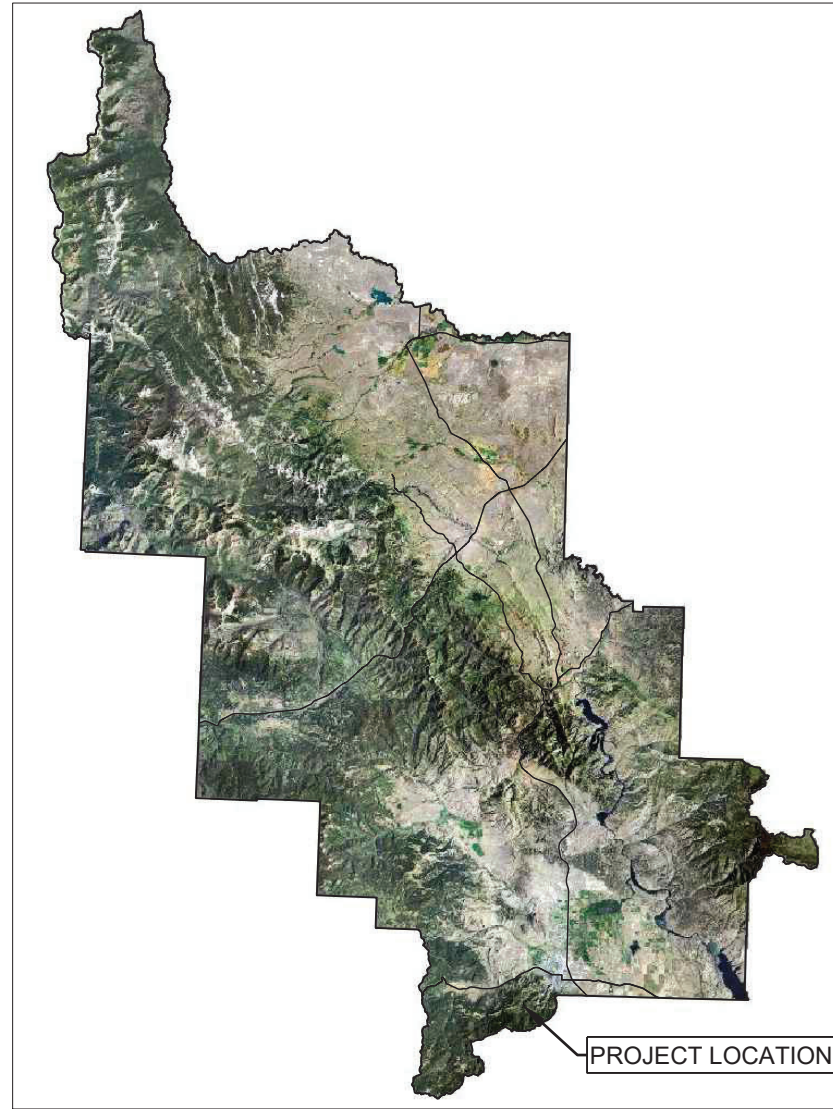
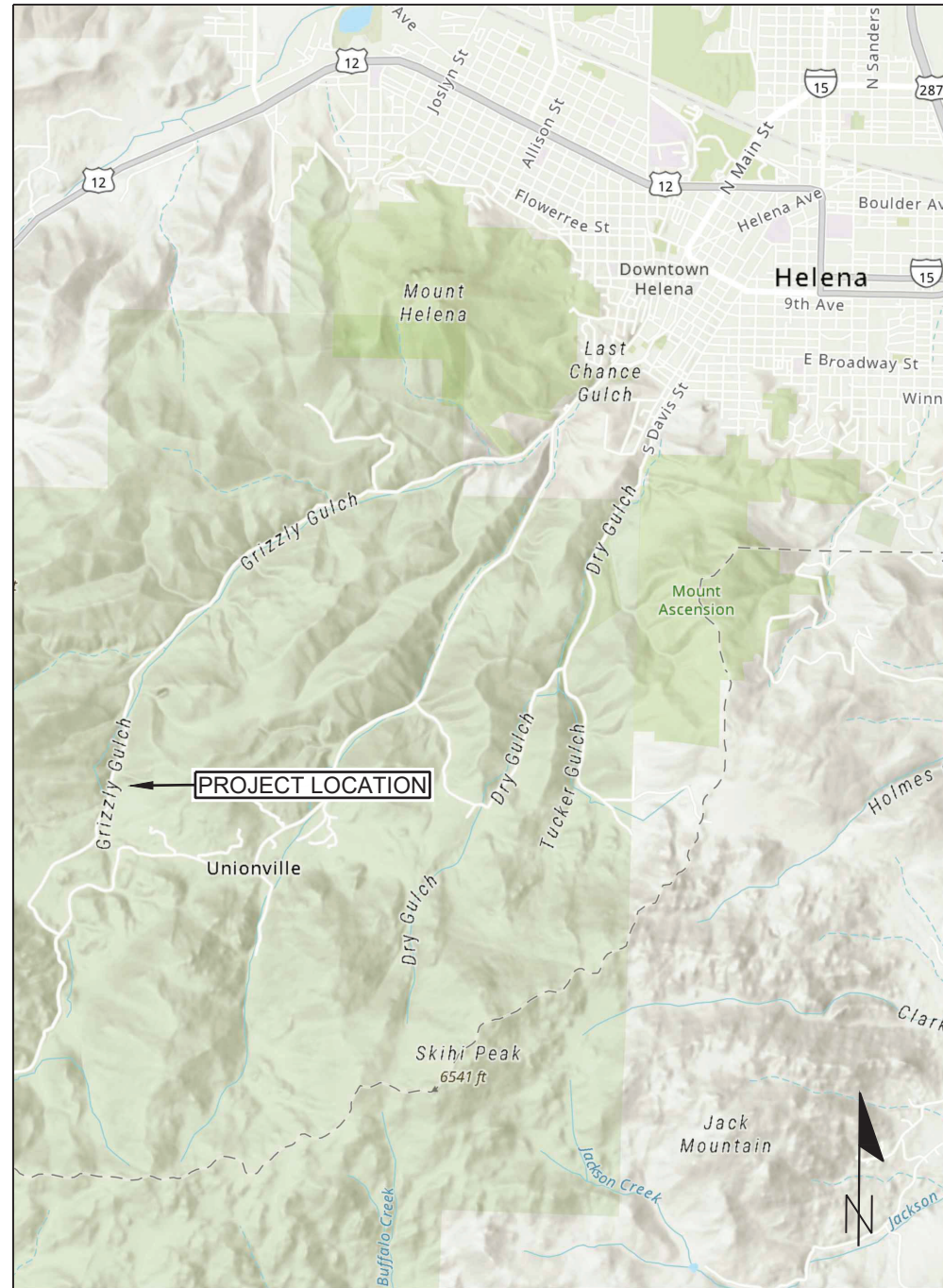


# GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT

LEWIS AND CLARK COUNTY  
NOVEMBER 2024  
RESPEC PROJECT NO. W0138.23005



LEWIS AND CLARK COUNTY,  
MONTANA  
N.T.S.

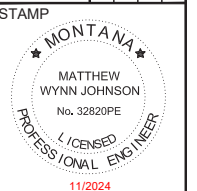


VICINITY MAP  
N.T.S.

SHEET INDEX	
Sheet Number	Sheet Title
G-0	COVER SHEET AND VICINITY MAP
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G-2	CONSTRUCTION QUANTITIES
G-3	PROJECT AREA OVERVIEW
C-1	EXISTING CONDITIONS
C-2	GENERAL CONSTRUCTION
C-3	CHANNEL PLAN AND PROFILE
C-4	FLOODPLAIN SECTIONS STATIONS 1+50 - 4+00
C-5	FLOODPLAIN SECTIONS STATIONS 4+50 - 7+00
C-6	FLOODPLAIN SECTIONS STATIONS 7+50 - 10+00
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D-1	DROP STRUCTURE DETAILS
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D-3	TYPICAL RIPRAP DETAIL

DESIGNED	MJW
DRAWN	MJH
CHECKED	MJW
DATE	8.07.2024

RESPEC  
3810 VALLEY COMMONS DRIVE SUITE 4  
BOZEMAN, MONTANA 59718  
WATER & NATURAL RESOURCES  
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PROJECT NAME:  
GRIZZLY GULCH PLACER MINE  
RECLAMATION PROJECT







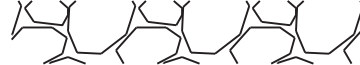



SHEET TITLE:  
COVER SHEET AND  
VICINITY MAP



SHEET NUMBER:  
G-0

MATTHEW JOHNSON  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF MONTANA NO. PEL-PE-LIC-32820  
DATE \_\_\_\_\_

# ADVERTISED COPY

LEGEND	EXISTING	PROPOSED
DESCRIPTION		
RIGHT OF WAY	-----	
SURVEY CONTROL		
CONTOUR		
CULVERT	-----	
OVERHEAD POWER		
WELL		
GUARDRAIL	-----	-----
FENCE		
RIPRAP		
TELEPHONE		
LIGHT POLE		
MAILBOX		

**GENERAL NOTES:**

1. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND DETERMINE LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK. **CALL 811** (OR ONE CALL UTILITY LOCATE: 1-800-424-5555) A MINIMUM OF 72-HOURS BEFORE WORK IS PLANNED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING AND PROPERLY REPAIRING ANY AND ALL DAMAGED UTILITIES.
2. ANY UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ALL UTILITY LOCATIONS ARE SUBJECT TO THE ACCURACY OF THE LOCATION METHOD AND SUBJECT TO RELOCATION FROM THE TIME THAT THESE DRAWINGS WERE PREPARED.
3. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB, ON-SITE AT ALL TIMES.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF ALL PERSONNEL, ALL SITE VISITORS, AND THE GENERAL PUBLIC WHO MAY BE AFFECTED BY THE CONSTRUCTION. THIS INCLUDES BUT IS NOT LIMITED TO GENERAL AND CHANNEL EXCAVATION, SHORING, TRAFFIC CONTROL, AND SECURITY. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS FOUND BETWEEN THE CONSTRUCTION PLANS AND CONDITIONS ENCOUNTERED IN THE FIELD.
5. CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS AND RESTRICTIONS FOUND IN REGULATORY PERMITS OBTAINED BY THE ENGINEER.
6. LEGAL LOAD LIMIT REQUIREMENTS SHALL BE ADHERED TO ON ALL STATE HIGHWAYS, COUNTY ROADS, AND CITY STREETS.
7. THE CONTRACTOR IS TO PROVIDE THEIR OWN WATER FOR COMPACTION AND DUST ABATEMENT.
8. CONSTRUCTION SHALL COMPLY WITH THESE PLANS IN ADDITION TO THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
9. ALL EQUIPMENT USED ONSITE WILL BE CLEAN AND WASHED PRIOR TO ARRIVAL TO THE PROJECT AREAS. ALL IMPORTED MATERIAL MUST BE CERTIFIED AS WEED FREE.
10. EMERGENCY SPILL KITS WILL BE MAINTAINED ON EACH PIECE OF EQUIPMENT, OR IN AN AREAS THAT CAN RAPIDLY BE REACHED.
11. FOR INSTALLATION OF STREAMBANK TREATMENTS, ALL WORK WILL BE DONE DURING LOW FLOWS.
12. STRUCTURAL BMPS, SUCH AS SILT FENCE, STRAW BALES OR WATTLES MAY BE USED TO ISOLATE CONSTRUCTION ALONG THE ACTIVE CHANNEL AS NECESSARY.
13. ALL EXPOSED SOILS WILL BE STABILIZED ONCE CONSTRUCTION IS COMPLETED. SOILS WILL BE STABILIZED USING VARIOUS TECHNIQUES AS DESCRIBED IN THIS PLAN INCLUDING SEEDING AND PLANTING. ALL IMPORTED MATERIAL MUST BE CERTIFIED AS WEED FREE.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAVING AND PROTECTING ALL EXISTING TREES AND VEGETATION WHERE REMOVAL FOR CONSTRUCTION IS NOT MANDATORY.
15. IF WOUNDING OF SAVED TREES OCCUR, A NON-TOXIC WOUND DRESSING MUST BE APPLIED IMMEDIATELY. EXCAVATORS MUST HAVE A NON-TOXIC TREE WOUND DRESSING WITH THEM ON CONSTRUCTION SITES.
16. ALL REMOVED ITEMS SHALL BECOME THE CONTRACTOR'S PROPERTY TO BE DISPOSED OF IN AN APPROVED MANNER IN ACCORDANCE WITH REGULATION BY THE OWNER AT NO ADDITIONAL EXPENSE TO THE OWNERS, UNLESS SPECIFIED WITHIN THE PLANS. NO CONCRETE, RUBBLE, OR EXTRA MATERIALS SHALL BE BACKFILLED ON SITE.
17. MATERIAL STOCK PILE AREAS, ACCESS ROUTES, AND EQUIPMENT STORAGE AREAS WILL BE IDENTIFIED PRIOR TO THE ARRIVAL OF CONTRACTOR HEAVY EQUIPMENT.
18. MATERIALS STORED ON THE SITE WHICH MIGHT CONTRIBUTE POLLUTANTS TO RUNOFF SHALL BE LOCATED IN AN ENCLOSED, COVERED, AND LOCKABLE CONTAINER. THESE MATERIALS ARE EXPECTED TO CONSIST MAINLY OF FERTILIZERS, FUELS, AND MACHINERY LUBRICANTS.
19. ALL EXISTING AND PROPOSED CONTOURS ARE LABELED IN FEET AND REFERENCE A LOCAL VERTICAL DATUM. ALL SLOPES ARE SHOWN AS DIAGRAMMATIC AND SHALL BE ROUNDED AT THE TOP AND BOTTOM.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP OF THE PROJECT SITE AND SURROUNDING AREAS ON A DAILY BASIS OF ANY TRASH OR MUD ON THE SITE AS A RESULT OF CONSTRUCTION.
21. THE CONTRACTOR SHALL RESTORE ALL STAGING AND STOCKPILING AREAS TO THEIR ORIGINAL CONDITION OR BETTER THAN EXISTING UPON COMPLETION OF THE PROJECT. THE COST TO RESTORE THESE AREAS SHALL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
22. THE CONTRACTOR SHALL MAINTAIN ALL HAUL ROUTES AND RESTORE THEM TO THEIR ORIGINAL CONDITION OR BETTER THAN EXISTING UPON COMPLETION OF USE AT NO EXPENSE TO THE OWNER.
23. ALL PAVED HAUL ROUTES SHALL BE MAINTAINED FREE OF MUD AND DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS.
24. CONTRACTOR IS RESPONSIBLE FOR REPAIRING/REPLACING ALL DAMAGED INFRASTRUCTURE.
25. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM ENGINEER. THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
26. ALL ESTIMATES OF QUANTITIES SHALL BE VERIFIED BY THE CONTRACTOR/SUBCONTRACTOR, WHO SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES AND PROVIDING THE WORK AND MATERIALS AS SHOWN ON THE PLANS. QUANTITY ESTIMATES ARE PROVIDED FOR GUIDANCE PURPOSES ONLY, AND SHOULD NOT BE USED AS A BASIS FOR PRICING.
27. DEWATERING ACTIVITIES MAY BE REQUIRED FOR CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A UNITED STATES ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 33 TEMPORARY CONSTRUCTION, ACCESS AND DEWATERING PERMIT, ALONG WITH ANY OTHER RELEVANT PERMITS REQUIRED FOR CONSTRUCTION DEWATERING.

DESIGNED: MJW DRAWN: MJH CHECKED: MJW DATE: 8.07.2024	<b>RESPEC</b> 3810 VALLEY COMMONS DRIVE SUITE 4 BOZEMAN, MONTANA 59718 WATER & NATURAL RESOURCES WWW.RESPEC.COM 406.284.2525	REVISION _____ _____ _____
<b>STAMP</b> 		
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PROJECT NAME: <b>GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT</b>		
SHEET TITLE: <b>LEGEND AND GENERAL NOTES</b>		
 Know what's below. <b>Call before you dig.</b>		
SHEET NUMBER: <b>G-1</b>		

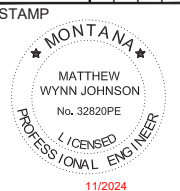


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SUMMARY OF CONSTRUCTION QUANTITIES			
DESCRIPTION	UNIT	QUANTITY	NOTES
UNCLASSIFIED EXCAVATION	CY	13800	NO IMPORTED FILL REQUIRED; QUANTITY REPRESENTS THE VOLUME THAT WILL BE MOVED ONSITE
CULVERT EXCAVATION	CY	412	EXCAVATION ASSUMES 1:1 SIDE SLOPES WITH A 1' BUFFER ON BOTH SIDES OF CULVERT
CHANNEL EXCAVATION	CY	230	QUANTITY OF EARTHWORK TO DEFINE LIMITS SET BY CHANNEL TYPICAL SECTION
SURFACE AGGREGATE	CY	2	3/4" MINUS FOR ACCESS POINT
42" STEEL ARCH PIPE CULVERT PROCURMENT/PLACEMENT	LF	88	8' LAY LENGTHS INCLUDES INLET AND OUTLET
18" CORRUGATED PLASTIC PIPE PROCURMENT/PLACEMENT	LF	164	INCLUDES INLET AND OUTLET
REMOVE EXISTING FENCE	LS	1	
STANDARD MGS GUARDRAIL	LF	450	
LOW SPEED TERMINAL GUARDRAIL	LF	50	
RIPRAP (CLASS I)	CY	27	
MDT CLASS C PERMANENT GEOTEXTILE FABRIC	SY	38	DOES NOT INCLUDE OVERLAP FOR ADJOINING PIECES
S150BN EROSION CONTROL MATTING	SY	1830	DOES NOT INCLUDE OVERLAP FOR ADJOINING PIECES
HDPE 100mm LINER	SY	6010	DOES NOT INCLUDE OVERLAP FOR ADJOINING PIECES
LOG DROP STRUCTURES	EA	9	
ROCK DROP STRUCTURES	EA	12	
12" COIR LOG	LF	2060	BOTH SIDES OF CHANNEL FOR CHANNEL EXTENTS
STREAMBED MATERIAL (3" MINUS COBBLE)	CY	13	PLACED 4" THICK ACROSS CHANNEL BOTTOM
<b>REVEGETATION</b>			<b>SEE SHEET C-10 AND C-11 FOR REVEGETATION DETAILS INCLUDING SEED MIX AND CONTAINERIZED PLANTING TABLES</b>
EAST UPLAND SEED MIX	ACRE	0.60	
WEST UPLAND SEED MIX	ACRE	0.82	
WETLAND SEED	ACRE	0.36	
FLOODPLAIN SEED	ACRE	1.15	
STREAMBANK SEED	ACRE	0.07	
DRILL SEEDING - FLOODPLAIN	ACRE	1.15	
BROADCAST SEEDING - WETLAND & STREAMBANK	ACRE	0.36	HAND SEEDING AND RAKING AND/OR BROADCAST SEEDING AND HARROWING
HYDROSEEDING - UPLAND/SLOPE	ACRE	1.42	
WILLOW FASCINES (HARVEST WILLOWS, BUNDLE, SOAK, CONSTRUCT AND INSTALL)	LF	165	INCLUDE LABOR TO CUT WILLOWS BOTH ONSITE AND OFFSITE (220 WILLOW STEMS CUT ROUGHLY 4 - 5' LONG)
TRANSPLANTED WILLOW CLUMPS FROM ONSITE SOURCES	EA	9	USE SMALL EXCAVATOR TO DIG ROOT BALL OF ONSITE SANDBAR WILLOWS AND TRANSPORT TO PLANTING AREA - ANTICIPATE SEVERAL PLANTS/STEMS PER HOLE
CONTAINERIZED PLANTINGS	EA	145	INCLUDES FLOODPLAIN AND WETLAND PLANTINGS

DESIGNED	MJW
DRAWN	MJH
CHECKED	MJW
DATE	8.07.2024

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PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT**

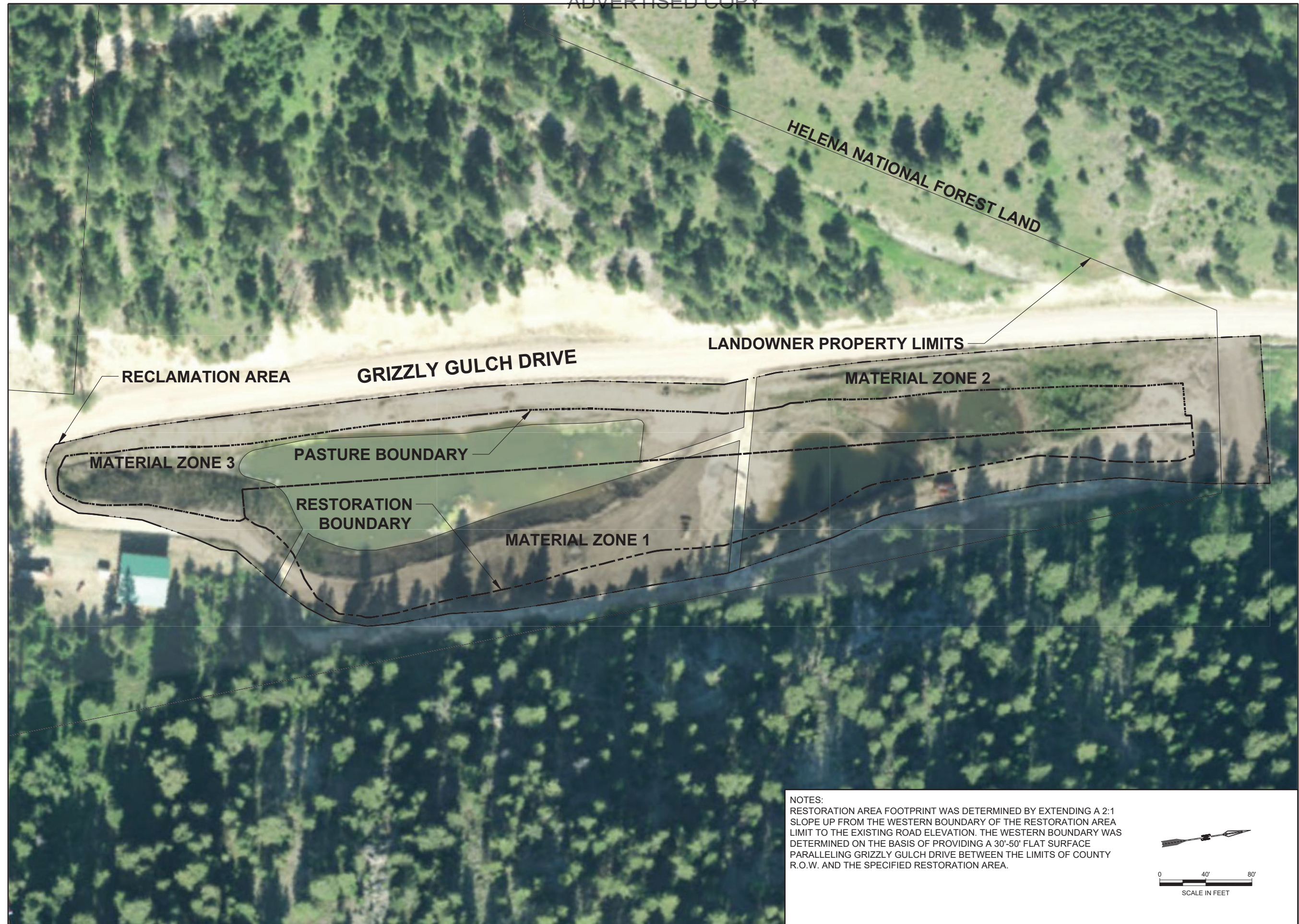
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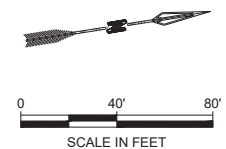
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**G-2**



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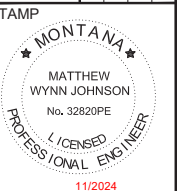


NOTES:  
 RESTORATION AREA FOOTPRINT WAS DETERMINED BY EXTENDING A 2:1 SLOPE UP FROM THE WESTERN BOUNDARY OF THE RESTORATION AREA LIMIT TO THE EXISTING ROAD ELEVATION. THE WESTERN BOUNDARY WAS DETERMINED ON THE BASIS OF PROVIDING A 30'-50' FLAT SURFACE PARALLELING GRIZZLY GULCH DRIVE BETWEEN THE LIMITS OF COUNTY R.O.W. AND THE SPECIFIED RESTORATION AREA.



DESIGNED		DRAWN		CHECKED		DATE	
MJW		MJH		MJW		8.07.2024	

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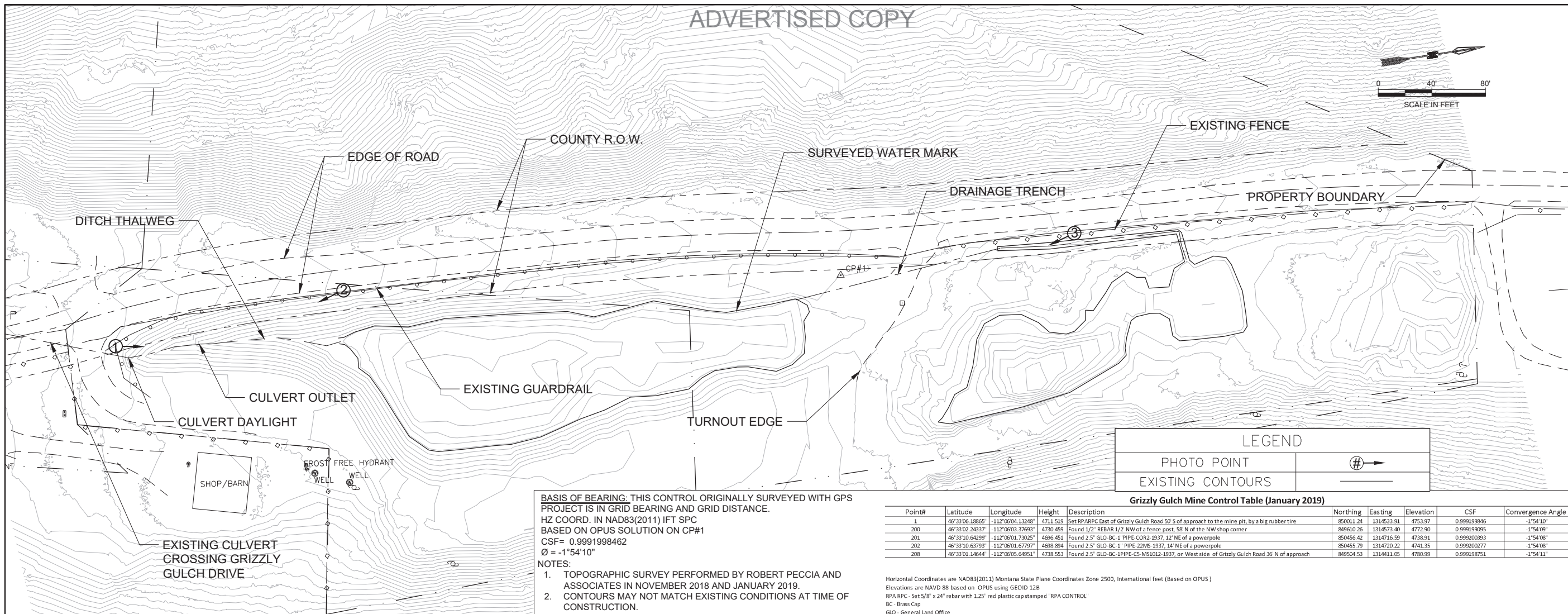
PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT**

SHEET TITLE:  
**PROJECT AREA OVERVIEW**



SHEET NUMBER:  
**G-3**





LEGEND	
PHOTO POINT	#
EXISTING CONTOURS	—

**BASIS OF BEARING:** THIS CONTROL ORIGINALLY SURVEYED WITH GPS PROJECT IS IN GRID BEARING AND GRID DISTANCE.  
**HZ COORD. IN NAD83(2011) IFT SPC**  
**BASED ON OPUS SOLUTION ON CP#1**  
**CSF= 0.9991998462**  
**Ø = -1°54'10"**

**NOTES:**

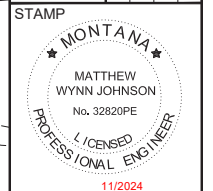
1. TOPOGRAPHIC SURVEY PERFORMED BY ROBERT PECCIA AND ASSOCIATES IN NOVEMBER 2018 AND JANUARY 2019.
2. CONTOURS MAY NOT MATCH EXISTING CONDITIONS AT TIME OF CONSTRUCTION.

Grizzly Gulch Mine Control Table (January 2019)									
Point#	Latitude	Longitude	Height	Description	Northing	Easting	Elevation	Convergence Angle	
1	46°33'06.18865"	-112°06'04.13248"	4711.519	Set RPARPC East of Grizzly Gulch Road 50' S of approach to the mine pit, by a big rubber tire	850011.24	1314533.91	4753.97	0.999199846	-1°54'10"
200	46°33'02.24337"	-112°06'03.37693"	4730.459	Found 1/2" REBAR 1/2" NW of a fence post, 58' N of the NW shop corner	849610.26	1314573.40	4772.90	0.999199846	-1°54'09"
201	46°33'10.64299"	-112°06'01.73025"	4696.451	Found 2.5" GLO-BC 1" PIPE COR2 1937, 12' NE of a powerpole	850456.42	1314716.59	4738.91	0.999200093	-1°54'08"
202	46°33'10.63793"	-112°06'01.67797"	4698.894	Found 2.5" GLO-BC 1" PIPE 22MS 1937, 14' NE of a powerpole	850455.79	1314720.22	4741.35	0.999200277	-1°54'08"
208	46°33'01.14644"	-112°06'05.64951"	4738.553	Found 2.5" GLO-BC 1" PIPE CS MS1012 1937, on West side of Grizzly Gulch Road 36' N of approach	849504.53	1314411.05	4780.99	0.999198751	-1°54'11"

Horizontal Coordinates are NAD83(2011) Montana State Plane Coordinates Zone 2500, International feet (Based on OPUS)  
 Elevations are NAVD 88 based on OPUS using GEOID 12B  
 RPA RPC - Set 5/8" x 24" rebar with 1.25" red plastic cap stamped "RPA CONTROL"  
 BC - Brass Cap  
 GLO - General Land Office

DESIGNED	DRAWN	CHECKED	DATE
MJW	MJW	MJW	8.07.2024

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PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT**

SHEET TITLE:  
**EXISTING CONDITIONS**



SHEET NUMBER:  
**C-1**

NAME: N:\Projects\W0138-23005-Grizzly Gulch Implementation\cad\Sheets\03470\_Final\_Revreg.dwg PLOT DATE: Aug 07, 2024 11:40am



PHOTO #1

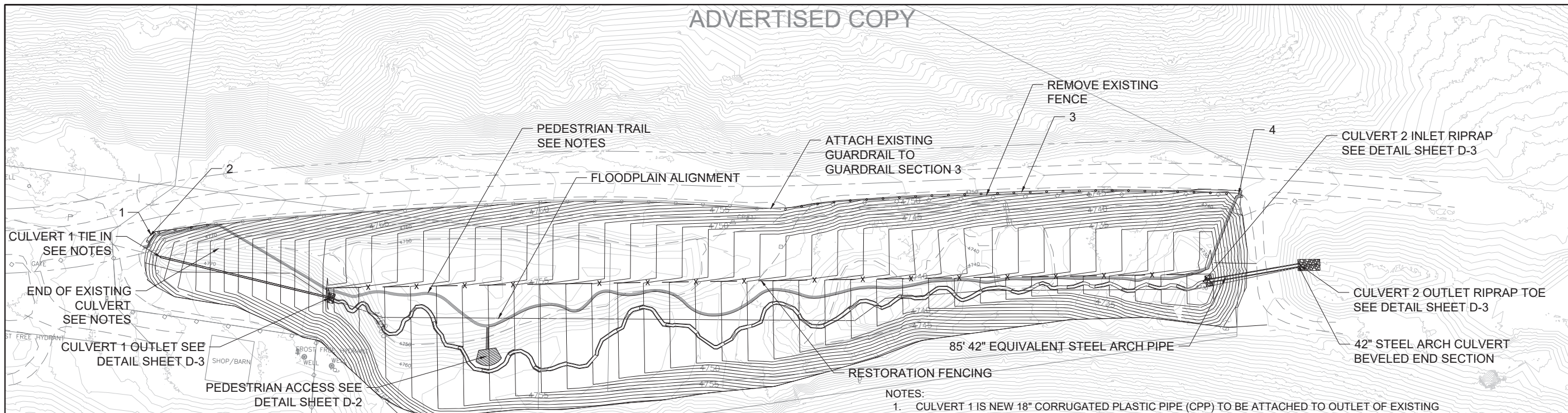


PHOTO #2



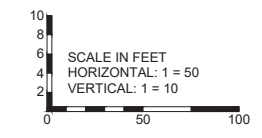
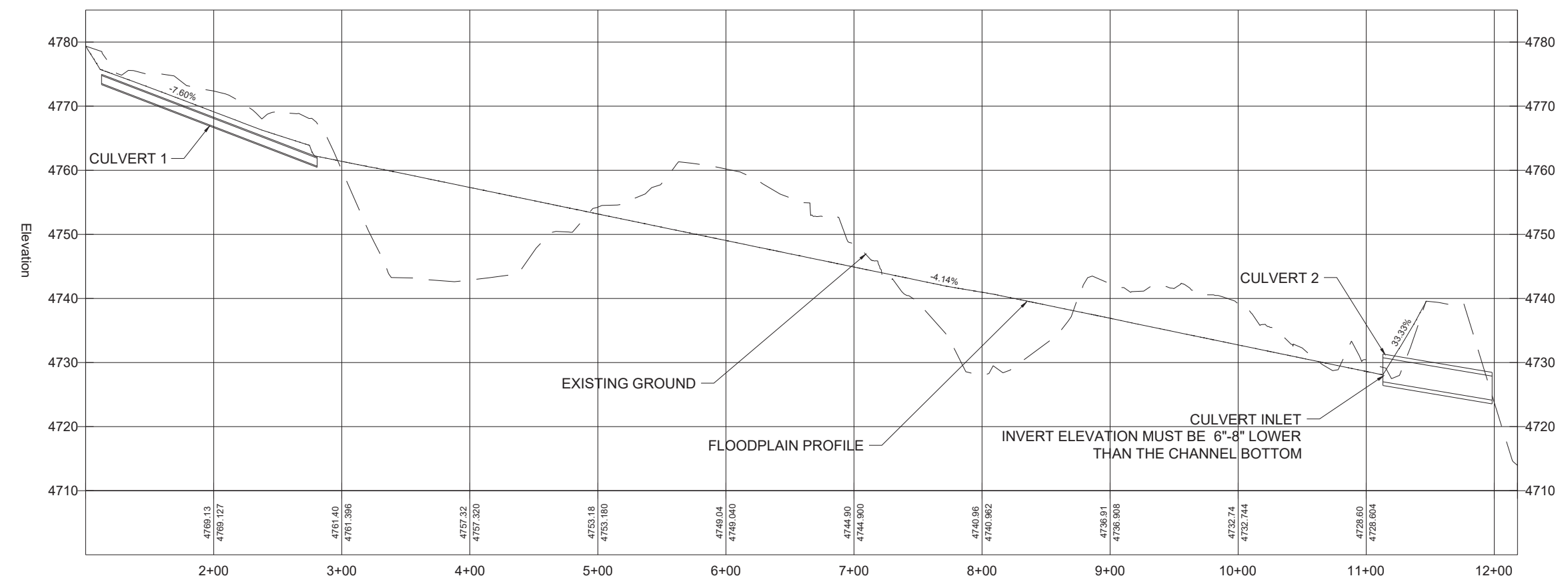
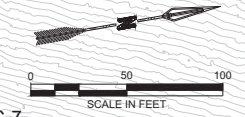
PHOTO #3





GUARDRAIL TABLE							
GUARDRAIL SECTION	START		END		GUARDRAIL TYPE (SEE FLH STANDARD DRAWING 617-14 FOR LOW SPEED TERMINALS)	RADIUS (FT)	LENGTH (FT)
	NORTHING	EASTING	NORTHING	EASTING			
1	849469.21	1314457.52	849491.50	1314450.28	LOW SPEED TERMINAL	16	25
2	849491.50	1314450.28	849528.67	1314451.20	STANDARD MGS	--	37.5
3	850056.70	1314529.89	850467.14	1314586.09	STANDAR MGS	--	412.5
4	850467.14	1314586.09	850486.35	1314595.85	LOW SPEED TERMINAL	16	25

- NOTES:
- CULVERT 1 IS NEW 18" CORRUGATED PLASTIC PIPE (CPP) TO BE ATTACHED TO OUTLET OF EXISTING CPP CROSSING UNDER GRIZZLY GULCH DRIVE.
  - EXTEND NEW CPP TO SPECIFIED CULVERT OUTLET LOCATION AND PLACE AT A MINIMUM OF 1' BELOW DESIGN GRADE
  - PEDESTRIAN TRAIL SHALL BE 2' WIDE
  - PEDESTRIAN TRAIL SHALL BE GRUBBED AND COMPACTED TO 95% STANDARD PROCTOR
  - GUARDRAIL SECTIONS ARE ANNOTATED FROM 1-4, REFER TO THE GUARDRAIL TABLE FOR INSTALLATION LOCATIONS
  - FOR GRADING SEE CHANNEL PLAN AND PROFILE SHEET C-3, FLOODPLAIN SECTIONS SHEET C-4-C-7, STAKING PLAN SHEET C-8, AND CHANNEL FLOODPLAIN TYPICAL SECTIONS SHEET C-9



DESIGNED	MJW	REVISION
DRAWN	MJH	
CHECKED	MJW	
DATE	8.07.2024	

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STAMP  
MONTANA  
MATTHEW WYNN JOHNSON  
No. 32820PE  
LICENSED PROFESSIONAL ENGINEER  
11/2024

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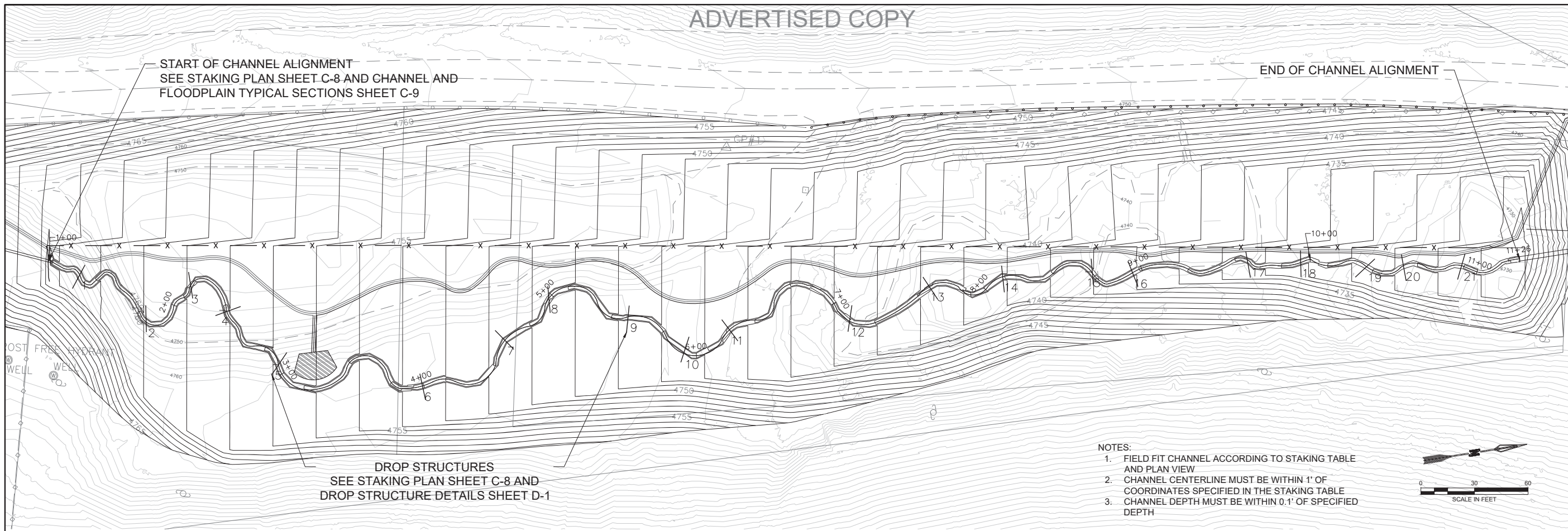
PROJECT NAME:  
GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT

SHEET TITLE:  
GENERAL CONSTRUCTION

811  
Know what's below.  
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SHEET NUMBER:  
C-2



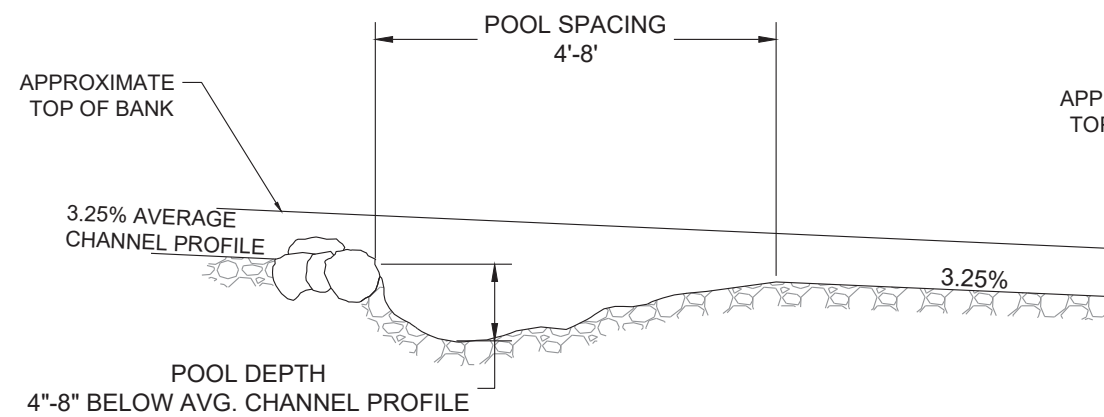
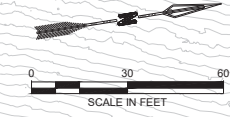


START OF CHANNEL ALIGNMENT  
SEE STAKING PLAN SHEET C-8 AND CHANNEL AND FLOODPLAIN TYPICAL SECTIONS SHEET C-9

END OF CHANNEL ALIGNMENT

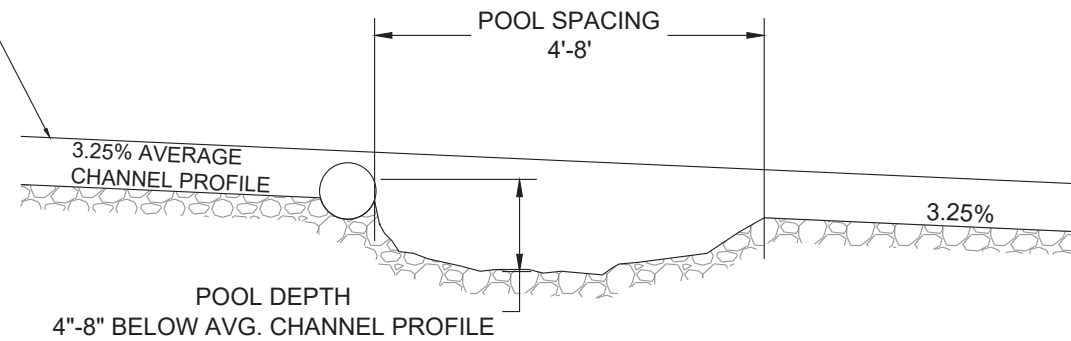
DROP STRUCTURES  
SEE STAKING PLAN SHEET C-8 AND DROP STRUCTURE DETAILS SHEET D-1

- NOTES:
1. FIELD FIT CHANNEL ACCORDING TO STAKING TABLE AND PLAN VIEW
  2. CHANNEL CENTERLINE MUST BE WITHIN 1' OF COORDINATES SPECIFIED IN THE STAKING TABLE
  3. CHANNEL DEPTH MUST BE WITHIN 0.1' OF SPECIFIED DEPTH



**ROCK DROP TYPICAL PROFILE**

DRAWING NOT TO SCALE



**LOG DROP TYPICAL PROFILE**

DRAWING NOT TO SCALE

REVISION			
DESIGNED	MJW		
DRAWN	MJH		
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No. 32820PE  
LICENSED PROFESSIONAL ENGINEER  
11/2024

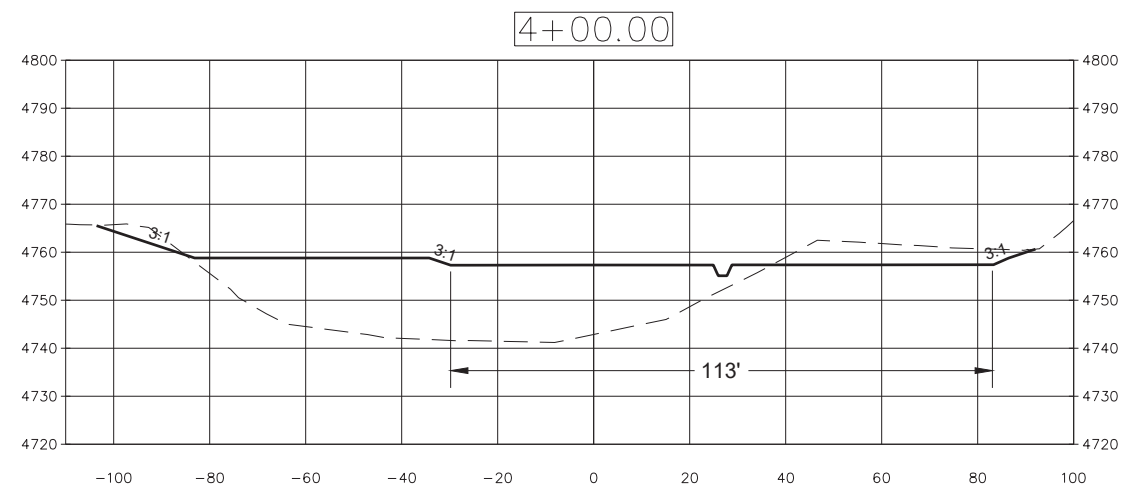
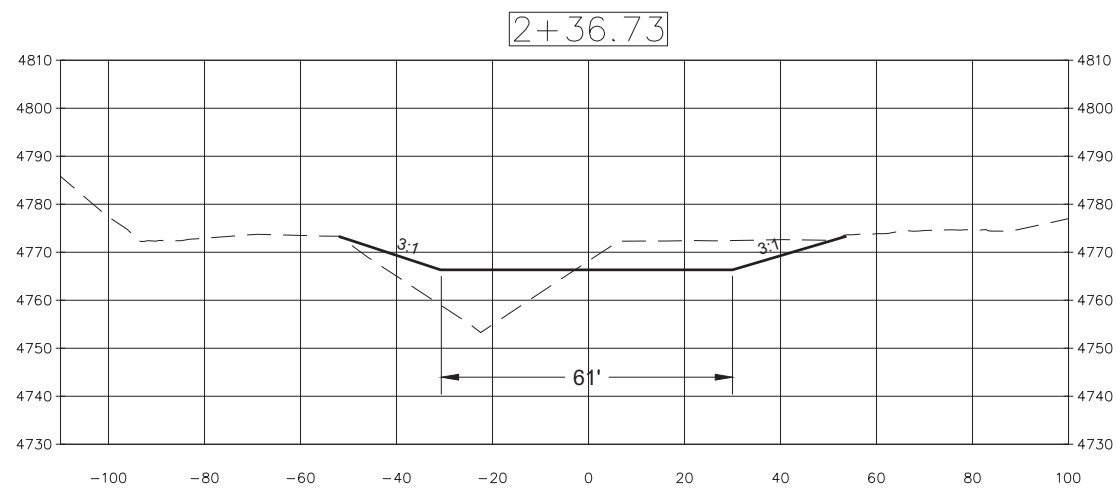
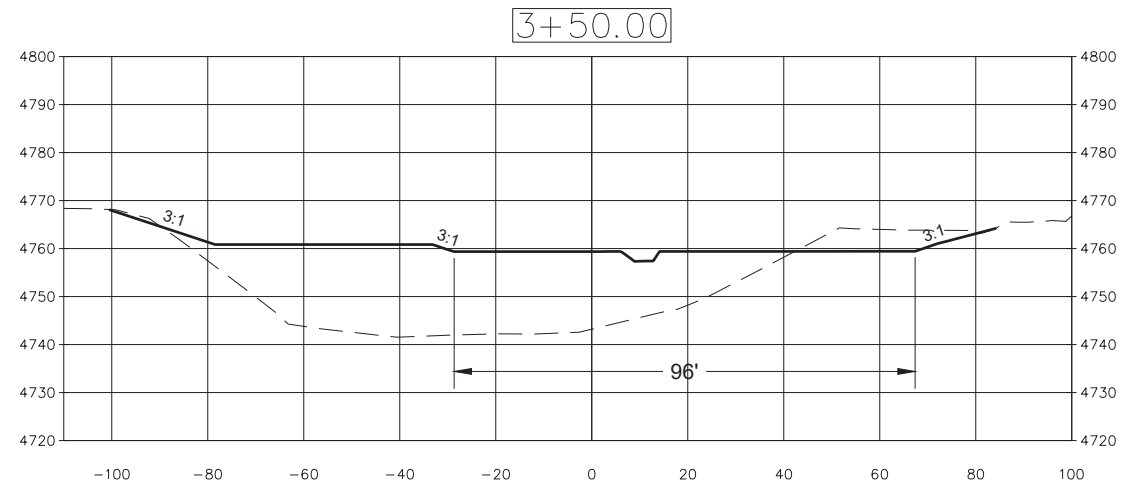
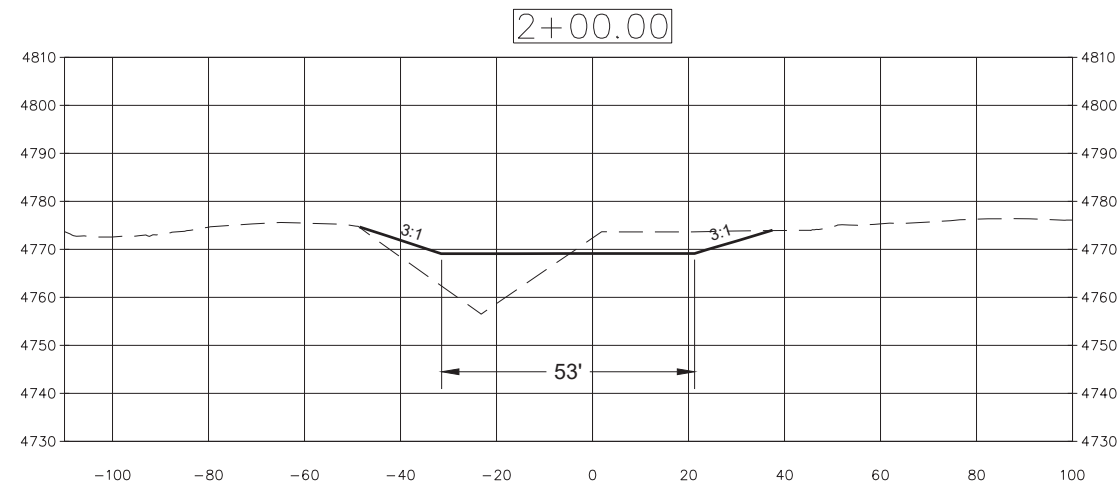
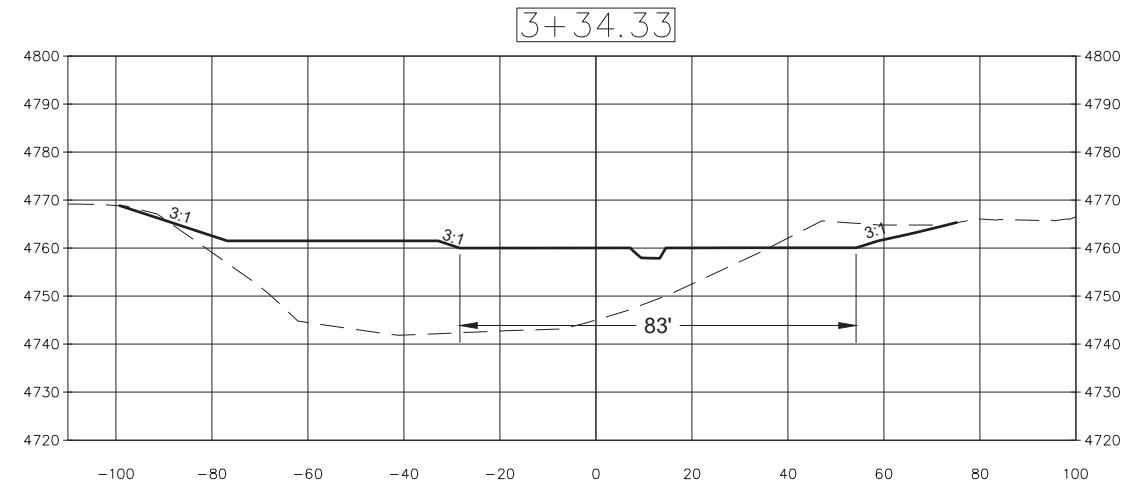
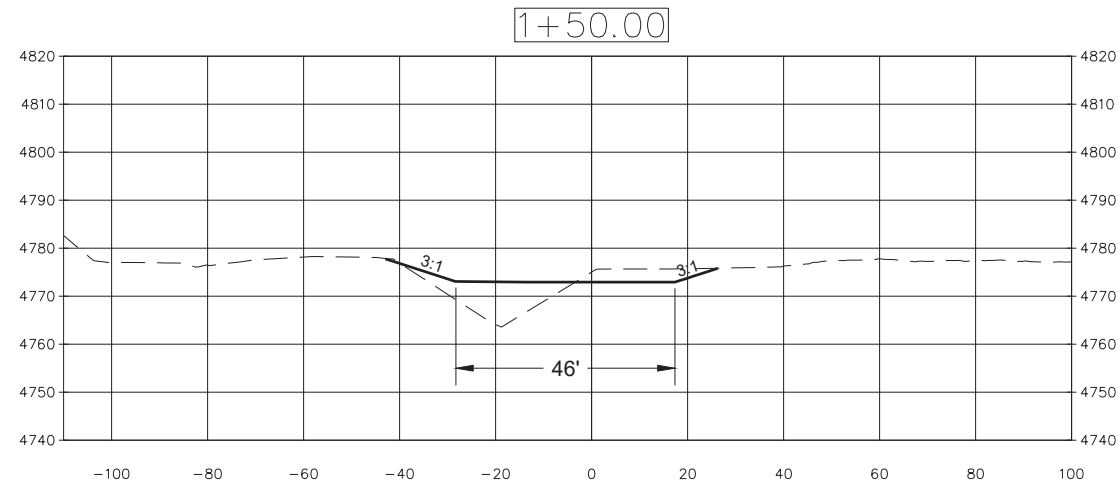
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT**

SHEET TITLE:  
**CHANNEL PLAN AND PROFILE**

SHEET NUMBER:  
**C-3**





ALL SECTIONS ARE CENTERED  
ALONG THE FLOODPLAIN ALIGNMENT

**LEGEND**

EXISTING: - - - - -

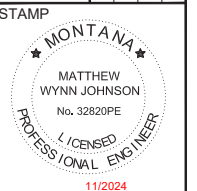
PROPOSED: —————

SCALE IN FEET

DESIGNED		DRAWN		CHECKED		DATE	
MJW		MJH		MJW			
						8.07.2024	

**RESPEC**

3810 VALLEY COMMONS DRIVE SUITE 4  
BOZEMAN, MONTANA 59718  
WATER & NATURAL RESOURCES  
WWW.RESPEC.COM 406.284.2525



THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

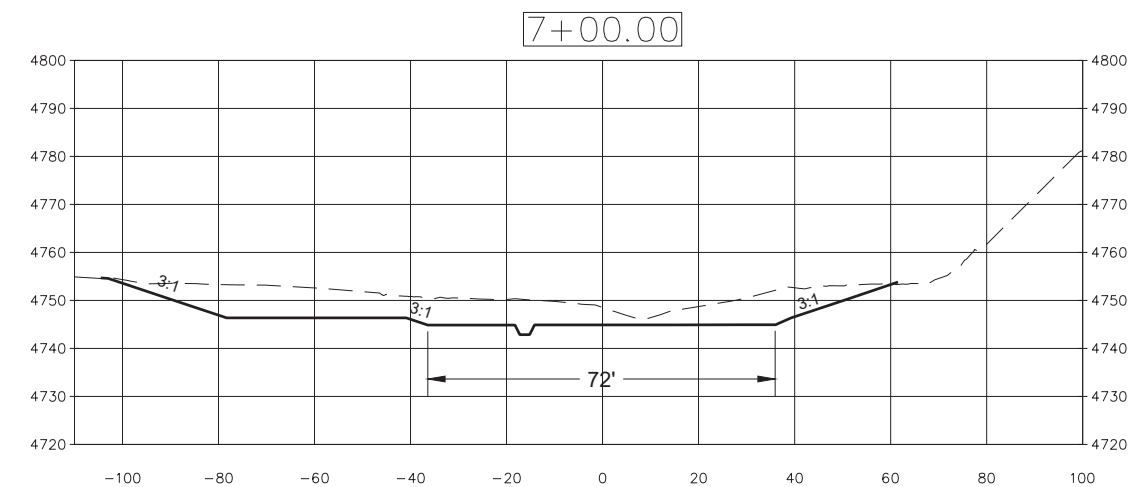
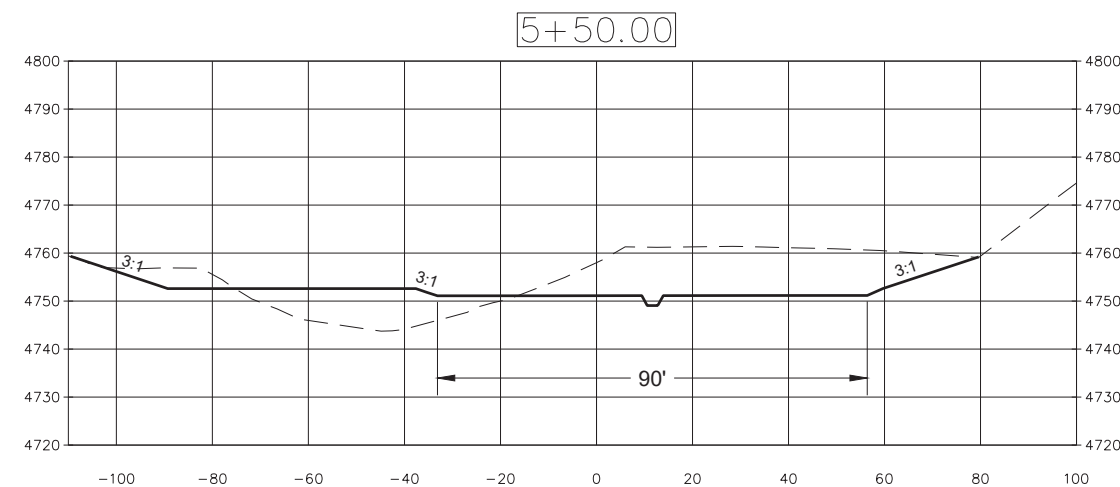
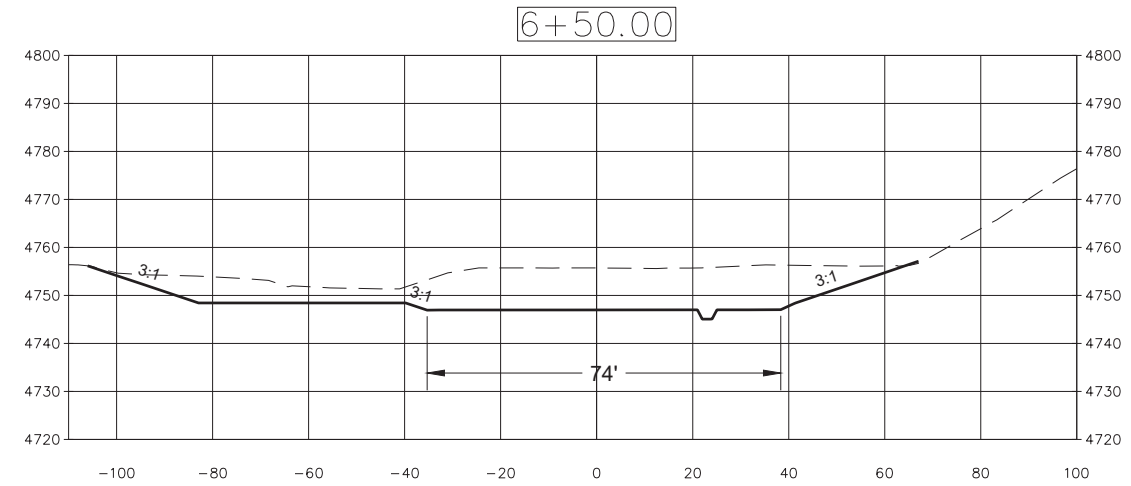
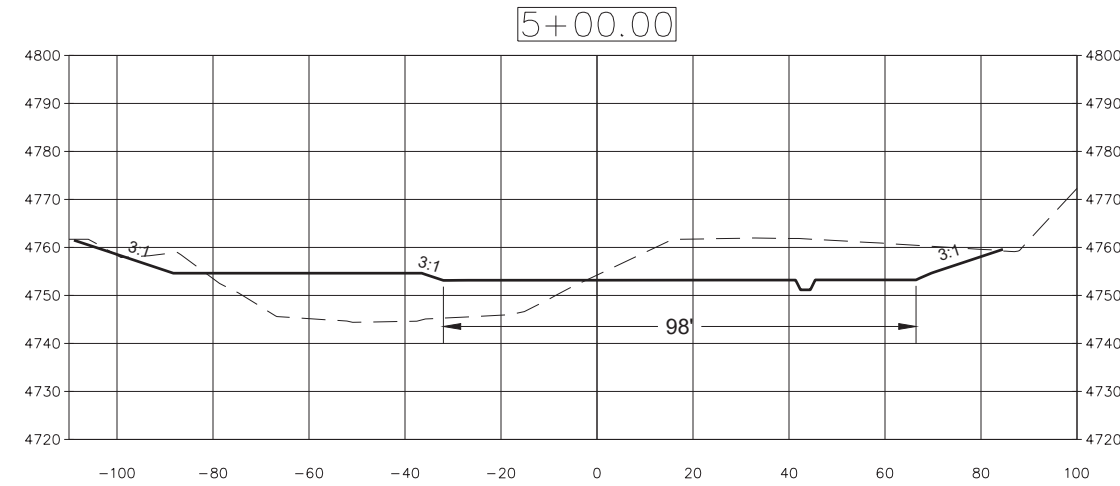
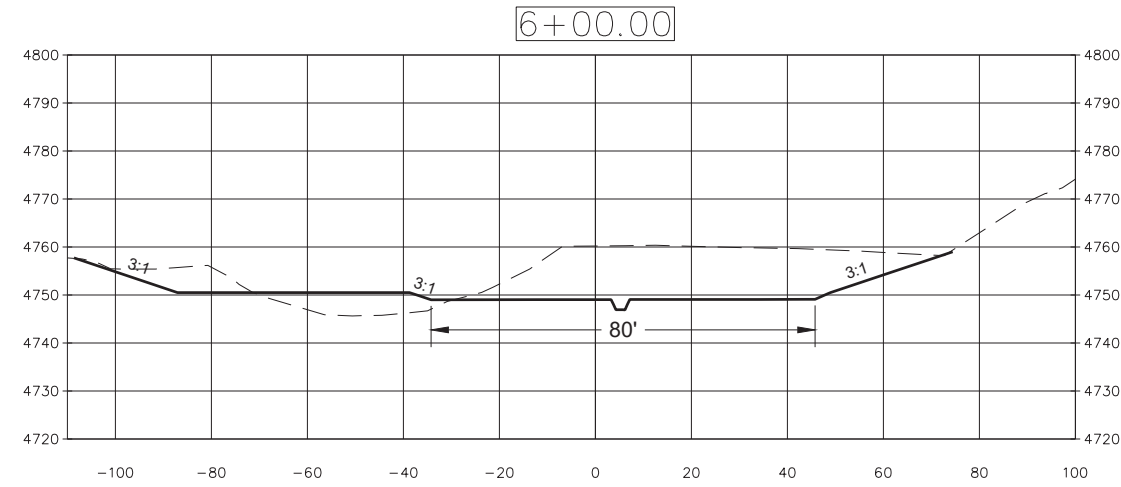
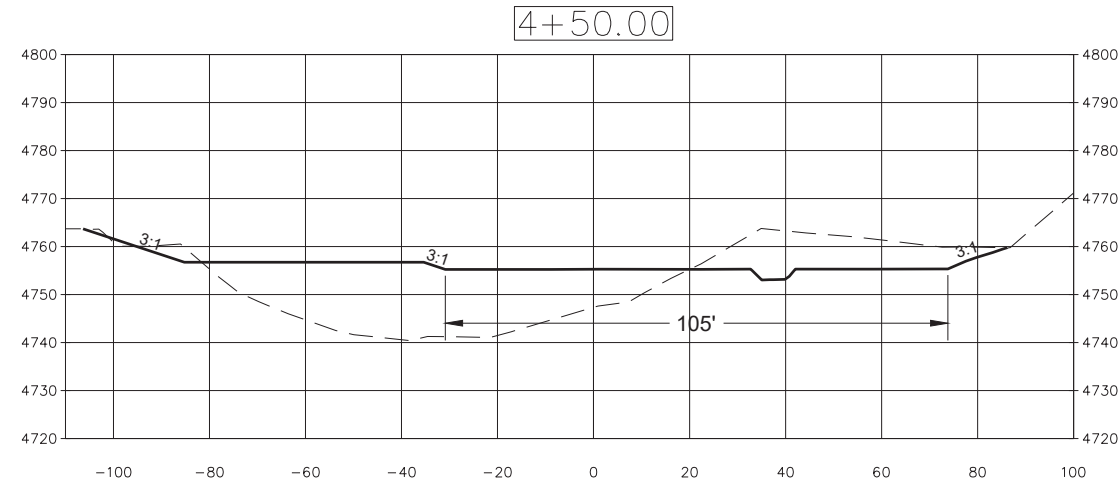
PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE  
RECLAMATION PROJECT**

SHEET TITLE:  
**FLOODPLAIN  
SECTIONS STATIONS  
1+50 - 4+00**



SHEET NUMBER:  
**C-4**





ALL SECTIONS ARE CENTERED  
ALONG THE FLOODPLAIN ALIGNMENT

LEGEND  
EXISTING (dashed line)  
PROPOSED (solid line)



DESIGNED		DRAWN		CHECKED		DATE	
MJW		MJH		MJW		8.07.2024	

RESPEC  
3810 VALLEY COMMONS DRIVE SUITE 4  
BOZEMAN, MONTANA 59718  
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WWW.RESPEC.COM 406.284.2525

STAMP  
MONTANA  
MATTHEW WYNN JOHNSON  
No. 32820PE  
LICENSED PROFESSIONAL ENGINEER  
11/2024

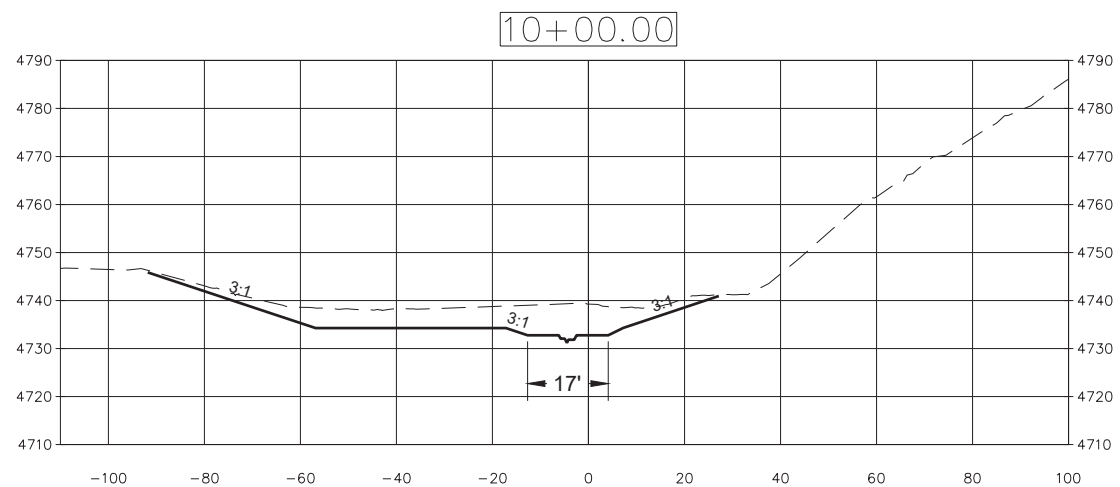
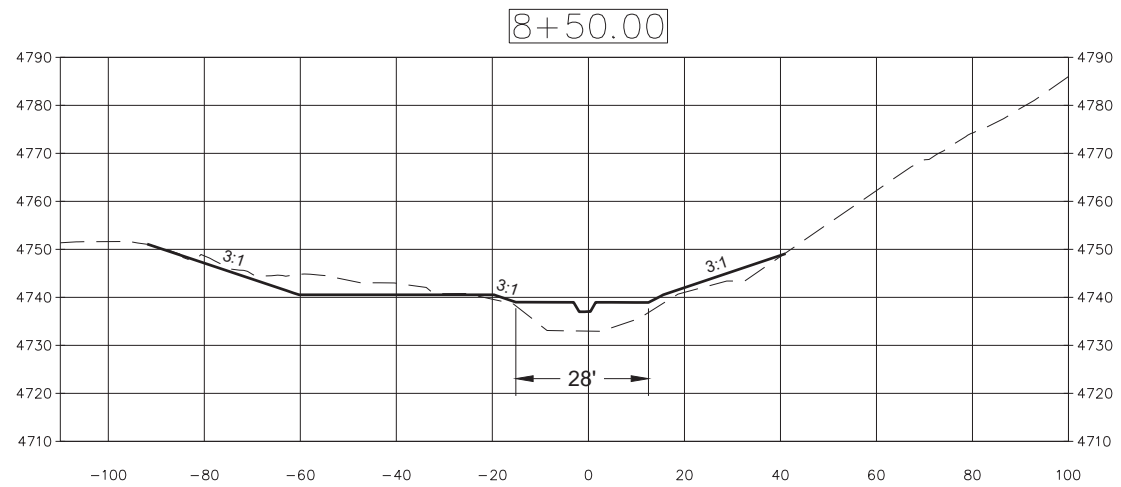
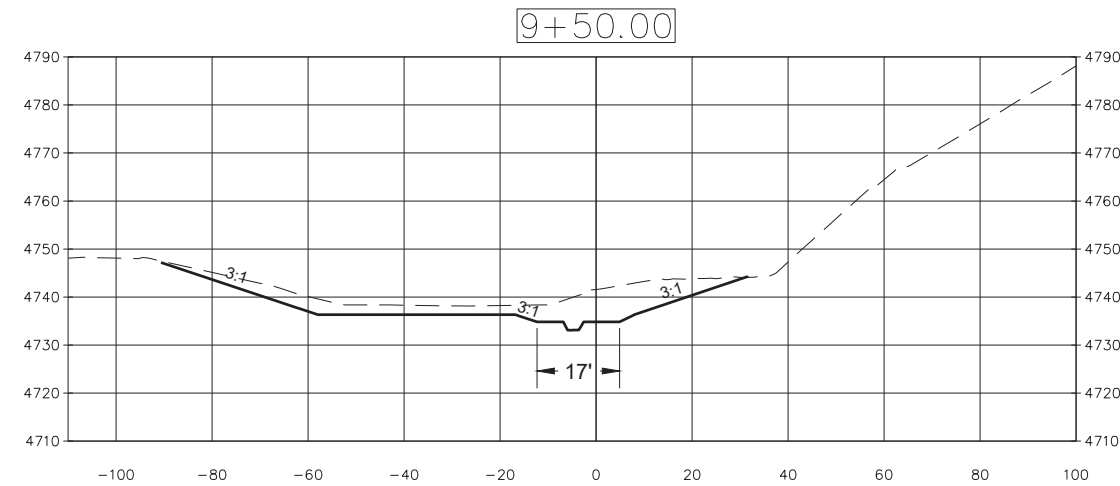
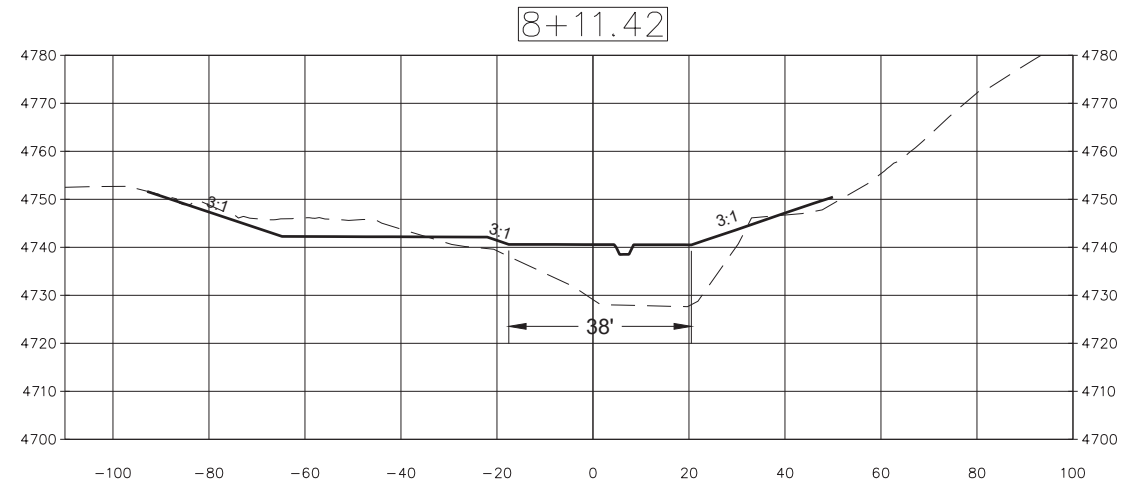
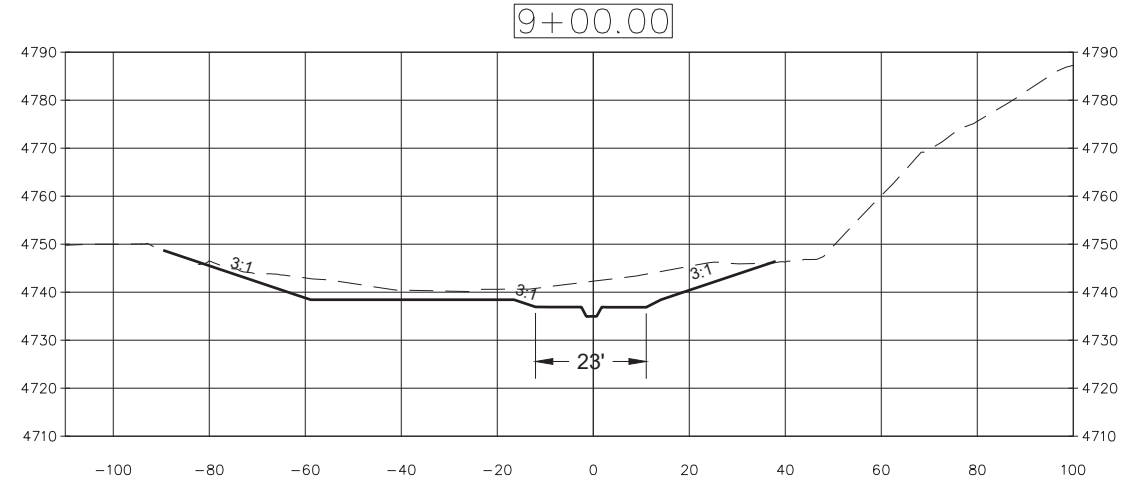
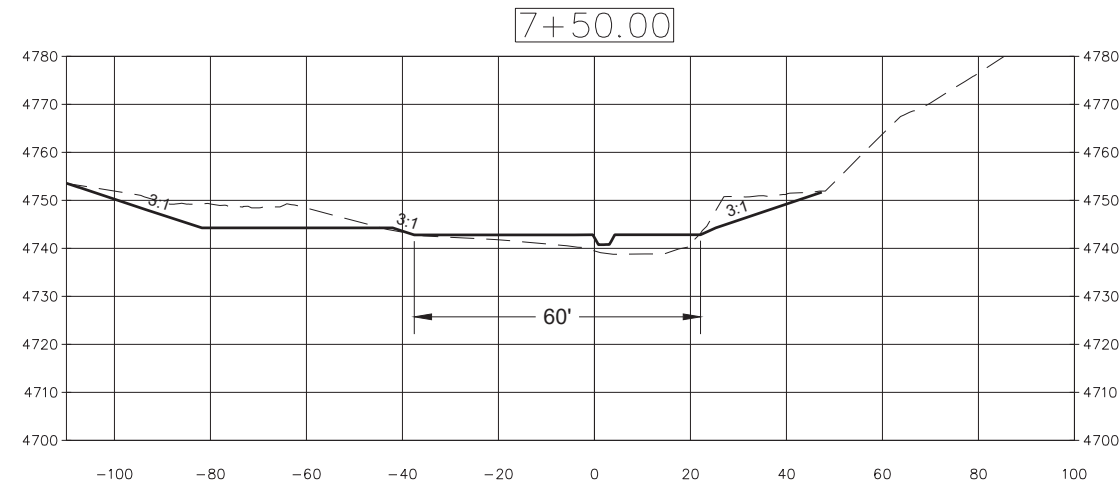
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

PROJECT NAME:  
GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT

SHEET TITLE:  
FLOODPLAIN SECTIONS STATIONS 4+50 - 7+00



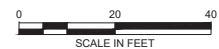
SHEET NUMBER:  
C-5



ALL SECTIONS ARE CENTERED  
ALONG THE FLOODPLAIN ALIGNMENT

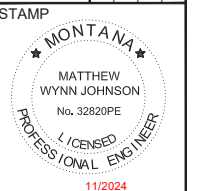
LEGEND

EXISTING   
PROPOSED 



DESIGNED	DRAWN	CHECKED	DATE
MJW	MJH	MJW	8.07.2024

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CONSTRUCTION UNLESS IT IS  
STAMPED, SIGNED AND DATED

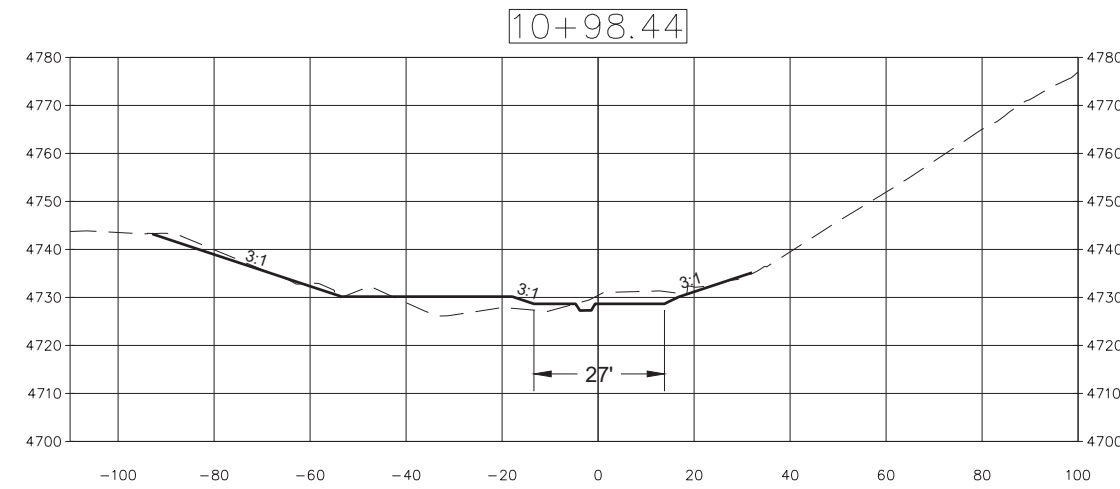
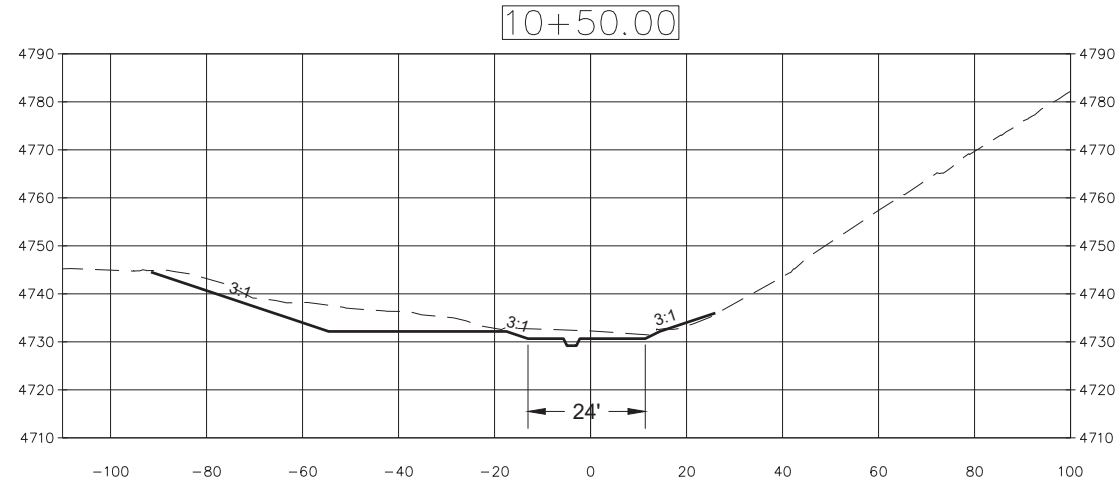
PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE  
RECLAMATION PROJECT**

SHEET TITLE:  
**FLOODPLAIN  
SECTIONS STATIONS  
7+50 - 10+00**



SHEET NUMBER:  
**C-6**

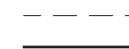




ALL SECTIONS ARE CENTERED  
ALONG THE FLOODPLAIN ALIGNMENT

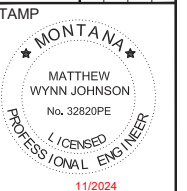
EXISTING  
PROPOSED

LEGEND



DESIGNED		DRAWN		CHECKED		DATE	
MJW		MJH		MJW		8.07.2024	

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BOZEMAN, MONTANA 59718  
WATER & NATURAL RESOURCES  
WWW.RESPEC.COM #86284.2528



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PROJECT NAME:  
GRIZZLY GULCH PLACER MINE  
RECLAMATION PROJECT

SHEET TITLE:  
FLOODPLAIN  
SECTIONS STATIONS  
10+50 - 11+00



SHEET NUMBER:  
C-7

# ADVERTISED COPY

CHANNEL ALIGNMENT - CENTERLINE STAKING		
STATION	NORTHING	EASTING
1+00.00	849,626.9927'	1,314,537.2213'
1+15.00	849,639.7585'	1,314,544.1362'
1+30.00	849,648.5953'	1,314,554.2511'
1+45.00	849,661.1707'	1,314,551.1276'
1+60.00	849,668.2417'	1,314,563.8759'
1+75.00	849,673.6869'	1,314,577.7652'
1+90.00	849,686.5680'	1,314,581.0802'
2+05.00	849,696.0533'	1,314,570.0755'
2+20.00	849,706.7231'	1,314,560.8677'
2+35.00	849,718.3509'	1,314,568.3081'
2+50.00	849,721.1196'	1,314,582.9125'
2+65.00	849,726.0436'	1,314,596.6329'
2+80.00	849,737.5920'	1,314,603.4693'
2+95.00	849,744.6767'	1,314,615.5523'
3+10.00	849,751.6131'	1,314,628.3415'
3+25.00	849,765.8333'	1,314,631.8459'
3+40.00	849,779.6483'	1,314,626.6278'
3+55.00	849,790.5893'	1,314,617.5586'
3+70.00	849,802.7026'	1,314,624.7957'
3+85.00	849,808.5227'	1,314,638.0855'
4+00.00	849,823.2478'	1,314,639.2272'
4+15.00	849,837.9002'	1,314,638.1008'
4+30.00	849,851.8389'	1,314,642.7052'
4+45.00	849,864.1670'	1,314,635.1234'
4+60.00	849,871.1356'	1,314,622.0743'
4+75.00	849,884.4314'	1,314,615.7605'
4+90.00	849,896.3890'	1,314,608.4129'
5+05.00	849,906.2106'	1,314,597.9778'
5+20.00	849,920.7141'	1,314,599.4577'
5+35.00	849,927.4341'	1,314,612.2803'
5+50.00	849,939.6248'	1,314,619.3771'
5+65.00	849,953.9352'	1,314,622.2647'
5+80.00	849,961.7613'	1,314,634.6186'
5+95.00	849,971.7079'	1,314,645.2438'

6+10.00	849,986.2559'	1,314,644.8101'
6+25.00	849,997.2670'	1,314,634.8725'
6+40.00	850,011.5991'	1,314,631.7853'
6+55.00	850,023.6749'	1,314,625.9509'
6+70.00	850,033.1254'	1,314,615.4249'
6+85.00	850,047.3408'	1,314,618.6683'
7+00.00	850,057.0996'	1,314,629.6636'
7+15.00	850,065.3863'	1,314,641.6106'
7+30.00	850,079.8460'	1,314,643.3918'
7+45.00	850,093.9692'	1,314,638.3929'
7+60.00	850,106.7099'	1,314,630.6509'
7+75.00	850,120.9590'	1,314,627.9362'
7+90.00	850,132.7211'	1,314,636.5246'
8+05.00	850,146.0227'	1,314,631.9704'
8+20.00	850,160.4233'	1,314,630.3329'
8+35.00	850,174.4333'	1,314,634.6997'
8+50.00	850,187.6650'	1,314,628.1378'
8+65.00	850,200.9894'	1,314,632.6486'
8+80.00	850,211.0125'	1,314,642.6438'
8+95.00	850,225.3537'	1,314,638.4646'
9+10.00	850,240.0614'	1,314,636.2739'
9+25.00	850,254.3042'	1,314,640.5003'
9+40.00	850,267.9285'	1,314,644.6202'
9+55.00	850,282.1784'	1,314,640.0688'
9+70.00	850,294.5378'	1,314,646.4621'
9+85.00	850,309.3468'	1,314,648.1122'
10+00.00	850,324.1899'	1,314,646.9235'
10+15.00	850,337.7855'	1,314,652.2236'
10+30.00	850,352.1067'	1,314,653.1747'
10+45.00	850,364.3265'	1,314,661.4668'
10+60.00	850,378.4677'	1,314,657.7239'
10+75.00	850,391.9875'	1,314,663.3626'
10+90.00	850,406.6636'	1,314,663.1741'
11+05.00	850,420.0844'	1,314,669.3698'
11+20.00	850,434.1110'	1,314,664.8094'
11+25.80	850,439.9067'	1,314,664.7661'

CHANNEL ALIGNMENT - DROP STRUCTURE STAKING				
Point #	Station	Northing	Easting	Structure
1	1+19.93	849642.666	1314547.937	LOG
2	5+52.54	849675.217	1314579.878	LOG
3	1+77.62	849701.996	1314565.046	LOG
4	2+13.48	849720.779	1314581.121	ROCK
5	2+48.17	849744.652	1314615.127	ROCK
6	2+94.57	849822.471	1314639.34	ROCK
7	3+99.21	849871.995	1314621.269	ROCK
8	4+61.18	849899.968	1314601.9	LOG
9	4+97.56	849942.139	1314619.055	ROCK
10	5+92.70	849969.644	1314644.223	LOG
11	6+24.71	849997.029	1314635.031	ROCK
12	7+13.55	850064.176	1314640.817	ROCK
13	7+65.02	850111.133	1314628.316	LOG
14	8+12.19	850152.723	1314629.533	ROCK
15	8+68.29	850202.606	1314635.5	LOG
16	8+94.45	850224.84	1314638.673	ROCK
17	9+64.43	850290.7	1314642.779	ROCK
18	9+94.38	850318.68	1314647.739	ROCK
19	10+33.62	850354.631	1314655.764	LOG
20	10+56.62	850375.171	1314658.397	LOG
21	10+90.72	850407.325	1314663.446	ROCK

FLOODPLAIN ALIGNMENT - INCREMENTAL STAKING			
Station	NORTHING	EASTING	ELEVATION
1+00.00	849,464.3550'	1,314,476.5283'	4779.42'
1+50.00	849,510.9678'	1,314,493.6359'	4772.82'
2+00.00	849,560.1180'	1,314,502.8151'	4768.89'
2+50.00	849,606.1516'	1,314,518.1643'	4765.11'
3+00.00	849,645.3867'	1,314,548.6579'	4760.96'
3+50.00	849,690.7283'	1,314,568.1040'	4758.99'
4+00.00	849,739.9136'	1,314,577.0935'	4756.94'
4+50.00	849,789.0988'	1,314,586.0829'	4754.89'
5+00.00	849,838.2841'	1,314,595.0724'	4752.85'
5+50.00	849,887.4693'	1,314,604.0619'	4750.80'
6+00.00	849,936.6546'	1,314,613.0513'	4748.76'
6+50.00	849,985.8399'	1,314,622.0408'	4746.71'
7+00.00	850,035.0251'	1,314,631.0302'	4744.66'
7+50.00	850,084.2104'	1,314,640.0197'	4742.62'
8+00.00	850,131.0848'	1,314,632.5070'	4740.78'
8+50.00	850,179.9937'	1,314,632.6465'	4738.83'
9+00.00	850,229.7606'	1,314,637.4691'	4736.79'
9+50.00	850,279.0808'	1,314,645.6746'	4734.70'
10+00.00	850,328.3941'	1,314,653.9328'	4732.64'
10+50.00	850,377.7074'	1,314,662.1910'	4730.59'
11+00.00	850,427.0404'	1,314,670.1534'	4728.54'

FLOODPLAIN ALIGNMENT - INFLECTIONS				
PI Station	Northing	Easting	Distance	Direction
1+00.00	849,464.3550'	1,314,476.5283'		
1+33.36	849,494.6082'	1,314,490.5806'	33.36'	N24° 54' 51"E
2+37.63	849,597.1056'	1,314,509.7229'	104.27'	N10° 34' 43"E
2+80.13	849,628.1803'	1,314,538.7207'	42.50'	N43° 01' 12"E
3+32.64	849,673.6551'	1,314,564.9836'	52.51'	N30° 00' 27"E
7+73.51	850,107.3334'	1,314,644.2458'	440.86'	N10° 21' 27"E
8+08.68	850,138.8664'	1,314,628.6611'	35.17'	N26° 18' 00"W
9+00.77	850,230.5246'	1,314,637.5432'	92.09'	N5° 32' 06"E
10+98.51	850,425.5500'	1,314,670.2029'	197.74'	N9° 30' 24"E
12+18.20	850,545.1702'	1,314,666.2266'	119.69'	N1° 54' 14"W

REVISION			
NO.	DATE	BY	DESCRIPTION

DESIGNED: MJW  
 DRAWN: MDH  
 CHECKED: MJW  
 DATE: 8.07.2024

**RESPEC**  
 3810 VALLEY COMMONS DRIVE SUITE 4  
 BOZEMAN, MONTANA 59718  
 WATER & NATURAL RESOURCES  
 WWW.RESPEC.COM 406.284.2628

STAMP

MONTANA  
 MATTHEW WYNN JOHNSON  
 No. 32820PE  
 LICENSED PROFESSIONAL ENGINEER  
 11/2024

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PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT**

SHEET TITLE:  
**STAKING PLAN**

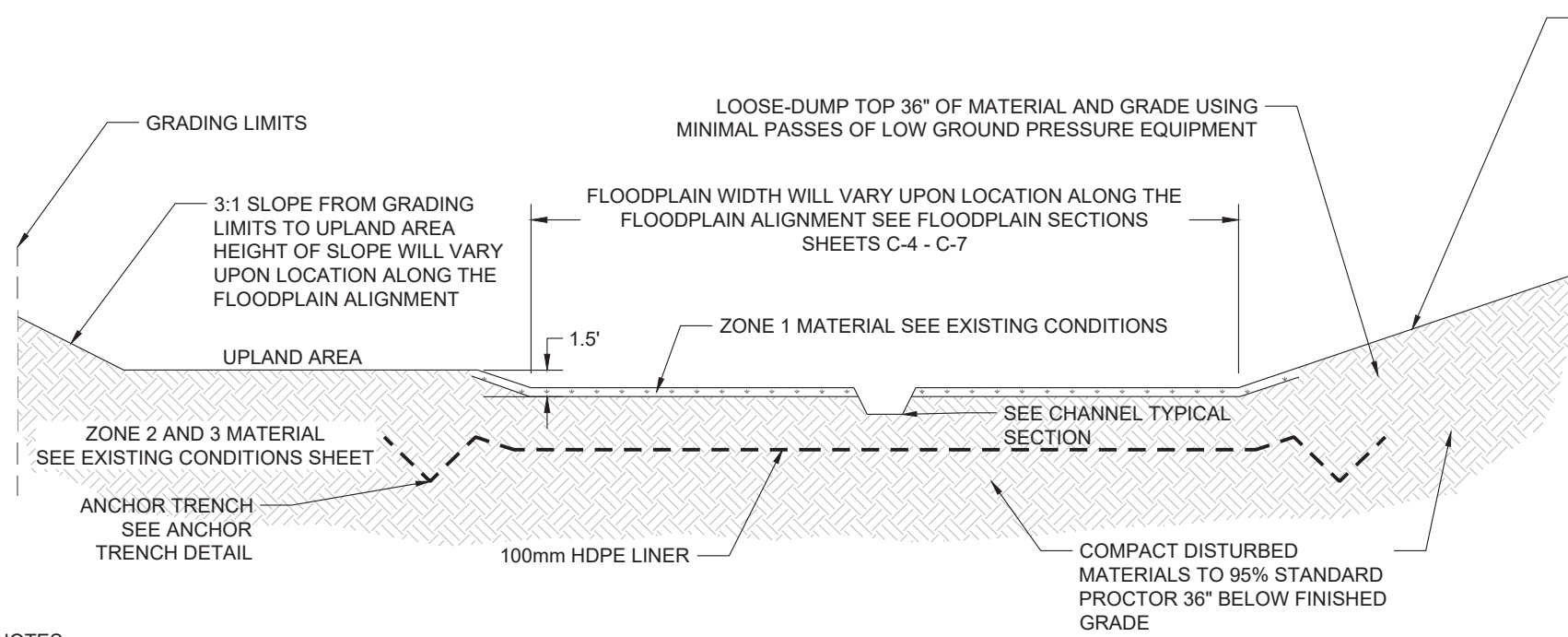
**811**  
 Know what's below.  
 Call before you dig.

SHEET NUMBER:  
**C-8**



HYDROLOGIC DATA	
FLOOD INTERVAL (YEAR)	PEAK FLOW (CFS)
2	9.7
5	29.0
10	51.5
25	94.1
50	137.0
100	193.0
500	374.0

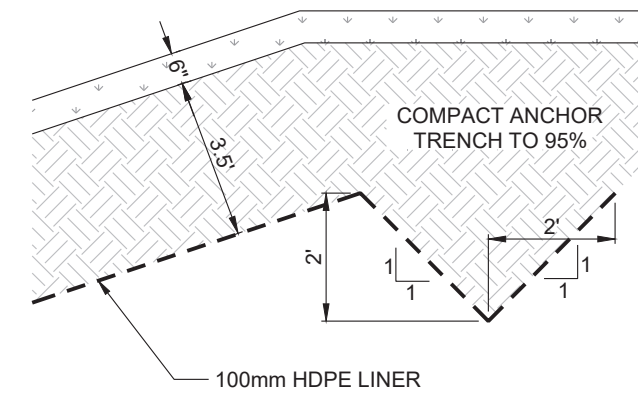
- NOTES:  
 1. CHANNEL DESIGNED FOR 2-YEAR FLOW  
 2. FLOODPLAIN DESIGNED FOR 100-YEAR FLOW



- NOTES:  
 1. USE FILL FROM ZONE 1 FOR TOP 6" OF FLOODPLAIN  
 2. FILL IN UPLAND AREA AND ON 3:1 SLOPES CAN BE SOURCED FROM EITHER ZONES 2 OR 3

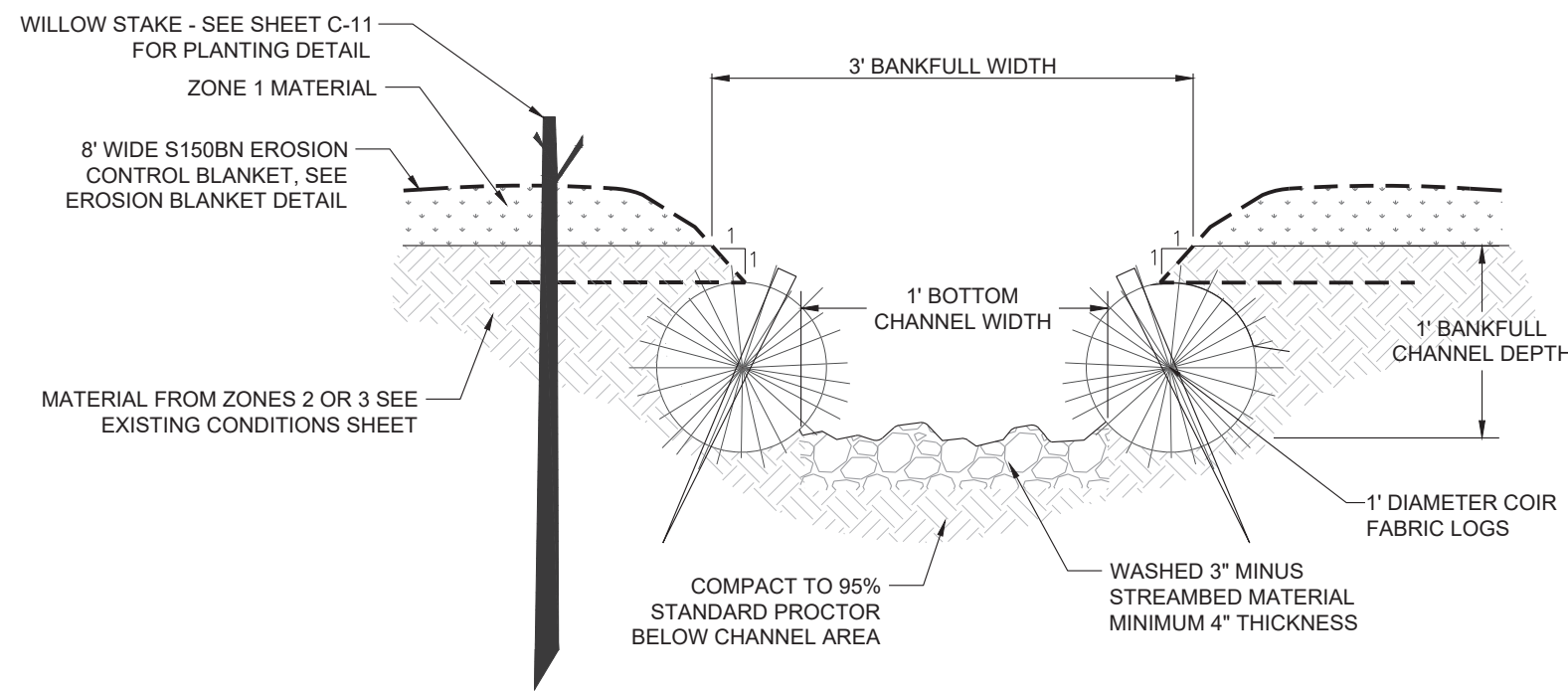
### FLOODPLAIN TYPICAL SECTION

DRAWING NOT TO SCALE



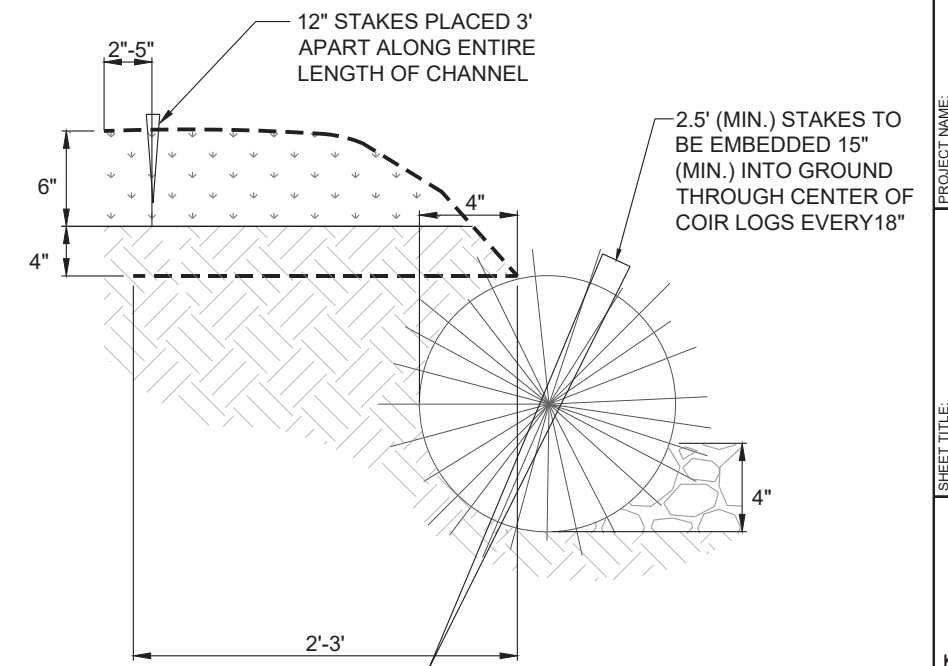
### ANCHOR TRENCH DETAIL

DRAWING NOT TO SCALE



### CHANNEL TYPICAL SECTION

DRAWING NOT TO SCALE



### COIR LOG AND EROSION BLANKET DETAIL

DRAWING NOT TO SCALE

DESIGNED	DRAWN	CHECKED	DATE
MJM	MJM	MJM	8.07.2024

RESPEC  
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 BOZEMAN, MONTANA 59718  
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 WWW.RESPEC.COM 406.284.2525

STAMP

MONTANA

MATTHEW WYNN JOHNSON  
 No. 32820PE  
 LICENSED PROFESSIONAL ENGINEER

11/2024

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PROJECT NAME:  
 GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT

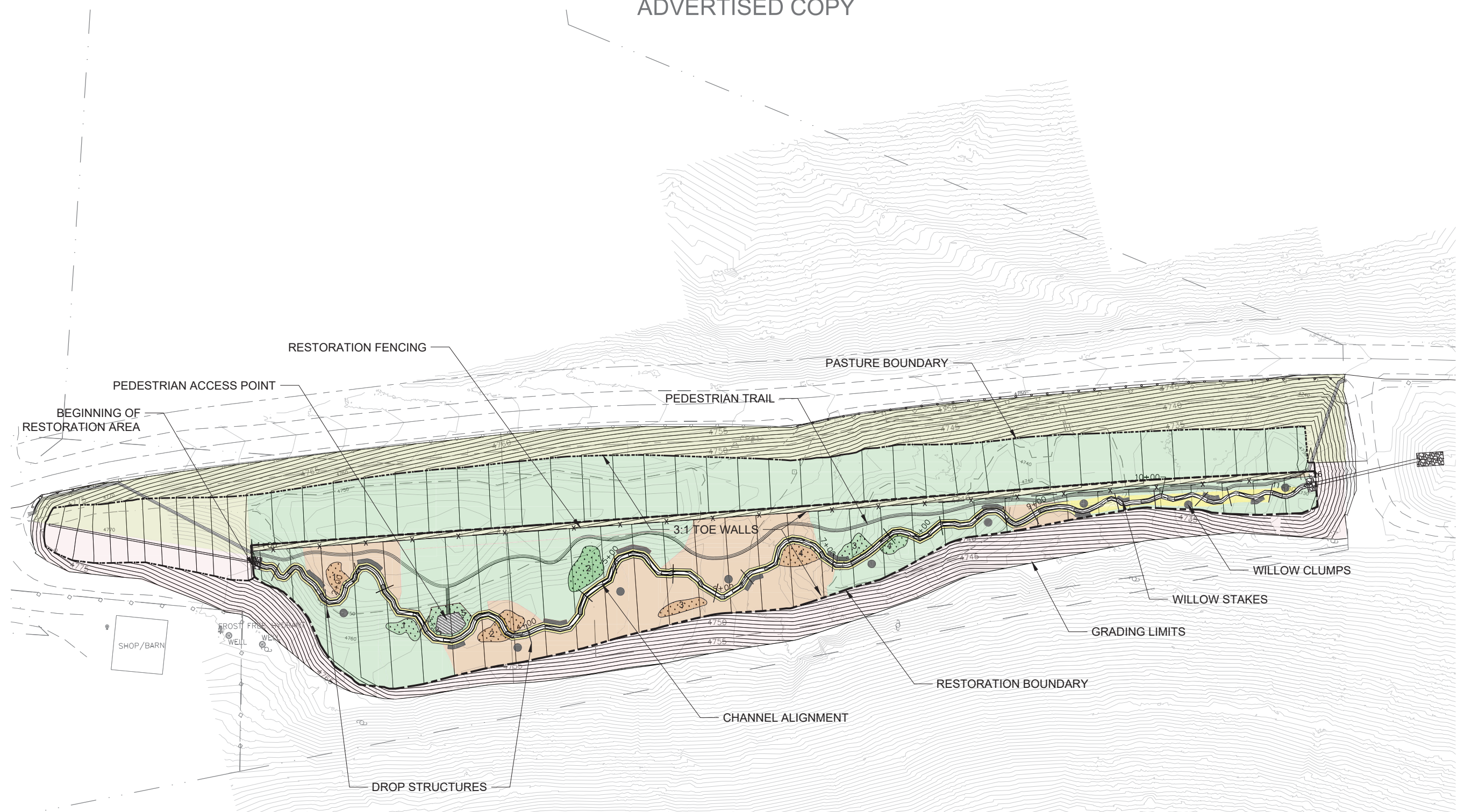
SHEET TITLE:  
 CHANNEL AND FLOODPLAIN TYPICAL SECTIONS

811

Know what's below.  
 Call before you dig.

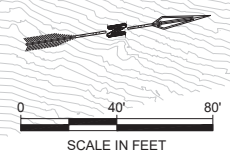
SHEET NUMBER:  
 C-9





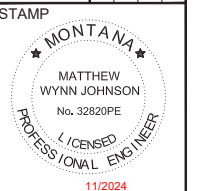
- NOTES:
1. IN ADDITION TO THE PLANTINGS, ALL FLOODPLAIN CONTAINERIZED PLANTINGS SHOULD BE SEEDED WITH FLOODPLAIN SEED MIX
  2. IN ADDITION TO THE PLANTINGS, ALL WETLAND CONTAINERIZED PLANTINGS SHOULD BE SEEDED WITH WETLAND SEED MIX
  3. SEE SHEET C-11 FOR SEED MIX AND CONTAINERIZED PLANTING SPECIFICATIONS
  4. FLOODPLAIN AND WETLAND CONTAINERIZED PLANTING NUMBERS ARE IN REFERENCE TO THE DETAILS SHOWN IN THE CONTAINERIZED PLANTINGS TABLE ON SHEET C-10

LEGEND	
EAST UPLAND SEED MIX	
WEST UPLAND SEED MIX	
STREAM BANK SEED MIX	
WETLAND SEED MIX	
FLOODPLAIN SEED MIX	
FLOODPLAIN CONTAINERIZED PLANTINGS	
WETLAND CONTAINERIZED PLANTINGS	



DESIGNED	MJW
DRAWN	MJH
CHECKED	MJW
DATE	8.07.2024

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3810 VALLEY COMMONS DRIVE SUITE 4  
BOZEMAN, MONTANA 59718  
WATER & NATURAL RESOURCES  
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PROJECT NAME:  
**GRIZZLY GULCH PLACER MINE RECLAMATION PROJECT**

SHEET TITLE:  
**REVEGETATION PLAN**



SHEET NUMBER:  
**C-10**



Containerized Plantings			
Common Name	Botanical Name	Quantity	Container Size
<b>Floodplain Plantings Areas</b>			
<b>Area 1 (67 SY or 0.014 acre)</b>			
Quaking aspen	<i>Populus tremuloides</i>	12	2 Gal
Common chokecherry	<i>Prunus virginiana</i>	5	2 Gal
Wood's rose	<i>Rosa woodsii</i>	4	1 Gal
Common snowberry	<i>Symphoricarpos albus</i>	6	Tall Gal
Golden currant	<i>Ribes aureum</i>	6	Tall Gal
		33	
<b>Area 2 (33 SY or 0.007 acre)</b>			
Quaking aspen	<i>Populus tremuloides</i>	8	2 Gal
Common snowberry	<i>Symphoricarpos albus</i>	6	Tall Gal
Native spirea	<i>Spiraea densiflora</i>	3	2 Gal
		17	
<b>Area 3 (67 SY or 0.014 acre)</b>			
Quaking aspen	<i>Populus tremuloides</i>	3	2 Gal
Common chokecherry	<i>Prunus virginiana</i>	5	2 Gal
Serviceberry	<i>Amelanchier alnifolia</i>	5	2 Gal
Shrubby cinquefoil	<i>Dasiphora fruticosa</i>	6	Tall Gal
		19	
<b>Area 4 (28 SY or 0.006 acre)</b>			
Rocky mountain juniper	<i>Juniperus scopulorum</i>	2	5 Gal
Quaking aspen	<i>Populus tremuloides</i>	5	Tall Gal
Wood's rose	<i>Rosa woodsii</i>	3	1 Gal
Common snowberry	<i>Symphoricarpos albus</i>	3	Tall Gal
Shrubby cinquefoil	<i>Dasiphora fruticosa</i>	3	Tall Gal
		16	
<b>Wetland Planting Areas</b>			
<b>Area 1 (22 SY or 0.005 acre)</b>			
Red-twig dogwood	<i>Cornus sericea</i>	3	Tall Gal
Bebb's willow	<i>Salix bebbiana</i>	5	Tall Gal
Geyer willow	<i>Salix geyeriana</i>	3	Tall Gal
Mountain alder	<i>Alnus incana tenuifolia</i>	3	Tall Gal
Pacific willow	<i>Salix lasiandra</i>	1	5 Gal
		15	
<b>Area 2 (82 SY or 0.017 acre)</b>			
Yellow willow	<i>Cornus sericea</i>	2	Tall Gal
Bebb's willow	<i>Salix bebbiana</i>	3	Tall Gal
Geyer willow	<i>Salix geyeriana</i>	5	Tall Gal
Mountain alder	<i>Alnus incana tenuifolia</i>	3	Tall Gal
Sandbar willow	<i>Salix exigua</i>	3	Tall Gal
		16	
<b>Area 3 (17 SY or 0.004 acre)</b>			
Sandbar willow	<i>Salix exigua</i>	3	Tall Gal
Pacific willow	<i>Salix lasiandra</i>	1	5 Gal
Geyer willow	<i>Salix geyeriana</i>	4	Tall Gal
Yellow willow	<i>Salix lutea</i>	2	Tall Gal
		10	
<b>Area 4 (17 SY or 0.004 acre)</b>			
Bebb's willow	<i>Salix bebbiana</i>	3	Tall Gal
Geyer willow	<i>Salix geyeriana</i>	4	Tall Gal
Yellow willow	<i>Salix lutea</i>	2	Tall Gal
		9	
		145	

Trees and shrubs will be planted in small clusters or groups to pattern a natural community association. Trees and shrubs will be planted on 3 to 5 ft centers, specific location by species within each cluster will be determined in the field.

West Slope/Upland Seed Mix						
<b>Targeted # Seeds/Sq. Ft = 120 - 140</b>						
<b>Number of Acres = 0.8</b>						
Common Name	Scientific Name	lbs PLS/Acre	Seeds/LB	Seeds/Ft Sq	Percent Seeds	% of Mix
Triticale (cover crop)	<i>Triticum aestivum</i>	5.0	13,000	1.49	11.82	14.3%
Yarrow	<i>Achillea millefolium</i>	0.10	2,770,000	6.36	4.5	0.3%
Thickspike wheatgrass	<i>Elymus lanceolatus</i>	6.0	154,000	21.21	74.99	17%
Basin wildrye	<i>Leymus cinereus</i>	4.5	130,000	13.43	40.08	13%
Junegrass	<i>Koeleria cristata</i>	0.5	2,315,400	26.58	18.79	1%
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	6.0	140,000	19.28	13.63	17%
Smooth brome	<i>Bromus inermis</i>	6.4	125,000	18.37	12.98	18%
Big bluegrass	<i>Poa ampla</i>	1.0	882,000	20.25	14.31	3%
Western wheatgrass	<i>Pascopyrum smithii</i>	5.0	110,000	12.63	8.93	14%
Blue flax	<i>Linum lewisii</i>	0.5	293,000	3.36	2.38	1%
		35.0		141.46	100%	100%

Hydroseeding rate of 35.0 lbs PLS/acre. Seeding rates will be divided in half for drill seeding.

East Slope/Upland Seed Mix						
<b>Targeted # Seeds/Sq. Ft = 60-80</b>						
<b>Number of Acres = 0.6</b>						
Common Name	Scientific Name	lbs PLS/Acre	Seeds/LB	Seeds/Ft Sq	Percent Seeds	% of Mix
Triticale (cover crop)	<i>Triticum aestivum</i>	5.0	13,000	1.49	2.87	20%
Yarrow	<i>Achillea millefolium</i>	0.3	2,770,000	19.08	36.70	1%
Timothy	<i>Phleum pratense</i>	1.0	1,300,000	29.84	57.41	4%
Slender wheatgrass	<i>Elymus trachycaulus</i>	6.0	156,000	21.49	41.3	24%
Intermediate wheatgrass	<i>Elytrigia intermedia</i>	7.0	88,000	14.14	28.57	28%
Smooth brome	<i>Bromus inermis</i>	5.7	125,000	16.36	31.46	23%
		25.0		51.99	100%	100%

Hydroseeding rate of 25.0 lbs PLS/acre. Seeding rates will be divided in half for drill seeding.

Floodplain Seed Mix						
<b>Targeted # Seeds/Sq. Ft = 120 - 140</b>						
<b>Number of Acres = 1.1</b>						
Common Name	Scientific Name	lbs PLS/Acre	Seeds/LB	Seeds/Ft Sq	Percent Seeds	% of Mix
Big bluegrass	<i>Poa ampla</i>	0.75	882,000	15.19	95.25	4%
Thickspike wheatgrass	<i>Elymus lanceolatus</i>	5.0	154,000	17.68	14.27	27%
Slender wheatgrass	<i>Elymus trachycaulus</i>	4.0	159,000	14.60	11.79	22%
Smooth brome	<i>Bromus inermis</i>	6.0	125,000	17.22	13.90	33%
Timothy	<i>Phleum pratense</i>	0.5	1,300,000	14.92	12.05	3%
Junegrass	<i>Koeleria cristata</i>	0.3	2,315,400	13.29	10.73	1%
Orchardgrass	<i>Dactylis glomerata</i>	1.0	654,000	15.01	12.12	5%
Canby bluegrass	<i>Poa canbyi</i>	0.8	926,000	15.94	12.87	4%
		18.3		123.85	100%	100%

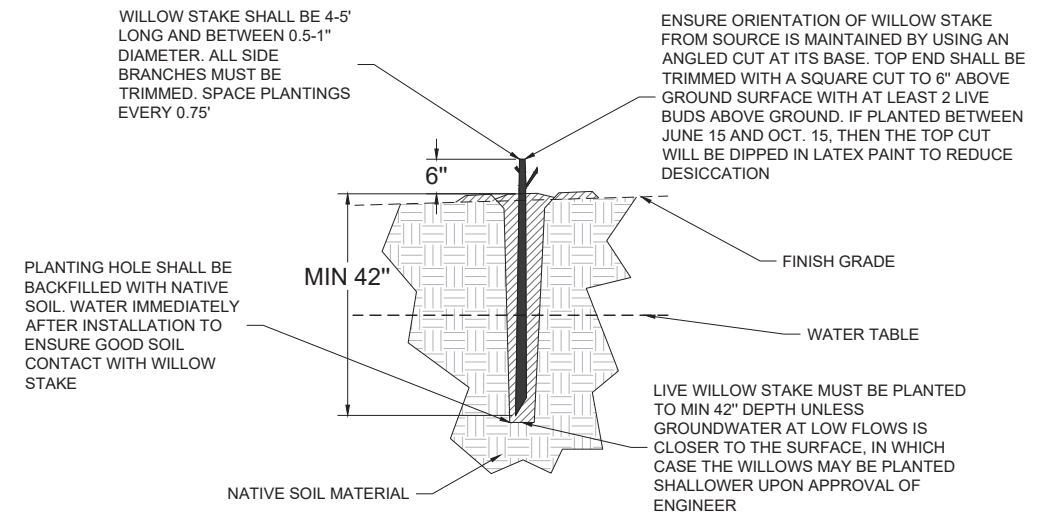
Drill seed at 18.3 PLS/acre. Rates will be doubled for broadcast seeding.

Wetland Seed Mix						
<b>Targeted # Seeds/Sq. Ft = 250-280</b>						
<b>Number of Acres = 0.4</b>						
Common Name	Scientific Name	lbs PLS/Acre	Seeds/LB	Seeds/Ft Sq	Percent Seeds	% of Mix
Alkaligrass	<i>Puccinellia distans</i>	1.25	1,200,000	34.44	12.73	6%
Bluejoint reedgrass	<i>Calamagrostis canadensis</i>	1.25	2,270,000	65.14	24.08	6%
Tufted hairgrass	<i>Deschampsia caespitosa</i>	1.00	1,500,000	34.44	12.73	5%
Canada wildrye	<i>Elymus canadensis</i>	8.00	115,000	21.12	7.81	39%
Fowl bluegrass	<i>Poa palustris</i>	1.00	3,156,000	72.45	26.78	5%
Slender wheatgrass	<i>Elymus trachycaulus</i>	8.00	159,000	29.20	10.79	39%
Baltic rush	<i>Juncus balticus</i>	0.20	3,000,000	13.77	5.09	1%
		20.70		270.56	100.00	100%

Broadcast seeding rate of 20.70 lbs PLS/acre.

Streambank Seed Mix						
<b>Targeted # Seeds/Sq. Ft = 130-140</b>						
<b>Number of Acres = 0.1</b>						
Common Name	Scientific Name	lbs PLS/Acre	Seeds/LB	Seeds/Ft Sq	Percent Seeds	% of Mix
Bluejoint reedgrass	<i>Calamagrostis canadensis</i>	0.50	2,270,000	26.06	20.16	1%
Mountain brome	<i>Bromus marginatus</i>	6.00	90,000	12.40	9.59	18%
Western wheatgrass	<i>Pascopyrum smithii</i>	4.00	110,000	10.10	7.82	12%
Beardless or creeping wildrye	<i>Leymus triticoides</i>	5.00	51,000	5.85	4.53	15%
Canada wildrye	<i>Elymus canadensis</i>	6.00	115,000	15.84	12.26	18%
Streambank wheatgrass	<i>Elymus lanceolatus</i>	6.00	156,000	21.49	16.63	18%
Slender wheatgrass	<i>Elymus trachycaulus</i>	6.50	159,000	23.73	18.36	19%
Baltic rush	<i>Juncus balticus</i>	0.20	3,000,000	13.77	10.66	1%
		34.20		129.24	79.84	99%

Broadcast or hydro-seeding rate of 34.20 lbs PLS/acre.



## WILLOW STAKE PLANTING DETAIL

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DESIGNED: MJW  
DRAWN: MJW  
CHECKED: MJW  
DATE: 8.07.2024

RESPEC  
3810 VALLEY COMMONS DRIVE SUITE 4  
BOZEMAN, MONTANA 59718  
WATER & NATURAL RESOURCES  
WWW.RESPEC.COM 406.284.2628

STAMP  
MONTANA  
MATTHEW WYNN JOHNSON  
No. 32820PE  
LICENSED PROFESSIONAL ENGINEER  
11/2024

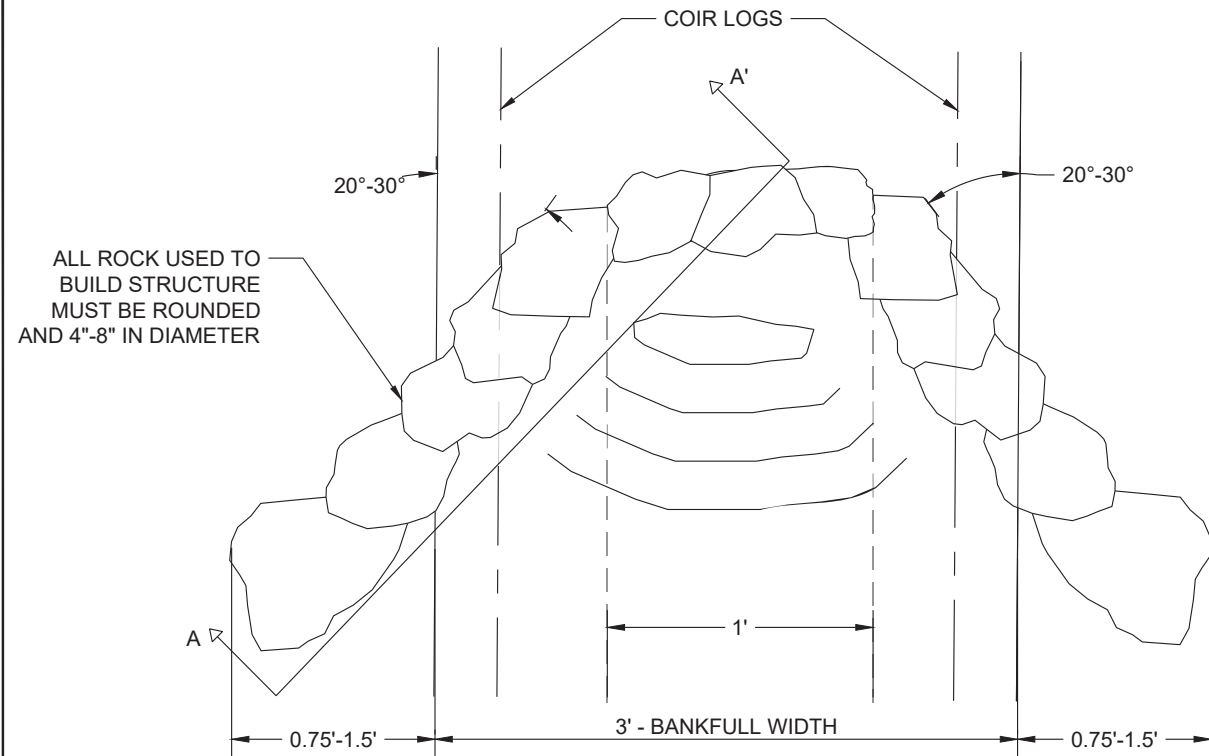
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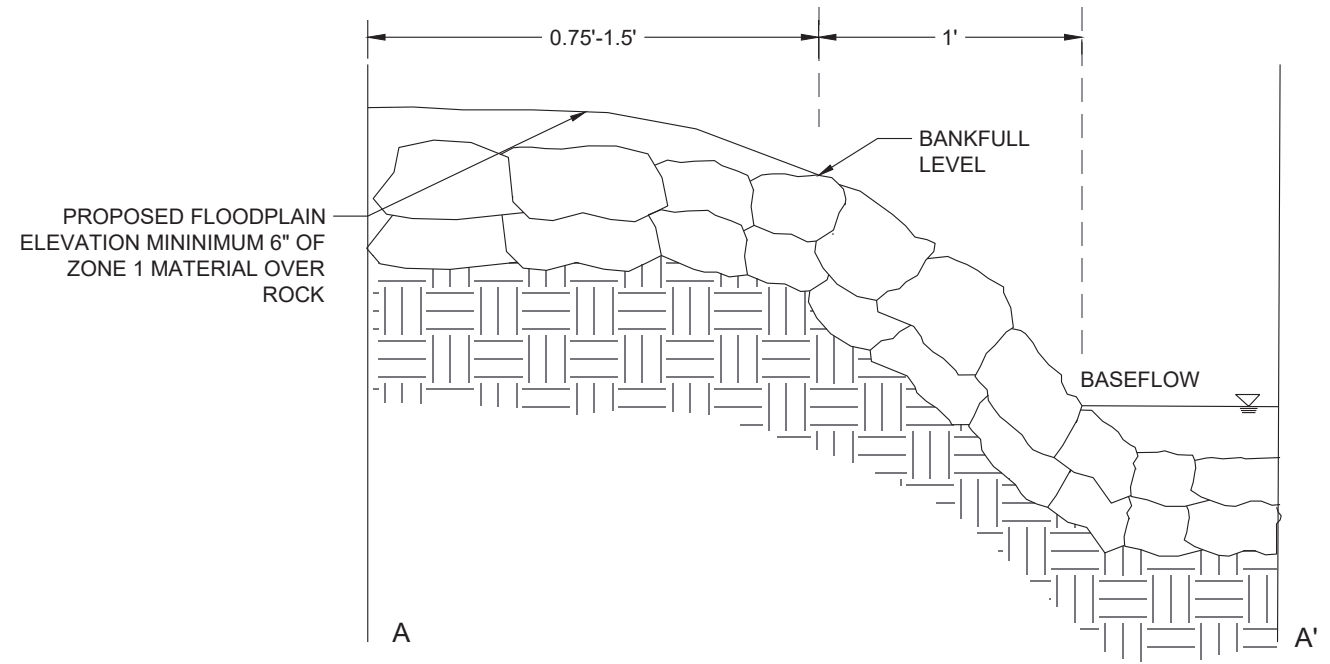
SHEET TITLE:  
SEED MIX AND CONTAINERIZED PLANTING TABLES

811  
Know what's below.  
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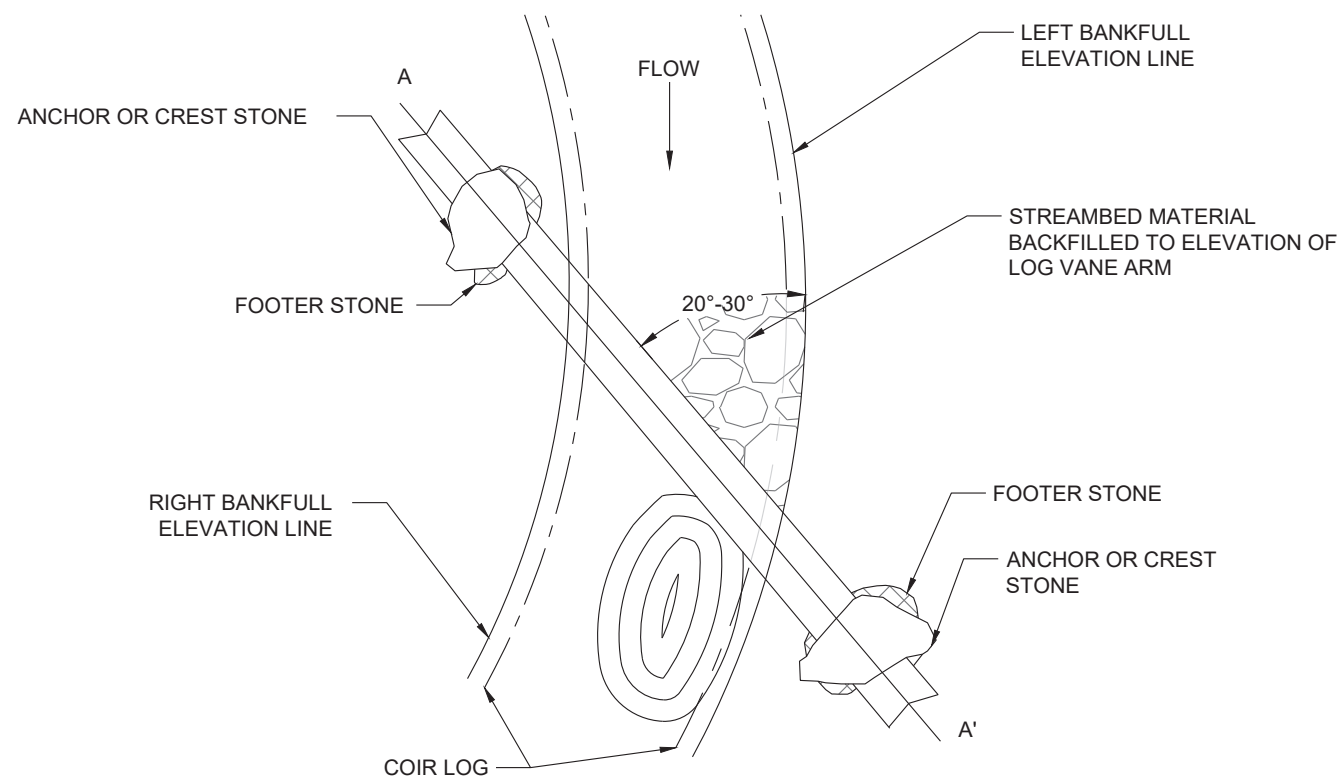
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C-11



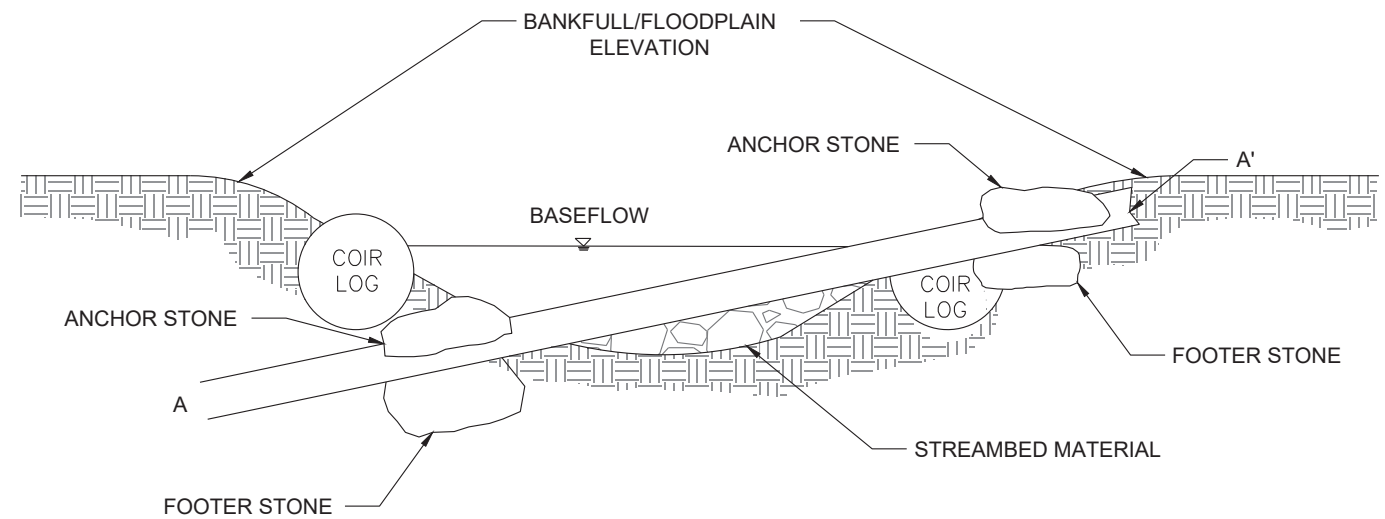
**ROCK DROP PLAN VIEW**  
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**ROCK DROP SECTION VIEW A-A'**  
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**LOG VANE PLAN VIEW**  
DRAWING NOT TO SCALE



**LOG VANE SECTION VIEW A-A'**  
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- NOTES:
- FOOTER AND ANCHOR STONE SHALL HAVE A MINIMUM DIAMETER OF 12"
  - LOG VANE DIAMETER SHALL BE BETWEEN 4"-8"

REVISION			
DESIGNED	MJM		
DRAWN	MJM		
CHECKED	MJM		
DATE	8.07.2024		

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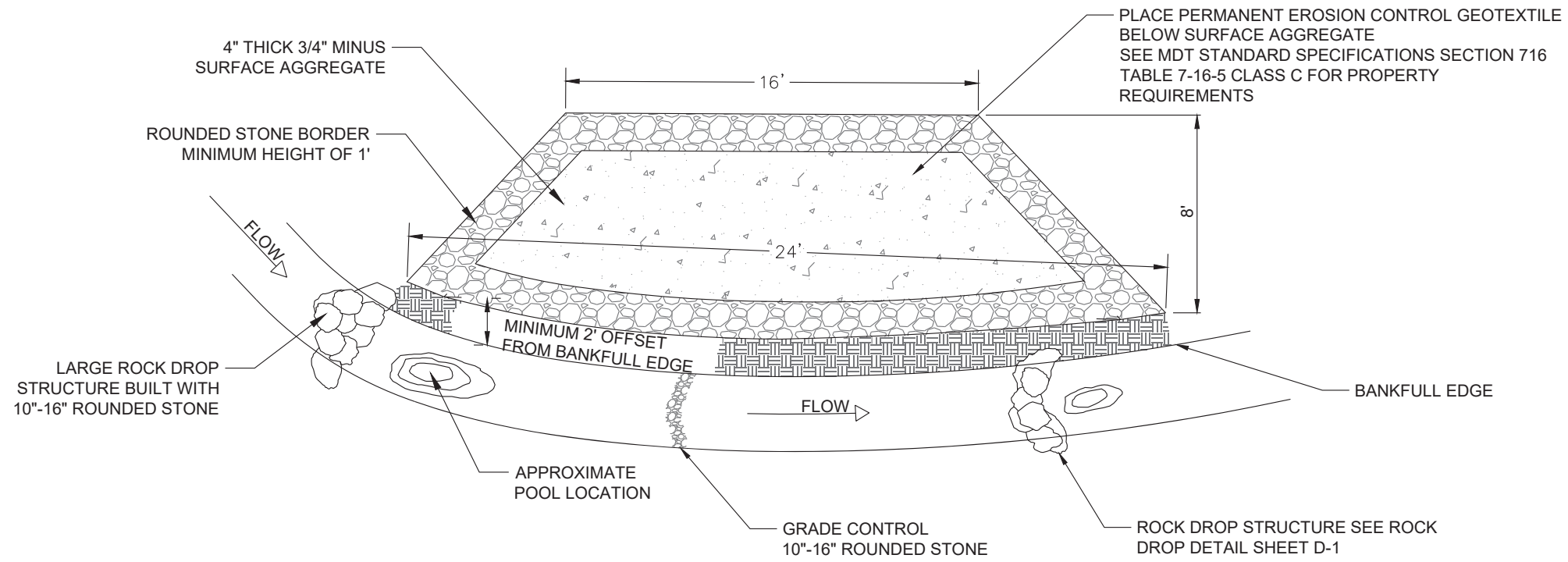
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**DROP STRUCTURE DETAILS**

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**D-1**

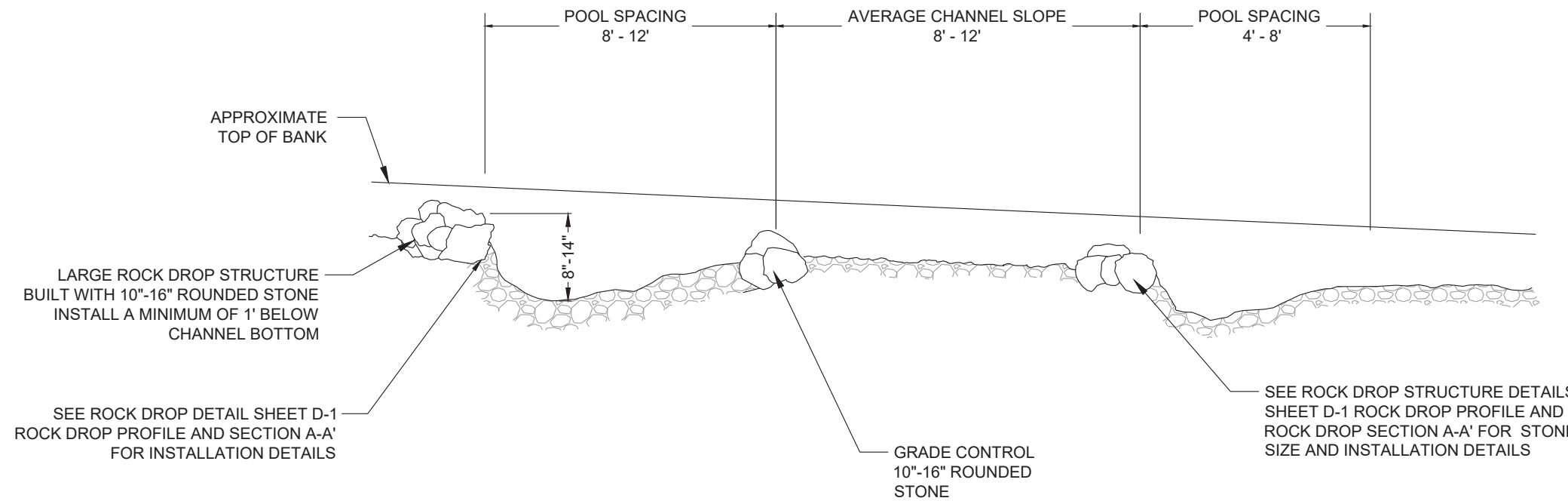


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PEDESTRIAN ACCESS - PLAN VIEW

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PEDESTRIAN ACCESS - PROFILE VIEW

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CHECKED	MJW		
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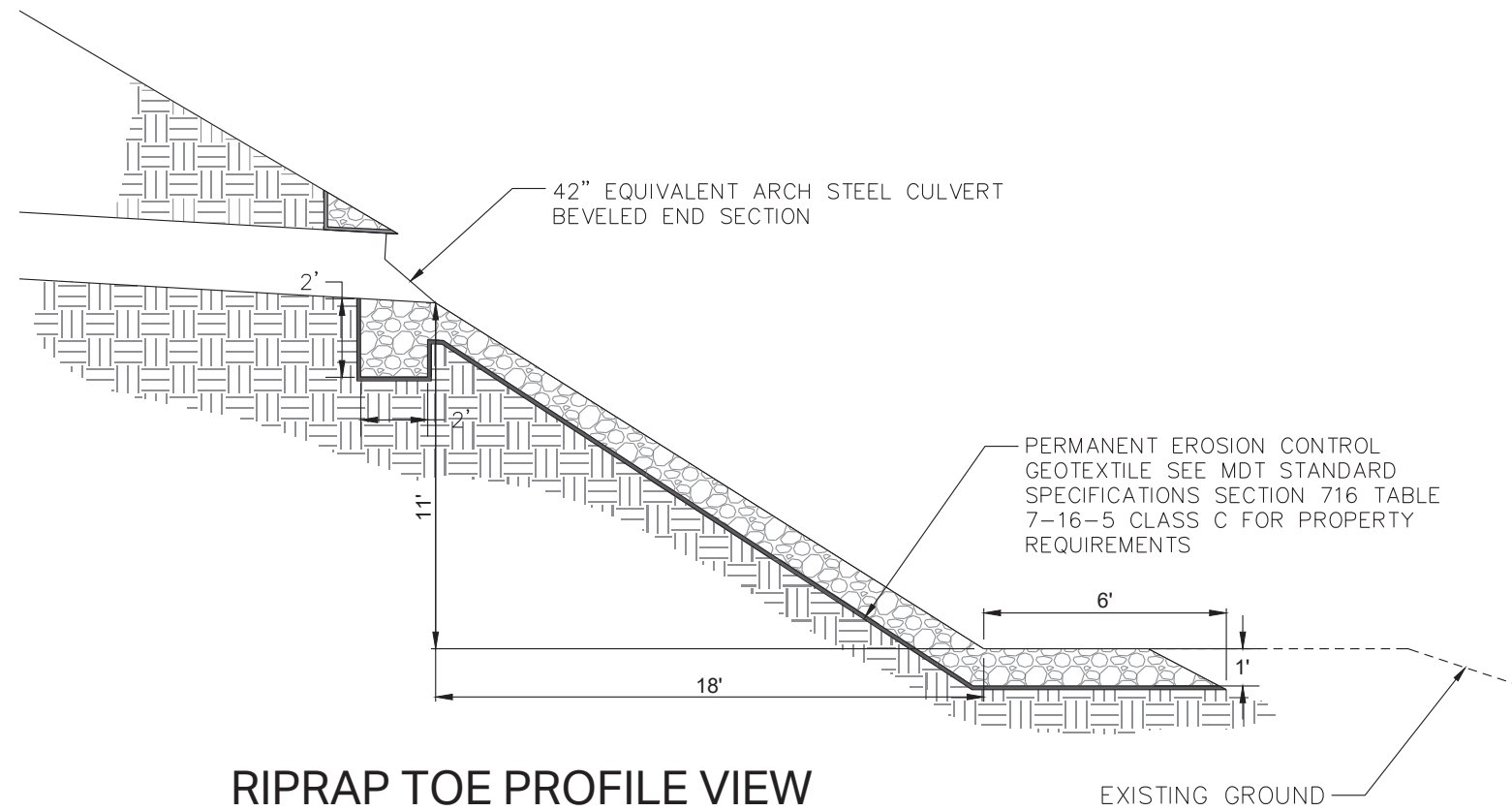
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SHEET TITLE:  
 PEDESTRIAN ACCESS DETAIL

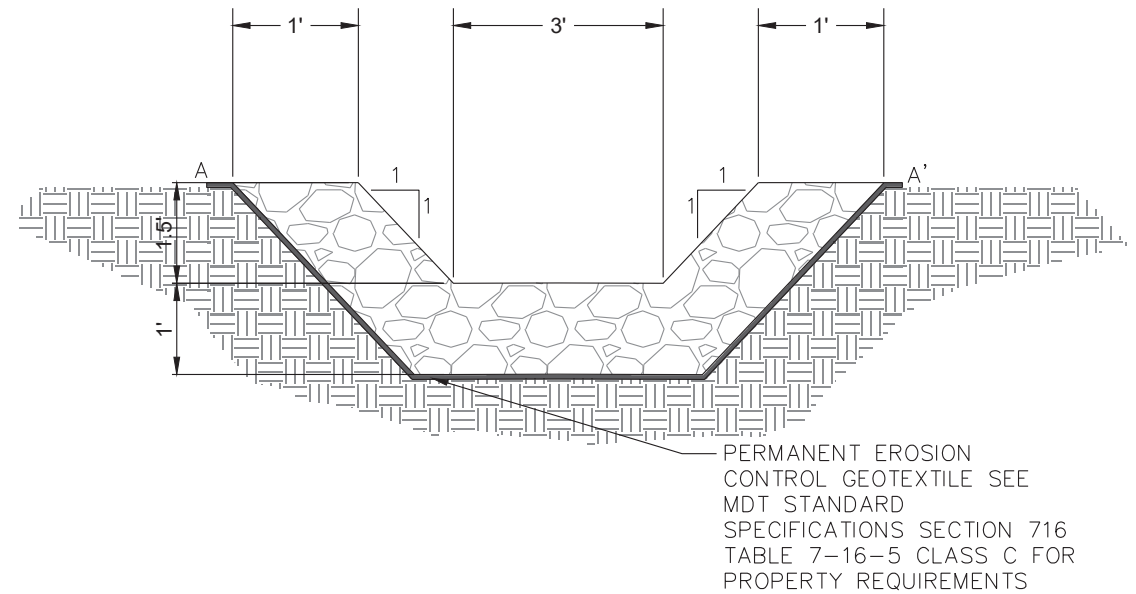
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SHEET NUMBER:  
 D-2



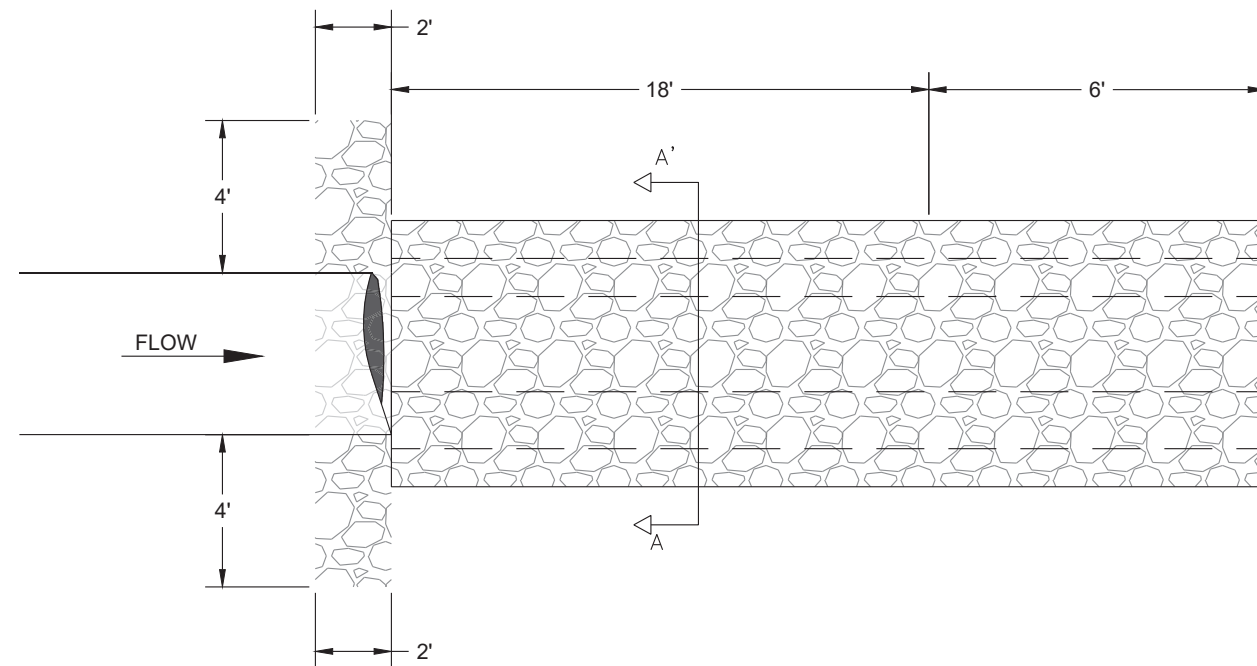
RIPRAP TOE PROFILE VIEW

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RIPRAP TOE SECTION VIEW A-A'

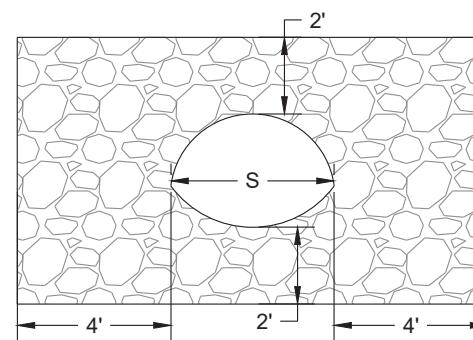
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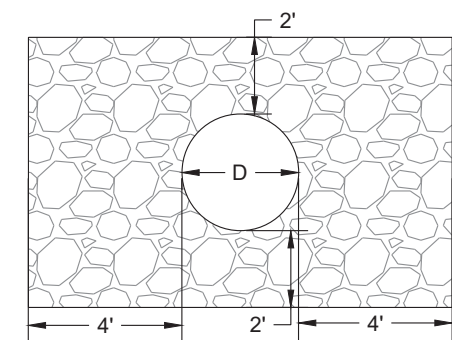
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CORRUGATED STEEL ARCH CULVERT



CORRUGATED PLASTIC CULVERT

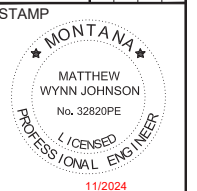


INLET/OUTLET CULVERT RIPRAP

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REVISION			
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DATE	8.07.2024		

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PROJECT NAME:  
GRIZZLY GULCH PLACER MINE  
RECLAMATION PROJECT

SHEET TITLE:  
TYPICAL RIPRAP  
DETAIL



SHEET NUMBER:  
D-3