

MIDDLE TRIBUTARY UPSTREAM OF I-25 CHANNEL RESTORATION

CONSTRUCTION PLANS

100% DESIGN - NOT FOR CONSTRUCTION
AUGUST, 2023

PROJECT DESCRIPTION

THE PURPOSE OF THE MIDDLE TRIBUTARY UPSTREAM OF I-25 CHANNEL RESTORATION PROJECT IS TO MITIGATE EXISTING CHANNEL INCISION AND CHANNEL BANK EROSION FOR THE PURPOSE OF RESTORING THE DEGRADED WETLAND HABITAT AND PREBBLES'S MEADOW JUMPING MOUSE HABITAT THAT HAS BEEN AFFECTED BY THESE CHANNEL CONDITIONS.

THE PROJECT INCLUDES 700 FEET OF FULL RESTORATION IN THE UPSTREAM REACH AND SELECTED LONG-TERM DEGRADATION PROJECT IN THE DOWNSTREAM REACH TO MAINTAIN THE EXISTING HABITAT, INCLUDING APPROXIMATELY 100 FEET OF HEADCUT RESTORATION.

VICINITY MAP



REVIEWED BY	
<u>CITY ENGINEER</u>	
BY: _____	DATE _____
<u>STORMWATER ENTERPRISE</u>	
BY: _____	DATE _____
<u>COLORADO SPRINGS UTILITIES</u>	
BY: _____	DATE _____
<u>COLORADO SPRINGS UTILITIES ELECTRIC</u>	
BY: _____	DATE _____
<u>UNITED STATES AIR FORCE ACADEMY</u> <u>10TH CIVIL ENGINEERING SQUADRON</u>	
BY: _____	DATE _____
<u>UNITED STATES AIR FORCE ACADEMY</u> <u>10TH CIVIL ENGINEERING SQUADRON</u>	
BY: _____	DATE _____

BID SET

OWNER INFORMAITON

CITY OF COLORADO SPRINGS
STORMWATER ENTERPRISE
30 S. NEVADA AVE, SUITE 401
COLORADO SPRINGS, CO 80903
719-385-5918



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
COVER

2021013002 1" = 100'
Project No. Horizontal Scale

Sheet 1 of 66

C:\Users\Matthew.Johnson\WaterVation Desktop\Projects\2021013002_Middle Tributary Upstream Of US Channel Restoration\1_CAD\Sheet_Rev100\GENERAL\GENERAL.dwg
2023/08/08 8:41 AM By: Matthew Johnson

Sheet List Table	
Sheet Number	Sheet Title
1	COVER
2	TABLE OF CONTENTS
3	NOTES
4	NOTES (2)
5	NOTES (3)
6	NOTES (4)
7	SOAQ
8	GEOTECHNICAL BORING (1)
9	GEOTECHNICAL BORING (2)
10	GEOTECHNICAL BORING (3)
11	OVERVIEW
12	ACCESS (1)
13	ACCESS (2)
14	PLANVIEW (1)
15	PLANVIEW (2)
16	PLANVIEW (3)
17	UPSTREAM PLAN & PROFILE (1)
18	UPSTREAM PLAN & PROFILE (2)
19	UPSTREAM PLAN & PROFILE (3)
20	DOWNSTREAM PLAN & PROFILE (1)
21	DOWNSTREAM PLAN & PROFILE (2)
22	DOWNSTREAM PLAN & PROFILE (3)
23	BOULDER VANE 1
24	BOULDER VANE 2
25	BOULDER VANE 3
26	DROP STRUCTURE 1
27	DROP STRUCTURE 2
28	SHEET PILE 1
29	SHEET PILE 2
30	SHEET PILE 3
31	CONCRETE TRAIL
32	TYPICAL SECTION
33	COBBLE RIFFLE
34	BOULDER RIFFLE
35	SOIL LIFT WITH ROCK TOE

36	RIPRAP BANK SECTION
37	RIFFLE SOIL LIFT SECTION
38	DROP STRUCTURE (1)
39	DROP STRUCTURE (2)
40	DROP STRUCTURE (3)
41	RIPRAP
42	SHEET PILE CAP
43	BOULDER RIFFLE SHEET PILE
44	REVEGETATION NOTES (1)
45	REVEGETATION NOTES (2)
46	REVEGETATION NOTES (3)
47	REVEGETATION NOTES (4)
48	REVEGETATION NOTES (5)
49	REVEGETATION NOTES (6)
50	REVEGETATION PLANTING PLAN (1)
51	REVEGETATION PLANTING PLAN (2)
52	REVEGETATION PLANTING PLAN (3)
53	REVEGETATION SEEDING PLAN (1)
54	REVEGETATION SEEDING PLAN (2)
55	REVEGETATION SEEDING PLAN (3)
56	SECTION SHEET - (1)
57	SECTION SHEET - (2)
58	SECTION SHEET - (3)
59	SECTION SHEET - (4)
60	SECTION SHEET - (5)
61	SECTION SHEET - (6)
62	SECTION SHEET - (7)
63	SECTION SHEET - (8)
64	SECTION SHEET - (9)
65	SECTION SHEET - (10)
66	SECTION SHEET - (11)

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
TABLE OF CONTENTS

2021013002 1" = 100'
Project No. Horizontal Scale

GENERAL NOTES:

1.

UNLESS OTHERWISE STATED, ALL COMPACTION SHALL BE PER SECTION 200 OF THE CITY SPECIFICATIONS.
2.

ANY EXCAVATION SHALL BE DEWATERED TO THE EXTENT REQUIRED FOR CONSTRUCTION OPERATIONS TO PROCEED UNDER DRY CONDITIONS. DIKES, CHANNELS, FLUMES, DRAINS, SUMPS, PUMPING EQUIPMENT, AND OTHER TEMPORARY DIVERSION AND PROTECTIVE WORKS SHALL BE CONSTRUCTED, FURNISHED, INSTALLED, OPERATED, AND MAINTAINED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. ALL COSTS TO OBTAIN REQUIRED DEWATERING AND DISCHARGE PERMITS SHALL BE INCLUDED IN THE WORK.
3.

WATER SHALL BE USED AS A DUST CONTROL WHERE REQUIRED. THIS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.
4.

UNDER NO CIRCUMSTANCES WILL ANY EXCESS MATERIAL BE DISPOSED OF IN WETLANDS OR WATERWAYS. REMOVED ASPHALT WILL NOT BE DISPOSED OF IN ANY MANNER THAT WOULD ALLOW THIS MATERIAL TO COME IN CONTACT WITH GROUND WATER. THE CONTRACTOR SHALL SUBMIT A DISPOSAL PLAN TO THE ENGINEER FOR APPROVAL.
5.

THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AND TOES OF SLOPES AS SHOWN IN THE PLANS AND CROSS-SECTIONS. ANY DISTURBANCE BEYOND THESE LIMITS SHALL BE RESTORED TO THE ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. CONSTRUCTION ACTIVITIES, IN ADDITION TO THE NORMAL CONSTRUCTION PROCEDURES, SHALL INCLUDE VEHICLE AND EQUIPMENT PARKING, DISPOSAL OF LITTER, AND ANY OTHER ACTIVITY WHICH WOULD ALTER EXISTING CONDITIONS.
6.

UNLESS OTHERWISE SPECIFIED, REMOVALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVALS SHALL BE DISPOSED OF OUTSIDE OF THE PROJECT LIMITS, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
7.

THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
8.

THE CONTRACTOR SHALL MAINTAIN DRAINAGE DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE REPAIR OF DAMAGES RESULTING FROM DRAINAGE AND RUNOFF IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND COST SHALL BE INCLUDED IN THE WORK.
9.

THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF THE WORK. ANY CONCRETE SUFFERING DAMAGE SUCH AS GRAFFITI, TACK COAT SPRAY, FOOTPRINTS, RAIN DAMAGE, ETC. WILL BE REMOVED AND REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S COST PRIOR TO FINAL ACCEPTANCE PAYMENT. IF ANY CONCRETE MUST BE REPLACED BECAUSE OF RAVELING AT THE JOINTS, RANDOM CRACKING, FOOTPRINTS, GRAFFITI, ETC. THE ENTIRE SLAB OR STONE MUST BE REPLACED AT THE CONTRACTOR'S EXPENSE.
10.

THE CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION DESIGNATED TO REMAIN FROM DAMAGE DURING CONSTRUCTION OPERATIONS. ANY MONUMENTS DISTURBED BY THE CONTRACTOR THAT ARE NOT DESIGNATED FOR RELOCATION SHALL BE RESET AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR AND ENGINEER SHALL NOTE THOSE MONUMENTS IN THE FIELD PRIOR TO CONSTRUCTION.
11.

THE CONTRACTOR WILL BE RESPONSIBLE FOR PLACING TRAFFIC CONTROL DEVICES SO THAT THE WORK ZONES ARE IN FULL COMPLIANCE WITH THE MUTCD, AND CITY STANDARDS.
12.

CONTRACTOR TO LOCATE ALL UTILITIES HORIZONTALLY AND VERTICALLY AND NOTIFY ENGINEER TO ADDRESS ANY CONFLICTS.
13.

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN DAILY ON-SITE GPS SURVEY CONTROL.
14.

BANKFULL CHANNEL EXTENTS SHOWN ON THE PLAN SHEETS ARE FOR GENERAL REPRESENTATION ONLY. BANKFULL CHANNEL SHALL BE CONSTRUCTED ACCORDING TO THE GRADING PLAN, CROSS-SECTION, AND PROFILE.
15.

CONSTRUCTION TOLERANCES:

15.1.

HORIZONTAL = PER PLAN

15.2.

VERTICAL = 0.10 FEET (ALL STRUCTURES & WITHIN BANKFULL CHANNEL)

15.3.

VERTICAL = 0.20 FEET (FLOODPLAIN GRADING)
16.

DESIGN FLOWS:

16.1.

RIFFLE SELECT MATERIAL DESIGNED FOR 10-YEAR EVENT (237 CFS)

16.2.

BOULDER DROP STRUCTURE DESIGNED FOR 100-YEAR EVENT (792 CFS)

16.3.

BOULDER VANE STRUCTURES DESIGNED FOR 100-YEAR EVENT (792 CFS)
17.

CHANGES TO THESE DESIGN PLANS SHALL NOT BE ALLOWED UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER RESPONSIBLE FOR SIGNING AND SEALING THESE PLANS.

LEGEND:



BOULDER RIFFLE (SEE DETAIL)



BURIED BOULDER



EXPOSED BOULDER



SOIL RIPRAP



SOIL LIFT WITH ROCK TOE (SEE DETAIL)



RIFFLE (SEE DETAIL)



RIPRAP BANK (SEE DETAIL)



NEDIA KOIR MAT 900 EROSION CONTROL BLANKET




PMJM HIGH QUALITY HABITAT



PMJM UPLAND HABITAT



EXISTING SANITARY SEWER UTILITY



EXISTING GAS UTILITY



EXISTING ELECTRIC UTILITY



SHEET PILE



BANKFULL CHANNEL



EXISTING GROUND



PROPOSED THALWEG



EXISTING CONTOUR



PROPOSED CONTOUR



LIMITS OF DISTURBANCE

ACCESS CONTACTS:

ORACLE	JOHN CORNELLA	JOHN.CORNELLA@ORACLE.COM	719-491-3843
--------	---------------	--------------------------	--------------

UTILITY CONTACTS:

CITY OF COLORADO SPRINGS TRAFFIC (FIBER OPTIC)	ROB HELT	719-385-7603
COLORADO SPRINGS UTILITIES (CSU)	JASON MESSAMER	719-668-4170
WATER AND WASTE WATER	AJ WERTZ	719-668-5586
GAS	TIM WENDT	719-668-4962
ELECTRIC	TIM WENDT	719-668-4962
USAFA	BRIAN MIHLBACHLER	719-333-3308

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

NOTES

2021013002 #####

Project No. Horizontal Scale

NOTES FOR WORK ON USAFA PROPERTY

LEGEND:

- PMJM HIGH QUALITY HABITAT
- PMJM MEDIUM QUALITY HABITAT
- PMJM UPLAND HABITAT

GENERAL NOTES: (Rev:2022MAY20)

- EXISTING UTILITY LINES ARE PRESENT IN THE PROJECT AREA, INCLUDING BUT NOT LIMITED TO: TELECOM, GAS, ELECTRIC, WATER, AND SANITARY SEWER. EXISTING UTILITIES HAVE NOT BEEN POTHOLED OR SURVEYED, AND HAVE BEEN SHOWN ON THESE DRAWINGS BASED ON CAD INFORMATION PROVIDED BY USAFA. IT IS ASSUMED THAT UTILITIES EXIST IN THE PROJECT AREA IN ADDITION TO WHAT IS SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND EQUIPMENT PRIOR TO EXCAVATION.
- CONTRACTOR SHALL OBTAIN AN APPROVED EXCAVATION PERMIT (AF FORM 103) FROM THE 10th CIVIL ENGINEER SQUADRON (CES) PRIOR TO ANY TRENCHING, EXCAVATION, OR EARTHWORK. URGENT REPAIR EXCAVATION PERMITS MUST BE REQUESTED BEFORE BEGINNING WORK. COORDINATE THE PERMIT REQUEST THROUGH THE 10 CES CONSTRUCTION MANAGER. COORDINATE WITH THE 10 CES CONSTRUCTION MANAGER TO SCHEDULE UTILITY LOCATES PRIOR TO DIGGING.
- THE AREA OF WORK FOR THIS PROJECT IS SHOWN ON THE PLANS. CONTRACTOR IS TO LIMIT ALL CONSTRUCTION ACTIVITIES AND DISTURBANCES TO THIS AREA.
- IN THE EVENT THAT AN EXISTING UTILITY LINE IS DISCOVERED, AND IS NOT IDENTIFIED ON THE DRAWINGS, THE CONTRACTOR SHALL SURVEY THE SAID UTILITY AND NOTIFY THE GIS DEPARTMENT (719-459-4553) TO BE RECORDED INTO THE AFA GIS MAPPING SYSTEM.
- THE AIRFIELD MANAGER (AFM) WILL ESTABLISH HAUL ROUTES TO AND FROM THE CONSTRUCTION SITES. THE CONTRACTOR SHALL MAINTAIN ALL HAUL ROUTES CLEAR OF FOREIGN OBJECT DEBRIS (FOD) AT ALL TIMES. AT NO TIME WILL THE CONTRACTOR OPERATE OR PARK ANY EQUIPMENT ON THE ACTIVE AIRFIELD OPERATIONAL AREA. EQUIPMENT PARKING AND LAYDOWN AREA MUST BE APPROVED BY THE AFM.

FIRE PROTECTION NOTES:

- ANY WELDING, CUTTING, BRAZING, SOLDERING OR OPEN FLAME MUST HAVE A BURN PERMIT ISSUED FOR THE SPECIFIC WORK AREA WHICH WORK IS TO BE PERFORMED. CONTACT PERSONNEL AT FIRE STATION #3 AT 719-333-4433.
- FIRE EXTINGUISHERS MUST BE KEPT ON HAND AROUND HEAT PRODUCING EQUIPMENT AT ALL TIMES.
- FLAMMABLE AND COMBUSTIBLE MATERIAL MUST BE STORED SAFELY WHEN NOT IN USE AND DURING OPEN FLAME OPERATIONS.
- WORK SITE MUST BE KEPT NEAT, ALL DEBRIS HAULED AWAY FROM THE SITE ON A DAILY BASIS OR MORE FREQUENTLY AS NEEDED.
- SMOKING IS NOT ALLOWED IN OR AROUND THE WORK SITE. COORDINATE A DESIGNATED SMOKING AREA AS NECESSARY.
- ALL EMERGENCY REPORTING ON THE ACADEMY: DIAL 911.
- CONTACT 719-333-2051 FOR ASSISTANCE.

BID SET

ADDITIONAL NOTES:

- USAFA UTILITY LOCATE REQUESTS AND DIG PERMITS MUST BE COORDINATED WITH 10 CES/PRODUCTION CONTROL AT (719) 333-2790.
- SHOULD ANY POTENTIAL CULTURAL MATERIALS BE ENCOUNTERED (BONES, POTTERY, GLASS, METAL ITEMS, ETC.), THE CONTRACTOR AND USAFA WILL FOLLOW THE STANDARD OPERATING PROCEDURES FOR DISCOVERIES OF ARCHEOLOGICAL RESOURCES AND NAGPRA ITEMS AS PUBLISHED IN THE 2019 INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN. ALL WORK SHOULD STOP, AND IMMEDIATELY CONTACT THE USAFA CULTURAL RESOURCES MANAGER, ERWIN ROEMER, AT (719) 333-7341 OR ERWIN.ROEMER@US.AF.MIL
- WORK IS OCCURRING WITH THE HABITAT OF THE FEDERALLY-THREATENED PREBLE'S MEADOW JUMPING MOUSE. TO PREVENT INADVERTENT IMPACTS TO HABITAT OR THE MOUSE, THE CONTRACTOR SHALL
 - RECEIVE A BRIEFING FROM USAFA NATURAL RESOURCES AT THE PRE-CONSTRUCTION KICK-OFF MEETING
 - BE SUPERVISED BY USAFA NATURAL RESOURCES DURING CONSTRUCTION
 - FENCE OR OTHERWISE DELINEATE THE APPROVED LIMITS OF DISTURBANCE
 - CONTACT USAFA NATURAL RESOURCES AT (719) 333-3308 IF A DEAD, INJURED, OR HIBERNATING MOUSE IS ENCOUNTERED DURING CONSTRUCTION.



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

USAFA NOTES

2021013002

Project No.

1" = 100'

Horizontal Scale

NOTES FOR WORK ON USAFA PROPERTY

ENVIRONMENTAL NOTES: (Rev:2020JULY06)

- THE CONTRACTOR SHALL HEED THE USAFA ENVIRONMENTAL STANDARDS. CONTACT 10 CES/CEIEC AT 719.333.5826 FOR THE MOST CURRENT VERSION.
- GREEN PROCUREMENT - THE CONTRACTOR, 10 DAYS PRIOR TO CONSTRUCTION START, SHALL SUBMIT A GREEN PROCUREMENT PROGRAM (GPP) REPORT TO THE 10 CES/CEIEC GPP MANAGER AT 719.333.5826. THE CONTRACTOR SHALL COMPLY WITH THE EPA'S COMPREHENSIVE PROCUREMENT GUIDELINES REGARDING THE PURCHASE OF EPA DESIGNATED PRODUCTS.
- SOLID WASTE - THE CONTRACTOR, ON A MONTHLY BASIS AND WITHIN 10 DAYS FROM PROJECT COMPLETION, SHALL SUBMIT A SOLID WASTE REPORT TO THE 10 CES/CEIEC SOLID WASTE MANAGER AT 719.333.5826. THE REPORT MUST INCLUDE WEIGHT CONSTRUCTION DEBRIS DISPOSED AND RECYCLED, ITEMIZED.
- AIR QUALITY - CONTRACTORS SHALL REMAIN IN COMPLIANCE WITH ALL FEDERAL, STATE, LOCAL, DOD AND AIR FORCE AIR QUALITY REQUIREMENTS. CONTRACTORS SHALL FULLY COMPLY WITH THE CONDITIONS OF ALL APPLICABLE COLORADO AIR POLLUTION PREVENTION AND CONTROL ACT AND REGULATIONS AS IDENTIFIED IN 5 CCR 1001: REGULATIONS 1-19.

FOR PROJECTS DISTURBING MORE THAN ONE ACRE, BUT LESS THAN 25 ACRES, FOR LESS THAN SIX MONTHS DURATION, CONTRACTORS SHALL SUBMIT A PERMIT APPLICATION TO EL PASO COUNTY WITH COPIES SUBMITTED TO 10 CES/CEIEC. FOR PROJECTS DISTURBING MORE THAN 25 ACRES, OR DISTURBING AN AREA OF ANY SIZE FOR A DURATION LONGER THAN SIX MONTHS, THE CONTRACTOR SHALL SUBMIT AN AIR POLLUTION EMISSION NOTICE (APEN) ALONG WITH ASSOCIATED FEES TO THE STATE. A COPY OF THE APEN WILL BE SUBMITTED TO 10 CES/CEIEC, AIR QUALITY MANAGER AT 719.333.5826.

ANY EQUIPMENT OR ACTIVITY THAT EMITS OR HAS THE POTENTIAL TO EMIT POLLUTANTS OR THAT DISTURBS SOLID OR LIQUID MATERIALS, WHICH CAN BECOME AIRBORNE, IS A SOURCE OF AIR POLLUTION THAT MAY REQUIRE A PERMIT. ACTIVITIES WITH ANTICIPATED AIR EMISSIONS INCLUDE BUT ARE NOT LIMITED TO PAINTING, STRIPPING, CLEANING WITH DEGREASERS OR SOLVENTS, MATERIAL HAULING, DEMOLITION, SAND BLASTING, USE OF FUEL-BURNING EQUIPMENT (OTHER THAN MOTOR VEHICLES), WELDING, USE OF VOLATILE ORGANIC COMPOUNDS OR OZONE-DEPLETING CHEMICALS (ODCS), AND REMEDIATION ACTIVITIES. CONTRACTORS SHALL OBTAIN APPROVAL FOR USE OF HAZARDOUS MATERIALS AS IDENTIFIED IN ITEM 5 HAZARDOUS MATERIALS.

IF AIR EMISSION ESTIMATES FOR CRITERIA OR HAZARDOUS AIR POLLUTANTS (HAPS) EXCEEDS THRESHOLD LEVELS (AS DEFINED BY 5 CCR 1001-5: REGULATION NO. 3) THE CONTRACTOR SHALL COMPLETE AN APEN AND/OR CONSTRUCTION PERMIT APPLICATIONS REQUIRED BY CDPHE, AIR POLLUTION CONTROL DIVISION (APCD). CONTRACTORS SHALL SUBMIT THE COMPLETED APEN(S) AND/OR CONSTRUCTION PERMIT APPLICATION(S) TO CDPHE AND PROVIDE A COPY TO 10 CES/CEIEC, AIR QUALITY MANAGER AT 719.333.5826.

CONTRACTORS SHALL ENSURE ALL COMPANY-OWNED AND EMPLOYEE OWNED GASOLINE AND DIESEL VEHICLES WHICH SHALL BE DRIVEN ON USAFA COMPLY WITH THE EMISSIONS INSPECTION REQUIREMENTS OF CDPHE 5 CCR 1001-13: REGULATION NO. 11 (MOTOR VEHICLE EMISSIONS INSPECTION PROGRAM) AND 5 CCR 1001-15: REGULATION NO. 12 (REDUCTION OF DIESEL VEHICLE EMISSIONS).

OPEN BURNING ON USAFA IS PROHIBITED.

CONTRACTORS SHALL CREATE NO NOXIOUS ODORS THAT VIOLATE COLORADO'S ODOR EMISSIONS REGULATION (5 CCR 1001-4: REGULATION NO. 2).

CONTRACTORS SHALL ENSURE ANY EQUIPMENT CONTAINING OZONE-DEPLETING COMPOUNDS (ODC) ARE OPERATED AND MAINTAINED IN ACCORDANCE WITH COLORADO'S CONTROL OF EMISSION OF (ODC) REQUIREMENTS (5 CCR 1001-19: REGULATION NO.15). ALL CONTRACTORS AND SUBCONTRACTOR EMPLOYEES SERVICING ODC CONTAINING EQUIPMENT SHALL BE TRAINED AND EPA CERTIFIED IN ACCORDANCE WITH CDPHE AIR QUALITY REGULATION NO. 15. CONTRACTORS MUST SUBMIT COPIES OF TECHNICIAN AND EQUIPMENT CERTIFICATIONS TO 10 CES/CEIEC PRIOR TO START OF WORK AT 719.333.5826. ALL CLASS I ODC USE IS PROHIBITED. ANY REQUESTS FOR USE OF CLASS II ODC MUST BE SUBMITTED IN WRITING TO THE CO FOR REVIEW AND APPROVAL, OTHERWISE, THE USE OF CLASS II ODS IS PROHIBITED.

CONTRACTORS SHALL TAKE ACTIVE STEPS TO PREVENT EVAPORATION OF ALL SOLID OR LIQUID MATERIALS THAT HAVE POTENTIAL TO BECOME AIRBORNE INCLUDING BUT NOT LIMITED TO FUELS, SOLVENTS, PAINTS, AND OTHER VOLATILE CHEMICALS UNDER THE CONTRACTOR'S CONTROL. ALL CONTAINERS HOLDING SOLID OR LIQUID MATERIALS THAT HAVE POTENTIAL TO BECOME AIRBORNE SHALL BE CLOSED AT ALL TIMES.

WHEN A FUGITIVE PARTICULATE CONTROL PLAN IS NOT REQUIRED BY 5 CCR 1001-3: REGULATION NO. 1, CONTRACTORS SHALL PERFORM ALL FUGITIVE PARTICULATE CONTROL MEASURES NECESSARY TO PREVENT EMISSIONS OF OVER 20 PERCENT OPACITY OR VISIBLE EMISSIONS THAT CROSS USAFA'S PROPERTY BOUNDARIES. CONTRACTORS SHALL MAINTAIN A DAILY LOG OF FUGITIVE PARTICULATE EMISSIONS THAT EXCEED 20 PERCENT OPACITY OR THAT CAUSE VISIBLE EMISSIONS. CONTRACTORS SHALL MAINTAIN A COPY OF THIS LOG ON SITE AT ALL TIMES AND SHALL MAKE IT AVAILABLE FOR REVIEW BY 10 CES/CEIEC, AIR QUALITY MANAGER UPON REQUEST.

CONTRACTORS SHALL NOT UTILIZE CUTBACK ASPHALT OR ANY COATING INCLUDED IN THE DEFINITION OF CUTBACK ASPHALT AS DEFINED AT 5 CCR 1001-9: REGULATION NO. 7 DURING THE MONTHS OF MARCH THROUGH SEPTEMBER UNLESS THE CUTBACK ASPHALT IS USED SOLELY AS A PENETRATING PRIME COAT; OR IF THE USER CAN DEMONSTRATE TO CDPHE APCD THAT UNDER THE CONDITIONS OF ITS INTENDED USE THAT THERE WILL BE NO EMISSIONS OF VOLATILE ORGANIC COMPOUNDS TO THE AMBIENT AIR. ALL INFORMATION CONCERNING SUCH WILL BE SENT TO 10 CES/CEIEC, AIR QUALITY MANAGER AT 719.333.5826.

CONTRACTORS SHALL NOT APPLY SAND OR GRAVEL TO USAFA ROADS WITHOUT OBTAINING PRIOR WRITTEN APPROVAL FROM 10 CES/CEIEC, AIR QUALITY MANAGER 719.333.5826.

CONTRACTORS SHALL PROPERLY RE-VEGETATE ALL DISTURBED LAND TO PREVENT FUGITIVE PARTICULATE EMISSIONS FOLLOWING THE COMPLETION OF WORK.

- WATER QUALITY - CONSTRUCTION STORM WATER, IF GREATER THAN OR EQUAL TO ONE (1) ACRE OF LAND DISTURBANCE IS CREATED. A STORM WATER CONSTRUCTION ELECTRONIC NOTICE OF INTENT (ENOI) IS REQUIRED TO BE FILED BY THE CONTRACTOR. IF AN ENOI IS REQUIRED, THE CONTRACTOR IS REQUIRED TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PRIOR TO SUBMITTING THE ENOI. THE SWPPP SHALL COMPLY WITH ALL PROVISIONS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR DISCHARGES FROM CONSTRUCTION ATIVITIES, GENERAL PERMIT NO. COR12000F. PLEASE REFER TO THE USAFA AND CONTRACTOR STORM WATER PERMITTING GUIDANCE DOCUMENT FOR INSTRUCTION. THE SWPPP MUST BE APPROVED BY THE 10 CES/CEIEC WATER QUALITY MANAGER PRIOR TO ENOI FILING. THE ENOI REQUIRES INFORMATION PROVIDED BY 10 CES/CEIEC TO THE CONTRACTOR. A COPY OF THE APPROVED, FINAL AND SIGNED SWPPP SHALL BE PROVIDED TO THE 10 CES/CEIEC WATER QUALITY MANAGER. THE STORM WATER PERMITTING PROCESS IS REQUIRED TO BE COMPLETED PRIOR TO CONSTRUCTION COMMENCEMENT. THE EPA ENOI APPROVAL PROCESS IS, AT A MINIMUM, A 14-DAY PROCESS AND WORK CANNOT BEGIN UNTIL FINAL APPROVAL IS RECEIVED. CONTRACTORS ARE URGED TO SUBMIT THE SWPPP TO THE USAFA CONTRACTING OFFICE OR 10 CES/CEIEC 30 DAYS PRIOR TO GROUND-BREAKING.

IF INITIALLY THE CONTRACTOR DETERMINES THAT LESS THAN ONE (1) ACRE IS PROPOSED TO BE DISTURBED, AND THE DISTURBANCE IS ACTUALLY GREATER THAN OR EQUAL TO ONE (1) ACRE DURING CONSTRUCTION, THE PROCESS NOTED IN THE ABOVE PARAGRAPH MUST BE COMPLETED IMMEDIATELY. THE PROJECT MAY BE TEMPORARILY HALTED UNTIL THE CONTRACTOR AND USAFA SECURE THE STORM WATER PERMIT COVERAGE. IF THE CONTRACTOR EQUALS OR EXCEEDS THE ONE (1) ACRE DISTURBANCE THRESHOLD DURING CONSTRUCTION WITHOUT REGULATORY AUTHORIZATION, THE CONTRACTOR IS RESPONSIBLE FOR ANY PROJECT DELAY COSTS. UPON PROJECT COMPLETION, AN ELECTRONIC NOTICE OF TERMINATION (ENOT) WITH THE STORM WATER GENERAL PERMIT IS REQUIRED TO BE FILED. THE ENOT IS REQUIRED TO BE APPROVED BY THE 10 CES/CEIEC WATER QUALITY MANAGER.

LAND DISTURBANCE INCLUDES GRUBBING, CLEARING, EXCAVATION, GRADING, STOCKPILING, MAINTENANCE YARDS, AND OTHER AREAS CREATING GROUND DISRUPTION IN WHERE VEGETATION IS REMOVED OR SIGNIFICANTLY IMPACTED. IF PROPOSED LAND DISTURBANCE IS LESS THAN ONE (1) ACRE, THE CONTRACTOR IS REQUIRED TO IMPLEMENT STORM WATER BEST MANAGEMENT PRACTICES (BMPS) WITHOUT FILING AN ENOI AND RELATED SWPPP. REFER TO THE 10 CES/CEIEC ENVIRONMENTAL STANDARDS FOR MORE GUIDANCE. PLEASE CONTACT THE 10 CES/CEIEC WATER QUALITY MANAGER AT 719-459-4548 TO DISCUSS STORM WATER PERMITTING REQUIREMENTS.

70% VEGETATIVE COVER IS REQUIRED TO BE ESTABLISHED BEFORE A NOT CAN BE APPROVED BY WATER QUALITY MANAGER.

REFERENCE UNITED STATES AIR FORCE ACADEMY STANDARD SECTION 01351

IF THE PROPOSED ACTIVITIES IMPACT WATERS OF THE US BY FILLING ACTIVITY, NATIONWIDE AUTHORIZATION OR AN INDIVIDUAL PERMIT IS REQUIRED TO BE APPROVED BY THE US ARMY CORPS OF ENGINEERS (USACE). UPON ADEQUATE PROJECT DESCRIPTION, THE 10 CES/CEIEC WATER QUALITY MANAGER OR CONTRACTOR WILL PREPARE AND SUBMIT THE APPROPRIATE USACE AUTHORIZATION/PERMITTING APPLICATIONS. THE PERMIT APPLICATION IS REQUIRED PRIOR TO START OF CONSTRUCTION. ANY QUESTIONS REGARDING WHAT CONSTITUTES "WATERS OF THE US," SHALL BE DIRECTED TO THE 10 CES/CEIEC WATER QUALITY MANAGER.

IF WASTE WATER IS GENERATED BY THE PROJECT OR CONSTRUCTION ACTIVITY, THE 10 CES/CEIEC WATER QUALITY MANAGER SHALL BE NOTIFIED PRIOR TO DISPOSAL OR DISCHARGE. NON-STORM WATER DISCHARGES ARE PROHIBITED FROM BEING DISCHARGED TO THE USAFA STORM WATER SYSTEM. DISCHARGES TO THE USAFA WASTE WATER TREATMENT PLANT (WWTP) REQUIRE PRE-AUTHORIZATION BY 10 CES/CEIEC AND/OR THE WWTP MANAGER. PLEASE CONTACT THE 10 CES/CEIEC WATER QUALITY MANAGER IF THE PROJECT GENERATES WASTE WATER.

- HAZARDOUS WASTE - IF HAZARDOUS WASTES ARE TO BE GENERATED BY CONSTRUCTION, THE 10 CES/CEIEC HAZARDOUS WASTE MANAGER SHALL BE CONTACTED AT 719.333.5826 PRIOR TO GENERATION.

THE CONTRACTOR SHALL OBTAIN APPROVAL FOR A WRITTEN SPILL PREVENTION RELEASE PLAN (SPRP) PRIOR TO CONSTRUCTION START. PLAN SHALL BE SUBMITTED TO THE 10 CES/CEIEC HAZARDOUS MATERIAL AND HAZARDOUS WASTE MANAGER AT 719.333.5826.

- SPILL PREVENTION CONTROLS AND COUNTERMEASURES (SPCC) - ANY CONTRACTOR STORING OIL, AS DEFINED BY 40 CFR 112.2, IN CONTAINERS WITH A CAPACITY OF 55 GALLONS OR MORE, SHALL SUBMIT AN INVENTORY OF THE CONTAINERS FOR APPROVAL TO THE 10 CES/CEIEC POLS MANAGER AT 719.333.6425. IF A CONTRACTOR'S AGGREGATE OIL STORAGE CAPACITY IS 1,320 GALLONS OR GREATER, AN SPCC PLAN SHALL BE PREPARED ACCORDING TO THE REQUIREMENTS OF 40 CFR 112 AND A COPY SHALL BE PROVIDED TO THE SPCC COORDINATOR.

- STORAGE TANKS - NO CONTRACTOR IS AUTHORIZED TO USE OR STORE STORAGE TANKS ON USAFA WITHOUT PERMISSION FROM USAFA. PLEASE CONTACT 10 CES/CEIEC AT 719.333.5826 IF THE PROJECT REQUIRES THE USE OF STORAGE TANKS.

- PERMITTING - ALL REGULATORY PERMITTING AND AUTHORIZATION ASSUMPTIONS ARE BASED ON DETAILS PROVIDED IN THE DESIGN ANALYSIS DOCUMENTS AND DRAWINGS SUBMITTED. ANY FIELD CHANGES IN PROJECT SCOPE, DESIGN, OR CONSTRUCTION EXECUTION MAY REQUIRE ADDITIONAL REGULATORY PERMITTING OR AUTHORIZATIONS. PLEASE CONTACT 10 CES/CEIEC IMMEDIATELY IF CHANGES TO THE PROJECT ARE IMPLEMENTED.

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
USAFA NOTES (2)

2021013002 1" = 100'
Project No. Horizontal Scale

Sheet 5 of 66

GEOTECHNICAL NOTES:

1.

SUBGRADE SHALL BE PREPARED BY SCARIFYING THE SUBGRADE SOILS TO A DEPTH OF AT LEAST 8 INCHES, MOISTURE CONDITIONING AND COMPACTING AS RECOMMENDED.
2.

IF BEDROCK IS EXPOSED AT THE PLANNED EXCAVATION ELEVATION, IT SHOULD BE SCRAPED CLEAN AND RELATIVELY FLAT.
3.

ALL FILL MATERIAL SHALL BE PLACED ON A HORIZONTAL PLAN AND PLACED IN LOOSE LIFTS NOT TO EXCEED 8 INCHES OF THICKNESS.
4.

ZONES OF VERY MOIST TO WET, SOFT, UNSTABLE SOILS MAY BE ENCOUNTERED DURING EXCAVATION. IF ENCOUNTERED AT THE PLANNED EXCAVATION ELEVATION, IT SHOULD BE SCARAFIED, RECOMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF FILL. USE OF ROCK, OR A COMBINATION OF GEO-GRID AND AGGREGATE, CAN BE USED TO STABILIZE AREAS THAT CANNOT OTHERWISE BE PROPERLY PREPARED FOR SUPPORT OF ADDITIONAL FILL OR STRUCTURAL ELEMENTS.
5.

FILL MATERIALS
- 5.1.

STRUCTURAL FILL: THIS MATERIAL SHALL BE PLACED BELOW ANY FOUNDATION OR DROP STRUCTURE ELEMENTS IF SANDSTONE/CLAYSTONE BEDROCK IS NOT ENCOUNTERED AT SUBGRADE ELEVATIONS AND SHOULD INCLUDE IMPORTED GRANULAR MATERIAL MEETING THE REQUIREMENTS OF (CDOT) CLASS 1 STRUCTURE BACKFILL. ON-SITE SANDS MAY BE RE-USED AS STRUCTURAL BACKFILL.
- 5.2.

COMMON FILL: COMMON FILL MUST BE PROPERLY PREPARED AND PLACED AT A DEPTH THAT WILL NOT BE EXPOSED TO STREAM FLOW/EROSIVE HYDRAULIC FORCES. WET ON-SITE SOILS WILL NEED TO BE DRIED TO WITHIN THE COMPACTION MOISTURE CRITERIA PRIOR TO RE-COMPACTION.
- 5.3.

STREAMBED FILL: SEE ENGINEERING PLANS.
6.

SEE TABLE 2 FOR COMPACTION CRITERIA.
7.

FILL SHOULD BE PLACED IN LEVEL LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND COMPACTED TO THE SPECIFIED PERCENT COMPACTION TO PRODUCE A FIRM AND STABLE SURFACE.
8.

FOR DROP STRUCTURES AND BOULDER RIFFLES BEAR DIRECTLY ON OR WITHIN THE SANDSTONE/CLAYSTONE BEDROCK OR ON AT LEAST 12 INCHES OF PROPERLY COMPACTED GRANULAR STRUCTURAL FILL. IF OVER-EXCAVATION OF THE SOILS IS REQUIRED, THE EXCAVATION SHOULD EXTEND Laterally AT LEAST 18 INCHES BEYOND THE EDGE OF THE FOUNDATION ELEMENT.
9.

IT IS ANTICIPATED THAT SHEET PILING CANNOT BE DRIVEN TO SIGNIFICANT DEPTHS INTO THE BEDROCK. PENETRATION OF NO MORE THAN 12 TO 18 INCHES IS EXPECTED BEFORE REFUSAL OCCURS IN SOME AREAS WITHIN THE CHANNEL. IT MAY BE POSSIBLE TO PRE-DRILL HOLES OR TRENCH INTO THE BEDROCK TO EASE THE INSTALLATION OF SHEET PILING. IF THIS CONDITION OCCURS, CONCRETE SHOULD BE USED TO FILL THE TRENCH AROUND THE SHEET PILE.
10.

ONCE BEDROCK IS ENCOUNTERED, SHEET PILING SHALL BE DRIVEN TO "SEAT" THE SHEET PILING INTO THE BEDROCK. ATTEMPTING TO DRIVE THE SHEET PILING TO ACHIEVE DEEPER PENETRATION IS LIKELY TO DAMAGE THE SHEET PILE.

Table 2 Compaction Specifications			
FILL LOCATION	MATERIAL TYPE (See Section 4.2.4)	PERCENT COMPACTION ¹ (ASTM D1557)	MOISTURE CONTENT
Subgrade Preparation (after clearing, grubbing, excavation, and prior to placement of new fill and/or structural elements)	On-site soils	92 minimum -or- stabilized per Section 4.2.2	± 2 % of optimum
Drop Structure and Wall Foundation Subgrade (if not bearing on bedrock)	CDOT Class I Structure Backfill	92 minimum	± 2 % of optimum
Structural Fill			
Utility Trench Backfill (if applicable)	On-site Soils	90 minimum	± 2 % of optimum
Potential Slope Re-Grading/ Embankment Fill	On-site Soils	92 minimum	± 2 % of optimum
Lower Zone of Channel Backfill ("Common Fill")	On-site Sand or Clay Soils	90 minimum	± 2 % of optimum
Streambed Fill	Materials Defined by Hydraulic Engineer	90 minimum	± 2 % of optimum

1) The more stringent compaction criteria should be utilized where two or more "fill locations" coincide. In non-structural/landscaped areas, the compaction specification may be reduced to 90 percent.

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
GEOTECHNICAL NOTES

2021013002 1" = 100'
Project No. Horizontal Scale

SUMMARY OF APPROXIMATE QUANTITIES

DESCRIPTION	UNIT	QTY
MOBILIZATION	LS	
CONSTRUCTION SURVEYING	LS	
REDLINE DRAWINGS	LS	
EROSION AND SEDIMENT CONTROL	LS	
WATER CONTROL AND DEWATERING	LS	
WORK ZONE TRAFFIC CONTROL	LS	
CLEARING AND GRUBBING	LS	
SITE RESTORATION	LS	
CONSTRUCTION FENCING	LF	6712
EARTHWORK - ONSITE	CY	70
EARTHWORK - IMPORT	CY	714
TOPSOIL	CY	51
CONCRETE TRAIL (5 INCH)	SY	21
CONCRETE CURB (6 INCH)	LF	26
REINFORCING STEEL	LB	26
SHEET PILE WALL	SY	254
SHEET PILE CAP	LF	342
SELECT MATERIAL	CY	271
SOIL-FILLED RIPRAP (18 INCH)	CY	485
VOID-FILLED RIPRAP (12 INCH)	CY	18
RIFFLE BOULDERS (24 INCH)	EA	60
VANE BOULDERS (24 INCH)	LF	409
GROUTED BOULDERS (24 INCH)	LF	340
GROUTED BOULDERS (36 INCH)	SY	89
GROUTED BOULDERS (42 INCH)	SY	69
NEDIA KOIRMAT 900	SY	757
NEDIA KOIRMAT 1200	SY	481
WILLOW STAKE	EA	6192
HERBACEAUS PLUG (10CI)	EA	12750
SHRUB (60 CI)	EA	575
TREE (5-GALLON)	EA	50
WETLAND AND RIPARIAN SEED (ZONE A, B, C)	AC	0.8
UPLAND SEED (ZONE D)	AC	2.3
BIOSOL SOIL AMENDMENT (ZONE B, C, & D)	AC	2.4
HYDROMULCH AND TACKIFER (ZONE B, C, & D)	AC	2.4
TEMPORARY SEEDING, TOPSOIL STOCKPILE	AC	1.0

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SOAQ

2021013002 1" = 100'
Project No. Horizontal Scale

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

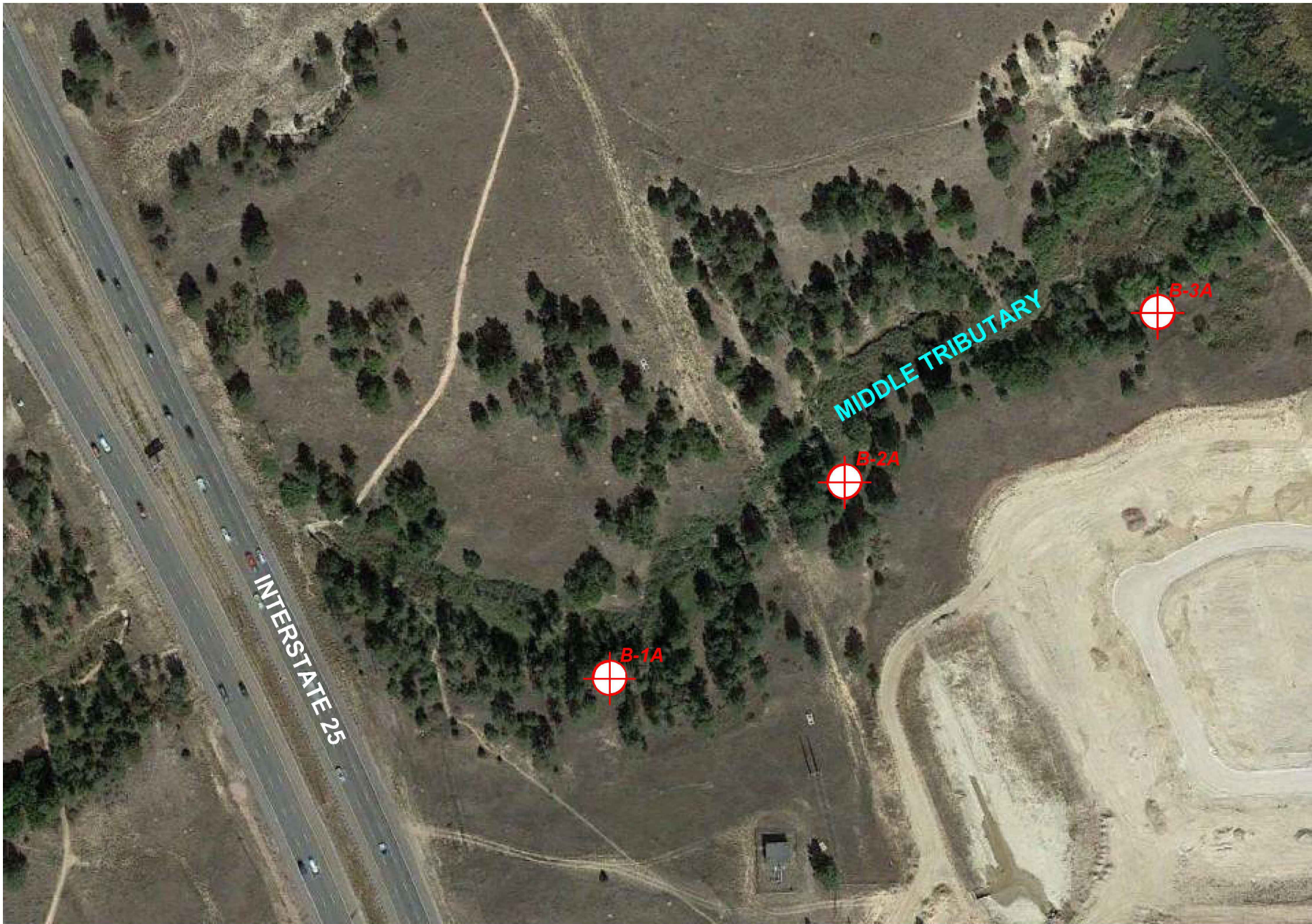
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
GEOTECHNICAL BORING (1)

2021013002 1" = 100'
Project No. Horizontal Scale

Sheet 8 of 66

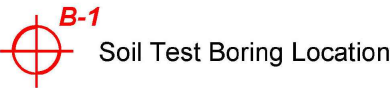
BID SET



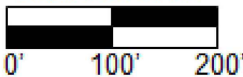
The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Vivid makes no representations or warranties, express or implied, as to the accuracy, completeness, timeliness or right to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

REFERENCE:
Base image obtained from
Google Earth Pro
Dated: 10/6/2019

LEGEND



GRAPHIC SCALE



Project No.D21-2-470

Date: February 21, 2022

Drawn by: BTM

Reviewed by: WJB

FIELD EXPLORATION PLAN

Proposed Middle Tributary Improvements
East of I-25 and West of Secretariat Drive
Colorado Springs, Colorado

FIGURE

2

C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Middle Tributary Upstream of I-25 Channel Restoration\3_CAD\Sheet_Rev100\GENERAL\GENERAL.dwg
2023/08/08 8:41 AM By: Matthew Johnson

GENERAL BH / TP / WELL - MODIFIED - GINT STD US LAB GDT - 2/16/22 15:19 - C:\Users\BRYSEN MUSTAIN\VIVID ENGINEERING GROUP\GEOTECH GROUP\VIVID ENGINEERING - DOCUMENTS\PROJECTS_2021\021-2-470_WATERVATION_MIDDLE TRIBUTARY_GEC



VIVID Engineering Group, Inc.
1053 Elkton Drive
Colorado Springs, Colorado 80907
Telephone: 719-896-4356
Fax: 719-896-4357

BORING NUMBER B-1A

PAGE 1 OF 1

CLIENT WaterVation PROJECT NAME Proposed Middle Tributary Channel Improvements
PROJECT NUMBER D21-2-470 PROJECT LOCATION Colorado Springs, Colorado
DATE STARTED 1/14/22 COMPLETED 1/14/22 GROUND ELEVATION 6587.244 ft HOLE SIZE 4 inches
DRILLING CONTRACTOR VINE (CME-850) GROUND WATER LEVELS:
DRILLING METHOD 4" Solid Stem Auger ∇ AT TIME OF DRILLING 3.50 ft / Elev 6583.74 ft
LOGGED BY M. Ray CHECKED BY B. Mustain AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0					Silty SAND, light gray to grayish-brown, wet, dense
5	GB				
5	MC	10-38	pH = 7.6, Conductivity = 0.432 mmhos/cm, Resistivity = 2,060 ohm-cm, Redox = 250 mV, Sulfide = 0.1 mg/kg, Chloride = 158 mg/kg, Sulfate = 0.0546% MC = 11.3% DD = 118.4 pcf LL = NP PL = NP Fines = 20.0%		∇ Dawson Formation Weathered CLAYSTONE, light gray to bluish-gray, moist, moderately hard
10	MC	33-50/5"			Dawson Formation Silty to Clayey SANDSTONE, uncemented to moderately cemented, light gray, moist, very hard
15	MC	50/4"			
20	MC	30-50/3"50/9"			
24.3	MC	50/3"			Bottom of borehole at 24.3 feet.

BID SET



VIVID Engineering Group, Inc.
1053 Elkton Drive
Colorado Springs, Colorado 80907
Telephone: 719-896-4356
Fax: 719-896-4357

BORING NUMBER B-2A

PAGE 1 OF 1

CLIENT WaterVation PROJECT NAME Proposed Middle Tributary Channel Improvements
PROJECT NUMBER D21-2-470 PROJECT LOCATION Colorado Springs, Colorado
DATE STARTED 1/14/22 COMPLETED 1/14/22 GROUND ELEVATION 6610.351 ft HOLE SIZE 4 inches
DRILLING CONTRACTOR VINE (CME-850) GROUND WATER LEVELS:
DRILLING METHOD 4" Solid Stem Auger ∇ AT TIME OF DRILLING 17.00 ft / Elev 6593.35 ft
LOGGED BY M. Ray CHECKED BY B. Mustain AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	TESTS	GRAPHIC LOG	MATERIAL DESCRIPTION
0					Clayey SAND, fine to medium-grained, light brown, slightly moist, medium dense
5	GB				
5	MC	6-6	MC = 4.4%		
10	MC	8-9			Poorly Graded SAND, fine to coarse-grained, light gray, moist, medium dense
15	MC	50/7"	MC = 15.5% DD = 113.0 pcf UCS = 3,398 PSF, Shear Strength = 1,699 PSF		Dawson Formation Interbedded SANDSTONE and CLAYSTONE, yellowish-brown, bluish-gray, moist, hard
20	MC	50/10"			
24.6	MC	50/7"	MC = 13.7% DD = 123.0 pcf LL = 36 PL = 27 Fines = 40.0%		Bottom of borehole at 24.6 feet.



WATERVATION

123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

GEOTECHNICAL BORING (2)

2021013002

Project No.

1" = 100'

Horizontal Scale

Sheet 9 of 66

(Continued Next Page)

BID SET



BID SET

EMBANKMENT
RECONSTRUCTION
BY OTHER

EXISTING
WETLANDS
(TYP)

UPSTREAM
REACH

UTILITY
CORRIDOR

OHWM
(TYP)

ELECTRIC MH
N:1427271.57
E:3193815.23
ELEV:6627.62

ELECTRIC MH
N:1427265.52
E:3193818.58
ELEV:6627.62

WW MH
N:1427140.26
E: 3193946.71
ELEV: 6597.81

CP 1 (POUNDED REBAR)
N:1426949.153
E: 3194075.857
ELEV: 6616.191

DOWNSTREAM
REACH

CDOT EASEMENT

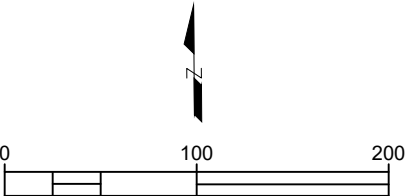


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



EXISTING WETLANDS

OHWM



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

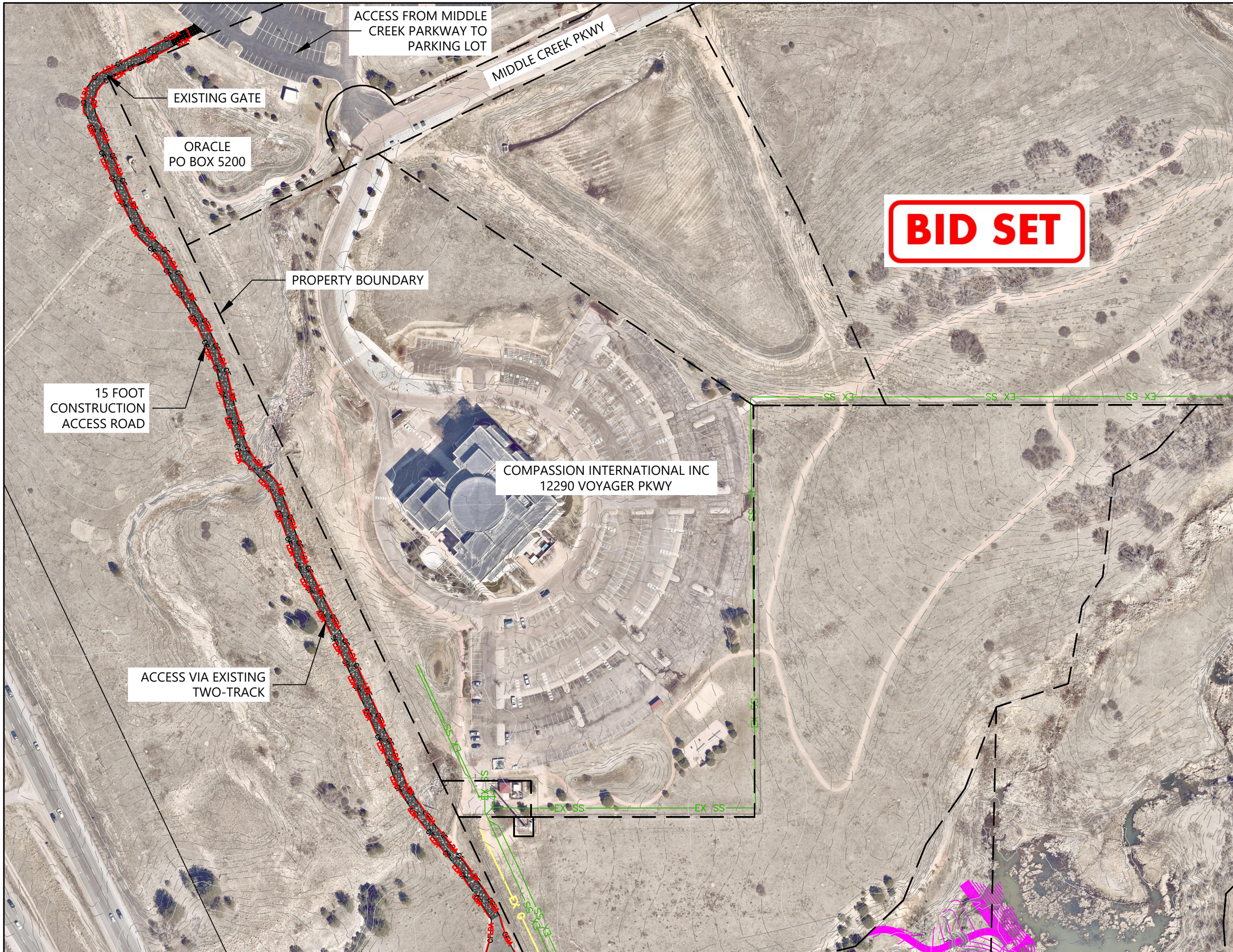
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
OVERVIEW

2021013002 1" = 100'
Project No. Horizontal Scale

Sheet 11 of 66

C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Arizona Tributary Upstream of I-25 Channel Restoration\3_CAD\Sheet_2.dwg, 100% G:\GENERAL\ACCESS.dwg
2023/06/08 8:43 AM By: Matthew Johnson

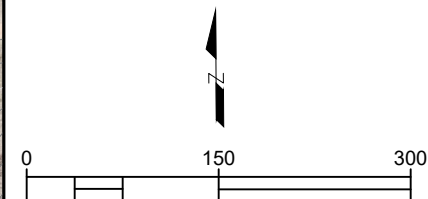


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
ACCESS (1)

2021013002 **1" = 150'**
Project No. Horizontal Scale

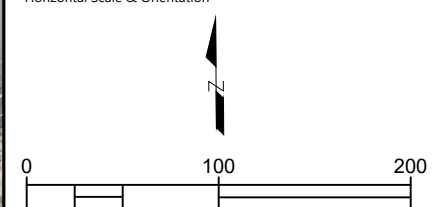
Sheet 12 of 66



The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.

The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Horizontal Scale & Orientation



Colorado Springs Utilities
It's how we're all connected



It's now we're all connected.

**COLORADO
SPRINGS**
OLYMPIC CITY USA



STORMWATER
ENTERPRISE

Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

ACCESS (2)

2021013002 1" = 100'

Project No. _____ Horizontal Scale _____

Sheet 13 of 66

BID SET

STAGING AREA

15 FOOT
CONSTRUCTION
ACCESS ROAD

AVOID
ELECTRICAL
MANHOLE

DO NOT
DISTURB
AREA

EXISTING
FENCE

ACCESS VIA EXISTING
GRAVEL TRAIL

ACCESS AND
DISTURBANCE HERE

CDOT
EASEMENT

PMJM HIGH
QUALITY HABITAT

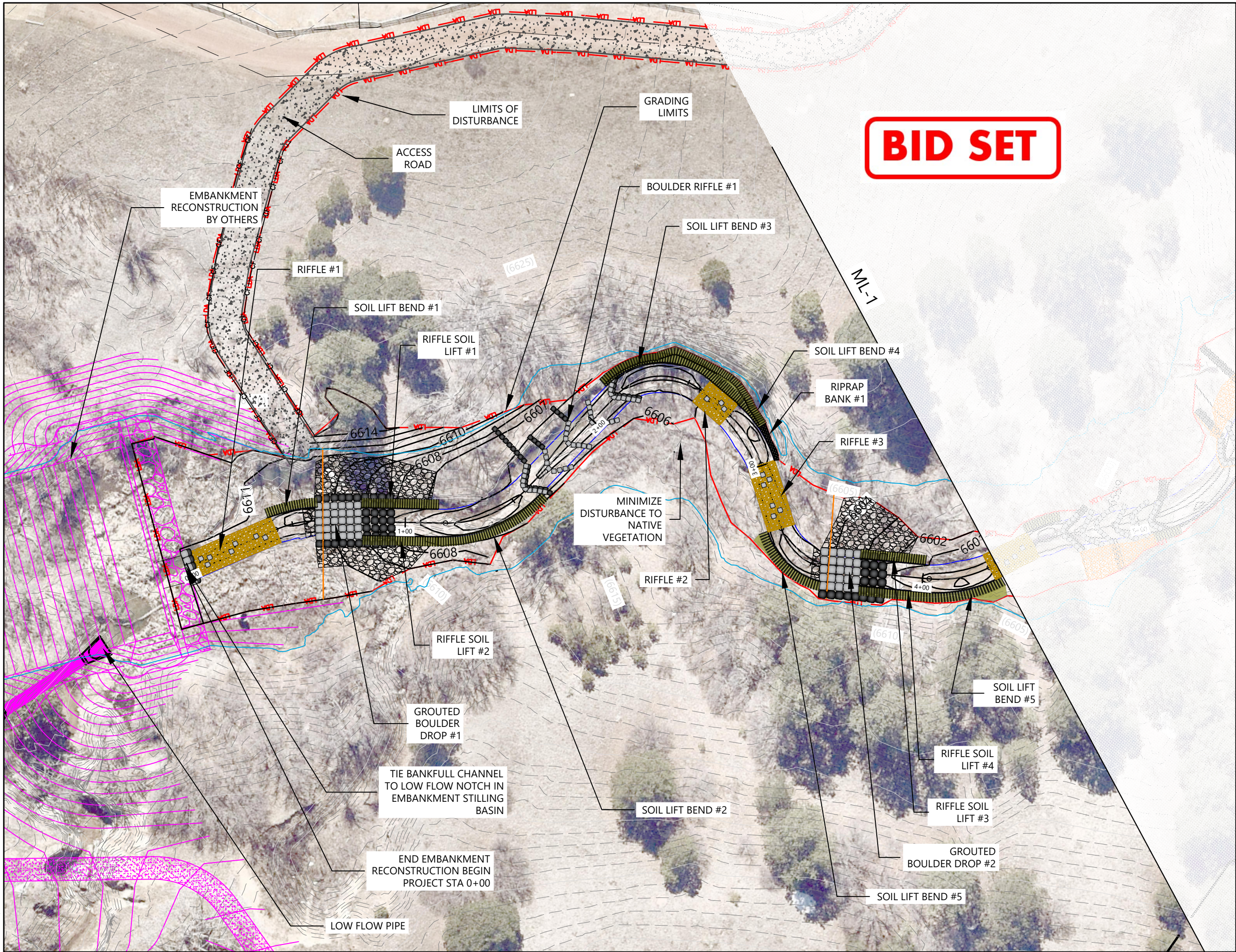
PMJM UPLAND HABITAT

ALYDAR L

C:\Users\Matthew_Johnson\Water\Valton Dropbox\Projects\2021013002_Middle_Tributary Upstream Of I25 Channel Restoration\3_CAD\Sheet_Files\100%(GENERAL)\ACCESS.dwg

ORIGINAL SHEET - ANSI B

C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Arizona\Tributary upstream of I-25 Channel Restoration\1_CAD\Sheet - Plan\100%PLAN & PROFILE.dwg - C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Arizona\Tributary upstream of I-25 Channel Restoration\1_CAD\Sheet - Plan\100%PLAN & PROFILE.dwg - 11/1/2021 11:11 AM By: Matthew Johnson



ORIGINAL SHEET - ANSI B

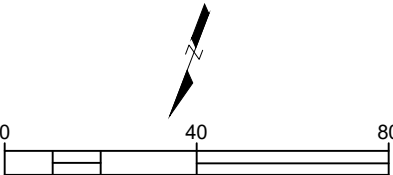


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

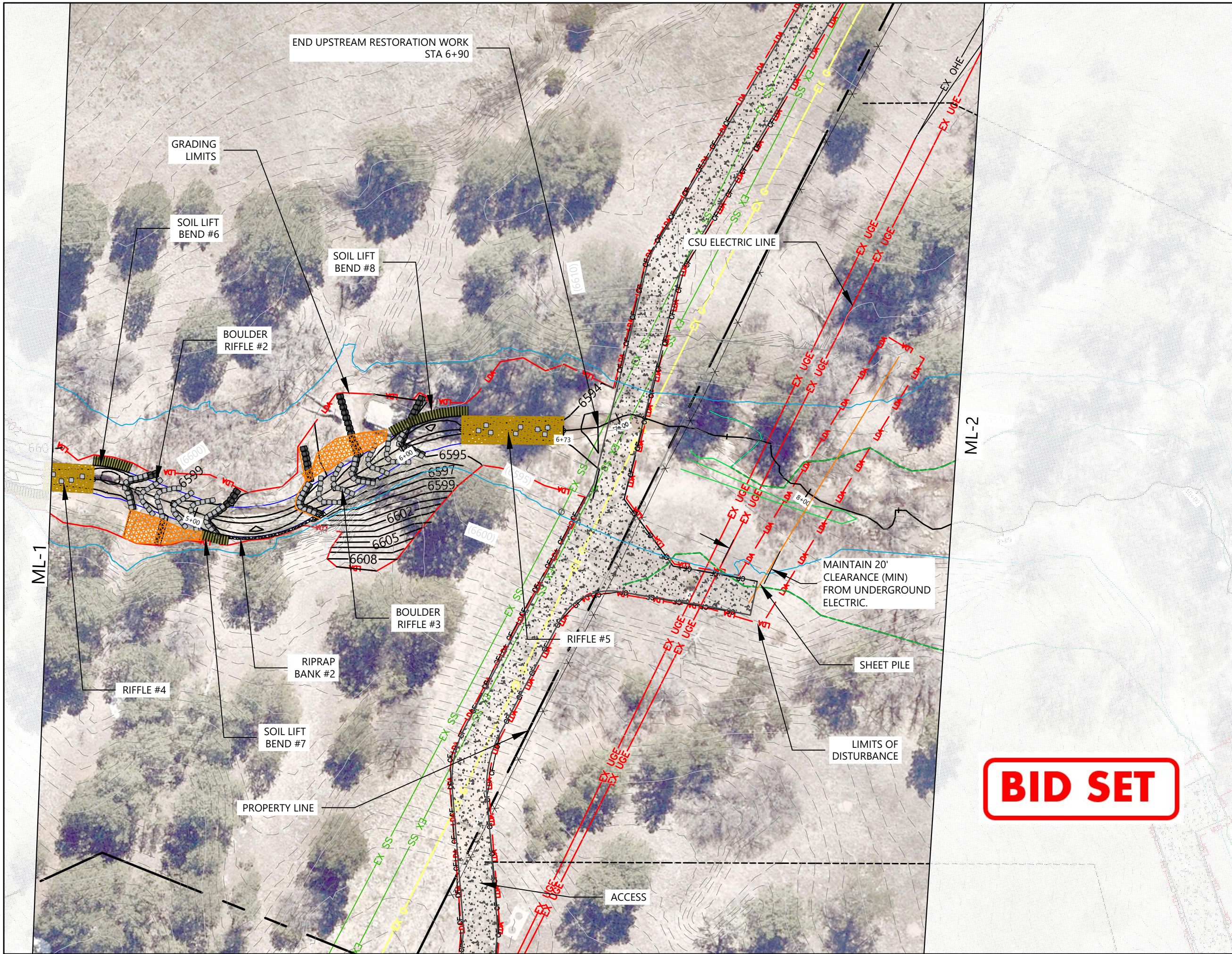
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
PLANVIEW (1)

Project No. **2021013002** Horizontal Scale **1" = 40'**

Sheet **14** of **66**

C:\Users\Matthew Johnson\WaterVation Desktop\Projects\2021013002_Middle Tributary Upstream of I-25 Channel Restoration\1_CAD\Sheet_2\Plan\100%Plan.dwg - C:\Users\Matthew Johnson\WaterVation Desktop\Projects\2021013002_Middle Tributary Upstream of I-25 Channel Restoration\1_CAD\Sheet_2\Plan\100%Plan.dwg - 11/11/2023 8:44 AM By: Matthew Johnson



ORIGINAL SHEET - ANSI B

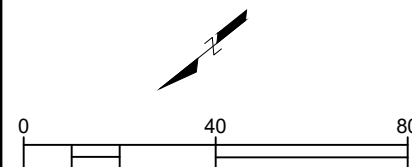


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
PLANVIEW (2)

2021013002 1" = 40'
Project No. Horizontal Scale

Sheet 15 of 66



C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Artistic\Library\Upstream of I-25 Channel Restoration\1_CAD\Sheet_2\Plan\100m\PLAN & PROFILE\WV - 11 - 11.dwg
2023/08/08 8:44 AM By: Matthew Johnson

ORIGINAL SHEET - ANSI B

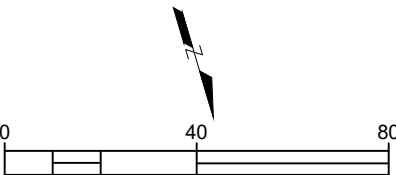


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

PLANVIEW (3)

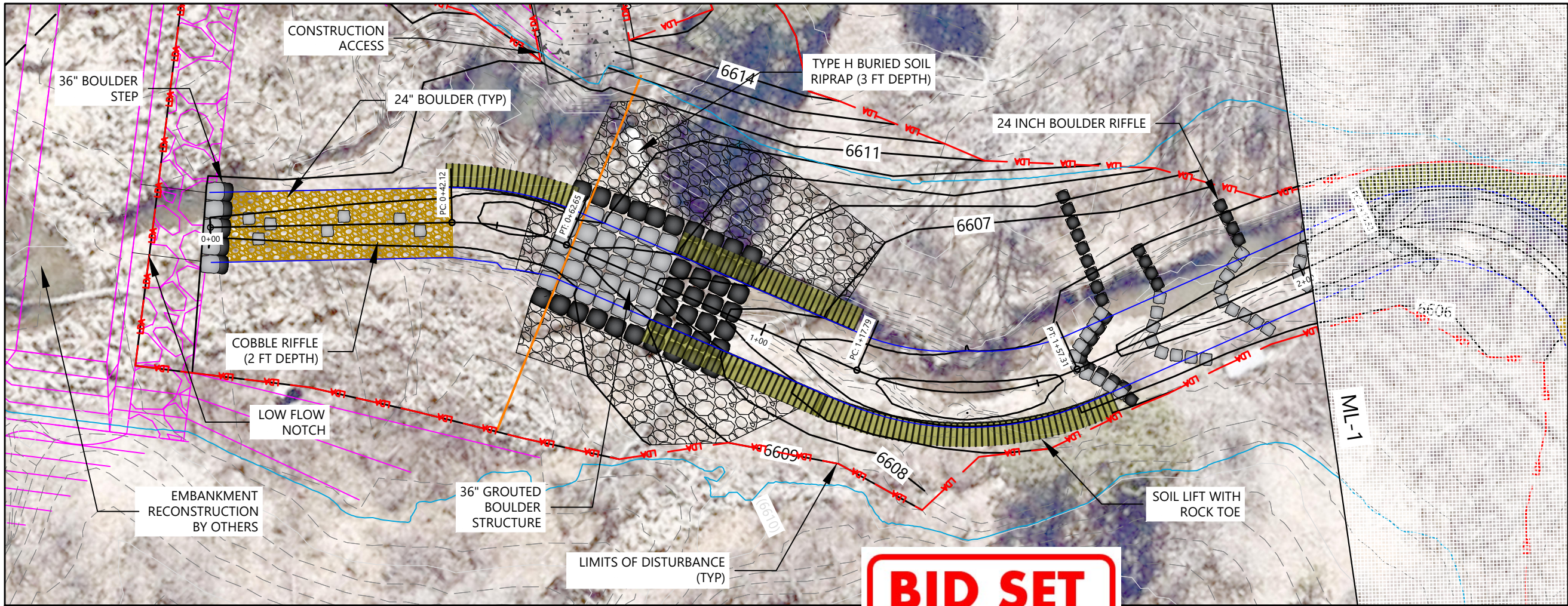
2021013002

1" = 40'

Project No.

Horizontal Scale

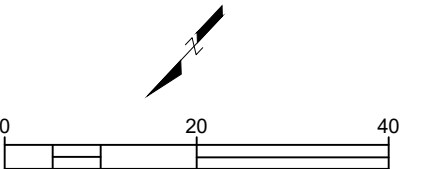
Sheet 16 of 66



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

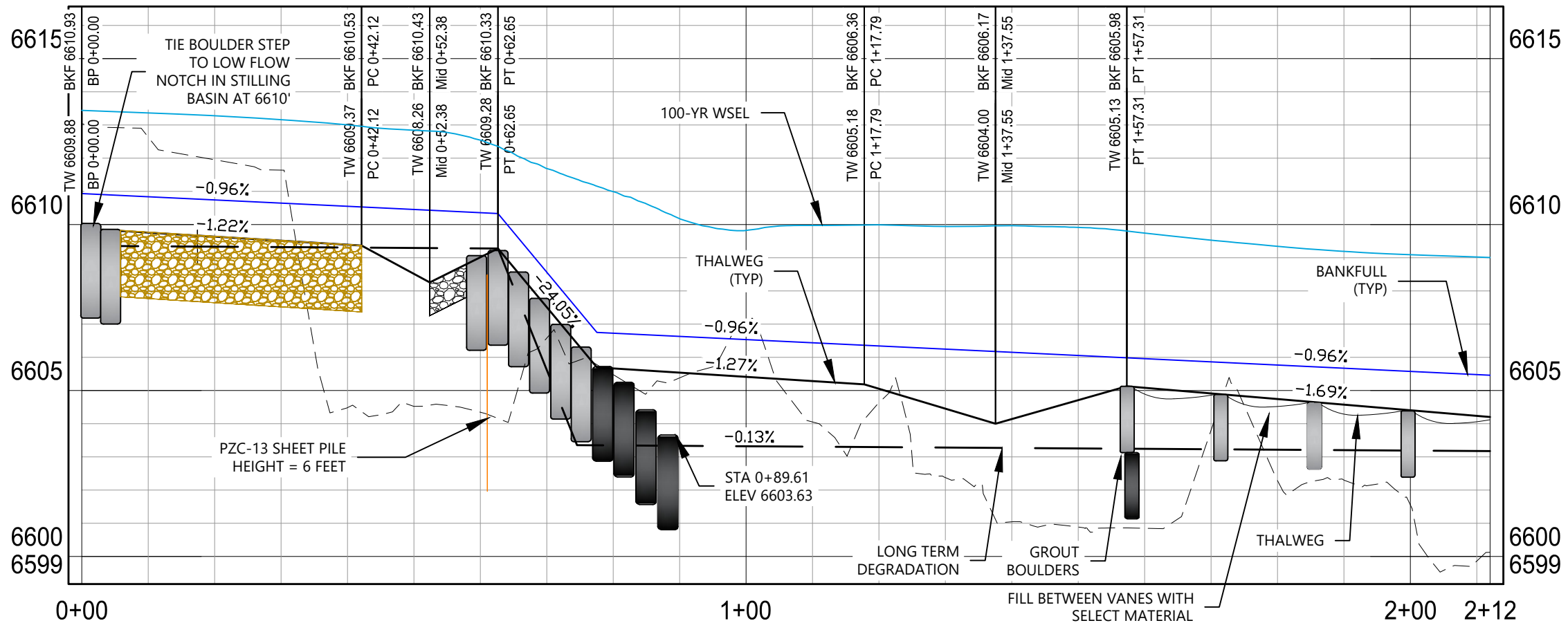
Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN



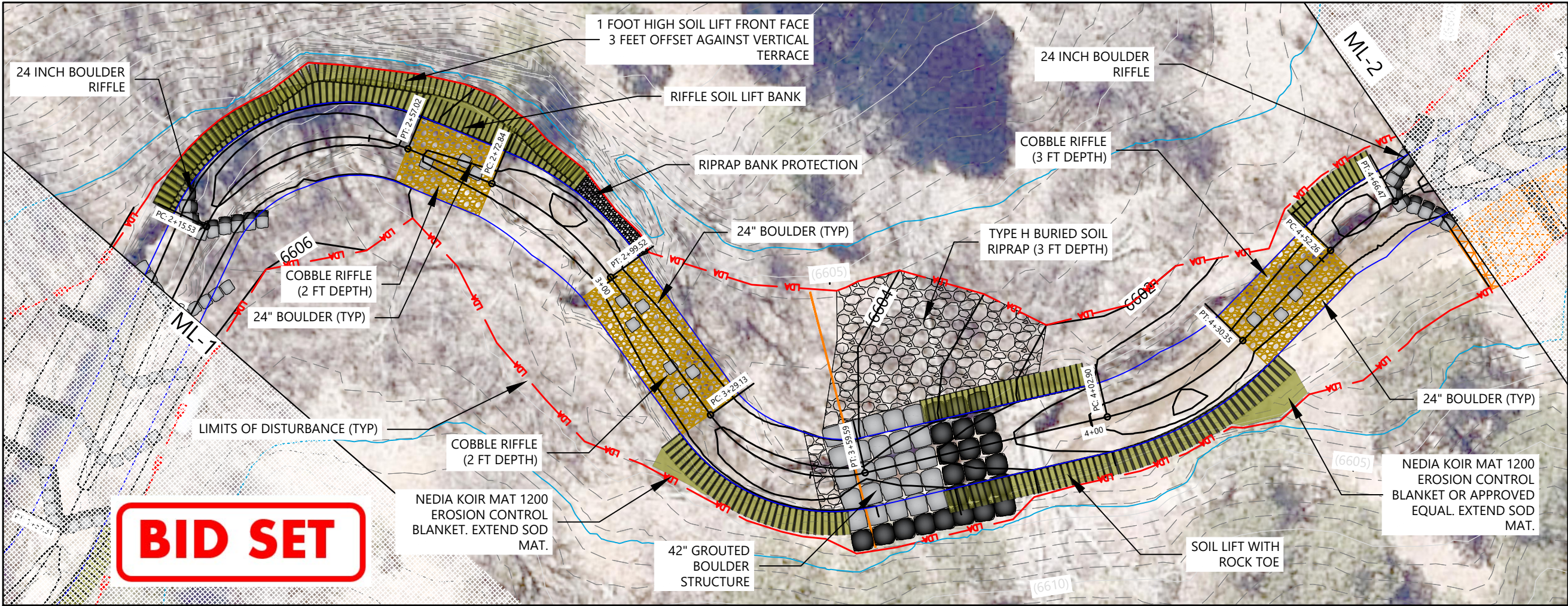
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

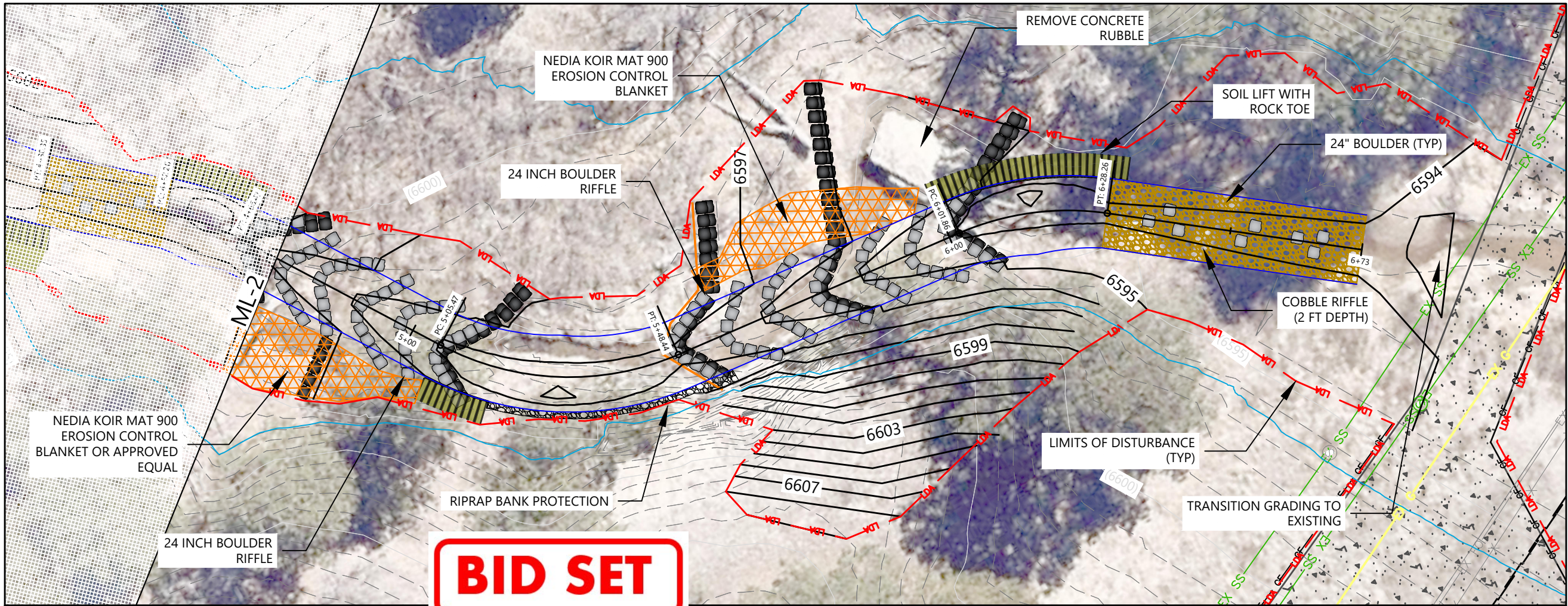
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
UPSTREAM PLAN & PROFILE (1)

2021013002 1" = 20'
Project No. Horizontal Scale

Sheet 17 of 66

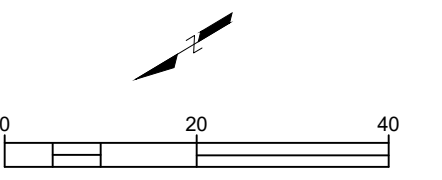




Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

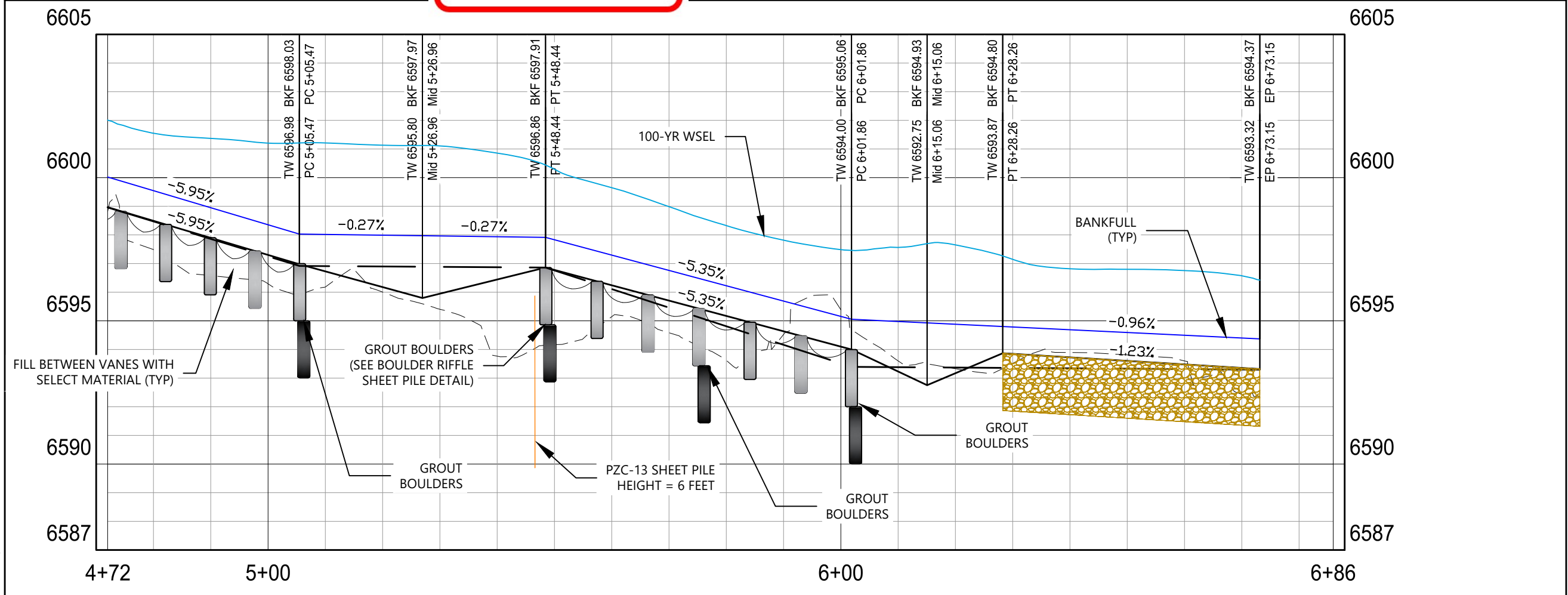
Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN



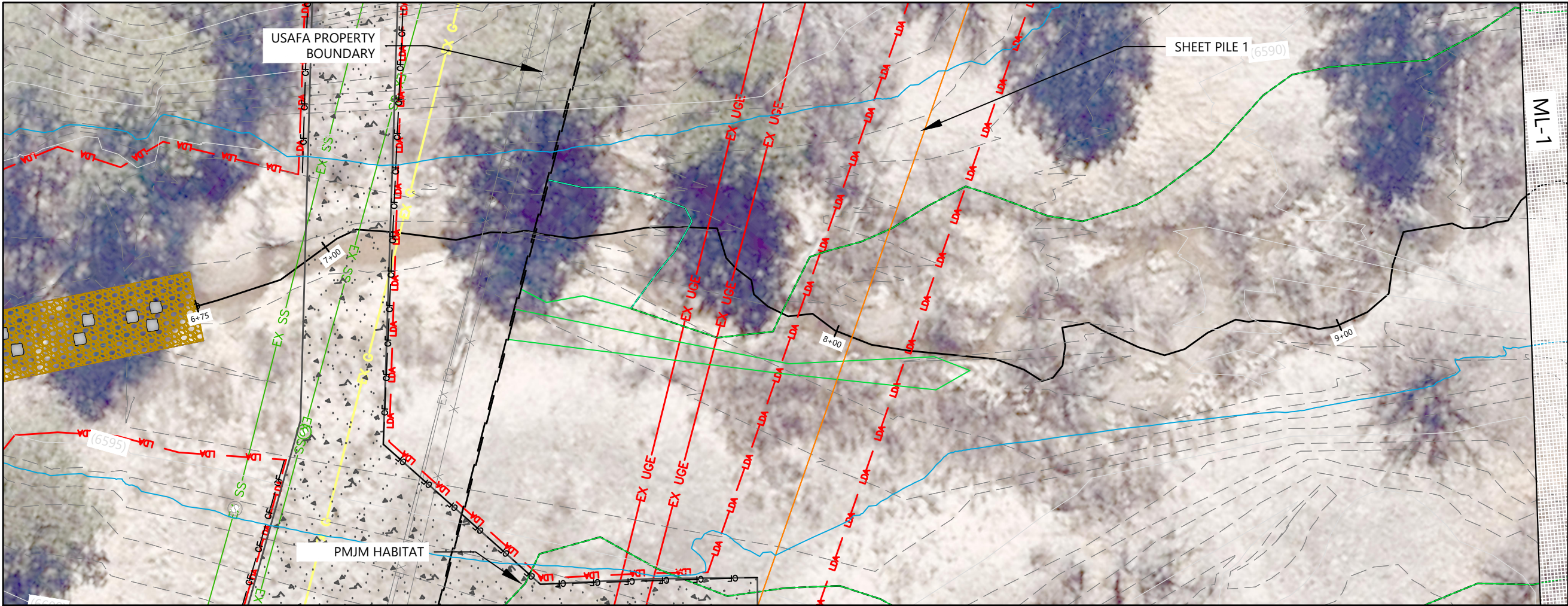
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
UPSTREAM PLAN & PROFILE (3)

2021013002 1" = 20'
Project No. Horizontal Scale

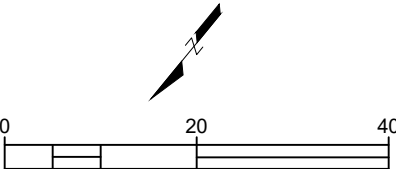
C:\Users\Matthew Johnson\OneDrive\Projects\2021013002_Middle Tributary Upstream of I-25 Channel Restoration\Drawings\Plan & Profile\WV - C:\Users\Matthew Johnson\OneDrive\Projects\2021013002_Middle Tributary Upstream of I-25 Channel Restoration\Drawings\Plan & Profile\WV - 10.dwg
2023/08/08 8:45 AM By: Matthew Johnson



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

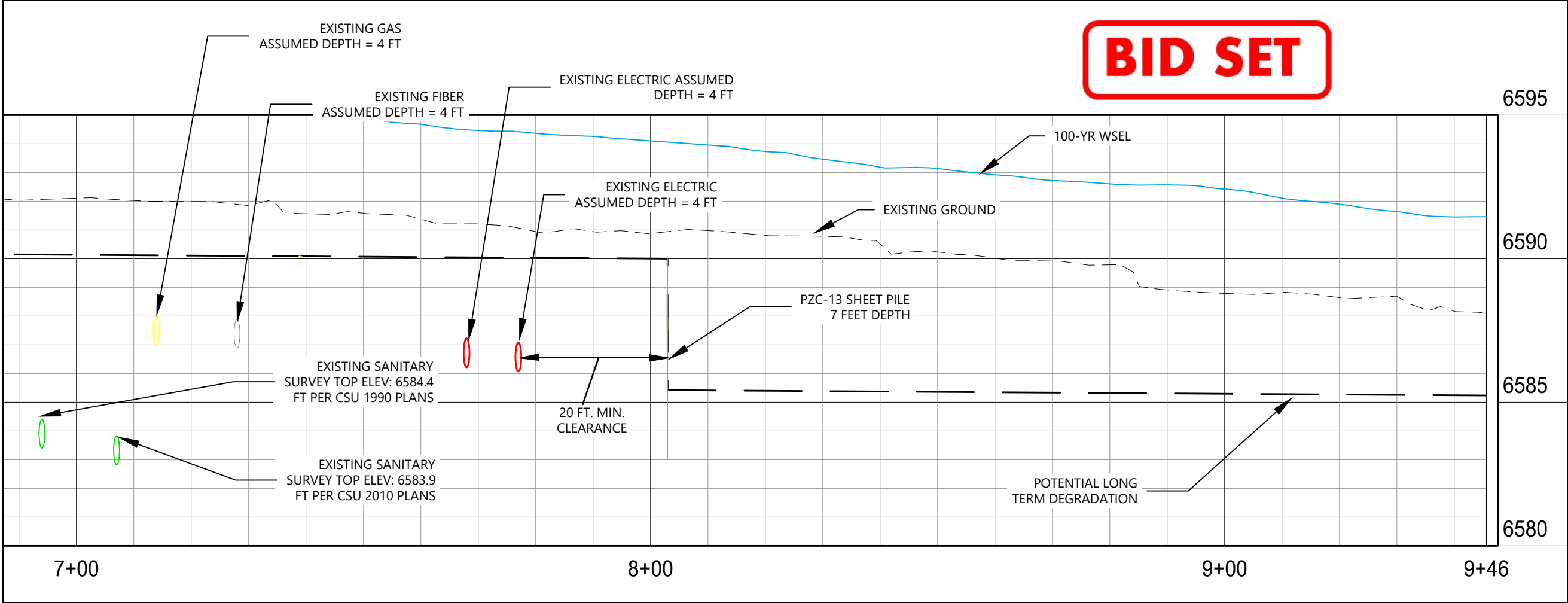
Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN

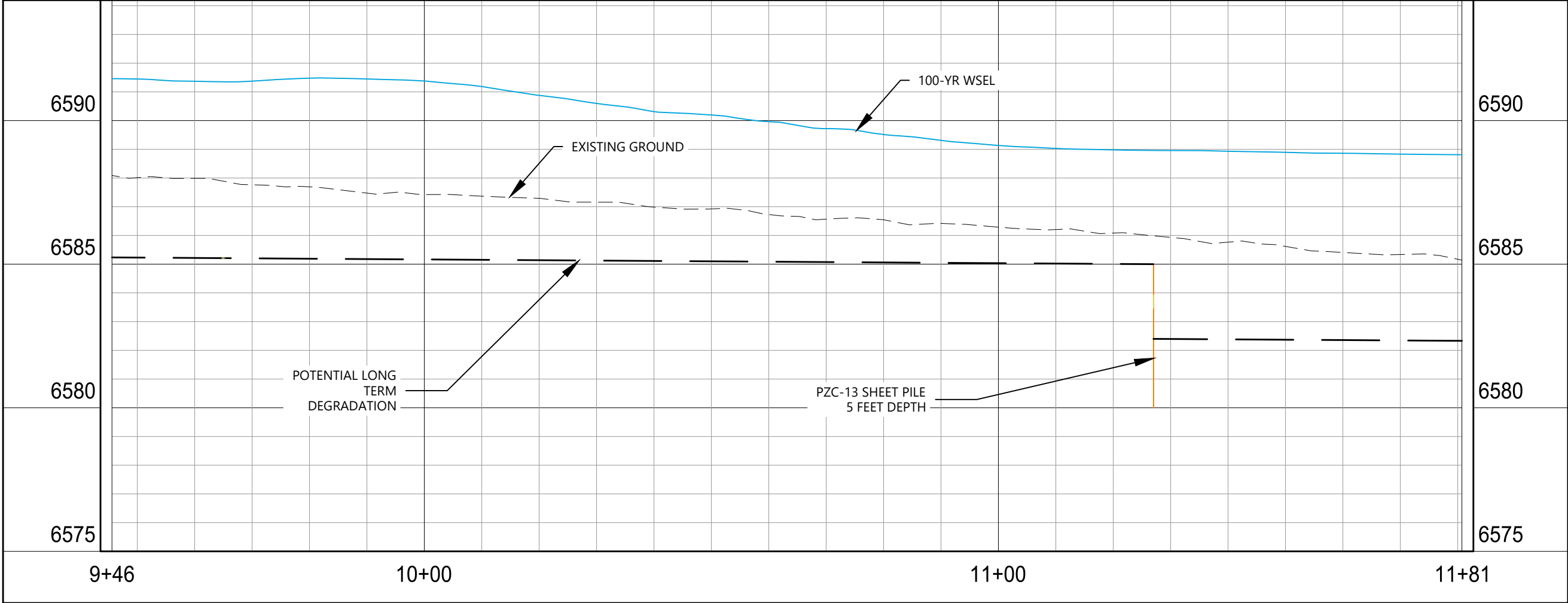
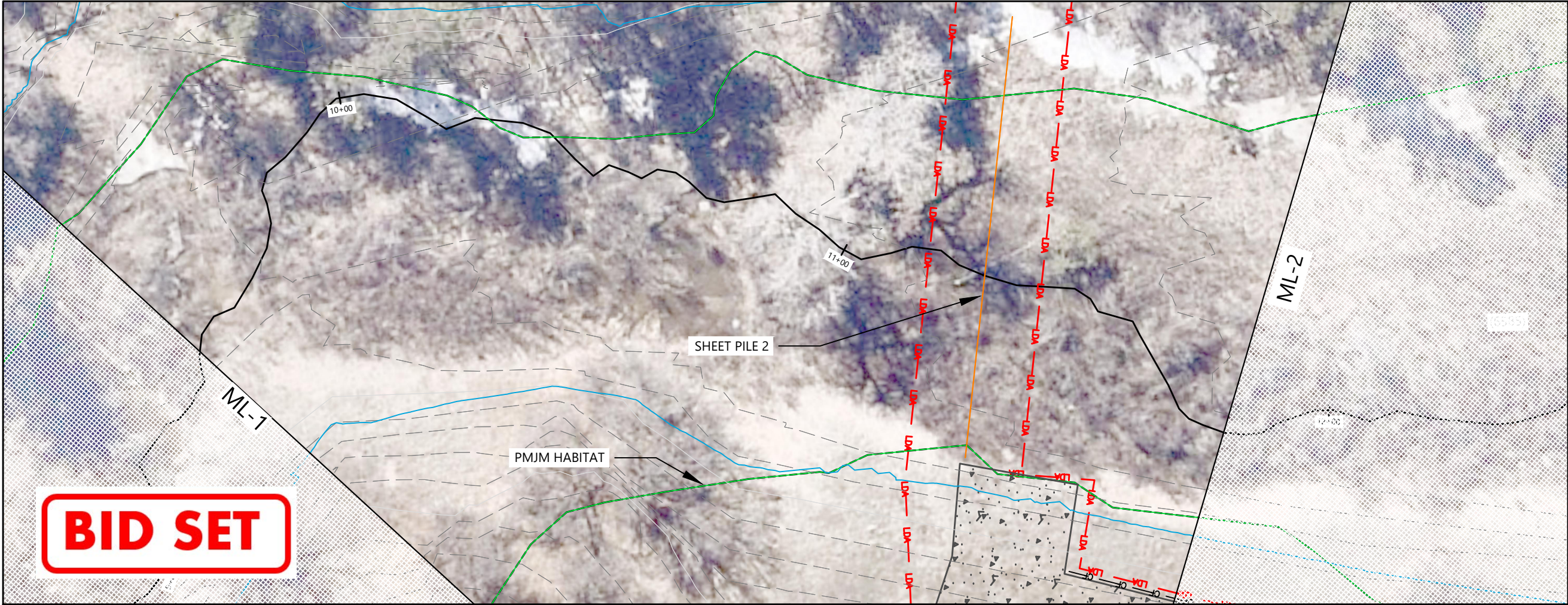


Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
DOWNSTREAM PLAN & PROFILE (1)

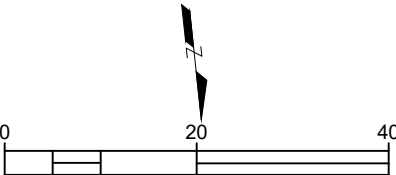
2021013002 1" = 20'
Project No. Horizontal Scale



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



APPROXIMATE 100-YEAR FLOODPLAIN

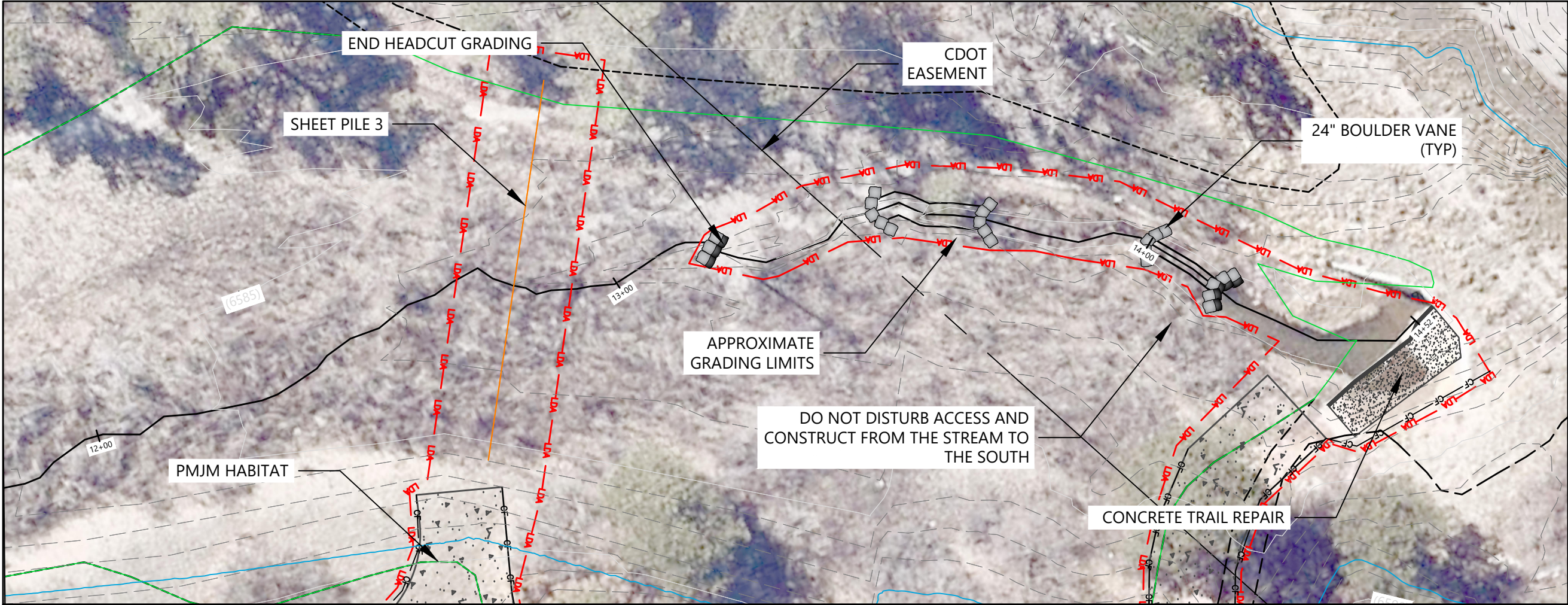


Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
DOWNSTREAM PLAN & PROFILE (2)

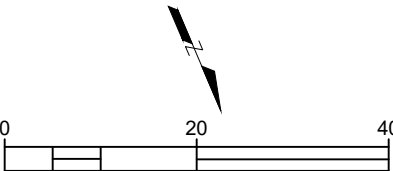
2021013002 1" = 20'
Project No. Horizontal Scale



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

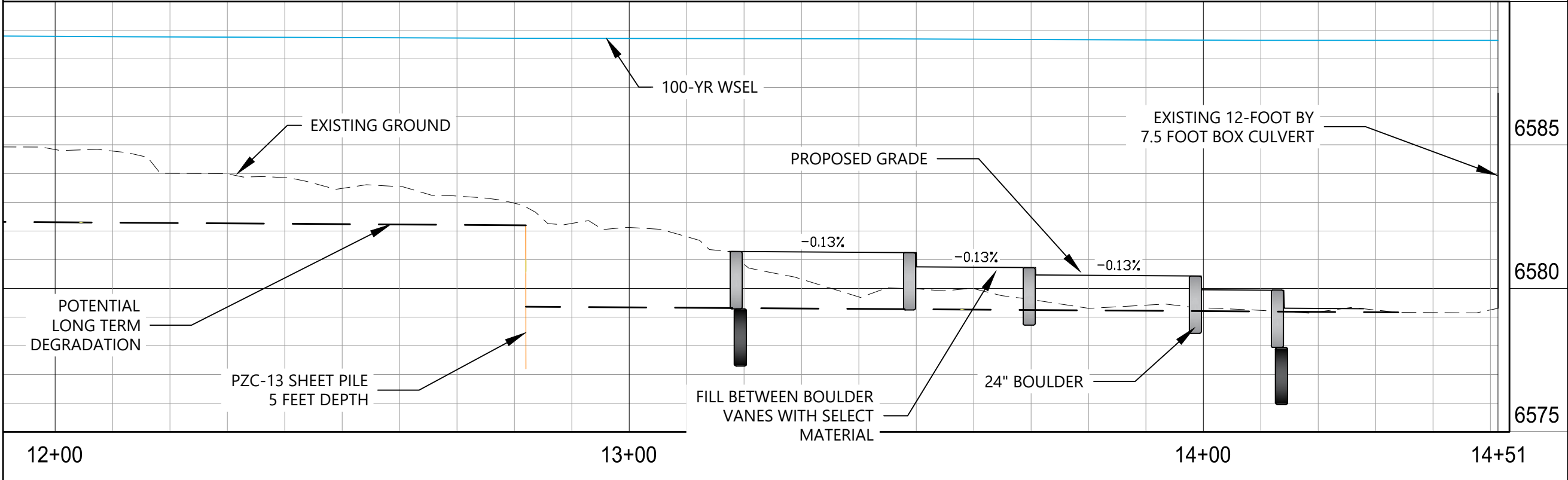


Legend



APPROXIMATE 100-YEAR FLOODPLAIN

BID SET



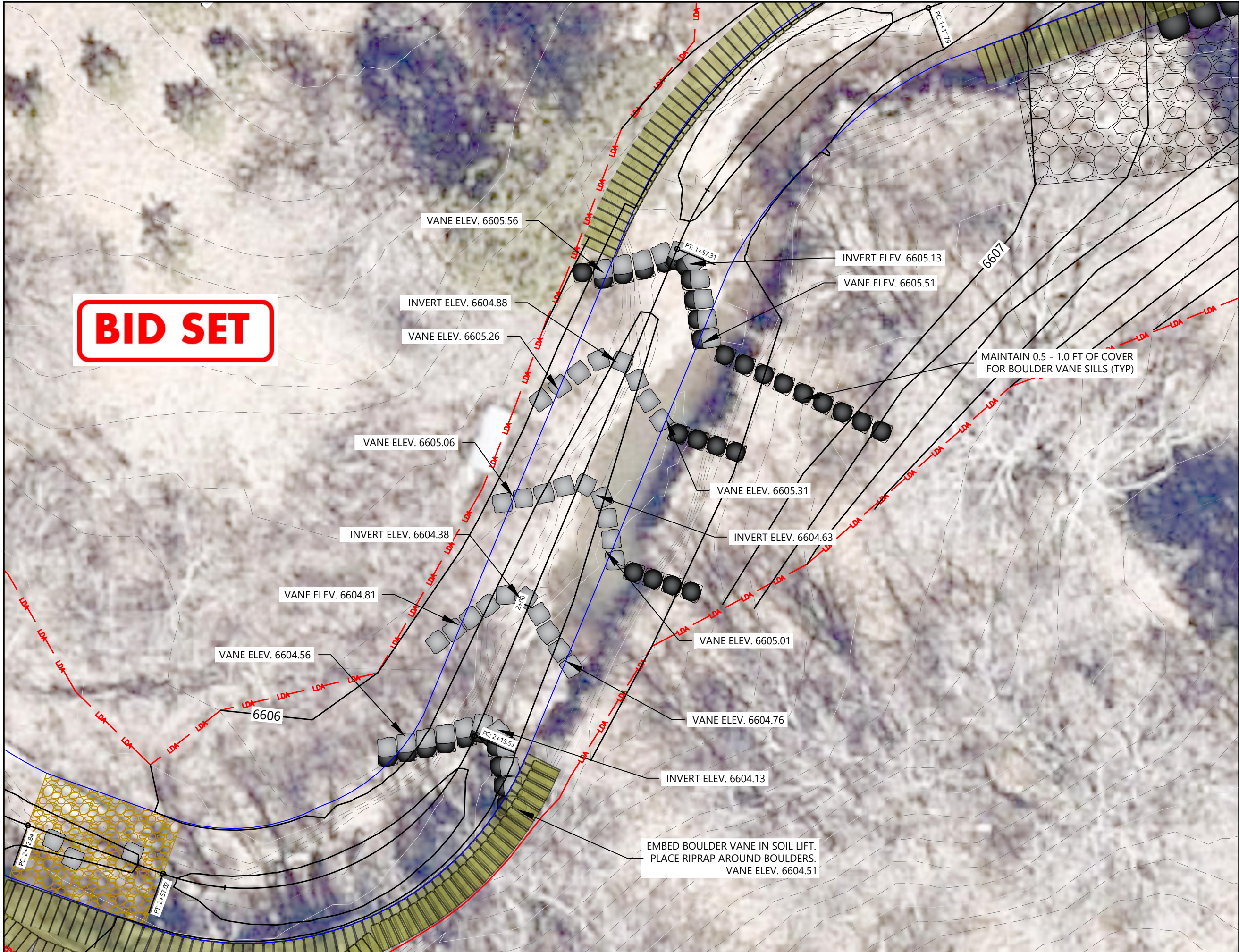
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
DOWNSTREAM PLAN & PROFILE (3)

2021013002 1" = 20'
Project No. Horizontal Scale

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

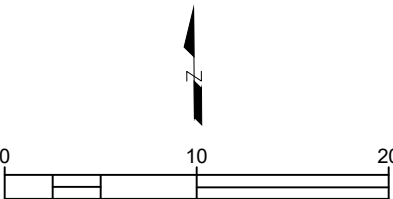
Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.

The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



ALL ELEVATIONS REFERENCED ARE AT THE THALWEG OFFSET 1 FT FROM THE CENTERLINE OR WHERE THE BOULDER VANE INTERSECTS THE BANKFULL LINE.



Client/Project

CITY OF COLORADO SPRINGS

MIDDLE TRIBUTARY UPSTREAM OF I-25

CHANNEL RESTORATION

COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

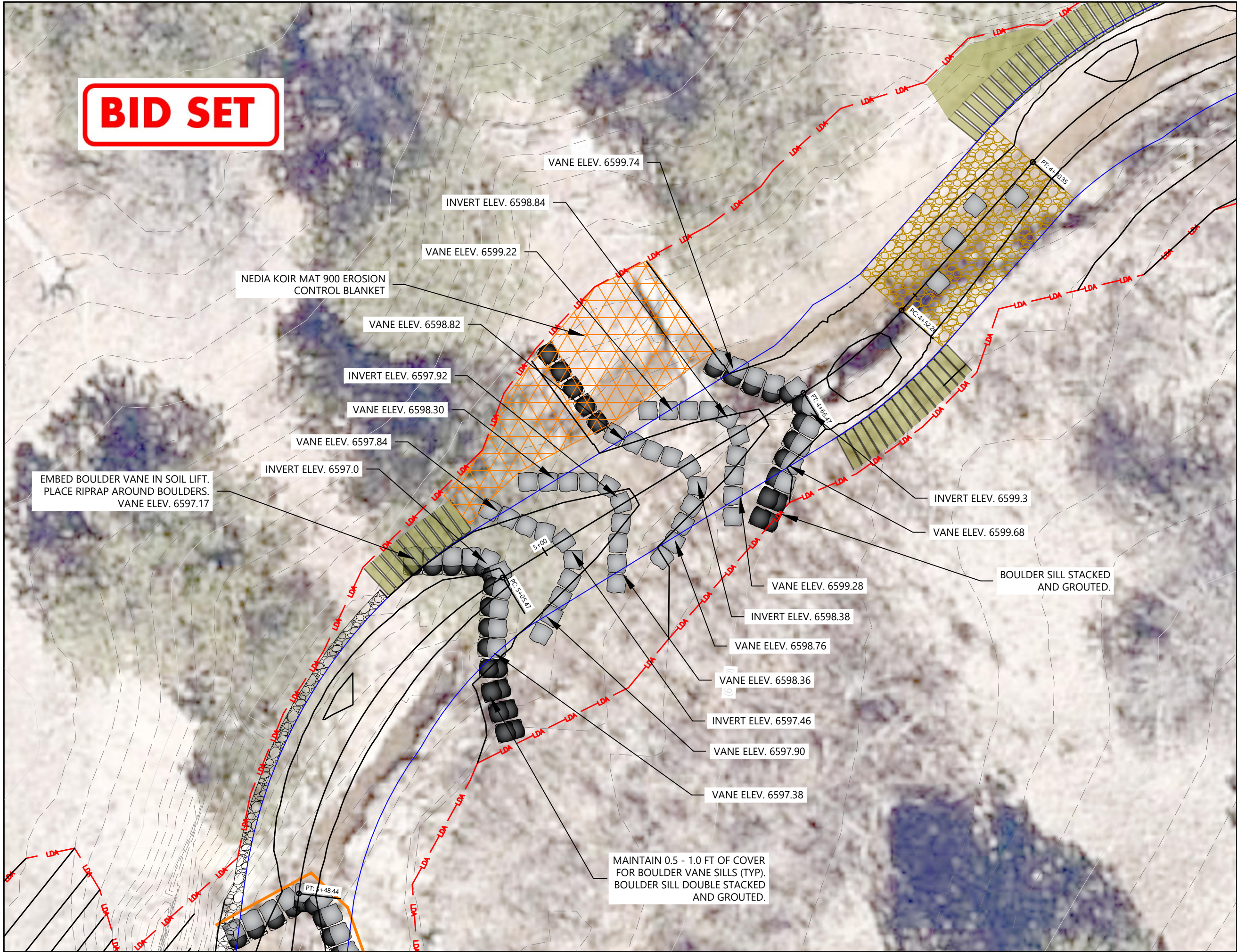
BOULDER VANE 1

2021013002 1" = 10'

Project No. Horizontal Scale

Sheet 23 of 66

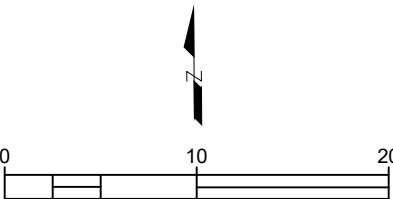
BID SET



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



ALL ELEVATIONS REFERENCED ARE AT THE THALWEG OFFSET 1 FT FROM THE CENTERLINE OR WHERE THE BOULDER VANE INTERSECTS THE BANKFULL LINE.



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

BOULDER VANE 2

2021013002

Project No.

1" = 10'

Horizontal Scale

Sheet 24 of 66

BID SET

EMBED BOULDER VANE IN BANK.
PLACE RIPRAP AROUND BOULDERS.
VANE ELEV. 6597.23

INVERT ELEV. 6596.86

VANE ELEV. 6597.16

VANE ELEV. 6596.73

BOULDER SILL STACKED AND
GROUTED.

INVERT ELEV. 6596.38

VANE ELEV. 6596.63

VANE ELEV. 6596.26

INVERT ELEV. 6595.42

VANE ELEV. 6595.73

VANE ELEV. 6595.30

INVERT ELEV. 6594.46

VANE ELEV. 6594.81

VANE ELEV. 6594.37

INVERT ELEV. 6595.9

VANE ELEV. 6596.24

NEDIA KOIR MAT 900 EROSION
CONTROL BLANKET

VANE ELEV. 6595.78

INVERT ELEV. 6594.94

BOULDER SILL
STACKED AND
GROUTED.

VANE ELEV. 6595.18

VANE ELEV. 6594.82

INVERT ELEV. 6593.98

EMBED BOULDER VANE IN SOIL LIFT.
PLACE RIPRAP AROUND BOULDERS.
VANE ELEV. 6594.27

MAINTAIN 0.5 - 1.0 FT OF
COVER FOR BOULDER VANE
SILLS (TYP). BOULDER SILL
STACKED AND GROUTED.



WATERVATION

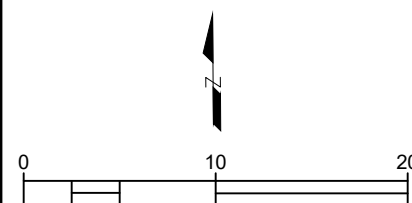
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



ALL ELEVATIONS REFERENCED ARE AT THE THALWEG OFFSET 1 FT FROM THE CENTERLINE OR WHERE THE BOULDER VANE INTERSECTS THE BANKFULL LINE.



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

BOULDER VANE 3

2021013002

Project No.

1" = 10'

Horizontal Scale

Sheet 25 of 66

BID SET

PZC-13 STEEL SHEET PILE
LENGTH = 67 FT

PLACE SOIL LIFT AND BURIED
RIPRAP OVER BURIED BOULDERS,
DEPTHS WILL BE LIMITED BY
BOULDER ELEVATION.

TYPE M VOID
FILLED RIPRAP
LENGTH = 4 FT

DROP STRUCTURE
CROSS-SECTION TO
MATCH GRADING AND
TYPICAL SECTION

WEEP DRAIN (TYP)

BURIED BOULDER (TYP)

WEEP DRAIN (TYP)

SHEET PILE BURIED 6
INCHES BELOW GRADE IN
UN-GROUTED SECTION.

PLACE SOIL LIFT AND
BURIED RIPRAP OVER
BURIED BOULDERS, DEPTHS
WILL BE LIMITED BY
BOULDER ELEVATION.

TYPE H SOIL RIPRAP BURIED 6
INCHES BELOW FINISHED GRADE.
COVER WITH TOPSOIL OR SOIL
MIXED WITH COMPOST.



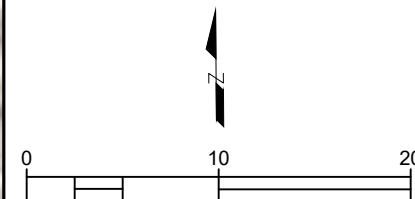
WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

DROP STRUCTURE 1

2021013002

Project No.

1" = 10'

Horizontal Scale

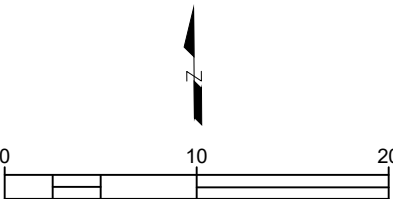
Sheet 26 of 66

BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

DROP STRUCTURE 2

2021013002

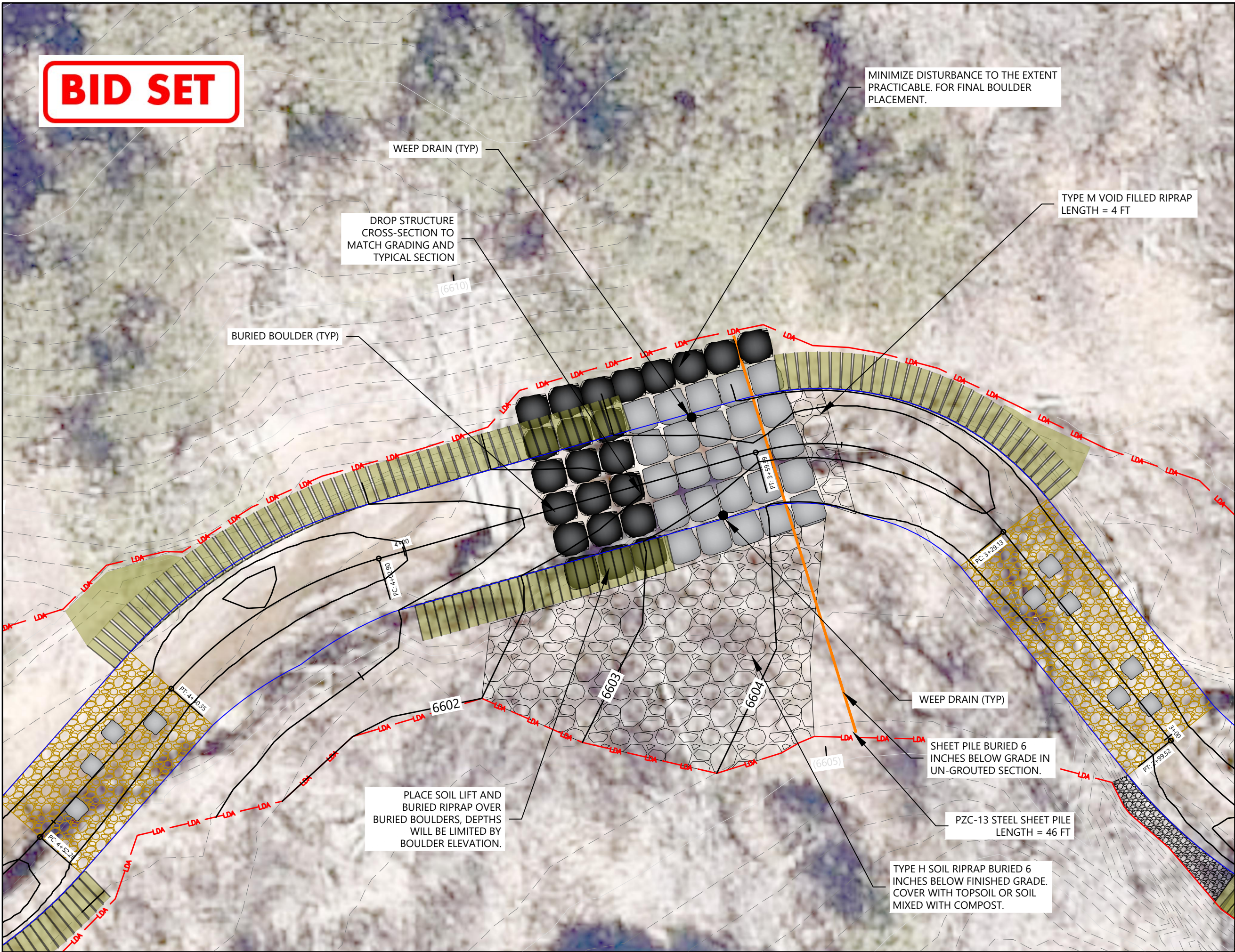
Project No.

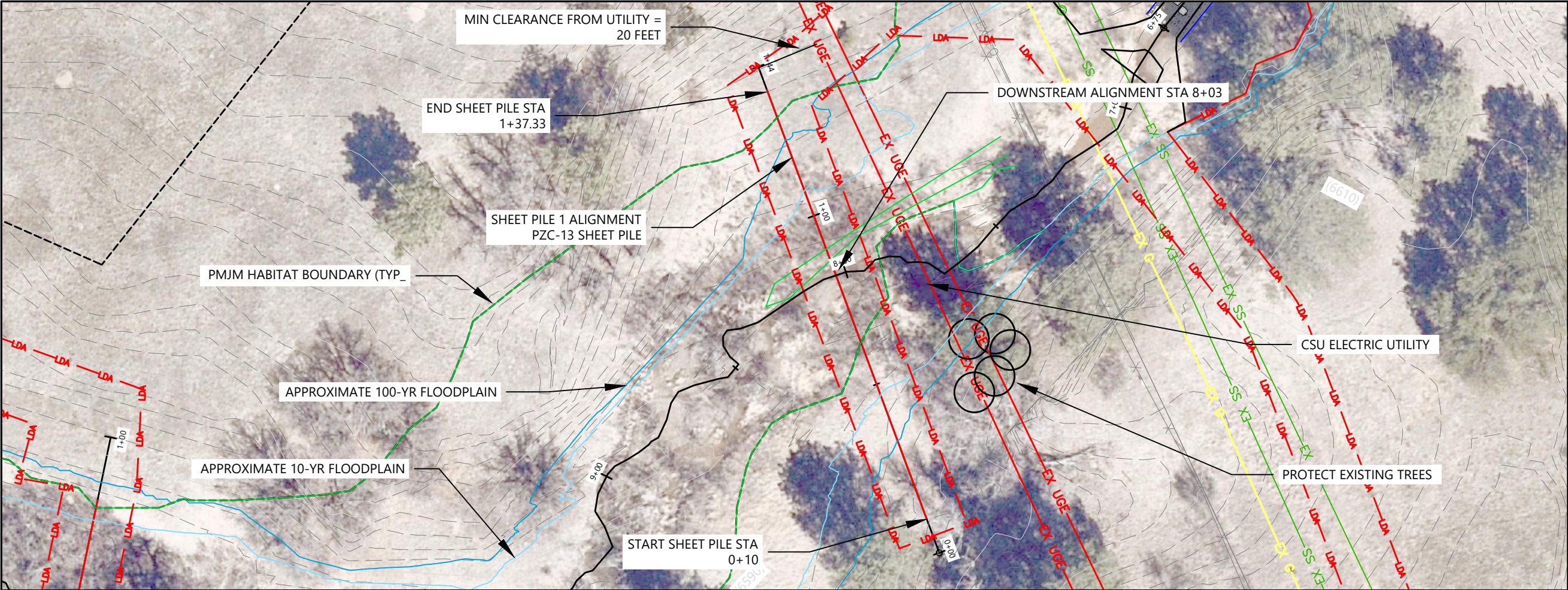
1" = 10'

Horizontal Scale

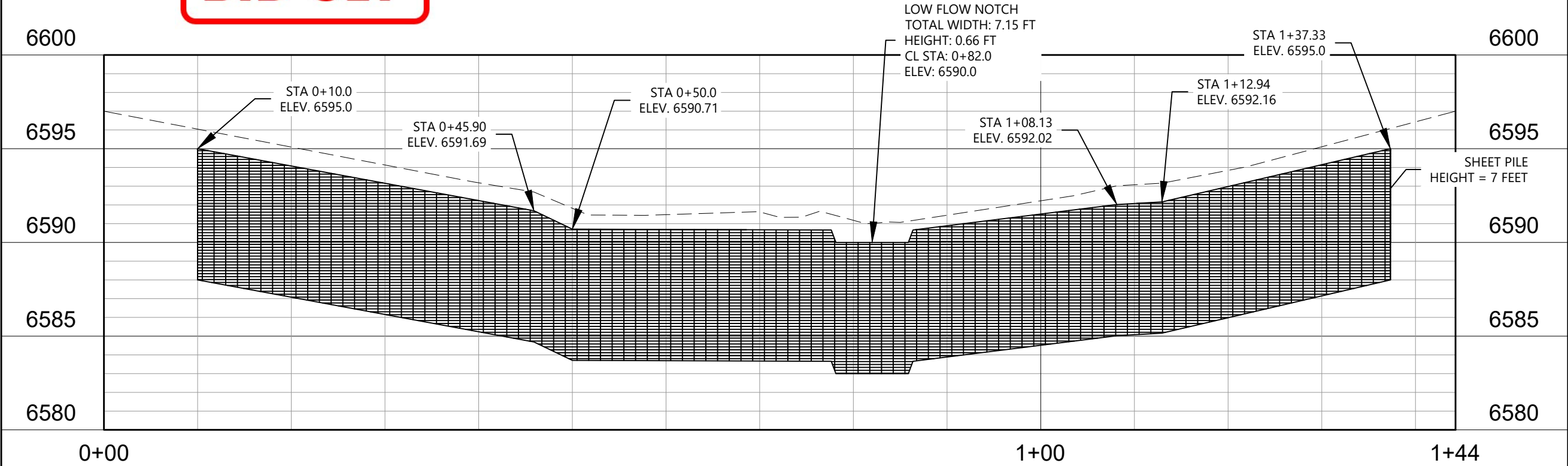
Sheet 27 of 66

C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Arkade Tributary Upstream of I-25 Channel Restoration\3_CAD\Sheet_2\Rev\100\DETAILS\Boulder Drop Structure.dwg
2023/08/08 8:47 AM By: Matthew Johnson





BID SET



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



APPROXIMATE 10-YEAR FLOODPLAIN

APPROXIMATE 100-YEAR FLOODPLAIN

NOTES:
1. CSU ELECTRIC TO BE NOTIFIED AND ONSITE PRIOR TO SHEETPILE INSTALLATION.

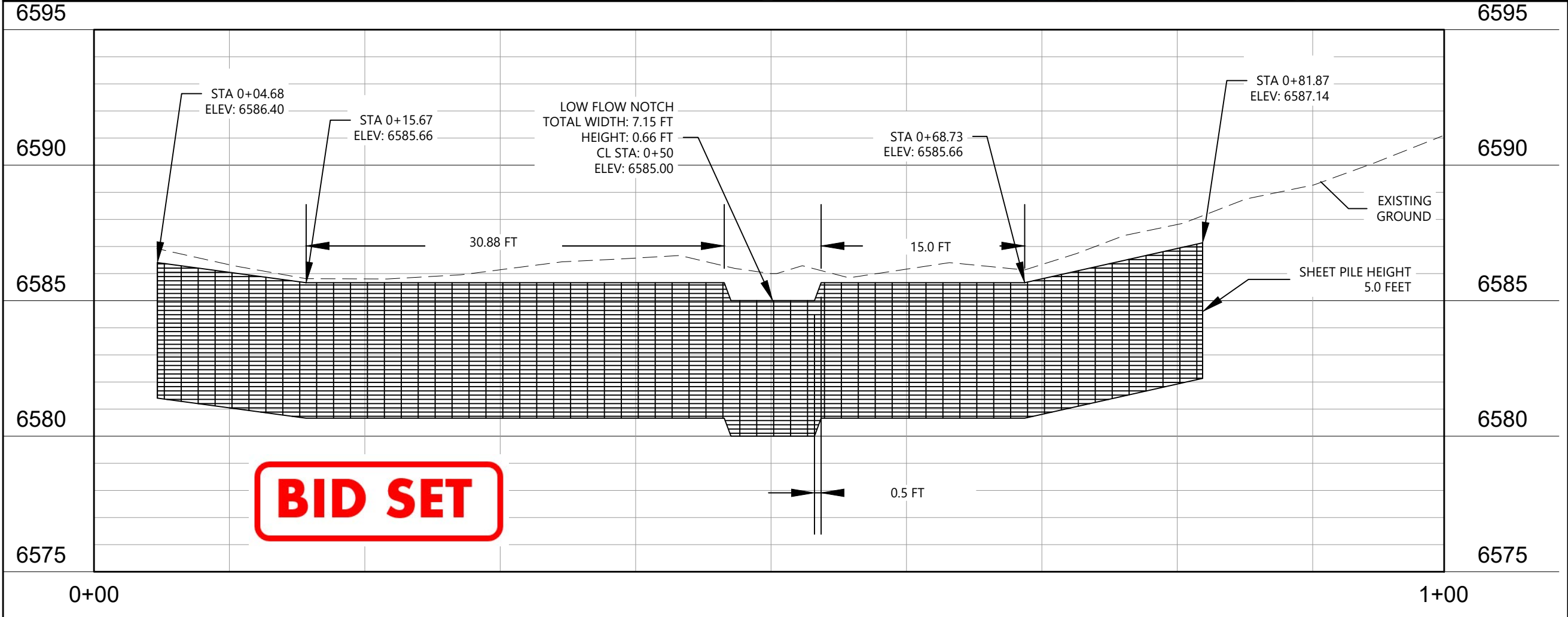
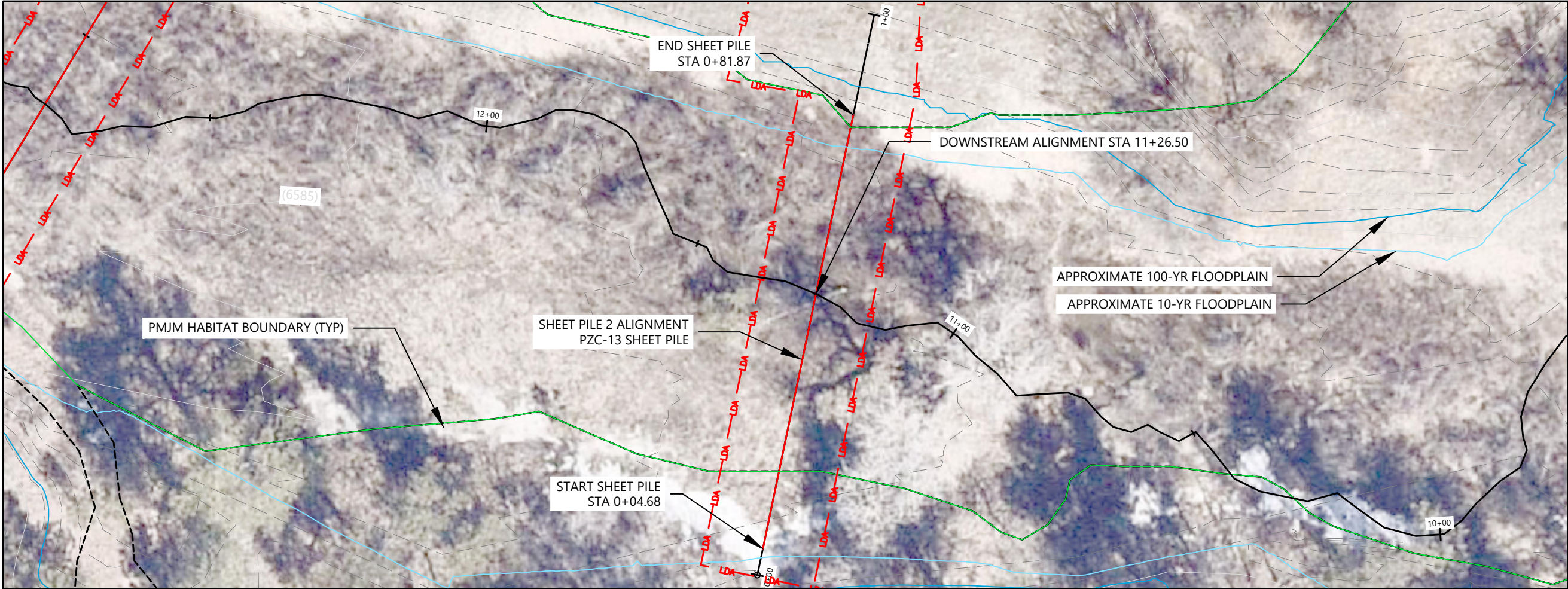


Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SHEET PILE 1

2021013002 Custom
Project No. Horizontal Scale



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



APPROXIMATE 10-YEAR FLOODPLAIN
APPROXIMATE 100-YEAR FLOODPLAIN

NOTES:
1. POTENTIAL CLAYSTONE BEDROCK
AT ELEV. 6582.7' PER BORING B-1A

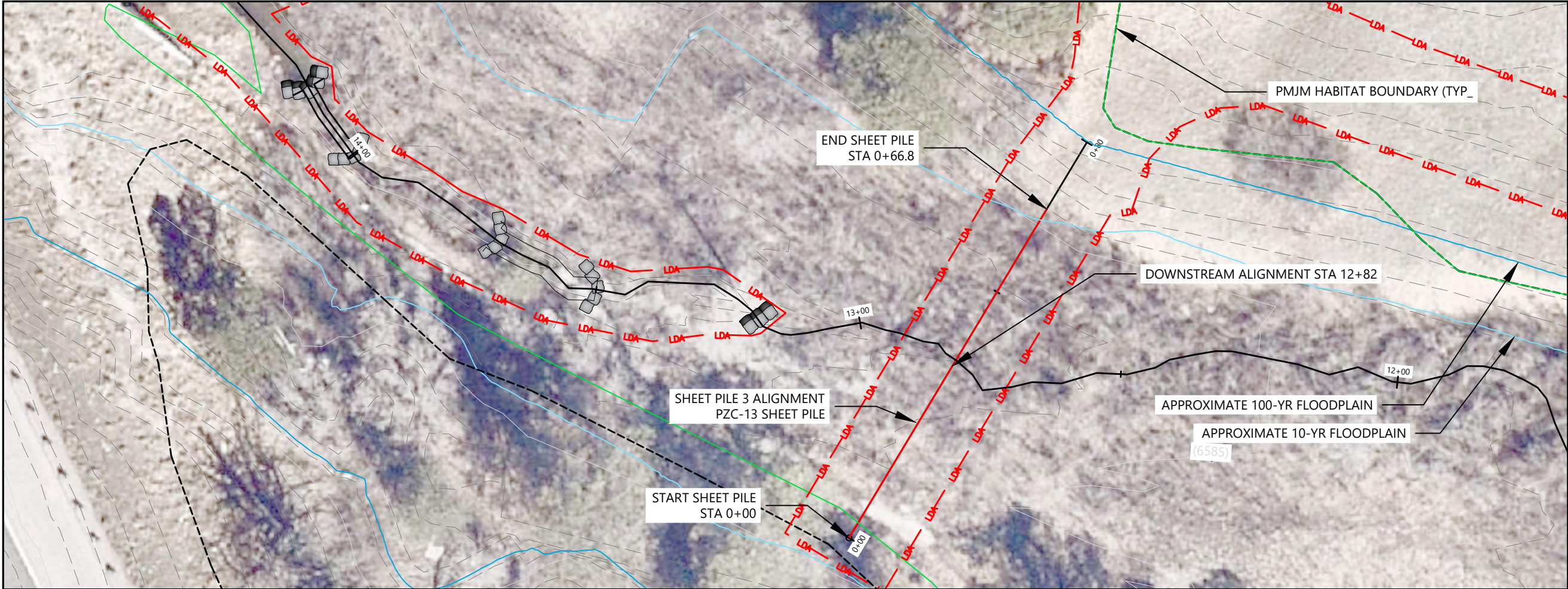


Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SHEET PILE 2

2021013002 Custom
Project No. Horizontal Scale



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

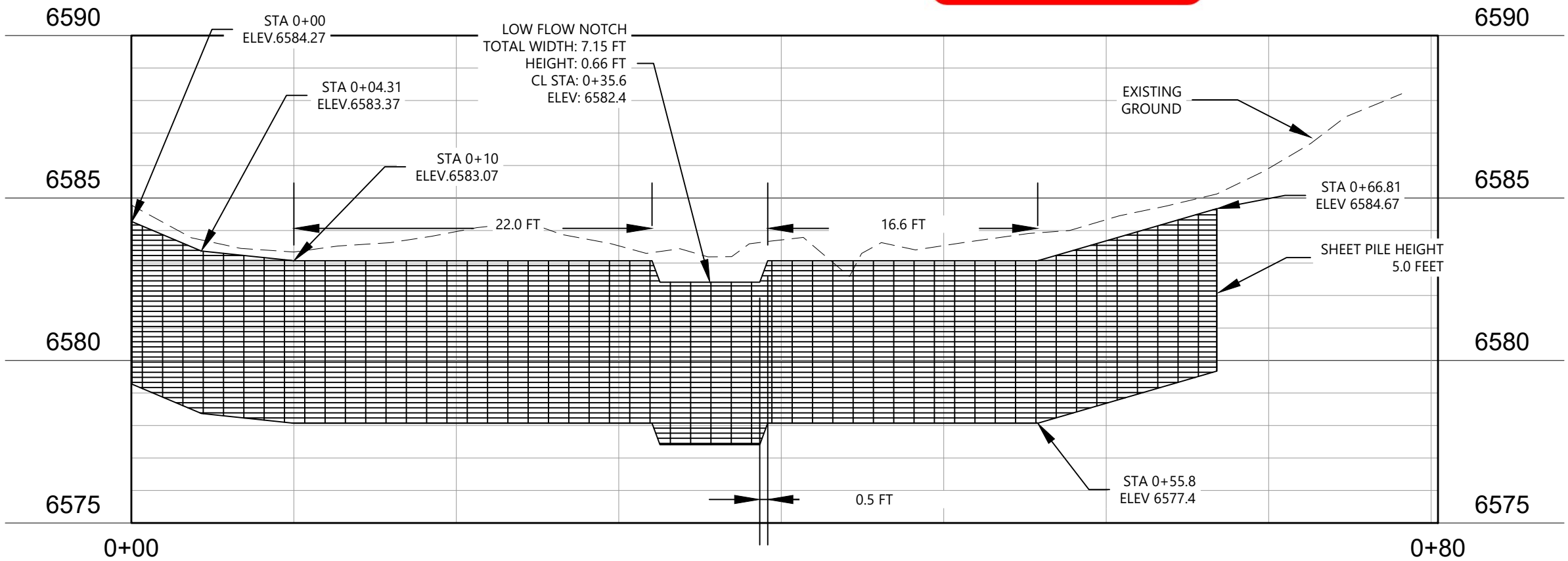
Legend



APPROXIMATE 10-YEAR FLOODPLAIN

APPROXIMATE 100-YEAR FLOODPLAIN

BID SET



NOTES:
1. POTENTIAL CLAYSTONE BEDROCK AT ELEV. 6582.7' PER BORING B-1A

Colorado Springs Utilities
It's how we're all connected

COLORADO SPRINGS
OLYMPIC CITY USA



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SHEET PILE 3

2021013002 Custom
Project No. Horizontal Scale

Sheet 30 of 66

BID SET

DEMO EXISTING CONCRETE AND RE-POUR CONCRETE PER CITY OF COLORADO SPRINGS STANDARD DETAILS

FINISHED GRADE ELEV. 6579.44

FINISHED GRADE ELEV. 6579.39

FINISHED GRADE ELEV. 6579.29

TAPER CURB TO FINISHED GRADE AT 2:1 SLOPE

FINISHED GRADE ELEV. 6579.69

FINISHED GRADE ELEV. 6579.84

SECTION VIEW

FINISHED GRADE ELEV. 6580.50

TAPER CURB TO FINISHED GRADE AT 2:1 SLOPE

FINISHED GRADE ELEV. 6580.35

CONCRETE CURB 6 IN WIDE AND 6 IN ABOVE CONCRETE TRAIL

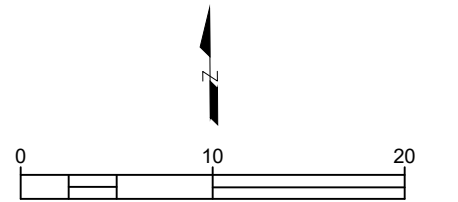


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

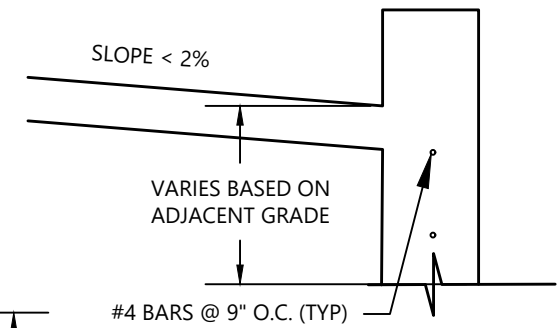
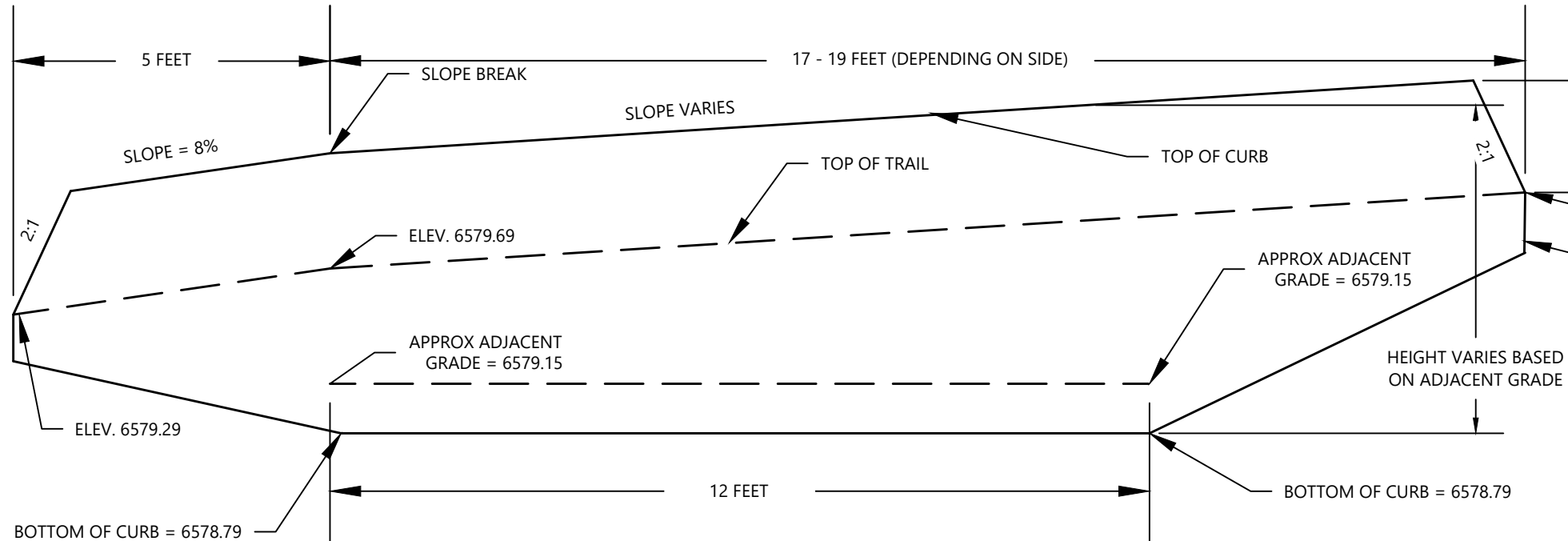


Legend



NOTES:

1. CONCRETE TRAIL TO BE 4000 PSI CITY MIX WITH 1.5--LBS OF POLYOLEFIN MACRO-FIBER THAT MEETS ASTM C-1116 AND ASTM D-7508.
2. CONCRETE TRAIL TO BE 5 INCHES THICK
3. SAW CUT 1-INCH DEEP CONTROL JOINTS EVERY 10--FEET
4. EXPANSION JOINTS EVERY 100--FEET, $\frac{1}{2}$ DEPTH OF TRAIL. ALL EXPANSION JOINTS SHALL BE SEALED.
5. A MEDIUM BROOM FINISH, WITH SWEEPS PERPENDICULAR TO THE DIRECTION OF TRAVEL, SHALL BE APPLIED TO ALL CONCRETE SURFACES.
6. CROSS SLOPE LESS THAN 2%
7. COLORADO SPRINGS PARKS DEPARTMENT TO INSPECT FORMS PRIOR TO POUR



PROFILE ALONG CURB HEAD

SECTION



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

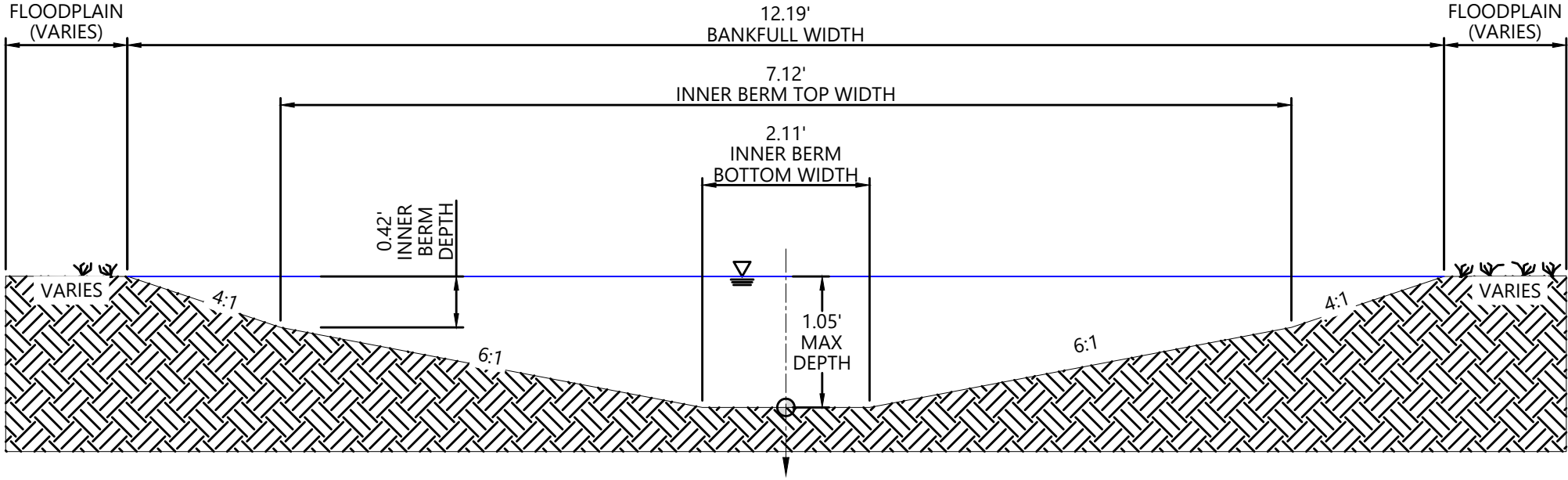
Sheet Name
CONCRETE TRAIL

2021013002 1" = 10'
Project No. Horizontal Scale

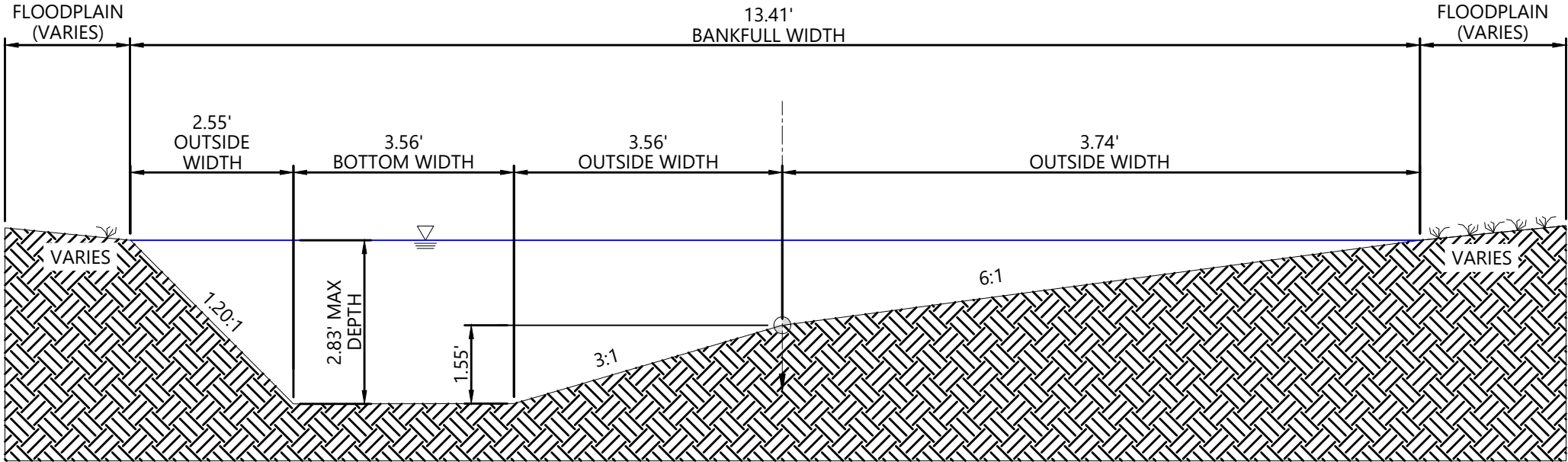
C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Artistic\Library\Upstream of I-25 Channel Restoration\3_CAD\Sheet_2.dwg (100% DETAILS\CONCRETE TRAIL.dwg)
2023/08/08 8:48 AM By: Matthew Johnson

TYPICAL MAIN CHANNEL SECTION - RIFFLE
SCALE: NTS

BID SET



TYPICAL MAIN CHANNEL SECTION - POOL
SCALE: NTS



- NOTES:
1. THALWEG (DEEPEST POINT IN A CROSS SECTION) IS LOCATED ON OUTSIDE 1/3 OF BANKFULL CHANNEL WITHIN THE POOL CROSS SECTION.
 2. ALL CROSS SECTIONS ARE SHOWN LOOKING IN THE DOWNSTREAM DIRECTION.
 3. ⊕ GRADE POINT IS THE CENTERLINE OF THE STREAM.
 4. ALL SHARP CORNERS SHOULD BE ROUNDED.
 5. THE ELEVATION OF THE LOCATION MARKED "INNER BERM DEPTH" SHALL MATCH THE DOWNSTREAM LOW FLOW ELEVATION.
 6. CONTRACTOR TO WORK IN THE FIELD TO FIELD FIT RIFFLE AND POOL TRANSITIONS WITH THE ENGINEER AS NEEDED.

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



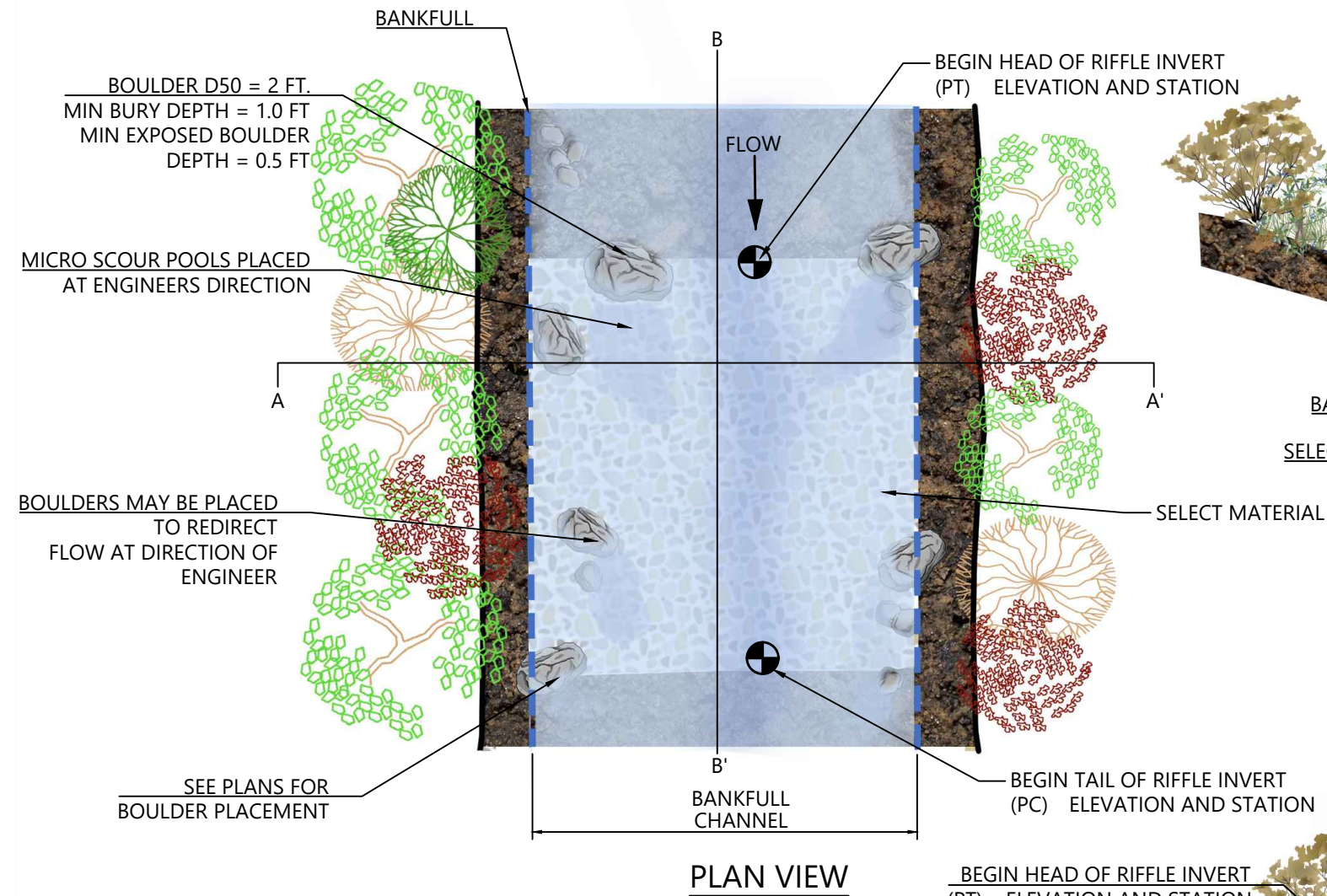
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
90% DESIGN SUBMITTAL

Sheet Name
TYPICAL SECTION

2021013002 Custom
Project No. Horizontal Scale

- NOTES:
- 1) BOULDERS SHALL BE PLACED AS SHOWN ON THE PLANS. LOCATION CAN BE MODIFIED DURING CONSTRUCTION AT THE DIRECTION OF ENGINEER.
 - 2) BOULDER STRUCTURES SHALL CONSIST OF A SURFACE BOULDER AND FOOTER BOULDER.
 - 3) SURFACE BOULDER SHALL BE PLACED ON TOP OF A FOOTER BOULDER AND HORIZONTALLY OFFSET (IN THE UPSTREAM DIRECTION) BY A DISTANCE OF $\frac{1}{2}$ THE BOULDER DIAMETER.
 - 4) THE SURFACE OF ALL BOULDERS SHALL BE SLIGHTLY ANGLED IN THE UPSTREAM DIRECTION SO THAT ACTIVE STREAM FLOW "PUSHES" THE SURFACE BOULDER ONTO THE SURFACE OF THE FOOTER BOULDER WITHOUT RESULTING IN SURFACE BOULDER SLIPPING OFF OF THE FOOTER BOULDER.
 - 5) BOULDERS DIAMETER = 2.0 FEET.

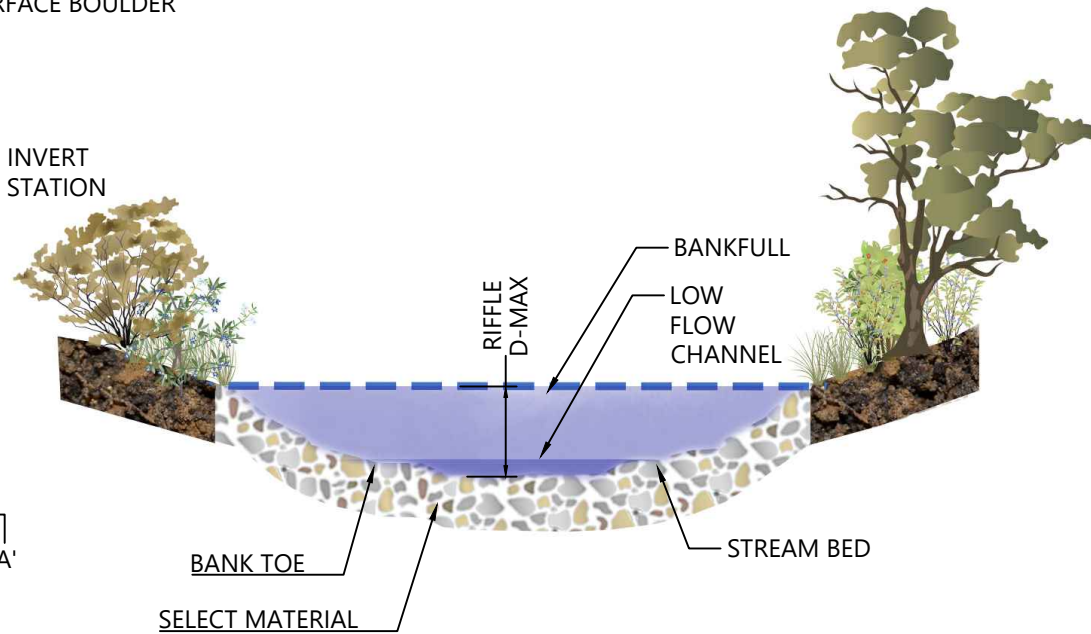


- NOTES:
- 1. SELECT RIFFLE MATERIAL WILL BE PLACED AT A UNIFORM THICKNESS.
 - 2. THE SELECT RIFFLE MATERIAL WILL BE PLACED SUCH THAT, IN CROSS-SECTION, ITS LOWEST ELEVATION OCCURS IN THE CENTER OF THE CHANNEL AS PER THE DETAIL.
 - 3. SET INVERTS AT ELEVATIONS SHOWN ON THE PROFILE.
 - 4. SELECT RIFFLE MATERIAL SHALL BE COMPACTED USING TRACK EQUIPMENT SUCH THAT FUTURE SETTLEMENT OF THE MATERIAL IS KEPT TO A MINIMUM.
 - 5. THE FINISHED GRADE SHALL MATCH TYPICAL RIFFLE CROSS-SECTION SHOWN ON THE DRAWINGS. THE INVERT ELEVATION TOLERANCE IS +/- 0.1 FT.
 - 6. POST INSTALLATION RE-DRESSING OF CHANNEL AND BANKFULL BENCH/FLOODPLAIN WILL LIKELY BE REQUIRED AND SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.
 - 7. SEE TYPICAL RIFFLE CROSS SECTION FOR DIMENSIONS.
 - 8. D= 2.0 FEET FOR ALL APPLICATIONS UNLESS OTHERWISE STATED.
 - 9. RIFFLE TYPE SHOWN ON THE PLANS.
 - 10. SEE SPECIFICATIONS FOR FURTHER DETAIL.

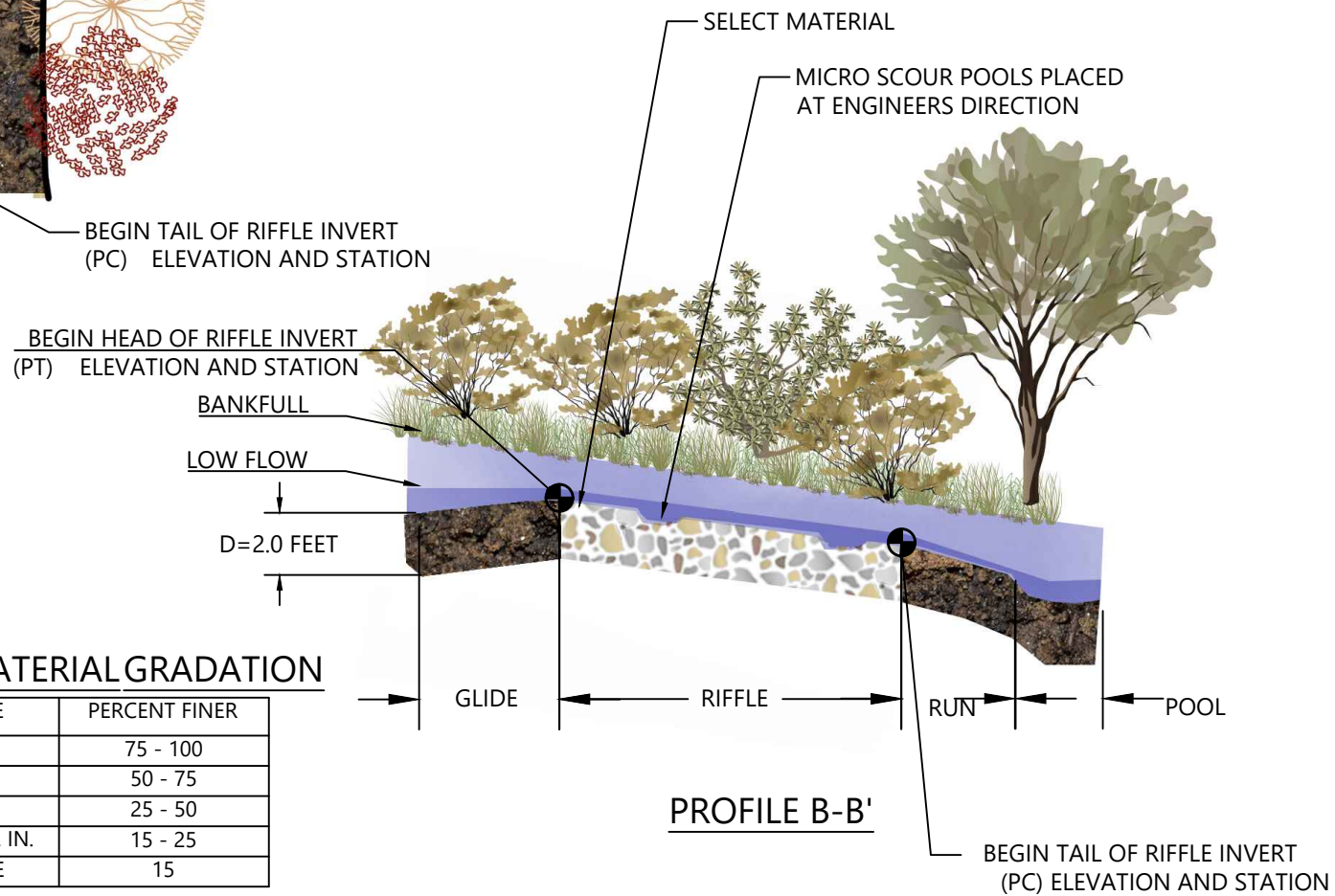
SELECT MATERIAL GRADATION

ROCK SIZE	PERCENT FINER
8 - 12 IN.	75 - 100
6 - 8 IN.	50 - 75
2 - 6 IN.	25 - 50
#30 SIEVE - 2 IN.	15 - 25
#30 SIEVE	15

BID SET



CROSS SECTION A-A'



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
30% DESIGN SUBMITTAL

Sheet Name
COBBLE RIFFLE

2021013002 Custom
Project No. Horizontal Scale

Sheet 33 of 66

BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



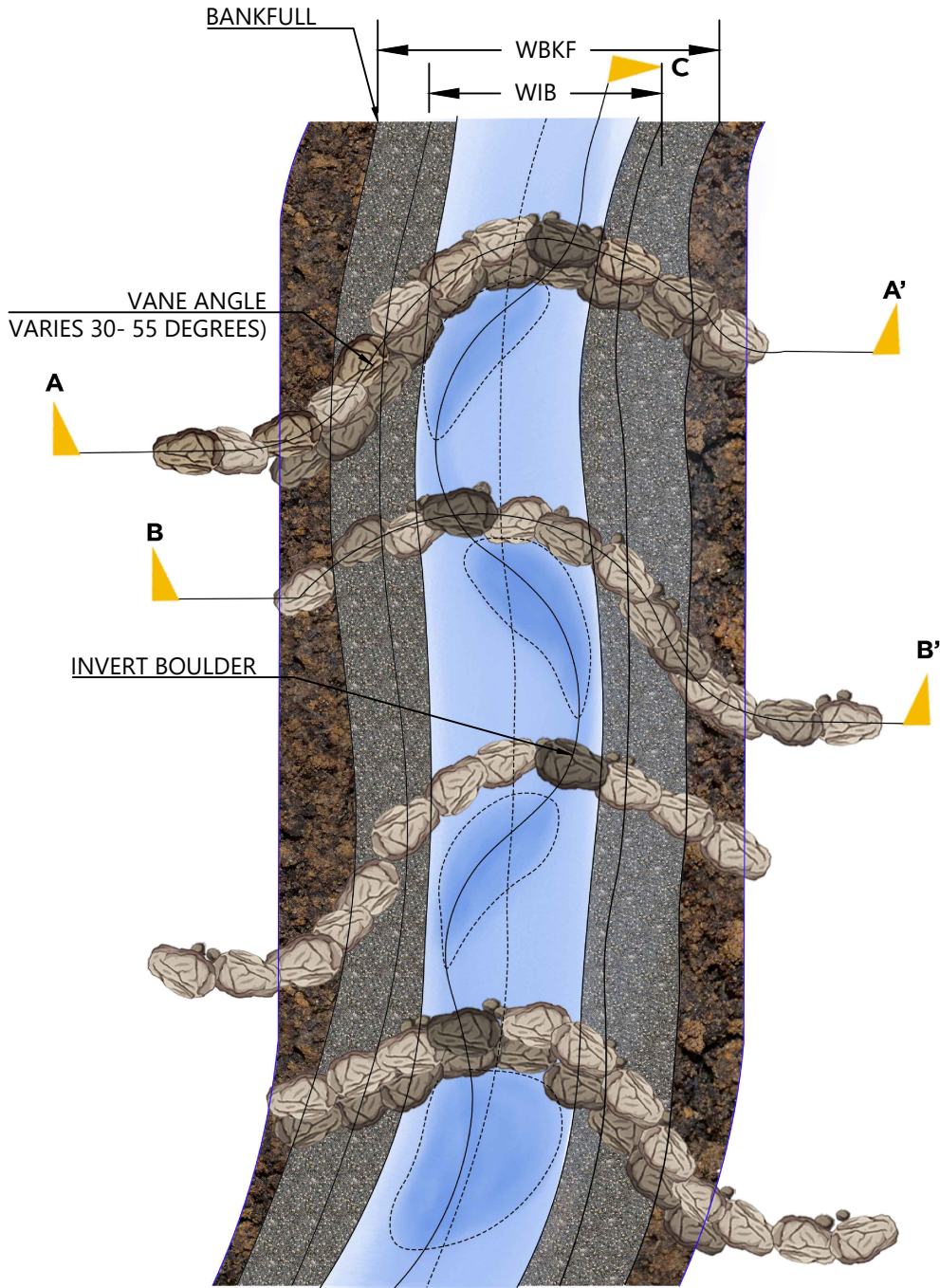
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
30% DESIGN SUBMITTAL

Sheet Name
BOULDER RIFFLE

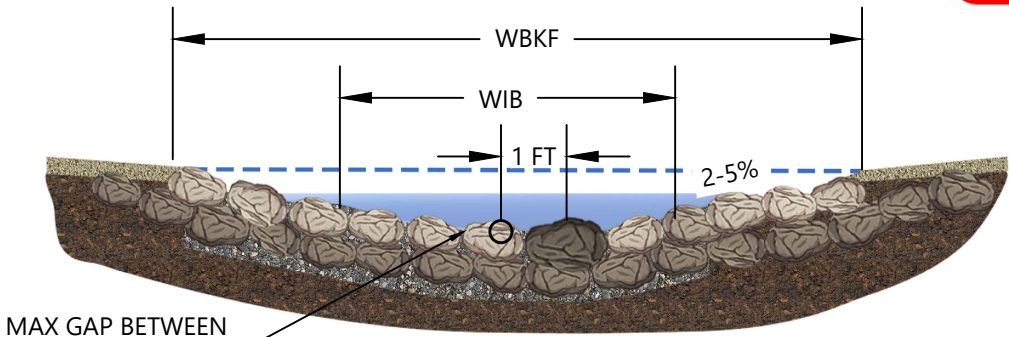
2021013002 Custom
Project No. Horizontal Scale

Sheet 34 of 66

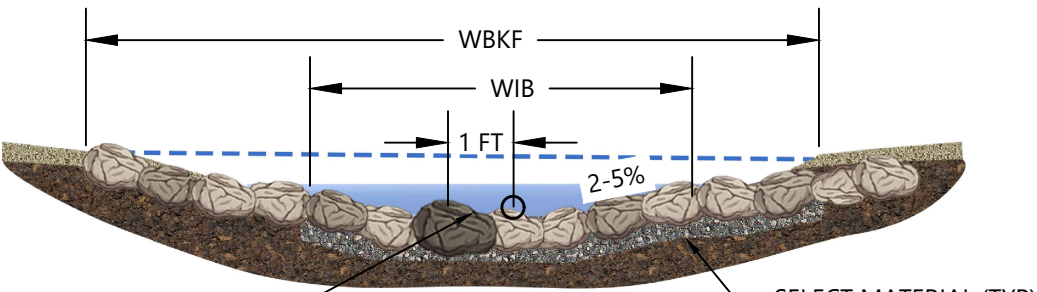


C'
PLAN VIEW

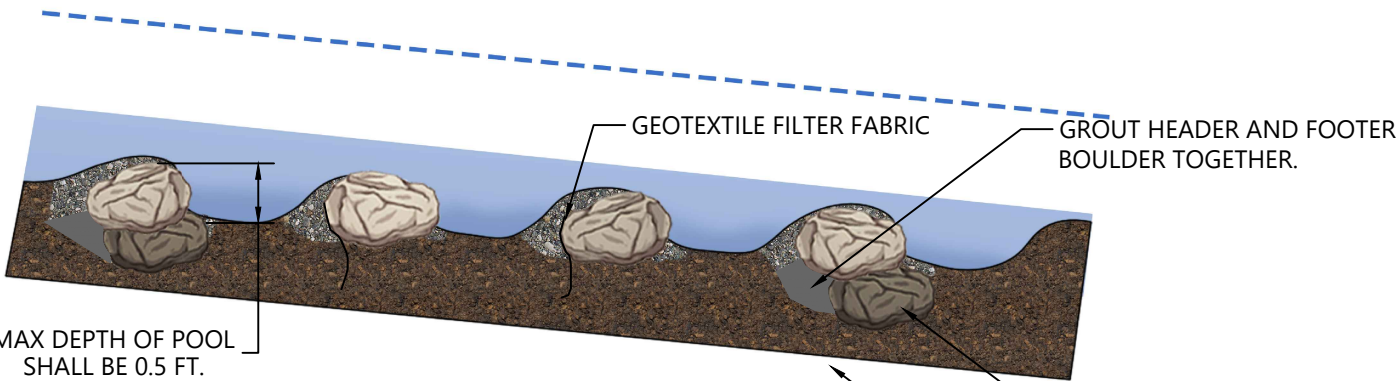
- NOTES:
1. THE NUMBER OF VANE ARMS COMPRISING THE STRUCTURE IS SHOWN ON THE PLAN VIEW/GRADING SHEETS.
 2. THE DROP BETWEEN VANES SHALL NOT EXCEED 0.5 FEET.
 3. THE VANE INVERT SHALL BE SET BASED ON THE ELEVATIONS SHOWN ON THE PLAN AND PROFILE SHEETS AND SHALL BE WITHIN 0.1 FEET OF THE SPECIFIED ELEVATION.
 4. BACKFILL VANES WITH SELECT MATERIAL PLACED 1.0 FEET DEEP. COMPACT THE BACKFILLED MATERIAL SUCH THAT FUTURE SETTLEMENT OF THE MATERIAL IS KEPT TO A MINIMUM.
 5. SELECT MATERIAL SHALL BE USED TO FILL GAPS BETWEEN STRUCTURE BOULDERS. HAND CHINK ROCK FROM THE BACK OF THE STRUCTURE AS NECESSARY.
 6. THE INVERT OF THE BOULDER VANE IS OFFSET 1.0 FEET ALTERNATING AS SHOWN ON THE DETAIL AND PROJECT PLANS. THE INVERT SHALL BE THE ELEVATION SHOWN ON THE PROFILE.



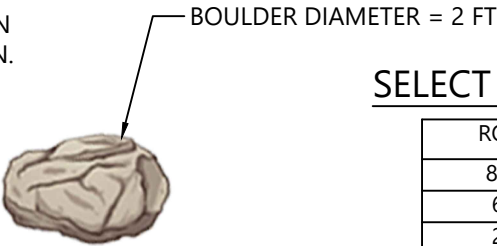
SECTION A-A'



SECTION B-B'



PROFILE C-C'

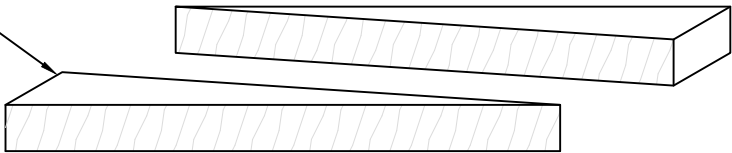


SELECT MATERIAL GRADATION

ROCK SIZE	PERCENT FINER
8 - 12 IN.	75 - 100
6 - 8 IN.	50 - 75
2 - 6 IN.	25 - 50
#30 SIEVE - 2 IN.	15 - 25
#30 SIEVE	15

BID SET

DIAGONALLY CUT WOOD STAKES
MADE FROM 2"X4" DIMENSIONAL
LUMBER 2'-0" LENGTHS FOR COIR
MAT. PLACE STAKES 2' O.C.



CUT WOOD STAKES



WATERVATION

123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

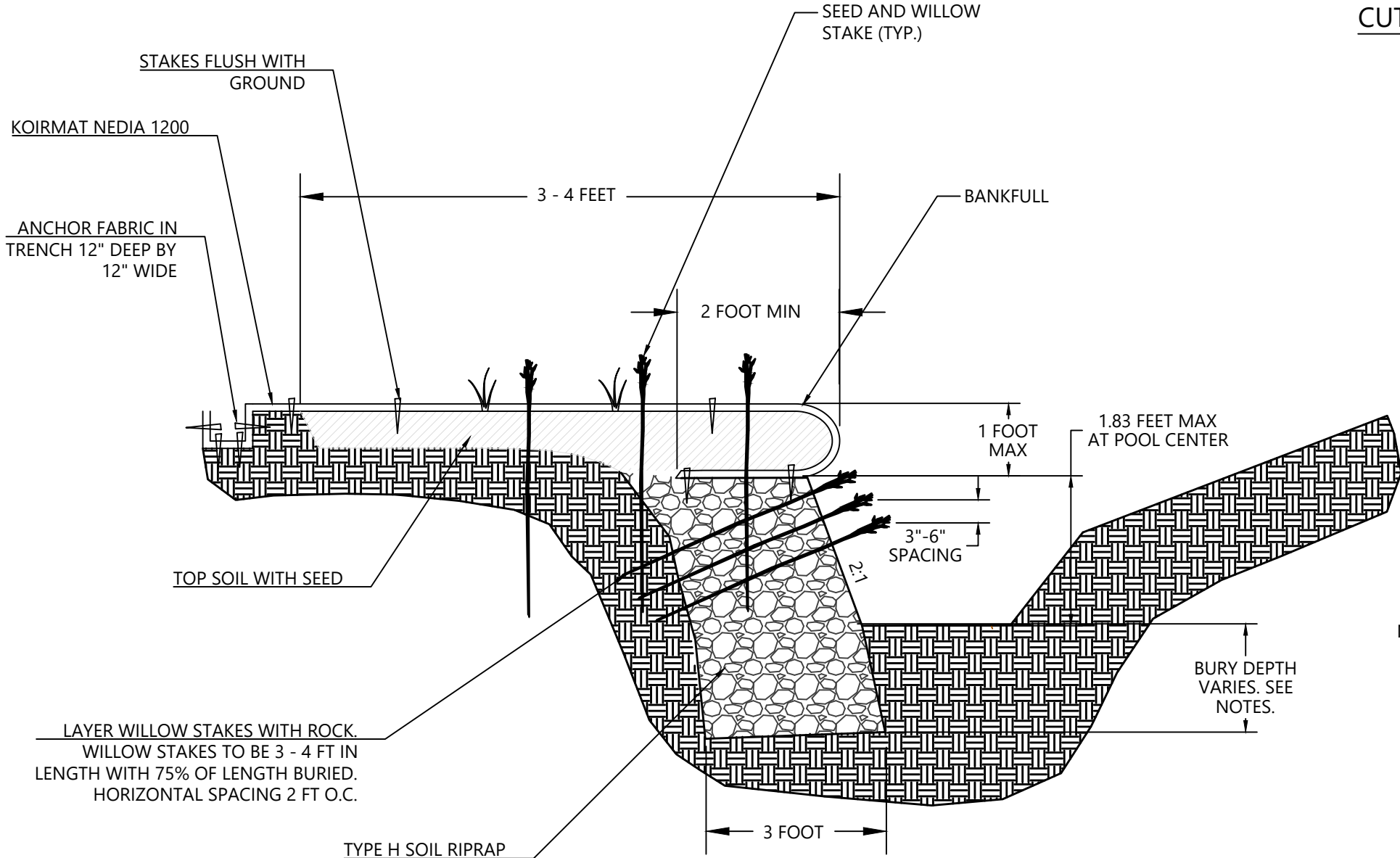
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.

The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



NOTES FOR BURY DEPTHS:

1. SOIL LIFT BEND #1 DEPTH = 4.0 FT
2. SOIL LIFT BEND #2 DEPTH = 4.0 FT
3. SOIL LIFT BEND #3 DEPTH = 5.0 FT
4. SOIL LIFT BEND #4 DEPTH = 4.0 FT
5. SOIL LIFT BEND #5 DEPTH = 5.0 FT
6. SOIL LIFT BEND #6 DEPTH = 3.0 FT
7. SOIL LIFT BEND #7 DEPTH = 4.0 FT
8. SOIL LIFT BEND #8 DEPTH = 3.0 FT
9. SOIL LIFT BEND #9 DEPTH = 3.0 FT

SOIL LIFT BEND SECTION



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

SOIL LIFT WITH ROCK TOE

2021013002 Custom

Project No.	Horizontal Scale
-------------	------------------

Sheet 35 of 66

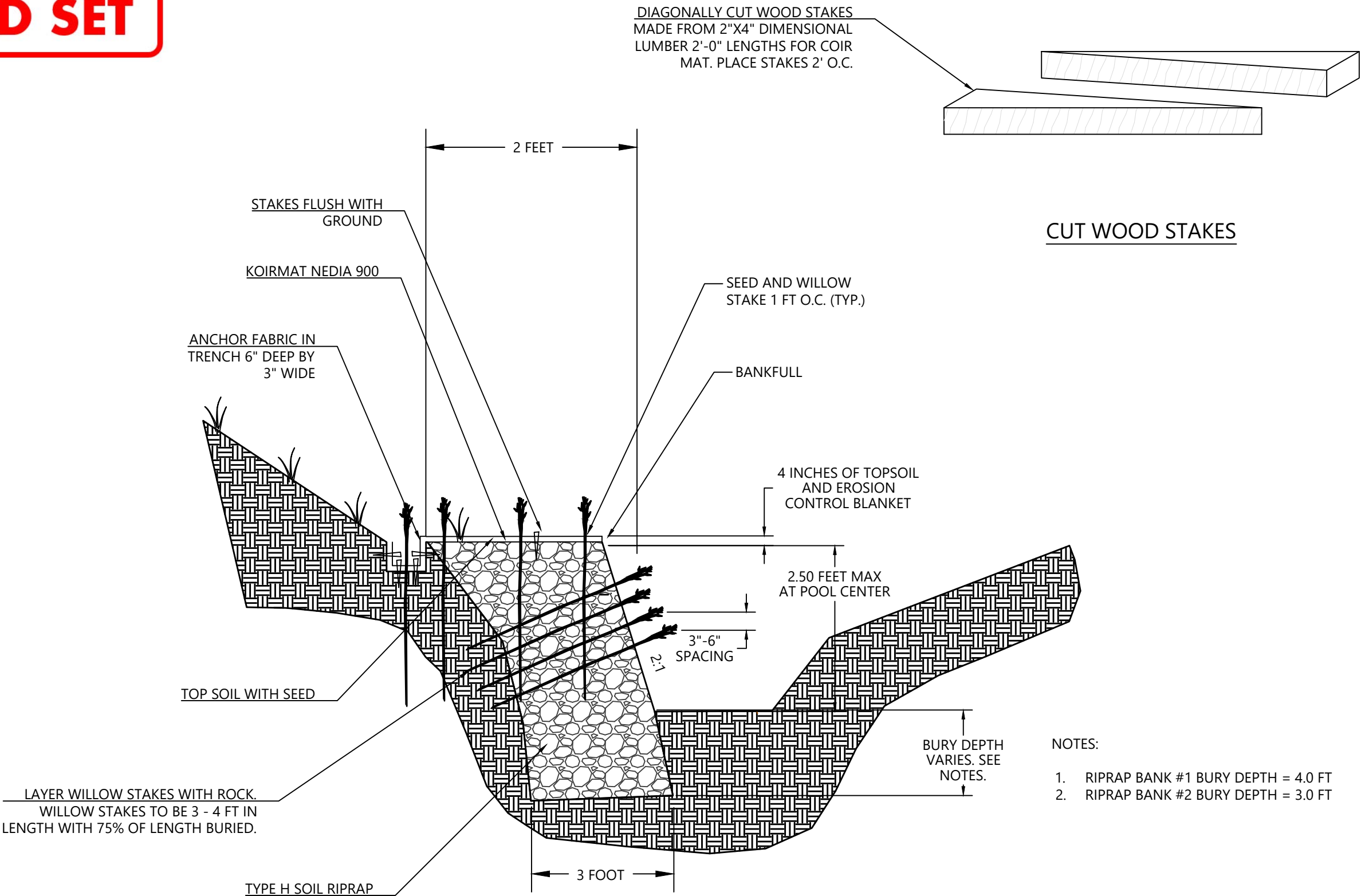
BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



- NOTES:
1. RIPRAP BANK #1 BURY DEPTH = 4.0 FT
 2. RIPRAP BANK #2 BURY DEPTH = 3.0 FT



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

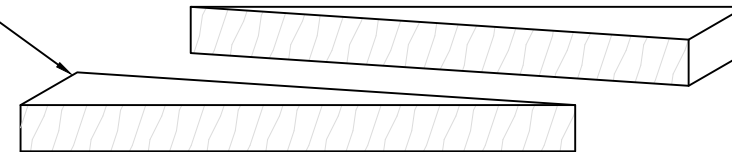
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
RIPRAP BANK SECTION

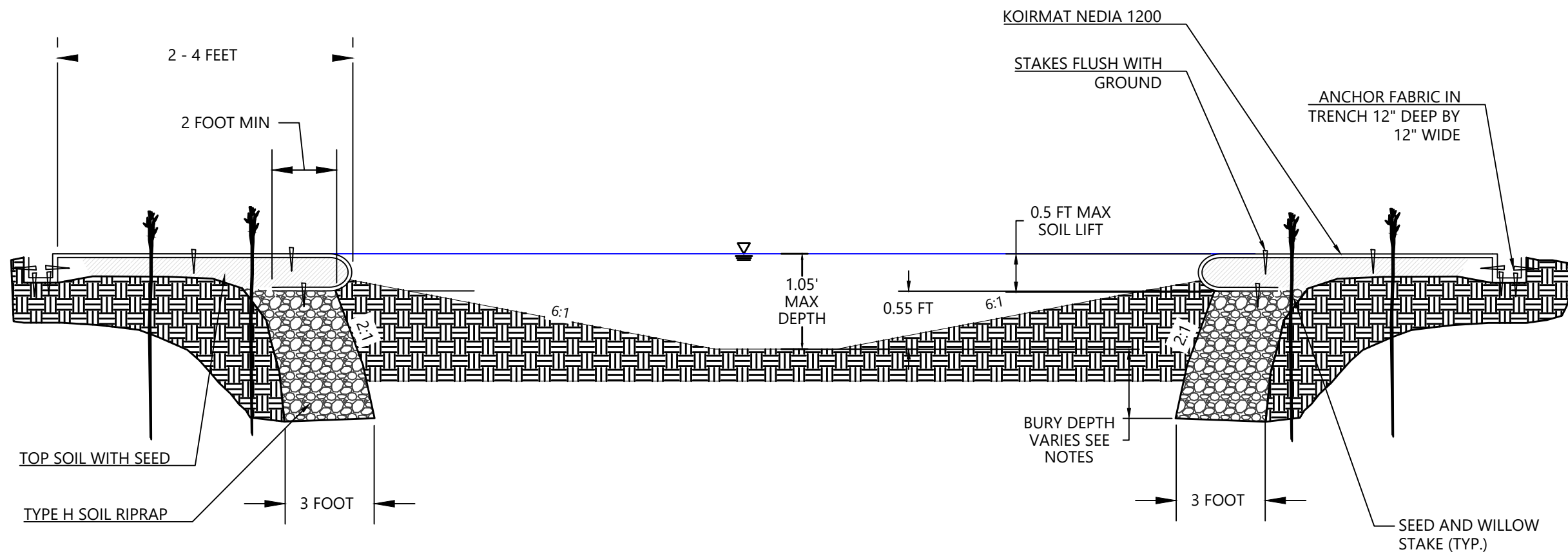
2021013002 Custom
Project No. Horizontal Scale

BID SET

DIAGONALLY CUT WOOD STAKES
MADE FROM 2"X4" DIMENSIONAL
LUMBER 2'-0" LENGTHS FOR COIR
MAT. PLACE STAKES 2' O.C.



CUT WOOD STAKES



RIFFLE SOIL LIFT SECTION

NOTES:

1. RIFFLE SOIL LIFT #1 & #2 BURY DEPTH = 3.0 FT
2. RIFFLE SOIL LIFT #3 & #4 BURY DEPTH = 3.0 FT



WATERVATION

123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

RIFFLE SOIL LIFT SECTION

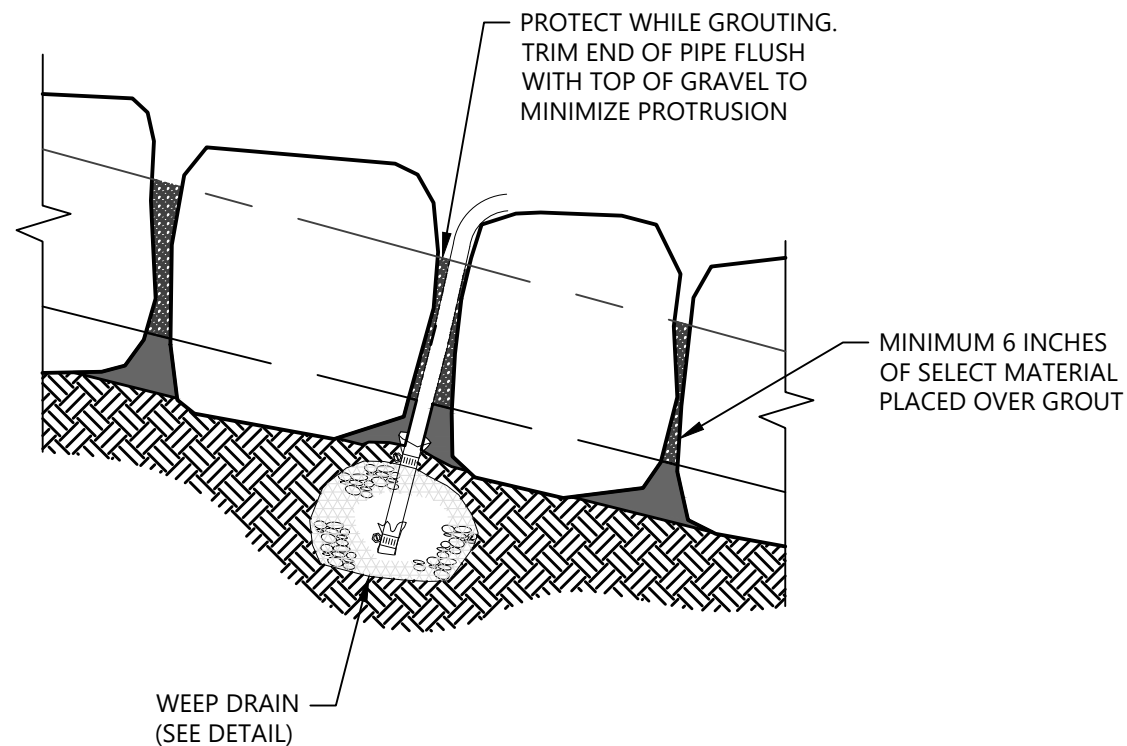
2021013002

Custom

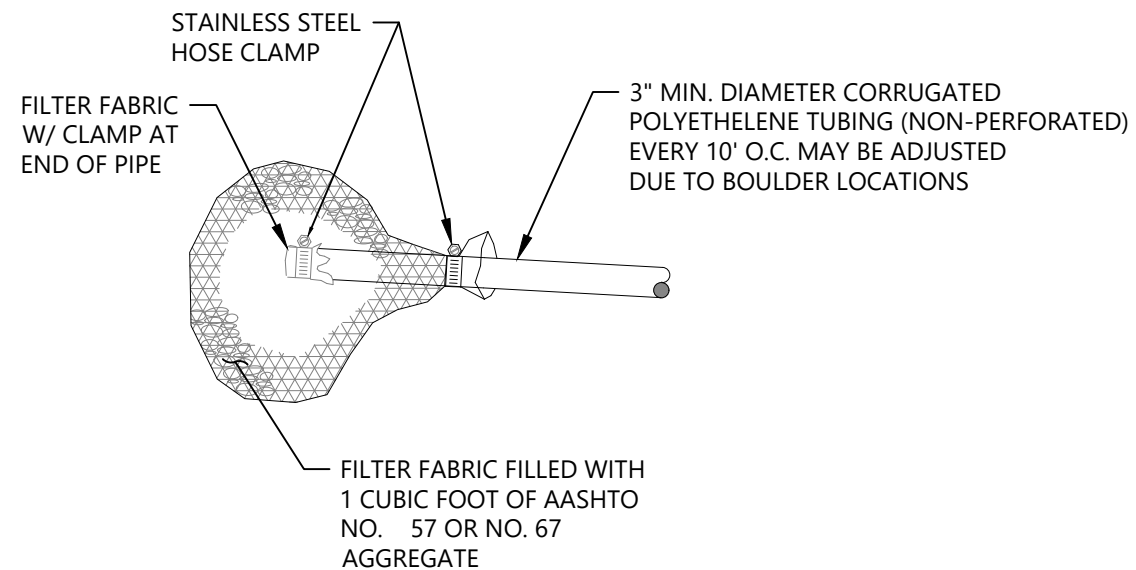
Project No.

Horizontal Scale

Sheet 37 of 66



GROUTED BOULDER DROP STRUCTURE

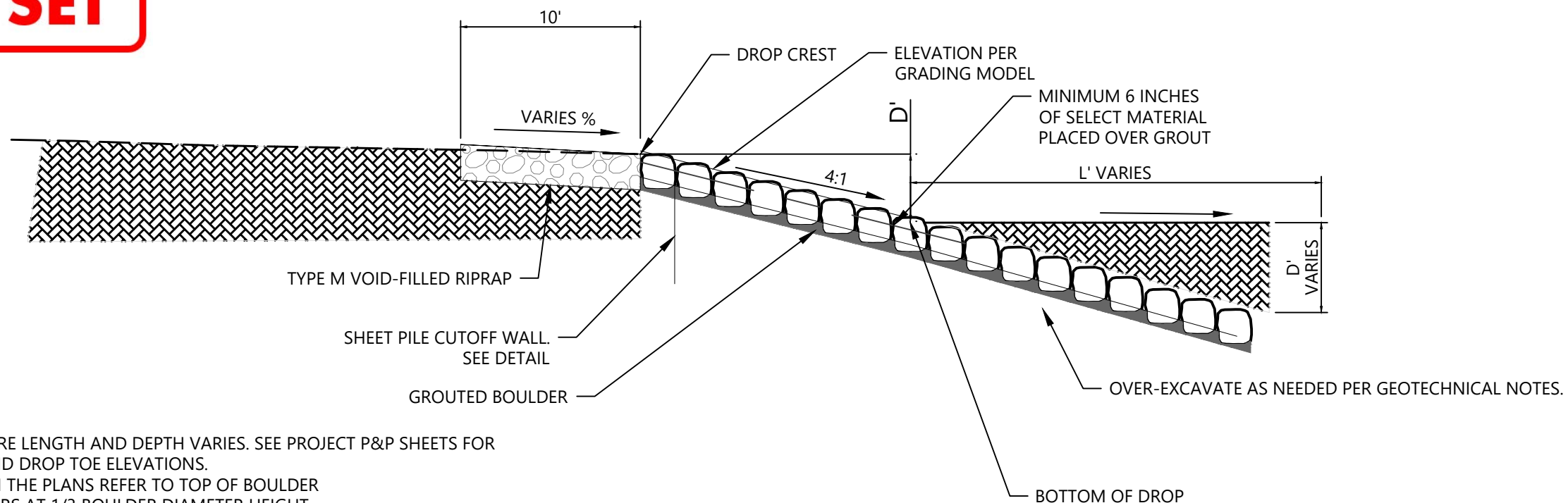


NOTES:

1. INSTALL WEEP DRAINS FOR DROPS AND GROUTED RIPRAP AT 10' O.C. FILTER FABRIC SHALL BE PLACED BELOW GROUT AND BOTTOM OF ROCK.

WEEP DRAIN DETAIL

BID SET



NOTES:

1. DROP STRUCTURE LENGTH AND DEPTH VARIES. SEE PROJECT P&P SHEETS FOR DROP CREST AND DROP TOE ELEVATIONS.
2. ELEVATIONS ON THE PLANS REFER TO TOP OF BOULDER
3. GROUT BOULDERS AT 1/3 BOULDER DIAMETER HEIGHT.
4. BOULDERS TO BE STEPPED WITH TOP OF BOULDER PLACED FLAT.
5. PLACE A MINIMUM OF 6 INCHES OF SELECT MATERIAL OVER GROUT WITHIN STRUCTURE. HAND PLACE MATERIAL INTO GROUT WHILE UN-DRY. THEN PLACE REST OF THE MATERIAL.

GROUTED BOULDER DROP STRUCTURE PROFILE



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

DROP STRUCTURE (1)

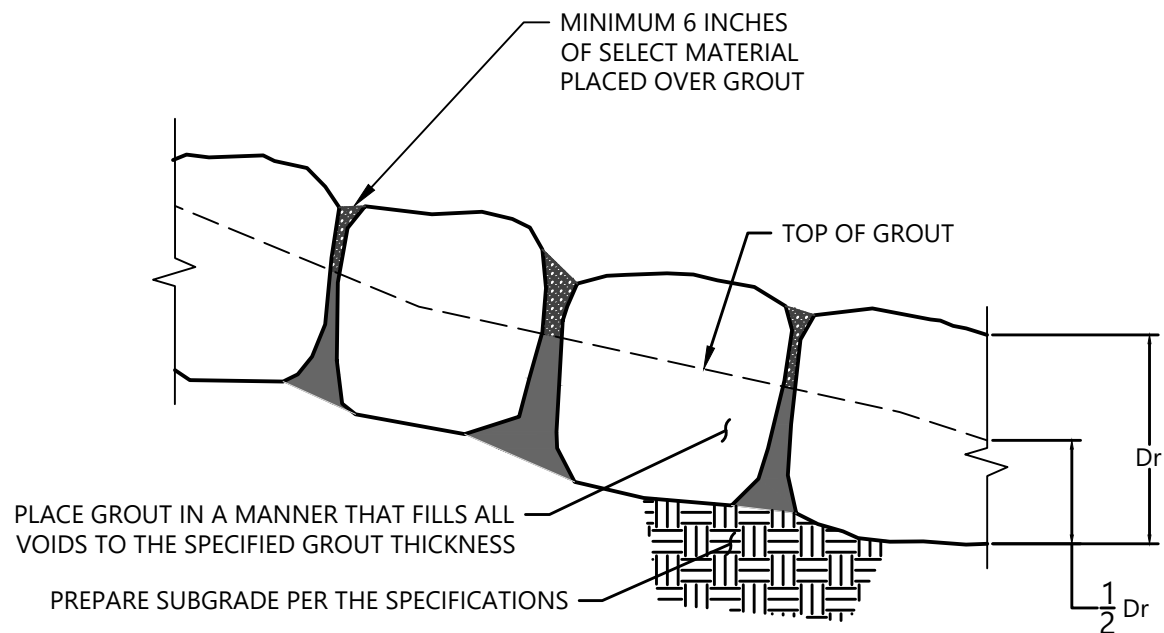
Project No.

2021013002

Custom

Horizontal Scale

BID SET



BOULDER PLACEMENT NOTES:

1. PLACE BOULDER WITH THE REQUIRED BOULDER HEIGHT VERTICAL. PLACE BOULDERS AS TIGHTLY TOGETHER AS POSSIBLE (WITHOUT TOUCHING) WHILE PROVIDING ENOUGH ROOM BETWEEN THEM TO THOROUGHLY VIBRATE THE GROUT AND ENSURE NO GAPS IN THE GROUT. THE SMALL DIMENSION OF A 2X4 CAN BE USED AS A GUIDE TO CHECK MINIMUM SPACING.
2. BEFORE GROUTING, CLEAN ALL DIRT AND MATERIAL FROM ROCK THAT COULD PREVENT THE GROUT FROM BINDING THE TO ROCK. KEEP BOULDERS FROM TOUCHING. AVOID SLIDING BOULDERS AGAINST SUBGRADE TO PROPERLY POSITION.

MATERIALS SPECIFICATIONS:

1. ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3200 PSI.
2. ONE CUBIC YARD OF GROUT SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
3. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
4. THE AGGREGATE SHALL BE COMPRISED OF 70% NATURAL SAND (FINES) AND 30% 3/8-INCH ROCK (COARSE).
5. THE GROUT SLUMP SHALL BE BETWEEN 4-INCHES TO 6-INCHES.
6. AIR ENTRAINMENT SHALL BE BETWEEN 5.5% AND 7.5%.
7. TO CONTROL SHRINKAGE AND CRACKING, 1.5 PONDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT.
8. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED WHEN SO SPECIFIED BY CONTRACT.

GROUT PLACEMENT SPECIFICATIONS:

1. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAT 40°F OR GREATER THAN 90°F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT.
2. GROUT SHALL BE DELIVERED BY MEANS OF A LOW PRESSURE (LESS THAN 10 PSI) GROUT PUMP USING A 2-INCH DIAMETER (MAXIMUM) NOZZLE.
3. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS THE GROUT FILLS, WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
4. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
5. AFTER GROUT PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED AND FREE OF GROUT.
6. ALL FINISHED GROUT SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C309.
7. PLACE SELECT MATERIAL OVER GROUT WHILE NOT DRY. MAY REQUIRE HAND PLACEMENT OF SELECT MATERIAL INTO WETTED GROUT.

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
DROP STRUCTURE (2)

2021013002 Custom
Project No. Horizontal Scale

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

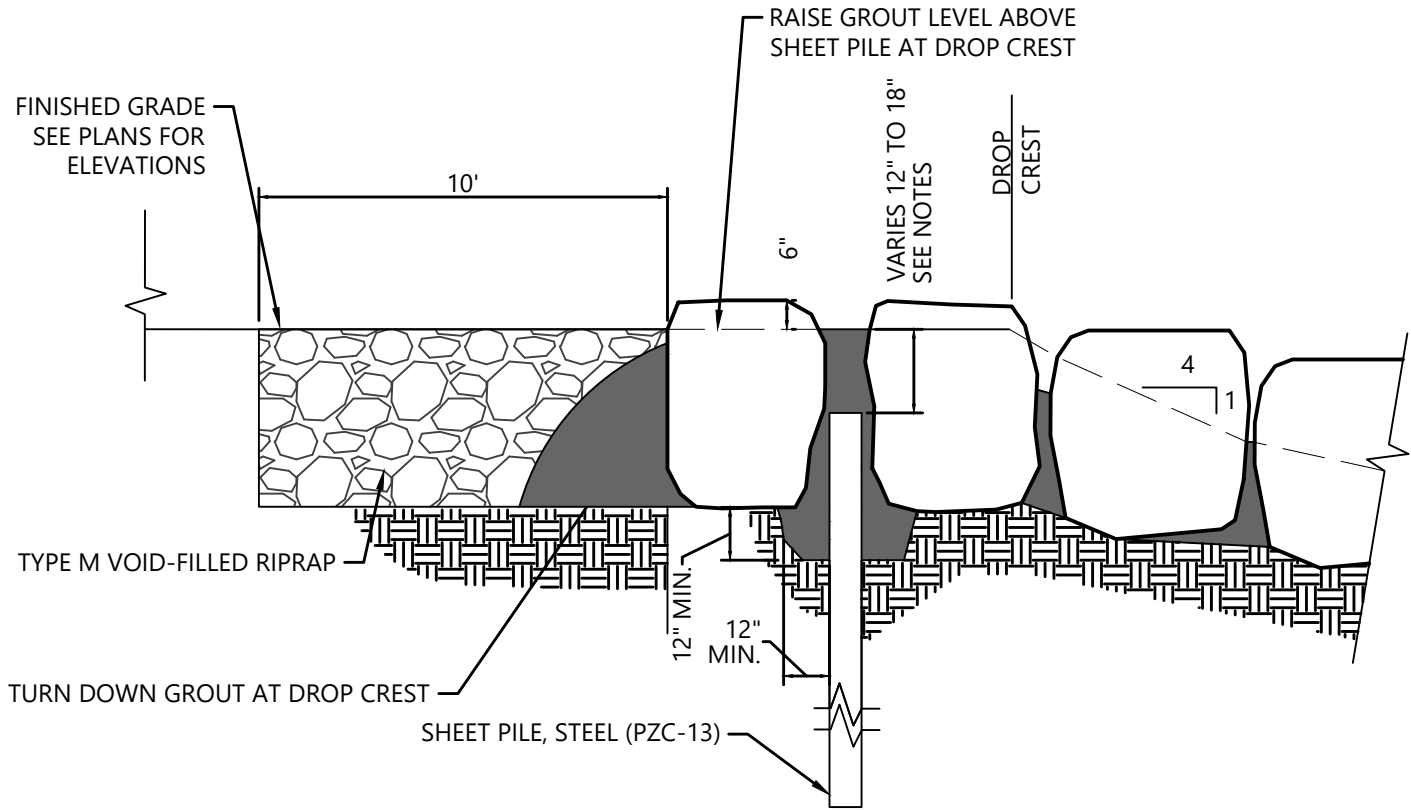
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
DROP STRUCTURE (3)

2021013002 Custom
Project No. Horizontal Scale

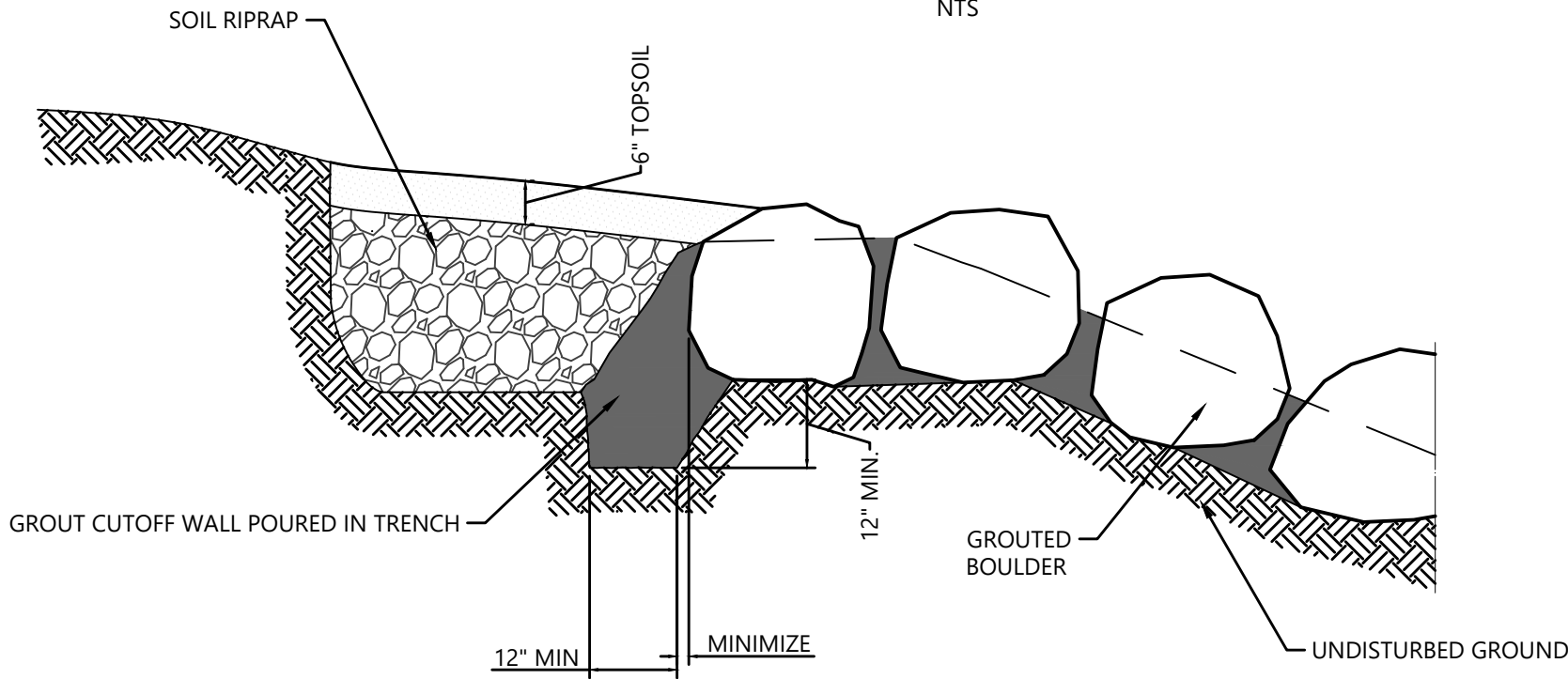
Sheet 40 of 66

- NOTES:
1. CREATE 7.12-FOOT WIDE LOW FLOW PATH CENTERED ON DROP STRUCTURE. GROUT DEPTH OVER SHEET PILE IS 12-INCHES AT LOW FLOW PATH AND 18-INCHES BEYOND THESE LIMITS.
 2. SHEET PILE CUTOFF WALL TO BE PLACED BETWEEN THE FIRST AND SECOND BOULDER ROW OF THE DROP STRUCTURE.
 3. CONTRACTOR TO MINIMIZE BOULDER SPACING GAP ALONG SHEET PILE.



STRUCTURE CREST WALL DETAIL (GSB)

NTS



STRUCTURE EDGE WALL DETAIL (GSB)

NTS

BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

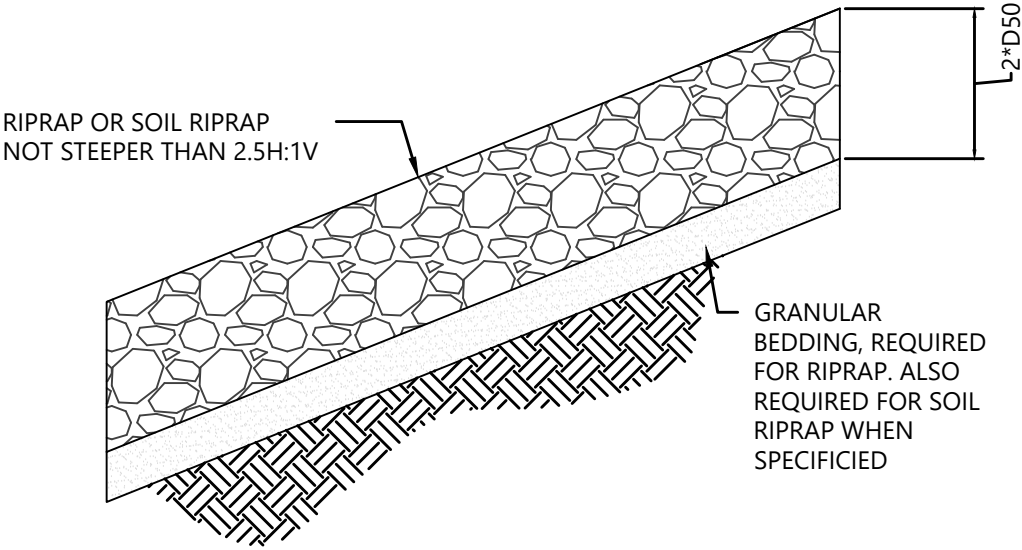
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
RIPRAP

2021013002 Custom
Project No. Horizontal Scale

SOIL RIPRAP NOTES:

1. ELEVATION TOLERANCES FOR THE SOIL RIPRAP SHALL BE 0.10 FEET. THICKNESS OF SOIL RIPRAP SHALL BE NO LESS THAN THICKNESS SHOWN AND NO MORE THAN 2-INCHES GREATER THAN THE THICKNESS SHOWN.
2. WHERE “SOIL RIPRAP” IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP VOIDS ARE TO BE FILLED WITH NATIVE SOIL. THE RIPRAP SHALL BE PRE-MIXED WITH THE NATIVE SOIL AT THE FOLLOWING PROPORTIONS BY VOLUME: 65 PERCENT RIPRAP AND 35 PERCENT SOIL. THE SOIL USED FOR MIXING SHALL BE NATIVE TOPSOIL AND SHALL HAVE A MINIMUM FINES CONTENT OF 15 PERCENT. THE SOIL RIPRAP SHALL BE INSTALLED IN A MANNER THAT RESULTS IN A DENSE, INTERLOCKED LAYER OF RIPRAP WITH RIPRAP VOIDS FILLED COMPLETELY WITH SOIL. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF SOIL; THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL ESSENTIALLY BE THE SAME AS IF THE RIPRAP WAS PLACED WITHOUT SOIL.
3. WHERE SPECIFIED (TYPICALLY AS “BURIED SOIL RIPRAP”), A SURFACE LAYER OF TOPSOIL SHALL BE PLACED OVER THE SOIL RIPRAP ACCORDING TO THE THICKNESS SPECIFIED ON THE CONTRACT DRAWINGS. THE TOPSOIL SURFACE LAYER SHALL BE COMPACTED TO APPROXIMATELY 85% OF MAXIMUM DENSITY AND WITHIN TWO PERCENTAGE POINTS OF OPTIMUM MOISTURE IN ACCORDANCE WITH ASTM D698. TOPSOIL SHALL BE ADDED TO ANY AREAS THAT SETTLE.
4. ALL SOIL RIPRAP THAT IS BURIED WITH TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.



RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D ₅₀ * (INCHES)
TYPE VL	70 - 100	12	6
	50 - 70	9	
	35 - 50	6	
	2 - 10	2	
TYPE L	70 - 100	15	9
	50 - 70	12	
	35 - 50	9	
	2 - 10	3	
TYPE M	70 - 100	21	12
	50 - 70	18	
	35 - 50	12	
	2 - 10	4	
TYPE H	70 - 100	30	18
	50 - 70	24	
	35 - 50	18	
	2 - 10	6	
*D ₅₀ = MEAN ROCK SIZE			

RIPRAP AND SOIL RIPRAP PLACEMENT AND GRADATION

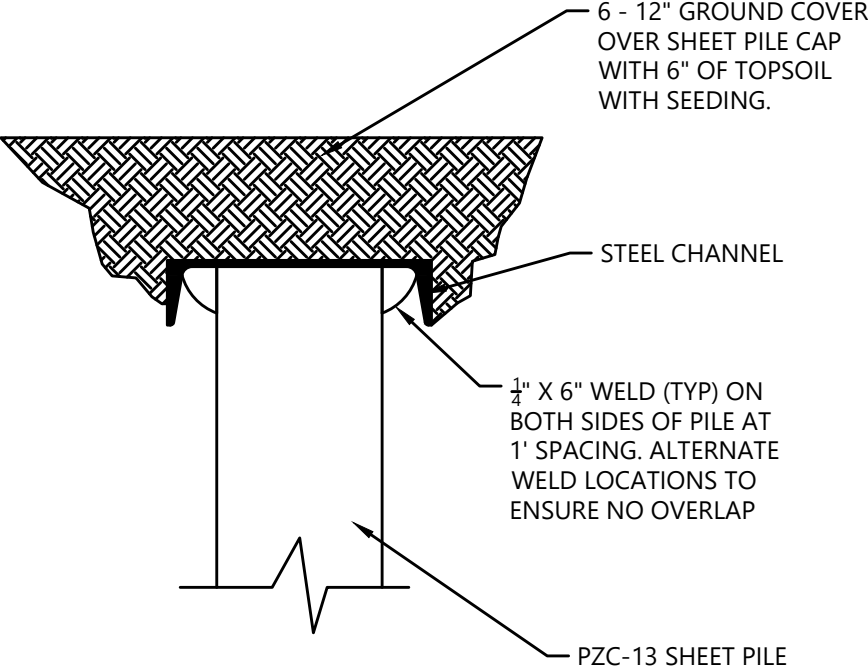
BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

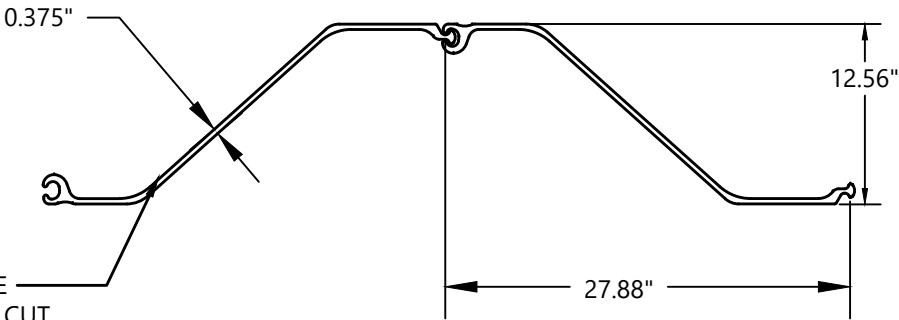
Sub-Consultants

Horizontal Scale & Orientation

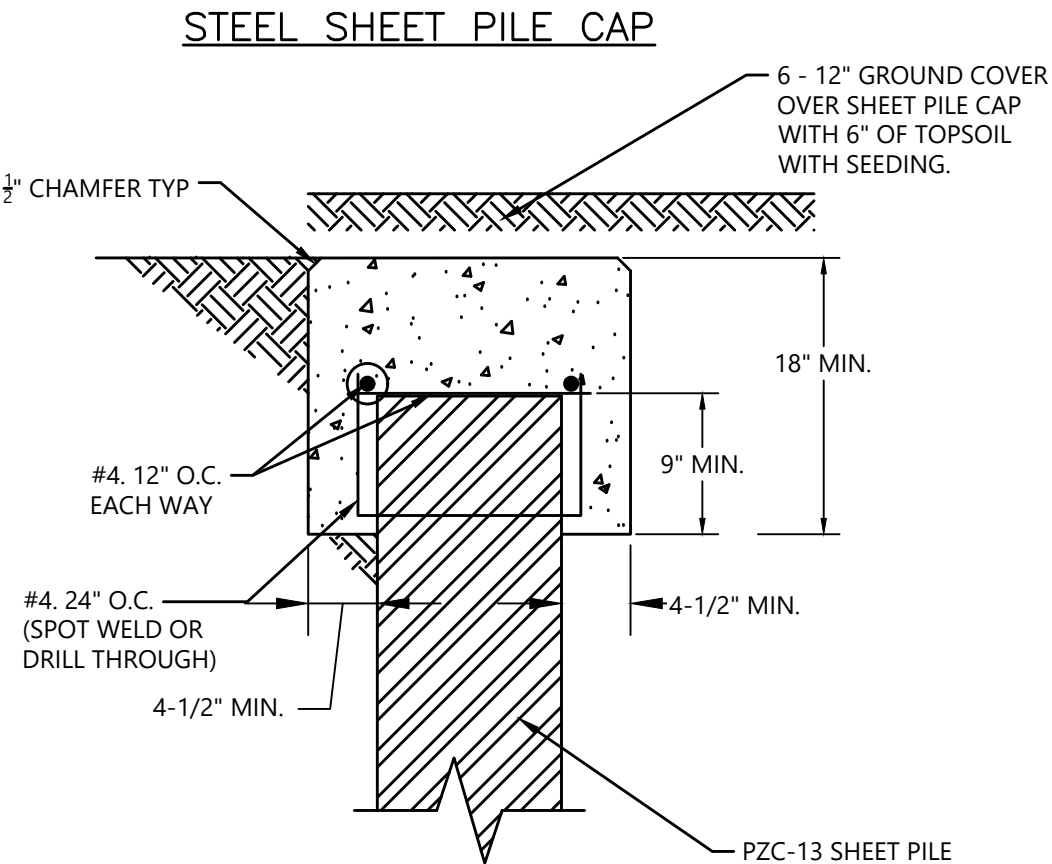
Legend



WHERE BENDS ARE REQUIRED: STITCH CUT, BEND & WELD TO MAKE ANGLE. CUT & WELD PER MANUFACTURER RECOMMENDATIONS.



PZC-13 SHEET PILE DETAIL



OPTIONAL ALTERNATIVE
CONCRETE PILE CAP

BID SET

NOTES:

1. ADD CATHODIC PROTECTION 2 ANODES PER SHEET PILE. COORDINATE WITH CSU CATHODIC PROTECTION UNIT.
2. SHEET PILE CAP ONLY REQUIRED OUTSIDE GROUTED BOULDER AREA.



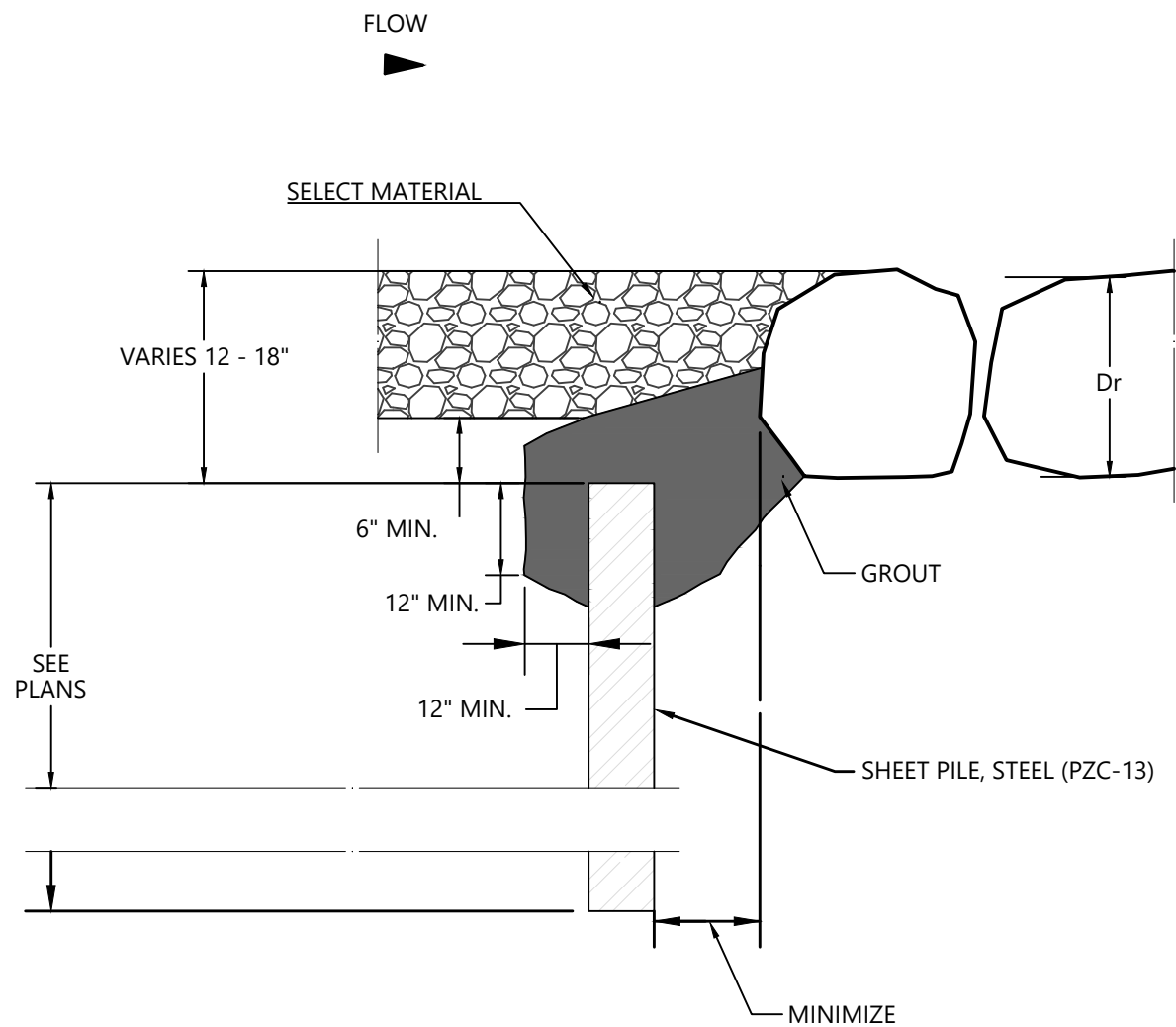
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SHEET PILE CAP

2021013002 Project No. Custom
Horizontal Scale

C:\Users\Matthew Johnson\WaterVation Desktop\Projects\2021013002_Middle Tributary Upstream of I-25 Channel Restoration\CAD\Sheet\Plan\100%DETAILS.DWG
2023/06/08 8:48 AM By: Matthew Johnson



BOULDER RIFFLE SHEET PILE DETAIL

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
BOULDER RIFFLE SHEET PILE DETAIL

2021013002 Project No.
Custom Horizontal Scale

Sheet 43 of 66

GENERAL NOTES:

1. The contractor will supply all plants in quantities sufficient to complete the work shown on the plan. All plant material should meet the specifications of the American Standards for Nursery Stock (latest edition) as set forth by the American Association of Nurserymen.
2. All populations of Colorado List A and B noxious weeds found in or within 100 feet of the project area will be treated with the appropriate herbicide(s) prior to and throughout the duration of construction. Always follow all label recommendations, precautions and restrictions when using any herbicide. Read and comply with all herbicide labels, organic or nonorganic, for application rates, mixing instructions, protective equipment, re-entry period, grazing or harvest restrictions and other safety information. Herbicides should be applied only by responsible, licensed applicators.
3. After the site has been staked, but prior to clearing, grubbing, and earthwork activities, the contractor, engineer, and ecologist shall walk the site to evaluate and locate existing plant material to be protected and identify plant material that may be salvaged within the designated limits of construction.
4. The contractor will provide submittals for containerized plant material (wetland plugs and shrubs), all trees, each seed mix, mulch, and tackifier. Submittals for live plant material and the seed mixes will include the scientific names of each species, including variety and subspecies (as-applicable). Additionally, the seed mix submittals will include the lot number, test date, seed type and variety, purity and germination percentage, crop seed percentage, inert matter percentage, weed seed percentage, noxious weeds by name and number per pound.
5. All best management practices (BMPs) used shall be selected, installed, implemented, and maintained according to appropriate engineering, hydrologic and pollution control practices.
6. The use of chemicals such as soil stabilizers, dust palliatives, herbicides, growth inhibitors, fertilizers, deicing salts, etc., shall be in accordance with the manufacturer's recommended application rates, frequency, and instructions. These chemicals shall not be used, stored, or stockpiled within 50 horizontal feet of the creek or other aquatic habitats.
7. Construction equipment, fuels, lubricants, and other petroleum distillates shall not be stored or stockpiled within 50 horizontal feet of the creek or other aquatic habitats. Equipment fueling and servicing shall occur only within approved designated areas.

TOPSOIL STOCKPILE NOTES:

1. The ecologist will oversee and inspect topsoil stockpiling activities.
2. Stockpile topsoil from wetlands separately in windrows, piles should be uncompacted and low in height with soil mounds no higher than 10 feet to preserve soil microbes and ideally no higher than 4 feet if space onsite allows.
3. Stockpile topsoil (separately from subgrade) from all other areas disturbed by the project in windrows, piles should be uncompacted and low in height with soil mounds no higher than 10 feet to preserve soil microbes and ideally no wider than 4 feet if space onsite allows.
4. Use a placard to identify stockpiles as “Wetland Topsoil”, “Topsoil”, or “Subgrade”.
5. All topsoil stockpiled longer than 1 month should be seeded with Italian rye (*Lolium multiflorum*) at a rate of 2 lbs/1000 square feet.
6. Test all topsoil stockpiles for standard nutrient tests and USDA texture analysis and provide test results to the ecologist for review prior to application. Soil amendments may be adjusted based on these test results.
7. Prior to topsoil placement, the top one foot of the stockpile material should be mixed with the remainder of the stockpile to distribute living organisms.

SEEDBED PREPARATION NOTES:

1. The ecologist will oversee and inspect all seedbed preparation activities.
2. Do not work soils when frozen, snow covered, wet, or muddy.
3. Before topsoil is placed, sub-soil in all work areas (other than the immediate channel banks) will be decompacted and loosened to a depth of 12 inches.
4. Access roads and staging areas will be decompacted and loosened to a depth of 18 inches prior to topsoil placement.
5. When spreading topsoil, ensure that the layer is not compacted by using a soil penetrometer - in general, penetrometer readings less than 200 pounds per square inch (psi) in the top 8 inches are appropriate. Contractor should place topsoil in a manner that precludes having to continuously drive over newly placed topsoil.
6. Following topsoil placement, and before seeding and mulch application, topically apply organic slow release fertilizer (such as Biosol Forte) at 800 lbs. per acre to all disturbed non-wetland areas.
7. All finished grades will be left rough and natural with soil clods no greater than 3 inches in diameter, no smooth surfaces or straight edges.

LIVE WILLOW STAKE HARVEST AND INSTALLATION NOTES:

1. Sandbar willow (*Salix exigua*) stakes can be harvested from within the limits of construction or other legally accessible sites nearby while dormant (Nov - after leaf drop to April - prior to bud break). All areas for harvest shall be approved by the ecologist prior to cutting and the ecologist will oversee the willow stake harvest operation.
2. When harvesting outside of the limits of constructioBEDn, remove no more than 20% of the branches from any single willow clump, do not remove more than 30% of the overall canopy cover from any willow stand and harvest stems evenly through the stand.
3. Stakes shall be approximately 3-feet in length and ½ to 1 inch diameter at the base. The stem shall be pruned of all branches with the bottom end cut at a 45-degree angle and the top end cut at a 90-degree angle.
4. As stakes are cut, the bottom end shall be immediately placed into water. Once harvested, stakes shall be completely submerged in cold water--for at least 72 hours, but not more than 14 days, prior to planting. The storage location shall be shaded to maintain a cold-water temperature. The stakes will be kept wet until placed into the ground and will not be stored out of water for more than 10 minutes prior to planting.
5. Willow stakes will be installed from 0.5 to 2.5 feet vertical above the low-flow water surface elevation.
6. Stake spacing shall be 1.5-foot on center, located in upper Zone A and all of Zone B. Stakes shall be installed to a depth of 24-inches ensuring that the bottom end is placed in or at the top of the water table.
7. Backfill willow stake holes to remove any air pockets and trim all installed stakes to no more than 8 inches above the ground surface.

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

REVEGETATION NOTES (1)

2021013002

Project No.

Horizontal Scale

Sheet 44 of 66

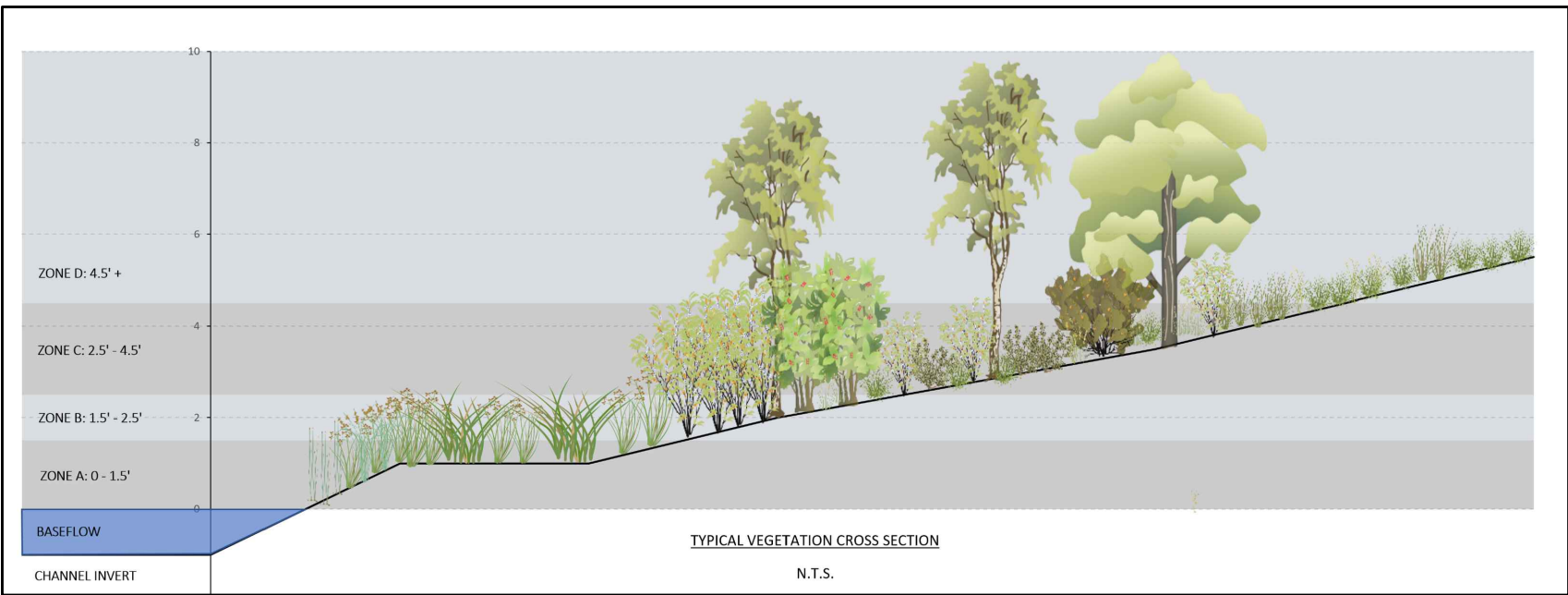
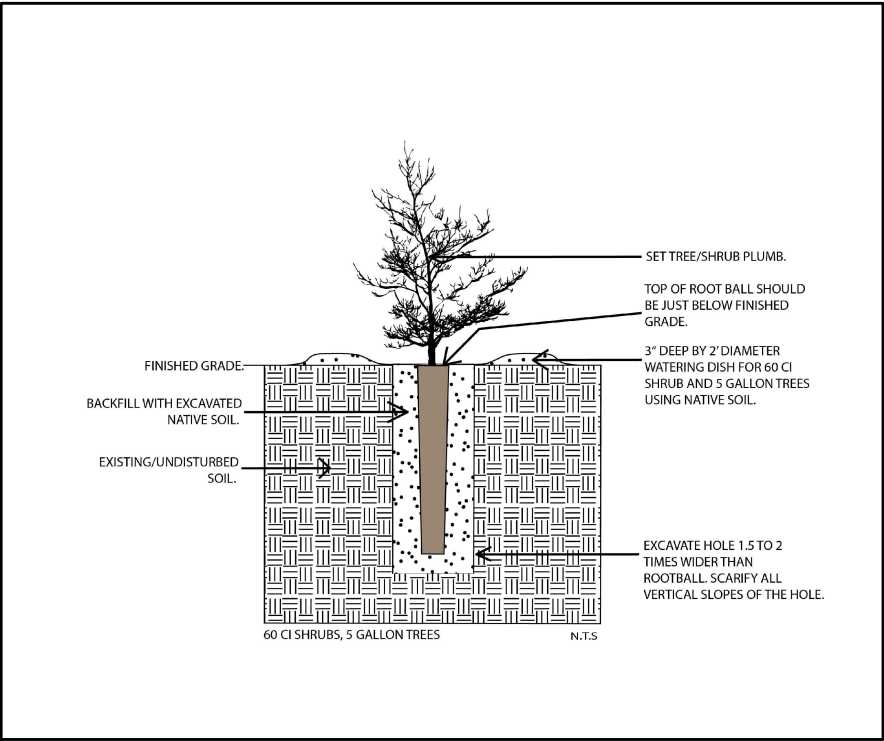
CONTAINERIZED PLANT MATERIAL INSTALLATION NOTES:

1. All containerized plant material must be inspected for health, size, species, and quantity upon arrival onsite, notify the ecologist at least 3 business days prior to delivery. Alternatively, local nursery inspection of plants may be arranged prior to delivery. Please notify the ecologist at least 3 business days prior to scheduled delivery.
2. All plant material should be watered prior to transport and covered during transport. Water plant material once it arrives onsite and store in a shaded location or in the Middle Tributary channel if water levels allow.
3. Zone A is 0-1.5 vertical feet, Zone B is 1.5-2.5 vertical feet, Zone C is 2.5-4.5 vertical feet and Zone D is anything above 4.5 vertical feet above the low-flow water surface elevation, as shown in the project plans. Exact planting locations will be based on final grading.
4. The contractor will mark all planting locations for adjustment and approval by the ecologist prior to installation.
5. When installing trees and shrubs, dig the hole 1.5 to 2 times the width of the rootball.
6. Tree and shrubs planted in Zones B and C shall be deep planted, when necessary and as plant material size allows to ensure placement of the rootball in the capillary fringe (moist soil) immediately above the water table. Trees and shrubs can be planted up to 1/3 to 1/2 of the above ground height at the time of planting.
7. Create watering dishes for all trees and shrubs (except willow stakes). All 60 cubic inch (ci) shrubs and 5-gallon trees, watering dishes shall be 3 inches deep by 2 feet in diameter.
8. Once planted, all trees and shrubs shall be watered so that the entire rootball and soil around the rootball are inundated. Water thoroughly on the day of planting.

SEEDING AND MULCHING NOTES:

1. No construction equipment will be allowed in the project area after seeding.
2. All seed bags found onsite should be tagged and labeled. Seed bag tags should have the following information; project Name, total pounds, and the scientific names and seeding rate for each species.
3. The contractor will stake the seeding limits and obtain approval from the ecologist prior to seeding.
4. Seeding will only be performed in late September or early October, unless approved by the ecologist.
5. All areas in Zone A (0-1.5 vertical feet) will be seeded with the Wetland Seed Mix (Table 2), Zone B will be seeded with the Wetland and Riparian and Upland Seed Mixes (Tables 2 and 3), and Zones C and D will be seeded with the Riparian and Upland Seed Mix (Table 3).
6. Seeding rates shown in the tables are for drill seeding, double the rate for broadcast seeding. Drill seeding is the preferred seeding method where terrain allows.
7. All bank treatments will be seeded with the Wetland and Riparian Seed Mixes (Tables 2 and 3)
8. All areas with erosion control blanket will be decompacted and a loose, smooth seed bed prepared using rakes and other hand tools. Prior to blanket placement, broadcast seed the appropriate mix based on the planted zone at the specified rate shown in Tables 2, 3, or 4.
9. Adjacent seed mixes will be overlapped by each other a minimum of 3 feet.
10. After seeding, all areas that lack erosion control blanket will be hydromulched with mechanically defibrated virgin wood fiber at a rate of 2,500 lbs/acre with 150 lbs/acre of organic psyllium derived tackifier.

BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Colorado Springs Utilities
It's how we're all connected



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION NOTES (2)

2021013002
Project No. Horizontal Scale

WETLAND AND RIPARIAN CONTAINERIZED PLANT MATERIAL:

Common Name	Scientific Name	Size	Spacing (O.C.)	Quantity
Zone A ¹				
Nebraska Sedge	<i>Carex nebrascensis</i>	10 ci	1.5'	1,000
Hardstem Bulrush	<i>Schoenoplectus acutus</i>	10 ci	1.5'	750
Common Threesquare	<i>Schoenoplectus pungens</i>	10 ci	1.5'	1,000
Softstem Bulrush	<i>Schoenoplectus tabernaemontani</i>	10 ci	1.5'	750
Wooly Sedge	<i>Carex pellita</i>	10 ci	1.5'	2,000
Common Spikerush	<i>Eleocharis palustris</i>	10 ci	1.5'	1,000
Panicled Bulrush	<i>Scirpus microcarpus</i>	10 ci	1.5'	1,000
Baltic Rush	<i>Juncus balticus</i>	10 ci	1.5'	1,000
Willow Stakes	<i>Salix exigua</i>	3-foot stake	1.5'	4,250
			Total Zone A	12,750
Zone B ¹				
Narrowleaf Cottonwood	<i>Populus angustifolia</i>	5-gal	10'	30
Peachleaf Willow	<i>Salix amygdaloides</i>	5-gal	10'	10
Redosier Dogwood	<i>Cornus sericea</i>	60 ci	3'-4'	100
American Plum	<i>Prunus americana</i>	60 ci	3'-4'	125
Chokecherry	<i>Prunus virginiana</i>	60 ci	3'-4'	100
Willow Stakes	<i>Salix exigua</i>	3-foot stake	1.5'	850
			Total Zone B	1,215
Zone C ¹				
Narrowleaf Cottonwood	<i>Populus angustifolia</i>	5-gal	10'	10
Golden Currant	<i>Ribes aurem</i>	60 ci	3'-4'	25
Woods' Rose	<i>Rosa woodsii</i>	60 ci	3'-4'	27
Western Snowberry	<i>Symphoricarpos occidentalis</i>	60 ci	3'-4'	30
			Total Zone C	92
Live Willow Stakes, Where Specified				
Sandbar Willow	<i>Salix exigua</i>	3-foot Stake	1.5'	400

UPLAND SEED MIX (ZONE D):

Common Name	Scientific Name	Variety	Lbs PLS/Acre ¹
Indian Ricegrass	<i>Achnatherum hymenoides</i>	Native	2.0
Fringed sage	<i>Artemisia frigida</i>	Native	0.1
Sideoats grama	<i>Bouteloua curtipendula</i>	Vaughn	0.7
blue grama	<i>Bouteloua gracilis</i>	Lovington	0.3
blue grama	<i>Bouteloua gracilis</i>	Hachita	0.3
Buffalograss	<i>Buchloe dactyloides</i>	Bowie	3.8
Buffalograss	<i>Buchloe dactyloides</i>	Cody	3.8
Prairie sandreed	<i>Calamovilfa longifolia</i>	Goshen	1.0
Purple Prarie Clover	<i>Dalea purpurea</i>	Native	0.3
Thickspike wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	Critana	1.8
Blanketflower	<i>Gaillardia aristata</i>	Native	0.4
needle and thread grass	<i>Hesperostipa comata ssp. comata</i>	Native	2.5
sidebells penstemon	<i>Penstemon secundiflorus</i>	Native	0.1
Prairie coneflower	<i>Ratibida columnifera</i>	Native	0.1
Little bluestem	<i>Schizachyrium scoparium</i>	Cimarron	0.5
Sand dropseed	<i>Sporobolus cryptandrus</i>	Native	0.1
		Total	17.8

WETLAND AND RIPARIAN SEED MIX (ZONES A & B & C):

Common Name	Scientific Name	Variety	NWPL ¹ Indicator	Lbs PLS/Acre ²
Prairie Cordgrass	<i>Spartina pectinata</i>	VNS	FACW	2
Switchgrass	<i>Panicum virgatum</i>	Blackwell, Dacotah, or NE 28	FAC	1.2
Canada Wildrye	<i>Elymus canadensis</i>	Mandan	FACU	2.3
Western Wheatgrass	<i>Pascopyrum smithii</i>	Rosana, Arriba	FACU	3.5
Fowl Mannagrass	<i>Glyceria striata</i>	VNS	OBL	2.5
Sand Dropseed	<i>Sporobolus cryptandrus</i>	VNS	FACU	1
		Lodorm, Cucharas Germplasm	UPL	1.5
Green Needlegrass	<i>Nassella viridula</i>	Native	FAC	0.1
Alkali Sacaton	<i>Sporobolus airoides</i>	Native	UPL	3
Buffalograss	<i>Bouteloua dactyloides</i>	Tatanka		
	<i>Schoenoplectus tabernaemontani</i>	Native	OBL	0.7
Softstem Bulrush	<i>Schoenoplectus pungens</i>	Native	OBL	1
Common Threesquare	<i>Schoenoplectus pungens</i>	Native	FACW	0.1
Baltic Rush	<i>Juncus balticus</i>	Native	OBL	0.5
Creeping Spikerush	<i>Eleocharis palustris</i>	Native	FACW	0.1
Swamp Milkweed	<i>Asclepias incarnata</i>	Native	UPL	0.3
Prairie Coneflower	<i>Ratibida columnifera</i>	Native	UPL	1.2
Blue Flax	<i>Linum lewisii</i>	Native	UPL	0.8
Purple Prairiecover	<i>Dalea purpurea</i>	Purpurea	UPL	2
Threeleaf Sumac	<i>Rhus trilobata</i>	Native	UPL	1
Wood's Rose	<i>Rosa woodsii</i>	Native	UPL	1
Fringed Sage	<i>Artemisia frigida</i>	Native	UPL	2
Mountain Mohogany	<i>Cercocarpus ledifolius</i>	Native		
Total				27.8

BID SET

VEGETATIVE STRIPS):

Common Name	Scientific Name	Size	Spacing (O.C.)	Quantity
Vegetative Strips				
Golden Currant	<i>Ribes aurem</i>	60 ci	1.5'	42
Woods' Rose	<i>Rosa woodsii</i>	60 ci	1.5'	42
Redosier Dogwood	<i>Cornus sericea</i>	60 ci	1.5'	42
Chokecherry	<i>Prunus virginiana</i>	60 ci	1.5'	42
Willow Stakes	<i>Salix exigua</i>	3-foot stake	1.5'	42
			Total for Strips	210

NOTES:

1. ZONE A IS 0 - 1.5 VERTICAL FEET ABOVE THE LOW FLOW CHANNEL
2. ZONE B IS 1.5 - 2.5 VERTICAL FEET ABOVE THE LOW FLOW CHANNEL
3. ZONE C IS 2.5 - 4.5 VERTICAL FEET ABOVE THE LOW FLOW CHANNEL
4. ZONE D IS ANYTHING ABOVE 4.5 VERTICAL FEET ABOVE THE LOW FLOW CHANNEL
5. LBS PLS/ACRE IS BASED ON DRILL SEEDING, DOUBLE THIS RATE IF BROADCAST SEEDING
6. NWPL = NATIONAL WETLAND PLANT LIST



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

REVEGETATION NOTES (3)

2021013002

Project No.

Horizontal Scale

Sheet 46 of 66

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION NOTES (4)

2021013002
Project No. Horizontal Scale

BID SET

Upland Seed Mix						
Scientific Name and Variety	Variety*	Common Name	PLS lbs/ac	% of Seed Mix by Wgt	PLS/sq ft	% of PLS/sq ft
Graminoids						
<i>Achnatherum hymenoides</i>	Paloma	Indian ricegrass	1.50	5	5	3
<i>Bouteloua curtipendula</i>	Butte or Vaughn	sideoats grama	3.50	11	15	10
<i>Bouteloua gracilis</i>	CO Ecotype (or VNS)	blue grama	1.00	3	19	12
<i>Schizachyrium scoparium</i>	Aldous	little bluestem	1.20	4	6	3
<i>Elymus lanceolatus ssp. lanceolatus</i>	CO Ecotype (or VNS)	thickspike wheatgrass	3.50	11	12	8
<i>Festuca idahoensis</i>	Elmer	Idaho fescue	1.00	3	10	7
<i>Hesperostipa comata</i>	Paloma	needle and thread	2.00	6	5	3
<i>Koeleria macrantha</i>	CO Ecotype (or VNS)	prairie junegrass	0.15	0	8	5
<i>Pascopyrum smithii</i>	Rosana	western wheatgrass	3.00	9	8	5
<i>Poa secunda</i>	CO Ecotype (or VNS)	Sandberg bluegrass	0.50	2	12	8
<i>Sporobolus cryptandrus</i>	CO Ecotype (or VNS)	sand dropseed	0.14	0	18	11
<i>Triticum aestivum x Secale cereale</i>	VNS	Quickguard sterile hybrid tritical	10.00	31	3	2
Graminoid Totals			27	85	121	77
Forbs						
<i>Achillea lanulosa var occidentalis</i>	Eagle or Yakima	common yarrow	0.05	0	4	2
<i>Gaillardia aristata</i>	CO Ecotype (or VNS)	blanketflower	1.00	3	4	3
<i>Penstemon secundiflorus</i>	CO Ecotype (or VNS)	sidebells penstemon	0.40	1	5	3
<i>Ratibida columnifera</i>	CO Ecotype (or VNS)	prairie coneflower	0.30	1	5	3
<i>Solidago canadensis</i>	CO Ecotype (or VNS)	Canada goldenrod	0.05	0	5	3
Forb Totals			1.80	6	23	15
Shrub/Sub-Shrub						
<i>Artemisia frigida</i>	CO Ecotype (or VNS)	fringed sage	0.05	0	5	3
<i>Cercocarpus ledifolius</i>	CO Ecotype (or VNS)	curl-leaf mountain mahogany	3.00	9	4	2
<i>Artemisia ludoviciana</i>	CO Ecotype (or VNS)	prairie sage	0.05	0	5	3
Shrub/Sub-Shrub Totals			3.10	10	14	9
Total			32.39	100	158	100
*vns. = variety not specified						

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION NOTES (5)

2021013002
Project No. Horizontal Scale

Riparian Seed Mix						
Scientific Name and Variety	Variety*	Common Name	PLS lbs/ac	% of Seed Mix by Wgt	PLS/sq ft	% of PLS/sq ft
Graminoids						
<i>Agrostis scabra</i>	CO Ecotype (or VNS)	ticklegrass	0.08	0	9	7
<i>Juncus arcticus ssp. Littoralis</i>	CO Ecotype (or VNS)	mountain rush	0.04	0	10	7
<i>Elymus canadensis</i>	Mandan	Canada wildrye	4.00	9	10	8
<i>Elymus lanceolatus ssp. lanceolatus</i>	Critana	thickspike wheatgrass	4.00	9	14	10
<i>Elymus trachycaulus</i>	San Luis	slender wheatgrass	2.70	6	10	7
<i>Panicum virgatum</i>	Forestburg	switchgrass	1.50	3	9	7
<i>Pascopyrum smithii</i>	Rosana	western wheatgrass	4.00	9	10	8
<i>Poa palustris</i>	CO Ecotype (or VNS)	fowl bluegrass	0.20	0	9	6
<i>Sporobolus airoides</i>	Salado	alkali sacaton	0.20	0	8	6
<i>Sporobolus cryptandrus</i>	CO Ecotype (or VNS)	sand dropseed	0.08	0	10	8
<i>Triticum aestivum x Secale cereale</i>	VNS	Quickguard sterile hybrid tritical	10.00	21	3	2
Graminoid Totals			26.80	57	103	76
Forbs						
<i>Solidago canadensis</i>	CO Ecotype (or VNS)	Canada goldenrod	0.07	0	7	5
<i>Vicia americana</i>	CO Ecotype (or VNS)	American vetch	5.00	11	4	3
<i>Geranium viscosissimum</i>	Incisum	sticky geranium	6.20	13	7	5
<i>Asclepias tuberosa ssp. Interior</i>	CO Ecotype (or VNS)	butterfly milkweed	2.20	5	5	4
Forb Totals			13.47	29	24	18
Shrubs / Sub-Shrub						
<i>Rhus trilobata</i>	CO Ecotype (or VNS)	threeleaf sumac	4.00	9	2	2
<i>Fallugia paradoxa</i>	CO Ecotype (or VNS)	Apache plume	0.40	1	4	3
<i>Rosa woodsii</i>	CO Ecotype (or VNS)	Wood's rose	2.20	5	3	2
Shrubs/Sub-Shrub Totals			6.60	14	9	7
Total			46.87	100	136	100
*vns. = variety not specified						

BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



BID SET



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

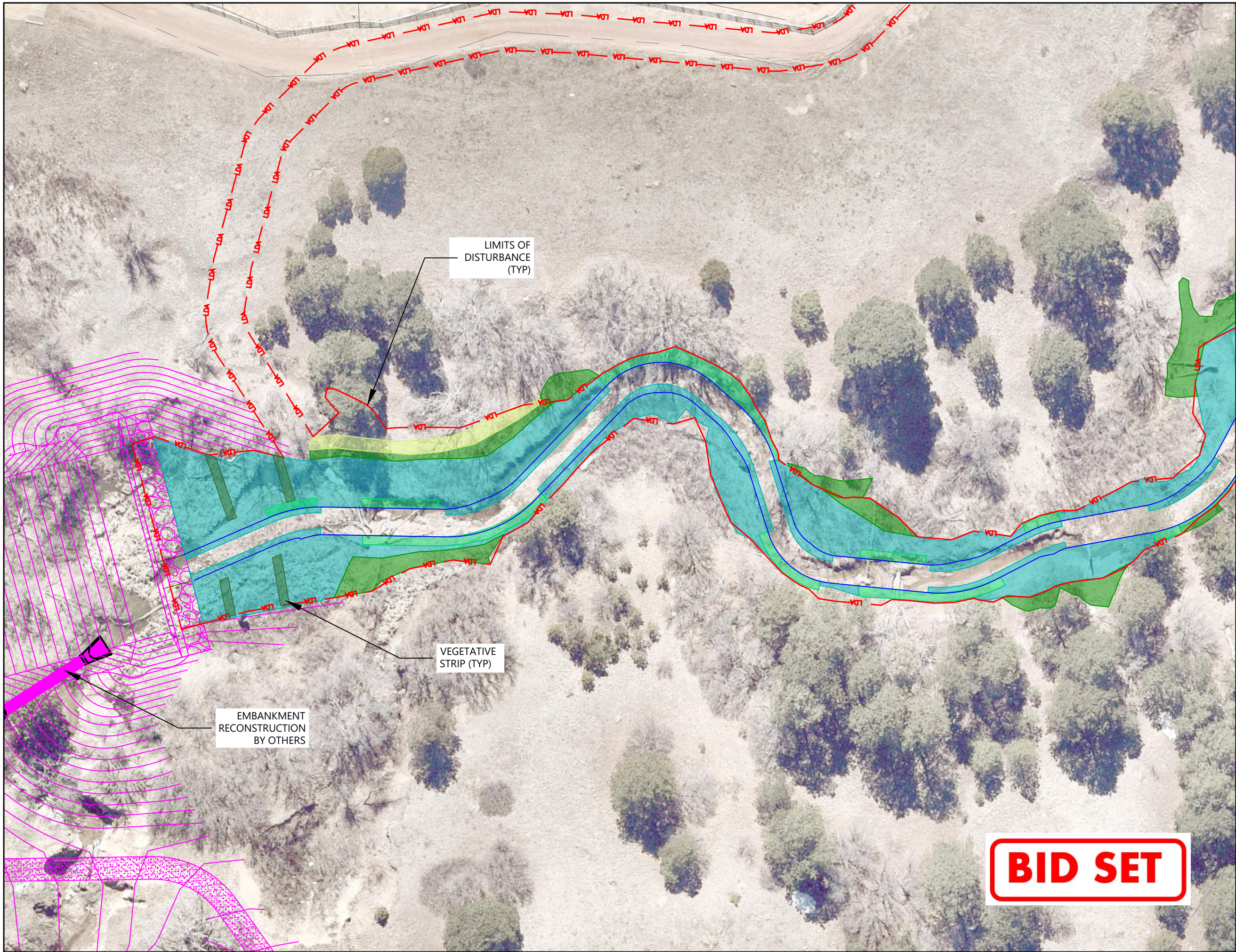
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION NOTES (6)

2021013002
Project No. Horizontal Scale

Wetland Seed Mix						
Scientific Name and Variety	Variety*	Common Name	PLS lbs/ac	% of Seed Mix by Wgt	PLS/sq ft	% of PLS/sq ft
Graminoids						
<i>Carex nebrascensis</i>	CO Ecotype (or VNS)	Nebraska sedge	1.00	6	10	8
<i>Elymus canadensis</i>	Mandan	Canada wildrye	4.50	29	12	9
<i>Elymus trachycaulus</i>	San Luis	slender wheatgrass	3.00	19	11	9
<i>Juncus arcticus ssp. Littoralis</i>	CO Ecotype (or VNS)	mountain rush	0.04	0	10	8
<i>Juncus torreyi</i>	CO Ecotype (or VNS)	Torrey's rush	0.30	2	9	8
<i>Panicum virgatum</i>	Forestburg	switchgrass	2.00	13	12	9
<i>Poa palustris</i>	CO Ecotype (or VNS)	fowl bluegrass	0.25	2	11	9
<i>Schoenoplectus acutus</i>	CO Ecotype (or VNS)	hardstem bulrush	0.80	5	8	6
<i>Schoenoplectus tabernaemontani</i>	CO Ecotype (or VNS)	softstem bulrush	0.70	4	9	7
<i>Sporobolus airoides</i>	Salado	alkali sacaton	0.25	2	10	8
Graminoid Totals			12.84	82	102	63
Forbs						
<i>Helianthus nuttallii</i>	CO Ecotype (or VNS)	Nuttall's sunflower	0.34	2	2	1
<i>Verbena hastata</i>	CO Ecotype (or VNS)	swamp verbena	0.52	3	19	15
<i>Asclepias incarnata</i>	CO Ecotype (or VNS)	swamp milkweed	1.87	12	3	2
Forb Totals			2.73	18	24	19
Total			15.57	100	126	100
*vns. = variety not specified						

C:\Users\Matthew Johnson\WaterVation\Dropbox\Projects\2021013002_Arvida Tributary Upstream of I-25 Channel Restoration\1_CAD\Sheet_2.dwg 100% WATERVATION\Revegetation.dwg
2023/08/08 8:52 AM By: Matthew Johnson



ORIGINAL SHEET - ANSI B

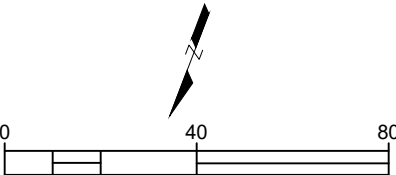


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.





Sub-Consultants

Horizontal Scale & Orientation



Legend



-  WILLOW ONLY PLANTINGS
-  ZONE A PLANTINGS
-  ZONE B PLANTINGS
-  ZONE C PLANTINGS



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

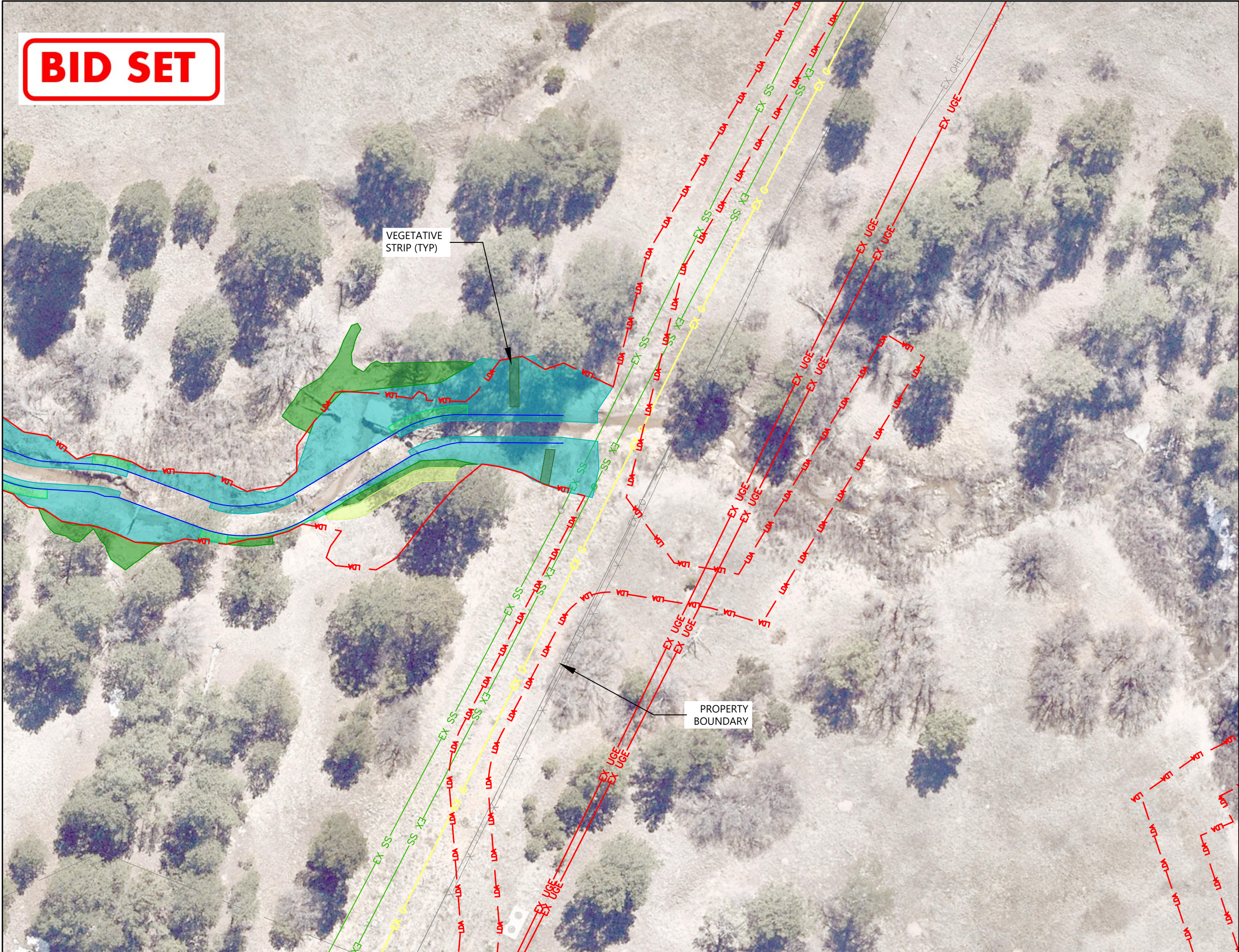
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION PLANTING PLAN (1)

Project No. 2021013002
Horizontal Scale 1" = 40'

Sheet 50 of 66

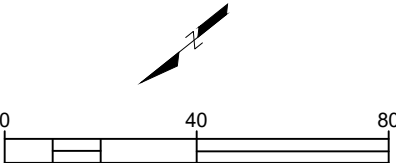
BID SET



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



Legend



- WILLOW ONLY PLANTINGS
- ZONE A PLANTINGS
- ZONE B PLANTINGS
- ZONE C PLANTINGS



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION PLANTING PLAN (2)

2021013002 1" = 40'
Project No. Horizontal Scale

BID SET

CDOT
EASEMENT

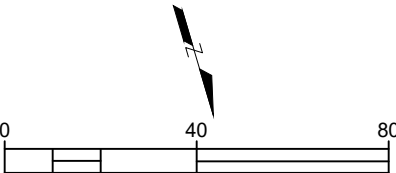


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.





Sub-Consultants

Horizontal Scale & Orientation



Legend



-  WILLOW ONLY PLANTINGS
-  ZONE A PLANTINGS
-  ZONE B PLANTINGS
-  ZONE C PLANTINGS



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION PLANTING PLAN (3)

2021013002 1" = 40'
Project No. Horizontal Scale

Sheet 52 of 66

BID SET

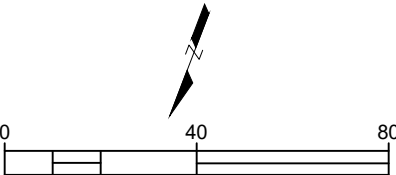


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

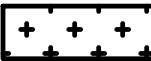
Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

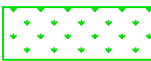
Horizontal Scale & Orientation



Legend



UPLAND SEEDING



RIPARIAN/WETLAND SEEDING

LIMITS OF
DISTURBANCE
(TYP)

EMBANKMENT
RECONSTRUCTION
BY OTHERS



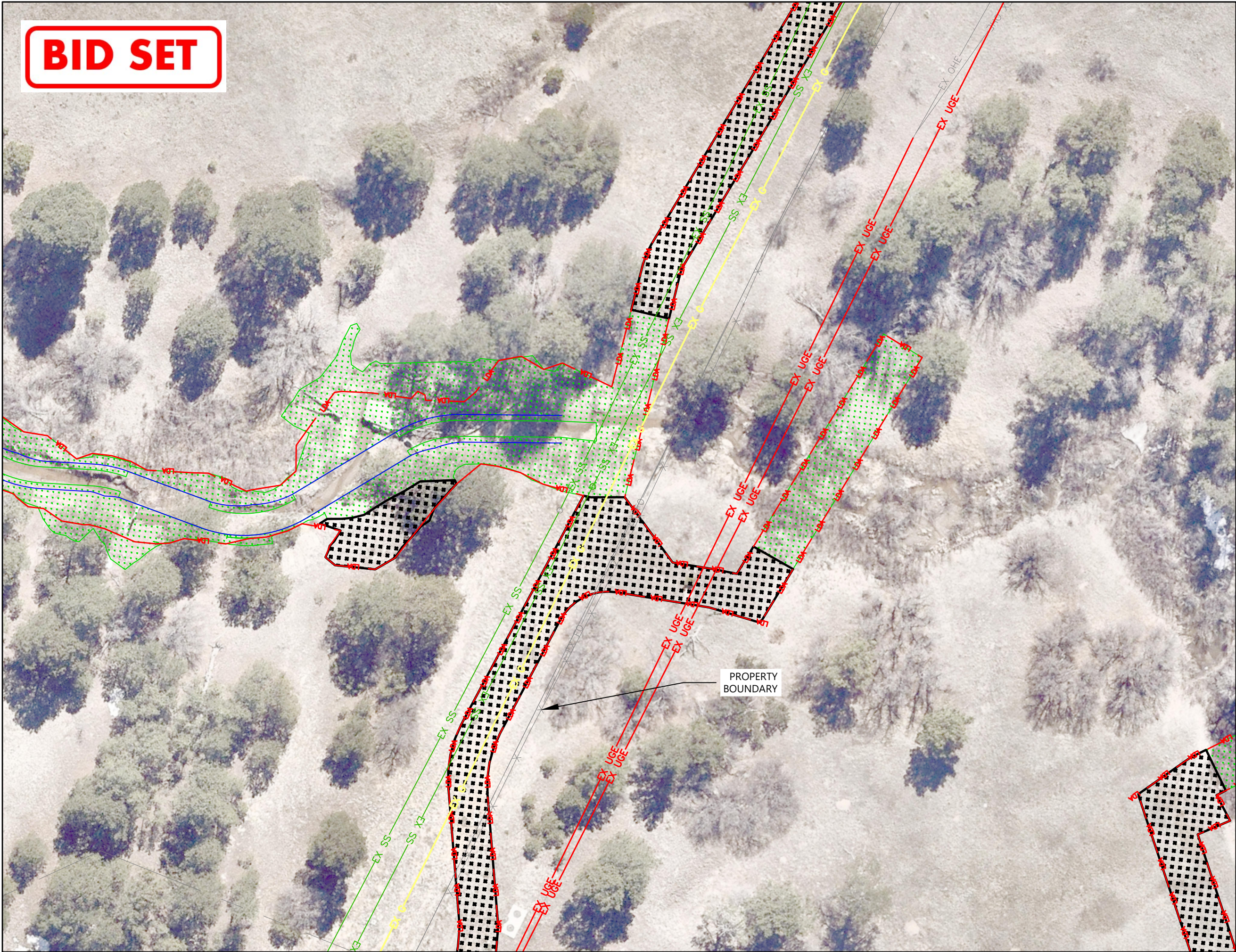
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION SEEDING PLAN (1)

Project No. 2021013002
Horizontal Scale 1" = 40'

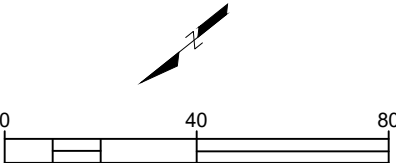
BID SET



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

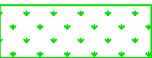
Horizontal Scale & Orientation



Legend



UPLAND SEEDING



RIPARIAN/WETLAND SEEDING

USE USAFA SEED MIXES ON USAFA PROPERTY

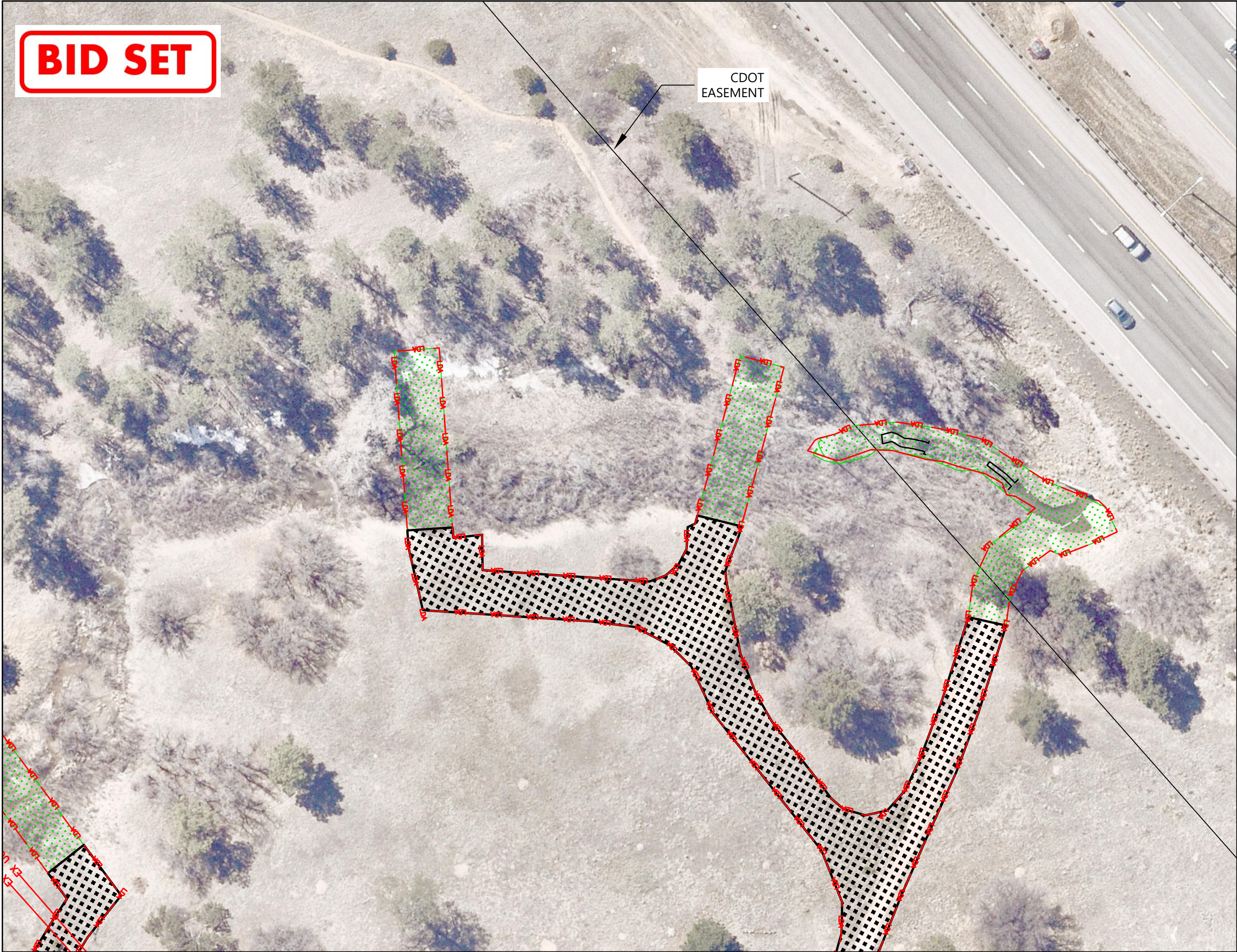


Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
REVEGETATION SEEDING PLAN (2)

2021013002 1" = 40'
Project No. Horizontal Scale



BID SET

CDOT
EASEMENT

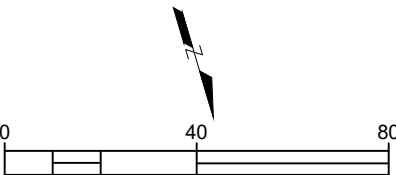


WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

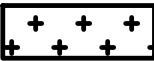
Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

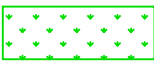
Horizontal Scale & Orientation



Legend



UPLAND SEEDING



RIPARIAN/WETLAND SEEDING

USE USAFA SEED MIXES ON USAFA PROPERTY



Client/Project

CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone

100% DESIGN SUBMITTAL

Sheet Name

REVEGETATION SEEDING PLAN (3)

2021013002

1" = 40'

Project No.

Horizontal Scale

Sheet 55 of 66

BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

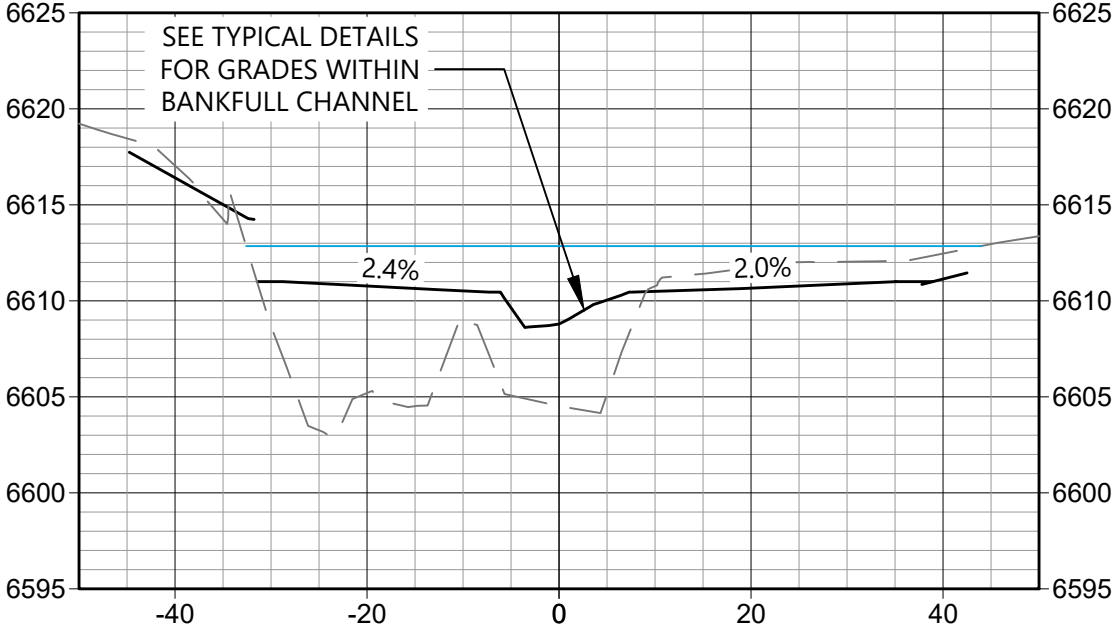
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (1)

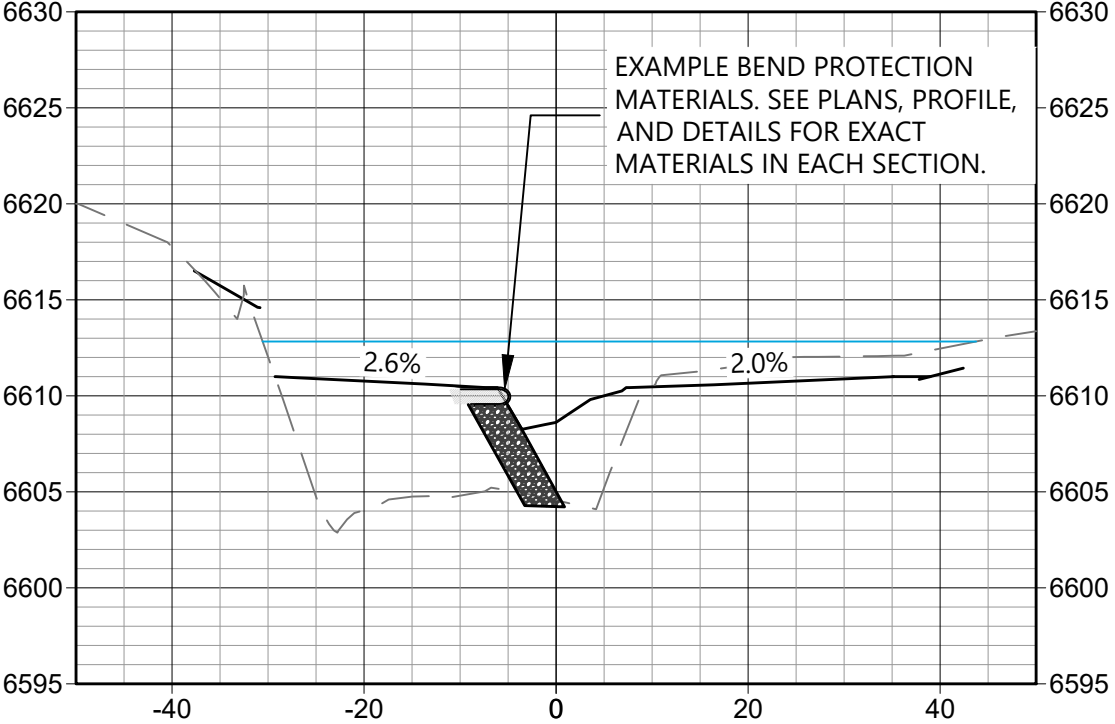
2021013002 1" = 20'
Project No. Horizontal Scale

Sheet 56 of 66

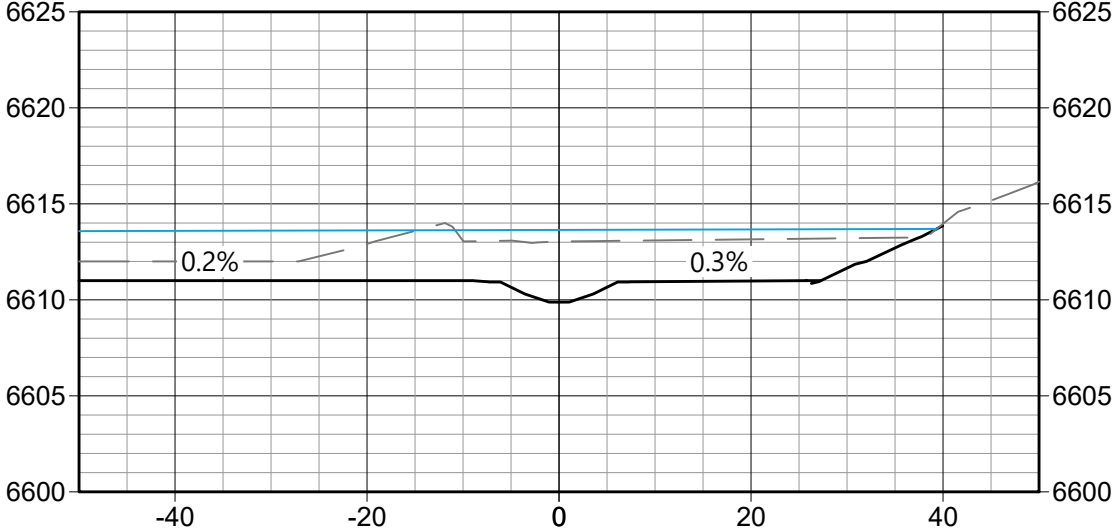
SL -3
0+50.0



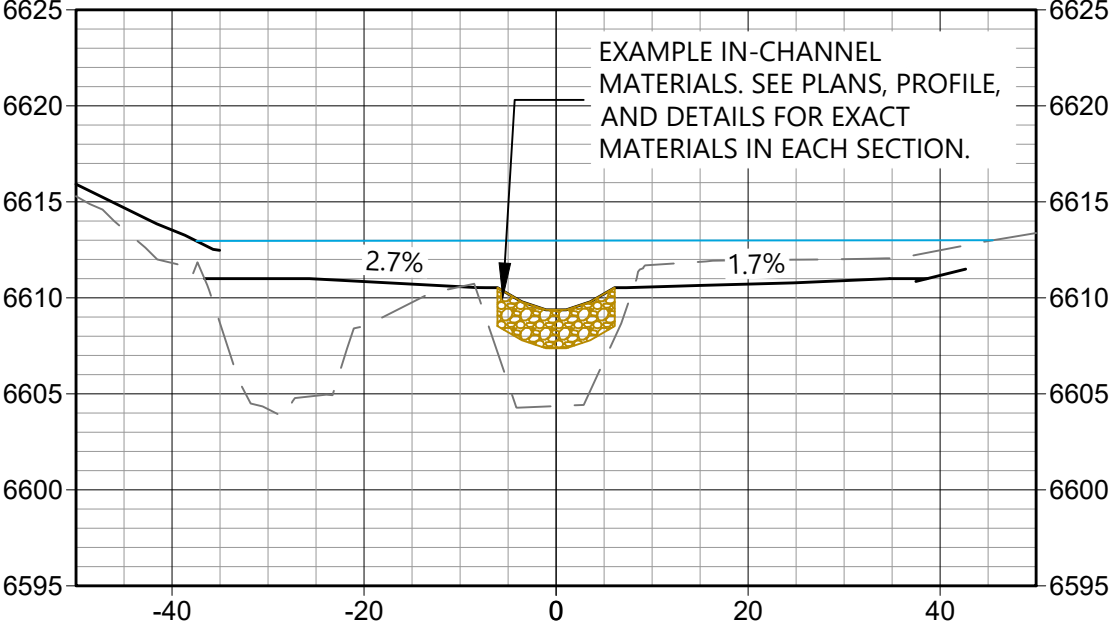
SL -4
0+52.4



SL -1
0+00.0



SL -2
0+42.1




BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.


Sub-Consultants

Horizontal Scale & Orientation

Legend

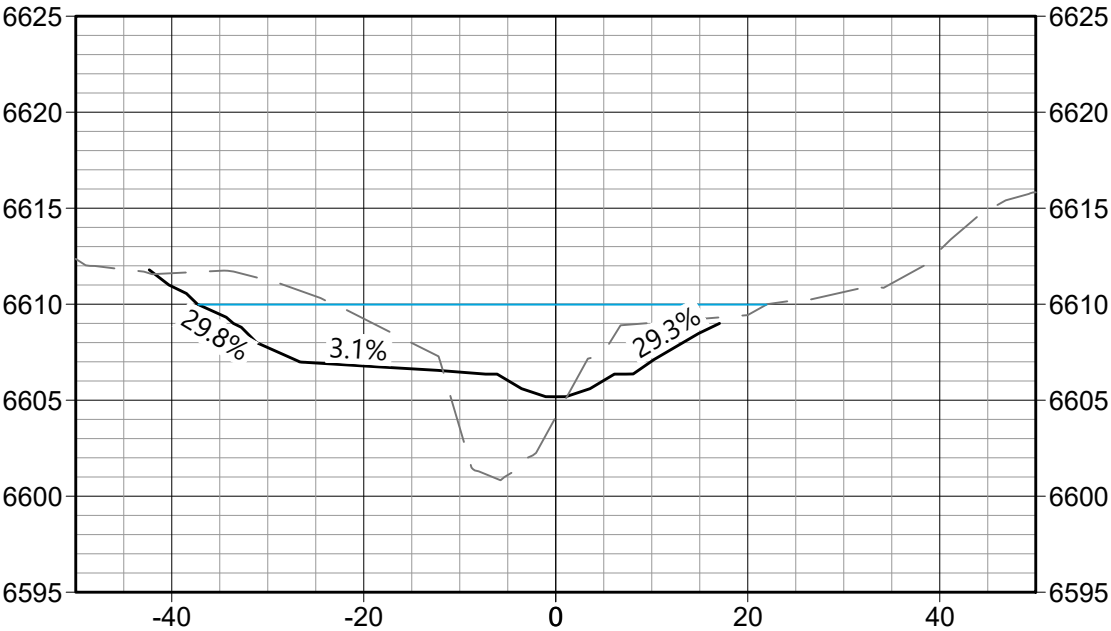


811
Call before you dig
Call before you dig

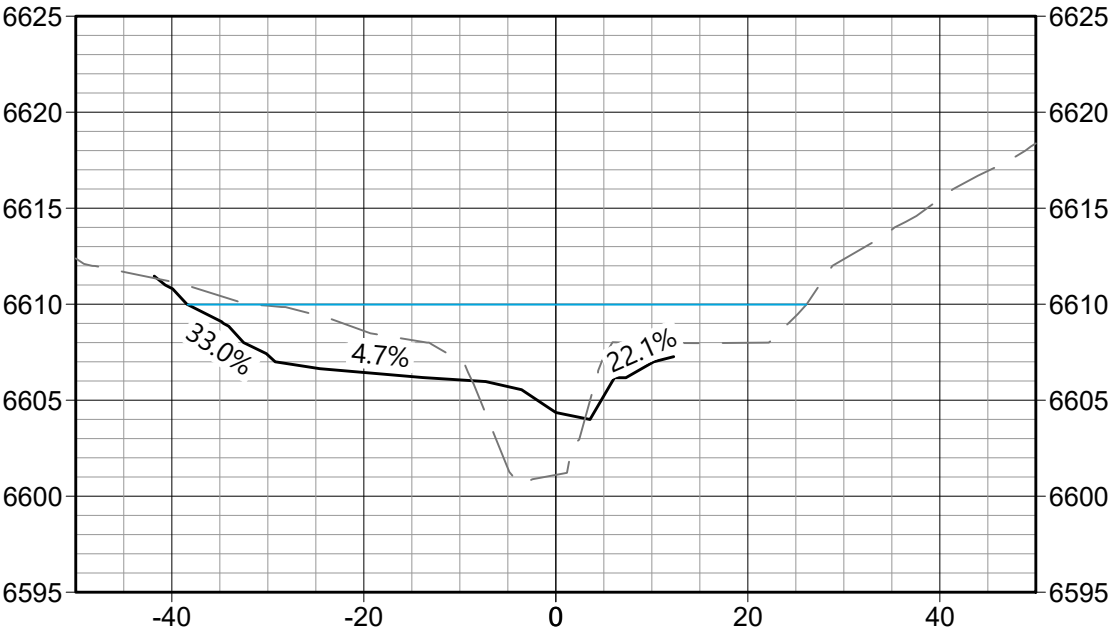


100-YEAR WATER SURFACE ELEVATION

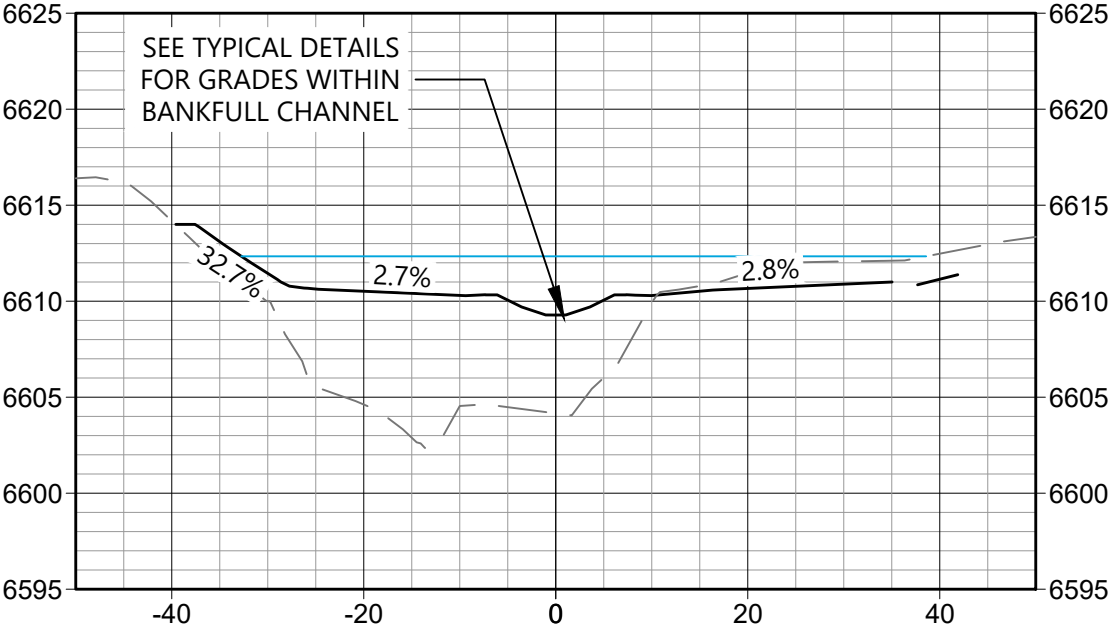
SL -7
1+17.8



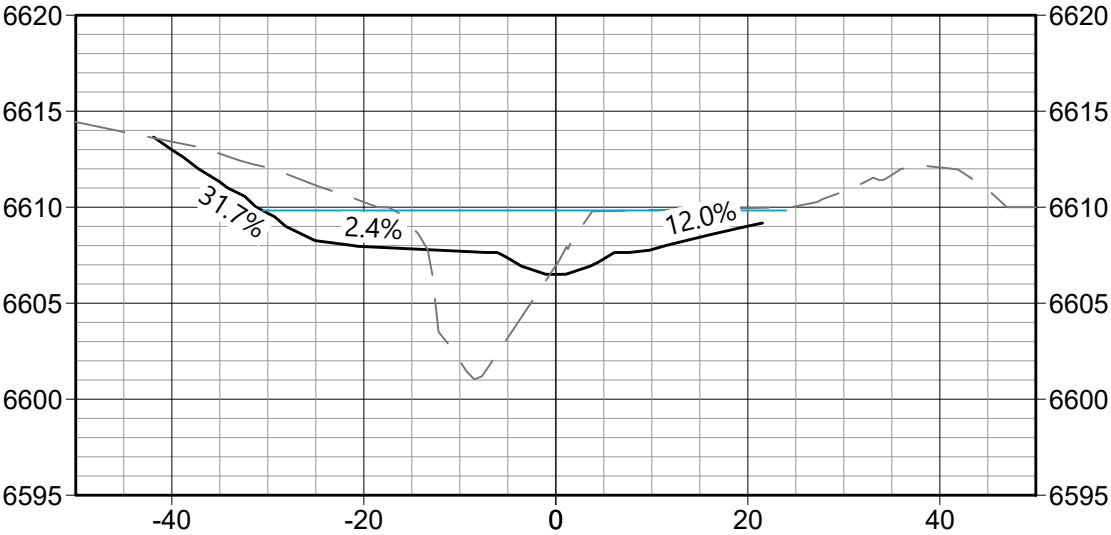
SL -8
1+37.6



SL -5
0+62.6



SL -6
1+00.0



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

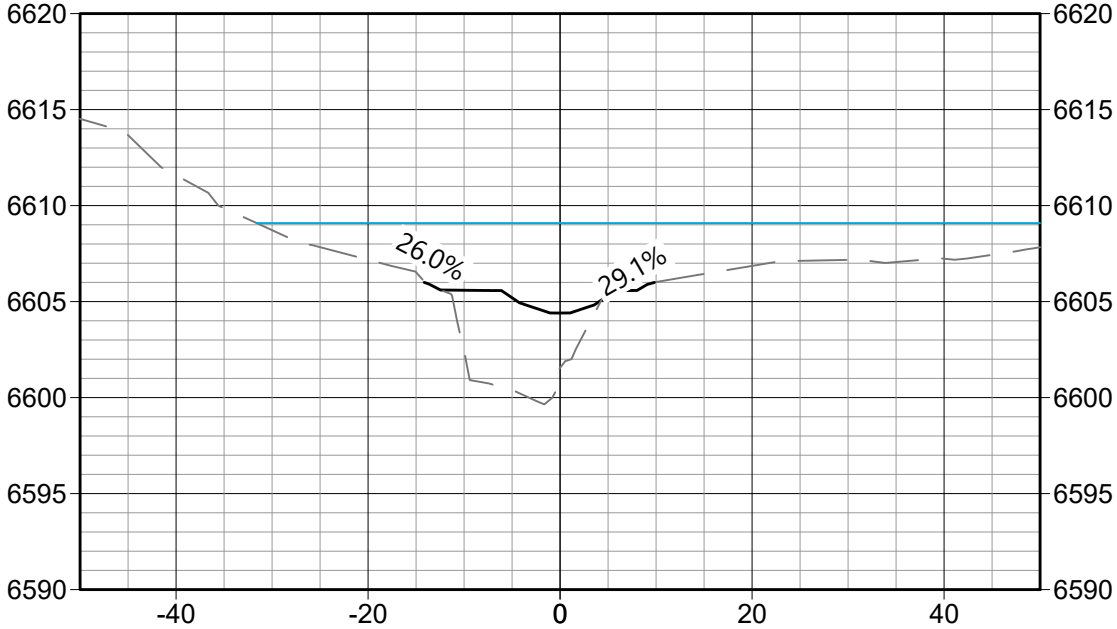
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (2)

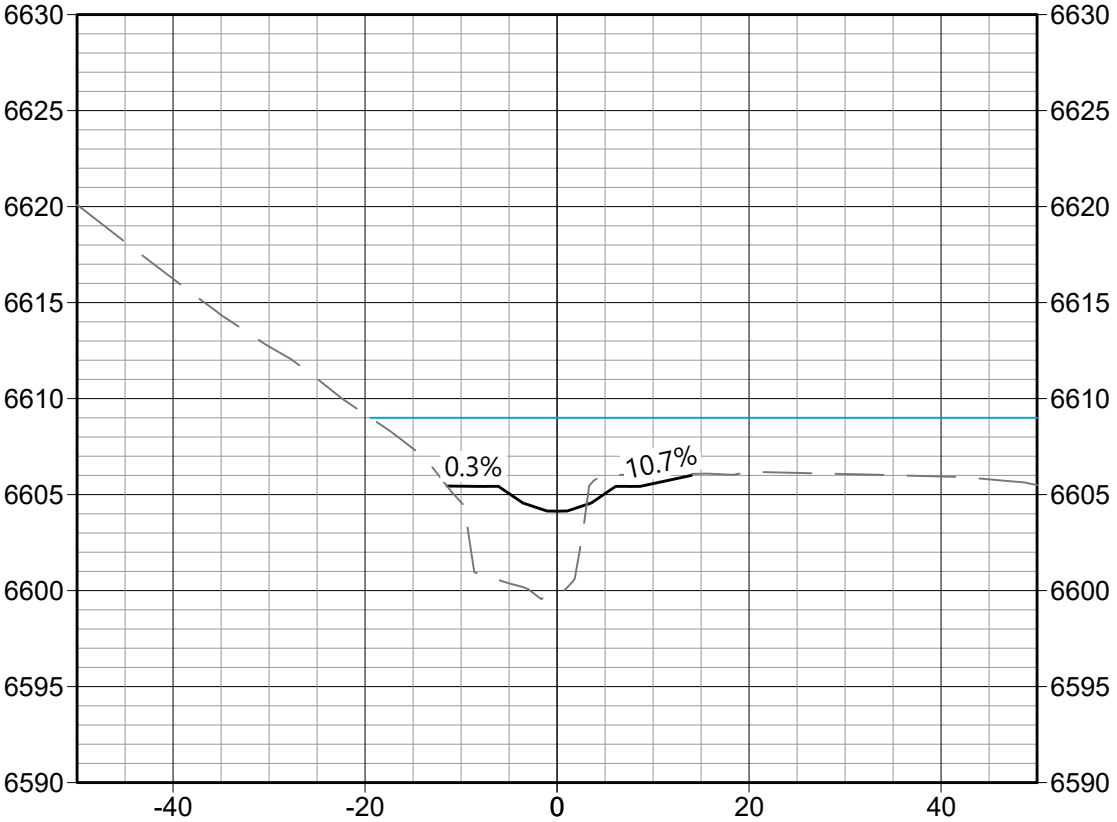
2021013002 1" = 20'
Project No. Horizontal Scale

BID SET

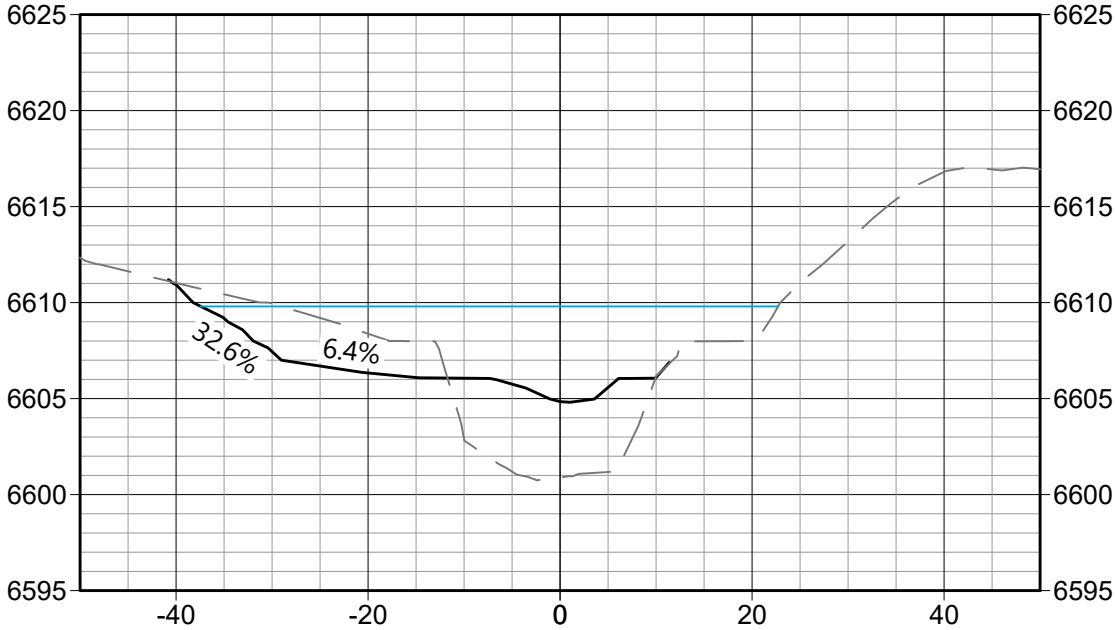
SL -11
2+00.0



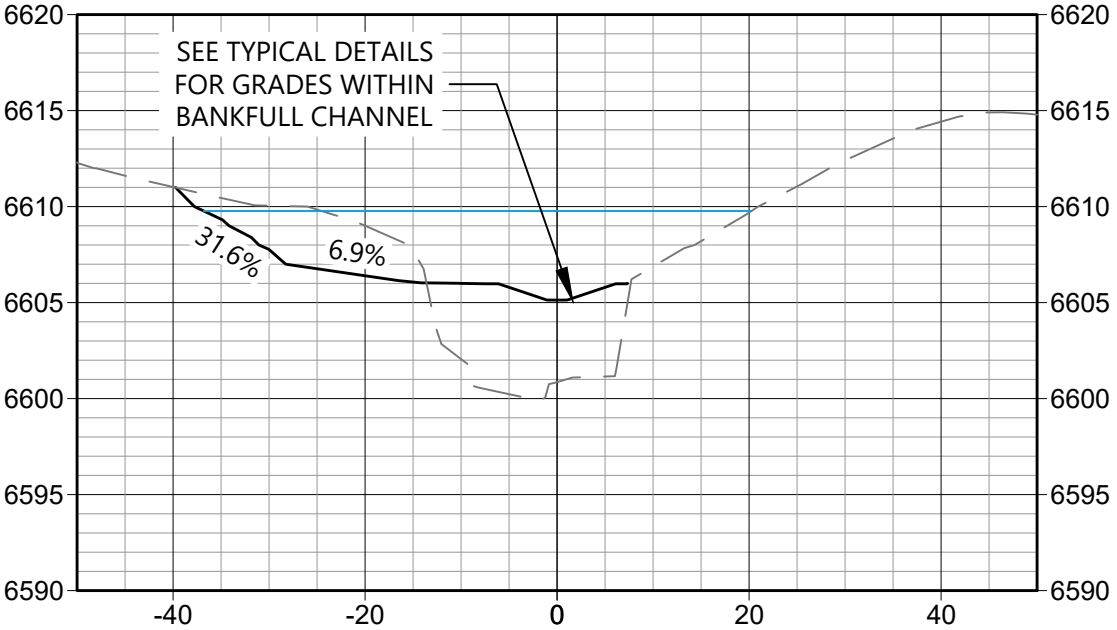
SL -12
2+15.5



SL -9
1+50.0



SL -10
1+57.3



Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION

Colorado Springs Utilities
It's how we're all connected

COLORADO SPRINGS
OLYMPIC CITY USA



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

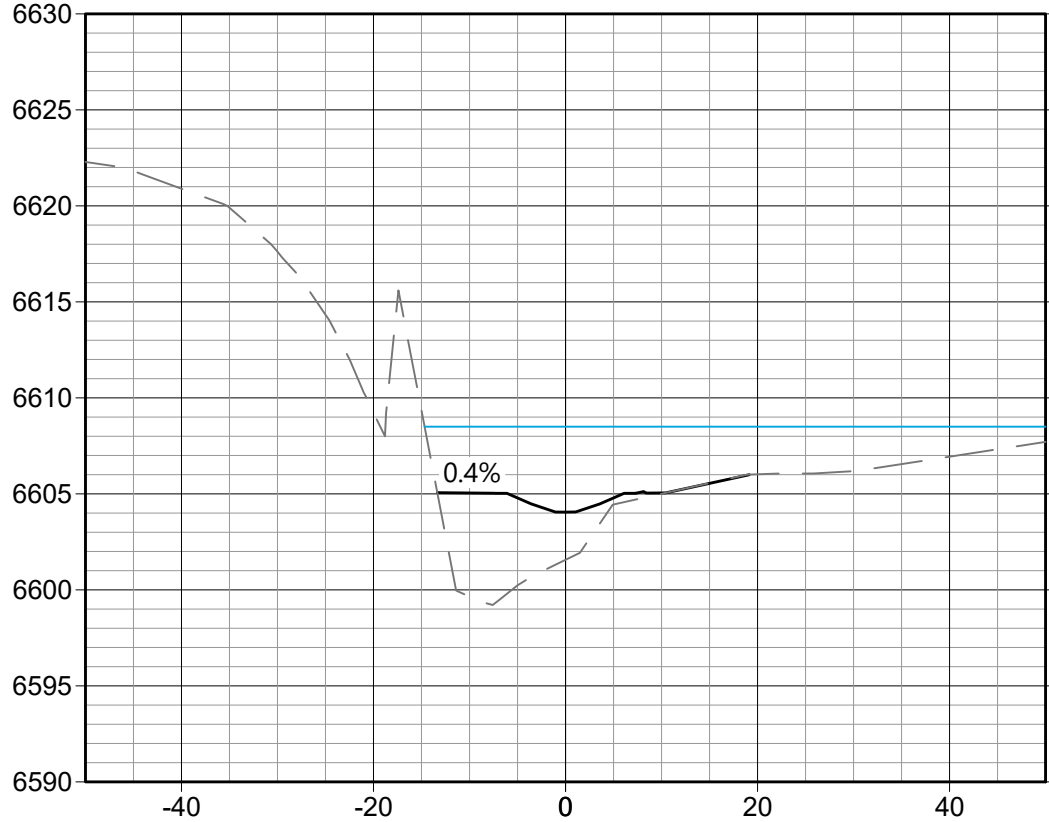
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (3)

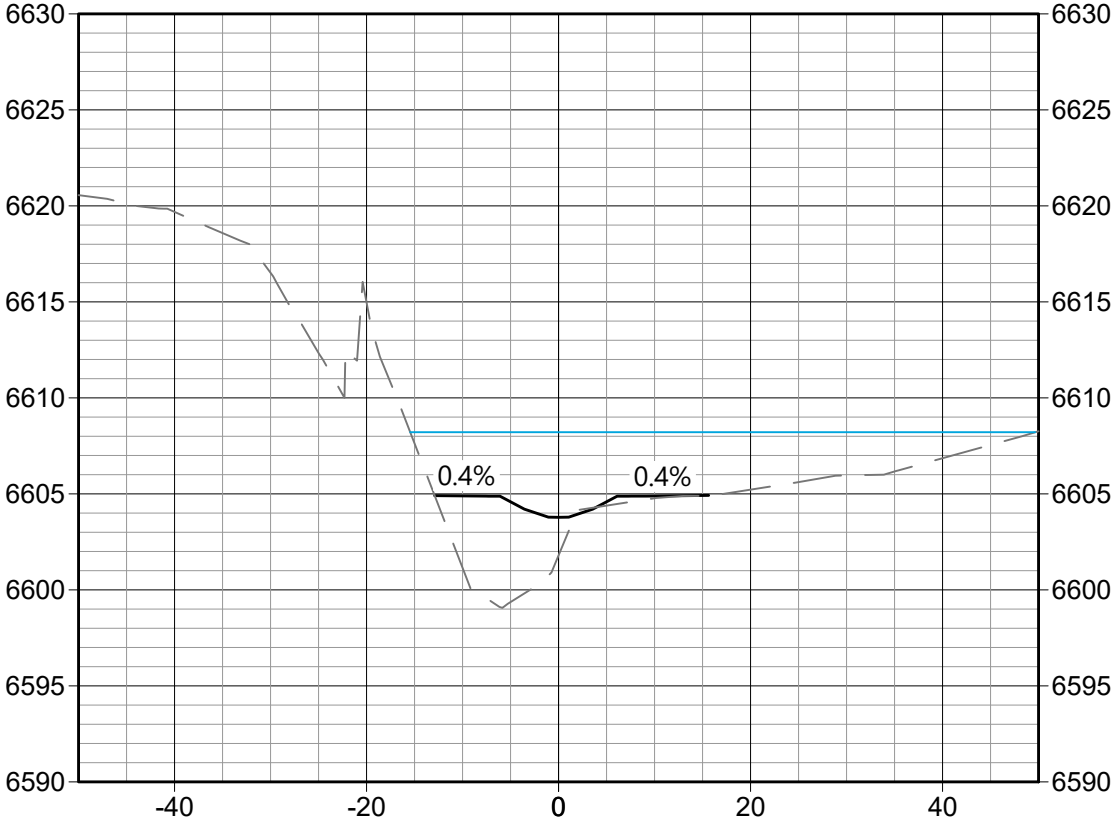
2021013002 1" = 20'
Project No. Horizontal Scale

STRUCTURES NOT SHOWN IN SECTION VIEW

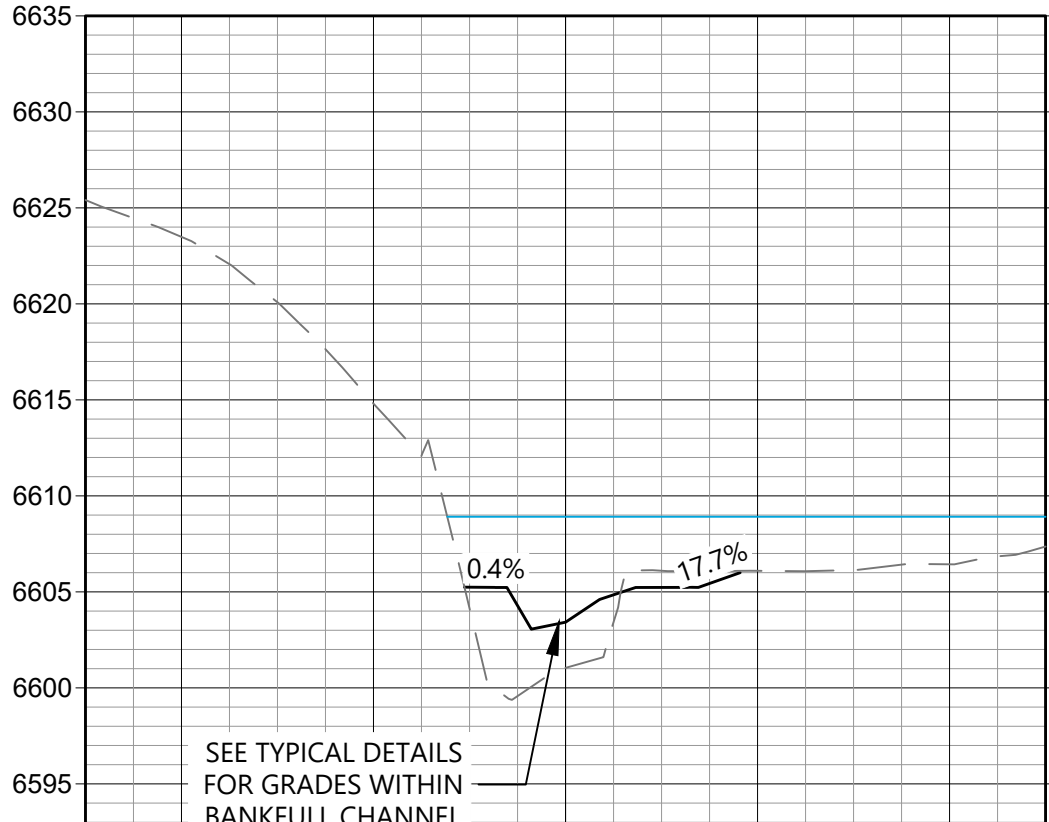
SL -15
2+57.0



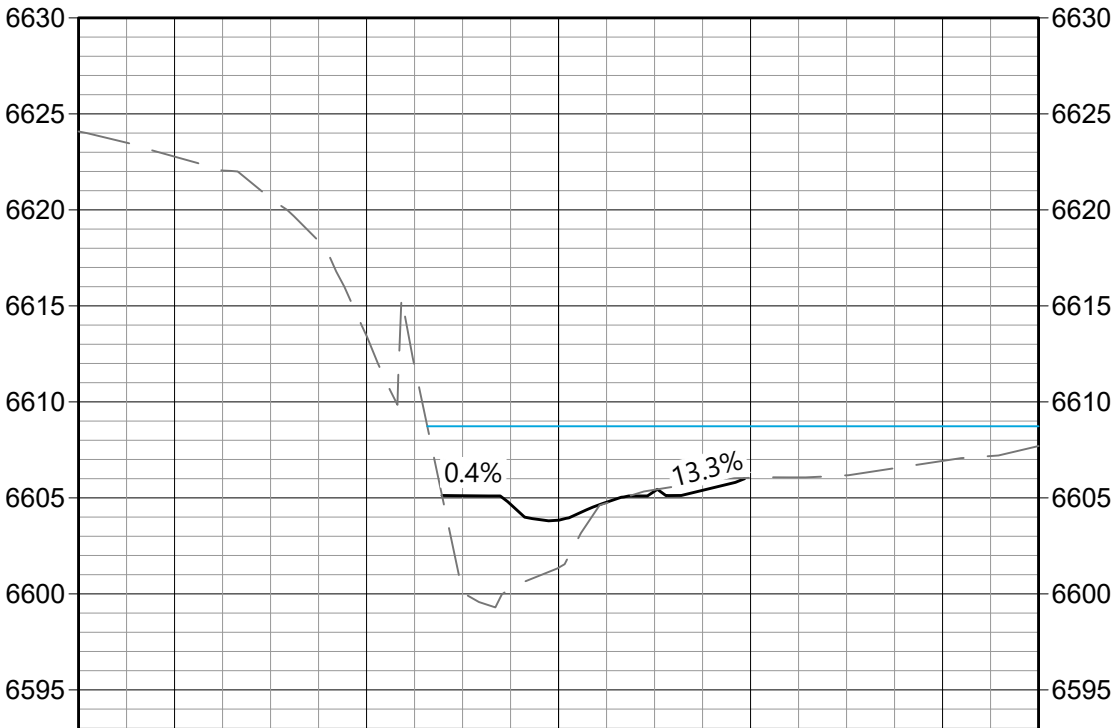
SL -16
2+72.8



SL -13
2+36.3



SL -14
2+50.0



BID SET



WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (4)

2021013002 1"=20'
Project No. Horizontal Scale

Sheet 59 of 66


BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.


Sub-Consultants

Horizontal Scale & Orientation

Legend



811
Call before you dig
Call before you dig



100-YEAR WATER SURFACE ELEVATION



Colorado Springs Utilities
It's how we're all connected



COLORADO SPRINGS
OLYMPIC CITY USA



STORMWATER ENTERPRISE

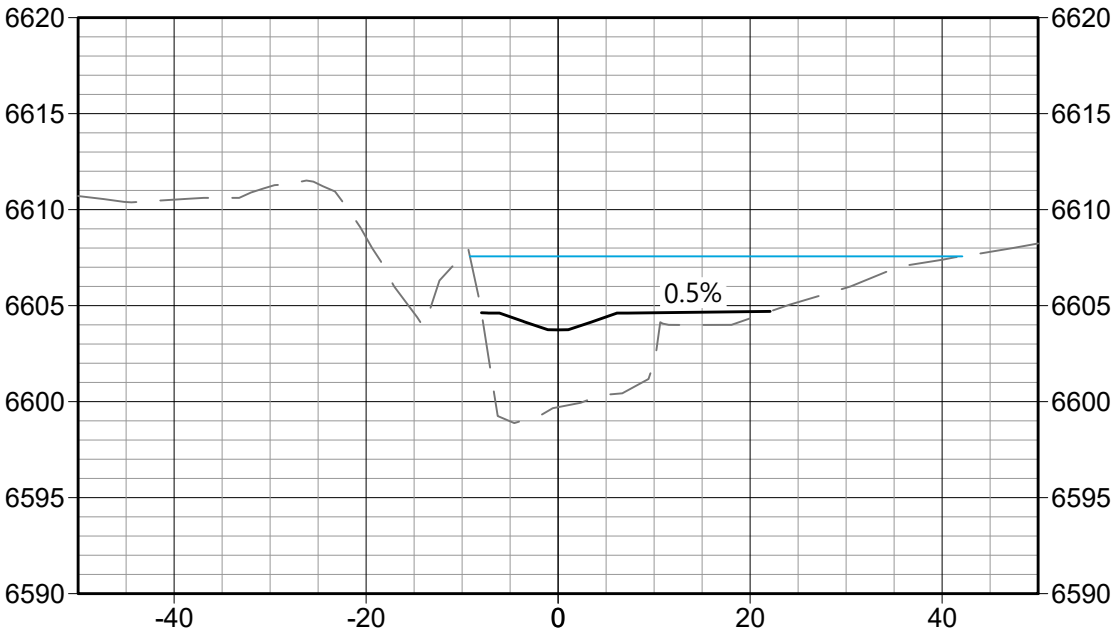
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

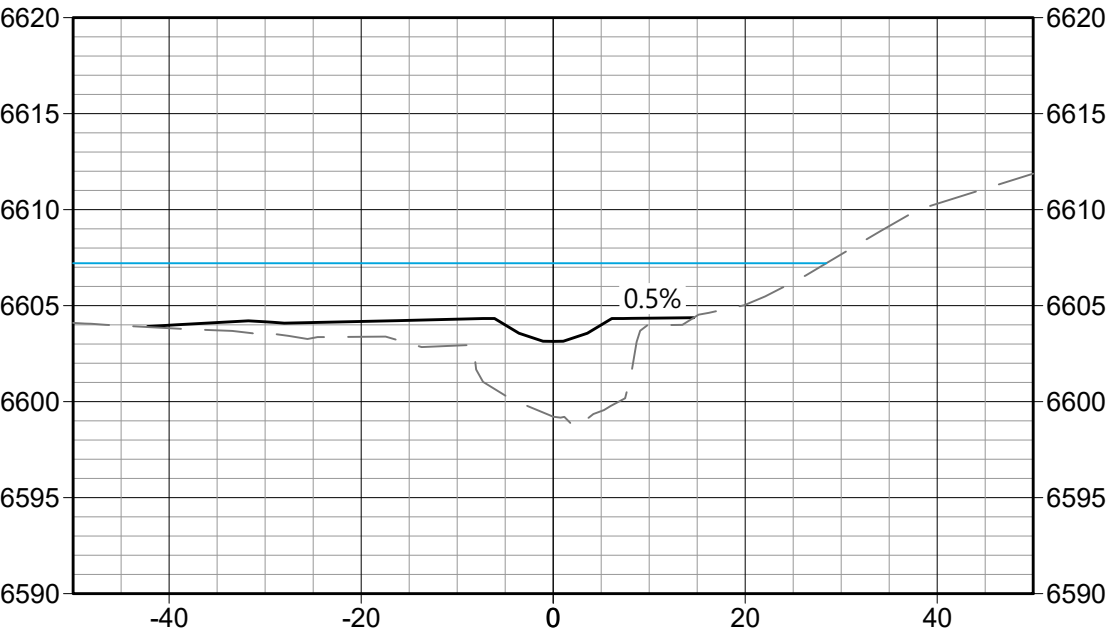
Sheet Name
SECTION SHEET - (5)

2021013002 1" = 20'
Project No. Horizontal Scale

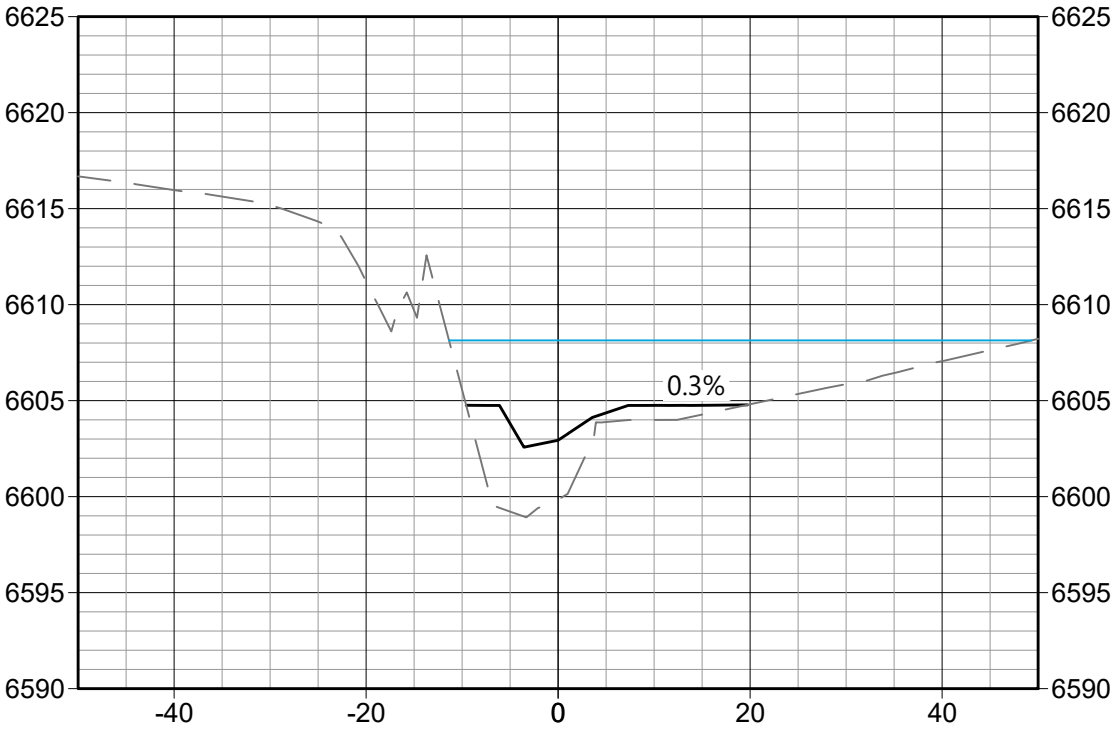
SL -19
3+00.0



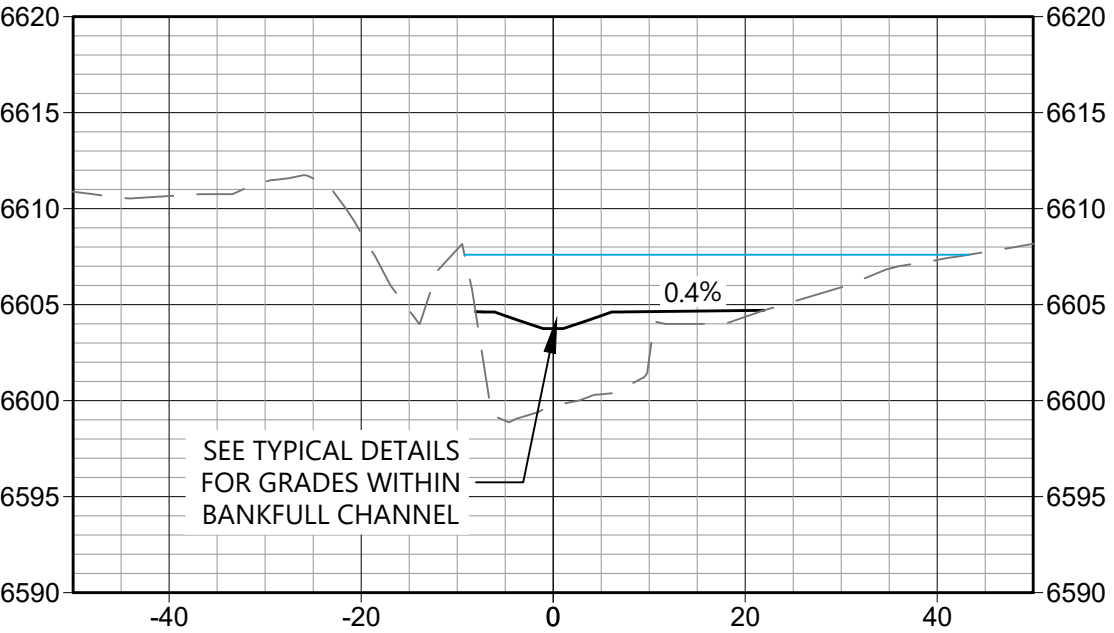
SL -20
3+29.1



SL -17
2+86.2



SL -18
2+99.5



STRUCTURES NOT SHOWN IN SECTION VIEW

BID SET




WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION



COLORADO SPRINGS
OLYMPIC CITY USA

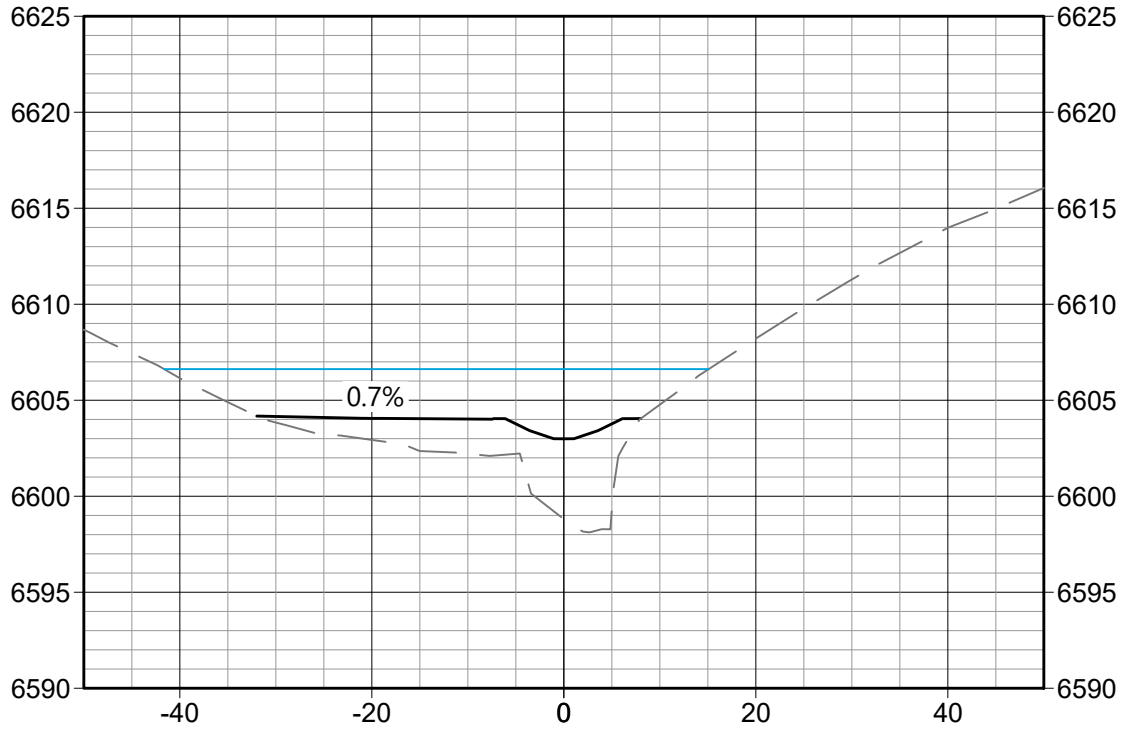
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

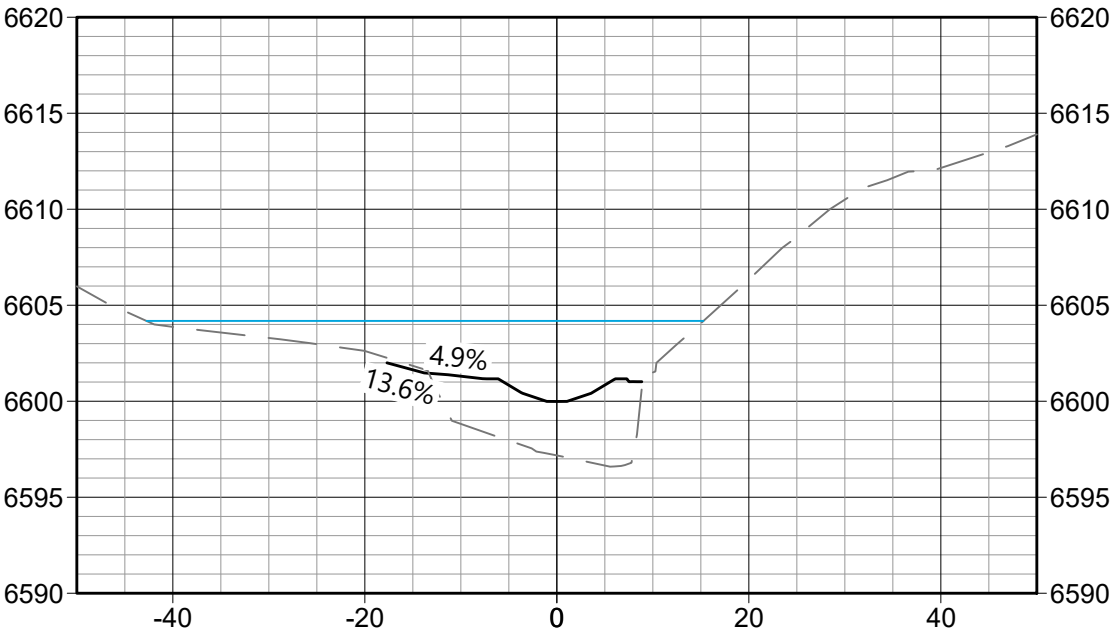
Sheet Name
SECTION SHEET - (6)

2021013002 1" = 20'
Project No. Horizontal Scale

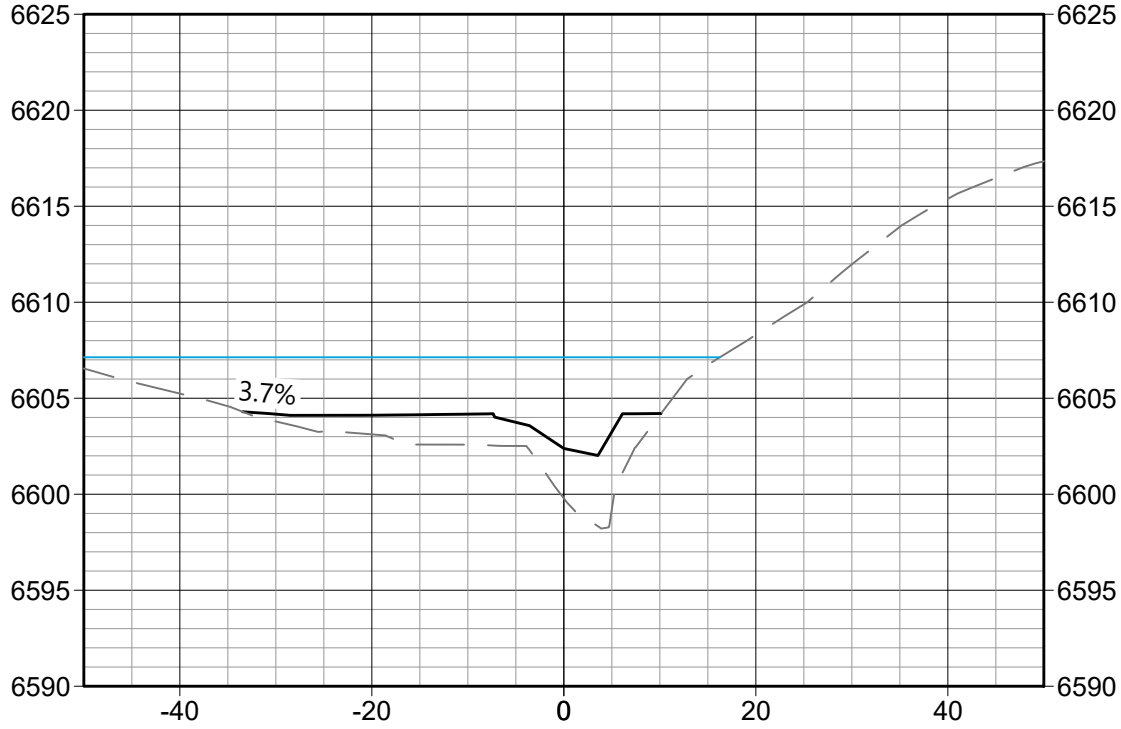
SL -23
3+59.6



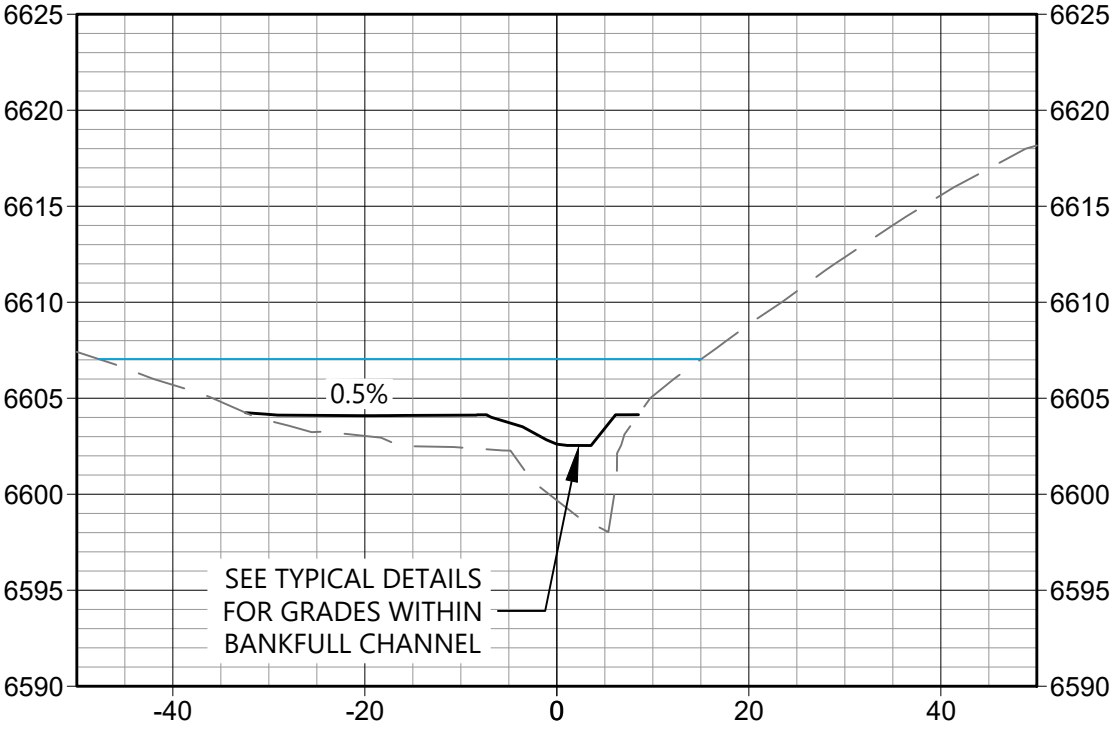
SL -24
4+00.0



SL -21
3+44.4



SL -22
3+50.0



BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION



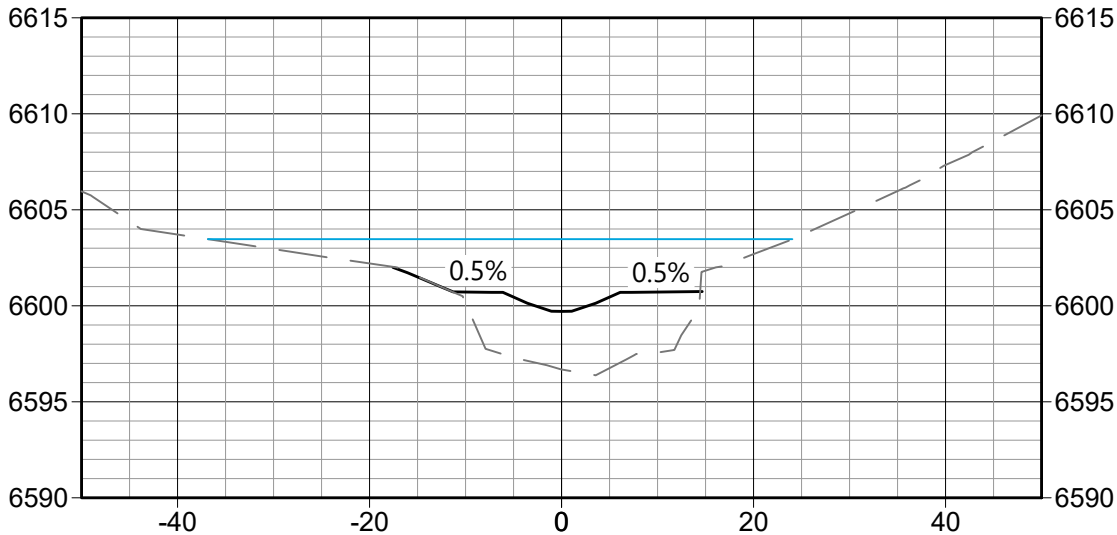
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

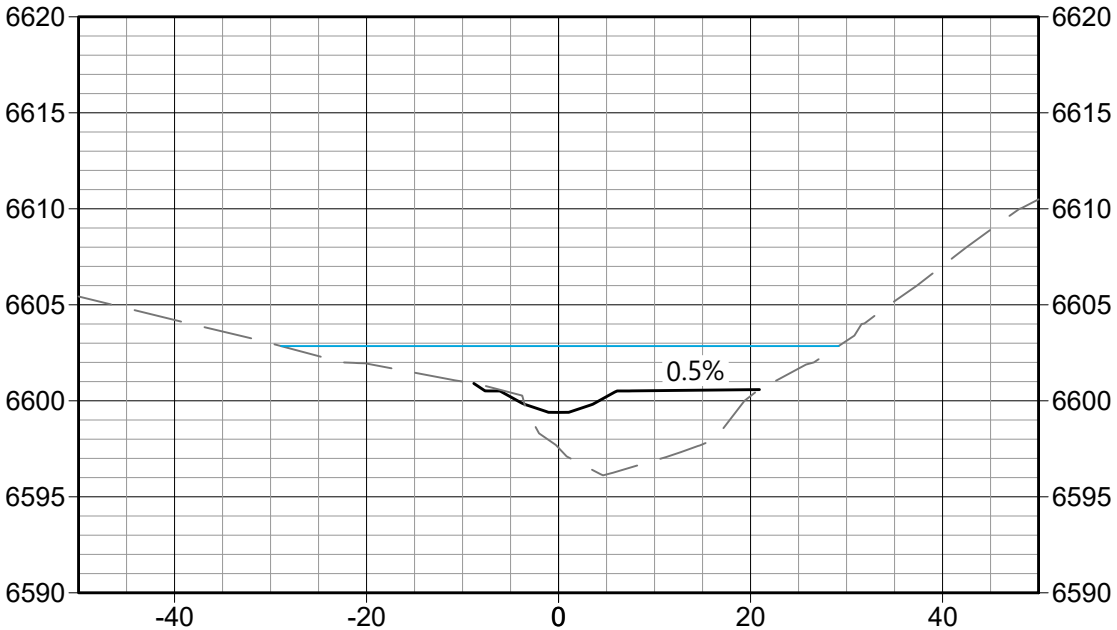
Sheet Name
SECTION SHEET - (7)

2021013002 1" = 20'
Project No. Horizontal Scale

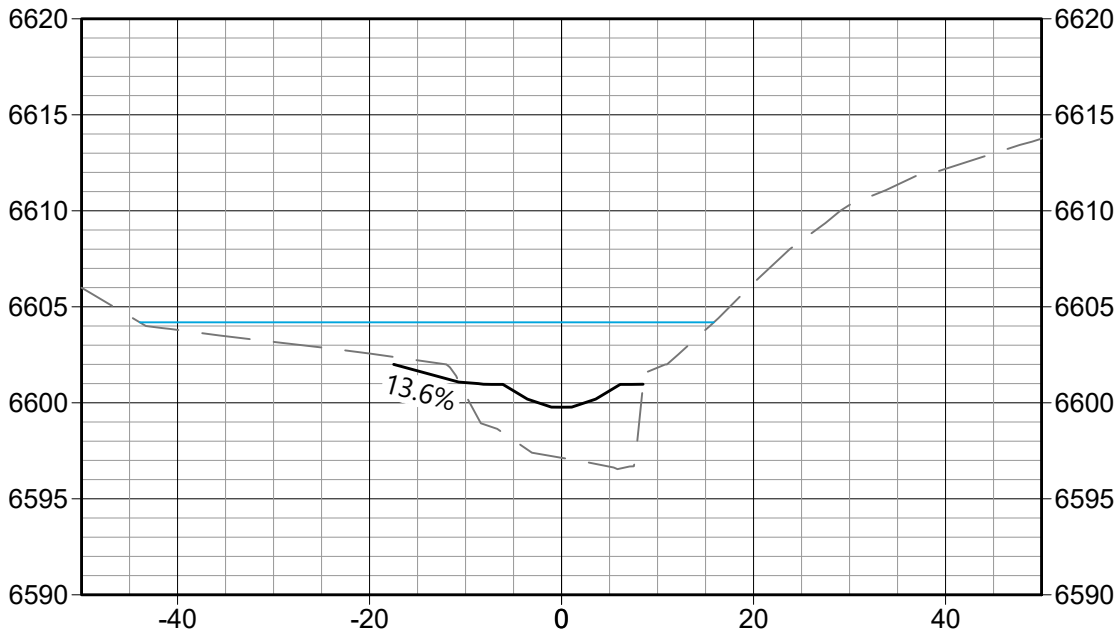
SL -27
4+30.4



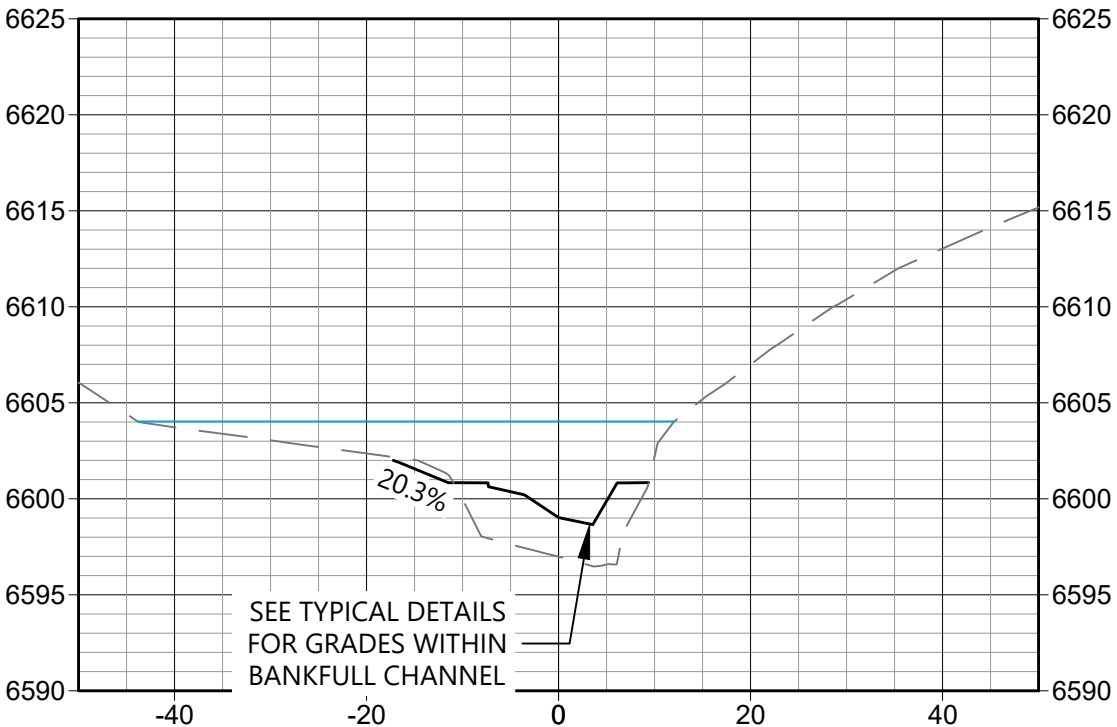
SL -28
4+50.0



SL -25
4+02.9



SL -26
4+16.6



STRUCTURES NOT SHOWN IN SECTION VIEW

BID SET




WATERVATION
123 G Street, Suite 18
Salida, CO 81201
www.water-vation.com

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

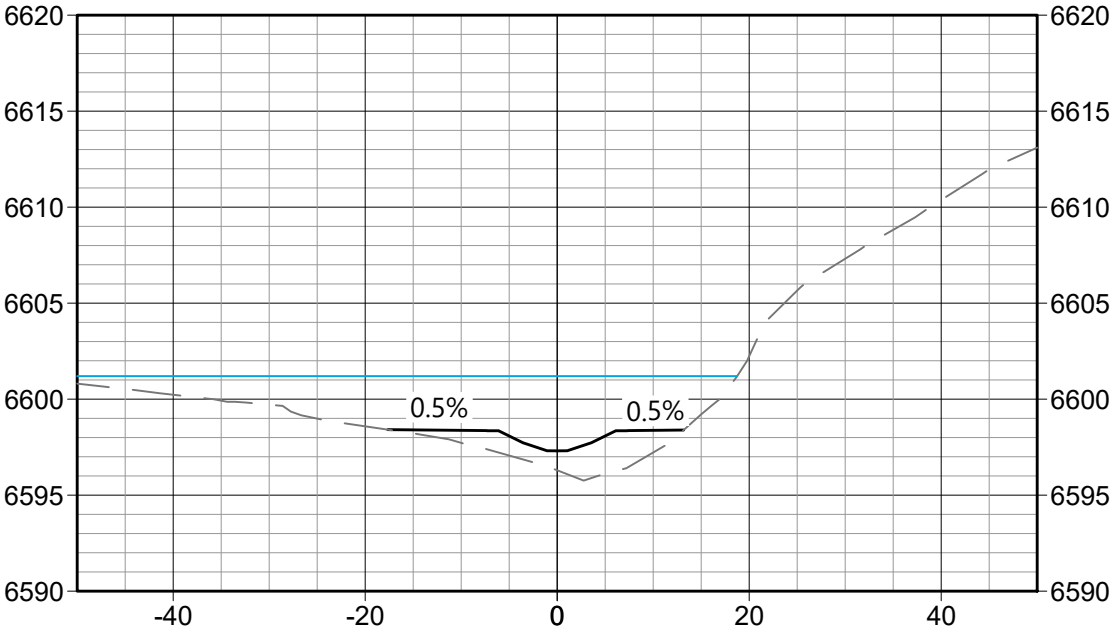
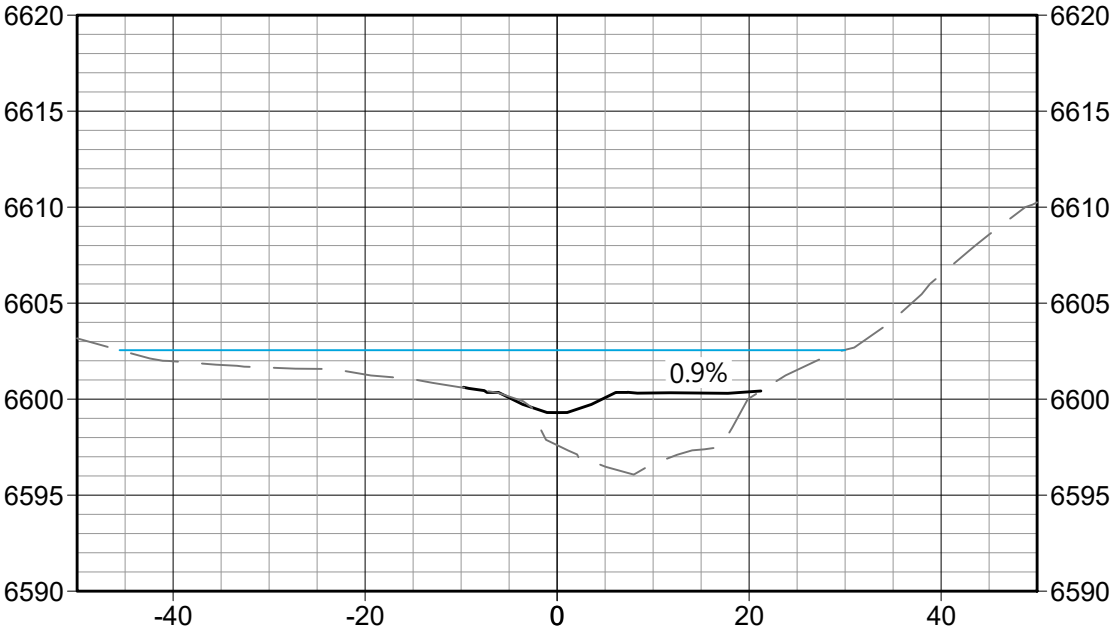
Legend



100-YEAR WATER SURFACE ELEVATION

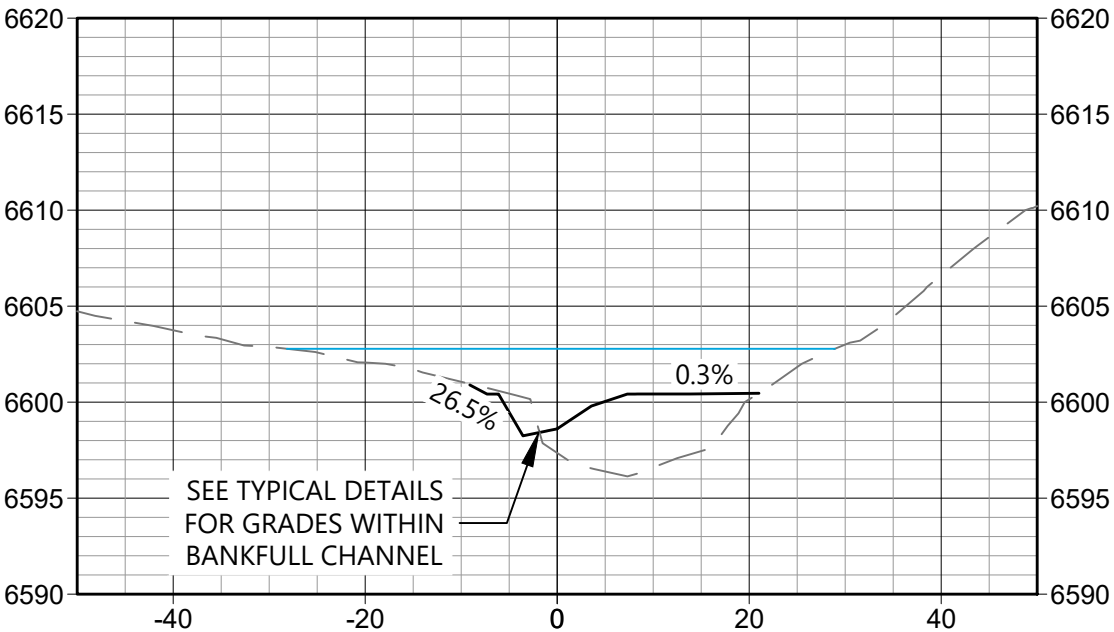
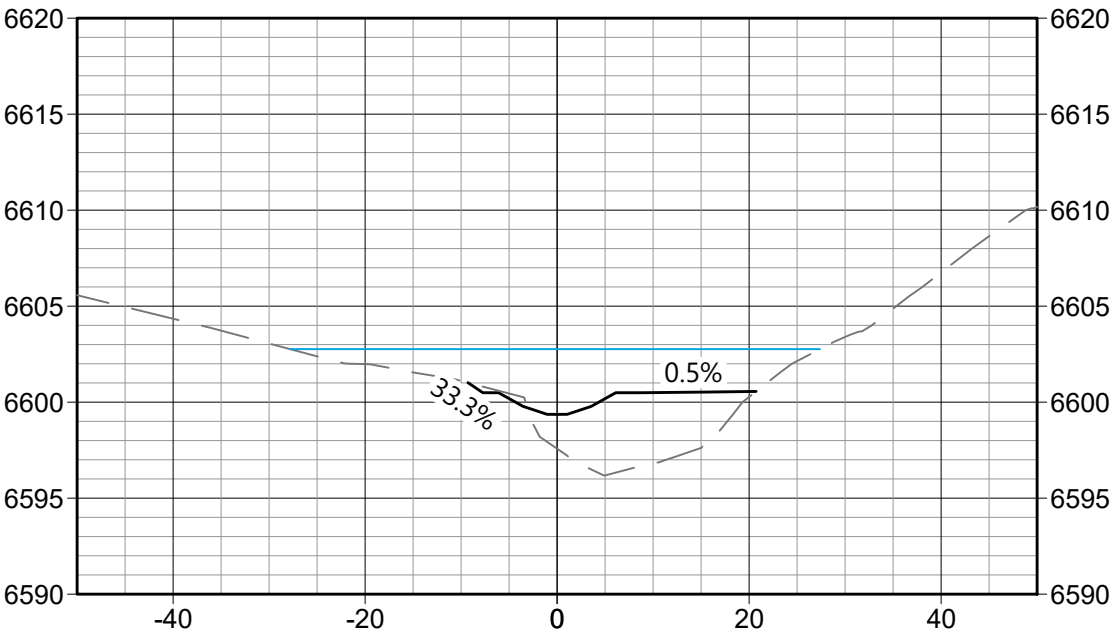
SL -31
4+66.5

SL -32
5+00.0



SL -29
4+52.3

SL -30
4+59.4





COLORADO SPRINGS
OLYMPIC CITY USA

Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (8)

2021013002 1" = 20'
Project No. Horizontal Scale

BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

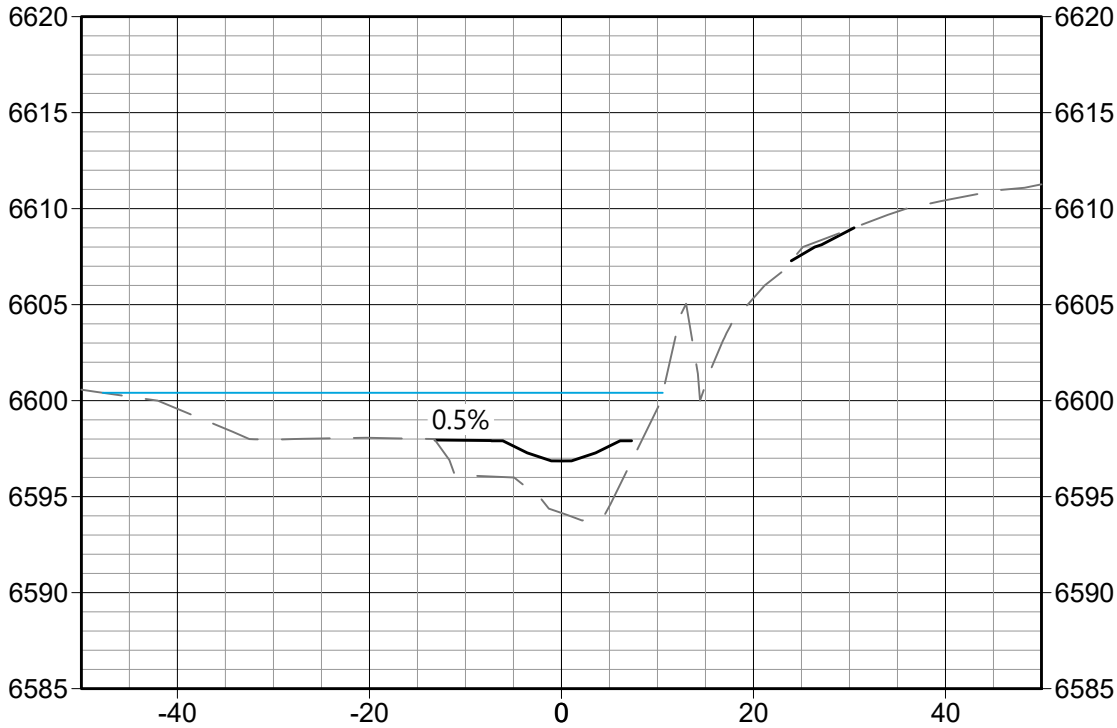
Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (9)

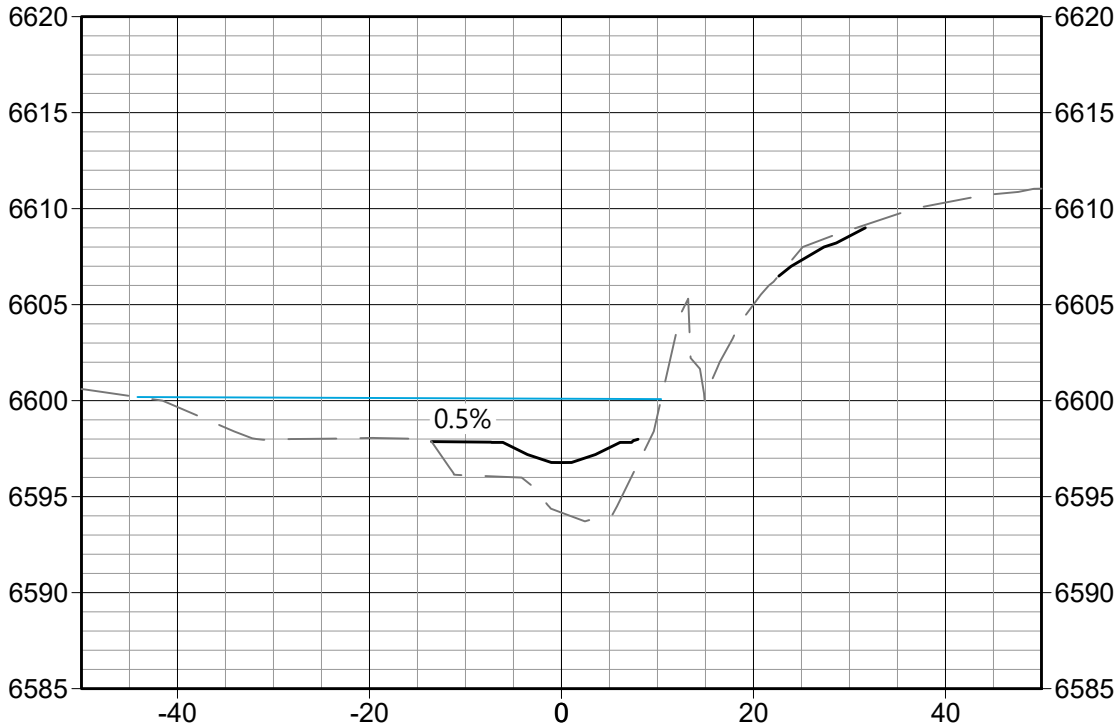
2021013002 1" = 20'
Project No. Horizontal Scale

Sheet 64 of 66

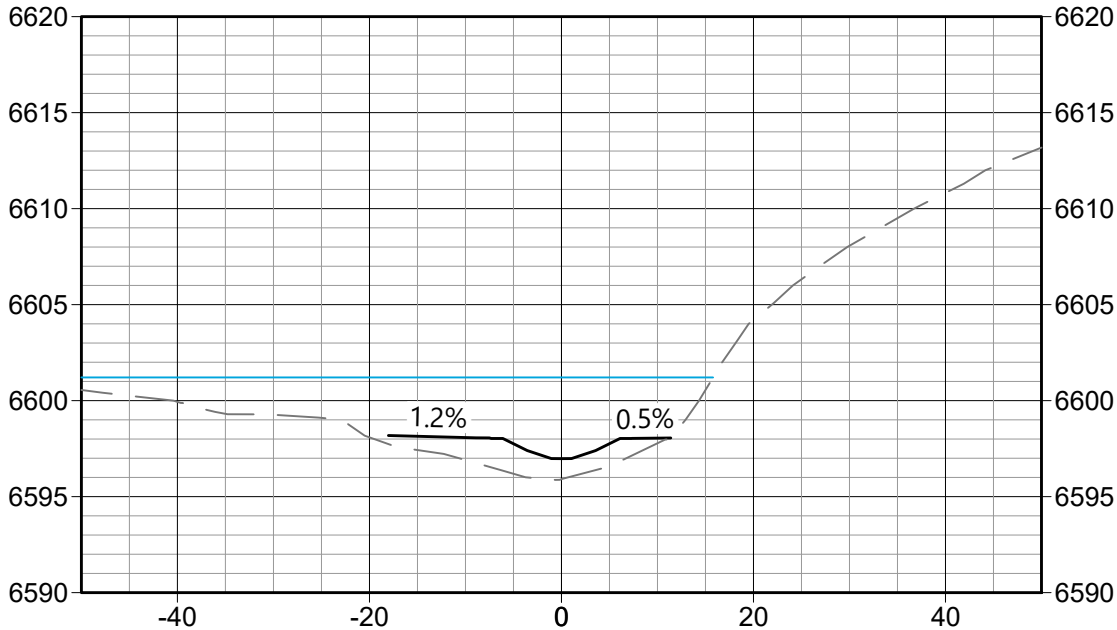
SL -35
5+48.4



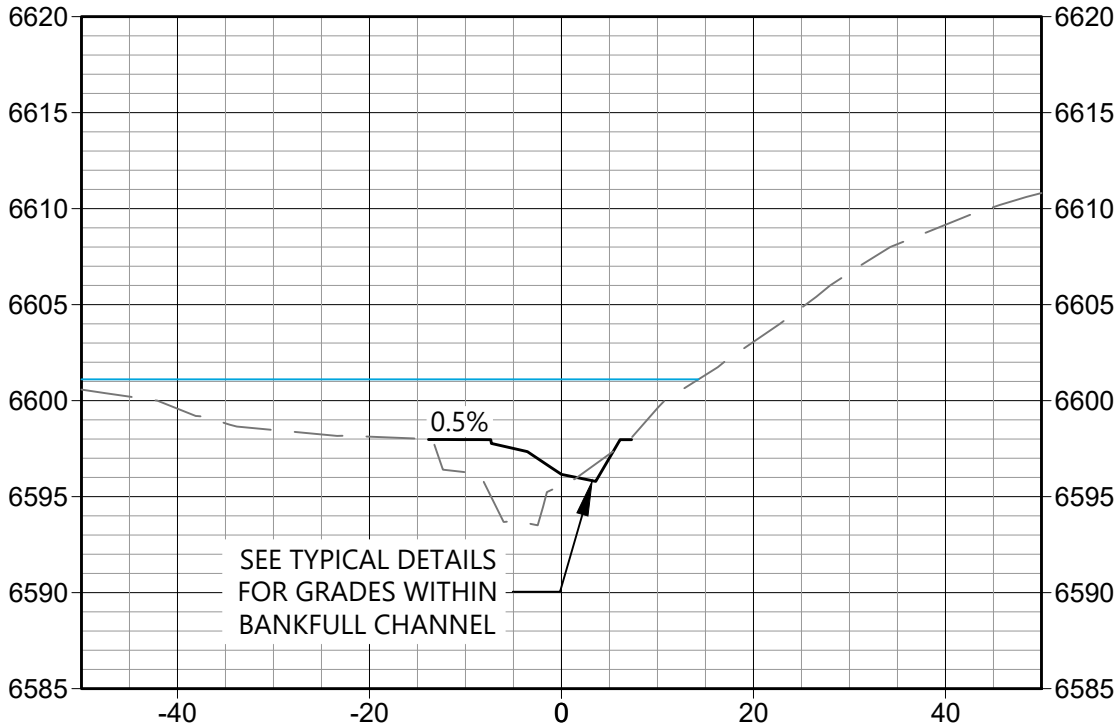
SL -36
5+50.0



SL -33
5+05.5



SL -34
5+27.0



BID SET

Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation

Legend



100-YEAR WATER SURFACE ELEVATION



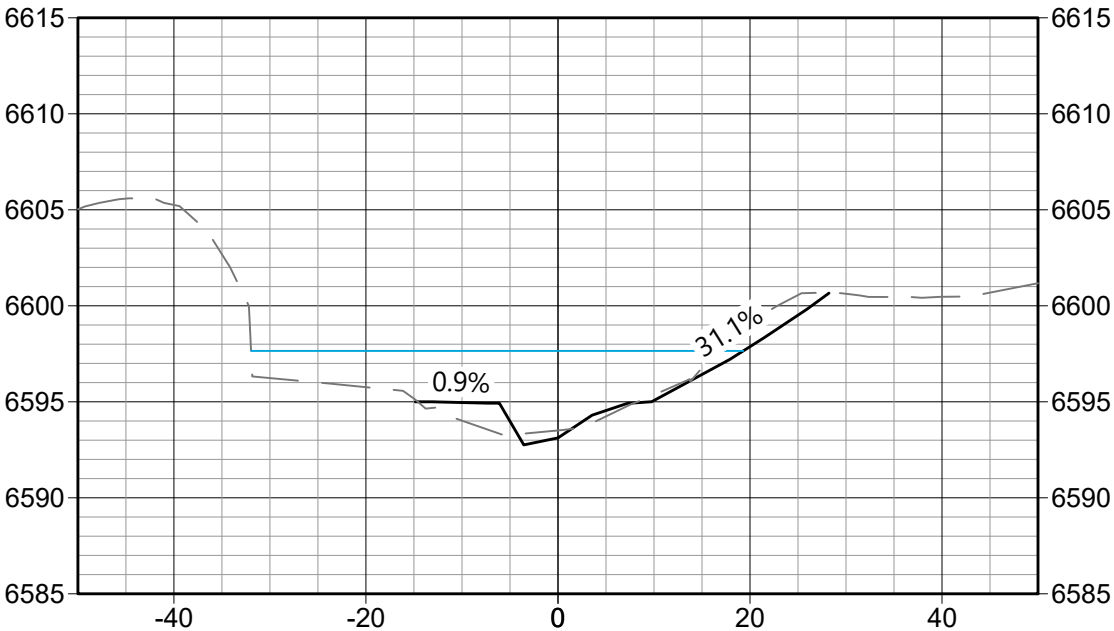
Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

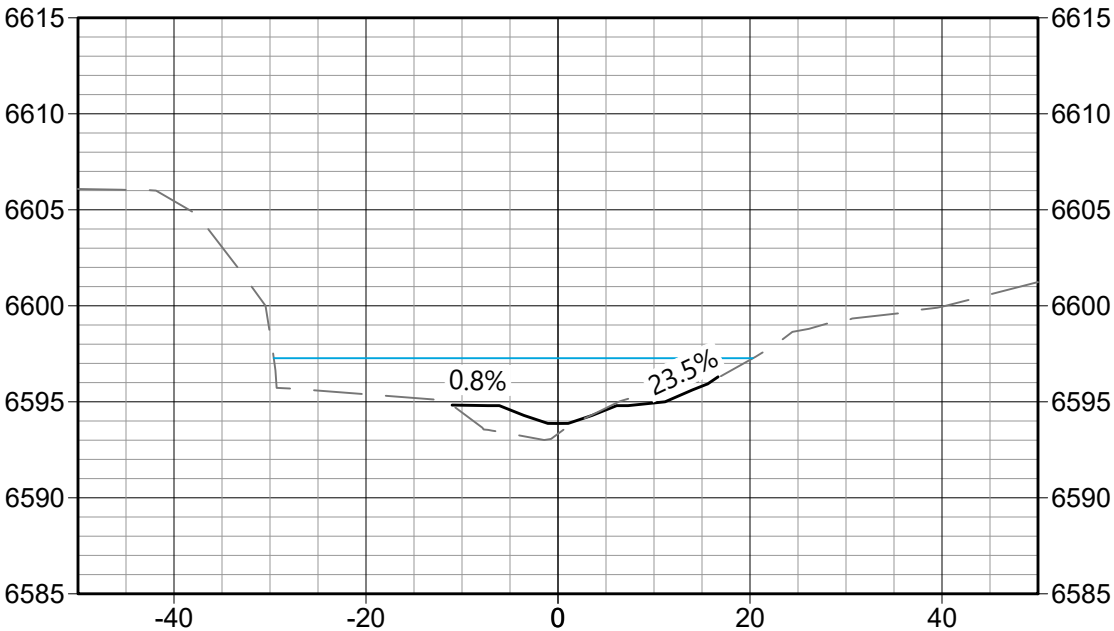
Sheet Name
SECTION SHEET - (10)

2021013002 1" = 20'
Project No. Horizontal Scale

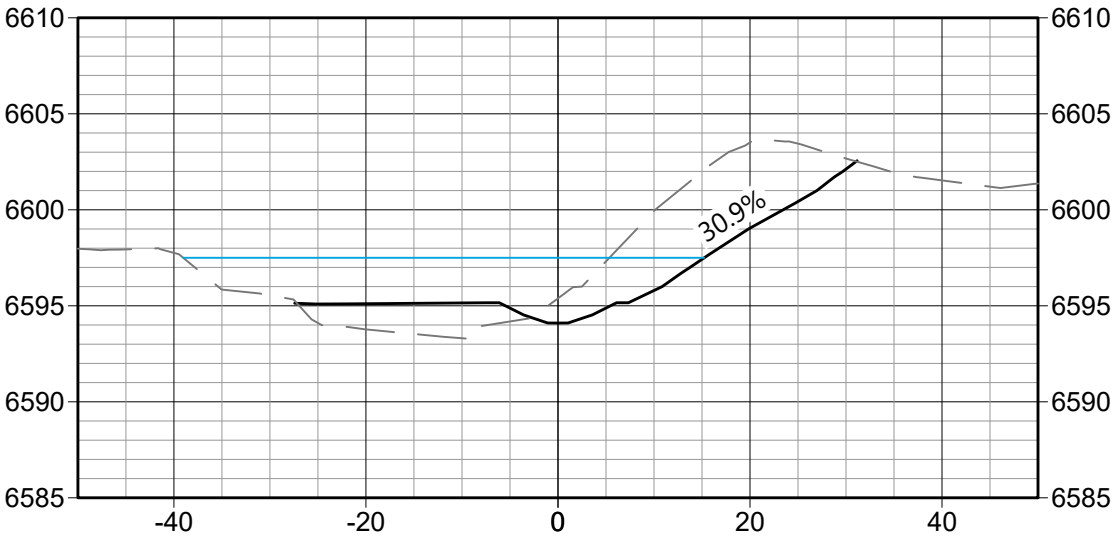
SL -39
6+15.1



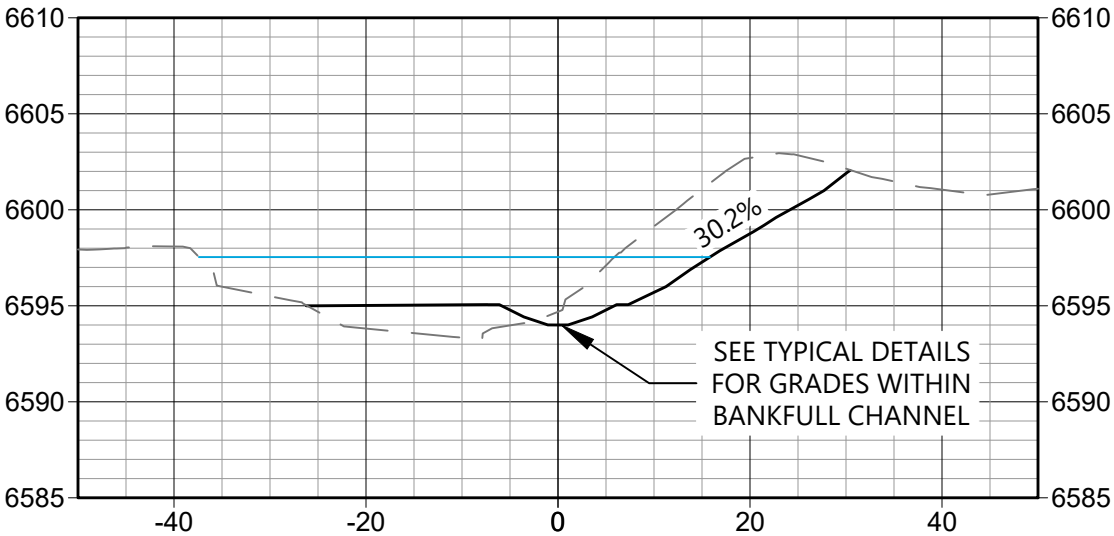
SL -40
6+28.3



SL -37
6+00.0



SL -38
6+01.9



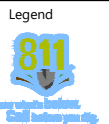
STRUCTURES NOT SHOWN IN SECTION VIEW

BID SET

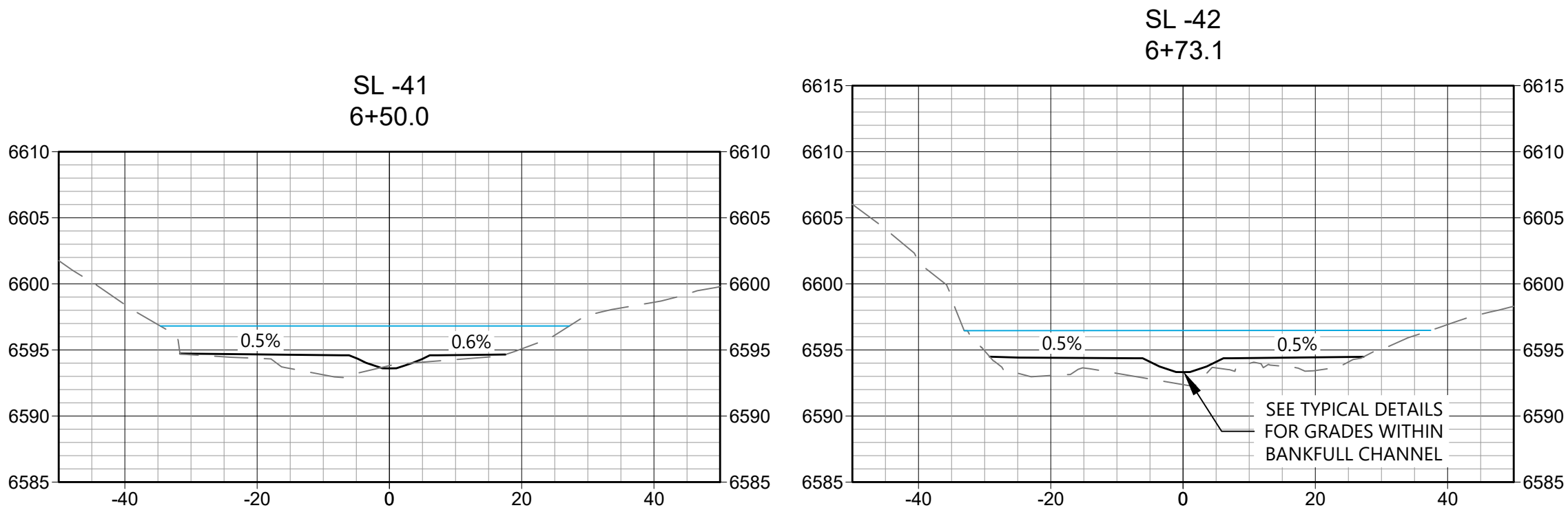
Copyright Reserved
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to WaterVation without delay.
The Copyrights to all designs and drawings are the property of WaterVation. Reproduction or use for any purpose other than that authorized by WaterVation is forbidden.

Sub-Consultants

Horizontal Scale & Orientation



100-YEAR WATER SURFACE ELEVATION



Client/Project
CITY OF COLORADO SPRINGS
MIDDLE TRIBUTARY UPSTREAM OF I-25
CHANNEL RESTORATION
COLORADO SPRINGS, CO

Project Milestone
100% DESIGN SUBMITTAL

Sheet Name
SECTION SHEET - (11)

2021013002 1" = 20'
Project No. Horizontal Scale