



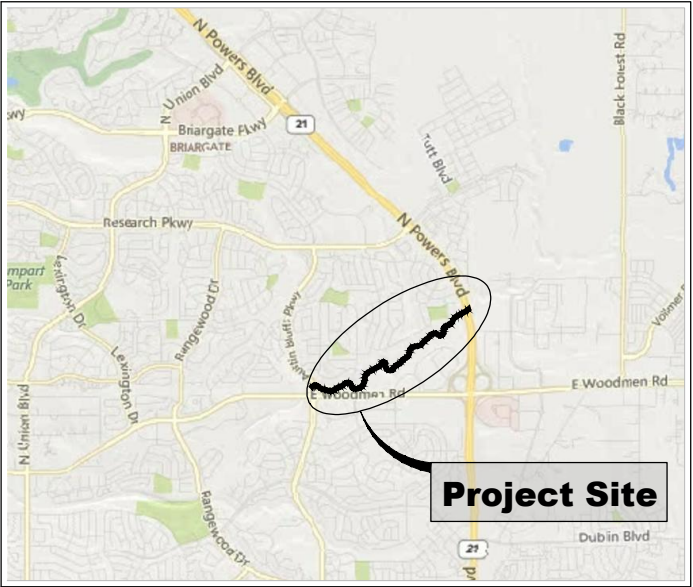
COTTONWOOD CREEK CHANNEL REHABILITATION

CITY OF COLORADO SPRINGS

PERMIT PLAN SET

January 2021

MATRIX PROJECT No. 20.069.091



VICINITY MAP
N.T.S.

VERTICAL DATUM: THE ELEVATIONS ON THIS PROJECT ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.

HORIZONTAL DATUM: THE BASIS OF BEARINGS ARE GRID BEARINGS OF THE STATE PLANE COLORADO CENTRAL ZONE. PROJECT COORDINATES ARE NAD83/2011 STATE PLANE COLORADO CENTRAL ZONE, GRID COORDINATES.

AERIAL PHOTO: PROVIDED BY AERIAL MAPPING SERVICES

BENCHMARK STATEMENT: THE BENCHMARK USED FOR THIS PROJECT IS A COLORADO SPRINGS UTILITIES G.I.S. SURVEY MONUMENT "ABRP", POINT NUMBER 9999, BEING A FOUND NAIL WITH F.I.M.S. WASHER SET IN A CONCRETE ELECTRICAL VAULT LOCATED AT THE SOUTHEAST CORNER OF AUSTIN BLUFFS PARKWAY AND RESEARCH PARKWAY AND HAVING A PUBLISHED NAVD88 ELEVATION OF 6907.36' U.S. SURVEY FEET.

PROPERTY INFORMATION: PARCEL LINES AND PROPERTY OWNERSHIP INFORMATION SHOWN WERE PROVIDED BY THE EL PASO COUNTY PROPERTY APPRAISER'S OFFICE.



LOCATION MAP
SCALE: 1" = 2,000'

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APPROVED









SIGNED: _____ DATE: _____
CITY OF COLORADO SPRINGS

REFERENCE DRAWINGS X-069-MDG22x34 X-REF_BKF-CHANNEL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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- ## ABBREVIATIONS

C.	CENTER LINE	APPROX.	APPROXIMATE
HCL	HORIZONTAL CONTROL LINE	MIN.	MINIMUM
DIA	DIAMETER	MAX.	MAXIMUM
EX/EXIST	EXISTING	HORIZ	HORIZONTAL
EL./ELEV	ELEVATION	VERT.	VERTICAL
FT.	FEET	DIST.	DISTANCE
INV.	INVERT	NTS	NOT TO SCALE
LF	LINEAR FEET	TYP	TYPICAL
LT	LEFT	O.C.	ON CENTER
N,S,E,W	NORTH, SOUTH, EAST, WEST	L.O.C.	LIMITS OF CONSTRUCTION
P	PROPERTY LINE	RR	RAILROAD
ROW	RIGHT-OF-WAY	BCL	BANKFULL CONTROL LINE
RT	RIGHT	TCL	THALWEG CONTROL LINE
SF	SQUARE FEET		
STA.	STATION		

STANDARD SYMBOLS

	CENTER LINE
	EXISTING CONTOURS
	PROPOSED CONTOURS
	L.O.C.
	CONSTRUCTION ACCESS
	ROW
	RAILROAD ROW
	PROTECT EXISTING VEGETATION

LEGEND

EXISTING RIPRAP

PROPOSED RIPRAP - BURIED 6" WITH TOPSOIL & REVEGETATION

PROPOSED SCULPTED CONCRETE DROP STRUCTURE (LARGE DROP)

PROPOSED GROUTED CROSS VANE (SMALL DROP)

PROPOSED GROUTED BOULDERS AT 4:1 (SMALL DROP)

[illegible]



Know what's below.
Call before you dig.



REFERENCE DRAWINGS			
X-069-MDG22-34 X-069-EX-IMAGE Cottonwood Creek Survey-4Matrix 20200604 X-069-EX-PARCELS X-069-EX-TOPO			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: S:\20_069_091 Cottonwood Creek Channel Rehabilitation Design Services\DWG\Design Plans\069-EX01.dwg			
CTB FILE: Matrix(black).ctb			
PLOT DATE: 1/25/2021 4:13 PM			
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PREPARED BY:
 Matrix
Excellence by Design

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
EXISTING CONDITIONS MAP			
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 20.069.091			
DESIGNED BY: JAB	SCALE: 1" = 400'	DATE ISSUED: January 2021	DRAWING No. EX01
CHECKED BY: AJS	HORIZ: N/A	SHEET 03 OF 37	



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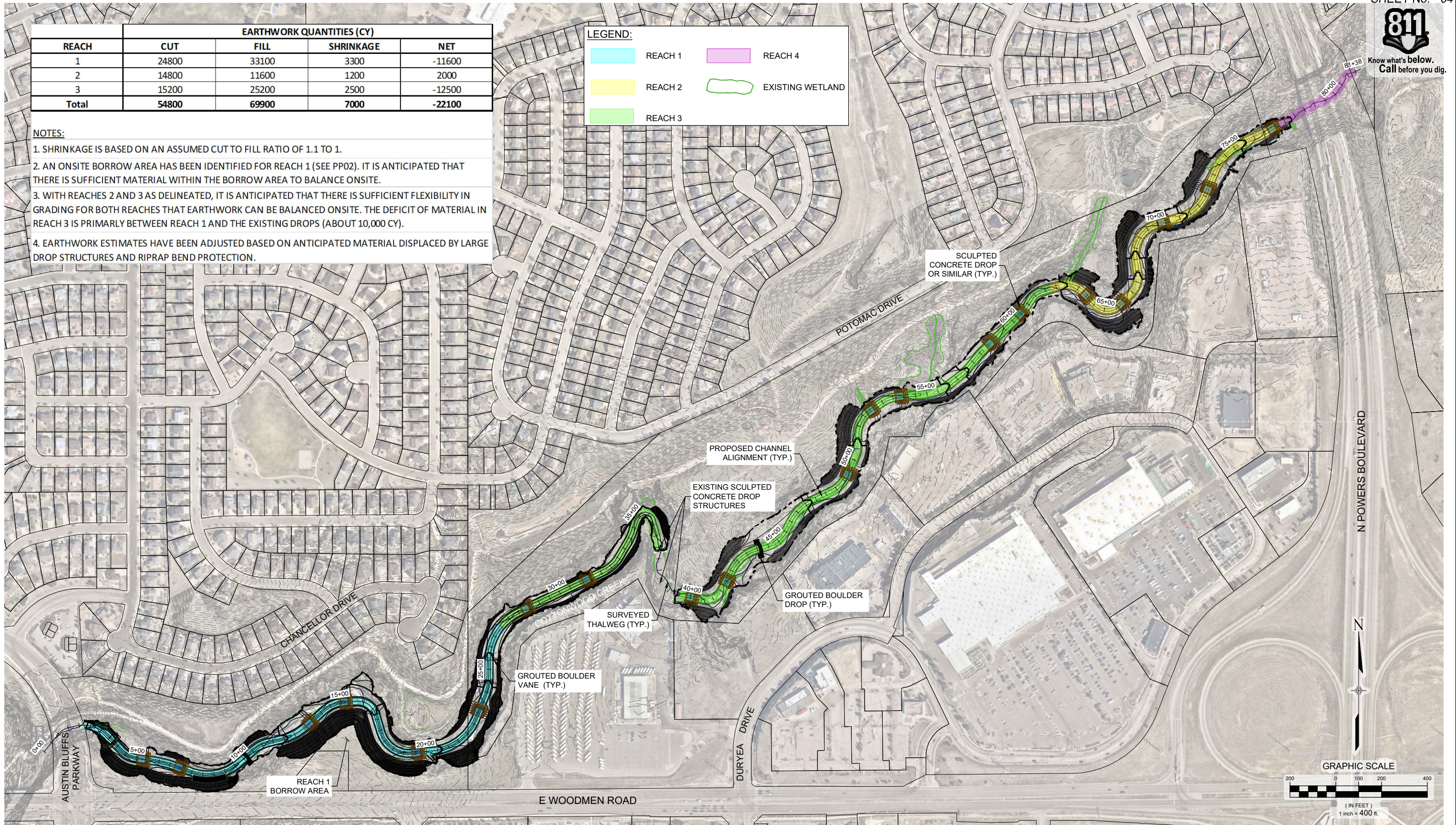
EARTHWORK QUANTITIES (CY)				
REACH	CUT	FILL	SHRINKAGE	NET
1	24800	33100	3300	-11600
2	14800	11600	1200	2000
3	15200	25200	2500	-12500
Total	54800	69900	7000	-22100

NOTES:

1. SHRINKAGE IS BASED ON AN ASSUMED CUT TO FILL RATIO OF 1.1 TO 1.
2. AN ONSITE BORROW AREA HAS BEEN IDENTIFIED FOR REACH 1 (SEE PP02). IT IS ANTICIPATED THAT THERE IS SUFFICIENT MATERIAL WITHIN THE BORROW AREA TO BALANCE ONSITE.
3. WITH REACHES 2 AND 3 AS DELINEATED, IT IS ANTICIPATED THAT THERE IS SUFFICIENT FLEXIBILITY IN GRADING FOR BOTH REACHES THAT EARTHWORK CAN BE BALANCED ONSITE. THE DEFICIT OF MATERIAL IN REACH 3 IS PRIMARILY BETWEEN REACH 1 AND THE EXISTING DROPS (ABOUT 10,000 CY).
4. EARTHWORK ESTIMATES HAVE BEEN ADJUSTED BASED ON ANTICIPATED MATERIAL DISPLACED BY LARGE DROP STRUCTURES AND RIPRAP BEND PROTECTION.

LEGEND:

	REACH 1		REACH 4
	REACH 2		EXISTING WETLAND
	REACH 3		



REFERENCE DRAWINGS			
X-069-MDG22-04			
Cottonwood Creek Survey-Matrix	20200004		
X-069-EX-IMAGE			
X-069-PR-TOPO			
X-069-EX-PARCELS			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
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FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
CHANNEL IMPROVEMENT PLAN			
DESIGNED BY:	JAB	SCALE	DATE ISSUED:
DRAWN BY:	TKM	HORIZ 1" = 400'	January 2021
CHECKED BY:	AJS	VERT. N/A	SHEET 04 OF 37
			DRAWING No. DR01



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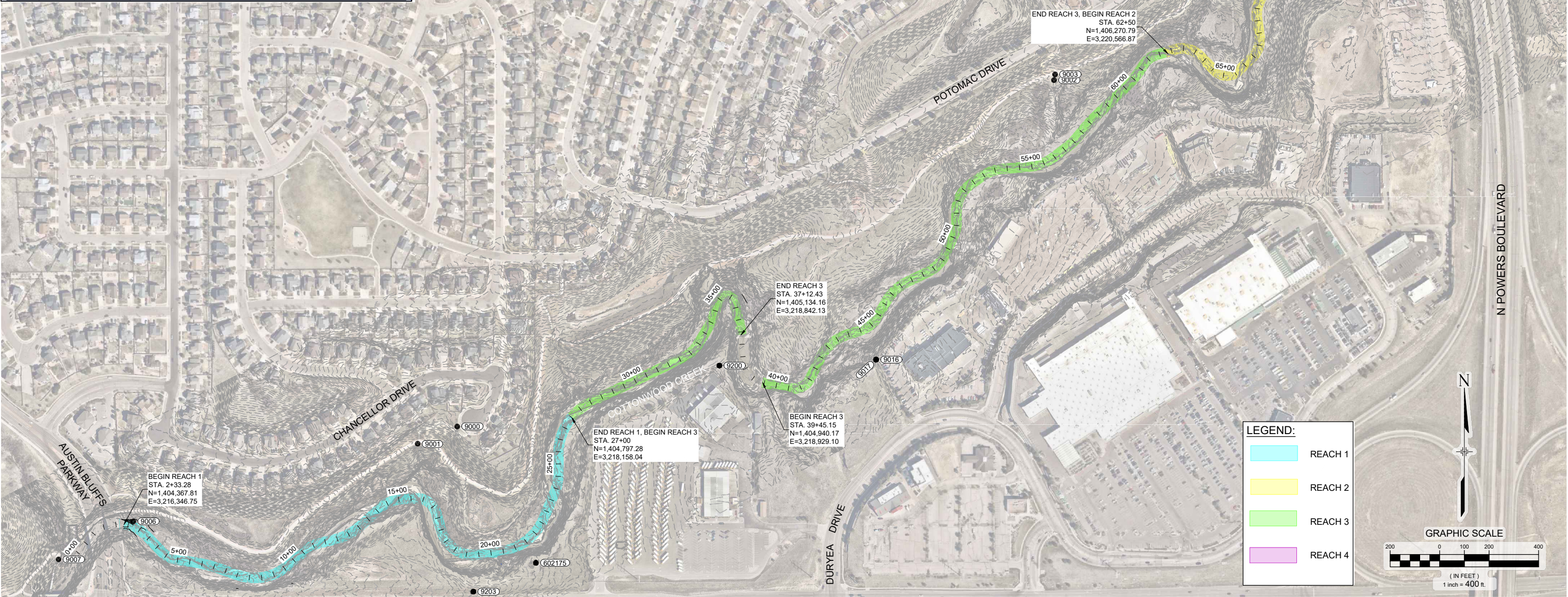
Project Survey Control Coordinates (NAD83/2011 State Plane Colorado Central Zone)				
Point #	Northing	Easting	Elevation	Description
9000	1404763.62	3217693.14	6774.91	CP-SET-60D
9001	1404692.29	3217533.50	6755.87	CP-SET-+-FOW
9002	1406162.64	3220106.95	6811.28	CP-SET-60D
9003	1406186.06	3220111.02	6812.38	CP-MAG
9004	1407150.07	3221941.33	6850.84	CP-SET-RB
9005	1406936.99	3221581.73	6824.72	CP-SET-RB
9006	1404379.75	3216383.53	6693.96	CP-SET-60D
9007	1404225.64	3216081.08	6699.43	CP-SCRIBE-X
9016	1405033.19	3219387.74	6790.44	FMON-1.5AC-PLS13226
9017	1405033.40	3219387.12	6790.66	FMON-1.0PYC-PLSILLEGIBLE
9200	1405009.15	3218753.82	6772.60	FMON-1.5-YPC-ILL
9201	1407331.47	3221733.02	6865.28	FMON-3.5-AC-CDOT-ROW-MP3036
9202	1407150.81	3221435.09	6857.59	FMON-3.5-AC-CDOT-ROW-PLS24964
9203	1404095.42	3217758.91	6738.99	FMON-3.5-AC-WOODMEN-SRVY-CTL
9999	1409183.61	3216427.18	6907.36	FMON-NAIL&WASHER-CONC-ELEC-VAULT-FIMS-ABRP-NAVD88
602016	1407307.99	3221836.20	6836.62	FMON-SURVEY-MRK-AL-ROD-0.53-ABOVE-NG-420U1-WITNESS-POST
602175	1404211.93	3218012.05	6746.39	FMON-1.0-YPC-BROKEN

PROJECT SURVEY CONTROL:

THE BENCHMARK USED FOR THIS PROJECT IS A COLORADO SPRINGS UTILITIES G.I.S. SURVEY MONUMENT "ABRP", POINT NUMBER 9999, BEING A FOUND NAIL WITH F.I.M.S. WASHER SET IN A CONCRETE ELECTRICAL VAULT LOCATED AT THE SOUTHEAST CORNER OF AUSTIN BLUFFS PARKWAY AND RESEARCH PARKWAY AND HAVING A PUBLISHED NAVD88 ELEVATION OF 6907.36' U.S. SURVEY FEET.

THE BASIS OF BEARINGS ARE GRID BEARINGS OF THE STATE PLANE COLORADO CENTRAL ZONE.

PROJECT COORDINATES ARE NAD83/2011 STATE PLANE COLORADO CENTRAL ZONE, GRID COORDINATES.



REFERENCE DRAWINGS			
X-069-MDG22234			
Cottonwood Creek Survey-Matrix	20200804		
X-069-EK-MAGE			
X-069-PR-TOPO			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: S:\20.069.091 Cottonwood Creek Channel Rehabilitation Design Services\DWG\Design Plans\069-HZ01.dwg			
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Matrix
Excellence by Design

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THIS DRAWING HAS NOT BEEN APPROVED BY GOVERNING AGENCIES AND IS SUBJECT TO CHANGE

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
HORIZONTAL CONTROL PLAN			
DESIGNED BY:	JAB	SCALE	DATE ISSUED:
DRAWN BY:	TKM	HORIZ. 1" = 400'	January 2021
CHECKED BY:	AJS	VERT. N/A	05 OF 37
			DRAWING No. HZ01



EROSION CONTROL LEGEND

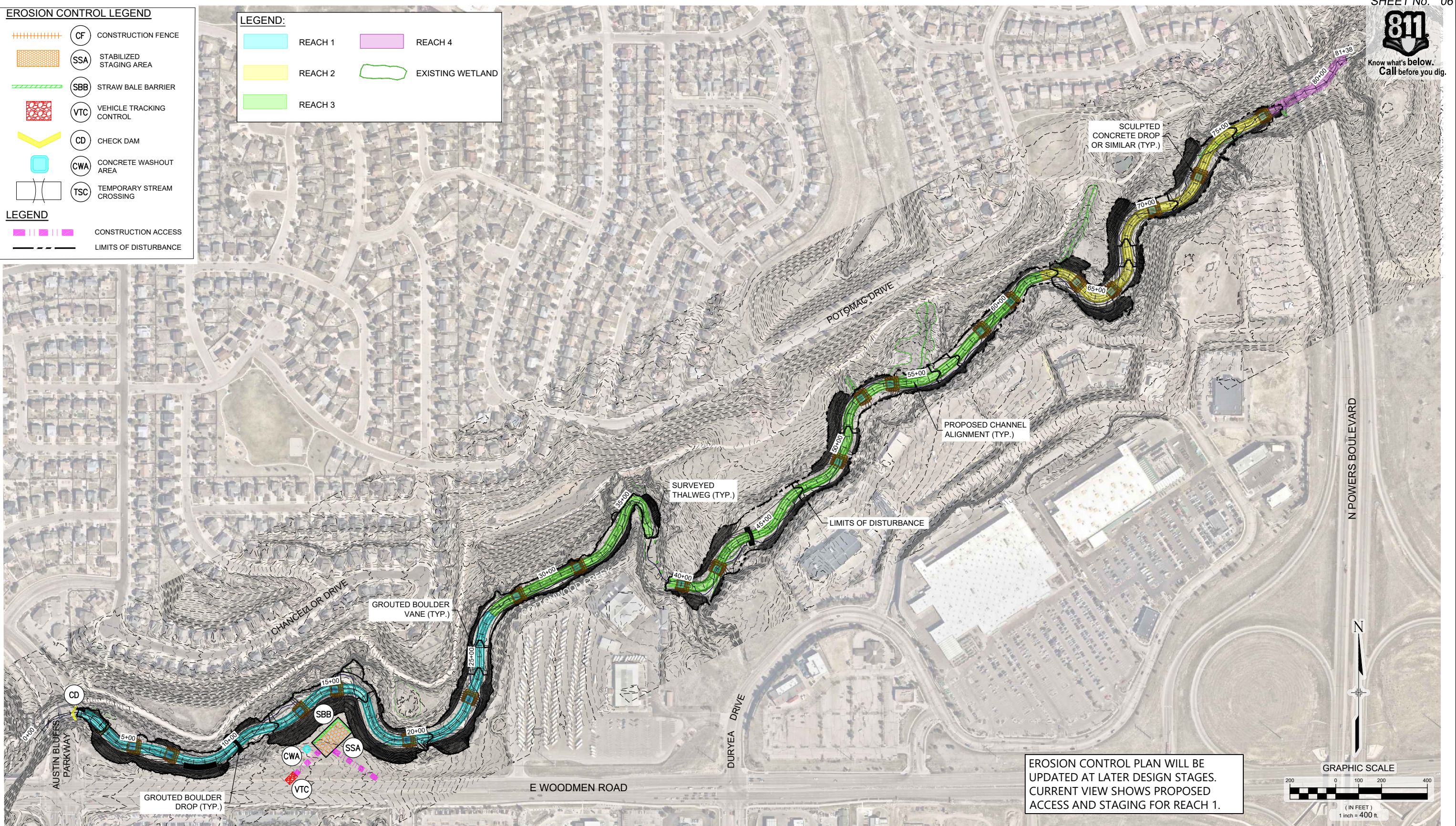
- ++++ CF CONSTRUCTION FENCE
- SSA STABILIZED STAGING AREA
- SBB STRAW BALE BARRIER
- VTC VEHICLE TRACKING CONTROL
- CD CHECK DAM
- CWA CONCRETE WASHOUT AREA
- TSC TEMPORARY STREAM CROSSING

LEGEND

- CONSTRUCTION ACCESS
- LIMITS OF DISTURBANCE

LEGEND:

- REACH 1
- REACH 2
- REACH 3
- REACH 4
- EXISTING WETLAND



EROSION CONTROL PLAN WILL BE
UPDATED AT LATER DESIGN STAGES.
CURRENT VIEW SHOWS PROPOSED
ACCESS AND STAGING FOR REACH 1.

REFERENCE DRAWINGS			
X-069-MDG22-04			
Cottonwood Creek Survey-Matrix	20200004		
X-069-EK-IMAGE			
X-069-PR-TOPO			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
FILE NAME: S:\20.069.091 Cottonwood Creek Channel Rehabilitation Design Services\Drawings\Design Plans\069-EC01.dwg			
CTB FILE: Matrix(black).ctb			
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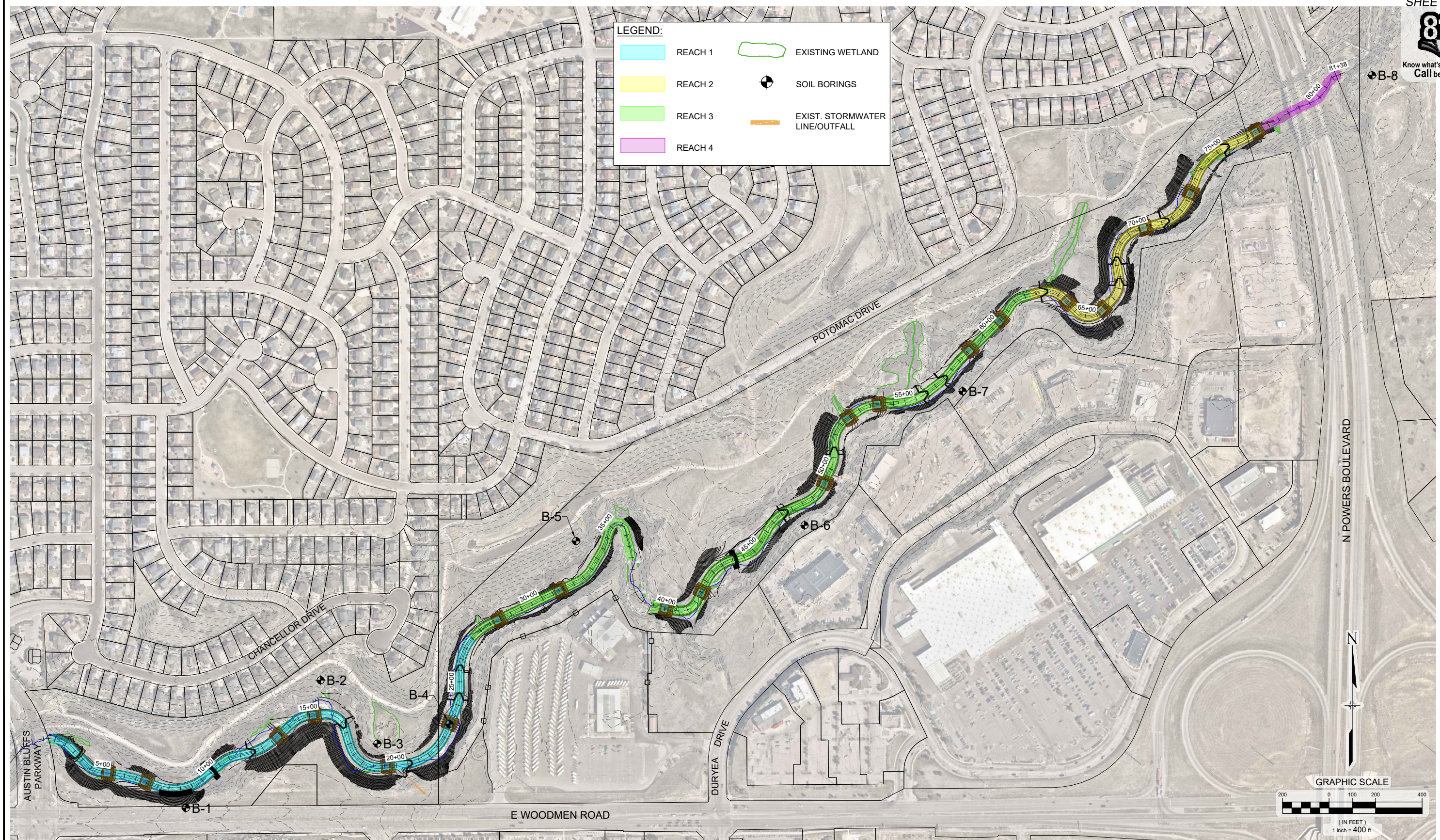
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GOVERNING AGENCIES AND
IS SUBJECT TO CHANGE

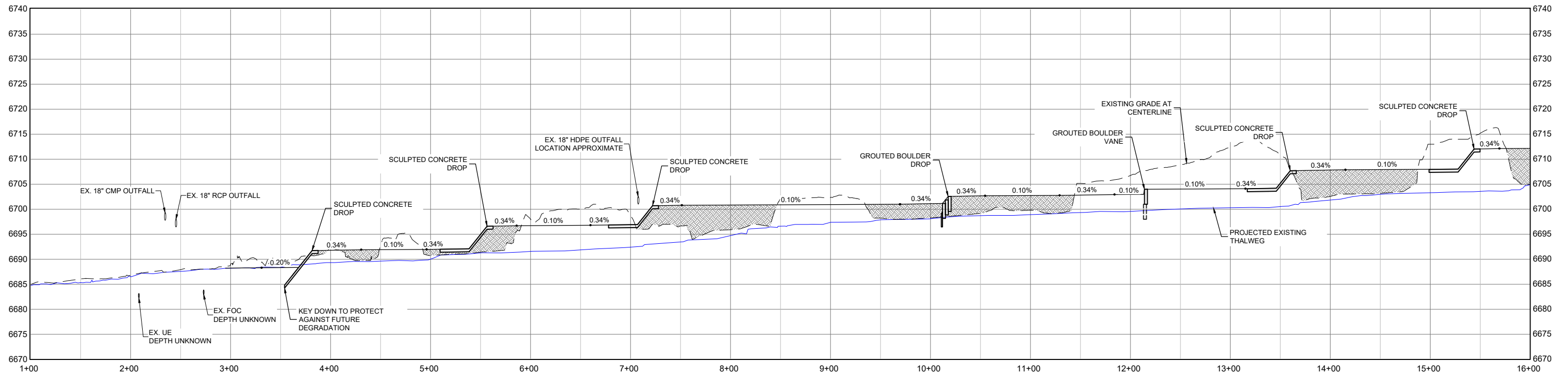
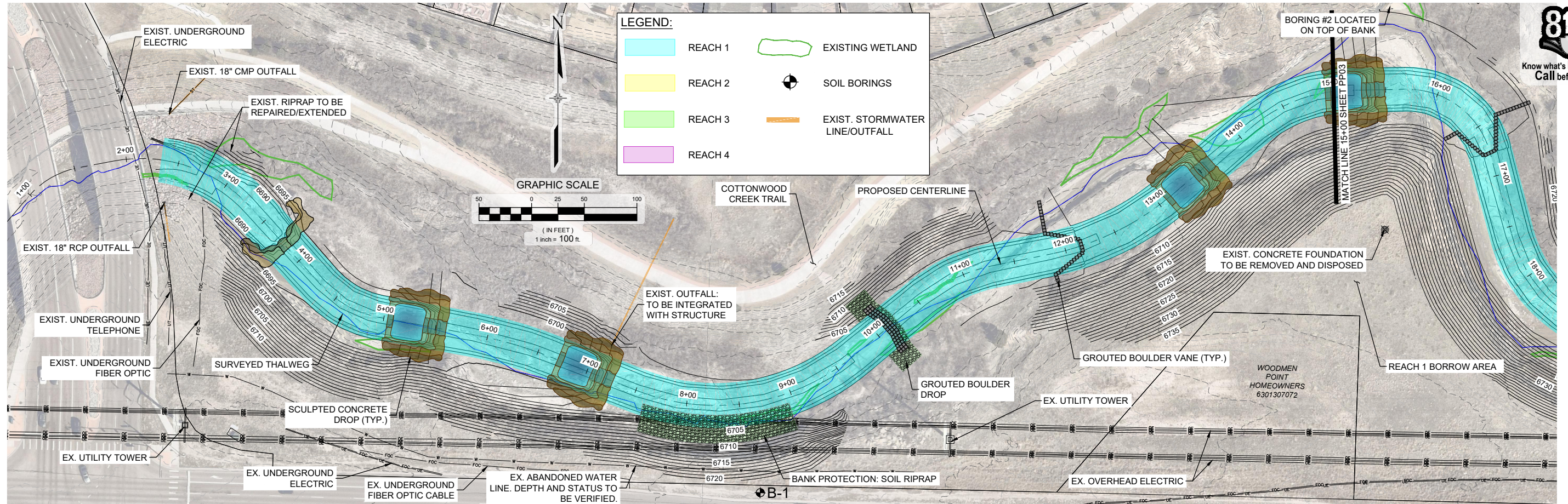
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
EROSION CONTROL PLAN			
DESIGNED BY:	JAB	SCALE	DATE ISSUED: January 2021
DRAWN BY:	TKM	HORIZ 1" = 400'	DRAWING No. EC01
CHECKED BY:	AJS	VERT. N/A	SHEET 06 OF 37



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REFERENCE DRAWINGS			
X-069-MDG22234 Cottonwood Creek Survey-Matrix_20200604			
X-069-EX-TOPO			
X-069-PR-TOPO			
X-069-EX-PARCELS			
X-069-EX-IMAGE			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
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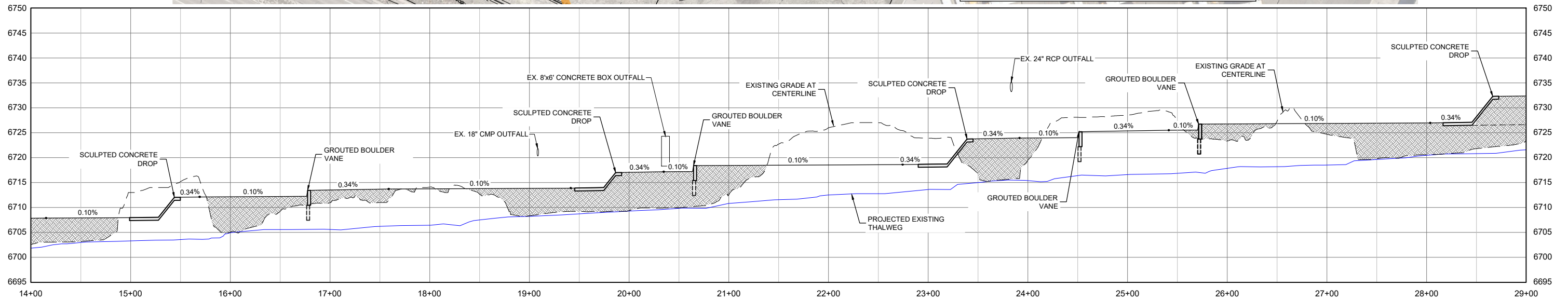
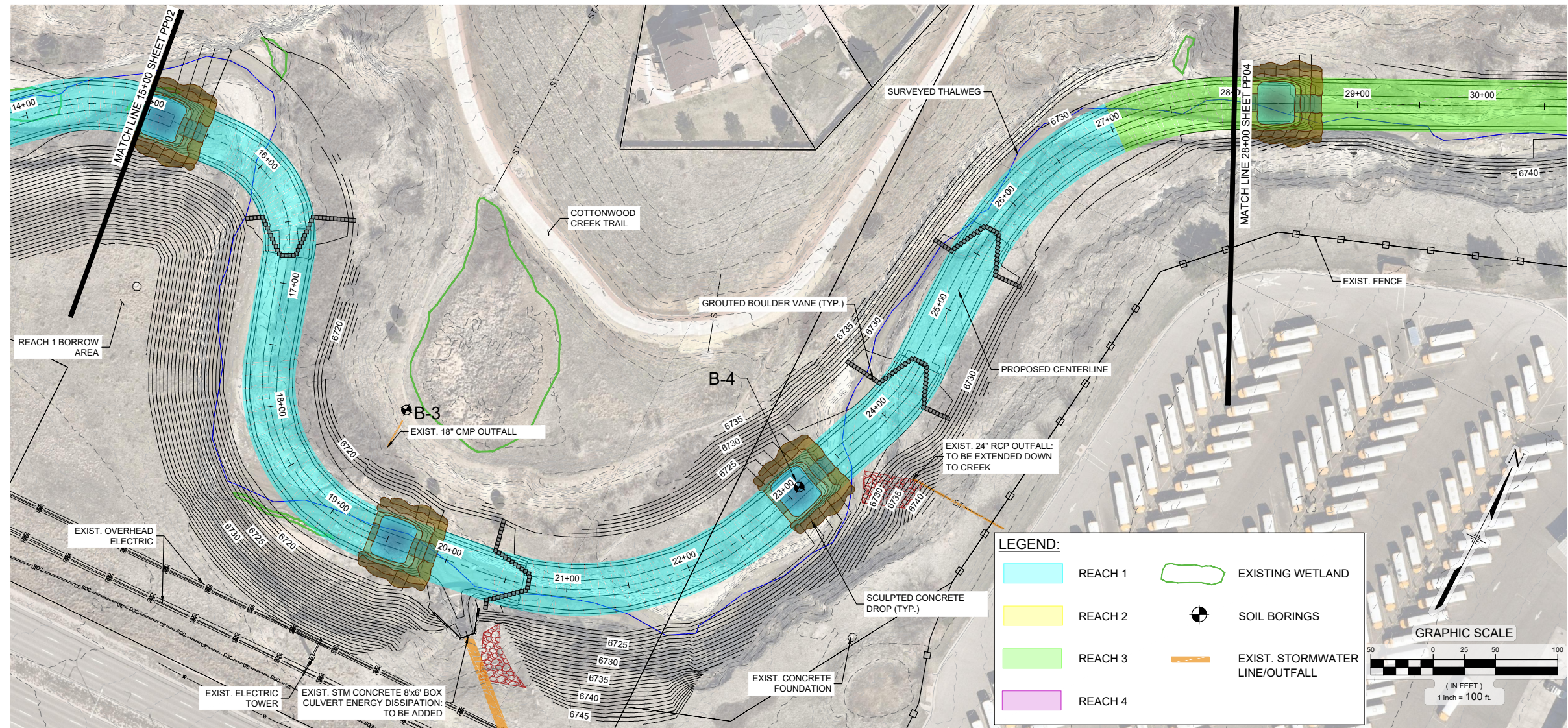
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PRELIMINARY THIS DRAWING HAS NOT BEEN APPROVED BY GOVERNING AGENCIES AND IS SUBJECT TO CHANGE			
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 20.069.091			
DESIGNED BY: JAB	SCALE: HORIZ. 1" = 100'	DATE ISSUED: January 2021	DRAWING No. PP02
CHECKED BY: AJS	VERT. 1" = 20'	SHEET 08 OF 37	

CITY OF COLORADO SPRINGS
COTTONWOOD CREEK CHANNEL REHABILITATION
PERMIT PLAN SET

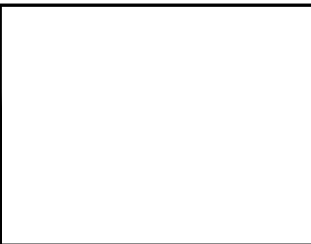
PLAN AND PROFILE
STA. 1+00 TO STA. 15+00



Know what's below.
Call before you dig.



REFERENCE DRAWINGS			
X-069-MDG22-34 Cottonwood Creek Survey-Matrix_20200604			
X-069-EX-TOPO			
X-069-PR-TOPO			
X-069-EX-PARCELS			
X-069-EX-IMAGE			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
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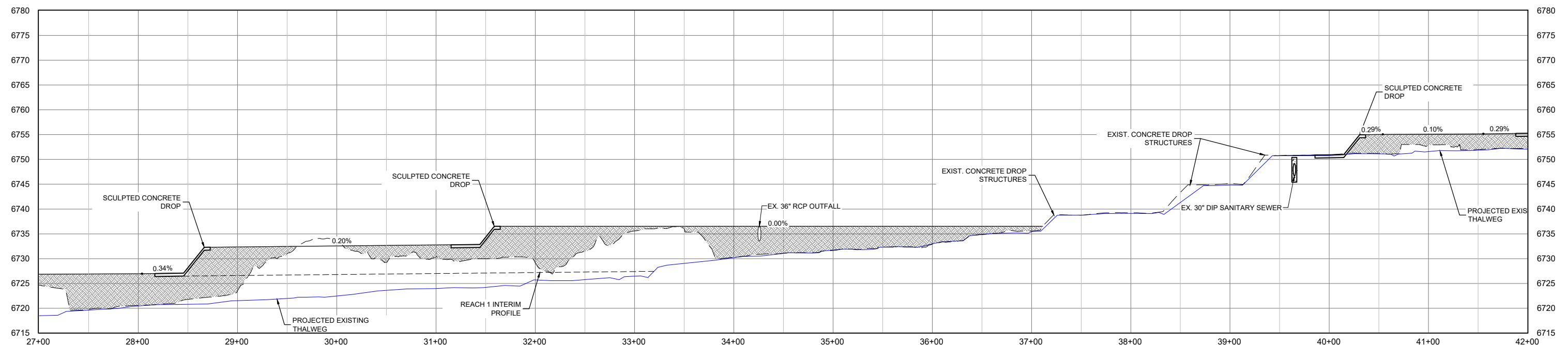
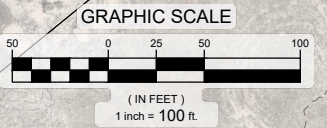


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MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
PLAN AND PROFILE STA. 15+00 TO STA. 28+00			
DESIGNED BY: JAB	SCALE: HORIZ. 1"=100'	DATE ISSUED: January 2021	DRAWING No. PP03
CHECKED BY: AJS	VERT. 1"=20'	SHEET 09 OF 37	

[illegible]

PREPARED BY:

 **Matrix**
Excellence by Design

SEAL

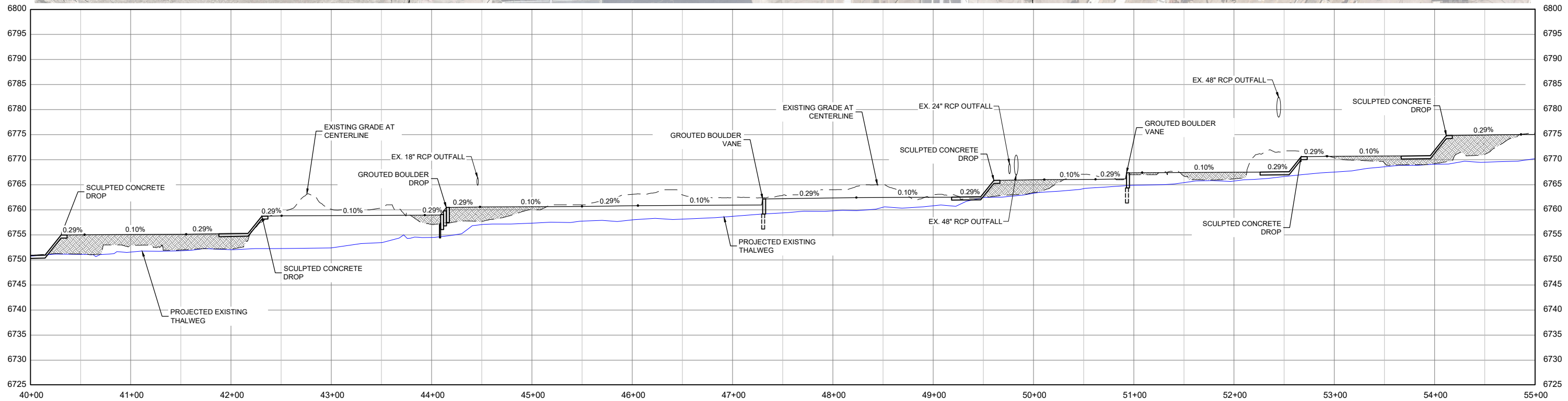
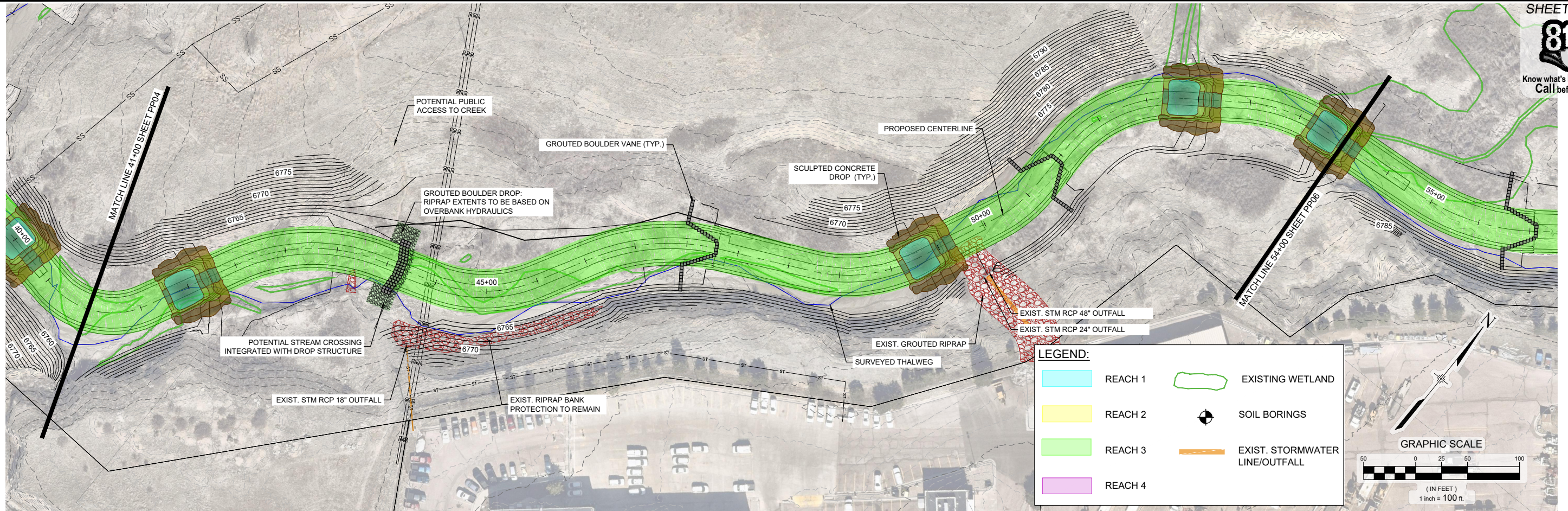
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MATRIX DESIGN GROUP, INC.
PROJECT No. 20,069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION			
PERMIT PLAN SET			
PLAN AND PROFILE			
STA. 28+00 TO STA. 41+00			
DESIGNED BY:	JAB	SCALE	DATE ISSUED: January 2021
DRAWN BY:	EAL	HORIZ. 1" = 100'	DRAWING No. PP04
CHECKED BY:	AJS	VERT. 1" = 20'	
		SHEET	10 OF 37



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REFERENCE DRAWINGS			
X-069-MDG22234 Cottonwood Creek Survey-Matrix_20200804 X-069-EX-TOPO X-069-PR-TOPO X-069-EX-PARCELS X-069-EX-IMAGE			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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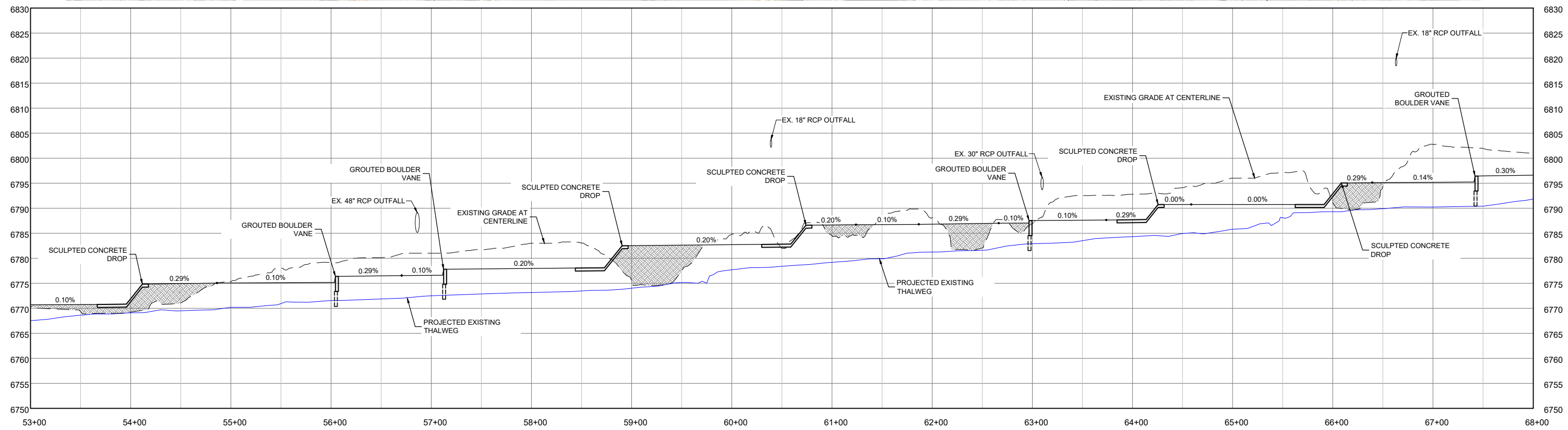
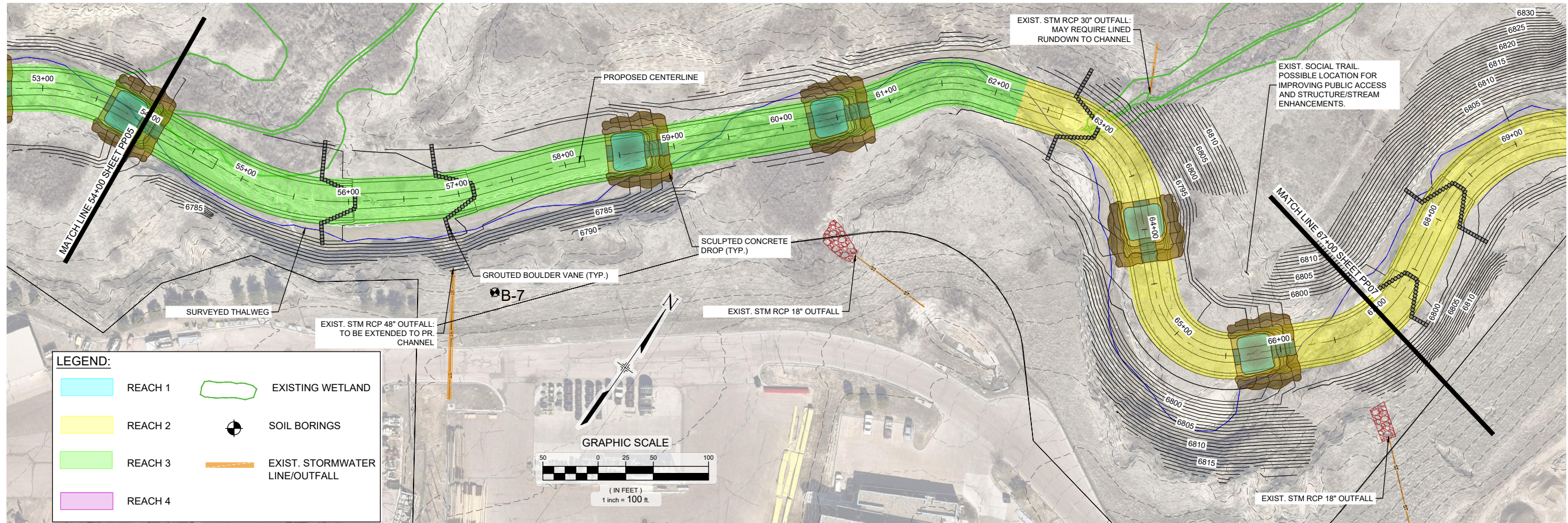


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PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
PLAN AND PROFILE STA. 41+00 TO STA. 54+00			
DESIGNED BY: JAB	SCALE: HORIZ. 1" = 100'	DATE ISSUED: January 2021	DRAWING No. PP05
CHECKED BY: AJS	VERT. 1" = 20'	SHEET 11 OF 37	



REFERENCE DRAWINGS			
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X-069-EX-TOPO			
X-069-PR-TOPO			
X-069-EX-PARCELS			
X-069-EX-IMAGE			
No.	DATE	DESCRIPTION	BY
COMPUTER FILE MANAGEMENT			
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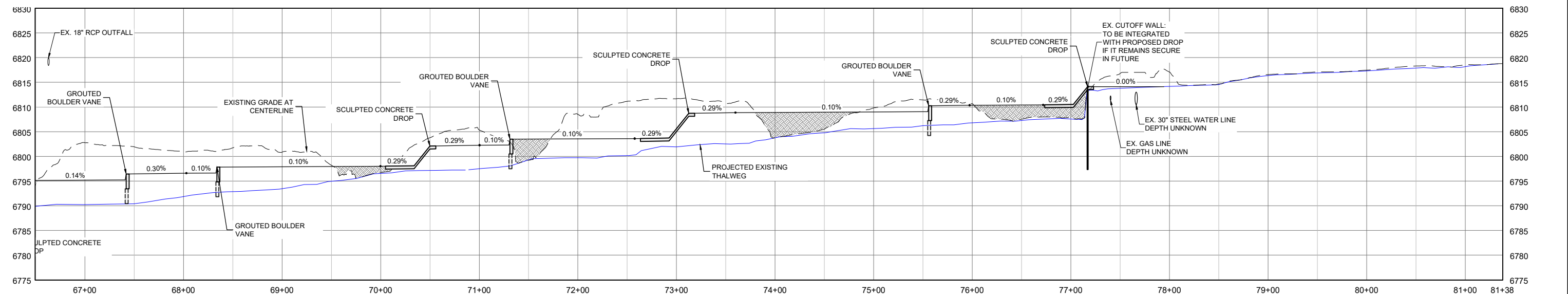
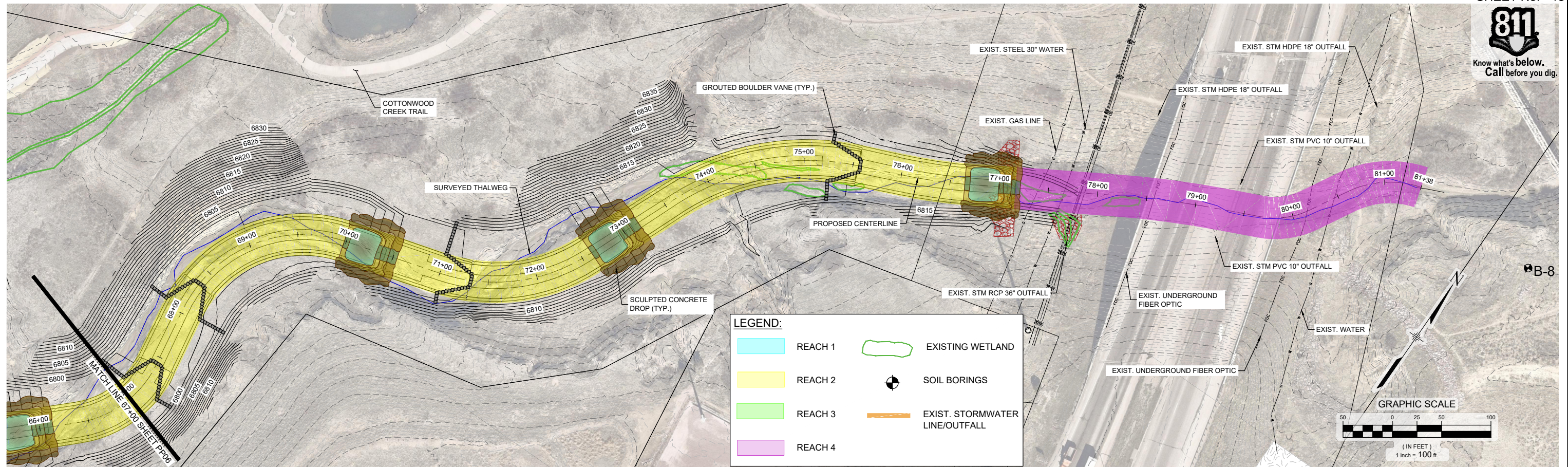


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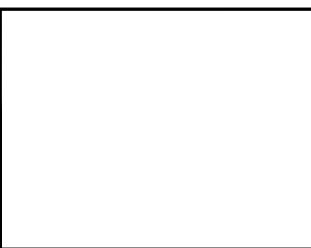
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION			
PERMIT PLAN SET			
PLAN AND PROFILE			
STA. 54+00 TO STA. 67+00			
DESIGNED BY:	JAB	SCALE	DATE ISSUED:
DRAWN BY:	EAL	HORIZ. 1" = 100'	January 2021
CHECKED BY:	AJS	VERT. 1" = 20'	12 OF 37
			DRAWING No. PP06



NOTE:
ANY IMPROVEMENTS IN REACH 4 TO BE
DETERMINED BASED ON FUTURE CONDITIONS

REFERENCE DRAWINGS			
X-069-MDG22-34 Cottonwood Creek Survey-Matrix_20200604			
X-069-EX-TOPO X-069-PR-TOPO X-069-EX-PARCELS X-069-EX-IMAGE			
No.	DATE	DESCRIPTION REVISIONS	BY
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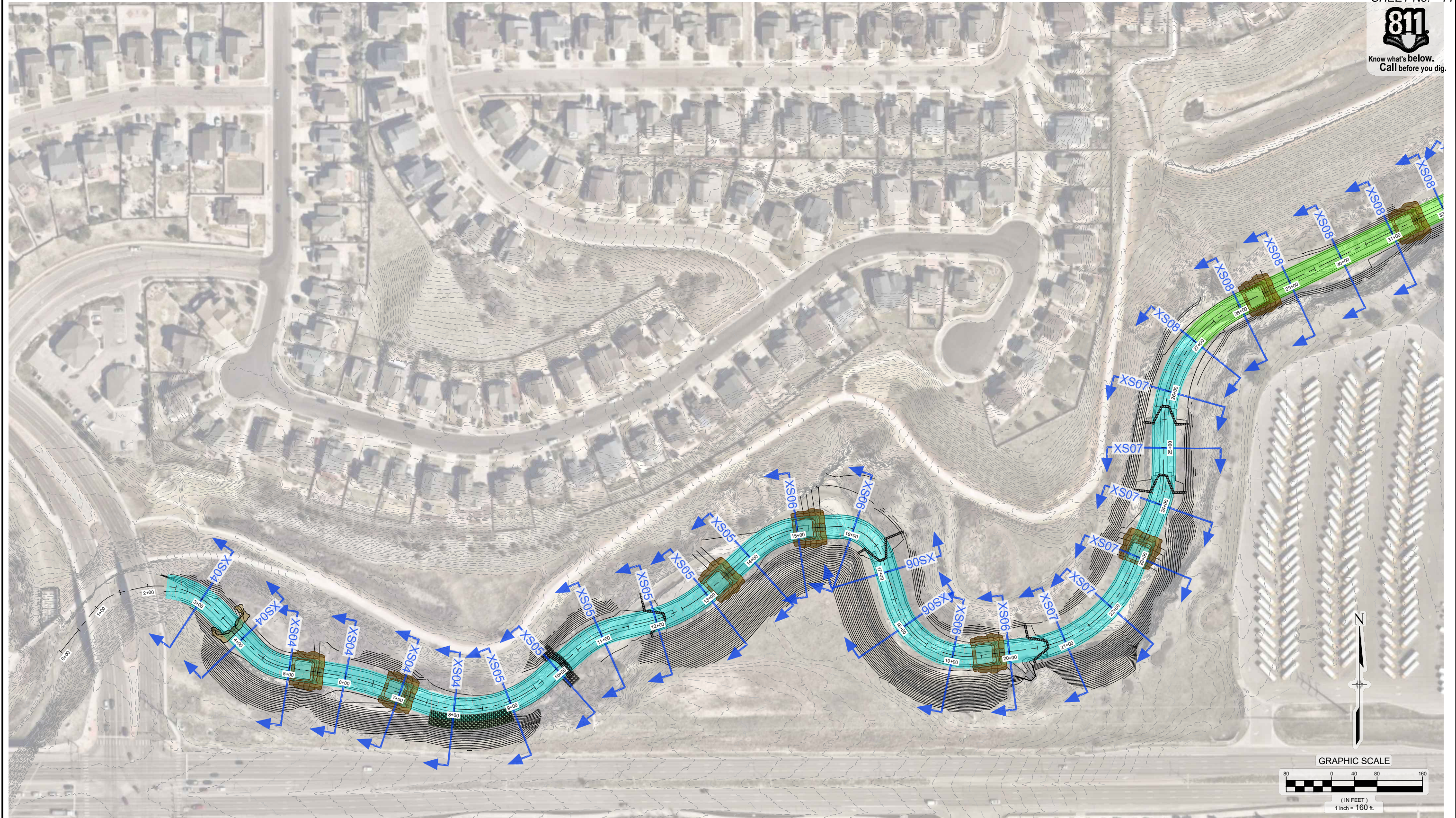


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PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
PLAN AND PROFILE STA. 67+00 TO STA. 81+38			
DESIGNED BY: JAB	SCALE: HORIZ. 1" = 100'	DATE ISSUED: January 2021	DRAWING No. PP07
CHECKED BY: AJG	VERT. 1" = 20'	SHEET 13 OF 37	

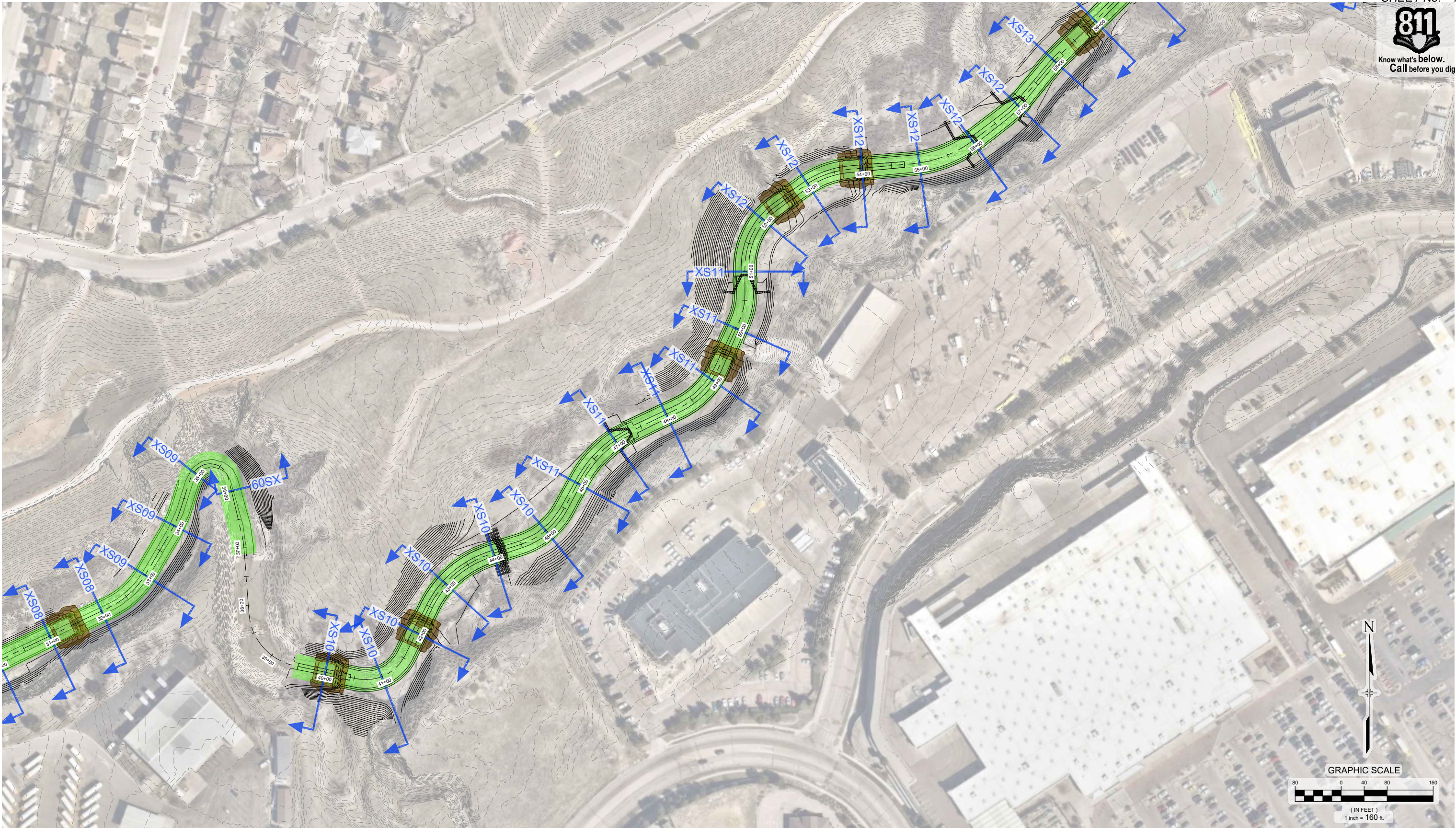


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CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
CROSS SECTION OVERVIEW MAP			
DESIGNED BY: JAB	SCALE: HORIZ 1" = 160'	DATE ISSUED: January 2021	DRAWING No. XS01
CHECKED BY: AJS	VERT. N/A	SHEET 14 OF 37	



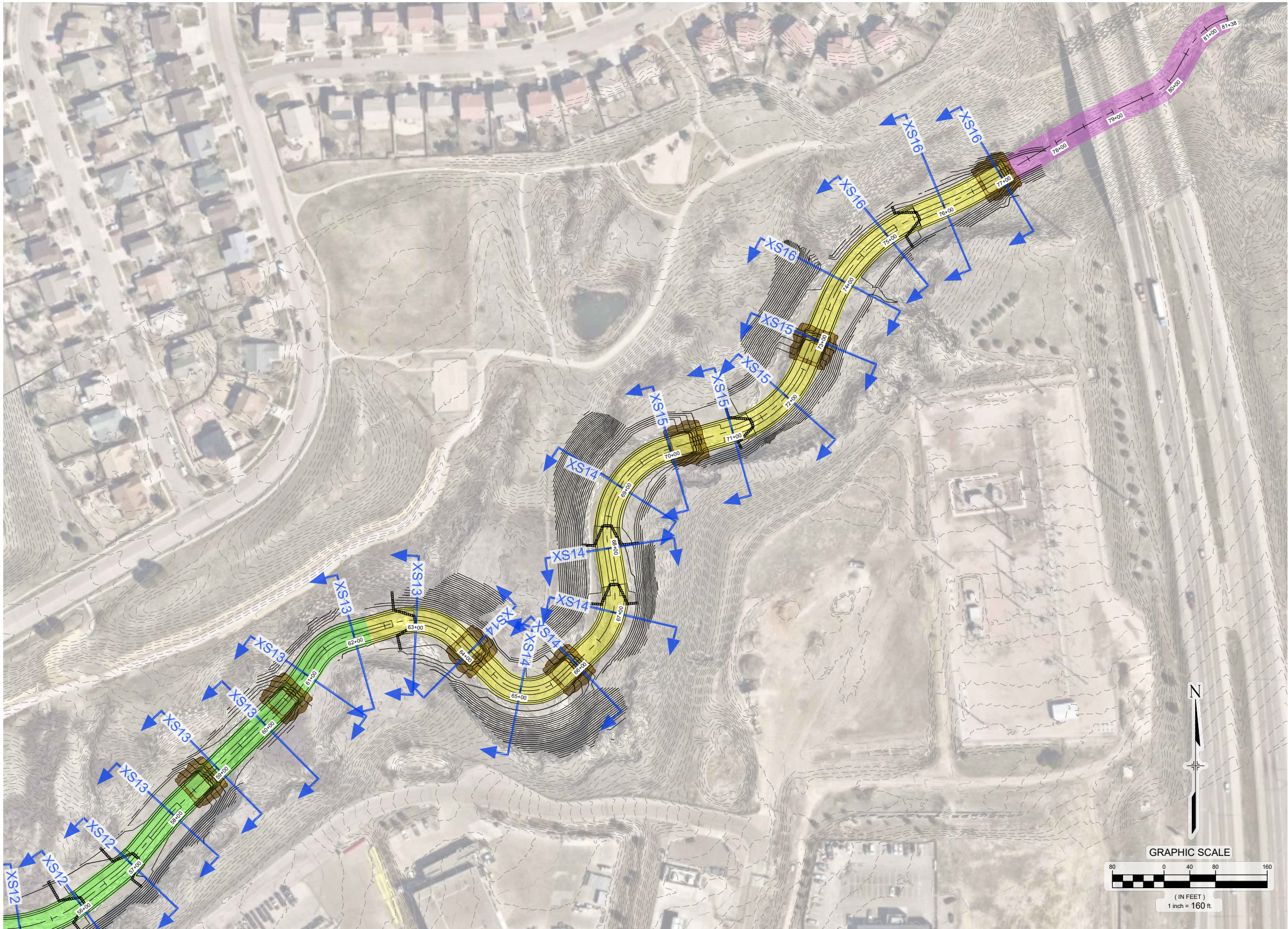
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REVISIONS					
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CITY OF COLORADO SPRINGS					
COTTONWOOD CREEK CHANNEL REHABILITATION					
PERMIT PLAN SET					
CROSS SECTION OVERVIEW MAP					
DESIGNED BY:	JAB	SCALE	DATE ISSUED:	January 2021	DRAWING No.
DRAWN BY:	RAF	HORIZ. 1" = 160'	SHEET	15 OF 37	XS02
CHECKED BY:	AJS	VERT. N/A			
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 20.069.091					



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REFERENCE DRAWINGS			
X-069-MDG22-34 X-069-EX-IMAGE X-069-PR-TOPO			
No.	DATE	DESCRIPTION REVISIONS	BY
COMPUTER FILE MANAGEMENT			
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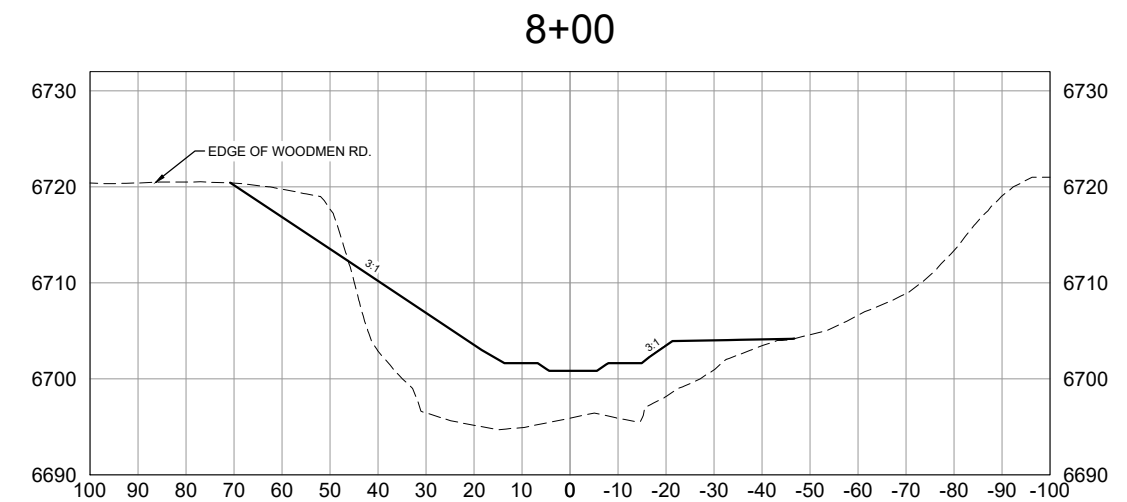
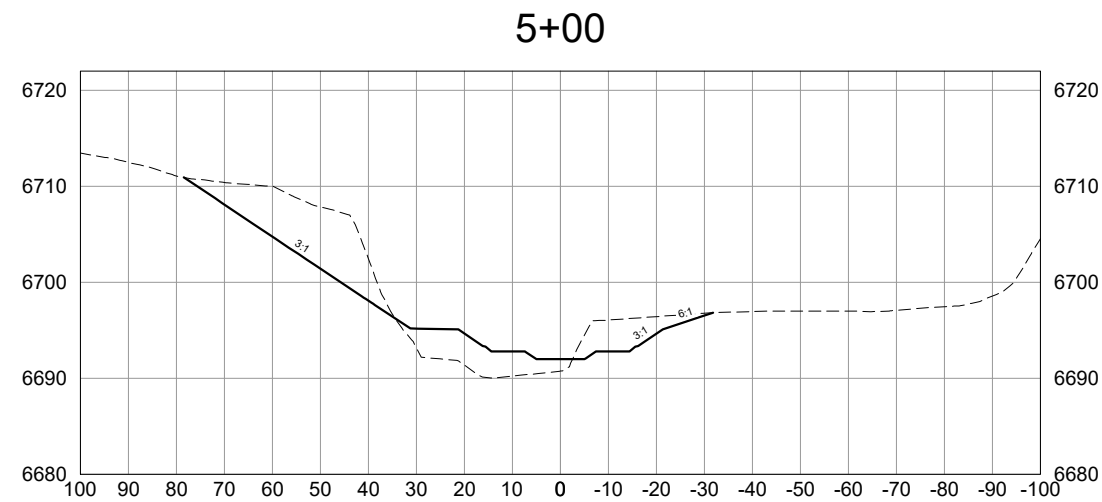
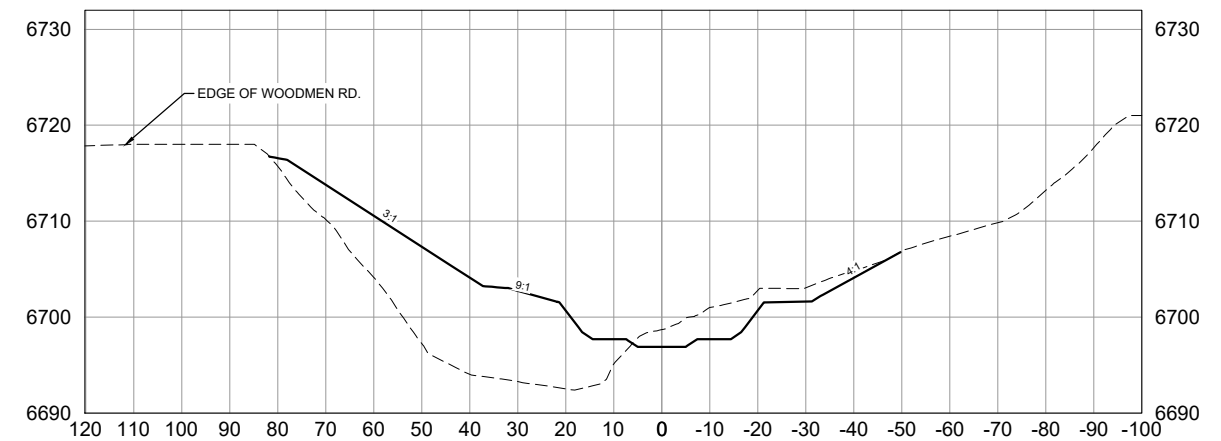
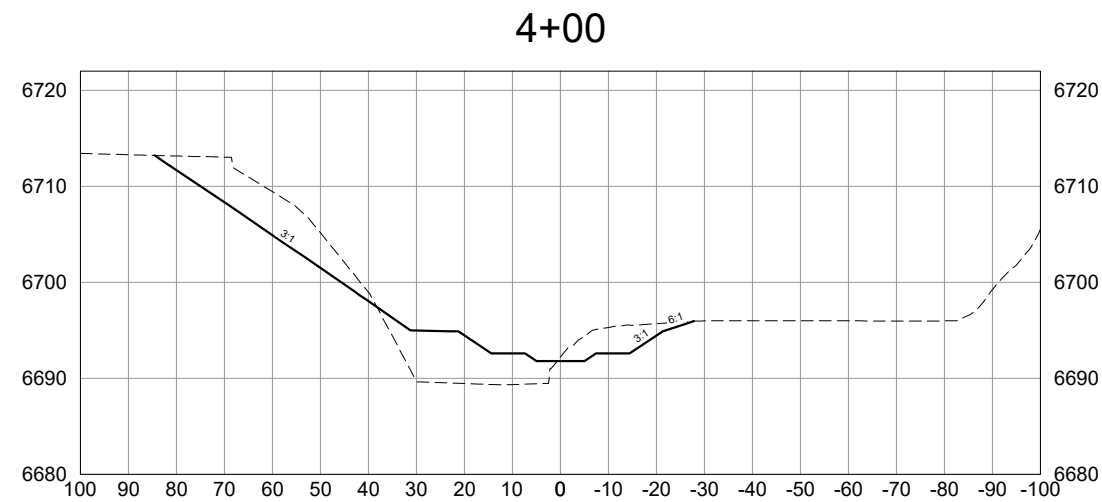
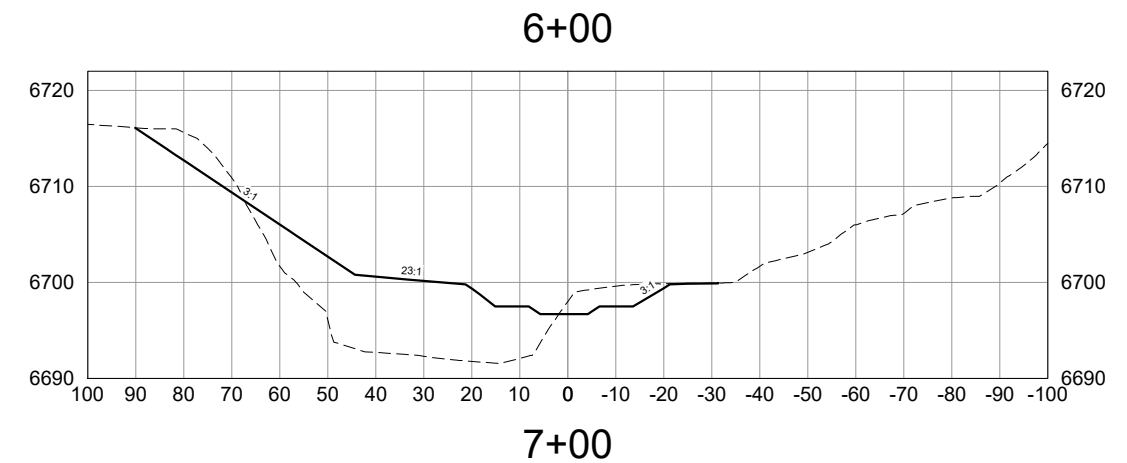
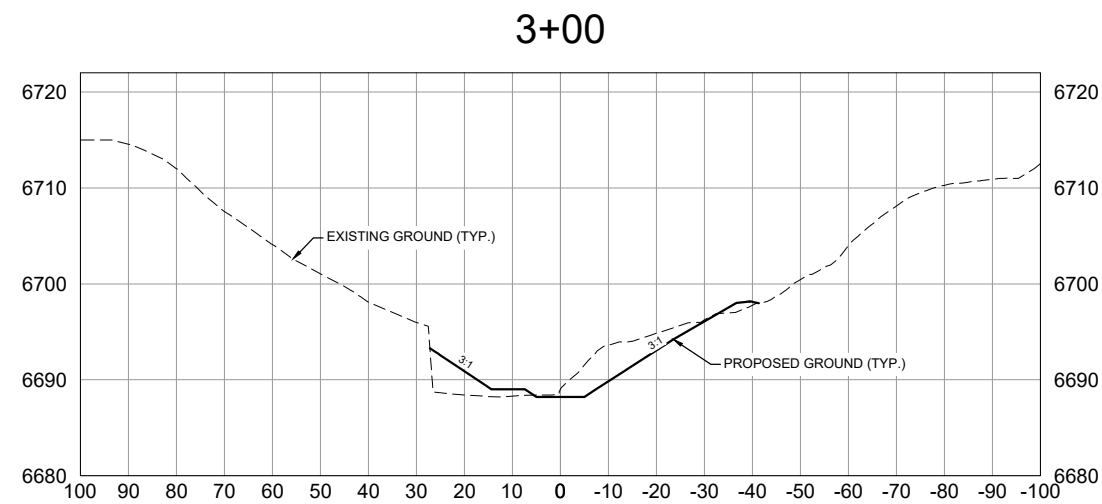
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MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
CROSS SECTION OVERVIEW MAP			
DESIGNED BY: JAB	SCALE: HORIZ. 1" = 160'	DATE ISSUED: January 2021	DRAWING No. XS03
CHECKED BY: AJS	VERT. N/A	SHEET 16 OF 37	



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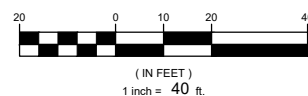
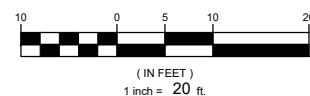


VERTICAL SCALE: 1" = 20'

HORIZONTAL SCALE: 1" = 40'

VERTICAL GRAPHIC SCALE

HORIZONTAL GRAPHIC SCALE

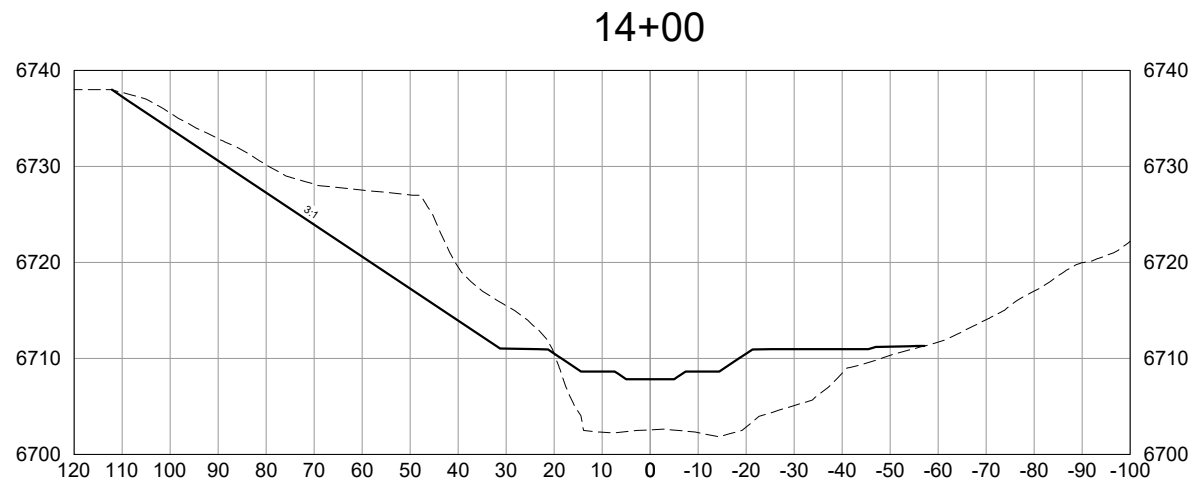
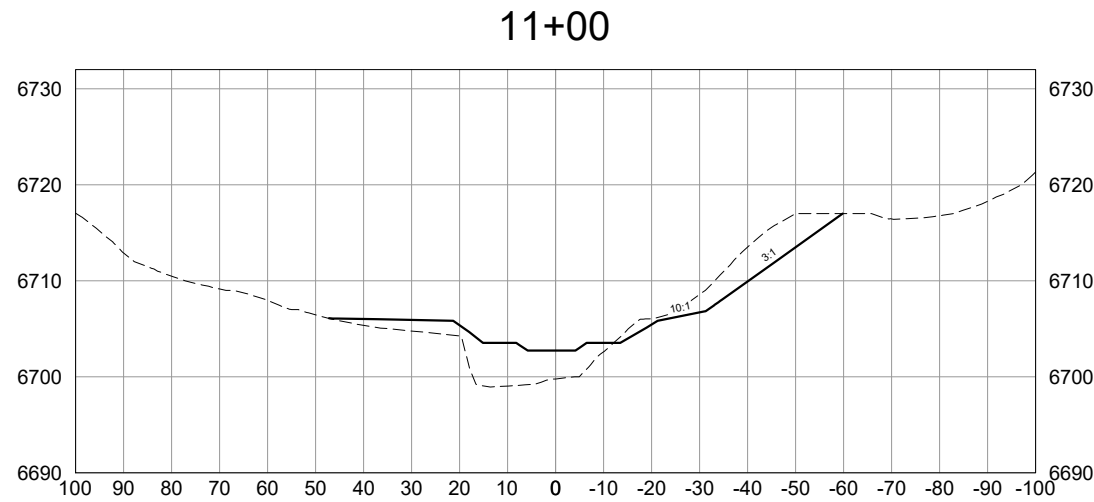
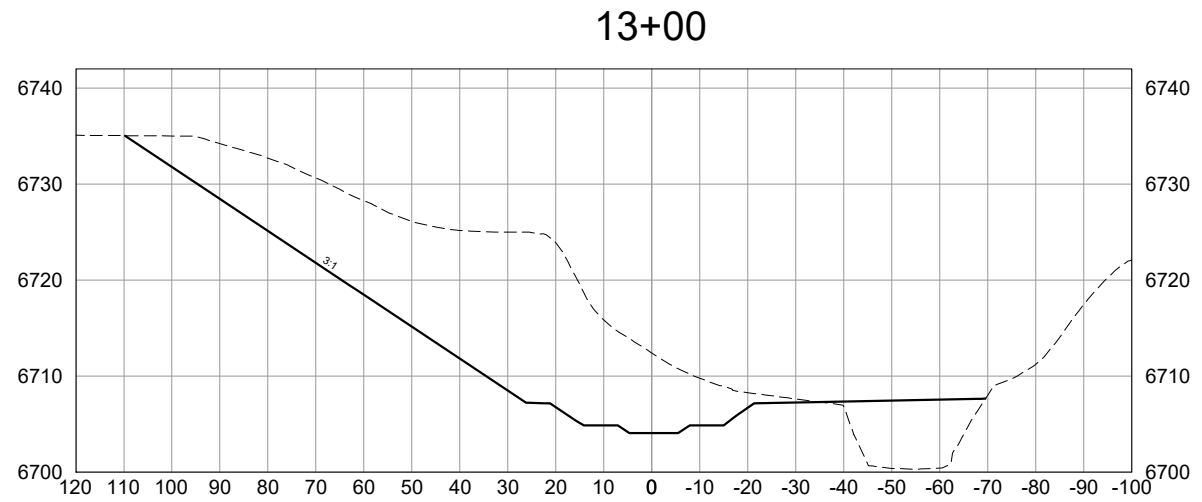
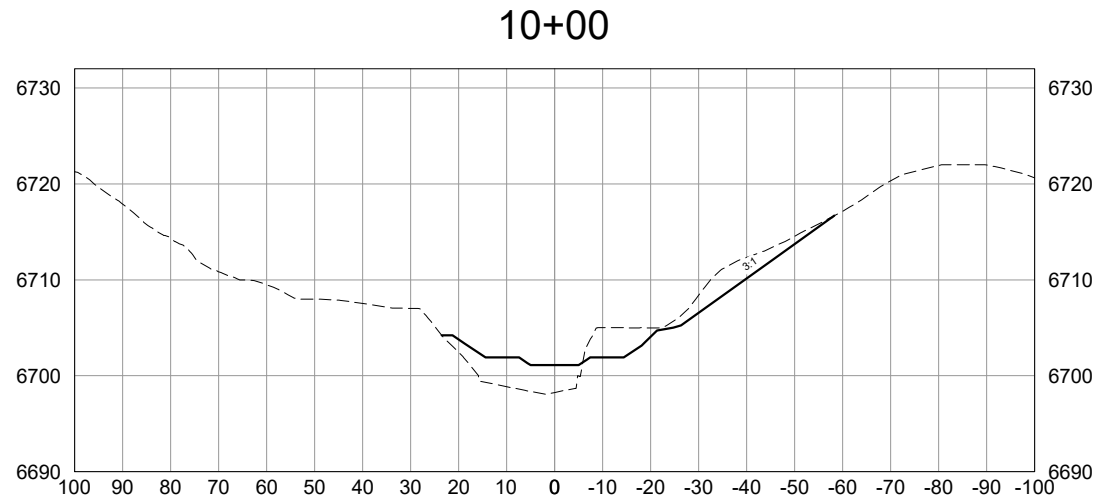
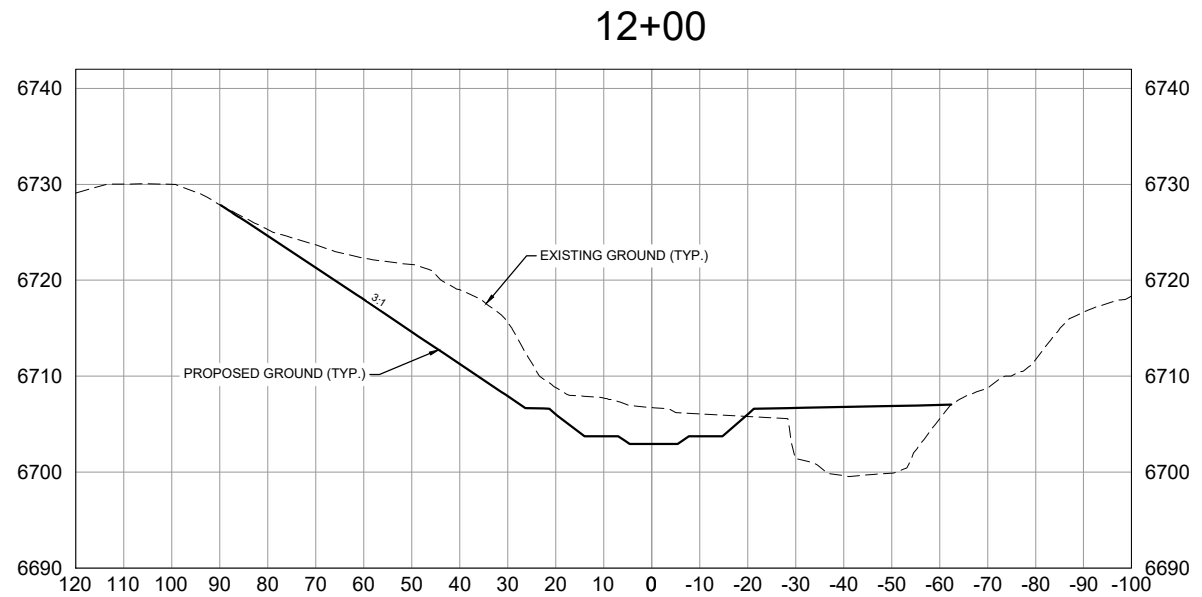
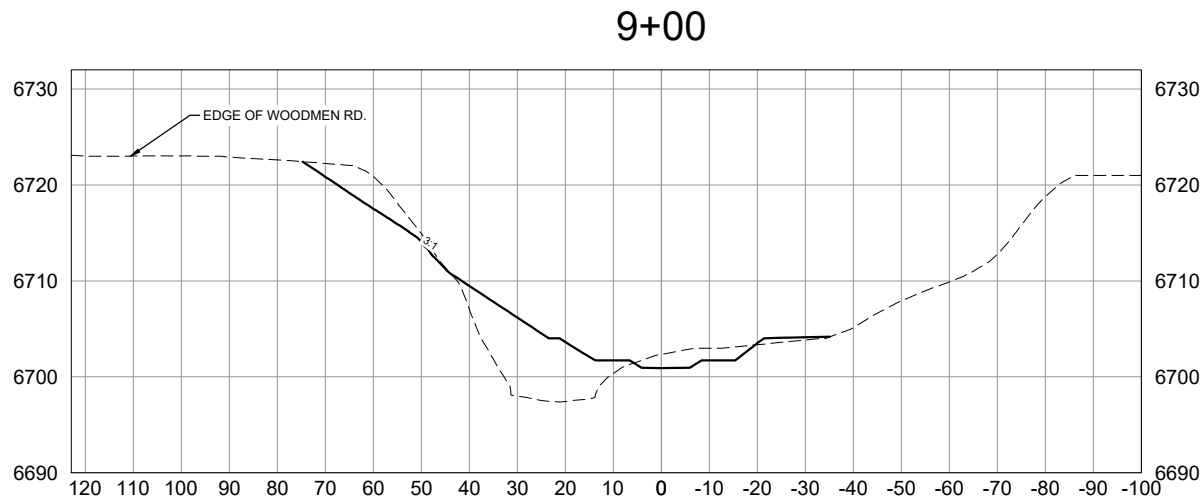


NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

[illegible]

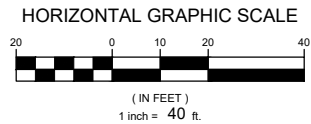
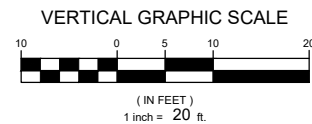


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VERTICAL SCALE: 1" = 20'

HORIZONTAL SCALE: 1" = 40'



NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

REFERENCE DRAWINGS			
X-069-MDG22X34			
X-069-EX-IMAGE			
X-069-PR-TOPO			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
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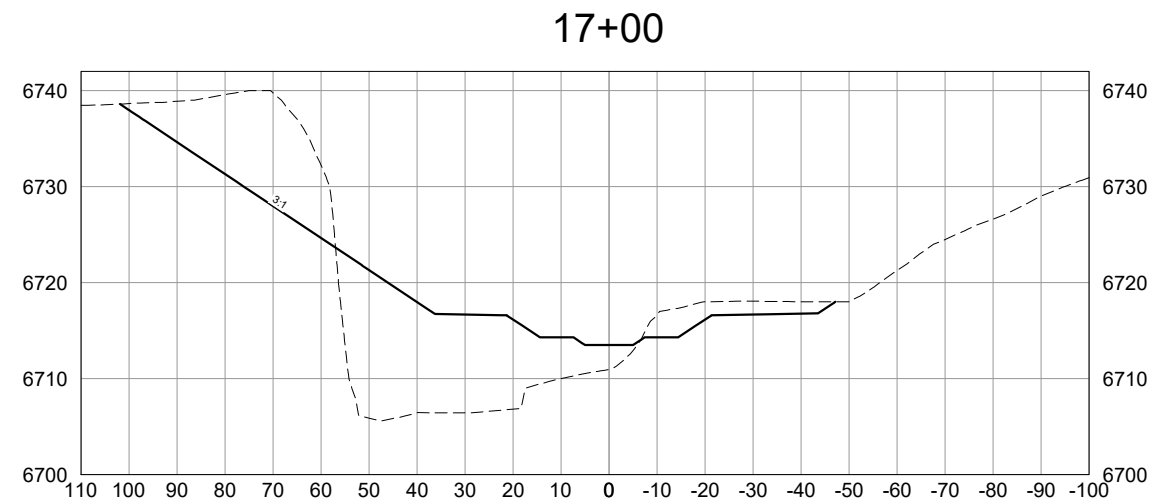
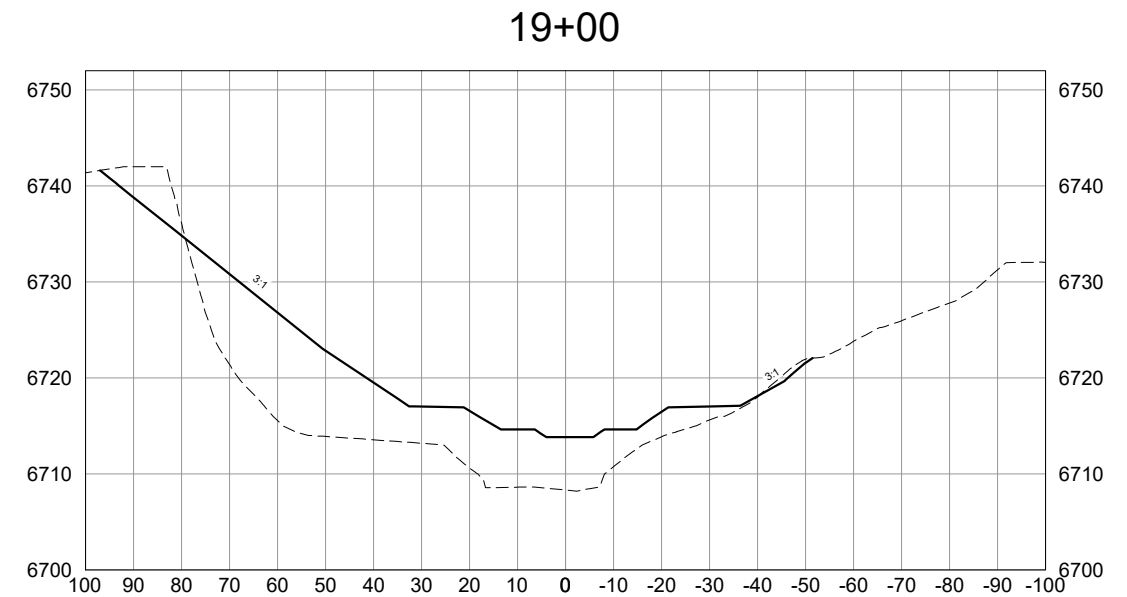
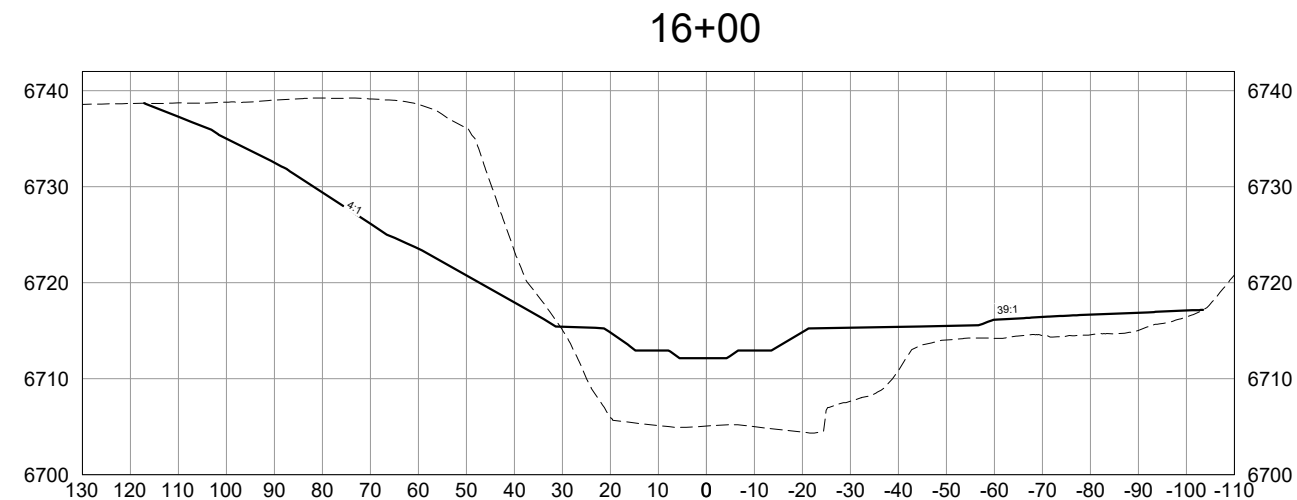
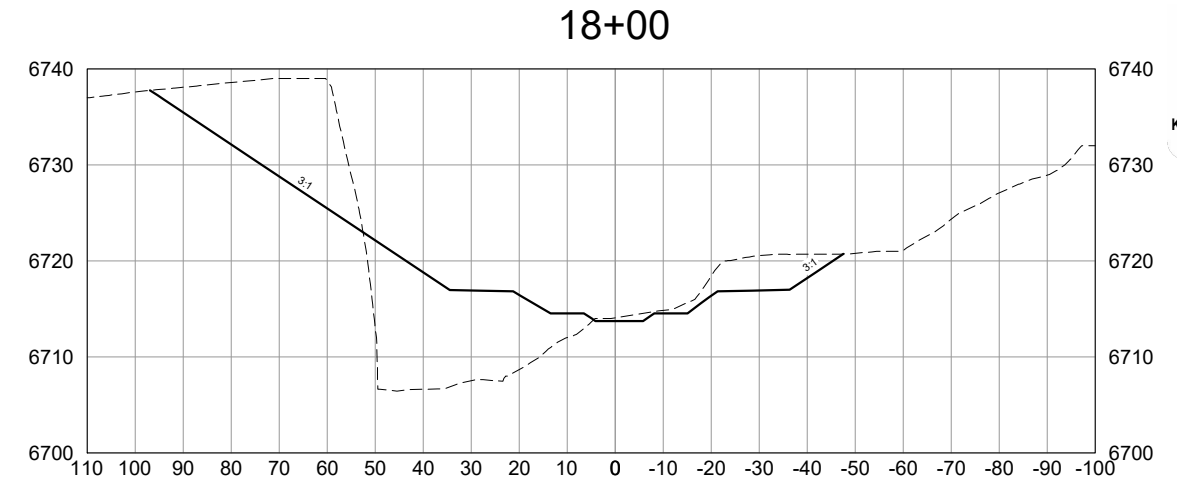
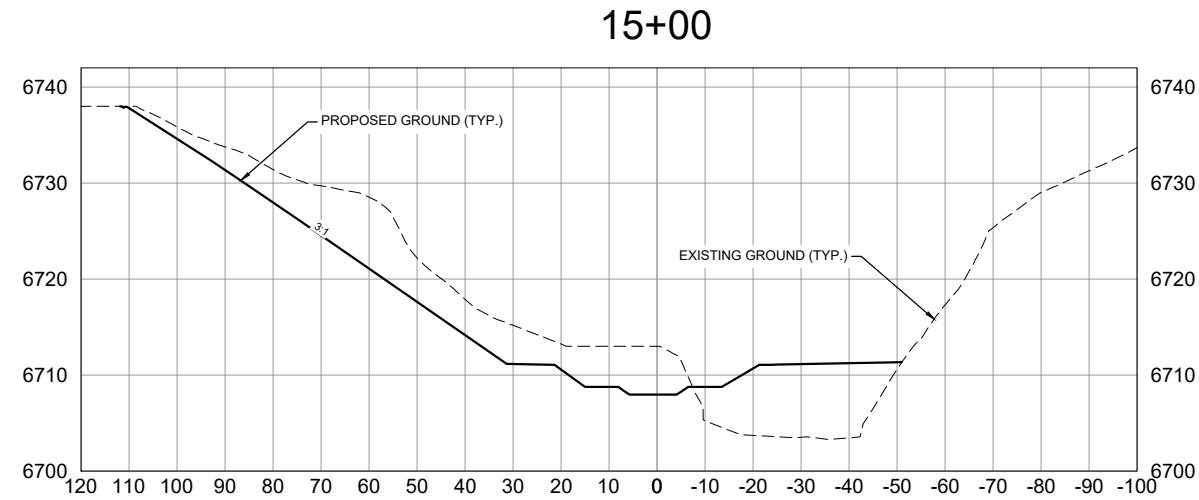


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PROJECT No. 20.069.091

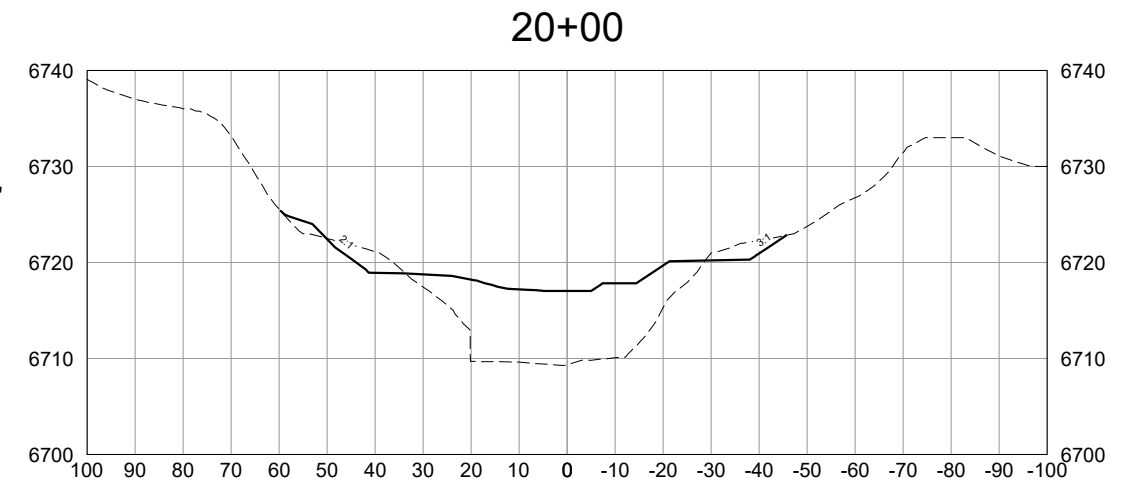
CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION			
PERMIT PLAN SET			
CROSS SECTIONS			
STA. 9+00 TO 14+00			
DESIGNED BY:	JAB	SCALE	DATE ISSUED:
DRAWN BY:	RAF	HORIZ. 1" = 40'	January 2021
CHECKED BY:	AJS	VERT. 1" = 20'	SHEET
18 OF 37			DRAWING No. XS05



NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

HORIZONTAL SCALE: 1" = 40'
HORIZONTAL GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 40 ft.

VERTICAL SCALE: 1" = 20'
VERTICAL GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 inch = 20 ft.

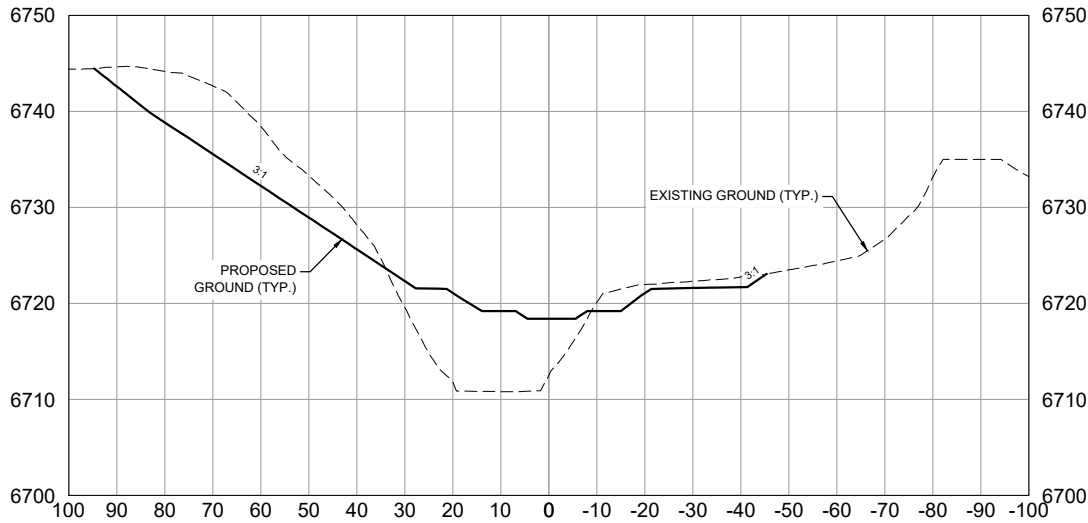


REFERENCE DRAWINGS X-069-MDG22x34 X-069-EX-IMAGE X-069-PR-TOPO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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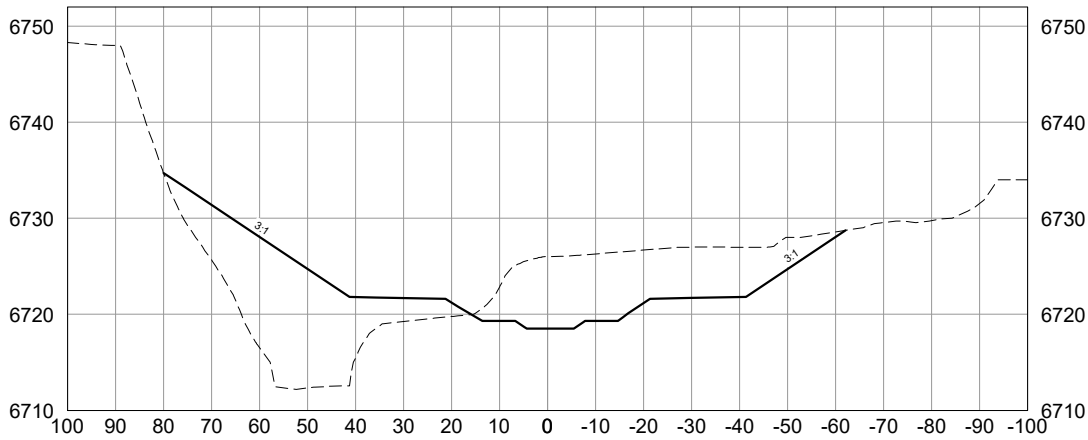


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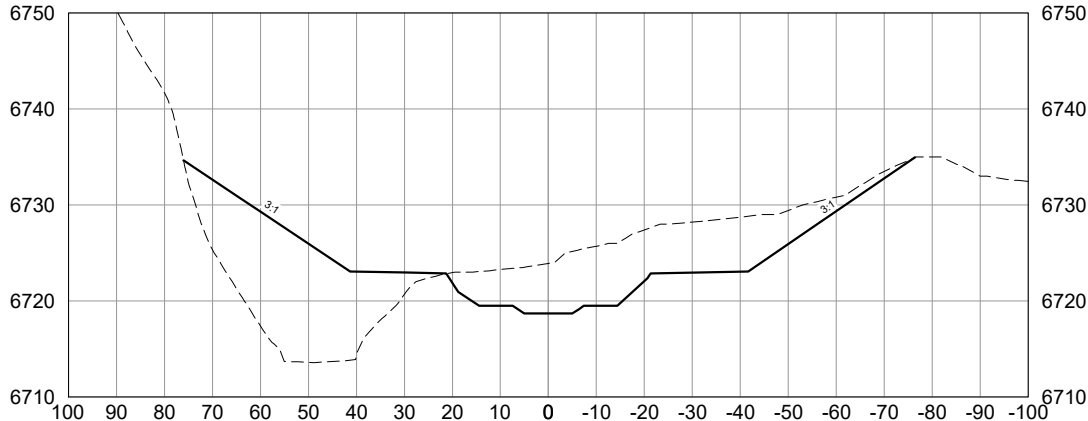
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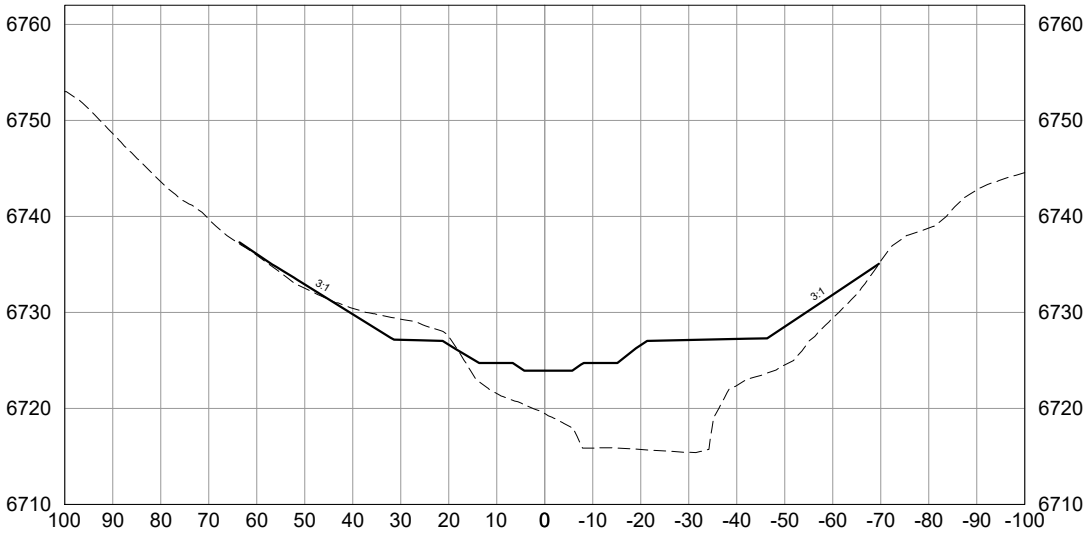
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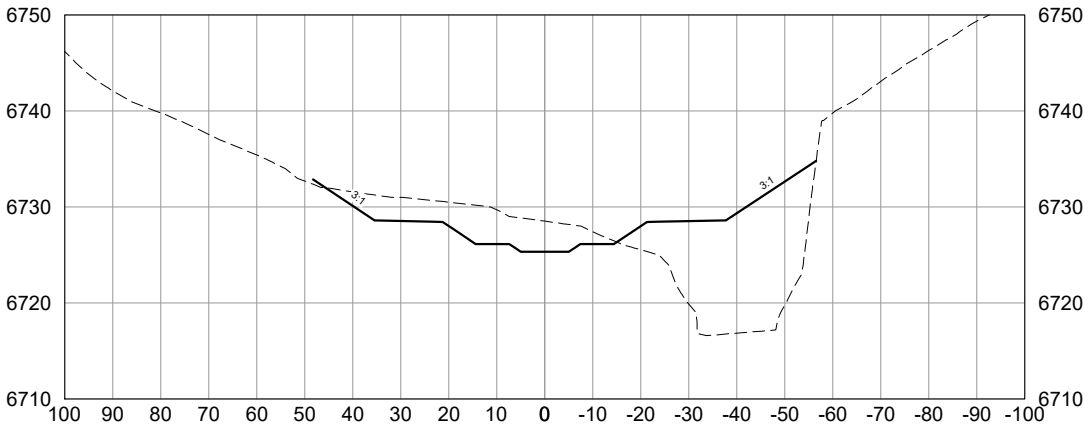
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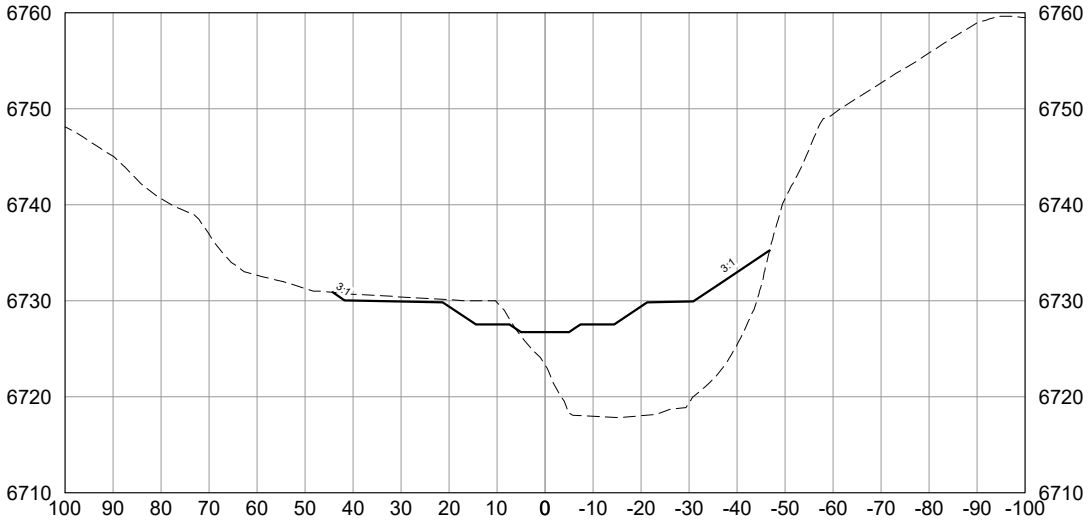
24+00



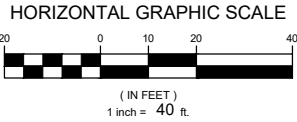
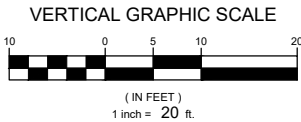
25+00



26+00



VERTICAL SCALE: 1" = 20' HORIZONTAL SCALE: 1" = 40'



NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

REFERENCE DRAWINGS				
	No.	DATE	DESCRIPTION	BY
			REVISIONS	
COMPUTER FILE MANAGEMENT				
FILE NAME: S:\20.069.091 Cottonwood Creek Channel Rehabilitation Design Services\DWG\Design Plans\069-XS01-XX.dwg				
CTB FILE: Matrix(black).ctb				
PLOT DATE: 1/25/2021 1:49 PM				
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.				



PREPARED BY:
 Matrix
Excellence by Design

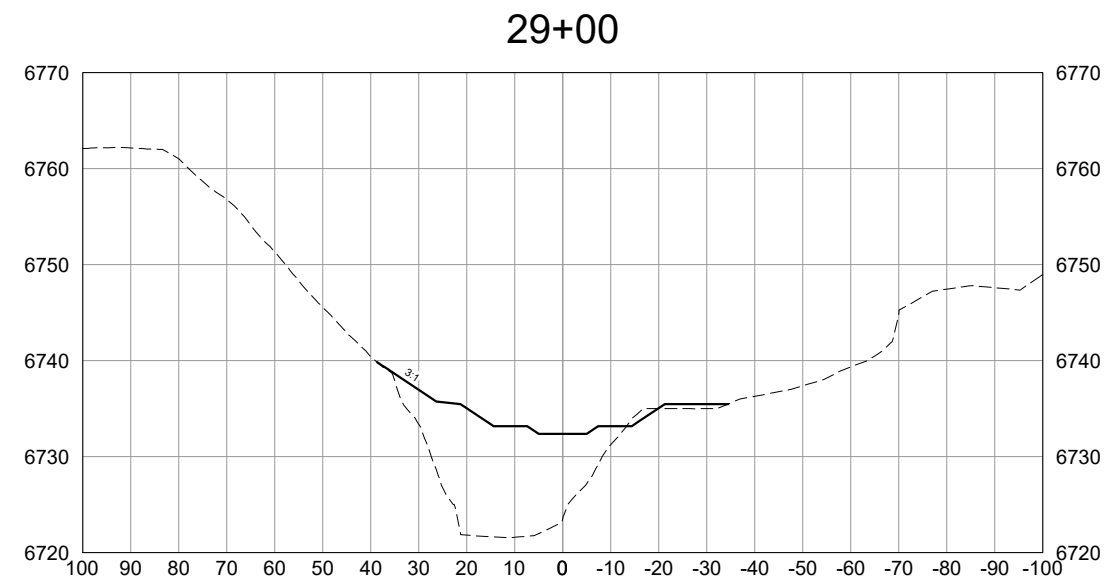
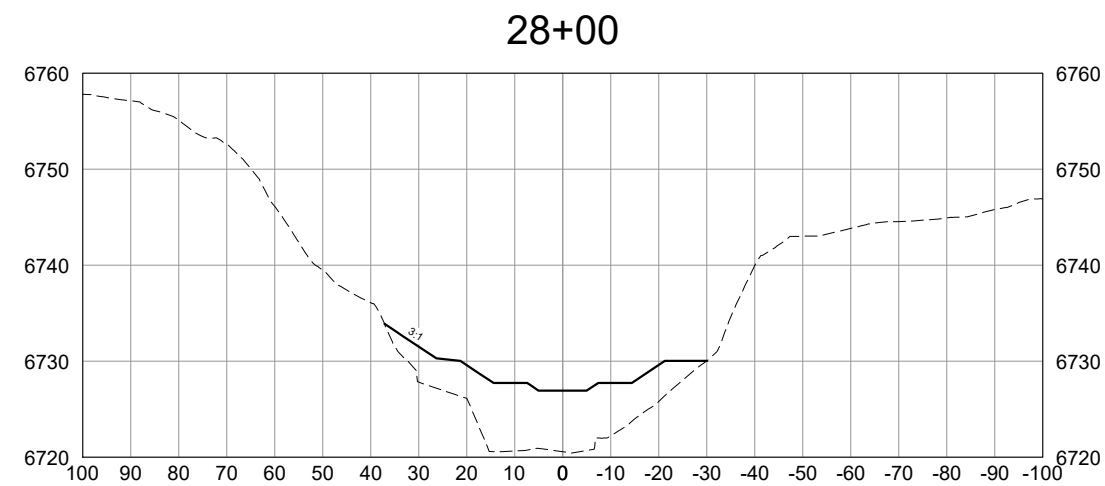
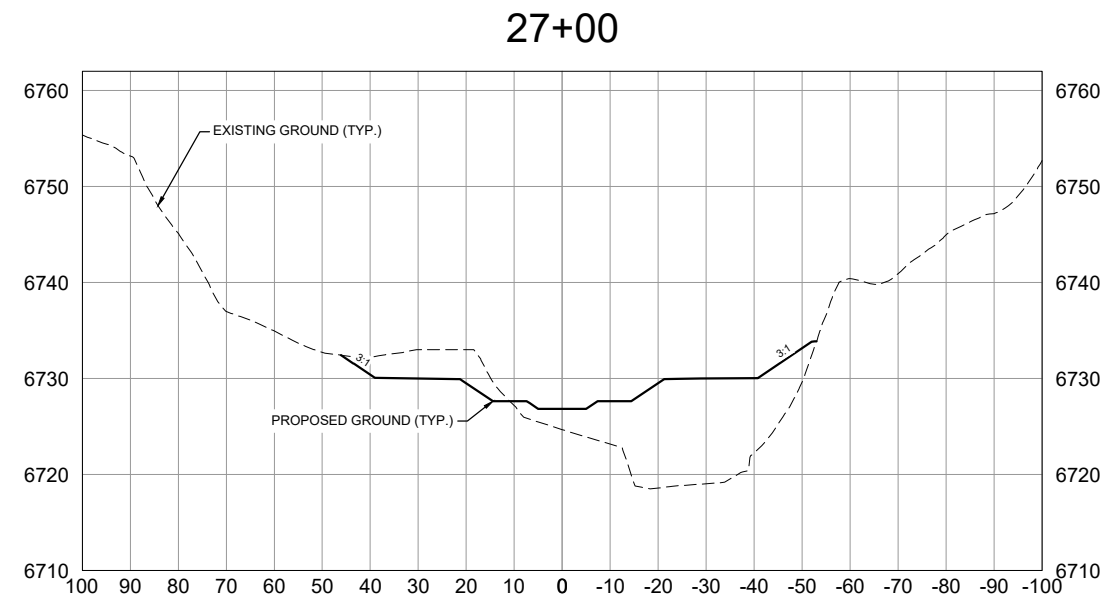
SEAL
PRELIMINARY
THIS DRAWING HAS NOT
BEEN APPROVED BY
GOVERNING AGENCIES AND
IS SUBJECT TO CHANGE

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
CROSS SECTIONS STA. 21+00 TO 26+00			
DESIGNED BY: JAB	SCALE: HORIZ 1" = 40'	DATE ISSUED: January 2021	DRAWING No. XS07
CHECKED BY: AJS	VERT. 1" = 20'	SHEET 20 OF 37	



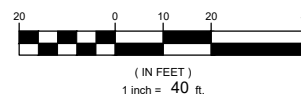
Know what's below.
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NOTE:
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ARE SHOWN LOOKING
DOWNSTREAM

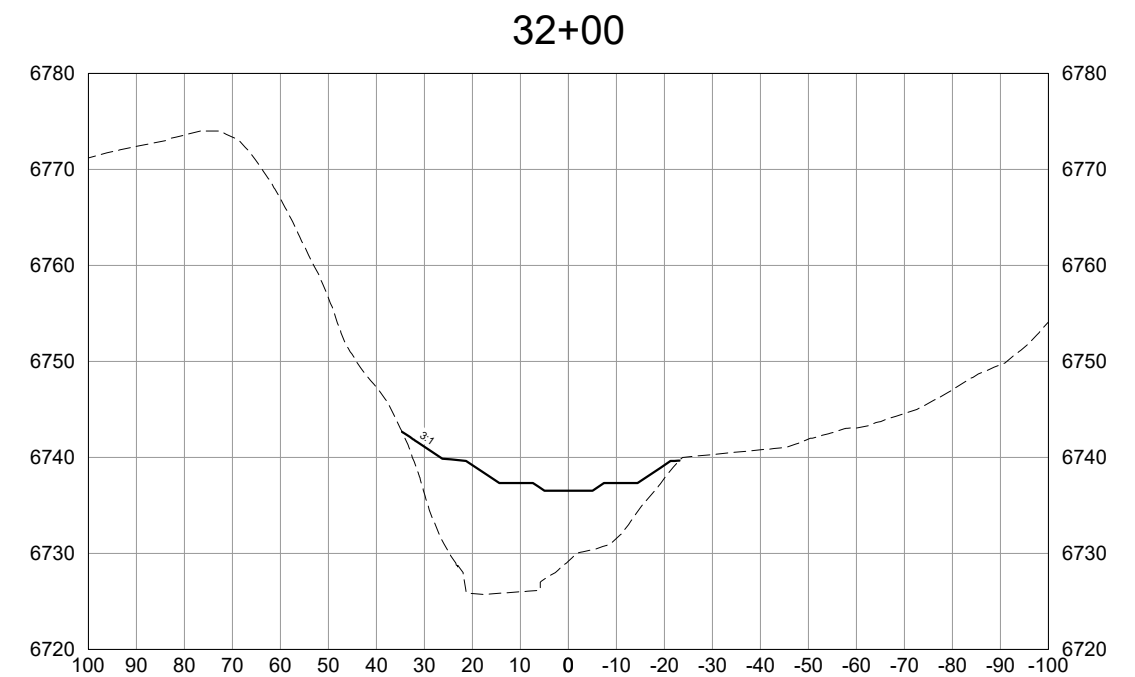
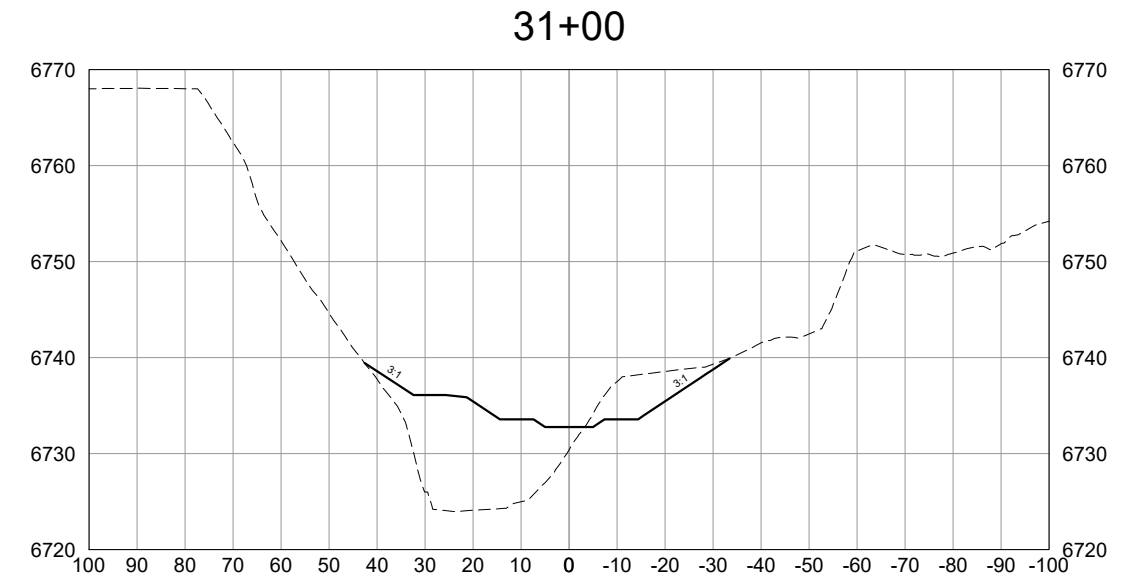
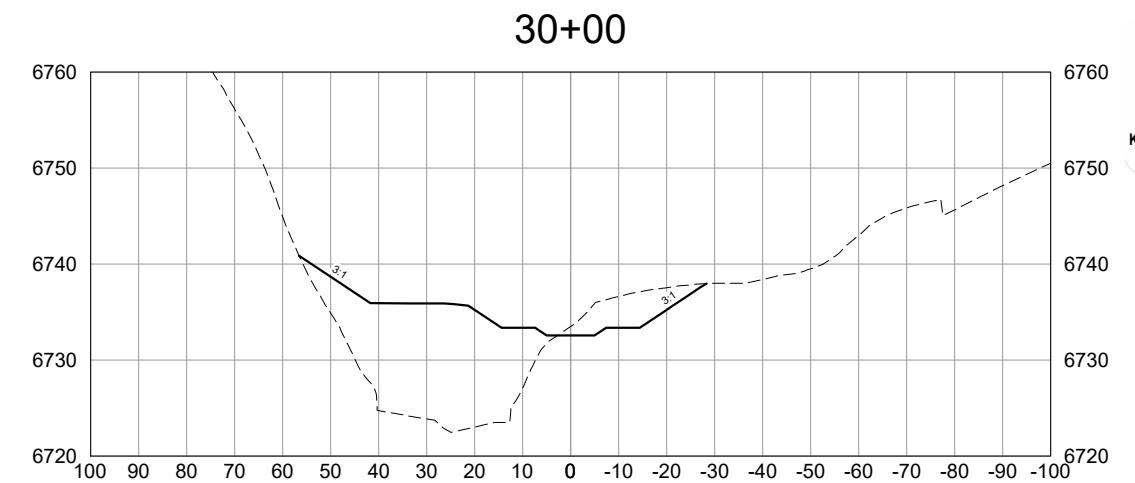
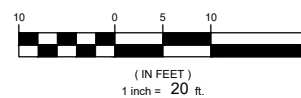
HORIZONTAL SCALE: 1" = 40'

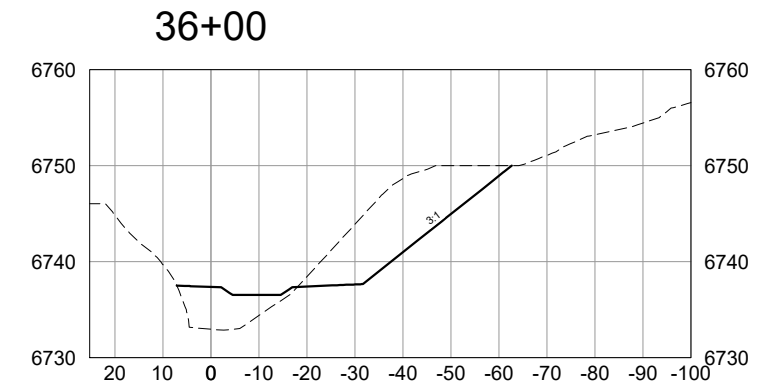
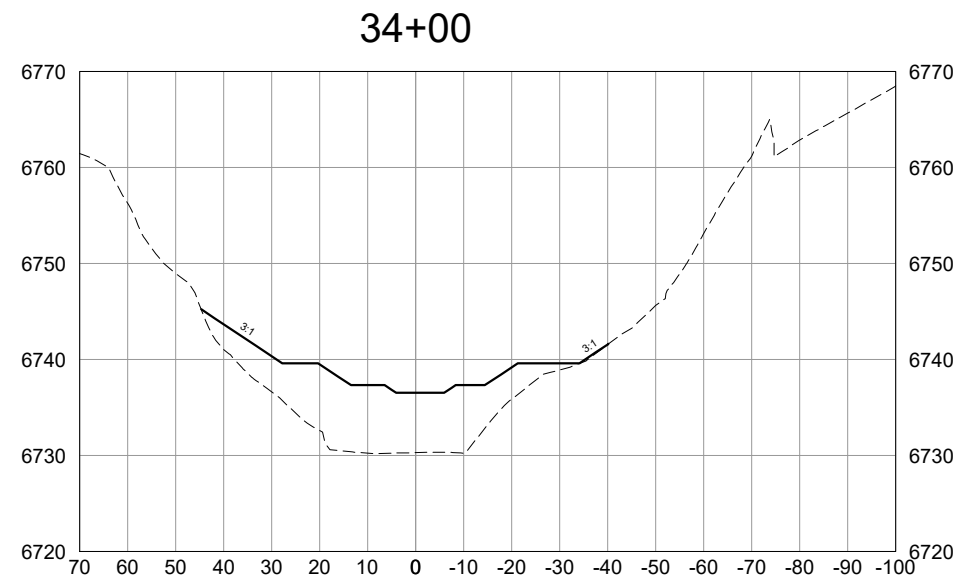
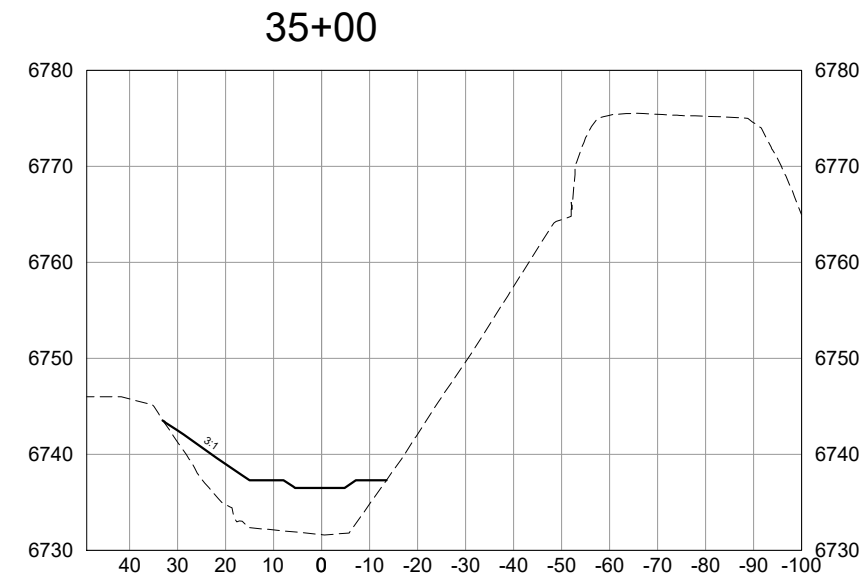
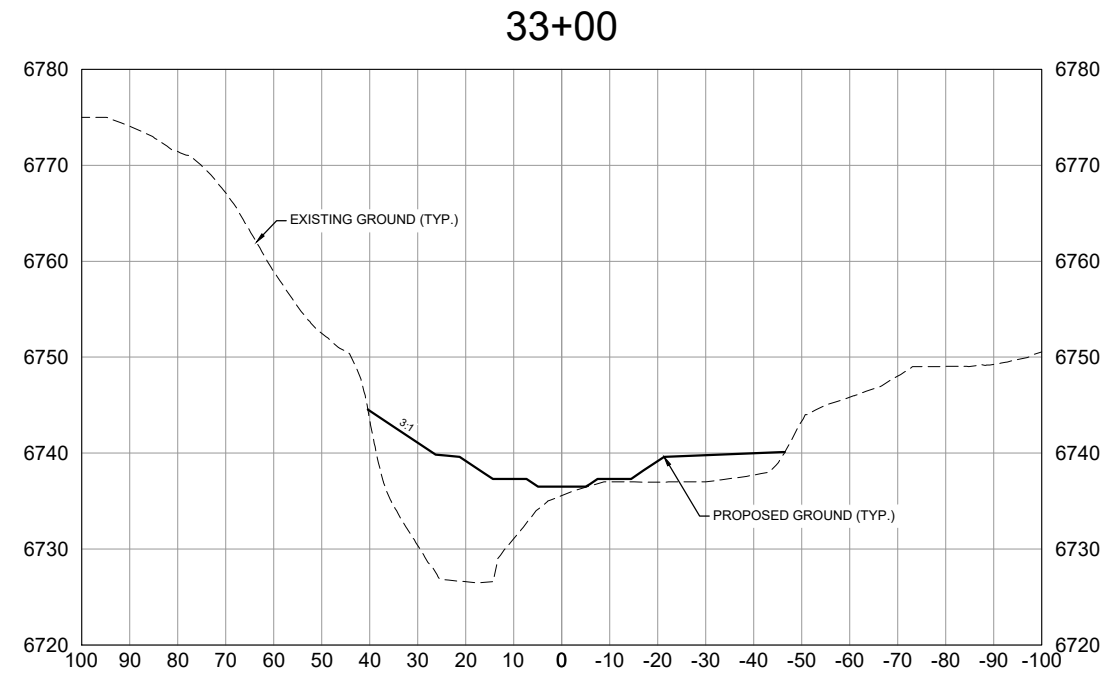
HORIZONTAL GRAPHIC SCALE



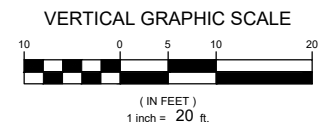
VERTICAL SCALE: 1" = 20'

VERTICAL GRAPHIC SCALE

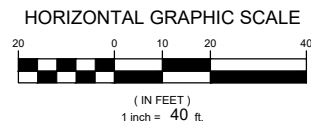
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VERTICAL SCALE: 1" = 20'

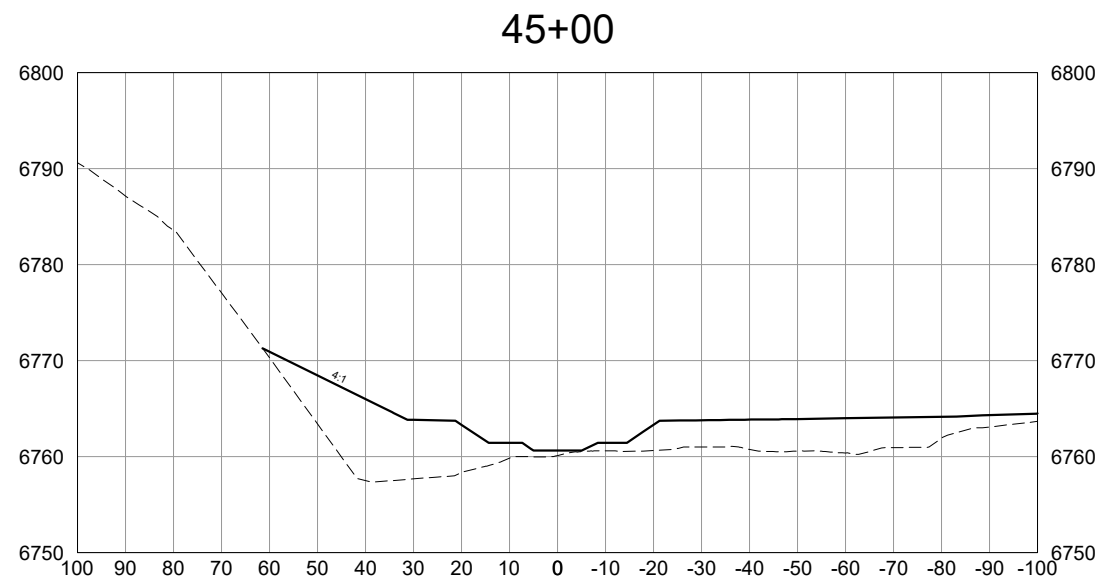
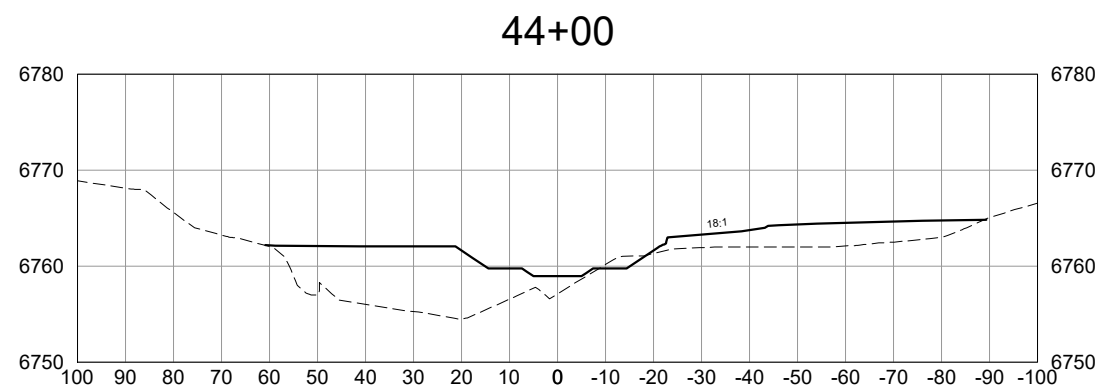
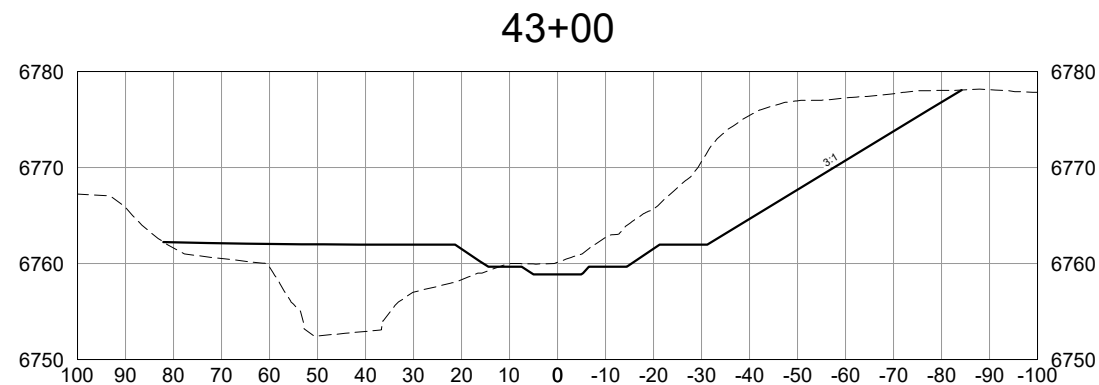


HORIZONTAL SCALE: 1" = 40'



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DOWNSTREAM

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HORIZONTAL GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

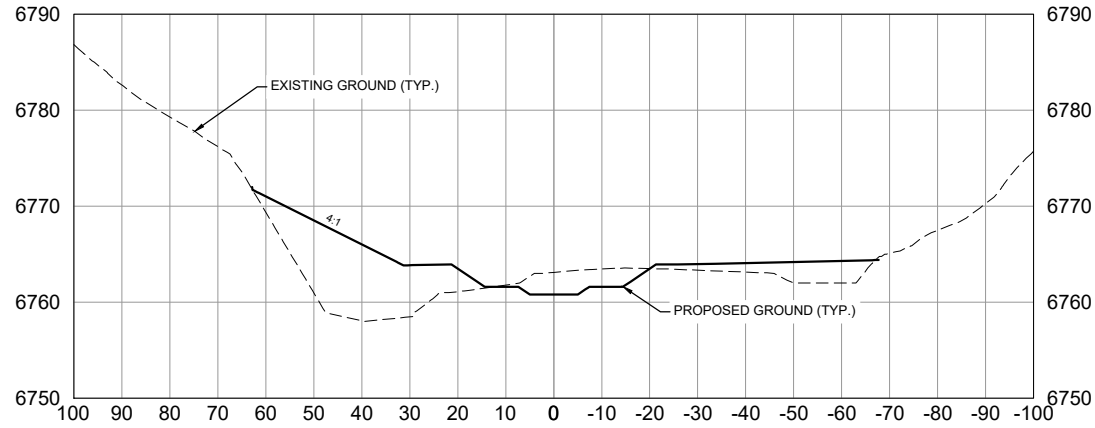


FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC
PROJECT No. 20.069.091

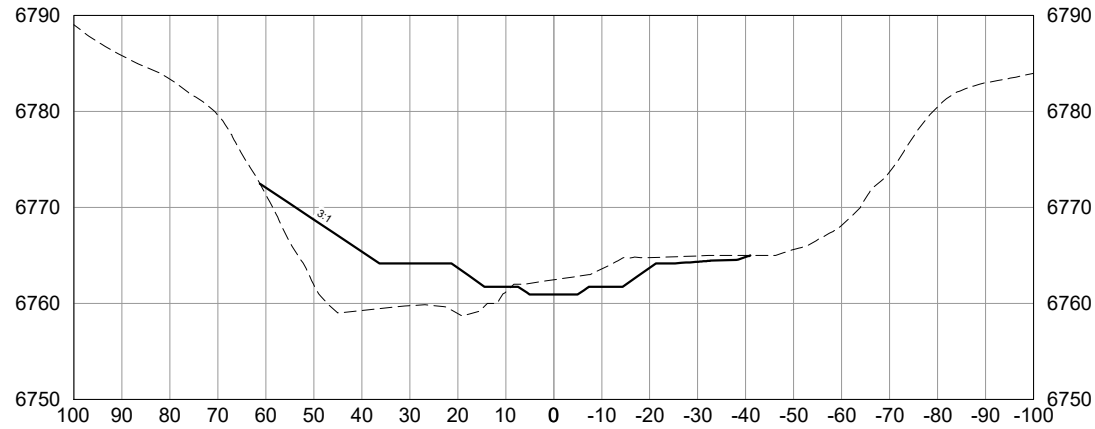
DESIGNED BY:	JAB	SCALE		DATE ISSUED:	January 2021	DRAWING No. XS10
DRAWN BY:	RAF	HORIZ.	1" = 40'	SHEET	23 OF 37	
CHECKED BY:	AJS	VERT.	1" = 20'			



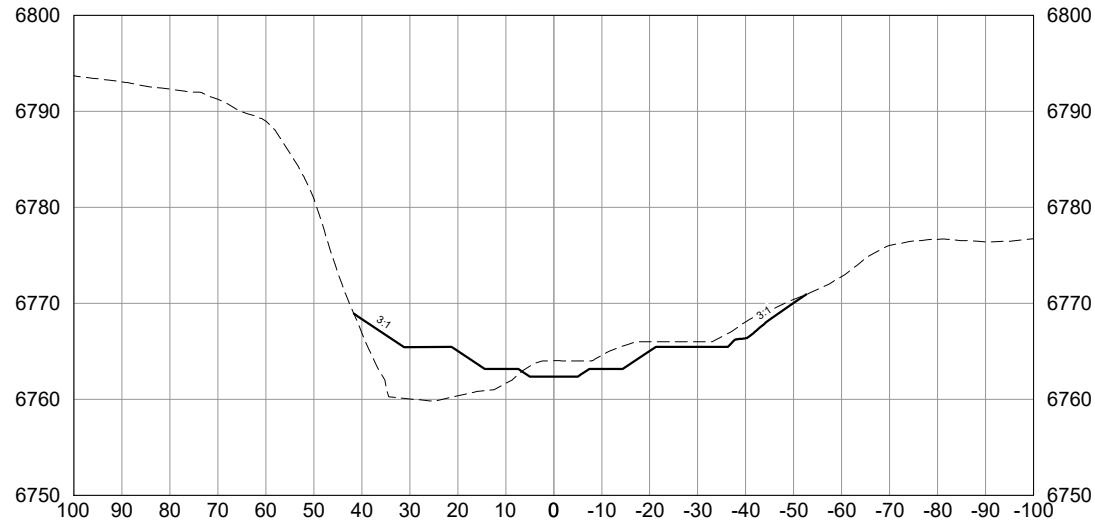
46+00



47+00

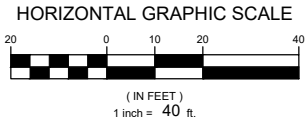
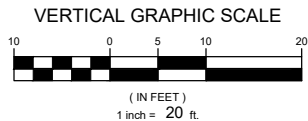


48+00



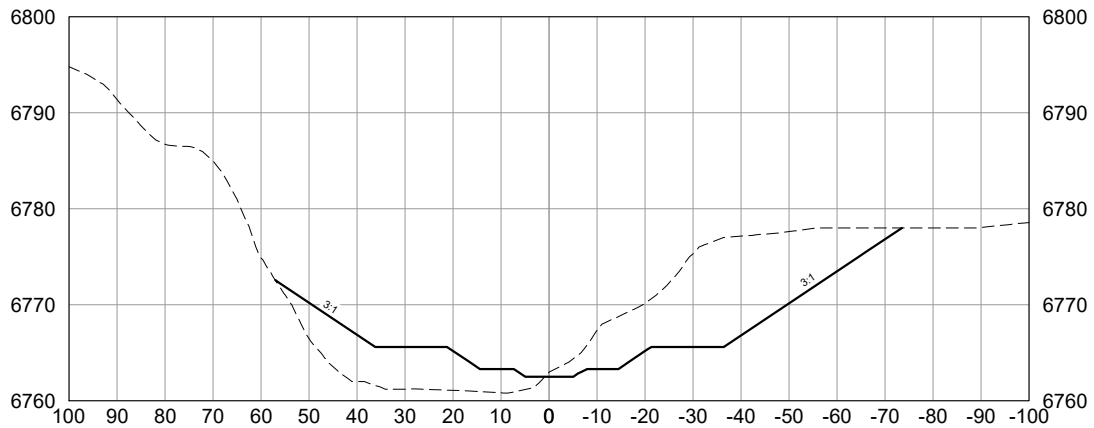
VERTICAL SCALE: 1" = 20'

HORIZONTAL SCALE: 1" = 40'

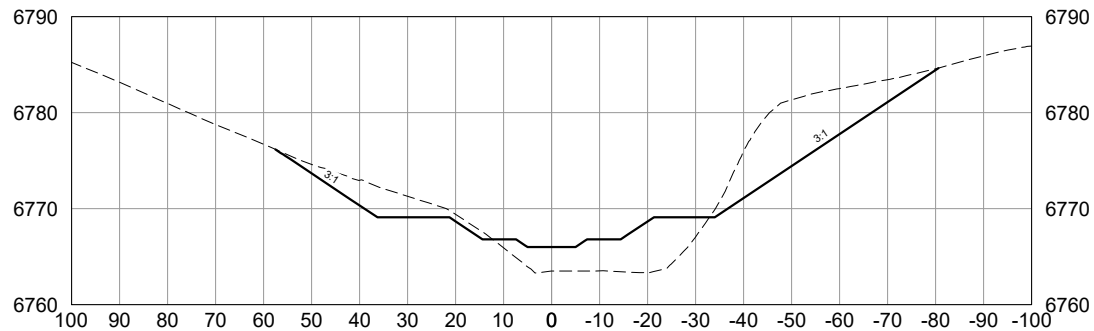


NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

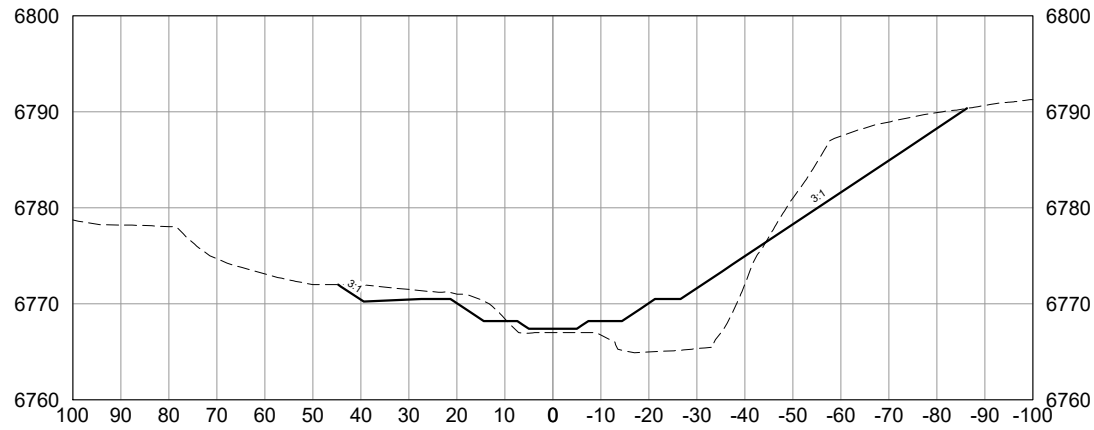
49+00



50+00



51+00



REFERENCE DRAWINGS			
X:069-MDG22X34			
X:069-EX-IMAGE			
X:069-PR-TOPO			
No.	DATE	DESCRIPTION	BY
REVISIONS			
COMPUTER FILE MANAGEMENT			
FILE NAME: S:\20.069.091 Cottonwood Creek Channel Rehabilitation Design Services\Drawings\Design Plans\069-XS01-XX.dwg			
CTB FILE: Matrix(black).ctb			
PLOT DATE: 1/25/2021 1:47 PM			
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			

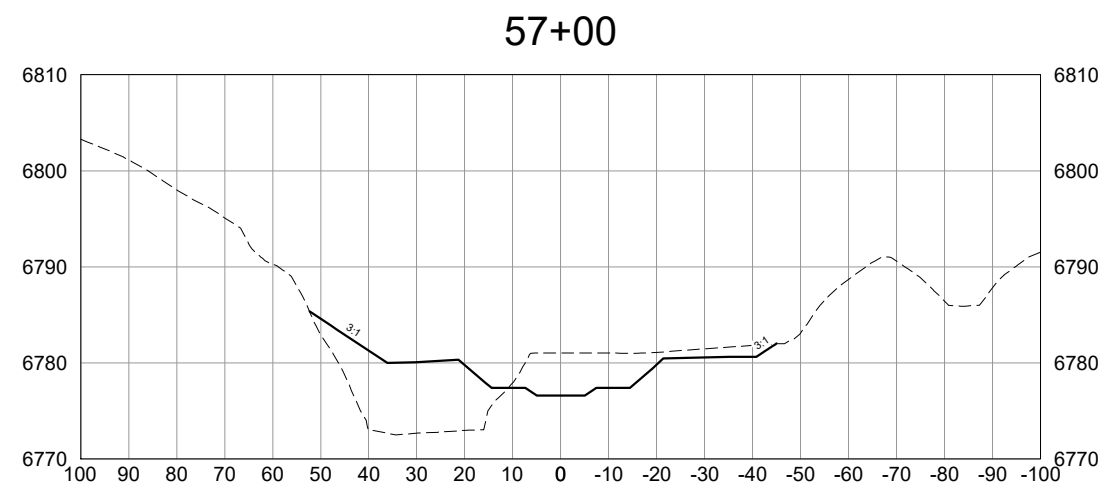
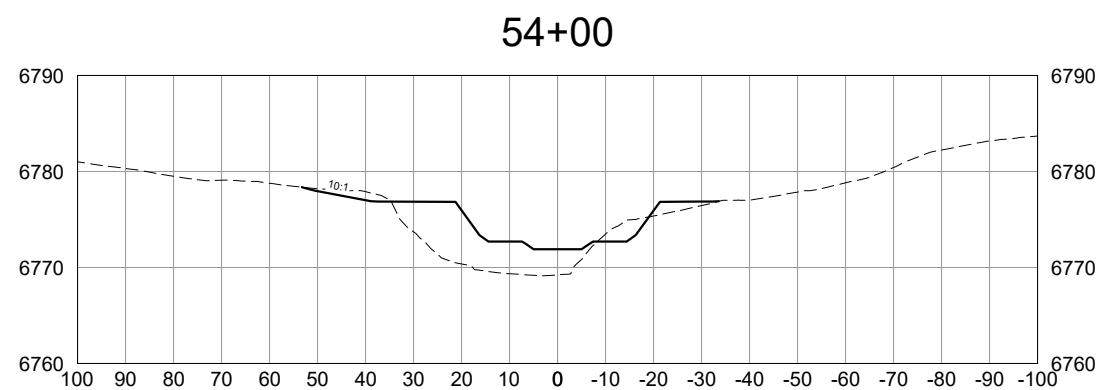
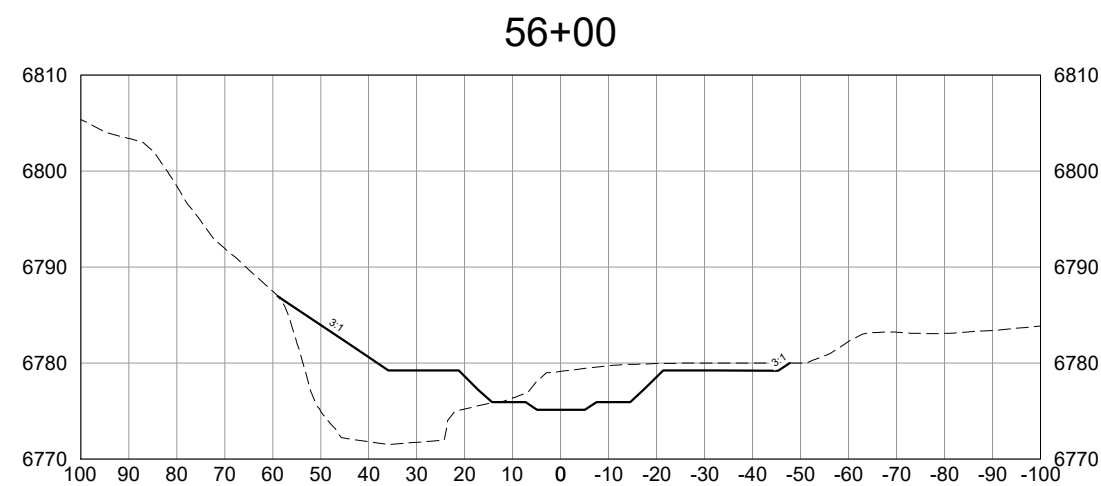
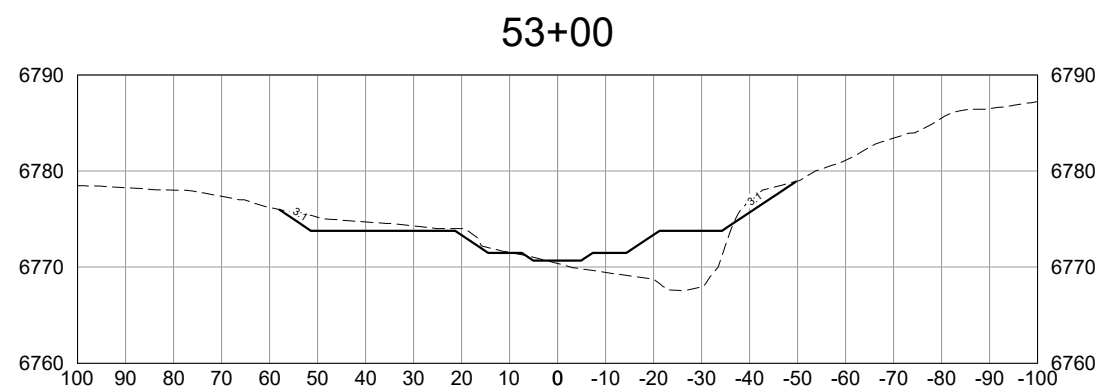
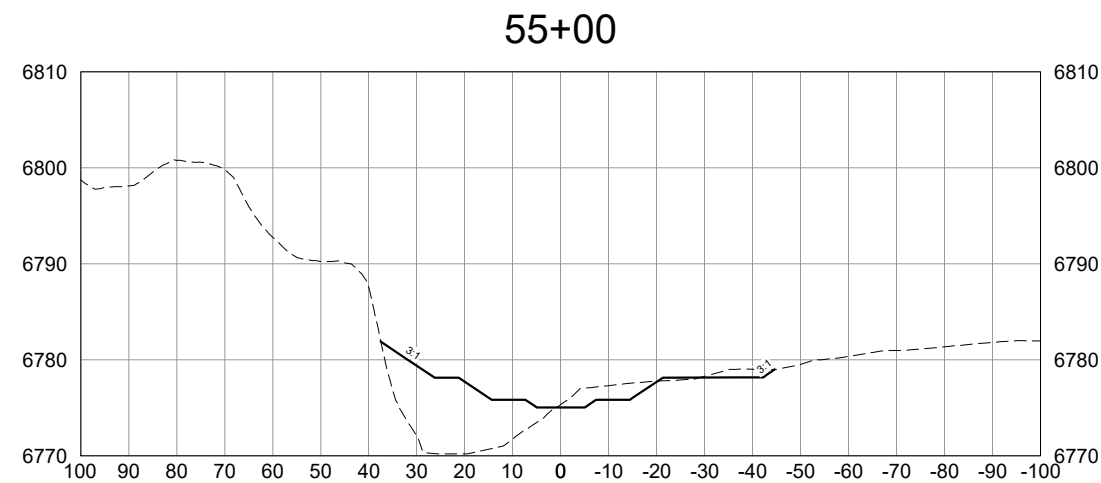
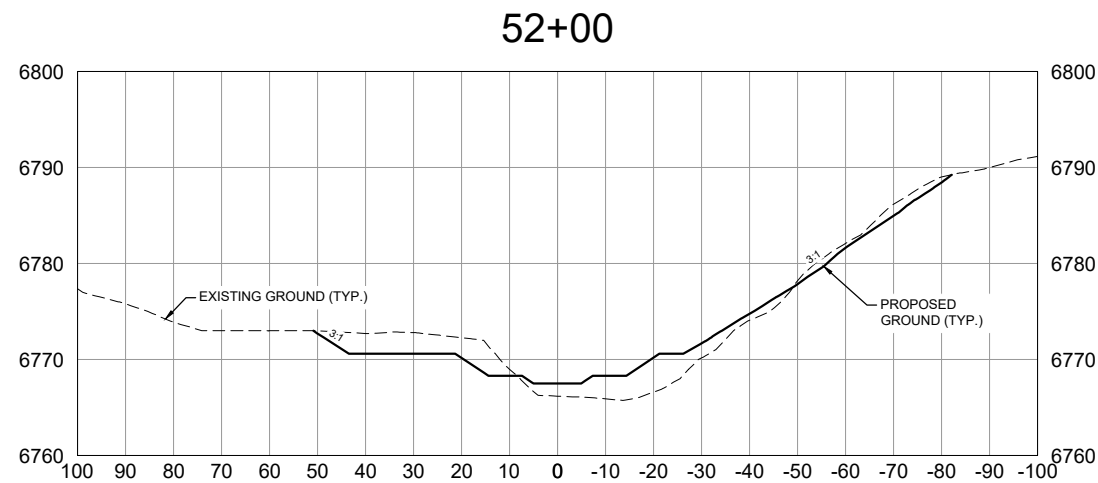


SEAL			
PRELIMINARY THIS DRAWING HAS NOT BEEN APPROVED BY GOVERNING AGENCIES AND IS SUBJECT TO CHANGE			
FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC. PROJECT No. 20.069.091			

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
CROSS SECTIONS STA. 46+00 TO 51+00			
DESIGNED BY:	JAB	SCALE	DATE ISSUED:
DRAWN BY:	RAF	HORIZ. 1" = 40'	January 2021
CHECKED BY:	AJS	VERT. 1" = 20'	SHEET
			24 OF 37
			DRAWING No. XS11

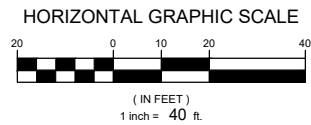
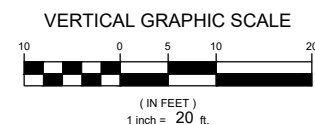


Know what's below.
Call before you dig.



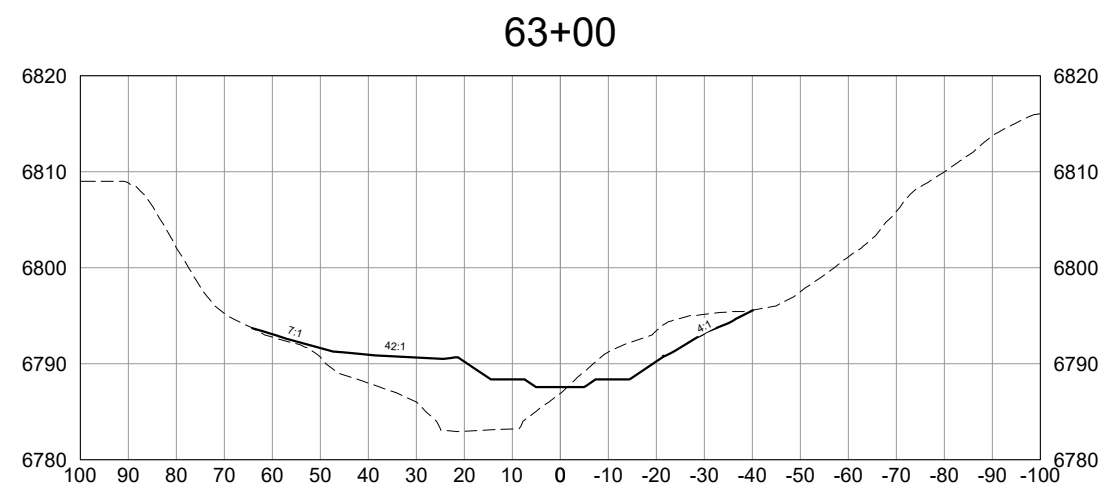
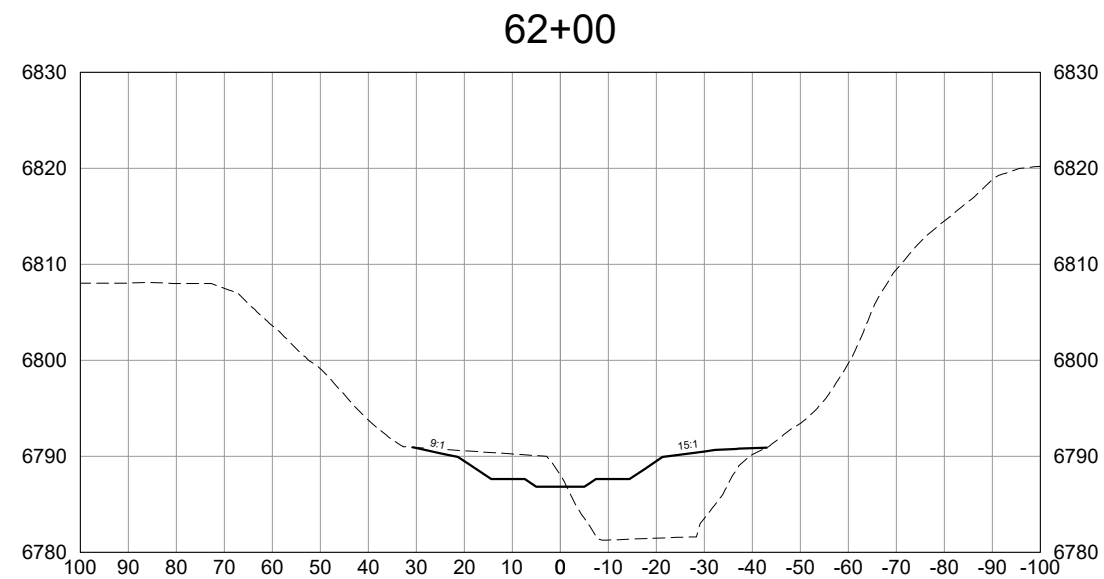
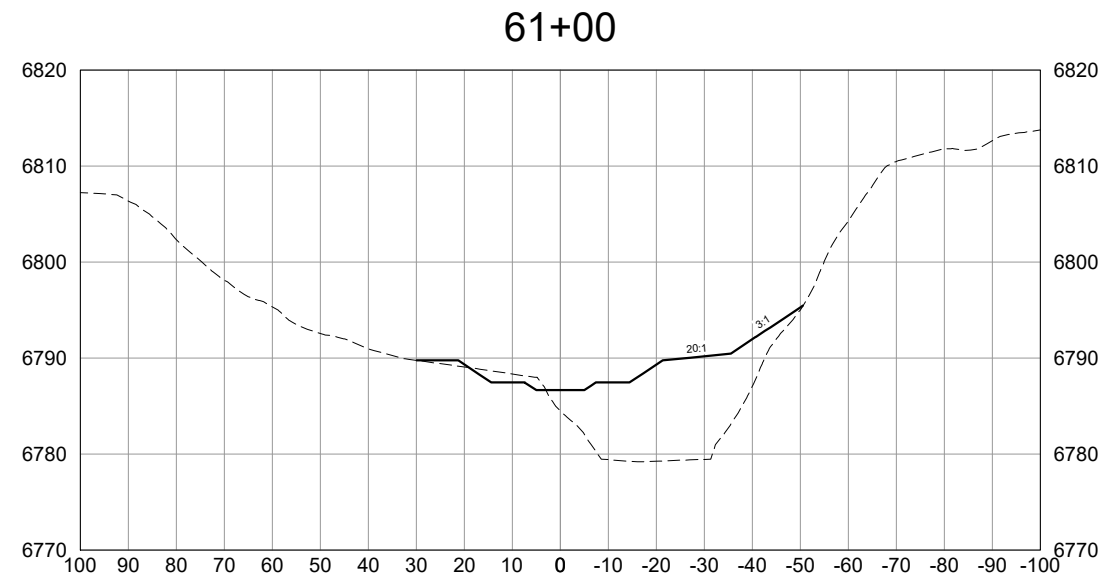
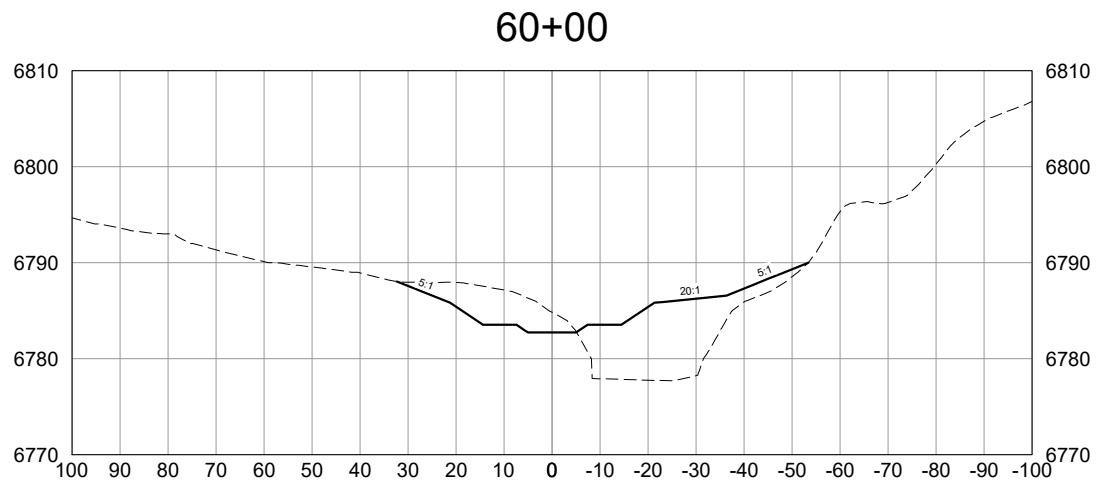
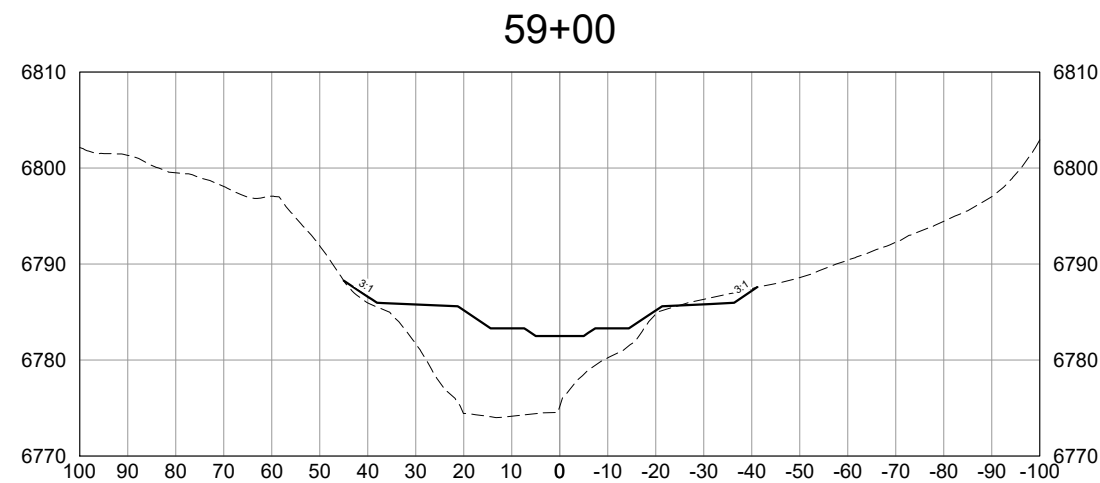
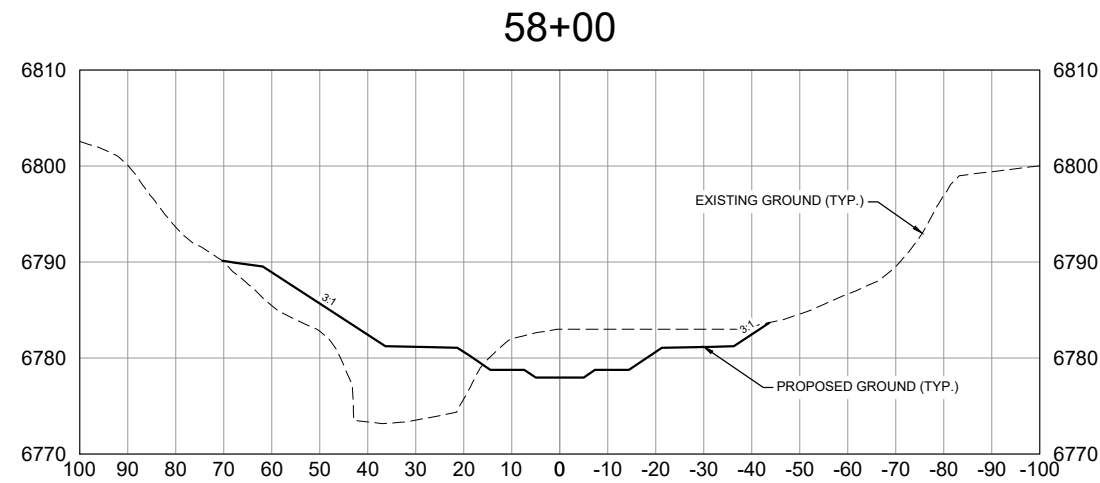
VERTICAL SCALE: 1" = 20'

HORIZONTAL SCALE: 1" = 40'



NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

[illegible]



VERTICAL SCALE: 1" = 20'

VERTICAL GRAPHIC SCALE

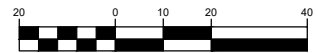


(IN FEET)

1 inch = 20 ft.

HORIZONTAL SCALE: 1" = 40'

HORIZONTAL GRAPHIC SCALE

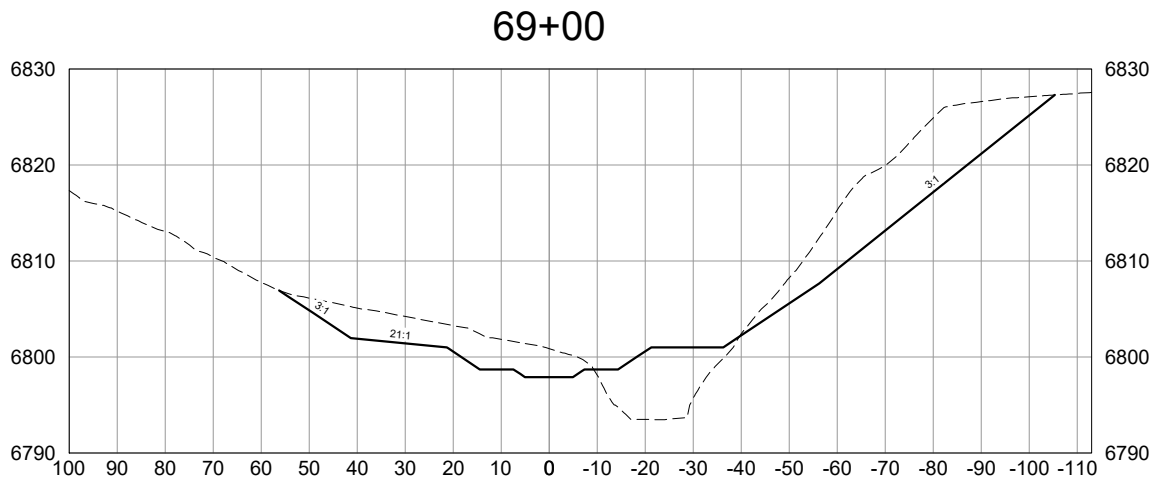
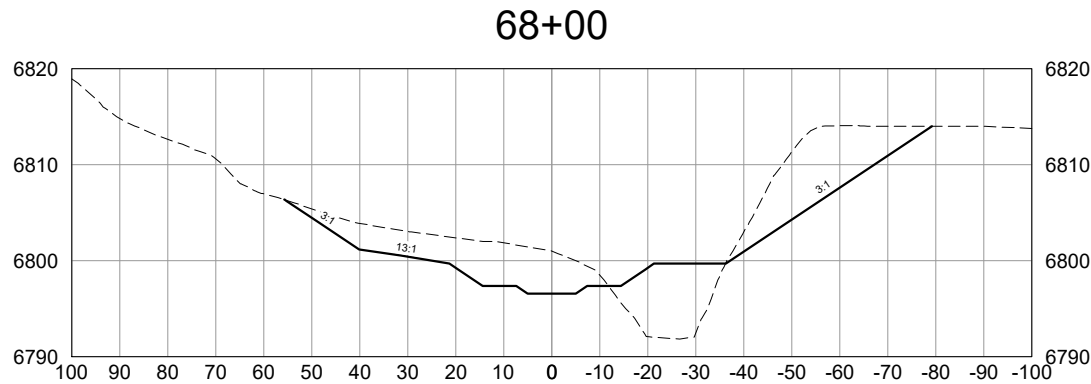
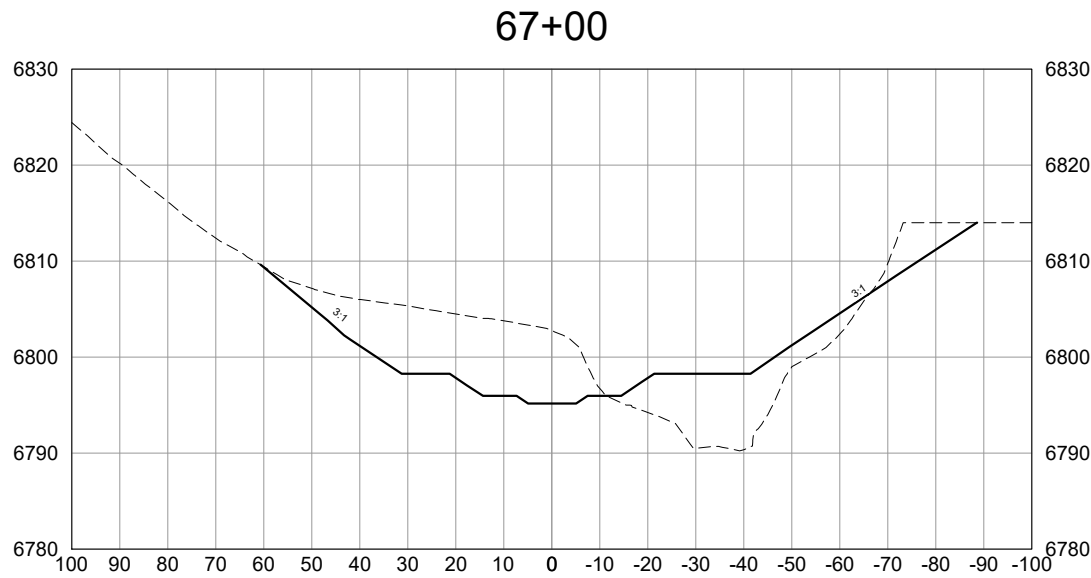
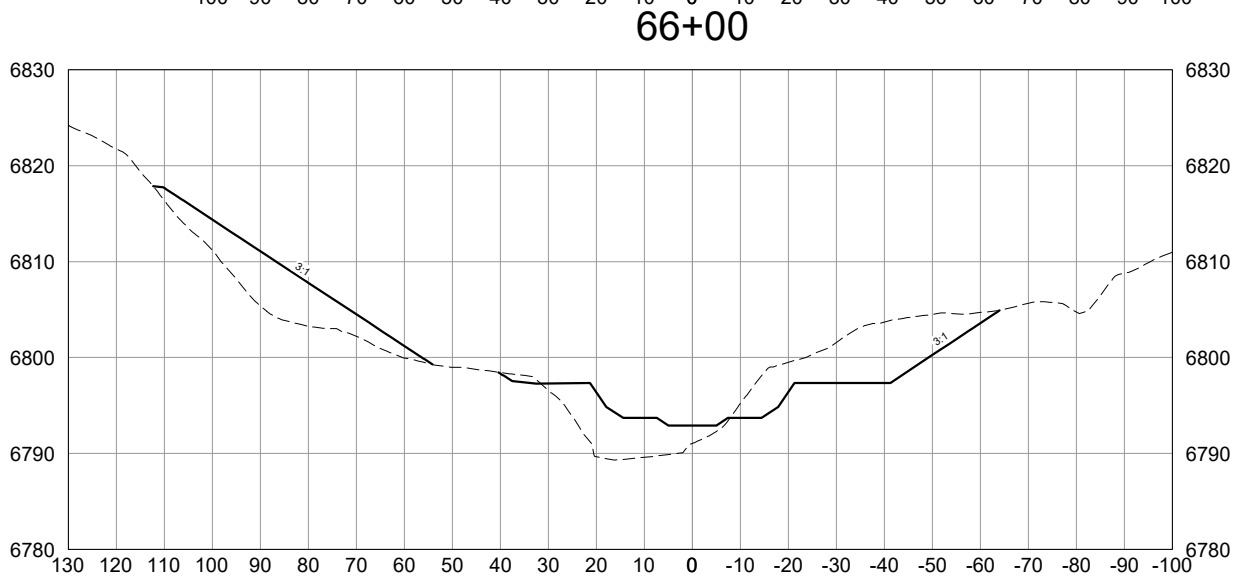
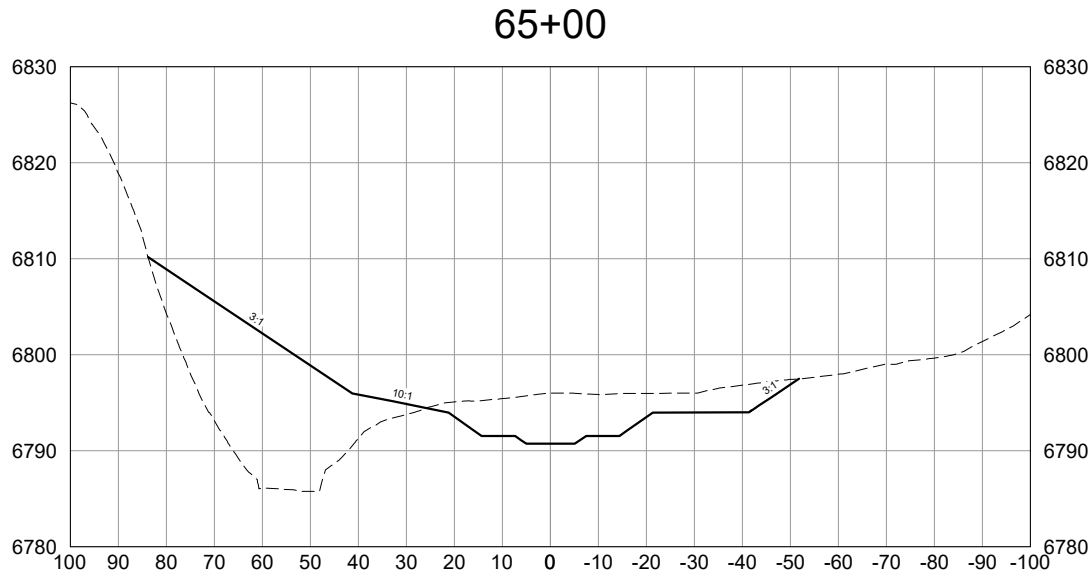
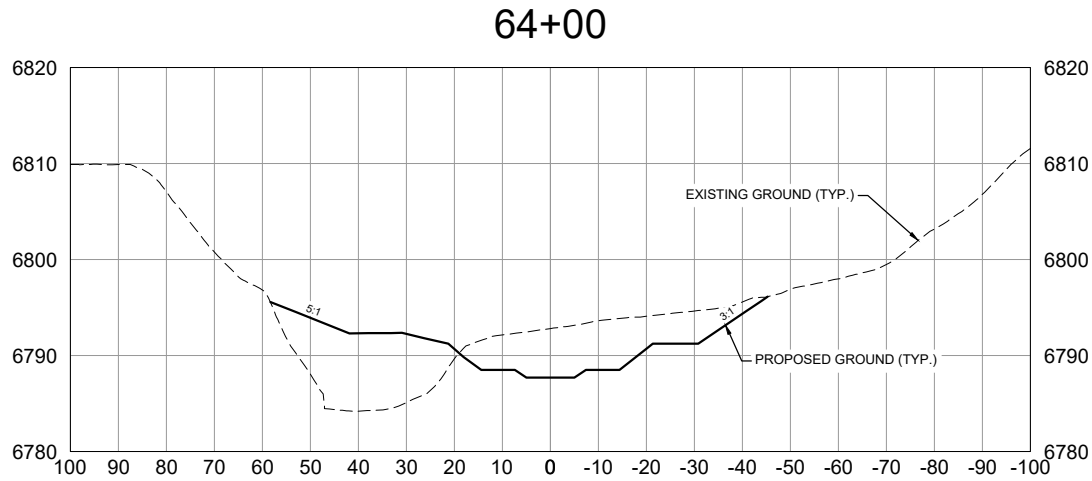


(IN FEET)

1 inch = 40 ft.

NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

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NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

HORIZONTAL SCALE: 1" = 40'

HORIZONTAL GRAPHIC SCALE



(IN FEET)
1 inch = 40 ft.

VERTICAL SCALE: 1" = 20'

VERTICAL GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

REFERENCE DRAWINGS				
	No.	DATE	DESCRIPTION	BY
			REVISIONS	
COMPUTER FILE MANAGEMENT				
FILE NAME: S:\20.069.091 Cottonwood Creek Channel Rehabilitation Design Services\Drawings\Design Plans\069-XS01-XX.dwg				
CTB FILE: Matrix(black).ctb				
PLOT DATE: 1/25/2021 1:45 PM				
THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.				



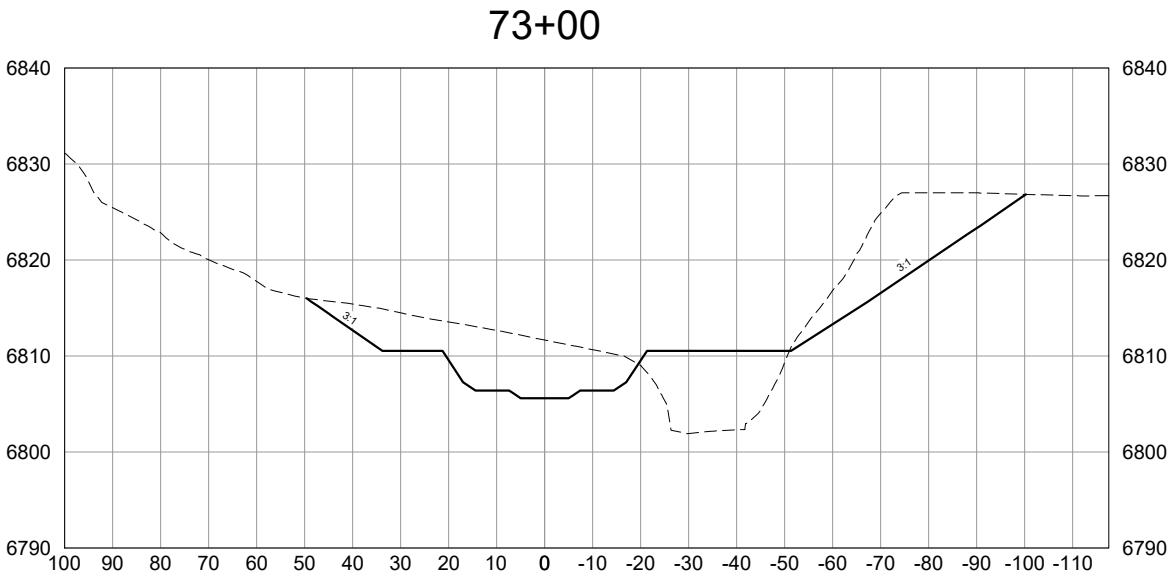
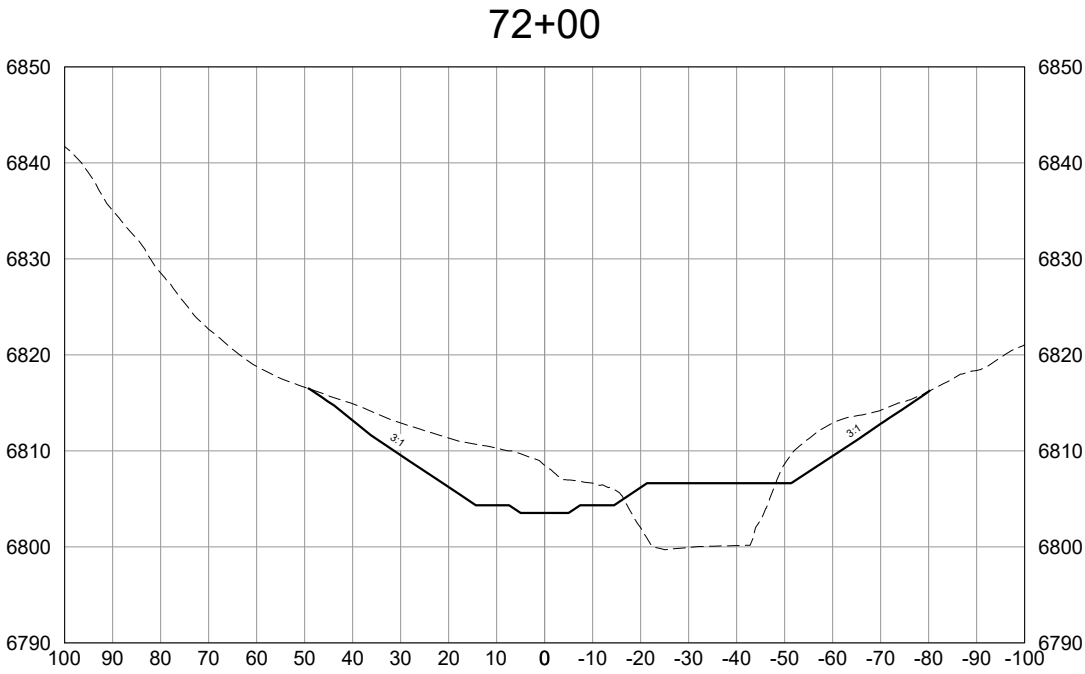
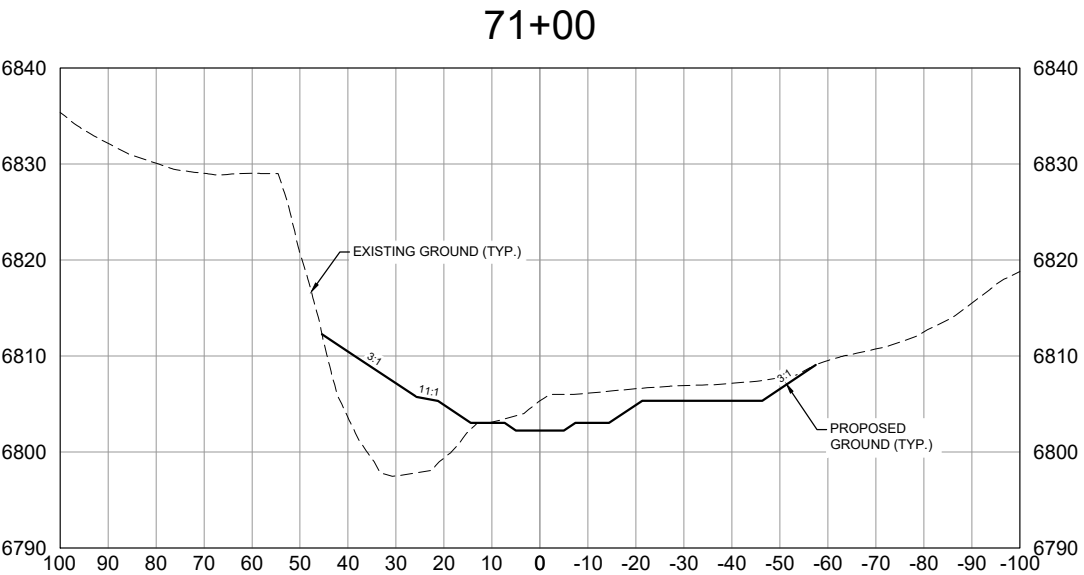
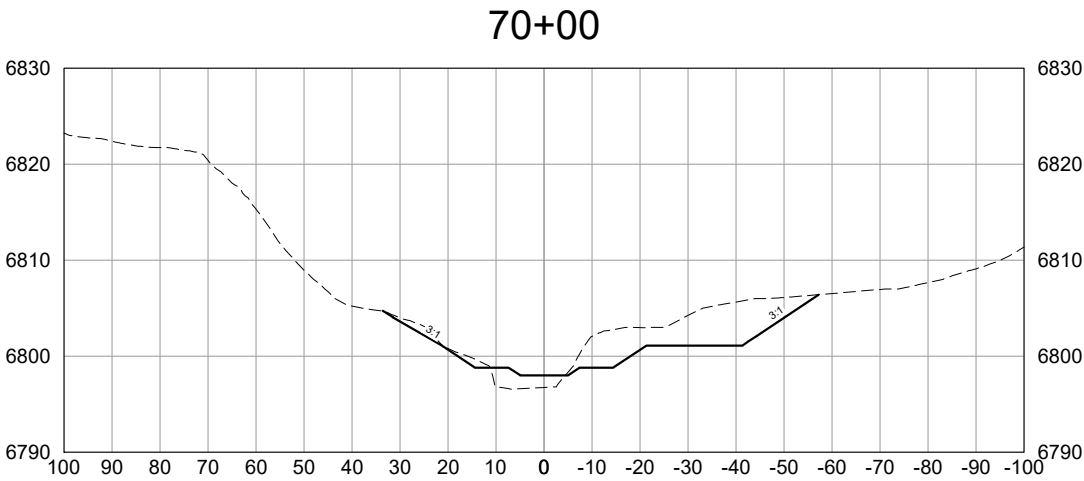
PREPARED BY:

Excellence by Design

CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
CROSS SECTIONS STA. 64+00 TO 69+00			
DESIGNED BY: JAB	SCALE: 1" = 40'	DATE ISSUED: January 2021	DRAWING No. XS14
DRAWN BY: RAF	HORIZ. 1" = 40'	SHEET 27 OF 37	
CHECKED BY: AJS	VERT. 1" = 20'		

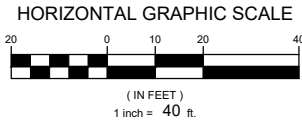
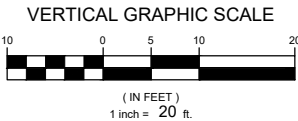
SEAL
PRELIMINARY
THIS DRAWING HAS NOT
BEEN APPROVED BY
GOVERNING AGENCIES AND
IS SUBJECT TO CHANGE

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091



VERTICAL SCALE: 1" = 20'

HORIZONTAL SCALE: 1" = 40'



NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

REFERENCE DRAWINGS				
	No.	DATE	DESCRIPTION	BY
			REVISIONS	
	COMPUTER FILE MANAGEMENT			
	FILE NAME: S:\20.069.091 Cottonwood Creek Channel Rehabilitation Design Services\Drawings\Design Plans\069-XS01-XX.dwg			
	CTB FILE: Matrix(black).ctb			
	PLOT DATE: 1/25/2021 1:44 PM			
	THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE.			



SEAL

PRELIMINARY
THIS DRAWING HAS NOT
BEEN APPROVED BY
GOVERNING AGENCIES AND
IS SUBJECT TO CHANGE

FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS

COTTONWOOD CREEK CHANNEL REHABILITATION

PERMIT PLAN SET

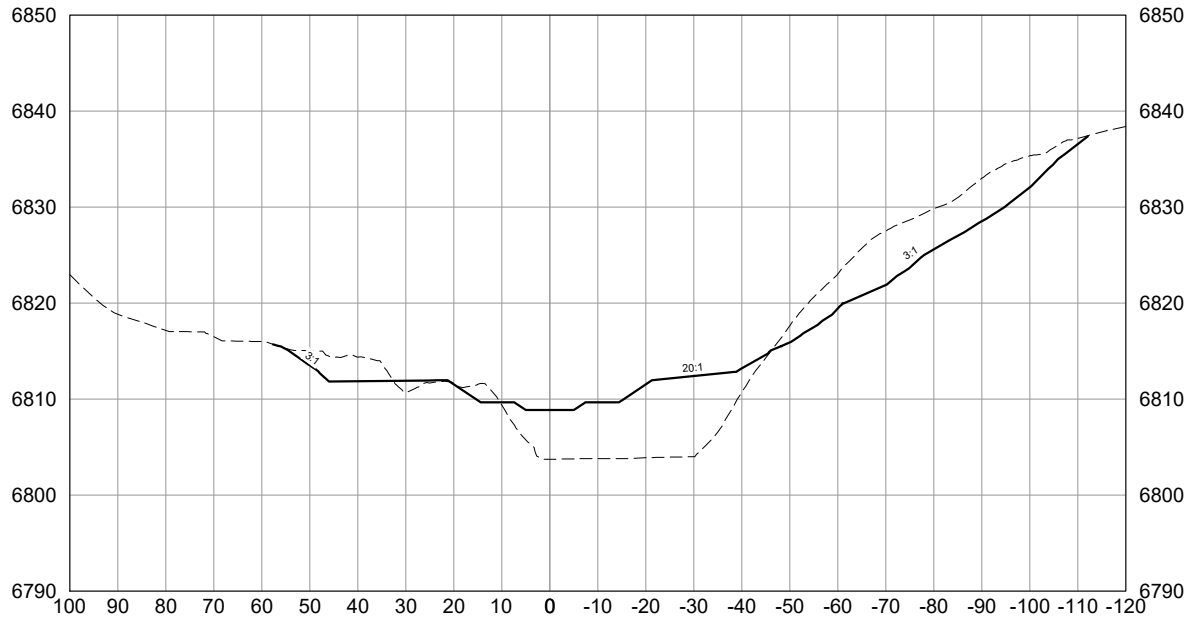
CROSS SECTIONS
STA. 70+00 TO 73+00

DESIGNED BY:	JAB	SCALE	DATE ISSUED:	January 2021	DRAWING No.
DRAWN BY:	RAF	HORIZ. 1" = 40'			
CHECKED BY:	AJS	VERT. 1" = 20'	SHEET	28 OF 37	XS15

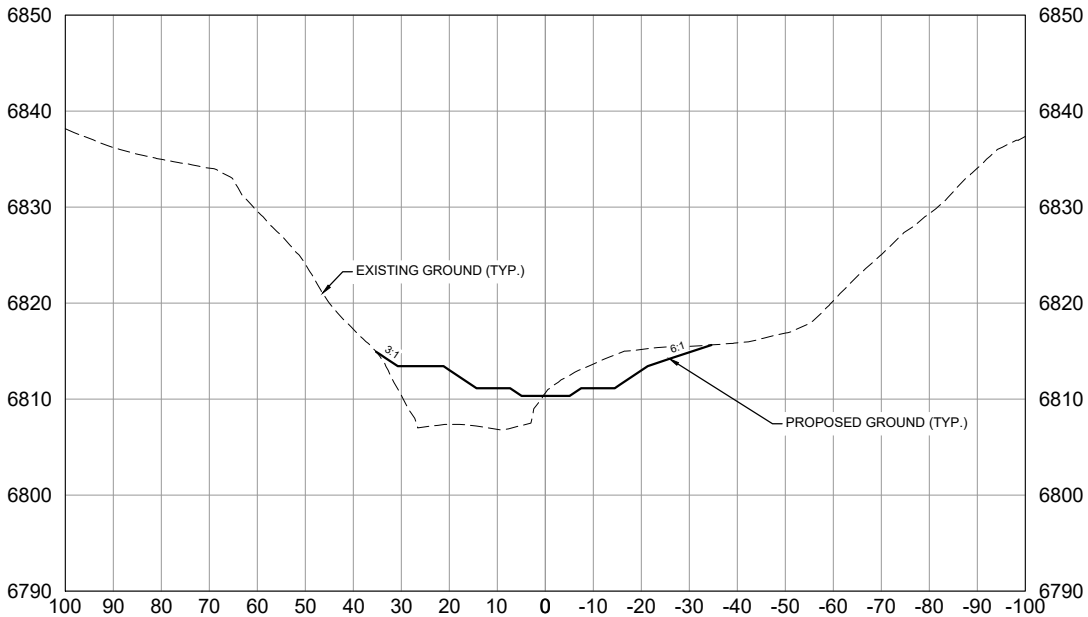


Know what's below.
Call before you dig.

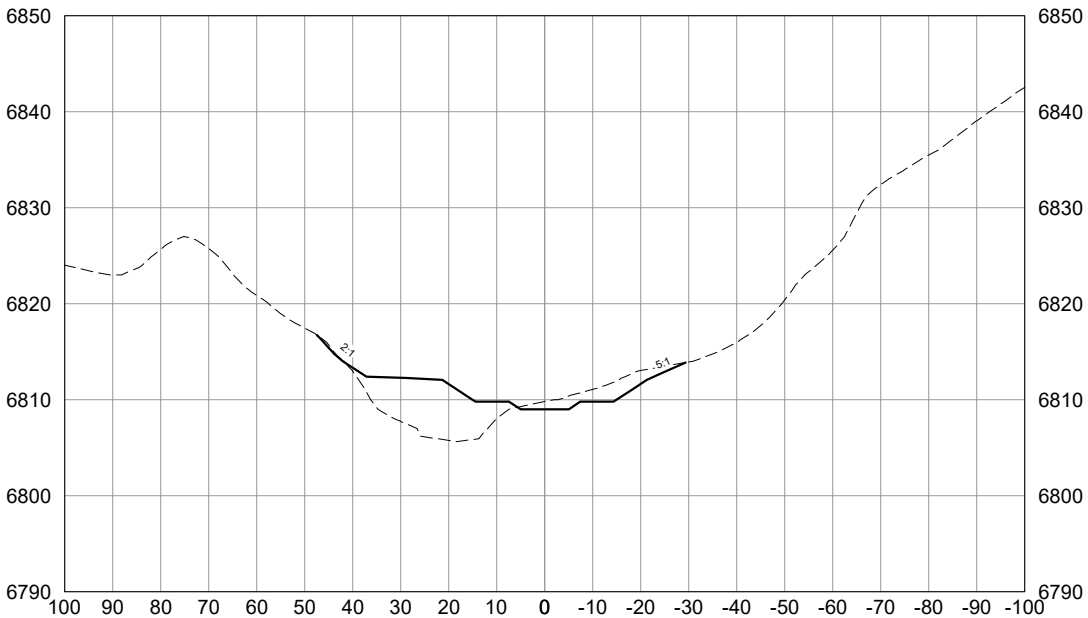
74+00



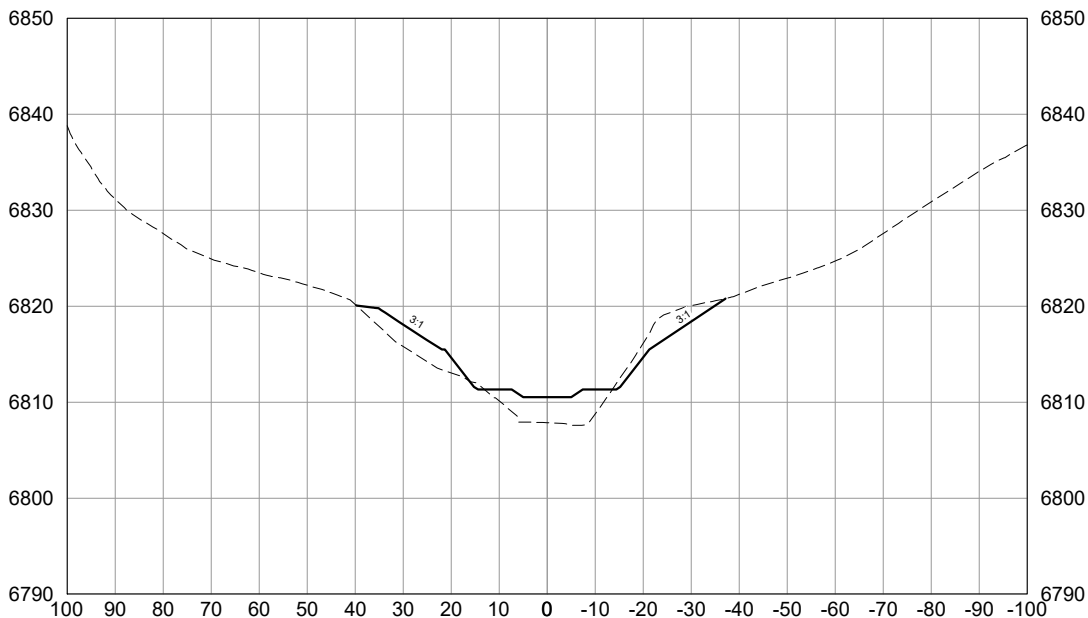
76+00



75+00

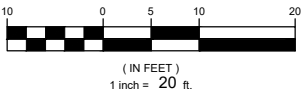


77+00



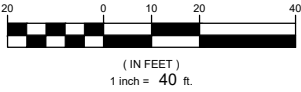
VERTICAL SCALE: 1" = 20'

VERTICAL GRAPHIC SCALE



HORIZONTAL SCALE: 1" = 40'

HORIZONTAL GRAPHIC SCALE



NOTE:
ALL CROSS SECTIONS
ARE SHOWN LOOKING
DOWNSTREAM

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REVEGETATION EXTENTS

	NEDIA KOIRWRAP 1200 OR APPROVED EQUAL (AC)	NEDIA C400B COCONUT MATTING OR APPROVED EQUAL (AC)	SEEDING AREA (AC)
REACH 1	1.8	5.0	6.8
REACH 2	1.2	2.8	4.0
REACH 3	2.4	4.5	7.0
TOTAL AREA	5.4	12.3	17.8



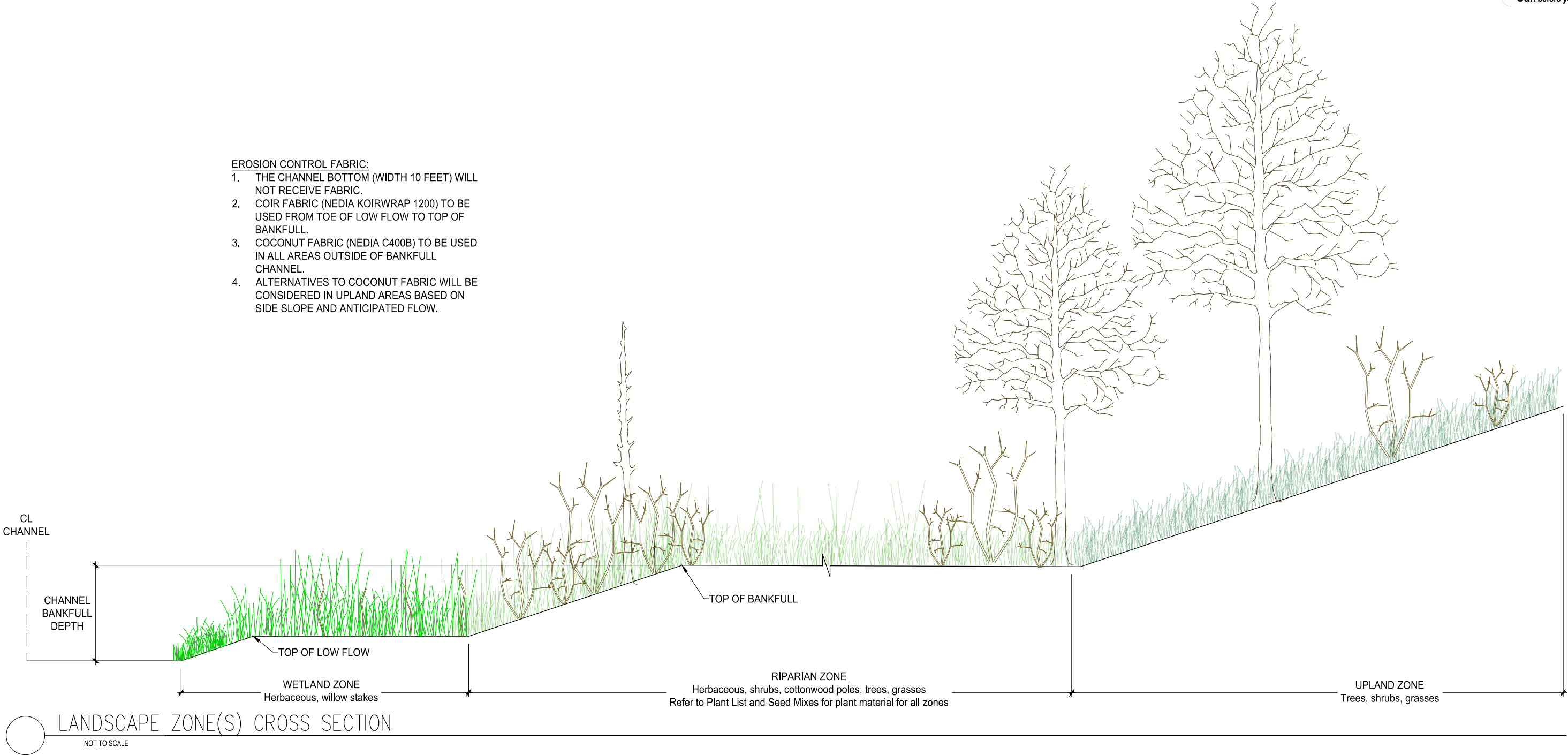
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CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
REVEGETATION PLAN VIEW			
DESIGNED BY:	JAB	SCALE	DATE ISSUED: January 2021
DRAWN BY:	JDH	HORIZ 1" = 400'	DRAWING No. RV01
CHECKED BY:	AJS	VERT. N/A	SHEET 30 OF 37



- EROSION CONTROL FABRIC:**
- 1. THE CHANNEL BOTTOM (WIDTH 10 FEET) WILL NOT RECEIVE FABRIC.
 - 2. COIR FABRIC (NEDIA KOIRWRAP 1200) TO BE USED FROM TOE OF LOW FLOW TO TOP OF BANKFULL.
 - 3. COCONUT FABRIC (NEDIA C400B) TO BE USED IN ALL AREAS OUTSIDE OF BANKFULL CHANNEL.
 - 4. ALTERNATIVES TO COCONUT FABRIC WILL BE CONSIDERED IN UPLAND AREAS BASED ON SIDE SLOPE AND ANTICIPATED FLOW.



REFERENCE DRAWINGS X-069-MDG22X34 X-069-EX-IMAGE				
	No.	DATE	DESCRIPTION REVISIONS	BY
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FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS				
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET				
TYPICAL REVEGETATION SECTION SEEDING AND PLANTINGS				
DESIGNED BY: JAB	SCALE	DATE ISSUED: January 2021	DRAWING No.	
DRAWN BY: JDH	HORIZ. N/A		RV02	
CHECKED BY: AJG	VERT. N/A	SHEET 31 OF 37		



Know what's below.
Call before you dig.

Cottonwood Creek Seed Mixes						
Wetland Seed Mix		lb/ac (PLS)	% PLS/ac	seeds/lb	seeds/ac	seeds/ft ²
<i>Beckmannia syzigachne</i>	American Sloughgrass	0.4	3.97	900,000	360,000	8.26
<i>Bolboschoenus maritimus</i>	Alkali Bulrush	1	9.92	230,000	230,000	5.28
<i>Carex pellita</i>	Woolly Sedge	1.3	12.90	236,000	306,800	7.04
<i>Carex nebrakensis</i>	Nebraska Sedge	0.4	3.97	912,300	364,920	8.38
<i>Dechampsia cespitosa</i>	Tufted Hairgrass	0.1	0.99	2,500,000	250,000	5.74
<i>Eleocharis palustris</i>	Creeping Spikerush	0.7	6.94	620,000	434,000	9.96
<i>Glyceria striata</i>	Fowl Mannagrass	1.7	16.87	180,000	306,000	7.02
<i>Juncus balticus</i>	Baltic Rush	0.05	0.50	8,000,000	400,000	9.18
<i>Juncus torreyi</i>	Torrey's Rush	0.03	0.30	12,300,000	369,000	8.47
<i>Schoenoplectus acutus</i>	Hardstem Bulrush	1	9.92	402,700	402,700	9.24
<i>Schoenoplectus pungens</i>	Common Three-Square	1.2	11.90	216,000	259,200	5.95
<i>Spartina pectinata</i>	Prairie Cordgrass	2.2	21.83	183,000	402,600	9.24
		10.08	100.00	26,680,000	4,085,220	93.78
Riparian Seed Mix		lb/ac (PLS)	% PLS/ac	seeds/lb	seeds/ac	seeds/ft ²
<i>Andropogon hallii</i>	Sand Bluestem	3.4	19.10	96,640	328,576	7.54
<i>Dechampsia cespitosa</i>	Tufted Hairgrass	0.3	1.69	1,500,000	450,000	10.33
<i>Elymus lanceolatus</i> spp. <i>psammophilus</i>	Streambank wheatgrass, Sodar	2.4	13.48	156,000	374,400	8.60
<i>Glyceria striata</i>	Fowl Mannagrass	2	11.24	180,000	360,000	8.26
<i>Nassella viridula</i> 'Cucharas'	Green Needlegrass, Cucharas	2	11.24	167,840	335,680	7.71
<i>Panicum virgatum</i> 'Blackwell'	Switchgrass, Blackwell	1.4	7.87	259,000	362,600	8.32
<i>Pascopyrum smithii</i> 'Arriba'	Western wheatgrass, Arriba	3.5	19.66	115,000	402,500	9.24
<i>Spartina pectinata</i>	Prairie cordgrass	2.5	14.04	197,000	492,500	11.31
<i>Sporobolus airoides</i> 'Salado'	Alkali sacaton, Salado	0.3	1.69	1,750,000	525,000	12.05
		17.80	100.00	4,421,480	3,631,256	83.36
Forbes and Shrubs						
<i>Asclepias speciosa</i>	Showy Milkweed	2	34.48	58,000	116,000	2.66
<i>Coreopsis tinctoria</i>	Plains Coreopsis	0.05	0.86	3,200,000	160,000	3.67
<i>Alnus incana tenuifolia</i>	Thinleaf Alder	0.25	4.31	675,000	168,750	3.87
<i>Rosa woodsii</i>	Wood's Rose	2	34.48	49,000	98,000	2.25
<i>Symphoricarpos albus</i>	Common Snowberry	1.5	25.86	76,000	114,000	2.62
		5.80	100.00	4,058,000	656,750	15.08
Upland Seed Mix		lb/ac (PLS)	% PLS/ac	seeds/lb	seeds/ac	seeds/ft ²
<i>Achnatherum hymenoides</i>	Indian Ricegrass	2.2	7.23	161,920	356,224	8.18
<i>Bouteloua curtipendula</i> 'Vaughn'	Sideoats Grama, Vaughn	2	6.57	191,000	382,000	8.77
<i>Bouteloua gracilis</i> 'Bad River'	Blue Grama, Bad River	0.5	1.64	825,000	412,500	9.47
<i>Buchloe dactyloides</i> 'Texoka'	Buffalograss, Texoka	6	19.72	45,000	270,000	6.20
<i>Hesperostipa comata</i> ssp. <i>Comata</i>	Needle and Thread	2.8	9.20	115,000	322,000	7.39
<i>Koeleria macrantha</i>	Prairie Junegrass	0.15	0.49	2,310,000	346,500	7.95
<i>Nassella viridula</i> 'Cucharas'	Green Needlegrass, Cucharas	1.7	5.59	167,840	285,328	6.55
<i>Pascopyrum smithii</i> 'Arriba'	Western Wheatgrass, Arriba	3.5	11.51	115,000	402,500	9.24
<i>Schizachyrium scoparium</i> 'Pastura'	Little Bluestem, Pastura	1.5	4.93	240,670	361,005	8.29
<i>Sporobolus cryptandrus</i>	Sand Dropseed	0.07	0.23	5,600,000	392,000	9.00
<i>Avena sativa</i> 'Monida'	Oats-Monida	10	32.87	14,000	140,000	3.21
		30.42	100.00	9,785,430	3,670,057	84.25
Forbes and Shrubs						
<i>Achillea millefolium</i>	White Yarrow	0.04	0.70	2,700,000	108,000	2.48
<i>Antennaria parvifolia</i>	Pussytoes	0.1	1.75	1,135,000	113,500	2.61
<i>Artemisia frigida</i>	Fringed Sage	0.02	0.35	4,500,000	90,000	2.07
<i>Astragalus adsurgens</i>	Upright Milkvetch	1.8	31.52	70,000	126,000	2.89
<i>Cleome serrulata</i>	Rocky Mountain Bee Plant	1	17.51	113,500	113,500	2.61
<i>Fallugia paradoxa</i>	Apache Plume	0.15	2.63	420,000	63,000	1.45
<i>Ptelea trifoliata</i>	Western Hop Tree	1.5	26.27	9,000	13,500	0.31
<i>Purshia tridentata</i>	Bitterbrush	1.1	19.26	13,400	14,740	0.34
		5.71	100.00	8,960,900	642,240	14.74

COTTONWOOD CREEK PLANT LIST					
WETLAND SPECIES					
<i>Trees</i>					
AIT		Alnus incana tenuifolia	THINLEAF ALDER	5 FT, Clump	B&B, FACW
PAN		Populus angustifolia	NARROWLEAF COTTONWOOD	1.5-2" CAL	B&B, FACW
PDE		Populus deltoides	PLAINS COTTONWOOD	1.5-2" CAL/POLES	B&B and/or harvested poles, FAC
SAM		Salix amygdaloides	PEACH-LEAF WILLOW	4-5FT HT	B&B, FACW
<i>Shrubs</i>					
AFR		Amorpha fruticosa	FALSE INDIGO	5 GAL.	Container, As Shown, FACW
CSB		Cornus sericea 'Baileyi'	BAILEY RED TWIG DOGWOOD	5 GAL.	(C. <i>alba</i>), Container, As Shown, FACW
DFR		Dasiphora fruticosa	SHRUBBY CINQUEFOIL	5 GAL.	Container, As Shown, FACW
SEX		Salix exigua	SANDBAR WILLOW	5 GAL.	Container, As Shown, FACW
<i>Herbaceous Plugs</i>					
		<i>Carex pellita</i>	WOOLLY SEDGE	7 CU IN	Tubling, OBL
		<i>Carex nebrakensis</i>	NEBRASKA SEDGE	7 CU IN	Tubling, OBL
		<i>Eleocharis palustris</i>	CREEPING SPIKERUSH	7 CU IN	Tubling, OBL
		<i>Juncus balticus</i>	BALTIC RUSH	7 CU IN	Tubling, OBL
		<i>Juncus torreyi</i>	TORREY'S RUSH	7 CU IN	Tubling, FACW
		<i>Schoenoplectus acutus</i>	HARDSTEM BULRUSH	7 CU IN	Tubling, FACW
		<i>Schoenoplectus pungens</i>	COMMON THREE-SQUARE	7 CU IN	Tubling, OBL
		<i>Spartina pectinata</i>	PRAIRIE CORDGRASS	7 CU IN	Tubling, FACW
RIPARIAN SPECIES					
<i>Trees</i>					
AIT		Alnus incana tenuifolia	THINLEAF ALDER	5 FT, Clump	B&B, FACW
PAN		Populus angustifolia	NARROWLEAF COTTONWOOD	1.5-2" CAL	B&B, FACW
PDE		Populus deltoides	PLAINS COTTONWOOD	1.5-2" CAL/POLES	B&B and/or harvested poles, FAC
SAM		Salix amygdaloides	PEACH-LEAF WILLOW	4-5FT HT	B&B, FACW
<i>Shrubs</i>					
AFR		Amorpha fruticosa	FALSE INDIGO	5 GAL.	Container, As Shown, FACW
CSB		Cornus sericea 'Baileyi'	BAILEY RED TWIG DOGWOOD	5 GAL.	(C. <i>alba</i>), Container, As Shown, FACW
DFR		Dasiphora fruticosa	SHRUBBY CINQUEFOIL	5 GAL.	Container, As Shown, FACW
SEX		Salix exigua	SANDBAR WILLOW	5 GAL.	Container, As Shown, FACW
UPLAND SPECIES					
<i>Trees</i>					
COC		Celtis occidentalis	HACKBERRY	2" CAL	Container, As Shown, FACU
JMO		Juniperus monosperma	ONE-SEED JUNIPER	#15	Container, As Shown
JSC		Juniperus scopulorum	ROCKY MOUNTAIN JUNIPER	#15	Container, As Shown
JVI		Juniperus virginiana	EASTERN RED CEDAR	#15	Container, As Shown, UPL
PED		Pinus edulis	PINYON PINE	4 FT HT	Container, As Shown
PPO		Pinus ponderosa	PONDEROSA PINE	5 FT HT	Container, As Shown, UPL
PAM		Prunus americana	AMERICAN PLUM	5 FT, Clump	Container, As Shown, UPL
PVI		Prunus virginiana	NATIVE CHOKECHERRY	5 FT. Clump	Container, As Shown, FACU
<i>Shrubs</i>					
CMO		Cercocarpus montanus	MOUNTAIN MAHOGANY	5 GAL.	Container, As Shown
FPA		Fallugia paradoxa	APACHE PLUME	5 GAL.	Container, As Shown
KLA		Krascheninnikovia lantana	WINTERFAT	5 GAL.	Container, As Shown
PBE		Prunus besseyi	WESTERN SAND CHERRY	5 GAL.	Container, As Shown
PMO		Physocarpus monogynus	MOUNTAIN NINEBARK	5 GAL.	Container, As Shown, FACU
POP		Physocarpus opulifolius	COMMON NINEBARK	5 GAL.	Container, As Shown, FACU
QGA		Quercus gambelii	GAMBEL OAK	5 GAL.	Container, As Shown
RTR		Rhus trilobata	THREE-LEAF SUMAC	5 GAL.	Container, As Shown
RAU		Ribes aureum	GOLDEN CURRANT	5 GAL.	Container, As Shown, FACU
RWO		Rosa woodsii	WOODS' ROSE	5 GAL.	Container, As Shown, FACU
SAL		Symphoricarpos albus	COMMON SNOWBERRY	5 GAL.	Container, As Shown, UPL
SOC		Symphoricarpos occidentalis	WESTERN SNOWBERRY	5 GAL.	Container, As Shown, UPL

REFERENCE DRAWINGS

X-069-MDG22x34
X-069-EX-IMAGE

No.	DATE	DESCRIPTION	BY
REVISIONS			

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FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20,069.091

CITY OF COLORADO SPRINGS

COTTONWOOD CREEK CHANNEL REHABILITATION
PERMIT PLAN SET

REVEGETATION LISTS
SEED MIXES AND PLANTINGS

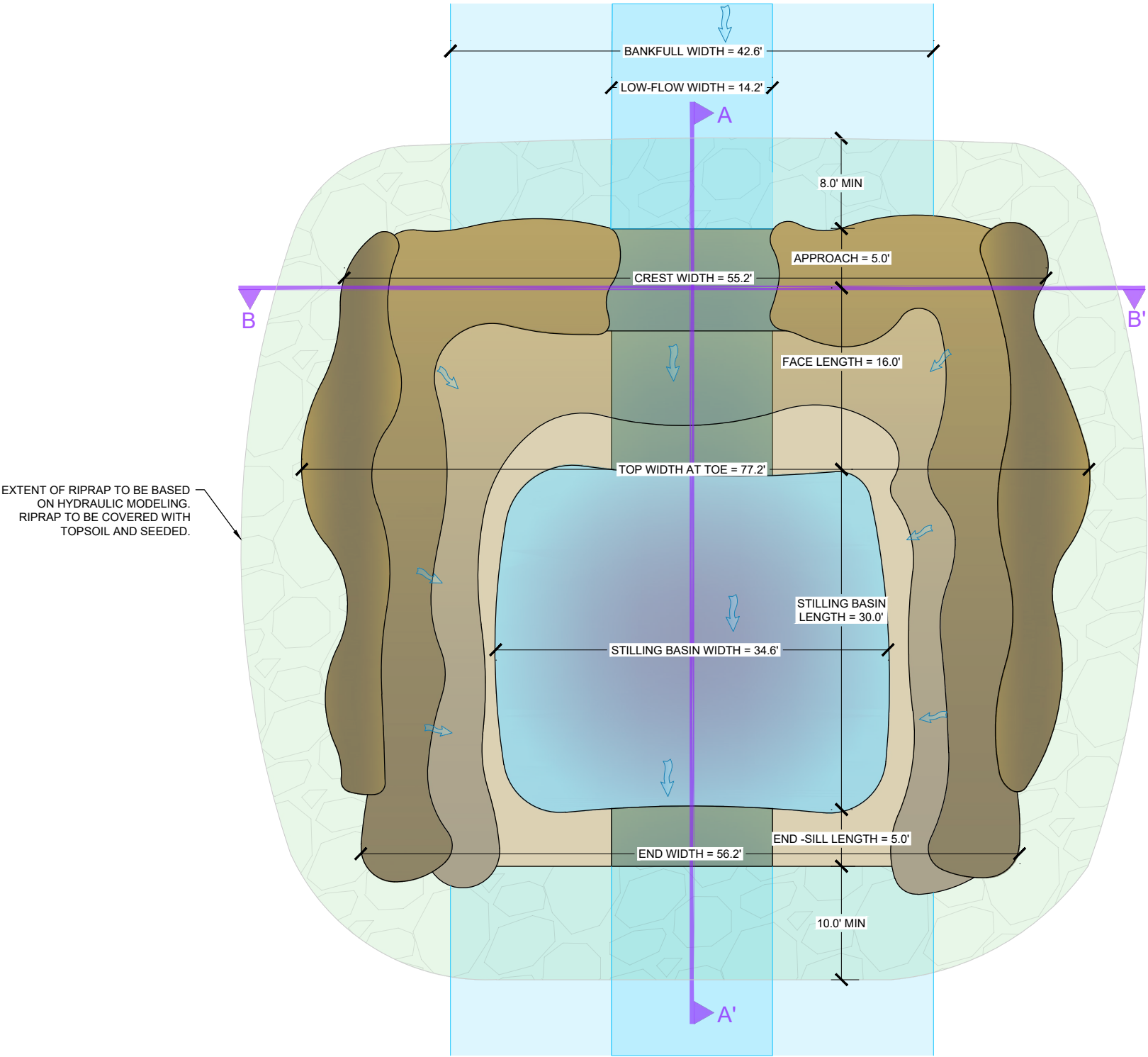
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DRAWN BY:	JDH	HORIZ	N/A		
CHECKED BY:	AJS	VERT.	N/A	SHEET 32 OF 37	RV03



NOT TO SCALE

NOTE: 3:1 VERTICAL
EXAGGERATION

[illegible]



- NOTE:
- 1. DIMENSIONS SHOWN ON DT02 AND DT03 ARE DESIGNED BASED ON A DROP HEIGHT OF 4.0'. ACTUAL DIMENSIONS WILL VARY BETWEEN STRUCTURES.
 - 2. THE STRUCTURE IS DESIGNED TO COMPLETELY CONTAIN THE 10-YEAR EVENT WITHIN THE HARDER ARMORING (E.G. SCULPTED CONCRETE).
 - 3. SOIL RIPRAP TO BE EXTENDED Laterally TO CONTAIN 100-YEAR EVENT (OR TO THE EXTENT OF NON-EROSIVE FORCES).

PLAN VIEW OF TYPICAL LARGE DROP - SCULPTED CONCRETE
NOT TO SCALE

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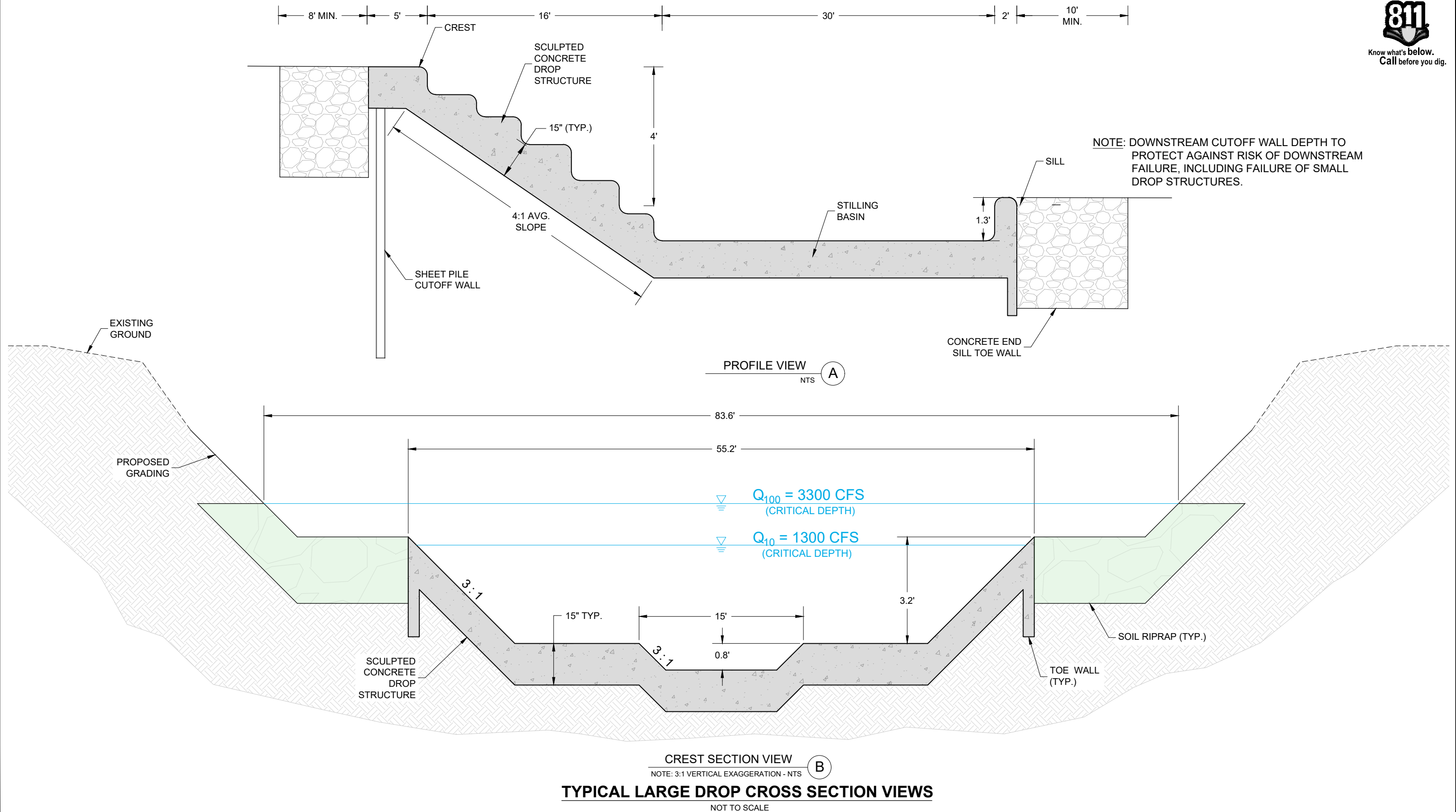


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PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS				
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET				
TYPICAL LARGE DROP STRUCTURE PLAN VIEW				
DESIGNED BY:	JAB	SCALE	DATE ISSUED:	DRAWING No.
DRAWN BY:	RAF	HORIZ.	January 2021	
CHECKED BY:	AJS	VERT.	34 OF 37	DT02



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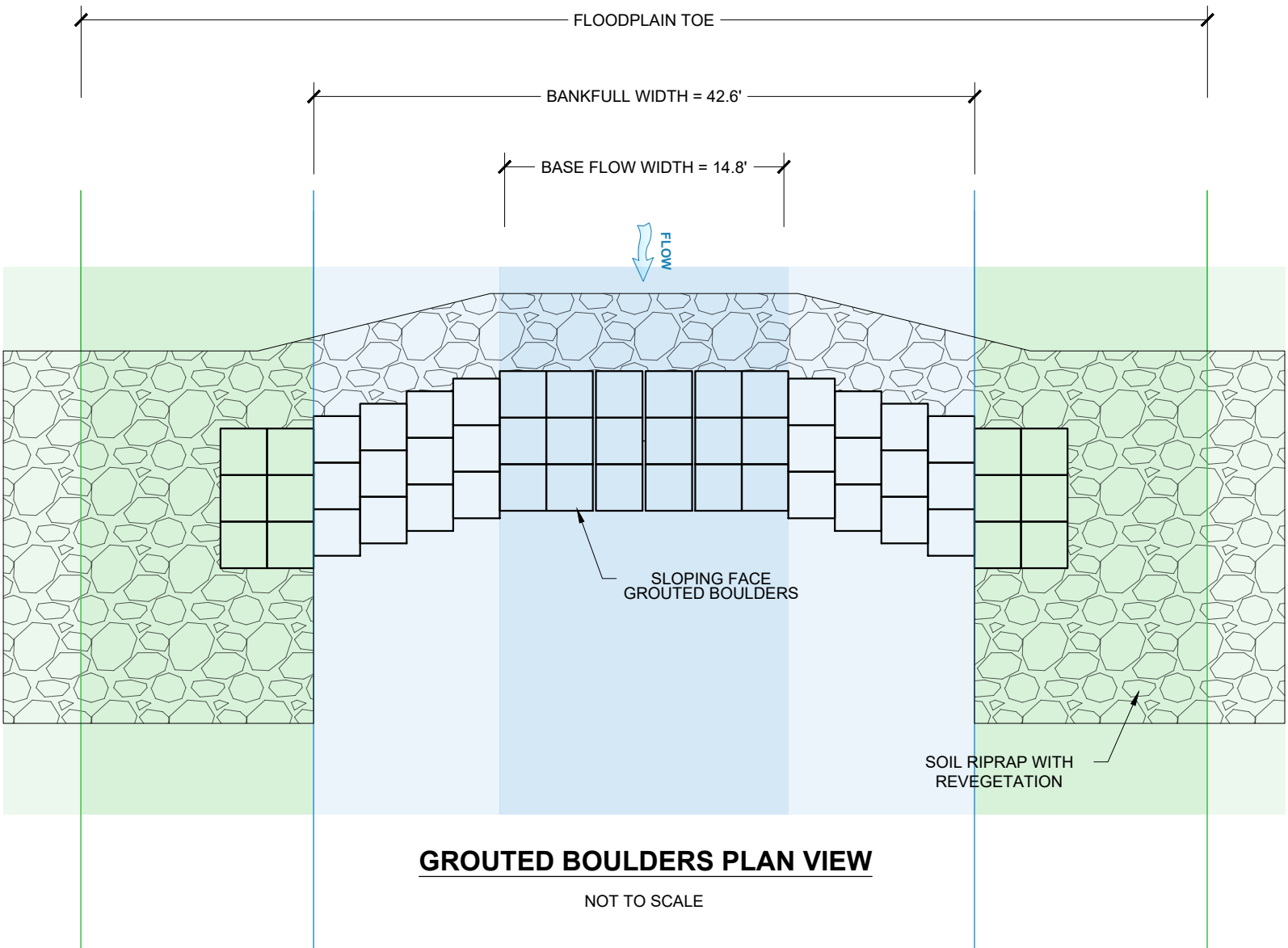
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MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS				
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET				
TYPICAL LARGE DROP STRUCTURE SECTION AND PROFILE VIEWS				
DESIGNED BY:	JAB	SCALE	DATE ISSUED:	January 2021
DRAWN BY:	RAF	HORIZ.	N/A	
CHECKED BY:	AJS	VERT.	N/A	
			SHEET	35 OF 37
			DRAWING No.	DT03

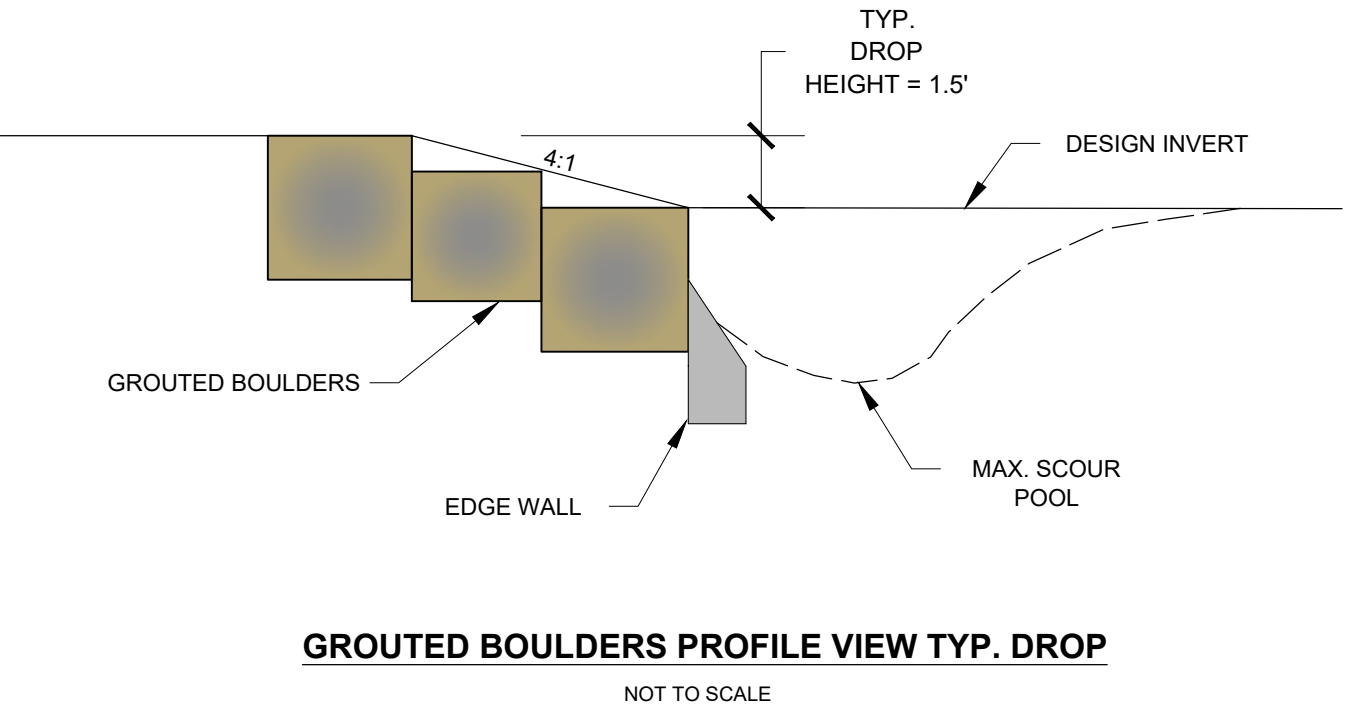


Know what's below.
Call before you dig.



NOTES:

- 1. DROP HEIGHT MAY VARY BETWEEN 1' AND 2' TO MATCH EXISTING CONSTRAINTS.
- 2. DROP STRUCTURE WOULD BE DESIGNED PER MILE HIGH DISTRICT CRITERIA FOR HYDRAULIC STRUCTURES.
- 3. MADE OF GROUTED BOULDERS.
- 4. OVBANKS STABILIZED THROUGH VEGETATION AND TRANSITIONAL SLOPE (E.G. 5%). SECONDARY PROTECTION PROVIDED BY BURIED SOIL RIPRAP OR CUTOFF SILL.



REFERENCE DRAWINGS X-069-MDG22X34				
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PREPARED BY:

Matrix
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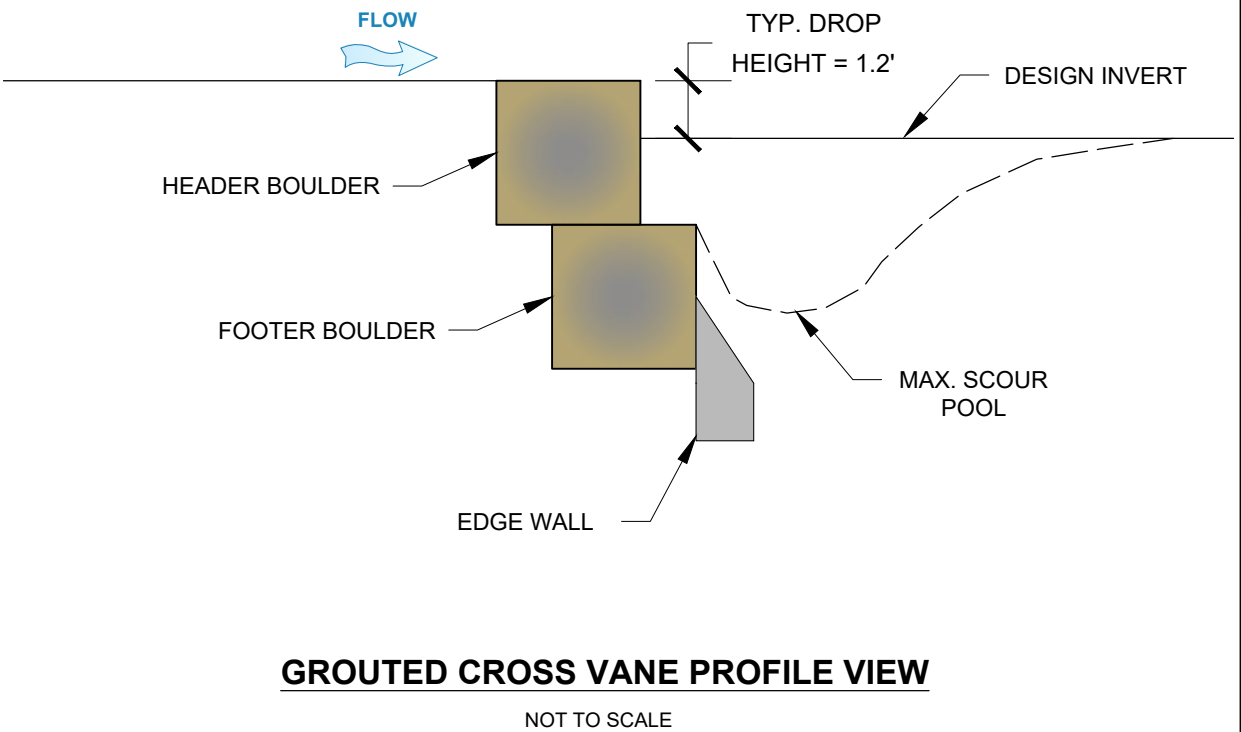
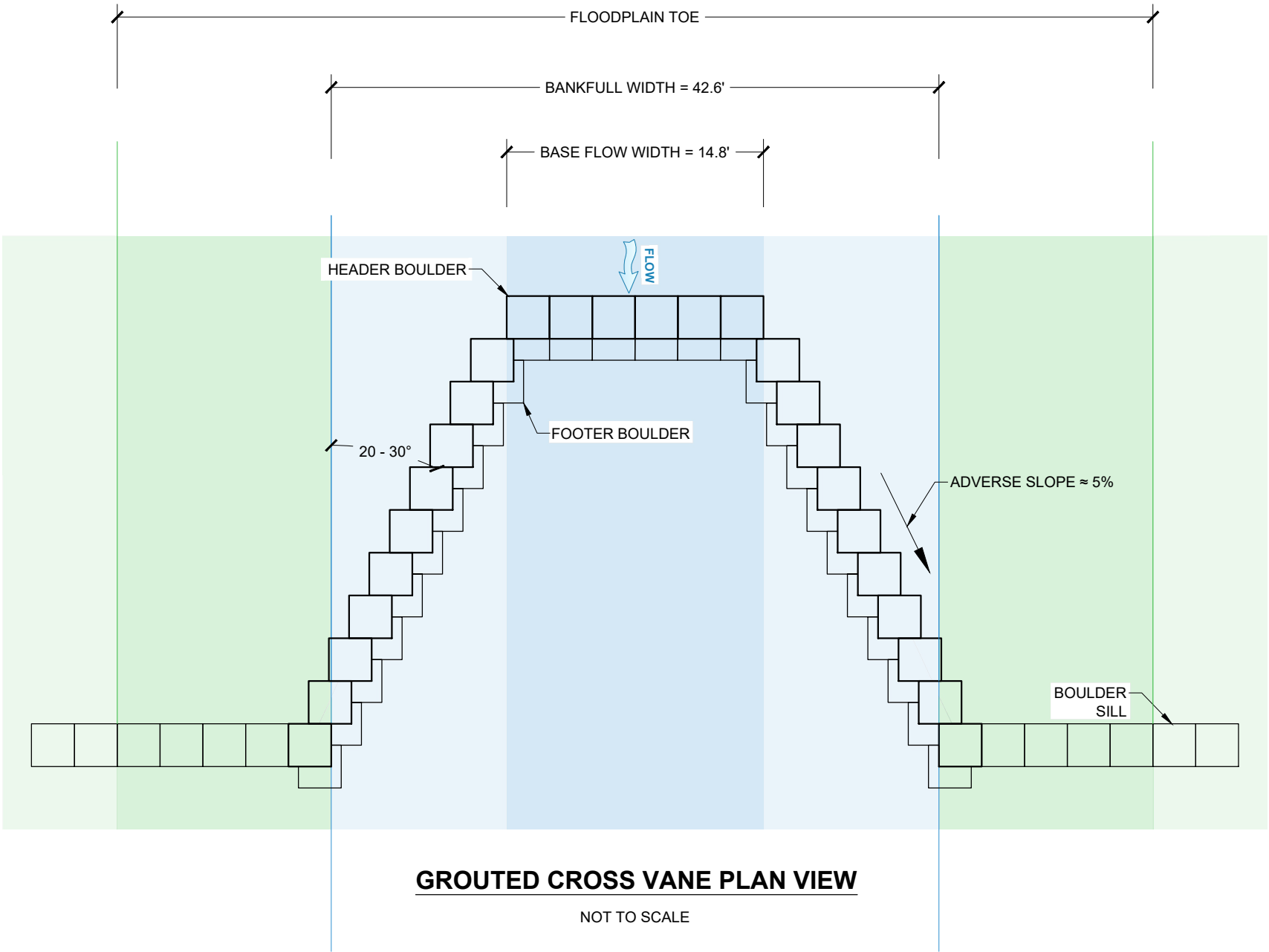
FOR AND ON BEHALF OF
MATRIX DESIGN GROUP, INC.
PROJECT No. 20.069.091

CITY OF COLORADO SPRINGS				
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET				
SMALL DROP OPTION 1 GROUTED BOULDERS AT 4:1				
DESIGNED BY: JAB	SCALE	DATE ISSUED: January 2021	DRAWING No. DT04	
DRAWN BY: RAF	HORIZ. N/A			
CHECKED BY: AJS	VERT. N/A	SHEET 36 OF 37		



NOTES:

- 1. CROSS VANE DROP HEIGHT TYPICALLY 1.0' TO 1.2'.
- 2. SILLS TIE INTO VALLEY WALLS TO PREVENT FLANKING.
- 3. BOULDERS ARE GROUTED TO PREVENT INDIVIDUAL BOULDER FAILURE AND PIPING.
- 4. VANES PROVIDE BANK PROTECTION IN BENDS: TYPICAL LENGTH IS 1 VANE LENGTH UPSTREAM OF CREST AND 2 LENGTHS DOWNSTREAM OF SILL.
- 4. OVERBANKS ARE STABILIZED THROUGH VEGETATION AND TRANSITIONAL SLOPE (E.G. 5%). SECONDARY PROTECTION PROVIDED BY BURIED SOIL RIPRAP OR BOULDER CUTOFF SILL.



REFERENCE DRAWINGS				
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			REVISIONS	
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CITY OF COLORADO SPRINGS			
COTTONWOOD CREEK CHANNEL REHABILITATION PERMIT PLAN SET			
SMALL DROP OPTION 2 GROUTED CROSS VANE			
DESIGNED BY: JAB	SCALE	DATE ISSUED: January 2021	DRAWING No.
DRAWN BY: RAF	HORIZ. N/A		
CHECKED BY: AUS	VERT. N/A	SHEET	37 OF 37
			DT05