AS-BUILT

BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

AND

GREAT DIVIDE SAND TAILINGS
RECLAMATION PROJECT

AS-BUILT CONSTRUCTION DRAWINGS

DEQ CONTRACT NO. 410017

PREPARED FOR

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
ABANDONED MINE LANDS BUREAU

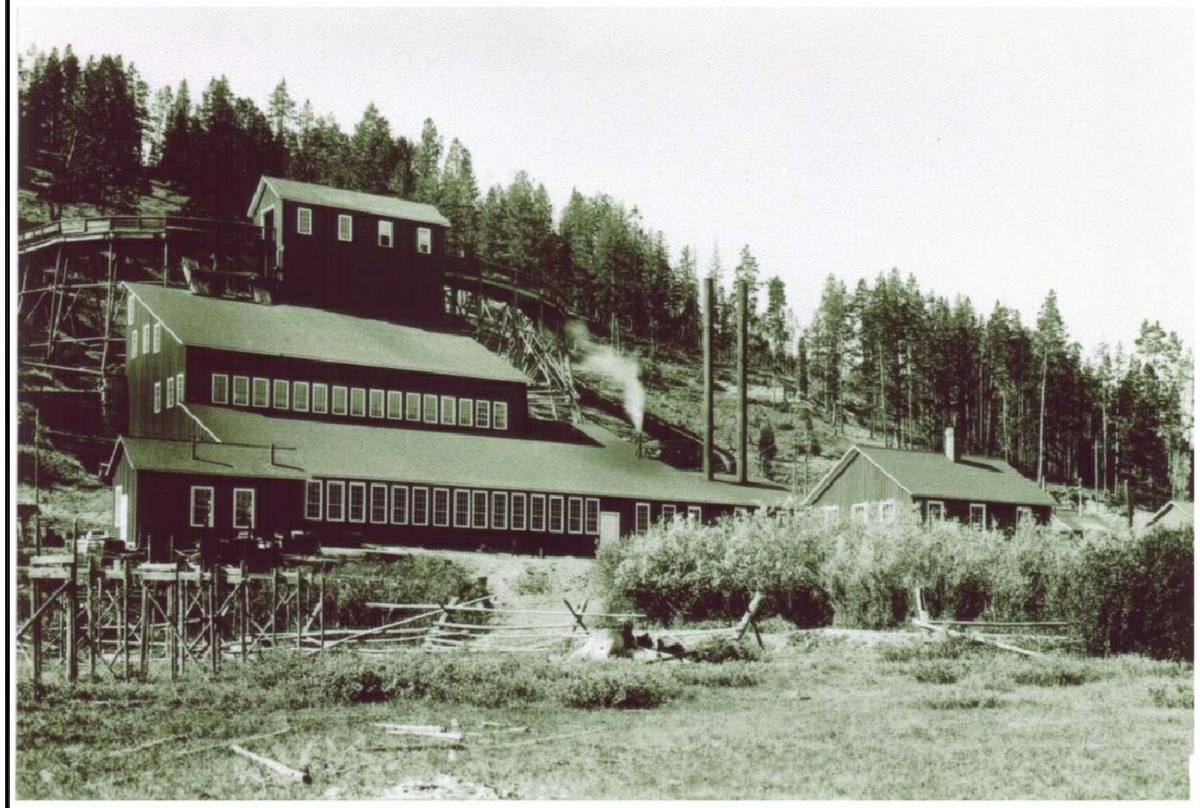
RECOVERY.GOV

PREPARED BY

MONTANA
TIMOTHY P. RANF
8742PE
LICENSED
PROFESSIONAL ENGINEER

PIONEER TECHNICAL SERVICES, INC.

APRIL 5, 2013



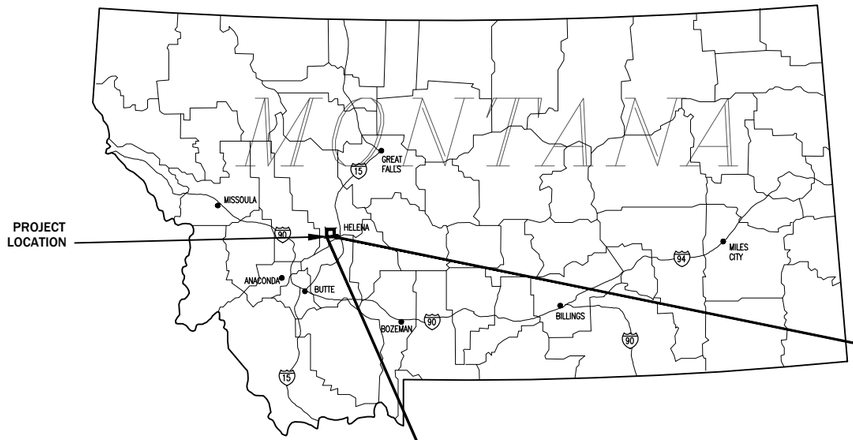
BALD BUTTE MILLSITE
COURTESY OF THE MONTANA HISTORICAL SOCIETY

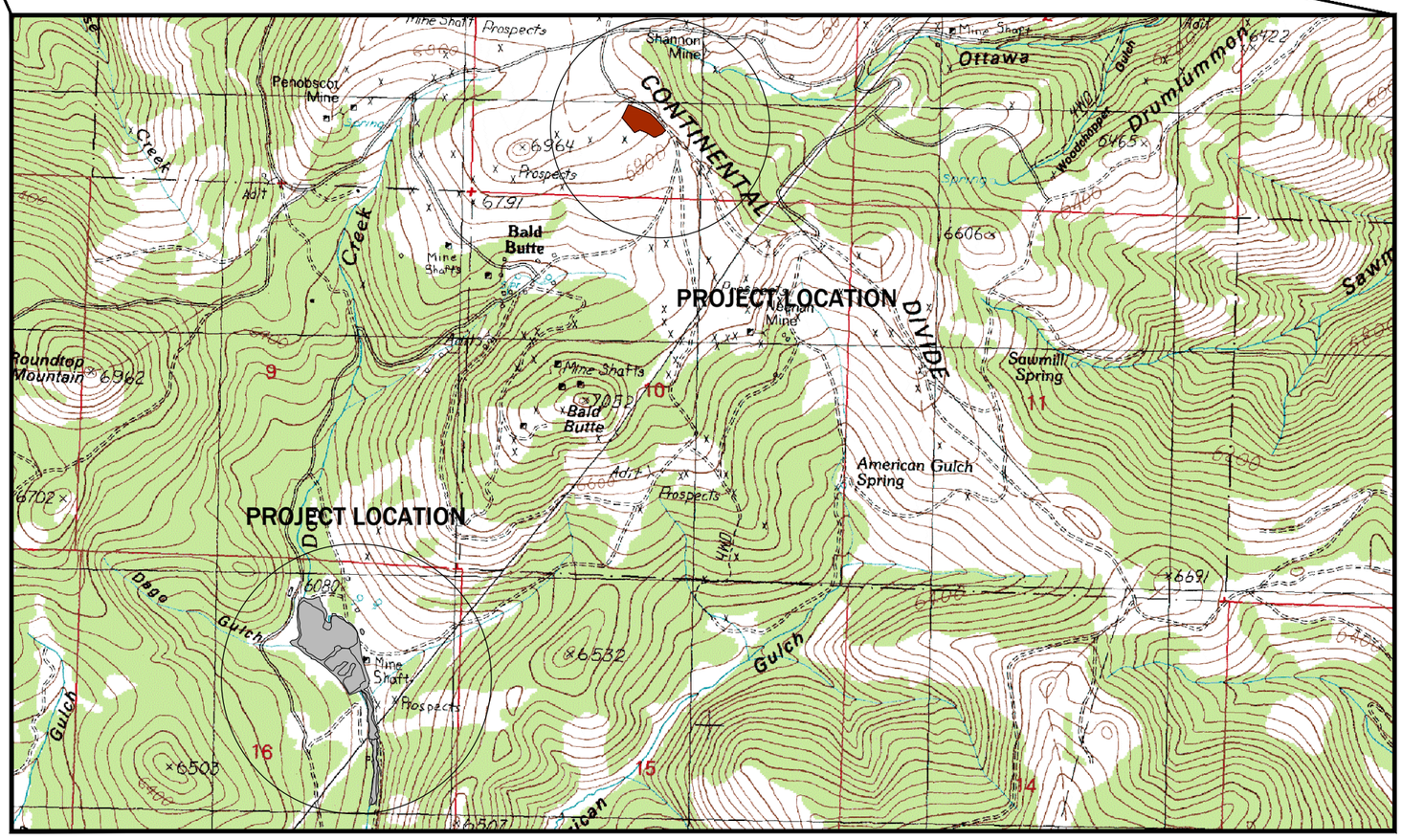
BALD BUTTE MINE AND MILLSITE RECLAMATION PROJECT
LEWIS AND CLARK COUNTY, MONTANA

DEQ CONTRACT NO.410017
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
ABANDONED MINE LANDS BUREAU

PREPARED BY
PIONEER TECHNICAL SERVICES, INC.
APRIL 5, 2013

AS-BUILT





SITE VICINITY MAP
SOURCE: USGS 7.5 MINUTE QUADRANGLE

SHEET
BB-1

LEGEND

6550 — EXISTING INDEX CONTOURS

EXISTING INTERMEDIATE CONTOURS

EXISTING ROADS

RAILROADS

EXISTING FENCE

EXISTING CULVERTS

OE — OVERHEAD ELECTRIC

GAS — HIGH PRESSURE GAS MAIN

TEL — TELEPHONE

WTR — WATER LINE

UU — UNDERGROUND ELECTRIC

FF — FILTER FENCE

DRAINAGE

STREAM

EXISTING TEXT

PROPOSED TEXT

PROPERTY LINE

TAILINGS REPOSITORY AREA

TAILINGS EXCAVATION AREA

1.56 **TAILINGS EXCAVATION DEPTHS**

N660000 E149500 **EXCAVATION STAKING GRID WITH NORTHING AND EASTING**

PROPOSED INDEX CONTOURS

PROPOSED INTERMEDIATE CONTOURS

0 50 1 00 1 50 CENTERLINE

1 3 SLOPE DESIGNATION

P PIEZOMETER

MW MONITORING WELL

200342 4890.48 PANEL OR SURVEY CONTROL POINT WITH ELEVATION

TAILINGS

STREAMBED MATERIAL

TYPE 1 RIPRAP

TYPE 3 RIPRAP

COVER SOIL

GENERAL FILL

EROSION CONTROL MAT

DETAIL INDICATOR

1 / 7 — **DETAIL NUMBER**; **SHEET NUMBER ON WHICH DETAIL APPEARS**

ON PLAN

DETAIL 1 / 7 — **DETAIL NUMBER**; **SHEET NUMBER ON WHICH DETAIL APPEARS.**

AT DETAIL

BH-3 BOREHOLE

RTP-3 TEST PITS

W DEWATERING WELL POINT

5920 SPOT ELEVATION

SECTION INDICATOR

A / 1 — **SECTION DESIGNATION**; **SHEET NUMBER ON WHICH SECTION APPEARS**

ON PLAN

SECTION A–A / 7 — **SECTION DESIGNATION**; **SHEET NUMBER ON WHICH SECTION APPEARS.**

AT SECTION DETAIL

GENERAL NOTES

1. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND UTILITY OWNERS AS DESCRIBED IN THE SPECIAL PROVISIONS. CONTRACTOR IS RESPONSIBLE FOR PROTECTING AND REPAIRING ANY DAMAGED UTILITIES.
2. UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE BASED ON AERIAL SURVEYS AND RECORDS PROVIDED BY THE UTILITY OWNERS AND ARE APPROXIMATE. ALL UTILITY LOCATIONS SHOWN ARE SUBJECT TO THE ACCURACY OF THE LOCATION METHODS AND RECORDS EMPLOYED BY THE UTILITY OWNERS. UTILITIES ARE ALSO SUBJECT TO RELOCATION SINCE THE DRAWINGS WERE PREPARED. UTILITY LOCATIONS SHOWN SHOULD BE CONSIDERED APPROXIMATE AND ACTUAL LOCATIONS, DEPTHS, AND/OR HEIGHTS MAY VARY.
3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL BURIED UTILITIES ENCOUNTERED DURING CONSTRUCTION AND SHALL NOT BACKFILL UNTIL ENGINEER AND CONTRACTOR HAVE RECORDED ITS TYPE, SIZE, AND LOCATION.
4. CONTRACTOR SHALL RESPECT ALL RIGHT-OF-WAY BOUNDARIES. PROTECT FROM DAMAGE: BUILDINGS, WALLS, MONUMENTS, TREES AND OTHER LANDSCAPING, UTILITY POLES, AND OTHER FEATURES INSIDE AND OUTSIDE ANY RIGHTS-OF-WAY.
5. ANY DISTURBED SECTION CORNERS, PROPERTY PINS, SURVEY MONUMENTS, OR BENCHMARKS SHALL BE RESET BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MONTANA AT CONTRACTOR'S EXPENSE. THESE ITEMS ARE NOT SHOWN ON THE DRAWINGS.
6. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED TO PERFORM THE WORK PRIOR TO STARTING CONSTRUCTION.
7. CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAINAGE PATTERNS UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. ADDITIONAL TEMPORARY CULVERTS MAY BE ADDED OR REQUIRED. THESE CULVERTS WILL BE INSTALLED AND REMOVED AT NO ADDITIONAL EXPENSE TO OWNER.
8. CONTRACTOR SHALL COMPLY WITH ALL SAFETY AND REQUIREMENTS DESCRIBED IN THE SPECIAL PROVISIONS.
9. CONTRACTOR SHALL COORDINATE ALL WORK ON THE BALD BUTTE MINE AND MILLSITE AND GREAT DIVIDE SAND TAILINGS RECLAMATION PROJECTS.

SHEET INDEX

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BB-D14	JACK LEG FENCE DETAILS

NOTE:
THE GREAT DIVIDE SAND TAILINGS RECLAMATION PROJECT PLANSET FOLLOWS THIS PLANSET.

AS-BUILT

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DRAWN BY: JB/CR
DESIGNED BY: JB
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE: PIONEER

SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

SHEET INDEX AND LEGEND

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-2

REVISION:		
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DESIGNED BY: PL
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APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

SCALE IN FEET
0 1000 2000

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

PROJECT OVERVIEW

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-3

REVISION:		
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PROJECT NO:	10169
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UNITS:	FT
SOURCE:	

SCALE IN FEET

0 500 1000

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

TAILINGS, WASTE ROCK, AND REPOSITORY LOCATIONS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-4

NOTE:
1. HAUL ROUTES ~~SHALL BE~~ WERE IMPROVED TO THE MINIMUM EXTENT PRACTICAL TO ALLOW SAFE AND EFFICIENT HAULAGE OF WASTE MATERIALS. SEE SPECIAL PROVISIONS AND DETAIL ON SHEET BB-D1.
2. ~~INSTALL FILTER FENCE ALONG BLM ROAD ON THE DOWN SLOPE .~~

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COORD SYS/ZONE:	N/A
DATUM:	N/A
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SOURCE:	

N

SCALE IN FEET
0 500 1000

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

BALD BUTTE
HAUL ROAD
IMPROVEMENT
PLAN

PIONEER
TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-5

NOTE:
1. STOCKPILED REPOSITORY COVER SOIL STOCKPILES (R-1 THROUGH R-3) ON COVER SOIL BORROW AREA.
2. STOCKPILED REPOSITORY SUBSOIL STOCKPILE (R-4) NORTH OF REPOSITORY.
3. DEVELOPED COVER SOIL BORROW AREA AFTER DEPLETING STOCKPILES R-1, R-3, AND ~~ALL BUT 7.084CY OF~~ R-2 AS DESCRIBED IN THE SPECIAL PROVISIONS.

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DATE:	04-05-2013

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COORD SYS/ZONE:	N/A
DATUM:	N/A
UNITS:	FT
SOURCE:	PIONEER

N

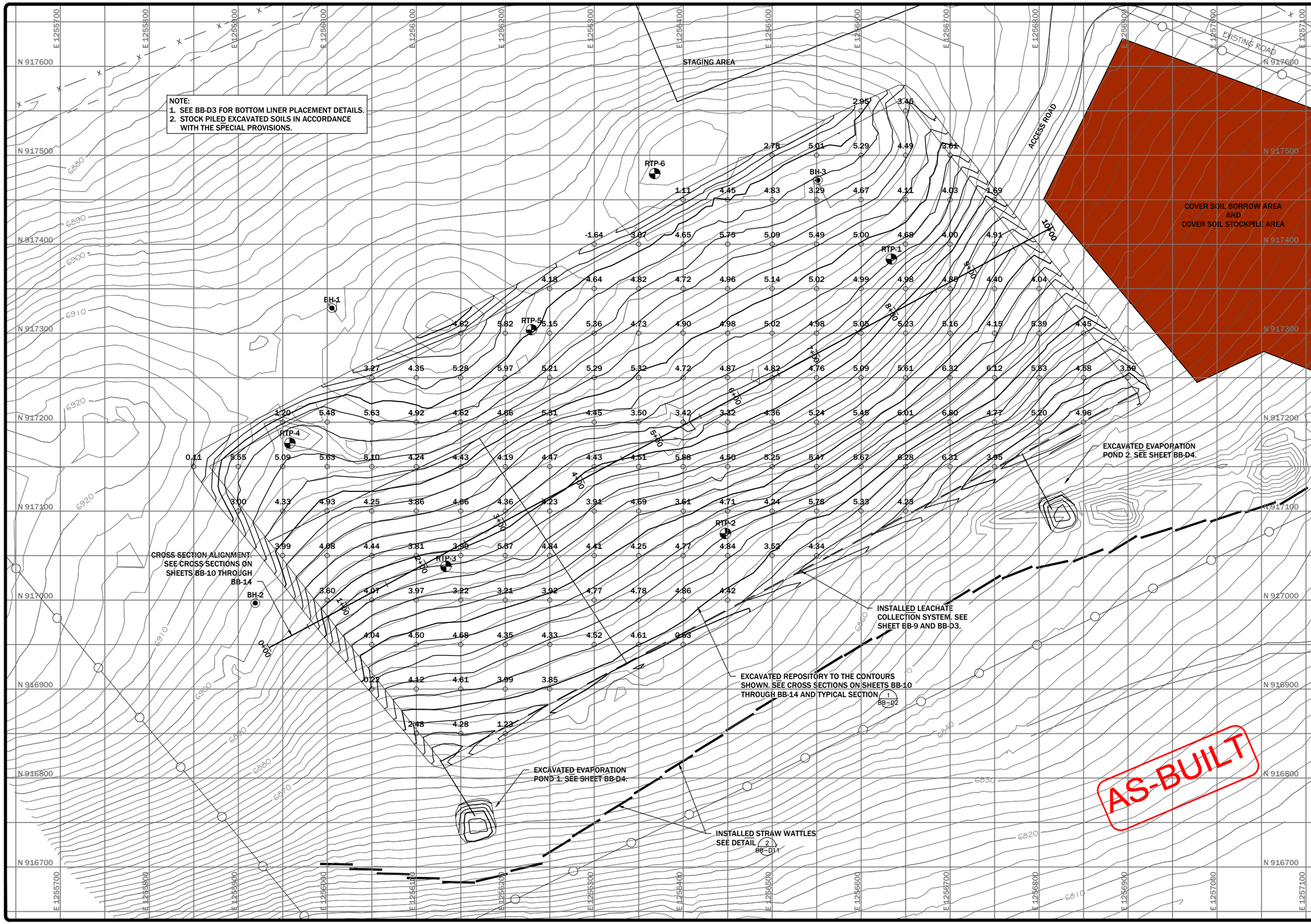
SCALE IN FEET
0 100 200

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY SITE AND FENCING PLAN

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-6



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CHECKED BY:	TR
APPROVED BY:	TR
PROJECT NO:	10169
DATE:	04-05-2013

DISPLAYED AS:

COORD SYS/ZONE:	MSP
DATUM:	NAD 83
UNITS:	FT
SOURCE:	OLYMPUS/PIONEER

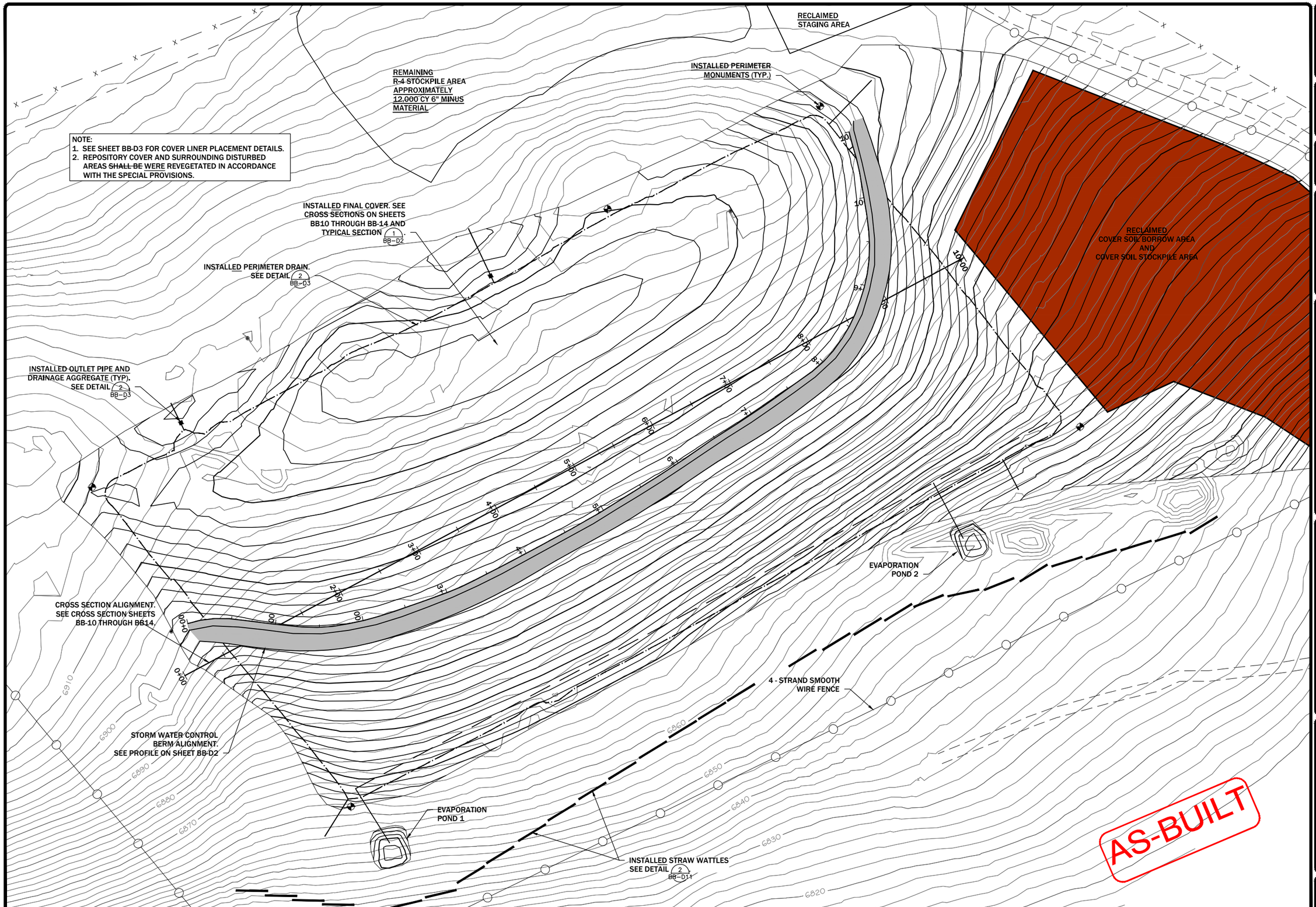
SCALE IN FEET
0 50 100

DEQ-AMLB BALD BUTTE MINE AND MILLSITE RECLAMATION PROJECT

REPOSITORY EXCAVATION PLAN

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET BB-7



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APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

N

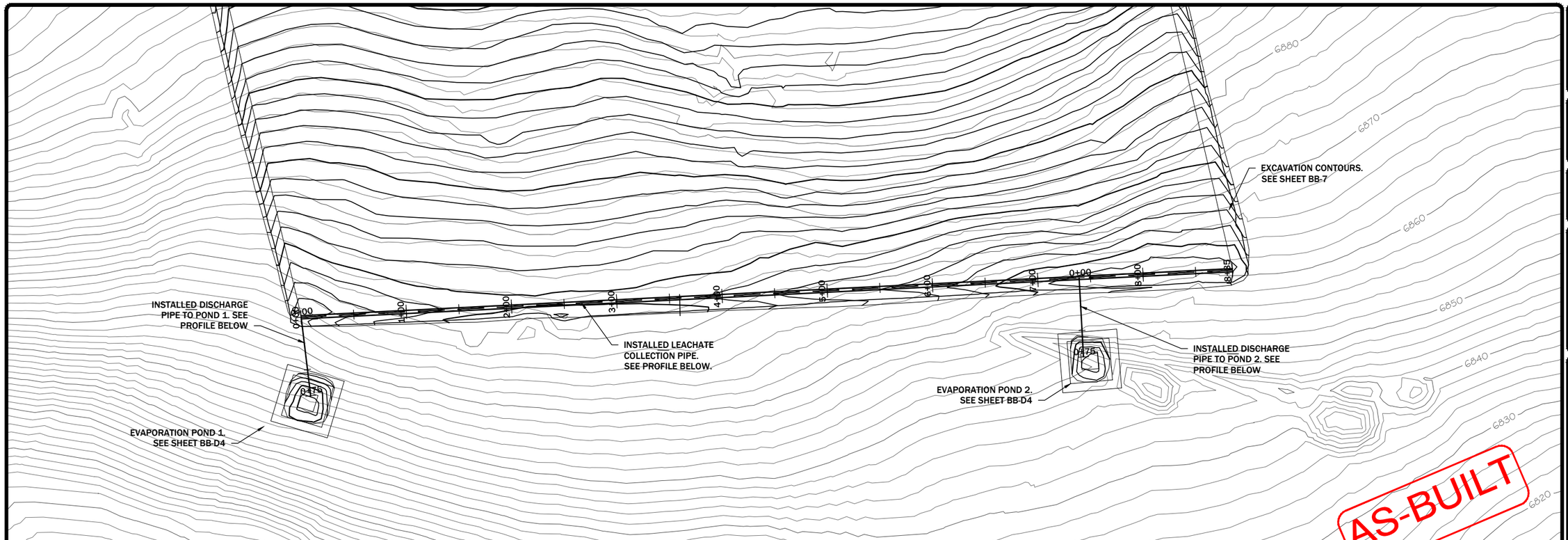
SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

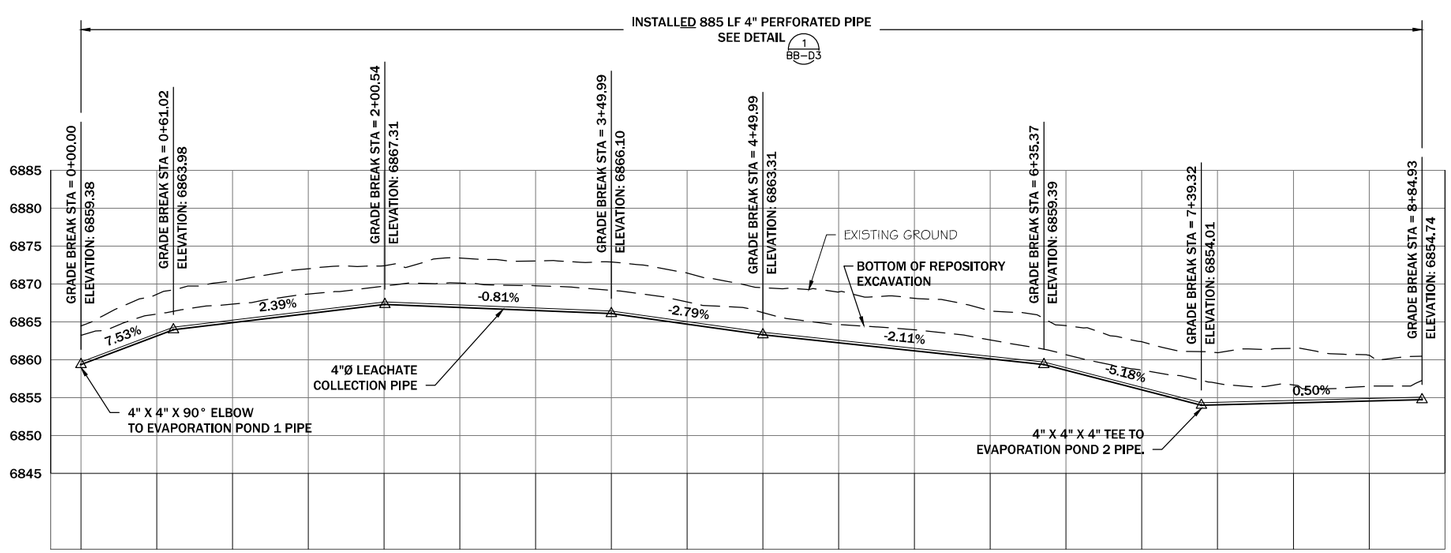
REPOSITORY
FINAL COVER PLAN

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

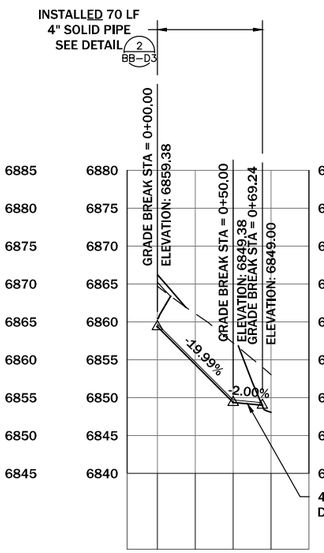
SHEET
BB-8



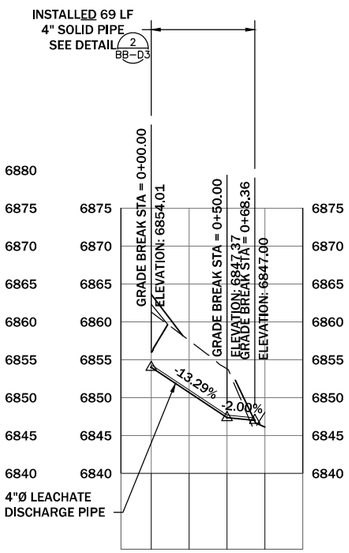
VERTICAL EXAGGERATION = 5X



LEACHATE COLLECTION PIPE



EVAPORATION POND 1 PIPE



EVAPORATION POND 2 PIPE

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DRAWN BY: JB/CR
DESIGNED BY: JB
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: PIONEER

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY
LEACHATE
COLLECTION SYSTEM
PLAN & PROFILES

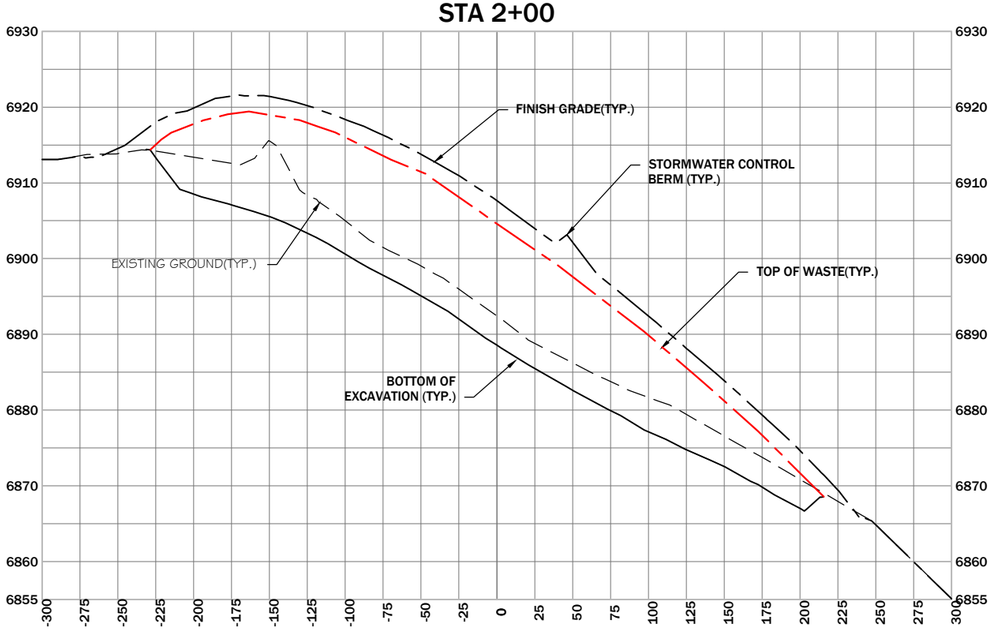
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-9

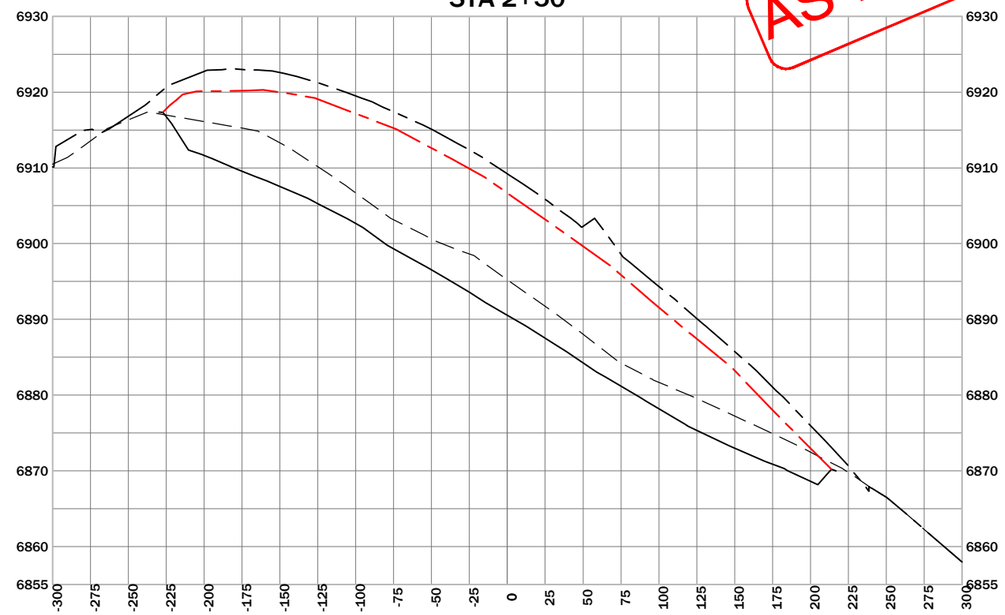
NOTE:
VERTICAL EXAGGERATION = 5X

AS-BUILT

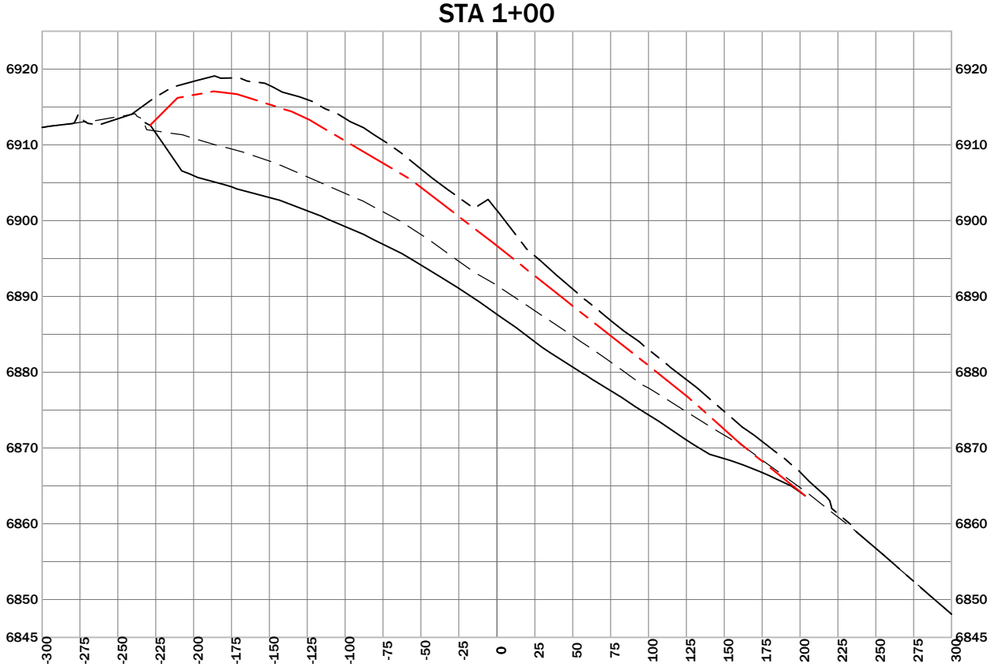
STA 2+00



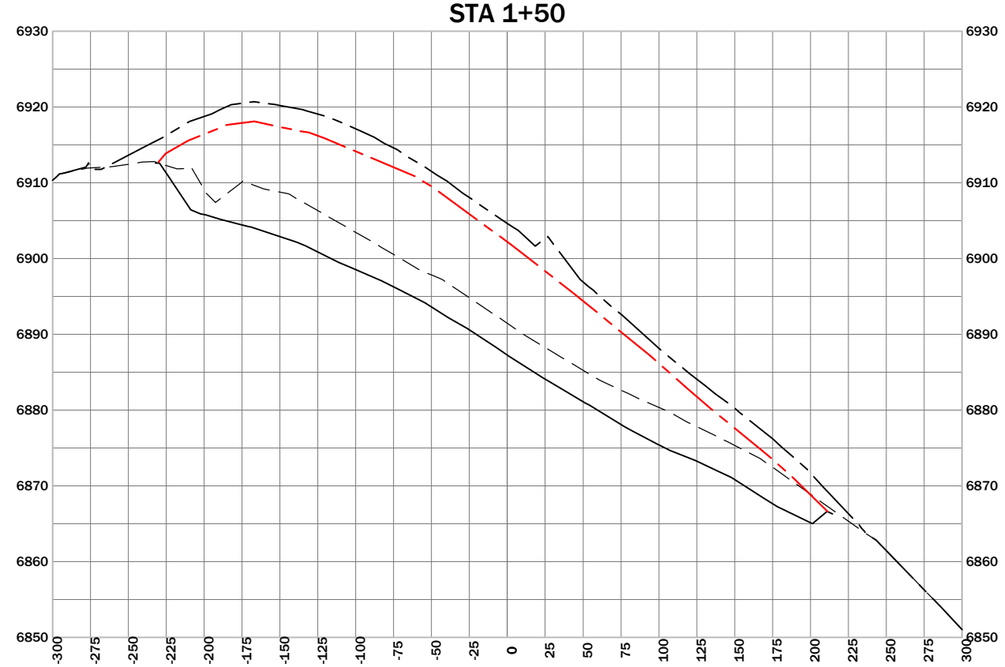
STA 2+50



STA 1+00



STA 1+50



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DISPLAYED AS:
COORD SYS/ZONE: N/A
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UNITS: FT
SOURCE: PIONEER

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY
CROSS SECTIONS
STA 1+00 TO 2+50

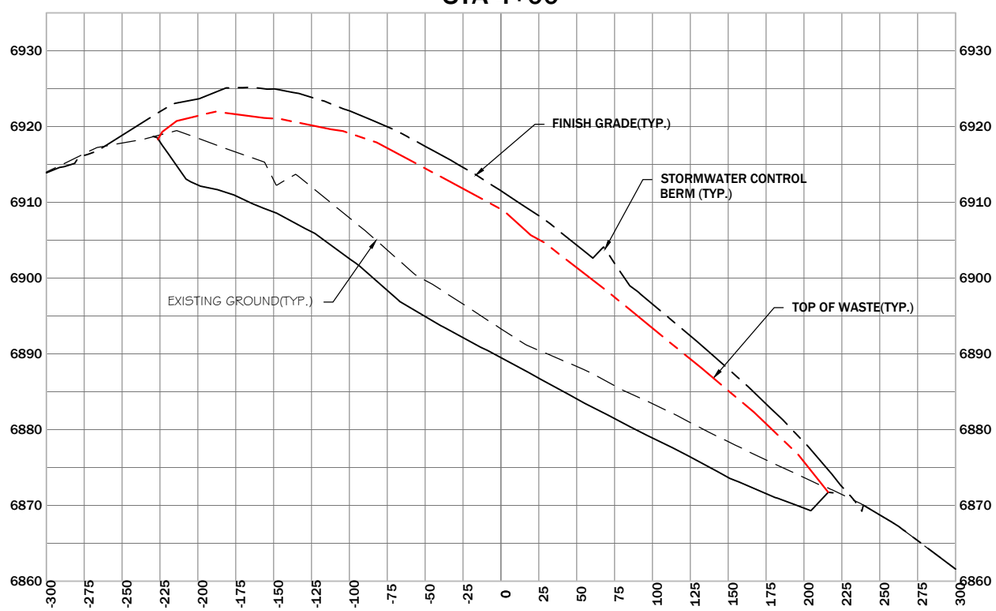
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-10

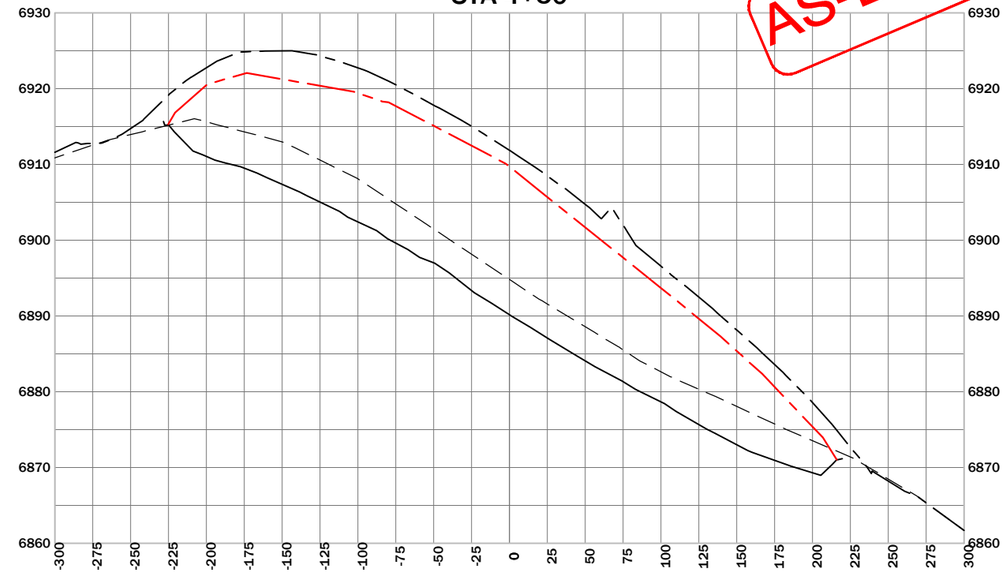
NOTE:
VERTICAL EXAGGERATION = 5X

AS-BUILT

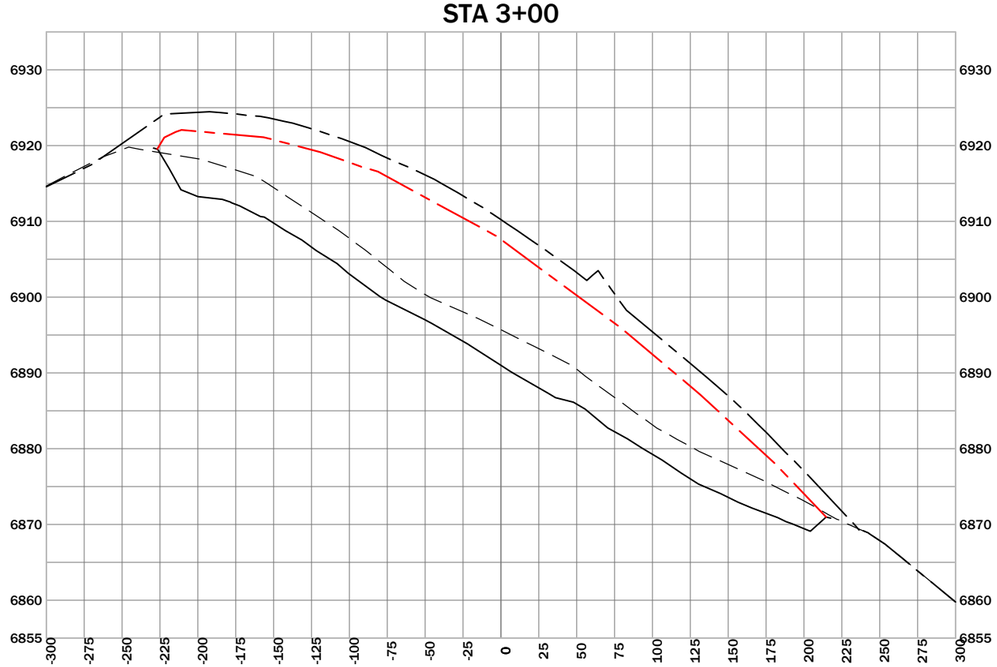
STA 4+00



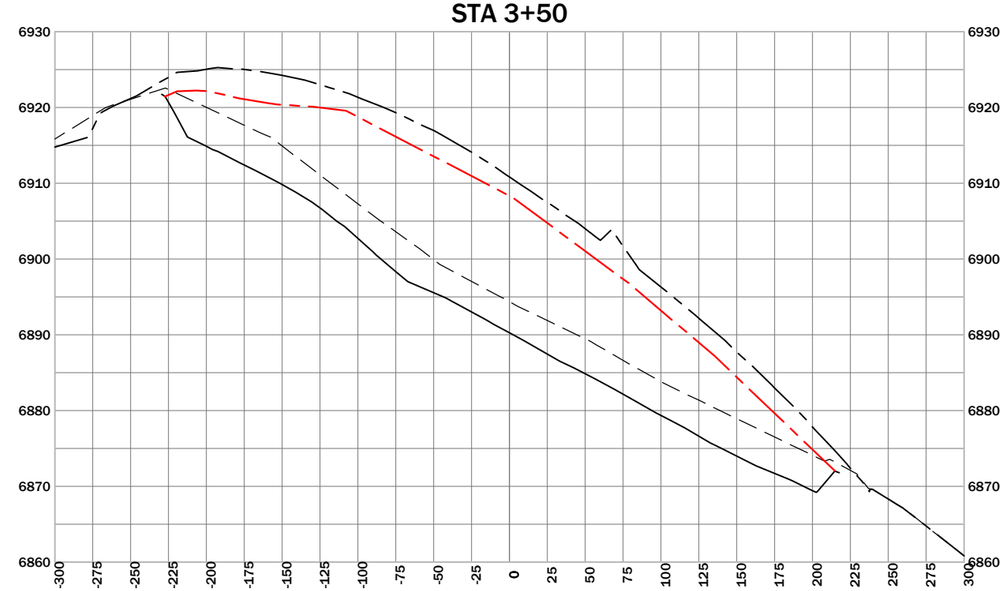
STA 4+50



STA 3+00



STA 3+50



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DRAWN BY: JB/CR
DESIGNED BY: PS
CHECKED BY: TR
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PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE: PIONEER

SCALE IN FEET
0 50 100

BALD BUTTE MINE AND MILLSITE
DEQ-AMLB
RECLAMATION PROJECT

REPOSITORY
CROSS SECTIONS
STA 3+00 TO 4+50

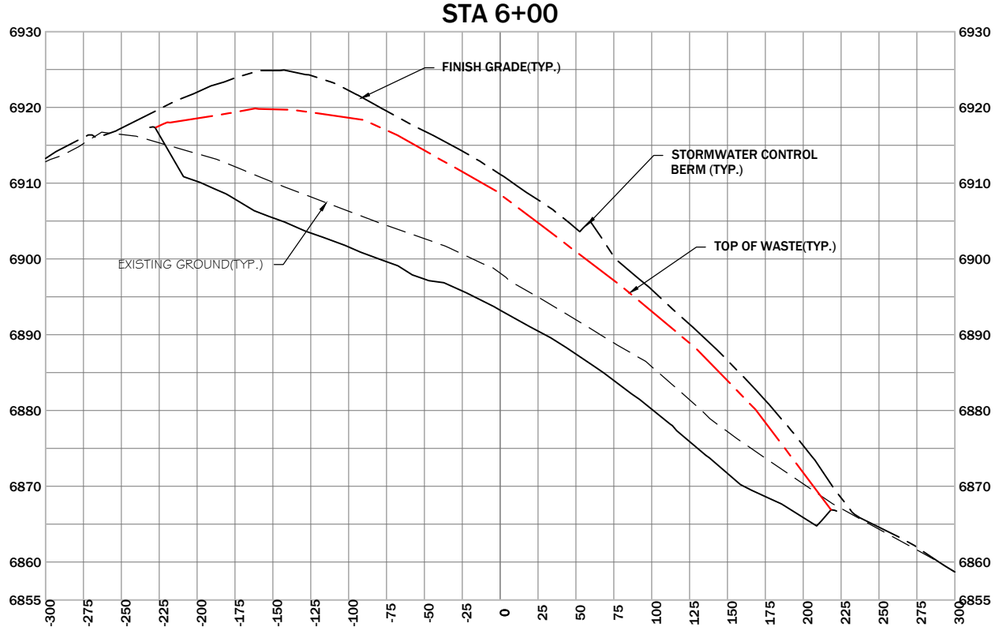
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-11

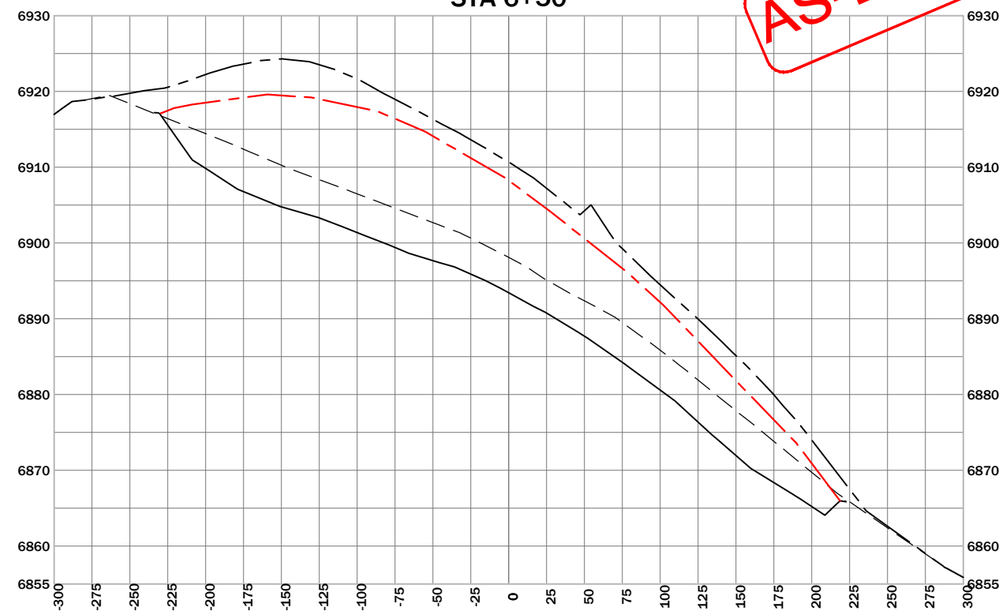
NOTE:
VERTICAL EXAGGERATION = 5X

AS-BUILT

STA 6+00



STA 6+50



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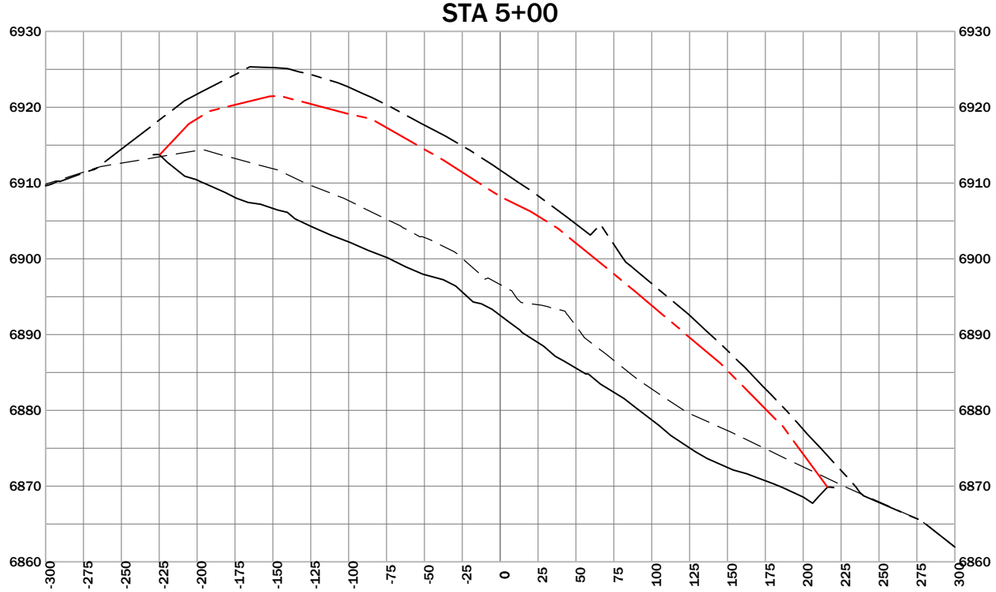

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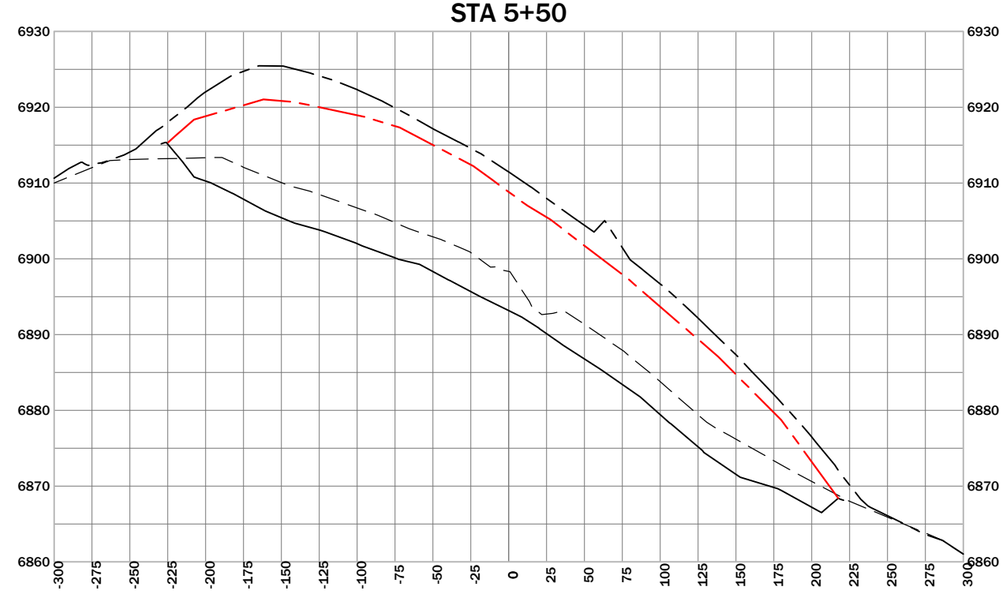

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DRAWN BY: JB/CR
DESIGNED BY: PS
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE: PIONEER

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY
CROSS SECTIONS
STA 5+00 TO 6+50

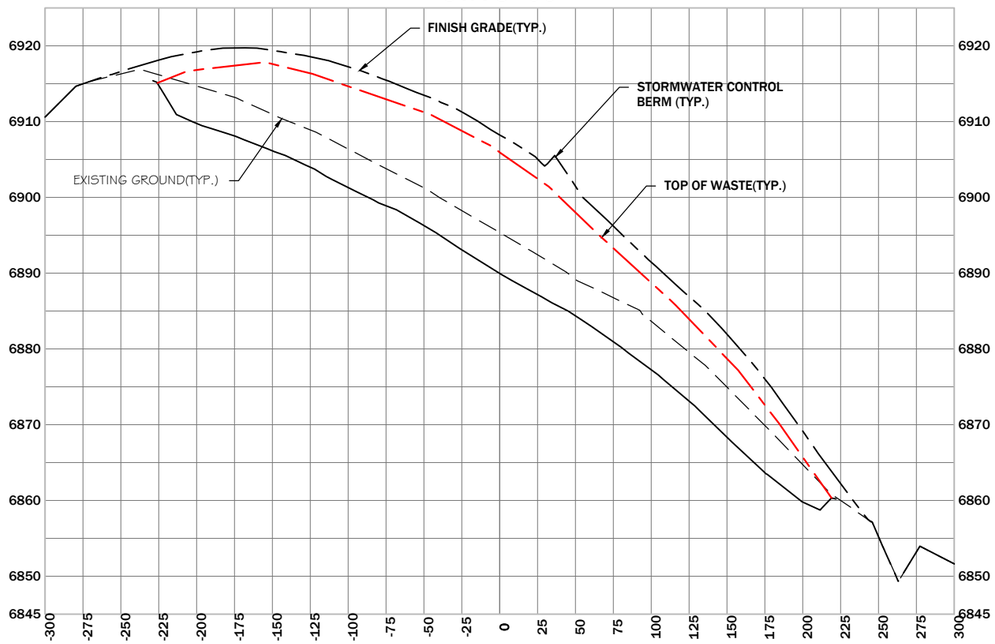
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-12

NOTE:
VERTICAL EXAGGERATION = 5X

AS-BUILT

STA 8+00



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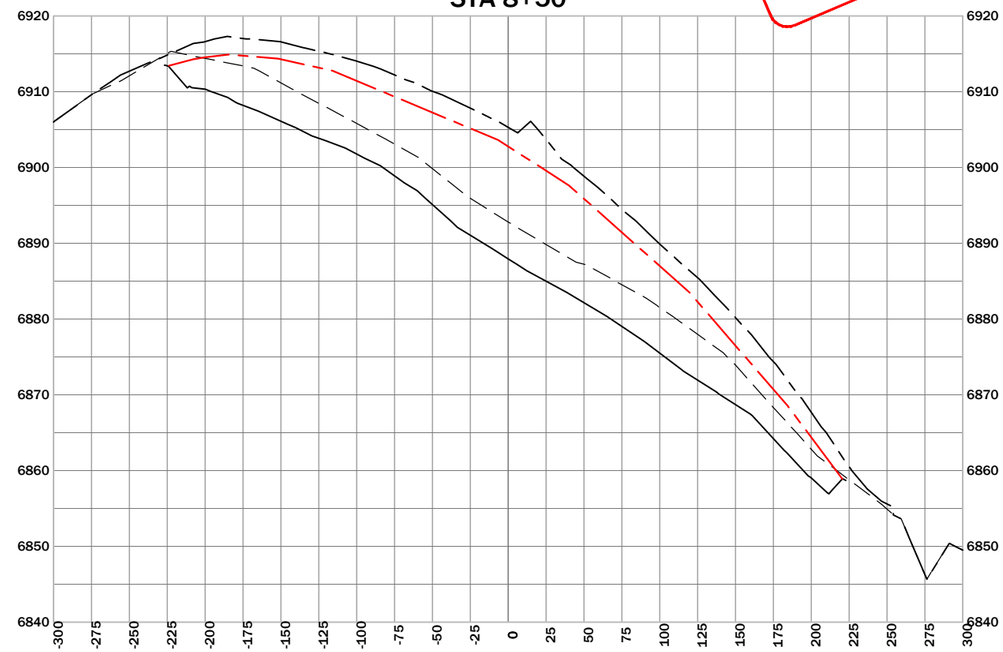
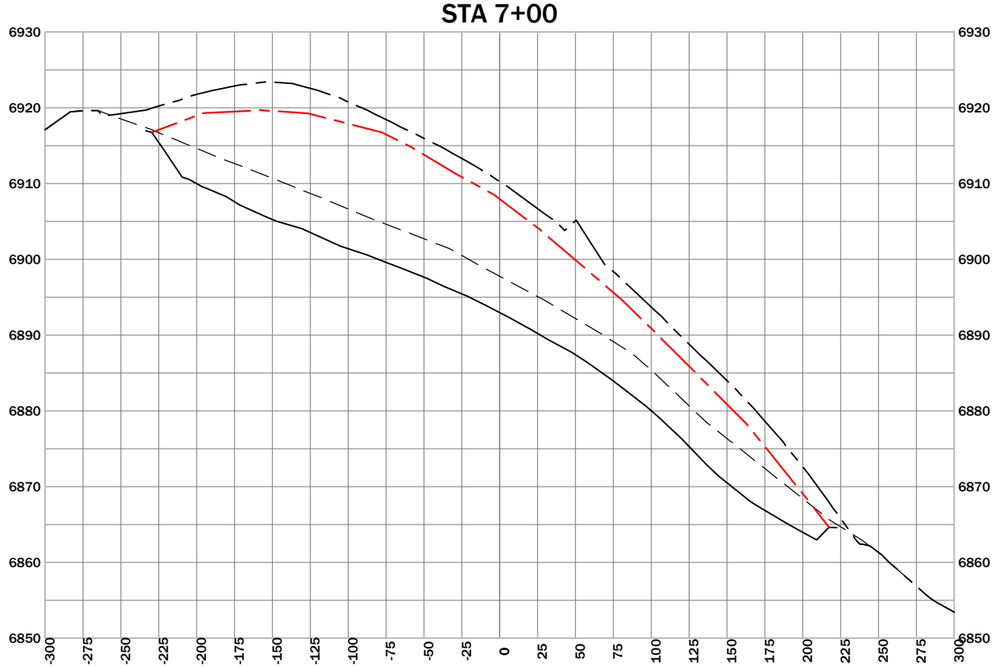


STA 7+00



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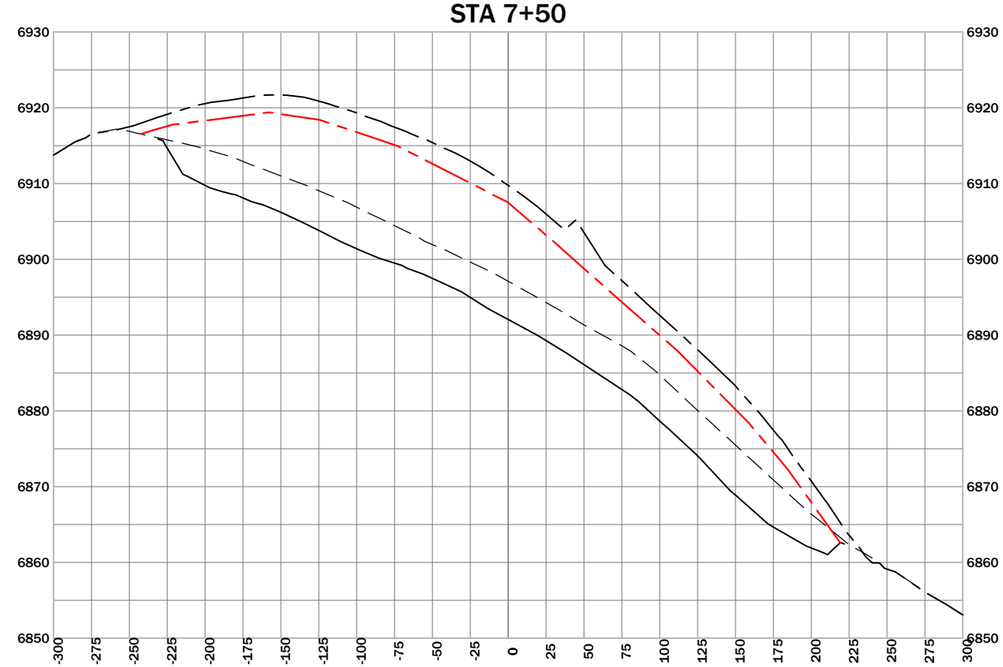

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DRAWN BY: JB/CR
DESIGNED BY: PS
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE: PIONEER

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY
CROSS SECTIONS
STA 7+00 TO 8+50

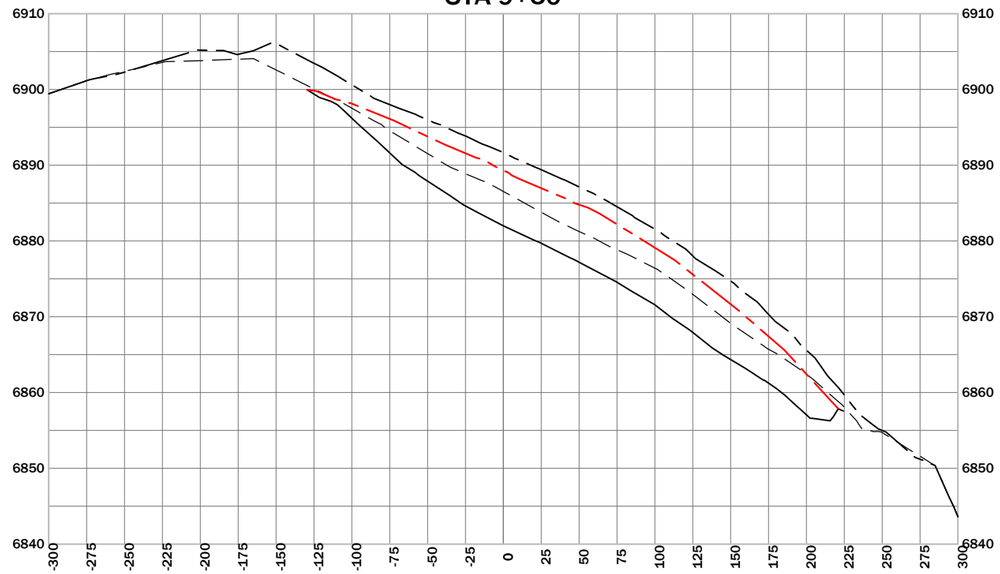
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-13

NOTE:
VERTICAL EXAGGERATION = 5X

AS-BUILT

STA 9+50



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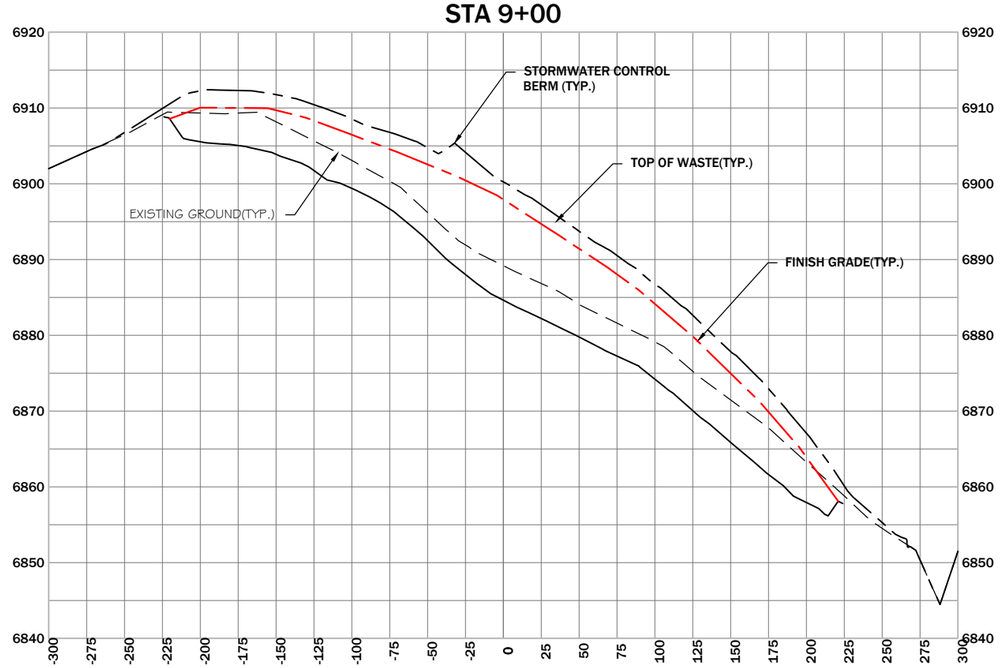

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DRAWN BY: JB/CR
DESIGNED BY: PS
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE: PIONEER

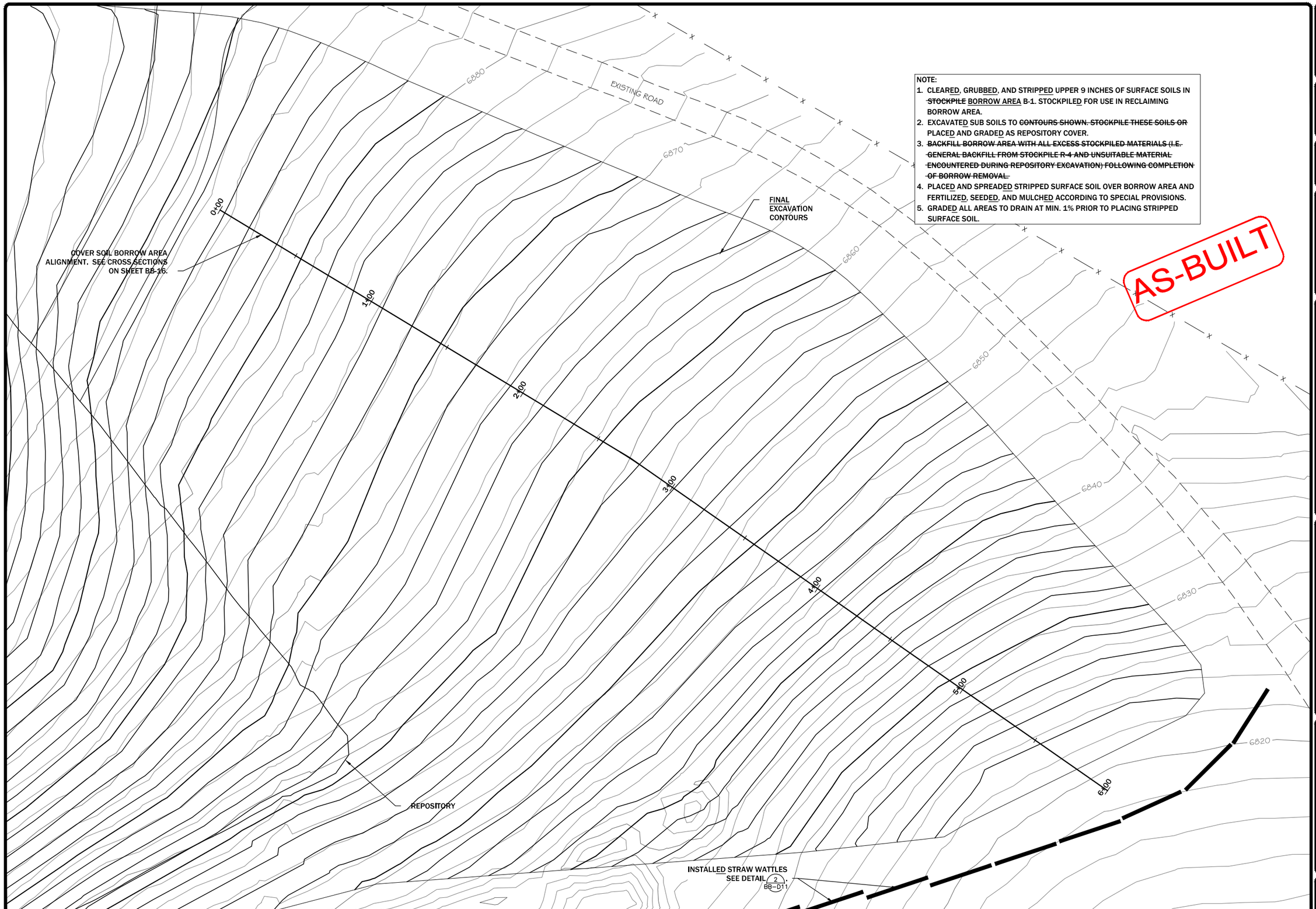
SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY
CROSS SECTIONS
STA 9+00 TO 9+50

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-14



NOTE:

1. CLEARED, GRUBBED, AND STRIPPED UPPER 9 INCHES OF SURFACE SOILS IN ~~STOCKPILE~~ BORROW AREA B-1. STOCKPILED FOR USE IN RECLAIMING BORROW AREA.
2. EXCAVATED SUB SOILS TO ~~CONTOURS SHOWN. STOCKPILE THESE SOILS OR~~ PLACED AND GRADED AS REPOSITORY COVER.
3. ~~BACKFILL BORROW AREA WITH ALL EXCESS STOCKPILED MATERIALS (I.E. GENERAL BACKFILL FROM STOCKPILE R-4 AND UNSUITABLE MATERIAL ENCOUNTERED DURING REPOSITORY EXCAVATION) FOLLOWING COMPLETION OF BORROW REMOVAL.~~
4. PLACED AND SPREADED STRIPPED SURFACE SOIL OVER BORROW AREA AND FERTILIZED, SEEDED, AND MULCHED ACCORDING TO SPECIAL PROVISIONS.
5. GRADED ALL AREAS TO DRAIN AT MIN. 1% PRIOR TO PLACING STRIPPED SURFACE SOIL.

REVISION: DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: TR
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

N

SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

COVER SOIL
BORROW AREA
EXCAVATION PLAN
E 1256800 TO E 1257400

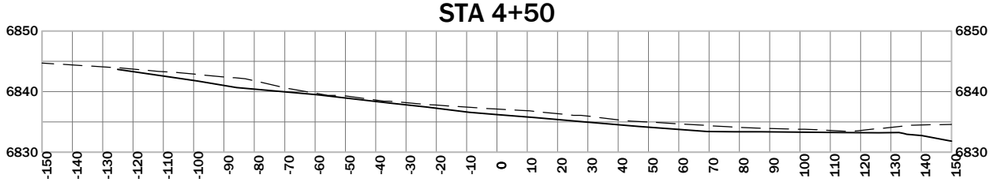
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-15

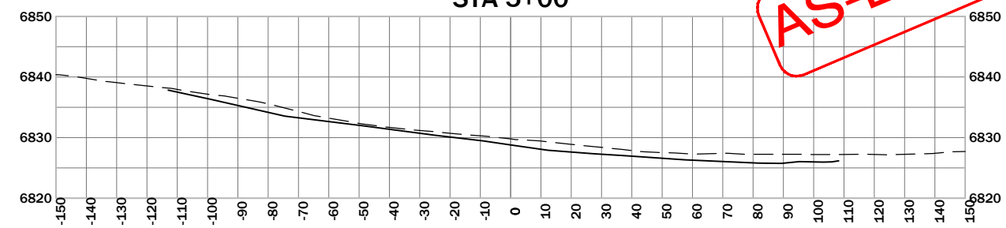
VERTICAL EXAGGERATION = 2X

AS-BUILT

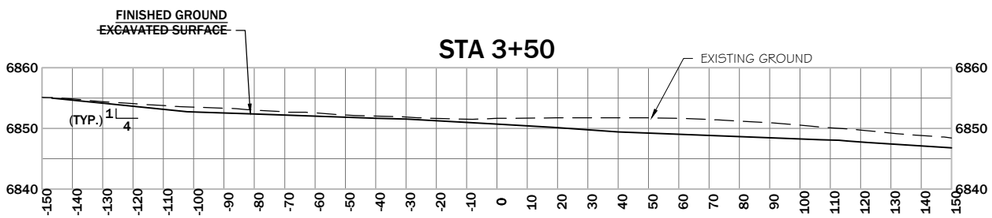
STA 4+50



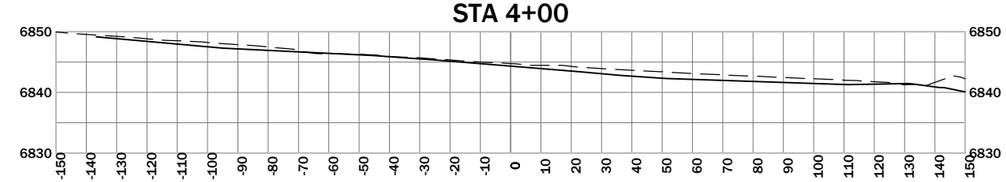
STA 5+00



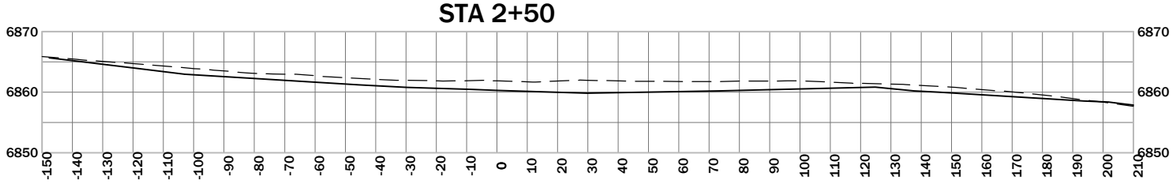
STA 3+50



STA 4+00



STA 2+50



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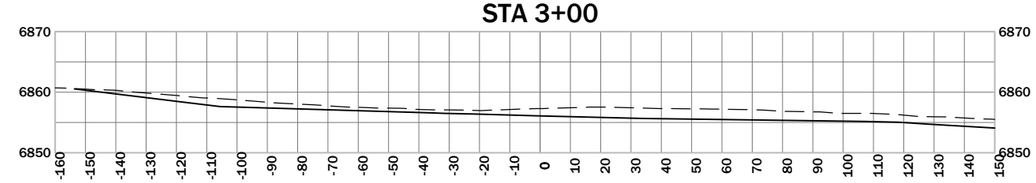
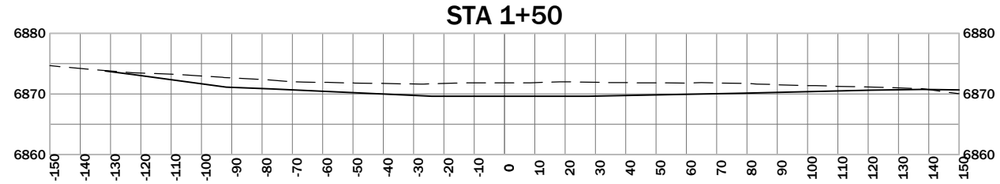


STA 1+50



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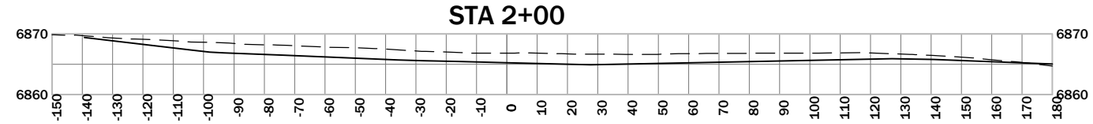
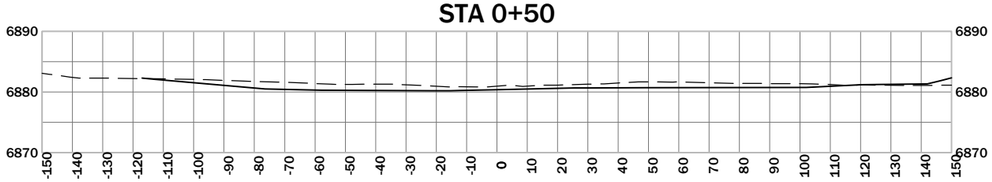


STA 0+50



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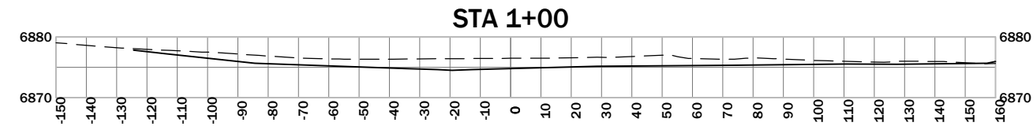

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DRAWN BY: JB/CR
DESIGNED BY: TR
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

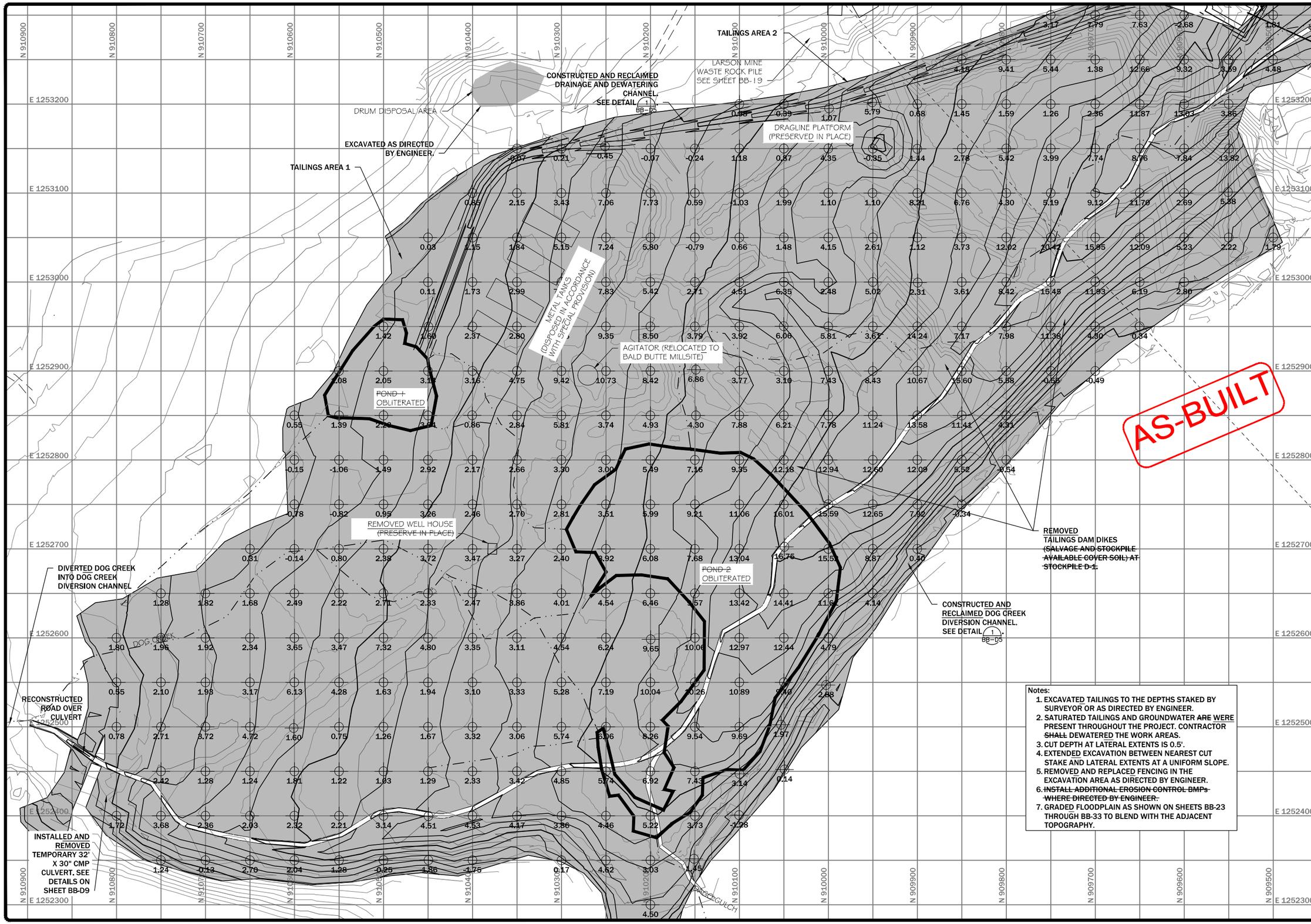
SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

COVER SOIL
BORROW AREA
CROSS SECTIONS
STA 0+50 TO 5+00

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-16



Notes:

1. EXCAVATED TAILINGS TO THE DEPTHS STAKED BY SURVEYOR OR AS DIRECTED BY ENGINEER.
2. SATURATED TAILINGS AND GROUNDWATER ~~ARE~~ WERE PRESENT THROUGHOUT THE PROJECT. CONTRACTOR ~~SHALL~~ DEWATERED THE WORK AREAS.
3. CUT DEPTH AT LATERAL EXTENTS IS 0.5'.
4. EXTENDED EXCAVATION BETWEEN NEAREST CUT STAKE AND LATERAL EXTENTS AT A UNIFORM SLOPE.
5. REMOVED AND REPLACED FENCING IN THE EXCAVATION AREA AS DIRECTED BY ENGINEER.
6. ~~INSTALL ADDITIONAL EROSION CONTROL BMPs WHERE DIRECTED BY ENGINEER.~~
7. GRADED FLOODPLAIN AS SHOWN ON SHEETS BB-23 THROUGH BB-33 TO BLEND WITH THE ADJACENT TOPOGRAPHY.

REVISION:

DATE:	BY:	DESC:
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DRAWN BY:	JB/CR
DESIGNED BY:	JM
CHECKED BY:	TR
APPROVED BY:	TR
PROJECT NO:	10169
DATE:	04-05-2013

DISPLAYED AS:

COORD SYS/ZONE:	MSP
DATUM:	NAD 83
UNITS:	FT
SOURCE:	OLYMPUS/PIONEER

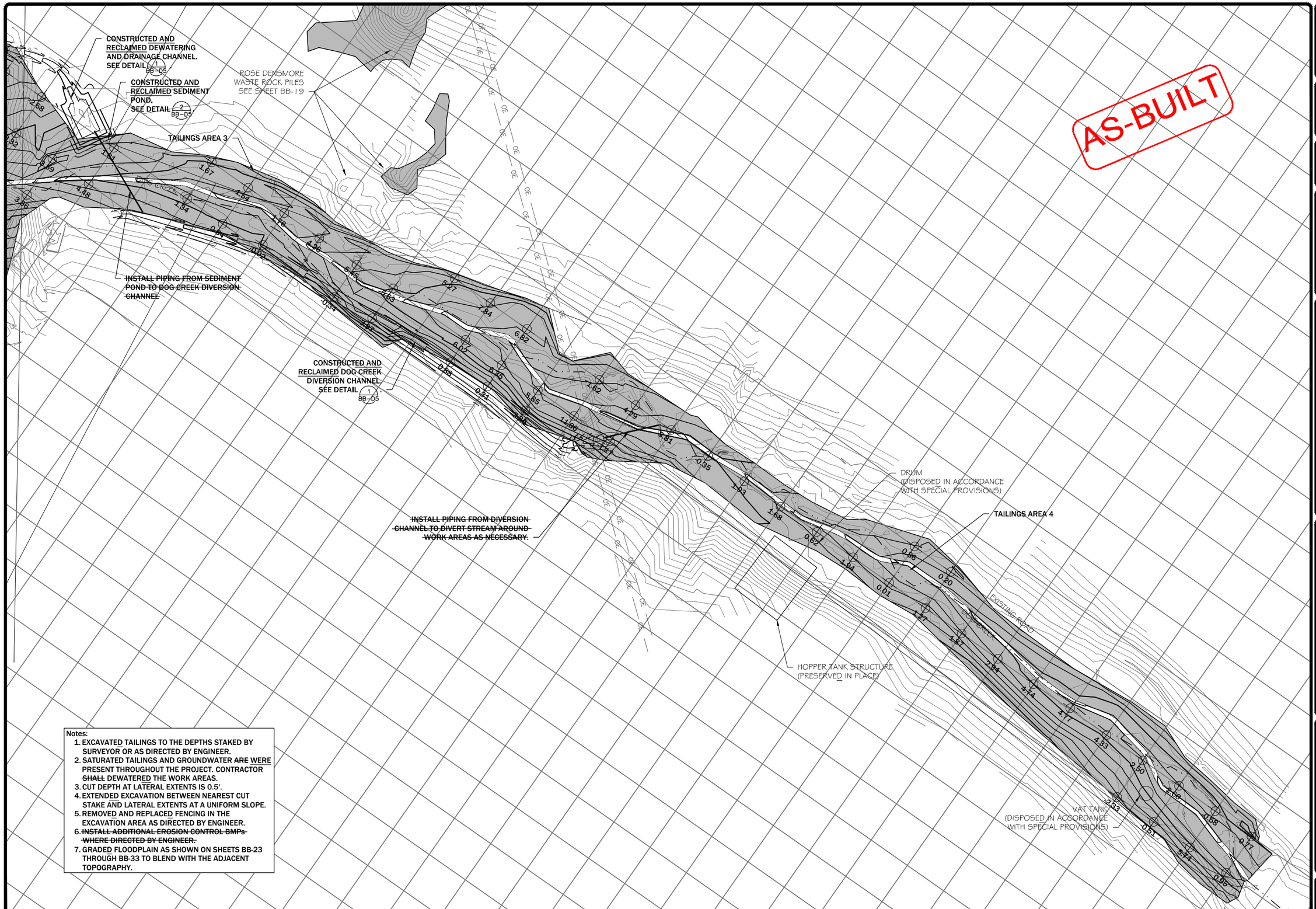
SCALE IN FEET
0 100 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

TAILINGS AREA 1 AND 2
EXCATATION PLAN
N 910900 TO N 909500

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-17



Notes:

1. EXCAVATED TAILINGS TO THE DEPTHS STAKED BY SURVEYOR OR AS DIRECTED BY ENGINEER.
2. SATURATED TAILINGS AND GROUNDWATER ~~ARE~~ WERE PRESENT THROUGHOUT THE PROJECT. CONTRACTOR ~~SHALL~~ DEWATERED THE WORK AREAS.
3. CUT DEPTH AT LATERAL EXTENTS IS 0.5'.
4. EXTENDED EXCAVATION BETWEEN NEAREST CUT STAKE AND LATERAL EXTENTS AT A UNIFORM SLOPE.
5. REMOVED AND REPLACED FENCING IN THE EXCAVATION AREA AS DIRECTED BY ENGINEER.
6. ~~INSTALL ADDITIONAL EROSION CONTROL BMPs WHERE DIRECTED BY ENGINEER.~~
7. GRADED FLOODPLAIN AS SHOWN ON SHEETS BB-23 THROUGH BB-33 TO BLEND WITH THE ADJACENT TOPOGRAPHY.

REVISION:

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DRAWN BY: JB/CR
DESIGNED BY: JM
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

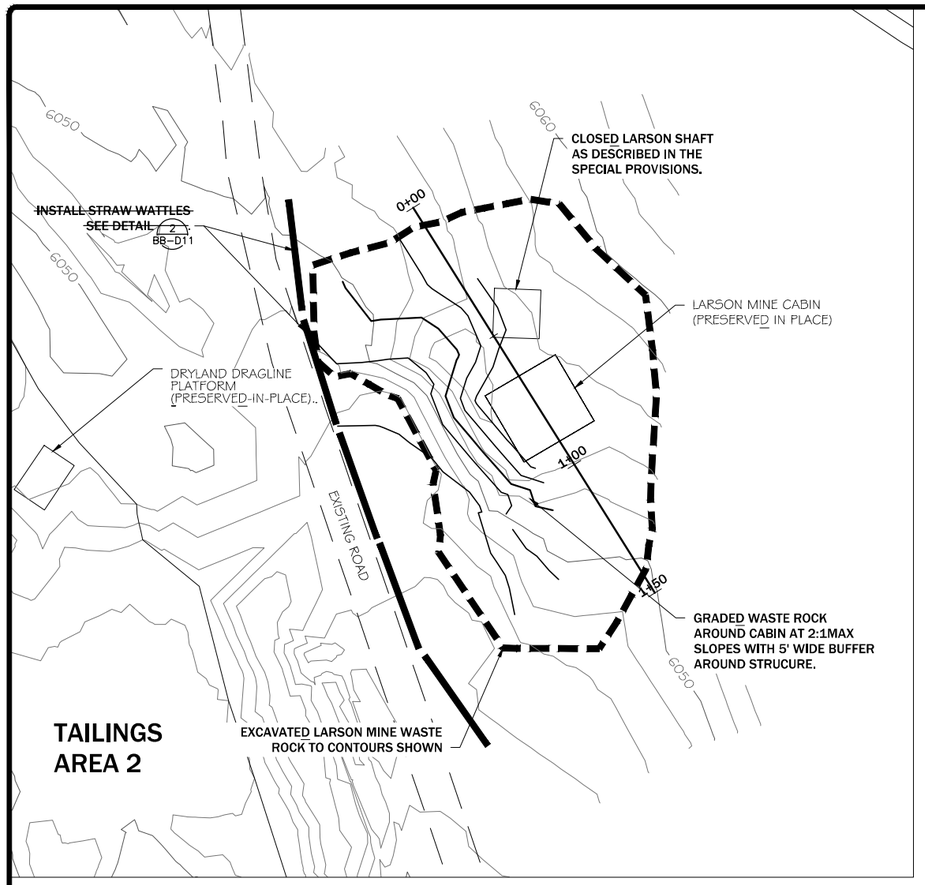
SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

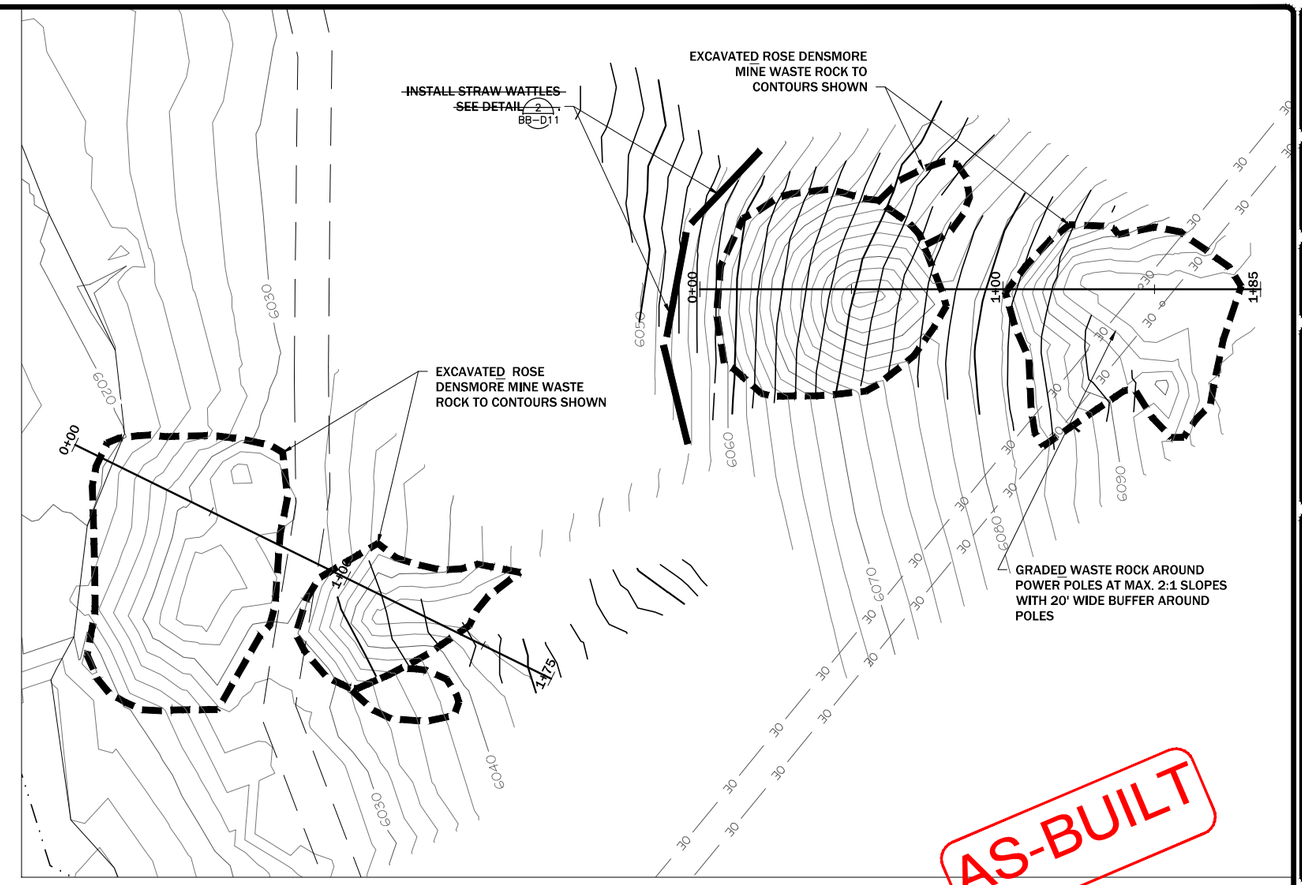
TAILINGS AREA 3 AND 4
EXCAVATION PLAN
N 909600 TO N 907900

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

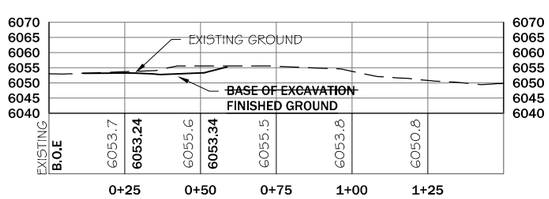
SHEET
BB-18

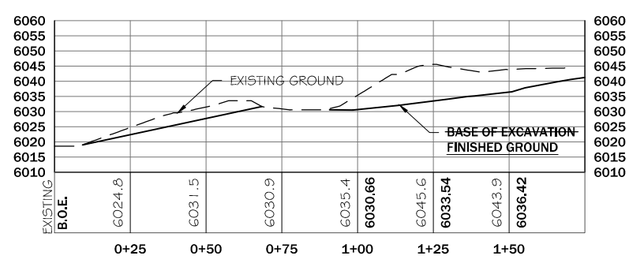


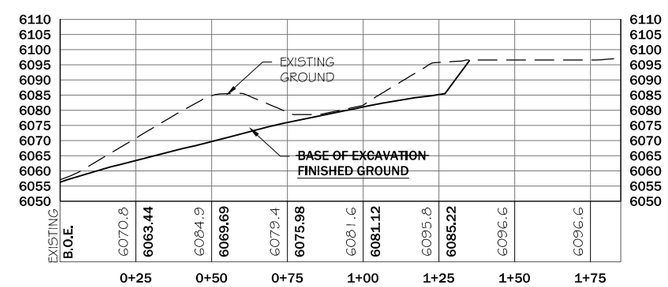
TAILINGS AREA 2



AS-BUILT







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DRAWN BY:	JB/CR
DESIGNED BY:	JM
CHECKED BY:	TR
APPROVED BY:	TR
PROJECT NO:	10169
DATE:	04-05-2013

DISPLAYED AS:

COORD SYS/ZONE:	MSP
DATUM:	NAD 83
UNITS:	FT
SOURCE:	OLYMPUS/PIONEER

N

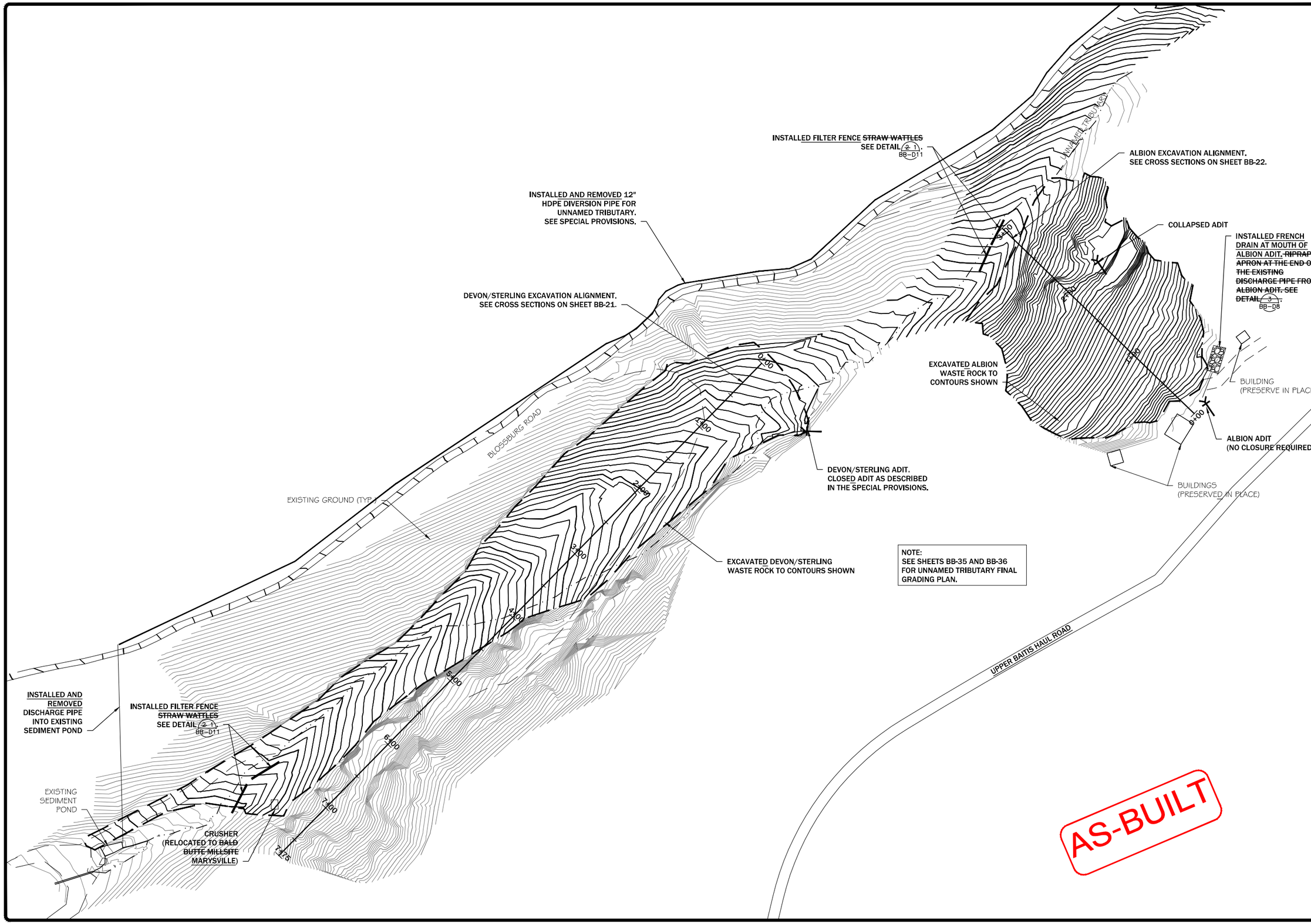
SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

LARSON AND ROSE DENSMORE EXCAVATION PLAN & PROFILE

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-19



REVISION:		
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DRAWN BY:	JB/CR
DESIGNED BY:	PS
CHECKED BY:	TR
APPROVED BY:	TR
PROJECT NO:	10169
DATE:	04-05-2013

DISPLAYED AS:	
COORD SYS/ZONE:	MSP
DATUM:	NAD 83
UNITS:	FT
SOURCE:	OLYMPUS/PIONEER

N

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

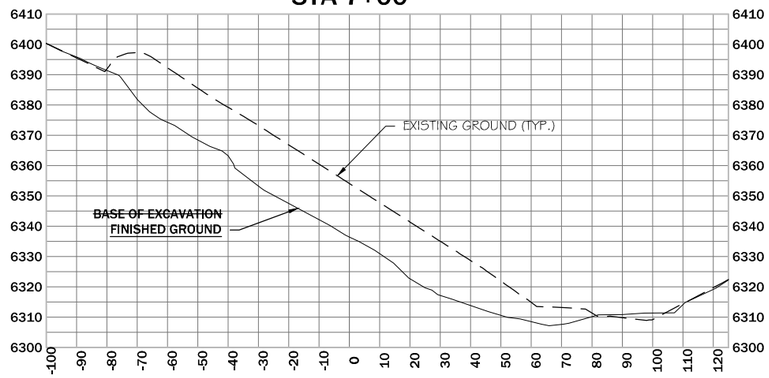
DEVON/STERLING & ALBIONS AREAS WASTE ROCK EXCAVATION PLAN

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-20

AS-BUILT

STA 7+00



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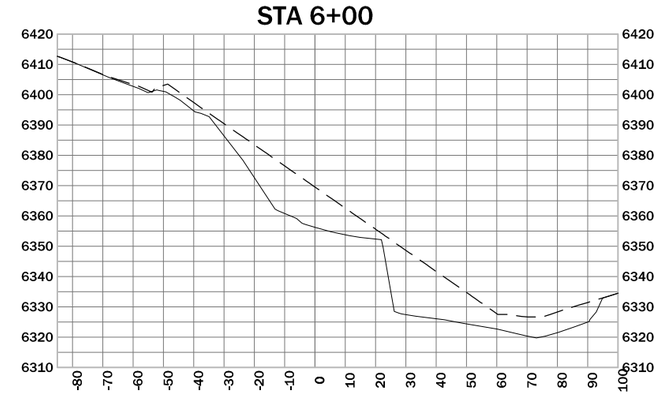
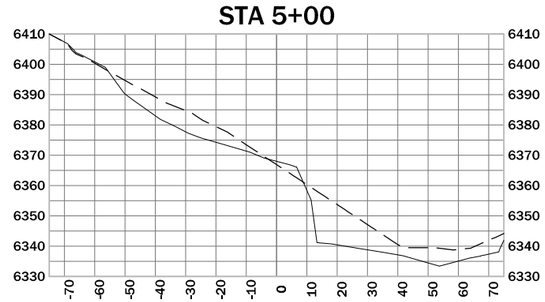


STA 5+00



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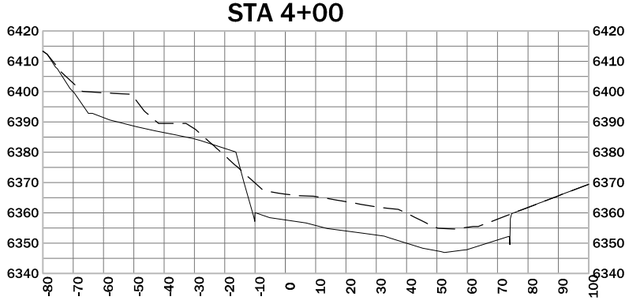

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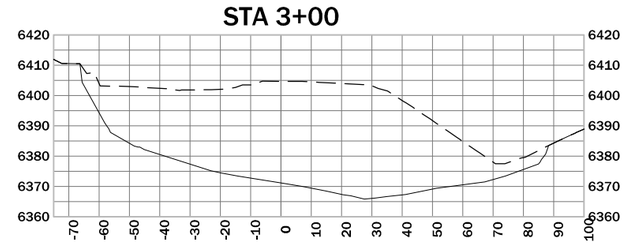

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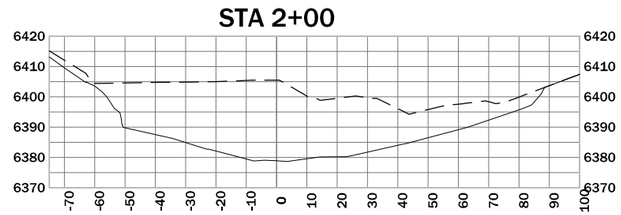

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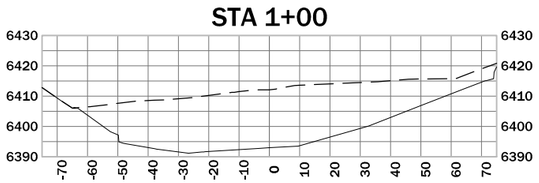

REVISION:		
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DRAWN BY: JB/CR
DESIGNED BY: JB
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: PIONEER

N

SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DEVON/STERLING
WASTE ROCK
CROSS SECTIONS
STA 1+00 TO 7+00

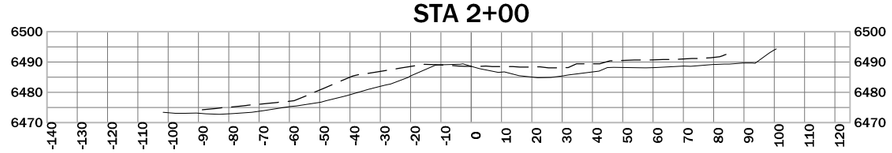
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-21

AS-BUILT

STA 2+50

STA 2+00



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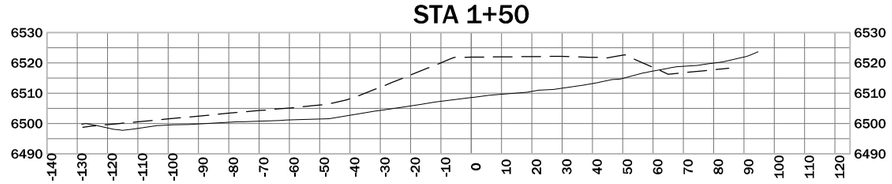

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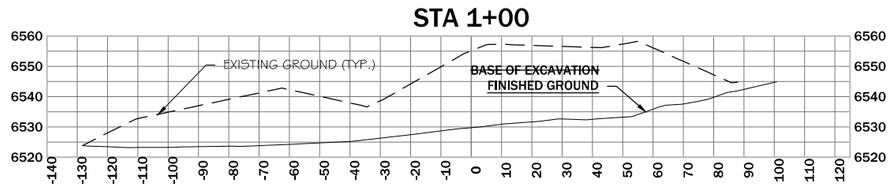
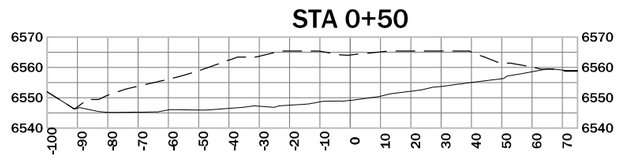


STA 0+50



REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: JB
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: PIONEER

N

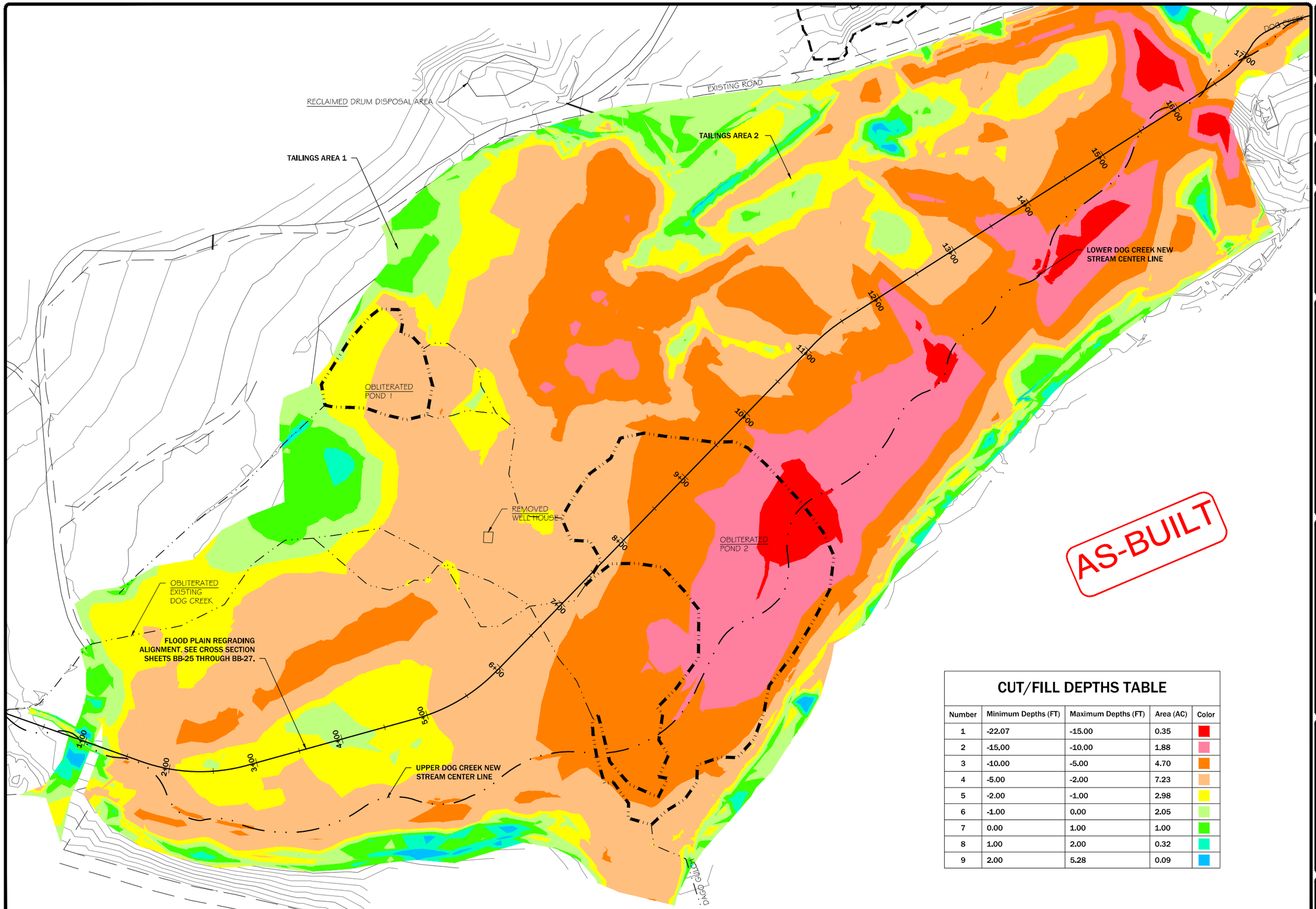
SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

ALBION
WASTE ROCK
CROSS SECTIONS
STA 0+50 TO 2+50

PIONEER
TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-22



CUT/FILL DEPTHS TABLE

Number	Minimum Depths (FT)	Maximum Depths (FT)	Area (AC)	Color
1	-22.07	-15.00	0.35	
2	-15.00	-10.00	1.88	
3	-10.00	-5.00	4.70	
4	-5.00	-2.00	7.23	
5	-2.00	-1.00	2.98	
6	-1.00	0.00	2.05	
7	0.00	1.00	1.00	
8	1.00	2.00	0.32	
9	2.00	5.28	0.09	

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: AW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

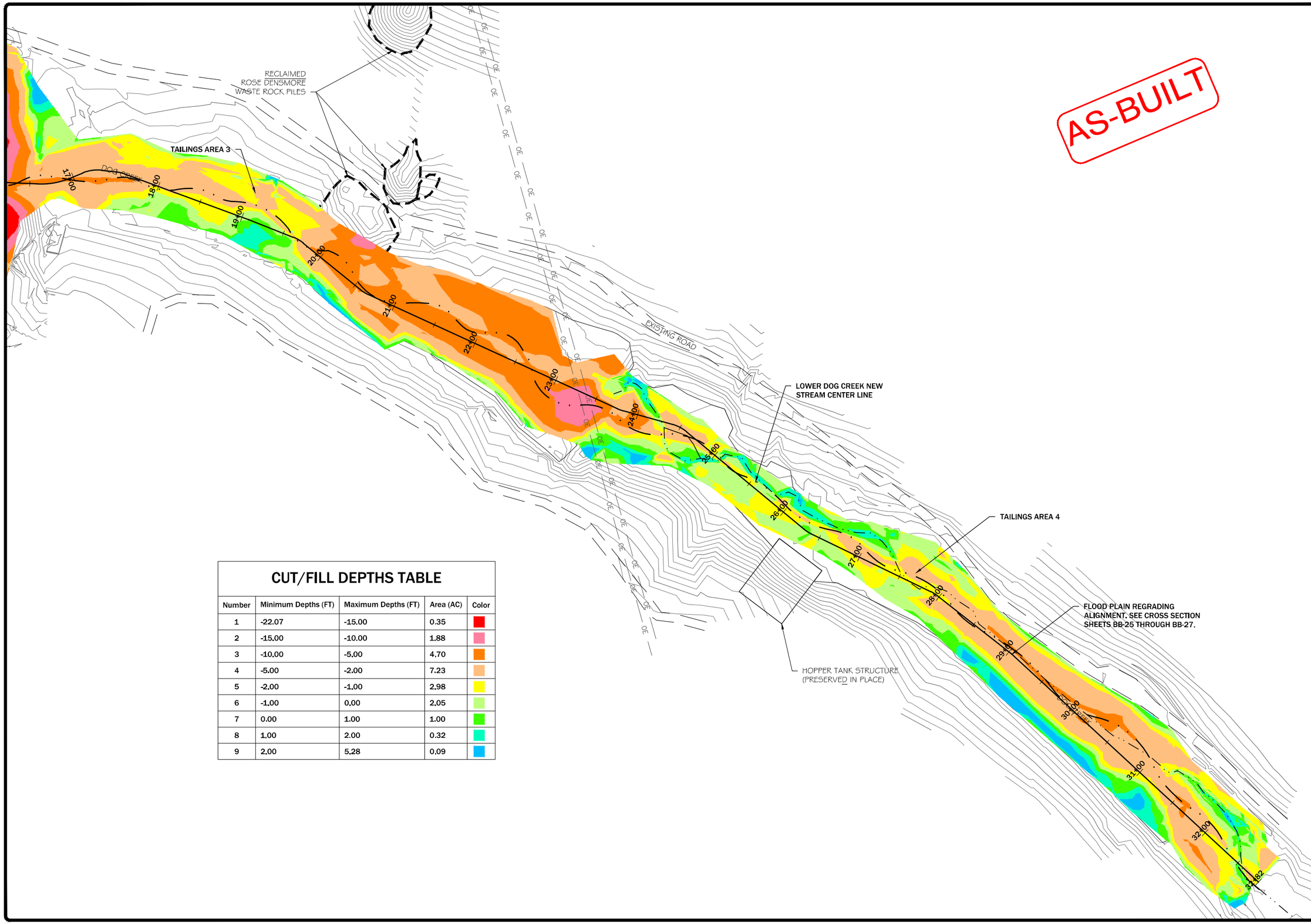
SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DOG CREEK
FLOOD PLAIN
REGRADING PLAN
CUTS AND FILLS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-23



AS-BUILT

CUT/FILL DEPTHS TABLE

Number	Minimum Depths (FT)	Maximum Depths (FT)	Area (AC)	Color
1	-22.07	-15.00	0.35	
2	-15.00	-10.00	1.88	
3	-10.00	-5.00	4.70	
4	-5.00	-2.00	7.23	
5	-2.00	-1.00	2.98	
6	-1.00	0.00	2.05	
7	0.00	1.00	1.00	
8	1.00	2.00	0.32	
9	2.00	5.28	0.09	

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: AW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

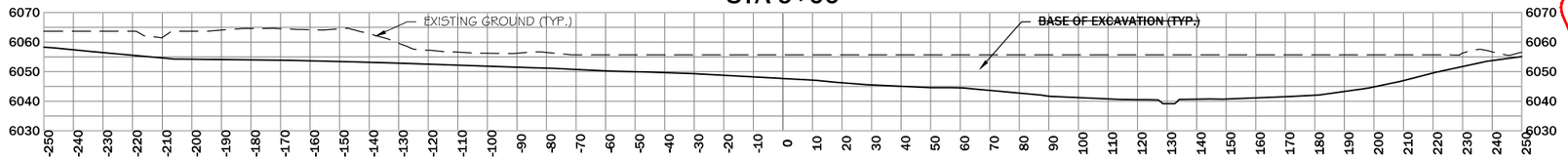
DOG CREEK
FLOOD PLAIN
REGRADING PLAN
CUT AND FILLS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

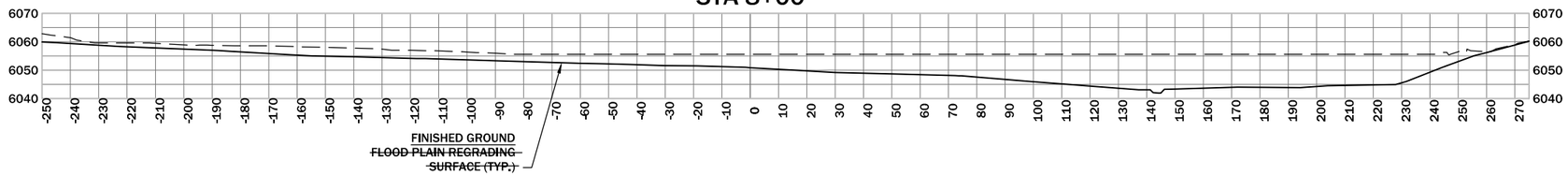
SHEET
BB-24

AS-BUILT

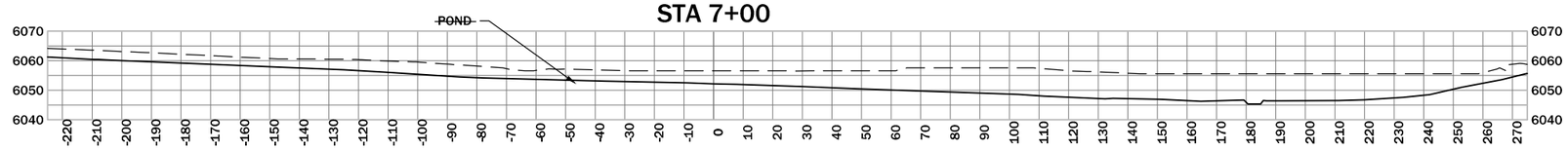
STA 9+00



STA 8+00



STA 7+00



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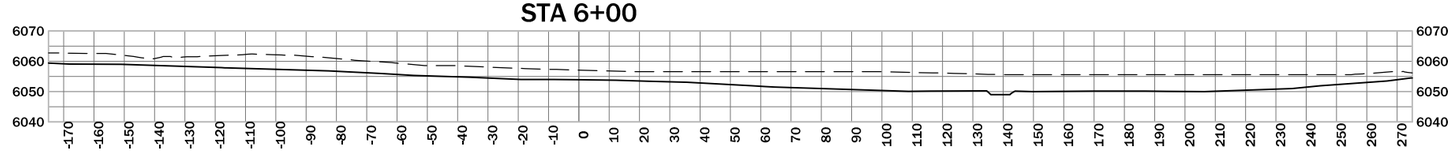

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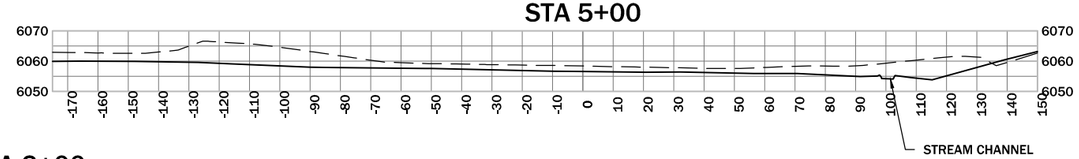
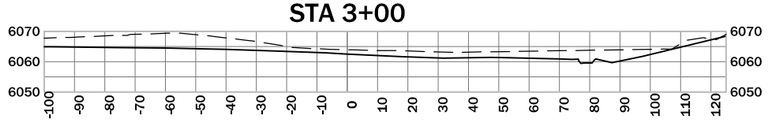


STA 3+00



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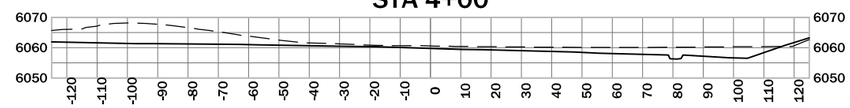
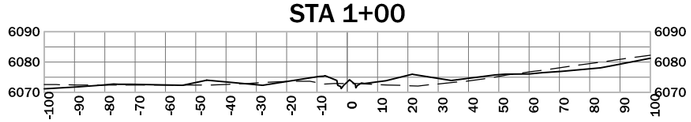


STA 1+00



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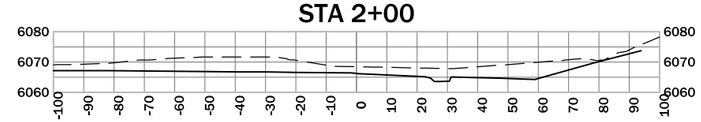

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

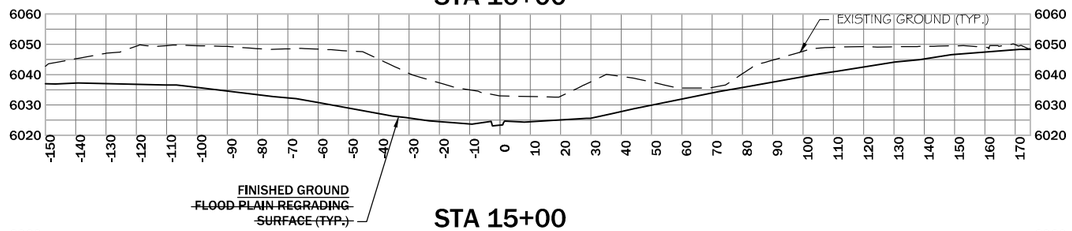
EXCAVATION AND
REGRADING
CROSS SECTIONS
STA 1+00 TO 9+00

PIONEER
TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

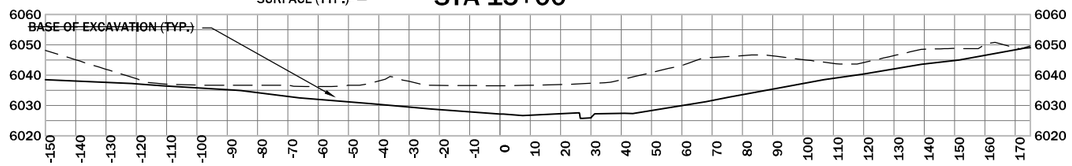
SHEET
BB-25

AS-BUILT

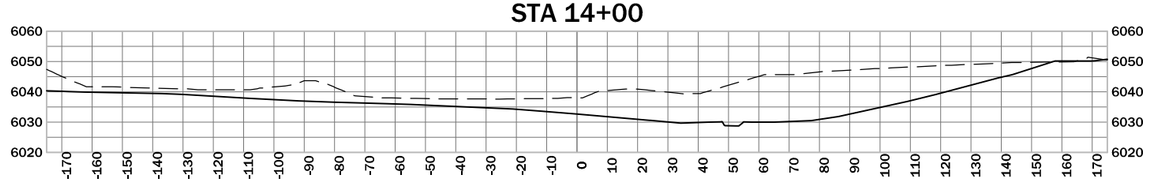
STA 16+00



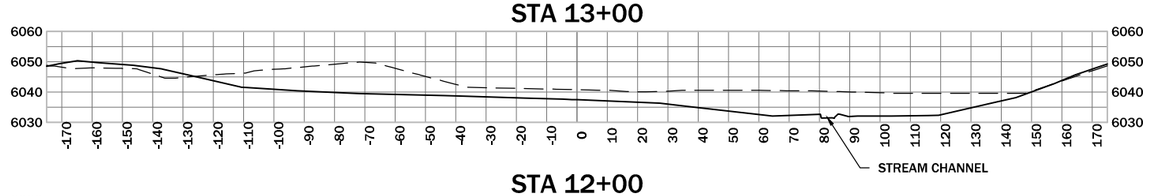
STA 15+00



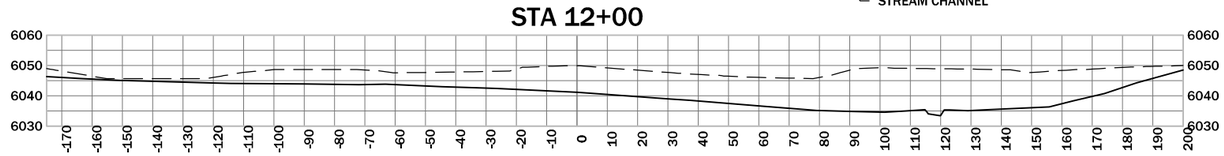
STA 14+00



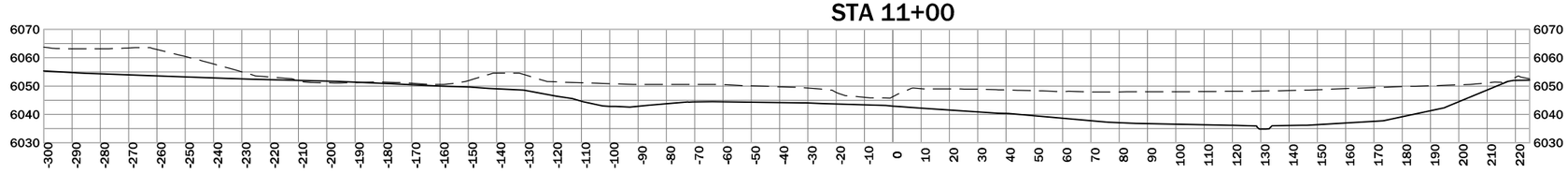
STA 13+00



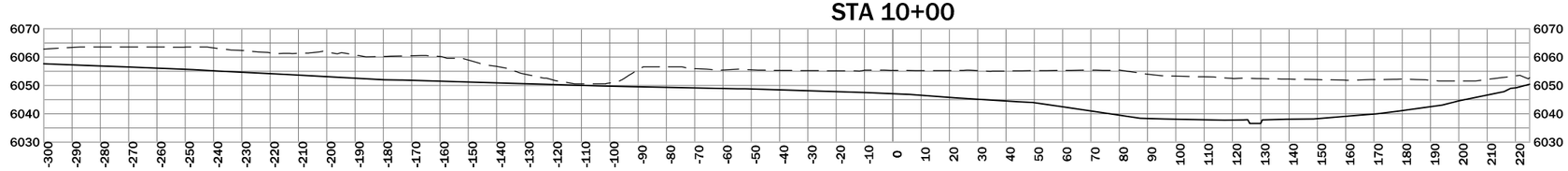
STA 12+00



STA 11+00



STA 10+00



REVISION: DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

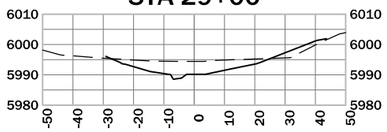
EXCAVATION AND REGRADING CROSS SECTIONS STA 10+00 TO 16+00

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

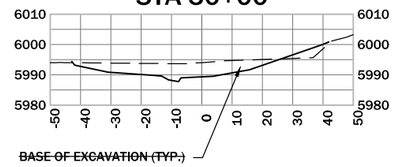
SHEET
BB-26

AS-BUILT

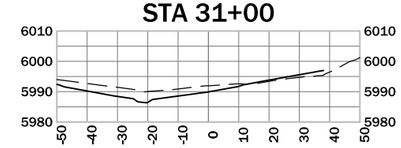
STA 29+00



STA 30+00



STA 31+00



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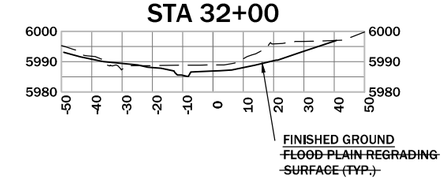
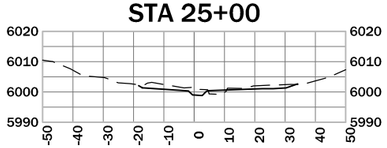
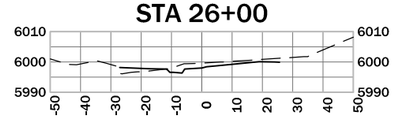


STA 25+00



STA 26+00



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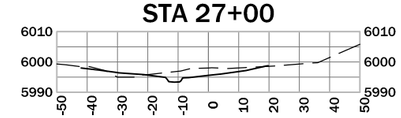
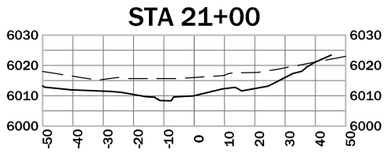
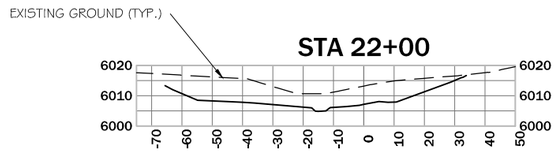


STA 28+00

STA 21+00



STA 22+00



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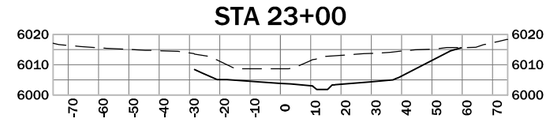
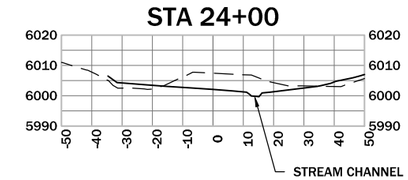
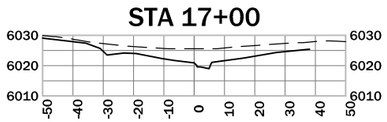


STA 24+00



STA 17+00



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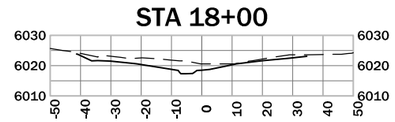

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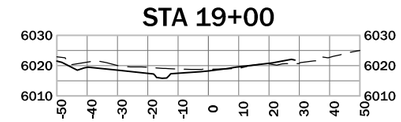
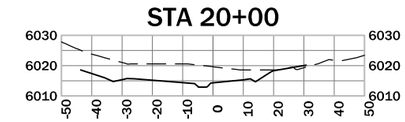


STA 20+00



REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

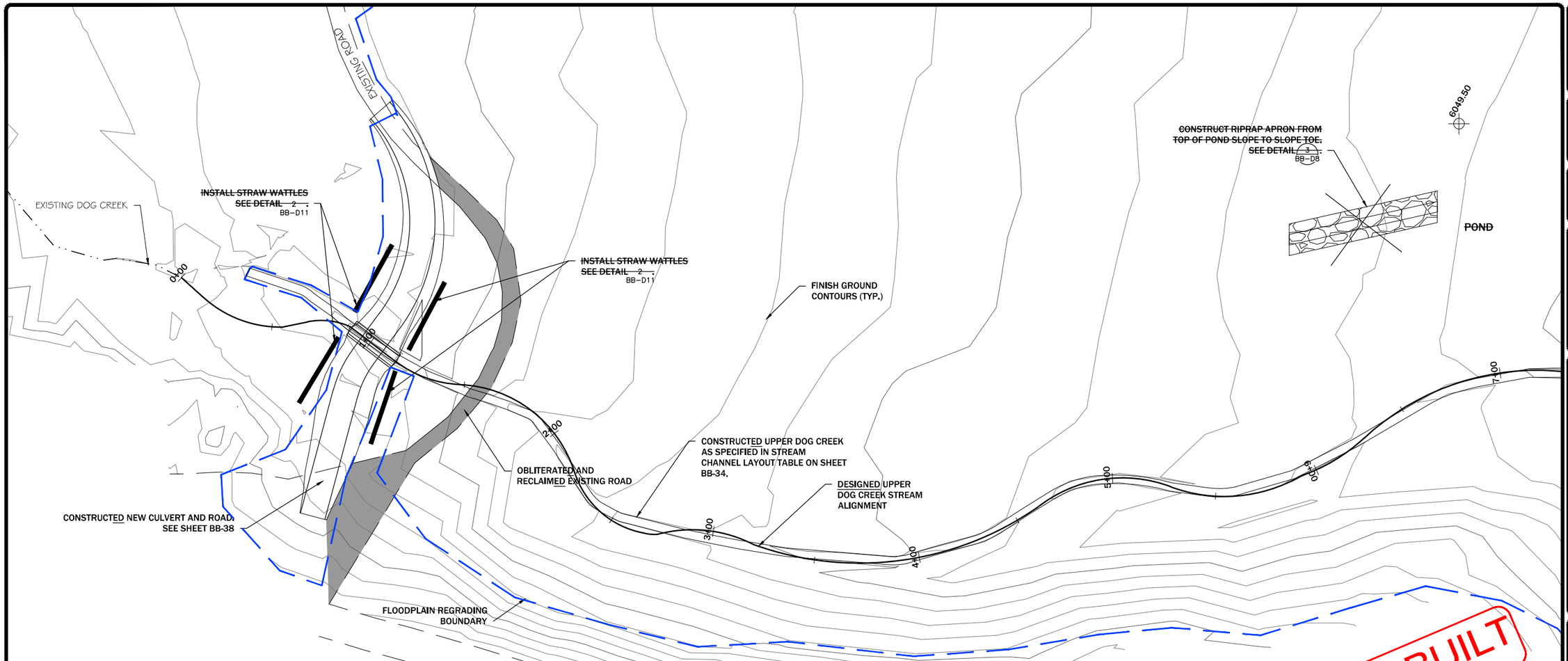
SCALE IN FEET
0 25 50

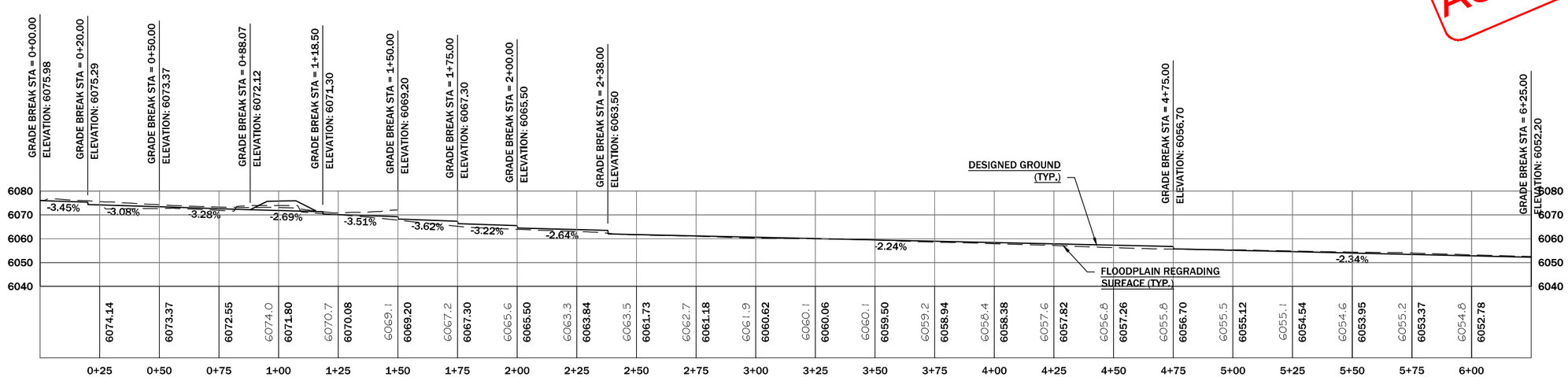
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

EXCAVATION AND
REGRADING
CROSS SECTIONS
STA 17+00 TO 32+00

PIONEER
TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-27





REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: TW
CHECKED BY: TW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: PIONEER

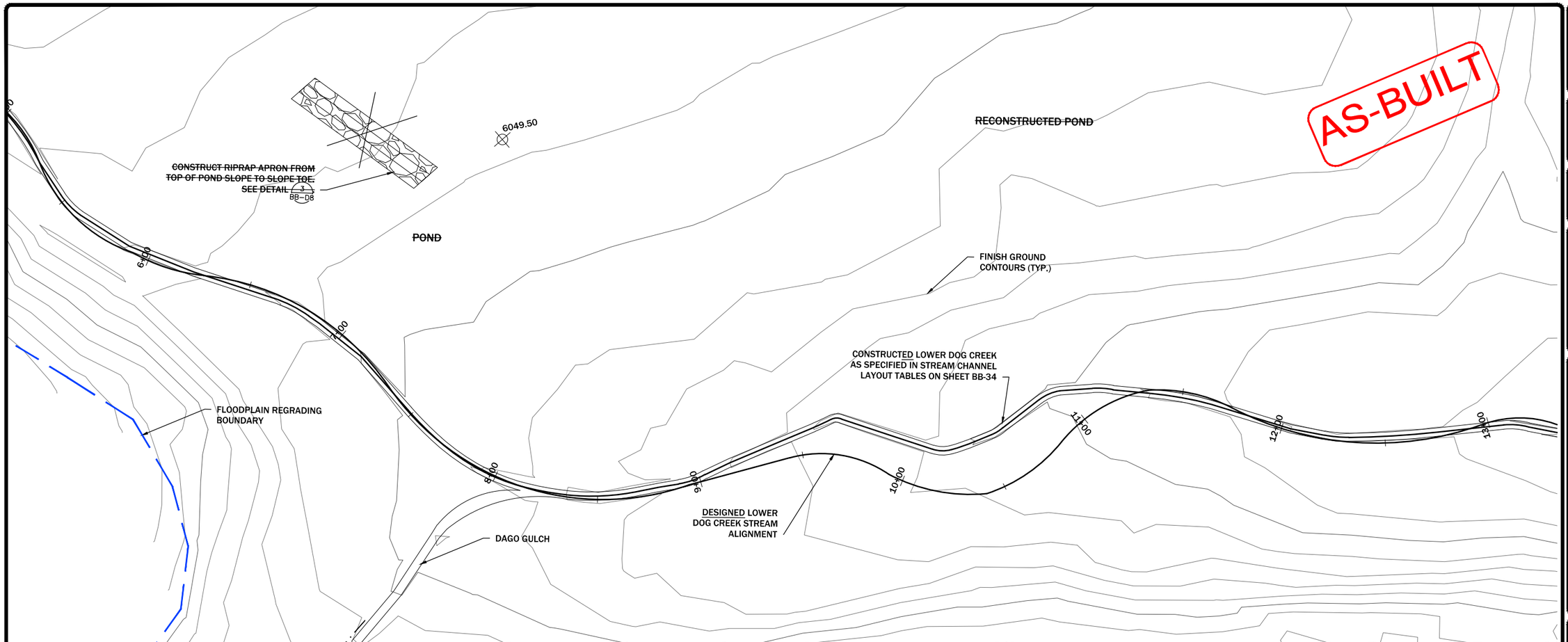
SCALE IN FEET
0 25 50

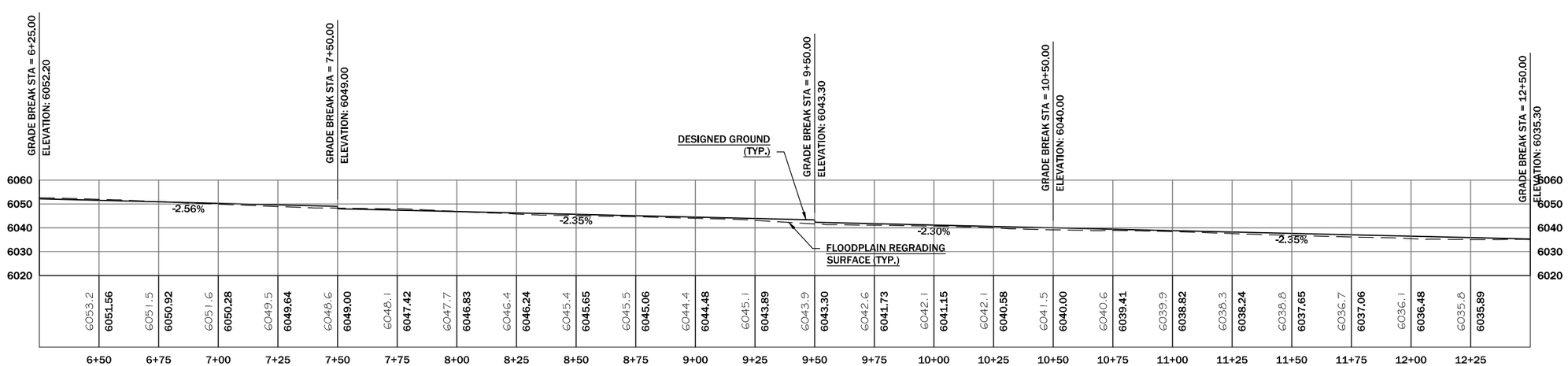
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

UPPER DOG CREEK
FLOOD PLAIN AND
CHANNEL PROFILE
STA 0+00 TO 6+50

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-28





REVISION:		
DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: TW
CHECKED BY: TW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: PIONEER

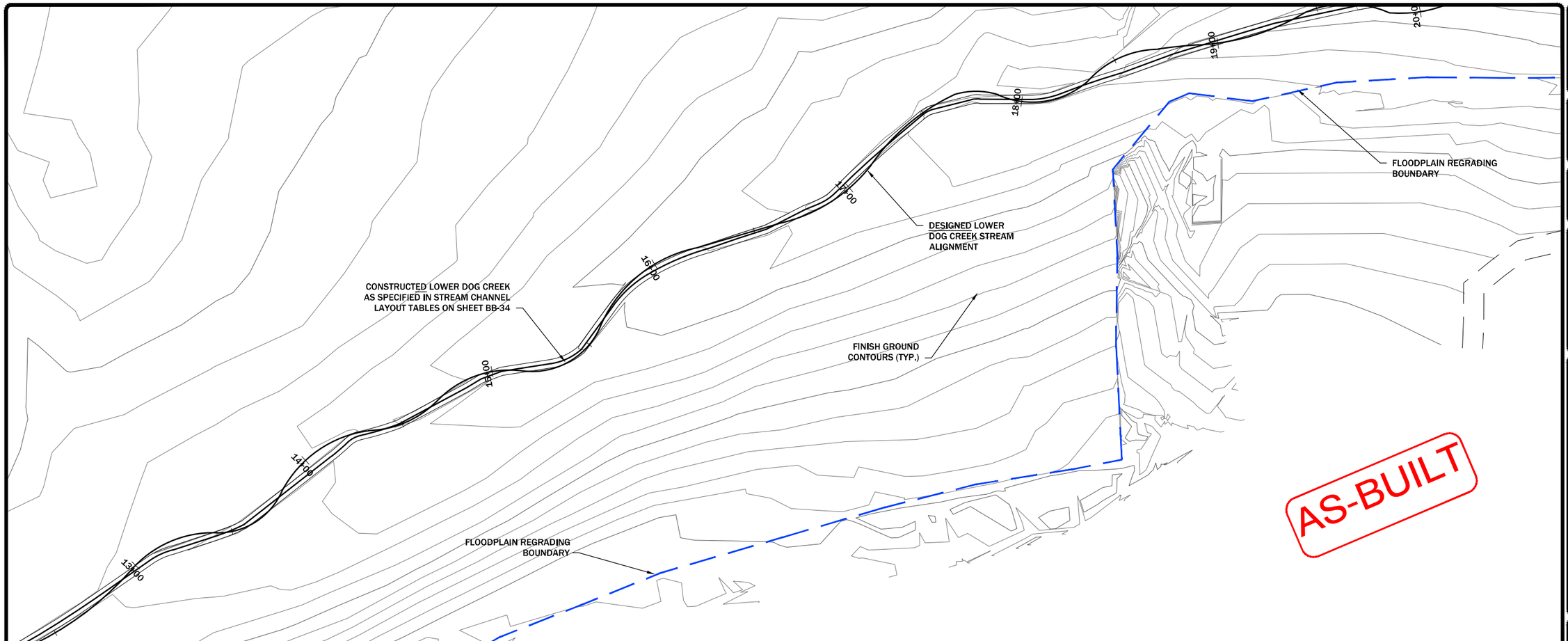
SCALE IN FEET
0 25 50

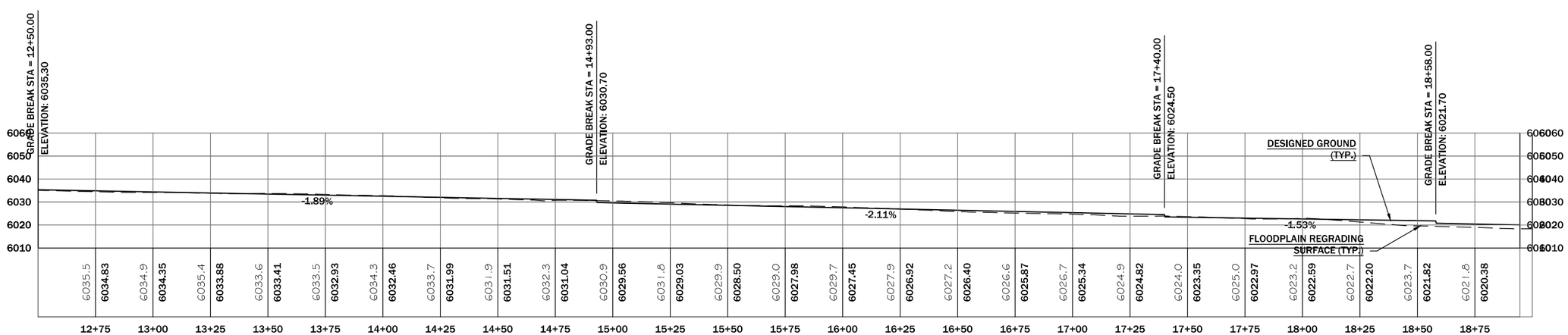
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

LOWER DOG CREEK
FLOOD PLAIN AND
CHANNEL PROFILE
STA 0+00 TO 6+00

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-29





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DRAWN BY: JB/CR
DESIGNED BY: TW
CHECKED BY: TW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: PIONEER

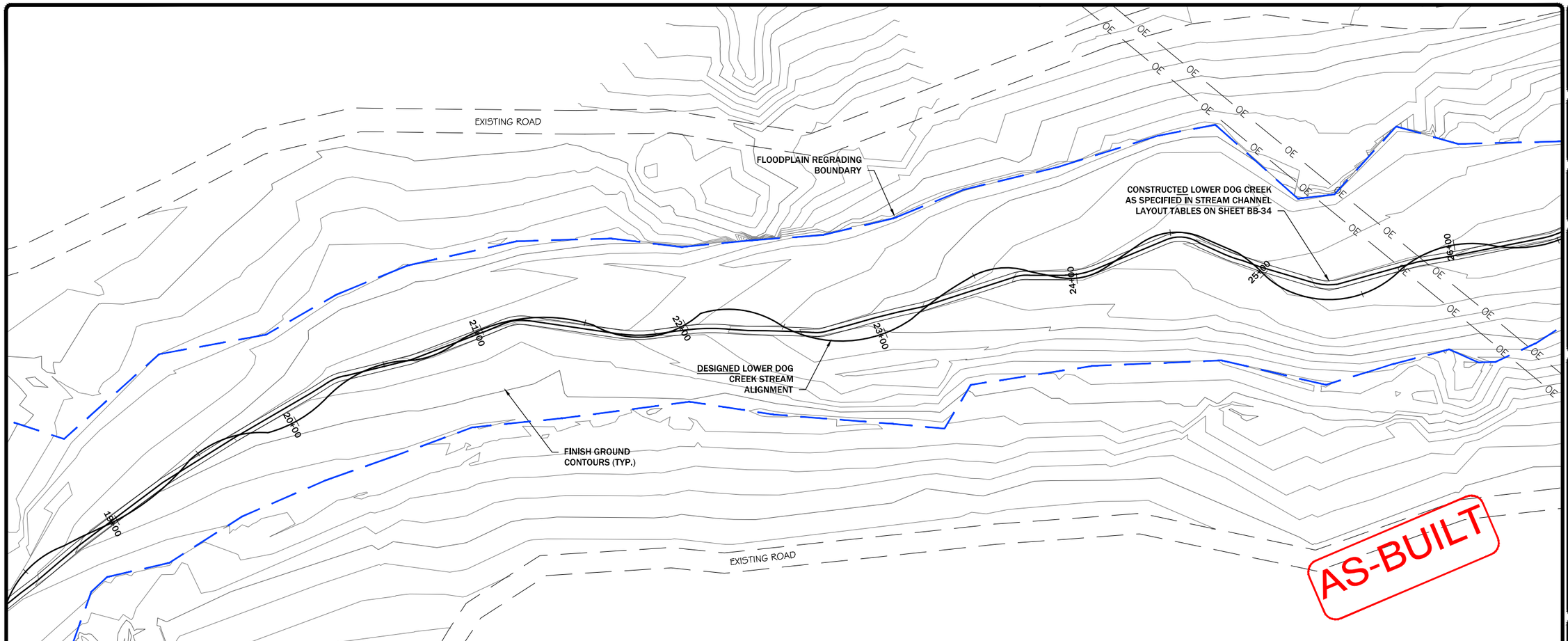
SCALE IN FEET
0 25 50

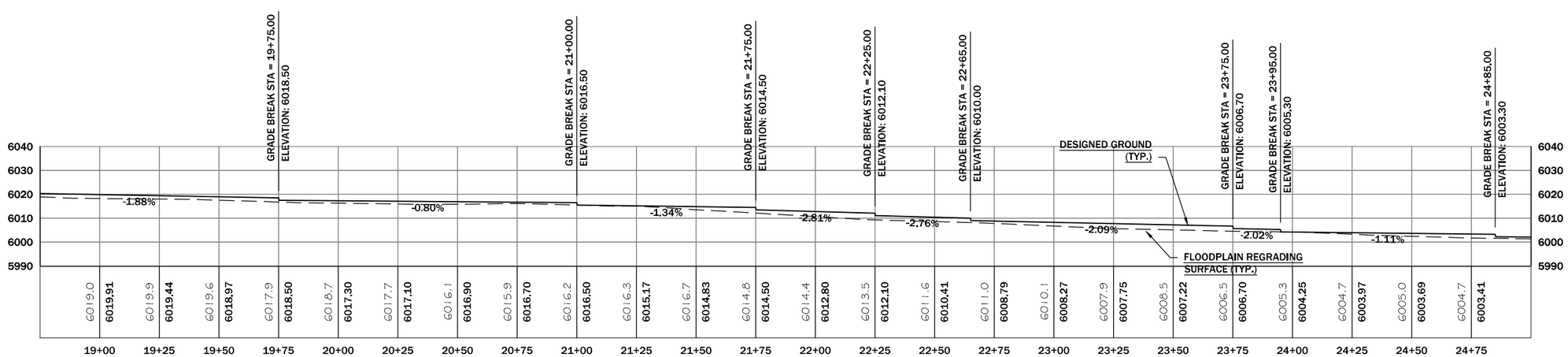
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

LOWER DOG CREEK
FLOOD PLAIN AND
CHANNEL PROFILE
STA 6+25 TO 12+25

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-30





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DATUM:	NAD 83
UNITS:	FT
SOURCE:	PIONEER

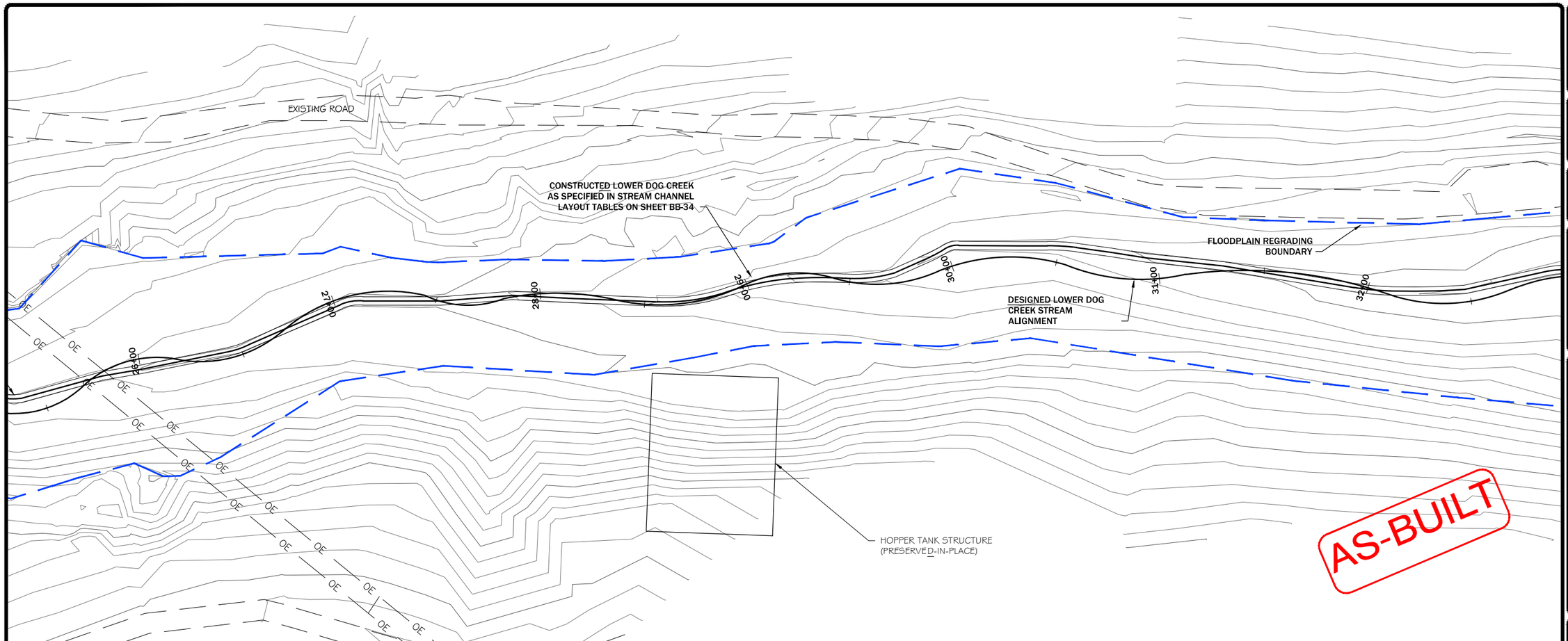
SCALE IN FEET
0 25 50

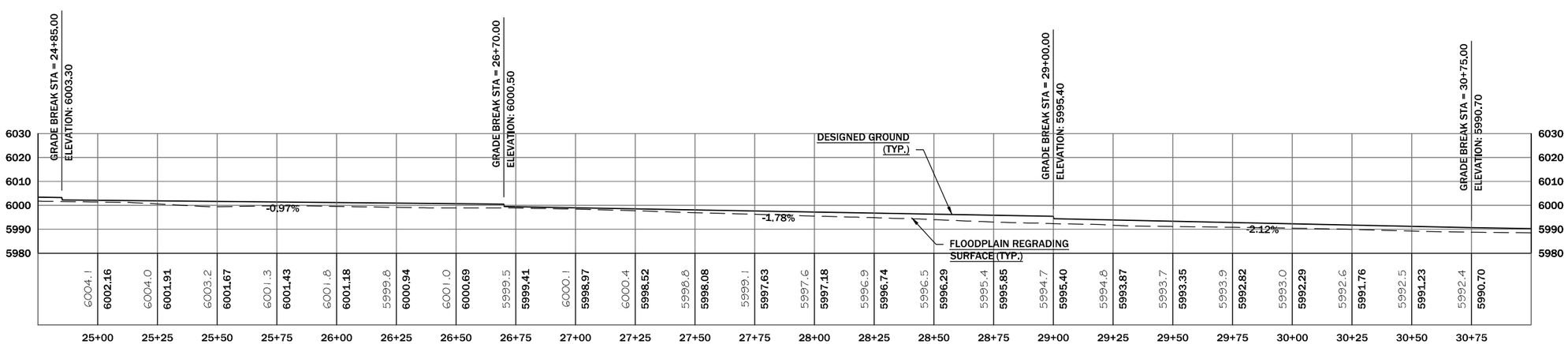
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

LOWER DOG CREEK
FLOOD PLAIN AND
CHANNEL PROFILE
STA 12+50 TO 18+50

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-31





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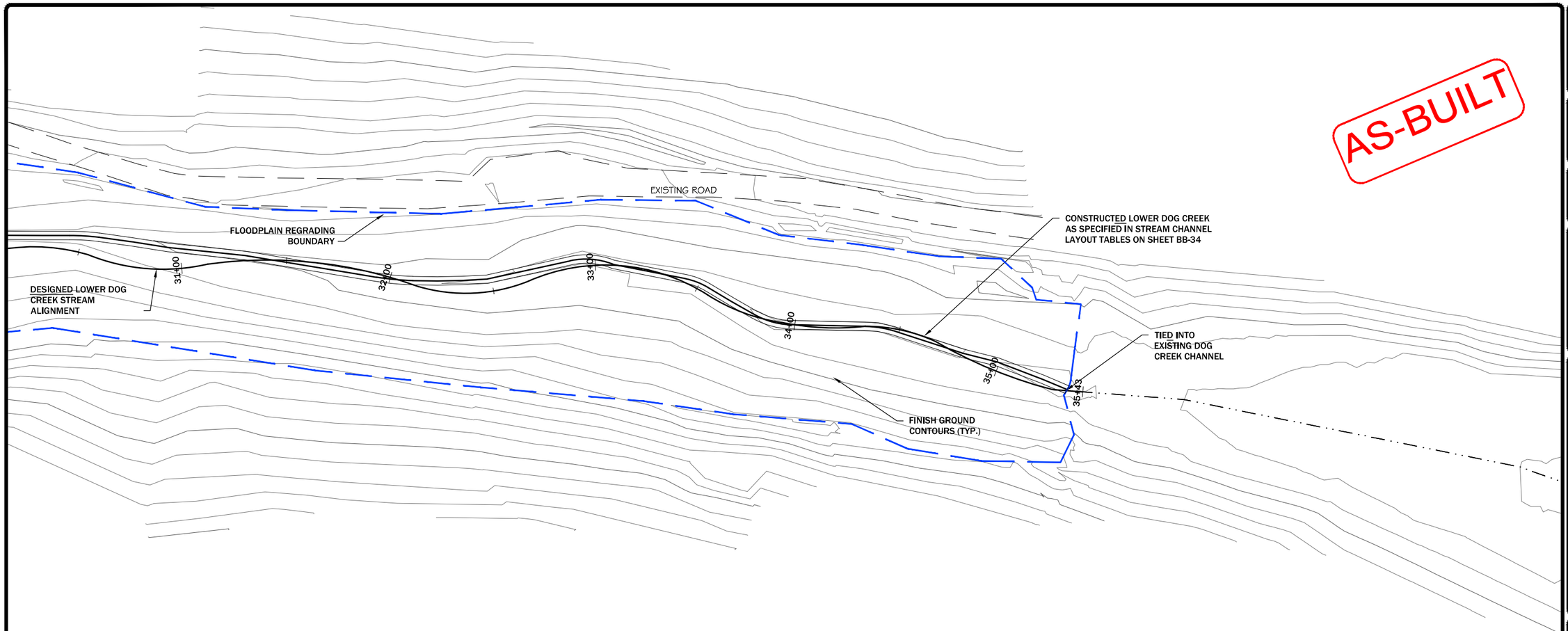
SCALE IN FEET
0 25 50

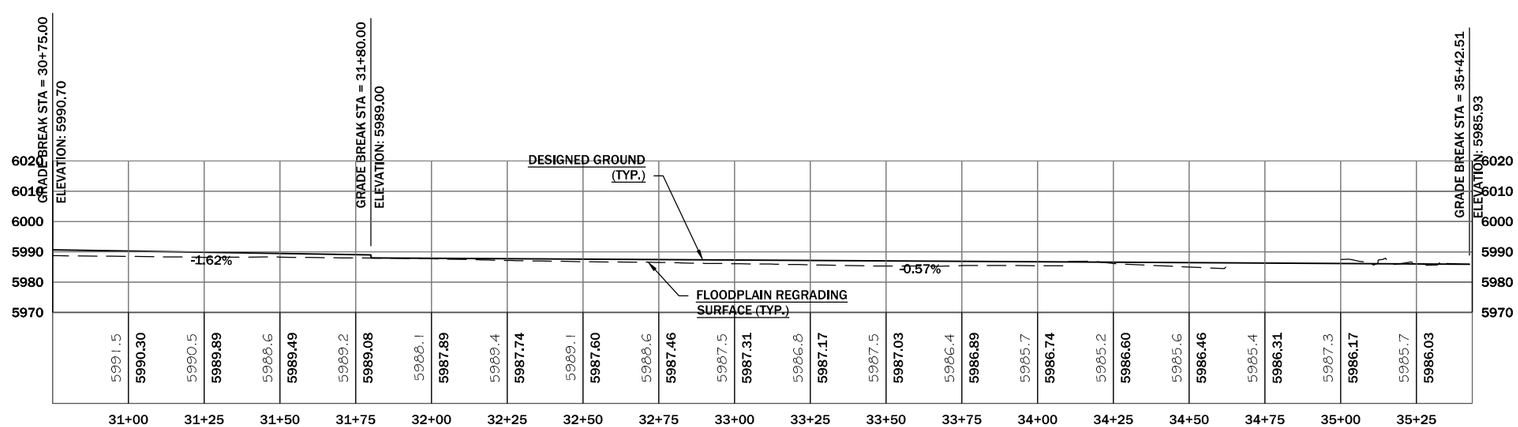
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

LOWER DOG CREEK
FLOOD PLAIN AND
CHANNEL PROFILE
STA 18+75 TO 24+75

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-32





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DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

LOWER DOG CREEK
FLOOD PLAIN AND
CHANNEL PROFILE
STA 25+00 TO 28+25

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-33

DOG CREEK CHANNEL PLAN LAYOUT TABLE 1
STATION 0+00 TO STATION 8+75

STATION START	STATION END	CHANNEL TYPE	LENGTH (FT)
0+00	0+19.5	NON-DEFORMABLE RUN - DETAIL 1/BB-D6	19.5
0+19.5	0+21	CHANNEL STEP - DETAIL 1/BB-D7	1.5
0+21	0+50	CHANNEL STEP POOL - DETAIL 2/BB-D7	29
0+50	0+70	CHANNEL RUN - DETAIL 1/BB-D6	20
0+70	0+89	CHANNEL POOL - DETAIL 2/BB-D6	18.7
0+89	1+18	CULVERT - SEE SHEET BB38	29.3
1+18	1+19.5	CHANNEL STEP - DETAIL 1/BB-D7	1.5
1+19.5	1+49.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	30
1+49.5	1+51	CHANNEL STEP - DETAIL 1/BB-D7	1.5
1+51	1+74.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	23.5
1+74.5	1+76	CHANNEL STEP - DETAIL 1/BB-D7	1.5
1+76	1+99.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	23.5
1+99.5	2+01	CHANNEL STEP - DETAIL 1/BB-D7	1.5
2+01	2+37.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	36.5
2+37.5	2+39	CHANNEL STEP - DETAIL 1/BB-D7	1.5
2+39	2+89	CHANNEL STEP POOL - DETAIL 2/BB-D7	50
2+89	2+99	CHANNEL RUN - DETAIL 1/BB-D6	10
2+99	3+29	CHANNEL POOL - DETAIL 2/BB-D6	30
3+29	3+69	CHANNEL RUN - DETAIL 1/BB-D6	40
3+69	3+99	CHANNEL POOL - DETAIL 2/BB-D6	30
3+99	4+19	CHANNEL RUN - DETAIL 1/BB-D6	20
4+19	4+49	CHANNEL POOL - DETAIL 2/BB-D6	30
4+49	4+74.5	CHANNEL RUN - DETAIL 1/BB-D6	25.5
4+74.5	4+76	CHANNEL STEP - DETAIL 1/BB-D7	1.5
4+76	5+00	CHANNEL STEP POOL - DETAIL 2/BB-D7	24
5+00	5+40	CHANNEL RUN - DETAIL 1/BB-D6	40
5+40	5+70	CHANNEL POOL - DETAIL 2/BB-D6	30
5+70	6+00	CHANNEL RUN - DETAIL 1/BB-D6	30
6+00	6+20	CHANNEL POOL - DETAIL 2/BB-D6	20
6+20	6+40	CHANNEL RUN - DETAIL 1/BB-D6	20
6+40	6+60	CHANNEL POOL - DETAIL 2/BB-D6	20
6+60	6+80	CHANNEL RUN - DETAIL 1/BB-D6	20
6+80	7+10	CHANNEL POOL - DETAIL 2/BB-D6	30
7+10	7+30	CHANNEL RUN - DETAIL 1/BB-D6	20
7+30	7+49.5	CHANNEL POOL - DETAIL 2/BB-D6	19.5
7+49.5	7+51	CHANNEL STEP - DETAIL 1/BB-D7	1.5
7+51	7+75	CHANNEL STEP POOL - DETAIL 2/BB-D7	24
7+75	8+05	CHANNEL RUN - DETAIL 1/BB-D6	30
8+05	8+35	CHANNEL POOL - DETAIL 2/BB-D6	30
8+35	8+55	CHANNEL RUN - DETAIL 1/BB-D6	20
8+55	8+75	CHANNEL POOL - DETAIL 2/BB-D6	20

DOG CREEK CHANNEL PLAN LAYOUT TABLE 2
STATION 8+75 TO STATION 18+89

STATION START	STATION END	CHANNEL TYPE	LENGTH (FT)
8+75	9+15	CHANNEL RUN - DETAIL 1/BB-D6	40
9+15	9+49.5	CHANNEL POOL - DETAIL 2/BB-D6	34.5
9+49.5	9+51	CHANNEL STEP - DETAIL 1/BB-D7	1.5
9+51	9+75	CHANNEL STEP POOL - DETAIL 2/BB-D7	24
9+75	9+95	CHANNEL RUN - DETAIL 1/BB-D6	20
9+95	10+15	CHANNEL POOL - DETAIL 2/BB-D6	20
10+15	10+35	CHANNEL RUN - DETAIL 1/BB-D6	20
10+35	10+65	CHANNEL POOL - DETAIL 2/BB-D6	30
10+65	10+85	CHANNEL RUN - DETAIL 1/BB-D6	20
10+85	11+05	CHANNEL POOL - DETAIL 2/BB-D6	20
11+05	11+25	CHANNEL RUN - DETAIL 1/BB-D6	20
11+25	11+45	CHANNEL POOL - DETAIL 2/BB-D6	20
11+45	11+65	CHANNEL RUN - DETAIL 1/BB-D6	20
11+65	11+85	CHANNEL POOL - DETAIL 2/BB-D6	20
11+85	12+15	CHANNEL RUN - DETAIL 1/BB-D6	30
12+15	12+45	CHANNEL POOL - DETAIL 2/BB-D6	30
12+45	12+75	CHANNEL RUN - DETAIL 1/BB-D6	30
12+75	13+15	CHANNEL POOL - DETAIL 2/BB-D6	40
13+15	13+45	CHANNEL RUN - DETAIL 1/BB-D6	30
13+45	13+85	CHANNEL POOL - DETAIL 2/BB-D6	40
13+85	14+05	CHANNEL RUN - DETAIL 1/BB-D6	20
14+05	14+20	CHANNEL POOL - DETAIL 2/BB-D6	15
14+20	14+40	CHANNEL RUN - DETAIL 1/BB-D6	20
14+40	14+60	CHANNEL POOL - DETAIL 2/BB-D6	20
14+60	14+92.5	CHANNEL RUN - DETAIL 1/BB-D6	32.5
14+92.5	14+94	CHANNEL STEP - DETAIL 1/BB-D7	1.5
14+94	15+14	CHANNEL STEP POOL - DETAIL 2/BB-D7	20
15+14	15+64	CHANNEL RUN - DETAIL 1/BB-D6	50
15+64	15+94	CHANNEL POOL - DETAIL 2/BB-D6	30
15+94	16+24	CHANNEL RUN - DETAIL 1/BB-D6	30
16+24	16+54	CHANNEL POOL - DETAIL 2/BB-D6	30
16+54	16+84	CHANNEL RUN - DETAIL 1/BB-D6	30
16+84	17+04	CHANNEL POOL - DETAIL 2/BB-D6	20
17+04	17+39.5	CHANNEL RUN - DETAIL 1/BB-D6	35.5
17+39.5	17+41	CHANNEL STEP - DETAIL 1/BB-D7	1.5
17+41	17+61	CHANNEL STEP POOL - DETAIL 2/BB-D7	20
17+61	18+01	CHANNEL RUN - DETAIL 1/BB-D6	40
18+01	18+21	CHANNEL POOL - DETAIL 2/BB-D6	20
18+21	18+57.5	CHANNEL RUN - DETAIL 1/BB-D6	36.5
18+57.5	18+59	CHANNEL STEP - DETAIL 1/BB-D7	1.5
18+59	18+89	CHANNEL STEP POOL - DETAIL 2/BB-D7	30

DOG CREEK CHANNEL PLAN LAYOUT TABLE 3
STATION 18+89 TO STATION 27+31

STATION START	STATION END	CHANNEL TYPE	LENGTH (FT)
18+89	19+19	CHANNEL RUN - DETAIL 1/BB-D6	30
19+19	19+49	CHANNEL POOL - DETAIL 2/BB-D6	30
19+49	19+74.5	CHANNEL RUN - DETAIL 1/BB-D6	25.5
19+74.5	19+76	CHANNEL STEP - DETAIL 1/BB-D7	1.5
19+76	19+96	CHANNEL STEP POOL - DETAIL 2/BB-D7	20
19+96	20+06	CHANNEL RUN - DETAIL 1/BB-D6	10
20+06	20+36	CHANNEL POOL - DETAIL 2/BB-D6	30
20+36	20+56	CHANNEL RUN - DETAIL 1/BB-D6	20
20+56	20+76	CHANNEL POOL - DETAIL 2/BB-D6	20
20+76	20+99.5	CHANNEL RUN - DETAIL 1/BB-D6	23.5
20+99.5	21+01	CHANNEL STEP - DETAIL 1/BB-D7	1.5
21+01	21+21	CHANNEL STEP POOL - DETAIL 2/BB-D7	20
21+21	21+41	CHANNEL RUN - DETAIL 1/BB-D6	20
21+41	21+61	CHANNEL POOL - DETAIL 2/BB-D6	20
21+61	21+74.5	CHANNEL RUN - DETAIL 1/BB-D6	13.5
21+74.5	21+76	CHANNEL STEP - DETAIL 1/BB-D7	1.5
21+76	22+24.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	48.5
22+24.5	22+26	CHANNEL STEP - DETAIL 1/BB-D7	1.5
22+26	22+64.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	38.5
22+64.5	22+66	CHANNEL STEP - DETAIL 1/BB-D7	1.5
22+66	23+15	CHANNEL STEP POOL - DETAIL 2/BB-D7	49
23+15	23+35	CHANNEL RUN - DETAIL 1/BB-D6	20
23+35	23+55	CHANNEL POOL - DETAIL 2/BB-D6	20
23+55	23+74.5	CHANNEL RUN - DETAIL 1/BB-D6	19.5
23+74.5	23+76	CHANNEL STEP - DETAIL 1/BB-D7	1.5
23+76	23+94.5	CHANNEL STEP POOL - DETAIL 2/BB-D7	18.5
23+94.5	23+96	CHANNEL STEP - DETAIL 1/BB-D7	1.5
23+96	24+26	CHANNEL STEP POOL - DETAIL 2/BB-D7	30
24+26	24+46	CHANNEL RUN - DETAIL 1/BB-D6	20
24+46	24+66	CHANNEL POOL - DETAIL 2/BB-D6	20
24+66	24+84.5	CHANNEL RUN - DETAIL 1/BB-D6	18.5
24+84.5	24+86	CHANNEL STEP - DETAIL 1/BB-D7	1.5
24+86	25+06	CHANNEL STEP POOL - DETAIL 2/BB-D7	20
25+06	25+46	CHANNEL RUN - DETAIL 1/BB-D6	40
25+46	25+76	CHANNEL POOL - DETAIL 2/BB-D6	30
25+76	26+06	CHANNEL RUN - DETAIL 1/BB-D6	30
26+06	26+36	CHANNEL POOL - DETAIL 2/BB-D6	30
26+36	26+69.5	CHANNEL RUN - DETAIL 1/BB-D6	33.5
26+69.5	26+71	CHANNEL STEP - DETAIL 1/BB-D7	1.5
26+71	26+91	CHANNEL STEP POOL - DETAIL 2/BB-D7	20
26+91	27+31	CHANNEL RUN - DETAIL 1/BB-D6	40

DOG CREEK CHANNEL PLAN LAYOUT TABLE 3
STATION 27+31 TO STATION 35+42.5

STATION START	STATION END	CHANNEL TYPE	LENGTH (FT)
27+31	27+51	CHANNEL POOL - DETAIL 2/BB-D6	20
27+51	27+91	CHANNEL RUN - DETAIL 1/BB-D6	40
27+91	28+11	CHANNEL POOL - DETAIL 2/BB-D6	20
28+11	28+31	CHANNEL RUN - DETAIL 1/BB-D6	20
28+31	28+61	CHANNEL POOL - DETAIL 2/BB-D6	30
28+61	28+99.5	CHANNEL RUN - DETAIL 1/BB-D6	38.5
28+99.5	29+01	CHANNEL STEP - DETAIL 1/BB-D7	1.5
29+01	29+31	CHANNEL STEP POOL - DETAIL 2/BB-D7	30
29+31	29+61	CHANNEL RUN - DETAIL 1/BB-D6	30
29+61	29+91	CHANNEL POOL - DETAIL 2/BB-D6	30
29+91	30+11	CHANNEL RUN - DETAIL 1/BB-D6	20
30+11	30+31	CHANNEL POOL - DETAIL 2/BB-D6	20
30+31	30+71	CHANNEL RUN - DETAIL 1/BB-D6	40
30+71	31+01	CHANNEL POOL - DETAIL 2/BB-D6	30
31+01	31+31	CHANNEL RUN - DETAIL 1/BB-D6	30
31+31	31+79.5	CHANNEL POOL - DETAIL 2/BB-D6	48.5
31+79.5	31+81	CHANNEL STEP - DETAIL 1/BB-D7	1.5
31+81	32+30	CHANNEL STEP POOL - DETAIL 2/BB-D7	49
32+30	32+50	CHANNEL RUN - DETAIL 1/BB-D6	20
32+50	32+70	CHANNEL POOL - DETAIL 2/BB-D6	20
32+70	33+00	CHANNEL RUN - DETAIL 1/BB-D6	30
33+00	33+20	CHANNEL POOL - DETAIL 2/BB-D6	20
33+20	33+50	CHANNEL RUN - DETAIL 1/BB-D6	30
33+50	33+80	CHANNEL POOL - DETAIL 2/BB-D6	30
33+80	34+20	CHANNEL RUN - DETAIL 1/BB-D6	40
34+20	34+80	CHANNEL POOL - DETAIL 2/BB-D6	60
34+80	35+00	CHANNEL RUN - DETAIL 1/BB-D6	20
35+00	35+20	CHANNEL POOL - DETAIL 2/BB-D6	20
35+20	35+42.5	NON-DEFORMABLE RUN - DETAIL 1/BB-D6	22.5

STREAM CHANNEL CONSTRUCTION NOTES APPLICABLE TO ALL STREAM CHANNEL RECONSTRUCTION DETAILS:

1. SURVEYOR ~~WILL~~ SET OFFSET STAKES FOR EXCAVATION CUTS AT THE CHANNEL CENTERLINE AT 25 FOOT STATIONS.
2. ~~SURVEYOR WILL STAKE THE STARTING AND ENDING STATIONS FOR EACH CHANNEL SECTION EXCLUDING THE STARTING STATION FOR THE STEP POOLS.~~
3. PLACED CHANNEL EXCAVATION MATERIAL IN THE ROUGH-GRADED FLOODPLAIN AND BLENDED WITH THE ADJACENT TOPOGRAPHY PRIOR TO PLACING COVER SOIL.
4. INSTALLED BIODEGRADABLE COIR FABRIC TO FORM AND ENCAPSULATE THE COVER SOIL STREAMBANKS AS DESCRIBED IN THE SPECIAL PROVISIONS.
5. INSTALLED BIODEGRADABLE COIR LOGS TO FORM THE CHANNEL BANKS AS SHOWN ON SHEETS BB-D6 AND BB-D7.
6. OVERLAPPED COIR FABRIC IN THE DOWNSTREAM DIRECTION (SHINGLE PATTERN) WITH A MINIMUM 3-FOOT OVERLAP AT ALL SEAMS.
7. BROADCAST SEEDED RIPARIAN SEED MIX AND FERTILIZED COVER SOIL BEFORE SECURING THE UPPER PORTION OF THE FABRIC WITH STAKES.
8. SECURELY STAKED ALL COIR FABRIC IN PLACE AS SHOWN ON SHEETS BB-D6 AND BB-D7.
9. SALVAGED LARGE STONES (GREATER THAN 18" DIAMETER) FROM CHANNEL EXCAVATION OR TAILINGS EXCAVATION FOR CHANNEL STEP CONSTRUCTION OR AS DIRECTED BY ENGINEER.
10. STREAM CHANNEL TOP WIDTH ~~CAN VARY~~ VARIED UP TO ONE FOOT FROM THE DIMENSIONS SHOWN ON THE DRAWINGS; PROVIDED THE AVERAGE WIDTH IN ANY 50-FOOT-LONG STREAM SEGMENT IS WITHIN 0.5 FEET OF THE DIMENSIONS SPECIFIED. VERTICAL TOLERANCE FOR STREAM CONSTRUCTION SHALL BE WITHIN 0.2 FEET OF THE DESIGNED CHANNEL ELEVATIONS.
11. CONSTRUCTED ~~COFFER DAMS~~, EARTHEN DAMS AND/OR TEMPORARY DIVERSIONS AS NECESSARY TO FACILITATE CHANNEL CONSTRUCTION IN CONFINED AREAS.

AS-BUILT

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SOURCE:

SCALE IN FEET
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DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DOG CREEK
CHANNEL STREAM
LAYOUT TABLES

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
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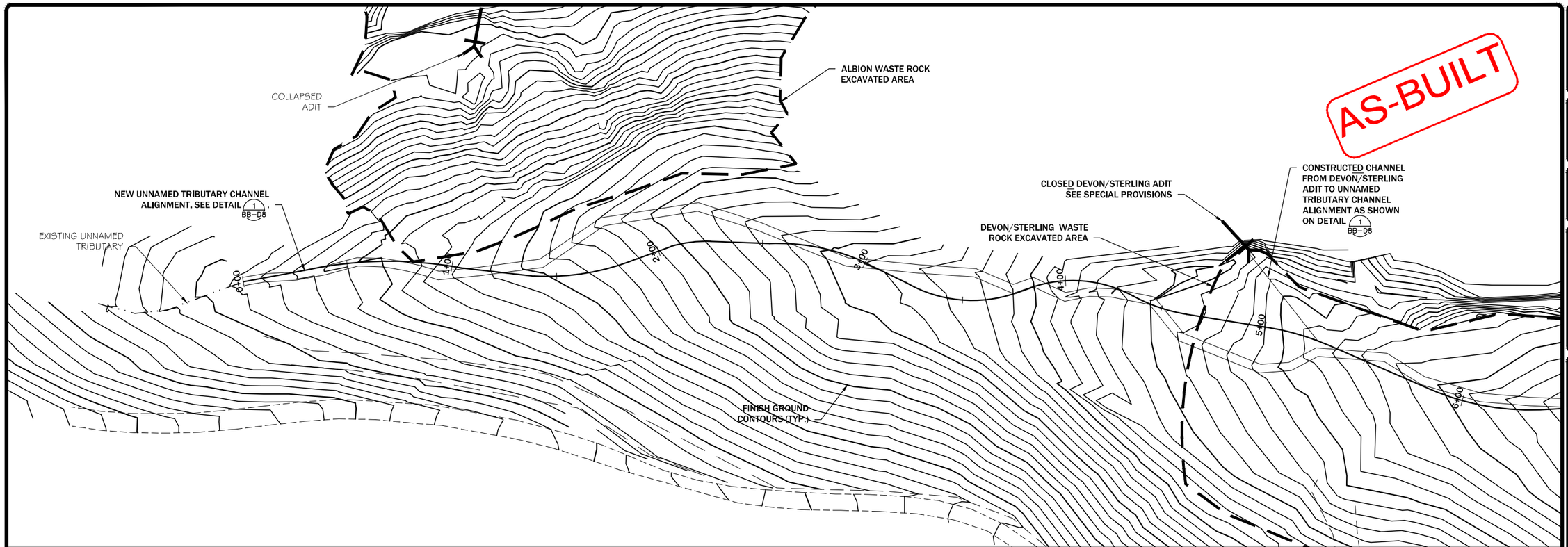
SHEET
BB-34



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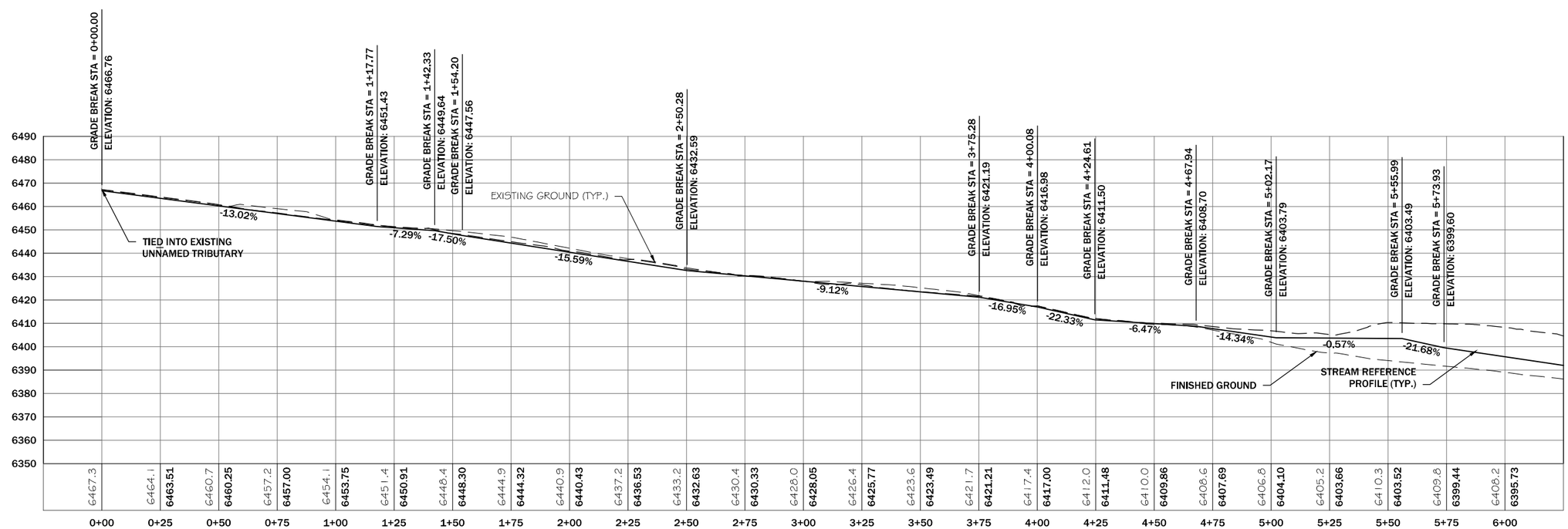

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SCALE IN FEET
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DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

UNNAMED TRIBUTARY GRADING PLAN AND CHANNEL PROFILE STA 0+00 TO 6+00

PIONEER TECHNICAL SERVICES, INC.
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HELENA, MT 59601
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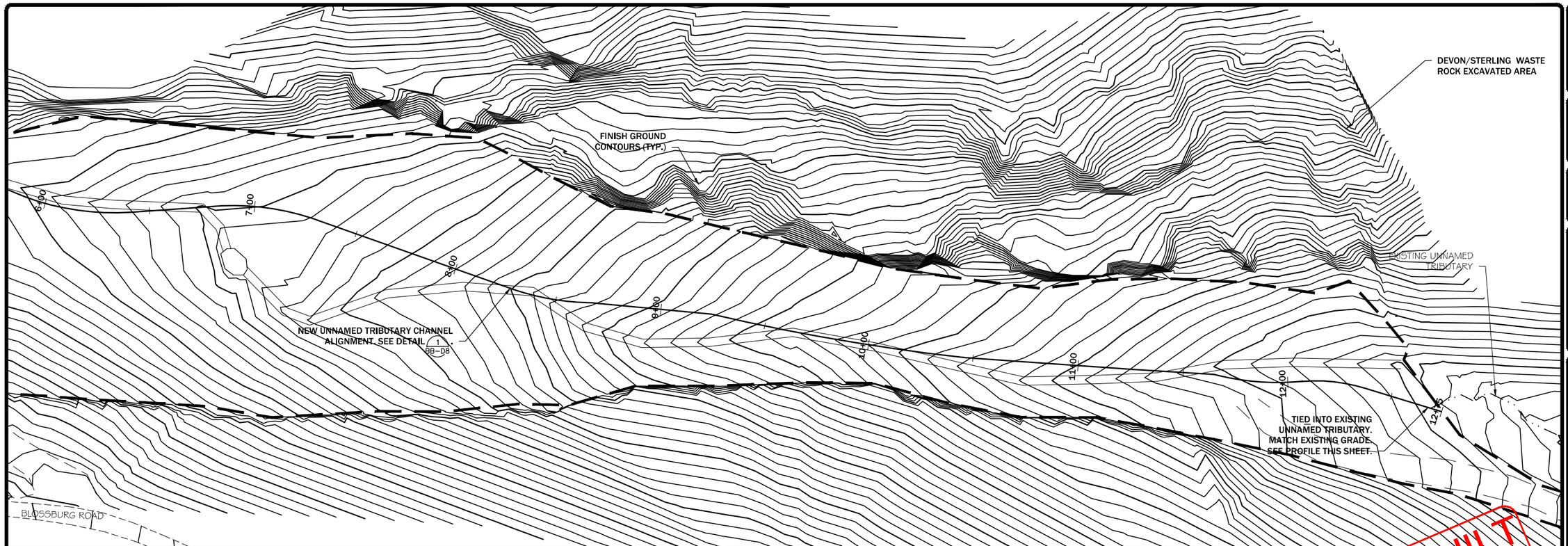

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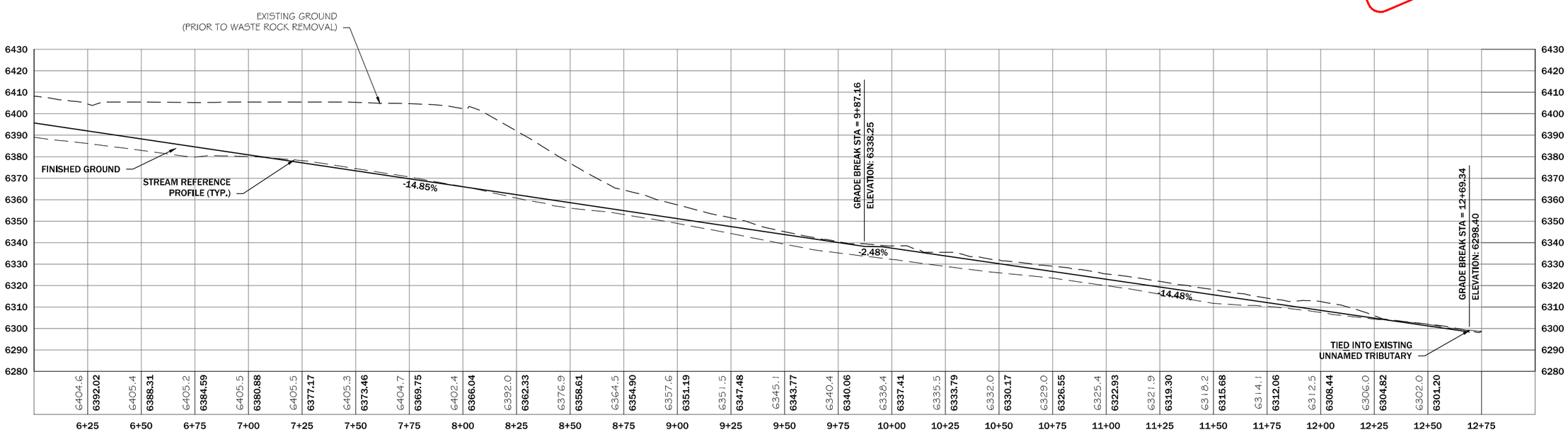

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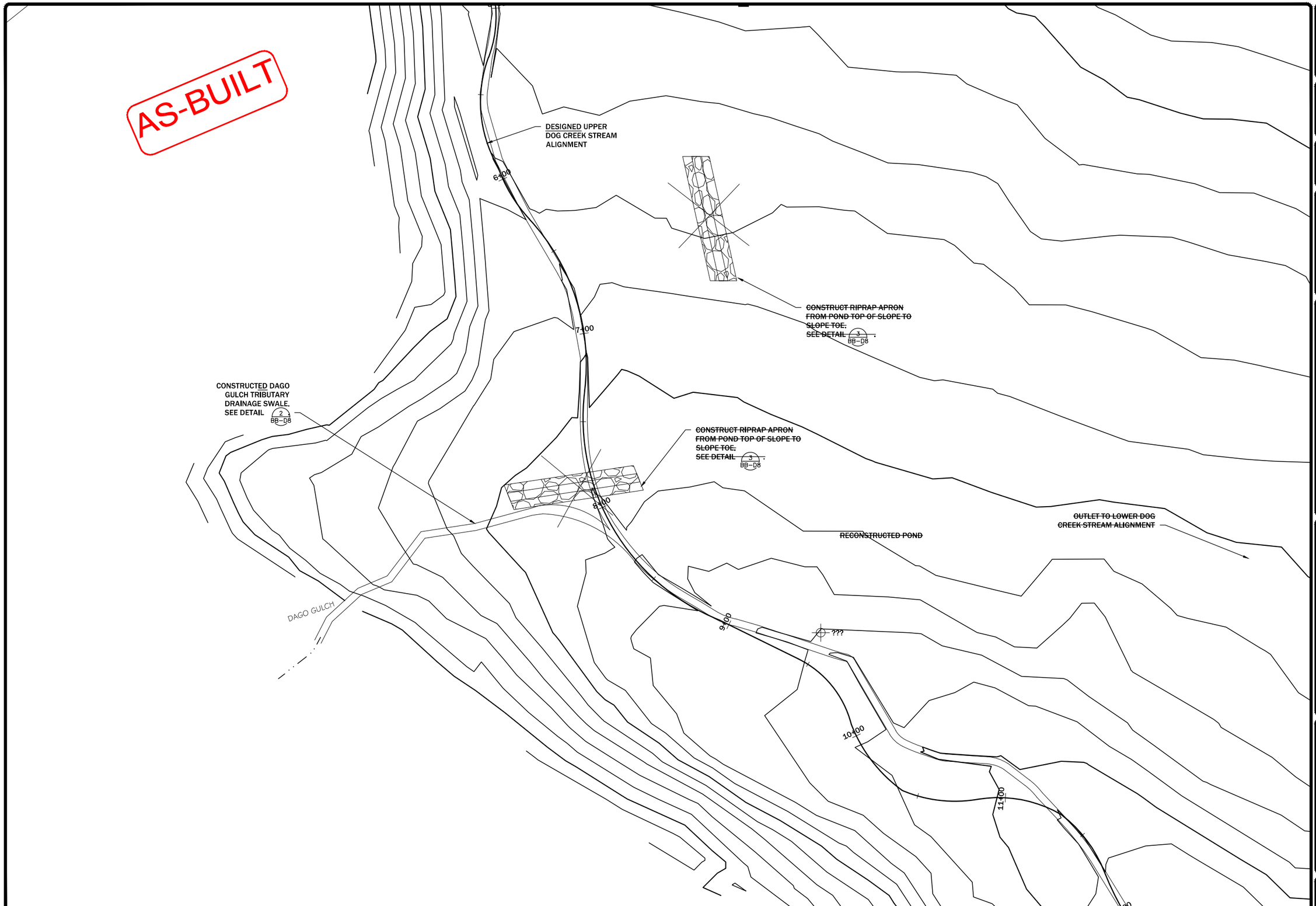
UNNAMED TRIBUTARY
GRADING PLAN AND
CHANNEL PROFILE
STA 6+25 TO 12+75

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-36



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DRAWN BY: JB/CR
DESIGNED BY: JB
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

N

SCALE IN FEET
0 25 50

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DAGO GULCH
PLAN VIEW

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-37

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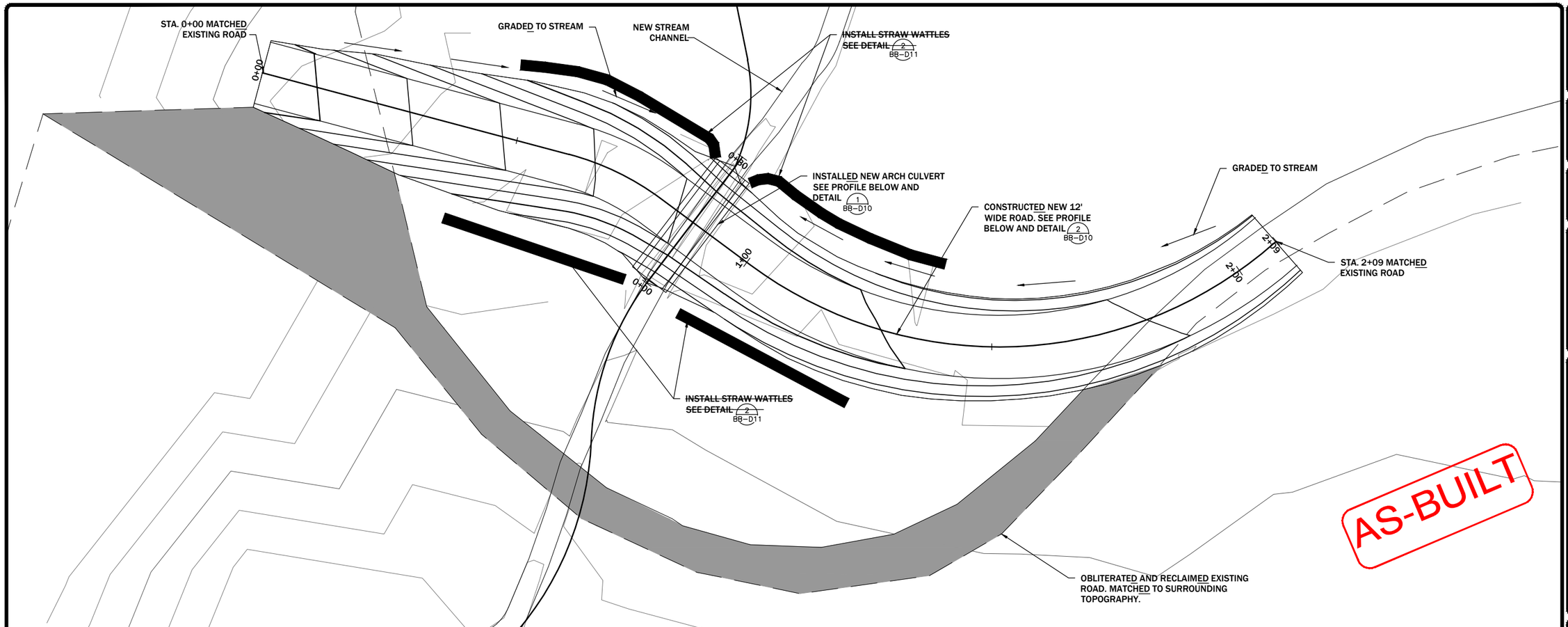
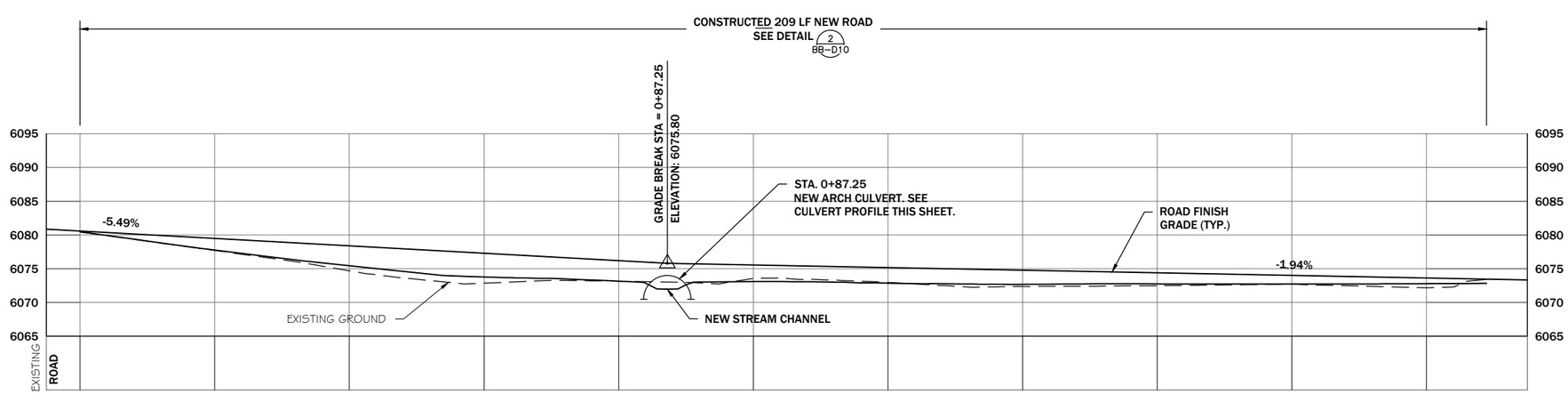
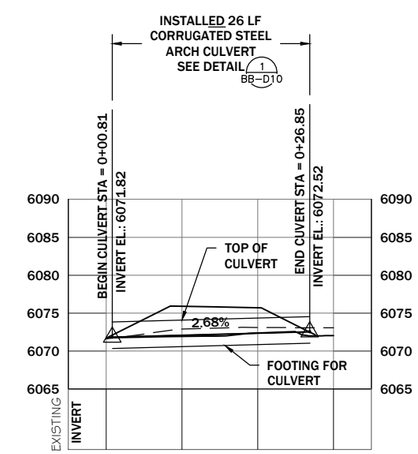




ROAD PROFILE



CULVERT PROFILE

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DRAWN BY: JB/CR
DESIGNED BY: TR
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

N

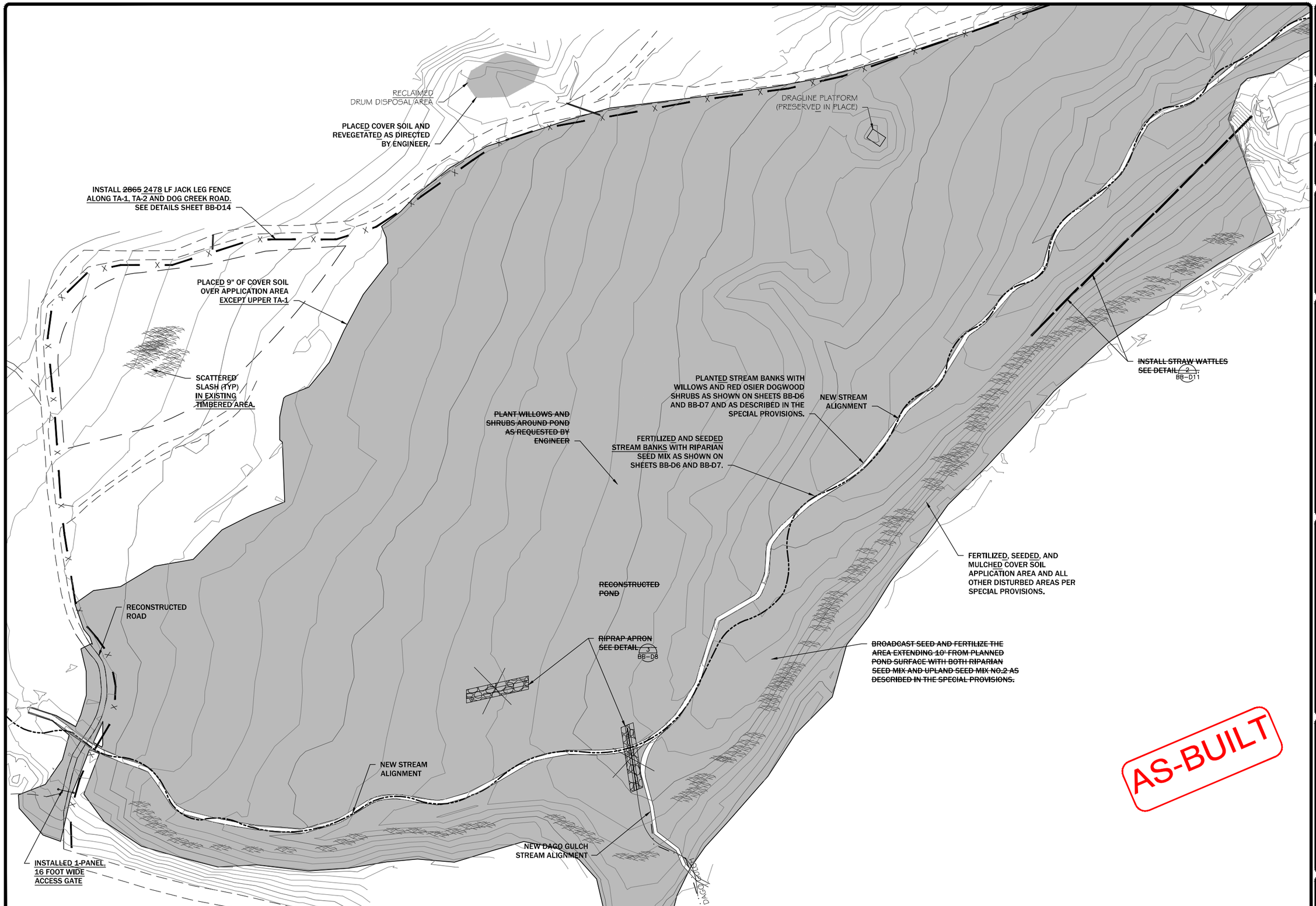
SCALE IN FEET
0 10 20

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DOG CREEK
ROAD CROSSING
PLAN & PROFILE

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-38



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DESIGNED BY:	JB
CHECKED BY:	TR
APPROVED BY:	TR
PROJECT NO:	10169
DATE:	04-05-2013

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DATUM:	NAD 83
UNITS:	FT
SOURCE:	OLYMPUS/PIONEER

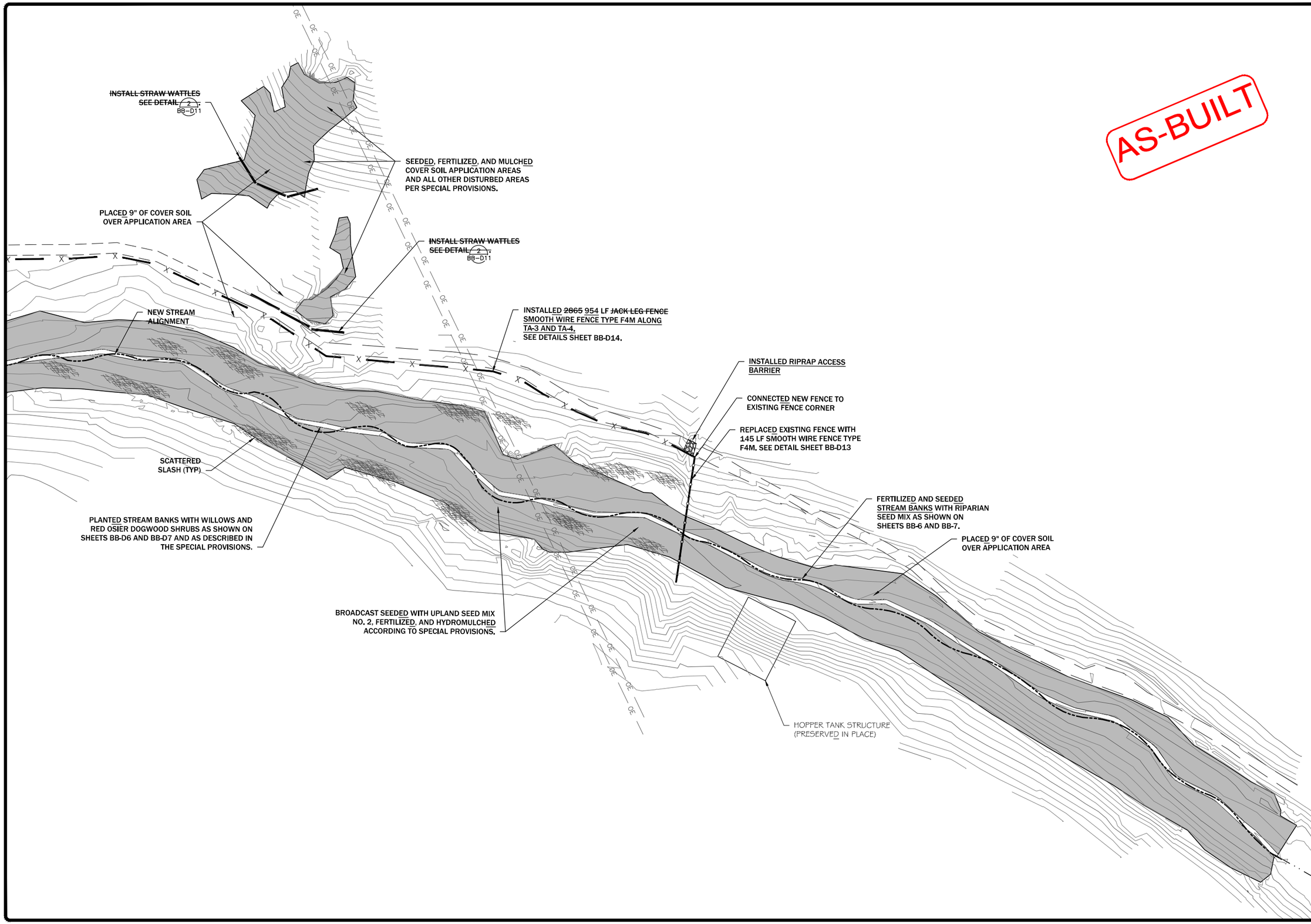
SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

COVER SOIL
PLACEMENT AND
FENCING PLAN
(POND AREA)

PIONEER
TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-39



AS-BUILT

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APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

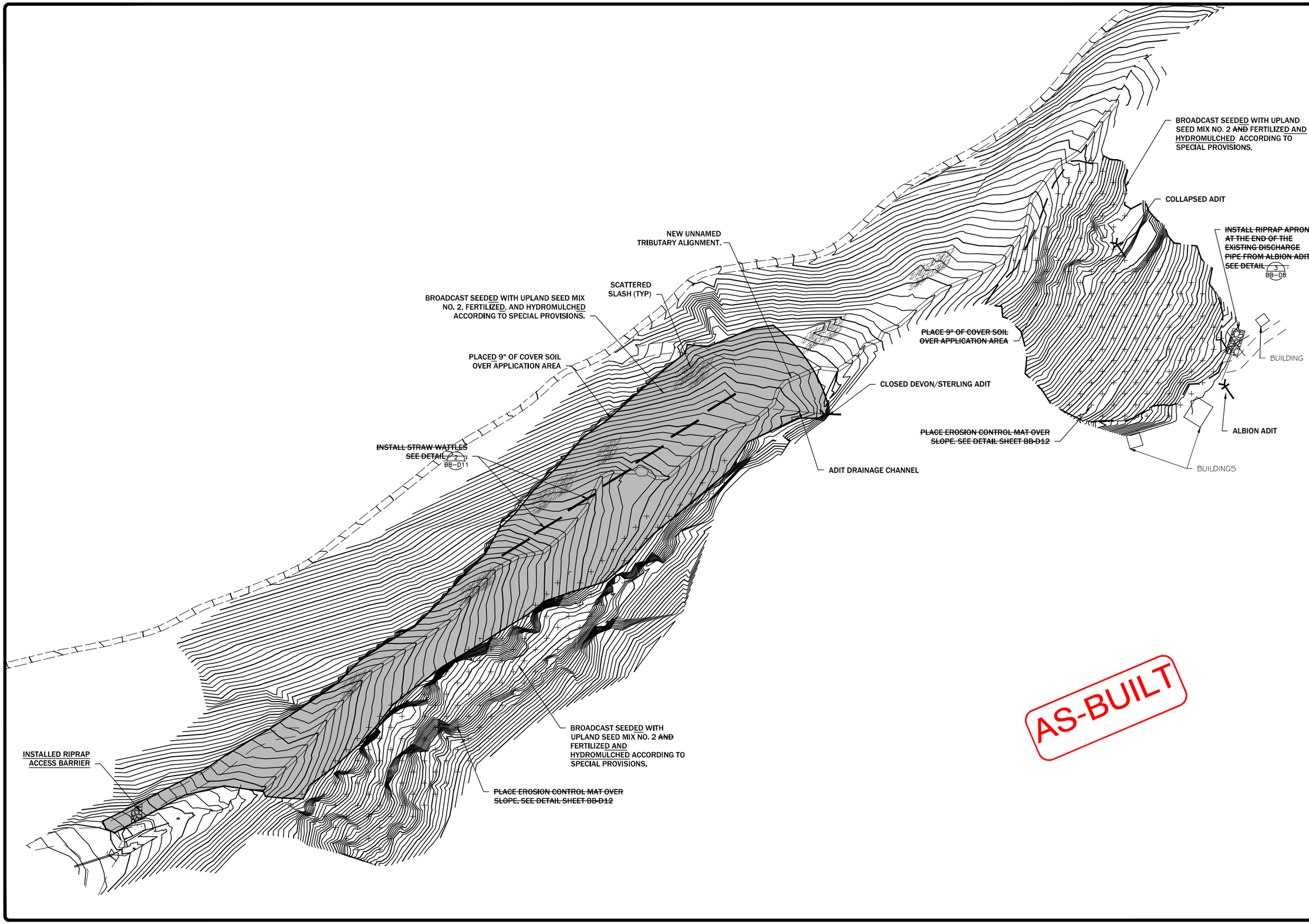
SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

COVER SOIL PLACEMENT AND FENCING PLAN (LOWER DOG CREEK)

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-40



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APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: MSP
DATUM: NAD 83
UNITS: FT
SOURCE: OLYMPUS/PIONEER

SCALE IN FEET
0 50 100

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

COVER SOIL
PLACEMENT PLAN
(UNNAMED TRIBUTARY)

PIONEER
TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-41

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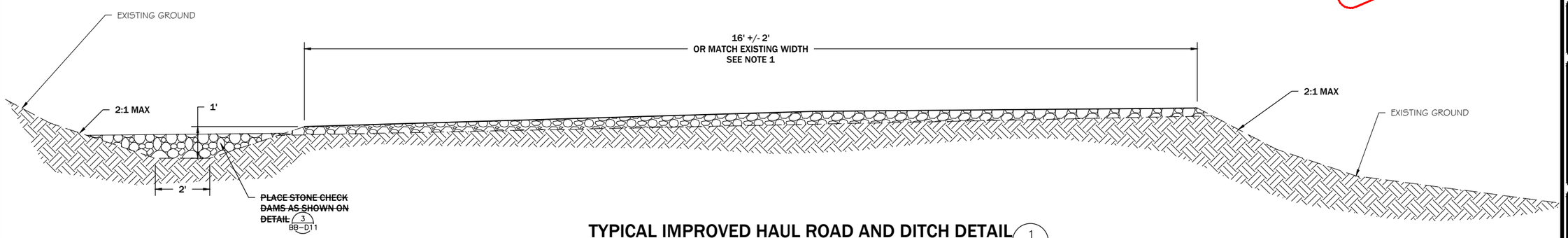
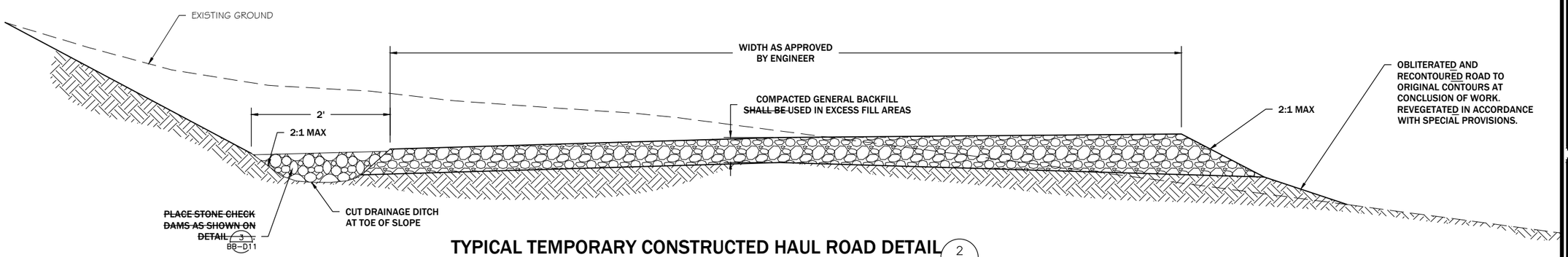
AS-BUILT



TYPICAL IMPROVED HAUL ROAD AND DITCH DETAIL 1 BB-D1

N.T.S.



TYPICAL TEMPORARY CONSTRUCTED HAUL ROAD DETAIL 2 BB-D1

N.T.S.

NOTES:

1. EXISTING ROADS WITH A TOP WIDTH GREATER THAN 16' ~~SHALL~~ WERE NOT ~~BE~~ IMPROVED BEYOND EXISTING WIDTH WITHOUT APPROVAL OF ENGINEER. EXISTING ROADS WITH A TOP WIDTH LESS THAN 16' ~~SHALL BE~~ WERE IMPROVED TO MAXIMUM WIDTH OF 16' +/- 2'.
2. USED EXISTING MATERIAL TO CUT, FILL, SHAPE, AND IMPROVE HAUL ROAD WHERE PRACTICABLE.
3. USED GENERAL BACKFILL FROM REPOSITORY EXCAVATION TO CONSTRUCT HAUL ROAD SURFACING WHERE EXISTING MATERIALS ~~ARE~~ WERE SOFT OF OTHERWISE UNSUITABLE.
4. INSLOPED, OUTSLOPED OR CROWNED SURFACE FOR POSITIVE DRAINAGE (2% MIN.) AS REQUIRED.

REVISION:

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DATE: 04-05-2013

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DATUM: N/A
UNITS: FT
SOURCE:

SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

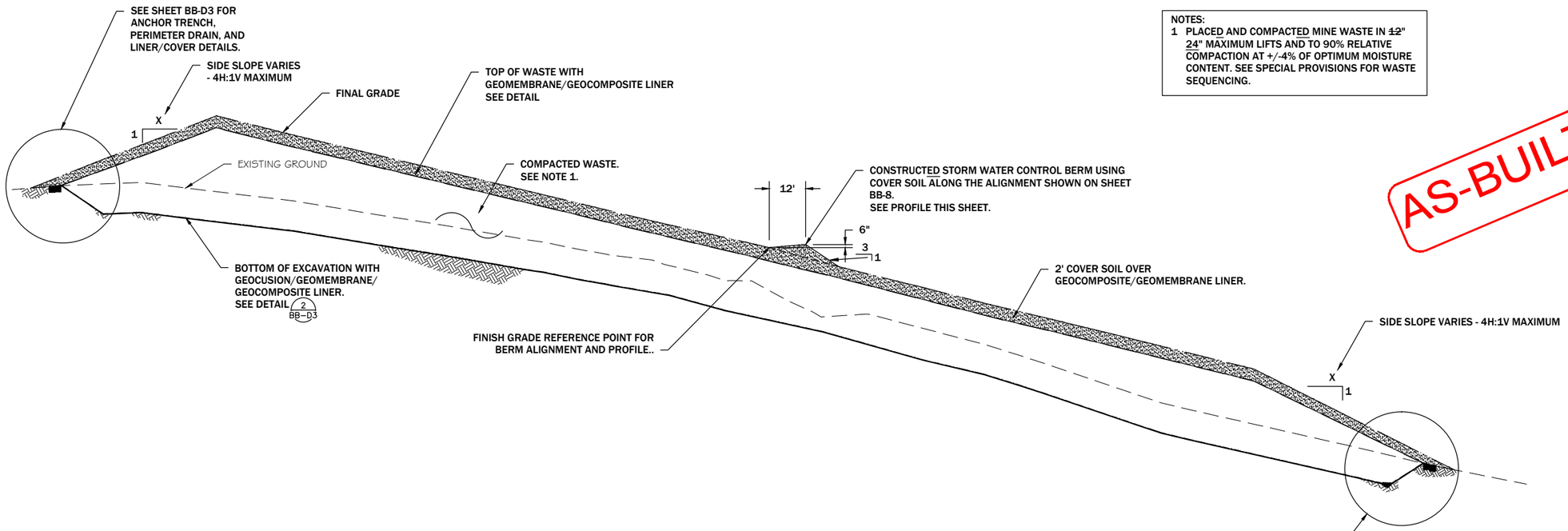
HAUL ROAD
IMPROVEMENT AND
RECLAMATION
TYPICAL SECTIONS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D1

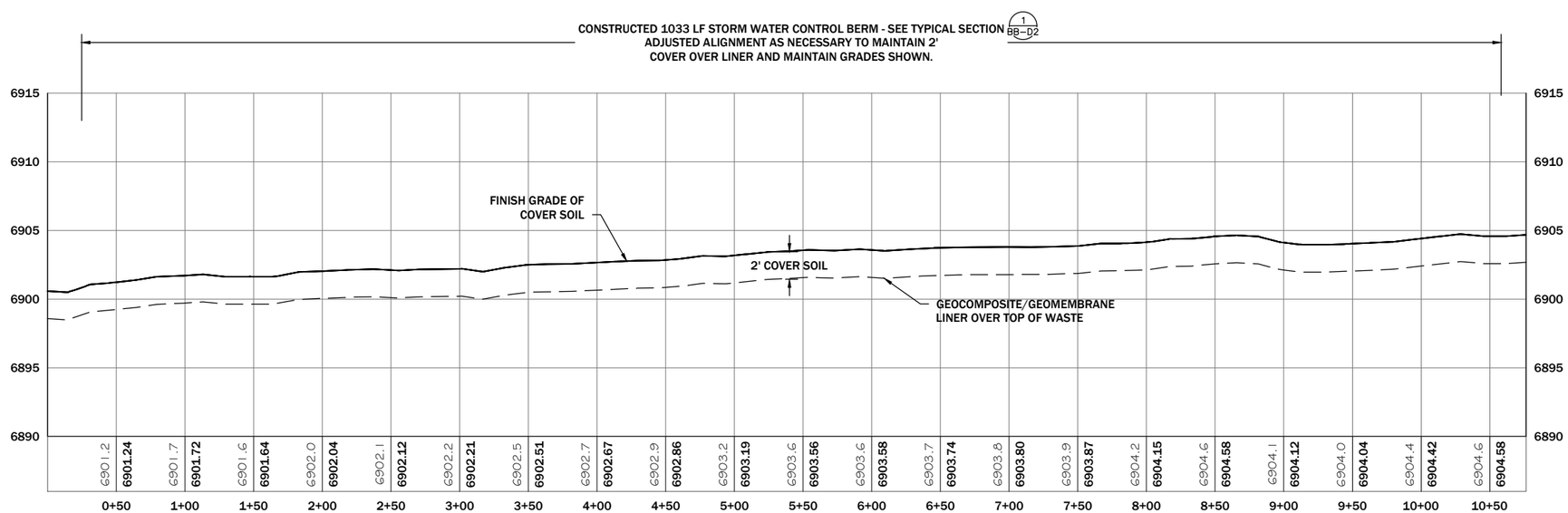
NOTES:
1 PLACED AND COMPACTED MINE WASTE IN ~~12"~~ 24" MAXIMUM LIFTS AND TO 90% RELATIVE COMPACTION AT +/-4% OF OPTIMUM MOISTURE CONTENT. SEE SPECIAL PROVISIONS FOR WASTE SEQUENCING.

AS-BUILT



REPOSITORY TYPICAL SECTION 1 BB-D2

N.T.S.



STORMWATER CONTROL BERM PROFILE 2 BB-D2

N.T.S.

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DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

SCALE IN FEET
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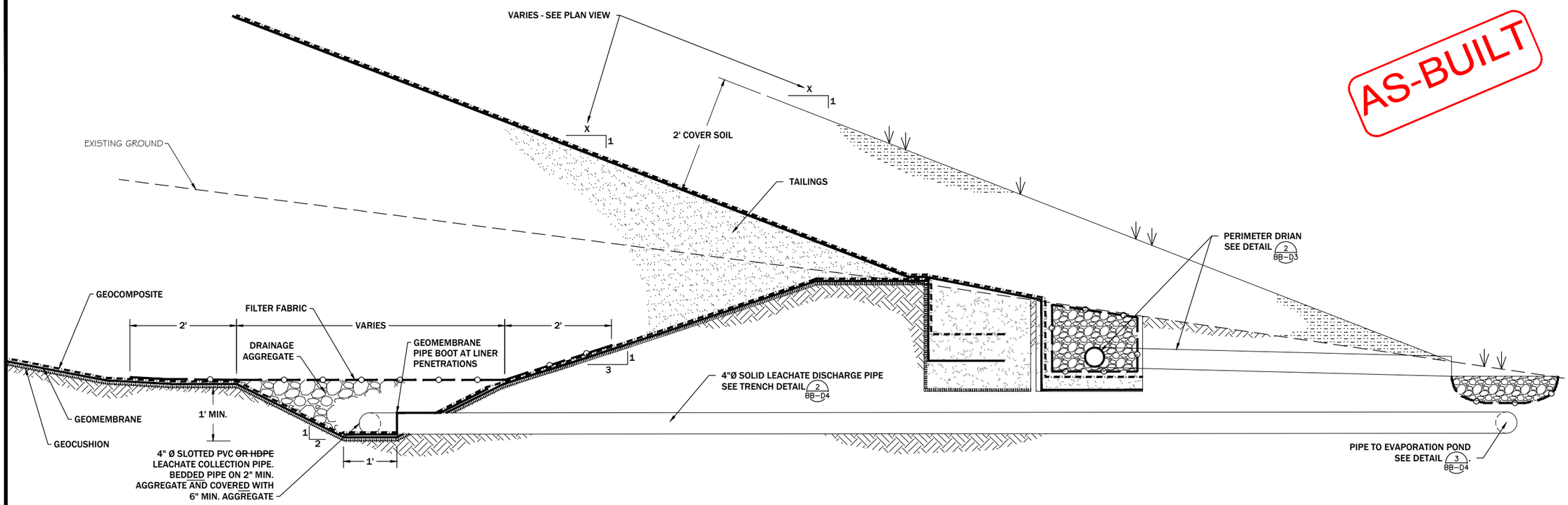
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY TYPICAL CROSS SECTION AND BERM PROFILE

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D2



REPOSITORY LEACHATE COLLECTION TRENCH/PIPE DETAIL 1 BB-D3

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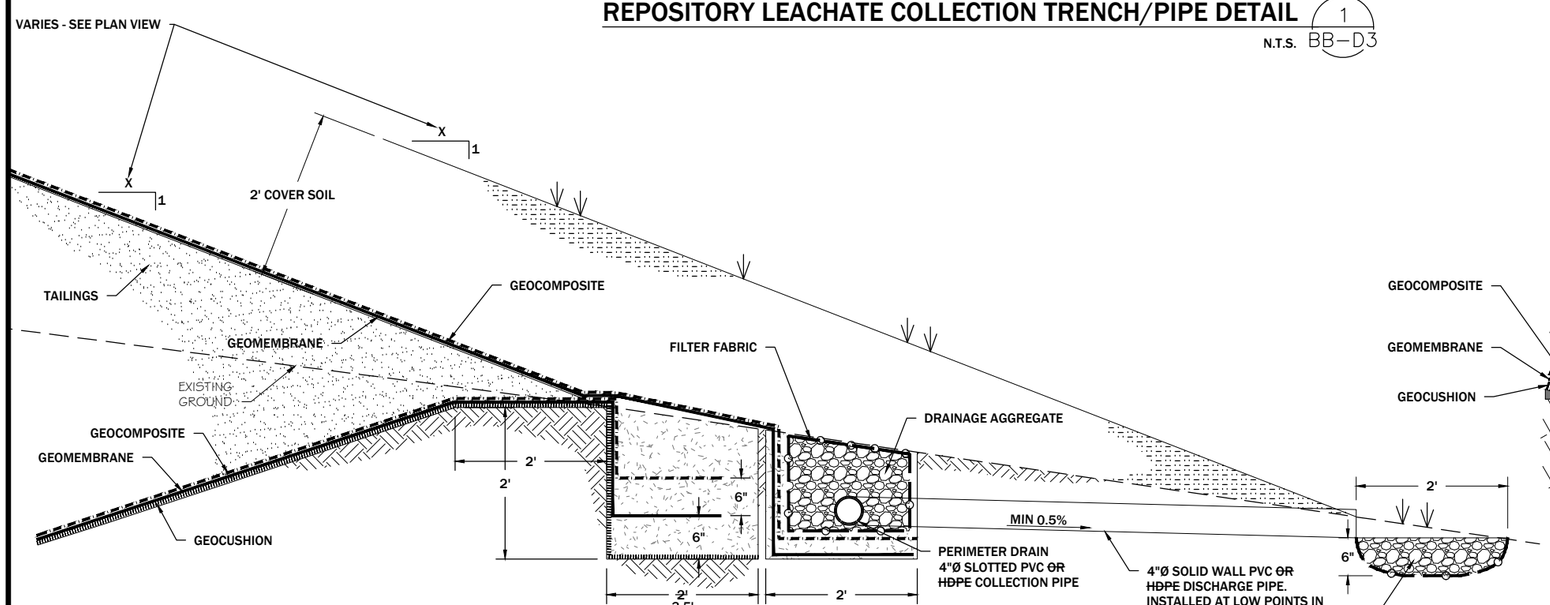

COVER AND LINER ANCHOR TRENCH DETAIL 2 BB-D3

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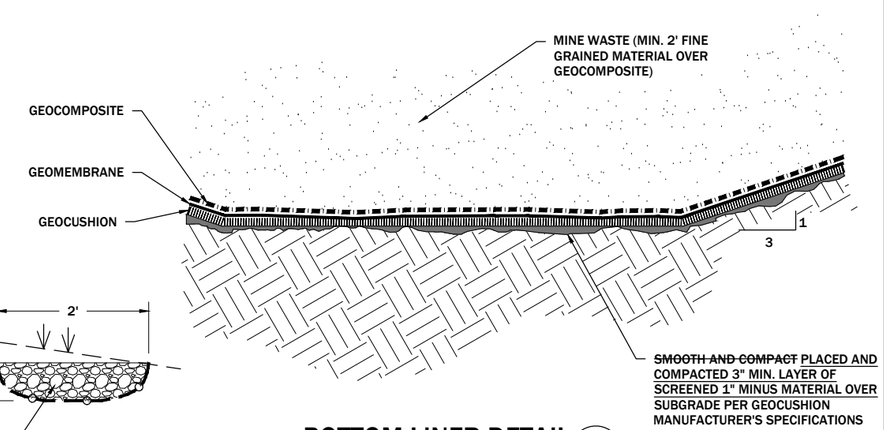

BOTTOM LINER DETAIL 3 BB-D3

N.T.S.

AS-BUILT

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DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

SCALE IN FEET
0 N.T.S.

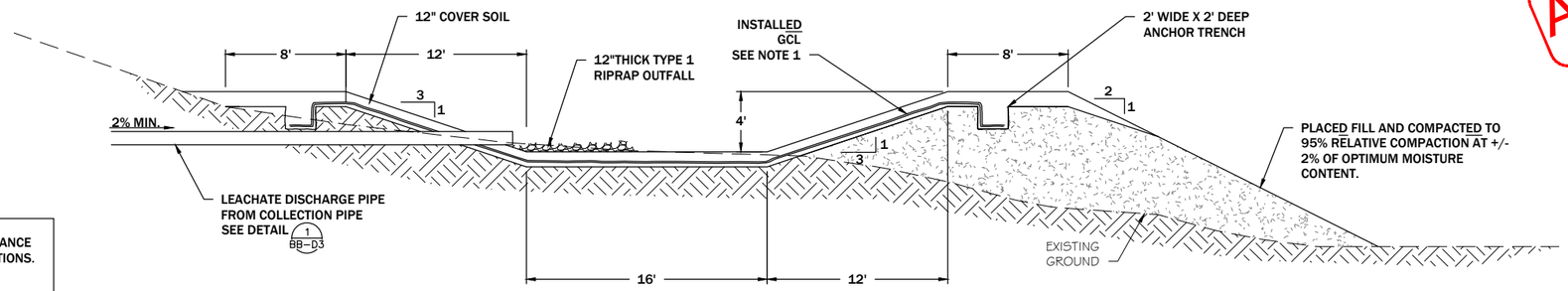
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY LINER AND LEACHATE COLLECTION SYSTEM DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

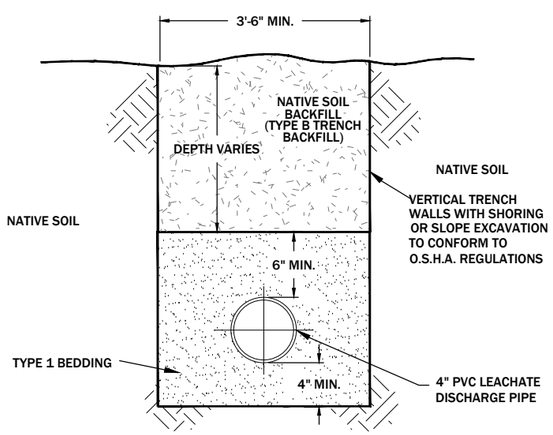
SHEET
BB-D3

AS-BUILT



NOTE:
1. INSTALLED GCL AND PIPE PENETRATION IN ACCORDANCE WITH THE MANUFACTURE'S INSTALLATION INSTRUCTIONS. PREPARED SUBGRADE ACCORDING TO SPECIAL PROVISIONS PRIOR TO INSTALLATION.
2. REVEGETATED PONDS, TRENCHES AND SURROUNDING DISTURBED AREAS ACCORDING TO SPECIAL PROVISIONS.

TYPICAL EVAPORATION POND SECTION 1 BB-D4



DISCHARGE PIPE TRENCH DETAIL 2 BB-D4

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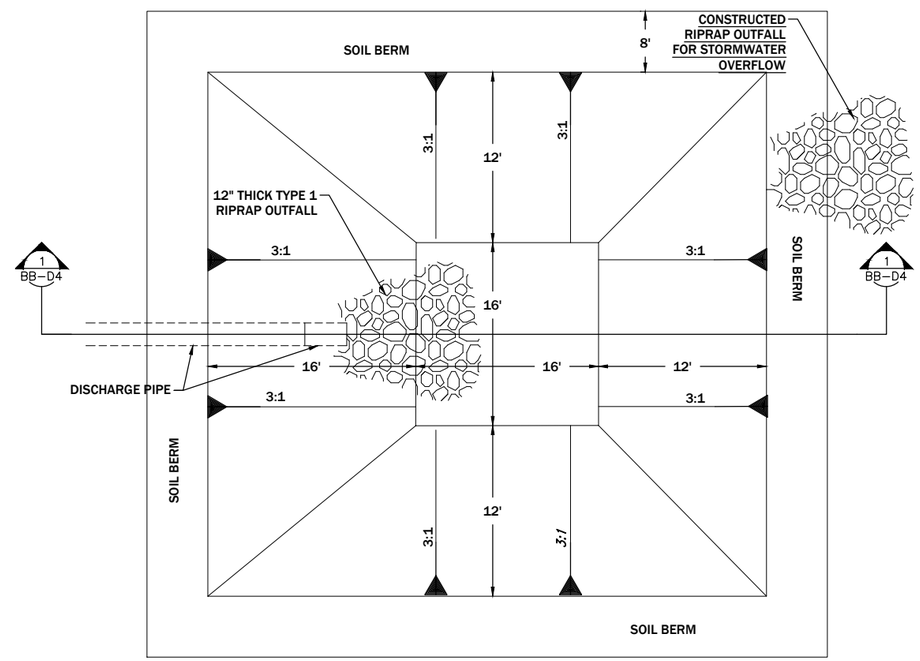

EVAPORATION POND DETAIL 3 BB-D4

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UNITS: FT
SOURCE:

SCALE IN FEET
0 N.T.S.

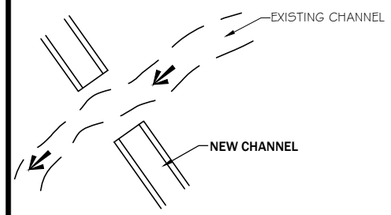
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

REPOSITORY
EVAPORATION POND
AND DISCHARGE PIPE
DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

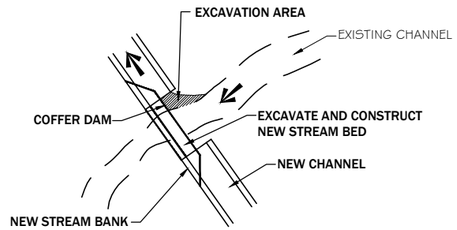
SHEET
BB-D4

1. DISPOSE OF WATER PUMPED FROM BEHIND COFFER DAM TO EXISTING SEDIMENT POND OR A DEPRESSION IN THE FLOODPLAIN APPROVED BY ENGINEER.
2. CONSTRUCT DEPRESSION IN FLOODPLAIN OR SEDIMENT POND AS NECESSARY TO DISPOSE OF PUMPED WATER.



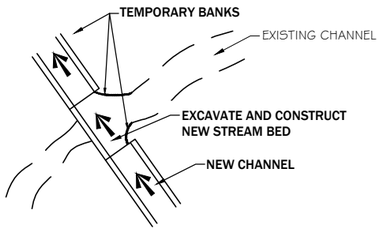
NO. 1

BUILD NEW CHANNEL BANKS AS CLOSE AS FEASIBLE TO EXISTING CHANNEL.



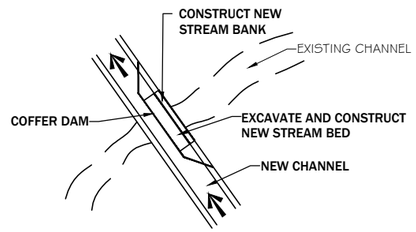
NO. 2

1. EXCAVATE TEMPORARY CONNECTING CHANNEL FROM EXISTING TO NEW CHANNEL TO DIVERT WATER TO NEW CHANNEL.
2. CONSTRUCT COFFER DAM TO DEWATER BANK ON DOWNSTREAM SIDE OF EXISTING CHANNEL.
3. CONSTRUCT NEW STREAMBED AND NEW STREAMBANK ON THIS HALF OF CHANNEL.



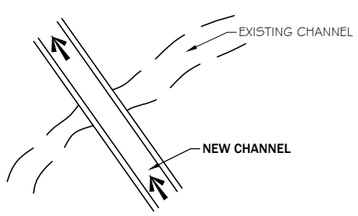
NO. 3

REMOVE COFFER DAM. INTRODUCE FLOW IN CONSTRUCTED HALF CHANNEL BY PERFORMING STEPS 1 AND 2 AT NEXT UPSTREAM CROSSING.



NO. 4

CONSTRUCT COFFER DAM ON UPSTREAM SIDE OF EXISTING CHANNEL. CONSTRUCT NEW STREAM BED AND NEW STREAM BANK ON THIS HALF OF CHANNEL.



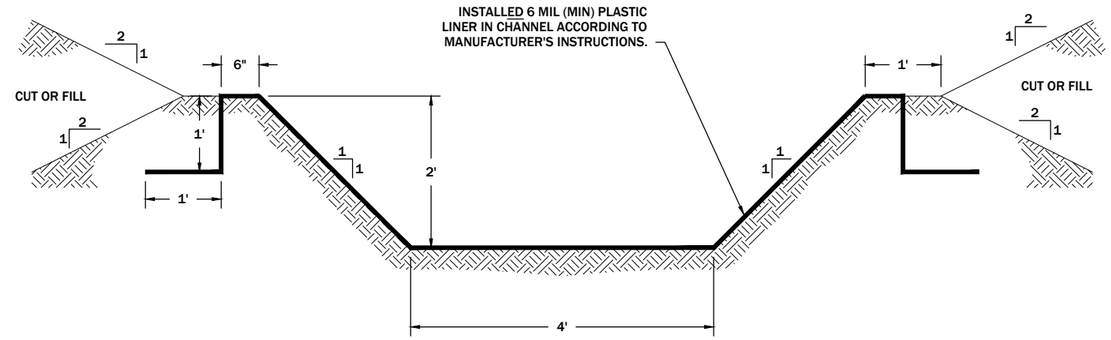
NO. 5

REMOVE COFFER DAM. RECLAIM EXISTING CHANNEL.

CHANNEL CROSSING SEQUENCE

(EXISTING CHANNEL HIGHER THAN NEW CHANNEL)
N.T.S.

3 BB–D5

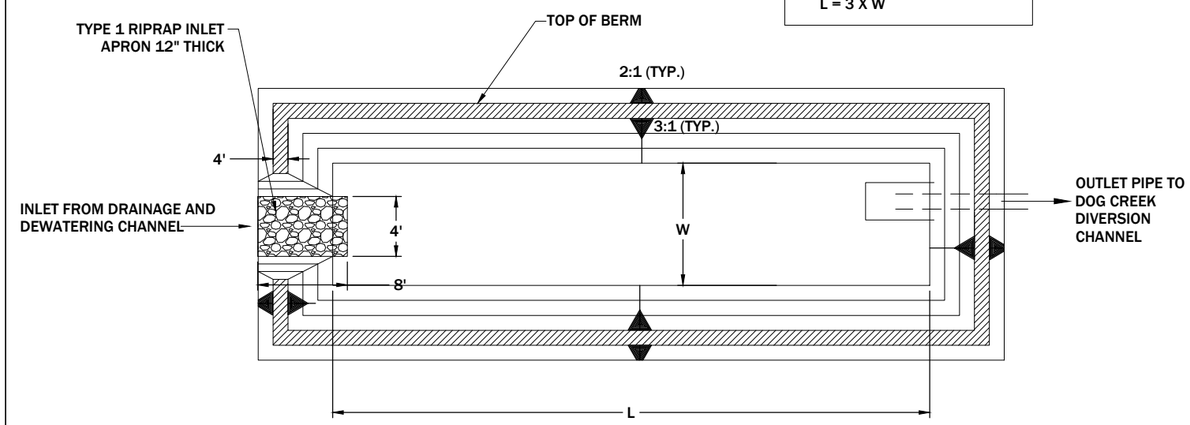


DOG CREEK DIVERSION CHANNEL AND DRAINAGE AND DEWATERING CHANNEL TYPICAL SECTION

N.T.S.

1 BB–D5

NOTE:
MINIMUM SIZE:
W = 2 X CHANNEL WIDTH
L = 3 X W



SEDIMENT POND PLAN

N.T.S.

2 BB–D5

AS-BUILT

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DESIGNED BY: PS
CHECKED BY: PL
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

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COORD SYS/ZONE: N/S
DATUM: N/S
UNITS: FT
SOURCE:

SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DIVERSION CHANNEL
TYPICAL SECTION
AND DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

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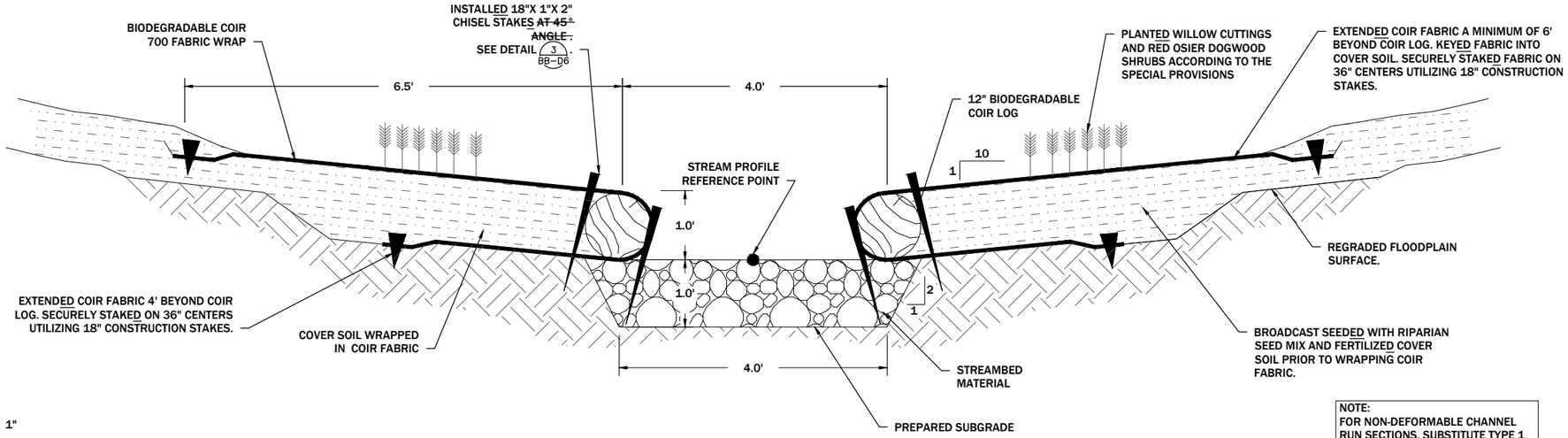
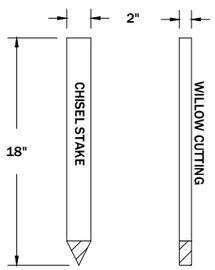
BB-D5



NOTE:
FOR NON-DEFORMABLE CHANNEL RUN SECTIONS, SUBSTITUTE TYPE 1 RIPRAP FOR STREAMBED MATERIAL

DOG CREEK CHANNEL RUN SECTION DETAIL 1 BB-D6

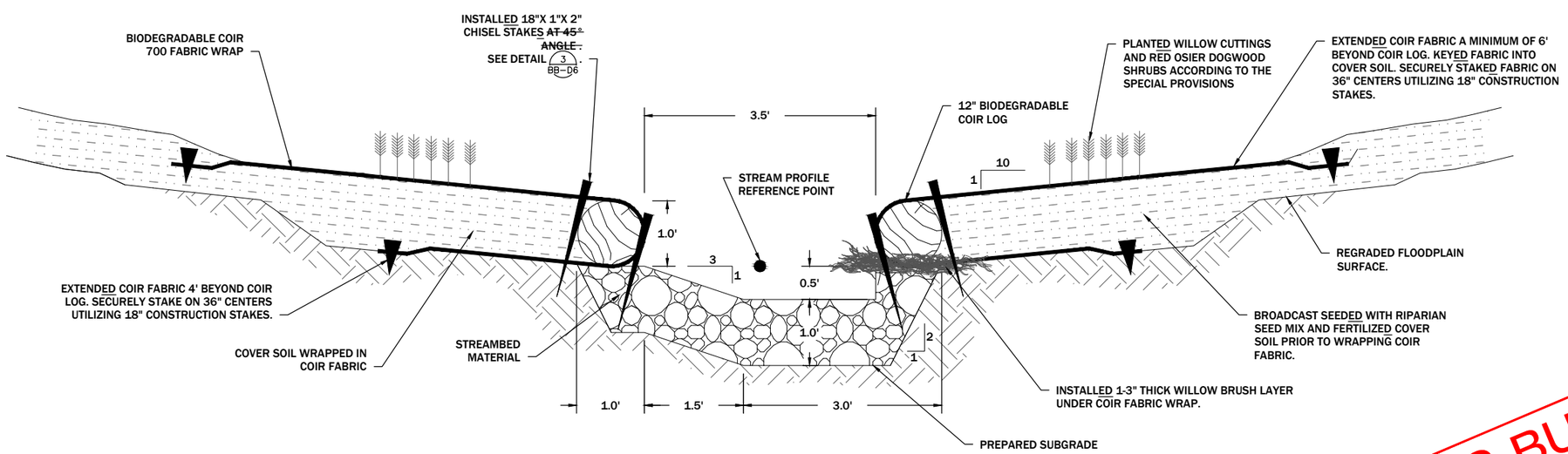
N.T.S.



NOTE:
1. CONTRACTOR MAY SUBSTITUTE WILLOW CUTTINGS IN PLACE OF 18" CHISEL STAKES USED FOR STAKING COIR LOGS. WILLOW CUTTING SHALL HAVE A MINIMUM DIAMETER OF 1 INCH. WILLOW CUTTINGS MAY BE SALVAGED FROM THE SITE AND SHALL BE DEEMED DURABLE FOR USE BY ENGINEER.

COIR LOG STAKE DETAIL 3 BB-D6

N.T.S.



DOG CREEK CHANNEL POOL SECTION DETAIL 2 BB-D6

N.T.S.

AS-BUILT

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CHECKED BY: AW
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UNITS: FT
SOURCE:

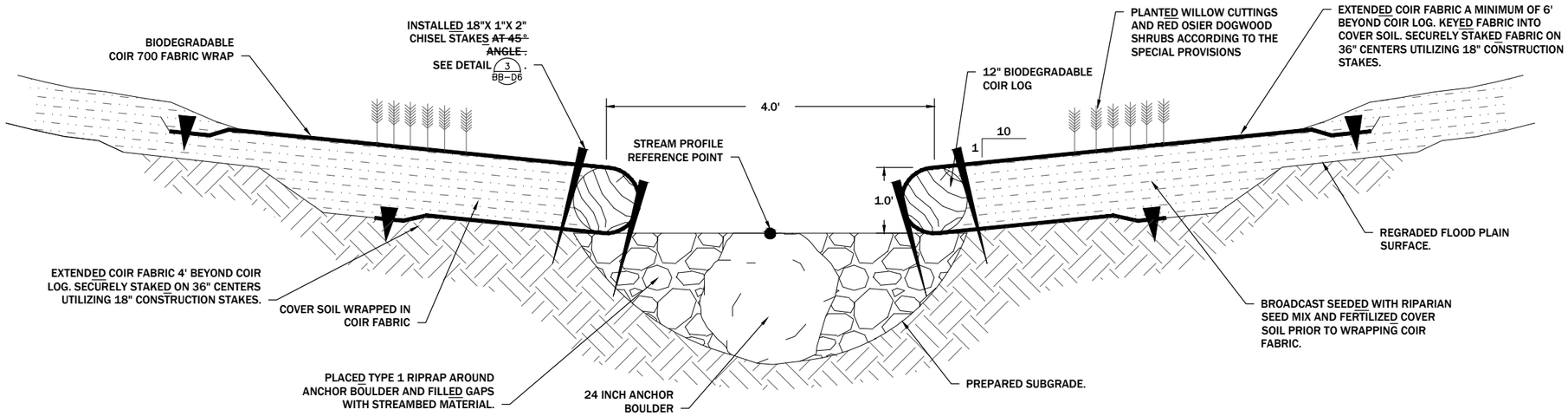
SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DOG CREEK
CHANNEL RUN AND
POOL DETAILS

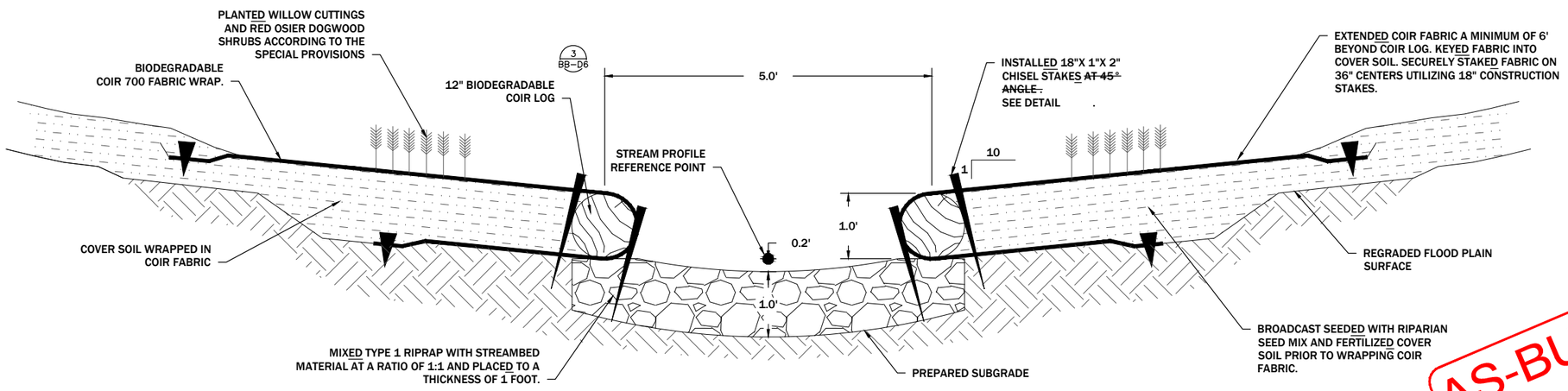
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D6



DOG CREEK CHANNEL STEP SECTION DETAIL 1 BB-D7

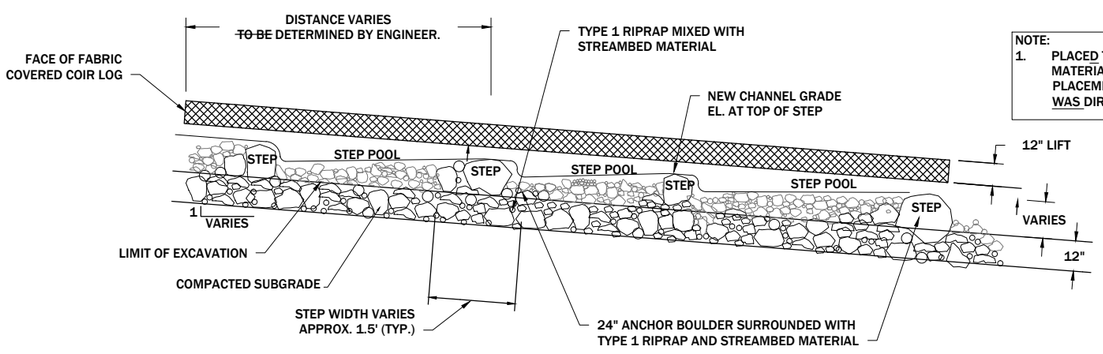
N.T.S.



AS-BUILT

DOG CREEK CHANNEL STEP POOL SECTION DETAIL 2 BB-D7

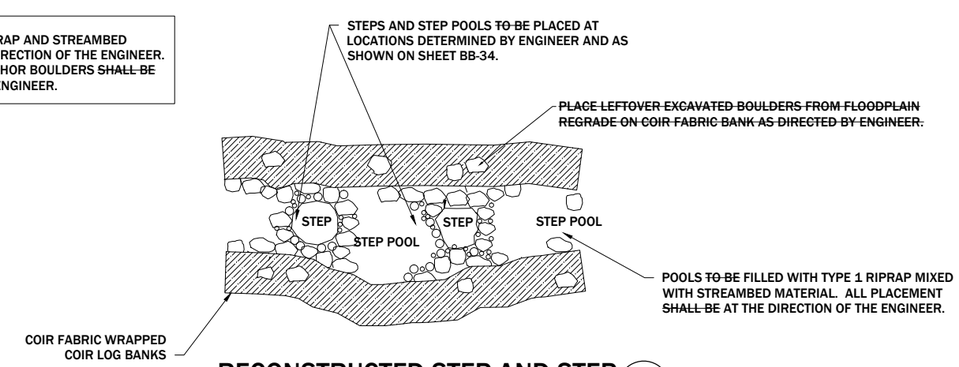
N.T.S.



NOTE:
1. PLACED TYPE 1 RIPRAP AND STREAMBED MATERIAL AT THE DIRECTION OF THE ENGINEER. PLACEMENT OF ANCHOR BOULDERS ~~SHALL BE~~ WAS DIRECTED BY ENGINEER.

RECONSTRUCTED STEP AND STEP POOL CHANNEL PROFILE 3 BB-D7

N.T.S.



RECONSTRUCTED STEP AND STEP POOL CHANNEL PLAN 4 BB-D7

N.T.S.

REVISION:		
DATE:	BY:	DESC:
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DRAWN BY:	JB/CR
DESIGNED BY:	AW
CHECKED BY:	AW
APPROVED BY:	TR
PROJECT NO:	10169
DATE:	04-05-2013

DISPLAYED AS:	
COORD SYS/ZONE:	N/A
DATUM:	N/A
UNITS:	FT
SOURCE:	

SCALE IN FEET
0 N.T.S.

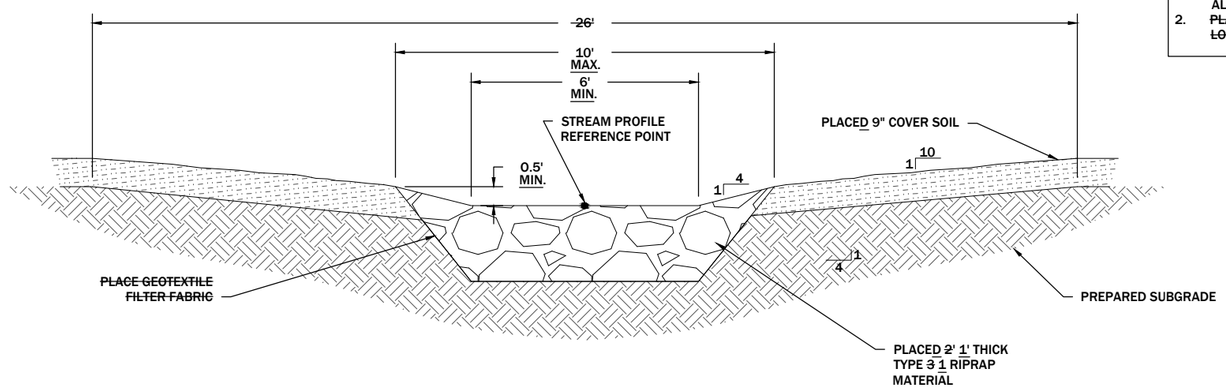
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DOG CREEK
CHANNEL STEP AND
STEP POOL DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D7

NOTE:
1. CONSTRUCTED UNNAMED TRIBUTARY AND ADIT CHANNEL ALONG ALIGNMENT STAKED BY ENGINEER.
2. ~~PLACE TYPE 3 RIPRAP TO THE HORIZONTAL EXTENT POSSIBLE IN LOCATIONS LESS THAN 26' WIDE.~~



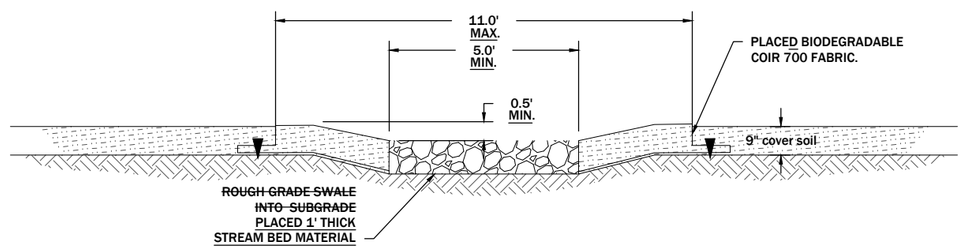
UNNAMED TRIBUTARY AND DEVON/STERLING ADIT CHANNEL DETAIL (1)

N.T.S. BB-D8

REVISED

AS-BUILT

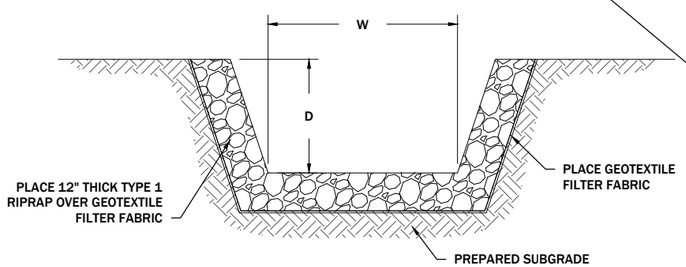
NOTE:
1. CONSTRUCTED DRAINAGE SWALE ALONG ALIGNMENT SHOWN ON SHEET BB-37.
2. INSTALLED AND STAKED BIODEGRADABLE COIR FABRIC PER MANUFACTURERS INSTRUCTIONS AND AS DESCRIBED IN THE SPECIAL PROVISIONS.
3. FERTILIZED AND SEEDED CHANNEL ~~BOTTOM~~ BANKS WITH UPLAND SEED MIX NO. 2 PRIOR TO INSTALLING COIR FABRIC.



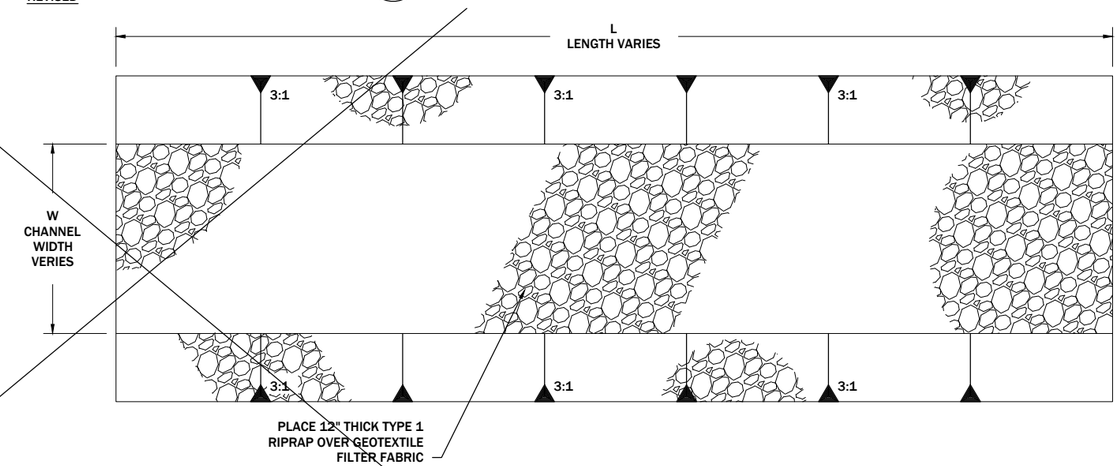
DAGO GULCH TRIBUTARY DRAINAGE SWALE DETAIL (2)

N.T.S. BB-D8

REVISED



RIPRAP APRON DIMENSIONS (FT)			
LOCATION	L	W	D
DOG CREEK	72	4	1
DAGO GULCH	74	5	0.50
ALBION ADIT	20	2	0.50



RIP-RAP APRON DETAIL (3)

N.T.S. BB-D8

NOT USED

REVISION:		
DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: AW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

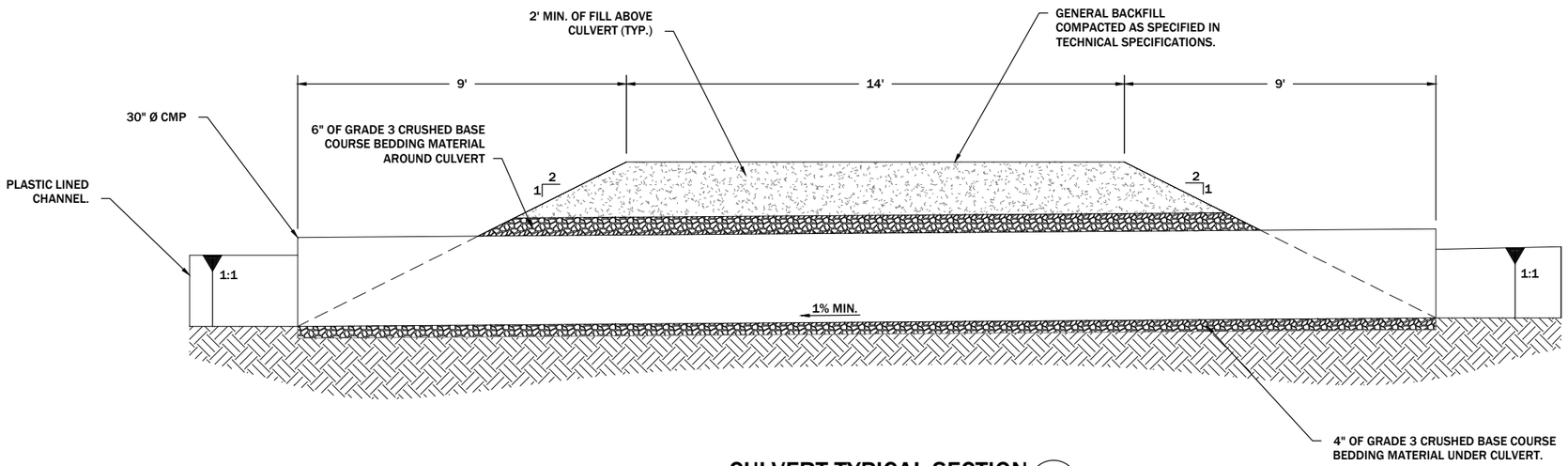
SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

TRIBUTARY
TYPICAL CHANNEL
DETAILS

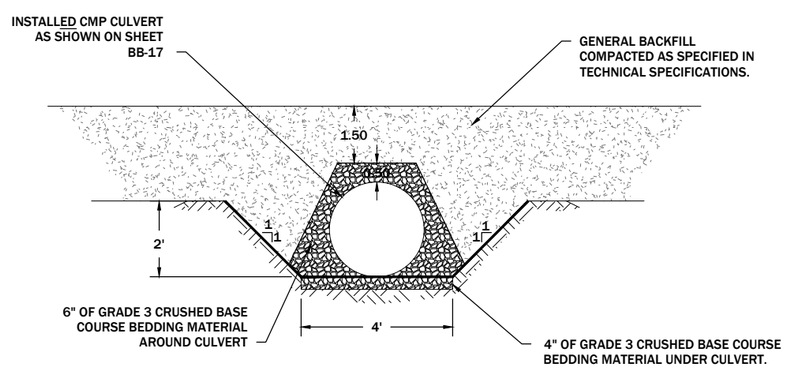
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D8



CULVERT TYPICAL SECTION (1 / BB-D9)

N.T.S.



CULVERT TYPICAL SECTION (2 / BB-D9)

N.T.S.

AS-BUILT

REVISION: DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: JB
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

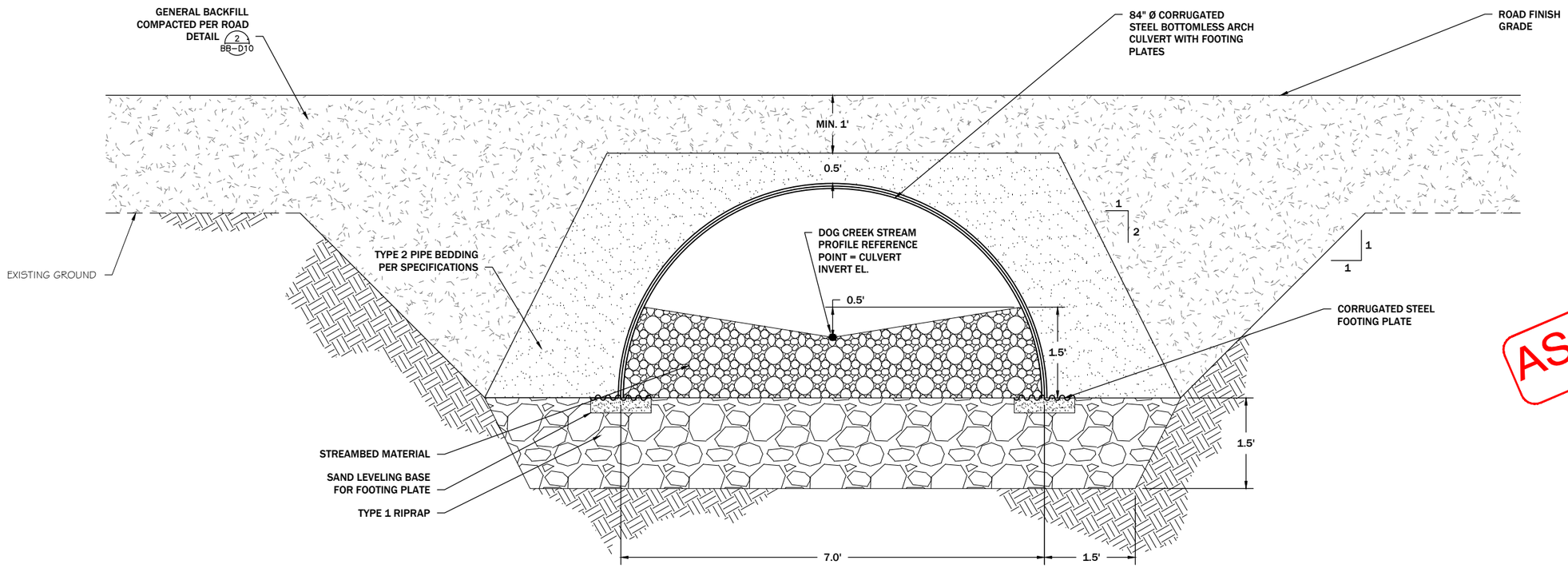
SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

TRENCHING AND CULVERT INSTALLATION DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

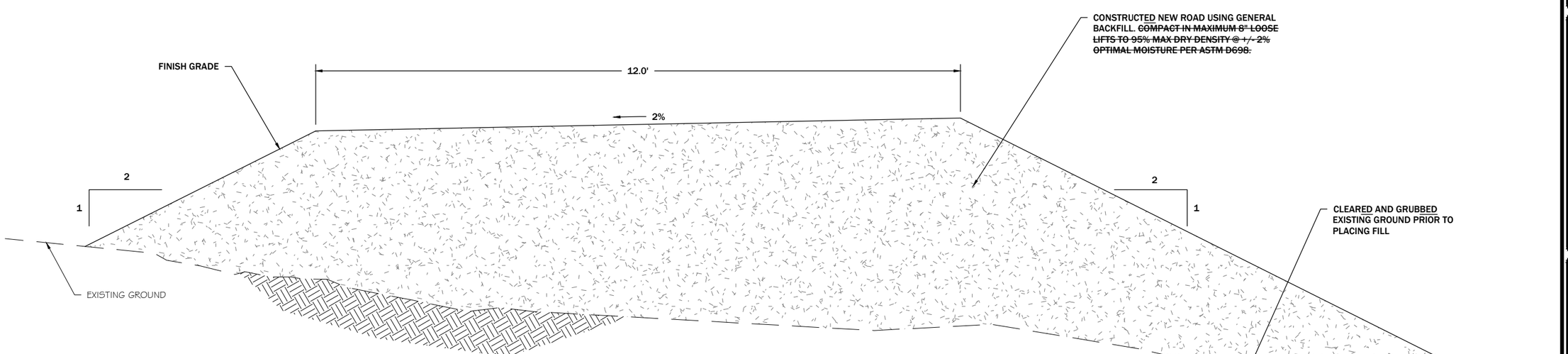
SHEET
BB-D9



AS-BUILT

OPEN BOTTOM ARCH CULVERT DETAIL 1

N.T.S. BB-D10



DOG CREEK ROAD DETAIL 2

N.T.S. BB-D10

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: TR
CHECKED BY: TR
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

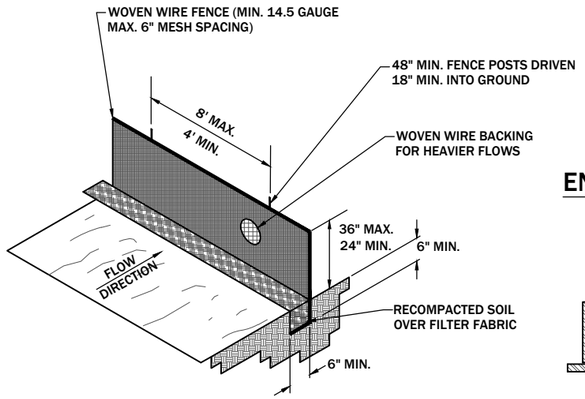
SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

DOG CREEK
ROAD CROSSING
AND CULVERT
DETAILS

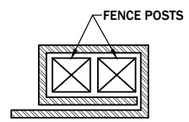
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D10



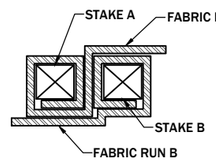
FILTER FENCE DETAIL (1)

N.T.S. BB–D11



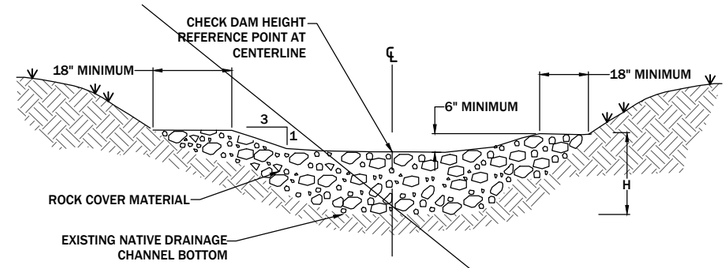
END STAKE DETAIL (1A)

N.T.S. BB–D11



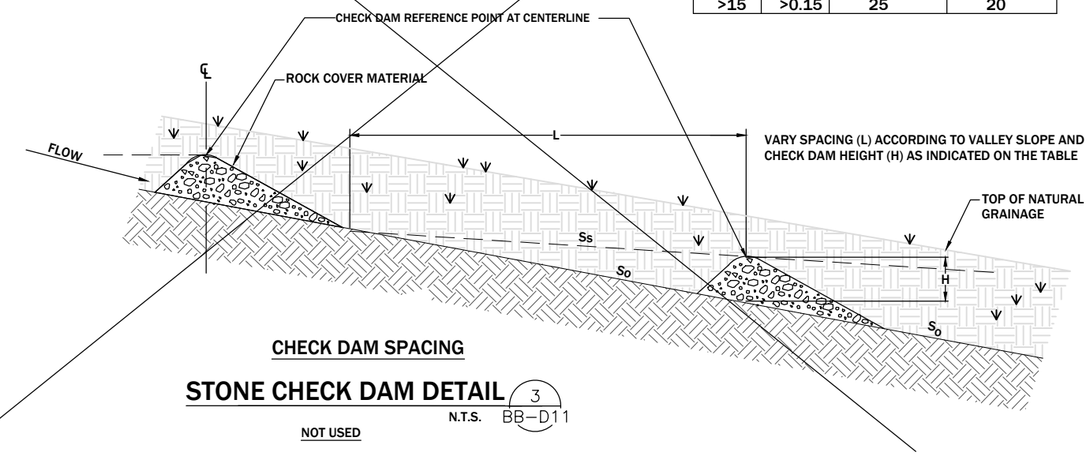
JOINING SECTION DETAIL (1B)

N.T.S. BB–D11



CHECK DAM CROSS-SECTIONAL VIEW LOOKING UPSTREAM

Valley Slope (So)		Check Dam Spacing (L), ft.	
%	ft/ft	H = 2 ft.	H = 1.5 ft.
1	0.01	667	500
2	0.02	333	250
3	0.03	222	167
4	0.04	167	125
5	0.05	133	100
6	0.06	111	83
7	0.07	95	71
8	0.08	83	63
9	0.09	74	56
10	0.10	40	30
11	0.11	36	27
12	0.12	33	25
13	0.13	31	23
14	0.14	29	21
15	0.15	27	20
>15	>0.15	25	20

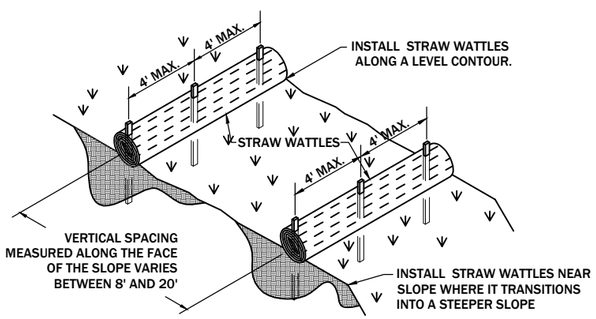


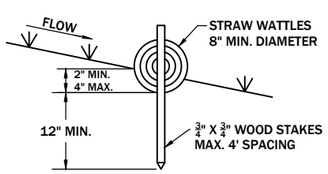
CHECK DAM SPACING

STONE CHECK DAM DETAIL (3)

N.T.S. BB–D11

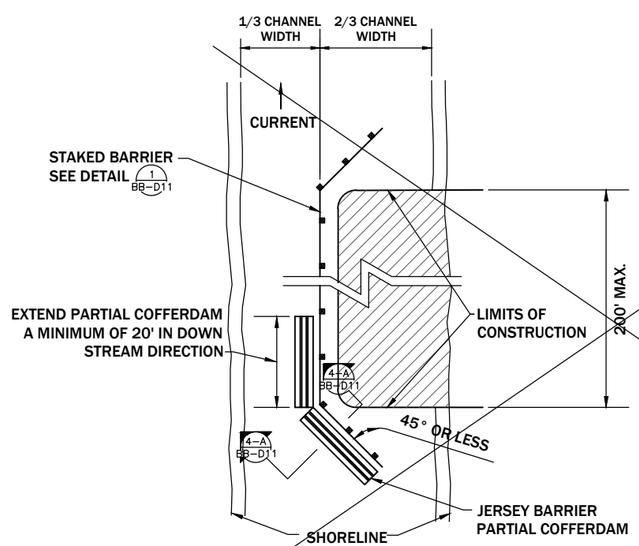
NOT USED





STRAW WATTLES (FIBER ROLLS) DETAILS (2)

N.T.S. BB–D11



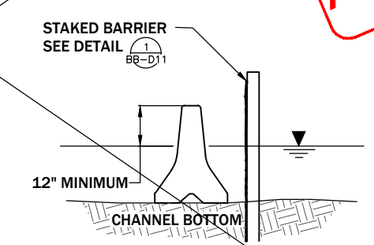
INSTREAM SEDIMENT CONTROL DETAIL (4)

N.T.S. BB–D11

NOT USED

NOTES: INSTALL SANDBAGS ALONG TOE OF STAKED BARRIER AS NEEDED TO SECURE FABRIC BARRIER TO BOTTOM OF STREAM CHANNEL.

AS-BUILT



SECTION (4–A)

N.T.S BB–D11

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: JG
CHECKED BY: JG
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

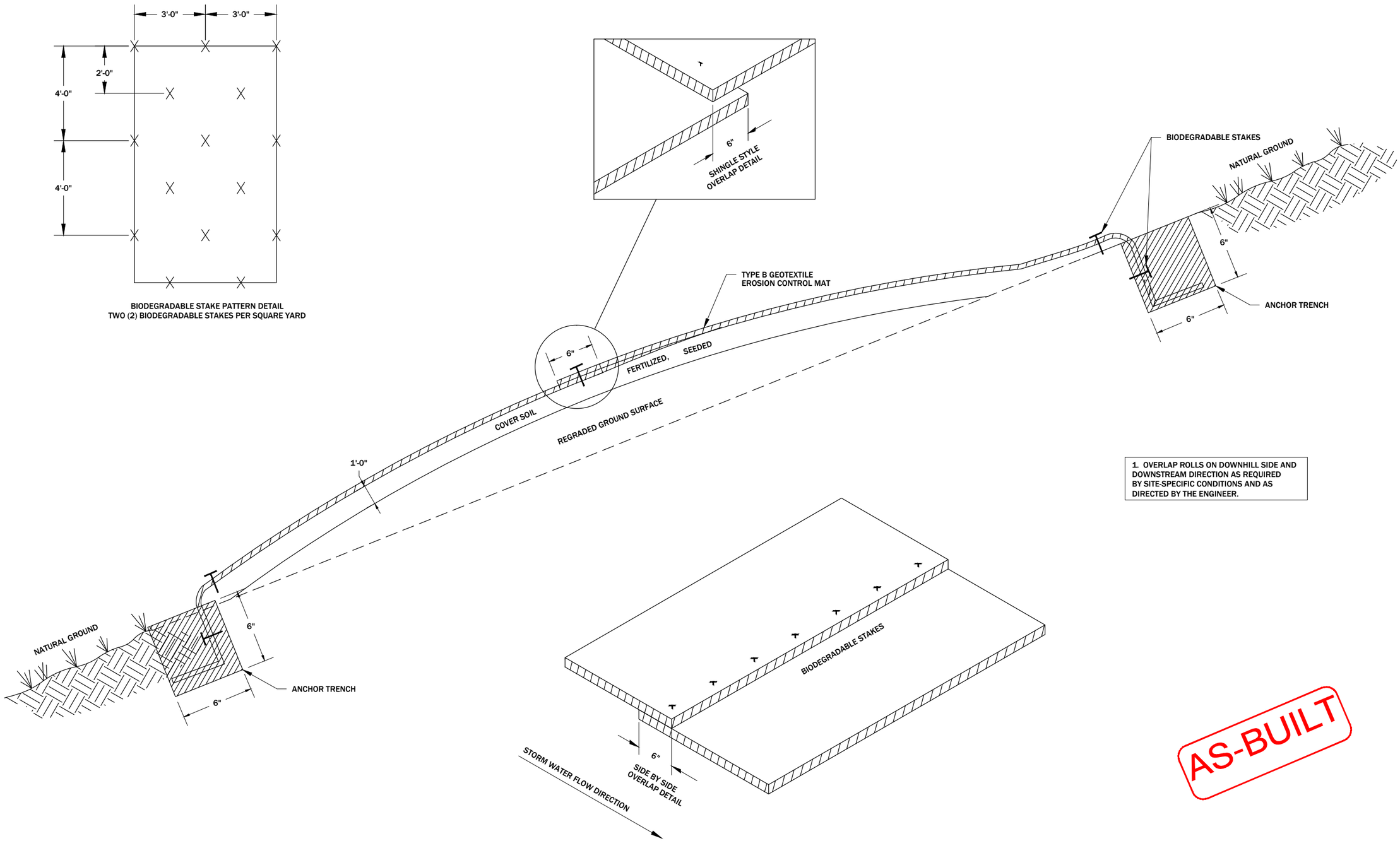
SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

STORM WATER
BMPS DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D11



1. OVERLAP ROLLS ON DOWNHILL SIDE AND DOWNSTREAM DIRECTION AS REQUIRED BY SITE-SPECIFIC CONDITIONS AND AS DIRECTED BY THE ENGINEER.

AS-BUILT

TYPE B GEOTEXTILE - EROSION CONTROL MAT INSTALLATION DETAIL

N.T.S. 1 BB-D12

NO EROSION CONTROL MAT INSTALLED

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: JM
CHECKED BY: MB
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

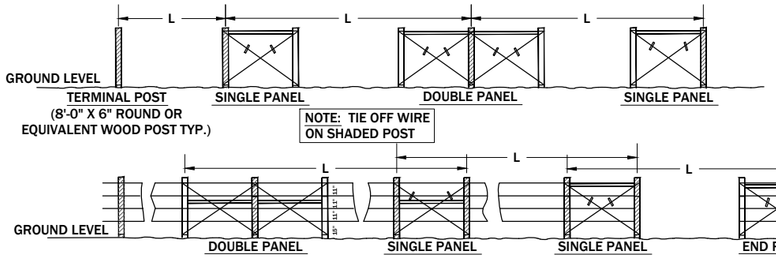
SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

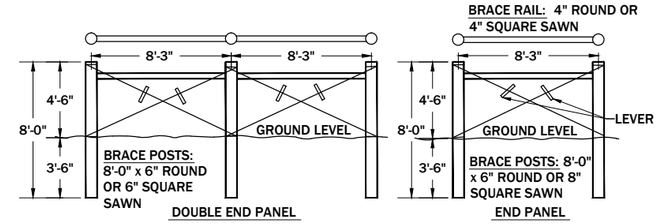
EROSION CONTROL
MAT DETAILS

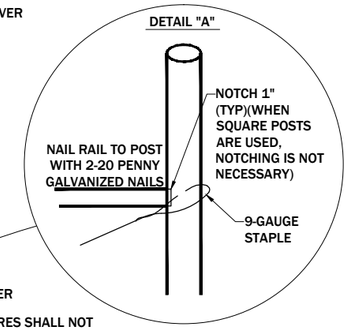
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

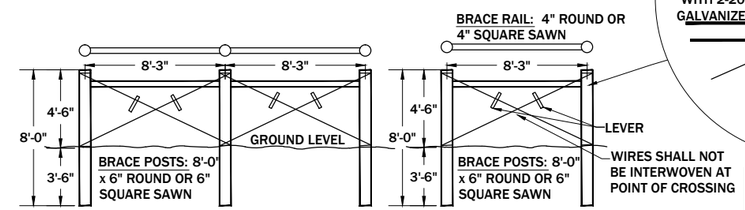
SHEET
BB-D12



FENCE TYPE	RUN = L	PANELS REQUIRED
F-4M F-4W	66' OR LESS	TERMINAL POST
	66' - 660'	SINGLE
	OVER 660' TO MAX. 990'	DOUBLE





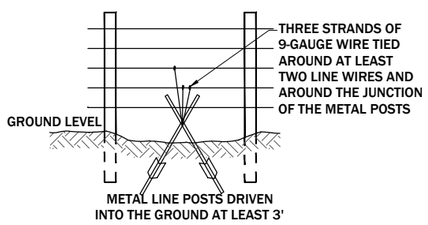


FOR CORNERS, PULLING, STRETCHING OR CHANGES IN HORIZONTAL ALIGNMENT

FOR PULLING, STRETCHING, CHANGES IN VERTICAL ALIGNMENT, OR PANELS ON A RUN OF LESS THAN 330'

NOTES:
1. BRACE WIRES - ONE CONTINUOUS 9-GAUGE SMOOTH WIRE, DOUBLED TO FORM A FOUR WIRE BRACE. THE TWO ENDS SHALL BE TIED NEAR THE TOP OF THE PANEL POSTS.
2. LEVERS - 1 1/2" x 2" x 12" MINIMUM SIZE.

THIS DETAIL DRAWN AT 2:1

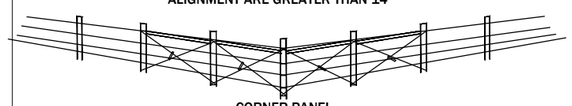


ALTERNATE DEADMAN

WHEN APPROVED BY THE ENGINEER, THE ABOVE DEADMAN MAY BE USED IN LIEU OF A ROCK OR PRECAST CONCRETE BLOCK, AS SPECIFIED.

DOUBLE PANEL

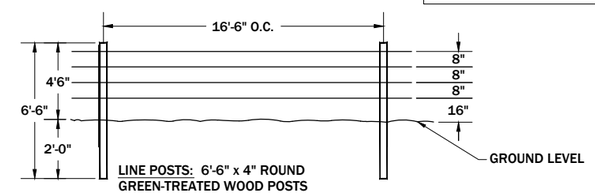
USE WHERE RUNS ARE LESS THAN 660 FEET OR WHERE CHANGES IN HORIZONTAL ALIGNMENT ARE GREATER THAN 14°



CORNER PANEL

(FOR ANGLES GREATER THAN 30° AND WHERE RUNS ARE 660 FEET TO 990 FEET)

FENCE PANEL TYPES



LINE POSTS: 6'-6" x 4" ROUND GREEN-TREATED WOOD POSTS OR METAL POSTS AS APPROVED BY OWNER

SMOOTH WIRE FENCE DETAIL

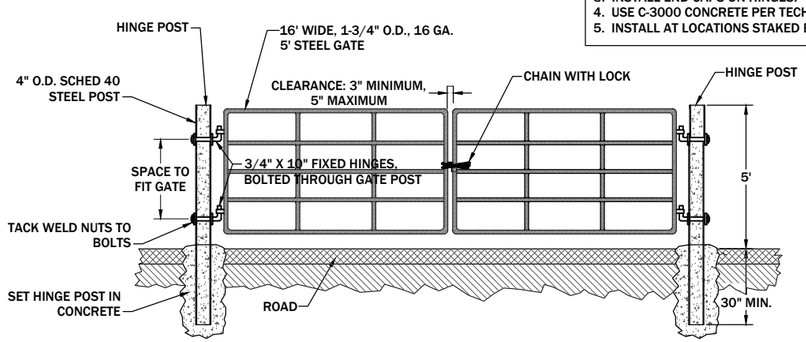
N.T.S. 1 BB-D13

NOTES:

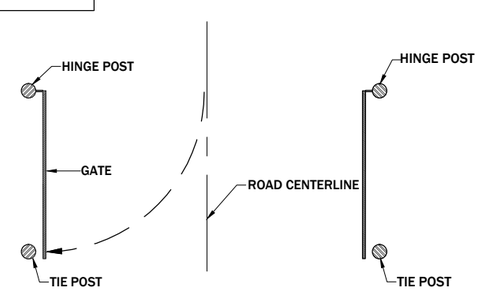
1. PLACE ALL FENCE WIRE ON SIDE OF POST OPPOSITE WORK AREA EXCEPT AT CURVES, PLACE THE WIRE ON THE OUTSIDE OF THE CURVE. PLACE WIRE ON WINDWARD SIDE OF POSTS IN AREAS SUBJECT TO HIGH VELOCITY WINDS AND MOVING DEBRIS, EXCEPT ON CURVES.
2. MEASURE POST SPACING GENERALLY PARALLEL TO GROUND.
3. SPACE LINE POSTS 16'-6" APART. ALSO SPACE LINE POSTS 16'-6" FROM BRACE OR PANEL POSTS.
4. A DEADMAN MAY BE A CONCRETE BLOCK, A CAST-IN-PLACE CONCRETE BLOCK, A ROCK OR OTHER APPROVED OBJECT, WEIGHING AT LEAST 150 POUNDS AND COVERED AT LEAST 2 FEET BELOW GROUND SURFACE.
5. TYPE F-4M: 4 STRAND SMOOTH WIRE FENCE WITH METAL LINE POSTS.
6. TYPE F-4W: 4 STRAND SMOOTH WIRE FENCE WITH WOOD LINE POSTS.
7. IF STAYS ARE USED, ONLY PLACE STAY ON BOTTOM THREE WIRES.
8. CONSTRUCT FENCES IN LOCATIONS STAKED BY SURVEYOR.

NOTES:

1. ENSURE HINGE POST & LOCK POST ARE STRAIGHT AND VERTICAL.
2. FILL HINGE POSTS WITH CONCRETE.
3. INSTALL END CAPS ON HINGES.
4. USE C-3000 CONCRETE PER TECHNICAL SPECIFICATIONS.
5. INSTALL AT LOCATIONS STAKED BY ENGINEER.



ELEVATION VIEW



PLAN VIEW

32' STEEL GATE DETAIL

NOT TO SCALE 2 BB-D13

AS-BUILT

REVISION: DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: AW
CHECKED BY: AW
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
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UNITS: FT
SOURCE:

SCALE IN FEET
0 N.T.S.

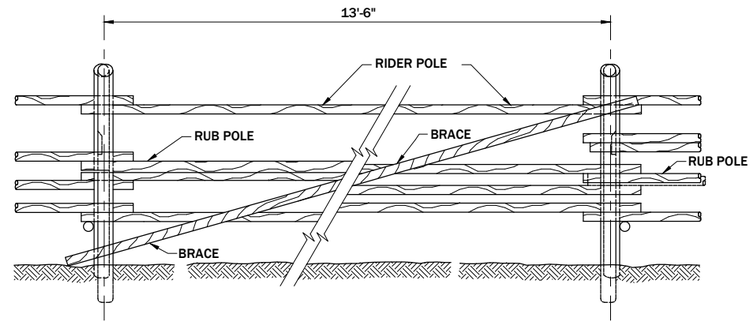
DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

FENCE AND GATE DETAILS

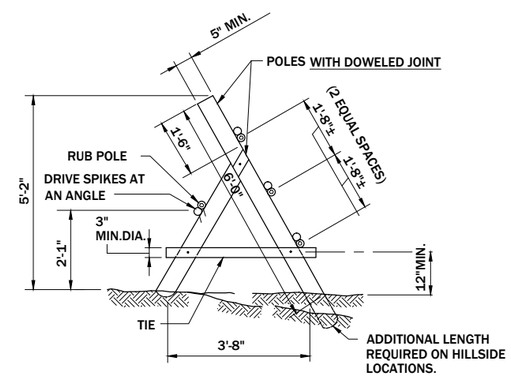
PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D13

4/2/2013 5:18:52 PM P:\HELENADATA\DEQ\BALD BUTTE - GREAT DIVIDE\CONSTRUCTION\DRAWINGS\AS-BUILT\SHEET SET - BALD BUTTE\10162-CO-DET-007-11.DWG

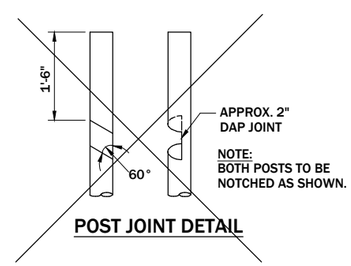


ELEVATION



3-POLE FENCE

NOTES:
1. SPIKES SHALL BE USED AS FASTENERS. TWO SPIKES SHALL BE USED TO FASTEN POSTS TOGETHER. ONE SPIKE SHALL BE USED TO FASTEN POLES, BRACES & TIES TO POSTS.
2. POLES, BRACES, TIES, & POSTS SHALL BE OF MATERIAL AS DESCRIBED IN THE SPECIAL PROVISIONS.



POST JOINT DETAIL

JACK LEG FENCE DETAIL

N.T.S. 1 BB-D14

AS-BUILT

REVISION:

DATE:	BY:	DESC:
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DRAWN BY: JB/CR
DESIGNED BY: PL
CHECKED BY: PL
APPROVED BY: TR
PROJECT NO: 10169
DATE: 04-05-2013

DISPLAYED AS:
COORD SYS/ZONE: N/A
DATUM: N/A
UNITS: FT
SOURCE:

SCALE IN FEET
0 N.T.S.

DEQ-AMLB
BALD BUTTE MINE AND MILLSITE
RECLAMATION PROJECT

JACK LEG
FENCE DETAILS

PIONEER TECHNICAL SERVICES, INC.
201 E. BROADWAY, SUITE C
HELENA, MT 59601
(406) 457-8252

SHEET
BB-D14