DYMAR

POND REPORT

Pond Report

Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Detention

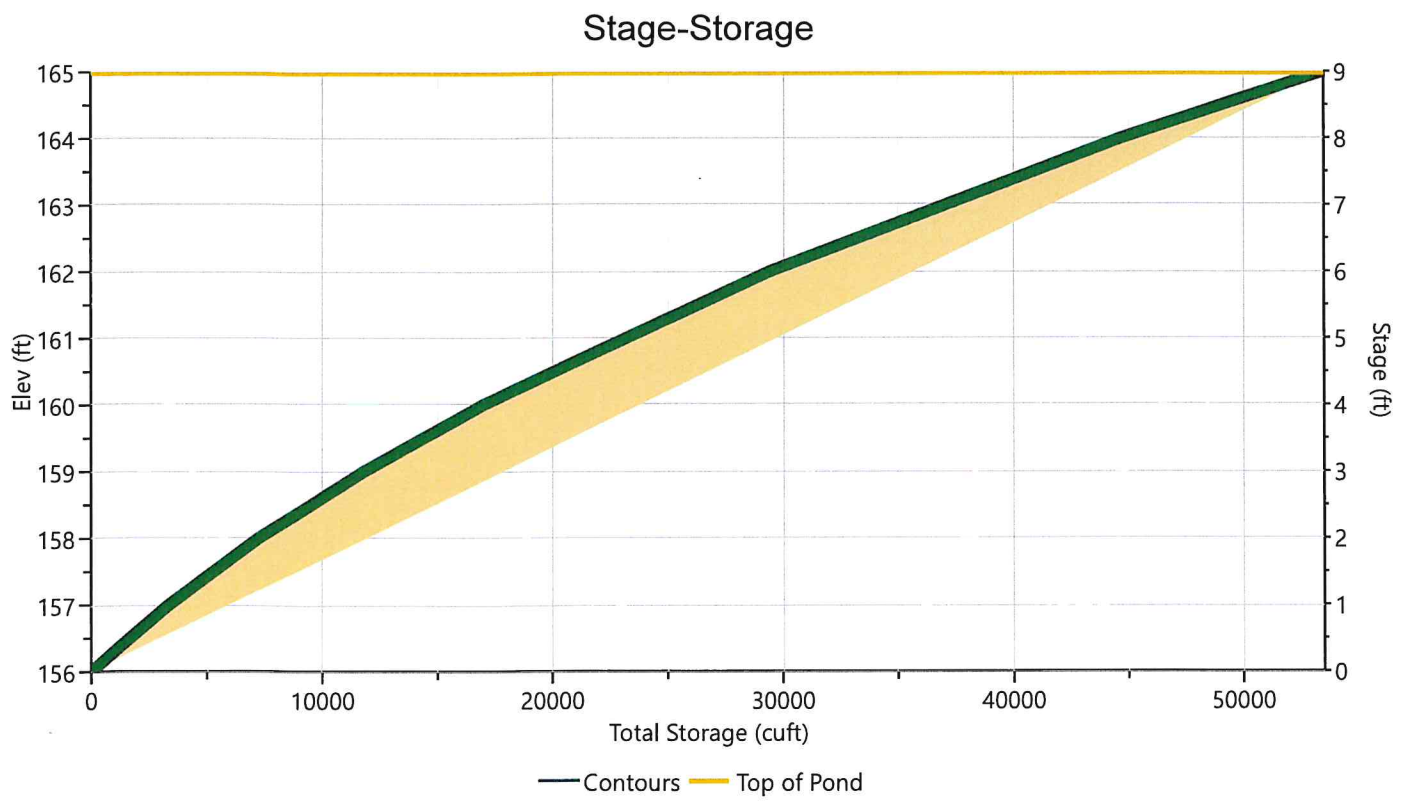
Stage-Storage

User Defined Contours

Description	Input
Bottom Elevation, ft	156.00
Voids (%)	40.00
Volume Calc	None

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	156.00	7,826	0.000	0.000
1.00	157.00	8,912	3,348	3,348
2.00	158.00	10,492	3,881	7,228
3.00	159.00	12,145	4,527	11,756
4.00	160.00	13,893	5,208	16,963
6.00	162.00	17,197	12,436	29,399
8.00	164.00	20,965	15,265	44,664
9.00	165.00	23,320	8,857	53,521



Pond Report

Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Detention

Culvert / Orifices	Culvert	Orifices 1*	Orifices 2*	Orifices 3*
Rise, in	15	8	8	6
Span, in	15	8	8	36
No. Barrels	1	1	1	6
Invert Elevation, ft	156.00	156.01	158.00	163.00
Orifice Coefficient, Co	0.60	0.60	0.60	0.60
Length, ft	45			
Barrel Slope, %	1			
N-Value, n	0.013			

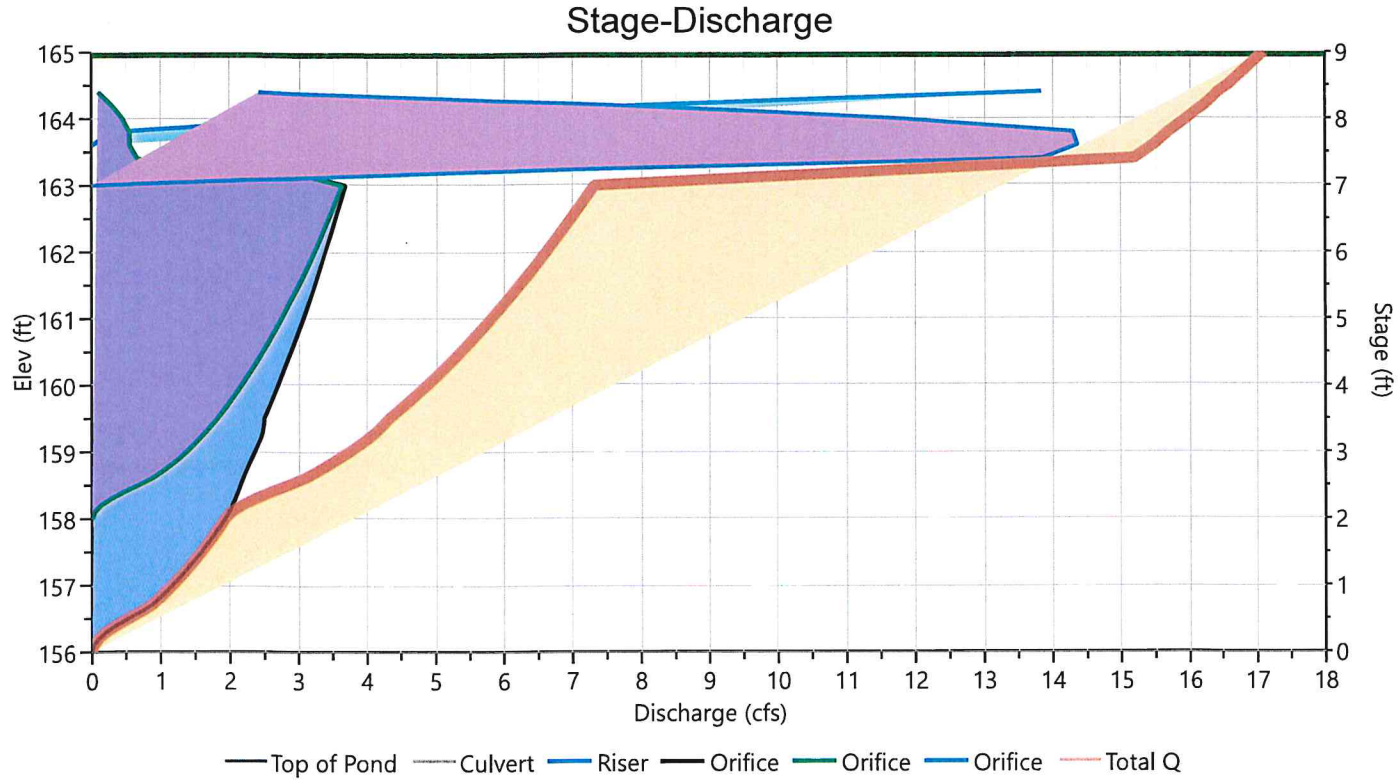
Weirs	Riser*	Weirs 1	Weirs 2	Weirs 3
Shape / Type	Box			
Crest Elevation, ft	163.75			
Crest Length, ft	8			
Angle, deg				
Weir Coefficient, Cw	3.3			

Orifice Plate	
Orifice Dia, in	
No. Orifices	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Ancillary	
Exfiltration, in/hr	

*Routes through Culvert.

Stage-Discharge



Pond Report

Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Detention

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	156.00	0.000	0.000	0.000	0.000	0.000	0.000							0.000
1.00	157.00	3,348	1.172 ic	1.172	0.000	0.000	0.000							1.172
2.00	158.00	7,228	1.930 ic	1.930	0.000	0.000	0.000							1.930
3.00	159.00	11,756	3.733 ic	2.361	1.372	0.000	0.000							3.733
4.00	160.00	16,963	4.869 oc	2.699	2.170	0.000	0.000							4.869
6.00	162.00	29,399	6.604 oc	3.386	3.218	0.000	0.000							6.604
8.00	164.00	44,664	15.96 ic	0.456	0.456	11.75	3.300							15.96
9.00	165.00	53,521	17.10 ic	0.000	0.000	0.000	0.000							17.10

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

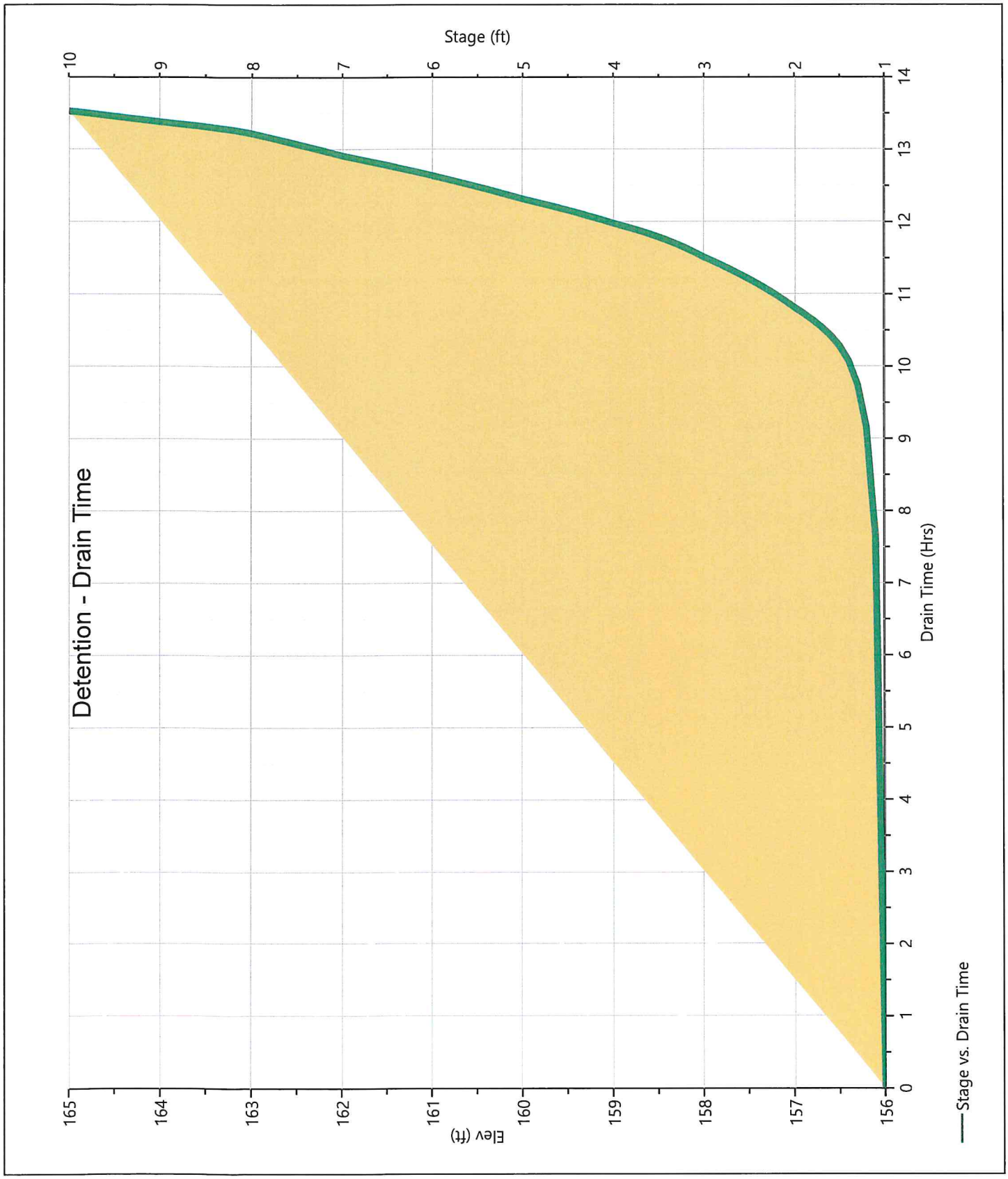
Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Detention

Pond Drawdown



Pond Report

Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Weir

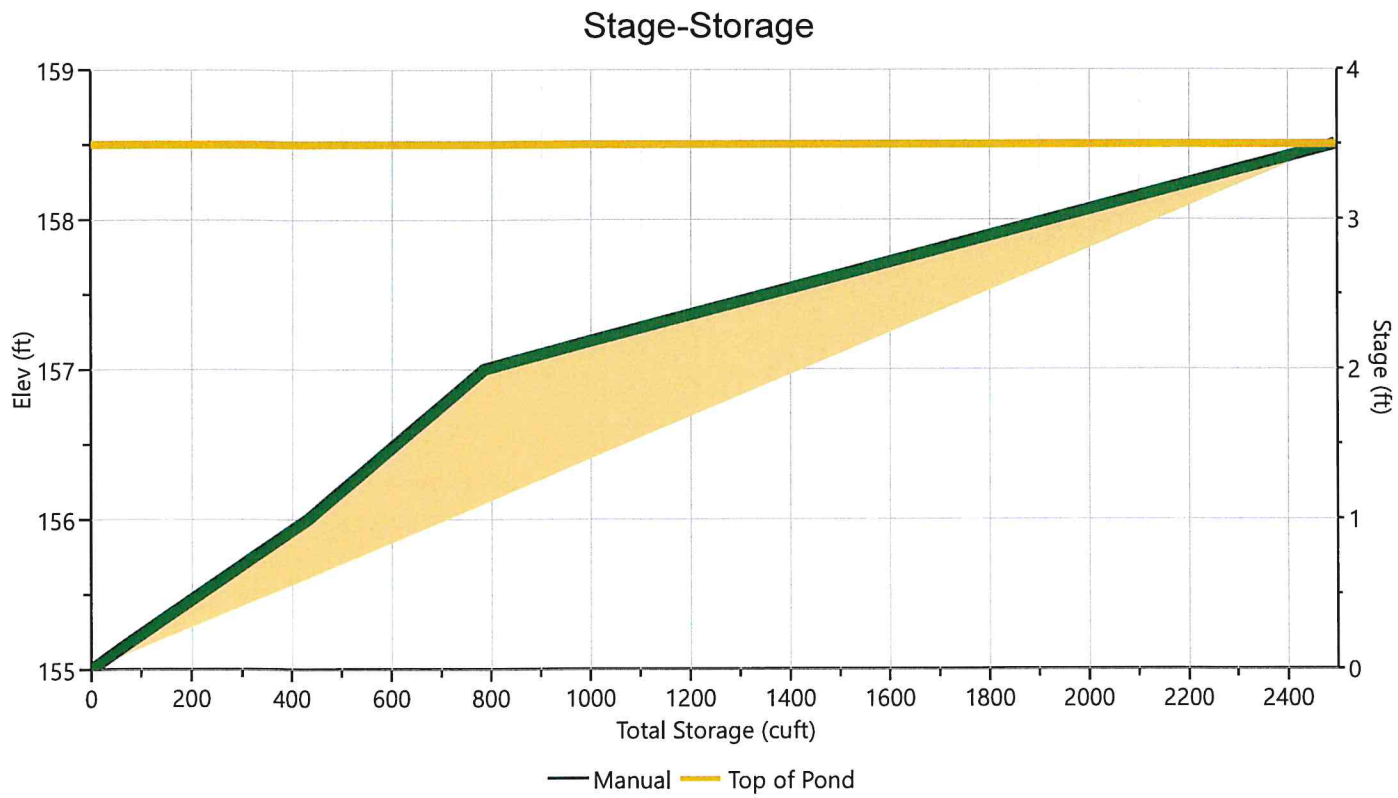
Stage-Storage

User Defined Storage

Description	Input
Bottom Elevation, ft	155.00

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	155.00	n/a	0.000	0.000
1.00	156.00	n/a	432	432
2.00	157.00	n/a	354	786
3.00	158.00	n/a	1,140	1,926
3.25	158.25	n/a	285	2,211
3.50	158.50	n/a	285	2,496



Pond Report

Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Weir

Stage-Discharge

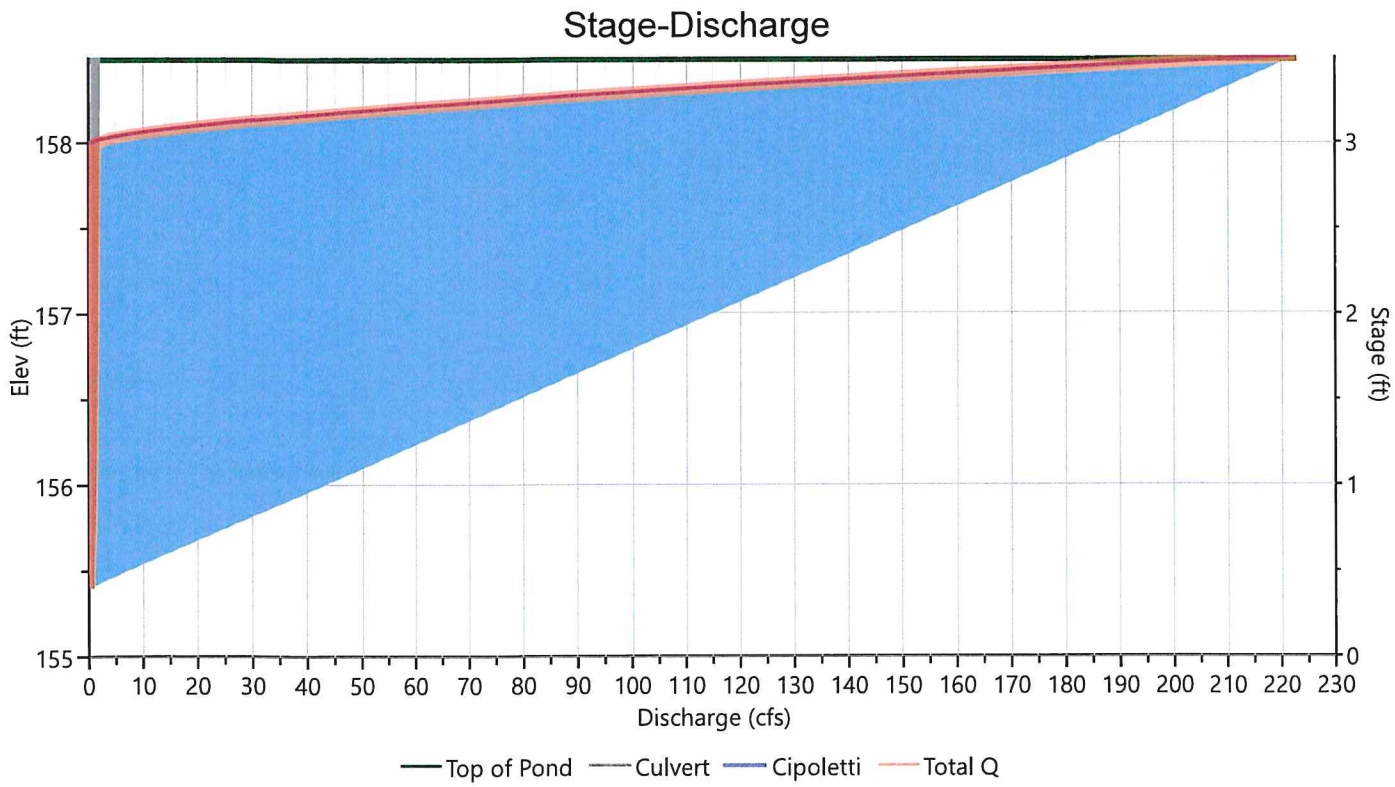
Culvert / Orifices	Culvert	Orifices 1	Orifices 2	Orifices 3
Rise, in	4			
Span, in	4			
No. Barrels	2			
Invert Elevation, ft	155.42			
Orifice Coefficient, Co	0.60			
Length, ft	20			
Barrel Slope, %	1			
N-Value, n	0.012			

Perforated Riser	
Hole Diameter, in	
No. holes	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Weirs	Riser*	Weirs 1	Weirs 2	Weirs 3
Shape / Type		Cipoletti		
Crest Elevation, ft		158		
Crest Length, ft		190		
Angle, deg				
Weir Coefficient, Cw		3.3		

Ancillary	
Exfiltration, in/hr	3.00**

*Routes through Culvert. **Exfiltration extracted from outflow hydrograph. Rate applied to contours.



Pond Report

Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Weir

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	155.00	0.000	0.000					0.000				0.000		0.000
1.00	156.00	432	0.482 oc					0.000				0.000		0.482
2.00	157.00	786	0.867 oc					0.000				0.000		0.867
3.00	158.00	1,926	1.127 oc					0.000				0.000		1.127
3.25	158.25	2,211	1.183 oc					78.38				0.000		79.56
3.50	158.50	2,496	1.237 oc					221.7				0.000		222.9

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

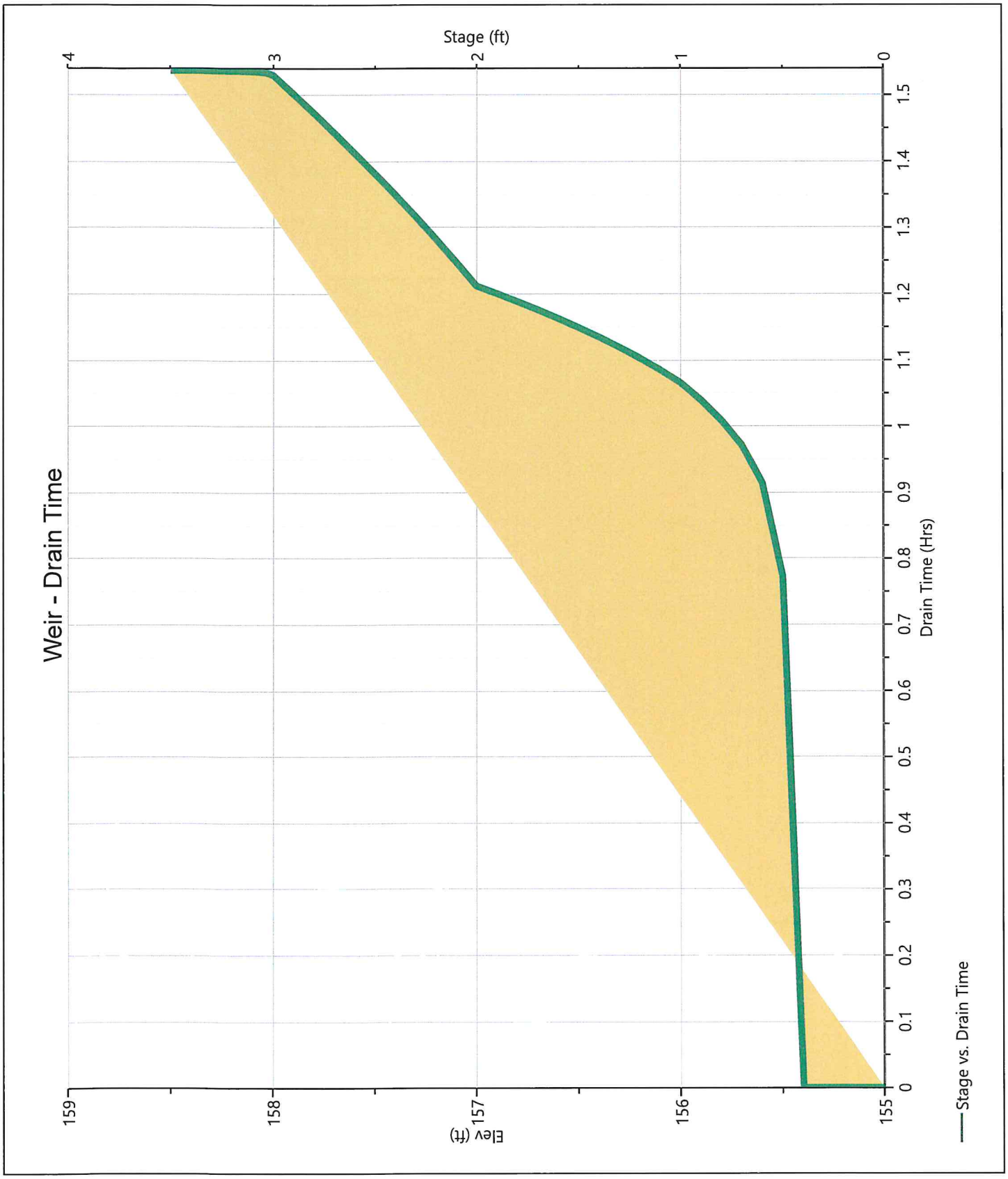
Project Name: Belta Final Rev

Hydrology Studio v 3.0.0.16

08-18-2020

Weir

Pond Drawdown



DYMAR

RATIONAL METHOD ANALYSIS FOR STORMWATER COLLECTION SYSTEM

Runoff Curve Number and Runoff Mon Aug 17 14:11:53 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/2
Location: CB#1 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Open Space-Good (>75% grass)	80	D	0.006
Open Space-Good (>75% grass)	74	C	0.102
Paved Streets w/Curbs & Sewers	98	D	0.001
Paved Streets w/Curbs & Sewers	98	C	0.278
Open Space-Poor (<50% grass)	86	C	0.014
Open Space-Poor (<50% grass)	89	D	0.000

CN (weighted): 91.2
Total Area: 0.401 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

DYMAR

STORMWATER HYDRAULIC ANALYSIS -POST-DEVELOPMENT – TR-55 FLOWS

Runoff Curve Number and Runoff Mon Aug 17 14:14:03 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/2
Location: CB#2 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Paved Streets w/Curbs & Sewers	98	C	0.018
Open Space-Good (>75% grass)	74	C	0.006
Open Space-Good (>75% grass)	80	D	0.019
Paved Streets w/Curbs & Sewers	98	D	0.043
Open Space-Poor (<50% grass)	86	C	0.001
Open Space-Poor (<50% grass)	89	D	0.003

CN (weighted): 92.2
Total Area: 0.090 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

Runoff Curve Number and Runoff Mon Aug 17 14:48:32 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/2
Location: CB#3 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Open Space-Good (>75% grass)	74	C	0.013
Open Space-Good (>75% grass)	80	D	0.160
Paved Streets w/Curbs & Sewers	98	C	0.025
Paved Streets w/Curbs & Sewers	98	D	0.084
Open Space-Poor (<50% grass)	86	C	0.000
Open Space-Poor (<50% grass)	89	D	0.004

CN (weighted): 86.7
Total Area: 0.286 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

Runoff Curve Number and Runoff Mon Aug 17 14:52:21 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/2
Location: YD #1 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Woods (Good)	77	D	0.009
Open Space-Good (>75% grass)	80	D	0.045
Paved Streets w/Curbs & Sewers	98	D	0.046
Open Space-Poor (<50% grass)	89	D	0.003

CN (weighted): 88.0
Total Area: 0.103 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

Runoff Curve Number and Runoff Mon Aug 17 14:53:37 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/2
Location: YD #2 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Woods (Good)	70	C	0.027
Open Space-Good (>75% grass)	74	C	0.061
Open Space-Good (>75% grass)	80	D	0.200
Woods (Good)	77	D	0.097
Paved Streets w/Curbs & Sewers	98	D	0.018
Open Space-Poor (<50% grass)	86	C	0.001
Open Space-Poor (<50% grass)	89	D	0.004

CN (weighted): 78.6
Total Area: 0.408 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

Runoff Curve Number and Runoff Mon Aug 17 14:57:21 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/20
Location: CB #4 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Open Space-Good (>75% grass)	80	D	0.052
Woods (Good)	77	D	0.004
Paved Streets w/Curbs & Sewers	98	D	0.106
Open Space-Poor (<50% grass)	89	D	0.011

CN (weighted): 91.5
Total Area: 0.173 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

Runoff Curve Number and Runoff Mon Aug 17 14:56:05 2020

Project: Belta Subdivision By: S.A.L. Date: 08/17/
Location: CB #5 Checked: Date:
Developed

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Woods (Good)	77	D	0.306
Open Space-Good (>75% grass)	80	D	0.330
Paved Streets w/Curbs & Sewers	98	D	0.178
Open Space-Poor (<50% grass)	89	D	0.058

CN (weighted): 83.2
Total Area: 0.872 Acre

2. Runoff

Return Period:	2 YEAR	
Rainfall, P:	0.00	in
Runoff, Q:	0.0000	in
Runoff Volume:	0.0000	Acre-Ft

Hydrograph 25-yr Summary

Project Name:

Hydrology Studio v 3.0.0.16

08-17-2020

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Post To CB #1	2.351	12.07	7,532	----		
2	NRCS Runoff	Post To CB #2	0.534	12.07	1,726	----		
3	NRCS Runoff	Post To CB #3	1.573	12.07	4,878	----		
4	NRCS Runoff	Post To CB #4	1.006	12.07	3,246	----		
5	NRCS Runoff	Post To CB #5	4.502	12.07	13,729	----		
6	NRCS Runoff	Post To ECB #1	3.833	12.07	11,760	----		
7	NRCS Runoff	Post To ECB #2	3.993	12.07	12,211	----		
8	NRCS Runoff	Post To YD#1	0.578	12.07	1,808	----		
9	NRCS Runoff	Post To YD#2	1.908	12.07	5,737	----		

Hydrograph Report

Project Name:

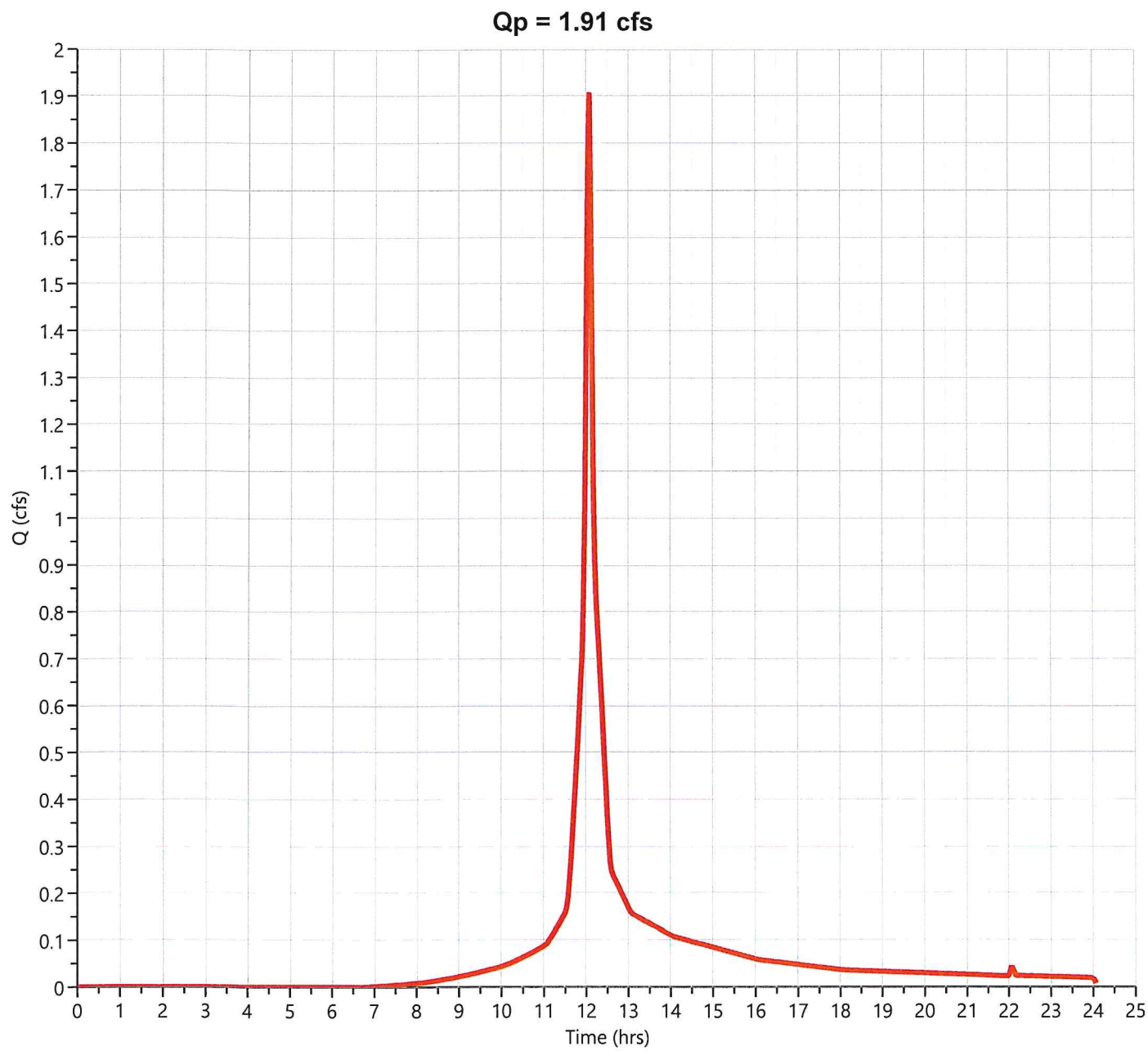
Hydrology Studio v 3.0.0.16

08-17-2020

Post To YD#2

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.908 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.07 hrs
Time Interval	= 2 min	Runoff Volume	= 5,737 cuft
Drainage Area	= 0.408 ac	Curve Number	= 78.6
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.55 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484

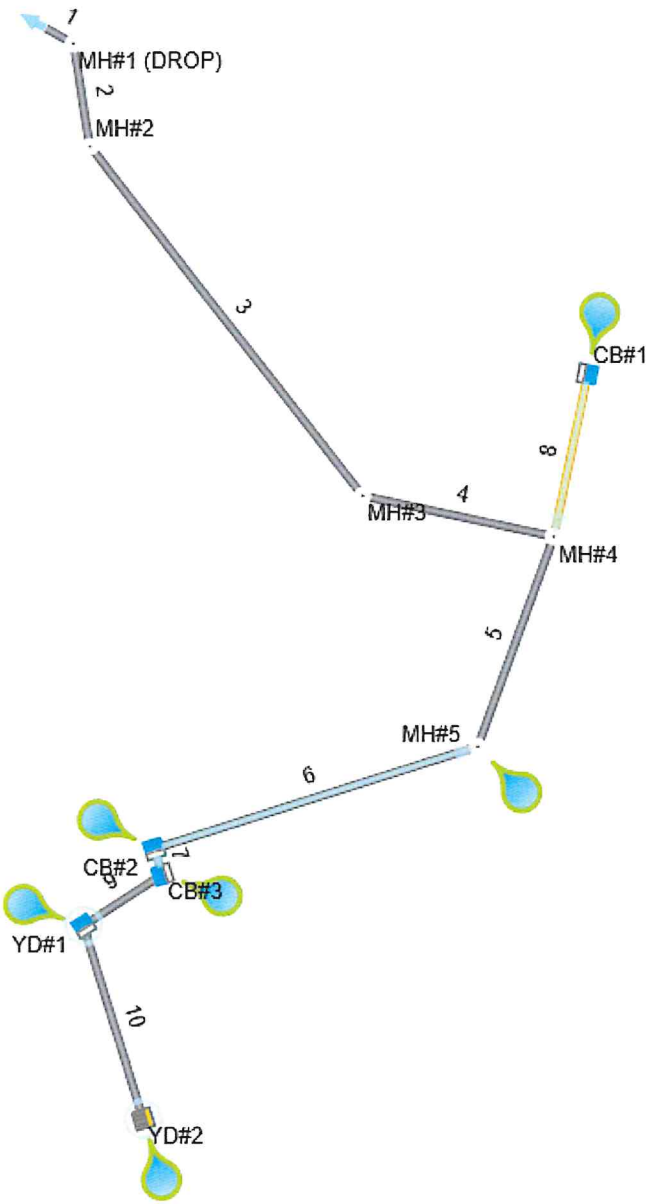


Plan View

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



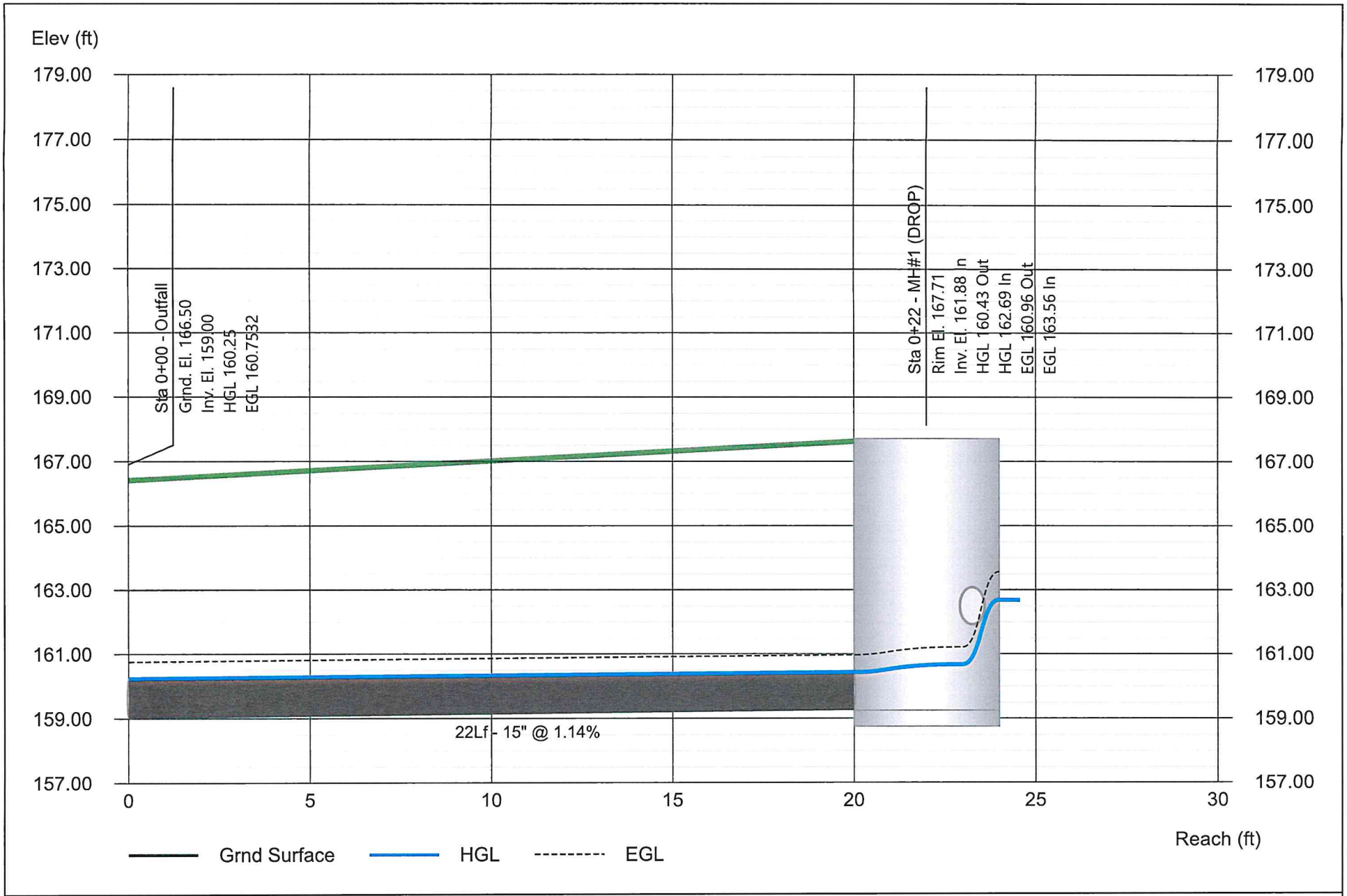
Project File: Private Road.sws

Line 1

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



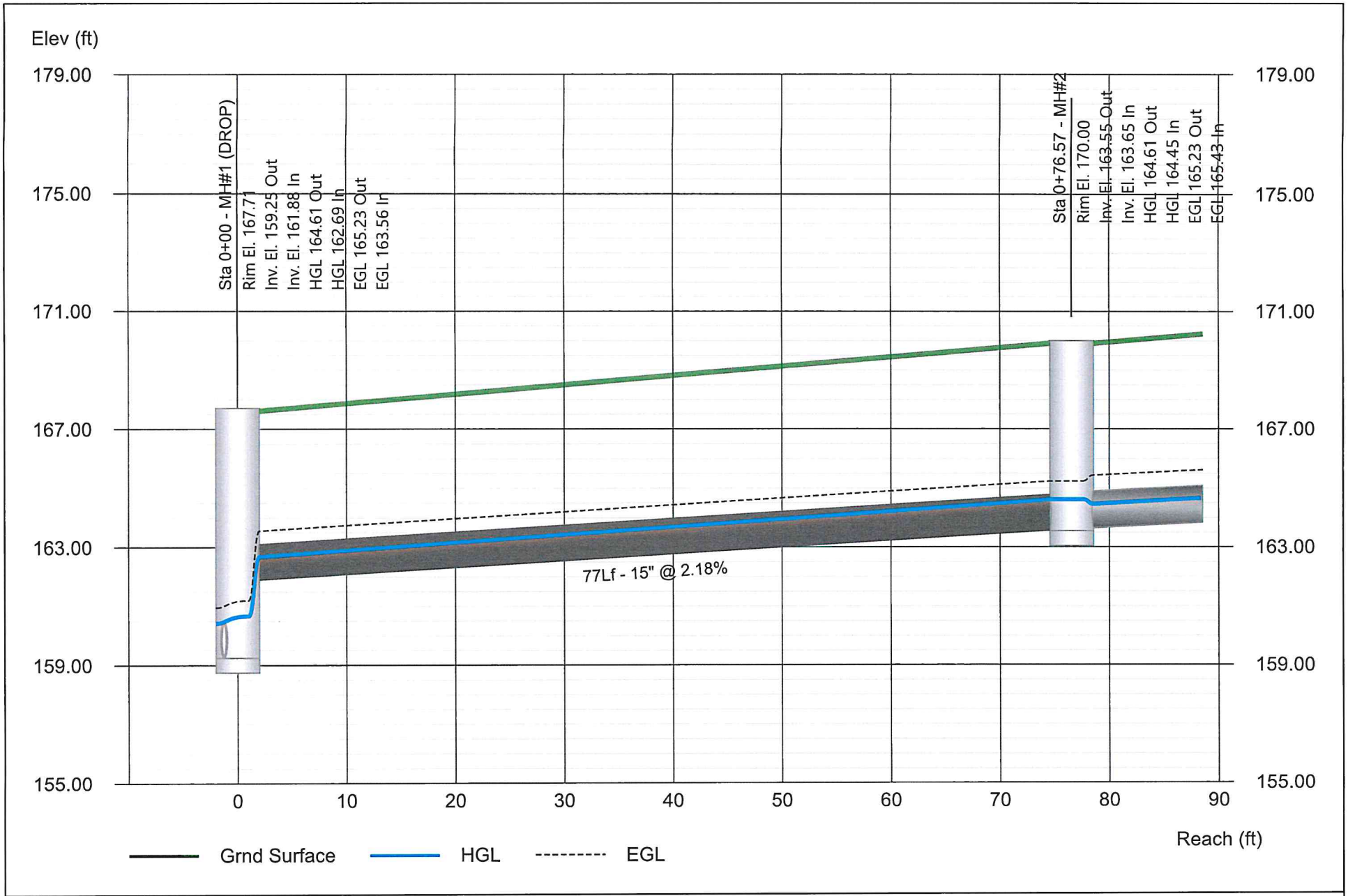
Project File: Private Road.sws

Line 2

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



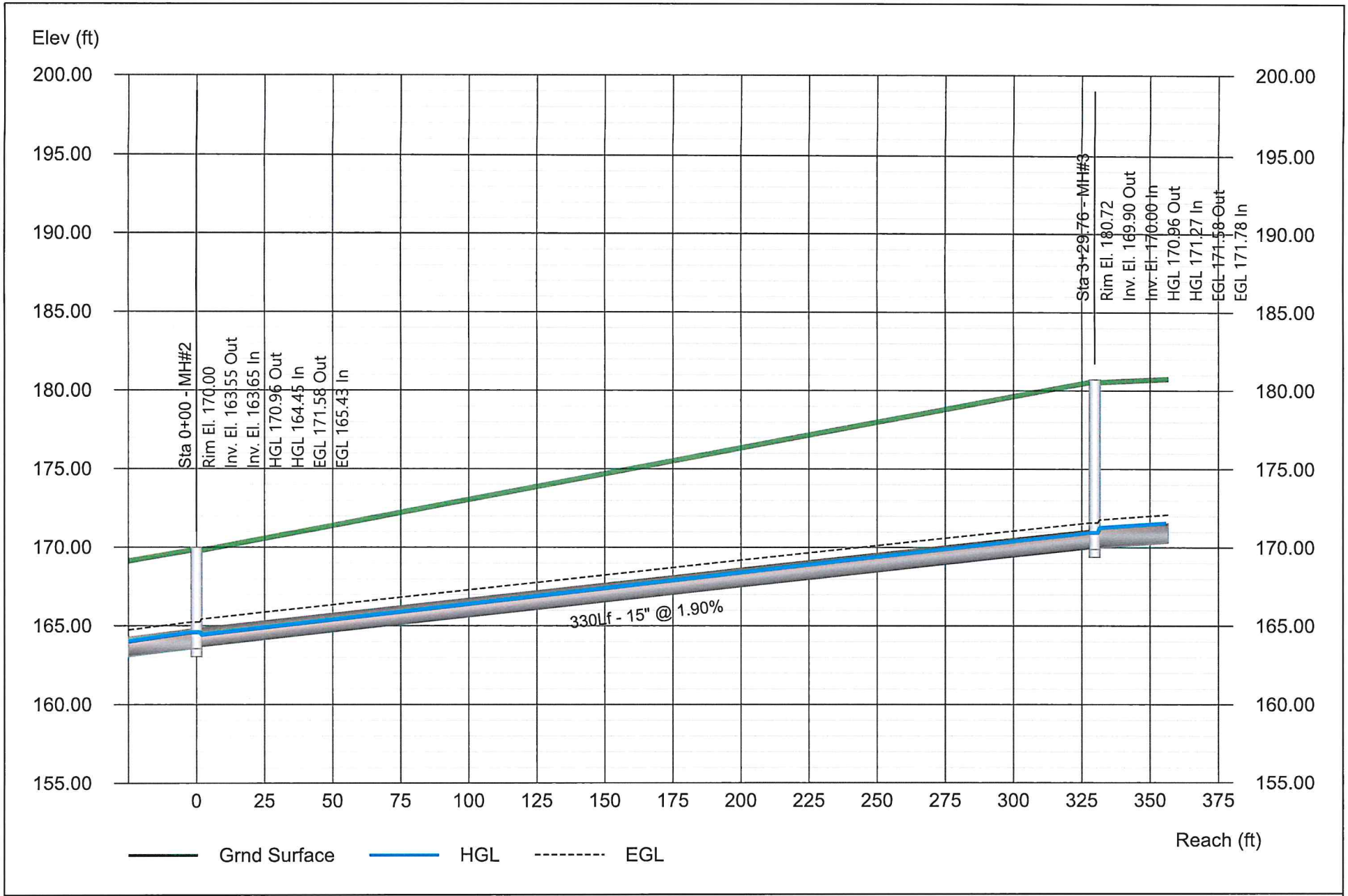
Project File: Private Road.sws

Line 3

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



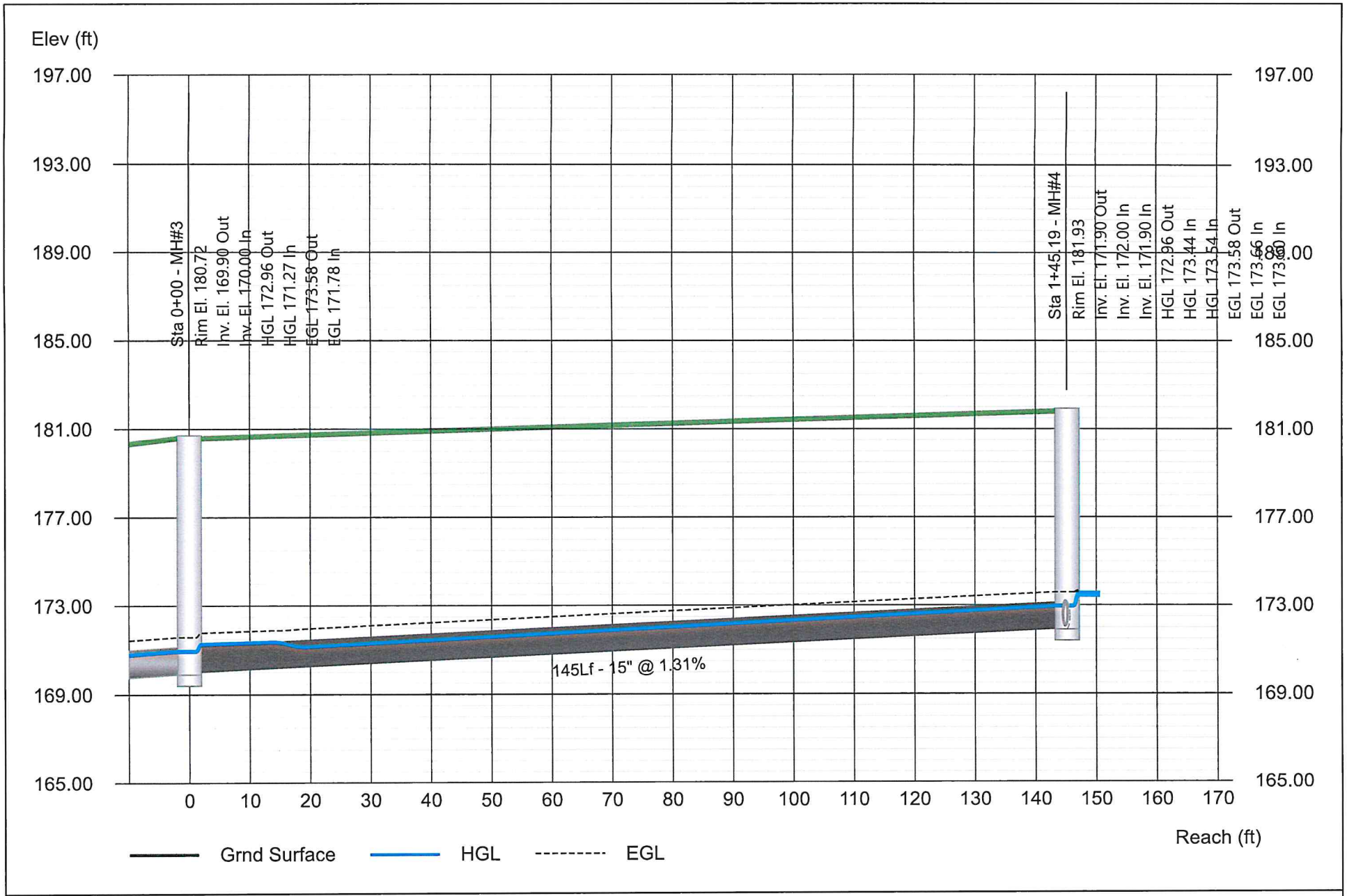
Project File: Private Road.sws

Line 4

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



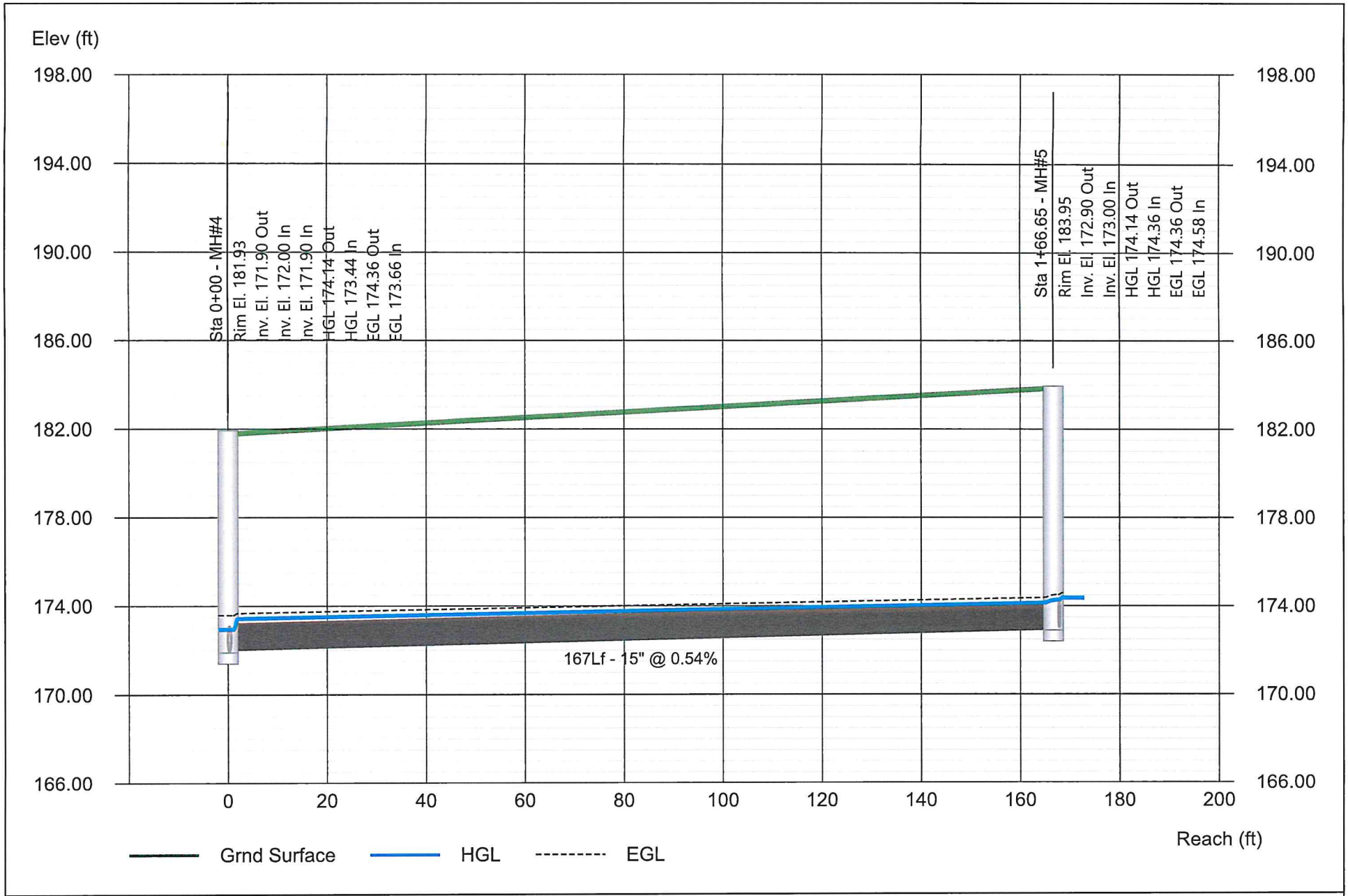
Project File: Private Road.sws

Line 5

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



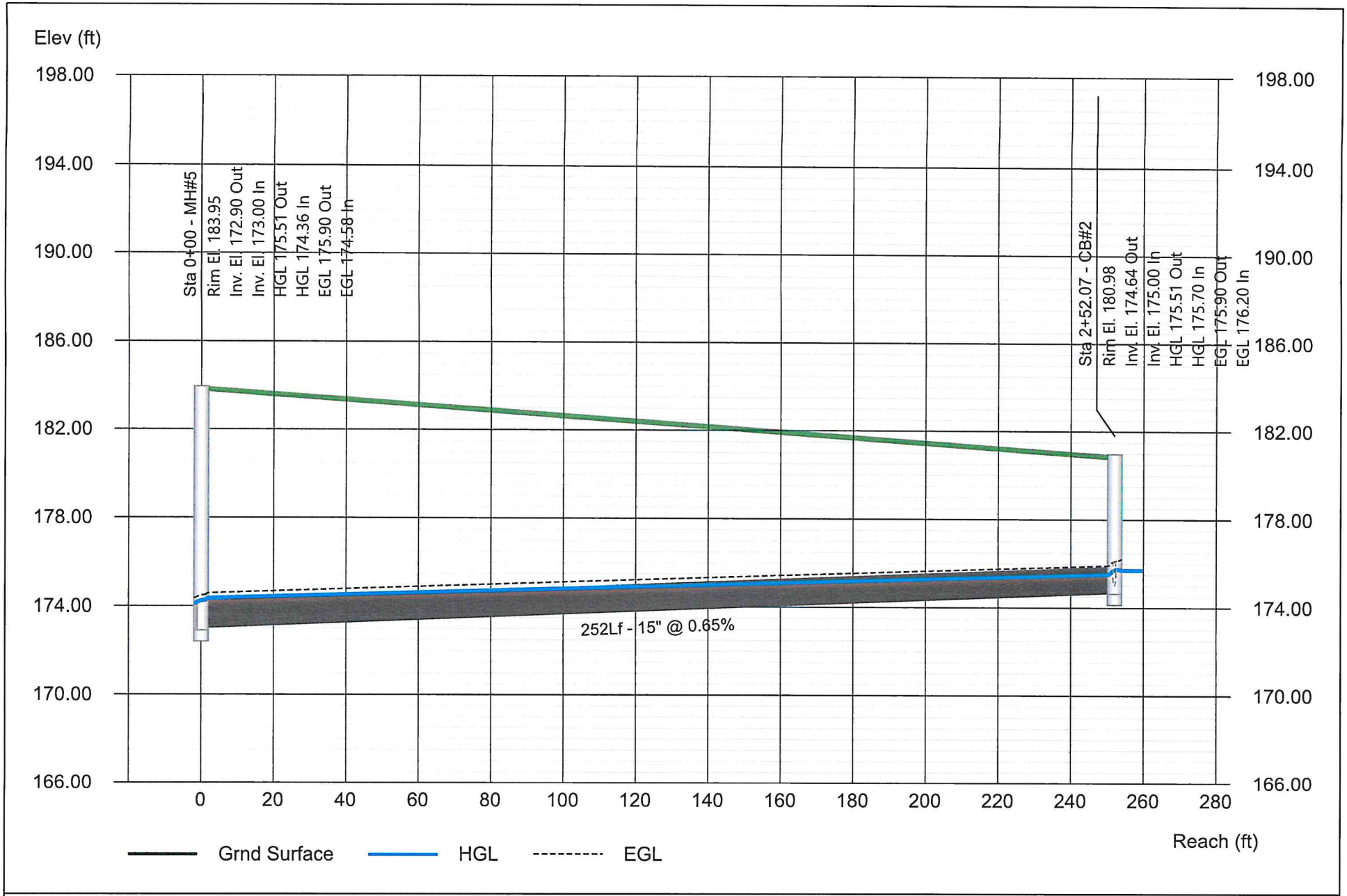
Project File: Private Road.sws

Line 6

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



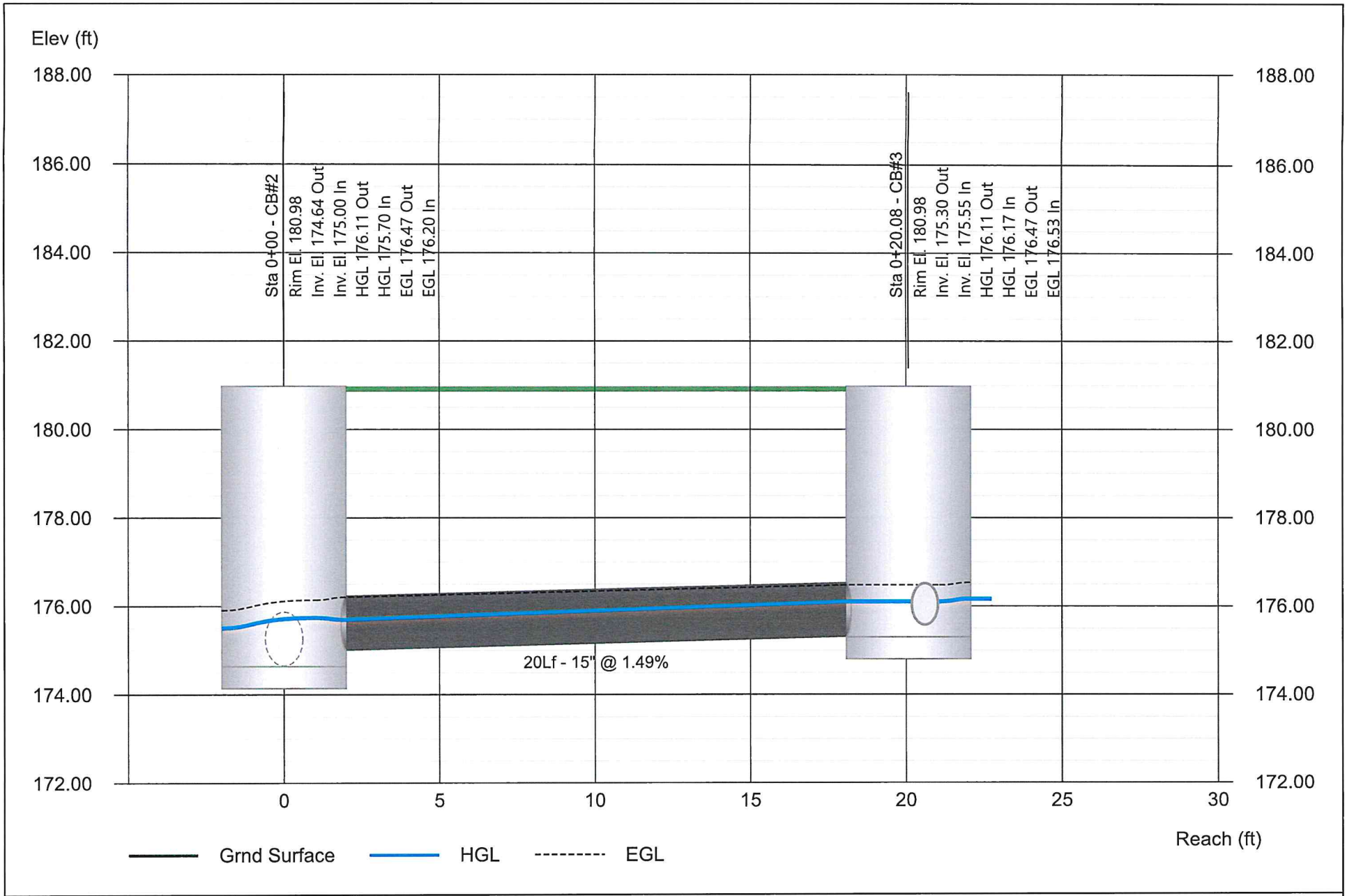
Project File: Private Road.sws

Line 7

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



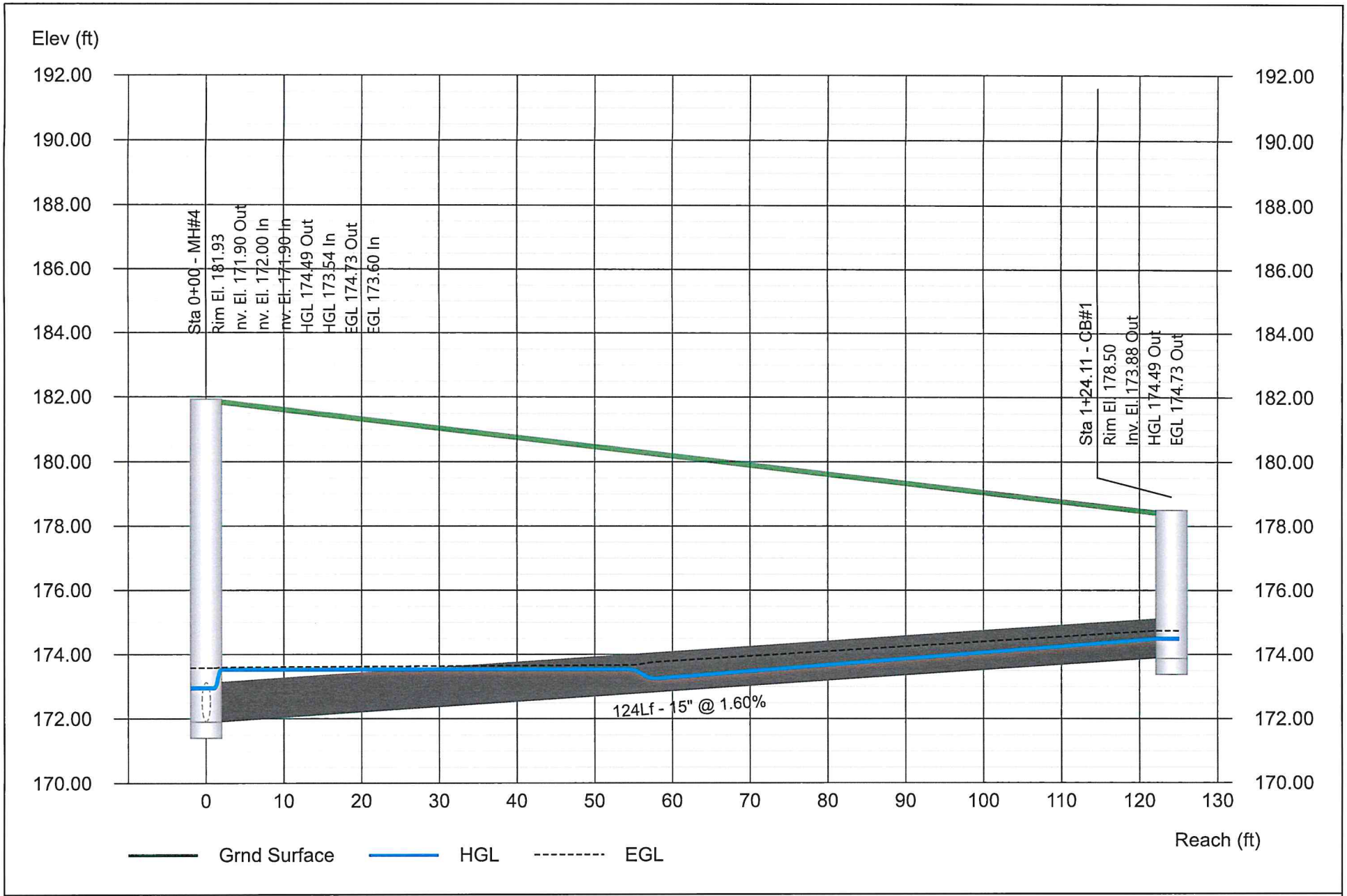
Project File: Private Road.sws

Line 8

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



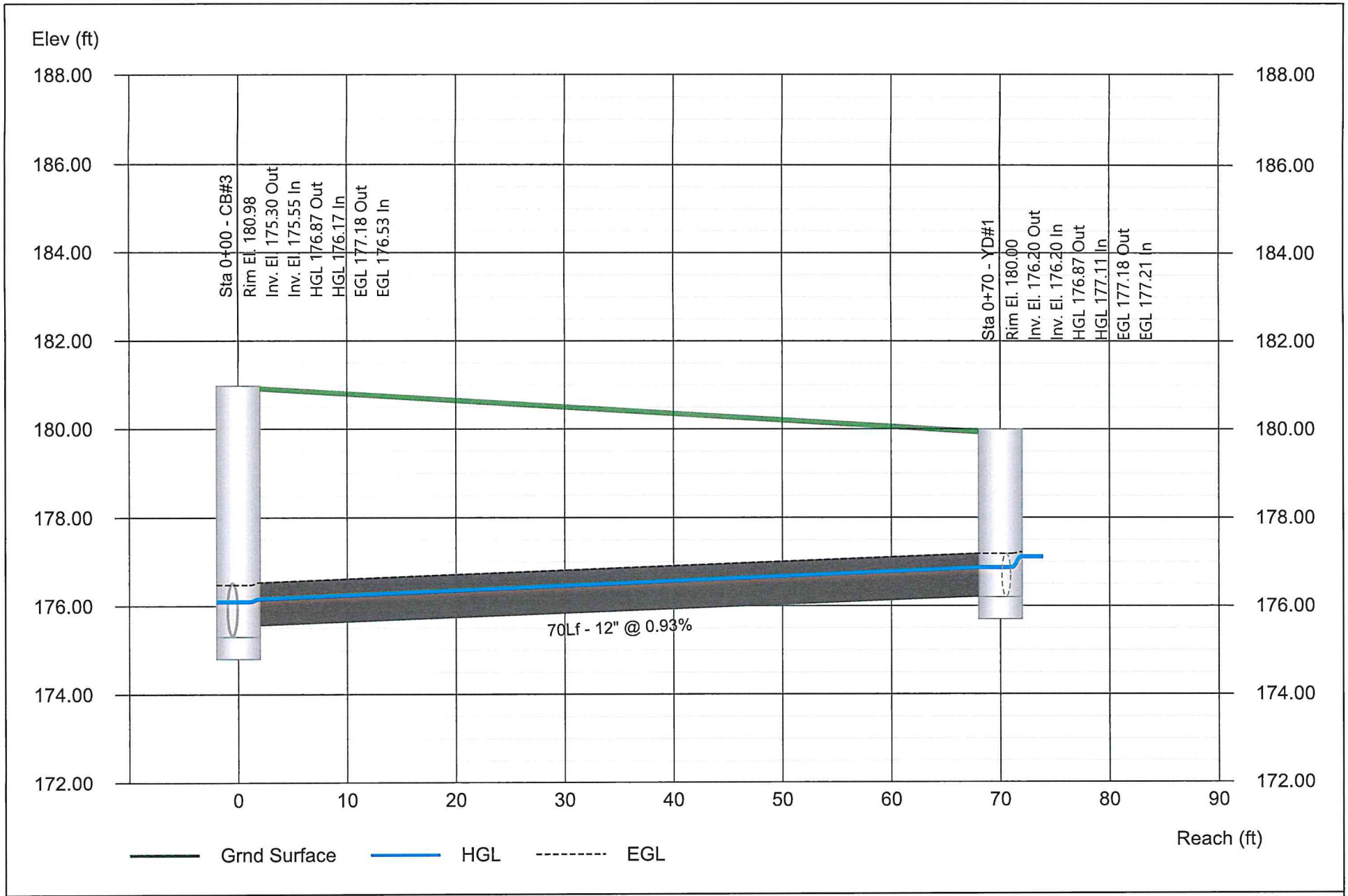
Project File: Private Road.sws

Line 9

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



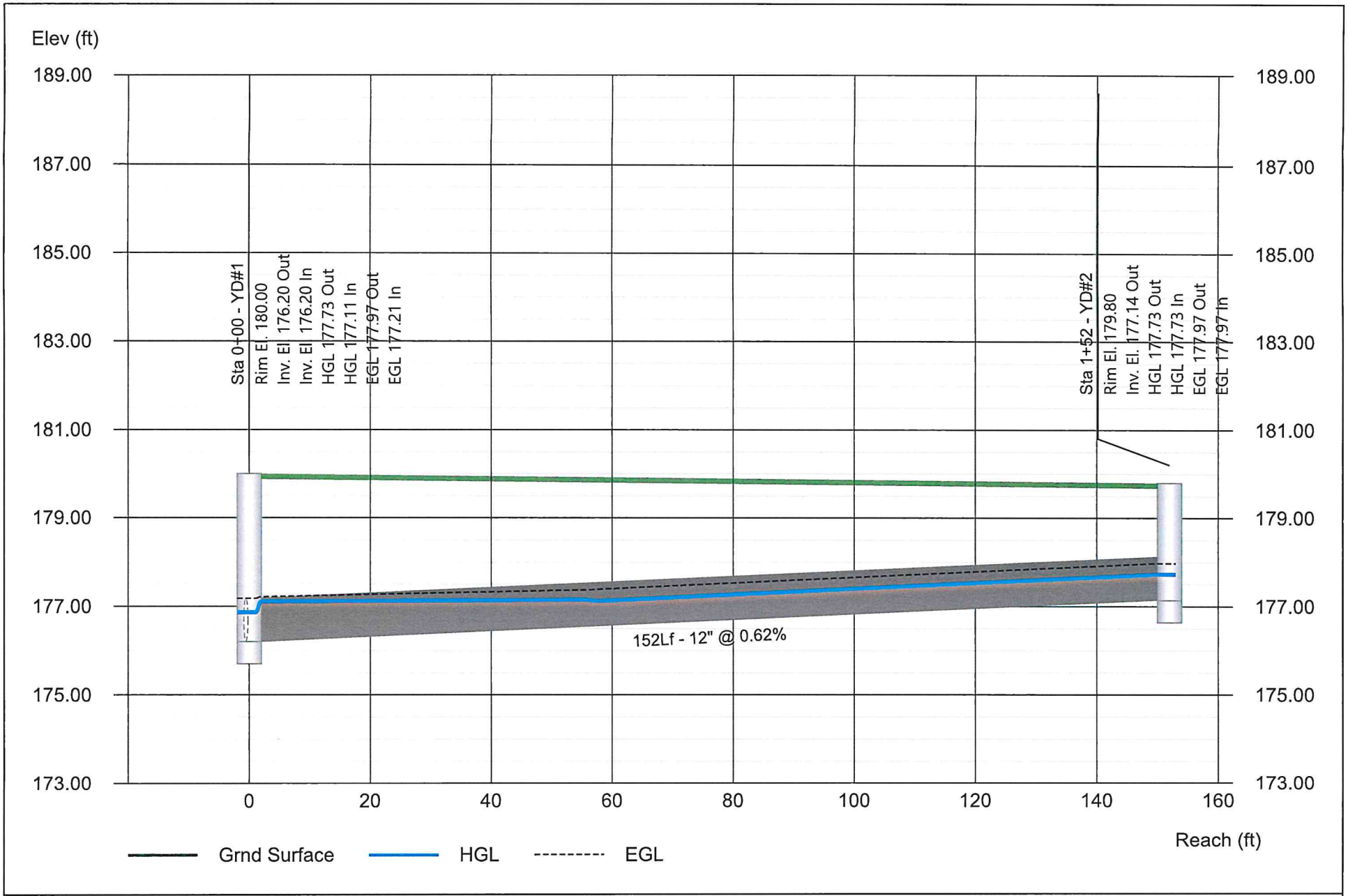
Project File: Private Road.sws

Line 10

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020



Project File: Private Road.sws

Storm Sewer Tabulation

Stormwater Studio 2020 v 3.0.0.20

Project Name: Enter Project Name...

08-17-2020

Line ID	Length	Drng Area		Rational	C x A		Tc		Intensity	Total Q	Capacity	Velocity	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
Line 1	22.00	0.000	0.000	0.00	0.00	0.00	0.0	3.42	5.08	6.98	7.46	5.75	15	1.14	159.25	159.00	160.43	160.25	167.71	166.50	1
Line 2	76.57	0.000	0.000	0.00	0.00	0.00	0.0	3.28	5.08	6.98	10.33	7.32	15	2.18	163.55	161.88	164.61	162.69	170.00	167.71	2
Line 3	329.76	0.000	0.000	0.00	0.00	0.00	0.0	2.63	5.08	6.98	9.63	7.34	15	1.90	169.90	163.65	170.96	164.45	180.72	170.00	3
Line 4	145.19	0.000	0.000	0.00	0.00	0.00	0.0	2.31	5.08	6.98	8.00	6.00	15	1.31	171.90	170.00	172.96	171.27	181.93	180.72	4
Line 5	166.65	0.000	0.000	0.00	0.00	0.00	0.0	1.72	5.08	4.63	5.14	3.78	15	0.54	172.90	172.00	174.14	173.44	183.95	181.93	5
Line 6	252.07	0.000	0.000	0.00	0.00	0.00	0.0	0.90	5.08	4.59	5.64	4.38	15	0.65	174.64	173.00	175.51	174.36	180.98	183.95	6
Line 7	20.08	0.000	0.000	0.00	0.00	0.00	0.0	0.85	5.08	4.06	8.55	5.28	15	1.49	175.30	175.00	176.11	175.70	180.98	180.98	7
Line 8	124.11	0.000	0.000	0.00	0.00	0.00	0.0	0.00	5.08	2.35	8.84	2.92	15	1.60	173.88	171.90	174.49	173.54	178.50	181.93	8
Line 9	70.00	0.000	0.000	0.00	0.00	0.00	0.0	0.62	5.08	2.49	3.72	4.68	12	0.93	176.20	175.55	176.87	176.17	180.00	180.98	9
Line 10	152.00	0.000	0.000	0.00	0.00	0.00	0.0	0.00	5.08	1.91	3.03	3.27	12	0.62	177.14	176.20	177.73	177.11	179.80	180.00	10

Notes: IDF File = WestportCT.idf, Return Period = 2-yrs.

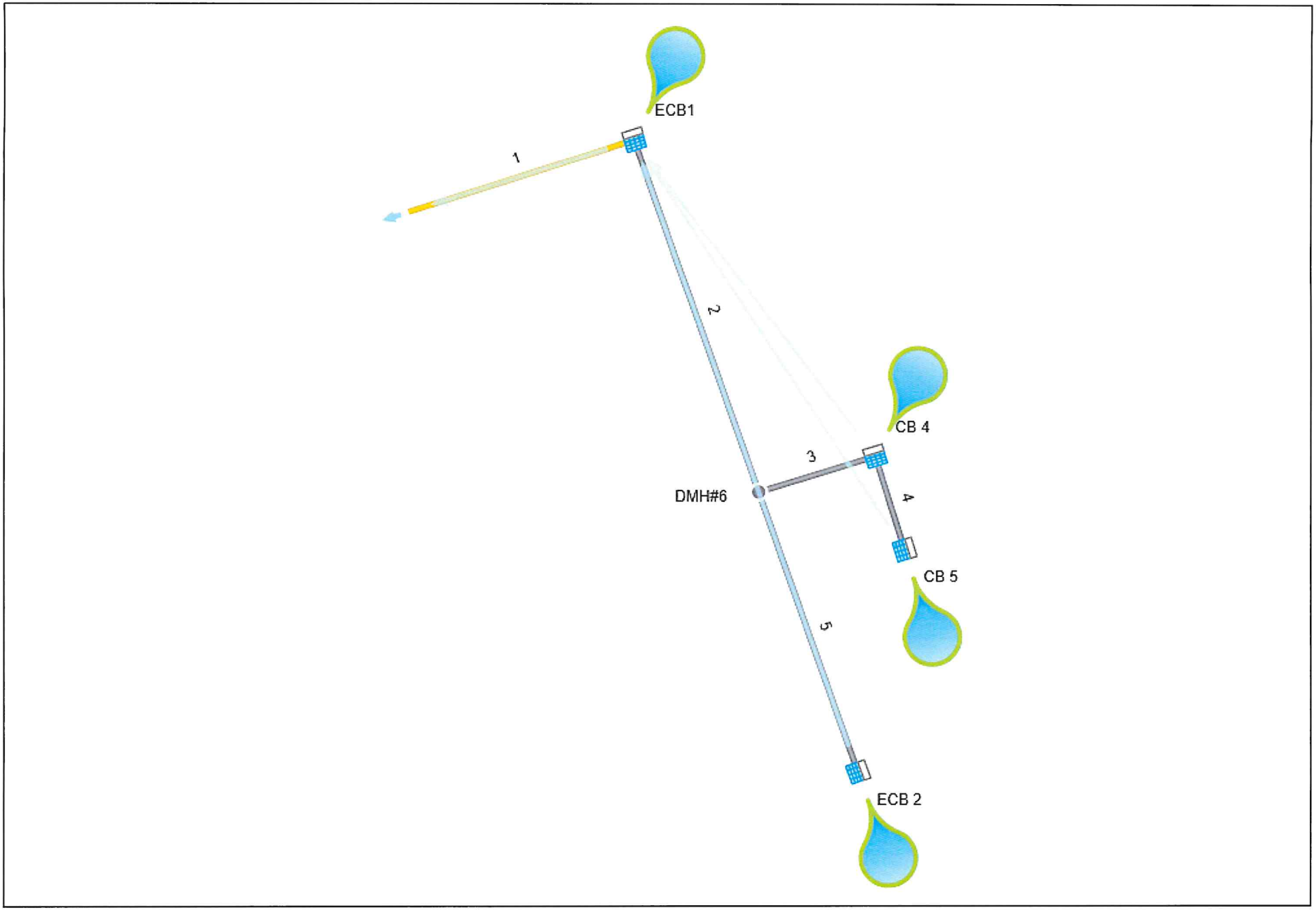
Project File: Private Road.sws

Plan View

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020



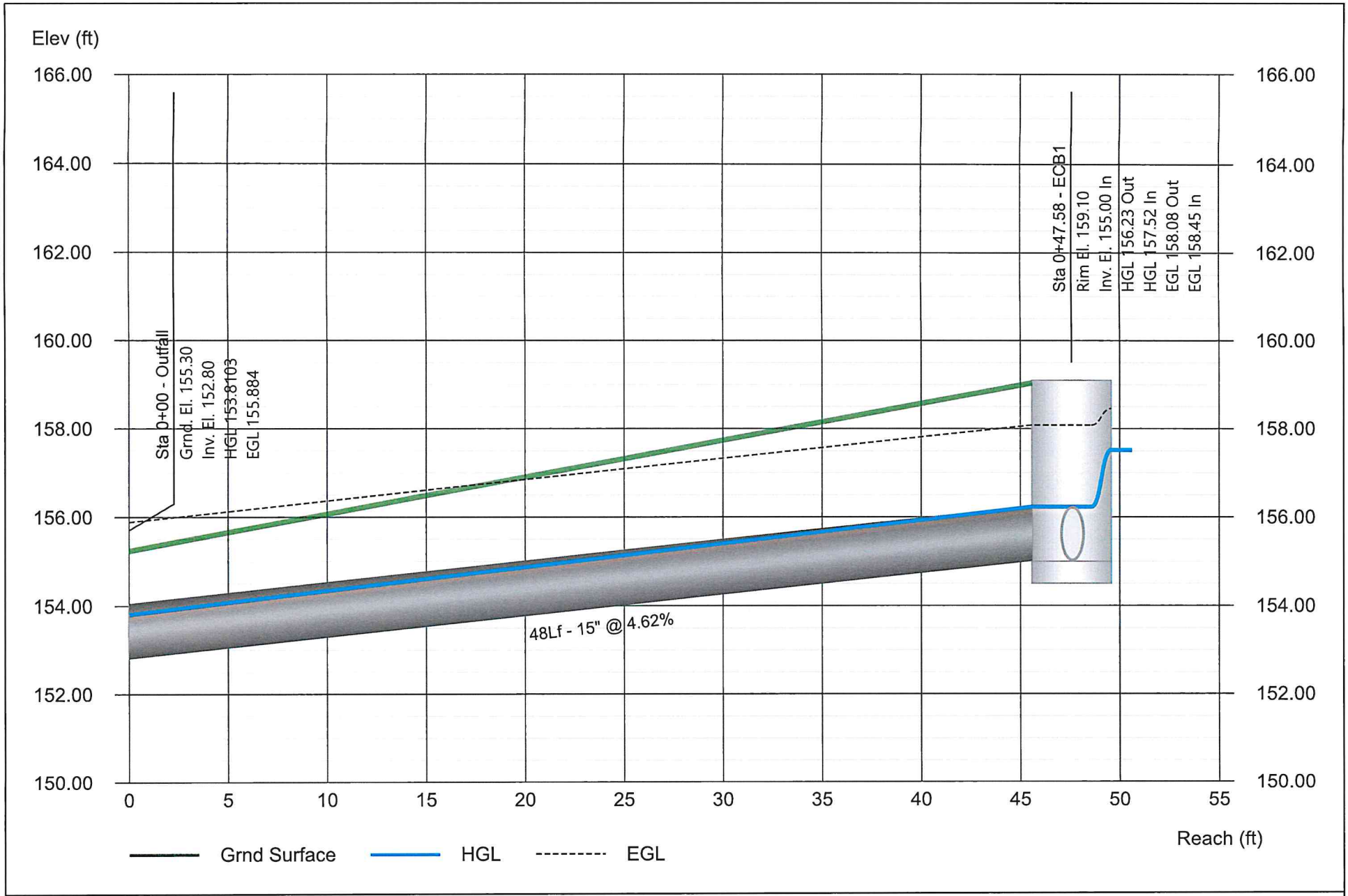
Project File: Pr-CBs-TR55.sws

Line 1

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020



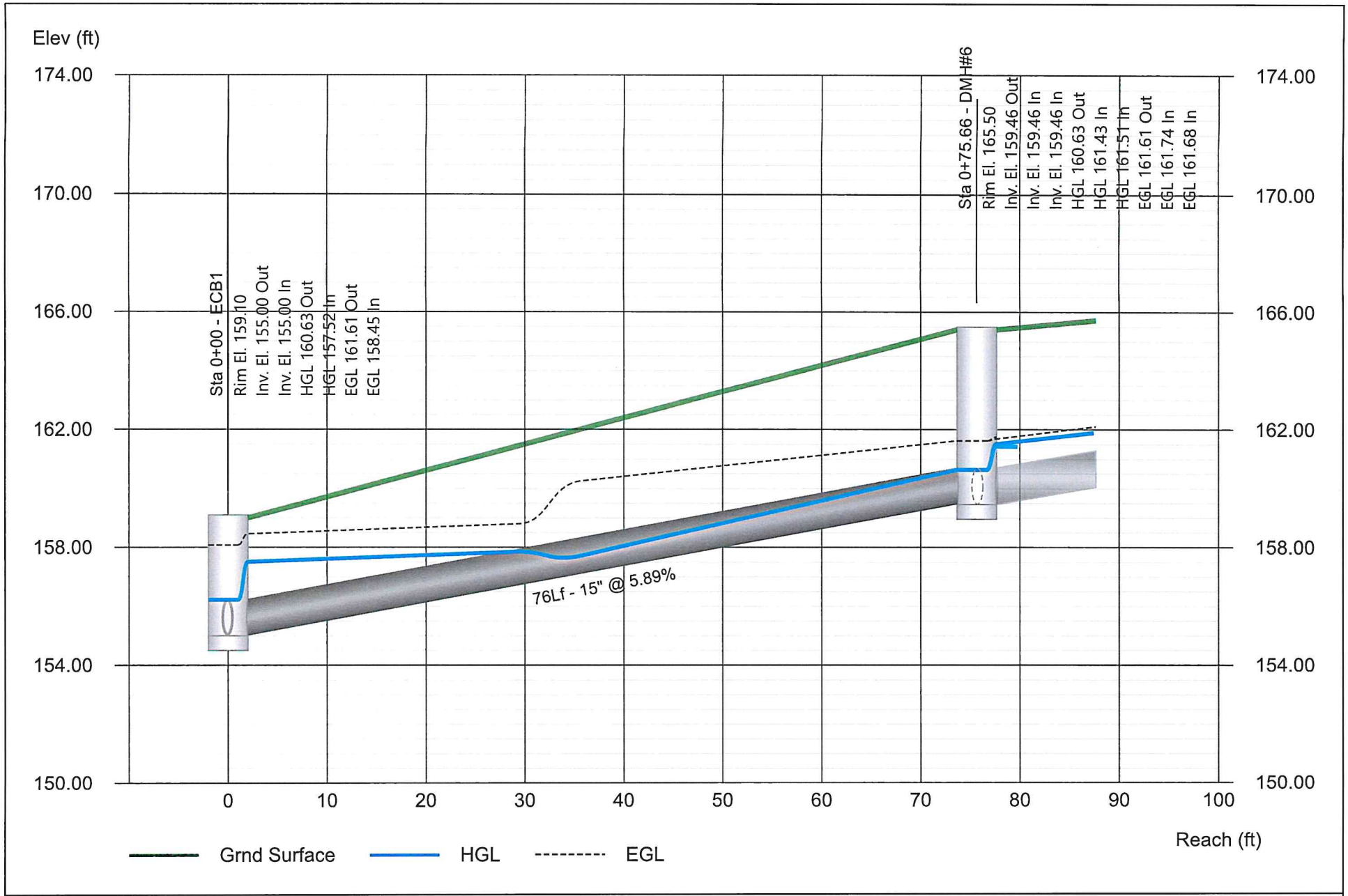
Project File: Pr-CBs-TR55.sws

Line 2

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020



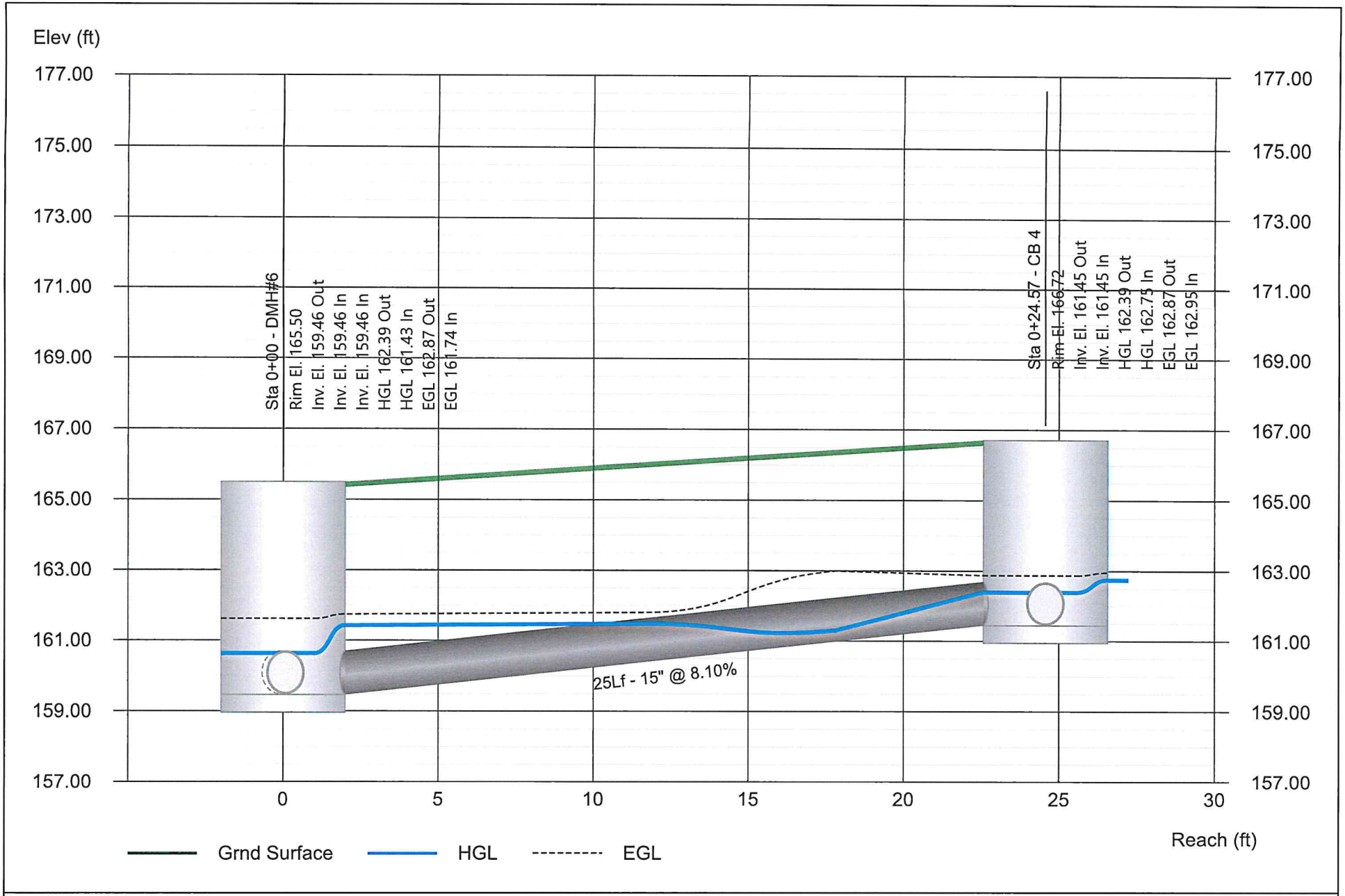
Project File: Pr-CBs-TR55.sws

Line 3

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020



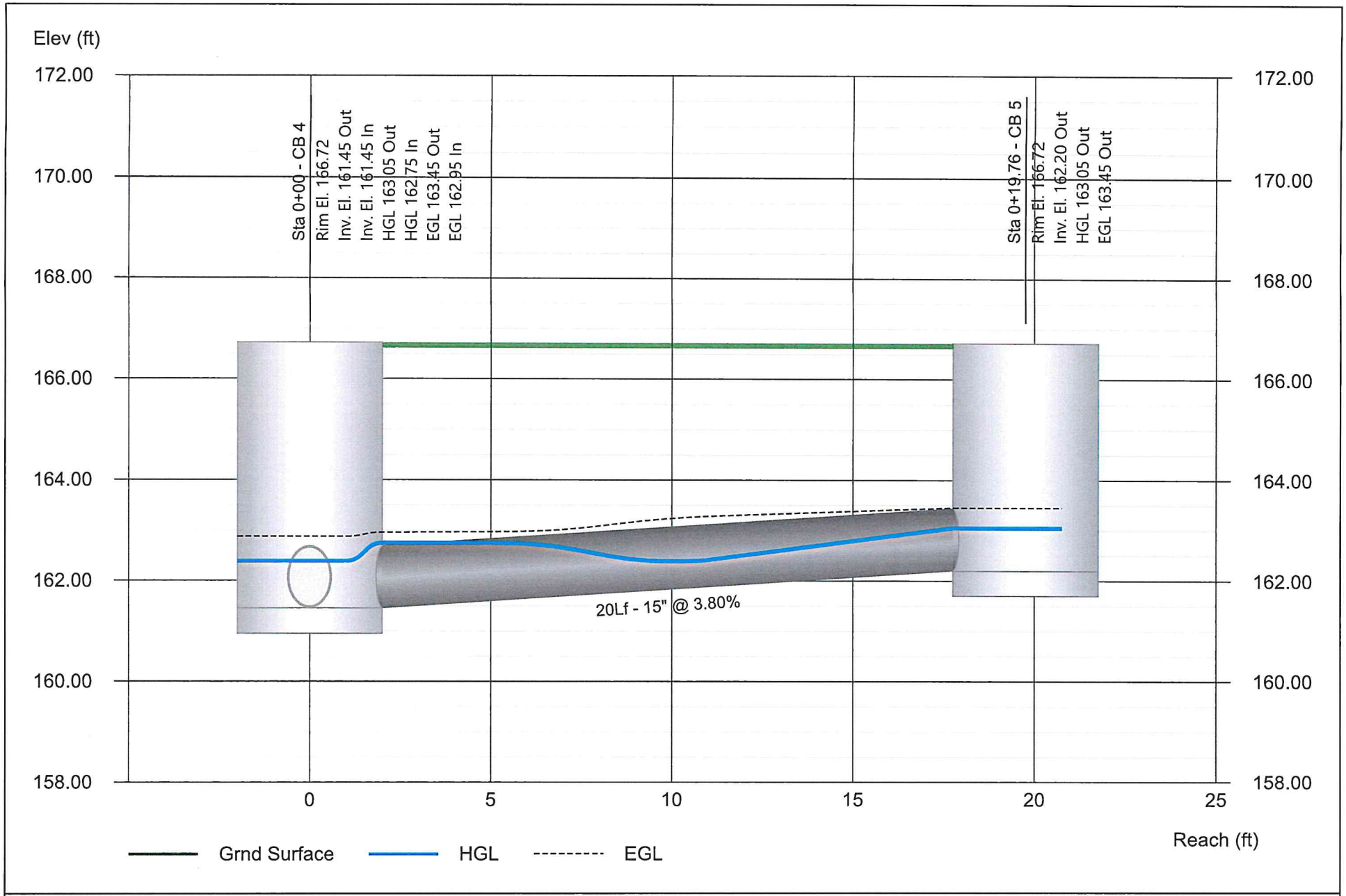
Project File: Pr-CBs-TR55.sws

Line 4

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020



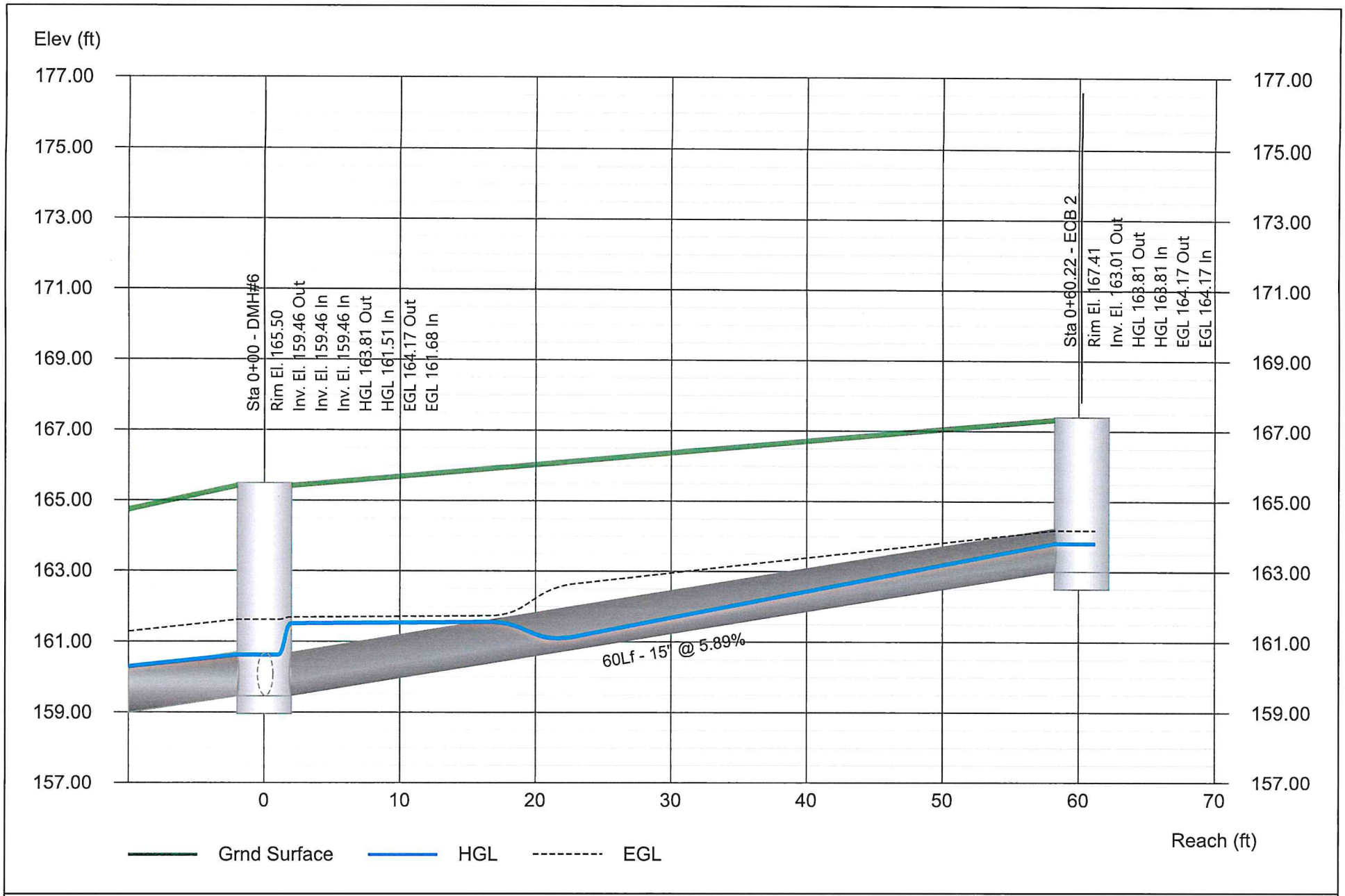
Project File: Pr-CBs-TR55.sws

Line 5

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020



Project File: Pr-CBs-TR55.sws

Storm Sewer Tabulation

Stormwater Studio 2020 v 3.0.0.20

Project Name: Belta Subdivision

08-17-2020

Line ID	Length	Drng Area		Rational	C x A		Tc		Intensity	Total Q	Capacity	Velocity	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
Line 1	47.58	0.000	0.000	0.00	0.00	0.00	5.0	5.18	8.56	13.33	15.04	11.72	15	4.62	155.00	152.80	156.23	153.81	159.10	155.30	1
Line 2	75.66	0.000	0.000	0.00	0.00	0.00	0.0	5.09	8.62	9.50	16.98	7.84	15	5.89	159.46	155.00	160.63	157.52	165.50	159.10	2
Line 3	24.57	0.000	0.000	0.00	0.00	0.00	5.0	5.03	8.66	5.51	19.91	5.03	15	8.10	161.45	159.46	162.39	161.43	166.72	165.50	3
Line 4	19.76	0.000	0.000	0.00	0.00	0.00	5.0	5.00	8.68	4.50	13.63	4.37	15	3.80	162.20	161.45	163.05	162.75	166.72	166.72	4
Line 5	60.22	0.000	0.000	0.00	0.00	0.00	5.0	5.00	8.68	3.99	16.98	4.03	15	5.89	163.01	159.46	163.81	161.51	167.41	165.50	5

Notes: IDF File = WestportCT.idf, Return Period = 25-yrs.

Project File: Pr-CBs-TR55.sws

DYMAR

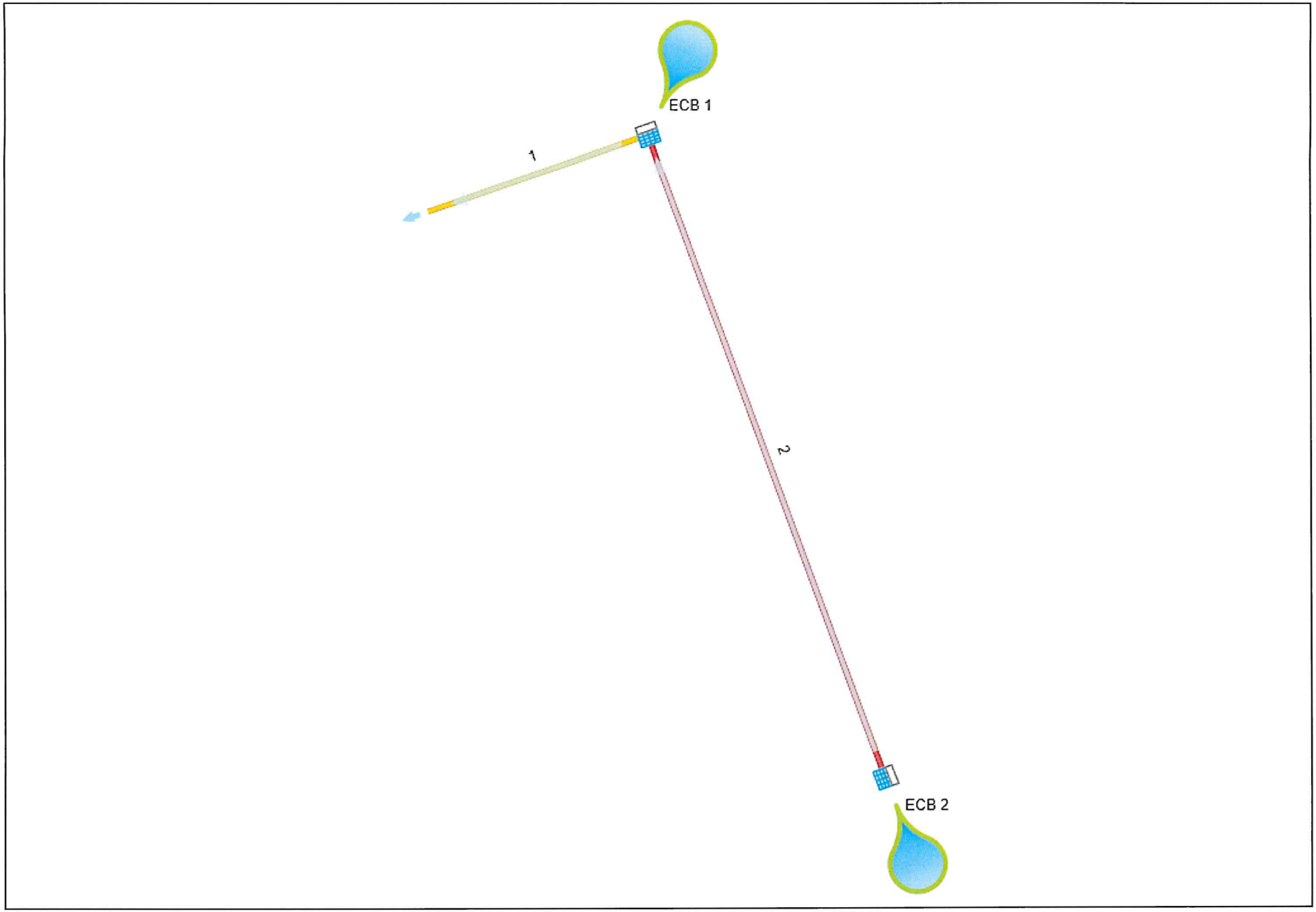
STORMWATER HYDRAULIC ANALYSIS -EXISTING CONDITIONS – RATIONAL METHOD

Plan View

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



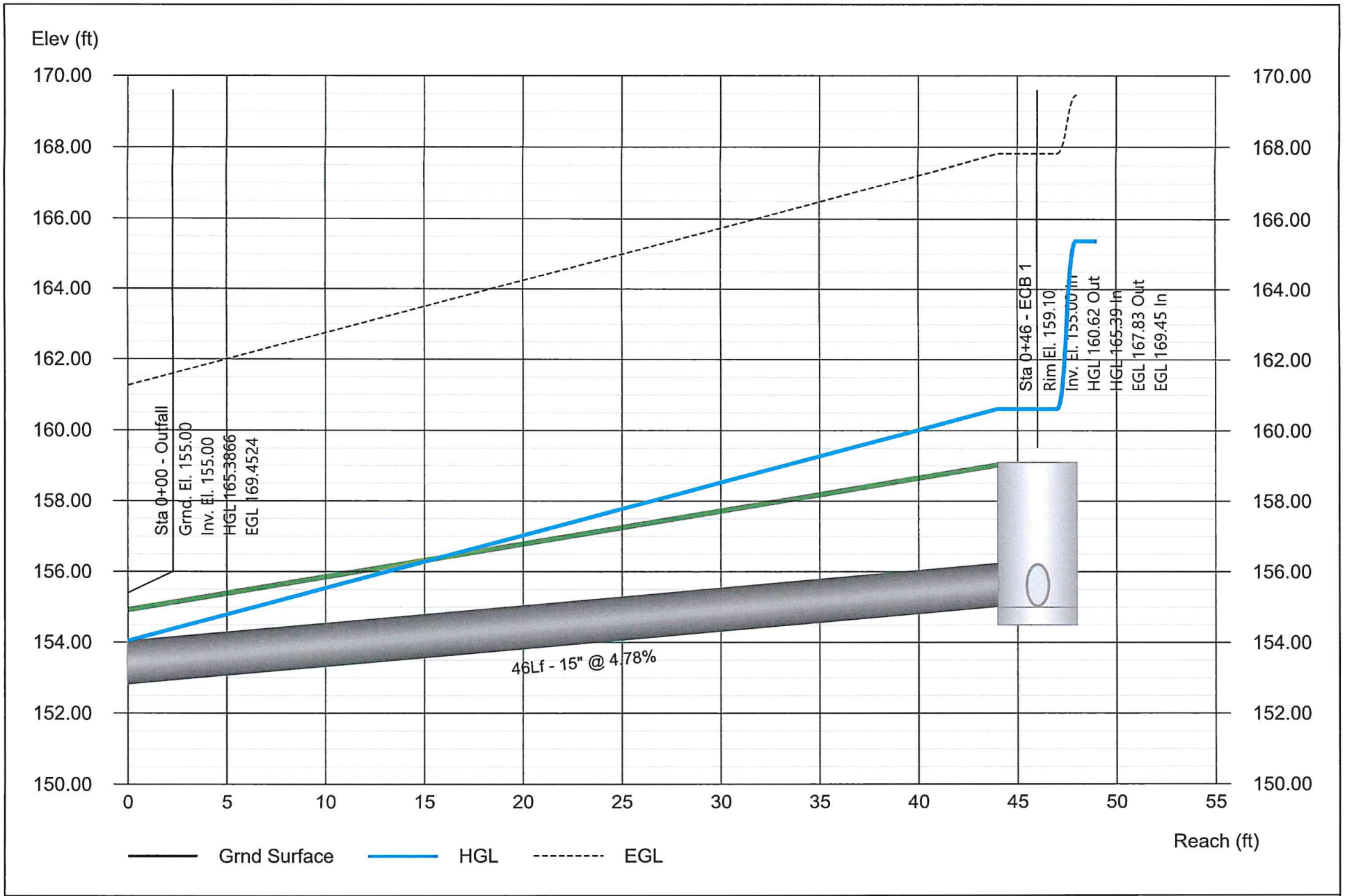
Project File: Ex-CBs.sws

Line 1

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



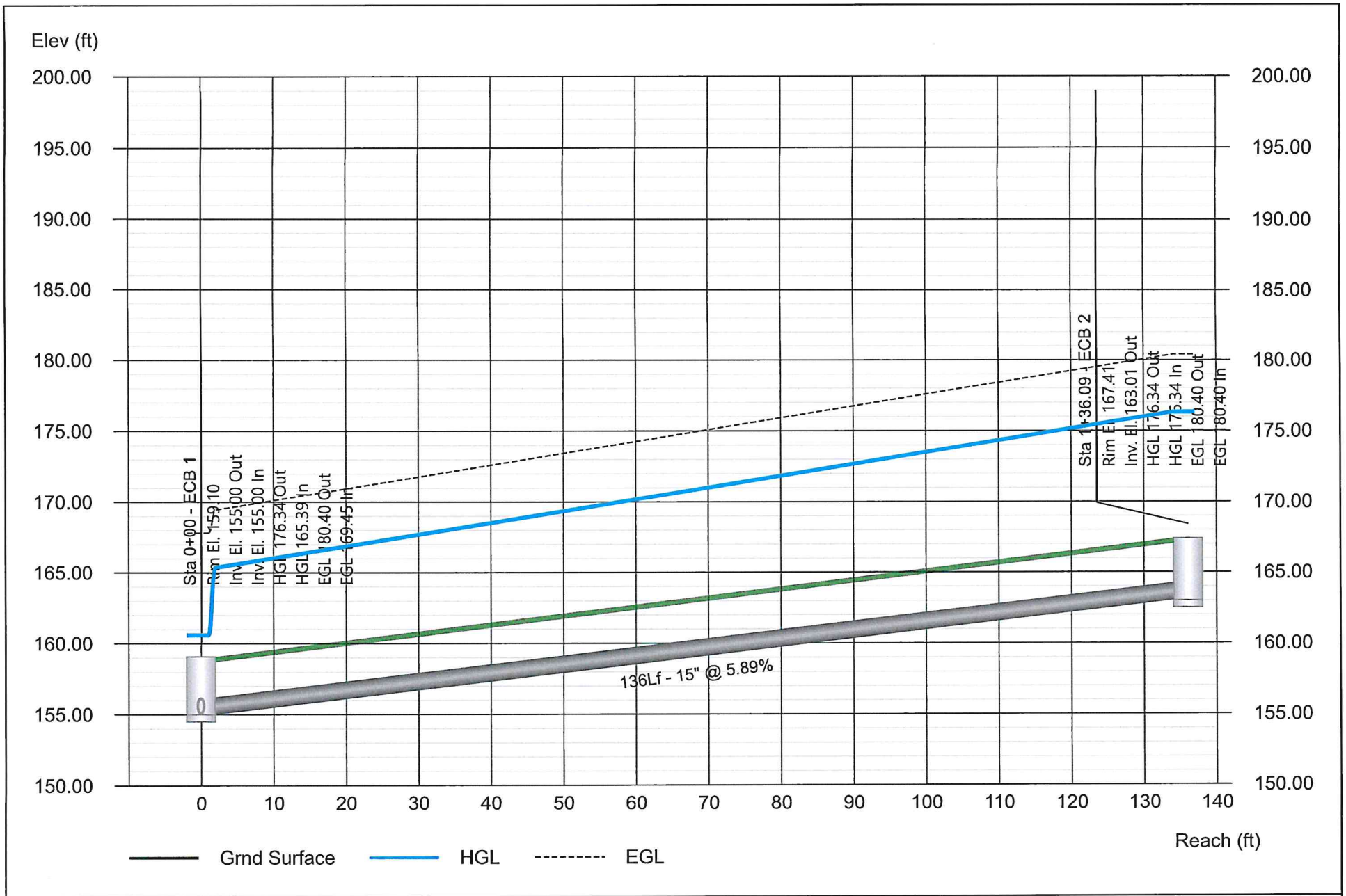
Project File: Ex-CBs.sws

Line 2

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



Project File: Ex-CBs.sws

Storm Sewer Tabulation

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020

Line ID	Length	Drng Area		Rational	C x A		Tc		Intensity	Total Q	Capacity	Velocity	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
Line 1	46.00	3.275	10.895	0.24	0.79	3.08	5.0	5.14	8.58	26.42	15.30	21.53	15	4.78	155.00	152.80	160.62	154.05	159.10	155.00	1
Line 2	136.09	7.620	7.620	0.30	2.29	2.29	5.0	5.00	8.68	19.84	16.97	16.17	15	5.89	163.01	155.00	176.34	165.39	167.41	159.10	2

Notes: IDF File = WestportCT.idf, Return Period = 25-yrs.

Project File: Ex-CBs.sws

Energy Grade Line Calculations

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020

Line No	Line Size	Q	Downstream							Length	Upstream							Pipe		Junction		
			Invert Elev	Depth	Area	HGL Elev	Vel	Vel Head	EGL Elev		Invert Elev	Depth	Area	HGL Elev	Vel	Vel Head	EGL Elev	n Value	Enrgy Loss	HGLa Elev	EGLa Elev	Enrgy Loss
	(in)	(cfs)	(ft)	(ft)	(sqft)	(ft)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)
1	15	26.42	152.80	1.25[3]	1.23	154.05	21.54	7.21	161.26	46.00	155.00	1.25	1.23	160.62	21.53	7.21	167.83	0.012	6.564	160.62	167.83	0.00
2	15	19.84	155.00	1.25	1.23	165.39	16.17	4.07	169.45	136.09	163.01	1.25	1.23	176.34	16.17	4.06	180.40	0.012	10.950	176.34	180.40	0.00

Notes: Return Period = 25-yrs. [3] Normal depth.

Project File: Ex-CBs.sws

Inlet Report

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020

Line No	Inlet		Q				Curb		Grate			Gutter							Inlet			Byp Line No
	Id	Type	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Ht (in)	L (ft)	L (ft)	W (ft)	Area (sqft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	ECB 1	Combination	6.88	10.44	8.63	8.68	3.0	5.00	3.00	1.50	-	0.084	2.00	0.030	0.030	0.013	0.30	10.13	0.37	9.69	1.0	0
2	ECB 2	Combination	19.84	0.00	9.41	10.44	3.0	5.00	3.00	1.50	-	0.080	2.00	0.030	0.030	0.013	0.32	10.77	0.39	10.32	1.0	1

Notes: Return Period = 25-yrs. All curb inlets are Horiz throat.,

Project File: Ex-CBs.sws

C-Factor Calculation Tue Jul 7 13:34:48 2020

Project: Belta Subivision By: S.A.L. Date: 07/07/2
Location: DA ECB 1 Checked: Date:
Present

C-factor (CF)

Cover description	CF	Area(Acre)
Drives and Walks	0.900	0.083
Roofs	0.950	0.120
Lawns, Sandy Soil, Steep, 7%	0.180	0.549
Unimproved Areas	0.200	1.099
Unimproved Areas - post	0.200	1.424

CF (weighted): 0.242
Total Area: 3.275 Acre

C-Factor Calculation Tue Jul 7 13:35:46 2020

Project: Belta Subivision By: S.A.L. Date: 07/07/2
Location: DA ECB 2 Checked: Date:
Present

C-factor (CF)

Cover description	CF	Area(Acre)
Lawns, Sandy Soil, Steep, 7%	0.180	0.420
Roofs	0.950	0.113
Unimproved Areas	0.200	0.143
Unimproved Areas - post	0.200	0.086

CF (weighted): 0.300
Total Area: 0.762 Acre

DYMAR

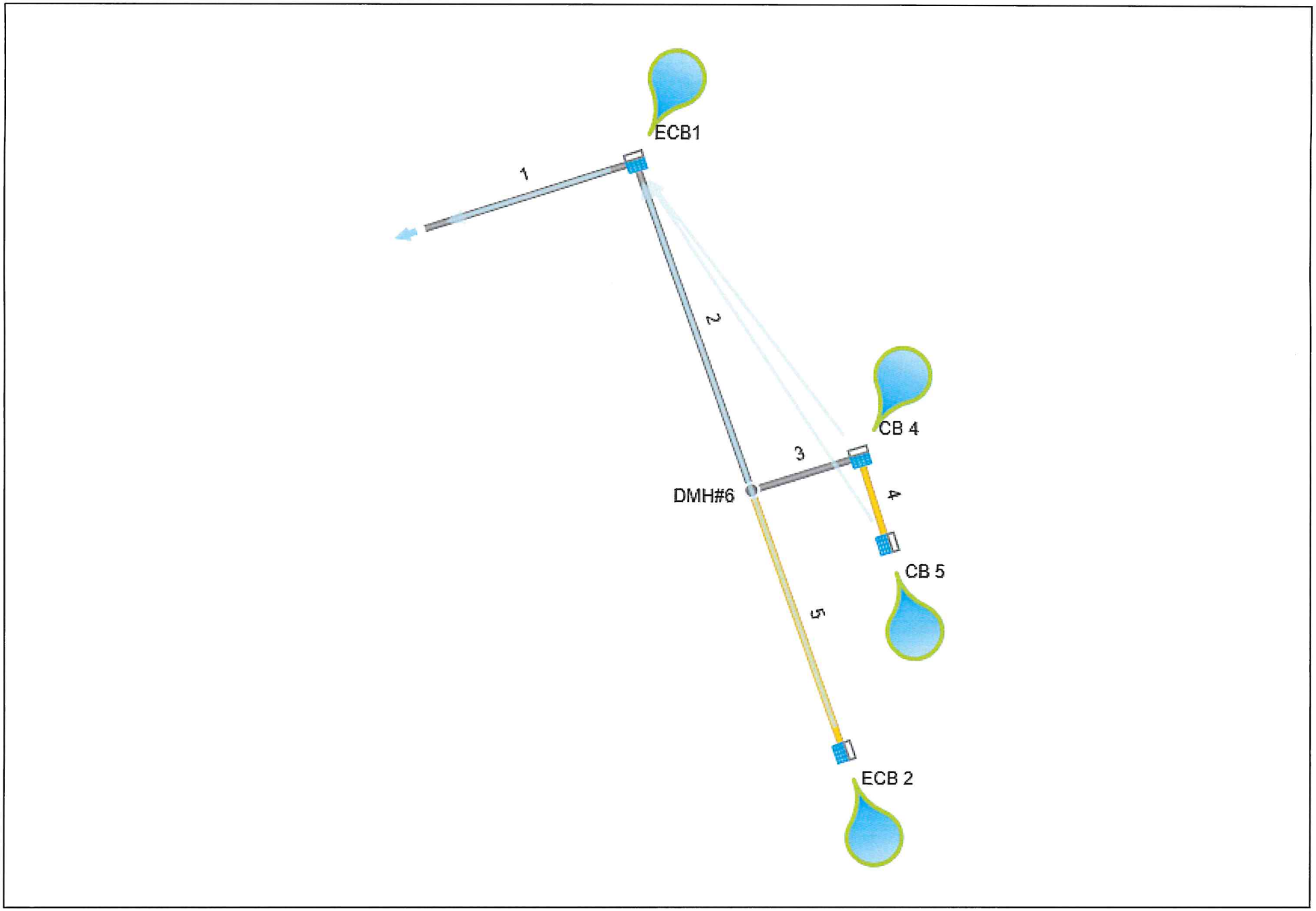
STORMWATER HYDRAULIC ANALYSIS -POST-DEVELOPMENT – RATIONAL METHOD

Plan View

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



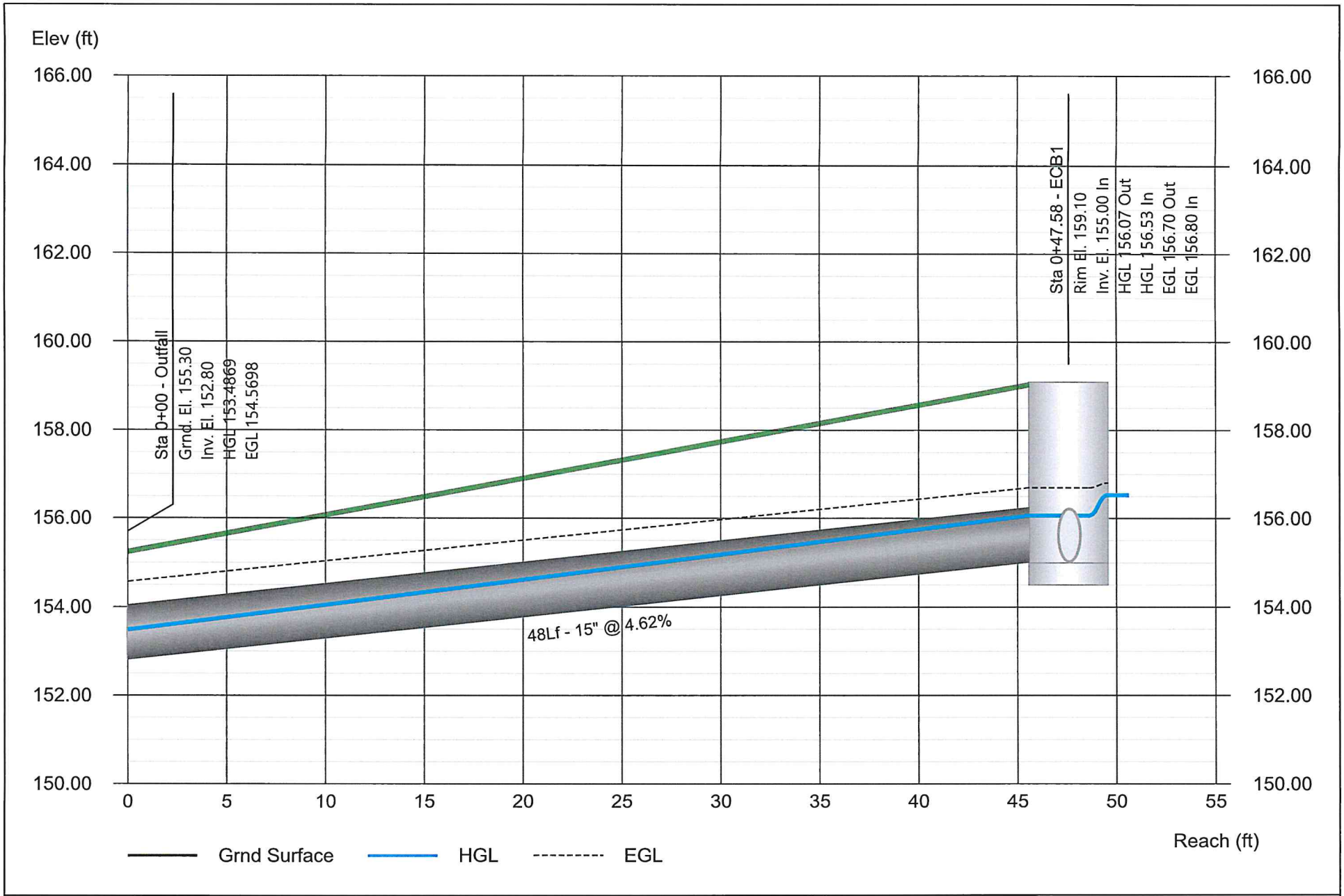
Project File: Pr-CBs.sws

Line 1

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



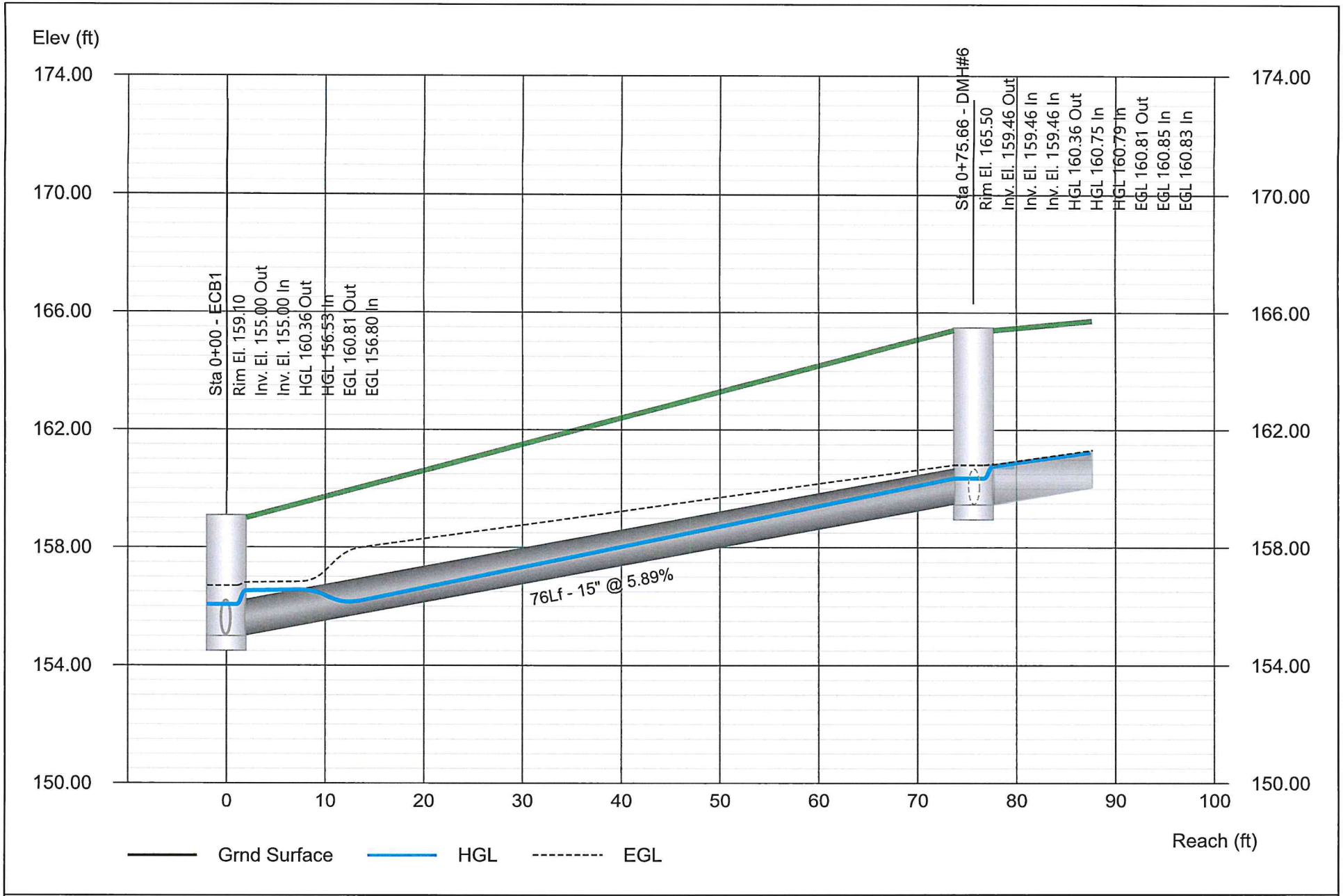
Project File: Pr-CBs.sws

Line 2

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



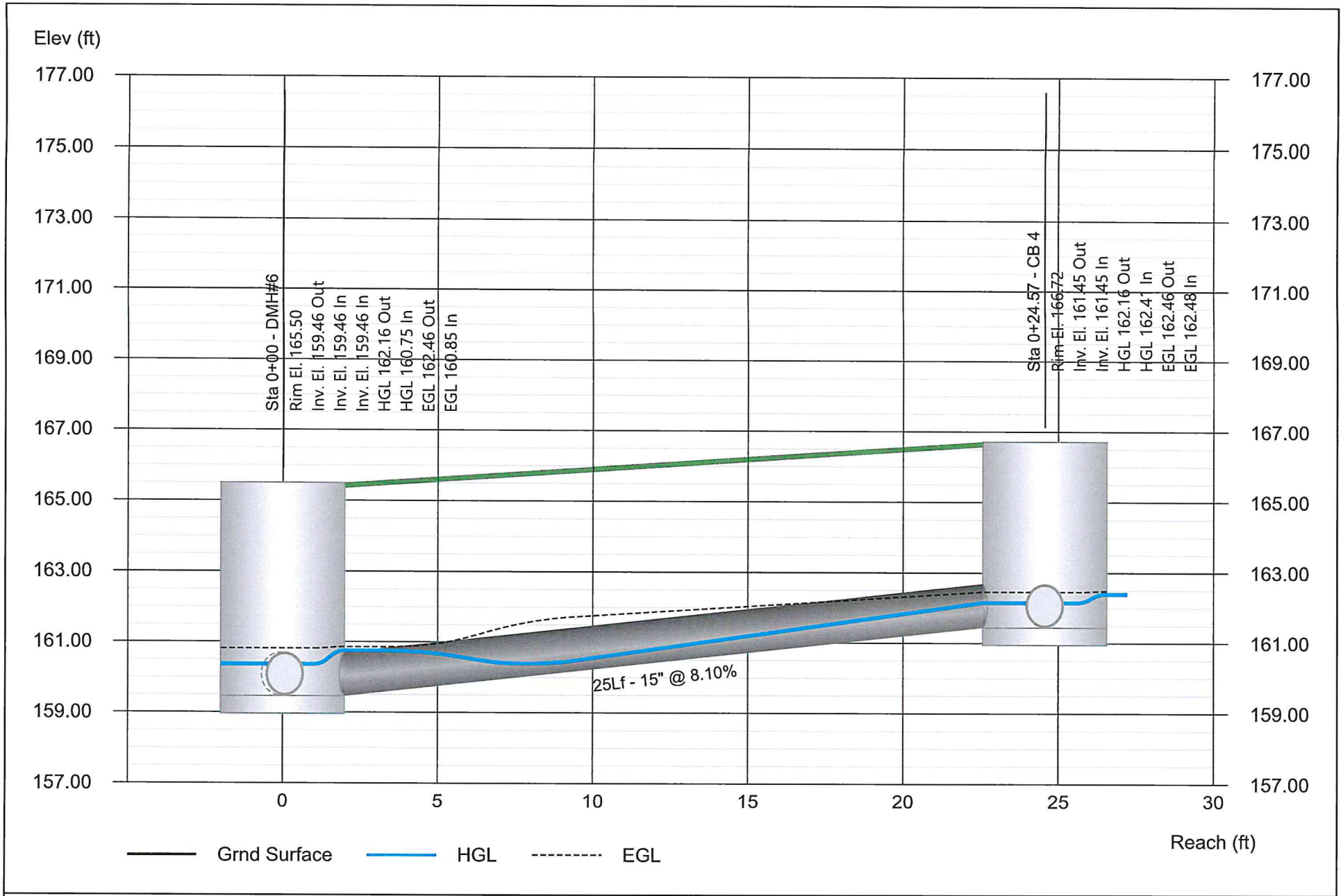
Project File: Pr-CBs.sws

Line 3

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



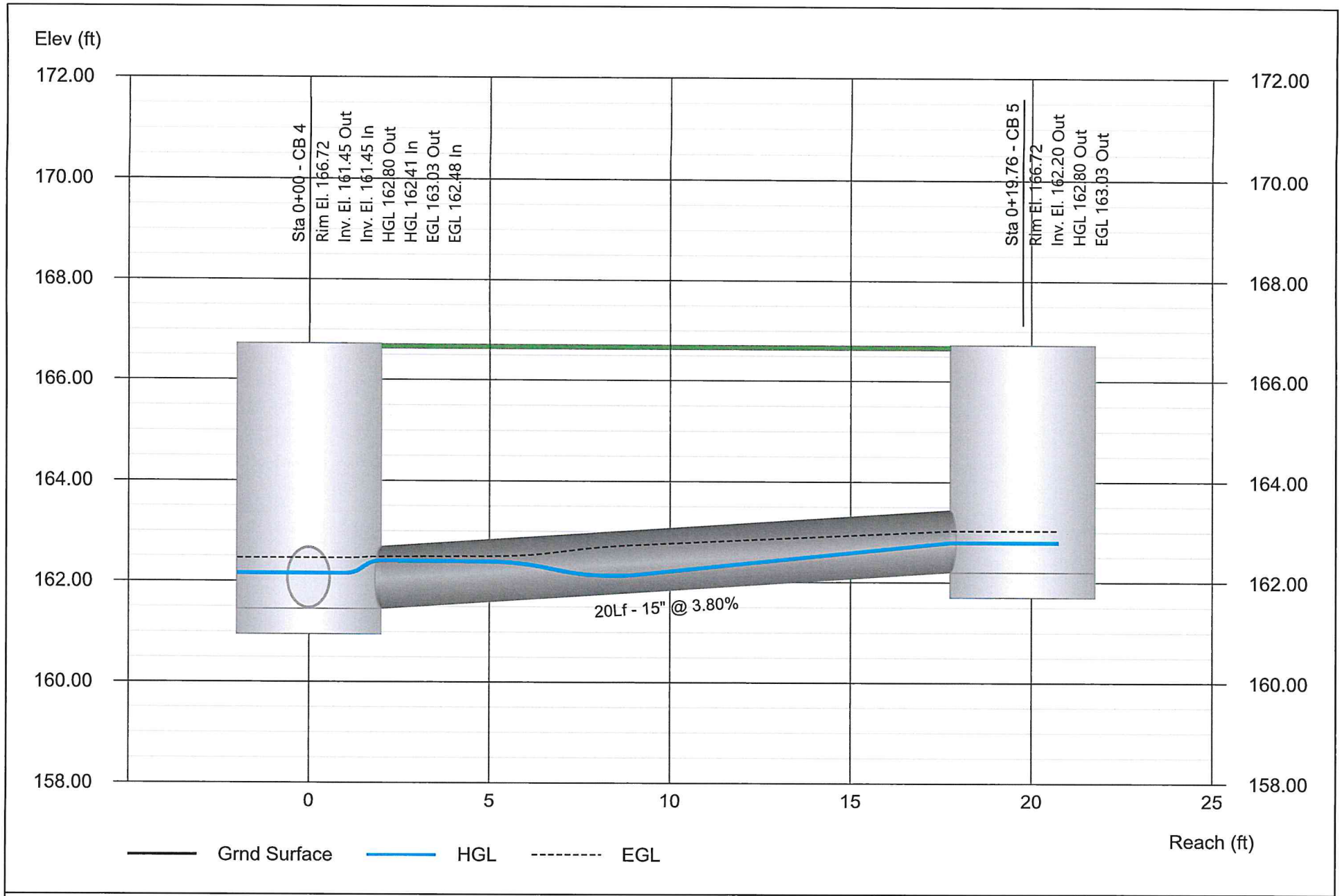
Project File: Pr-CBs.sws

Line 4

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



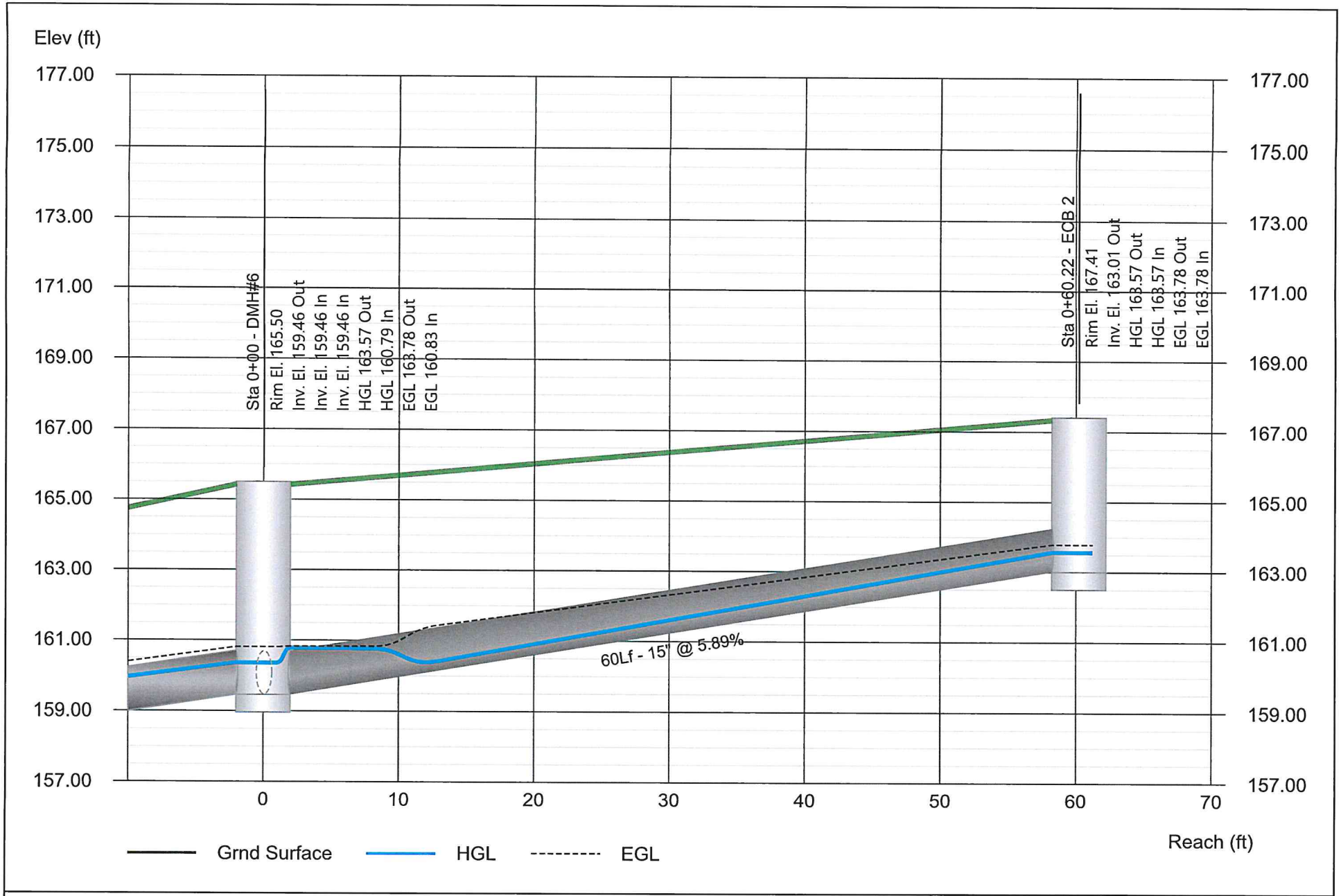
Project File: Pr-CBs.sws

Line 5

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020



Project File: Pr-CBs.sws

Storm Sewer Tabulation

Project Name: Belta Subdivision

Stormwater Studio 2020 v 3.0.0.18

07-07-2020

Line ID	Length	Drng Area		Rational	C x A		Tc		Intensity	Total Q	Capacity	Velocity	Line		Invert Elev		HGL Elev		Surface Elev		Line No
		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
Line 1	47.58	0.722	2.435	0.33	0.24	0.83	5.0	5.21	8.53	7.09	15.04	8.31	15	4.62	155.00	152.80	156.07	153.49	159.10	155.30	1
Line 2	75.66	0.000	1.713	0.00	0.00	0.59	0.0	5.11	8.60	5.10	16.98	4.76	15	5.89	159.46	155.00	160.36	156.53	165.50	159.10	2
Line 3	24.57	0.173	0.951	0.62	0.11	0.36	5.0	5.04	8.65	3.15	19.91	3.47	15	8.10	161.45	159.46	162.16	160.75	166.72	165.50	3
Line 4	19.76	0.778	0.778	0.33	0.26	0.26	5.0	5.00	8.68	2.23	13.63	3.03	15	3.80	162.20	161.45	162.80	162.41	166.72	166.72	4
Line 5	60.22	0.762	0.762	0.30	0.23	0.23	5.0	5.00	8.68	1.98	16.98	2.65	15	5.89	163.01	159.46	163.57	160.79	167.41	165.50	5

Notes: IDF File = WestportCT.idf, Return Period = 25-yrs.

Project File: Pr-CBs.sws

Energy Grade Line Calculations

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020

Line No	Line Size	Q	Downstream							Length	Upstream							Pipe		Junction		
			Invert Elev	Depth	Area	HGL Elev	Vel	Vel Head	EGL Elev		Invert Elev	Depth	Area	HGL Elev	Vel	Vel Head	EGL Elev	n Value	Enrgy Loss	HGLa Elev	EGLa Elev	Enrgy Loss
	(in)	(cfs)	(ft)	(ft)	(sqft)	(ft)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)
1	15	7.09	152.80	0.69‡	0.69	153.49	10.27	1.64	154.57	47.58	155.00	1.07²	1.12	156.07	6.35	0.63	156.70	0.012	2.126	156.07	156.70	0.00
2	15	5.10	155.00	1.25	1.23	156.53	4.15	0.27	156.80	75.66	159.46	0.90²	0.95	160.36	5.37	0.45	160.81	0.012	4.008	160.36	160.81	0.00
3	15	3.15	159.46	1.25	1.23	160.75	2.57	0.10	160.85	24.57	161.45	0.71²	0.72	162.16	4.38	0.30	162.46	0.012	1.606	162.16	162.46	0.00
4	15	2.23	161.45	0.96	1.01	162.41	2.21	0.08	162.48	19.76	162.20	0.60²	0.58	162.80	3.85	0.23	163.03	0.012	0.545	162.80	163.03	0.00
5	15	1.98	159.46	1.25	1.23	160.79	1.61	0.04	160.83	60.22	163.01	0.56²	0.54	163.57	3.69	0.21	163.78	0.012	2.957	163.57	163.78	0.00

Notes: Return Period = 25-yrs. ² Critical depth. ‡ Supercritical.

Project File: Pr-CBs.sws

Inlet Report

Stormwater Studio 2020 v 3.0.0.18

Project Name: Belta Subdivision

07-07-2020

Line No	Inlet		Q				Curb		Grate			Gutter							Inlet			Byp Line No
	Id	Type	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Ht (in)	L (ft)	L (ft)	W (ft)	Area (sqft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	ECB1	Combination	2.07	0.00	1.73	0.34	3.0	5.00	3.00	1.50	-	0.084	2.00	0.030	0.025	0.013	0.14	5.04	0.18	3.95	1.0	0
2	DMH#6	Manhole	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	CB 4	Combination	0.94	0.00	0.94	0.00	3.0	5.00	1.50	3.00	-	0.020	2.00	0.030	0.030	0.013	0.13	4.47	0.18	3.36	1.0	1
4	CB 5	Combination	2.23	0.00	2.23	0.00	3.0	5.00	1.50	3.00	-	0.040	2.00	0.030	0.030	0.013	0.16	5.43	0.22	4.52	1.0	1
5	ECB 2	Combination	1.98	0.00	1.98	0.00	3.0	5.00	1.50	3.00	-	0.080	2.00	0.030	0.030	0.013	0.14	4.57	0.19	3.46	1.0	1

Notes: Return Period = 25-yrs. All curb inlets are Horiz throat.,

Project File: Pr-CBs.sws

C-Factor Calculation

Tue Jul 7 12:24:20 2020

Project: Belta Subdivision
Location: DA ECB1
Developed

By: S.A.L.
Checked:

Date: 07/07/20
Date:

C-factor (CF)

Cover description	CF	Area(Acre)
Roofs	0.950	0.058
Lawns, Sandy Soil, Steep, 7% - post	0.180	0.315
Unimproved Areas - post	0.200	0.135
Streets, Asphaltic - post	0.900	0.082
Unimproved Areas - post	0.200	0.132

CF (weighted): 0.331
Total Area: 0.722 Acre

C-Factor Calculation Tue Jul 7 12:30:52 2020

Project: Belta Subdivision By: S.A.L. Date: 07/07/20
Location: DA ECB 2 Checked: Date:
Developed

C-factor (CF)

Cover description	CF	Area(Acre)
Lawns, Sandy Soil, Steep, 7% - post	0.180	0.355
Roofs	0.950	0.050
Streets, Asphaltic - post	0.900	0.064
Unimproved Areas - post	0.200	0.143
Unimproved Areas - post	0.200	0.151

CF (weighted): 0.299
Total Area: 0.763 Acre

C-Factor Calculation Tue Jul 7 12:30:10 2020

Project: Belta Subdivision By: S.A.L. Date: 07/07/20
Location: DA CB 4 Checked: Date:
Developed

C-factor (CF)

Cover description	CF	Area(Acre)
Lawns, Sandy Soil, Steep, 7% - post	0.180	0.052
Unimproved Areas - post	0.200	0.004
Streets, Asphaltic - post	0.900	0.106
Unimproved Areas - post	0.200	0.011

CF (weighted): 0.623
Total Area: 0.173 Acre

C-Factor Calculation Tue Jul 7 12:29:14 2020

Project: Belta Subdivision By: S.A.L. Date: 07/07/20
Location: DA CB 5 Checked: Date:
Developed

C-factor (CF)

Cover description	CF	Area(Acre)
Unimproved Areas - post	0.200	0.306
Lawns, Sandy Soil, Steep, 7% - post	0.180	0.264
Streets, Asphaltic - post	0.900	0.152
Unimproved Areas - post	0.200	0.056

CF (weighted): 0.330
Total Area: 0.778 Acre

DYMAR
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ENGINEERING • PLANNING • ENVIRONMENTAL • SURVEYING SERVICES

PROJECT: Belta Subdivision		PAGE: 1	
CLIENT: Belta		JOB #: 934	
SUBJECT: Weir outlet pipes		DATE: 8/17/20	
DONE BY: SAL		CHECKED BY:	

Rip Rap outlet protection @ weir under drain system per CT DOT Drainage Manual.

100yr storm, EL @ weir 158.9 W.S.E.
weir El. 158.0

Per stage storage discharge table (Pond Reports)

$$\frac{Q_{100}}{1.13} = \frac{158.9'}{158.0'}$$

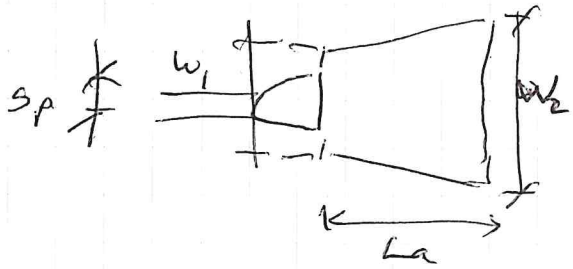
$$\therefore Q_{100} = \frac{158.9}{158} \times 1.13 \text{ cfs} = 1.14 \text{ cfs}$$

(Assume 1 of 2 outlet pipes becomes clogged)

$$Q = VA \Rightarrow V = \frac{Q}{A} = \frac{1.14 \text{ cfs}}{\frac{\pi}{4}\left(\frac{4}{12}\right)^2} = 13.06 \text{ fps} < 14 \text{ fps}$$

Use d_{50} Med. Rip Rap per Table 4.11.

Design Apron for Type A Apron
w/ T.W. < 0.5 S_p
and V < 14 fps.



$$L_a = \frac{180(Q^{.5})}{S_p^{1.5}} + 10 = 10' \text{ as } Q < 5$$

$$W_1 = 3 \times S_p = 3 \times 4/12 = \underline{1'}$$

$$W_2 = 3S_p + 0.7 \times L_a$$

$$W_2 = 1 + 0.7 \times 10 = \underline{8'}$$

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WATER QUALITY VOLUME CALCULATIONS

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Project: Belrta Subdivision
Westport, CT
Job No. : 00934
Date : 3/31/2020
Designed By : S.A.L.

Water Quality Volume Calculations

(Based on Conn. DEP 2004 Stormwater Quality Manual)

Post Construction Development

WQV = 1"xRxA/12
WQV = Water Quality Volume (ac-ft)
R = Volumetric Runoff Coeffecient = 0.05+0.009xI
I = Percent Impervious Cover
A = Site Area (ac)

Stormwater Management Area (Drainage Area)	Drainage Area	Impervious Cover	Vol. Runoff Coefficient	Required Water Quality Volume		Provided Water Quality Volume	
	(ac)	%		(ac-ft)	(cf)	(ac-ft)	(cf)
Drainage Area A*	14.55	16.27	0.20	0.24	10,375	0.000	0
Drainage Area B	6.67	12.23	0.16	0.09	3,874	0.092	4,008
Drainage Area C**	0.28	100.00	0.95	0.02	968	0.024	1,045

* Impervious area restricted to paved surfaces; roof runoff to separte lot recharger systems.
** System sized for 100% capture of proposed road, existing house not included.

Water Quality Flow Calculations

(Based on Conn. DEP 2004 Stormwater Quality Manual)

Post Construction Development

WQF = (qu)x(A)x(Q)
WQF = Water Quality Flow (cfs)
qu = TR-55 Peak Unit Discharge (cfs/mi2/in)
Q = Watershed Runoff Depth (in)
A = Site Area (mi2)
P = 1 in of Rainfall

Stormwater Management Area (Drainage Area)	Drainage Area	Impervious Cover	Watershed Runoff	CN	Ia/P	Tc	Unit Discharge	Water Quality Flow
	(mi2)	%	(in)		(in)	(hrs)	(cfs/mi2/in)	(cfs)
Drainage Area A*	0.0227	16.27	0.20	75	0.703	0.67	180	0.8
Drainage Area B	0.0104	12.23	0.16	82	0.439	0.78	220	0.4
Drainage Area C**	0.0004	100.00	0.95	98	0.041	0.083	660	0.3