



April 10, 2023

El Paso County
Planning & Community Development
2880 International Circle, Suite 110
Colorado Springs, CO 80910

Attn.: Project Manager

RE: The Ridge at Lorson Ranch Filing No. 1 (SF 22-004)
Private Stormwater Quality Pond F
As-built Certification

Dear Project Manager:

Per the approved construction drawings for The Ridge at Lorson Ranch Filing No.1 (PUD/SP 21-006 and SF 22-004), improvements were made to construct one water quality facility in compliance with the current El Paso County Drainage Criteria and the approved Final Drainage Report for this project.

Based upon this information and periodic site visits by field personnel to the project during significant/key phases of the stormwater BMP installation, Core Engineering Group, LLC is of the opinion that the detention and stormwater BMPs have been constructed in general compliance with the approved design plans and specifications as filed with El Paso County.

Statement Of Engineer of Record

To the best of my knowledge, information and belief, for the referenced project above, the improvements have been constructed in general compliance with the approved design plans and specifications as filed with El Paso County.



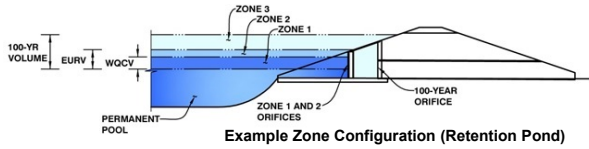
Richard L. Schindler
Colorado P.E. No.33997
For and on behalf of Core Engineering Group, LLC

Attachments: Water Quality Pond F As-Built Drawings

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.02 (February 2020)

Project: The Ridge at Lorson Ranch
Basin ID: Pond F-asbuilt



	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.11	0.090	Orifice Plate
Zone 2 (EURV)	3.57	0.200	Rectangular Orifice
Z3 (100+1/2WQCV)	4.83	0.246	Weir&Pipe (Restrict)
Total (all zones)		0.537	

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

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

Underdrain Orifice Area =	N/A	ft ²
Underdrain Orifice Centroid =	N/A	feet

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

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	2.11	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	0.37	sq. inches (diameter = 11/16 inch)

Calculated Parameters for Plate		
WQ Orifice Area per Row =	2.569E-03	ft ²
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft ²

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

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.80	1.55					
Orifice Area (sq. inches)	0.37	0.37	0.37					

	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 Rectangular	Not Selected	
Invert of Vertical Orifice =	2.35	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	3.57	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Height =	1.00	N/A	inches
Vertical Orifice Width =	12.00		inches

Calculated Parameters for Vertical Orifice		
Vertical Orifice Area =	0.08	N/A
Vertical Orifice Centroid =	0.04	N/A

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 =	3.36	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	6.00	N/A	feet
Overflow Weir Gate Slope =	0.00	N/A	H:V
Horiz. Length of Weir Sides =	3.00	N/A	feet
Overflow Gate Open Area % =	50%	N/A	%, gate open area/total area
Debris Clogging % =	50%	N/A	%

Calculated Parameters for Overflow Weir		
Height of Gate Upper Edge, H ₁ =	3.36	N/A
Overflow Weir Slope Length =	3.00	N/A
Gate Open Area / 100-yr Orifice Area =	5.09	N/A
Overflow Gate Open Area w/o Debris =	9.00	N/A
Overflow Gate Open Area w/ Debris =	4.50	N/A

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 =	0.05	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 =	18.00		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate		
Outlet Orifice Area =	1.77	N/A
Outlet Orifice Centroid =	0.75	N/A
Half-Central Angle of Restrictor Plate on Pipe =	3.14	N/A

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage =	4.31	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	10.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	0.50	feet

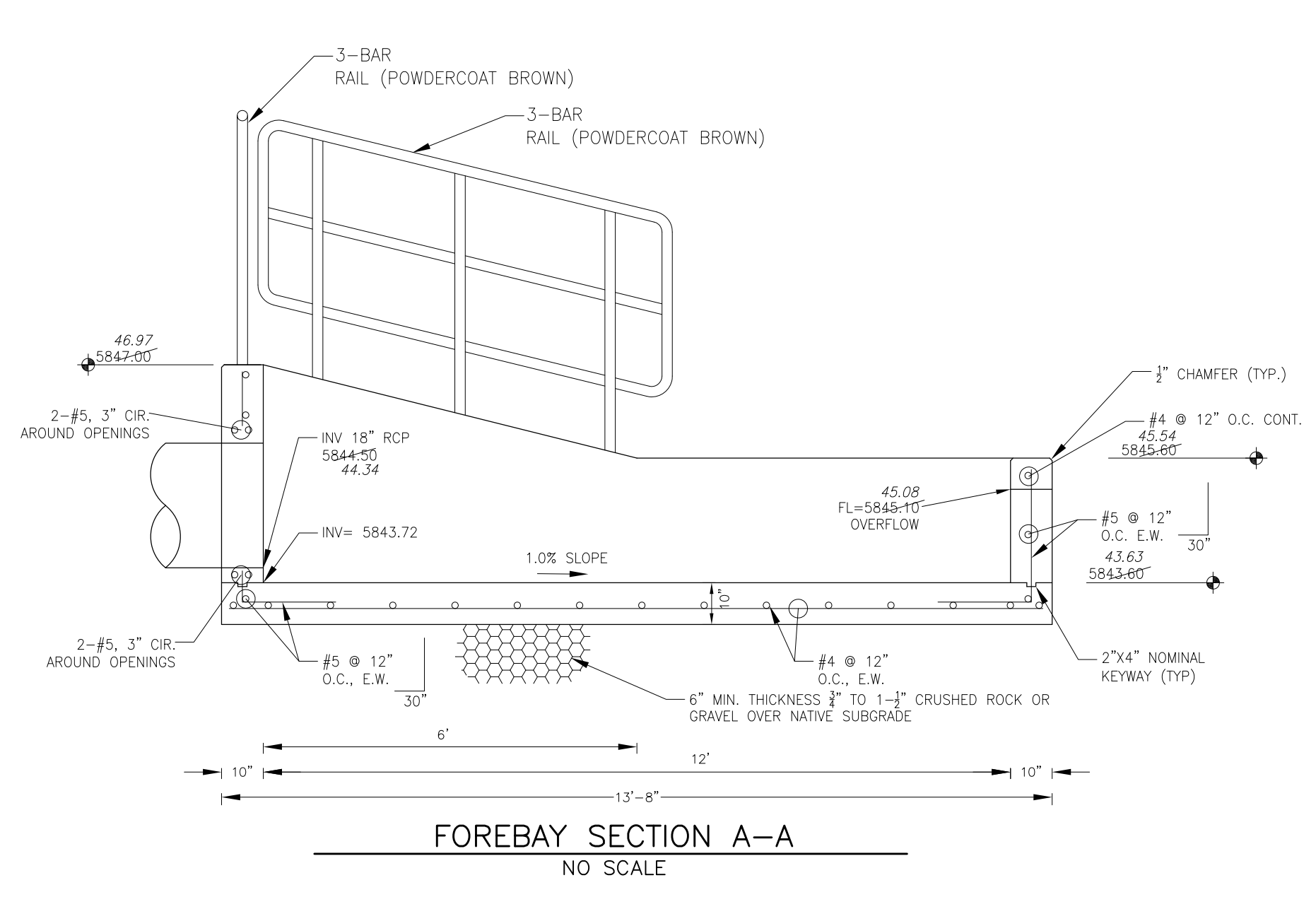
Calculated Parameters for Spillway		
Spillway Design Flow Depth =	0.44	feet
Stage at Top of Freeboard =	5.25	feet
Basin Area at Top of Freeboard =	0.22	acres
Basin Volume at Top of Freeboard =	0.63	acre-ft

top micropool = 5842.61 = stage 0

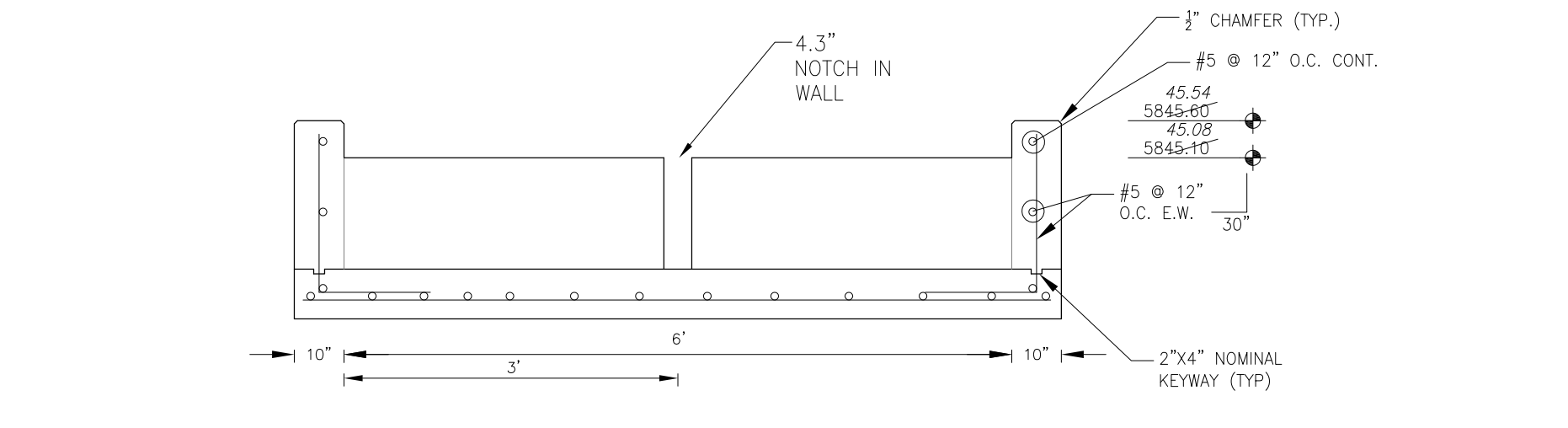
Routed Hydrograph Results

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

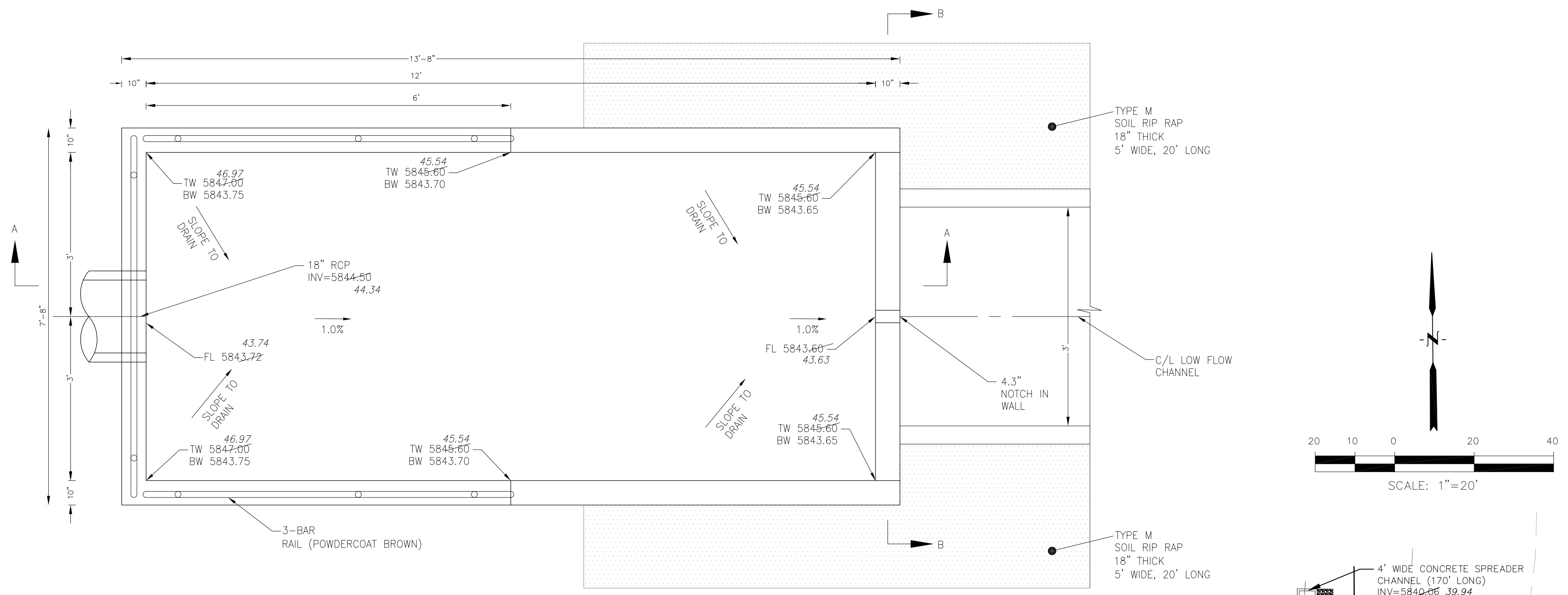
	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.14
One-Hour Rainfall Depth (in) =	0.090	0.290	0.270	0.379	0.474	0.597	0.699	0.827	1.089
CUHP Runoff Volume (acre-ft) =	N/A	N/A	0.270	0.379	0.474	0.597	0.699	0.827	1.089
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.3	1.0	1.5	2.8	3.5	4.5	6.3
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.07	0.20	0.31	0.57	0.72	0.92	1.29
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	3.2	4.5	5.5	7.4	8.6	10.2	13.3
Peak Inflow Q (cfs) =	0.0	2.3	0.4	1.4	2.6	4.6	6.0	8.0	11.3
Peak Outflow Q (cfs) =	N/A	N/A	N/A	1.5	1.7	1.6	1.7	1.8	1.8
Ratio Peak Outflow to Predevelopment Q =									
Structure Controlling Flow =	Plate	Overflow Weir 1	Vertical Orifice 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1
Max Velocity through Grate 1 (fps) =	N/A	0.30	N/A	0.1	0.2	0.5	0.6	0.8	1.2
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	46	53	54	52	49	47	45	42	38
Time to Drain 99% of Inflow Volume (hours) =	49	60	62	61	60	58	57	55	52
Maximum Ponding Depth (ft) =	2.11	3.57	3.13	3.47	3.54	3.64	3.70	3.78	3.89
Area at Maximum Ponding Depth (acres) =	0.10	0.17	0.15	0.17	0.17	0.17	0.18	0.18	0.19
Maximum Volume Stored (acre-ft) =	0.090	0.291	0.220	0.272	0.284	0.301	0.312	0.326	0.348



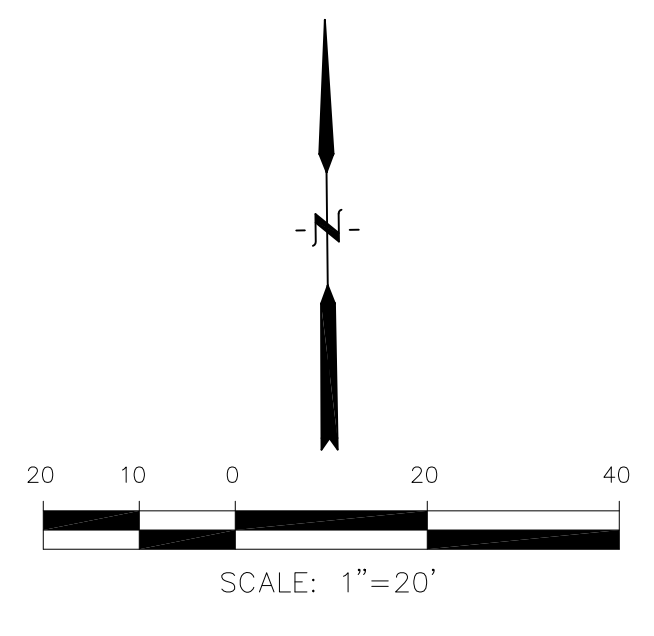
FOREBAY SECTION A-A
NO SCALE



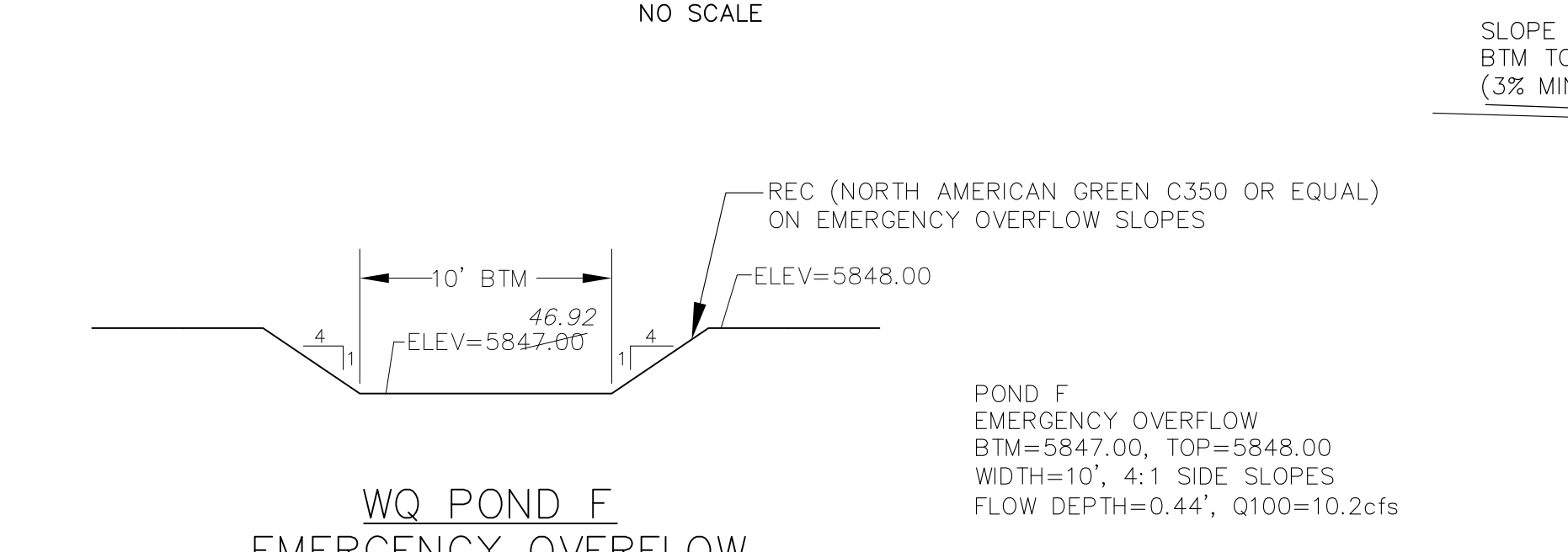
FOREBAY SECTION B-B
NO SCALE



FOREBAY DETAIL
NO SCALE

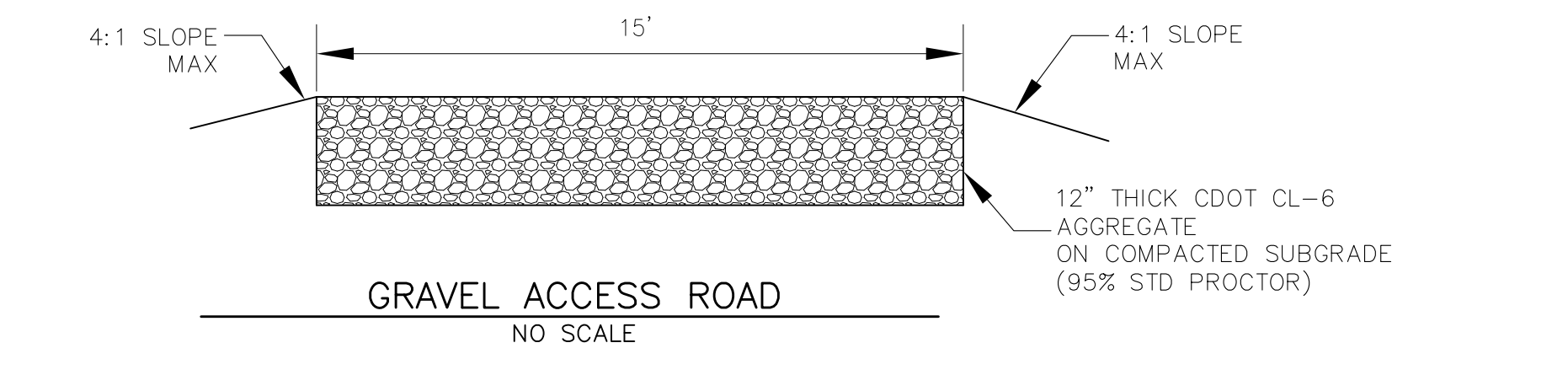


NOTE:
1. POND SLOPES SHALL BE 4:1 UNLESS OTHERWISE NOTED
2. STRAW ECB SHALL BE PLACED ON ALL POND SIDE SLOPES UNLESS NOTED OTHERWISE

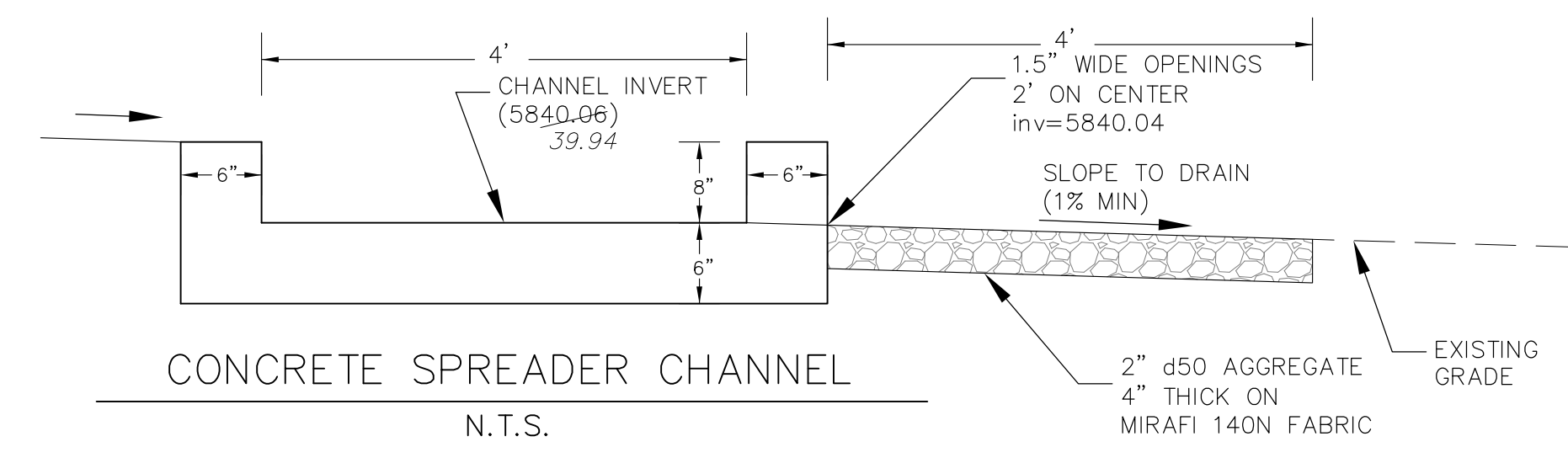


WQ POND F
EMERGENCY OVERFLOW
PROFILE
SCALE: NTS

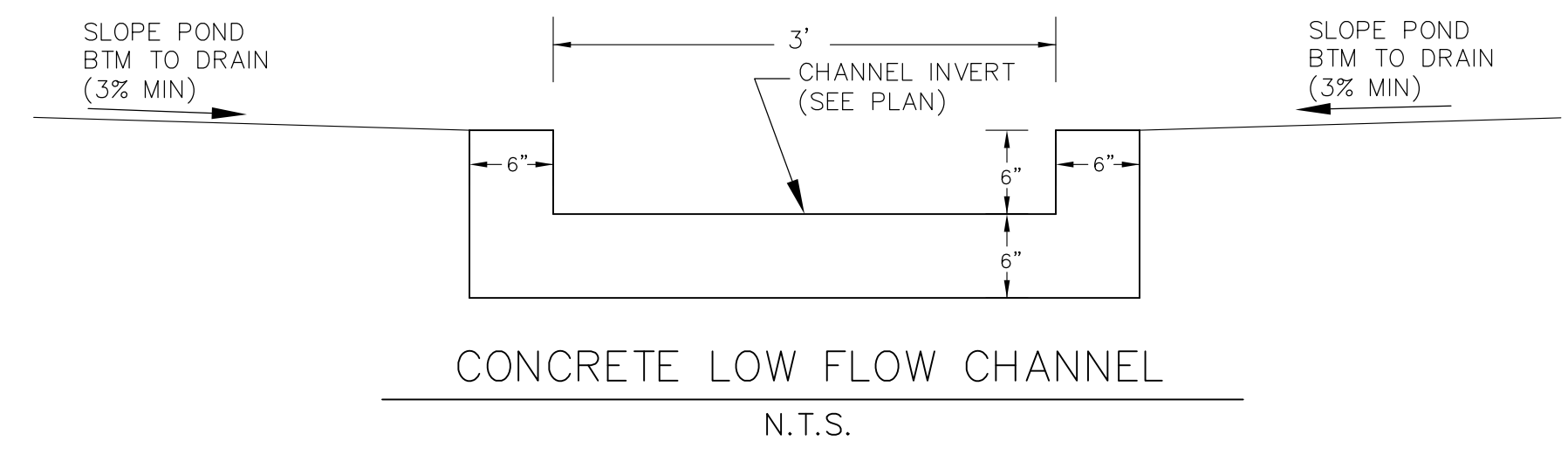
POND F
EMERGENCY OVERFLOW
BTM=5847.00, TOP=5848.00
WIDTH=10', 4:1 SIDE SLOPES
FLOW DEPTH=0.44', Q100=10.2cfs



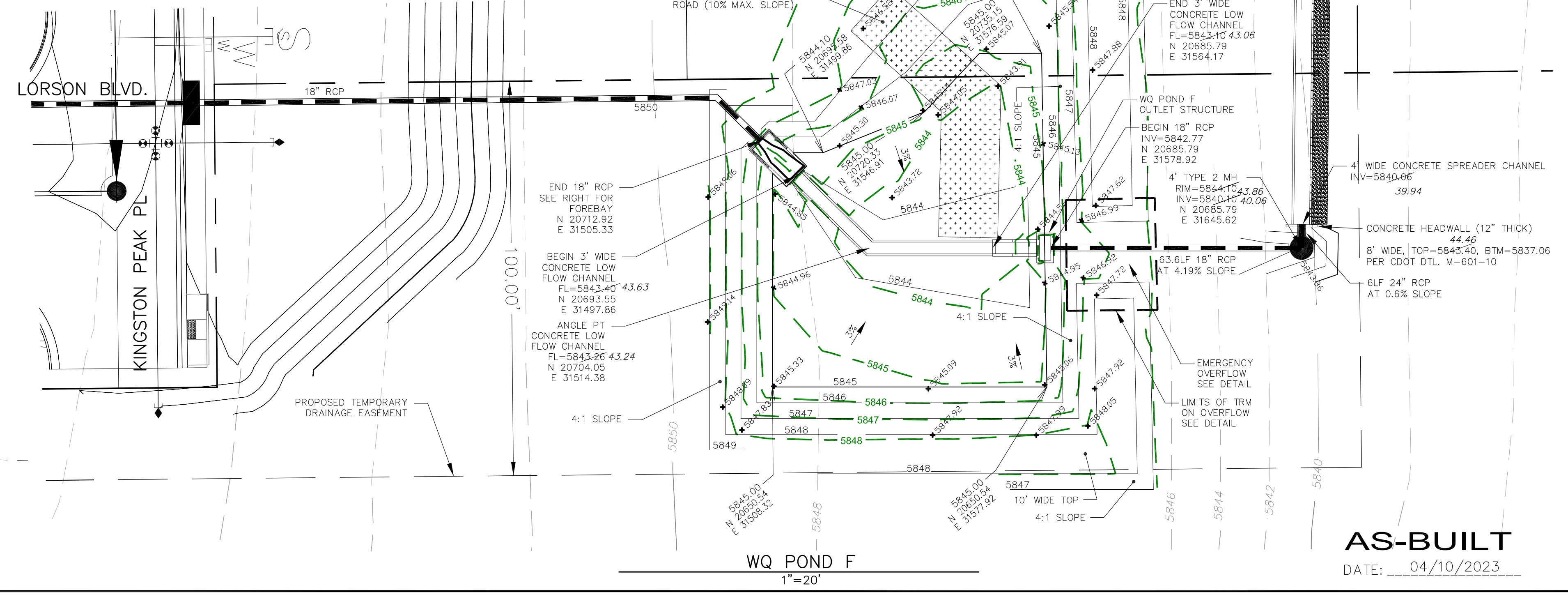
GRAVEL ACCESS ROAD
NO SCALE



CONCRETE SPREADER CHANNEL
N.T.S.



CONCRETE LOW FLOW CHANNEL
N.T.S.



WQ POND F
1"=20'

AS-BUILT
DATE: 04/10/2023

CORE ENGINEERING GROUP
15004 151ST AVENUE, S.
DENVER, CO 80232
PHONE: 719.570.1100
CONTACT: RICHARD L. SCHINDLER, P.E.
EMAIL: Rich@cegi.com

DATE: NOV. 30, 2021

DESCRIPTION: MODIFY CONCRETE SPREADER CHANNEL

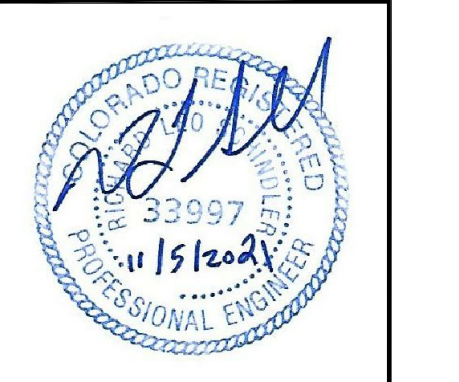
NO. 1

PREPARED FOR:
LORSON, LLC
212 N. WAHSATCH AVE, SUITE 301
COLORADO SPRINGS, COLORADO 80903
CONTACT: RICHARD L. SCHINDLER, P.E.
(719) 635-3200
CONTACT: JEFF MARK

PROJECT:
THE RIDGE AT LORSON RANCH
FONTAINE BLVD. - WALLEYE DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

WQ POND F
POND STRUCTURES
AND TRICKLE CHANNEL

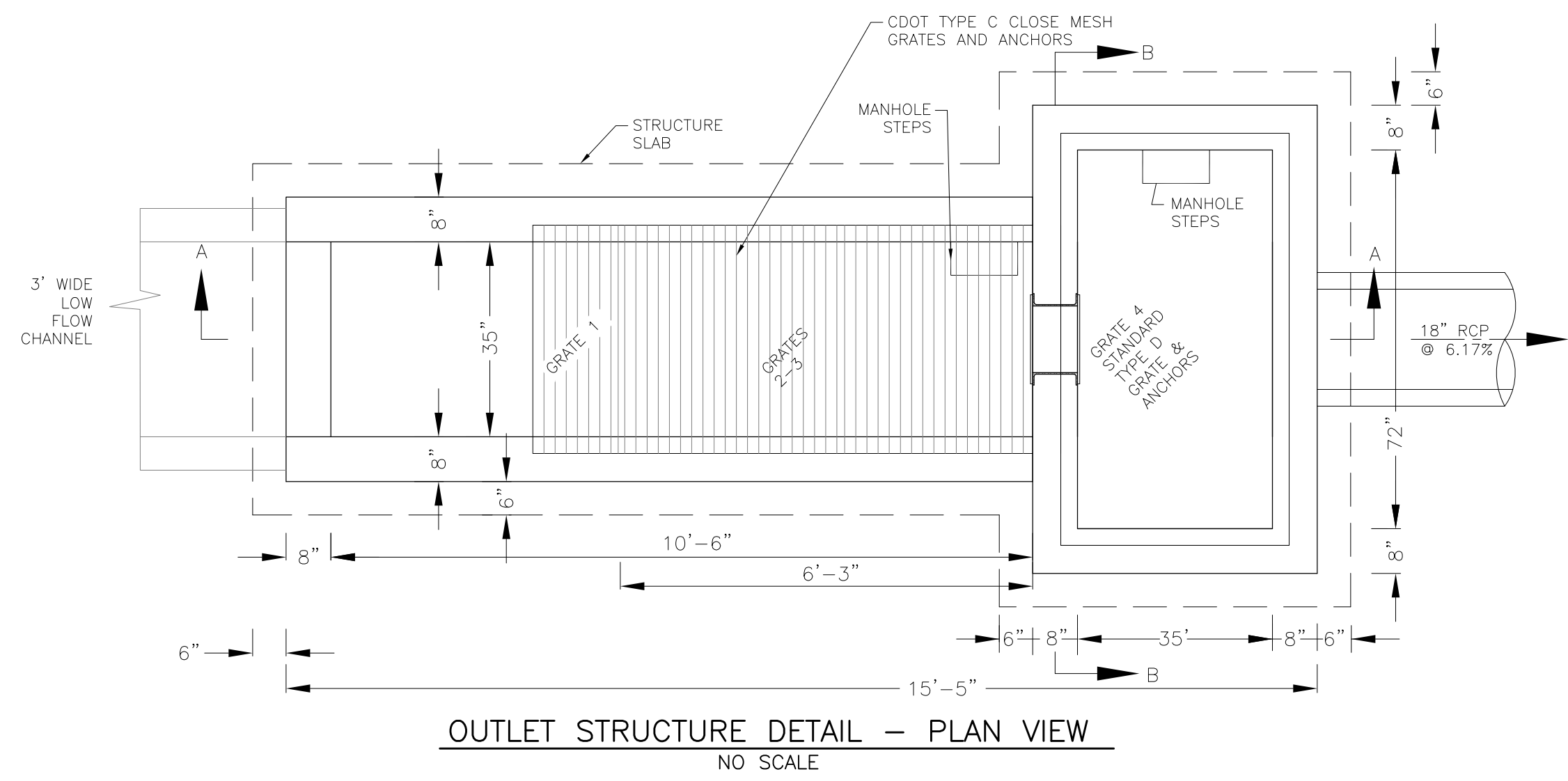
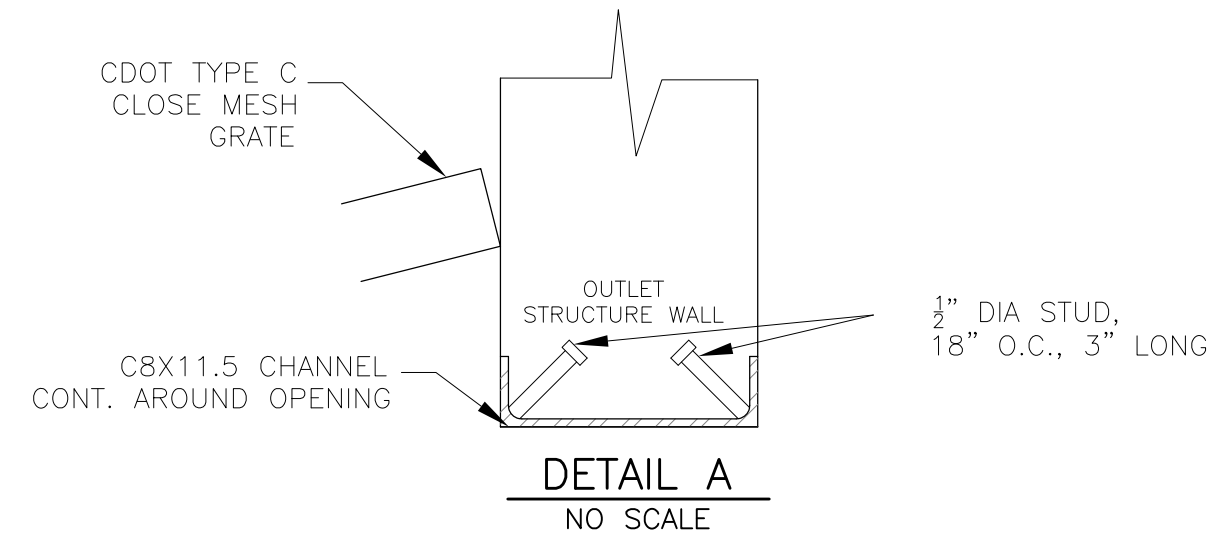


DATE: NOV 5, 2021

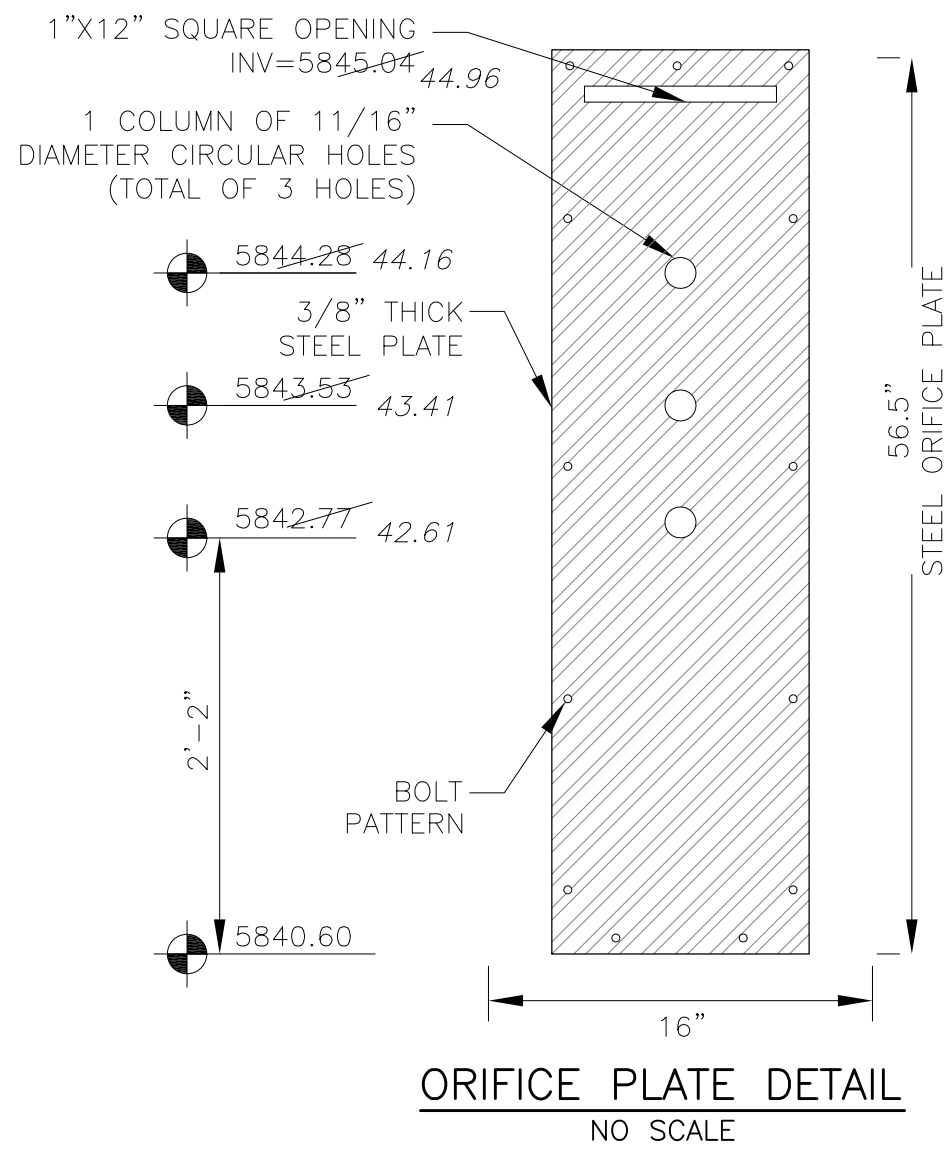
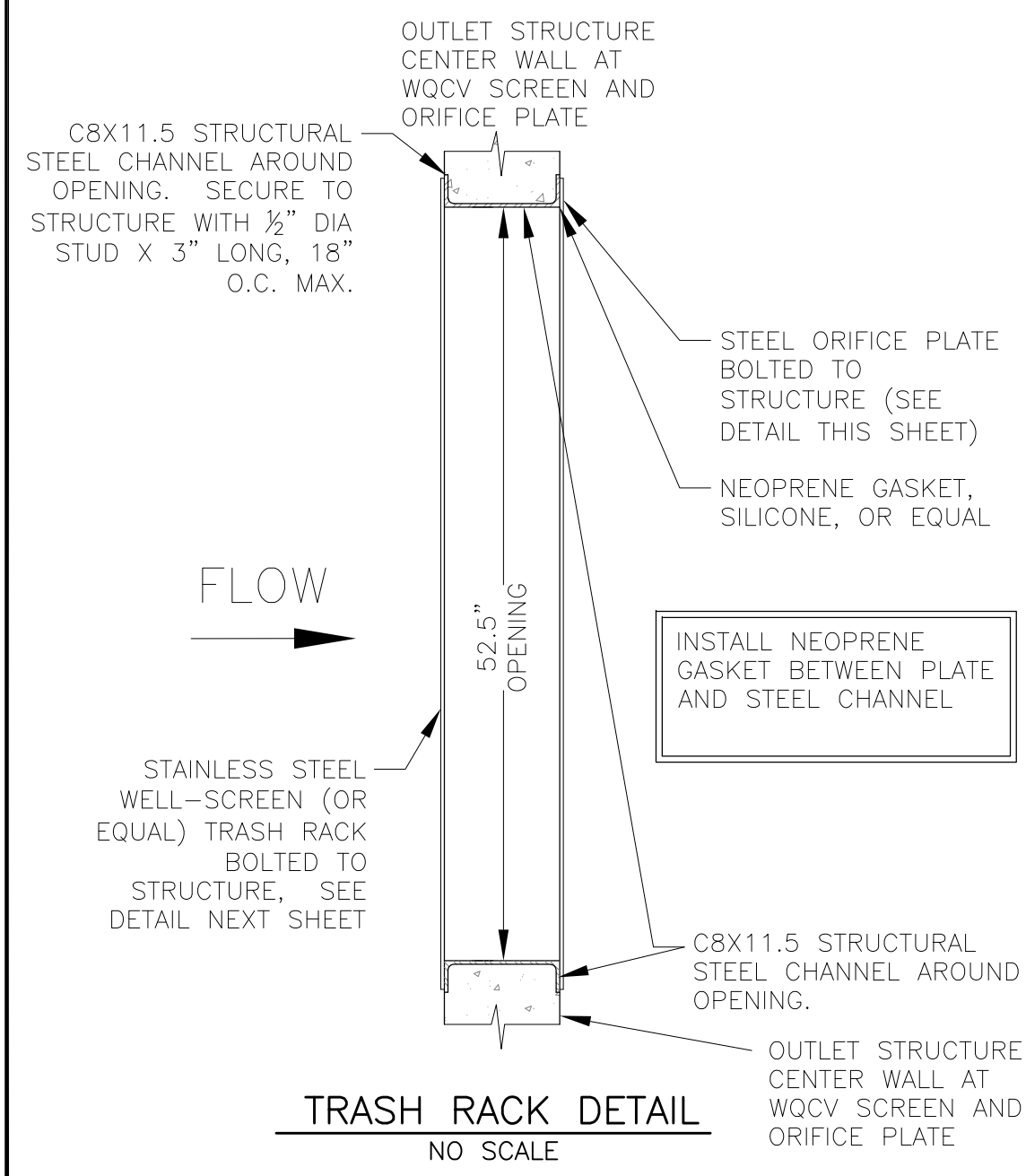
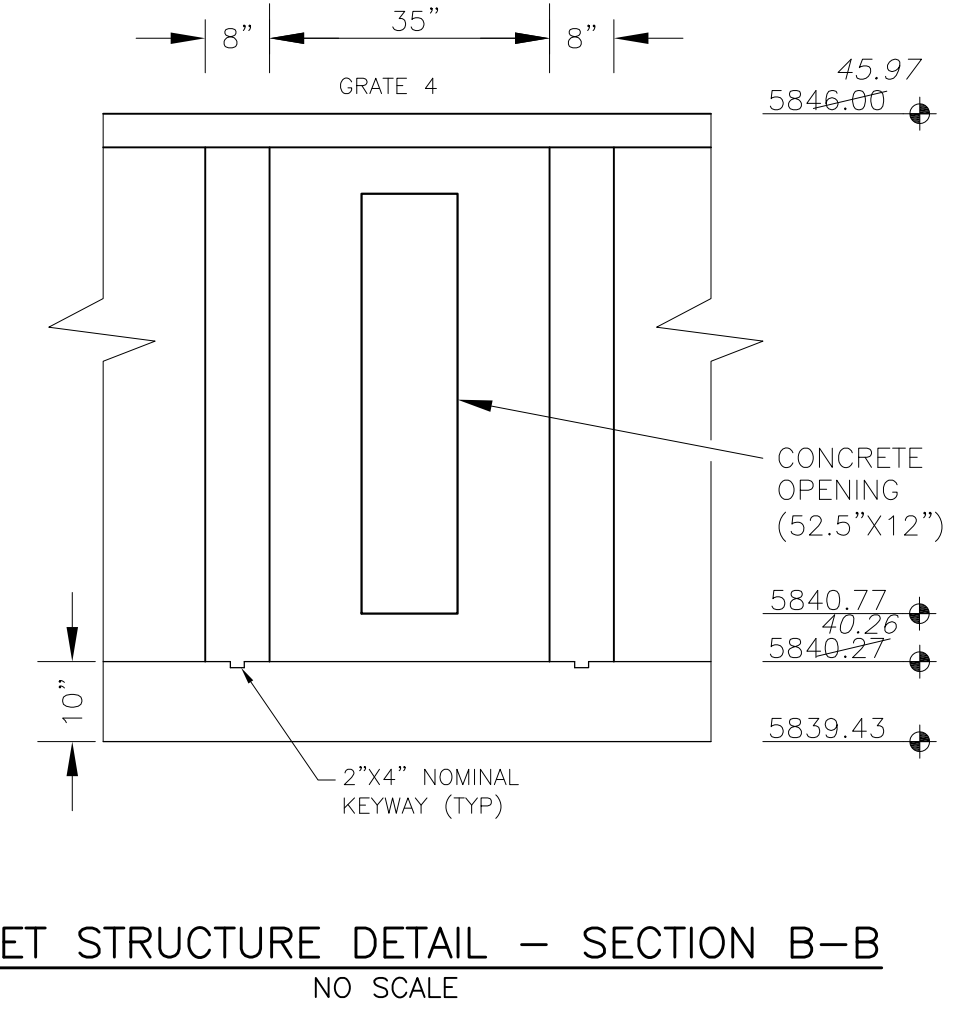
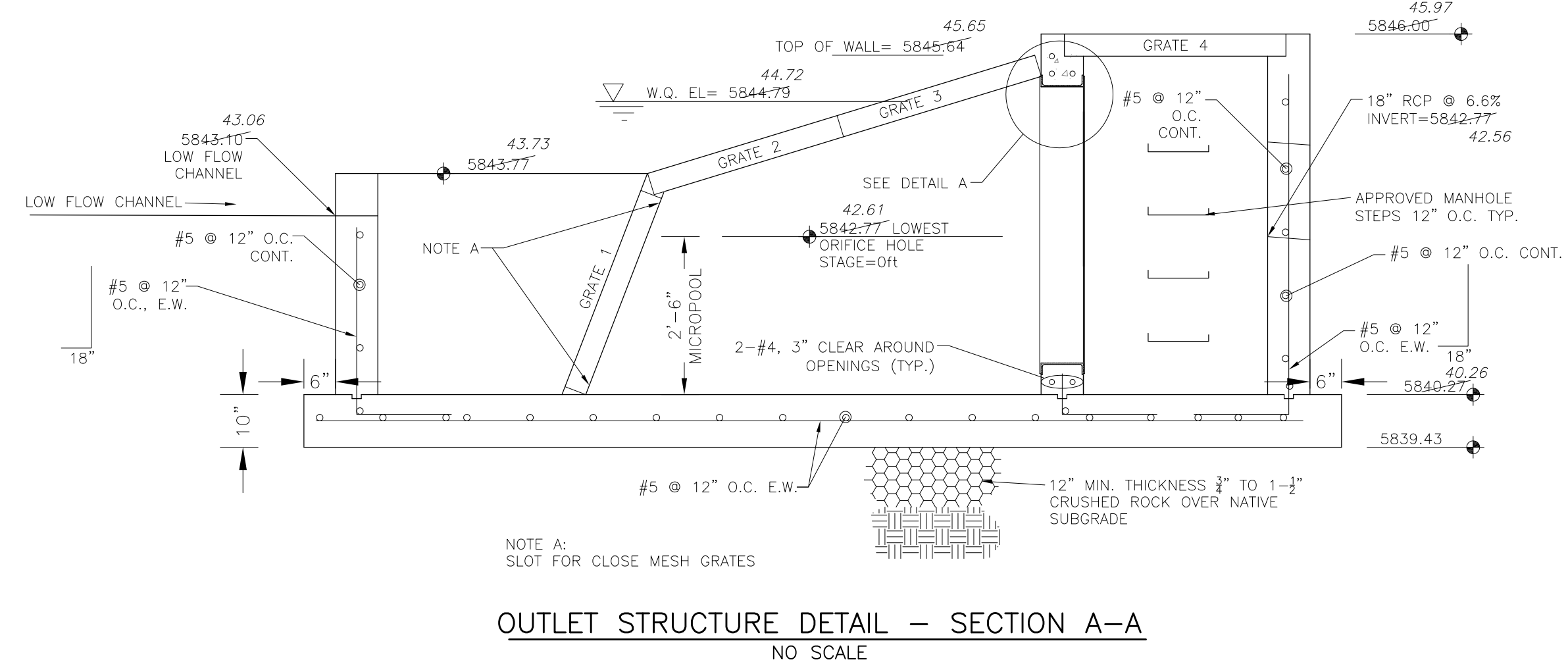
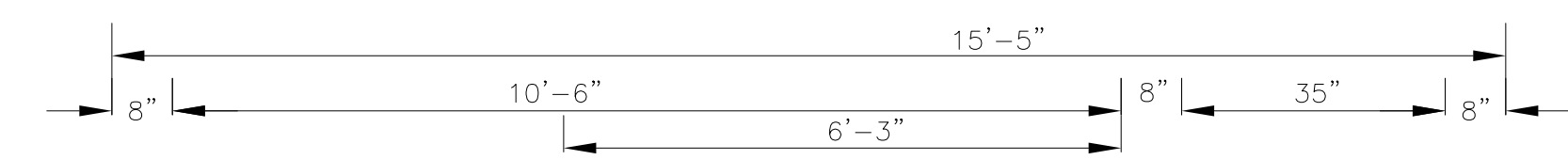
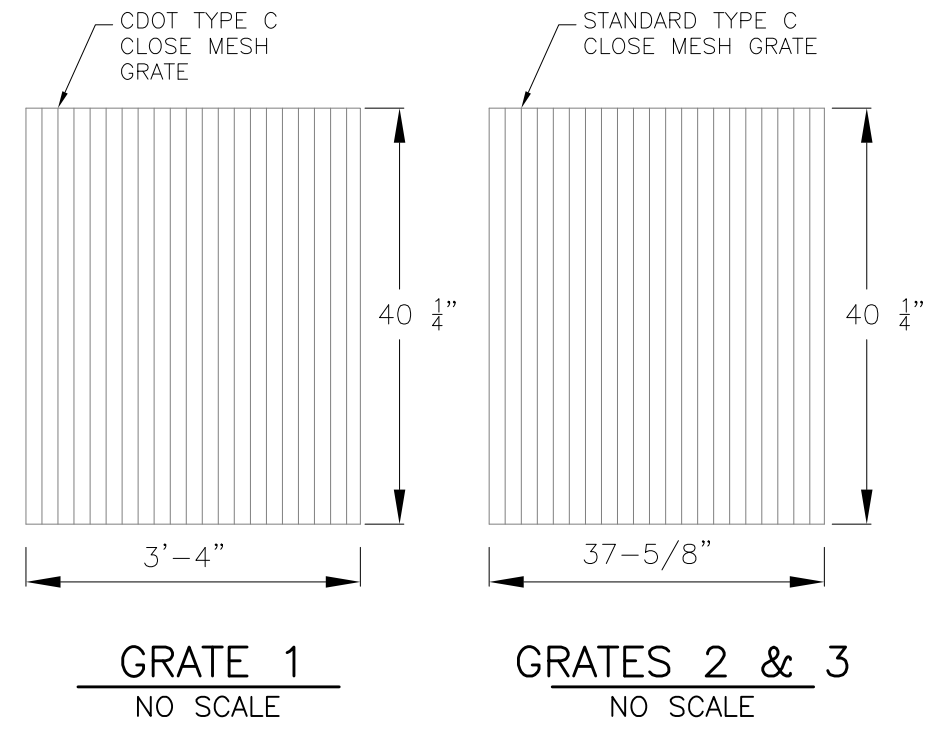
PROJECT NO. 100.064

SHEET NUMBER C9.3

TOTAL SHEETS: 23



NOTE:
AFTER CONCRETE STRUCTURE HAS BEEN POURED
ALL GRATE DIMENSIONS SHALL BE FIELD VERIFIED
PRIOR TO GRATE CONSTRUCTION

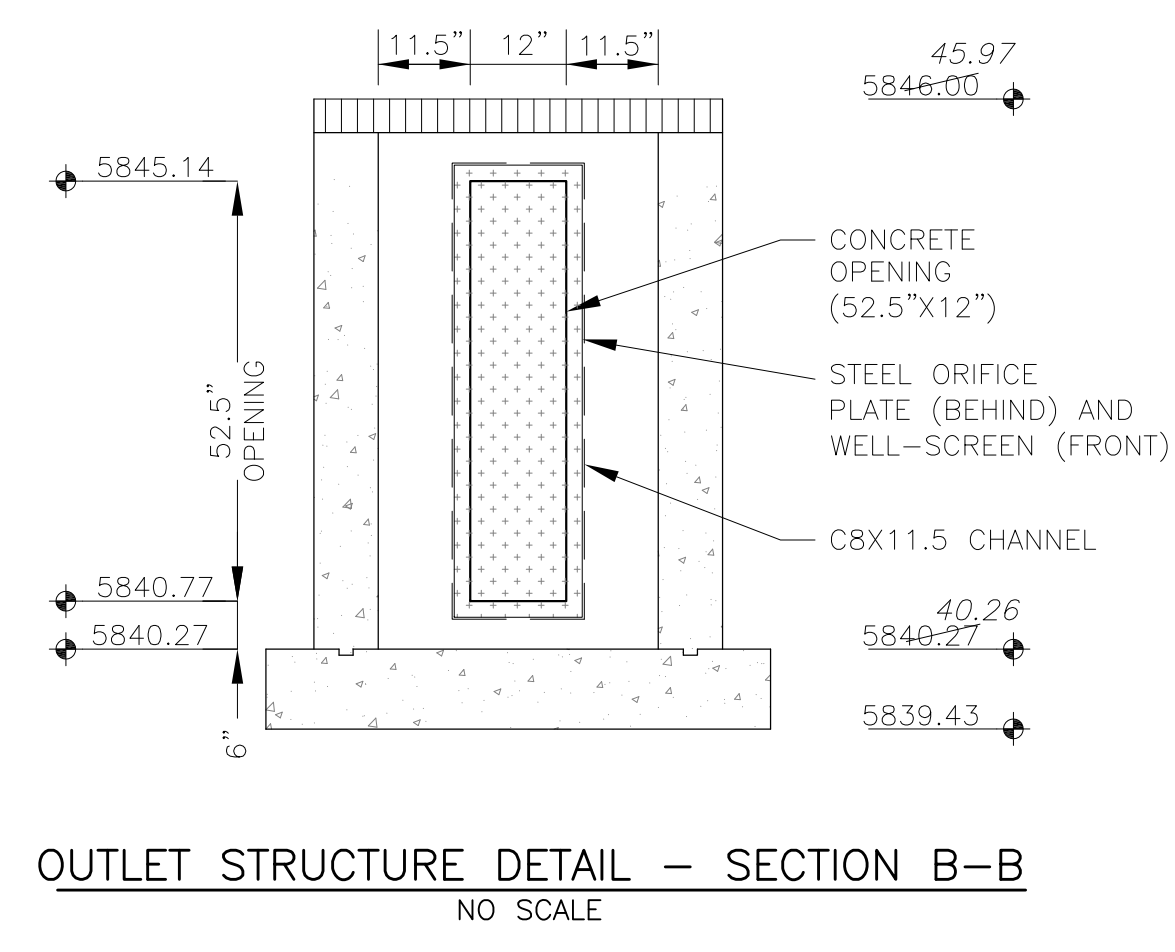


OUTLET STRUCTURE, FOREBAY, AND DRAIN CHANNEL NOTES:

- PRIOR TO CONSTRUCTION, CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL COMPONENTS OF THE OUTLET STRUCTURE.
 - GRADE 60 REINFORCING STEEL REQUIRED. SEE TABLE FOR THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS. ALL REINFORCING STEEL SHALL HAVE A TWO-INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE, UNLESS OTHERWISE NOTED.
- | BAR SIZE | #4 | #5 | #6 |
|--------------------|-------|-------|-------|
| MIN. SPLICE LENGTH | 1'-3" | 1'-7" | 2'-0" |
- CONCRETE FOR THE OUTLET STRUCTURE AND FOREBAY SHALL BE CDOT CLASS D CONCRETE.
 - CONCRETE FOR DRAIN CHANNELS SHALL BE CDOT CLASS B CONCRETE
 - EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213. EXPANSION JOINT MATERIAL SHALL BE 1/2" THICK, SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE AND THE JOINT SHALL BE SEALED, REFER TO DETAILS.
 - ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 3/8" CHAMFER UNLESS OTHERWISE NOTED.
 - SUBGRADE TO BE 12" THICK CLEAN FILL COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM M698 UNDER STRUCTURE.
 - REFER TO POND DETAILS FOR PRESEDIMENTATION/FOREBAY DESIGN.
 - ENGINEER SHALL BE NOTIFIED PRIOR TO BEGINNING CONSTRUCTION OF OUTLET STRUCTURE TO SCHEDULE OBSERVATION VISITS FOR STRUCTURES.

- WQCV WELL-SCREEN NOTES:
- Well-Screen shall be stainless steel and attached by stainless steel bolts along edge of the mounting frame.
 - WQCV Well Screen
 - Type of Screen: Stainless steel #93 Vee Wire (Johnson Vee Wire (tm) Stainless Steel Screen or equivalent with 60% open area)
 - Screen slot opening dimension: 0.139" (Screen #93 Vee Wire Slot Opening)
 - Type and Size of Support Rod: TE 0.074"x0.50"
 - Spacing of Support Rod (O.C.): 1.0 Inch
 - Total Screen Thickness: 0.655"
 - Carbon Steel Holding Frame Type: 3/4" x 1.0" angle

AS-BUILT
DATE: 04/10/2023



CORE ENGINEERING GROUP
15004 1ST AVENUE S.
DENVER, CO 80202
PH: 719.570.1100
CONTACT: RICHARD L. SCHINDLER, P.E.
EMAIL: Rich@cog1.com

DATE: NOV 30, 2021
DESCRIPTION: MODIFY CIRCULAR HOLES IN ORIFICE PLATE
PREPARED FOR: LORSON, LLC
212 N. WAHSATCH AVE, SUITE 301
COLORADO SPRINGS, COLORADO 80903
CONTACT: JEFF MARK

PROJECT: THE RIDGE AT LORSON RANCH
FONTAINE BLVD. - WALLEYE DR
COLORADO SPRINGS, COLORADO

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

POND F
WQ POND
OUTLET STRUCTURE DETAILS



DATE: NOV 5, 2021
PROJECT NO. 100.064
SHEET NUMBER C9.6
TOTAL SHEETS: 23