

ABBREVIATIONS		LEGEND	
A	DELTA		EXISTING GROUND
ABS	ACRYLONITRILE BUTADIENE STYRENE		ORIGINAL GROUND (1974)
ALT	ALTERNATIVE		EXISTING ROAD
~ OR APPROX	APPROXIMATE		EXISTING TOPOGRAPHY ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
AVG	AVERAGE		BURIED PIPE, ALIGNMENT UNKNOWN
BP	BEGINNING POINT		CROSS SECTION LOCATION A, REFERS TO THE LOCATION WHERE THE SECTION WAS CUT. CROSS SECTION DESIGNATION 2, REFERS TO THE SHEET NUMBER WHERE THE SECTION IS LOCATED.
CL	CENTERLINE		
C-C	CENTER TO CENTER		
CP	CONTROL POINT		
CPT	CONE PENETRATION TEST		
CORR	CORRIDOR		
Ø	DIAMETER		
DWG	DRAWING		
E	EASTING OR EAST		STORMWATER FLOW ARROW
EA	EACH		PIEZOMETER - EXISTING
EL OR ELEV	ELEVATION		PIEZOMETER - PROPOSED
EP	END POINT		MOVEMENT MONUMENT
EX OR EXIST	EXISTING		INCLINOMETER - EXISTING
EW	EACH WAY		INCLINOMETER - PROPOSED
FT	FOOT		
L	LENGTH		
LF	LINEAR FEET		
MIN	MINIMUM		
N	NORTHING OR NORTH		
nb	north buttress		FILTER LAYER
nc	north channel		RIPPRAP
NE	NORTHEAST		COARSE TAILINGS SAND BEDDING
NO	NUMBER		
NOM	NOMINAL		
NW	NORTHWEST		
OC	ON CENTER		
O/S	OFFSET		
PC	POINT OF CURVE		
PI	POINT OF INTERSECTION		
PRC	POINT OF REVERSE CURVE		
PT	POINT OF TANGENCY		
PVC	POLYVINYL CHLORIDE		
R	RADIUS		
RCP	REINFORCED CONCRETE PIPE		
REF	REFERENCE		
ROW	RIGHT OF WAY		
RW	RETURN WATER		
S	SLOPE		
sb	south buttress		
SC	south channel		
SCH	SCHEDULE		
SE	SOUTHEAST		
SH	STATE HIGHWAY		
SPD	SINGLE POINT DISCHARGE		
ST	STORM		
STA	STATION		
SST	STAINLESS STEEL		
STL	STEEL		
SW	SOUTHWEST		
TDL	TAILING DELIVERY LINE		
TP	TEST POINT		
TYP	TYPICAL		
VW	VIBRATING WIRE		
WB	WEST BUTRESS		
WSEL	WATER SURFACE ELEVATION		
YR	YEAR		

GENERAL NOTES

1. THESE DRAWINGS ARE FOR CONSTRUCTING 3 DAM BUTRESS STAGE 1 PRIOR TO AVERAGE TAILINGS DAM CREST ELEVATION OF 8893 FT.

2. EXISTING TOPOGRAPHY IS PROVIDED BY HENDERSON (AUGUST 2017)

3. SEE SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS

4. DATUM:
LOCAL MINE COORDINATE SYSTEM

AECOM

6200 S. Quebec Street
Greenwood Village, CO 80111
303.694.4770 (phone)
303.694.4340 (fax)

**CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL,
NEAR PARSHALL, CO**

**HENDERSON
3 DAM BUTRESS
STAGE 1**

ISSUED FOR BIDDING		DATE	BY
ISSUED FOR CONSTRUCTION		DATE	BY
REVISIONS			
NO	DESCRIPTION	DATE	
Δ			
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AECOM PROJECT NO. 00551494			
DRAWN BY		AMF	
DESIGNED BY		PAS	
CHECKED BY			
DATE CREATED		02/11/17	
PLOT DATE		1/20/18	
SCALE		AS SHOWN	
ACAD VER.		2018	
SHEET TITLE			

**GENERAL NOTES,
LEGEND, AND
ABBREVIATIONS**

**PRELIMINARY 90% DESIGN
NOT FOR CONSTRUCTION**



PLAN VIEW

0 100 200 300

SCALE IN FEET

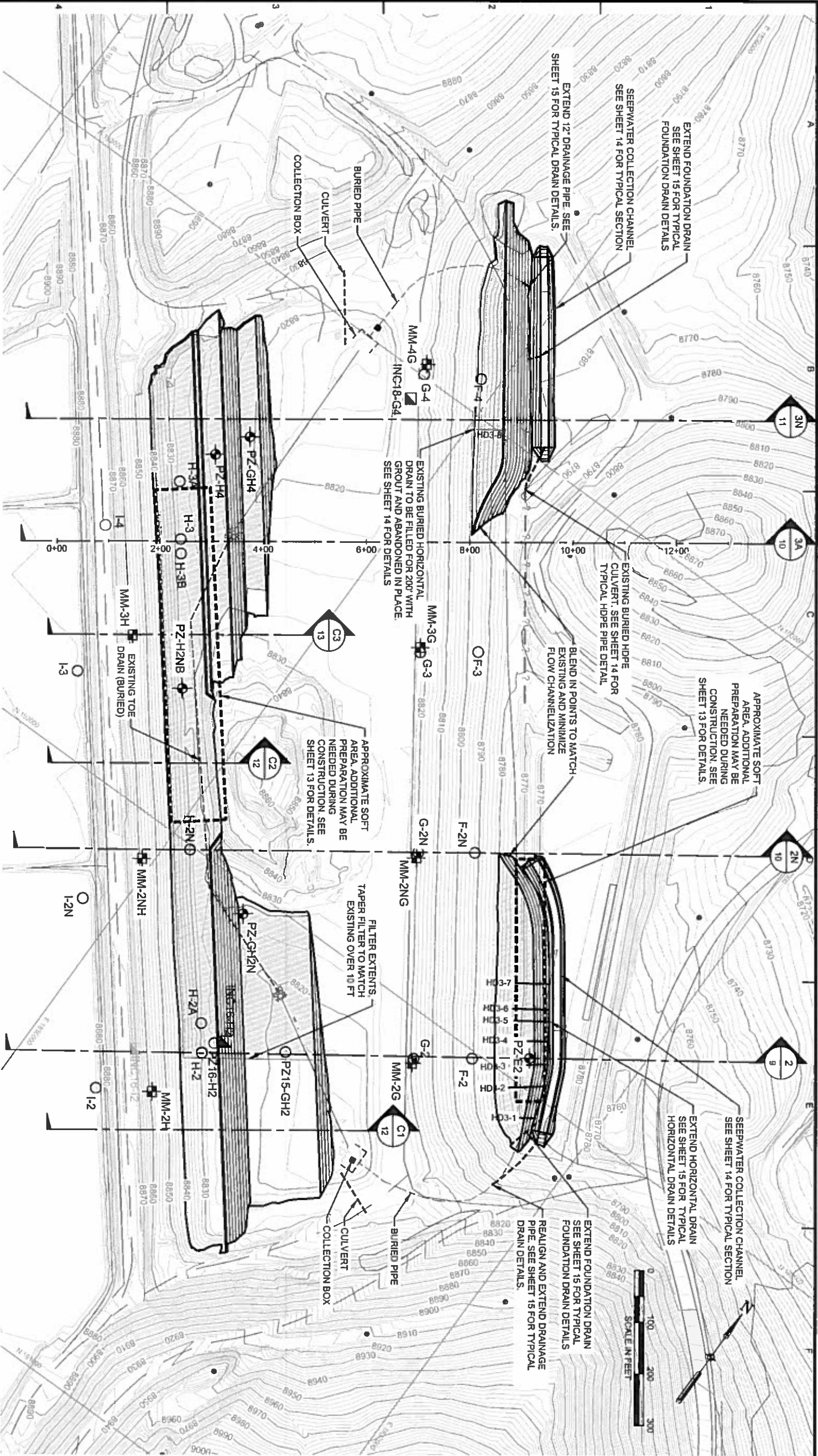
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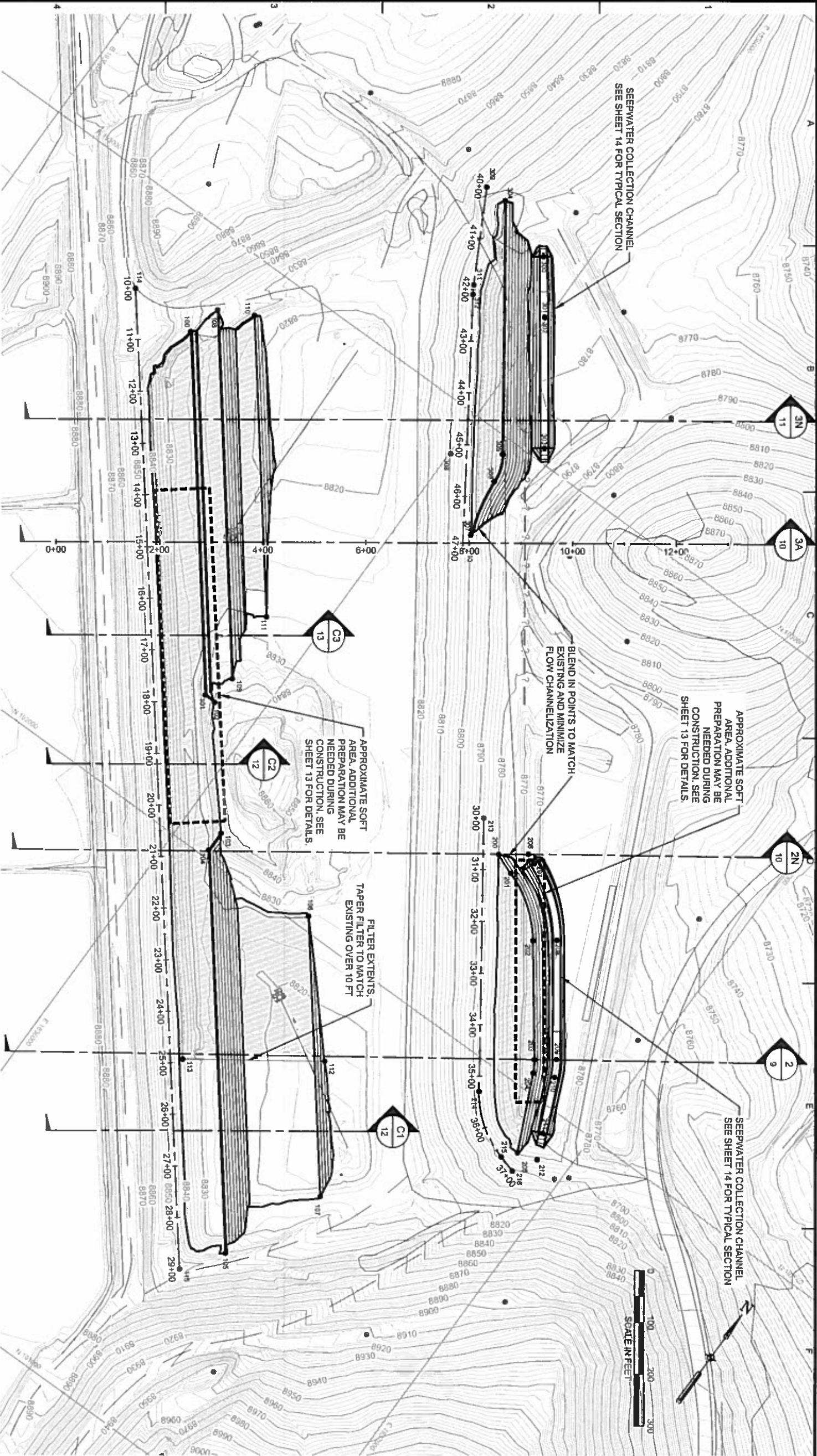
**CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL.
NEAR PARSHALL, CO**

**HENDERSON
3 DAM BUTTRESS
STAGE 1**

ISSUED FOR BIDDING		DATE	BY
ISSUED FOR CONSTRUCTION		DRAWN BY	DATE
REVISIONS			
NO.	DESCRIPTION	DATE	
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AECOM PROJECT NO.		000516948	
DRAWN BY		AMW	
DESIGNED BY		PAS	
CHECKED BY			
DATE CREATED		9/23/17	
PLOT DATE		1/20/18	
SCALE		AS SHOWN	
ACAD VER		2018	
SHEET TITLE			

3DAM
EXISTING CONDITIONS
PLAN VIEW





POINT TABLE			
POINT #	NORTHING	EASTING	ELEVATION DESCRIPTION
100	18208.73	183546.66	8641.00 PT
101	18254.93	183581.71	8633.86 PT
102	18254.06	183591.80	8641.00 PT
103	18256.15	183607.07	8641.00 PT
104	18251.71	183607.76	8638.31 PT
105	181403.16	183659.61	8641.00 PT
106	18202.90	183630.66	8624.00 PT
107	181600.27	183644.23	8624.00 PT
108	182070.96	183574.17	8637.00 PT
109	18231.00	1835916.63	8637.00 PT
110	182504.25	183559.33	8639.00 PT
111	182448.47	183588.24	8628.00 PT
112	181818.84	1836186.31	8617.51 TAPER
113	181668.80	1836271.28	8638.00 TAPER
114	182811.53	183520.79	8656.00 WB

POINT TABLE			
POINT #	NORTHING	EASTING	ELEVATION DESCRIPTION
115	181326.32	1836026.78	8651.76 WB
200	182306.91	1836632.88	8780.00 PT
201	182222.86	1836673.46	8774.05 PC
202	182343.21	1836684.46	8766.04 PT
203	182057.88	1836822.73	8770.09 PC
204	182033.61	1836838.08	8770.06 PC
205	181893.13	1836802.13	8780.00 PT
206	182072.91	1836679.23	8766.48 SC
207	182366.34	1836590.61	8766.32 SC-PC
208	182270.83	1836721.43	8769.11 SC-PT
209	182003.57	1836656.88	8768.27 SC-PC
210	182033.18	1836817.40	8768.45 SC-PT
211	181952.16	1836818.40	8769.00 SC-PT
212	181804.14	1836840.78	8769.43 SC-PT
213	182276.59	1836466.56	8769.68 SB

POINT TABLE			
POINT #	NORTHING	EASTING	ELEVATION DESCRIPTION
214	181845.41	1836772.72	8781.56 SB-PC
215	181868.07	1836681.33	8784.55 SB-PT
216	181858.49	1836814.78	8780.82 SB
300	183324.38	1835824.18	8781.23 NC
301	183231.43	1835904.47	8778.76 NC-PC
302	183230.70	1835995.01	8778.75 NC-PT
303	183026.18	1836142.72	8780.56 NC
304	183166.07	1836000.92	8789.00 PT
305	182968.06	1836084.14	8785.14 PC
306	182817.48	1836102.37	8784.37 PC
307	182806.70	1836128.84	8784.37 PT
308	182811.23	1836802.56	8808.87 200' RADIUS
309	183368.88	1835756.44	8817.52 NB
310	182778.87	1836128.88	8803.00 NB
311	183201.12	1835847.23	8803.05 NB-PC

POINT TABLE			
POINT #	NORTHING	EASTING	ELEVATION DESCRIPTION
312	183185.44	1835856.67	8802.88 NB-PT

- NOTES:
- SEE SHEET 2 FOR LEGEND
 - FILTER MAY BE LESS THAN THE MINIMUM REQUIRED 1.5-FT WHERE IT IS TIED INTO NATURAL GROUND AS CONFIRMED BY THE FIELD ENGINEER
 - TOE BUTRESS MUST BE COMPLETED BEFORE STARTING THE STEPPACK BUTRESS
 - SEE SPECIFICATION 02330 FOR EARTHWORK REQUIREMENTS

STAGE 1 BUTRESS FILL QUANTITY: 108,200 CY
STAGE 1 FILTER QUANTITY: 17,800 CY
STAGE 1 DITCH EXCAVATION QUANTITY: 4,400 CY

PRELIMINARY 90% DESIGN
NOT FOR CONSTRUCTION

ACOM
EC03 S. Currier Street
Greenwood Village, CO 80111
303.694.2770 (phone)
303.694.4346 (fax)

**CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL
NEAR PARSHALL, CO**

HENDERSON
3 DAM BUTRESS
STAGE 1

ISSUED FOR BIDDING	DATE
ISSUED FOR CONSTRUCTION	DATE

REVISIONS	
NO	DESCRIPTION
DATE	

NO	DESCRIPTION	DATE

ACOM PROJECT NO.	00551494
DRAWN BY:	AMF
DESIGNED BY:	AMS
CHECKED BY:	AMS
DATE CREATED:	02/11/17
PLOT DATE:	1/20/18
SCALE:	AS SHOWN
ACAD VER:	2018

SHEET TITLE
BUTRESS PLAN
STAGE 1
EARTHWORK
HORIZONTAL
CONTROL



LEGEND
→ DIRECT ONAL FLOW PATH

- NOTES:
1. SEE SHEET 2 FOR LEGEND
 2. STORMWATER MANAGEMENT TO BE DESIGNED AND IMPLEMENTED BY OTHERS
 3. SEE SHEET 5 FOR CONSTRUCTION CONTROL POINTS

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NOT FOR CONSTRUCTION

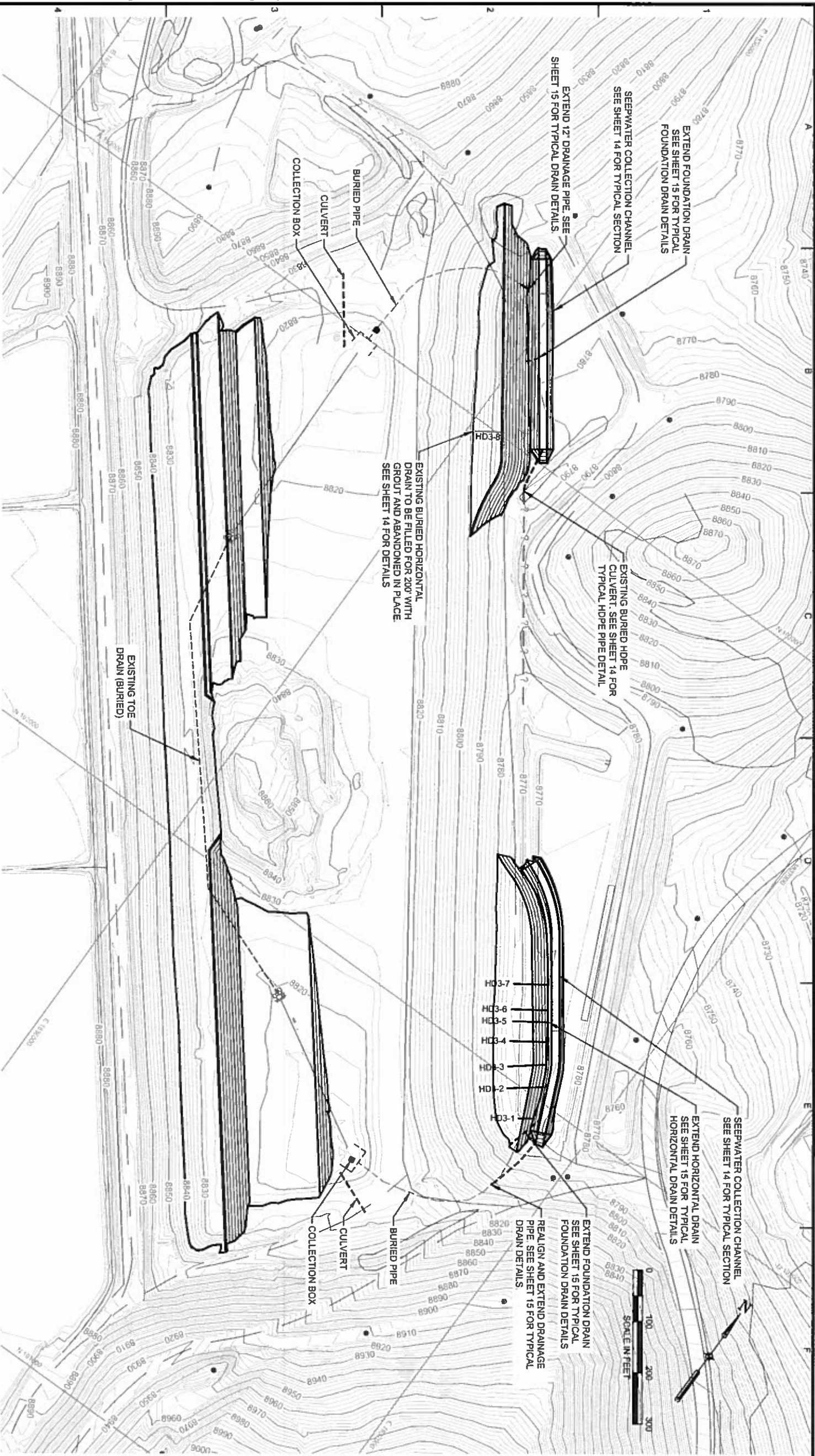
AECOM
6220 S. Quebec Street
Greenwood Village, CO 80111
303.427.4700 (phone)
303.426-3945 (fax)

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HENDERSON MILL,
NEAR PARSHALL, CO

HENDERSON
3 DAM BUTRESS
STAGE 1

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ISSUED FOR CONSTRUCTION		DATE	BY
REVISIONS			
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AECOM PROJECT NO. 60551494			
DRAWN BY		AMF	
DESIGNED BY		PAS	
CHECKED BY:			
DATE CREATED:		9/21/17	
PLOT DATE:		1/2018	
SCALE:		AS SHOWN	
ACAD VER:		2016	
SHEET TITLE			
BUTRESS PLAN			
STAGE 1			
STORMWATER			
MANAGEMENT			

SHEET 6 OF 15



- NOTES:**
1. SEE SHEET 2 FOR LEGEND
 2. IMPACTED INFRASTRUCTURES - SEEPWATER COLLECTION CHANNEL, HORIZONTAL DRAINS, FOUNDATION DRAINS, SEEPWATER COLLECTION PIPE, SEEPWATER COLLECTION CHANNEL, CULVERT
 3. SEE SHEET 5 FOR CONSTRUCTION CONTROL POINTS
 4. INSTRUMENTATIONS ARE SHOWN ON SHEET 8

PRELIMINARY 90% DESIGN
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AECON

6200 S. Quince Street
Greenwood Village, CO 80111
303.584.2770 (phone)
303.584.3340 (fax)

**CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL,
NEAR PARSHALL, CO**

**HENDERSON
3 DAM BUTTRSS
STAGE 1**

ISSUED FOR BIDDING		DATE	BY
ISSUED FOR CONSTRUCTION		DATE	BY
REVISIONS			
NO.	DESCRIPTION	DATE	
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AECON PROJECT NO. 60551494			
DRAWN BY:		AMF	PMS
DESIGNED BY:			
CHECKED BY:			
DATE CREATED		9/21/17	
PLOT DATE:		1/20/18	
SCALE:		AS SHOWN	
ACAD VER:		2016	
SHEET TITLE			

**BUTTRSS PLAN
STAGE 1
INFRASTRUCTURES**



NEW INSTRUMENTATION TABLE		
INSTRUMENT	INSTRUMENT ID	INSTALLATION
INCLINOMETER	INC18-G4	TO BE INSTALLED AFTER COMPLETION OF STAGE 1 BUTTRSS
PIEZOMETER	PZ-GH6	TO BE INSTALLED BEFORE COMPLETION OF STAGE 1 BUTTRSS
PIEZOMETER	PZ-GH2	TO BE INSTALLED AFTER COMPLETION OF STAGE 1 BUTTRSS
PIEZOMETER	PZ-GH4	TO BE INSTALLED BEFORE COMPLETION OF STAGE 1 BUTTRSS
PIEZOMETER	PZ-H4	TO BE INSTALLED BEFORE COMPLETION OF STAGE 1 BUTTRSS

PIEZOMETER EXTENSION TABLE		
INSTRUMENT	INSTRUMENT ID	MODIFICATION
INCLINOMETER	INC18-G4	REPLACE
PIEZOMETER	PZ-GH6	EXTEND
PIEZOMETER	PZ-GH2	EXTEND
PIEZOMETER	PZ-GH4	EXTEND
PIEZOMETER	PZ-H4	EXTEND
PIEZOMETER	PZ15-GH2	EXTEND
PIEZOMETER	PZ16-H2	EXTEND
PIEZOMETER	PZ16-GH2	EXTEND
PIEZOMETER	PZ16-H2	EXTEND
PIEZOMETER	PZ16-GH2	EXTEND

- NOTES:
- SEE SHEET 2 FOR LEGEND
 - IMPACTED INSTRUMENTATION - STAGE 1: H-2A, PZ16-H2, H-2N, H-3, H-3A, H-3B, F-4, PZ15-GH2, PIEZOMETERS TO BE RAISED BY HENDERSON.
 - SEE SHEET 5 FOR CONSTRUCTION CONTROL POINTS
 - PIEZOMETERS TO BE RAISED BY HENDERSON ACCORDING TO THE PIEZOMETER EXTENSION TABLE ON THIS SHEET
 - ALL THE NEW PIEZOMETERS ARE VIBRATING WIRE PIEZOMETERS. SEE THIS SHEET FOR COORDINATES
 - SEE SPECIFICATIONS # 13500 FOR PIEZOMETERS REQUIREMENTS

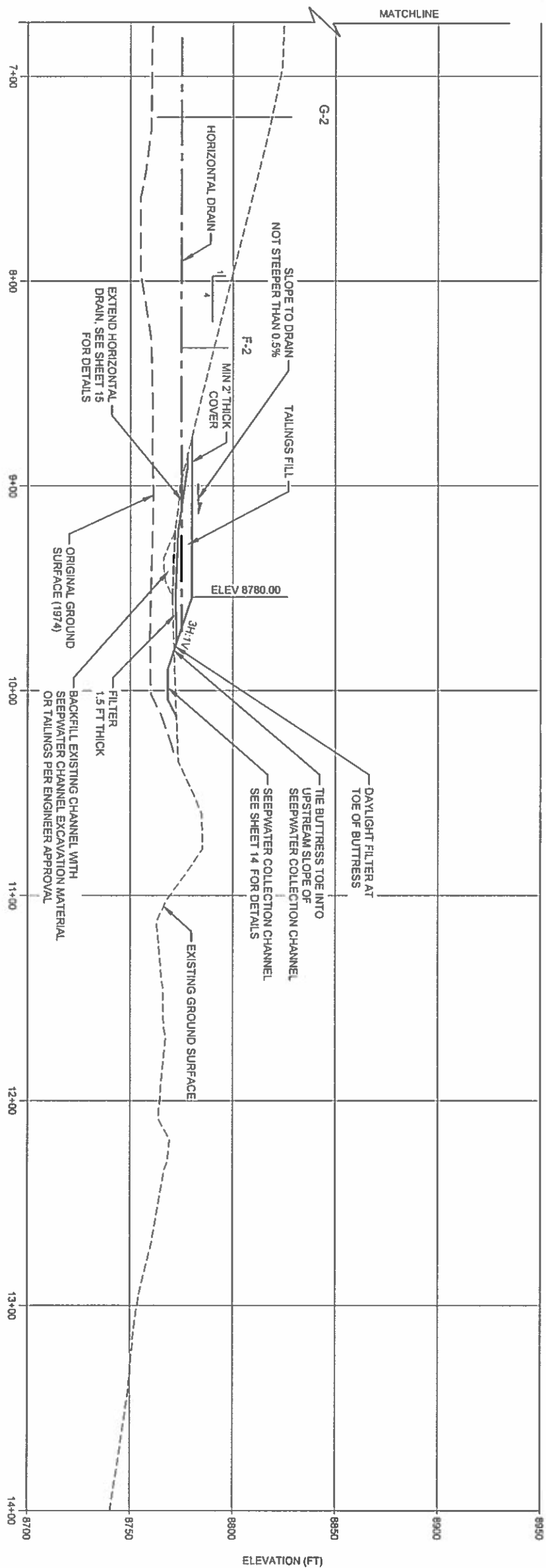
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6200 S. Quebec Street
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303.584.4770 (phone)
303.584.4349 (fax)

**CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL,
NEAR PARSHALL, CO**

**HENDERSON
3 DAM BUTTRSS
STAGE 1**

ISSUED FOR BIDDING	
ISSUED FOR CONSTRUCTION	
REVISIONS	
NO	DESCRIPTION
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BUTTRSS PLAN STAGE 1 INSTRUMENTATIONS	



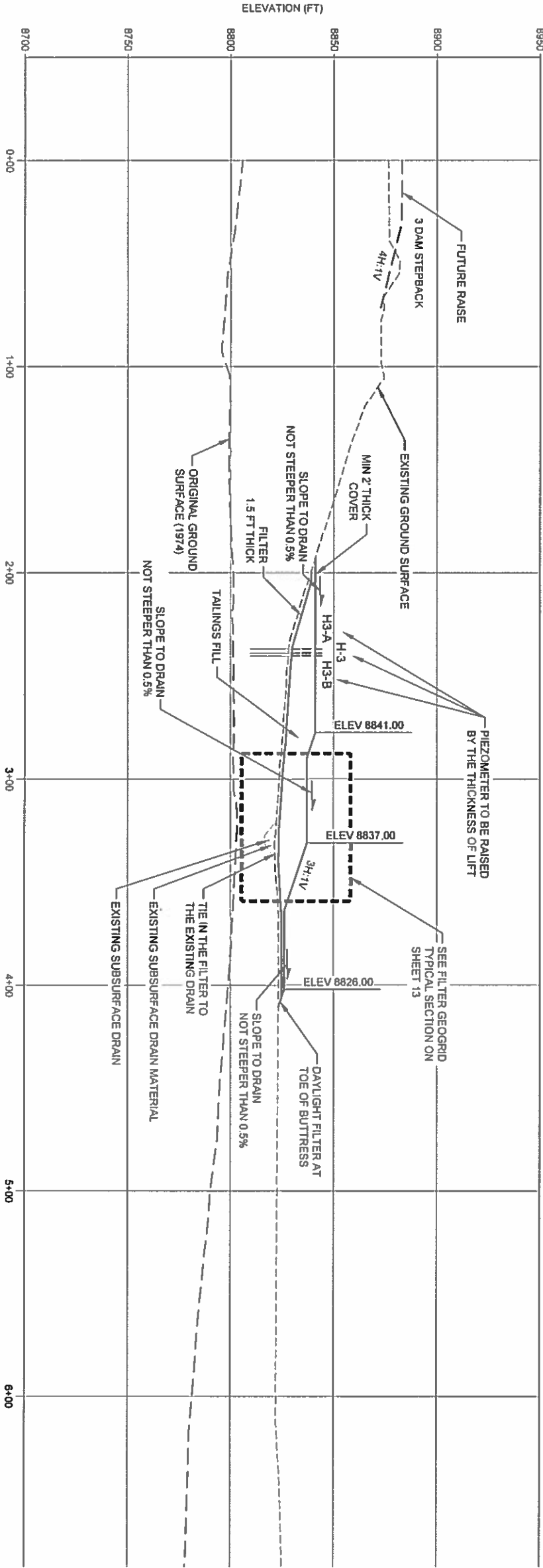
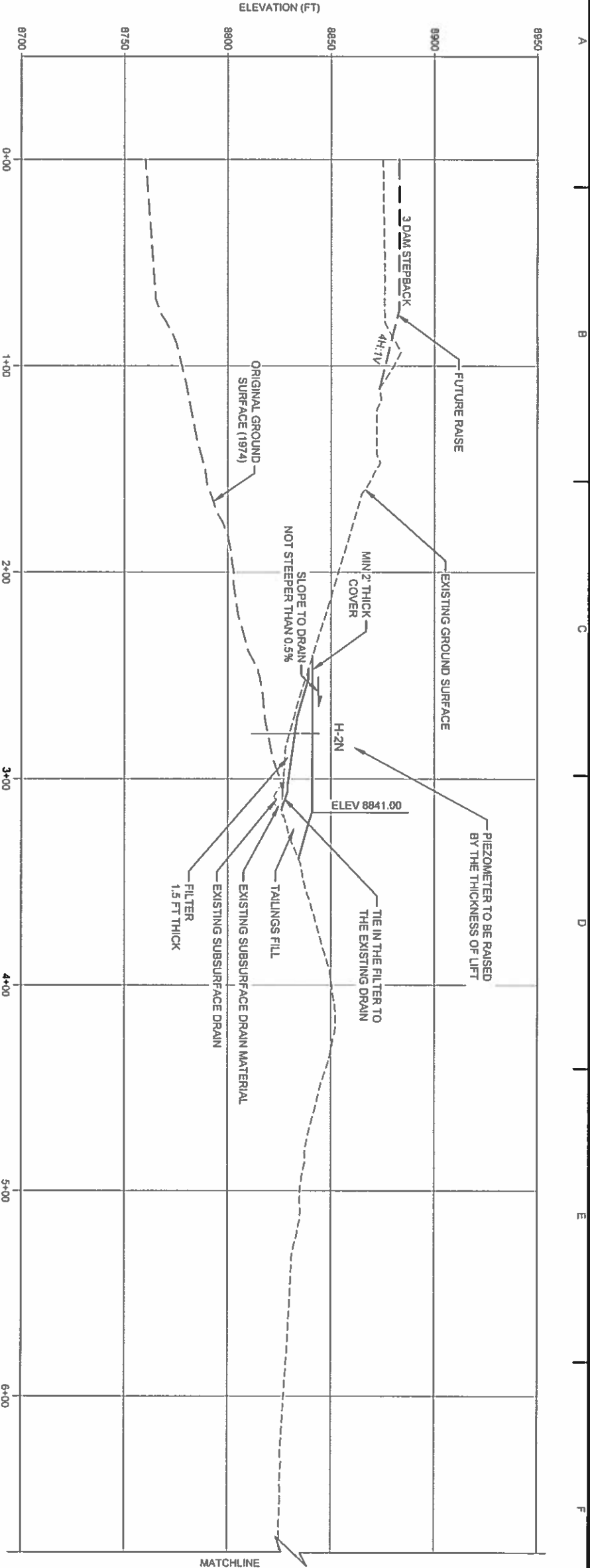
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NEAR PARSHALL, CO**

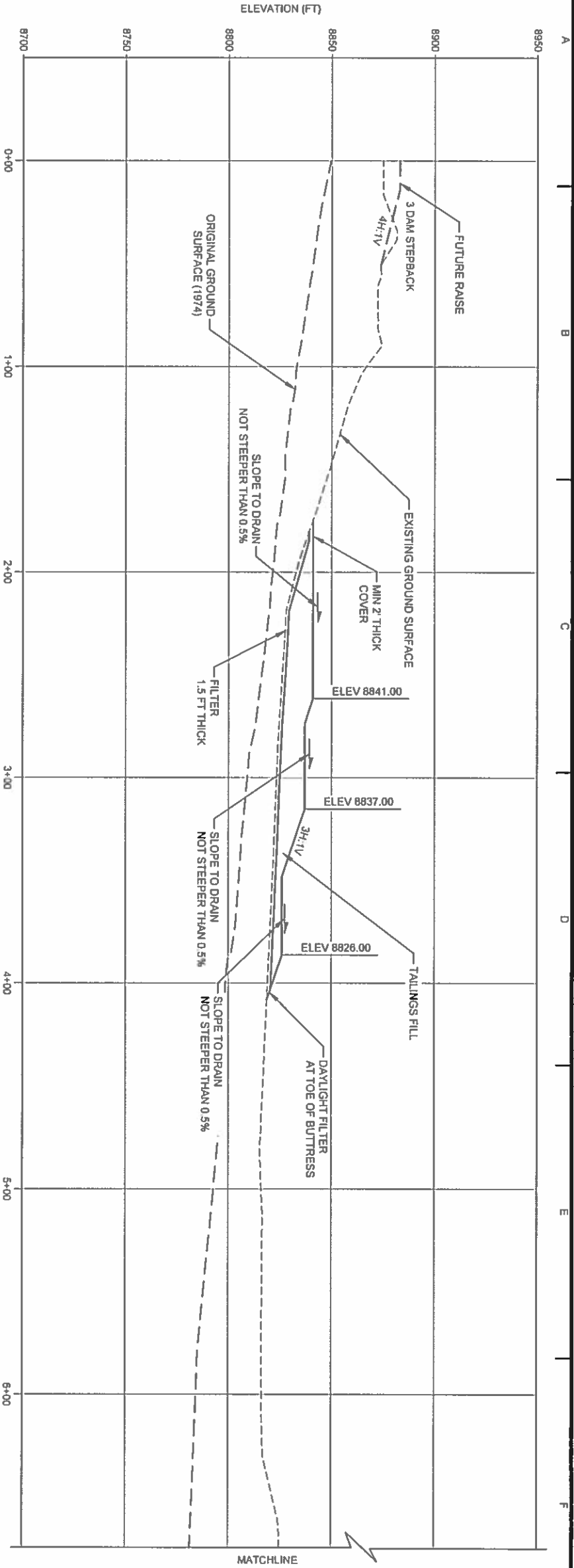
**HENDERSON
3 DAM BUTTRESS
STAGE 1**

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ISSUED FOR CONSTRUCTION		DATE	
REVISIONS			
NO.	DESCRIPTION	DATE	
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AECOM PROJECT NO.		00551484	
DRAWN BY		AMF	
DESIGNED BY		PAS	
CHECKED BY			
DATE CREATED		02/11/17	
PLOT DATE		12/01/18	
SCALE		AS SHOWN	
ACAD VER		2018	
SHEET TITLE			

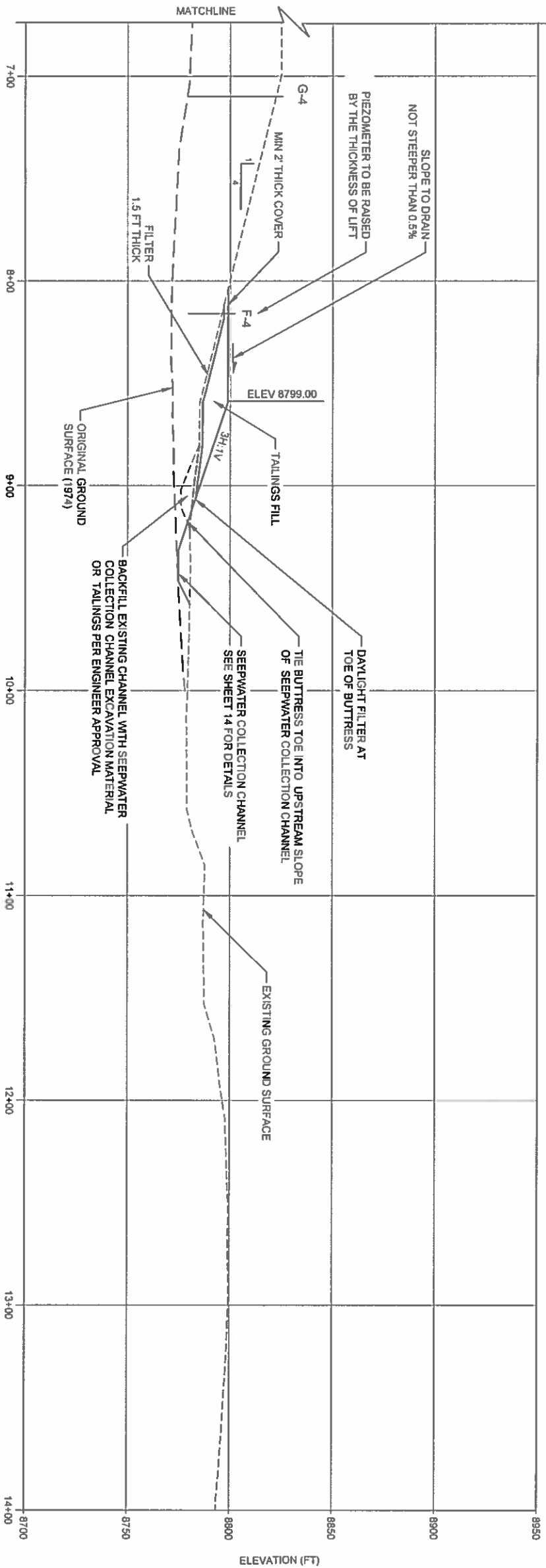
**BUTRESS STAGE 1
SECTION 2**

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ISSUED FOR CONSTRUCTION		DATE		BY	
REVISIONS					
NO	DESCRIPTION	DATE			
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AECOM PROJECT NO. 60531484					
DRAWN BY:		AMF		DATE	
DESIGNED BY:		PAS		CHECKED BY:	
CHECKED BY:		PAS		DATE CREATED: 9/21/17	
PLOT DATE:		1/2016		SCALE:	
AS SHOWN		ACAD VER:		2016	
SHEET TITLE					





SECTION
SCALE 1"=30'
3N
4



SECTION
SCALE 1"=30'
3N
4

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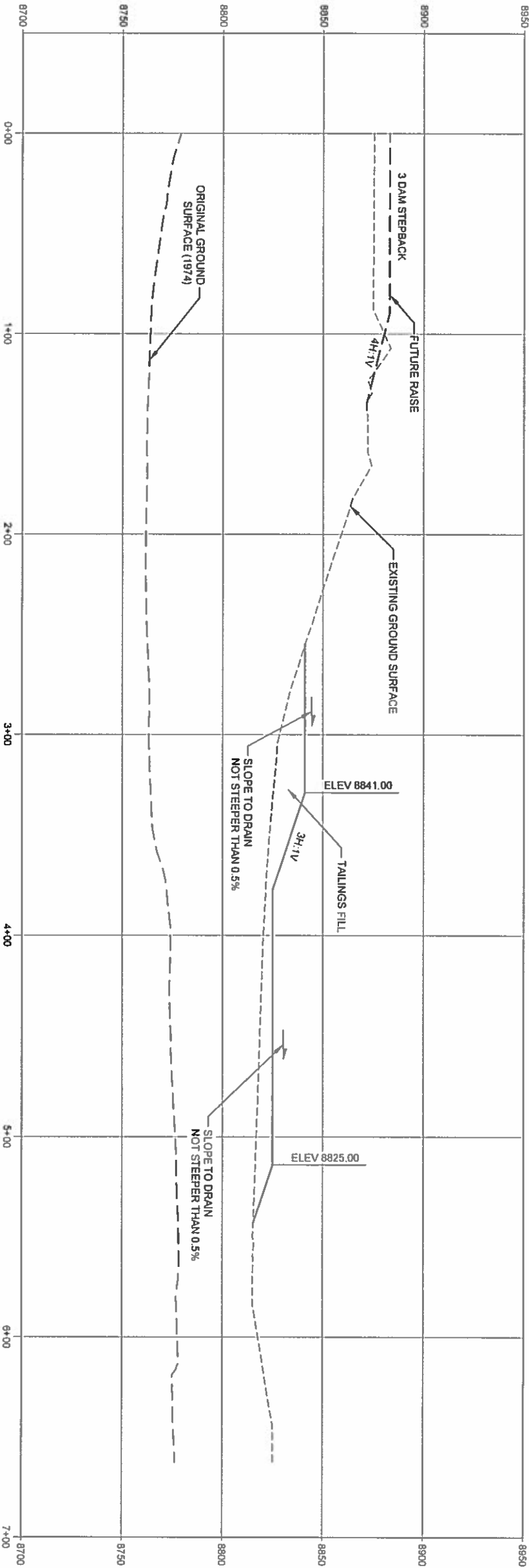
AECON
6200 S Quebec Street
Greenwood Village, CO 80111
(303) 751-3700
303-664-3946 (fax)

**CLIMAX MOLYBDENUM
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NEAR PARSHALL, CO**

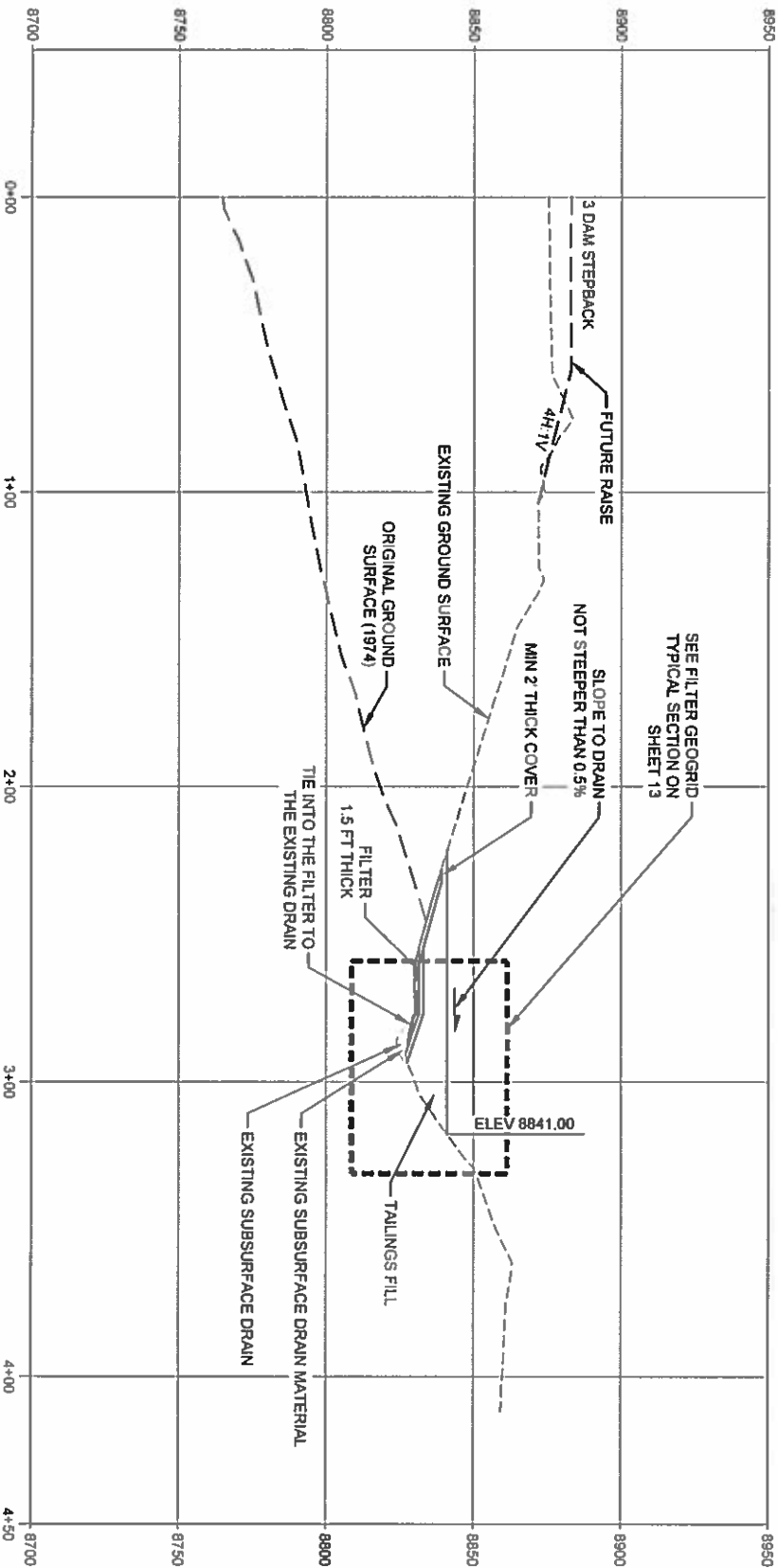
**HENDERSON
3 DAM BUTTRSS
STAGE 1**

ISSUED FOR BIDDING		DATE		BY
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REVISIONS				
NO	DESCRIPTION	DATE		
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AECOM PROJECT NO 60551484				
DRAWN BY		AMF		
DESIGNED BY		PAS		
CHECKED BY		PAS		
DATE CREATED		9/21/17		
PLOT DATE		1/20/18		
SCALE		AS SHOWN		
ACAD VER		2016		
SHEET TITLE				

**BUTTRSS STAGE 1
SECTION 3N**



SECTION C1
SCALE: 1"=30'



SECTION - TYPICAL SOFT AREA
SCALE: 1"=30'

C2
4

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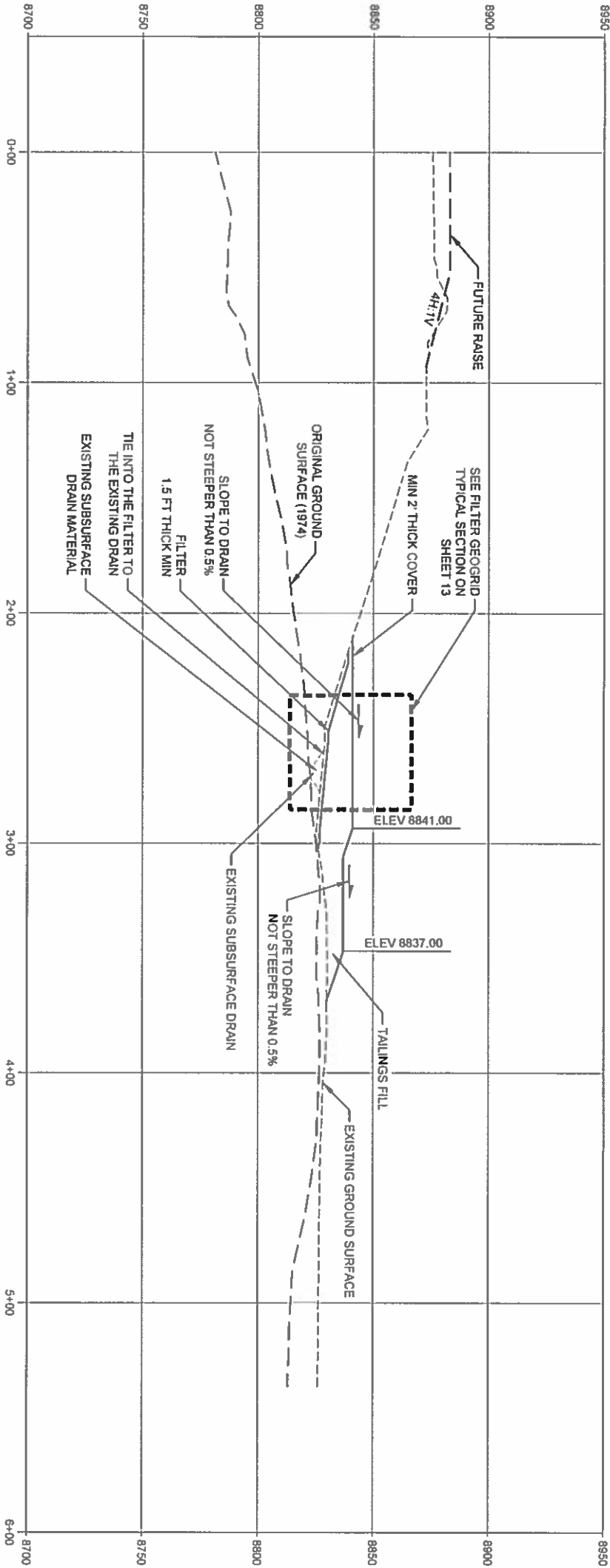
AECOM
6200 S Quebec Street
Suite 300
Denver, CO 80211
303.854.2770 (ext. 270)
303.854.3146 (fax)

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HENDERSON MILL,
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HENDERSON
3 DAM BUTRESS
STAGE 1

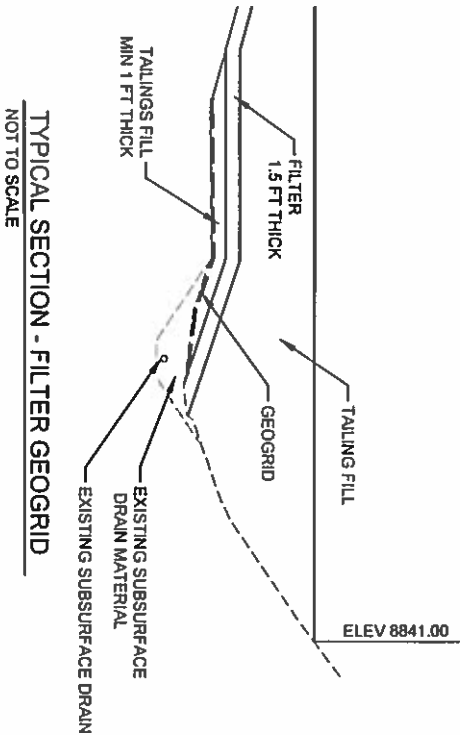
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AECOM PROJECT NO 60551494			
DRAWN BY AMF			
DESIGNED BY PAS			
CHECKED BY			
DATE CREATED 8/21/17			
PLOT DATE 1/20/18			
SCALE AS SHOWN			
ACAD VER. 2016			
SHEET TITLE			

BUTRESS STAGE 1
SECTION C1 & C2



SECTION C3
SCALE 1"=30'

4



- NOTES:
1. TYPICAL SECTION FOR SOFT AREA MAY BE REQUIRED IN WET AREAS AT THE TOE OF THE STEEPBACK OR ORIGINAL DAM AS SHOWN ON PLAN VIEW.
 2. THIS INSTALLATION IS REQUIRED ONLY FOR CONTRACTIBILITY PURPOSES AND AS DETERMINED BY FIELD ENGINEER.
 3. GEOGRID WILL BE TENSAR TX160 GEOGRID OR SIMILAR AS APPROVED BY THE ENGINEER. INSTALL AS DIRECTED BY MANUFACTURER.

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AECON

6200 S. Quebec Street
Greenwood Village, CO 80111
303.894.2770 (phone)
303.894.3948 (fax)

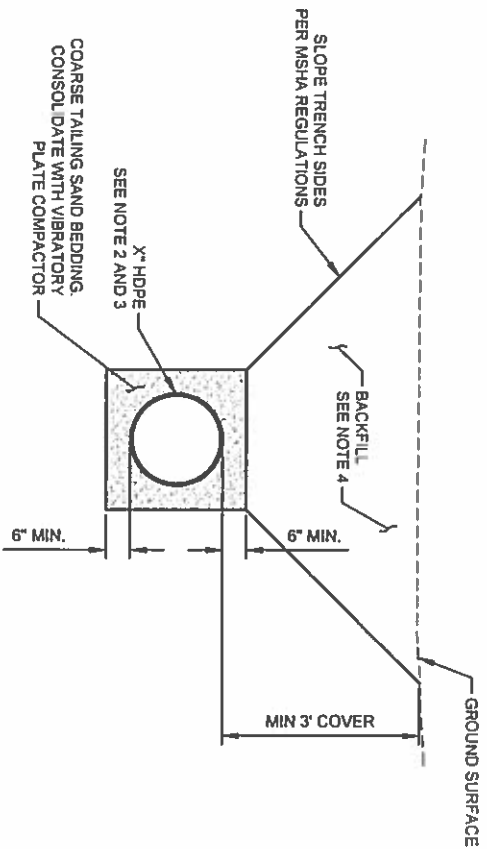
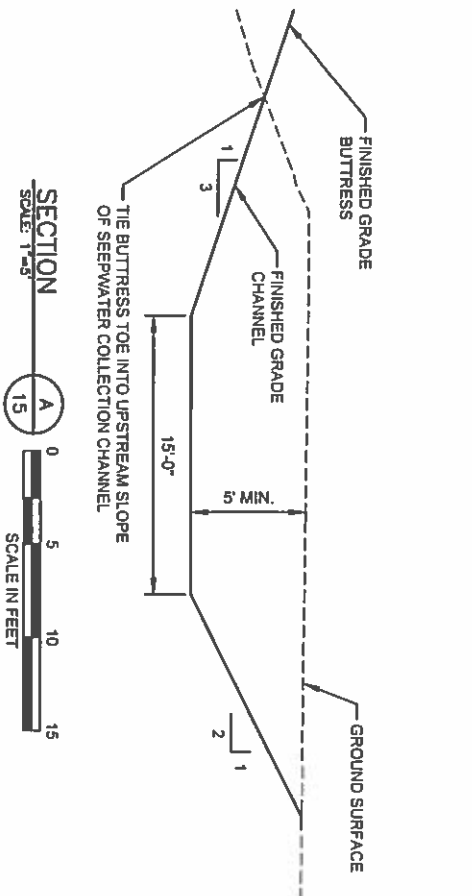
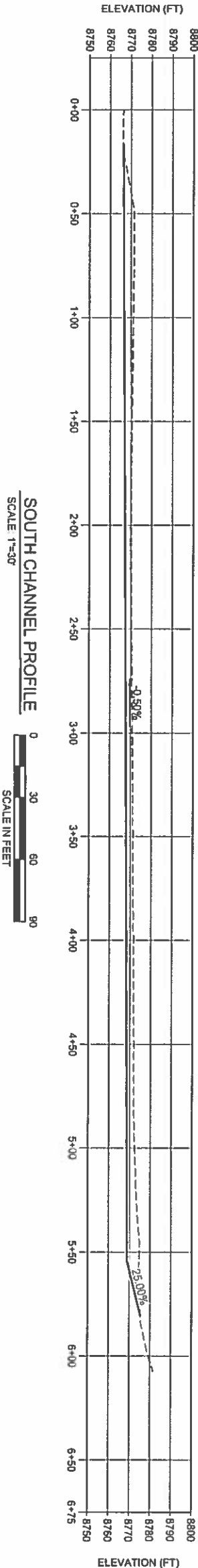
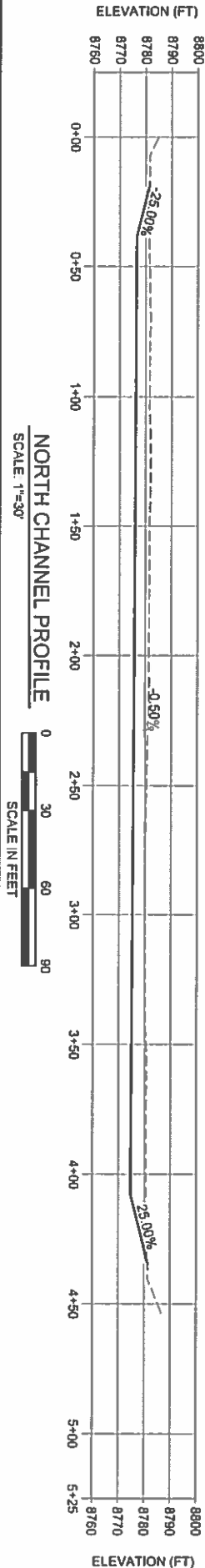
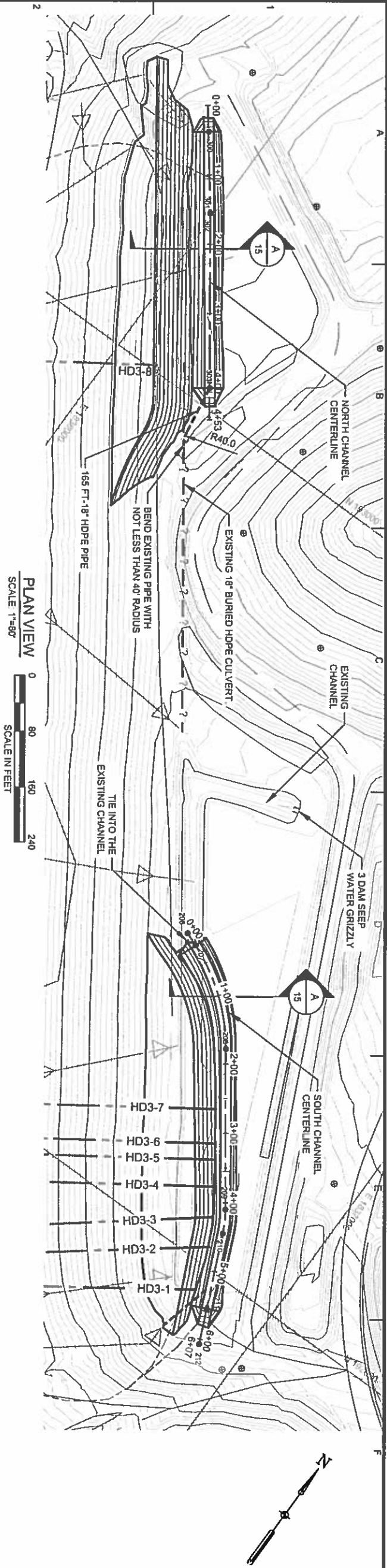
CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL
NEAR PARSHALL, CO

HENDERSON
3 DAM BUTRESS
STAGE 1

ISSUED FOR BIDDING		DATE	BY
ISSUED FOR CONSTRUCTION		DATE	BY

REVISIONS				
NO	DESCRIPTION	DATE		
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AECON PROJECT NO			60551484	
DRAWN BY		AMF		
DESIGNED BY		PAS		
CHECKED BY				
DATE CREATED		02/2/17		
PLOT DATE		1/20/18		
SCALE		AS SHOWN		
ACAD VER		2016		
SHEET TITLE				

BUTRESS STAGE 1
SECTION C3-SOFT AREA



- NOTES:
1. SEE SHEET 2 FOR LEGEND
 2. HDPE PIPE DIMENSIONS ARE AS FOLLOWS:
 - BURIED CULVERT, X = 18"
 - FOUNDATION DRAIN, X = 8", 10", 12"
 - DRAINAGE PIPE, X=12"
 3. PIPE EXTENSION MATERIAL TO MATCH EXISTING TYPE, DIAMETER AND PIPE THICKNESS
 4. BACKFILL WITH EXCAVATION MATERIAL OR TAILINGS PER ENGINEER APPROVAL

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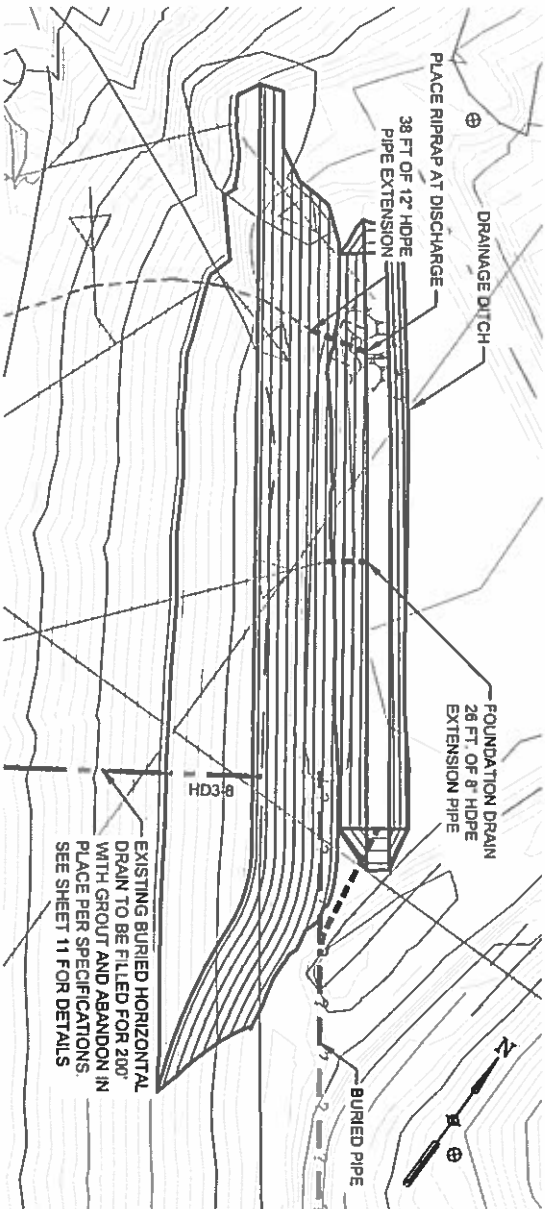
AECOM

6200 S. Quebec Street
Greenwood Village, CO 80111
303.654.4770 (phone)
303.654.4360 (fax)

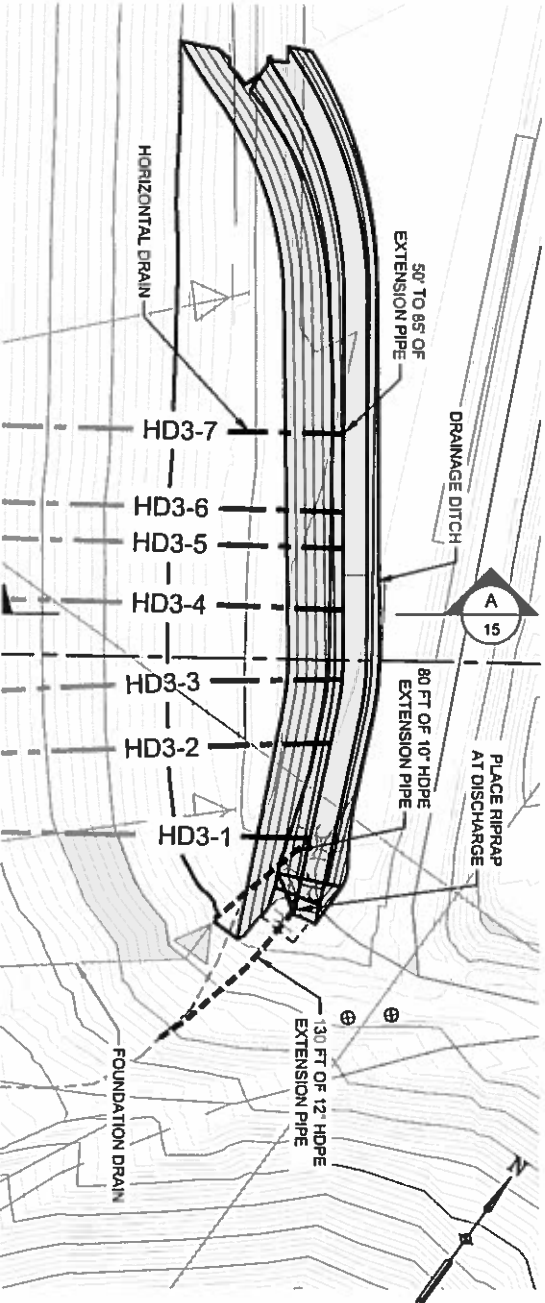
**CLIMAX MOLYBDENUM
COMPANY,
HENDERSON MILL,
NEAR PARSHALL, CO**

**HENDERSON
3 DAM BUTTRESS
STAGE 1**

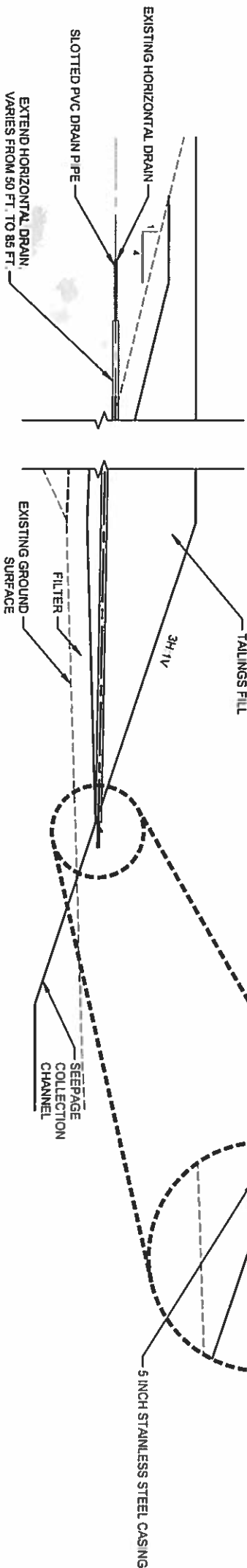
ISSUED FOR BIDDING		DATE	BY
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AECOM PROJECT NO. 60551494			
DRAWN BY: AMF			
DESIGNED BY: PMS			
CHECKED BY:			
DATE CREATED: 9/21/17			
PLOT DATE: 1/20/18			
SCALE: AS SHOWN			
ACAD VER: 2016			
SHEET TITLE			
SEEP WATER COLLECTION CHANNEL DETAILS			



NORTH BUTTRISS
PLAN VIEW



SOUTH BUTTRISS
PLAN VIEW

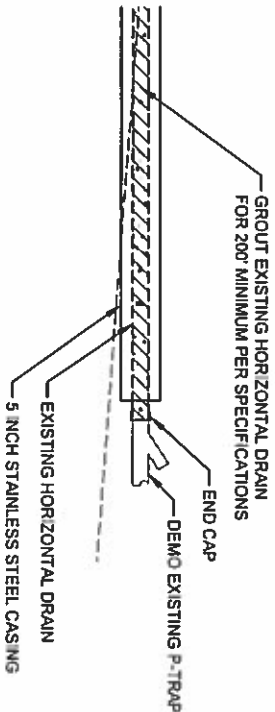


TYPICAL HORIZONTAL DRAIN PROFILE



HORIZONTAL DRAIN EXTENSION TABLE	
HORIZONTAL DRAIN	EXTENSION LENGTH (FT)
HD3-1	50
HD3-2	63
HD3-3	65
HD3-4	65
HD3-5	75
HD3-6	78
HD3-7	75

- NOTES:
- SEE SHEET 2 FOR LEGEND
 - SEE SHEET 11 FOR TYPICAL HDPE PIPE CROSS SECTION
 - HORIZONTAL DRAIN MATERIALS:
PVC PIPE: SCH 80
CASING: 316 SS, WELDED AS DIRECTED BY HENDERSON



TYPICAL DETAIL - HORIZONTAL DRAIN ABANDONMENT
NOT TO SCALE

PRELIMINARY 90% DESIGN
NOT FOR CONSTRUCTION

ISSUED FOR BIDDING		DATE	BY
ISSUED FOR CONSTRUCTION		DATE	BY
REVISIONS			
NO	DESCRIPTION	DATE	
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AECOM PROJECT NO. 60561494			
DRAWN BY: AMF		DATE: 1/20/16	
DESIGNED BY: PAS		DATE: 1/20/16	
CHECKED BY: -		DATE: 1/20/16	
DATE CREATED: 1/20/16		SCALE: AS SHOWN	
ACAD VER: 2016		SHEET TITLE	