



Final Drainage Report - Amendment No. 1

Widefield Parks and Recreation Facility Expansion El Paso County, Colorado

Prepared for:
Widefield School District 3
1820 Main Street
Colorado Springs, CO 80911
Contact: Dave Gish

Prepared by:
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Project #: 096958002

Prepared: December 2, 2022

PCD File Number: PPR-2213

Kimley»»Horn



CERTIFICATION

DESIGN ENGINEER'S STATEMENT

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

SIGNATURE (Affix Seal): _____
Colorado P.E. No. 49487 Date

OWNER/DEVELOPER'S STATEMENT

I, the developer, have read and will comply with all of the requirements specified in this Drainage Report and Plan.

Widefield School District 3
Name of Developer

Authorized Signature Date

Printed Name

Title

Address:

EL PASO COUNTY

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

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

Conditions:

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INTRODUCTION

PURPOSE AND SCOPE OF STUDY

The purpose of this Final Drainage Report Amendment No. 1 (Amendment) is to provide calculations and analysis for a revised pond design that differs from the pond as part of the previously approved Final Drainage Report titled “Widefield Parks and Recreation Facility Expansion El Paso County, Colorado” prepared by Kimley-Horn and Associates. The Project is located within the jurisdictional limits of El Paso County (“the County”). Thus, the guidelines for the hydrologic and hydraulic design components were based on the criteria for the County and City of Colorado Springs, described below.

LOCATION

The 39.26-acre parcel (TSN: 6513100001, 6513100003, 6512300003) is bounded between Widick St. to the east and Aspen Dr. to the west. A vicinity map has been provided in the **Appendix A** of this report.

DESCRIPTION OF PROPERTY

The Project is located on approximately 39.26 acres of land consisting of an existing park, with five (5) baseball fields, soccer field, parking lots, playground equipment, dirt trail around the perimeter, tennis courts, public library, aquatic center, and hardscape. The Project consists of a new recreation center with associated sidewalk and hardscape extensions, and a proposed onsite full spectrum detention basin. With the exception of pavement replacement over the proposed sanitary sewer service connection, the existing parking lot to the west of the proposed recreation building will remain undisturbed and be restriped. The Site does not currently provide water quality or detention for the Project area. The existing land use per El Paso County’s Assessor is Exempt, Political Subdivision (Public School Use).

The existing topography consists of slopes ranging from 1% to 30% and generally slopes from Northeast to Southwest.

NRCS soil data is available for this Site and it has been noted that soils onsite are generally USCS Type A. There are no major drainage ways or irrigation facilities within the Site.

Improvements will consist of mowing, clearing and grubbing, weed control, paved access road construction, building pad grading, one detention pond, culverts, drainage swales, and native seeding.

An updated Topographic field survey was completed for the Project by Drexel, Barrell & CO, dated August 6, 2021 and is the basis for design for the drainage improvements.

AMENDMENTS TO FINAL DRAINAGE REPORT

WATER QUALITY AND DETENTION POND

Due to existing utility conflicts discovered in the field during construction of the proposed water quality and detention pond, the pond was required to be redesigned to avoid the utility lines.

This Amendment provides the revised storage calculations and revised pond details. Further description of the updated calculations is listed below and in the attached Appendix.

HYDRAULIC CRITERIA

Applicable design methods were utilized to size the proposed pond, which includes the use of the UD-Detention spreadsheet and rational calculations spreadsheet.

Proposed drainage features on-site have been analyzed and sized for the following design storm events:

- Major Storm: 100-year Storm Event

One full spectrum detention pond is proposed in order to maintain historic flows and water quality. The detention pond known as the South Pond. The South Pond is in the southwest corner of the Site with a proposed volume of 1.55 ac-ft and designed for the 100-year storm event. The pond has a discharge rate of 14.4 cfs in the 100-year condition. Water from the South Pond is discharged into an existing culvert at the southwest corner of the site and ultimately outfalls to Fountain Creek. Pond calculations are provided in the Appendix.

The pond is designed to release the 100-year flow rates below the pre-development flow rate.

Emergency overflows will be routed over the western side of the pond. It will follow existing drainage conditions and cross the property line to the West, where it will avoid the single family residence and enter the Grand Boulevard right of way.

DRAINAGE FACILITY DESIGN

GENERAL CONCEPT

The proposed drainage patterns will match the historic patterns. To maintain historic flows, a full spectrum detention pond is being proposed and will capture and control the flows from the proposed development to convey flows with a series of swales, parking lot sheet flow, and a storm drain system.

The revised proposed drainage map showing the updated pond grading can be found in the Appendix.

SPECIFIC DETAILS

On site flows enter the South Pond which then release controlled flows into the existing 24” CMP culvert that conveys flows south underneath the adjacent property’s drive access. The 24” CMP has a 100% flow capacity of 41.59 cfs. The proposed pond has a 100 year discharge rate of 14.4 cfs. Therefore the pipe has capacity for the released flows.

SUMMARY

The proposed drainage design is to maintain the historic drainage patterns, the overall imperviousness and release rates for the Site. Runoff from the Site will flow through an existing storm drain system to an existing El Paso County drainage basin: The Windmill Gulch Drainage Basin. The basin ultimately discharges to Fountain Creek. The drainage design presented within

this report conforms to the criteria presented in both the MANUAL and the Colorado Springs MANUAL. Additionally, the Site runoff and storm drain facilities will not adversely affect the downstream and surrounding developments, including Fountain Creek.

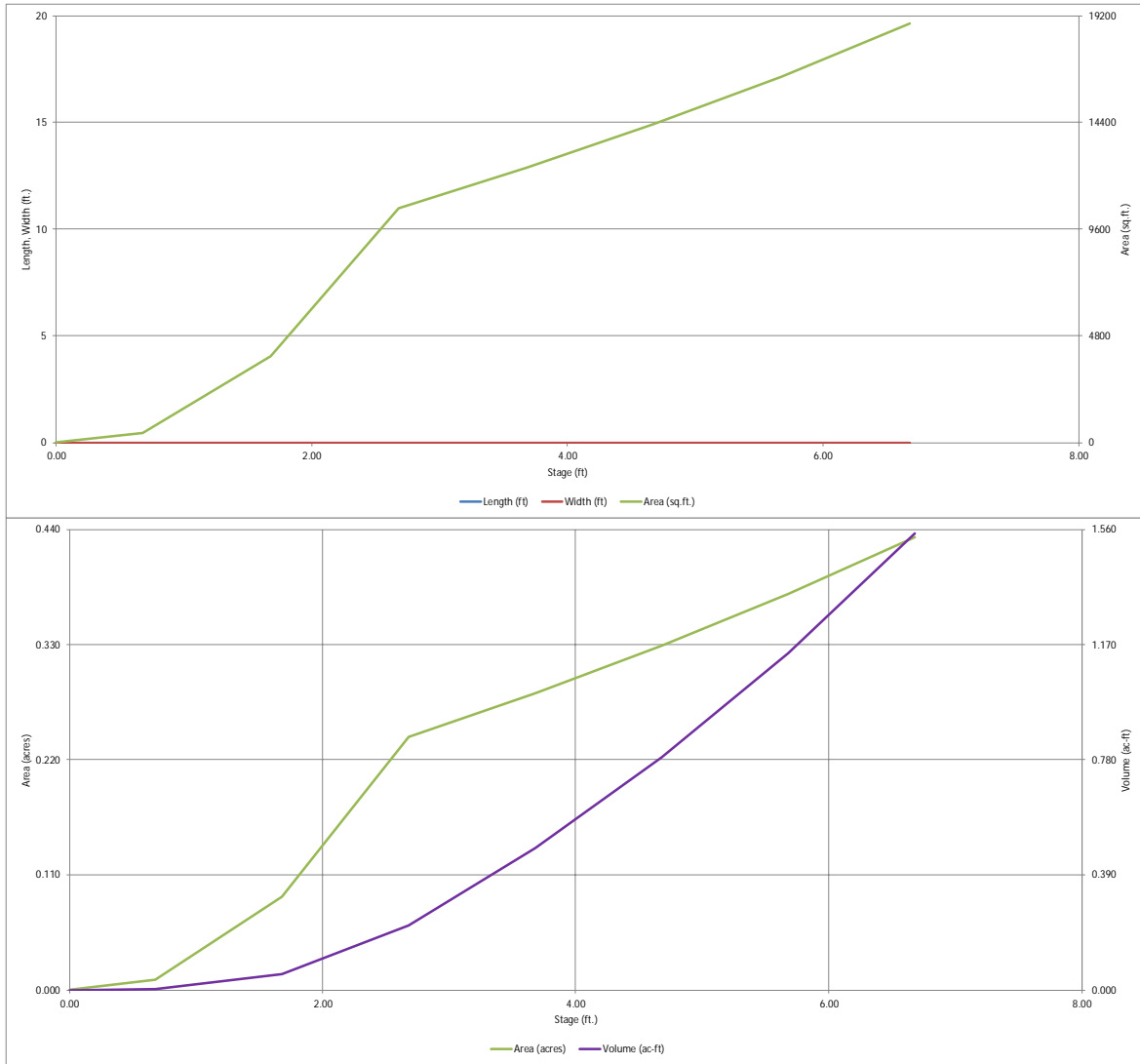
REFERENCES

1. City of Colorado Springs “Drainage Criteria Manual (DCM) Volume 1”, dated May, 2014
2. El Paso County “Drainage Criteria Manual”, dated October 31, 2018
3. El Paso County “Engineering Criteria Manual” Revision 6, dated December 13, 2016
4. Chapter 6 and Section 3.2.1. of Chapter 13-City of Colorado Springs Drainage Criteria Manual, May 2014.
5. Urban Drainage and Flood Control District Drainage Criteria Manual (UDFCDCM), Vol. 1, prepared by Wright-McLaughlin Engineers, June 2001, with latest revisions.
6. Flood Insurance Rate Map, El Paso County, Colorado and Incorporated Areas, Map Number 08041C0763G and 08041C0951G effective date, December 7, 2018, prepared by the Federal Emergency Management Agency (FEMA).

APPENDIX

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

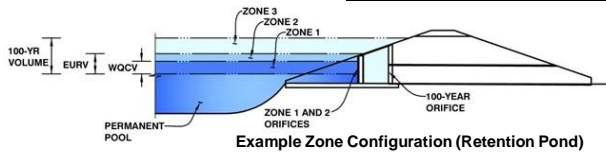
MHFD-Detention, Version 4.04 (February 2021)



DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD- Detention, Version 4.04 (February 2021)

Project: Widefield Rec Center
Basin ID: South Pond



	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WOCV)	2.69	0.220	Orifice Plate
Zone 2 (EURV)	3.46	0.199	Circular Orifice
Zone 3 (100-year)	5.06	0.494	Weir&Pipe (Restrict)
Total (all zones)		0.913	

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

Underdrain Orifice Invert Depth = ft (distance below the filtration media surface)
Underdrain Orifice Diameter = inches

Calculated Parameters for Underdrain
Underdrain Orifice Area = ft²
Underdrain Orifice Centroid = feet

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

Invert of Lowest Orifice = ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate = ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing = inches
Orifice Plate: Orifice Area per Row = sq. inches (diameter = 15/16 inch)

Calculated Parameters for Plate
WQ Orifice Area per Row = ft²
Elliptical Half-Width = feet
Elliptical Slot Centroid = feet
Elliptical Slot Area = ft²

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.00	2.00					
Orifice Area (sq. inches)	0.67	0.67	0.67					

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

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Circular	Not Selected	
Invert of Vertical Orifice =	2.69	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	3.46	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =	1.87	N/A	inches

Calculated Parameters for Vertical Orif
Vertical Orifice Area = ft²
Vertical Orifice Centroid = feet

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

	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	3.46	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	10.00	N/A	feet
Overflow Weir Gate Slope =	4.00	N/A	H:V
Horiz. Length of Weir Sides =	4.00	N/A	feet
Overflow Gate Type =	Type C Gate	N/A	
Debris Clogging % =	50%	N/A	%

Calculated Parameters for Overflow Weir
Height of Gate Upper Edge, H₁ = feet
Overflow Weir Slope Length = feet
Gate Open Area / 100-yr Orifice Area = N/A
Overflow Gate Open Area w/o Debris = N/A
Overflow Gate Open Area w/ Debris = N/A

Shown as 4ft on detail on last page below.

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

	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.50	N/A	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	18.00	N/A	inches
Restrictor Plate Height Above Pipe Invert =	15.00	N/A	inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate
Outlet Orifice Area = ft²
Outlet Orifice Centroid = feet
Half-Central Angle of Restrictor Plate on Pipe = N/A

Neither matches what is shown on detail on last page below.

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Revise to 24"

Spillway Invert Stage =	5.18	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	21.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway
Spillway Design Flow Depth = feet
Stage at Top of Freeboard = feet
Basin Area at Top of Freeboard = acres
Basin Volume at Top of Freeboard = acre-ft

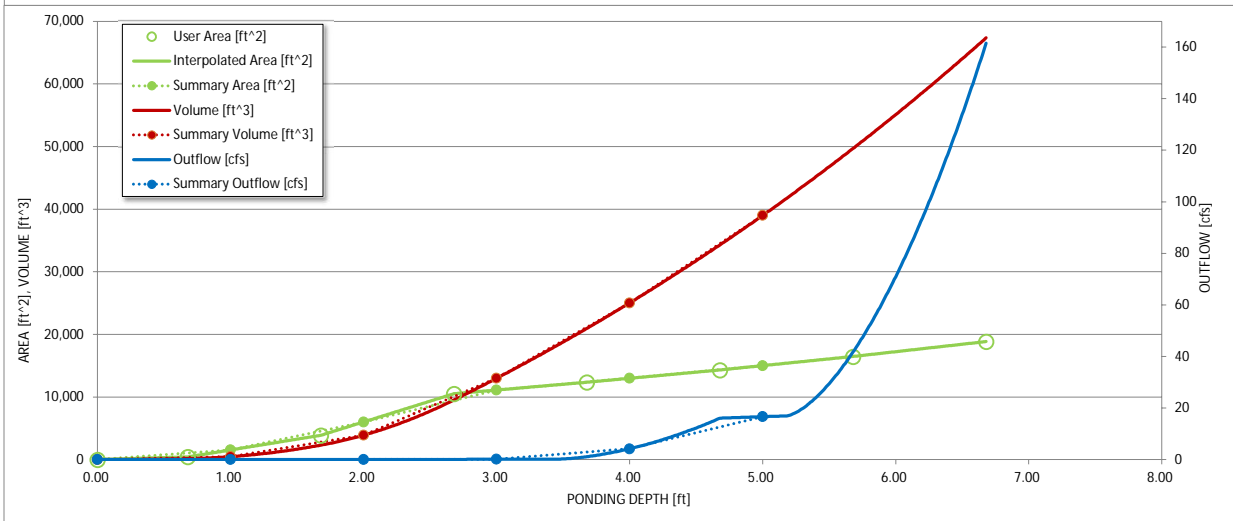
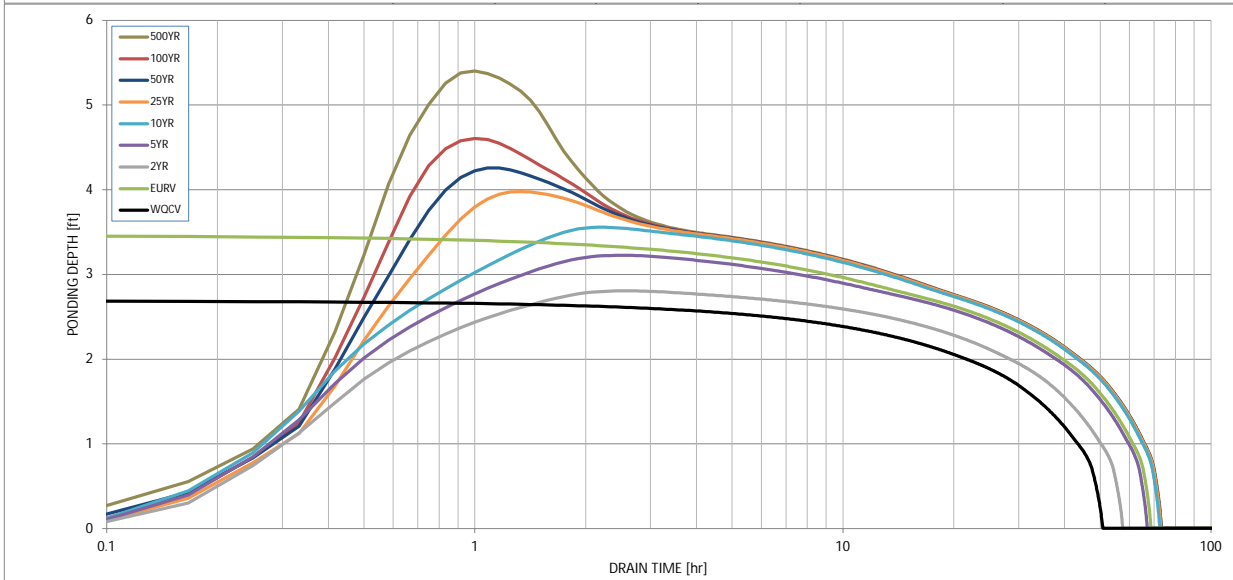
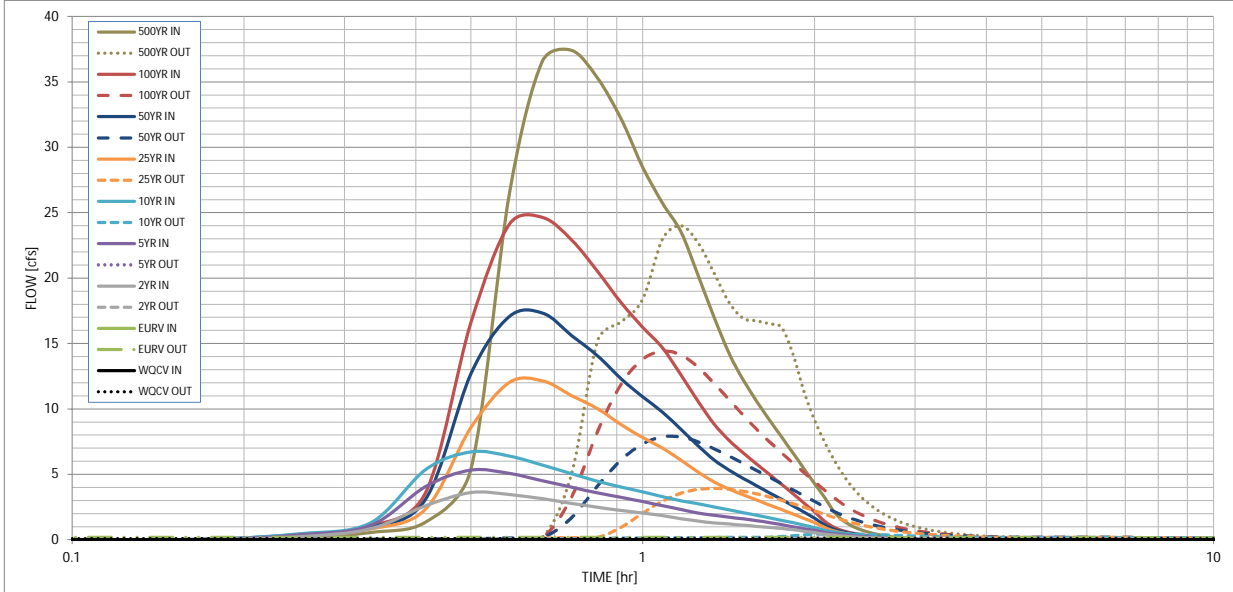
Routed Hydrograph Results

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

	WOCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Design Storm Return Period =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.55
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.55
CUHP Runoff Volume (acre-ft) =	0.220	0.419	0.267	0.383	0.489	0.830	1.154	1.637
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.267	0.383	0.489	0.830	1.154	1.637
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.2	0.4	0.5	4.9	9.8	16.6
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A						
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.01	0.02	0.02	0.22	0.44	0.76
Peak Inflow Q (cfs) =	N/A	N/A	3.6	5.3	6.7	12.1	17.3	24.7
Peak Outflow Q (cfs) =	0.1	0.2	0.1	0.2	0.4	3.9	7.9	14.4
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.4	0.8	0.8	0.8	0.9
Structure Controlling Flow =	Plate	Overflow Weir 1	Vertical Orifice 1	Vertical Orifice 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1
Max Velocity through Gate 1 (fps) =	N/A	N/A	N/A	N/A	0.0	0.1	0.3	0.5
Max Velocity through Gate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	46	61	52	60	64	61	58	54
Time to Drain 99% of Inflow Volume (hours) =	49	65	55	64	69	67	66	64
Maximum Ponding Depth (ft) =	2.69	3.46	2.80	3.22	3.56	3.98	4.26	4.60
Area at Maximum Ponding Depth (acres) =	0.24	0.27	0.25	0.26	0.28	0.30	0.31	0.33
Maximum Volume Stored (acre-ft) =	0.221	0.420	0.248	0.355	0.445	0.565	0.650	0.761

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)



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

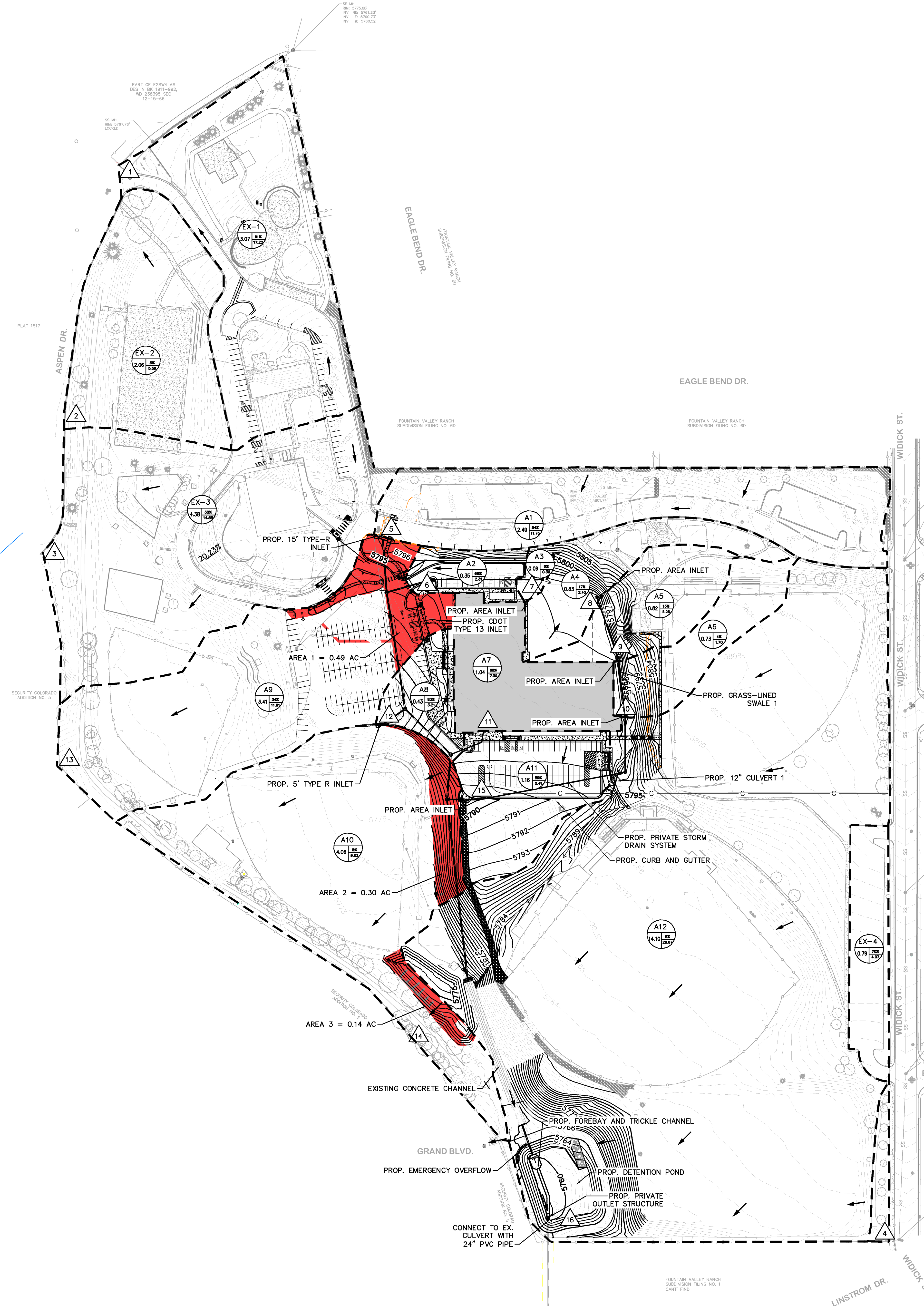
DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename: _____

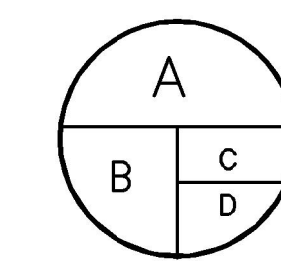
Inflow Hydrographs

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

Time Interval	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.08
	0:15:00	0.00	0.00	0.23	0.37	0.46	0.31	0.39	0.39	0.55
	0:20:00	0.00	0.00	0.83	1.09	1.29	0.82	0.96	1.04	1.34
	0:25:00	0.00	0.00	2.60	4.08	5.36	2.36	3.11	3.63	5.39
	0:30:00	0.00	0.00	3.60	5.33	6.72	8.56	12.67	16.60	26.41
	0:35:00	0.00	0.00	3.45	5.06	6.40	12.01	17.05	24.12	36.57
	0:40:00	0.00	0.00	3.13	4.52	5.70	12.15	17.34	24.65	37.42
	0:45:00	0.00	0.00	2.78	4.01	5.06	11.03	15.62	22.94	35.28
	0:50:00	0.00	0.00	2.48	3.58	4.47	10.02	14.06	20.50	32.15
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	1:00:00	0.00	0.00	2.04	2.91	3.65	7.81	10.92	16.24	25.72
	1:05:00	0.00	0.00	1.84	2.60	3.30	6.99	9.74	14.67	23.53
	1:10:00	0.00	0.00	1.61	2.31	2.98	6.07	8.43	12.58	20.21
	1:15:00	0.00	0.00	1.42	2.05	2.74	5.18	7.19	10.58	17.02
	1:20:00	0.00	0.00	1.29	1.86	2.51	4.41	6.09	8.84	14.24
	1:25:00	0.00	0.00	1.20	1.72	2.28	3.87	5.32	7.60	12.21
	1:30:00	0.00	0.00	1.11	1.59	2.07	3.43	4.69	6.63	10.58
	1:35:00	0.00	0.00	1.02	1.47	1.87	3.03	4.12	5.79	9.16
	1:40:00	0.00	0.00	0.94	1.31	1.67	2.66	3.59	5.00	7.86
	1:45:00	0.00	0.00	0.86	1.15	1.49	2.31	3.08	4.24	6.62
	1:50:00	0.00	0.00	0.77	1.00	1.30	1.96	2.59	3.51	5.43
	1:55:00	0.00	0.00	0.65	0.85	1.11	1.63	2.11	2.81	4.30
	2:00:00	0.00	0.00	0.54	0.71	0.92	1.31	1.65	2.13	3.22
	2:05:00	0.00	0.00	0.42	0.56	0.73	0.93	1.13	1.41	2.10
	2:10:00	0.00	0.00	0.34	0.45	0.59	0.66	0.79	0.95	1.43
	2:15:00	0.00	0.00	0.28	0.37	0.49	0.50	0.59	0.68	1.02
	2:20:00	0.00	0.00	0.23	0.30	0.40	0.39	0.46	0.51	0.74
	2:25:00	0.00	0.00	0.19	0.25	0.33	0.31	0.36	0.38	0.54
	2:30:00	0.00	0.00	0.15	0.20	0.27	0.24	0.28	0.29	0.40
	2:35:00	0.00	0.00	0.12	0.16	0.21	0.19	0.22	0.21	0.28
	2:40:00	0.00	0.00	0.10	0.13	0.17	0.15	0.17	0.16	0.20
	2:45:00	0.00	0.00	0.08	0.10	0.13	0.12	0.13	0.12	0.15
	2:50:00	0.00	0.00	0.06	0.08	0.10	0.09	0.10	0.10	0.12
	2:55:00	0.00	0.00	0.05	0.06	0.08	0.07	0.08	0.08	0.09
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	3:10:00	0.00	0.00	0.02	0.03	0.03	0.03	0.03	0.03	0.04
	3:15:00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.03
	3:20:00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
	3:25:00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	



LEGEND



A = BASIN DESIGNATION
 B = AREA (ACRES)
 C = 100-YR COMPOSITE RUNOFF COEFFICIENT
 D = 100-YR DESIGN STORM RUNOFF (CFS)



DESIGN POINT
 FLOW DIRECTION
 DRAINAGE BASIN BOUNDARY
 PROPERTY LINE
 PROPOSED MAJOR CONTOUR
 PROPOSED MINOR CONTOUR
 EXISTING MAJOR CONTOUR
 EXISTING MINOR CONTOUR
 DISTURBED AREA EXCLUDED FROM POND

NOTES

- THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID DETAILED PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE ESTABLISHED CRITERIA FOR DETAILED DRAINAGE PLANS AND SPECIFICATIONS, AND SAID DETAILED PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH THE MASTER PLAN OF THE DRAINAGE BASIN. SAID DETAILED DRAINAGE PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR DRAINAGE FACILITY(S) IS DESIGNED. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR COMMISSIONS ON MY PART IN PREPARATION OF THE DETAILED DRAINAGE PLANS AND SPECIFICATIONS.
- PLAN REVIEW BY EL PASO COUNTY IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH DESIGN CRITERIA. EL PASO COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. EL PASO COUNTY, THROUGH APPROVAL OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.
- PLEASE SEE THE FINAL DRAINAGE REPORT FOR THIS WIDEFIELD REC CENTER FOR PROPOSED 5 AND 100 YEAR FLOW VALUES.

BASINS TRIBUTARY TO POND		DISTURBED AREAS NOT TRIBUTARY TO POND	
A1	2.49 AC	AREA 1	0.49 AC
A2	0.35 AC	AREA 2	0.30 AC
A3	0.09 AC	AREA 3	0.14 AC
A4	0.83 AC	TOTAL	0.93 AC
A5	0.82 AC		
A6	0.73 AC		
A7	1.04 AC		
A8	0.43 AC		
A11	1.16 AC		
A12	14.10 AC		
TOTAL	22.04 AC		

SUMMARY - PROPOSED RUNOFF TABLE

DESIGN POINT	BASIN DESIGNATION	BASIN AREA (ACRES)	DIRECT 5-YR RUNOFF (CFS)	DIRECT 100-YR RUNOFF (CFS)	CUMULATIVE 5-YR RUNOFF (CFS)	CUMULATIVE 100-YR RUNOFF (CFS)
1	EX-1	3.07	8.19	17.22	8.19	17.22
2	EX-2	2.06	1.03	5.56	1.03	5.56
3	EX-3	4.38	5.79	14.55	5.79	14.55
4	EX-4	0.79	2.04	4.07	2.04	4.07
5	A1	2.49	5.35	11.73	5.35	11.73
6	A2	0.35	1.15	2.31	1.15	2.31
7	A3	0.09	0.06	0.30	0.06	0.30
8	A4	0.83	0.68	2.40	0.68	2.40
9	A5	0.82	0.56	2.26	0.56	2.26
10	A6	0.73	0.28	1.70	0.28	1.70
11	A7	1.04	3.92	7.30	3.92	7.30
12	A8	0.43	1.70	3.21	1.70	3.21
13	A9	3.41	4.42	11.61	4.42	11.61
14	A10	4.06	1.92	9.02	1.92	9.02
15	A11	1.16	2.51	5.41	2.51	5.41
16	A12	14.10	5.26	28.67	5.26	28.67

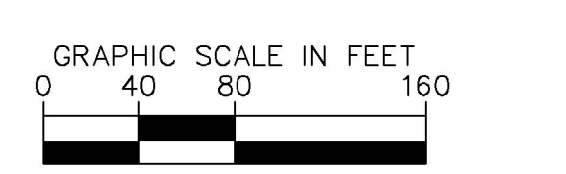
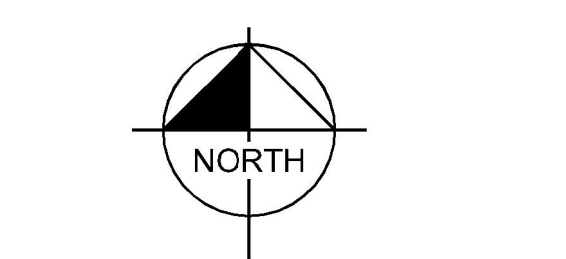
Update table for these 2 basins since more impervious service has been added in the parking areas on N and S side of bldg
 The calcs that need to be re-done and included in this addendum can be found on page 48 of 91 of the previously approved FDR for this project.

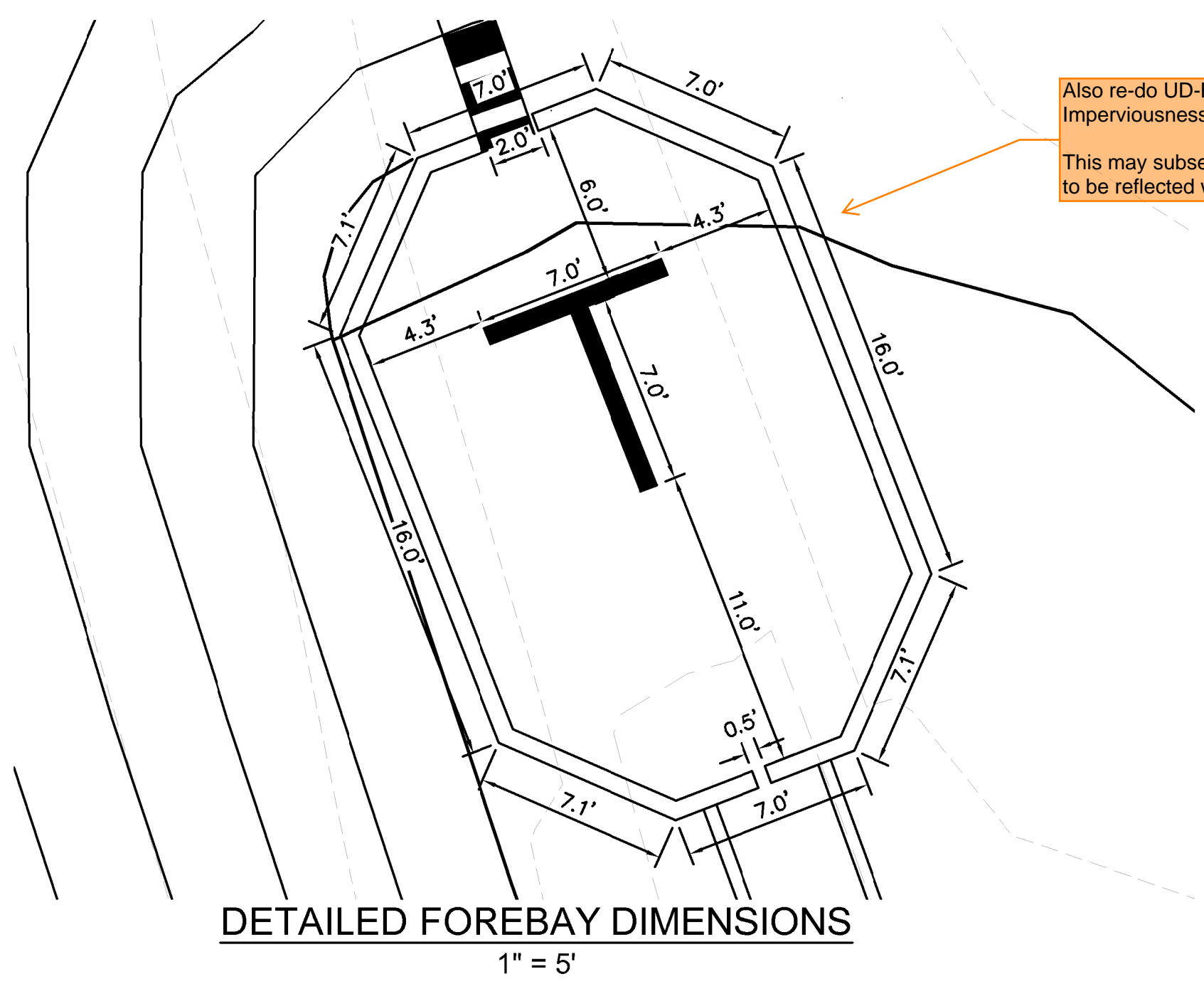
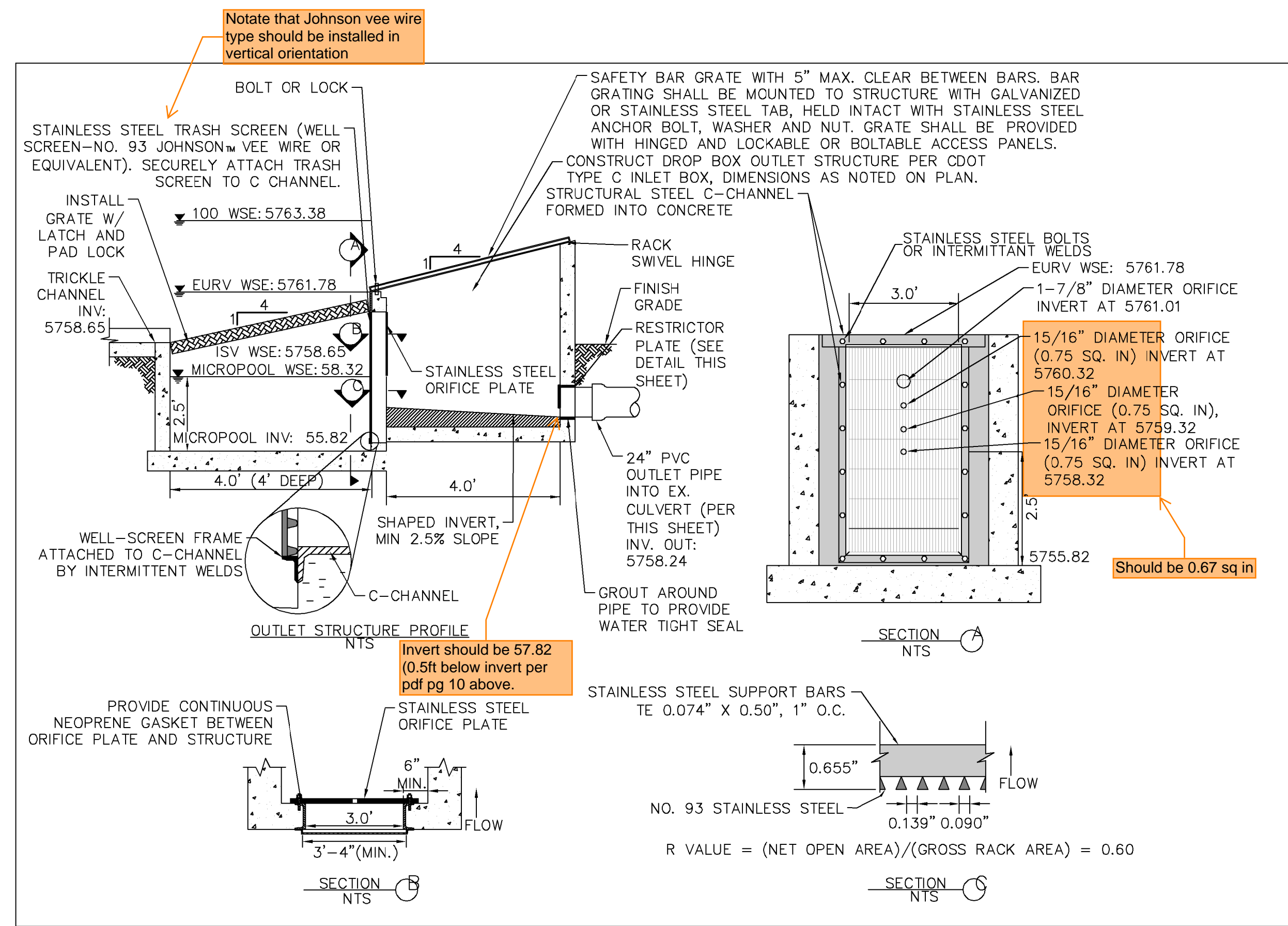


Construction Documents

Drawn: JAR
 Checked: EUG
 Issued: 30 March 2022
 Revised:

Area Key Plan





Also re-do UD-BMP spreadsheet to include the change in Effective Imperviousness and to the WQCV. This may subsequently effect the sizing of the forebay, which would need to be reflected with revisions on this detail.

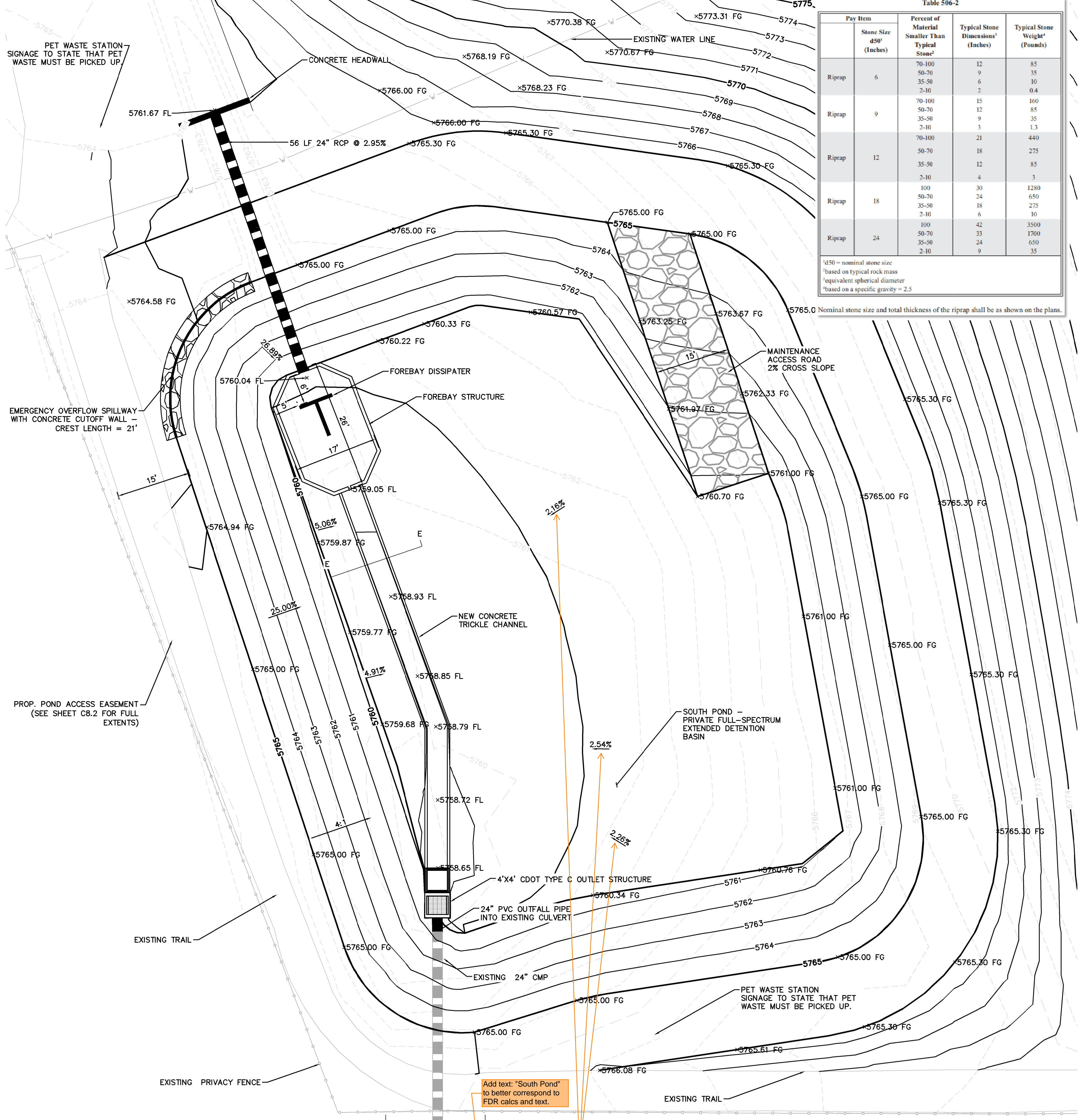
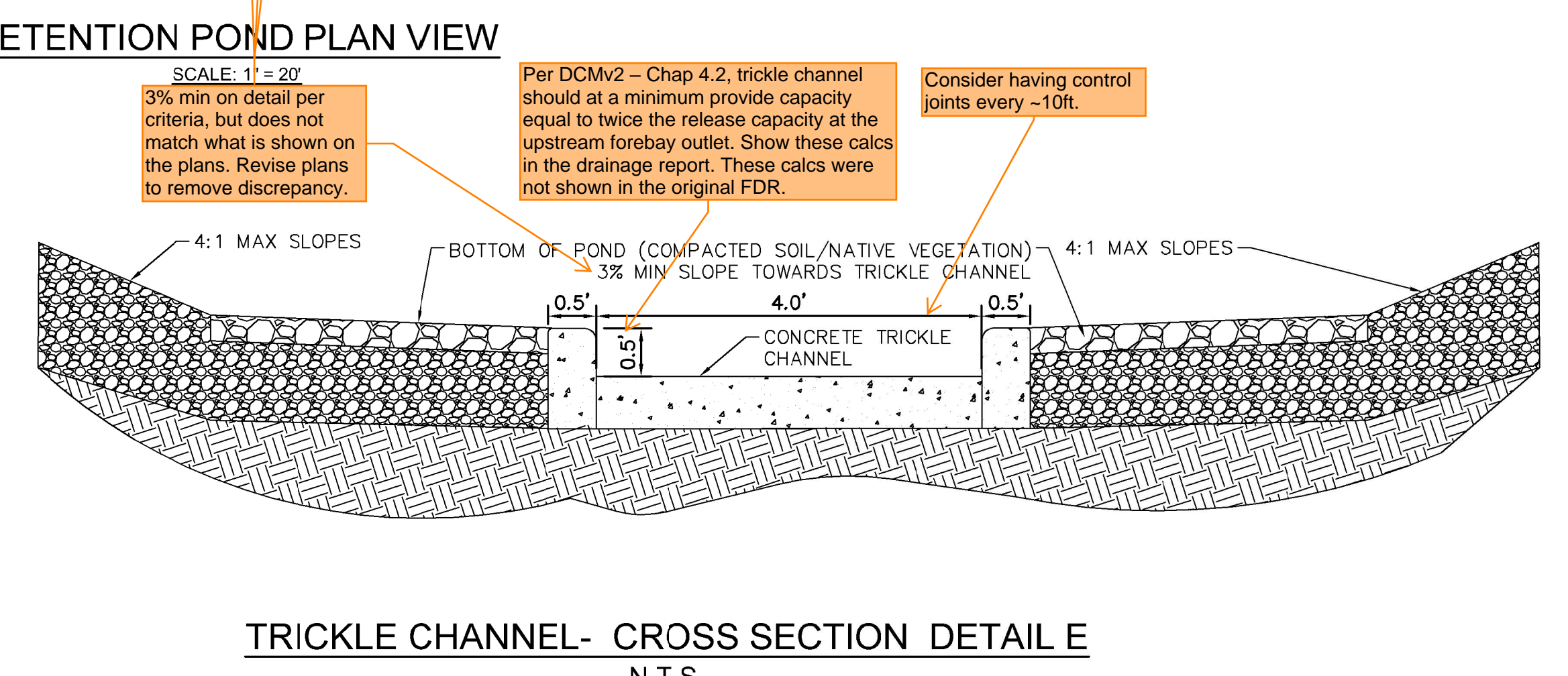
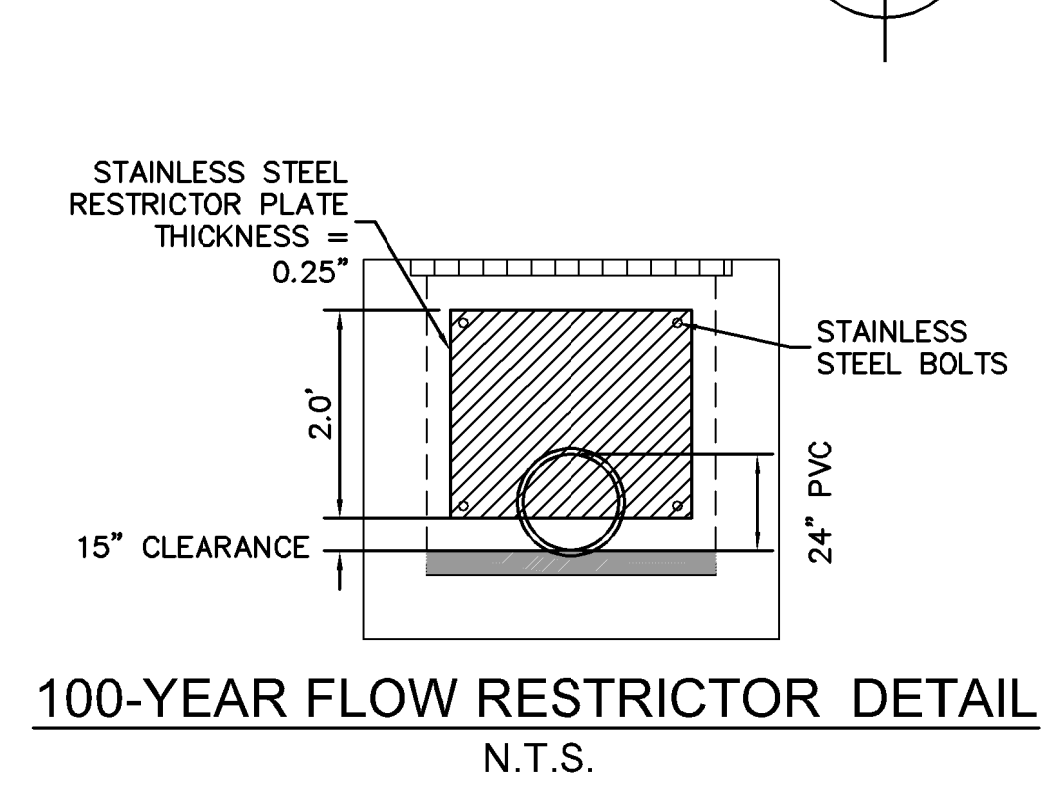
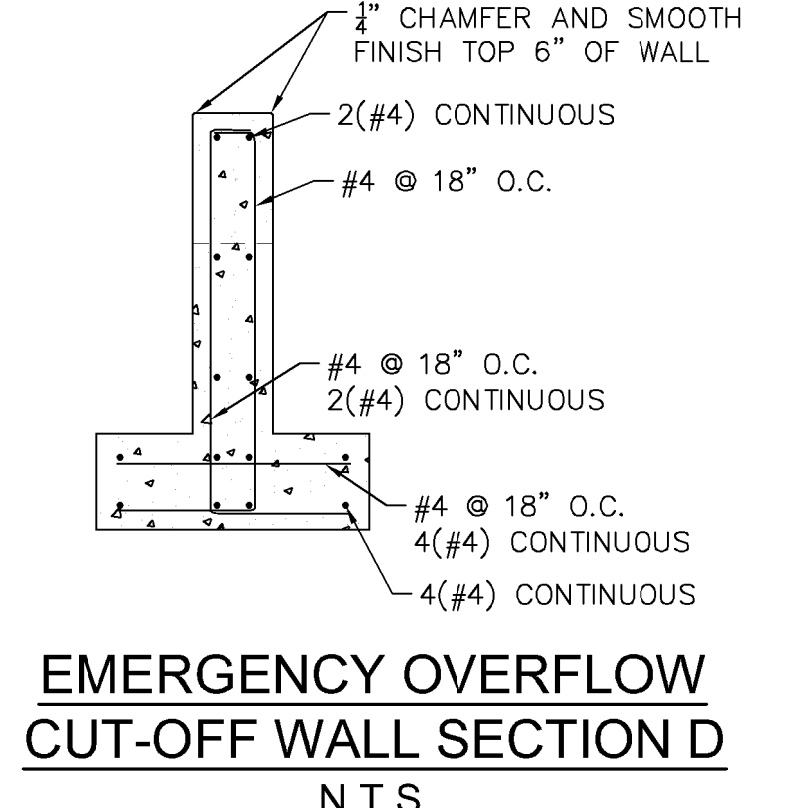
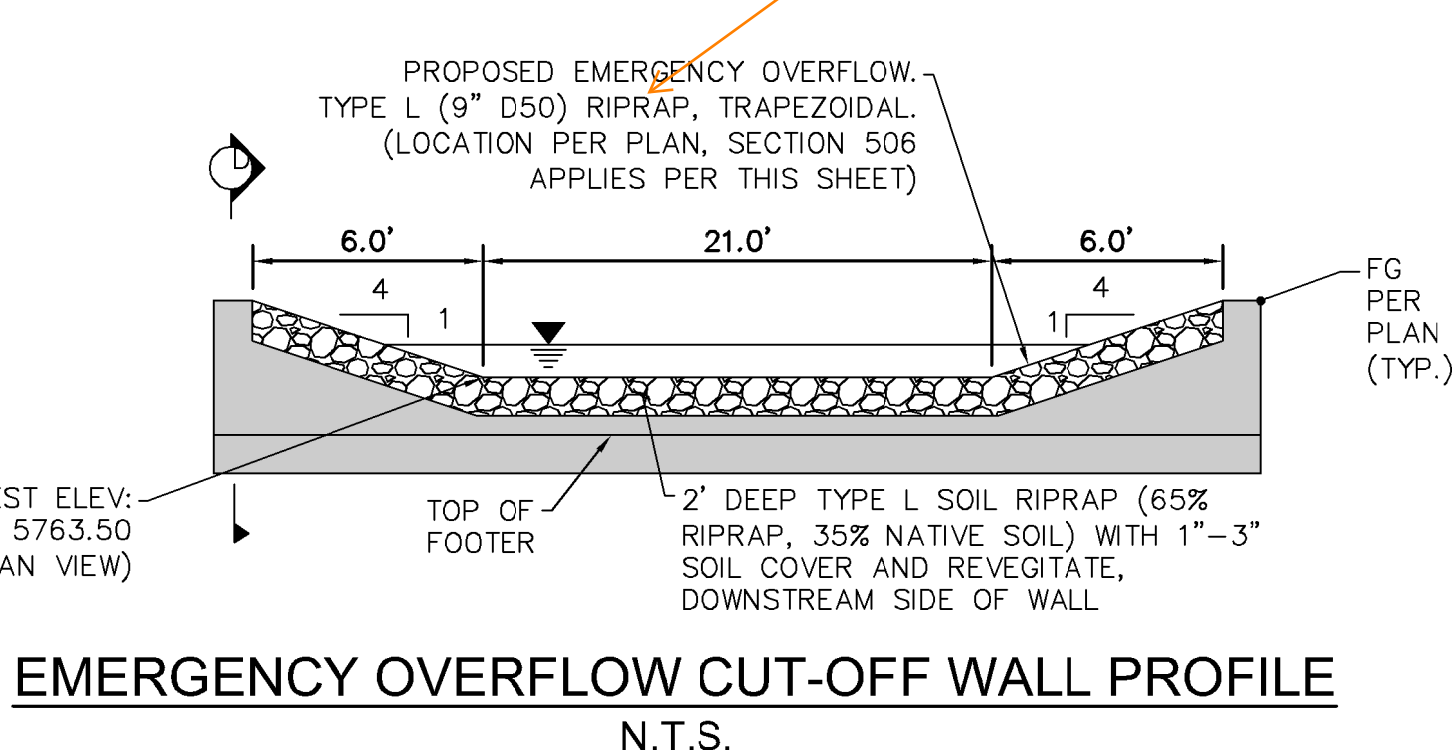
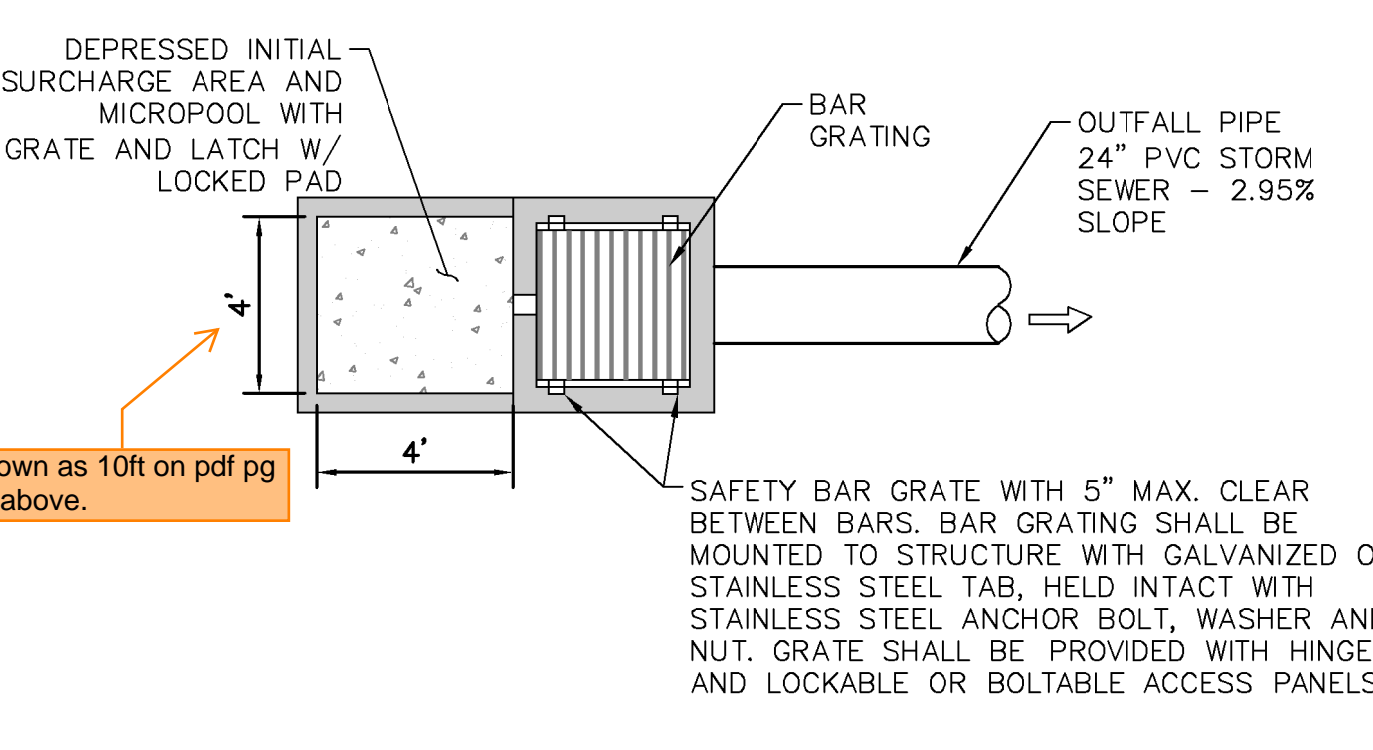
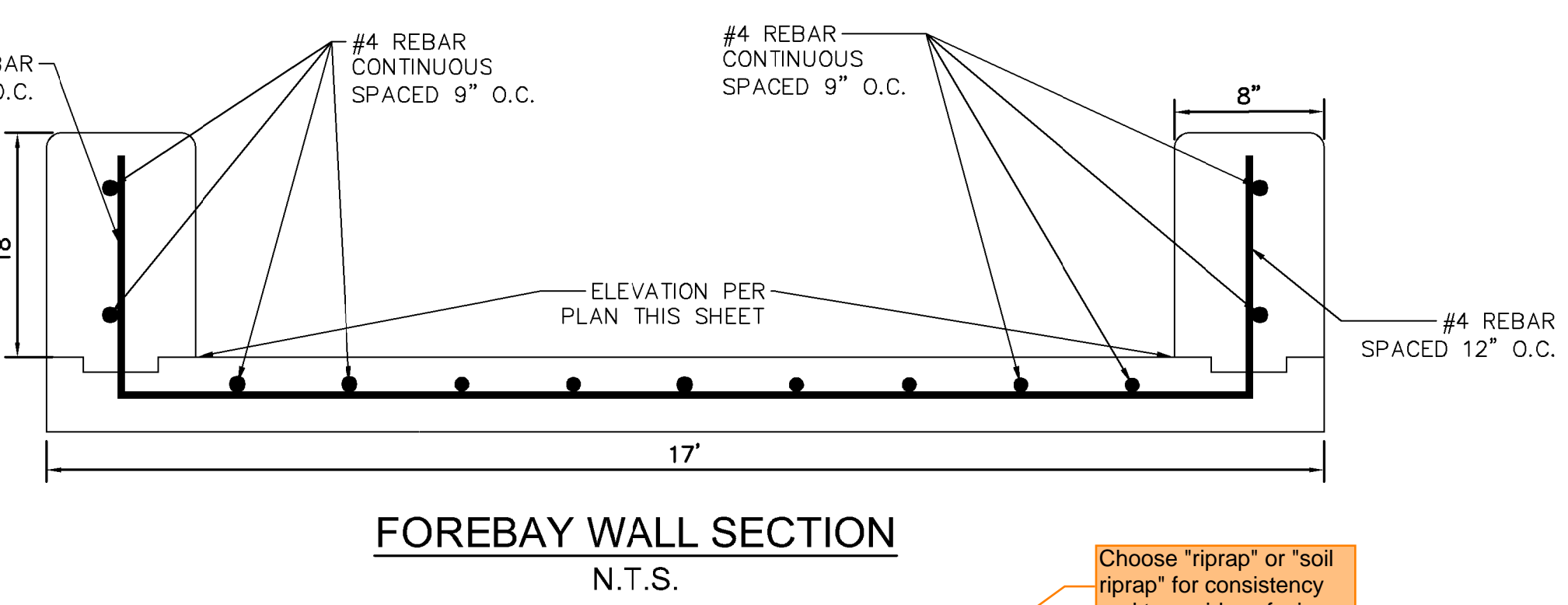
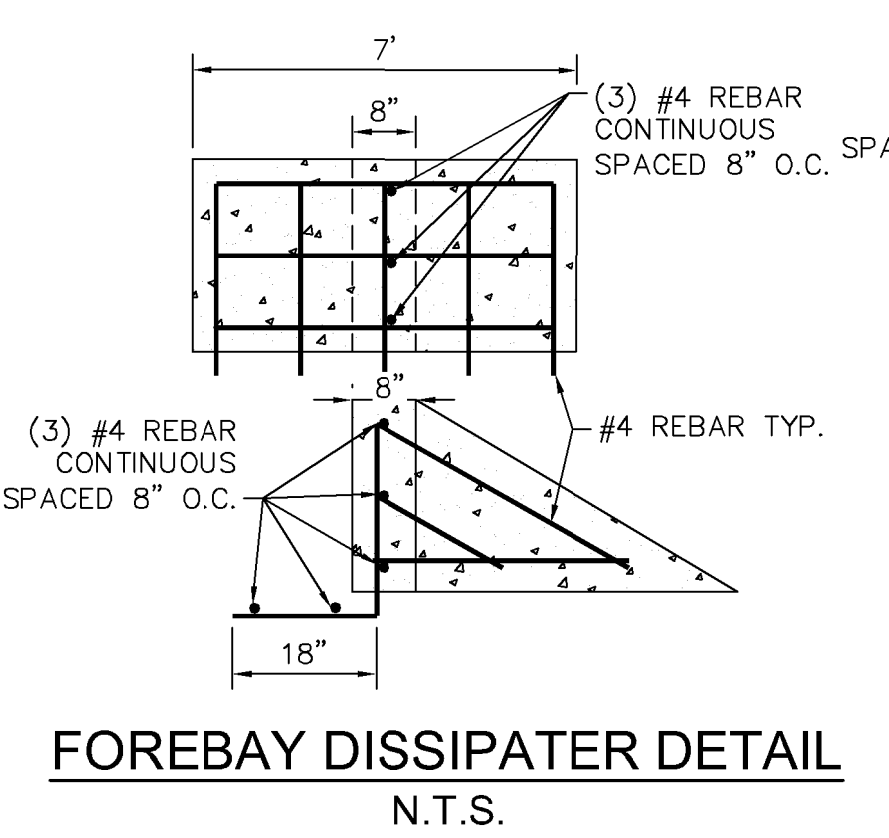
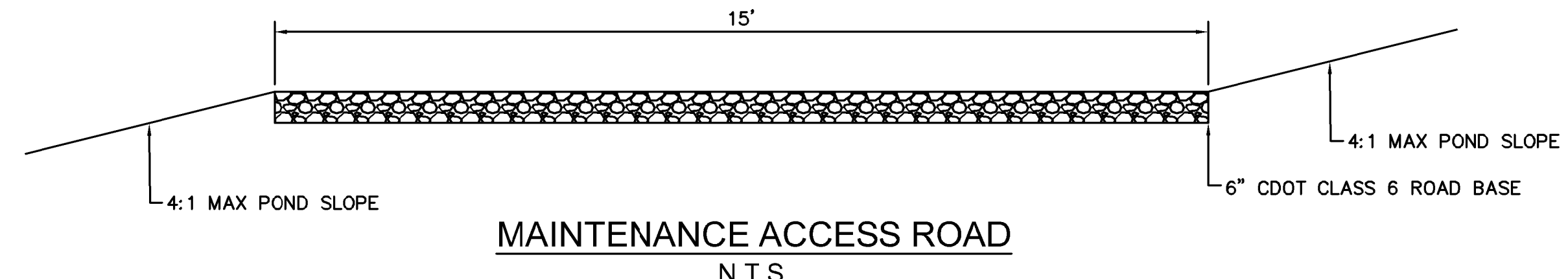
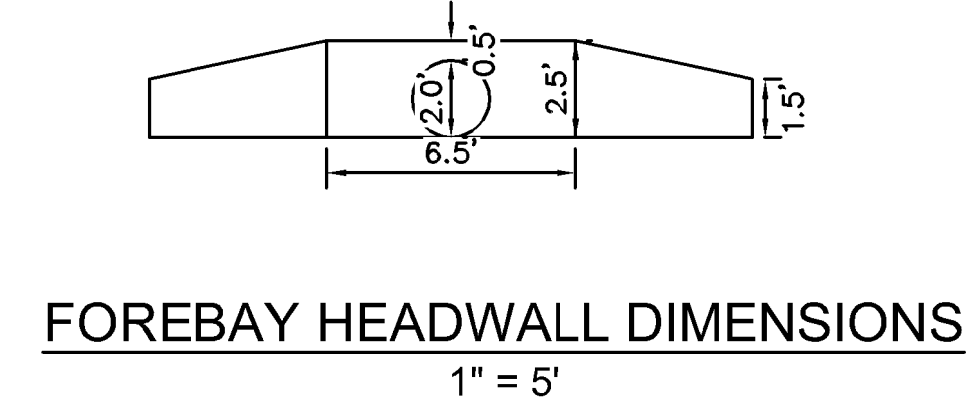


Table 506-2

Pay Item	Stone Size (Inches)	Percent of Material Smaller Than Typical Stone ¹	Typical Stone Dimensions ² (Inches)	Typical Stone Weight ³ (Pounds)
Riprap 6	6	70-100	12	85
		50-70	9	35
		35-50	6	10
		2-10	2	0.4
Riprap 9	9	70-100	15	160
		50-70	12	85
		35-50	9	35
		2-10	3	1.3
Riprap 12	12	70-100	21	440
		50-70	18	275
		35-50	12	85
		2-10	4	3
Riprap 18	18	100	30	1280
		50-70	24	650
		35-50	18	275
		2-10	6	10
Riprap 24	24	100	42	3500
		50-70	33	1700
		35-50	24	650
		2-10	9	35

¹4/50 = nominal stone size
²based on typical rock mass
³equivalent spherical diameter
⁴based on a specific gravity = 2.5

Nominal stone size and total thickness of the riprap shall be as shown on the plans.

Widefield Parks and Recreation Facility Expansion
705 Aspen Drive, Colorado Springs, CO 80911



CONSTRUCTION DOCUMENTS

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Checked: EUG
Issued: 30 March 2022
Revised: 2 December 2022

Area Key Plan

POND DETAILS

C7.5

Project No. 21-004
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