

LEGEND:

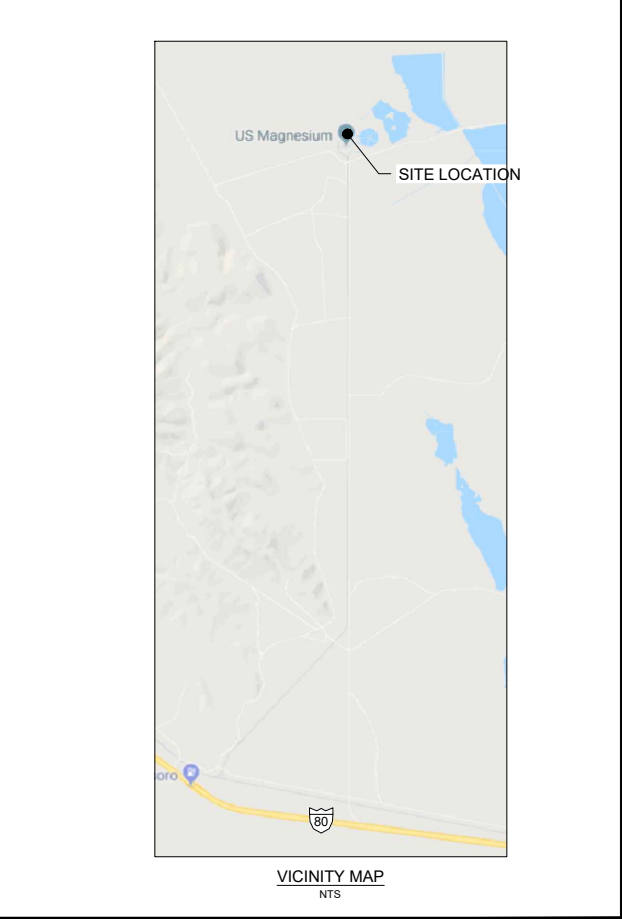
- SOIL BORING
- ◆ MONITORING WELL
- ▲ PIEZOMETER
- TEST PIT
- CWP CURRENT WASTE POND
- OWP OLD WASTE POND
- EXISTING ROAD

NOTES:

- ONLY THOSE SOIL BORING, MONITORING WELLS, PIEZOMETERS, AND TEST PITS LOCATED WITHIN THE AREA OF THE WORK, OR THAT ARE APPLICABLE TO THE WORK, ARE SHOWN.
- AERIAL IMAGERY PROVIDED BY NM GROUP, 2015.

INDEX OF DRAWINGS

DRAWING NO.	DRAWING TITLE
C001	EXISTING CONDITIONS
C002	PLAN VIEW
C003	CROSS SECTIONS (SHEET 1 OF 5)
C004	CROSS SECTIONS (SHEET 2 OF 5)
C005	CROSS SECTIONS (SHEET 3 OF 5)
C006	CROSS SECTIONS (SHEET 4 OF 5)
C007	CROSS SECTIONS (SHEET 5 OF 5)
C008	TURNING RADIUS DETAILS
C009	CONTROL POINT AND STAGE-STORAGE TABLES
C010	TYPICAL EMBANKMENT DETAILS



2/28/2022 2:59 PM - C:\P-DRIVE\T-ZIUS MAGNESIUM\LLC\117-8733003 - CQA AND EOR SERVICES\07-CAD\SHEETFILES\PHASE 1\FC REV\0-RWP-C001-EXISTING CONDITIONS.DWG

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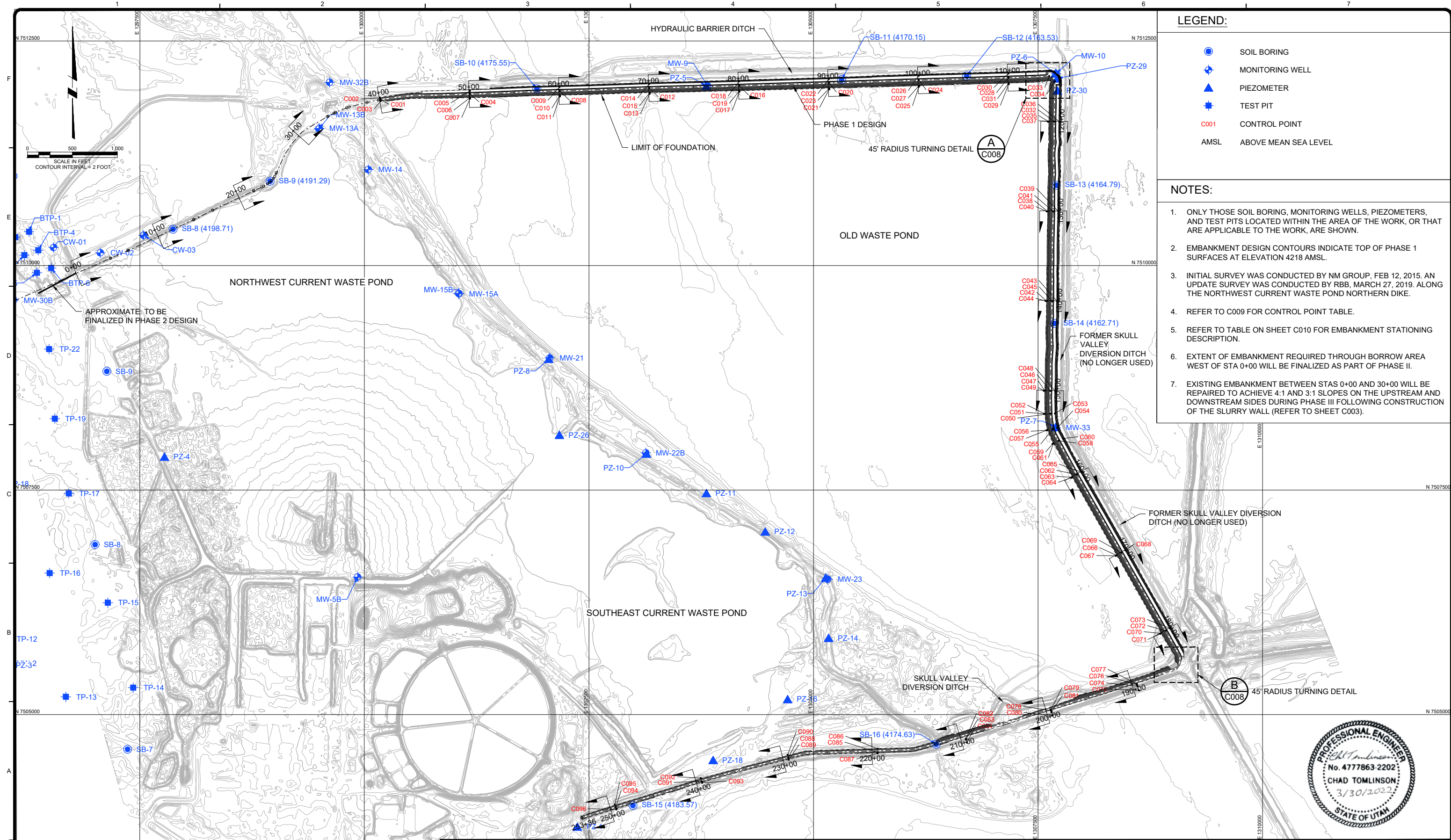
MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN
EXISTING CONDITIONS

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT
C001

Bar Measures 1 inch

2/28/2022 3:00 PM - C:\P-DRIVE\IT-ZIUS MAGNESIUM\LLC\117-8733003 - CQA AND EOR SERVICES\07-CAD\SHETSFILES\PHASE 1\FC REV0-RWP-C002 PLAN VIEW.DWG



LEGEND:

- SOIL BORING
- ⊕ MONITORING WELL
- ▲ PIEZOMETER
- ⊞ TEST PIT
- C001 CONTROL POINT
- AMSL ABOVE MEAN SEA LEVEL

- NOTES:**
- ONLY THOSE SOIL BORING, MONITORING WELLS, PIEZOMETERS, AND TEST PITS LOCATED WITHIN THE AREA OF THE WORK, OR THAT ARE APPLICABLE TO THE WORK, ARE SHOWN.
 - EMBANKMENT DESIGN CONTOURS INDICATE TOP OF PHASE 1 SURFACES AT ELEVATION 4218 AMSL.
 - INITIAL SURVEY WAS CONDUCTED BY NM GROUP, FEB 12, 2015. AN UPDATE SURVEY WAS CONDUCTED BY RBB, MARCH 27, 2019. ALONG THE NORTHWEST CURRENT WASTE POND NORTHERN DIKE.
 - REFER TO C009 FOR CONTROL POINT TABLE.
 - REFER TO TABLE ON SHEET C010 FOR EMBANKMENT STATIONING DESCRIPTION.
 - EXTENT OF EMBANKMENT REQUIRED THROUGH BORROW AREA WEST OF STA 0+00 WILL BE FINALIZED AS PART OF PHASE II.
 - EXISTING EMBANKMENT BETWEEN STAS 0+00 AND 30+00 WILL BE REPAIRED TO ACHIEVE 4:1 AND 3:1 SLOPES ON THE UPSTREAM AND DOWNSTREAM SIDES DURING PHASE III FOLLOWING CONSTRUCTION OF THE SLURRY WALL (REFER TO SHEET C003).



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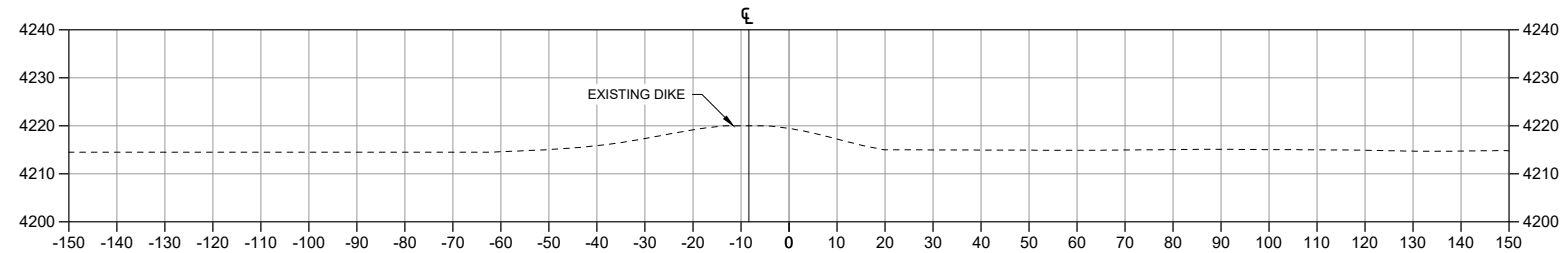
US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT

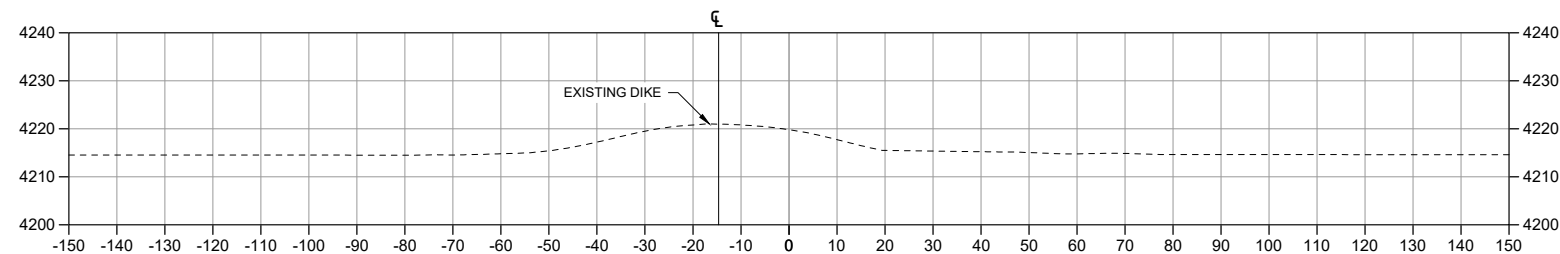
PLAN VIEW C002

Bar Measures 1 inch

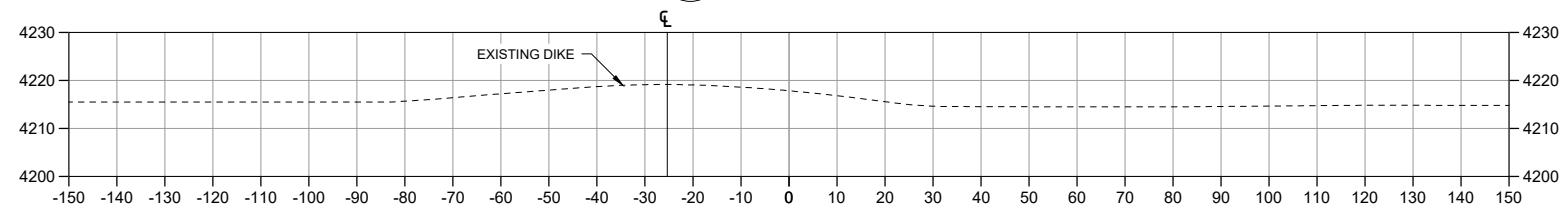
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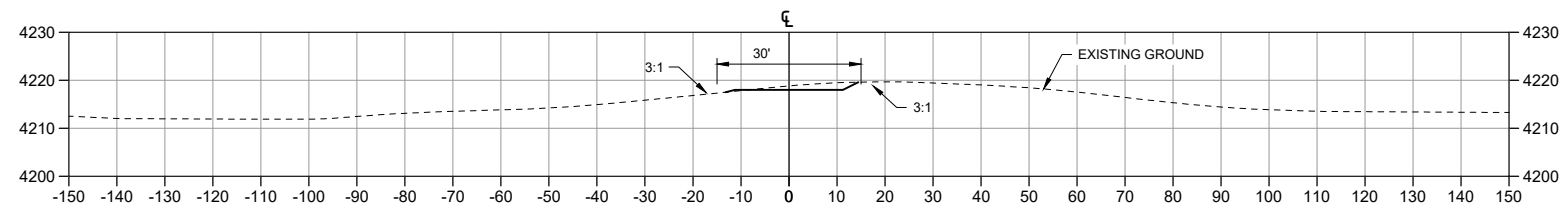
A STATION 10+00



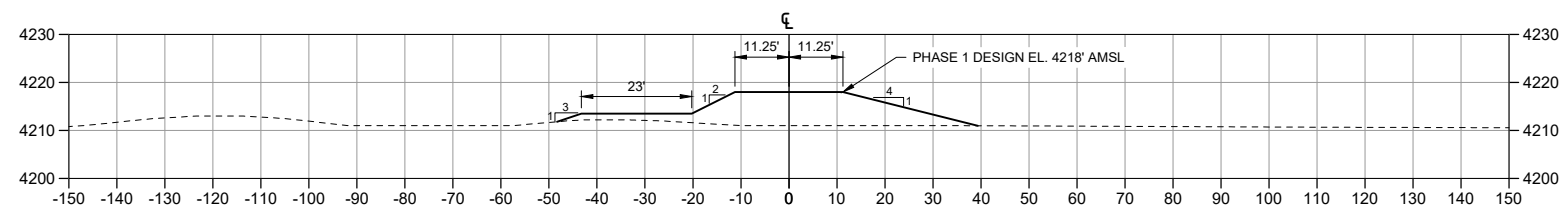
B STATION 20+00



C STATION 30+00



D STATION 40+00



E STATION 50+00

LEGEND:

- AMSL ABOVE MEAN SEA LEVEL
- BGS BELOW GROUND SURFACE
- ELEV ELEVATION
- GSL GREAT SALT LAKE
- MAX MAXIMUM

NOTES:

1. PHASE 1 EMBANKMENT TO BE CONSTRUCTED TO ELEV 4218' AMSL AS INDICATED.
2. EMBANKMENT TO BE CONSTRUCTED OF MATERIALS MEETING SPECIFICATIONS FOR EMBANKMENT FILL, PER SPECIFICATION 02222-EARTHWORKS.
3. REFER TO SHEET C009 FOR CONTROL POINTS AND STATIONING AND DESCRIPTION OF FOUNDATION PREPARATION.
4. FOUNDATION PREPARATION TO BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02222-EARTHWORKS.
5. REFER TO SHEET C010 FOR TYPICAL EMBANKMENT DETAILS.
6. EXISTING EMBANKMENT BETWEEN STAS 0+00 AND 30+00 WILL BE REPAIRED TO ACHIEVE 4:1 AND 3:1 SLOPES ON THE UPSTREAM AND DOWNSTREAM SIDES DURING PHASE III FOLLOWING CONSTRUCTION OF THE SLURRY WALL (REFER TO SHEET C002).



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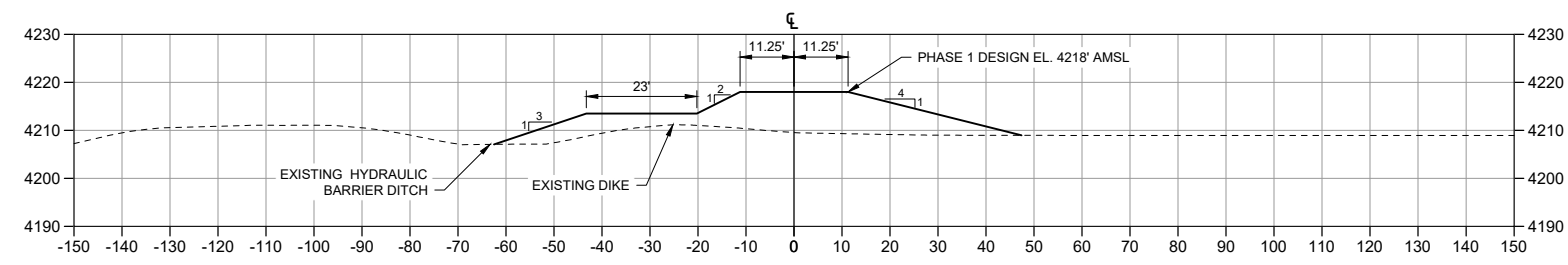
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MARK	DATE	DESCRIPTION	BY
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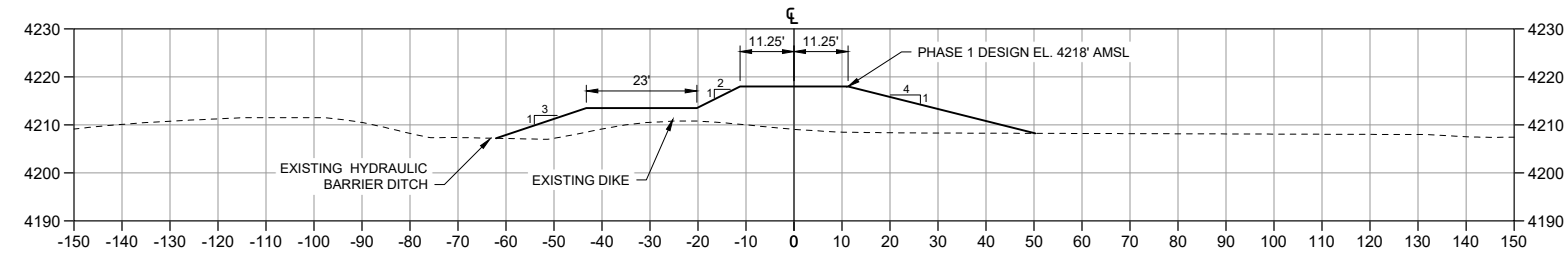
US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN
CROSS-SECTIONS

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT
C003

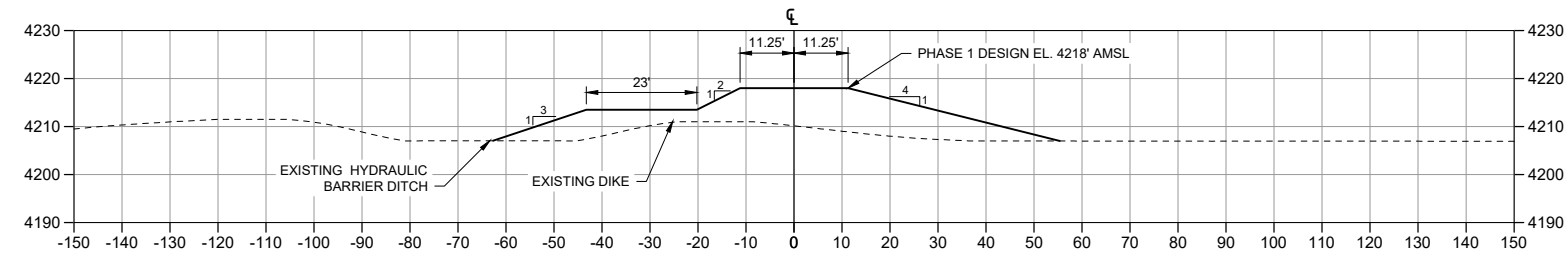
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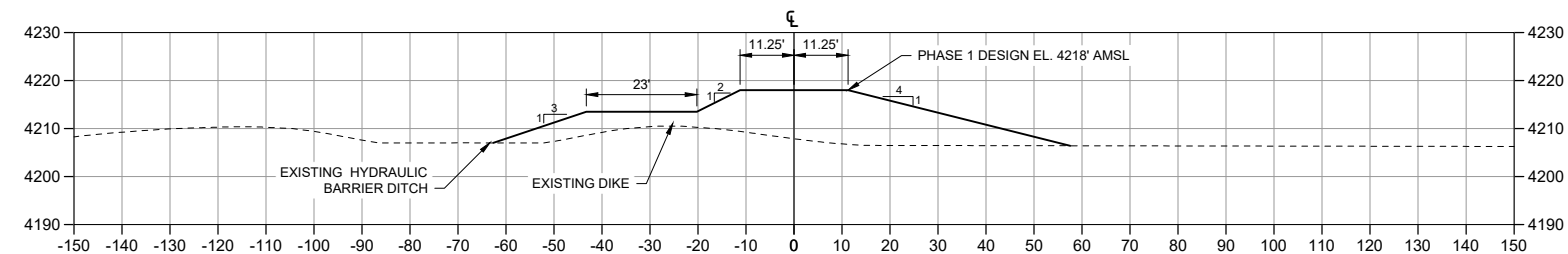
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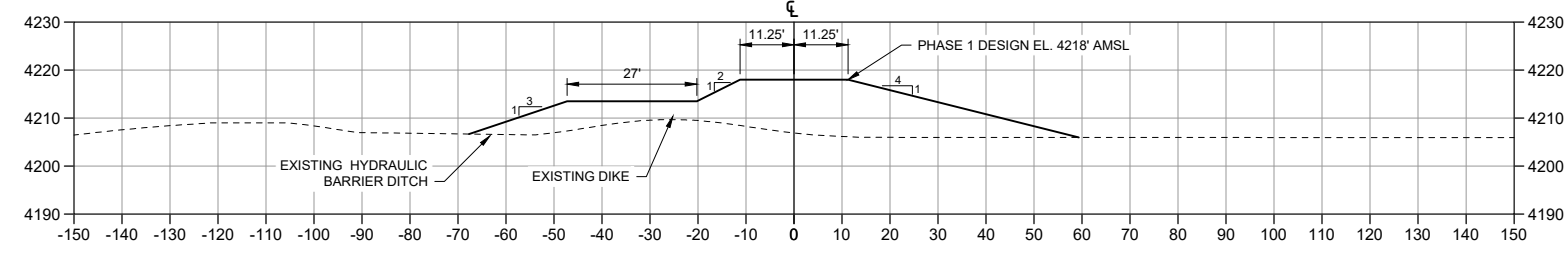
G STATION 70+00



H STATION 80+00



I STATION 90+00



J STATION 100+00

LEGEND:

AMSL	ABOVE MEAN SEA LEVEL
BGS	BELOW GROUND SURFACE
ELEV	ELEVATION
OWP	OLD WASTE POND

- NOTES:**
1. PHASE 1 EMBANKMENT TO BE CONSTRUCTED TO ELEV 4218' AMSL AS INDICATED.
 2. EMBANKMENT TO BE CONSTRUCTED OF MATERIALS MEETING SPECIFICATIONS FOR EMBANKMENT FILL, PER SPECIFICATION 02222-EARTHWORKS.
 3. REFER TO SHEET C009 FOR CONTROL POINTS AND STATIONING AND DESCRIPTION OF FOUNDATION PREPARATION.
 4. FOUNDATION PREPARATION TO BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02222-EARTHWORKS.
 5. REFER TO SHEET C010 FOR TYPICAL EMBANKMENT DETAILS.



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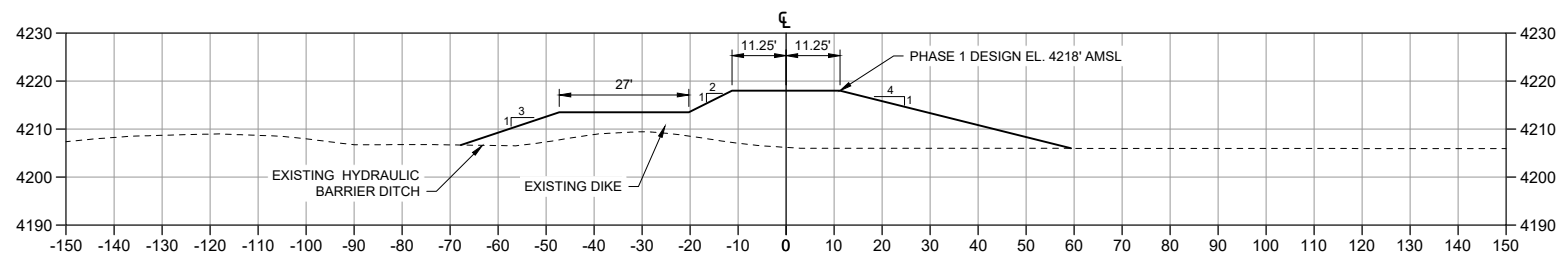
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MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

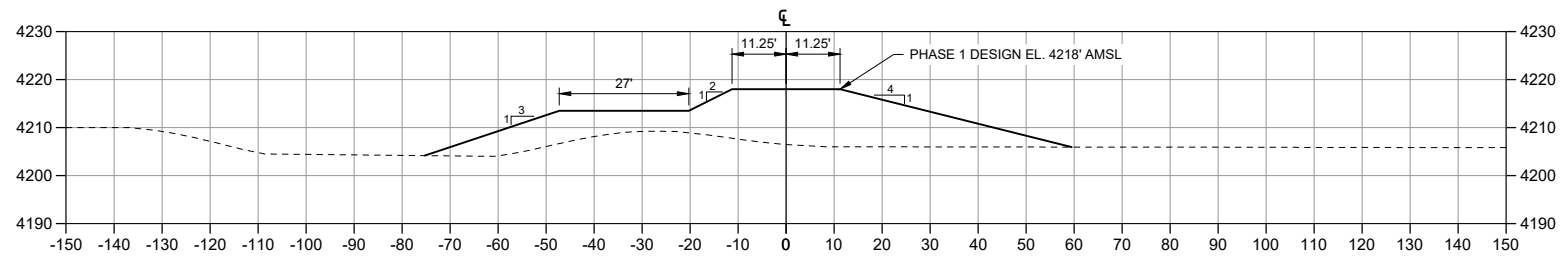
US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN
CROSS-SECTIONS

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT
C004

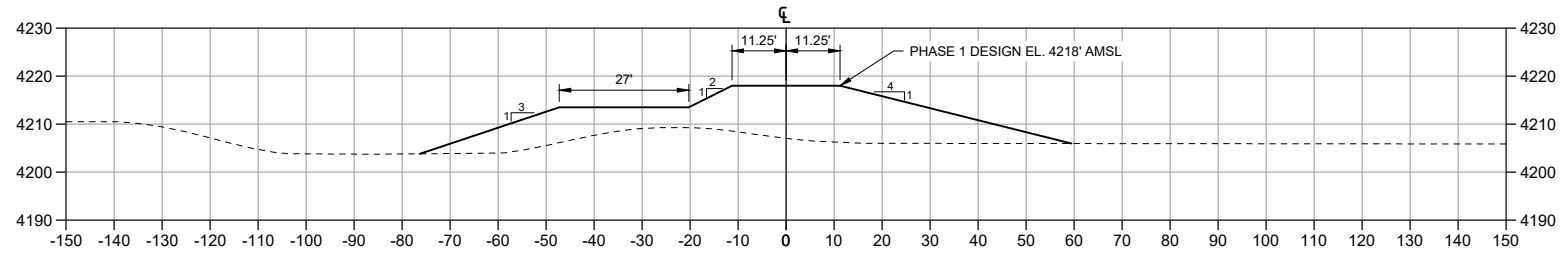
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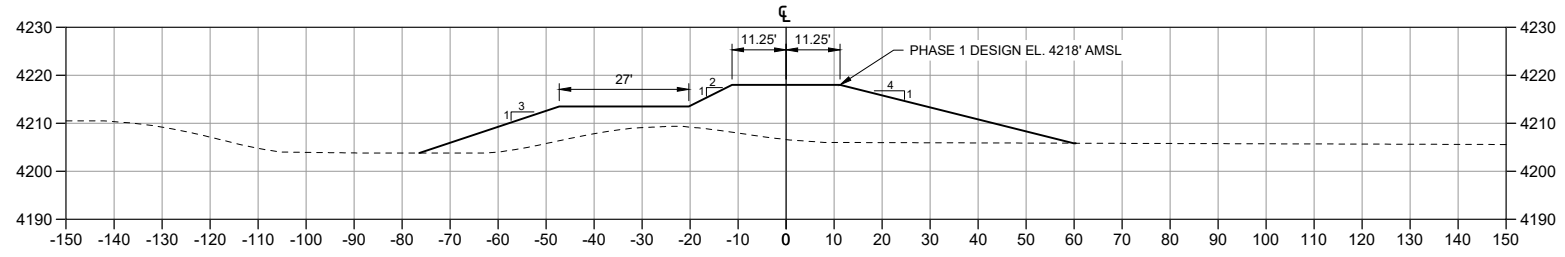
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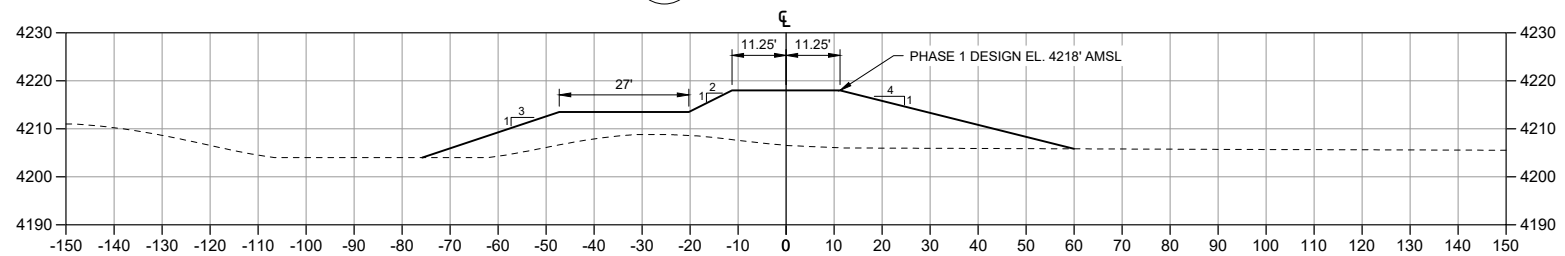
L STATION 120+00



M STATION 130+00



N STATION 140+00



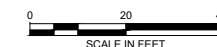
O STATION 150+00

LEGEND:

- AMSL ABOVE MEAN SEA LEVEL
- BGS BELOW GROUND SURFACE
- ELEV ELEVATION
- OWP OLD WASTE POND
- SVDD SKULL VALLEY DIVERSION DITCH

NOTES:

1. PHASE 1 EMBANKMENT TO BE CONSTRUCTED TO ELEV 4218' AMSL AS INDICATED.
2. EMBANKMENT TO BE CONSTRUCTED OF MATERIALS MEETING SPECIFICATIONS FOR EMBANKMENT FILL, PER SPECIFICATION 02222-EARTHWORKS.
3. REFER TO SHEET C009 FOR CONTROL POINTS AND STATIONING AND DESCRIPTION OF FOUNDATION PREPARATION.
4. FOUNDATION PREPARATION TO BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02222-EARTHWORKS.
5. REFER TO SHEET C010 FOR TYPICAL EMBANKMENT DETAILS.



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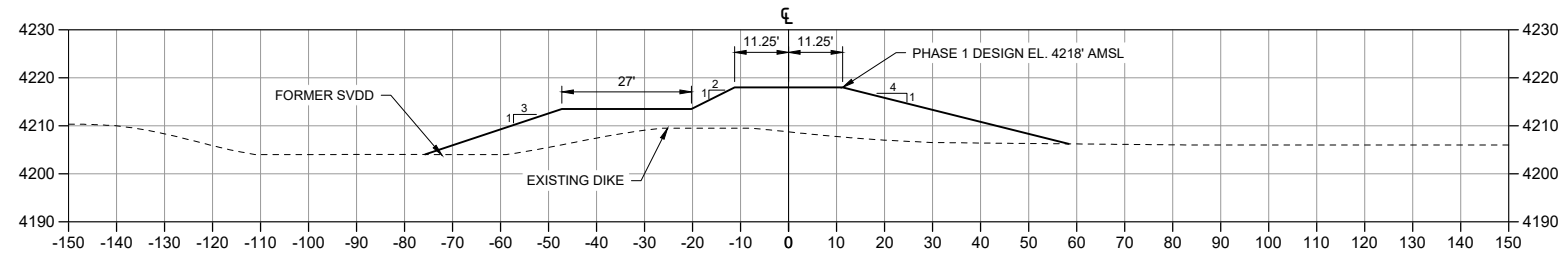
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MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

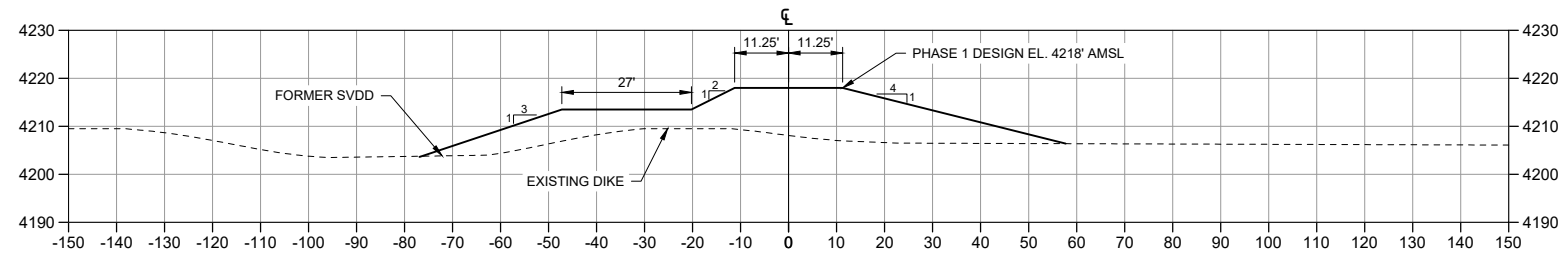
US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN
CROSS-SECTIONS

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT
C005

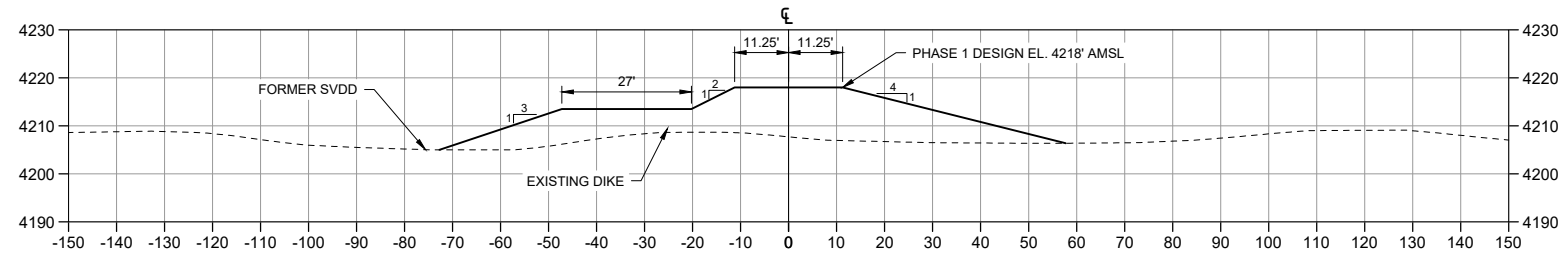
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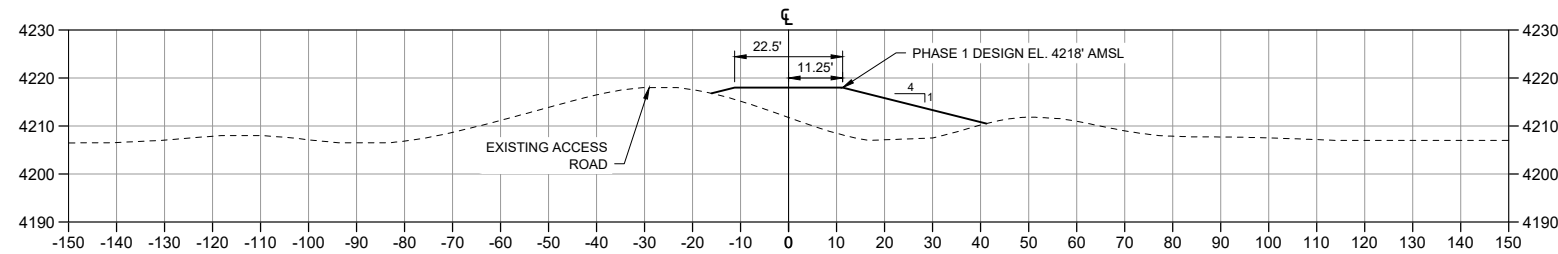
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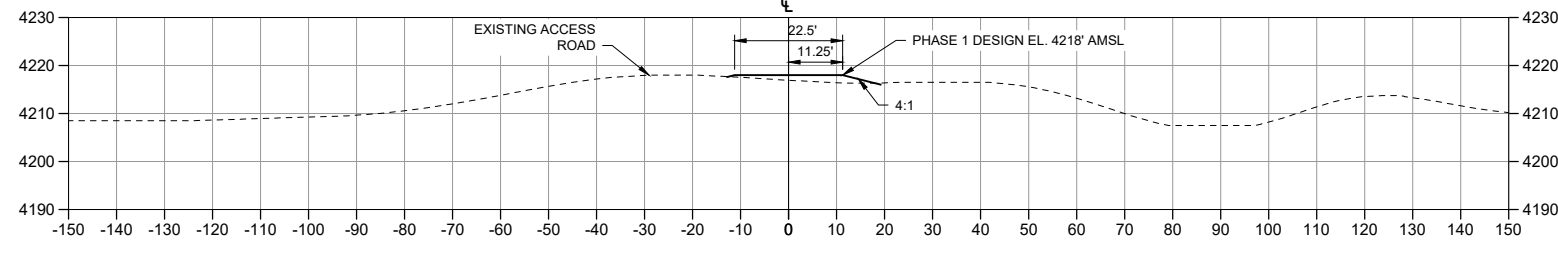
Q STATION 170+00



R STATION 180+00



S STATION 190+00



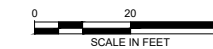
T STATION 200+00

LEGEND:

- AMSL ABOVE MEAN SEA LEVEL
- BGS BELOW GROUND SURFACE
- ELEV ELEVATION
- OWP OLD WASTE POND
- SVDD SKULL VALLEY DIVERSION DITCH

NOTES:

1. PHASE 1 EMBANKMENT TO BE CONSTRUCTED TO ELEV 4218' AMSL AS INDICATED.
2. EMBANKMENT TO BE CONSTRUCTED OF MATERIALS MEETING SPECIFICATIONS FOR EMBANKMENT FILL, PER SPECIFICATION 02222-EARTHWORKS.
3. REFER TO SHEET C009 FOR CONTROL POINTS AND STATIONING AND DESCRIPTION OF FOUNDATION PREPARATION.
4. FOUNDATION PREPARATION TO BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02222-EARTHWORKS.
5. REFER TO SHEET C010 FOR TYPICAL EMBANKMENT DETAILS.



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MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

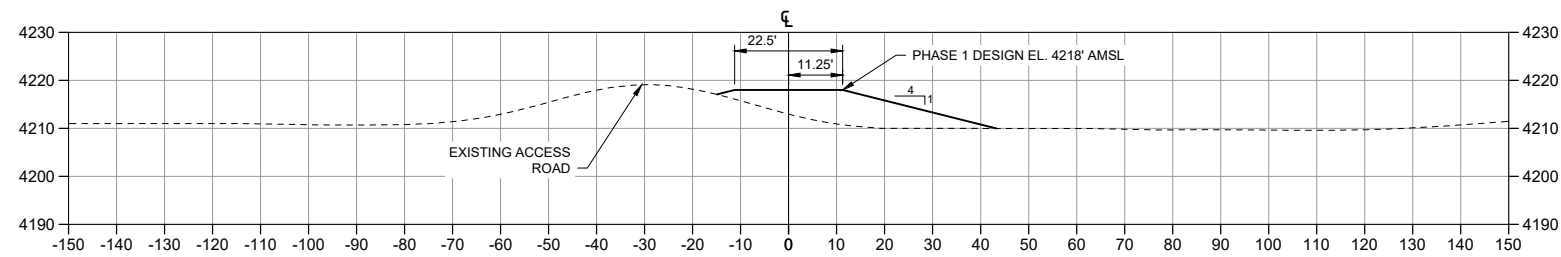
US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN

CROSS-SECTIONS

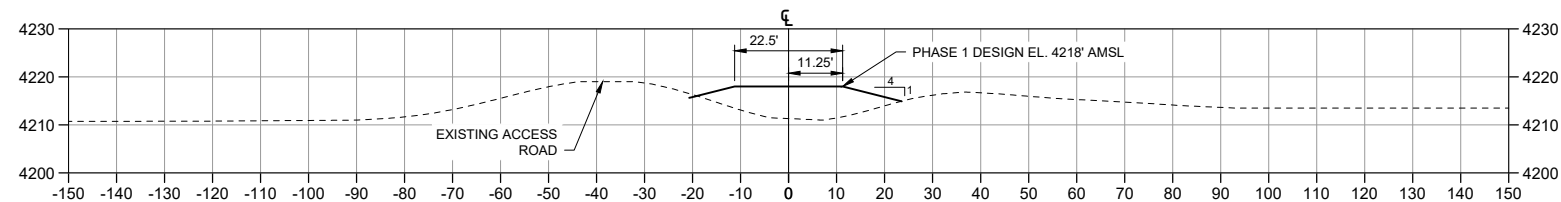
Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT

C006

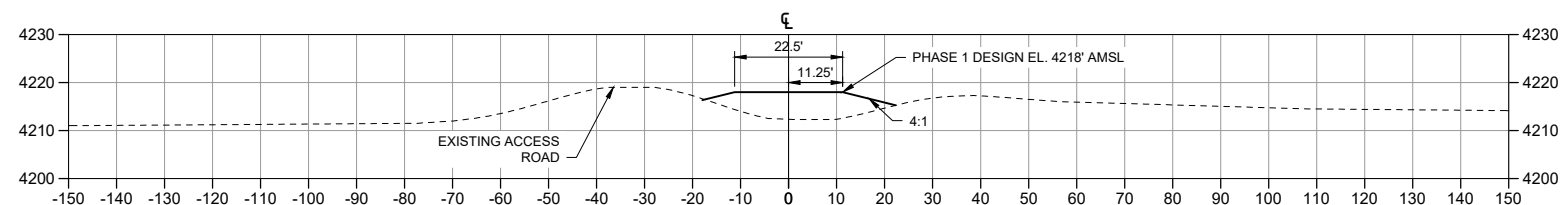
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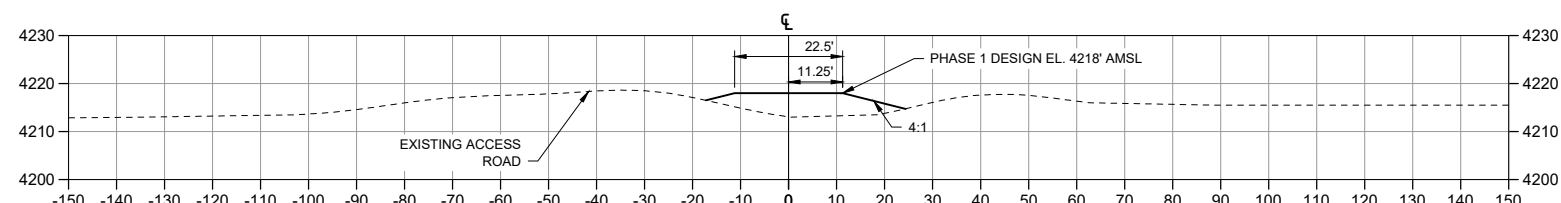
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-
STATION 210+00



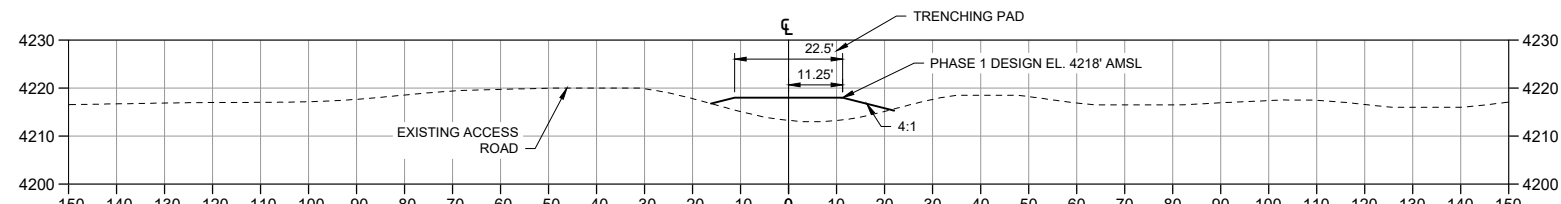
V
-
STATION 220+00



W
-
STATION 230+00



X
-
STATION 240+00



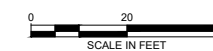
Y
-
STATION 250+00

LEGEND:

- AMSL ABOVE MEAN SEA LEVEL
- BGS BELOW GROUND SURFACE
- ELEV ELEVATION
- OWP OLD WASTE POND
- SVDD SKULL VALLEY DIVERSION DITCH

NOTES:

1. PHASE 1 EMBANKMENT TO BE CONSTRUCTED TO ELEV 4218' AMSL AS INDICATED.
2. EMBANKMENT TO BE CONSTRUCTED OF MATERIALS MEETING SPECIFICATIONS FOR EMBANKMENT FILL, PER SPECIFICATION 02222-EARTHWORKS.
3. REFER TO SHEET C009 FOR CONTROL POINTS AND STATIONING AND DESCRIPTION OF FOUNDATION PREPARATION.
4. FOUNDATION PREPARATION AND BACKFILLING OF SVDD TO BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02222-EARTHWORKS.
5. REFER TO SHEET C010 FOR TYPICAL EMBANKMENT DETAILS.



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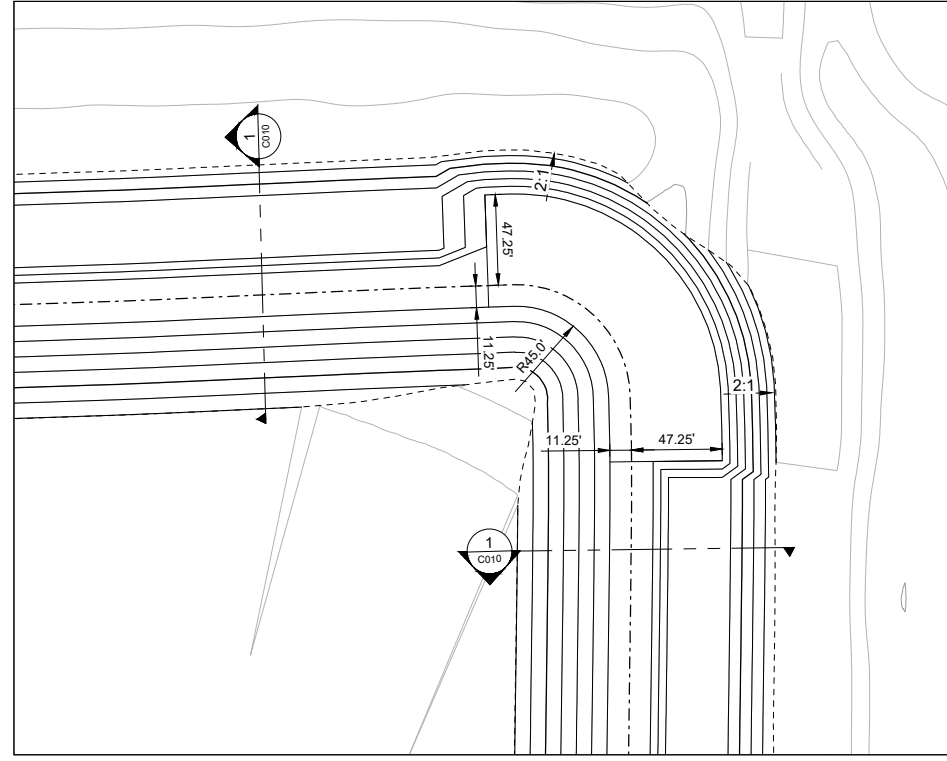
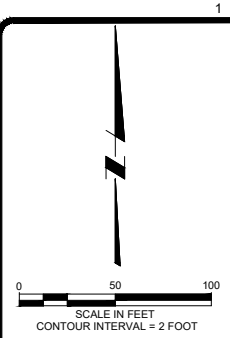
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MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

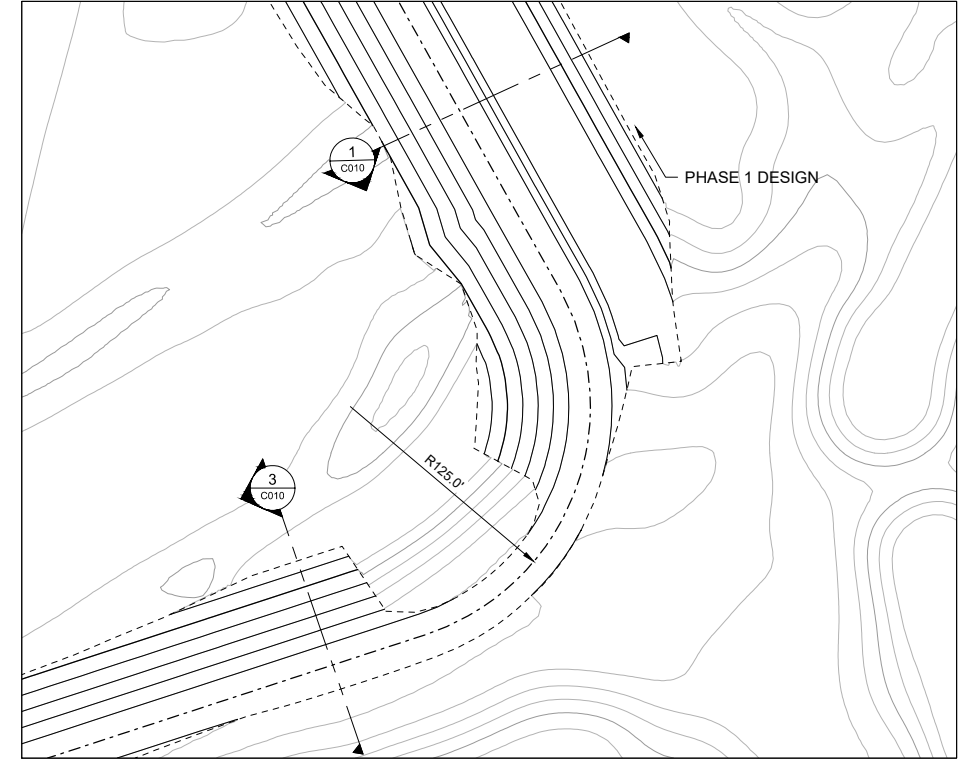
US MAGNESIUM
GRANTSVILLE, UTAH
PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN
CROSS-SECTIONS

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT
C007

2/28/2022 3:01 PM - C:\L-DRIVE\IT-ZIUS\MAGNESIUM\LLC\117-6733003 - CGA AND EOR SERVICES\07-CAD\SHEETFILES\PHASE 1\FIC REV0-RWP-C008 ROAD TURNING DETAILS.DWG



A 45' RADIUS TURNING DETAIL
 C002
 SCALE IN FEET
 CONTOUR INTERVAL = 2 FOOT



B 125' RADIUS TURNING DETAIL
 C002
 SCALE IN FEET
 CONTOUR INTERVAL = 2 FOOT



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MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

US MAGNESIUM
 GRANTSVILLE, UTAH
 PHASE 1 RETROFITTED WASTE POND
 HYDRAULIC BARRIER WALL DESIGN
 TURNING RADIUS
 DETAIL

Project No.:	117-8733004
Designed By:	CT
Drawn By:	JSS
Checked By:	CT
C008	

Bar Measures 1 inch

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EMBANKMENT CONTROL POINT TABLE				
ID	STATION	EASTING	NORTHING	ELEVATION
C001	STA 40+00	1300177	7511848.06	4218.00
C002	STA 40+00	1300173	7511866.96	4216.27
C003	STA 40+00	1300179.62	7511832.36	4218.00
C004	STA 50+00	1301173.81	7511911.91	4218.00
C005	STA 50+00	1301173.09	7511943.61	4213.50
C006	STA 50+00	1301175.2	7511868.86	4210.95
C008	STA 60+00	1302173.22	7511945.67	4218.00
C009	STA 60+00	1302172	7511989.76	4212.80
C010	STA 60+00	1302174.62	7511895.18	4208.95
C012	STA 70+00	1303172.72	7511977.26	4218.00
C014	STA 70+00	1303171.21	7512023.14	4212.15
C015	STA 70+00	1303174.63	7511923.39	4208.18
C016	STA 80+00	1304172.33	7512004.78	4218.00
C018	STA 80+00	1304171.12	7512051.97	4211.34
C019	STA 80+00	1304174.02	7511945.7	4206.97
C020	STA 90+00	1305171.91	7512033.8	4218.00
C022	STA 90+00	1305170.52	7512078.63	4212.39
C023	STA 90+00	1305173.79	7511973.1	4206.42
C024	STA 100+00	1306171.43	7512064.9	4218.00
C026	STA 100+00	1306169.93	7512112.88	4212.69
C027	STA 100+00	1306173.41	7512002	4205.98
C028	STA 110+00	1307171.01	7512093.77	4218.00
C030	STA 110+00	1307169.7	7512139.86	4213.29
C031	STA 110+00	1307172.8	7512030.79	4205.97
C032	STA 120+00	1307682.53	7511601.69	4218.00
C033	STA 114+54	1307625.28	7512110.26	4218.00
C034	STA 115+50	1307687.78	7512051.07	4218.00
C035	STA 120+00	1307619.29	7511602.89	4205.93
C036	STA 120+00	1307737.41	7511600.49	4210.35
C038	STA 130+00	1307606.6	7510602.92	4205.95
C039	STA 130+00	1307726.11	7510603.25	4209.89
C041	STA 130+00	1307669.61	7510603.09	4218.00
C042	STA 140+00	1307594.75	7509605.63	4205.83
C043	STA 140+00	1307713.5	7509601.29	4210.06
C045	STA 140+00	1307657.64	7509603.33	4218.00
C046	STA 150+00	1307637.61	7508604.1	4218.00
C047	STA 150+00	1307574.04	7508605.98	4205.82
C048	STA 150+00	1307691.38	7508602.51	4210.67
C050	STA 152+52	1307639.83	7508351.43	4218.00
C052	STA 152+52	1307576.32	7508347.71	4205.85
C053	STA 152+52	1307689.08	7508352.71	4212.25
C054	STA 154+24	1307714.86	7508192.01	4211.73
C055	STA 154+24	1307664.89	7508182.31	4218.00
C056	STA 154+24	1307603.62	7508167.61	4206.00
C058	STA 155+71	1307726.68	7508048.86	4218.00
C060	STA 155+71	1307777.74	7508074.27	4209.67
C061	STA 155+71	1307671.26	7508018.89	4206.00
C062	STA 160+00	1307932.82	7507672.7	4218.00
C063	STA 160+00	1307878.8	7507641.94	4206.21
C065	STA 160+00	1307981.84	7507700.52	4209.83
C066	STA 170+00	1308373.55	7506773.07	4206.37
C068	STA 170+00	1308473.03	7506829.42	4211.00
C069	STA 170+00	1308426.92	7506803.3	4218.00
C070	STA 180+00	1308868.27	7505904.21	4206.33
C072	STA 180+00	1308921.73	7505934.3	4218.00
C073	STA 180+00	1308968.31	7505960.46	4210.86
C074	STA 190+00	1308606.93	7505316.36	4213.57
C075	STA 190+00	1308621.52	7505271.59	4207.20

EMBANKMENT CONTROL POINT TABLE				
ID	STATION	EASTING	NORTHING	ELEVATION
C076	STA 190+00	1308601.69	7505332.31	4217.50
C078	STA 200+00	1307645.25	7505042.2	4217.72
C080	STA 200+00	1307660.06	7504991.79	4210.79
C081	STA 200+00	1307649.89	7505026.71	4216.94
C083	STA 210+00	1306697.02	7504723.84	4216.82
C084	STA 210+00	1306708.61	7504688.75	4210.50
C085	STA 220+00	1305712.49	7504579.47	4218.04
C086	STA 220+00	1305712.19	7504620.01	4215.82
C087	STA 220+00	1305712.58	7504568.15	4218.26
C088	STA 230+00	1304719.2	7504518.92	4218.00
C089	STA 230+00	1304724.29	7504497.6	4218.18
C090	STA 230+00	1304711.73	7504550.65	4216.86
C091	STA 240+00	1303754.65	7504257.55	4218.00
C092	STA 240+00	1303744.39	7504292.65	4216.73
C093	STA 240+00	1303759.47	7504240.52	4218.20
C094	STA 250+00	1302797.73	7503967.28	4218.00
C095	STA 250+00	1302788.55	7503997.32	4216.90
C096	STA 250+00	1302804.67	7503945.15	4218.19

FOUNDATION CONTROL POINT TABLE				
ID	STATION	EASTING	NORTHING	ELEVATION
C007	STA 50+00	1301175.49	7511858.93	4210.90
C011	STA 60+00	1302175.95	7511884.5	4208.94
C013	STA 70+00	1303174.83	7511913.06	4208.16
C017	STA 80+00	1304174.27	7511935.69	4206.96
C021	STA 90+00	1305174.13	7511962.52	4206.40
C025	STA 100+00	1306173.7	7511991.87	4205.97
C029	STA 110+00	1307173.09	7512020.67	4205.96
C037	STA 120+00	1307609.27	7511602.88	4205.92
C040	STA 130+00	1307596.48	7510602.89	4205.94
C044	STA 140+00	1307584.01	7509606.02	4205.80
C049	STA 150+00	1307563.9	7508606.28	4205.78
C051	STA 150+52	1307566.23	7508348.55	4205.80
C057	STA 154+24	1307593.9	7508165.29	4205.97
C059	STA 155+71	1307662.52	7508014.03	4206.00
C064	STA 160+00	1307870.01	7507636.99	4206.12
C067	STA 170+00	1308364.8	7506767.84	4206.34
C071	STA 180+00	1308359.24	7505899.22	4206.40
C077	STA 190+00	1308598.52	7505342.11	4217.68
C079	STA 200+00	1307642.15	7505051.71	4218.00
C082	STA 210+00	1306695.1	7504729.65	4218.40

WALL SEGMENT	STATIONING	DESCRIPTION
1	0+00 - 30+00	EXISTING RETENTION BERM
2	30+00 - 40+00	NON-FILL REACH ACROSS PARENT-GROUND
3	40+00 - 110+40	UPGRADE EXISTING E-W BERM ON GSL
4	110+40 - 180+50	UPGRADE EXISTING N-S BERM ON GSL MUDFLAT
5	180+50 - 212+33 (APPROX) ~	NEW BERM ATOP NATURAL SPIT/BEACH
6	212+33 - 256+83	NEW EMBANKMENT OVER SVDD



TETRA TECH
www.tetrattech.com
4750 West 2100 South, Suite 400
Salt Lake City, Utah 84120
PHONE: 801-972-9100

MARK	DATE	DESCRIPTION	BY
1	2-24-22	UPDATED DIKE DESIGN TO ADD MIXING PAD	CT

US MAGNESIUM
GRANTSVILLE, UTAH

PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN

CONTROL POINTS

Project No.: 117-8733004
Designed By: CT
Drawn By: JSS
Checked By: CT

C009

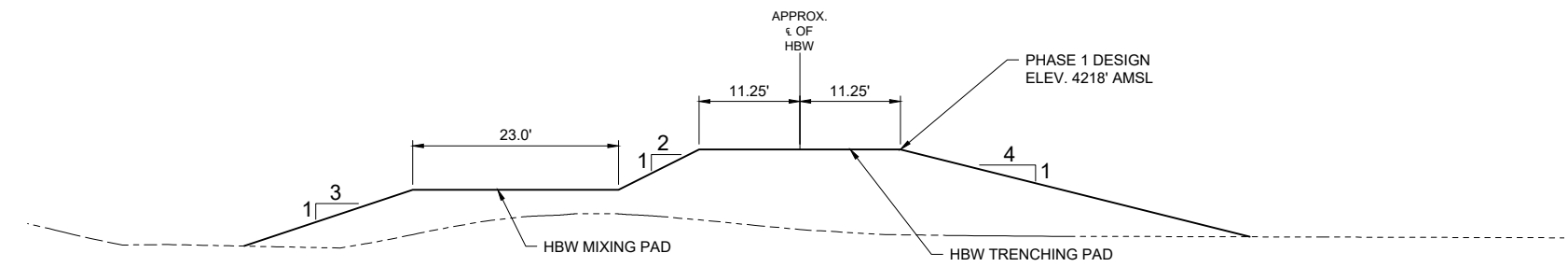
2/28/2022 3:18 PM - C:\I-R-DRIVE\IT-ZIUS\MAGNESIUM\LLC\117-8733003 - CQA AND EOR SERVICES\07-CADD\SHEETFILES\PHASE 1\FIC REV0-RWP-C010 TYPICAL EMBANKMENT DETAILS.DWG

LEGEND:

AMSL	ABOVE MEAN SEA LEVEL
BGS	BELOW GROUND SURFACE
ELEV	ELEVATION
HBW	HYDRAULIC BARRIER WALL
MIN	MINIMUM
OWP	OLD WASTE POND
STA	STATION

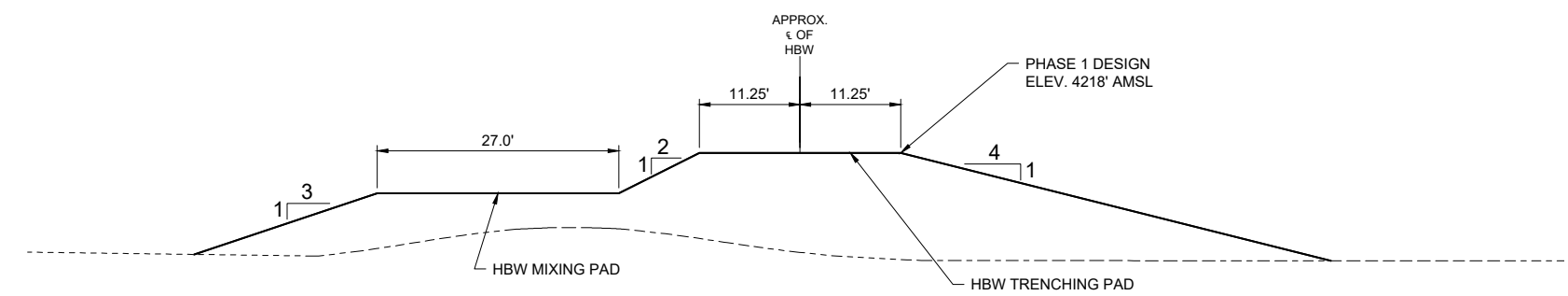
NOTES:

- CONSTRUCTION OF EMBANKMENT IS NOT REQUIRED FROM STA 0+00 TO STA 40+00.
- LOCATION, WIDTH AND DEPTH OF FUTURE HBW IS SHOWN AS APPROXIMATE. DESIGN OF HBW TO BE COMPLETED AS PART OF PHASE 2.
- REFER TO SHEETS C003 THROUGH C007 AND C009 FOR LIMITS OF FOUNDATION PREPARATION INCLUDING OVER-EXCAVATION, CARIFYING, AND RECOMPACTION.
- EMBANKMENT DETAILS SHOWN ARE TYPICAL. REFER TO SHEET C003 THROUGH C007 FOR CROSS SECTIONS. REFER TO SHEET C010 FOR TYPICAL EMBANKMENT DETAILS.



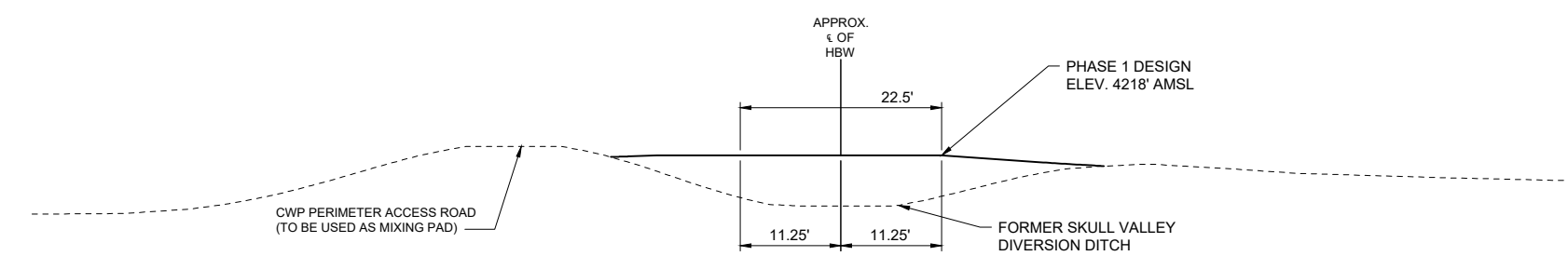
1 TYPICAL EMBANKMENT DETAIL
- STA 45+00 TO STA 95+00

0 10 20
SCALE IN FEET



2 TYPICAL EMBANKMENT DETAIL
- STA 95+00 TO STA 183+48

0 10 20
SCALE IN FEET



3 TYPICAL EMBANKMENT DETAIL
- STA 183+48 TO STA 253+36

0 10 20
SCALE IN FEET



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USmag

MARK	DATE	DESCRIPTION	BY
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US MAGNESIUM
GRANTSVILLE, UTAH

PHASE 1 RETROFITTED WASTE POND
HYDRAULIC BARRIER WALL DESIGN

**TYPICAL
EMBANKMENT
DETAILS**

Project No.: 117-8733004
Designed By: CT
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C010