



STORMWATER DRAINAGE REPORT

ZEBULON, NORTH CAROLINA

Chamblee Lake / DRH-22004 / February 2024



Storm Drainage Report

CHAMBLEE LAKE

ZEBULON, NORTH CAROLINA
DRH22004

Date: February 27, 2024

DESIGNED BY: BENJAMIN KINTNER
CHECKED BY: KATIE ANDERSON, PE



MCADAMS

621 HILLSBOROUGH ST. SUITE 500
RALEIGH, NC 27603
NC LIC. # C-0293

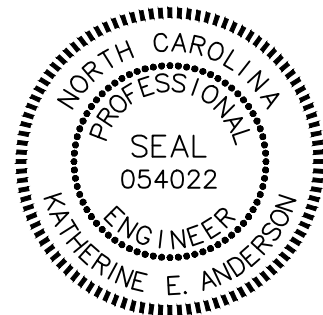


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CHAMBLEE LAKE

ZEBULON, NORTH CAROLINA

Storm Drainage Calculation Report

1.0 PROJECT NARRATIVE

The site of the proposed Chamblee Lake residential development is to be located on approximately 136.0 AC as described in the Chamblee Lake PUD approved in 2022. The proposed single-family subdivision will incorporate a total of 232 single-family homes and 123 townhomes. The site sits along Chamblee Road in the Town of Zebulon. The parcel is largely undeveloped and zoned R-30 (Wake County Zoning). The tract is within the Neuse River Basin. There are several existing environmental features on site. Water and Sewer are available to the site and utilities for this project through the City of Raleigh.

2.0 CALCULATION METHODOLOGY

STORM DRAINAGE

- For each individual storm drainage inlet, a drainage area was measured as well as assigning impervious surface percentage. From this impervious percentage, a rational c factor was calculated based on 0.95 for impervious areas. For drainage areas with a combination of both pervious and impervious areas, a composite “c” factor was interpolated.
- The pipes were sized using Stormwater Studio. This program accepts the input data from each inlet, as well as physical characteristics of the storm system to be designed and calculates flow rates and pipe sizes throughout the system. For rainfall data, an IDF curve describing the Zebulon region was used. The results of this program as well as calculated pipe sizes and hydraulic grade lines may be found in the appropriate section of this report. The minimum pipe size was 15” in the ROW. Pipe material is RCP and HsP as noted on the plans.
- The various inlet types are shown on the stormwater detail sheet, within the plan set.
- The storm water spread was evaluated for the 4in per hour storm event.
- The pipe network sizing was analyzed for the 10-year storm event.

APPENDIX

APPENDIX A – DRAINAGE AREA MAPS

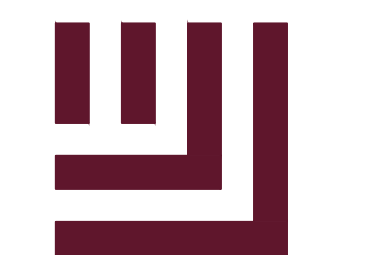
APPENDIX B – RAINFALL DATA

APPENDIX C – 4IN PER HOUR GUTTER SPREAD CALCULATION

APPENDIX D – 10 YEAR STORM DRAINAGE CAPACITY ANALYSIS

APPENDIX E – VELOCITY DISSIPATOR CALCULATIONS

APPENDIX A
DRAINAGE AREA MAPS



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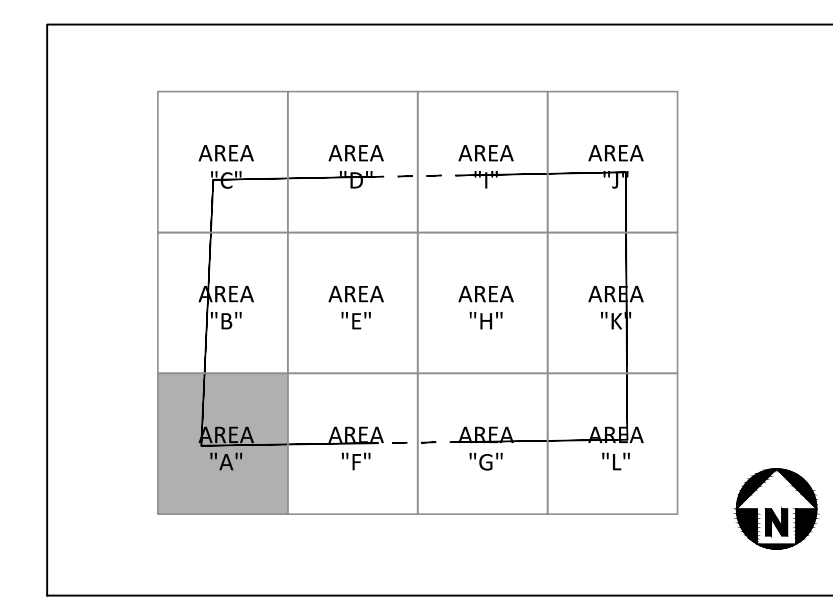
www.mcadamsco.com

CLIENT

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7208 FALLS OF NEUSE ROAD, SUITE 201
RALEIGH, NC 27615
PHONE: 919. 809. 4207

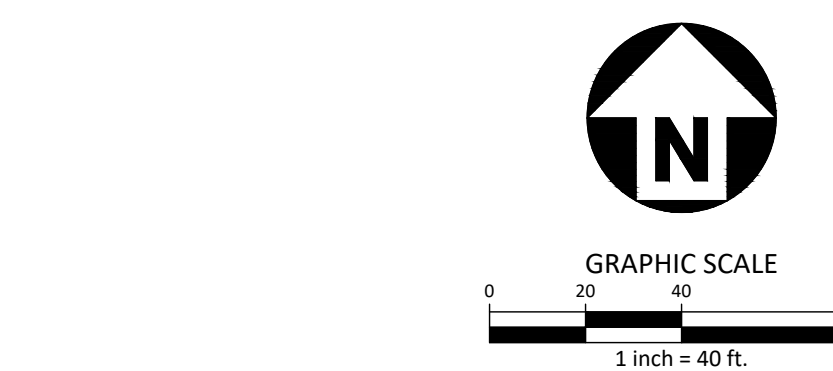


**CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA**



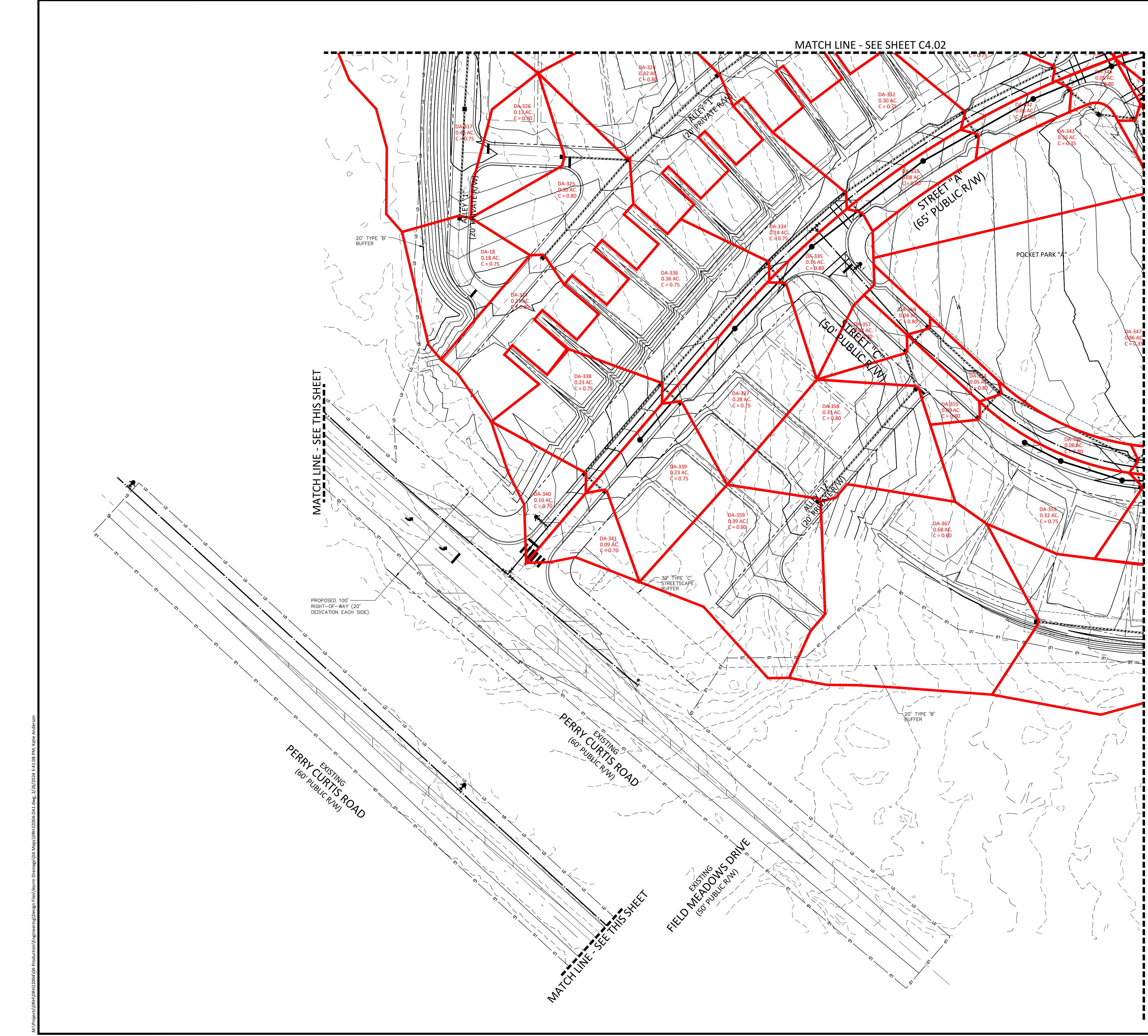
GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-RAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- LINE BREAK SYMBOL
- TOP & BOTTOM CURB ELEVATIONS
- TOP OF WALL ELEVATION
- BOTTOM OF WALL ELEVATION
(NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE
- ROOF DRAIN, 8" ADS
NON-PERFORATED TUBING OR
EQUAL 1.0% MIN. SLOPE 3" MIN.
COVER PVC SCHEDULE 40 IN
TRAFFIC AREAS
- TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- WOODED AREA
- MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA
(2% MAX. SLOPE IN ALL DIRECTIONS)



Town Certification. This design has been reviewed by the Engineer for the Town of Zebulon, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Zebulon.
By: _____ Date: _____
Town Engineer
These plans are approved by the Town of Zebulon and serve as construction plans for this project.
By: _____ Date: _____
Administrator

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION



REVISIONS

NO.	DATE

PLAN INFORMATION

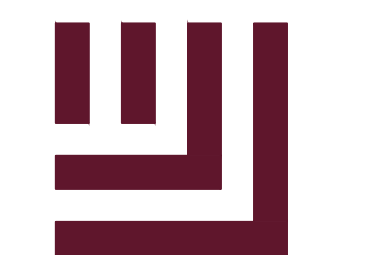
PROJECT NO.	DRH22004
FILENAME	DRH22004-G1
CHECKED BY	RKB
DRAWN BY	
SCALE	1"=40'
DATE	02.26.2024

SHEET

**DRAINAGE AREA MAP
AREA "A"**

DA.01

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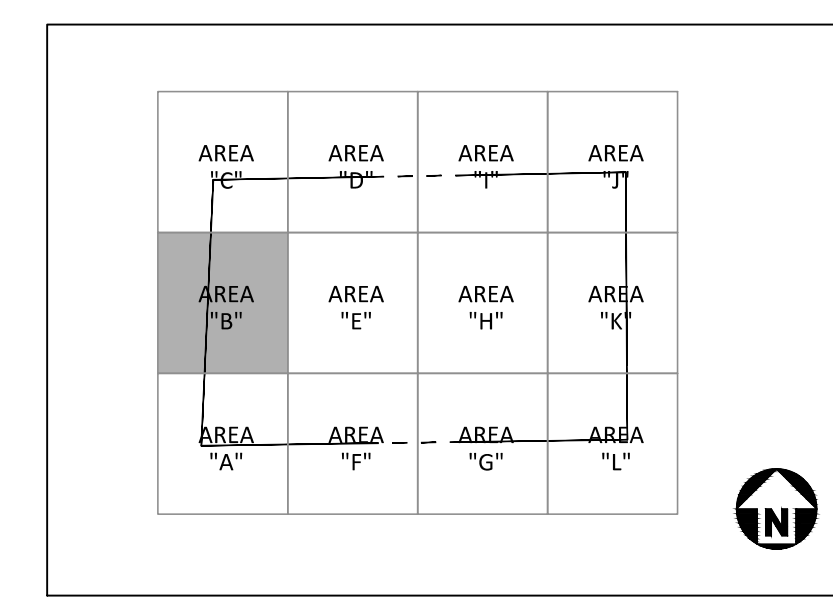
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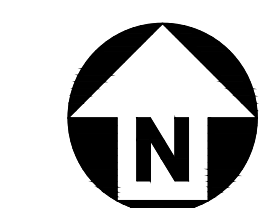
**CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA**



KEY MAP

GRADING LEGEND

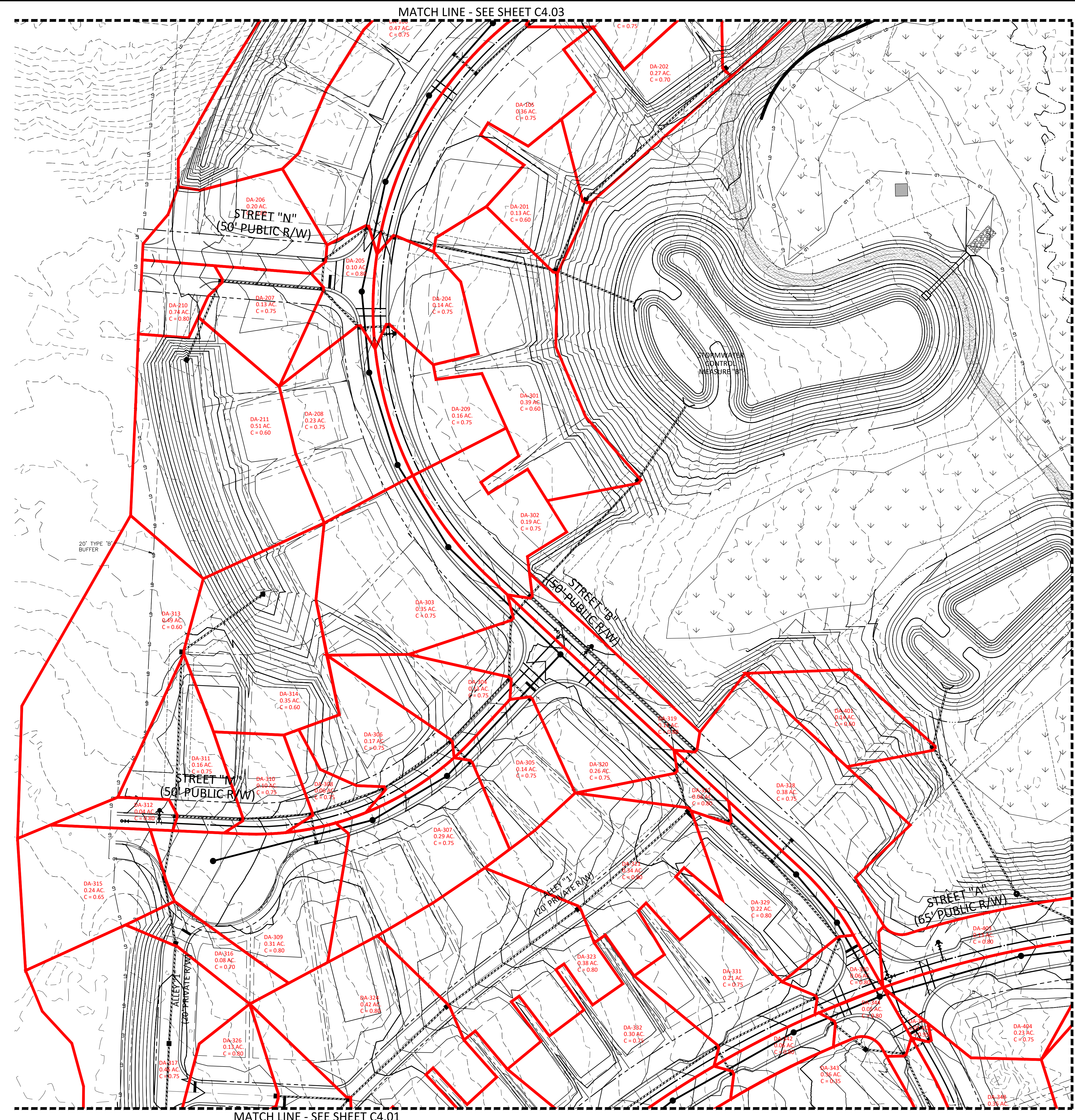
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GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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MATCH LINE - SEE SHEET C4.03

MATCH LINE - SEE SHEET C4.01

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NO. DATE

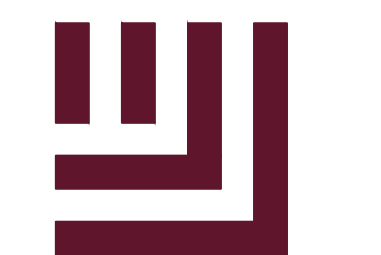
PLAN INFORMATION

PROJECT NO. DRH22004
FILENAME DRH22004-G1
CHECKED BY RKB
DRAWN BY
SCALE 1"=40'
DATE 02.26.2024

SHEET

**DRAINAGE AREA MAP
AREA "B"**

DA.02



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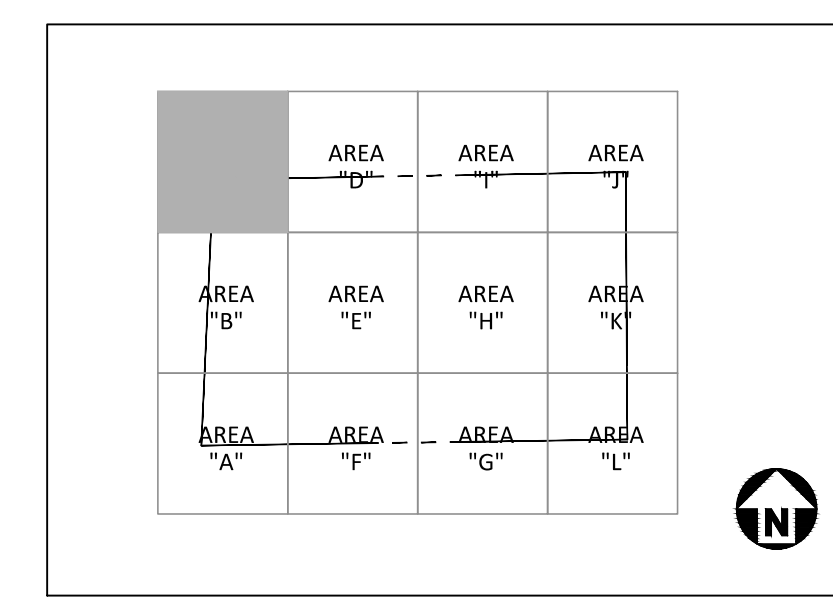
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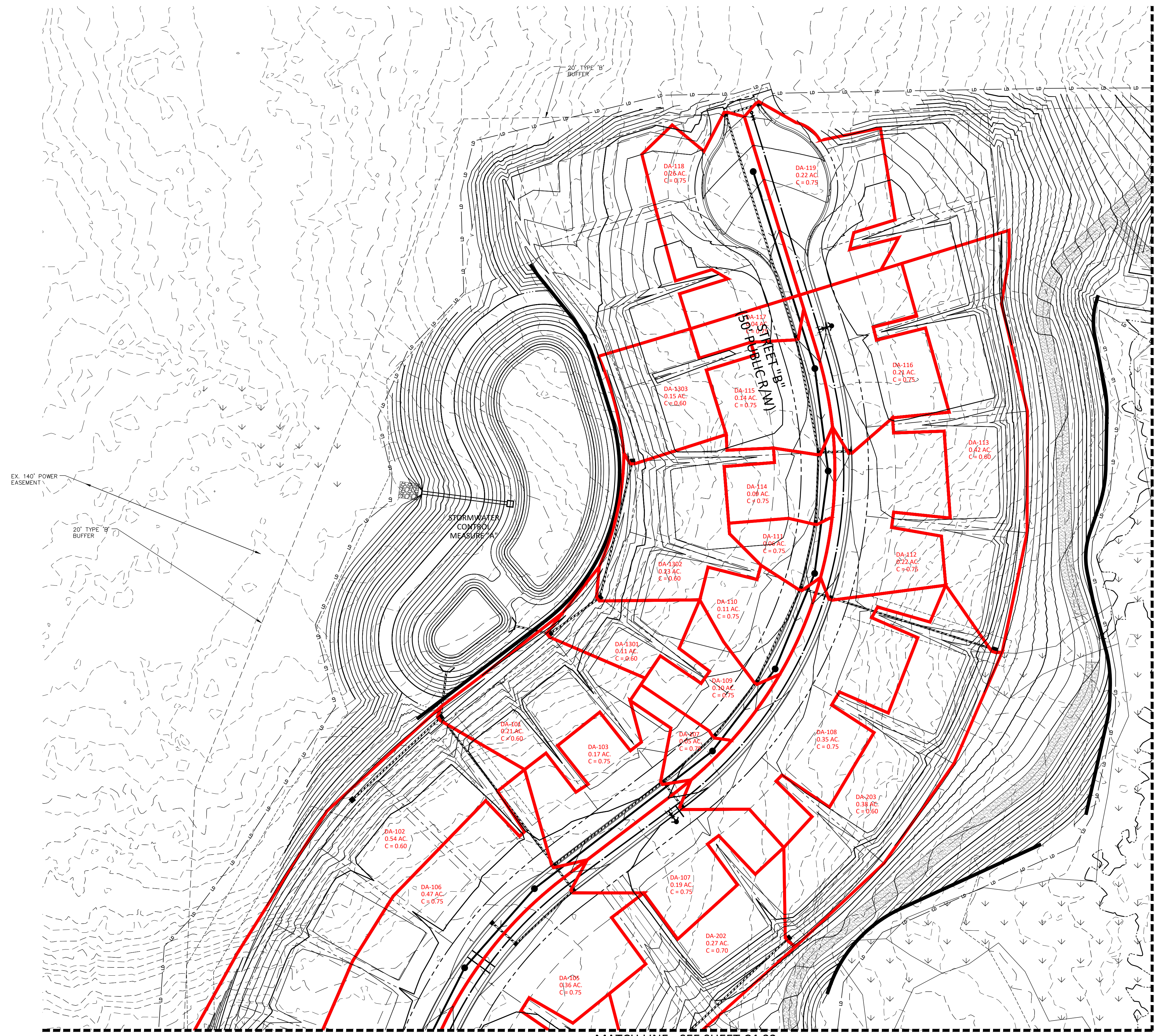
**CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA**



KEY MAP

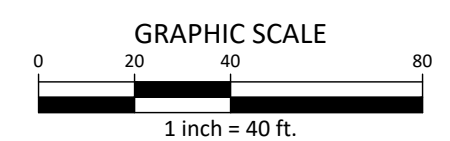
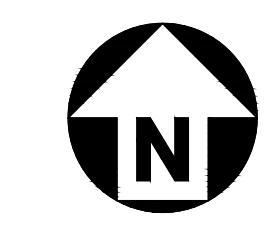
GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
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(2% MAX. SLOPE IN ALL DIRECTIONS)



MATCH LINE - SEE SHEET C4.02

MATCH LINE - SEE SHEET C4.04



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REVISIONS

NO.	DATE

PLAN INFORMATION

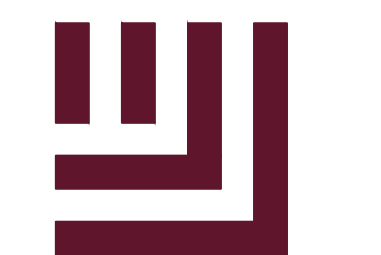
PROJECT NO.	DRH22004
FILENAME	DRH22004-G1
CHECKED BY	RKB
DRAWN BY	
SCALE	1"=40'
DATE	02.26.2024

SHEET

**DRAINAGE AREA MAP
AREA "C"**

DA.03

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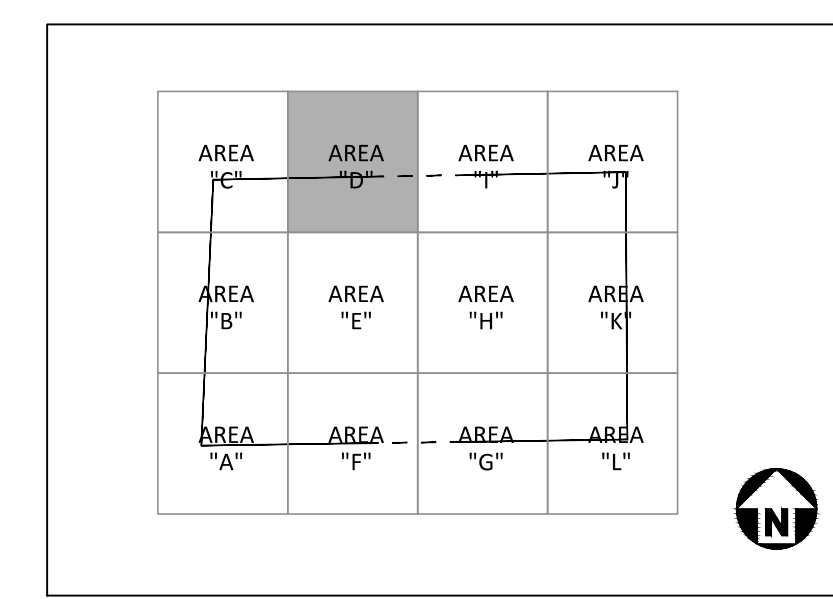
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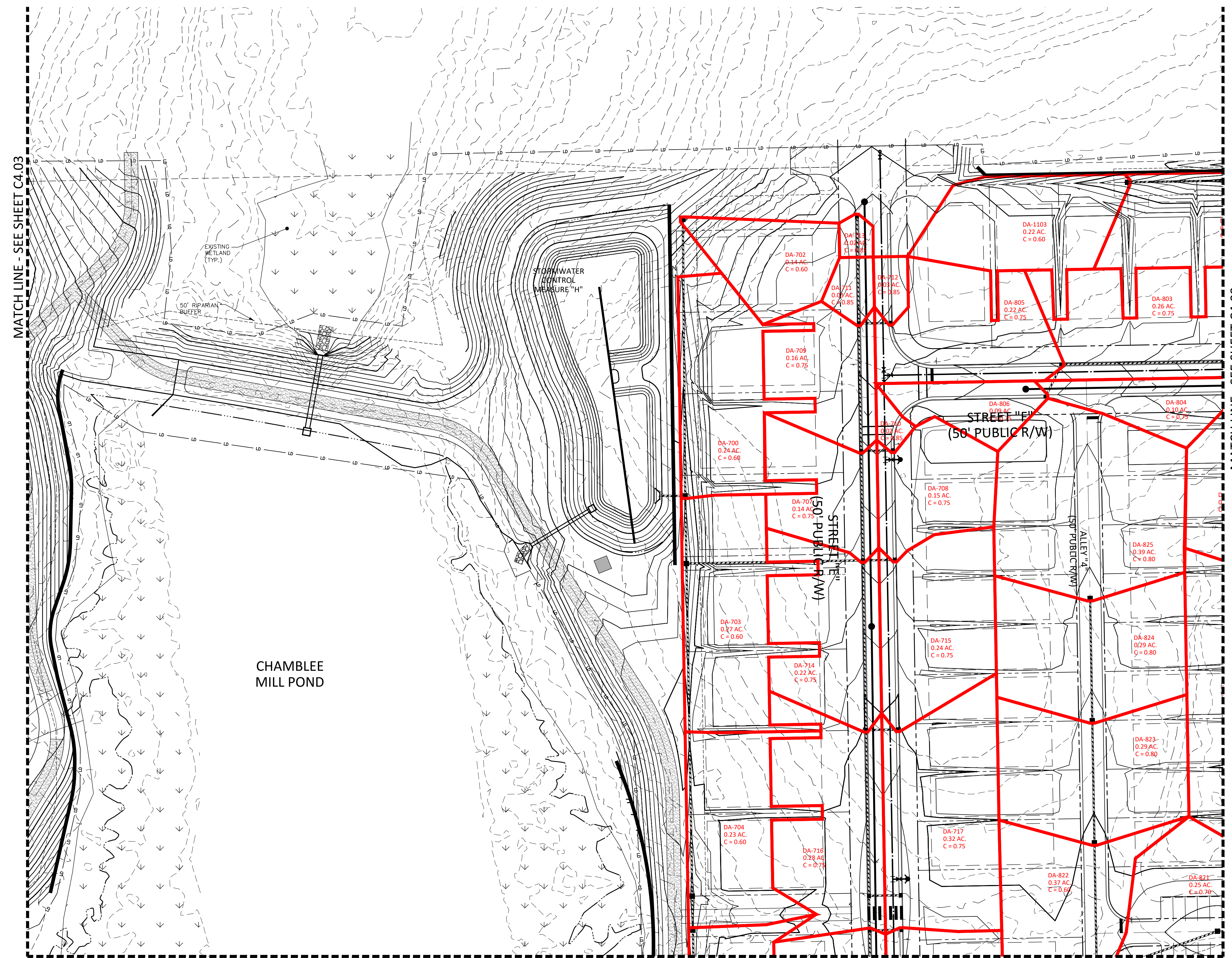
CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA



KEY MAP

GRADING LEGEND

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EQUAL 1.0% MIN. SLOPE 3' MIN.
COVER PVC SCHEDULE 40 IN
TRAFFIC AREAS
- TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- WOODED AREA
- 250 MAJOR CONTOUR
- 252 MINOR CONTOUR
- 250 EXISTING MAJOR CONTOUR
- 252 EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA
(2% MAX. SLOPE IN ALL DIRECTIONS)

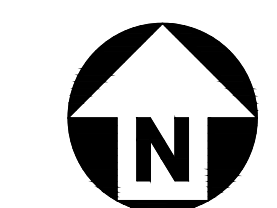


MATCH LINE - SEE SHEET C4.03

MATCH LINE - SEE SHEET C4.09

MATCH LINE - SEE SHEET C4.05

CHAMBLEE
MILL POND



GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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NO. DATE

PLAN INFORMATION

PROJECT NO. DRH22004
FILENAME DRH22004-G1
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DRAWN BY
SCALE 1"=40'
DATE 02.26.2024

SHEET

DRAINAGE AREA MAP
AREA "D"

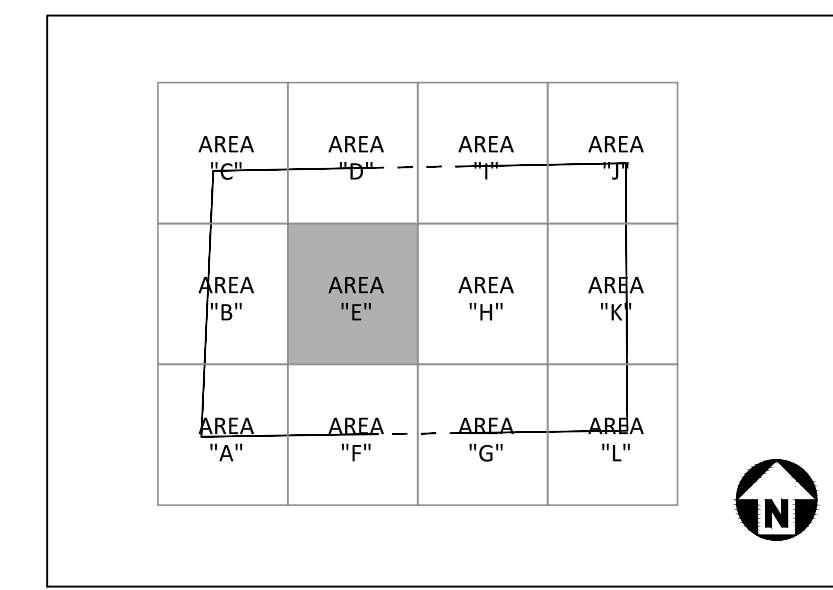
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MATCH LINE - SEE SHEET C4.04

CHAMBLEE MILL POND

MATCH LINE - SEE SHEET C4.02



GRADING LEGEND

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1509 CHAMBLEE ROAD
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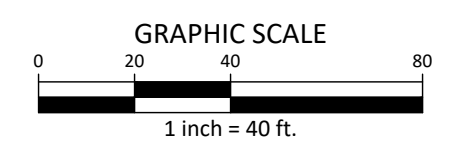
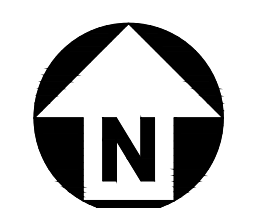
PLAN INFORMATION

PROJECT NO. DRH22004
FILENAME DRH22004-G1
CHECKED BY RKB
DRAWN BY
SCALE 1"=40'
DATE 02.26.2024

SHEET

DRAINAGE AREA MAP
AREA "E"

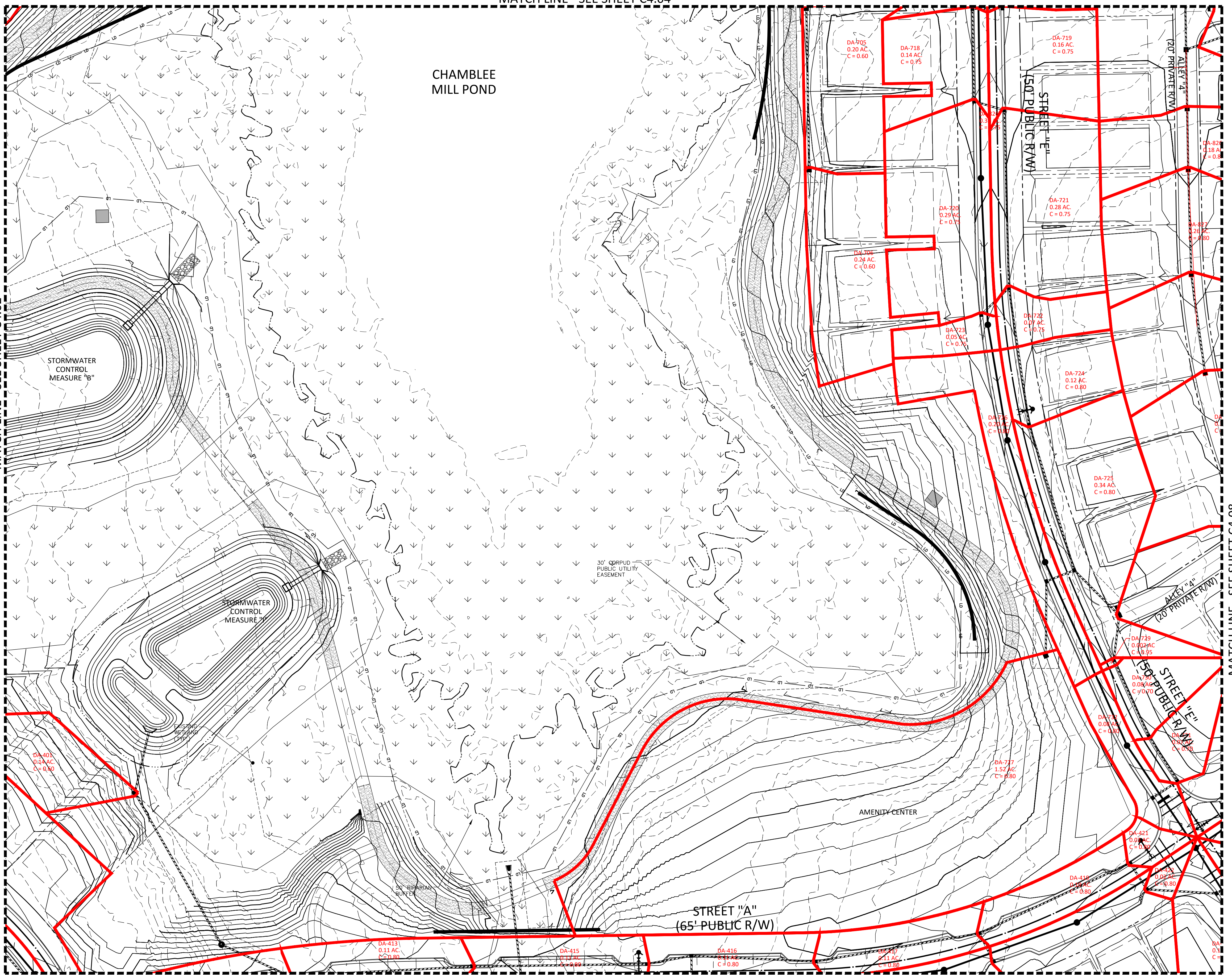
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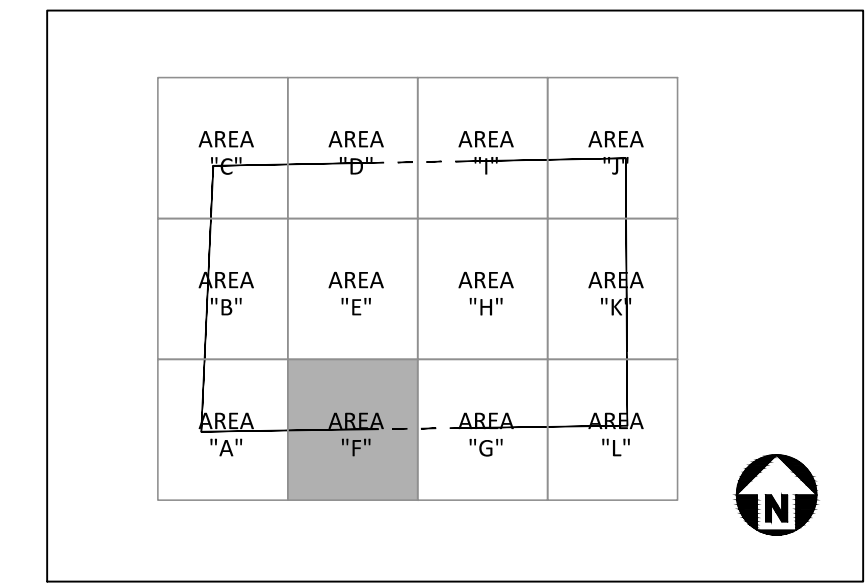


MATCH LINE - SEE SHEET C4.06

MATCH LINE - SEE SHEET C4.05

MATCH LINE - SEE SHEET C4.01

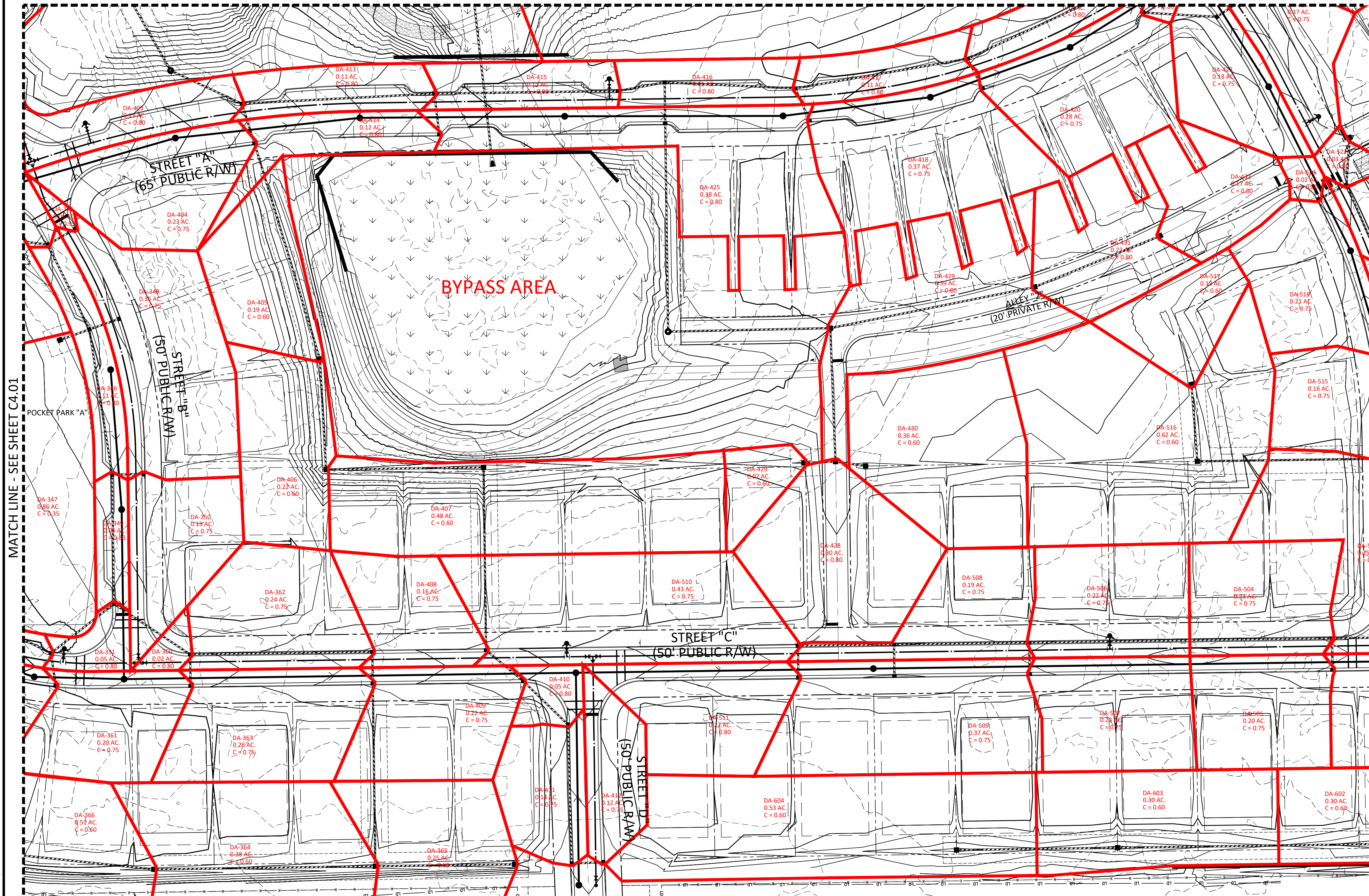
MATCH LINE - SEE SHEET C4.07



KEY MAP

GRADING LEGEND

- FLARED END SECTION
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- STORM SERVICE INLET
- STORM SERVICE ROOF- DRAIN
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CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
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REVISIONS

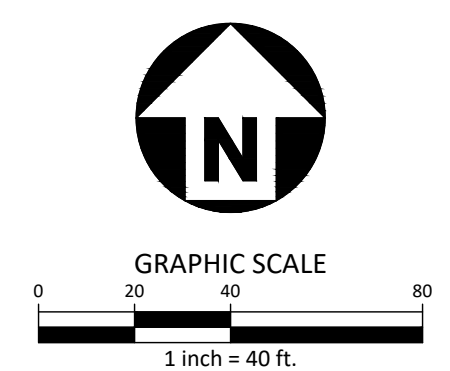
NO.	DATE

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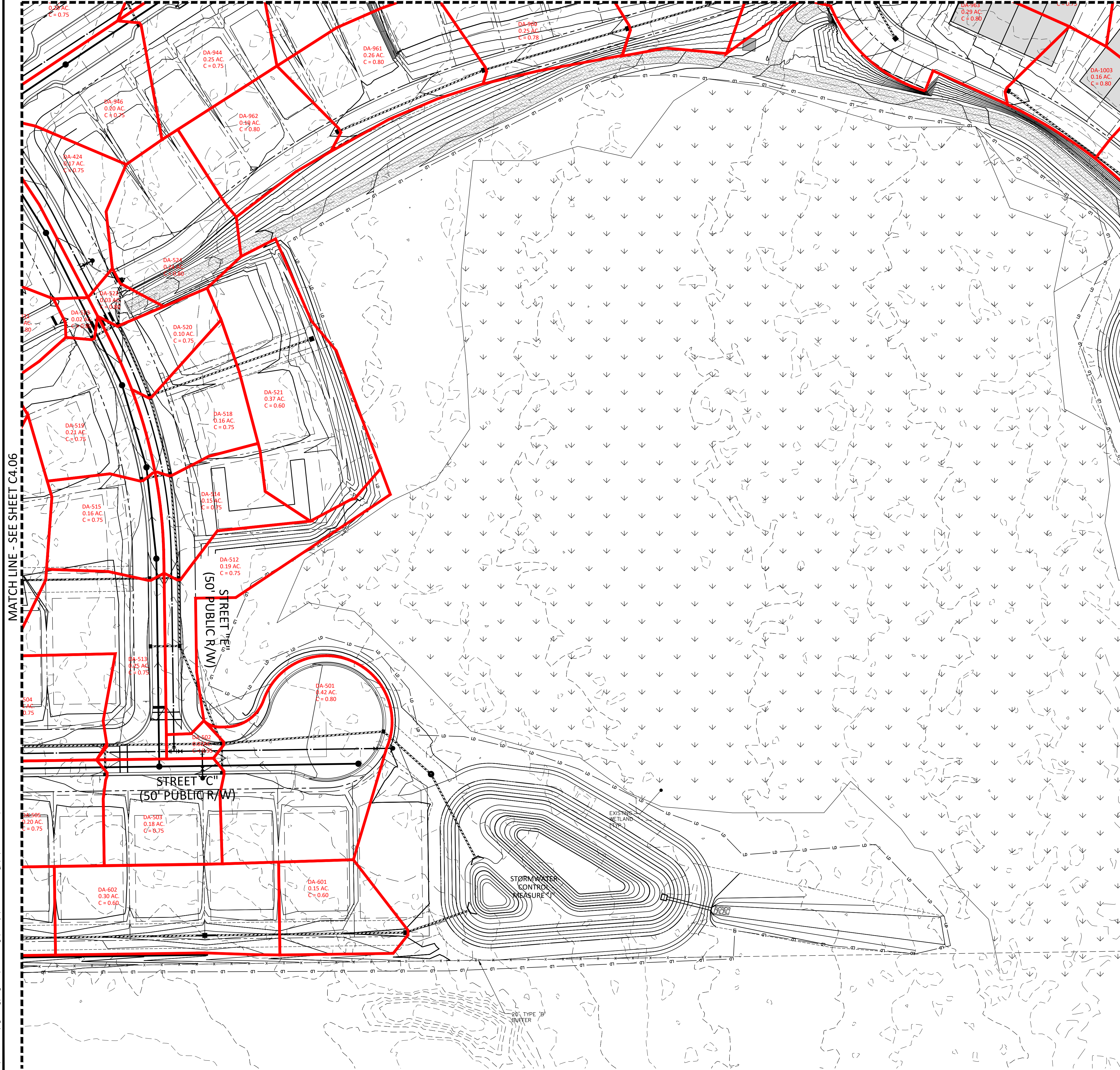
DRAINAGE AREA MAP
AREA "F"
DA.06

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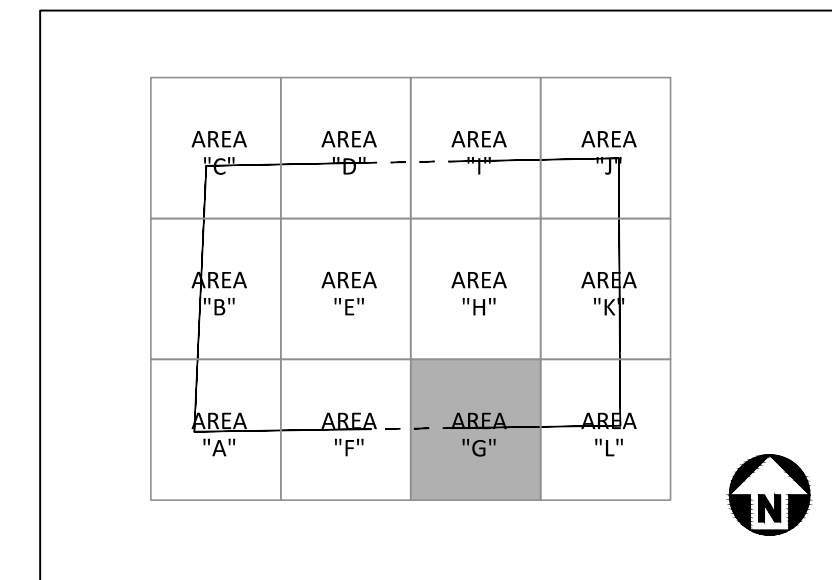
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MATCH LINE - SEE SHEET C4.08



MATCH LINE - SEE SHEET C4.06

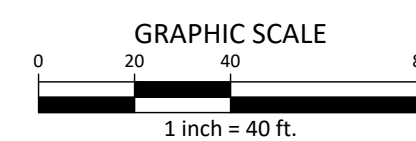
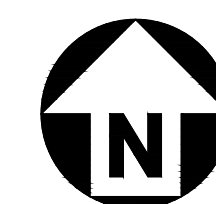
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KEY MAP

GRADING LEGEND

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- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-RAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- LINE BREAK SYMBOL
- TOP & BOTTOM CURB ELEVATIONS
TW=250.50
BW=250.00
- TOP OF WALL ELEVATION
TW=223.00
BW=213.00
(NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- SPOT ELEVATION
+ 250.60
- STORM DRAINAGE
- STORM SERVICE LINE
- ROOF DRAIN, 8" ADS
NON-PERFORATED TUBING OR
EQUAL, 1.0% MIN. SLOPE 3' MIN.
COVER PVC SCHEDULE 40 IN
TRAFFIC AREAS
- TP TP TP TREE PROTECTION FENCE
- LD LD LIMITS OF DISTURBANCE
- WOODED AREA
- 250 MAJOR CONTOUR
- 252 MINOR CONTOUR
- 250 EXISTING MAJOR CONTOUR
- 252 EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA
(2% MAX. SLOPE IN ALL DIRECTIONS)



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FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION



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CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

REVISIONS

NO.	DATE

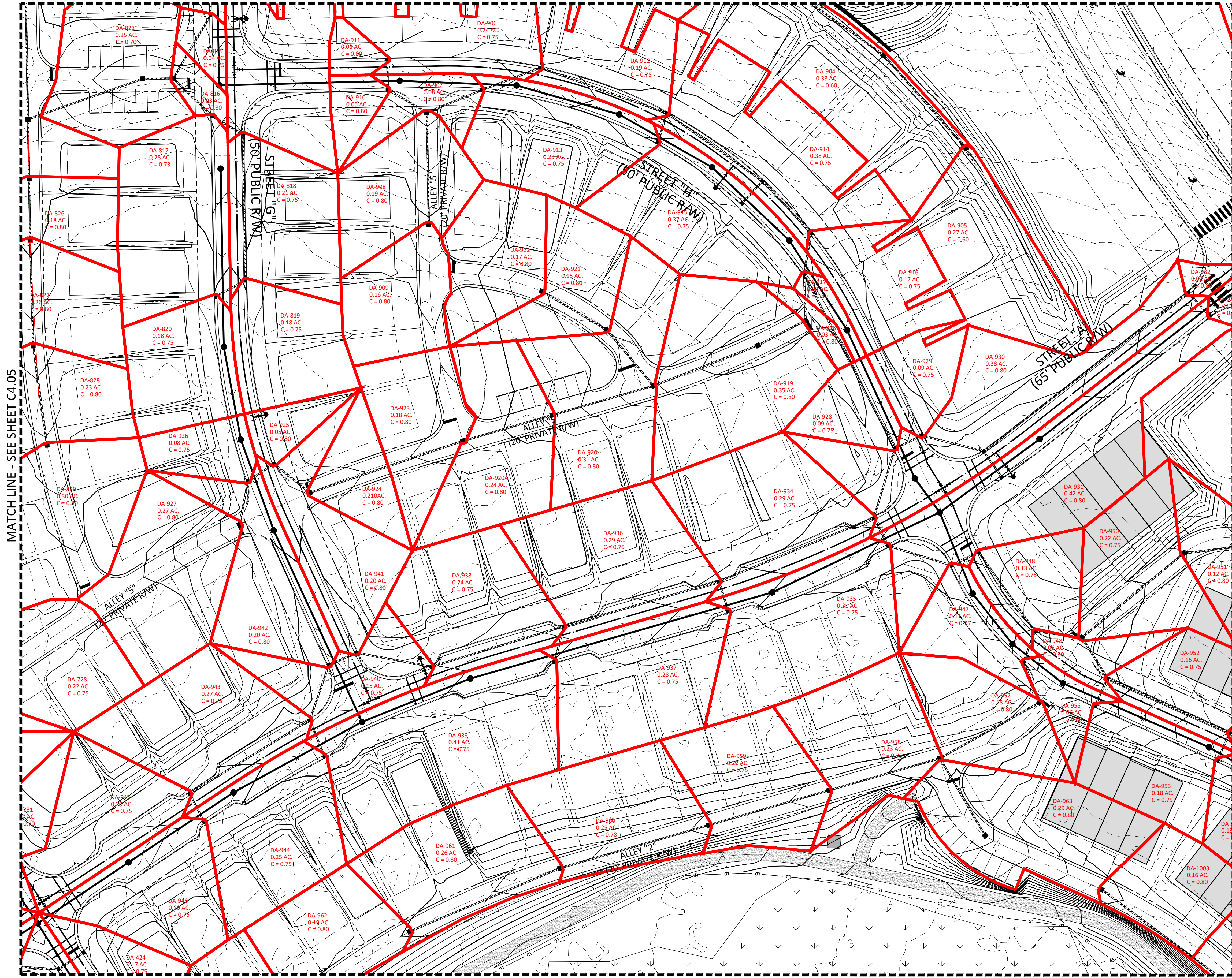
PLAN INFORMATION

PROJECT NO.	DRH22004
FILENAME	DRH22004-G1
CHECKED BY	RKB
DRAWN BY	
SCALE	1"=40'
DATE	02.26.2024

SHEET
DRAINAGE AREA MAP
AREA "G"
DA.07

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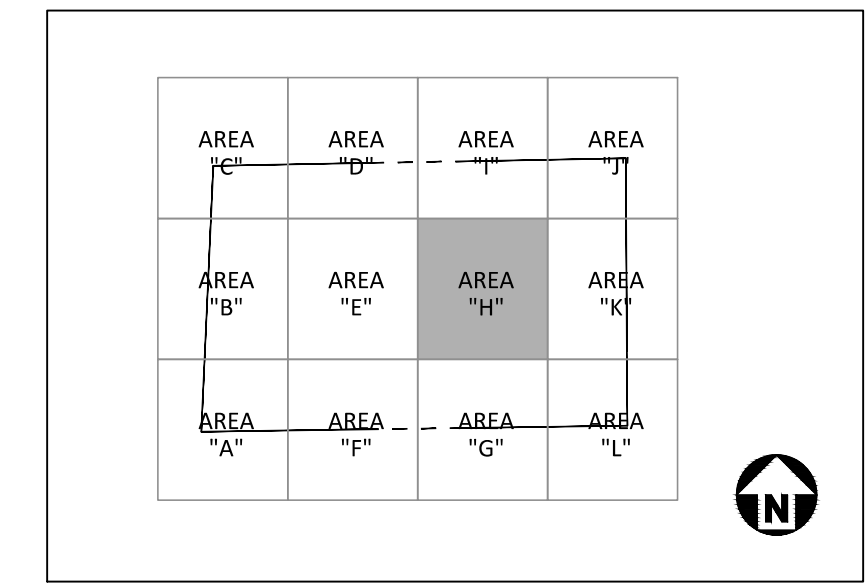
MATCH LINE - SEE SHEET C4.09



MATCH LINE - SEE SHEET C4.05

MATCH LINE - SEE SHEET C4.11

MATCH LINE - SEE SHEET C4.07



KEY MAP

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-RAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- LINE BREAK SYMBOL
- TOP & BOTTOM CURB ELEVATIONS
- TOP OF WALL ELEVATION
- BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE
- ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1/2" MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- WOODED AREA
- MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)

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CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

REVISIONS

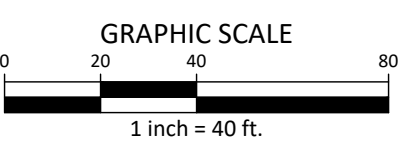
NO.	DATE

PLAN INFORMATION

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FILENAME	DRH22004-G1
CHECKED BY	RKB
DRAWN BY	
SCALE	1"=40'
DATE	02.26.2024

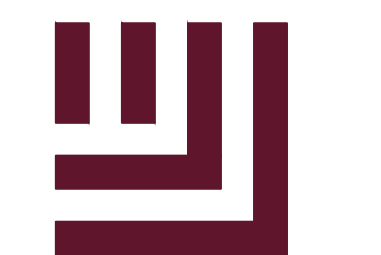
SHEET

DRAINAGE AREA MAP
AREA "H"
DA.08



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M:\Projects\DRH\DRH22004\Map\DRH22004-G1.dwg, 2/26/2024 5:42:14 PM, Katie Anderson



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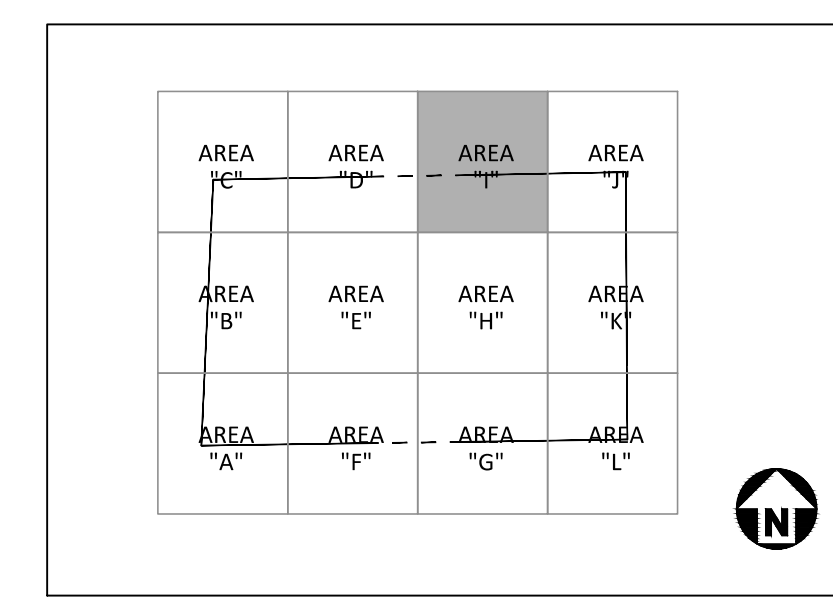
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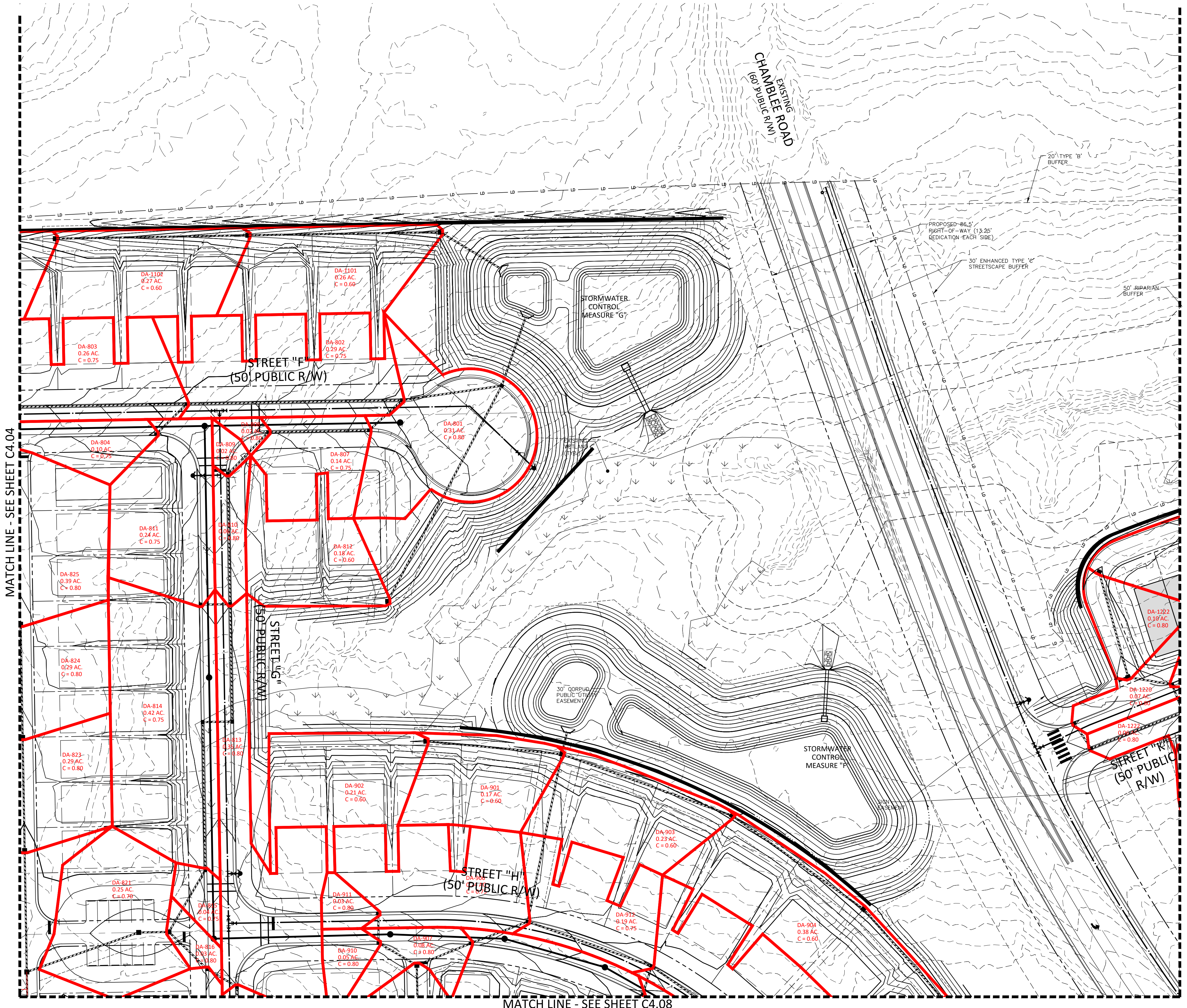
**CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA**



KEY MAP

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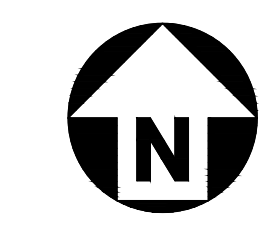
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- LIMITS OF DISTURBANCE
- WOODED AREA
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- 252 MINOR CONTOUR
- 250.00 EXISTING MAJOR CONTOUR
- 252.00 EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA
(2% MAX. SLOPE IN ALL DIRECTIONS)



MATCH LINE - SEE SHEET C4.04

MATCH LINE - SEE SHEET C4.10

MATCH LINE - SEE SHEET C4.08



GRAPHIC SCALE
1 inch = 40 ft.

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REVISIONS

NO. DATE

PLAN INFORMATION

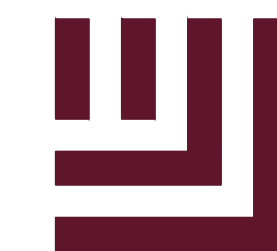
PROJECT NO. DRH22004
 FILENAME DRH22004-G1
 CHECKED BY RKB
 DRAWN BY
 SCALE 1"=40'
 DATE 02.26.2024

SHEET

**DRAINAGE AREA MAP
AREA "I"**

DA.09

M:\Projects\DRH\DRH22004\Production\Engineering\Design Files\Storm Drainage\DA_Map\DRH22004-G1.dwg, 2/26/2024, 5:42:24 PM, Katie Anderson



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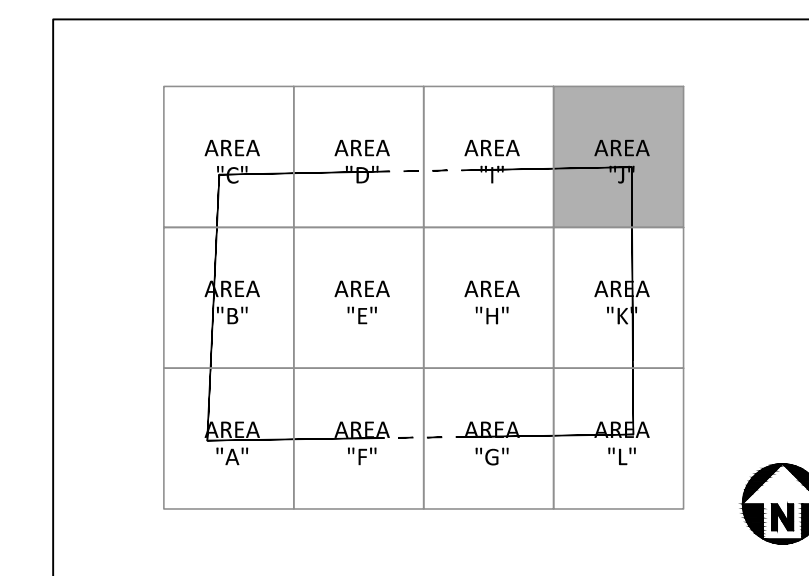
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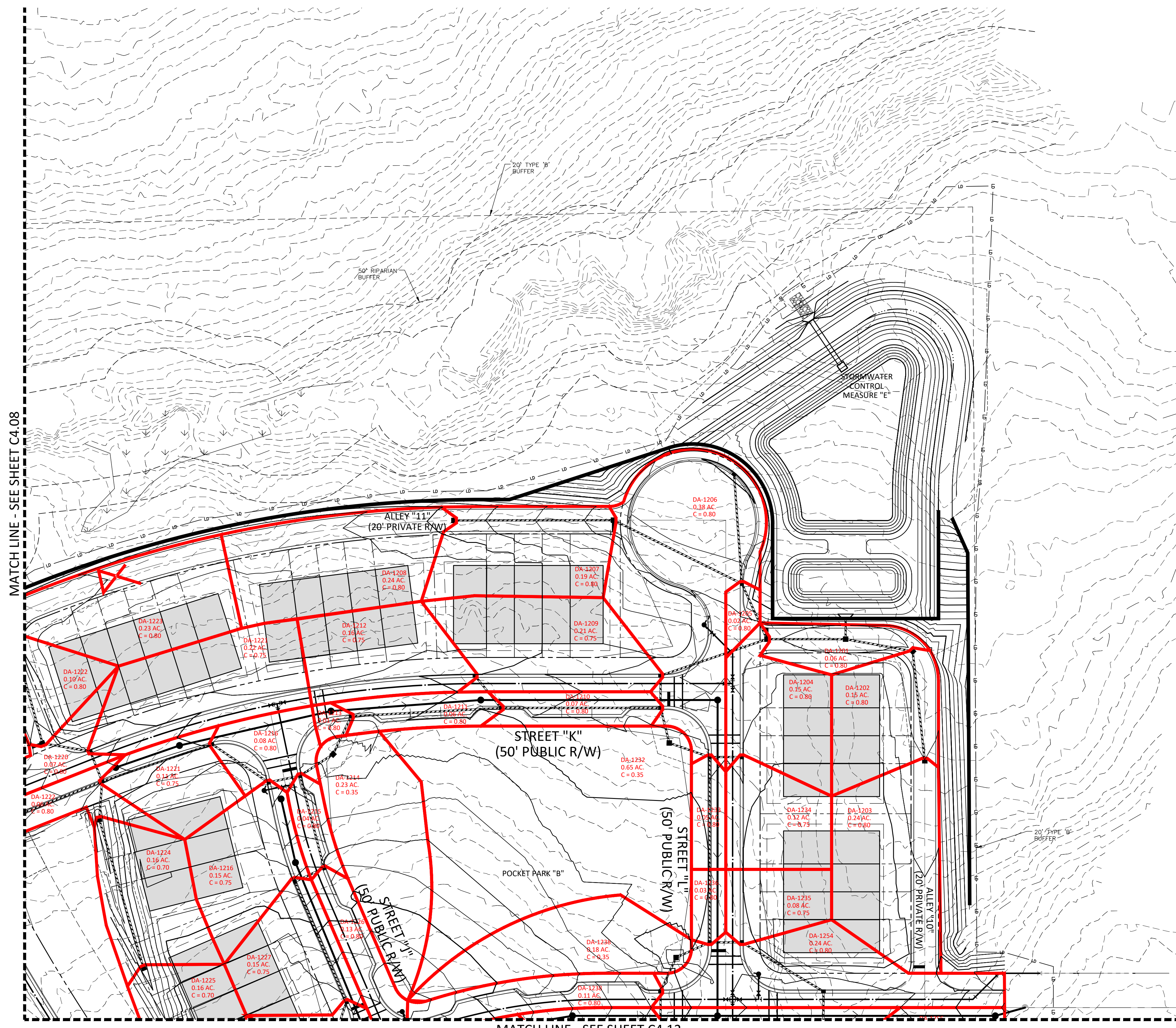
**CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA**



KEY MAP

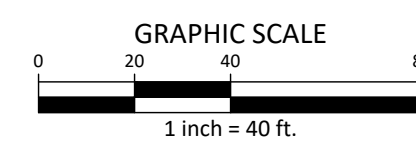
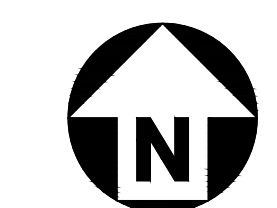
GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
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MATCH LINE - SEE SHEET C4.08

MATCH LINE - SEE SHEET C4.12



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REVISIONS

NO. DATE

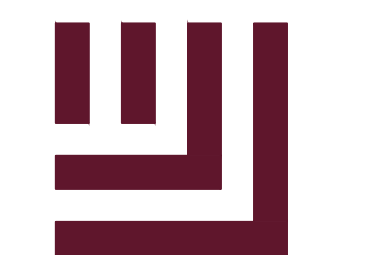
PLAN INFORMATION

PROJECT NO. DRH22004
 FILENAME DRH22004-G1
 CHECKED BY RKB
 DRAWN BY
 SCALE 1"=40'
 DATE 02.26.2024

SHEET

**DRAINAGE AREA MAP
AREA "J"**

DA.10



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CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

REVISIONS

NO.	DATE

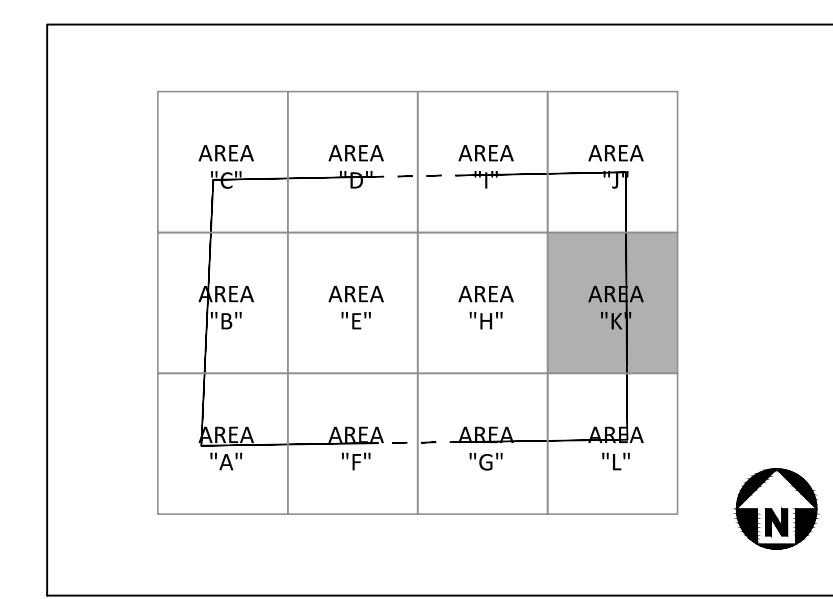
PLAN INFORMATION

PROJECT NO. DRH22004
 FILENAME DRH22004-G1
 CHECKED BY RKB
 DRAWN BY
 SCALE 1"=40'
 DATE 02.26.2024

SHEET

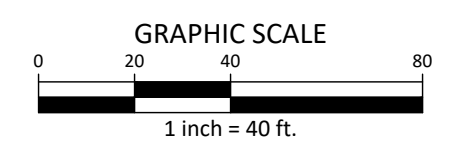
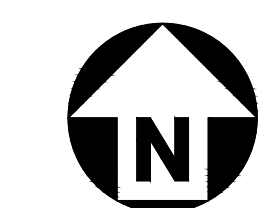
DRAINAGE AREA MAP
AREA "K"

DA.11



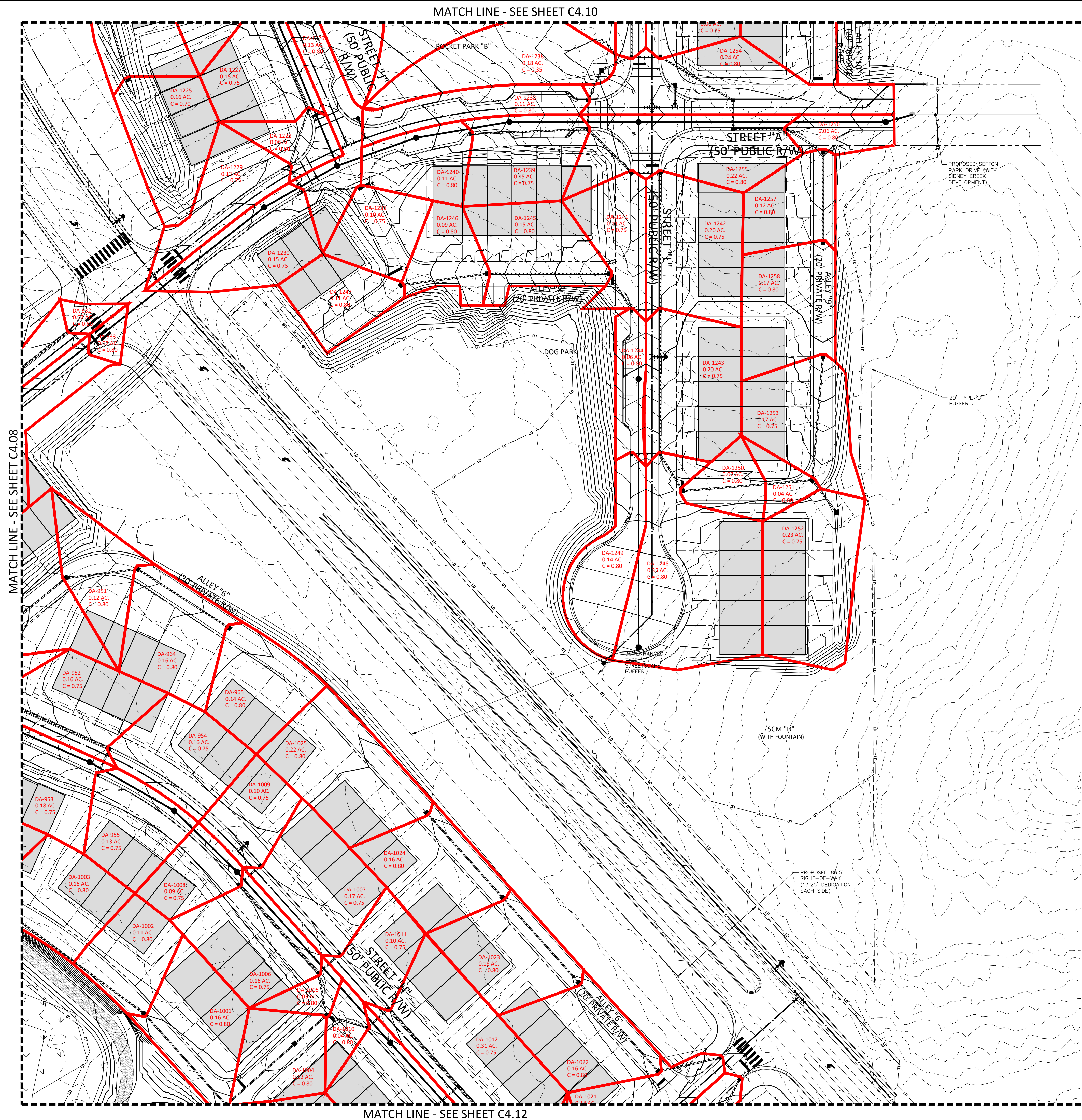
GRADING LEGEND

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- ENDWALL SECTION
- CATCH BASIN
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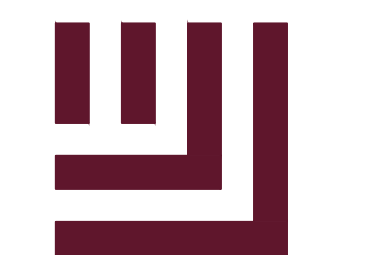


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**CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA**

REVISIONS

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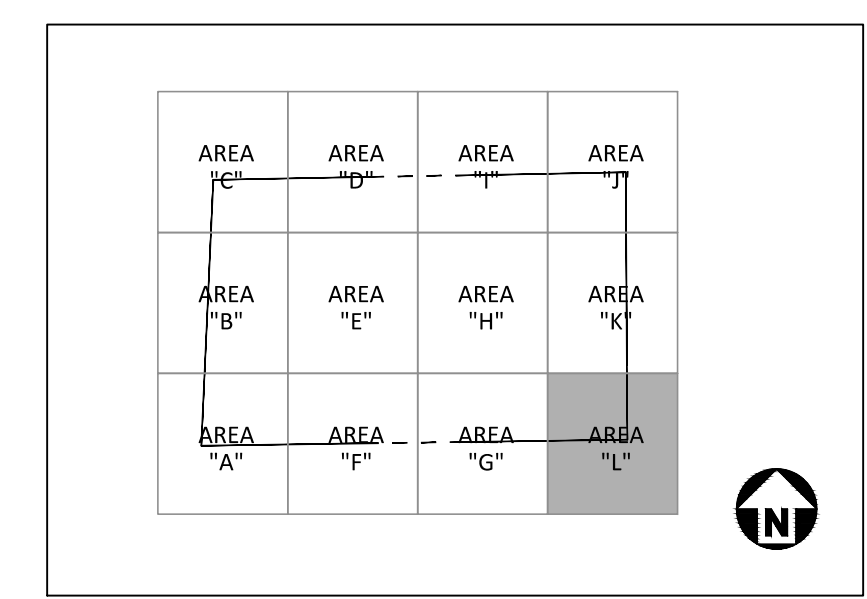
PLAN INFORMATION

PROJECT NO.	DRH22004
FILENAME	DRH22004-G1
CHECKED BY	RKB
DRAWN BY	
SCALE	1"=40'
DATE	02.26.2024

SHEET

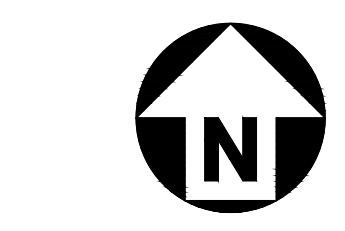
**DRAINAGE AREA MAP
AREA "L"**

DA.12



GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
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- STORM SERVICE ROOF- DRAIN
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- SPOT ELEVATION
- STORM DRAINAGE 1 inch = 40 ft.
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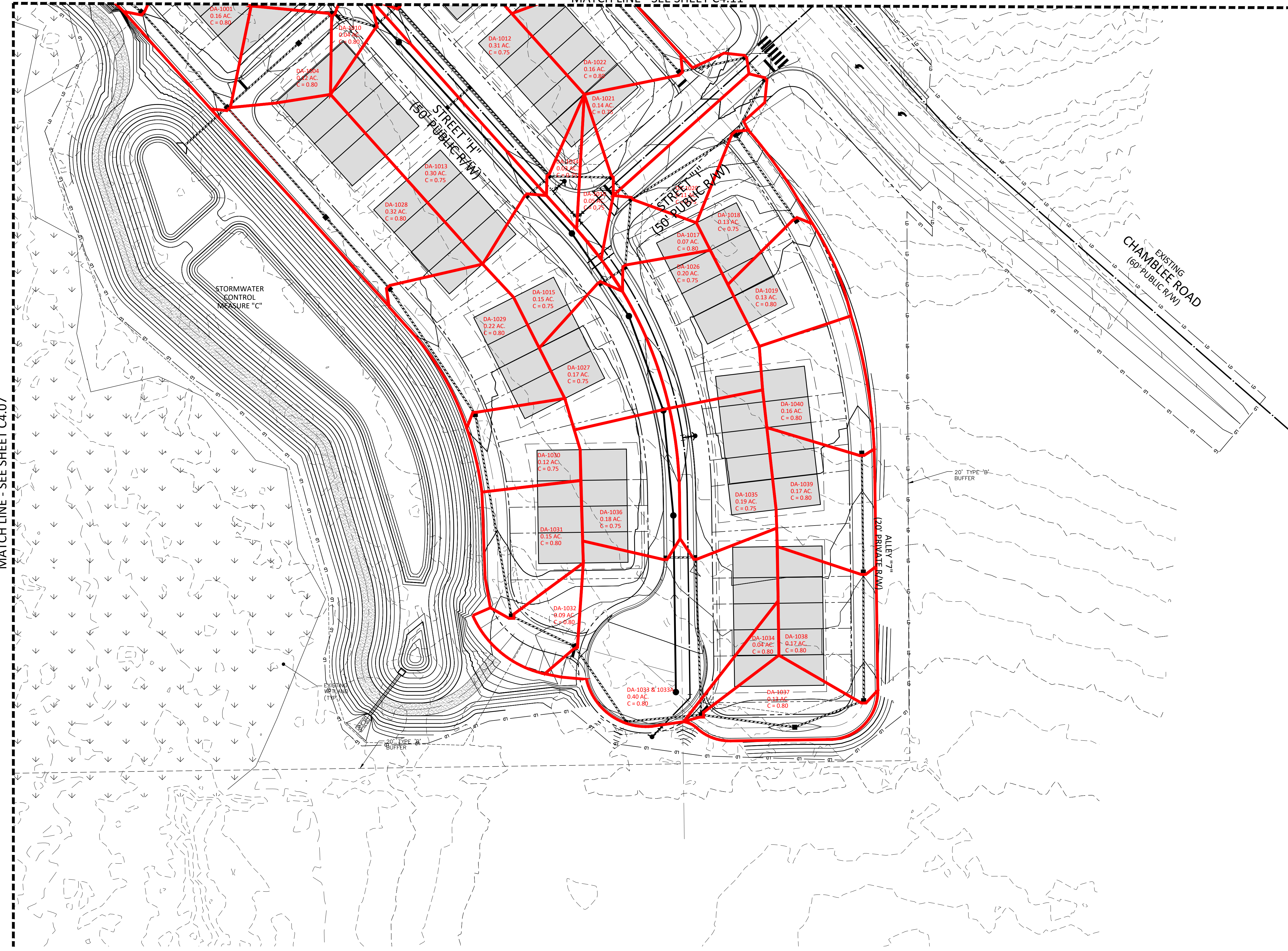
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MATCH LINE - SEE SHEET C4.11

MATCH LINE - SEE SHEET C4.07



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APPENDIX B
RAINFALL DATA

Point precipitation frequency estimates (inches/hour)

NOAA Atlas 14 Volume 2 Version 3

Data type: Precipitation intensity

Time series type: Partial duration

Project area: Ohio River Basin

Location name: North Carolina USA

Station Name: -

Latitude: 35.8088 Degree

Longitude: -78.2885 Degree

Elevation (USGS): 307 ft

PRECIPITATION FREQUENCY ESTIMATES

by duration	1	2	5	10	25	50	100	200
5-min:	4.87	5.63	6.37	7.22	8.08	8.78	9.42	10
10-min:	3.89	4.5	5.11	5.78	6.43	6.99	7.48	7.93
15-min:	3.24	3.77	4.3	4.87	5.44	5.9	6.3	6.67
30-min:	2.22	2.6	3.06	3.53	4.03	4.44	4.83	5.19
60-min:	1.38	1.63	1.96	2.3	2.68	3.01	3.32	3.64
2-hr:	0.81	0.958	1.16	1.39	1.65	1.88	2.12	2.36
3-hr:	0.571	0.677	0.825	0.989	1.19	1.37	1.55	1.75
6-hr:	0.343	0.406	0.496	0.595	0.717	0.831	0.947	1.07
12-hr:	0.201	0.238	0.292	0.352	0.426	0.498	0.571	0.651
24-hr:	0.119	0.144	0.183	0.215	0.26	0.298	0.338	0.38
2-day:	0.069	0.083	0.105	0.123	0.147	0.168	0.19	0.213
3-day:	0.049	0.059	0.074	0.086	0.103	0.117	0.131	0.147
4-day:	0.039	0.047	0.058	0.067	0.08	0.091	0.102	0.114
7-day:	0.026	0.031	0.038	0.044	0.052	0.058	0.065	0.072
10-day:	0.021	0.025	0.03	0.034	0.04	0.044	0.049	0.054
20-day:	0.014	0.016	0.02	0.022	0.026	0.028	0.031	0.034
30-day:	0.011	0.013	0.016	0.018	0.02	0.022	0.024	0.026
45-day:	0.01	0.011	0.013	0.015	0.016	0.018	0.019	0.021
60-day:	0.009	0.01	0.012	0.013	0.014	0.015	0.017	0.018

Date/time (GMT): Wed Dec 20 17:01:43 2023

pyRunTime: 0.008411169052124023

APPENDIX C
4IN PER HOUR GUTTER SPREAD CALCULATIONS

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	100-101	Dp-Grate	11.93	4.86	5.80
2	2	101-103	Comb.	10.13	5.55	4.40
3	3	103-107	Comb.	6.56	4.73	2.19
4	4	107-109	Comb.	5.36	3.85	3.39
5	5	109-110	Comb.	5.06	4.84	3.54
6	6	110-111	Comb.	4.73	4.62	2.48
7	7	111-114	Comb.	2.88	3.28	3.35
8	8	114-115	Comb.	2.61	4.07	3.97
9	9	115-116	Comb.	0.63	0.78	4.84
10	10	115-117	Comb.	1.56	3.40	1.92
11	11	117-118	Comb.	1.44	3.16	3.92
12	12	118-119	Comb.	0.66	1.95	3.63
13	13	101-102	Dp-Grate	1.30	3.20	9.14
14	14	103-104	Comb.	3.06	3.70	5.51
15	15	104-105	Comb.	2.49	3.41	3.20
16	16	107-108	Comb.	1.05	3.00	6.33
17	17	111-112	Comb.	1.67	1.43	5.17
18	18	112-113	Dp-Grate	1.01	2.21	8.04
19	19	105-106	Comb.	1.41	2.68	4.17

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-100.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	200-201	Dp-Grate	8.51	3.27	30.85
2	2	201-202	Dp-Grate	1.67	3.48	30.85
3	3	202-203	Dp-Grate	0.91	2.26	30.85
4	4	201-204	Comb.	6.53	4.73	4.12
5	5	204-205	Comb.	6.11	4.56	4.98
6	6	205-206	Comb.	5.79	4.54	4.45
7	7	206-207	Comb.	5.15	4.08	5.94
8	8	207-208	Comb.	1.17	3.10	4.98
9	9	208-209	Comb.	0.48	1.74	4.21
10	10	207-210	Comb.	3.59	4.26	6.42
11	11	210-211	Dp-Grate	1.22	2.49	30.85

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-200.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	300-301	Dp-Grate	42.79	3.06	7.74
2	2	301-302	Comb.	41.85	5.25	4.45
3	3	302-303	Comb.	10.10	5.07	5.85
4	4	303-304	Comb.	9.05	4.90	3.25
5	5	304-306	Comb.	8.24	4.43	3.15
6	6	306-308	Comb.	6.86	4.23	1.75
7	7	308-310	Comb.	6.68	4.76	2.24
8	8	309-310	Comb.	0.99	2.94	4.45
9	9	306-307	Comb.	0.87	2.83	4.50
10	10	302-319	Comb.	31.18	5.09	3.54
11	11	319-320	Comb.	30.83	6.65	5.51
12	12	320-321	Dp-Grate	30.05	6.06	8.00
13	13	321-322	Comb.	24.35	5.69	6.47
14	14	328-329	Comb.	24.16	6.09	2.72
15	15	329-330	Comb.	22.32	5.59	2.48
16	16	330-331	Comb.	22.12	5.96	4.55
17	17	331-342	Comb.	15.27	3.50	2.05
18	18	342-343	Dp-Grate	15.08	4.25	5.80
19	19	343-344	Comb.	14.58	4.89	1.95
20	20	344-346	Comb.	14.38	5.39	0.63
21	21	346-349	Comb.	11.77	4.55	2.53
22	22	349-351	Comb.	11.01	4.87	2.29
23	23	351-360	Comb.	6.53	3.70	1.47
24	24	360-362	Comb.	5.87	4.15	4.93

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-300.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	362-363	Comb.	5.15	4.02	5.51
26	26	363-364	Dp-Grate	4.37	3.76	7.65
27	27	321-323	Dp-Grate	4.61	4.20	8.00
28	28	323-324	Dp-Grate	3.39	4.17	7.50
29	29	324-325	Dp-Grate	2.05	3.67	7.00
30	30	325-327	Dp-Grate	0.67	2.62	6.00
31	31	325-326	Dp-Grate	0.42	1.15	5.50
32	32	346-347	Dp-Grate	1.20	3.13	8.79
33	33	331-332	Comb.	6.22	4.65	5.17
34	34	332-333	Comb.	0.26	0.80	2.82
35	35	344-345	Comb.	0.04	1.19	1.15
36	36	332-334	Comb.	5.06	3.79	5.46
37	37	334-335	Comb.	0.51	1.80	4.60
38	38	334-336	Comb.	3.83	4.36	6.28
39	39	336-337	Comb.	0.84	1.42	5.65
40	40	336-338	Comb.	1.91	3.65	3.97
41	41	338-339	Comb.	0.69	1.42	3.97
42	42	338-340	Comb.	0.53	1.91	2.19
43	43	346-348	Comb.	1.05	3.00	3.20
44	44	310-311	Comb.	5.39	3.83	3.01
45	45	311-312	Comb.	4.91	4.22	1.55
46	46	351-352	Comb.	4.32	4.12	2.91
47	47	304-305	Comb.	0.42	2.28	3.83
48	48	352-354	Comb.	3.10	4.04	2.19

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-300.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
49	49	354-355	Comb.	0.29	0.63	5.94
50	50	354-356	Comb.	2.66	3.72	1.92
51	51	356-357	Comb.	2.53	3.53	2.72
52	52	312-313	Dp-Grate	2.02	2.78	8.69
53	53	357-358	Dp-Grate	2.30	3.66	7.00
54	54	358-359	Dp-Grate	1.25	3.17	6.50
55	55	352-353	Comb.	0.96	2.87	6.18
56	56	360-361	Comb.	0.60	2.53	5.37
57	57	340-341	Comb.	0.25	1.68	2.05
58	58	312-315	Comb.	2.77	3.89	3.68
59	59	315-316	Dp-Grate	2.14	3.80	4.50
60	60	364-365	Dp-Grate	0.60	1.63	6.27
61	61	364-366	Dp-Grate	2.86	3.93	8.87
62	62	366-367	Dp-Grate	1.63	3.26	10.32
63	63	313-314	Dp-Grate	0.84	2.03	7.34
64	64	349-350	Comb.	0.57	2.49	4.55
65	65	316-317	Dp-Grate	1.92	3.64	9.36
66	66	317-318	Dp-Grate	0.54	1.64	5.00
67	67		Comb.	1.14	3.08	3.29

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-300.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	400-401	Dp-Grate	16.63	1.73	17.00
2	2	401-402	MH	16.30	2.41
3	3	402-403	Comb.	16.30	2.78	3.25
4	4	403-413	Comb.	10.98	3.41	3.15
5	5	413-415	Comb.	10.24	4.53	4.69
6	6	415-416	Comb.	9.89	4.99	0.88
7	7	416-425	Comb.	5.70	3.06	4.65
8	8	425-426	MH	4.49	4.07
9	9	426-427	Dp-Grate	4.49	4.26	9.00
10	10	427-431	Dp-Grate	1.25	2.32	6.50
11	11	431-432	Dp-Grate	0.54	1.85	6.50
12	12	403-404	Comb.	4.91	4.29	4.21
13	13	404-405	Dp-Grate	4.22	4.28	17.00
14	14	405-406	Dp-Grate	3.76	4.10	17.00
15	15	406-407	Dp-Grate	3.23	3.78	8.60
16	16	407-408	Comb.	2.08	3.19	4.12
17	17	408-409	Comb.	1.60	3.08	4.79
18	18	409-410	Comb.	0.94	2.35	2.63
19	19	410-411	Comb.	0.78	2.63	3.68
20	20	411-412	Comb.	0.36	1.74	3.35
21	21	416-417	Comb.	3.83	4.36	3.63
22	22	417-419	Comb.	2.37	3.63	3.39
23	23	419-421	Comb.	1.21	2.38	2.91
24	24	421-422	Comb.	1.11	2.99	3.11

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	422-423	Comb.	1.05	3.00	3.92
26	26	423-424	Comb.	0.51	2.41	3.83
27	27	413-414	Comb.	0.38	2.22	3.54
28	28	427-428	Dp-Grate	1.99	3.65	7.50
29	29	428-429	Dp-Grate	0.17	1.01	3.83
30	30	417-418	Comb.	1.11	1.56	6.47
31	31	419-420	Comb.	0.84	2.80	5.46
32	32	428-430	Dp-Grate	0.86	1.76	11.38

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-400.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	New	MH	15.53	1.31
2	2	500-501	Comb.	15.53	1.50	4.17
3	3	501-502	Comb.	14.18	2.44	2.14
4	4	502-512	Comb.	7.31	2.15	1.38
5	5	512-514	Comb.	5.96	2.93	4.31
6	6	514-518	Comb.	3.23	3.41	4.31
7	7	518-519	Comb.	0.63	0.86	4.84
8	8	518-520	Comb.	2.12	3.24	3.35
9	9	520-521	Dp-Grate	0.89	2.07	255.52
10	10	514-515	Comb.	2.28	2.12	4.55
11	11	520-522	Comb.	0.93	2.10	1.85
12	12	522-523	Comb.	0.06	0.53	1.60
13	13	522-524	Dp-Grate	0.77	2.72	7.00
14	14	515-516	Dp-Grate	1.80	2.71	51.88
15	15	516-517	Dp-Grate	0.31	1.23	17.00
16	16	502-504	Comb.	6.25	1.83	4.74
17	17	504-506	Comb.	5.02	3.28	4.93
18	18	506-508	Comb.	3.67	4.09	2.24
19	19	508-510	Comb.	1.99	2.67	6.52
20	20	510-511	Comb.	0.70	1.91	5.03
21	21	508-509	Comb.	1.11	1.37	3.68
22	22	504-505	Comb.	0.60	2.53	4.64
23	23	506-507	Comb.	0.69	2.64	5.03
24	24	512-513	Comb.	0.75	1.09	1.88

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-500.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	502-503	Comb.	0.54	2.45	4.64

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-500.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-600

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	600-601	Dp-Grate	3.07	0.98	8.07
2	2	601-602	Dp-Grate	2.71	1.27	11.64
3	3	602-603	Dp-Grate	1.99	2.50	11.64
4	4	603-604	Dp-Grate	1.27	2.79	16.10

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-600.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	700-701	Dp-Grate	19.38	3.34	6.61
2	2	701-703	Dp-Grate	18.56	3.70	6.61
3	3	703-707	Comb.	16.28	5.12	4.21
4	4	707-709	Comb.	0.82	2.78	3.68
5	5	709-711	Comb.	0.27	2.02	1.62
6	6	711-713	Comb.	0.07	1.04	1.40
7	7	711-712	Comb.	0.10	1.39	1.62
8	8	709-710	Comb.	0.07	0.42	1.40
9	9	707-714	Comb.	14.17	4.98	4.84
10	10	714-716	Comb.	12.37	4.77	3.39
11	11	716-718	Comb.	11.47	4.88	4.88
12	12	718-720	Comb.	9.76	5.46	1.87
13	13	720-721	Comb.	9.61	5.39	2.24
14	14	721-722	Comb.	9.40	5.33	3.25
15	15	722-724	Comb.	8.38	4.62	3.25
16	16	724-725	Comb.	8.00	5.00	5.41
17	17	725-728	Dp-Grate	1.40	0.77	6.00
18	18	728-729	Comb.	0.74	0.73	0.63
19	19	729-730	Comb.	0.74	2.01	2.58
20	20	730-731	Comb.	0.48	2.37	2.34
21	21	701-702	Dp-Grate	0.34	2.14	6.61
22	22	703-704	Dp-Grate	1.66	2.39	6.61
23	23	704-705	Dp-Grate	1.06	2.69	6.61
24	24	705-706	Dp-Grate	0.58	2.04	6.61

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-700.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	718-719	Comb.	0.84	2.72	4.84
26	26	725-726	Comb.	5.50	4.46	4.21
27	27	707-708	Comb.	0.66	2.60	4.31
28	28	714-715	Comb.	0.96	2.91	5.13
29	29	716-717	Comb.	0.48	1.86	3.68
30	30	722-723	Comb.	0.64	2.58	4.21
31	31	731-732	Comb.	0.26	1.86	2.58
32	32	726-727	Dp-Grate	4.86	4.02	36.55

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-700.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	800-801	Comb.	18.97	4.60	6.50
2	2	801-802	Comb.	17.55	5.20	4.45
3	3	802-807	Comb.	14.71	5.81	2.95
4	4	807-808	Comb.	14.29	5.44	1.32
5	5	808-809	Comb.	14.23	5.68	1.37
6	6	809-810	Comb.	14.16	5.68	2.25
7	7	810-813	Comb.	13.25	5.11	3.29
8	8	813-814	Comb.	12.13	4.89	4.29
9	9	814-815	Comb.	10.87	4.67	2.60
10	10	815-816	Dp-Grate	10.77	5.19	5.00
11	11	816-821	Dp-Grate	8.13	5.11	11.42
12	12	821-822	Dp-Grate	7.46	4.57	24.28
13	13	822-826	Dp-Grate	3.65	3.90	15.00
14	14	826-827	Dp-Grate	2.53	3.77	15.00
15	15	827-828	Dp-Grate	1.70	2.76	11.00
16	16	810-811	Comb.	0.72	2.65	4.75
17	17	810-812	Dp-Grate	0.43	1.18	32.00
18	18	822-823	Dp-Grate	3.01	4.00	14.00
19	19	823-824	Dp-Grate	2.14	3.11	12.00
20	20	816-817	Comb.	2.55	3.78	5.25
21	21	817-818	Comb.	1.71	3.10	4.60
22	22	818-819	Comb.	1.08	2.50	4.30
23	23	819-820	Comb.	0.54	1.93	4.40
24	24	802-803	Comb.	1.97	3.68	4.65

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-800.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	803-805	Comb.	0.89	2.31	4.25
26	26	805-806	Comb.	0.27	1.40	2.75
27	27	803-804	Comb.	0.30	0.71	2.70
28	28	824-825	Dp-Grate	1.15	2.39	14.00
29	29	828-829	Dp-Grate	0.96	2.91	11.00

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-800.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	900-901	Dp-Grate	39.45	7.28	10.00
2	2	901-906	Comb.	36.43	6.21	4.85
3	3	906-912	Comb.	34.07	6.12	4.90
4	4	912-914	Comb.	32.81	6.17	3.79
5	5	914-916	Comb.	30.86	5.95	2.80
6	6	916-917	Comb.	30.35	7.01	1.80
7	7	917-928	Comb.	23.78	5.31	2.75
8	8	928-934	Comb.	20.55	5.25	6.25
9	9	934-935	Comb.	11.53	2.70	6.50
10	10	935-947	Comb.	10.60	3.61	3.25
11	11	947-948	Comb.	10.27	5.58	3.35
12	12	948-949	Comb.	9.88	5.20	3.30
13	13	949-950	Dp-Grate	4.39	4.58	12.00
14	14	950-952	Comb.	2.13	2.64	3.30
15	15	952-953	Comb.	0.54	1.56	3.40
16	16	952-954	Comb.	1.11	2.44	3.95
17	17	917-918	Dp-Grate	6.48	4.72	4.04
18	18	918-919	Dp-Grate	6.38	4.69	20.27
19	19	919-920	Dp-Grate	5.26	3.85	13.00
20	20	920-920A	Dp-Grate	3.25	4.11	11.00
21	21	920A-923	Dp-Grate	2.48	4.00	9.00
22	22	923-924	Dp-Grate	1.90	3.19	9.00
23	23	924-925	Comb.	1.26	2.66	4.55
24	24	925-926	Comb.	1.10	2.89	5.90

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-900.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	926-927	Dp-Grate	0.86	2.80	13.00
26	26	934-936	Comb.	8.15	5.12	6.05
27	27	936-938	Comb.	6.44	3.99	5.55
28	28	938-940	Comb.	4.49	4.62	5.40
29	29	940-941	Comb.	4.04	4.19	5.00
30	30	941-942	Comb.	3.40	3.75	5.10
31	31	942-943	Comb.	2.76	3.47	5.70
32	32	943-945	Comb.	1.20	2.54	4.75
33	33	945-946	Comb.	0.60	1.97	4.75
34	34	943-944	Comb.	0.75	1.04	5.30
35	35	906-907	Comb.	1.63	3.46	4.25
36	36	907-908	Dp-Grate	1.38	3.27	10.00
37	37	908-910	Comb.	0.26	1.50	2.25
38	38	910-911	Comb.	0.10	1.39	1.75
39	39	908-909	Dp-Grate	0.51	1.73	9.00
40	40	938-939	Comb.	1.23	3.15	6.90
41	41	920-921	Dp-Grate	1.02	2.97	11.00
42	42	921-922	Dp-Grate	0.54	2.00	9.00
43	43	928-929	Comb.	2.96	3.54	2.75
44	44	929-930	Comb.	2.69	3.85	4.29
45	45	930-932	Comb.	0.13	0.94	1.40
46	46	932-933	Comb.	0.06	1.37	1.40
47	47	936-937	Comb.	0.84	2.07	6.55
48	48	912-913	Comb.	0.69	2.64	5.30

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-900.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
49	49	914-915	Comb.	0.81	2.77	2.29
50	50	930-931	Comb.	1.34	2.80	5.29
51	51	901-902	Dp-Grate	0.50	2.40	11.00
52	52	901-903	Dp-Grate	2.11	3.49	12.00
53	53	903-904	Dp-Grate	1.56	3.40	17.12
54	54	904-905	Dp-Grate	0.65	1.90	13.00
55	55	949-956	Comb.	5.38	2.64	3.85
56	56	956-957	Dp-Grate	5.19	3.75	14.00
57	57	957-958	Dp-Grate	4.61	4.48	14.00
58	58	954-955	Comb.	0.48	2.37	3.40
59	59	958-959	Dp-Grate	3.00	3.20	14.00
60	60	959-960	Dp-Grate	2.34	3.25	14.00
61	61	960-961	Dp-Grate	1.54	3.39	14.00
62	62	961-962	Dp-Grate	0.77	2.10	12.00
63	63	958-963	Dp-Grate	0.93	1.34	13.42
64	64	950-951	Dp-Grate	1.60	3.43	11.00
65	65	951-964	Dp-Grate	0.90	2.28	9.00
66	66	964-965	Dp-Grate	0.51	2.06	10.00

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-900.sws

Spread Report

Project Name: SD-1000

Stormwater Studio 2024 v 3.0.0.33

02-27-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	1000-1001	Dp-Grate	18.93	1.55	6.00
2	2	1001-1004	Dp-Grate	10.14	0.93	5.29
3	3	1004-1005	Dp-Grate	9.75	1.20	4.00
4	4	1005-1010	Comb.	8.10	1.36	2.05
5	5	1010-1011	Comb.	7.97	1.57	3.90
6	6	1011-1012	Comb.	7.65	2.43	2.29
7	7	1012-1014	Comb.	5.82	3.23	2.35
8	8	1014-1016	Comb.	5.28	4.19	1.90
9	9	1016-1017	Comb.	5.13	4.36	2.40
10	10	1017-1018	Dp-Grate	3.80	3.33	5.00
11	11	1018-1020	Comb.	2.99	3.69	3.90
12	12	1020-1021	Comb.	2.66	3.79	4.65
13	13	1021-1022	Dp-Grate	2.24	3.52	7.00
14	14	1022-1023	Dp-Grate	1.73	3.50	7.00
15	15	1023-1024	Dp-Grate	1.22	2.74	7.00
16	16	1024-1025	Dp-Grate	0.70	2.19	6.50
17	17	1005-1006	Comb.	1.56	3.40	4.35
18	18	1006-1008	Comb.	0.57	1.77	3.20
19	19	1001-1028	Dp-Grate	7.41	0.85	9.81
20	20	1028-1029	Dp-Grate	6.39	1.09	7.50
21	21	1029-1030	Dp-Grate	5.69	1.86	5.50
22	22	1030-1031	Dp-Grate	5.30	3.66	5.50
23	23	1031-1032	Dp-Grate	4.82	4.19	5.00
24	24	1032-1033	Comb.	4.53	4.18	4.79

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-1000.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	1033-1034	Dp-Grate	3.25	3.88	4.00
26	26	1034-1037	Dp-Grate	2.02	2.80	6.92
27	27	1034-1035	Comb.	1.11	2.16	4.35
28	28	1037-1038	Dp-Grate	1.60	3.43	7.00
29	29	1038-1039	Dp-Grate	1.06	2.55	6.50
30	30	1039-1040	Dp-Grate	0.51	1.89	6.00
31	31	1018-1019	Dp-Grate	0.42	2.17	5.00
32	32	1017-1026	Comb.	1.11	3.05	4.80
33	33	1026-1027	Comb.	0.51	1.84	4.35
34	34	1001-1002	Dp-Grate	0.86	2.82	5.50
35	35	1002-1003	Dp-Grate	0.51	2.11	6.00
36	36	1012-1013	Comb.	0.90	2.86	2.29
37	37	1008-1009	Comb.	0.30	1.86	3.40
38	38	1014-1015	Comb.	0.45	2.33	4.45
39	39	1035-1036	Comb.	0.54	1.90	4.25
40	40	1006-1007	Comb.	0.51	1.32	4.50

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-1000.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1100

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	1100-1101	Dp-Grate	1.80	2.52	10.00
2	2	1101-1102	Dp-Grate	1.18	2.60	10.00
3	3	1102-1103	Dp-Grate	0.53	1.85	7.00

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-1100.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	1200-1201	Dp-Grate	24.46	1.95	10.67
2	2	1201-1204	Dp-Grate	23.09	5.77	9.00
3	3	1204-1209	Comb.	19.95	5.73	5.10
4	4	1209-1210	Comb.	19.32	5.39	2.15
5	5	1210-1211	Comb.	7.49	4.61	2.60
6	6	1211-1213	Comb.	6.82	4.31	1.42
7	7	1213-1214	Dp-Grate	6.79	4.13	7.64
8	8	1214-1215	Comb.	6.46	4.71	1.87
9	9	1215-1216	Comb.	4.14	2.82	3.90
10	10	1216-1217	Comb.	3.69	4.28	3.60
11	11	1217-1218	Comb.	3.36	3.78	3.15
12	12	1218-1219	Comb.	0.42	1.65	2.15
13	13	1219-1220	Comb.	0.22	1.83	3.85
14	14	1218-1224	Dp-Grate	0.90	1.02	11.07
15	15	1224-1225	Dp-Grate	0.45	1.56	7.00
16	16	1210-1232	Dp-Grate	11.69	5.04	13.27
17	17	1232-1233	Comb.	10.78	5.20	2.05
18	18	1233-1234	Comb.	0.36	2.18	3.35
19	19	1233-1236	Comb.	10.26	5.02	2.80
20	20	1236-1237	Dp-Grate	7.37	3.37	6.79
21	21	1237-1238	Comb.	7.12	4.87	2.65
22	22	1238-1239	Comb.	6.76	4.73	3.10
23	23	1239-1241	Comb.	5.96	4.18	4.10
24	24	1241-1242	Comb.	5.63	4.46	4.40

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Spread Report

Project Name: SD-1200

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
25	25	1242-1243	Comb.	5.03	4.10	4.00
26	26	1243-1244	Comb.	1.31	3.22	1.82
27	27	1244-1245	Dp-Grate	1.12	3.06	8.00
28	28	1245-1246	Dp-Grate	0.64	2.13	7.00
29	29	1215-1226	Comb.	2.20	3.83	2.65
30	30	1226-1227	Comb.	1.78	3.56	2.85
31	31	1227-1228	Comb.	1.33	2.90	2.10
32	32	1228-1229	Comb.	1.14	3.08	3.15
33	33	1229-1230	Comb.	0.75	2.70	1.15
34	34	1230-1231	Dp-Grate	0.30	1.58	7.00
35	35	1243-1248	Comb.	3.12	4.05	4.90
36	36	1248-1249	Comb.	0.45	2.32	3.00
37	37	1248-1250	Dp-Grate	1.55	3.40	7.00
38	38	1250-1251	Dp-Grate	1.33	3.23	6.00
39	39	1251-1252	Dp-Grate	0.69	2.62	11.37
40	40	1251-1253	Dp-Grate	0.51	1.75	8.00
41	41	1204-1205	Comb.	2.66	3.83	1.37
42	42	1205-1207	Dp-Grate	1.38	3.27	11.00
43	43	1207-1208	Dp-Grate	0.77	2.19	10.00
44	44	1201-1202	Dp-Grate	1.25	3.17	12.00
45	45	1202-1203	Dp-Grate	0.77	2.30	12.00
46	46	1205-1206	Comb.	1.22	3.14	5.29
47	47	1218-1221	Comb.	1.72	3.51	4.40
48	48	1221-1222	Dp-Grate	1.06	2.46	9.00

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
49	49	1222-1223	Dp-Grate	0.74	2.56	12.00
50	50	1211-1212	Comb.	0.48	2.37	4.35
51	51	1236-1235	Comb.	2.80	2.52	2.96
52	52	1235-1254	Comb.	2.56	3.34	1.90
53	53	1254-1255	Comb.	1.79	3.22	1.90
54	54	1255-1256	Comb.	1.09	2.46	3.85
55	55	1256-1257	Dp-Grate	0.89	2.85	10.00
56	56	1257-1258	Dp-Grate	0.51	2.41	9.00
57	57	1239-1240	Comb.	0.35	2.17	3.00
58	58	1246-1247	Dp-Grate	0.35	2.17	7.00

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-1200.sws

Spread Report

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1300

02-26-2024

Line No.	Line No.	Line ID	Junct Type	Flow Rate (cfs)	Vel Ave (ft/s)	Gutter Spread (ft)
1	1	1300-1301	Dp-Grate	1.18	1.78	4.47
2	2	1301-1302	Dp-Grate	0.91	2.87	6.04
3	3	1302-1303	Dp-Grate	0.36	1.63	5.04

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 3-yrs.

Project File: SD-1300.sws

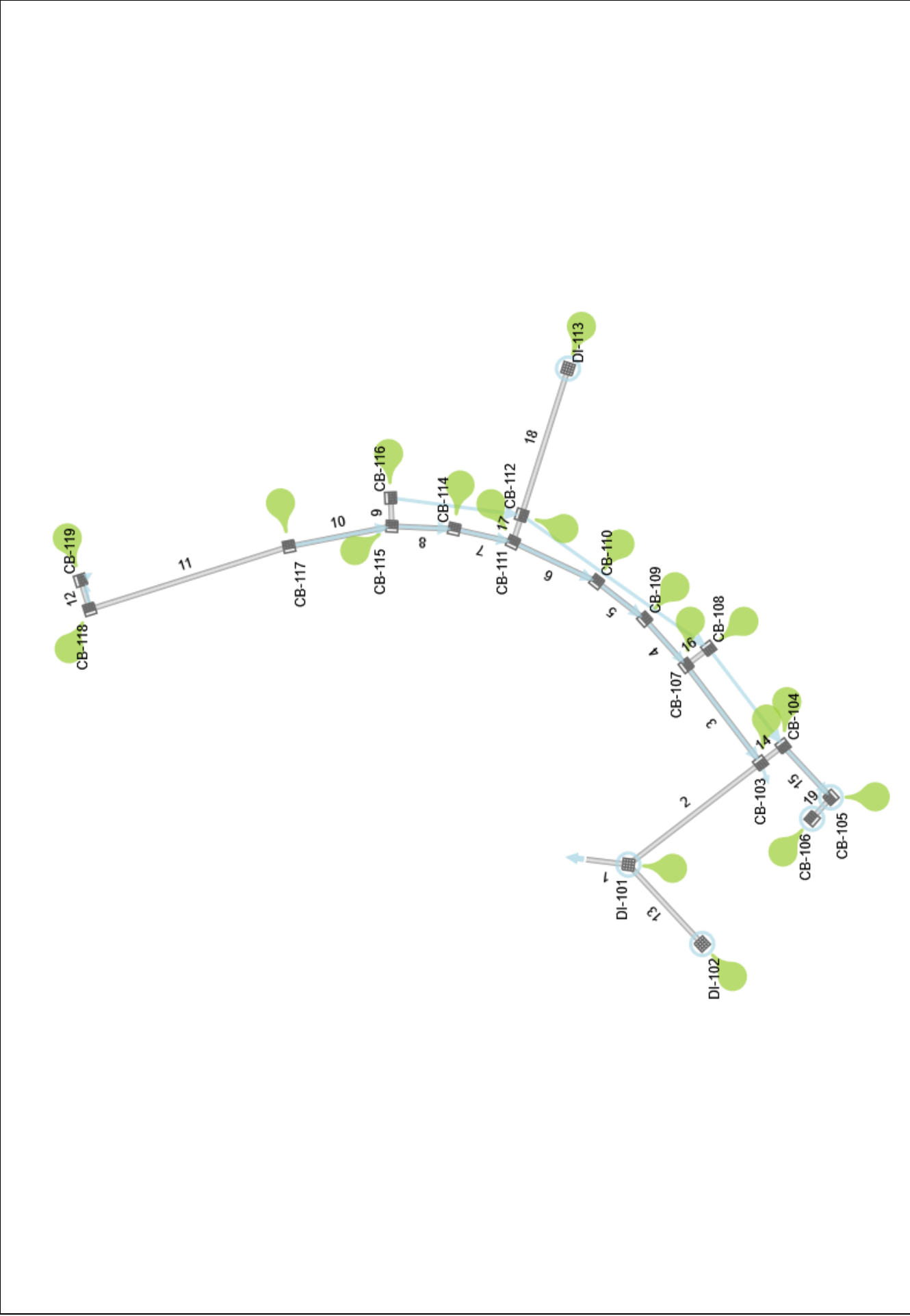
APPENDIX D
10 YEAR STORM DRAINAGE CAPACITY ANALYSIS

Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024



Energy Grade Line Calculations

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)
1	24	19.27	314.00	2.00	3.14	316.00	6.13	0.58	316.58	34.35	1.55 ²	2.62	317.35	7.35	0.84	318.20	0.013	1.610	317.35	318.20	0.00
2	24	16.57	317.60	1.44 ¹	2.42	319.04	6.83	0.73	319.77	138.25	1.44 ²	2.42	320.24	6.83	0.73	320.97	0.013	1.200	320.24	320.97	0.00
3	24	10.85	319.50	1.29	2.14	320.79	5.07	0.40	321.19	101.70	1.17 ²	1.90	321.37	5.70	0.51	321.87	0.013	0.684	321.37	321.87	0.00
4	24	8.92	320.30	1.42	2.39	321.72	3.73	0.22	321.94	51.50	1.06 ²	1.69	321.76	5.29	0.43	322.19	0.013	0.254	321.76	322.19	0.00
5	18	8.47	321.20	1.12 ³	1.41	322.32	6.00	0.56	322.88	50.54	1.12	1.41	322.72	6.00	0.56	323.28	0.013	0.401	322.81	323.37	0.09
6	18	8.00	321.70	1.47	1.76	323.18	4.54	0.32	323.50	76.77	1.34	1.67	323.54	4.80	0.36	323.89	0.013	0.398	323.57	323.93	0.04
7	18	4.90	322.40	1.46	1.75	323.86	2.80	0.12	323.98	50.06	1.10	1.39	323.90	3.52	0.19	324.10	0.013	0.117	323.94	324.13	0.03
8	15	4.47	323.00	0.99	1.05	323.99	4.28	0.28	324.28	51.74	0.85 ²	0.88	324.34	5.06	0.40	324.74	0.013	0.462	324.34	324.74	0.00
9	15	1.14	323.50	1.24	1.22	324.73	0.93	0.01	324.74	23.50	1.04	1.09	324.74	1.04	0.02	324.75	0.013	0.008	324.75	324.77	0.02
10	15	2.71	324.60	0.66 ¹	0.66	325.25	4.13	0.27	325.52	87.03	0.66 ²	0.66	325.86	4.13	0.27	326.12	0.013	0.602	325.86	326.12	0.00
11	15	2.58	325.30	0.64 ¹	0.64	325.94	4.06	0.26	326.20	173.49	0.64 ²	0.64	327.04	4.06	0.26	327.30	0.013	1.101	327.04	327.30	0.00
12	15	1.19	326.50	0.78	0.80	327.27	1.49	0.03	327.31	25.26	0.56	0.54	327.27	2.21	0.08	327.34	0.013	0.032	327.30	327.38	0.04
13	15	2.34	320.70	0.61 ¹	0.60	321.31	3.91	0.24	321.55	89.89	0.61 ²	0.60	321.91	3.91	0.24	322.15	0.013	0.599	321.91	322.15	0.00
14	18	5.45	319.50	1.36	1.69	320.86	3.23	0.16	321.03	23.47	1.18	1.49	320.88	3.65	0.21	321.09	0.013	0.062	320.94	321.14	0.05
15	18	4.47	319.80	1.26	1.59	321.06	2.82	0.12	321.19	58.29	0.90	1.11	321.10	4.04	0.25	321.35	0.013	0.169	321.29	321.54	0.19
16	15	1.89	321.00	0.82	0.85	321.82	2.22	0.08	321.90	23.47	0.59	0.57	321.79	3.31	0.17	321.96	0.013	0.066	321.96	322.13	0.17
17	18	2.93	322.30	1.50	1.77	323.91	1.66	0.04	323.95	23.49	1.42	1.73	323.92	1.69	0.04	323.97	0.013	0.017	323.94	323.99	0.02
18	15	1.82	322.70	1.25	1.23	323.97	1.48	0.03	324.00	127.40	0.62	0.61	324.12	2.99	0.14	324.26	0.013	0.257	324.19	324.33	0.07
19	15	2.54	320.30	1.20	1.21	321.50	2.10	0.07	321.57	23.50	1.02	1.07	321.52	2.38	0.09	321.60	0.013	0.034	321.62	321.71	0.10

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth. ³ Normal depth.

Project File: SD-100.sws

Storm Sewer Tabulation

Project Name: SD-100
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

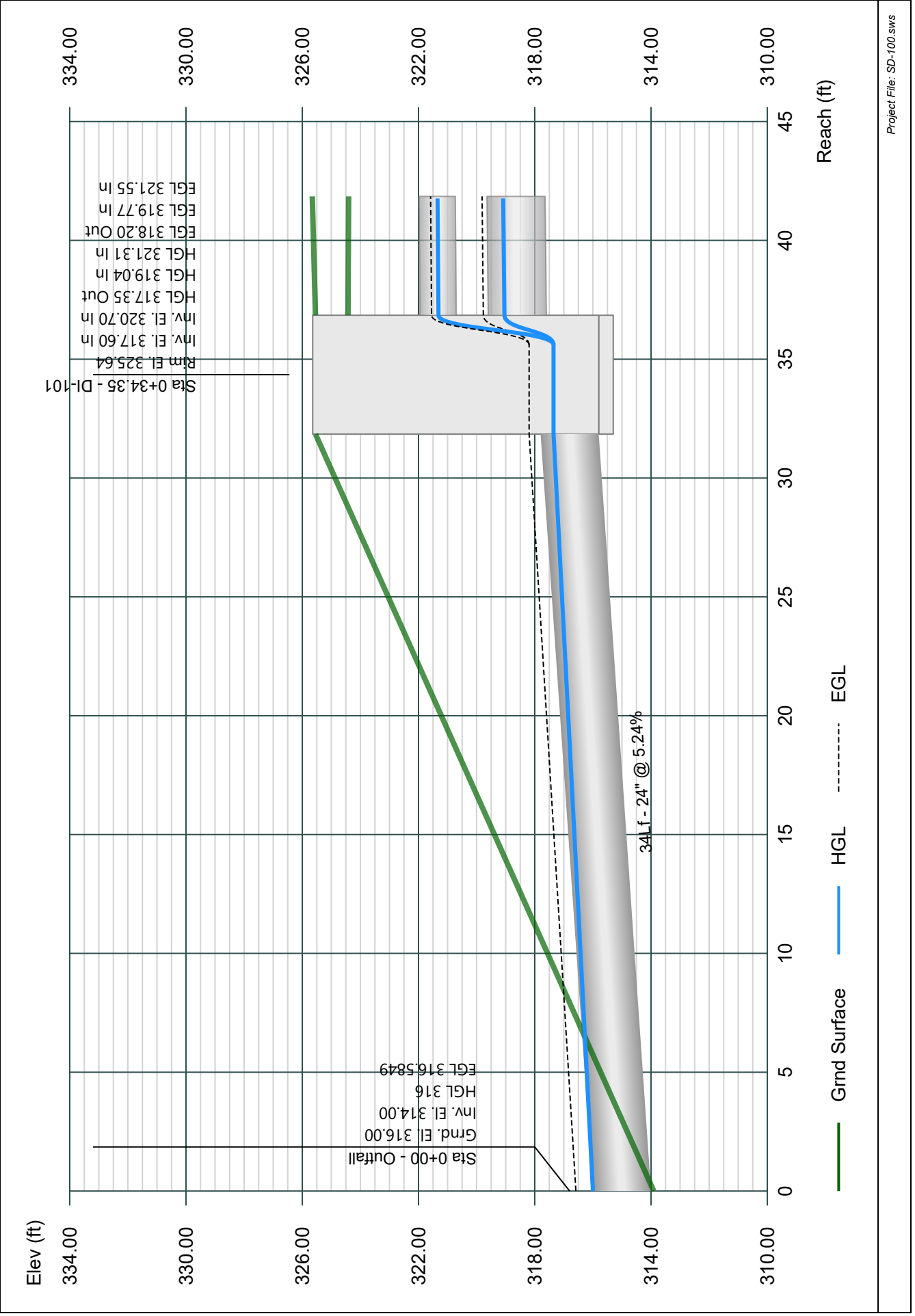
Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
100-101	34.35	0.210	4.210	0.60	0.13	2.98	5.0	7.56	6.46	19.27	51.77	6.74	24	5.24	315.80	314.00	317.35	316.00	325.64	314.00	1
101-103	138.25	0.170	3.460	0.75	0.13	2.53	5.0	7.24	6.54	16.57	21.07	6.83	24	0.87	318.80	317.60	320.24	319.04	328.66	325.64	2
103-107	101.70	0.050	2.270	0.75	0.04	1.64	5.0	6.96	6.62	10.85	18.77	5.39	24	0.69	320.20	319.50	321.37	320.79	330.25	328.66	3
107-109	51.50	0.100	1.870	0.75	0.08	1.34	5.0	6.82	6.66	8.92	19.93	4.51	24	0.78	320.70	320.30	321.76	321.72	330.84	330.25	4
109-110	50.54	0.110	1.770	0.75	0.08	1.26	5.0	6.68	6.70	8.47	9.36	6.00	18	0.79	321.60	321.20	322.72	322.32	331.42	330.84	5
110-111	76.77	0.060	1.660	0.75	0.05	1.18	5.0	6.45	6.76	8.00	8.43	4.67	18	0.65	322.20	321.70	323.54	323.18	332.30	331.42	6
111-114	50.06	0.090	0.960	0.75	0.07	0.72	5.0	6.29	6.81	4.90	9.39	3.16	18	0.80	322.80	322.40	323.90	323.86	332.87	332.30	7
114-115	51.74	0.140	0.870	0.75	0.11	0.65	5.0	6.14	6.86	4.47	6.32	4.67	15	0.96	323.50	323.00	324.34	323.99	333.46	332.87	8
115-116	23.50	0.210	0.210	0.75	0.16	0.16	5.0	5.00	7.21	1.14	6.03	0.99	15	0.87	323.70	323.50	324.74	324.73	333.46	333.46	9
115-117	87.03	0.040	0.520	0.75	0.03	0.39	5.0	5.80	6.96	2.71	5.37	4.13	15	0.69	325.20	324.60	325.86	325.25	334.46	333.46	10
117-118	173.49	0.260	0.480	0.75	0.20	0.36	5.0	5.11	7.17	2.58	5.14	4.06	15	0.63	326.40	325.30	327.04	325.94	330.95	334.46	11
118-119	25.26	0.220	0.220	0.75	0.17	0.17	5.0	5.00	7.21	1.19	5.77	1.85	15	0.80	326.70	326.50	327.27	327.27	330.95	330.95	12
101-102	89.89	0.540	0.540	0.60	0.32	0.32	5.0	5.00	7.21	2.34	5.27	3.91	15	0.67	321.30	320.70	321.91	321.31	324.13	324.52	13
103-104	23.47	0.190	1.020	0.75	0.14	0.77	5.0	5.28	7.12	5.45	9.66	3.44	18	0.85	319.70	319.50	320.88	320.86	328.66	328.66	14
104-105	58.29	0.360	0.830	0.75	0.27	0.62	5.0	5.08	7.18	4.47	8.70	3.43	18	0.69	320.20	319.80	321.10	321.06	328.73	328.66	15
107-108	23.47	0.350	0.350	0.75	0.26	0.26	5.0	5.00	7.21	1.89	5.96	2.77	15	0.85	321.20	321.00	321.79	321.82	329.78	330.25	16
111-112	23.49	0.220	0.640	0.75	0.17	0.42	5.0	5.56	7.03	2.93	9.77	1.68	18	0.87	322.50	322.30	323.92	323.91	332.30	332.30	17
112-113	127.40	0.420	0.420	0.60	0.25	0.25	5.0	5.00	7.21	1.82	5.11	2.24	15	0.63	323.50	322.70	324.12	323.97	327.25	332.30	18
105-106	23.50	0.470	0.470	0.75	0.35	0.35	5.0	5.00	7.21	2.54	5.96	2.24	15	0.85	320.50	320.30	321.52	321.50	328.73	328.73	19

Line 1 - 100-101

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

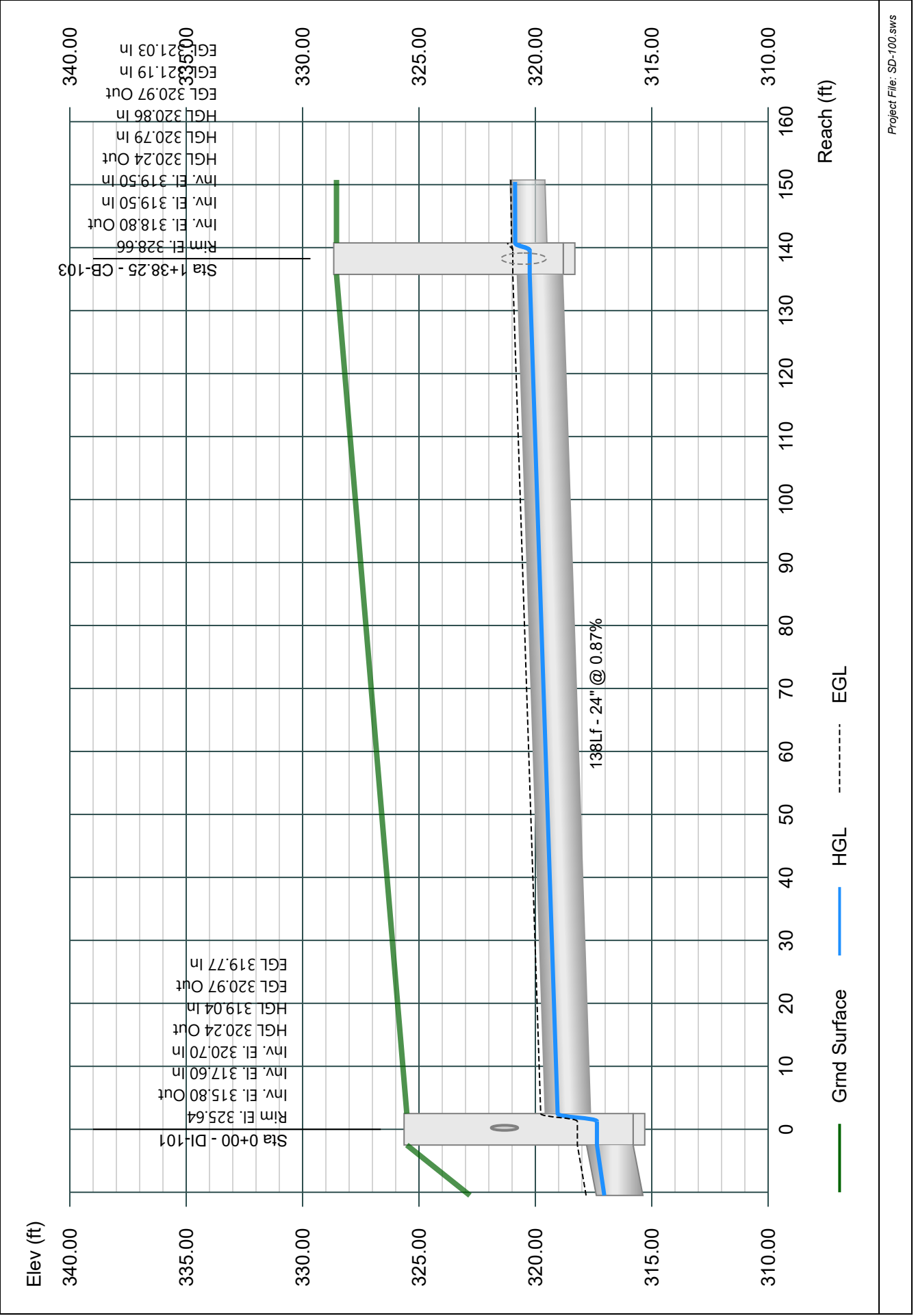


Line 2 - 101-103

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

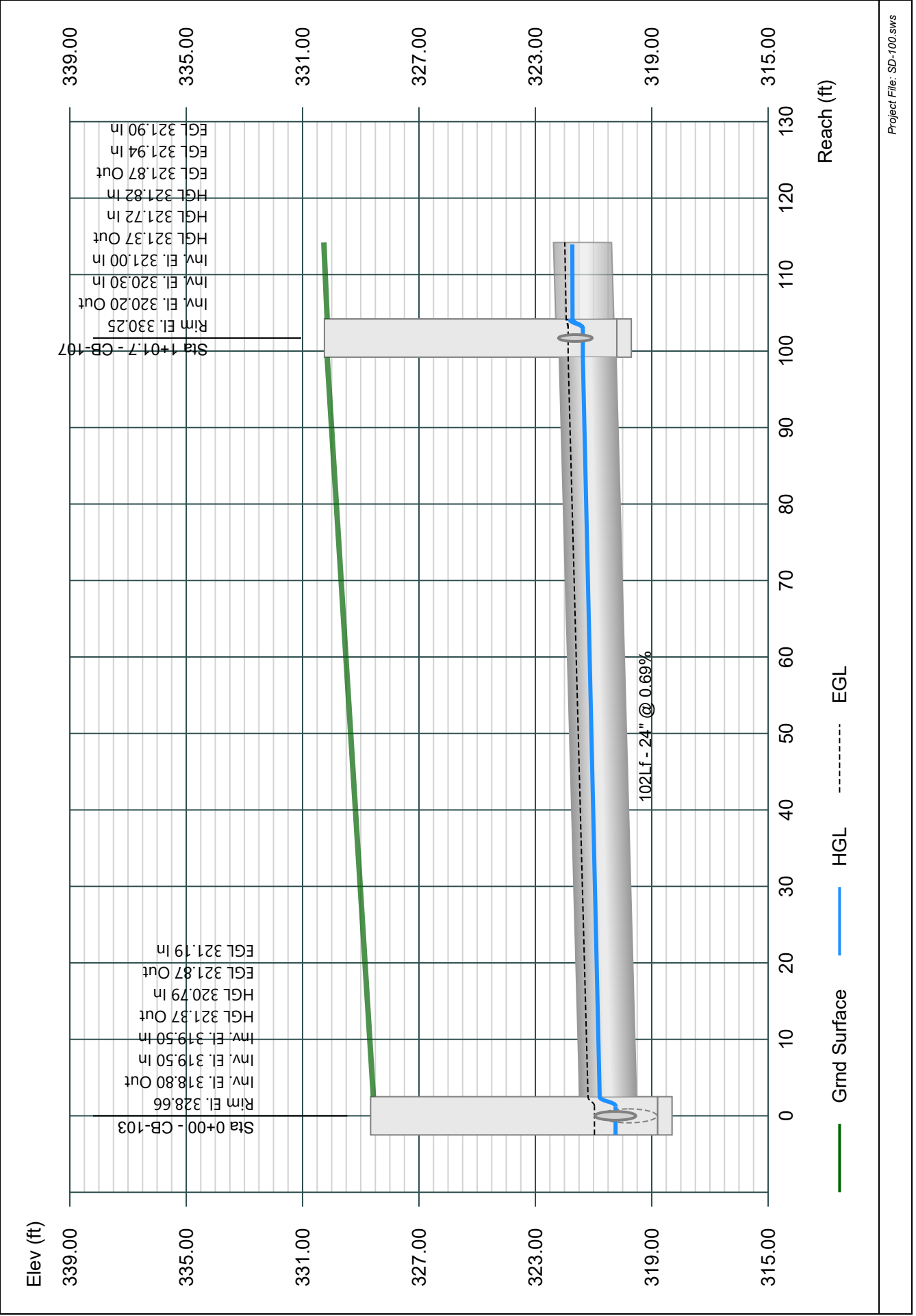


Line 3 - 103-107

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

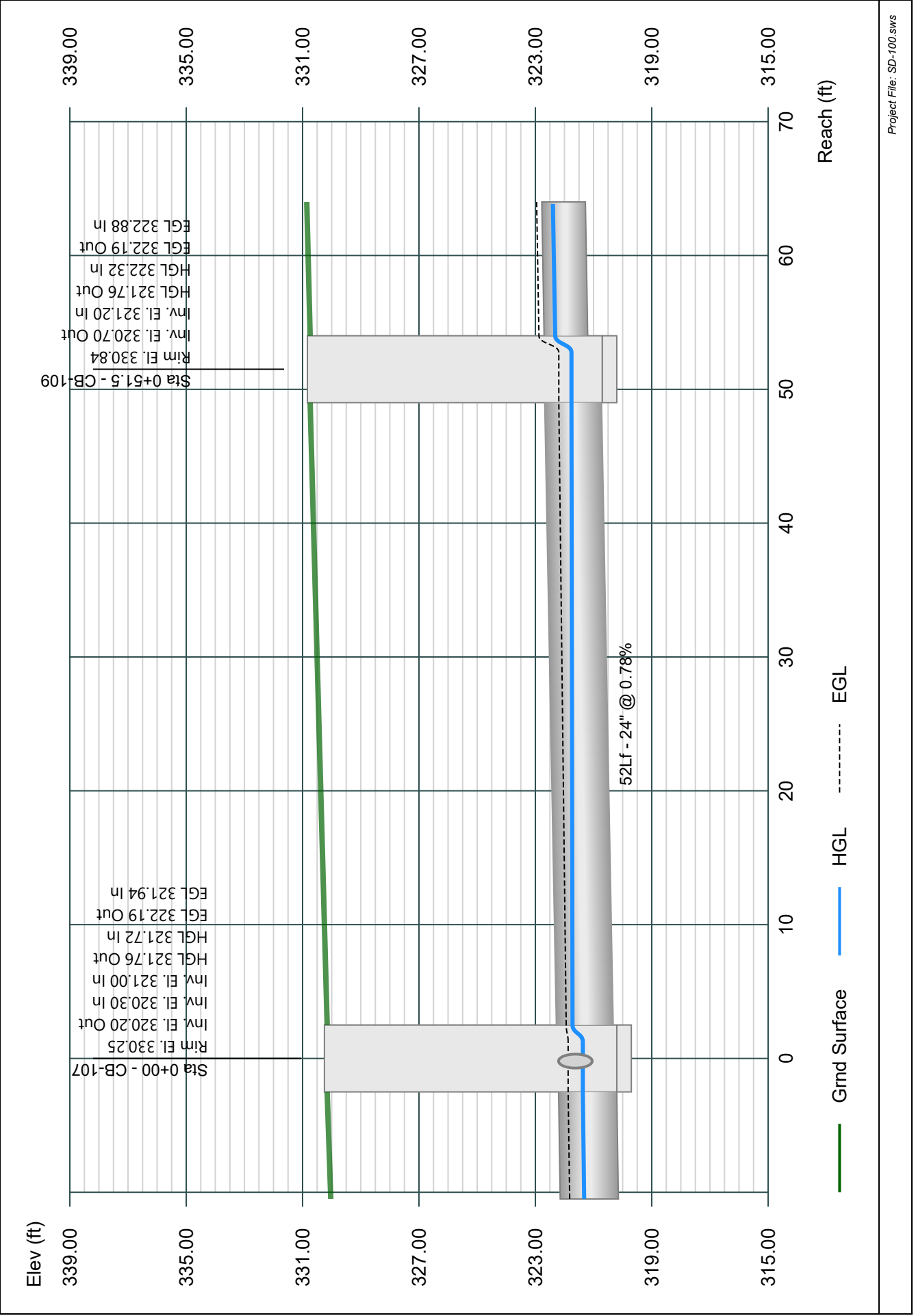


Line 4 - 107-109

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

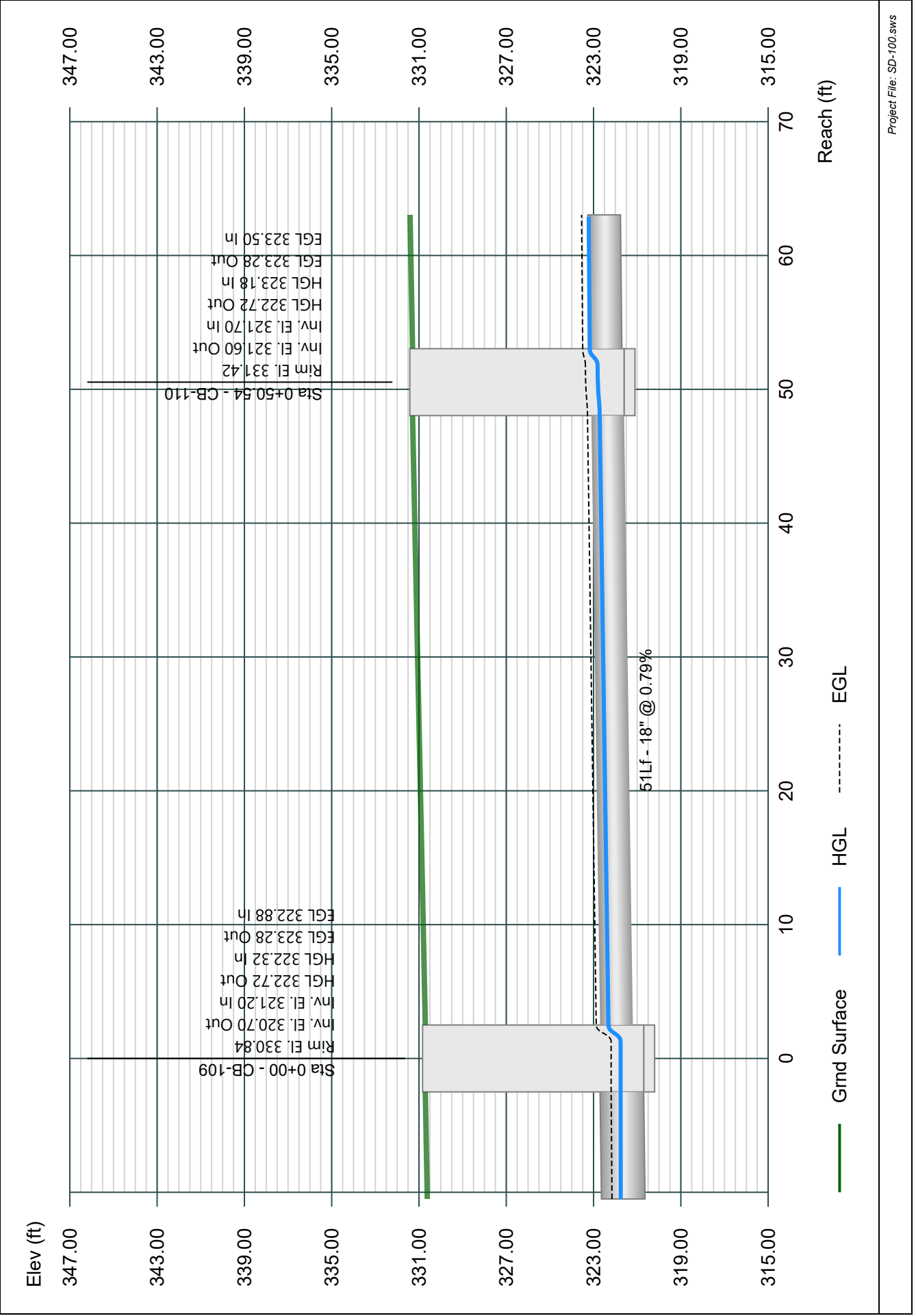


Line 5 - 109-110

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

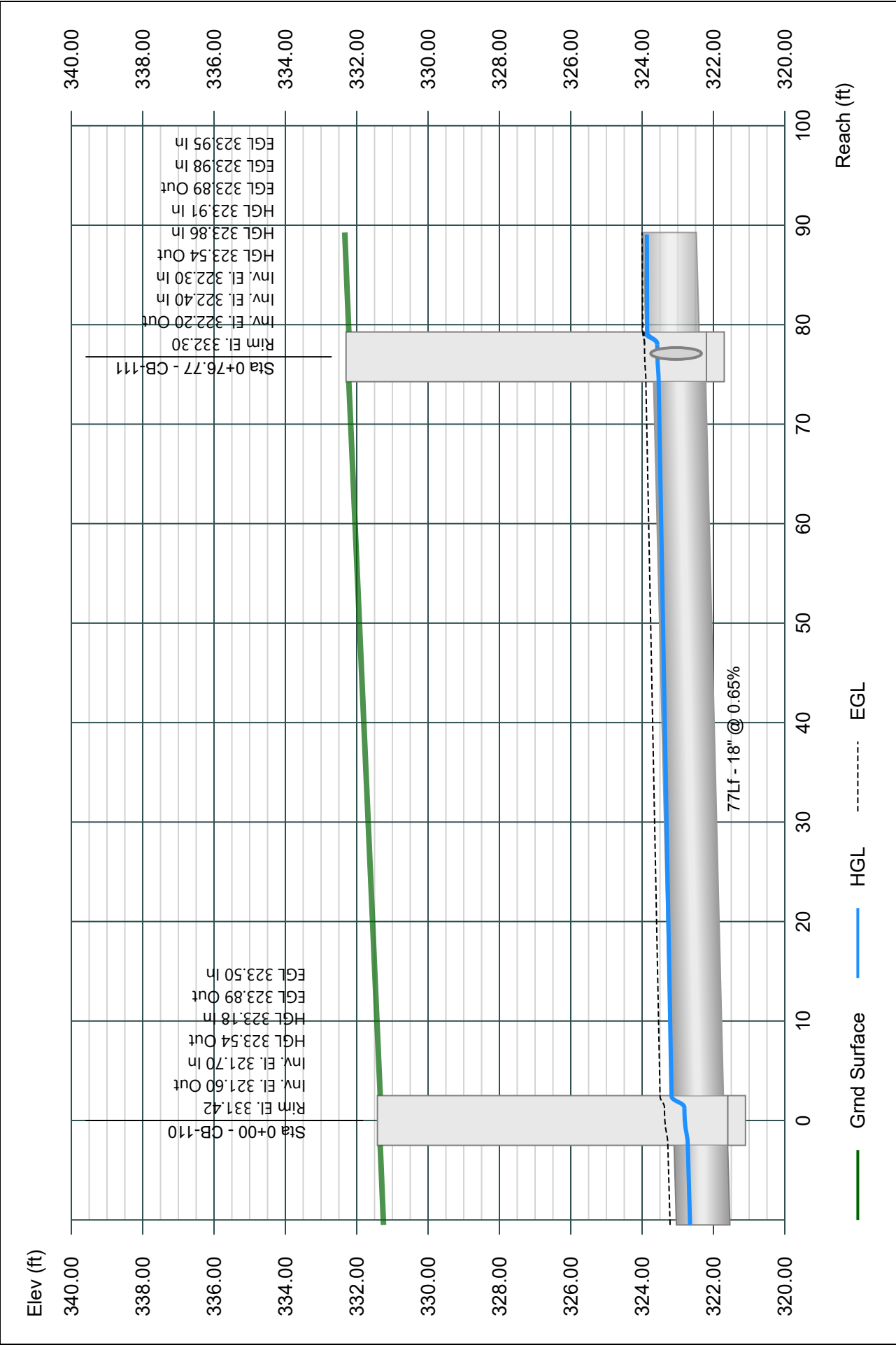


Line 6 - 110-111

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

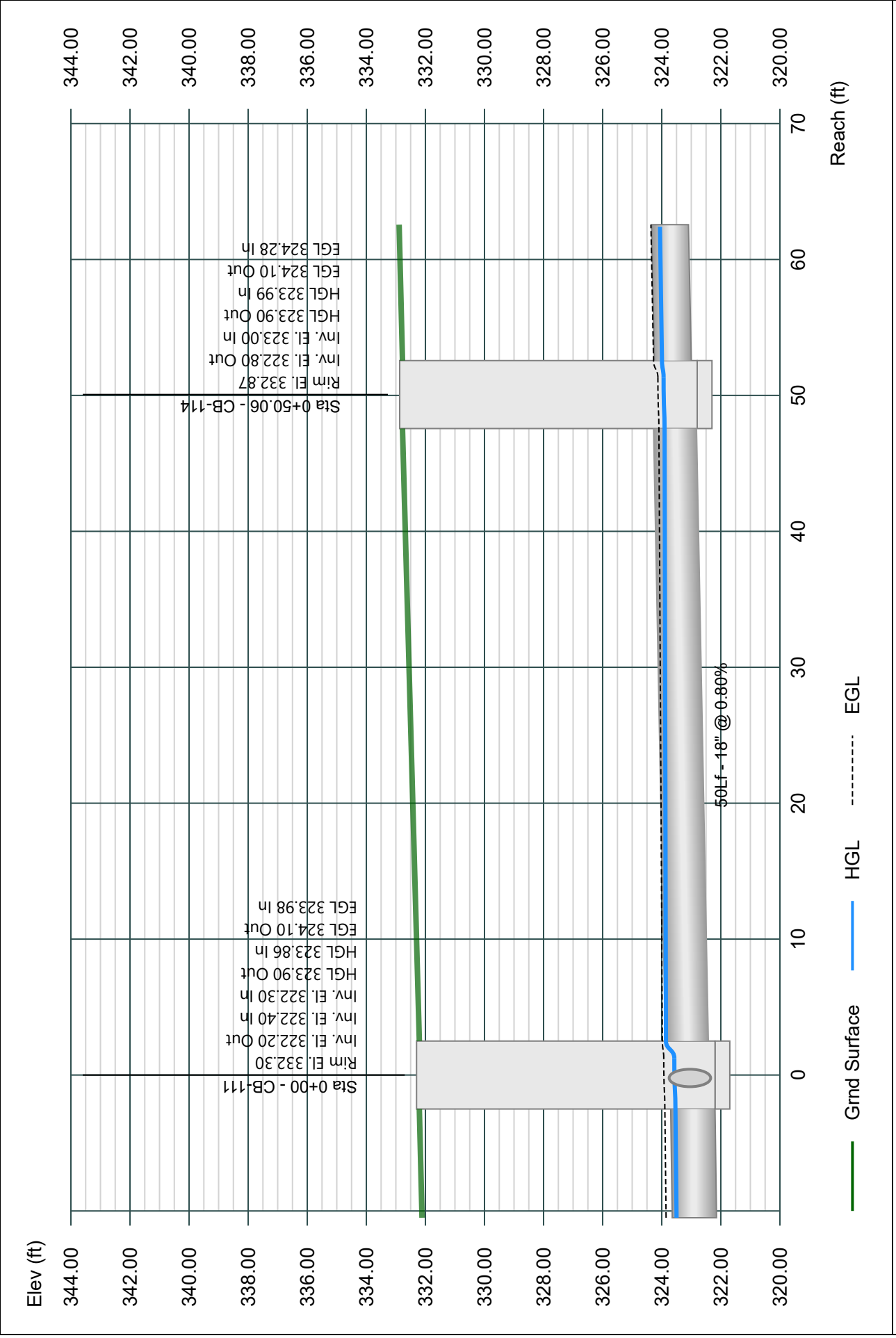


Line 7 - 111-114

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

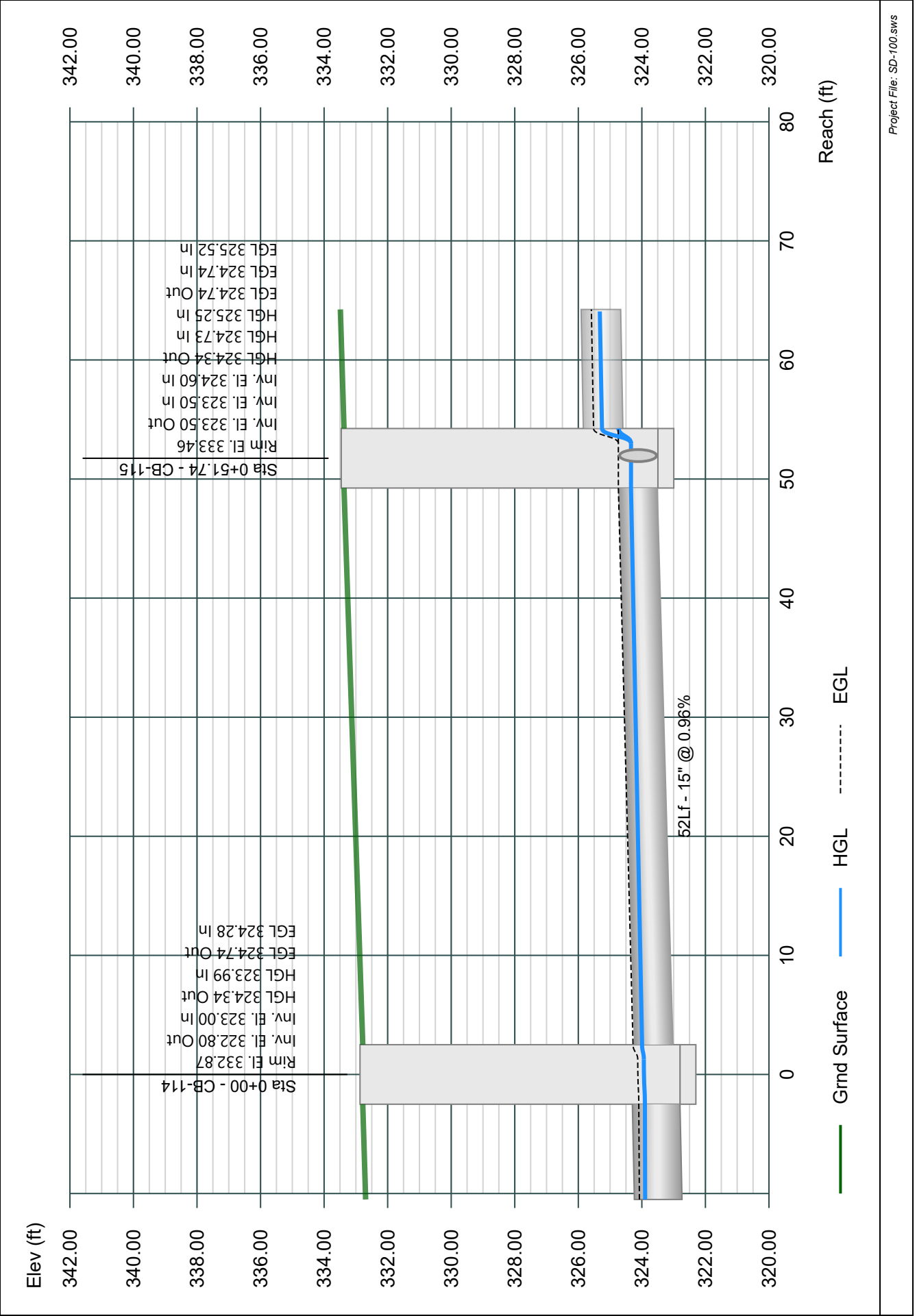


Line 8 - 114-115

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

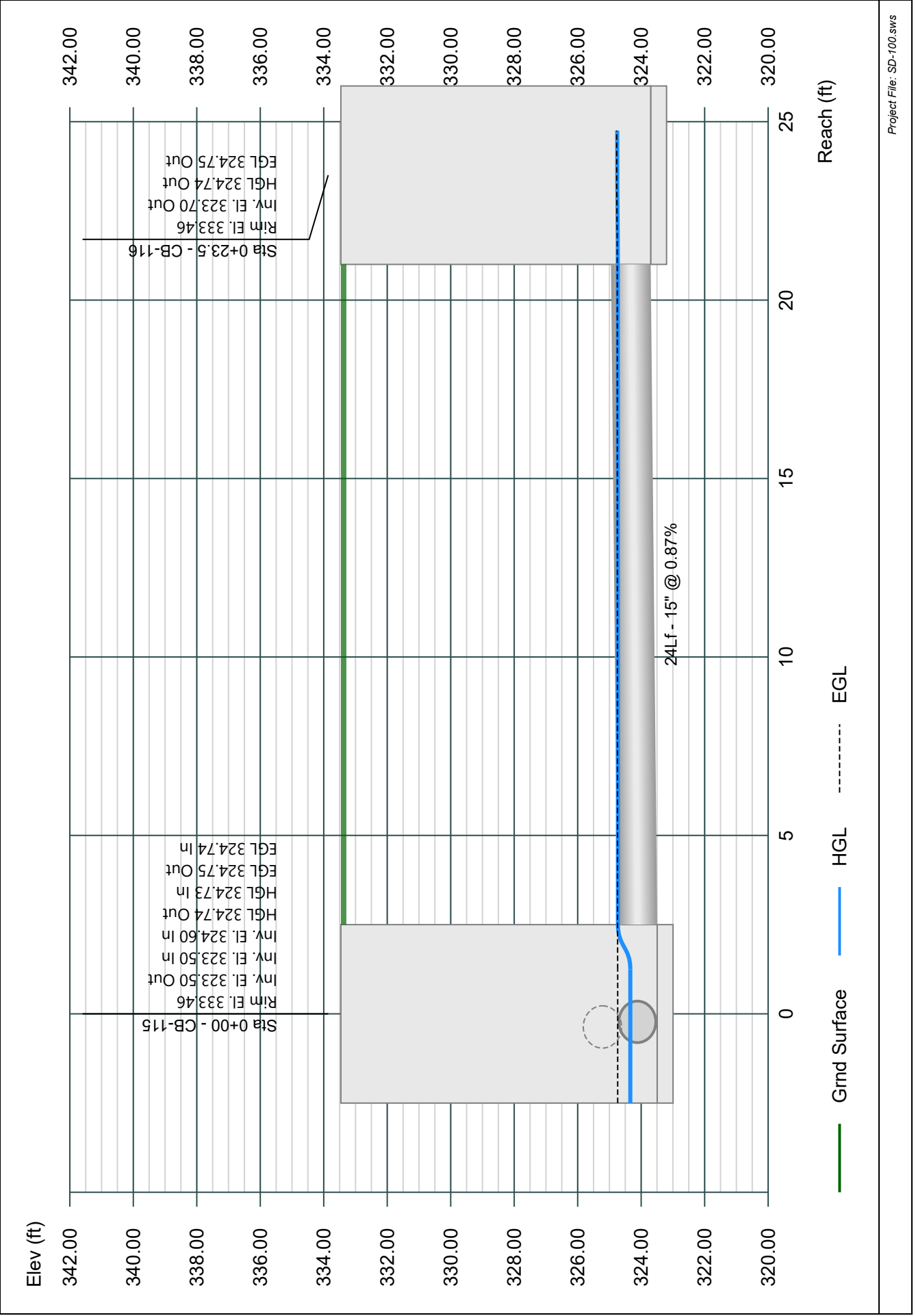


Line 9 - 115-116

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

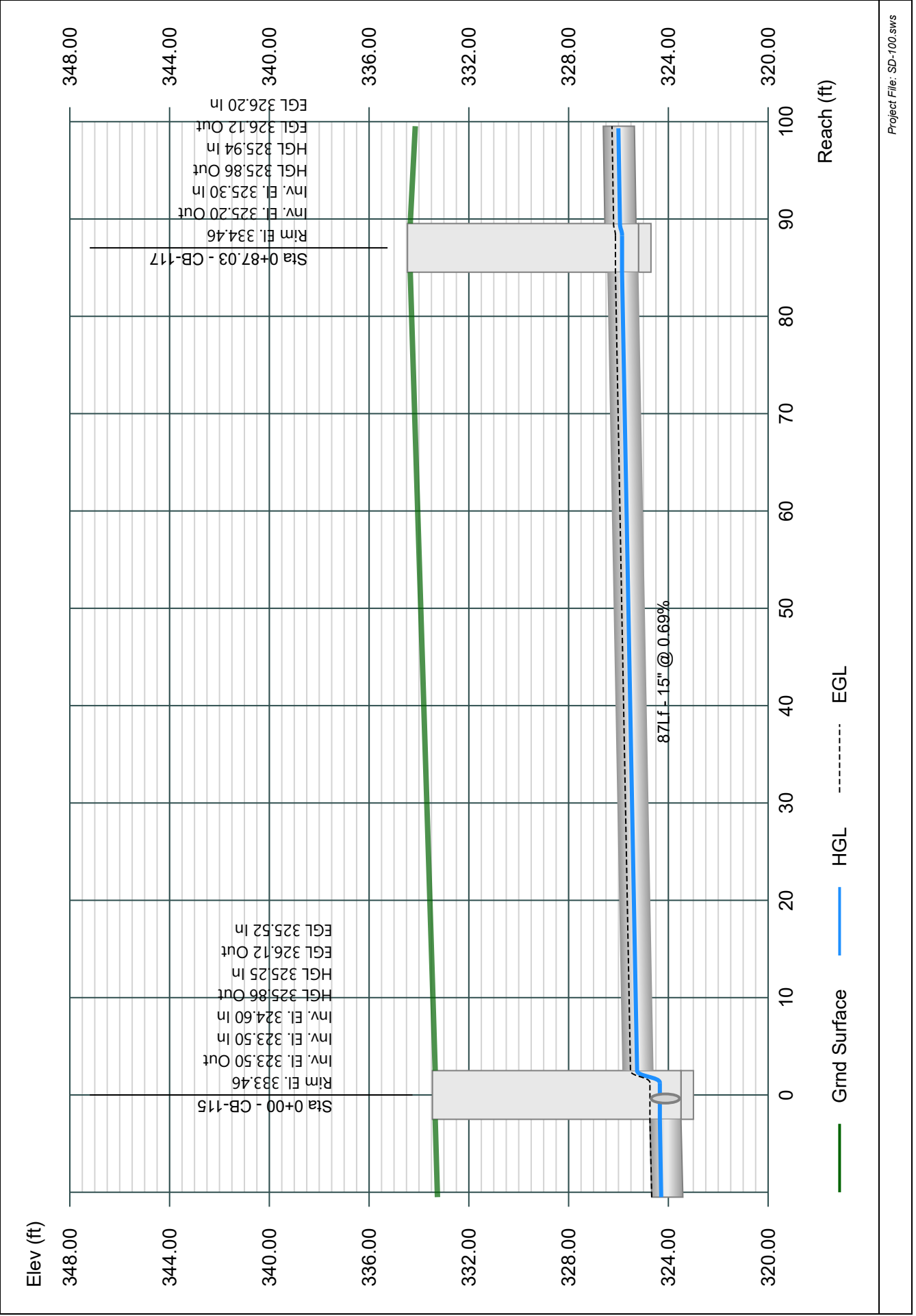


Line 10 - 115-117

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

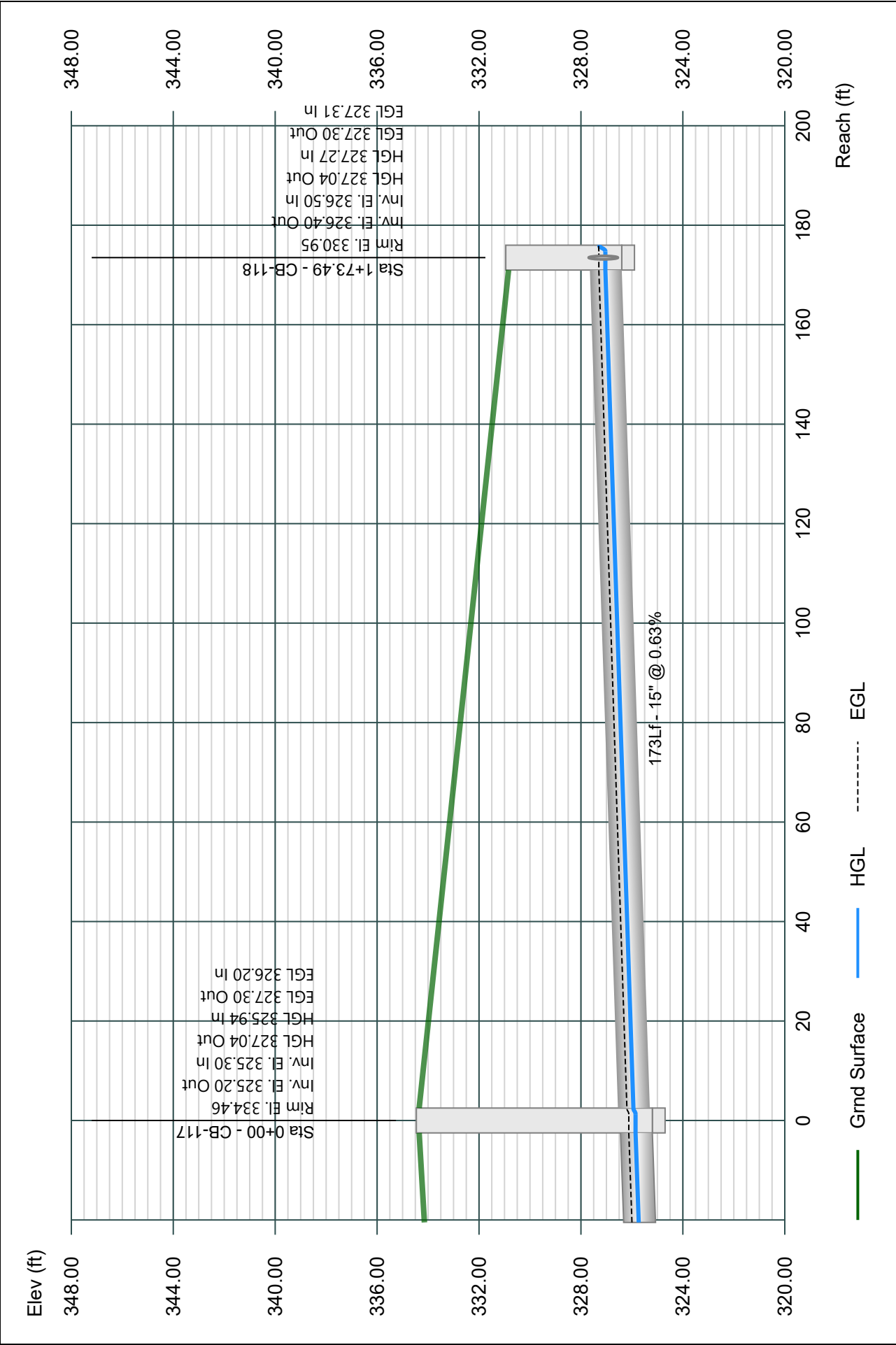
02-26-2024



Line 11 - 117-118

Project Name: SD-100
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

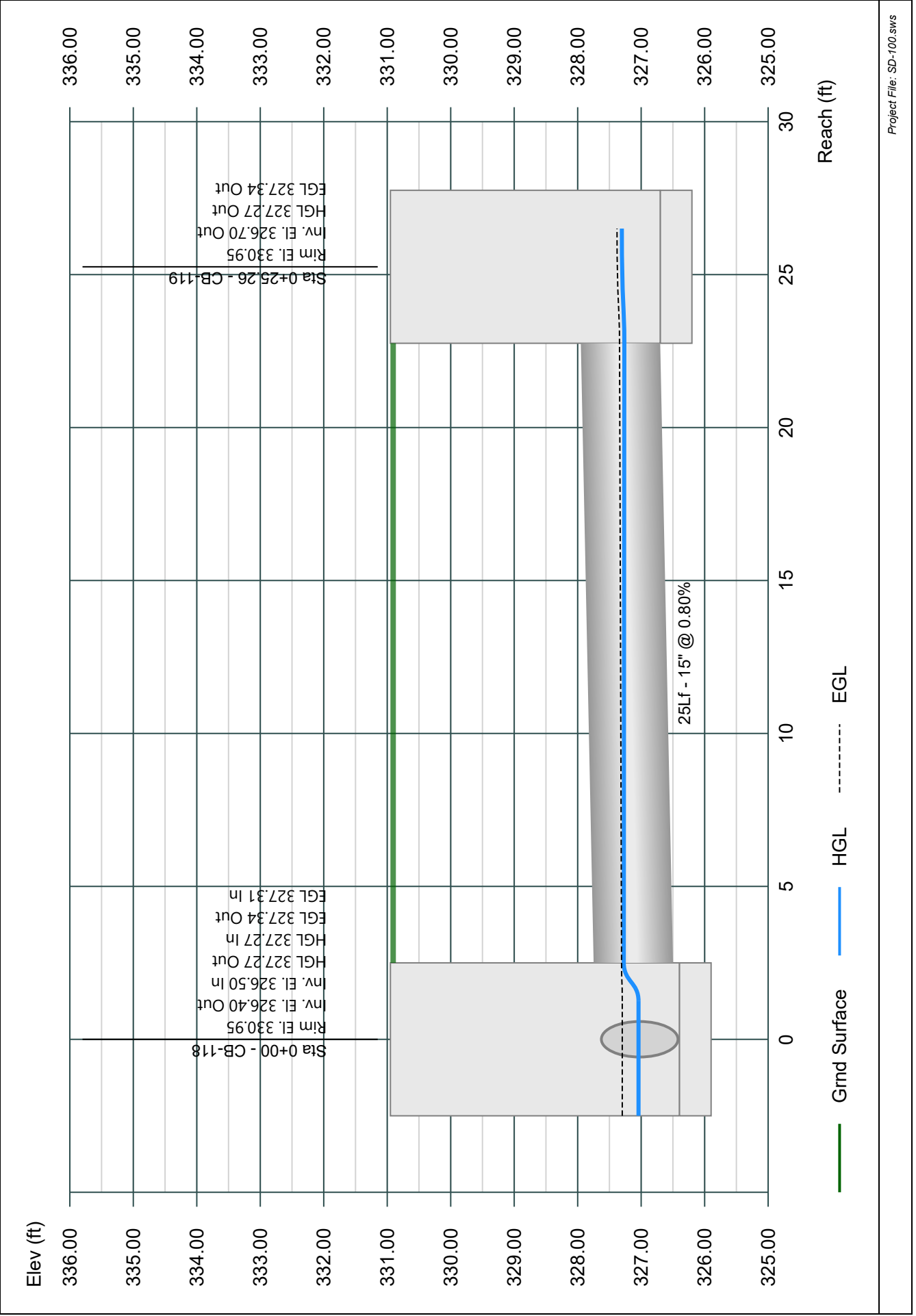


Line 12 - 118-119

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

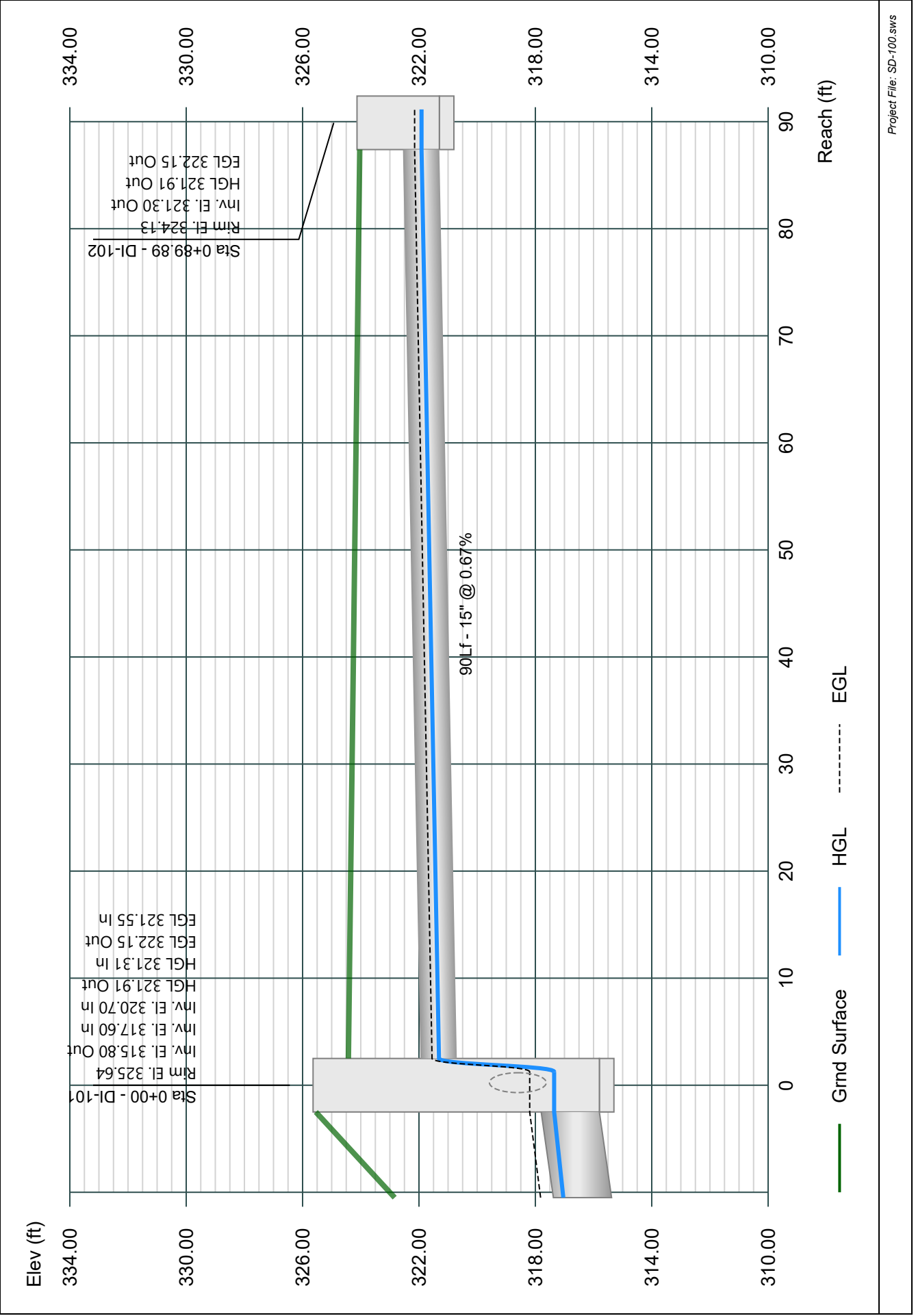


Line 13 - 101-102

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

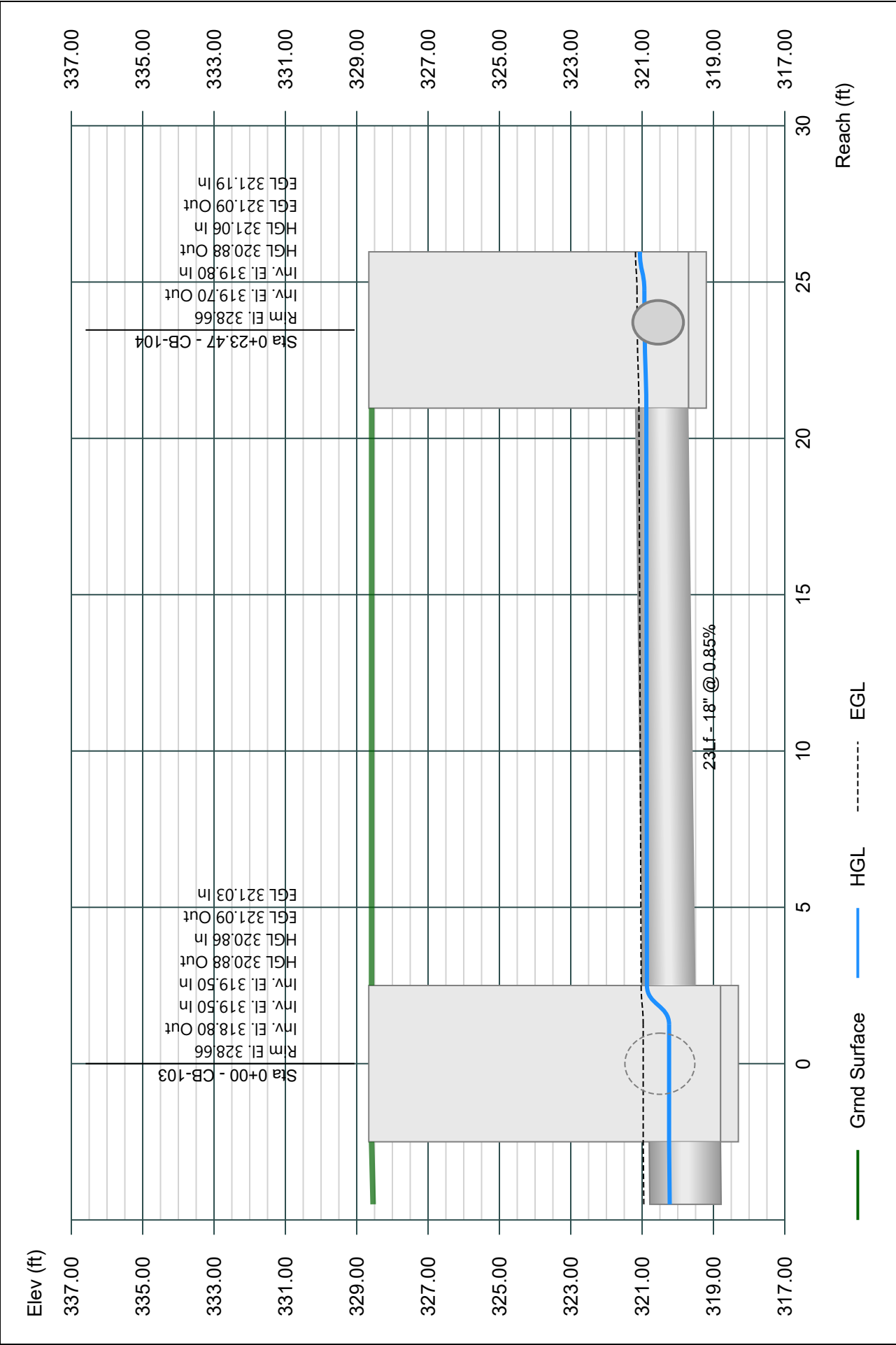


Line 14 - 103-104

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

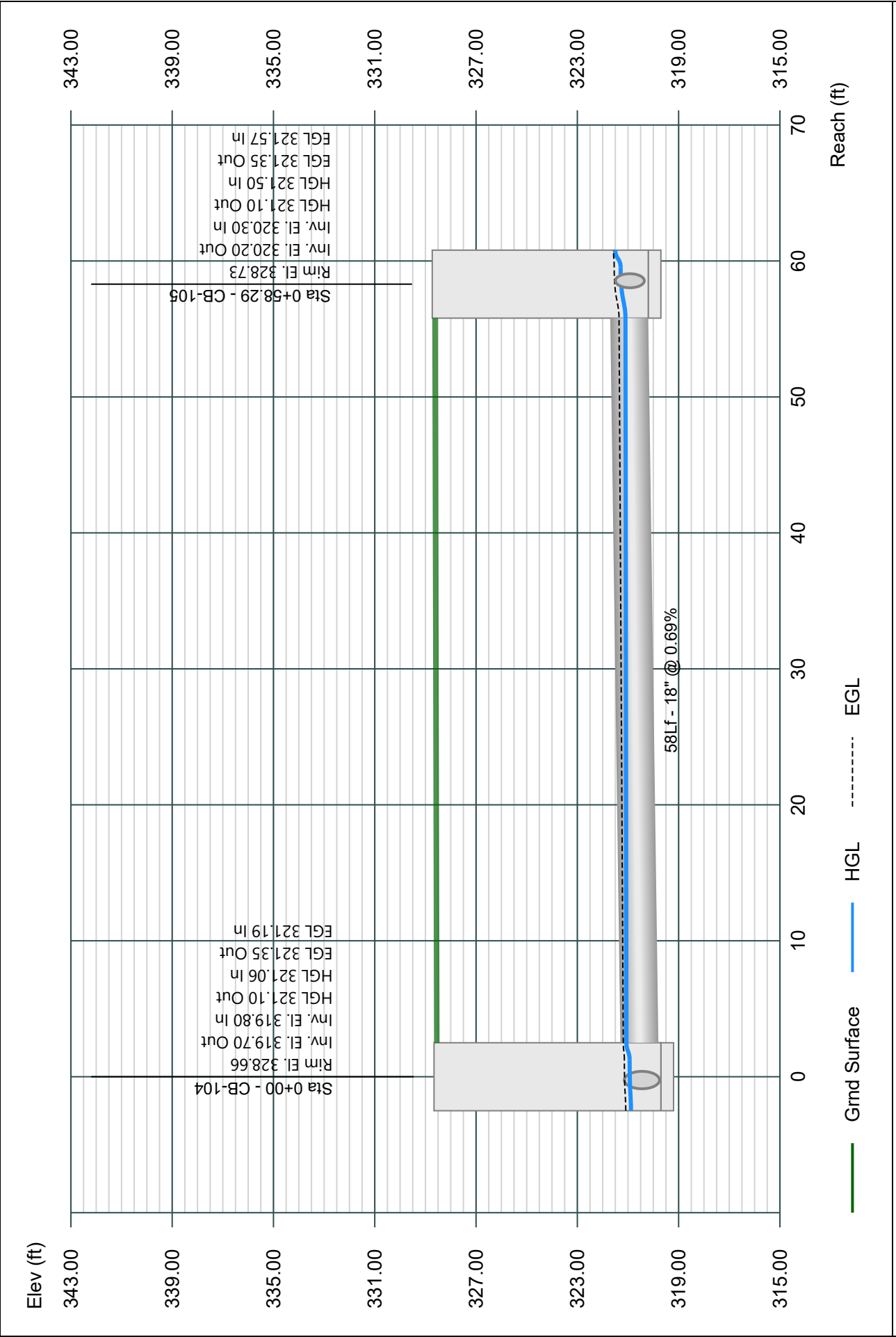


Line 15 - 104-105

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

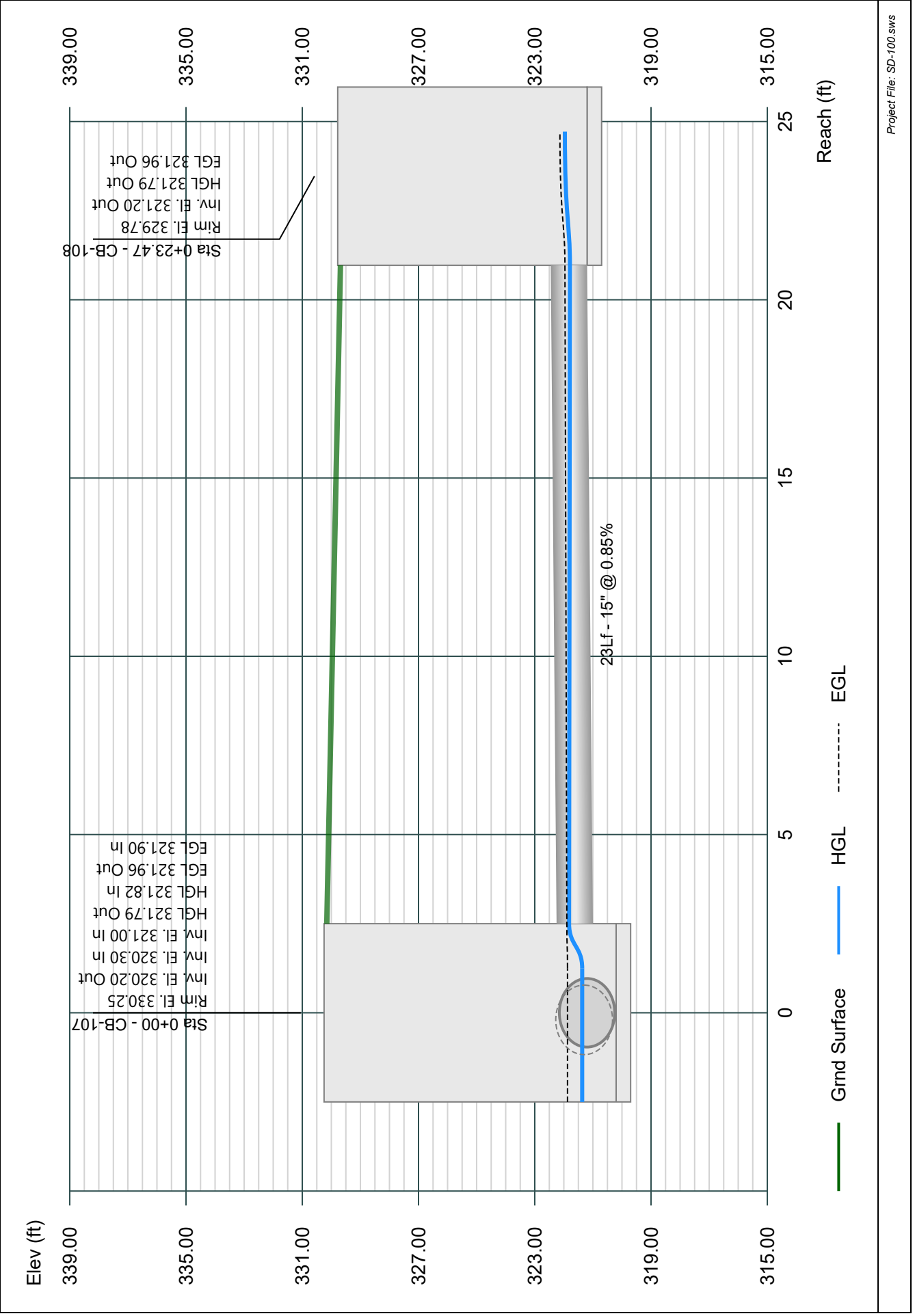


Line 16 - 107-108

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

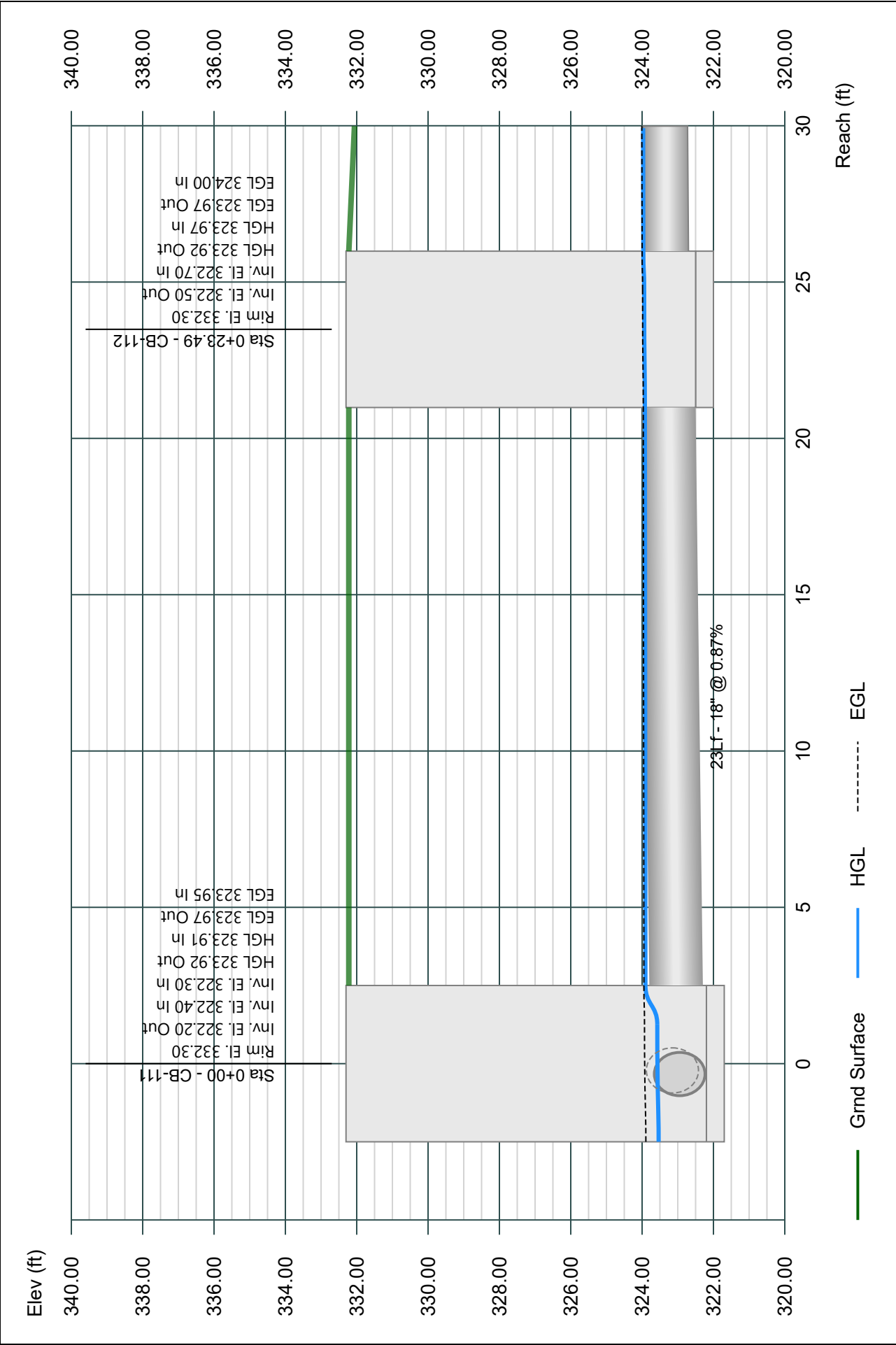


Line 17 - 111-112

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

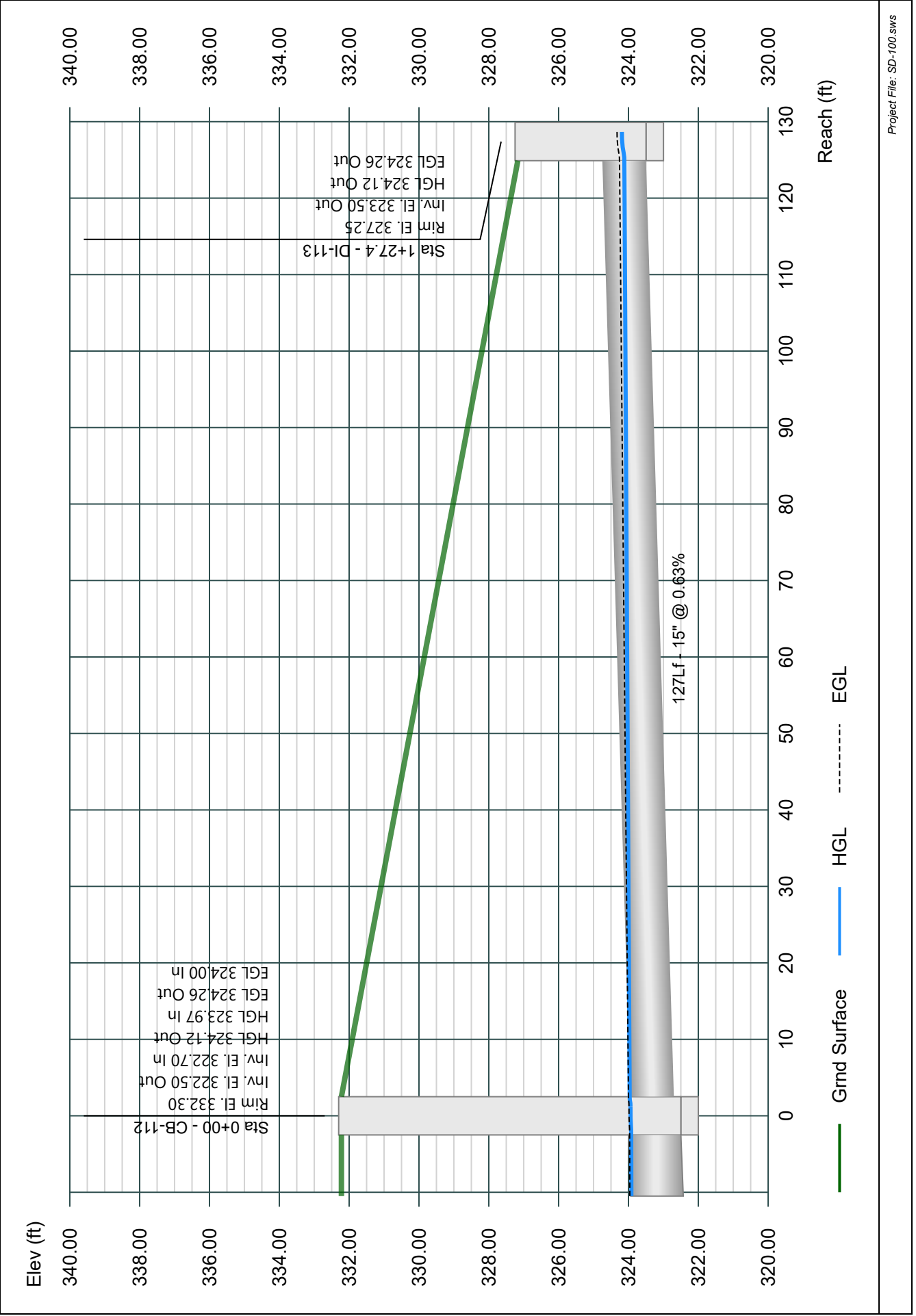


Line 18 - 112-113

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

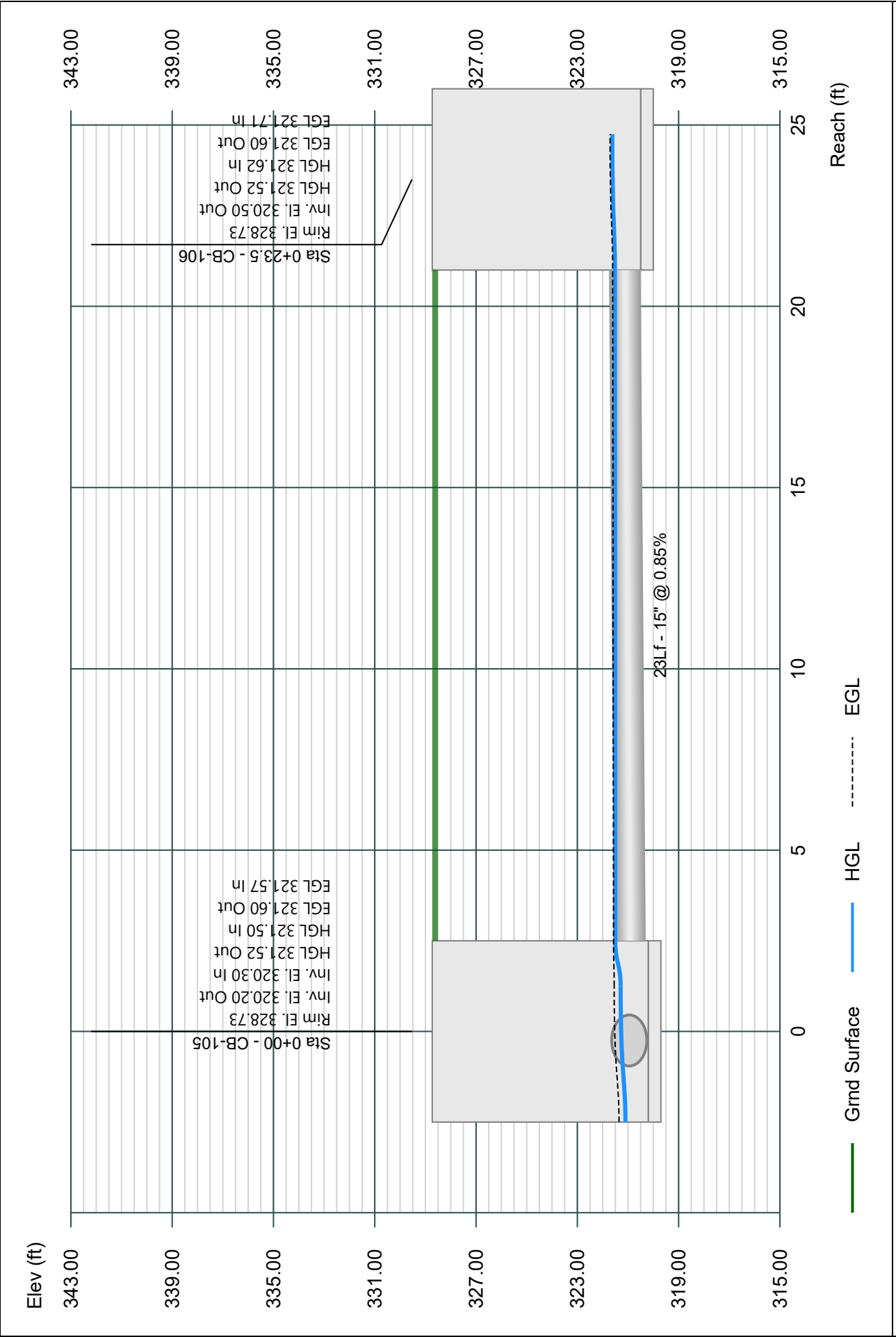


Line 19 - 105-106

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-100

02-26-2024

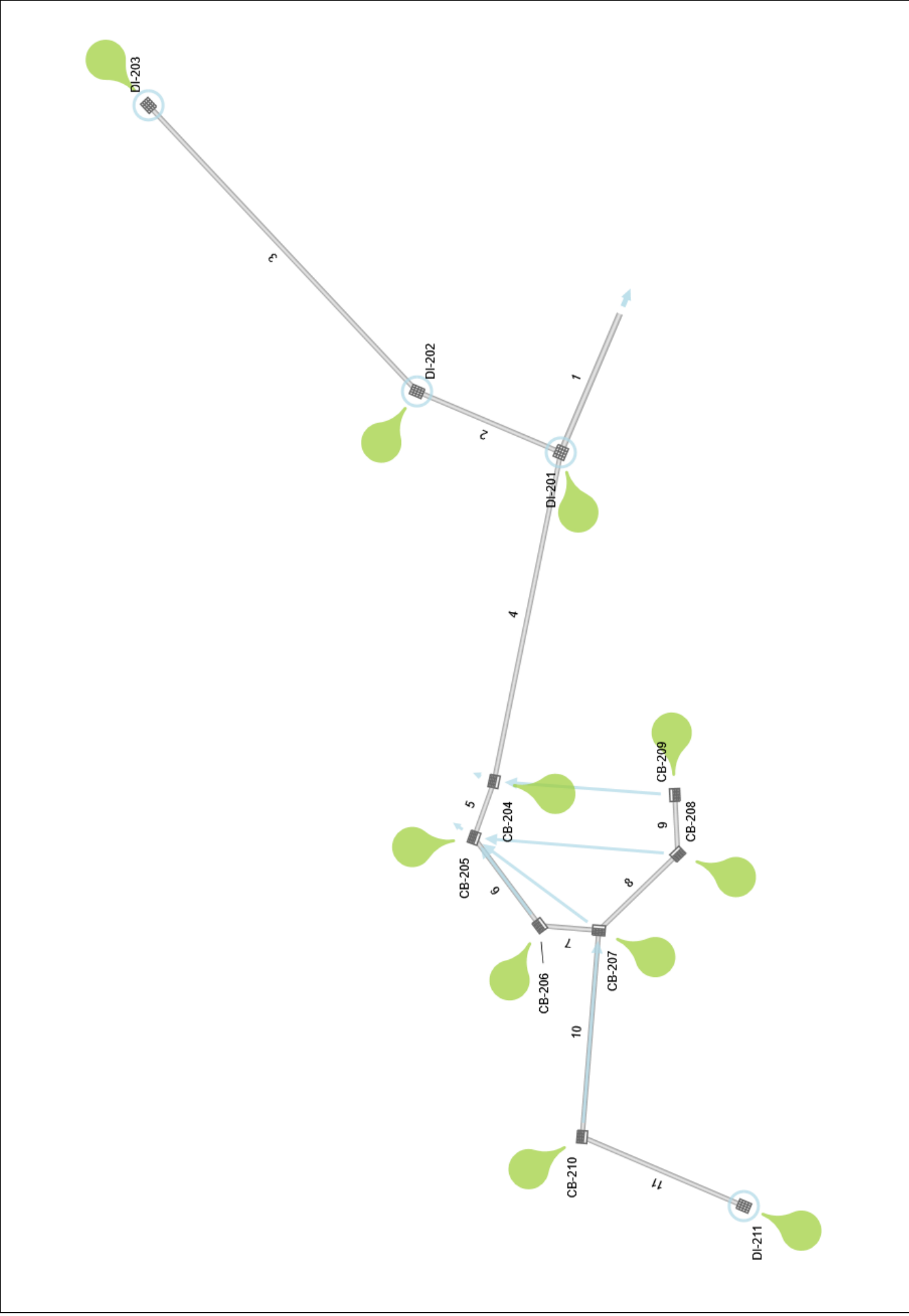


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024



Energy Grade Line Calculations

Project Name: SD-200

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	30	14.68	310.00	2.50	4.91	313.85	2.99	0.14	313.99	59.44	314.70	1.28 ²	2.53	315.98	5.80	0.52	316.50	0.013	2.511	315.98	316.50	0.00
2	15	2.94	319.70	0.69 ¹	0.69	320.39	4.26	0.28	320.67	62.00	321.10	0.69 ²	0.69	321.78	4.26	0.28	322.07	0.013	1.392	321.78	322.07	0.00
3	15	1.64	321.20	0.83	0.86	322.03	1.90	0.06	322.08	155.73	323.40	0.51 ²	0.47	323.91	3.46	0.19	324.10	0.013	2.019	323.91	324.10	0.00
4	24	11.38	315.20	1.19 ¹	1.96	316.39	5.81	0.53	316.92	133.25	318.10	1.19 ²	1.96	319.29	5.81	0.53	319.82	0.013	2.899	319.29	319.82	0.00
5	24	10.67	318.20	1.36	2.27	319.56	4.71	0.34	319.90	23.72	318.40	1.16 ²	1.88	319.56	5.67	0.50	320.06	0.013	0.156	319.56	320.06	0.00
6	24	10.17	319.80	1.13 ¹	1.83	320.93	5.56	0.48	321.41	43.58	320.10	1.13 ²	1.83	321.23	5.56	0.48	321.71	0.013	0.299	321.23	321.71	0.00
7	24	9.07	320.20	1.31	2.19	321.51	4.15	0.27	321.78	23.50	320.40	1.07	1.71	321.47	5.29	0.44	321.91	0.013	0.127	321.57	322.01	0.10
8	15	2.10	326.20	0.58 ¹	0.56	326.78	3.77	0.22	327.00	43.58	326.50	0.58 ²	0.56	327.08	3.77	0.22	327.30	0.013	0.301	327.08	327.30	0.00
9	15	0.87	326.60	0.68	0.69	327.28	1.26	0.02	327.31	23.49	326.80	0.47	0.43	327.27	2.04	0.06	327.34	0.013	0.029	327.31	327.37	0.03
10	18	6.40	320.90	0.97 ¹	1.20	321.87	5.32	0.44	322.31	82.24	321.50	0.97 ²	1.20	322.47	5.32	0.44	322.91	0.013	0.604	322.47	322.91	0.00
11	15	2.21	321.80	1.07	1.12	322.87	1.98	0.06	322.93	69.80	322.30	0.63	0.62	322.93	3.57	0.20	323.13	0.013	0.199	323.02	323.21	0.08

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-200.sws

Storm Sewer Tabulation

Project Name: SD-200

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

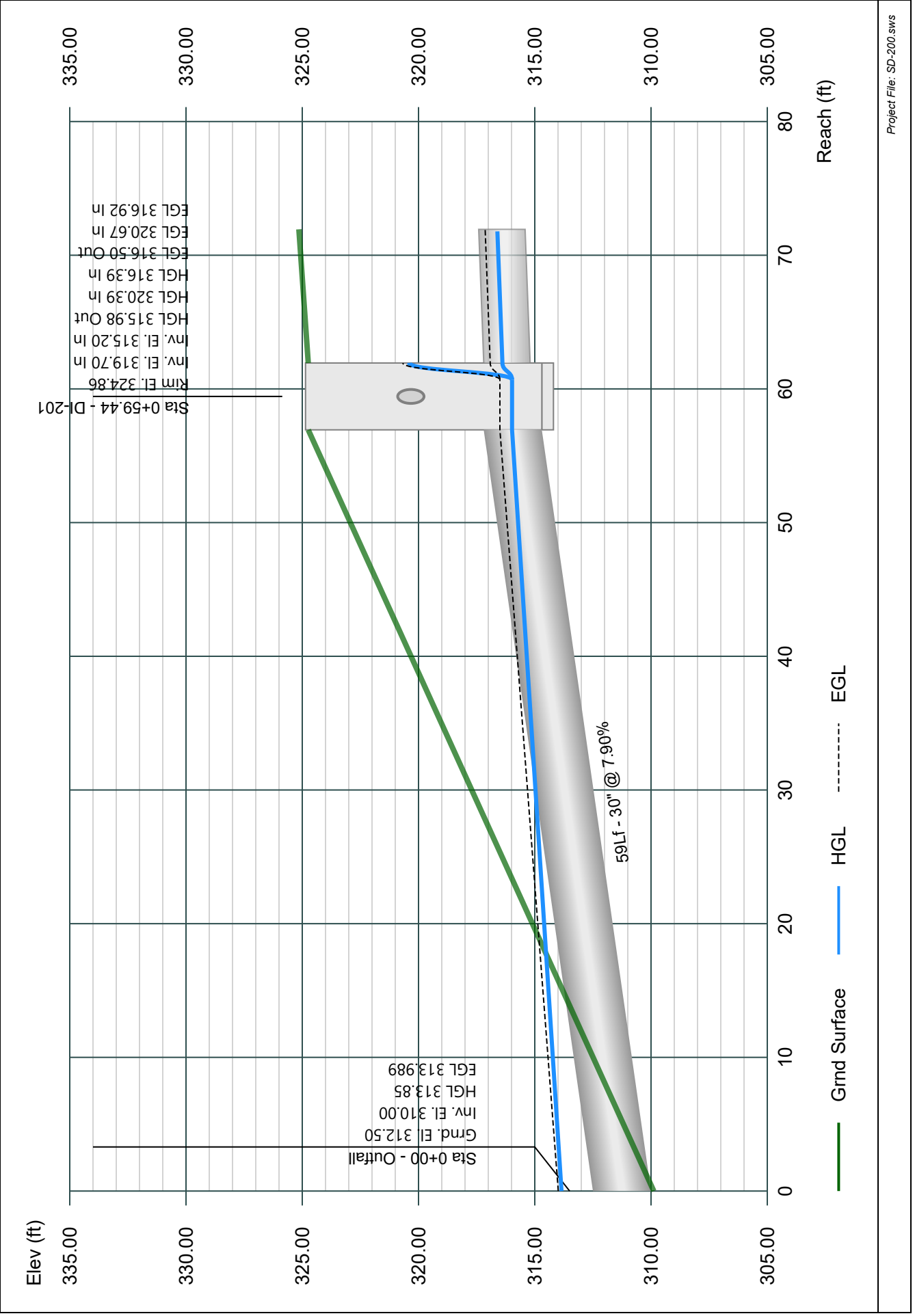
Line ID	Length (ft)	Drng Area (ac)		Rational (C)	C x A		Tc (min)		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Incr	Slope (%)	Up	Dn	Up	Dn	Up	Dn	
200-201	59.44	0.130	3.050	0.60	0.08	2.13	5.0	6.00	6.90	14.68	115.28	4.40	30	7.90	314.70	310.00	315.98	313.85	324.86	310.00	1
201-202	62.00	0.270	0.650	0.70	0.19	0.42	5.0	5.52	7.04	2.94	9.68	4.26	15	2.25	321.10	319.70	321.78	320.39	323.96	324.86	2
202-203	155.73	0.380	0.380	0.60	0.23	0.23	5.0	5.00	7.21	1.64	7.68	2.68	15	1.42	323.40	321.20	323.91	322.03	326.21	323.96	3
201-204	133.25	0.140	2.270	0.75	0.11	1.63	5.0	5.77	6.97	11.38	33.36	5.81	24	2.18	318.10	315.20	319.29	316.39	330.24	324.86	4
204-205	23.72	0.100	2.130	0.80	0.08	1.53	5.0	5.71	6.99	10.67	20.77	5.19	24	0.84	318.40	318.20	319.56	319.56	330.20	330.24	5
205-206	43.58	0.200	2.030	0.80	0.16	1.45	5.0	5.59	7.02	10.17	18.73	5.56	24	0.69	320.10	319.80	321.23	320.93	331.01	330.20	6
206-207	23.50	0.130	1.830	0.75	0.10	1.29	5.0	5.52	7.04	9.07	20.92	4.72	24	0.86	320.40	320.20	321.47	321.51	331.01	331.01	7
207-208	43.58	0.230	0.390	0.75	0.17	0.29	5.0	5.11	7.18	2.10	5.37	3.77	15	0.69	326.50	326.20	327.08	326.78	331.11	331.01	8
208-209	23.49	0.160	0.160	0.75	0.12	0.12	5.0	5.00	7.21	0.87	5.97	1.65	15	0.86	326.80	326.60	327.27	327.28	331.11	331.11	9
207-210	82.24	0.800	1.310	0.74	0.59	0.90	5.0	5.28	7.12	6.40	9.00	5.32	18	0.73	321.50	320.90	322.47	321.87	333.62	331.01	10
210-211	69.80	0.510	0.510	0.60	0.31	0.31	5.0	5.00	7.21	2.21	5.46	2.77	15	0.71	322.30	321.80	322.93	322.87	325.64	333.62	11

Line 1 - 200-201

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

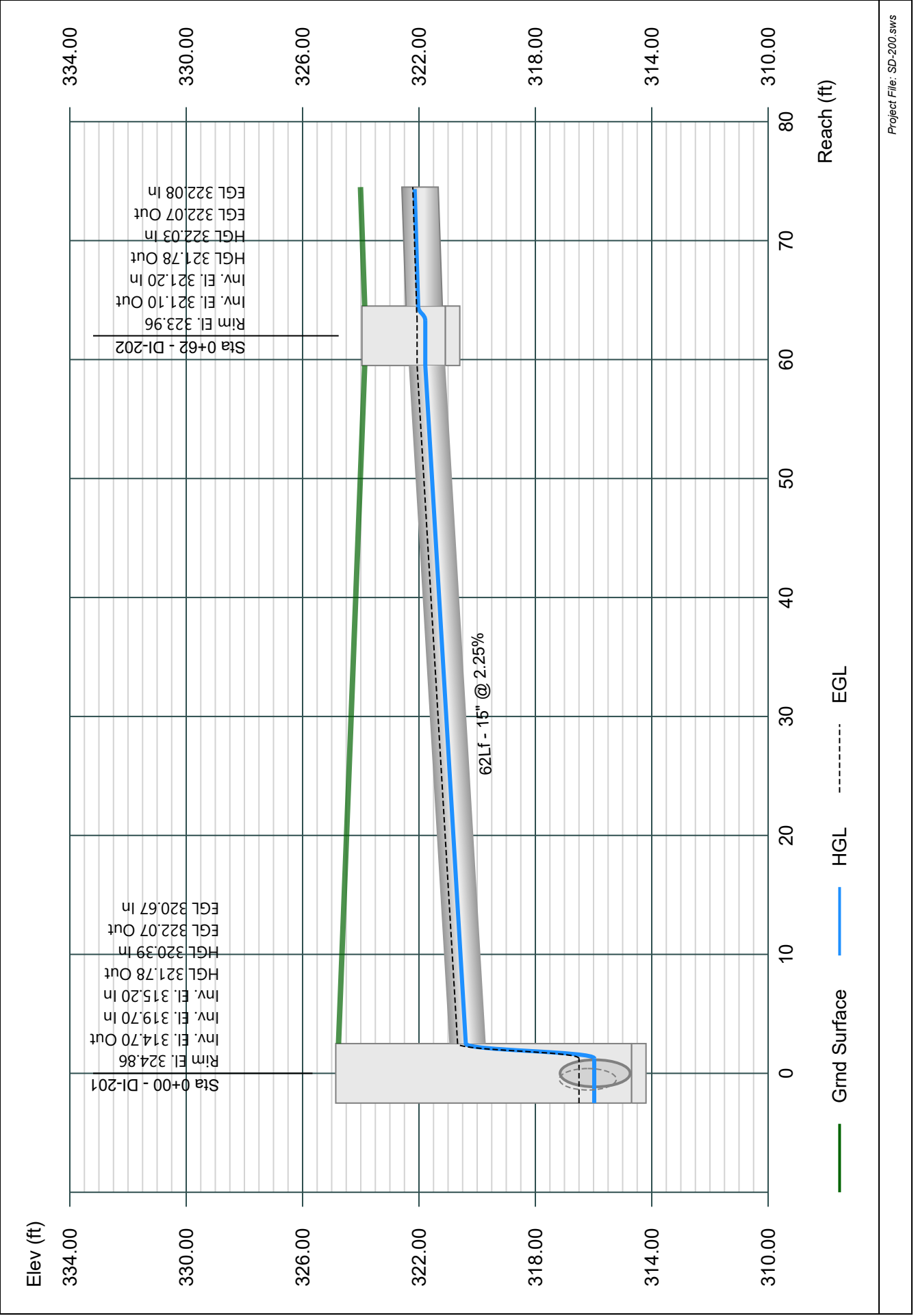


Line 2 - 201-202

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

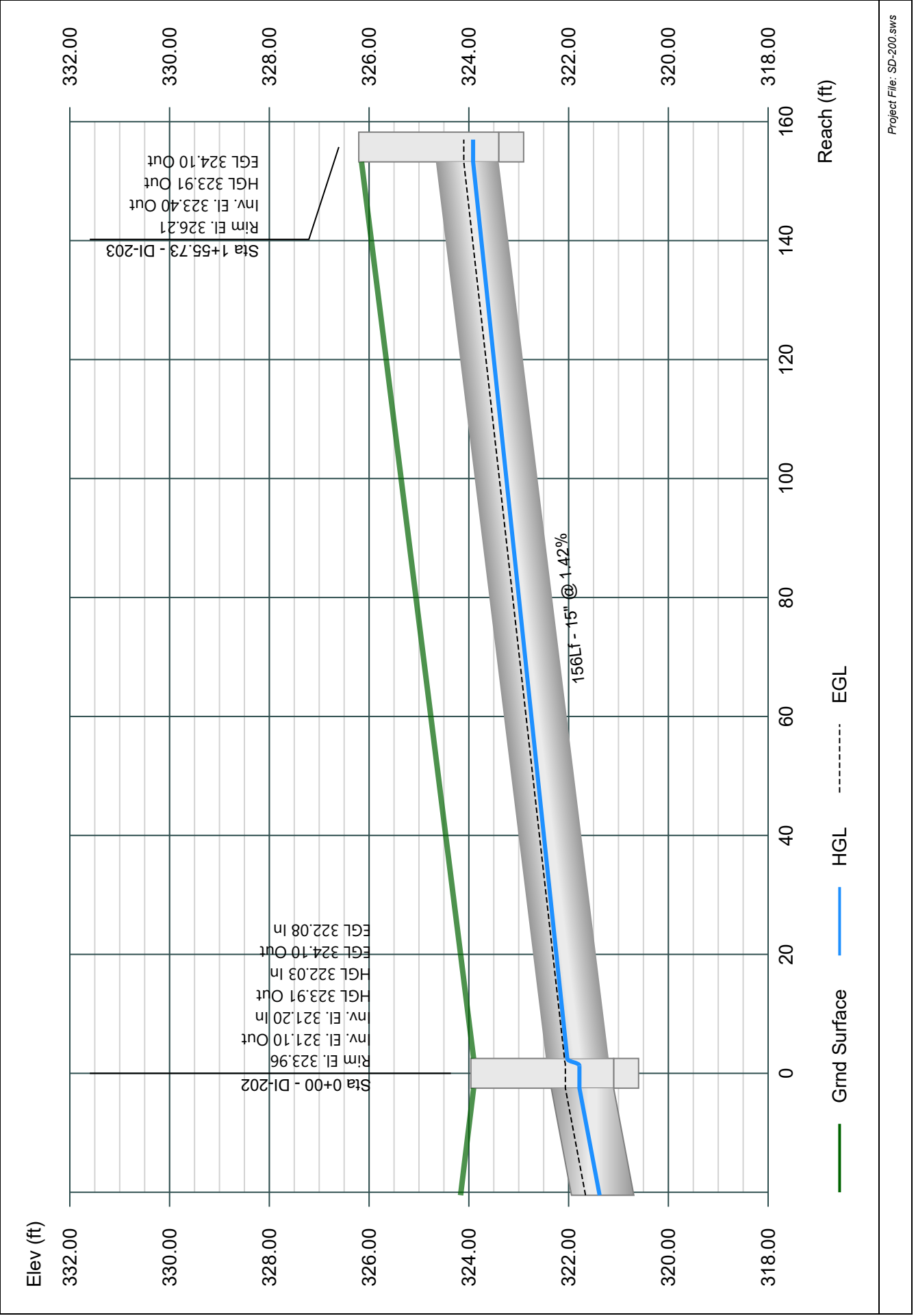


Line 3 - 202-203

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

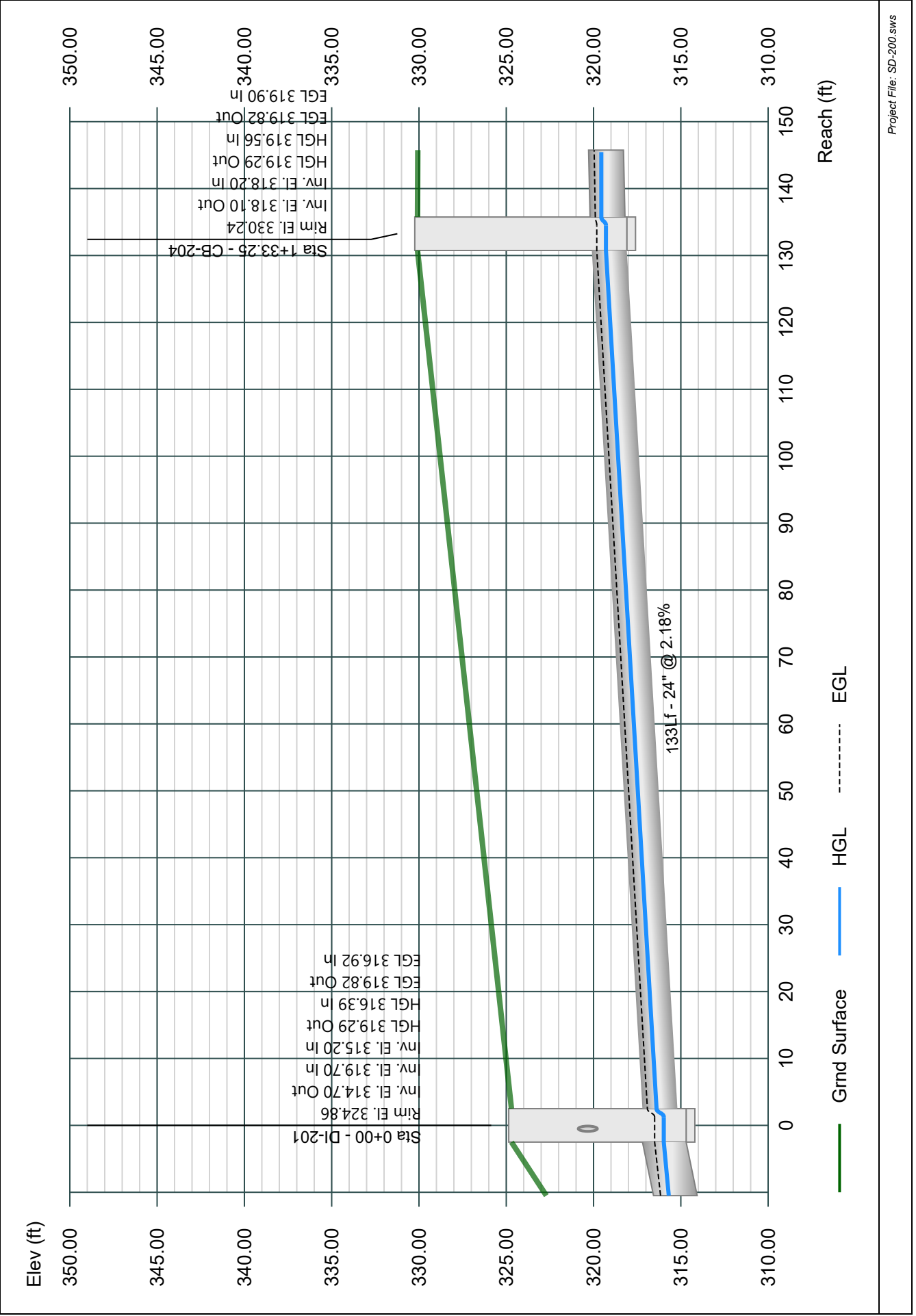


Line 4 - 201-204

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

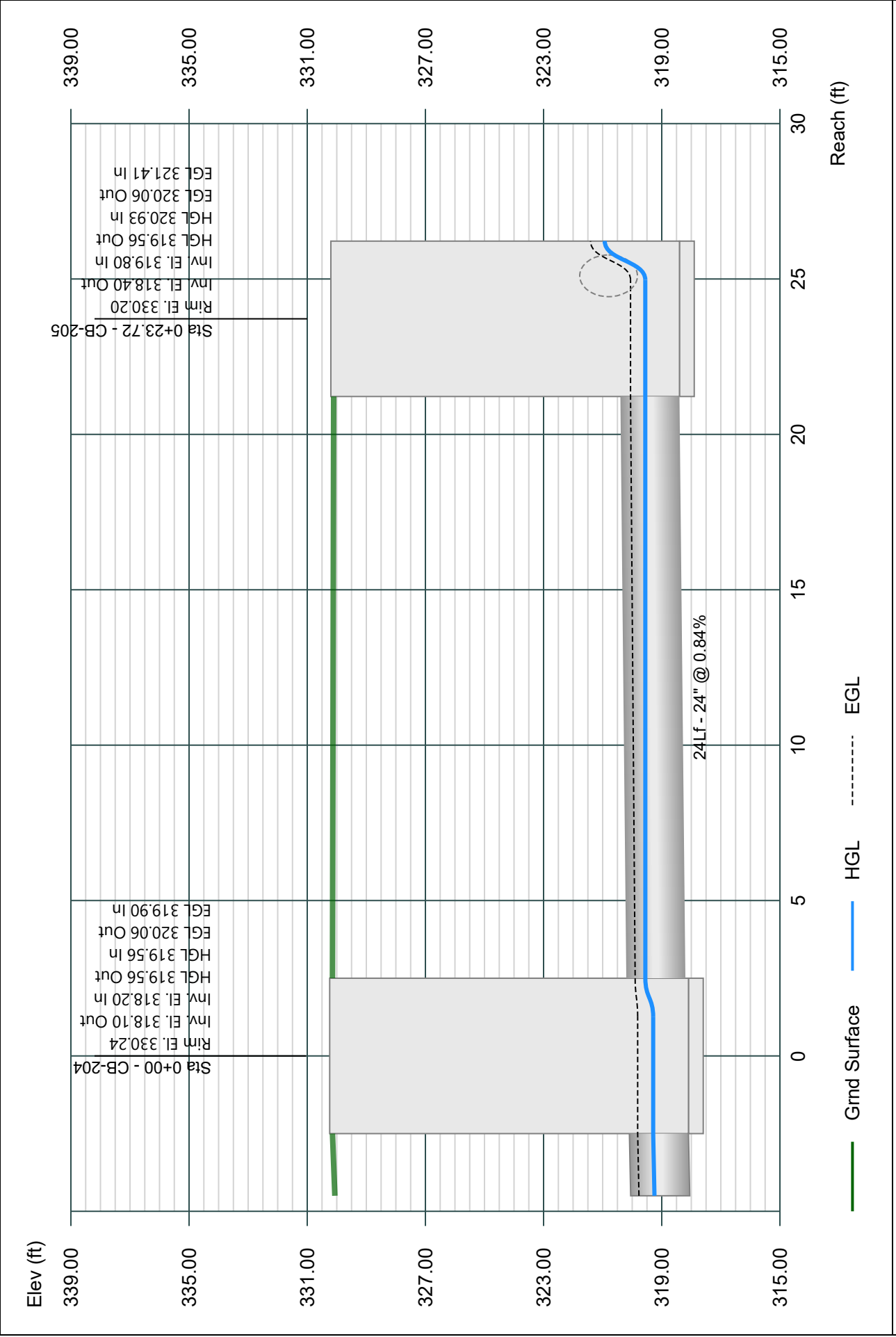


Line 5 - 204-205

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

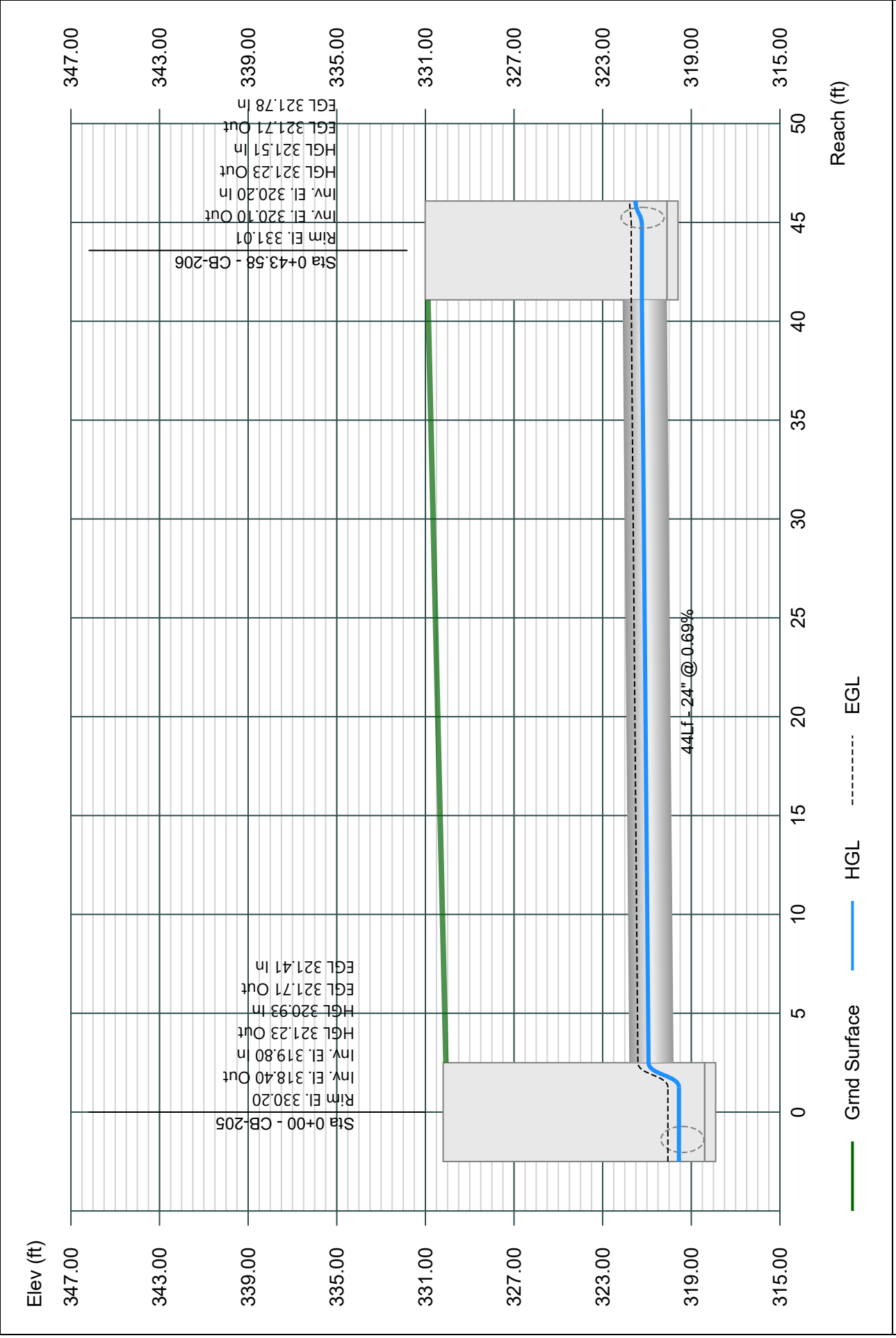


Line 6 - 205-206

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

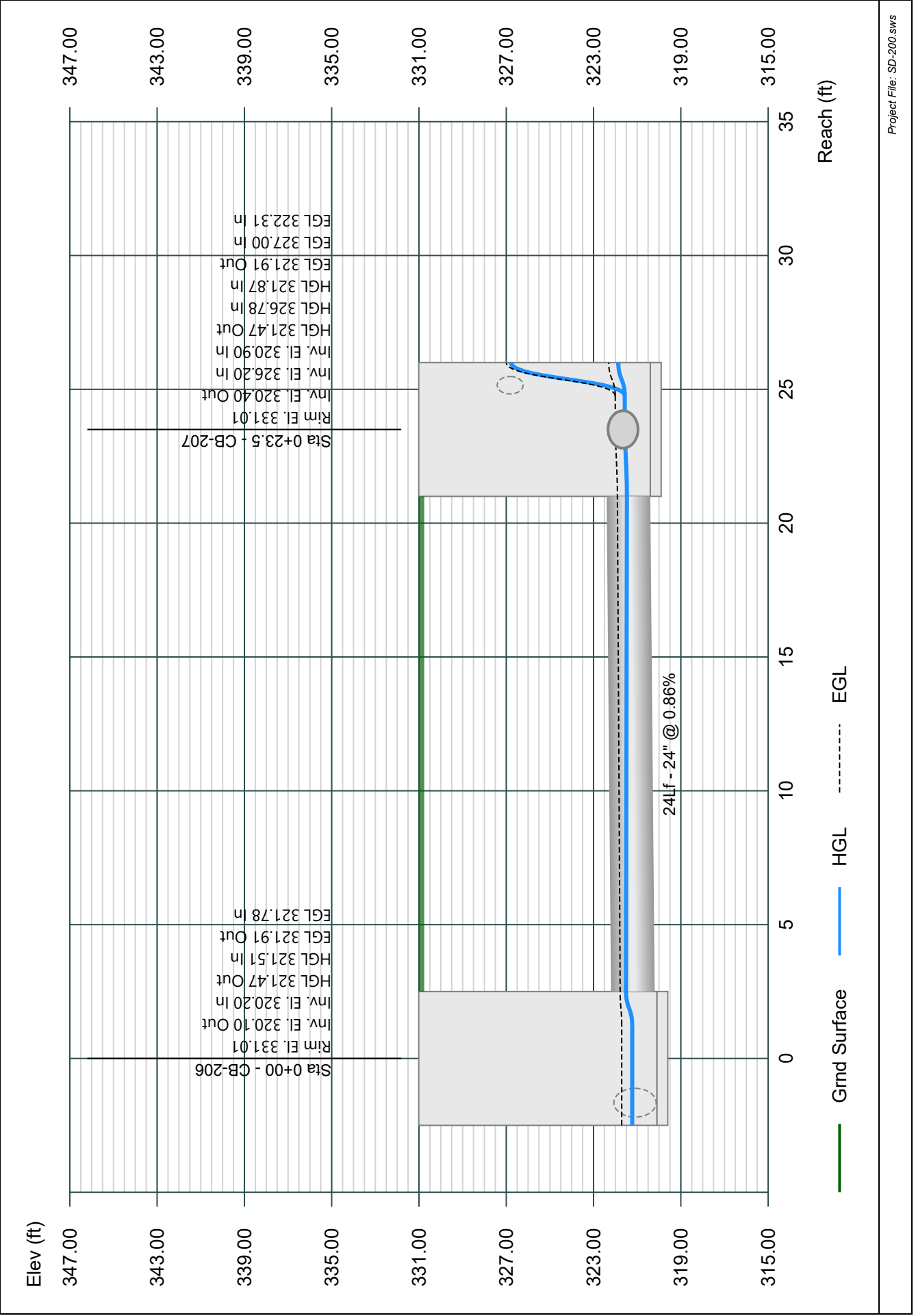


Line 7 - 206-207

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

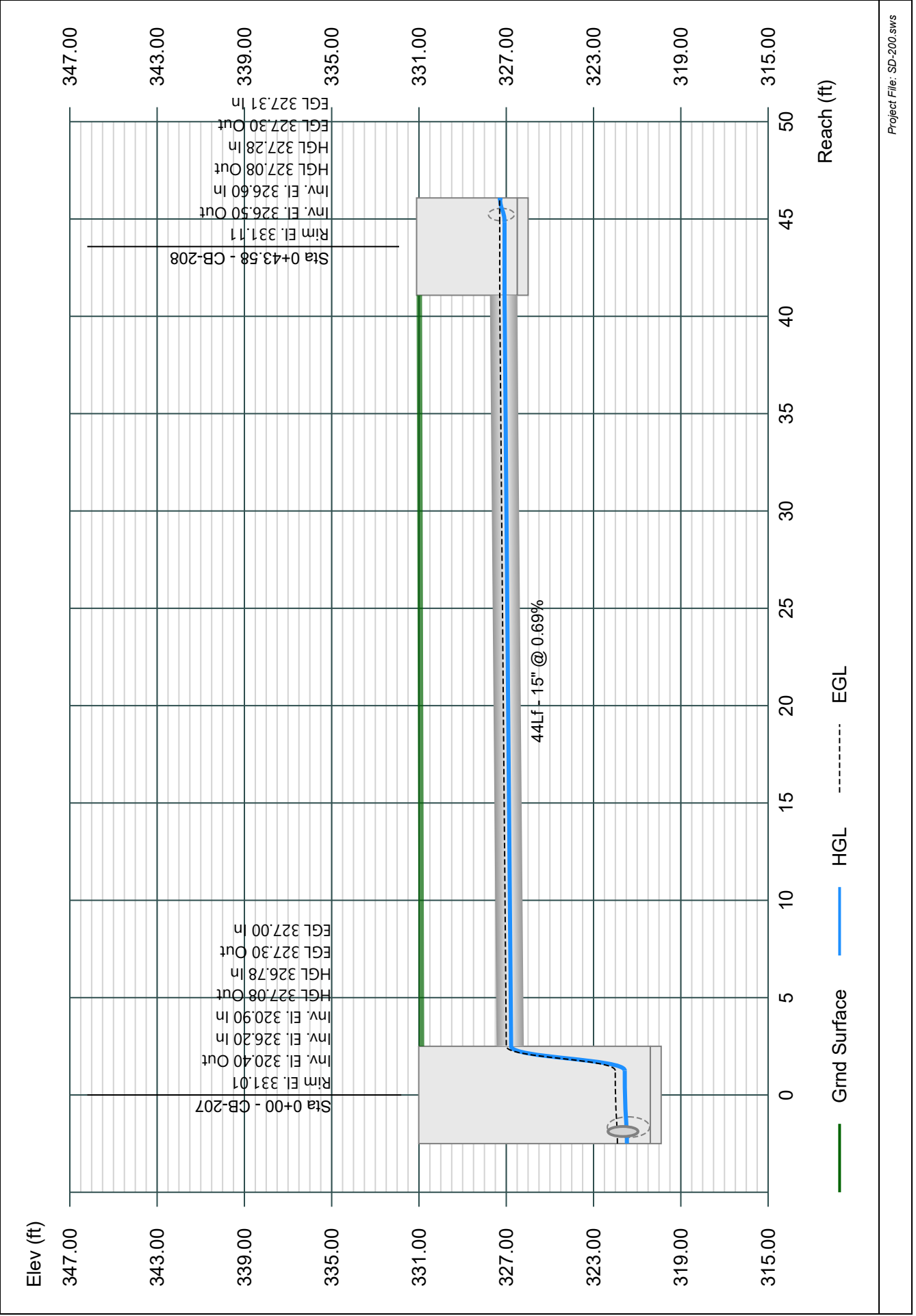


Line 8 - 207-208

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

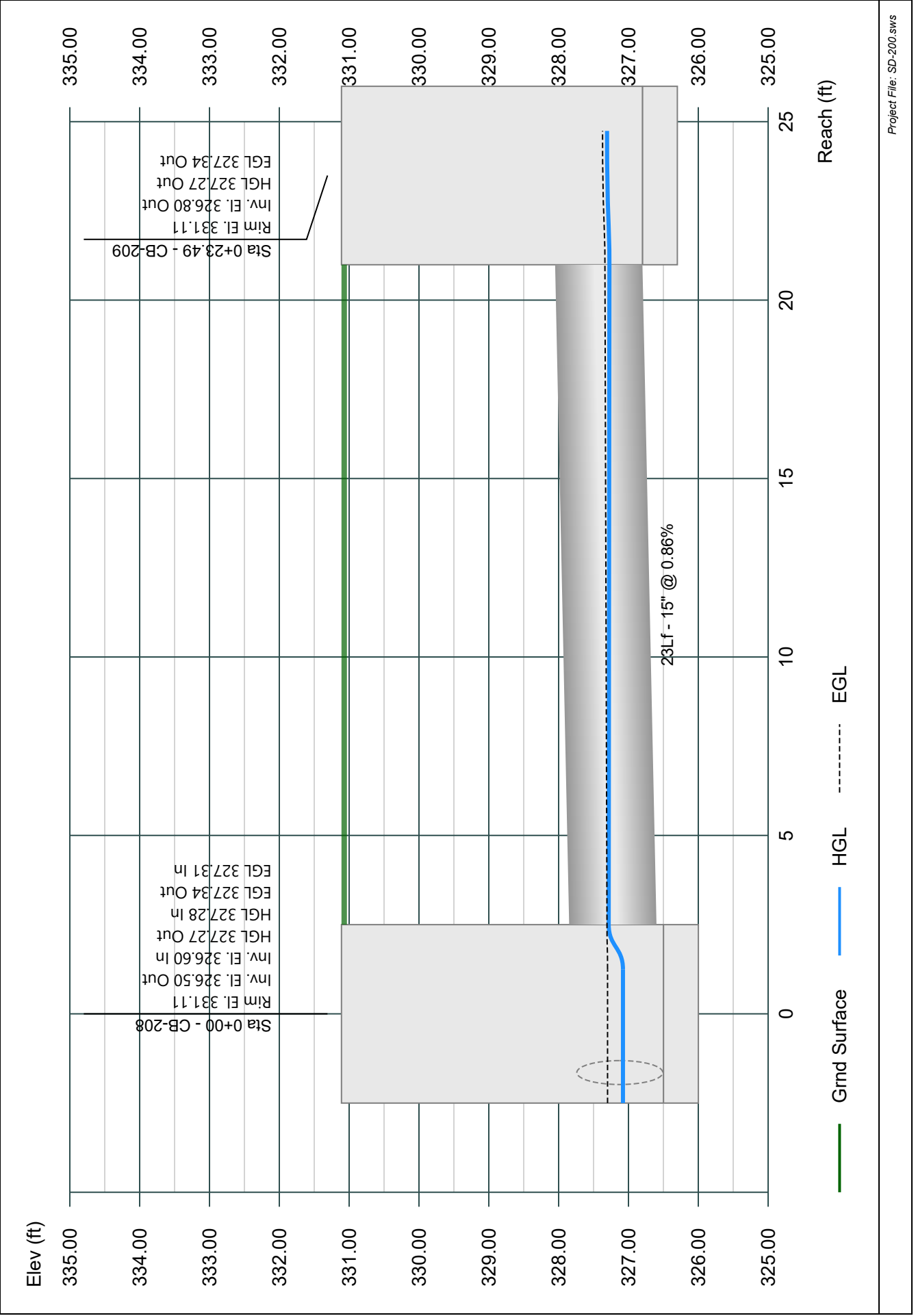


Line 9 - 208-209

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

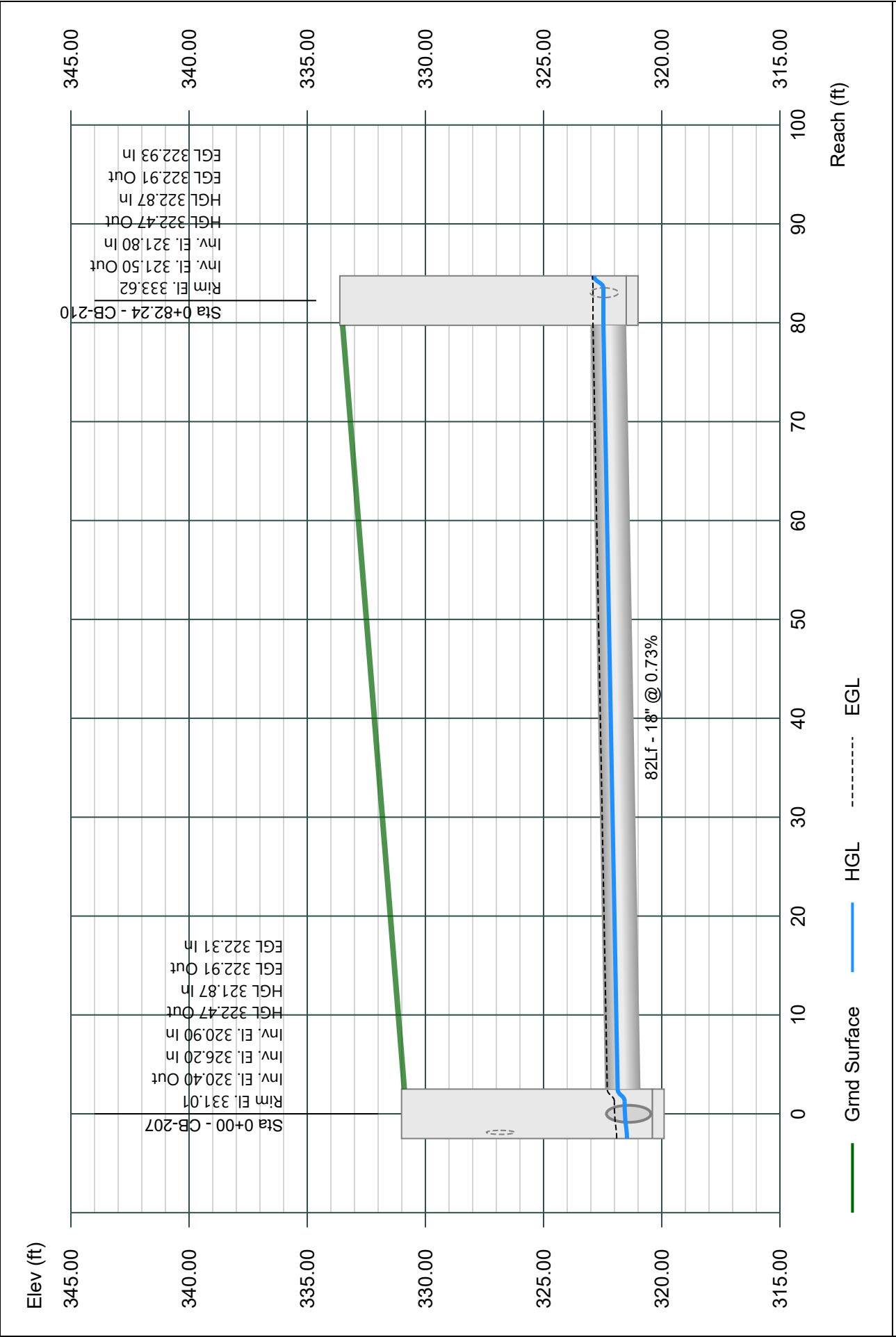


Line 10 - 207-210

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

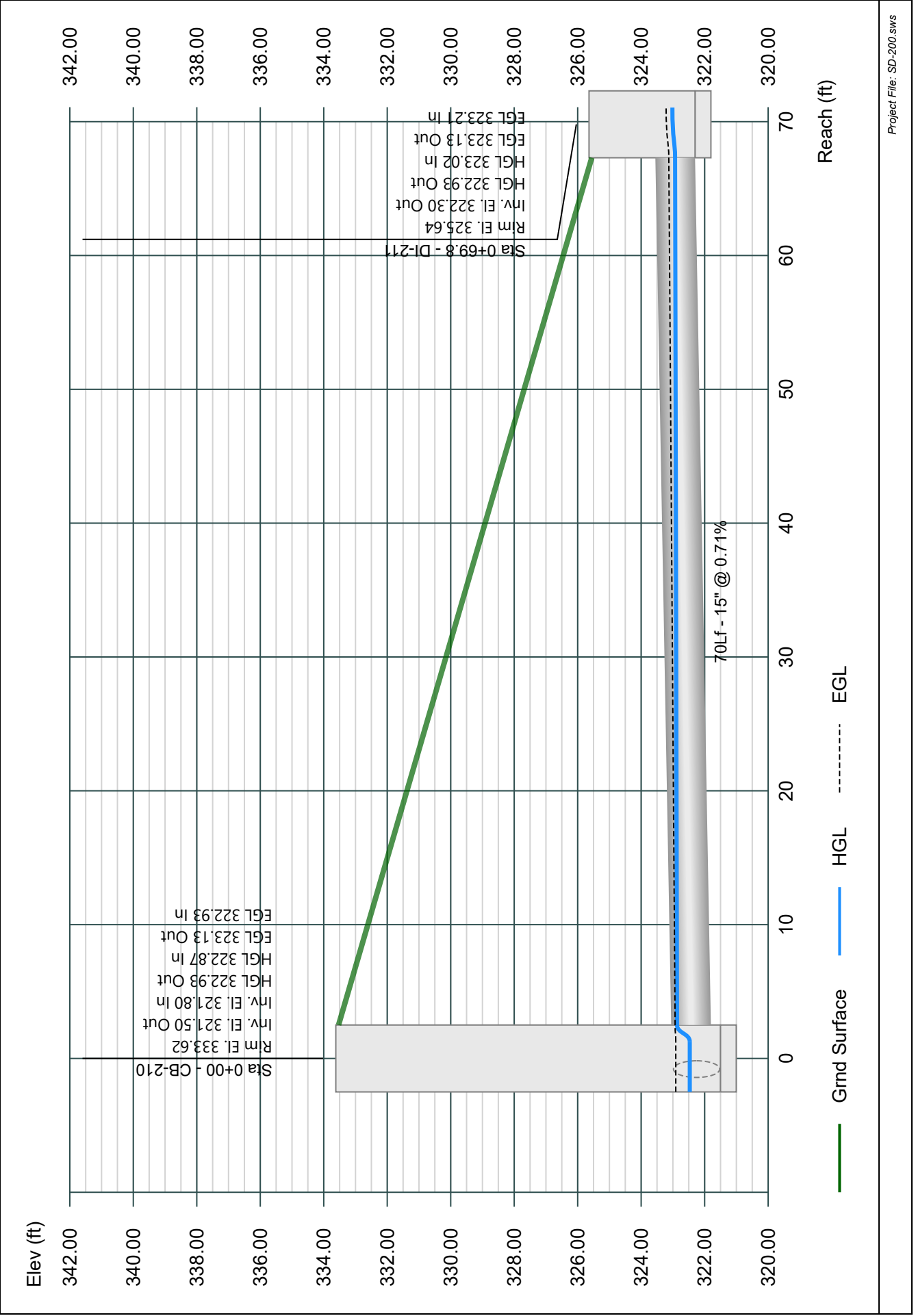


Line 11 - 210-211

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-200

02-26-2024

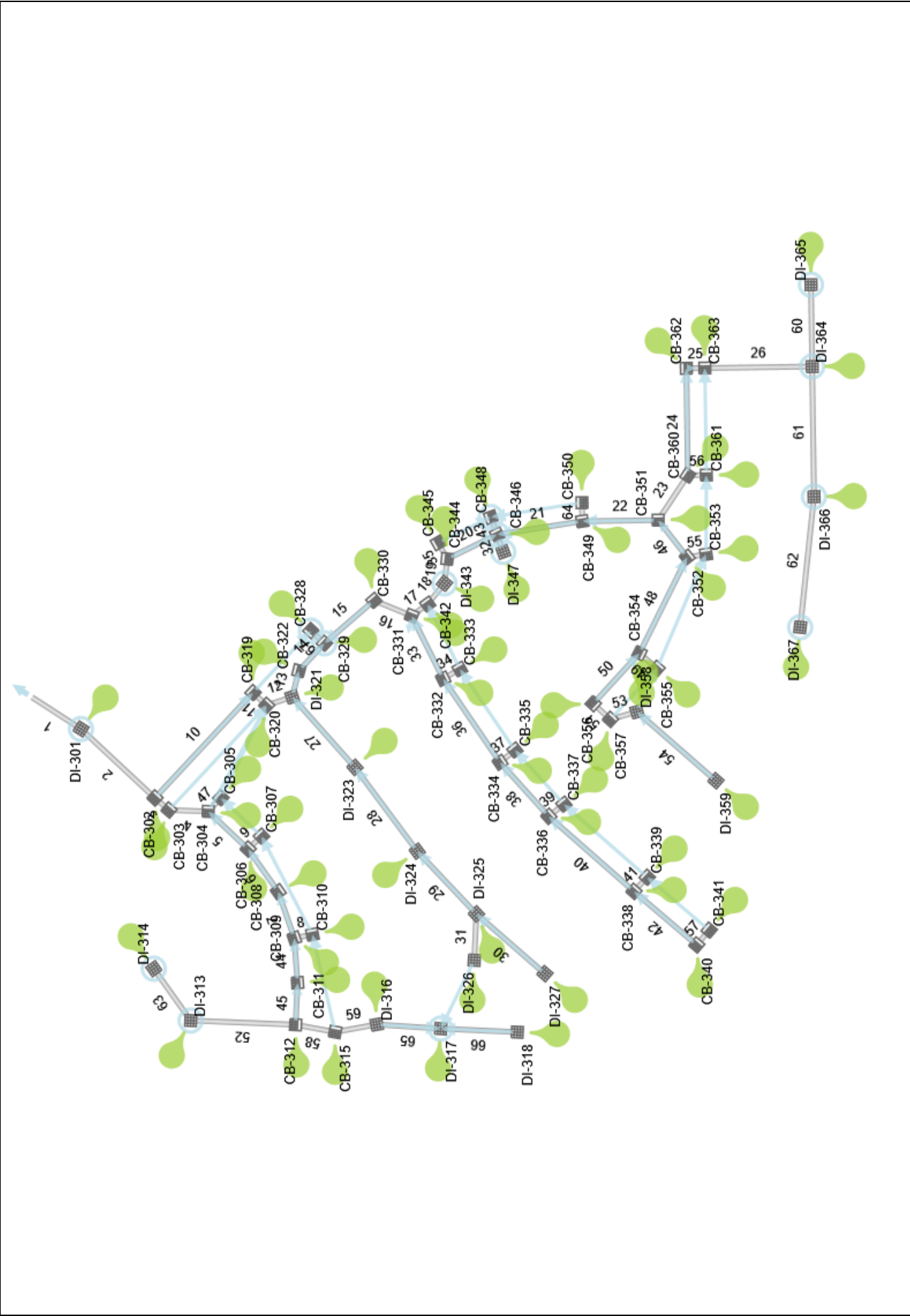


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024



Energy Grade Line Calculations

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	60	65.18	310.00	3.70	15.58	313.70	4.18	0.27	313.97	72.76	310.60	3.02	12.42	313.62	5.25	0.43	314.05	0.013	0.078	313.64	314.07	0.02
2	48	64.33	310.70	2.87	9.65	313.57	6.67	0.69	314.26	128.25	311.50	2.37 ²	7.76	313.87	8.29	1.07	314.94	0.013	0.679	313.87	314.94	0.00
3	30	16.60	313.00	1.69	3.53	314.69	4.70	0.34	315.03	23.52	313.20	1.37	2.75	314.56	6.04	0.57	315.13	0.013	0.097	314.66	315.23	0.09
4	30	14.96	321.10	1.29 ¹	2.56	322.39	5.84	0.53	322.92	49.90	321.40	1.29 ²	2.56	322.69	5.84	0.53	323.22	0.013	0.299	322.69	323.22	0.00
5	30	13.72	321.50	1.49	3.04	322.98	4.51	0.32	323.30	69.47	322.00	1.24 ²	2.42	323.24	5.66	0.50	323.74	0.013	0.440	323.24	323.74	0.00
6	24	11.51	322.00	1.51	2.54	323.51	4.53	0.32	323.83	66.16	322.40	1.21	1.98	323.61	5.81	0.53	324.13	0.013	0.302	323.66	324.18	0.05
7	24	11.29	322.50	1.44	2.41	323.93	4.68	0.34	324.28	62.38	322.90	1.19 ²	1.95	324.09	5.79	0.52	324.62	0.013	0.340	324.09	324.62	0.00
8	15	1.79	334.10	0.54 ¹	0.50	334.63	3.56	0.20	334.83	23.50	334.30	0.54 ²	0.50	334.84	3.56	0.20	335.03	0.013	0.201	334.84	335.03	0.00
9	15	1.57	328.40	0.50 ¹	0.46	328.90	3.41	0.18	329.08	23.50	328.60	0.50 ²	0.46	329.10	3.41	0.18	329.28	0.013	0.201	329.10	329.28	0.00
10	48	48.60	311.60	3.12	10.52	314.72	4.62	0.33	315.05	182.59	312.70	2.06	6.53	314.76	7.44	0.86	315.62	0.013	0.570	314.80	315.66	0.04
11	42	48.13	313.20	2.12 ¹	6.11	315.32	7.88	0.96	316.29	23.50	313.40	2.12 ²	6.11	315.52	7.88	0.96	316.49	0.013	0.200	315.52	316.49	0.00
12	42	47.02	313.50	2.55	7.51	316.05	6.27	0.61	316.66	34.21	313.80	2.10 ²	6.03	315.90	7.80	0.95	316.85	0.013	0.187	315.90	316.85	0.00
13	36	38.20	313.90	2.58	6.47	316.48	5.91	0.54	317.02	34.21	314.20	2.22	5.62	316.42	6.80	0.72	317.14	0.013	0.120	316.51	317.23	0.09
14	36	38.05	314.30	2.56	6.43	316.86	5.92	0.55	317.41	47.58	314.60	2.30	5.83	316.90	6.53	0.66	317.57	0.013	0.162	316.99	317.65	0.08
15	36	35.39	314.70	2.66	6.63	317.36	5.34	0.44	317.80	83.01	315.20	2.25	5.68	317.45	6.23	0.60	318.05	0.013	0.247	317.49	318.09	0.04
16	36	35.23	315.30	2.44	6.15	317.74	5.73	0.51	318.25	51.67	315.70	1.90	4.72	317.60	7.47	0.87	318.47	0.013	0.219	317.68	318.55	0.08
17	36	24.37	315.80	2.61	6.53	318.41	3.73	0.22	318.62	25.14	316.00	2.41	6.08	318.41	4.01	0.25	318.66	0.013	0.031	318.42	318.67	0.01
18	36	24.15	316.10	2.41	6.08	318.50	3.97	0.25	318.75	33.84	316.30	2.20	5.57	318.51	4.34	0.29	318.80	0.013	0.049	318.52	318.81	0.01
19	36	23.41	316.40	2.23	5.64	318.63	4.15	0.27	318.90	31.20	316.60	2.03	5.08	318.62	4.61	0.33	318.95	0.013	0.054	318.64	318.97	0.01
20	30	23.24	316.70	1.87	3.94	318.57	5.90	0.54	319.11	70.45	317.20	1.61 ²	3.34	318.81	6.95	0.75	319.56	0.013	0.454	318.81	319.56	0.00
21	30	19.23	317.30	2.05	4.31	319.35	4.46	0.31	319.66	109.39	318.00	1.47	3.01	319.47	6.40	0.64	320.11	0.013	0.442	319.51	320.14	0.04
22	30	18.17	318.10	1.78	3.74	319.88	4.85	0.37	320.25	96.33	318.70	1.42 ²	2.89	320.12	6.29	0.61	320.74	0.013	0.488	320.12	320.74	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-300.sws

Energy Grade Line Calculations

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
23	24	10.87	318.80	1.81	2.99	320.60	3.64	0.21	320.81	68.14	319.20	1.47	2.48	320.68	4.38	0.30	320.98	0.013	0.168	320.69	320.99	0.01
24	24	9.92	319.30	1.52	2.57	320.83	3.87	0.23	321.06	135.73	320.20	1.12 ²	1.80	321.31	5.51	0.47	321.79	0.013	0.727	321.31	321.79	0.00
25	24	8.73	320.30	1.30	2.17	321.60	4.03	0.25	321.85	23.50	320.50	1.05	1.67	321.55	5.22	0.42	321.97	0.013	0.120	321.60	322.03	0.05
26	24	7.54	320.60	1.29	2.14	321.89	3.52	0.19	322.08	136.25	321.50	0.97 ²	1.52	322.47	4.97	0.38	322.85	0.013	0.772	322.47	322.85	0.00
27	24	7.94	322.90	1.00 ¹	1.57	323.90	5.07	0.40	324.30	119.65	327.20	1.00 ²	1.57	328.20	5.07	0.40	328.60	0.013	4.301	328.20	328.60	0.00
28	18	5.90	327.70	0.93 ¹	1.15	328.63	5.15	0.41	329.04	132.41	332.50	0.93 ²	1.15	333.42	5.15	0.41	333.83	0.013	4.791	333.42	333.83	0.00
29	15	3.60	332.80	0.79	0.81	333.58	4.43	0.31	333.89	109.43	336.00	0.76 ²	0.78	336.76	4.61	0.33	337.09	0.013	3.206	336.76	337.09	0.00
30	15	1.21	336.70	0.44 ¹	0.39	337.14	3.14	0.15	337.29	115.29	337.40	0.44 ²	0.39	337.84	3.14	0.15	337.99	0.013	0.702	337.84	337.99	0.00
31	15	0.75	336.10	0.98	1.04	337.09	0.72	0.01	337.10	58.78	336.50	0.60	0.58	337.09	1.30	0.03	337.12	0.013	0.022	337.10	337.13	0.01
32	15	2.17	322.10	0.59 ¹	0.57	322.69	3.81	0.23	322.92	23.24	323.40	0.59 ²	0.57	323.99	3.81	0.23	324.22	0.013	1.300	323.99	324.22	0.00
33	24	10.56	324.50	1.15 ¹	1.87	325.65	5.64	0.50	326.15	89.17	326.40	1.15 ²	1.87	327.55	5.64	0.50	328.05	0.013	1.900	327.55	328.05	0.00
34	15	0.46	327.10	0.94	0.99	328.04	0.47	0.00	328.05	24.50	327.30	0.74	0.76	328.04	0.61	0.01	328.05	0.013	0.001	328.05	328.05	0.01
35	15	0.07	322.60	0.10 ¹	0.05	322.70	1.39	0.03	322.73	23.50	322.80	0.10 ²	0.05	322.90	1.39	0.03	322.93	0.013	0.201	322.90	322.93	0.00
36	24	8.69	326.50	1.39	2.34	327.89	3.72	0.22	328.11	128.25	329.20	1.04 ²	1.66	330.24	5.24	0.43	330.67	0.013	2.562	330.24	330.67	0.00
37	15	0.92	329.80	0.86	0.90	330.66	1.03	0.02	330.68	24.51	330.00	0.66	0.66	330.66	1.41	0.03	330.69	0.013	0.013	330.68	330.71	0.02
38	18	6.65	329.70	0.98 ¹	1.23	330.68	5.41	0.45	331.14	92.31	330.60	0.98 ²	1.23	331.59	5.41	0.45	332.04	0.013	0.902	331.59	332.04	0.00
39	15	1.51	330.90	1.12	1.16	332.02	1.30	0.03	332.05	24.68	331.10	0.93	0.98	332.03	1.55	0.04	332.07	0.013	0.015	332.05	332.08	0.02
40	15	3.38	331.10	0.83	0.87	331.93	3.89	0.24	332.17	143.99	332.90	0.74 ²	0.75	333.64	4.50	0.31	333.95	0.013	1.785	333.64	333.95	0.00
41	15	1.24	333.00	0.93	0.98	333.94	1.26	0.02	333.96	24.54	333.20	0.73	0.75	333.93	1.66	0.04	333.98	0.013	0.015	333.96	334.00	0.02
42	15	0.95	333.20	0.74	0.75	333.94	1.27	0.02	333.96	104.69	337.10	0.39 ²	0.33	337.49	2.91	0.13	337.63	0.013	3.664	337.49	337.63	0.00
43	15	1.89	321.90	0.55 ¹	0.52	322.45	3.63	0.21	322.66	23.50	322.10	0.55 ²	0.52	322.65	3.63	0.21	322.86	0.013	0.201	322.65	322.86	0.00
44	24	9.17	323.00	1.46	2.46	324.46	3.73	0.22	324.68	56.68	323.40	1.08	1.73	324.48	5.31	0.44	324.92	0.013	0.239	324.57	325.01	0.09

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-300.sws

Energy Grade Line Calculations

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)
45	24	8.41	323.50	1.36	2.27	324.86	3.71	0.21	325.07	53.33	323.90	1.03 ²	1.62	5.18	0.42	325.35	0.013	0.274	324.93	325.35	0.00
46	24	7.40	323.50	0.96 ¹	1.50	324.46	4.94	0.38	324.84	59.63	325.00	0.96 ²	1.50	4.94	0.38	326.34	0.013	1.500	325.96	326.34	0.00
47	15	0.76	326.30	0.35 ¹	0.28	326.65	2.71	0.11	326.76	23.50	326.50	0.35 ²	0.28	2.71	0.11	326.96	0.013	0.201	326.85	326.96	0.00
48	18	5.40	325.50	0.89 ¹	1.09	326.39	4.96	0.38	326.77	136.03	327.20	0.89 ²	1.09	4.96	0.38	328.47	0.013	1.700	328.09	328.47	0.00
49	15	0.52	327.50	0.96	1.02	328.47	0.51	0.00	328.47	29.50	327.70	0.77	0.79	0.66	0.01	328.48	0.013	0.003	328.48	328.49	0.01
50	18	4.68	327.30	1.01	1.27	328.31	3.69	0.21	328.52	86.70	327.90	0.83 ²	1.00	4.70	0.34	329.07	0.013	0.547	328.73	329.07	0.00
51	18	4.48	328.00	0.82	0.98	328.82	4.56	0.32	329.14	29.50	328.20	0.81	0.98	4.59	0.33	329.34	0.013	0.197	329.04	329.37	0.03
52	15	3.57	323.90	1.25	1.23	325.27	2.91	0.13	325.40	133.25	324.70	0.94	0.99	3.60	0.20	325.85	0.013	0.447	325.89	326.09	0.24
53	18	4.10	328.30	0.90	1.11	329.20	3.69	0.21	329.41	35.11	328.60	0.77 ²	0.92	4.47	0.31	329.68	0.013	0.269	329.37	329.68	0.00
54	15	2.25	328.90	0.61	0.59	329.51	3.79	0.22	329.73	132.94	334.20	0.60 ²	0.58	3.86	0.23	335.03	0.013	5.297	334.80	335.03	0.00
55	15	1.73	325.50	0.79	0.82	326.30	2.11	0.07	326.36	24.33	325.70	0.57	0.55	3.15	0.15	326.43	0.013	0.063	326.36	326.51	0.09
56	15	1.08	324.20	0.42 ¹	0.36	324.62	3.03	0.14	324.76	23.50	324.40	0.42 ²	0.36	3.03	0.14	324.96	0.013	0.201	324.82	324.96	0.00
57	15	0.45	337.20	0.40	0.34	337.60	1.34	0.03	337.63	24.50	337.40	0.27 ²	0.19	2.33	0.08	337.75	0.013	0.124	337.67	337.75	0.00
58	18	4.77	333.10	0.83 ¹	1.01	333.94	4.73	0.35	334.29	51.04	333.50	0.83 ²	1.01	4.73	0.35	334.68	0.013	0.396	334.33	334.68	0.00
59	15	3.73	333.70	0.86	0.90	334.56	4.14	0.27	334.83	53.66	334.10	0.77 ²	0.80	4.68	0.34	335.21	0.013	0.388	334.87	335.21	0.00
60	15	1.08	321.70	1.15	1.18	322.85	0.92	0.01	322.86	103.77	322.40	0.51	0.47	2.30	0.08	322.99	0.013	0.133	322.94	323.02	0.03
61	18	5.02	323.50	0.86 ¹	1.04	324.35	4.82	0.36	324.72	165.02	325.60	0.86 ²	1.04	4.82	0.36	326.82	0.013	2.103	326.46	326.82	0.00
62	15	2.94	325.80	0.91	0.96	326.71	3.07	0.15	326.86	166.50	327.40	0.69 ²	0.69	4.26	0.28	328.37	0.013	1.509	328.09	328.37	0.00
63	15	1.51	324.80	1.25	1.23	326.07	1.23	0.02	326.10	80.65	325.30	0.81	0.84	1.80	0.05	326.16	0.013	0.060	326.12	326.18	0.02
64	15	1.03	322.90	0.41 ¹	0.35	323.30	2.98	0.14	323.44	23.50	323.20	0.41 ²	0.35	2.98	0.14	323.74	0.013	0.301	323.61	323.74	0.00
65	15	3.38	334.20	0.81	0.84	335.01	4.03	0.25	335.26	81.34	334.70	0.74	0.76	4.48	0.31	335.75	0.013	0.488	335.69	336.00	0.25
66	15	0.97	334.80	1.19	1.21	335.99	0.81	0.01	336.00	97.26	335.40	0.62	0.60	1.61	0.04	336.06	0.013	0.057	336.05	336.09	0.02

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-300.sws

Energy Grade Line Calculations

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Enrgy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Enrgy Loss (ft)
67	15	2.06	321.20	0.57 ¹	0.55	321.77	3.74	0.22	321.99	23.50	321.40	0.57 ²	0.55	321.97	3.74	0.22	322.19	0.013	0.200	321.97	322.19	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-300.sws

Storm Sewer Tabulation

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
300-301	72.76	0.390	15.290	0.60	0.23	10.70	5.0	9.07	6.09	65.18	236.20	4.72	60	0.82	310.60	310.00	313.62	313.70	326.12	310.00	1
301-302	128.25	0.190	14.900	0.75	0.14	10.46	5.0	8.83	6.15	64.33	113.45	7.48	48	0.62	311.50	310.70	313.87	313.57	330.95	326.12	2
302-303	23.52	0.350	3.550	0.75	0.26	2.53	5.0	7.13	6.57	16.60	37.43	5.37	30	0.83	313.20	313.00	314.56	314.69	330.94	330.95	3
303-304	49.90	0.130	3.200	0.75	0.10	2.26	5.0	7.00	6.61	14.96	31.77	5.84	30	0.60	321.40	321.10	322.69	322.39	330.81	330.94	4
304-306	69.47	0.170	2.930	0.75	0.13	2.06	5.0	6.83	6.66	13.72	35.03	5.08	30	0.73	322.00	321.50	323.24	322.98	332.90	330.81	5
306-308	66.16	0.060	2.470	0.75	0.05	1.72	5.0	6.64	6.71	11.51	17.52	5.17	24	0.60	322.40	322.00	323.61	323.51	335.81	332.90	6
308-310	62.38	0.100	2.410	0.75	0.08	1.67	5.0	6.47	6.76	11.29	18.21	5.24	24	0.65	322.90	322.50	324.09	323.93	338.59	335.81	7
309-310	23.50	0.310	0.310	0.80	0.25	0.25	5.0	5.00	7.21	1.79	5.97	3.56	15	0.86	334.30	334.10	334.84	334.63	338.59	338.59	8
306-307	23.50	0.290	0.290	0.75	0.22	0.22	5.0	5.00	7.21	1.57	5.97	3.41	15	0.86	328.60	328.40	329.10	328.90	332.90	332.90	9
302-319	182.59	0.110	11.160	0.80	0.09	7.80	5.0	8.46	6.24	48.60	111.50	6.03	48	0.60	312.70	311.60	314.76	314.72	328.00	330.95	10
319-320	23.50	0.260	11.050	0.75	0.20	7.71	5.0	8.42	6.25	48.13	92.81	7.88	42	0.85	313.40	313.20	315.52	315.32	328.00	328.00	11
320-321	34.21	0.340	10.790	0.80	0.27	7.51	5.0	8.36	6.26	47.02	94.21	7.03	42	0.88	313.80	313.50	315.90	316.05	327.98	328.00	12
321-322	34.21	0.060	9.010	0.80	0.05	6.09	5.0	8.29	6.28	38.20	62.45	6.35	36	0.88	314.20	313.90	316.42	316.48	327.02	327.98	13
328-329	47.58	0.220	8.950	0.80	0.18	6.04	5.0	8.19	6.30	38.05	52.96	6.23	36	0.63	314.60	314.30	316.90	316.86	326.69	326.69	14
329-330	83.01	0.060	8.350	0.80	0.05	5.58	5.0	8.01	6.34	35.39	51.76	5.78	36	0.60	315.20	314.70	317.45	317.36	327.53	326.69	15
330-331	51.67	0.210	8.290	0.75	0.16	5.53	5.0	7.91	6.37	35.23	58.69	6.60	36	0.77	315.70	315.30	317.60	317.74	329.50	327.53	16
331-342	25.14	0.060	6.010	0.80	0.05	3.82	5.0	7.86	6.38	24.37	59.61	3.87	36	0.80	316.00	315.80	318.41	318.41	329.37	329.50	17
342-343	33.84	0.360	5.950	0.35	0.13	3.77	5.0	7.78	6.40	24.15	51.68	4.16	36	0.60	316.30	316.10	318.51	318.50	327.13	329.37	18
343-344	31.20	0.050	5.590	0.80	0.04	3.64	5.0	7.70	6.42	23.41	53.02	4.38	36	0.63	316.60	316.40	318.62	318.63	327.13	327.13	19
344-346	70.45	0.110	5.530	0.80	0.09	3.60	5.0	7.54	6.46	23.24	34.65	6.43	30	0.71	317.20	316.70	318.81	318.57	326.35	327.13	20
346-349	109.39	0.060	4.210	0.80	0.05	2.94	5.0	7.28	6.53	19.23	32.72	5.43	30	0.64	318.00	317.30	319.47	319.35	327.46	326.35	21
349-351	96.33	0.050	3.960	0.80	0.04	2.75	5.0	7.03	6.60	18.17	32.31	5.57	30	0.62	318.70	318.10	320.12	319.88	328.59	327.46	22

Storm Sewer Tabulation

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
351-360	68.14	0.020	2.540	0.80	0.02	1.63	5.0	6.84	6.65	10.87	17.52	4.01	24	0.60	319.20	318.80	320.68	320.60	328.70	328.59	23
360-362	135.73	0.240	2.320	0.75	0.18	1.47	5.0	6.45	6.76	9.92	18.36	4.69	24	0.66	320.20	319.30	321.31	320.83	326.92	328.70	24
362-363	23.50	0.260	2.080	0.75	0.20	1.29	5.0	6.39	6.78	8.73	20.92	4.62	24	0.86	320.50	320.30	321.55	321.60	326.92	326.92	25
363-364	136.25	0.380	1.820	0.60	0.23	1.09	5.0	5.98	6.90	7.54	18.36	4.25	24	0.66	321.50	320.60	322.47	321.89	326.52	326.92	26
321-323	119.65	0.380	1.440	0.80	0.30	1.15	5.0	6.02	6.89	7.94	42.88	5.07	24	3.59	327.20	322.90	328.20	323.90	332.25	327.98	27
323-324	132.41	0.420	1.060	0.80	0.34	0.85	5.0	5.80	6.96	5.90	19.97	5.15	18	3.62	332.50	327.70	333.42	328.63	337.11	332.25	28
324-325	109.43	0.300	0.640	0.80	0.24	0.51	5.0	5.57	7.03	3.60	11.05	4.52	15	2.93	336.00	332.80	336.76	333.58	341.00	337.11	29
325-327	115.29	0.210	0.210	0.80	0.17	0.17	5.0	5.00	7.21	1.21	5.04	3.14	15	0.61	337.40	336.70	337.84	337.14	343.63	341.00	30
325-326	58.78	0.130	0.130	0.80	0.10	0.10	5.0	5.00	7.21	0.75	5.28	1.01	15	0.67	336.50	336.10	337.09	337.09	340.75	341.00	31
346-347	23.24	0.860	0.860	0.35	0.30	0.30	5.0	5.00	7.21	2.17	15.27	3.81	15	5.59	323.40	322.10	323.99	322.69	327.16	326.35	32
331-332	89.17	0.300	2.070	0.75	0.23	1.56	5.0	6.35	6.79	10.56	33.02	5.64	24	2.13	326.40	324.50	327.55	325.65	331.58	329.50	33
332-333	24.50	0.080	0.080	0.80	0.06	0.06	5.0	5.00	7.21	0.46	5.79	0.54	15	0.80	327.30	327.10	328.04	328.04	331.58	331.58	34
344-345	23.50	0.010	0.010	0.95	0.01	0.01	5.0	5.00	7.21	0.07	5.97	1.39	15	0.86	322.80	322.60	322.90	322.70	327.13	327.13	35
332-334	128.25	0.240	1.690	0.75	0.18	1.27	5.0	6.10	6.87	8.69	32.82	4.48	24	2.11	329.20	326.50	330.24	327.89	334.29	331.58	36
334-335	24.51	0.160	0.160	0.80	0.13	0.13	5.0	5.00	7.21	0.92	5.79	1.22	15	0.80	330.00	329.80	330.66	330.66	334.28	334.29	37
334-336	92.31	0.360	1.290	0.75	0.27	0.96	5.0	5.85	6.94	6.65	10.38	5.41	18	0.98	330.60	329.70	331.59	330.68	335.36	334.29	38
336-337	24.68	0.280	0.280	0.75	0.21	0.21	5.0	5.00	7.21	1.51	5.79	1.43	15	0.80	331.10	330.90	332.03	332.02	335.39	335.36	39
336-338	143.99	0.230	0.650	0.75	0.17	0.48	5.0	5.44	7.07	3.38	7.23	4.20	15	1.25	332.90	331.10	333.64	331.93	337.48	335.36	40
338-339	24.54	0.230	0.230	0.75	0.17	0.17	5.0	5.00	7.21	1.24	5.79	1.46	15	0.80	333.20	333.00	333.93	333.94	337.52	337.48	41
338-340	104.69	0.100	0.190	0.70	0.07	0.13	5.0	5.15	7.16	0.95	12.47	2.09	15	3.73	337.10	333.20	337.49	333.94	341.72	337.48	42
346-348	23.50	0.350	0.350	0.75	0.26	0.26	5.0	5.00	7.21	1.89	5.97	3.63	15	0.86	322.10	321.90	322.65	322.45	326.35	326.35	43
310-311	56.68	0.160	2.000	0.75	0.12	1.35	5.0	6.31	6.80	9.17	19.00	4.52	24	0.71	323.40	323.00	324.48	324.46	341.11	338.59	44

Storm Sewer Tabulation

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
311-312	53.33	0.040	1.840	0.80	0.03	1.23	5.0	6.16	6.85	8.41	19.59	4.44	24	0.75	323.90	323.50	324.93	324.86	343.37	341.11	45
351-352	59.63	0.080	1.370	0.80	0.06	1.08	5.0	6.13	6.86	7.40	35.87	4.94	24	2.52	325.00	323.50	325.96	324.46	330.07	328.59	46
304-305	23.50	0.140	0.140	0.75	0.11	0.11	5.0	5.00	7.21	0.76	5.97	2.71	15	0.85	326.50	326.30	326.85	326.65	330.81	330.81	47
352-354	136.03	0.050	0.970	0.80	0.04	0.78	5.0	5.78	6.96	5.40	11.74	4.96	18	1.25	327.20	325.50	328.09	326.39	331.86	330.07	48
354-355	29.50	0.090	0.090	0.80	0.07	0.07	5.0	5.00	7.21	0.52	5.28	0.58	15	0.67	327.70	327.50	328.47	328.47	331.98	331.86	49
354-356	86.70	0.040	0.830	0.80	0.03	0.66	5.0	5.49	7.05	4.68	8.75	4.19	18	0.70	327.90	327.30	328.73	328.31	333.00	331.86	50
356-357	29.50	0.070	0.790	0.80	0.06	0.63	5.0	5.39	7.08	4.48	8.58	4.57	18	0.67	328.20	328.00	329.01	328.82	333.12	333.00	51
312-313	133.25	0.490	0.840	0.60	0.29	0.50	5.0	5.37	7.09	3.57	5.00	3.26	15	0.60	324.70	323.90	325.65	325.27	341.73	343.37	52
357-358	35.11	0.330	0.720	0.80	0.26	0.58	5.0	5.28	7.12	4.10	9.72	4.08	18	0.86	328.60	328.30	329.37	329.20	333.16	333.12	53
358-359	132.94	0.390	0.390	0.80	0.31	0.31	5.0	5.00	7.21	2.25	12.89	3.83	15	3.98	334.20	328.90	334.80	329.51	338.51	333.16	54
352-353	24.33	0.320	0.320	0.75	0.24	0.24	5.0	5.00	7.21	1.73	5.80	2.63	15	0.81	325.70	325.50	326.27	326.30	329.99	330.07	55
360-361	23.50	0.200	0.200	0.75	0.15	0.15	5.0	5.00	7.21	1.08	5.97	3.03	15	0.86	324.40	324.20	324.82	324.62	328.70	328.70	56
340-341	24.50	0.090	0.090	0.70	0.06	0.06	5.0	5.00	7.21	0.45	5.79	1.84	15	0.80	337.40	337.20	337.67	337.60	341.72	341.72	57
312-315	51.04	0.240	0.960	0.65	0.16	0.69	5.0	6.00	6.90	4.77	9.25	4.73	18	0.78	333.50	333.10	334.33	333.94	343.03	343.37	58
315-316	53.66	0.080	0.720	0.70	0.06	0.54	5.0	5.81	6.95	3.73	5.59	4.41	15	0.75	334.10	333.70	334.87	334.56	340.53	343.03	59
364-365	103.77	0.250	0.250	0.60	0.15	0.15	5.0	5.00	7.21	1.08	5.31	1.61	15	0.68	322.40	321.70	322.91	322.85	325.19	326.52	60
364-366	165.02	0.510	1.190	0.60	0.31	0.71	5.0	5.55	7.03	5.02	11.86	4.82	18	1.27	325.60	323.50	326.46	324.35	328.67	326.52	61
366-367	166.50	0.680	0.680	0.60	0.41	0.41	5.0	5.00	7.21	2.94	6.33	3.66	15	0.96	327.40	325.80	328.09	326.71	330.24	328.67	62
313-314	80.65	0.350	0.350	0.60	0.21	0.21	5.0	5.00	7.21	1.51	5.05	1.52	15	0.61	325.30	324.80	326.11	326.07	328.14	341.73	63
349-350	23.50	0.190	0.190	0.75	0.14	0.14	5.0	5.00	7.21	1.03	7.31	2.98	15	1.28	323.20	322.90	323.61	323.30	327.46	327.46	64
316-317	81.34	0.460	0.640	0.75	0.35	0.48	5.0	5.51	7.05	3.38	5.05	4.25	15	0.61	334.70	334.20	335.44	335.01	339.15	340.53	65
317-318	97.26	0.180	0.180	0.75	0.14	0.14	5.0	5.00	7.21	0.97	5.09	1.21	15	0.62	335.40	334.80	336.02	335.99	341.58	339.15	66

Project File: SD-300.sws

Notes: IDF File = Zebulon-10yr-IDF, Return Period = 10-yrs.

Storm Sewer Tabulation

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

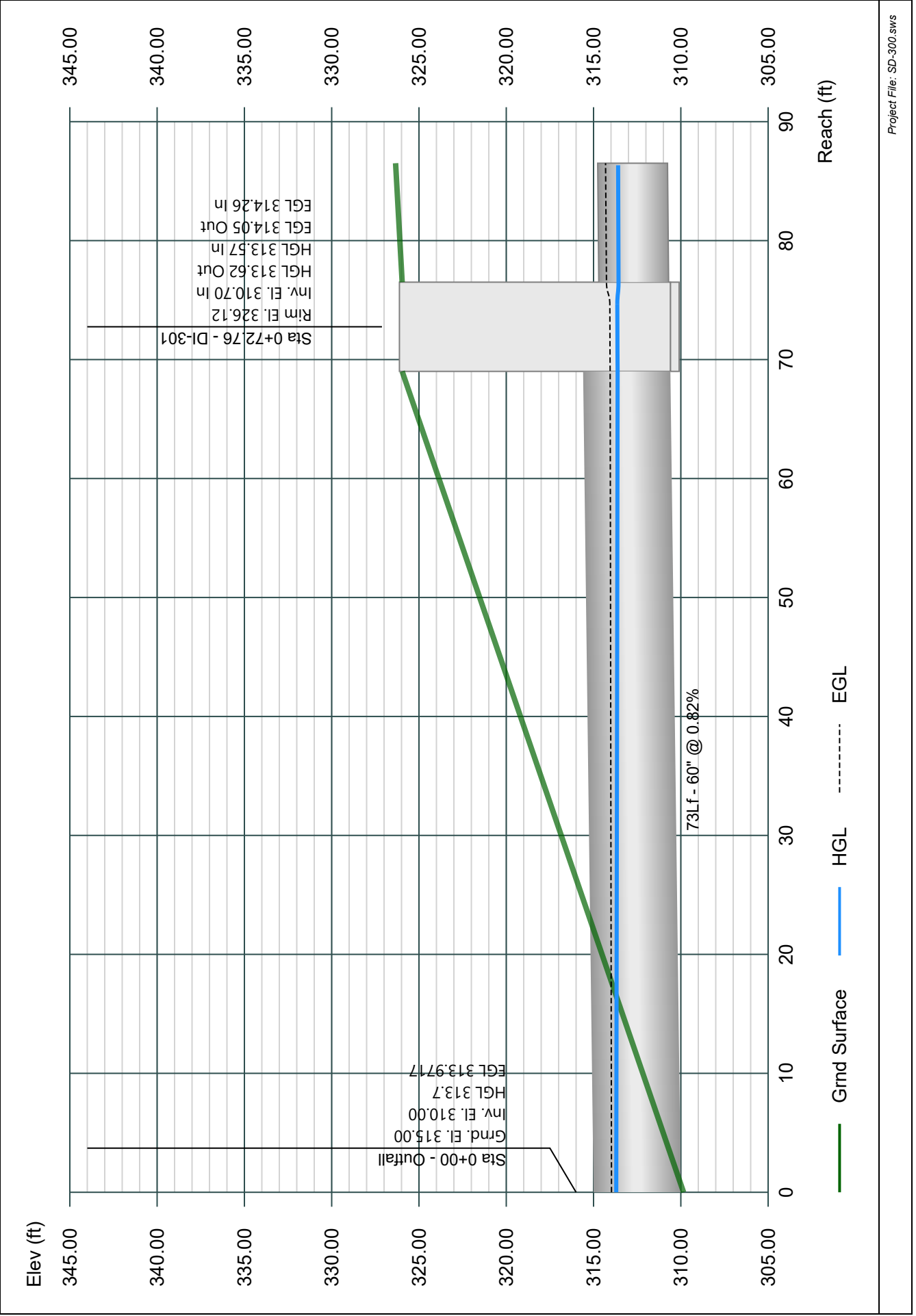
Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
Line 67	23.50	0.380	0.380	0.75	0.29	0.29	5.0	5.00	7.21	2.06	5.96	3.74	15	0.85	321.40	321.20	321.97	321.77	326.22	326.69	67

Line 1 - 300-301

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

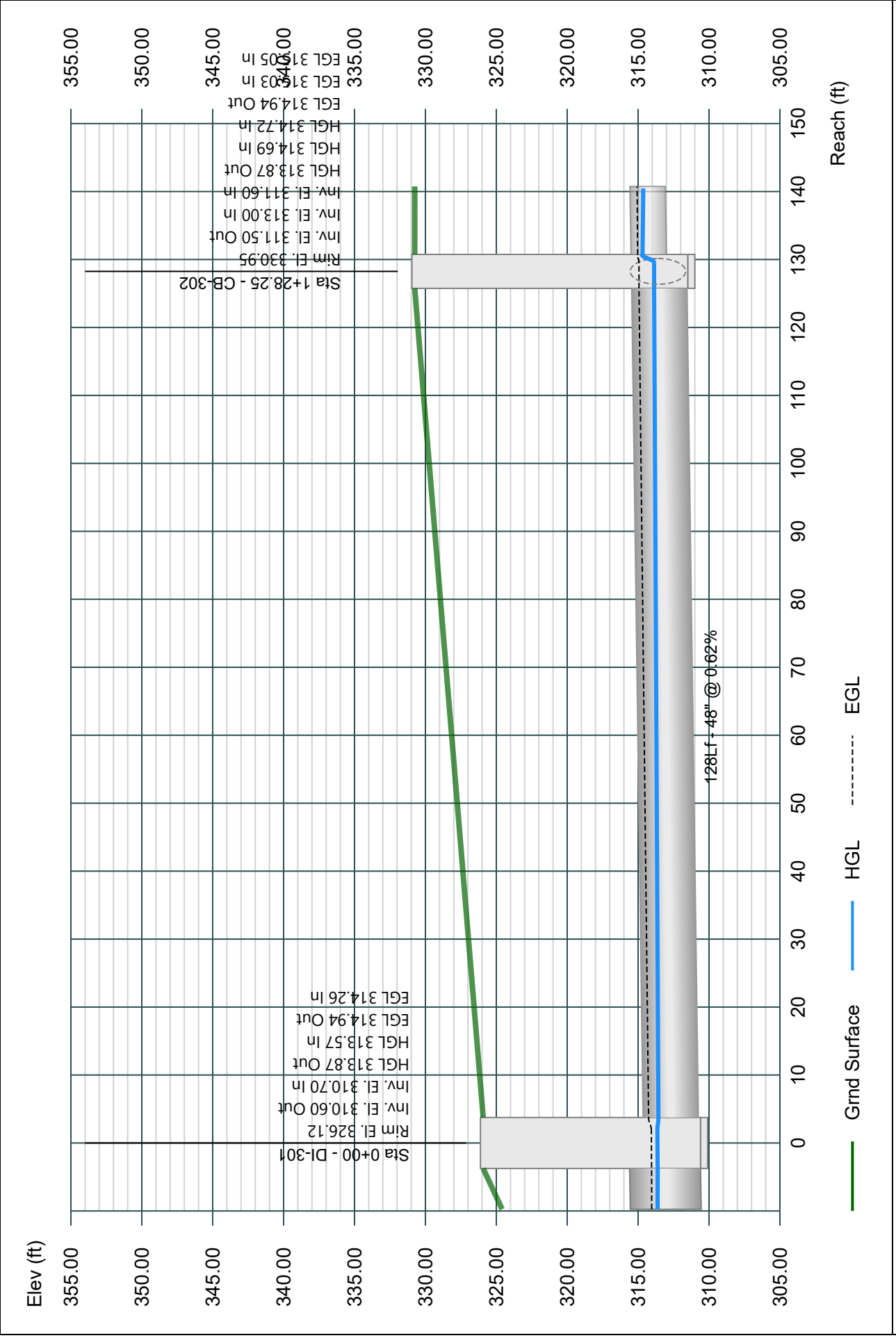


Line 2 - 301-302

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

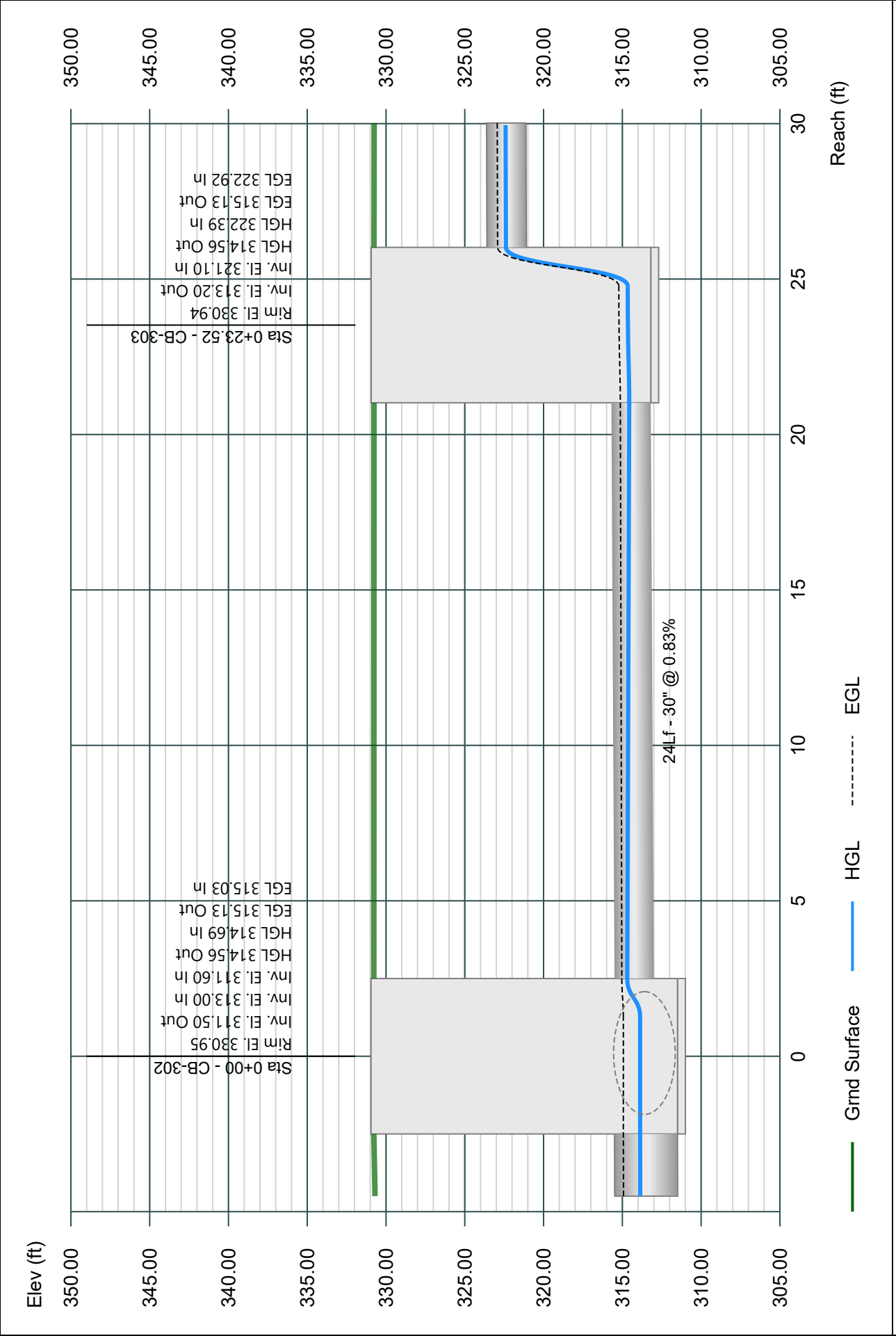


Line 3 - 302-303

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

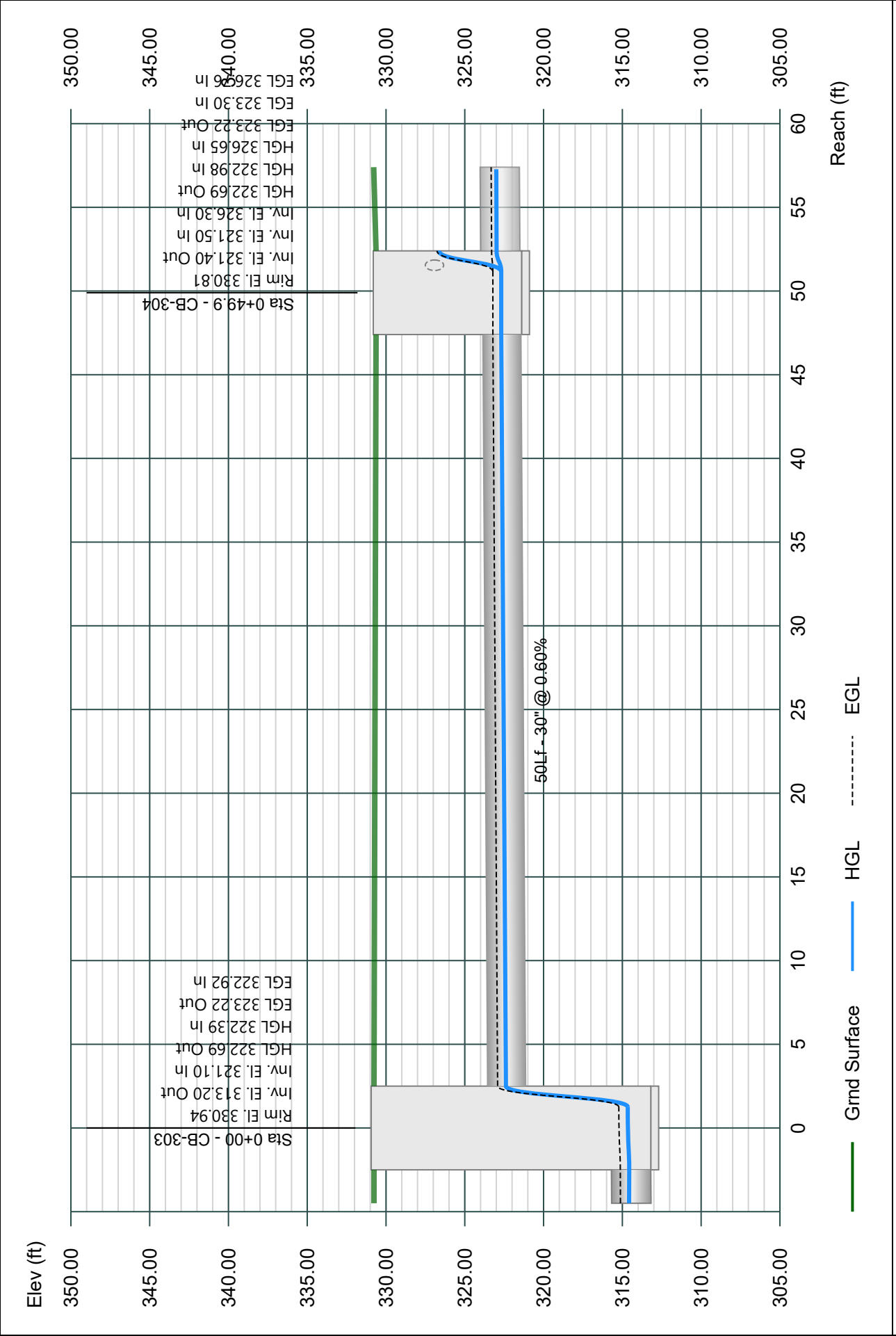


Line 4 - 303-304

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

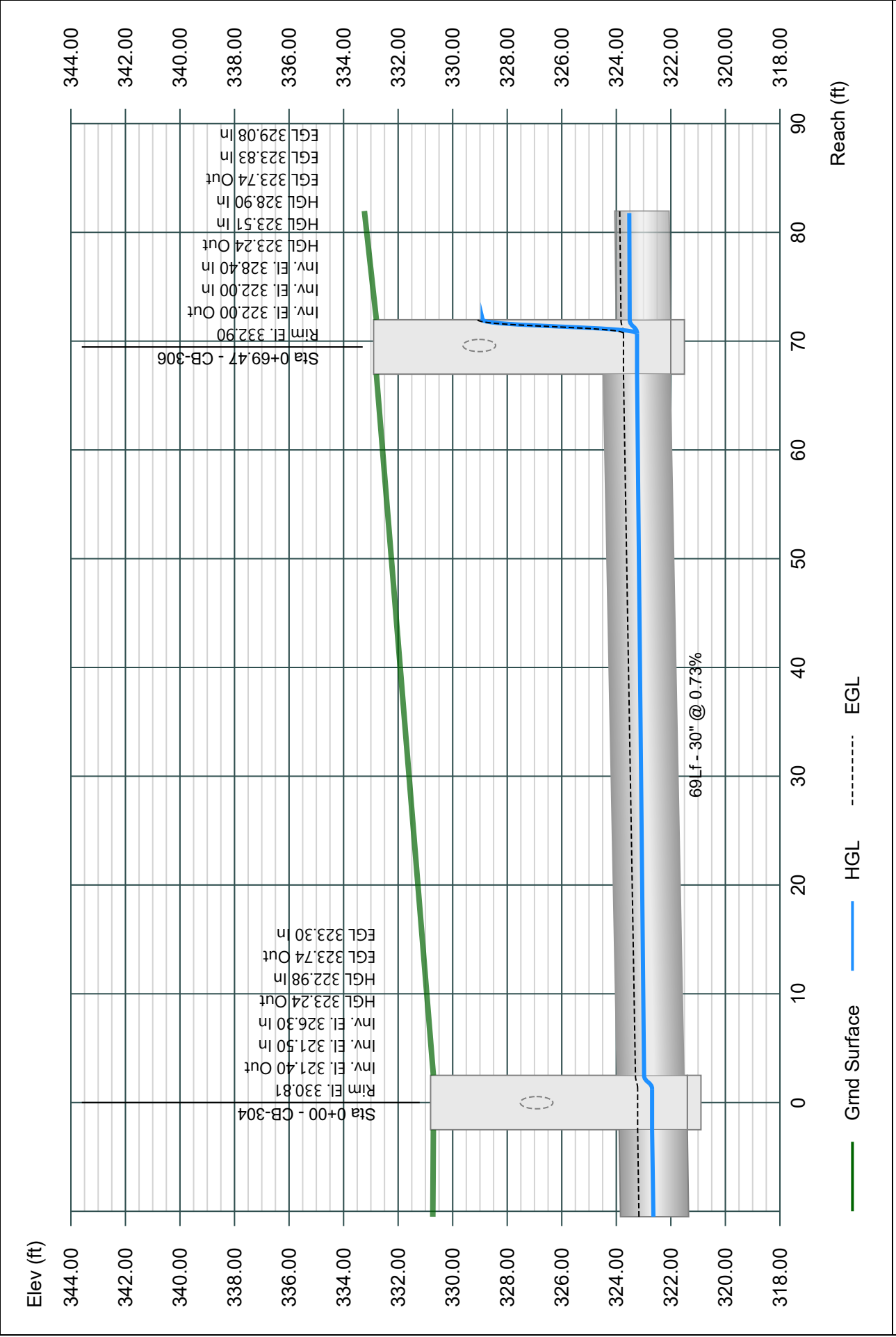


Line 5 - 304-306

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

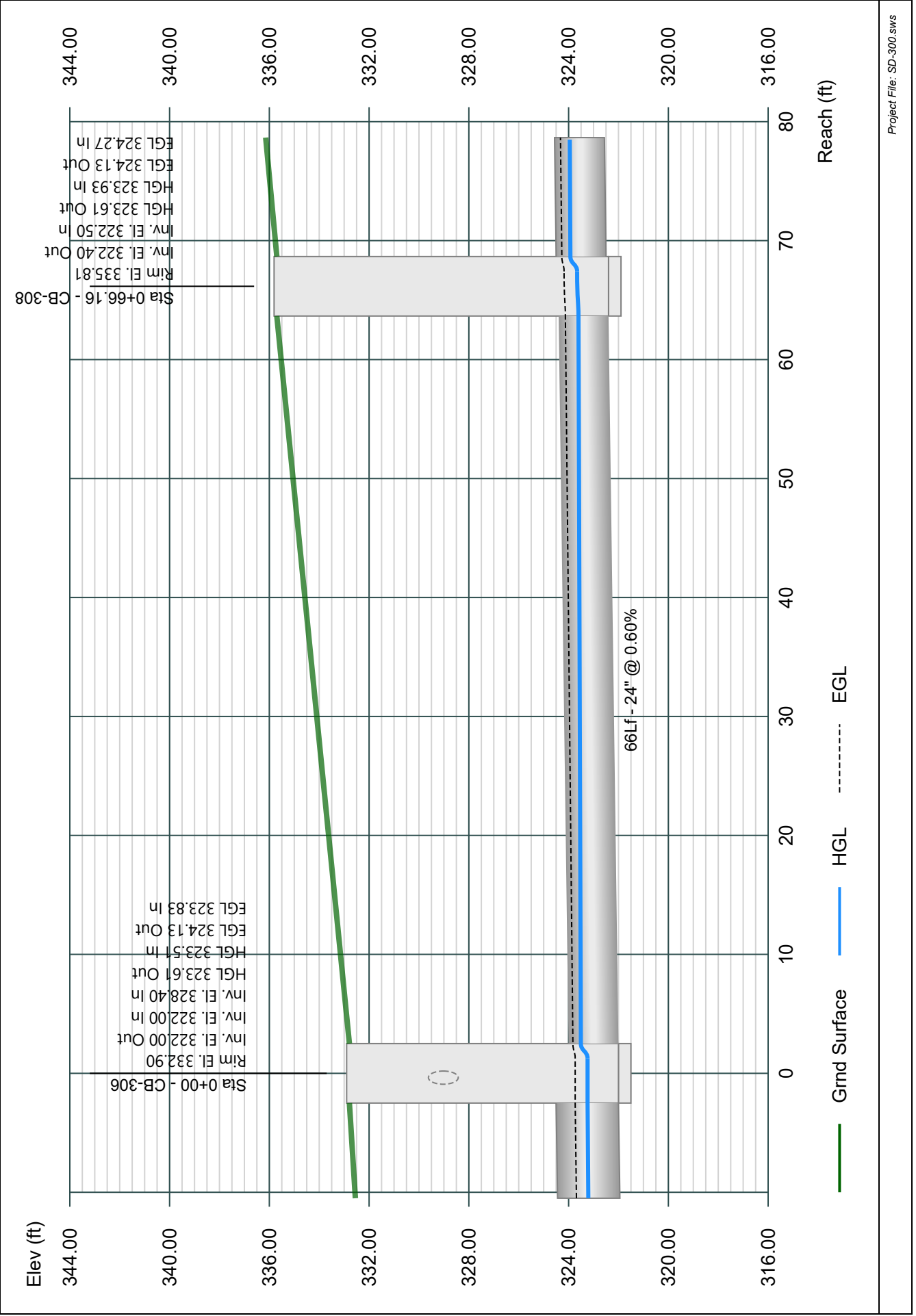


Line 6 - 306-308

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

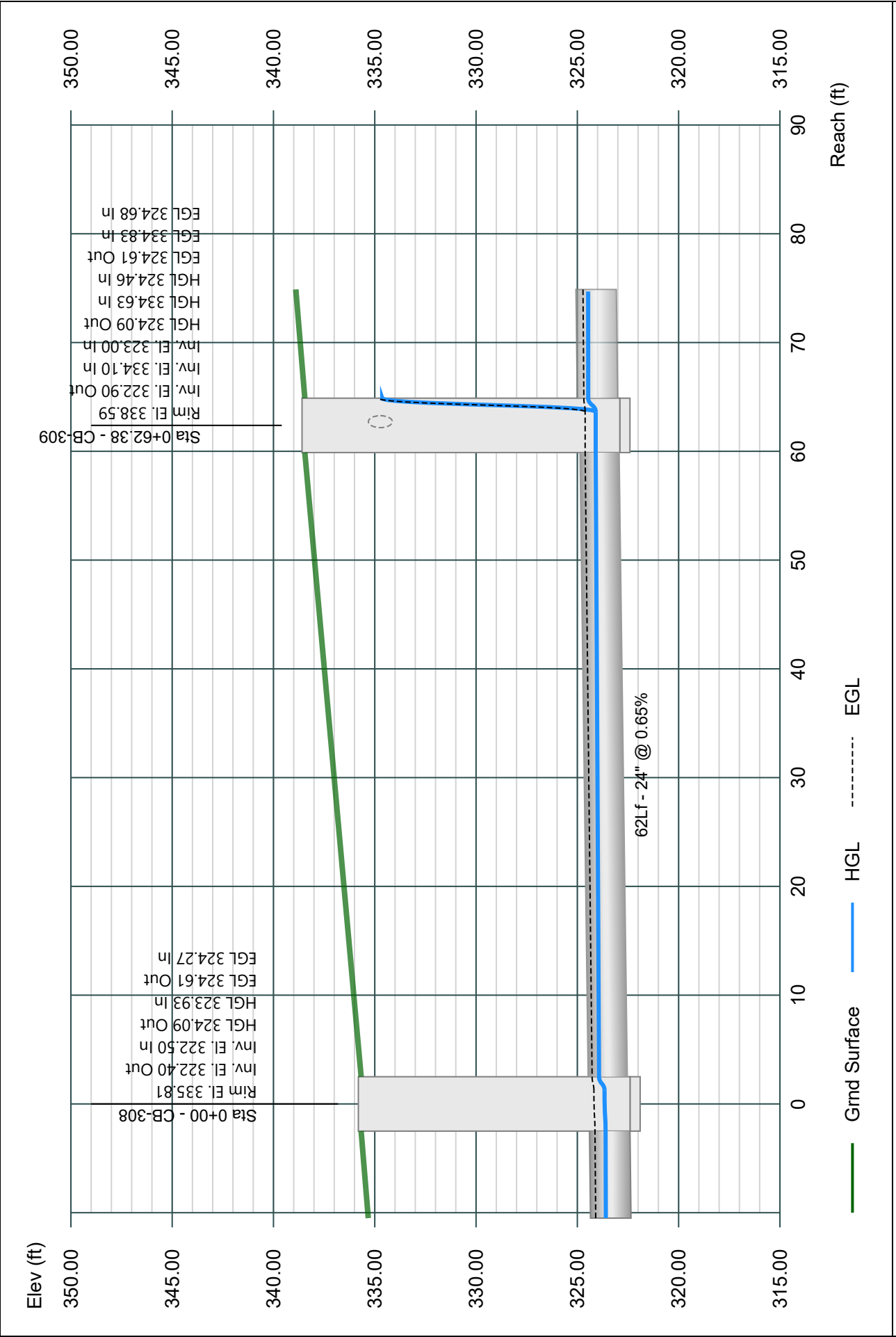


Line 7 - 308-310

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

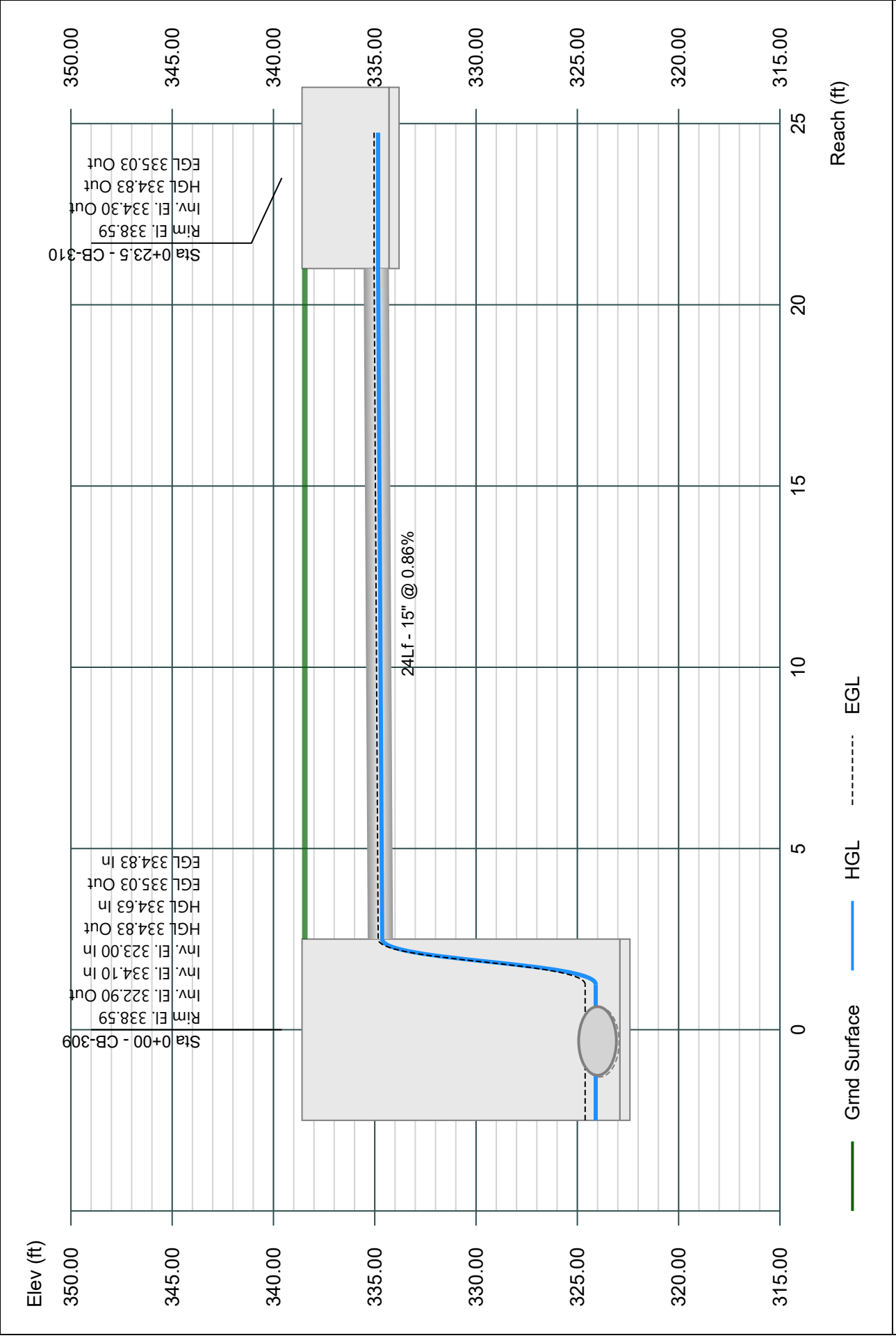


Line 8 - 309-310

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

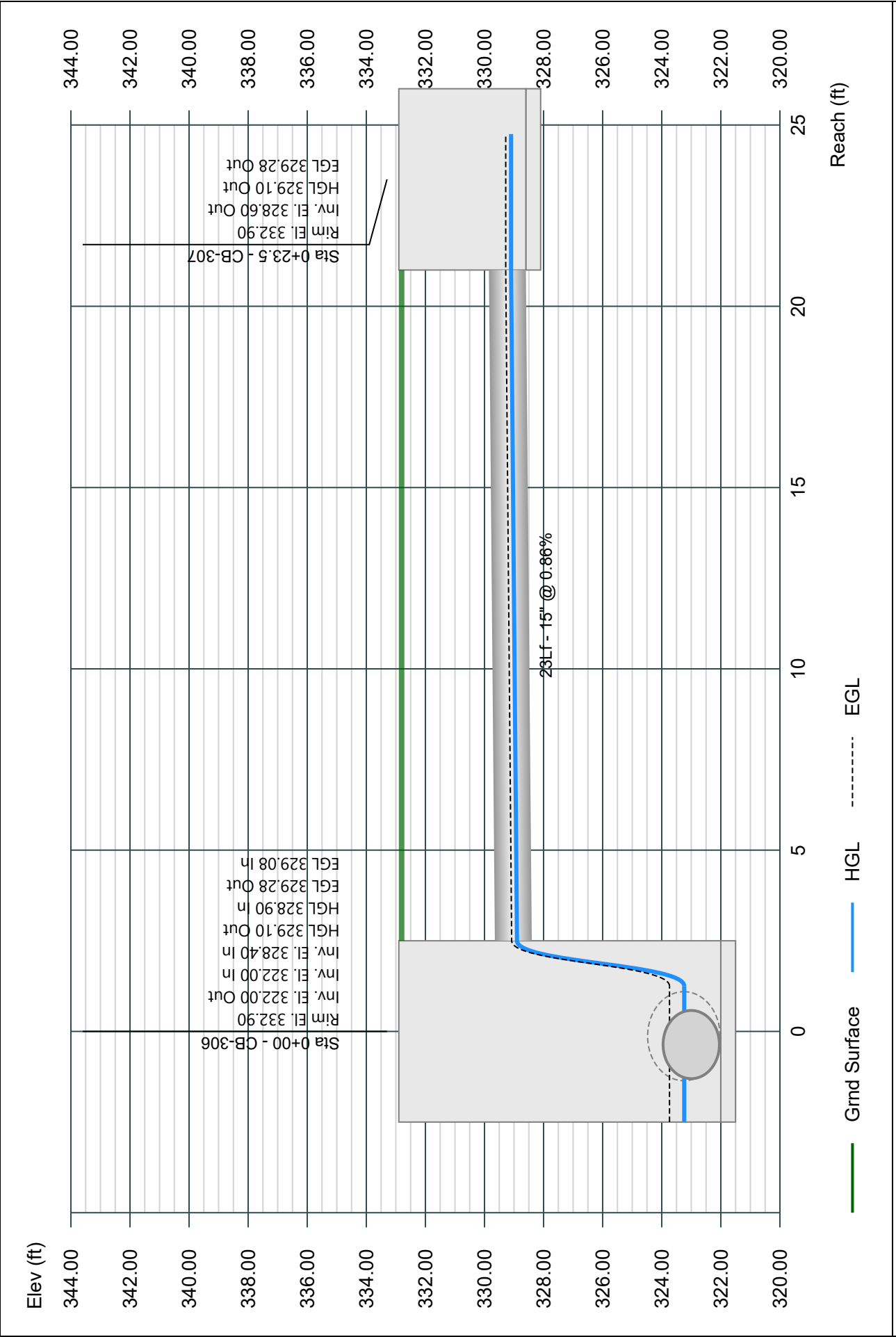


Line 9 - 306-307

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

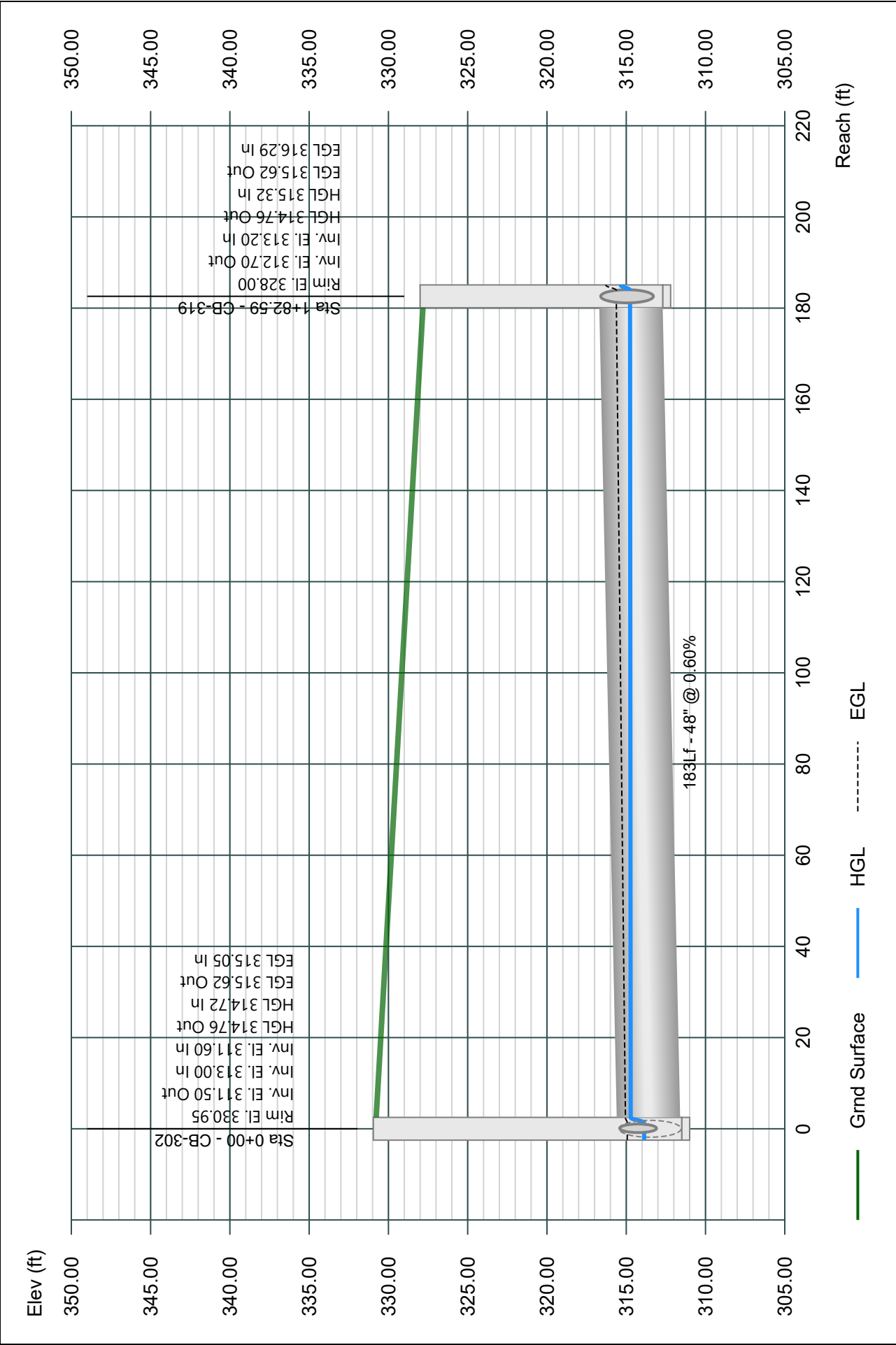


Line 10 - 302-319

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

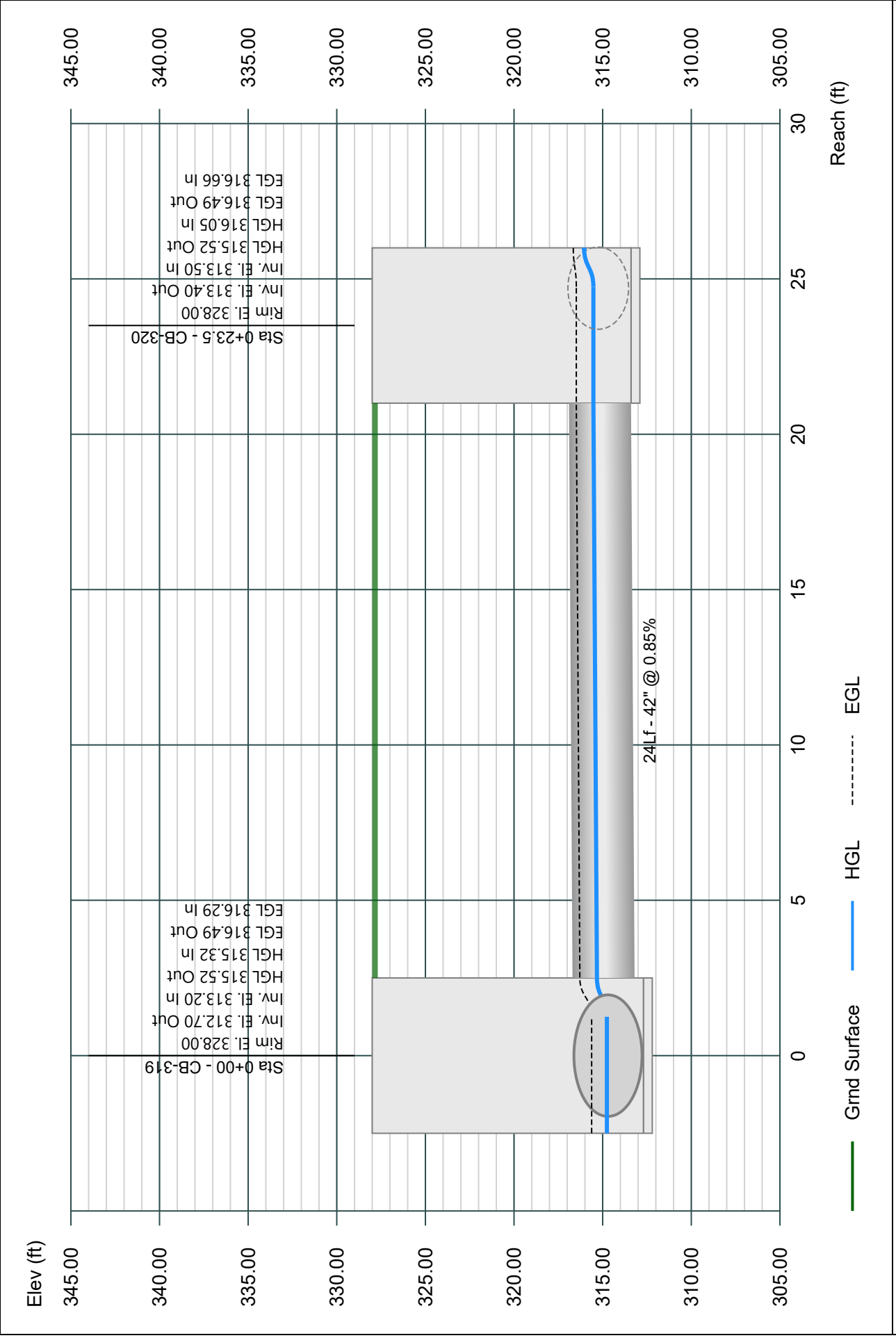


Line 11 - 319-320

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

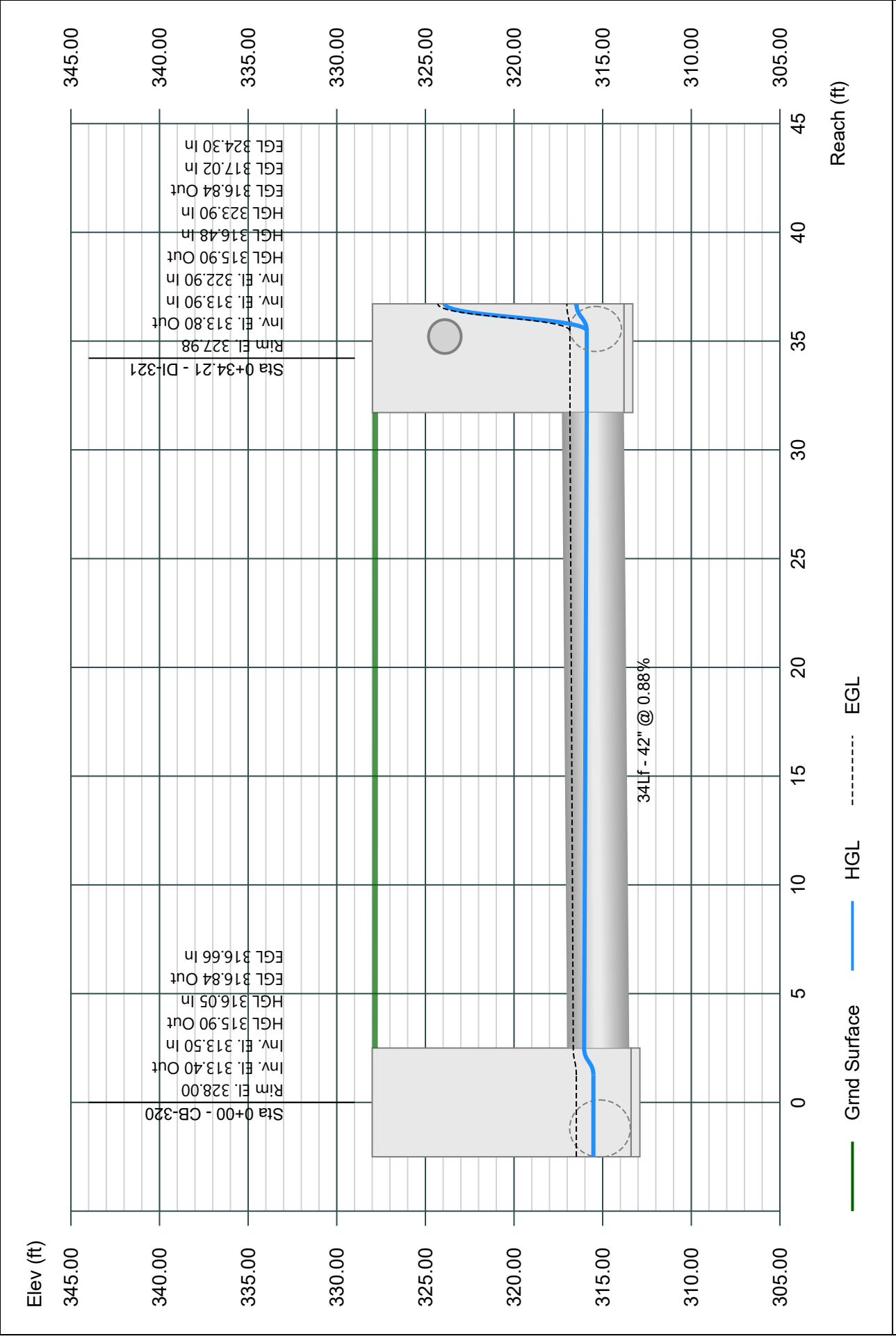


Line 12 - 320-321

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

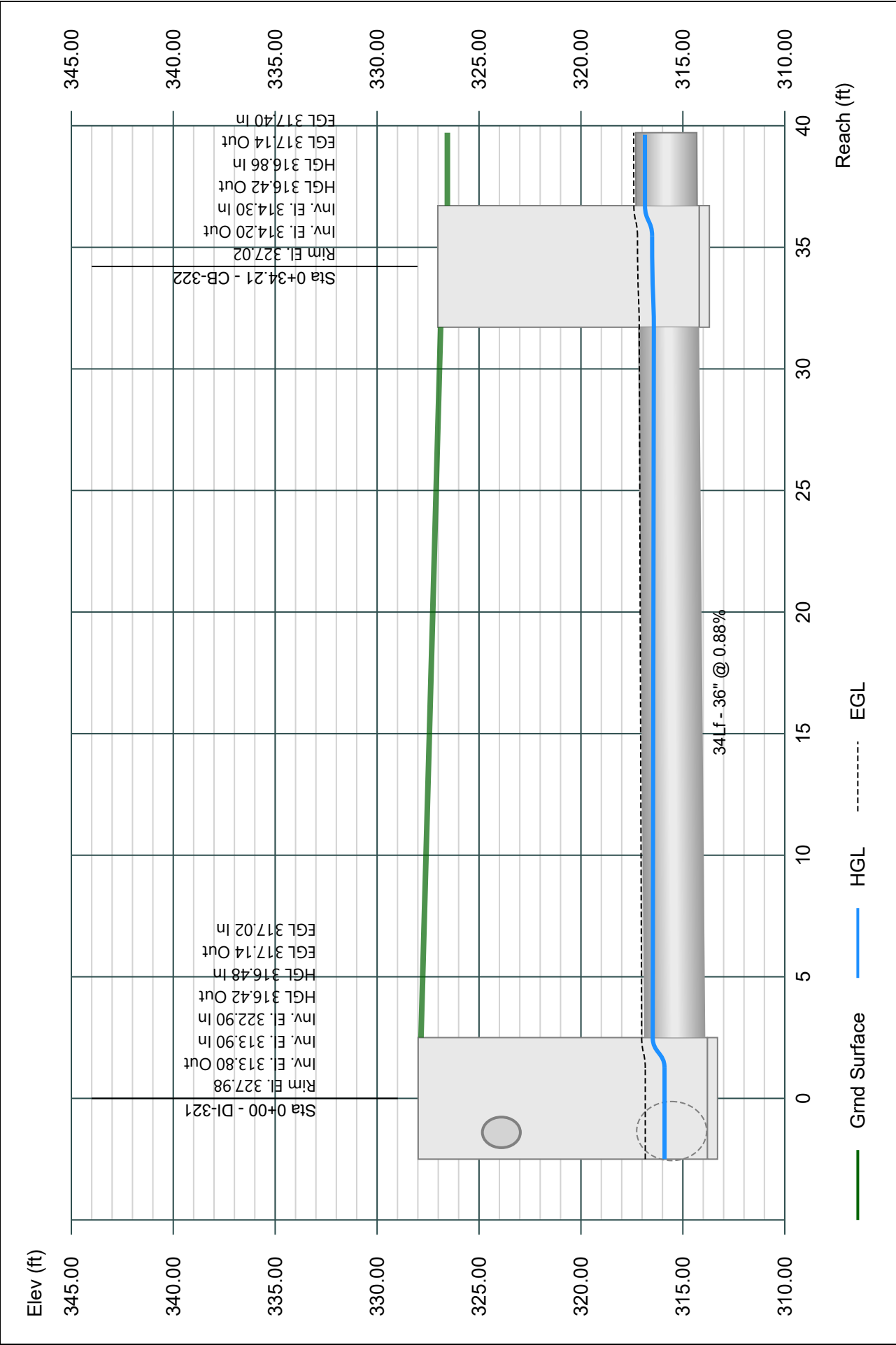


Line 13 - 321-322

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

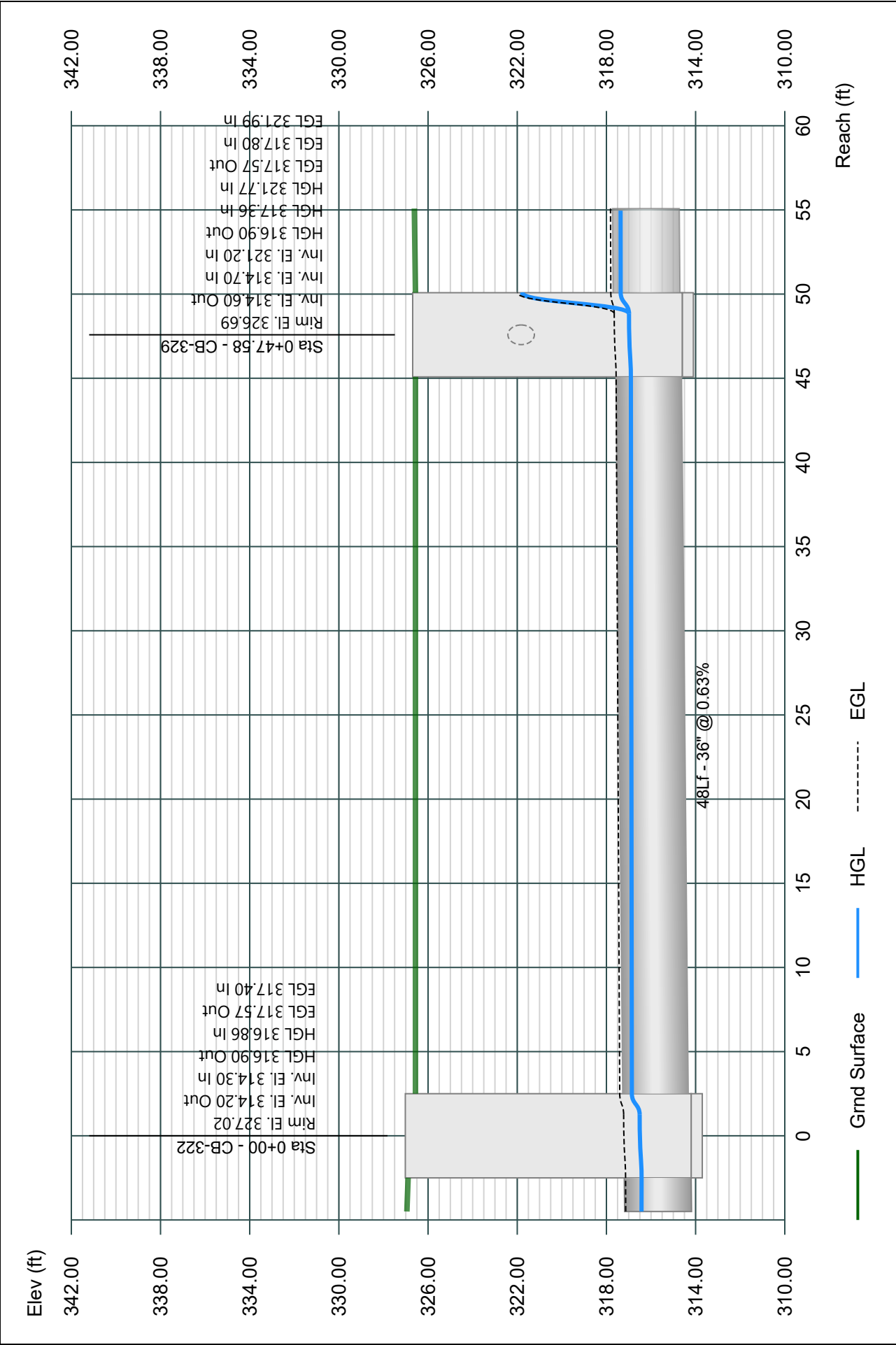


Line 14 - 328-329

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

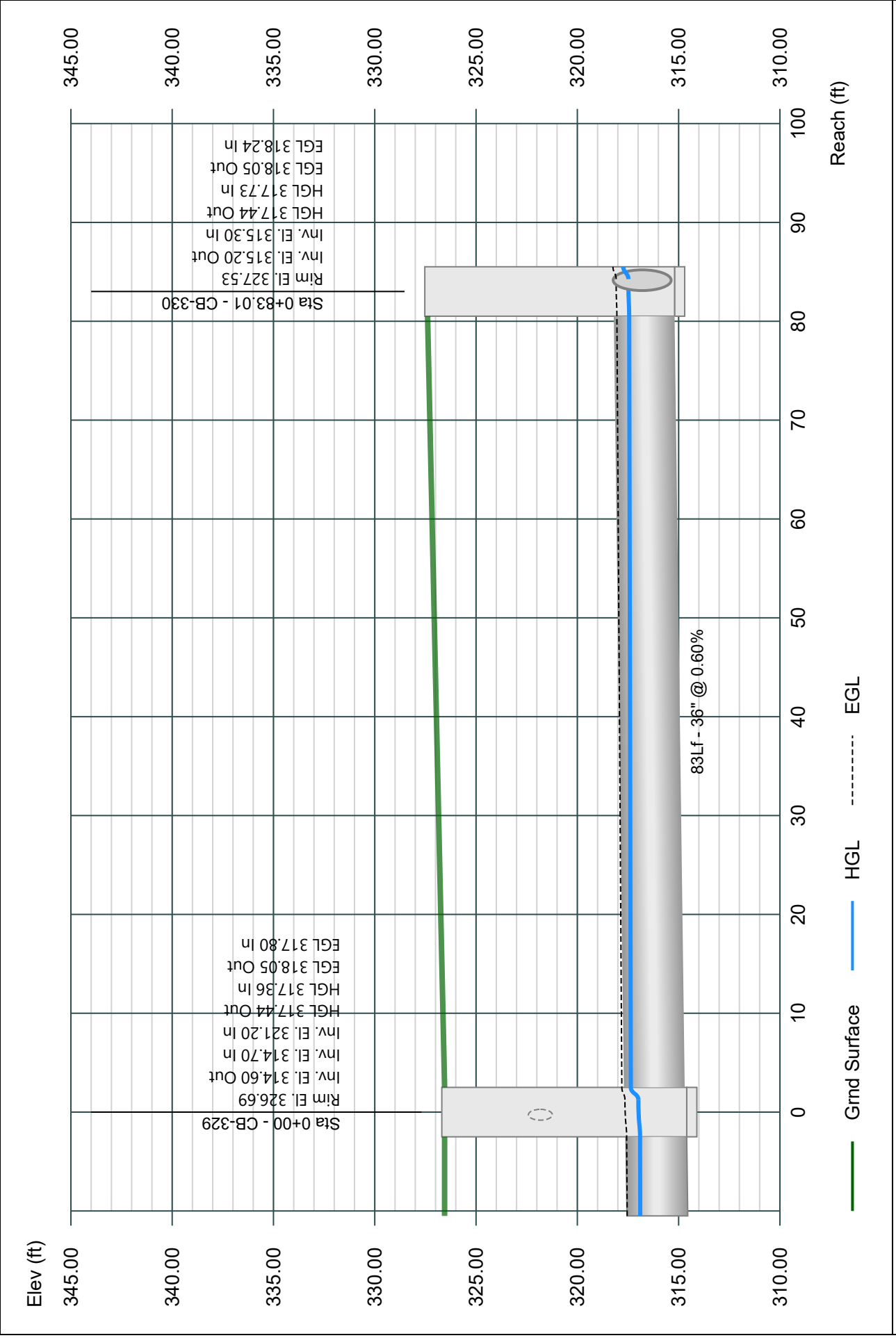


Line 15 - 329-330

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

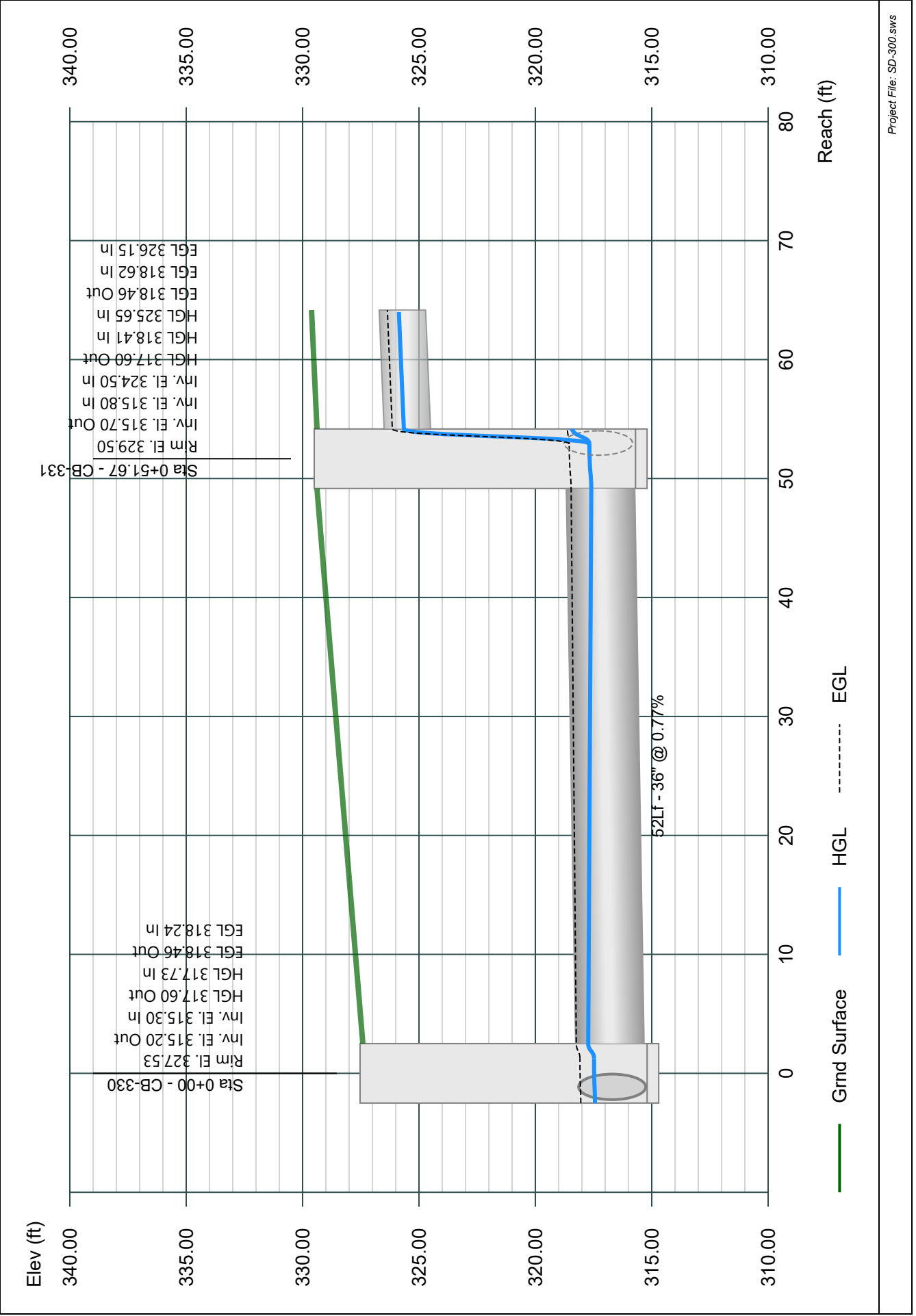


Line 16 - 330-331

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

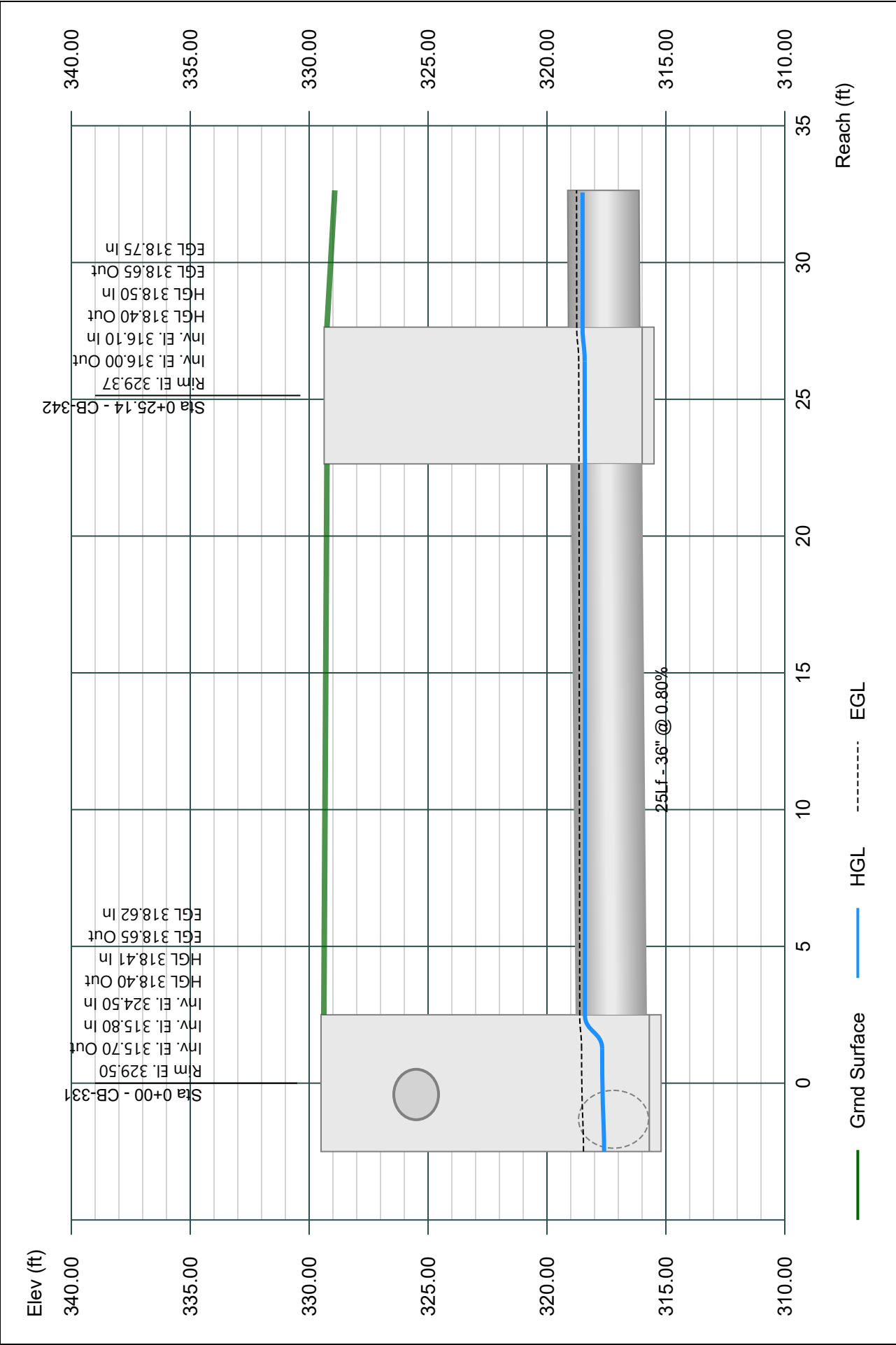


Line 17 - 331-342

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

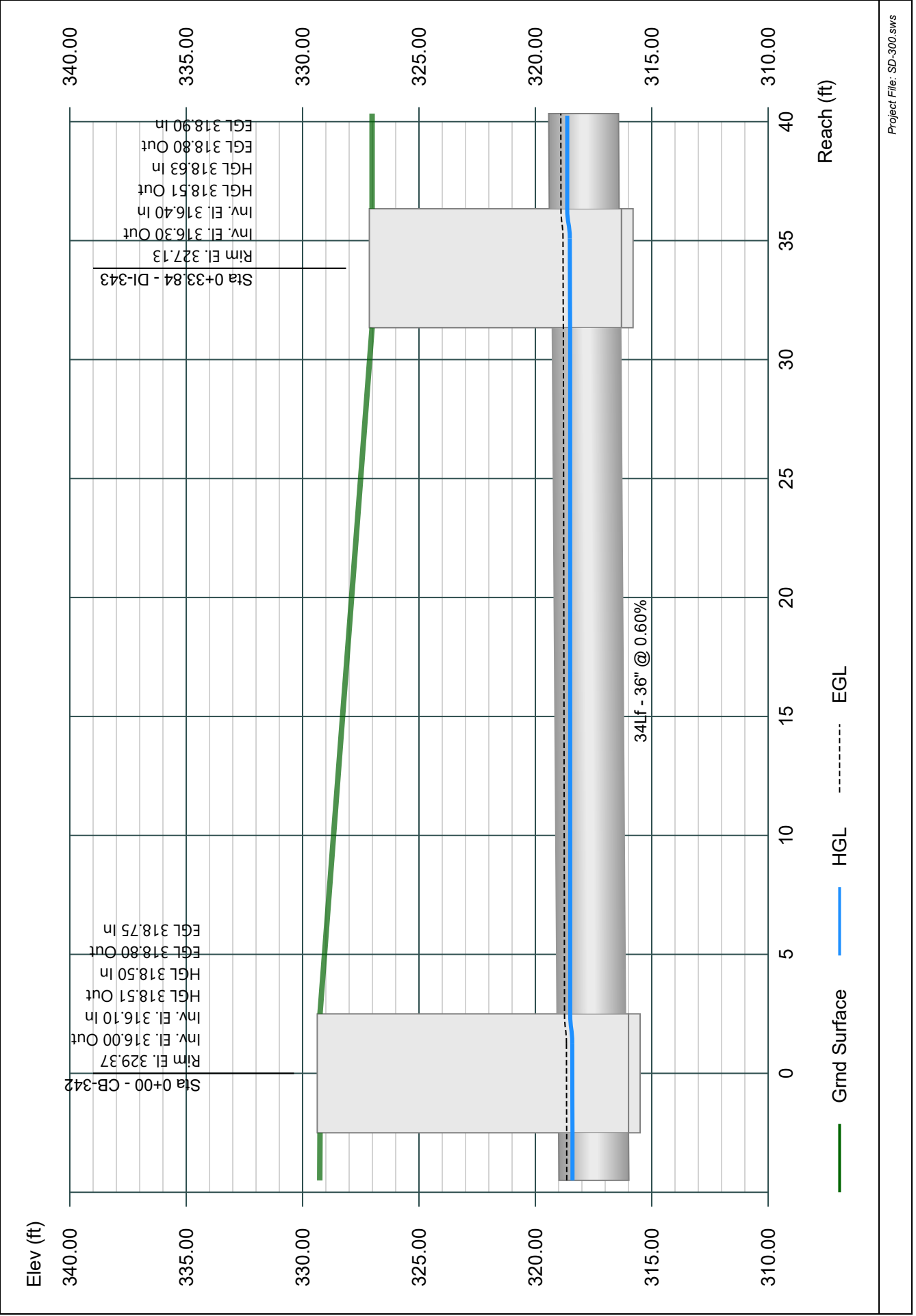


Line 18 - 342-343

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

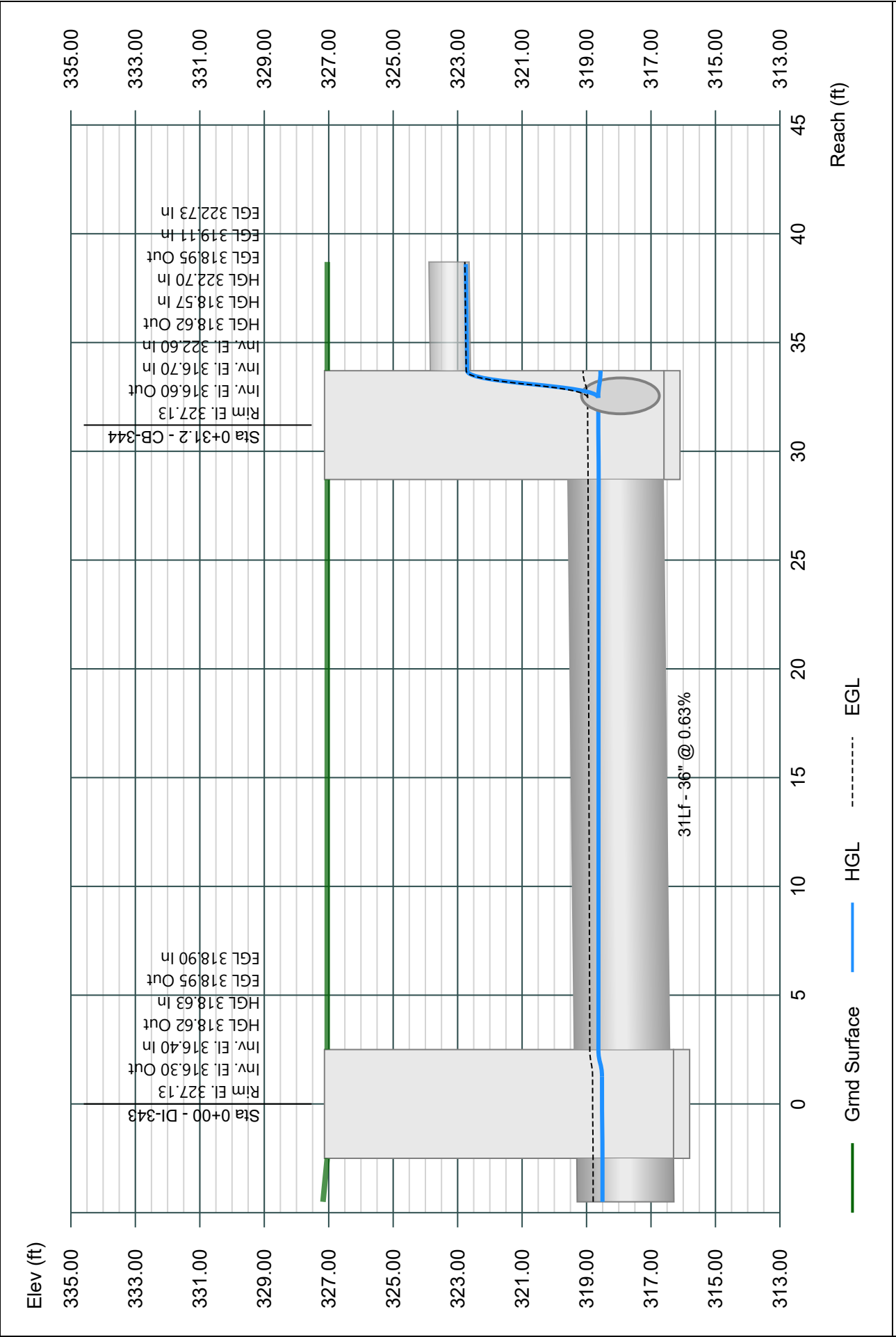


Line 19 - 343-344

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

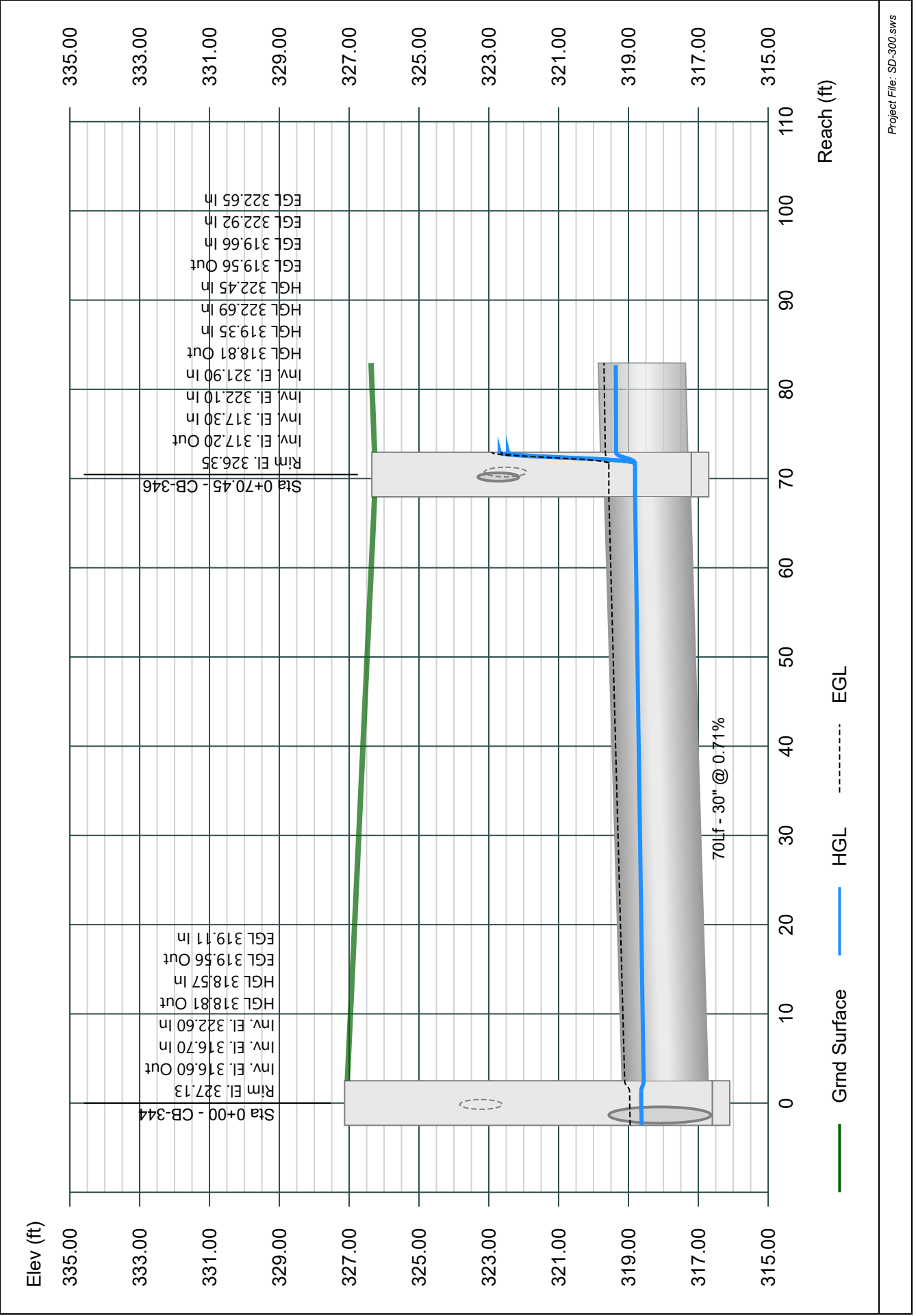


Line 20 - 344-346

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

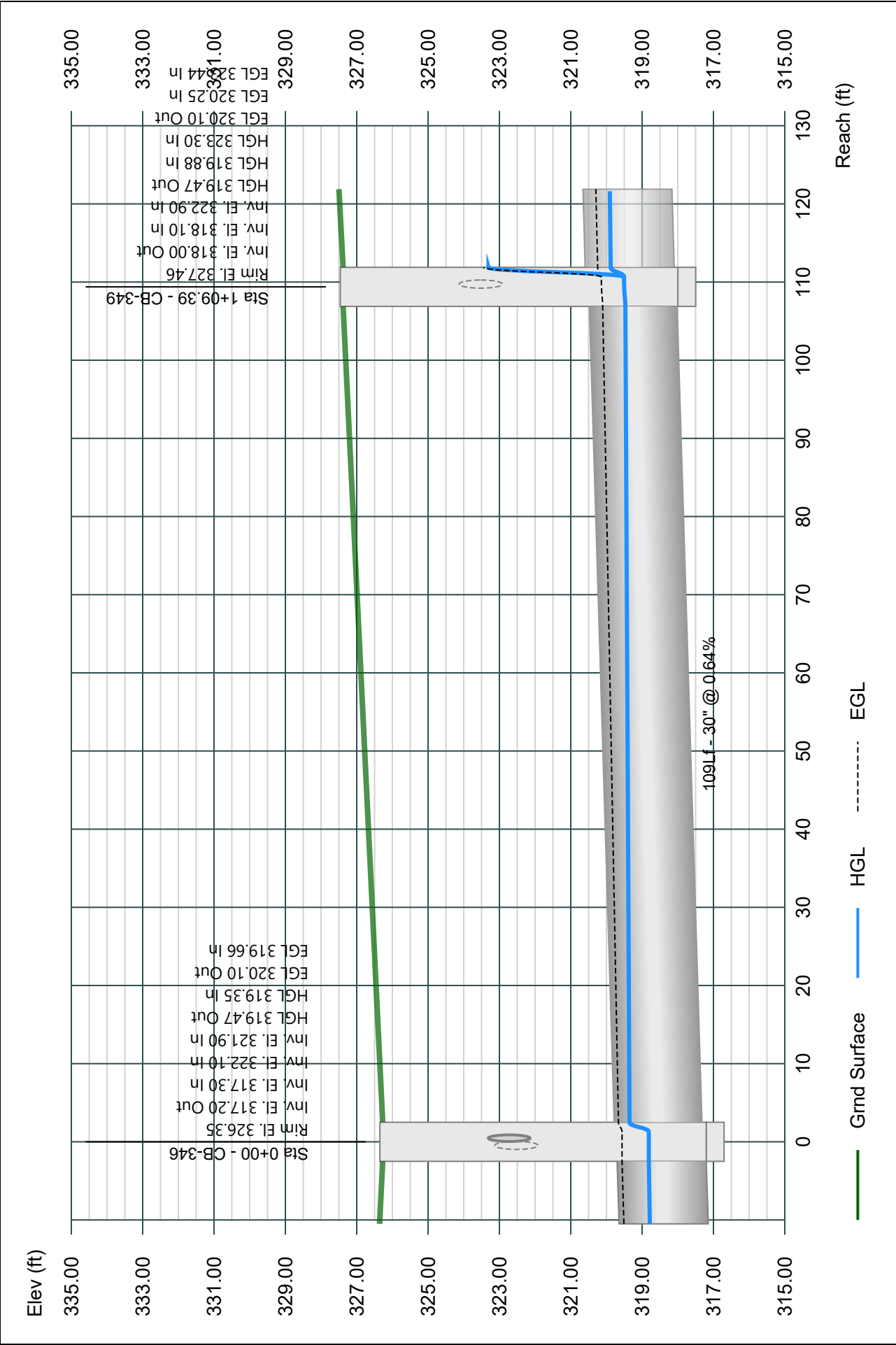


Line 21 - 346-349

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

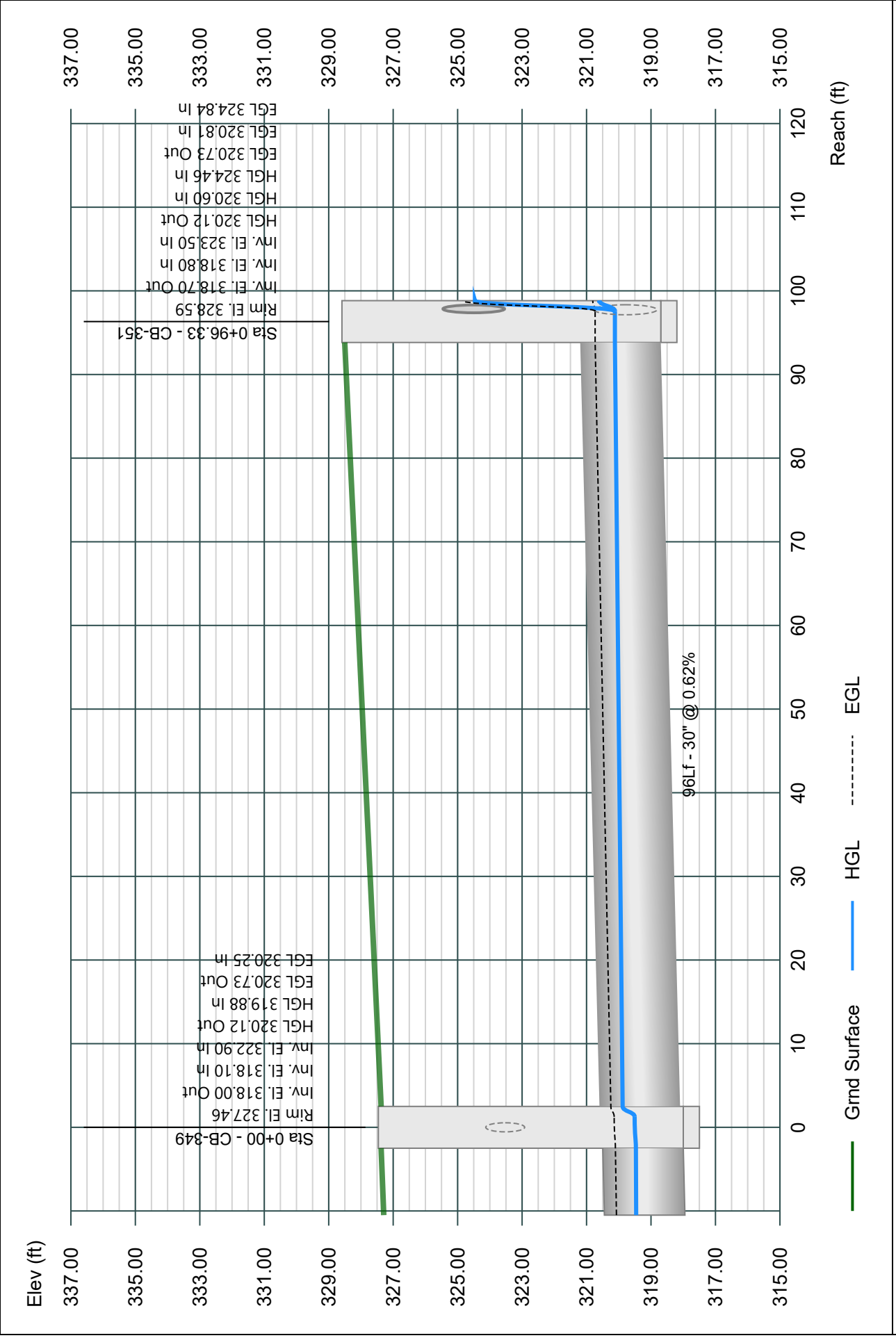


Line 22 - 349-351

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

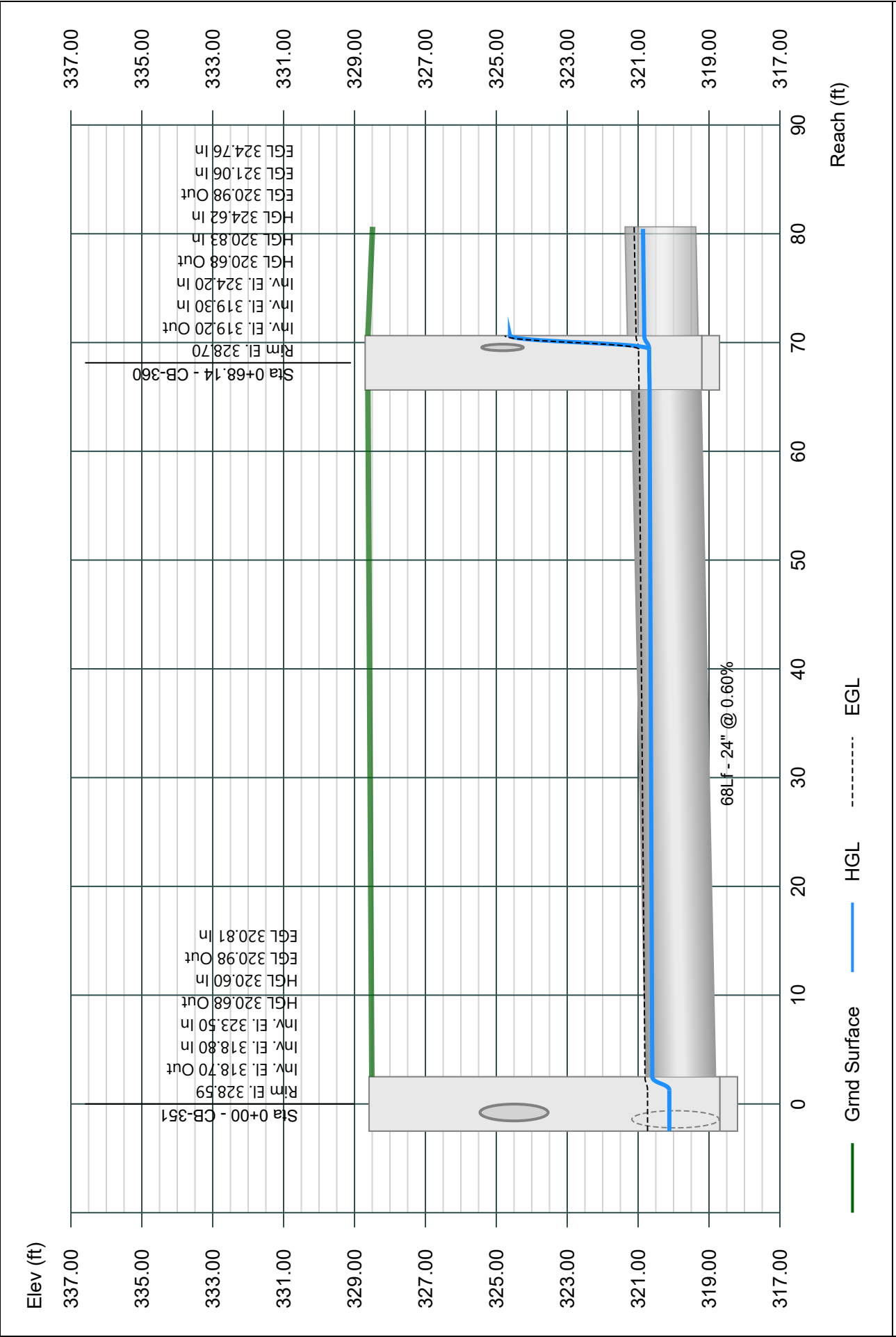


Line 23 - 351-360

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

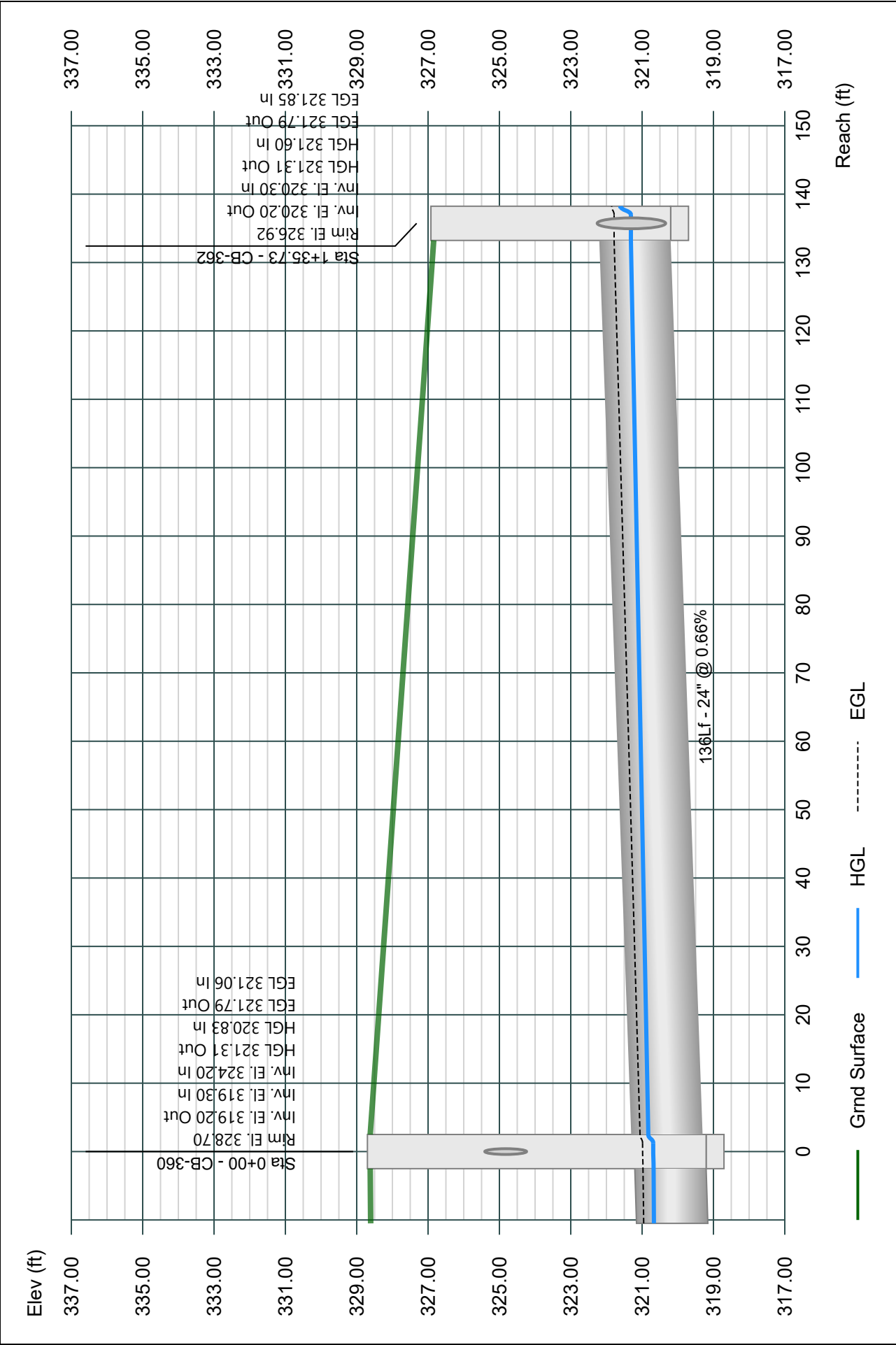
02-26-2024



Line 24 - 360-362

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

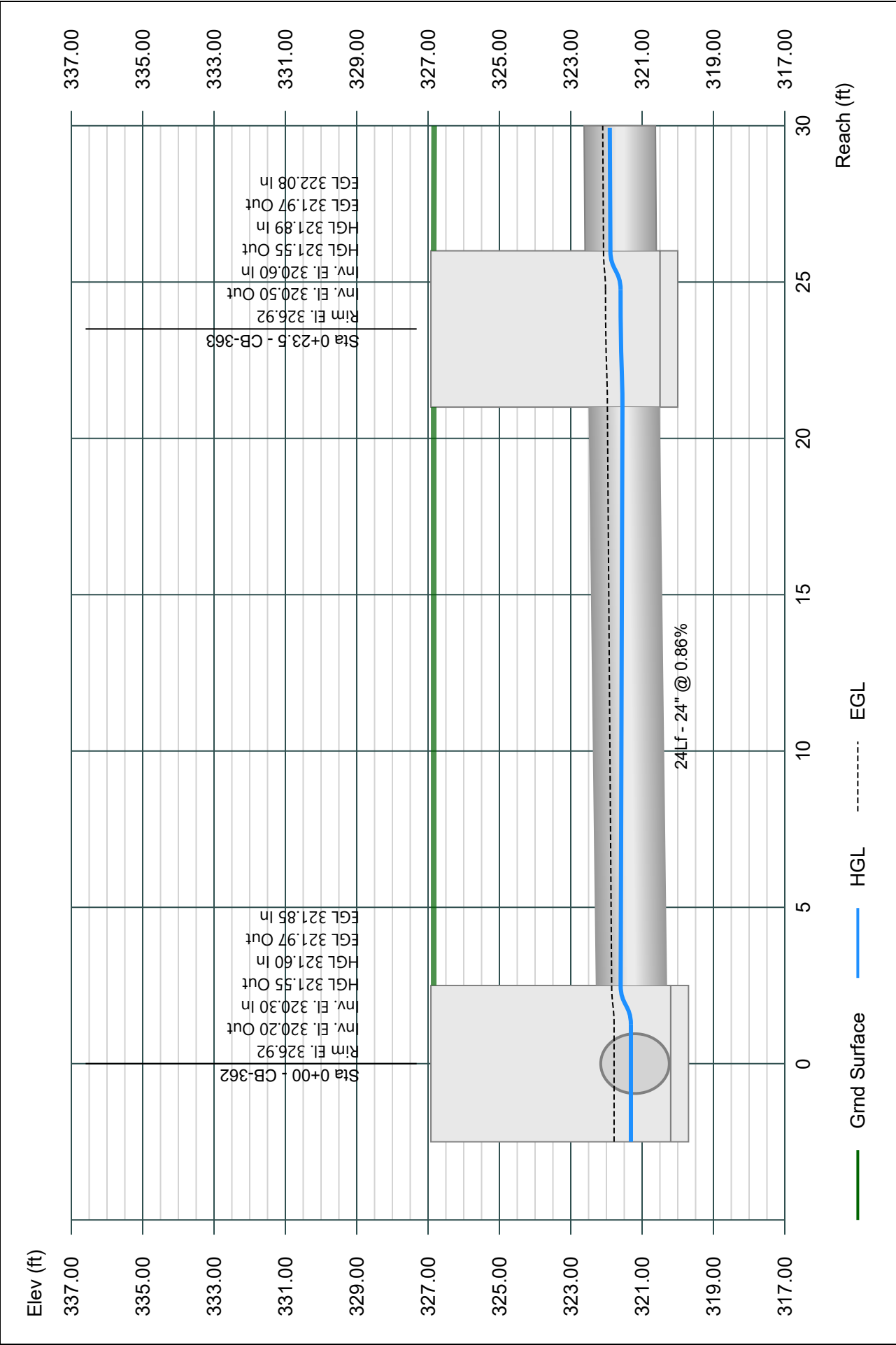


Line 25 - 362-363

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

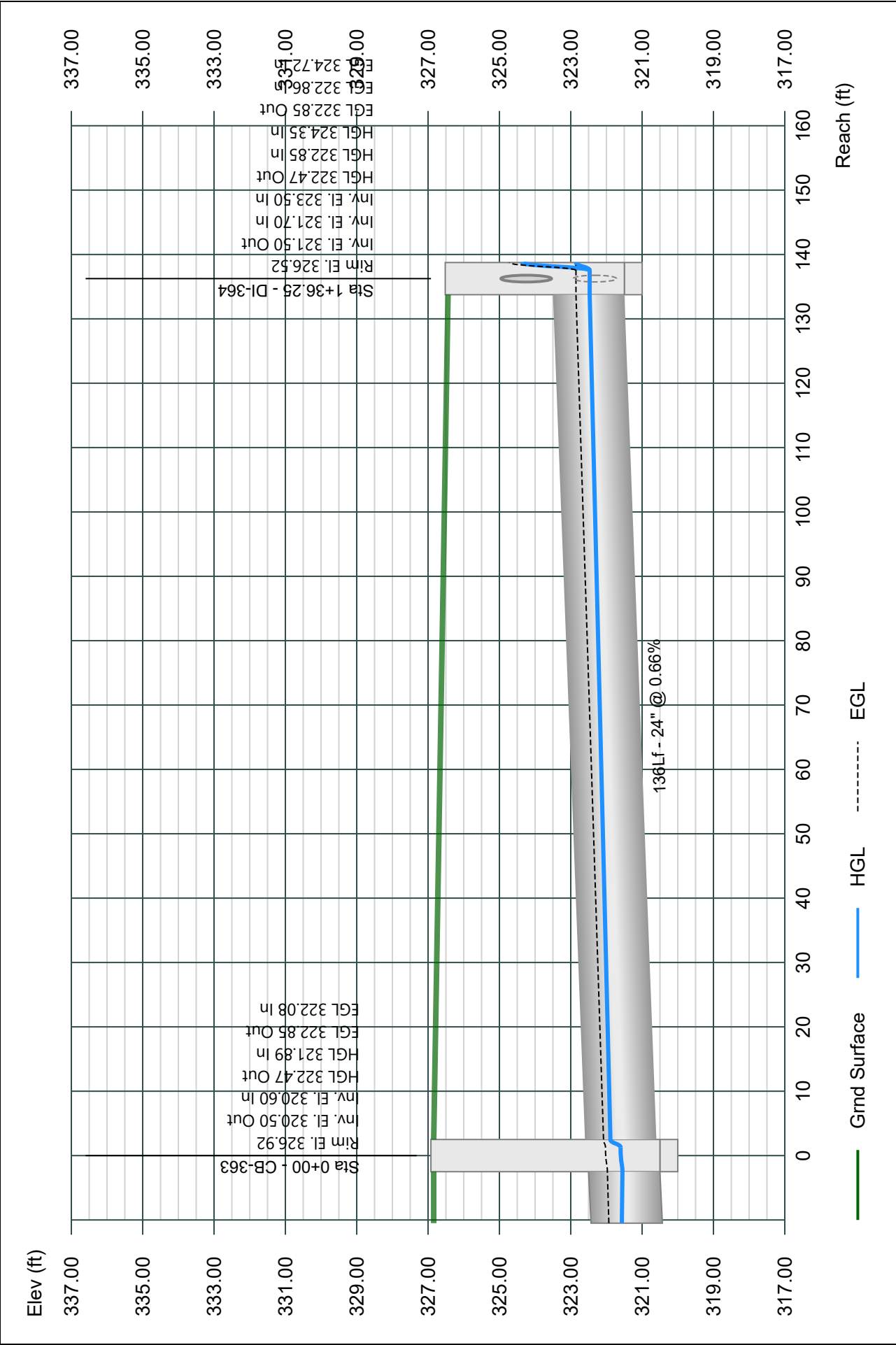


Line 26 - 363-364

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

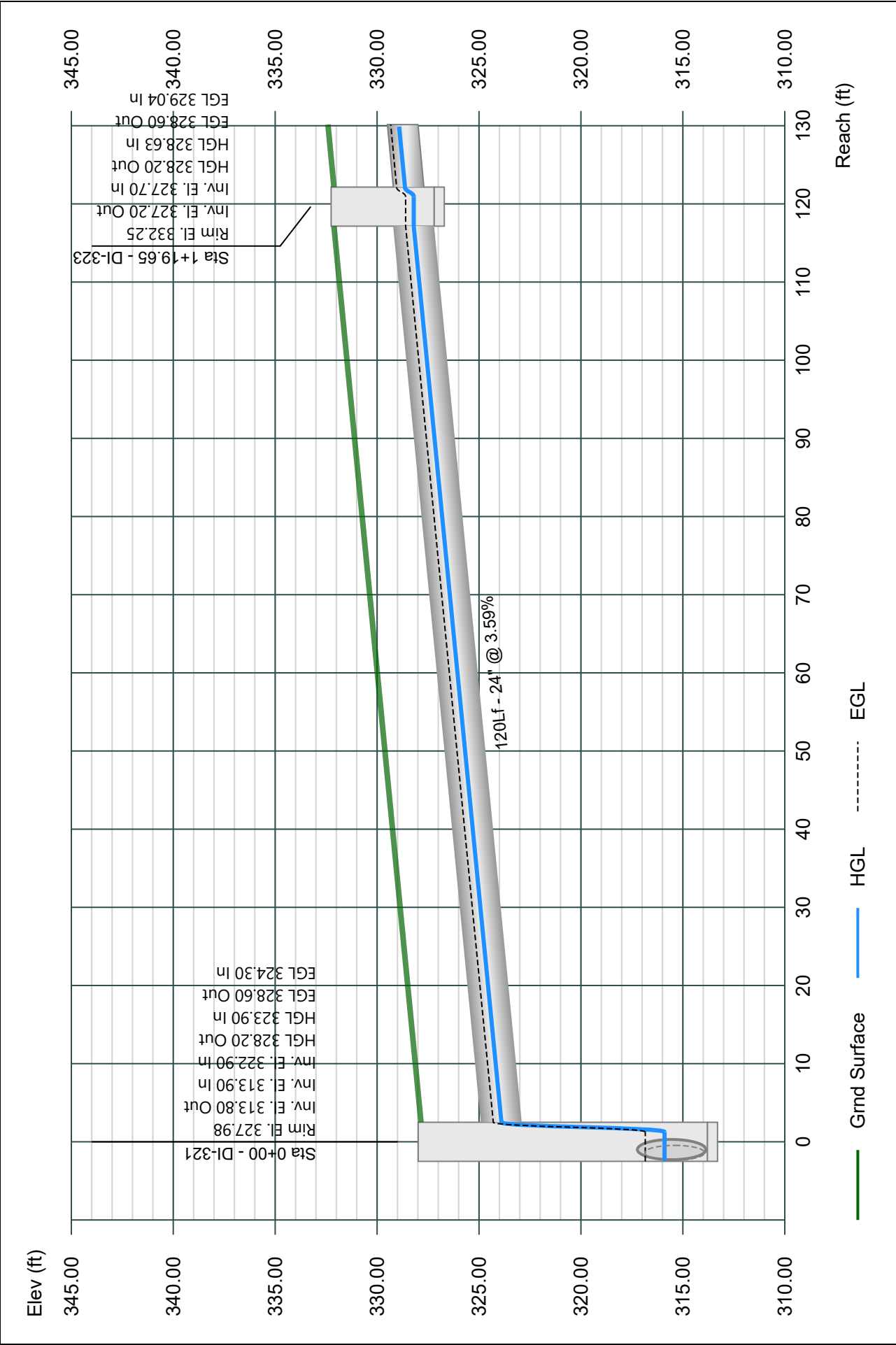


Line 27 - 321-323

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

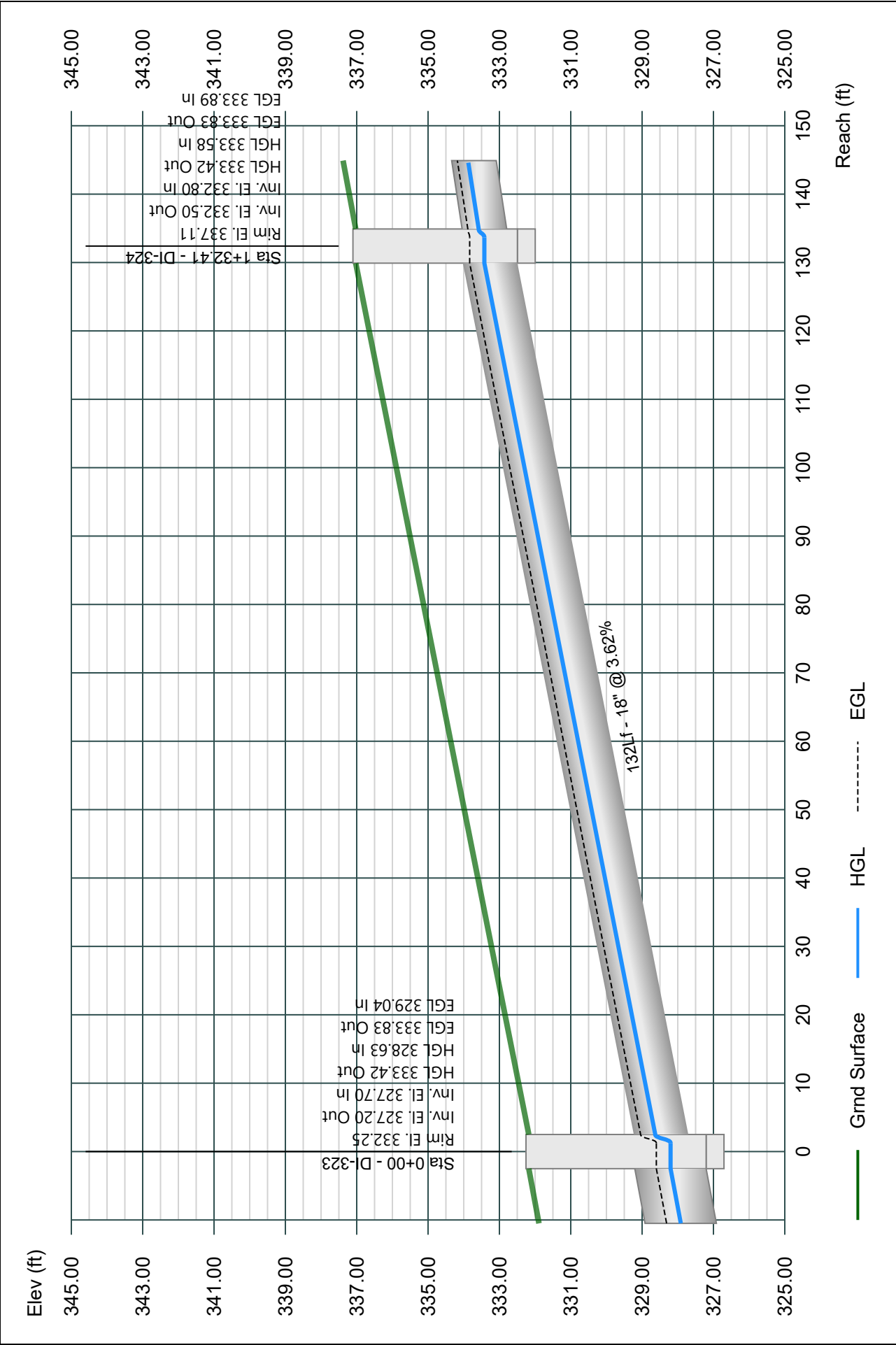


Line 28 - 323-324

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

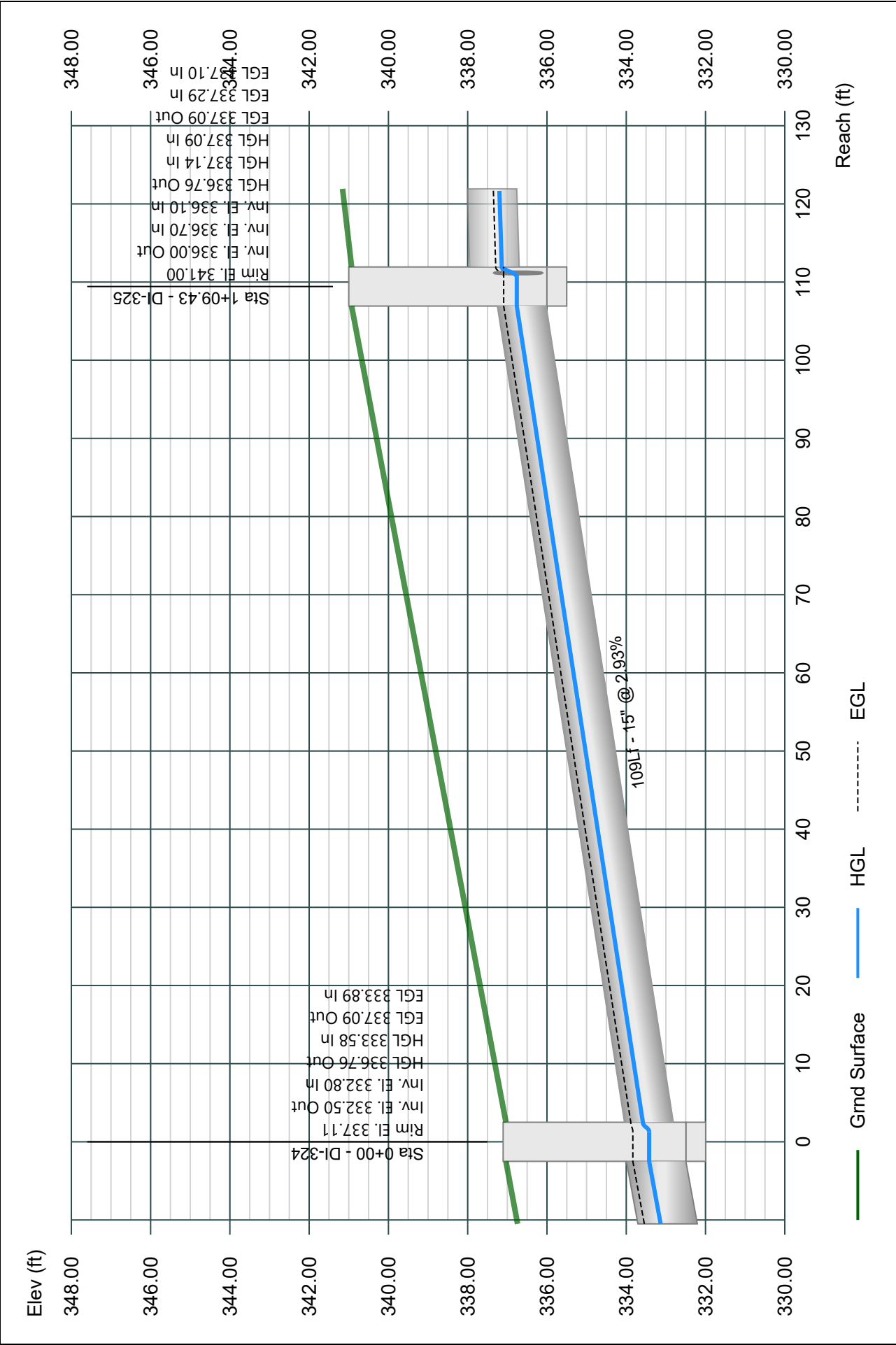


Line 29 - 324-325

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

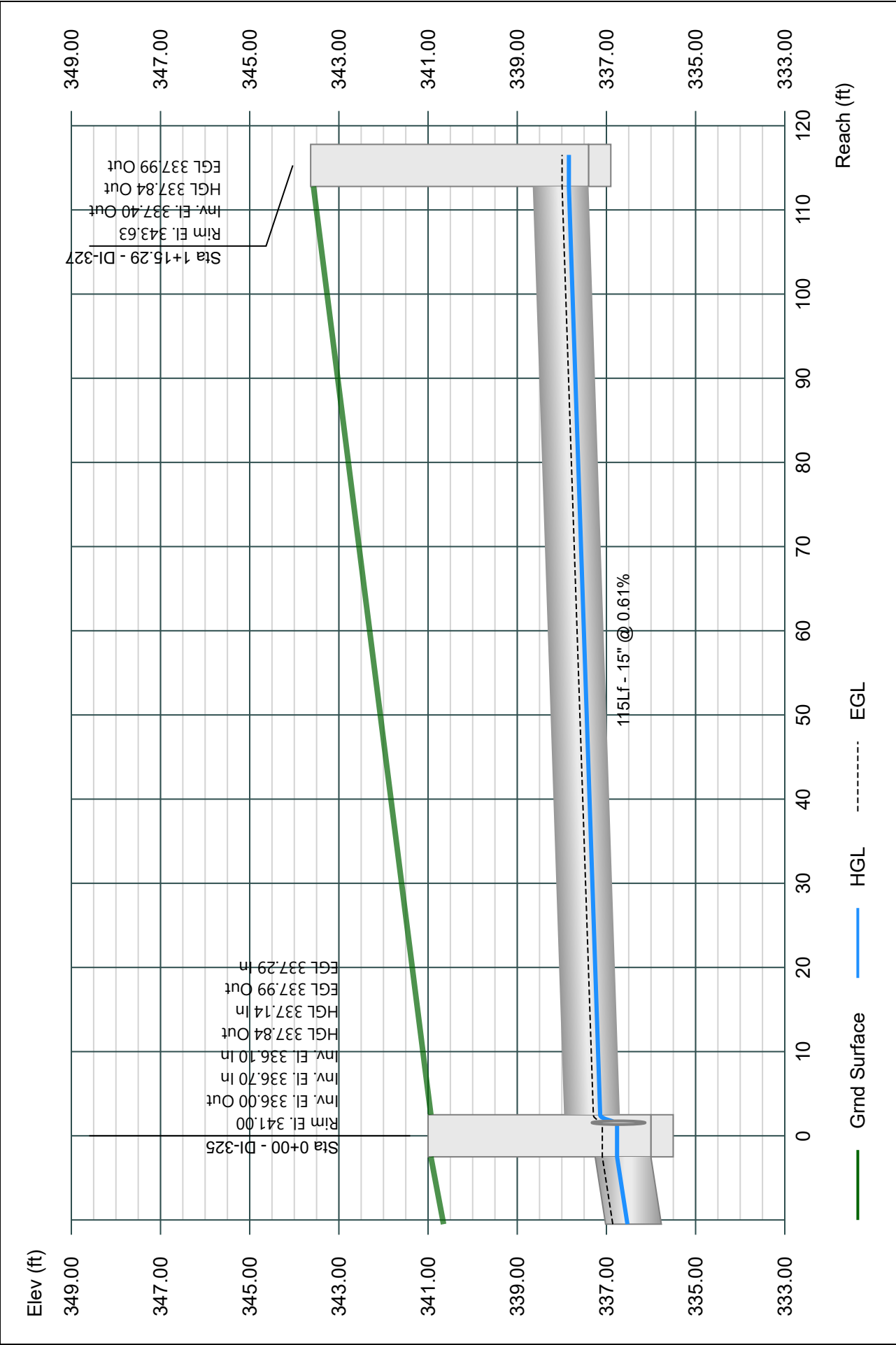
02-26-2024



Line 30 - 325-327

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

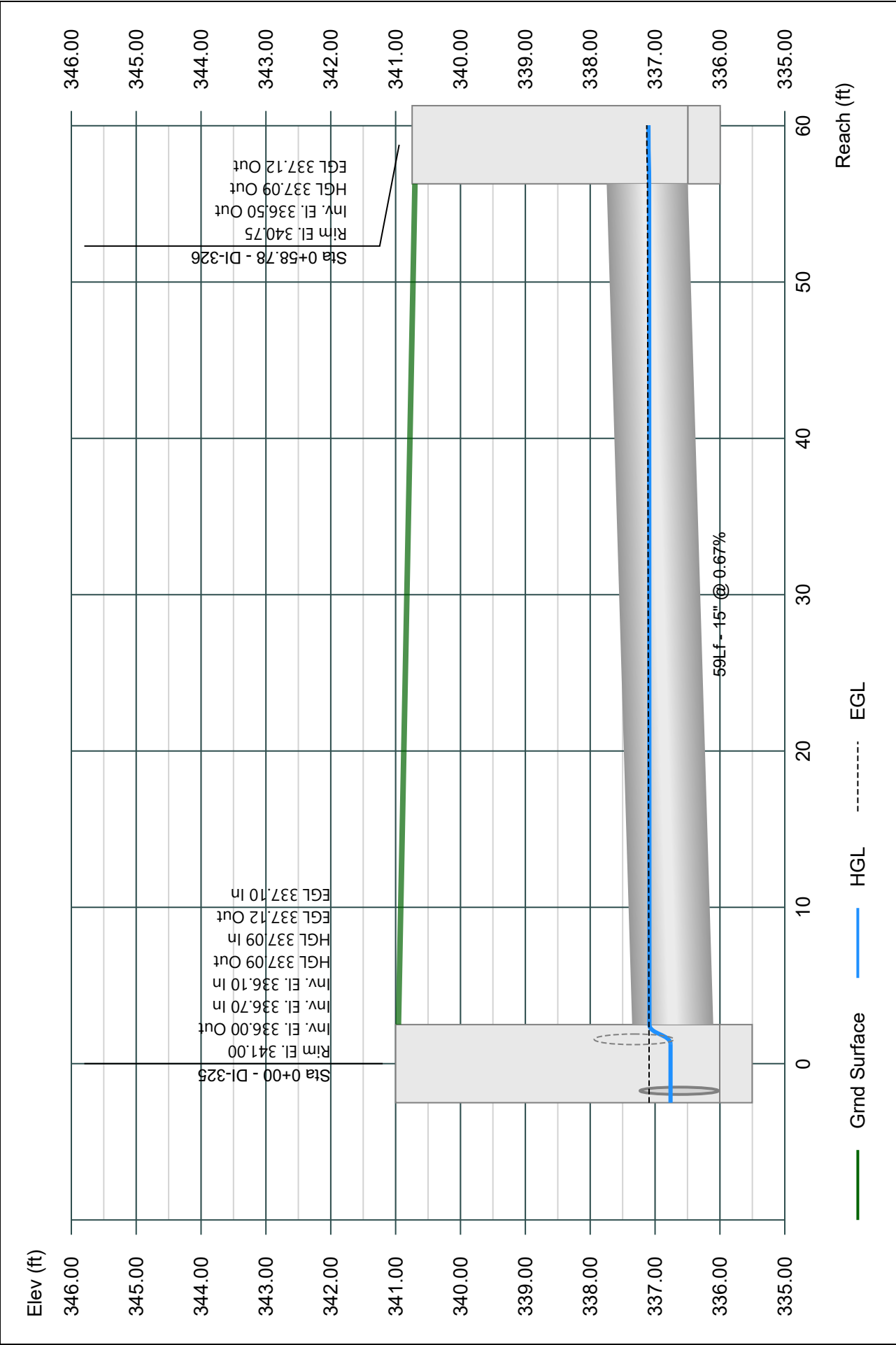


Line 31 - 325-326

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

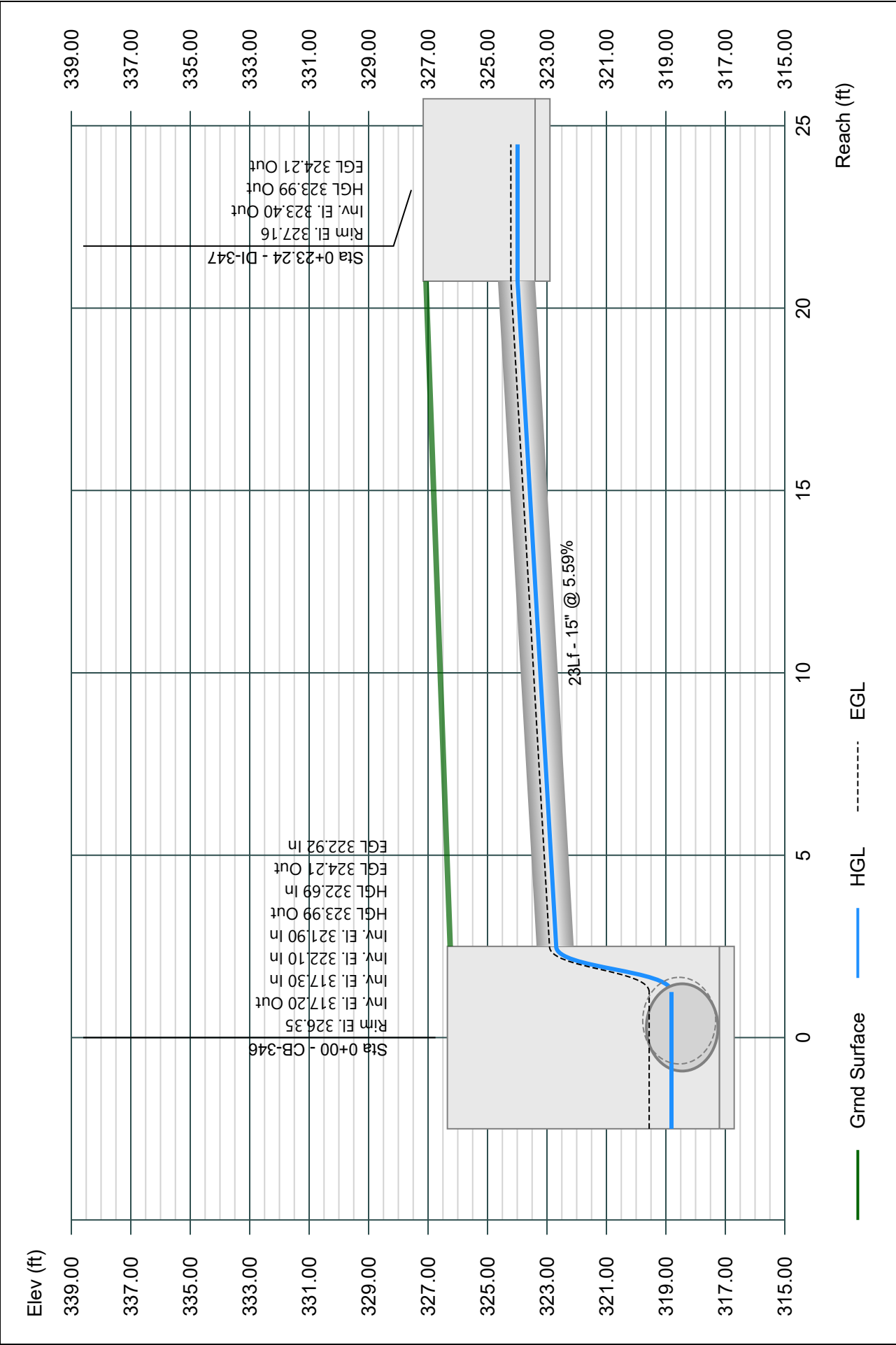


Line 32 - 346-347

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

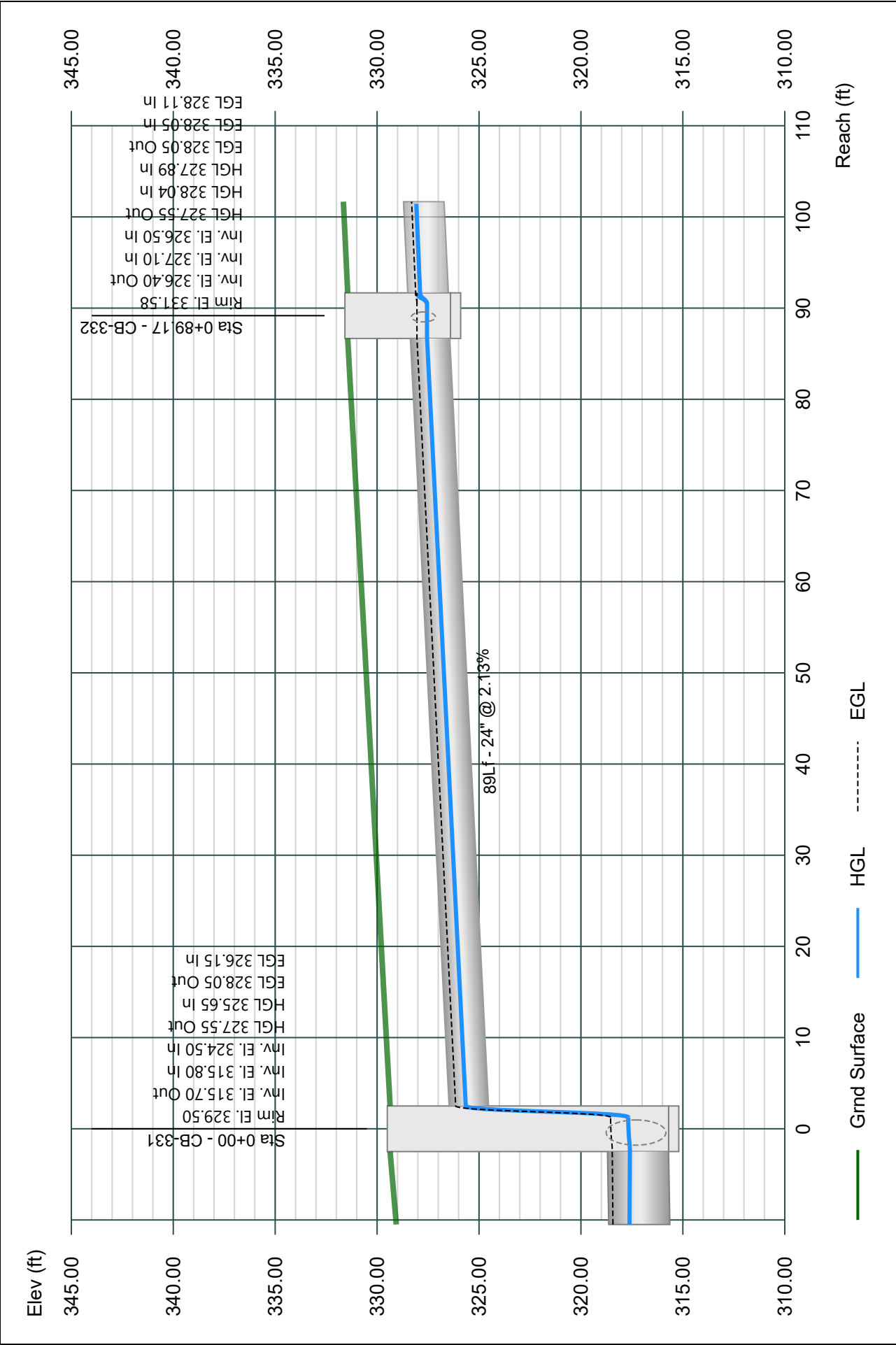


Line 33 - 331-332

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

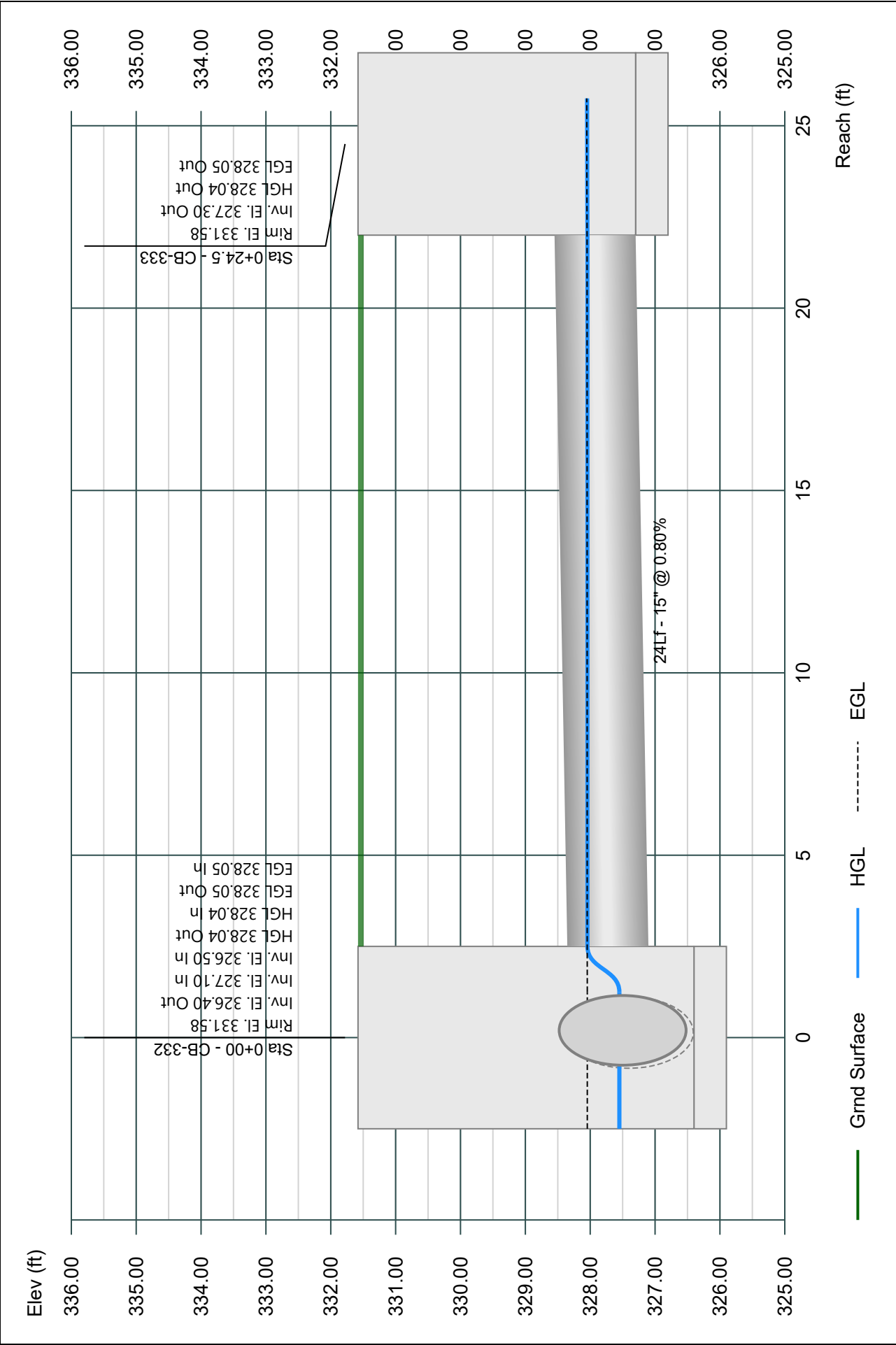


Line 34 - 332-333

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

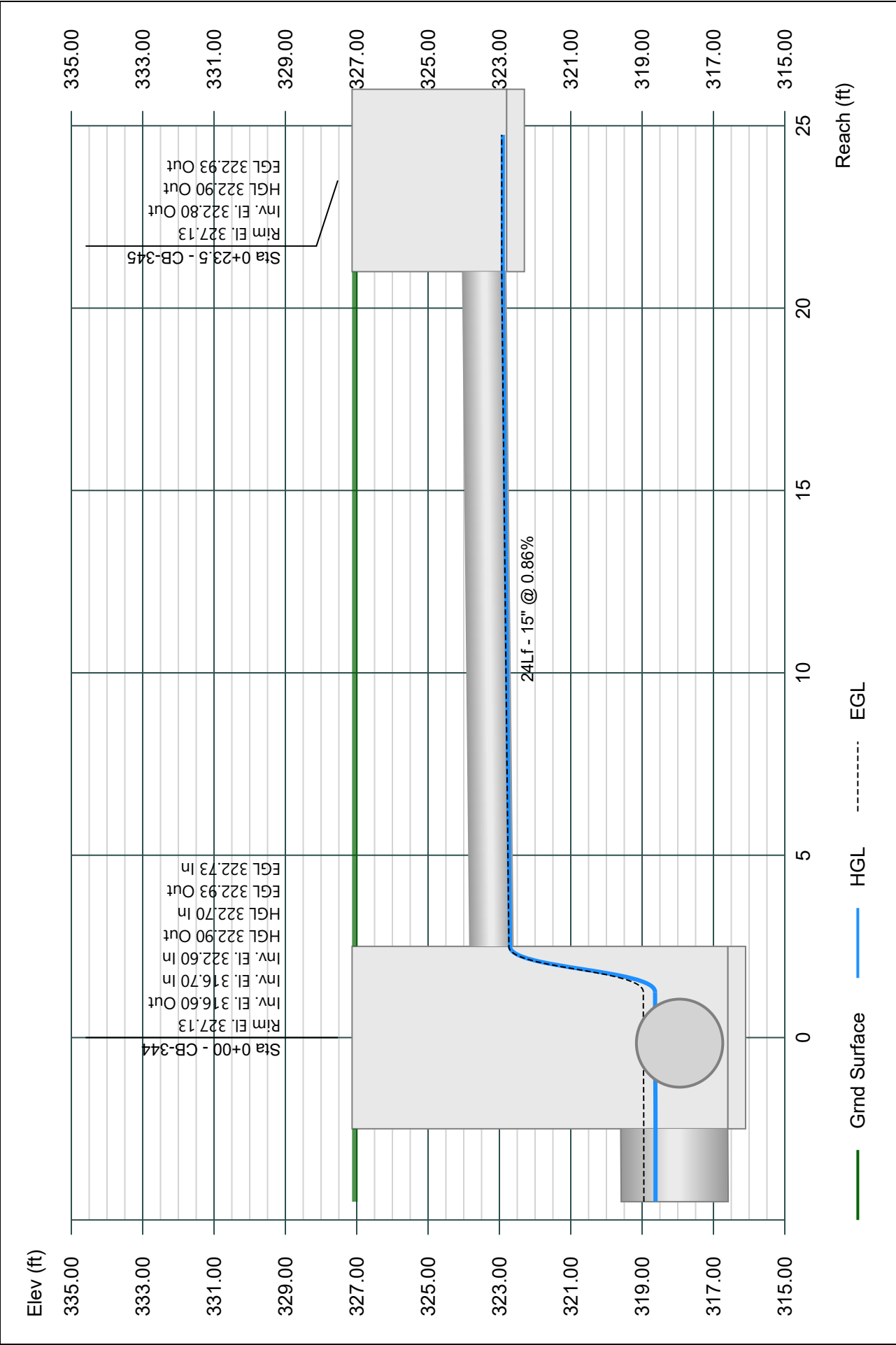


Line 35 - 344-345

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

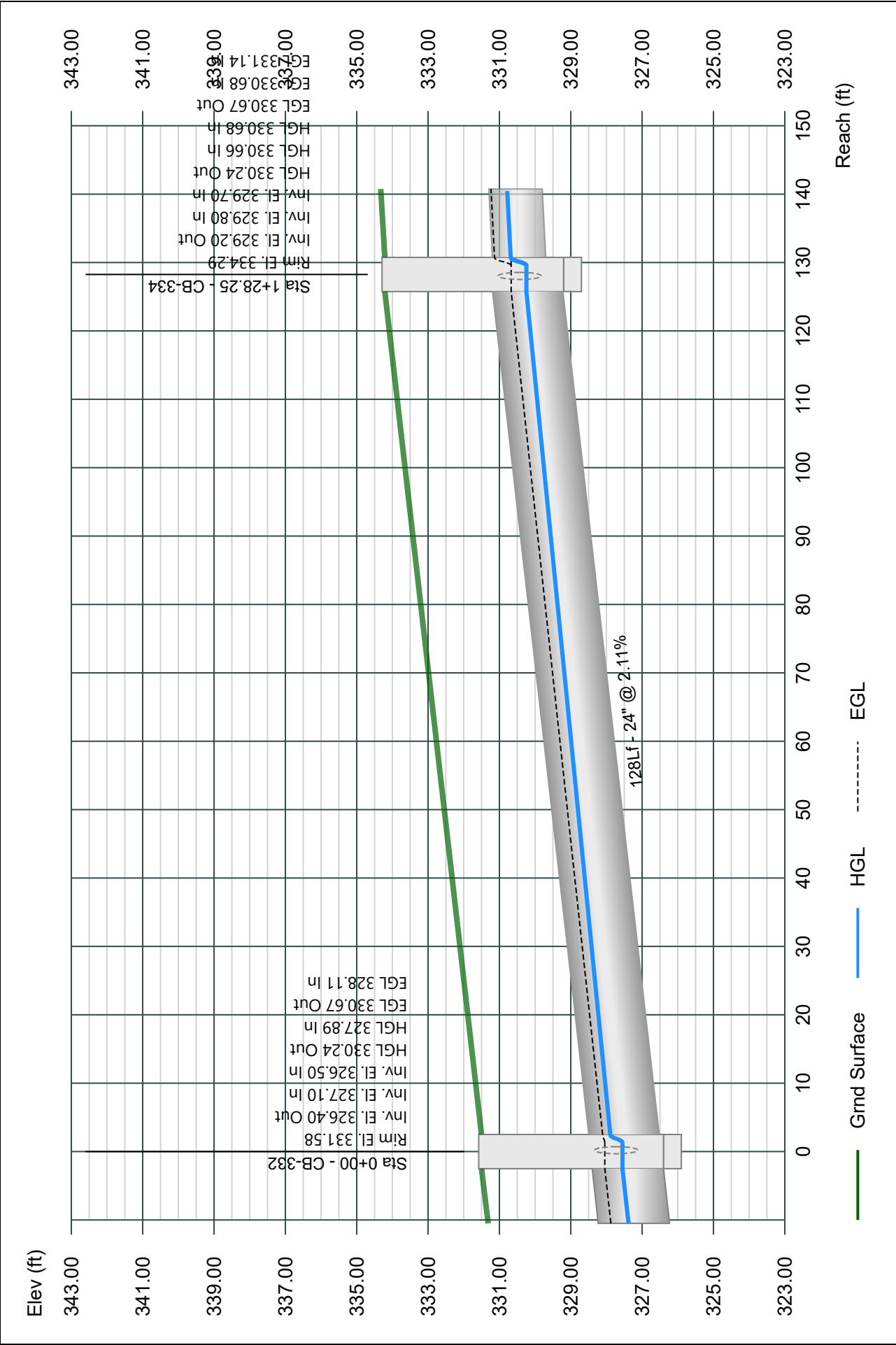


Line 36 - 332-334

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

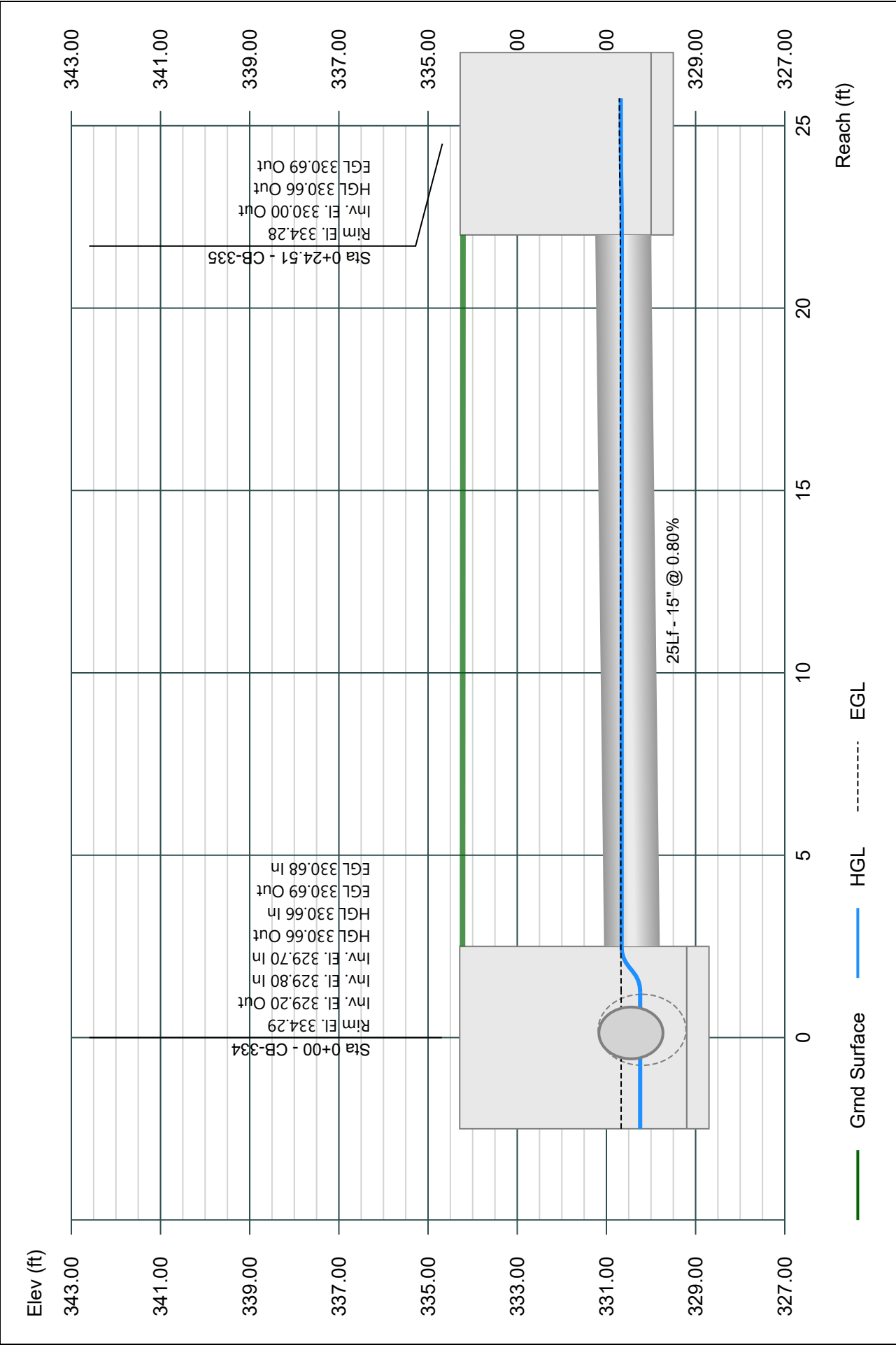


Line 37 - 334-335

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

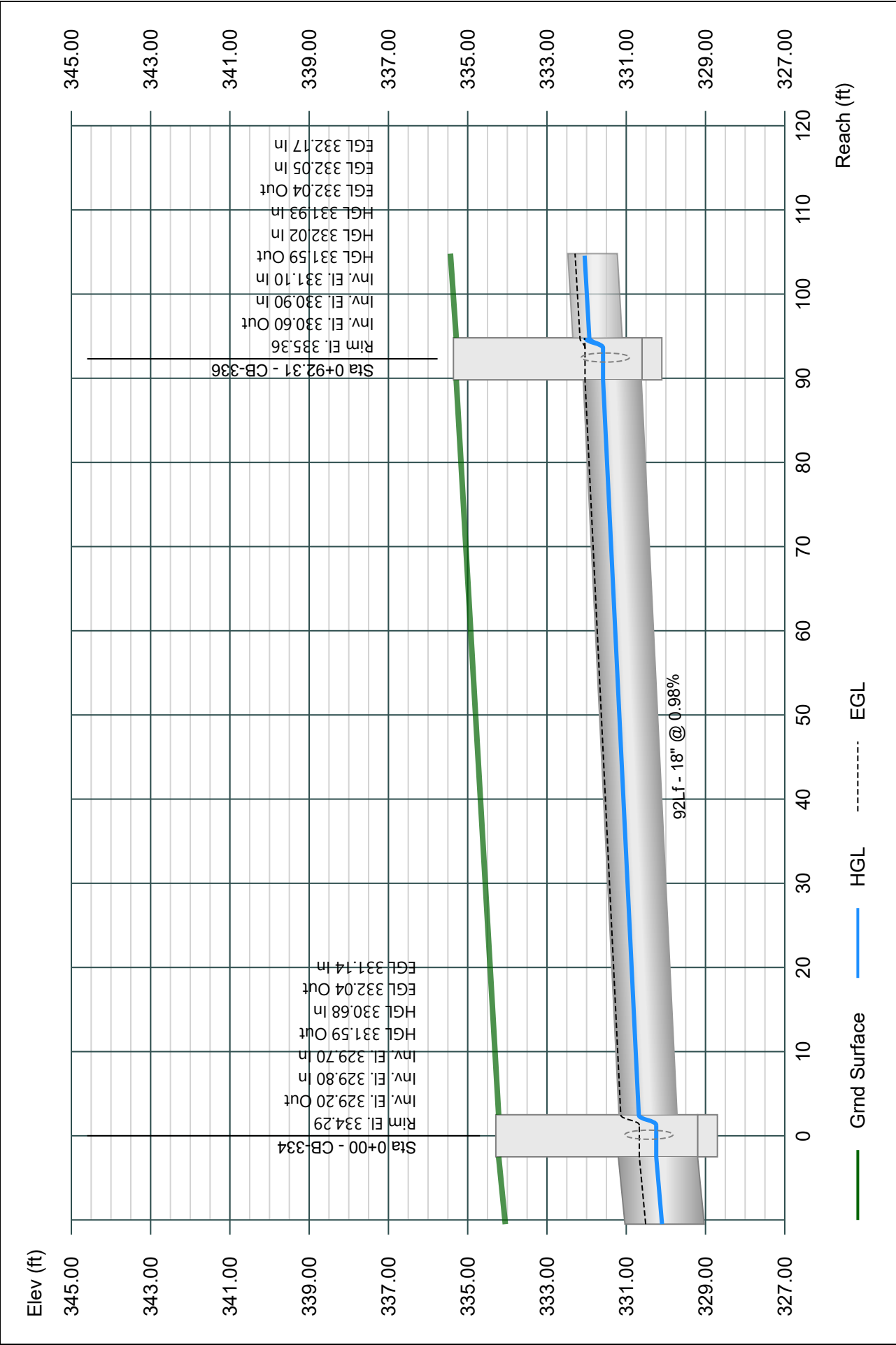
02-26-2024



Line 38 - 334-336

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

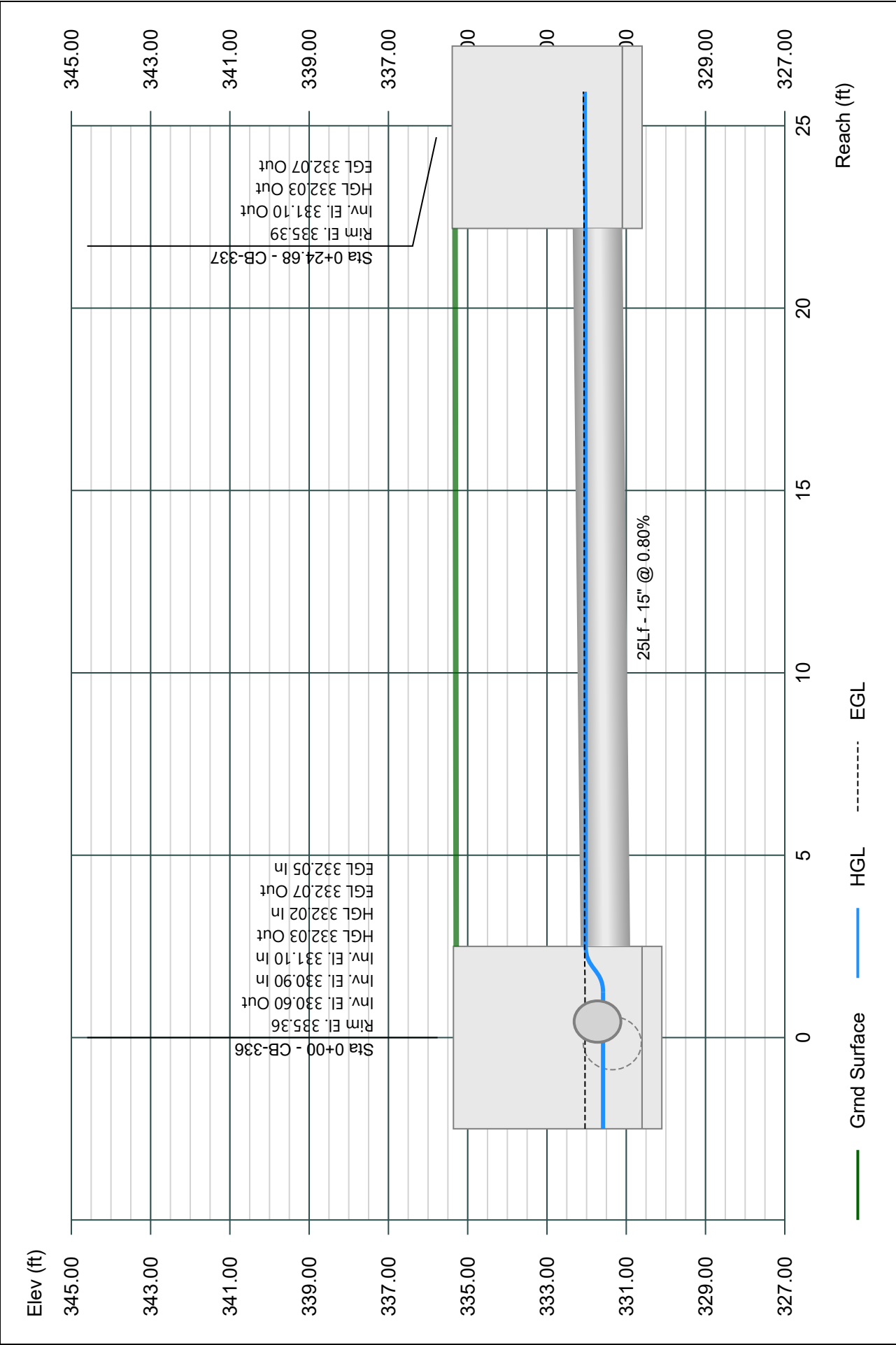


Line 39 - 336-337

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

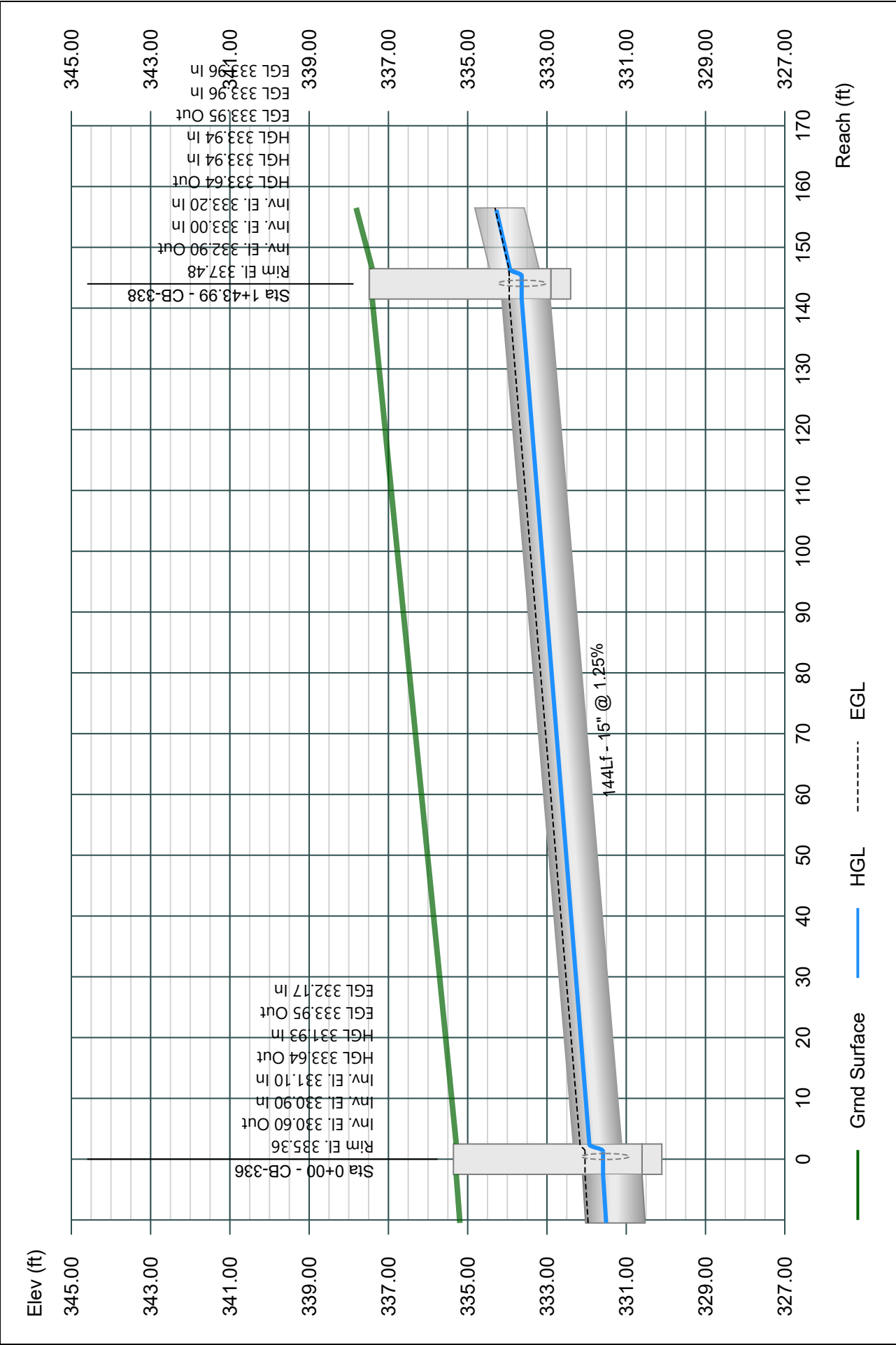


Line 40 - 336-338

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

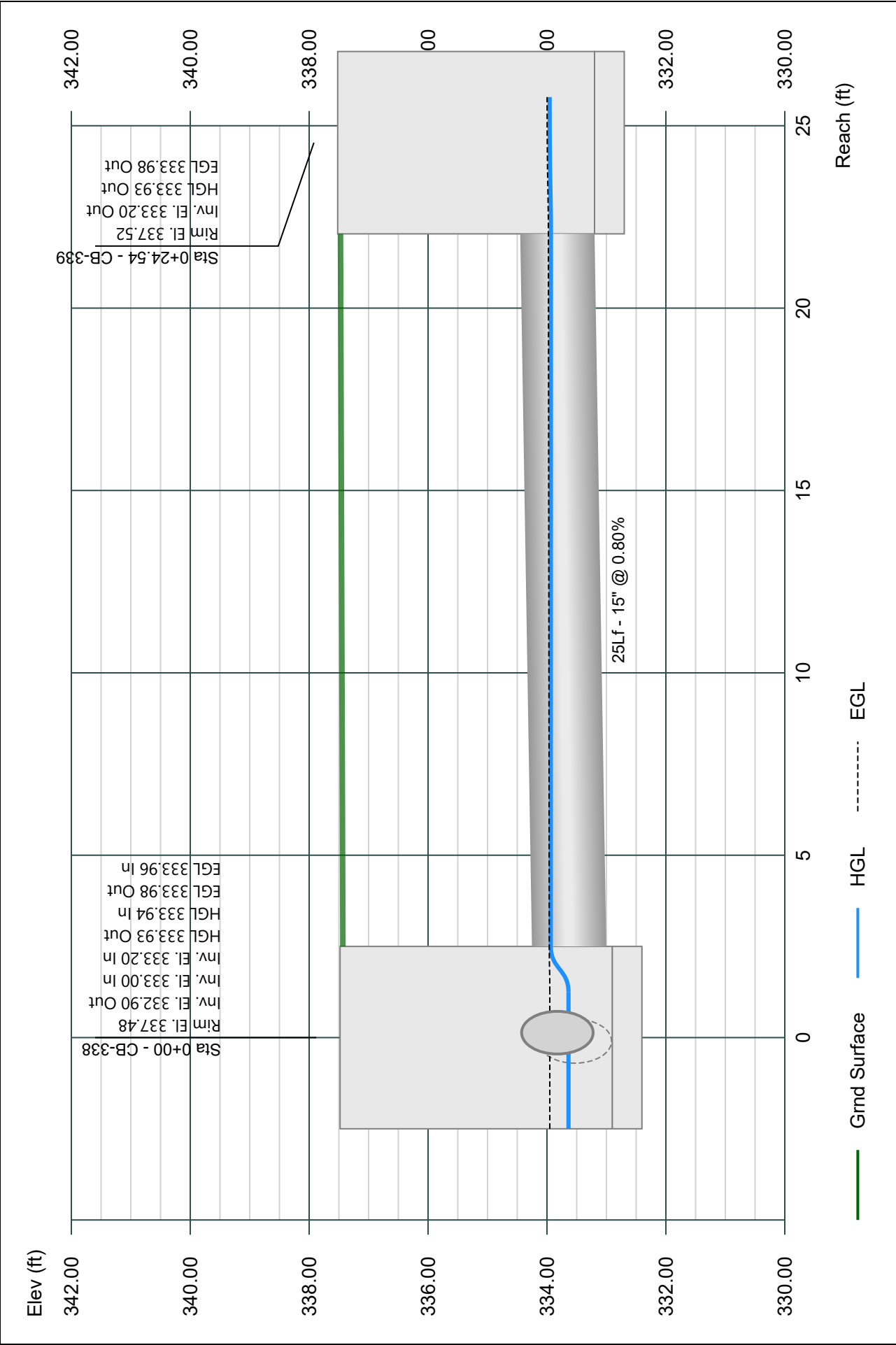


Line 41 - 338-339

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

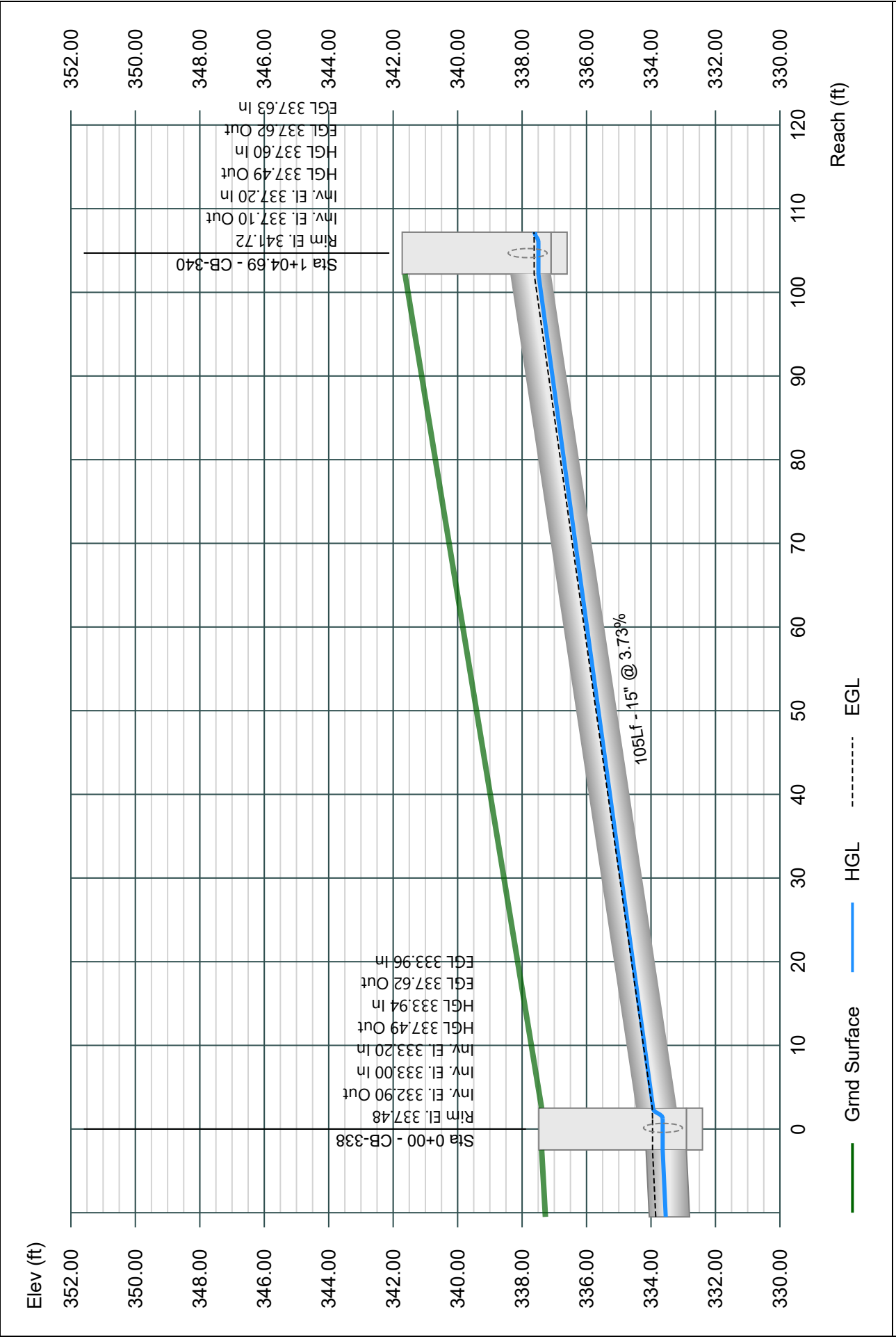
02-26-2024



Line 42 - 338-340

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

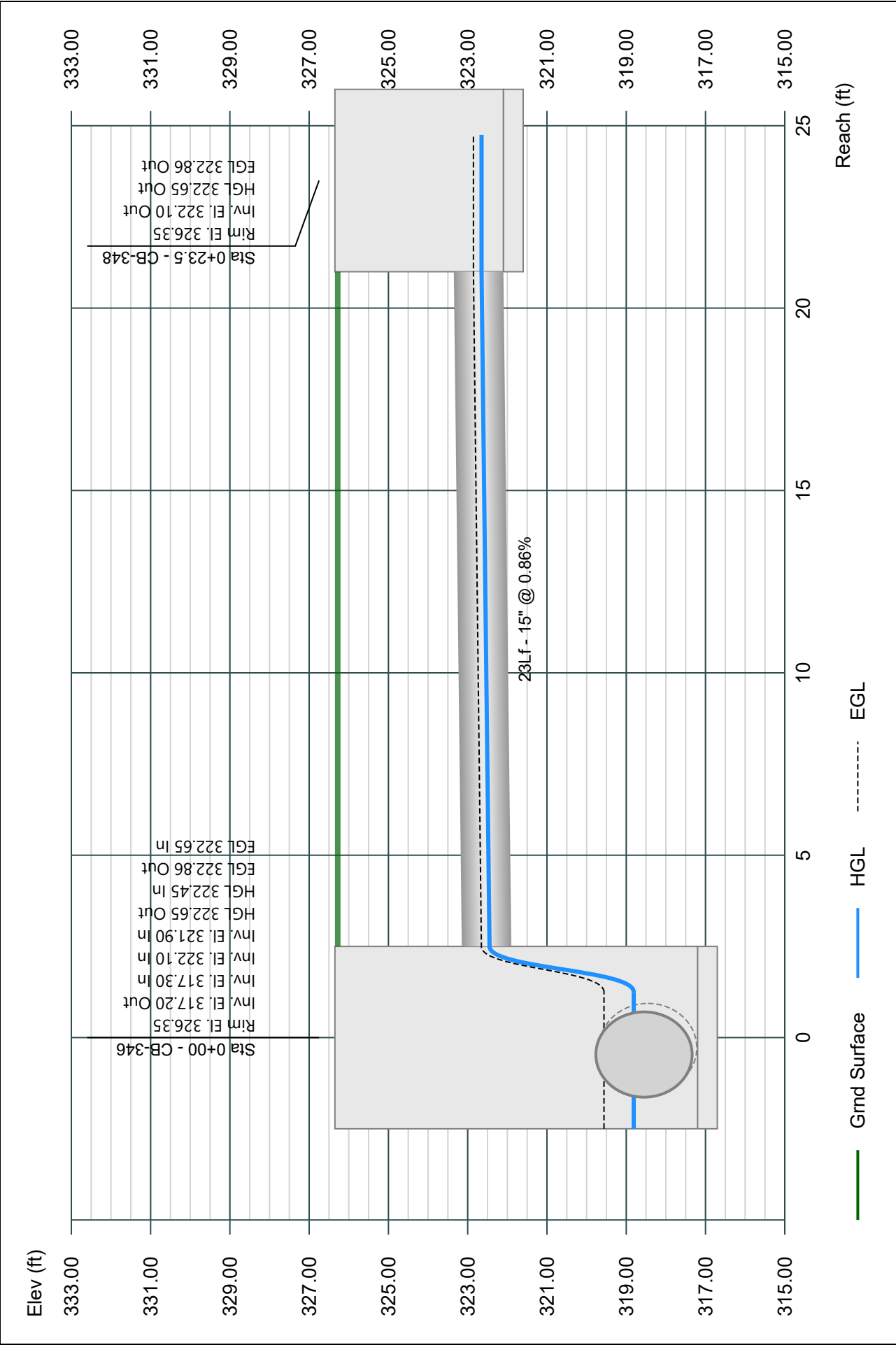


Line 43 - 346-348

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

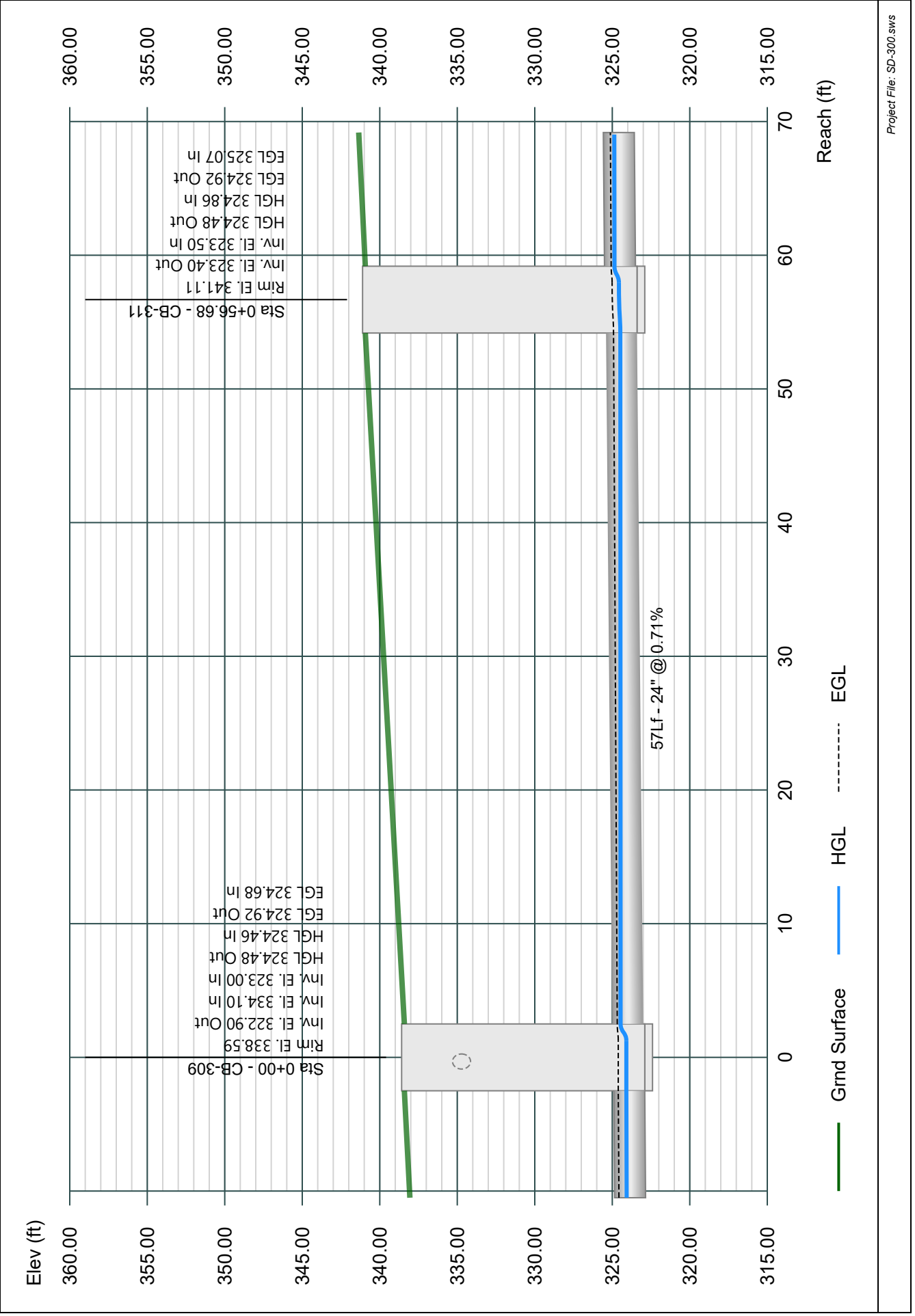


Line 44 - 310-311

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

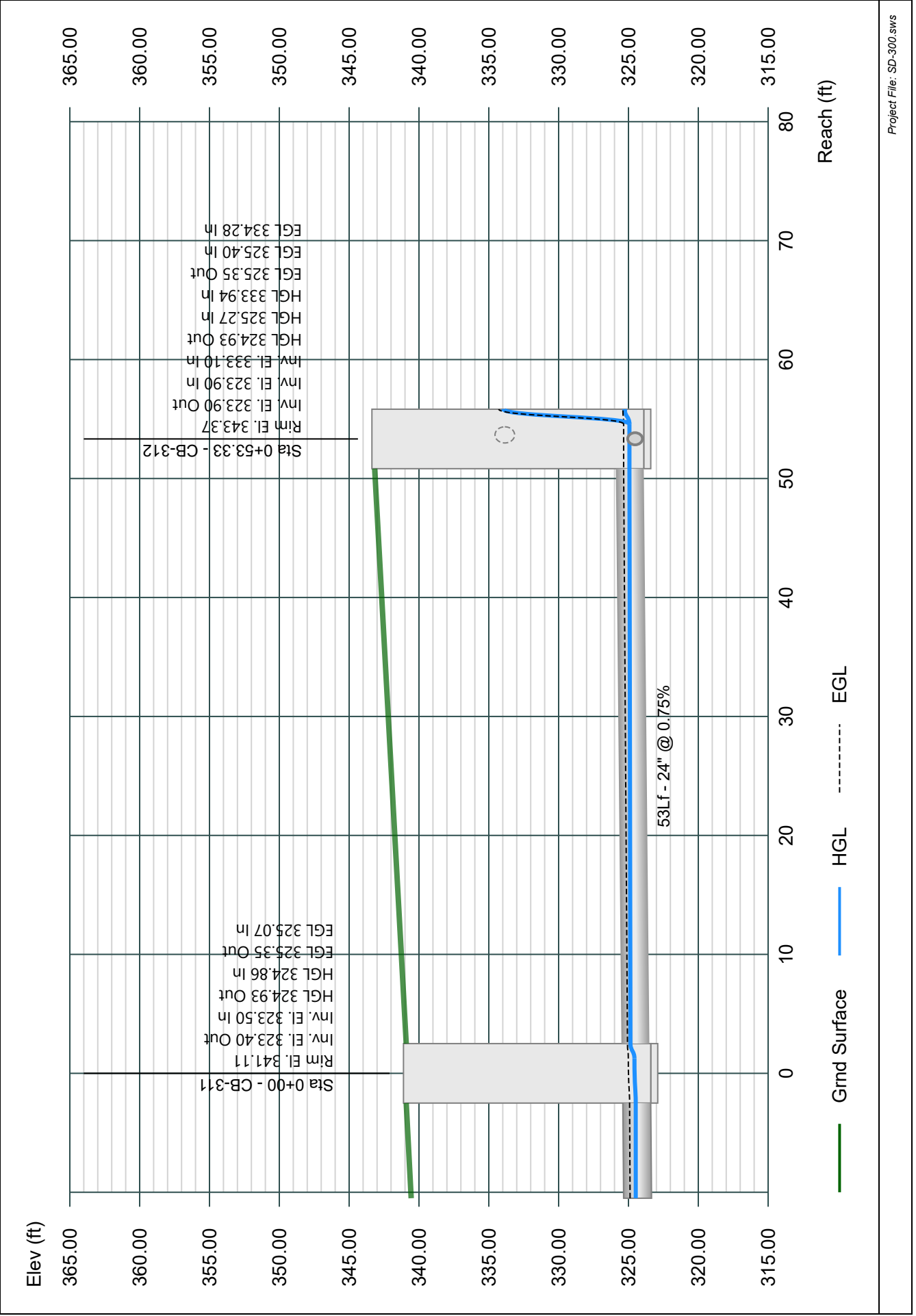


Line 45 - 311-312

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

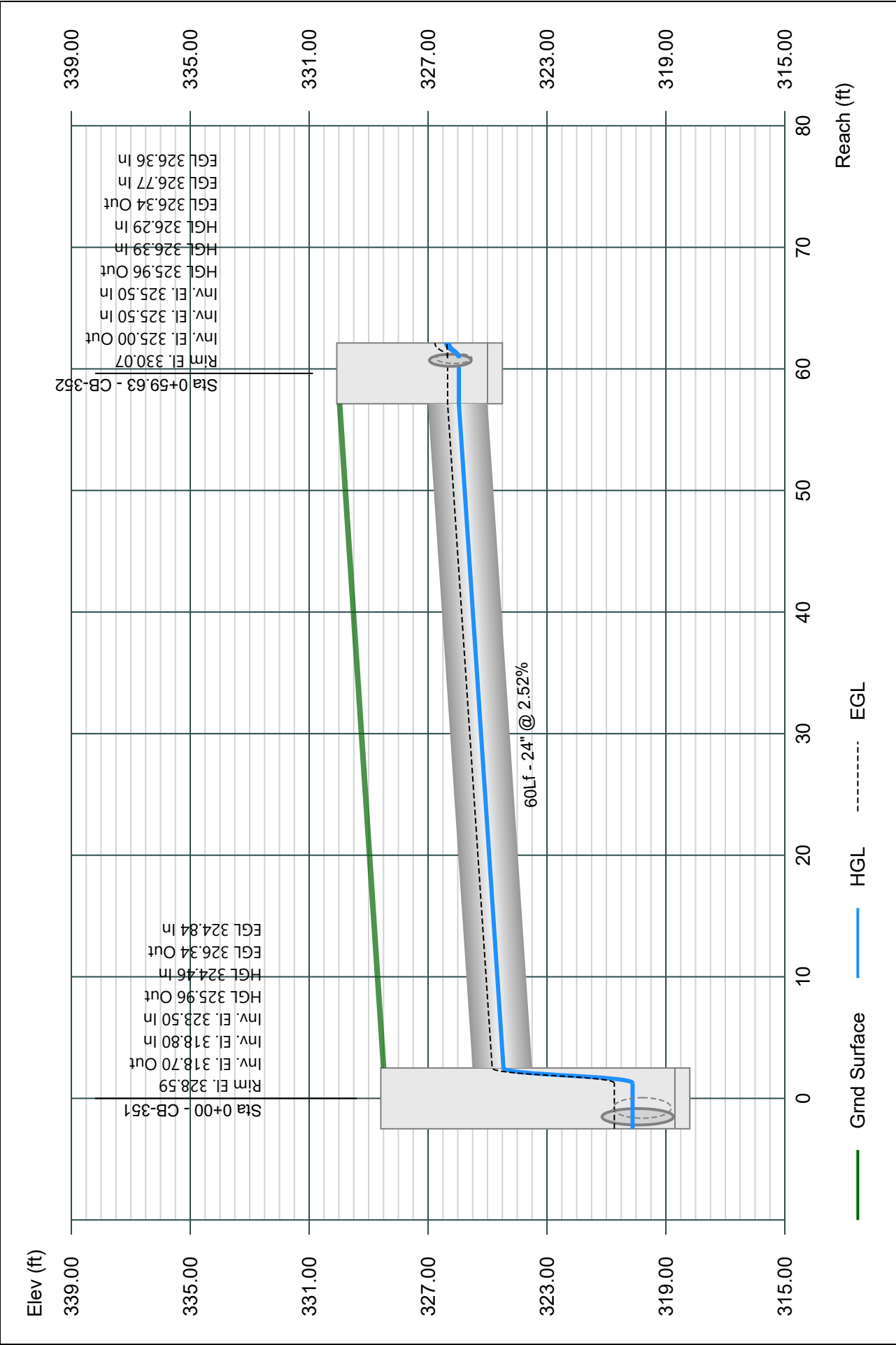


Line 46 - 351-352

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

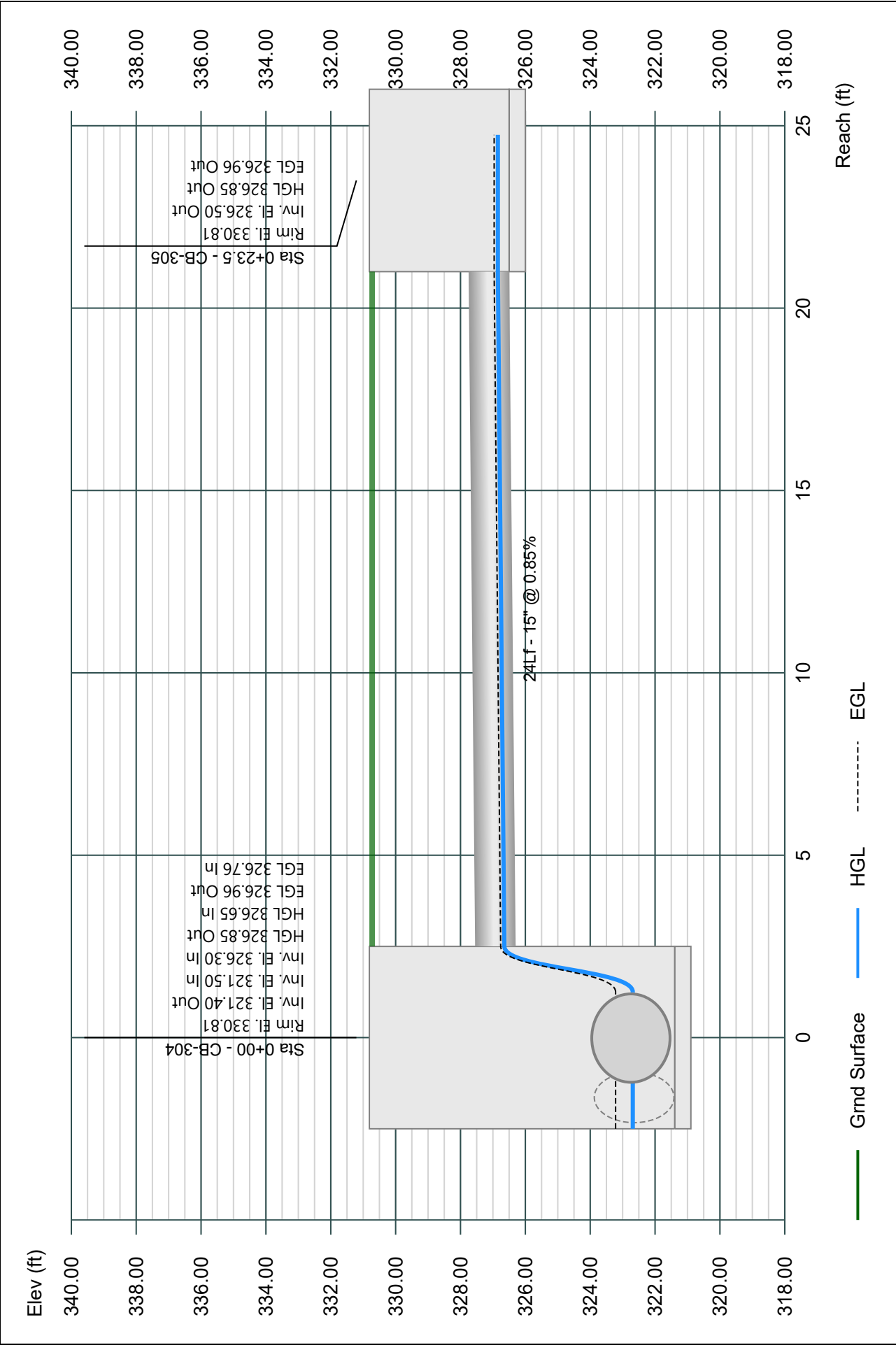


Line 47 - 304-305

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

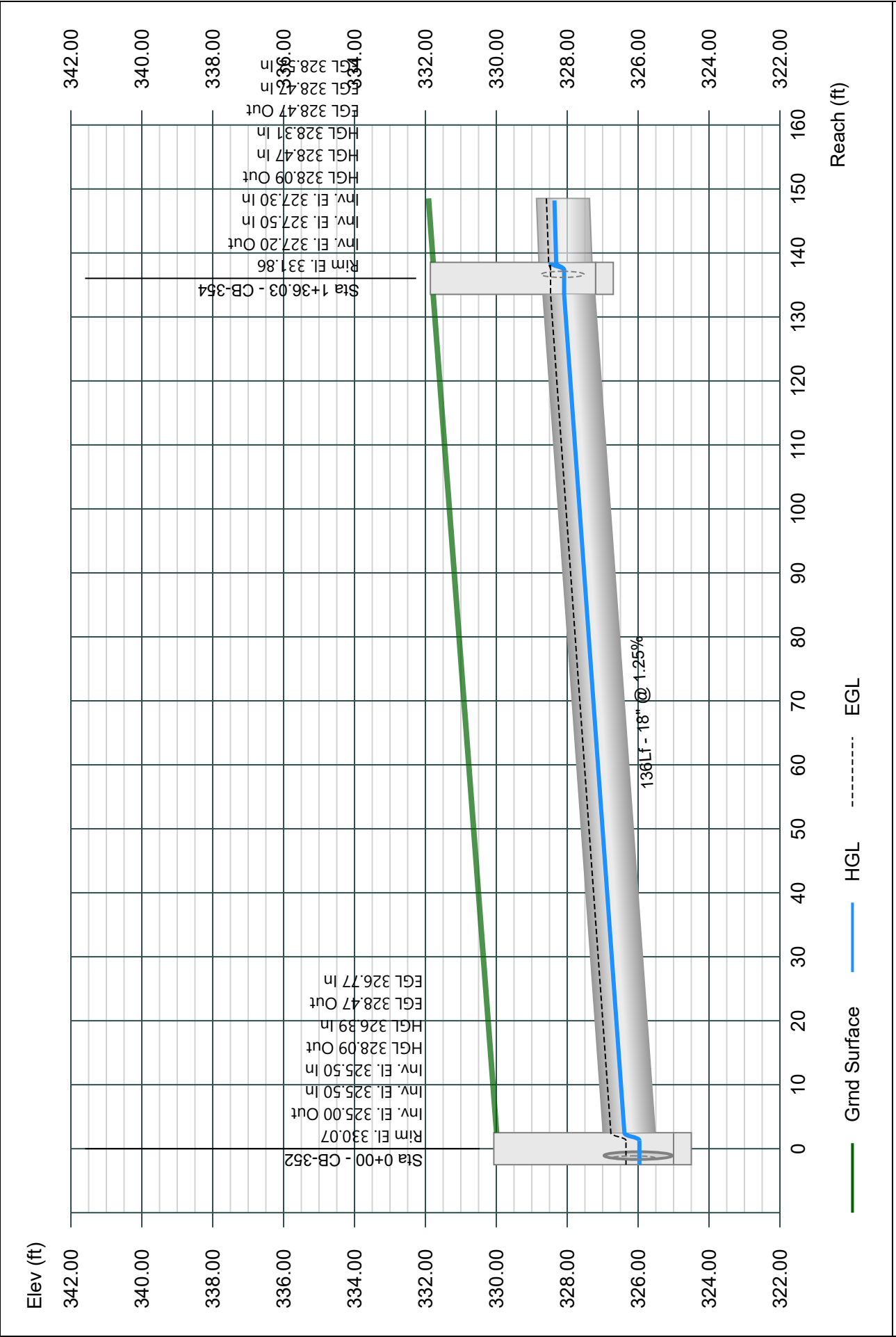


Line 48 - 352-354

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024



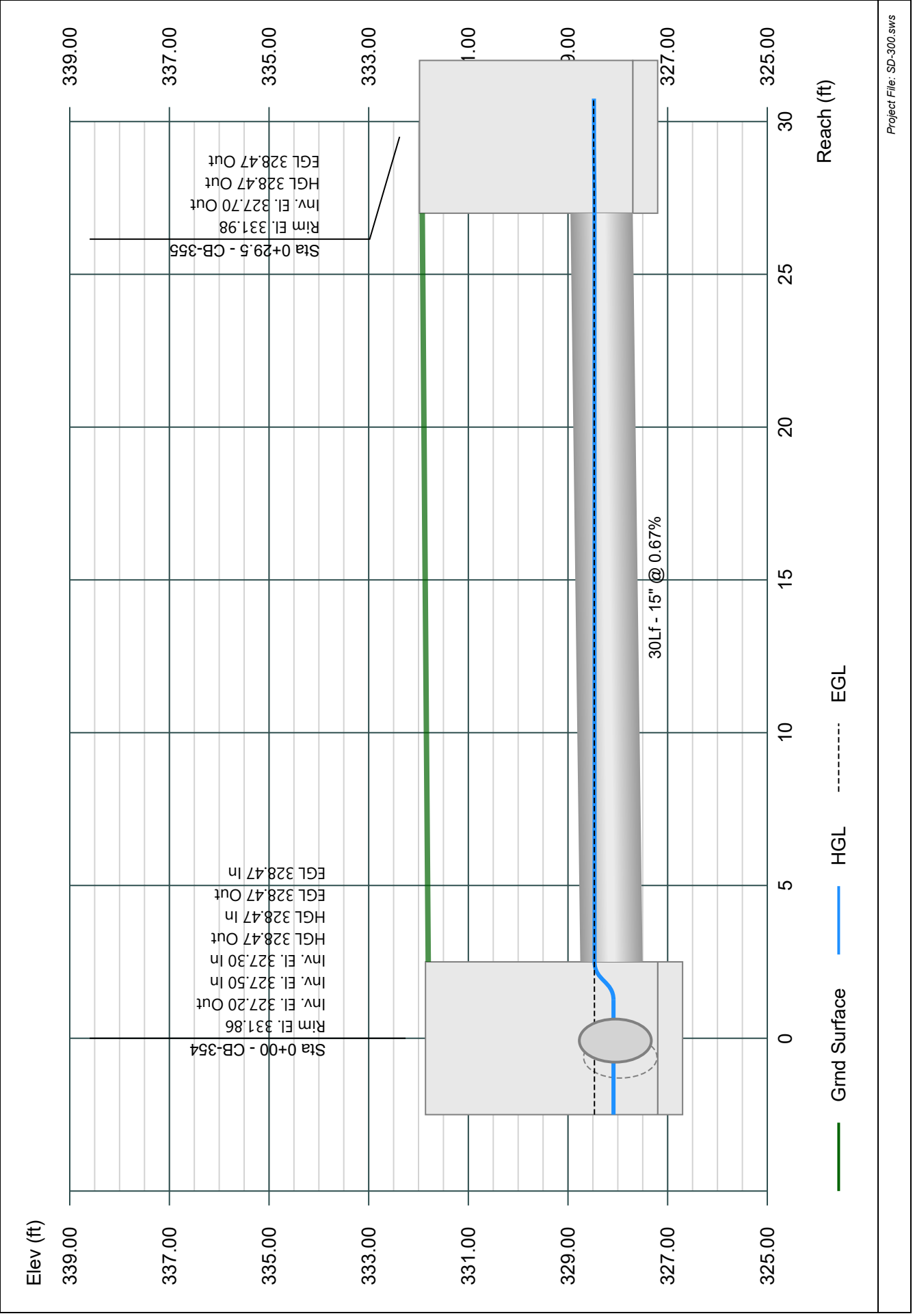
Project File: SD-300.sws

Line 49 - 354-355

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

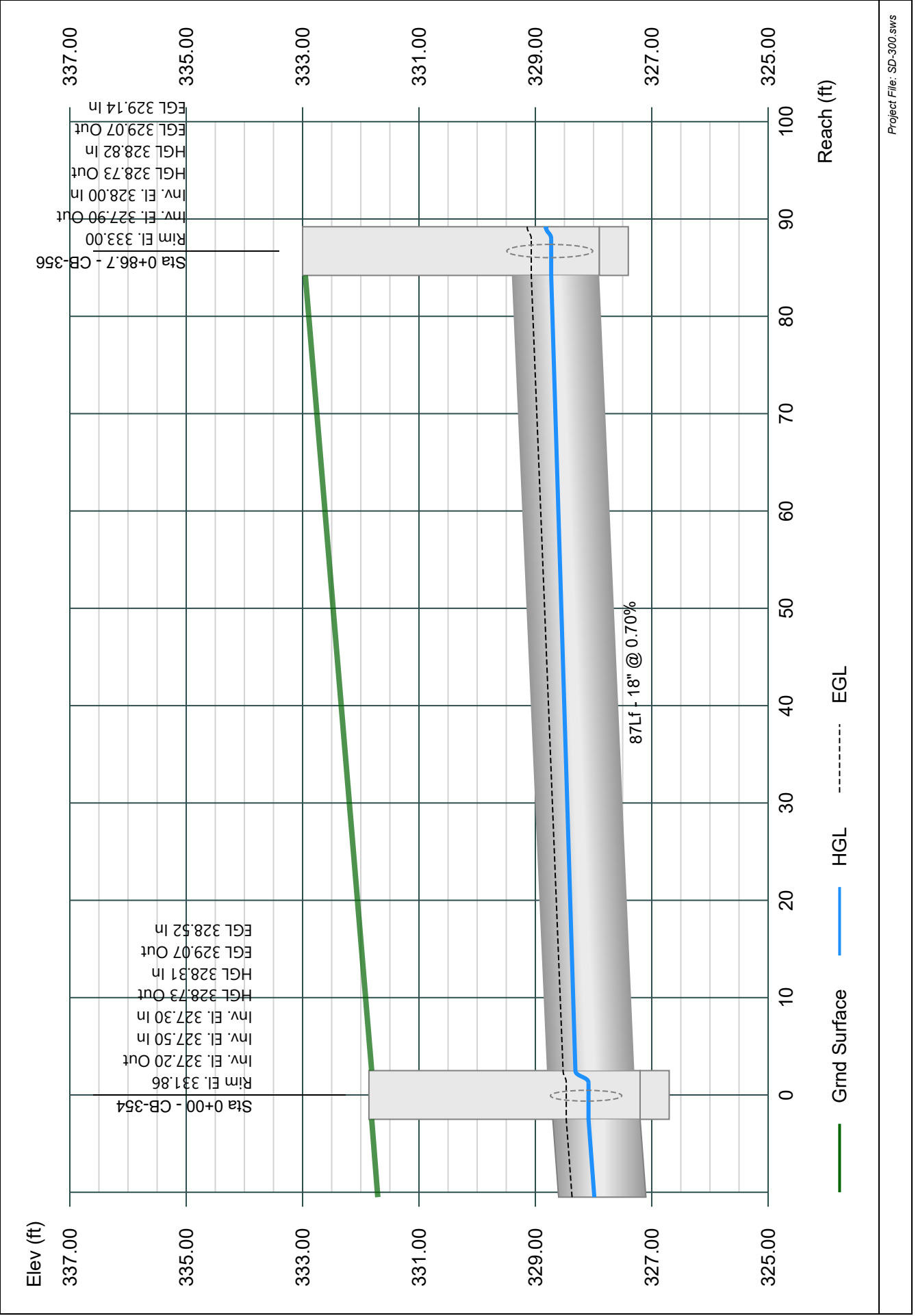


Line 50 - 354-356

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

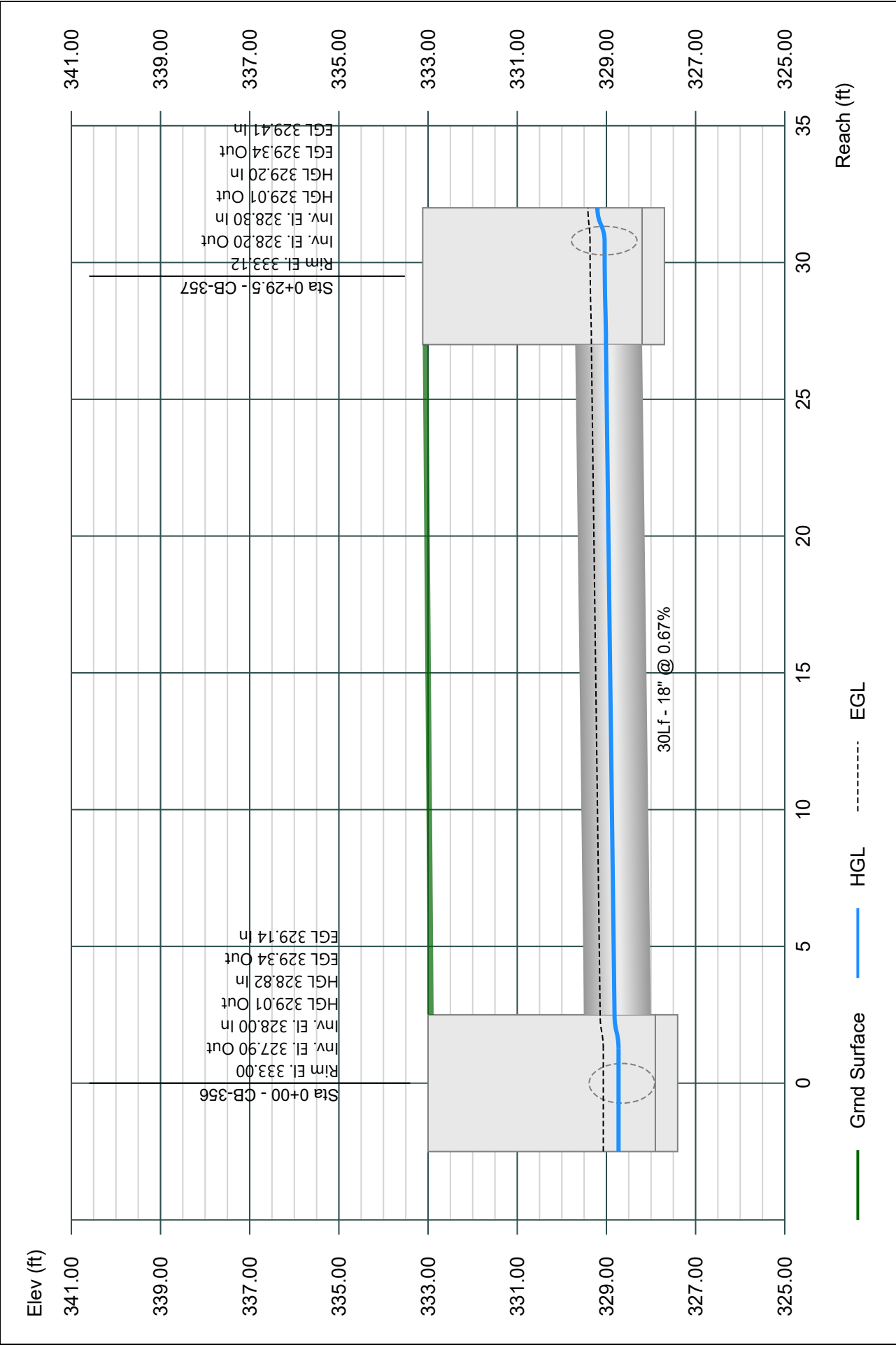


Line 51 - 356-357

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

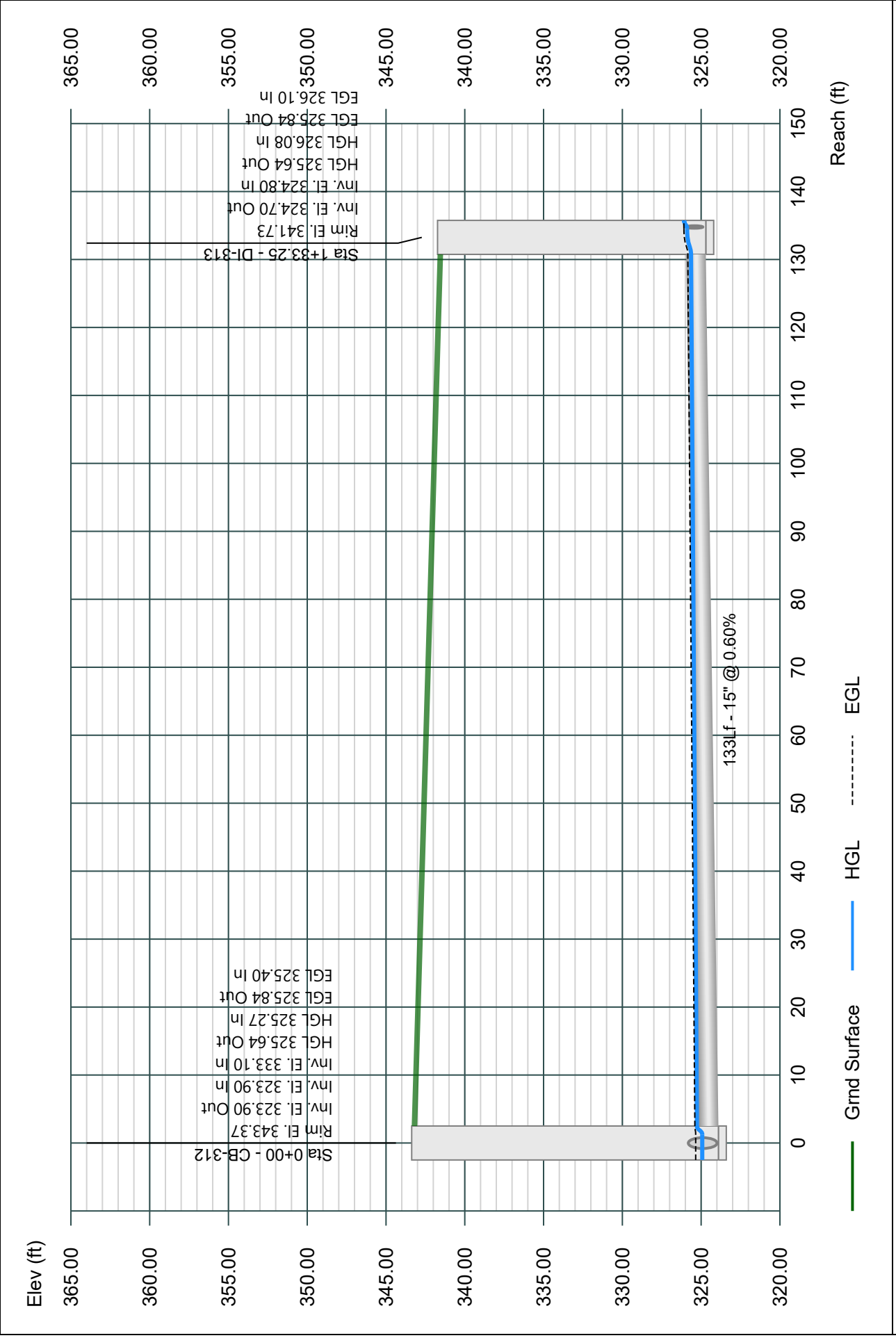


Line 52 - 312-313

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

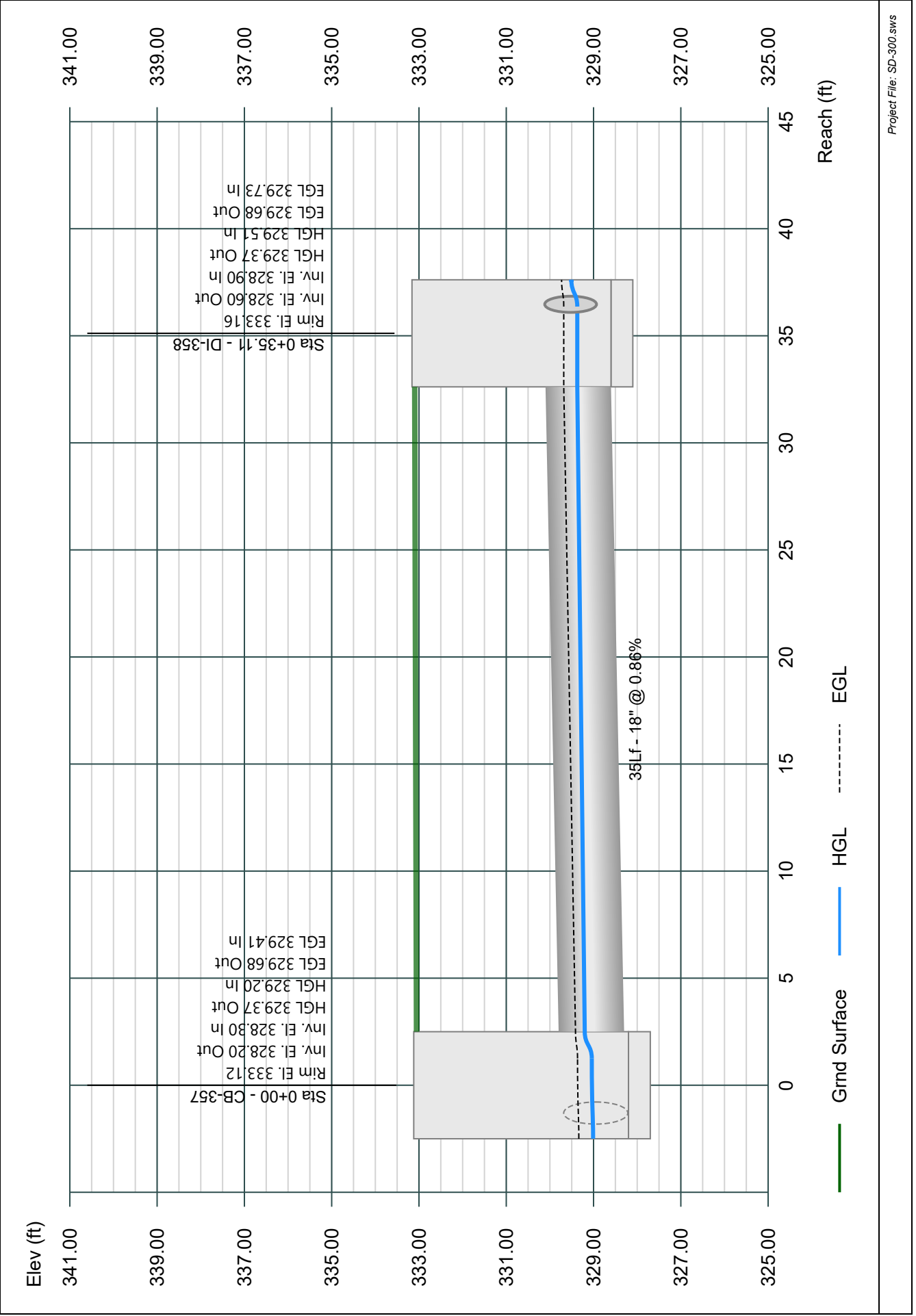


Line 53 - 357-358

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

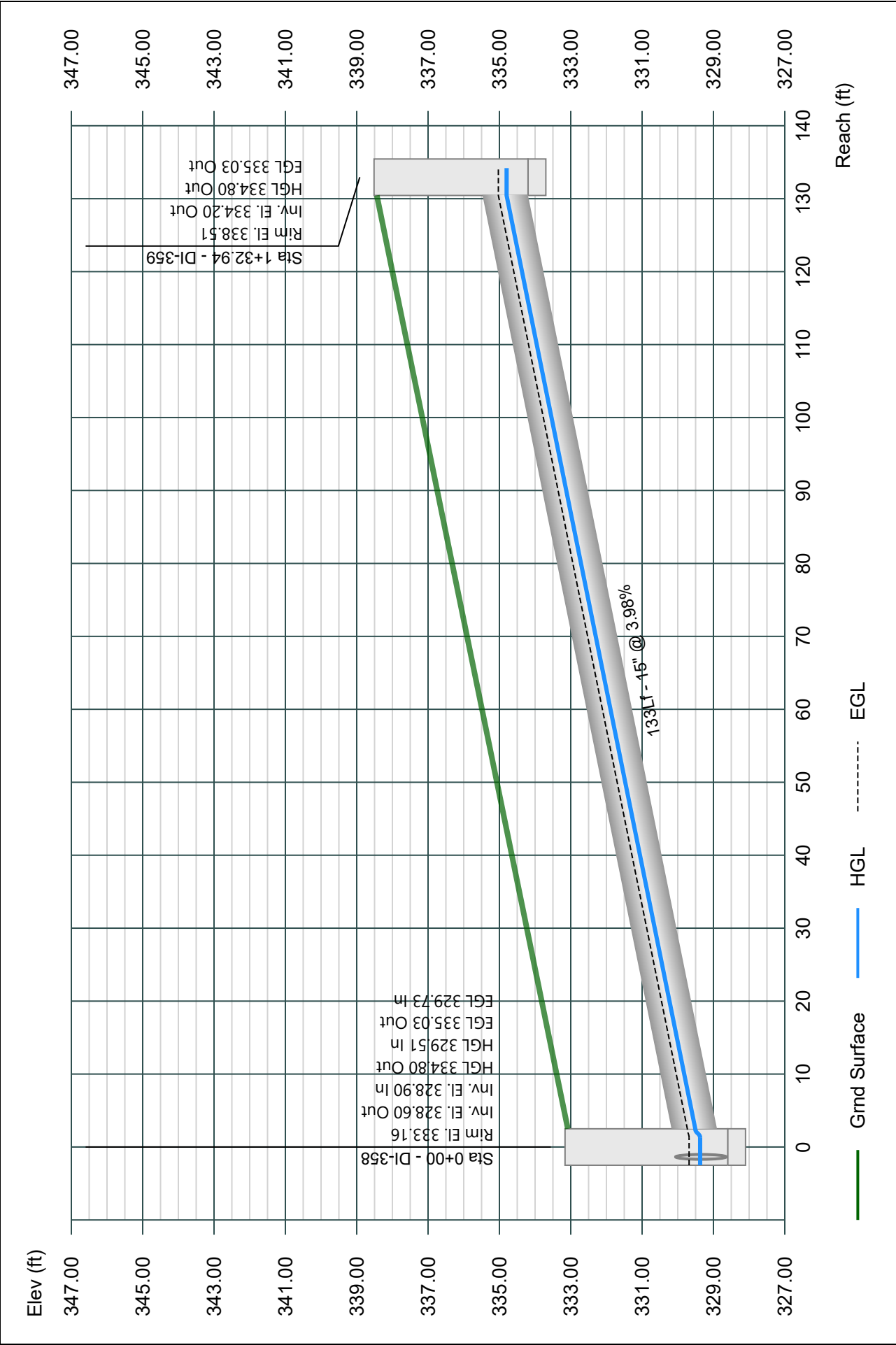
02-26-2024



Line 54 - 358-359

Project Name: SD-300
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

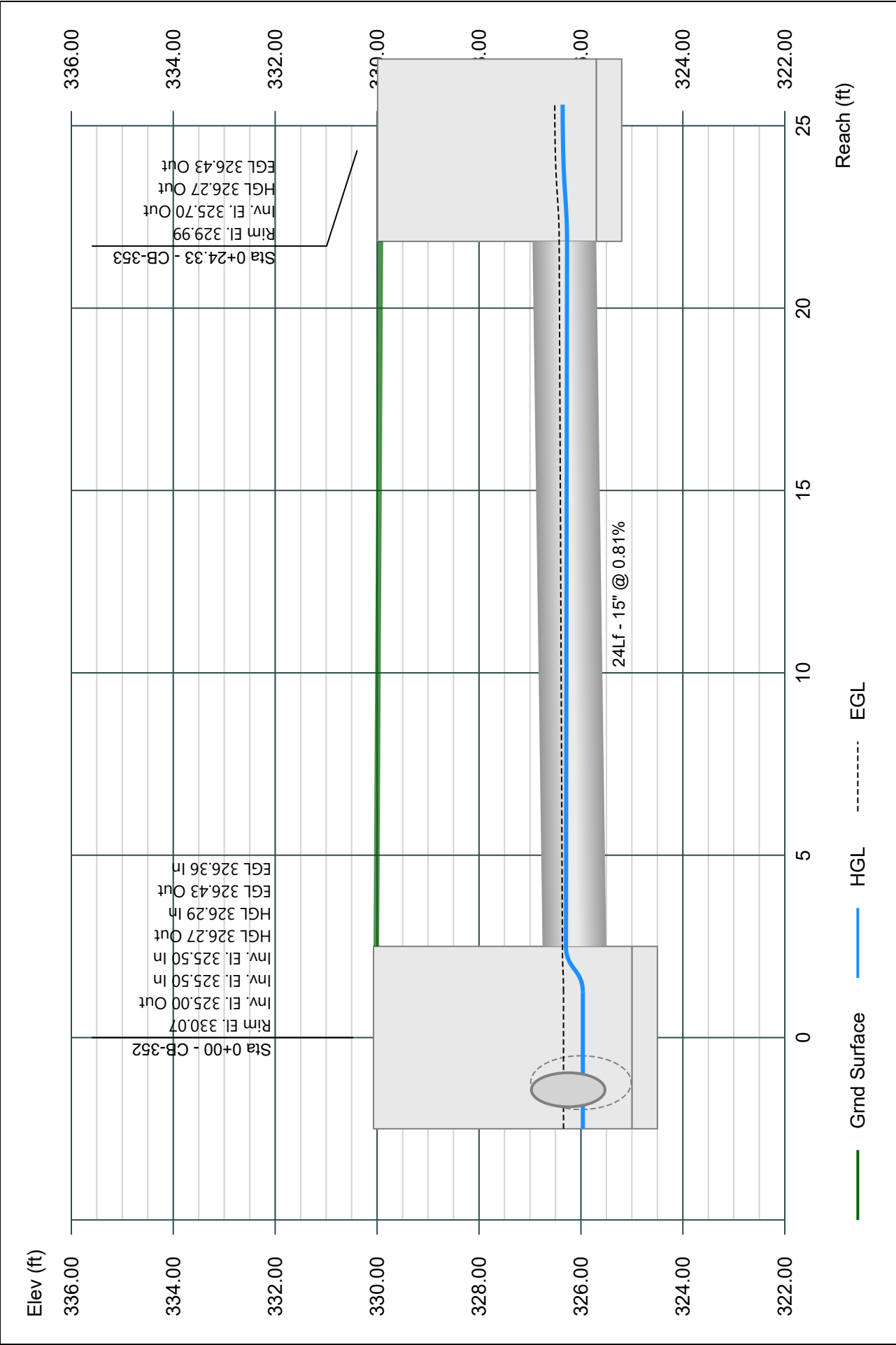


Line 55 - 352-353

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

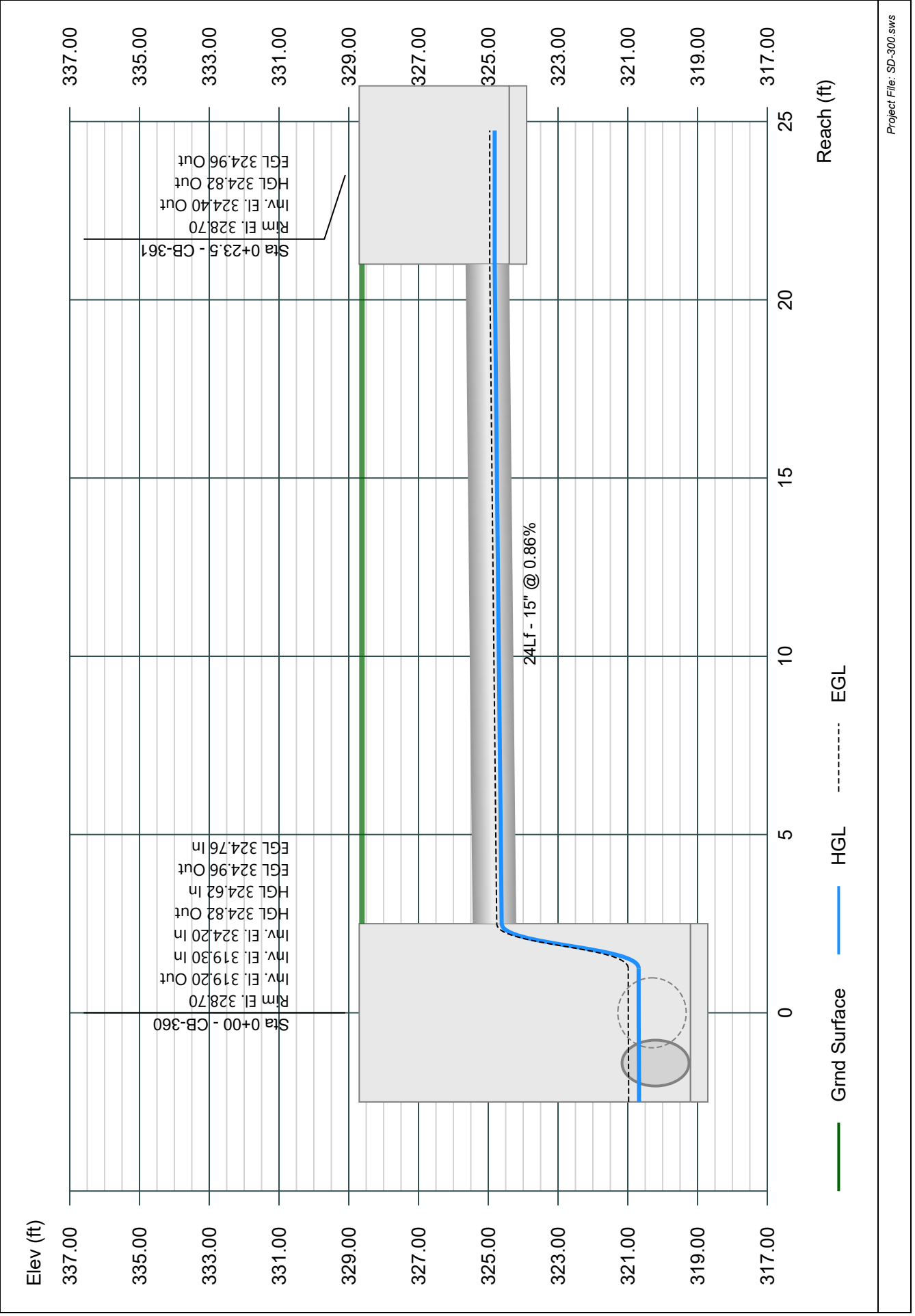


Line 56 - 360-361

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

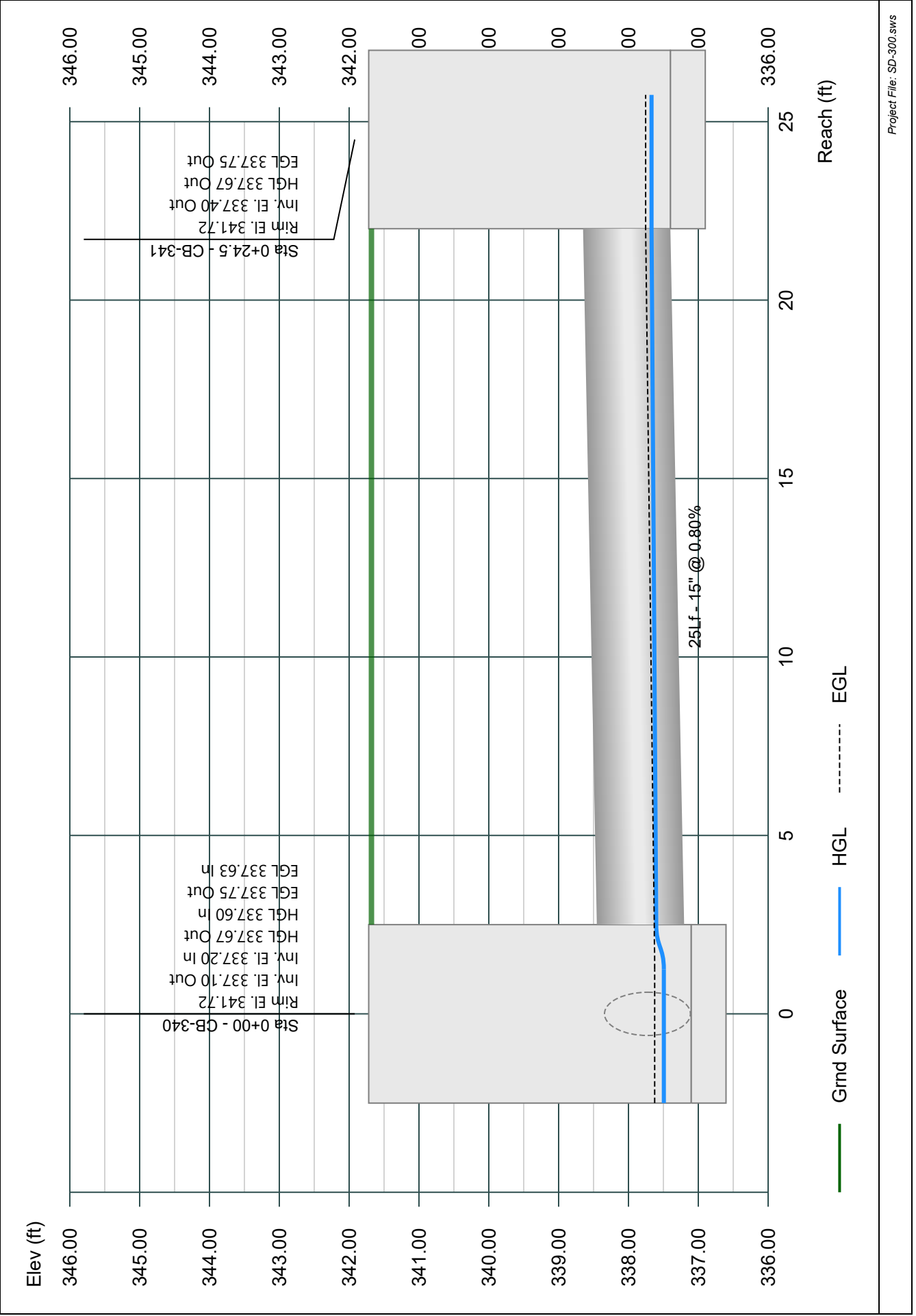


Line 57 - 340-341

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

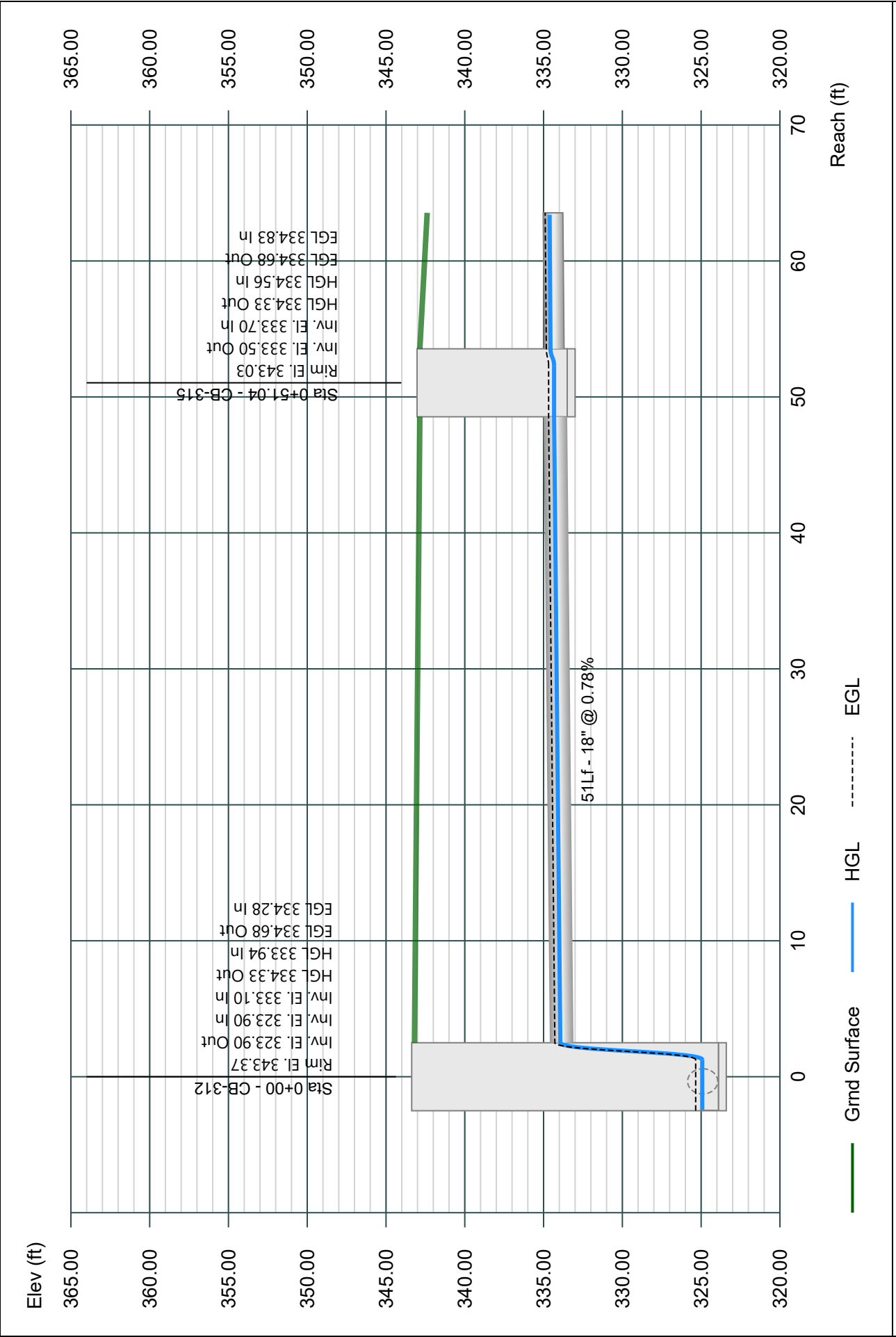


Line 58 - 312-315

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

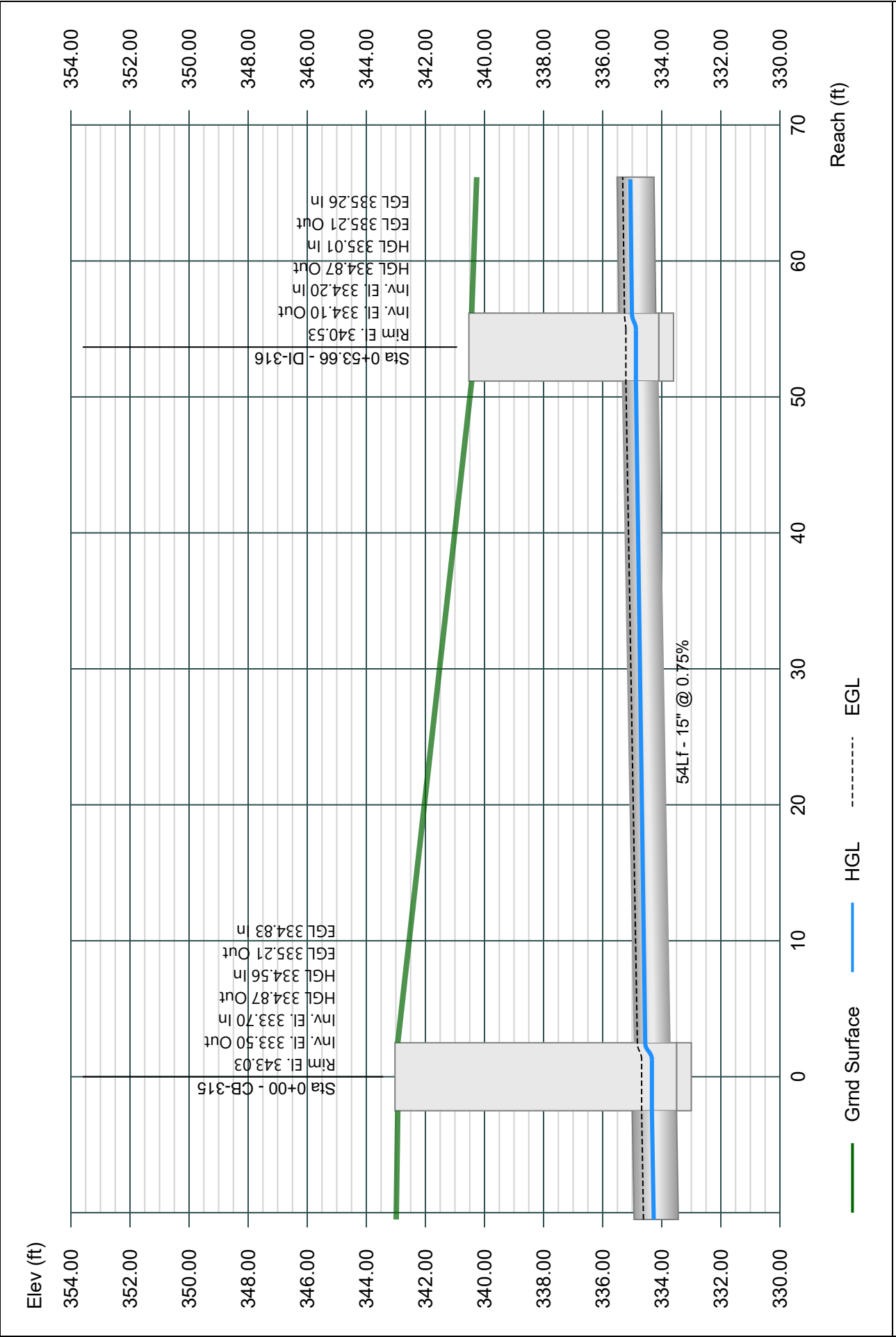


Line 59 - 315-316

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

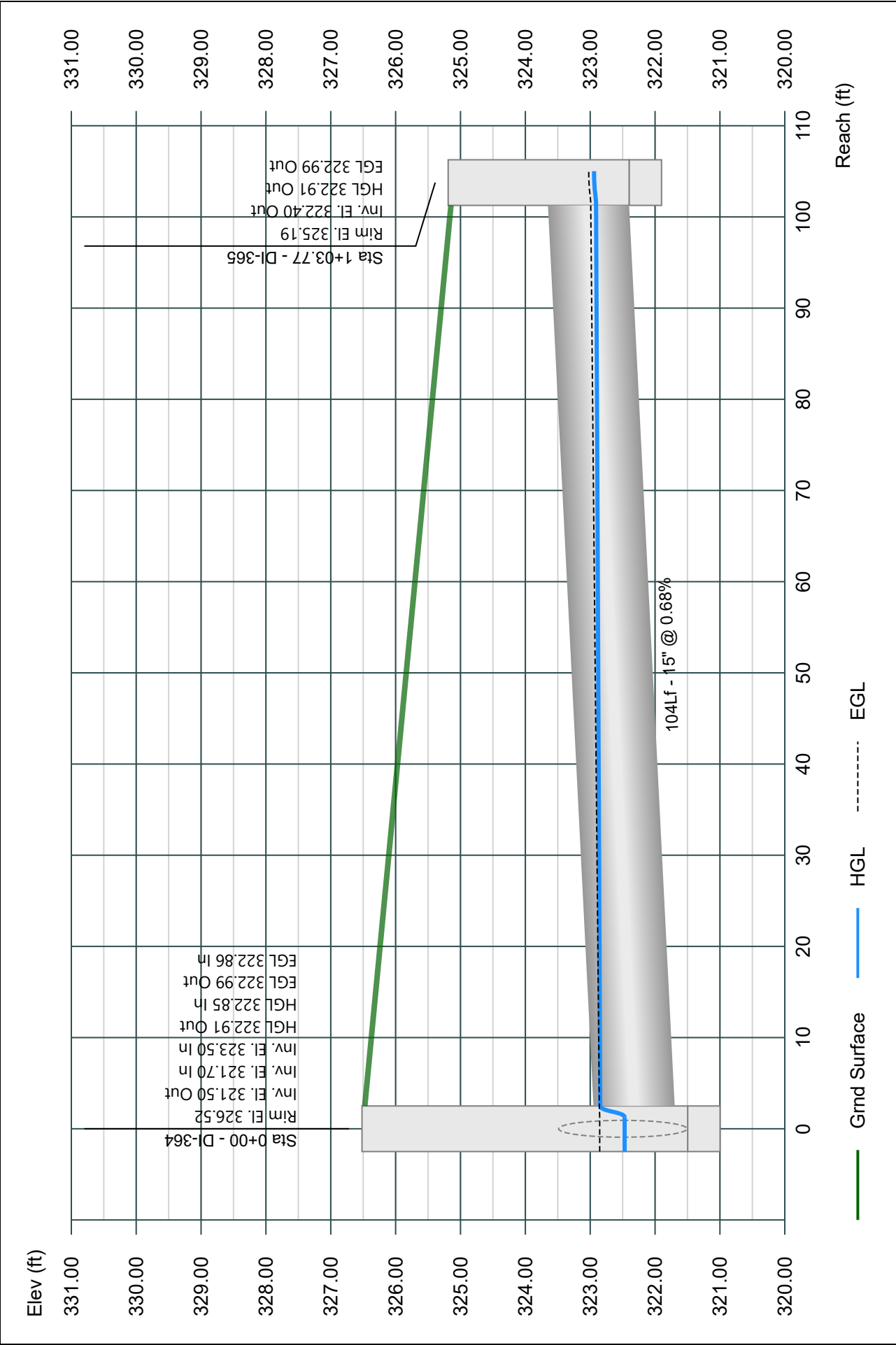


Line 60 - 364-365

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

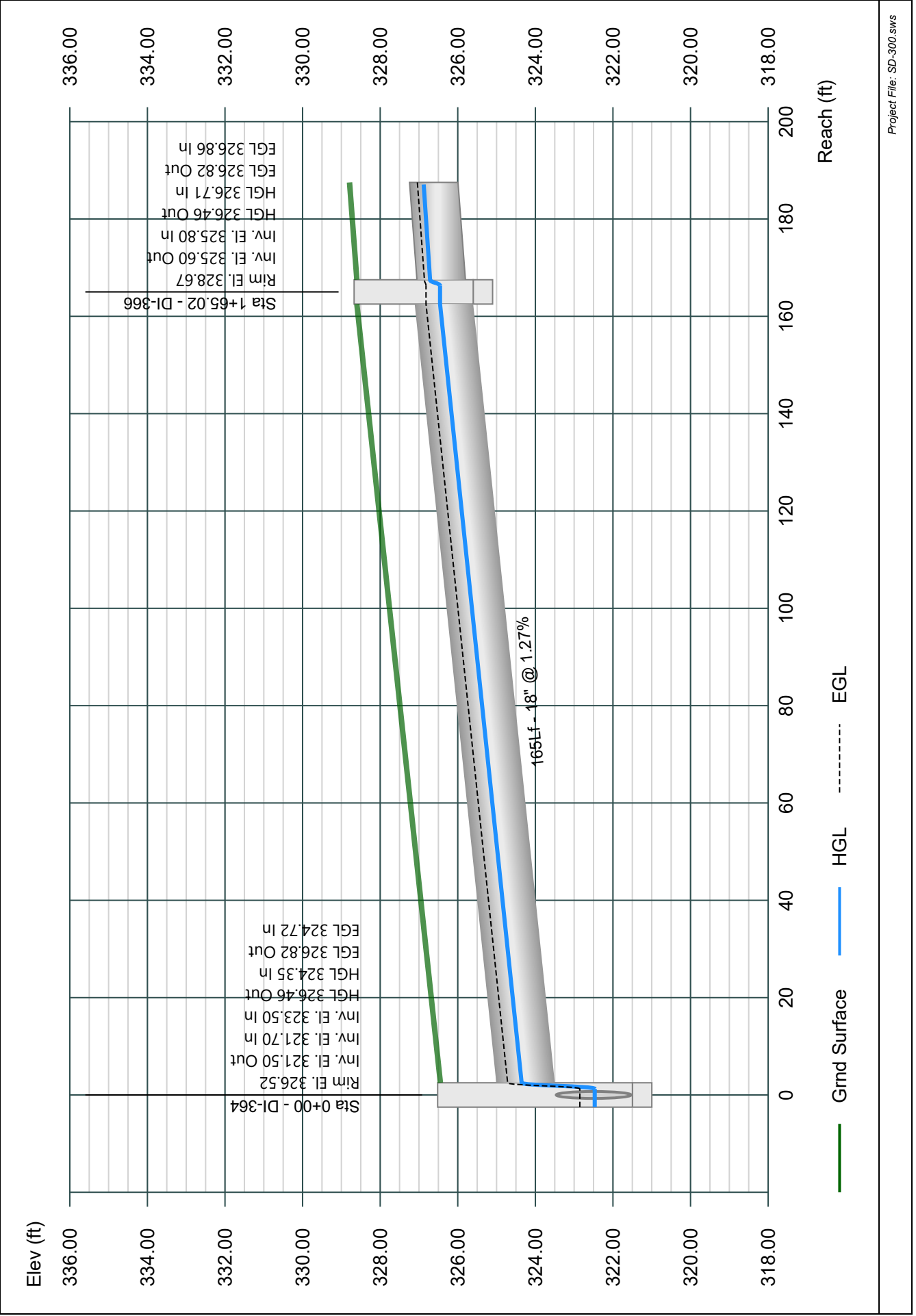


Line 61 - 364-366

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

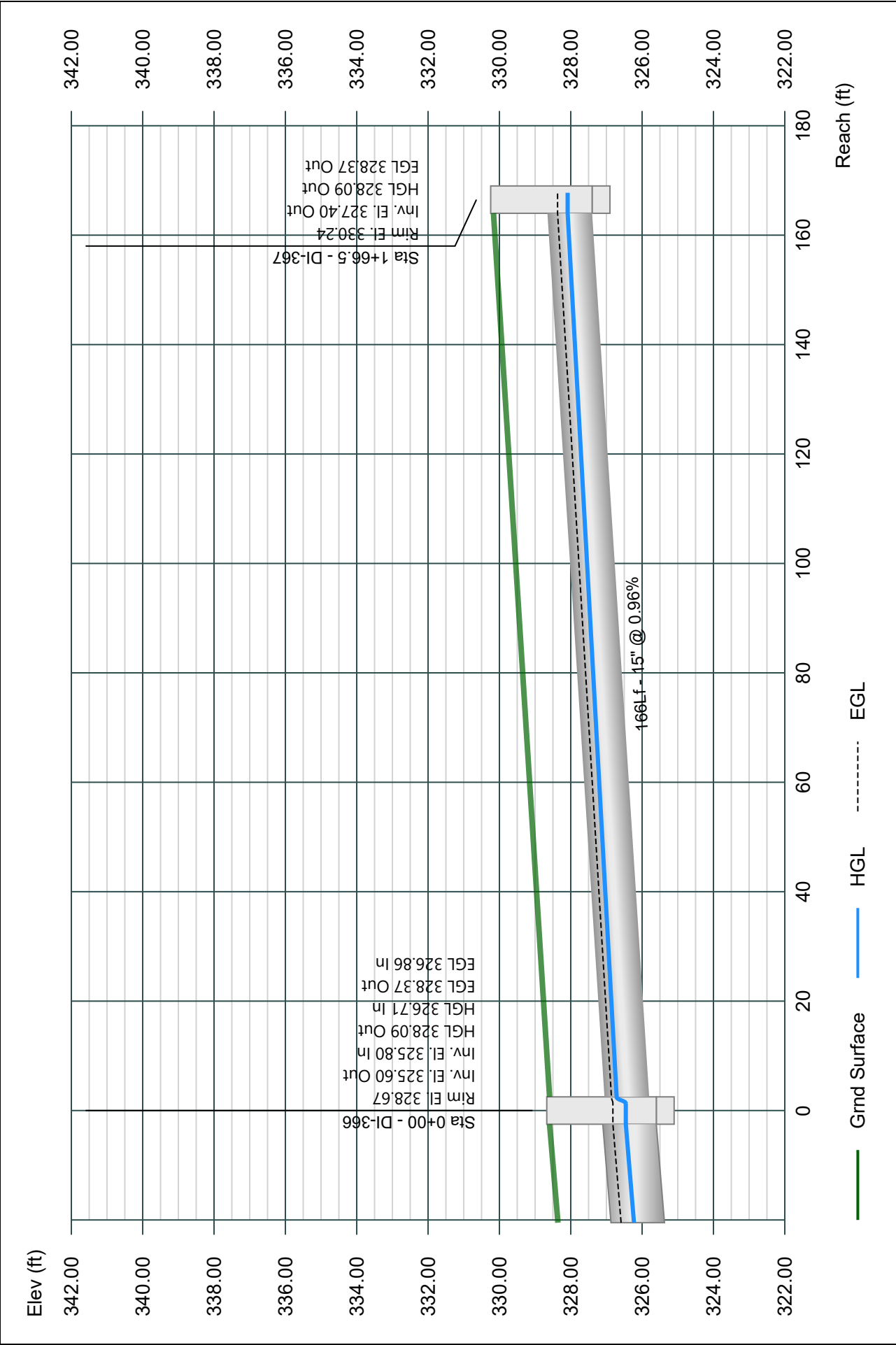


Line 62 - 366-367

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

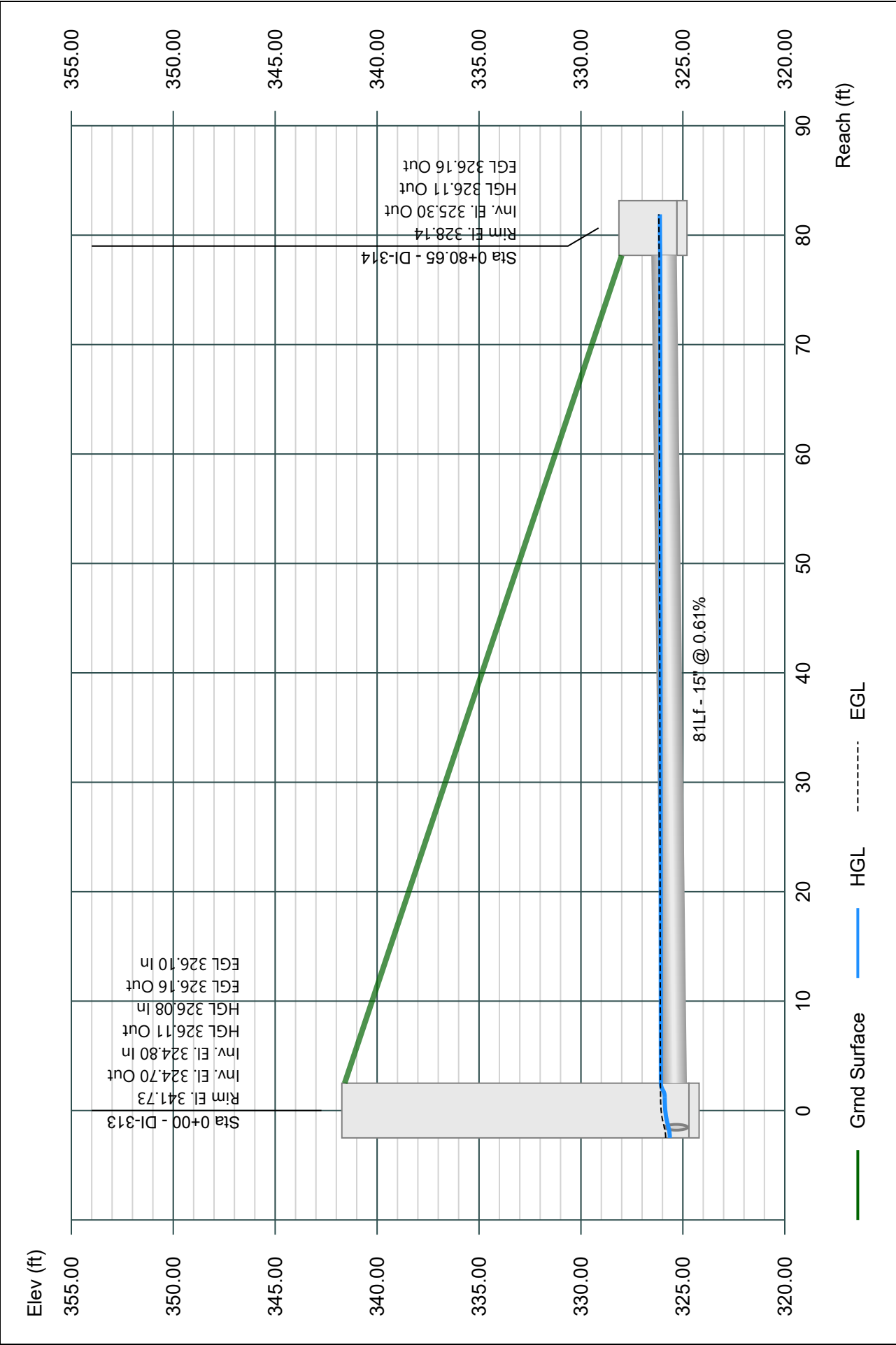


Line 63 - 313-314

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

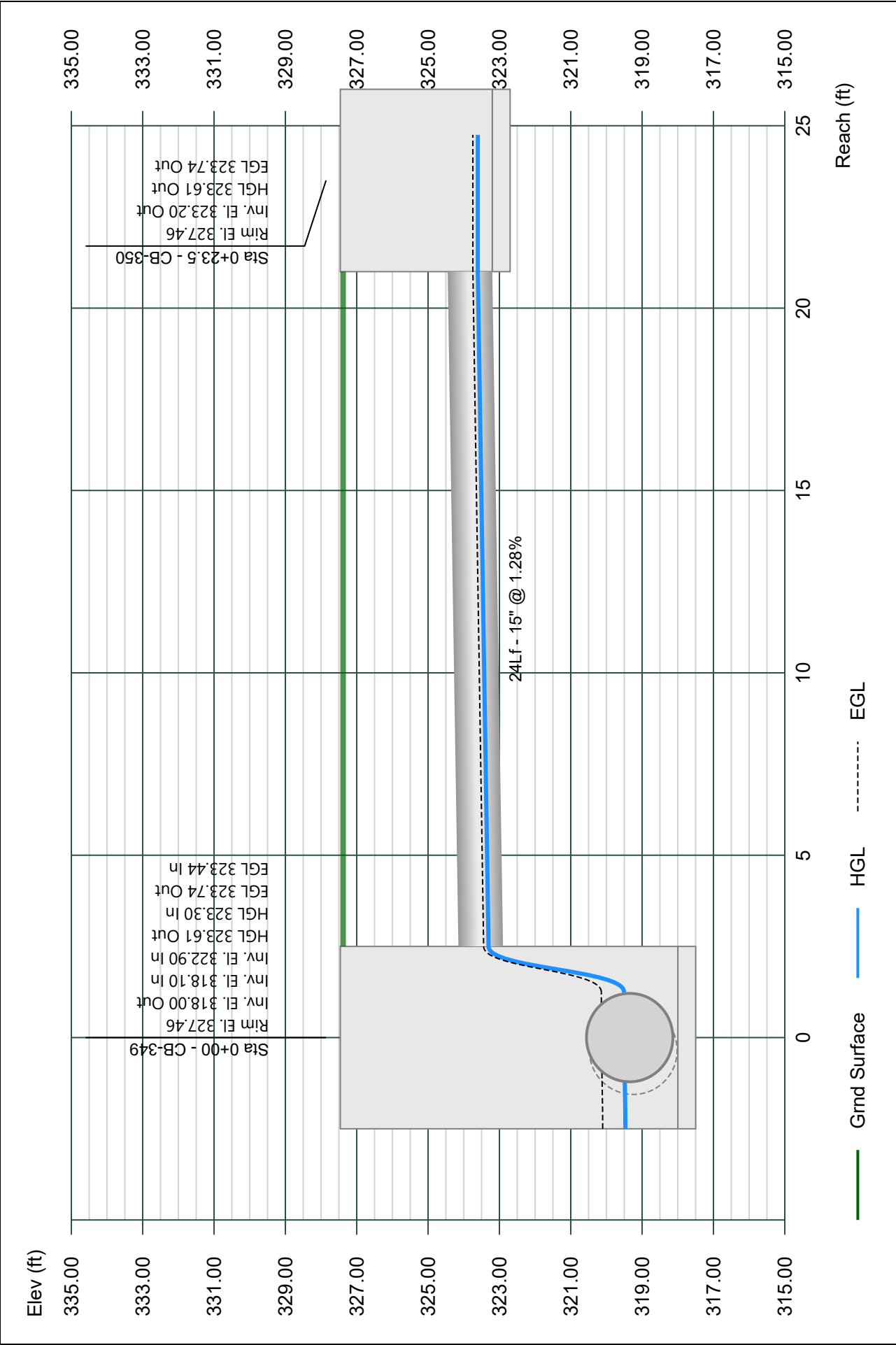


Line 64 - 349-350

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

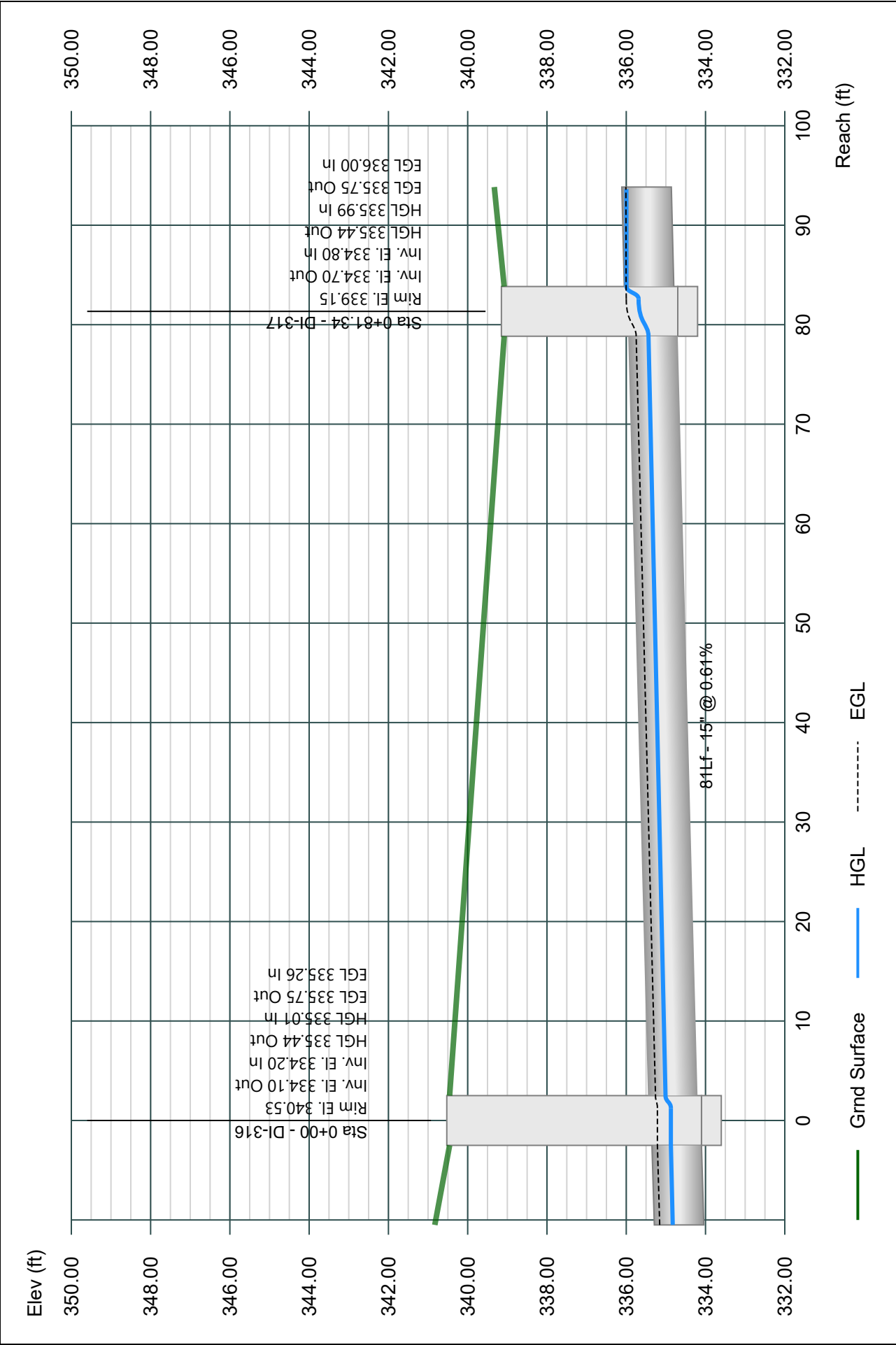


Line 65 - 316-317

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

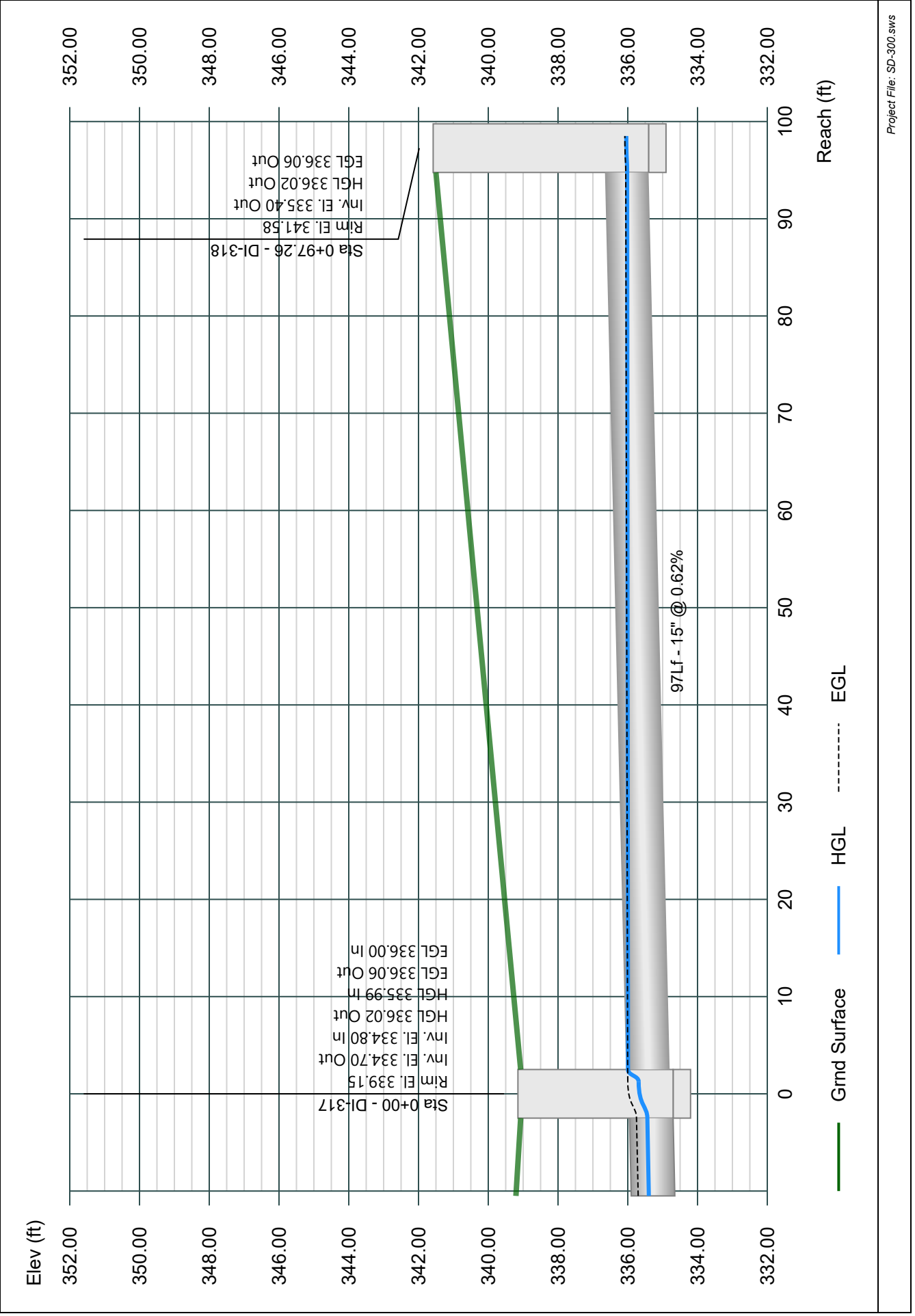


Line 66 - 317-318

Project Name: SD-300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

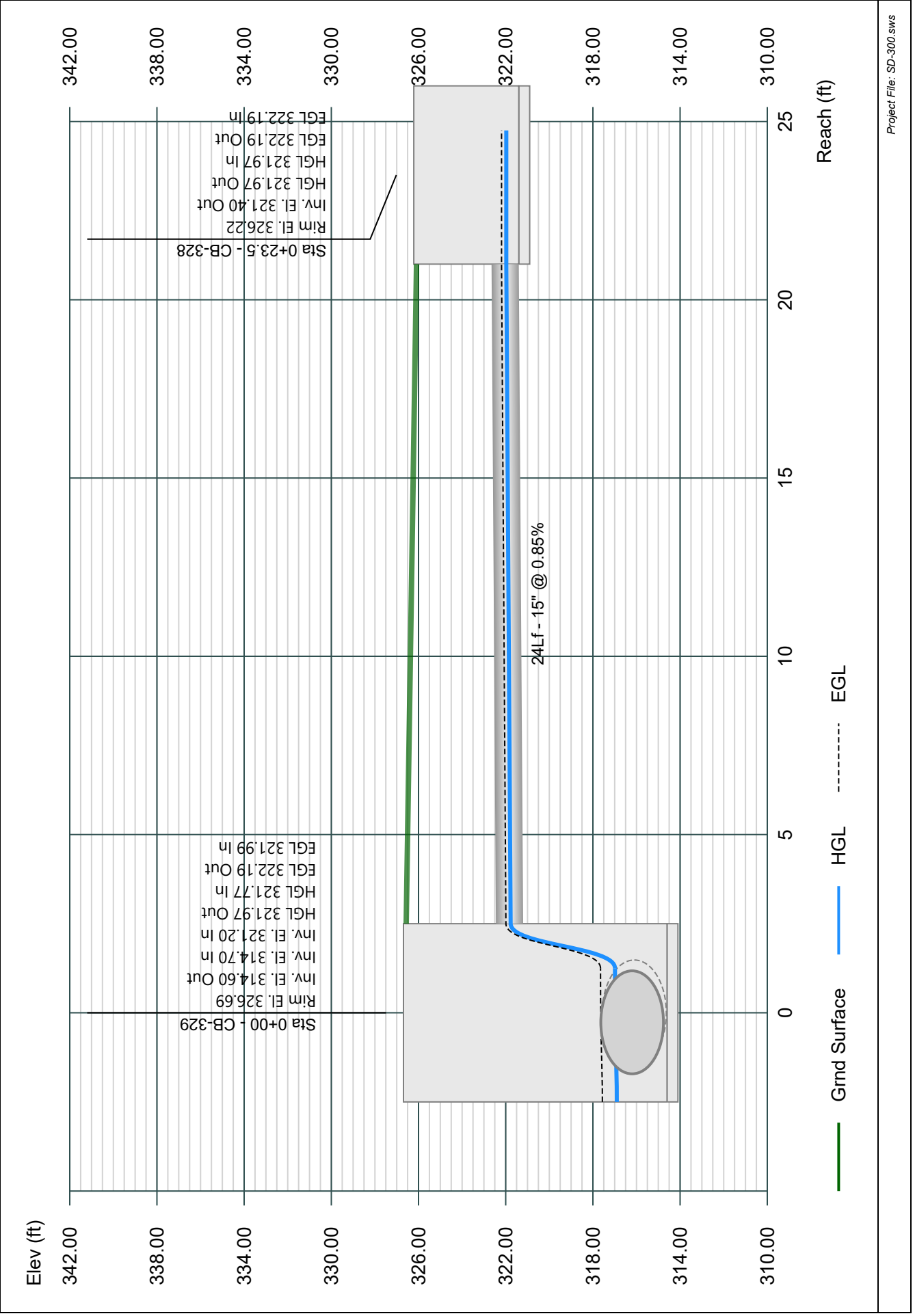


Line 67

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-300

02-26-2024

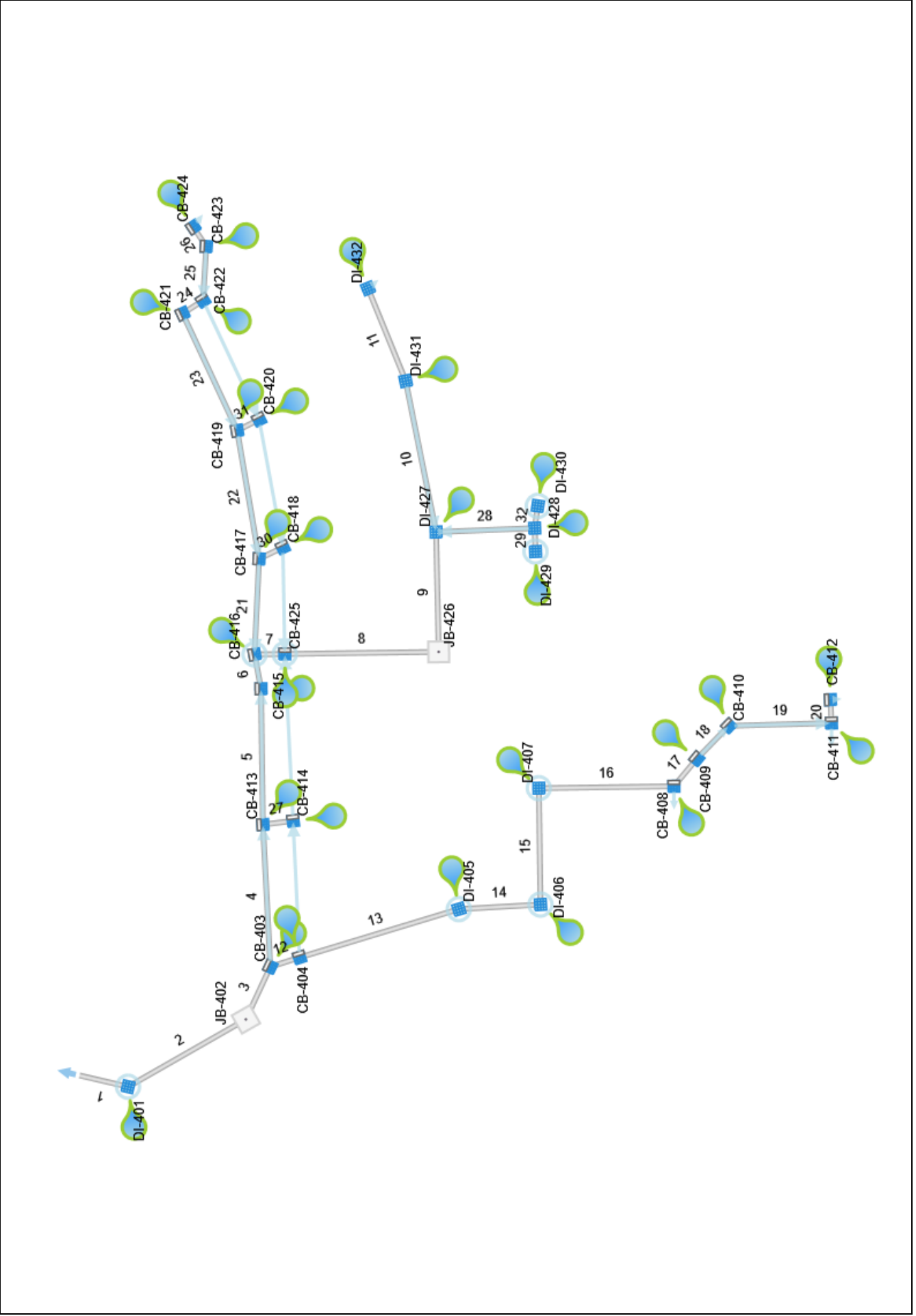


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024



Energy Grade Line Calculations

Project Name: SD-400
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	42	26.26	308.80	3.50	9.62	312.61	2.73	0.12	312.73	49.17	309.10	3.50	9.62	312.64	2.73	0.12	312.76	0.013	0.033	312.65	312.76	0.00
2	36	26.04	309.20	3.00	7.07	312.64	3.69	0.21	312.85	136.89	310.10	2.71	6.72	312.81	3.88	0.23	313.04	0.013	0.197	312.88	313.12	0.07
3	36	26.18	310.20	2.77	6.82	312.97	3.84	0.23	313.20	58.42	310.60	2.40	6.06	313.00	4.32	0.29	313.29	0.013	0.088	313.01	313.30	0.01
4	30	17.89	310.70	2.48	4.90	313.18	3.65	0.21	313.39	143.65	311.60	1.73	3.63	313.33	4.93	0.38	313.71	0.013	0.327	313.35	313.73	0.02
5	30	16.92	311.70	1.81	3.82	313.52	4.43	0.31	313.82	136.88	312.60	1.37 ²	2.77	313.98	6.12	0.58	314.56	0.013	0.738	313.98	314.56	0.00
6	30	16.40	312.70	1.54	3.17	314.24	5.17	0.42	314.66	35.31	313.00	1.35 ²	2.71	314.35	6.05	0.57	314.92	0.013	0.258	314.35	314.92	0.00
7	24	9.49	313.10	1.71	2.86	314.80	3.32	0.17	314.98	30.50	313.30	1.52	2.56	314.82	3.71	0.21	315.03	0.013	0.056	314.85	315.07	0.04
8	18	7.62	313.40	1.49	1.77	314.89	4.32	0.29	315.18	155.25	314.40	1.21	1.52	315.61	5.01	0.39	316.00	0.013	0.813	316.11	316.50	0.51
9	18	7.75	314.50	1.50	1.77	316.32	4.38	0.30	316.62	120.83	315.30	1.50	1.77	316.98	4.38	0.30	317.28	0.013	0.658	317.01	317.31	0.03
10	15	2.22	315.60	1.25	1.23	317.28	1.81	0.05	317.33	155.33	316.60	0.86	0.90	317.46	2.47	0.09	317.56	0.013	0.227	317.49	317.58	0.02
11	15	0.98	316.70	0.87	0.91	317.57	1.08	0.02	317.59	100.85	318.90	0.40 ²	0.33	319.30	2.93	0.13	319.43	0.013	1.844	319.30	319.43	0.00
12	24	7.91	312.50	1.00 ¹	1.56	313.50	5.06	0.40	313.90	31.00	312.70	1.00	1.57	313.70	5.03	0.39	314.09	0.013	0.196	313.76	314.15	0.06
13	18	6.94	312.80	1.03 ³	1.30	313.83	5.36	0.45	314.28	167.95	313.90	1.03	1.29	314.93	5.37	0.45	315.37	0.013	1.098	315.02	315.47	0.10
14	18	6.26	314.00	1.33	1.65	315.32	3.79	0.22	315.55	82.46	314.50	1.03	1.30	315.53	4.83	0.36	315.90	0.013	0.350	315.64	316.00	0.10
15	18	5.47	314.60	1.27	1.60	315.87	3.42	0.18	316.06	117.30	315.40	0.89 ²	1.10	316.29	4.99	0.39	316.68	0.013	0.620	316.29	316.68	0.00
16	15	3.60	315.50	1.07	1.12	316.57	3.21	0.16	316.73	136.25	316.40	0.76 ²	0.78	317.16	4.61	0.33	317.49	0.013	0.765	317.16	317.49	0.00
17	15	2.78	316.50	0.89	0.94	317.39	2.97	0.14	317.53	36.11	316.80	0.67 ²	0.67	317.47	4.17	0.27	317.74	0.013	0.206	317.47	317.74	0.00
18	15	1.65	316.90	0.79	0.82	317.69	2.01	0.06	317.76	46.32	317.20	0.52	0.48	317.72	3.41	0.18	317.90	0.013	0.143	317.78	317.96	0.06
19	15	1.40	317.30	0.59	0.57	317.89	2.46	0.09	317.98	103.51	318.00	0.47 ²	0.43	318.47	3.28	0.17	318.64	0.013	0.659	318.47	318.64	0.00
20	15	0.65	318.10	0.52	0.48	318.62	1.34	0.03	318.65	23.58	318.30	0.33	0.25	318.63	2.56	0.10	318.73	0.013	0.080	318.68	318.79	0.06
21	18	6.48	314.60	1.00 ³	1.25	315.60	5.19	0.42	316.02	96.39	315.20	1.00	1.25	316.20	5.20	0.42	316.62	0.013	0.600	316.25	316.67	0.05
22	15	4.09	315.40	1.14	1.18	316.54	3.48	0.19	316.73	131.17	316.20	0.84	0.88	317.04	4.65	0.34	317.38	0.013	0.647	317.11	317.44	0.07

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth. ³ Normal depth.

Project File: SD-400.sws

Energy Grade Line Calculations

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
23	15	2.14	316.30	1.11	1.15	317.41	1.86	0.05	317.46	130.19	317.10	0.59	0.57	317.69	3.77	0.22	317.91	0.013	0.446	317.71	317.93	0.02
24	15	1.98	317.20	0.57	0.55	317.77	3.63	0.20	317.98	24.54	317.40	0.56 ²	0.54	317.96	3.69	0.21	318.17	0.013	0.197	317.96	318.17	0.00
25	15	1.88	317.50	0.60	0.58	318.10	3.22	0.16	318.26	54.52	317.90	0.55 ²	0.52	318.44	3.63	0.20	318.65	0.013	0.388	318.44	318.65	0.00
26	15	0.92	318.30	0.38 ¹	0.32	318.68	2.88	0.13	318.81	23.50	318.50	0.38 ²	0.32	318.88	2.88	0.13	319.01	0.013	0.201	318.88	319.01	0.00
27	15	0.69	316.30	0.33 ¹	0.26	316.63	2.64	0.11	316.74	30.67	316.50	0.33 ²	0.26	316.83	2.64	0.11	316.94	0.013	0.204	316.83	316.94	0.00
28	15	3.58	315.70	1.25	1.23	317.23	2.92	0.13	317.36	99.48	316.90	0.76 ²	0.78	317.66	4.60	0.33	317.99	0.013	0.625	317.66	317.99	0.00
29	15	0.30	317.00	0.99	1.04	317.99	0.29	0.00	317.99	23.61	318.20	0.22 ²	0.15	318.42	2.08	0.07	318.49	0.013	0.503	318.42	318.49	0.00
30	15	2.00	315.40	1.24	1.23	316.64	1.63	0.04	316.68	26.65	315.60	1.06	1.11	316.66	1.81	0.05	316.71	0.013	0.025	316.68	316.73	0.02
31	15	1.51	316.90	0.49 ¹	0.45	317.39	3.37	0.18	317.57	24.83	317.10	0.49 ²	0.45	317.59	3.37	0.18	317.77	0.013	0.199	317.59	317.77	0.00
32	15	1.56	317.00	0.96	1.01	317.96	1.54	0.04	318.00	22.67	317.20	0.76	0.78	317.96	1.99	0.06	318.02	0.013	0.023	317.98	318.05	0.02

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-400.sws

Storm Sewer Tabulation

Project Name: SD-400
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Inlet (min)	Syst (min)	Incr	Total					Inlet (min)	Syst (min)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
400-401	49.17	0.140	5.680	0.60	0.08	4.16	5.0	8.13	6.31	26.26	77.93	2.73	42	0.60	309.10	308.80	312.64	312.61	315.69	310.00	1
401-402	136.89	0.000	5.540	0.00	0.00	4.07	5.0	7.82	6.39	26.04	54.23	3.78	36	0.66	310.10	309.20	312.81	312.64	322.97	315.69	2
402-403	58.42	0.130	5.540	0.80	0.10	4.07	5.0	7.69	6.42	26.18	55.22	4.08	36	0.69	310.60	310.20	313.00	312.97	324.27	322.97	3
403-413	143.65	0.110	3.600	0.80	0.09	2.74	5.0	7.33	6.52	17.89	32.50	4.29	30	0.63	311.60	310.70	313.33	313.18	320.97	324.27	4
413-415	136.88	0.110	3.370	0.80	0.09	2.56	5.0	6.99	6.61	16.92	33.28	5.28	30	0.66	312.60	311.70	313.98	313.52	319.31	320.97	5
415-416	35.31	0.110	3.260	0.80	0.09	2.47	5.0	6.91	6.63	16.40	37.29	5.61	30	0.83	313.00	312.70	314.35	314.24	319.11	319.31	6
416-425	30.50	0.380	1.890	0.80	0.30	1.43	5.0	6.82	6.66	9.49	18.45	3.51	24	0.67	313.30	313.10	314.82	314.80	319.23	319.11	7
425-426	155.25	0.000	1.510	0.00	0.00	1.12	5.0	6.34	6.79	7.62	8.43	4.66	18	0.65	314.40	313.40	315.61	314.89	318.13	319.23	8
426-427	120.83	0.390	1.510	0.80	0.31	1.12	5.0	5.97	6.90	7.75	8.52	4.38	18	0.66	315.30	314.50	316.98	316.32	319.99	318.13	9
427-431	155.33	0.220	0.390	0.80	0.18	0.31	5.0	5.34	7.10	2.22	5.20	2.14	15	0.65	316.60	315.60	317.46	317.28	322.10	319.99	10
431-432	100.85	0.170	0.170	0.80	0.14	0.14	5.0	5.00	7.21	0.98	9.53	2.01	15	2.18	318.90	316.70	319.30	317.57	324.83	322.10	11
403-404	31.00	0.230	1.810	0.75	0.17	1.23	5.0	7.60	6.45	7.91	17.98	5.04	24	0.63	312.70	312.50	313.70	313.50	324.01	324.27	12
404-405	167.95	0.190	1.580	0.60	0.11	1.05	5.0	7.07	6.59	6.94	8.49	5.36	18	0.65	313.90	312.80	314.93	313.83	321.28	324.01	13
405-406	82.46	0.220	1.390	0.60	0.13	0.94	5.0	6.80	6.66	6.26	8.22	4.31	18	0.61	314.50	314.00	315.53	315.32	321.94	321.28	14
406-407	117.30	0.480	1.170	0.60	0.29	0.81	5.0	6.42	6.77	5.47	8.64	4.21	18	0.68	315.40	314.60	316.29	315.87	320.41	321.94	15
407-408	136.25	0.160	0.690	0.75	0.12	0.52	5.0	5.93	6.92	3.60	5.27	3.91	15	0.67	316.40	315.50	317.16	316.57	325.82	320.41	16
408-409	36.11	0.220	0.530	0.75	0.17	0.40	5.0	5.80	6.96	2.78	5.85	3.57	15	0.82	316.80	316.50	317.47	317.39	325.47	325.82	17
409-410	46.32	0.050	0.310	0.80	0.04	0.24	5.0	5.60	7.02	1.65	5.18	2.71	15	0.64	317.20	316.90	317.72	317.69	324.16	325.47	18
410-411	103.51	0.140	0.260	0.75	0.11	0.20	5.0	5.12	7.17	1.40	5.31	2.87	15	0.68	318.00	317.30	318.47	317.89	322.56	324.16	19
411-412	23.58	0.120	0.120	0.75	0.09	0.09	5.0	5.00	7.21	0.65	5.97	1.95	15	0.85	318.30	318.10	318.63	318.62	322.56	322.56	20
416-417	96.39	0.110	1.260	0.80	0.09	0.96	5.0	6.46	6.76	6.48	8.28	5.19	18	0.62	315.20	314.60	316.20	315.60	319.79	319.11	21
417-419	131.17	0.100	0.780	0.80	0.08	0.59	5.0	5.98	6.90	4.09	5.04	4.06	15	0.61	316.20	315.40	317.04	316.54	321.36	319.79	22

Project File: SD-400.sws

Notes: IDF File = Zebulon-10yr-IDF, Return Period = 10-yrs.

Storm Sewer Tabulation

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

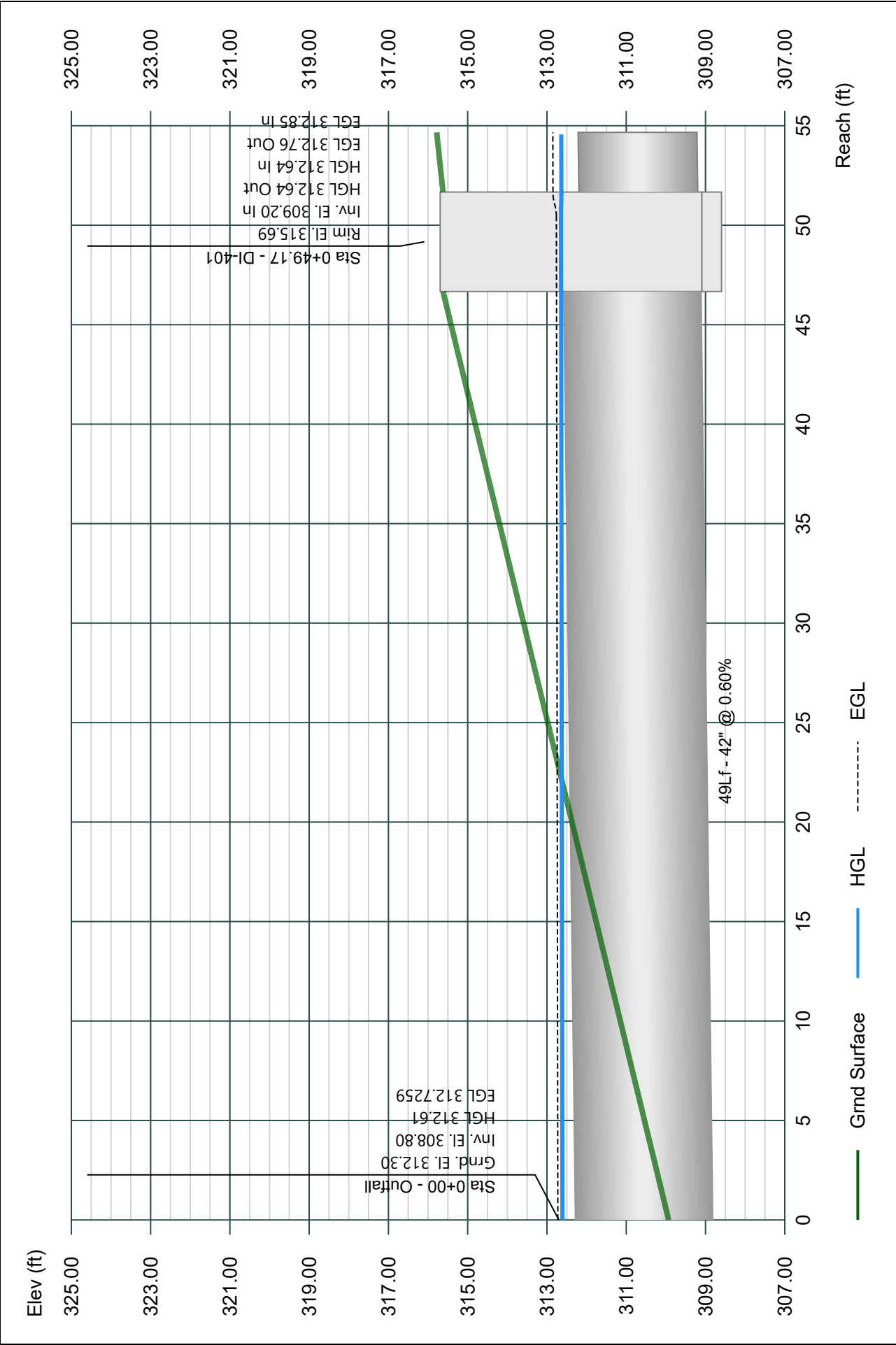
Line ID	Length (ft)	Drng Area (ac)		Rational (C)	C x A		Tc (min)		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size (in)	Slope (%)	Up	Dn	Up	Dn	Up	Dn	
419-421	130.19	0.030	0.400	0.80	0.02	0.30	5.0	5.43	7.07	2.14	5.07	2.81	15	0.62	317.10	316.30	317.69	317.41	322.49	321.36	23
421-422	24.54	0.020	0.370	0.80	0.02	0.28	5.0	5.33	7.10	1.98	5.79	3.66	15	0.80	317.40	317.20	317.96	317.77	322.49	322.49	24
422-423	54.52	0.180	0.350	0.75	0.14	0.26	5.0	5.11	7.18	1.88	5.51	3.42	15	0.73	317.90	317.50	318.44	318.10	322.84	322.49	25
423-424	23.50	0.170	0.170	0.75	0.13	0.13	5.0	5.00	7.21	0.92	5.97	2.88	15	0.86	318.50	318.30	318.88	318.68	322.84	322.84	26
413-414	30.67	0.120	0.120	0.80	0.10	0.10	5.0	5.00	7.21	0.69	5.27	2.64	15	0.67	316.50	316.30	316.83	316.63	320.78	320.97	27
427-428	99.48	0.300	0.730	0.80	0.24	0.50	5.0	5.09	7.18	3.58	7.09	3.76	15	1.21	316.90	315.70	317.66	317.23	321.31	319.99	28
428-429	23.61	0.070	0.070	0.60	0.04	0.04	5.0	5.00	7.21	0.30	14.57	1.19	15	5.09	318.20	317.00	318.42	317.99	322.83	321.31	29
417-418	26.65	0.370	0.370	0.75	0.28	0.28	5.0	5.00	7.21	2.00	5.59	1.72	15	0.75	315.60	315.40	316.66	316.64	319.90	319.79	30
419-420	24.83	0.280	0.280	0.75	0.21	0.21	5.0	5.00	7.21	1.51	5.78	3.37	15	0.80	317.10	316.90	317.59	317.39	321.40	321.36	31
428-430	22.67	0.360	0.360	0.60	0.22	0.22	5.0	5.00	7.21	1.56	6.07	1.77	15	0.88	317.20	317.00	317.96	317.96	320.20	321.31	32

Line 1 - 400-401

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

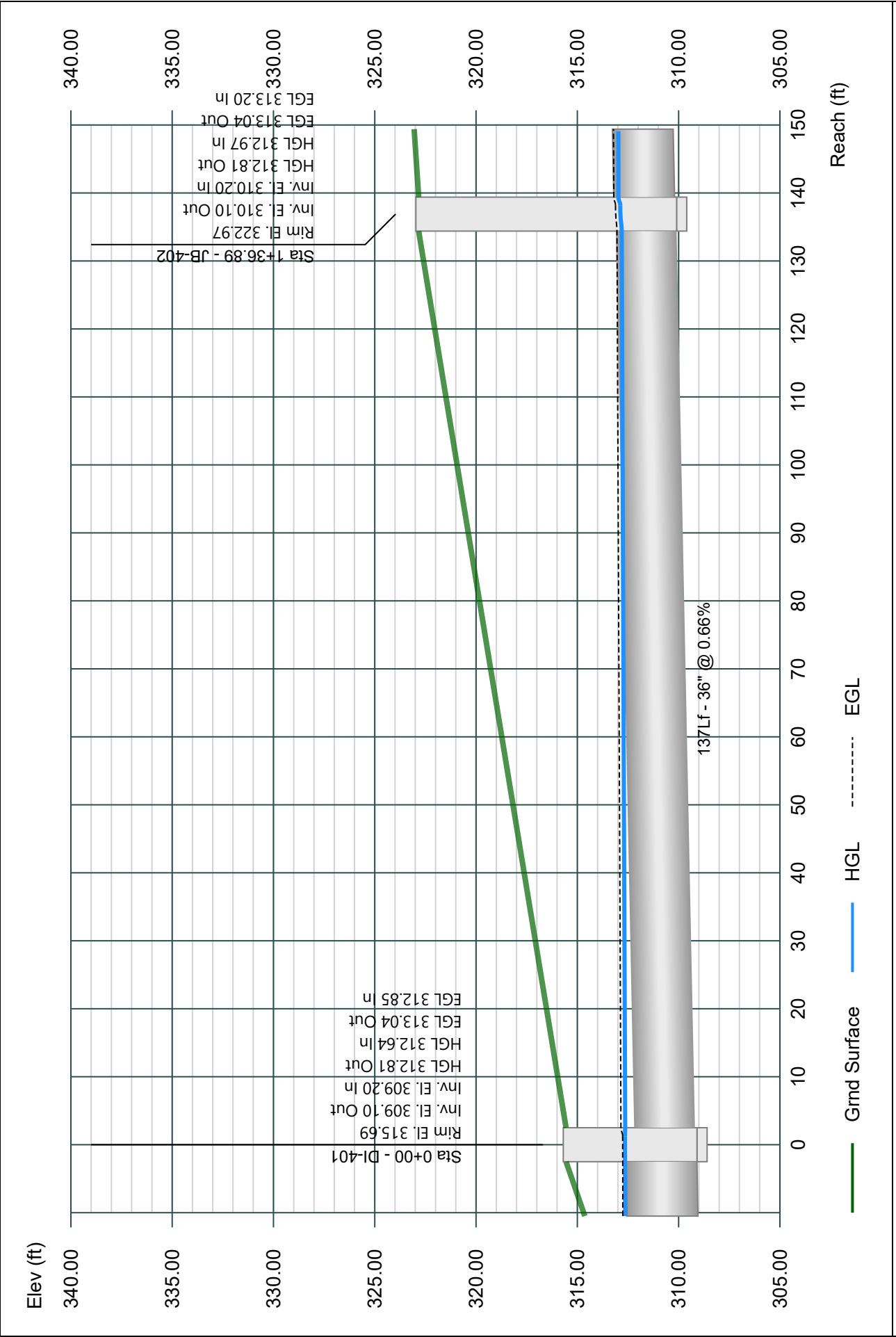


Line 2 - 401-402

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

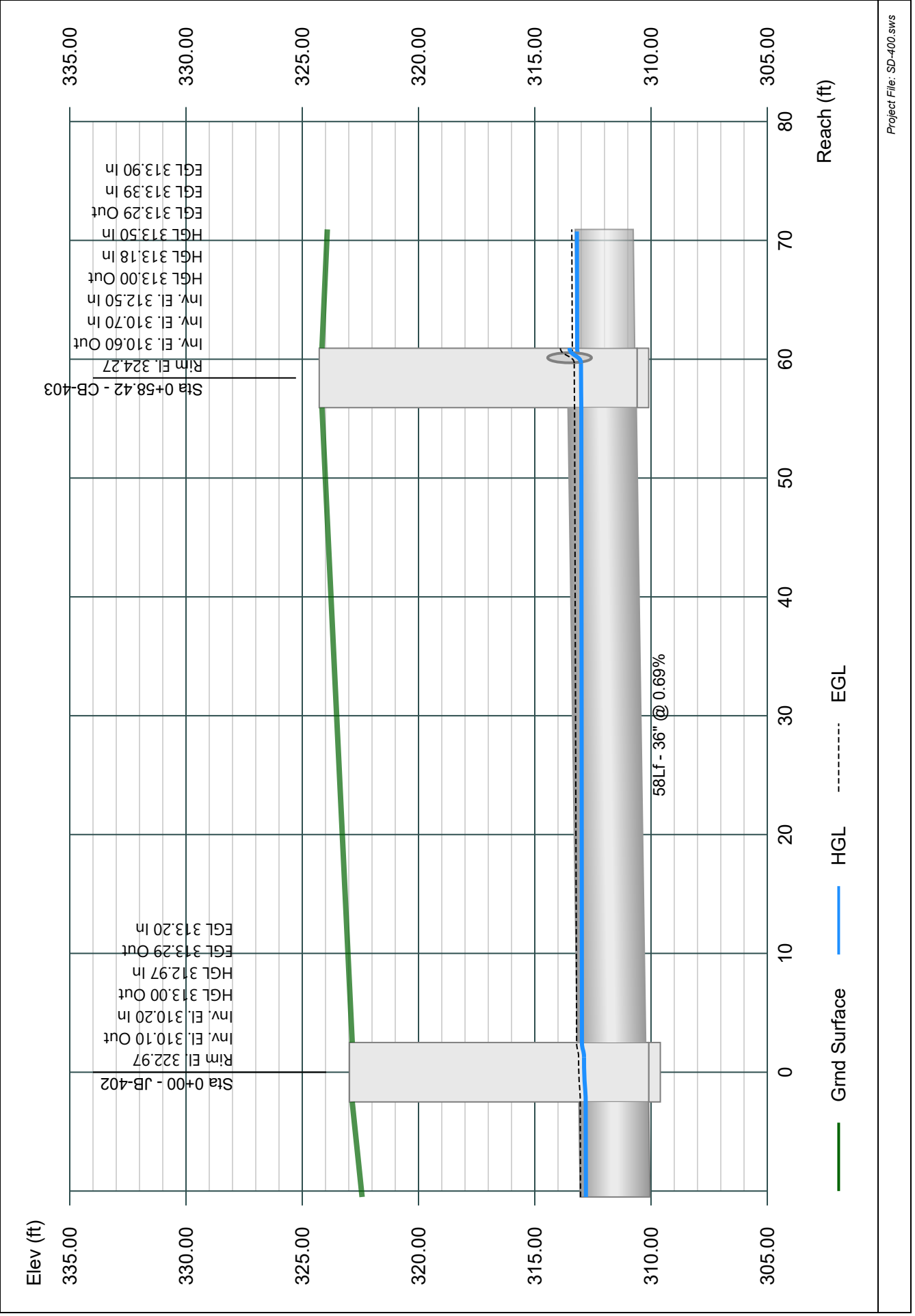


Line 3 - 402-403

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

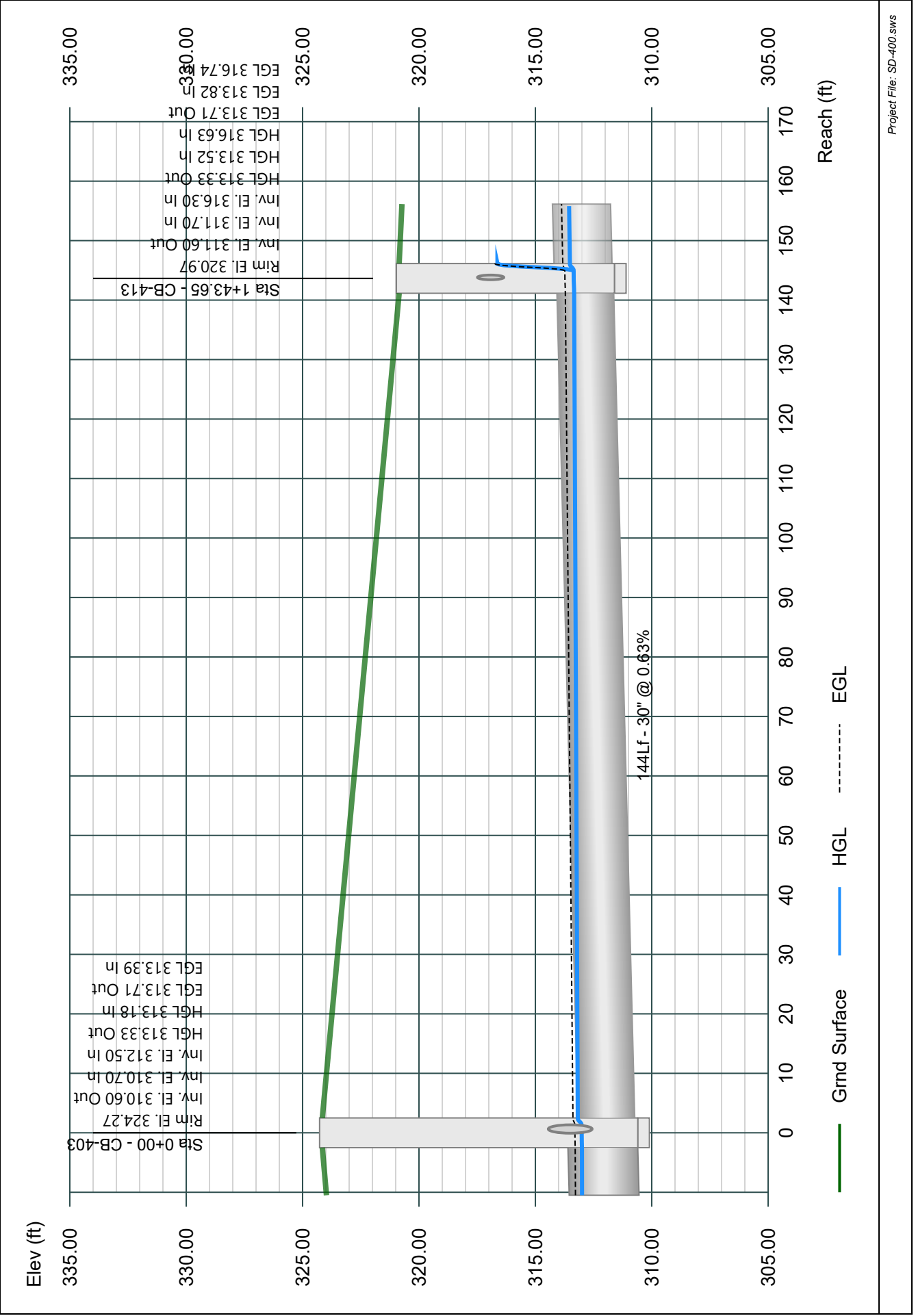


Line 4 - 403-413

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

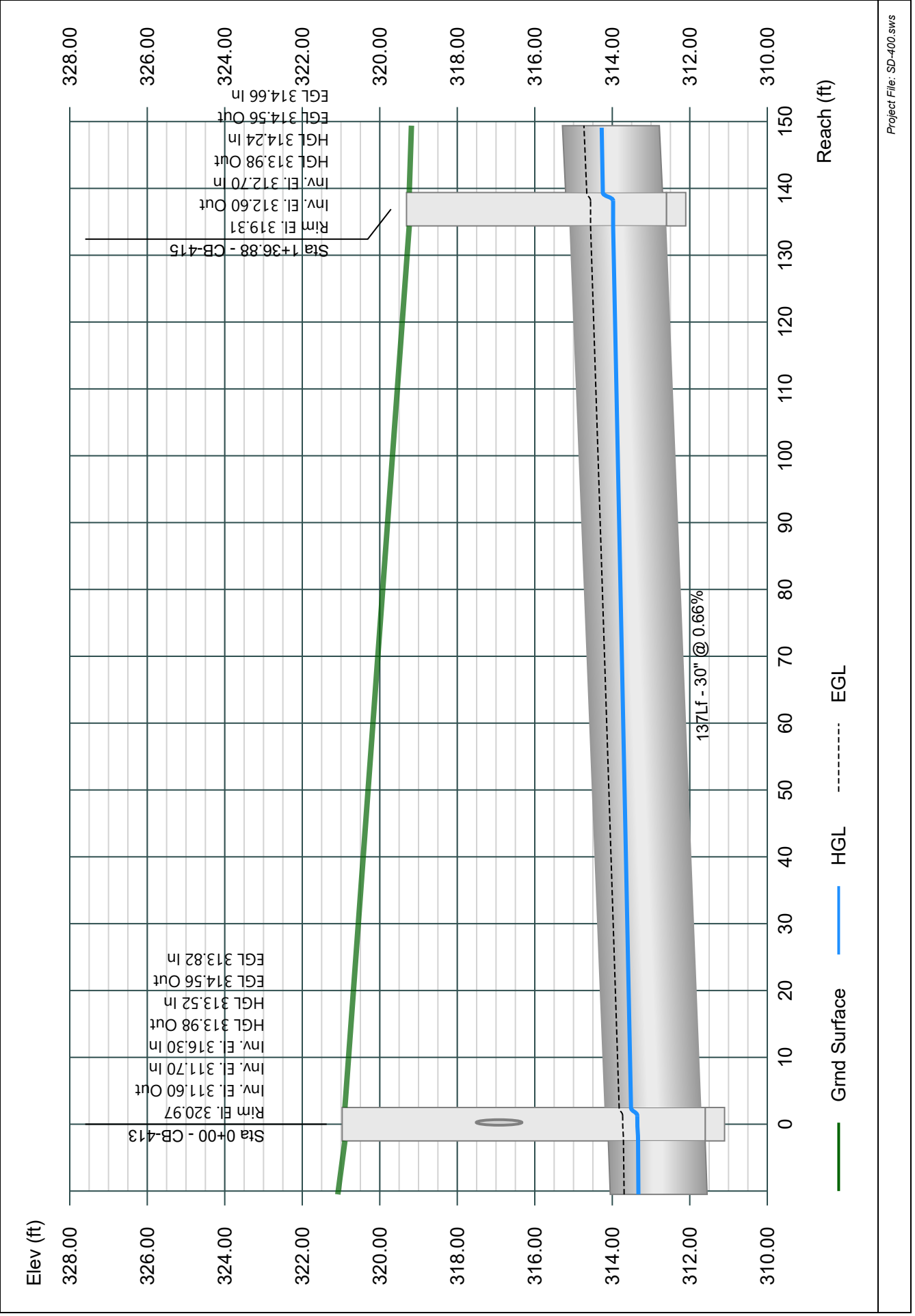


Line 5 - 413-415

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

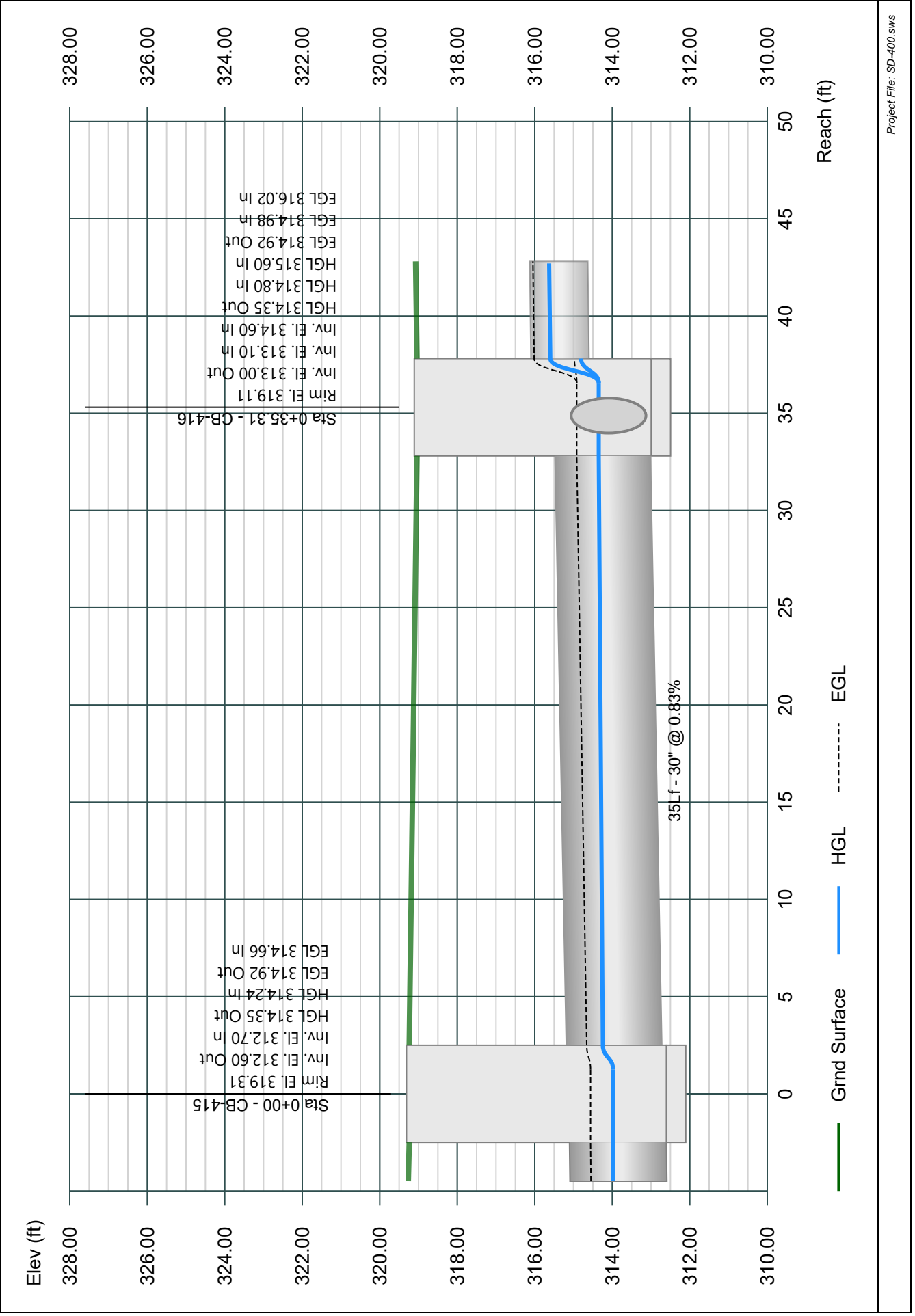


Line 6 - 415-416

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

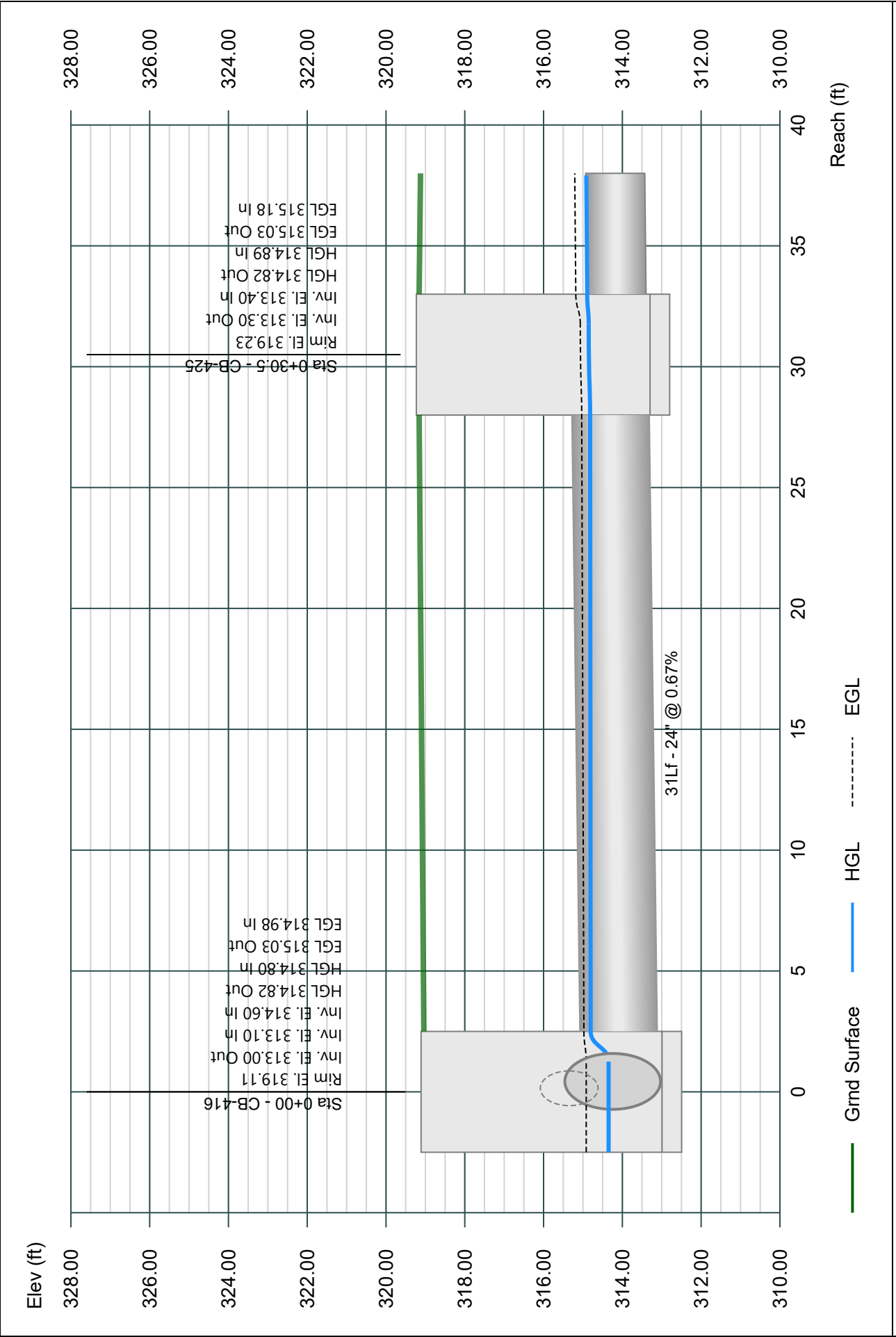


Line 7 - 416-425

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

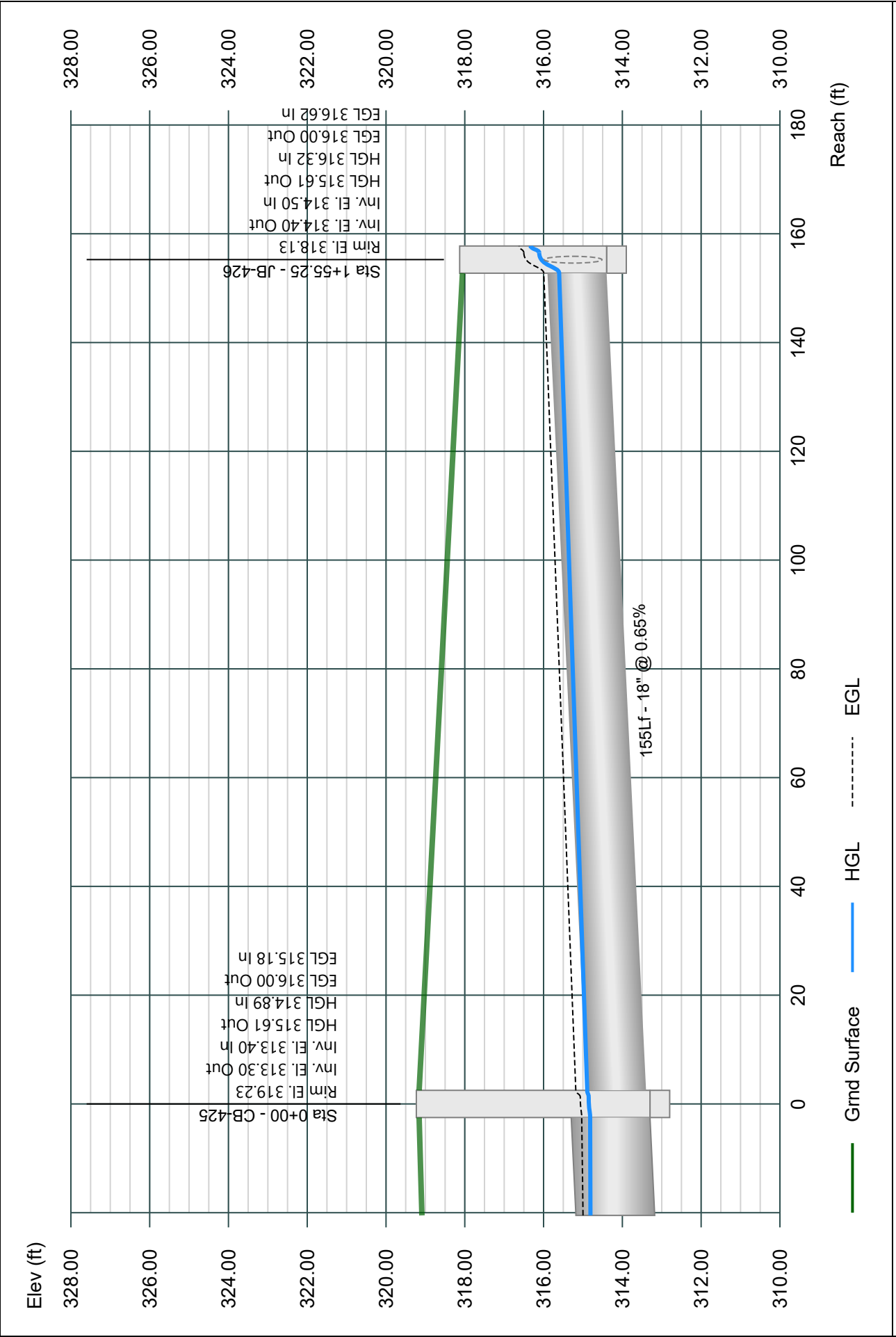


Line 8 - 425-426

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

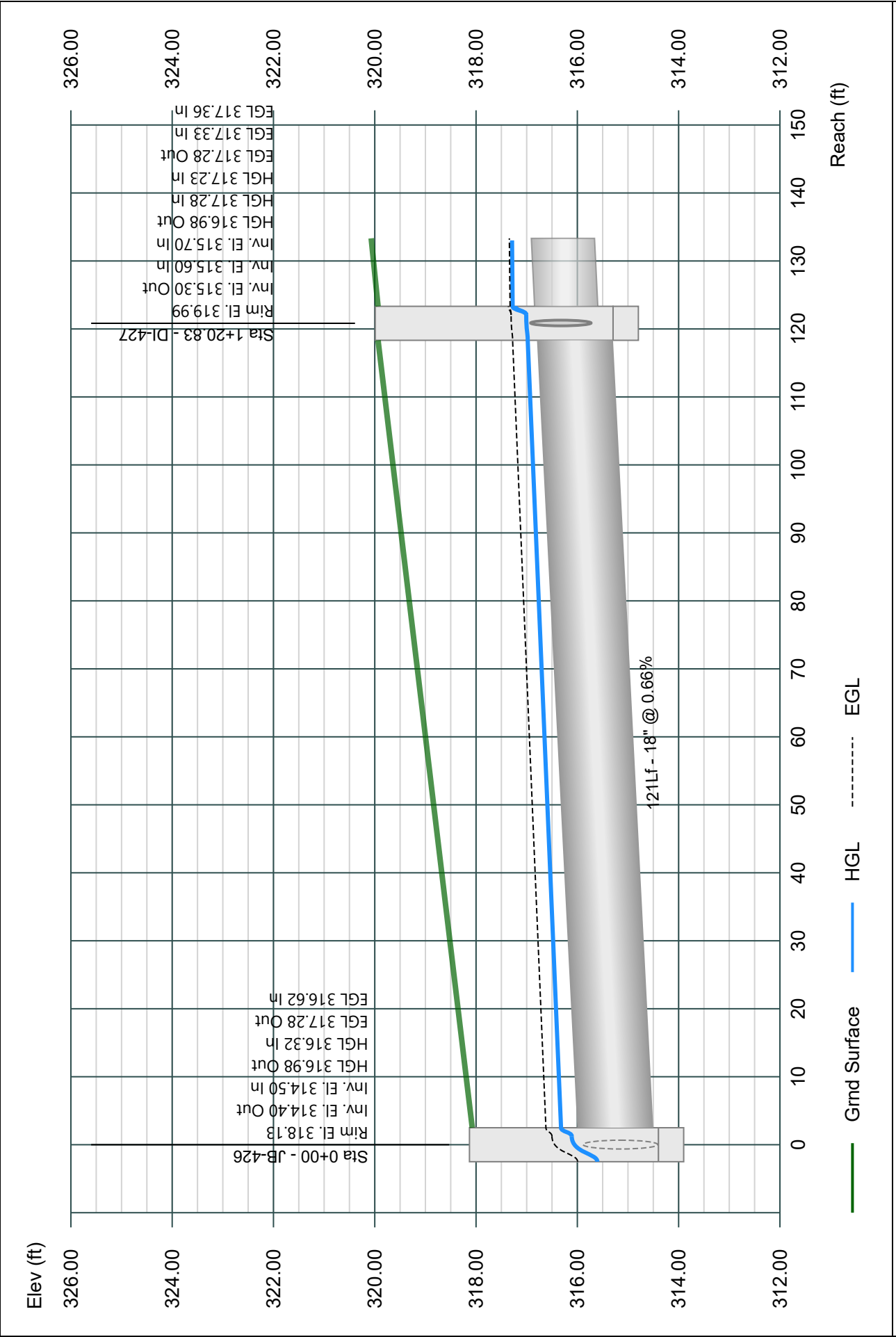


Line 9 - 426-427

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

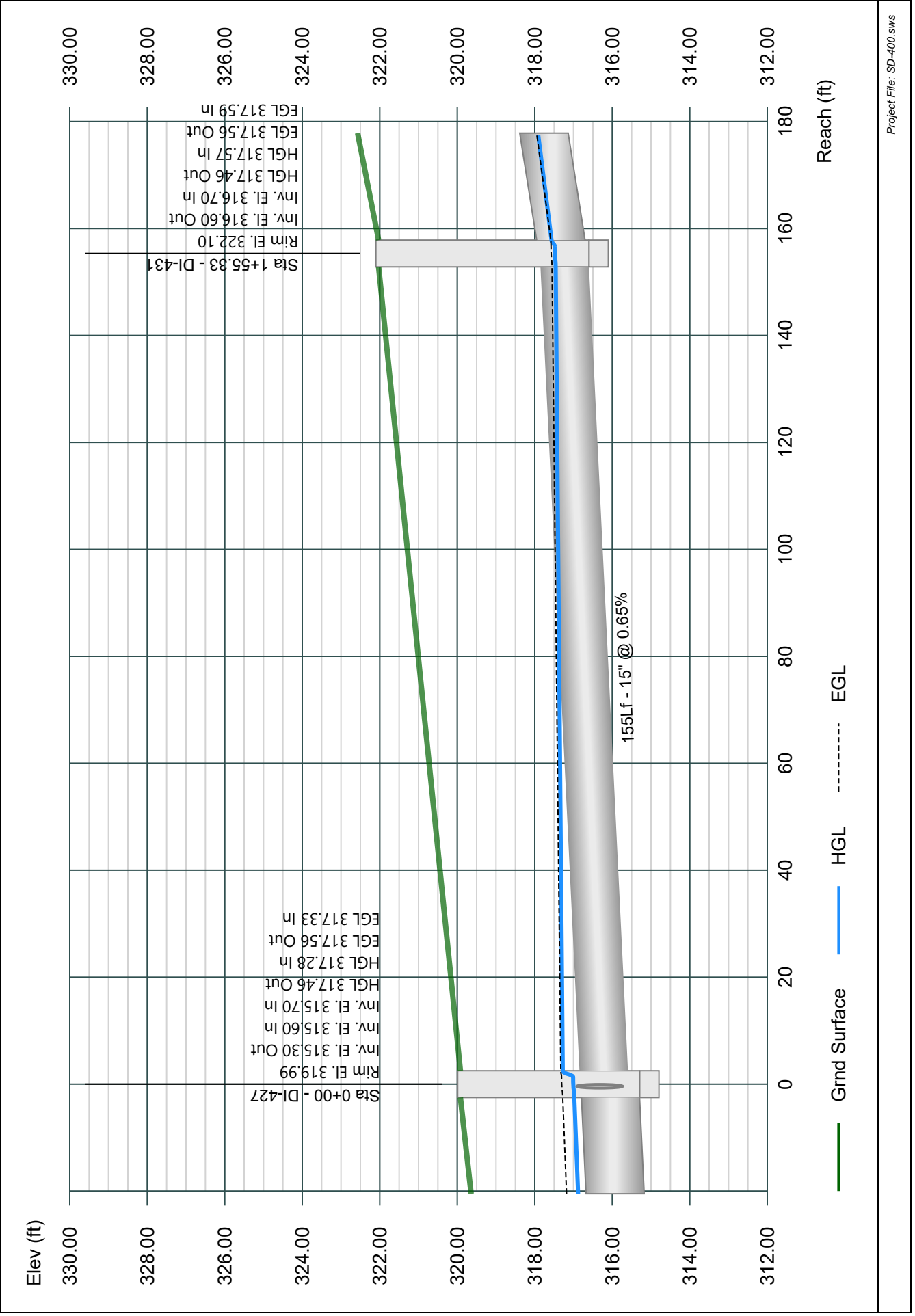


Line 10 - 427-431

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

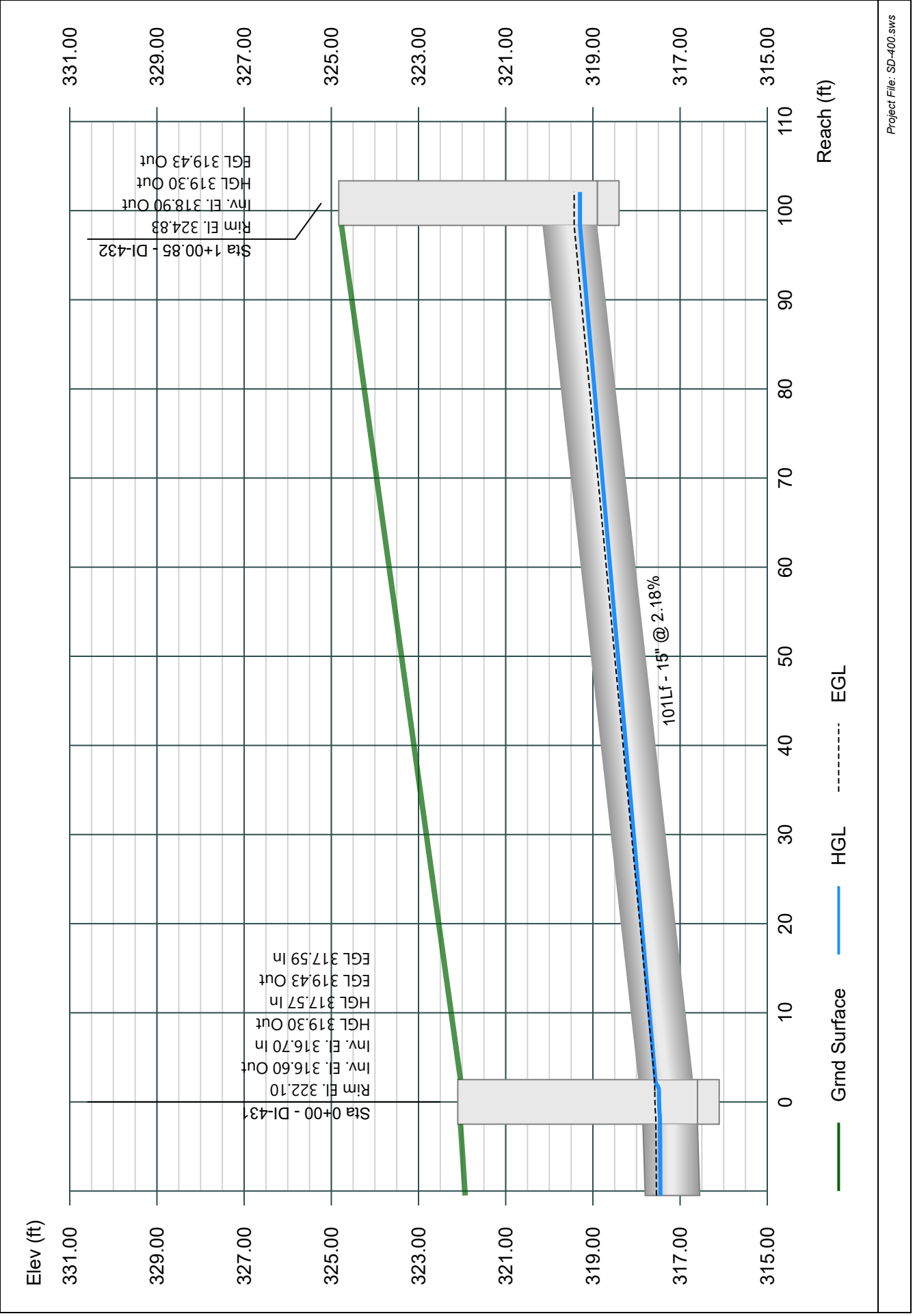


Line 11 - 431-432

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

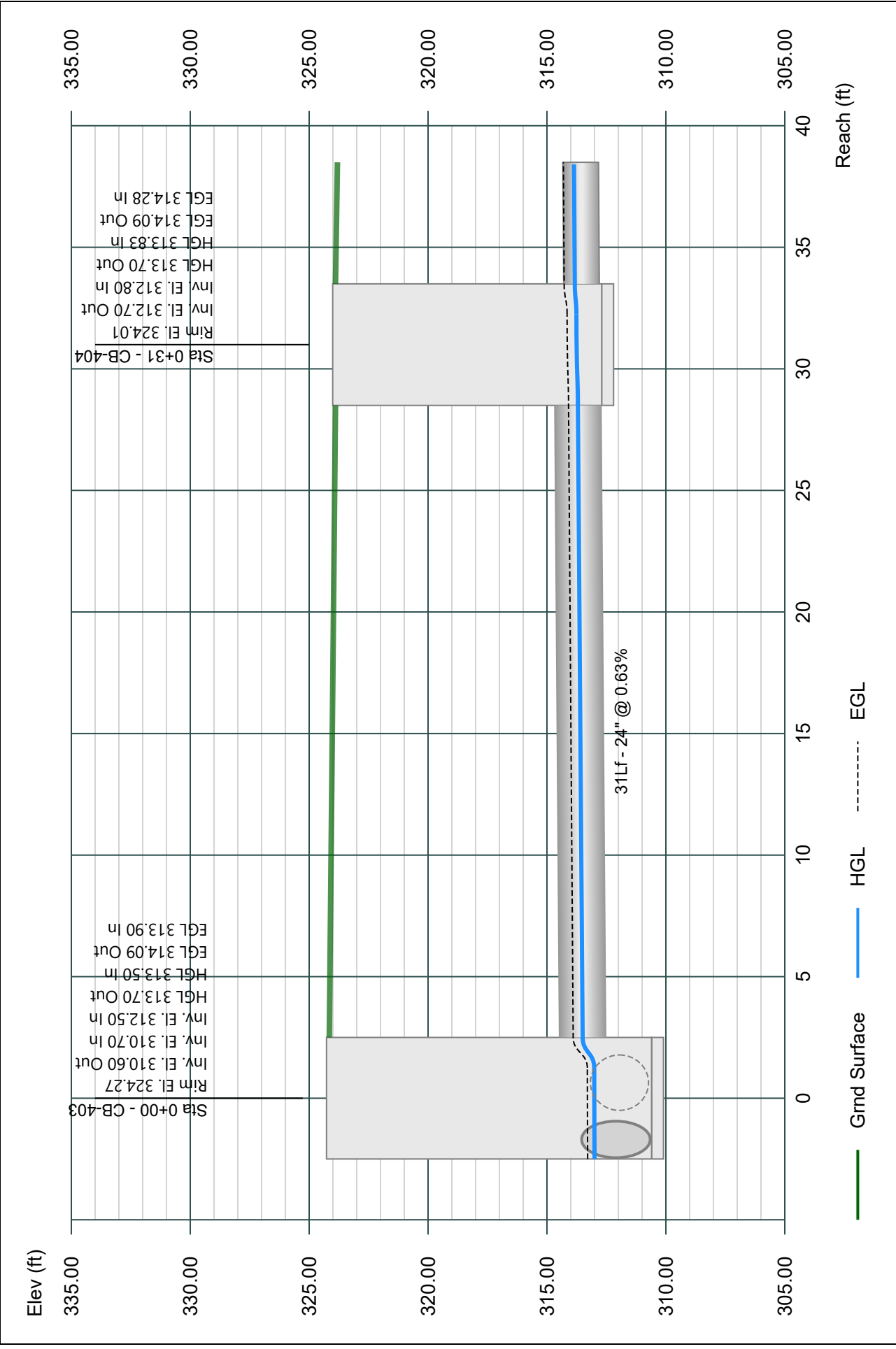


Line 12 - 403-404

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

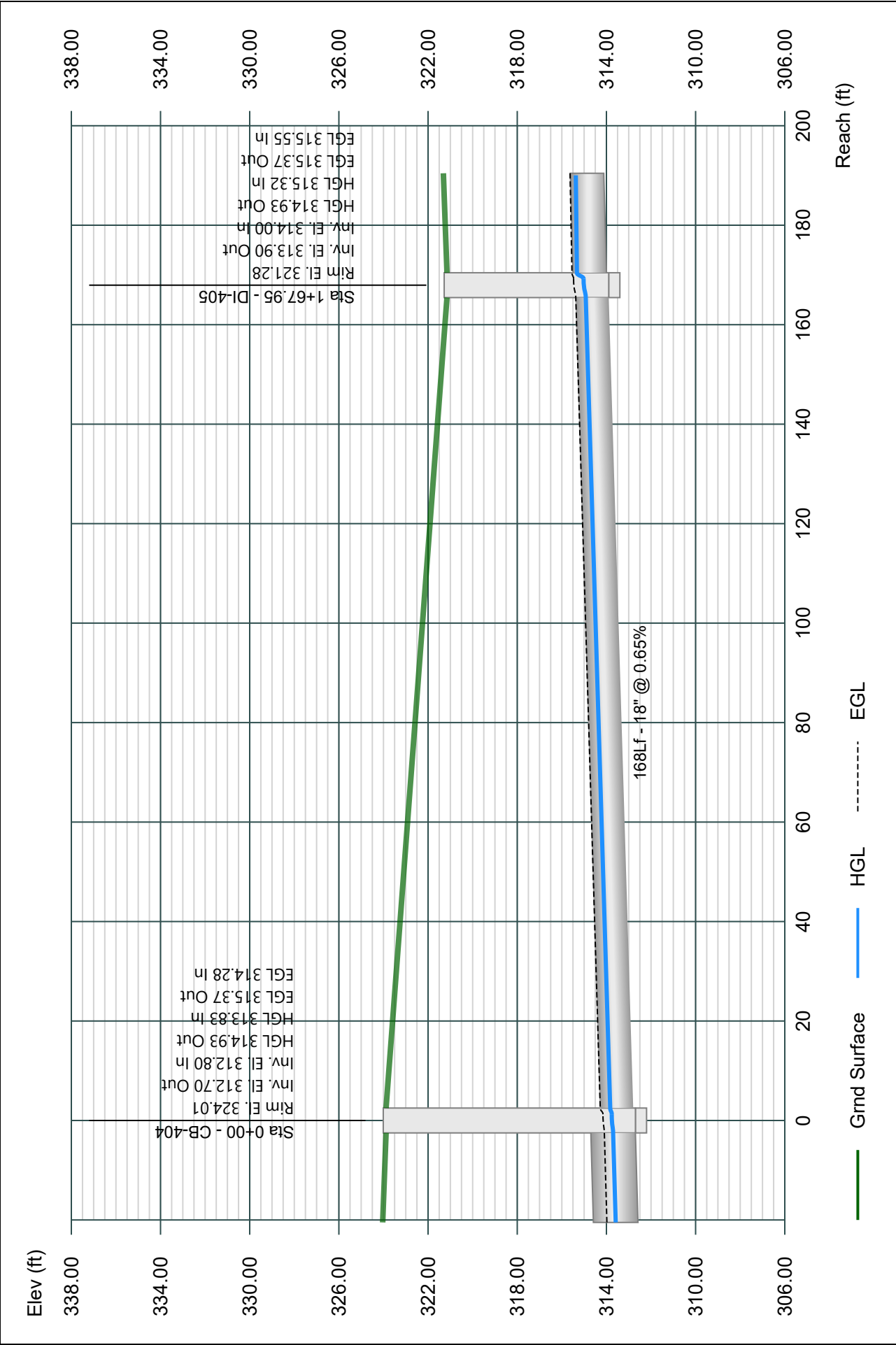


Line 13 - 404-405

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

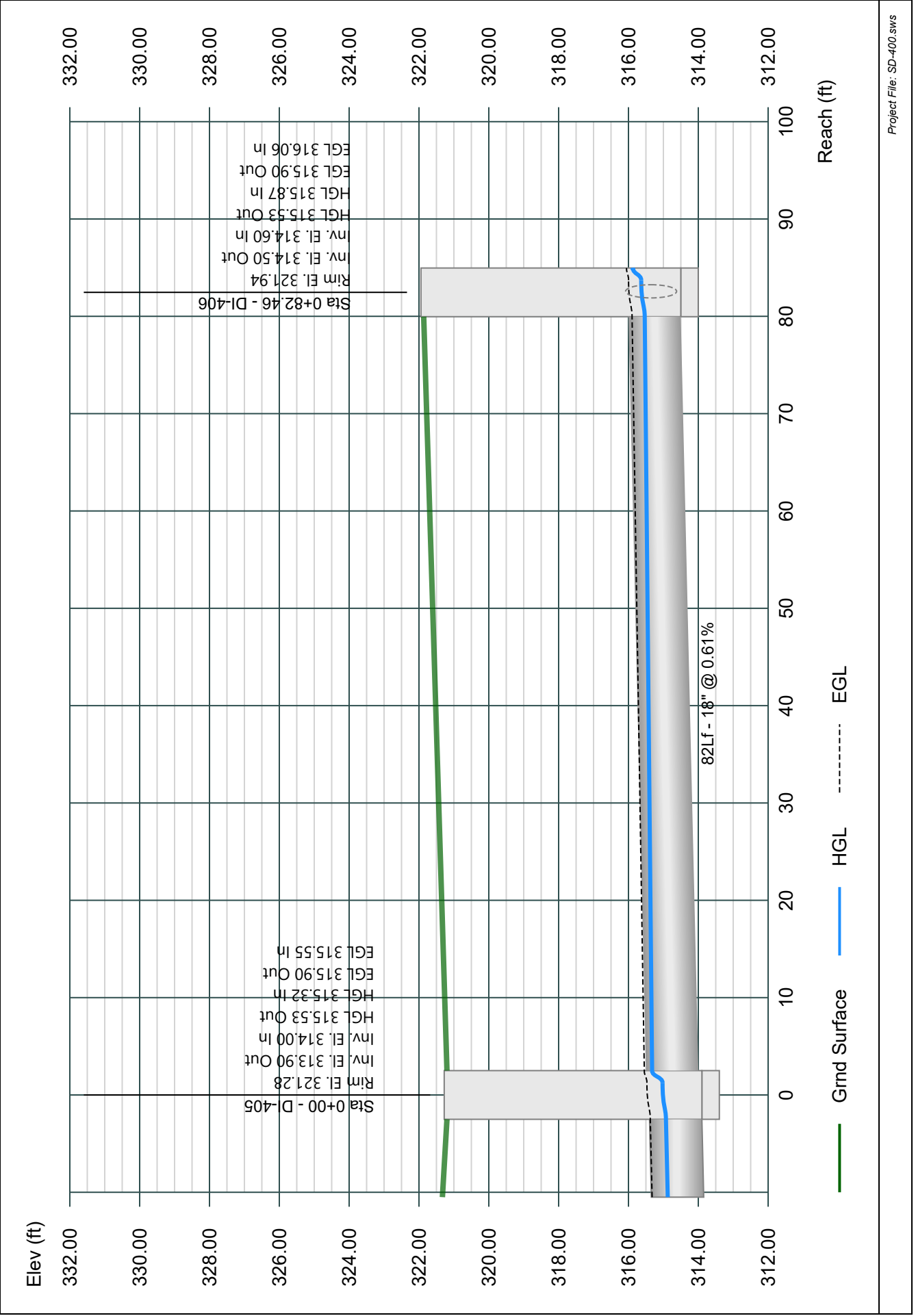


Line 14 - 405-406

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

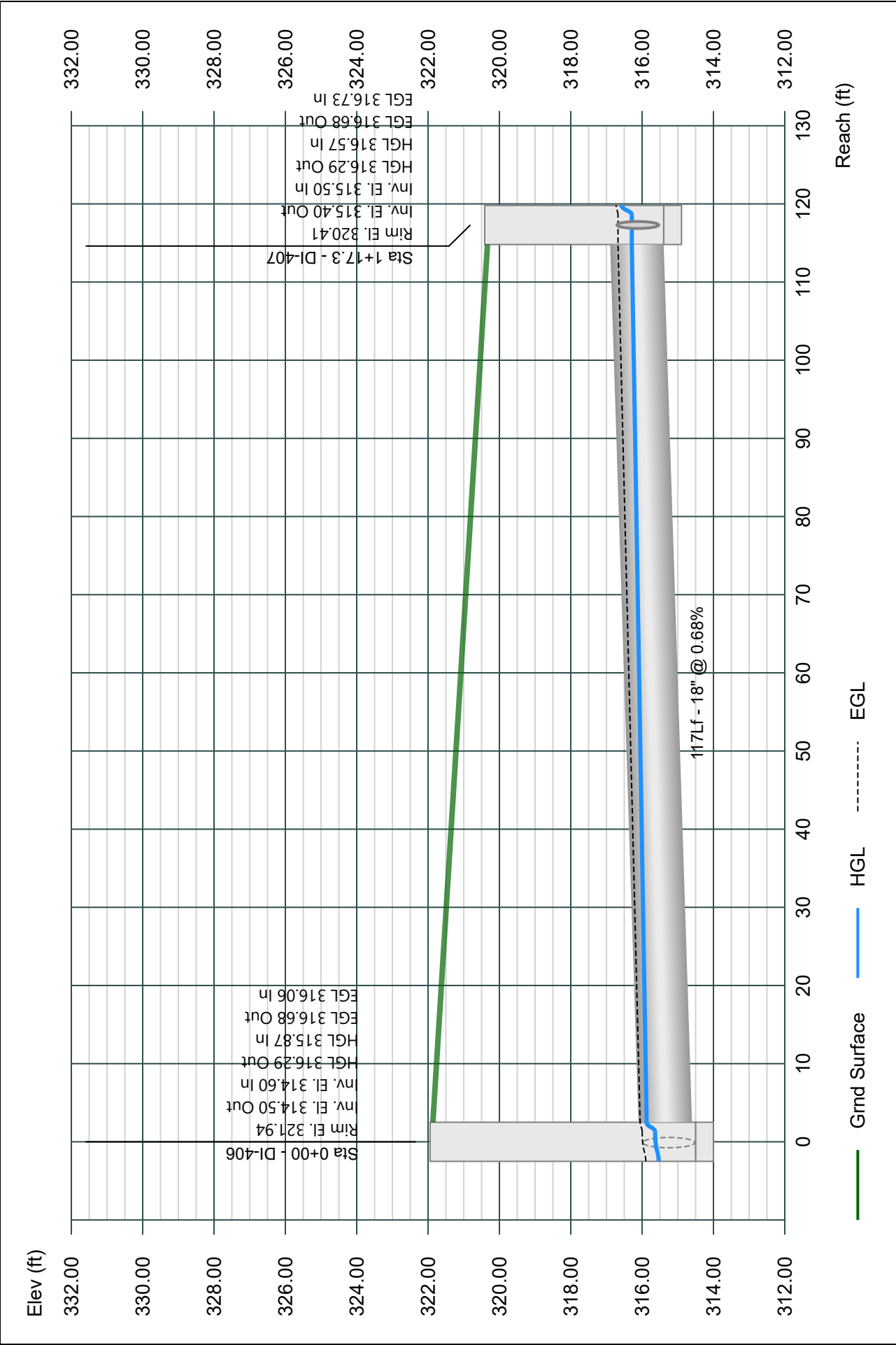
02-26-2024



Line 15 - 406-407

Project Name: SD-400
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

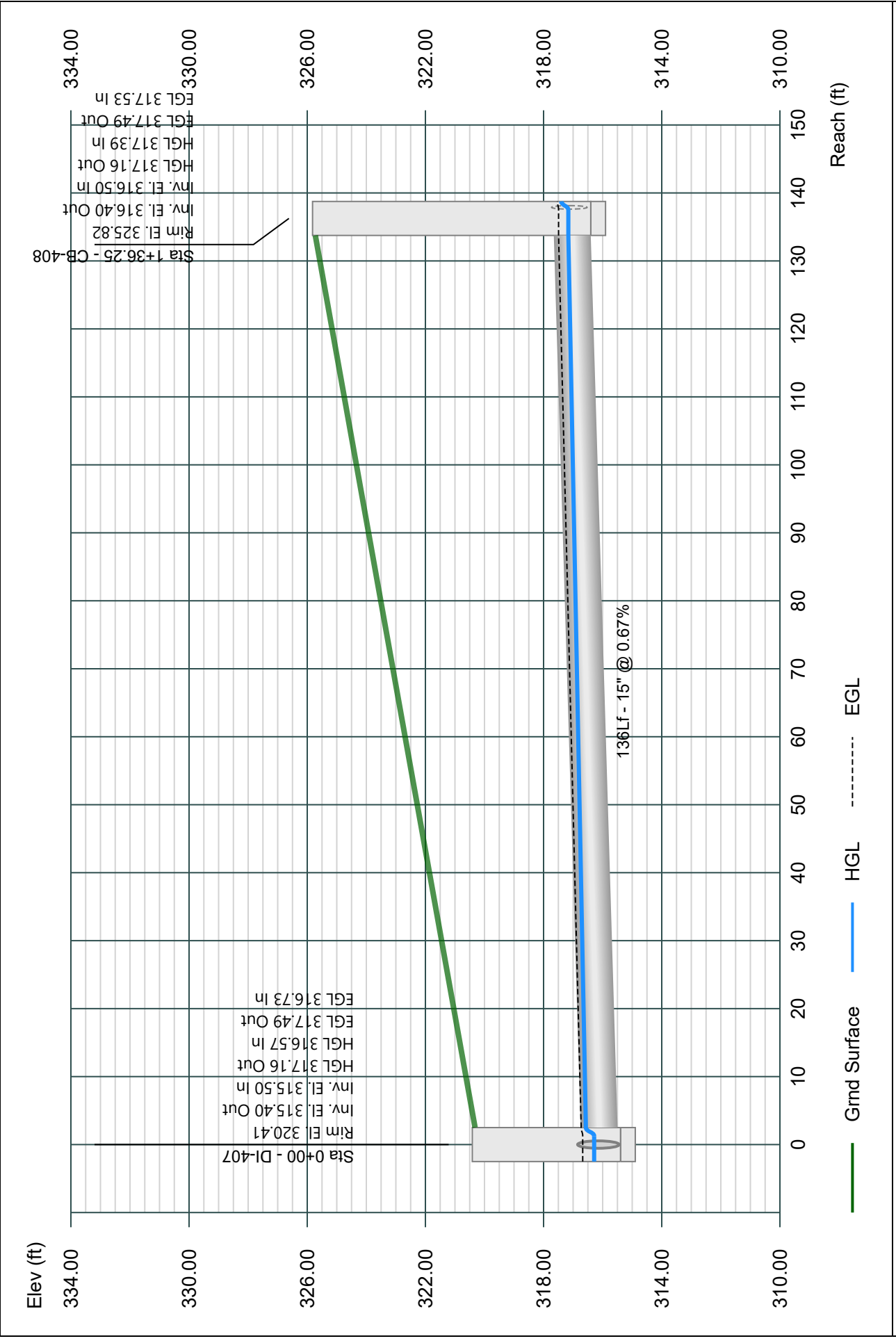


Line 16 - 407-408

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

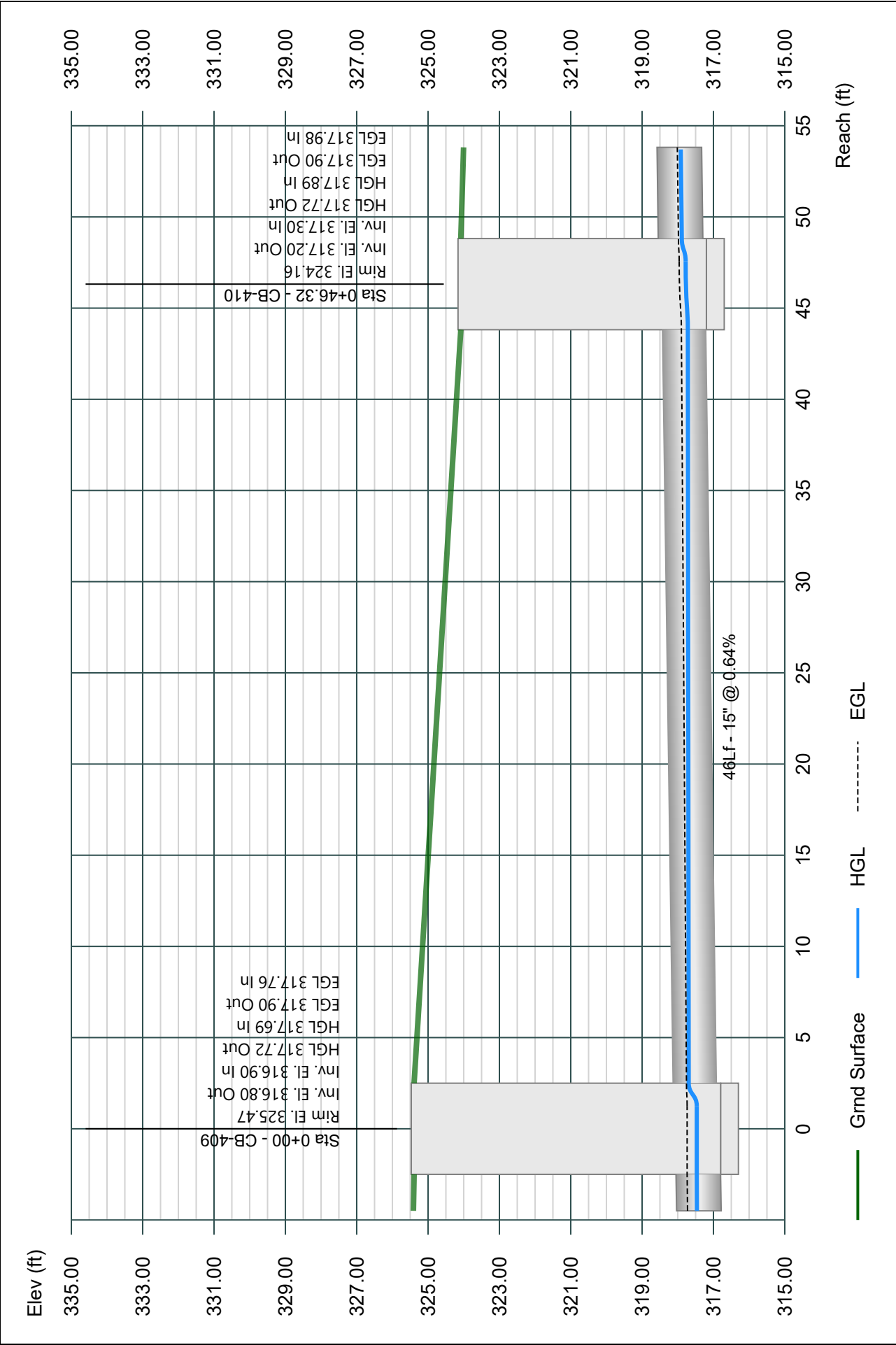
02-26-2024



Line 18 - 409-410

Project Name: SD-400
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

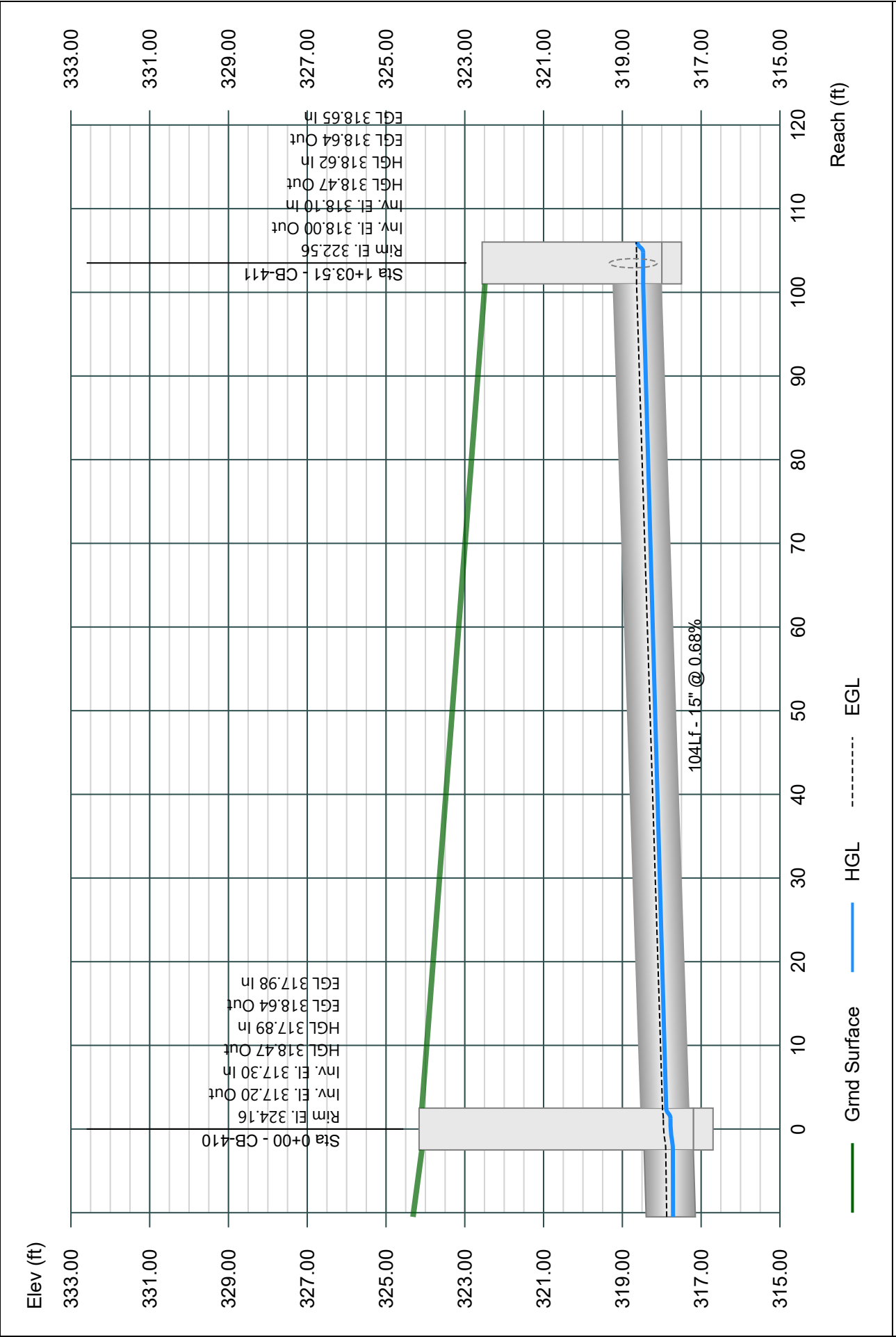


Line 19 - 410-411

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

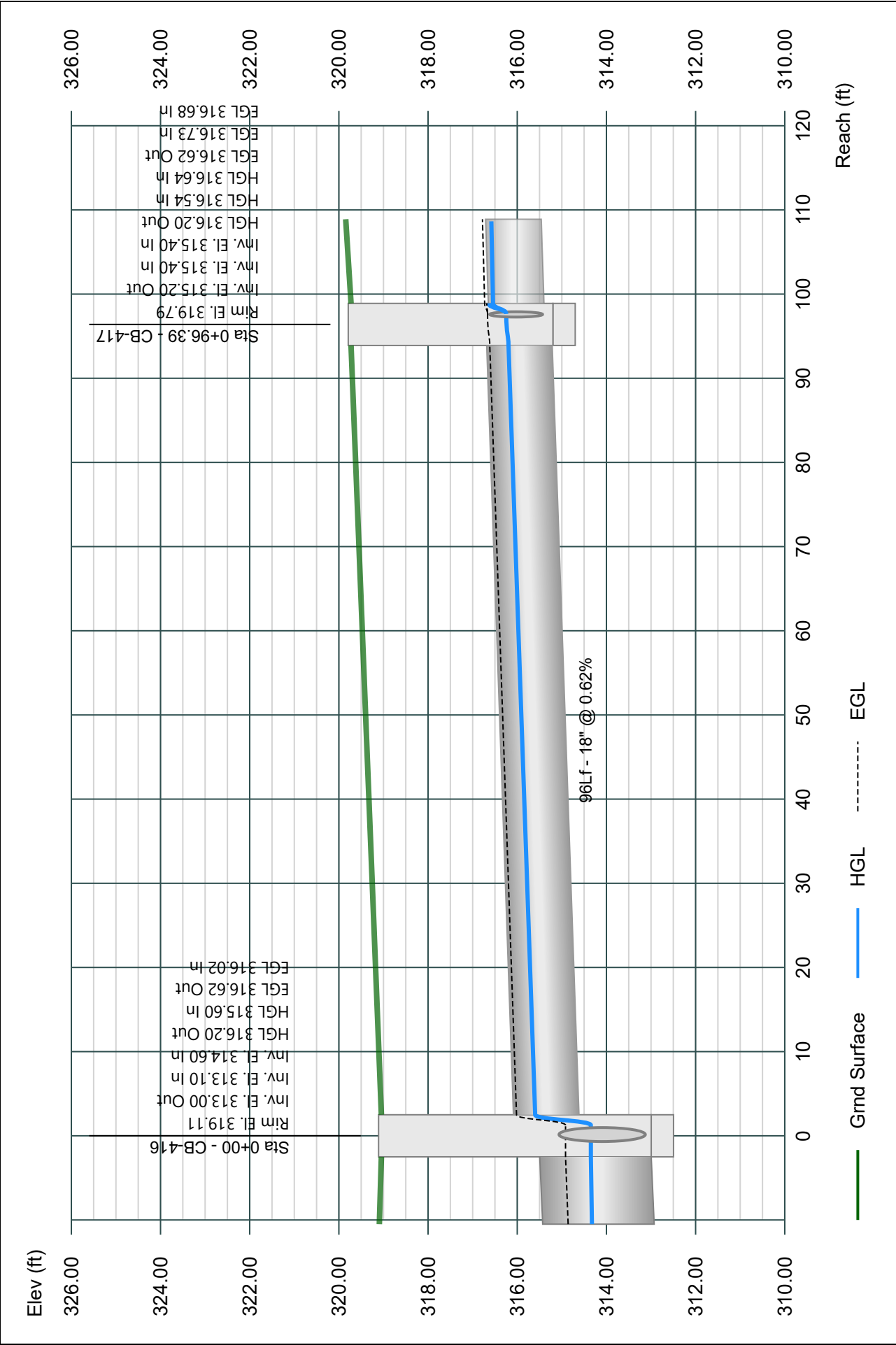


Line 21 - 416-417

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

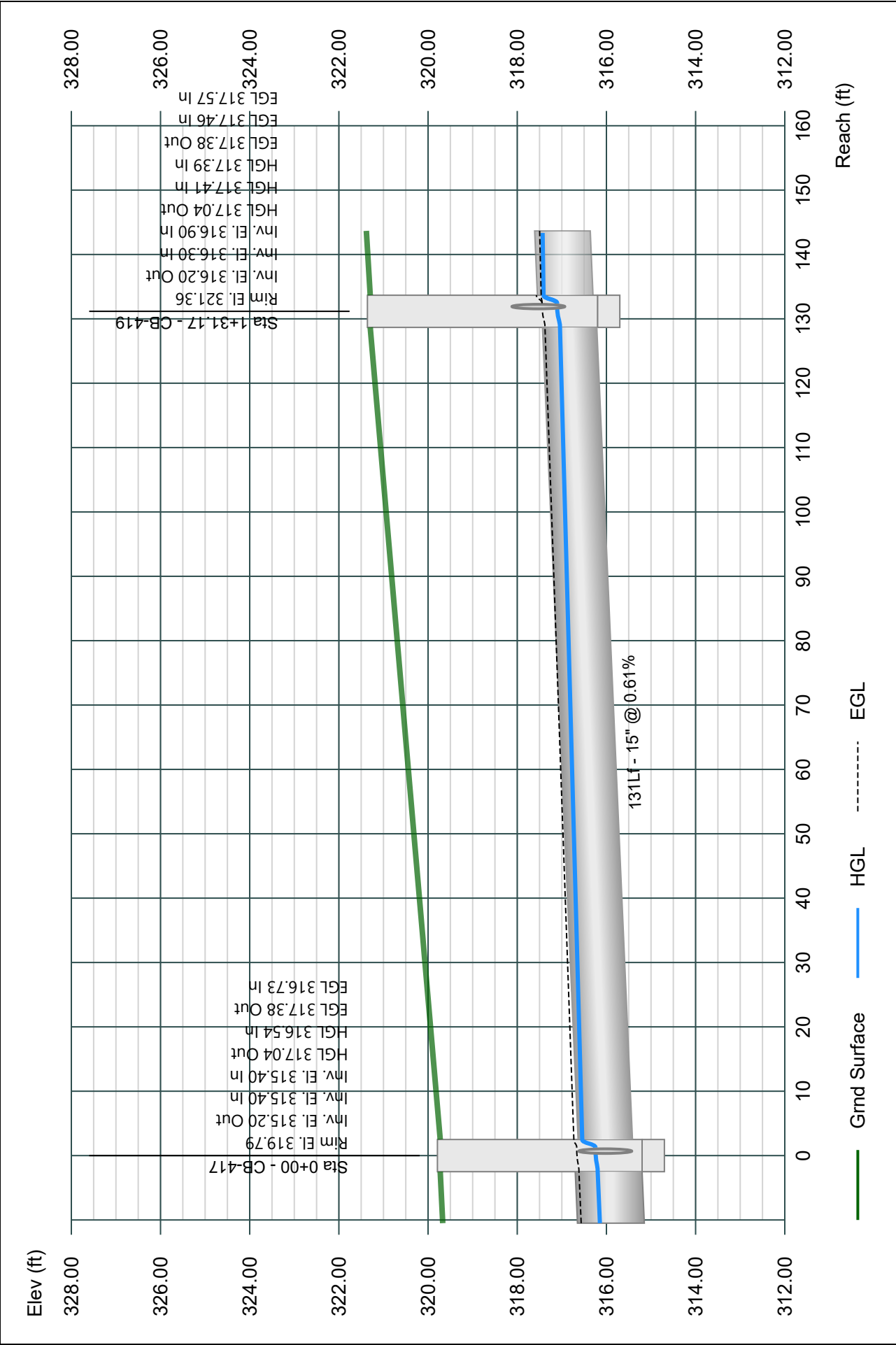


Line 22 - 417-419

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

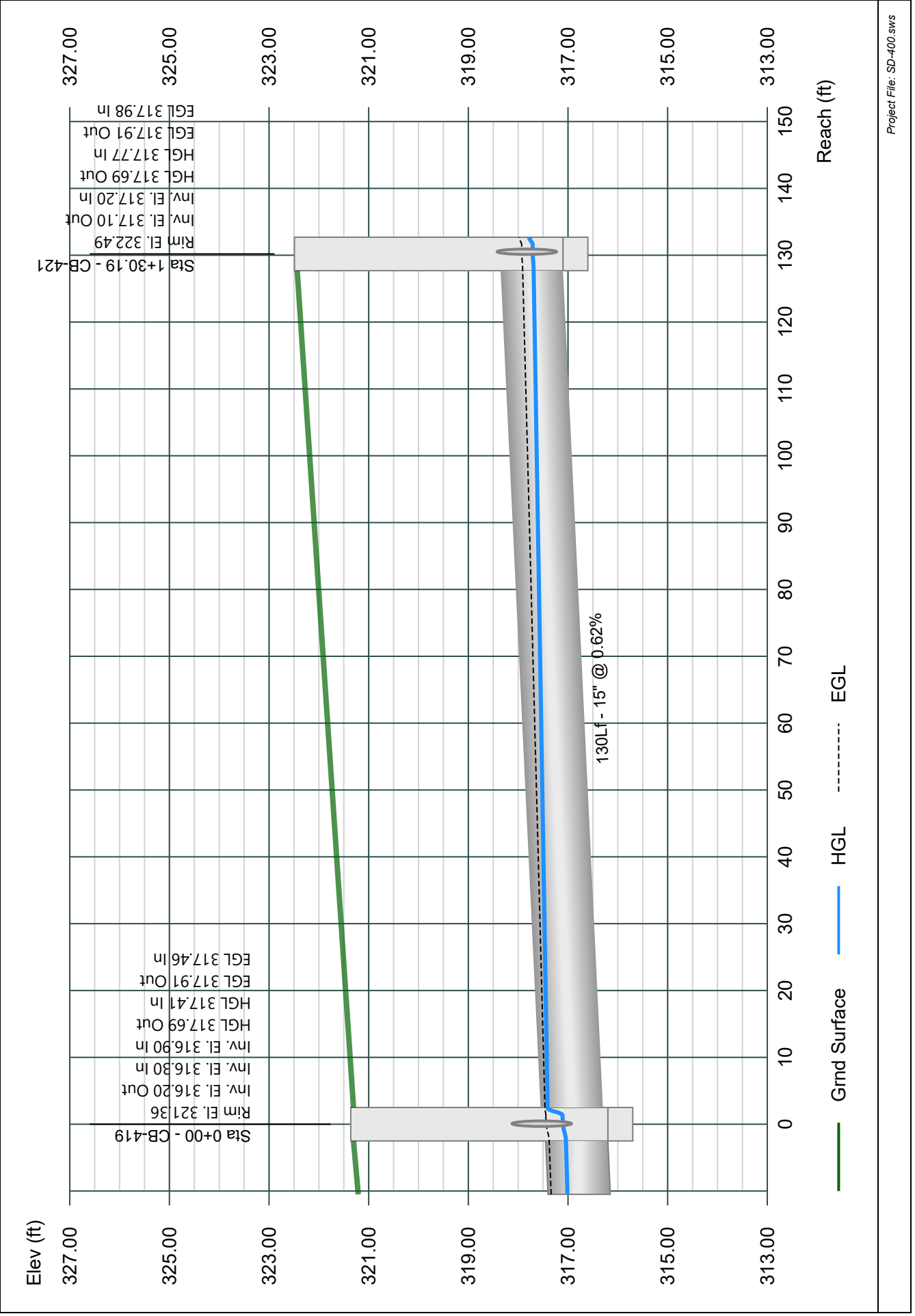


Line 23 - 419-421

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

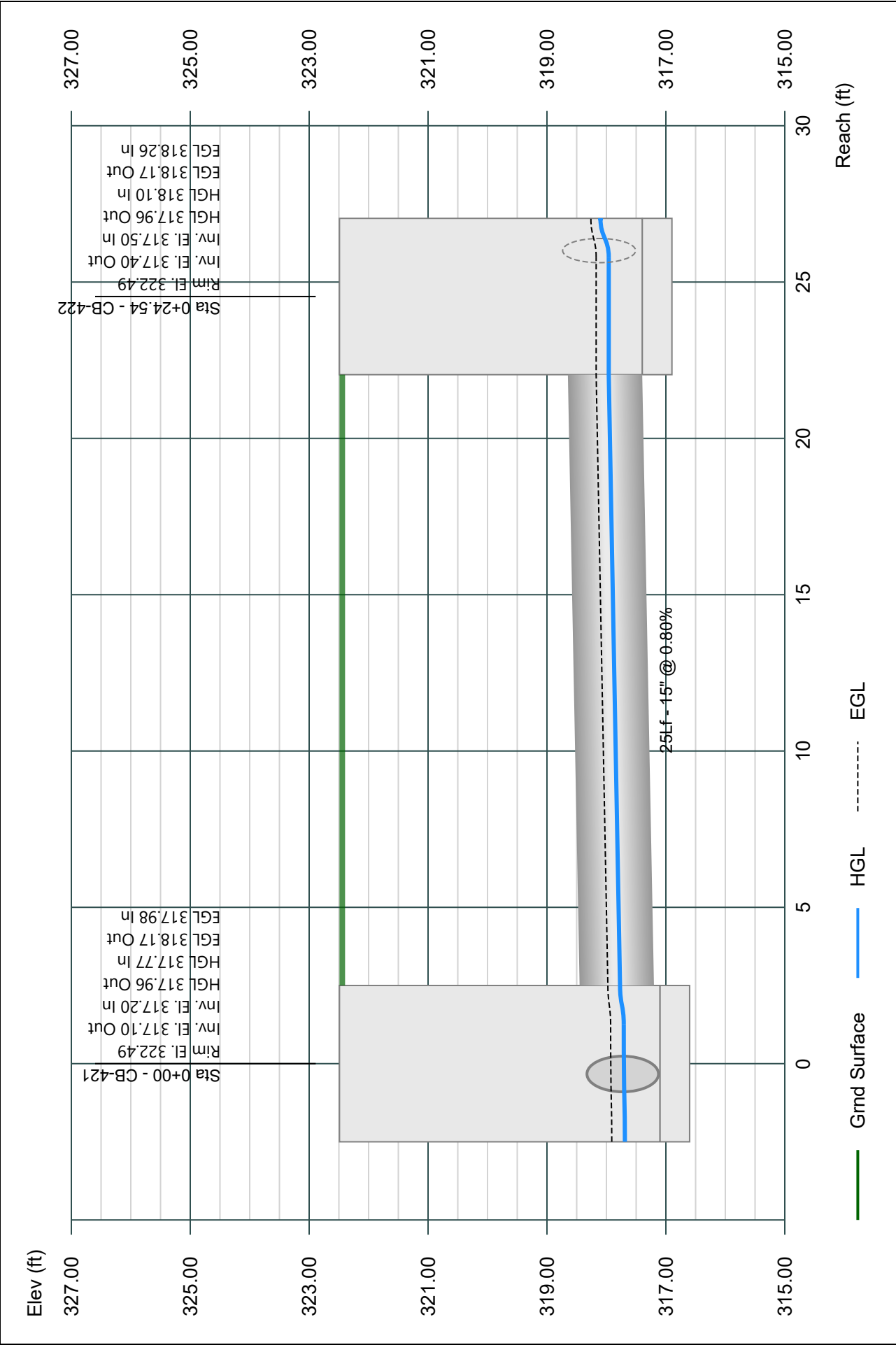


Line 24 - 421-422

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

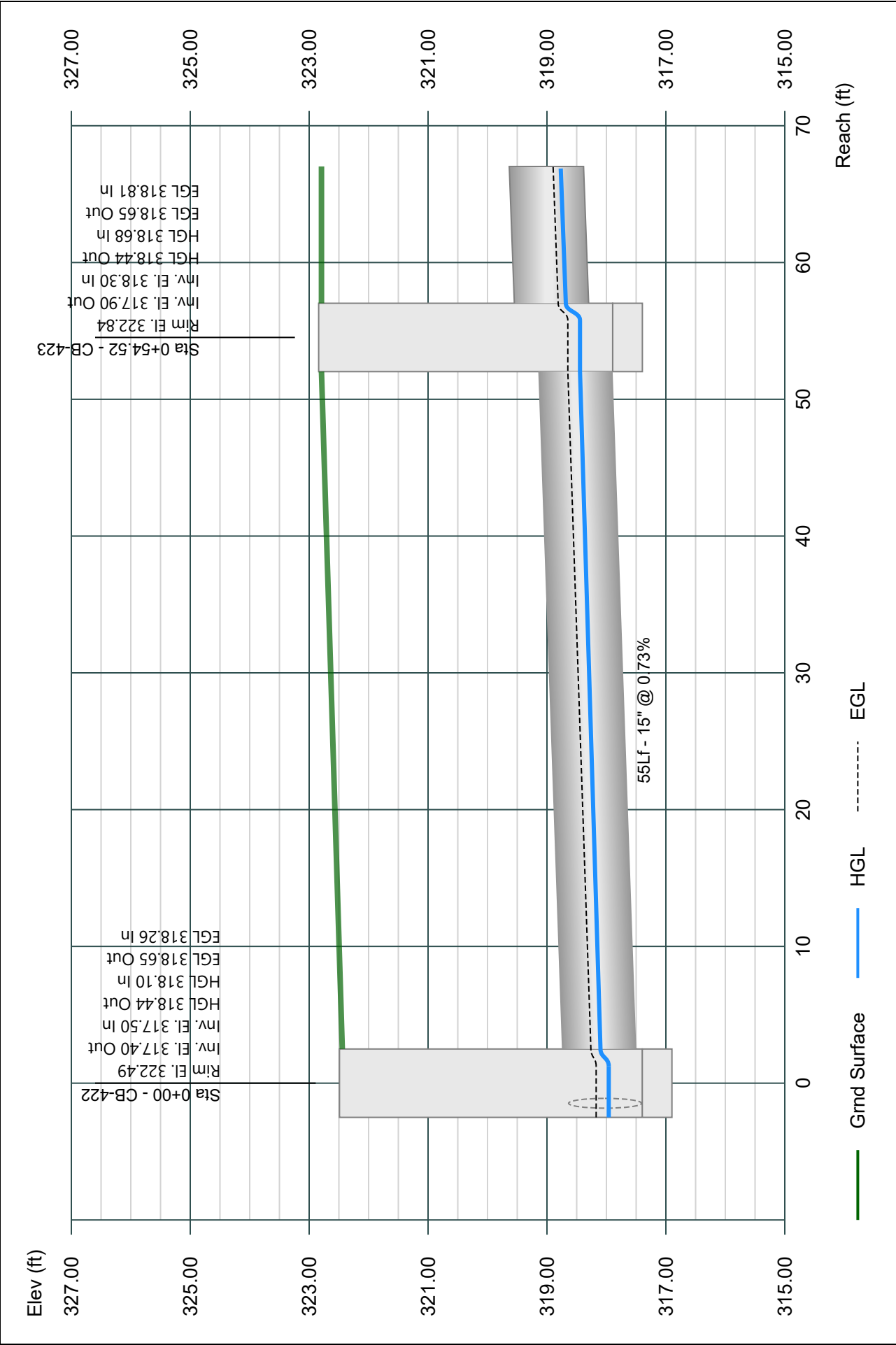


Line 25 - 422-423

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

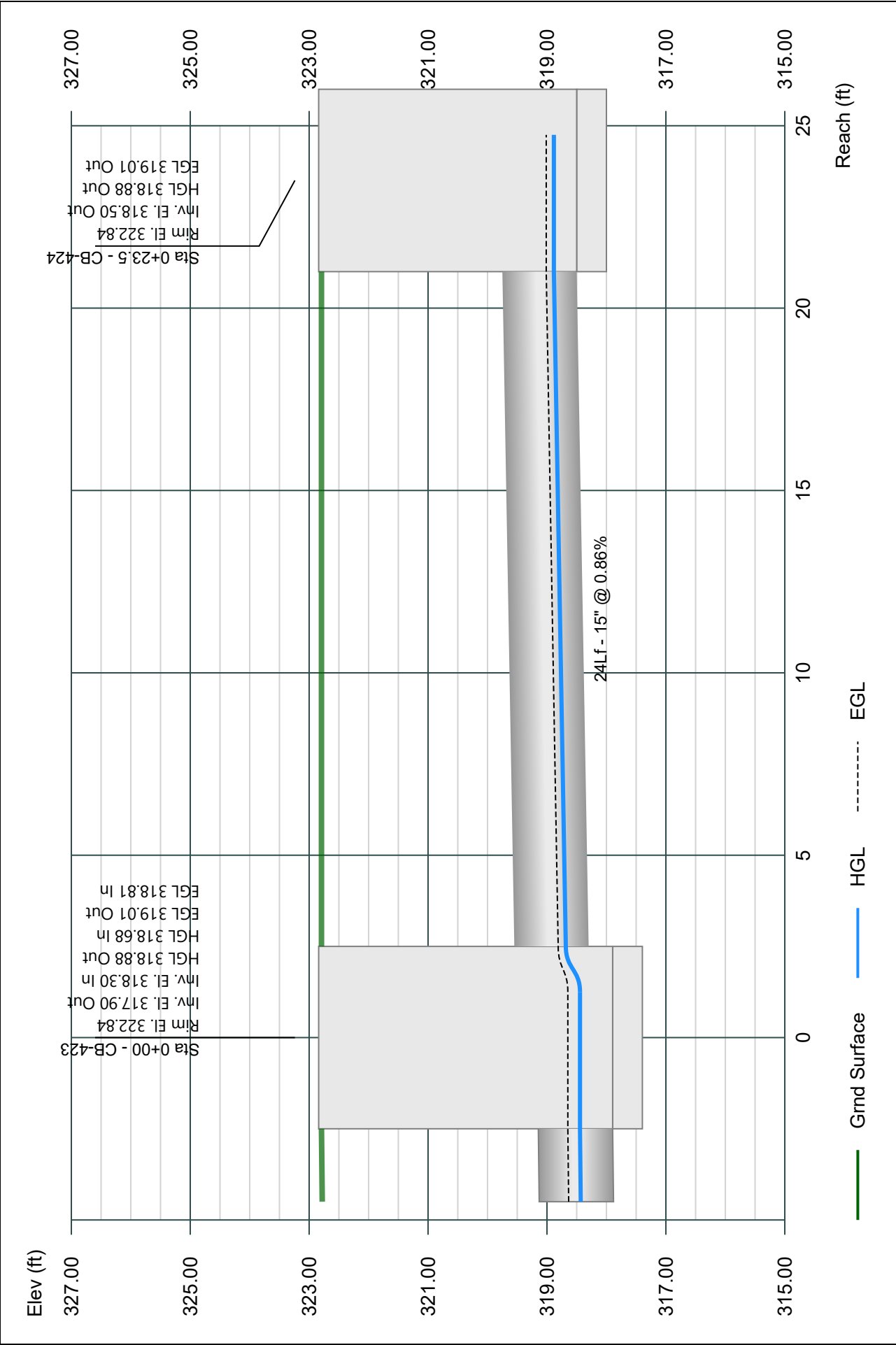


Line 26 - 423-424

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

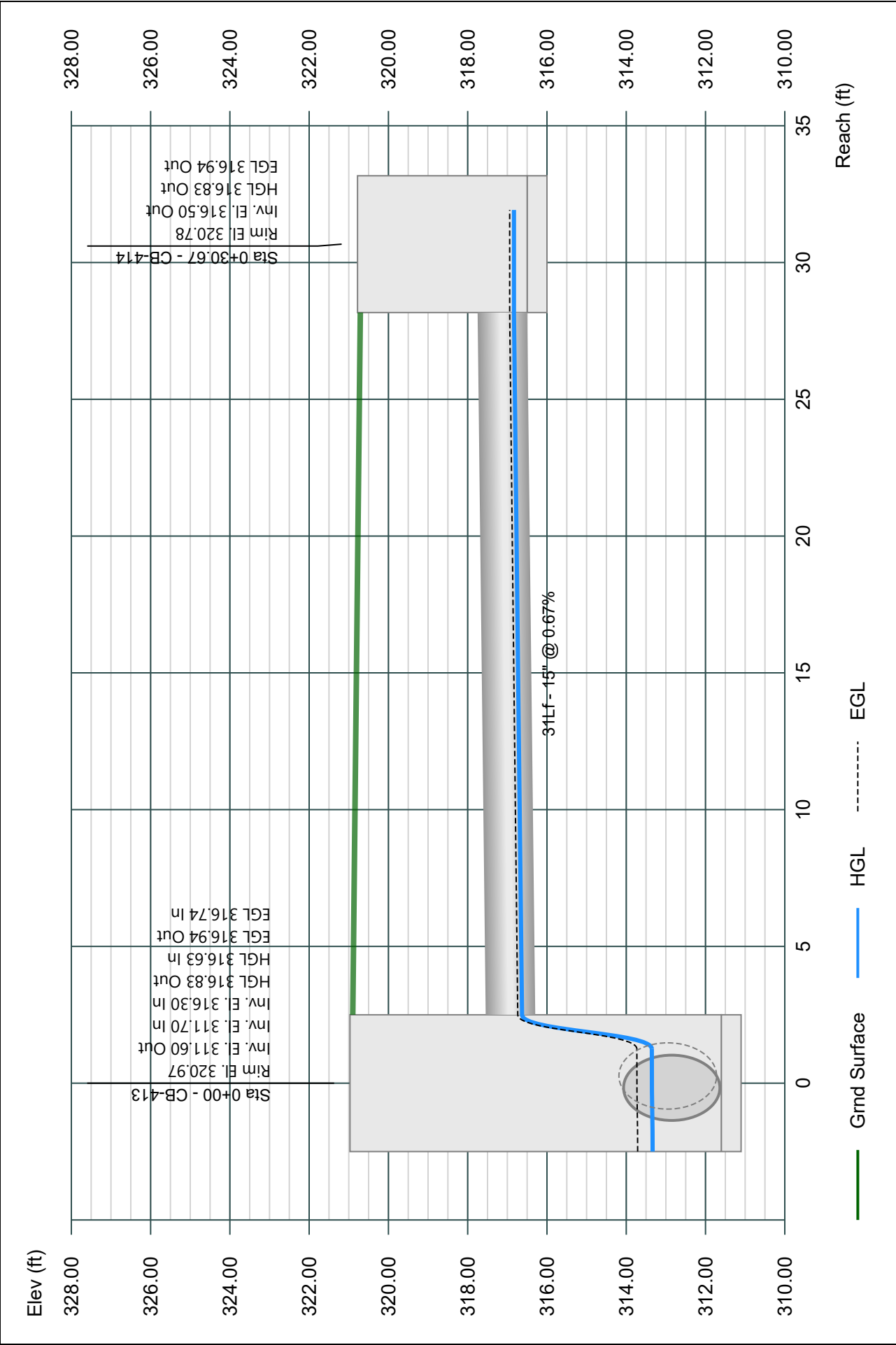


Line 27 - 413-414

Project Name: SD-400

Stormwater Studio 2024 v 3.0.0.33

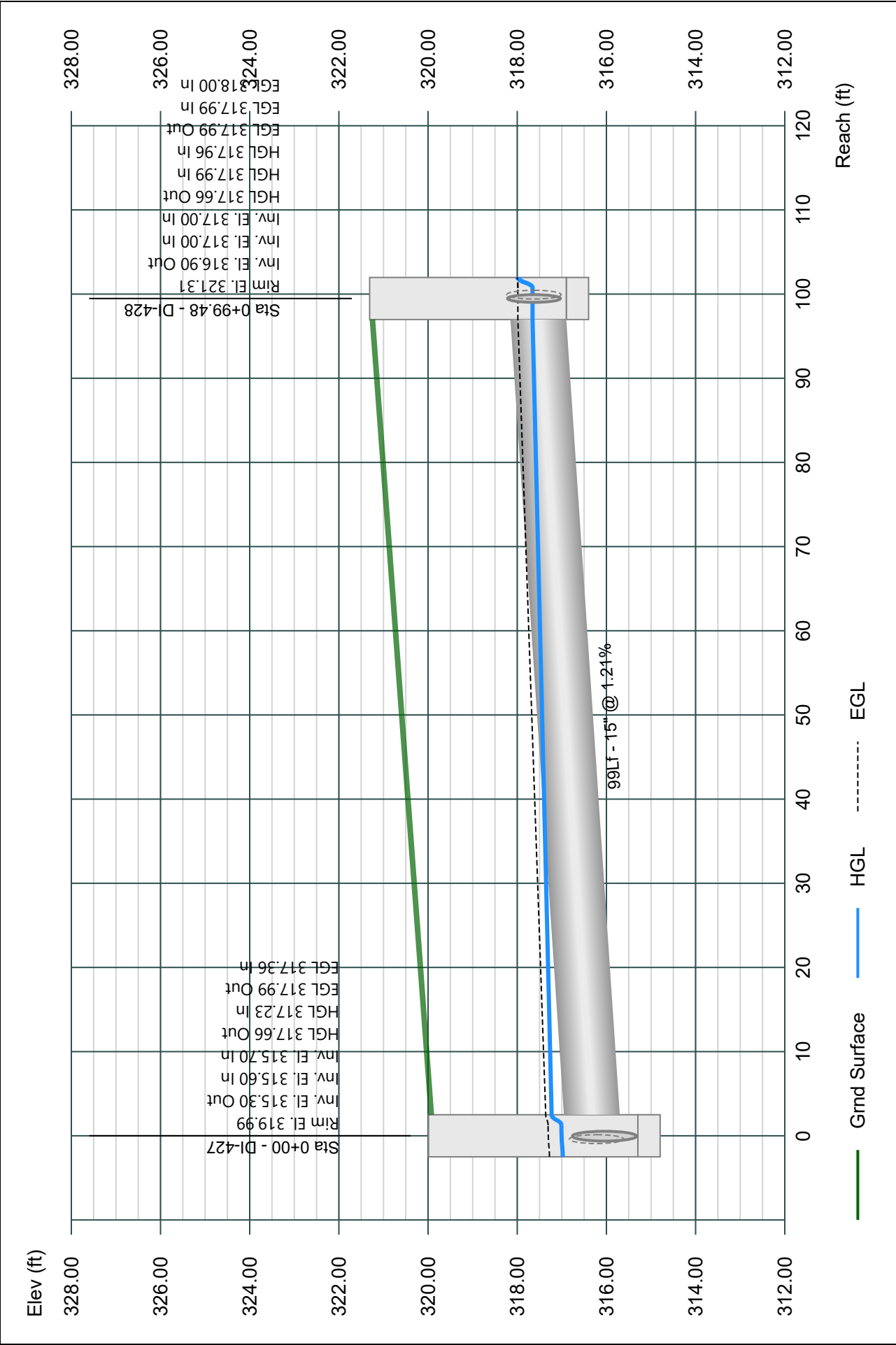
02-26-2024



Line 28 - 427-428

Project Name: SD-400
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

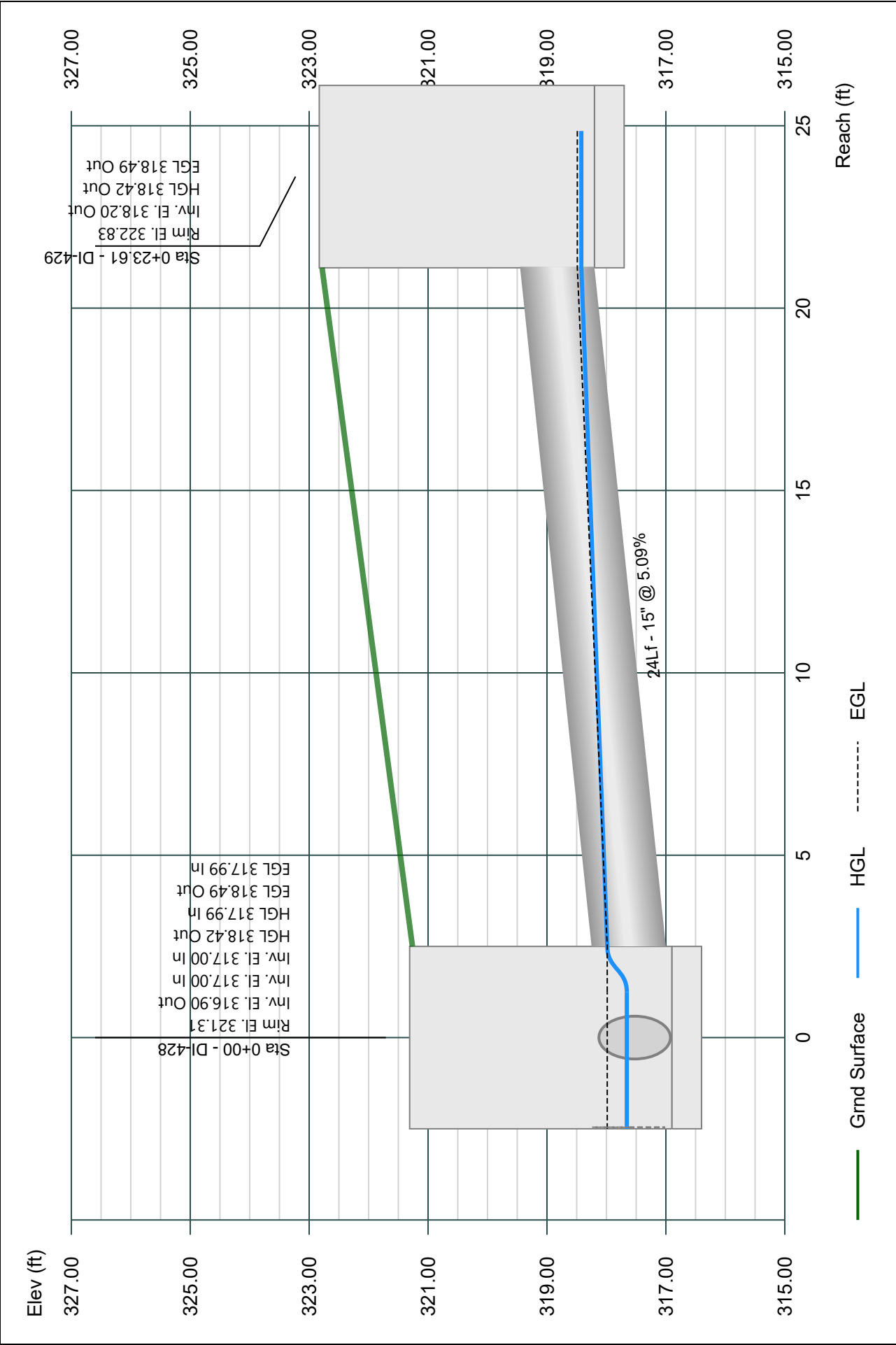


Line 29 - 428-429

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

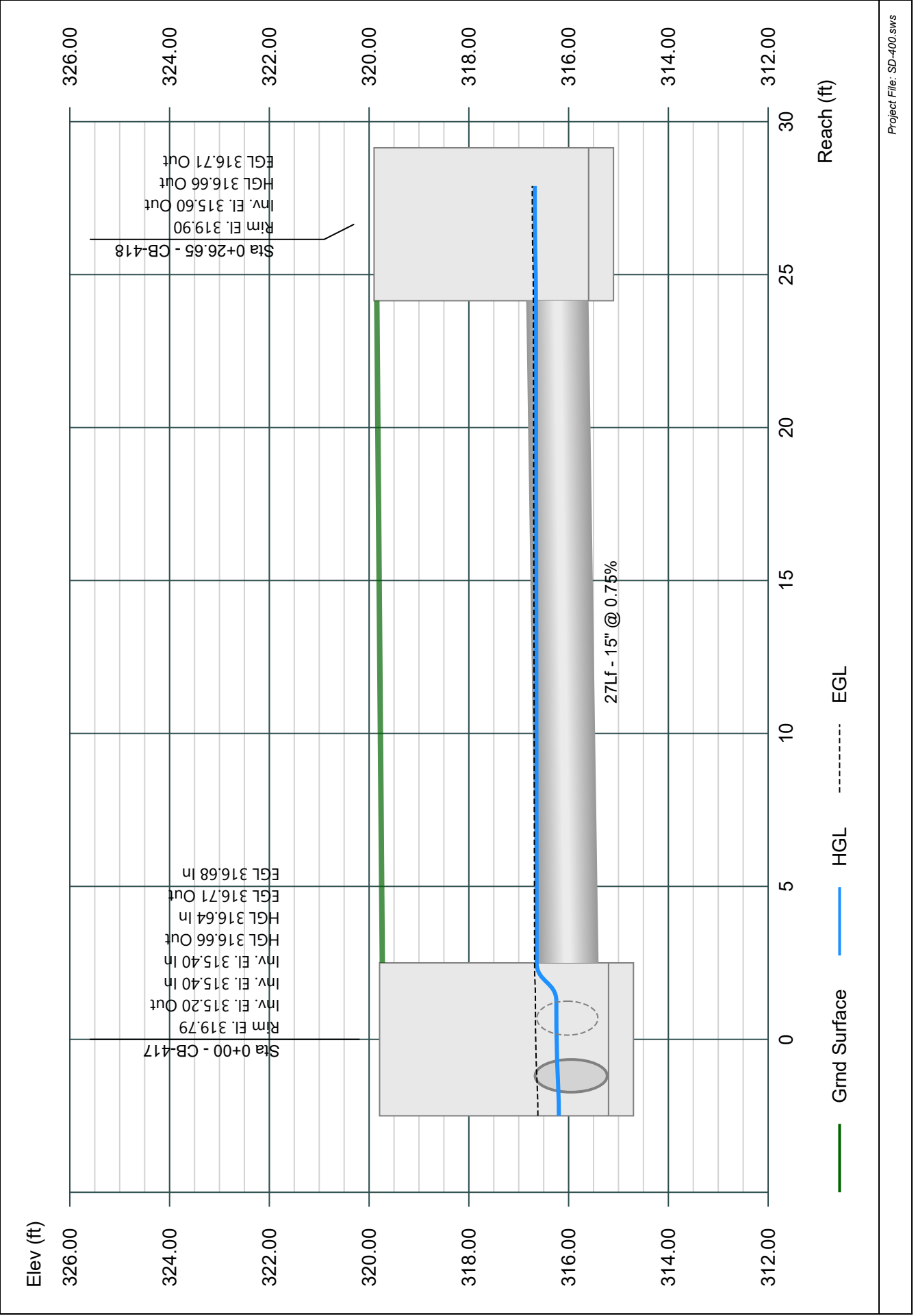


Line 30 - 417-418

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

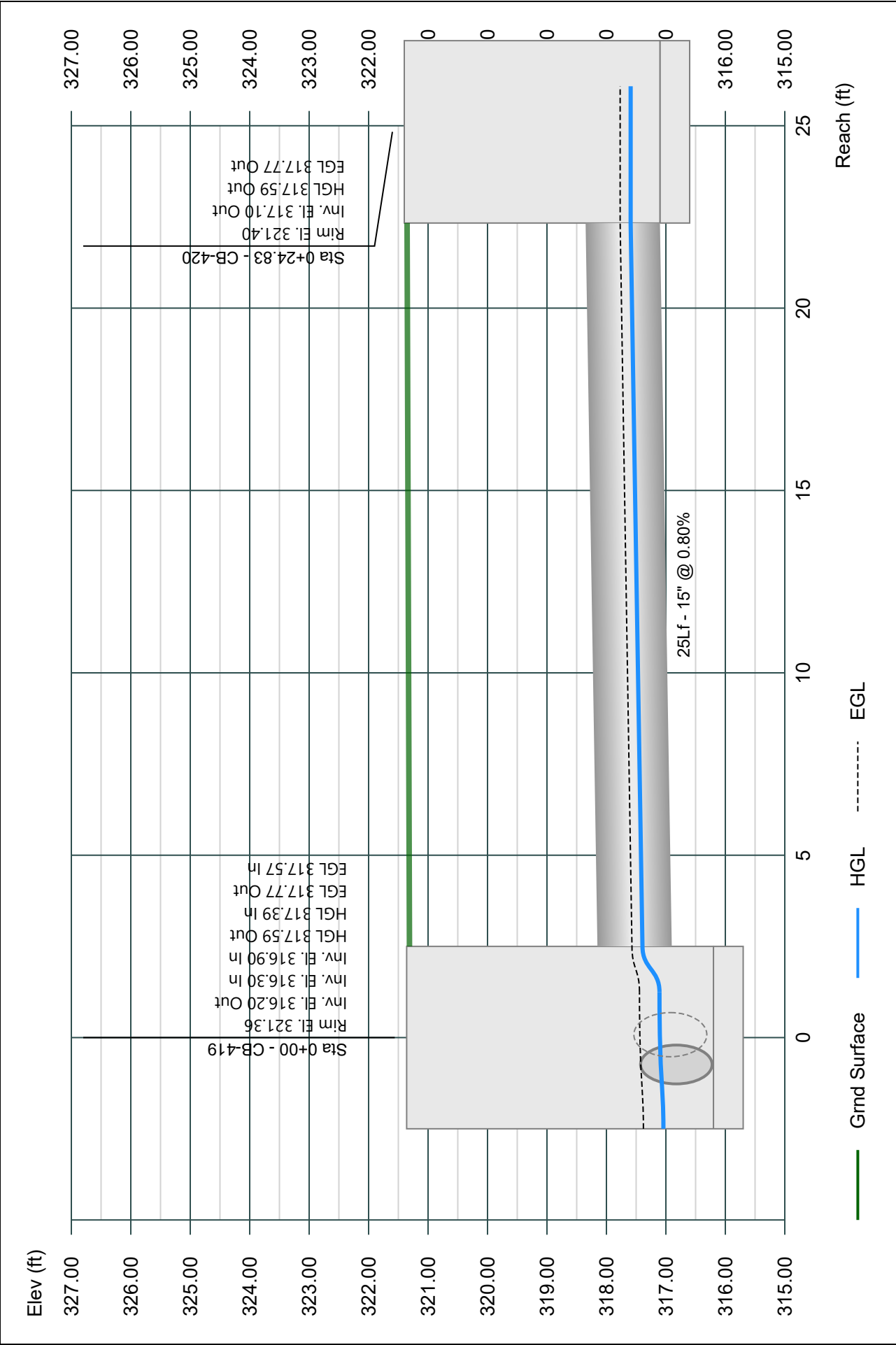


Line 31 - 419-420

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

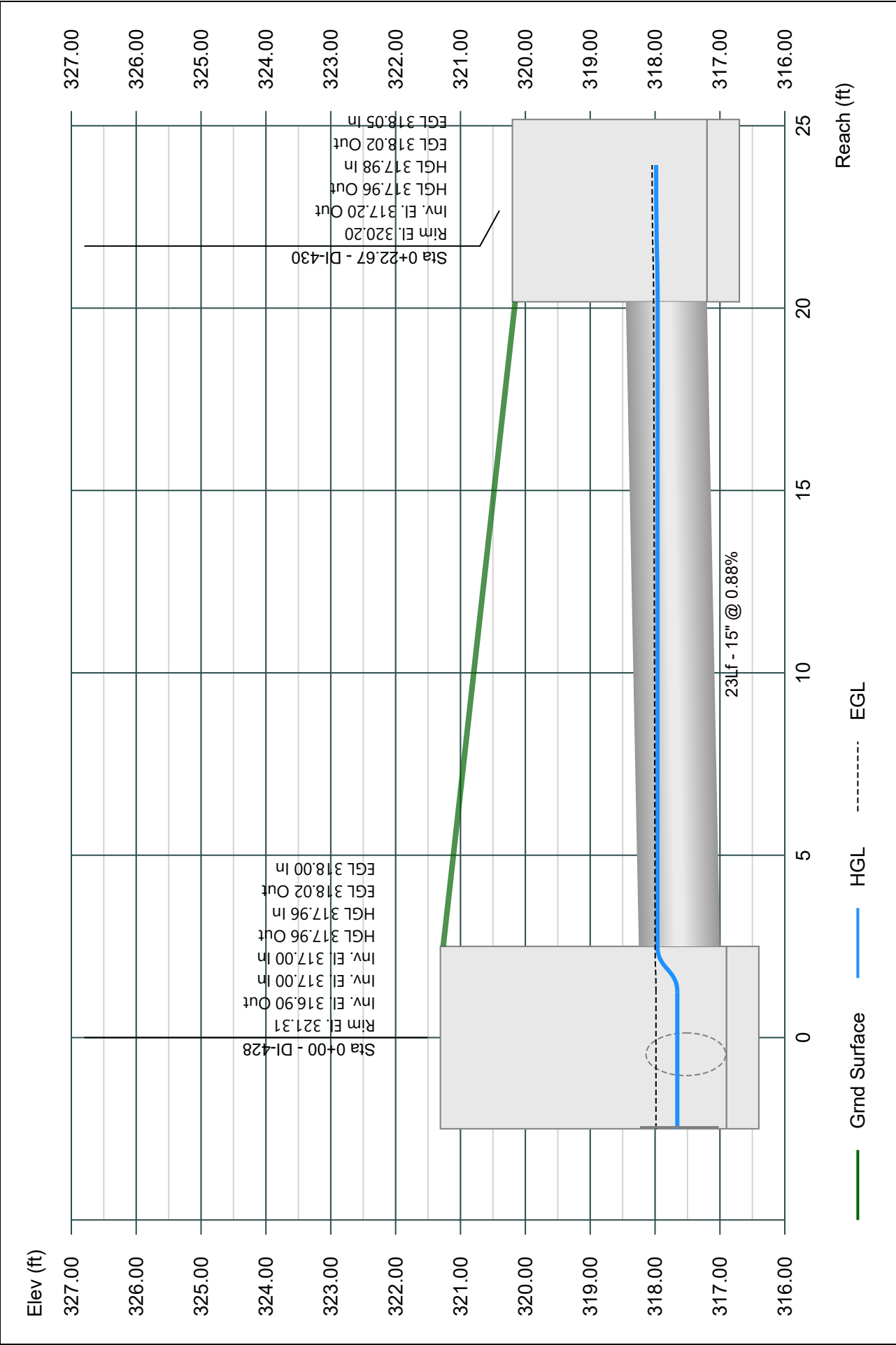


Line 32 - 428-430

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-400

02-26-2024

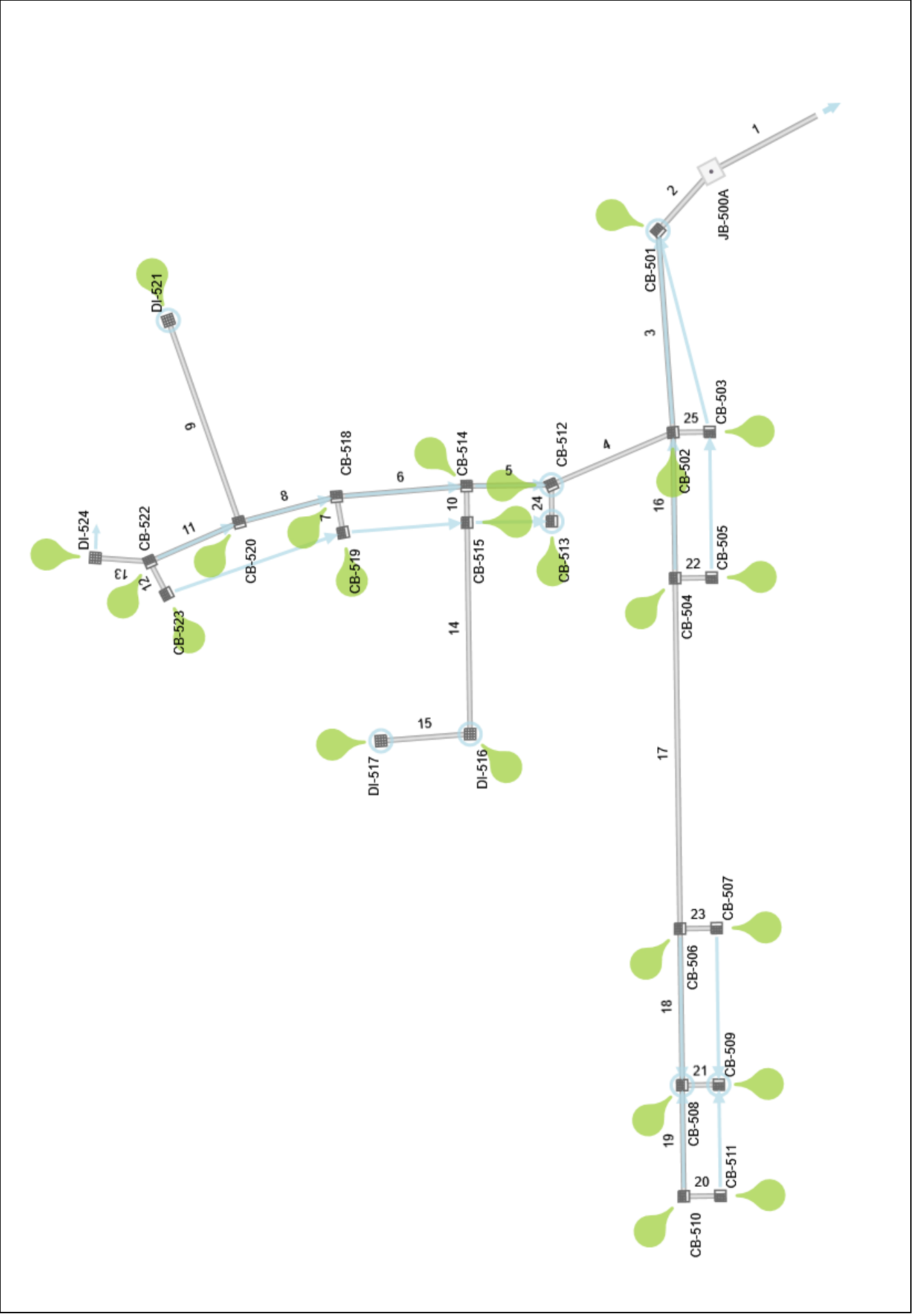


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024



Energy Grade Line Calculations

Project Name: SD-500

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)
1	48	25.64	313.00	3.88	12.46	316.88	2.06	0.07	316.95	76.04	3.39	11.37	316.89	2.26	0.08	316.97	0.013	0.025	316.91	316.99	0.01
2	48	25.76	313.60	3.34	11.20	316.93	2.30	0.08	317.02	51.24	2.93	9.86	316.93	2.61	0.11	317.03	0.013	0.017	316.93	317.04	0.01
3	36	23.83	314.10	2.82	6.90	316.92	3.45	0.19	317.11	130.08	2.08	5.23	316.98	4.56	0.32	317.30	0.013	0.195	316.99	317.31	0.01
4	30	12.47	315.00	2.24	4.64	317.24	2.68	0.11	317.36	85.22	1.65	3.45	317.25	3.62	0.20	317.46	0.013	0.100	317.27	317.47	0.01
5	30	10.22	315.70	1.68	3.52	317.38	2.91	0.13	317.51	54.53	1.22	2.39	317.33	4.28	0.28	317.61	0.013	0.098	317.35	317.63	0.02
6	18	5.60	316.20	1.30	1.63	317.51	3.44	0.18	317.69	83.91	0.91	1.12	317.70	5.01	0.39	318.10	0.013	0.406	317.78	318.17	0.07
7	15	1.14	316.90	1.25	1.23	318.16	0.93	0.01	318.17	23.50	1.06	1.11	318.16	1.02	0.02	318.18	0.013	0.007	318.17	318.19	0.01
8	15	3.71	316.90	1.17	1.20	318.07	3.10	0.15	318.22	64.73	0.92	0.97	318.22	3.82	0.23	318.45	0.013	0.225	318.27	318.49	0.05
9	15	1.60	317.40	1.08	1.13	318.47	1.42	0.03	318.51	137.77	0.51 ²	0.47	318.81	3.43	0.18	318.99	0.013	0.487	318.81	318.99	0.00
10	18	3.96	316.20	1.37	1.69	317.58	2.34	0.08	317.66	23.50	1.18	1.49	317.58	2.65	0.11	317.69	0.013	0.033	317.60	317.71	0.02
11	15	1.66	317.40	1.08	1.12	318.47	1.48	0.03	318.51	62.80	0.70	0.71	318.50	2.34	0.08	318.58	0.013	0.077	318.51	318.60	0.01
12	15	0.12	317.90	0.70	0.70	318.59	0.16	0.00	318.60	23.50	0.39	0.33	318.59	0.35	0.00	318.60	0.013	0.001	318.60	318.60	0.00
13	15	1.38	317.90	0.64	0.64	318.54	2.17	0.07	318.61	35.11	0.47 ²	0.42	318.67	3.27	0.17	318.84	0.013	0.223	318.67	318.84	0.00
14	18	3.20	316.50	1.16	1.47	317.66	2.18	0.07	317.74	136.12	0.68 ²	0.78	318.08	4.09	0.26	318.34	0.013	0.605	318.08	318.34	0.00
15	15	0.56	317.50	0.84	0.87	318.34	0.64	0.01	318.34	57.47	0.44	0.39	318.34	1.46	0.03	318.38	0.013	0.033	318.36	318.39	0.02
16	30	10.63	315.00	2.27	4.68	317.26	2.27	0.08	317.35	93.78	1.68	3.51	317.28	3.03	0.14	317.42	0.013	0.079	317.29	317.43	0.01
17	24	8.79	315.70	1.63	2.74	317.33	3.21	0.16	317.49	225.60	1.05 ²	1.67	318.15	5.26	0.43	318.58	0.013	1.087	318.15	318.58	0.00
18	18	6.52	317.20	1.15	1.45	318.34	4.51	0.32	318.66	100.75	0.98	1.22	318.78	5.34	0.44	319.22	0.013	0.565	318.90	319.34	0.12
19	18	3.58	317.90	1.40	1.72	319.30	2.09	0.07	319.37	71.55	0.94	1.16	319.34	3.08	0.15	319.48	0.013	0.117	319.37	319.52	0.03
20	15	1.27	318.50	1.00	1.06	319.50	1.20	0.02	319.53	23.50	0.57	0.55	319.47	2.33	0.08	319.55	0.013	0.029	319.51	319.59	0.04
21	15	2.00	317.90	1.25	1.23	319.32	1.63	0.04	319.36	23.50	1.24	1.23	319.34	1.63	0.04	319.38	0.013	0.022	319.37	319.41	0.03
22	15	1.08	318.40	0.42 ¹	0.36	318.82	3.03	0.14	318.96	23.50	0.42 ²	0.36	319.02	3.03	0.14	319.16	0.013	0.201	319.02	319.16	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-500.sws

Energy Grade Line Calculations

Project Name: SD-500

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Enrgy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Enrgy Loss (ft)
23	15	1.24	318.80	0.45 ¹	0.39	319.25	3.16	0.16	319.40	23.50	319.00	0.45 ²	0.39	319.45	3.16	0.16	319.60	0.013	0.201	319.45	319.60	0.00
24	15	1.35	316.30	1.16	1.19	317.46	1.14	0.02	317.48	23.50	316.50	0.96	1.01	317.46	1.34	0.03	317.49	0.013	0.010	317.48	317.51	0.02
25	15	0.97	316.80	0.42	0.36	317.22	2.71	0.11	317.33	23.50	317.00	0.39 ²	0.33	317.39	2.93	0.13	317.53	0.013	0.197	317.39	317.53	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-500.sws

Storm Sewer Tabulation

Project Name: SD-500
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
New	76.04	0.000	5.320	0.00	3.88	0.00	3.88	7.01	6.61	25.64	116.66	2.16	48	0.66	313.50	313.00	316.89	316.88	316.87	313.00	1
500-501	51.24	0.420	5.320	0.80	3.88	0.34	3.88	6.90	6.64	25.76	127.14	2.46	48	0.78	314.00	313.60	316.93	316.93	320.74	316.87	2
501-502	130.08	0.020	4.900	0.95	3.55	0.02	3.55	6.60	6.72	23.83	52.35	4.00	36	0.62	314.90	314.10	316.98	316.92	322.24	320.74	3
502-512	85.22	0.190	2.630	0.80	1.83	0.15	1.83	6.26	6.82	12.47	34.39	3.15	30	0.70	315.60	315.00	317.25	317.24	321.95	322.24	4
512-514	54.53	0.150	2.190	0.75	1.49	0.11	1.49	6.12	6.86	10.22	35.35	3.59	30	0.74	316.10	315.70	317.33	317.38	322.27	321.95	5
514-518	83.91	0.160	1.130	0.75	0.81	0.12	0.81	5.85	6.94	5.60	8.83	4.22	18	0.71	316.80	316.20	317.70	317.51	323.17	322.27	6
518-519	23.50	0.210	0.210	0.75	0.16	0.16	0.16	5.00	7.21	1.14	5.99	0.97	15	0.86	317.10	316.90	318.16	318.16	323.17	323.17	7
518-520	64.73	0.100	0.760	0.75	0.53	0.08	0.53	5.61	7.01	3.71	5.07	3.46	15	0.62	317.30	316.90	318.22	318.07	323.86	323.17	8
520-521	137.77	0.370	0.370	0.60	0.22	0.22	0.22	5.00	7.21	1.60	5.24	2.43	15	0.66	318.30	317.40	318.81	318.47	321.00	323.86	9
514-515	23.50	0.160	0.910	0.75	0.57	0.12	0.57	5.84	6.94	3.96	9.65	2.49	18	0.84	316.40	316.20	317.58	317.58	322.27	322.27	10
520-522	62.80	0.030	0.290	0.80	0.23	0.02	0.23	5.18	7.15	1.66	5.16	1.91	15	0.64	317.80	317.40	318.50	318.47	324.52	323.86	11
522-523	23.50	0.020	0.020	0.80	0.02	0.02	0.02	5.00	7.21	0.12	7.34	0.26	15	1.29	318.20	317.90	318.59	318.59	324.52	324.52	12
522-524	35.11	0.240	0.240	0.80	0.19	0.19	0.19	5.00	7.21	1.38	6.01	2.72	15	0.87	318.20	317.90	318.67	318.54	324.84	324.52	13
515-516	136.12	0.620	0.750	0.60	0.37	0.37	0.45	5.34	7.10	3.20	8.52	3.13	18	0.66	317.40	316.50	318.08	317.66	320.05	322.27	14
516-517	57.47	0.130	0.130	0.60	0.08	0.08	0.08	5.00	7.21	0.56	5.42	1.05	15	0.70	317.90	317.50	318.34	318.34	321.20	320.05	15
502-504	93.78	0.210	2.070	0.75	1.56	0.16	1.56	6.33	6.80	10.63	32.88	2.65	30	0.64	315.60	315.00	317.28	317.26	323.26	322.24	16
504-506	225.60	0.220	1.660	0.75	1.26	0.17	1.26	5.66	7.00	8.79	17.78	4.24	24	0.62	317.10	315.70	318.15	317.33	323.29	323.26	17
506-508	100.75	0.190	1.210	0.75	0.92	0.14	0.92	5.33	7.10	6.52	8.13	4.92	18	0.60	317.80	317.20	318.78	318.34	322.44	323.29	18
508-510	71.55	0.430	0.650	0.75	0.32	0.32	0.50	5.08	7.19	3.58	8.77	2.58	18	0.70	318.40	317.90	319.34	319.30	322.98	322.44	19
510-511	23.50	0.220	0.220	0.80	0.18	0.18	0.18	5.00	7.21	1.27	8.44	1.76	15	1.71	318.90	318.50	319.47	319.50	322.98	322.98	20
508-509	23.50	0.370	0.370	0.75	0.28	0.28	0.28	5.00	7.21	2.00	5.96	1.63	15	0.85	318.10	317.90	319.34	319.32	322.44	322.44	21
504-505	23.50	0.200	0.200	0.75	0.15	0.15	0.15	5.00	7.21	1.08	5.97	3.03	15	0.86	318.60	318.40	319.02	318.82	323.36	323.26	22

Storm Sewer Tabulation

Project Name: SD-500

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Incr	Total	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
506-507	23.50	0.230	0.230	0.75	0.17	0.17	5.0	5.00	7.21	1.24	5.97	3.16	15	0.86	319.00	318.80	319.45	319.25	323.29	323.29	23
512-513	23.50	0.250	0.250	0.75	0.19	0.19	5.0	5.00	7.21	1.35	5.97	1.24	15	0.86	316.50	316.30	317.46	317.46	321.95	321.95	24
502-503	23.50	0.180	0.180	0.75	0.14	0.14	5.0	5.00	7.21	0.97	5.97	2.82	15	0.85	317.00	316.80	317.39	317.22	322.24	322.24	25

Project File: SD-500.sws

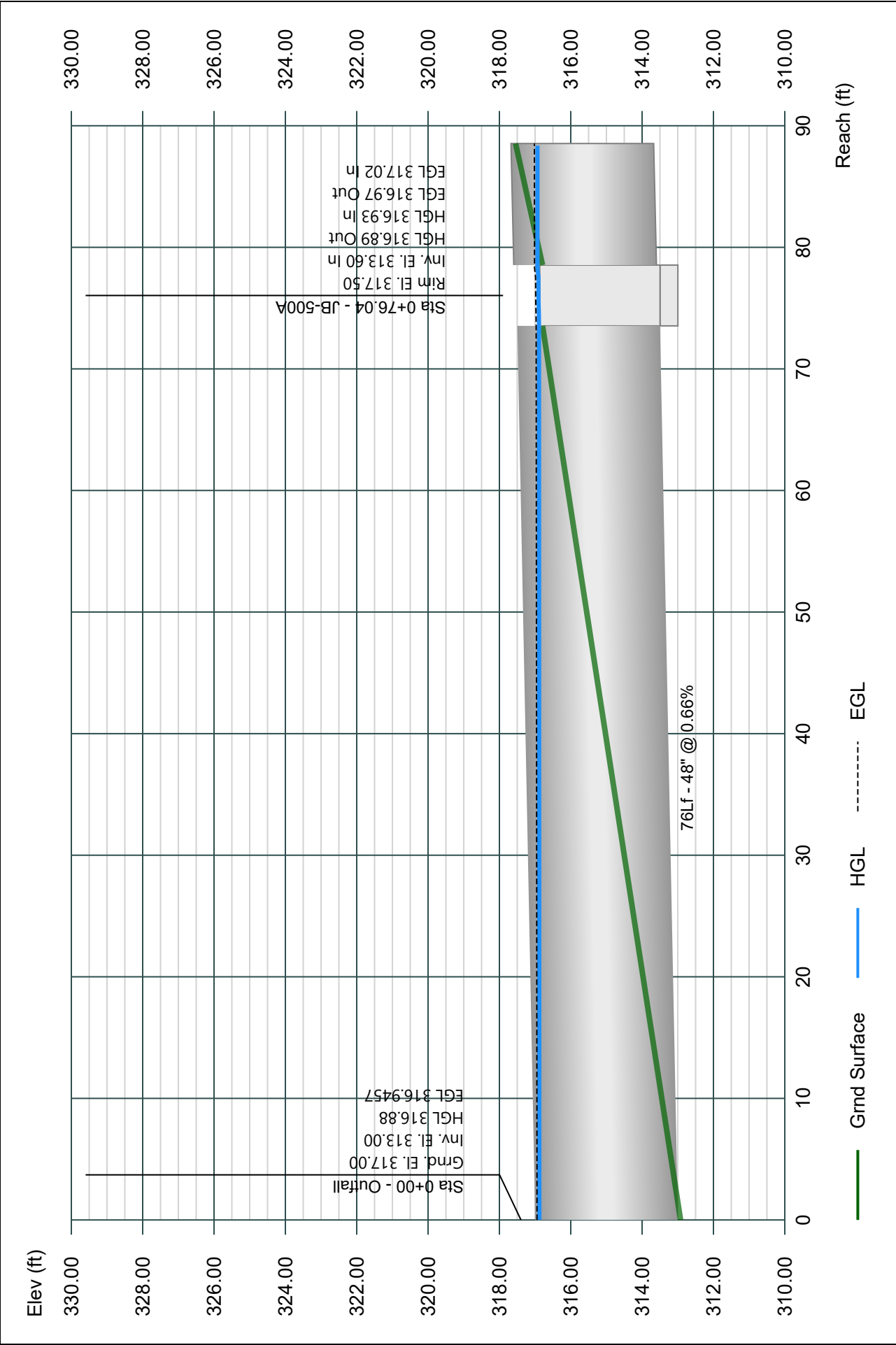
Notes: IDF File = Zebulon-10yr-IDF, Return Period = 10-yrs.

Line 1 - New

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

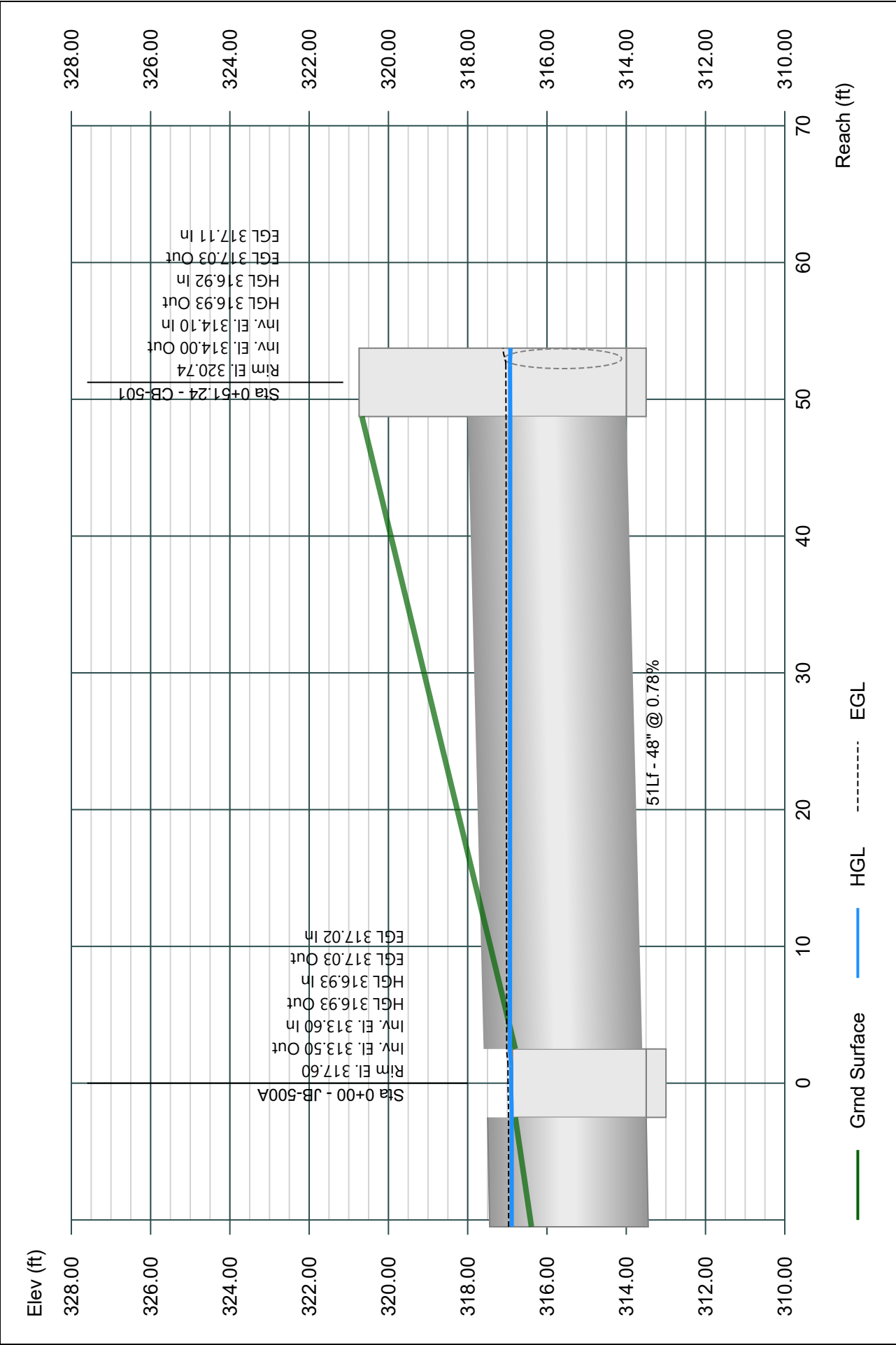


Line 2 - 500-501

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

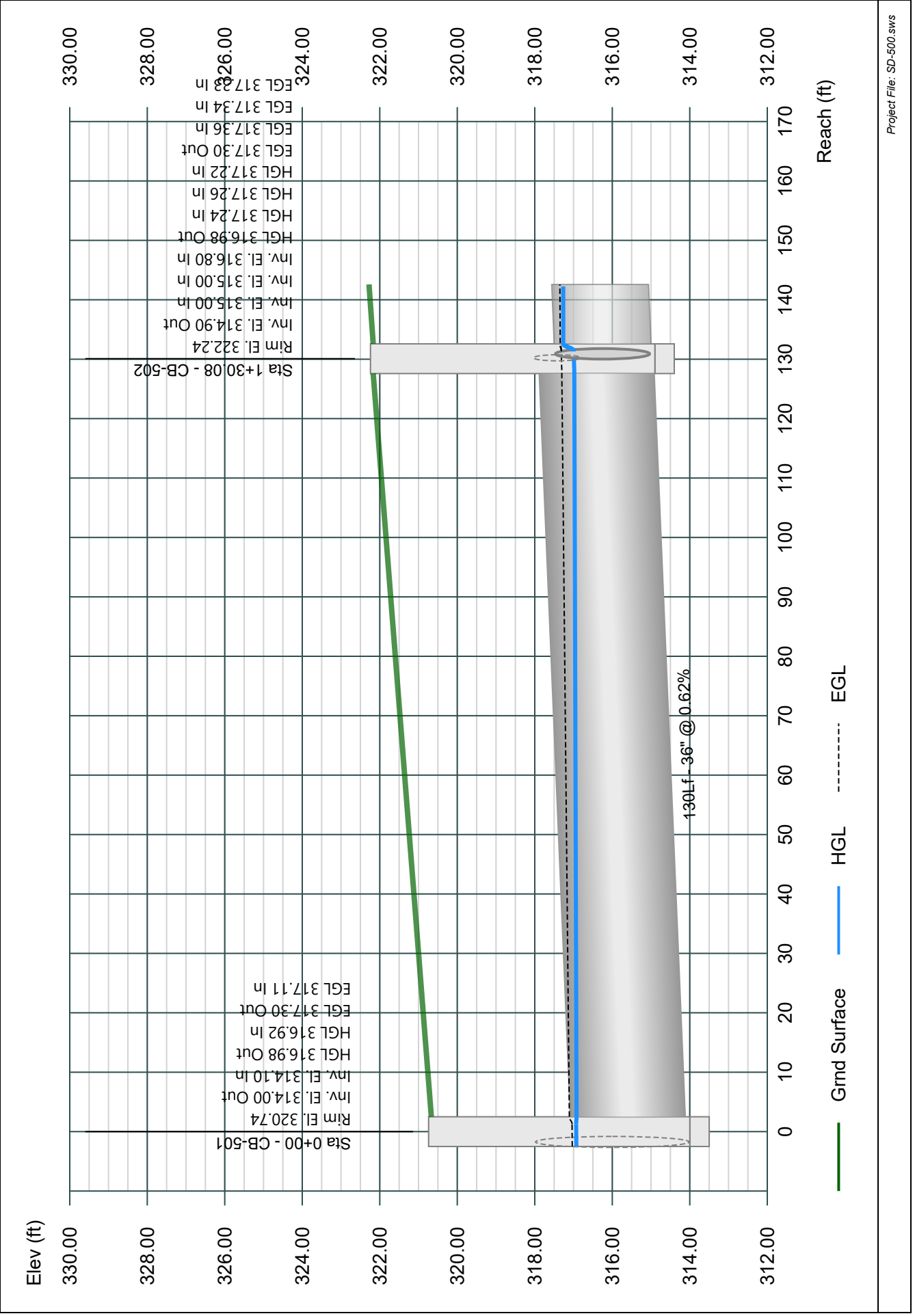


Line 3 - 501-502

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

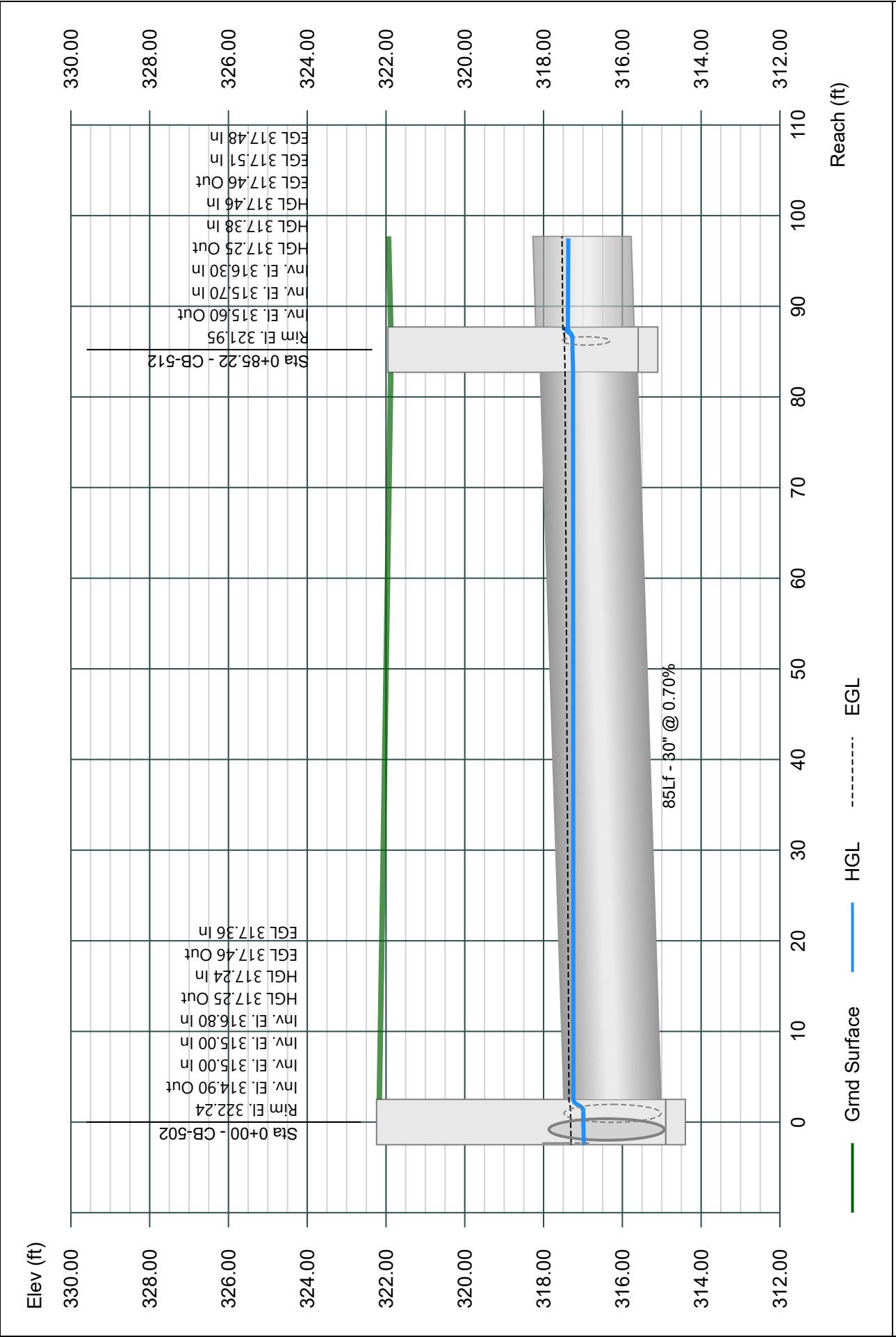


Line 4 - 502-512

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

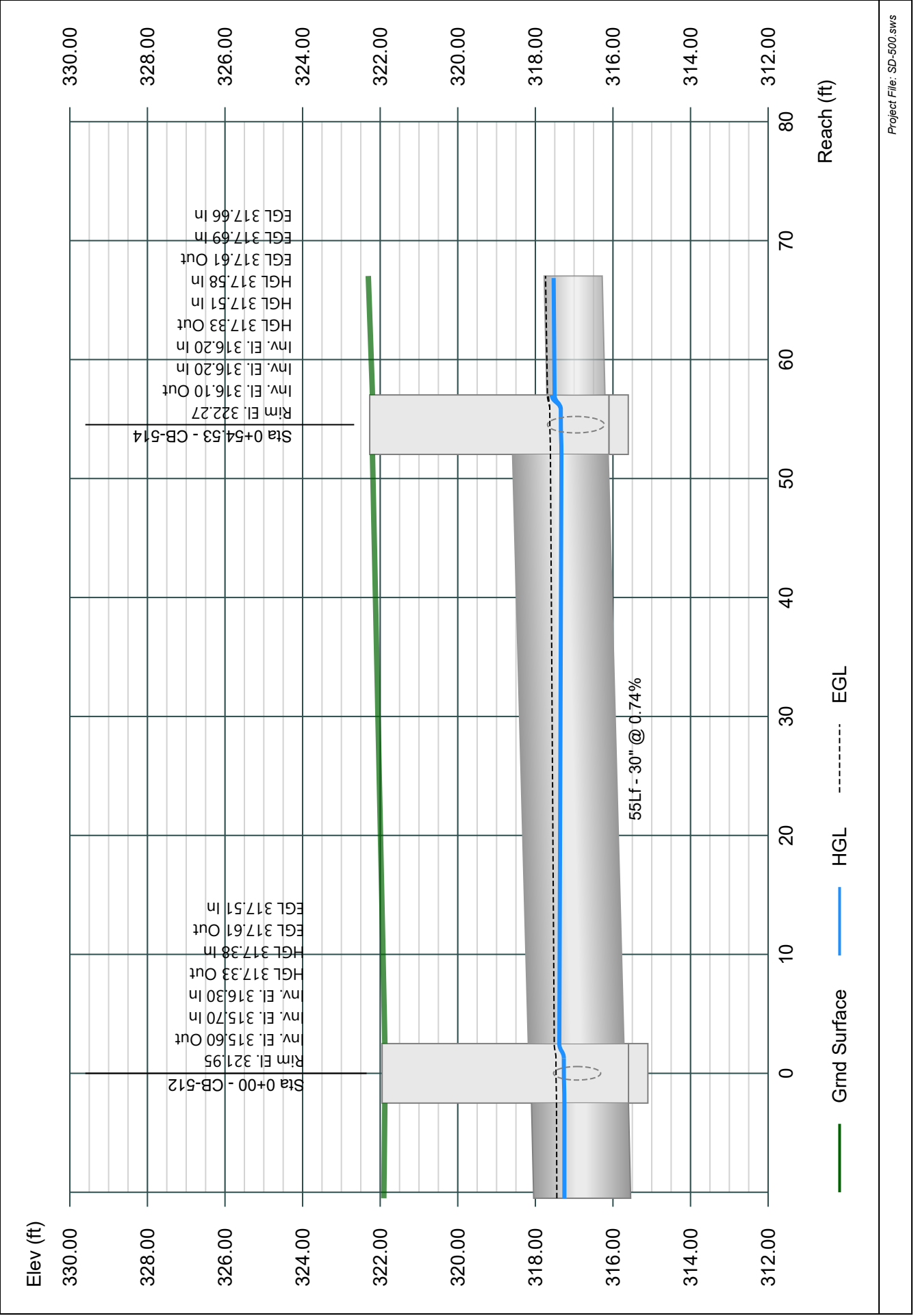


Line 5 - 512-514

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

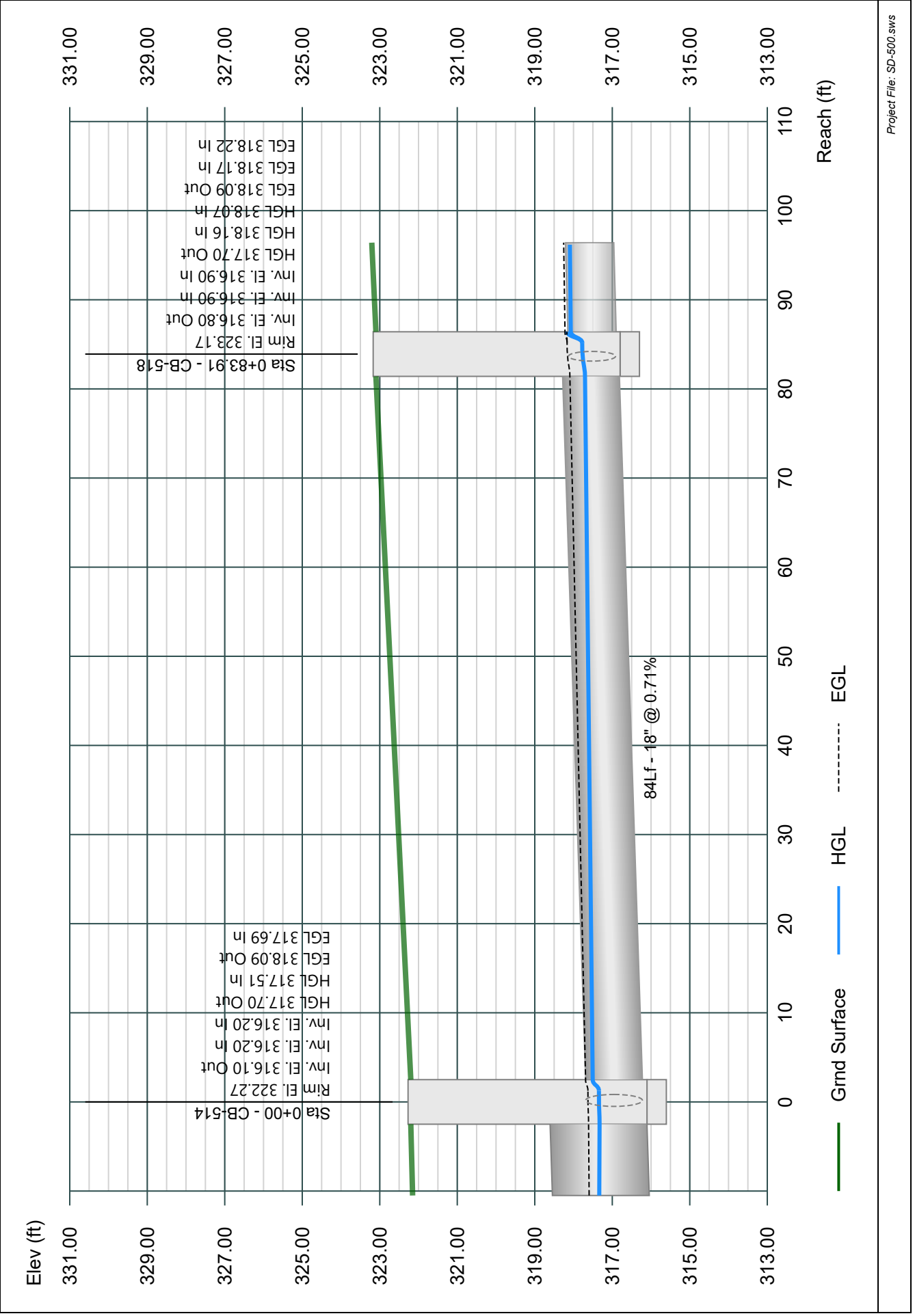


Line 6 - 514-518

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

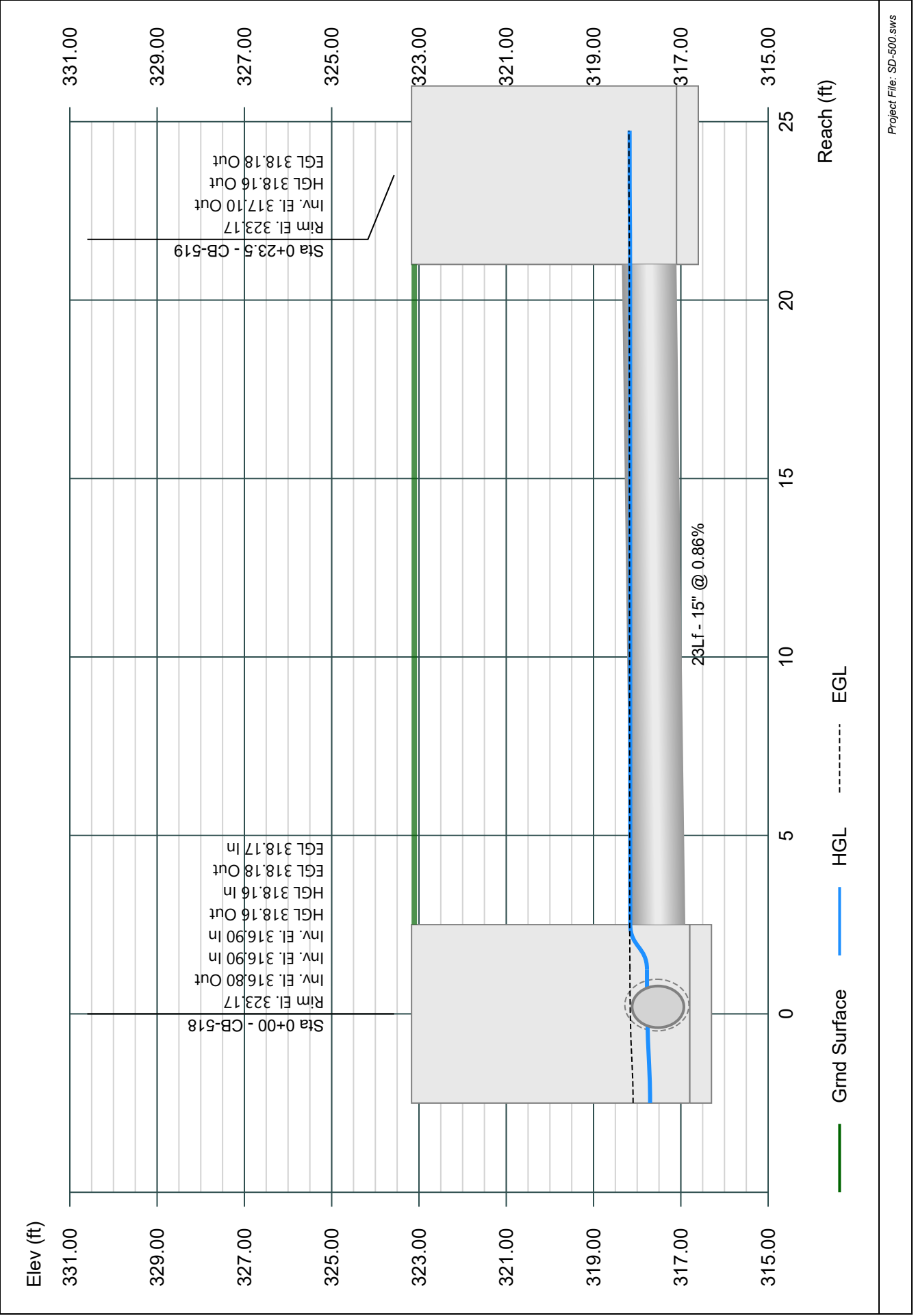


Line 7 - 518-519

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

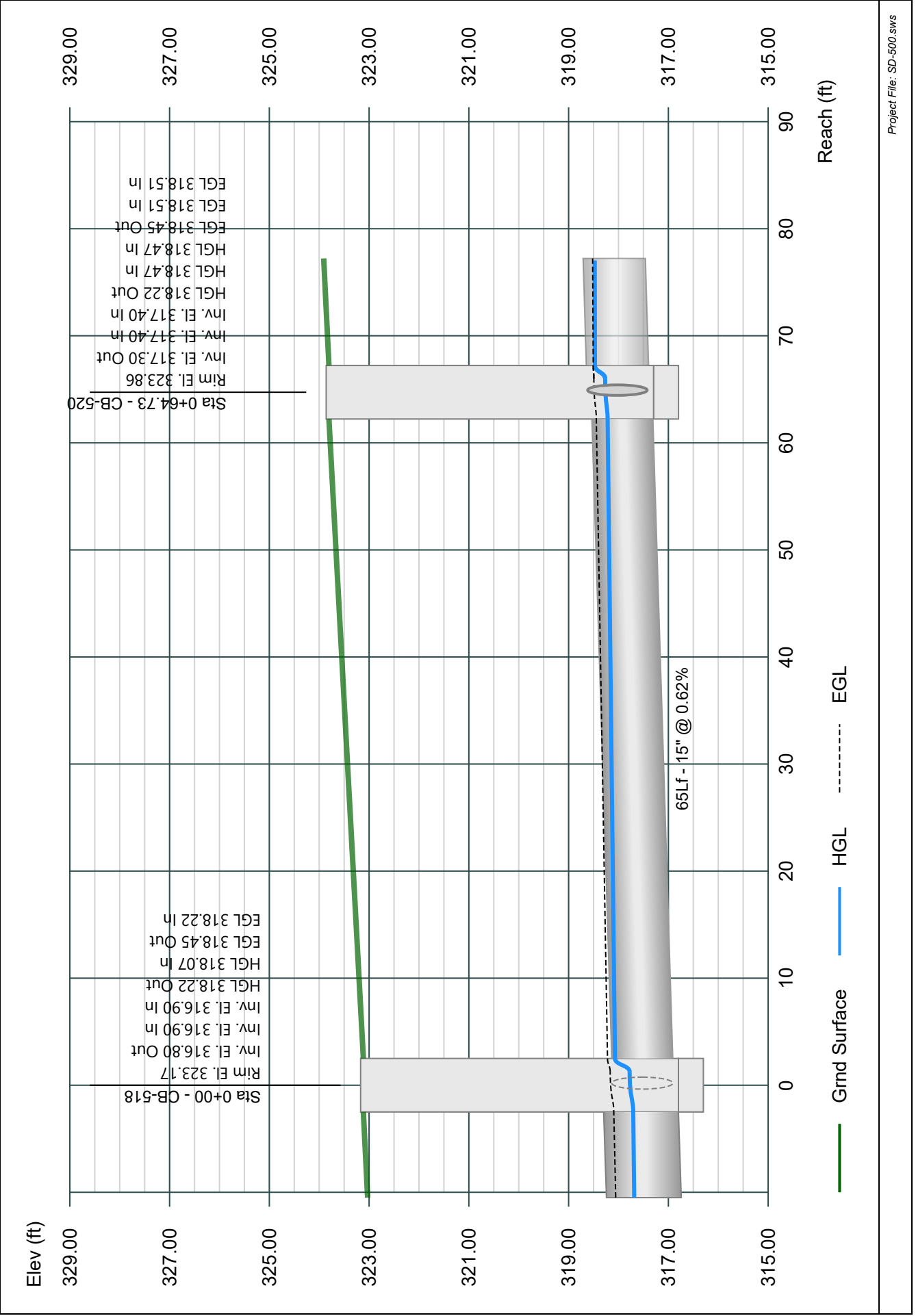


Line 8 - 518-520

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

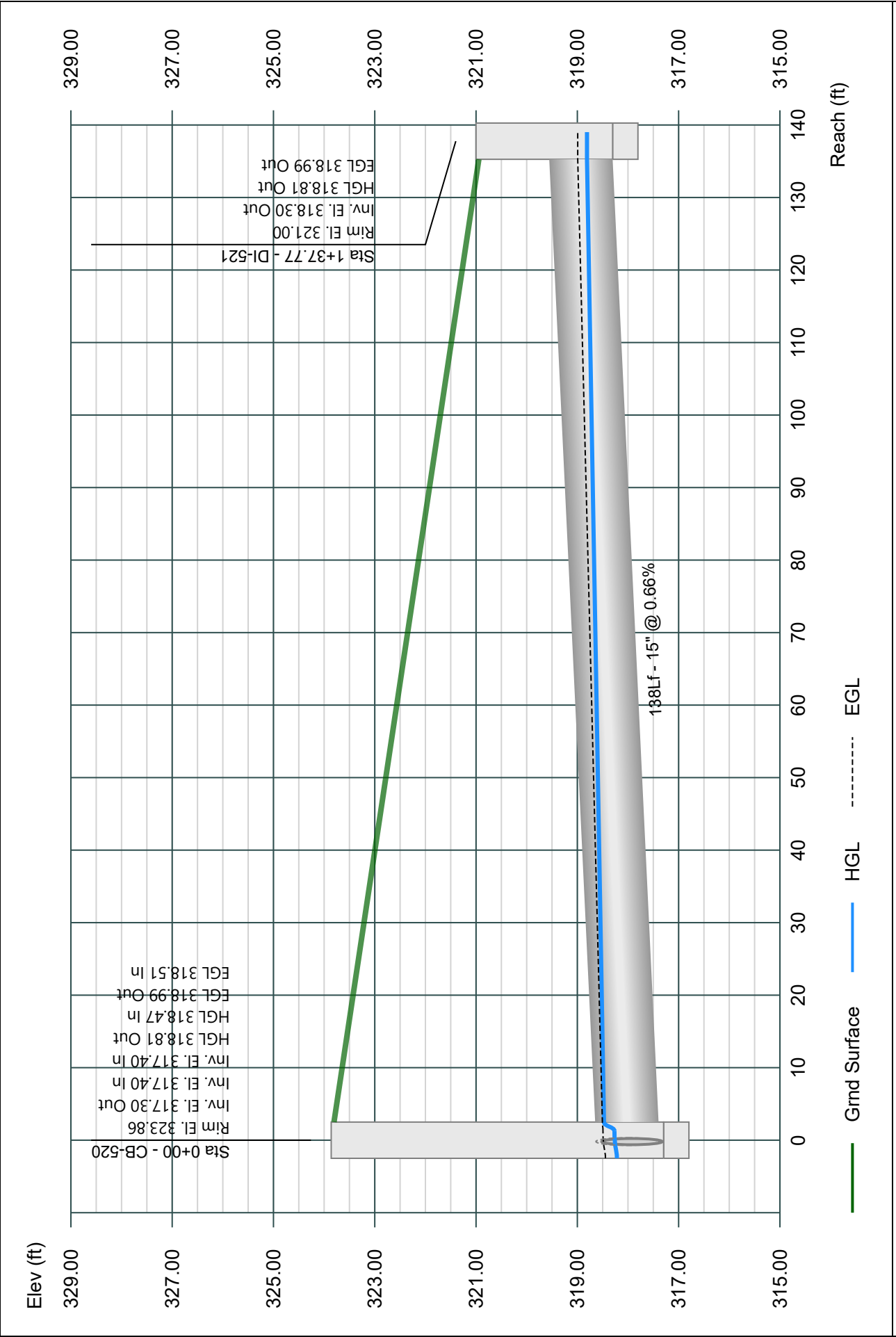
02-26-2024



Line 9 - 520-521

Project Name: SD-500
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

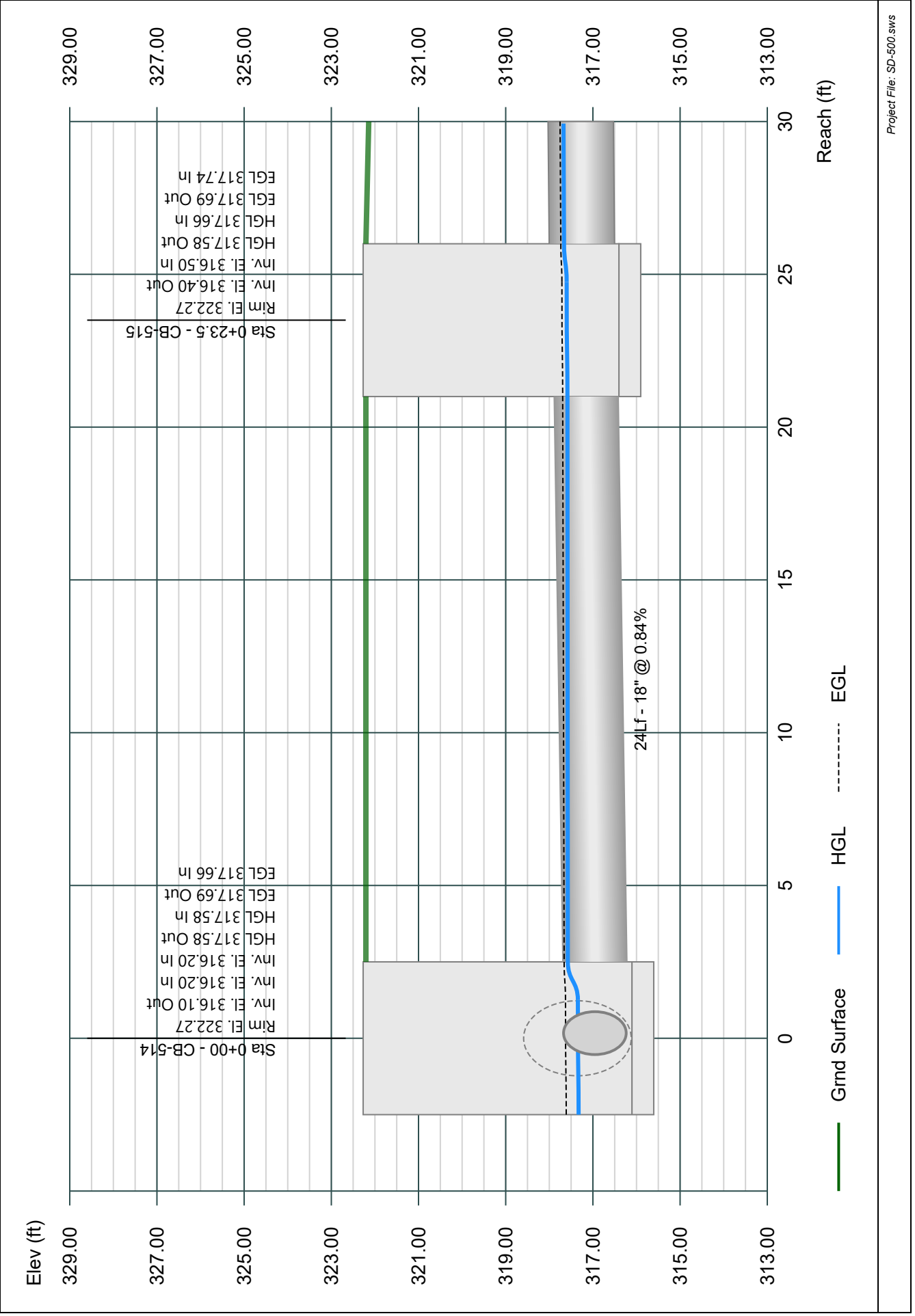


Line 10 - 514-515

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

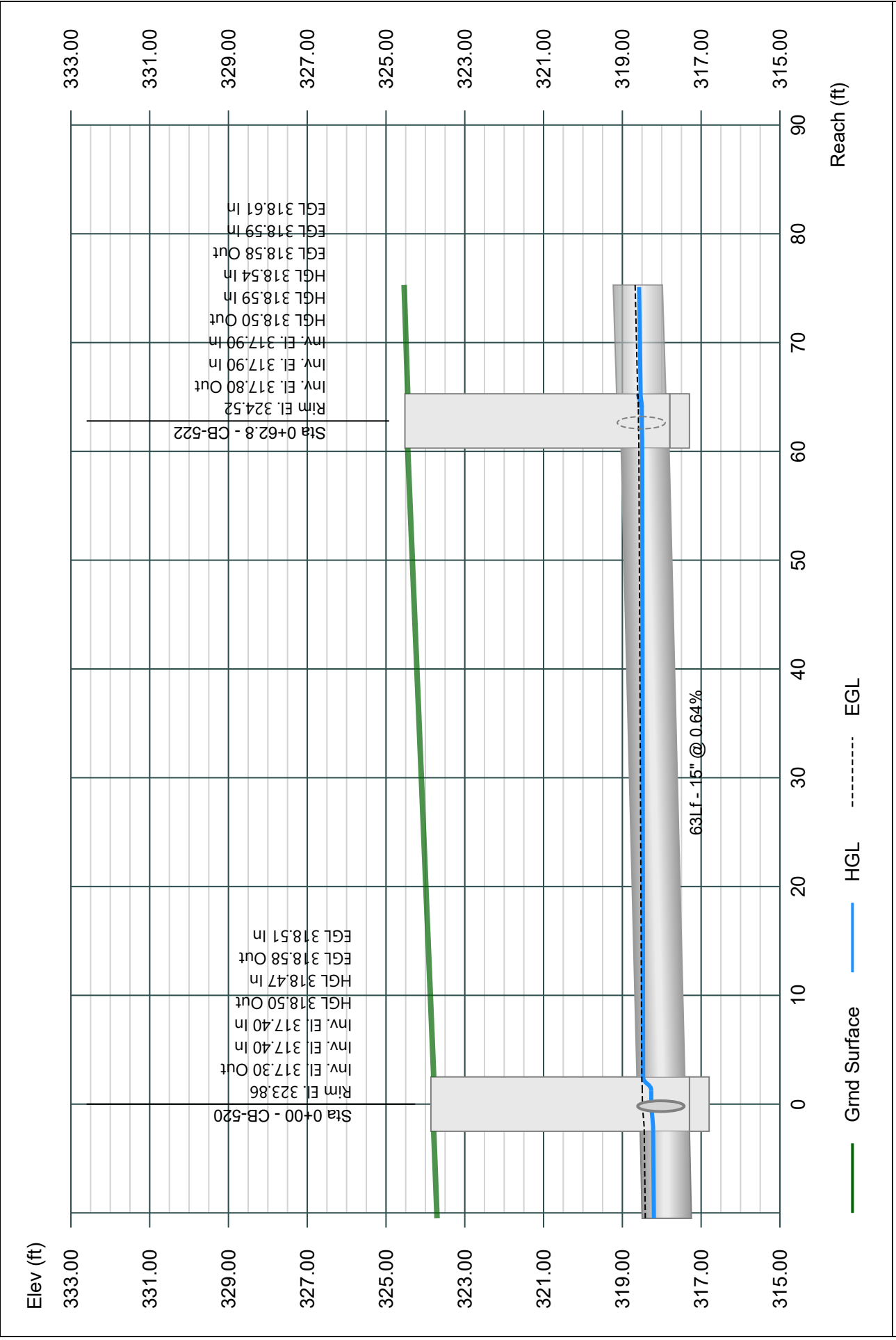


Line 11 - 520-522

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

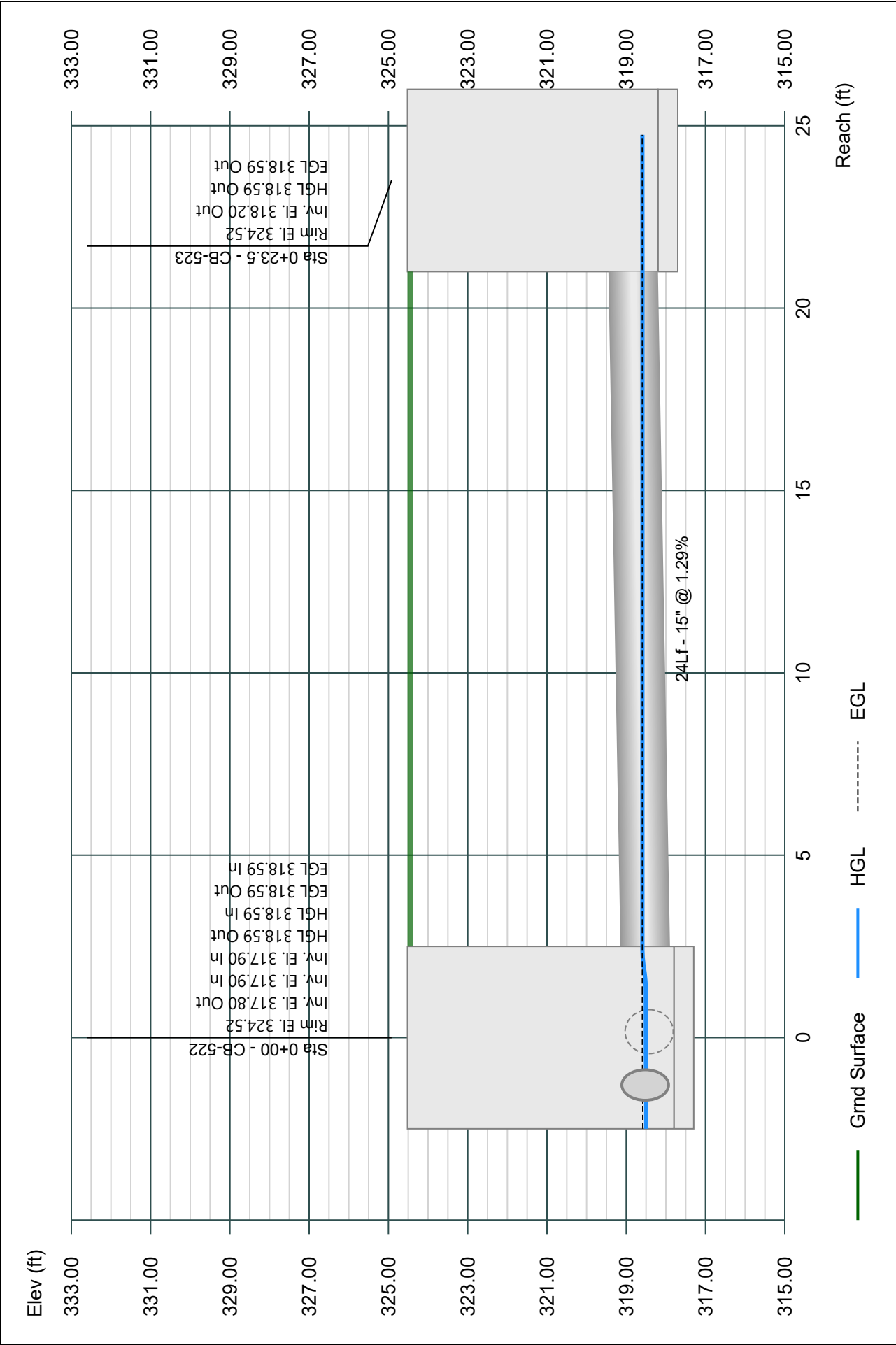


Line 12 - 522-523

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

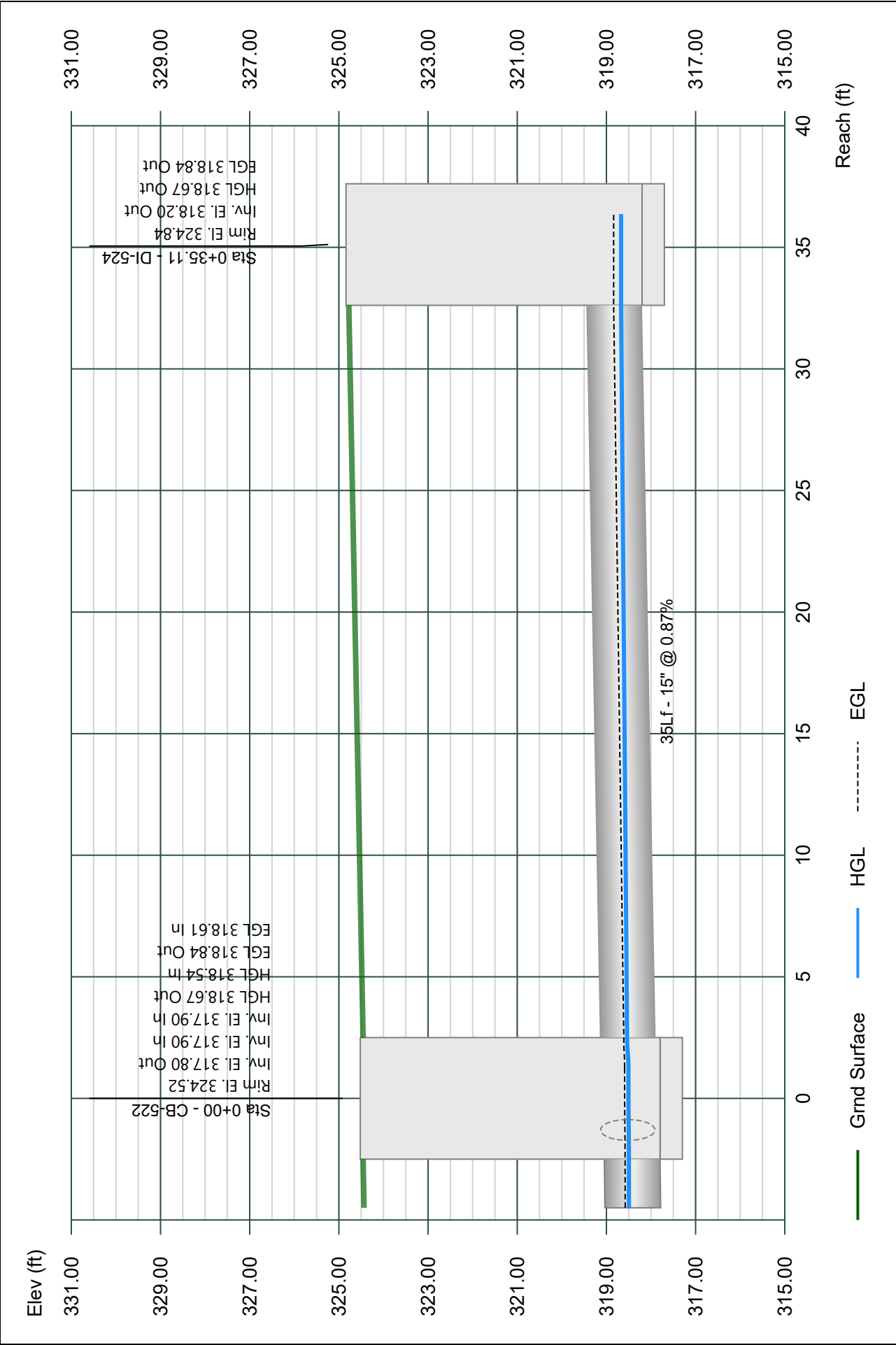


Line 13 - 522-524

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

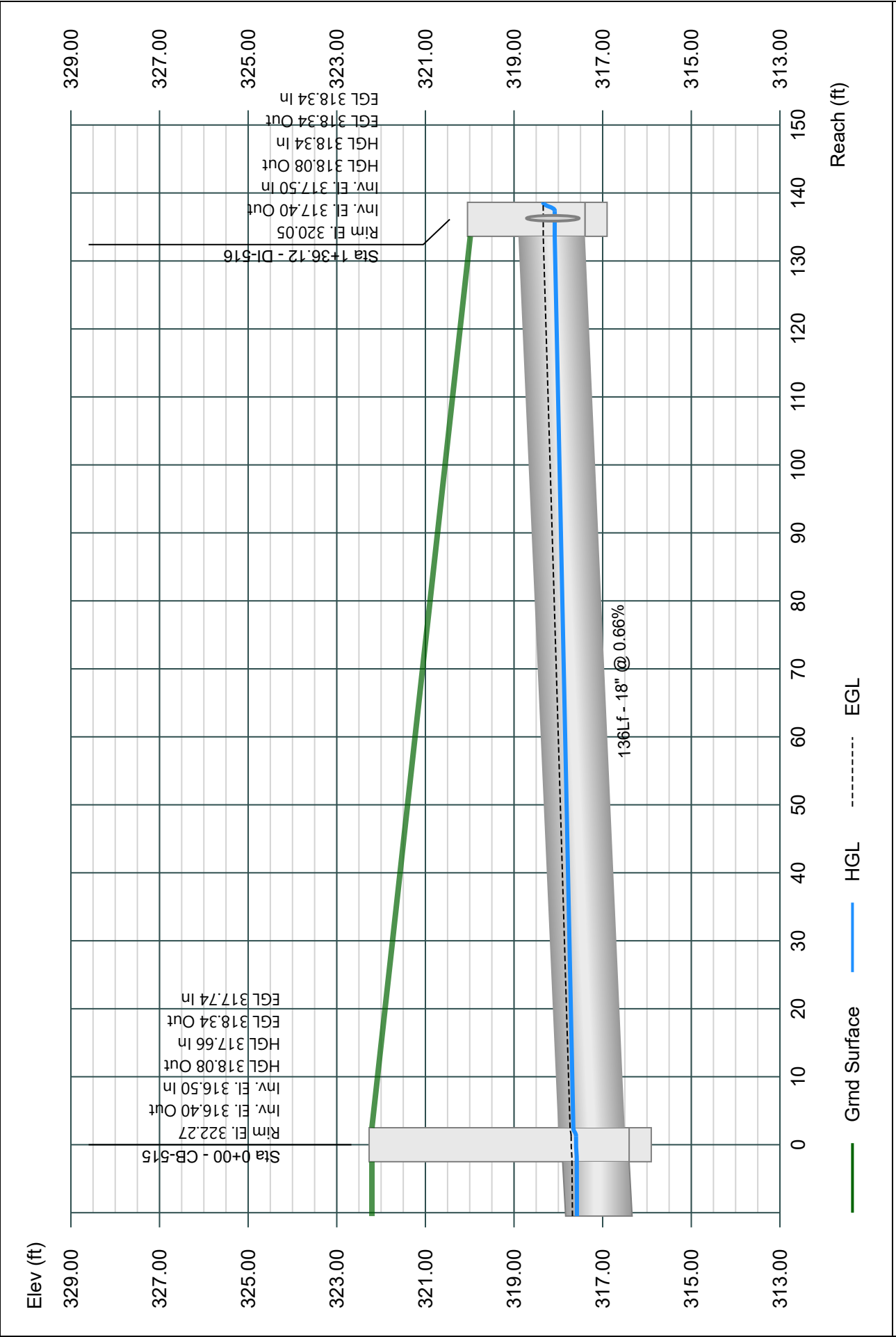


Line 14 - 515-516

Project Name: SD-500

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

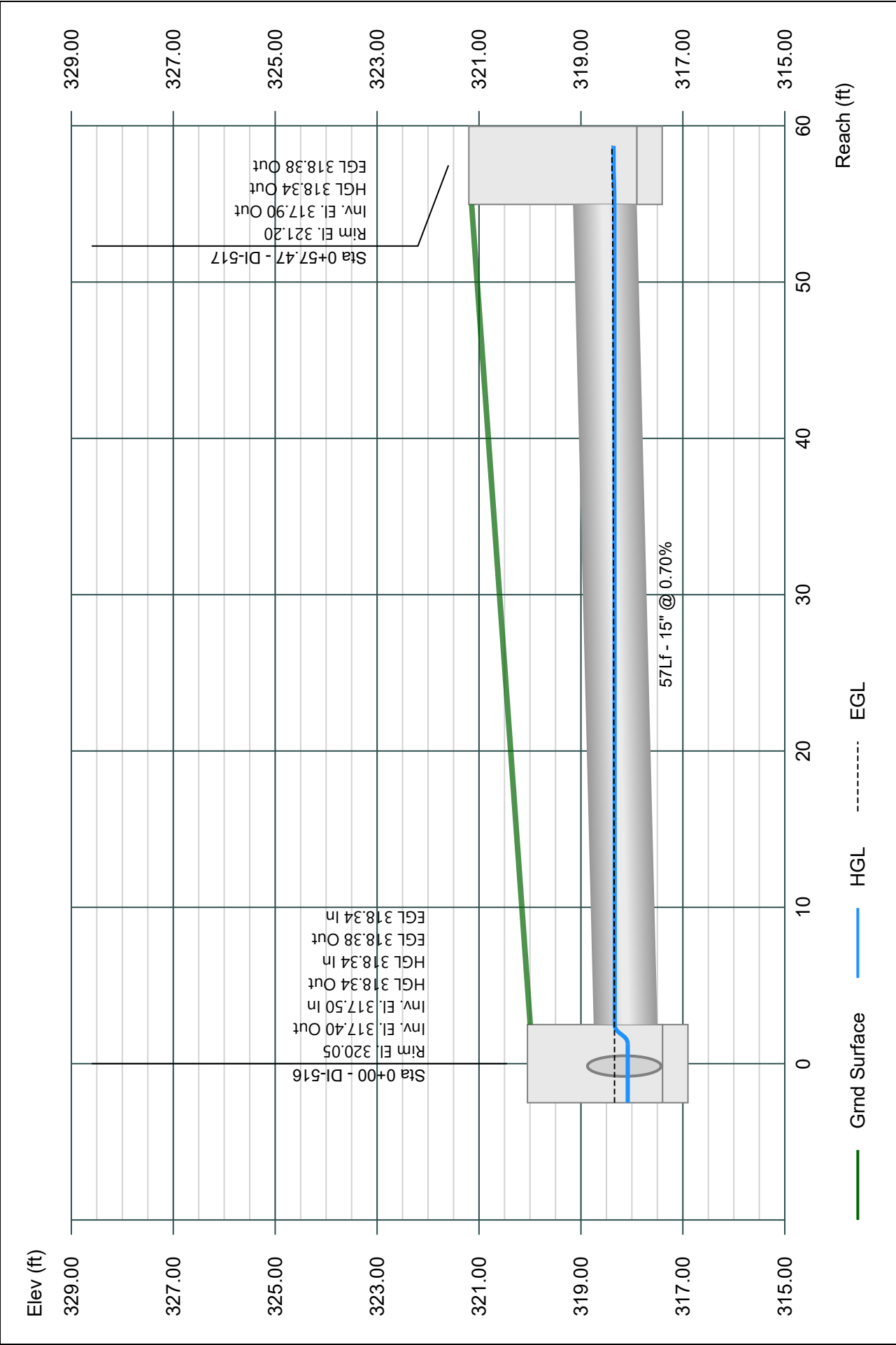


Line 15 - 516-517

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

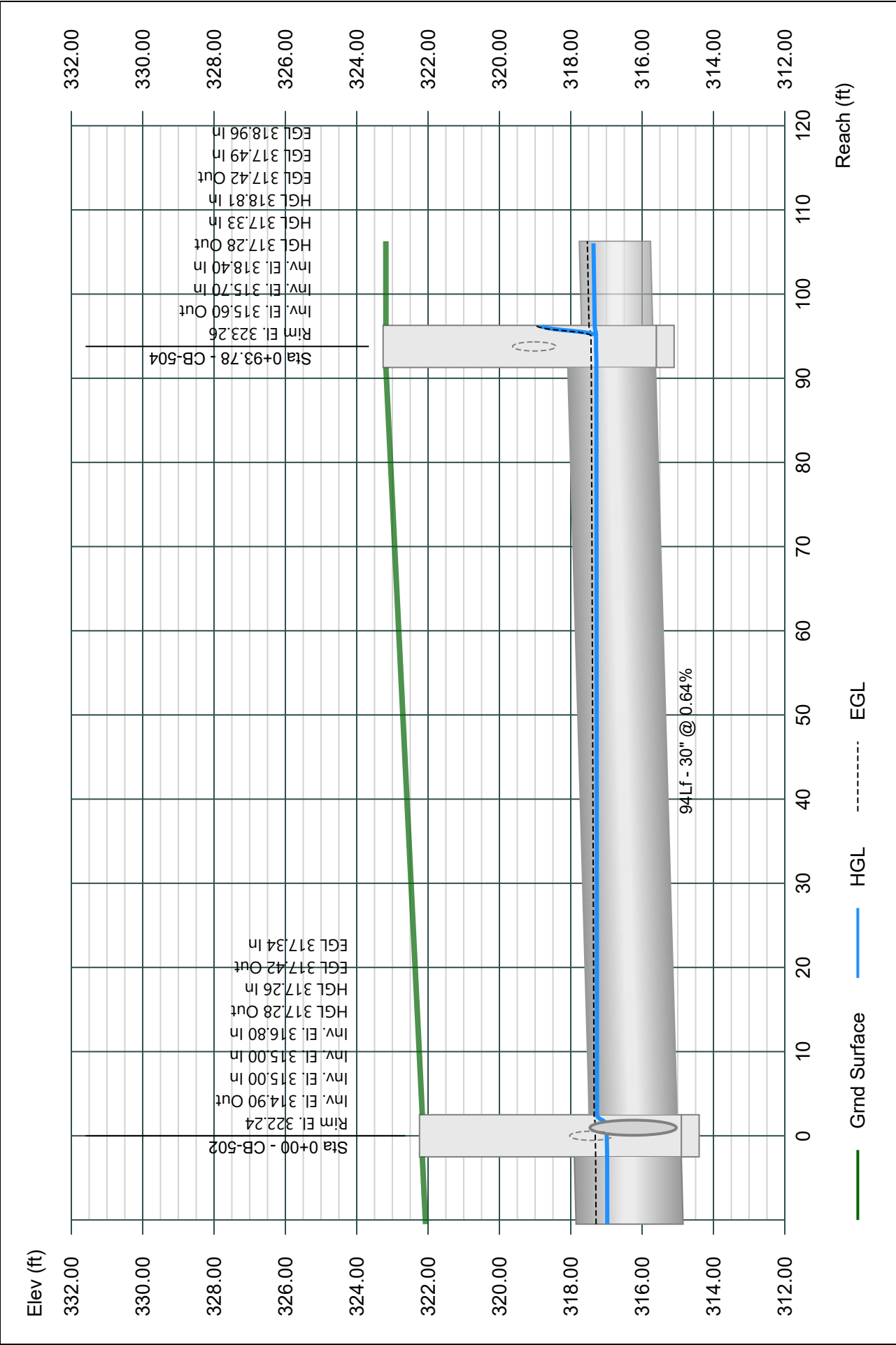


Line 16 - 502-504

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

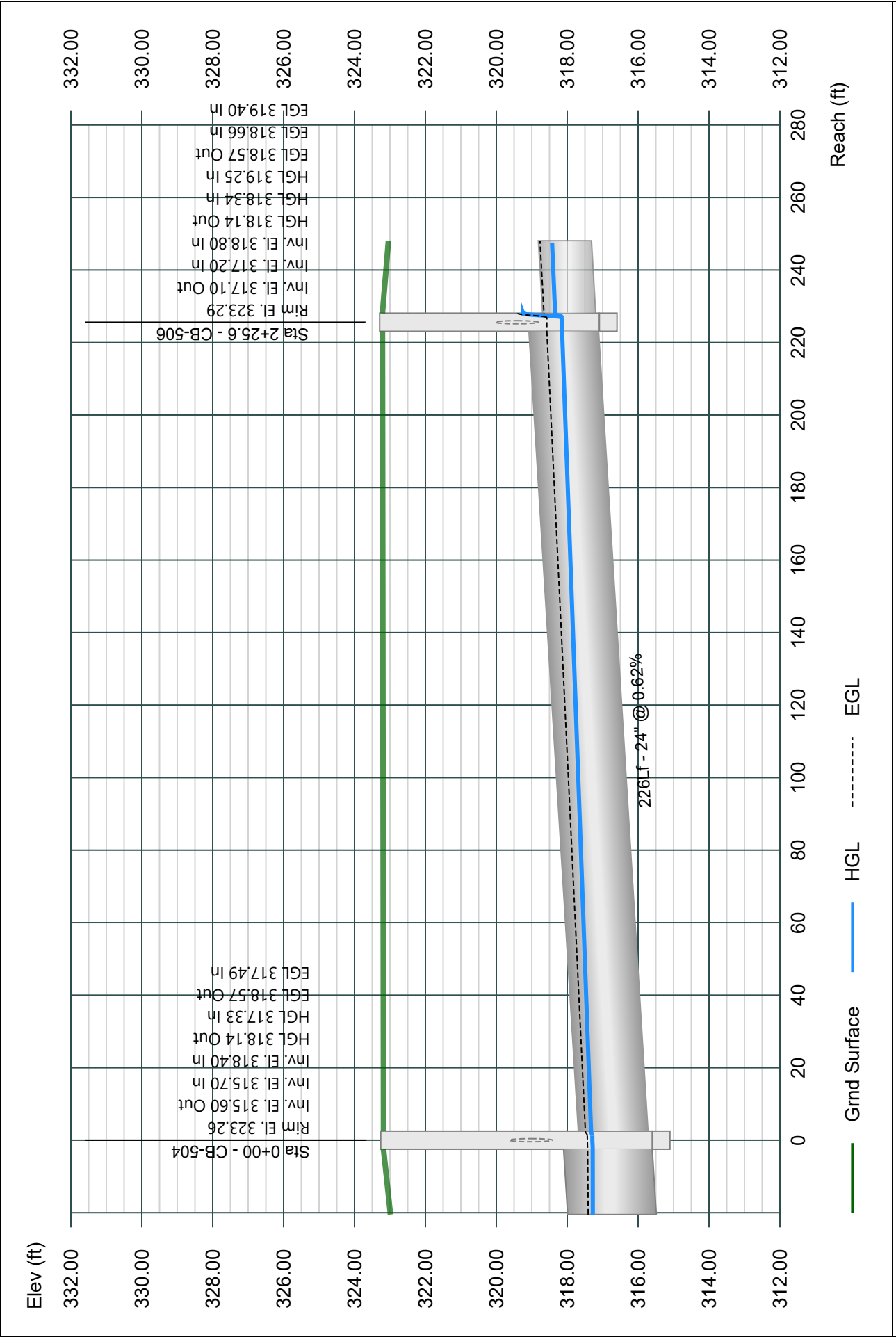


Line 17 - 504-506

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

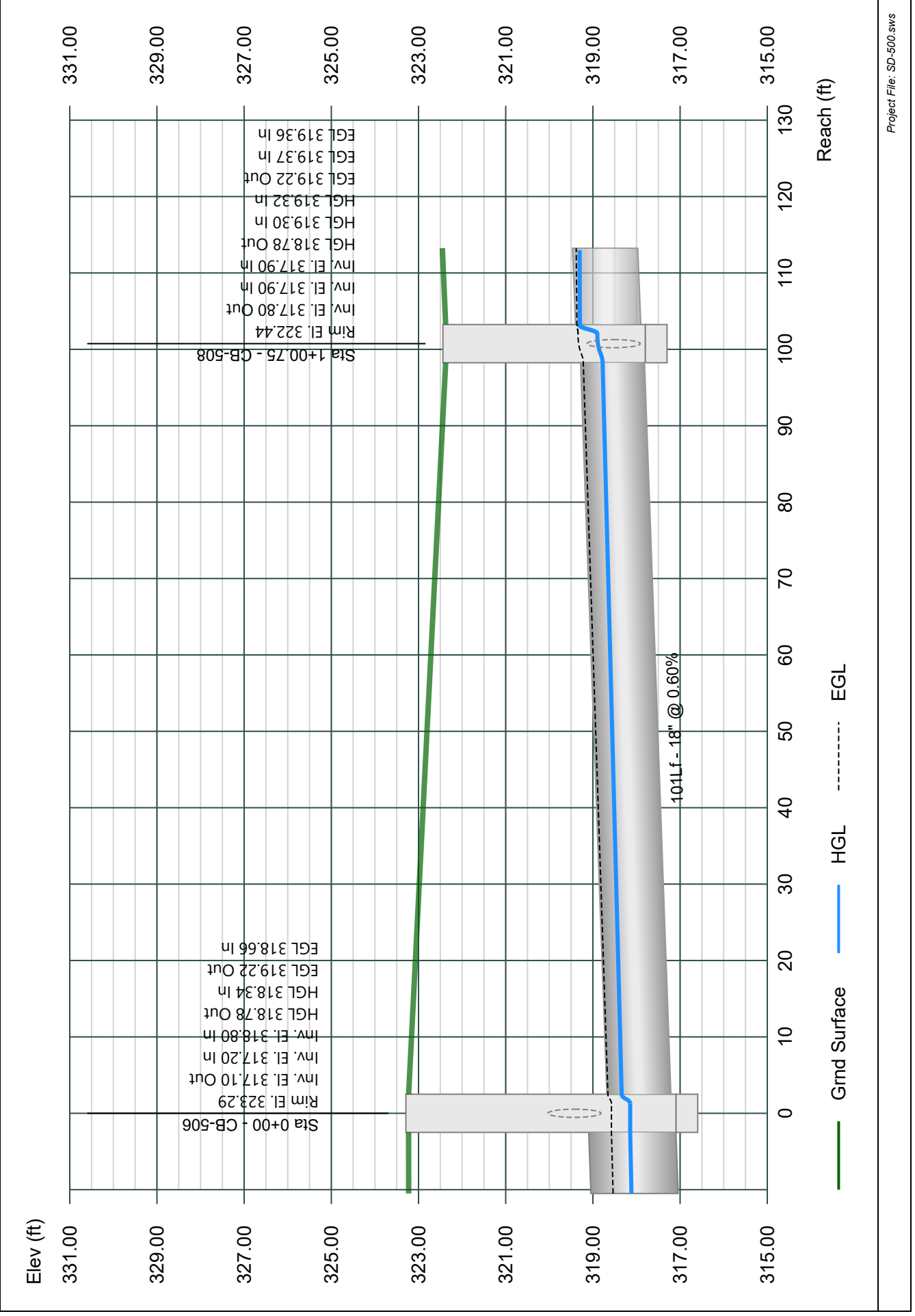


Line 18 - 506-508

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

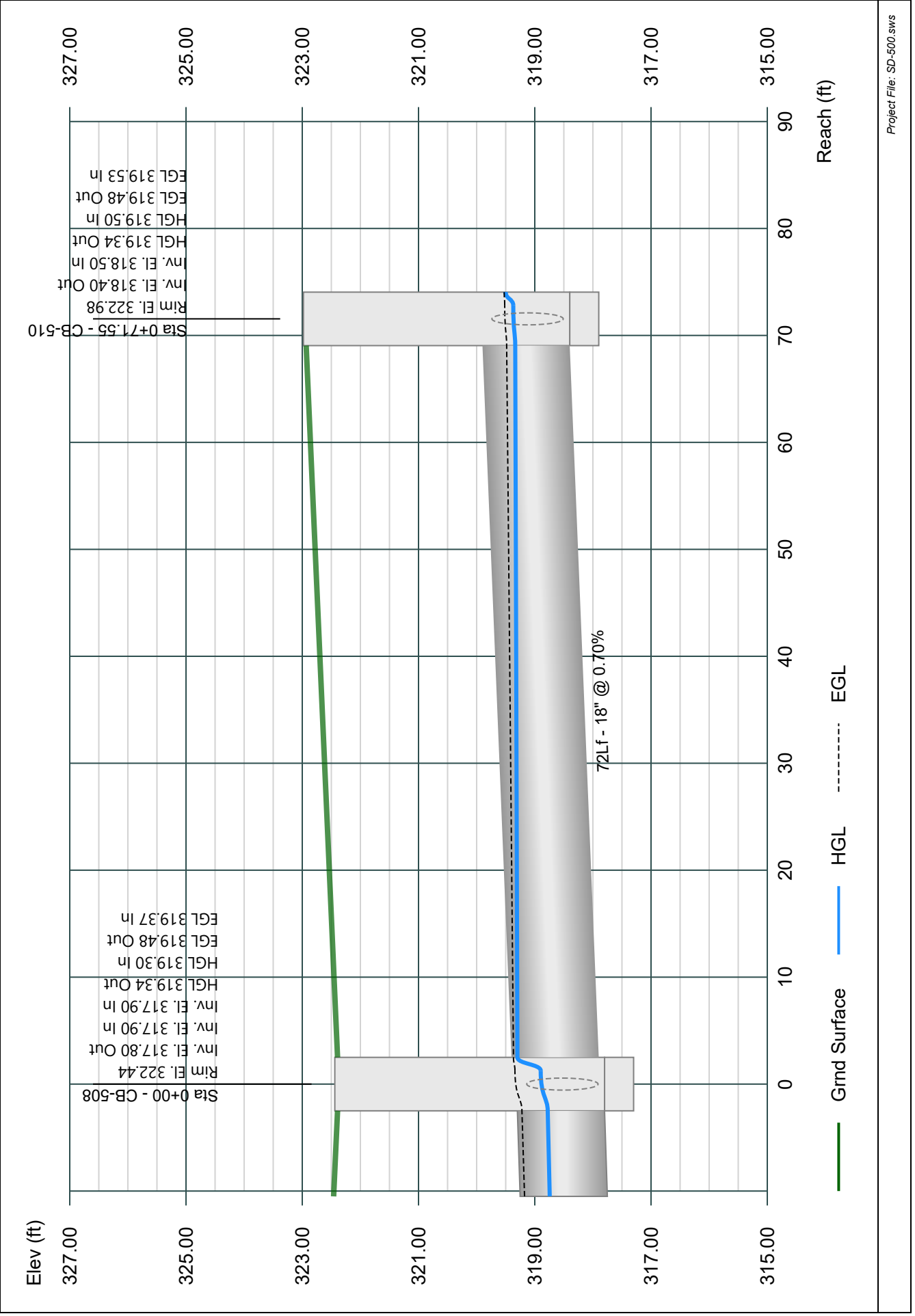


Line 19 - 508-510

Project Name: SD-500

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

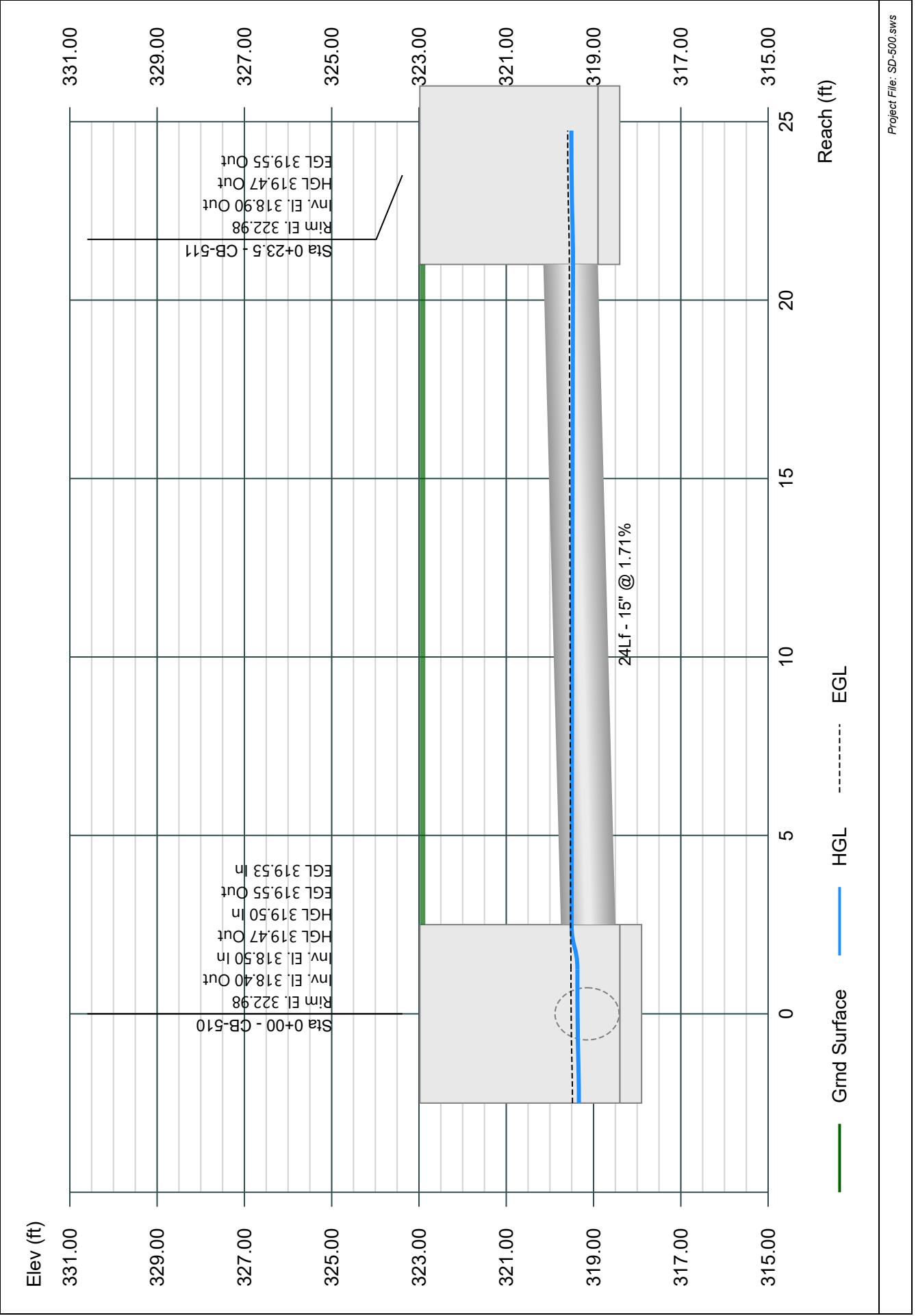


Line 20 - 510-511

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

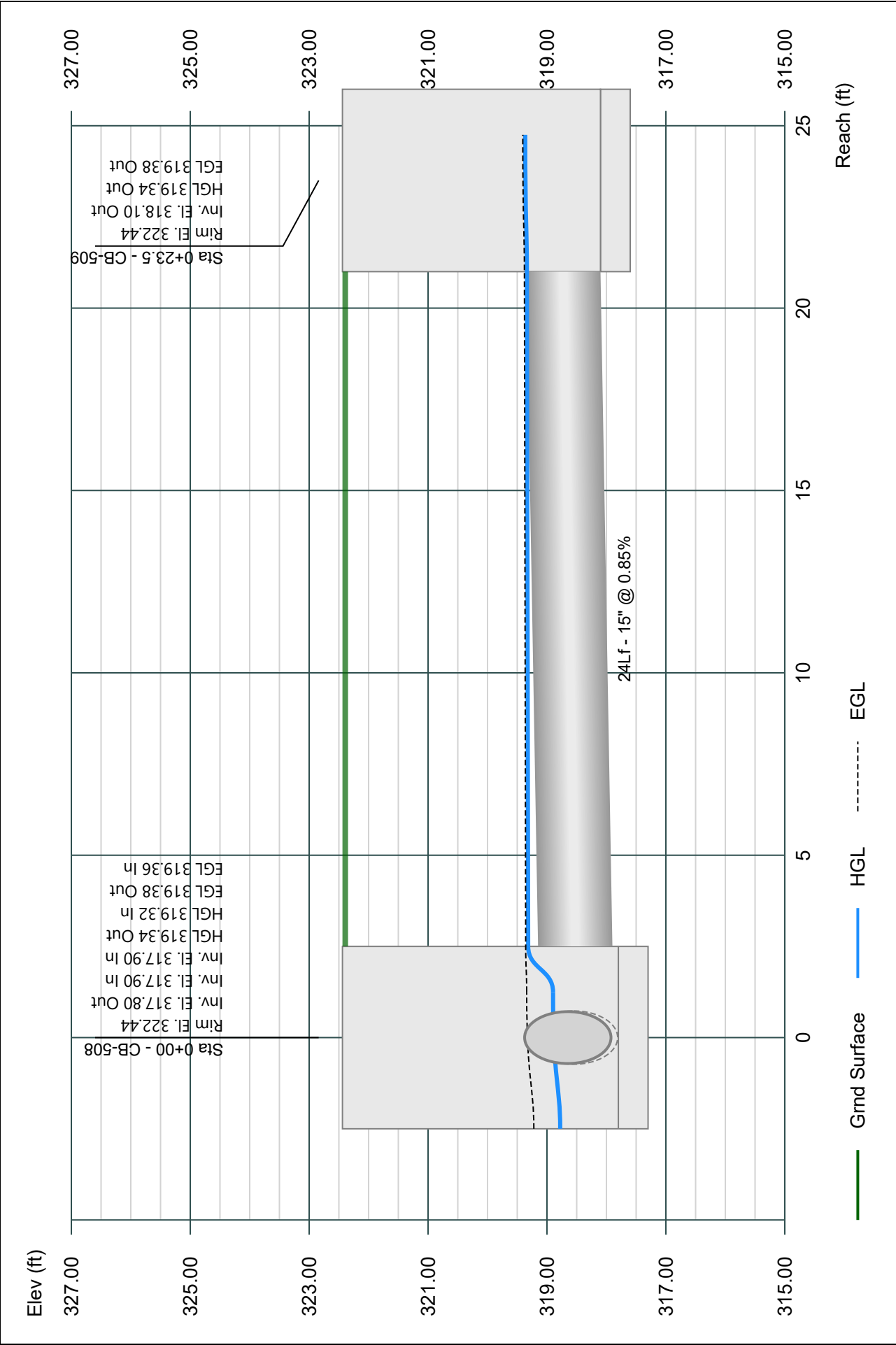


Line 21 - 508-509

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

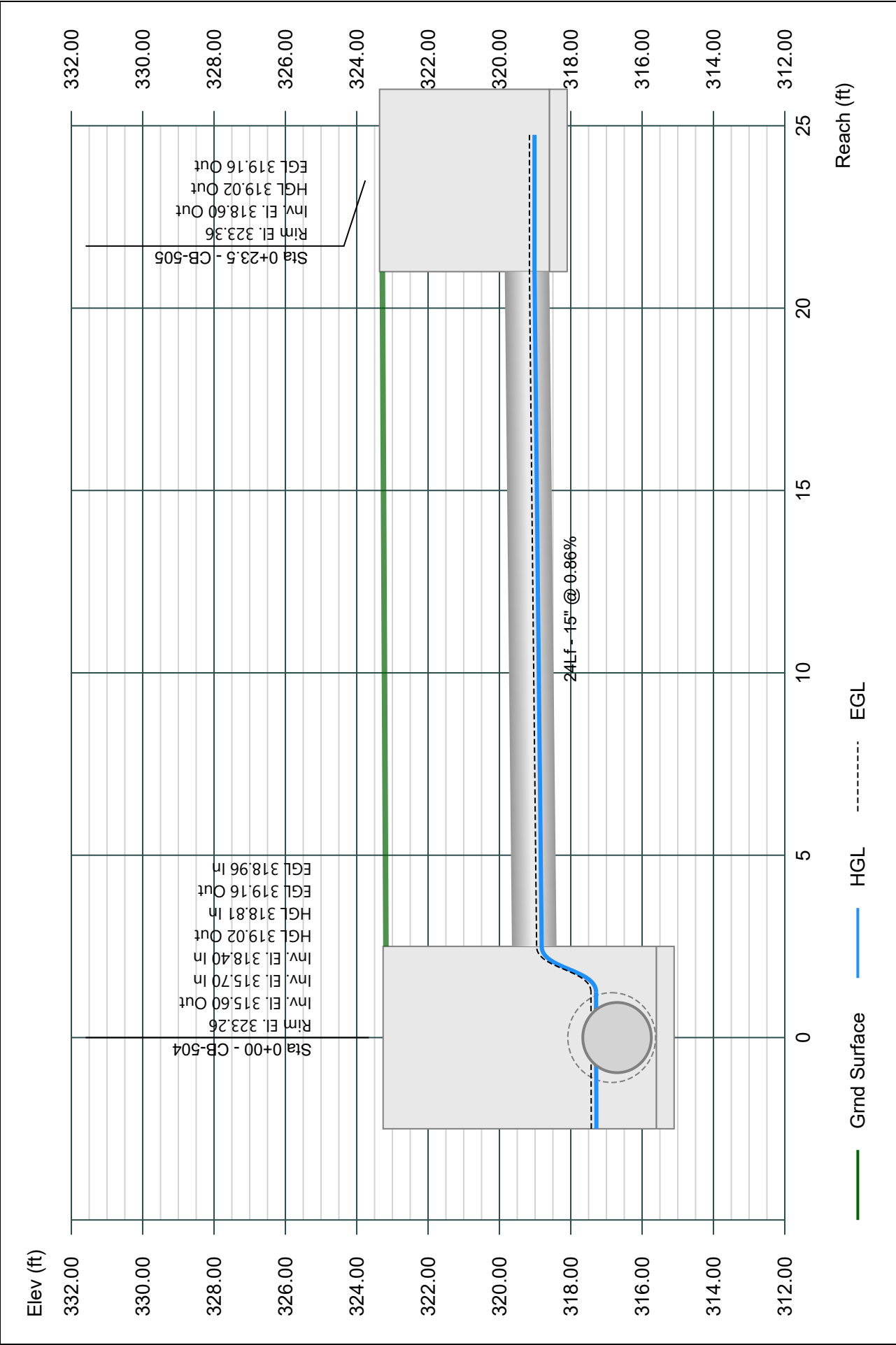


Line 22 - 504-505

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

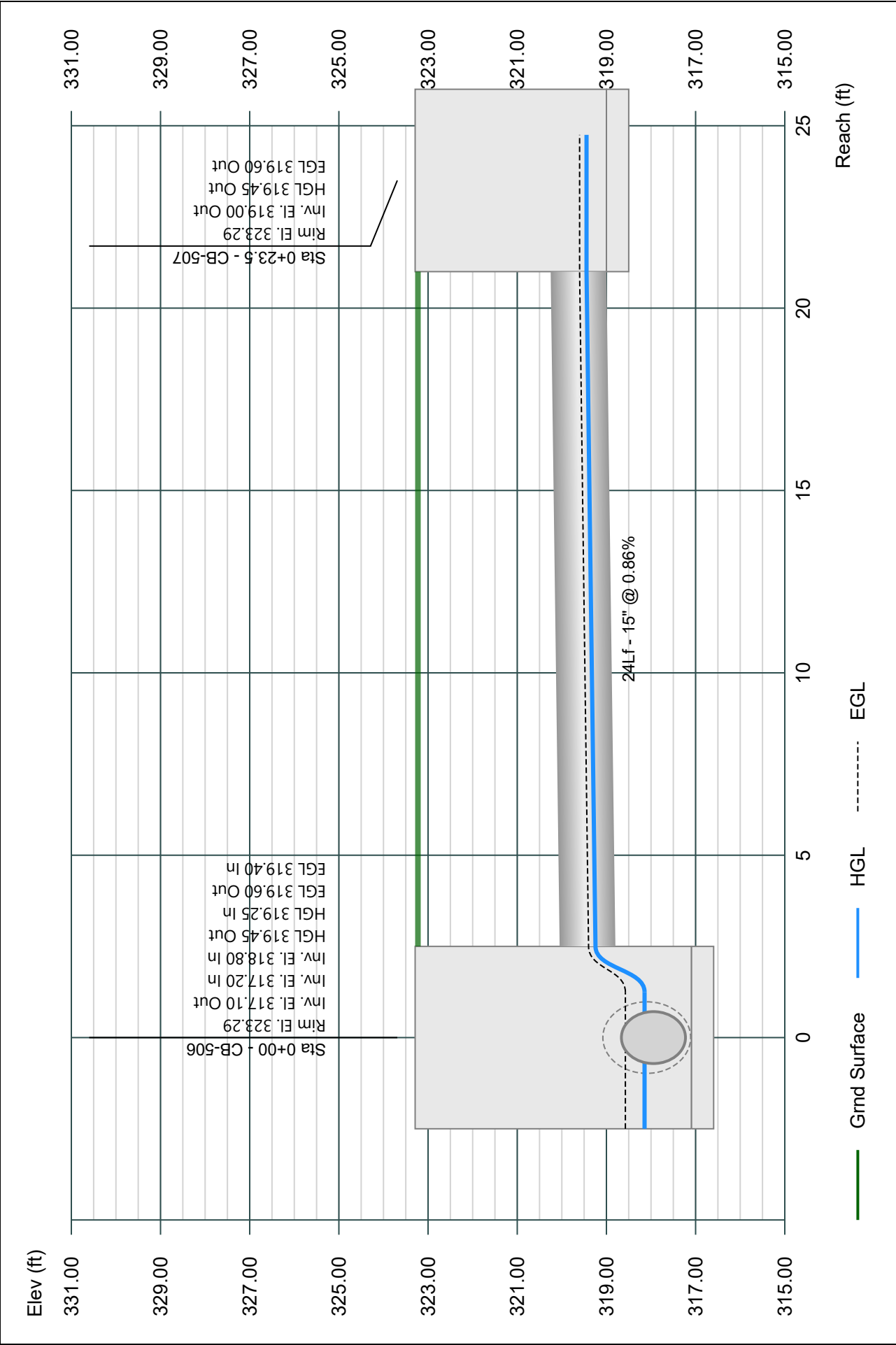


Line 23 - 506-507

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

02-26-2024

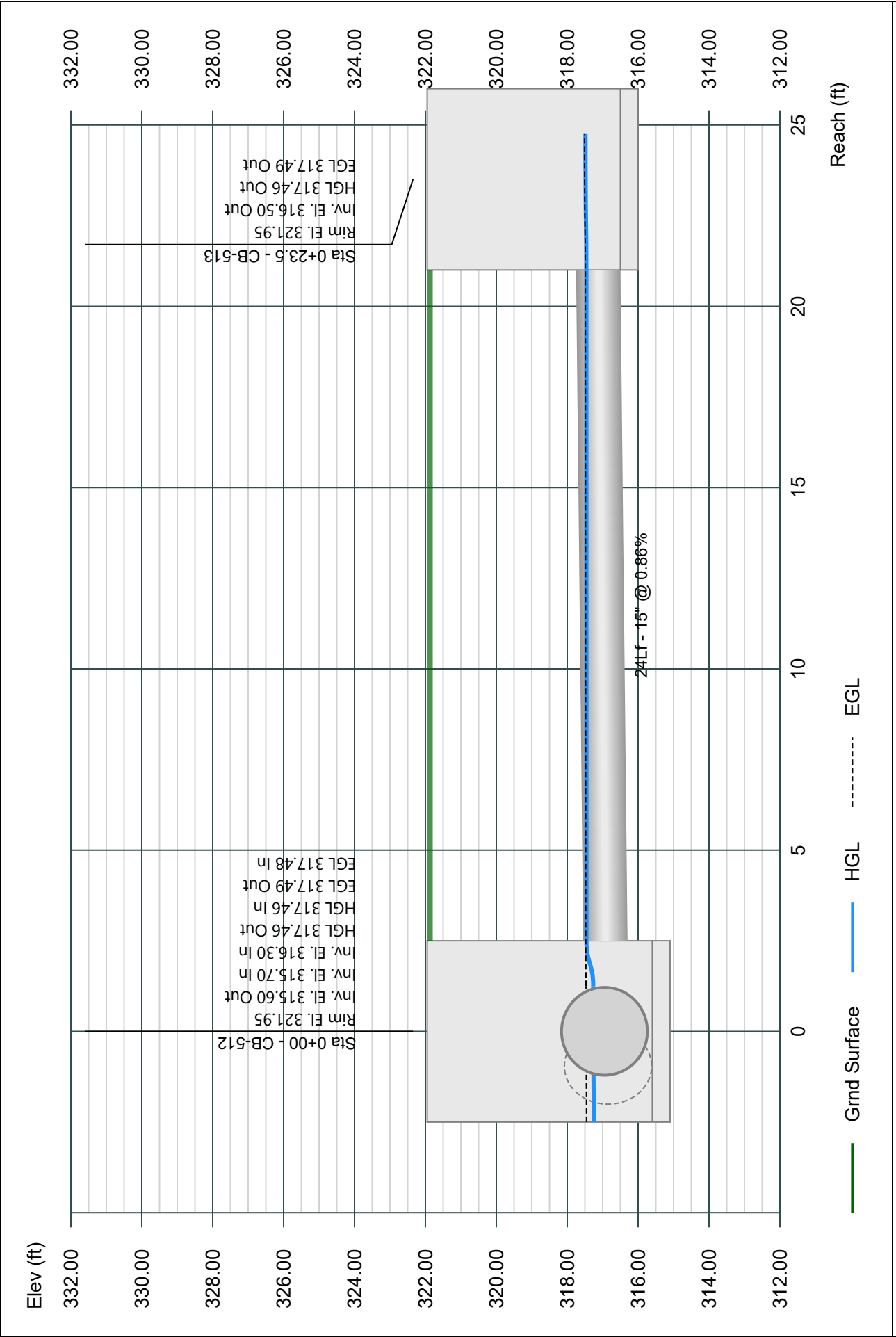


Line 24 - 512-513

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500

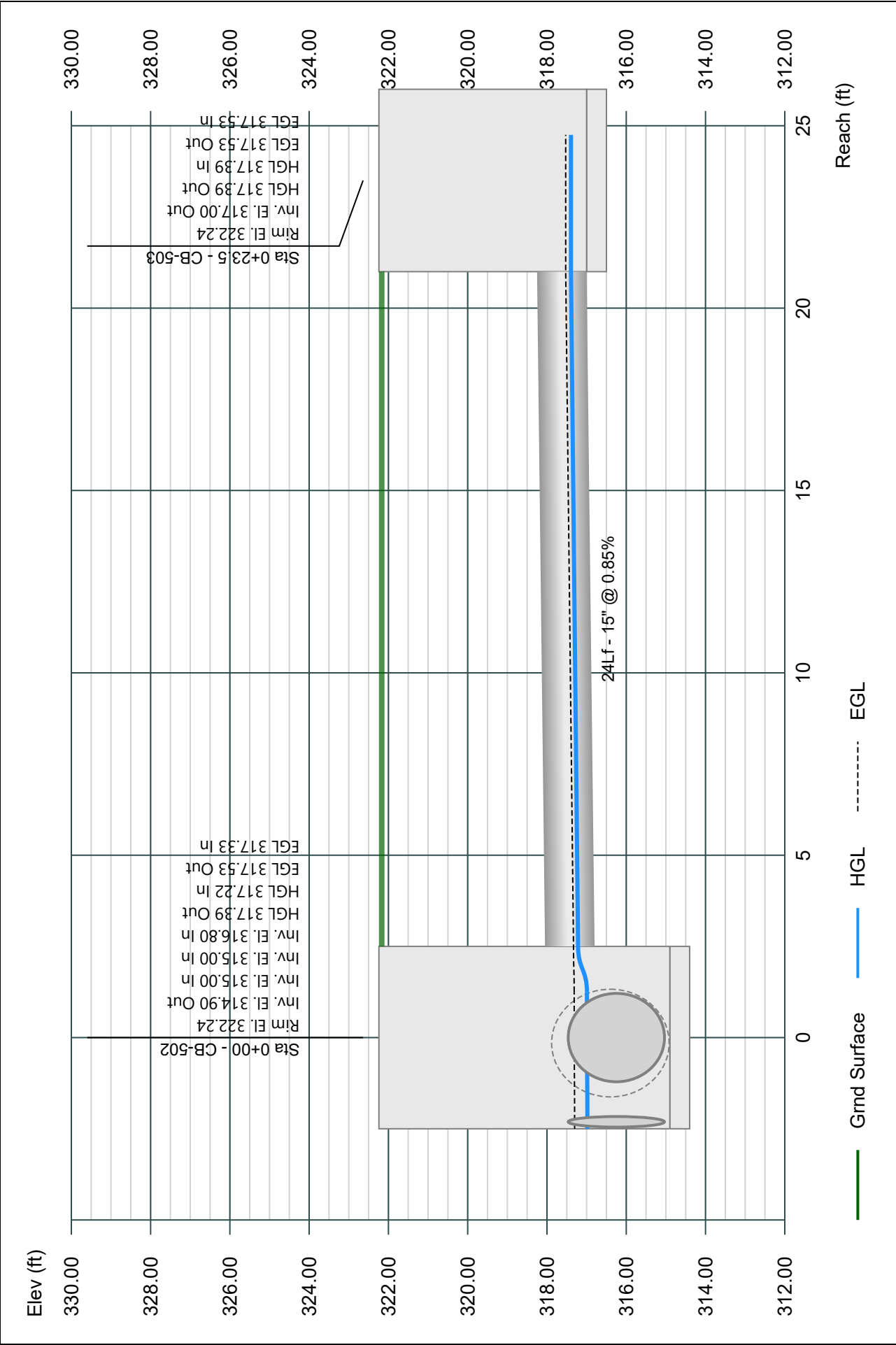
02-26-2024



Line 25 - 502-503

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-500
02-26-2024

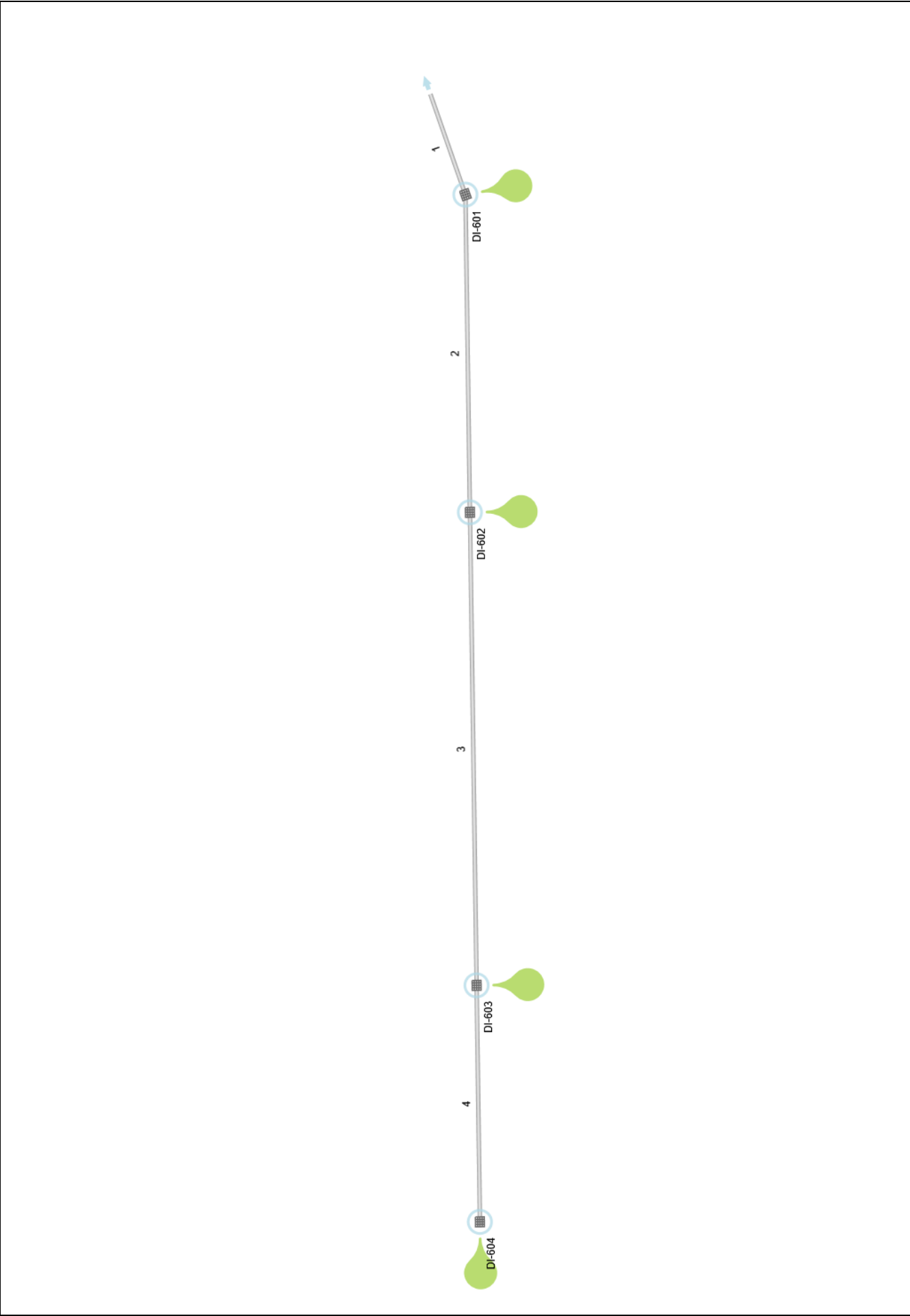


Plan View

Project Name: SD-600

Stormwater Studio 2024 v 3.0.0.33

02-26-2024



Energy Grade Line Calculations

Project Name: SD-600

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	24	5.09	314.10	2.00	3.14	316.88	1.62	0.04	316.92	53.56	314.80	2.00	3.14	316.91	1.62	0.04	316.95	0.013	0.027	316.91	316.95	0.00
2	24	4.60	314.90	2.00	3.14	316.93	1.46	0.03	316.96	161.17	315.90	1.09	1.74	316.99	2.64	0.11	317.10	0.013	0.135	317.00	317.11	0.01
3	18	3.51	315.90	1.14	1.45	317.05	2.43	0.09	317.14	240.00	317.40	0.72 ²	0.83	318.12	4.22	0.28	318.40	0.013	1.257	318.12	318.40	0.00
4	15	2.29	317.50	0.81	0.84	318.31	2.73	0.12	318.43	120.00	318.30	0.61 ²	0.59	318.91	3.89	0.23	319.14	0.013	0.716	318.91	319.14	0.00

Notes: Return Period = 10-yrs. ² Critical depth.

Project File: SD-600.sws

Storm Sewer Tabulation

Project Name: SD-600

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)		Drng Area (ac)		Rational (C)	C x A		Tc (min)		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
	Incr	Total	Incr	Total		Incr	Total	Inlet	Syst					Size (in)	Slope (%)	Up	Dn	Up	Dn	Up	Dn	
600-601	0.150	1.280	0.60	0.60	0.09	0.77	5.0	6.94	6.62	5.09	25.79	1.62	24	1.30	314.80	314.10	316.91	316.88	319.00	313.00	1	
601-602	0.300	1.130	0.60	0.60	0.18	0.68	5.0	6.37	6.79	4.60	17.88	2.05	24	0.62	315.90	314.90	316.99	316.93	319.82	319.00	2	
602-603	0.300	0.830	0.60	0.60	0.18	0.50	5.0	5.48	7.06	3.51	8.30	3.33	18	0.63	317.40	315.90	318.12	317.05	320.60	319.82	3	
603-604	0.530	0.530	0.60	0.60	0.32	0.32	5.0	5.00	7.21	2.29	5.27	3.31	15	0.67	318.30	317.50	318.91	318.31	320.60	320.60	4	

Notes: IDF File = Zebulon-10yr-IDF, Return Period = 10-yrs.

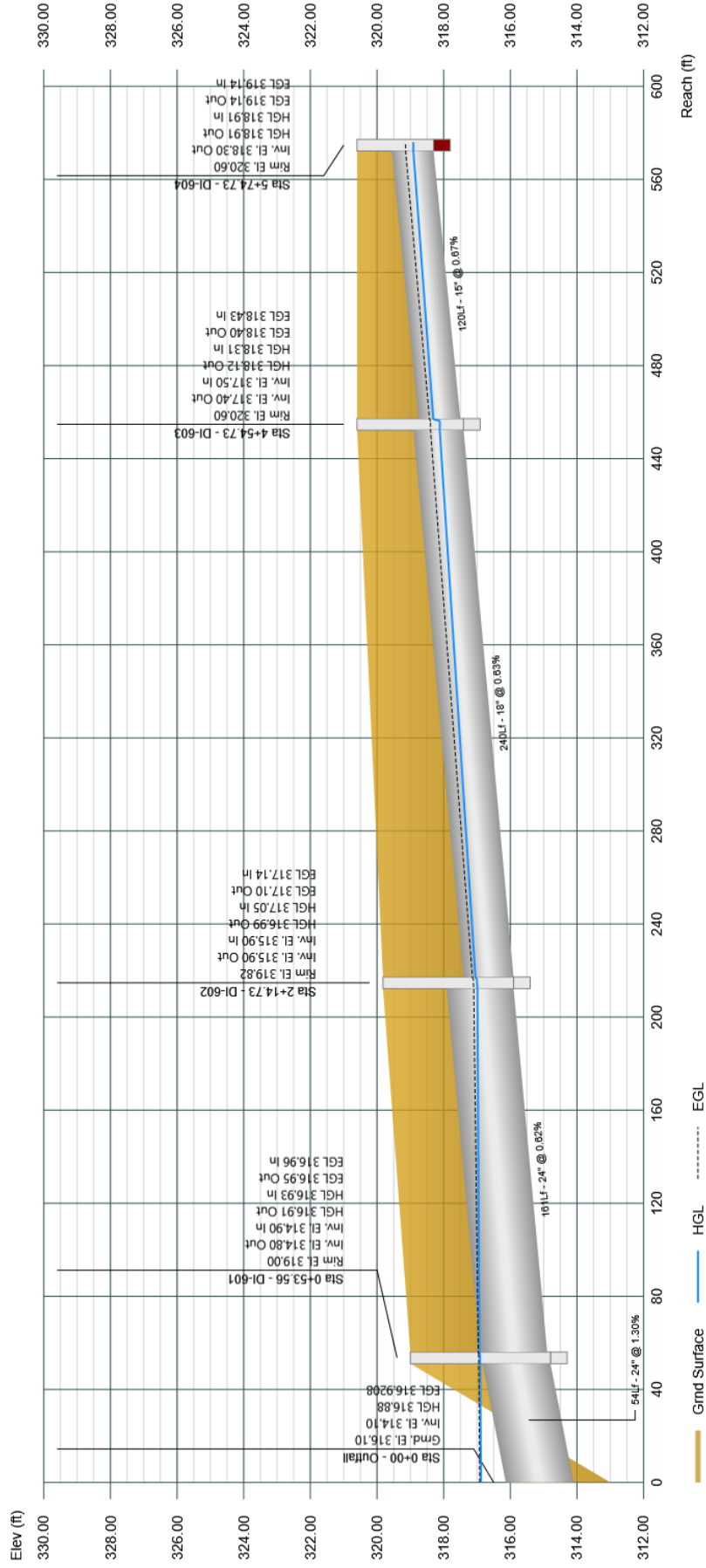
Project File: SD-600.sws

Profile View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-600

02-26-2024

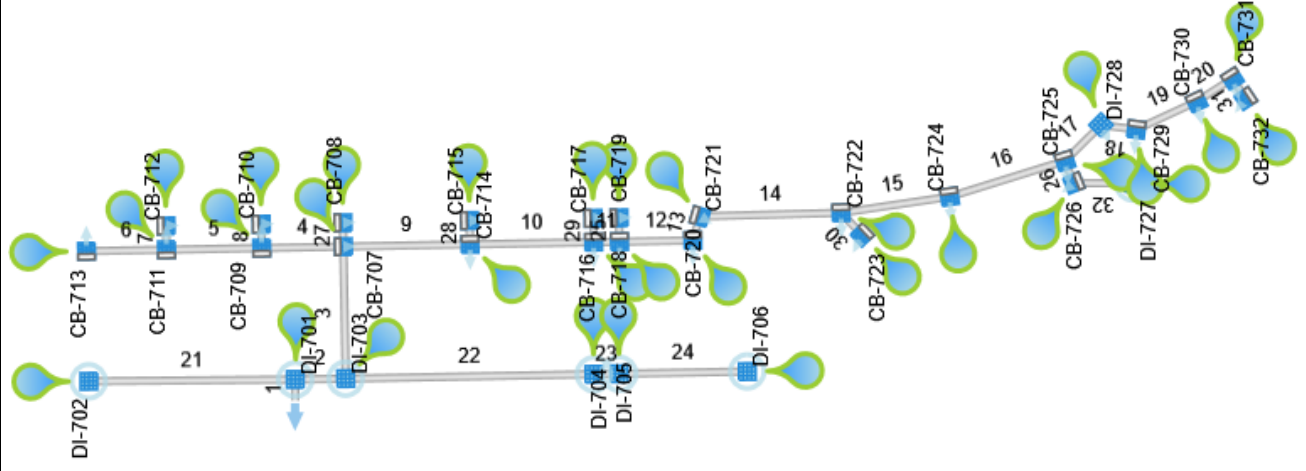


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024



Energy Grade Line Calculations

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)
1	36	30.37	309.80	2.41	6.09	312.21	4.99	0.39	312.60	19.00	2.16	5.44	312.16	5.59	0.49	312.64	0.013	0.047	312.18	312.67	0.02
2	36	29.22	310.10	2.29	5.79	312.40	5.04	0.40	312.79	49.77	1.98	4.94	312.38	5.91	0.54	312.93	0.013	0.134	312.42	312.96	0.04
3	30	25.94	310.50	2.07	4.34	312.57	5.97	0.55	313.13	130.10	1.70 ²	3.56	313.01	7.29	0.83	313.83	0.013	0.705	313.01	313.83	0.00
4	15	1.40	317.90	0.47 ¹	0.43	318.37	3.29	0.17	318.54	80.58	0.47 ²	0.43	319.87	3.29	0.17	320.04	0.013	1.499	319.87	320.04	0.00
5	15	0.47	319.70	0.28	0.21	319.98	2.28	0.08	320.06	93.92	0.28 ²	0.20	321.87	2.36	0.09	321.96	0.013	1.898	321.87	321.96	0.00
6	15	0.12	321.70	0.26	0.18	321.96	0.67	0.01	321.96	79.00	0.14 ²	0.08	322.34	1.62	0.04	322.38	0.013	0.419	322.34	322.38	0.00
7	15	0.18	321.70	0.25	0.17	321.95	1.07	0.02	321.96	23.50	0.17 ²	0.10	322.07	1.81	0.05	322.12	0.013	0.159	322.07	322.12	0.00
8	15	0.12	319.50	0.54	0.51	320.04	0.24	0.00	320.04	23.50	0.34	0.27	320.04	0.45	0.00	320.04	0.013	0.002	320.04	320.05	0.00
9	30	22.84	311.40	2.16	4.51	313.57	5.06	0.40	313.96	125.00	1.60	3.33	313.81	6.87	0.73	314.54	0.013	0.577	313.87	314.60	0.06
10	30	20.18	312.30	2.07	4.35	314.38	4.64	0.33	314.71	122.09	1.50 ²	3.08	314.60	6.55	0.67	315.27	0.013	0.556	314.60	315.27	0.00
11	30	18.75	313.20	1.79	3.77	314.99	4.98	0.39	315.38	25.44	1.45	2.96	314.85	6.33	0.62	315.48	0.013	0.102	314.89	315.52	0.04
12	24	16.08	313.50	1.65	2.77	315.15	5.81	0.52	315.67	72.47	1.42	2.39	315.43	6.72	0.70	316.13	0.013	0.459	315.47	316.17	0.04
13	24	15.87	314.10	1.77	2.94	315.87	5.40	0.45	316.33	24.61	1.60	2.70	315.91	5.88	0.54	316.44	0.013	0.118	315.94	316.48	0.04
14	24	15.76	314.40	1.79	2.97	316.19	5.31	0.44	316.63	139.31	1.42	2.38	316.72	6.61	0.68	317.40	0.013	0.766	316.77	317.45	0.05
15	24	14.21	315.40	1.83	3.01	317.22	4.73	0.35	317.57	108.32	1.39	2.33	317.49	6.09	0.58	318.07	0.013	0.496	317.54	318.12	0.05
16	24	13.74	316.20	1.65	2.77	317.85	4.95	0.38	318.23	119.22	1.31 ²	2.19	318.32	6.28	0.61	318.93	0.013	0.700	318.32	318.93	0.00
17	24	2.43	317.10	1.82	3.00	318.92	0.81	0.01	318.93	50.12	1.52	2.57	318.93	0.95	0.01	318.94	0.013	0.007	318.93	318.94	0.00
18	24	1.30	317.50	1.44	2.42	318.94	0.54	0.00	318.95	35.11	1.14	1.85	318.94	0.70	0.01	318.95	0.013	0.002	318.94	318.95	0.00
19	18	1.30	317.90	1.04	1.31	318.94	1.00	0.02	318.95	65.59	0.64	0.72	318.95	1.80	0.05	319.00	0.013	0.043	318.96	319.01	0.01
20	15	0.86	318.40	0.58	0.56	318.98	1.54	0.04	319.02	41.92	0.37 ²	0.30	319.07	2.82	0.12	319.20	0.013	0.176	319.07	319.20	0.00
21	15	0.60	313.10	0.31 ¹	0.24	313.41	2.54	0.10	313.51	203.73	0.31 ²	0.24	314.71	2.54	0.10	314.81	0.013	1.297	314.71	314.81	0.00
22	18	2.88	311.60	1.33	1.66	312.93	1.74	0.05	312.98	245.00	0.65 ²	0.73	313.75	3.94	0.24	313.99	0.013	1.012	313.75	313.99	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-700.sws

Energy Grade Line Calculations

Project Name: SD-700

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
23	15	1.85	313.20	0.71	0.72	313.91	2.55	0.10	314.01	25.00	313.40	0.55	0.52	313.95	3.58	0.20	314.15	0.013	0.131	313.99	314.19	0.04
24	15	1.04	313.50	0.66	0.66	314.16	1.58	0.04	314.20	126.37	314.30	0.41 ²	0.35	314.71	2.99	0.14	314.84	0.013	0.646	314.71	314.84	0.00
25	15	1.51	314.50	1.00	1.05	315.50	1.44	0.03	315.53	23.50	314.70	0.80	0.82	315.50	1.84	0.05	315.55	0.013	0.018	315.52	315.57	0.02
26	24	9.84	318.00	1.11 ¹	1.79	319.11	5.49	0.47	319.58	23.50	318.20	1.11 ²	1.79	319.31	5.49	0.47	319.78	0.013	0.200	319.31	319.78	0.00
27	15	1.19	317.80	0.44 ¹	0.38	318.24	3.12	0.15	318.39	23.50	318.00	0.44 ²	0.38	318.44	3.12	0.15	318.59	0.013	0.201	318.44	318.59	0.00
28	15	1.73	315.00	0.53 ¹	0.49	315.53	3.52	0.19	315.72	23.50	315.20	0.53 ²	0.49	315.73	3.52	0.19	315.92	0.013	0.201	315.73	315.92	0.00
29	15	0.86	314.30	0.96	1.01	315.26	0.85	0.01	315.27	23.50	314.50	0.76	0.78	315.26	1.11	0.02	315.28	0.013	0.006	315.27	315.29	0.01
30	15	1.15	316.50	0.93	0.98	317.43	1.17	0.02	317.46	30.24	316.70	0.74	0.75	317.44	1.54	0.04	317.47	0.013	0.017	317.46	317.49	0.02
31	15	0.46	318.80	0.36	0.29	319.16	1.57	0.04	319.20	23.50	319.00	0.27 ²	0.20	319.27	2.34	0.09	319.36	0.013	0.156	319.27	319.36	0.00
32	24	8.76	318.30	1.29	2.13	319.59	4.10	0.26	319.85	58.18	318.70	1.05 ²	1.67	319.75	5.25	0.43	320.18	0.013	0.330	319.75	320.18	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-700.sws

Storm Sewer Tabulation

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
700-701	19.00	0.200	6.522	0.60	0.12	4.84	5.0	8.29	6.27	30.37	69.11	5.29	36	1.07	310.00	309.80	312.16	312.21	318.85	310.00	1
701-703	49.77	0.260	6.182	0.60	0.16	4.64	5.0	8.18	6.30	29.22	51.78	5.48	36	0.60	310.40	310.10	312.38	312.40	318.07	318.85	2
703-707	130.10	0.210	5.232	0.75	0.16	4.07	5.0	7.88	6.37	25.94	32.17	6.63	30	0.62	311.30	310.50	313.01	312.57	322.20	318.07	3
707-709	80.58	0.160	0.260	0.75	0.12	0.21	5.0	6.15	6.84	1.40	8.81	3.29	15	1.86	319.40	317.90	319.87	318.37	324.27	322.20	4
709-711	93.92	0.030	0.080	0.85	0.03	0.07	5.0	5.75	6.96	0.47	9.18	2.32	15	2.02	321.60	319.70	321.87	319.98	326.24	324.27	5
711-713	79.00	0.020	0.020	0.85	0.02	0.02	5.0	5.00	7.20	0.12	5.16	1.14	15	0.64	322.20	321.70	322.34	321.96	326.53	326.24	6
711-712	23.50	0.030	0.030	0.85	0.03	0.03	5.0	5.00	7.20	0.18	5.97	1.44	15	0.86	321.90	321.70	322.07	321.95	326.24	326.24	7
709-710	23.50	0.020	0.020	0.85	0.02	0.02	5.0	5.00	7.20	0.12	5.97	0.35	15	0.85	319.70	319.50	320.04	320.04	324.27	324.27	8
707-714	125.00	0.280	4.542	0.75	0.21	3.54	5.0	7.58	6.45	22.84	32.81	5.97	30	0.64	312.20	311.40	313.81	313.57	319.96	322.20	9
714-716	122.09	0.140	3.942	0.75	0.11	3.09	5.0	7.29	6.52	20.18	33.04	5.60	30	0.65	313.10	312.30	314.60	314.38	318.77	319.96	10
716-718	25.44	0.290	3.642	0.75	0.22	2.87	5.0	7.23	6.54	18.75	36.59	5.66	30	0.80	313.40	313.20	314.85	314.99	318.82	318.77	11
718-720	72.47	0.050	3.072	0.75	0.04	2.44	5.0	7.05	6.59	16.08	18.88	6.26	24	0.70	314.00	313.50	315.43	315.15	319.47	318.82	12
720-721	24.61	0.070	3.022	0.75	0.05	2.40	5.0	7.00	6.60	15.87	20.27	5.64	24	0.80	314.30	314.10	315.91	315.87	319.55	319.47	13
721-722	139.31	0.120	2.952	0.80	0.10	2.35	5.0	6.64	6.70	15.76	18.14	5.96	24	0.64	315.30	314.40	316.72	316.19	321.08	319.55	14
722-724	108.32	0.120	2.632	0.80	0.10	2.09	5.0	6.35	6.78	14.21	18.18	5.41	24	0.65	316.10	315.40	317.49	317.22	322.29	321.08	15
724-725	119.22	0.340	2.512	0.80	0.27	2.00	5.0	6.05	6.87	13.74	18.59	5.62	24	0.68	317.00	316.20	318.32	317.85	323.62	322.29	16
725-728	50.12	0.220	0.452	0.75	0.17	0.35	5.0	5.83	6.94	2.43	17.52	0.88	24	0.60	317.40	317.10	318.93	318.92	324.73	323.62	17
728-729	35.11	0.002	0.232	0.95	0.00	0.19	5.0	5.67	6.99	1.30	20.76	0.62	24	0.84	317.80	317.50	318.94	318.94	324.32	324.73	18
729-730	65.59	0.080	0.230	0.80	0.06	0.18	5.0	5.35	7.09	1.30	8.24	1.40	18	0.62	318.30	317.90	318.95	318.94	323.72	324.32	19
730-731	41.92	0.070	0.150	0.80	0.06	0.12	5.0	5.14	7.16	0.86	5.44	2.18	15	0.71	318.70	318.40	319.07	318.98	322.87	323.72	20
701-702	203.73	0.140	0.140	0.60	0.08	0.08	5.0	5.00	7.20	0.60	5.15	2.54	15	0.64	314.40	313.10	314.71	313.41	317.68	321.86	21
703-704	245.00	0.250	0.690	0.60	0.15	0.41	5.0	5.74	6.97	2.88	8.22	2.84	18	0.61	313.10	311.60	313.75	312.93	320.19	316.88	22

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

Project File: SD-700.sws

Storm Sewer Tabulation

Project Name: SD-700

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
704-705	25.00	0.200	0.440	0.60	0.12	0.26	5.0	5.64	7.00	1.85	5.77	3.06	15	0.80	313.40	313.20	313.95	313.91	316.50	320.19	23
705-706	126.37	0.240	0.240	0.60	0.14	0.14	5.0	5.00	7.20	1.04	5.13	2.28	15	0.63	314.30	313.50	314.71	314.16	316.57	316.50	24
718-719	23.50	0.280	0.280	0.75	0.21	0.21	5.0	5.00	7.20	1.51	5.97	1.64	15	0.86	314.70	314.50	315.50	315.50	318.82	318.82	25
725-726	23.50	0.200	1.720	0.80	0.16	1.38	5.0	5.17	7.15	9.84	20.87	5.49	24	0.85	318.20	318.00	319.31	319.11	323.62	323.62	26
707-708	23.50	0.220	0.220	0.75	0.17	0.17	5.0	5.00	7.20	1.19	5.97	3.12	15	0.86	318.00	317.80	318.44	318.24	322.58	322.20	27
714-715	23.50	0.320	0.320	0.75	0.24	0.24	5.0	5.00	7.20	1.73	5.97	3.52	15	0.86	315.20	315.00	315.73	315.53	319.96	319.96	28
716-717	23.50	0.160	0.160	0.75	0.12	0.12	5.0	5.00	7.20	0.86	5.97	0.98	15	0.86	314.50	314.30	315.26	315.26	318.77	318.77	29
722-723	30.24	0.200	0.200	0.80	0.16	0.16	5.0	5.00	7.20	1.15	5.27	1.35	15	0.67	316.70	316.50	317.44	317.43	321.29	321.08	30
731-732	23.50	0.080	0.080	0.80	0.06	0.06	5.0	5.00	7.20	0.46	5.93	1.95	15	0.84	319.00	318.80	319.27	319.16	322.87	322.87	31
726-727	58.18	1.520	1.520	0.80	1.22	1.22	5.0	5.00	7.20	8.76	18.75	4.68	24	0.69	318.70	318.30	319.75	319.59	322.97	323.62	32

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

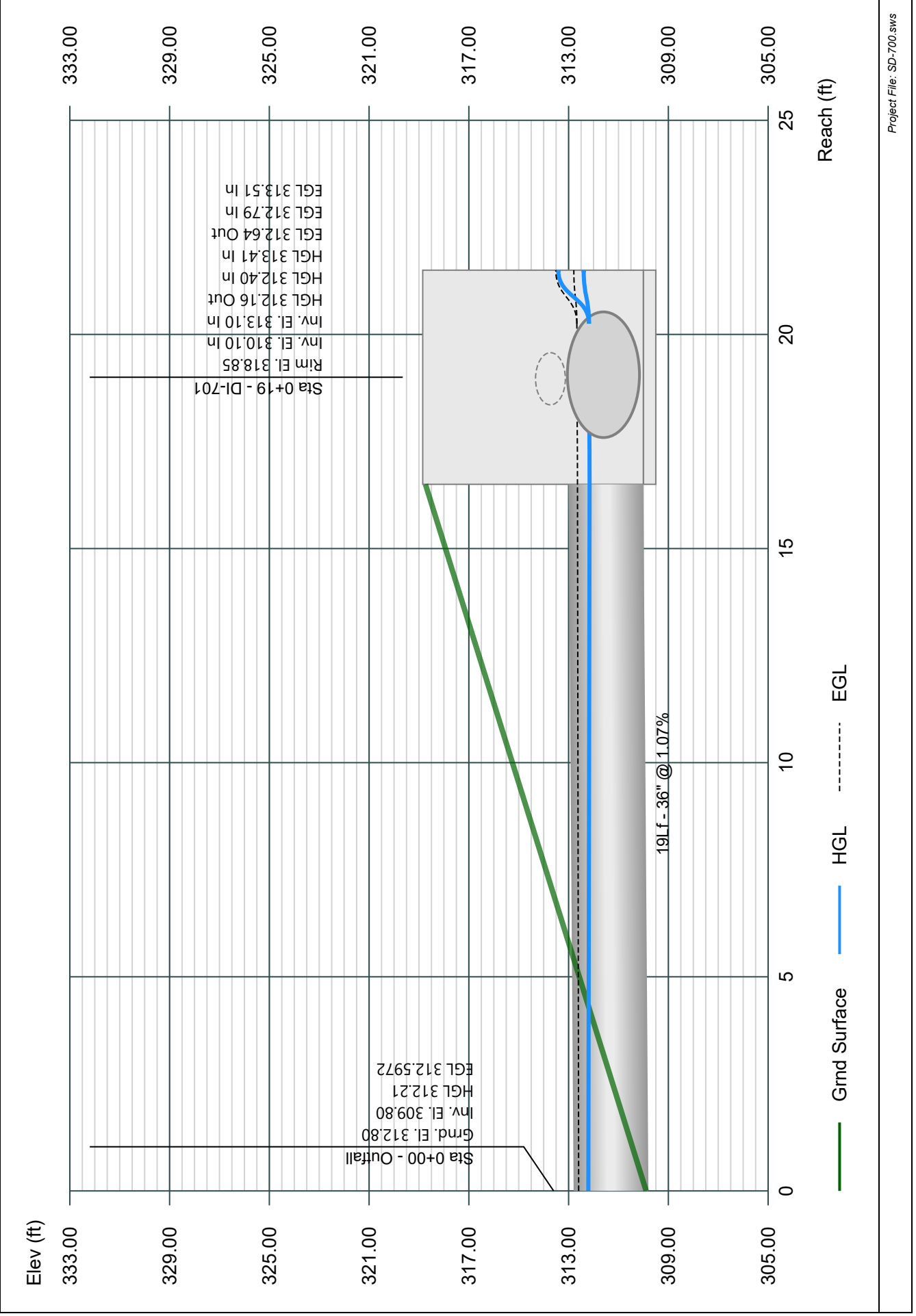
Project File: SD-700.sws

Line 1 - 700-701

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

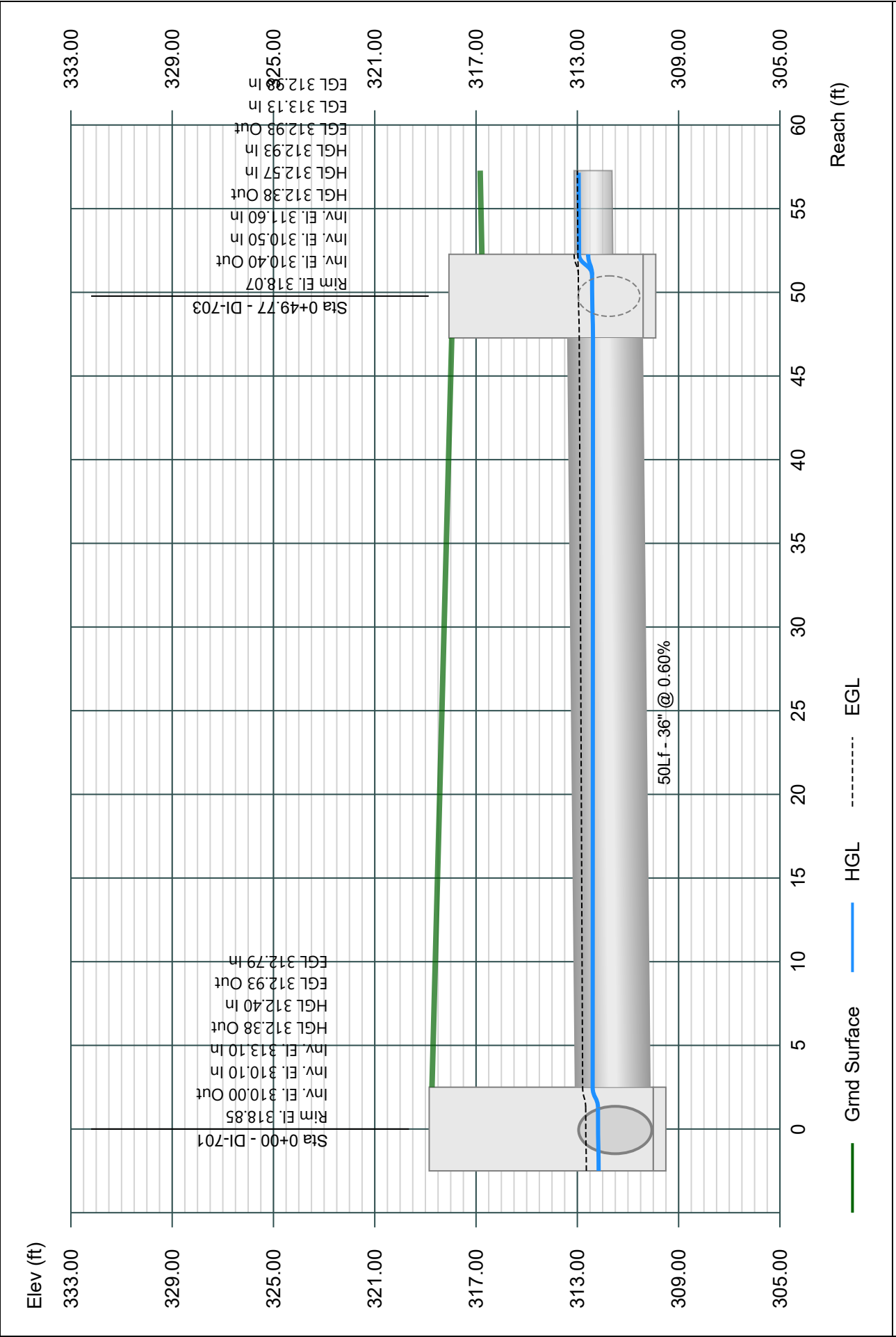


Line 2 - 701-703

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

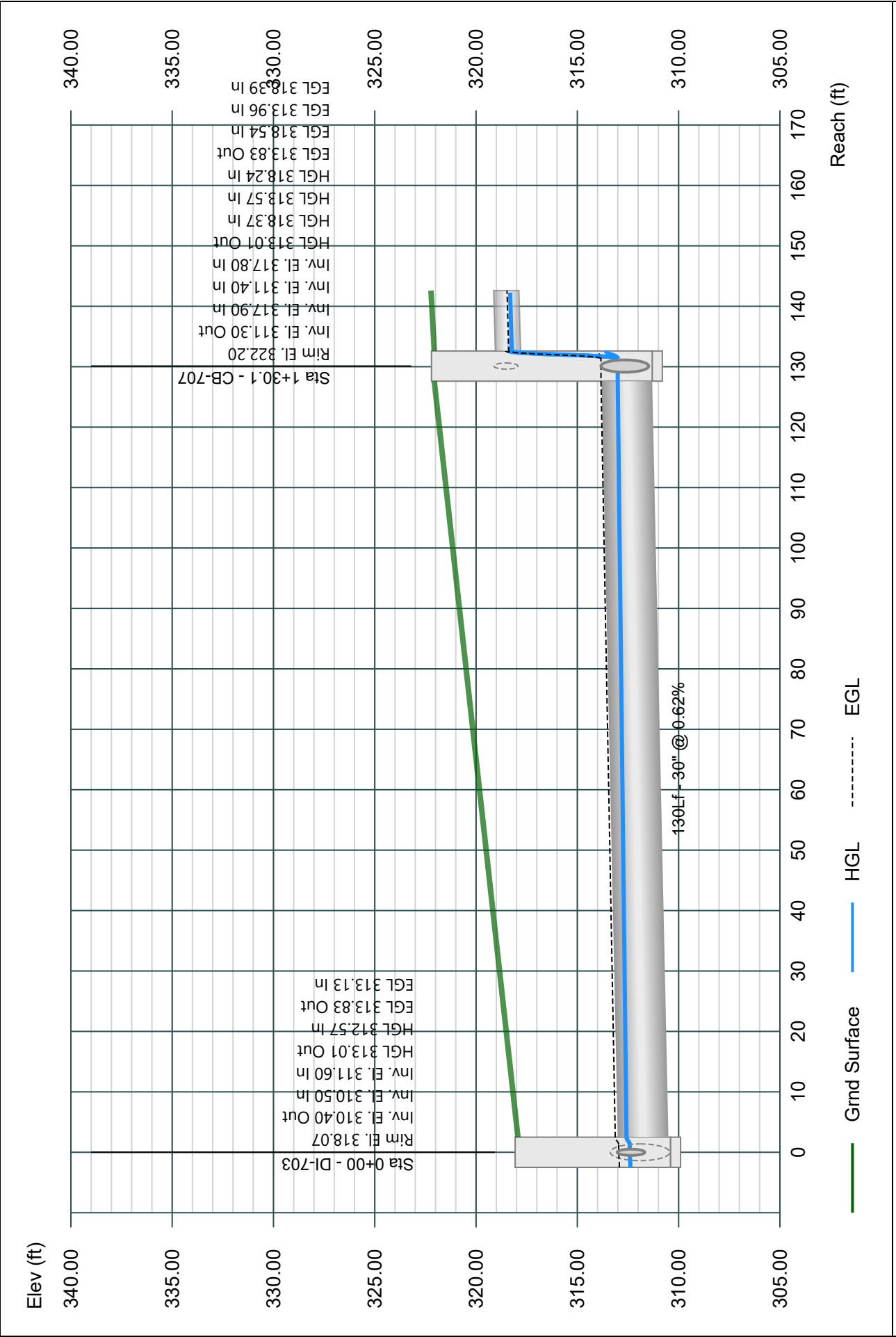


Line 3 - 703-707

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

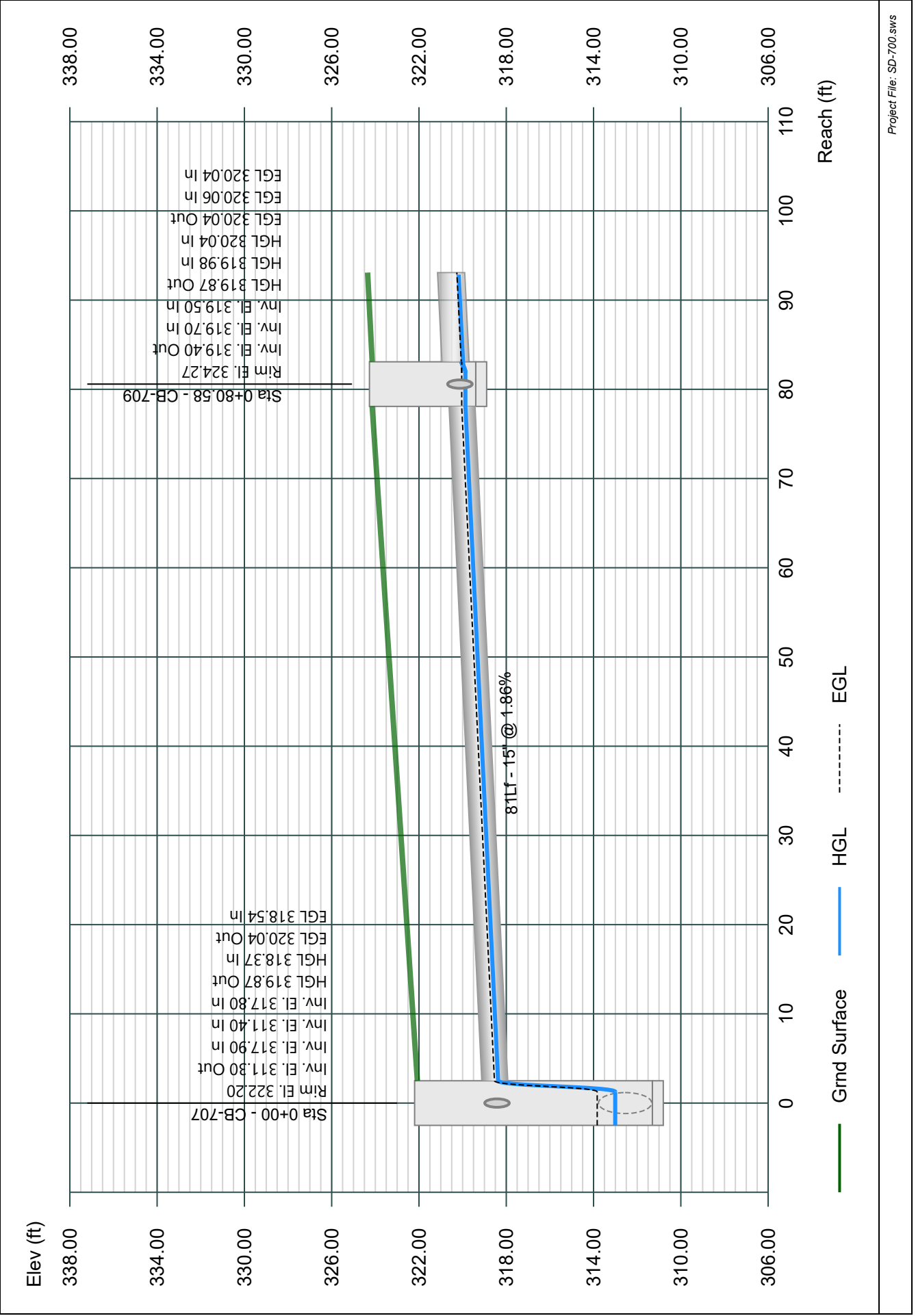


Line 4 - 707-709

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

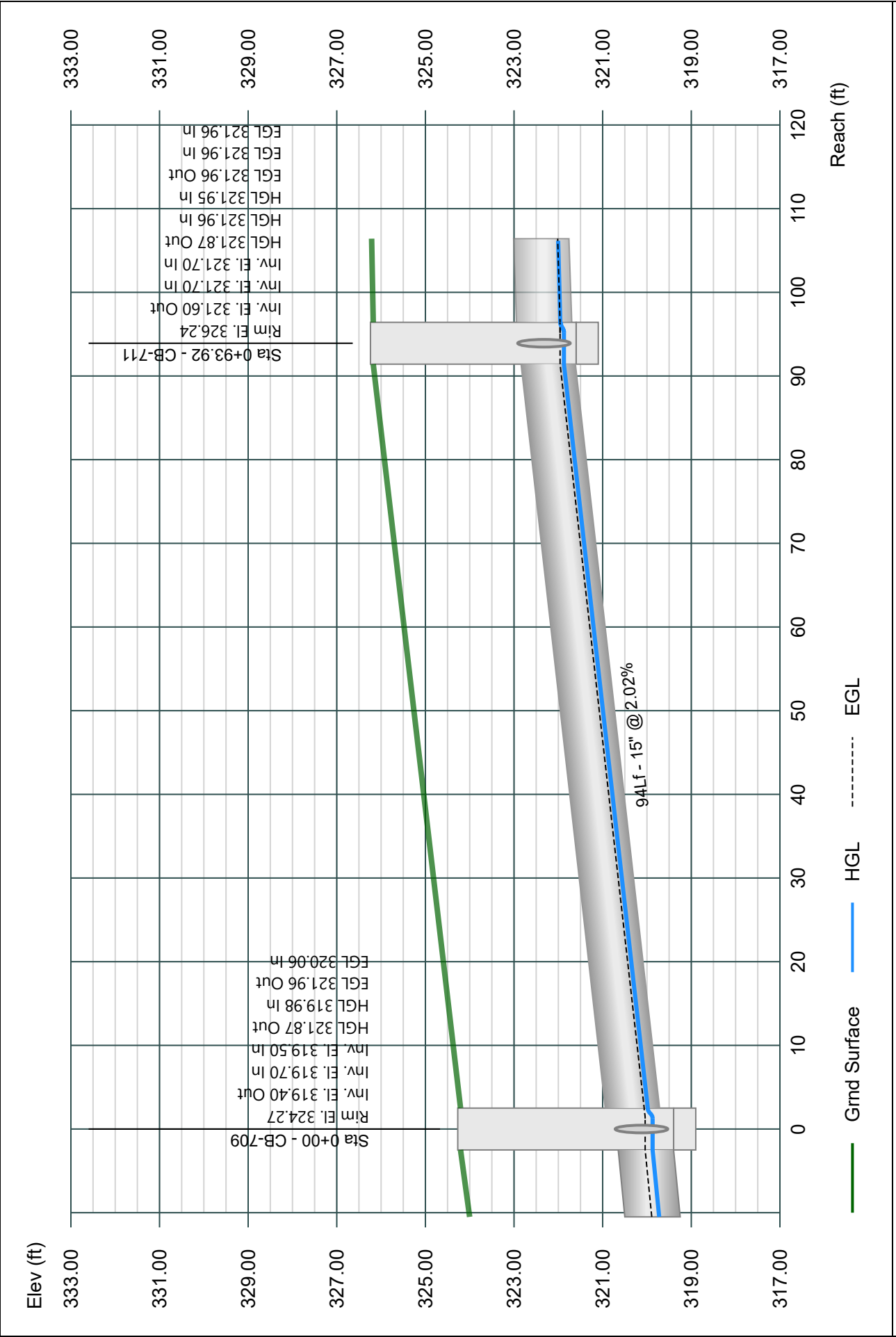


Line 5 - 709-711

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

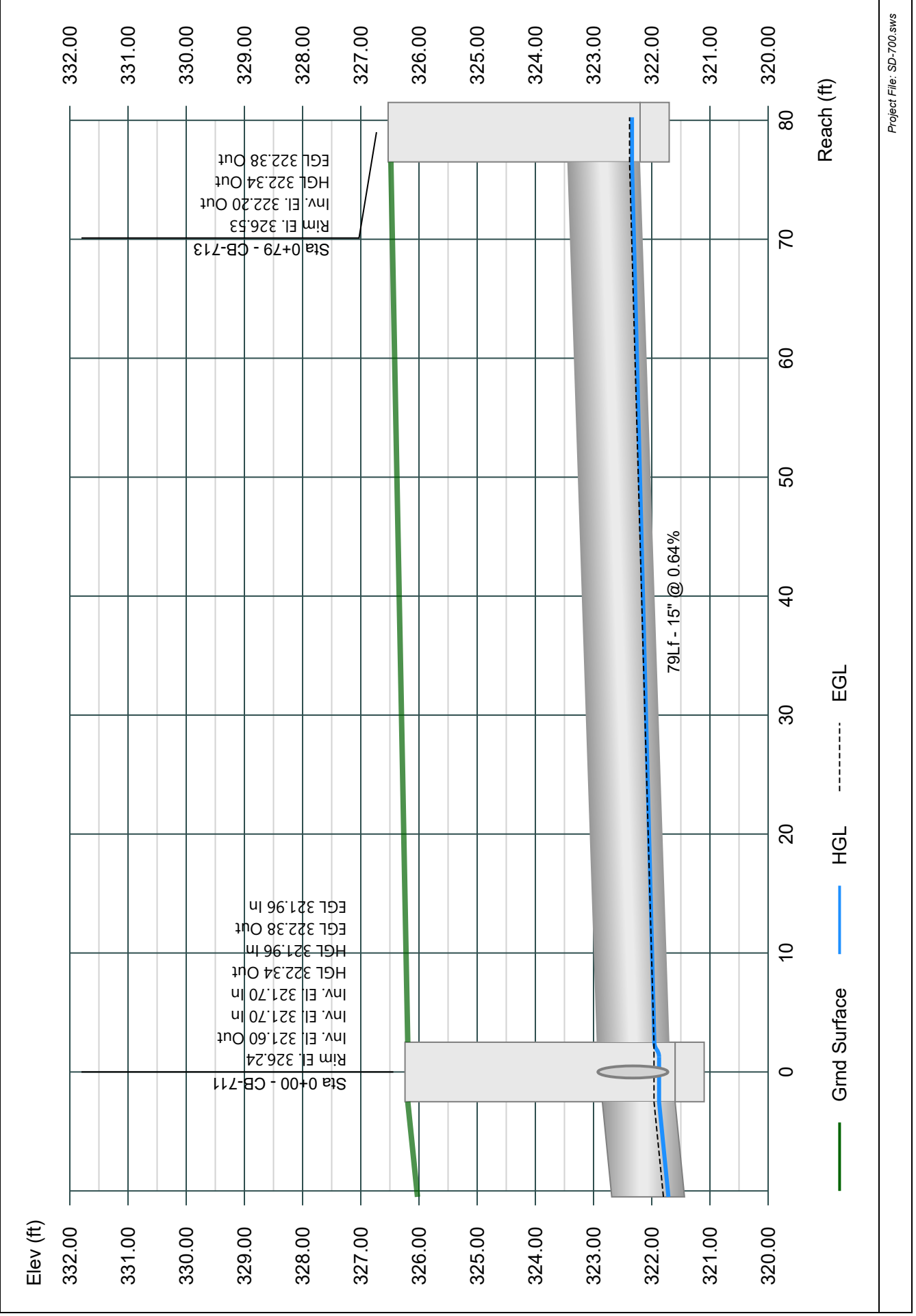


Line 6 - 711-713

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

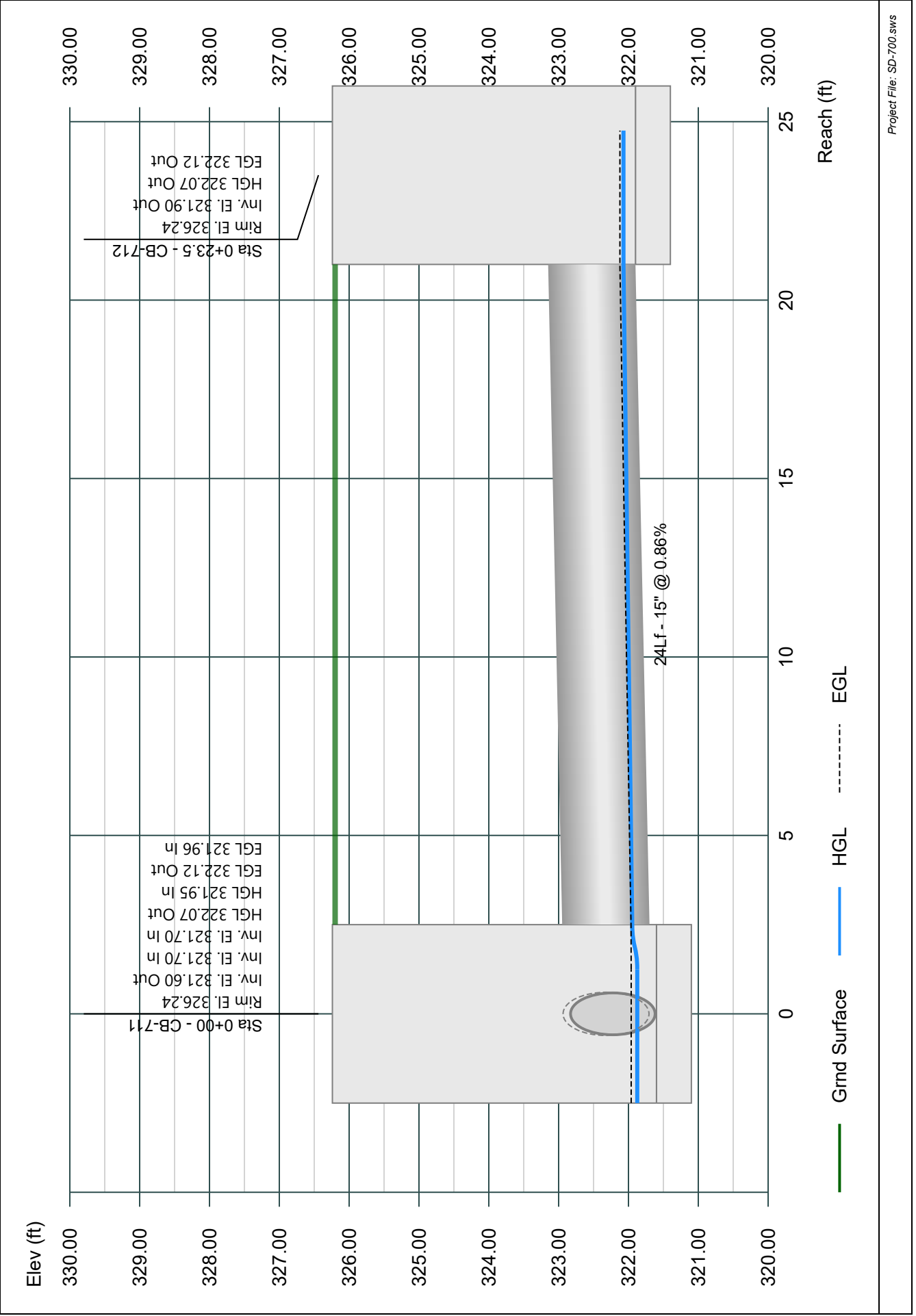


Line 7 - 711-712

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

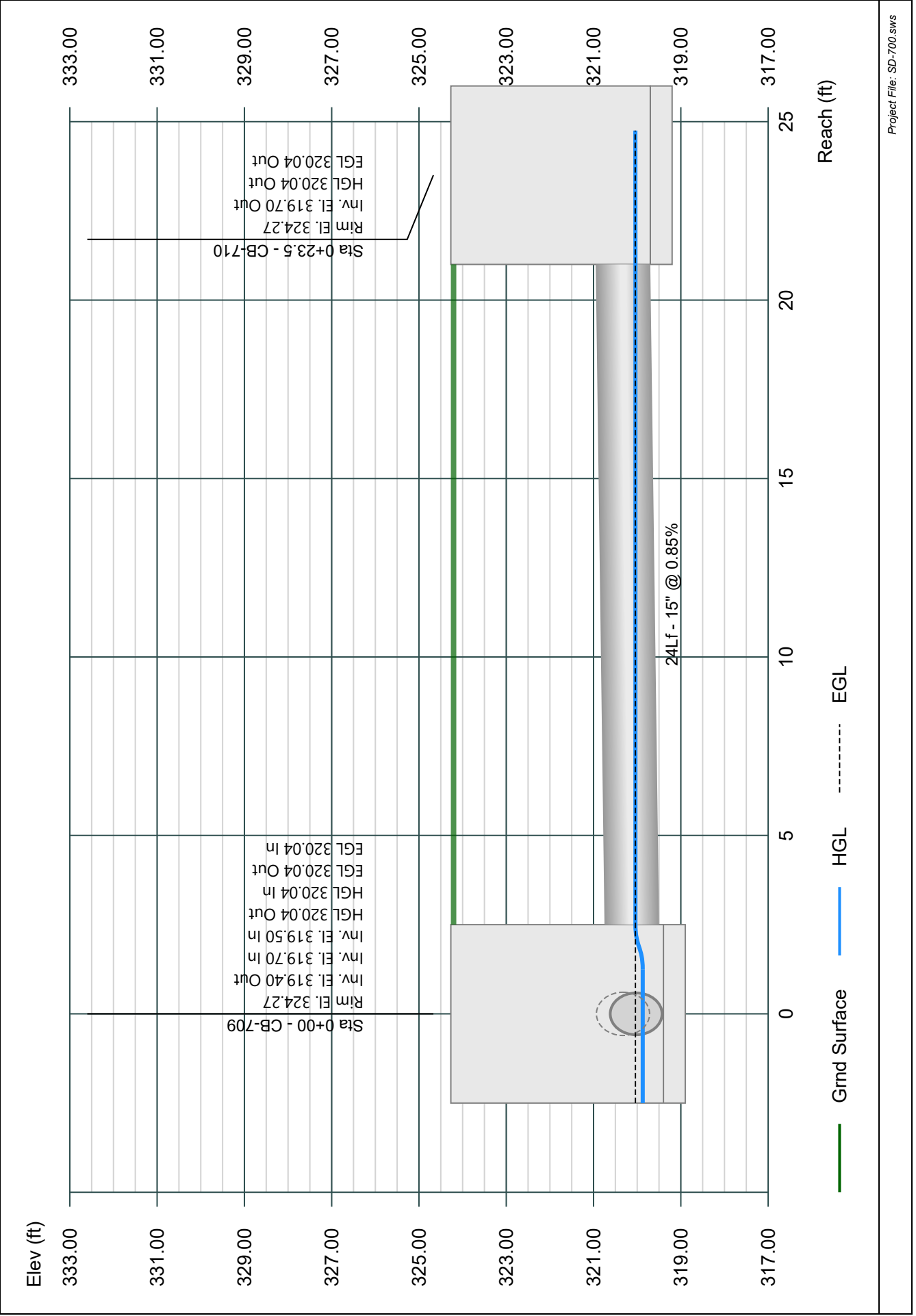


Line 8 - 709-710

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

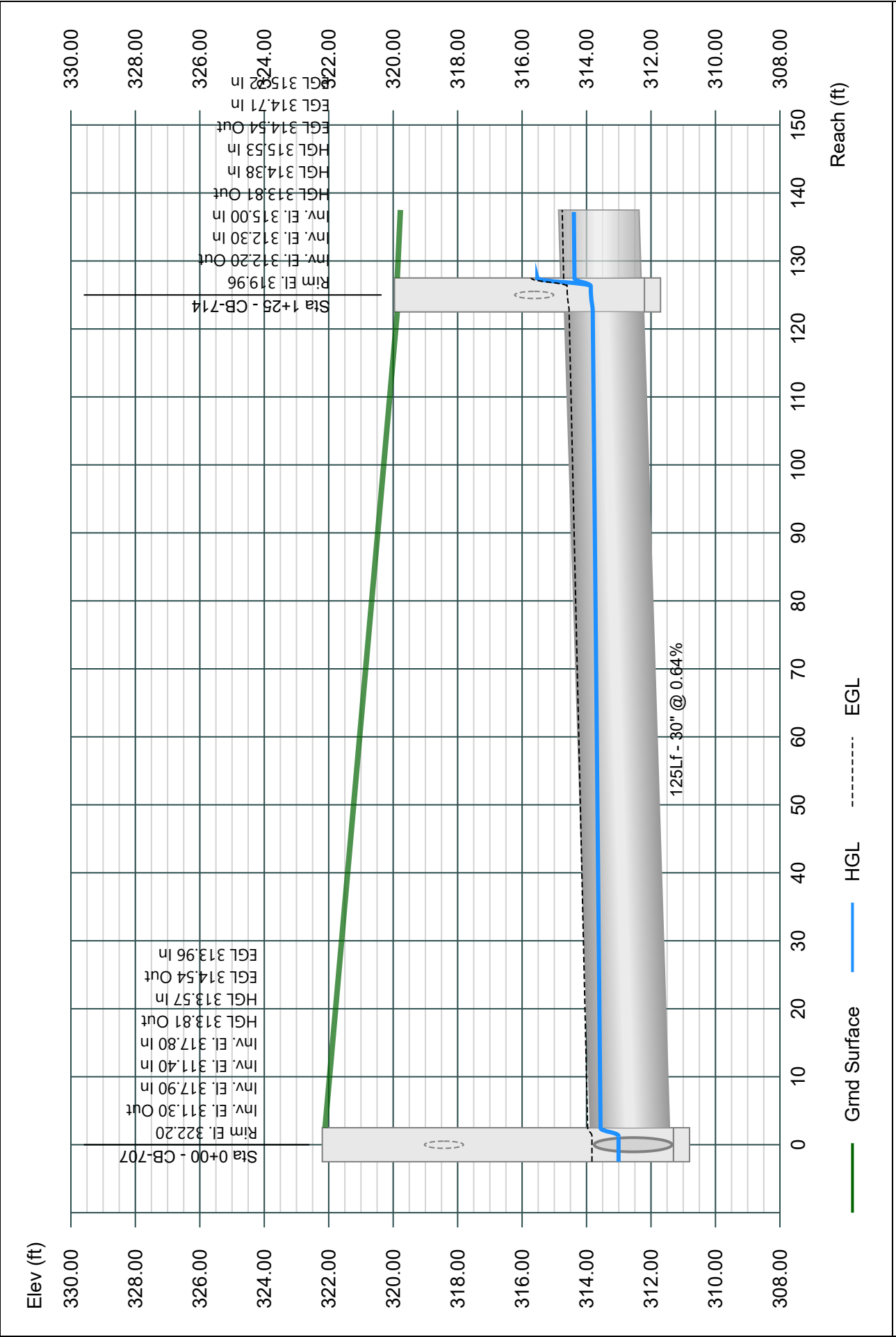


Line 9 - 707-714

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

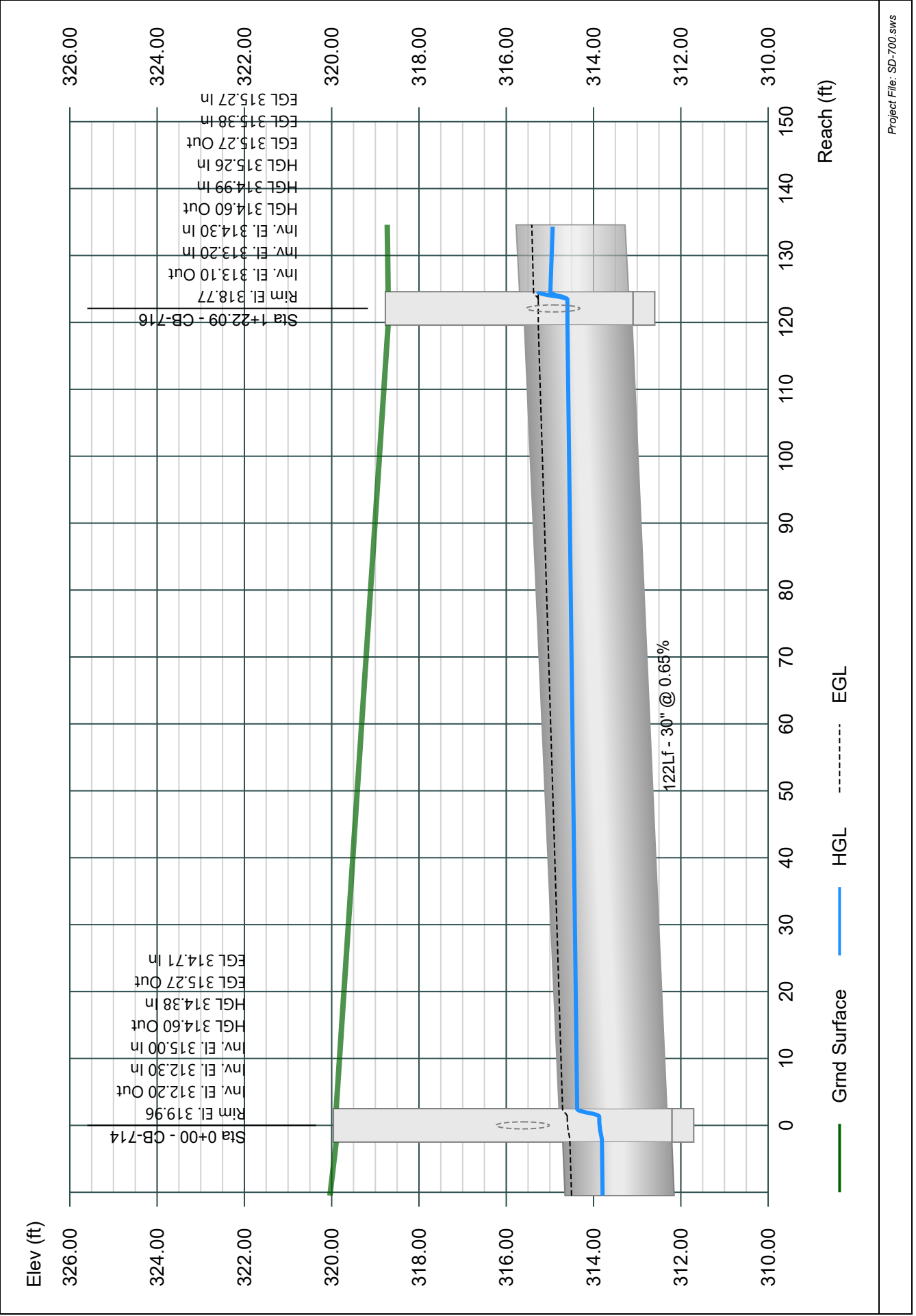


Line 10 - 714-716

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

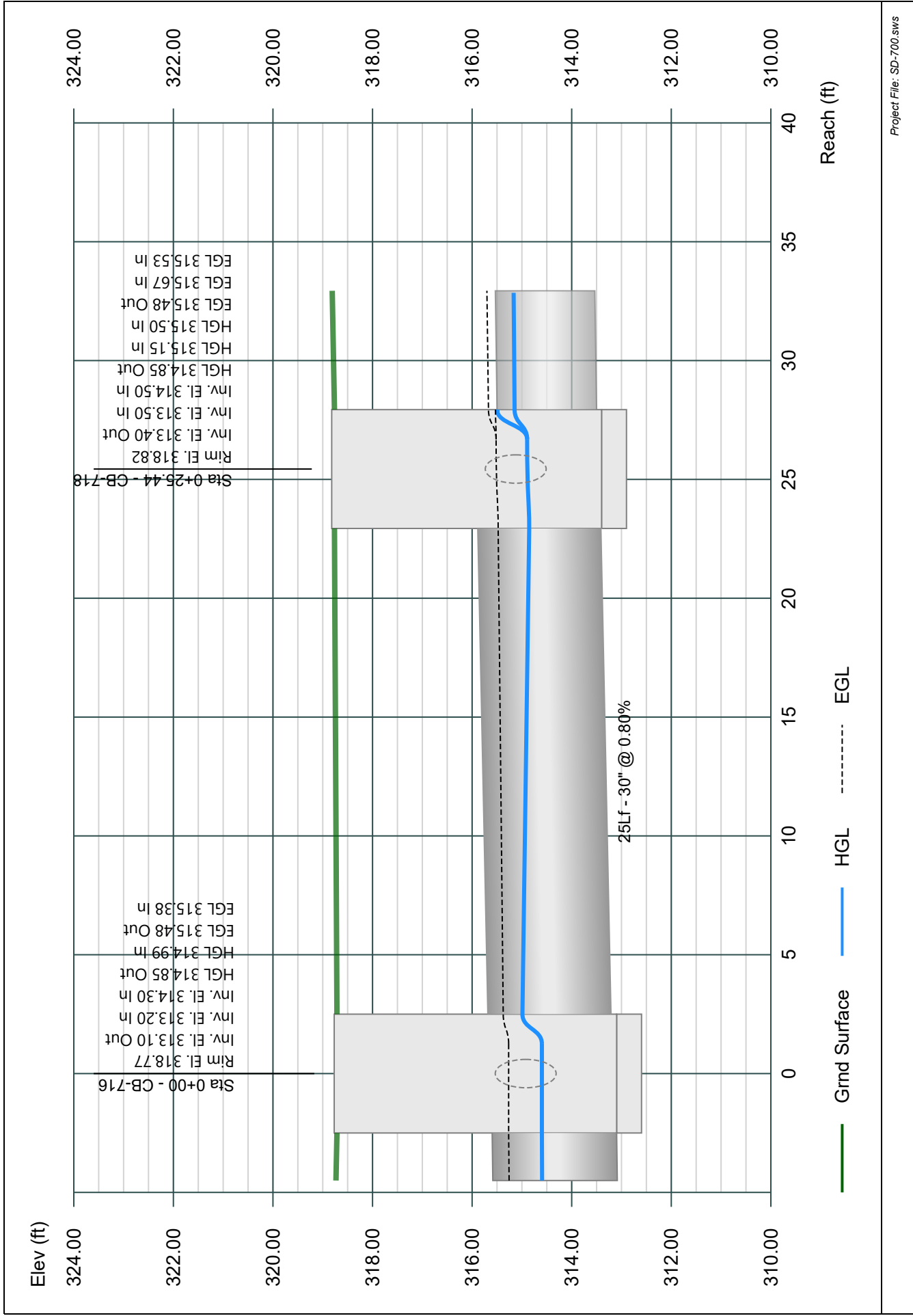


Line 11 - 716-718

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

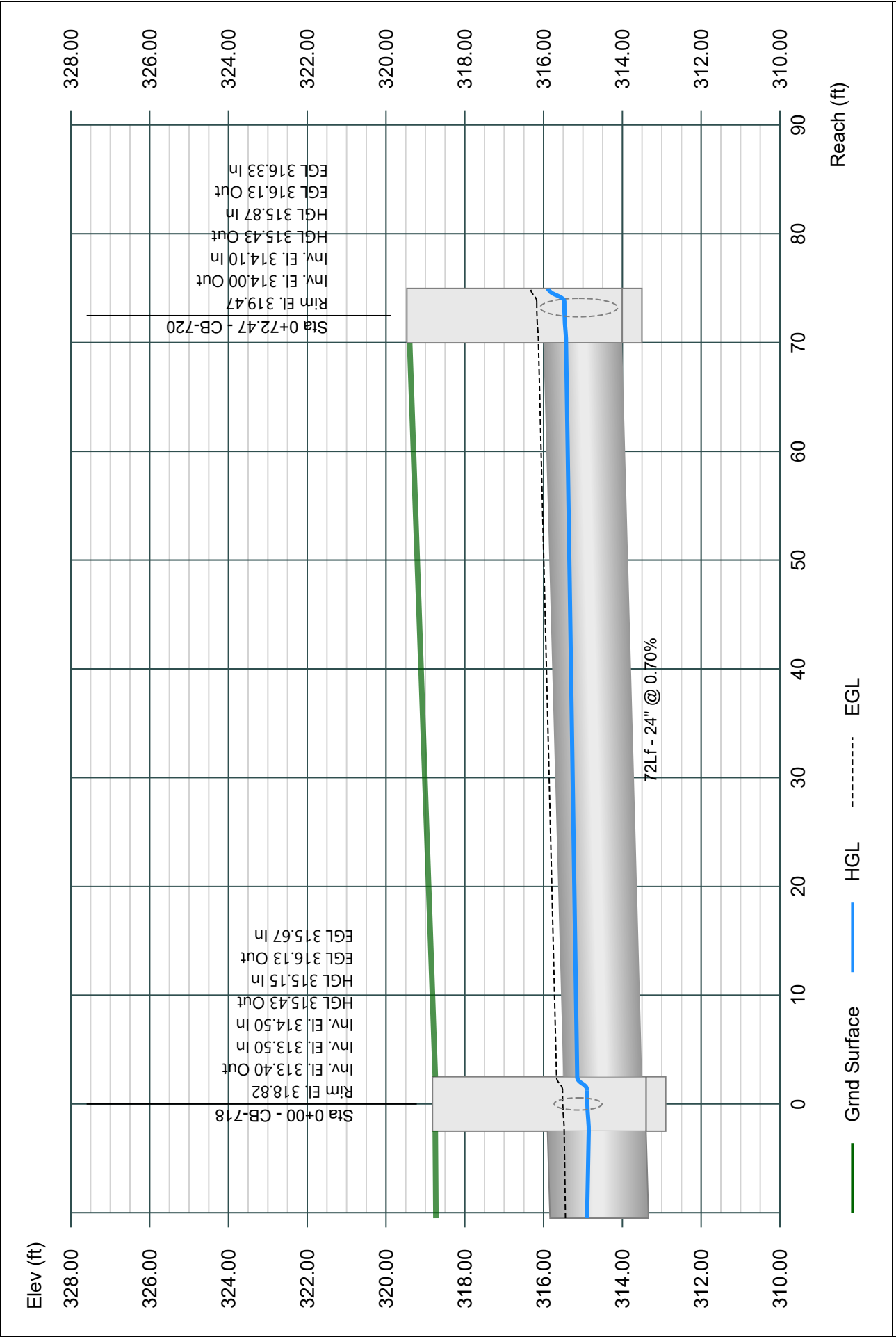


Line 12 - 718-720

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

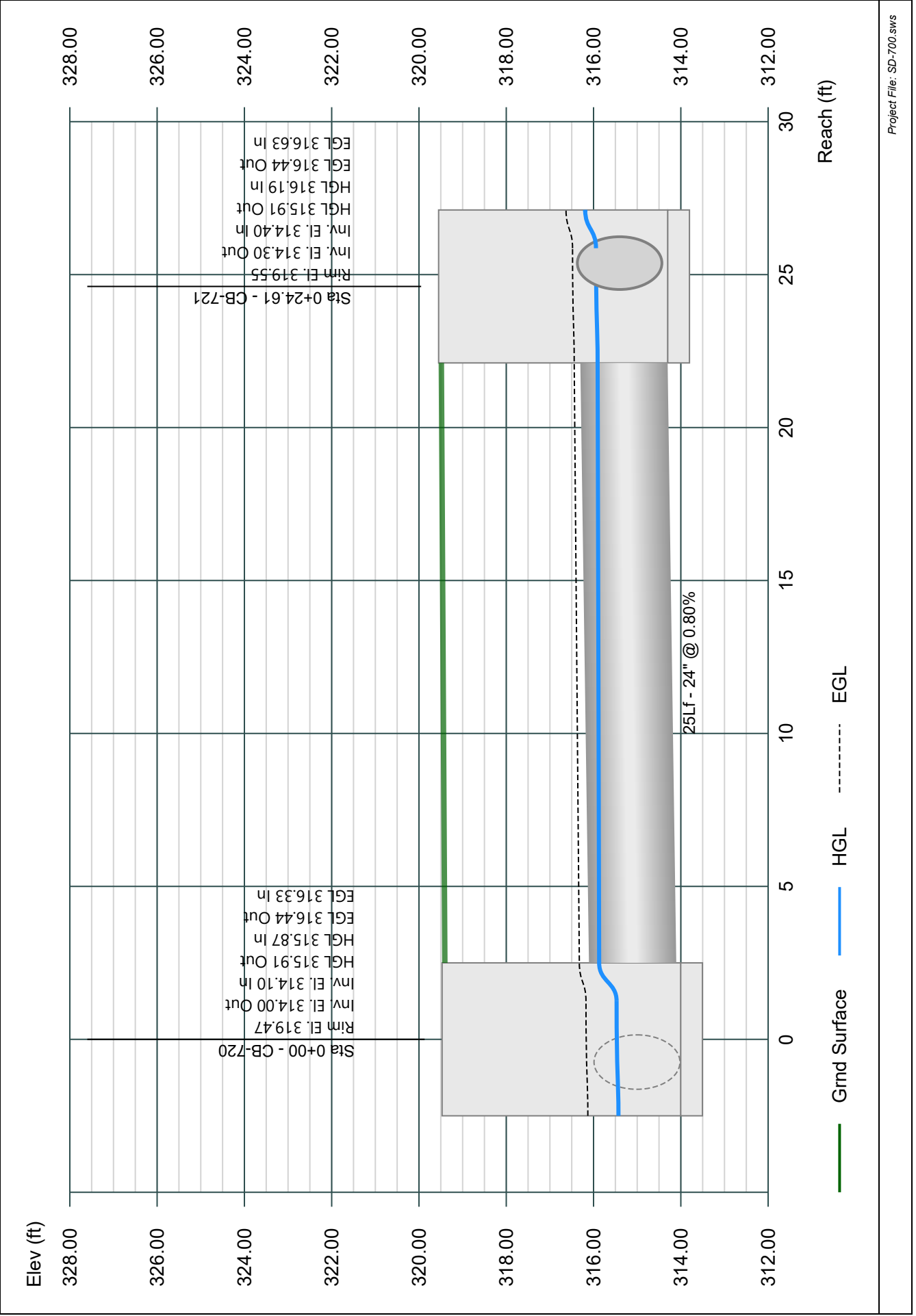


Line 13 - 720-721

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

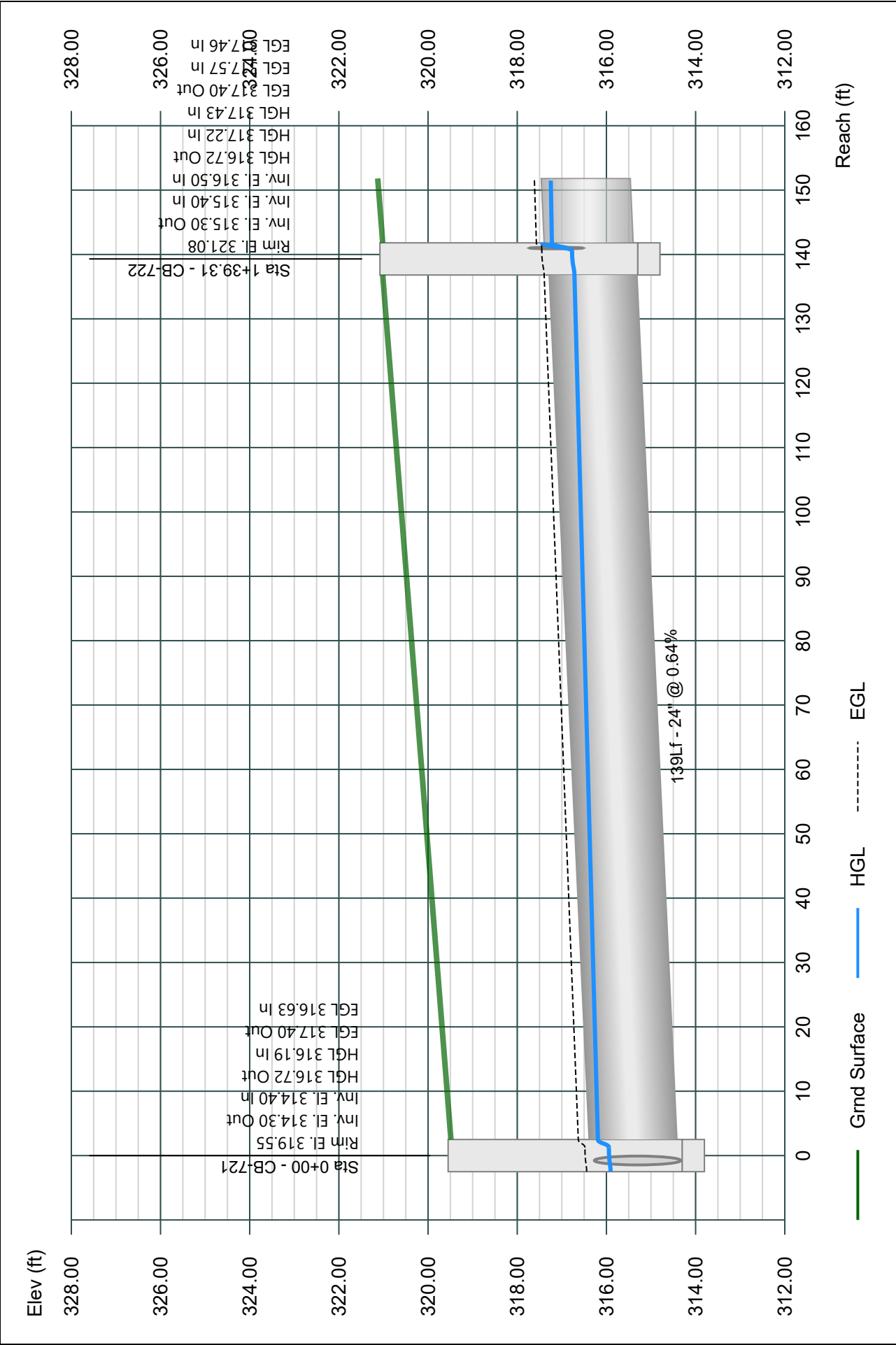


Line 14 - 721-722

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

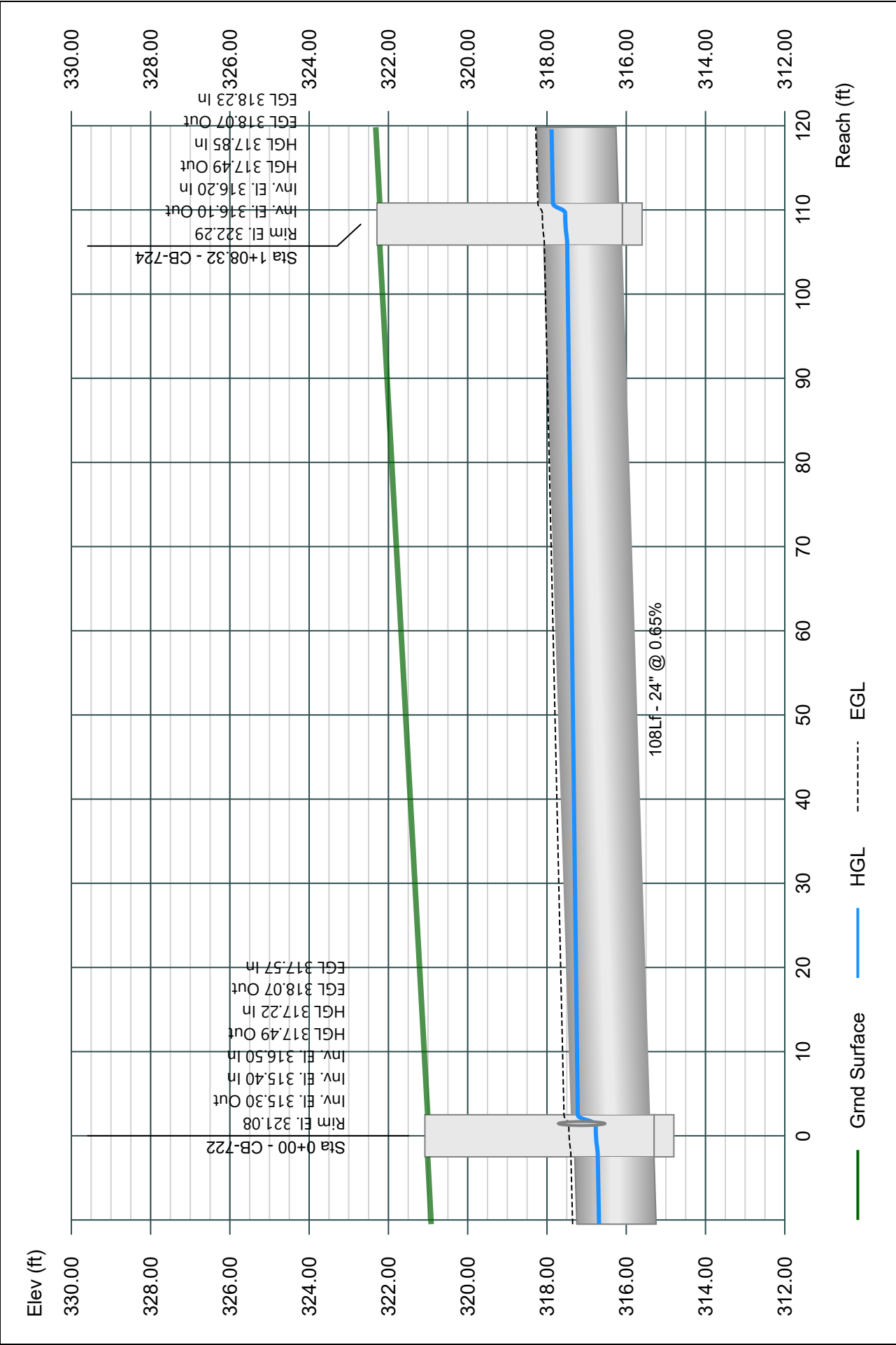
02-26-2024



Line 15 - 722-724

Project Name: SD-700
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

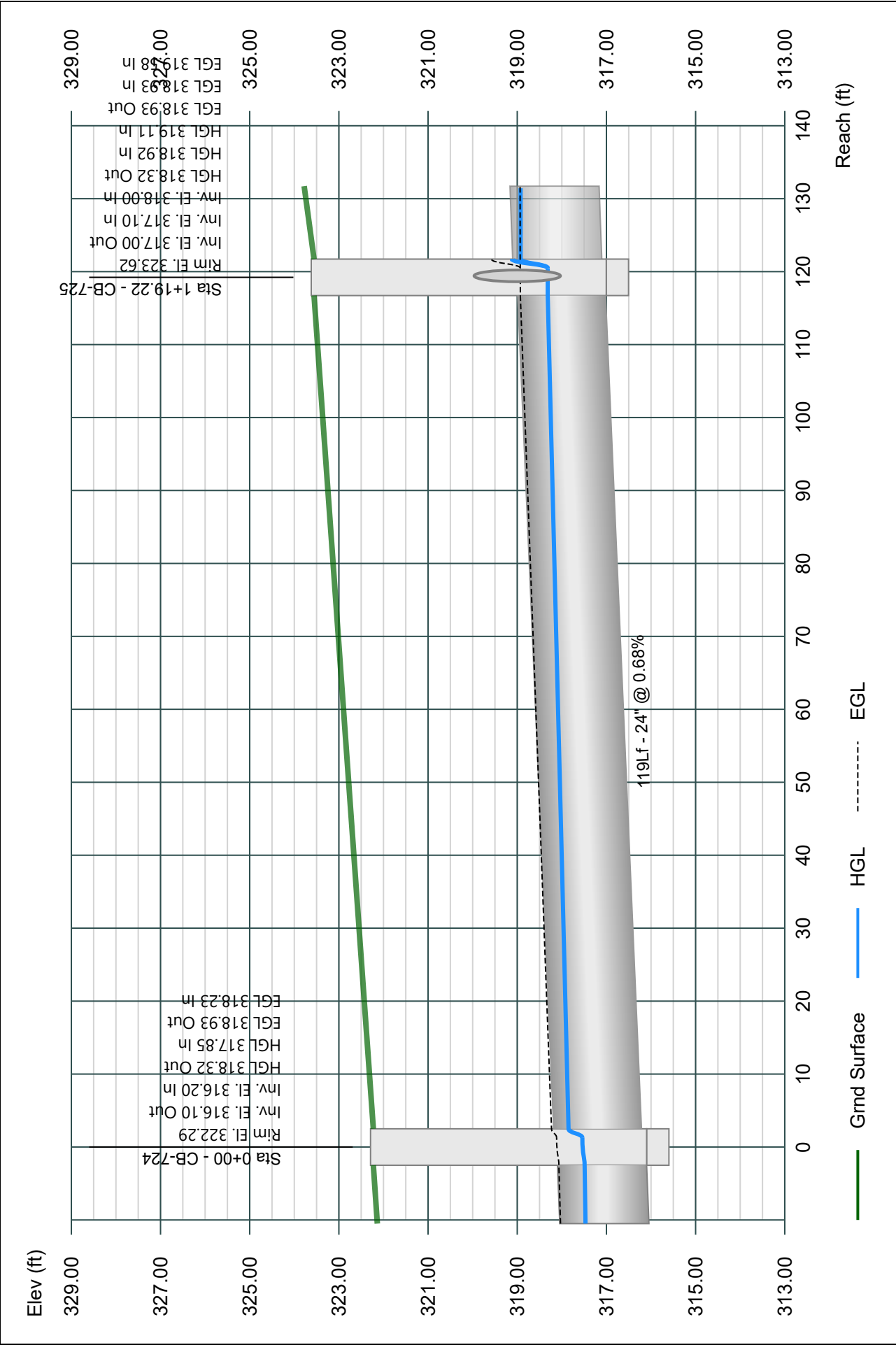


Line 16 - 724-725

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

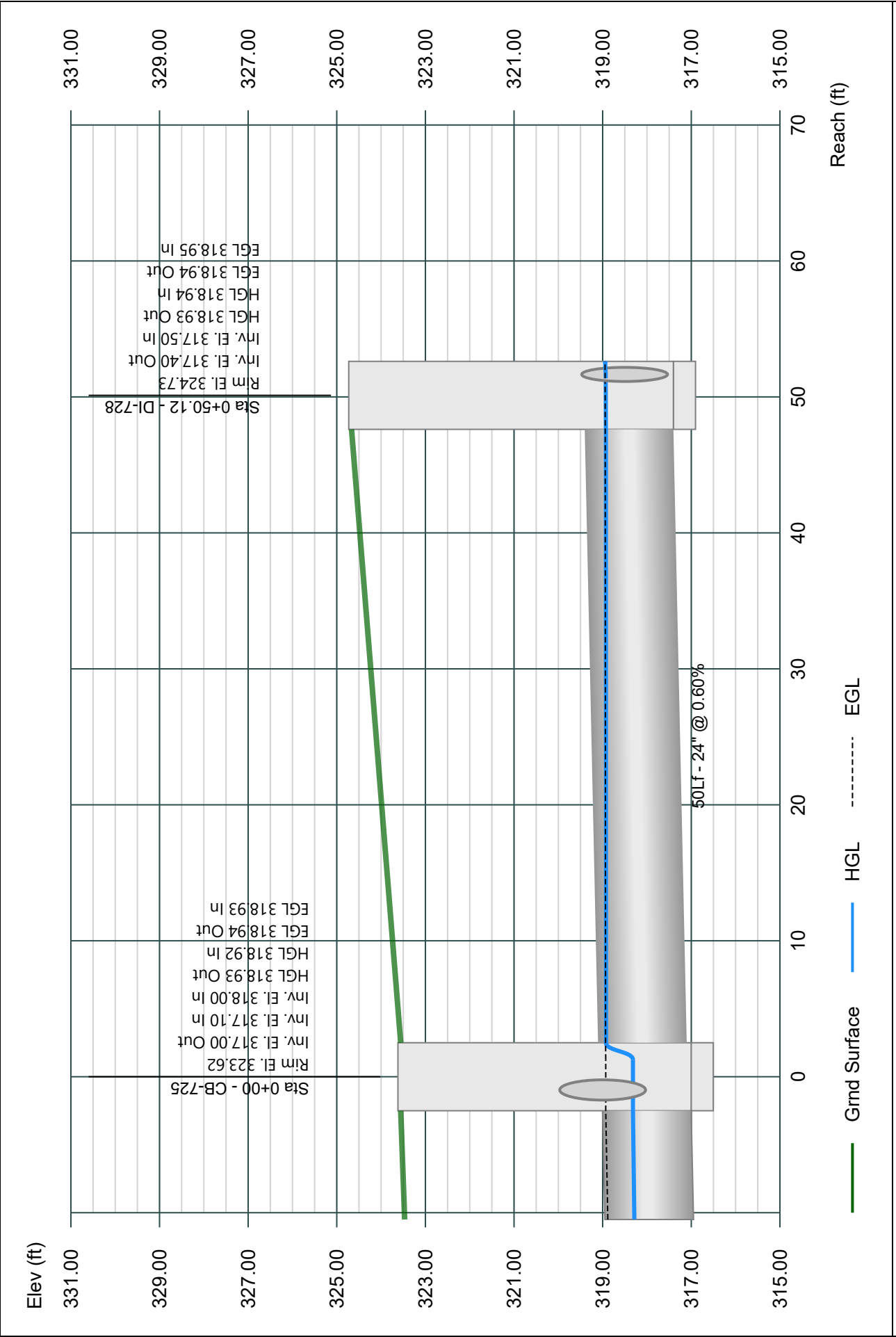
02-26-2024



Line 17 - 725-728

Project Name: SD-700
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

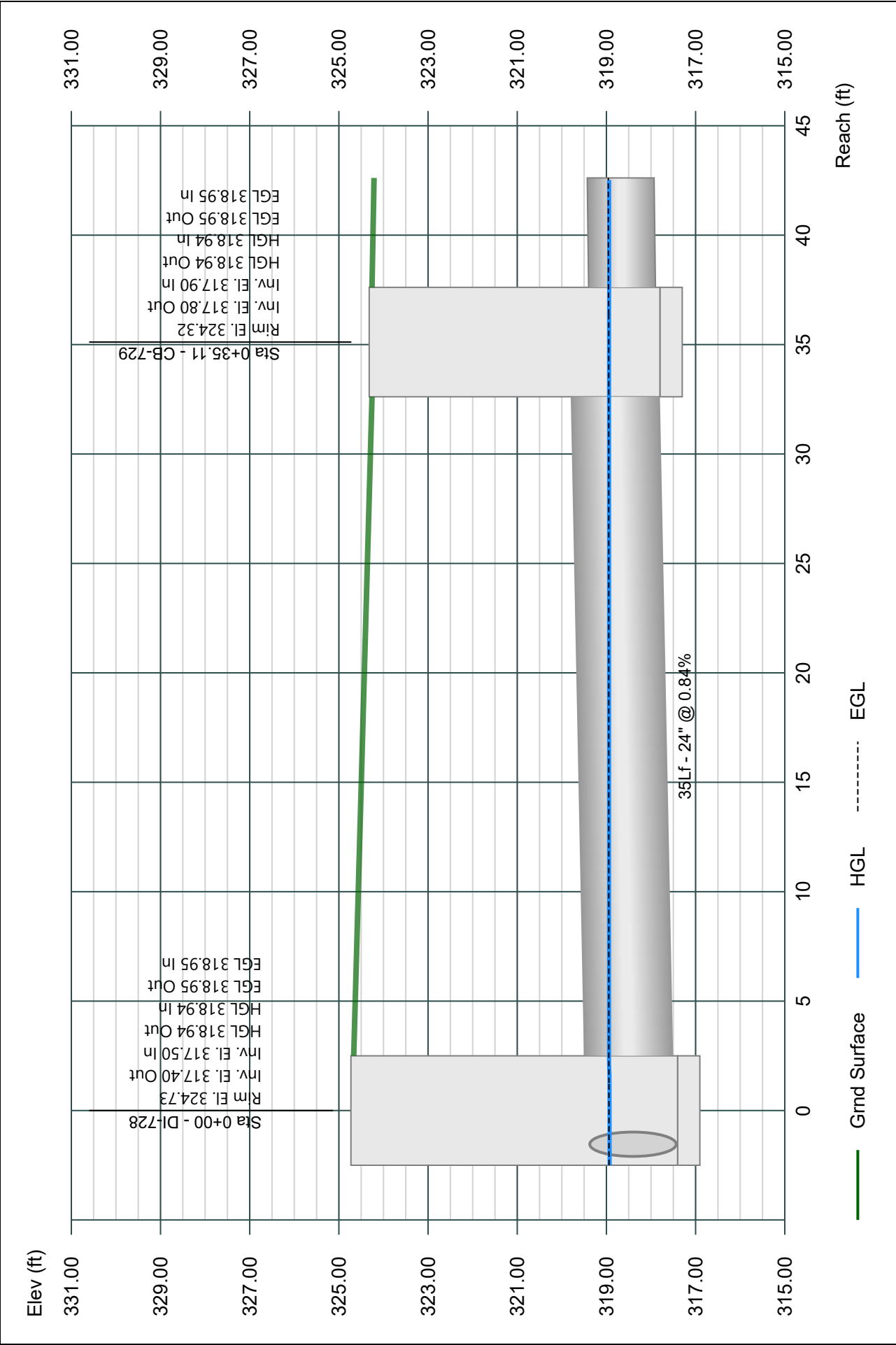


Line 18 - 728-729

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

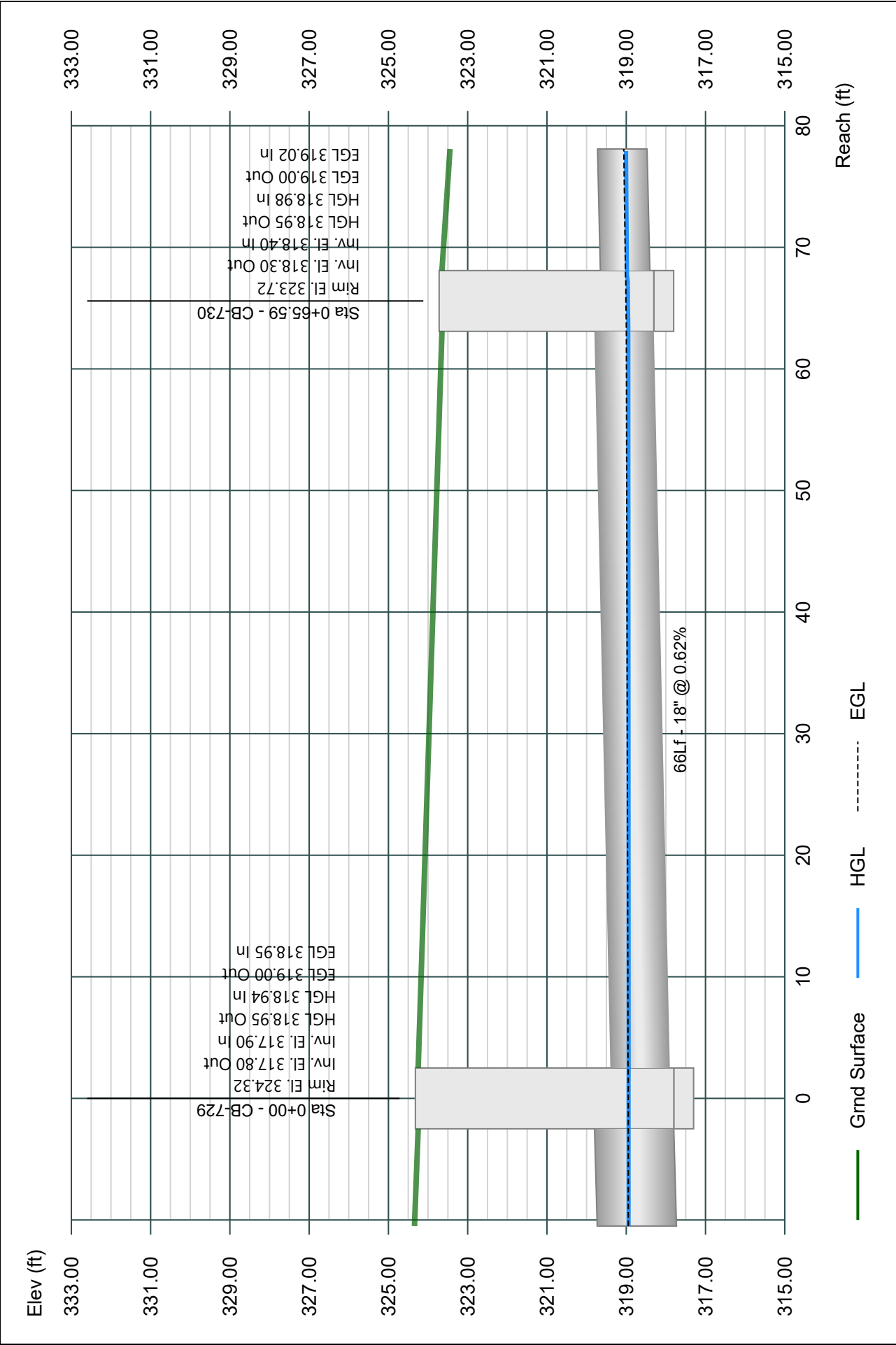
02-26-2024



Line 19 - 729-730

Project Name: SD-700
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

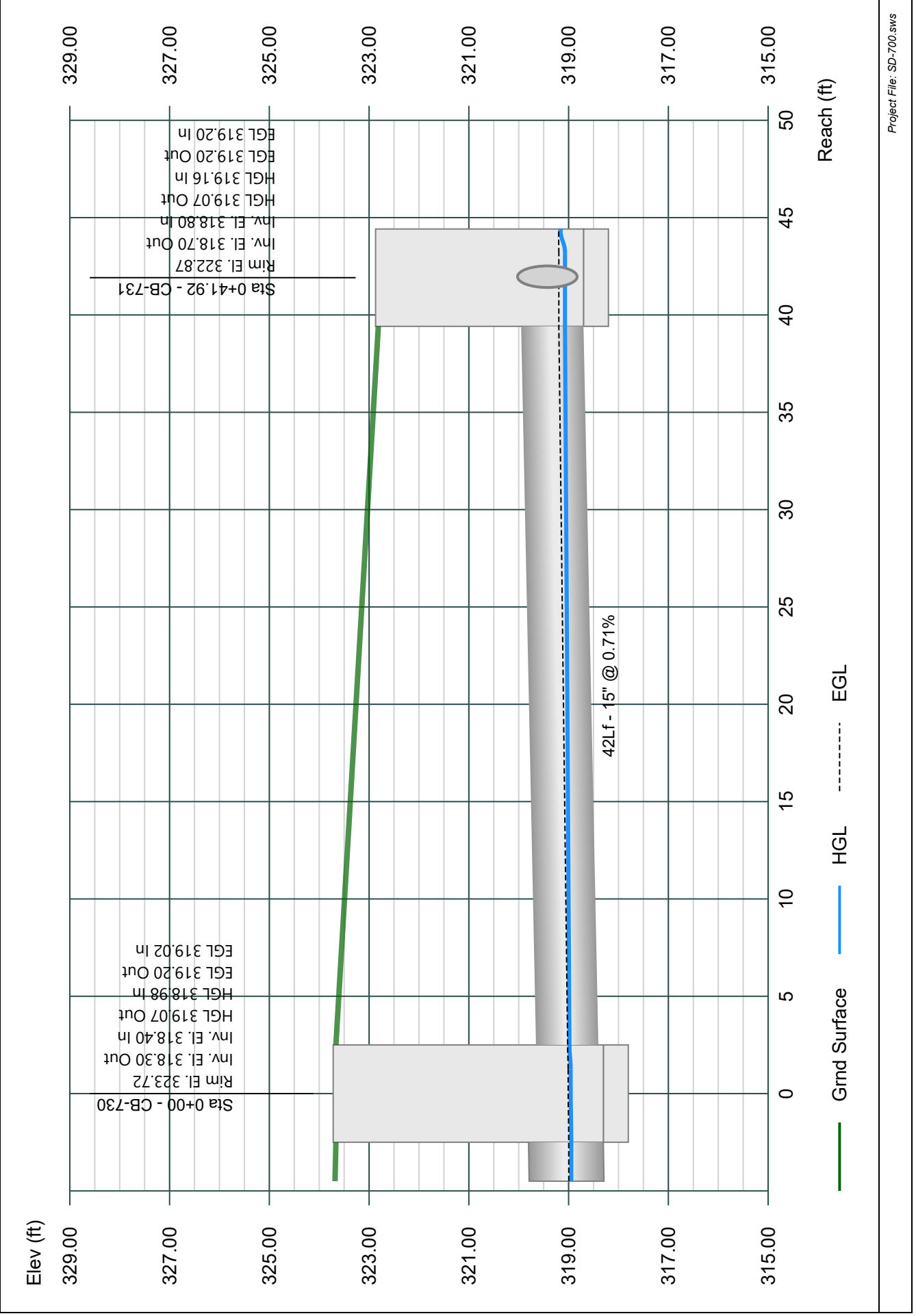


Line 20 - 730-731

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

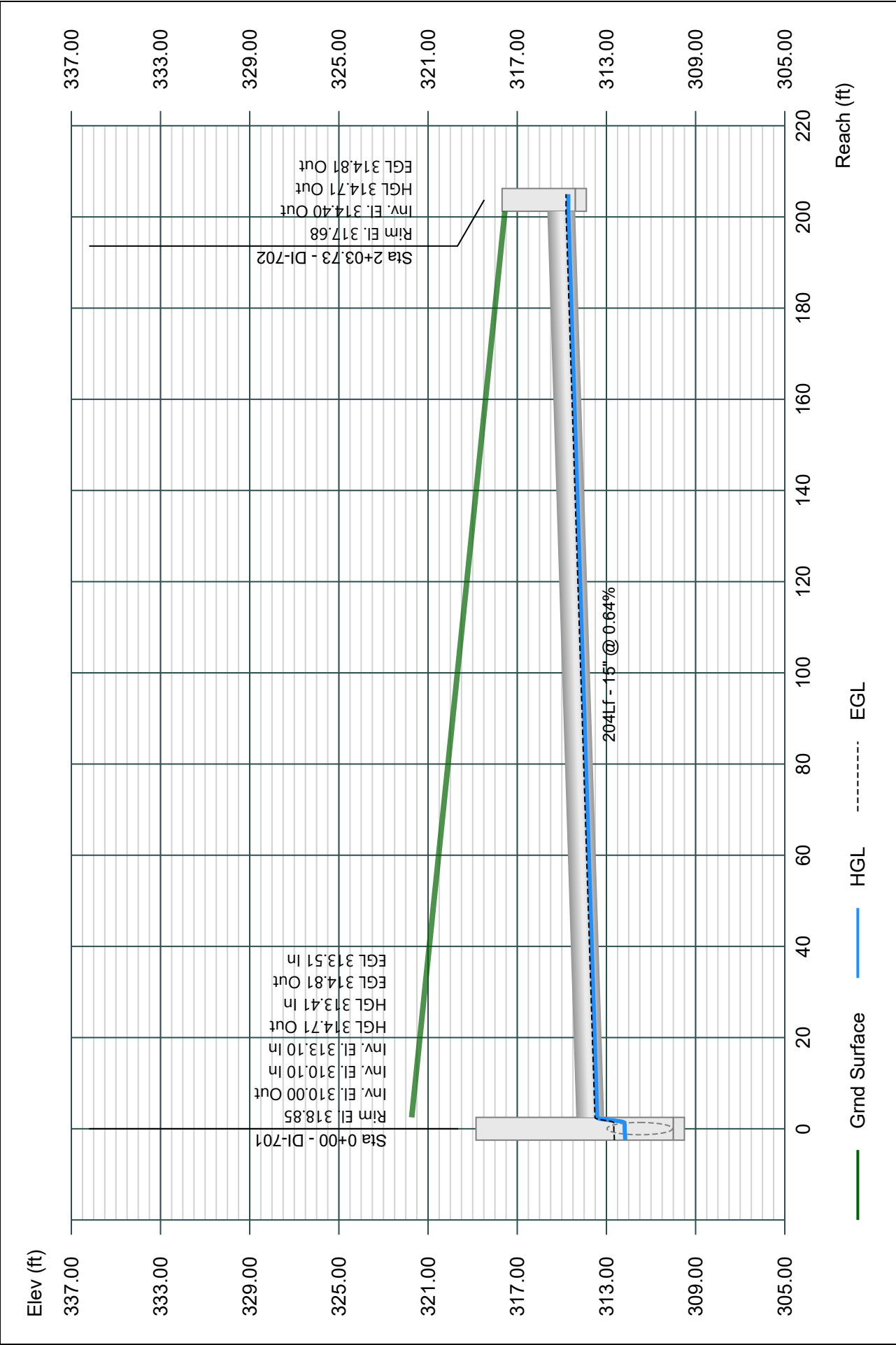
02-26-2024



Line 21 - 701-702

Project Name: SD-700
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

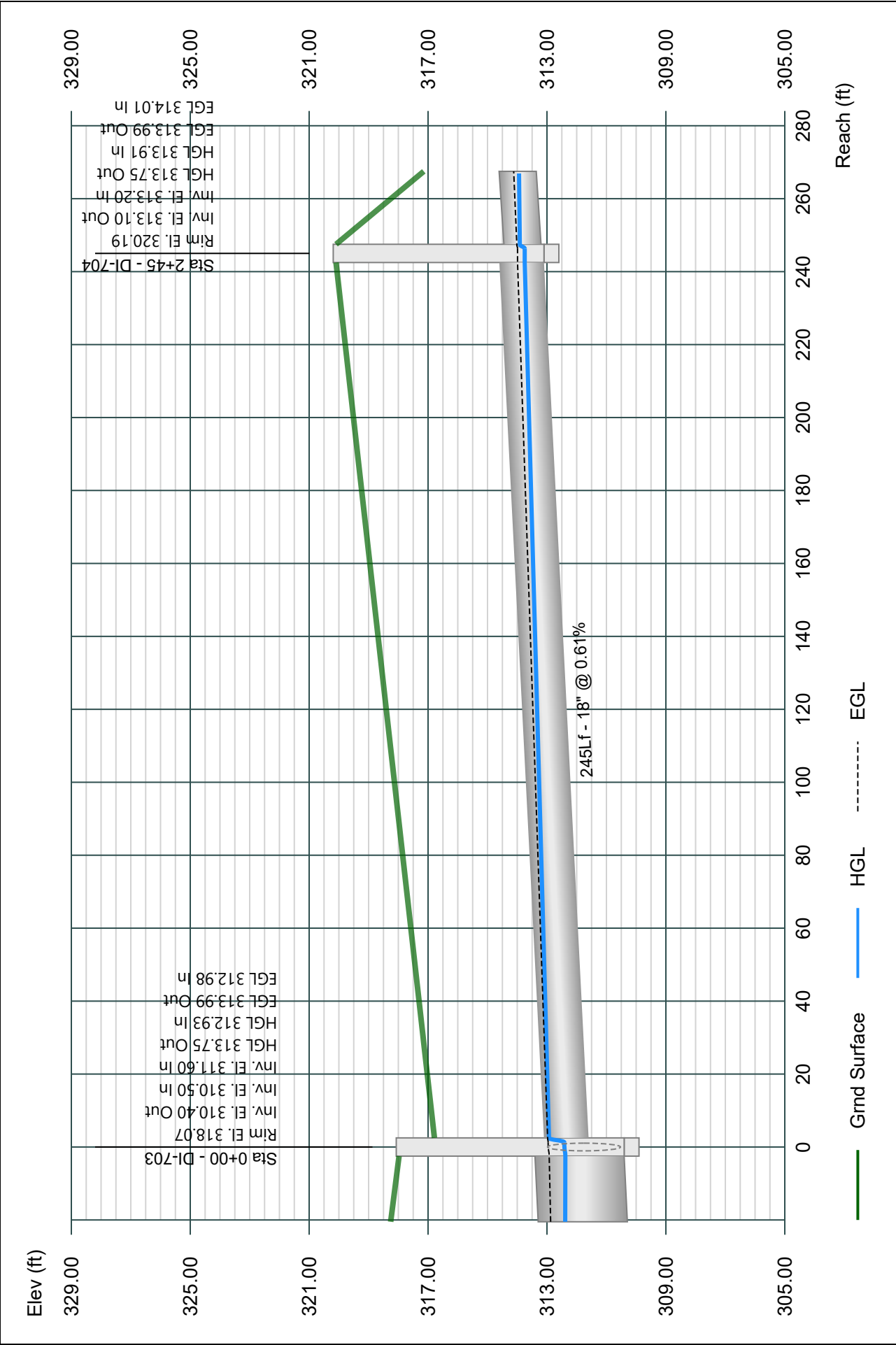


Line 22 - 703-704

Project Name: SD-700

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

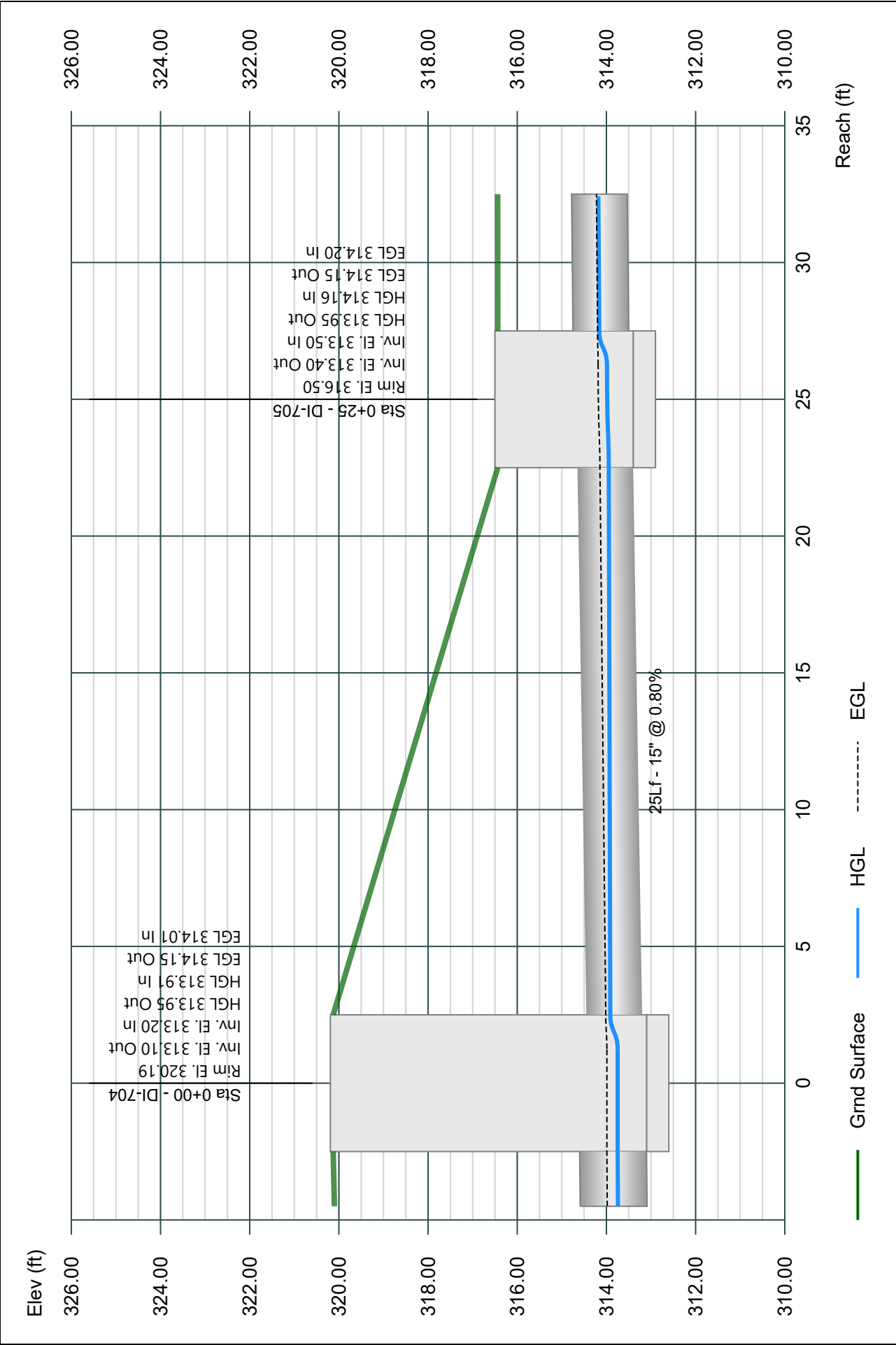


Line 23 - 704-705

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

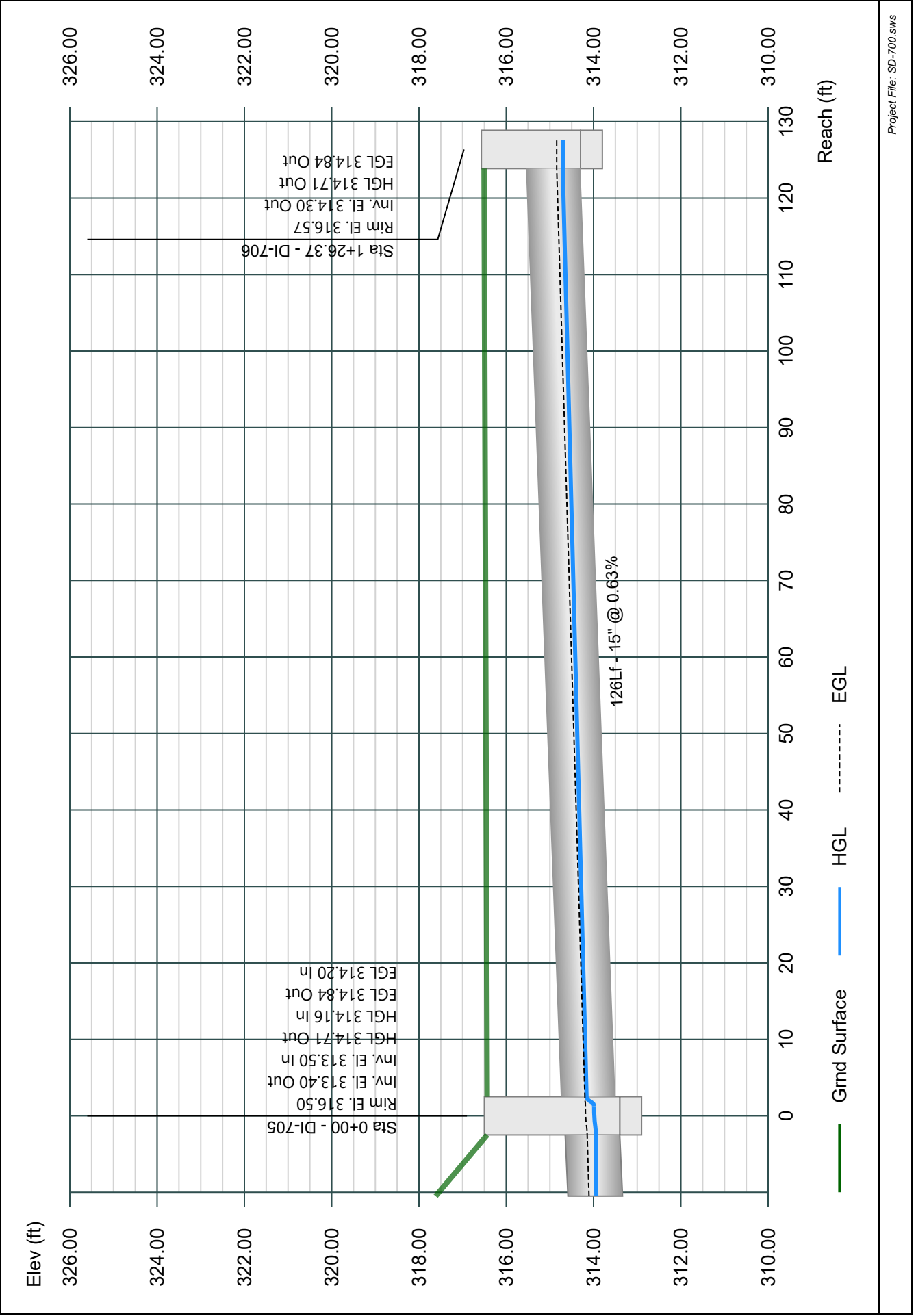


Line 24 - 705-706

Project Name: SD-700

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

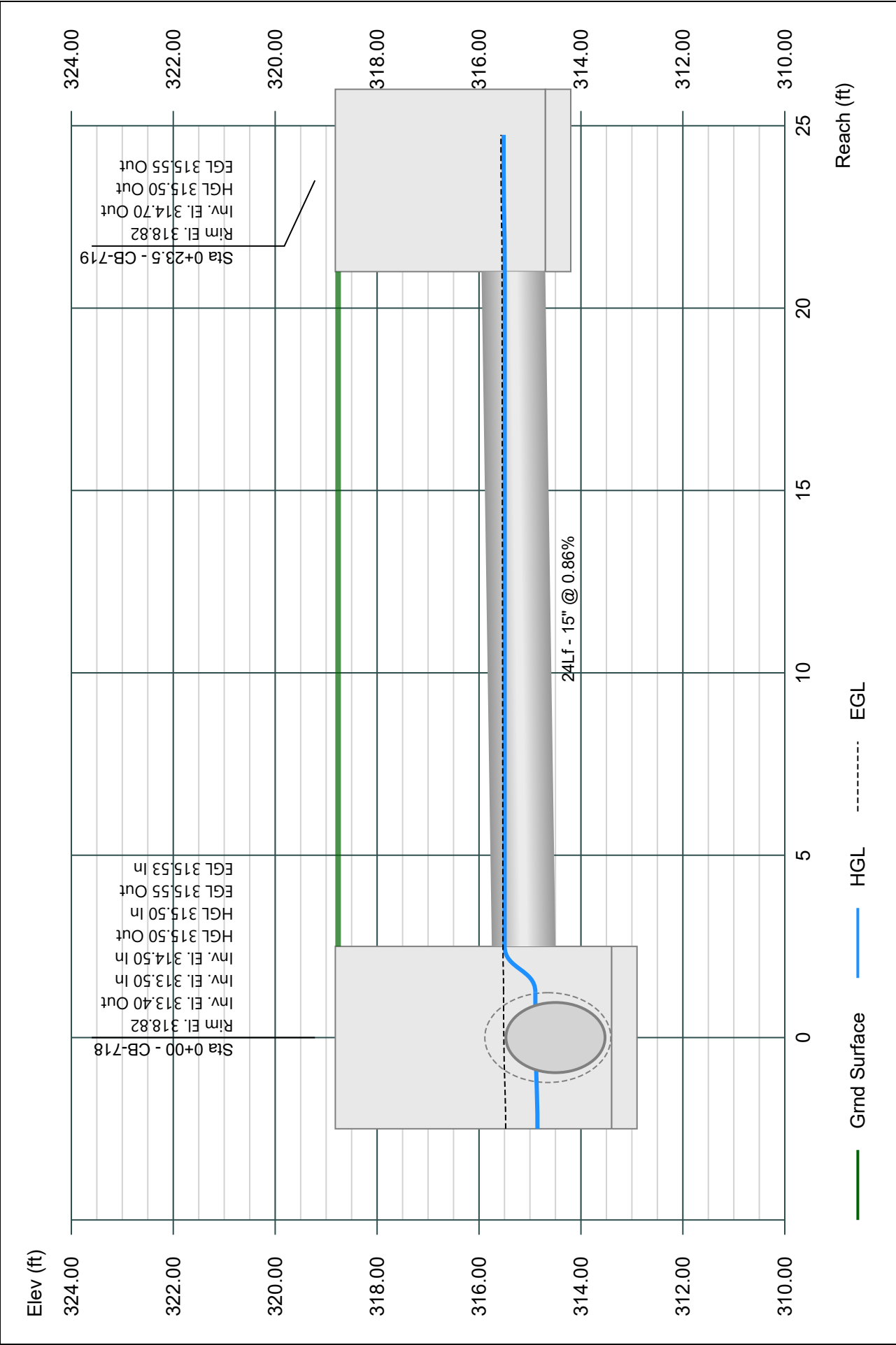


Line 25 - 718-719

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

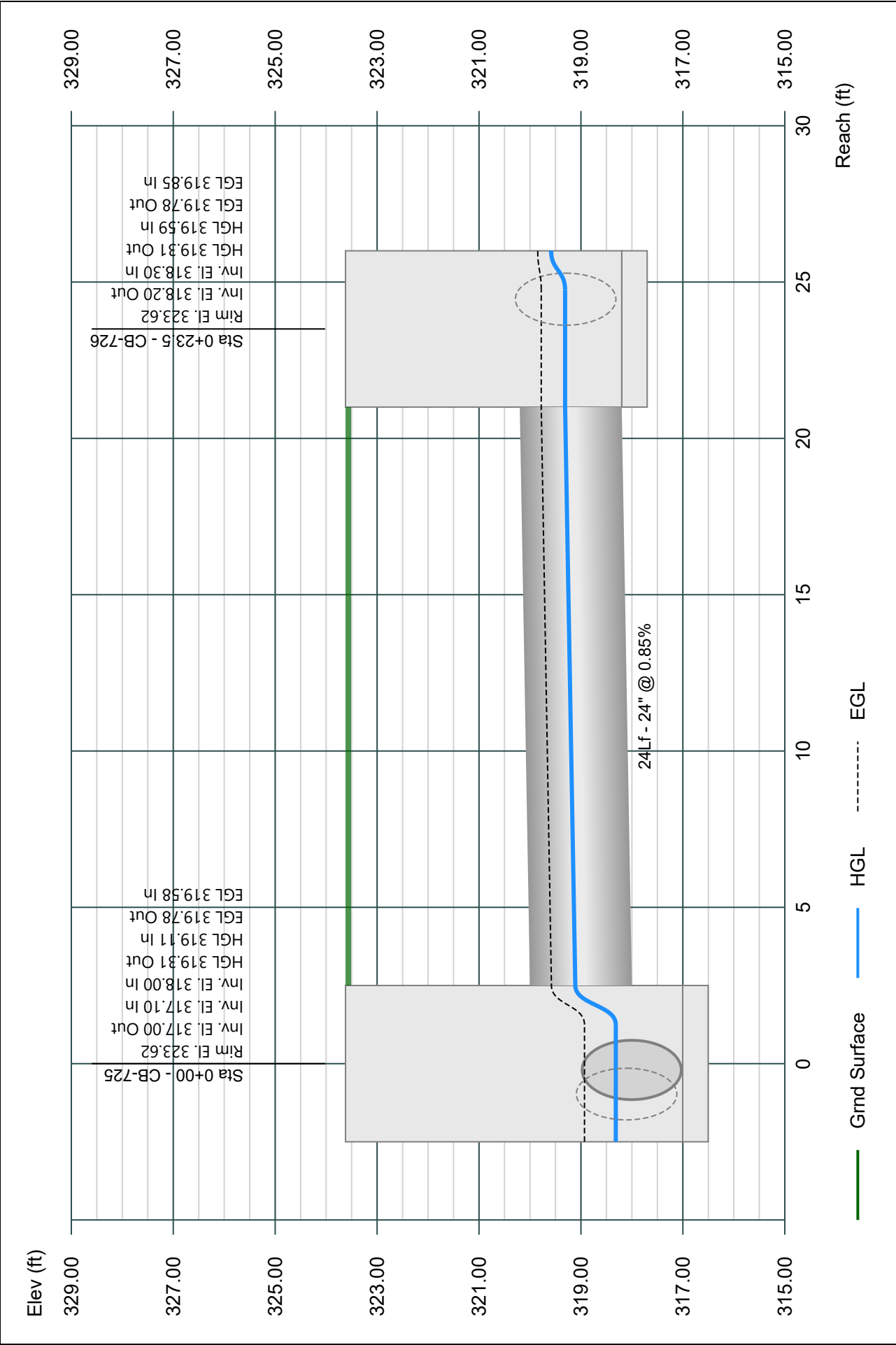


Line 26 - 725-726

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

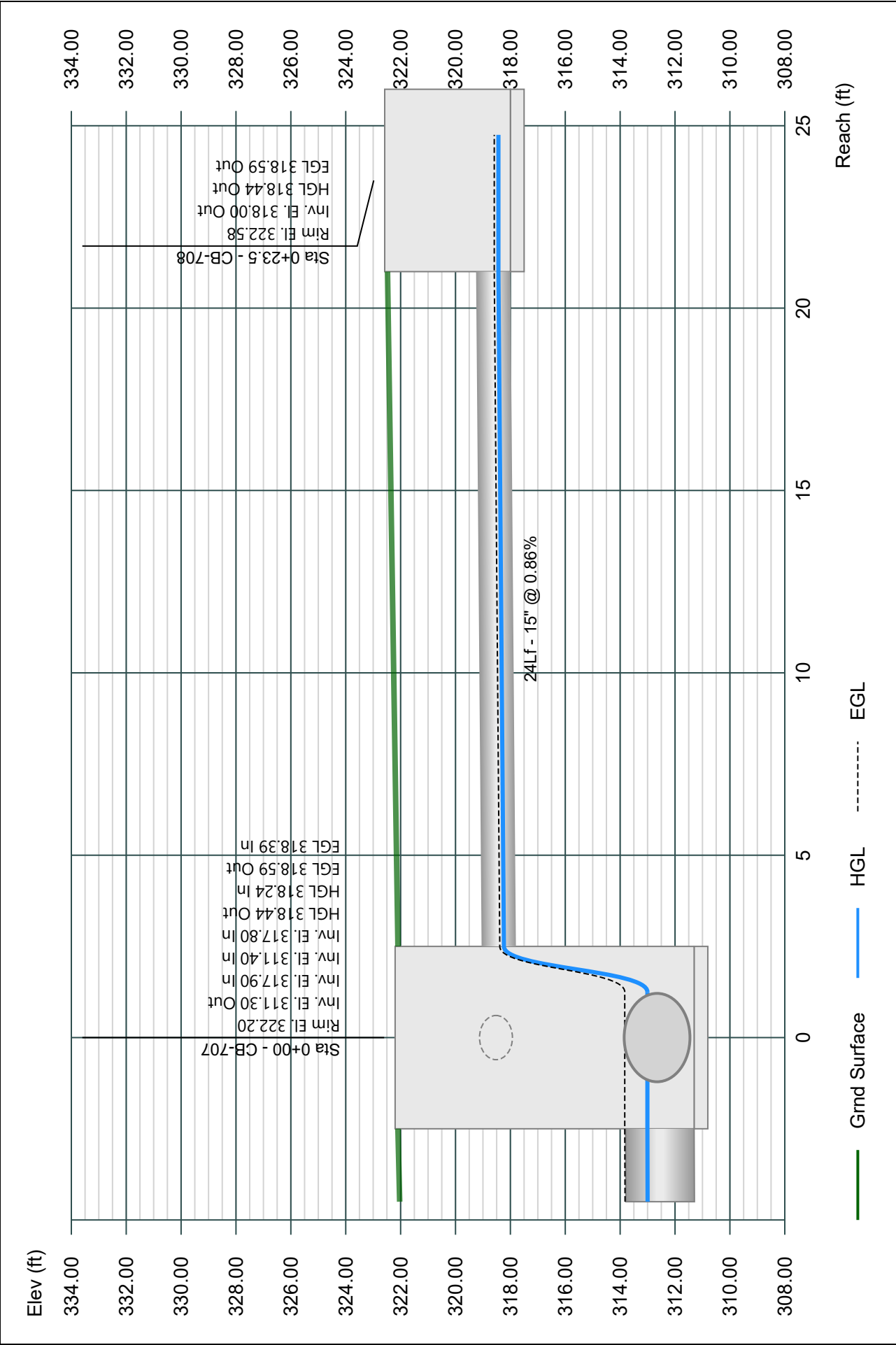


Line 27 - 707-708

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

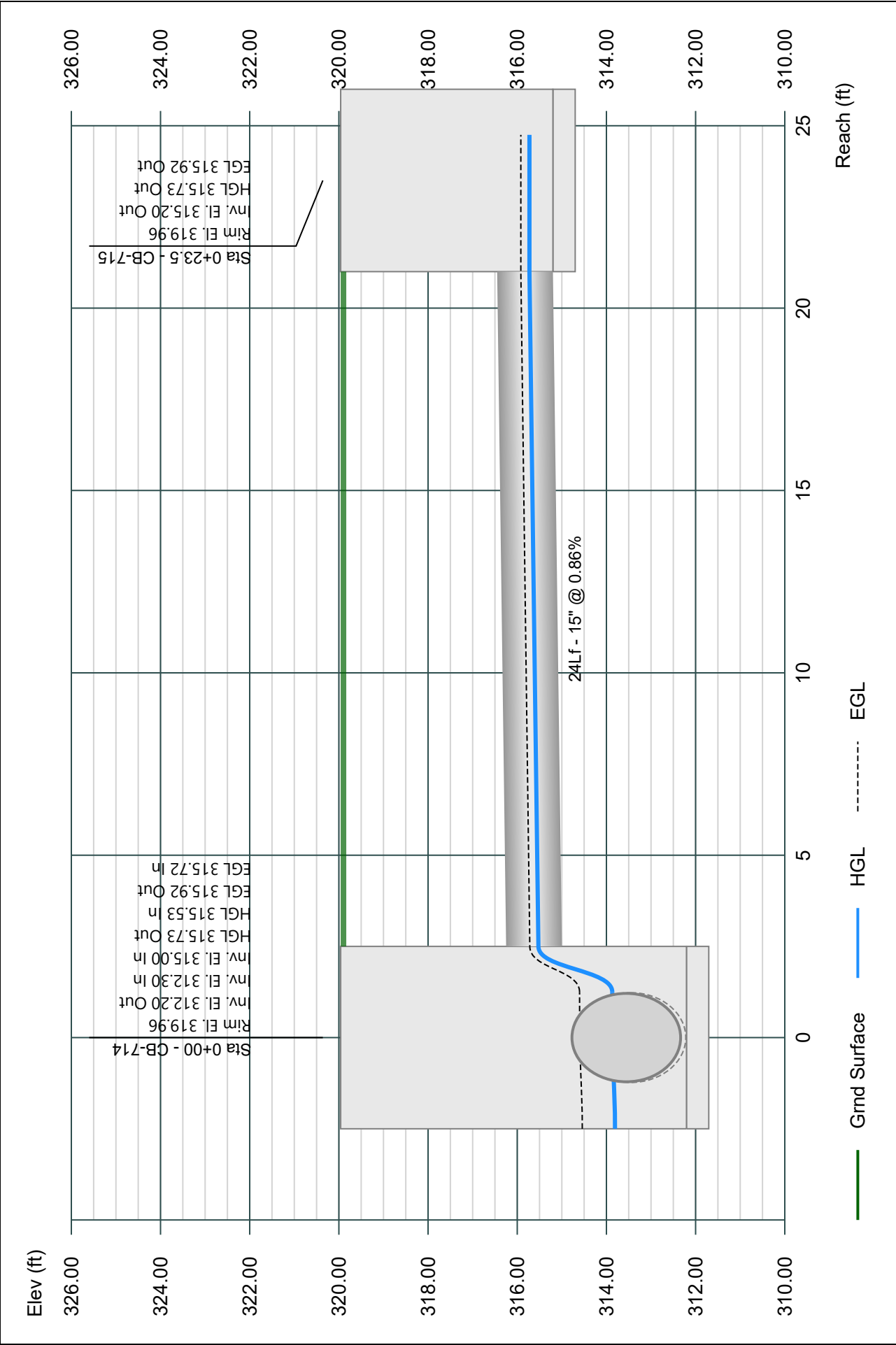


Line 28 - 714-715

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

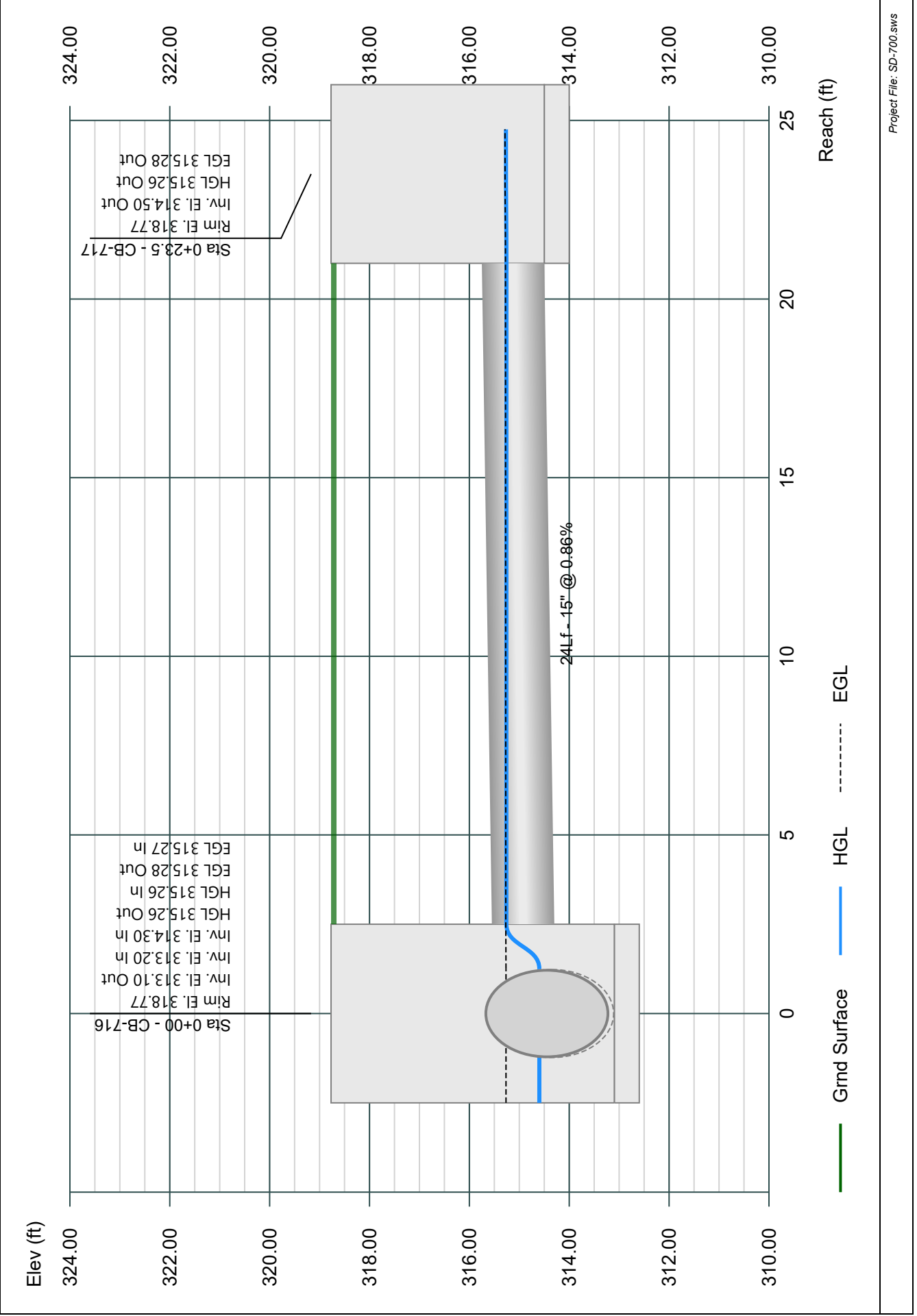


Line 29 - 716-717

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

02-26-2024

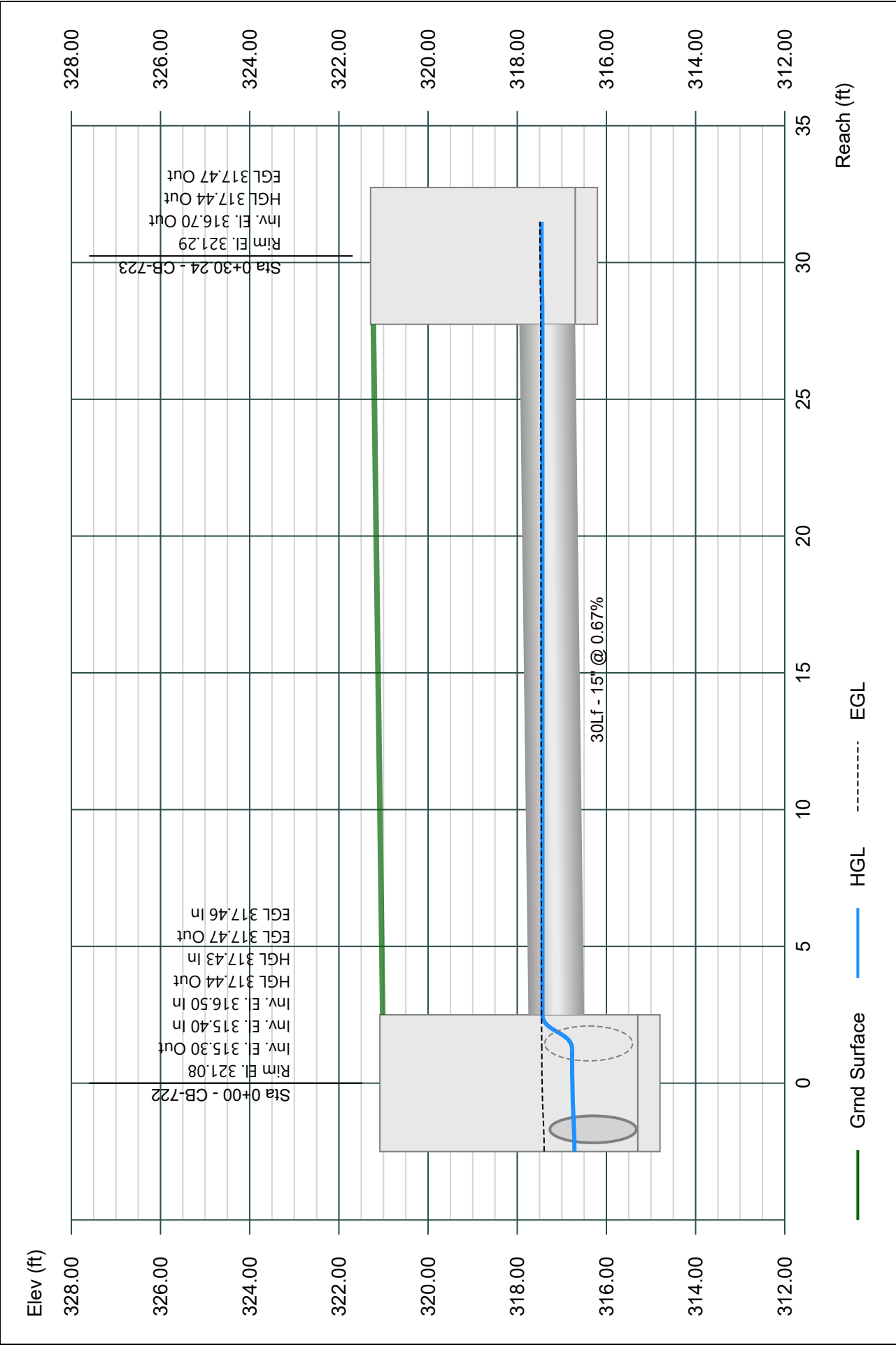


Line 30 - 722-723

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-700

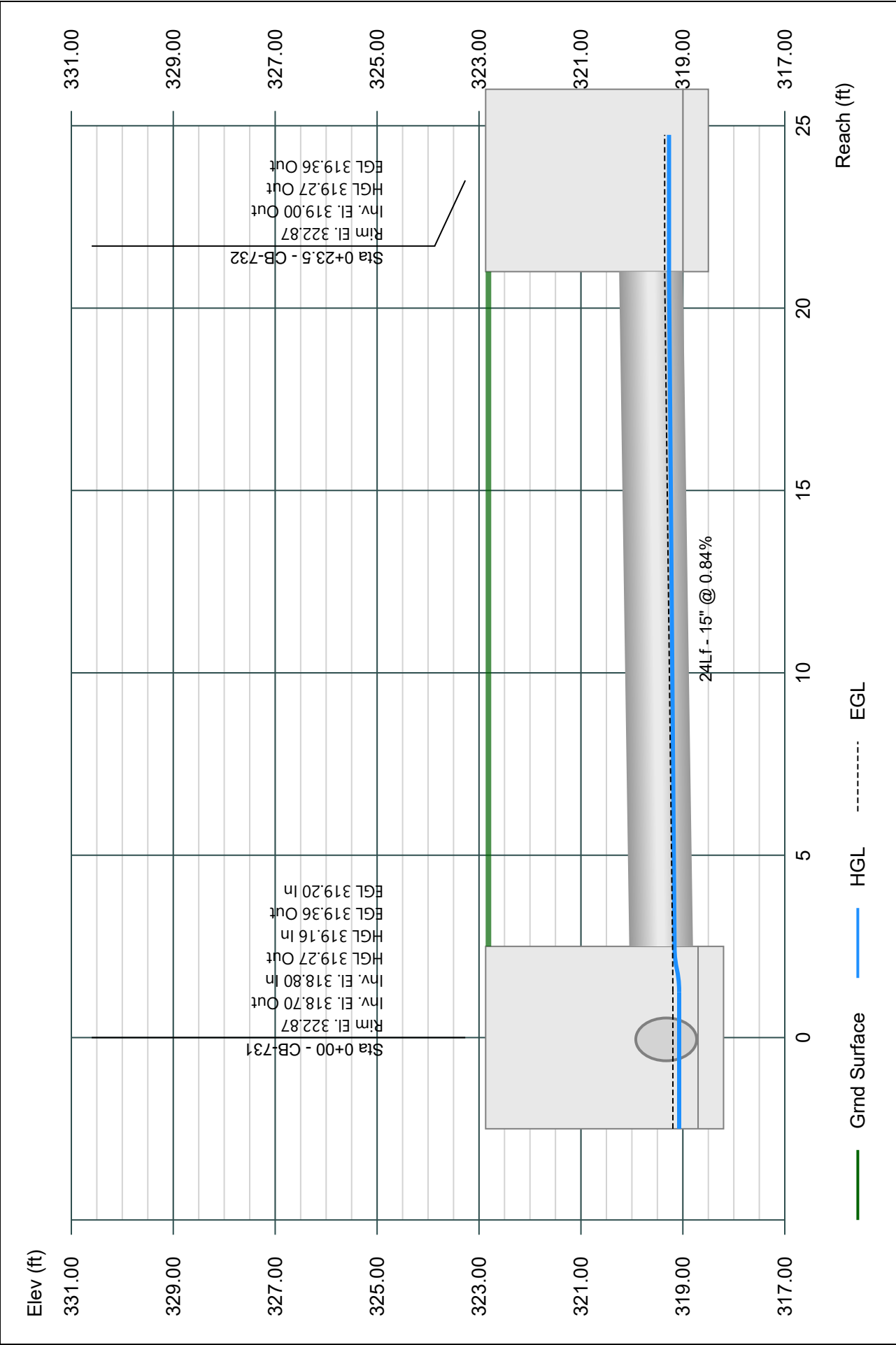
02-26-2024



Line 31 - 731-732

Stormwater Studio 2024 v 3.0.0.33

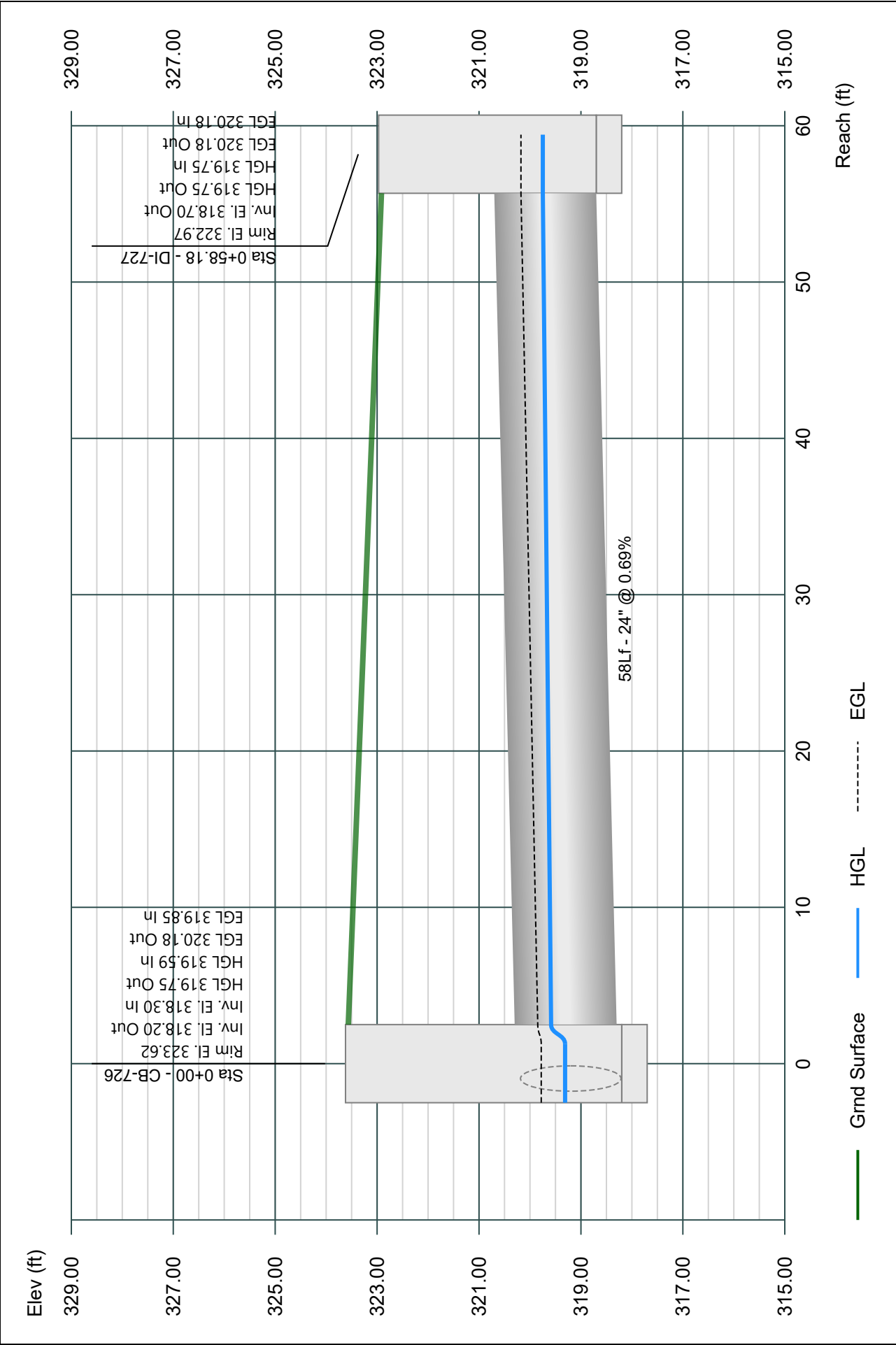
Project Name: SD-700
02-26-2024



Line 32 - 726-727

Project Name: SD-700
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

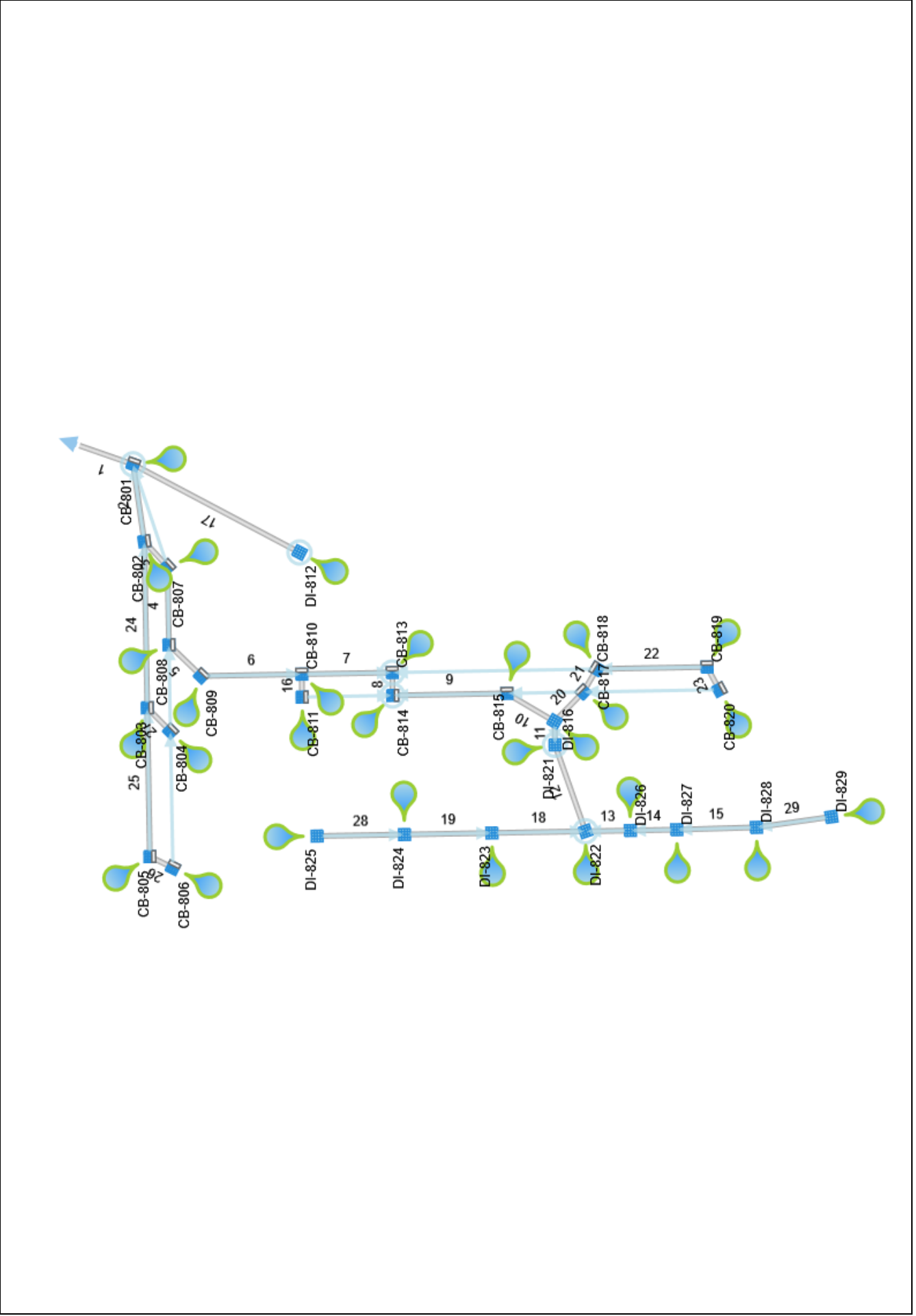


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024



Energy Grade Line Calculations

Project Name: SD-800
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	36	30.68	300.00	2.30	5.82	302.30	5.28	0.43	302.73	57.34	303.70	1.77 ²	4.33	305.47	7.09	0.78	306.25	0.013	3.516	305.47	306.25	0.00
2	36	28.52	303.80	2.14	5.39	305.94	5.29	0.44	306.37	80.02	305.30	1.70 ²	4.14	307.00	6.89	0.74	307.74	0.013	1.364	307.00	307.74	0.00
3	30	23.97	305.80	1.64 ¹	3.40	307.43	7.04	0.77	308.21	35.48	306.20	1.64 ²	3.40	307.84	7.04	0.77	308.61	0.013	0.403	307.84	308.61	0.00
4	30	23.47	306.30	1.94	4.08	308.24	5.75	0.51	308.75	80.21	306.80	1.63	3.38	308.43	6.95	0.75	309.18	0.013	0.426	308.47	309.22	0.04
5	30	23.47	306.90	1.96	4.12	308.86	5.69	0.50	309.36	46.32	307.20	1.64	3.42	308.84	6.86	0.73	309.58	0.013	0.212	308.88	309.62	0.04
6	30	23.59	307.30	1.94	4.09	309.24	5.76	0.52	309.76	103.50	308.00	1.62 ²	3.37	309.63	6.99	0.76	310.39	0.013	0.627	309.63	310.39	0.00
7	30	22.28	308.10	1.96	4.14	310.07	5.38	0.45	310.52	93.34	308.70	1.58 ²	3.26	310.28	6.83	0.72	311.01	0.013	0.487	310.28	311.01	0.00
8	30	20.44	308.80	1.92	4.05	310.72	5.05	0.40	311.12	23.50	309.00	1.64	3.42	310.65	5.97	0.55	311.20	0.013	0.082	310.72	311.27	0.07
9	30	18.54	309.10	1.95	4.12	311.06	4.50	0.32	311.37	117.66	309.90	1.44 ²	2.93	311.34	6.34	0.62	311.96	0.013	0.590	311.34	311.96	0.00
10	30	18.48	310.00	1.57	3.23	311.57	5.71	0.51	312.07	57.06	310.40	1.44 ²	2.92	311.84	6.33	0.62	312.46	0.013	0.389	311.84	312.46	0.00
11	24	13.97	310.60	1.51	2.55	312.11	5.48	0.47	312.58	24.04	310.90	1.32 ²	2.21	312.23	6.33	0.62	312.85	0.013	0.270	312.23	312.85	0.00
12	24	12.95	311.00	1.59	2.68	312.59	4.84	0.36	312.96	94.29	311.70	1.27 ²	2.11	312.97	6.13	0.58	313.56	0.013	0.597	312.97	313.56	0.00
13	24	6.39	312.50	0.92	1.42	313.42	4.50	0.31	313.74	46.26	314.20	0.90 ²	1.36	315.10	4.69	0.34	315.44	0.013	1.706	315.10	315.44	0.00
14	18	4.46	314.70	0.81 ¹	0.97	315.51	4.61	0.33	315.84	47.77	315.00	0.81	0.97	315.81	4.58	0.33	316.14	0.013	0.296	315.88	316.20	0.06
15	18	3.02	315.10	1.05	1.32	316.15	2.30	0.08	316.23	82.12	316.90	0.66 ²	0.75	317.57	4.01	0.25	317.82	0.013	1.588	317.57	317.82	0.00
16	15	1.30	311.10	0.46 ¹	0.40	311.55	3.20	0.16	311.71	23.50	311.24	0.46	0.41	311.70	3.18	0.16	311.85	0.013	0.141	311.79	311.95	0.09
17	15	0.78	304.30	1.25	1.23	306.24	0.63	0.01	306.25	193.94	305.60	0.68	0.69	306.29	1.13	0.02	306.31	0.013	0.056	306.30	306.32	0.01
18	18	5.27	312.40	0.88 ¹	1.07	313.27	4.91	0.38	313.65	96.49	315.50	0.88 ²	1.07	316.38	4.91	0.38	316.75	0.013	3.104	316.38	316.75	0.00
19	15	3.80	315.50	1.15	1.18	316.65	3.23	0.16	316.81	90.00	316.30	0.78 ²	0.81	317.08	4.72	0.35	317.43	0.013	0.618	317.08	317.43	0.00
20	18	4.47	312.40	0.81 ¹	0.97	313.21	4.61	0.33	313.54	42.25	312.90	0.81 ²	0.97	313.71	4.61	0.33	314.04	0.013	0.494	313.71	314.04	0.00
21	15	3.01	313.00	0.93	0.98	313.93	3.06	0.15	314.08	27.61	313.20	0.73	0.75	313.93	4.04	0.25	314.19	0.013	0.108	314.02	314.27	0.09
22	15	1.93	313.30	0.93	0.98	314.23	1.97	0.06	314.29	113.50	315.00	0.56 ²	0.53	315.56	3.66	0.21	315.77	0.013	1.477	315.56	315.77	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-800.sws

Energy Grade Line Calculations

Project Name: SD-800

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream							Length (ft)	Upstream							Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)		Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
23	15	0.97	315.10	0.64	0.63	315.74	1.54	0.04	315.78	26.49	0.43	0.37	315.73	2.60	0.11	315.84	0.013	0.058	315.80	315.90	0.07	
24	15	3.45	309.63	0.74 ¹	0.76	310.38	4.53	0.32	310.69	171.30	0.74 ²	0.76	315.05	4.53	0.32	315.37	0.013	4.671	315.05	315.37	0.00	
25	15	1.58	314.50	0.83	0.86	315.33	1.84	0.05	315.38	153.00	0.50 ²	0.46	318.51	3.42	0.18	318.69	0.013	3.306	318.51	318.69	0.00	
26	15	0.49	318.10	0.58	0.55	318.68	0.88	0.01	318.69	26.39	0.37	0.31	318.68	1.57	0.04	318.71	0.013	0.022	318.71	318.74	0.03	
27	15	0.54	314.40	0.96	1.01	315.36	0.53	0.00	315.37	33.95	0.66	0.66	315.36	0.82	0.01	315.37	0.013	0.004	315.37	315.38	0.01	
28	15	2.07	316.40	0.98	1.04	317.39	2.00	0.06	317.45	90.00	0.58 ²	0.55	317.78	3.75	0.22	318.00	0.013	0.548	317.78	318.00	0.00	
29	15	1.73	317.20	0.54	0.50	317.74	3.44	0.18	317.92	78.02	0.53 ²	0.49	319.33	3.52	0.19	319.52	0.013	1.598	319.33	319.52	0.00	

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-800.sws

Storm Sewer Tabulation

Project Name: SD-800

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
800-801	57.34	0.310	6.150	0.80	0.25	4.74	5.0	7.50	6.47	30.68	169.44	6.18	36	6.45	303.70	300.00	305.47	302.30	312.63	300.00	1
801-802	80.02	0.290	5.660	0.75	0.22	4.39	5.0	7.37	6.50	28.52	91.22	6.09	36	1.87	305.30	303.80	307.00	305.94	314.83	312.63	2
802-807	35.48	0.140	4.700	0.75	0.11	3.68	5.0	7.31	6.52	23.97	43.70	7.04	30	1.14	306.20	305.80	307.84	307.43	315.87	314.83	3
807-808	80.21	0.020	4.560	0.80	0.02	3.57	5.0	7.12	6.57	23.47	32.42	6.35	30	0.62	306.80	306.30	308.43	308.24	318.19	315.87	4
808-809	46.32	0.020	4.540	0.80	0.02	3.56	5.0	7.01	6.60	23.47	32.90	6.28	30	0.64	307.20	306.90	308.84	308.86	318.41	318.19	5
809-810	103.50	0.060	4.520	0.80	0.05	3.54	5.0	6.77	6.66	23.59	33.80	6.38	30	0.68	308.00	307.30	309.63	309.24	316.46	318.41	6
810-813	93.34	0.350	4.220	0.80	0.28	3.31	5.0	6.55	6.73	22.28	32.88	6.10	30	0.64	308.70	308.10	310.28	310.07	316.46	316.46	7
813-814	23.50	0.420	3.870	0.75	0.32	3.03	5.0	6.50	6.74	20.44	37.93	5.51	30	0.86	309.00	308.80	310.65	310.72	315.68	315.68	8
814-815	117.66	0.030	3.450	0.80	0.02	2.72	5.0	6.22	6.82	18.54	33.73	5.42	30	0.68	309.90	309.10	311.34	311.06	316.87	315.68	9
815-816	57.06	0.030	3.420	0.80	0.02	2.69	5.0	6.09	6.86	18.48	34.44	6.02	30	0.71	310.40	310.00	311.84	311.57	317.76	316.87	10
816-821	24.04	0.210	2.540	0.80	0.17	2.03	5.0	6.04	6.88	13.97	25.36	5.91	24	1.26	310.90	310.60	312.23	312.11	317.62	317.76	11
821-822	94.29	0.250	2.330	0.80	0.20	1.86	5.0	5.80	6.95	12.95	19.38	5.48	24	0.73	311.70	311.00	312.97	312.59	319.07	317.62	12
822-826	46.26	0.350	1.140	0.80	0.28	0.91	5.0	5.59	7.01	6.39	43.46	4.60	24	3.69	314.20	312.50	315.10	313.42	319.24	319.07	13
826-827	47.77	0.260	0.790	0.80	0.21	0.63	5.0	5.43	7.06	4.46	8.27	4.60	18	0.62	315.00	314.70	315.81	315.51	319.79	319.24	14
827-828	82.12	0.230	0.530	0.80	0.18	0.42	5.0	5.23	7.13	3.02	15.56	3.15	18	2.20	316.90	315.10	317.57	316.15	321.44	319.79	15
810-811	23.50	0.240	0.240	0.75	0.18	0.18	5.0	5.00	7.20	1.30	5.00	3.19	15	0.60	311.24	311.10	311.70	311.55	316.46	316.46	16
810-812	193.94	0.180	0.180	0.60	0.11	0.11	5.0	5.00	7.20	0.78	5.29	0.88	15	0.67	305.60	304.30	306.29	306.24	309.88	312.63	17
822-823	96.49	0.270	0.940	0.80	0.22	0.75	5.0	5.62	7.00	5.27	18.84	4.91	18	3.22	315.50	312.40	316.38	313.27	319.76	319.07	18
823-824	90.00	0.310	0.670	0.80	0.25	0.54	5.0	5.33	7.09	3.80	6.09	3.97	15	0.89	316.30	315.50	317.08	316.65	320.75	319.76	19
816-817	42.25	0.280	0.850	0.75	0.21	0.64	5.0	5.58	7.01	4.47	11.35	4.61	18	1.17	312.90	312.40	313.71	313.21	317.80	317.76	20
817-818	27.61	0.210	0.570	0.75	0.16	0.43	5.0	5.48	7.05	3.01	5.53	3.55	15	0.73	313.20	313.00	313.93	313.93	318.04	317.80	21
818-819	113.50	0.180	0.360	0.75	0.14	0.27	5.0	5.13	7.16	1.93	7.91	2.82	15	1.50	315.00	313.30	315.56	314.23	320.38	318.04	22

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

Project File: SD-800.sws

Storm Sewer Tabulation

Project Name: SD-800

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area (ac)		Rational (C)	C x A		Tc (min)		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Incr	Total	Incr	Total	Up	Dn	Up	Dn	
819-820	26.49	0.180	0.180	0.75	0.14	0.14	5.0	5.00	7.20	0.97	5.60	2.07	15	0.75	315.30	315.10	315.73	315.74	320.54	320.38	23
802-803	171.30	0.260	0.670	0.75	0.20	0.49	5.0	5.59	7.01	3.45	10.66	4.53	15	2.73	314.30	309.63	315.05	310.38	319.77	314.83	24
803-805	153.00	0.220	0.310	0.70	0.15	0.22	5.0	5.16	7.15	1.58	9.77	2.63	15	2.29	318.00	314.50	318.51	315.33	323.36	319.77	25
805-806	26.39	0.090	0.090	0.75	0.07	0.07	5.0	5.00	7.20	0.49	5.60	1.22	15	0.75	318.30	318.10	318.68	318.68	323.57	323.36	26
803-804	33.95	0.100	0.100	0.75	0.08	0.08	5.0	5.00	7.20	0.54	6.01	0.68	15	0.87	314.70	314.40	315.36	315.36	320.36	319.77	27
824-825	90.00	0.360	0.360	0.80	0.29	0.29	5.0	5.00	7.20	2.07	6.09	2.88	15	0.89	317.20	316.40	317.78	317.39	321.74	320.75	28
828-829	78.02	0.300	0.300	0.80	0.24	0.24	5.0	5.00	7.20	1.73	9.24	3.48	15	2.05	318.80	317.20	319.33	317.74	323.13	321.44	29

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

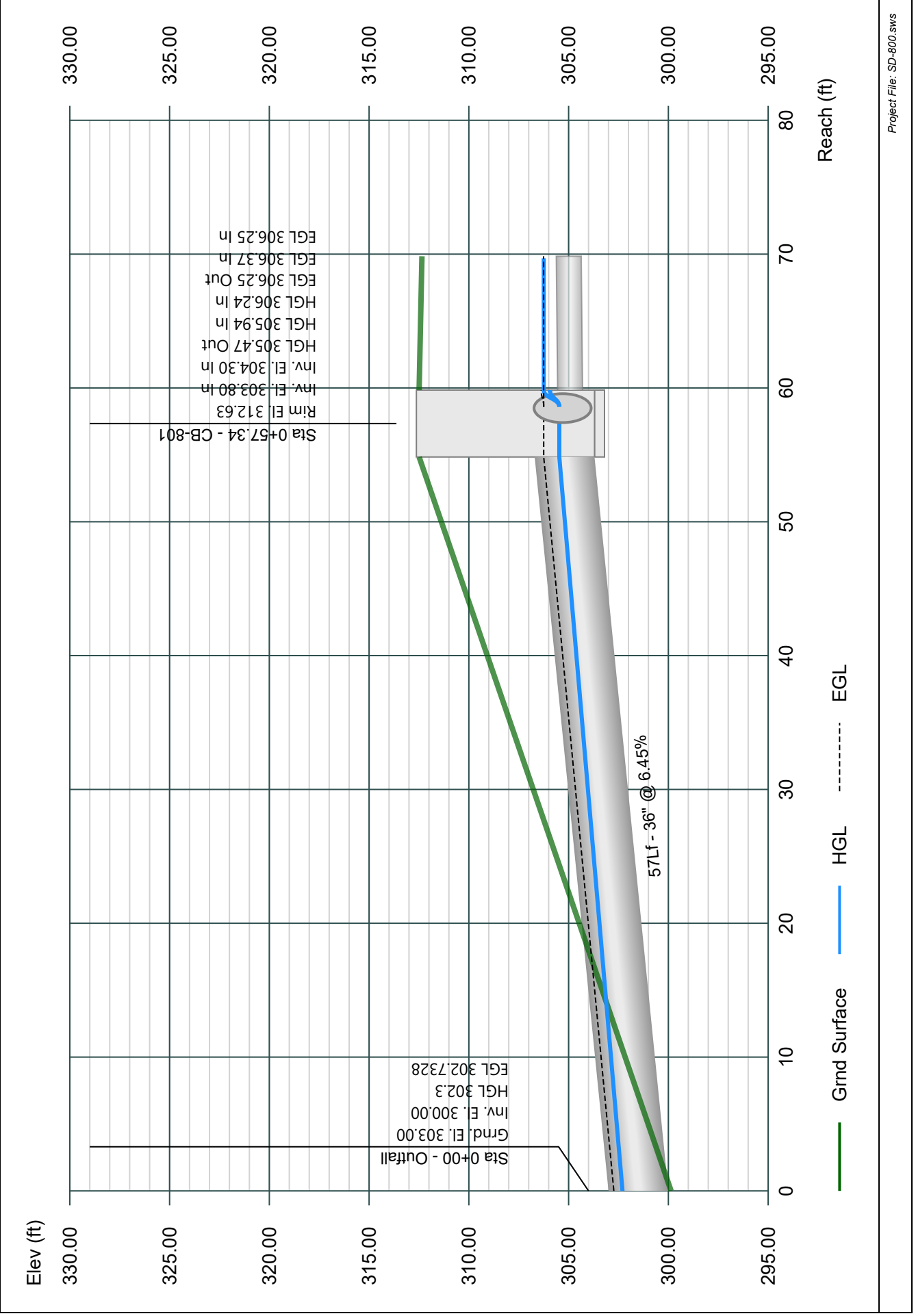
Project File: SD-800.sws

Line 1 - 800-801

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

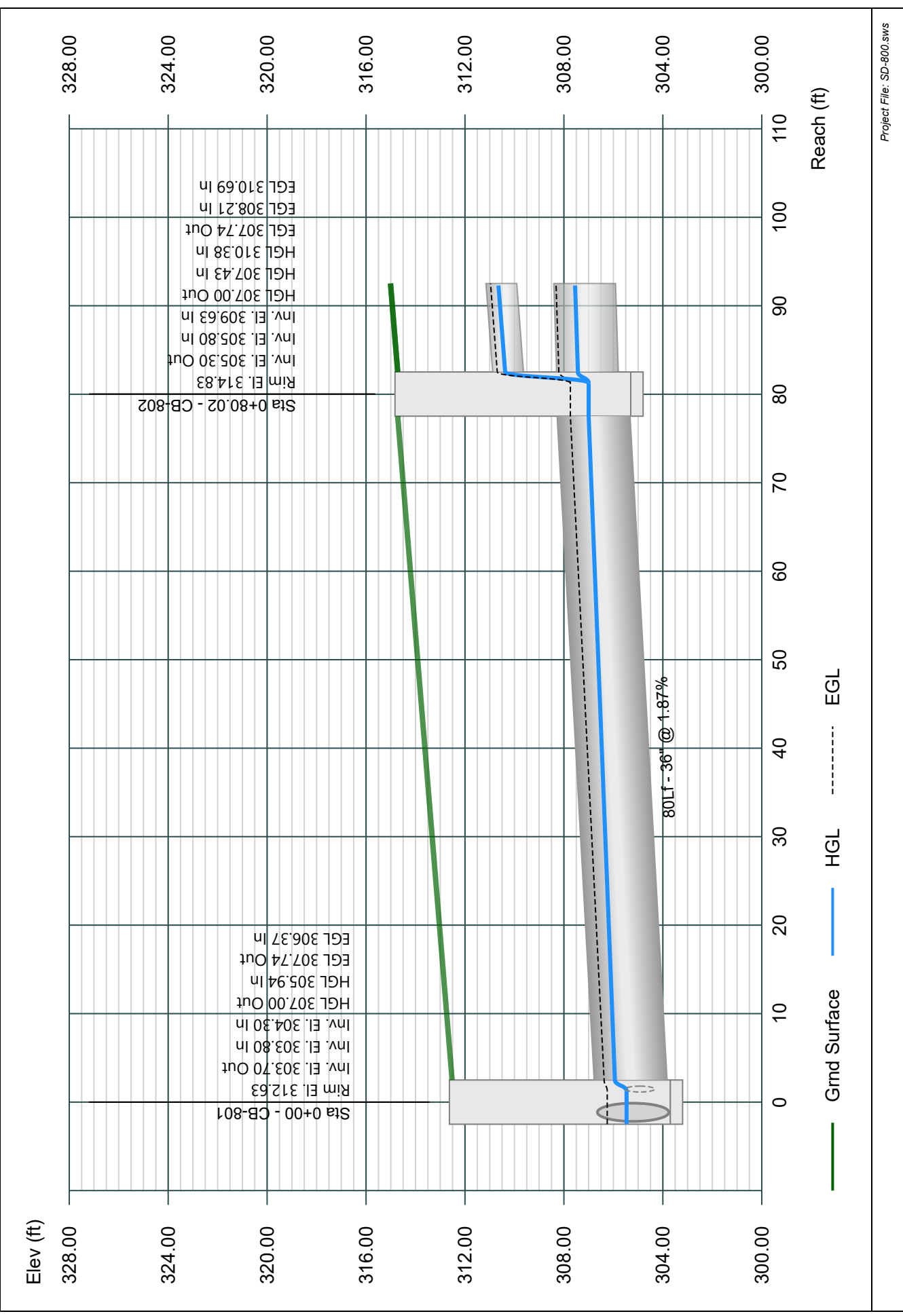


Line 2 - 801-802

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

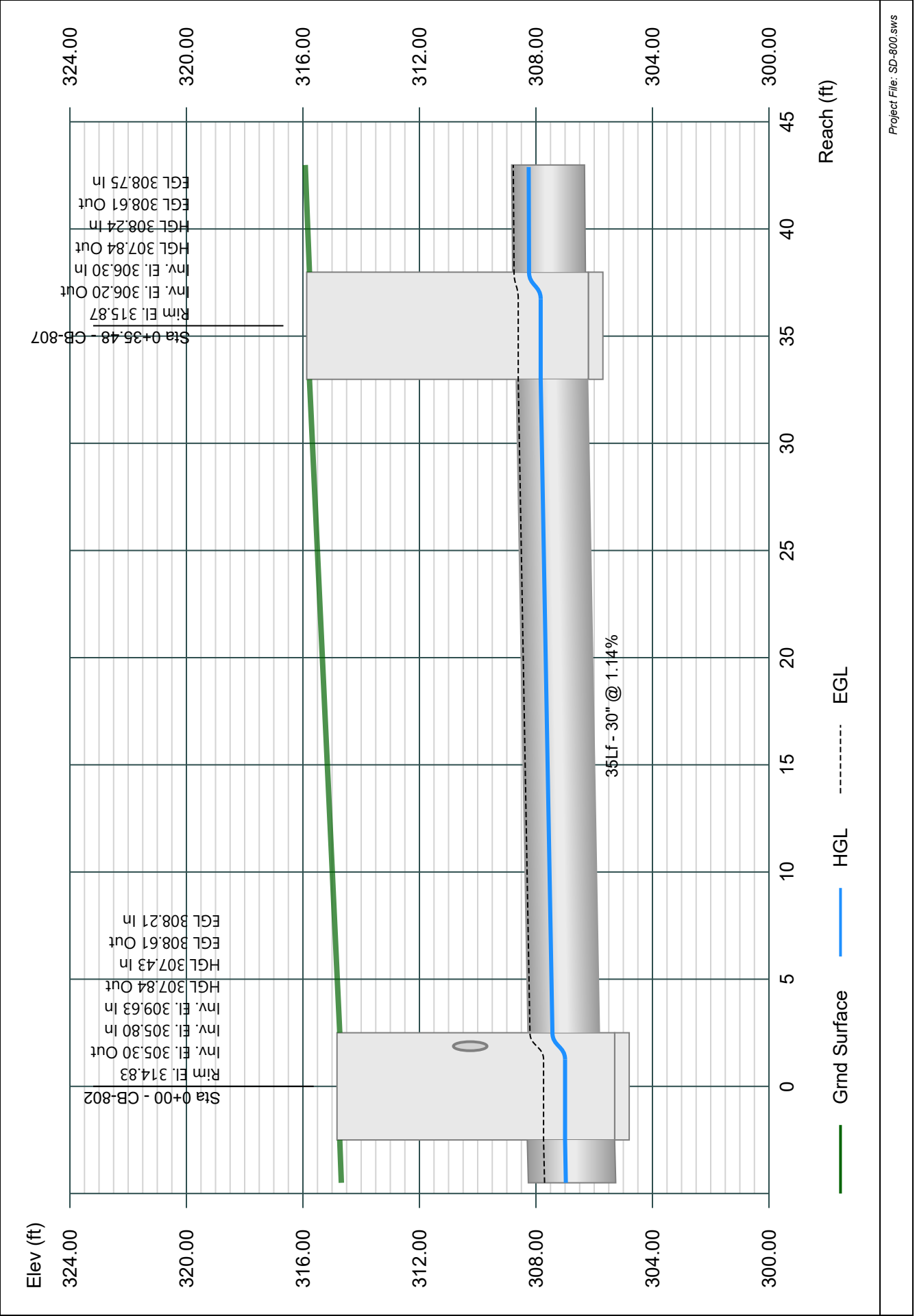


Line 3 - 802-807

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

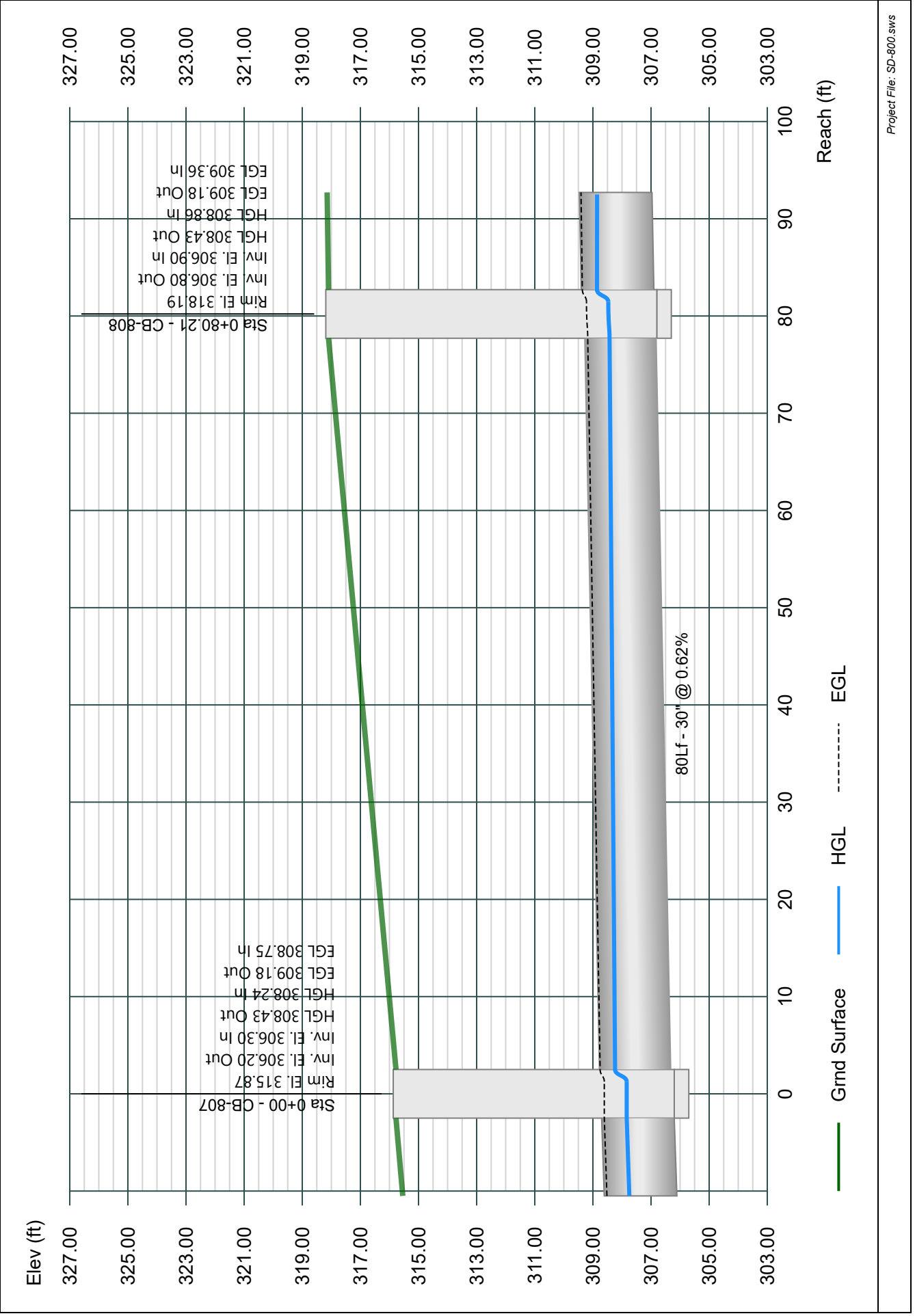


Line 4 - 807-808

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

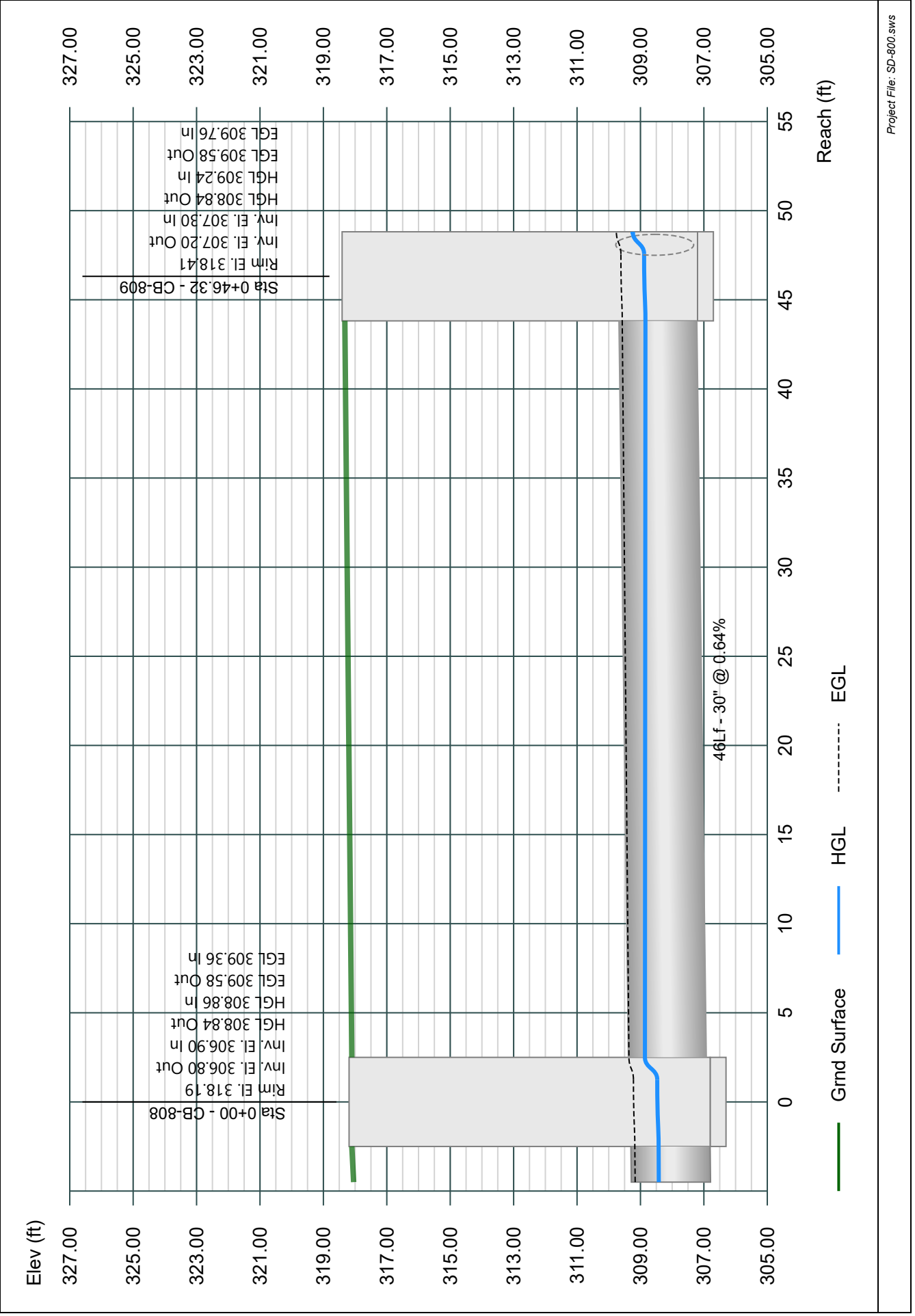


Line 5 - 808-809

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

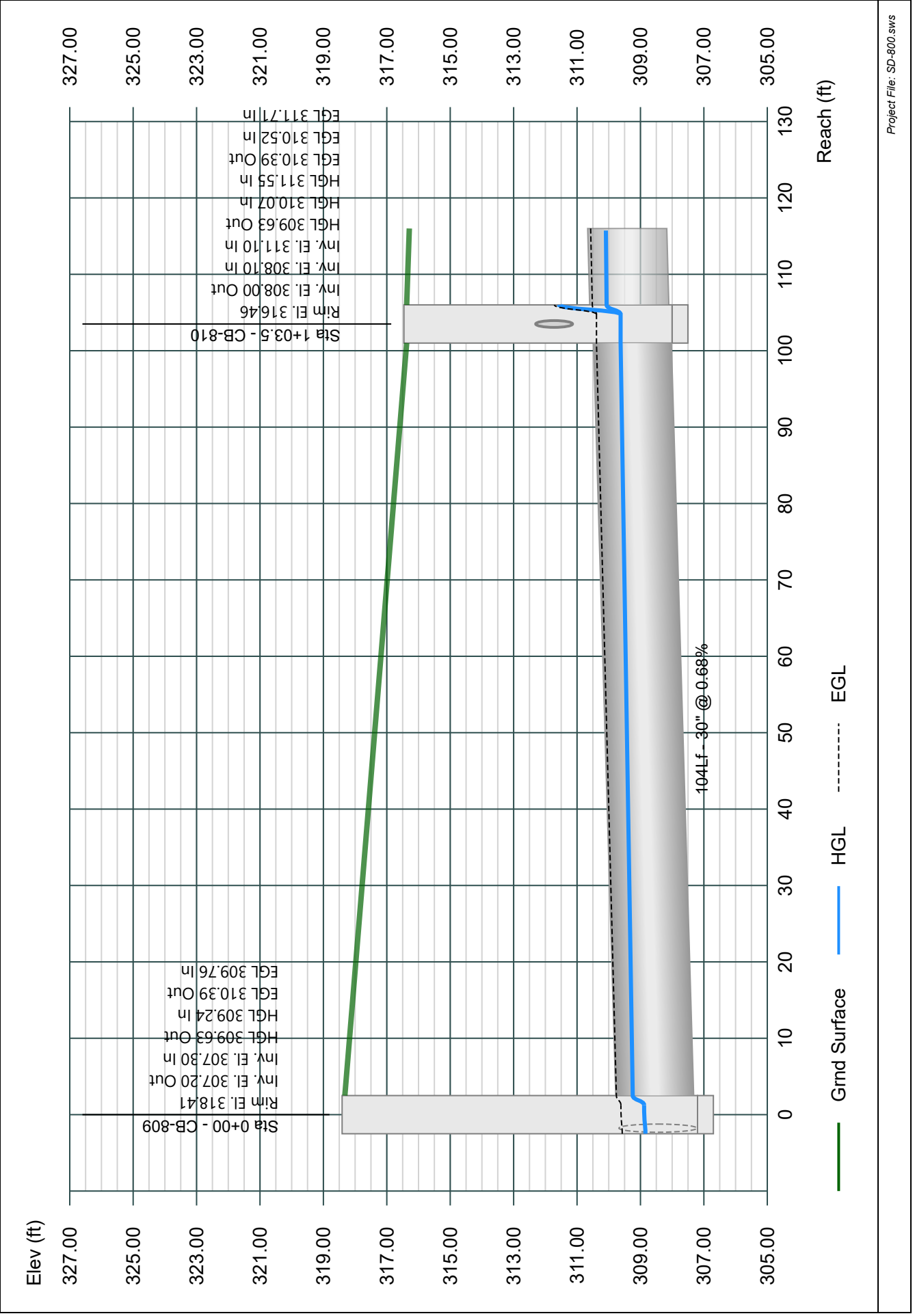


Line 6 - 809-810

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

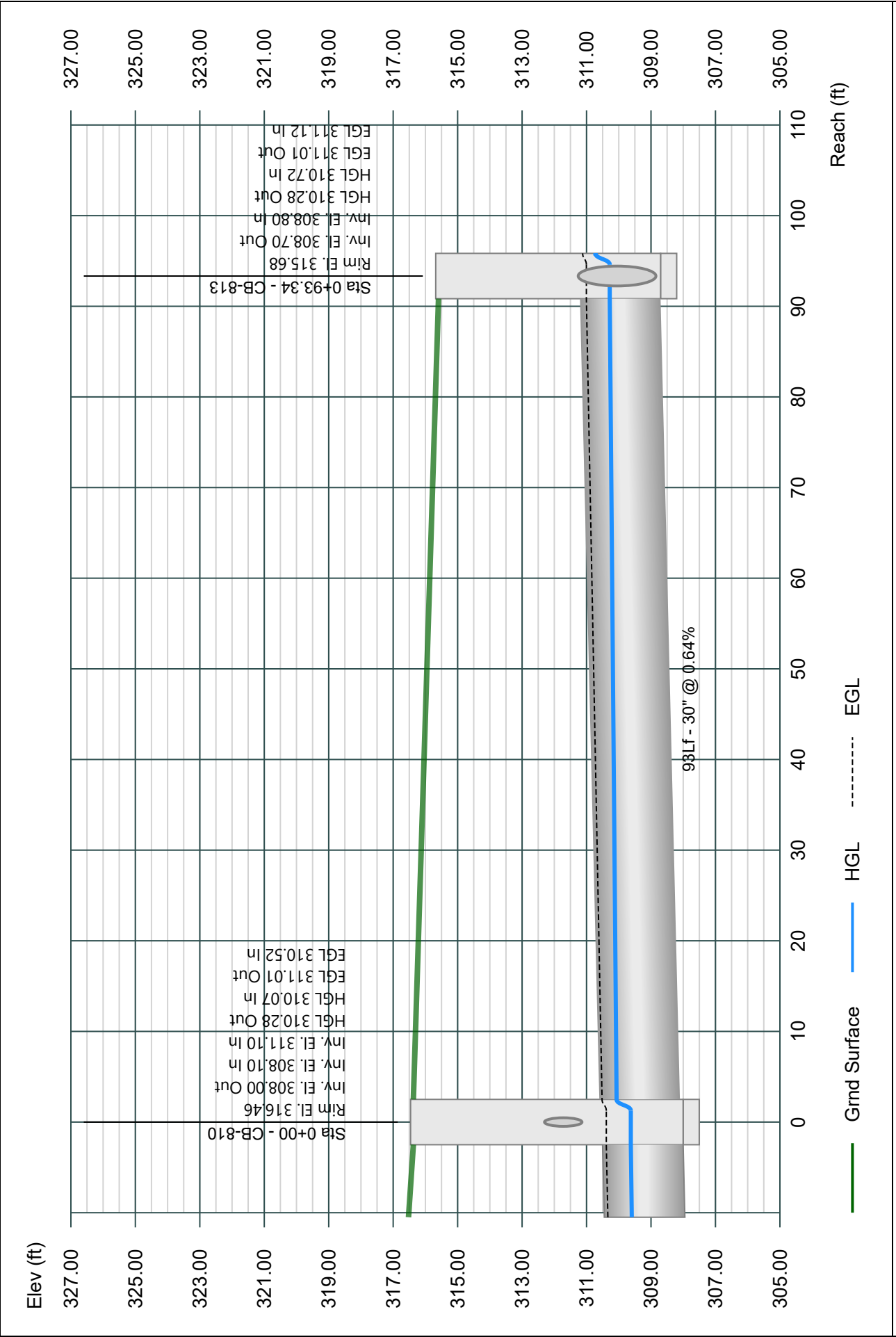


Line 7 - 810-813

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

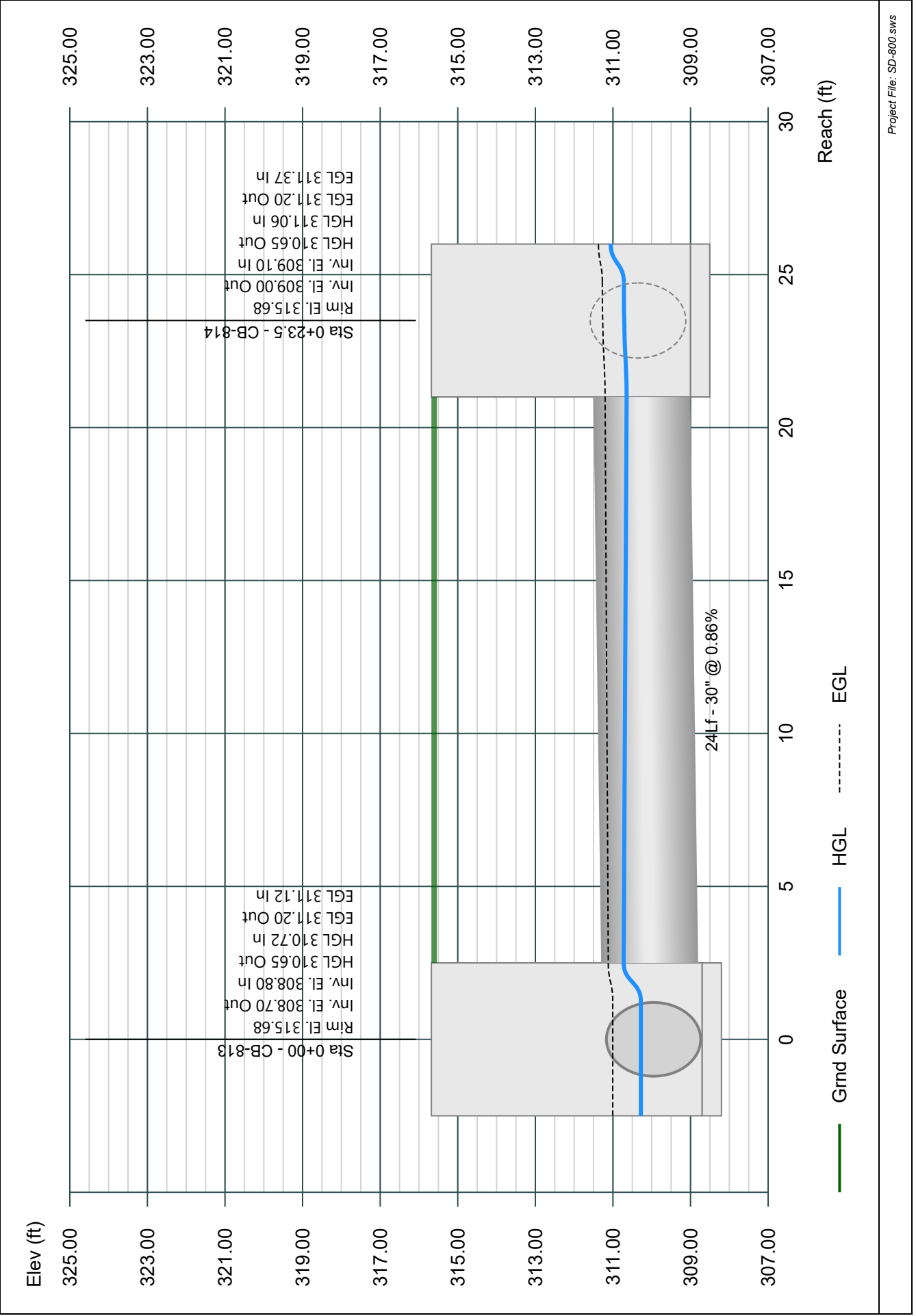


Line 8 - 813-814

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

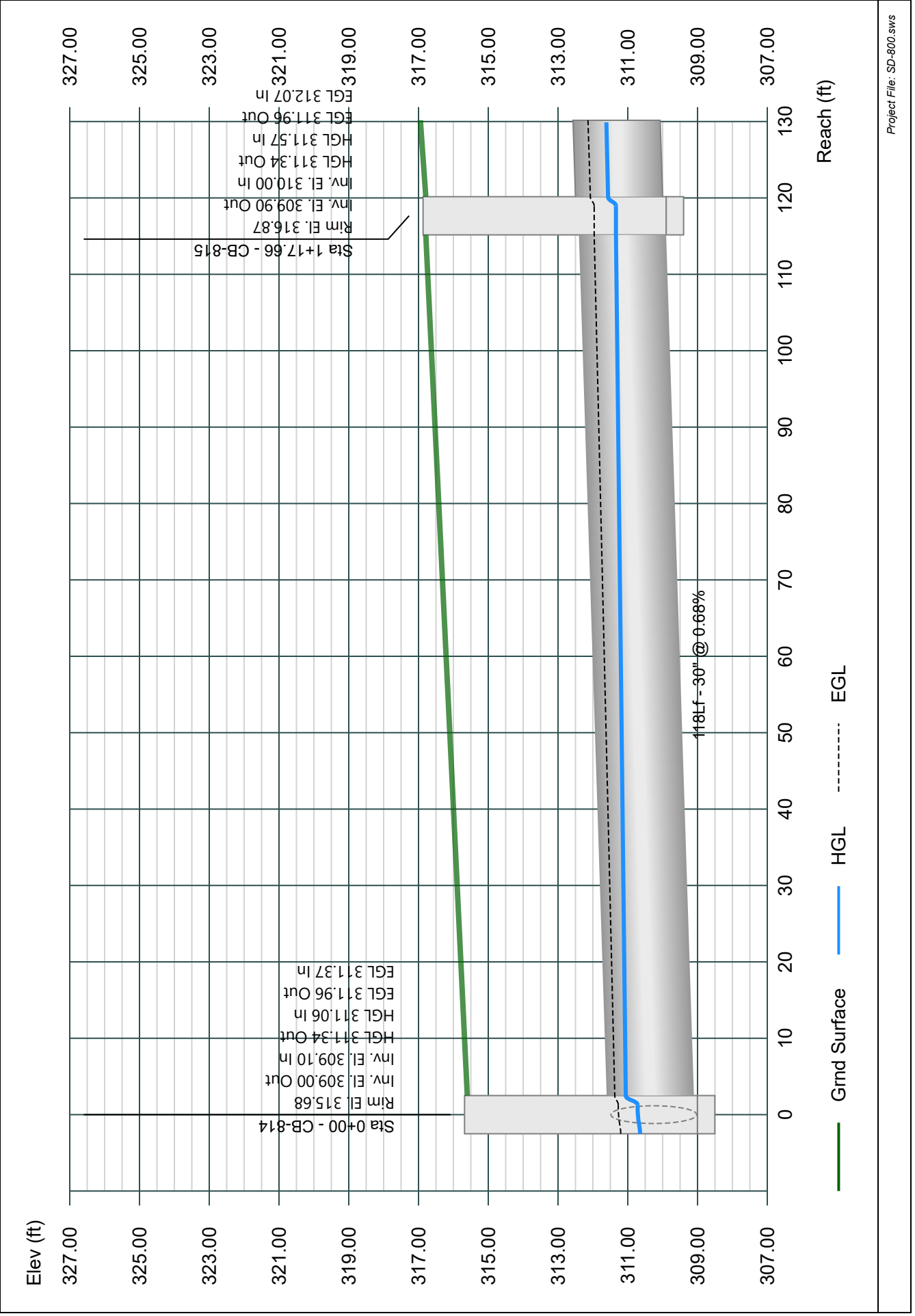


Line 9 - 814-815

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

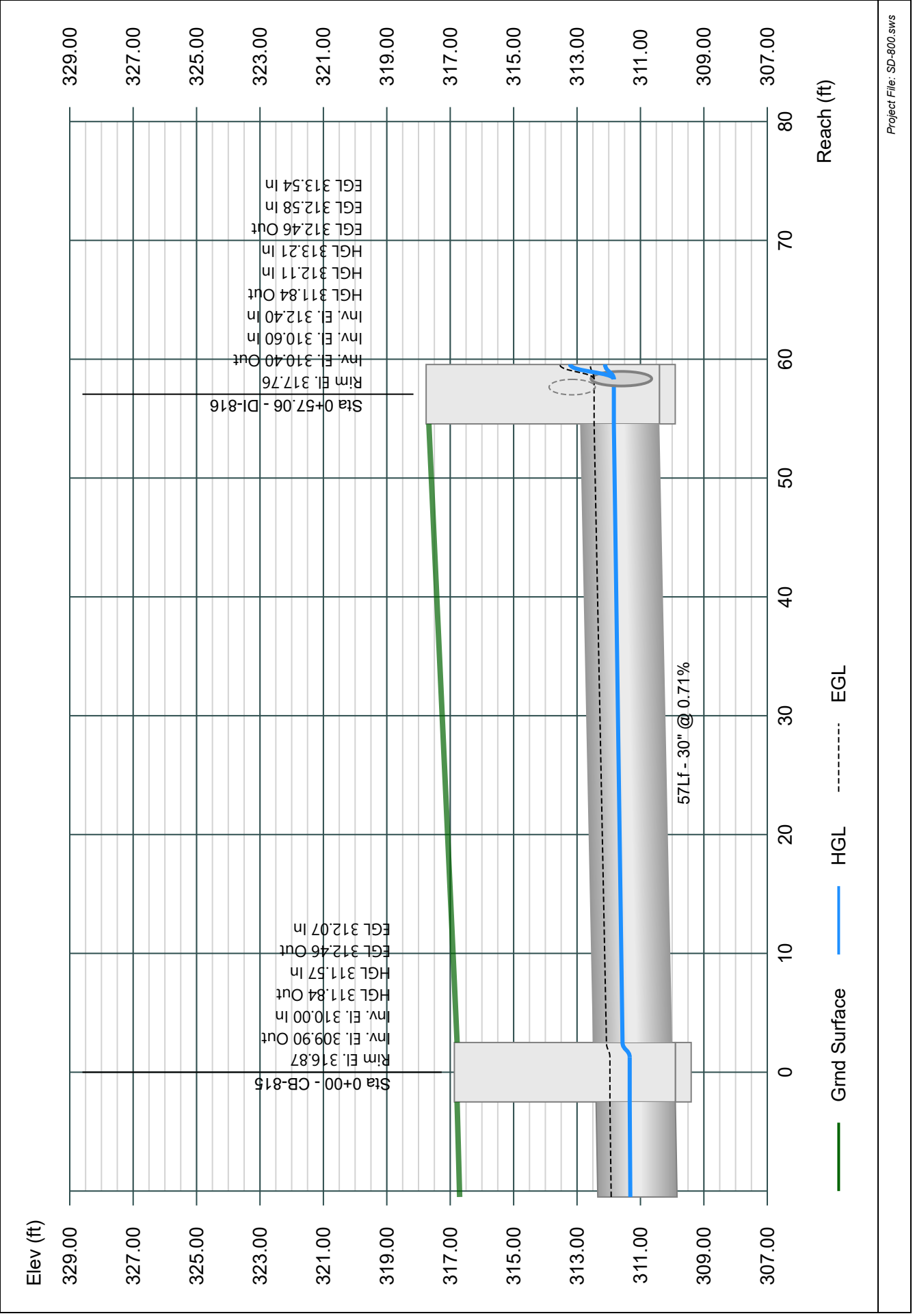


Line 10 - 815-816

Project Name: SD-800

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

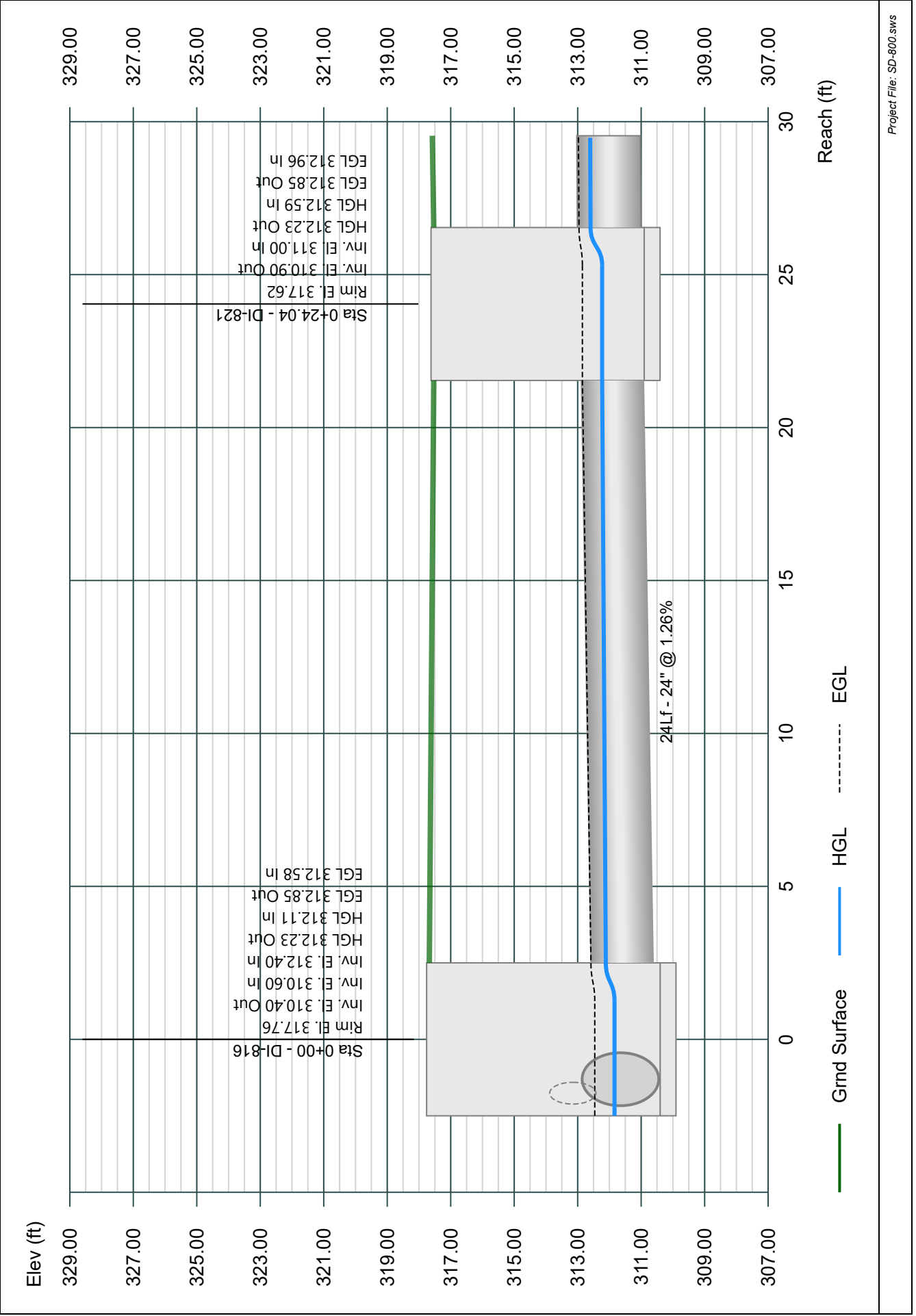


Line 11 - 816-821

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

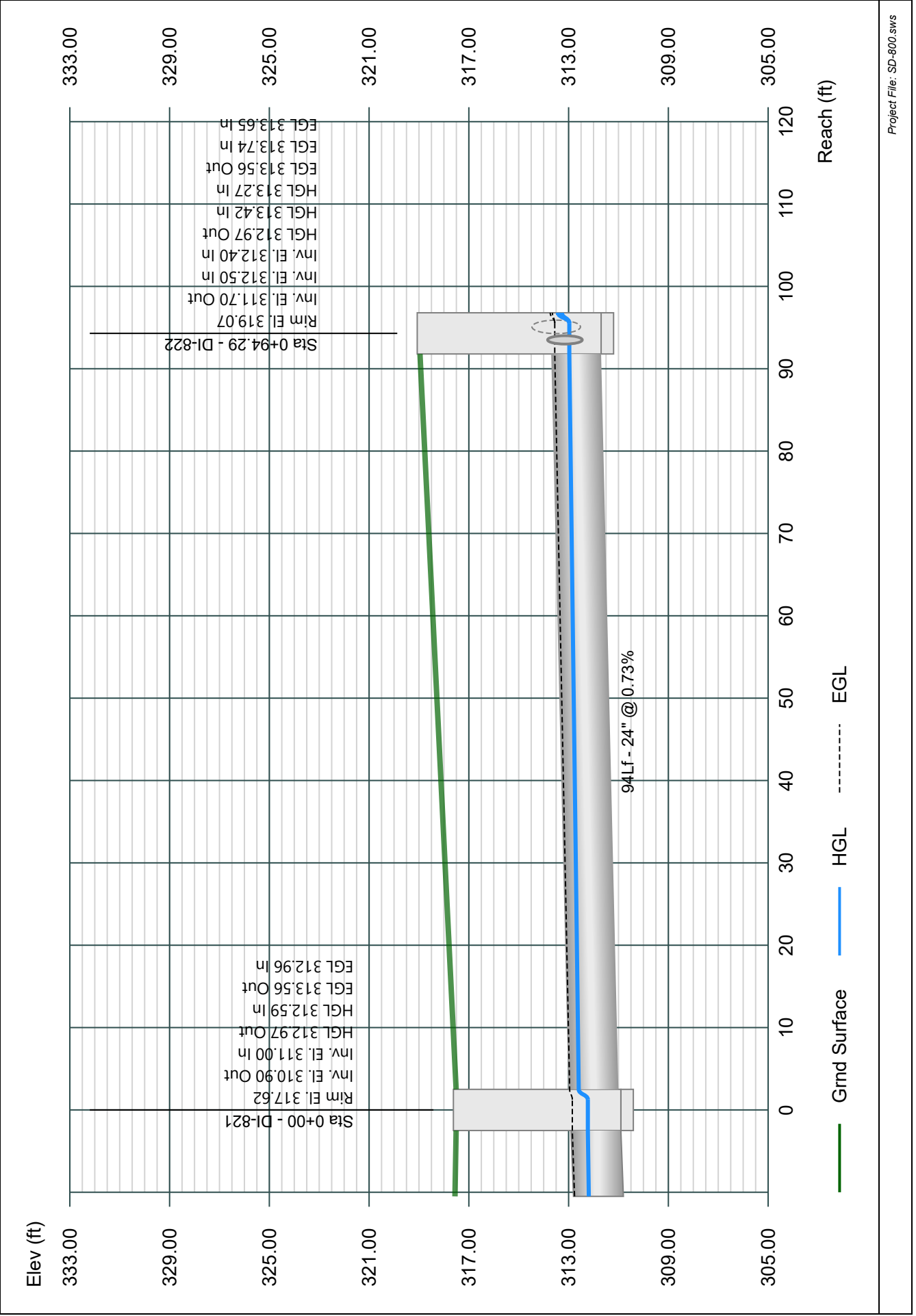


Line 12 - 821-822

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

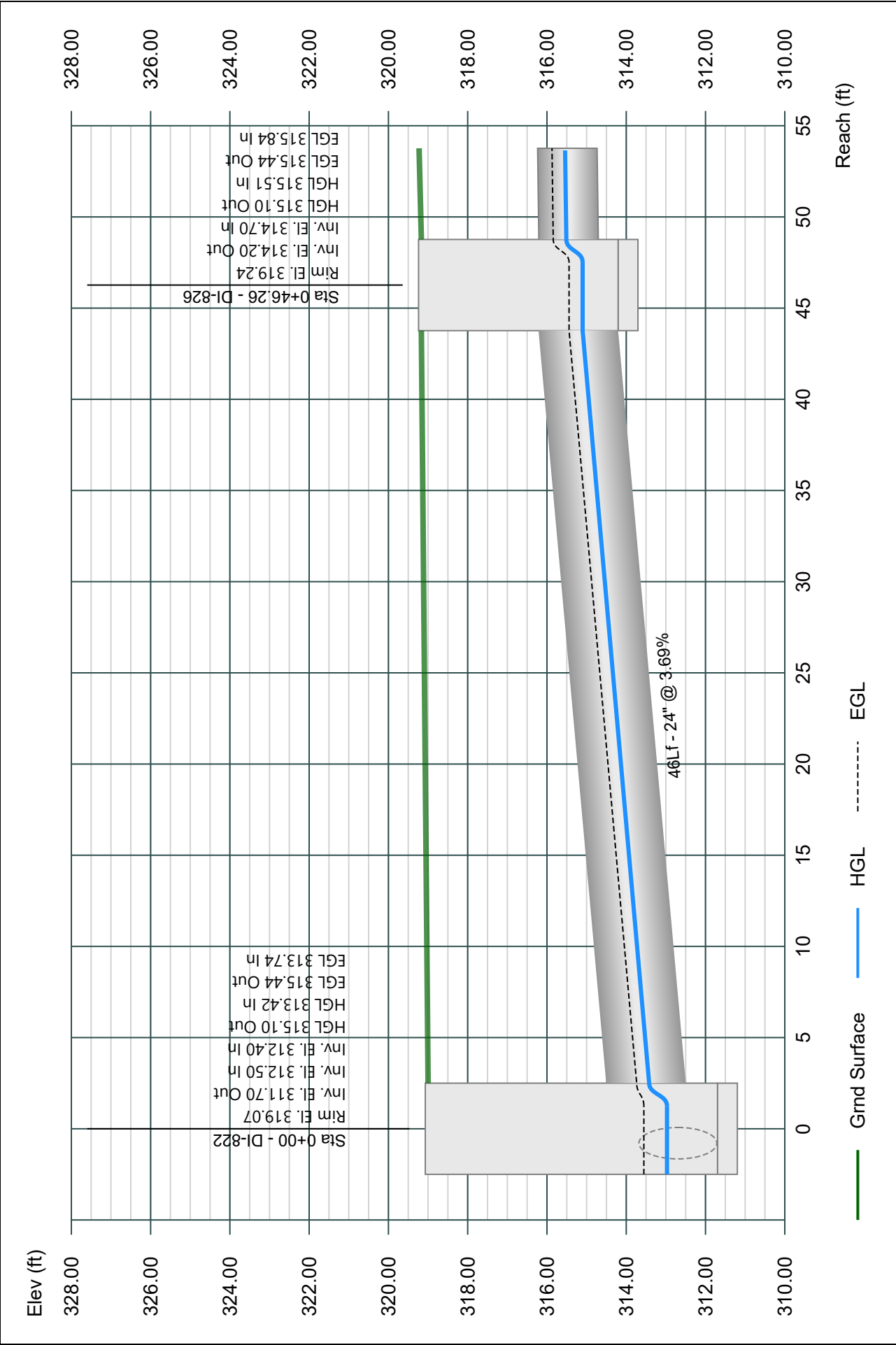


Line 13 - 822-826

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

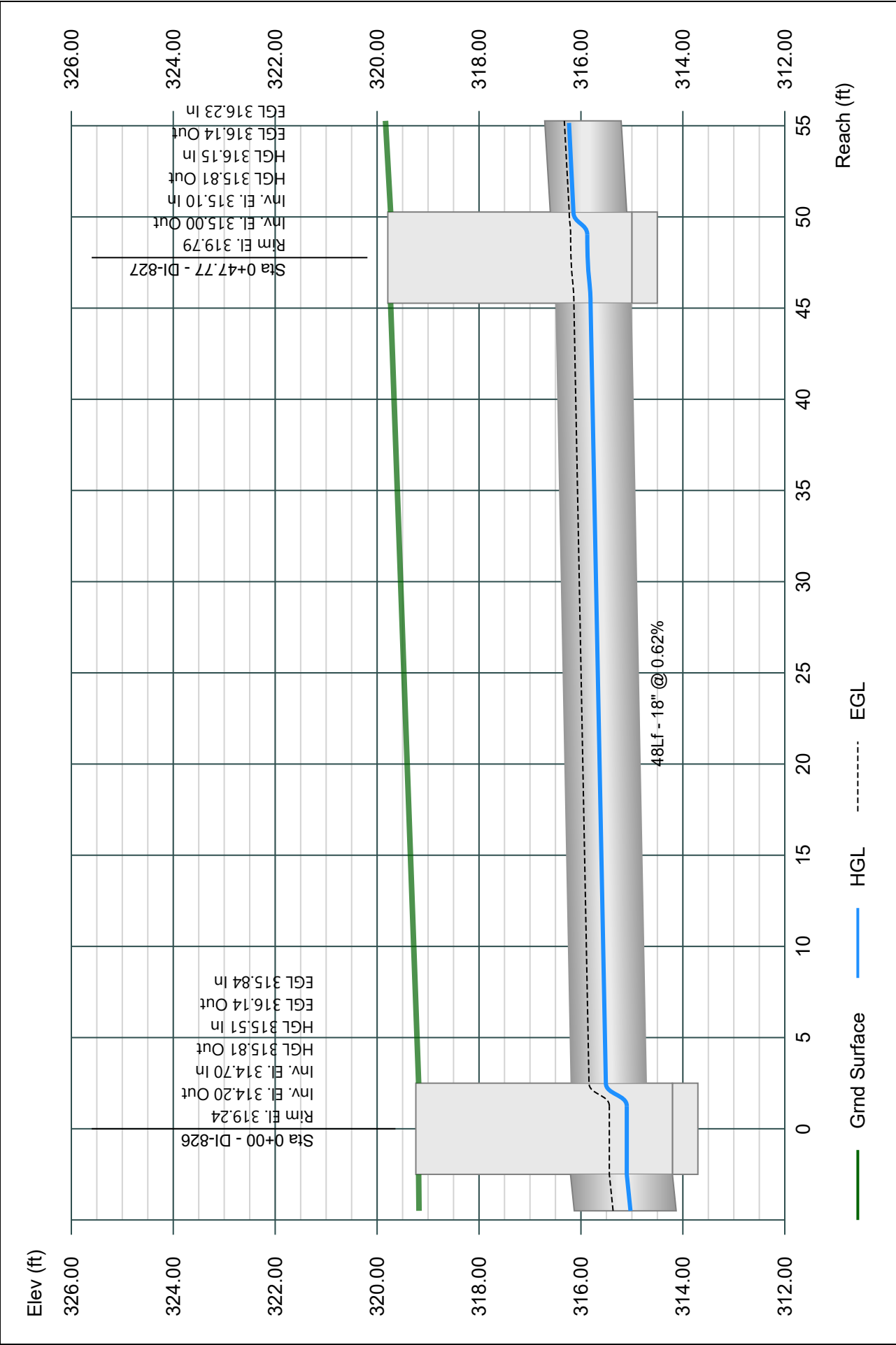
02-26-2024



Line 14 - 826-827

Project Name: SD-800
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

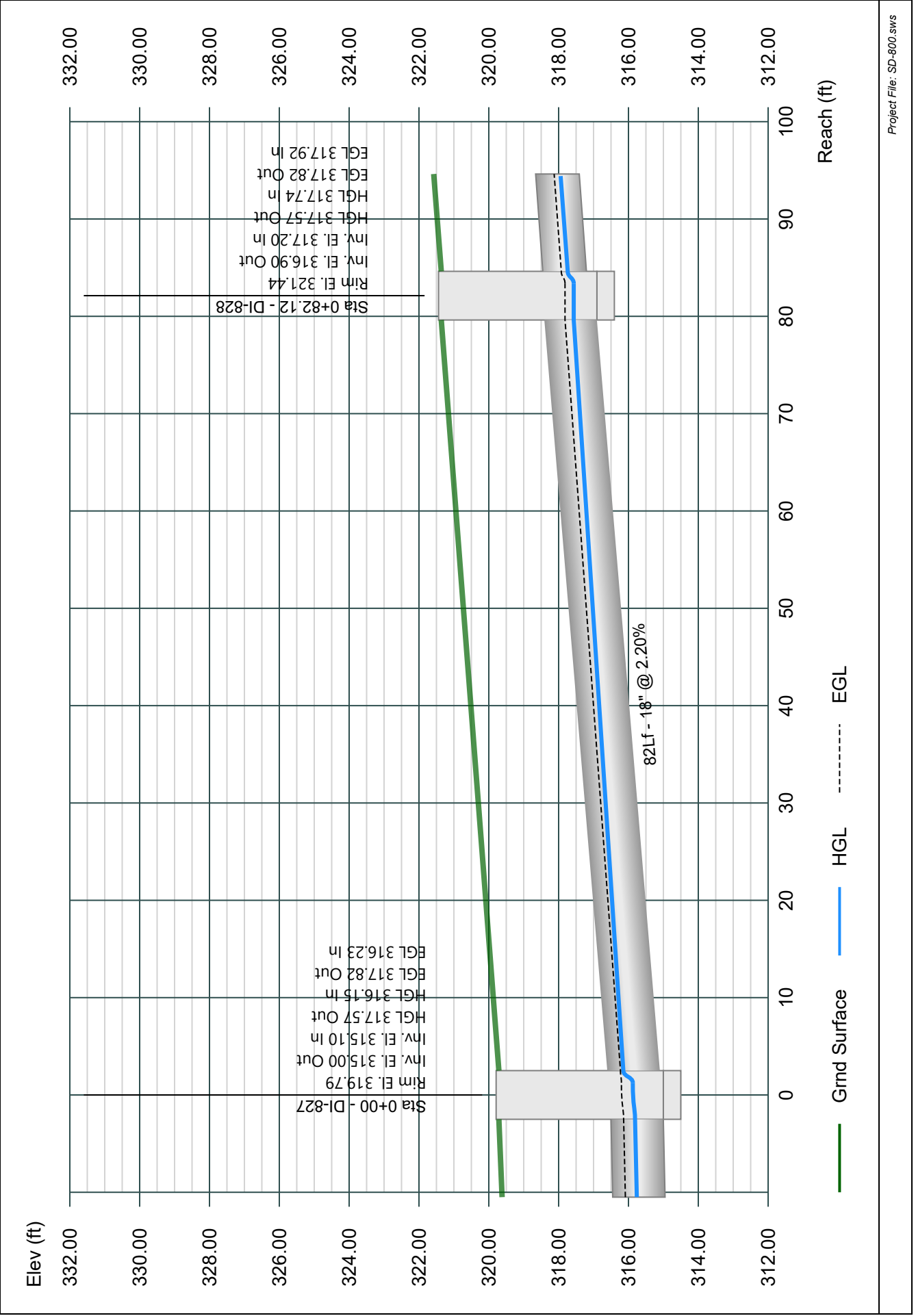


Line 15 - 827-828

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

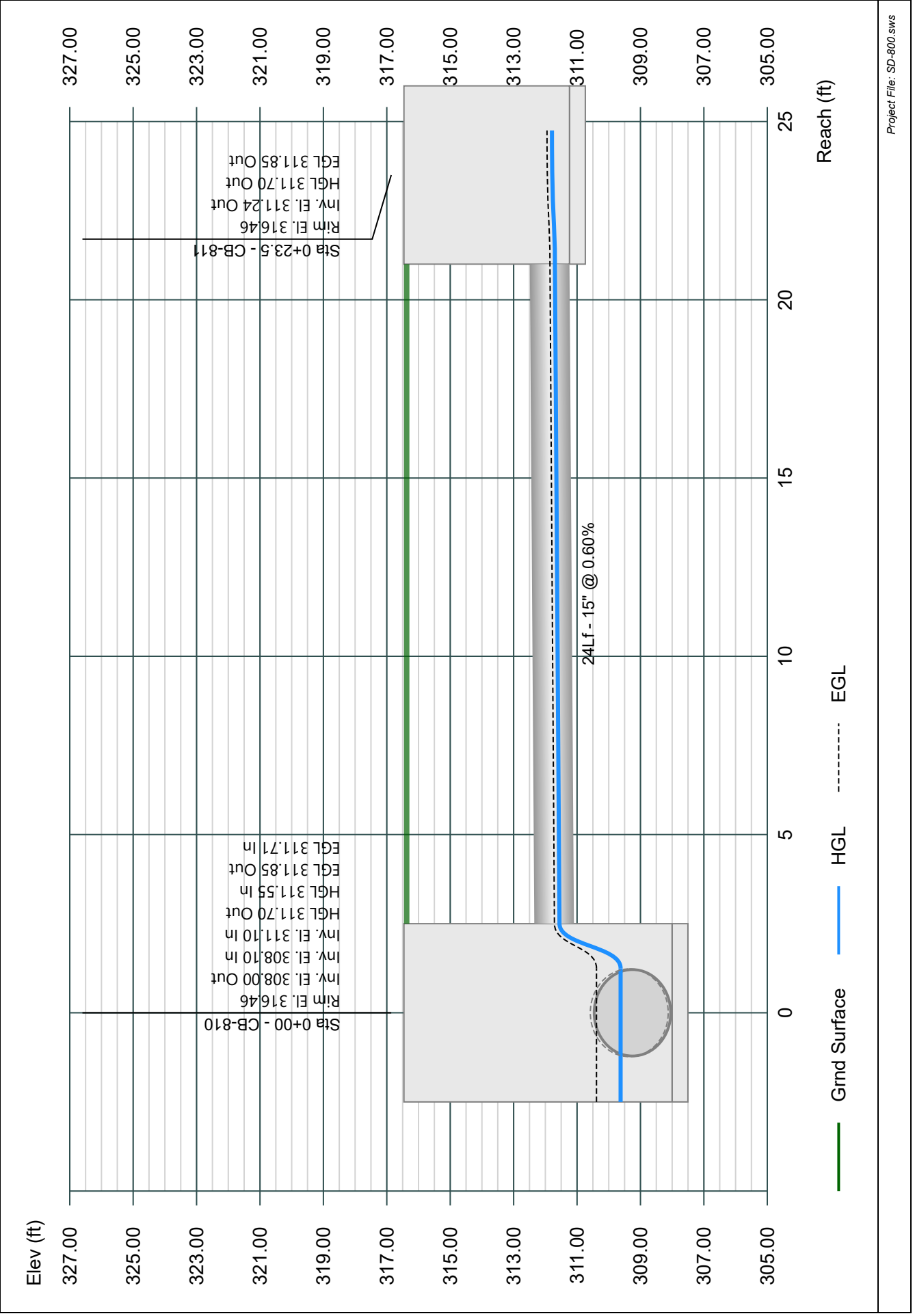


Line 16 - 810-811

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

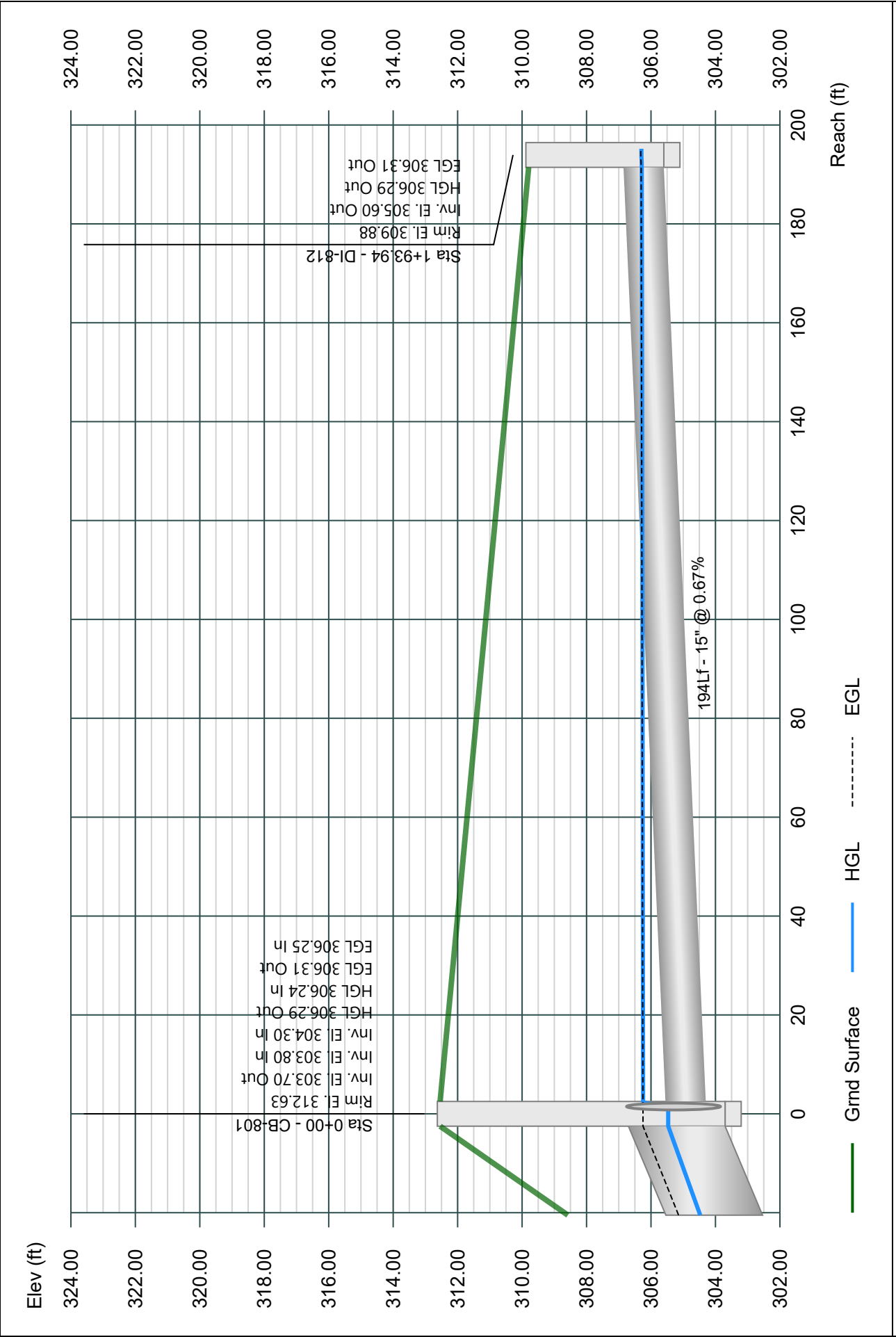
02-26-2024



Line 17 - 810-812

Project Name: SD-800
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

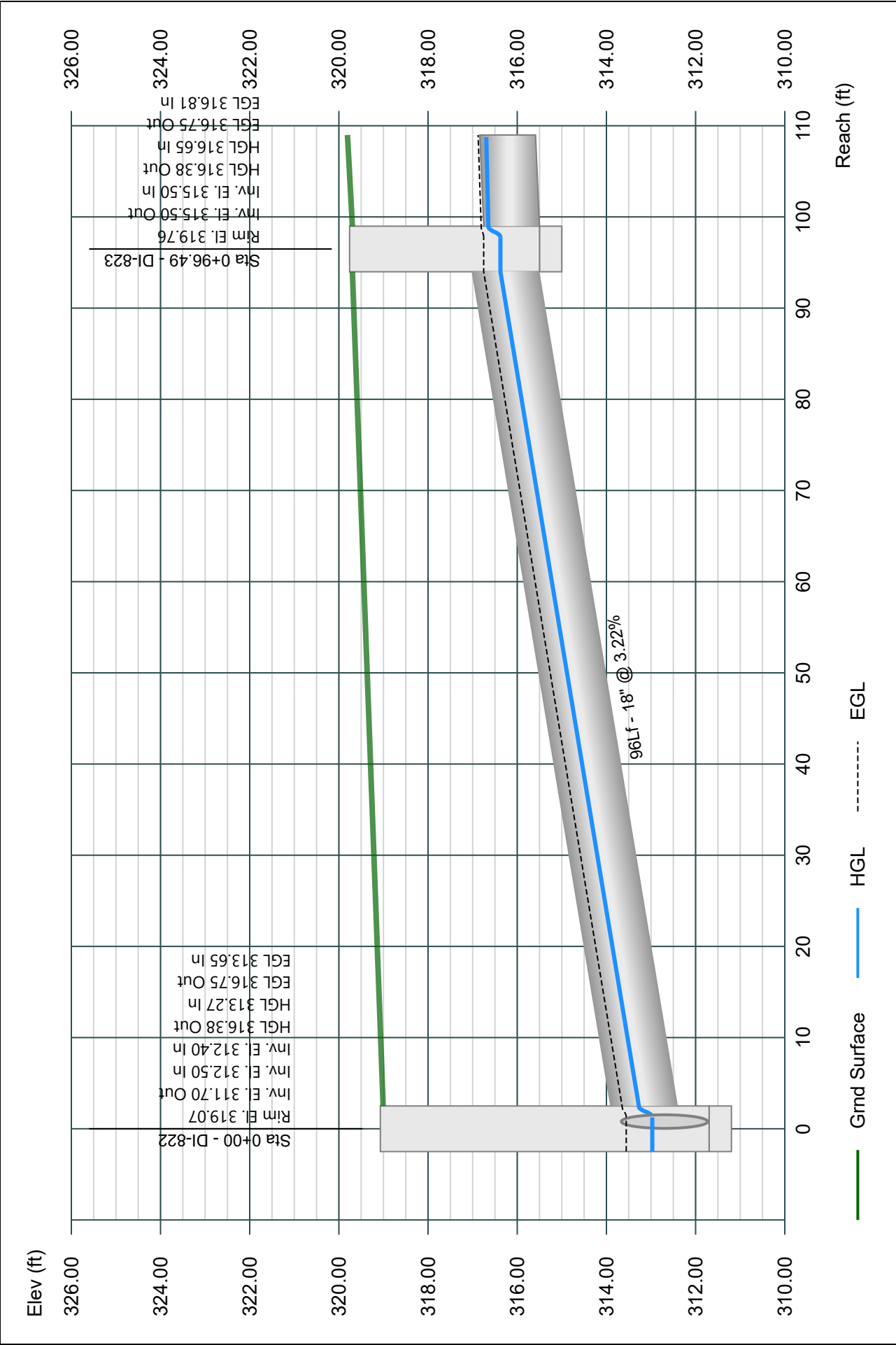


Line 18 - 822-823

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

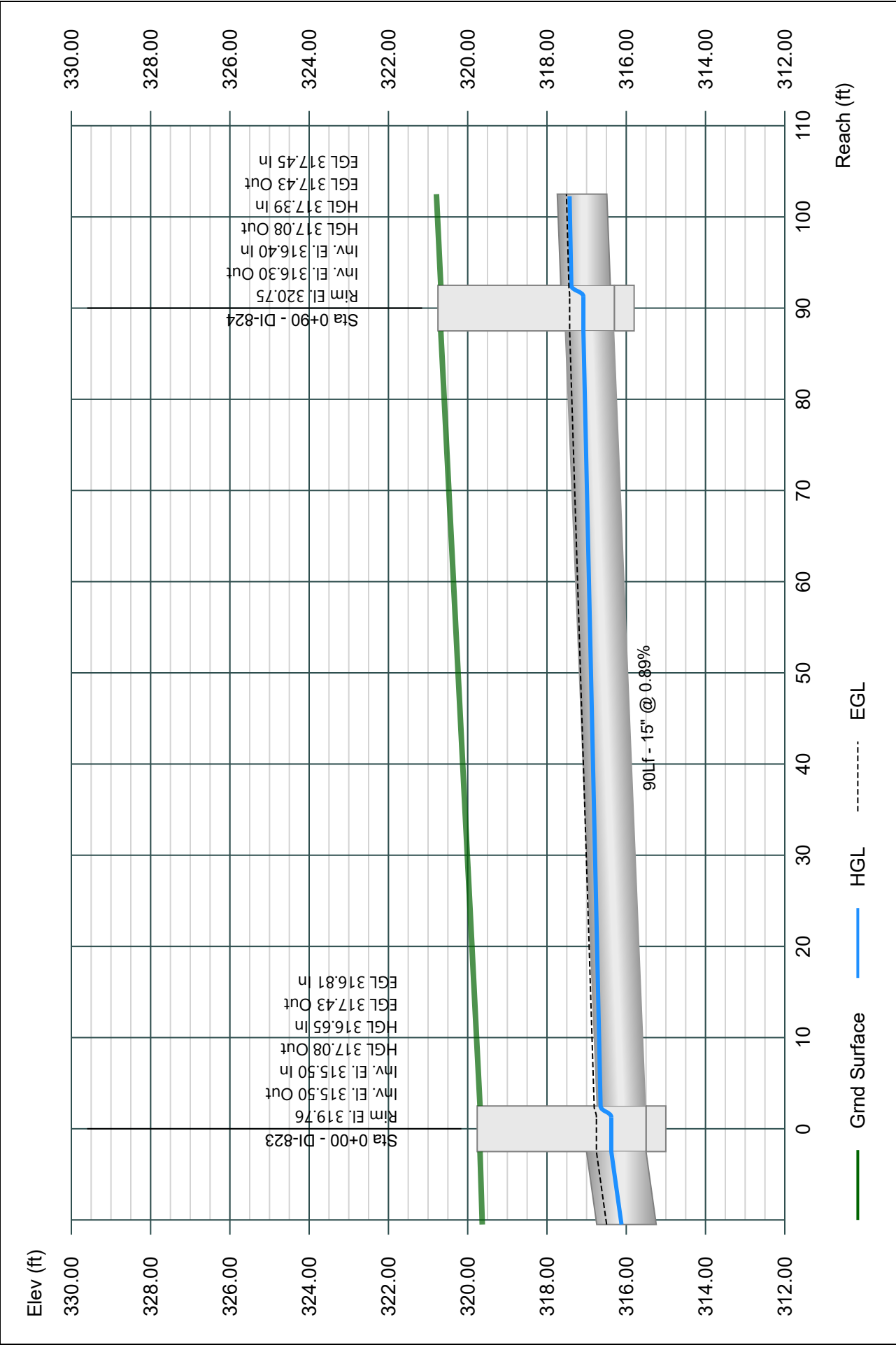


Line 19 - 823-824

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

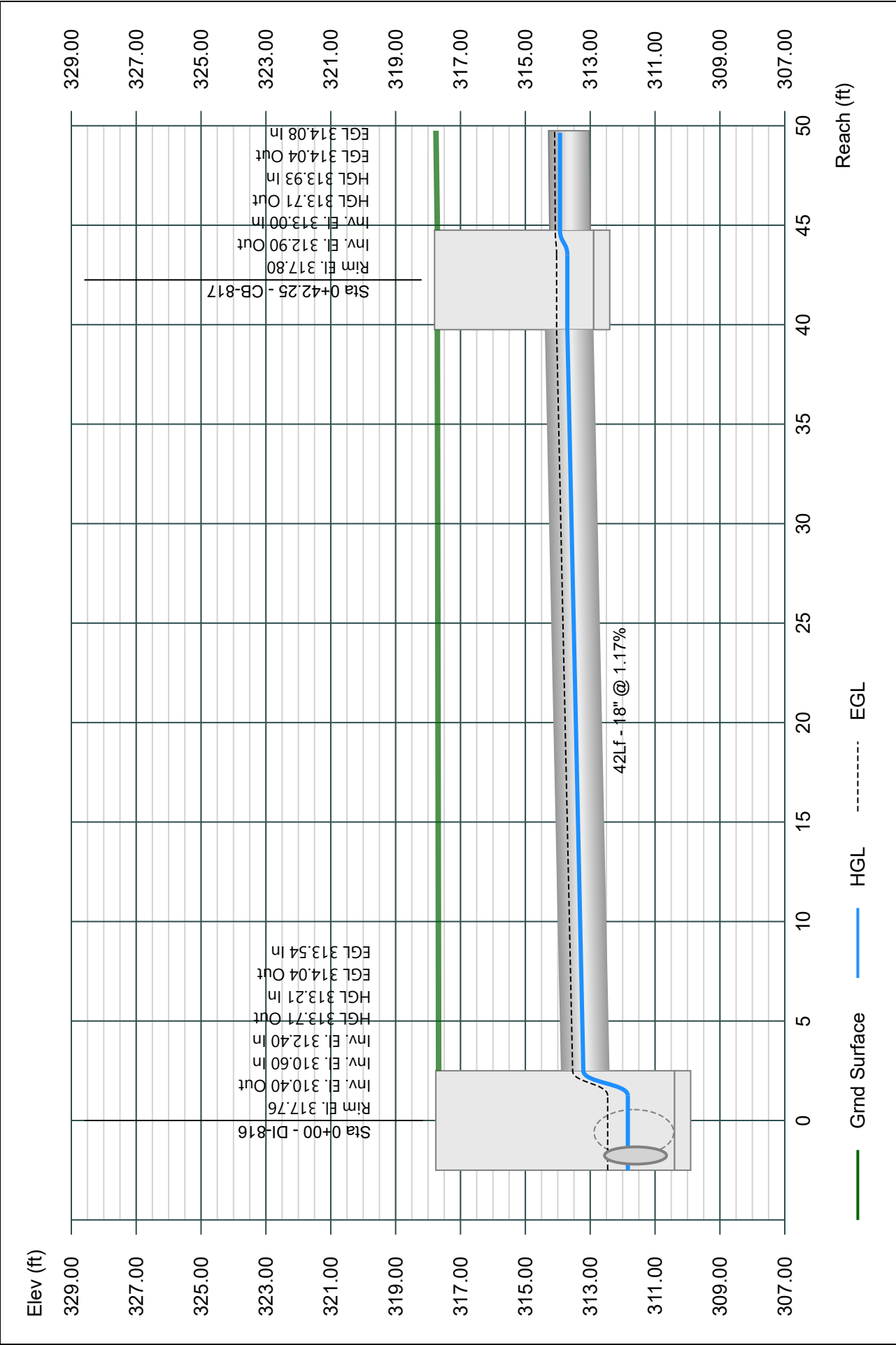


Line 20 - 816-817

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

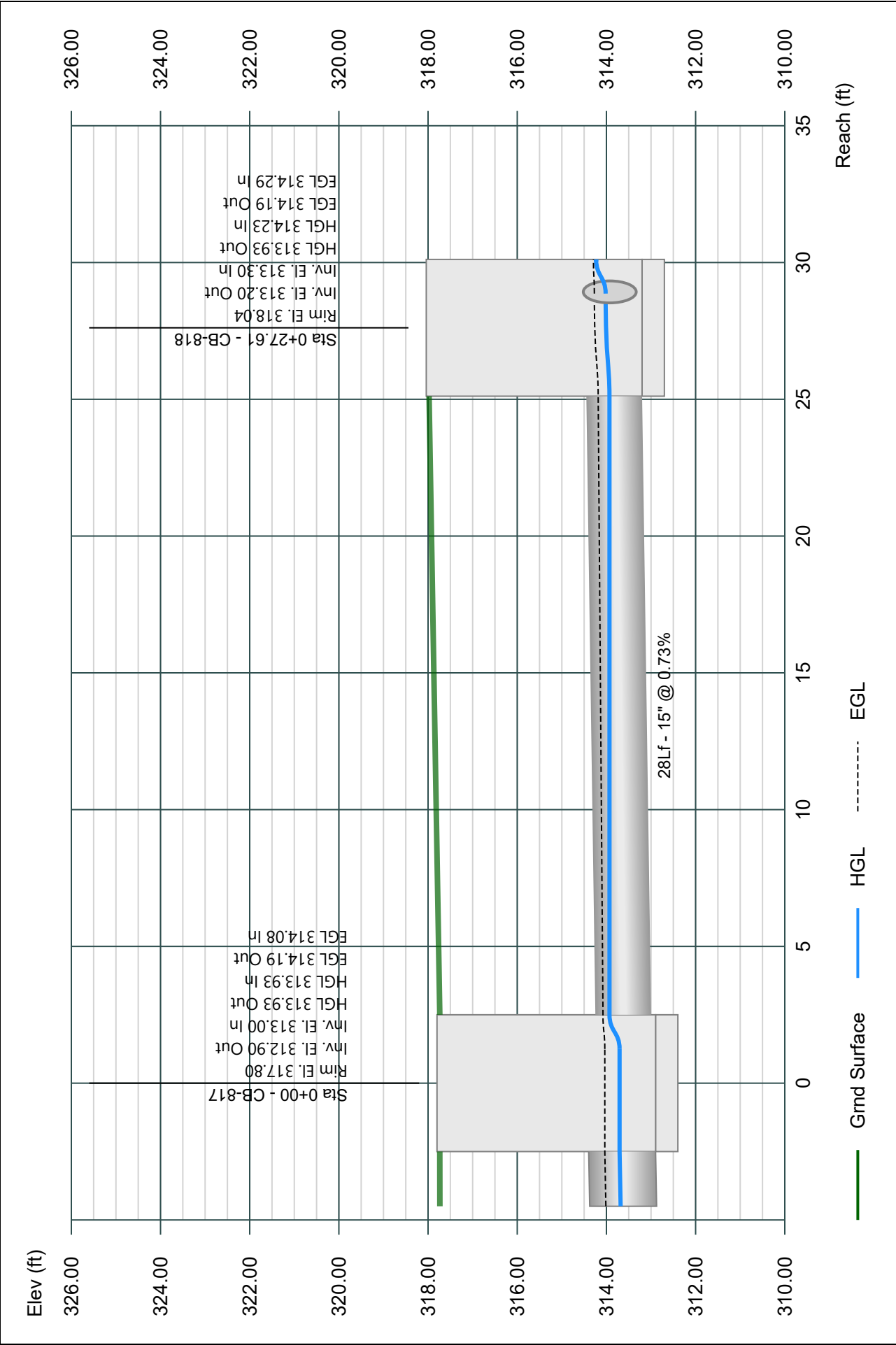


Line 21 - 817-818

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

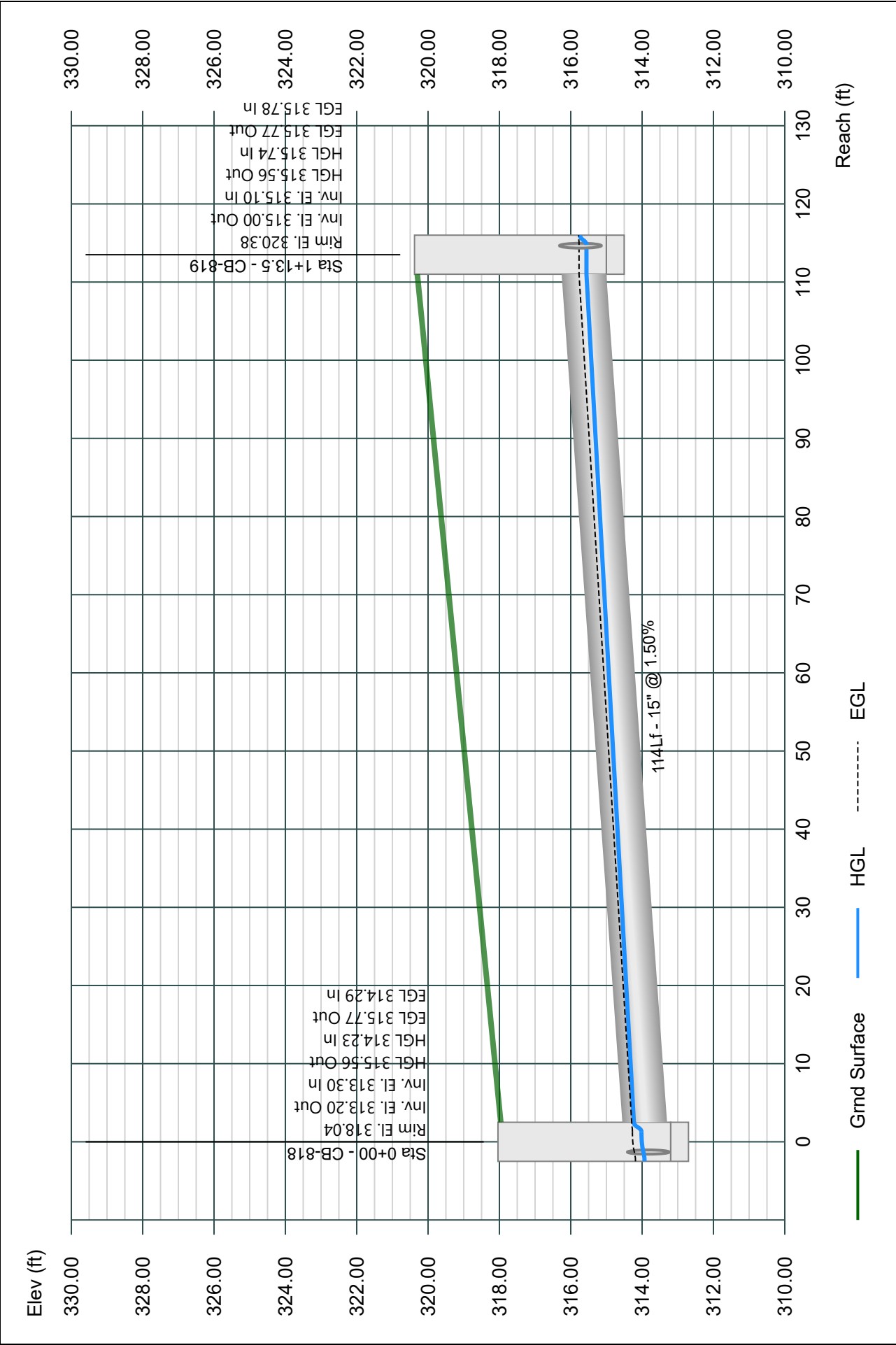


Line 22 - 818-819

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

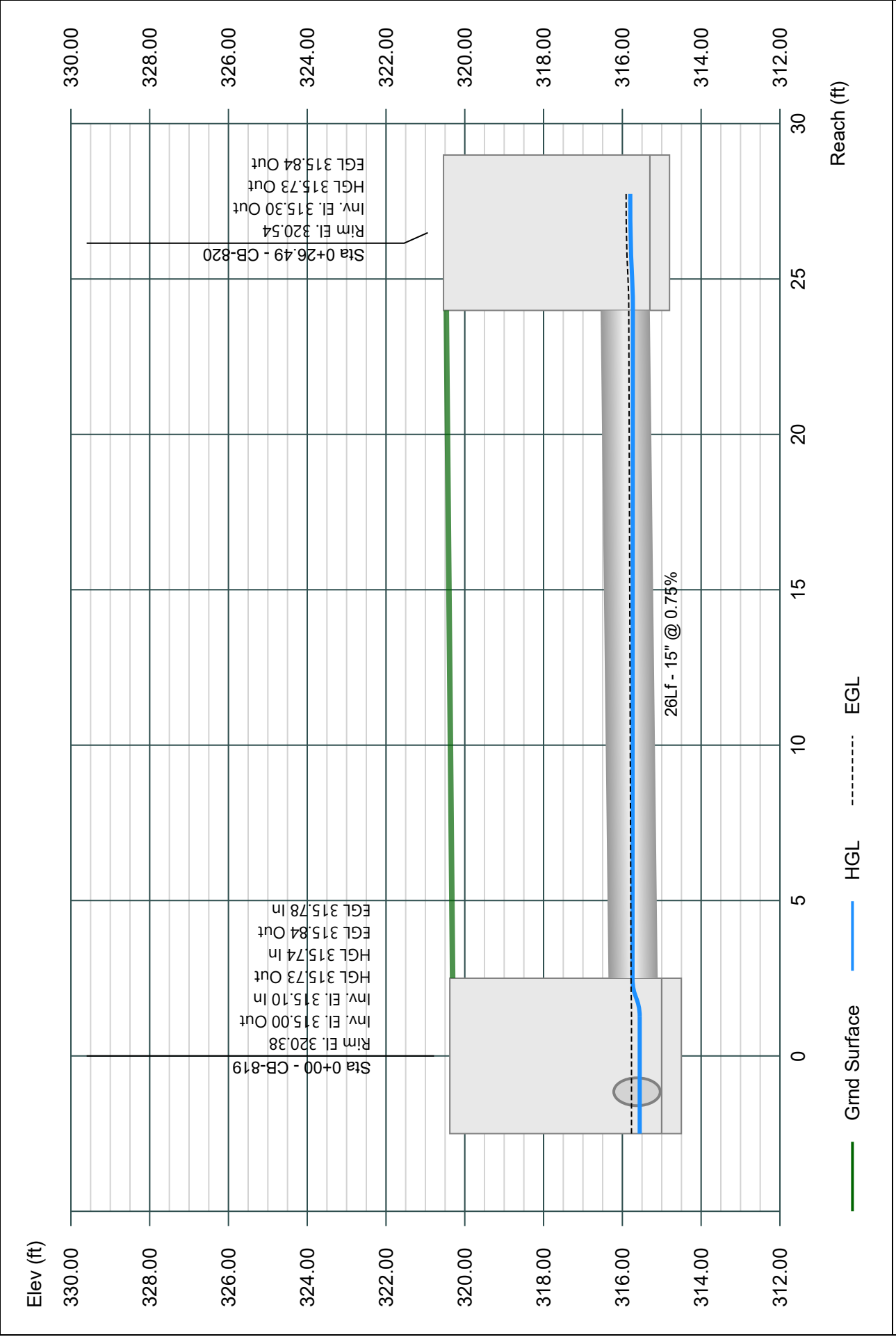


Line 23 - 819-820

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

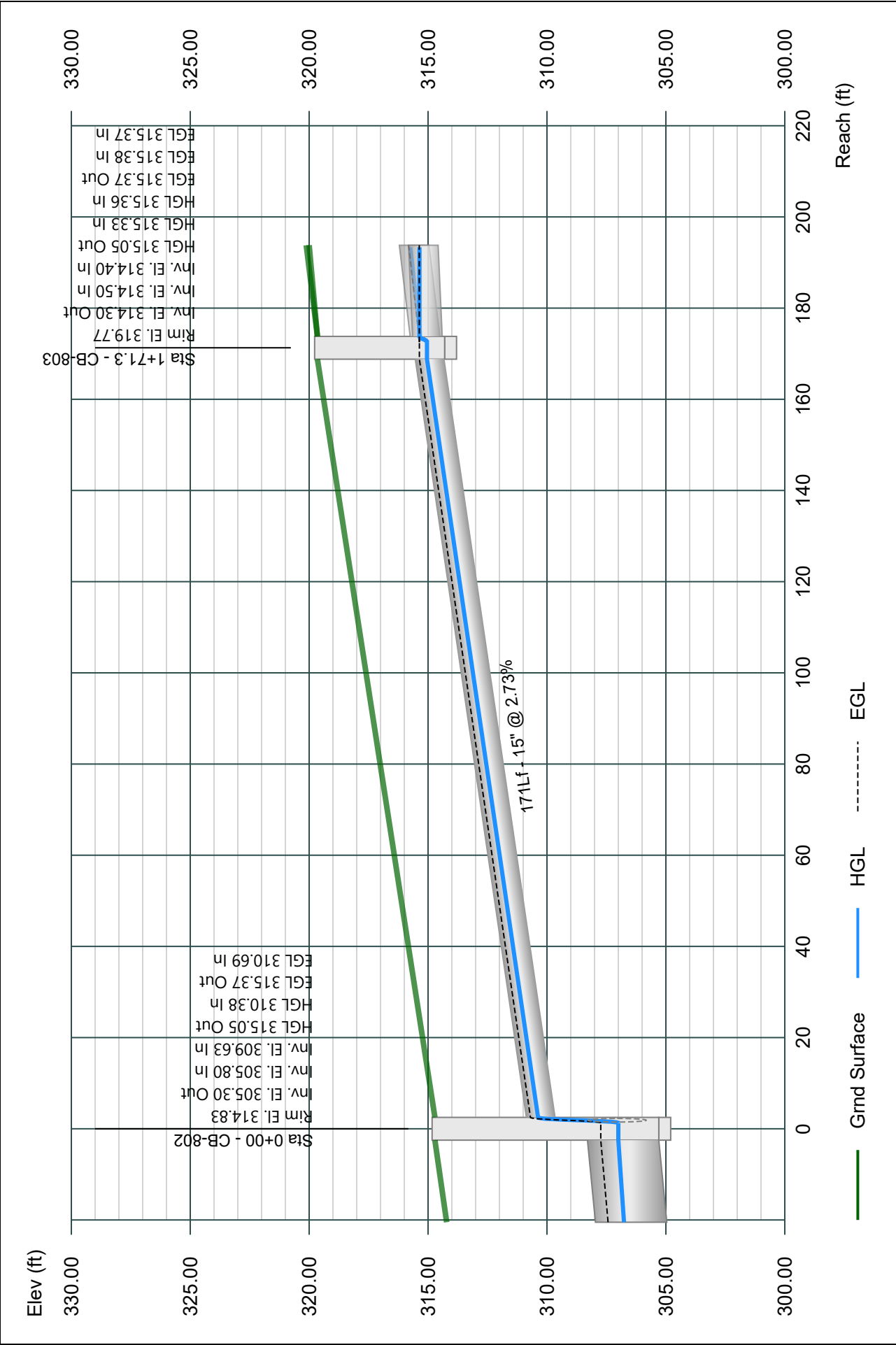


Line 24 - 802-803

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

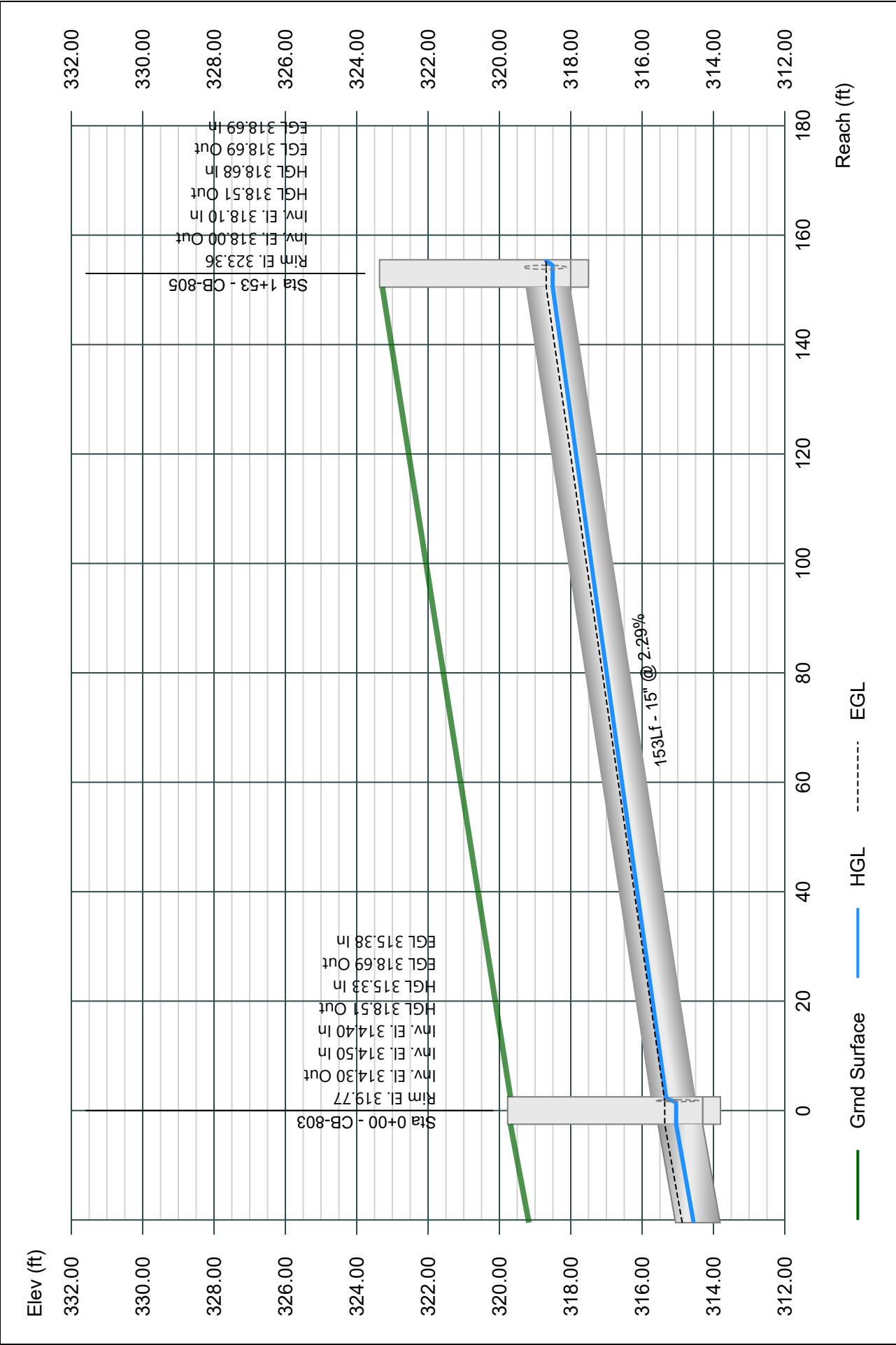


Line 25 - 803-805

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

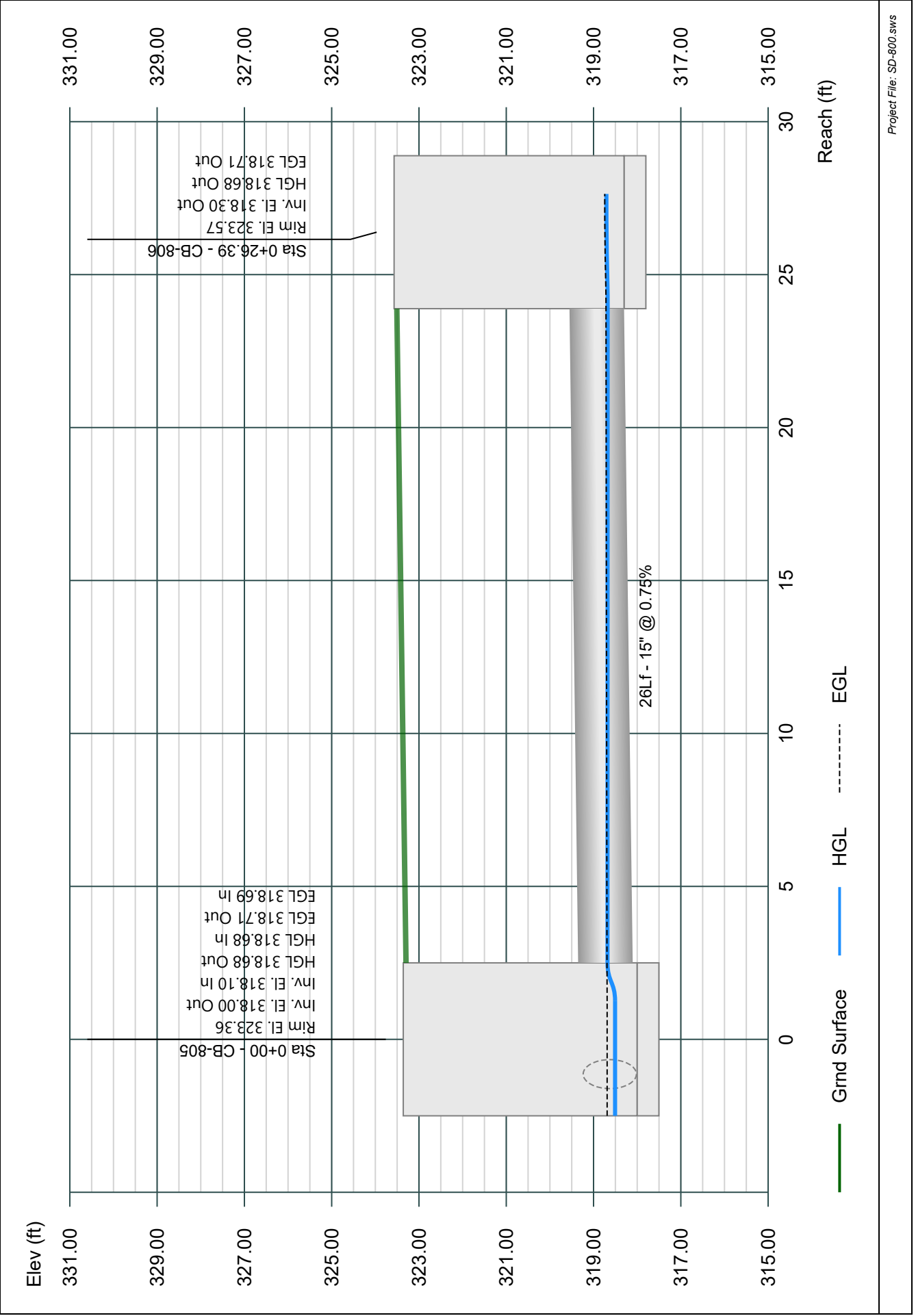


Line 26 - 805-806

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

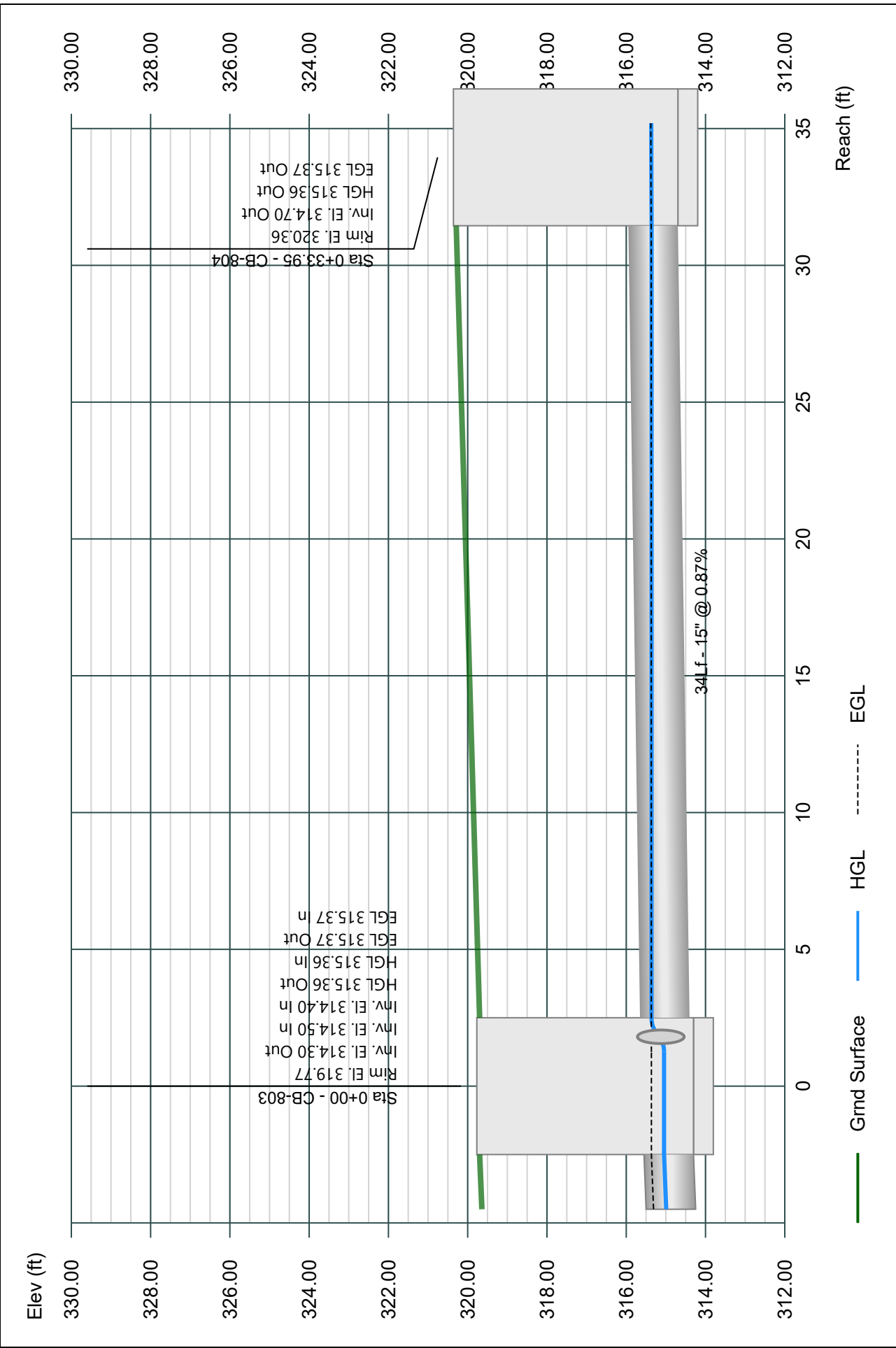


Line 27 - 803-804

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-800

02-26-2024

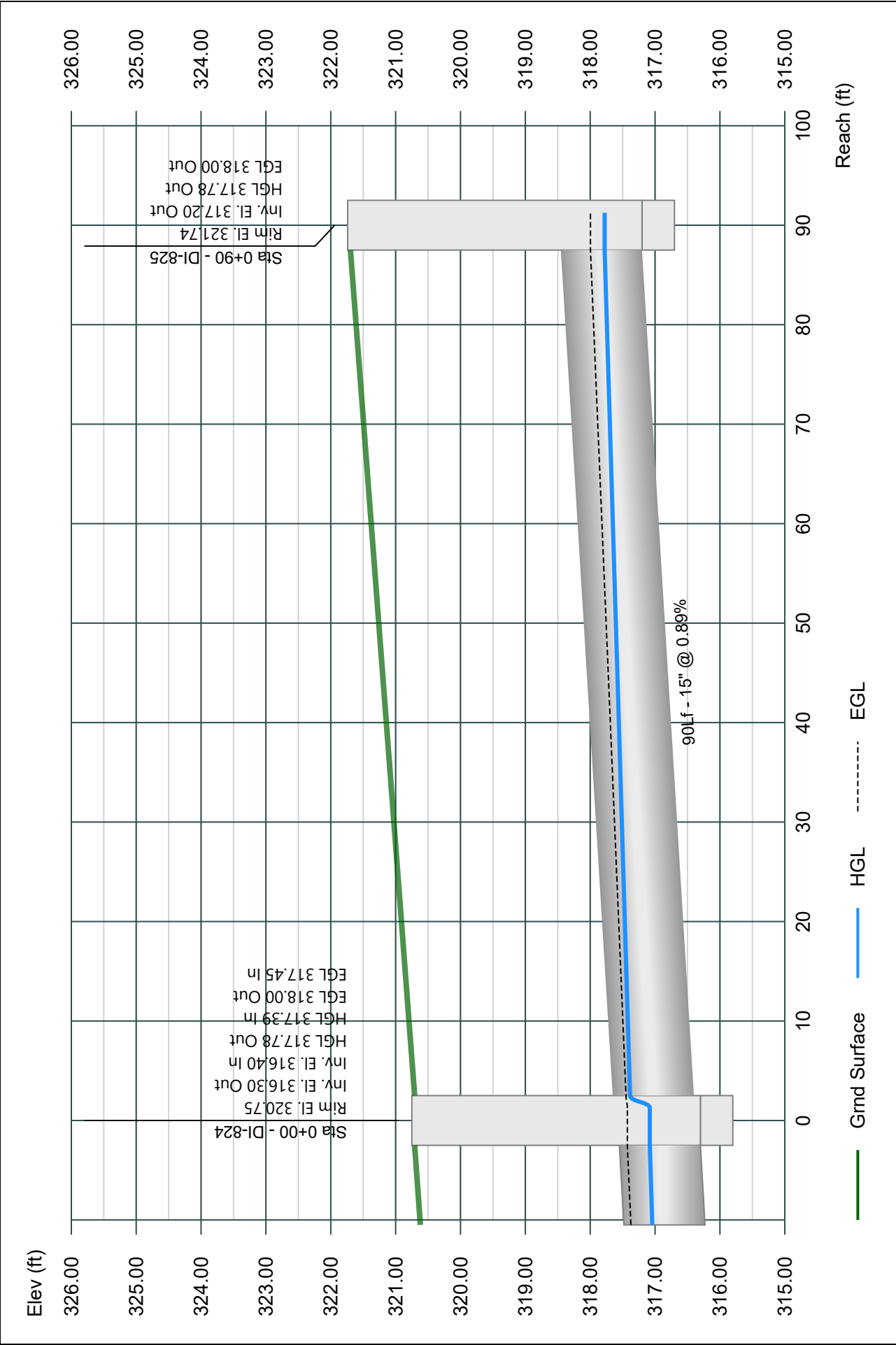


Line 28 - 824-825

Project Name: SD-800

Stormwater Studio 2024 v 3.0.0.33

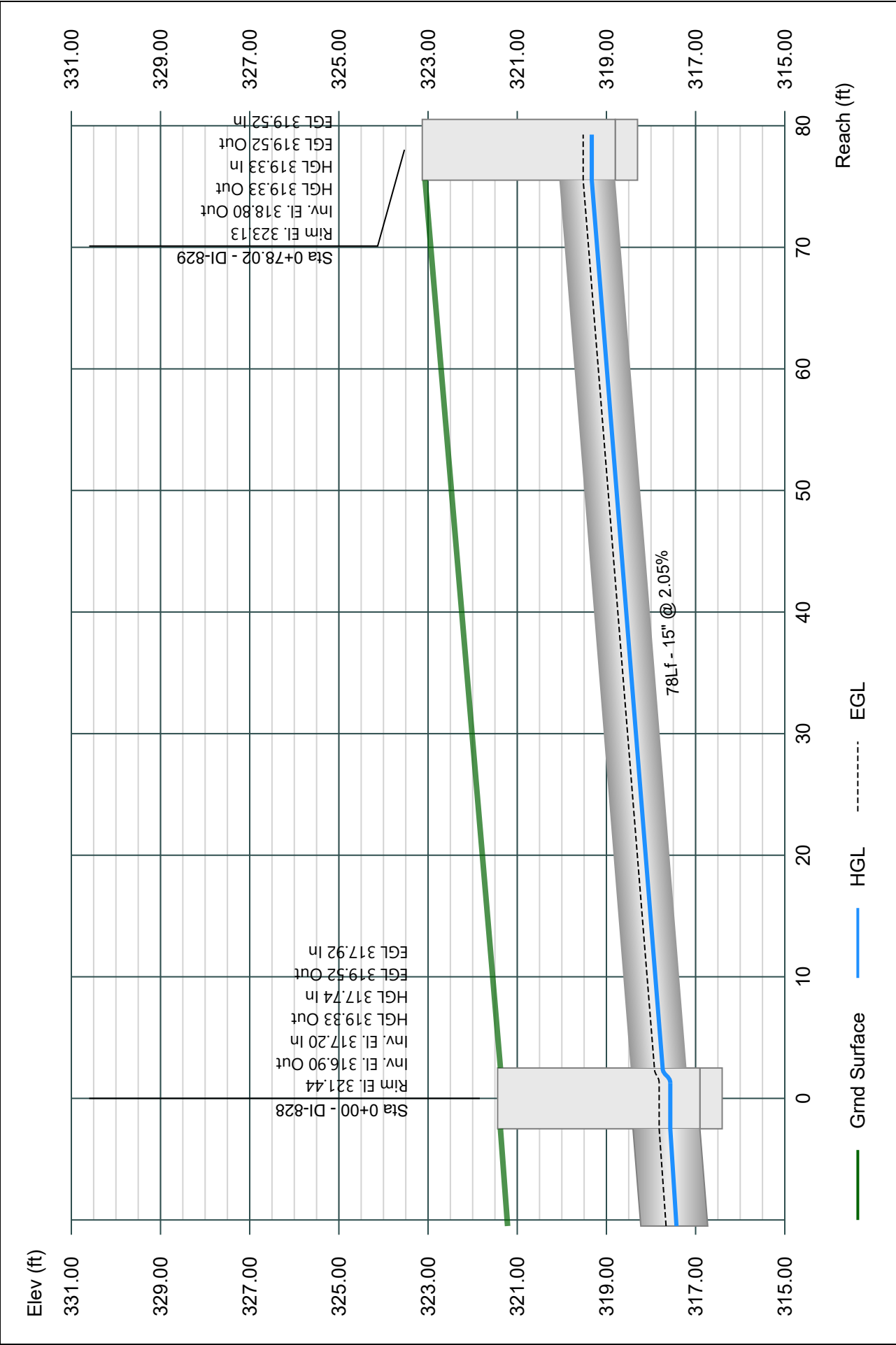
02-26-2024



Line 29 - 828-829

Project Name: SD-800
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

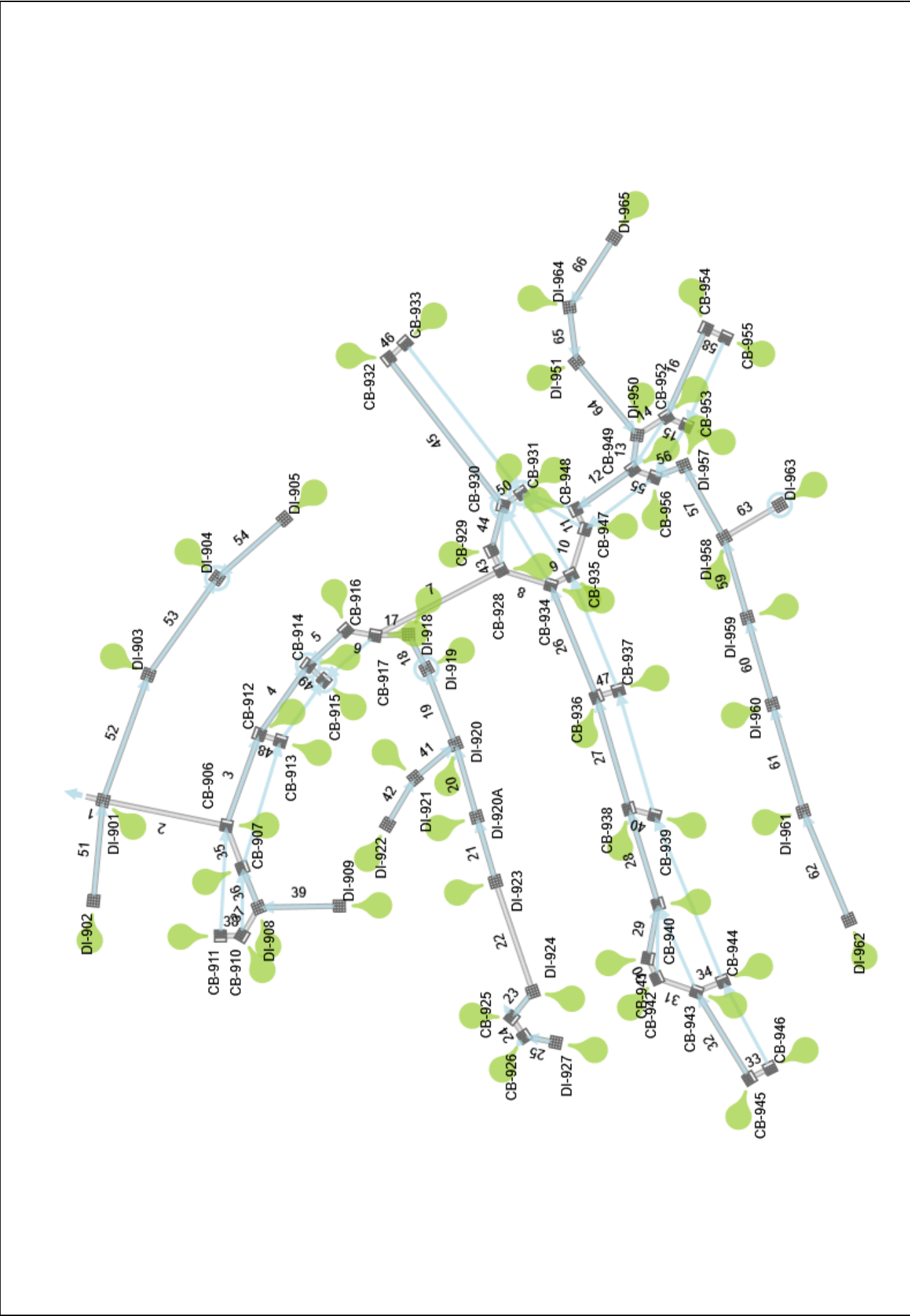


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024



Energy Grade Line Calculations

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	42	61.66	301.00	2.40 ¹	7.05	303.40	8.75	1.19	304.59	17.92	301.30	2.40 ²	7.05	303.70	8.75	1.19	304.89	0.013	0.300	303.70	304.89	0.00
2	42	57.49	301.40	3.07	8.94	304.47	6.43	0.64	305.11	135.89	302.30	2.32 ²	6.78	304.62	8.48	1.12	305.74	0.013	0.630	304.62	305.74	0.00
3	42	54.20	302.40	2.91	8.56	305.31	6.33	0.62	305.94	104.64	303.10	2.25 ²	6.55	305.35	8.27	1.06	306.42	0.013	0.481	305.35	306.42	0.00
4	42	52.55	303.20	2.77	8.16	305.97	6.44	0.65	306.61	90.98	303.80	2.22 ²	6.44	306.02	8.17	1.04	307.06	0.013	0.445	306.02	307.06	0.00
5	42	49.63	303.90	2.75	8.12	306.65	6.11	0.58	307.23	55.45	304.30	2.17	6.25	306.47	7.94	0.98	307.45	0.013	0.212	306.52	307.50	0.06
6	36	48.92	304.60	2.45	6.17	307.05	7.93	0.98	308.02	32.34	304.90	2.23 ²	5.63	307.13	8.68	1.17	308.30	0.013	0.279	307.13	308.30	0.00
7	36	38.76	305.00	3.00	7.07	308.02	5.48	0.47	308.49	152.88	306.30	1.98 ²	4.96	308.28	7.81	0.95	309.23	0.013	0.744	308.28	309.23	0.00
8	36	33.66	306.40	2.54	6.39	308.95	5.26	0.43	309.38	56.34	306.80	2.13	5.37	308.93	6.26	0.61	309.54	0.013	0.166	308.98	309.59	0.05
9	36	18.93	306.90	2.61	6.52	309.51	2.90	0.13	309.64	24.49	307.10	2.41	6.08	309.51	3.11	0.15	309.66	0.013	0.021	309.52	309.67	0.01
10	36	17.49	307.20	2.38	6.02	309.58	2.91	0.13	309.71	51.34	307.60	1.96	4.90	309.56	3.57	0.20	309.76	0.013	0.047	309.57	309.77	0.01
11	24	16.98	307.80	1.69	2.84	309.49	5.98	0.56	310.05	23.50	308.00	1.46	2.46	309.46	6.89	0.74	310.20	0.013	0.151	309.52	310.26	0.06
12	24	16.43	308.10	1.88	3.07	309.98	5.36	0.45	310.43	75.41	309.30	1.44 ²	2.41	310.74	6.81	0.72	311.46	0.013	1.028	310.74	311.46	0.00
13	18	7.66	310.00	1.07	1.35	311.07	5.68	0.50	311.57	36.90	310.80	1.06 ²	1.33	311.86	5.76	0.52	312.37	0.013	0.800	311.86	312.37	0.00
14	18	3.76	310.90	1.43	1.73	312.33	2.17	0.07	312.40	37.29	311.50	0.74	0.87	312.24	4.30	0.29	312.53	0.013	0.132	312.32	312.60	0.07
15	15	0.97	311.70	0.89	0.94	312.59	1.04	0.02	312.61	23.50	311.90	0.69	0.70	312.59	1.39	0.03	312.62	0.013	0.012	312.63	312.66	0.03
16	15	1.99	311.60	0.96	1.02	312.56	1.96	0.06	312.62	104.02	313.00	0.56 ²	0.54	313.56	3.70	0.21	313.78	0.013	1.153	313.56	313.78	0.00
17	24	10.91	308.30	1.17 ¹	1.91	309.47	5.72	0.51	309.98	36.05	308.60	1.17 ²	1.91	309.77	5.72	0.51	310.28	0.013	0.300	309.77	310.28	0.00
18	24	10.80	308.70	1.19	1.94	309.89	5.56	0.48	310.37	41.89	309.00	1.16 ²	1.90	310.16	5.69	0.50	310.67	0.013	0.300	310.16	310.67	0.00
19	24	8.97	309.10	1.41	2.37	310.51	3.79	0.22	310.73	86.97	310.90	1.06 ²	1.69	311.96	5.30	0.44	312.40	0.013	1.665	311.96	312.40	0.00
20	18	5.57	311.40	0.90	1.11	312.30	5.03	0.39	312.69	81.87	313.50	0.90	1.11	314.40	5.03	0.39	314.79	0.013	2.100	314.48	314.87	0.08
21	15	4.30	313.80	0.93	0.98	314.73	4.38	0.30	315.03	72.41	314.30	0.83	0.87	315.13	4.95	0.38	315.51	0.013	0.483	315.23	315.61	0.10
22	15	3.37	314.40	1.12	1.16	315.52	2.90	0.13	315.66	125.46	315.20	0.74	0.75	315.94	4.47	0.31	316.25	0.013	0.593	316.02	316.33	0.08

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-900.sws

Energy Grade Line Calculations

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
23	15	2.25	315.30	0.98	1.03	316.28	2.18	0.07	316.35	35.81	315.60	0.67	0.67	316.27	3.35	0.17	316.45	0.013	0.093	316.31	316.49	0.04
24	15	1.98	315.70	0.69	0.70	316.39	2.84	0.13	316.52	24.29	315.90	0.56 ²	0.54	316.46	3.69	0.21	316.67	0.013	0.158	316.46	316.67	0.00
25	15	1.56	316.00	0.57	0.54	316.57	2.87	0.13	316.70	34.46	316.30	0.50 ²	0.46	316.80	3.40	0.18	316.98	0.013	0.283	316.80	316.98	0.00
26	24	13.76	308.30	1.31 ¹	2.19	309.61	6.29	0.62	310.23	130.00	309.80	1.31 ²	2.19	311.11	6.29	0.62	311.73	0.013	1.500	311.11	311.73	0.00
27	24	11.01	309.90	1.67	2.80	311.57	3.93	0.24	311.81	125.63	311.20	1.18 ²	1.92	312.38	5.74	0.51	312.89	0.013	1.078	312.38	312.89	0.00
28	18	7.77	311.80	1.06 ¹	1.34	312.86	5.80	0.52	313.39	107.57	312.90	1.06 ²	1.34	313.96	5.80	0.52	314.49	0.013	1.100	313.96	314.49	0.00
29	18	7.05	313.00	1.28	1.60	314.28	4.39	0.30	314.58	59.34	313.40	1.05	1.33	314.45	5.31	0.44	314.89	0.013	0.314	314.54	314.98	0.08
30	18	5.95	313.50	1.35	1.67	314.85	3.56	0.20	315.04	23.50	313.70	1.16	1.47	314.86	4.05	0.25	315.12	0.013	0.075	314.90	315.15	0.03
31	18	4.86	313.80	1.25	1.57	315.05	3.09	0.15	315.20	45.15	314.20	0.85	1.03	315.05	4.74	0.35	315.39	0.013	0.195	315.12	315.47	0.08
32	15	2.15	314.40	1.03	1.09	315.43	1.98	0.06	315.49	109.36	315.50	0.59 ²	0.57	316.09	3.80	0.22	316.31	0.013	0.817	316.09	316.31	0.00
33	15	1.08	315.60	0.68	0.69	316.28	1.57	0.04	316.32	24.68	315.80	0.47	0.42	316.27	2.56	0.10	316.37	0.013	0.049	316.33	316.43	0.06
34	18	1.35	314.30	1.17	1.47	315.47	0.92	0.01	315.48	30.64	314.50	0.97	1.21	315.47	1.12	0.02	315.49	0.013	0.008	315.48	315.50	0.01
35	15	2.87	310.70	0.68 ¹	0.68	311.38	4.22	0.28	311.65	48.52	311.00	0.68	0.68	311.68	4.20	0.27	311.95	0.013	0.300	311.77	312.05	0.09
36	15	2.43	311.20	0.69	0.70	311.89	3.48	0.19	312.08	46.25	311.70	0.62 ²	0.61	312.32	3.97	0.25	312.57	0.013	0.488	312.32	312.57	0.00
37	15	0.46	312.00	0.56	0.54	312.56	0.85	0.01	312.57	35.11	312.30	0.28	0.20	312.58	2.27	0.08	312.66	0.013	0.083	312.62	312.70	0.04
38	15	0.17	312.40	0.29	0.22	312.69	0.80	0.01	312.70	23.50	312.60	0.17 ²	0.10	312.77	1.78	0.05	312.82	0.013	0.115	312.77	312.82	0.00
39	15	0.92	311.80	0.76	0.78	312.56	1.19	0.02	312.58	87.00	313.50	0.38 ²	0.32	313.88	2.88	0.13	314.01	0.013	1.436	313.88	314.01	0.00
40	15	2.21	312.00	0.81	0.84	312.81	2.63	0.11	312.92	28.50	312.20	0.60	0.58	312.80	3.81	0.23	313.02	0.013	0.107	312.92	313.15	0.12
41	15	1.82	311.70	0.55	0.52	312.25	3.51	0.19	312.44	56.95	312.20	0.54 ²	0.51	312.74	3.59	0.20	312.94	0.013	0.500	312.74	312.94	0.00
42	15	0.98	312.30	0.61	0.59	312.91	1.65	0.04	312.95	58.34	312.70	0.40 ²	0.33	313.10	2.93	0.13	313.23	0.013	0.278	313.10	313.23	0.00
43	24	4.95	307.70	1.49	2.52	309.19	1.96	0.06	309.25	23.50	307.90	1.29	2.14	309.19	2.31	0.08	309.27	0.013	0.016	309.19	309.28	0.01
44	18	4.53	308.00	1.18	1.49	309.18	3.04	0.14	309.32	49.50	308.30	0.92	1.14	309.22	3.99	0.25	309.47	0.013	0.144	309.34	309.59	0.12

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-900.sws

Energy Grade Line Calculations

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
45	15	0.23	308.60	0.99	1.04	309.59	0.22	0.00	309.59	201.06	310.90	0.19 ²	0.12	311.09	1.92	0.06	311.15	0.013	1.561	311.09	311.15	0.00
46	15	0.12	311.00	0.14 ¹	0.07	311.14	1.60	0.04	311.18	24.61	311.20	0.14 ²	0.07	311.34	1.60	0.04	311.38	0.013	0.198	311.34	311.38	0.00
47	15	1.51	310.60	1.11	1.15	311.71	1.31	0.03	311.74	24.50	310.80	0.91	0.96	311.71	1.57	0.04	311.75	0.013	0.014	311.74	311.78	0.03
48	15	1.24	309.00	0.45 ¹	0.39	309.45	3.16	0.16	309.60	23.91	309.20	0.45 ²	0.39	309.65	3.16	0.16	309.80	0.013	0.200	309.65	309.80	0.00
49	15	1.46	308.50	0.48 ¹	0.44	308.98	3.33	0.17	309.16	23.50	308.70	0.48 ²	0.44	309.18	3.33	0.17	309.36	0.013	0.200	309.18	309.36	0.00
50	15	2.42	308.50	1.04	1.09	309.54	2.22	0.08	309.61	24.49	308.70	0.84	0.88	309.54	2.76	0.12	309.66	0.013	0.044	309.65	309.77	0.11
51	15	0.91	305.80	0.38 ¹	0.32	306.18	2.86	0.13	306.31	108.48	306.50	0.38 ²	0.32	306.88	2.86	0.13	307.01	0.013	0.700	306.88	307.01	0.00
52	18	3.64	303.40	1.45	1.75	304.85	2.08	0.07	304.92	144.09	304.30	0.77	0.91	305.07	3.99	0.25	305.32	0.013	0.396	305.10	305.35	0.04
53	15	2.75	304.50	0.76	0.78	305.26	3.50	0.19	305.45	127.99	305.30	0.66 ²	0.66	305.96	4.15	0.27	306.23	0.013	0.778	305.96	306.23	0.00
54	15	1.17	305.40	0.81	0.84	306.21	1.38	0.03	306.24	96.49	306.00	0.43 ²	0.38	306.43	3.10	0.15	306.58	0.013	0.340	306.43	306.58	0.00
55	24	8.97	309.40	1.98	3.14	311.38	2.86	0.13	311.51	25.29	309.70	1.69	2.83	311.39	3.17	0.16	311.54	0.013	0.037	311.40	311.56	0.02
56	24	8.67	309.80	1.66	2.79	311.46	3.11	0.15	311.61	34.11	310.70	1.04 ²	1.66	311.74	5.23	0.43	312.17	0.013	0.558	311.74	312.17	0.00
57	18	7.78	310.80	1.17	1.48	311.97	5.25	0.43	312.40	88.60	311.80	1.06 ²	1.34	312.86	5.80	0.52	313.39	0.013	0.987	312.86	313.39	0.00
58	15	0.86	317.40	0.37 ¹	0.31	317.77	2.82	0.12	317.90	23.50	317.60	0.37 ²	0.31	317.97	2.82	0.12	318.10	0.013	0.200	317.97	318.10	0.00
59	18	5.10	311.90	1.40	1.72	313.30	2.97	0.14	313.44	89.86	313.50	0.86 ²	1.05	314.36	4.85	0.37	314.73	0.013	1.290	314.36	314.73	0.00
60	18	4.02	313.60	1.02	1.27	314.62	3.16	0.16	314.77	97.14	314.70	0.77 ²	0.91	315.47	4.44	0.31	315.77	0.013	1.001	315.47	315.77	0.00
61	15	2.69	315.00	0.66	0.66	315.66	4.06	0.26	315.92	120.15	316.20	0.66 ²	0.65	316.86	4.12	0.26	317.12	0.013	1.200	316.86	317.12	0.00
62	15	1.38	316.30	0.79	0.82	317.09	1.69	0.04	317.14	127.05	317.10	0.47 ²	0.42	317.57	3.27	0.17	317.74	0.013	0.602	317.57	317.74	0.00
63	18	1.67	311.90	1.48	1.76	313.38	0.95	0.01	313.39	69.67	312.50	0.88	1.08	313.38	1.54	0.04	313.42	0.013	0.028	313.43	313.46	0.04
64	15	2.82	313.20	0.67 ¹	0.67	313.87	4.19	0.27	314.15	102.62	315.80	0.67 ²	0.67	316.47	4.19	0.27	316.75	0.013	2.600	316.47	316.75	0.00
65	15	1.59	315.90	0.81	0.84	316.71	1.90	0.06	316.76	59.49	317.60	0.50 ²	0.46	318.10	3.43	0.18	318.29	0.013	1.524	318.10	318.29	0.00
66	15	0.92	317.70	0.55	0.52	318.25	1.77	0.05	318.30	89.10	319.60	0.38 ²	0.32	319.98	2.88	0.13	320.11	0.013	1.813	319.98	320.11	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-900.sws

Storm Sewer Tabulation

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
900-901	17.92	0.170	13.030	0.60	0.10	9.86	5.0	8.36	6.25	61.66	130.19	8.75	42	1.67	301.30	301.00	303.70	303.40	310.56	299.00	1
901-906	135.89	0.240	11.770	0.75	0.18	9.11	5.0	8.11	6.31	57.49	81.88	7.46	42	0.66	302.30	301.40	304.62	304.47	315.96	310.56	2
906-912	104.64	0.190	11.020	0.75	0.14	8.52	5.0	7.91	6.36	54.20	82.29	7.30	42	0.67	303.10	302.40	305.35	305.31	314.42	315.96	3
912-914	90.98	0.380	10.600	0.75	0.29	8.20	5.0	7.74	6.41	52.55	81.70	7.31	42	0.66	303.80	303.20	306.02	305.97	313.89	314.42	4
914-916	55.45	0.170	9.950	0.75	0.13	7.72	5.0	7.64	6.43	49.63	85.45	7.03	42	0.72	304.30	303.90	306.47	306.65	314.07	313.89	5
916-917	32.34	0.030	9.780	0.80	0.02	7.59	5.0	7.58	6.45	48.92	64.24	8.31	36	0.93	304.90	304.60	307.13	307.05	314.28	314.07	6
917-928	152.88	0.090	7.720	0.75	0.07	5.94	5.0	7.30	6.52	38.76	61.50	6.65	36	0.85	306.30	305.00	308.28	308.02	314.18	314.28	7
928-934	56.34	0.290	6.700	0.75	0.22	5.14	5.0	7.19	6.55	33.66	56.20	5.76	36	0.71	306.80	306.40	308.93	308.95	314.27	314.18	8
934-935	24.49	0.310	3.720	0.75	0.23	2.88	5.0	7.13	6.57	18.93	60.28	3.01	36	0.82	307.10	306.90	309.51	309.51	314.27	314.27	9
935-947	51.34	0.110	3.410	0.75	0.08	2.65	5.0	7.01	6.60	17.49	58.87	3.24	36	0.78	307.60	307.20	309.56	309.58	314.20	314.27	10
947-948	23.50	0.130	3.300	0.75	0.10	2.57	5.0	6.96	6.61	16.98	20.87	6.44	24	0.85	308.00	307.80	309.46	309.49	314.20	314.20	11
948-949	75.41	0.030	3.170	0.90	0.03	2.47	5.0	6.82	6.65	16.43	28.53	6.08	24	1.59	309.30	308.10	310.74	309.98	316.54	314.20	12
949-950	36.90	0.220	1.430	0.75	0.17	1.10	5.0	5.70	6.98	7.66	15.46	5.72	18	2.17	310.80	310.00	311.86	311.07	318.41	316.54	13
950-952	37.29	0.160	0.710	0.75	0.12	0.53	5.0	5.45	7.06	3.76	13.32	3.23	18	1.61	311.50	310.90	312.24	312.33	319.58	318.41	14
952-953	23.50	0.180	0.180	0.75	0.14	0.14	5.0	5.00	7.20	0.97	5.96	1.22	15	0.85	311.90	311.70	312.59	312.59	319.58	319.58	15
952-954	104.02	0.210	0.370	0.75	0.16	0.28	5.0	5.11	7.17	1.99	7.49	2.83	15	1.35	313.00	311.60	313.56	312.56	323.46	319.58	16
917-918	36.05	0.030	2.030	0.80	0.02	1.62	5.0	6.52	6.73	10.91	20.63	5.72	24	0.83	308.60	308.30	309.77	309.47	314.88	314.28	17
918-919	41.89	0.350	2.000	0.80	0.28	1.60	5.0	6.41	6.77	10.80	19.14	5.63	24	0.72	309.00	308.70	310.16	309.89	314.51	314.88	18
919-920	86.97	0.310	1.650	0.80	0.25	1.32	5.0	6.24	6.81	8.97	32.54	4.55	24	2.07	310.90	309.10	311.96	310.51	316.42	314.51	19
920-920A	81.87	0.240	1.020	0.80	0.19	0.81	5.0	6.08	6.86	5.57	16.82	5.03	18	2.57	313.50	311.40	314.40	312.30	318.74	316.42	20
920A-923	72.41	0.180	0.780	0.80	0.14	0.62	5.0	5.83	6.94	4.30	5.37	4.66	15	0.69	314.30	313.80	315.13	314.73	321.06	318.74	21
923-924	125.46	0.200	0.600	0.80	0.16	0.48	5.0	5.37	7.08	3.37	5.16	3.69	15	0.64	315.20	314.40	315.94	315.52	321.08	321.06	22

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

Project File: SD-900.sws

Storm Sewer Tabulation

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
924-925	35.81	0.050	0.400	0.80	0.04	0.32	5.0	5.23	7.13	2.25	5.91	2.76	15	0.84	315.60	315.30	316.27	316.28	321.00	321.08	23
925-926	24.29	0.080	0.350	0.75	0.06	0.28	5.0	5.14	7.16	1.98	5.86	3.26	15	0.82	315.90	315.70	316.46	316.39	320.96	321.00	24
926-927	34.46	0.270	0.270	0.80	0.22	0.22	5.0	5.00	7.20	1.56	6.03	3.14	15	0.87	316.30	316.00	316.80	316.57	321.21	320.96	25
934-936	130.00	0.290	2.690	0.75	0.22	2.04	5.0	6.45	6.75	13.76	24.30	6.29	24	1.15	309.80	308.30	311.11	309.61	315.79	314.27	26
936-938	125.63	0.240	2.120	0.75	0.18	1.61	5.0	6.16	6.84	11.01	23.01	4.83	24	1.03	311.20	309.90	312.38	311.57	317.25	315.79	27
938-940	107.57	0.150	1.470	0.75	0.11	1.12	5.0	5.88	6.92	7.77	10.62	5.80	18	1.02	312.90	311.80	313.96	312.86	318.48	317.25	28
940-941	59.34	0.200	1.320	0.80	0.16	1.01	5.0	5.70	6.98	7.05	8.62	4.85	18	0.67	313.40	313.00	314.45	314.28	319.31	318.48	29
941-942	23.50	0.200	1.120	0.80	0.16	0.85	5.0	5.63	7.00	5.95	9.69	3.80	18	0.85	313.70	313.50	314.86	314.85	319.31	319.31	30
942-943	45.15	0.270	0.920	0.75	0.20	0.69	5.0	5.50	7.04	4.86	9.88	3.91	18	0.89	314.20	313.80	315.05	315.05	319.65	319.31	31
943-945	109.36	0.200	0.400	0.75	0.15	0.30	5.0	5.11	7.16	2.15	6.48	2.89	15	1.01	315.50	314.40	316.09	315.43	320.90	319.65	32
945-946	24.68	0.200	0.200	0.75	0.15	0.15	5.0	5.00	7.20	1.08	5.81	2.07	15	0.81	315.80	315.60	316.27	316.28	320.93	320.90	33
943-944	30.64	0.250	0.250	0.75	0.19	0.19	5.0	5.00	7.20	1.35	8.48	1.02	18	0.65	314.50	314.30	315.47	315.47	319.65	319.65	34
906-907	48.52	0.080	0.510	0.80	0.06	0.41	5.0	5.54	7.03	2.87	5.08	4.21	15	0.62	311.00	310.70	311.68	311.38	316.62	315.96	35
907-908	46.25	0.190	0.430	0.80	0.15	0.34	5.0	5.39	7.08	2.43	6.71	3.73	15	1.08	311.70	311.20	312.32	311.89	317.69	316.62	36
908-910	35.11	0.050	0.080	0.80	0.04	0.06	5.0	5.18	7.14	0.46	5.97	1.56	15	0.85	312.30	312.00	312.58	312.56	317.76	317.69	37
910-911	23.50	0.030	0.030	0.80	0.02	0.02	5.0	5.00	7.20	0.17	5.96	1.29	15	0.85	312.60	312.40	312.77	312.69	317.76	317.76	38
908-909	87.00	0.160	0.160	0.80	0.13	0.13	5.0	5.00	7.20	0.92	9.03	2.03	15	1.95	313.50	311.80	313.88	312.56	320.16	317.69	39
938-939	28.50	0.410	0.410	0.75	0.31	0.31	5.0	5.00	7.20	2.21	5.41	3.22	15	0.70	312.20	312.00	312.80	312.81	317.41	317.25	40
920-921	56.95	0.150	0.320	0.80	0.12	0.26	5.0	5.29	7.11	1.82	6.05	3.55	15	0.88	312.20	311.70	312.74	312.25	317.10	316.42	41
921-922	58.34	0.170	0.170	0.80	0.14	0.14	5.0	5.00	7.20	0.98	5.35	2.29	15	0.69	312.70	312.30	313.10	312.91	318.12	317.10	42
928-929	23.50	0.090	0.930	0.75	0.07	0.74	5.0	6.69	6.69	4.95	20.86	2.14	24	0.85	307.90	307.70	309.19	309.19	314.18	314.18	43
929-930	49.50	0.380	0.840	0.80	0.30	0.67	5.0	6.51	6.74	4.53	8.17	3.51	18	0.61	308.30	308.00	309.22	309.18	313.42	314.18	44

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

Project File: SD-900.sws

Storm Sewer Tabulation

Project Name: SD-900
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
930-932	201.06	0.020	0.040	0.80	0.02	0.03	5.0	5.22	7.13	0.23	6.91	1.07	15	1.14	310.90	308.60	311.09	309.59	316.33	313.42	45
932-933	24.61	0.020	0.020	0.80	0.02	0.02	5.0	5.00	7.20	0.12	5.79	1.60	15	0.81	311.20	311.00	311.34	311.14	316.37	316.33	46
936-937	24.50	0.280	0.280	0.75	0.21	0.21	5.0	5.00	7.20	1.51	5.83	1.44	15	0.82	310.80	310.60	311.71	311.71	315.79	315.79	47
912-913	23.91	0.230	0.230	0.75	0.17	0.17	5.0	5.00	7.20	1.24	5.91	3.16	15	0.84	309.20	309.00	309.65	309.45	314.36	314.42	48
914-915	23.50	0.270	0.270	0.75	0.20	0.20	5.0	5.00	7.20	1.46	5.96	3.33	15	0.85	308.70	308.50	309.18	308.98	313.89	313.89	49
930-931	24.49	0.420	0.420	0.80	0.34	0.34	5.0	5.00	7.20	2.42	5.84	2.49	15	0.82	308.70	308.50	309.54	309.54	313.43	313.42	50
901-902	108.48	0.210	0.210	0.60	0.13	0.13	5.0	5.00	7.20	0.91	5.19	2.86	15	0.65	306.50	305.80	306.88	306.18	311.81	310.56	51
901-903	144.09	0.230	0.880	0.60	0.14	0.53	5.0	5.98	6.89	3.64	8.30	3.03	18	0.62	304.30	303.40	305.07	304.85	309.03	310.56	52
903-904	127.99	0.380	0.650	0.60	0.23	0.39	5.0	5.48	7.05	2.75	5.11	3.83	15	0.63	305.30	304.50	305.96	305.26	308.50	309.03	53
904-905	96.49	0.270	0.270	0.60	0.16	0.16	5.0	5.00	7.20	1.17	5.09	2.24	15	0.62	306.00	305.40	306.43	306.21	308.84	308.50	54
949-956	25.29	0.060	1.710	0.80	0.05	1.35	5.0	6.76	6.67	8.97	24.63	3.02	24	1.19	309.70	309.40	311.39	311.38	316.92	316.54	55
956-957	34.11	0.180	1.650	0.80	0.14	1.30	5.0	6.70	6.68	8.67	36.74	4.17	24	2.64	310.70	309.80	311.74	311.46	318.35	316.92	56
957-958	88.60	0.230	1.470	0.75	0.17	1.15	5.0	6.48	6.75	7.78	11.16	5.53	18	1.13	311.80	310.80	312.86	311.97	319.48	318.35	57
954-955	23.50	0.160	0.160	0.75	0.12	0.12	5.0	5.00	7.20	0.86	5.96	2.82	15	0.85	317.60	317.40	317.97	317.77	323.46	323.46	58
958-959	89.86	0.220	0.950	0.75	0.17	0.75	5.0	6.28	6.81	5.10	14.01	3.91	18	1.78	313.50	311.90	314.36	313.30	320.60	319.48	59
959-960	97.14	0.250	0.730	0.80	0.20	0.58	5.0	6.00	6.89	4.02	11.17	3.80	18	1.13	314.70	313.60	315.47	314.62	321.82	320.60	60
960-961	120.15	0.240	0.480	0.80	0.19	0.38	5.0	5.60	7.01	2.69	6.45	4.09	15	1.00	316.20	315.00	316.86	315.66	323.32	321.82	61
961-962	127.05	0.240	0.240	0.80	0.19	0.19	5.0	5.00	7.20	1.38	5.13	2.48	15	0.63	317.10	316.30	317.57	317.09	324.91	323.32	62
958-963	69.67	0.290	0.290	0.80	0.23	0.23	5.0	5.00	7.20	1.67	9.75	1.24	18	0.86	312.50	311.90	313.38	313.38	321.74	319.48	63
950-951	102.62	0.220	0.500	0.80	0.18	0.40	5.0	5.46	7.05	2.82	10.28	4.19	15	2.53	315.80	313.20	316.47	313.87	320.93	318.41	64
951-964	59.49	0.120	0.280	0.80	0.10	0.22	5.0	5.30	7.10	1.59	10.92	2.66	15	2.86	317.60	315.90	318.10	316.71	322.45	320.93	65
964-965	89.10	0.160	0.160	0.80	0.13	0.13	5.0	5.00	7.20	0.92	9.43	2.32	15	2.13	319.60	317.70	319.98	318.25	324.45	322.45	66

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

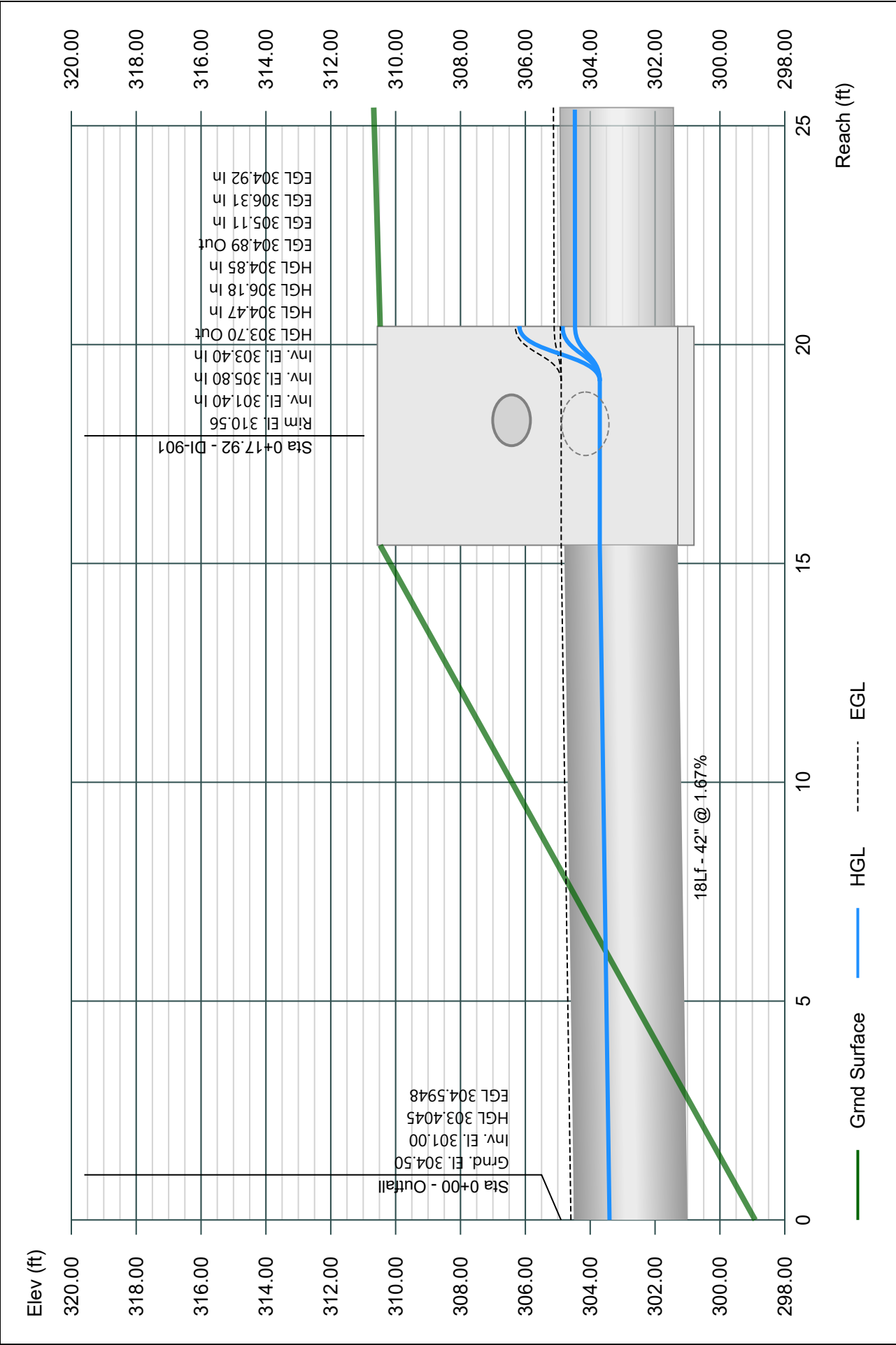
Project File: SD-900.sws

Line 1 - 900-901

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

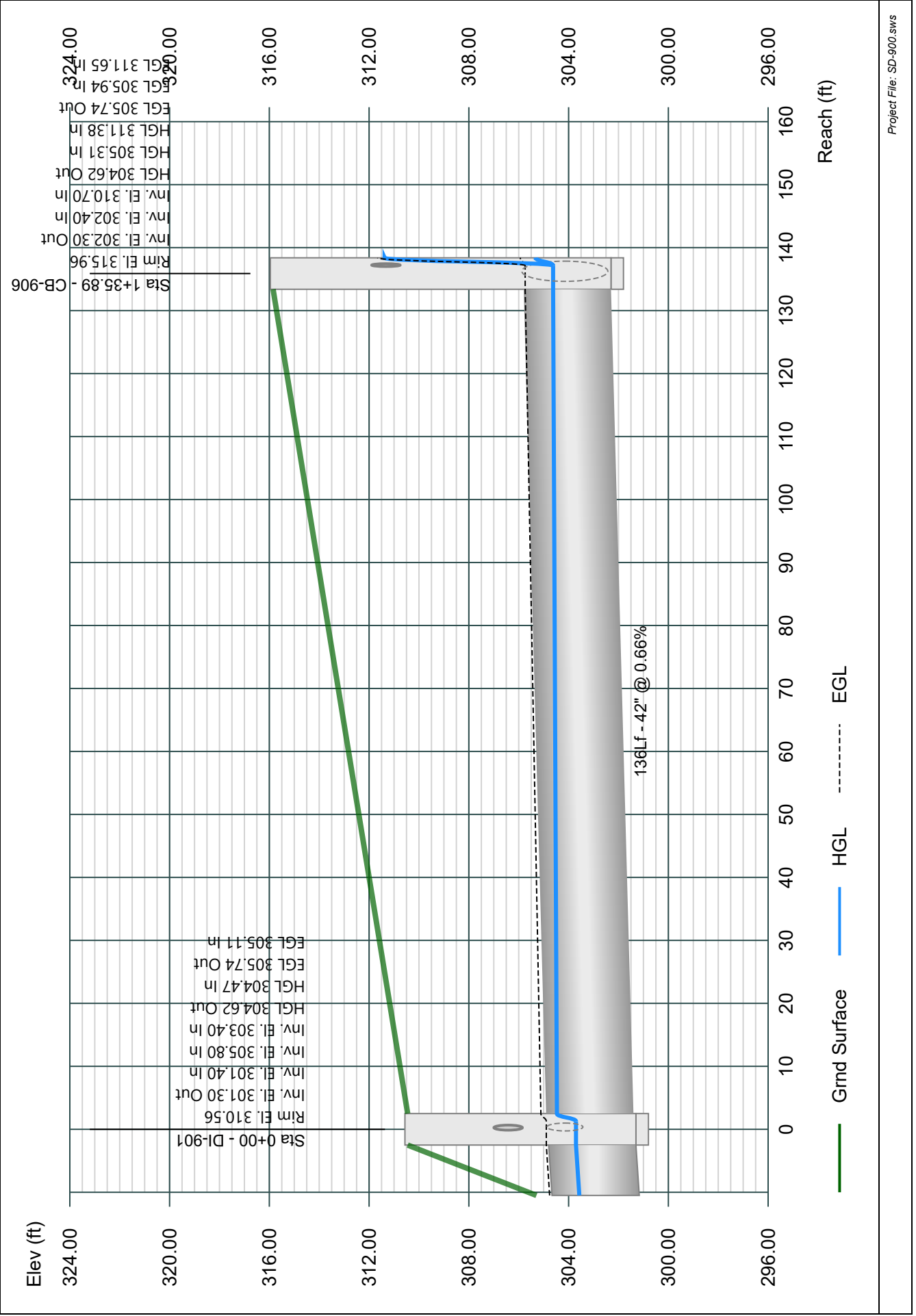


Line 2 - 901-906

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

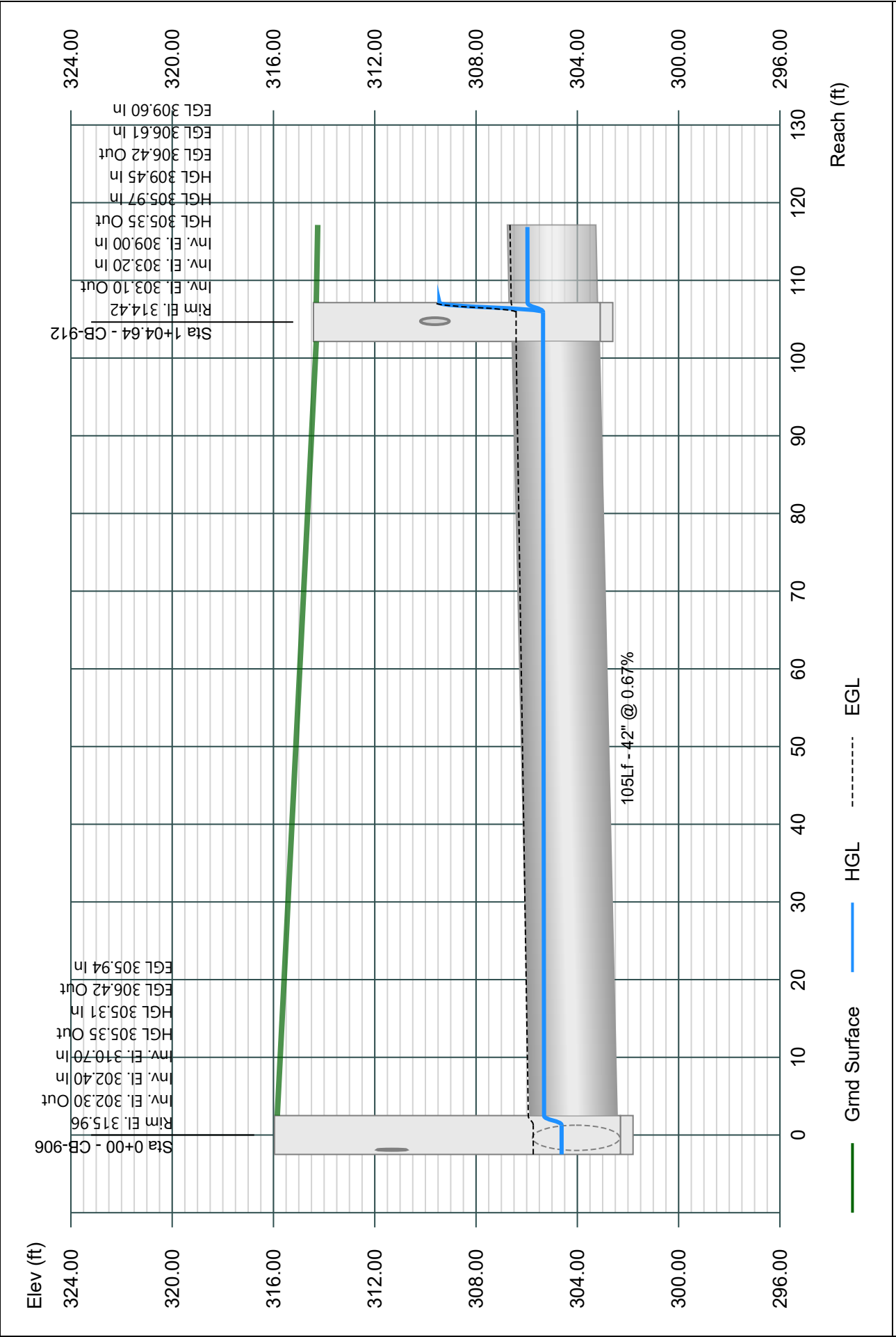


Line 3 - 906-912

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

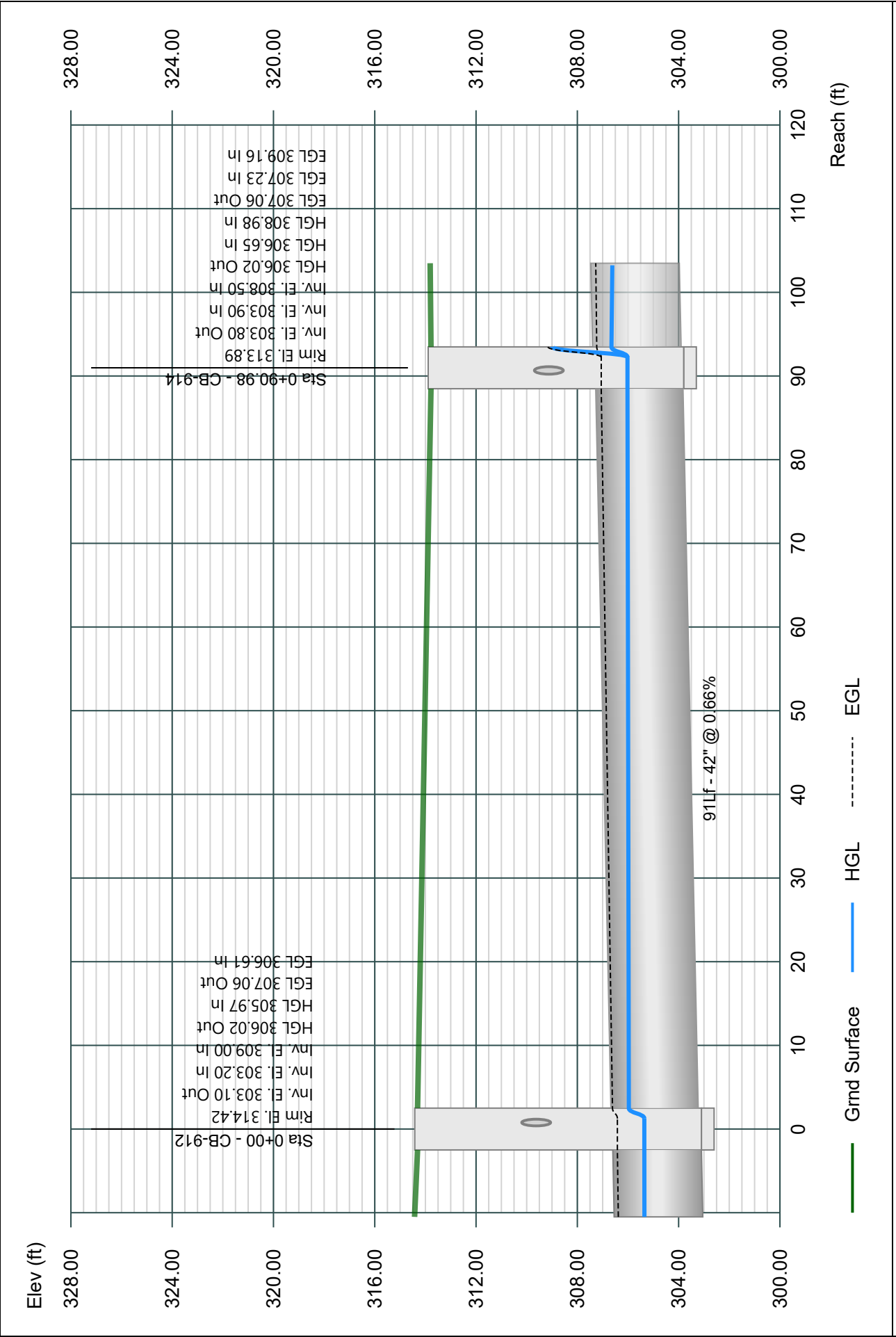


Line 4 - 912-914

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

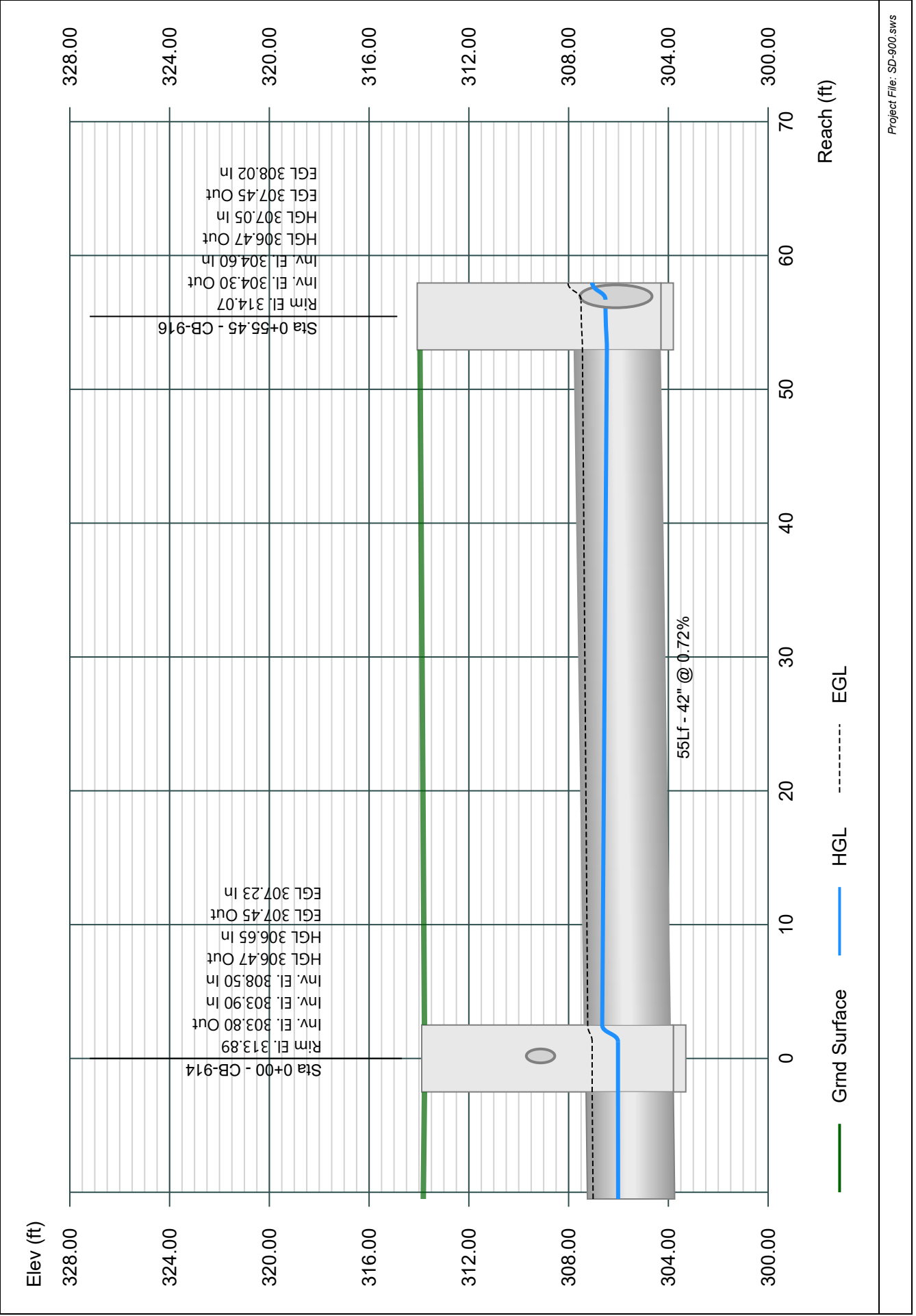


Line 5 - 914-916

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

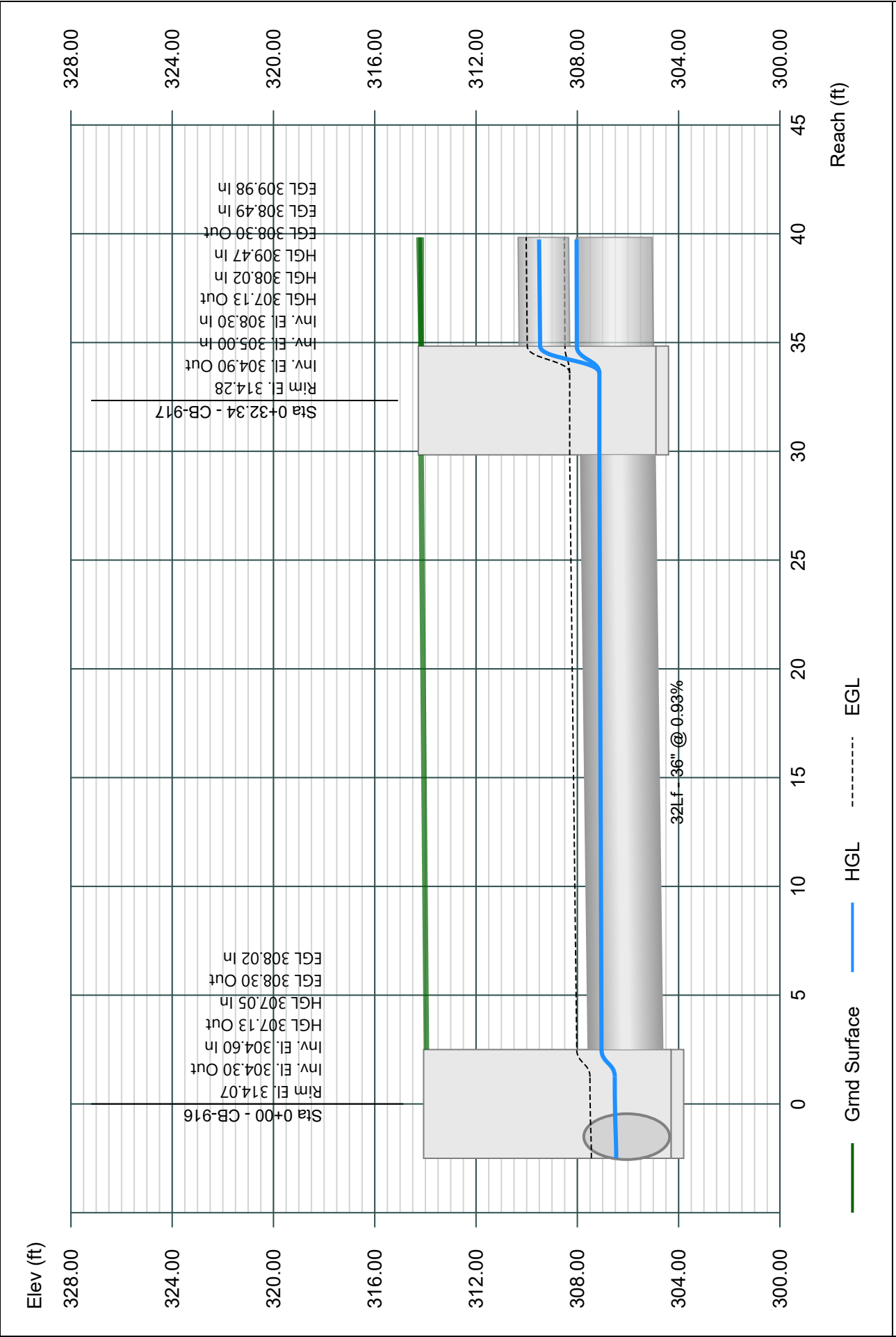


Line 6 - 916-917

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

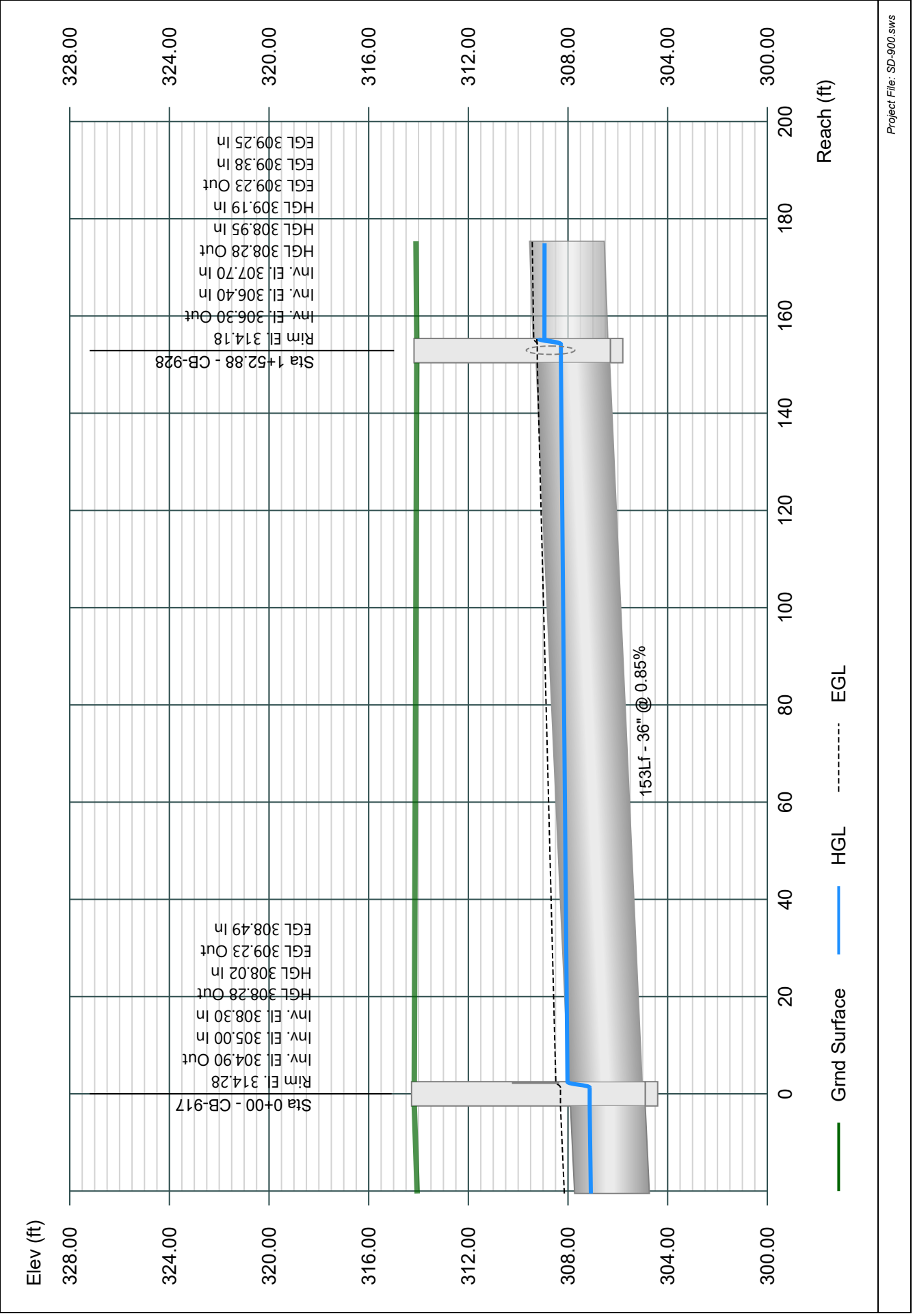


Line 7 - 917-928

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

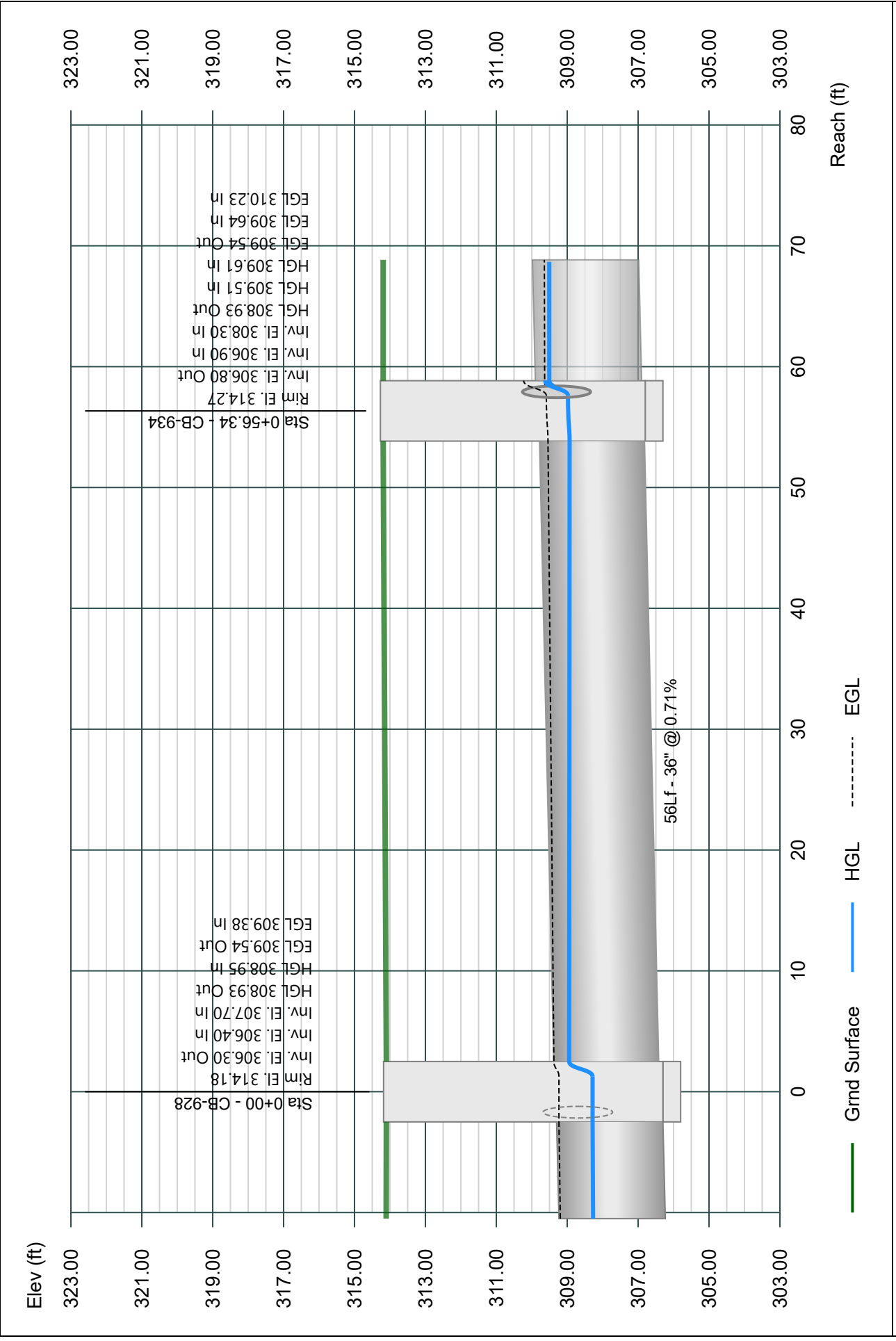


Line 8 - 928-934

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

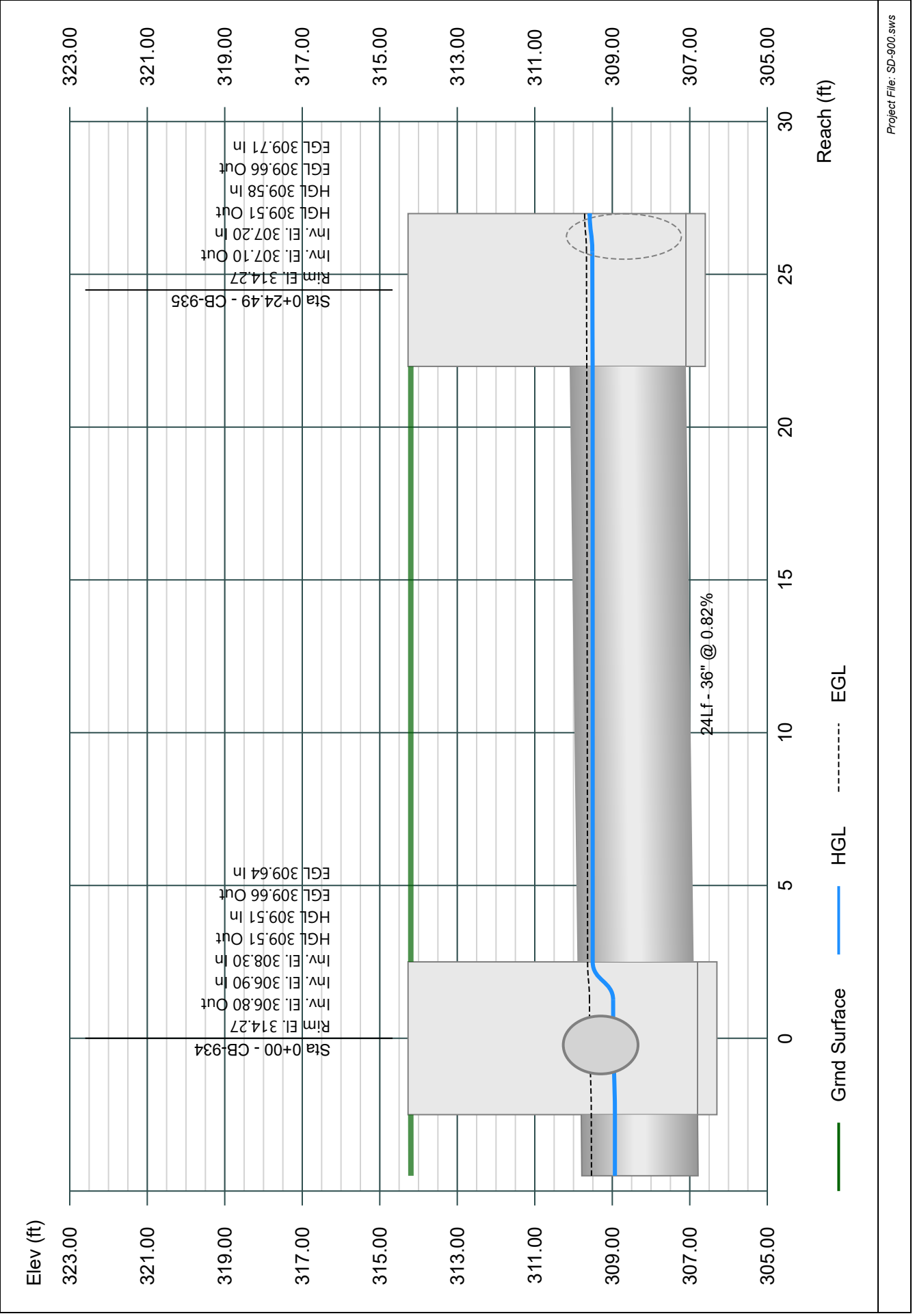


Line 9 - 934-935

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

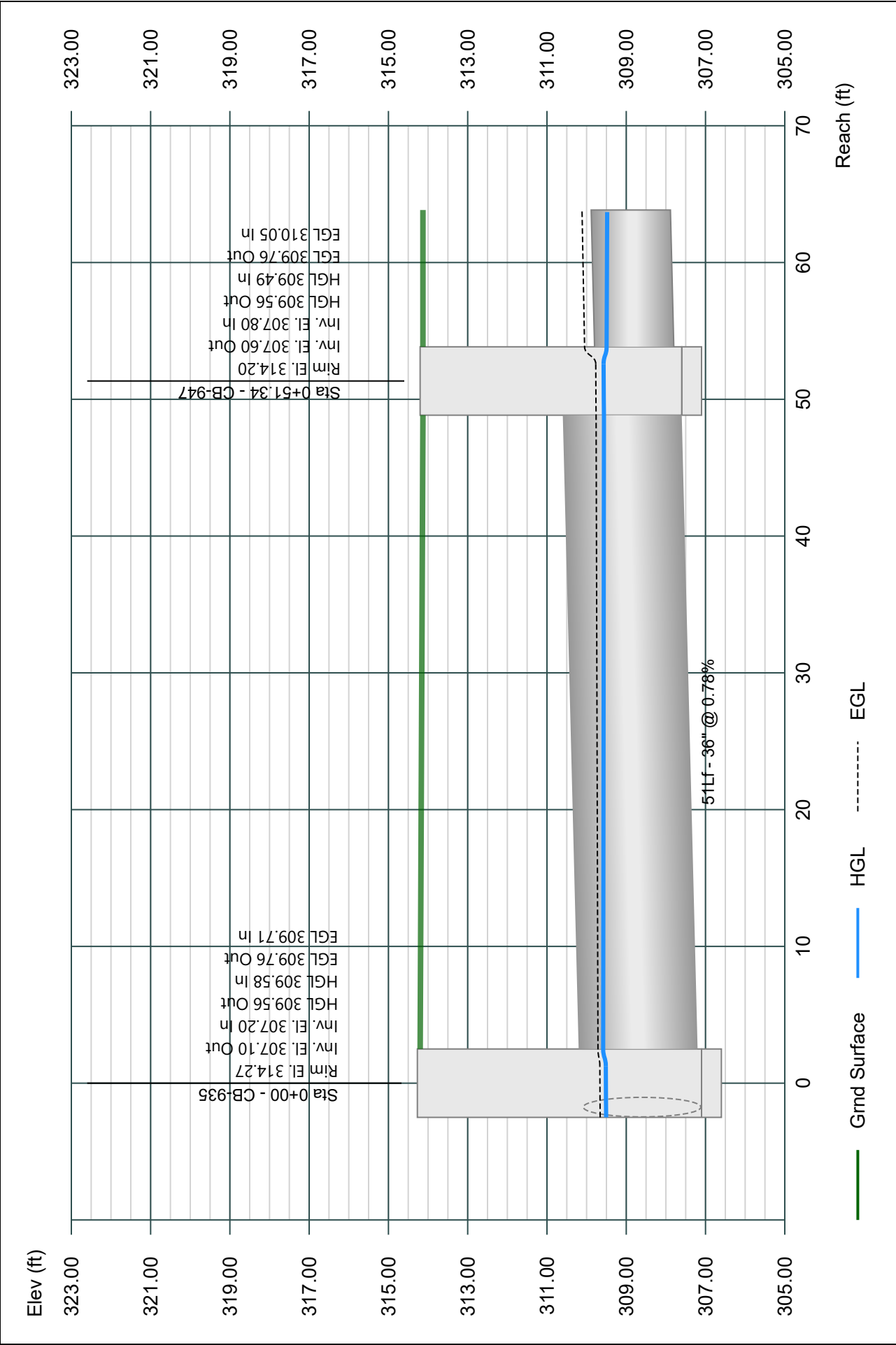


Line 10 - 935-947

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

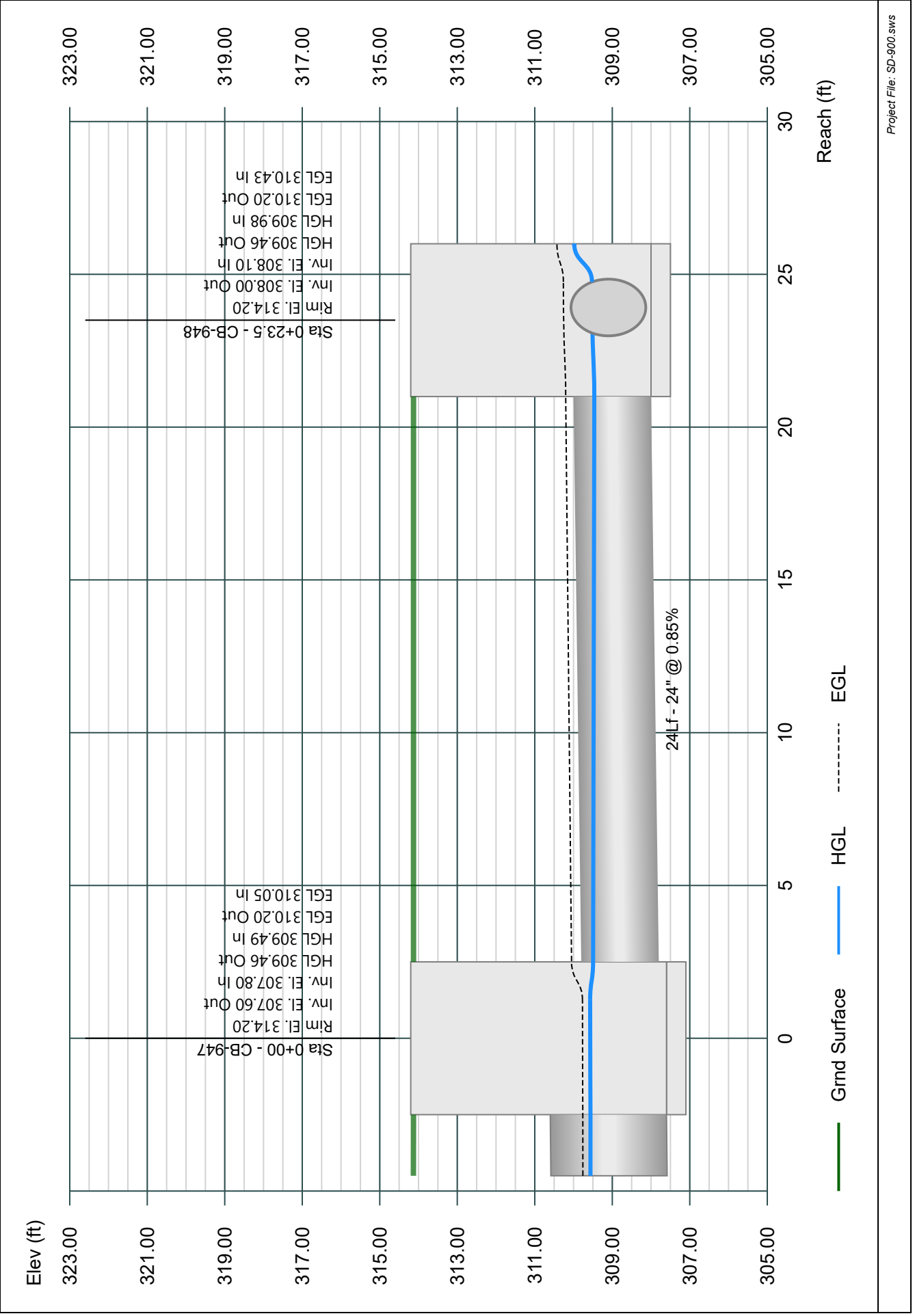


Line 11 - 947-948

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

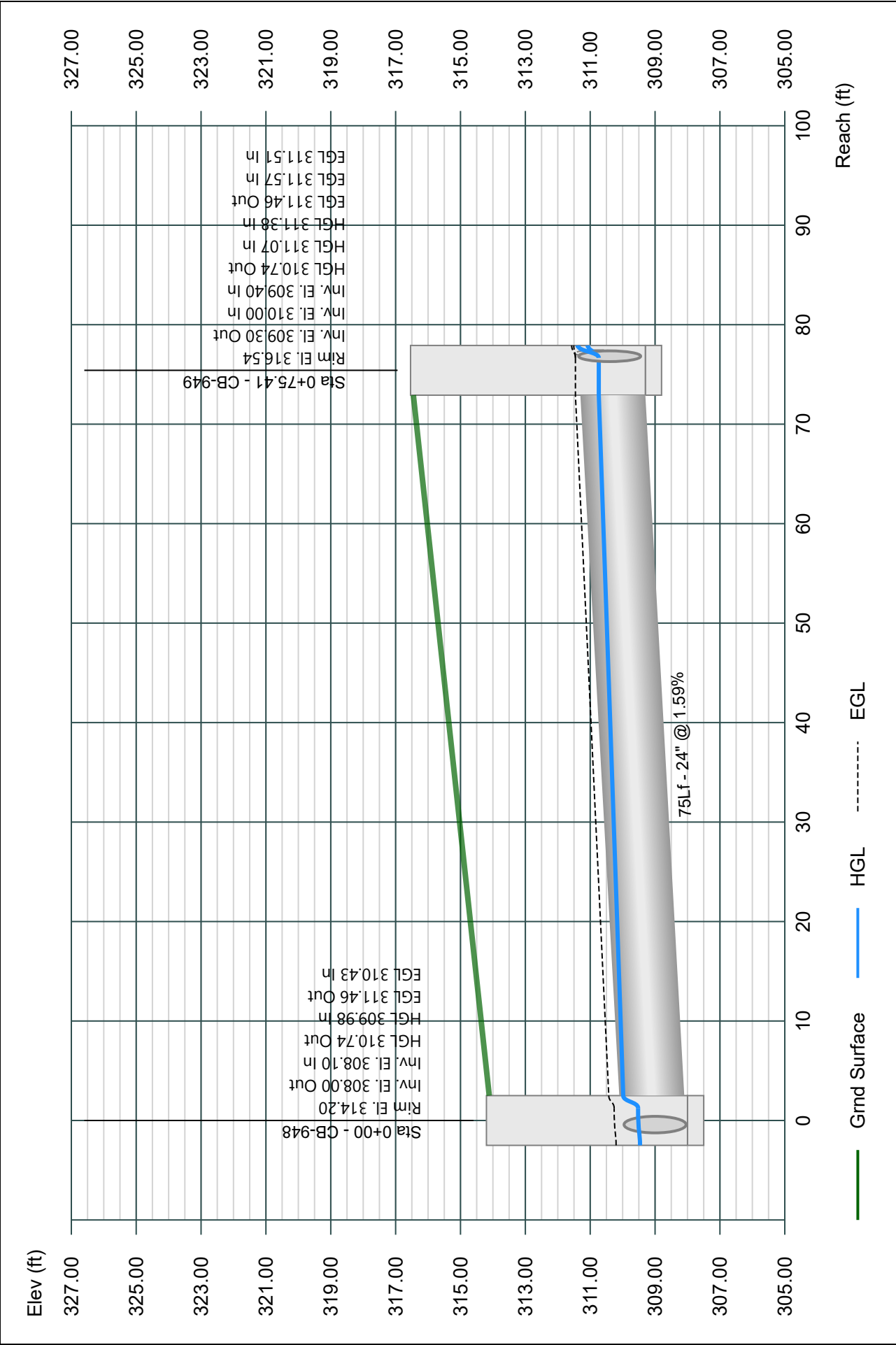


Line 12 - 948-949

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

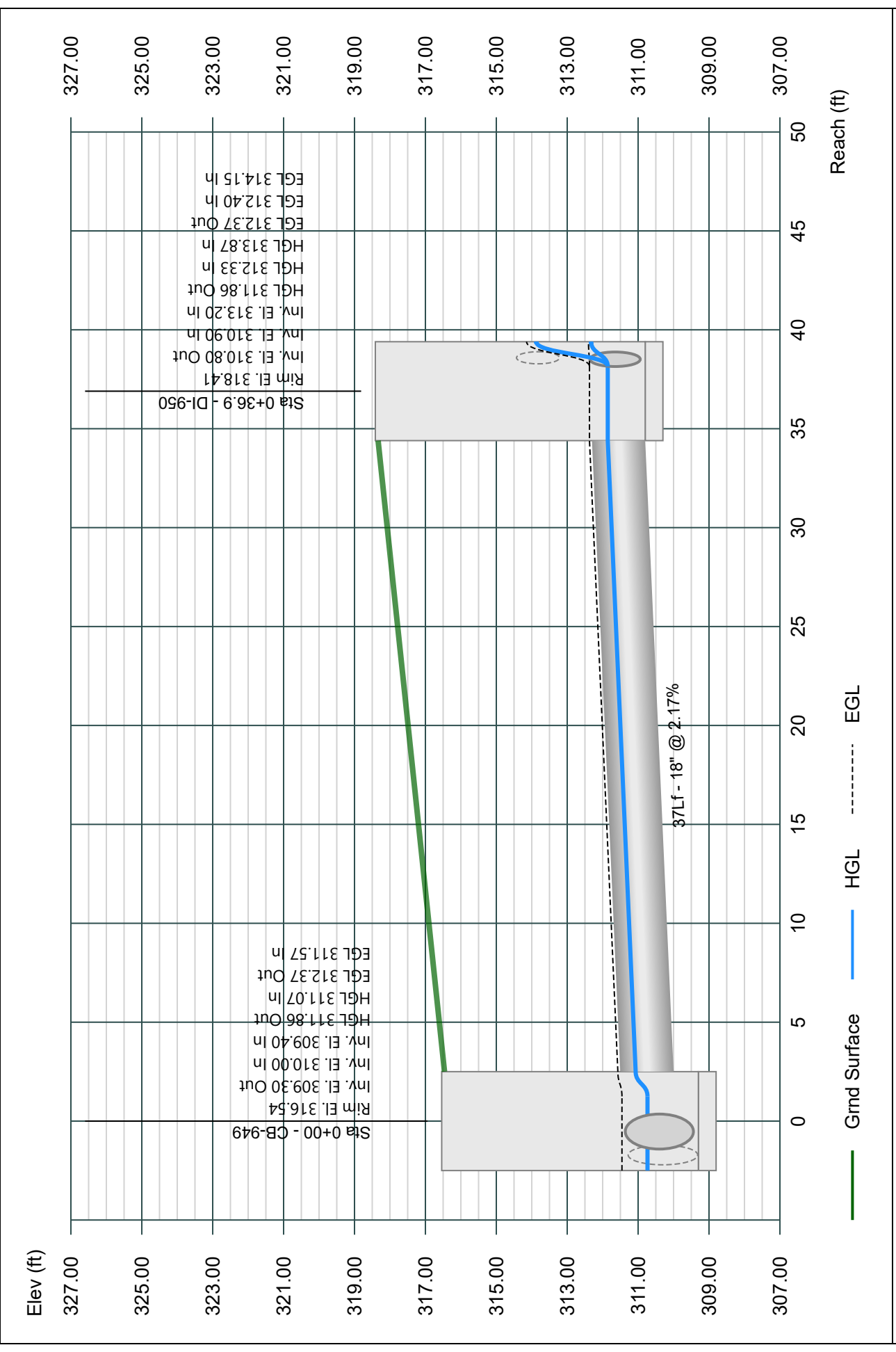


Line 13 - 949-950

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

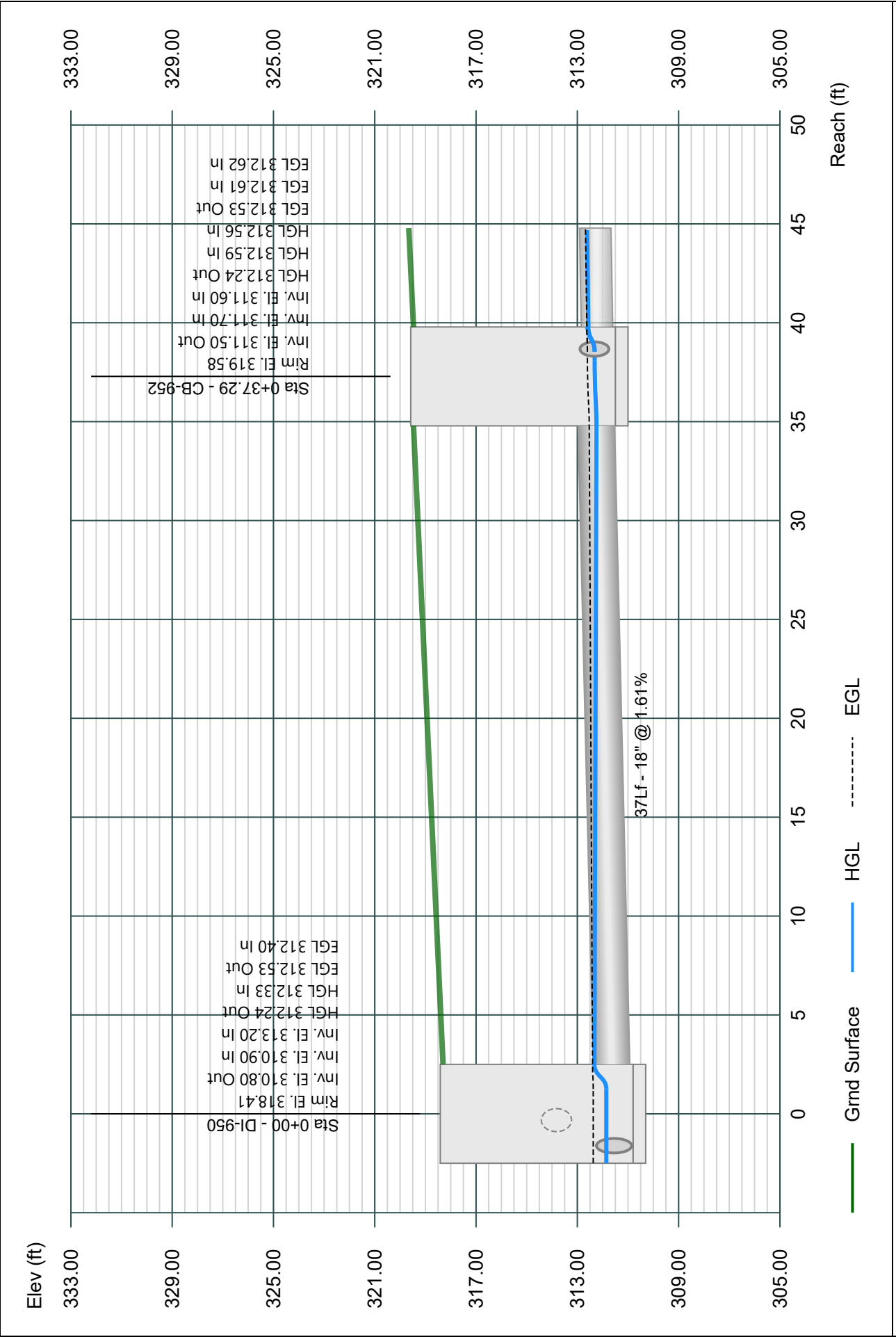


Line 14 - 950-952

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

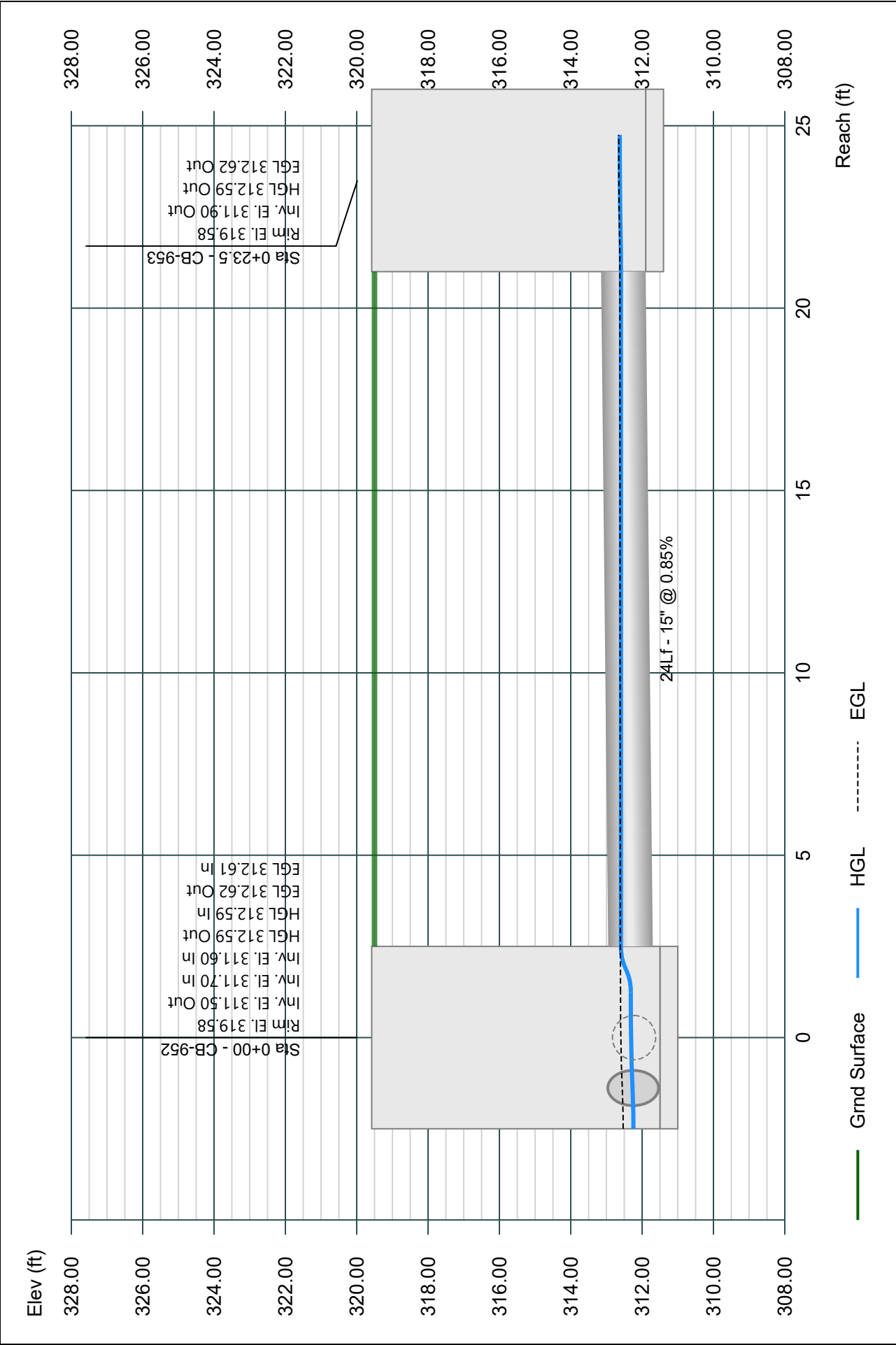


Line 15 - 952-953

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

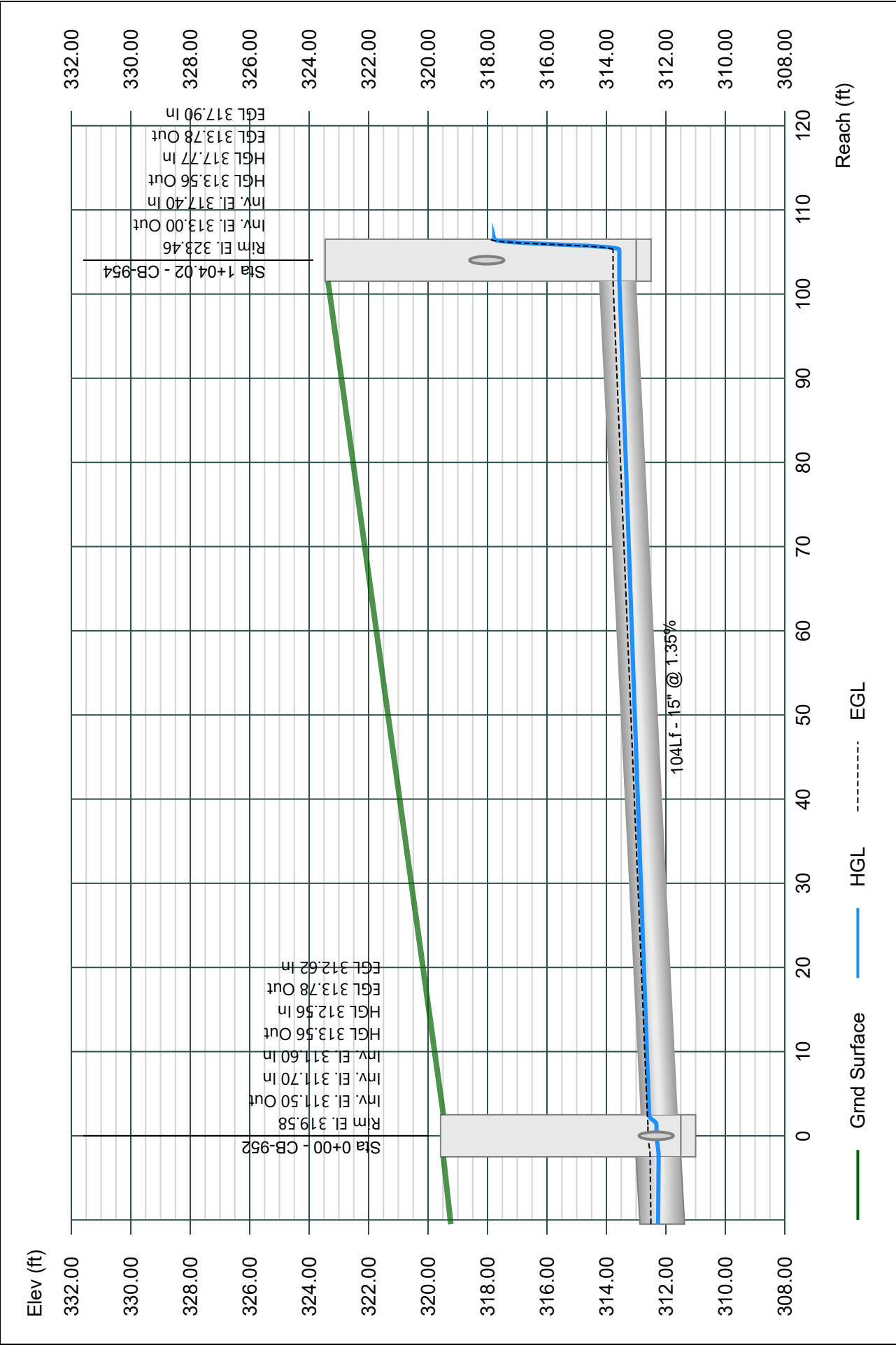
02-26-2024



Line 16 - 952-954

Project Name: SD-900
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

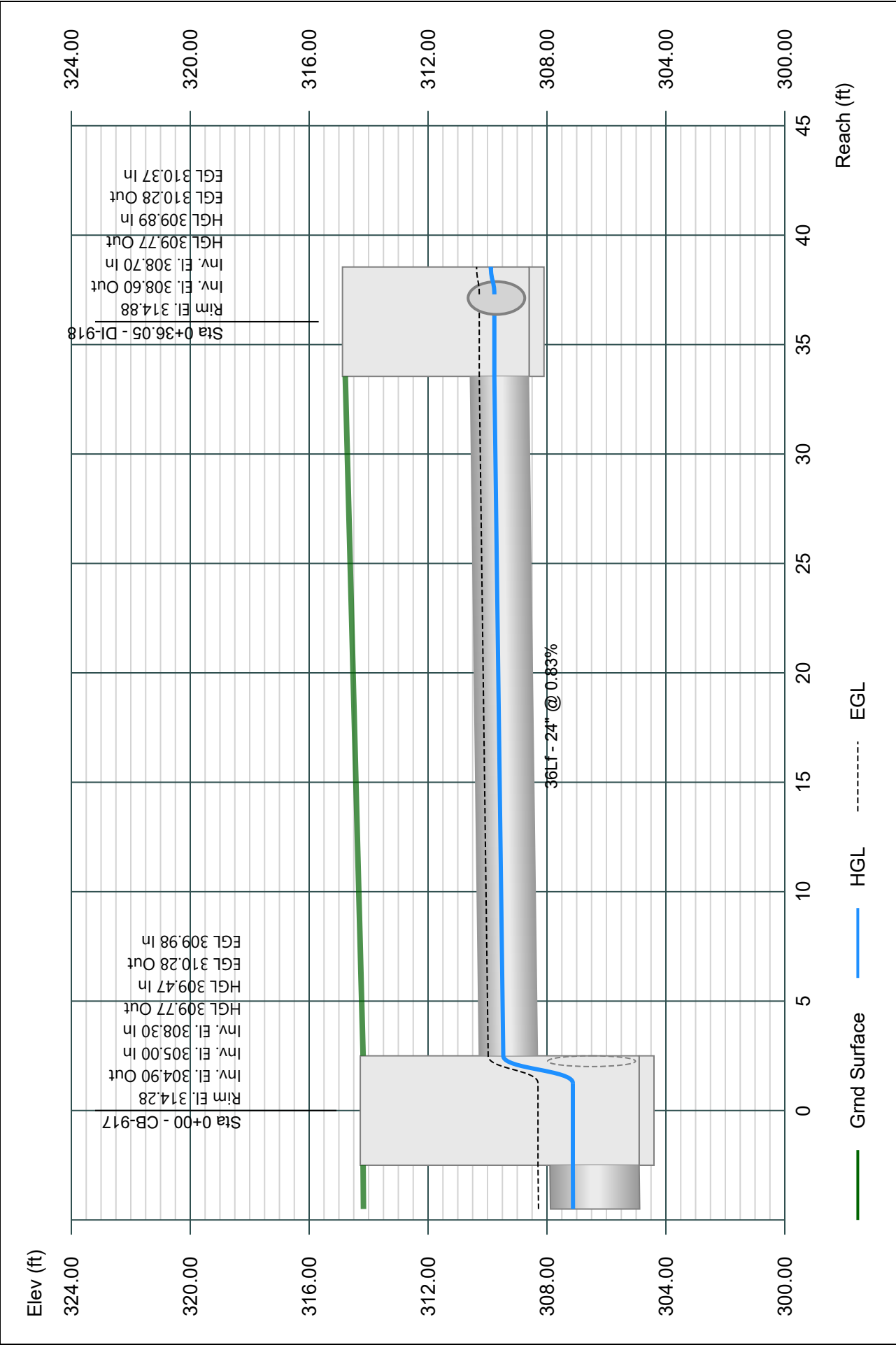


Line 17 - 917-918

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

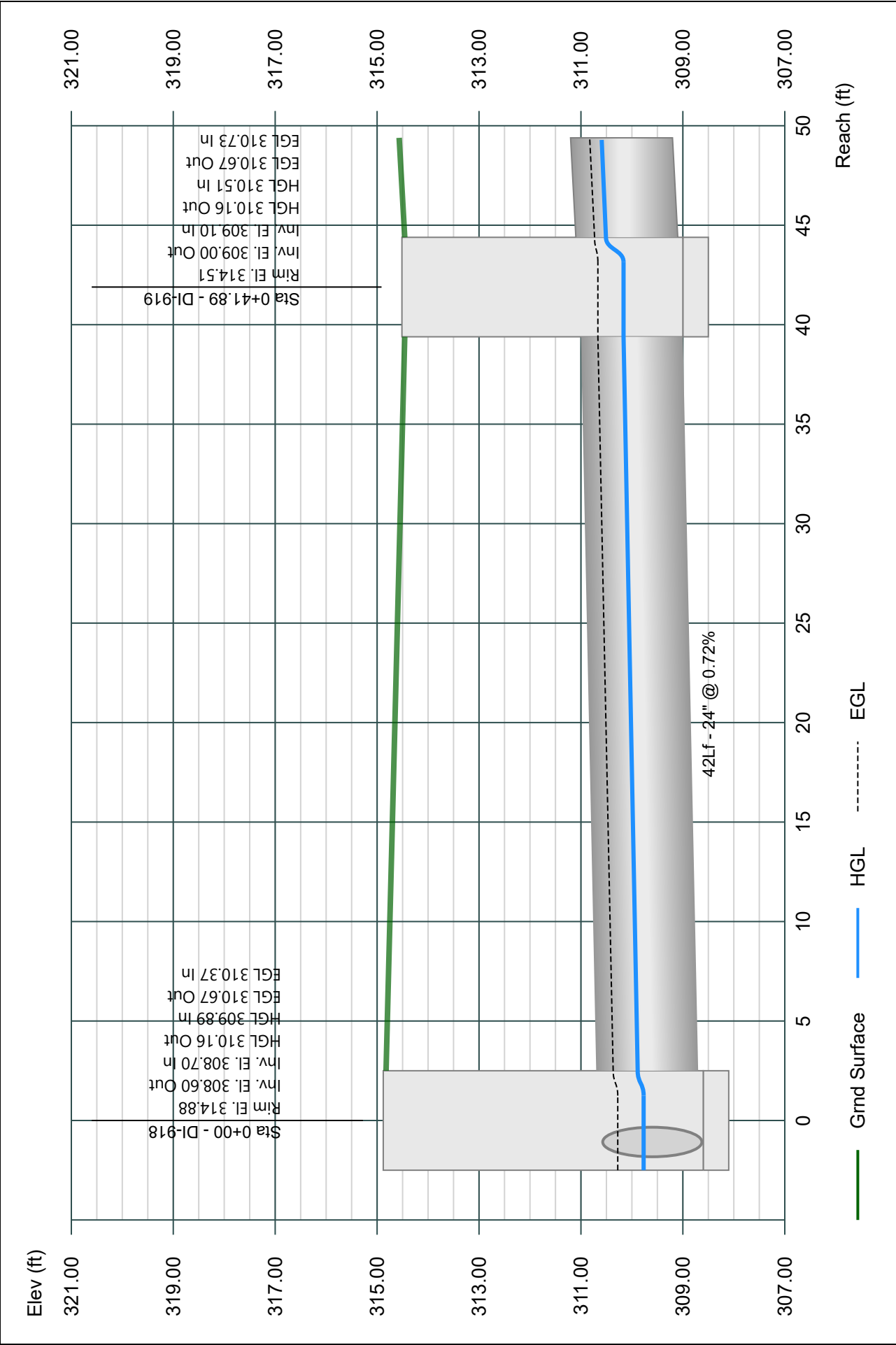


Line 18 - 918-919

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

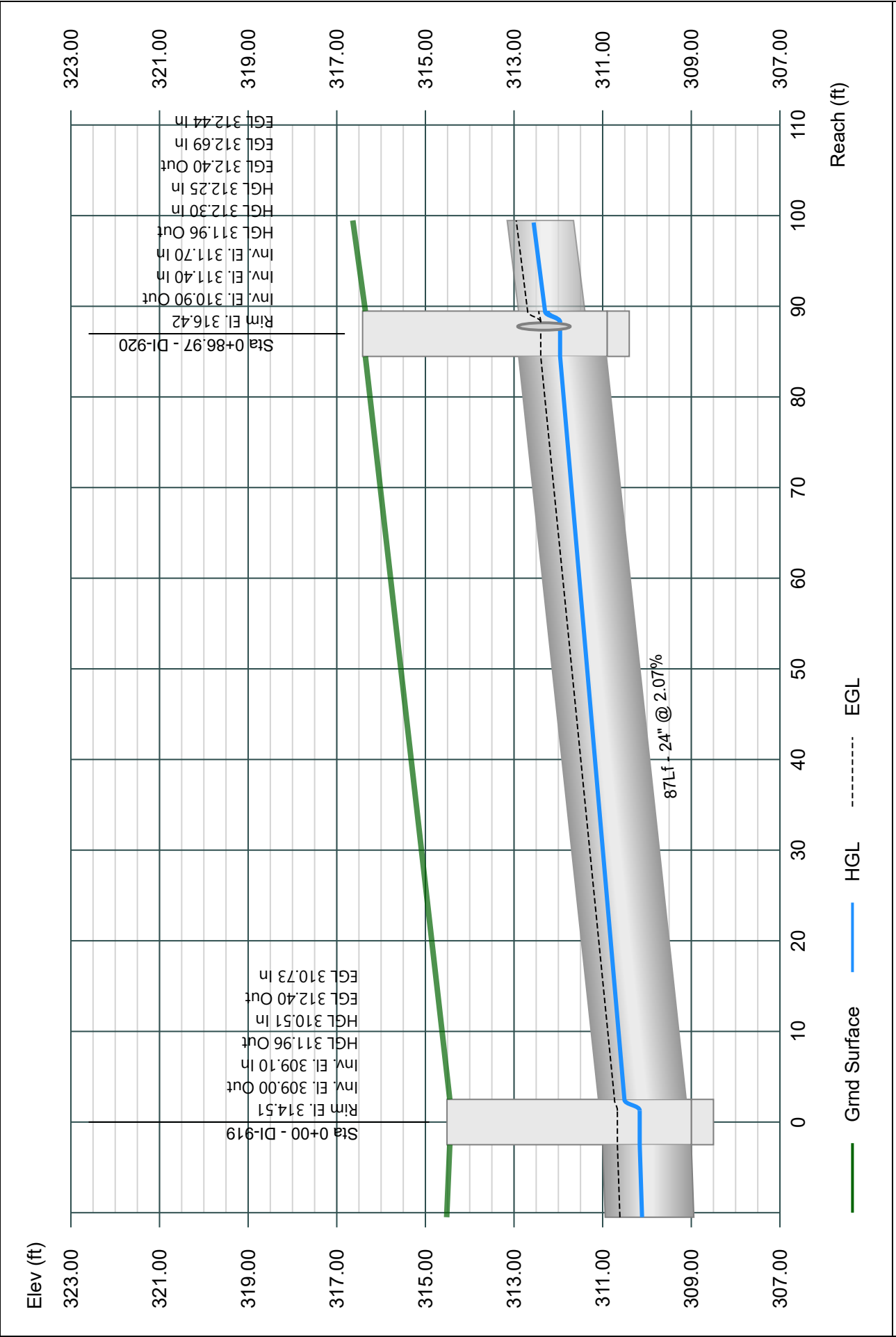


Line 19 - 919-920

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

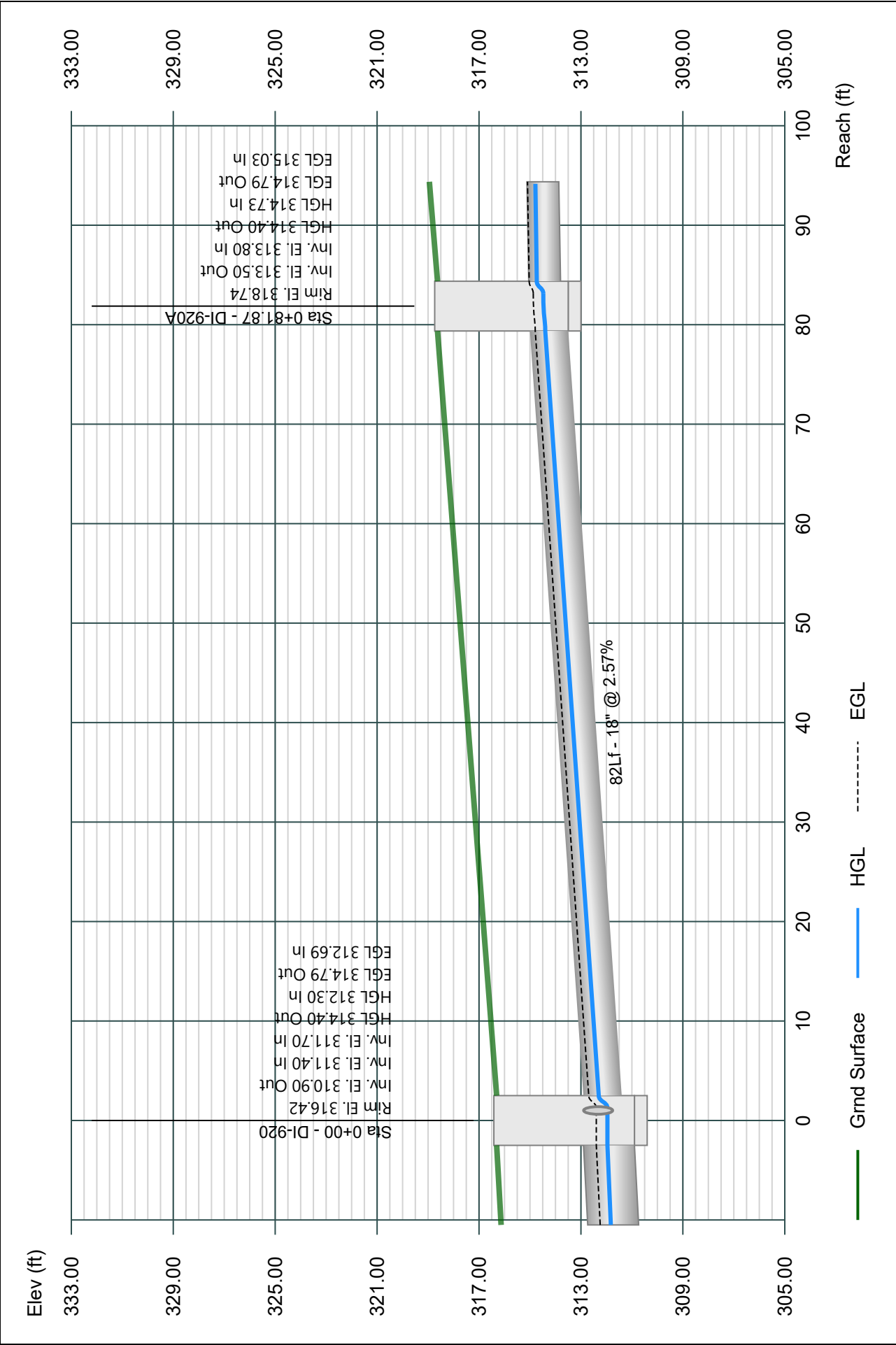


Line 20 - 920-920A

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

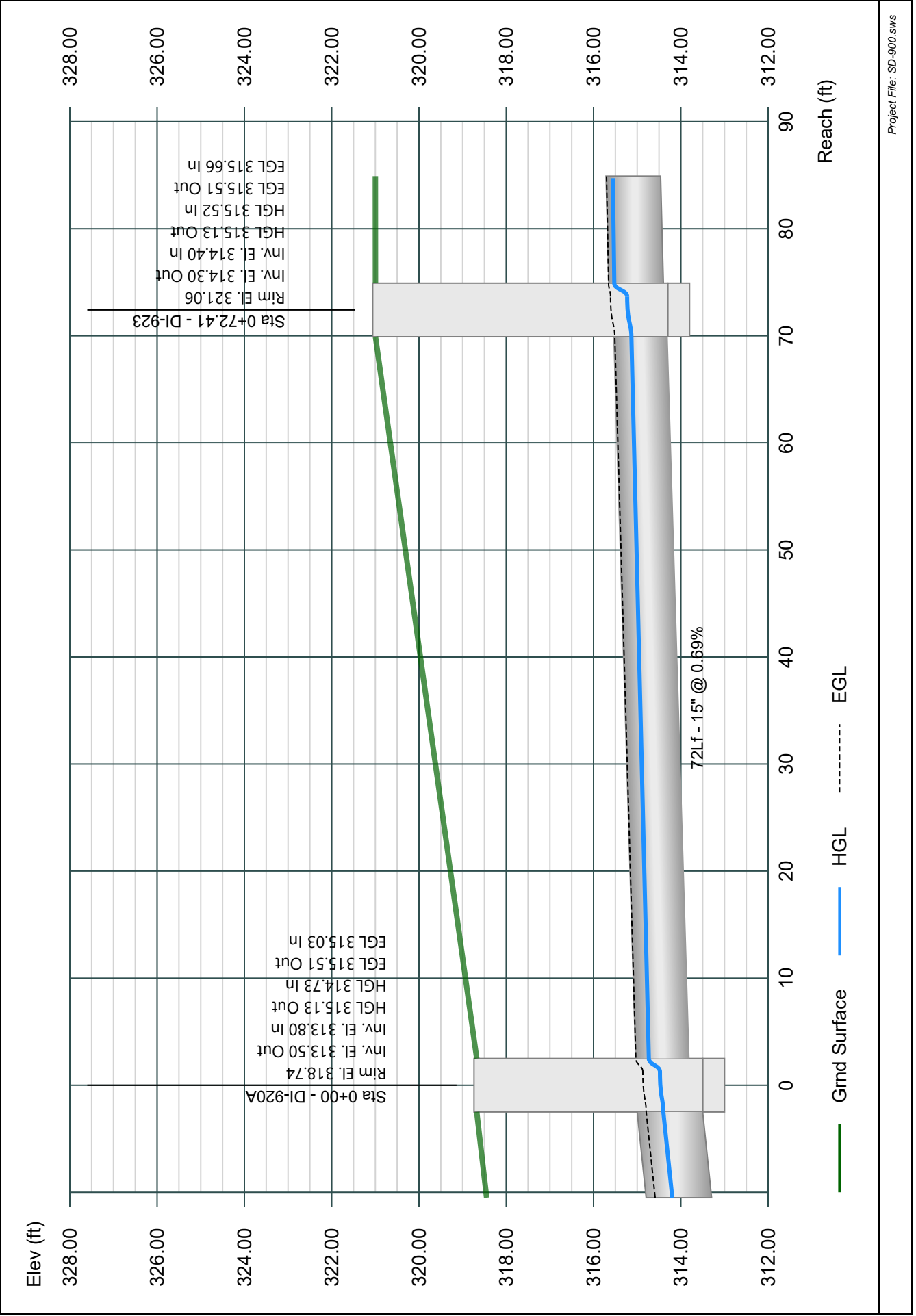


Line 21 - 920A-923

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

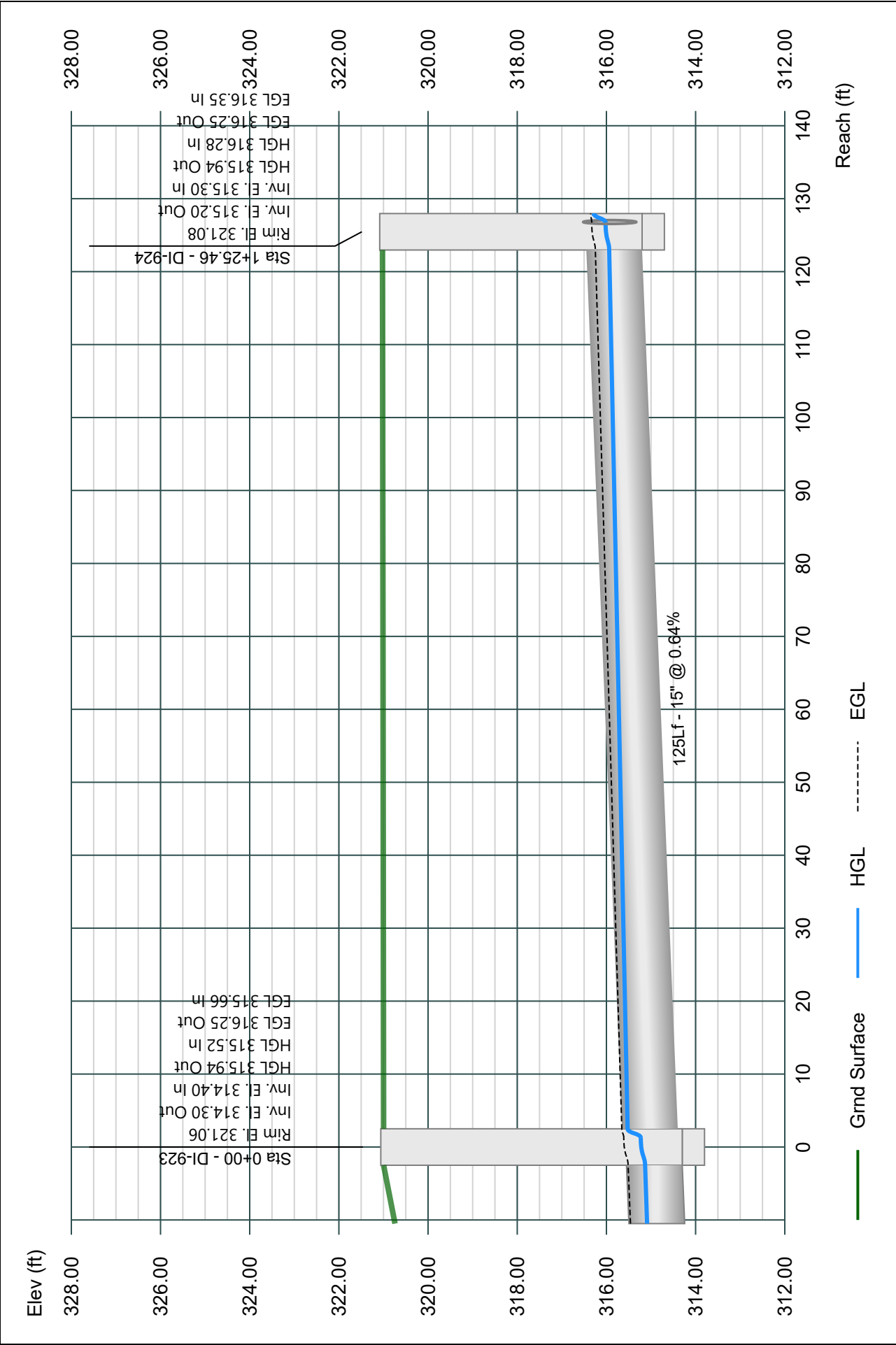


Line 22 - 923-924

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

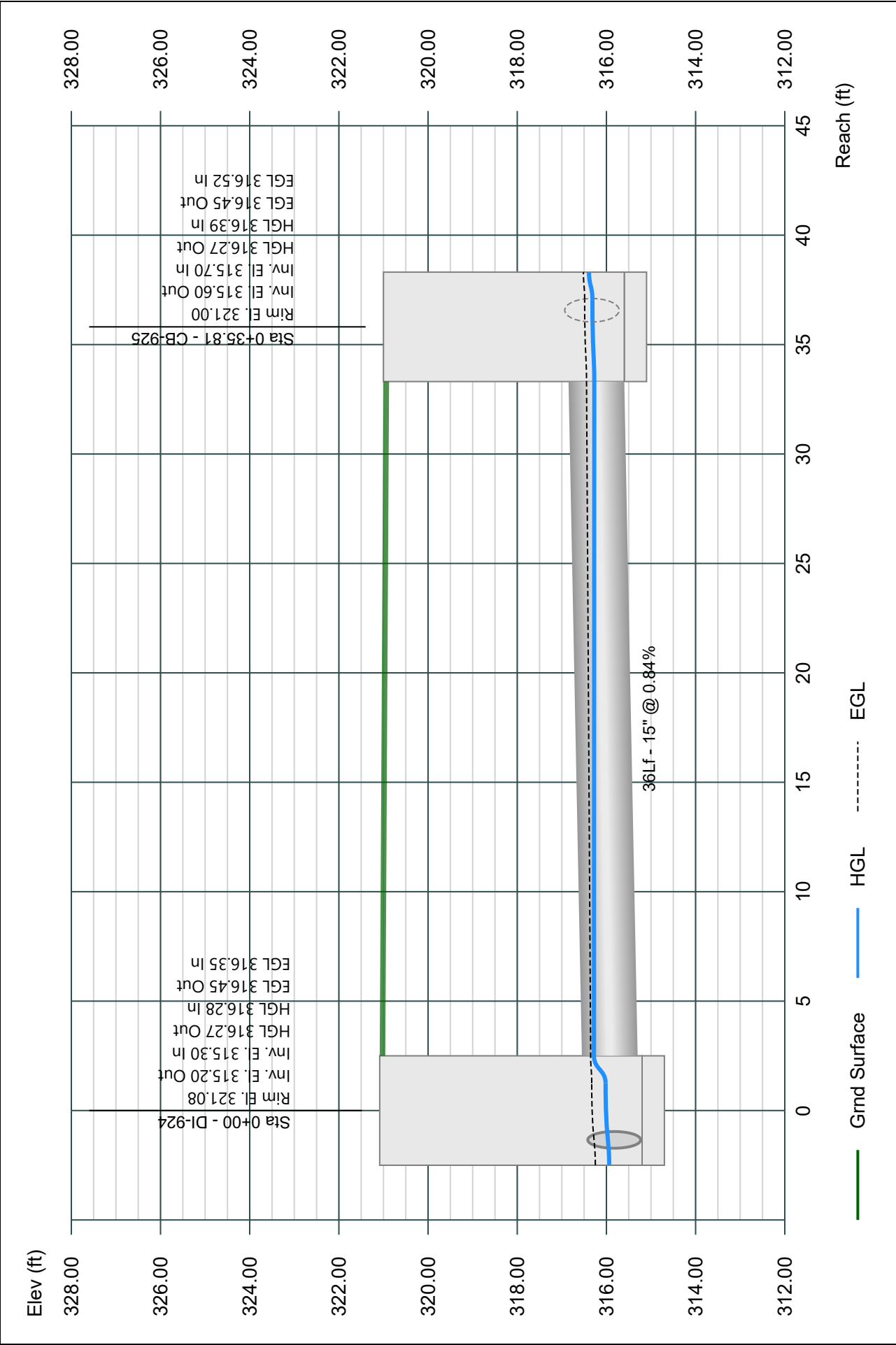


Line 23 - 924-925

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

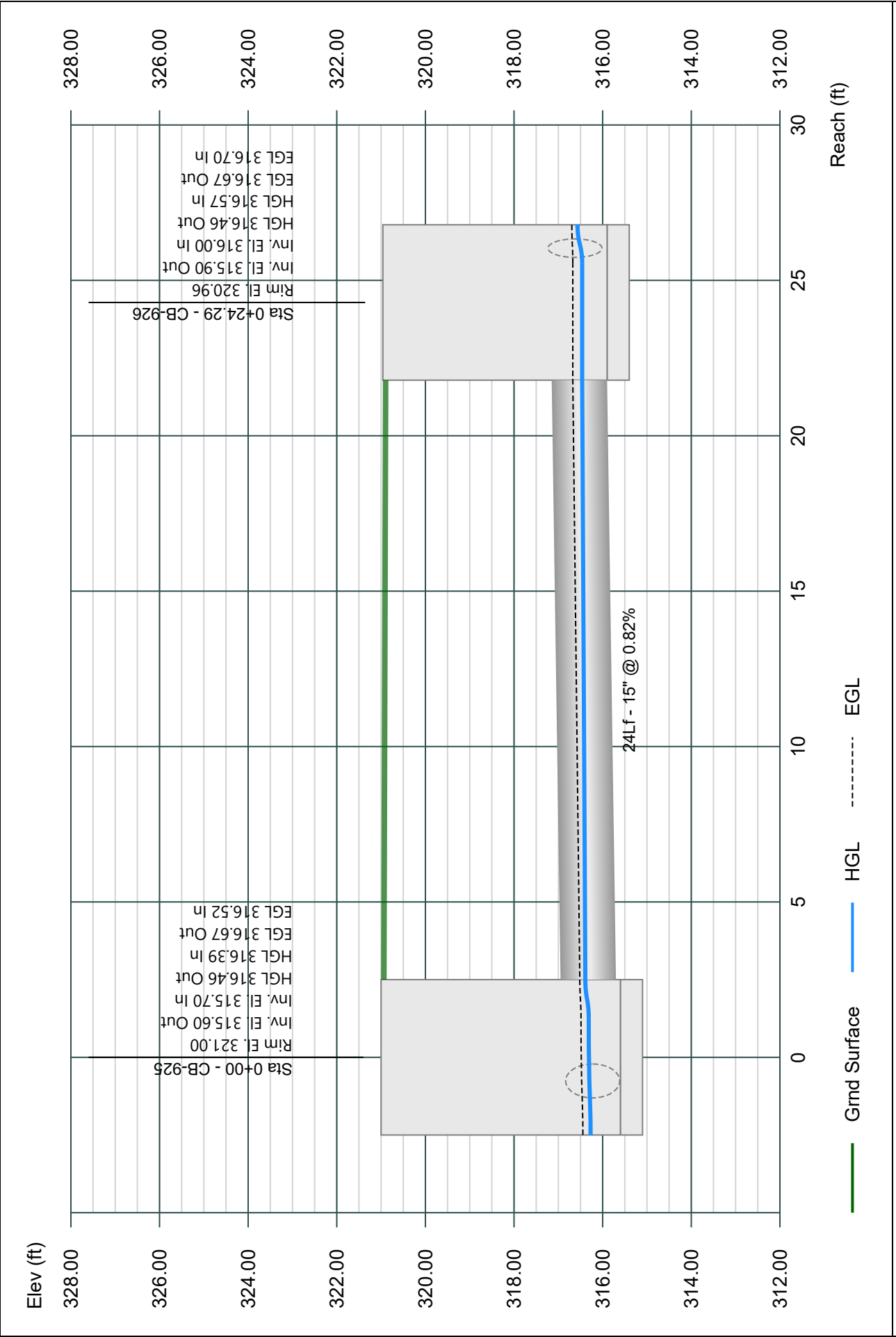


Line 24 - 925-926

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

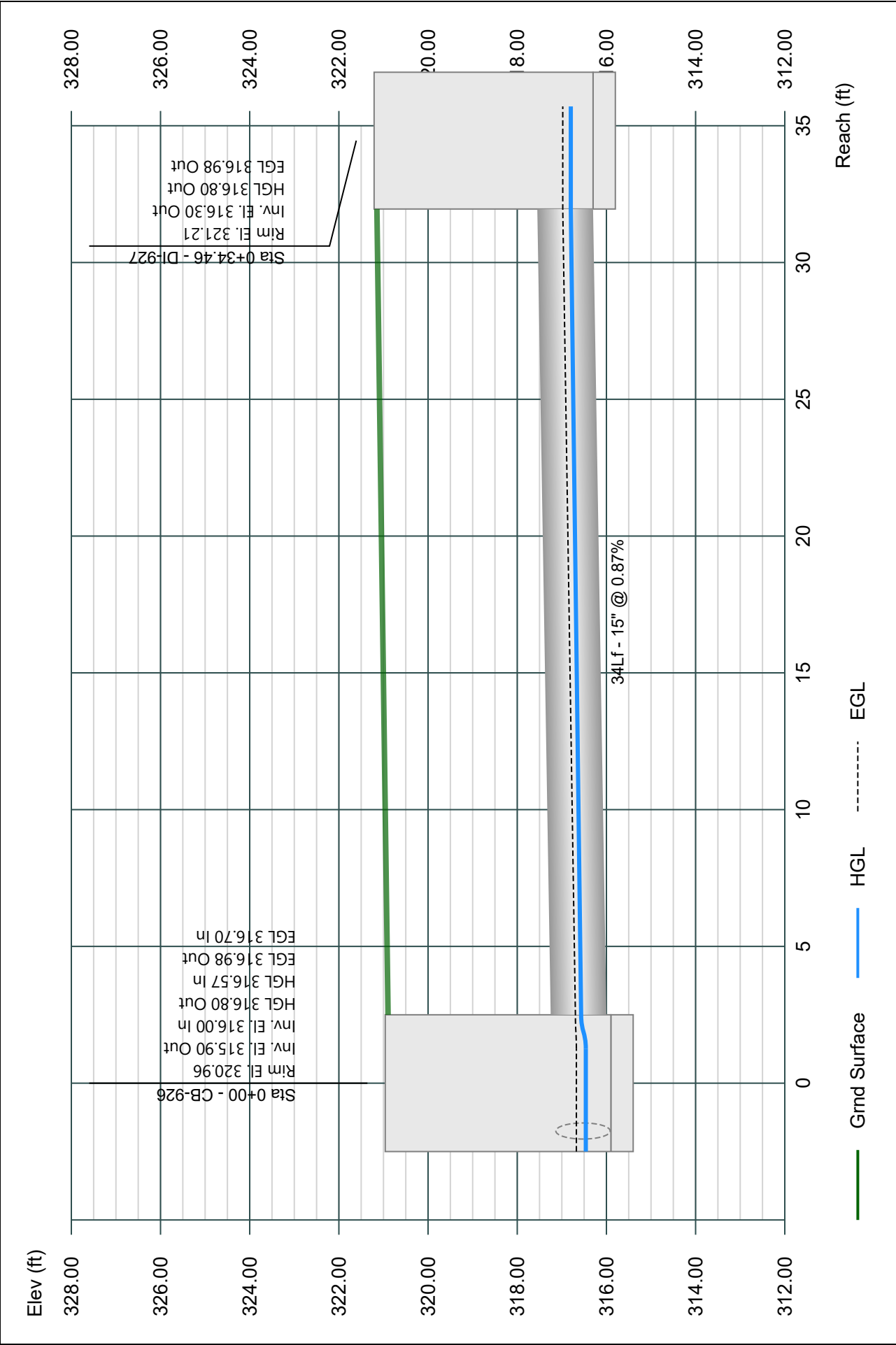
02-26-2024



Line 25 - 926-927

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900
02-26-2024

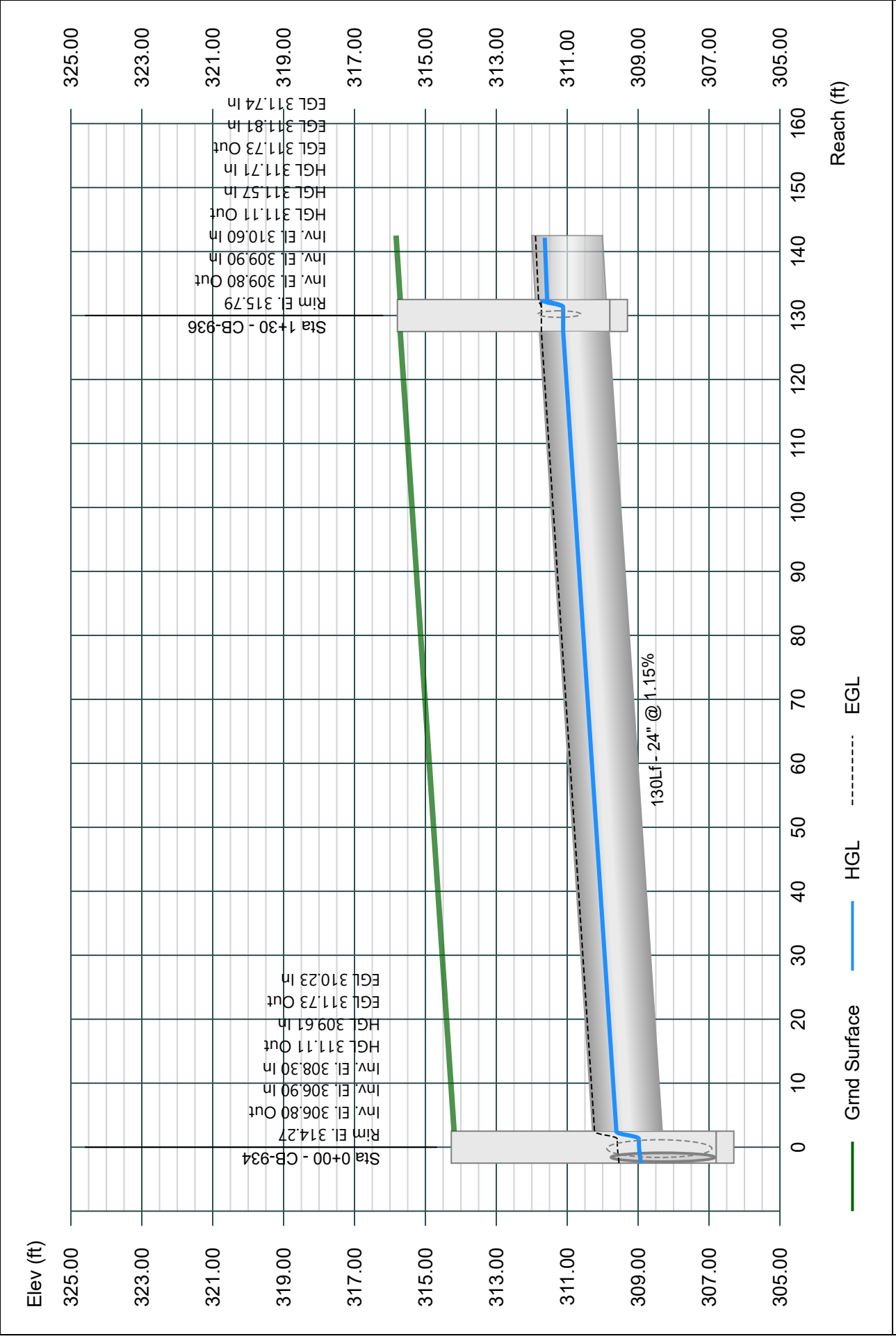


Line 26 - 934-936

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

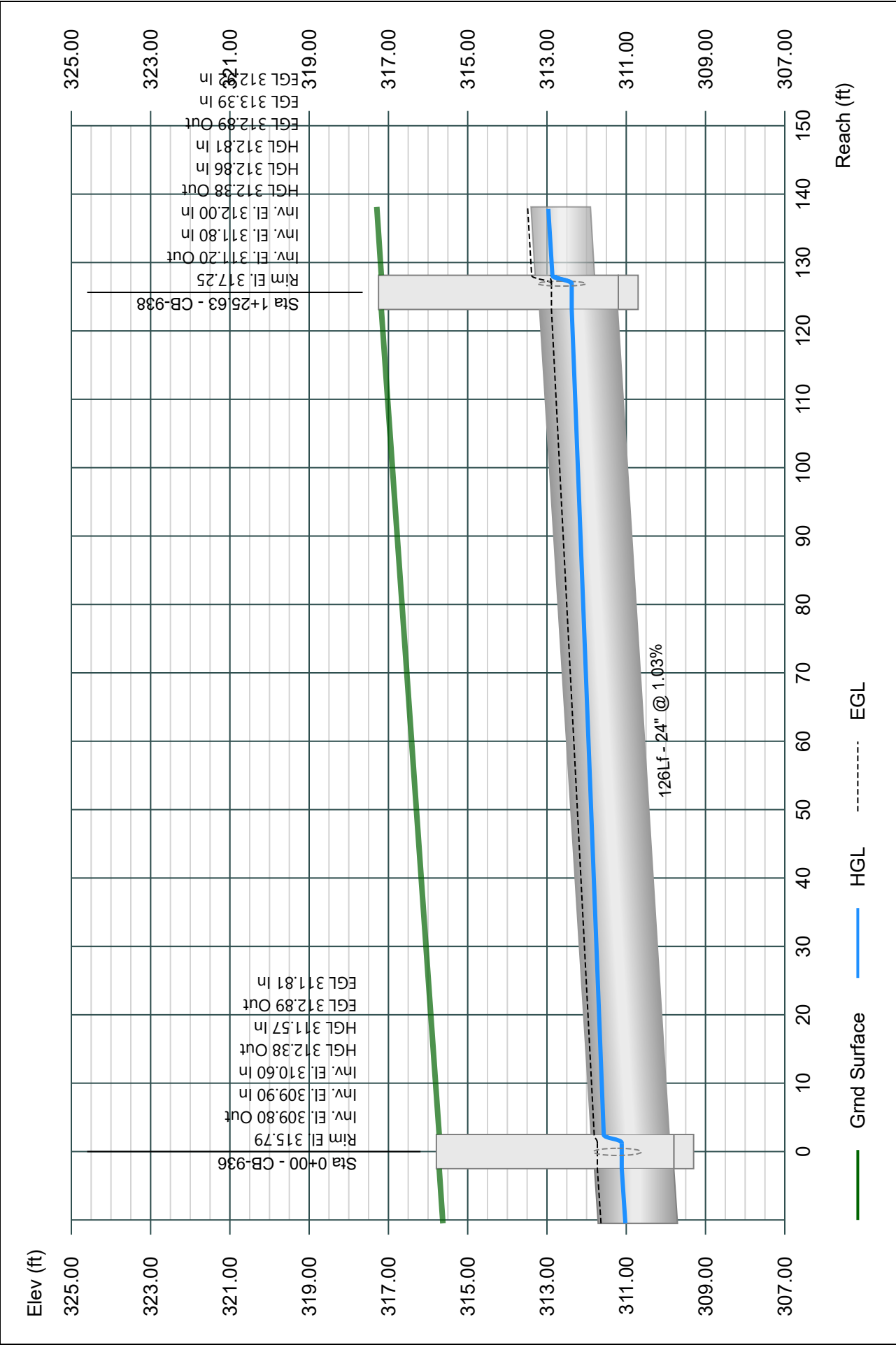


Line 27 - 936-938

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

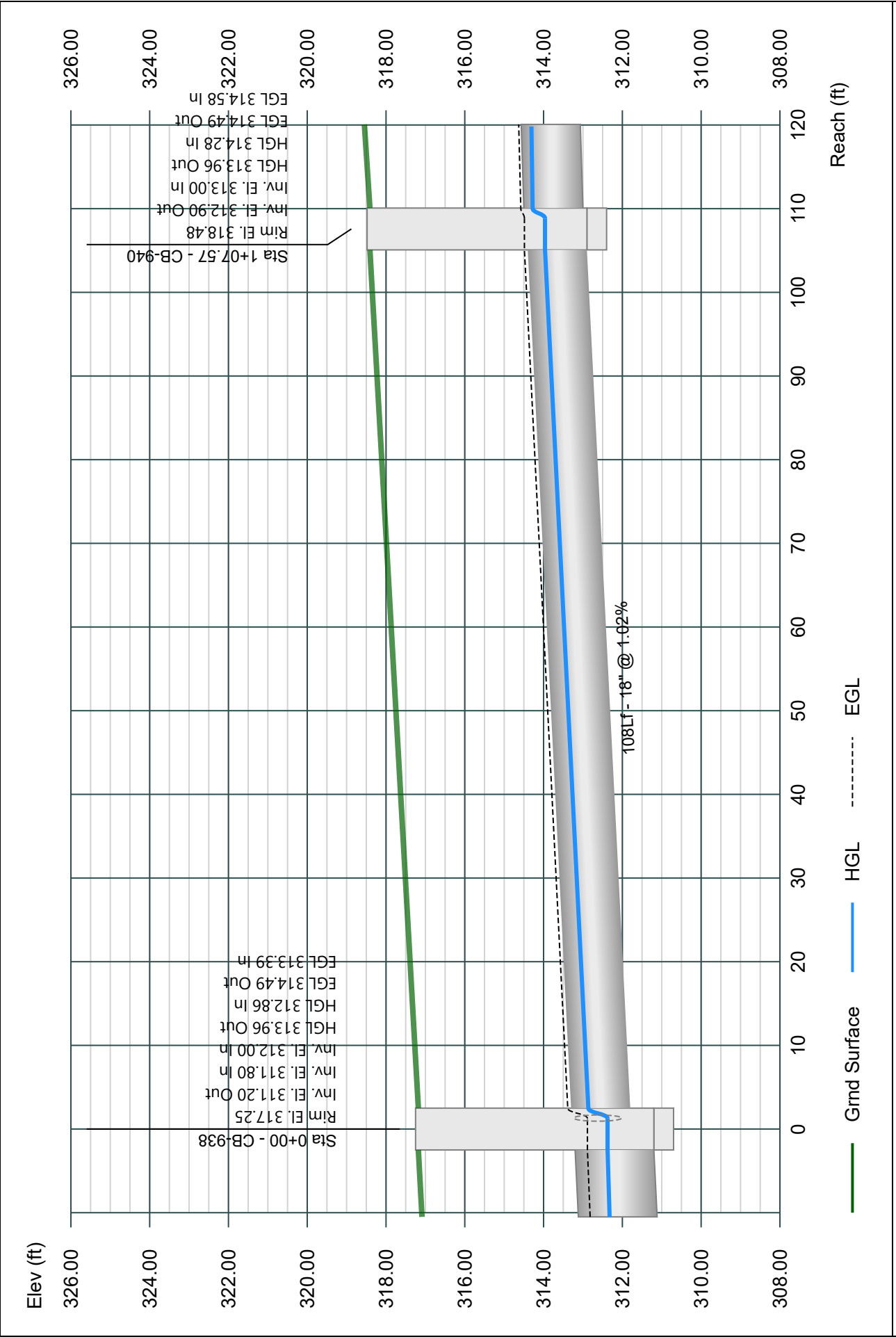


Line 28 - 938-940

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

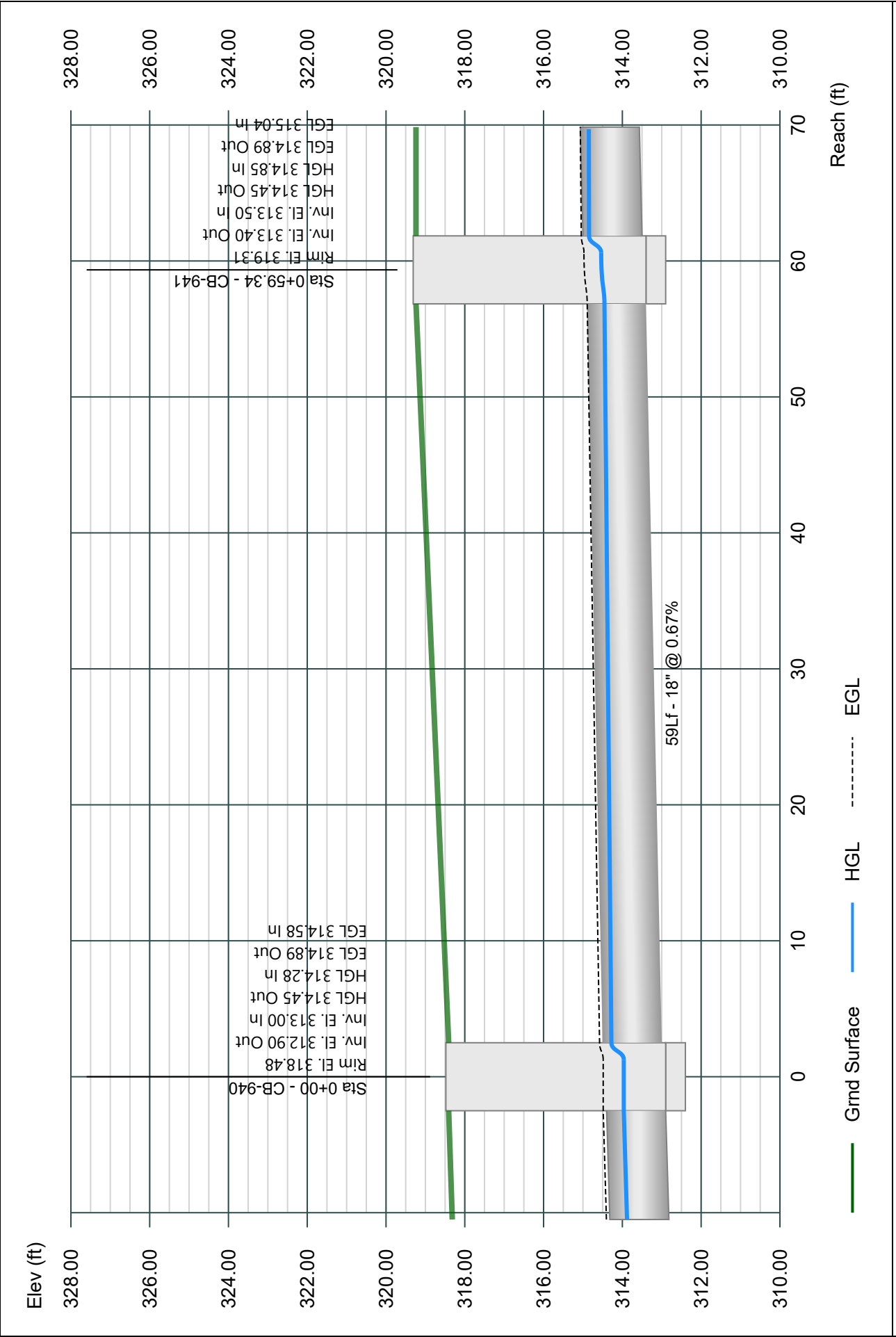


Line 29 - 940-941

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

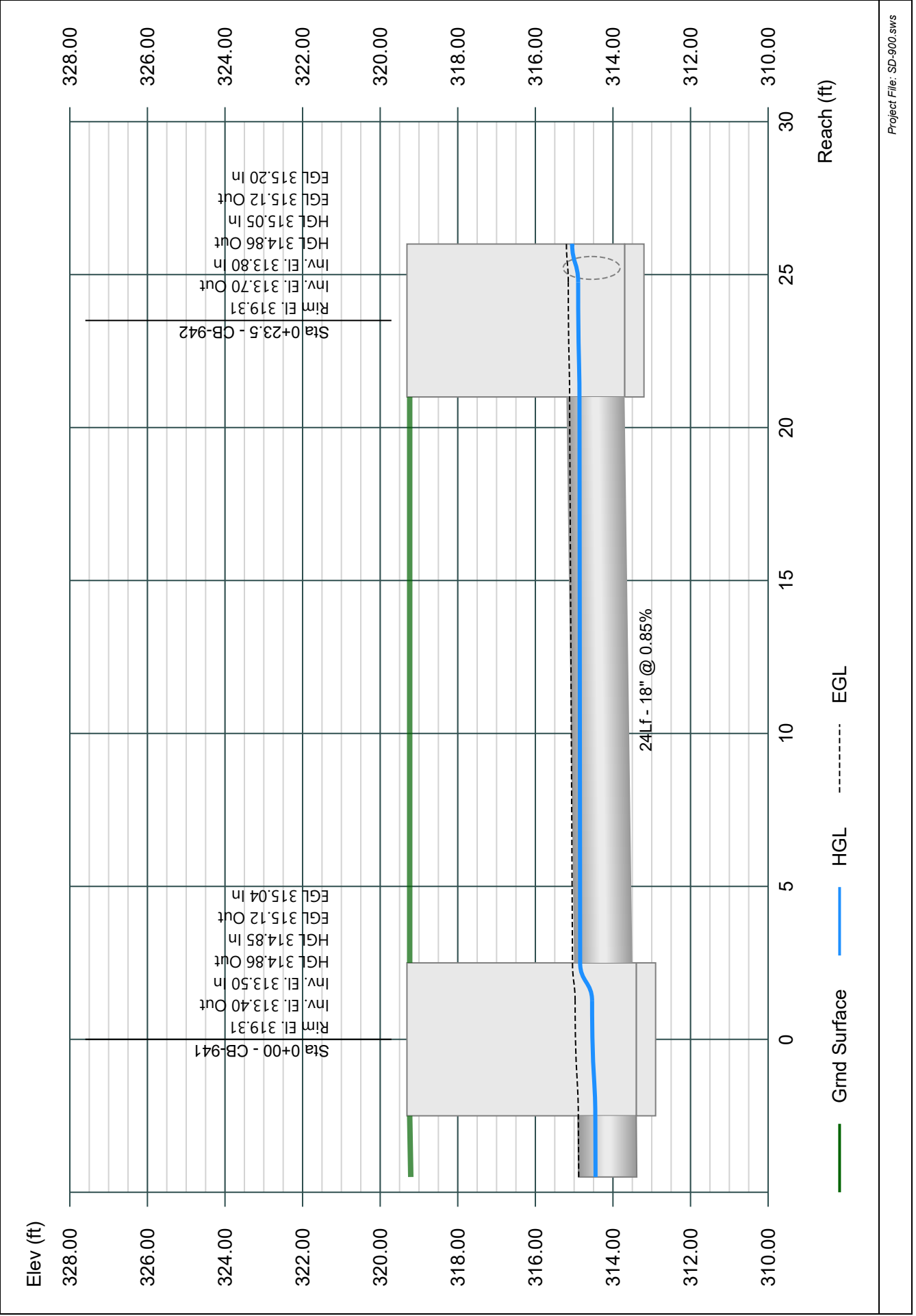


Line 30 - 941-942

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

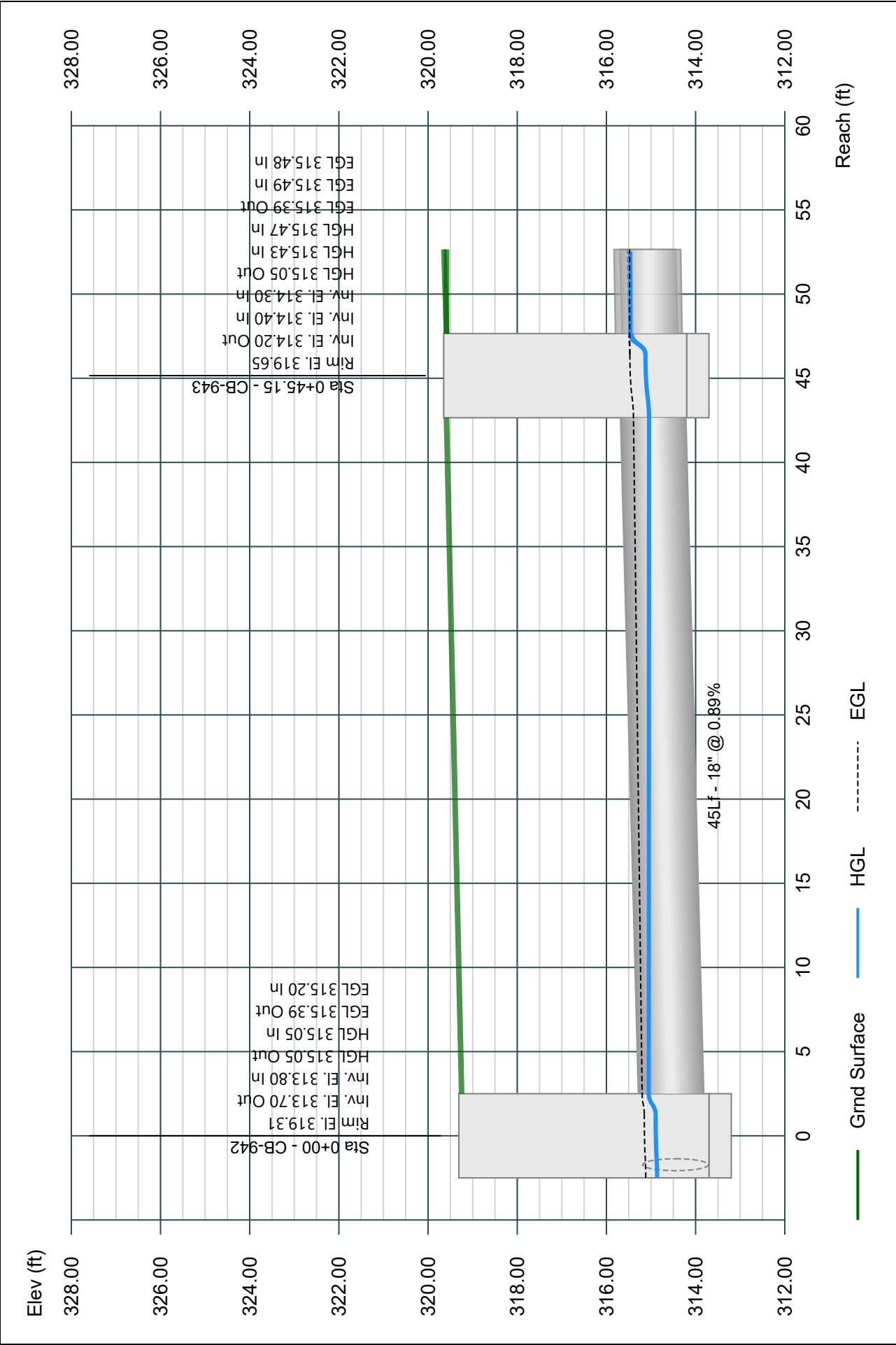


Line 31 - 942-943

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

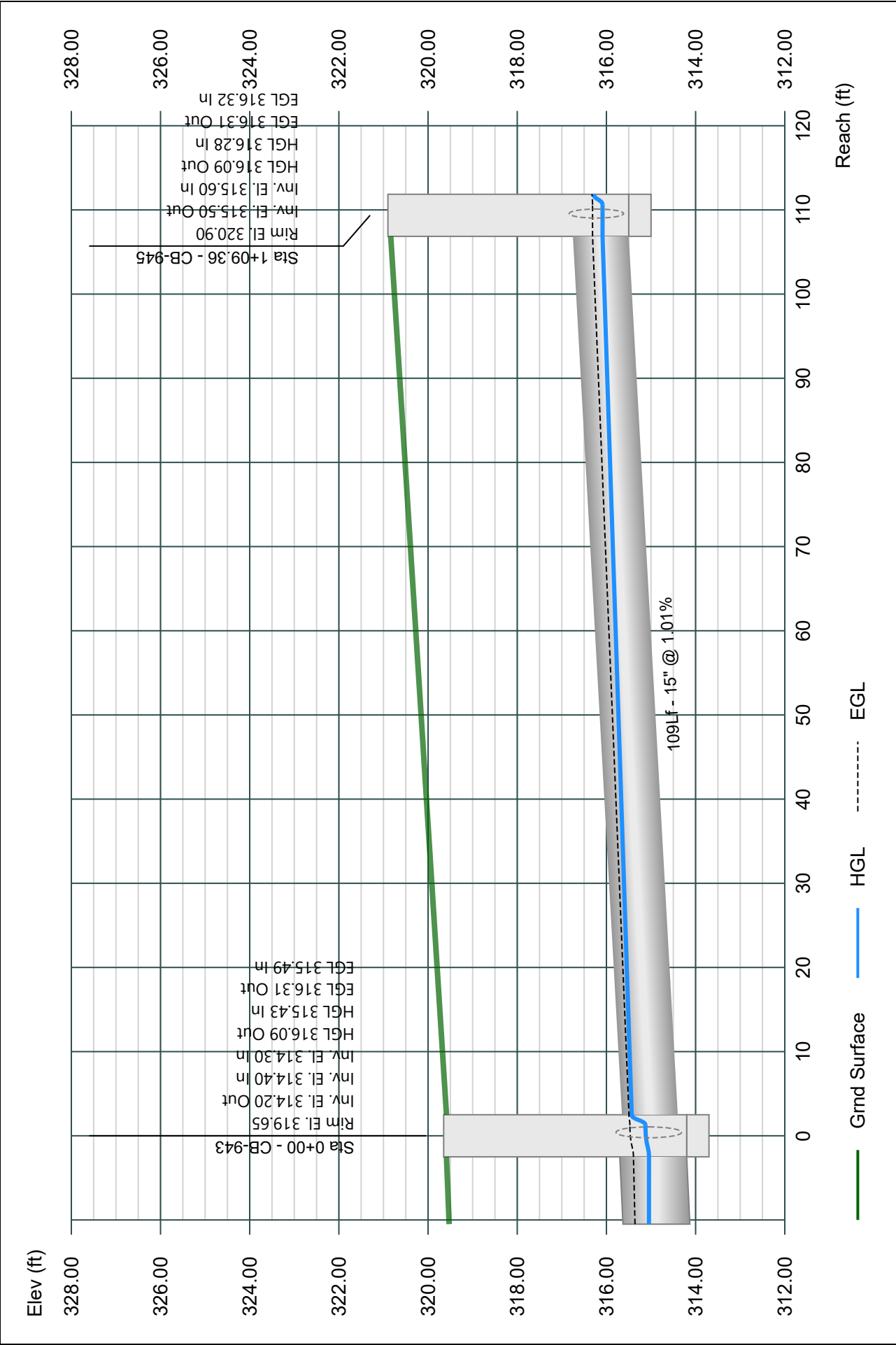
02-26-2024



Line 32 - 943-945

Project Name: SD-900
02-26-2024

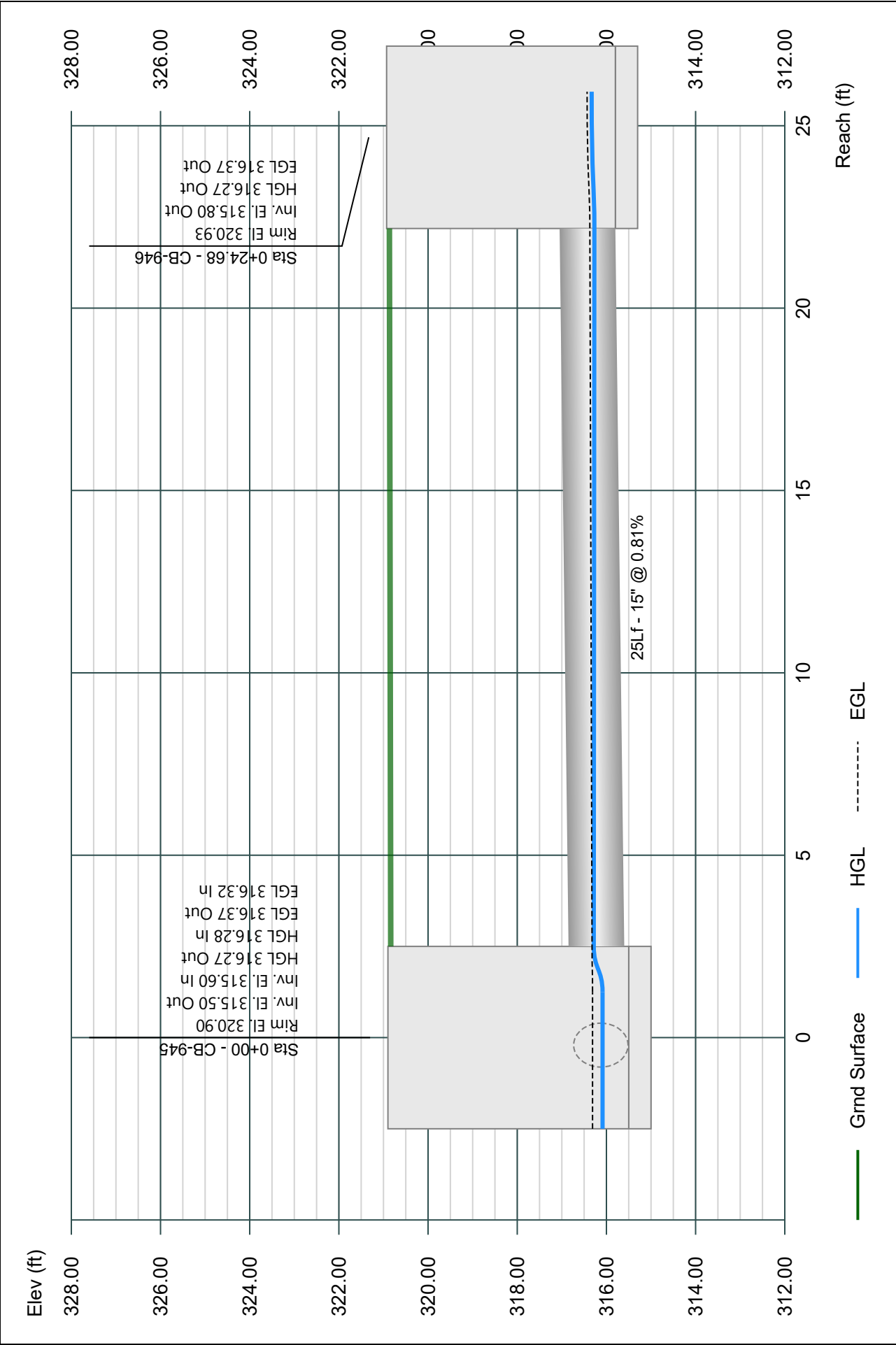
Stormwater Studio 2024 v 3.0.0.33



Line 33 - 945-946

Stormwater Studio 2024 v 3.0.0.33

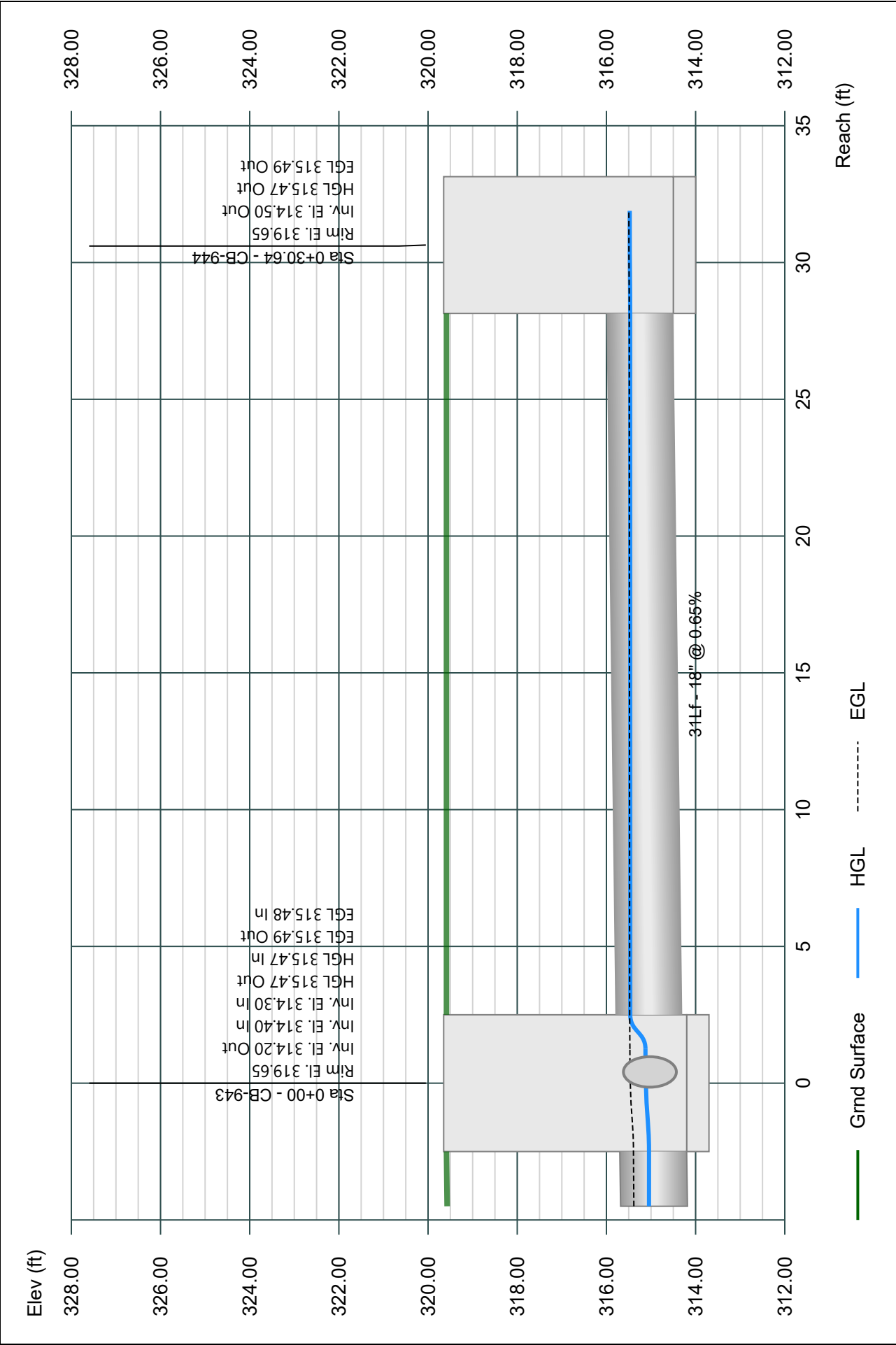
Project Name: SD-900
02-26-2024



Line 34 - 943-944

Project Name: SD-900
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

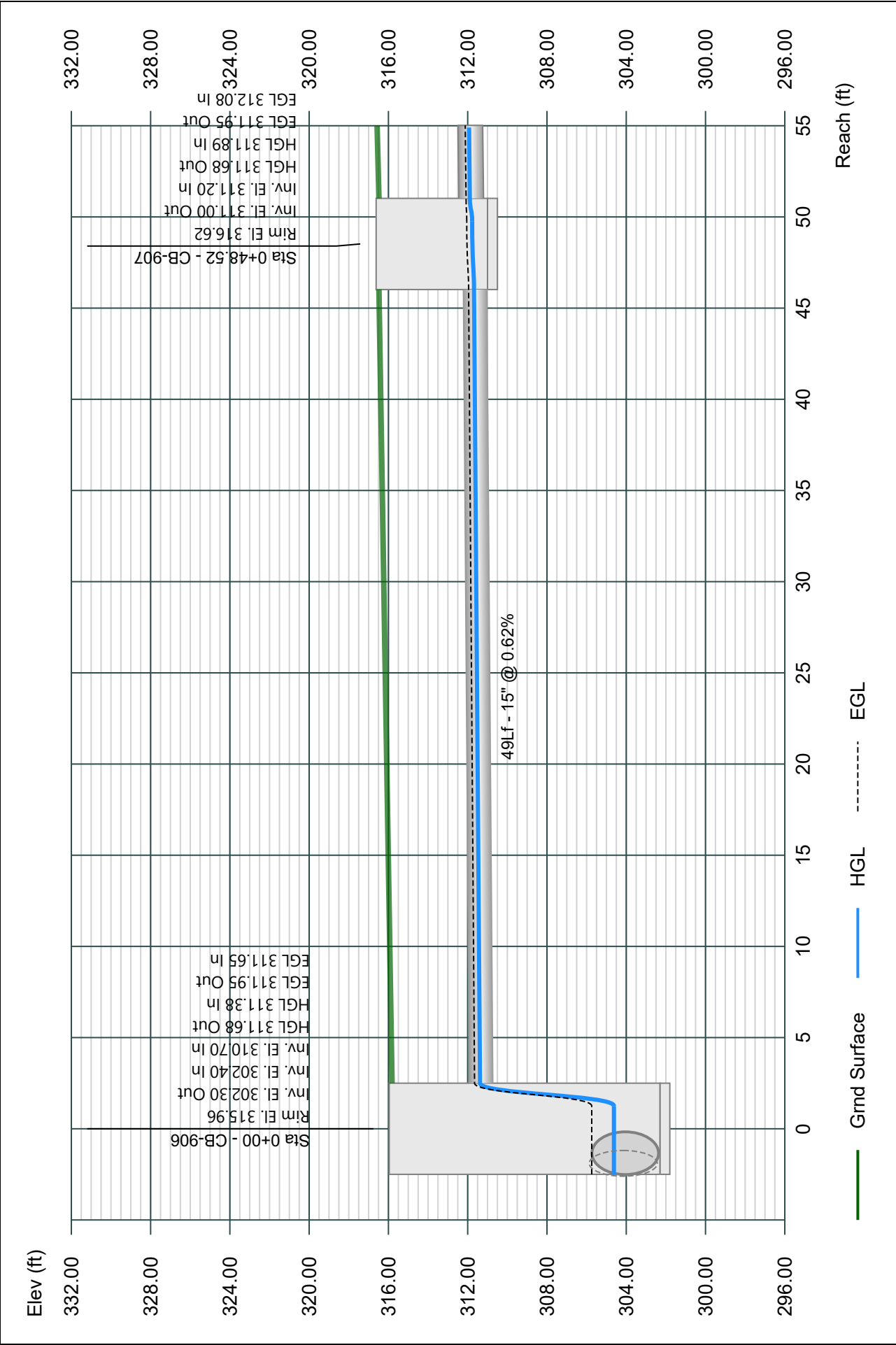


Line 35 - 906-907

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

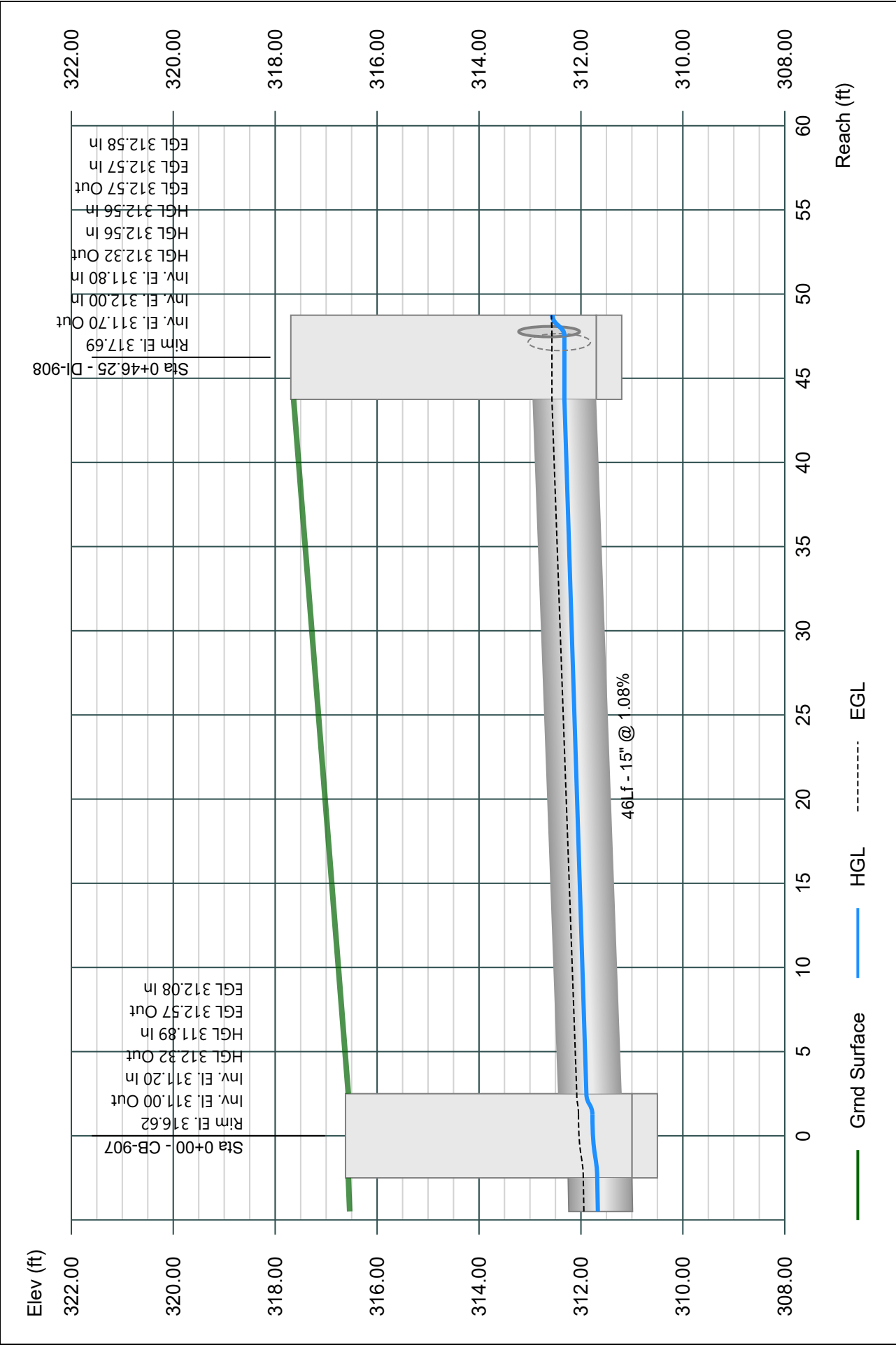


Line 36 - 907-908

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

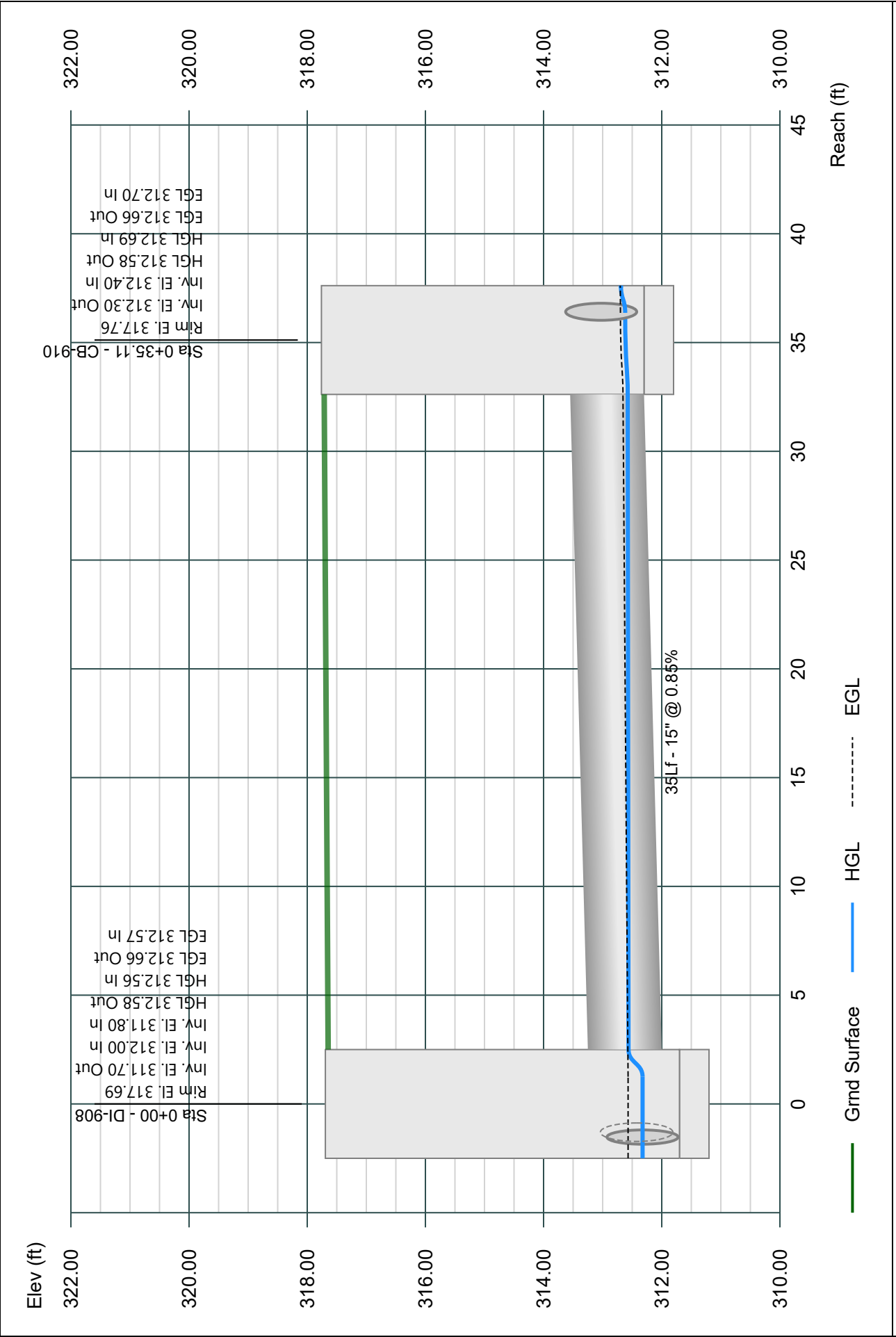


Line 37 - 908-910

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

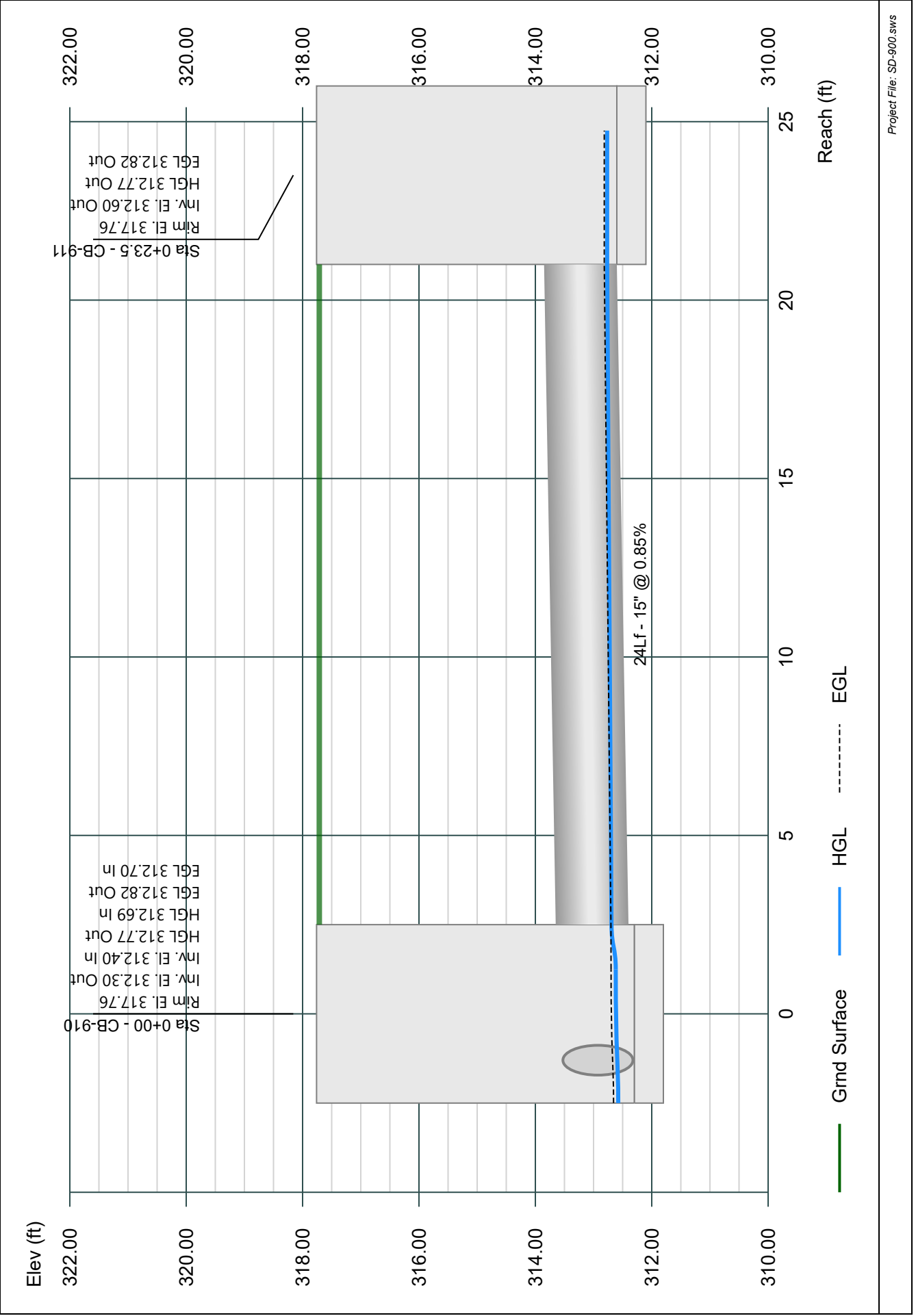


Line 38 - 910-911

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

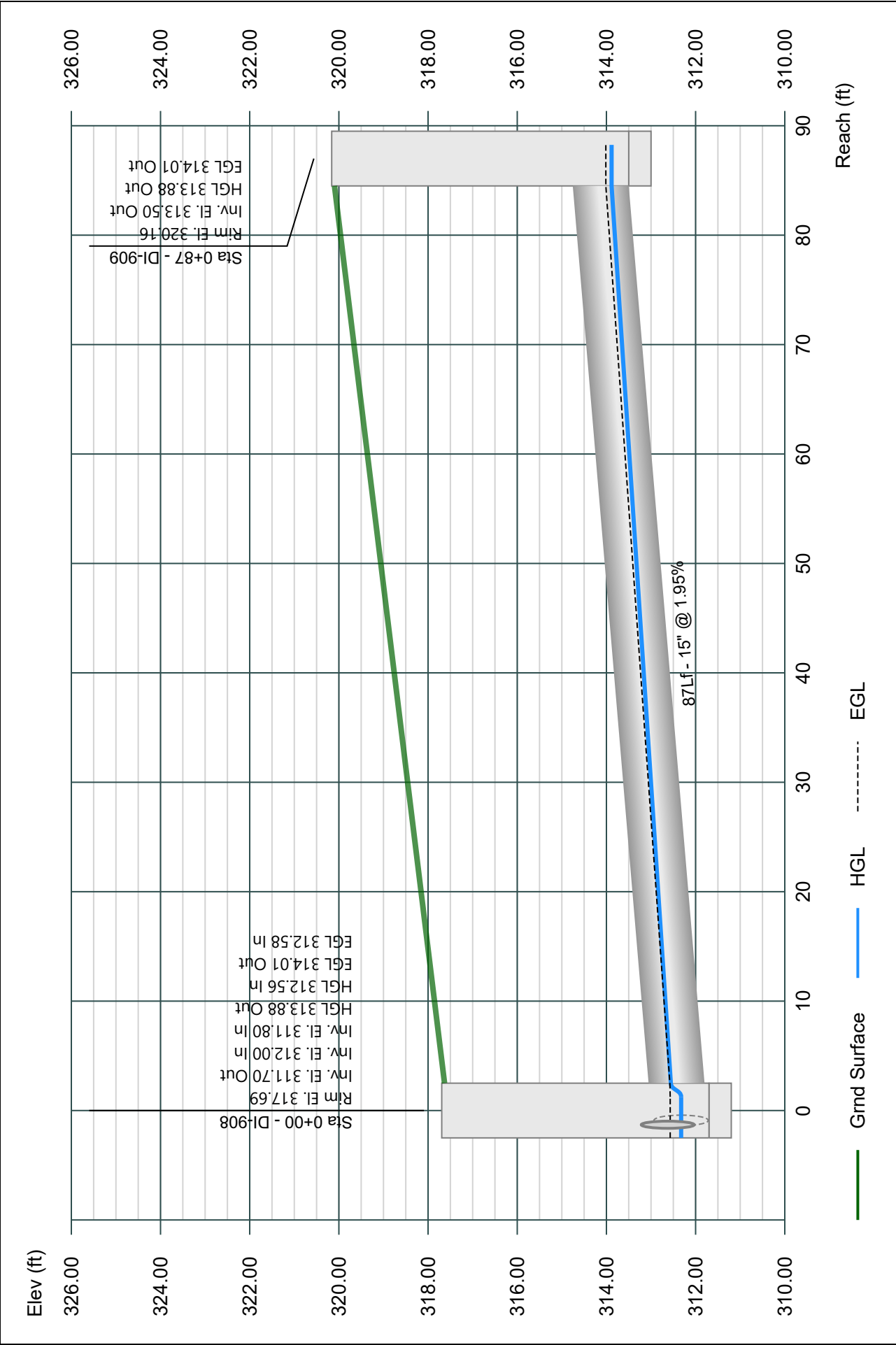


Line 39 - 908-909

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

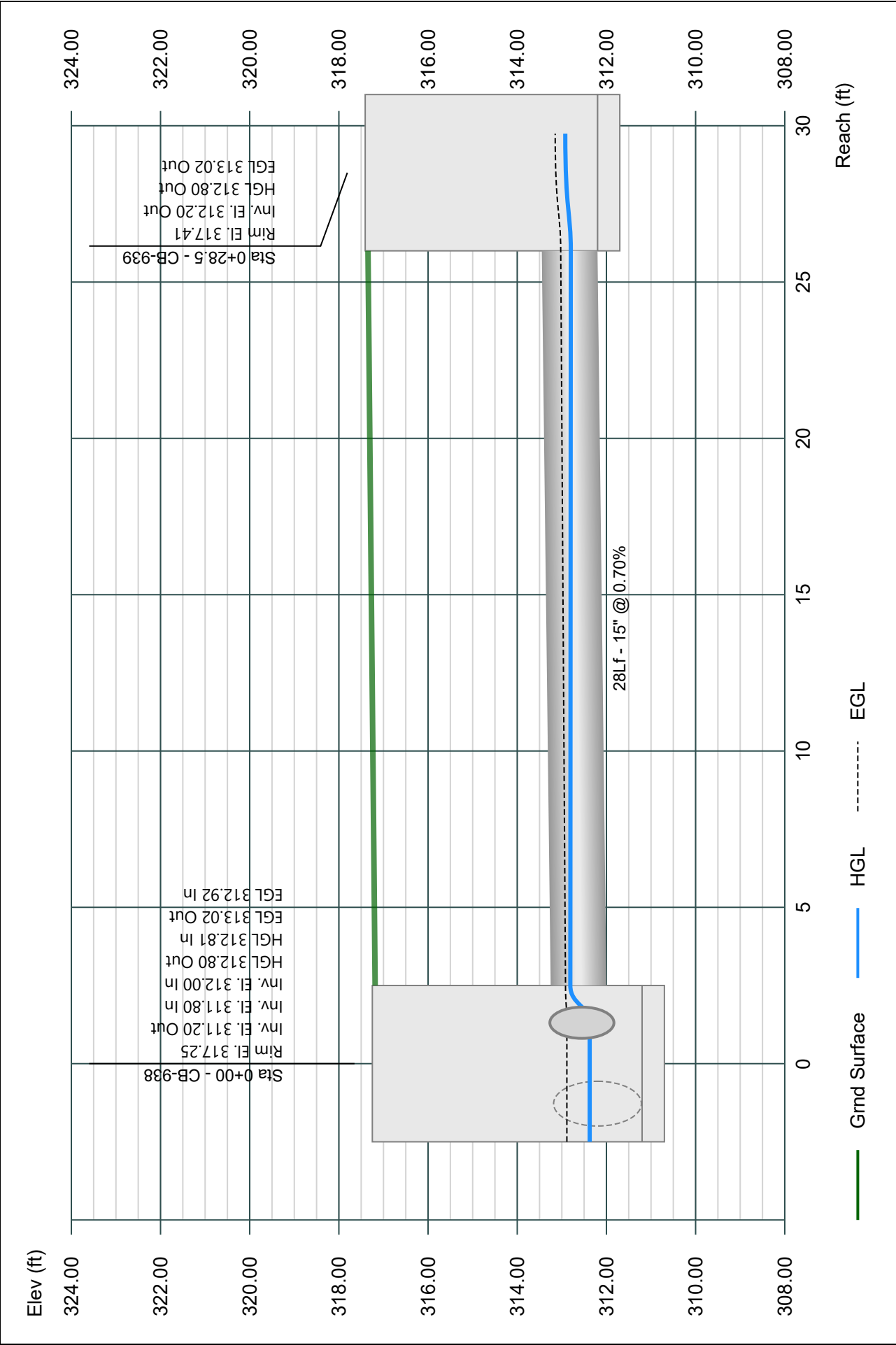


Line 40 - 938-939

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

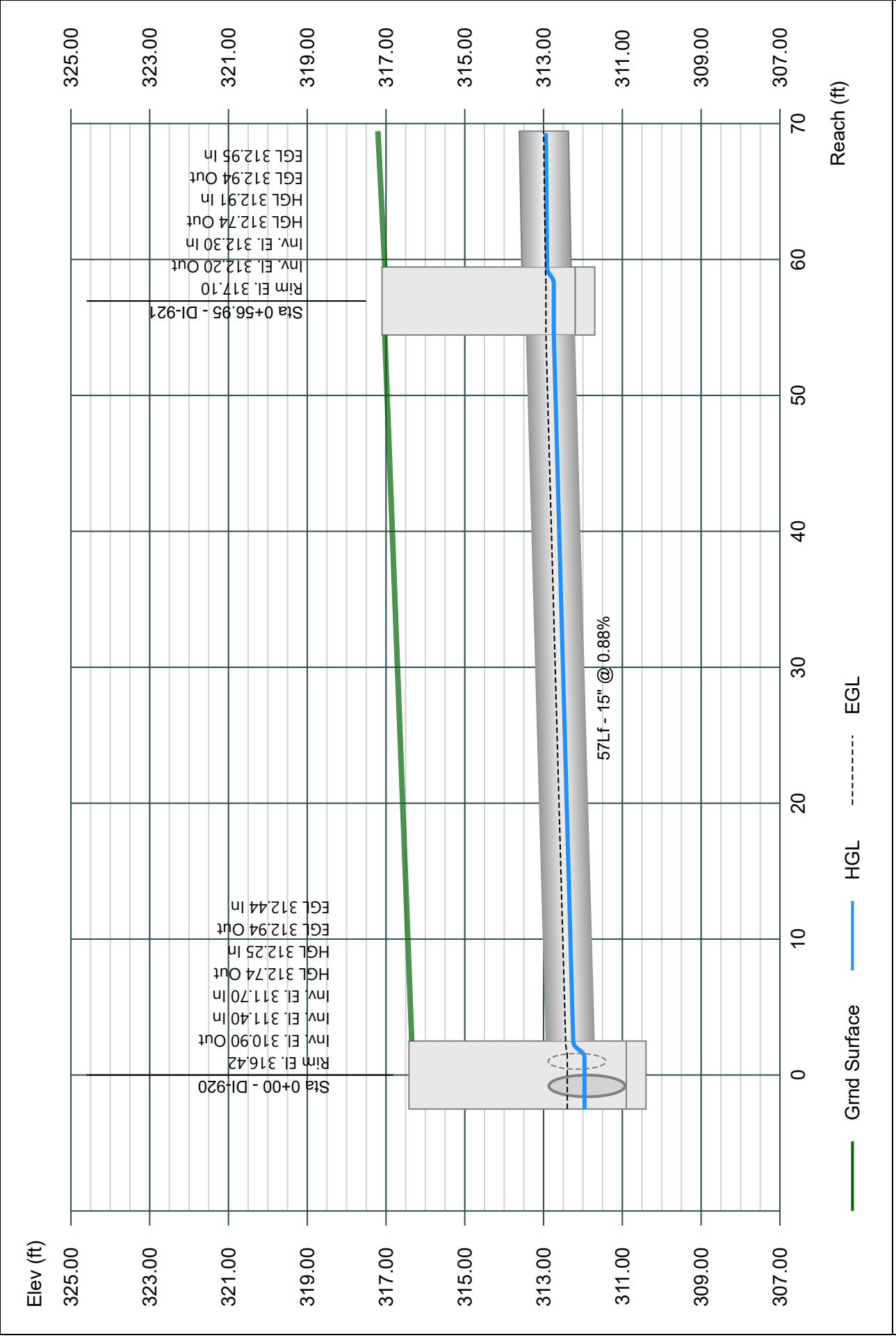


Line 41 - 920-921

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

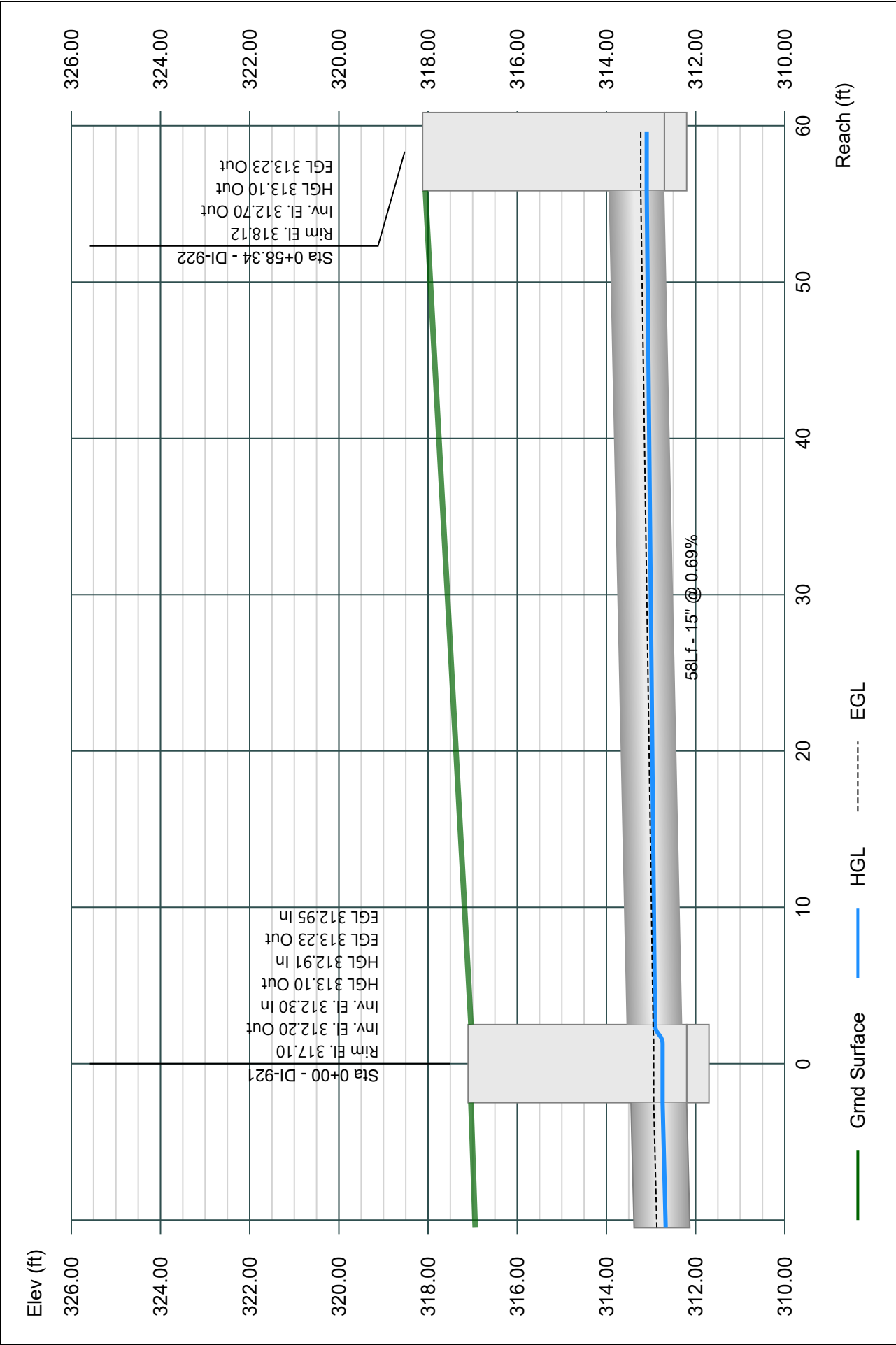


Line 42 - 921-922

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

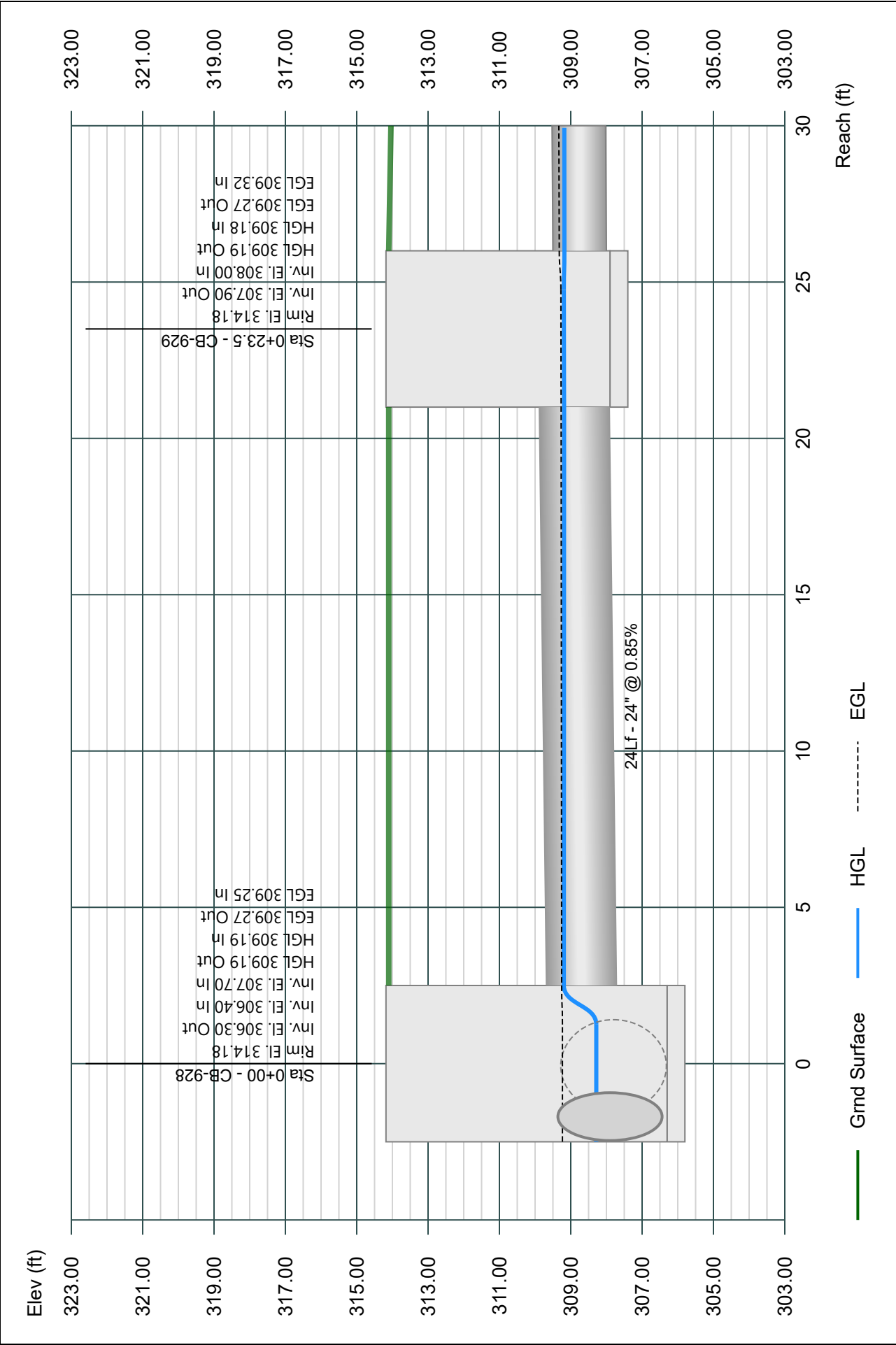


Line 43 - 928-929

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

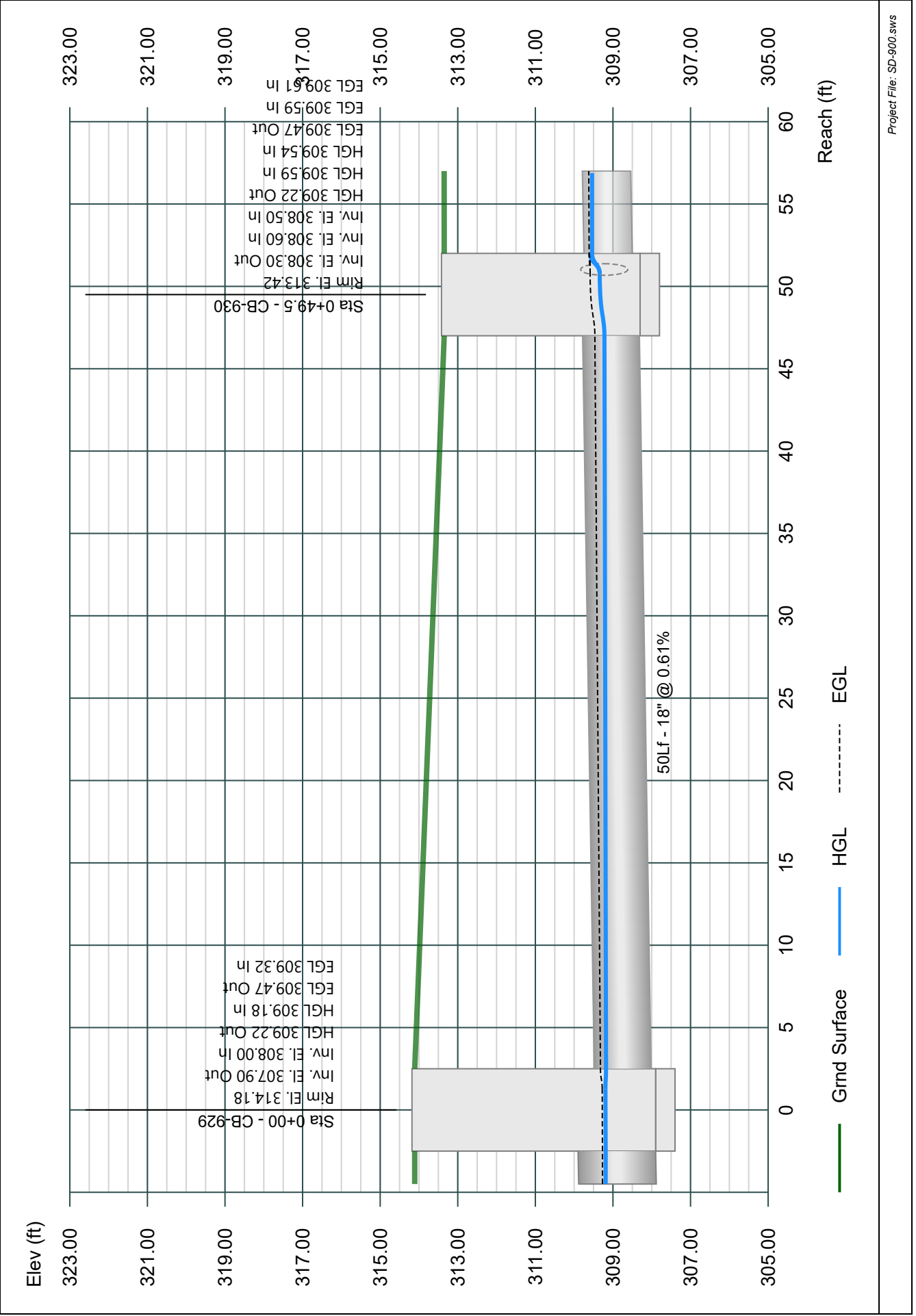


Line 44 - 929-930

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

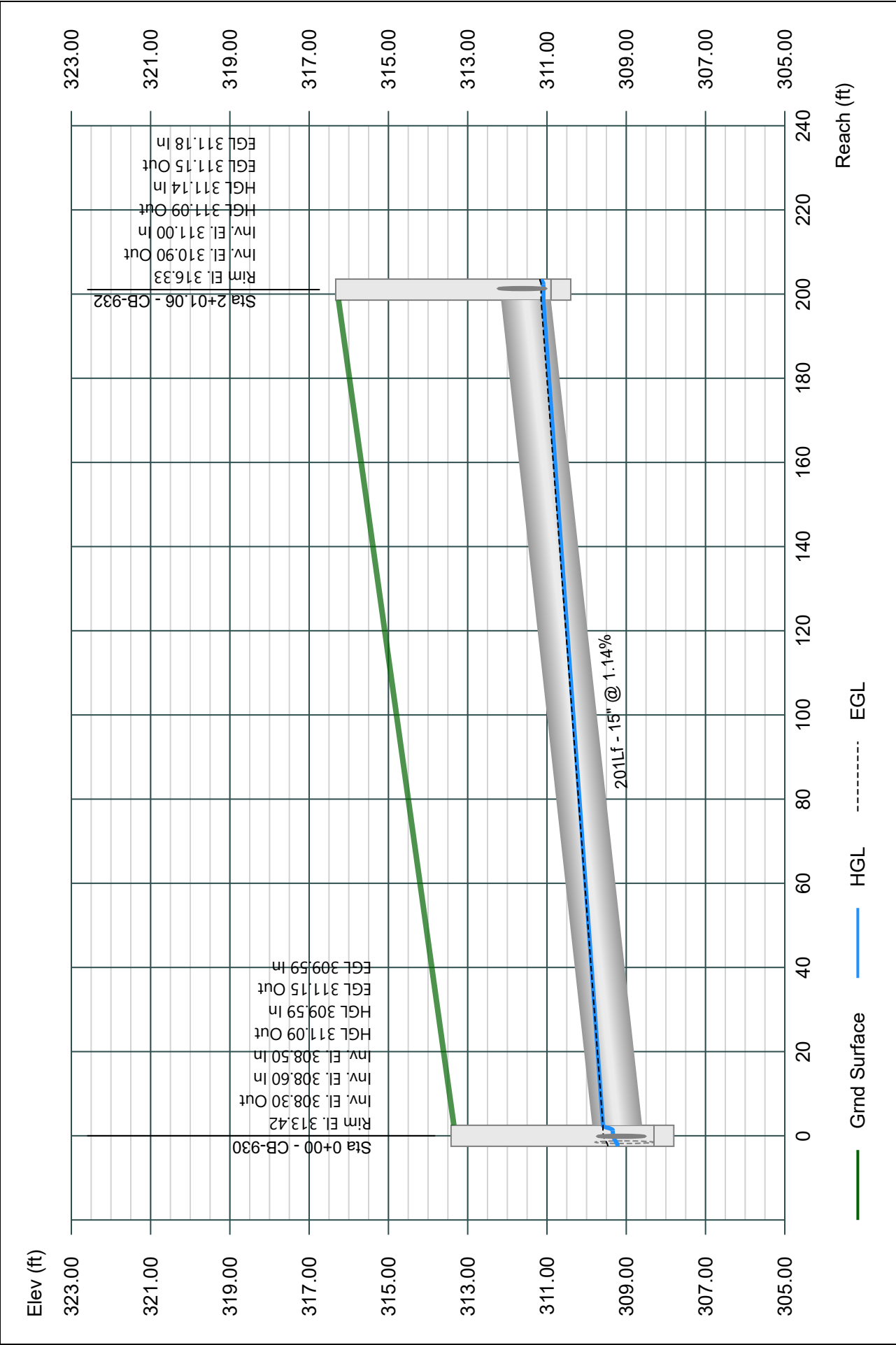


Line 45 - 930-932

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

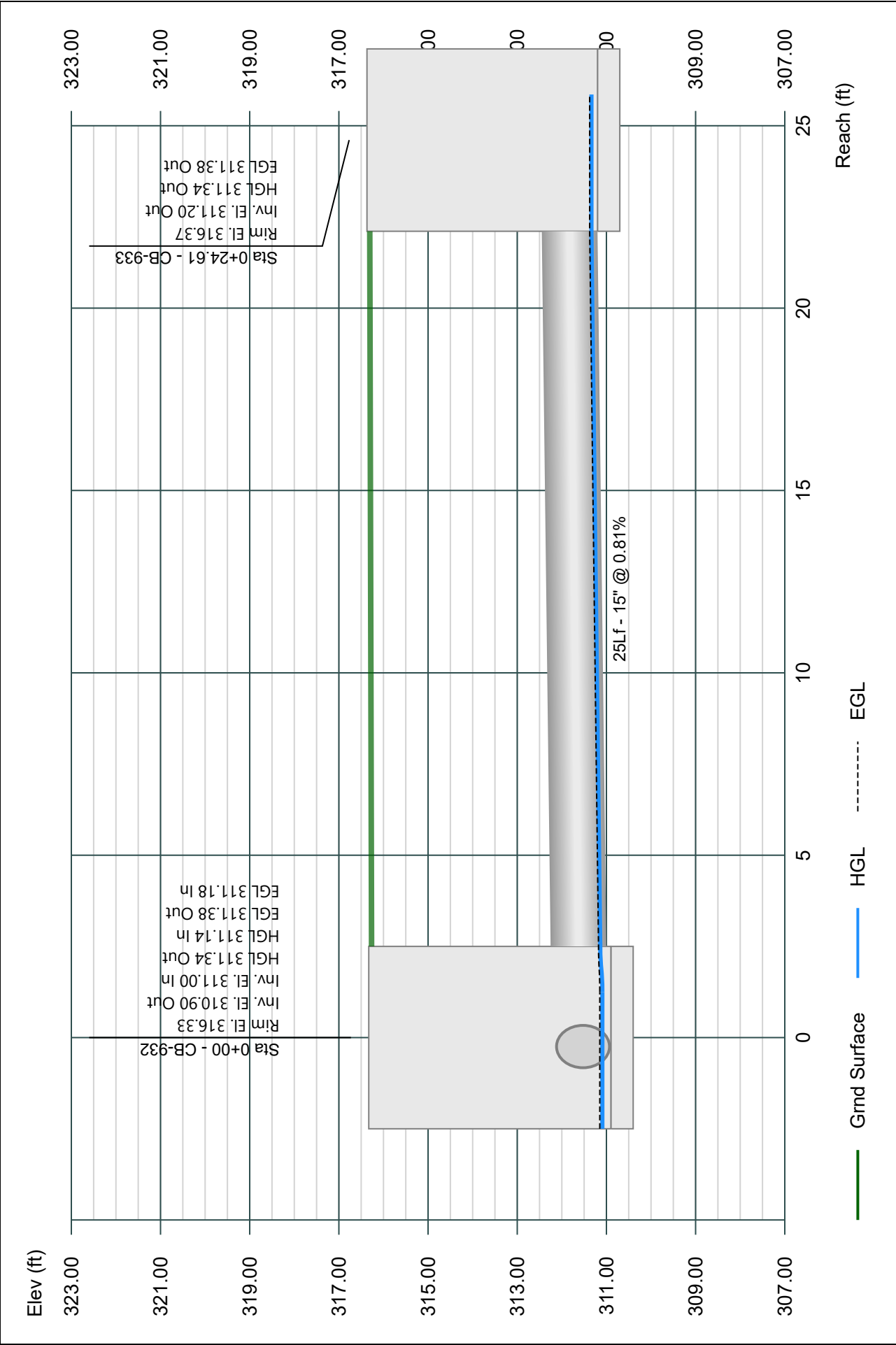


Line 46 - 932-933

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

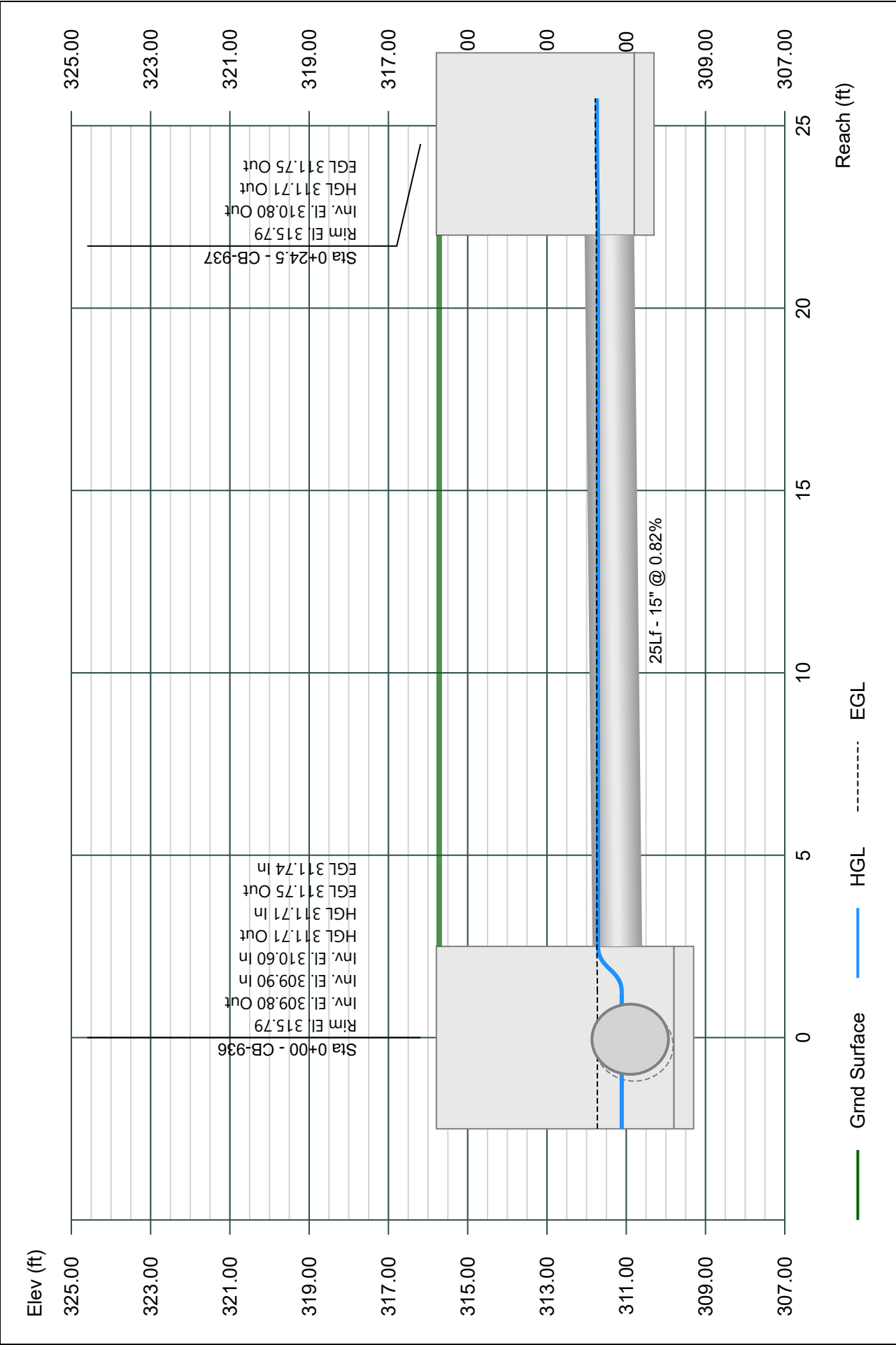


Line 47 - 936-937

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

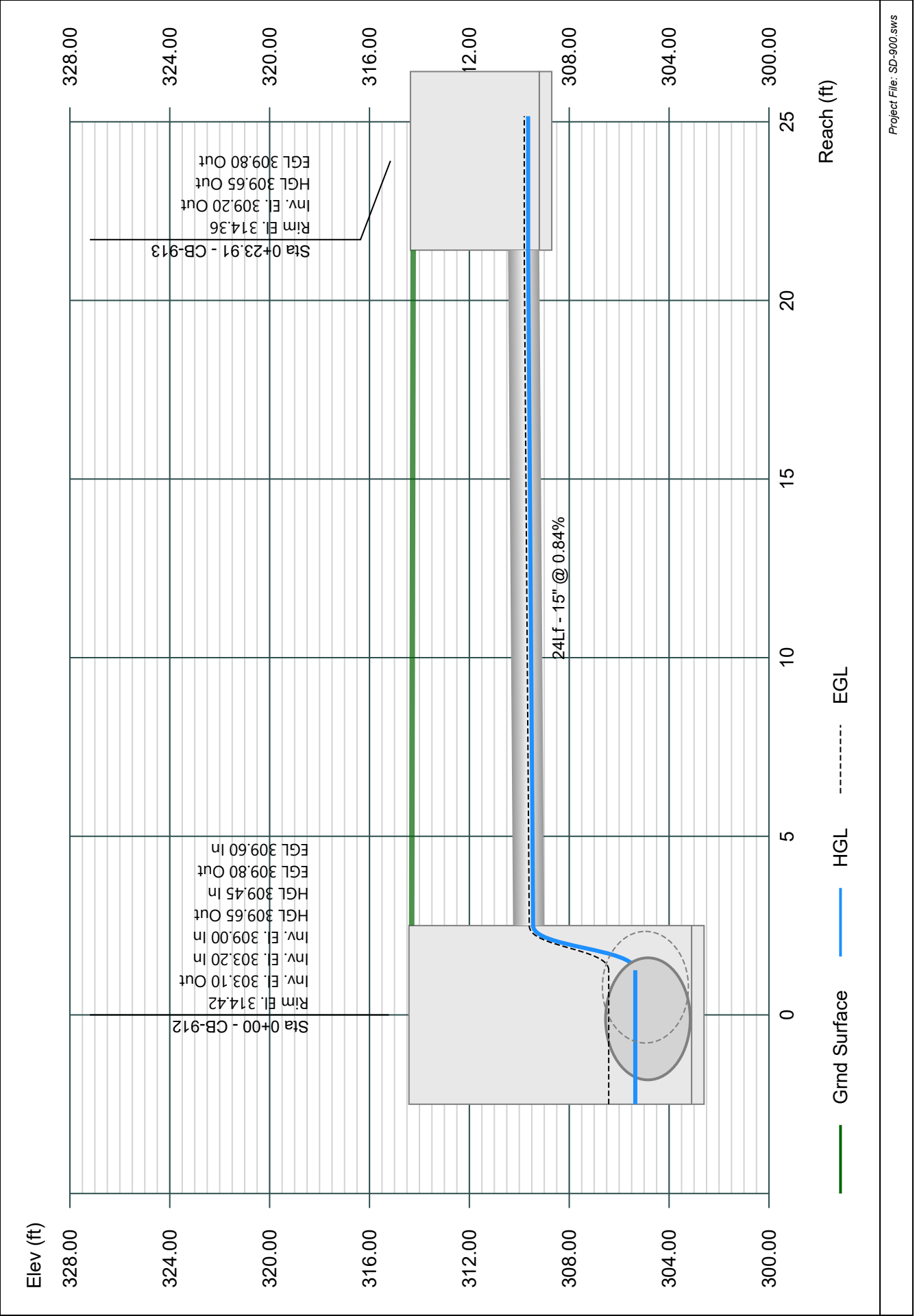


Line 48 - 912-913

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

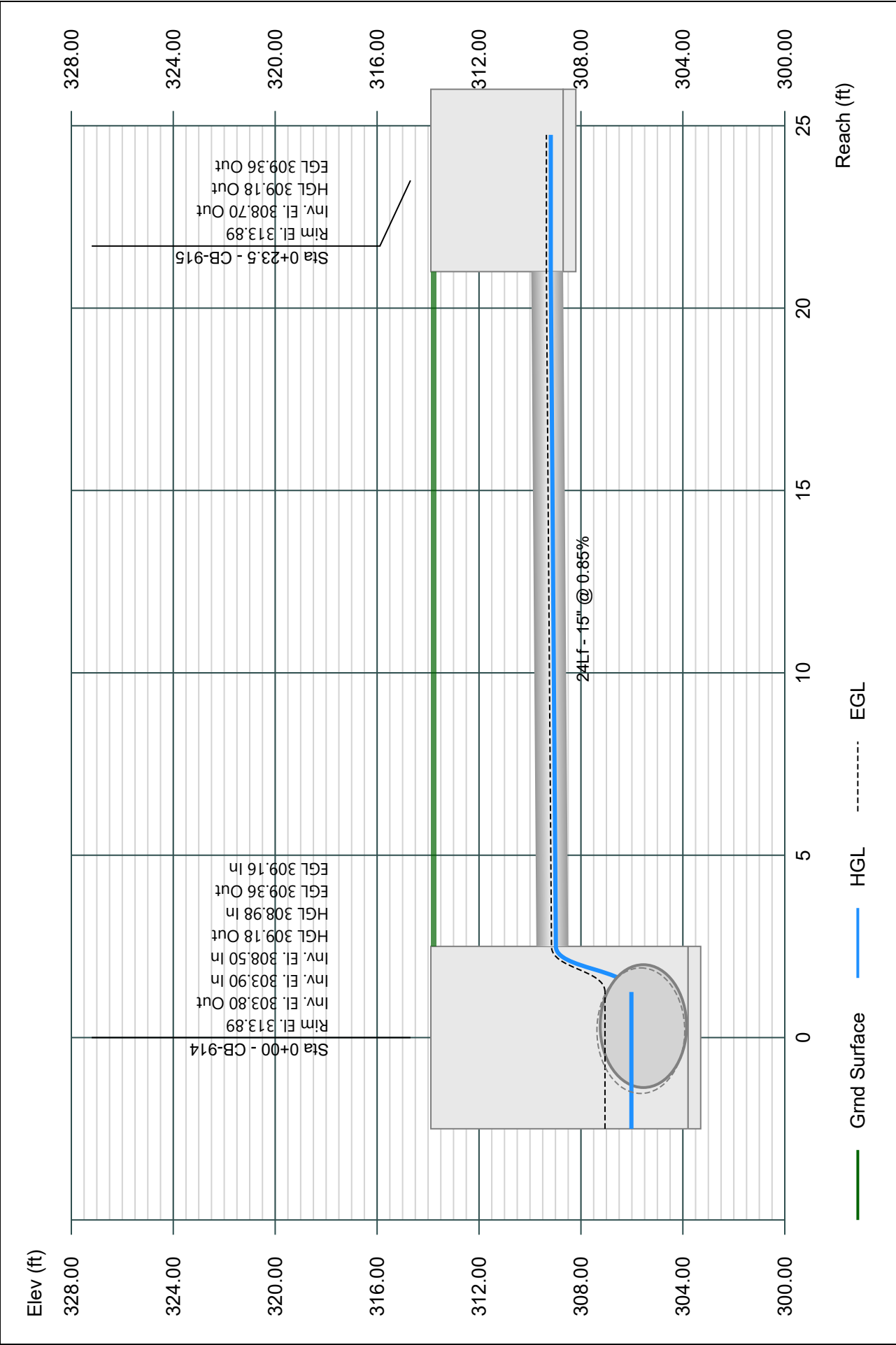


Line 49 - 914-915

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

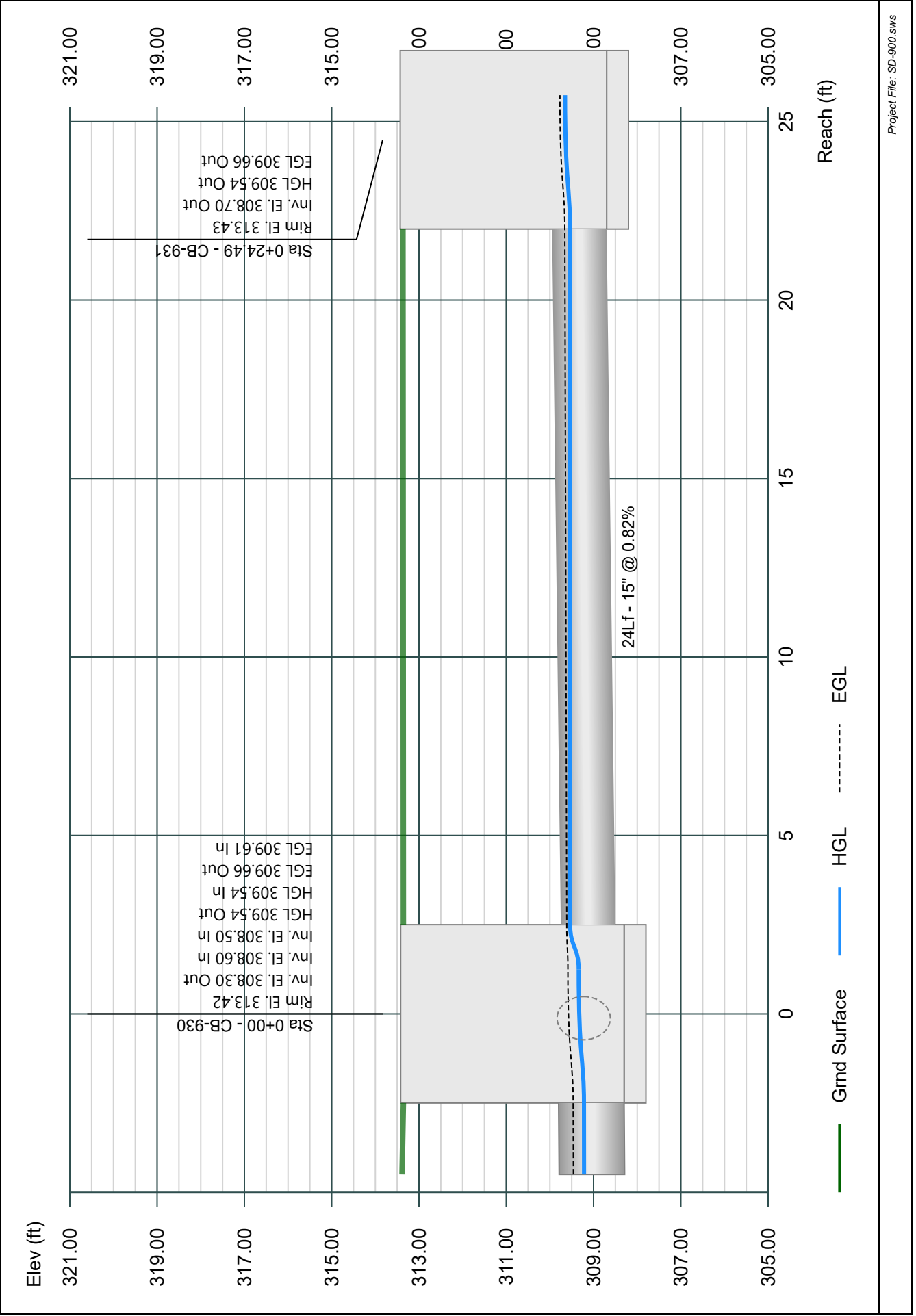


Line 50 - 930-931

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

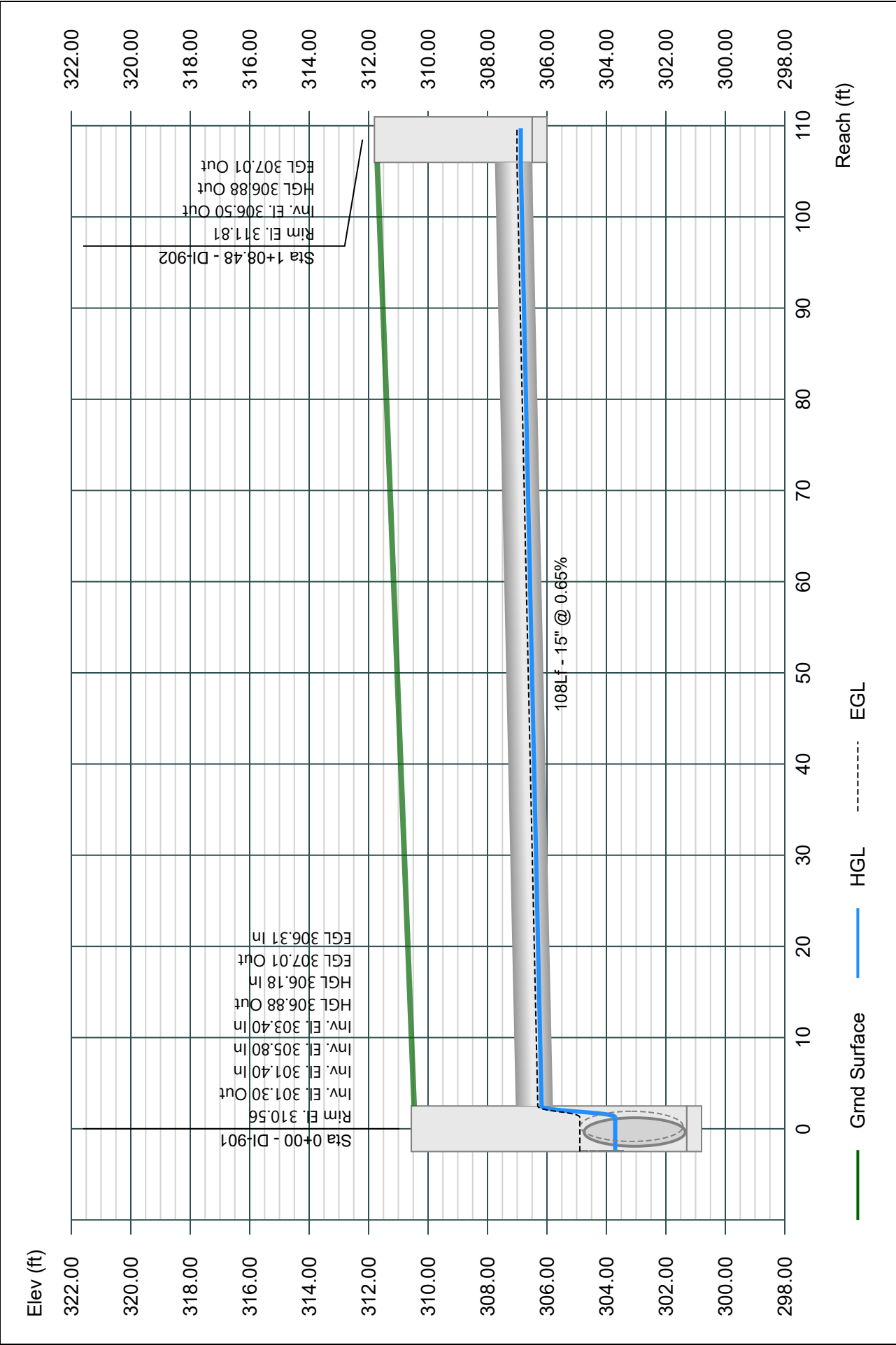


Line 51 - 901-902

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

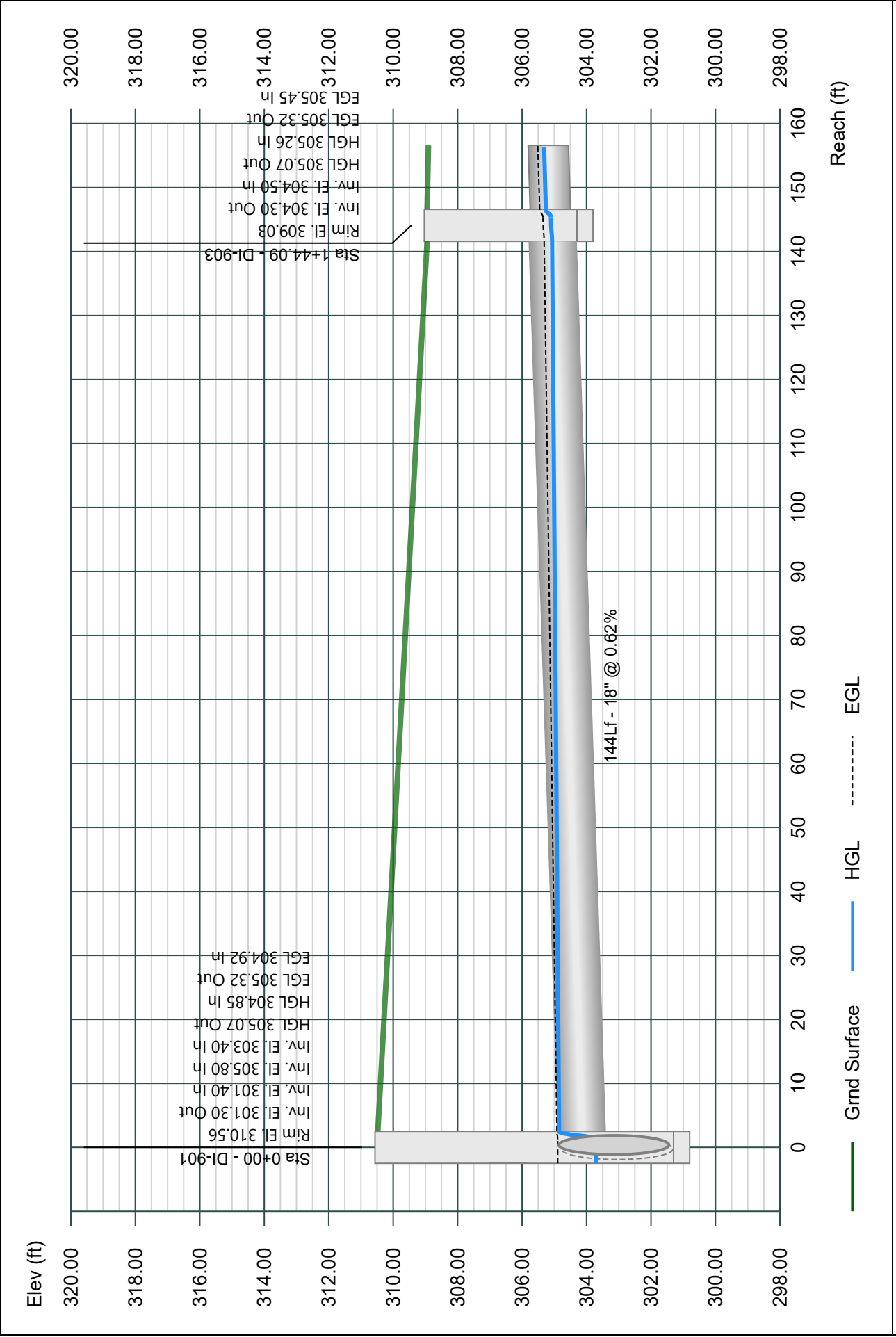


Line 52 - 901-903

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

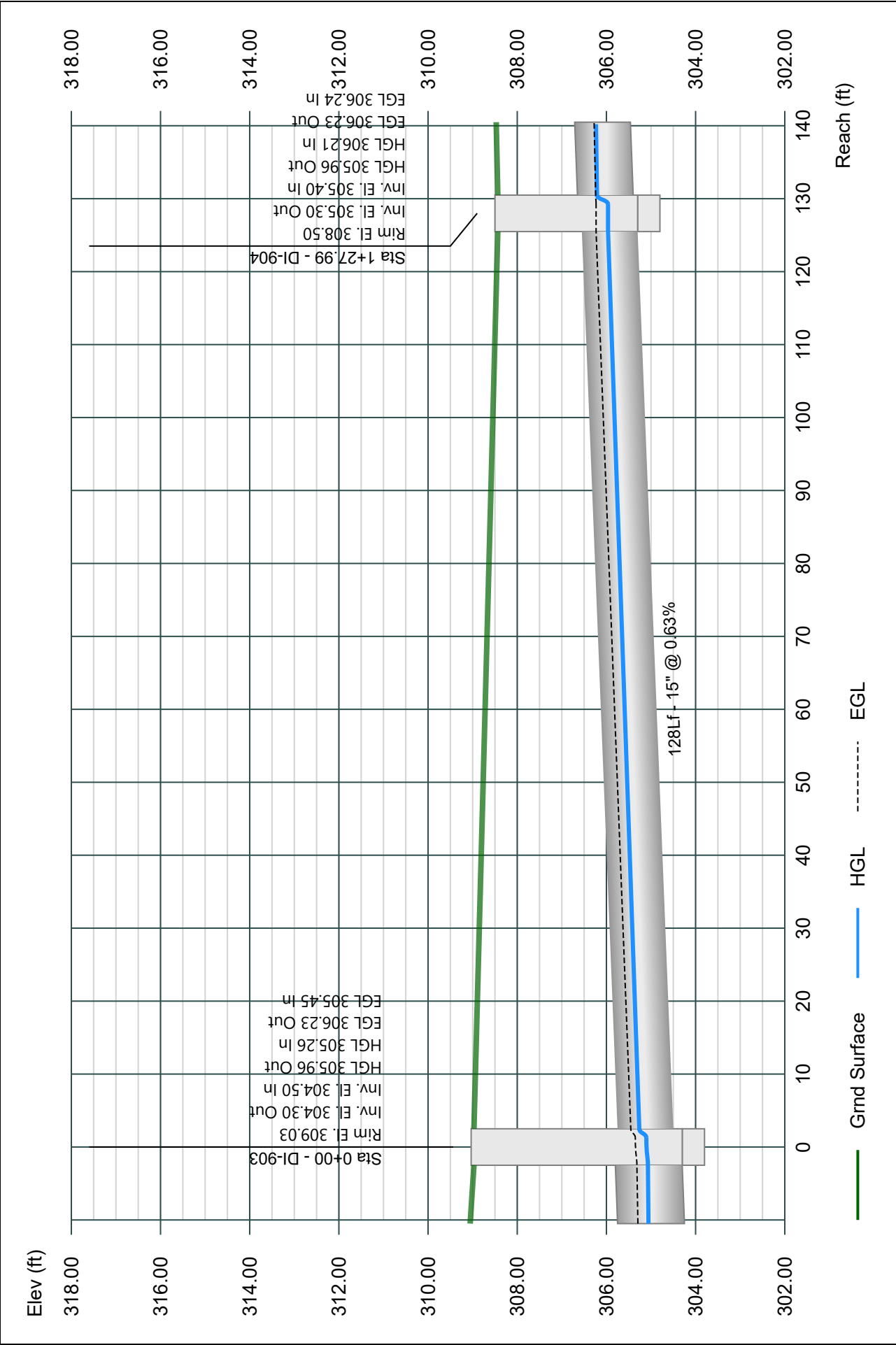


Line 53 - 903-904

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

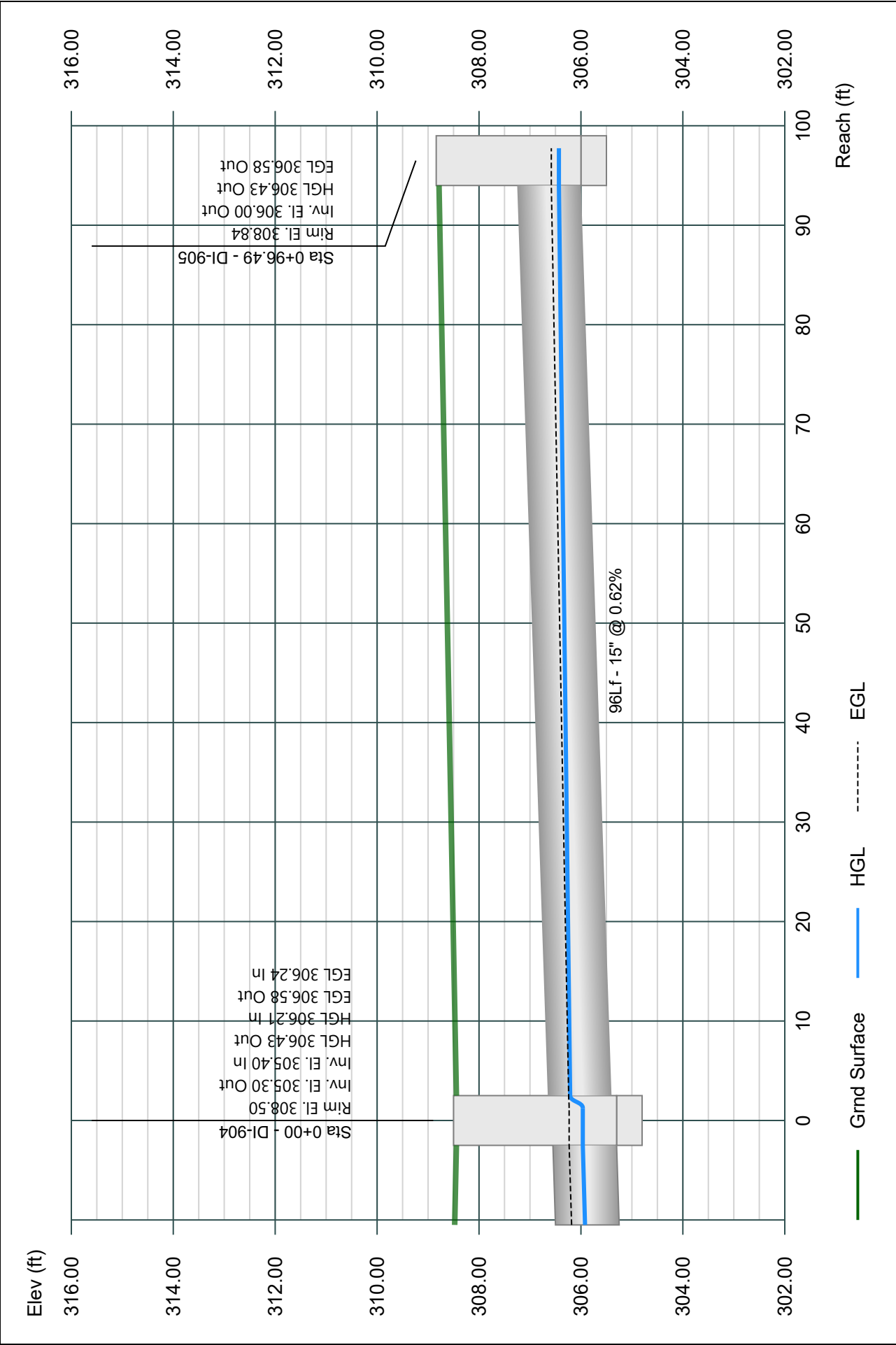


Line 54 - 904-905

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

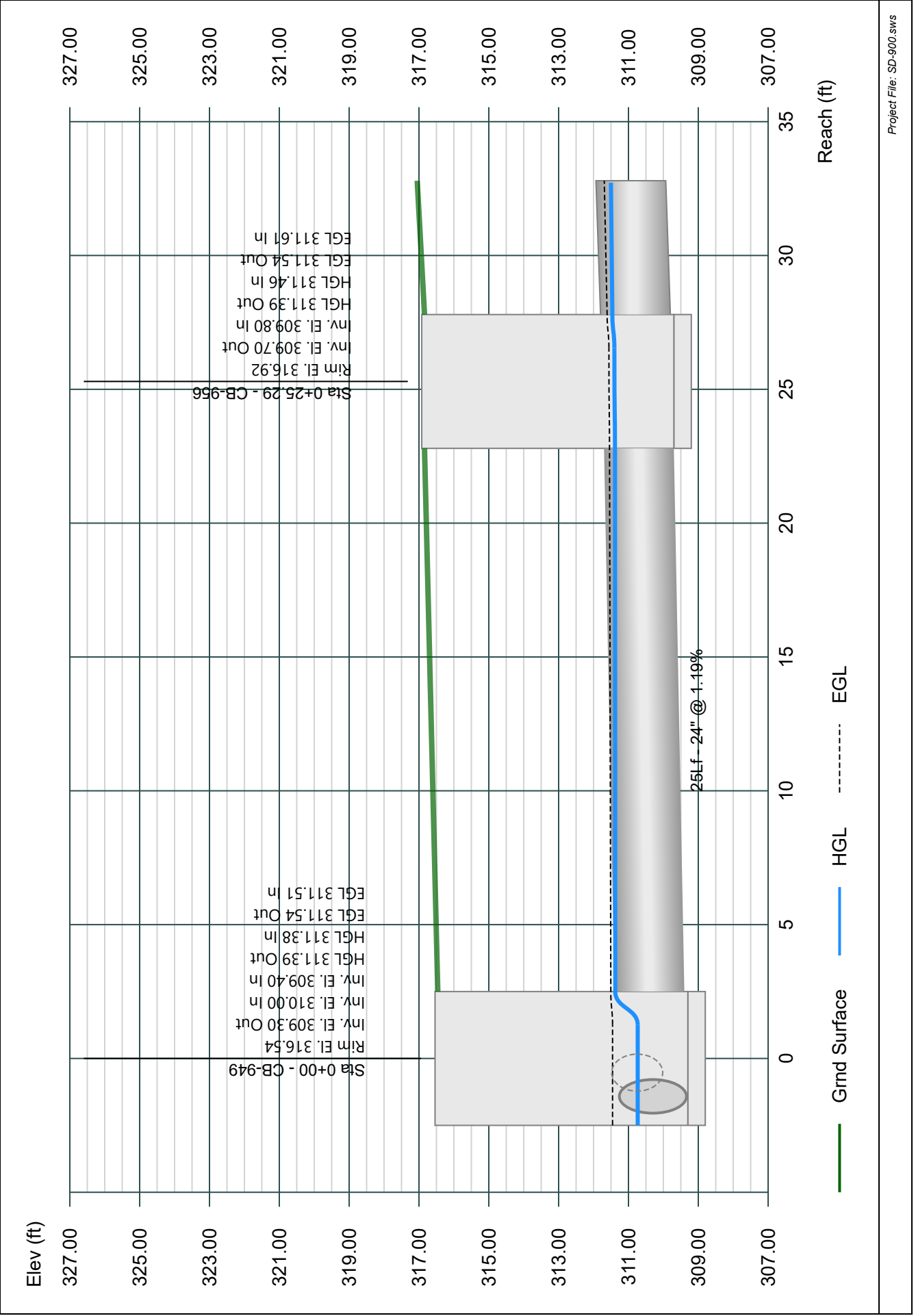


Line 55 - 949-956

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

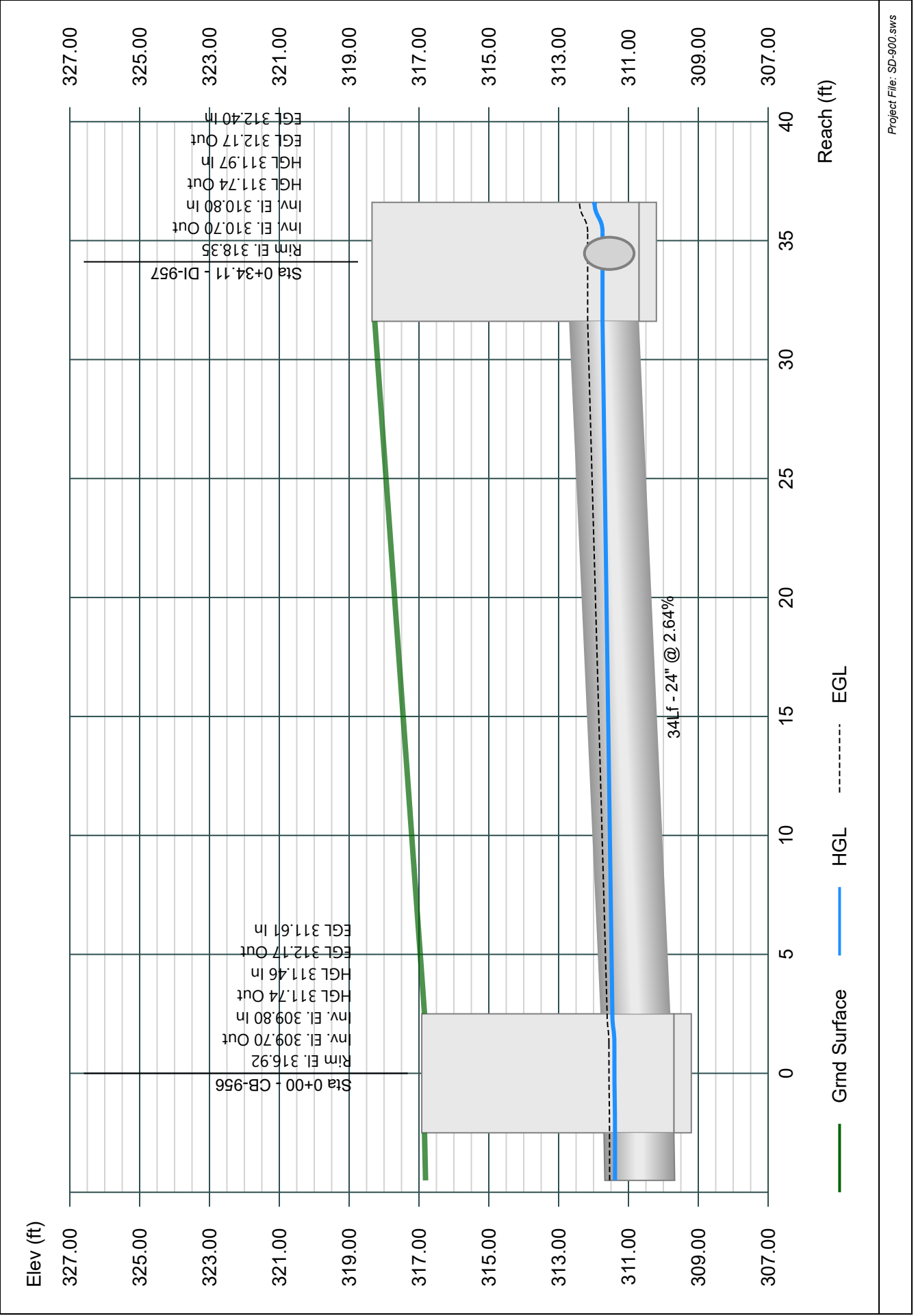


Line 56 - 956-957

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

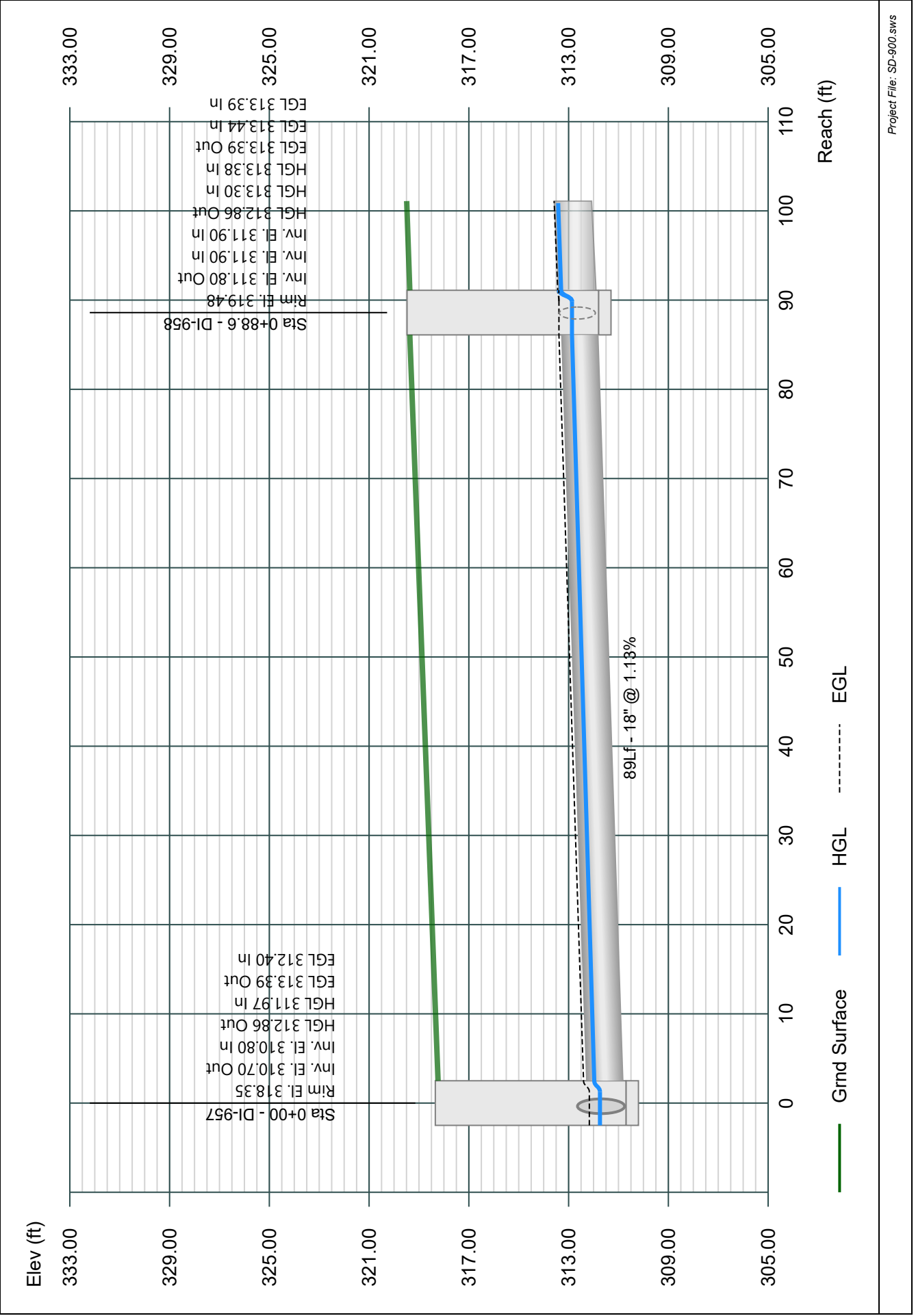


Line 57 - 957-958

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

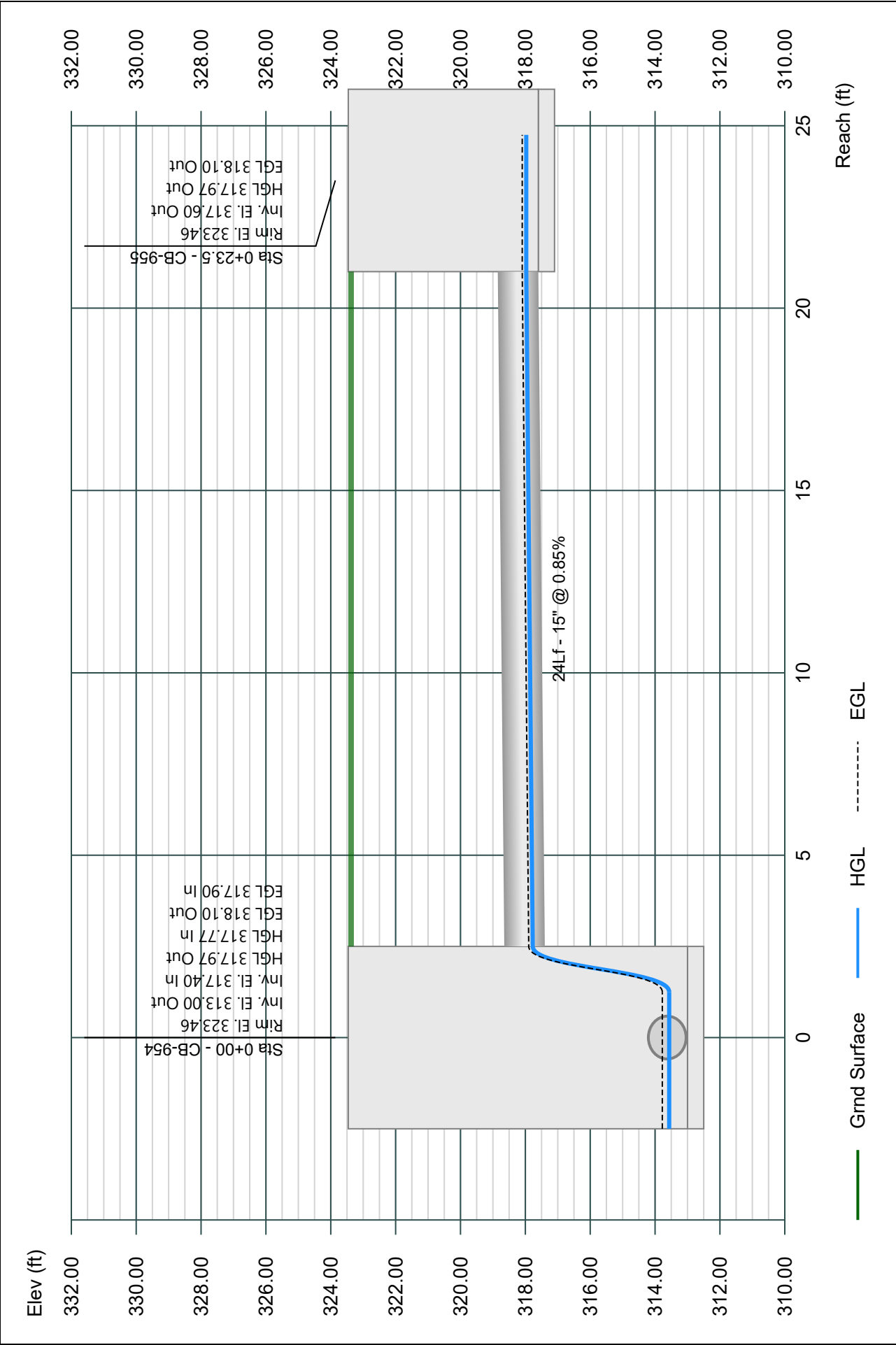


Line 58 - 954-955

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

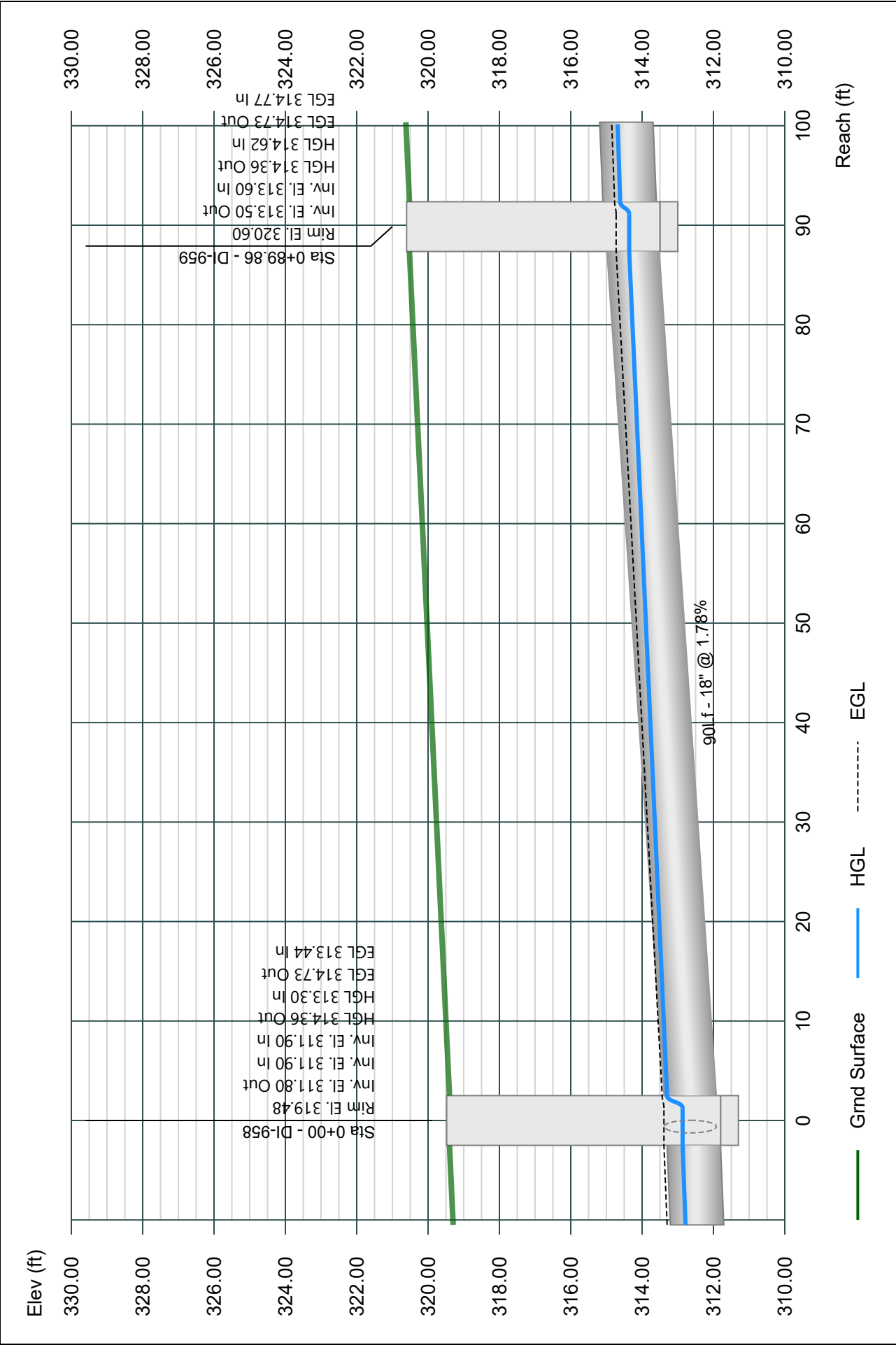
02-26-2024



Line 59 - 958-959

Project Name: SD-900
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

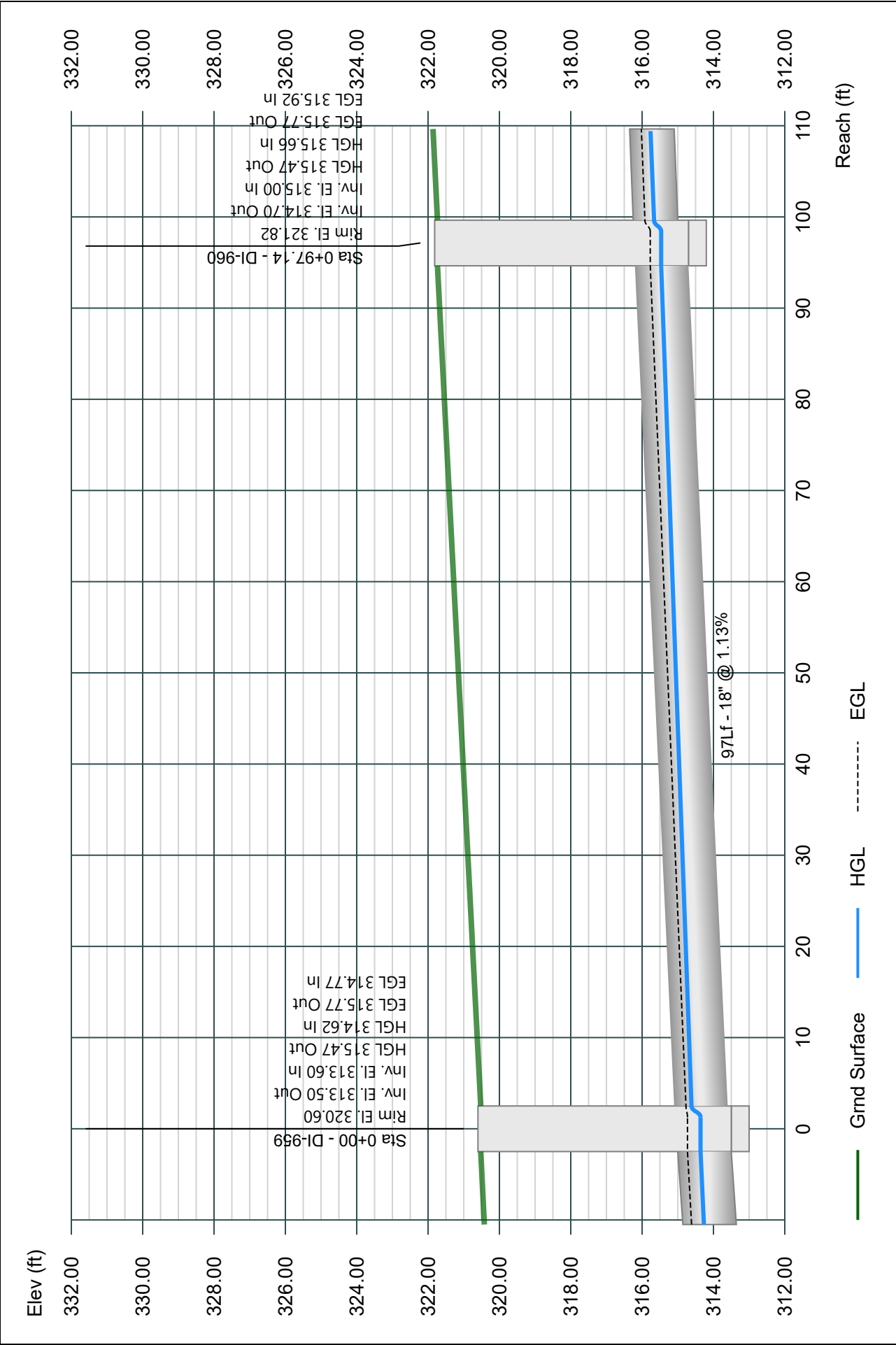


Line 60 - 959-960

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

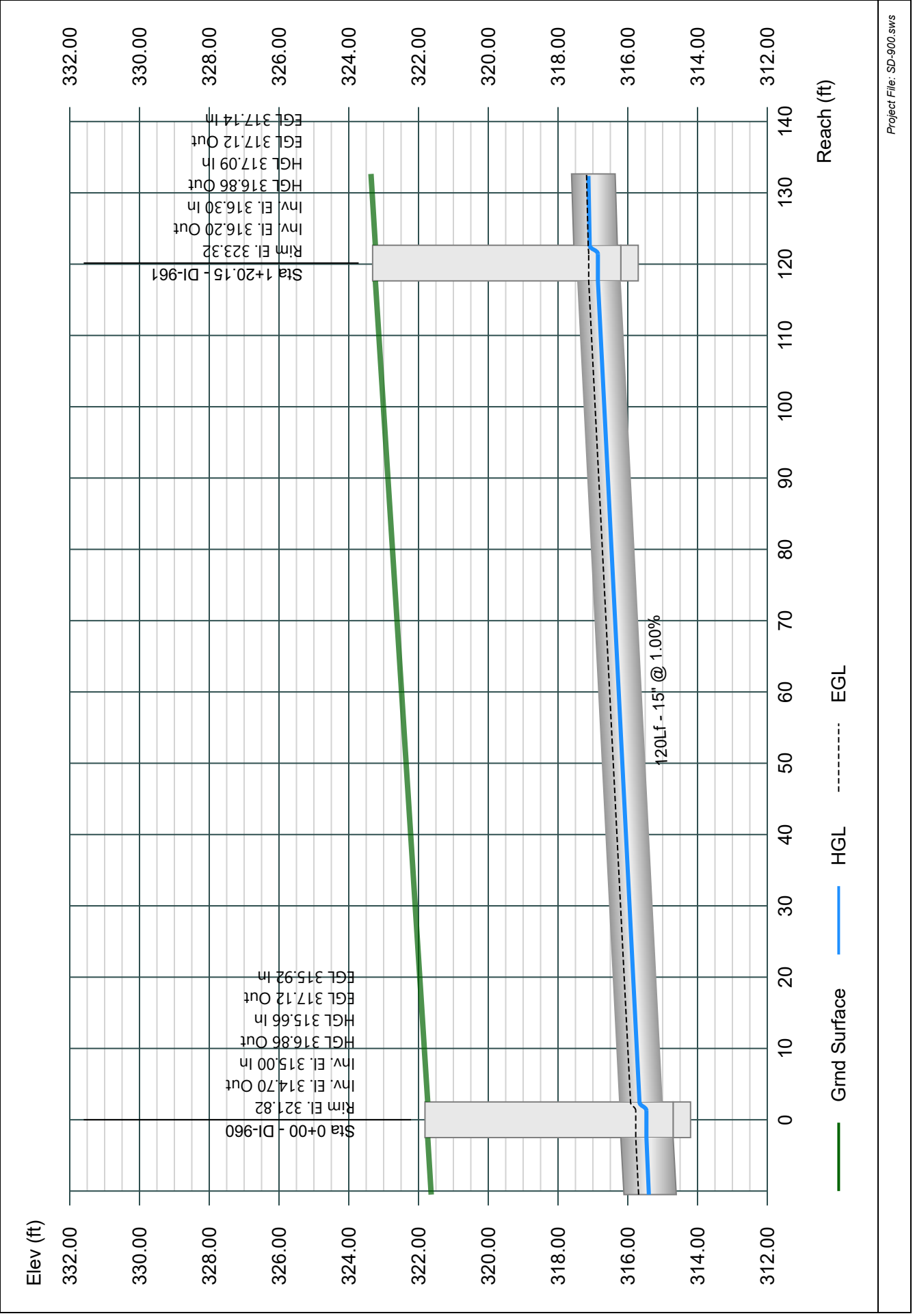


Line 61 - 960-961

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

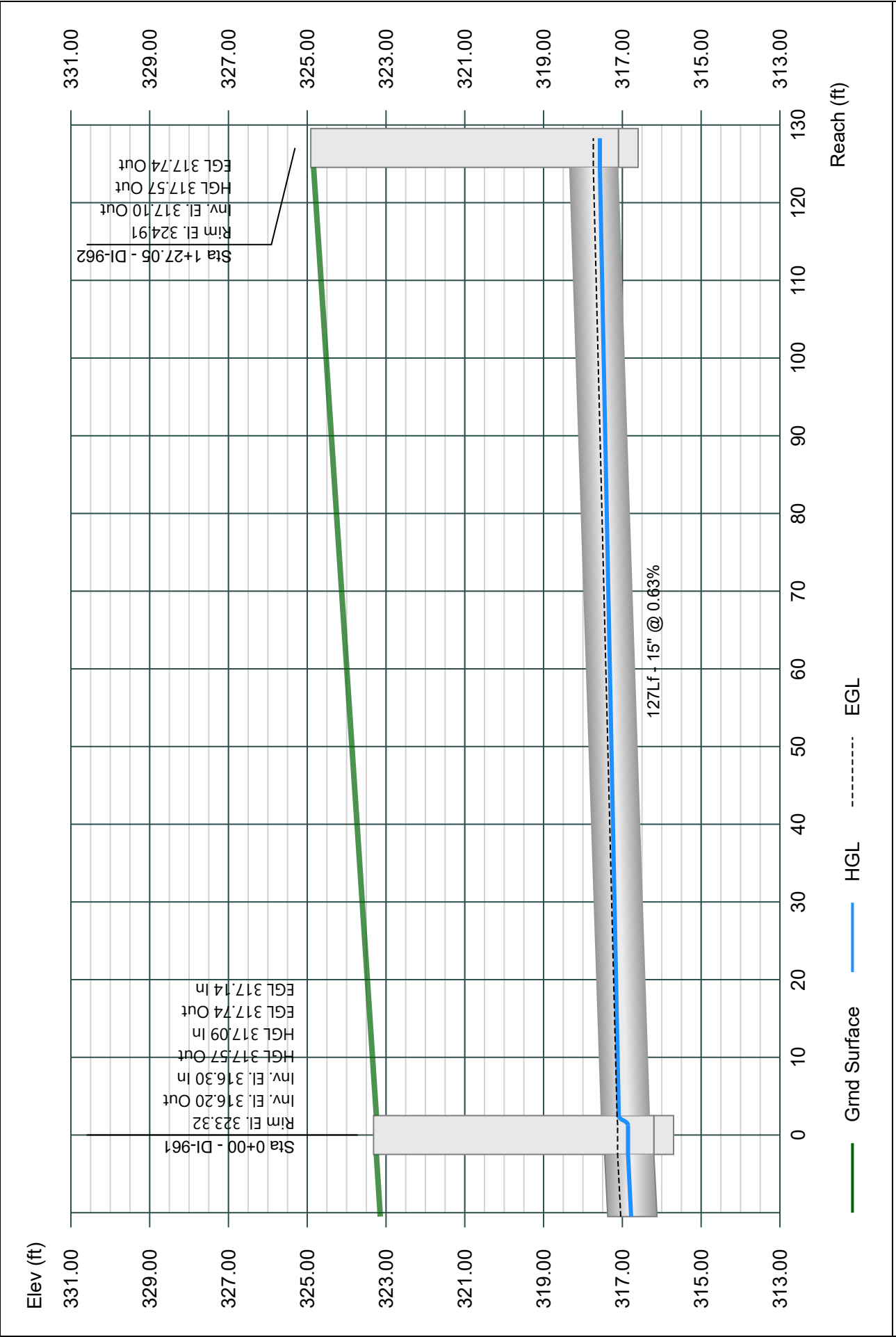


Line 62 - 961-962

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

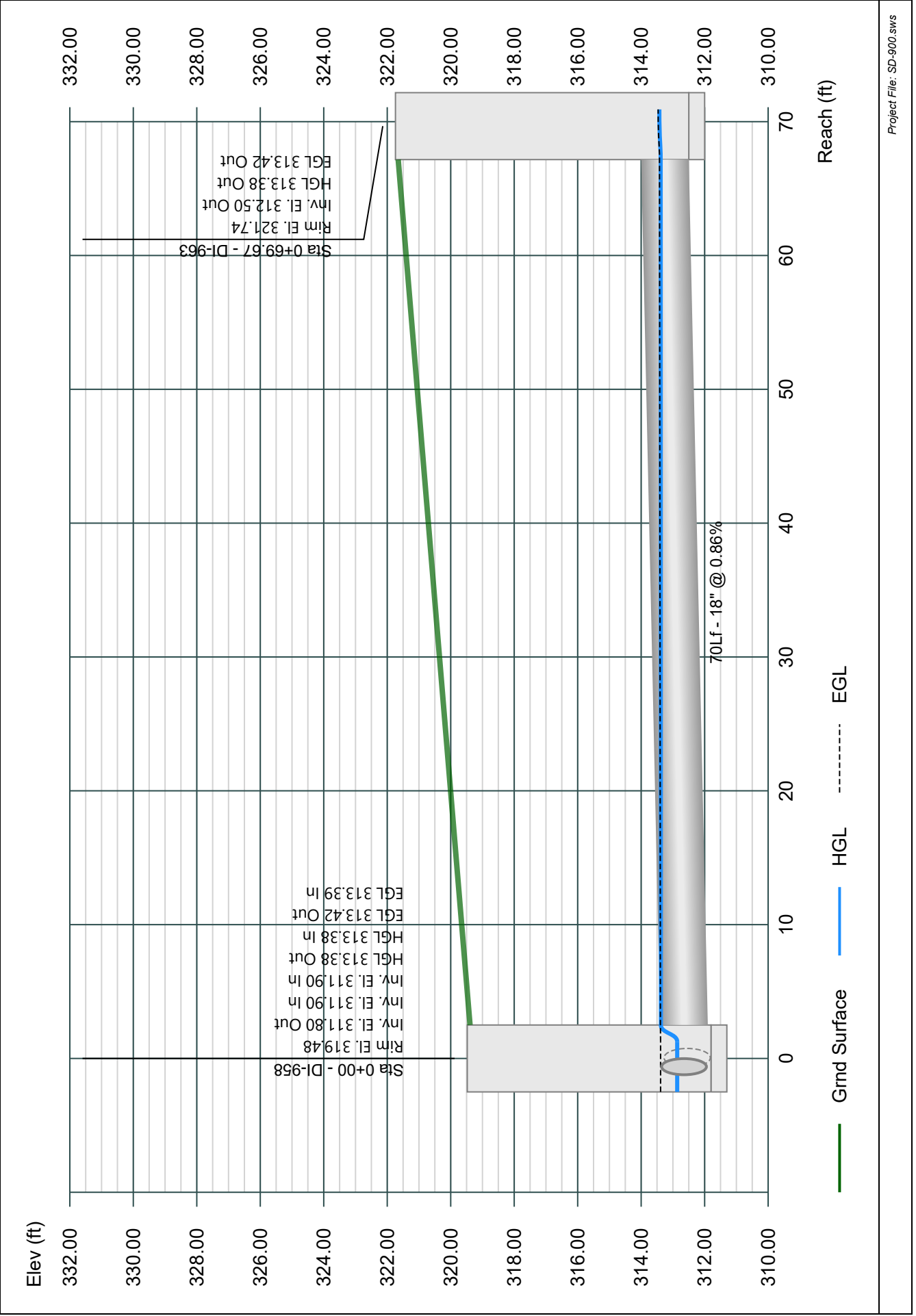


Line 63 - 958-963

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

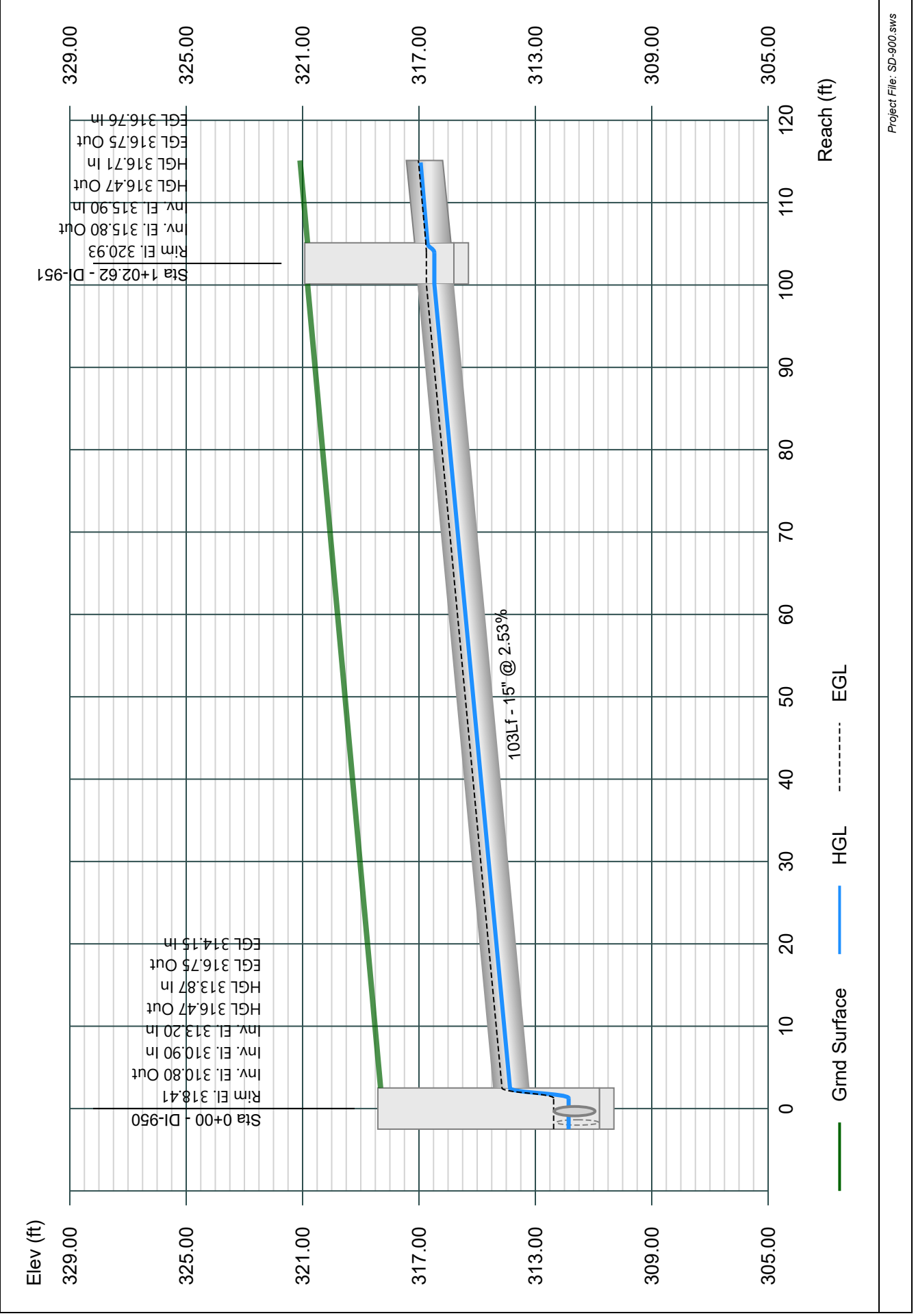


Line 64 - 950-951

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

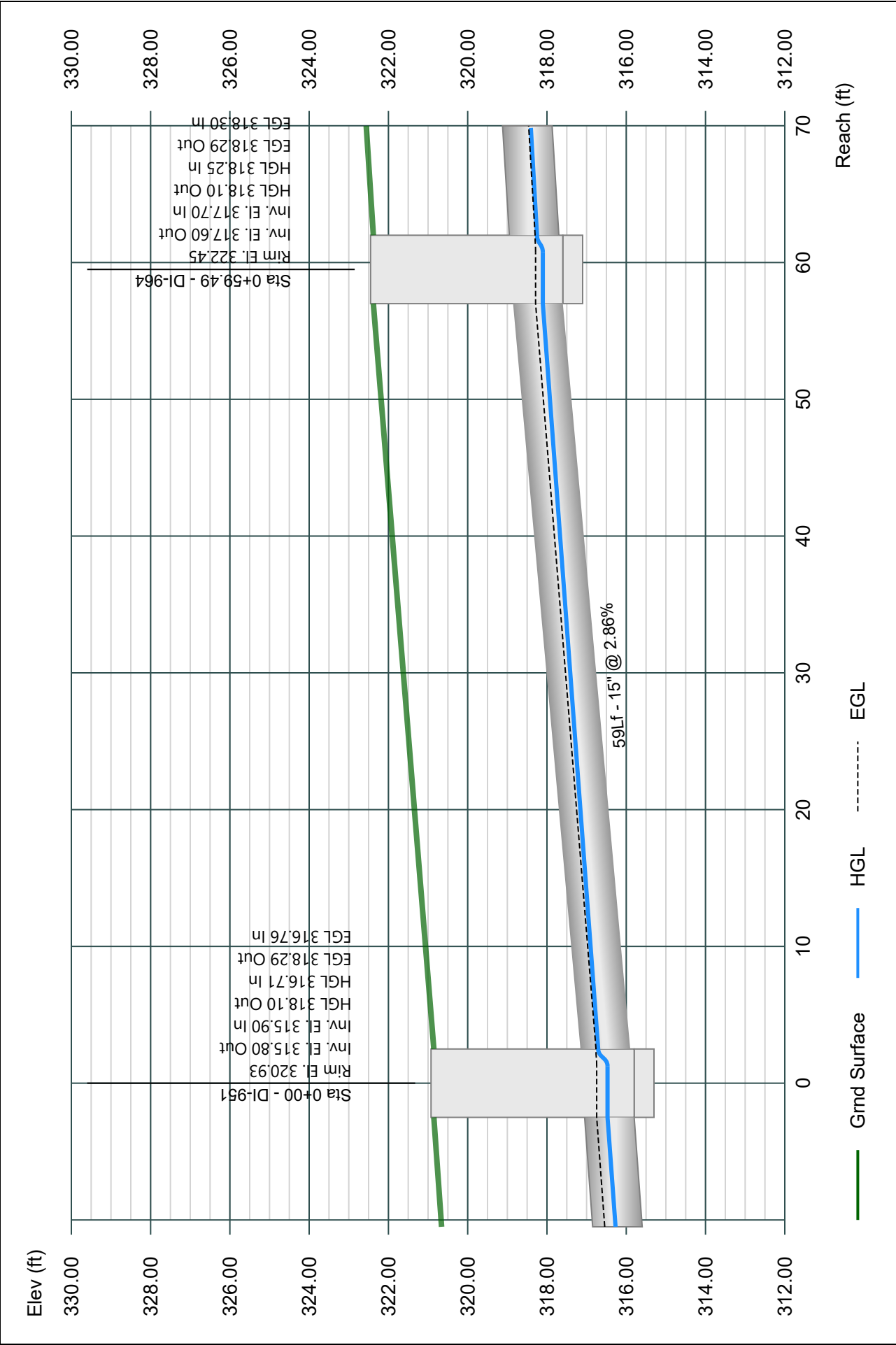


Line 65 - 951-964

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-900

02-26-2024

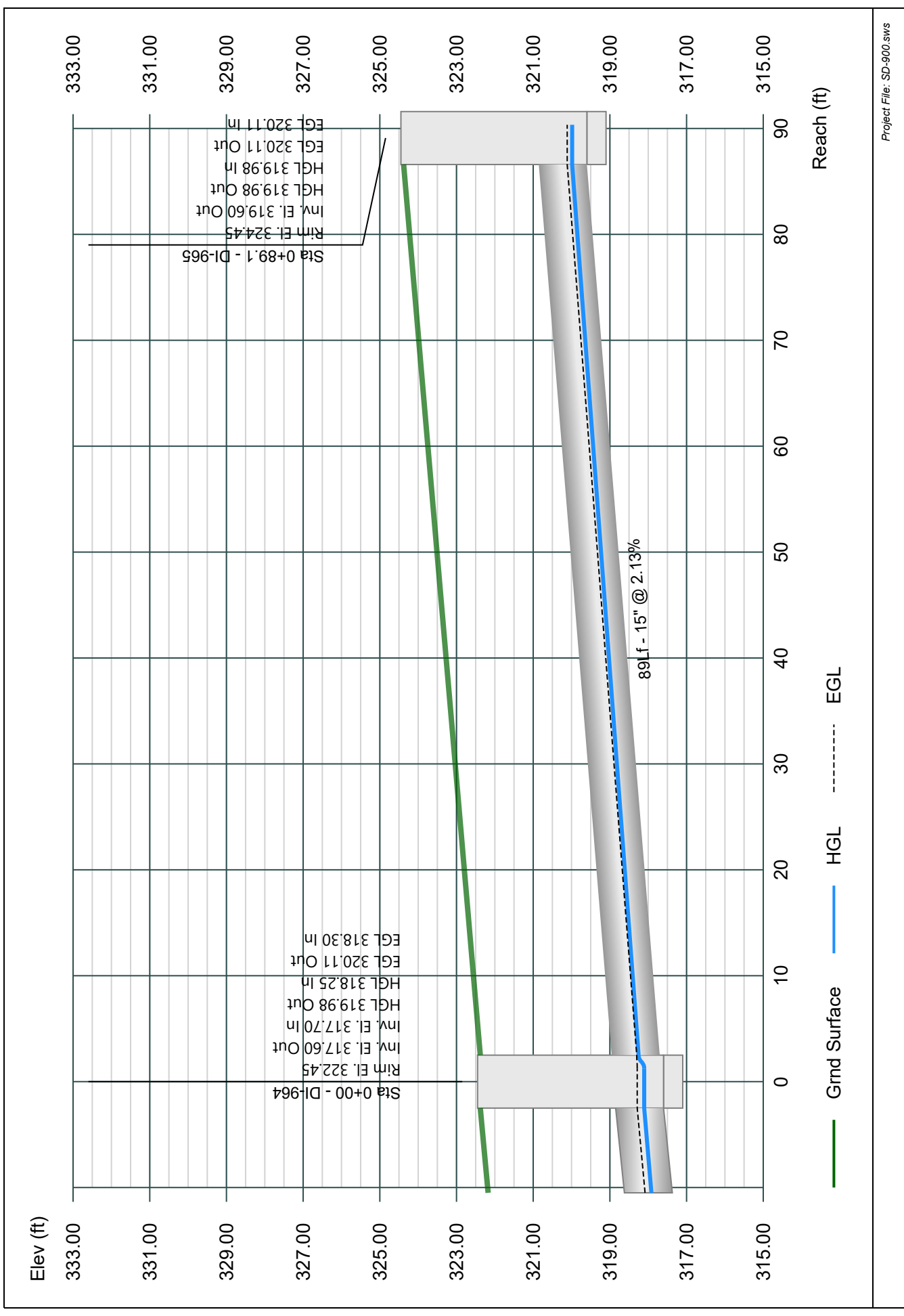


Line 66 - 964-965

Project Name: SD-900

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

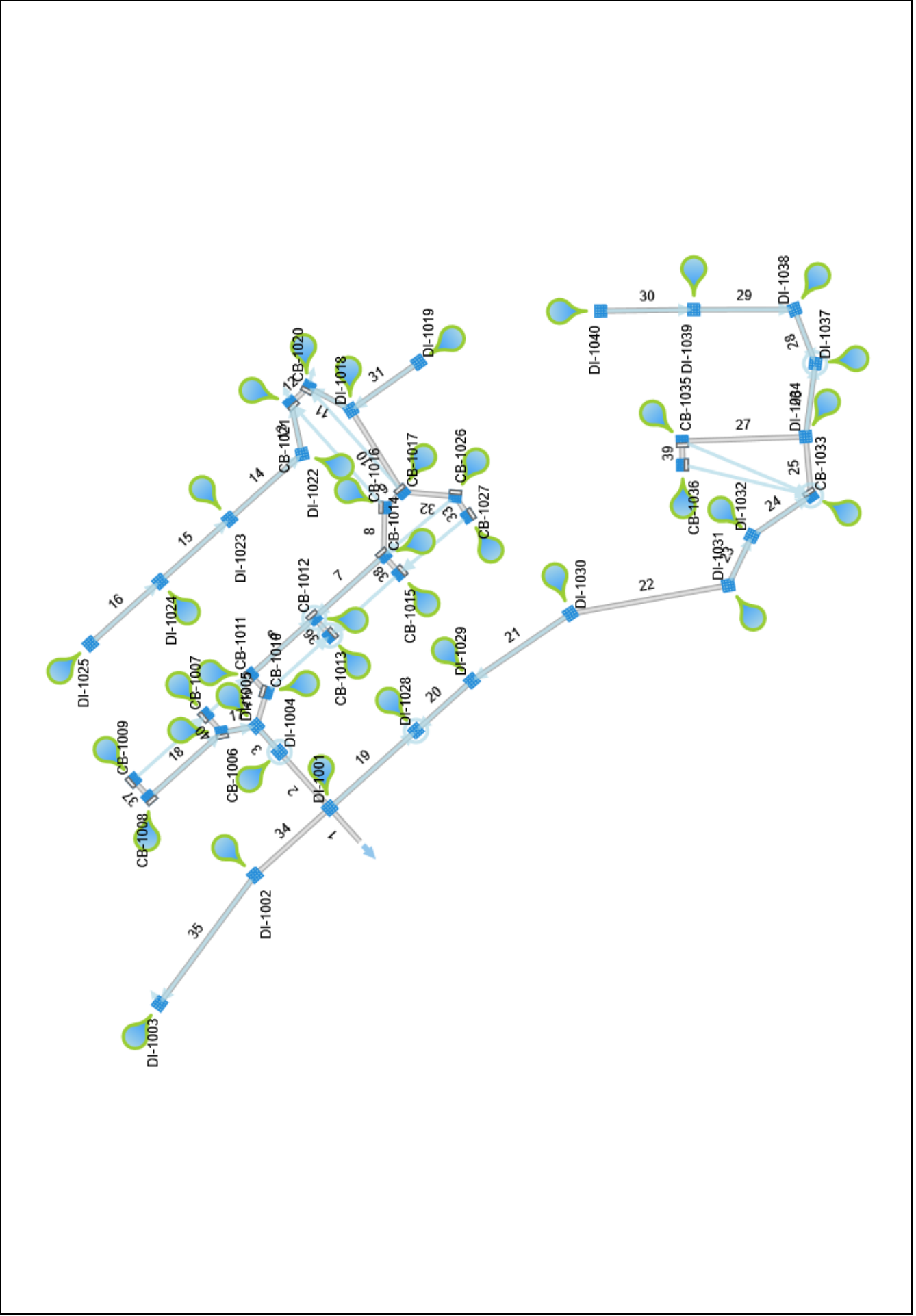


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024



Project File: SD-1000.sws

Energy Grade Line Calculations

Project Name: SD-1000

Stormwater Studio 2024 v 3.0.0.33

02-27-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	48	29.67	310.50	4.00	12.56	314.57	2.36	0.09	314.66	44.13	311.00	3.58	11.86	314.58	2.50	0.10	314.68	0.013	0.019	314.58	314.68	0.00
2	48	16.16	311.10	3.56	11.82	314.66	1.37	0.03	314.69	75.17	311.60	3.06	10.31	314.66	1.57	0.04	314.70	0.013	0.006	314.66	314.70	0.00
3	42	15.60	311.70	2.97	8.70	314.67	1.79	0.05	314.72	34.83	312.00	2.67	7.86	314.67	1.98	0.06	314.73	0.013	0.010	314.67	314.73	0.00
4	36	13.00	312.10	2.59	6.49	314.69	2.00	0.06	314.75	35.11	312.40	2.29	5.79	314.69	2.25	0.08	314.77	0.013	0.014	314.69	314.77	0.00
5	36	12.82	312.50	2.22	5.60	314.72	2.29	0.08	314.80	23.50	312.70	2.01	5.04	314.71	2.54	0.10	314.81	0.013	0.013	314.72	314.82	0.01
6	30	12.42	312.80	1.92	4.05	314.72	3.07	0.15	314.87	85.26	313.30	1.43	2.90	314.73	4.29	0.29	315.01	0.013	0.144	314.76	315.05	0.03
7	30	9.56	313.40	1.55	3.20	314.95	2.99	0.14	315.09	93.30	314.00	1.03 ²	1.92	315.03	4.99	0.39	315.42	0.013	0.330	315.03	315.42	0.00
8	24	8.72	314.10	1.17	1.92	315.27	4.55	0.32	315.60	48.02	314.40	1.05 ²	1.66	315.45	5.25	0.43	315.87	0.013	0.278	315.45	315.87	0.00
9	24	8.50	314.50	1.05	1.67	315.55	5.09	0.40	315.95	23.50	314.70	1.03 ²	1.64	315.73	5.19	0.42	316.15	0.013	0.200	315.73	316.15	0.00
10	24	6.37	314.80	1.25	2.06	316.05	3.09	0.15	316.20	96.37	315.40	0.89 ²	1.36	316.29	4.69	0.34	316.64	0.013	0.438	316.29	316.64	0.00
11	18	5.05	315.50	0.86	1.05	316.36	4.83	0.36	316.72	48.32	315.80	0.86	1.05	316.66	4.81	0.36	317.02	0.013	0.300	316.70	317.06	0.04
12	18	4.51	315.90	1.03	1.29	316.93	3.50	0.19	317.12	23.50	316.10	0.81	0.98	316.91	4.60	0.33	317.24	0.013	0.127	316.96	317.29	0.04
13	18	3.83	316.20	0.98	1.22	317.18	3.14	0.15	317.33	52.13	316.60	0.75 ²	0.88	317.35	4.35	0.29	317.64	0.013	0.312	317.35	317.64	0.00
14	15	3.00	316.70	0.72	0.73	317.42	4.09	0.26	317.68	97.50	317.30	0.70	0.70	318.00	4.27	0.28	318.28	0.013	0.598	318.07	318.35	0.07
15	15	2.15	317.40	0.90	0.94	318.30	2.27	0.08	318.38	93.33	318.10	0.59 ²	0.57	318.69	3.80	0.22	318.91	0.013	0.532	318.69	318.91	0.00
16	15	1.27	318.20	0.67	0.67	318.87	1.89	0.06	318.93	93.33	318.80	0.45 ²	0.40	319.25	3.18	0.16	319.41	0.013	0.482	319.25	319.41	0.00
17	15	2.74	317.40	0.66 ¹	0.66	318.06	4.15	0.27	318.33	35.11	317.70	0.66 ²	0.66	318.36	4.15	0.27	318.63	0.013	0.300	318.36	318.63	0.00
18	15	1.02	317.80	0.82	0.85	318.62	1.20	0.02	318.64	97.31	318.70	0.40 ²	0.34	319.10	2.97	0.14	319.24	0.013	0.604	319.10	319.24	0.00
19	42	11.78	311.20	3.47	9.60	314.67	1.23	0.02	314.69	115.63	311.90	2.77	8.17	314.67	1.44	0.03	314.70	0.013	0.016	314.68	314.71	0.00
20	36	10.24	312.00	2.69	6.68	314.69	1.53	0.04	314.72	74.94	312.50	2.19	5.53	314.69	1.85	0.05	314.74	0.013	0.021	314.70	314.75	0.00
21	30	9.24	312.60	2.11	4.41	314.71	2.09	0.07	314.77	119.13	313.40	1.31	2.61	314.71	3.53	0.19	314.91	0.013	0.134	314.73	314.92	0.01
22	24	8.78	313.50	1.14	1.85	314.64	4.75	0.35	314.99	160.17	314.50	1.05 ²	1.67	315.55	5.26	0.43	315.98	0.013	0.989	315.55	315.98	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-1000.sws

Energy Grade Line Calculations

Project Name: SD-1000

Stormwater Studio 2024 v 3.0.0.33

02-27-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
23	24	8.04	314.60	1.16	1.90	315.76	4.24	0.28	316.04	54.73	315.00	1.00 ²	1.58	316.00	5.09	0.40	316.41	0.013	0.364	316.00	316.41	0.00
24	24	7.63	315.10	1.01	1.58	316.11	4.82	0.36	316.47	71.50	315.60	0.98 ²	1.53	316.58	4.99	0.39	316.97	0.013	0.499	316.58	316.97	0.00
25	18	5.52	315.70	1.07	1.35	316.77	4.08	0.26	317.03	58.99	316.10	0.90 ²	1.10	317.00	5.01	0.39	317.39	0.013	0.355	317.00	317.39	0.00
26	18	3.46	316.20	1.12	1.42	317.32	2.43	0.09	317.42	73.79	316.70	0.71	0.83	317.41	4.17	0.27	317.68	0.013	0.267	317.47	317.74	0.06
27	15	1.99	316.20	1.16	1.19	317.36	1.68	0.04	317.40	123.41	318.00	0.56 ²	0.54	318.56	3.70	0.21	318.78	0.013	1.374	318.56	318.78	0.00
28	15	2.77	316.80	0.82	0.86	317.62	3.24	0.16	317.78	57.82	317.20	0.67 ²	0.66	317.87	4.17	0.27	318.14	0.013	0.351	317.87	318.14	0.00
29	15	1.86	317.30	0.77	0.80	318.08	2.33	0.08	318.16	100.61	318.20	0.55 ²	0.51	318.75	3.61	0.20	318.95	0.013	0.790	318.75	318.95	0.00
30	15	0.92	318.30	0.62	0.61	318.92	1.51	0.04	318.96	93.11	318.90	0.38 ²	0.32	319.28	2.88	0.13	319.41	0.013	0.455	319.28	319.41	0.00
31	15	0.75	316.00	0.62	0.61	316.62	1.24	0.02	316.64	82.66	316.50	0.35 ²	0.28	316.85	2.70	0.11	316.96	0.013	0.317	316.85	316.96	0.00
32	15	1.99	316.90	0.56 ¹	0.54	317.46	3.70	0.21	317.68	53.12	318.10	0.56 ²	0.54	318.66	3.70	0.21	318.88	0.013	1.200	318.66	318.88	0.00
33	15	0.92	318.20	0.66	0.65	318.86	1.41	0.03	318.89	23.51	318.40	0.44	0.38	318.84	2.39	0.09	318.93	0.013	0.041	318.90	318.98	0.06
34	15	1.50	318.20	0.49 ¹	0.45	318.69	3.36	0.18	318.87	100.47	318.80	0.49 ²	0.45	319.29	3.36	0.18	319.47	0.013	0.600	319.29	319.47	0.00
35	15	0.92	318.90	0.52	0.49	319.42	1.90	0.06	319.48	159.88	319.90	0.38 ²	0.32	320.28	2.88	0.13	320.41	0.013	0.935	320.28	320.41	0.00
36	15	1.62	316.60	0.51 ¹	0.47	317.11	3.45	0.18	317.29	23.50	316.80	0.51 ²	0.47	317.31	3.45	0.18	317.49	0.013	0.200	317.31	317.49	0.00
37	15	0.54	318.80	0.41	0.35	319.21	1.53	0.04	319.25	23.50	319.00	0.29 ²	0.22	319.29	2.45	0.09	319.39	0.013	0.139	319.29	319.39	0.00
38	15	0.81	317.10	0.36 ¹	0.29	317.46	2.77	0.12	317.58	23.50	317.30	0.36 ²	0.29	317.66	2.77	0.12	317.78	0.013	0.200	317.66	317.78	0.00
39	15	0.97	318.10	0.65	0.65	318.75	1.50	0.04	318.79	23.50	318.30	0.43	0.38	318.73	2.58	0.10	318.84	0.013	0.049	318.80	318.90	0.07
40	15	0.92	317.80	0.82	0.85	318.62	1.08	0.02	318.64	23.50	318.00	0.61	0.60	318.61	1.53	0.04	318.65	0.013	0.015	318.64	318.67	0.02

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-1000.sws

Storm Sewer Tabulation

Project Name: SD-1000
02-27-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1000-1001	44.13	0.160	6.070	0.80	0.13	4.73	5.0	8.29	6.27	29.67	152.91	2.43	48	1.13	311.00	310.50	314.58	314.57	323.80	312.00	1
1001-1004	75.17	0.120	3.300	0.80	0.10	2.53	5.0	7.86	6.38	16.16	117.15	1.47	48	0.67	311.60	311.10	314.66	314.66	322.67	323.80	2
1004-1005	34.83	0.030	3.180	0.80	0.02	2.44	5.0	7.78	6.40	15.60	93.37	1.89	42	0.86	312.00	311.70	314.67	314.67	322.95	322.67	3
1005-1010	35.11	0.040	2.630	0.80	0.03	2.02	5.0	7.69	6.42	13.00	61.64	2.12	36	0.85	312.40	312.10	314.69	314.69	322.46	322.95	4
1010-1011	23.50	0.100	2.590	0.80	0.08	1.99	5.0	7.63	6.43	12.82	61.53	2.42	36	0.85	312.70	312.50	314.71	314.72	322.46	322.46	5
1011-1012	85.26	0.310	2.490	0.75	0.23	1.91	5.0	7.39	6.50	12.42	31.41	3.68	30	0.59	313.30	312.80	314.73	314.72	322.04	322.46	6
1012-1014	93.30	0.030	1.880	0.75	0.02	1.46	5.0	7.12	6.57	9.56	32.89	3.99	30	0.64	314.00	313.40	315.03	314.95	322.54	322.04	7
1014-1016	48.02	0.050	1.700	0.75	0.04	1.32	5.0	6.98	6.61	8.72	17.88	4.90	24	0.62	314.40	314.10	315.45	315.27	322.17	322.54	8
1016-1017	23.50	0.070	1.650	0.80	0.06	1.28	5.0	6.92	6.62	8.50	20.87	5.14	24	0.85	314.70	314.50	315.73	315.55	322.17	322.17	9
1017-1018	96.37	0.130	1.210	0.75	0.10	0.95	5.0	6.60	6.71	6.37	17.85	3.89	24	0.62	315.40	314.80	316.29	316.05	320.77	322.17	10
1018-1020	48.32	0.110	0.950	0.75	0.08	0.75	5.0	6.44	6.76	5.05	8.27	4.82	18	0.62	315.80	315.50	316.66	316.36	319.54	320.77	11
1020-1021	23.50	0.140	0.840	0.75	0.11	0.67	5.0	6.37	6.78	4.51	9.69	4.05	18	0.85	316.10	315.90	316.91	316.93	319.54	319.54	12
1021-1022	52.13	0.160	0.700	0.80	0.13	0.56	5.0	6.19	6.83	3.83	9.20	3.75	18	0.77	316.60	316.20	317.35	317.18	320.77	319.54	13
1022-1023	97.50	0.160	0.540	0.80	0.13	0.43	5.0	5.81	6.94	3.00	5.07	4.18	15	0.62	317.30	316.70	318.00	317.42	321.90	320.77	14
1023-1024	93.33	0.160	0.380	0.80	0.13	0.30	5.0	5.45	7.06	2.15	5.59	3.03	15	0.75	318.10	317.40	318.69	318.30	322.98	321.90	15
1024-1025	93.33	0.220	0.220	0.80	0.18	0.18	5.0	5.00	7.20	1.27	5.18	2.54	15	0.64	318.80	318.20	319.25	318.87	324.06	322.98	16
1005-1006	35.11	0.160	0.520	0.75	0.12	0.39	5.0	5.56	7.02	2.74	5.97	4.15	15	0.85	317.70	317.40	318.36	318.06	323.11	322.95	17
1006-1008	97.31	0.090	0.190	0.75	0.07	0.14	5.0	5.13	7.16	1.02	6.21	2.09	15	0.92	318.70	317.80	319.10	318.62	324.18	323.11	18
1001-1028	115.63	0.320	2.340	0.80	0.26	1.85	5.0	7.95	6.35	11.78	78.28	1.33	42	0.61	311.90	311.20	314.67	314.67	323.04	323.80	19
1028-1029	74.94	0.220	2.020	0.80	0.18	1.60	5.0	7.74	6.41	10.24	54.48	1.69	36	0.67	312.50	312.00	314.69	314.69	323.37	323.04	20
1029-1030	119.13	0.120	1.800	0.80	0.10	1.42	5.0	7.39	6.50	9.24	33.61	2.81	30	0.67	313.40	312.60	314.71	314.71	324.66	323.37	21
1030-1031	160.17	0.150	1.680	0.80	0.12	1.33	5.0	6.91	6.62	8.78	17.87	5.00	24	0.62	314.50	313.50	315.55	314.64	323.58	324.66	22

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs. Project File - SD-1000.sws

Storm Sewer Tabulation

Project Name: SD-1000
02-27-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1031-1032	54.73	0.090	1.530	0.80	0.07	1.21	5.0	6.76	6.67	8.04	19.34	4.66	24	0.73	315.00	314.60	316.00	315.76	322.24	323.58	23
1032-1033	71.50	0.400	1.440	0.80	0.32	1.13	5.0	6.55	6.73	7.63	18.91	4.91	24	0.70	315.60	315.10	316.58	316.11	321.38	322.24	24
1033-1034	58.99	0.040	1.040	0.80	0.03	0.81	5.0	6.36	6.78	5.52	8.65	4.54	18	0.68	316.10	315.70	317.00	316.77	321.81	321.38	25
1034-1037	73.79	0.130	0.630	0.80	0.10	0.50	5.0	6.09	6.86	3.46	8.64	3.30	18	0.68	316.70	316.20	317.41	317.32	320.93	321.81	26
1034-1035	123.41	0.190	0.370	0.75	0.14	0.28	5.0	5.11	7.17	1.99	7.80	2.69	15	1.46	318.00	316.20	318.56	317.36	323.52	321.81	27
1037-1038	57.82	0.170	0.500	0.80	0.14	0.40	5.0	5.87	6.93	2.77	5.37	3.70	15	0.69	317.20	316.80	317.87	317.62	321.54	320.93	28
1038-1039	100.61	0.170	0.330	0.80	0.14	0.26	5.0	5.49	7.05	1.86	6.11	2.97	15	0.89	318.20	317.30	318.75	318.08	323.05	321.54	29
1039-1040	93.11	0.160	0.160	0.80	0.13	0.13	5.0	5.00	7.20	0.92	5.18	2.19	15	0.64	318.90	318.30	319.28	318.92	324.45	323.05	30
1018-1019	82.66	0.130	0.130	0.80	0.10	0.10	5.0	5.00	7.20	0.75	5.02	1.97	15	0.60	316.50	316.00	316.85	316.62	324.34	320.77	31
1017-1026	53.12	0.200	0.370	0.75	0.15	0.28	5.0	5.11	7.17	1.99	9.71	3.70	15	2.26	318.10	316.90	318.66	317.46	323.62	322.17	32
1026-1027	23.51	0.170	0.170	0.75	0.13	0.13	5.0	5.00	7.20	0.92	5.96	1.90	15	0.85	318.40	318.20	318.84	318.86	323.62	323.62	33
1001-1002	100.47	0.110	0.270	0.80	0.09	0.22	5.0	5.84	6.93	1.50	4.99	3.36	15	0.60	318.80	318.20	319.29	318.69	325.01	323.80	34
1002-1003	159.88	0.160	0.160	0.80	0.13	0.13	5.0	5.00	7.20	0.92	5.11	2.39	15	0.63	319.90	318.90	320.28	319.42	324.66	325.01	35
1012-1013	23.50	0.300	0.300	0.75	0.23	0.23	5.0	5.00	7.20	1.62	5.96	3.45	15	0.85	316.80	316.60	317.31	317.11	322.04	322.04	36
1008-1009	23.50	0.100	0.100	0.75	0.08	0.08	5.0	5.00	7.20	0.54	5.96	1.99	15	0.85	319.00	318.80	319.29	319.21	324.18	324.18	37
1014-1015	23.50	0.150	0.150	0.75	0.11	0.11	5.0	5.00	7.20	0.81	5.96	2.77	15	0.85	317.30	317.10	317.66	317.46	322.54	322.54	38
1035-1036	23.50	0.180	0.180	0.75	0.14	0.14	5.0	5.00	7.20	0.97	5.96	2.04	15	0.85	318.30	318.10	318.73	318.75	323.52	323.52	39
1006-1007	23.50	0.170	0.170	0.75	0.13	0.13	5.0	5.00	7.20	0.92	5.96	1.30	15	0.85	318.00	317.80	318.61	318.62	323.11	323.11	40

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

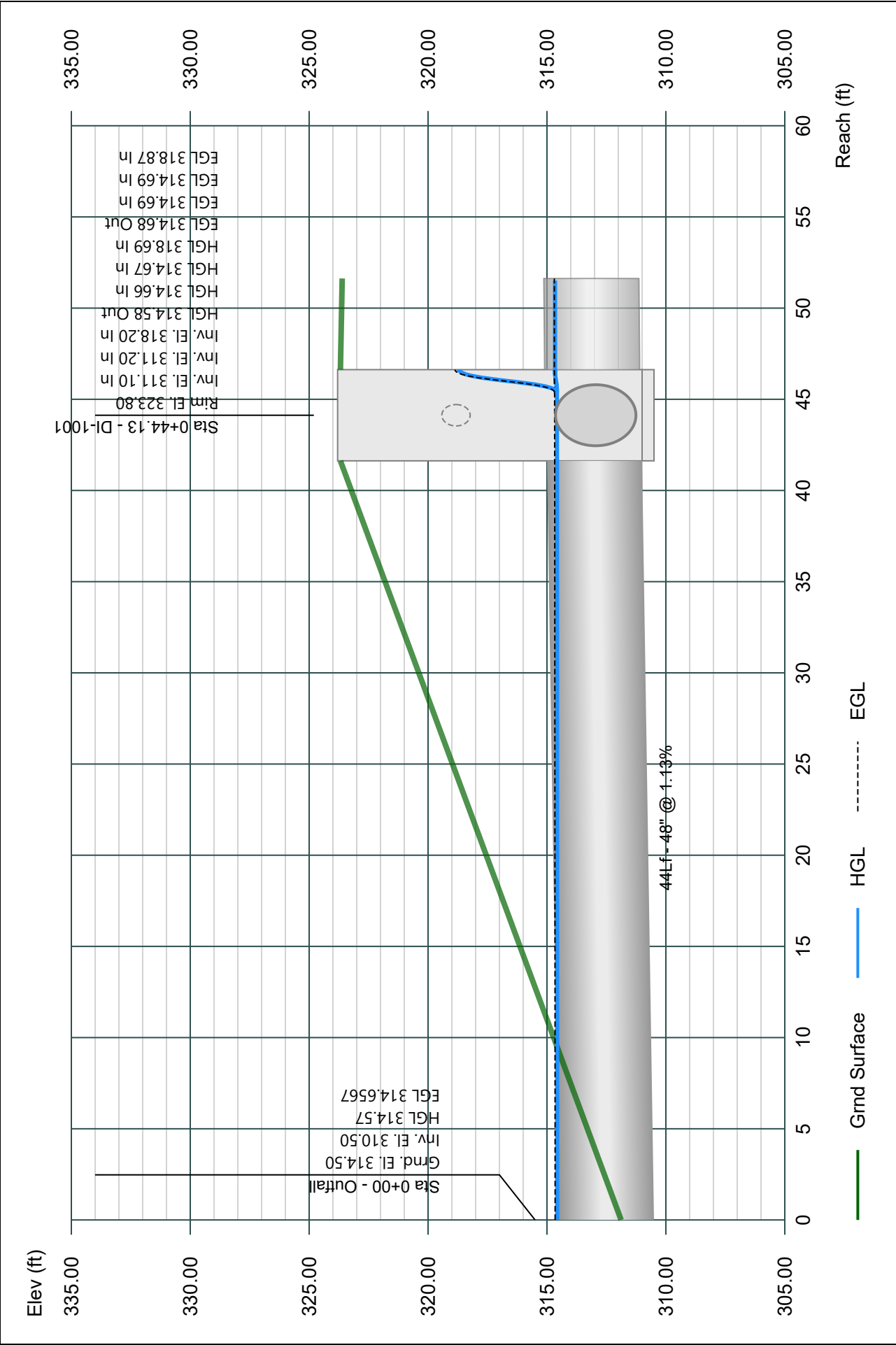
Project File: SD-1000.sws

Line 1 - 1000-1001

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

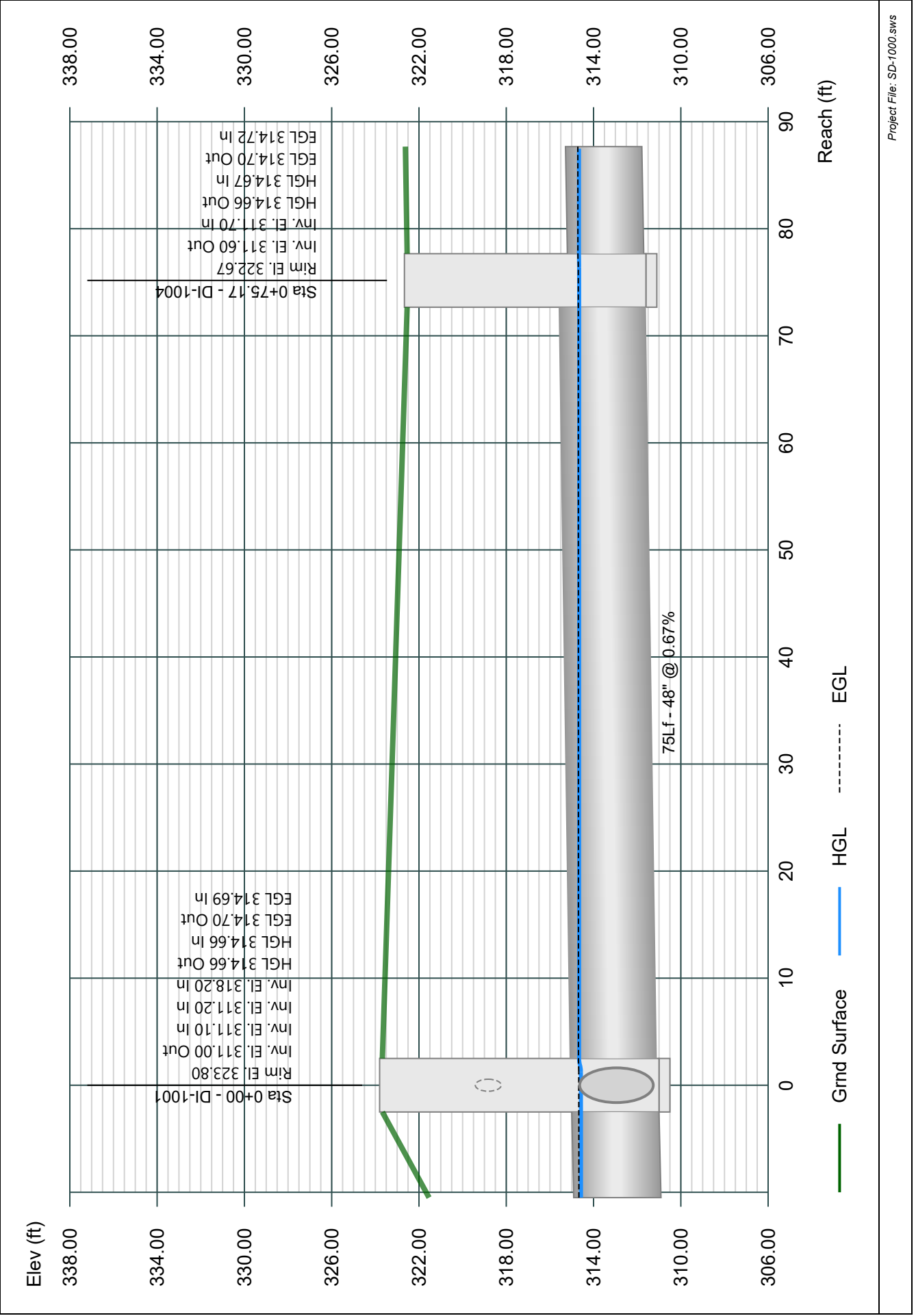


Line 2 - 1001-1004

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

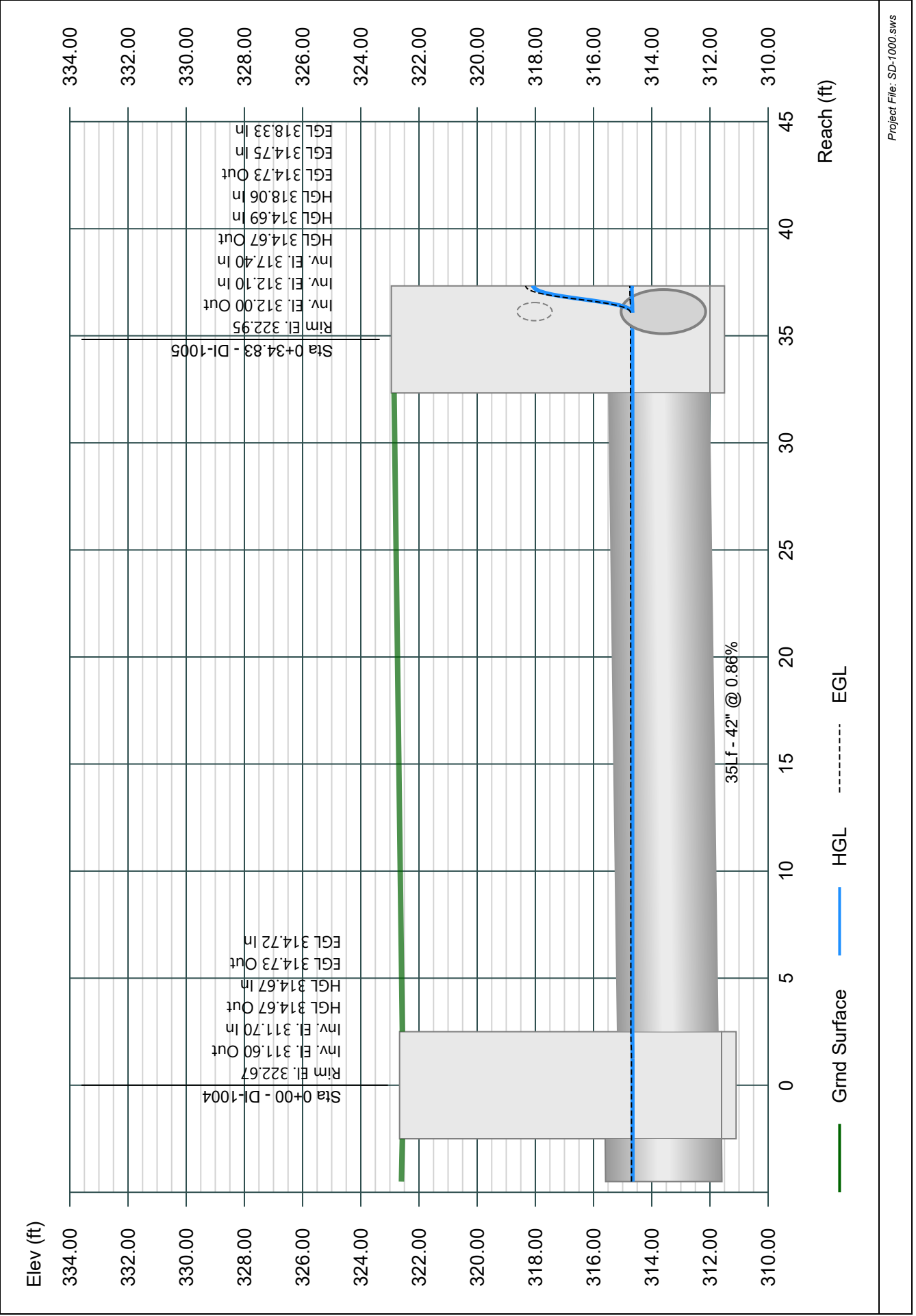


Line 3 - 1004-1005

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

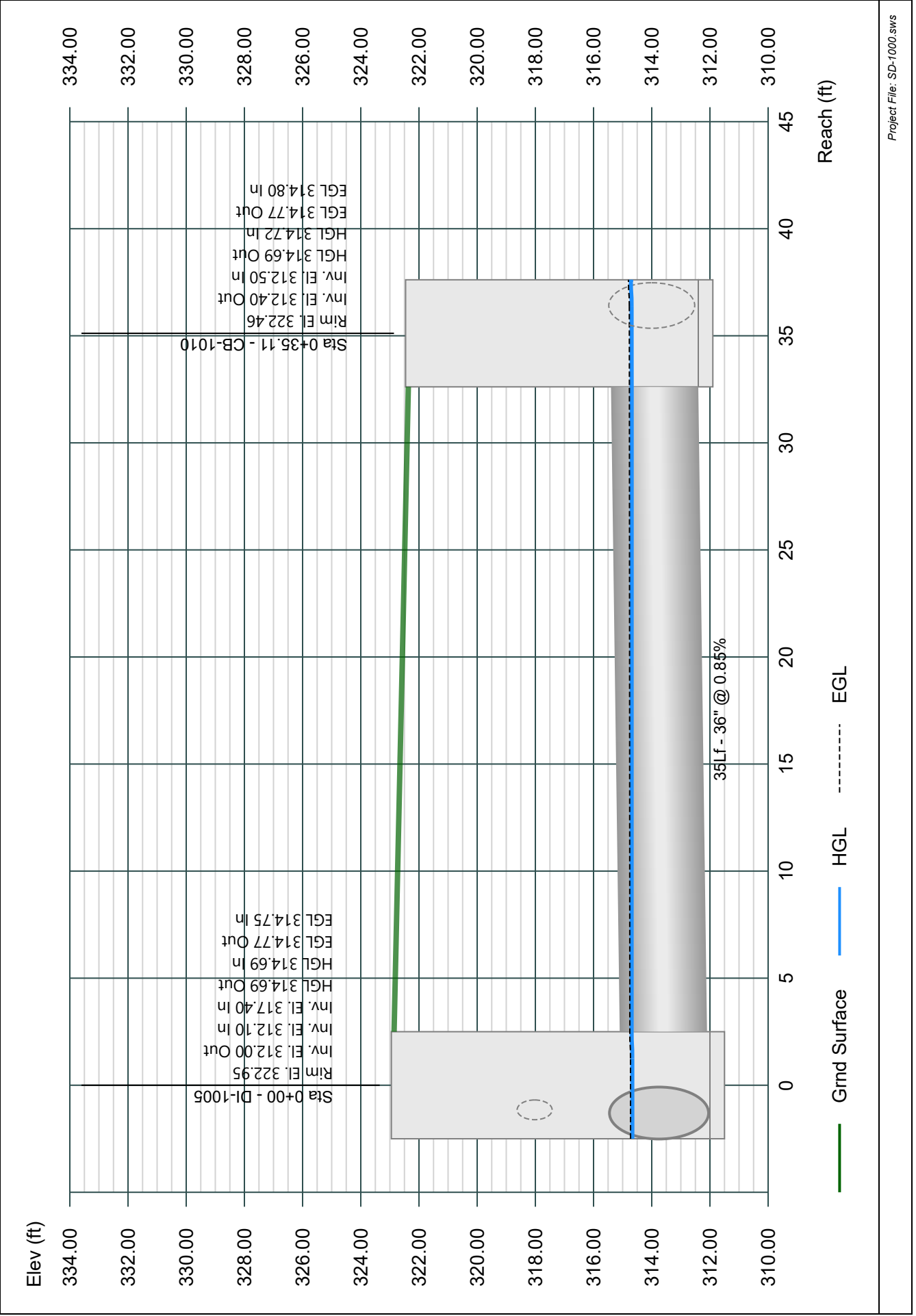


Line 4 - 1005-1010

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

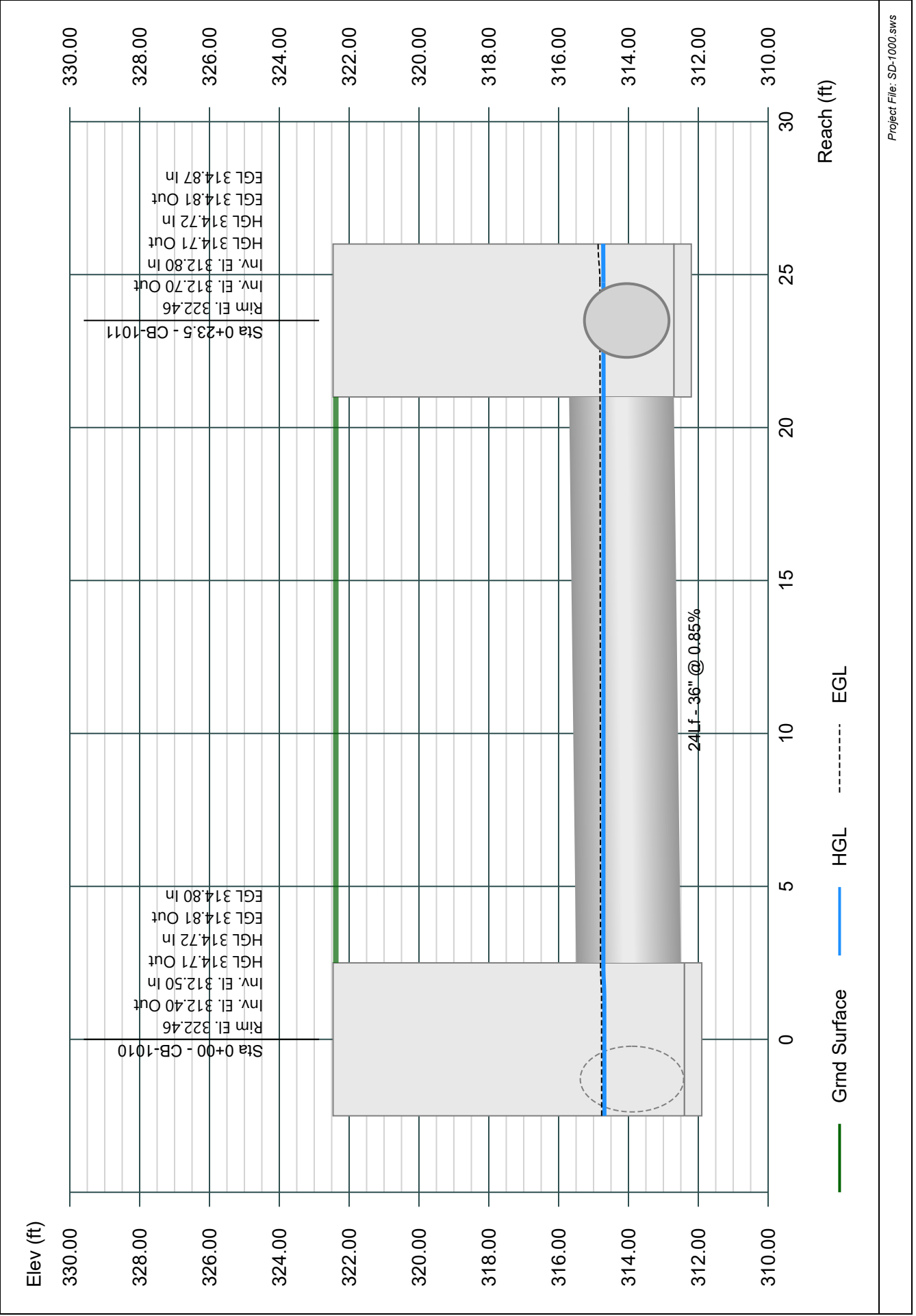


Line 5 - 1010-1011

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

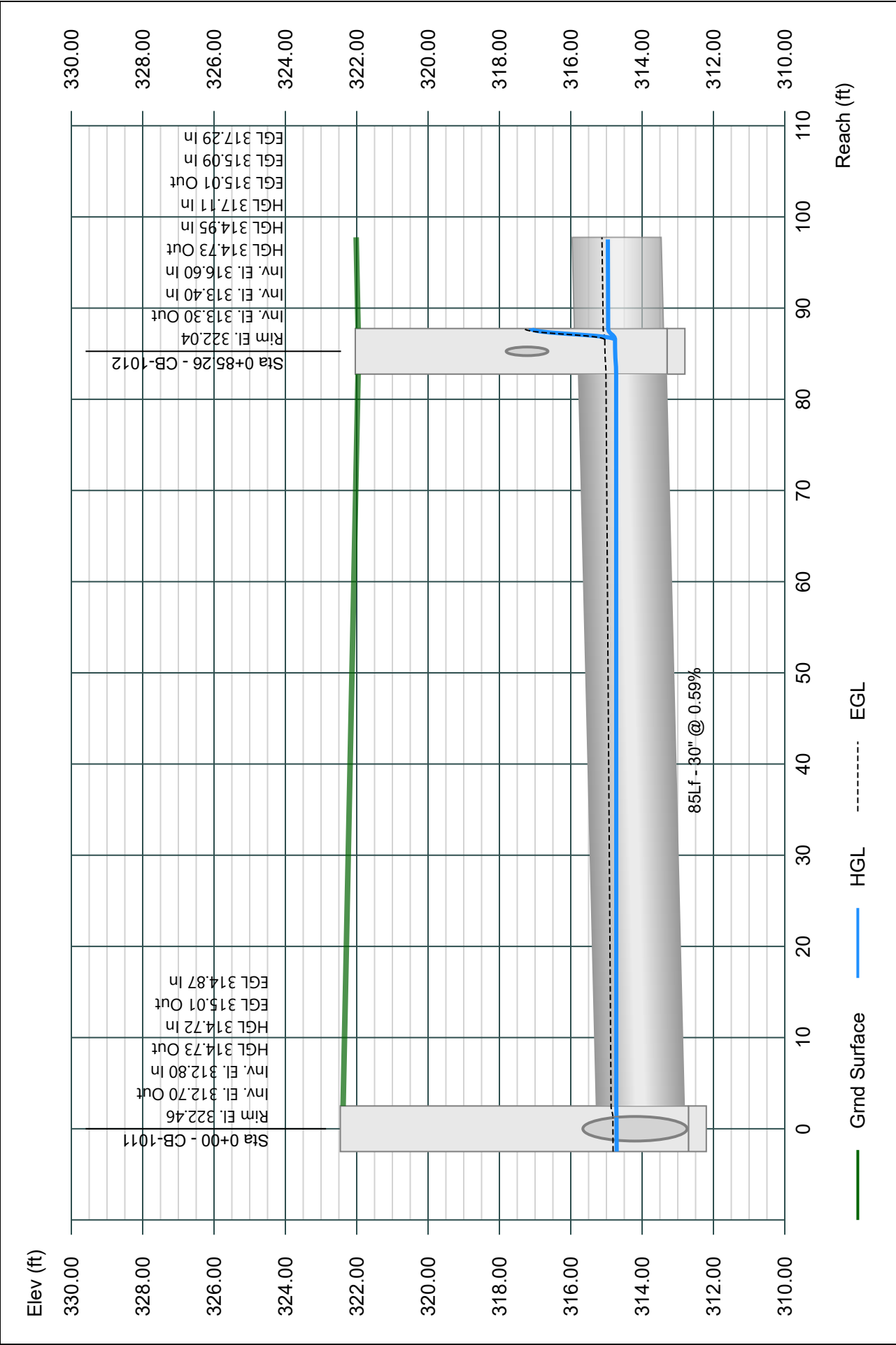
02-27-2024



Line 6 - 1011-1012

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

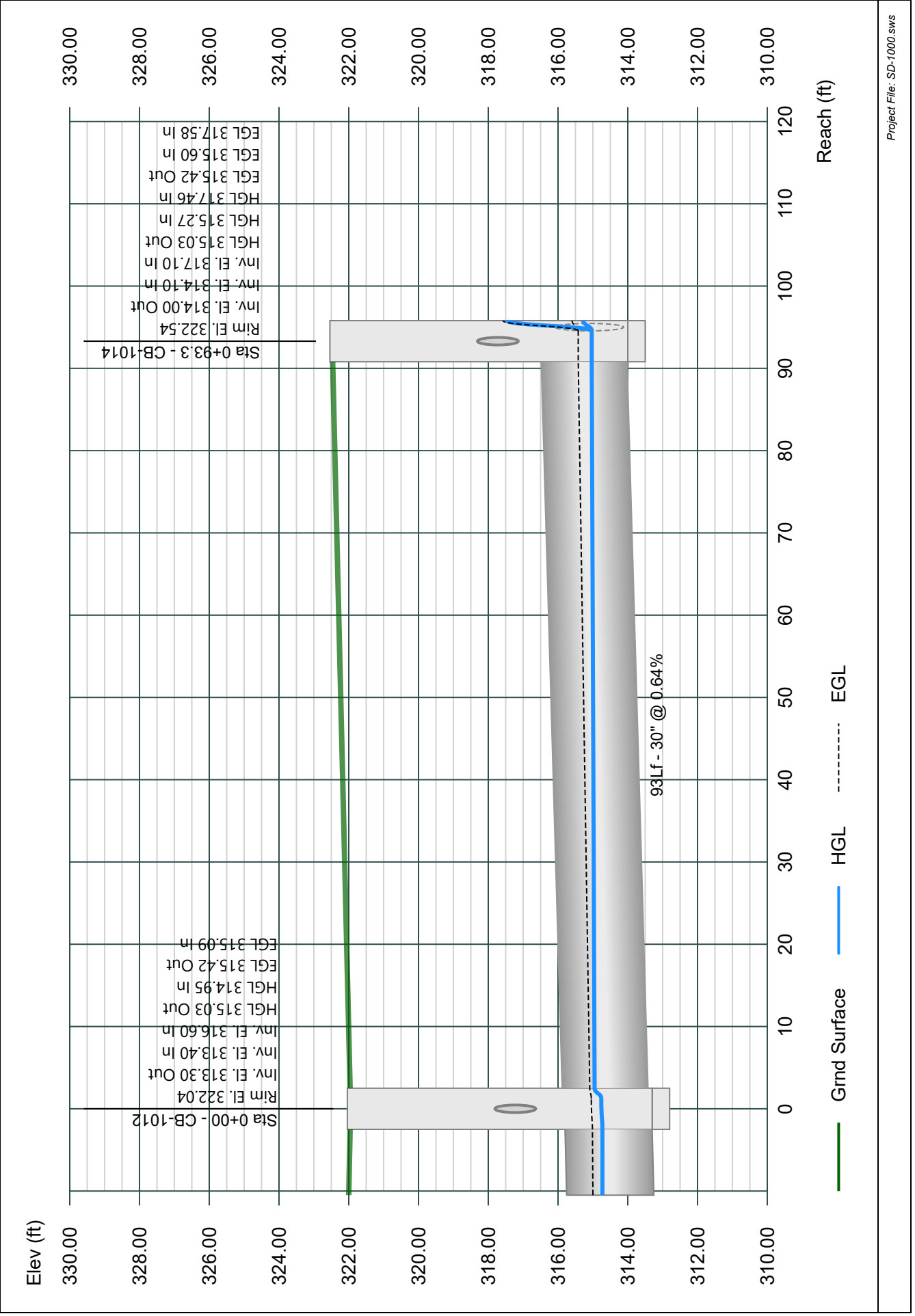


Line 7 - 1012-1014

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

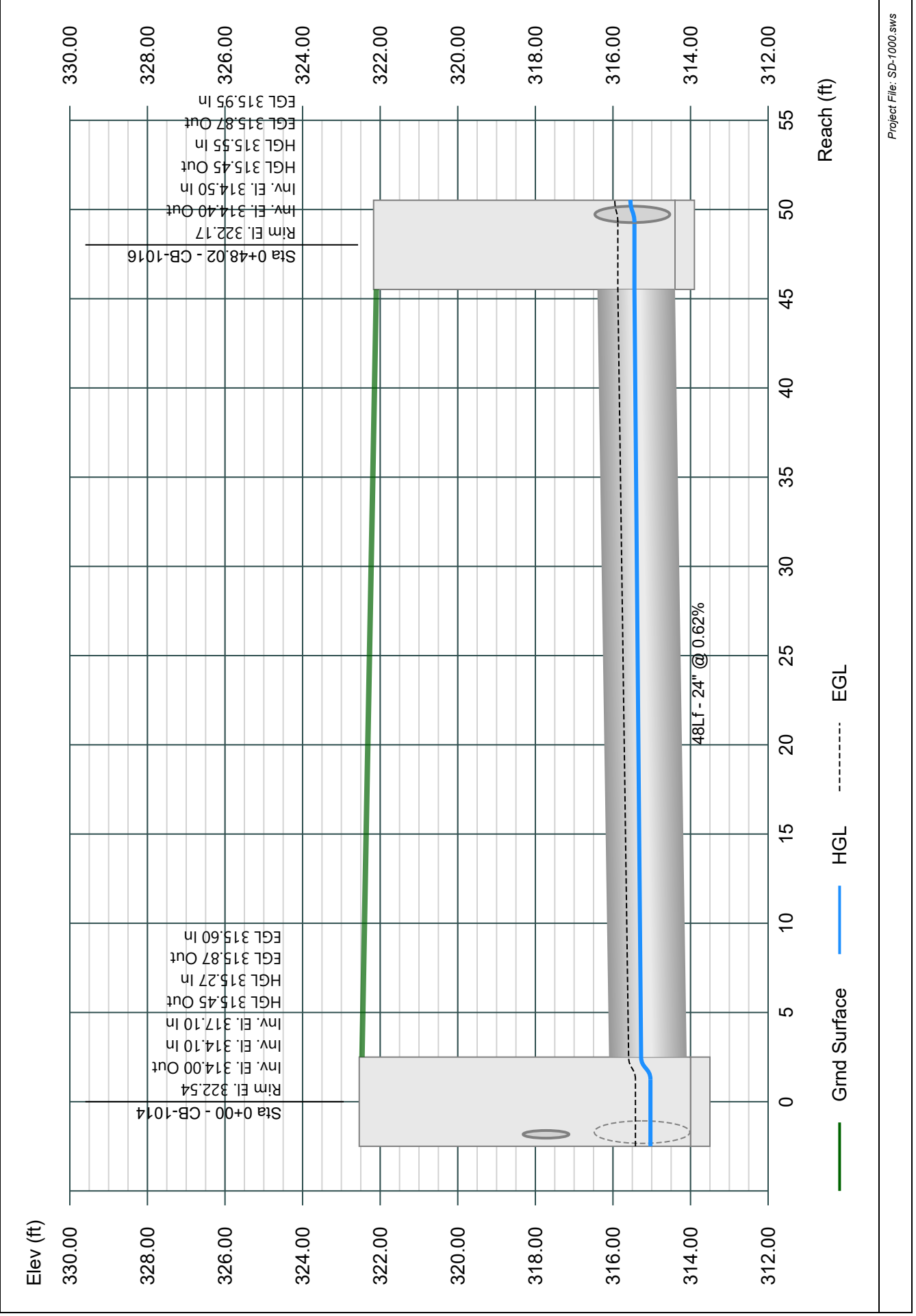


Line 8 - 1014-1016

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

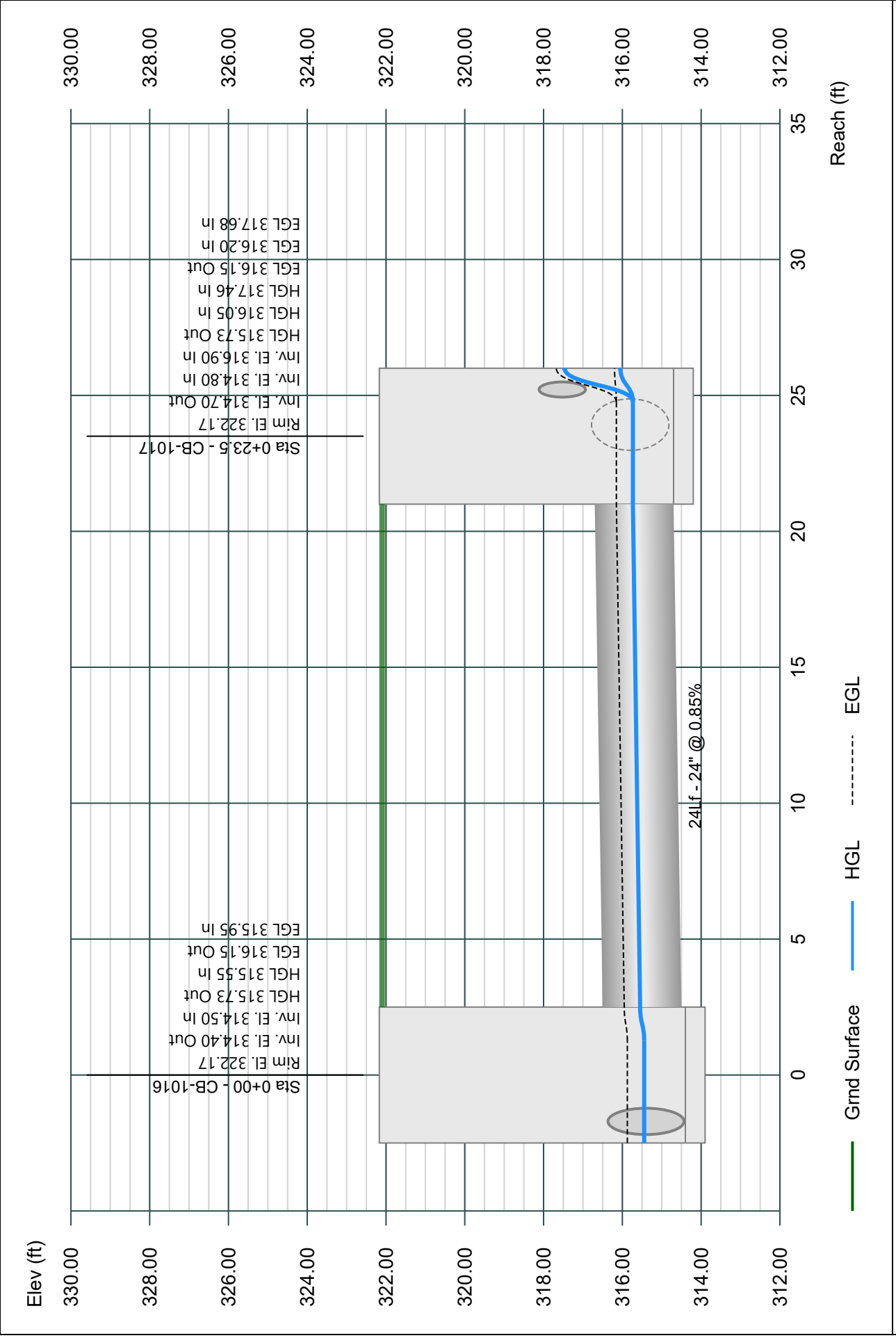


Line 9 - 1016-1017

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

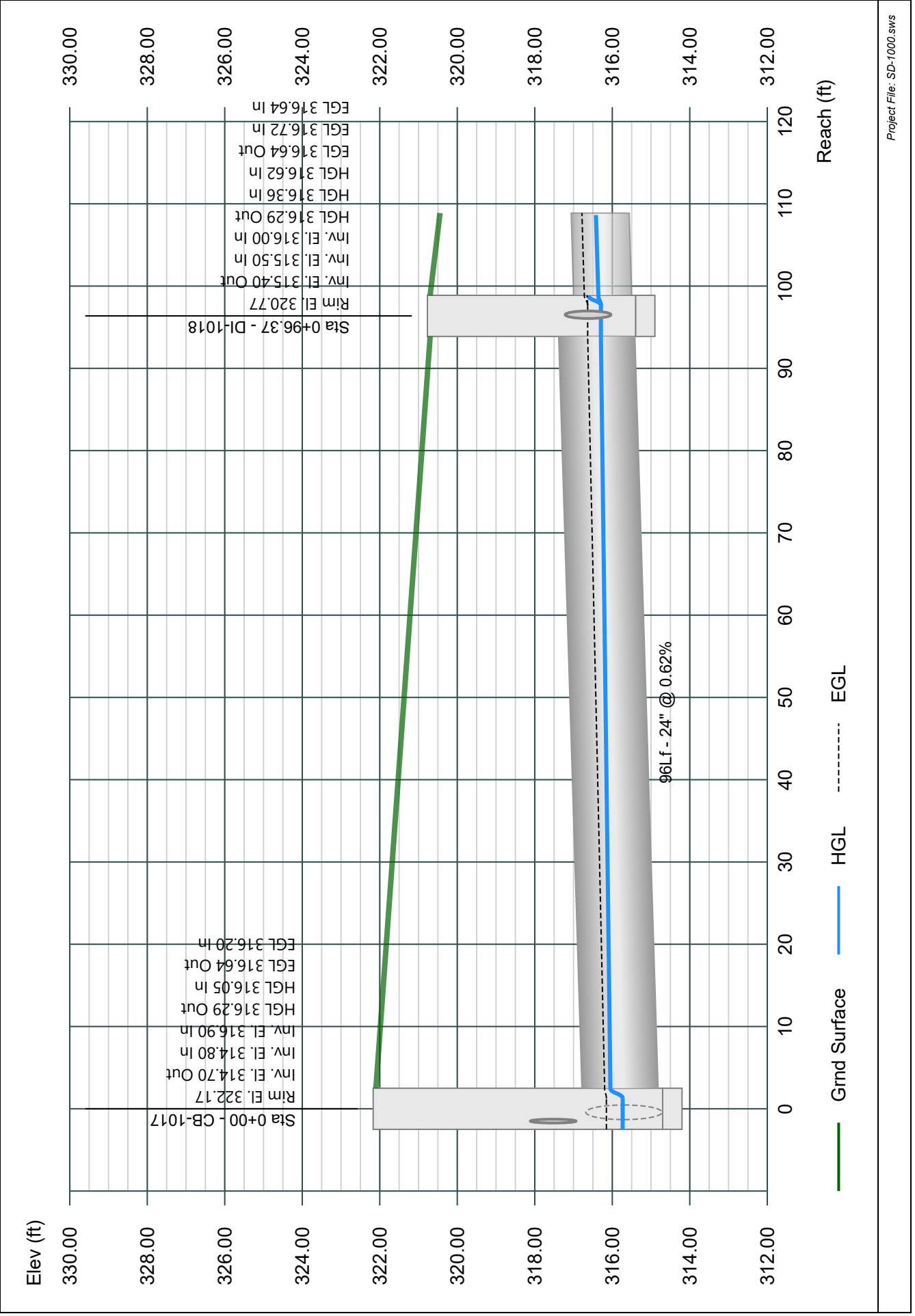


Line 10 - 1017-1018

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

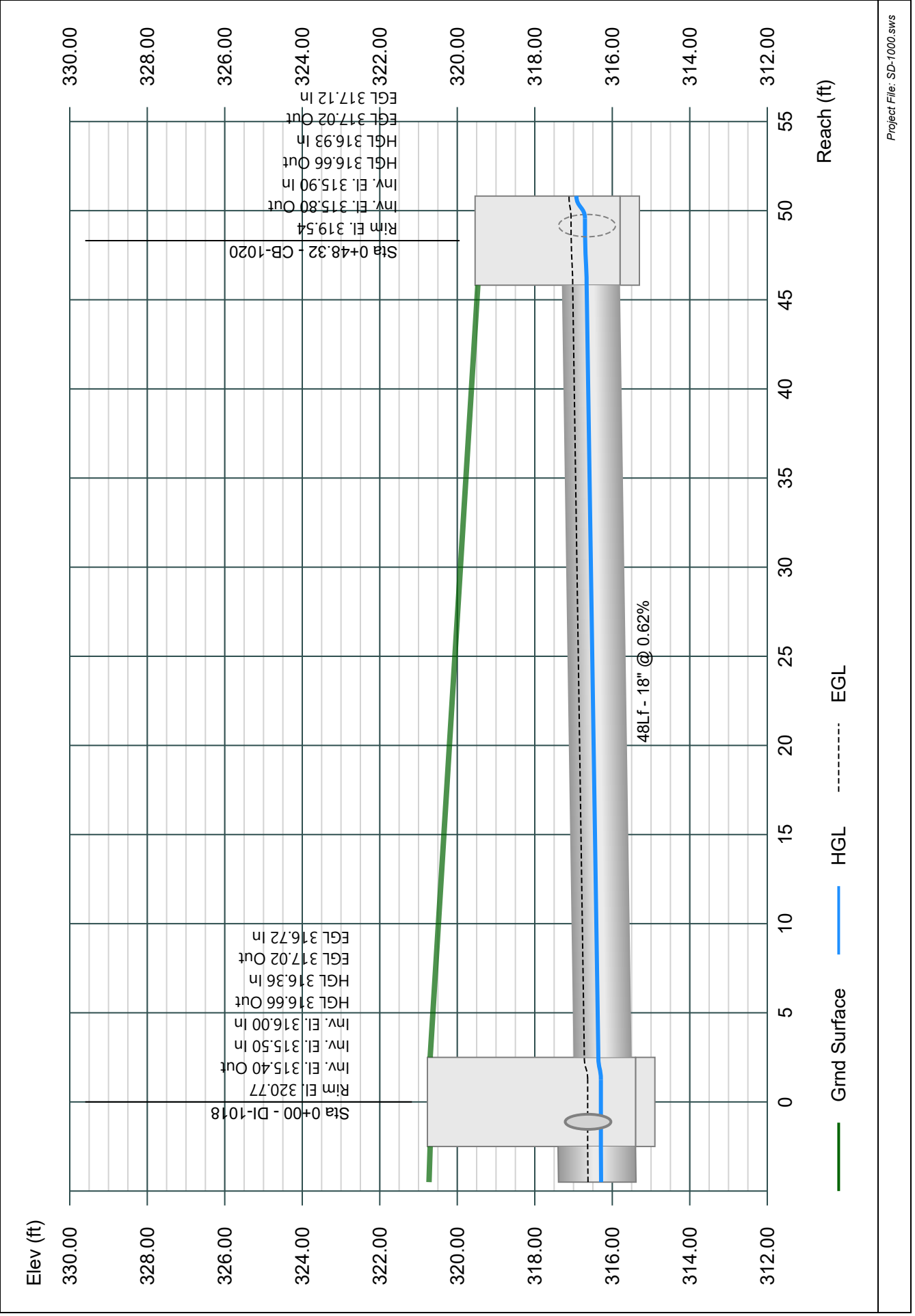


Line 11 - 1018-1020

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

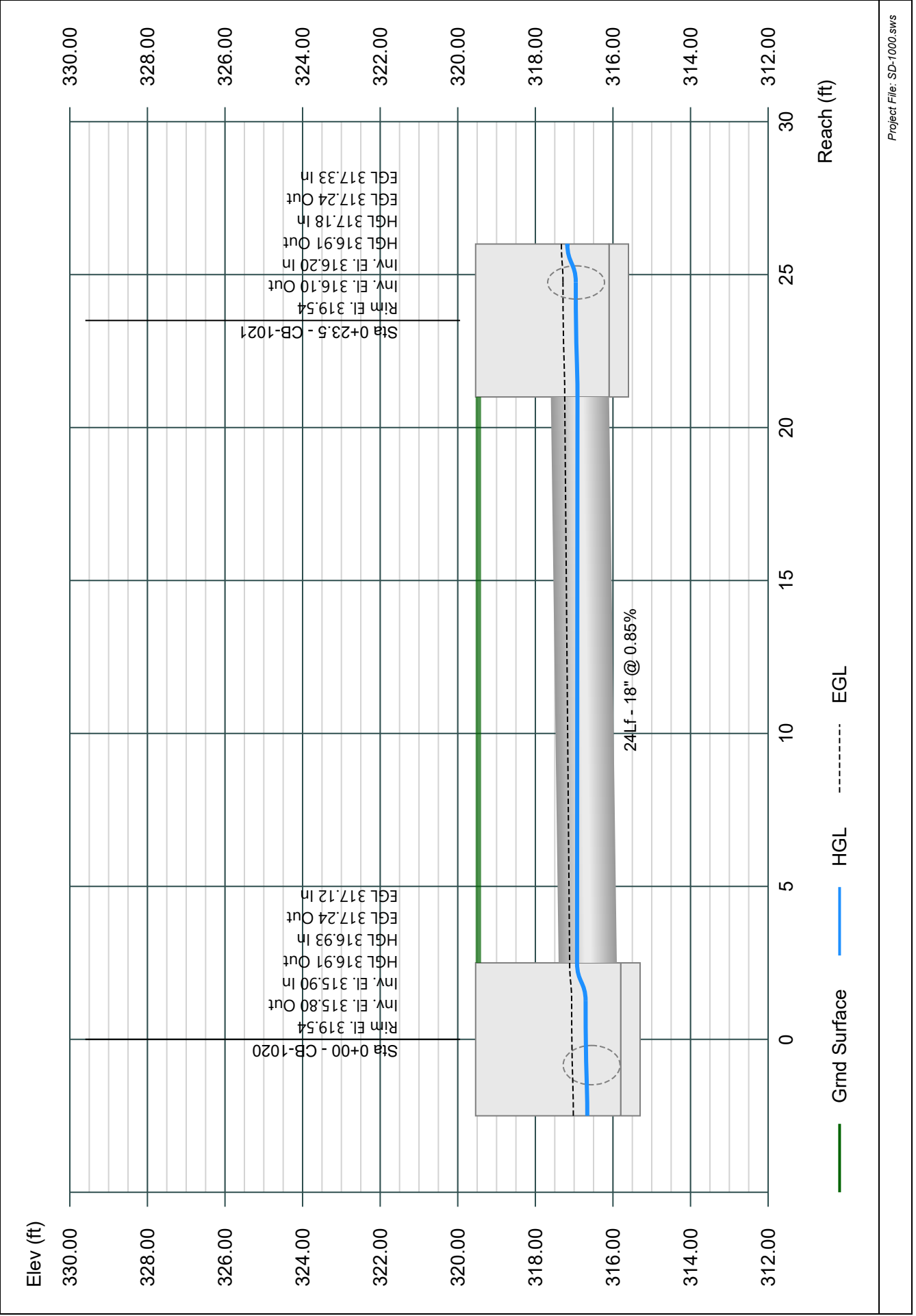


Line 12 - 1020-1021

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

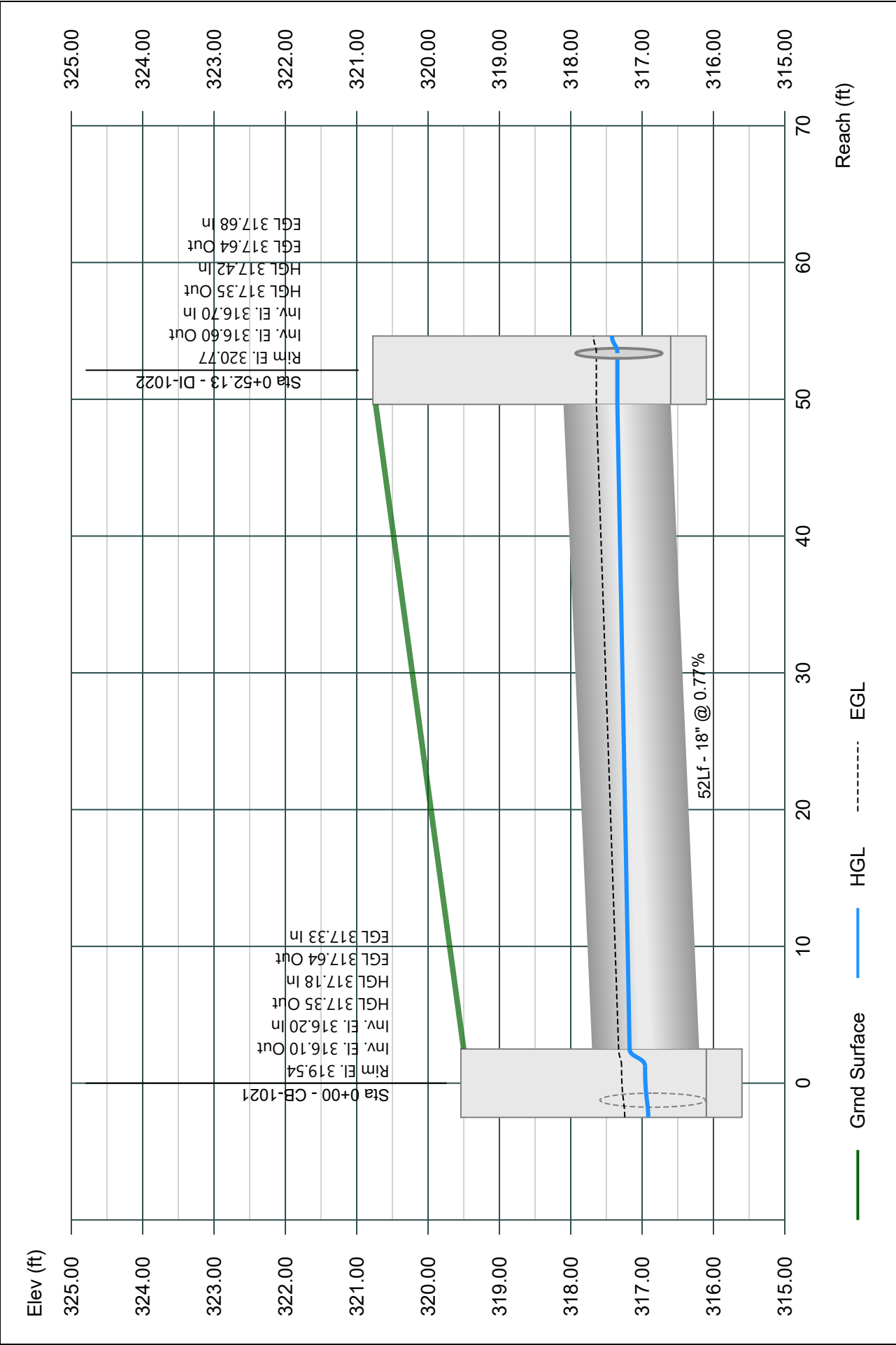


Line 13 - 1021-1022

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

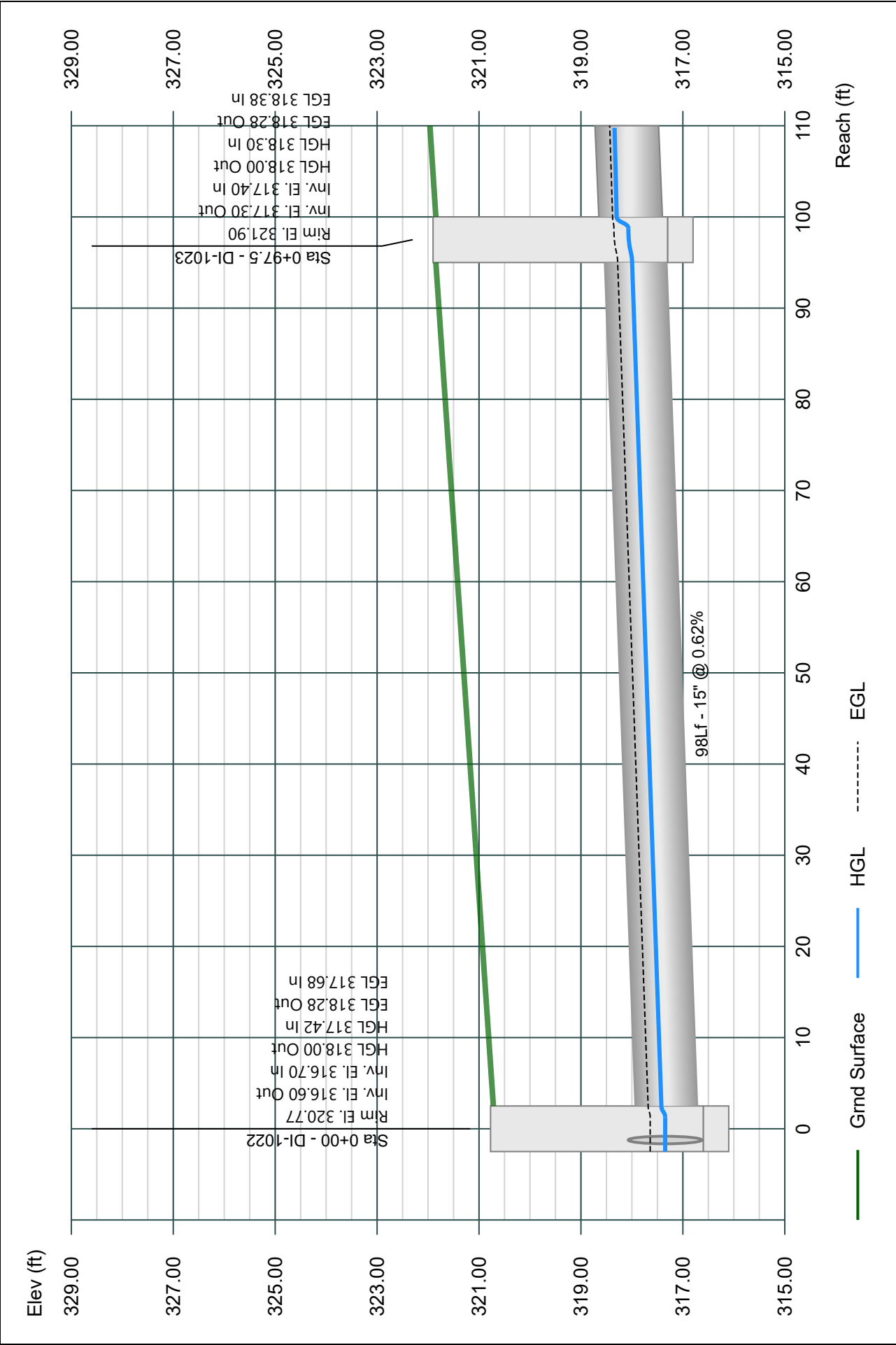
02-27-2024



Line 14 - 1022-1023

Stormwater Studio 2024 v 3.0.0.33

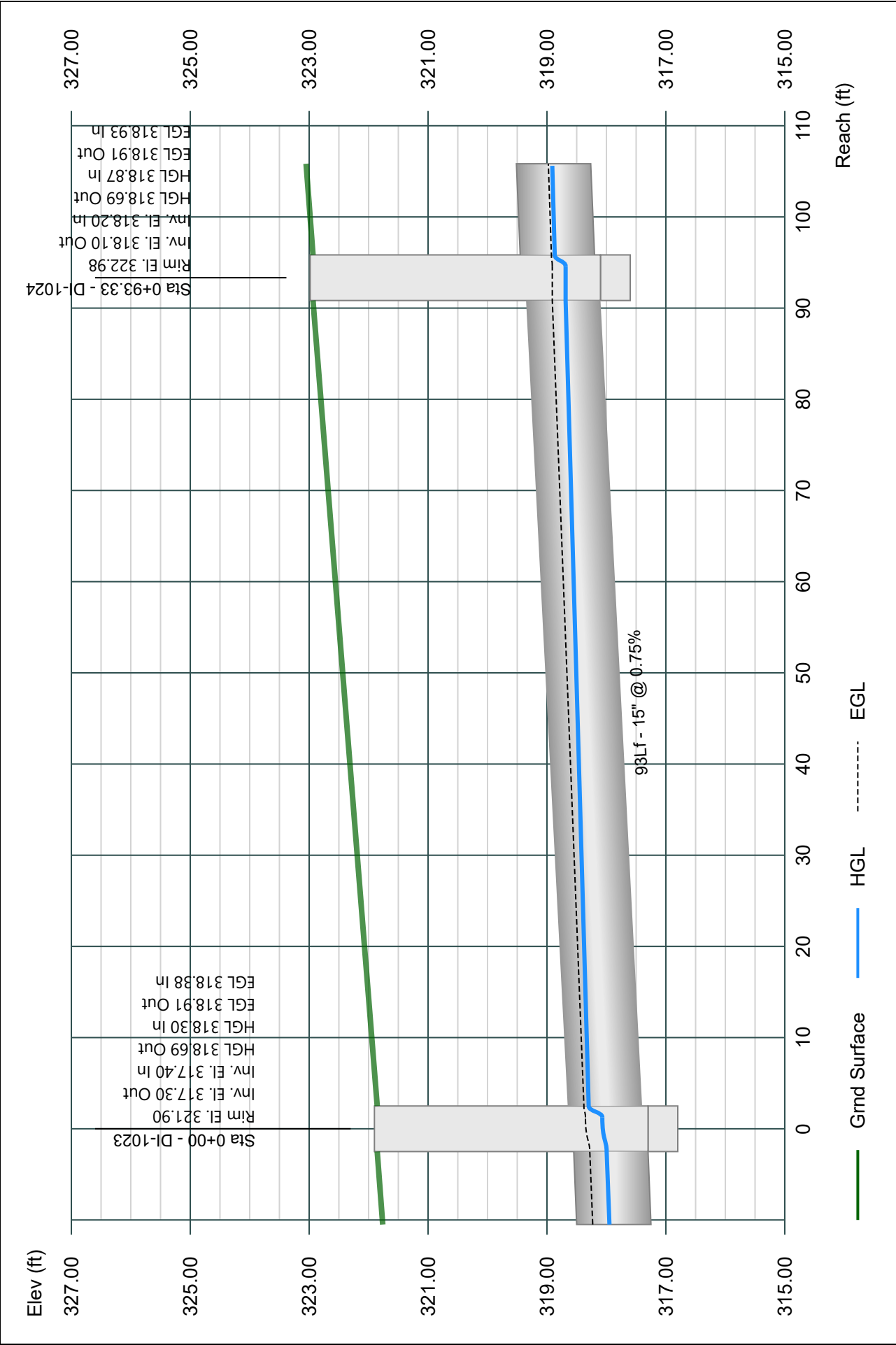
Project Name: SD-1000
02-27-2024



Line 15 - 1023-1024

Stormwater Studio 2024 v 3.0.0.33

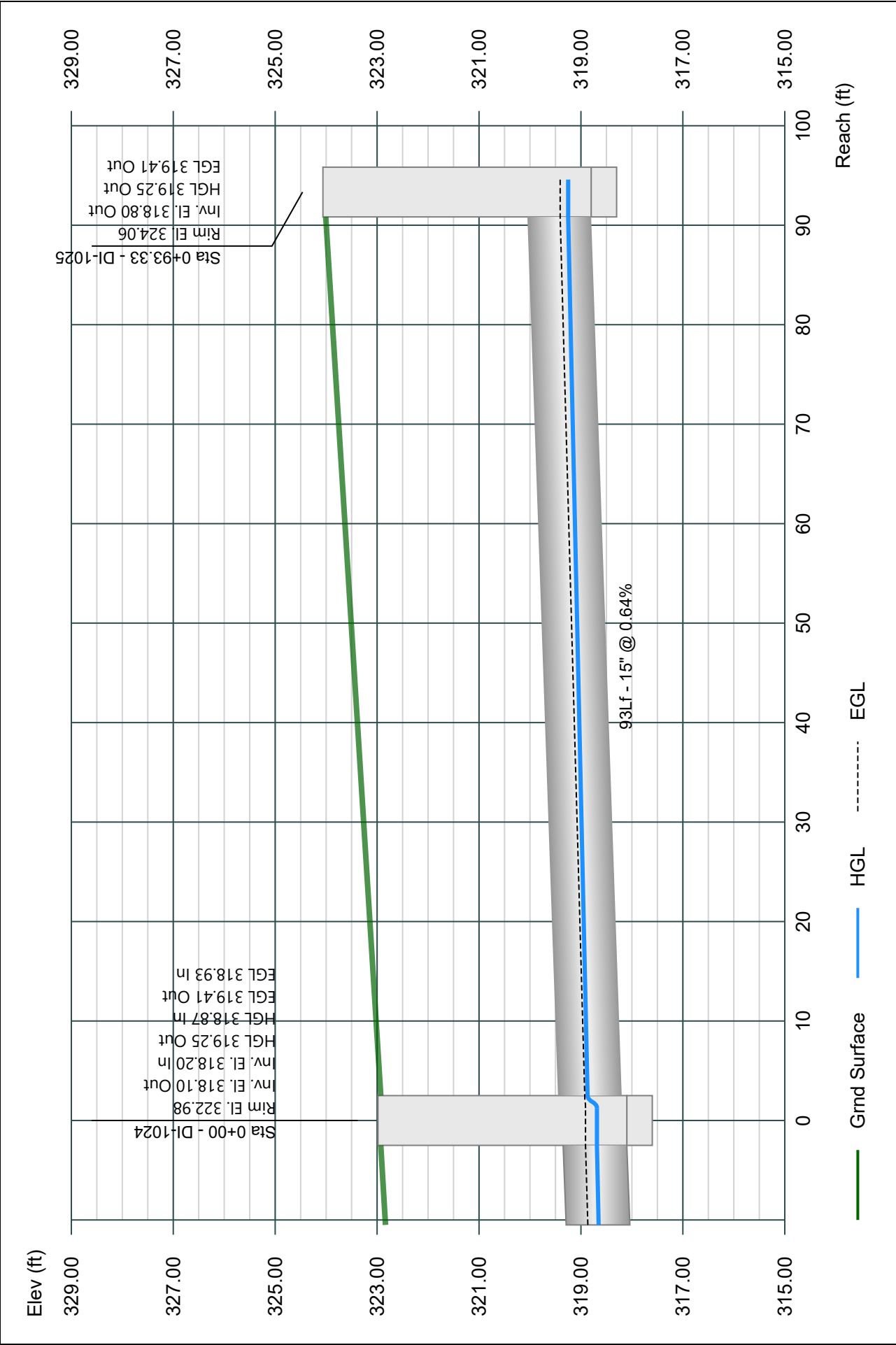
Project Name: SD-1000
02-27-2024



Line 16 - 1024-1025

Project Name: SD-1000
02-27-2024

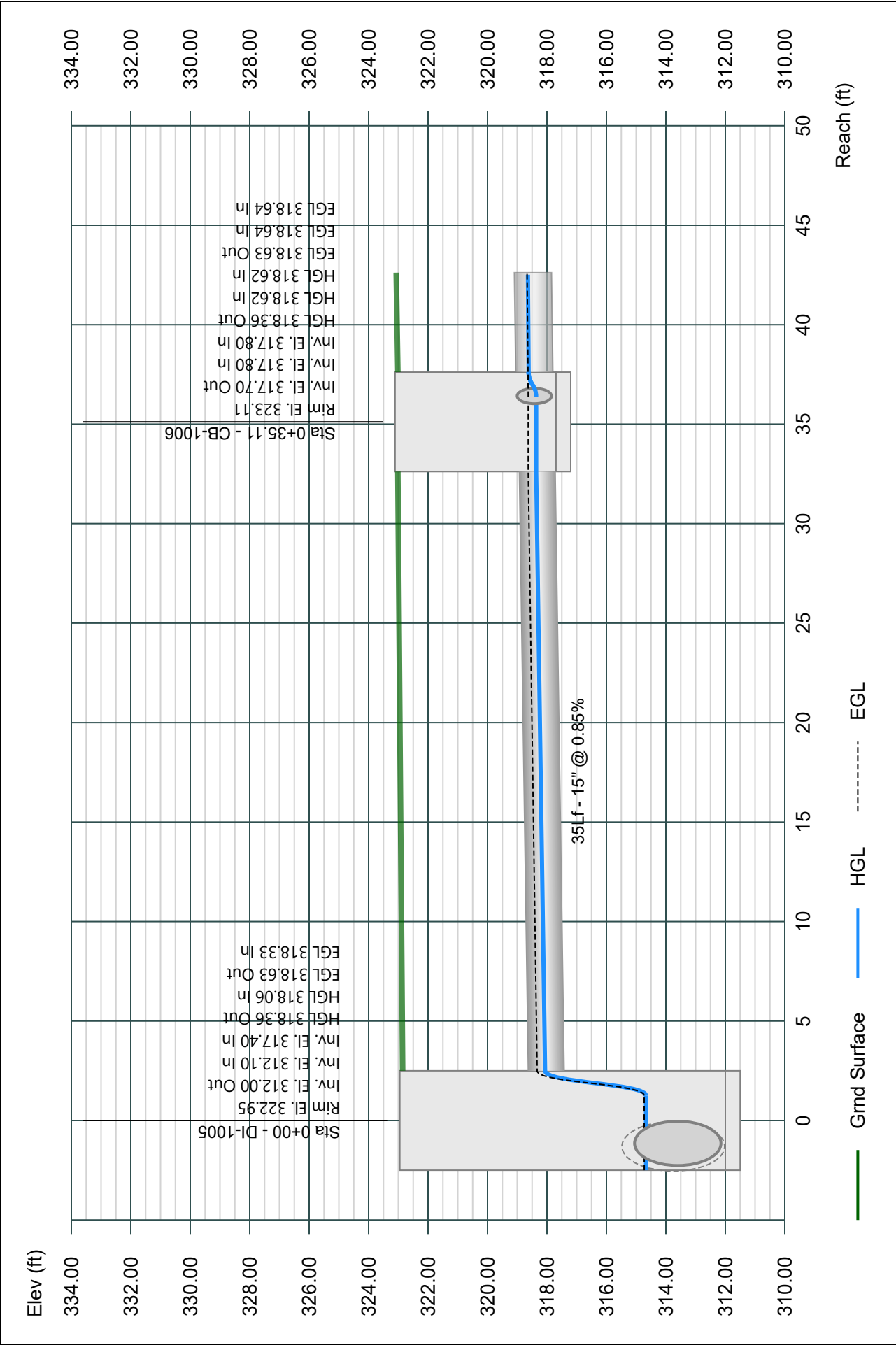
Stormwater Studio 2024 v 3.0.0.33



Line 17 - 1005-1006

Stormwater Studio 2024 v 3.0.0.33

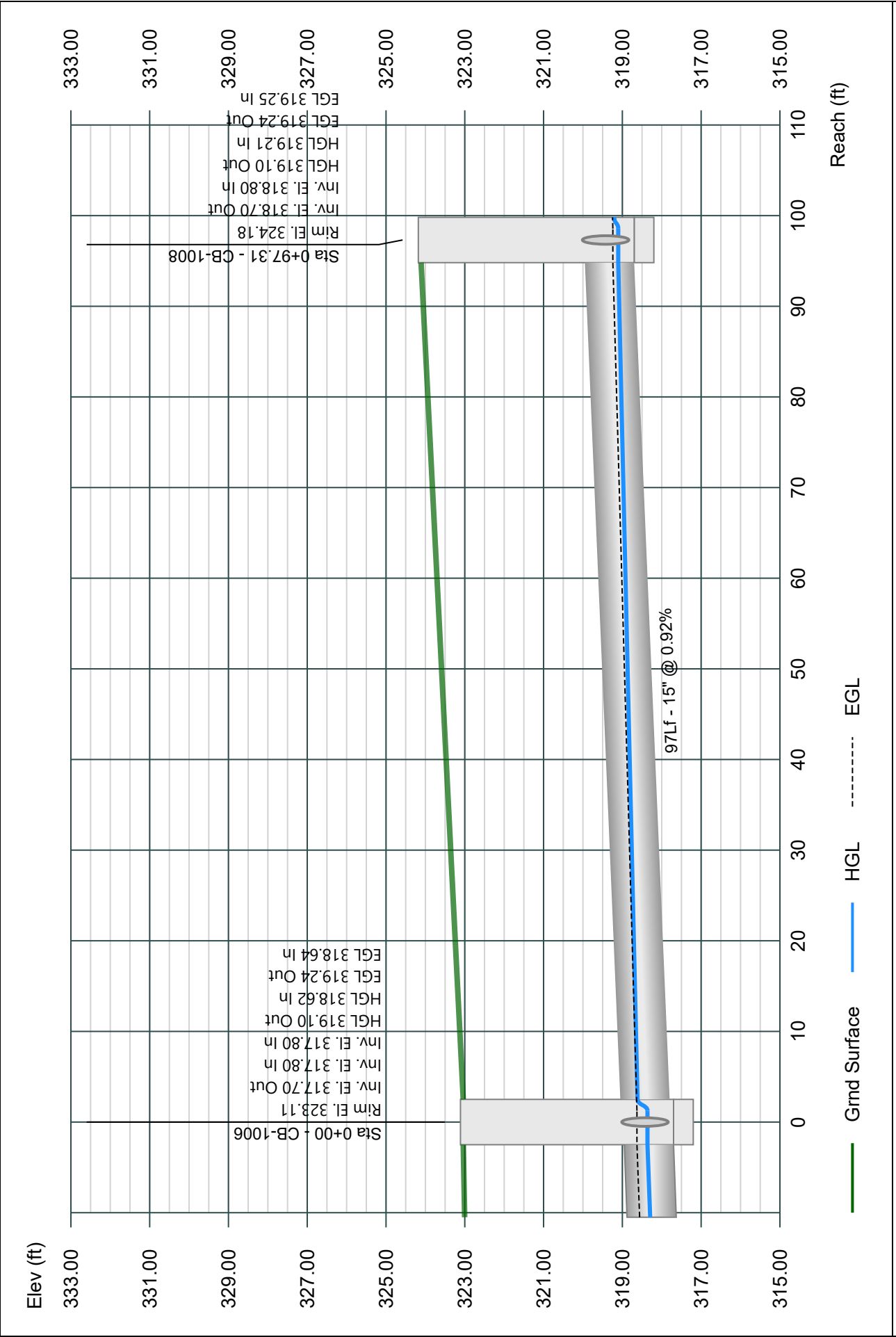
Project Name: SD-1000
02-27-2024



Line 18 - 1006-1008

Project Name: SD-1000
02-27-2024

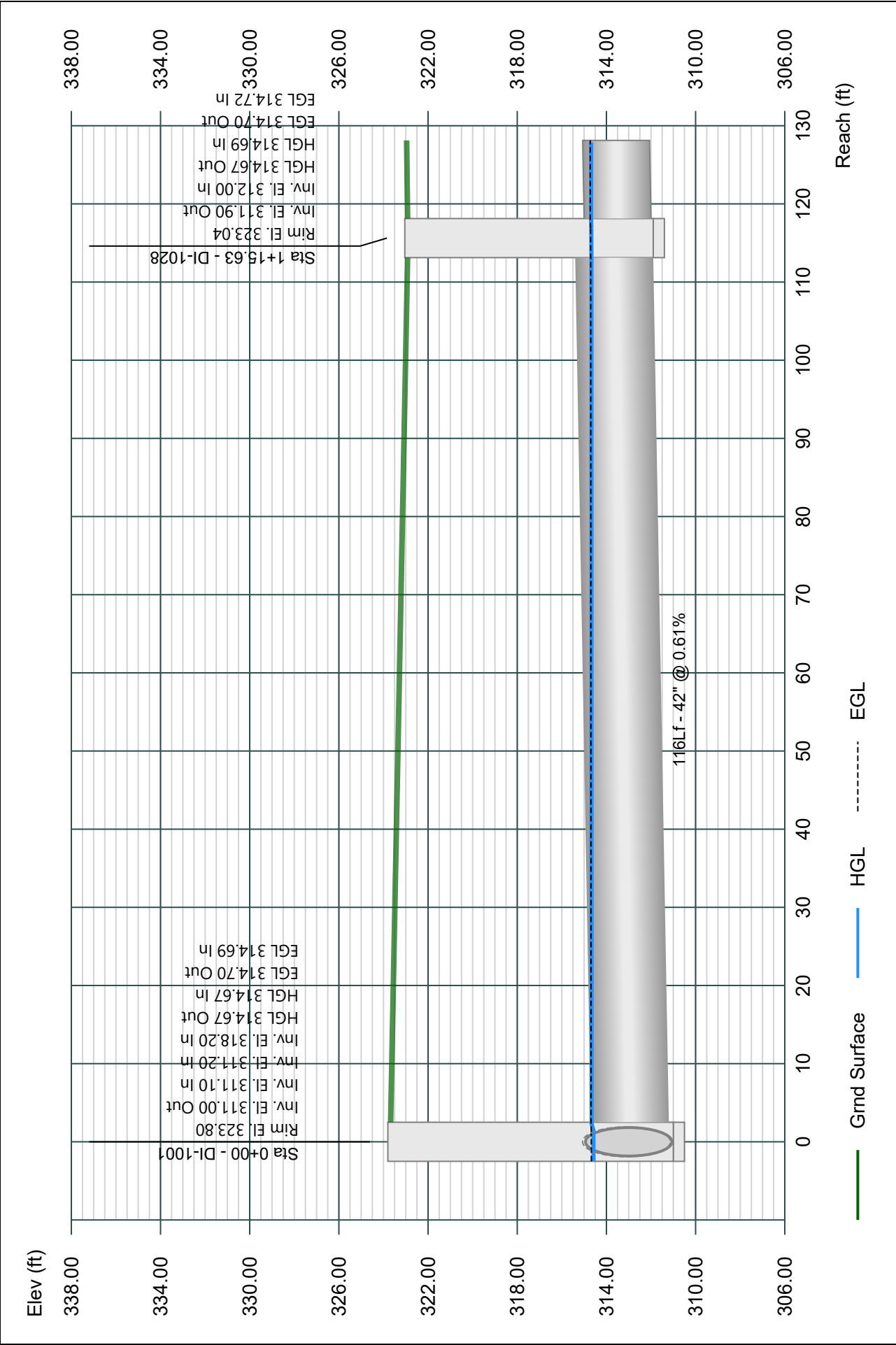
Stormwater Studio 2024 v 3.0.0.33



Line 19 - 1001-1028

Stormwater Studio 2024 v 3.0.0.33

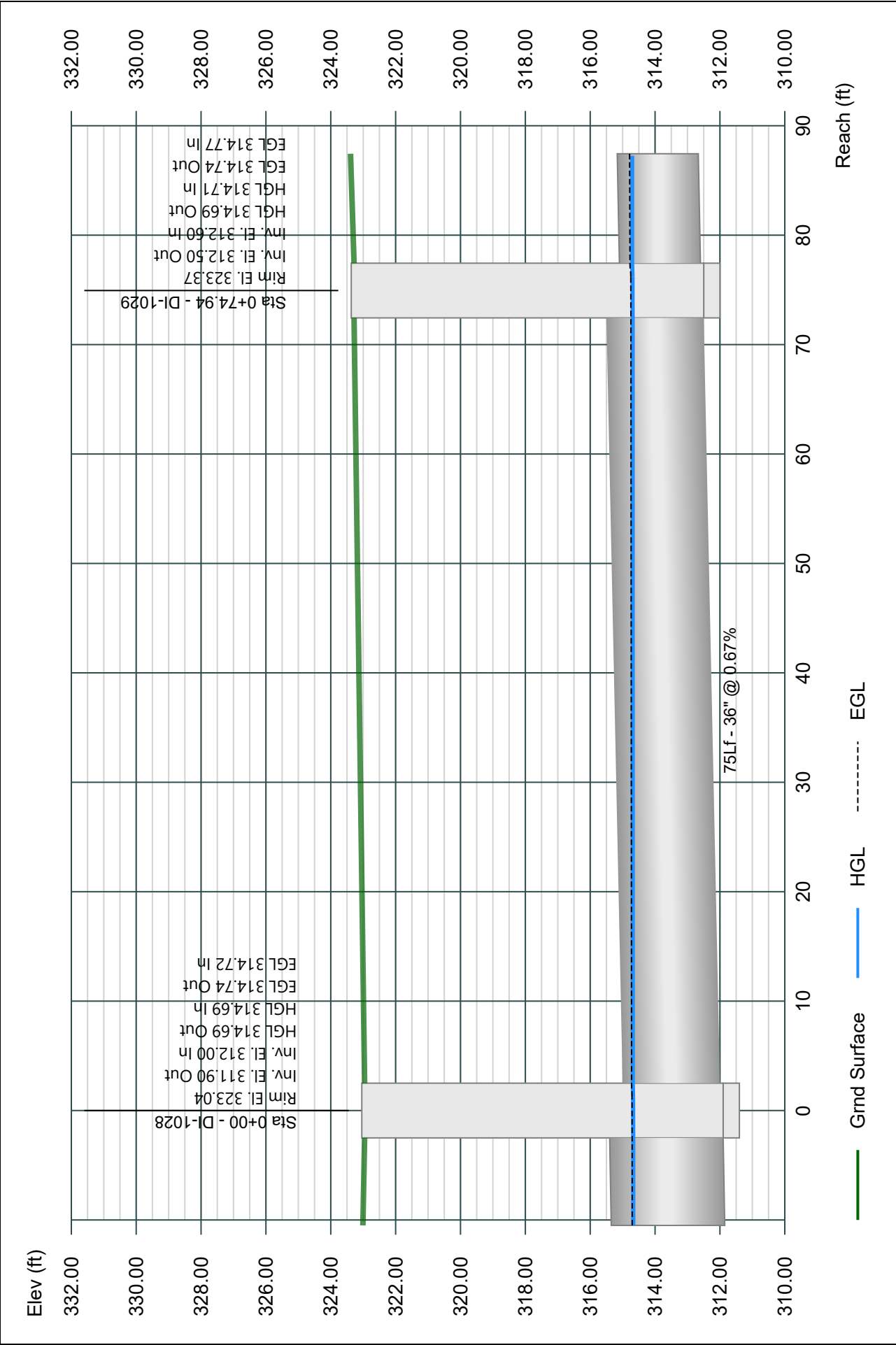
Project Name: SD-1000
02-27-2024



Line 20 - 1028-1029

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

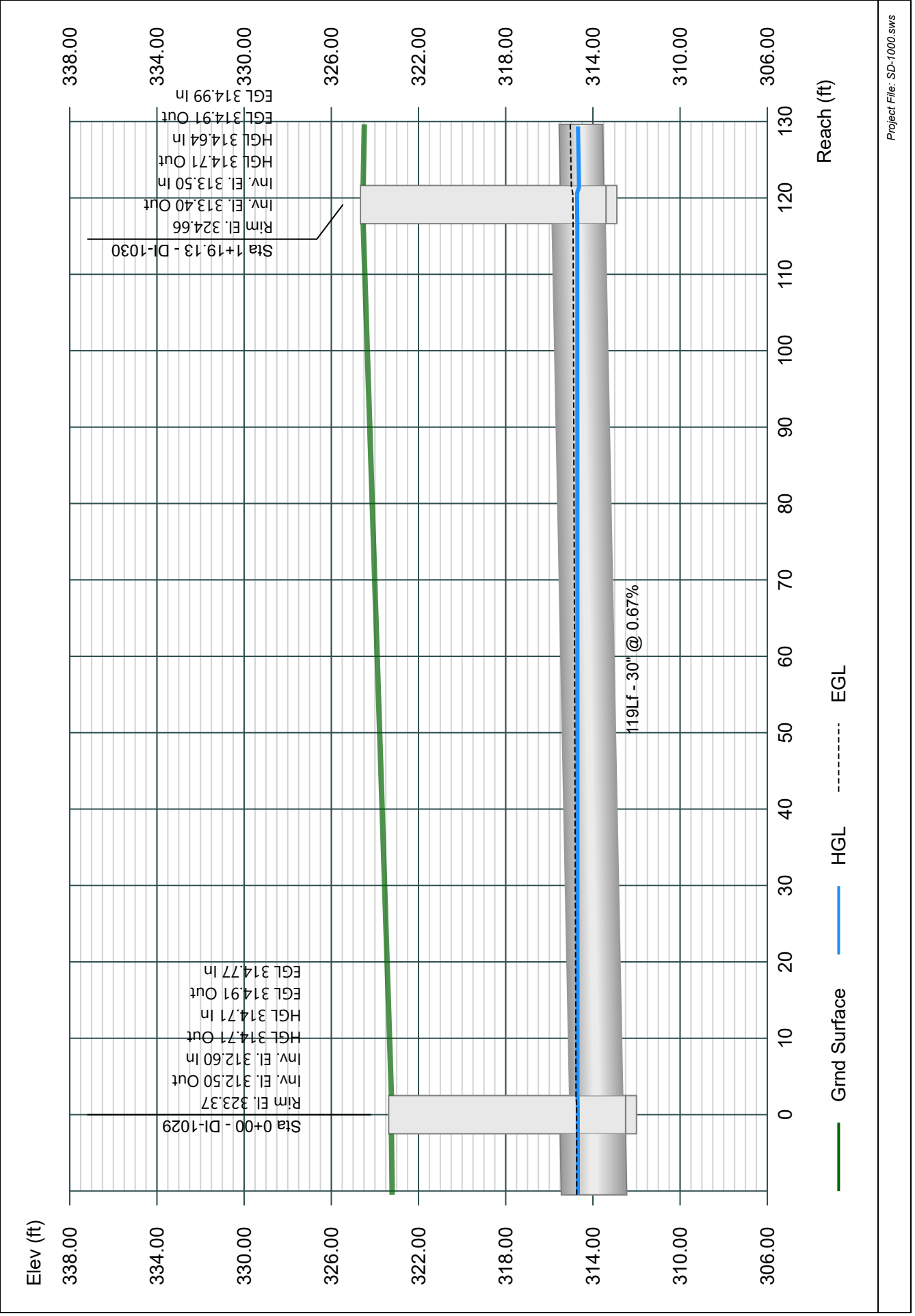


Line 21 - 1029-1030

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

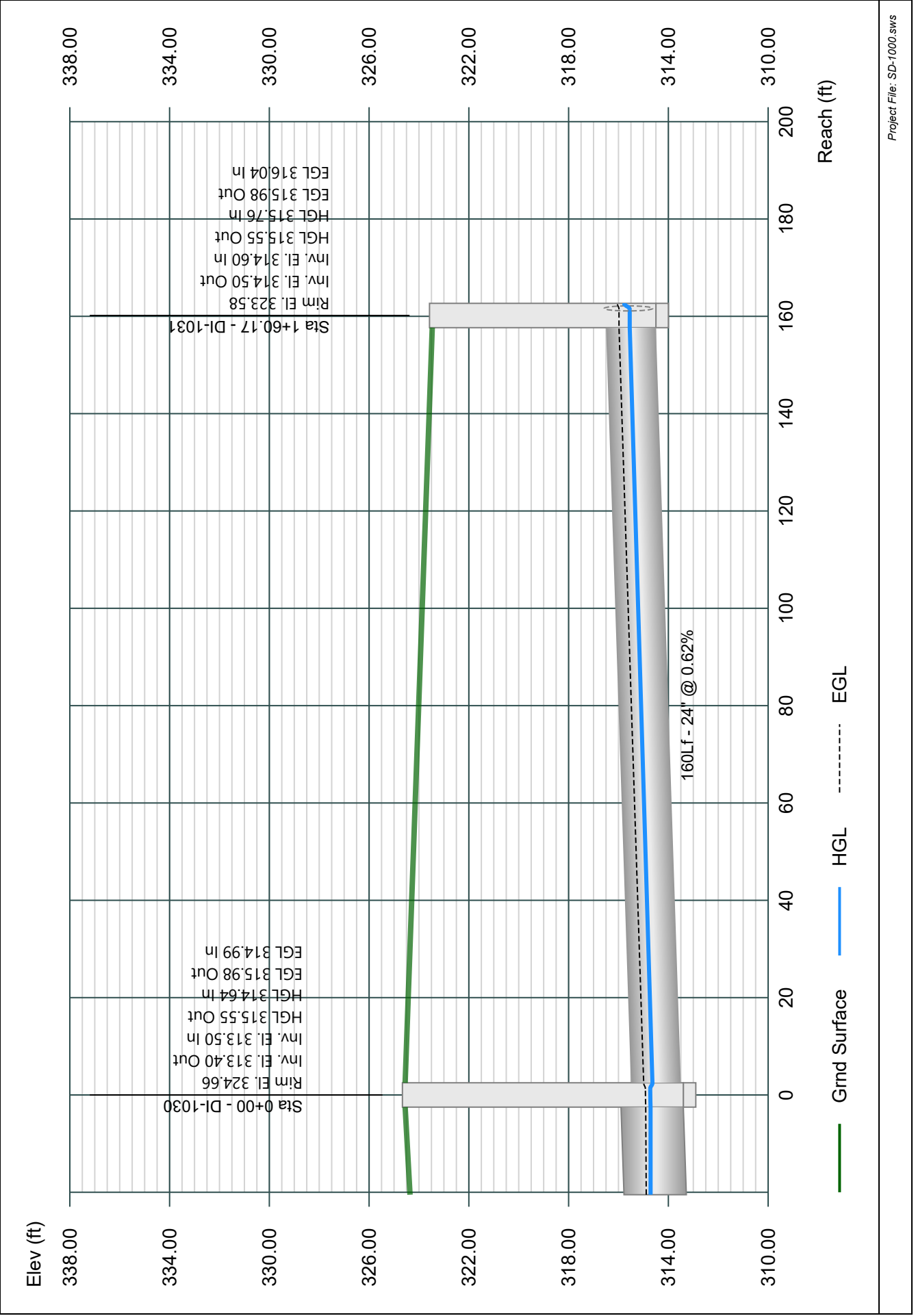


Line 22 - 1030-1031

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

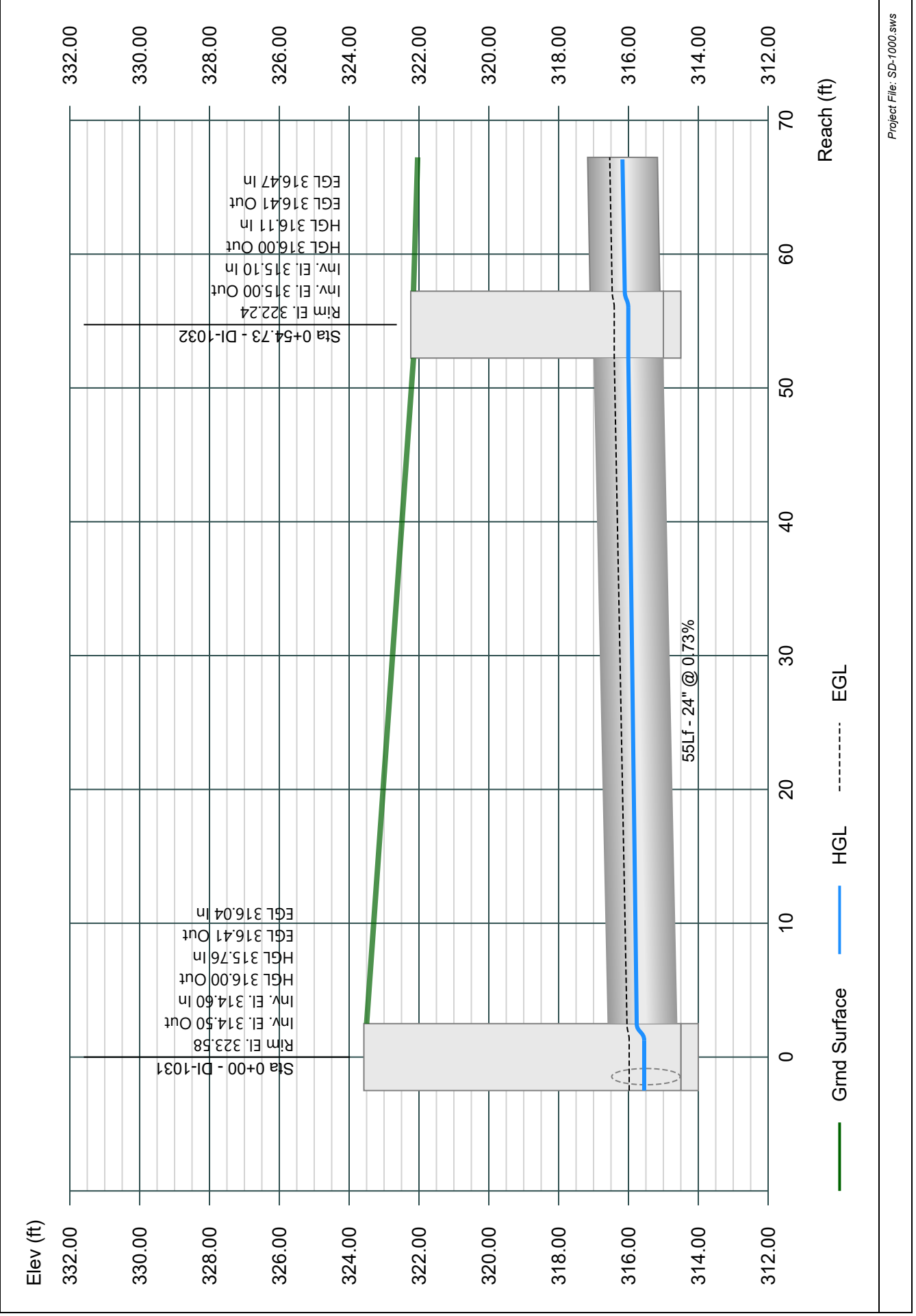


Line 23 - 1031-1032

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

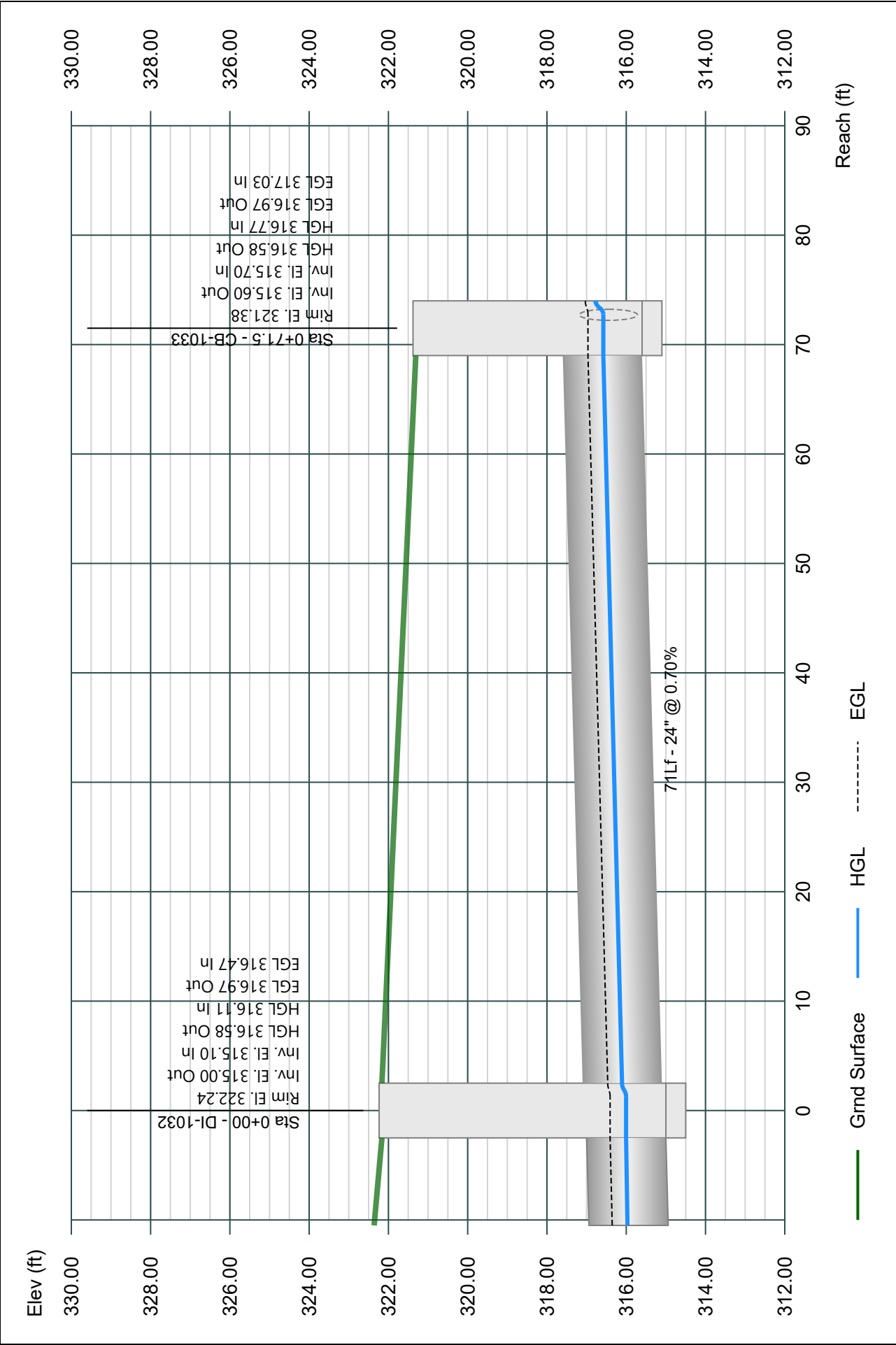
02-27-2024



Line 24 - 1032-1033

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

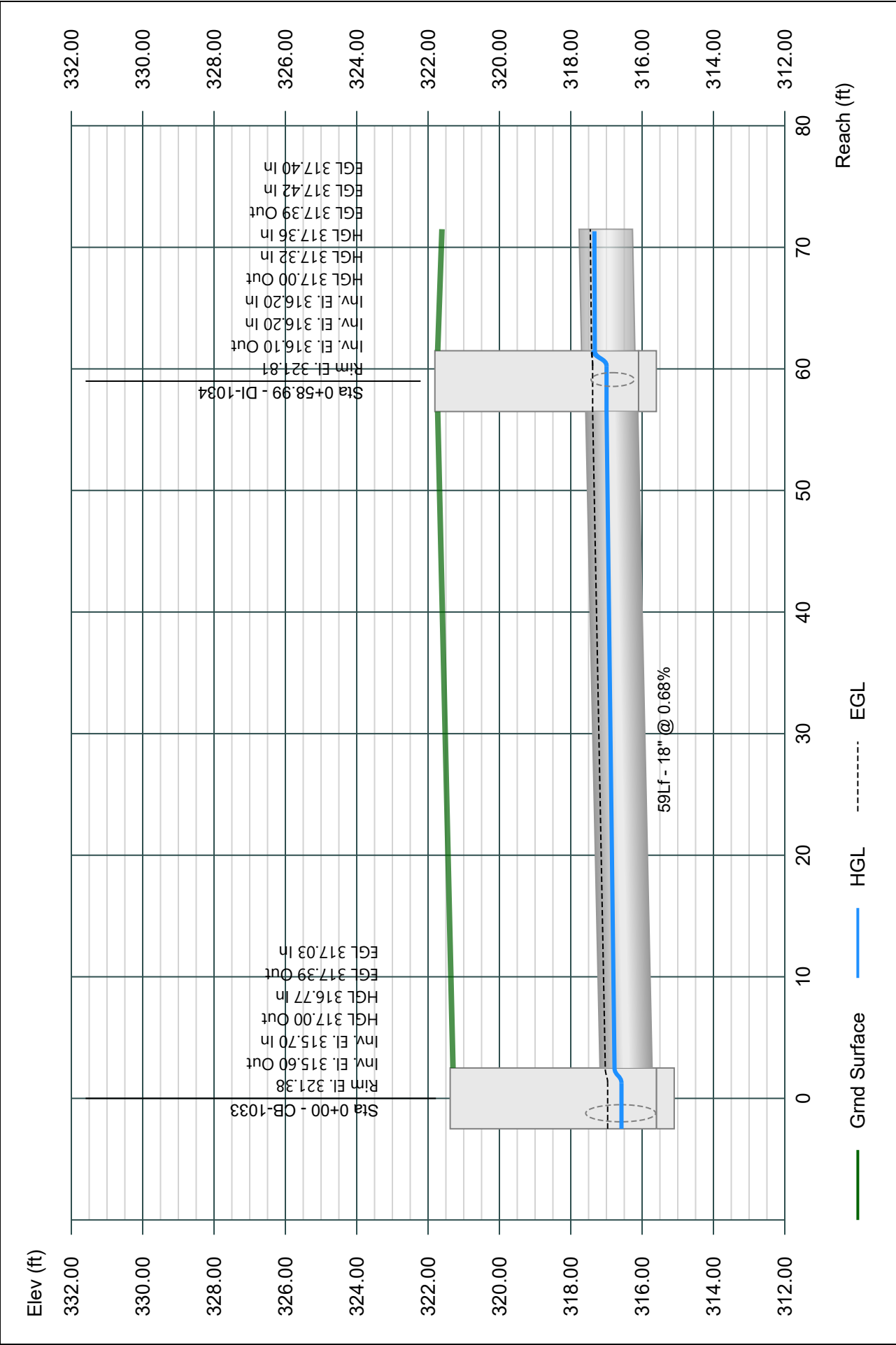


Line 25 - 1033-1034

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

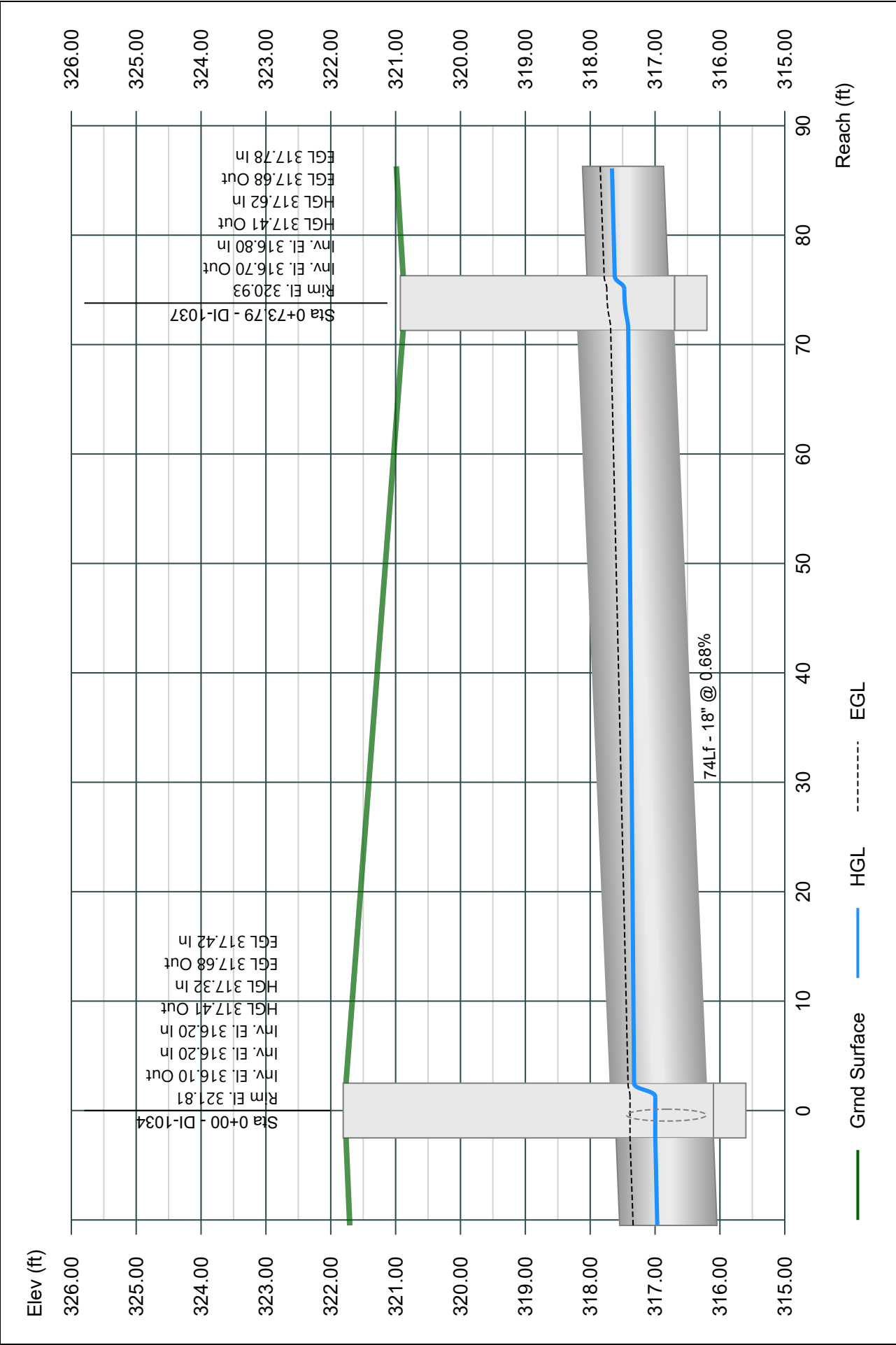
02-27-2024



Line 26 - 1034-1037

Project Name: SD-1000
02-27-2024

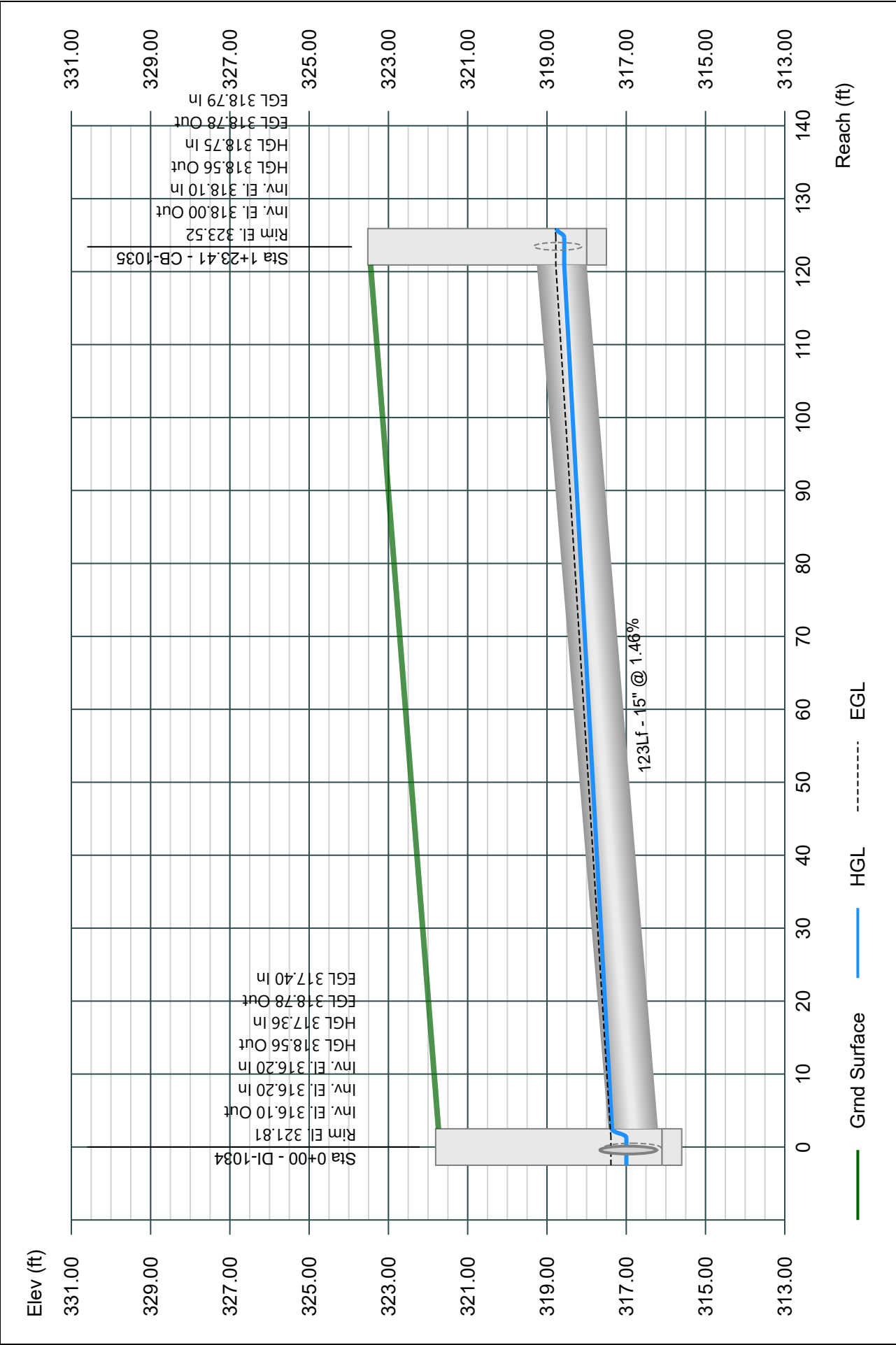
Stormwater Studio 2024 v 3.0.0.33



Line 27 - 1034-1035

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

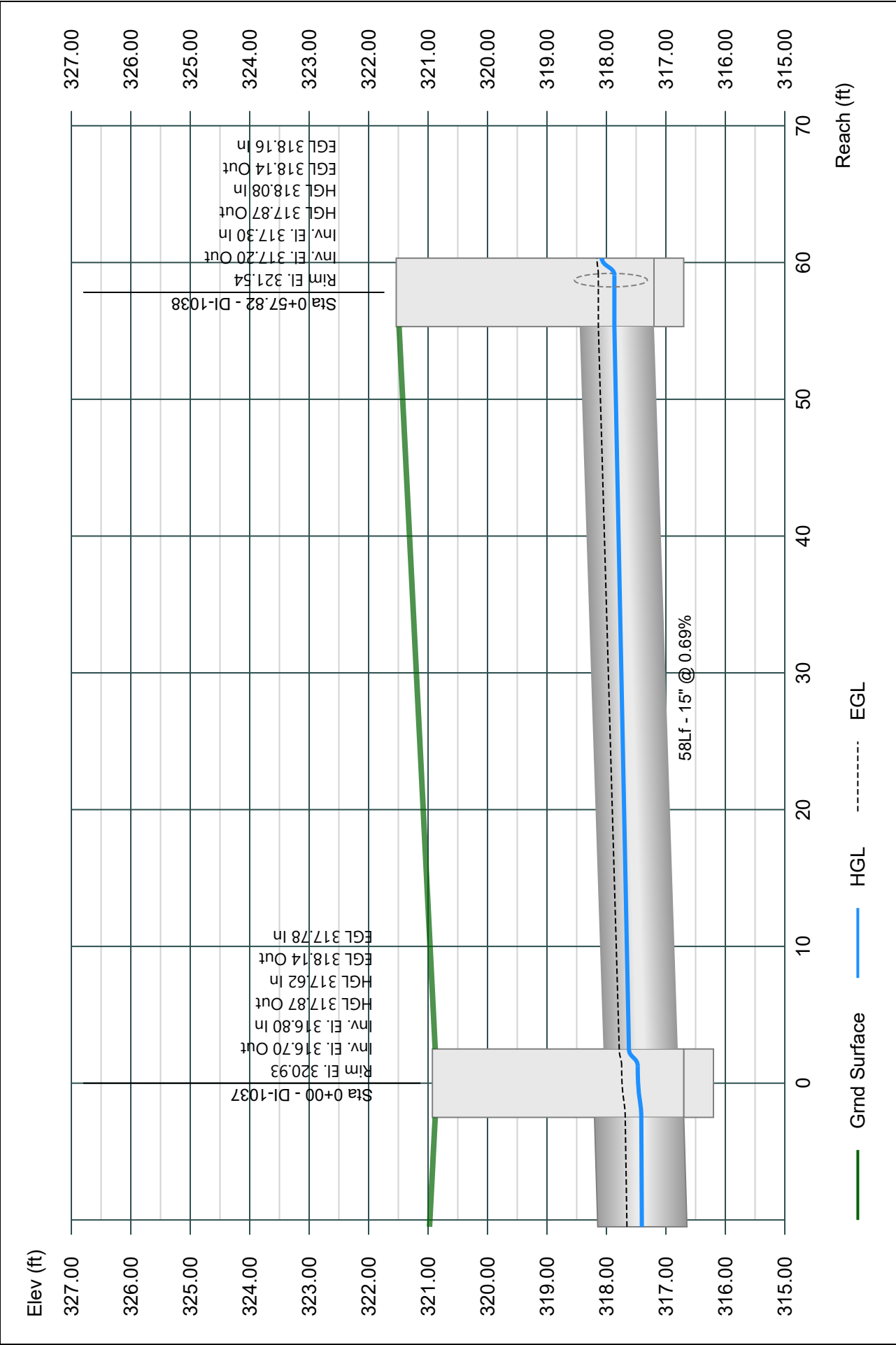


Line 28 - 1037-1038

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

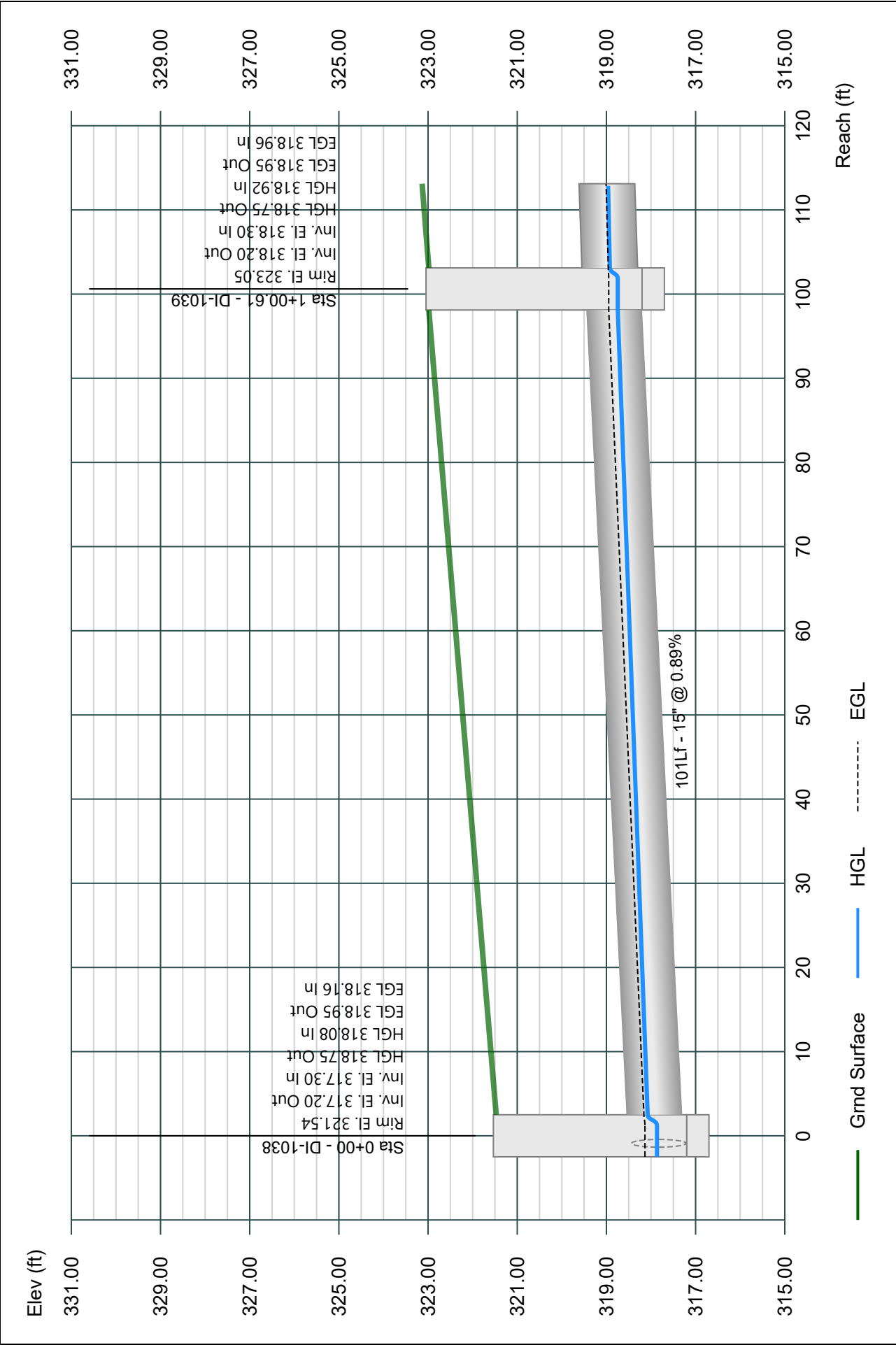
02-27-2024



Line 29 - 1038-1039

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

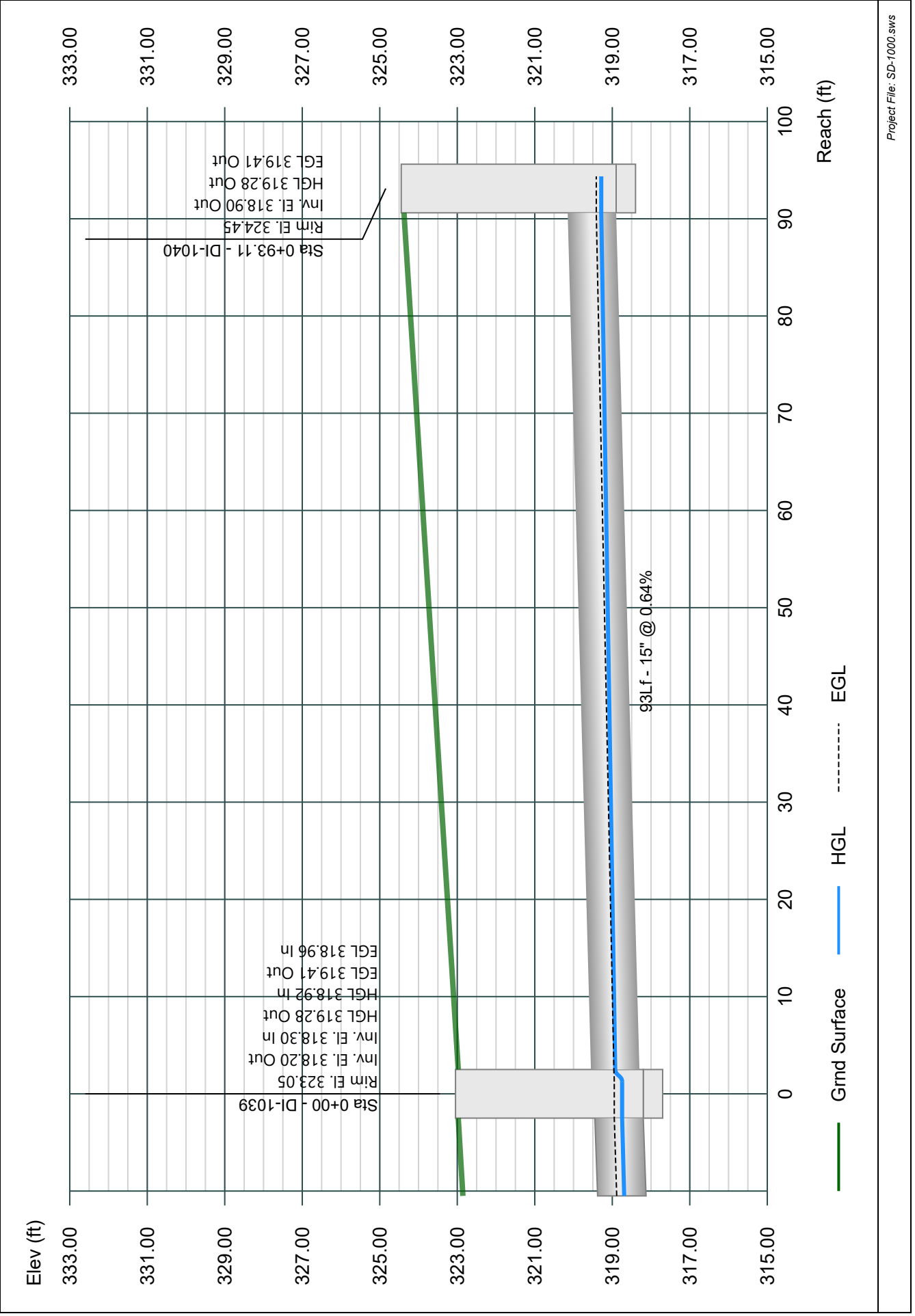


Line 30 - 1039-1040

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

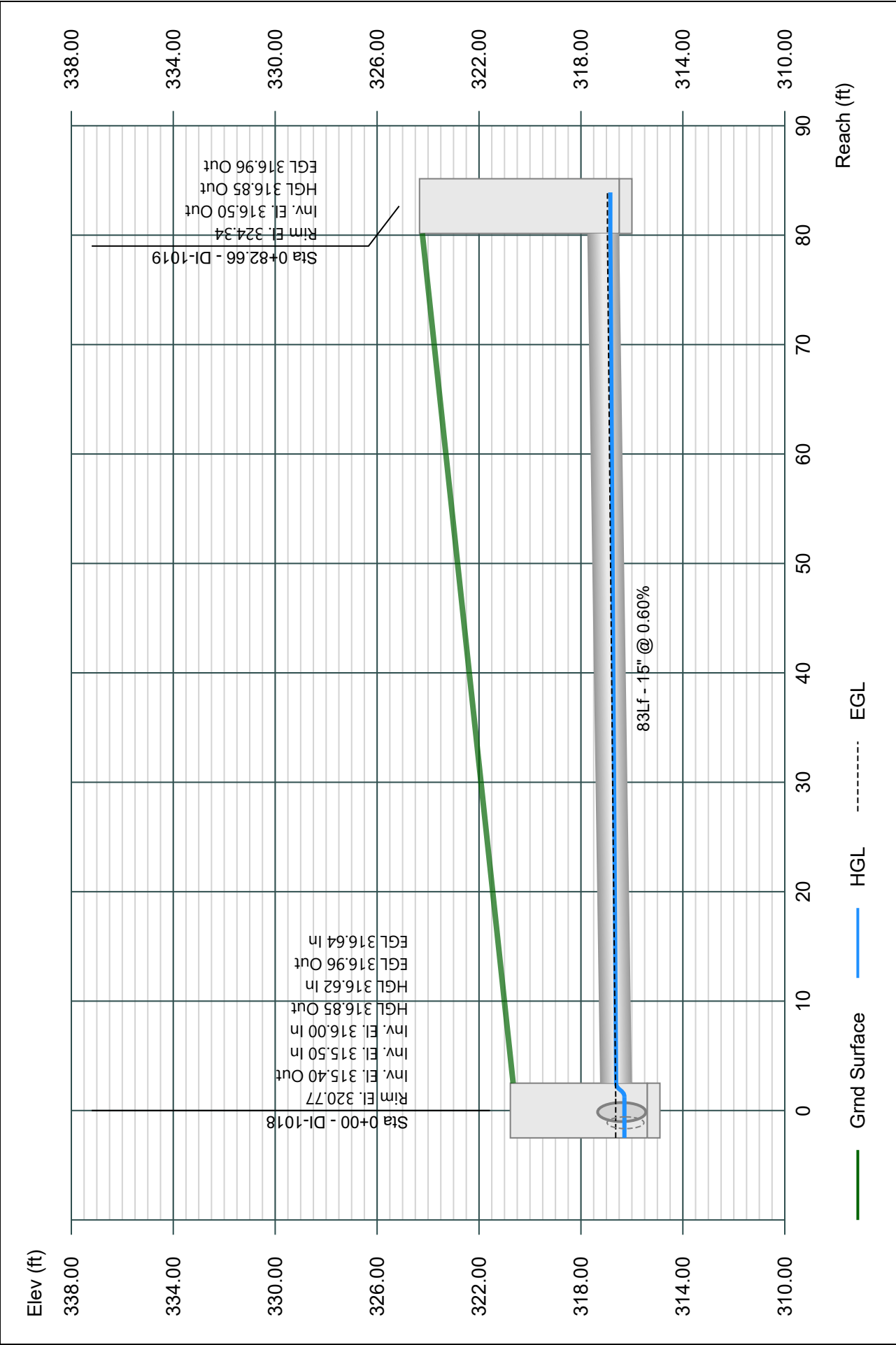
02-27-2024



Line 31 - 1018-1019

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

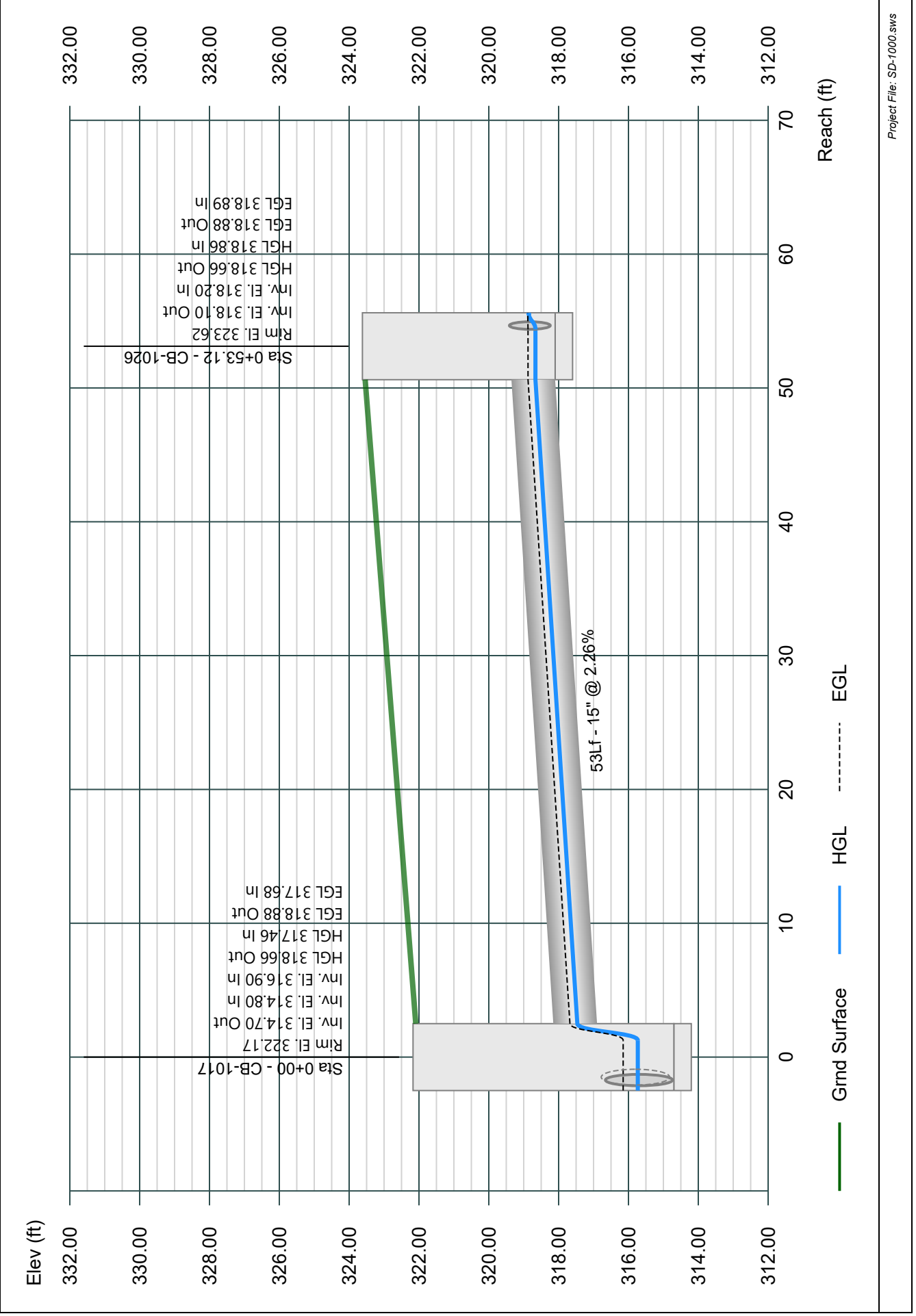


Line 32 - 1017-1026

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

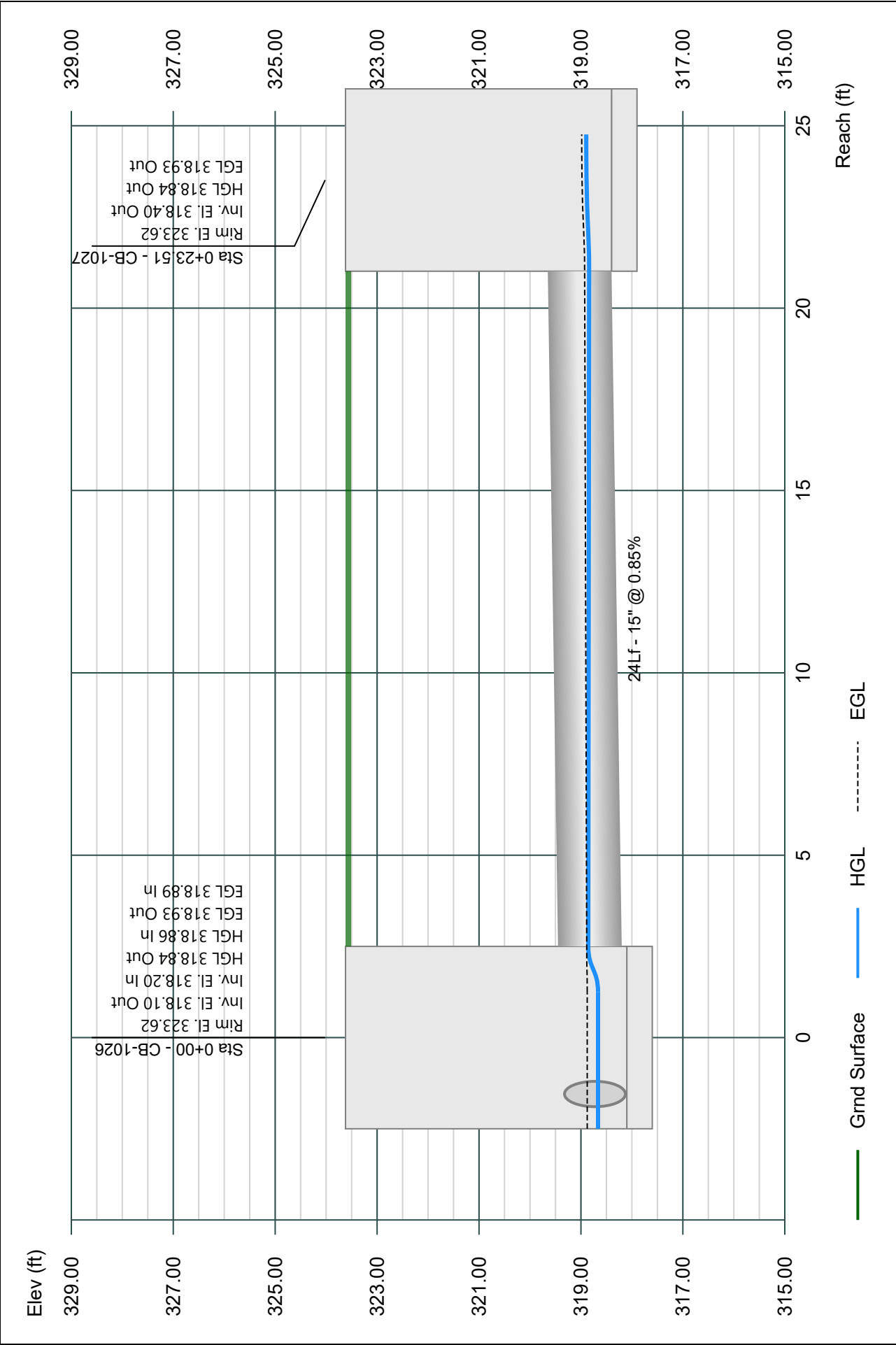
02-27-2024



Line 33 - 1026-1027

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

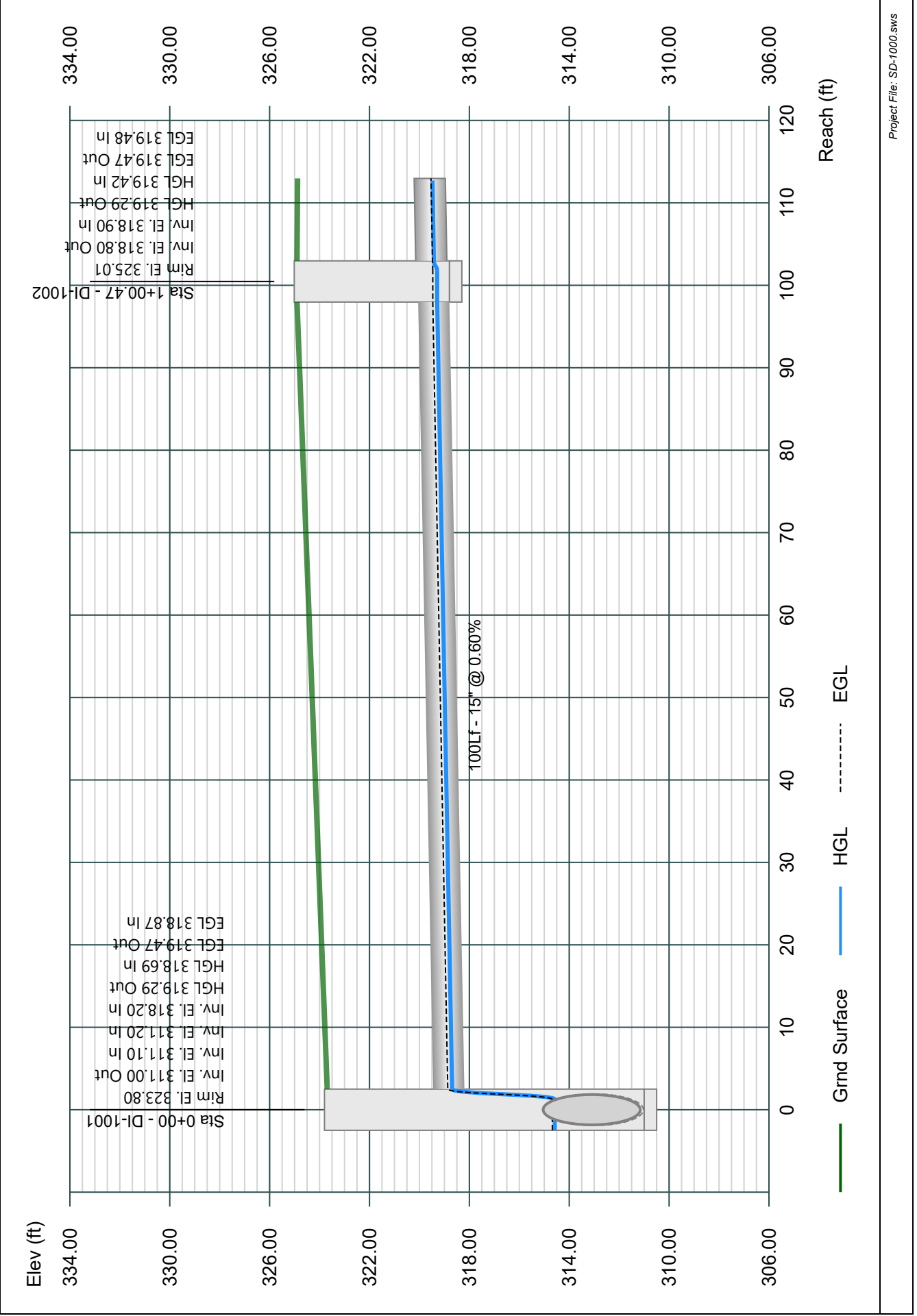


Line 34 - 1001-1002

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

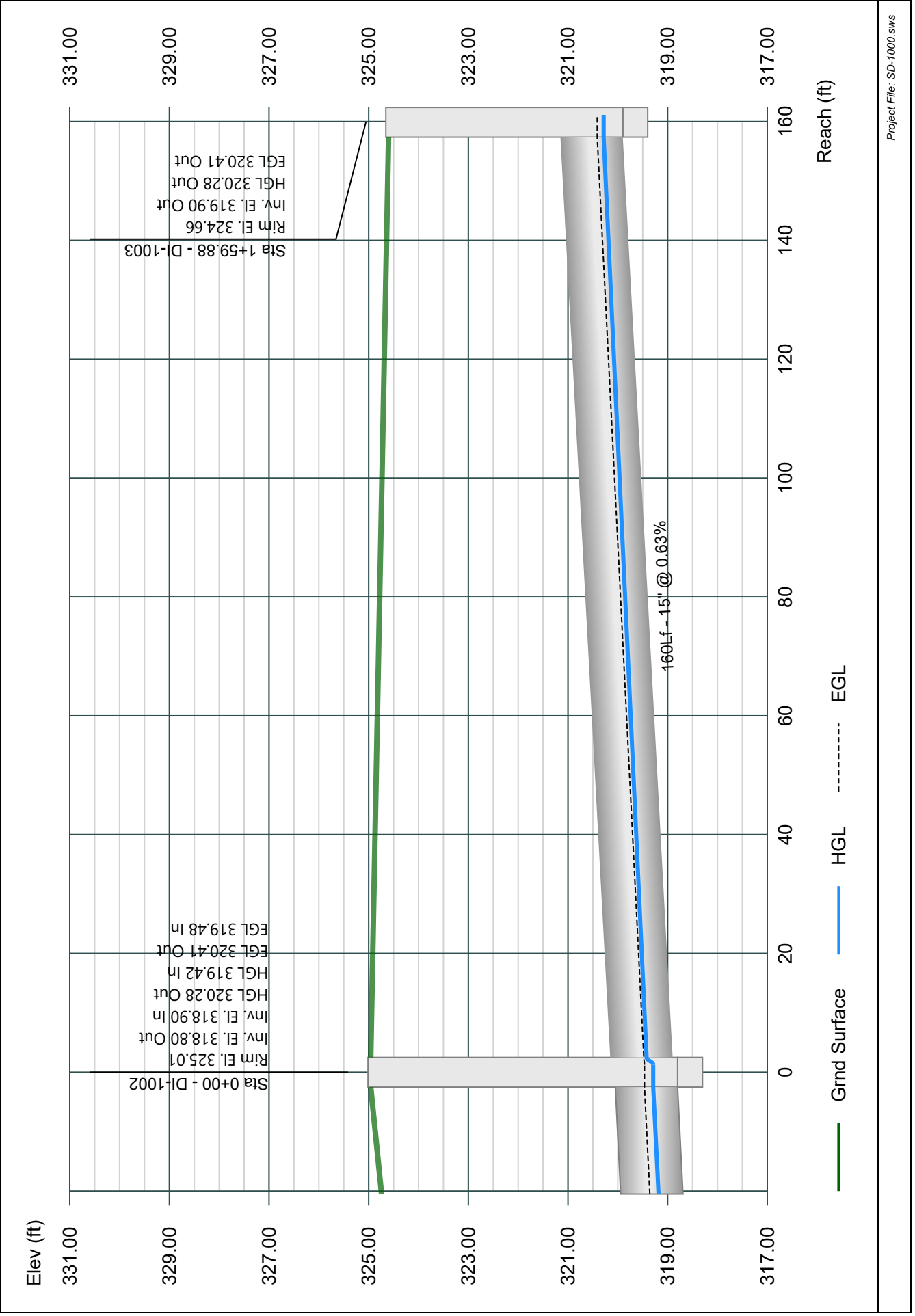


Line 35 - 1002-1003

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

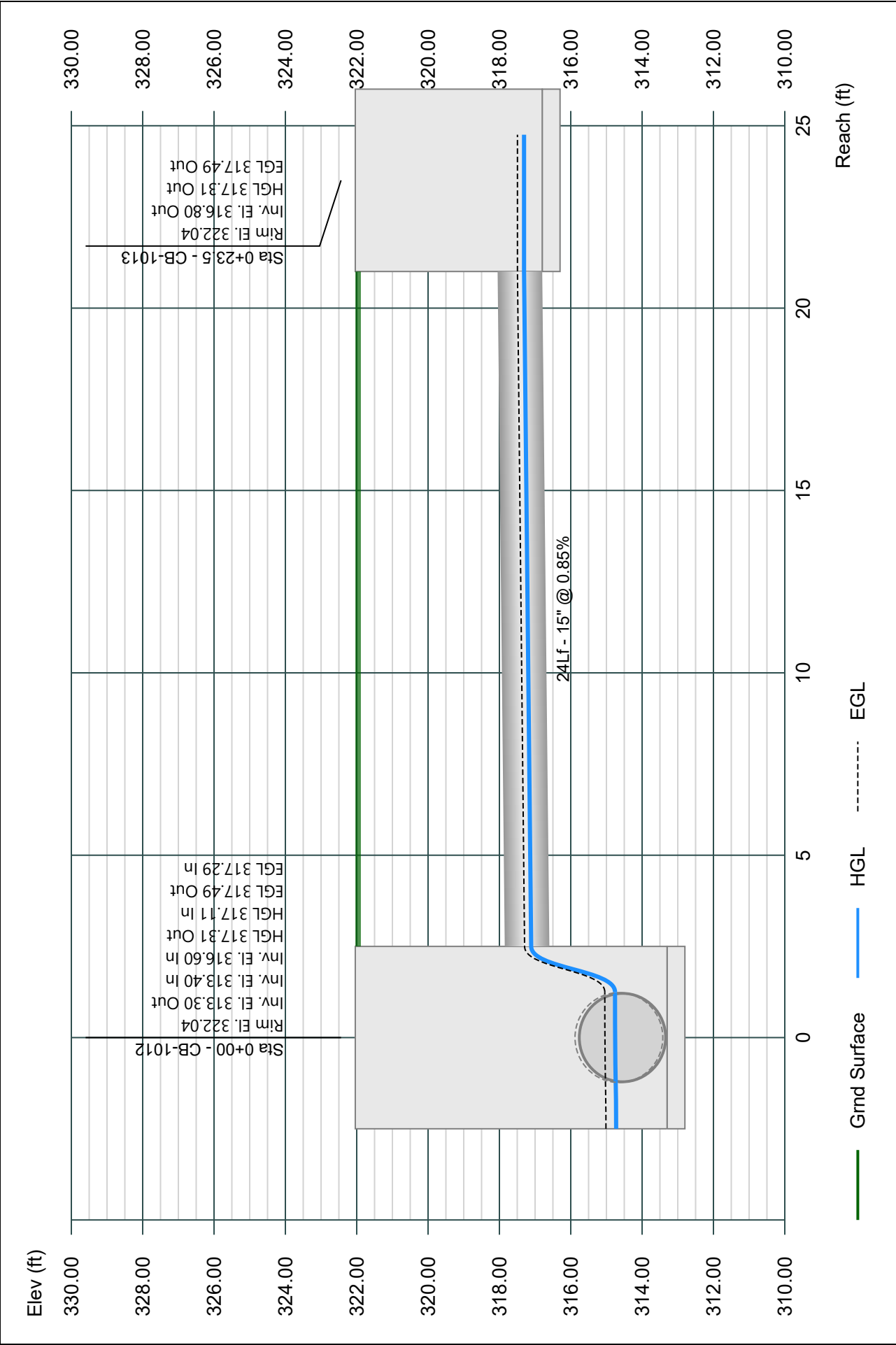
02-27-2024



Line 36 - 1012-1013

Stormwater Studio 2024 v 3.0.0.33

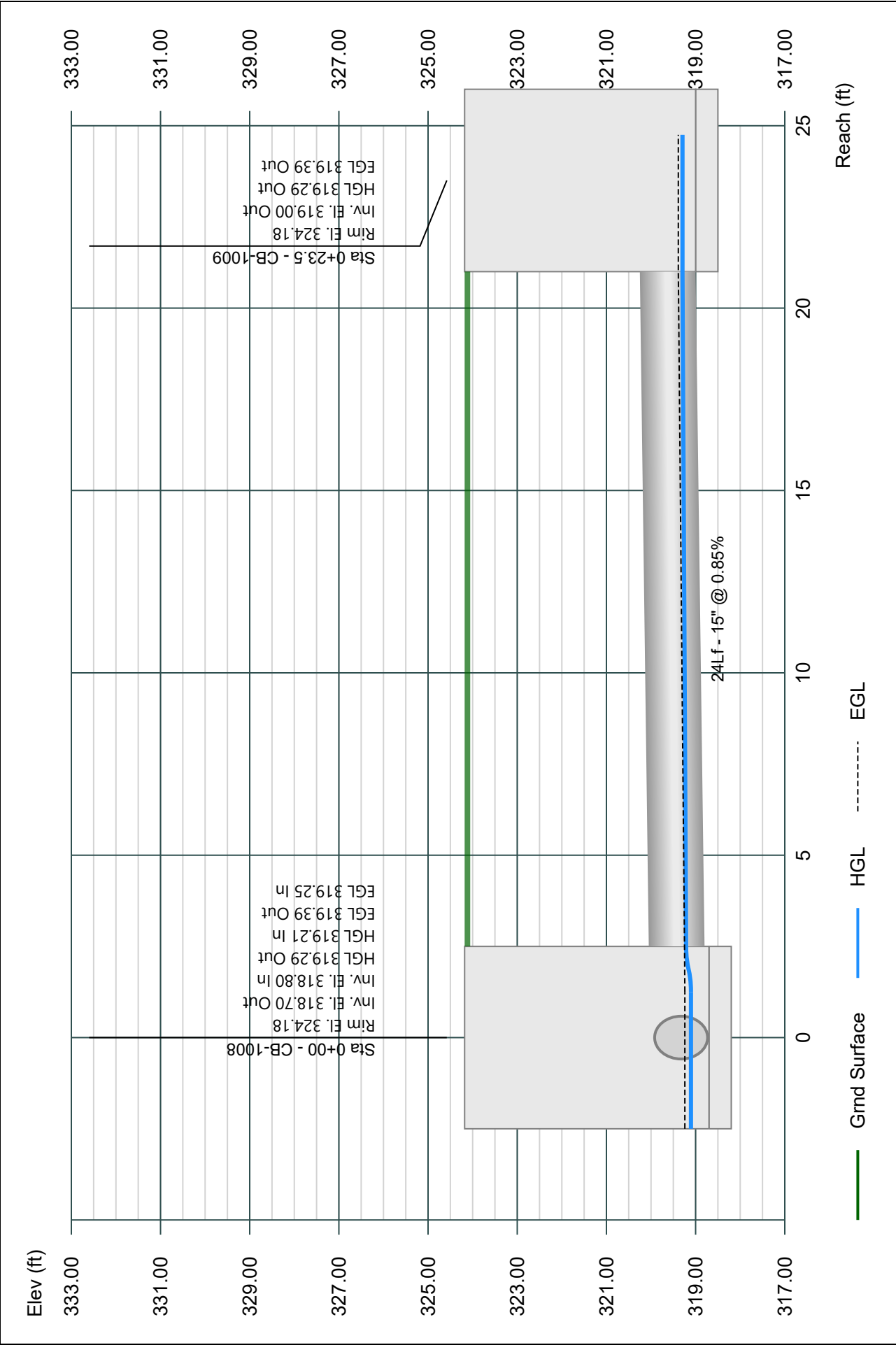
Project Name: SD-1000
02-27-2024



Line 37 - 1008-1009

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

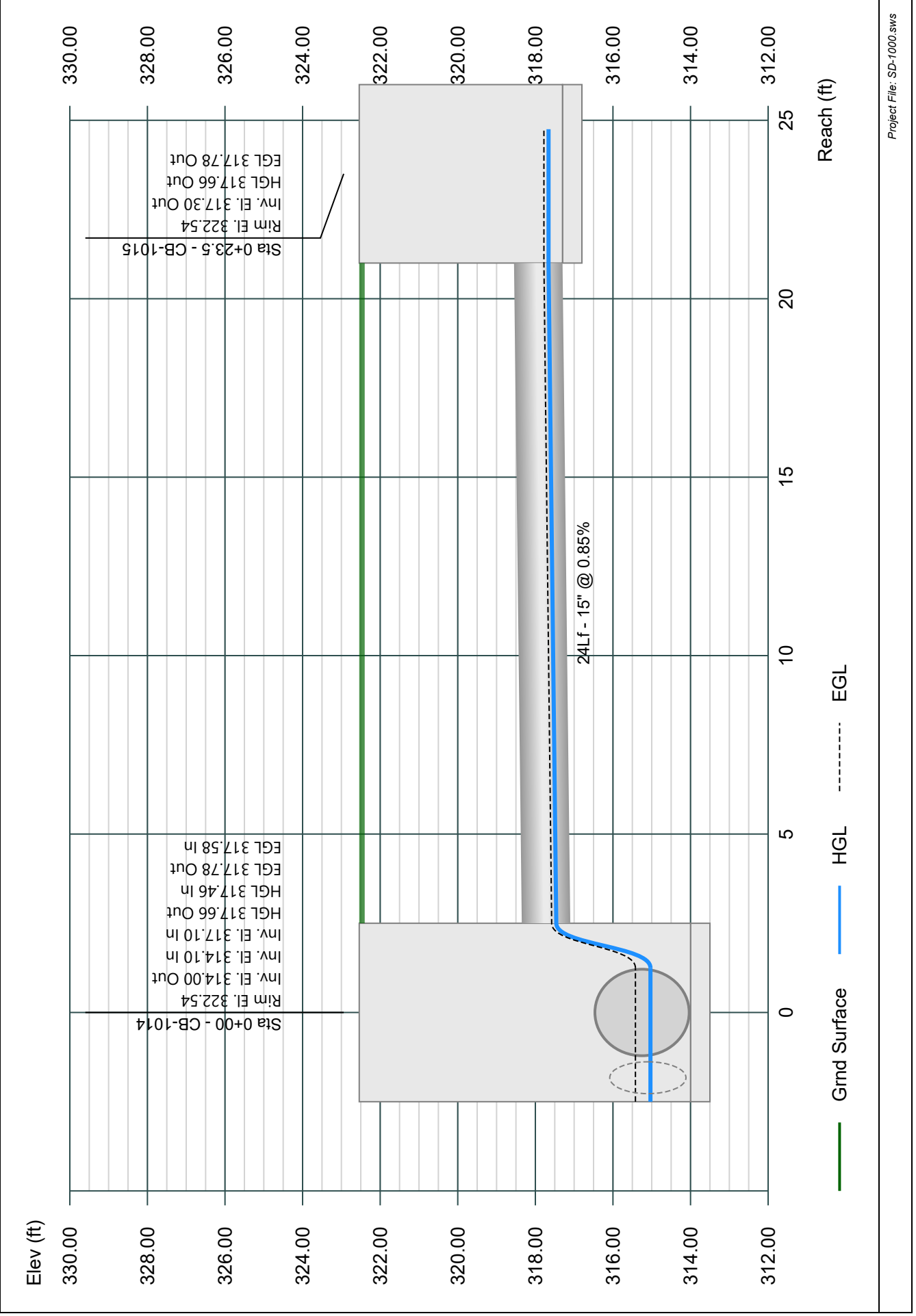


Line 38 - 1014-1015

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

02-27-2024

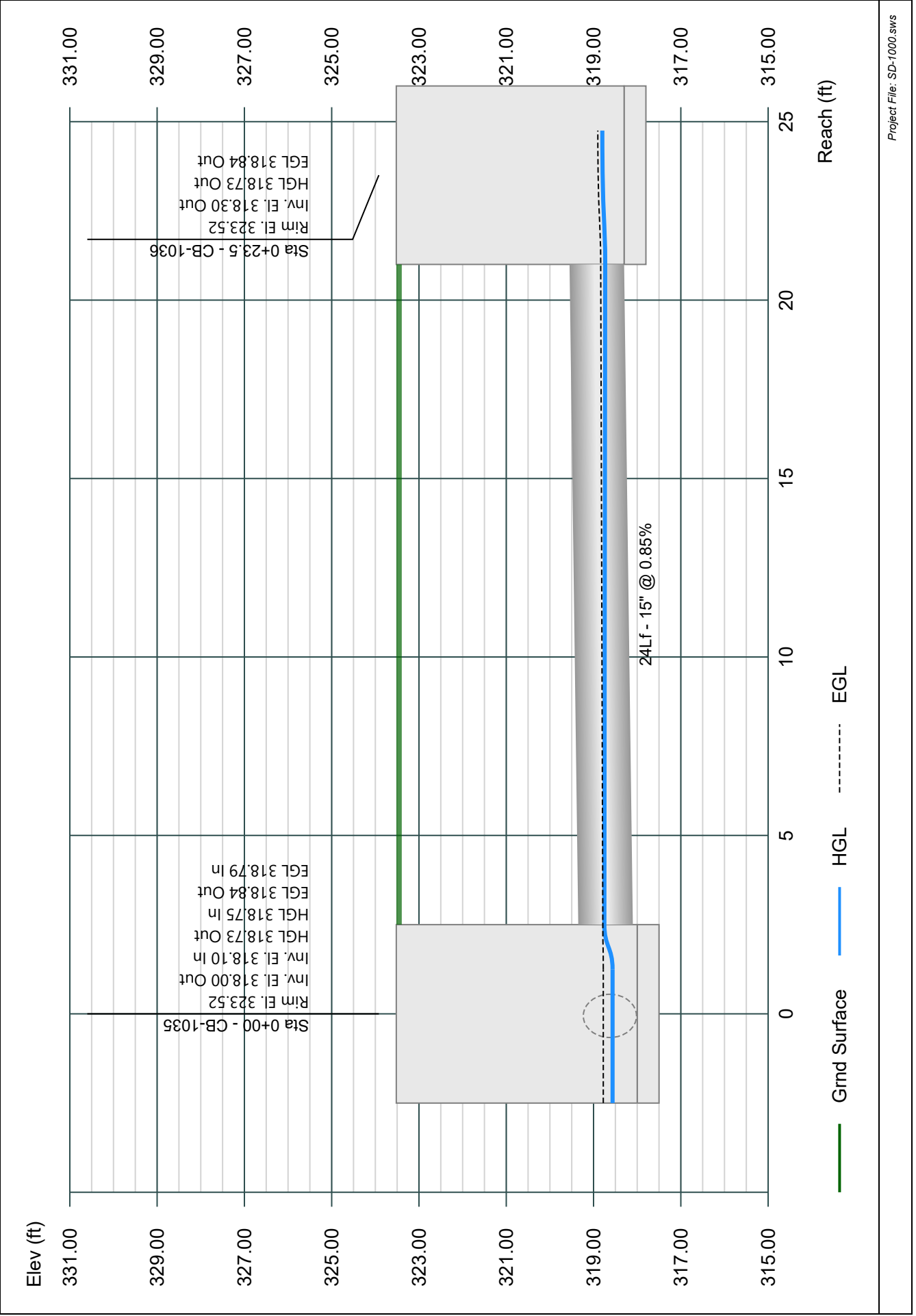


Line 39 - 1035-1036

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000

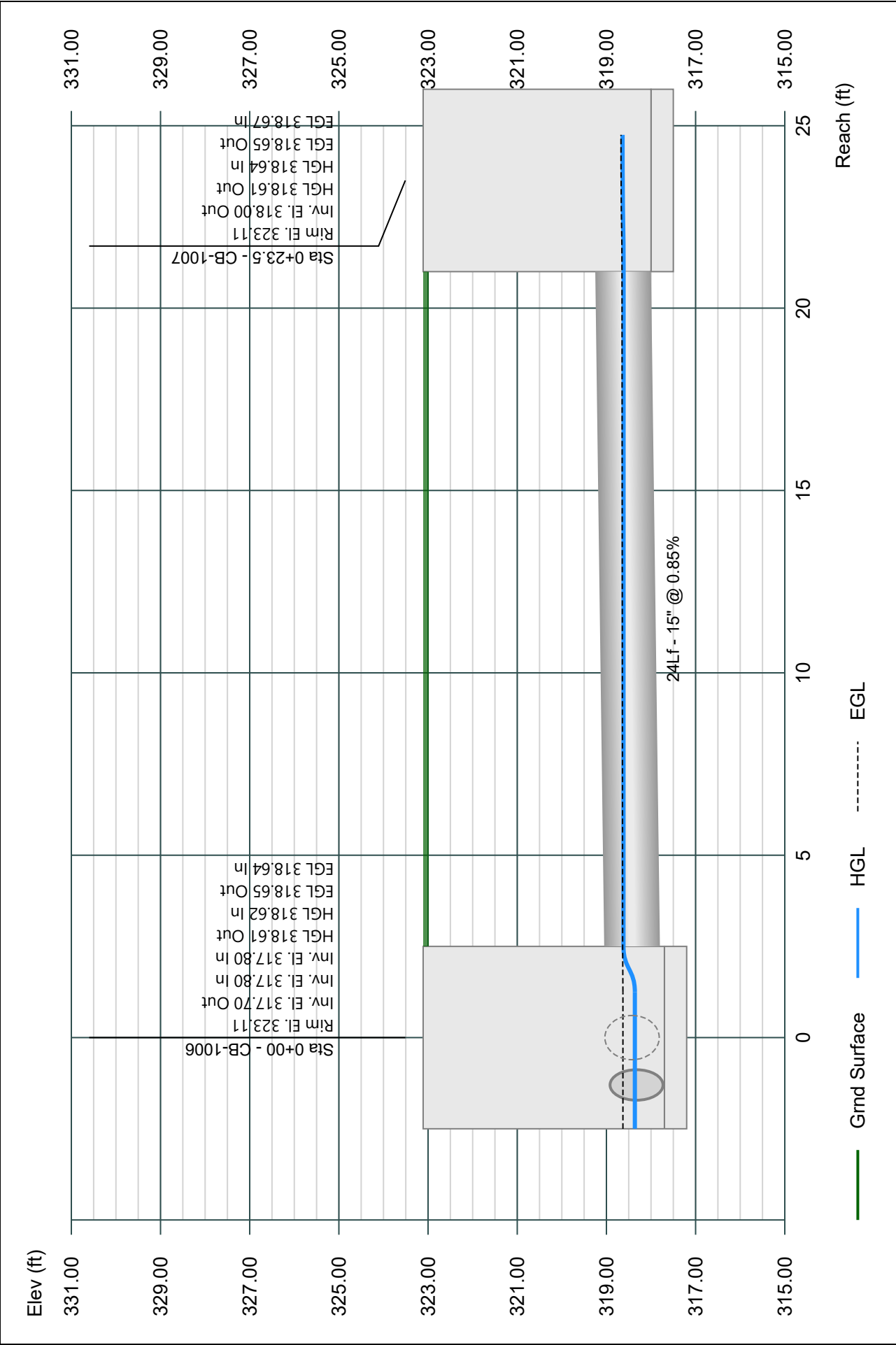
02-27-2024



Line 40 - 1006-1007

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1000
02-27-2024

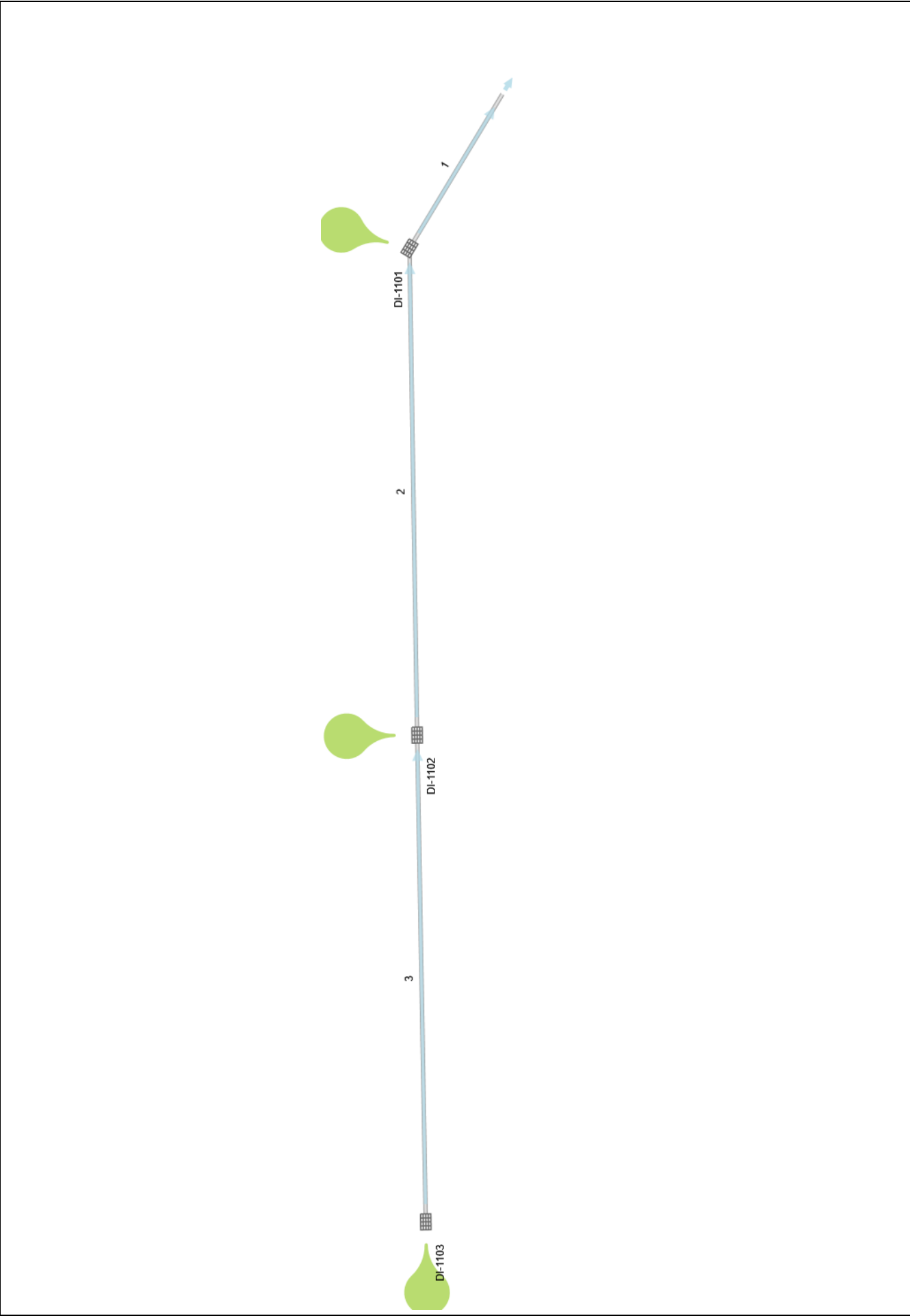


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1100

02-26-2024



Energy Grade Line Calculations

Project Name: SD-1100

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Enrgy Loss (ft)	HGLa Elev (ft)
1	15	3.13	298.00	1.25	1.23	302.30	2.55	0.10	302.40	56.30	0.72	303.21	4.36	0.30	303.50	0.013	1.103	303.21	303.50	0.00
2	15	2.08	302.60	0.84	0.88	303.44	2.36	0.09	303.53	153.00	0.55	307.98	3.75	0.22	308.20	0.013	4.666	307.98	308.20	0.00
3	15	0.95	307.50	0.67	0.68	308.17	1.41	0.03	308.21	153.00	0.33	313.39	2.91	0.13	313.52	0.013	5.316	313.39	313.52	0.00

Notes: Return Period = 10-yrs. ² Critical depth.

Project File: SD-1100.sws

Storm Sewer Tabulation

Project Name: SD-1100

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area (ac)		Rational (C)	C x A		Tc (min)		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Incr	Total	Incr	Total	Up	Dn	Up	Dn	
1100-1101	56.30	0.260	0.750	0.60	0.16	0.45	5.0	5.79	6.95	3.13	18.26	3.46	15	7.99	302.50	298.00	303.21	302.30	308.48	298.00	1
1101-1102	153.00	0.270	0.490	0.60	0.16	0.29	5.0	5.43	7.06	2.08	11.44	3.06	15	3.14	307.40	302.60	307.98	303.44	312.68	308.48	2
1102-1103	153.00	0.220	0.220	0.60	0.13	0.13	5.0	5.00	7.20	0.95	12.24	2.16	15	3.59	313.00	307.50	313.39	308.17	317.86	312.68	3

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

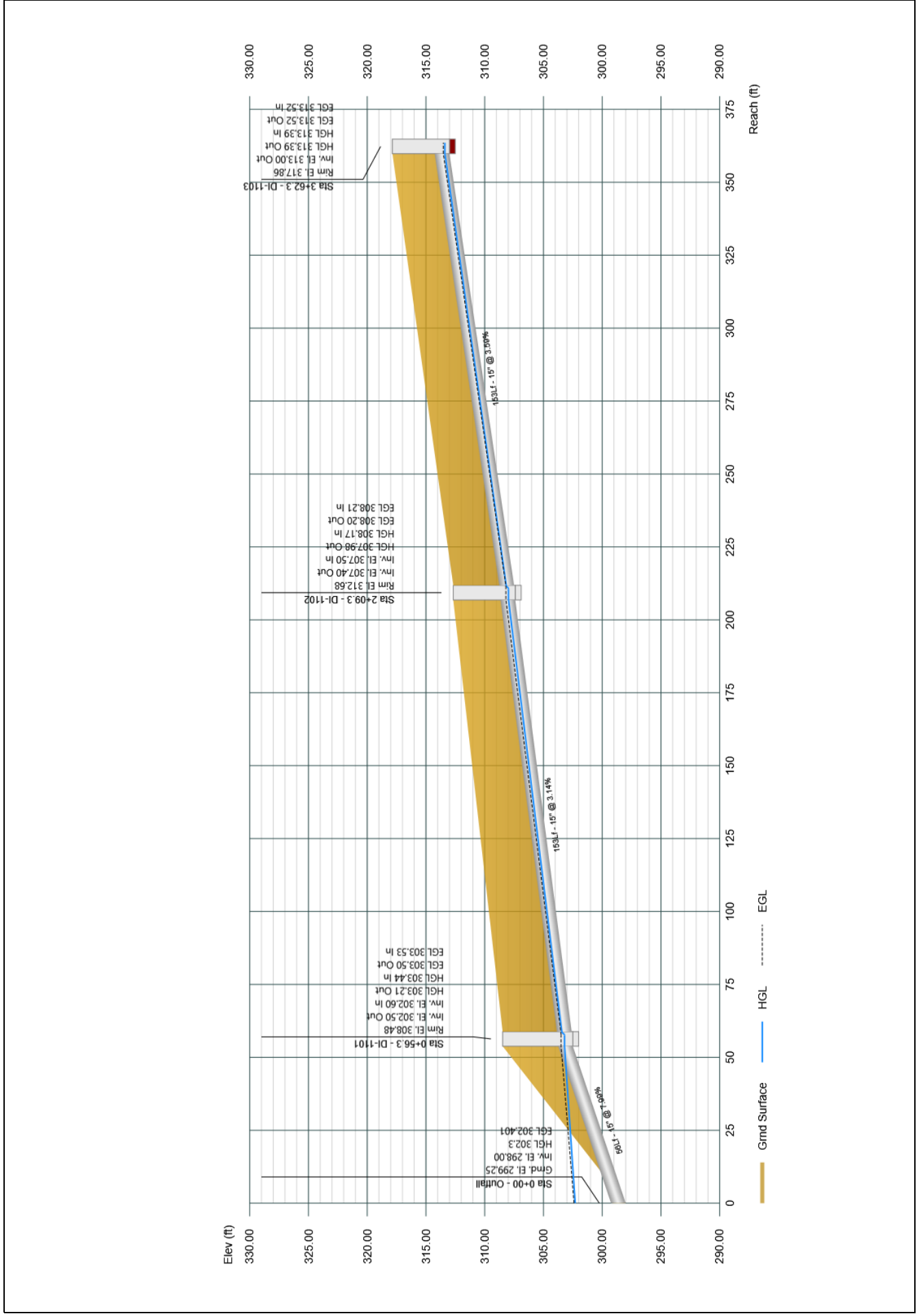
Project File: SD-1100.sws

Profile View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1100

02-26-2024

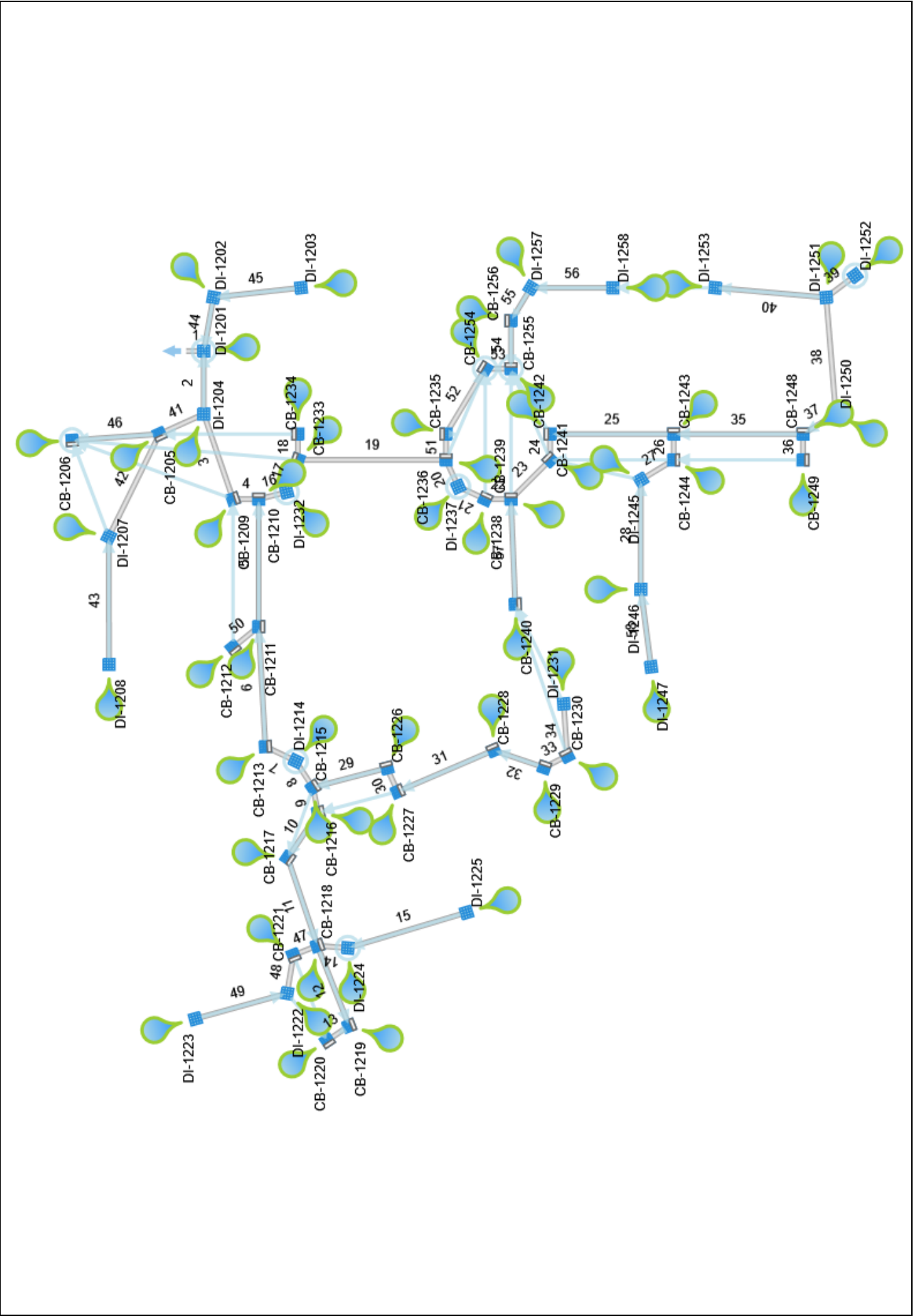


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024



Project File: SD-1200.sws

Energy Grade Line Calculations

Project Name: SD-1200
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream							Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	48	38.86	274.00	4.00	12.56	280.07	3.09	0.15	280.22	15.00	274.10	4.00	12.57	280.08	3.09	0.15	280.23	0.013	0.011	280.09	280.24	0.01
2	48	36.85	289.20	1.80 ¹	5.47	291.00	6.74	0.71	291.70	57.35	289.60	1.80 ²	5.47	291.40	6.74	0.71	292.10	0.013	0.400	291.40	292.10	0.00
3	42	32.08	290.10	1.73 ¹	4.76	291.83	6.74	0.71	292.54	81.93	290.60	1.73 ²	4.76	292.33	6.74	0.71	293.04	0.013	0.500	292.33	293.04	0.00
4	42	31.12	290.70	1.99	5.63	292.69	5.53	0.47	293.16	23.50	290.90	1.71 ²	4.66	292.61	6.67	0.69	293.30	0.013	0.140	292.61	293.30	0.00
5	30	12.48	291.80	1.35	2.70	293.15	4.63	0.33	293.48	116.18	292.50	1.18 ²	2.28	293.68	5.47	0.47	294.15	0.013	0.666	293.68	294.15	0.00
6	30	11.50	292.60	1.32	2.63	293.92	4.38	0.30	294.22	109.44	293.30	1.13 ²	2.16	294.43	5.32	0.44	294.87	0.013	0.656	294.43	294.87	0.00
7	30	11.49	293.40	1.13	2.17	294.53	5.30	0.44	294.97	30.63	293.60	1.13 ²	2.16	294.73	5.31	0.44	295.17	0.013	0.200	294.73	295.17	0.00
8	24	10.98	294.00	1.17 ¹	1.92	295.17	5.73	0.51	295.68	28.72	294.20	1.18	1.93	295.38	5.70	0.51	295.88	0.013	0.200	295.42	295.93	0.04
9	24	7.07	294.30	1.55	2.61	295.85	2.71	0.11	295.96	23.50	294.50	1.34	2.24	295.84	3.16	0.16	296.00	0.013	0.031	295.86	296.02	0.02
10	18	6.35	295.00	0.99 ³	1.24	295.99	5.10	0.40	296.40	49.68	295.30	0.99	1.24	296.29	5.11	0.41	296.70	0.013	0.300	296.40	296.80	0.10
11	18	5.85	295.40	1.26	1.58	296.66	3.69	0.21	296.87	84.48	296.00	0.92 ²	1.14	296.92	5.13	0.41	297.33	0.013	0.461	296.92	297.33	0.00
12	15	0.74	296.50	0.82	0.86	297.32	0.87	0.01	297.34	78.52	297.00	0.38	0.32	297.39	2.32	0.08	297.47	0.013	0.133	297.42	297.51	0.04
13	15	0.40	297.10	0.39	0.33	297.49	1.24	0.02	297.51	24.06	297.30	0.25 ²	0.18	297.55	2.25	0.08	297.63	0.013	0.120	297.55	297.63	0.00
14	18	1.57	296.10	1.22	1.54	297.32	1.02	0.02	297.34	27.86	296.30	1.02	1.28	297.32	1.23	0.02	297.34	0.013	0.006	297.33	297.35	0.01
15	15	0.81	296.40	0.95	1.00	297.35	0.81	0.01	297.36	112.90	297.10	0.38	0.32	297.48	2.54	0.10	297.58	0.013	0.225	297.53	297.63	0.05
16	36	18.88	294.50	1.38 ¹	3.19	295.88	5.92	0.54	296.43	26.29	294.70	1.38 ²	3.19	296.08	5.92	0.54	296.63	0.013	0.200	296.08	296.63	0.00
17	30	17.46	295.20	1.40 ¹	2.82	296.60	6.19	0.60	297.19	31.13	295.40	1.40	2.84	296.80	6.16	0.59	297.39	0.013	0.200	296.83	297.42	0.03
18	15	0.65	298.70	0.32 ¹	0.25	299.02	2.59	0.10	299.13	23.50	298.90	0.32 ²	0.25	299.22	2.59	0.10	299.33	0.013	0.200	299.22	299.33	0.00
19	30	16.81	295.50	1.65	3.43	297.15	4.90	0.37	297.52	135.00	297.00	1.37 ²	2.75	298.37	6.10	0.58	298.95	0.013	1.428	298.37	298.95	0.00
20	30	12.10	297.10	1.73	3.63	298.83	3.34	0.17	299.00	26.81	297.30	1.51	3.10	298.81	3.90	0.24	299.05	0.013	0.042	298.82	299.06	0.01
21	24	11.72	297.80	1.21 ¹	1.99	299.01	5.88	0.54	299.55	27.16	298.00	1.22	2.00	299.22	5.85	0.53	299.75	0.013	0.200	299.27	299.80	0.05
22	24	11.17	298.10	1.47	2.48	299.57	4.51	0.32	299.89	23.50	298.30	1.19	1.95	299.49	5.74	0.51	300.00	0.013	0.113	299.54	300.06	0.06

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth. ³ Normal depth.

Project File: SD-1200.sws

Energy Grade Line Calculations

Project Name: SD-1200

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction			
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)
23	24	9.90	298.40	1.48	2.50	299.88	3.96	0.24	300.13	50.56	298.80	1.11 ²	1.80	5.50	0.47	300.39	0.013	0.257	299.91	300.39	0.00
24	24	9.38	298.90	1.22	2.01	300.12	4.66	0.34	300.46	23.50	299.10	1.08 ²	1.74	5.39	0.45	300.64	0.013	0.176	300.18	300.64	0.00
25	24	8.50	299.20	1.23	2.03	300.43	4.19	0.27	300.70	112.67	299.90	1.03 ²	1.64	5.19	0.42	301.35	0.013	0.649	300.93	301.35	0.00
26	15	2.25	302.50	0.60 ¹	0.58	303.10	3.86	0.23	303.33	23.50	302.70	0.60 ²	0.58	3.86	0.23	303.53	0.013	0.200	303.30	303.53	0.00
27	15	1.94	302.80	0.58	0.55	303.38	3.51	0.19	303.57	35.11	303.10	0.56 ²	0.53	3.66	0.21	303.87	0.013	0.299	303.66	303.87	0.00
28	15	1.13	303.20	0.63	0.62	303.83	1.83	0.05	303.88	99.77	303.80	0.43 ²	0.37	3.07	0.15	304.37	0.013	0.491	304.23	304.37	0.00
29	15	3.77	300.80	0.78 ¹	0.80	301.58	4.70	0.34	301.92	69.78	301.30	0.78	0.81	4.68	0.34	302.08	0.013	0.500	302.19	302.53	0.11
30	15	3.07	303.00	0.70 ¹	0.71	303.70	4.33	0.29	303.99	23.55	303.20	0.70 ²	0.71	4.33	0.29	304.19	0.013	0.200	303.90	304.19	0.00
31	15	2.33	303.30	0.81	0.84	304.11	2.79	0.12	304.23	95.30	303.90	0.61 ²	0.60	3.91	0.24	304.75	0.013	0.523	304.51	304.75	0.00
32	15	2.02	307.00	0.57 ¹	0.54	307.57	3.71	0.21	307.78	48.68	307.30	0.57	0.55	3.69	0.21	308.08	0.013	0.300	307.94	308.16	0.07
33	15	1.33	308.20	0.46 ¹	0.41	308.66	3.23	0.16	308.82	23.55	308.40	0.46 ²	0.41	3.23	0.16	309.02	0.013	0.200	308.86	309.02	0.00
34	15	0.54	308.50	0.51	0.47	309.01	1.15	0.02	309.03	47.31	308.80	0.30	0.22	2.42	0.09	309.19	0.013	0.158	309.14	309.23	0.04
35	18	5.36	302.90	0.88 ¹	1.08	303.78	4.95	0.38	304.16	117.83	303.70	0.88 ²	1.08	4.95	0.38	304.96	0.013	0.800	304.58	304.96	0.00
36	15	0.81	307.70	0.36 ¹	0.29	308.06	2.76	0.12	308.18	23.50	307.90	0.36 ²	0.29	2.76	0.12	308.38	0.013	0.200	308.26	308.38	0.00
37	15	2.68	304.00	0.86	0.90	304.86	2.96	0.14	305.00	35.11	304.30	0.65 ²	0.65	4.11	0.26	305.22	0.013	0.218	304.96	305.22	0.00
38	15	2.34	304.40	0.64	0.63	305.04	3.72	0.22	305.25	106.58	305.10	0.61 ²	0.60	3.91	0.24	305.95	0.013	0.698	305.71	305.95	0.00
39	15	1.24	309.60	0.45 ¹	0.39	310.05	3.16	0.16	310.20	32.91	309.80	0.45	0.40	3.13	0.15	310.40	0.013	0.200	310.35	310.51	0.10
40	15	0.92	305.20	0.73	0.75	305.93	1.23	0.02	305.96	101.59	305.90	0.38 ²	0.32	2.87	0.13	306.41	0.013	0.454	306.28	306.41	0.00
41	18	4.58	294.10	0.82 ¹	0.98	294.92	4.66	0.34	295.25	44.36	294.40	0.82	0.99	4.63	0.33	295.55	0.013	0.300	295.25	295.58	0.03
42	15	2.42	295.90	0.62 ¹	0.61	296.52	3.96	0.24	296.77	104.35	296.60	0.62 ²	0.61	3.96	0.24	297.47	0.013	0.700	297.22	297.47	0.00
43	15	1.38	296.70	0.73	0.74	297.43	1.86	0.05	297.48	116.26	297.40	0.47 ²	0.42	3.27	0.17	298.04	0.013	0.555	297.87	298.04	0.00
44	15	2.21	296.90	0.59 ¹	0.58	297.49	3.84	0.23	297.72	49.65	297.20	0.60	0.58	3.81	0.23	298.02	0.013	0.298	297.85	298.08	0.06

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-1200.sws

Energy Grade Line Calculations

Project Name: SD-1200

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction				
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
45	15	1.38	297.30	0.75	0.77	298.04	1.80	0.05	298.10	80.28	297.80	0.47 ²	0.42	298.27	3.27	0.17	298.44	0.013	0.342	298.27	298.44	0.00
46	15	2.19	294.70	0.80	0.83	295.50	2.63	0.11	295.61	79.81	295.20	0.59 ²	0.57	295.79	3.82	0.23	296.02	0.013	0.410	295.79	296.02	0.00
47	15	3.02	298.40	0.70 ¹	0.70	299.10	4.30	0.29	299.38	23.49	298.60	0.70 ²	0.70	299.30	4.30	0.29	299.58	0.013	0.200	299.30	299.58	0.00
48	15	1.87	298.70	0.83	0.87	299.53	2.15	0.07	299.60	35.27	299.00	0.55	0.52	299.55	3.59	0.20	299.75	0.013	0.146	299.60	299.80	0.05
49	15	1.33	299.10	0.65	0.65	299.75	2.05	0.07	299.82	86.73	299.70	0.46 ²	0.41	300.16	3.23	0.16	300.32	0.013	0.507	300.16	300.32	0.00
50	15	0.86	299.60	0.37 ¹	0.31	299.97	2.82	0.12	300.10	30.25	299.80	0.37 ²	0.31	300.17	2.82	0.12	300.30	0.013	0.200	300.17	300.30	0.00
51	18	4.81	297.40	1.48	1.76	298.88	2.73	0.12	298.99	23.50	297.60	1.30	1.63	298.90	2.95	0.14	299.04	0.013	0.045	298.92	299.05	0.01
52	18	4.44	297.70	1.27	1.60	298.97	2.78	0.12	299.09	69.38	298.20	0.82	0.99	299.02	4.47	0.31	299.33	0.013	0.241	299.11	299.42	0.09
53	15	3.12	298.30	1.03	1.08	299.33	2.88	0.13	299.46	23.50	298.50	0.83	0.87	299.33	3.59	0.20	299.53	0.013	0.072	299.45	299.65	0.12
54	15	1.91	298.60	1.02	1.07	299.62	1.78	0.05	299.67	43.79	298.90	0.73	0.75	299.63	2.55	0.10	299.73	0.013	0.065	299.66	299.77	0.03
55	15	1.58	299.00	0.71	0.72	299.71	2.19	0.07	299.79	35.11	299.30	0.50 ²	0.46	299.80	3.42	0.18	299.99	0.013	0.199	299.80	299.99	0.00
56	15	0.92	300.00	0.38 ¹	0.32	300.38	2.87	0.13	300.51	74.67	300.50	0.38 ²	0.32	300.88	2.87	0.13	301.01	0.013	0.500	300.88	301.01	0.00
57	15	0.63	300.70	0.32 ¹	0.25	301.02	2.57	0.10	301.12	95.79	301.30	0.32 ²	0.25	301.62	2.57	0.10	301.72	0.013	0.600	301.62	301.72	0.00
58	15	0.63	307.80	0.32 ¹	0.25	308.12	2.57	0.10	308.22	71.19	308.30	0.32 ²	0.25	308.62	2.57	0.10	308.72	0.013	0.500	308.62	308.72	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-1200.sws

Storm Sewer Tabulation

Project Name: SD-1200
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1200-1201	15.00	0.060	8.510	0.50	0.03	6.11	5.0	7.94	6.36	38.86	117.29	3.09	48	0.67	274.10	274.00	280.08	280.07	301.75	278.00	1
1201-1204	57.35	0.150	8.060	0.80	0.12	5.77	5.0	7.83	6.38	36.85	119.97	6.74	48	0.70	289.60	289.20	291.40	291.00	302.11	301.75	2
1204-1209	81.93	0.210	7.080	0.75	0.16	4.99	5.0	7.65	6.43	32.08	78.59	6.74	42	0.61	290.60	290.10	292.33	291.83	303.58	302.11	3
1209-1210	23.50	0.070	6.870	0.50	0.04	4.83	5.0	7.60	6.44	31.12	92.81	6.10	42	0.85	290.90	290.70	292.61	292.69	303.58	303.58	4
1210-1211	116.18	0.060	2.590	0.80	0.05	1.87	5.0	6.77	6.66	12.48	31.83	5.05	30	0.60	292.50	291.80	293.68	293.15	304.85	303.58	5
1211-1213	109.44	0.010	2.370	0.80	0.01	1.70	5.0	6.47	6.75	11.50	32.80	4.85	30	0.64	293.30	292.60	294.43	293.92	305.92	304.85	6
1213-1214	30.63	0.230	2.360	0.35	0.08	1.70	5.0	6.39	6.77	11.49	33.14	5.31	30	0.65	293.60	293.40	294.73	294.53	305.10	305.92	7
1214-1215	28.72	0.040	2.130	0.80	0.03	1.62	5.0	6.31	6.80	10.98	18.87	5.72	24	0.70	294.20	294.00	295.38	295.17	306.13	305.10	8
1215-1216	23.50	0.150	1.370	0.75	0.11	1.03	5.0	6.17	6.84	7.07	20.87	2.93	24	0.85	294.50	294.30	295.84	295.85	306.13	306.13	9
1216-1217	49.68	0.110	1.220	0.75	0.08	0.92	5.0	6.01	6.89	6.35	8.16	5.11	18	0.60	295.30	295.00	296.29	295.99	305.52	306.13	10
1217-1218	84.48	0.110	1.110	0.75	0.08	0.84	5.0	5.74	6.97	5.85	8.85	4.41	18	0.71	296.00	295.40	296.92	296.66	304.04	305.52	11
1218-1219	78.52	0.060	0.130	0.80	0.05	0.10	5.0	5.15	7.15	0.74	5.15	1.59	15	0.64	297.00	296.50	297.39	297.32	302.51	304.04	12
1219-1220	24.06	0.070	0.070	0.80	0.06	0.06	5.0	5.00	7.20	0.40	5.89	1.75	15	0.83	297.30	297.10	297.55	297.49	302.41	302.51	13
1218-1224	27.86	0.160	0.320	0.70	0.11	0.22	5.0	5.62	7.00	1.57	8.90	1.12	18	0.72	296.30	296.10	297.32	297.32	301.15	304.04	14
1224-1225	112.90	0.160	0.160	0.70	0.11	0.11	5.0	5.00	7.20	0.81	5.09	1.67	15	0.62	297.10	296.40	297.48	297.35	304.18	301.15	15
1210-1232	26.29	0.650	4.210	0.35	0.23	2.92	5.0	7.54	6.46	18.88	58.17	5.92	36	0.76	294.70	294.50	296.08	295.88	304.31	303.58	16
1232-1233	31.13	0.050	3.560	0.80	0.04	2.70	5.0	7.46	6.48	17.46	32.87	6.18	30	0.64	295.40	295.20	296.80	296.60	304.18	304.31	17
1233-1234	23.50	0.120	0.120	0.75	0.09	0.09	5.0	5.00	7.20	0.65	5.96	2.59	15	0.85	298.90	298.70	299.22	299.02	304.18	304.18	18
1233-1236	135.00	0.030	3.390	0.80	0.02	2.57	5.0	7.18	6.55	16.81	43.23	5.50	30	1.11	297.00	295.50	298.37	297.15	304.69	304.18	19
1236-1237	26.81	0.180	2.470	0.35	0.06	1.84	5.0	7.12	6.57	12.10	35.42	3.62	30	0.75	297.30	297.10	298.81	298.83	303.90	304.69	20
1237-1238	27.16	0.110	2.290	0.80	0.09	1.78	5.0	7.04	6.59	11.72	19.41	5.87	24	0.74	298.00	297.80	299.22	299.01	305.97	303.90	21
1238-1239	23.50	0.150	2.180	0.75	0.11	1.69	5.0	6.99	6.61	11.17	20.86	5.12	24	0.85	298.30	298.10	299.49	299.57	305.97	305.97	22

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs. Project File: SD-1200.sws

Storm Sewer Tabulation

Project Name: SD-1200
02-26-2024

Stormwater Studio 2024 v 3.0.0.33

Line ID	Length (ft)	Drng Area		Rational	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1239-1241	50.56	0.110	1.920	0.75	0.08	1.49	5.0	6.85	6.64	9.90	20.12	4.73	24	0.79	298.80	298.40	299.91	299.88	304.98	305.97	23
1241-1242	23.50	0.200	1.810	0.75	0.15	1.41	5.0	6.79	6.66	9.38	20.87	5.02	24	0.85	299.10	298.90	300.18	300.12	304.98	304.98	24
1242-1243	112.67	0.200	1.610	0.75	0.15	1.26	5.0	6.45	6.75	8.50	17.83	4.69	24	0.62	299.90	299.20	300.93	300.43	308.48	304.98	25
1243-1244	23.50	0.060	0.410	0.80	0.05	0.33	5.0	6.04	6.87	2.25	5.96	3.86	15	0.85	302.70	302.50	303.30	303.10	308.48	308.48	26
1244-1245	35.11	0.150	0.350	0.80	0.12	0.28	5.0	5.91	6.92	1.94	5.97	3.59	15	0.85	303.10	302.80	303.66	303.38	307.80	308.48	27
1245-1246	99.77	0.090	0.200	0.80	0.07	0.16	5.0	5.40	7.07	1.13	5.01	2.45	15	0.60	303.80	303.20	304.23	303.83	312.70	307.80	28
1215-1226	69.78	0.130	0.720	0.80	0.10	0.55	5.0	6.07	6.87	3.77	5.47	4.69	15	0.72	301.30	300.80	302.08	301.58	308.46	306.13	29
1226-1227	23.55	0.150	0.590	0.75	0.11	0.45	5.0	5.99	6.89	3.07	5.95	4.33	15	0.85	303.20	303.00	303.90	303.70	308.54	308.46	30
1227-1228	95.30	0.060	0.440	0.80	0.05	0.33	5.0	5.60	7.01	2.33	5.12	3.35	15	0.63	303.90	303.30	304.51	304.11	312.21	308.54	31
1228-1229	48.68	0.130	0.380	0.75	0.10	0.29	5.0	5.39	7.08	2.02	5.07	3.70	15	0.62	307.30	307.00	307.87	307.57	314.34	312.21	32
1229-1230	23.55	0.150	0.250	0.75	0.11	0.19	5.0	5.29	7.11	1.33	5.95	3.23	15	0.85	308.40	308.20	308.86	308.66	314.37	314.34	33
1230-1231	47.31	0.100	0.100	0.75	0.08	0.08	5.0	5.00	7.20	0.54	5.14	1.78	15	0.63	308.80	308.50	309.10	309.01	313.49	314.37	34
1243-1248	117.83	0.350	1.000	0.80	0.28	0.78	5.0	6.07	6.87	5.36	8.65	4.95	18	0.68	303.70	302.90	304.58	303.78	313.09	308.48	35
1248-1249	23.50	0.140	0.140	0.80	0.11	0.11	5.0	5.00	7.20	0.81	5.96	2.76	15	0.85	307.90	307.70	308.26	308.06	313.09	313.09	36
1248-1250	35.11	0.070	0.510	0.80	0.06	0.39	5.0	5.95	6.90	2.68	5.97	3.54	15	0.85	304.30	304.00	304.96	304.86	314.10	313.09	37
1250-1251	106.58	0.040	0.440	0.80	0.03	0.33	5.0	5.52	7.03	2.34	5.23	3.82	15	0.66	305.10	304.40	305.71	305.04	314.39	314.10	38
1251-1252	32.91	0.230	0.230	0.75	0.17	0.17	5.0	5.00	7.20	1.24	5.03	3.15	15	0.61	309.80	309.60	310.25	310.05	314.50	314.39	39
1251-1253	101.59	0.170	0.170	0.75	0.13	0.13	5.0	5.00	7.20	0.92	5.36	2.05	15	0.69	305.90	305.20	306.28	305.93	310.48	314.39	40
1204-1205	44.36	0.020	0.830	0.80	0.02	0.66	5.0	5.97	6.90	4.58	8.64	4.64	18	0.68	294.40	294.10	295.22	294.92	301.85	302.11	41
1205-1207	104.35	0.190	0.430	0.80	0.15	0.34	5.0	5.56	7.02	2.42	5.29	3.96	15	0.67	296.60	295.90	297.22	296.52	301.40	301.85	42
1207-1208	116.26	0.240	0.240	0.80	0.19	0.19	5.0	5.00	7.20	1.38	5.01	2.57	15	0.60	297.40	296.70	297.87	297.43	304.57	301.40	43
1201-1202	49.65	0.150	0.390	0.80	0.12	0.31	5.0	5.38	7.08	2.21	5.00	3.82	15	0.60	297.20	296.90	297.79	297.49	302.05	301.75	44

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs. Project File: SD-1200.sws

Storm Sewer Tabulation

Project Name: SD-1200

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area (ac)		Rational (C)	C x A		Tc (min)		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size (in)	Slope (%)	Up	Dn	Up	Dn	Up	Dn	
1202-1203	80.28	0.240	0.240	0.80	0.19	0.19	5.0	5.00	7.20	1.38	5.11	2.54	15	0.63	297.80	297.30	298.27	298.04	303.01	302.05	45
1205-1206	79.81	0.380	0.380	0.80	0.30	0.30	5.0	5.00	7.20	2.19	5.11	3.23	15	0.63	295.20	294.70	295.79	295.50	300.37	301.85	46
1218-1221	23.49	0.220	0.550	0.75	0.17	0.43	5.0	5.54	7.03	3.02	5.96	4.30	15	0.85	298.60	298.40	299.30	299.10	304.04	304.04	47
1221-1222	35.27	0.100	0.330	0.80	0.08	0.26	5.0	5.40	7.07	1.87	5.96	2.87	15	0.85	299.00	298.70	299.55	299.53	303.70	304.04	48
1222-1223	86.73	0.230	0.230	0.80	0.18	0.18	5.0	5.00	7.20	1.33	5.37	2.64	15	0.69	299.70	299.10	300.16	299.75	304.93	303.70	49
1211-1212	30.25	0.160	0.160	0.75	0.12	0.12	5.0	5.00	7.20	0.86	5.25	2.82	15	0.66	299.80	299.60	300.17	299.97	305.06	304.85	50
1236-1235	23.50	0.080	0.890	0.75	0.06	0.70	5.0	6.02	6.88	4.81	9.69	2.84	18	0.85	297.60	297.40	298.90	298.88	304.69	304.69	51
1235-1254	69.38	0.240	0.810	0.80	0.19	0.64	5.0	5.79	6.95	4.44	8.91	3.63	18	0.72	298.20	297.70	299.02	298.97	303.69	304.69	52
1254-1255	23.50	0.220	0.570	0.80	0.18	0.45	5.0	5.71	6.98	3.12	5.96	3.23	15	0.85	298.50	298.30	299.33	299.33	303.69	303.69	53
1255-1256	43.79	0.060	0.350	0.80	0.05	0.27	5.0	5.53	7.03	1.91	5.34	2.17	15	0.69	298.90	298.60	299.63	299.62	304.01	303.69	54
1256-1257	35.11	0.120	0.290	0.80	0.10	0.22	5.0	5.39	7.08	1.58	5.97	2.81	15	0.85	299.30	299.00	299.80	299.71	304.91	304.01	55
1257-1258	74.67	0.170	0.170	0.75	0.13	0.13	5.0	5.00	7.20	0.92	5.28	2.87	15	0.67	300.50	300.00	300.88	300.38	306.80	304.91	56
1239-1240	95.79	0.110	0.110	0.80	0.09	0.09	5.0	5.00	7.20	0.63	5.11	2.57	15	0.63	301.30	300.70	301.62	301.02	309.38	305.97	57
1246-1247	71.19	0.110	0.110	0.80	0.09	0.09	5.0	5.00	7.20	0.63	5.41	2.57	15	0.70	308.30	307.80	308.62	308.12	316.25	312.70	58

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

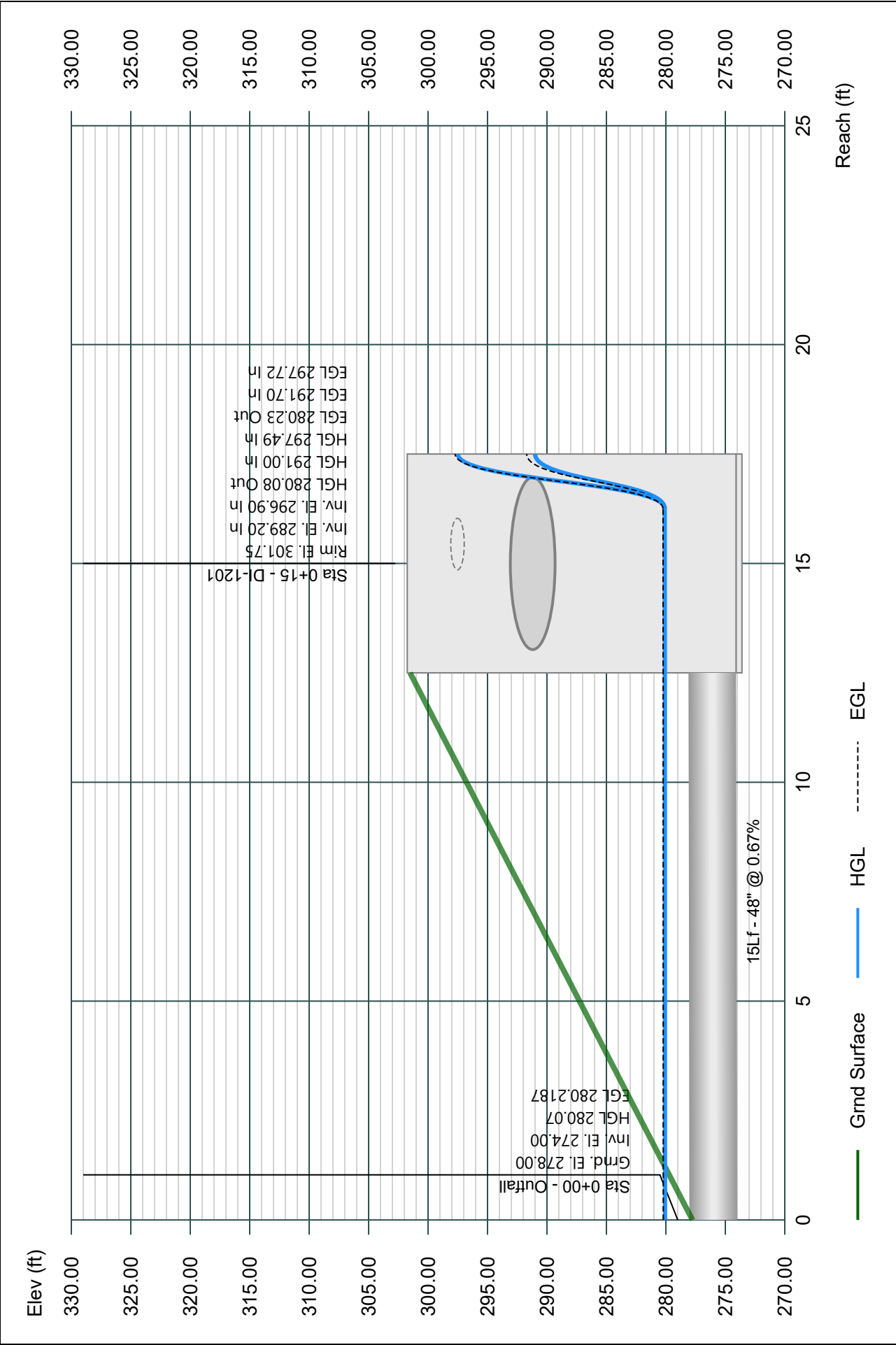
Project File: SD-1200.sws

Line 1 - 1200-1201

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

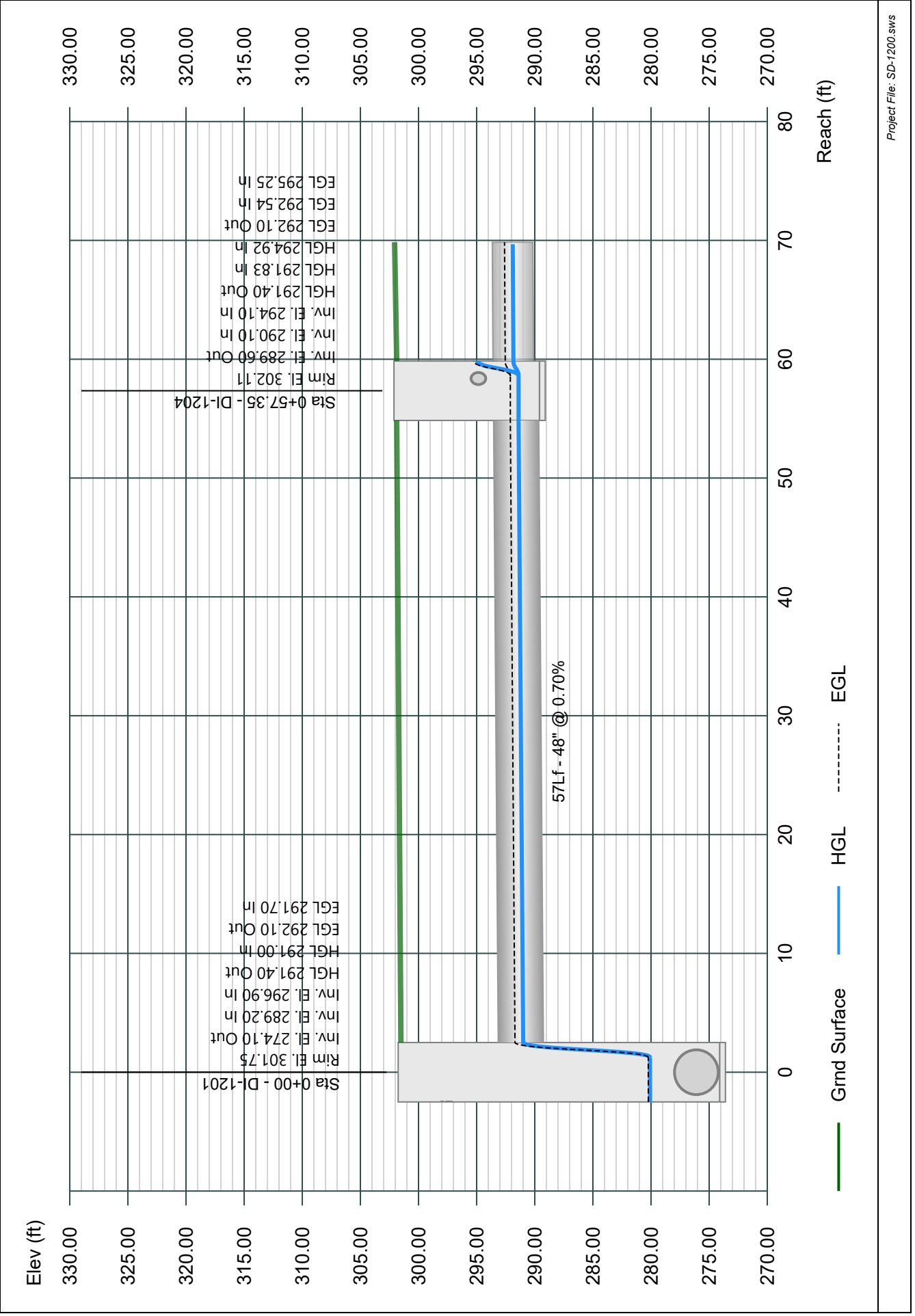


Line 2 - 1201-1204

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

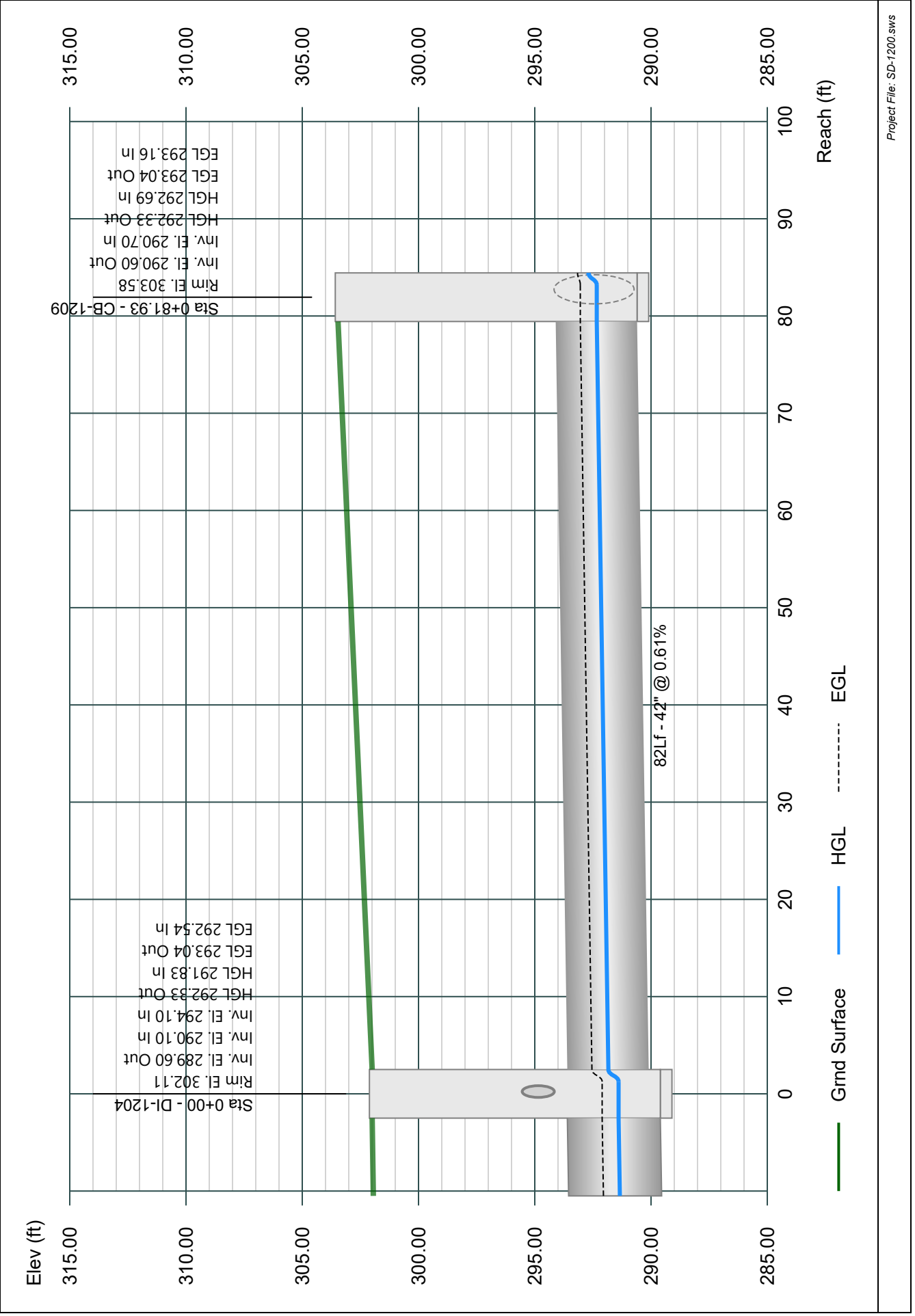


Line 3 - 1204-1209

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

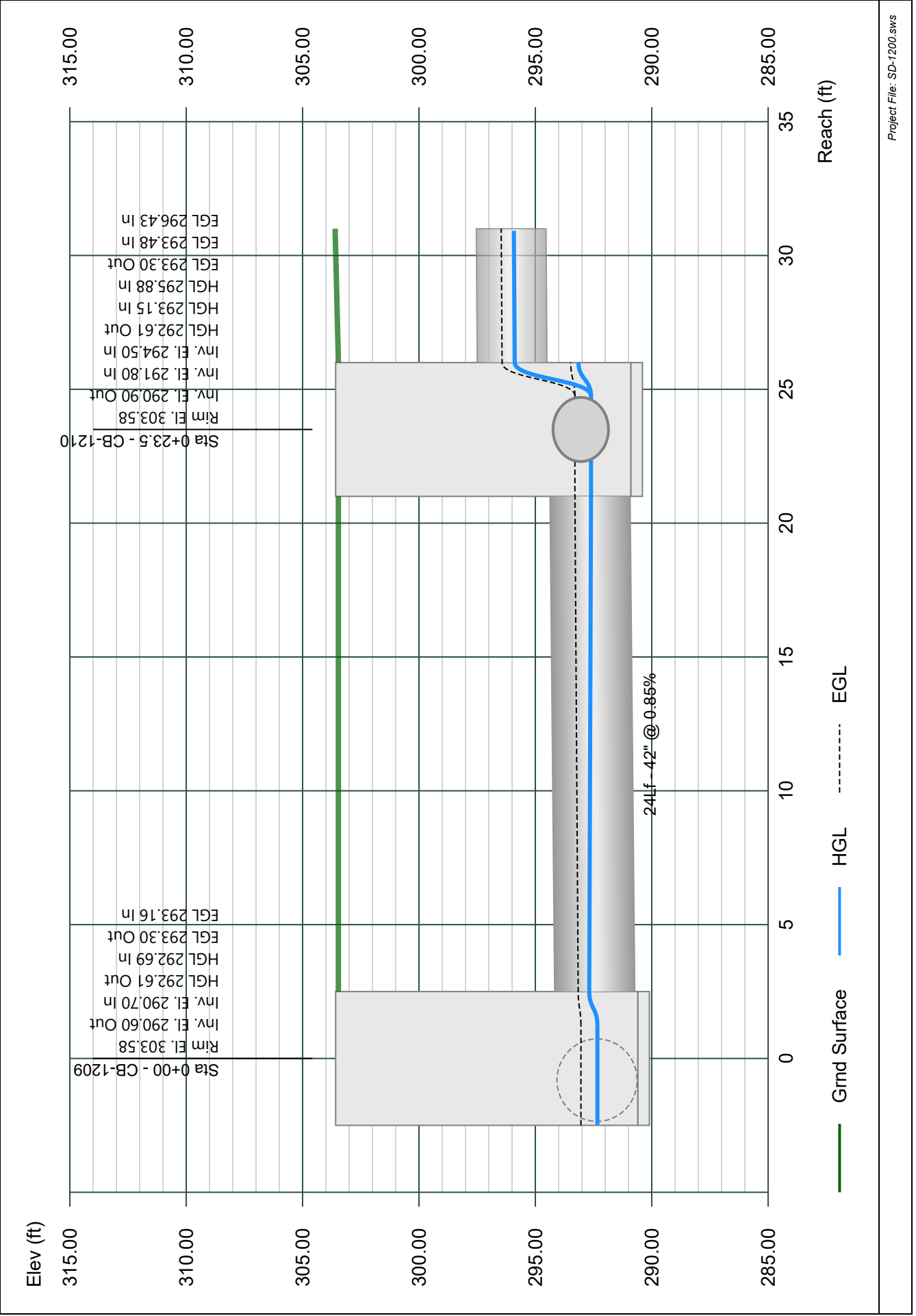


Line 4 - 1209-1210

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

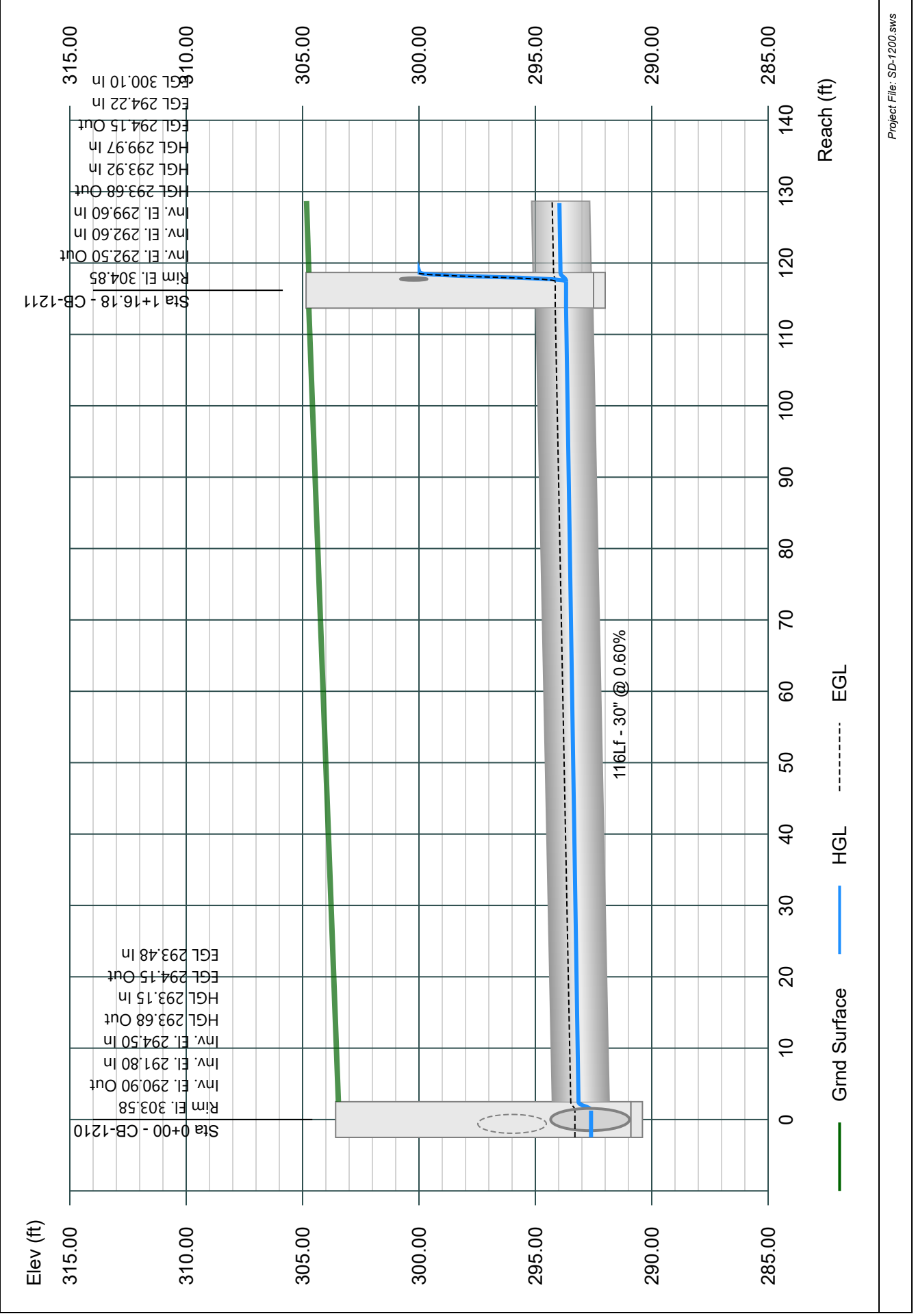


Line 5 - 1210-1211

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

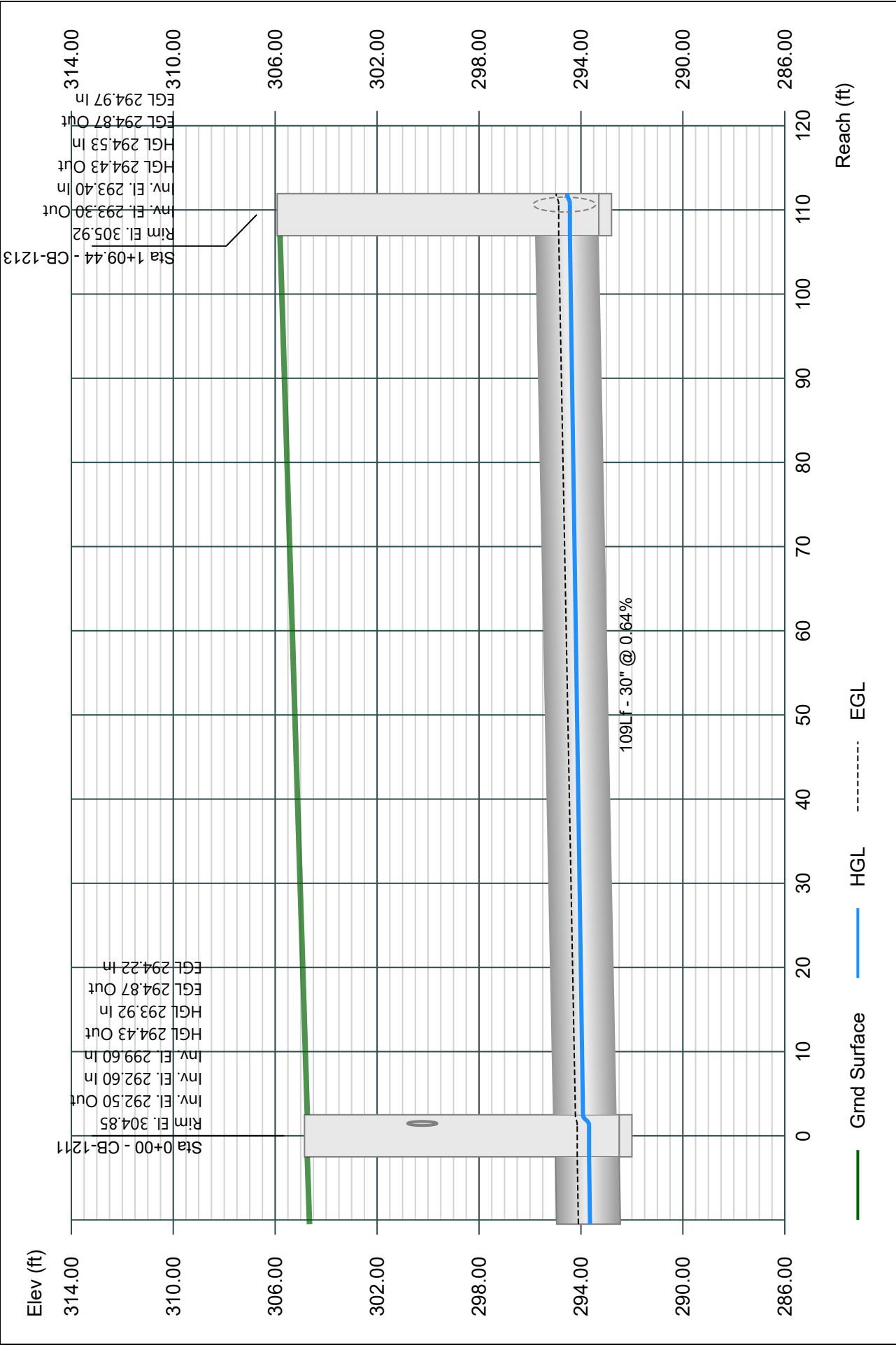
02-26-2024



Line 6 - 1211-1213

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

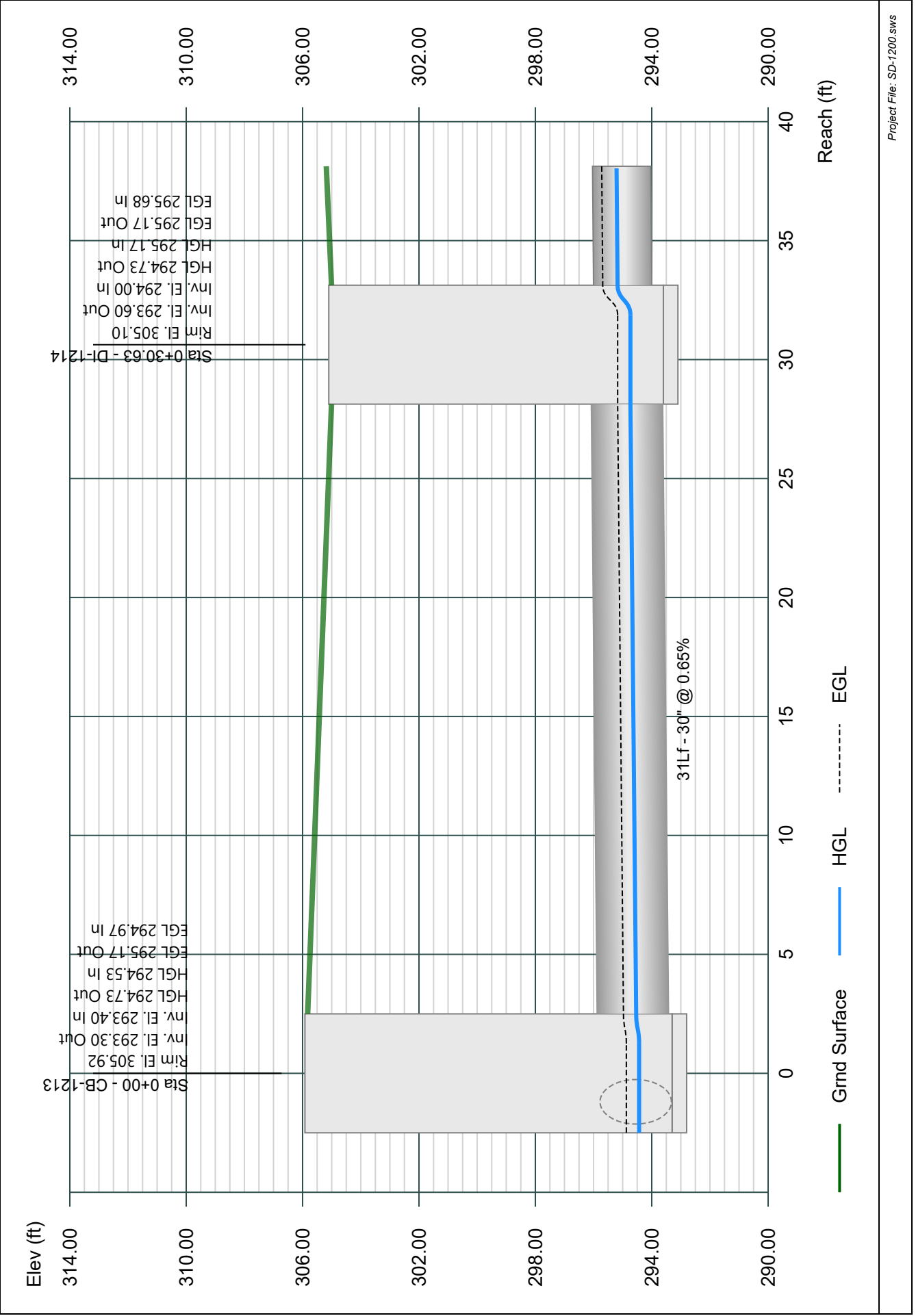


Line 7 - 1213-1214

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

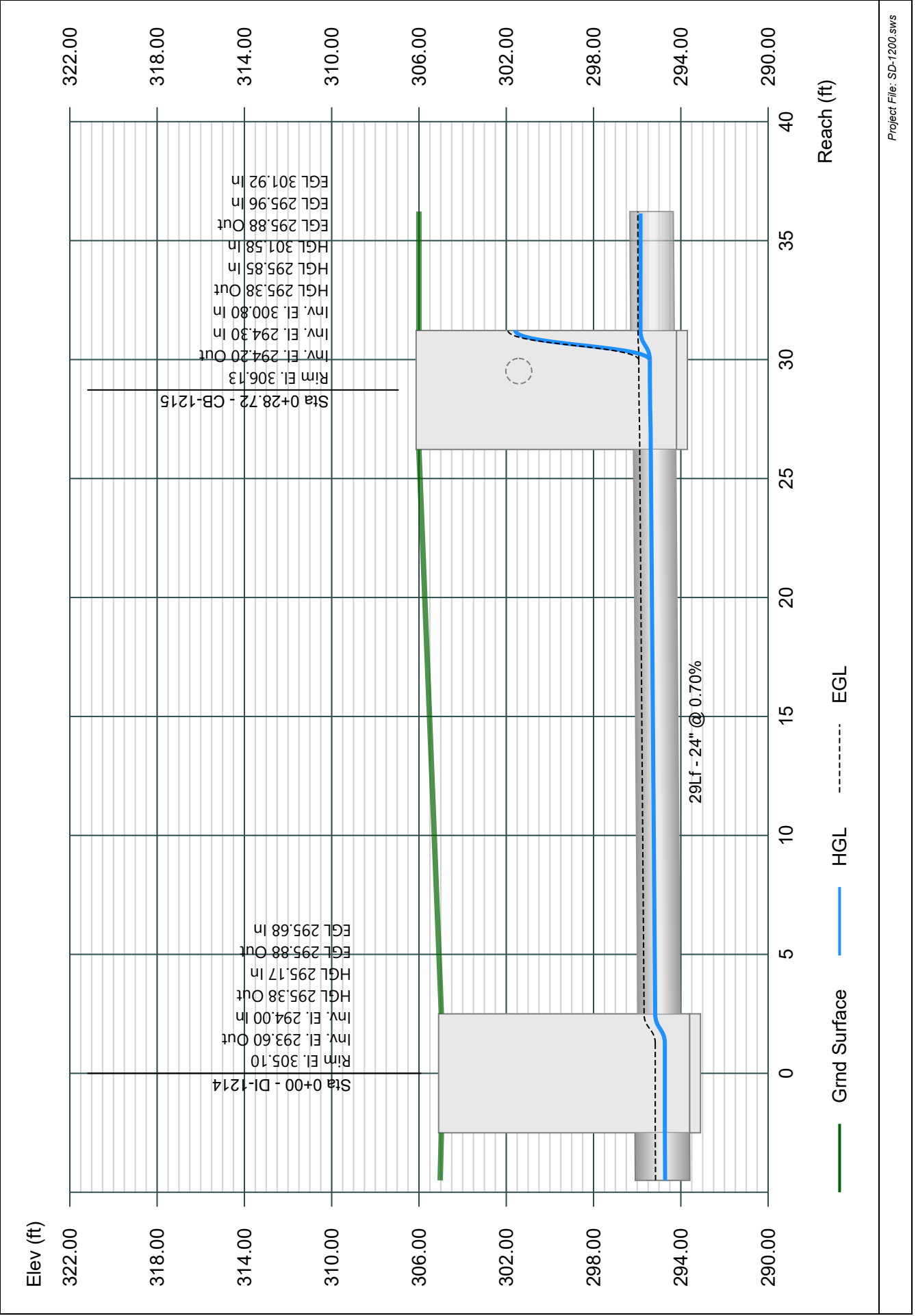


Line 8 - 1214-1215

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

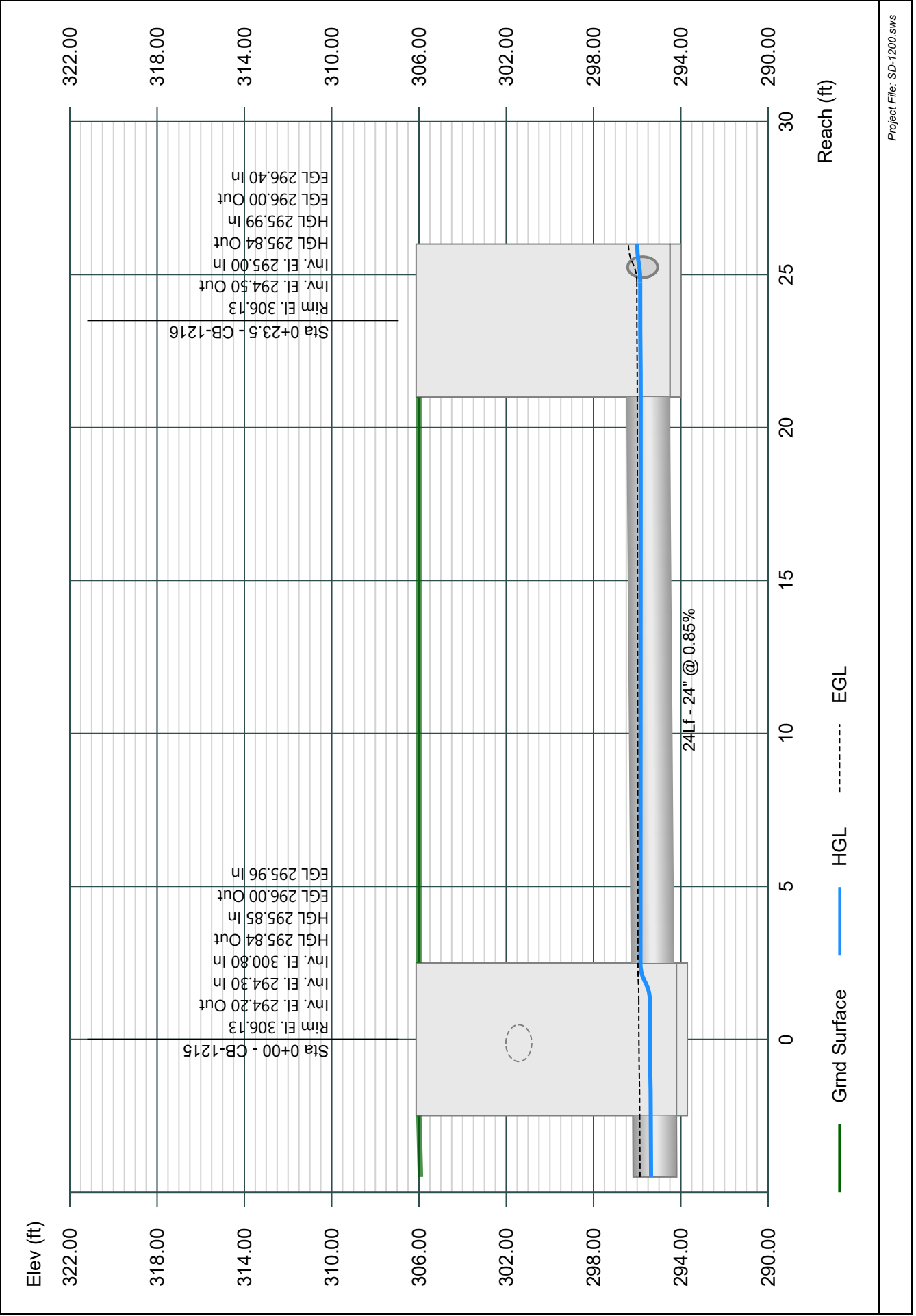


Line 9 - 1215-1216

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

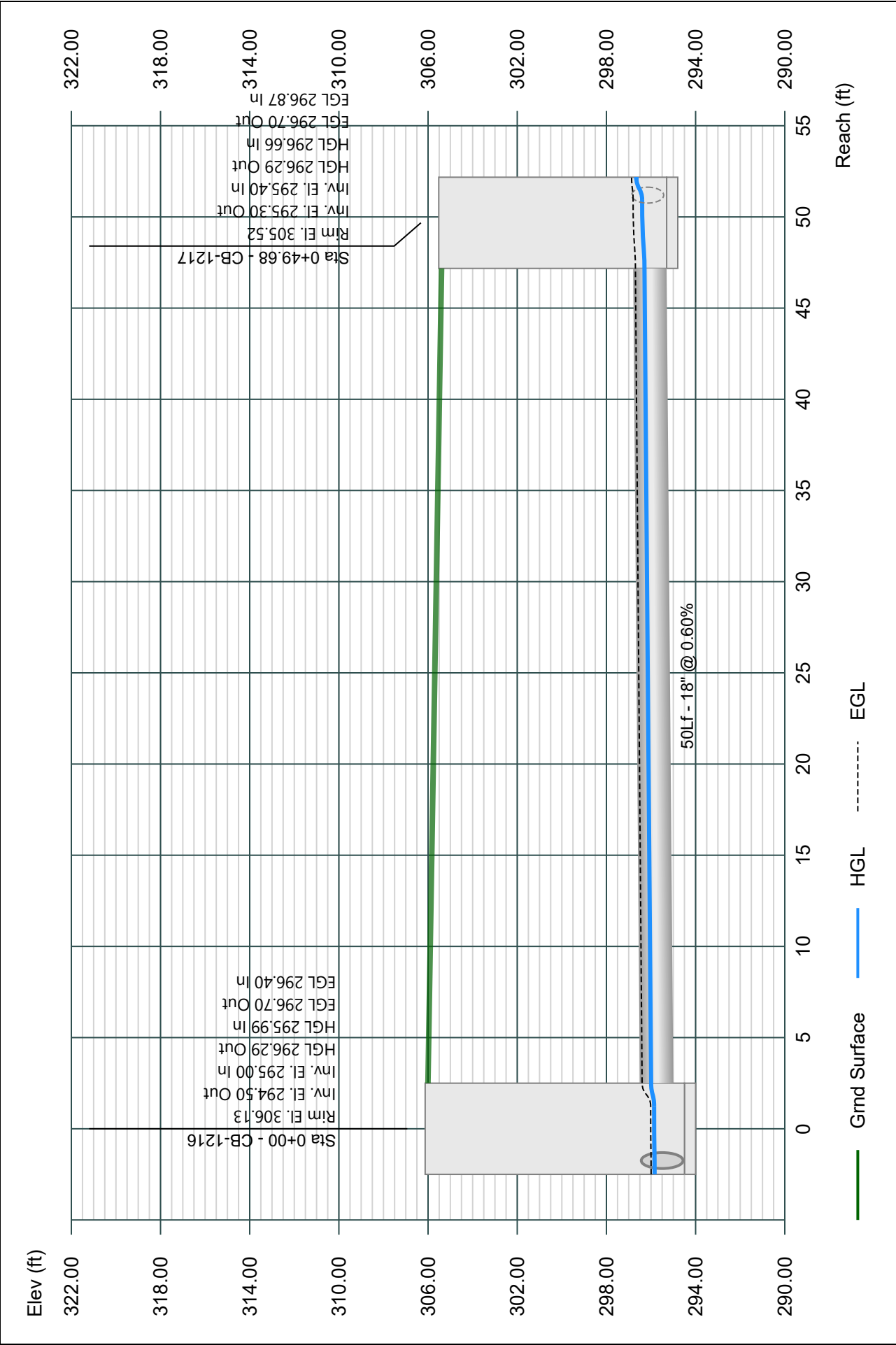
02-26-2024



Line 10 - 1216-1217

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

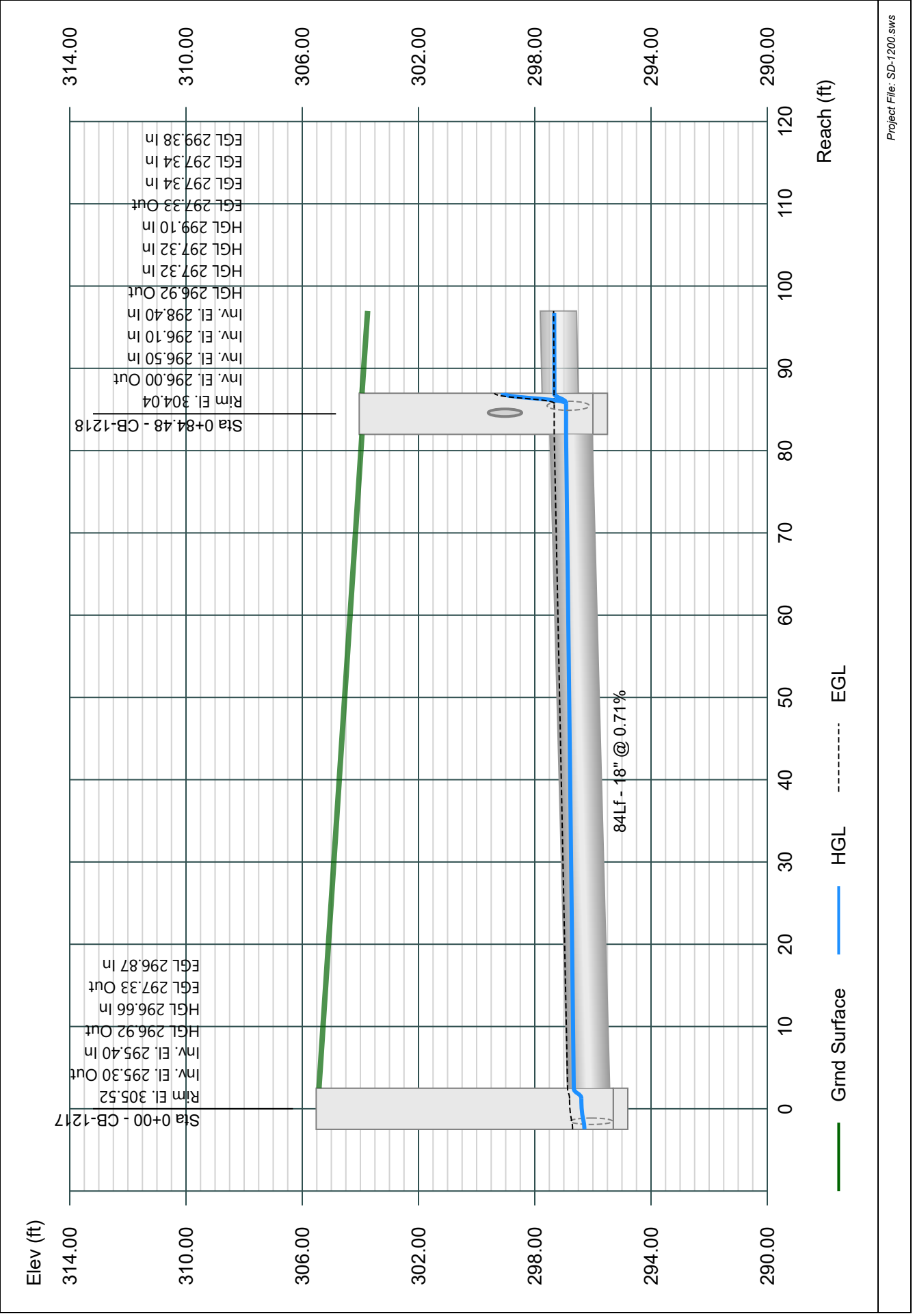


Line 11 - 1217-1218

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

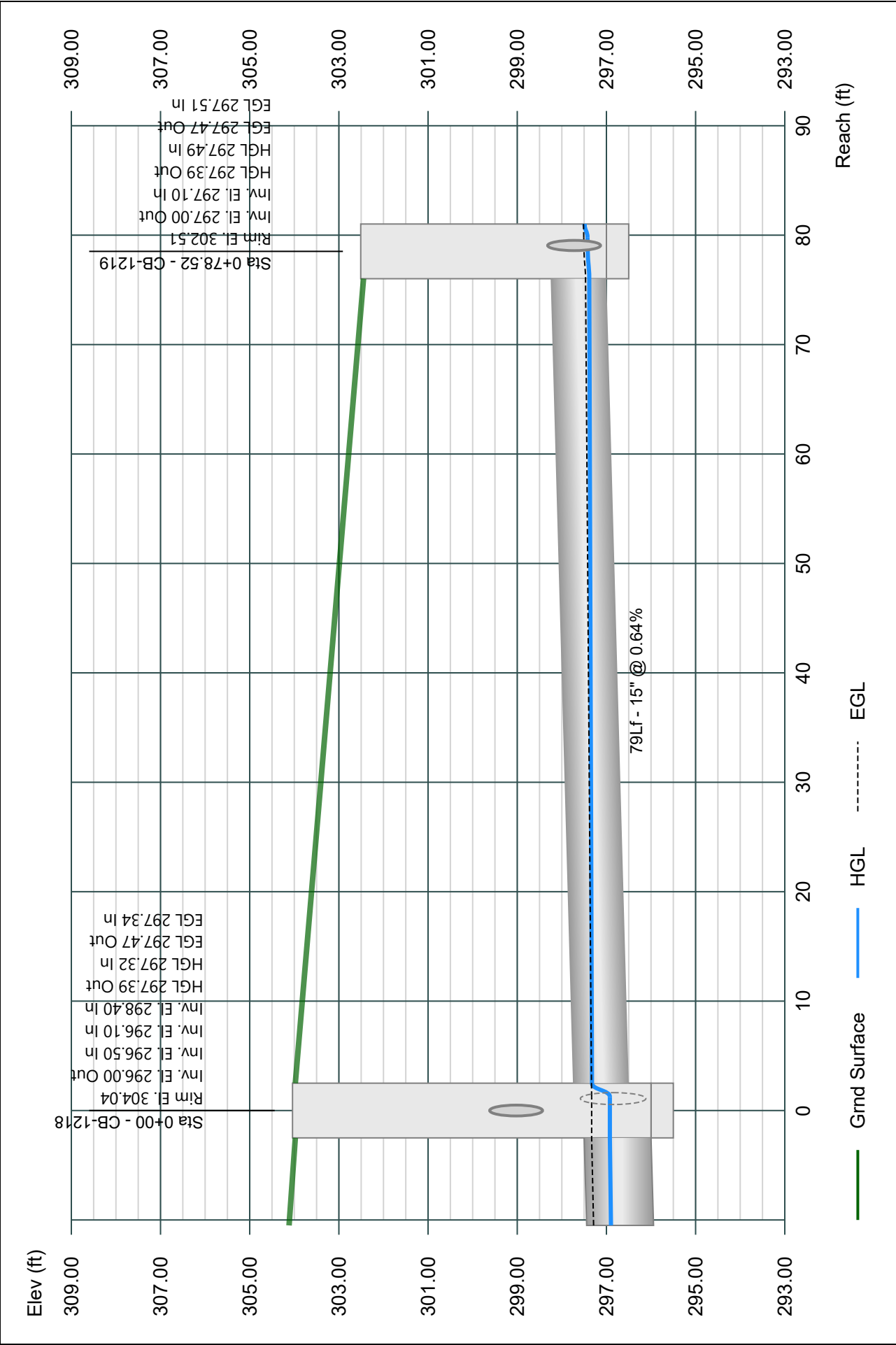
02-26-2024



Line 12 - 1218-1219

Stormwater Studio 2024 v 3.0.0.33

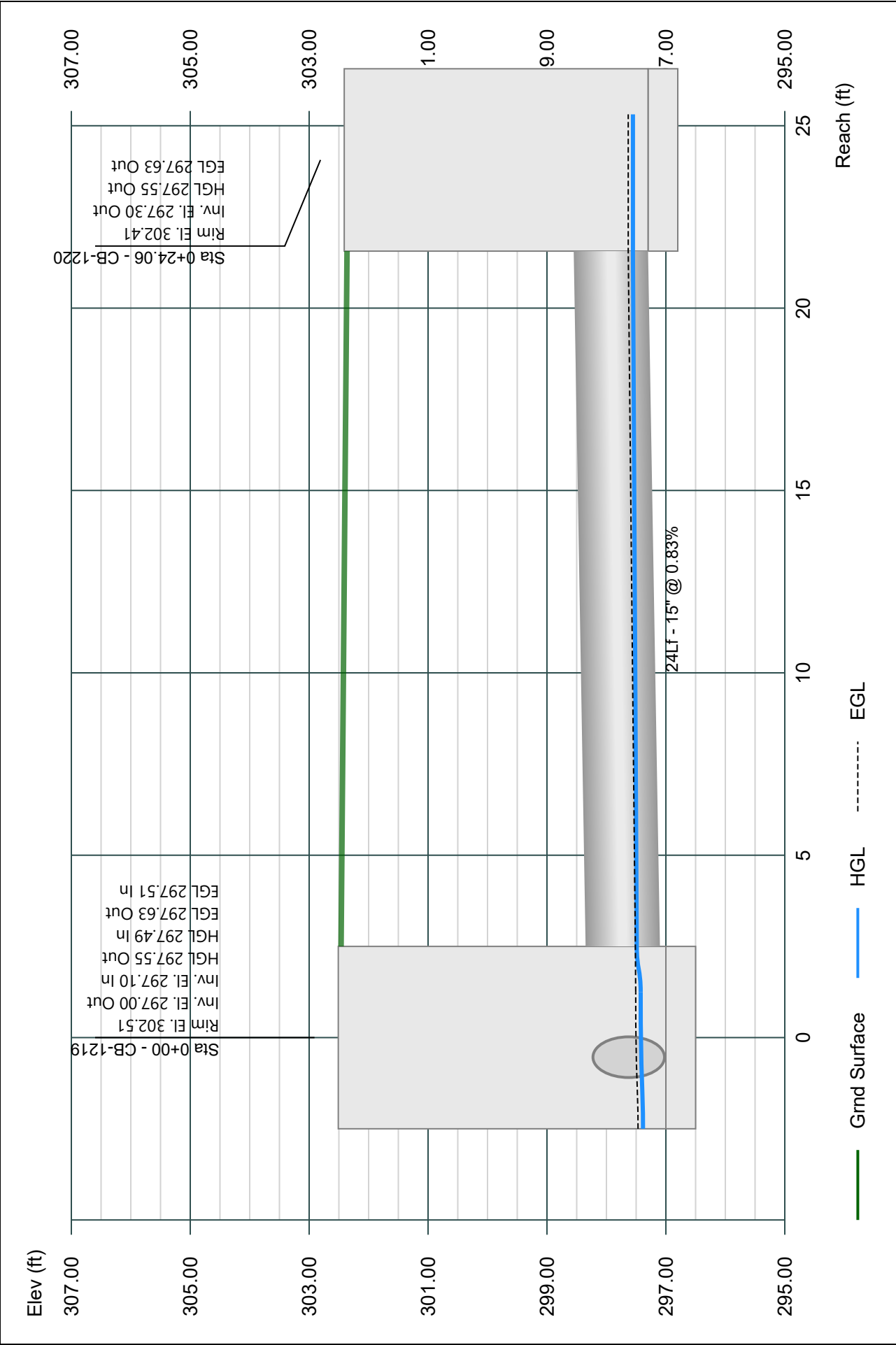
Project Name: SD-1200
02-26-2024



Line 13 - 1219-1220

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

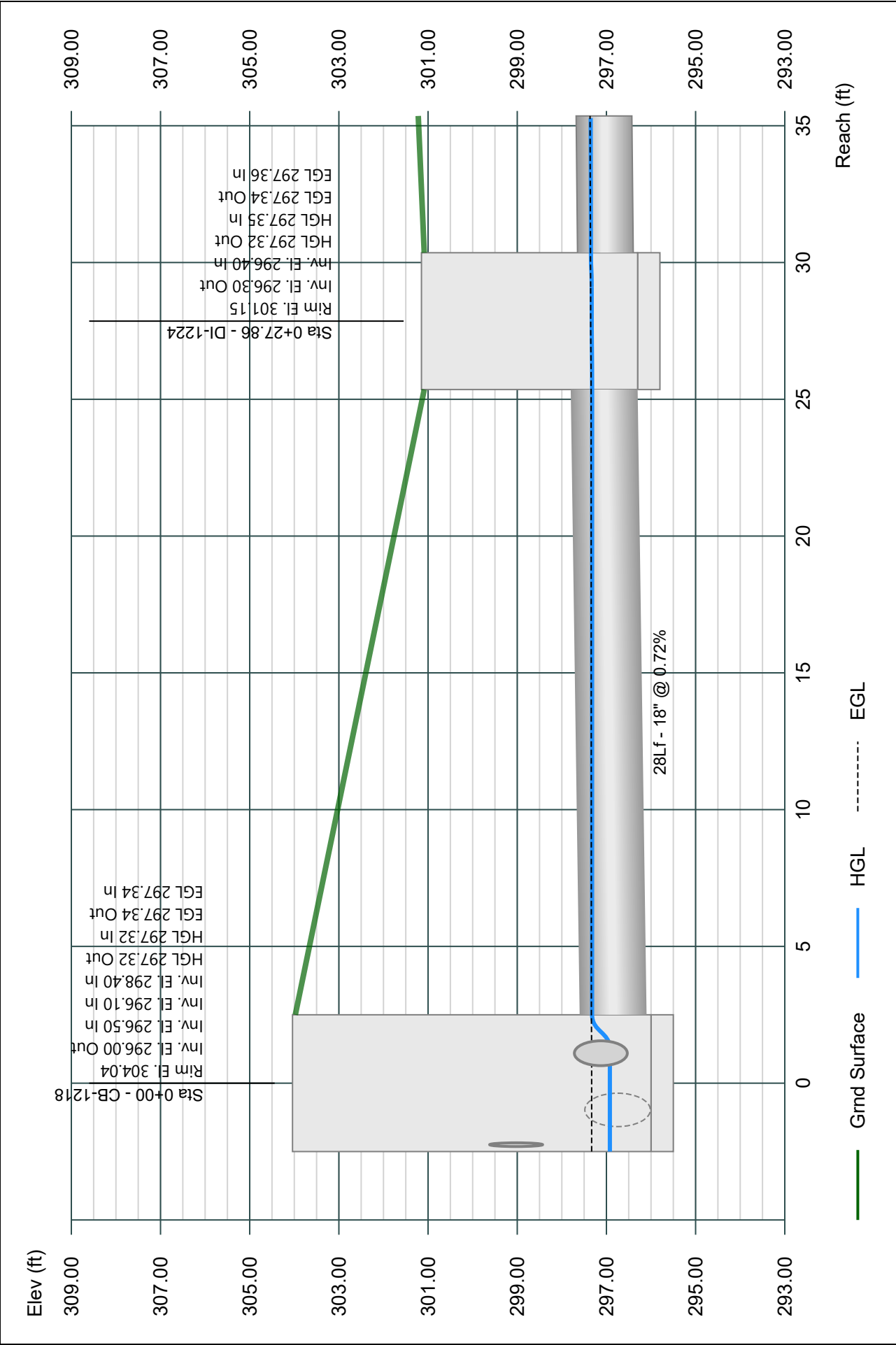


Line 14 - 1218-1224

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

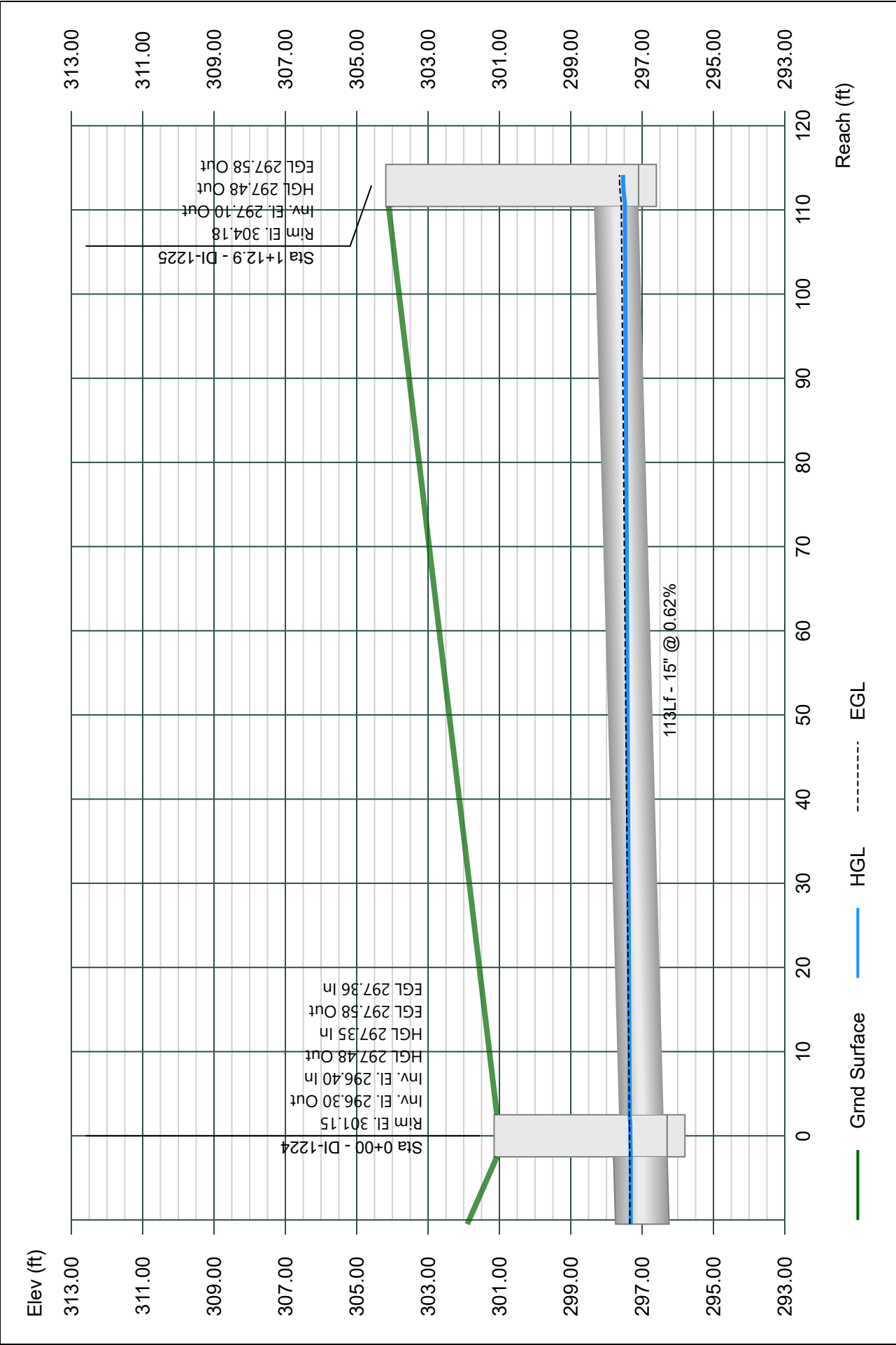


Line 15 - 1224-1225

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

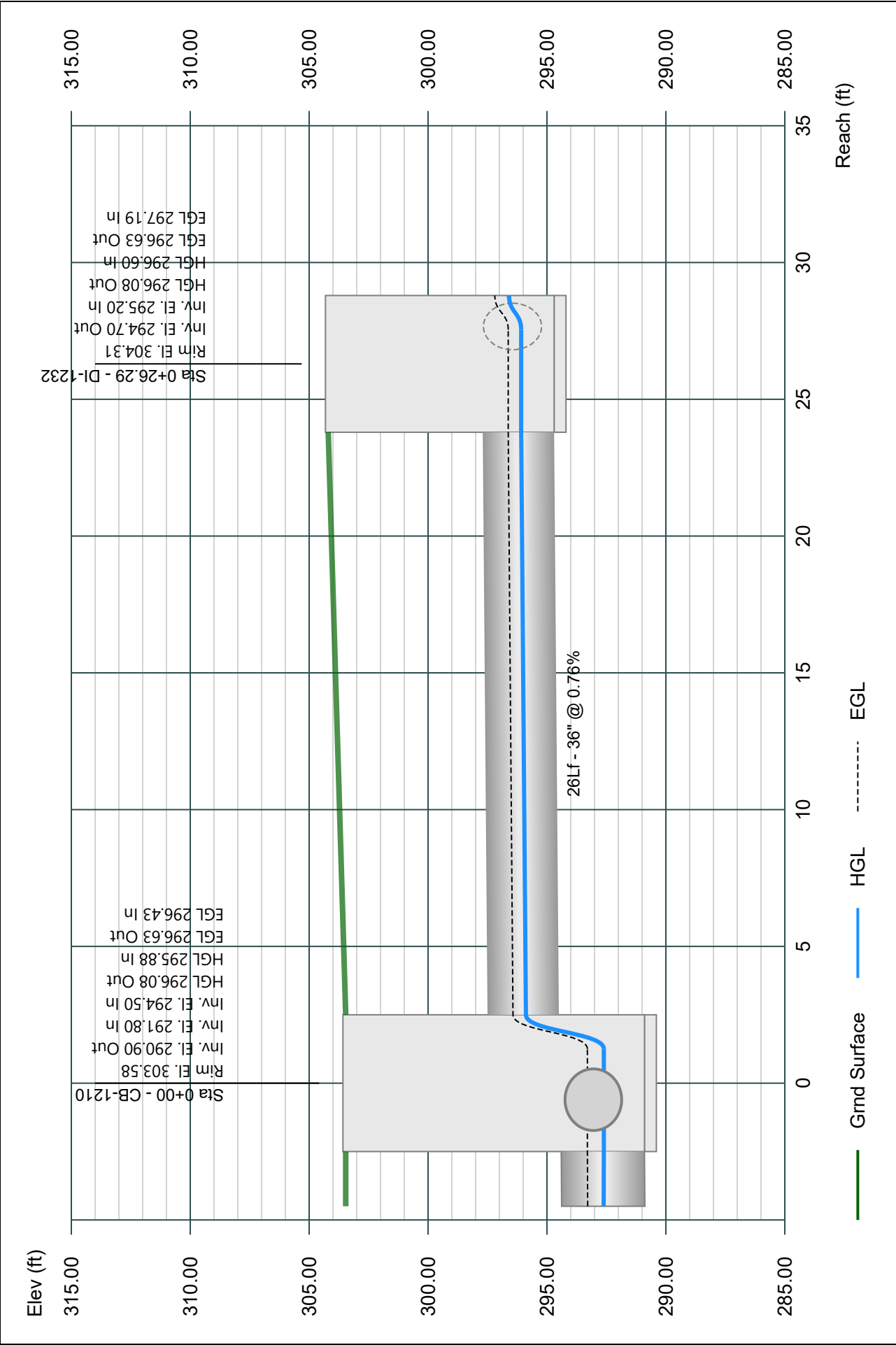
02-26-2024



Line 16 - 1210-1232

Stormwater Studio 2024 v 3.0.0.33

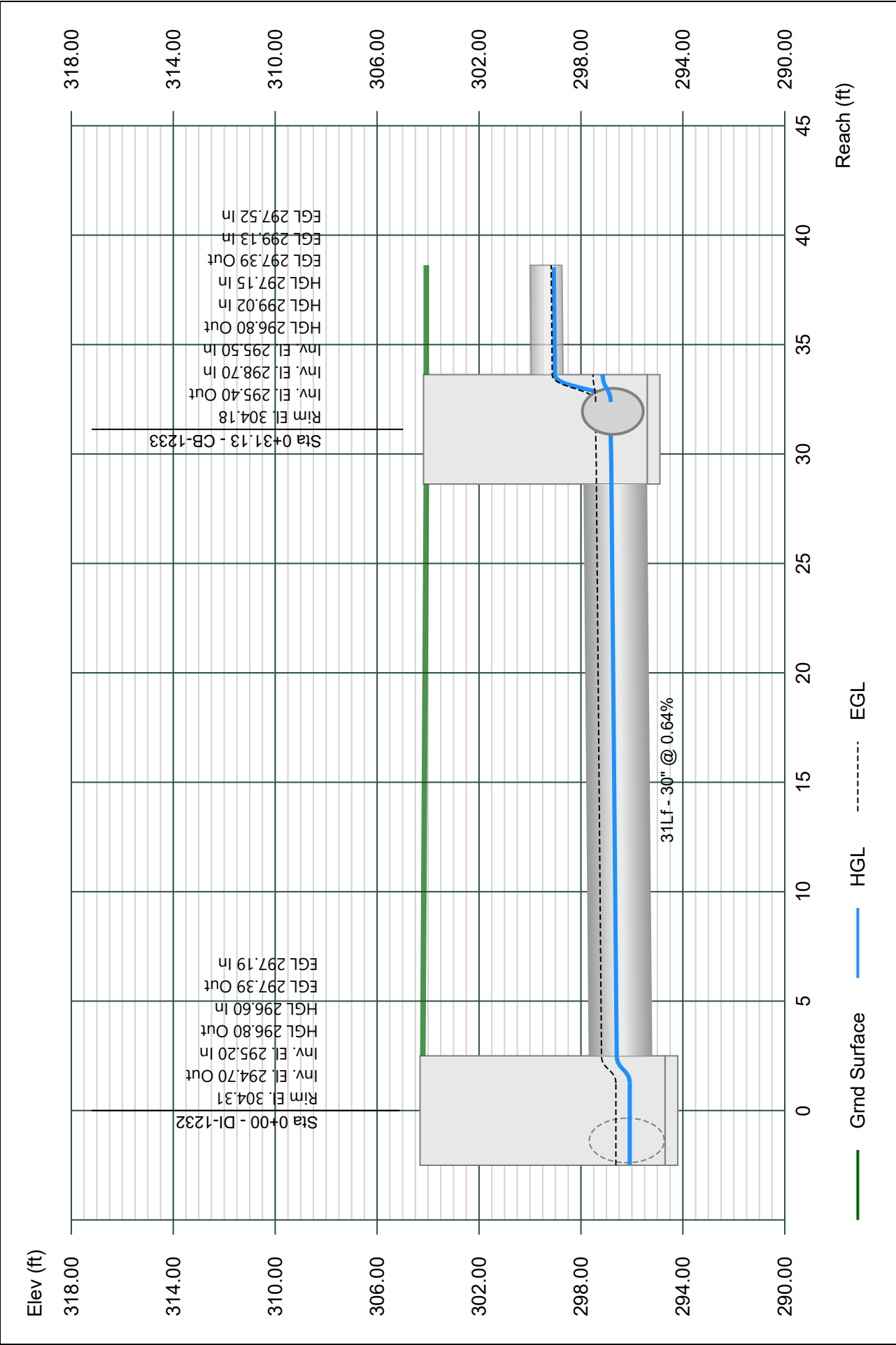
Project Name: SD-1200
02-26-2024



Line 17 - 1232-1233

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

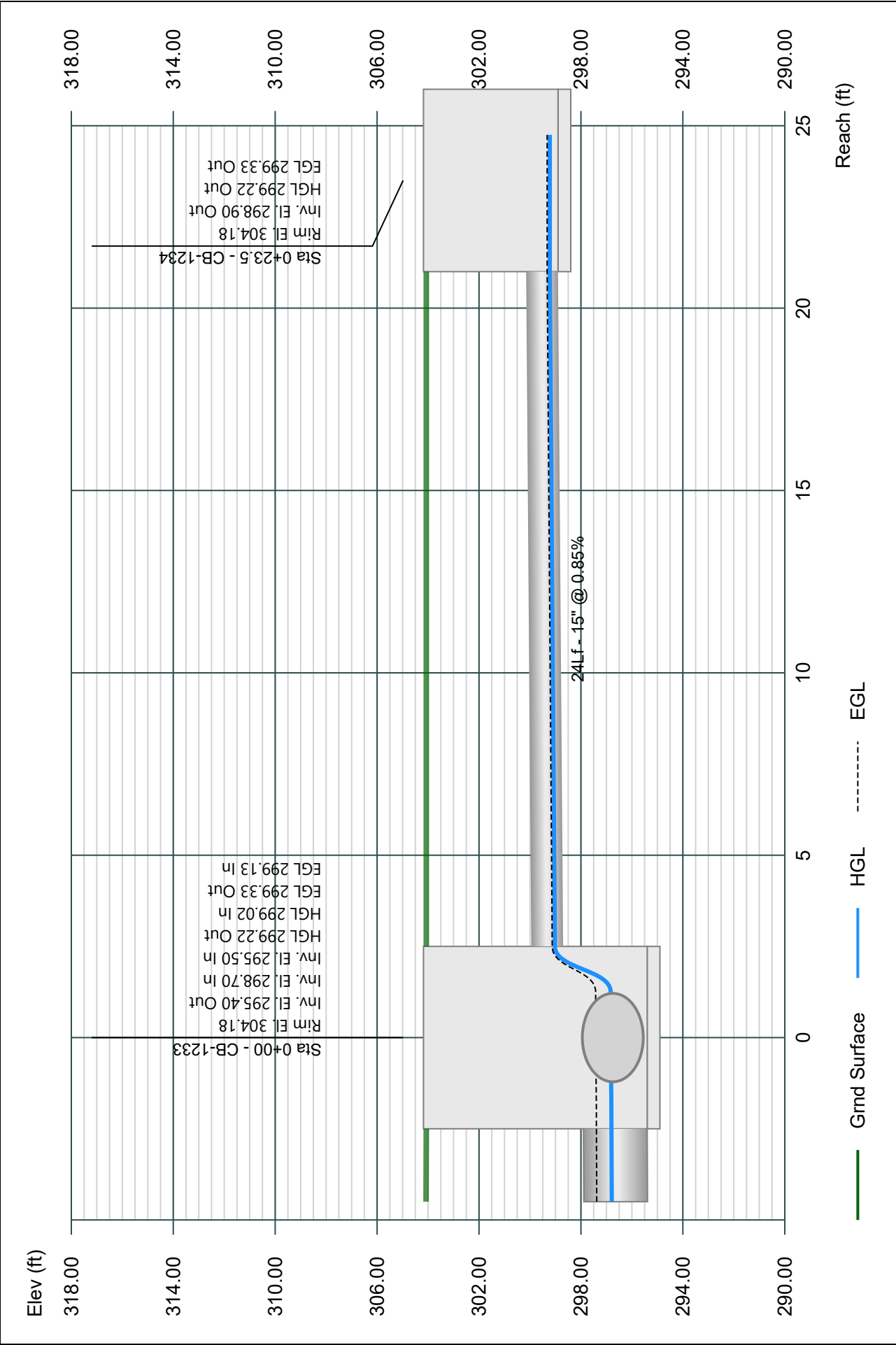


Line 18 - 1233-1234

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

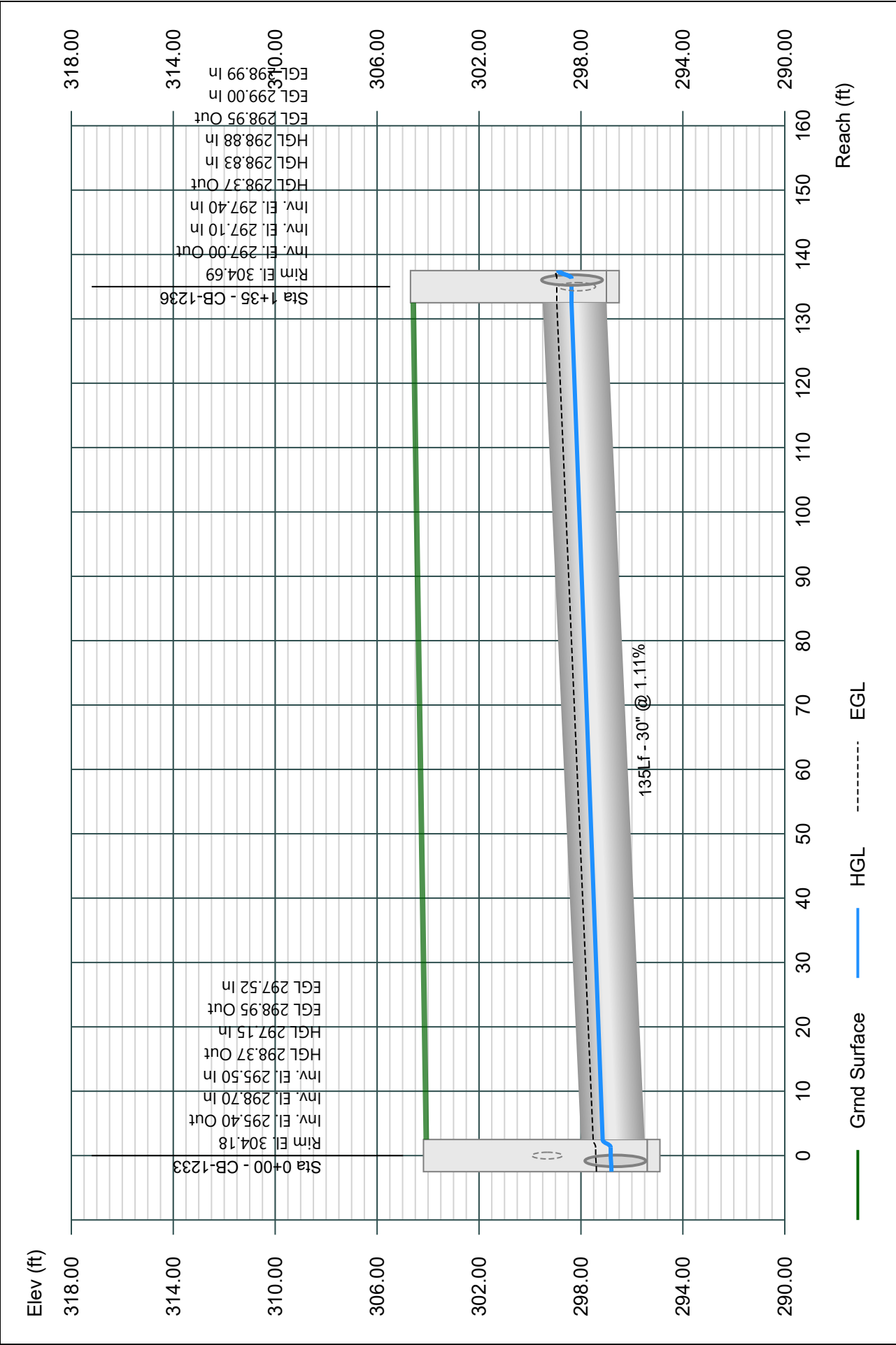
02-26-2024



Line 19 - 1233-1236

Stormwater Studio 2024 v 3.0.0.33

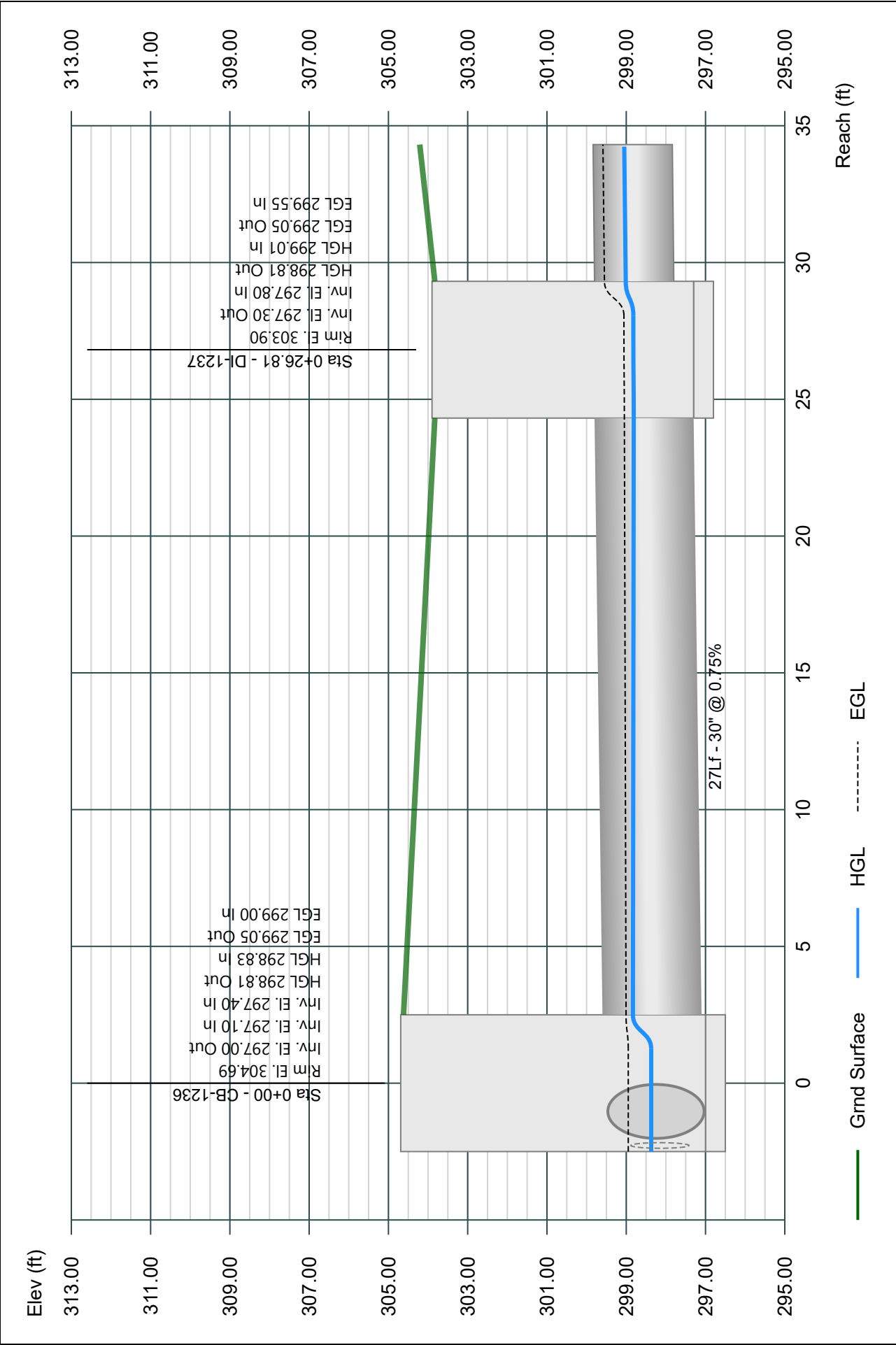
Project Name: SD-1200
02-26-2024



Line 20 - 1236-1237

Stormwater Studio 2024 v 3.0.0.33

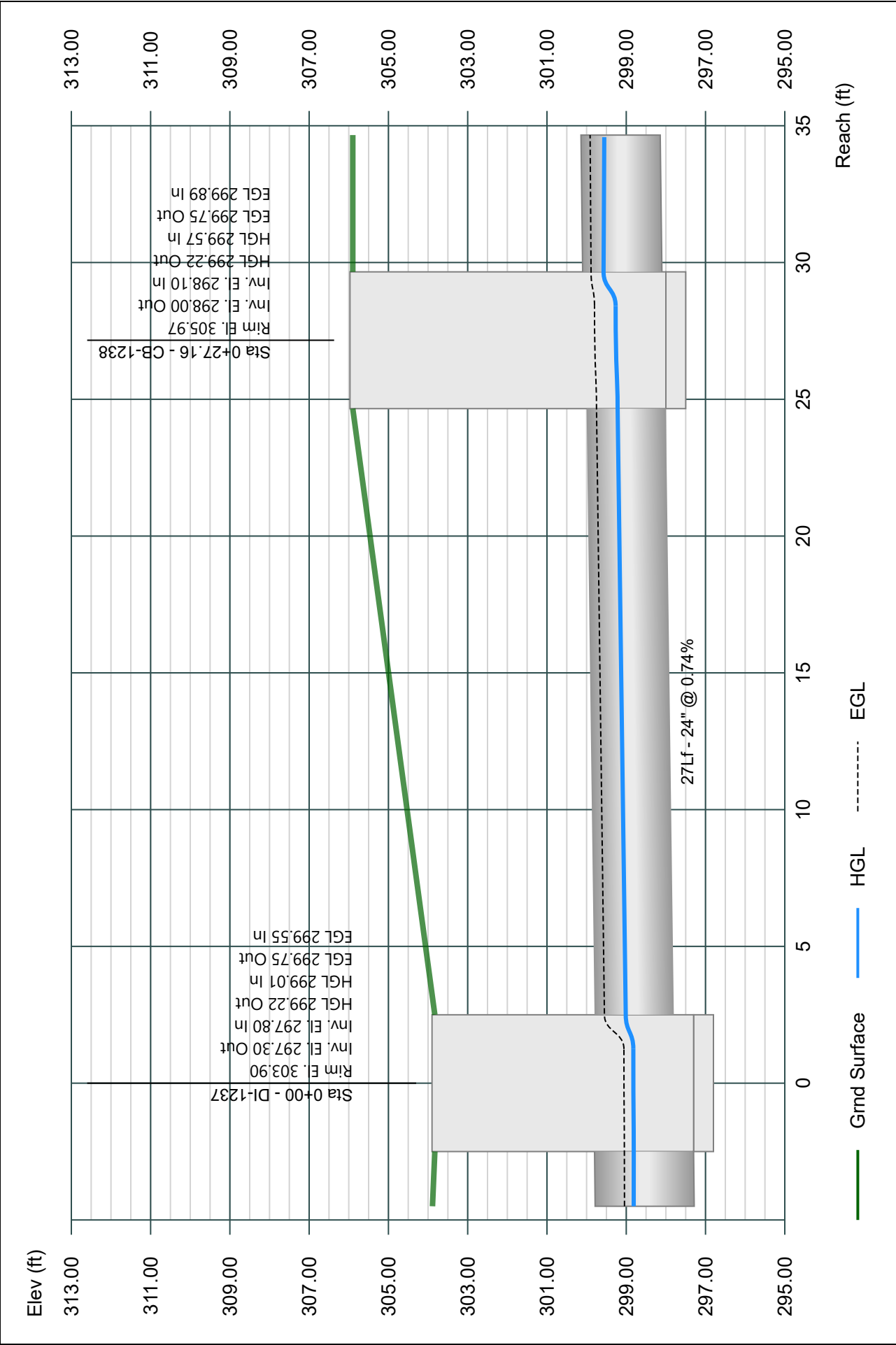
Project Name: SD-1200
02-26-2024



Line 21 - 1237-1238

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

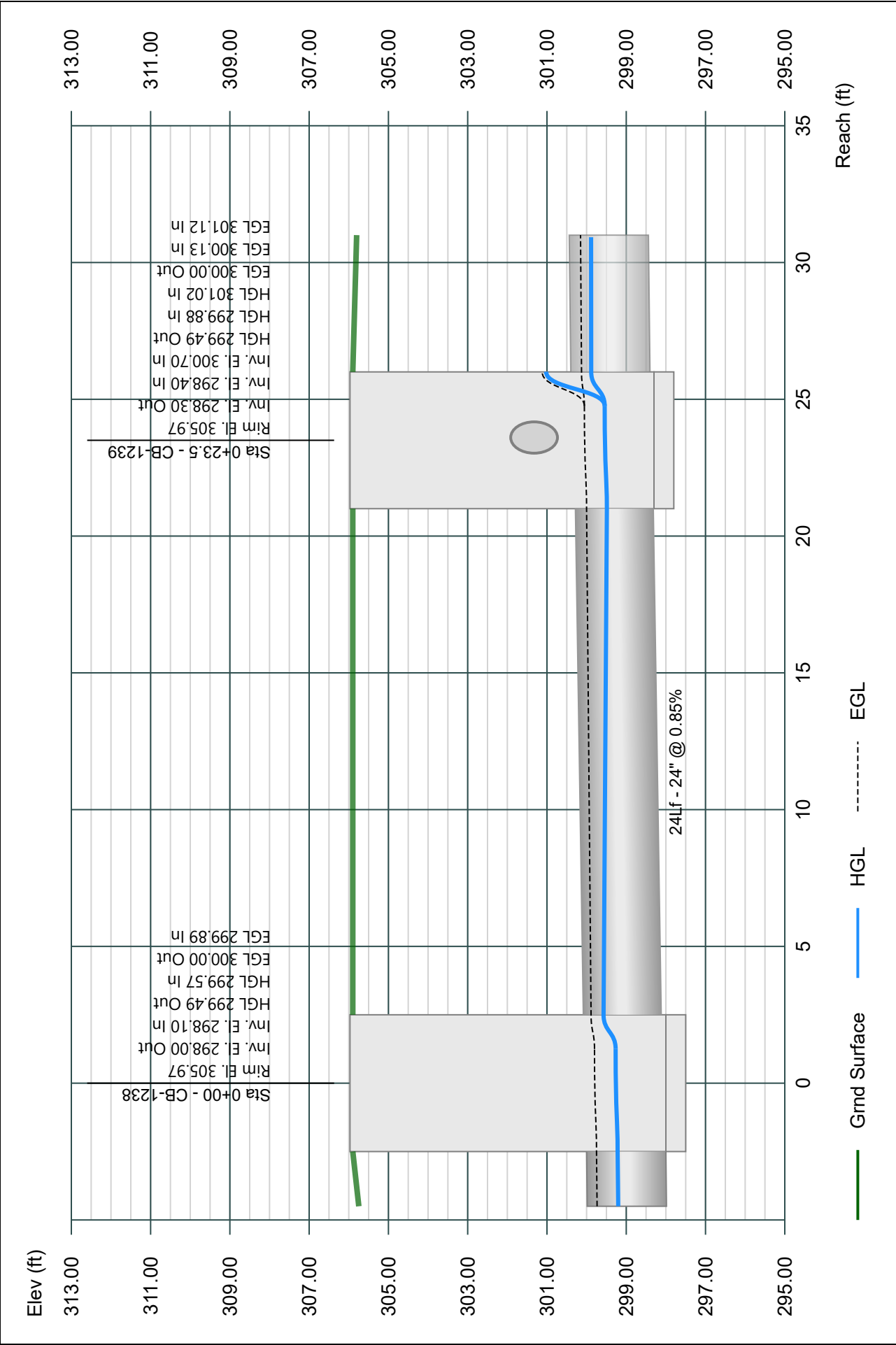


Line 22 - 1238-1239

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

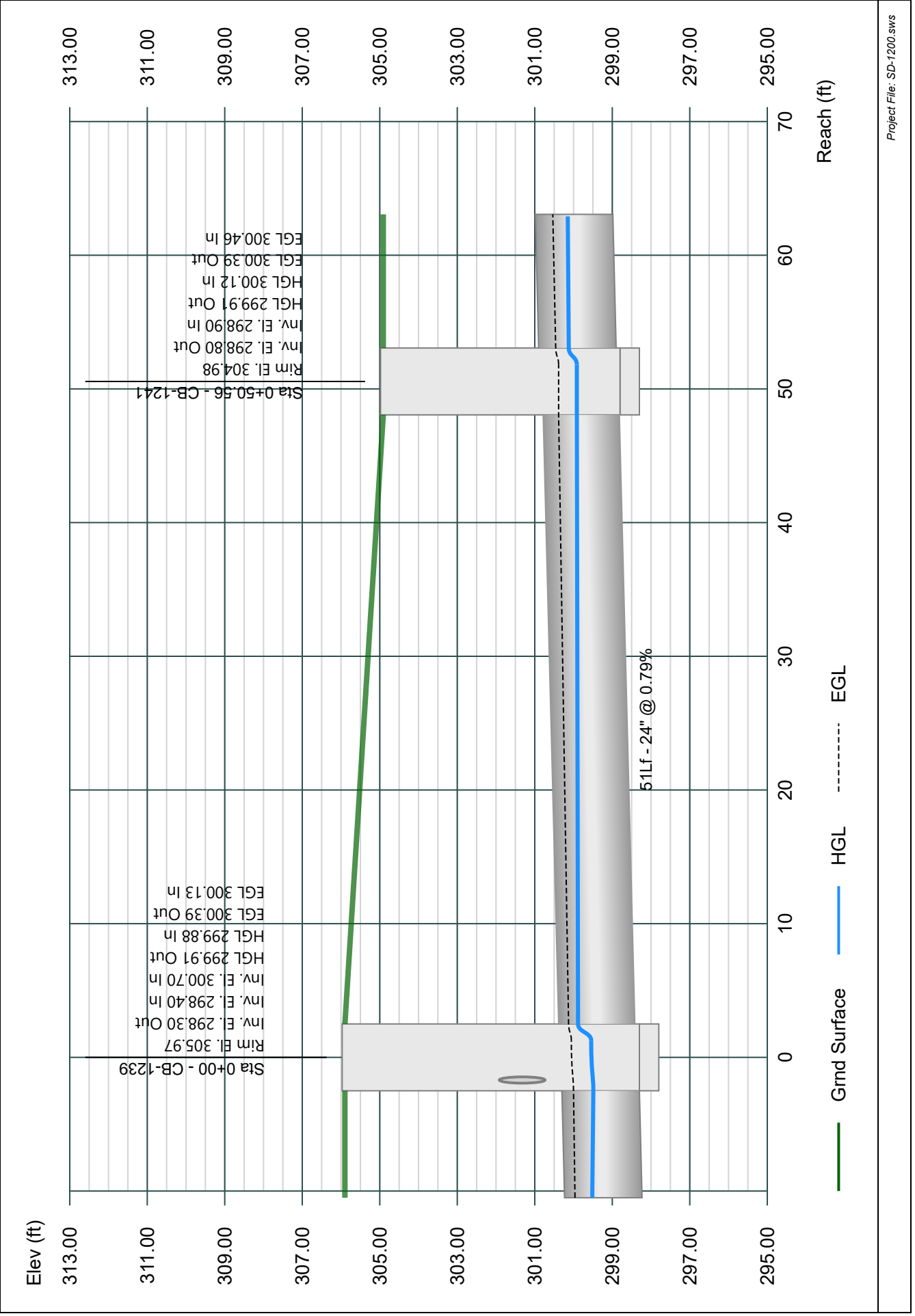


Line 23 - 1239-1241

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

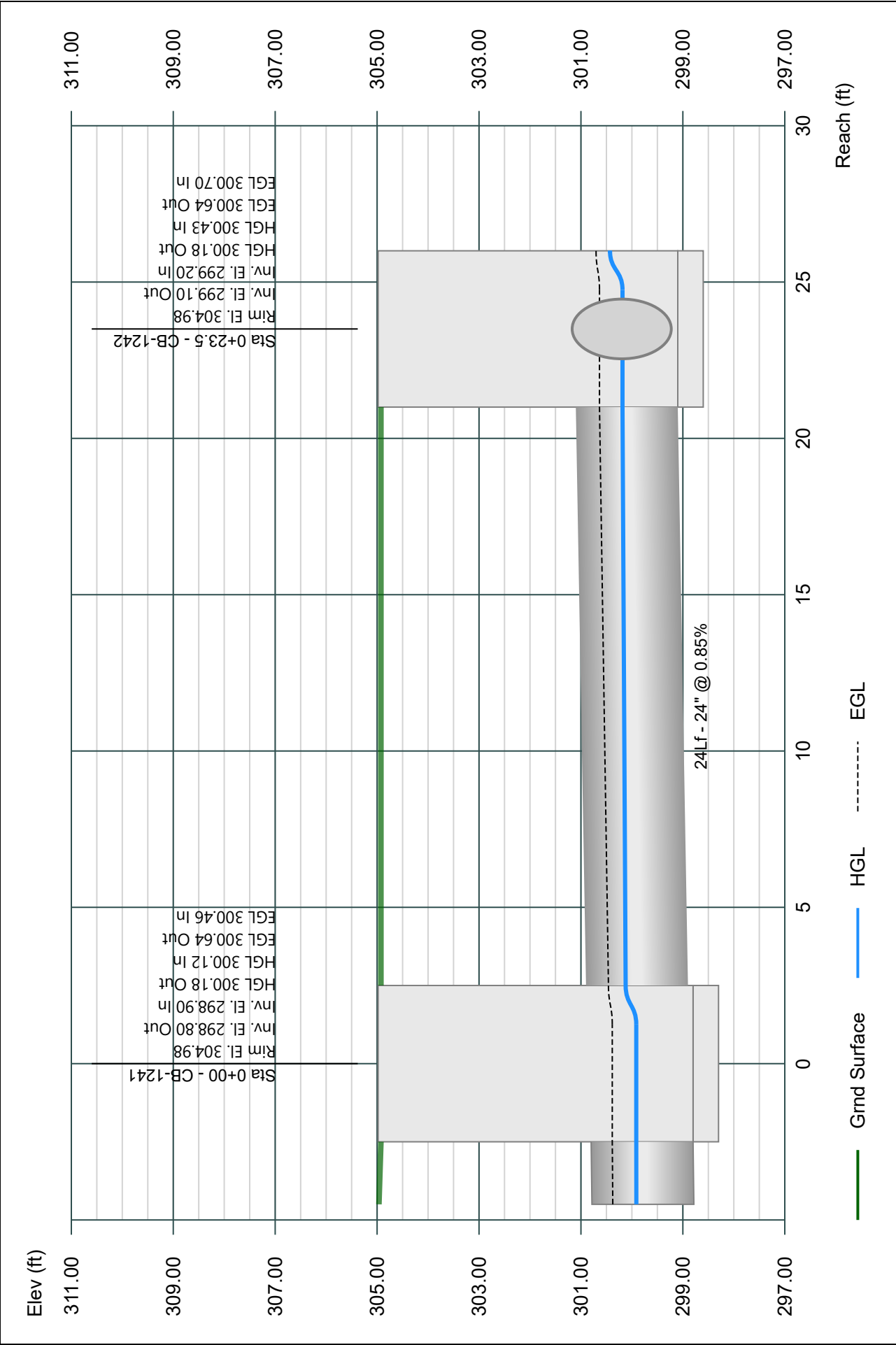
02-26-2024



Line 24 - 1241-1242

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

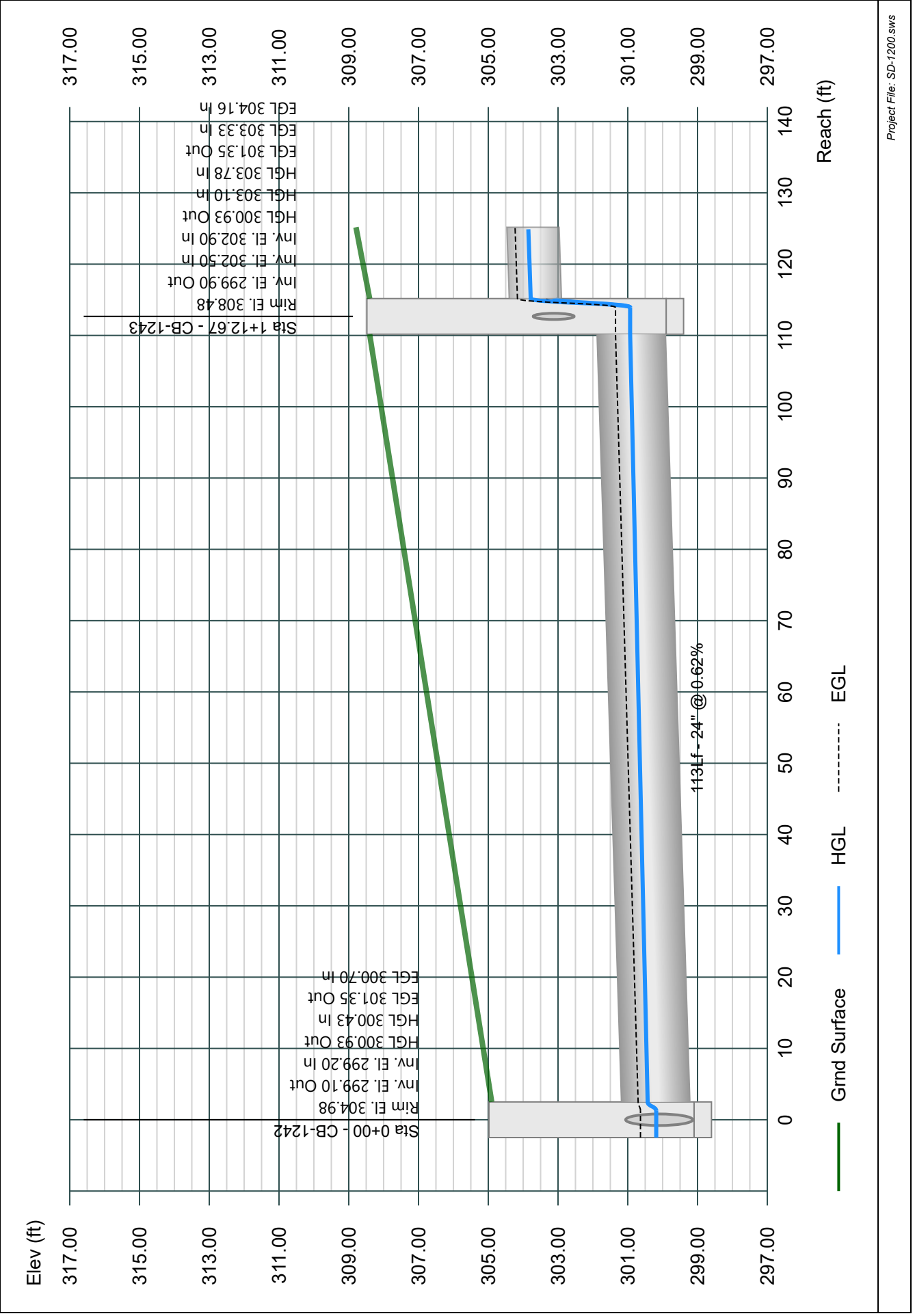


Line 25 - 1242-1243

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

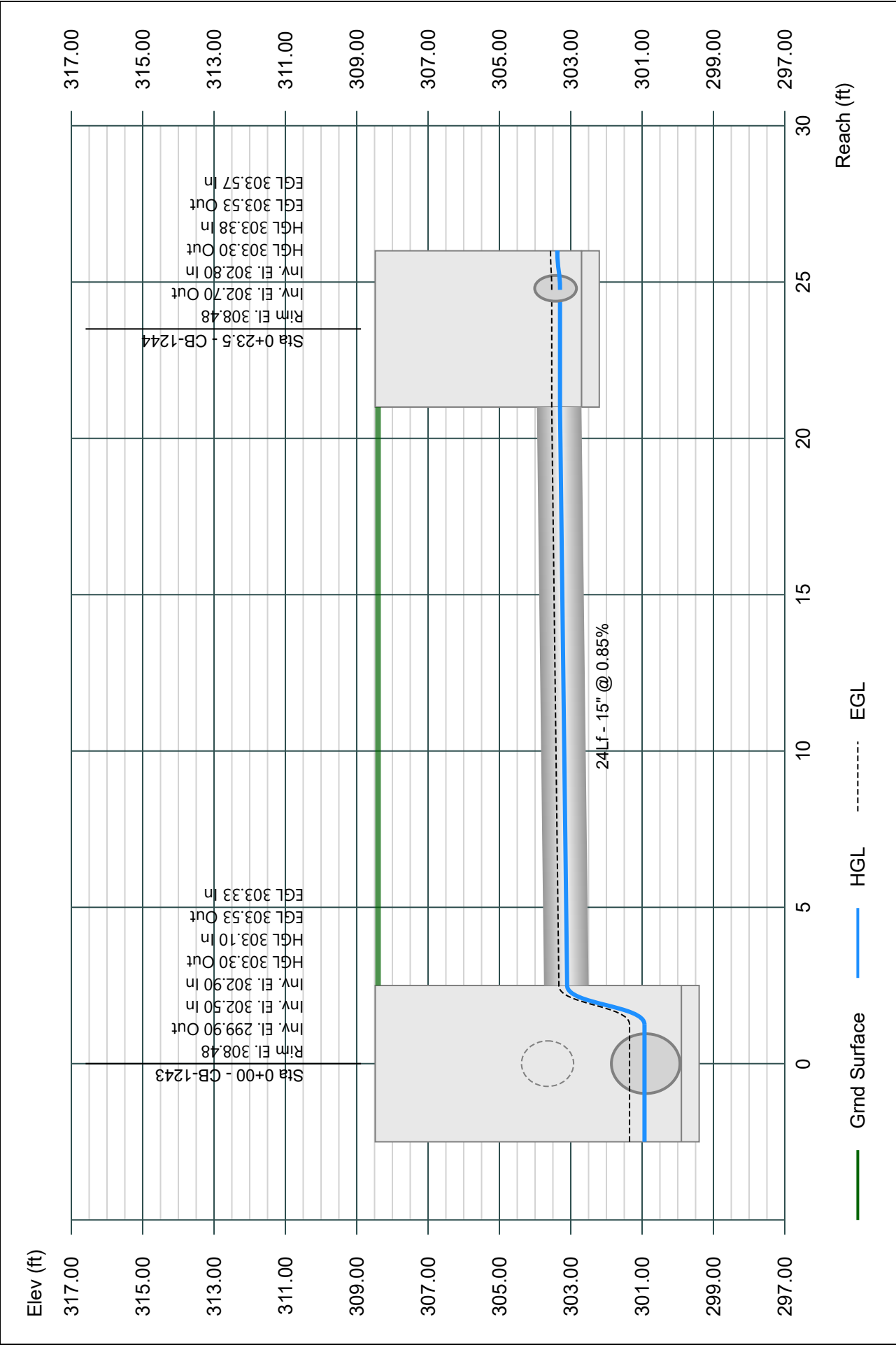
02-26-2024



Line 26 - 1243-1244

Stormwater Studio 2024 v 3.0.0.33

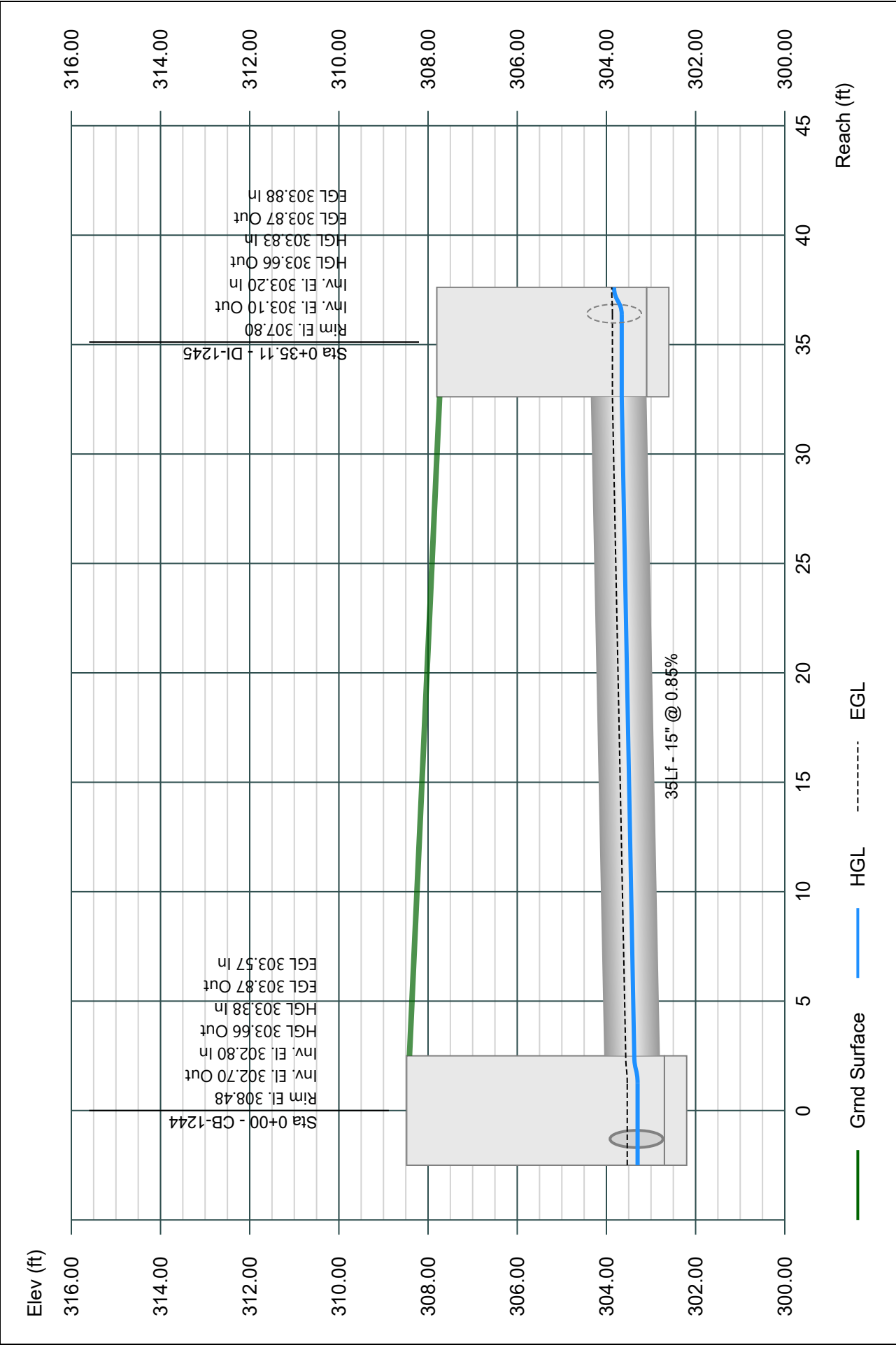
Project Name: SD-1200
02-26-2024



Line 27 - 1244-1245

Stormwater Studio 2024 v 3.0.0.33

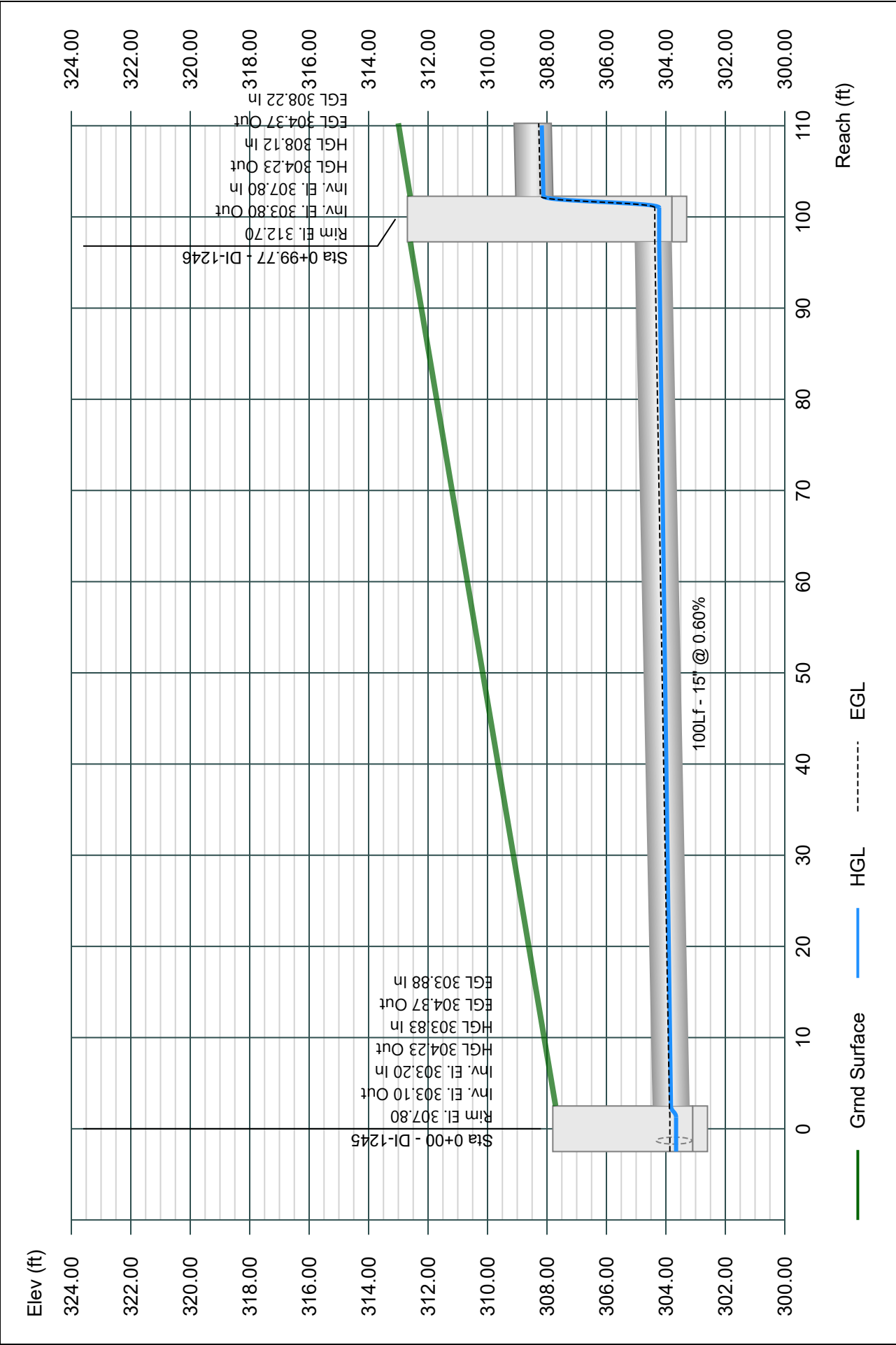
Project Name: SD-1200
02-26-2024



Line 28 - 1245-1246

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

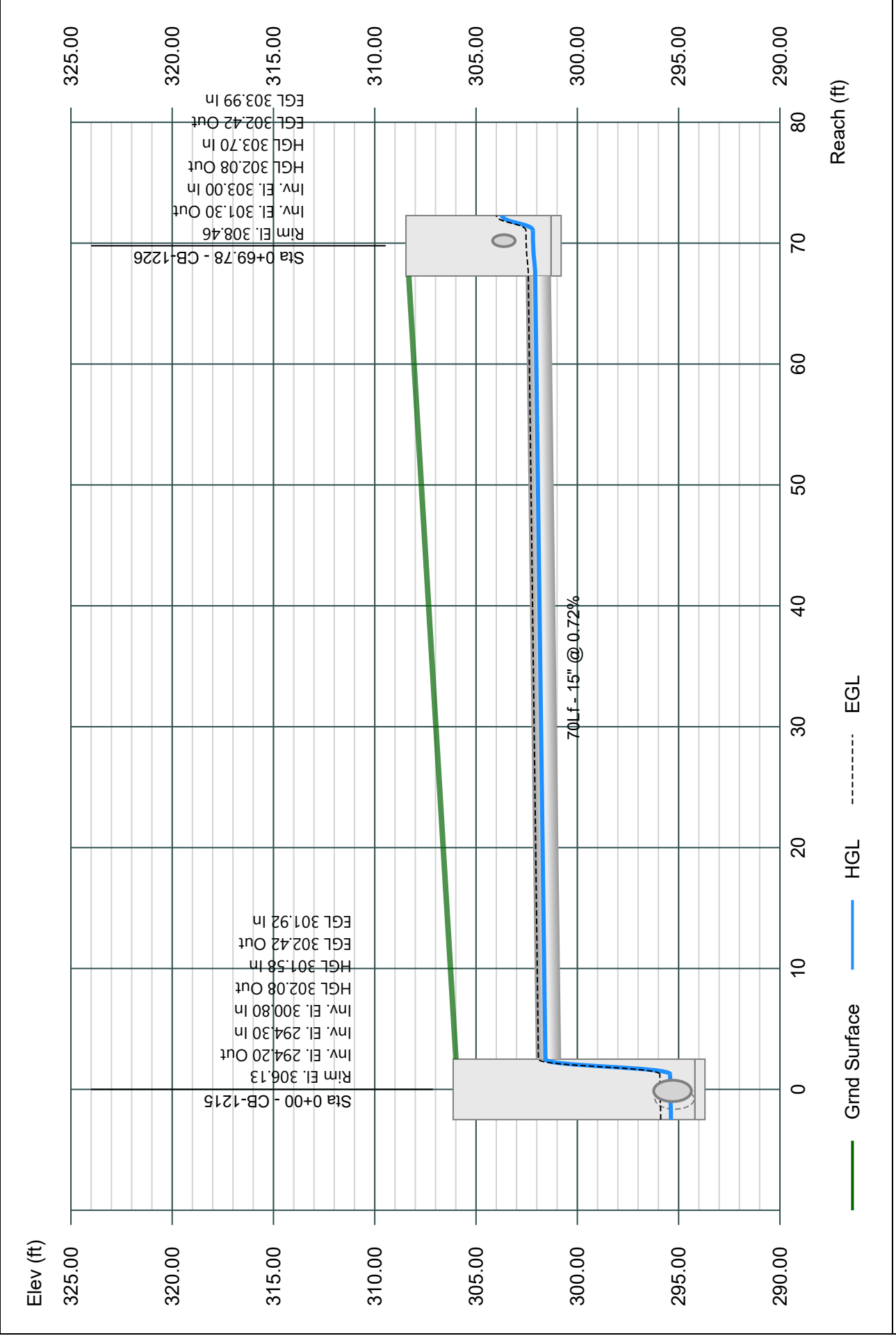


Line 29 - 1215-1226

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

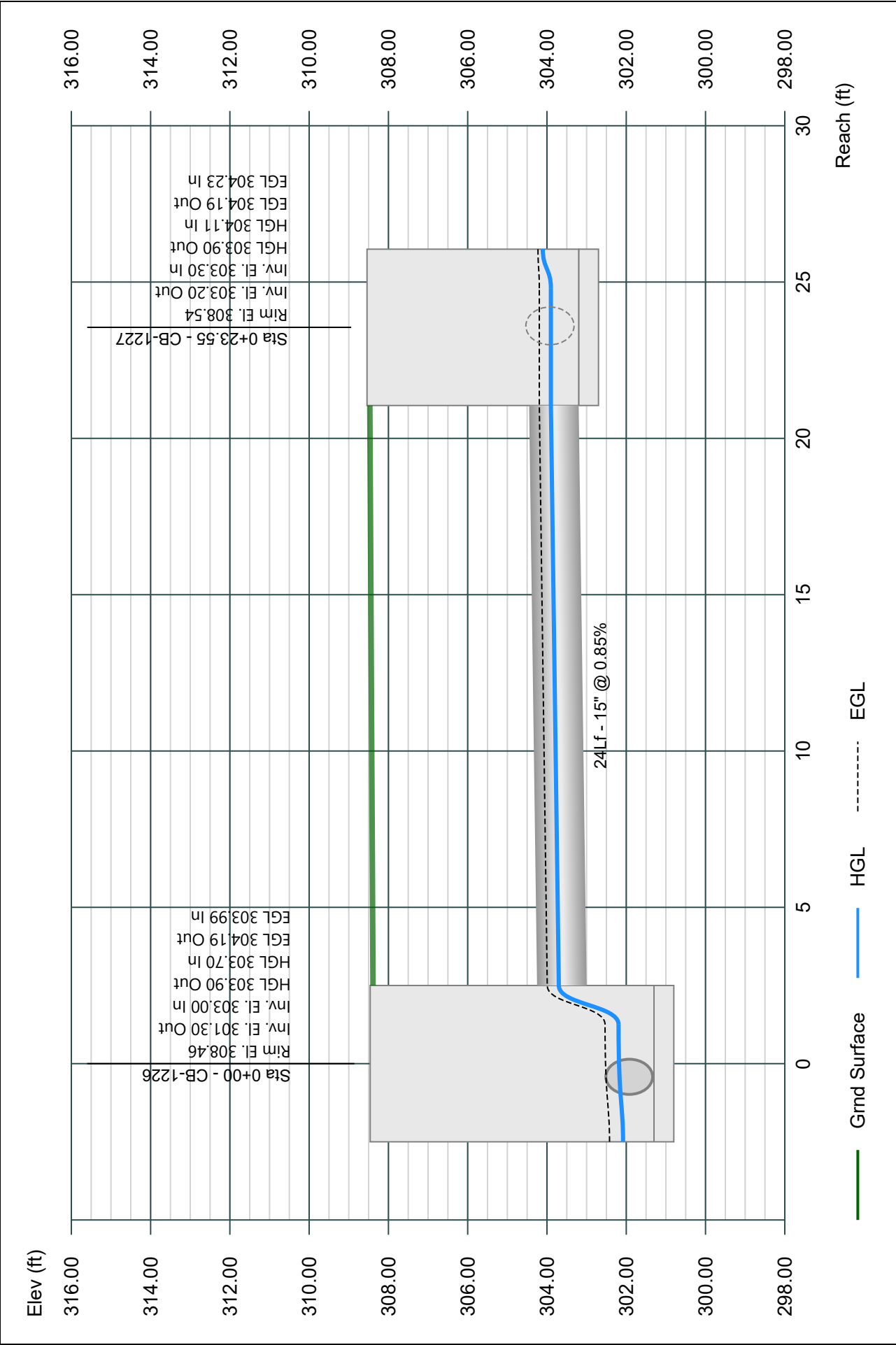


Line 30 - 1226-1227

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

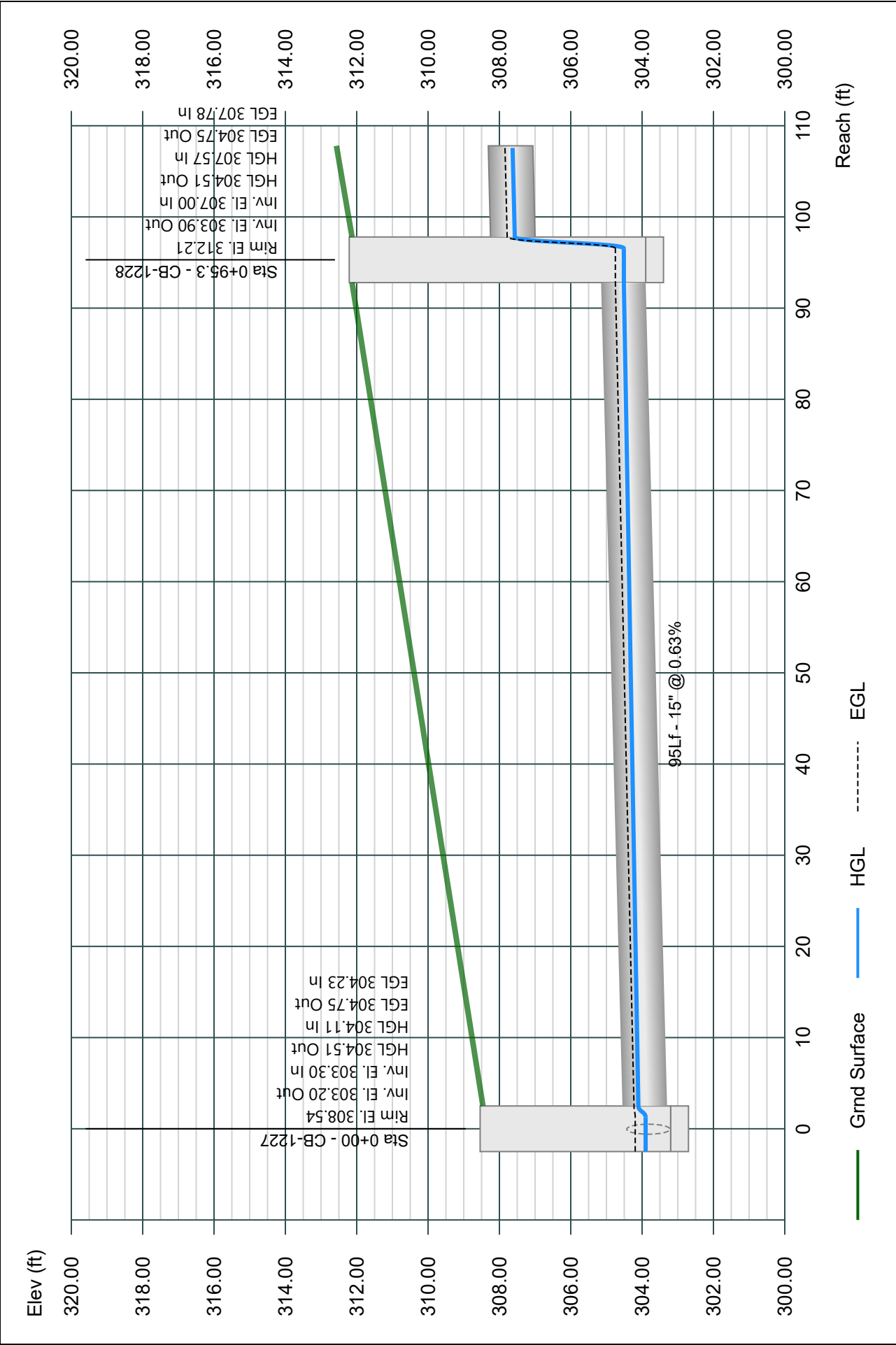
02-26-2024



Line 31 - 1227-1228

Project Name: SD-1200
02-26-2024

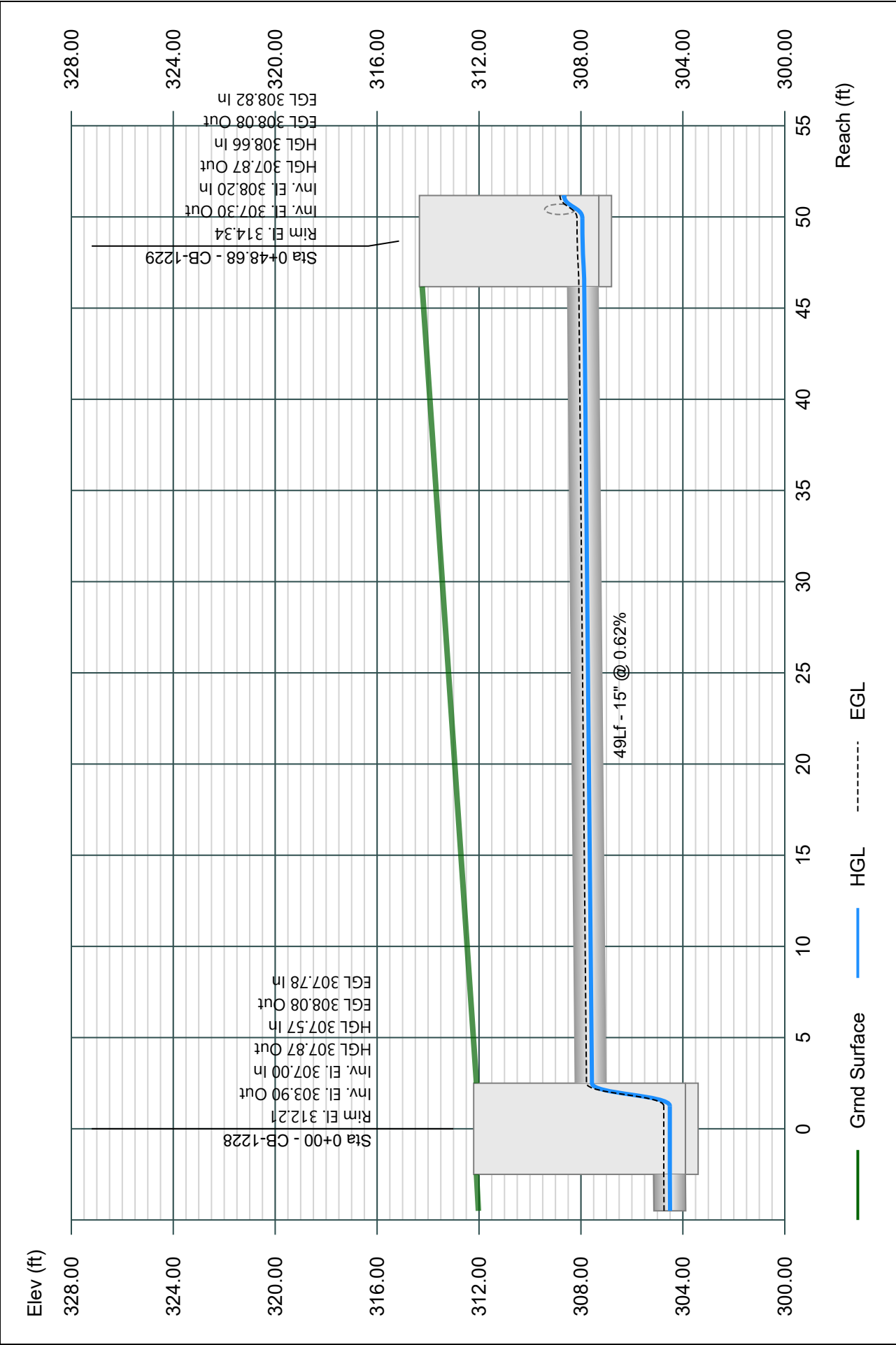
Stormwater Studio 2024 v 3.0.0.33



Line 32 - 1228-1229

Project Name: SD-1200
02-26-2024

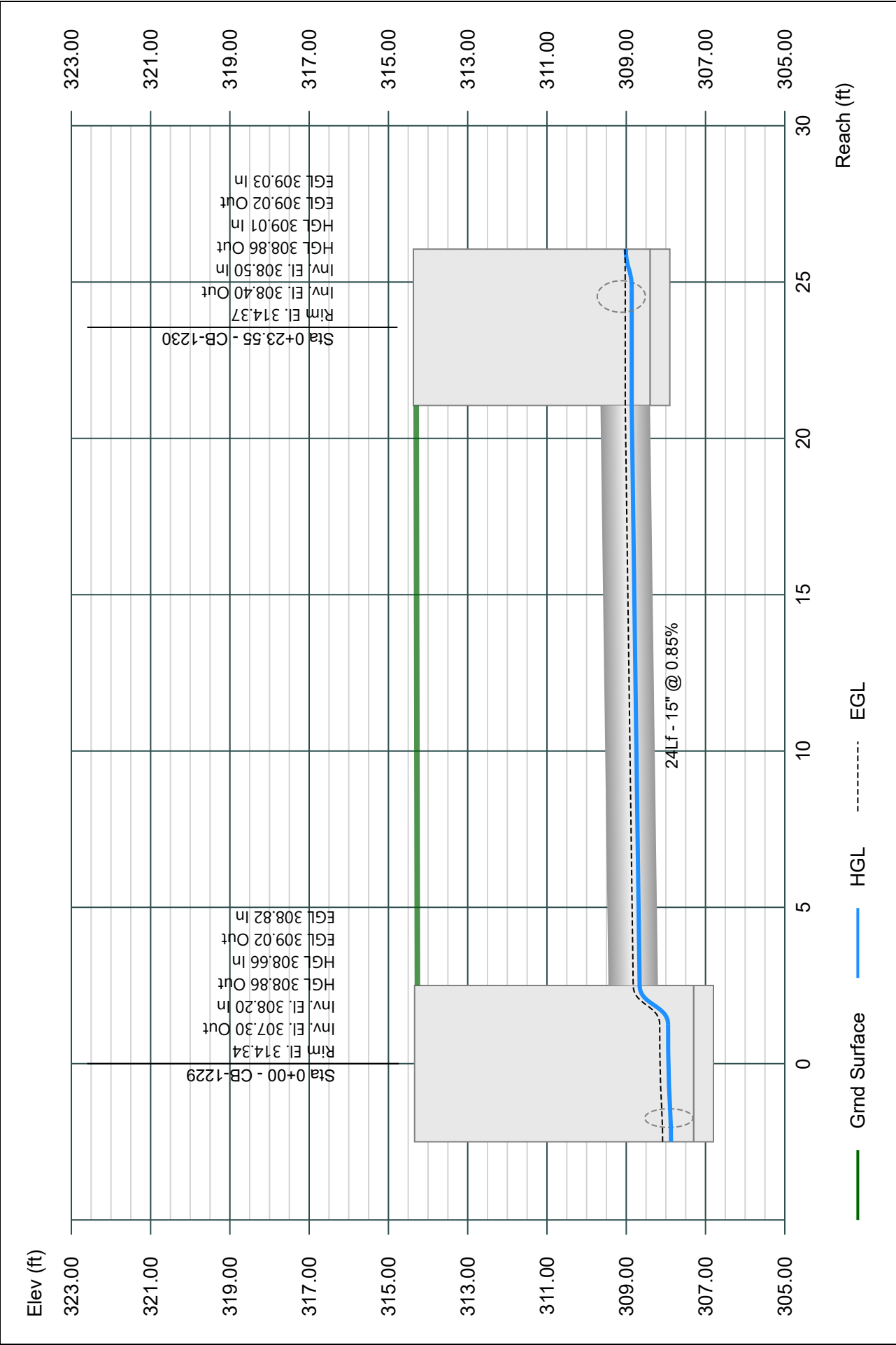
Stormwater Studio 2024 v 3.0.0.33



Line 33 - 1229-1230

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

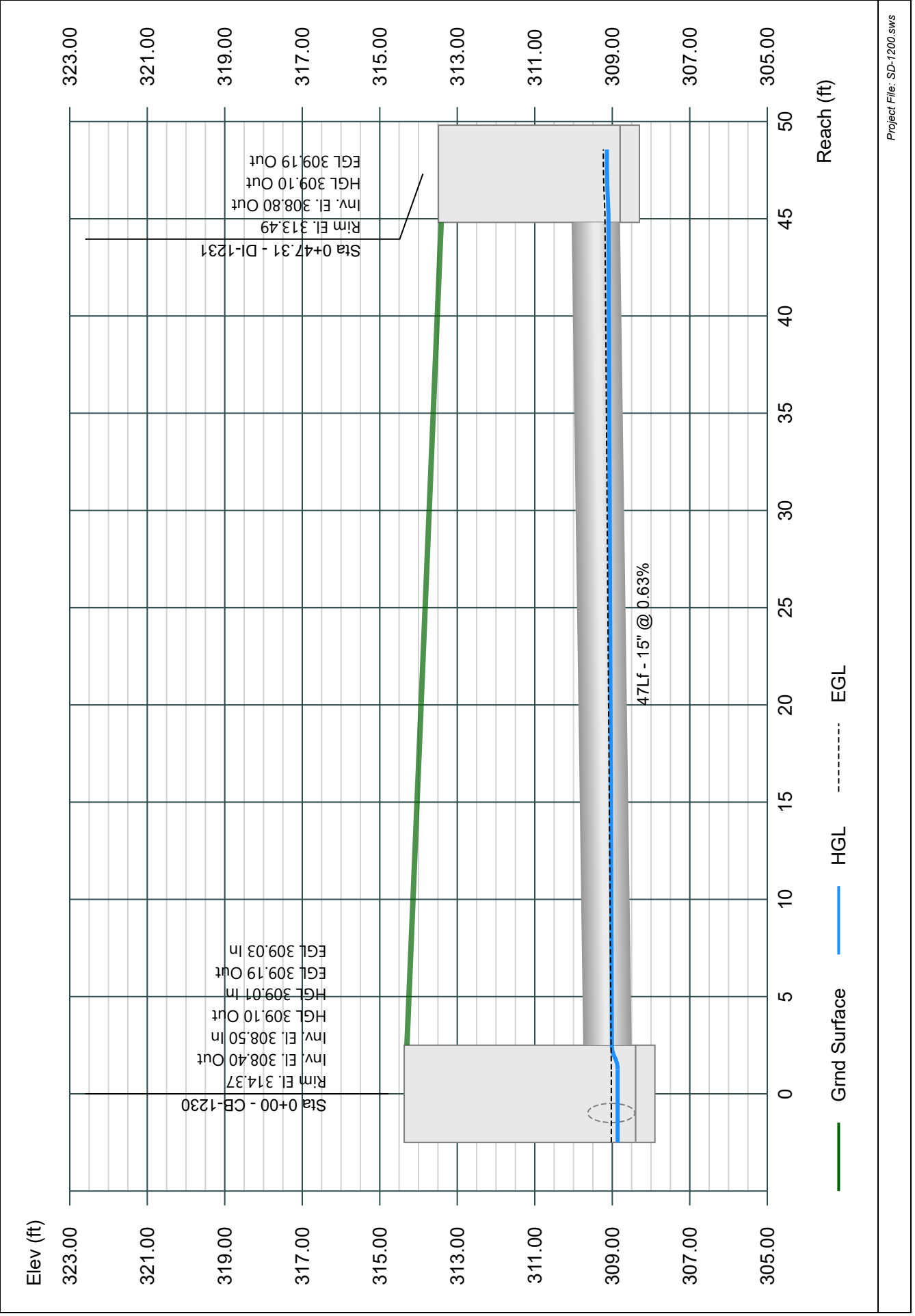


Line 34 - 1230-1231

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

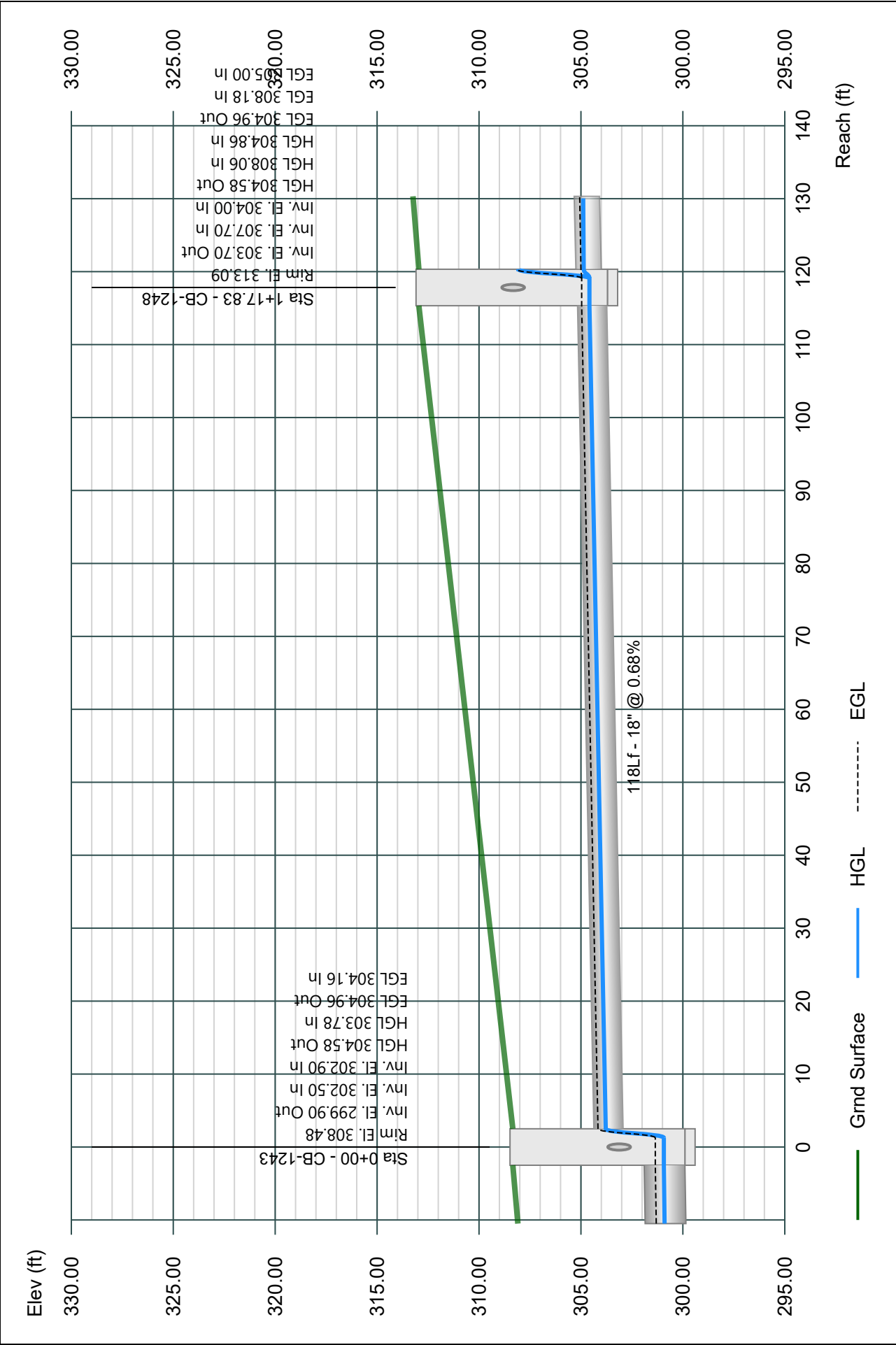
02-26-2024



Line 35 - 1243-1248

Stormwater Studio 2024 v 3.0.0.33

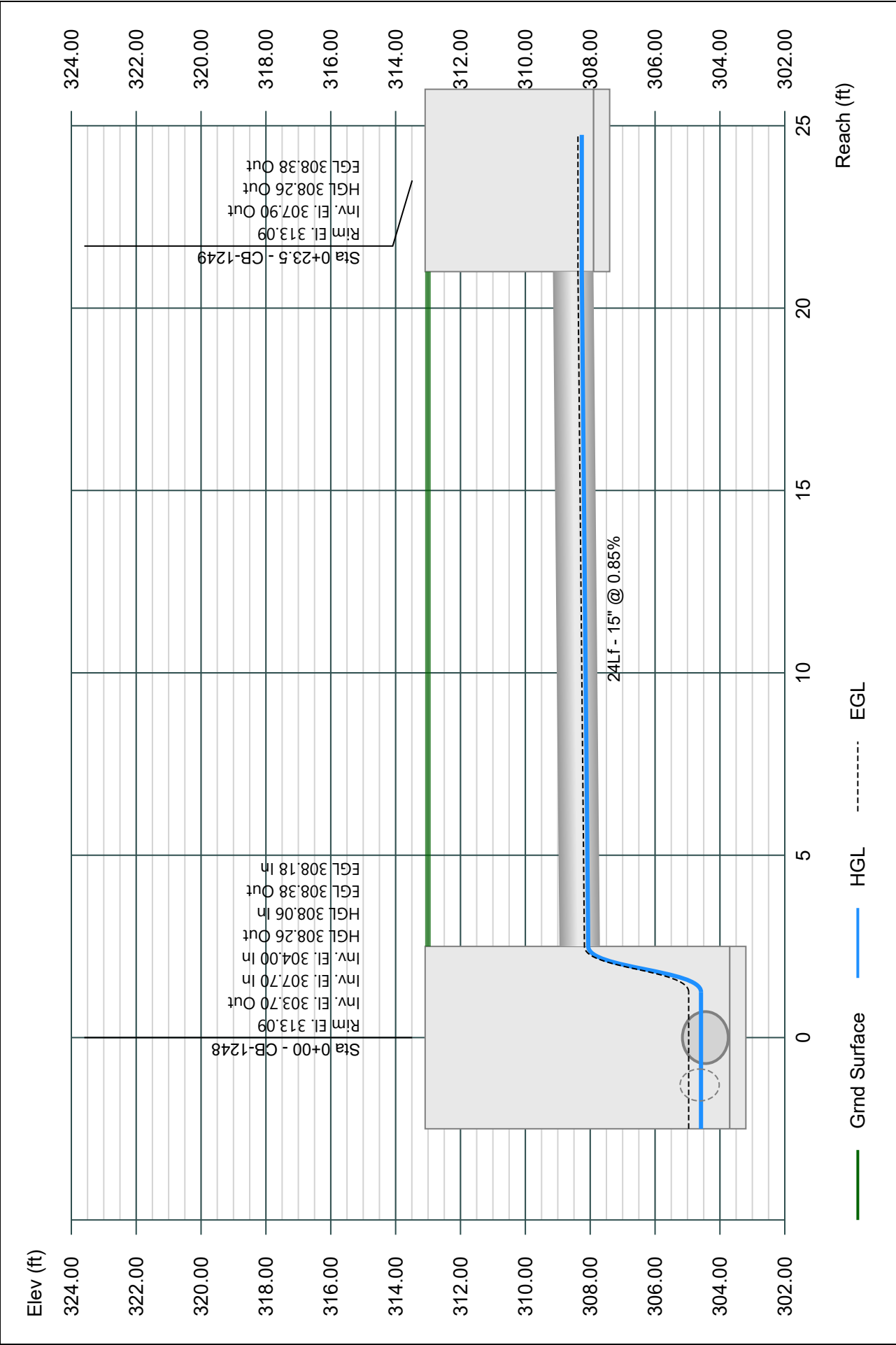
Project Name: SD-1200
02-26-2024



Line 36 - 1248-1249

Stormwater Studio 2024 v 3.0.0.33

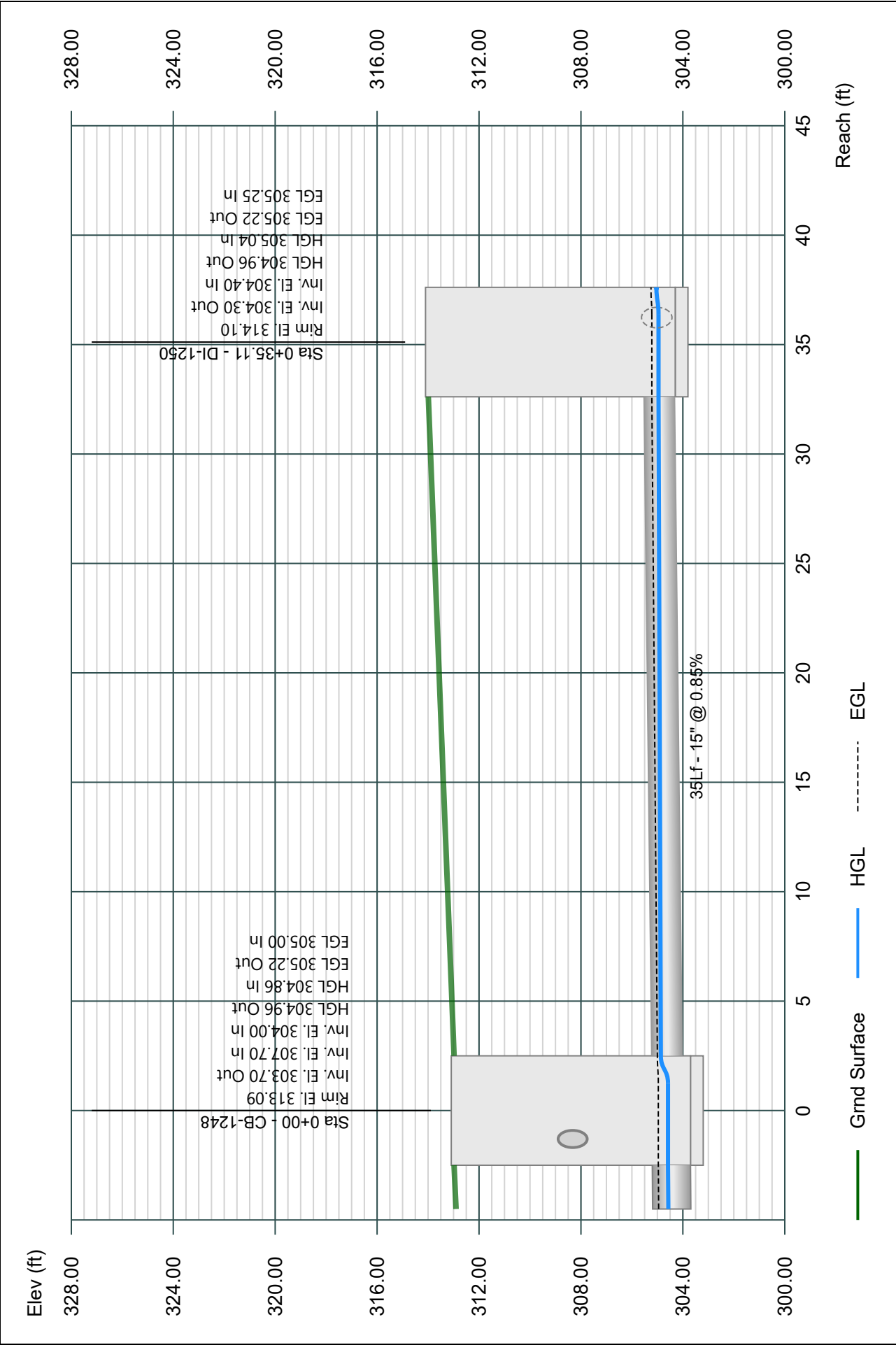
Project Name: SD-1200
02-26-2024



Line 37 - 1248-1250

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

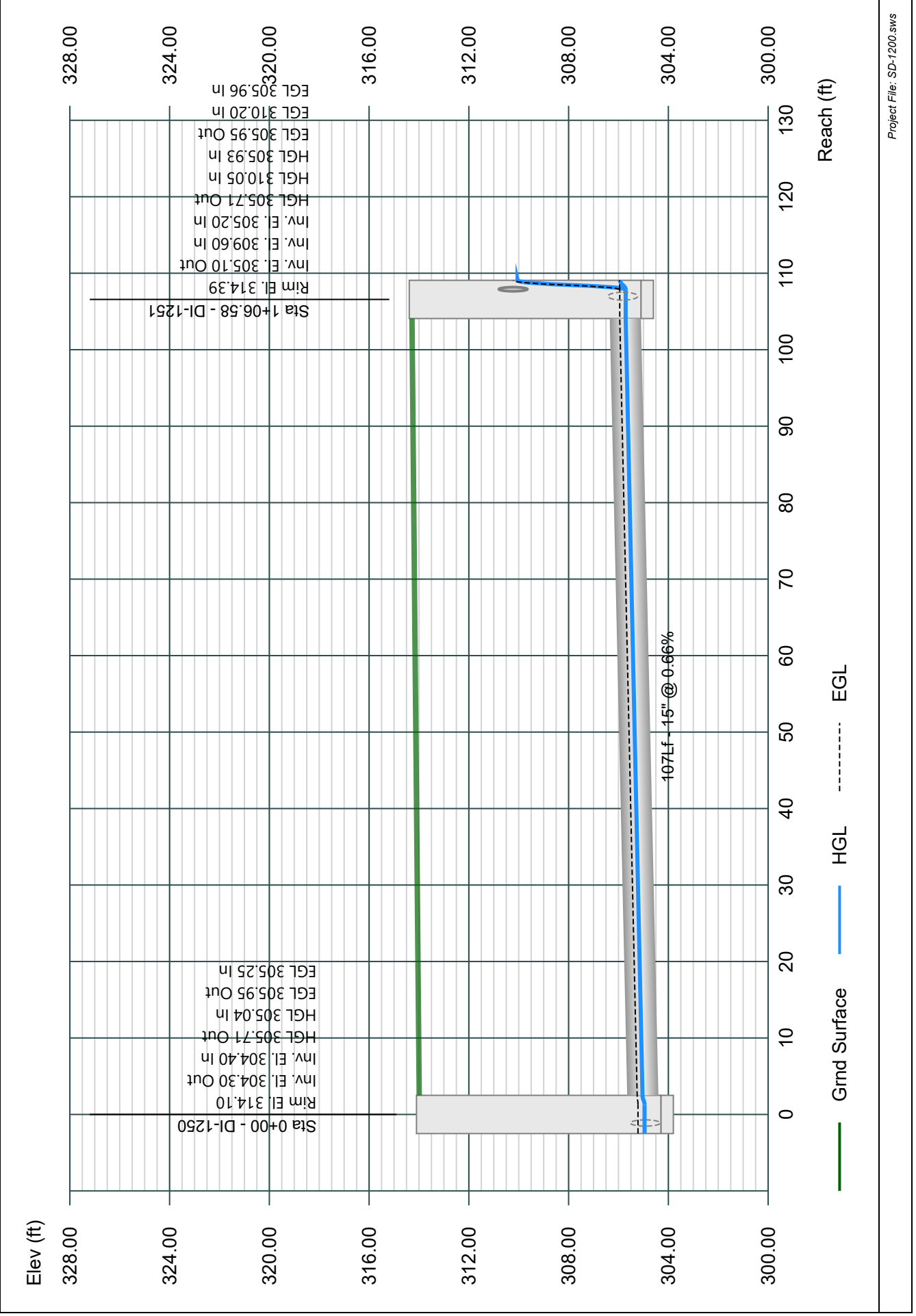


Line 38 - 1250-1251

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

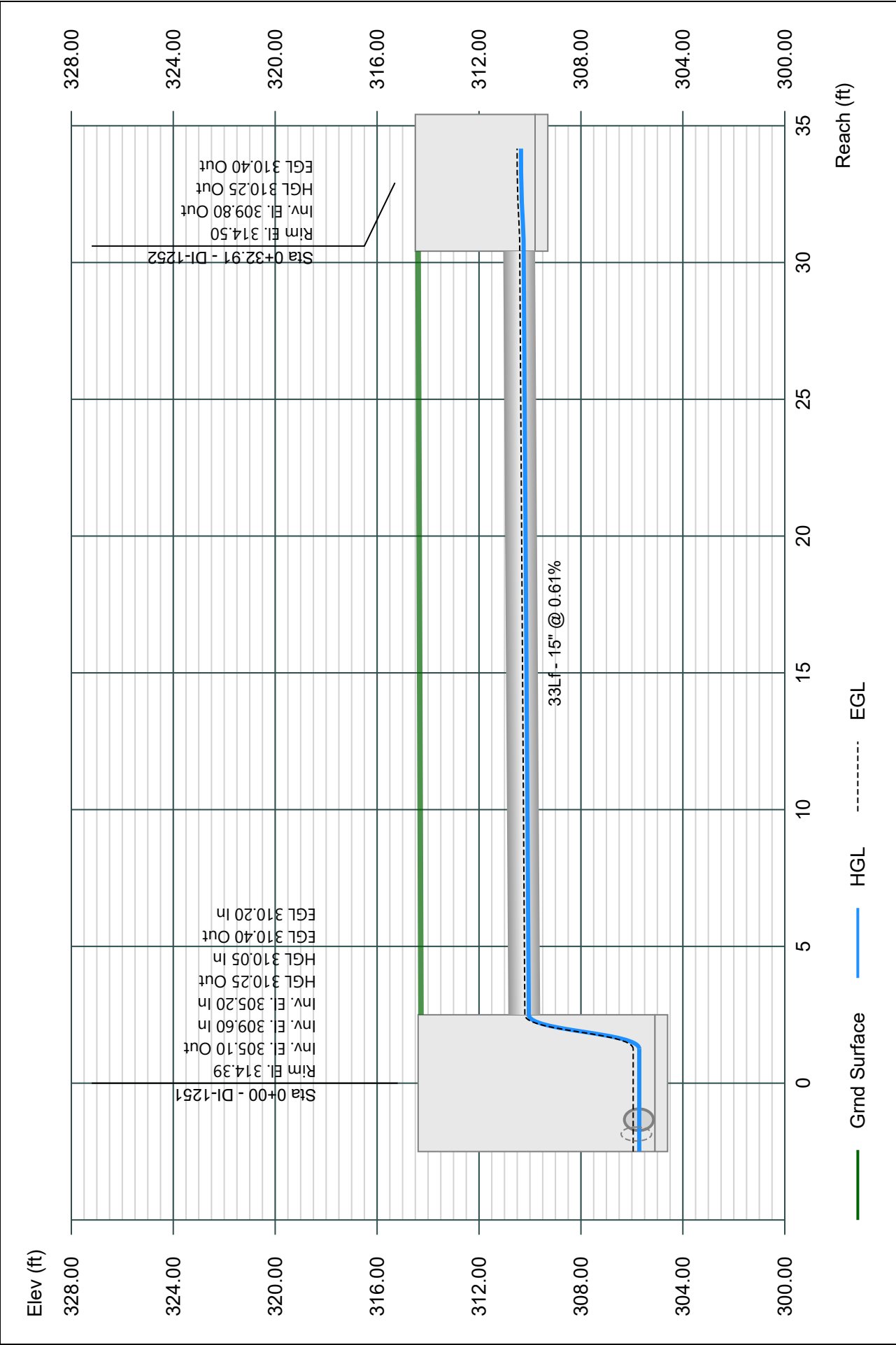
02-26-2024



Line 39 - 1251-1252

Stormwater Studio 2024 v 3.0.0.33

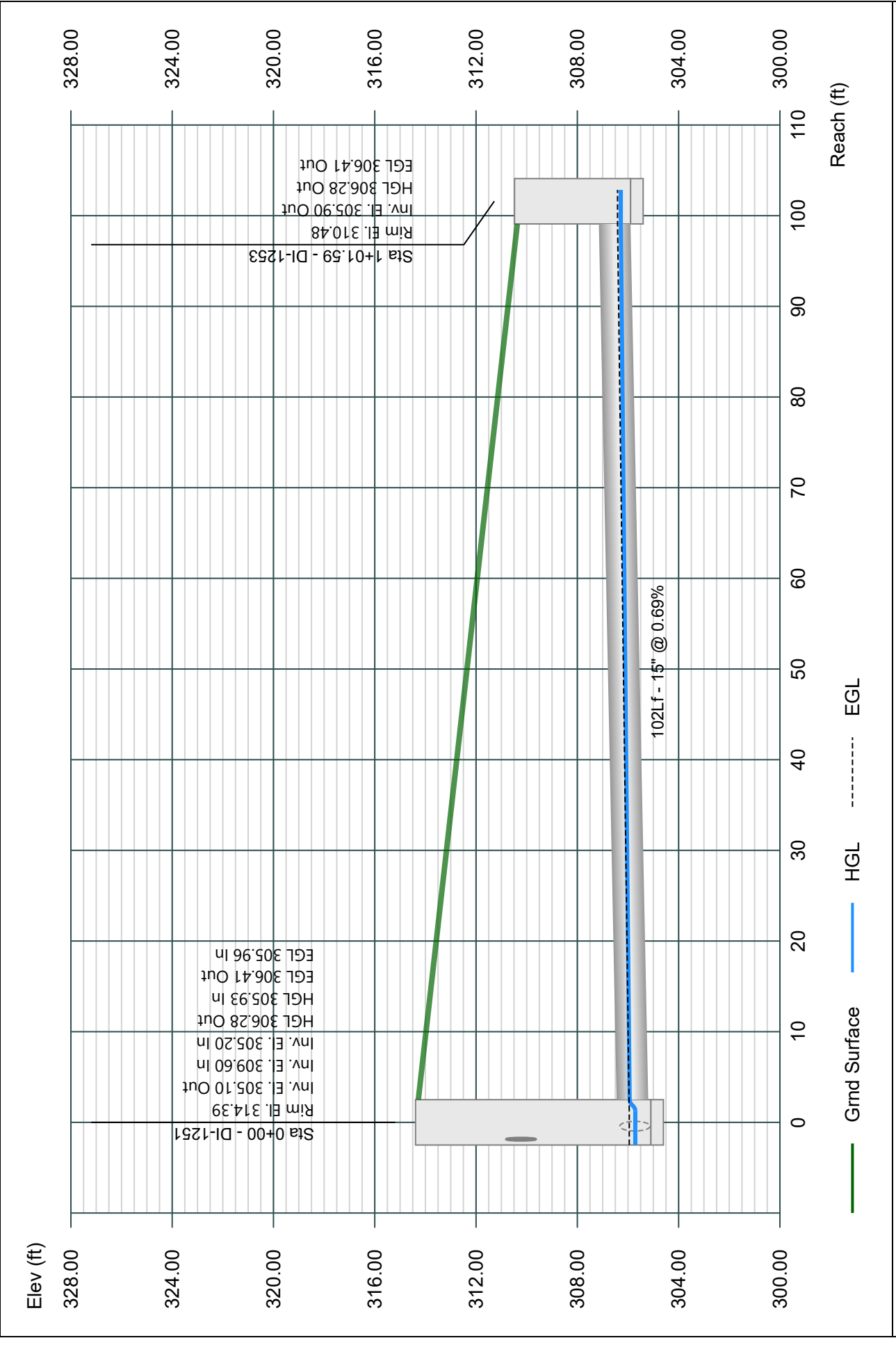
Project Name: SD-1200
02-26-2024



Line 40 - 1251-1253

Project Name: SD-1200
02-26-2024

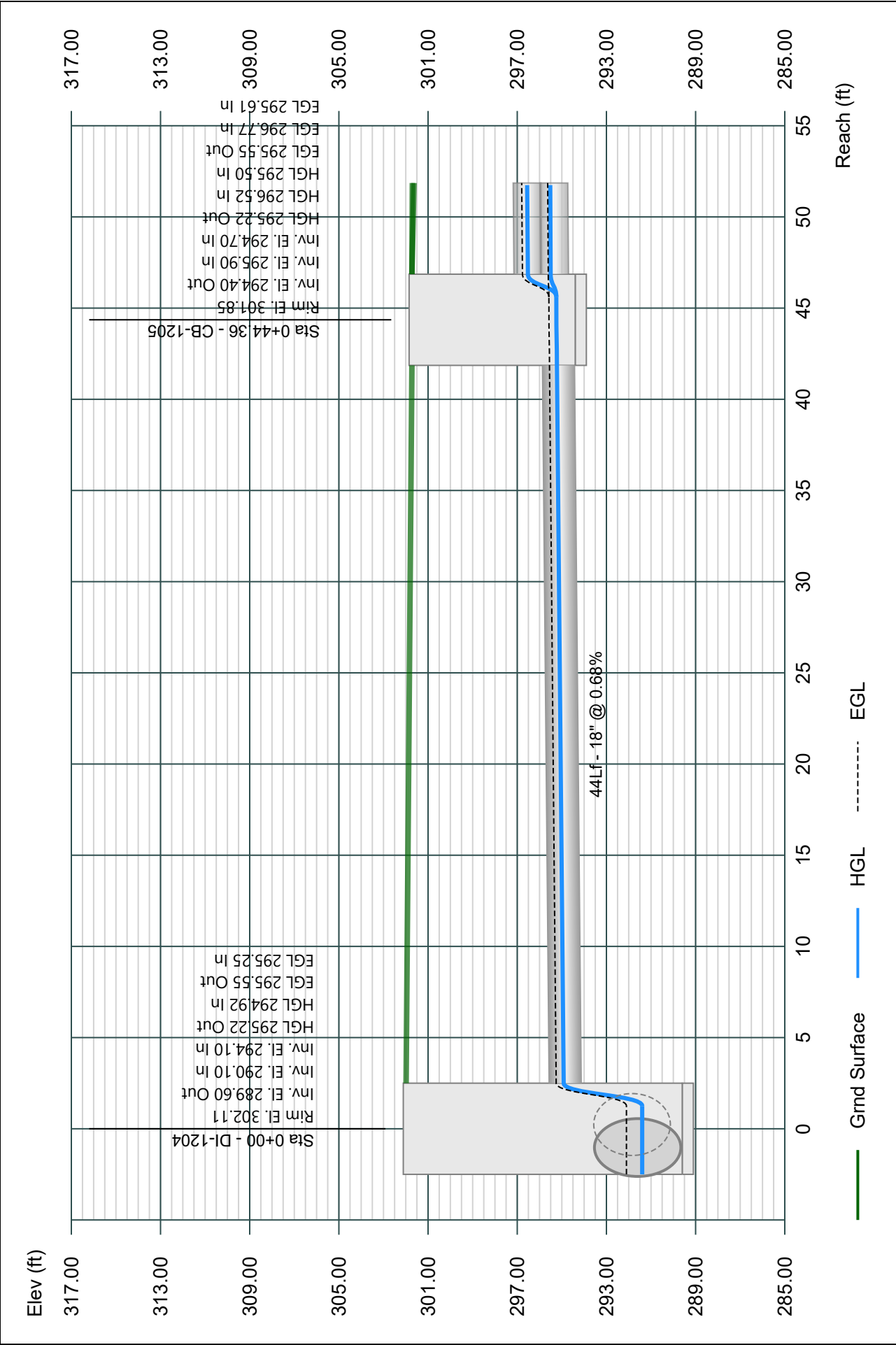
Stormwater Studio 2024 v 3.0.0.33



Line 41 - 1204-1205

Stormwater Studio 2024 v 3.0.0.33

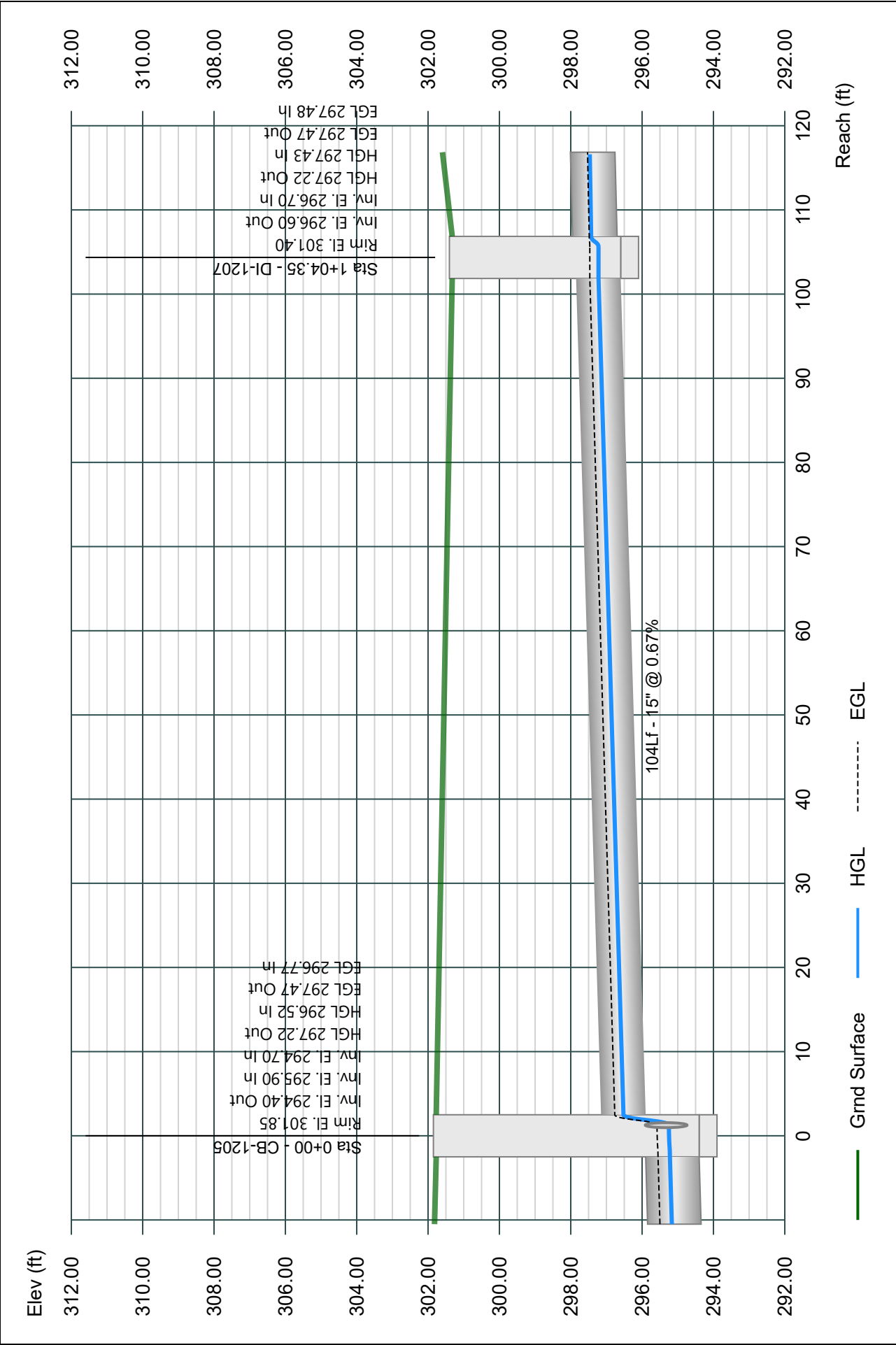
Project Name: SD-1200
02-26-2024



Line 42 - 1205-1207

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

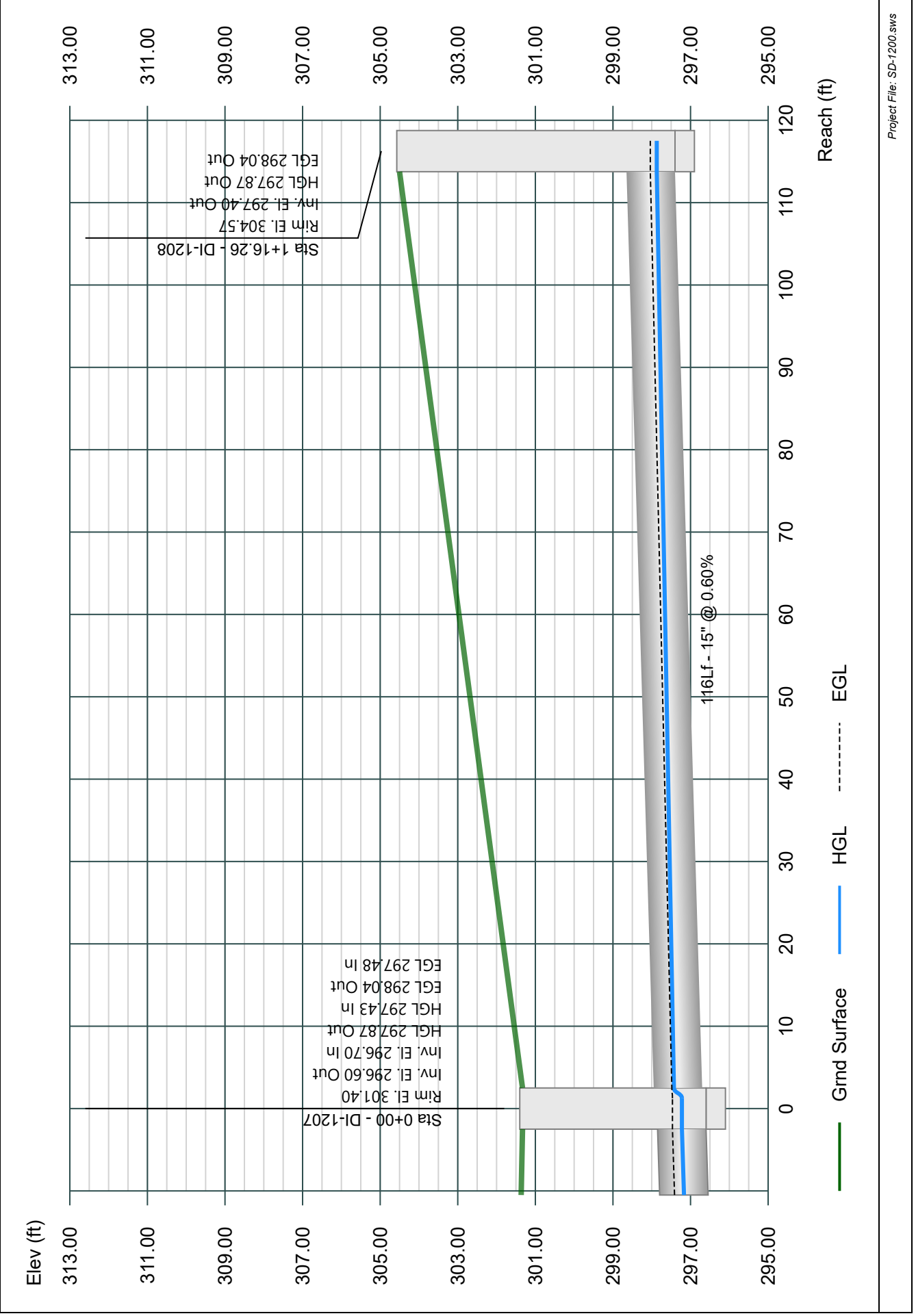


Line 43 - 1207-1208

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

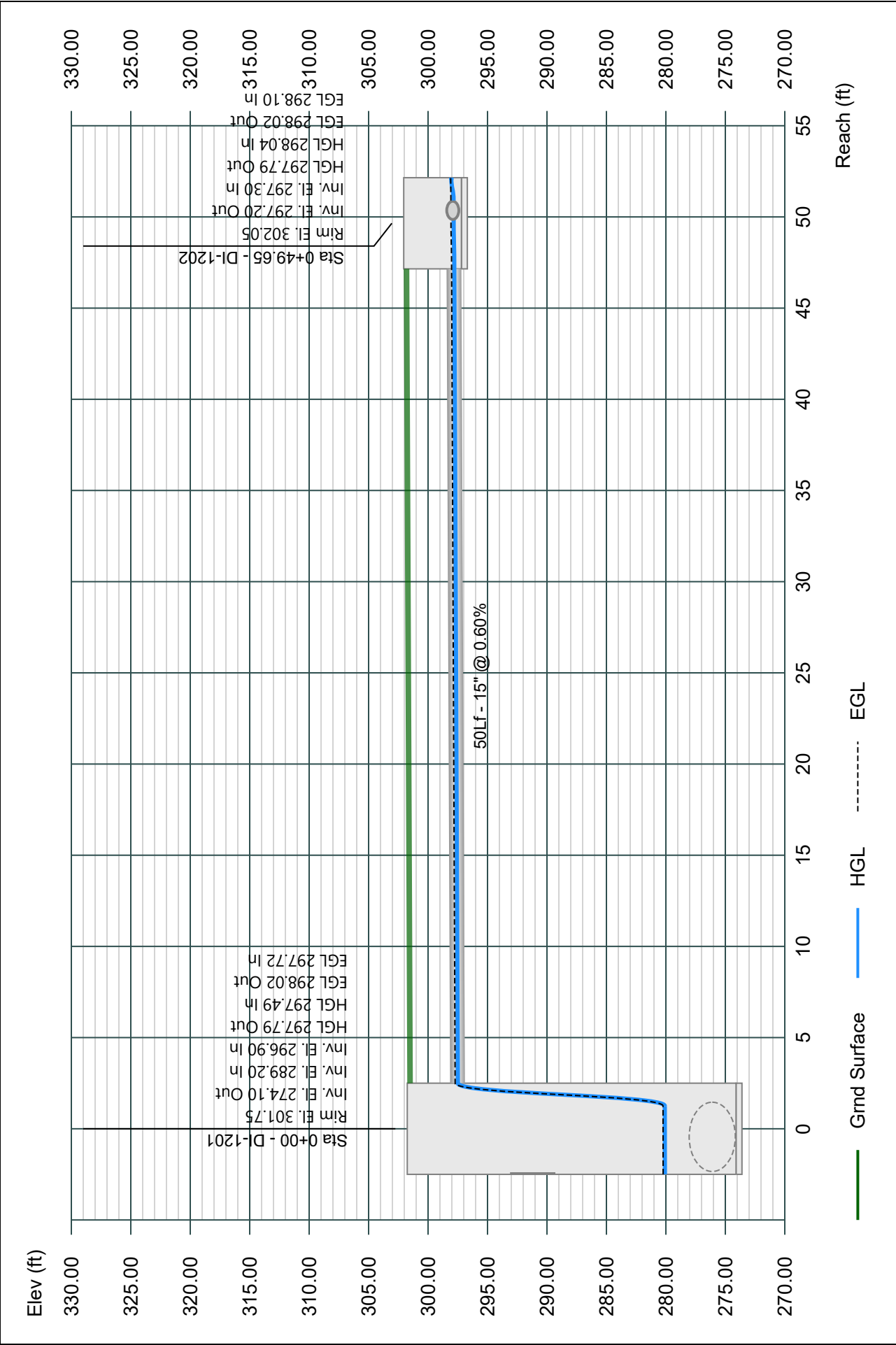
02-26-2024



Line 44 - 1201-1202

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

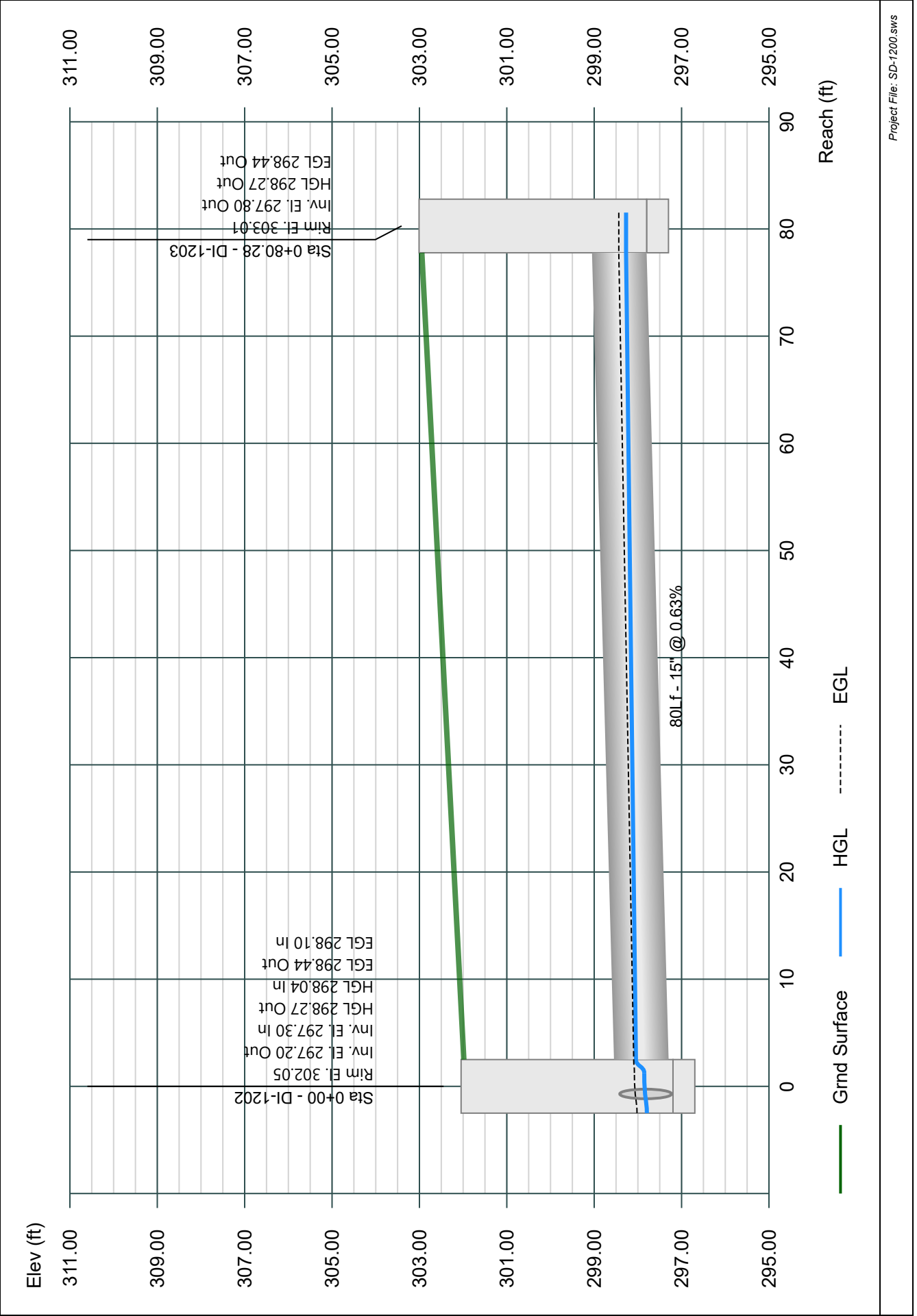


Line 45 - 1202-1203

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

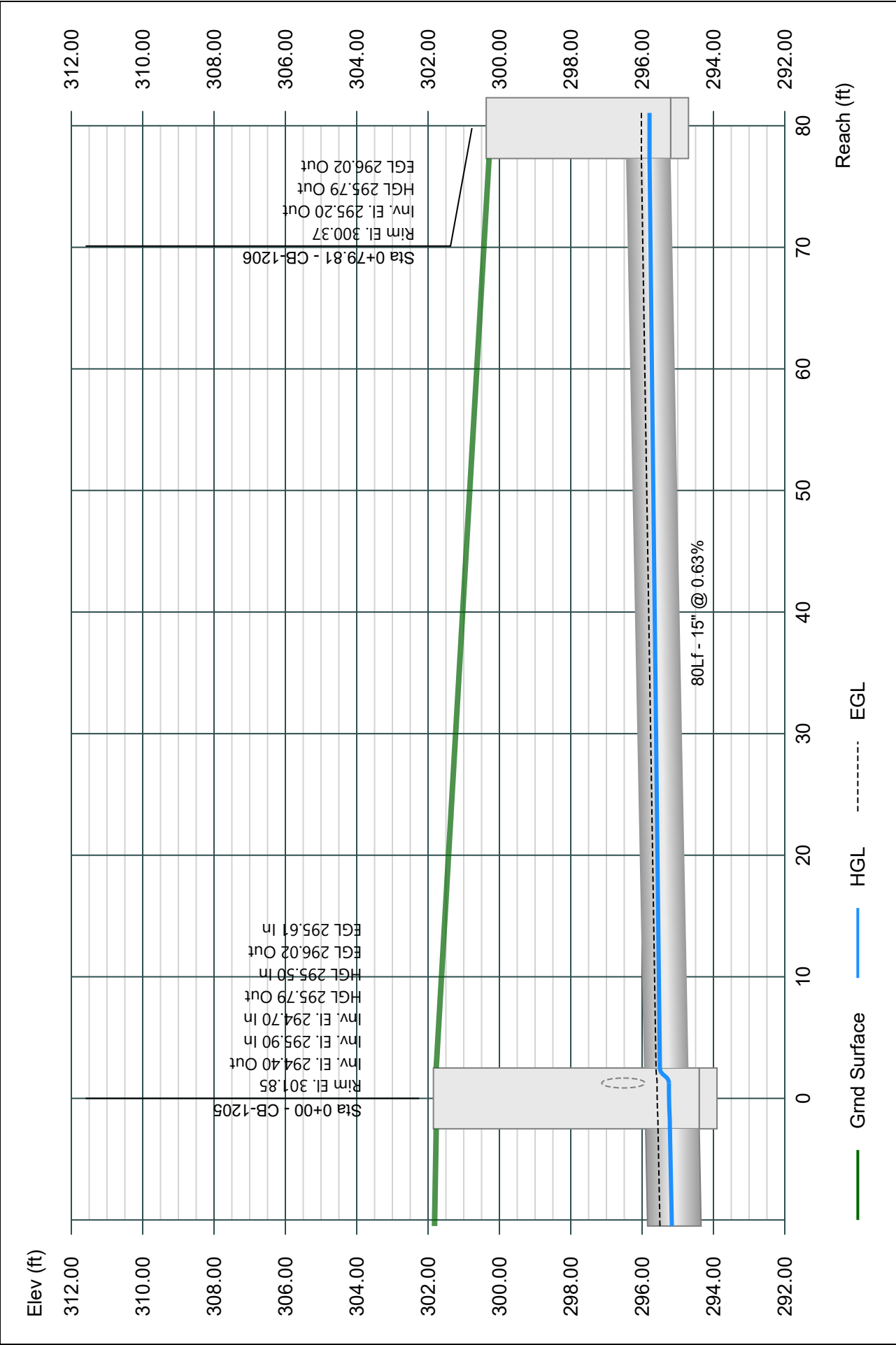
02-26-2024



Line 46 - 1205-1206

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

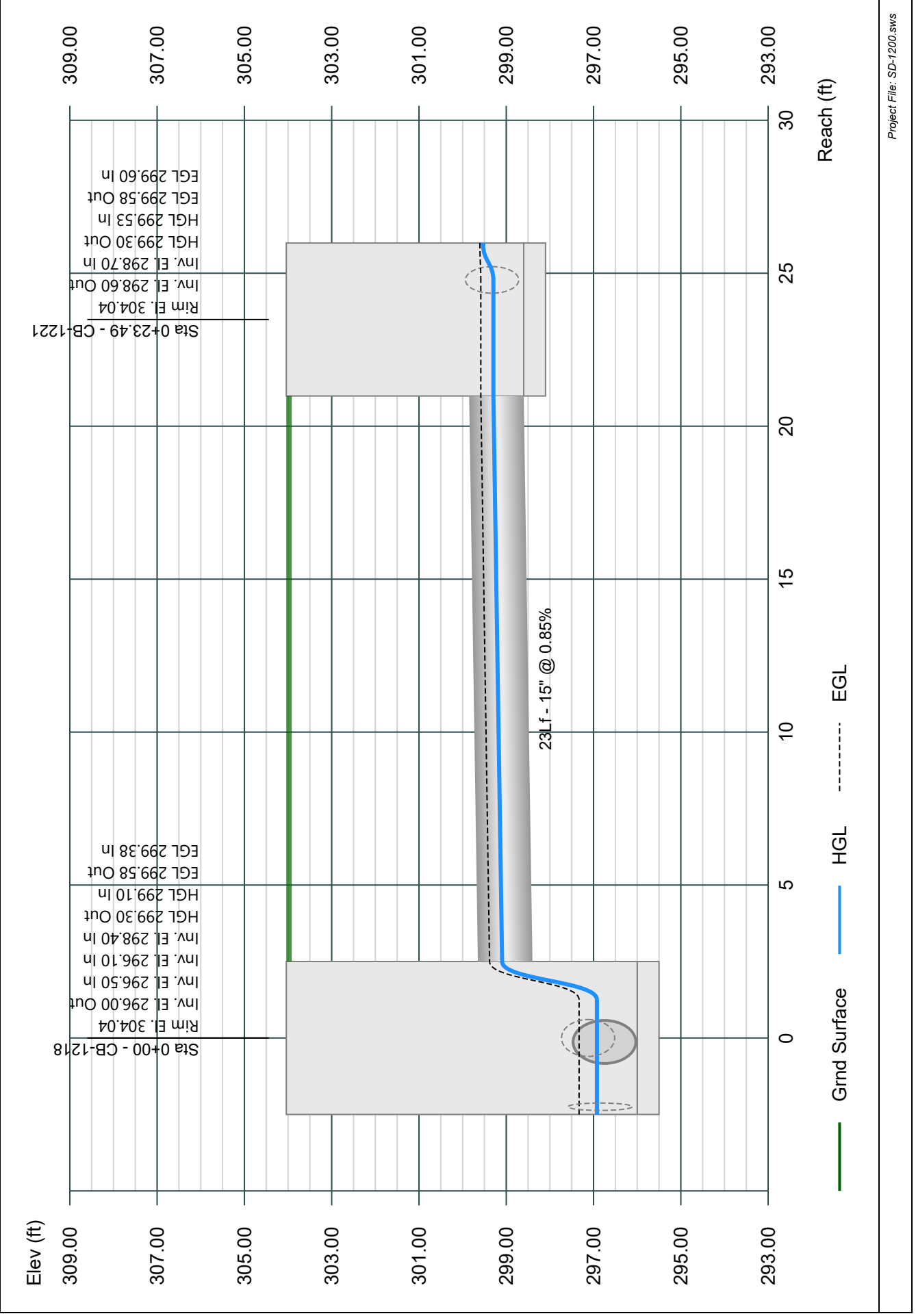


Line 47 - 1218-1221

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

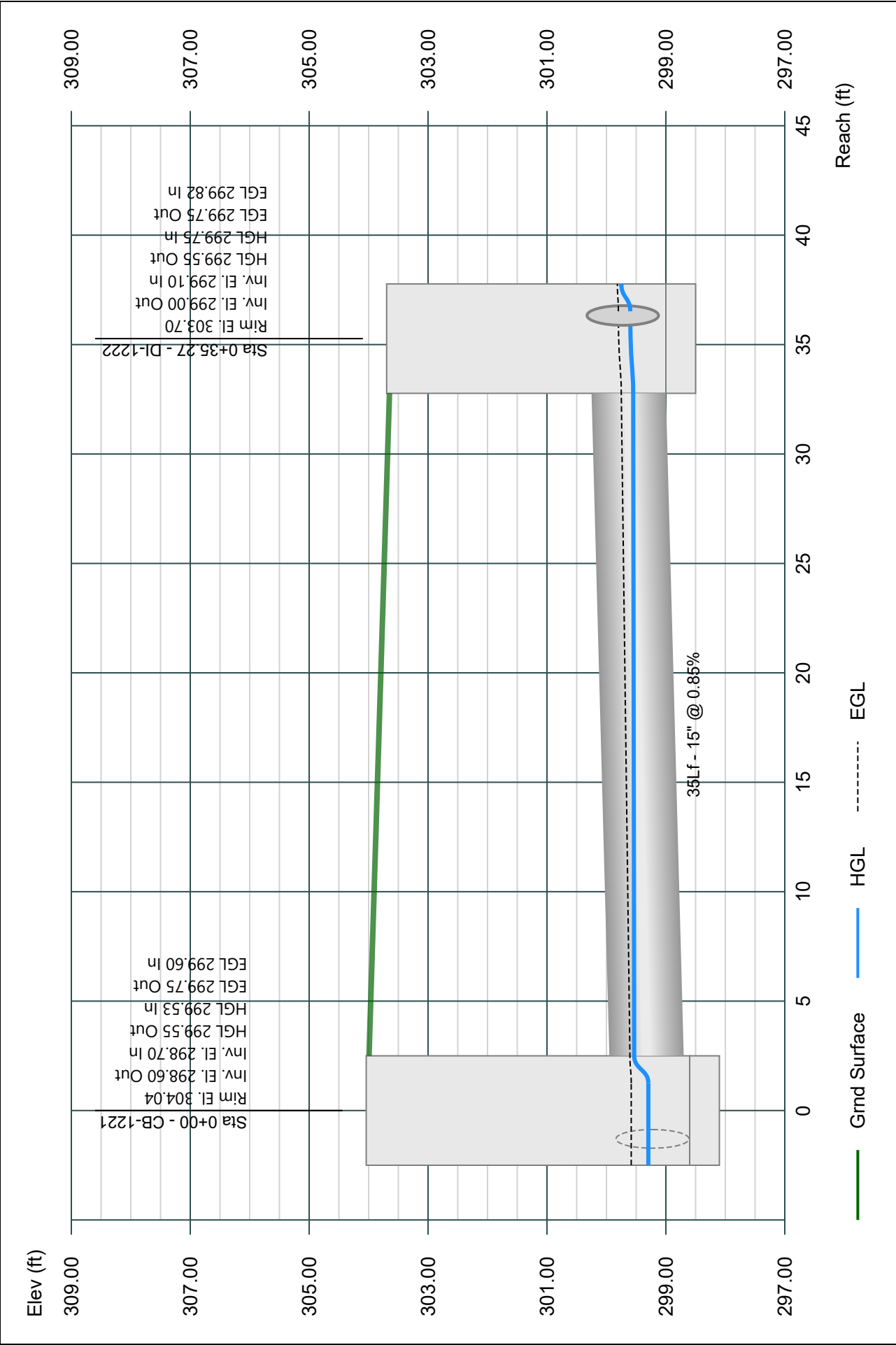
02-26-2024



Line 48 - 1221-1222

Stormwater Studio 2024 v 3.0.0.33

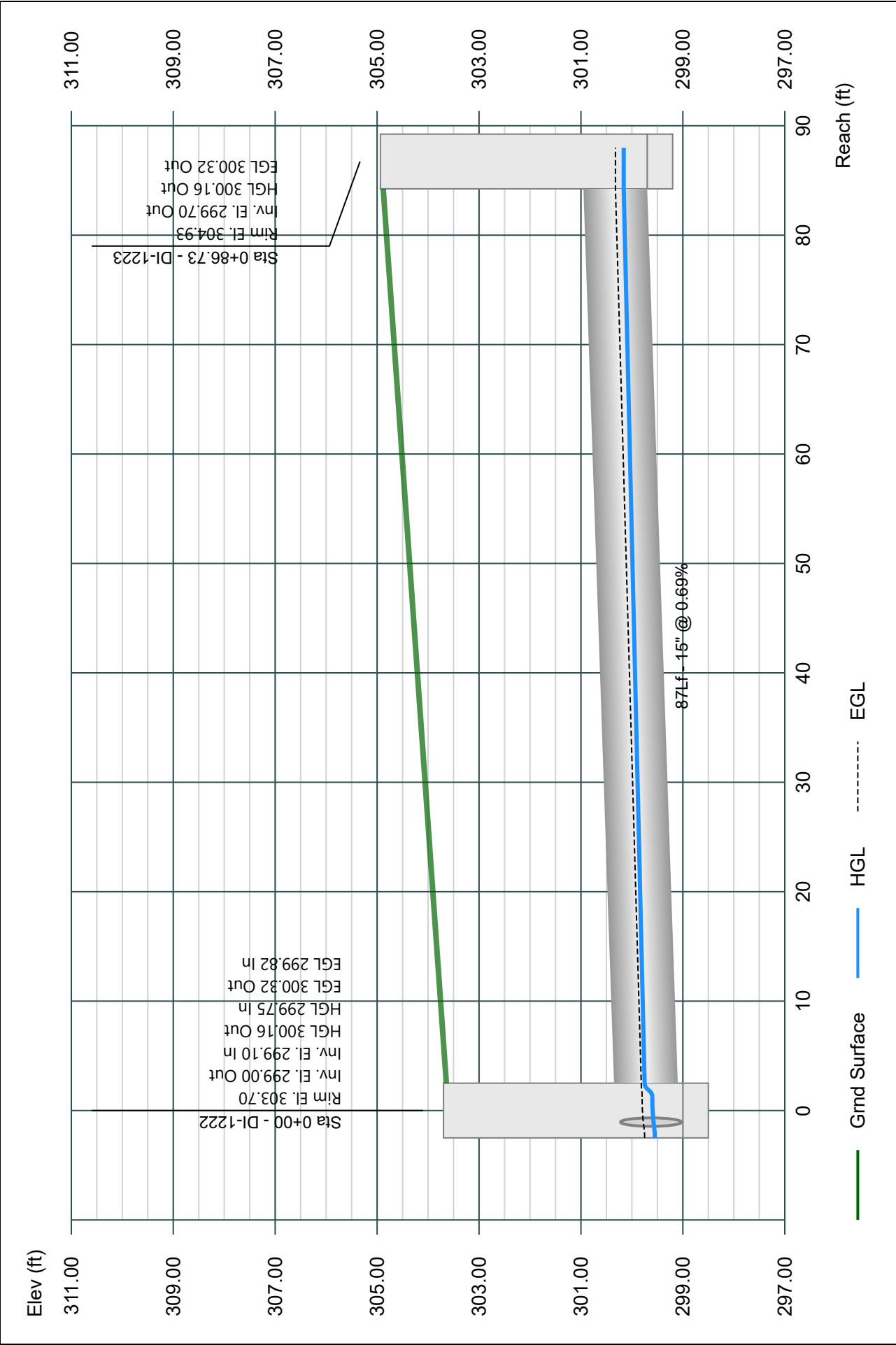
Project Name: SD-1200
02-26-2024



Line 49 - 1222-1223

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

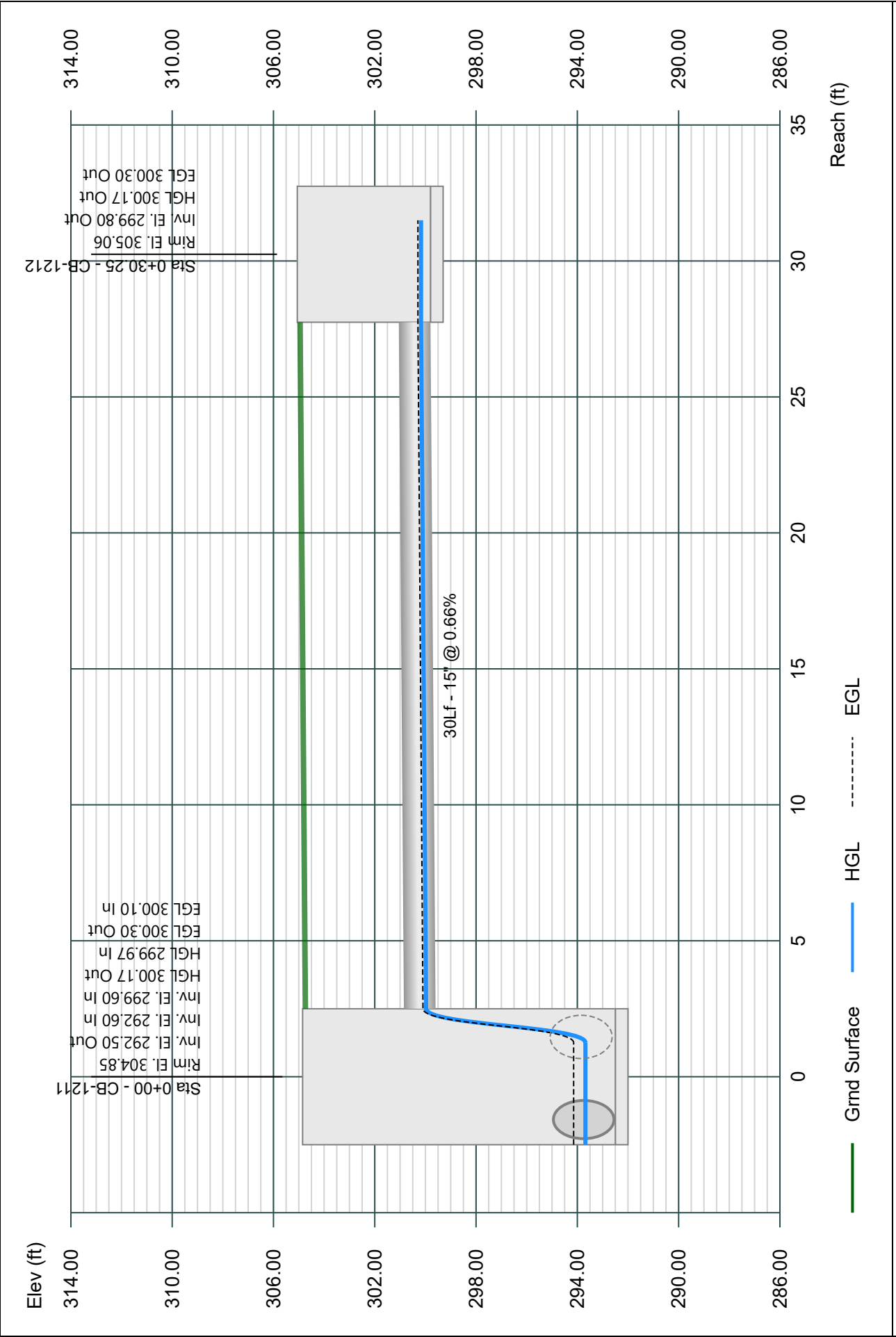


Line 50 - 1211-1212

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

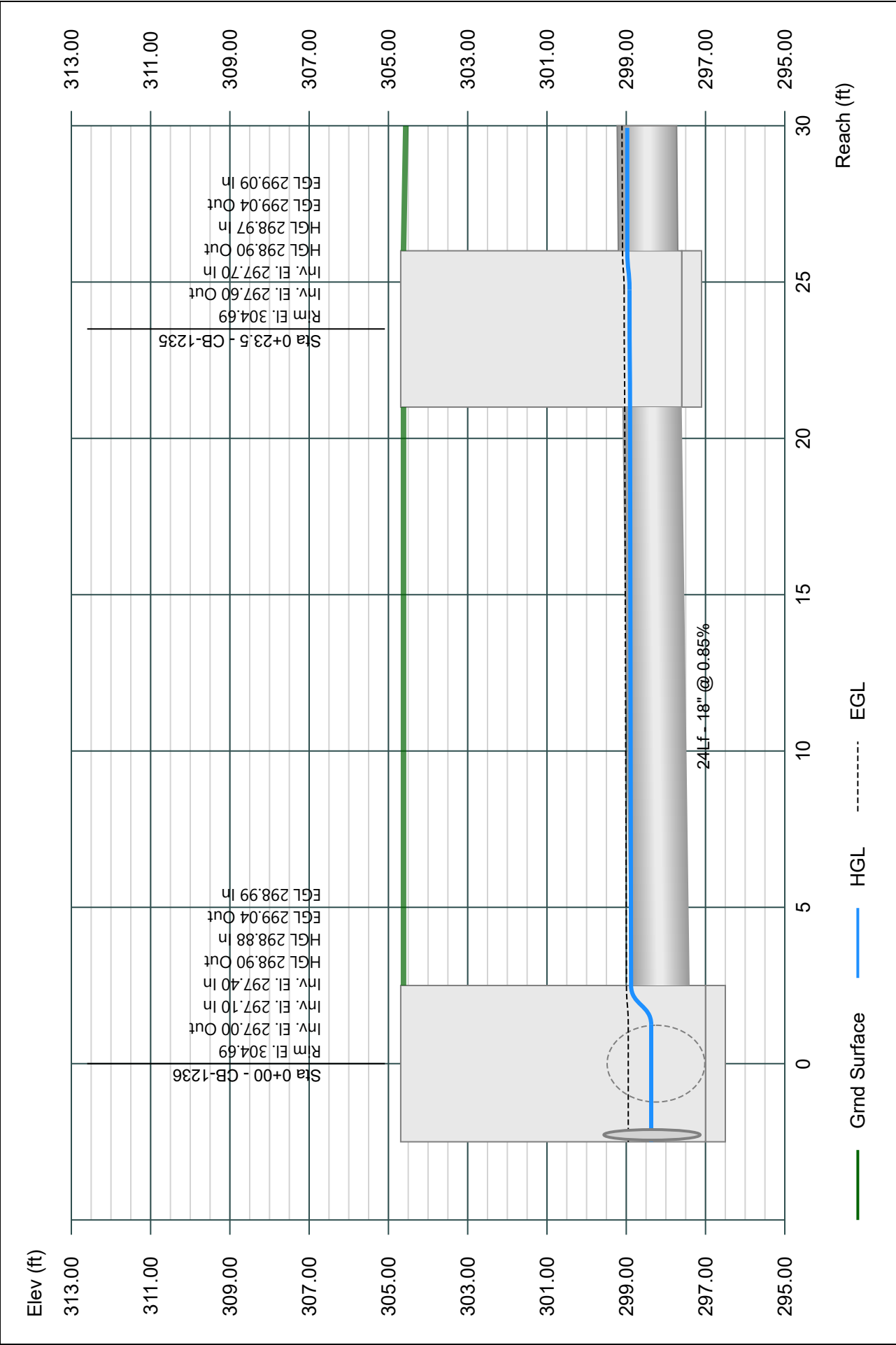
02-26-2024



Line 51 - 1236-1235

Stormwater Studio 2024 v 3.0.0.33

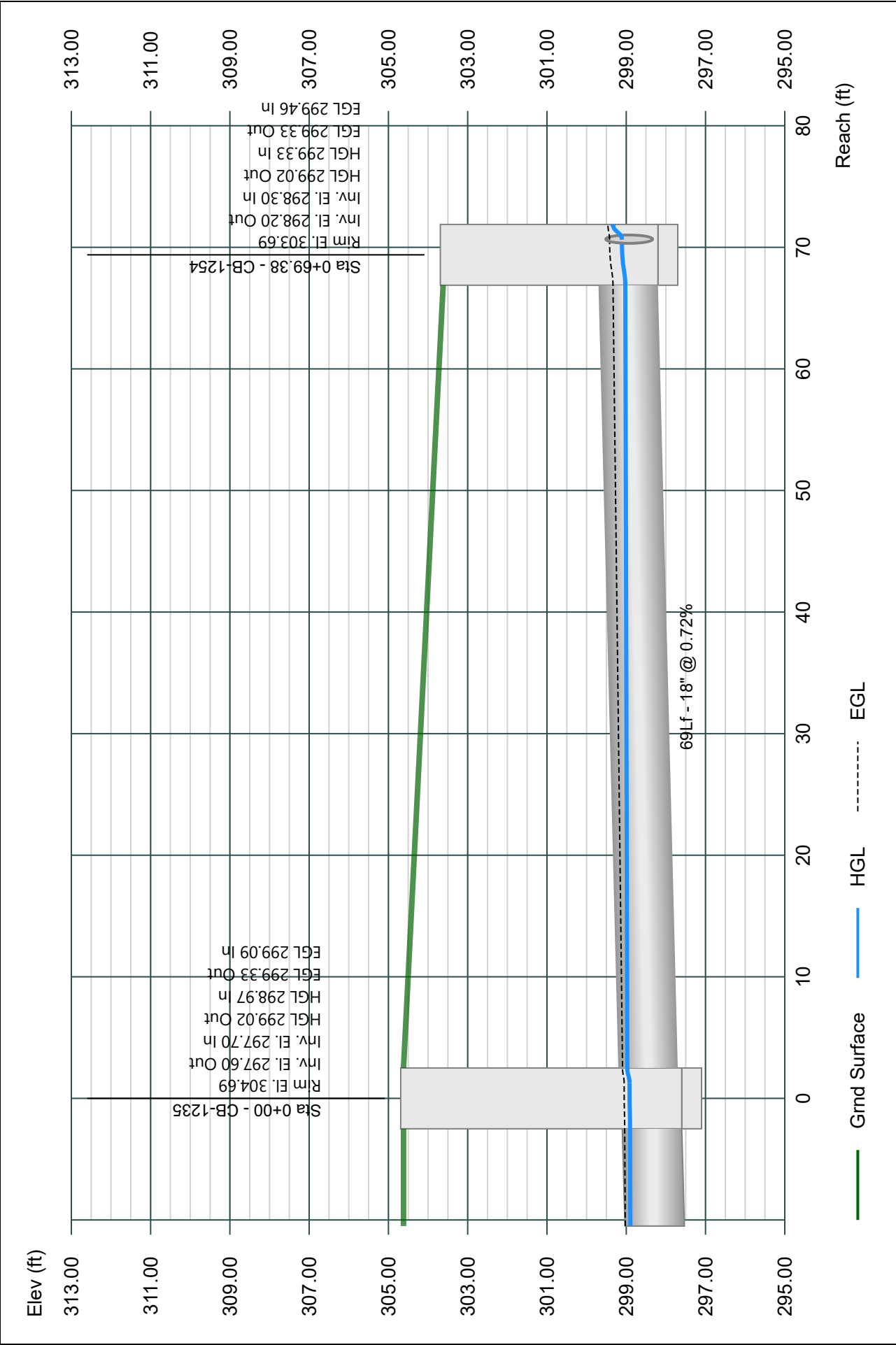
Project Name: SD-1200
02-26-2024



Line 52 - 1235-1254

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

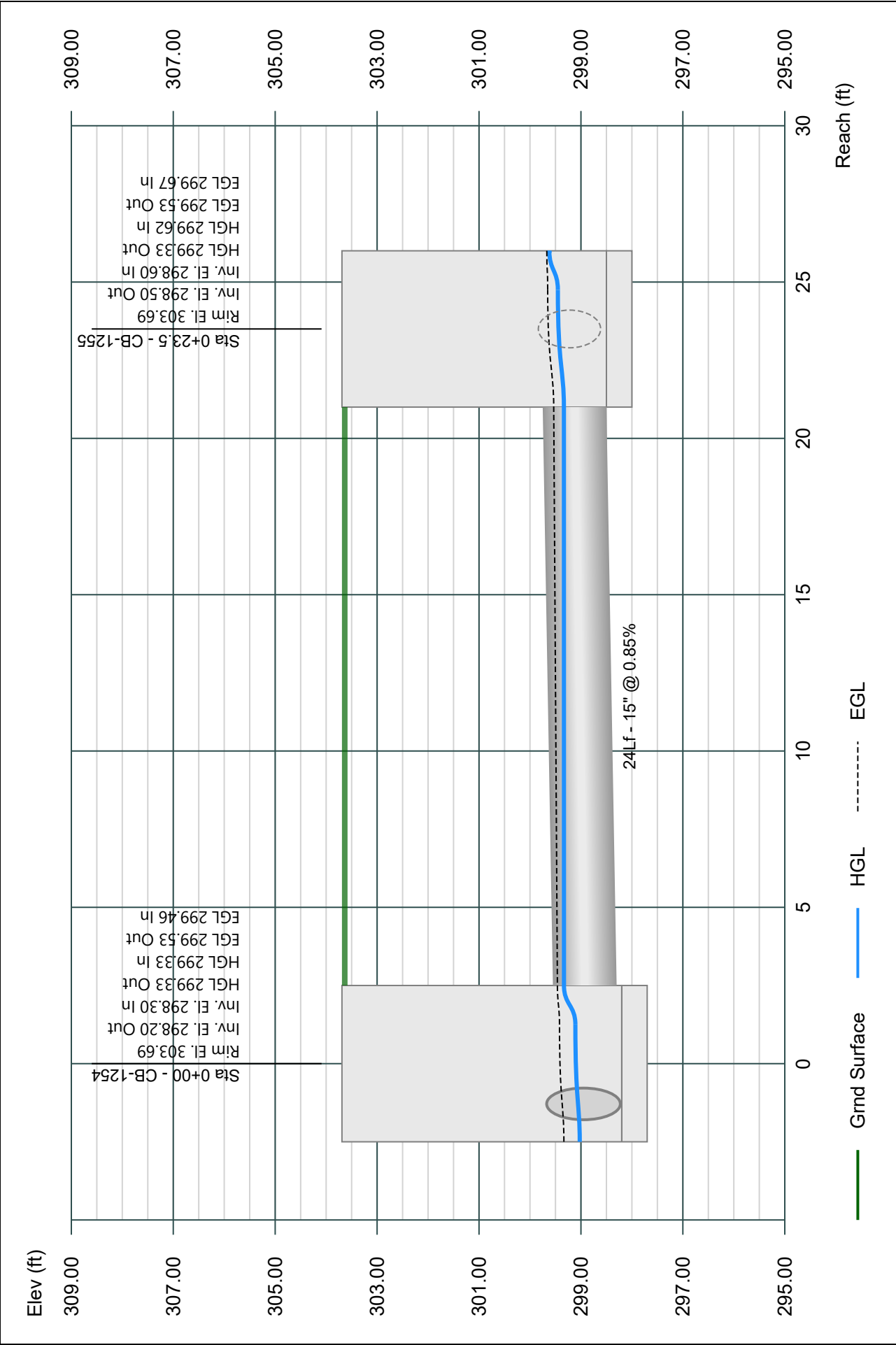


Line 53 - 1254-1255

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

02-26-2024

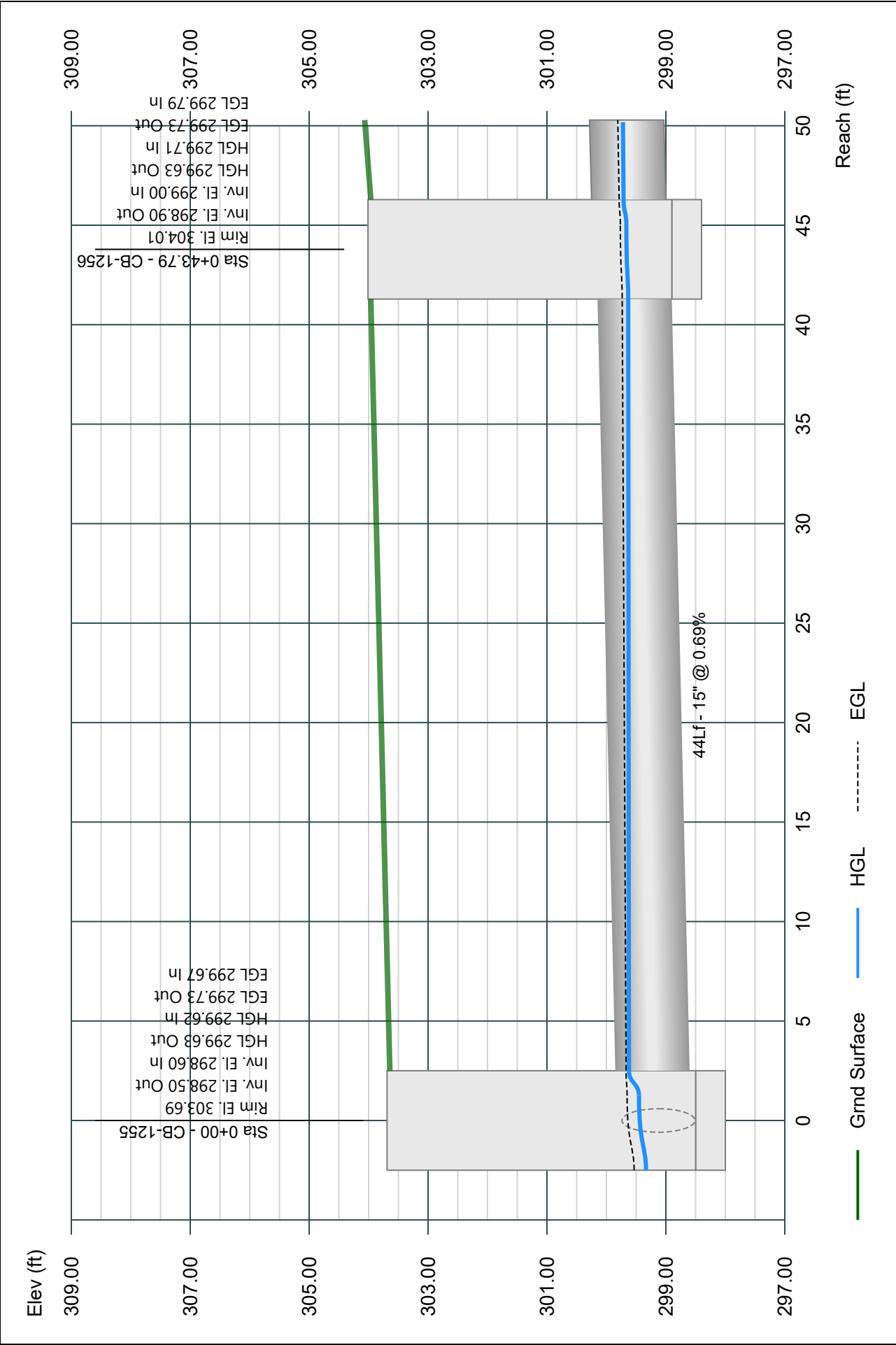


Line 54 - 1255-1256

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

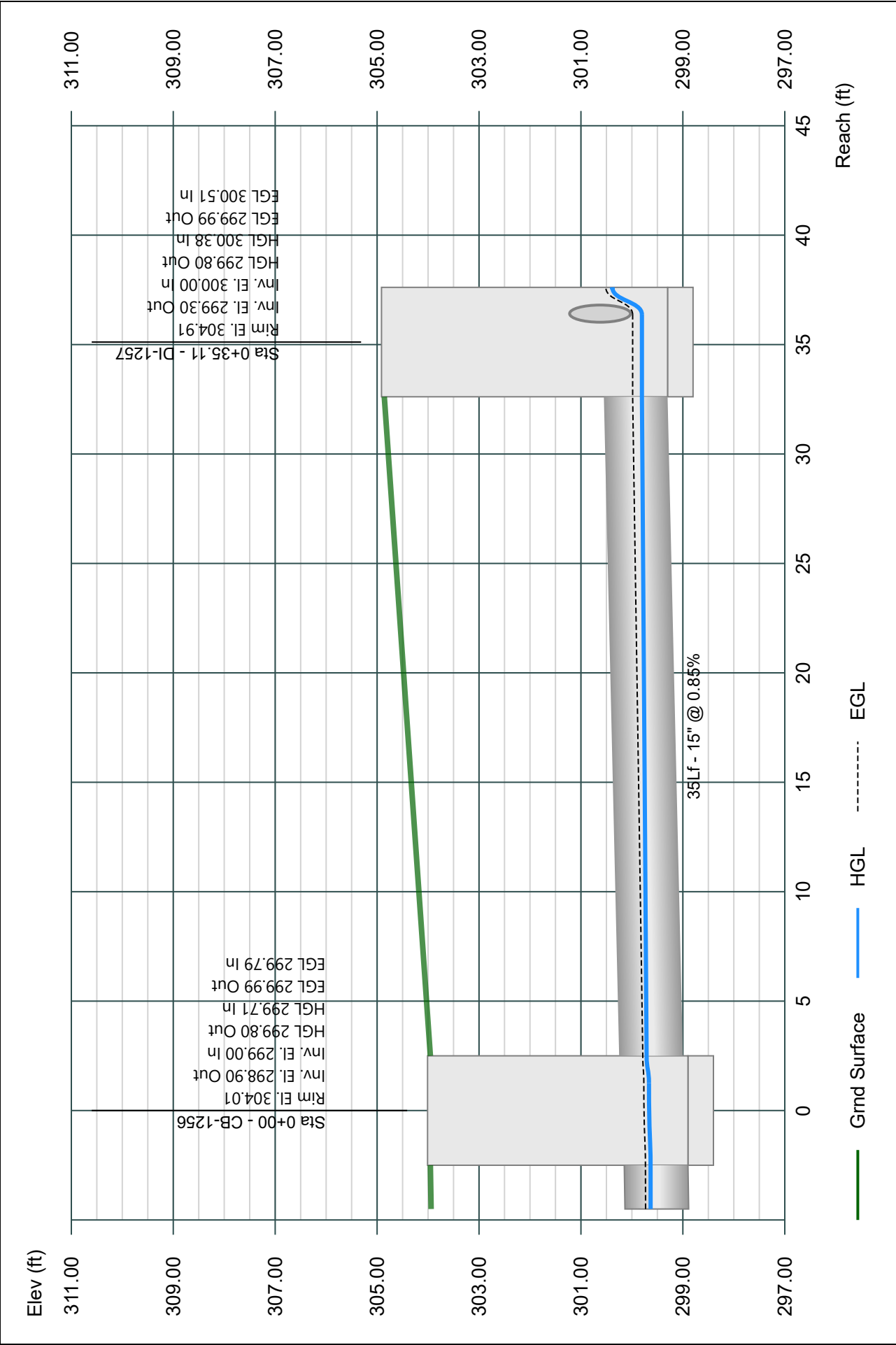
02-26-2024



Line 55 - 1256-1257

Stormwater Studio 2024 v 3.0.0.33

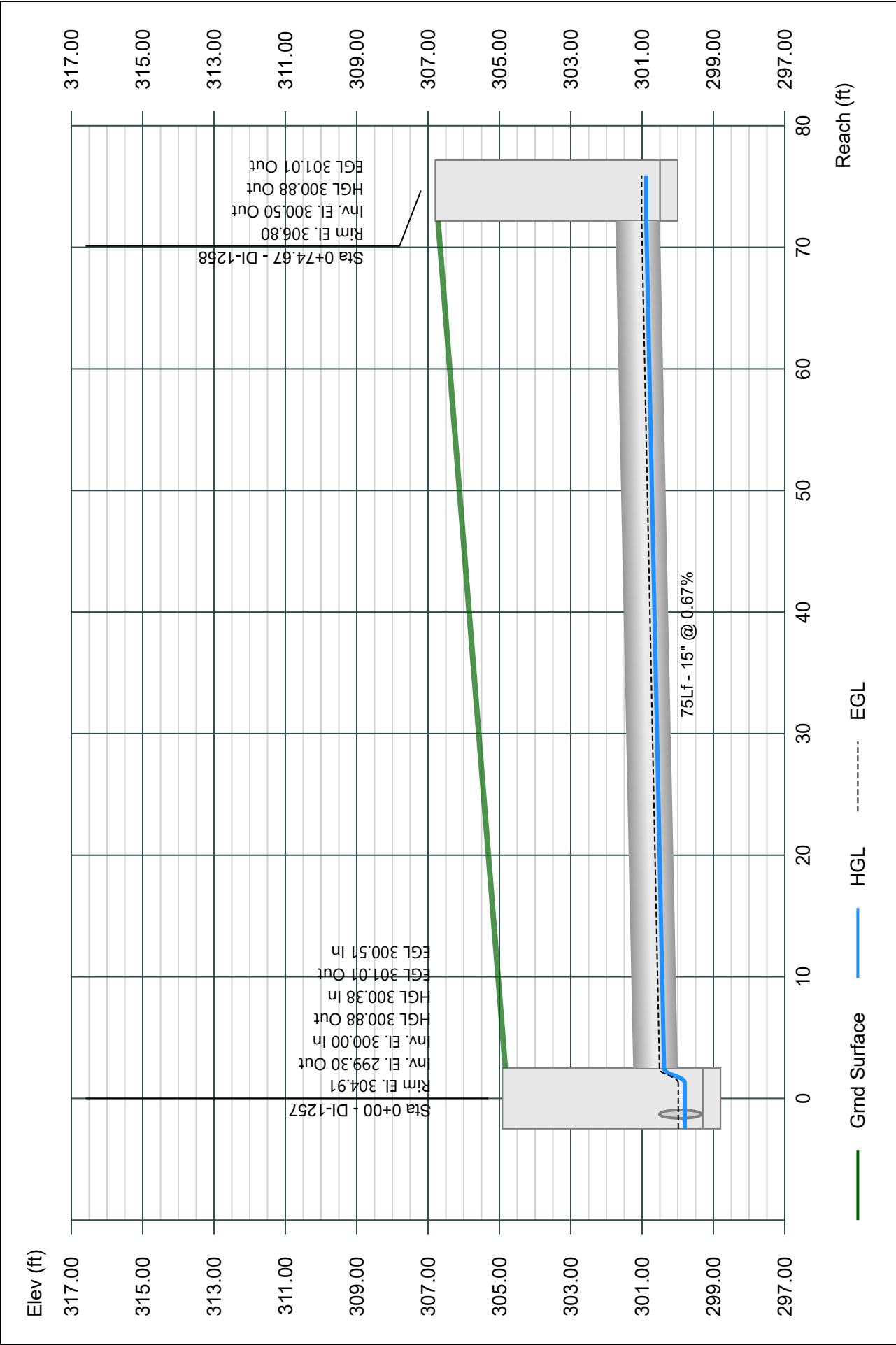
Project Name: SD-1200
02-26-2024



Line 56 - 1257-1258

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

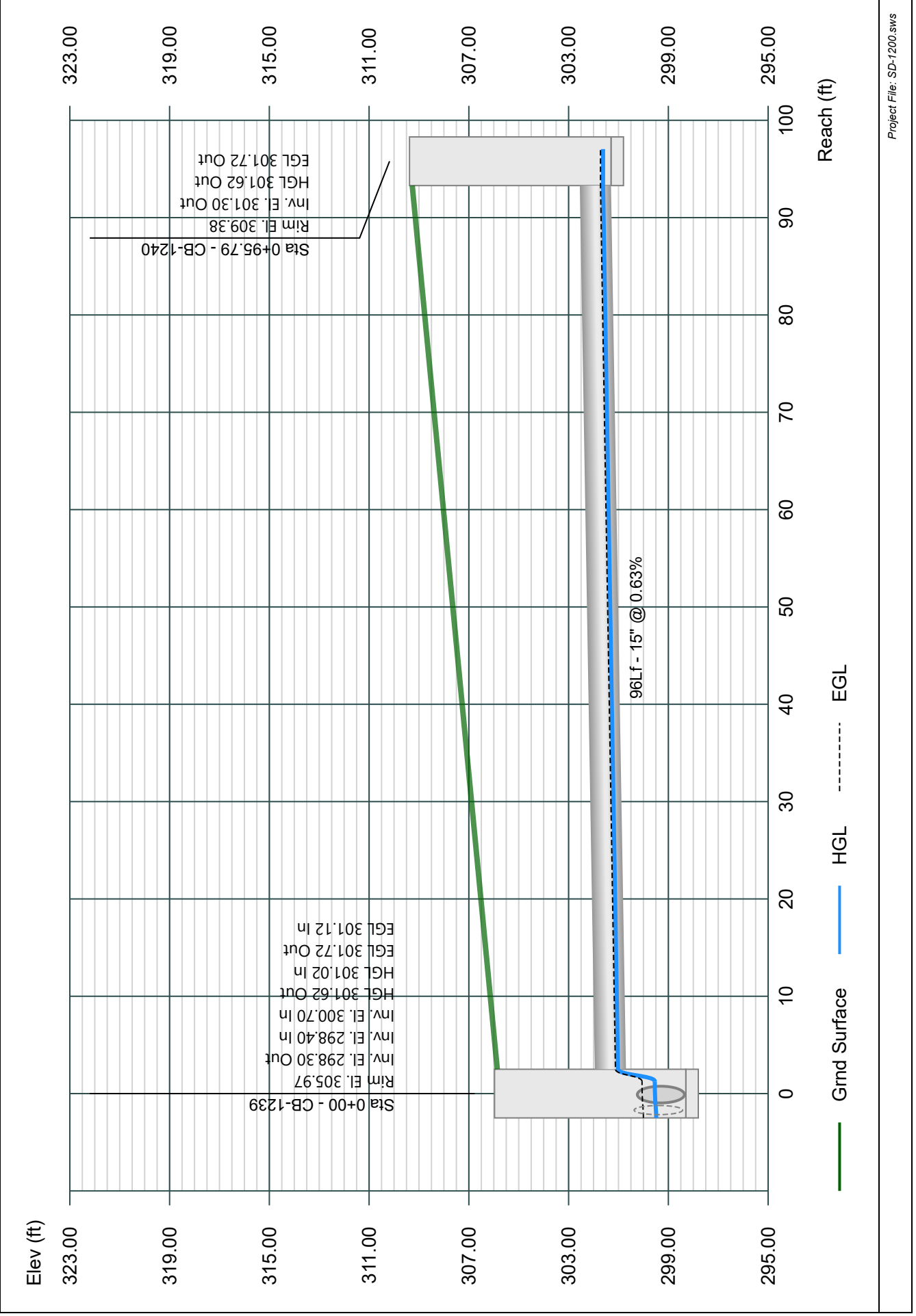


Line 57 - 1239-1240

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200

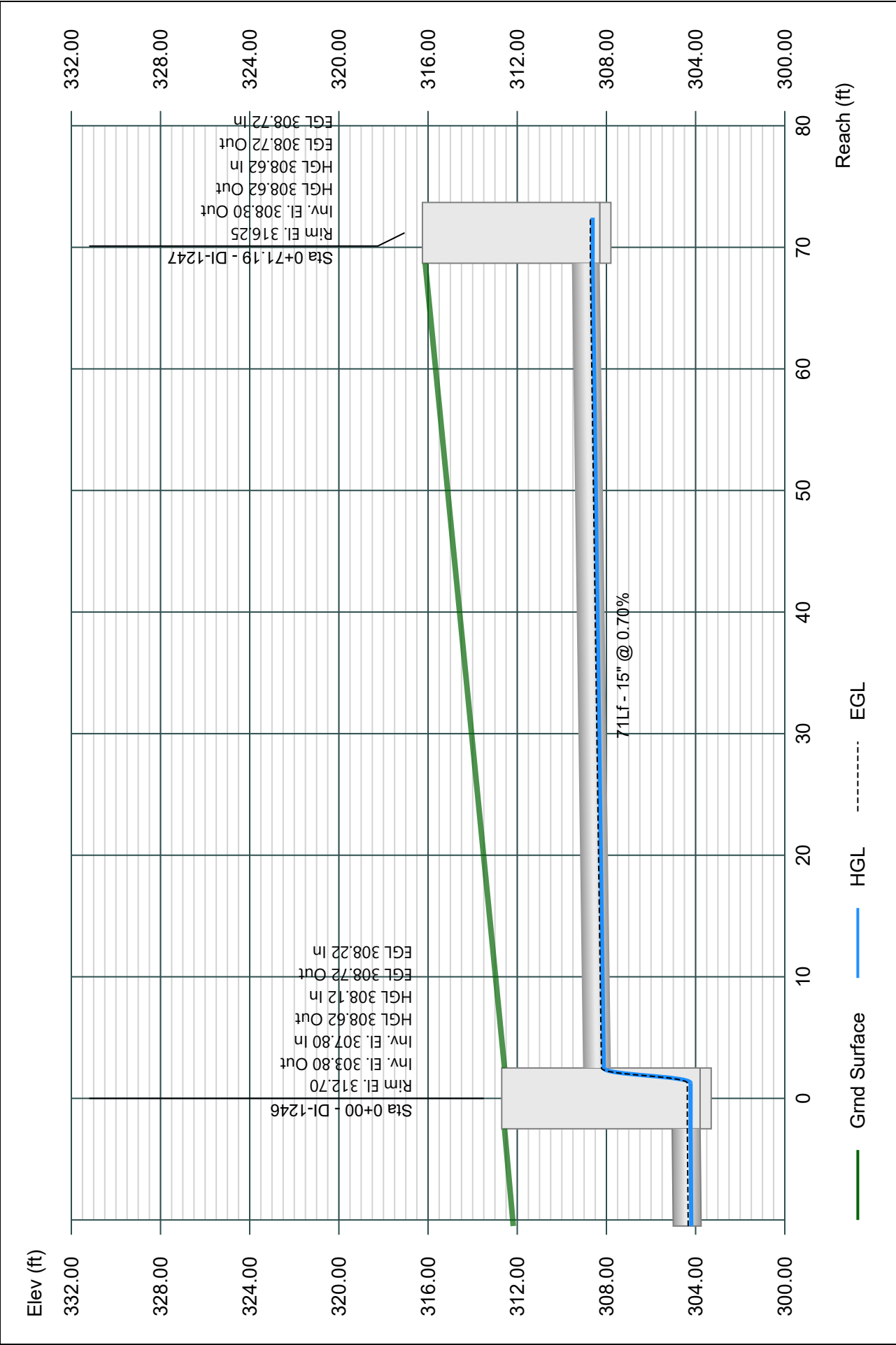
02-26-2024



Line 58 - 1246-1247

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1200
02-26-2024

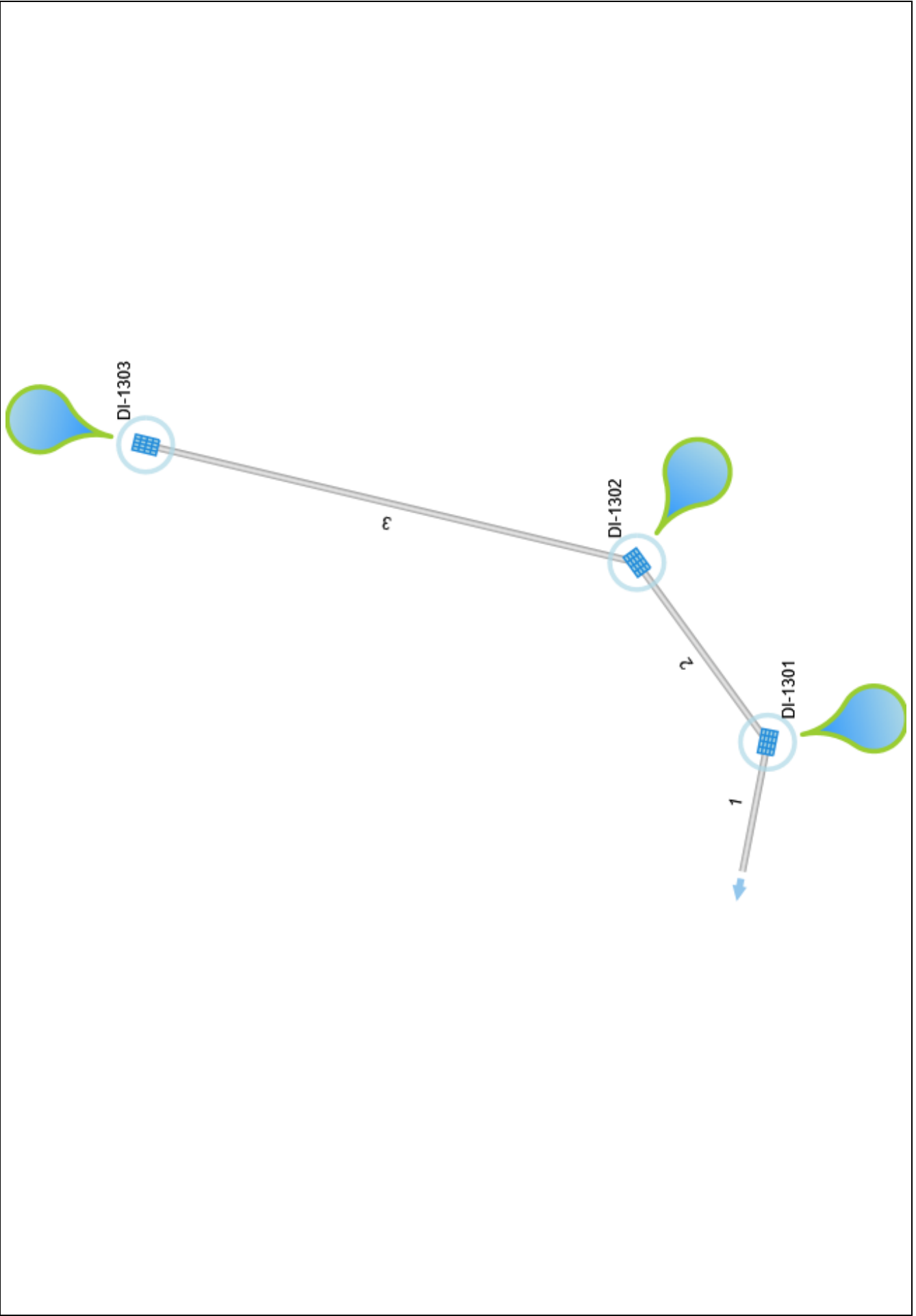


Plan View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1300

02-26-2024



Project File: SD-1300.sws

Energy Grade Line Calculations

Project Name: SD-1300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line No	Line Size (in)	Q (cfs)	Downstream						Length (ft)	Upstream						Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)		EGL Elev (ft)	Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Enrgy Loss (ft)	HGLa Elev (ft)
1	15	2.06	314.00	1.25	1.23	316.34	1.68	0.04	316.38	26.84	0.55	316.37	3.74	0.22	316.59	0.013	0.209	316.37	316.59	0.00
2	15	1.61	322.80	0.51 ¹	0.47	323.31	3.44	0.18	323.49	45.69	0.47	325.01	3.44	0.18	325.19	0.013	1.701	325.01	325.19	0.00
3	15	0.65	324.60	0.58	0.55	325.18	1.17	0.02	325.20	103.90	0.25	326.33	2.59	0.10	326.43	0.013	1.232	326.33	326.43	0.00

Notes: Return Period = 10-yrs. ¹ Critical depth. ² Critical depth.

Project File: SD-1300.sws

Storm Sewer Tabulation

Project Name: SD-1300

Stormwater Studio 2024 v 3.0.0.33

02-26-2024

Line ID	Length (ft)	Drng Area (ac)		Rational (C)	C x A		Tc		Intensity (in/hr)	Total Q (cfs)	Capacity (cfs)	Velocity (ft/s)	Line		Invert Elev (ft)		HGL Elev (ft)		Surface Elev (ft)		Line No
		Incr	Total		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up	Dn	Up	Dn	Up	Dn	
1300-1301	26.84	0.110	0.490	0.60	0.07	0.29	5.0	5.57	7.02	2.06	16.72	2.71	15	6.71	315.80	314.00	316.37	316.34	325.64	314.00	1
1301-1302	45.69	0.230	0.380	0.60	0.14	0.23	5.0	5.46	7.05	1.61	12.46	3.44	15	3.72	324.50	322.80	325.01	323.31	327.45	325.64	2
1302-1303	103.90	0.150	0.150	0.60	0.09	0.09	5.0	5.00	7.20	0.65	7.50	1.88	15	1.35	326.00	324.60	326.33	325.18	328.86	327.45	3

Notes: IDF File = Zebulon-4in per hr.IDF, Return Period = 10-yrs.

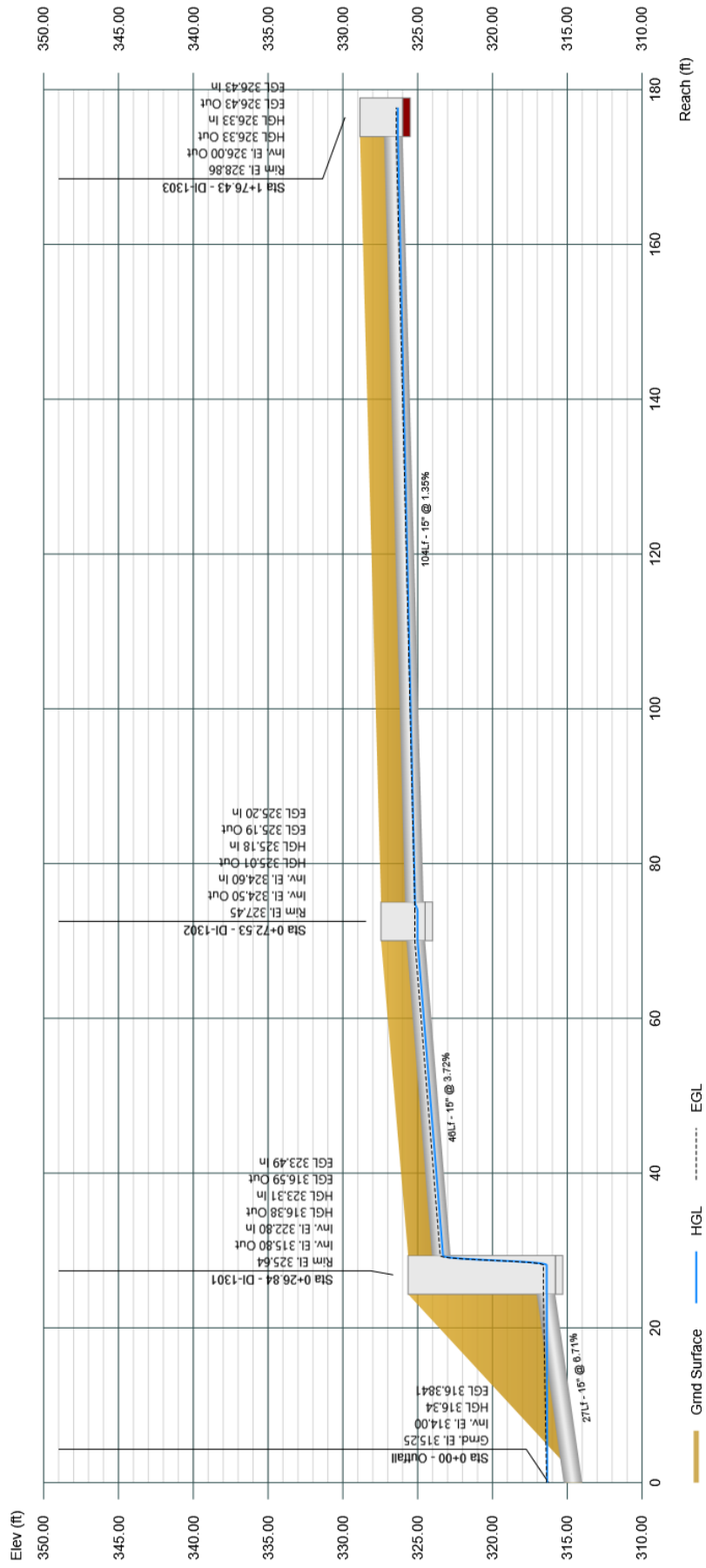
Project File: SD-1300.sws

Profile View

Stormwater Studio 2024 v 3.0.0.33

Project Name: SD-1300

02-26-2024



APPENDIX E
VELOCITY DISSIPATER CALCULATIONS

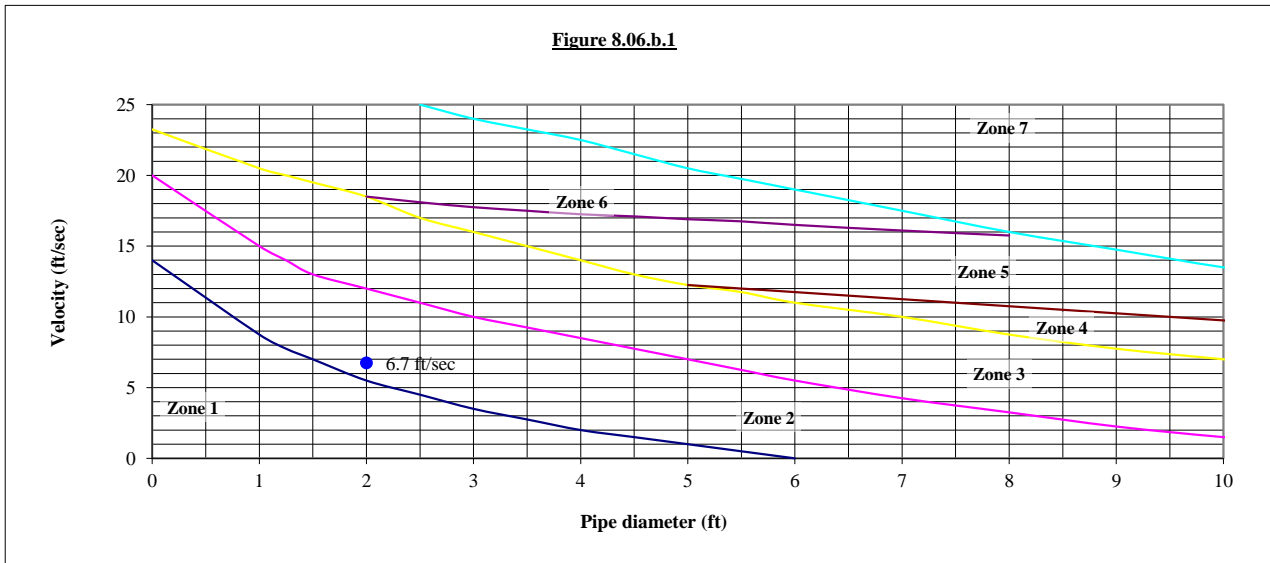


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-100

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	51.77	cfs
Pipe diameter =	24	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	6.74	ft/sec



Zone from graph above = 2

Outlet pipe diameter	24 in.
Outlet flowrate	51.8 cfs
Outlet velocity	6.7 ft/sec
Material	Class B

Length	12.0 ft.
Width	6.8 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

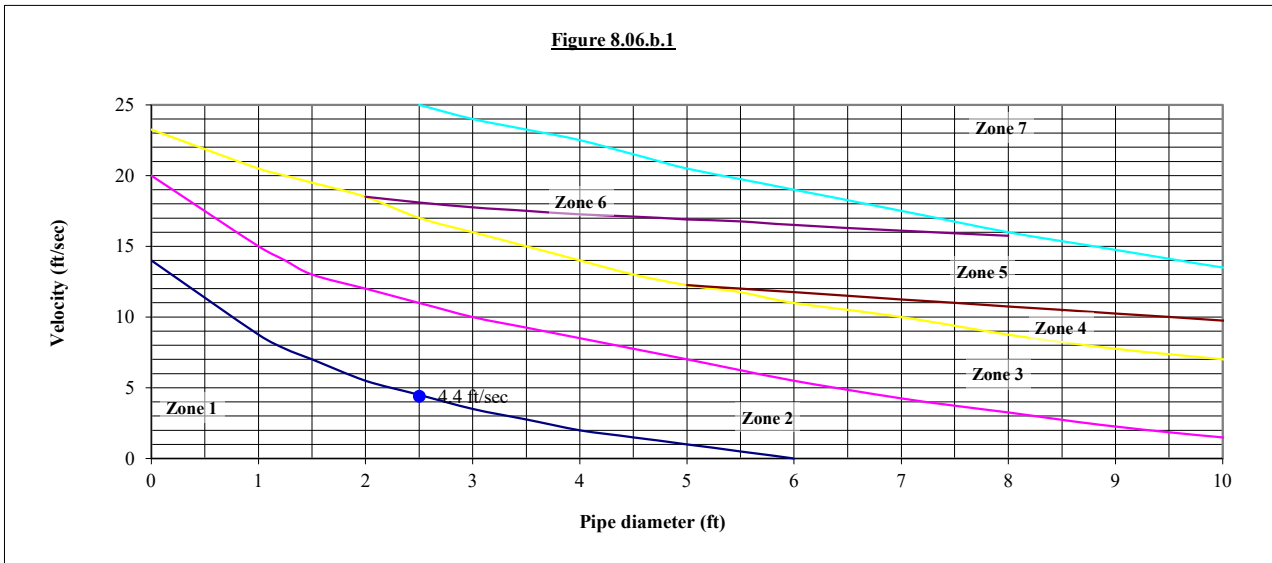


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-200

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	115.28	cfs
Pipe diameter =	30	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	4.4	ft/sec



Zone from graph above = 1

Outlet pipe diameter	30 in.
Outlet flowrate	115.3 cfs
Outlet velocity	4.4 ft/sec
Material	Class A

Length	10.0 ft.
Width	6.5 ft.
Stone diameter	3 in.
Thickness	12 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

1. Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
2. Outlet velocity based on full-flow velocity

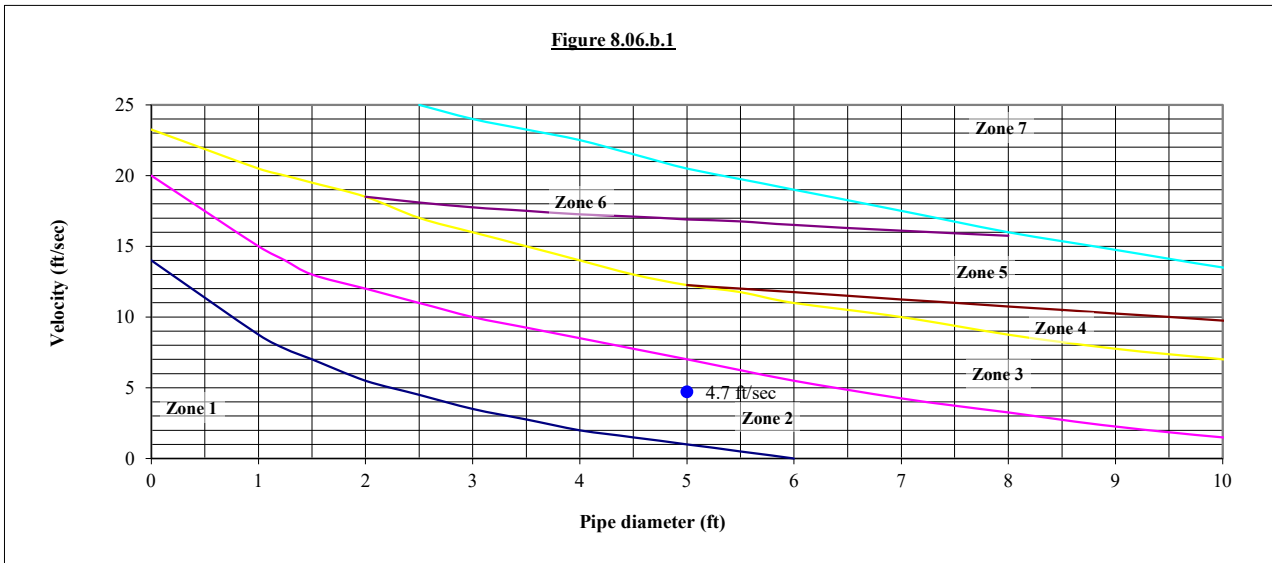


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-300

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	236.2	cfs
Pipe diameter =	60	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	4.71	ft/sec



Zone from graph above = 2

Outlet pipe diameter	60 in.
Outlet flowrate	236.2 cfs
Outlet velocity	4.7 ft/sec
Material	Class B

Length =	30.0 ft.
Width =	17.0 ft.
Stone diameter =	6 in.
Thickness =	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

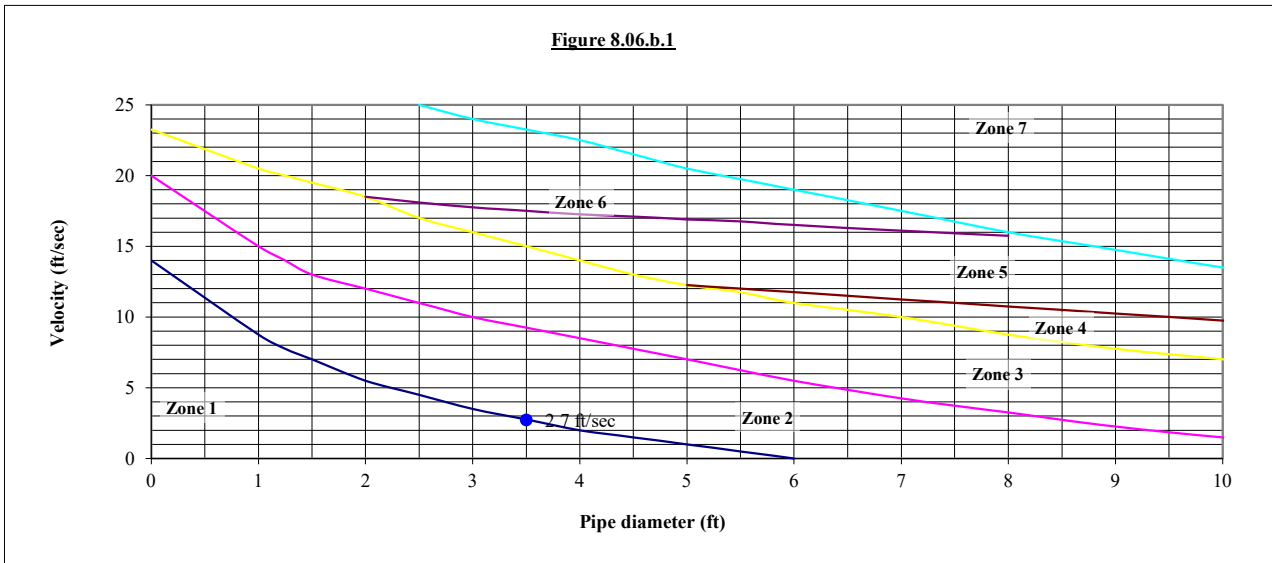


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-400

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	77.93	cfs
Pipe diameter =	42	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	2.73	ft/sec



Zone from graph above = 2

Outlet pipe diameter	42 in.
Outlet flowrate	77.9 cfs
Outlet velocity	2.7 ft/sec
Material	Class B

Length	21.0 ft.
Width	11.9 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

1. Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
2. Outlet velocity based on full-flow velocity

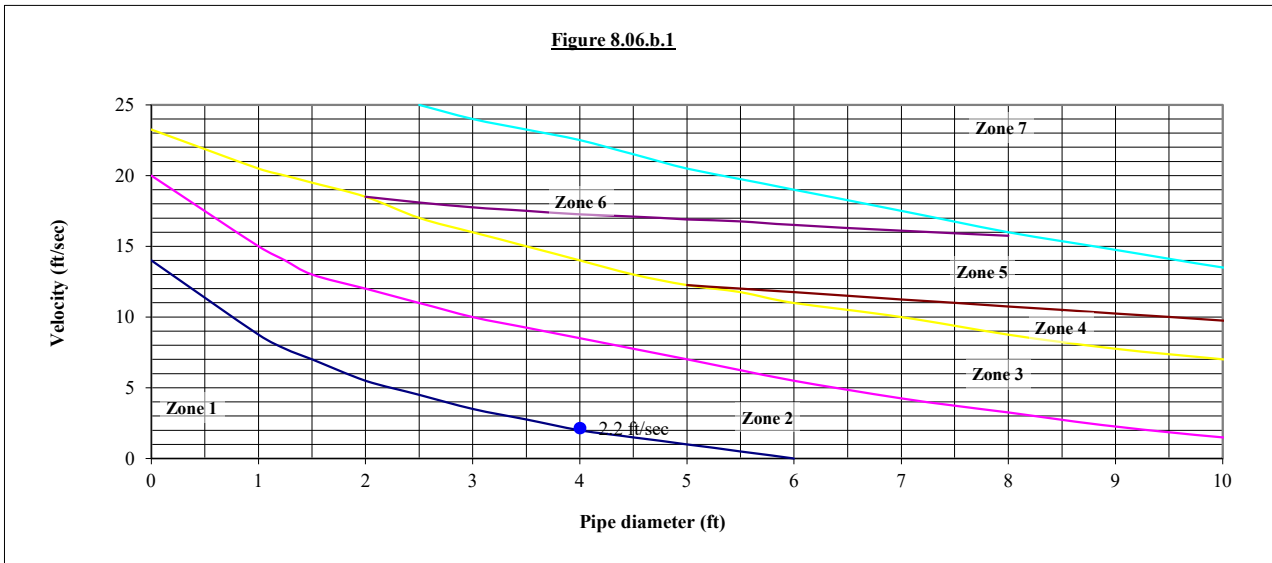


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-500

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	116.66	cfs
Pipe diameter =	48	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	2.15	ft/sec



Zone from graph above = 2

Outlet pipe diameter	48 in.
Outlet flowrate	116.7 cfs
Outlet velocity	2.2 ft/sec
Material	Class B

Length	24.0 ft.
Width	13.6 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

1. Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
2. Outlet velocity based on full-flow velocity

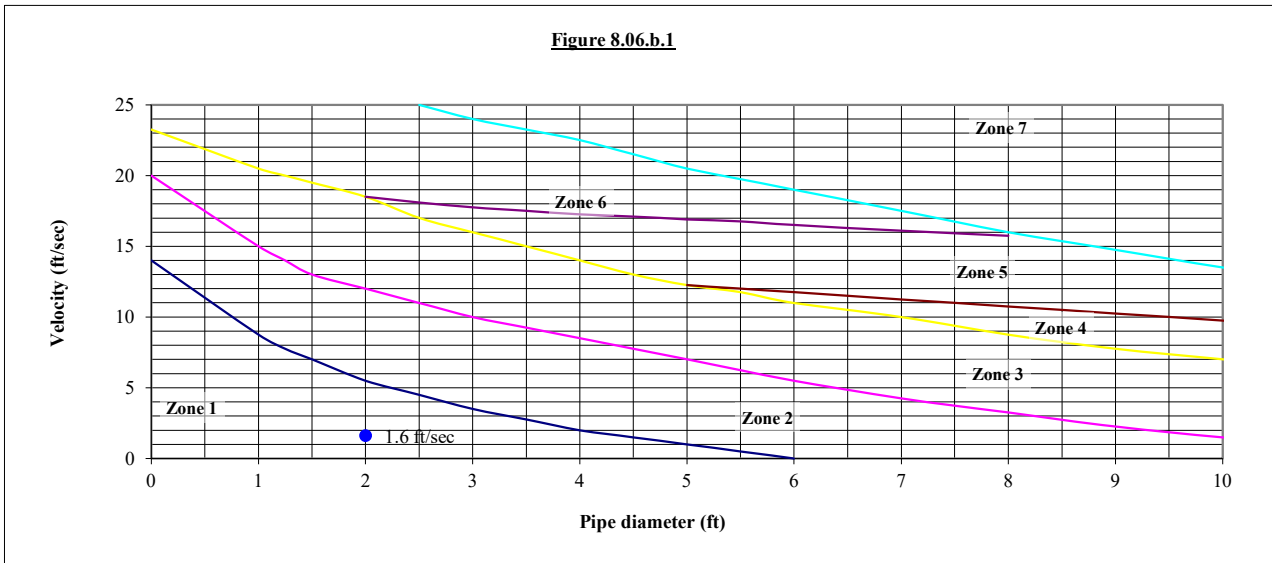


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-600

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	25.79	cfs
Pipe diameter =	24	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	1.62	ft/sec



Zone from graph above = 1

Outlet pipe diameter	24 in.
Outlet flowrate	25.8 cfs
Outlet velocity	1.6 ft/sec
Material	Class A

Length	8.0 ft.
Width	5.2 ft.
Stone diameter	3 in.
Thickness	12 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

1. Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
2. Outlet velocity based on full-flow velocity

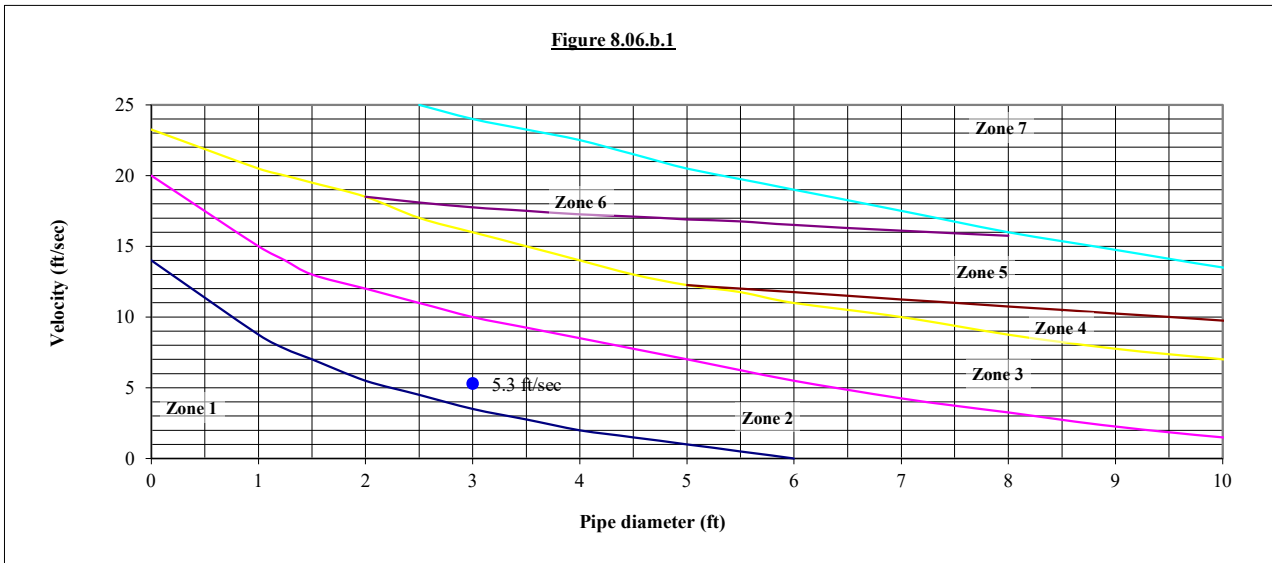


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-700

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	69.11	cfs
Pipe diameter =	36	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	5.29	ft/sec



Zone from graph above = 2

Outlet pipe diameter	36 in.
Outlet flowrate	69.1 cfs
Outlet velocity	5.3 ft/sec
Material	Class B

Length	18.0 ft.
Width	10.2 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

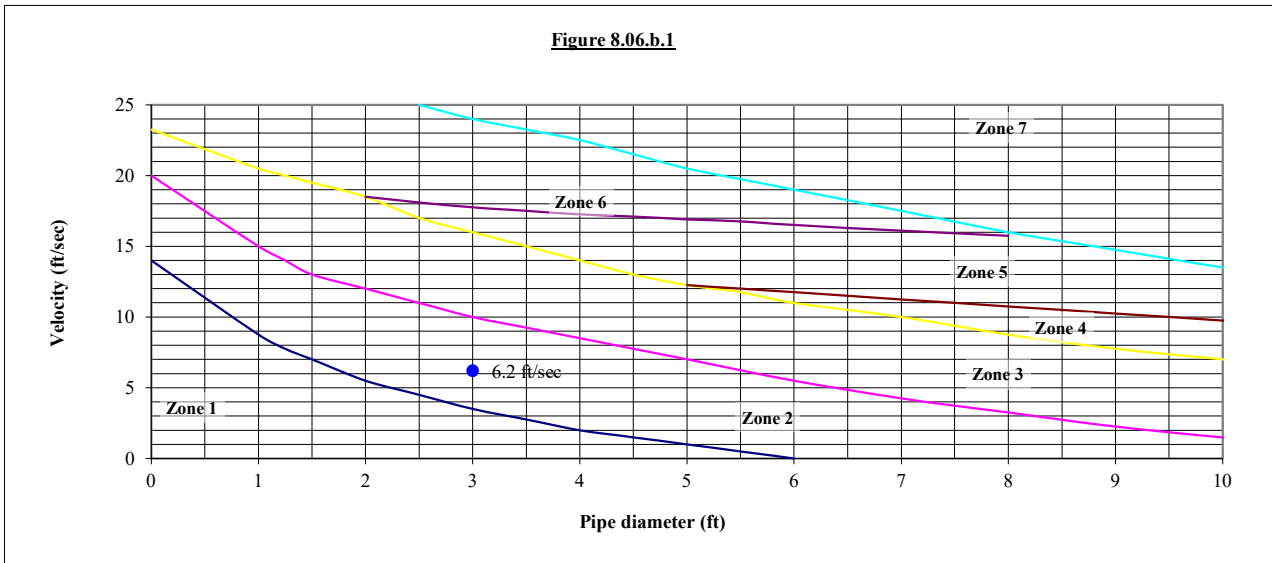


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-800

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	169.44	cfs
Pipe diameter =	36	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	6.19	ft/sec



Zone from graph above = 2

Outlet pipe diameter	36 in.
Outlet flowrate	169.4 cfs
Outlet velocity	6.2 ft/sec
Material	Class B

Length	18.0 ft.
Width	10.2 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

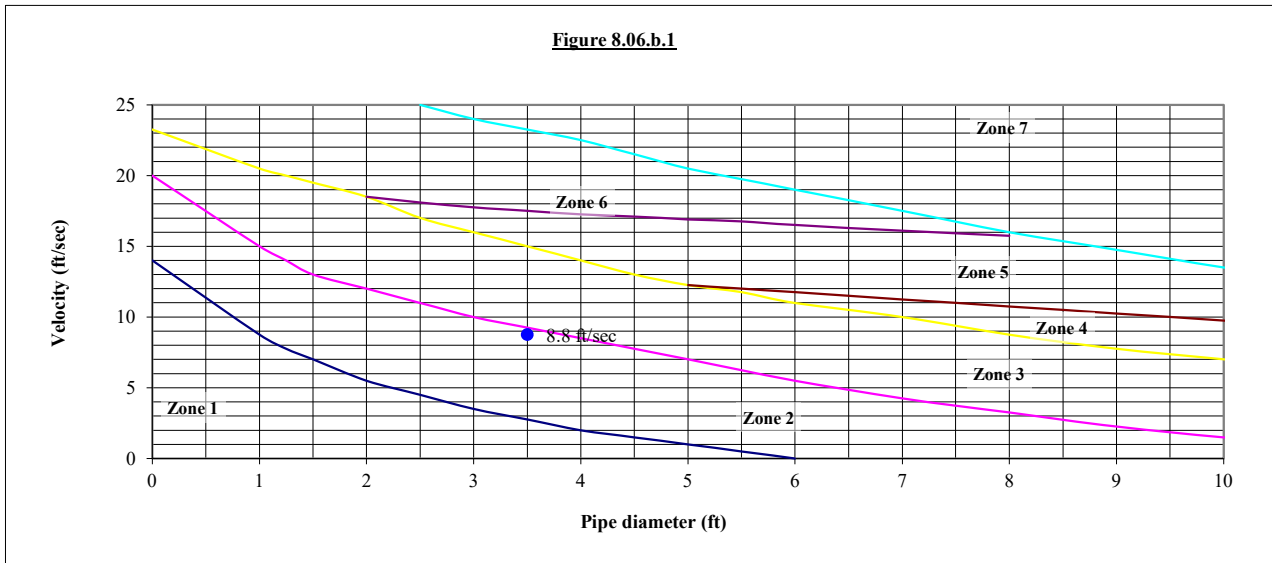


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-900

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	130.19	cfs
Pipe diameter =	42	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	8.75	ft/sec



Zone from graph above = 2

Outlet pipe diameter	42 in.
Outlet flowrate	130.2 cfs
Outlet velocity	8.8 ft/sec
Material	Class B

Length	21.0 ft.
Width	11.9 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

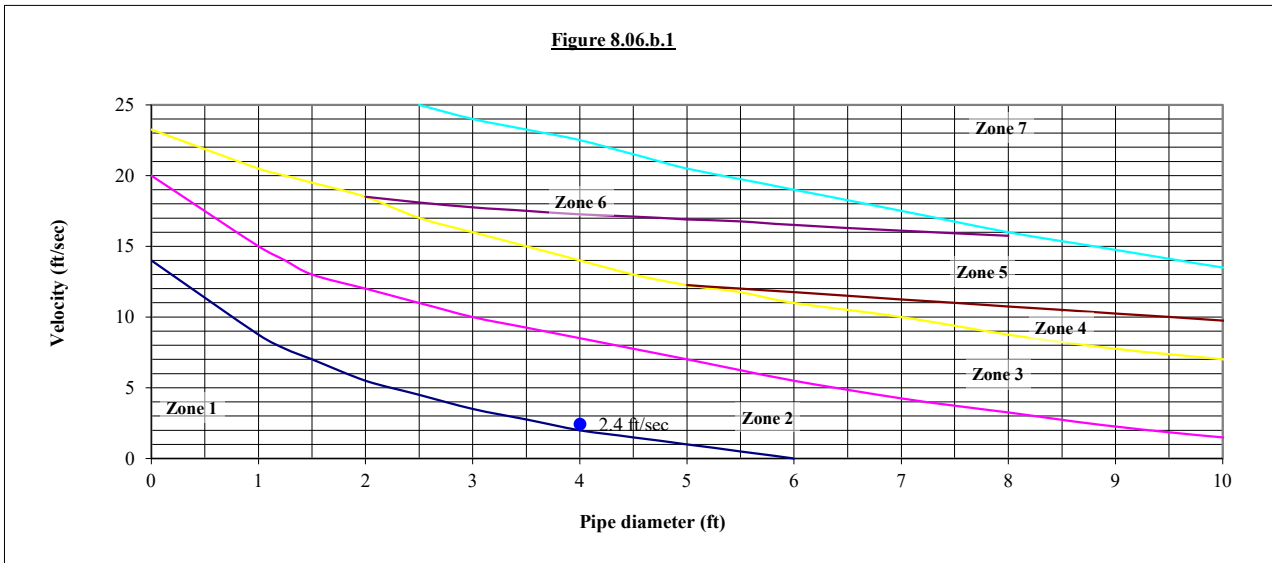


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-1000

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	152.91	cfs
Pipe diameter =	48	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	2.43	ft/sec



Zone from graph above = 2

Outlet pipe diameter	48 in.
Outlet flowrate	152.9 cfs
Outlet velocity	2.4 ft/sec
Material	Class B

Length	24.0 ft.
Width	13.6 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

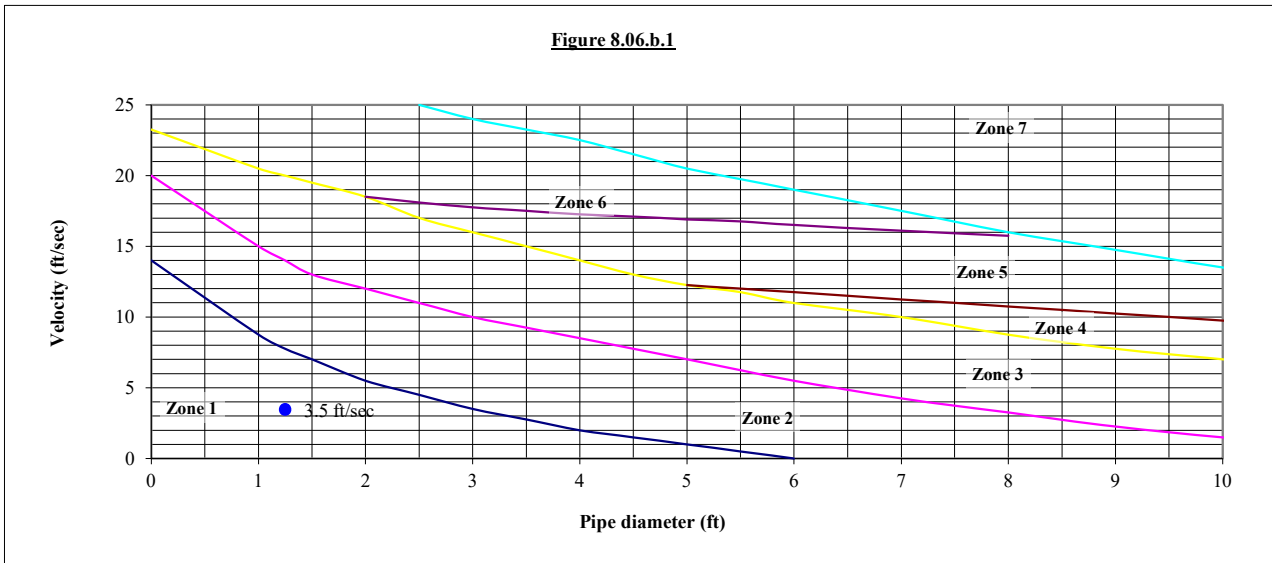


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-1100

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	18.26	cfs
Pipe diameter =	15	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	3.46	ft/sec



Zone from graph above = 1

Outlet pipe diameter	15 in.
Outlet flowrate	18.3 cfs
Outlet velocity	3.5 ft/sec
Material	Class A

Length	5.0 ft.
Width	3.3 ft.
Stone diameter	3 in.
Thickness	12 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

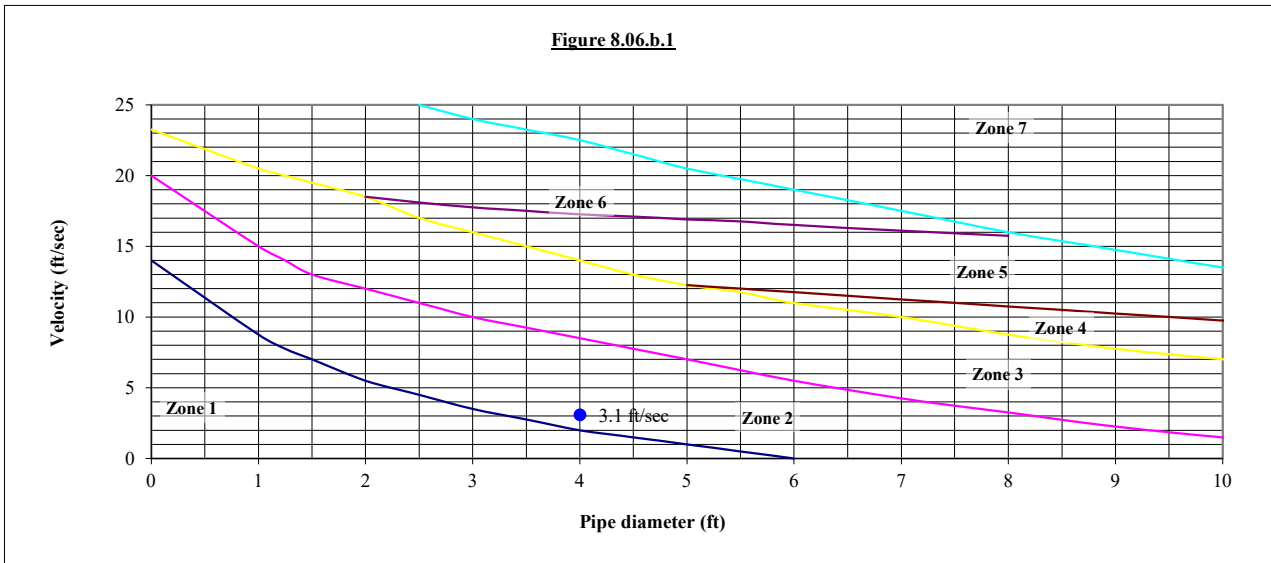


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-1200

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	117.29	cfs
Pipe diameter =	48	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	3.09	ft/sec



Zone from graph above = 2

Outlet pipe diameter	48 in.
Outlet flowrate	117.3 cfs
Outlet velocity	3.1 ft/sec
Material	Class B

Length	24.0 ft.
Width	13.6 ft.
Stone diameter	6 in.
Thickness	18 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

- Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
- Outlet velocity based on full-flow velocity

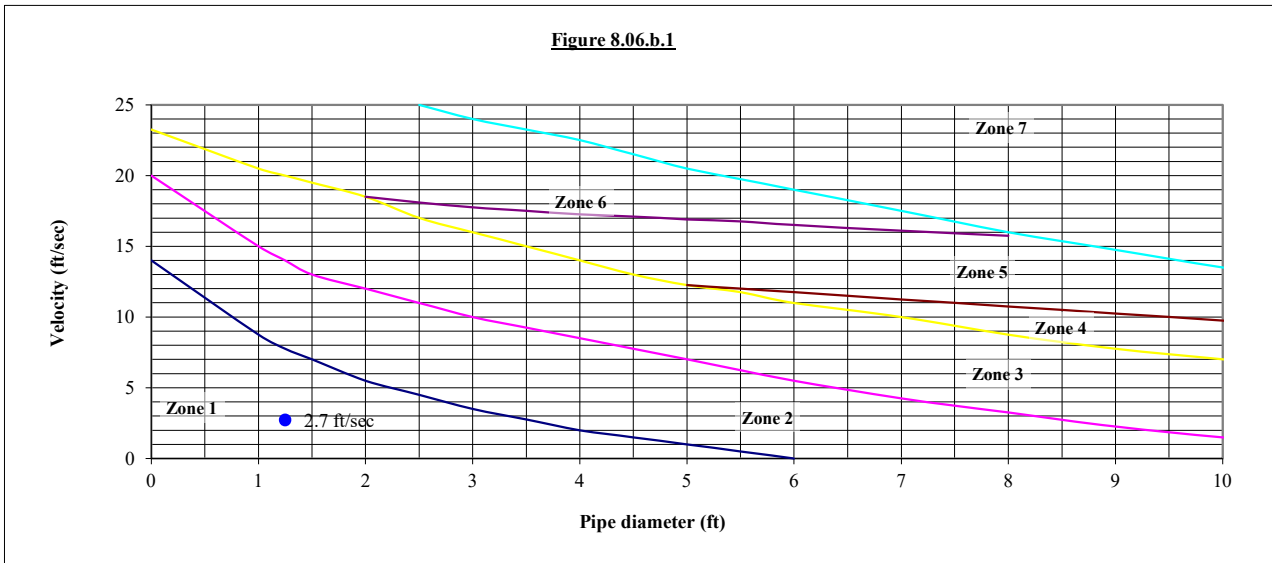


DESIGN OF RIPRAP OUTLET PROTECTION WORKSHEET

Project: Chamblee Lake
 Project Number: DRH 22004
 Outlet Number: SD-1300

Date: 2/26/2024
 Calculated By: KEA

Outlet flowrate =	16.72	cfs
Pipe diameter =	15	inches
Number of pipes =	1	
Pipe separation =	0	feet
Outlet Velocity =	2.72	ft/sec



Zone from graph above = 1

Outlet pipe diameter	15 in.
Outlet flowrate	16.7 cfs
Outlet velocity	2.7 ft/sec
Material	Class A

Length	5.0 ft.
Width	3.3 ft.
Stone diameter	3 in.
Thickness	12 in.

Zone	Material	Diameter	Thickness	Length	Width
1	Class A	3	12	4 x D(o)	3 x D(o)
2	Class B	6	18	6 x D(o)	3 x D(o)
3	Class I	13	24	8 x D(o)	3 x D(o)
4	Class I	13	24	8 x D(o)	3 x D(o)
5	Class II	23	36	10 x D(o)	3 x D(o)
6	Class II	23	36	10 x D(o)	3 x D(o)
7	Special study required				

1. Calculations based on NY DOT method - Pages 8.06.05 through 8.06.06 in NC Erosion Control Manual
2. Outlet velocity based on full-flow velocity