THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Fax: 907.465.4759

FISH HABITAT PERMIT FH23-I-0059

ISSUED: June 28, 2023
EXPIRES: Upon Satisfactory Completion of Restoration

Coeur Alaska Inc.
ATTN: Pete Strow
3031 Cliton Drive, Suite 202
Juneau, AK 99801

RE: Tailings Treatment Facility Back Dam
Mid Lake Slate Creek
Section 23, T 35S, R 62E, CRM (Juneau D-4)
Location: 58.81425 N, 135.03982 W

Dear Pete Strow:

Pursuant to the Fishway Act at AS 16.05.841, the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to construct a back dam in Mid Lake Slate Creek, between your tailings treatment facility (TTF; formerly Lower Slate Lake) and Upper Slate Lake, to contain the TTF footprint in preparation for increasing water level from the Stage 4 main dam raise; extending the life of the TTF by approximately 10 years.

The back dam will replace the existing concrete diversion dam in Mid Lake Slate Creek, which was authorized in FH05-I-0050, Amendments A, B, and C, and relocate the water diversion pipeline inlet providing fish passage from Upper Slate Lake to East Fork Slate Creek, bypassing the TTF.

Project Description
You will notify Habitat Section at least 5 days prior to beginning in-water work so a habitat biologist may remove fish from the inwater work area and observe construction. You will construct the back dam per your March 31, 2023, construction plans (enclosed) and June 1, 2023, water diversion plan (enclosed).

Upstream of the work area, you will install up to ½ inch mesh screen fence embedded into the substrate and banks by 1–2 ft in the Upper Slate Lake outlet to exclude fish from water pump intakes that will move water through the construction zone, expected to last about four months. Fish passage will not occur during back dam construction as water will be pumped over the top of the upper coffer dam and discharge into the diversion pipeline downstream of the back dam

work area. If the fence becomes problematic for efficient work on the back dam, it will be removed.

You will construct an upper and lower coffer dam in Mid Lake Slate Creek using rock and a HDPE geomembrane liners. You will construct sumps as needed in the work area and pump clean Upper Slate Lake water into the diversion pipeline flowing to East Fork Slate Creek.[a] If you encounter acid generating rock in the isolated work area, water will be pumped into trucks and treated separately. You will excavate to bedrock and construct the back dam to an elevation of 758 ft. The 26 inch HDPE diversion pipeline will be extended and encased with concrete into the back dam at an elevation of 738.5 ft.

Upon back dam construction completion you will remove the fence, upper coffer dam, and construction materials; the lower coffer dam will remain and be flooded at closure. You will fill sumps with inkind material and restore fish passage through the diversion pipeline to the main dam plunge pool.

At TTF closure, the back dam will be excavated to a flooded elevation of 3 ft connecting Upper Slate Lake with Lower Slate Lake. Mitigation for flooding Upper Slate Lake tributaries that provide spawning habitat for Dolly Varden includes: constructing two spawning habitat deltas at the new lake elevation, improving habitat for South Creek and lake edges, and replacing three culverts to provide fish passage. The water diversion pipeline will be blocked and downstream fish passage will occur through a new main dam spillway.

Fishway Act
Mid Lake Slate Creek is located between the TTF (Lower Slate Lake) and Upper Slate Lake and supports Dolly Varden and threespine stickleback, as does Upper Slate Lake. The TTF supports threespine stickleback. Downstream of the TTF, East Fork Slate Creek supports Dolly Varden and threespine stickleback. The anadromous section of Slate Creek (Stream No. 115-20-10030) provides habitat for chum, coho, and pink salmon, and eulachon; we have also documented Dolly Varden and cutthroat trout.

In accordance with AS 16.05.841, your project is approved subject to the project description, the following stipulations, and the permit terms:

1. You will notify Habitat Section at least 5 days prior to beginning in-water work on the back dam so a habitat biologist may remove fish from the work area and observe construction.
2. You will notify Habitat Section at least 5 business days prior to removing the upper coffer dam and provide Habitat Section plans describing the excavation means and methods, for Habitat Section approval in the form of a permit amendment.
3. You will notify Habitat Section at least 5 days prior to excavating the top of the back dam to a flooded elevation of 3 ft and provide plans describing the excavation means and methods for Habitat Section approval in the form of a permit amendment.

[a] To assure adequate streamflows maintains habitat for spawning, incubation, rearing, and migration of fish in Slate Creek, the water diversion pipeline and effluent inputs satisfy the in-stream flow schedule specified in Water Rights LAS 24486.

You must maintain the integrity of the structures in accordance with the terms of this permit so that free downstream fish passage is provided.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Please direct questions about this permit to Habitat Biologist Jesse Lindgren at (907) 465-1635 or jesse.lindgren@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner

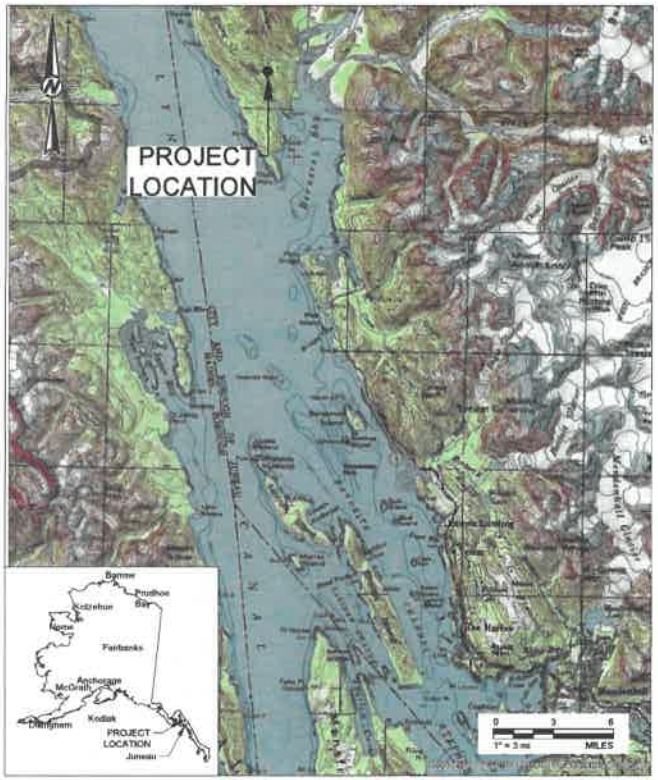
Kate Kanouse

By: Kate Kanouse
Regional Supervisor

Enclosures: Back Dam Detailed Design Drawings: March 31, 2023
Back Dam Pumping plan: June 1, 2023

Email cc:
Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Patrick Fowler, ADF&G SF, Sitka
Dan Teske, ADF&G SF, Douglas
Nicole Zeiser, ADF&G CF, Haines
Scott Forbes, ADF&G CF, Douglas
Roy Churchwell, ADF&G WC, Douglas
Ben Wagner, DNR DMLW, Anchorage
Ben Soiseth, USACE, Soldotna
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Sgt. Robert Welch, DPS/AWT, Juneau
Sylvia Kreel, DNR OPMP, Juneau
Casey Loofbourrow, USDA Forest Service, Juneau

COEUR ALASKA, INC.
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS



PROJECT LOCATION

REFERENCE
BASE MAP TAKEN FROM USGS 1:250,000 TOPOGRAPHY MAPS, JUNEAU, ALASKA-CANADA, DATED 1962 (MINOR REVISIONS - 1985) .

DRAWING INDEX		
DRAWING NUMBER	REVISION	DRAWING TITLE
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010	0	COFFERDAMS AND FOUNDATION PREPARATION DETAILS
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013	0	BACK DAM EMBANKMENT SECTION, PROFILE, AND DETAILS
014	0	USL DIVERSION PIPELINE EXTENSION PLAN
015	0	GROUT TRENCH LAYOUT AND DETAILS
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019	0	GEOMEMBRANE DETAILS
020	0	USL DIVERSION INTAKE STRUCTURE ACCESS ROAD PLAN
021	0	NORTH ACCESS ROAD MODIFICATION PLAN
022	0	NORTH ACCESS ROAD PROFILE
023	0	NORTH ACCESS ROAD DETAILS AND SECTIONS
024	0	NORTH DIVERSION DISCHARGE TO USL
S-001	0	STRUCTUAL GENERAL NOTES
S-002	0	STRUCTURAL GENERAL NOTES
S-003	0	TYPICAL DETAILS
S-004	0	INTAKE STRUCTURE CONCRETE PLAN AND SECTIONS
S-005	0	INTAKE STRUCTURE CONCRETE SECTIONS
S-006	0	INTAKE STRUCTURE STEEL PLAN AND SECTIONS
S-007	0	INTAKE STRUCTURE STEEL SECTIONS AND DETAILS

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	OCS	SLA

SEAL

STATE OF ALASKA 49TH — STEVEN L. ANDERSON — 12-9120 — PROFESSIONAL ENGINEER

CLIENT
COEUR ALASKA, INC.
KENSINGTON MINE

COEUR ALASKA™

CONSULTANT
wsp
WSP USA, INC.
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USA
(907) 344-6001

PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
COVER SHEET

PROJECT NO. 21460082 | REV. 0 | 001 of 024 | DRAWING 001

GENERAL LEGEND - PLANS - EXISTING

- EXISTING TOPOGRAPHY (REFERENCE 1)
- APPROX. EXISTING WATERLINE (REFERENCE 4)
- EXISTING ROAD
- EXISTING BUILDING
- POA1 BOUNDARY (REFERENCE 2)
- EXISTING DUAL USL DIVERSION PIPELINES (NOT BURIED)
- EXISTING NORTH STORMWATER DIVERSION PIPELINE
- EXISTING SOUTHEAST STORMWATER DIVERSION PIPELINE
- EXISTING WTP PIPELINE
- EXISTING WATER RECLAIM PIPELINE
- EXISTING CULVERT
- EXISTING WTP EFFLUENT DISCHARGE PIPELINE
- EXISTING TAILINGS DELIVERY / DISCHARGE PIPELINE
- EXISTING POWERLINES
- EXISTING RECLAIM WATER PIPELINE TO TREATMENT PLANT AND OVERFLOW TO TTF
- ESTIMATED EXISTING AREA OF THICKER PEAT DEPOSITS

GENERAL LEGEND - PLANS - PROPOSED

- PROPOSED EMBANKMENT GRADING
- PROPOSED ACCESS ROAD GRADING
- PROPOSED EXCAVATION SURFACE
- PROPOSED WATER TREATMENT PLANT PAD
- PROPOSED GRADING (OPTIONAL LOCATION)
- PROPOSED CLEARING LIMITS BOUNDARY
- PROPOSED STAGE 4A GROUT TRENCH
- PROPOSED ROAD
- PROPOSED DUAL USL DIVERSION PIPELINES
- PROPOSED DUAL USL DIVERSION PIPELINES (BURIED)
- PROPOSED SEEPAGE COLLECTION SYSTEM PIPELINE
- PROPOSED NORTH STORMWATER DIVERSION CHANNEL
- MAXIMUM OPERATING WATER LEVEL AT END OF STAGE 4A (APPROX.)
- PROPOSED GRADE BREAK
- PROPOSED / RELOCATED HDPE OVERFLOW DRAIN DISCHARGE LINE
- TEMPORARY RELOCATED DILUTION WATER PIPELINE / SEEP TREATMENT DISCHARGE PIPELINE
- TEMPORARY RELOCATED DIVERSION PIPELINE
- PROPOSED POWERLINES
- PROPOSED COMMUNICATION CONDUIT
- PROPOSED RECLAIM PIPELINE
- STAGE 4A PROPOSED GRADING EXTENTS (APPROX.)
- PROPOSED DRAINAGE PIPE

GENERAL LEGEND - SECTIONS AND DETAILS - EXISTING

- EXISTING GRADE
- EXISTING GROUND / OVERBURDEN
- EXISTING BEDROCK / COMPETENT FOUNDATION BEDROCK

05 / 009 — DETAIL IDENTIFICATION
DRAWING WHERE DETAIL IS LOCATED

A / 011 — CROSS-SECTION IDENTIFICATION
DRAWING WHERE CROSS-SECTION IS LOCATED

GENERAL LEGEND - SECTIONS AND DETAILS - PROPOSED

- PROPOSED ZONE F
- PROPOSED ZONE D
- PROPOSED ZONE A
- PROPOSED GENERAL FILL
- PROPOSED 100mil TEXTURED HDPE GEOMEMBRANE
- PROPOSED 40mil TEXTURED HDPE GEOMEMBRANE
- PROPOSED 12-oz NONWOVEN GEOTEXTILE
- PROPOSED 16-oz NONWOVEN GEOTEXTILE
- PROPOSED STRUCTURAL CONCRETE
- PROPOSED WEARING COURSE
- PROPOSED ARMOR ROCK
- PROPOSED BEDDING MATERIAL

ABBREVIATIONS

APPROX.	APPROXIMATE
ARD	ACID ROCK DRAINAGE
CAK, COEUR	COEUR ALASKA, INC.
℄	CENTERLINE
CPPE	CORRUGATED PERFORATED POLYETHYLENE
CSP	CORRUGATED STEEL PIPE
CQA	CONSTRUCTION QUALITY ASSURANCE
CQC	CONSTRUCTION QUALITY CONTROL
DIA. OR Ø	DIAMETER
DWG	DRAWING
ft OR '	DIMENSIONS IN FEET
H:V	HORIZONTAL TO VERTICAL
HDPE	HIGH DENSITY POLYETHYLENE
in OR "	DIMENSIONS IN INCHES
ID	INSIDE DIAMETER
LLO	LOW LEVEL OUTLET
LSL	LOWER SLATE LAKE
MCC	MOTOR CONTROL CABINET
mil	DIMENSIONS IN THOUSANDTHS OF AN INCH
MIN.	MINIMUM
mm	MILLIMETERS
N.T.S.	NOT TO SCALE
OD	OUTER DIAMETER
OZ	OUNCE
PSI	POUNDS PER SQUARE INCH
RCC	ROLLER COMPACTED CONCRETE
st	SHORT TONS
TTF	TAILINGS TREATMENT FACILITY
TYP	TYPICAL
USL	UPPER SLATE LAKE
WL	WATER LEVEL
WTP	WATER TREATMENT PLANT

REFERENCES

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
2. PLAN OF OPERATIONS AMENDMENT 1 (POA1) FOR KENSINGTON MINE, PREPARED BY COEUR ALASKA, INC., DATED MARCH 2022.
3. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.8ft ON MAY 9, 2022 AND 720.5ft ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

CLIENT
COEUR ALASKA, INC.
KENSINGTON MINE

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1400 W BENSON BLVD, SUITE 420
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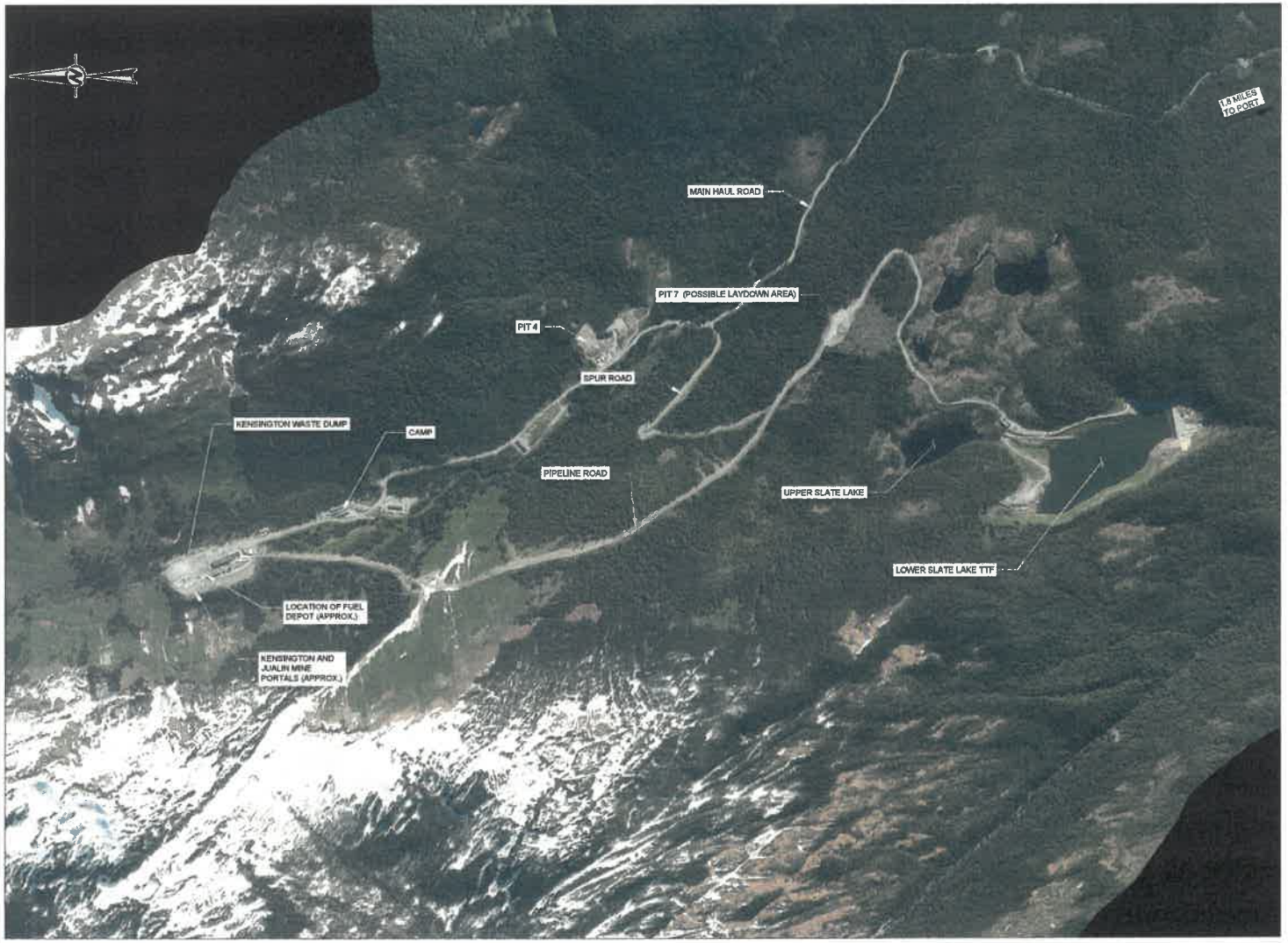
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
GENERAL LEGEND AND NOTES

PROJECT NO.	REV.	002 of 024	DRAWING
21460082	0		002



NOTE

1. AERIAL PHOTO DATED JUNE 2013 FROM USGS HIGH RESOLUTION ORTHOIMAGERY FOR JUNEAU AK63-1F, 0.3M RESOLUTION, AVAILABLE ONLINE AT WWW.NATIONALMAP.GOV.

ISSUED FOR CONSTRUCTION

0 800 1600
1" = 800' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH PETER L. ANDERSON CE-9120 REGISTERED PROFESSIONAL ENGINEER

CLIENT
COEUR ALASKA, INC.
KENSINGTON MINE

COEUR ALASKA™

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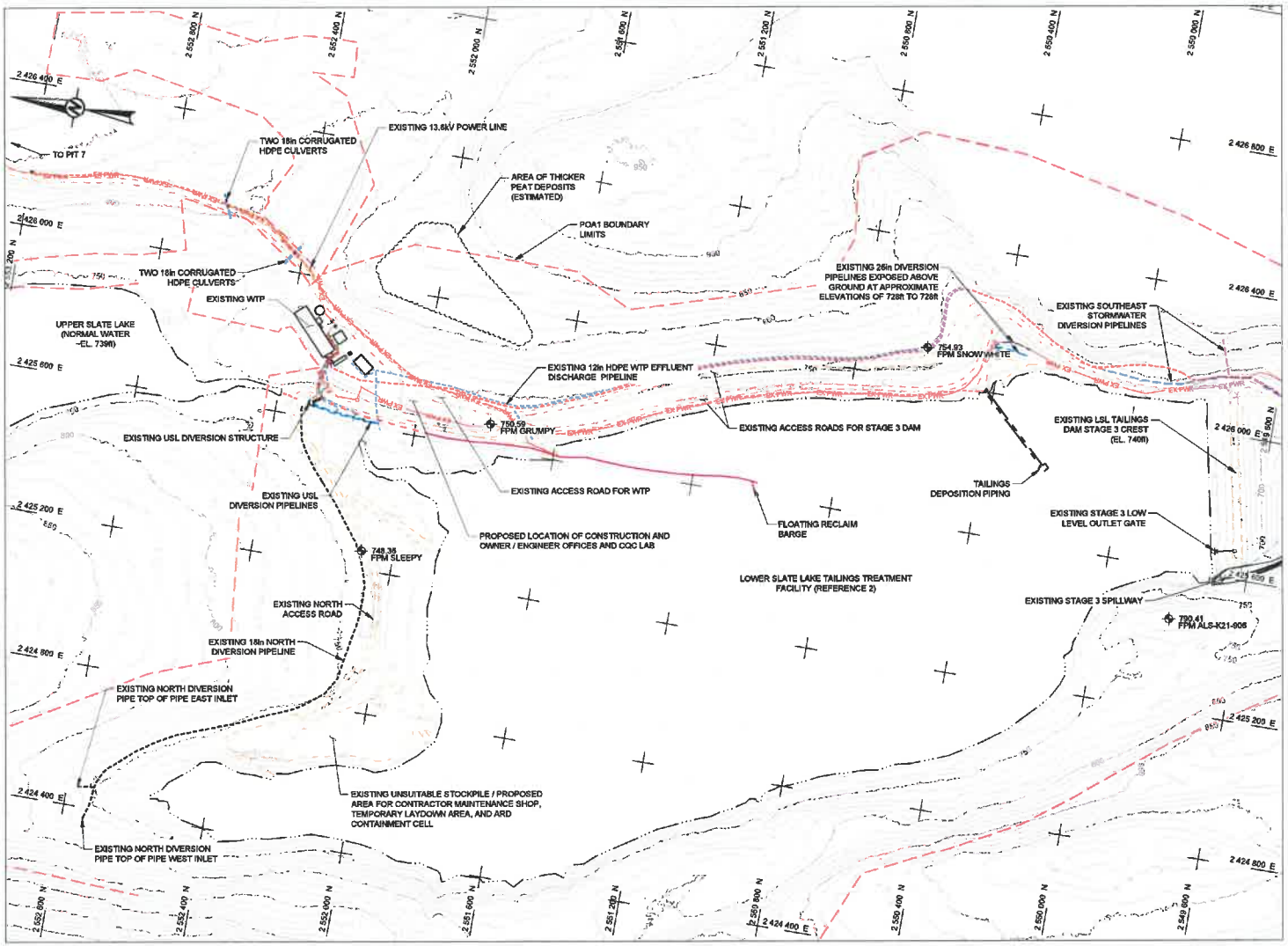
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
SITE LOCATION

PROJECT NO. 21460082
REV. 0
003 of 024
DRAWING 003



NOTES

1. LOCATIONS OF EXISTING UTILITIES AND STRUCTURES ARE APPROXIMATE. LOCATIONS OF SOME UTILITIES ARE MODIFIED DURING REGULAR OPERATIONS (I.E., PIPELINE ALIGNMENTS). MORE DETAILED UTILITY INFORMATION REGARDING EXISTING UTILITIES ARE PROVIDED IN DRAWING 007.
2. THE ELEVATION OF UPPER SLATE LAKE IS CONTROLLED BY PRECIPITATION AND DISCHARGE FLOWS THROUGH THE UPPER SLATE LAKE DIVERSION PIPELINES.
3. NO CONSTRUCTION OR GROUND DISTURBANCE SHALL OCCUR BEYOND THE LIMITS OF THE POA1 BOUNDARY. CONTRACTOR SHALL VERIFY LIMITS OF THE WORK AND SHALL INFORM THE OWNER IF AREAS OUTSIDE OF THE POA1 BOUNDARY APPEAR TO BE AFFECTED.

REFERENCE

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
2. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.8ft ON MAY 9, 2022 AND 720.5ft ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

CONTROL POINT TABLE

POINT I.D.	NORTHING (FT)	EASTING (FT)	ELEVATION (FT)
ALS-K21-906	2549799.89	2425457.90	790.41
GRUMPY	2551790.84	2425668.42	750.59
MINE RTK BASE	2562149.81	2424505.30	730.87
SLEEPY	2552090.96	2425253.14	748.36
SNOW WHITE	2550606.11	2426096.18	754.93

NOTE: CONTROL POINT MINE RTK BASE (ALSO REFEREED TO AS CP 604) IS LOCATED NEAR THE KENSINGTON AND JUALIN MINE PORTALS.

ISSUED FOR CONSTRUCTION

0 150 300
1" = 150' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

CLIENT
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KENSINGTON MINE

CONSULTANT
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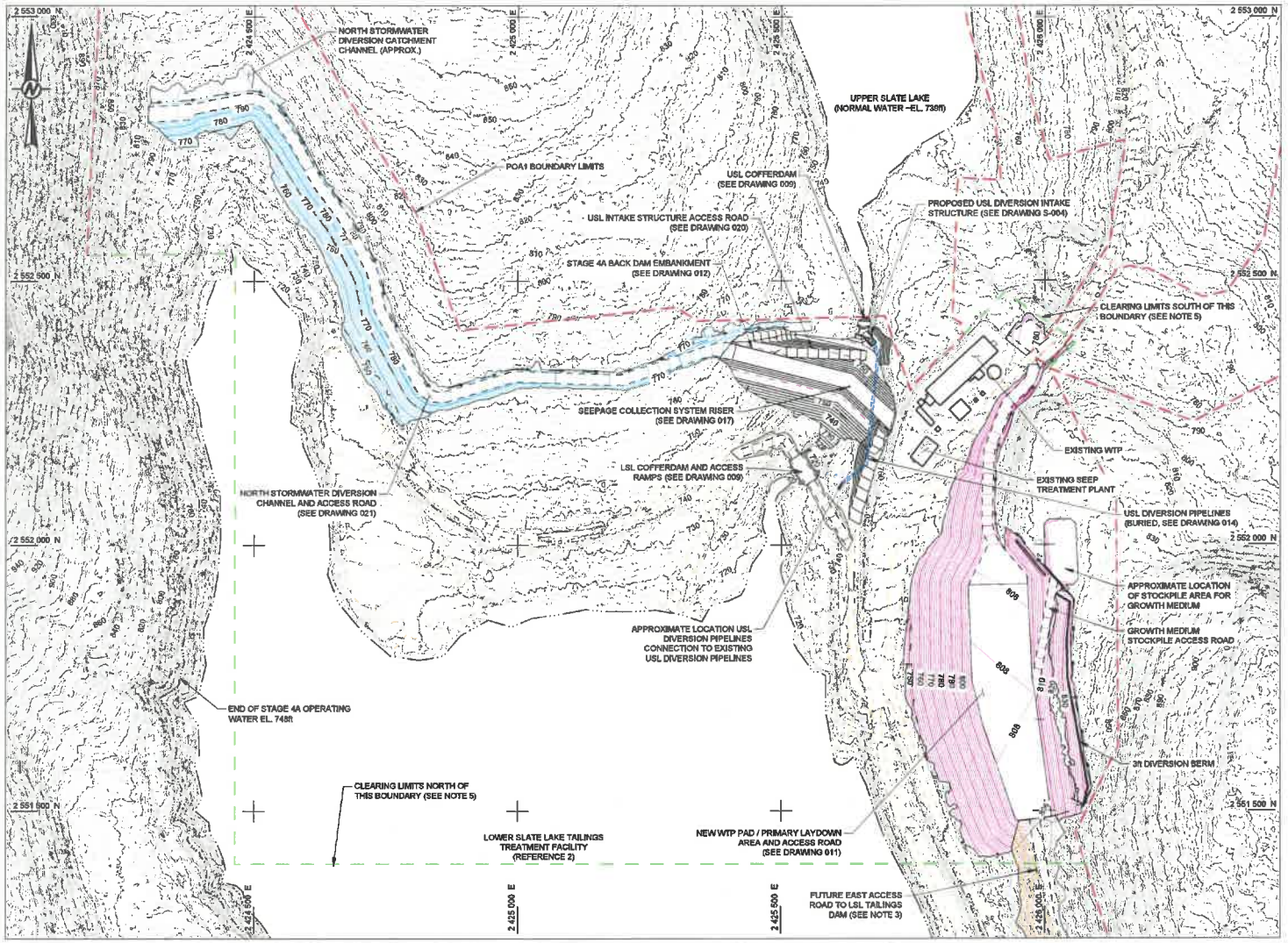
USA
(907) 344-6001

PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
EXISTING CONDITIONS

PROJECT NO. 21460082
REV. 0
004 of 024
DRAWING 004



NOTES

1. BACK DAM SHOWN WITH A GEOMEMBRANE LINER CREST ELEVATION OF 758 FEET.
2. LOCATIONS OF UTILITIES AND STRUCTURES ARE APPROXIMATE. LOCATIONS OF SOME UTILITIES ARE MODIFIED DURING REGULAR OPERATIONS (I.E., PIPELINE ALIGNMENTS). MORE DETAILED UTILITY INFORMATION REGARDING EXISTING UTILITIES ARE PROVIDED ON DRAWING 007 AND UTILITY RELOCATIONS ARE PROVIDED ON DRAWING 008.
3. ACCESS TO THE LSL TAILINGS DAM AT THE SOUTH END OF LOWER SLATE LAKE WILL BE COMPLETED AS A PART OF CONSTRUCTION OF THE LSL TAILINGS DAM STAGE 4A RAISE.
4. NO CONSTRUCTION OR GROUND DISTURBANCE SHALL OCCUR BEYOND THE LIMITS OF THE POA1 BOUNDARY. CONTRACTOR SHALL VERIFY LIMITS OF THE WORK AND SHALL INFORM THE OWNER IF AREAS OUTSIDE OF THE POA1 BOUNDARY APPEAR TO BE AFFECTED.
5. CLEARING WITHIN UNDISTURBED AREAS SHALL EXTEND TO 20ft BEYOND MINIMUM ELEVATION OF 768ft AND UP TO 10ft BEYOND FOOTPRINT LIMITS OF CONSTRUCTION AREA, WHICHEVER IS GREATER.

REFERENCE

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
2. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.6ft ON MAY 9, 2022 AND 720.5ft ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

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0 150 300
1" = 150' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH
STEVEN L. HUDSON
CE-9120
REGISTERED PROFESSIONAL ENGINEER

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COEUR ALASKA, INC.
KENSINGTON MINE

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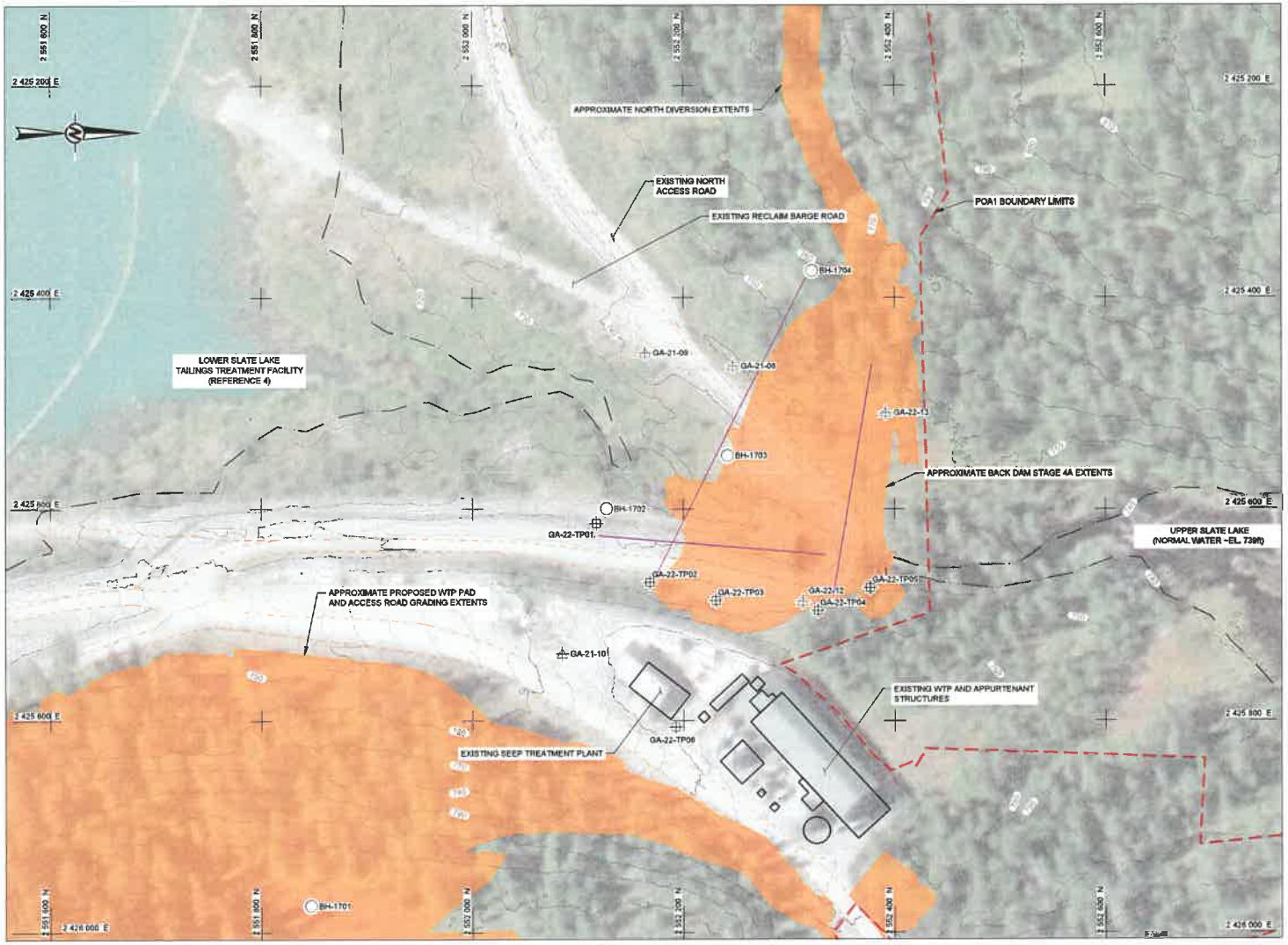
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
GENERAL STAGE 4A ARRANGEMENT SITE PLAN

PROJECT NO.	REV.	005 of 024	DRAWING
21460082	0		005



LEGEND

- BH-1704 — NEWFIELDS 2017 BOREHOLE LOCATIONS (APPROXIMATE) (SEE TABLE 6-1)
- GA-21-00 — GOLDER 2021 AND 2022 GEOTECHNICAL INVESTIGATION CORE HOLE LOCATIONS (SEE TABLE 6-1)
- GA-22-TP06 — GOLDER 2022 TEST PIT LOCATIONS (SEE TABLE 6-2)
- GOLDER 2022 GEOTECHNICAL INVESTIGATION APPROXIMATE SEISMIC REFRACTION LINE

NOTES

1. THE 2021 GEOTECHNICAL INVESTIGATION REPORT DATED MARCH 17, 2022 AND 2022 GEOTECHNICAL INVESTIGATION REPORT DATED NOVEMBER, 2022 DESCRIBE THICKNESS AND TYPE OF OVERBURDEN MATERIALS AND BEDROCK, AND APPROXIMATE DEPTHS TO COMPETENT BEDROCK. BEDROCK IN CONSTRUCTION AREAS ARE ANTICIPATED TO BE POTENTIALLY CAPABLE OF PRODUCING ACID ROCK DRAINAGE.
2. EXISTING LOCATIONS OF STRUCTURES ARE APPROXIMATE. LOCATIONS OF EXISTING UTILITIES ARE NOT SHOWN. REFER TO DRAWING 007.

REFERENCES

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1. VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
2. AERIAL IMAGERY: ESRI, MAXAR, VIVID. FLOWN SEPTEMBER 2019.
3. NEWFIELDS BOREHOLE INFORMATION IS BASED ON THE NEWFIELDS 2017 INVESTIGATION REPORT TITLED "SUBSURFACE INVESTIGATION AND GEOTECHNICAL EVALUATION REPORT TAILINGS TREATMENT AND WASTE ROCK STORAGE FACILITIES KENSINGTON MINE IN SUPPORT OF THE PLAN OF OPERATIONS AMENDMENT 1 (POA-1)," PREPARED FOR COEUR ALASKA, INC., DATED MARCH 2018.
4. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.6ft ON MAY 9, 2022 AND 720.5ft ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

TABLE 6-1: AS-BUILT BOREHOLE LOCATION (NAD83 STATE PLANE)

BOREHOLE ID	NORTHING	EASTING	DEPTH (ft)	INVESTIGATION
GA-22-12	2552392	2425509	61.5	GOLDER 2022
GA-22-13	2552313	2425687	100	GOLDER 2022
GA-21-08	2552247	2425466	73	GOLDER 2021
GA-21-09	2552164	2425452	63	GOLDER 2021
GA-21-10	2552085	2425737	103	GOLDER 2021
BH-1701	2551847	2425975	40	NEWFIELDS 2017
BH-1702	2552127	2425600	76	NEWFIELDS 2017
BH-1703	2552242	2425550	103	NEWFIELDS 2017
BH-1704	2552322	2425375	50	NEWFIELDS 2017

TABLE 6-2: AS-BUILT TEST PIT LOCATION (NAD83 STATE PLANE)

BOREHOLE ID	NORTHING	EASTING	DEPTH (ft)	INVESTIGATION
GA-22-TP-01	2552137	2425613	8	GOLDER 2022
GA-22-TP-02	2552168	2425669	3.5	GOLDER 2022
GA-22-TP-03	2552231	2425686	5	GOLDER 2022
GA-22-TP-04	2552328	2425696	3	GOLDER 2022
GA-22-TP-05	2552377	2425674	8	GOLDER 2022
GA-22-TP-06	APPROX. AS SHOWN	APPROX. AS SHOWN	17	GOLDER 2022

ISSUED FOR CONSTRUCTION

0 50 100
1" = 50' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH — SCOTT L. ANDERSON — 12-9139 — REGISTERED PROFESSIONAL ENGINEER

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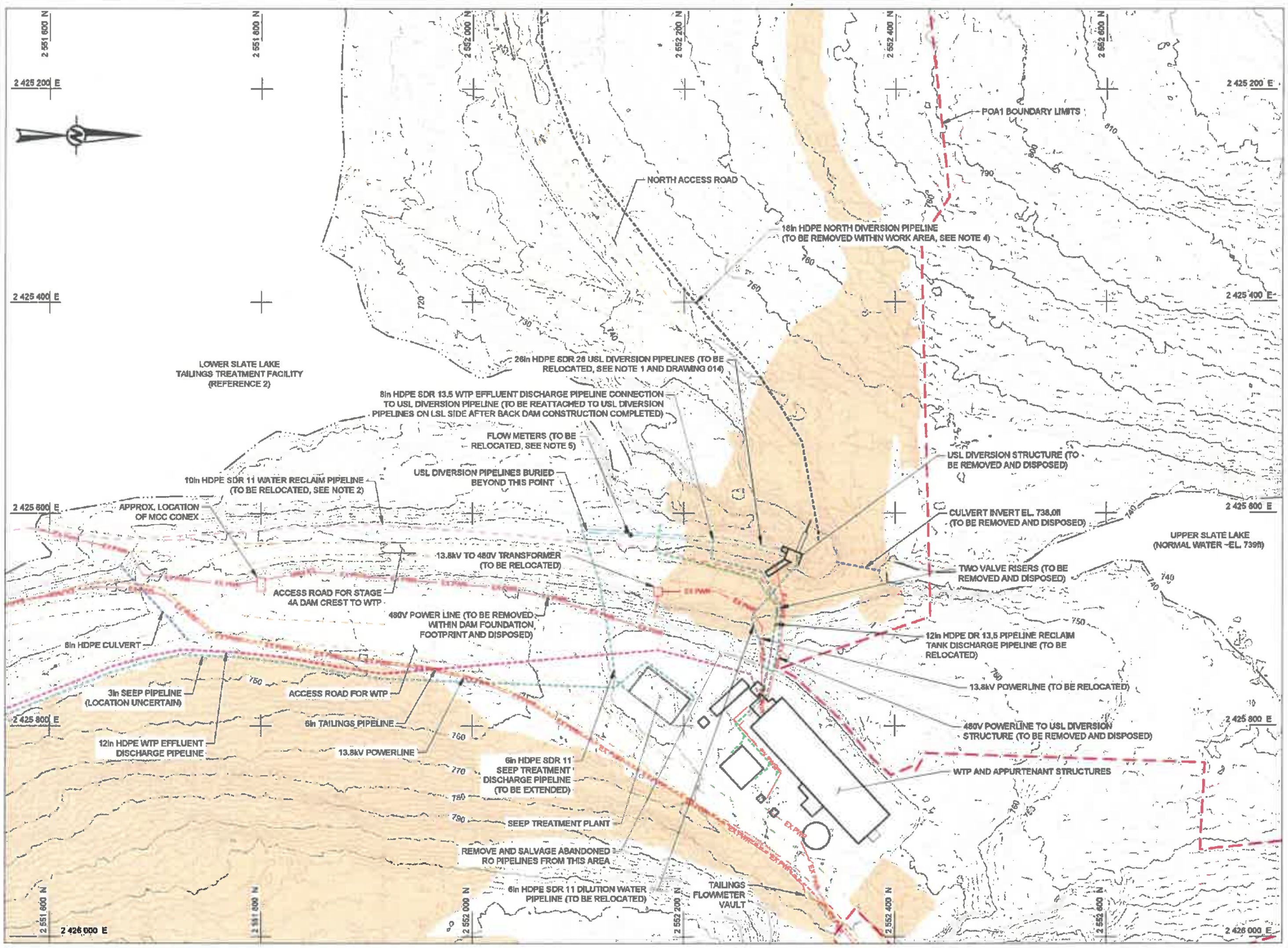
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
GEOTECHNICAL EXPLORATION PLAN

PROJECT NO. 21460082 | REV. 0 | 006 of 024 | DRAWING 006



NOTES

1. EXISTING USL DIVERSION PIPELINES SHALL BE ABANDONED BY REMOVAL FROM TIE-IN LOCATIONS (NEAR BURIED SECTION SOUTH OF THE BACK DAM FOOTPRINT) TO EXISTING USL DIVERSION STRUCTURE. EXISTING KNIFE GATE VALVES TO BE SALVAGED FOR INSTALLATION AT NEW DIVERSION INTAKE STRUCTURE.
2. CONTRACTOR SHALL RELOCATE EXISTING 10-INCH RECLAIM PIPELINE. PORTIONS OF 10-INCH PIPELINE MAY BE SALVAGED WHERE BURIED AT SHALLOW DEPTHS. PORTIONS OF PIPELINE UNDER ROAD MAY BE DEEPER AND NOT SALVAGEABLE.
3. CONTRACTOR SHALL PLAN ON SUPPLYING NEW MATERIAL FOR ALL PIPELINES, AND POWER LINES BEING RELOCATED UNLESS NOTED OTHERWISE OR AS DIRECTED BY OWNER. CONTRACTOR SHALL DISPOSE OF ALL UTILITY MATERIALS AND INFRASTRUCTURE REMOVED FROM THE WORK AREA TO LOCATION(S) IDENTIFIED BY OWNER UNLESS DIRECTED OTHERWISE BY THE OWNER OR NOTED OTHERWISE IN THE DRAWINGS.
4. CONTRACTOR SHALL SUBMIT WORK PLAN TO BE APPROVED BY THE OWNER FOR CONTINUED OPERATION OF EXISTING NORTH DIVERSION SYSTEM UNTIL IT IS BLOCKED OFF BY NEW NORTH STORMWATER DIVERSION AND ACCESS ROAD. POSSIBLE OPTIONS PROPOSED BY CONTRACTOR MAY INCLUDE, BUT NOT LIMITED TO CONNECTION INTO EXISTING USL DIVERSION PIPELINE OR DRAINAGE INTO A LINED POND WITH TRANSFER INTO USL AND TEMPORARY DIVERSION PUMPING SYSTEM. PROPOSED SYSTEM MUST ALLOW MONITORING OF FLOWS THROUGH DIVERSION TO BE SUBMITTED TO OWNER ON A DAILY BASIS. ONCE OPERATION OF THE EXISTING NORTH DIVERSION HAS CEASED IT SHALL BE DEMOLISHED WHERE NOT BURIED WITH SALVAGE OF MATERIALS AS DIRECTED BY THE OWNER.
5. EXISTING FLOW METERS TO BE RELOCATED DOWNSTREAM AT BURIED PIPE LOCATIONS IDENTIFIED BY OWNER DURING CONSTRUCTION. FLOW METER READOUTS TO BE MOUNTED NEAR EXISTING MCC CONEX.

REFERENCES

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
2. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.6ft ON MAY 9, 2022 AND 720.5ft ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

ISSUED FOR CONSTRUCTION

0 50 100
1" = 50' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-21	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH STEVEN L. ANDERSON CE-9120 REGISTERED PROFESSIONAL ENGINEER

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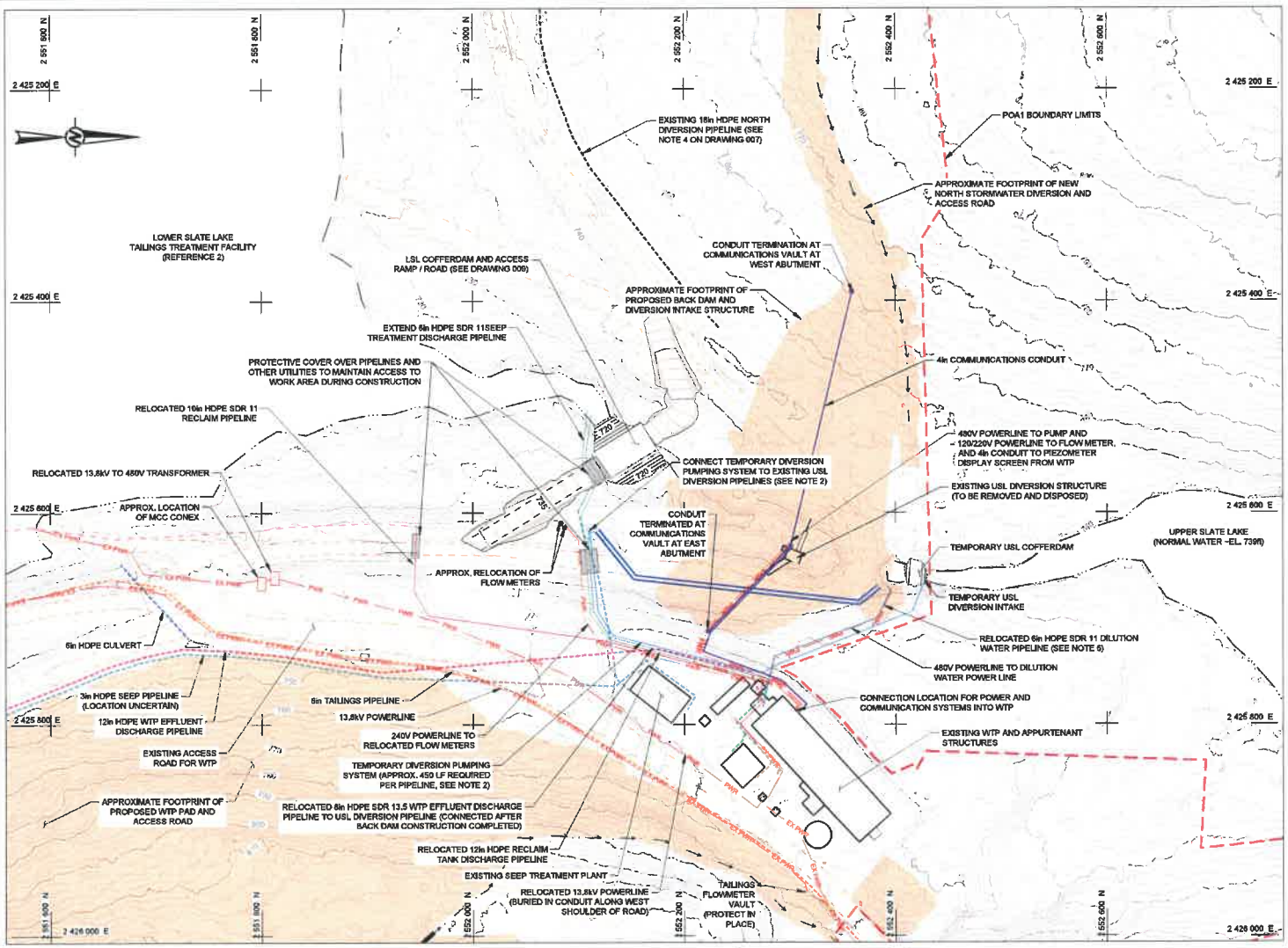
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
EXISTING UTILITY PLAN

PROJECT NO. 21460082 | REV. 0 | 007 of 024 | DRAWING 007



NOTES

1. PROPOSED RELOCATION OF UTILITY PIPELINES, TRANSFORMERS, AND POWERLINES SHOWN ARE APPROXIMATE AND THEIR LOCATION AND OPERATION DURING CONSTRUCTION SHALL BE COORDINATED WITH THE OWNER. THE OWNER SHALL REVIEW AND APPROVE ALL LOCATIONS BEFORE DISTURBING EXISTING INFRASTRUCTURE. LOCATIONS OF THE RELOCATED UTILITIES SHALL BE SURVEYED FOLLOWING COMPLETION UNLESS DIRECTED OTHERWISE BY THE OWNER AND THIS INFORMATION SHALL BE PROVIDED TO THE OWNER.
2. TEMPORARY RELOCATION OF USL DIVERSION PIPELINES DURING CONSTRUCTION WILL REQUIRE REGULAR OPERATION OF PUMPS TO CONVEY WATER FROM USL TO A TIE-IN LOCATION WITH THE EXISTING USL DIVERSION PIPELINES NEAR WHERE PIPELINES BECOME BURIED. CONTRACTOR SHALL SUBMIT PROPOSED DIVERSION PUMPING SYSTEM WITH A SCREENED INLET TO PROTECT FISH AND FLOWMETER(S) TO MONITOR VOLUME. THE EXISTING USL DIVERSION PIPELINES ARE GRAVITY-FLOW PIPELINES AND ARE CAPABLE OF CARRYING A COMBINED FLOW OF APPROXIMATELY 16,000 GPM; HOWEVER, MORE TYPICAL FLOW RATES VARY BETWEEN 1,000 GPM AND 10,000 GPM DURING THE SUMMER (BASED ON INFORMATION PROVIDED BY COEUR BETWEEN 2018 AND 2022). PUMPING SYSTEM SHALL BE OPERATED AS NECESSARY TO PREVENT OVERTOPPING OF USL COFFERDAM AND PROVIDE DAILY FLOW VOLUMES TO OWNER.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING THE CONSTRUCTION FOOTPRINT BETWEEN THE TWO COFFERDAMS AS NECESSARY TO PERFORM AND PROTECT THE WORK AND MAINTAIN ACCESS.
4. CONTRACTOR SHALL USE DIESEL PUMPS FOR TEMPORARY USL DIVERSION WATER PIPELINES.
5. CONTRACTOR SHALL PROTECT RELOCATED UTILITIES DURING THE WORK.
6. DILUTION WATER PIPELINE TO BE RELOCATED ON GRADE TO NEW USL INTAKE DIVERSION STRUCTURE AFTER BACK DAM CONSTRUCTION COMPLETED. WHERE POSSIBLE, PIPELINE IS TO BE BURIED BELOW FROST LINE. PIPELINE SHALL BE INSULATED AND FITTED WITH HEAT TRACE WHERE EXPOSED.

REFERENCE

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
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ISSUED FOR CONSTRUCTION

0 50 100
1" = 50' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

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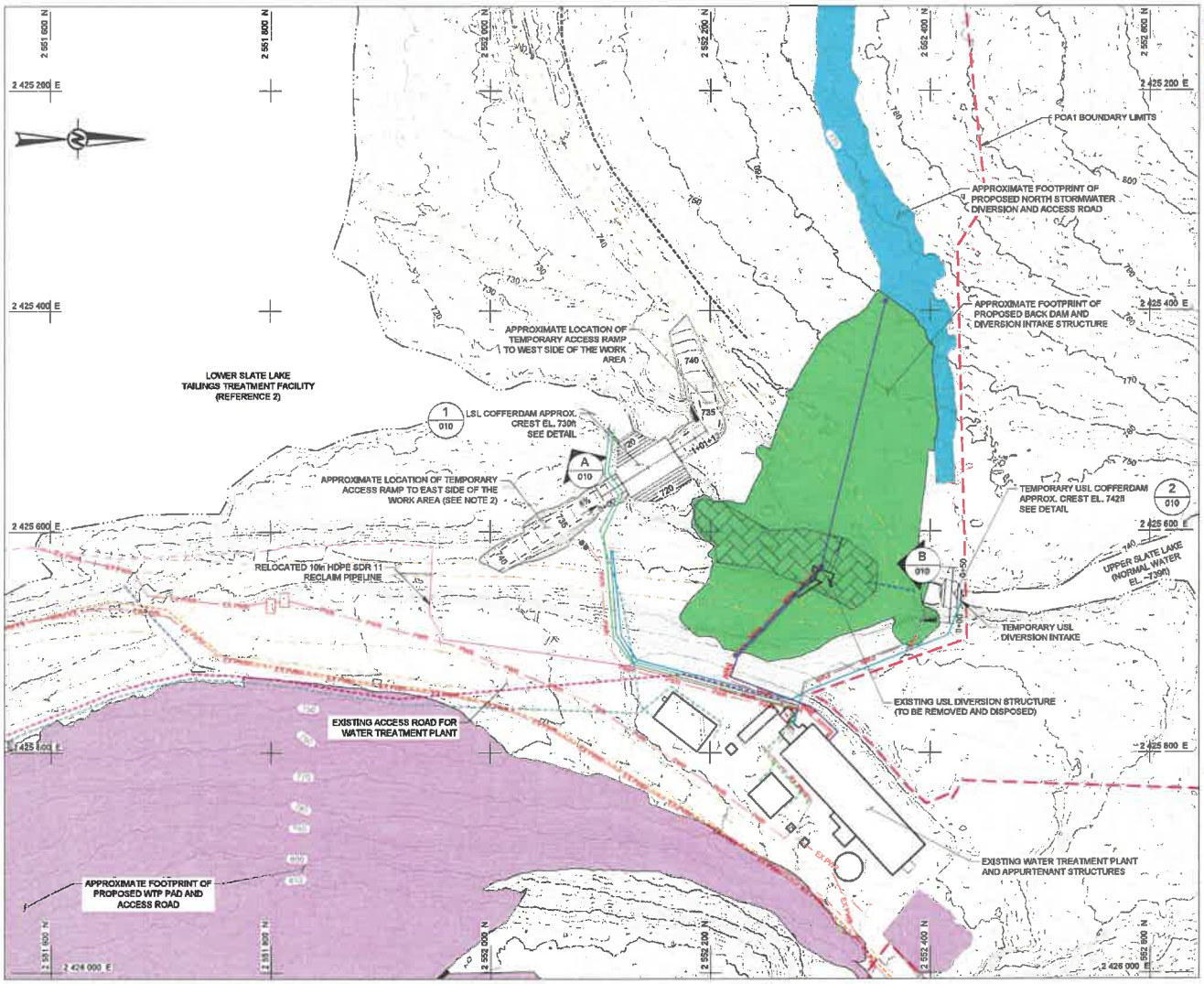
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
PROPOSED UTILITY RELOCATION PLAN

PROJECT NO.	REV.	008 of 024	DRAWING
21460082	0		008



LEGEND

- ESTIMATED BACK DAM FOUNDATION PREPARATION AREA
- ESTIMATED NORTH STORMWATER DIVERSION AND ACCESS ROAD FOUNDATION PREPARATION AREA
- ESTIMATED WTP PAD AND ACCESS ROAD FOUNDATION PREPARATION AREA
- REMOVE BOULDERS FROM THIS AREA AND STOCKPILE AT LAYDOWN AREA

NOTES

1. NO CONSTRUCTION OR GROUND DISTURBANCE SHALL OCCUR BEYOND THE LIMITS OF POA1 BOUNDARY. CONTRACTOR SHALL VERIFY LIMITS OF THE WORK AND SHALL INFORM THE OWNER IF AREAS OUTSIDE OF THE POA1 BOUNDARY APPEAR TO BE AFFECTED.
2. LOCATION AND ALIGNMENT OF COFFERDAMS ARE APPROXIMATE AND MAY BE ADJUSTED BY CONTRACTOR PROVIDED WORK CAN BE ACCOMPLISHED WITHOUT DISTURBANCE BEYOND LIMITS OF POA1 BOUNDARY AND TO ALLOW FOR PROPER FOUNDATION PREPARATION AS DESCRIBED IN THE DRAWINGS, SPECIFICATIONS, AND CQA PLAN. CONTRACTOR SHALL MAINTAIN ACCESS TO EAST AND WEST SIDES OF THE BACK DAM VIA THE LSL COFFERDAM ROADRAMP. CONTRACTOR SHALL MAINTAIN AS PRACTICAL LSL COFFERDAM ACCESS ROAD GRADES THAT ARE LESS THAN 10% AND SHALL INFORM THE OWNER IF STEEPER GRADES ARE REQUIRED.
3. FOUNDATION PREPARATION AREAS AND COFFERDAM GRADING SHOWN ARE IN REFERENCE TO THE EXISTING GROUND TOPOGRAPHY AND DO NOT DEPICT THE FINAL PREPARED SURFACE AREA FOLLOWING CLEARING, GRUBBING, AND EARTH EXCAVATION. CONTRACTOR SHALL PROVIDE APPROXIMATE 3 FT BUFFER BETWEEN LIMITS OF PREPARED SURFACE AND FILL MATERIALS, OR AN ALTERNATIVE BUFFER AS DIRECTED BY OWNER.
4. FOUNDATION PREPARATION SHALL BE OBSERVED BY THE DESIGN ENGINEER AS OUTLINED IN THE SPECIFICATIONS AND CQA PLAN. SURFACE GEOLOGIC MAPPING OF EXPOSED BEDROCK SURFACES SHALL BE COMPLETED BY A QUALIFIED GEOLOGIST PRIOR TO FINAL APPROVAL OF THE PREPARED SURFACES BY THE DESIGN ENGINEER FOR FOUNDATION TREATMENT.
5. FOUNDATION PREPARATION FOR THE BACK DAM AND NEW DIVERSION INTAKE STRUCTURE SHALL INCLUDE EARTH EXCAVATION TO COMPETENT BEDROCK (RMR 60) AND SHALL BE CLEARED OF ALL LOOSE MATERIALS AS NOTED IN THE SPECIFICATIONS.
6. THE CONTRACTOR SHALL AVOID EXPOSURE OF BEDROCK DURING GRUBBING AND EARTH EXCAVATION FOR THE NORTH STORMWATER DIVERSION, WTP PAD, EXISTING WTP PAD EXTENSION, AND RELATED ACCESS ROADS. THE CONTRACTOR SHALL CEASE GRUBBING AND EARTH EXCAVATION IF BEDROCK IS EXPOSED IN THESE AREAS AND NOTIFY OWNER AND DESIGN ENGINEER IMMEDIATELY. EXPOSED BEDROCK MAY REQUIRE FOUNDATION TREATMENT SIMILAR TO THAT REQUIRED IN THE FOOTPRINT OF THE BACK DAM AS DETERMINED BY THE OWNER.
7. POTENTIAL ACID GENERATING MATERIAL EXCAVATED FROM THE SITE SHALL BE REMOVED, HANDLED, AND STOCKPILED AS DIRECTED BY OWNER AND AS DESCRIBED IN THE SPECIFICATIONS. NON-ACID GENERATING MATERIAL MAY BE USED FOR GENERAL FILL AS APPROVED BY THE OWNER, IF UNSUITABLE FOR USE AS GENERAL FILL. NON-ACID GENERATING MATERIAL SHALL BE STOCKPILED AS DESCRIBED IN THE SPECIFICATIONS.
8. FOUNDATION TREATMENT AT THE BACK DAM SHALL BE AS NOTED IN THE SPECIFICATIONS AND CONSIST OF A MINIMUM OF 4 INCHES OF LEAN CONCRETE OR SHOTCRETE PLACED OVER THE PREPARED BEDROCK SURFACE. LEAN CONCRETE SHALL BE PLACED ON SLOPES NO STEEPER THAN 3H:1V UNLESS OTHERWISE APPROVED BY THE DESIGN ENGINEER. SHOTCRETE TO BE PLACED ON SLOPES STEEPER THAN 3H:1V AND REINFORCED AS DETERMINED IN THE FIELD BY THE DESIGN ENGINEER. LEAN CONCRETE SHALL BE PLACED AS NOTED IN THE SPECIFICATIONS AND ILLUSTRATED IN DRAWING 010, DETAILS 3 AND 4.
9. AREAS REQUIRING LEAN CONCRETE AND THE EXTENT OF THE LEAN CONCRETE SHALL BE DETERMINED BY THE DESIGN ENGINEER IN OBSERVATION OF FINAL SURFACE PREPARATIONS. LEAN CONCRETE SHALL BE SET AND PROPERLY CURED AND THE FINAL SURFACE ACCEPTED BY THE DESIGN ENGINEER PRIOR TO PLACEMENT OF ADJACENT OVERTOPPING LEAN CONCRETE OR SHOTCRETE TO ASSURE PROPER AND CONTINUOUS CONTACT BETWEEN MATERIALS.
10. THE CONTRACTOR MAY EXTEND THE PLACEMENT OF LEAN CONCRETE FOR CONVENIENCE TO CONTRACTOR'S CONSTRUCTION PROCEDURES, BUT AT NO ADDITIONAL COST TO THE PROJECT. VOLUNTARY USE OF LEAN CONCRETE BY THE CONTRACTOR DOES NOT RELIEVE THEM FROM ADHERENCE TO PREPARATION, PLACEMENT, CURING, AND MATERIAL SPECIFICATIONS FOR LEAN CONCRETE. THE EXTENTS OF THE LEAN CONCRETE, FOUNDATION PREPARATIONS, AND FINAL SURFACE CONFIGURATION AND QUALITY ARE SUBJECT TO APPROVAL BY THE DESIGN ENGINEER.

REFERENCE

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.
2. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.6ft ON MAY 9, 2022 AND 720.5 ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

ISSUED FOR CONSTRUCTION

0 50 100
1" = 50' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH PROFESSIONAL ENGINEER STEVEN L. ANDERSON CE-9120

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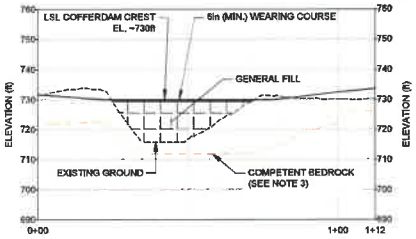
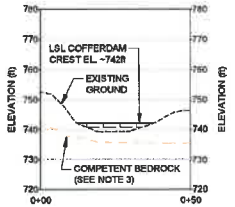
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
CLEARING, GRUBBING, FOUNDATION PREPARATION, AND COFFERDAMS PLAN

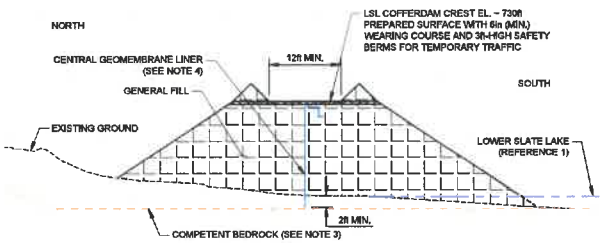
PROJECT NO.	REV.	009 of 024	DRAWING
21480082	0		009



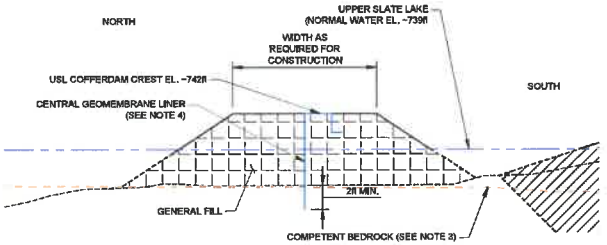
SCALE 1" = 20' A 010 LSL COFFERDAM PROFILE



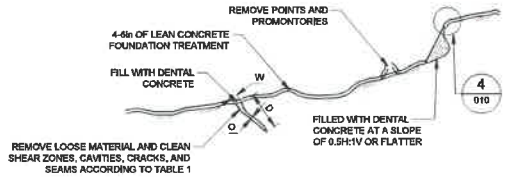
SCALE 1" = 20' B 010 USL COFFERDAM PROFILE



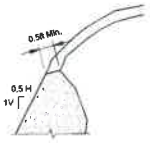
SCALE N.T.S. 1 010 LSL COFFERDAM CONSTRUCTION DETAIL



SCALE N.T.S. 2 010 USL COFFERDAM CONSTRUCTION DETAIL



SCALE N.T.S. 3 010 TYPICAL FOUNDATION TREATMENT DETAIL



CASE	WIDTH OF FEATURE (W)	DEPTH OF FEATURE (D)	TREATMENT
1.	2 INCHES OR LESS	3 TIMES THE WIDTH	DENTAL CONCRETE
2.	2 INCHES TO 5 FEET	3 TIMES THE WIDTH OR TO A DEPTH WHERE OPENING (W) IS 0.5 INCH OR LESS	DENTAL CONCRETE
3.	GREATER THAN 5 FEET	3 TIMES THE WIDTH OR AS DIRECTED BY CONTRACTING OFFICER	DENTAL CONCRETE

SCALE N.T.S. 4 010 LEAN CONCRETE-DENTAL CONCRETE TRANSITION TYPICAL DETAIL

NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF COFFERDAMS AT USL AND LSL TO REDUCE SEEPAGE INTO THE CONSTRUCTION AREA AND ALLOW FOR ACCESS ACROSS LSL DURING CONSTRUCTION. THE PROPOSED EARTHFILL COFFERDAMS WITH CENTRAL LINER SHOWN ARE OPTIONAL. ALTERNATIVE COFFERDAM MEANS AND METHODS PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED FOR REVIEW BY THE DESIGN ENGINEER AND APPROVAL BY THE OWNER PRIOR TO CONSTRUCTION.
2. PRIOR TO COFFERDAM CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A WORK PLAN FOR APPROVAL BY THE OWNER THAT INCLUDES CONSTRUCTION SEQUENCE, MANAGEMENT OF SEEPAGE AND SURFACE WATER, MAINTENANCE OF ACCESS, AND MANAGEMENT AND PROTECTION OF UTILITIES. THE WORK PLAN SHOULD DESCRIBE HOW WATER WILL BE MANAGED TO KEEP THE CONSTRUCTION AREA DEWATERED, KEEP USL WATER LEVELS STABLE, AND MAINTAIN SEPARATION OF USL AND LSL.
3. PROFILES ALONG PROPOSED EARTHEN COFFERDAM LOCATIONS SHOW MINIMUM CREST ELEVATIONS, ESTIMATED COMPETENT BEDROCK SURFACE, AND ESTIMATED WATER LEVELS DURING INITIAL COFFERDAM CONSTRUCTION. THE CREST WIDTHS ARE ESTIMATED BASED ON THE INTENDED PURPOSE AS THE CREST WIDTH OF THE USL COFFERDAM IS LIMITED DUE TO PROXIMITY TO POA 1 BOUNDARY DISTURBANCE LIMITS.
4. THE PROPOSED EARTHEN COFFERDAMS CAN BE CONSTRUCTED WITH GENERAL FILL MATERIALS WITH A LAYER OF WEARING COURSE OVER THE LSL COFFERDAM FOR TEMPORARY TRAFFIC. THE PROPOSED CENTRAL GEOMEMBRANE LINER WOULD BE INSTALLED THROUGH A TRENCH EXCAVATED INTO NATIVE SOILS OR MATERIALS WITH A RELATIVELY LOW PERMEABILITY. THE LENGTH OF THE GEOMEMBRANE ALONG THE ALIGNMENT SHOULD CONSIDER POTENTIAL SEEPAGE BYPASS ALONG THE PERIMETER. THE CENTRAL GEOMEMBRANE LINER SHOULD BE FLEXIBLE ENOUGH TO INSTALL INTO THE TRENCH AND DURABLE ENOUGH TO RESIST DAMAGE FROM THE TRENCH BACKFILL MATERIALS. GEOMEMBRANE SEAMS MAY BE OVERLAPPED, FUSED, GLUED, OR WELDED. THE BOTTOM OF THE GEOMEMBRANE LINER MAY NEED TO BE WEIGHTED TO RESIST BUOYANCY. IF BEDROCK IS ENCOUNTERED BASED ON EXCAVATION RESISTANCE OR CUTTINGS, THEN THE BOTTOM OF THE TRENCH EXCAVATION SHALL BE BACKFILLED WITH A CEMENT-BENTONITE GROUT.
5. CONTRACTOR TO BLOCK ACCESS ACROSS USL COFFERDAM AFTER USL COFFERDAM CONSTRUCTION COMPLETION.

REFERENCE

1. THE ELEVATION OF LOWER SLATE LAKE WAS APPROXIMATELY 717.6ft ON MAY 9, 2022 AND 720.5ft ON MARCH 12, 2023. THE ELEVATION OF THE LAKE IS SUBJECT TO CHANGE WITH PRECIPITATION EVENTS AND OPERATIONAL MODIFICATIONS (I.E., WATER TREATMENT RATES) AND HISTORICALLY INCREASES BY APPROXIMATELY 5.5ft PER YEAR.

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REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

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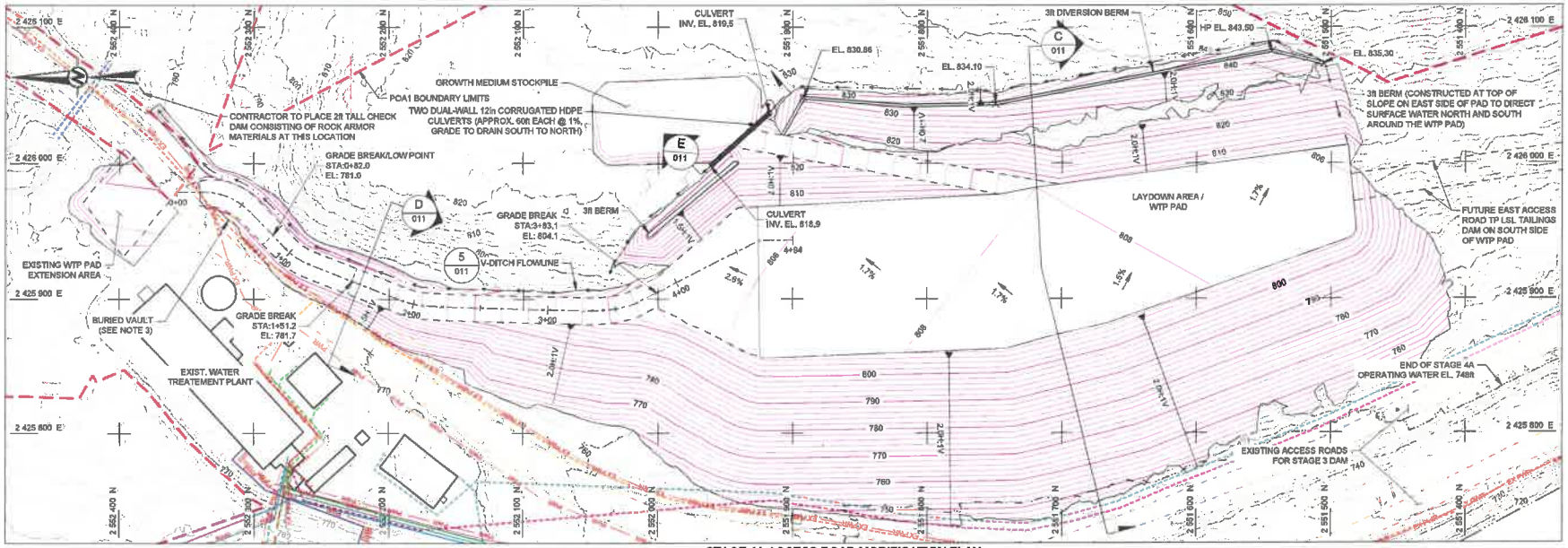
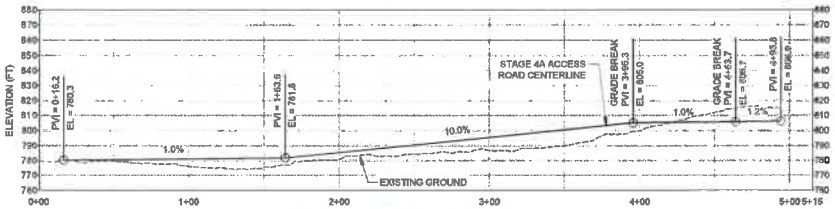
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
COFFERDAMS AND FOUNDATION PREPARATION DETAILS

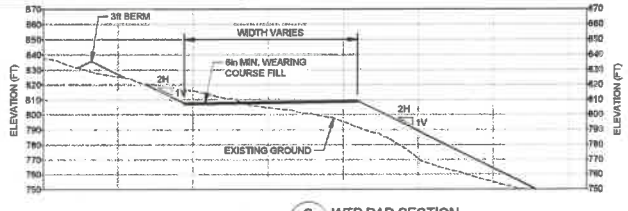
PROJECT NO.	REV.	010 of 024	DRAWING
21460082	0		010



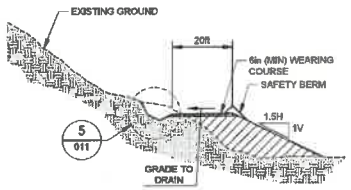
STAGE 4A ACCESS ROAD MODIFICATION PLAN



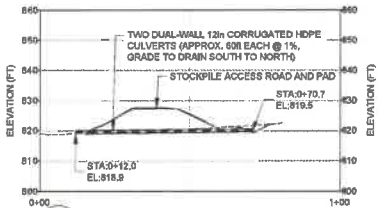
STAGE 4 ACCESS ROAD PROFILE
SCALE 1" = 40'



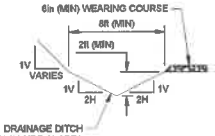
SCALE 1" = 40' VERT. SCALE 1:1 (C 011) WTP PAD SECTION



SCALE N.T.S. (D 011) STAGE 4A ACCESS ROAD SECTION



SCALE 1" = 20' VERT. SCALE 1:1 (E 011) WTP CULVERT CROSSING AT STOCKPILE ACCESS RD



SCALE N.T.S. (5 011) STAGE 4A ACCESS ROAD DITCH DETAIL

NOTES

1. ONLY RELOCATED AND/OR REMOVED UTILITIES ARE SHOWN FOR CLARITY. REFER TO DRAWING 007 FOR EXISTING UTILITY INFORMATION AND DRAWING 009 FOR REMOVED AND/OR RELOCATED UTILITIES INFORMATION.
2. THE WTP PAD AREA, ACCESS ROADS, AND EXTENSION OF EXISTING WTP PAD SHALL BE CLEARED AND GRUBBED PRIOR TO PLACING FILL AS DESCRIBED IN THE SPECIFICATIONS. AREAS CONTAINING SIGNIFICANT (GREATER THAN 2 FEET) THICKNESS OF PEAT AT THE SURFACE (SEE ESTIMATED PEAT AREA IN DRAWING 004) SHALL ALSO BE REMOVED PRIOR TO PLACEMENT OF FILL.
3. PROTECT ALL UTILITIES ALONG EXISTING ACCESS ROAD DURING CONSTRUCTION OF WTP PAD.BURIED UTILITIES THAT ARE LESS THAN 3ft BELOW FINISHED GRADE WHERE TRAFFIC AND ROAD MAINTENANCE ARE EXPECTED SHALL BE PROTECTED BY STEEL PLATE OR SIMILAR AS APPROVED BY THE OWNER.

ISSUED FOR CONSTRUCTION

0 80 120
1" = 80' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	MSW	MSW	CCS	SLA

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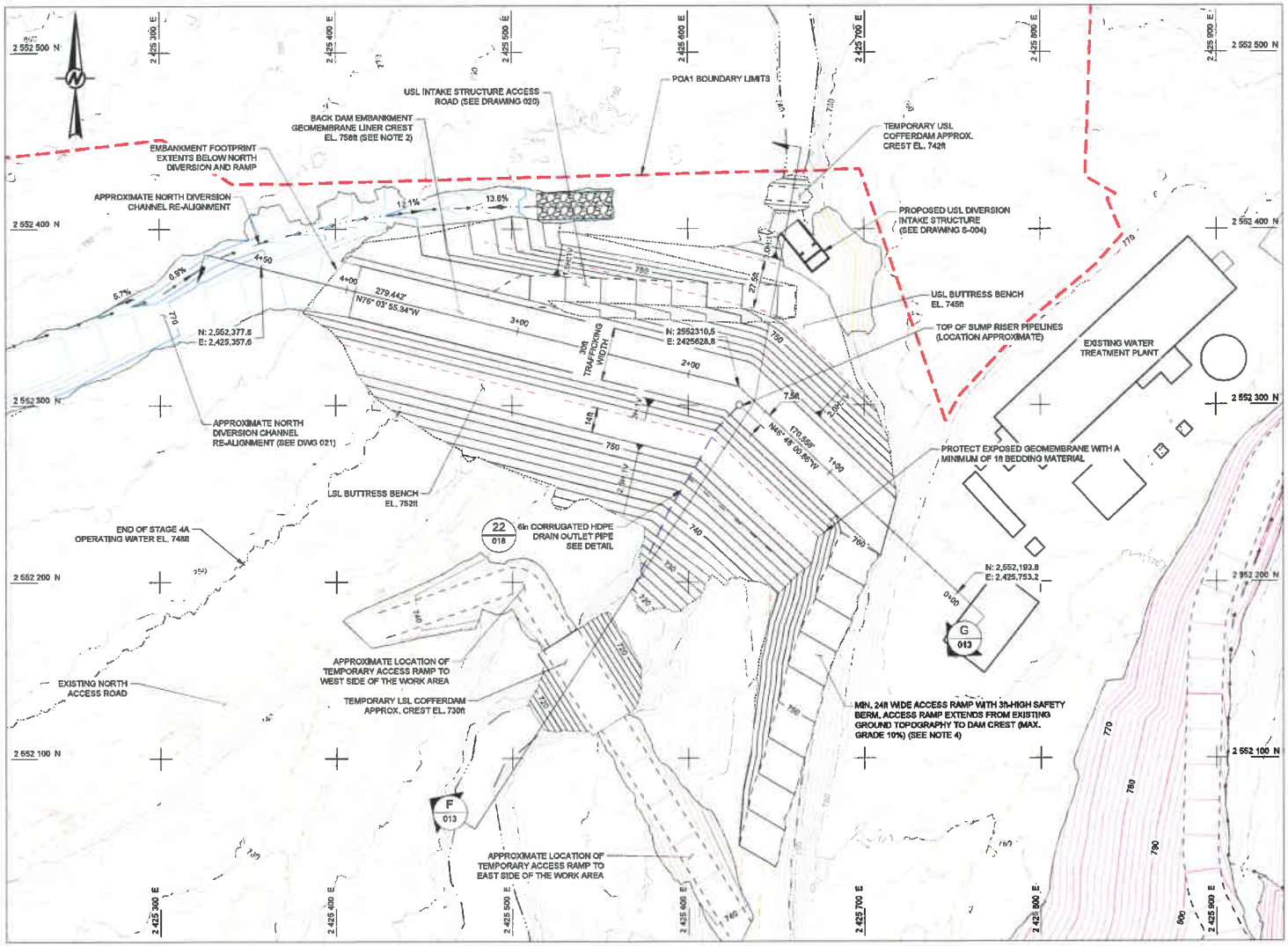
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
WTP PAD AND ACCESS ROAD PROFILE & SECTIONS

PROJECT NO. 21460082 | REV. 0 | 011 of 024 | DRAWING 011



NOTES

1. THE UPPER SLATE LAKE COFFERDAM WILL BE REMOVED AFTER CONSTRUCTION OF THE BACK DAM IS COMPLETE. THE LOWER SLATE LAKE COFFERDAM WILL BE ABANDONED IN PLACE.
2. THE FINAL EXTERIOR GRADES OF THE BACK DAM ARE SHOWN FOR CLARITY. CONTRACTOR SHALL REFER TO SECTIONS AND DETAILS REGARDING CONSTRUCTION OF THE BACK DAM EMBANKMENT, INCLUDING FILTER ZONES AND GEOMEMBRANE LINER.
3. CONTRACTOR SHALL USE CARE WHEN WORKING NEAR THE GEOMEMBRANE, ESPECIALLY WHERE EXPOSED AT THE SURFACE, AND SHALL INFORM THE OWNER OR DESIGN ENGINEER OF ANY DAMAGE TO THE GEOMEMBRANE WHILE PERFORMING THIS WORK. CONTRACTOR IS RESPONSIBLE FOR REPAIRING DAMAGE TO GEOMEMBRANE CAUSED DURING CONSTRUCTION.
4. SOUTH BACK DAM ACCESS RAMP SHALL BE CONSTRUCTED SIMILAR TO BUTTRESS AS SHOWN IN DETAILS 6 AND 9, DRAWING 013. ACCESS RAMP FILL MATERIALS SHALL BE GENERAL FILL BELOW EL. 752ft (SOUTH OF BUTTRESS ZONE A ROCKFILL). SURFACE OF ACCESS RAMP SHALL BE MIN. 6in-THICK WEARING COURSE FILL.

ISSUED FOR CONSTRUCTION

0 30 60
1" = 30' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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STATE OF ALASKA — 49TH — BRIAN L. ANDERSON — 12-4139 — REGISTERED PROFESSIONAL ENGINEER

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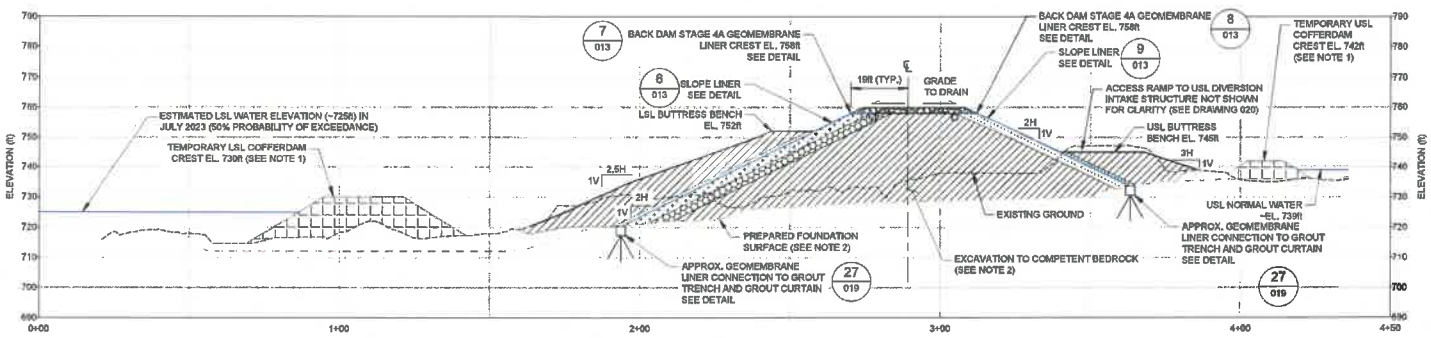
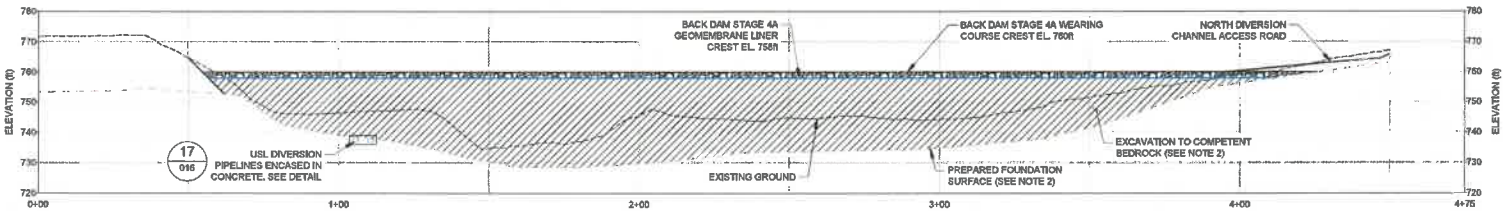
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
BACK DAM EMBANKMENT PLAN

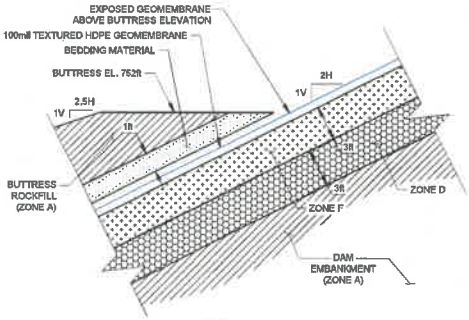
PROJECT NO.	REV.	012 of 024	DRAWING
21460082	0		012



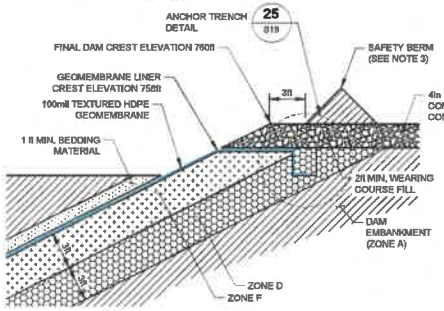
SCALE 1" = 20' F 013 BACK DAM SECTION



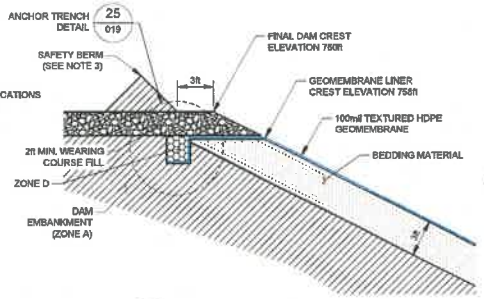
SCALE 1" = 20' G 013 BACK DAM CENTERLINE PROFILE



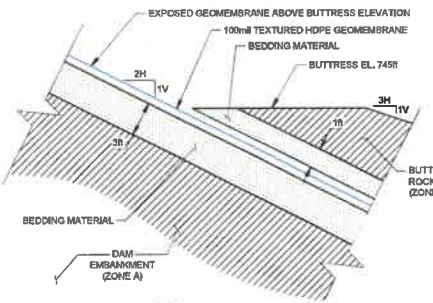
SCALE N.T.S. 6 013 LSL SLOPE LINER DETAIL



SCALE N.T.S. 7 013 LSL GEOMEMBRANE CREST DETAIL



SCALE N.T.S. 8 013 USL GEOMEMBRANE CREST DETAIL



SCALE N.T.S. 9 013 USL SLOPE LINER DETAIL

NOTES
1. THE UPPER SLATE LAKE COFFERDAM SHALL BE REMOVED AFTER CONSTRUCTION OF THE BACK DAM IS COMPLETE. THE LOWER SLATE LAKE COFFERDAM SHALL BE ABANDONED IN PLACE.
2. PREPARED FOUNDATION SURFACE SHOWN IS APPROXIMATE AND ACTUAL PREPARED FOUNDATION SURFACE WILL BE DETERMINED DURING CONSTRUCTION.
3. SAFETY BERM SHALL BE CONSTRUCTED FROM ZONE A ROCKFILL TO A MIN. HEIGHT OF 3ft.

ISSUED FOR CONSTRUCTION

0 20 40
1" = 20' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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STATE OF ALASKA 49TH VICTOR L. ANDERSON CE-9139 REGISTERED PROFESSIONAL ENGINEER

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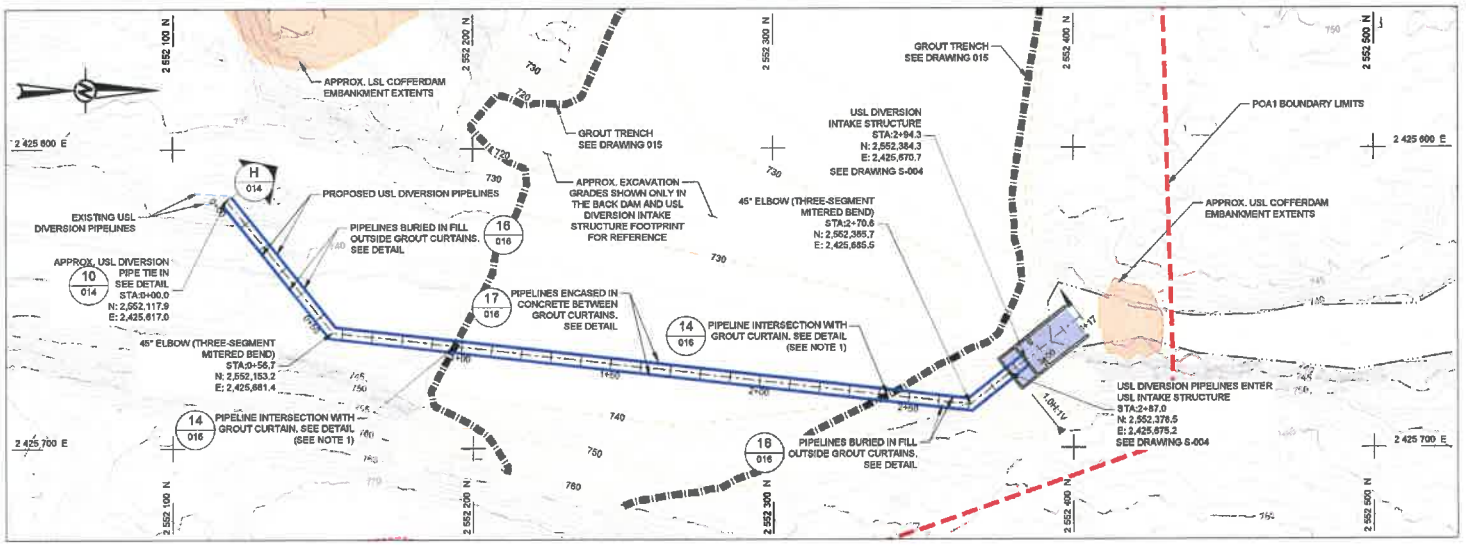
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

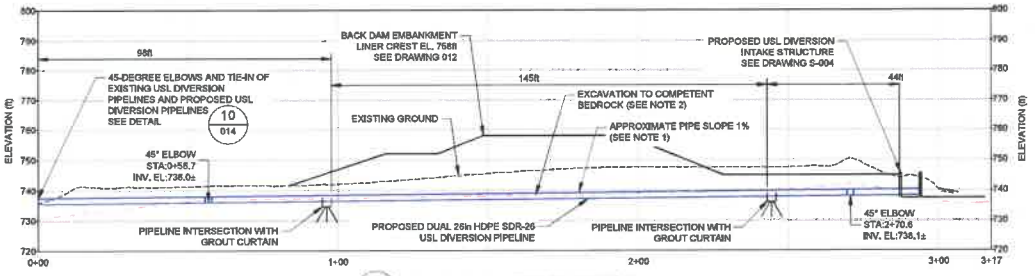
TITLE
BACK DAM EMBANKMENT SECTION, PROFILE, AND DETAILS

PROJECT NO.	REV.	013 of 024	DRAWING
21460082	0		013

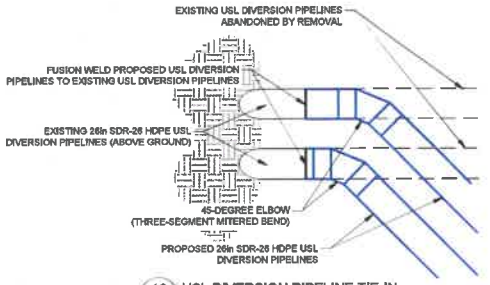


NOTES

1. THE EXTENDED USL DIVERSION PIPELINES SHALL BE ENCASED IN CONCRETE WHERE THEY PASS BETWEEN THE GROUT CURTAINS AND BEDDED IN FILL OUTSIDE OF THE GROUT CURTAINS. THE USL DIVERSION PIPELINES ARE GRAVITY FLOW CONTROLLED AND SHALL MAINTAIN A NEGATIVE GRADE OF APPROXIMATELY 1% BETWEEN THE NEW DIVERSION INTAKE STRUCTURE AND THE TIE-IN LOCATION TO THE EXISTING USL DIVERSION PIPELINES.
2. THE PROPOSED USL DIVERSION PIPELINE ALIGNMENT AND ASSOCIATED FITTINGS SHOWN ARE APPROXIMATE AND BASED ON THE ESTIMATED ELEVATIONS OF THE PREPARED FOUNDATION SURFACE. THE INTENT OF THE DESIGN IS TO AVOID POTENTIAL ROCK EXCAVATION VIA BLASTING TO ATTAIN THE PIPELINE GRADE. THEREFORE, ONCE THE BACK DAM FOUNDATION SURFACE HAS BEEN PREPARED AND PRIOR TO TREATMENT AND INSTALLATION OF THE NEW USL DIVERSION PIPELINE AND INTAKE STRUCTURE, THE CONTRACTOR SHALL SUBMIT A SURVEY OF THE FOUNDATION SURFACE AND THE PROPOSED PIPELINE ALIGNMENT. SOME ROTATION OF THE DIVERSION INTAKE STRUCTURE ALIGNMENT IS ALLOWABLE PROVIDED ADJACENT FILLS WILL NOT EXTEND BEYOND THE INLET WING WALLS.



SCALE 1" = 20' — H/014 USL DIVERSION PIPELINE PROFILE



SCALE N.T.S. — 10/014 USL DIVERSION PIPELINE TIE-IN

ISSUED FOR CONSTRUCTION

1" = 20' (0, 20, 40 FEET)

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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STATE OF ALASKA 49TH — KEITH L. ANDERSON CE-9126 — REGISTERED PROFESSIONAL ENGINEER

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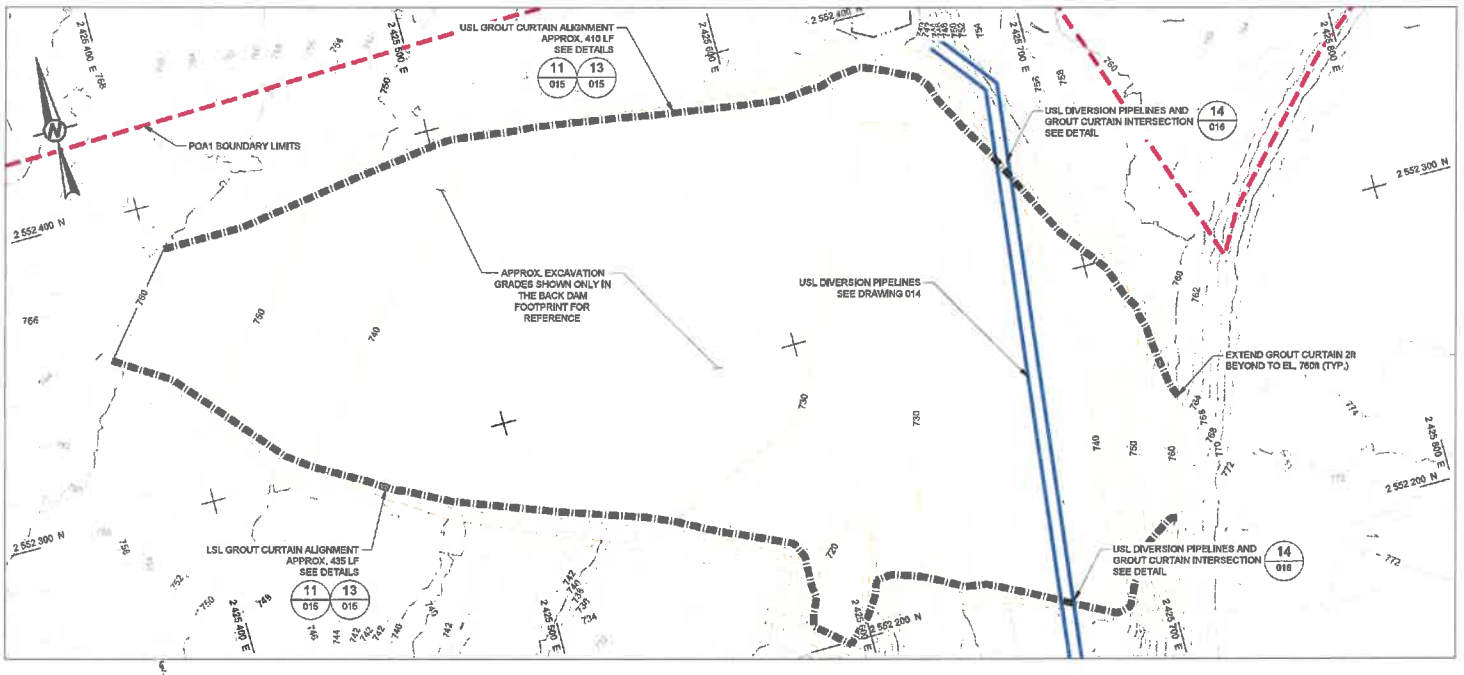
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

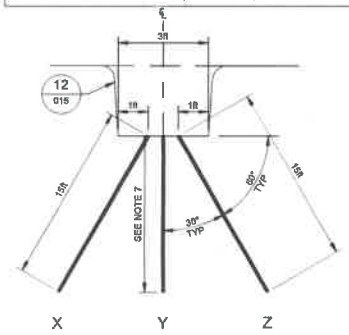
TITLE
USL DIVERSION PIPELINE EXTENSION PLAN

PROJECT NO. 21460082 | REV. 0 | 014 of 024 | DRAWING 014

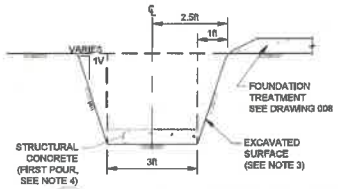


NOTES

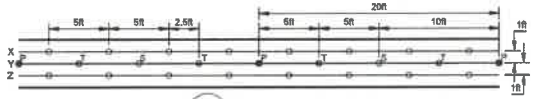
1. THE GROUT CURTAIN ALIGNMENTS ARE APPROXIMATE AND SHALL BE DETERMINED IN THE FIELD BASED ON THE PREPARED FOUNDATION SURFACE.
2. WHERE THE PREPARED FOUNDATION SURFACE IS STEEP AND INACCESSIBLE BY GROUTING EQUIPMENT, THE GROUT CURTAIN ALIGNMENT MAY BE ADJUSTED BEYOND THE PROJECTED SLOPE IN THE FIELD TO ALLOW ACCESS AND ACCOMMODATE GROUTING.
3. THE GROUT TRENCH SHALL BE EXCAVATED WITHOUT EXPLOSIVES TO APPROXIMATE DIMENSIONS OF 3ft DEEP AND 3ft WIDE. THE EXCAVATED ROCK SURFACE FOR THE GROUT TRENCH ON THE GEOMEMBRANE SIDE SHALL BE BEVELED TO REMOVE ANGULAR ROCK IRREGULARITIES AND FREE FROM SHARP ANGULAR PROTRUSIONS AND OVERHANGS.
4. THE FIRST CONCRETE POUR INTO THE GROUT TRENCH SHALL BE APPROXIMATELY 12in THICK TO PROVIDE A SMOOTH AND FLAT WORKING SURFACE THROUGH WHICH GROUTING SHALL BE CARRIED OUT, AND AGAINST WHICH THE GEOMEMBRANE LINER SHALL BE PLACED. STRUCTURAL CONCRETE USED IN THE GROUT TRENCH SHALL HAVE A COMPRESSIVE STRENGTH OF 4,500 psi.
5. CARRY OUT DRILLING AND CURTAIN GROUTING ACTIVITIES AT THE INCLINATIONS AND TO THE DEPTHS SPECIFIED, SETTING A MECHANICAL PACKER IN THE CONCRETE CAP WHEN SEALING THE CONCRETE/BEDROCK INTERFACE.
6. AFTER THE COMPLETION OF GROUTING ACTIVITIES, TREMIE BACKFILL AND/OR DRY PACK ALL GROUT HOLES THROUGH THE CONCRETE CAP. REMOVE ALL TEMPORARY ACCESS RAMP FILL AND THOROUGHLY SCRAPE AND WASH THE CONCRETE CAP SURFACE.
7. PRIMARY HOLES SHALL BE GROUTED TO DEPTH OF 45 ft ON THE LSL SIDE AND 55 ft ON THE USL SIDE. SECONDARY AND TERTIARY GROUT DEPTHS SHALL BE DETERMINED BASED ON PRIMARY GROUT TAKES AND LUGEON TEST RESULTS.



SCALE N.T.S. 11 015 TYPICAL SECTION THROUGH GROUT TRENCH



SCALE N.T.S. 12 015 TYPICAL GROUT TRENCH EXCAVATION DETAIL



SCALE N.T.S. 13 015 GROUT HOLE LAYOUT

GROUT HOLE LAYOUT LEGEND

- P ⊕ PRIMARY
- S ⊕ SECONDARY
- T ⊕ TERTIARY
- ○ CONSOLIDATION GROUT HOLE

ISSUED FOR CONSTRUCTION

0 20 40
1" = 20' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH
KEVIN L. ANDERSON
CE-9120
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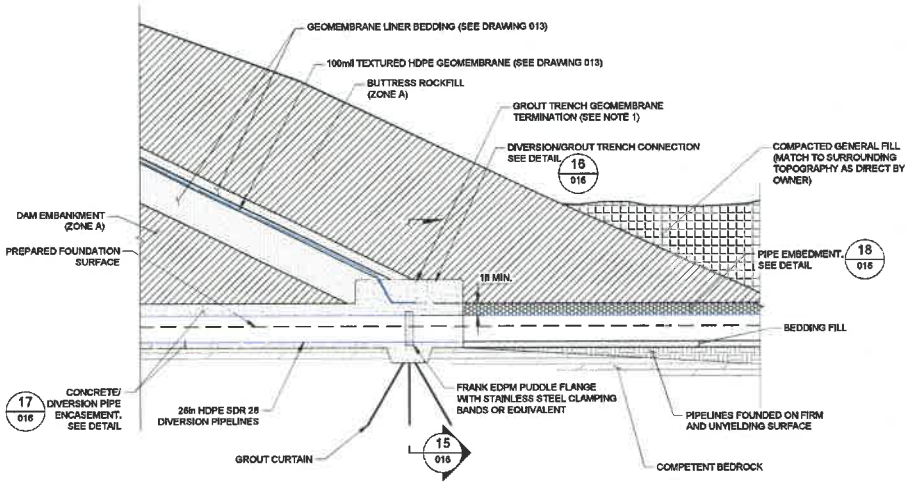
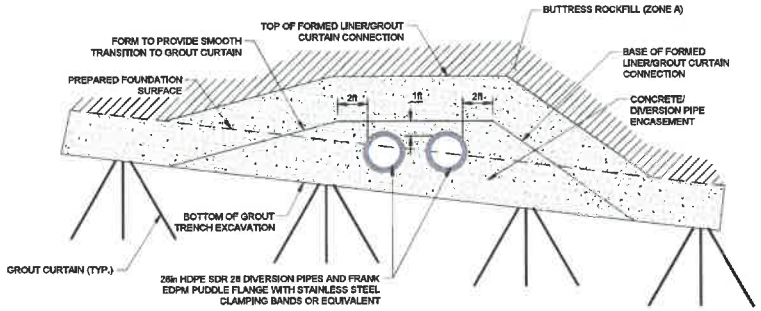
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
GROUT TRENCH LAYOUT AND DETAILS

PROJECT NO. 21460082
REV. 0
015 of 024
DRAWING 015

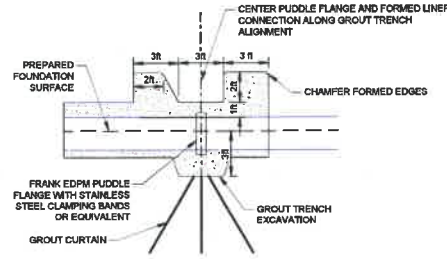


SCALE N.T.S. 14/016 USL DIVERSION PIPELINE ENCASEMENT AT GROUT CURTAIN

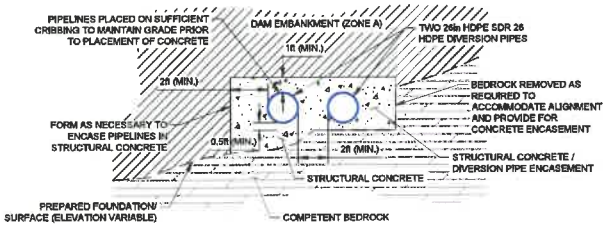


SCALE N.T.S. 15/016 USL DIVERSION PIPELINE PLACEMENT ENCASEMENT AT GROUT CURTAIN

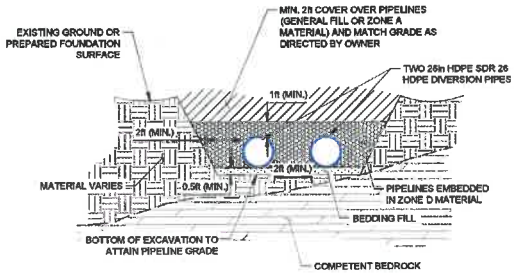
NOTE
1. GROUT TRENCH GEOMEMBRANE TERMINATION SHALL BE IN ACCORDANCE WITH DETAIL 27 ON DRAWING 019, EXCEPT THE FIRST 12in THICK CONCRETE POUR AND SHOTCRETE PLACEMENT NO REQUIRED.



SCALE N.T.S. 16/016 USL DIVERSION PIPELINE AND GROUT CURTAIN DETAILS



SCALE SCALE 17/016 USL DIVERSION PIPELINE PLACEMENT BETWEEN GROUT CURTAINS (TYPICAL)



SCALE N.T.S. 18/016 USL DIVERSION PIPELINE PLACEMENT OUTSIDE OF GROUT CURTAINS

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 4918 KEVIN L. ANDERSEN CE-9128 REGISTERED PROFESSIONAL ENGINEER

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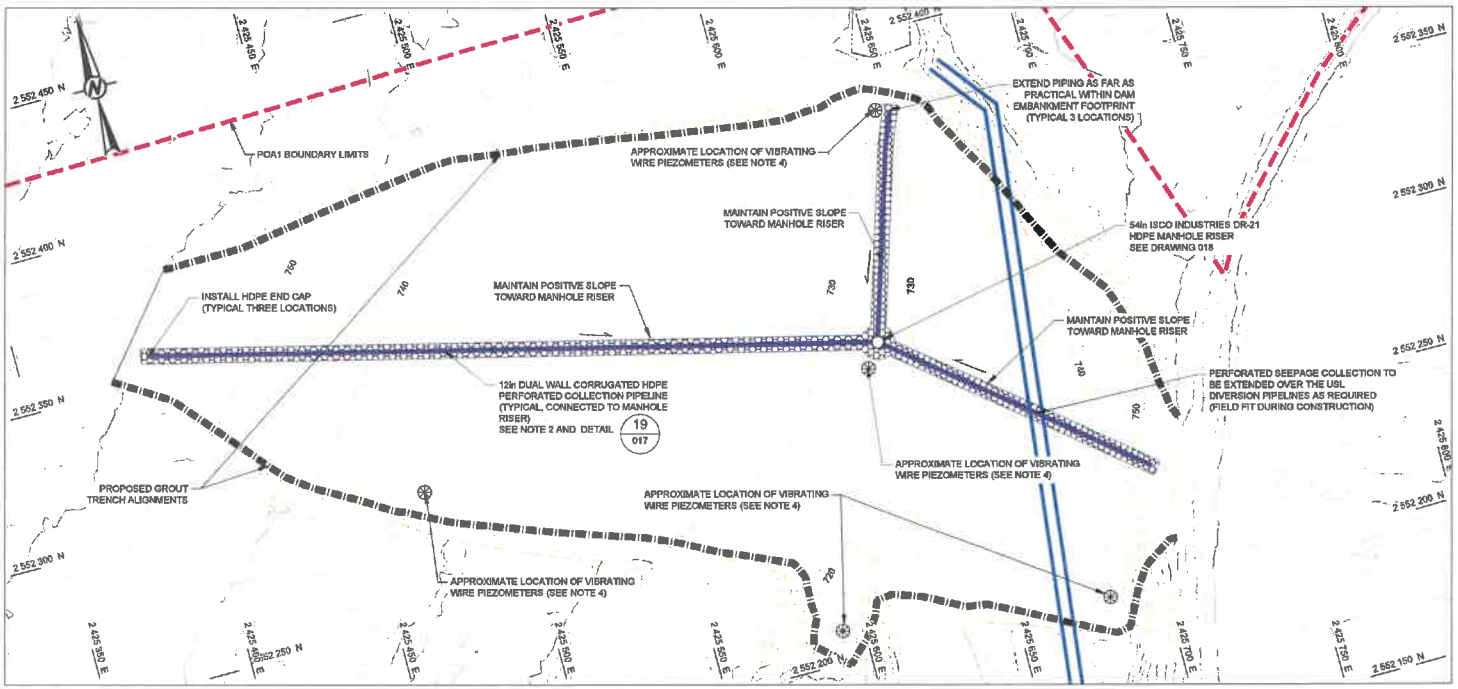
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
USL DIVERSION DETAILS AND SECTIONS

PROJECT NO.	REV.		DRAWING
21460082	0	016 of 024	016

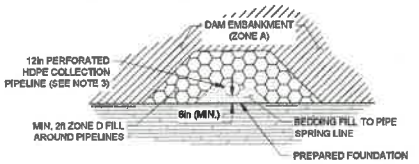


NOTES

1. PREPARED FOUNDATION SURFACE SHOWN IS APPROXIMATE AND FOR REFERENCE ONLY. ACTUAL PREPARED FOUNDATION SURFACE SHALL BE DETERMINED DURING CONSTRUCTION.
2. THE THREE 12in DIAMETER DUAL WALL CORRUGATED HDPE PERFORATED COLLECTION PIPELINES SHALL BE INSTALLED AT THE APPROXIMATE LOCATIONS SHOWN, ADJUSTED TO MAINTAIN A POSITIVE GRADE TOWARDS THE MANHOLE RISER, AND EXTENDED AS FAR AS PRACTICAL WITHIN THE PREPARED FOUNDATION FOOTPRINT.
3. CONNECT CORRUGATED HDPE PERFORATED COLLECTION PIPELINES TO HDPE MANHOLE RISER USING MARMAC DISSIMILAR PIPE COUPLING OR APPROVED EQUIVALENT.
4. TOTAL OF FIVE VIBRATING WIRE PIEZOMETERS TO BE INSTALLED AT APPROXIMATE LOCATIONS SHOWN THAT ARE CONNECTED TO DATALOGGER SYSTEM NEAR MANHOLE RISER. PIEZOMETERS SHALL BE INSTALLED NEAR THE PREPARED FOUNDATION SURFACE WITH FINAL LOCATIONS TO BE DETERMINED BY DESIGN ENGINEER. PIEZOMETERS AND ASSOCIATED CABLES SHALL BE INSTALLED WITHIN BEDDING FILL (MIN. 12in AROUND INSTRUMENT AND CABLE) AND PROTECTED FROM DAMAGE DURING CONSTRUCTION. PIEZOMETER CABLE SHALL BE CAREFULLY ATTACHED TO HDPE RISER NEAR SAME LOCATION FOR VERTICAL TRANSITION TO DAM CREST.

ISSUED FOR CONSTRUCTION

0 20 40
1" = 20' FEET



N.T.S. SCALE 19/017 SEEPAGE COLLECTION PIPELINE BEDDING DETAIL

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH — STEVEN L. ANDERSON — CE-9120 — REGISTERED PROFESSIONAL ENGINEER

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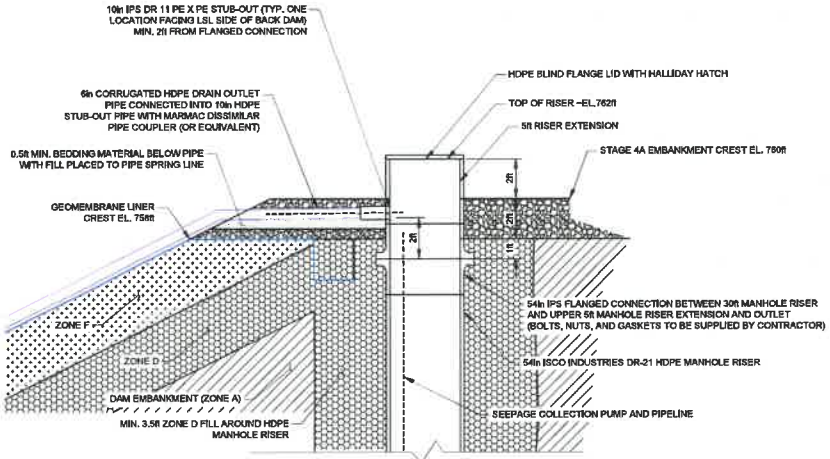
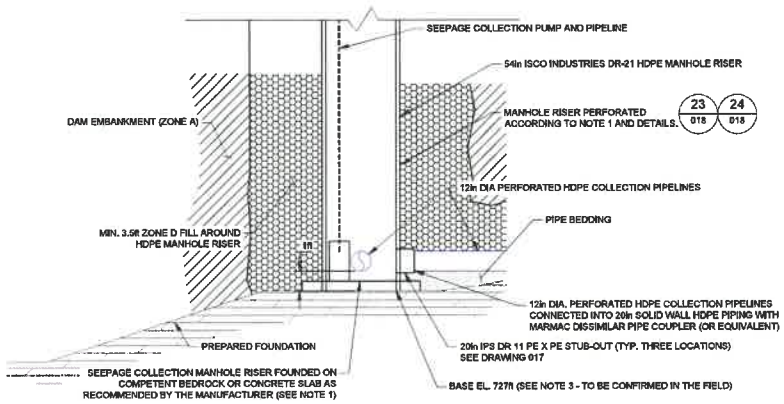
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
SEEPAGE COLLECTION SYSTEM PLAN

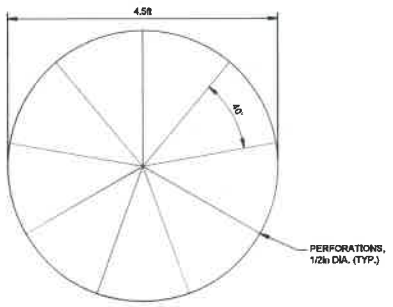
PROJECT NO.	REV.	017 of 024	DRAWING
21460082	0		017



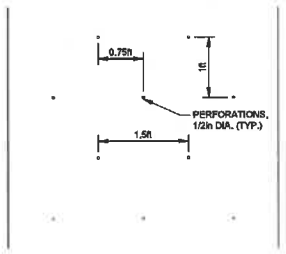
SCALE N.T.S. 20 018 SEEPAGE COLLECTION MANHOLE RISER - TOP



SCALE N.T.S. 21 018 SEEPAGE COLLECTION MANHOLE RISER - BASE



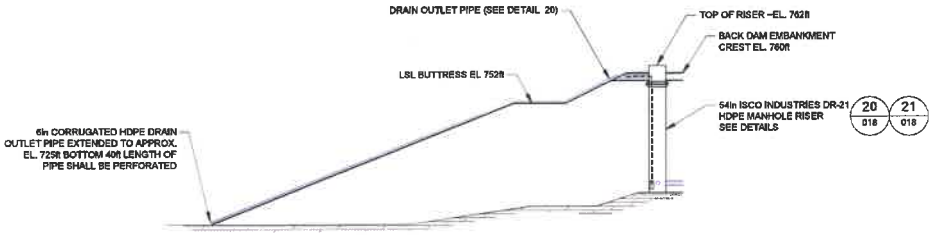
SCALE N.T.S. 23 018 MANHOLE RISER PERFORATION PLAN VIEW



SCALE N.T.S 24 018 MANHOLE RISER PERFORATION SECTION VIEW

NOTES

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR SEEPAGE COLLECTION MANHOLE RISER SYSTEM THAT IS COMPRISED OF, BUT NOT LIMITED TO, THE FOLLOWING ITEMS:
   - A. 54in ISCO INDUSTRIES DR-21 HDPE MANHOLE RISER, MAIN SECTION 30ft HEIGHT WITH 5ft LONG EXTENSION
     - a. FULL GROUNDWATER BOTTOM EXTENDED 4in PAST MANHOLE OD
     - b. THREE 20in IPS DR-11 PE x PE STUB-OUTS AT MANHOLE BASE (ORIENTED AT 9 O'CLOCK, 12 O'CLOCK, AND 3 O'CLOCK IN PLAN VIEW)
     - c. ONE 10in IPS DR-11 PE x PE STUB-OUT AT EXTENSION AT EACH STUB-OUT
     - d. MANHOLE RISER TO BE PERFORATED WITH 1/2in HOLES, STARTING LOWEST ROW OF PERFORATIONS 6in ABOVE STUB OUTS. HOLE SPACING 1.5ft HORIZONTALLY (40 DEG) AND 1ft VERTICALLY, FOR A TOTAL OF 10 ROWS WITH 9 HOLES PER ROW.
     - e. HDPE EXTRUDER WELDED FLANGE RINGS TO CONNECT BASE TO EXTENSION
     - f. HDPE BLIND FLANGE LID WITH HALLIDAY HATCH AT TOP OF EXTENSION
     - g. HDPE LIFT LUGS
   - B. NUTS, BOLTS, GASKETS, ETC. TO COMPLETE CONSTRUCTION OF THE SYSTEM
   - C. SUPPORT FOUNDATION FOR MANHOLE RISER, EITHER CONCRETE SLAB OR COMPACTED FILL AS RECOMMENDED BY MANUFACTURER
   - D. 6in CORRUGATED SINGLE WALL HDPE DRAIN OUTLET PIPELINE, WITH LOWER 40 ft SECTION PERFORATED, CONNECTED TO STUB-OUT WITH MARMAC DISSIMILAR PIPE COUPLING OR APPROVED EQUIVALENT
   - E. TSURUMI KTV2-6, 480V, 1-HP 3 PHASE PUMP, TSURUMI 5209 AUTOMATIC CONTROL PANEL, AND DISCHARGE PIPELINE. ATTACH FLOATS ON PIPELINE FOR START AND STOP RESPECTIVE 1ft AND 5ft WATER LEVELS.
   - F. DYNASONICS TFX-5000 TRANSIT TIME ULTRASONIC FLOW METER, 110/220V, 2in ANSI U-BOLT CONNECTION, DISPLAY AND KEYPAD, 1/2in NPT THREAD, AND MODBUS RTU STANDARD OUTPUT.
   - G. PUMP DISCHARGE PIPE SHALL BE 2in SCH 80 PVC ALONG VERTICAL SECTION AND FLEXIBLE PIPE ALONG HORIZONTAL SECTION. FLEXIBLE PIPE SHALL BE INSERTED INTO 6in CORRUGATED PIPE MIN. OF 6ft. COUPLERS PROVIDED TO ALLOW EXTRACTION FOR MAINTENANCE.
   - H. CORROSION RESISTANT WIRE ROPE SUPPORT AND LIFTING SYSTEM FOR PUMP AND PIPING SECURED ONTO MANHOLE EXTENSION. PIPING TO BE SECURED TO ROPE WITH HEAVY DUTY ZIP TIES OR EQUIVALENT.
   - I. STEEL STRUTS IN CONCRETE BASE FOR MOUNTING TSURUMI CONTROL PANEL, DYNASONICS KEYPAD, AND PIEZOMETER DIGITAL INTERFACE.
   - J. POWERLINES FOR PUMP AND FLOW METER BURIED ALONG THE DAM CREST AND CONNECTED TO WATER TREATMENT PLANT.
2. BASE ELEVATION OF MANHOLE RISER SHALL BE 727ft TO ACCOMMODATE BEDDING BETWEEN THE BOTTOM OF THE 6in DRAIN OUTLET PIPELINE AND THE GEOMEMBRANE LINER CREST ELEVATION OF 758ft. CONTRACTOR SHALL INFORM DESIGN ENGINEER IF BASE ELEVATION IS ANTICIPATED TO BE LOWER THAN 727ft. IF BASE ELEVATION IS LOWER THAN 727ft, CONTRACTOR SHALL USE COMPACTED FILL OR CONCRETE TO MAKE UP DIFFERENCE AS RECOMMENDED BY MANUFACTURER (SEE NOTE 1.C).
3. HDPE COLLECTION PIPING AND CORRUGATED DRAIN OUTLET SHALL BE INSERTED INTO PE STUB-OUT WHEN CONNECTING USING MARMAC DISSIMILAR PIPE COUPLER (OR EQUIVALENT).



N.T.S. SCALE 22 018 SEEPAGE DISCHARGE PIPELINE

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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STATE OF ALASKA 49TH STEVEN L. ANDERSON CE-9120 REGISTERED PROFESSIONAL ENGINEER

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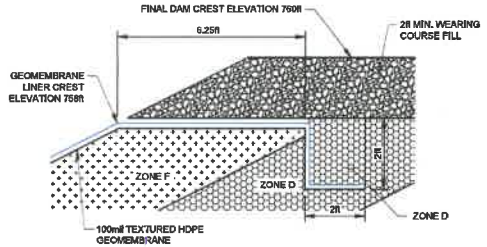
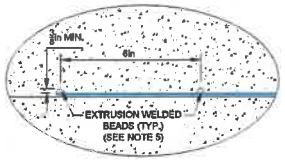
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
SEEPAGE COLLECTION MANHOLE RISER DETAILS

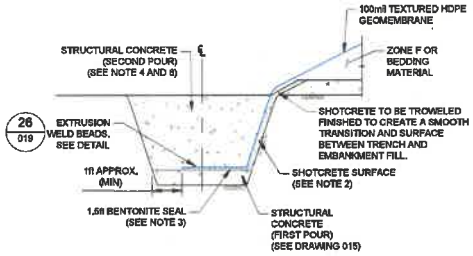
PROJECT NO. 21460082 | REV. 0 | 018 of 024 | DRAWING 018



N.T.S. SCALE 25 019 **ANCHOR TRENCH DETAIL**



SCALE N.T.S. 26 019 **EXTRUSION WELD BEADS DETAIL**



SCALE N.T.S. 27 019 **GROUT TRENCH GEOMEMBRANE TERMINATION DETAIL**

NOTES

1. AFTER THE COMPLETION OF GROUTING ACTIVITIES, TREMIE BACKFILL AND/OR DRY PACK ALL GROUT HOLES THROUGH THE CONCRETE CAP. REMOVE ALL TEMPORARY ACCESS RAMP FILL AND THOROUGHLY SCRAPE AND WASH THE CONCRETE CAP SURFACE.
2. THE EXCAVATED SURFACE SHALL BE COVERED WITH SHOTCRETE TO CREATE A SMOOTH SURFACE ON THE GEOMEMBRANE SIDE.
3. A THIN 1.5ft-WIDE BENTONITE SEAL ZONE SHALL BE CONSTRUCTED FROM GRANULAR BENTONITE. THE GRANULAR BENTONITE SHALL BE POURED AND LEVELED IN A THIN CONTINUOUS LAYER ALONG THE ENTIRE LENGTH OF THE GROUT TRENCH. THE SEAL ZONE THICKNESS SHALL BE IN THE ORDER OF ½in TO 3/4in. THE BENTONITE SEAL ZONE SHALL BE PROTECTED FROM MOISTURE PRIOR TO PLACEMENT OF GEOMEMBRANE AND SECOND CONCRETE POUR.
4. A SECOND CONCRETE POUR SHALL BE MADE TO INFILL THE GROUT TRENCH AND TO PROVIDE 18in TO 24in OF COVER TO SECURE THE GEOMEMBRANE INTO THE GROUT TRENCH.
5. EXTRUSION WELDED BEADS WITHIN THE GROUT TRENCH SHALL EXTEND ALONG ENTIRE GEOMEMBRANE FOR PULLOUT RESISTANCE. STRUCTURAL CONCRETE COMPRESSIVE STRENGTH SHALL BE 4500 psi.
6. LEAVE MIN. 0.5ft OF LINER EXPOSED BEYOND CONCRETE BACKFILL IN GROUT TRENCH AT EL. 756ft FOR POSSIBLE STAGE 4B CONNECTION.

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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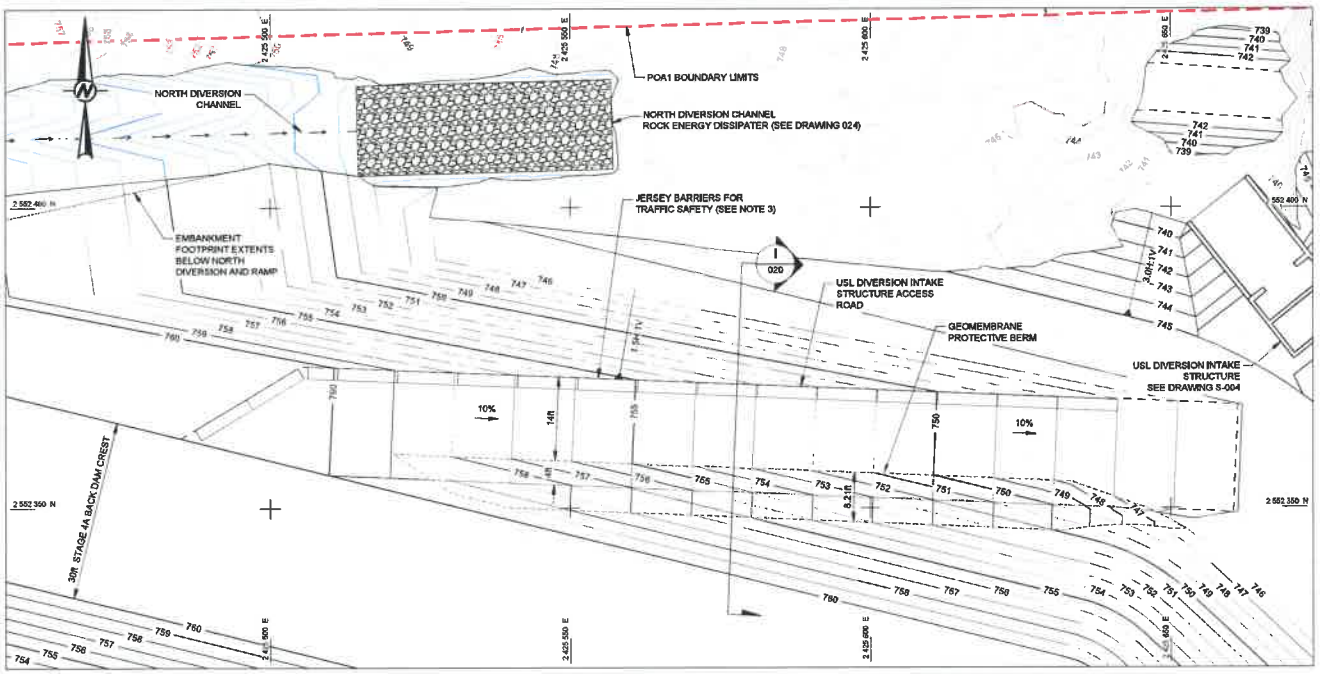
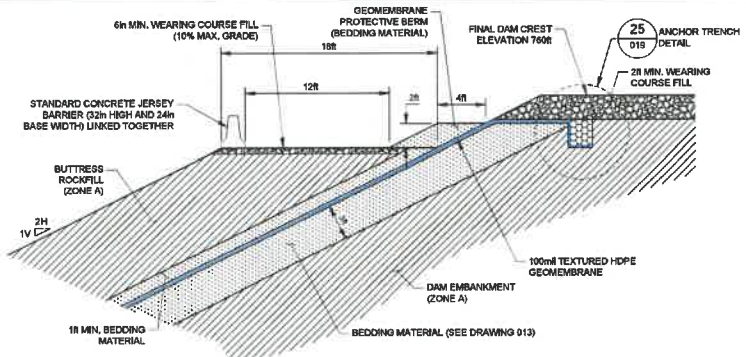
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
GEOMEMBRANE DETAILS

PROJECT NO.	REV.	019 of 024	DRAWING
21460082	0		019





NOTES

1. CONTRACTOR SHALL CONSTRUCT THE USL DIVERSION INTAKE STRUCTURE ACCESS ROAD FROM THE BOTTOM OF THE SLOPE (EL. 745ft) TO THE TOP OF THE BACK DAM. MATERIALS USED TO CONSTRUCT THE ACCESS ROAD SHALL NOT BE PLACED BY PUSHING MATERIALS FROM THE CREST OF THE BACK DAM.
2. CONTRACTOR SHALL USE CARE WHEN WORKING NEAR THE GEOMEMBRANE AND SHALL INFORM THE OWNER OR DESIGN ENGINEER OF ANY DAMAGE TO THE GEOMEMBRANE WHILE PERFORMING THIS WORK. CONTRACTOR IS RESPONSIBLE FOR REPAIRING DAMAGE TO GEOMEMBRANE CAUSED BY CONSTRUCTION.
3. CONTRACTOR SHALL FURNISH AND PLACE JERSEY BARRIERS ON THE OUTSIDE EDGE OF (NORTH) THE ACCESS ROAD ABOVE EL. 747ft TO THE CREST OF THE SLOPE AND BACK DAM (EL. 760ft).

REFERENCE

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.

ISSUED FOR CONSTRUCTION

0 10 20
1" = 10' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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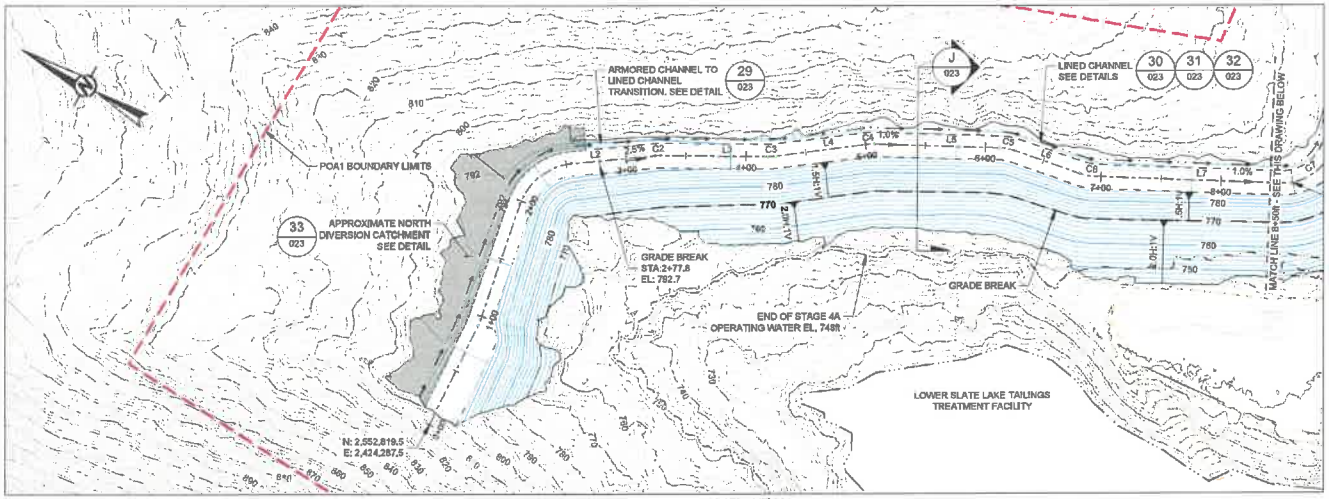
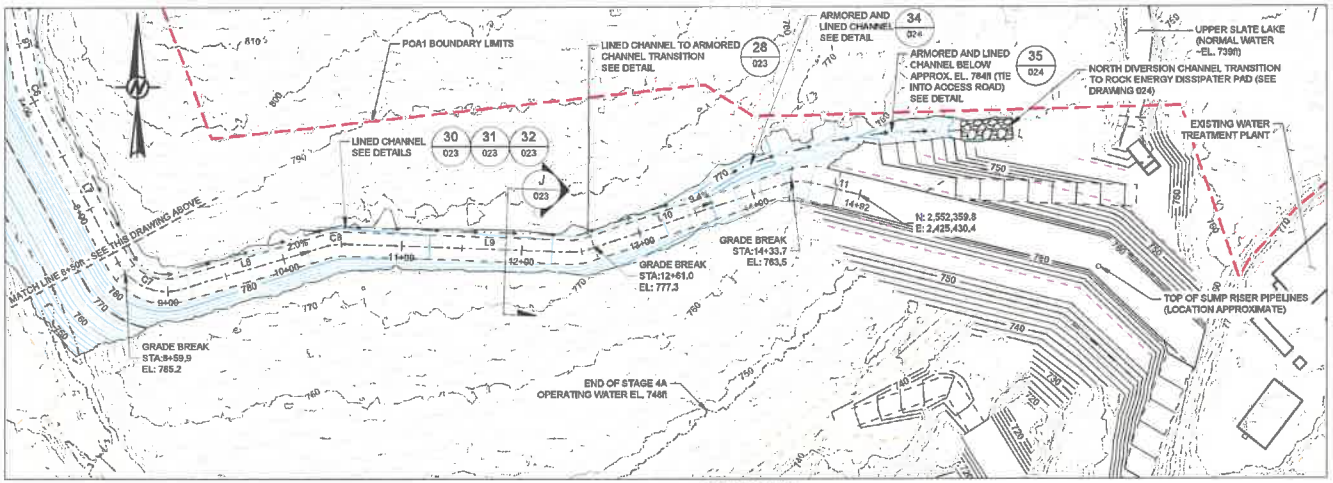
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
USL DIVERSION INTAKE STRUCTURE ACCESS ROAD PLAN

PROJECT NO.	REV.	020 of 024	DRAWING
21460082	0		020



STAGE 4A ACCESS ROAD MODIFICATION



STAGE 4A ACCESS ROAD MODIFICATION

NOTES

1. THE AREA OF THE NORTH STORMWATER DIVERSION CHANNEL AND ACCESS ROAD AREA PAD SHALL BE CLEARED AND GRUBBED PRIOR TO PLACING FILL AS DESCRIBED IN THE SPECIFICATIONS.
2. ACCESS ROAD SHALL BE CONSTRUCTED TO MINIMIZE DISTURBANCE TO EXISTING GROUND AND POTENTIAL EXPOSURE OF ACID-GENERATING MATERIAL.
3. GEOTEXTILE AND GEOMEMBRANE SHALL BE ANCHORED ON BOTH SIDES OF NORTH DIVERSION CHANNEL AS SHOWN ON DRAWING 023. GEOTEXTILE PANELS SHALL BE OVERLAPPED (IN A SHINGLING PATTERN WITH THE UPPER PANEL OVERLAPPING THE LOWER PANEL) A MINIMUM OF 3ft UNLESS INDICATED OTHERWISE BY THE DESIGN ENGINEER OR OWNER. GEOMEMBRANE PANELS SHALL BE EXTRUSION-WELDED TO EACH OTHER.
4. ARMORED CHANNEL SECTIONS SHALL USE A NON-WOVEN 16-oz GEOTEXTILE OVER GEOMEMBRANE LINER.

REFERENCE

1. EXISTING GROUND TOPOGRAPHY IS BASED ON A SURVEY COMPLETED IN 2021 BY PDC ENGINEERS. COORDINATE SYSTEM IS NAD83 STATE PLANE ZONE 1, VERTICAL DATUM IS NAVD88 USING GEOID 12B ALASKA.

STAGE 4 ACCESS ROAD ALIGNMENT TABLE

TAG NUMBER	START STATION END STATION	START EASTING START NORTHING	END EASTING END NORTHING	RADIUS (ft)	BEARING	LENGTH (ft)
L2	0+254.5 0+324.6	2424532.9 2552824.7	2424573.2 2552787.3		S35°06'E	70.2
C2	0+324.6 0+329.1	2424573.2 2552787.3	2424575.8 2552783.5	45		4.5
L3	0+329.1 0+418.3	2424575.8 2552783.5	2424619.4 2552685.7		S29°23'E	89.2
C3	0+418.3 0+424.4	2424619.4 2552685.7	2424622.7 2552680.7	45		6.0
L4	0+424.4 0+500.4	2424622.7 2552680.7	2424688.5 2552620.0		S37°03'E	78.1
C4	0+500.4 0+507.4	2424668.5 2552620.0	2424672.2 2552614.1	45		8.9
L5	0+507.4 0+611.5	2424672.2 2552614.1	2424721.4 2552522.4		S28°12'E	104.1
C5	0+611.5 0+625.1	2424721.4 2552522.4	2424726.0 2552509.6	45		13.7
L6	0+625.1 0+681.8	2424726.0 2552509.6	2424738.5 2552453.9		S10°49'E	56.7
C6	0+681.8 0+695.2	2424738.5 2552453.9	2424741.0 2552441.4	45		13.3
L7	0+695.2 0+849.7	2424741.0 2552441.4	2424813.1 2552304.7		S27°49'E	154.5
C7	0+849.7 0+911.3	2424813.1 2552304.7	2424865.5 2552282.5	45		61.6
L8	0+911.3 1+037.8	2424865.5 2552282.5	2424987.0 2552317.9		N73°44'E	126.5
C8	1+037.8 1+052.2	2424987.0 2552317.9	2425001.2 2552319.7	45		14.4
L9	1+052.2 1+240	2425001.2 2552319.7	2425188.9 2552312.9		S87°55'E	187.8
L10	1+256 1+426.3	2425204.7 2552315.1	2425366.3 2552368.5		N71°42'E	170.2
L11	1+451.6 1+491.9	2425391.2 2552389.5	2425430.4 2552359.8		S76°04'E	40.3

ISSUED FOR CONSTRUCTION

0 50 100
1" = 50' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	MSW	MSW	CCS	SLA

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STATE OF ALASKA 49TH
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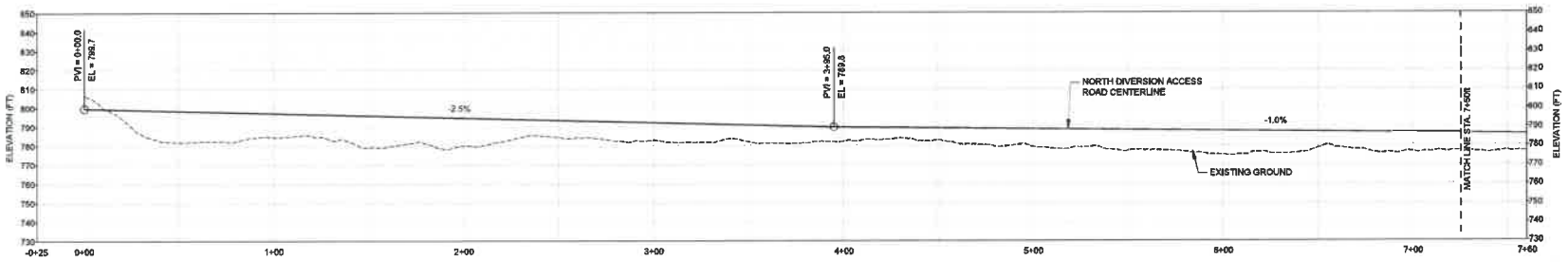
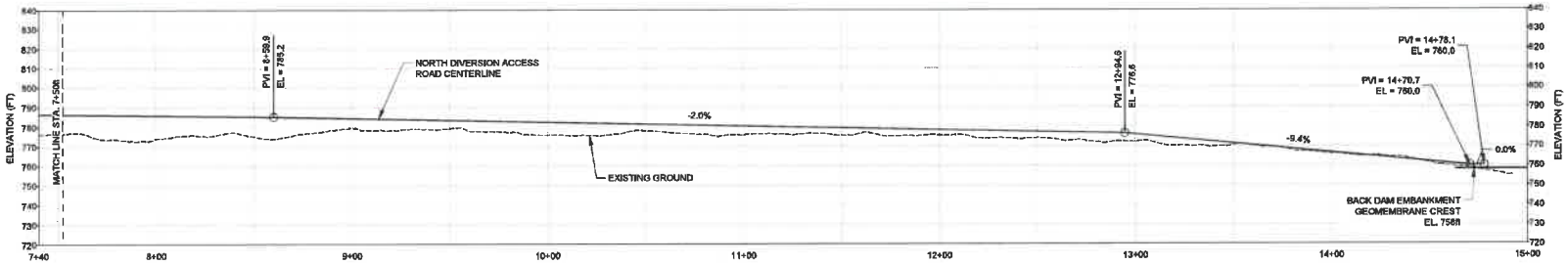
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
NORTH ACCESS ROAD MODIFICATION PLAN

PROJECT NO. 21460082
REV. 0
021 of 024
DRAWING 021



NORTH DIVERSION ACCESS ROAD PROFILE 0+00 - 7+50 ft
SCALE 1" = 30'



NORTH DIVERSION ACCESS ROAD PROFILE 7+50 ft - 15+00 ft
SCALE 1" = 30'

ISSUED FOR CONSTRUCTION

0 30 60
1" = 30' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	MSW	MSW	CCS	SLA

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STATE OF ALASKA
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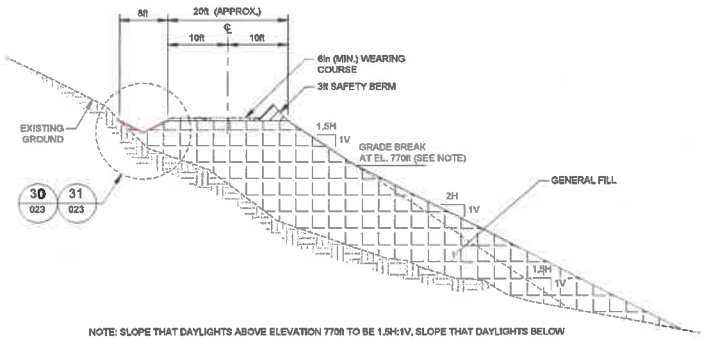
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

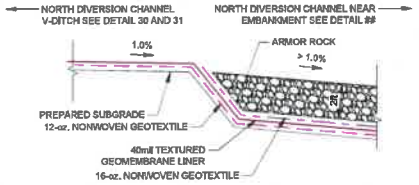
TITLE
NORTH ACCESS ROAD PROFILE

PROJECT NO. 21460082
REV. 0
022 of 024
DRAWING 022

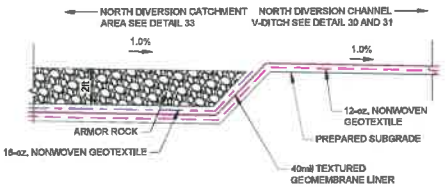


NOTE: SLOPE THAT DAYLIGHTS ABOVE ELEVATION 770ft TO BE 1.5H:1V, SLOPE THAT DAYLIGHTS BELOW ELEVATION 770 ft TO BE 2H:1V WITH GRADE BREAK OCCURRING AT ELEVATION 770ft.

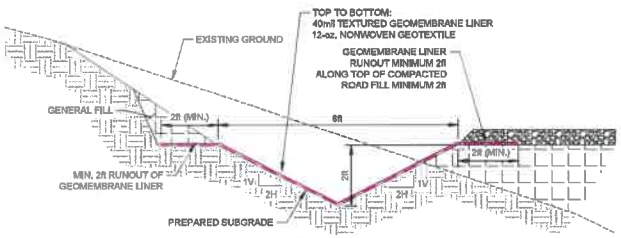
SCALE N.T.S. J 023 TYPICAL ROAD SECTION WITH GRADE BREAK



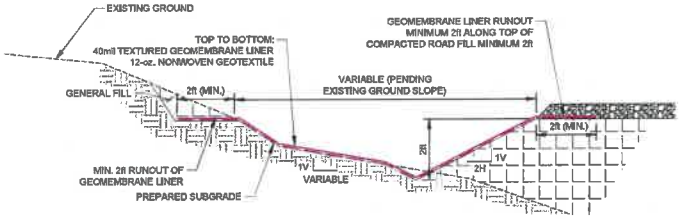
SCALE N.T.S. 28 023 NORTH DIVERSION CHANNEL TO ROCK ARMORED NORTH DIVERSION CHANNEL (~STA.12+75)



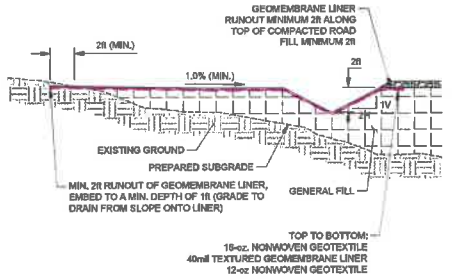
SCALE N.T.S. 29 023 ROCK ARMORED NORTH DIVERSION CATCHMENT CHANNEL TO NORTH DIVERSION CHANNEL (~STA. 2+50)



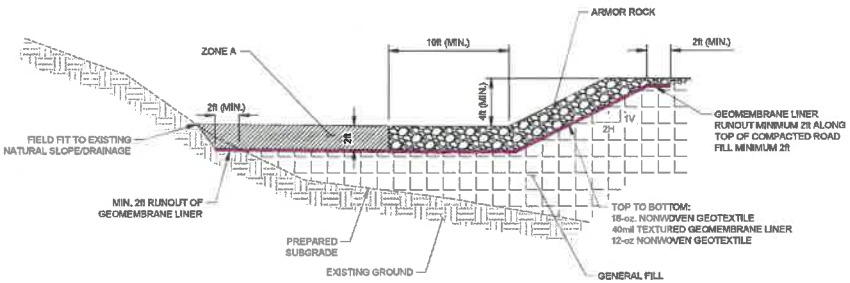
SCALE N.T.S. 30 023 DITCH DETAIL WITH CUT



SCALE N.T.S. 31 023 DITCH DETAIL WITH FILL ON SOUTH SIDE



SCALE N.T.S. 32 023 DITCH DETAIL WITH FILL ON BOTH SIDES OF DITCH



NOTE: WHERE THE CATCHMENT WIDTH IS LESS THAN 10ft, CONTRACTOR SHALL PLACE ARMOR ROCK TO FULL WIDTH OF CHANNEL

SCALE N.T.S. 33 023 NORTH DIVERSION CATCHMENT CHANNEL (STA. 0+00 TO STA. 2+50)

NOTE(S)

1. THE NORTH ACCESS ROAD AND DIVERSION SHALL BE CLEARED AND GRUBBED PRIOR TO PLACING FILL AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS.

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

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STATE OF ALASKA 49TH STEVEN L. ANDERSON CE-9120 PROFESSIONAL ENGINEER

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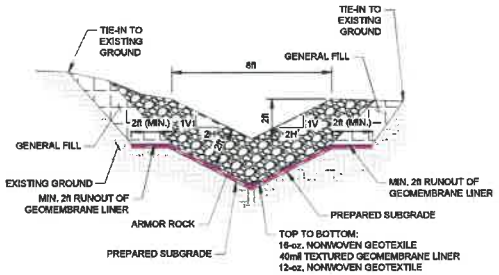
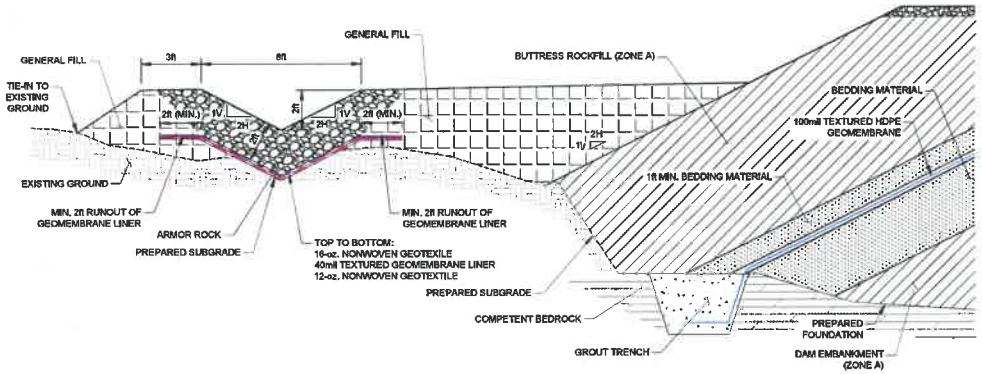
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
NORTH ACCESS ROAD DETAILS AND SECTIONS

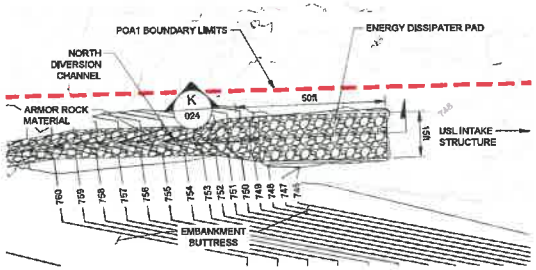
PROJECT NO. 21460082
REV. 0
023 of 024
DRAWING 023



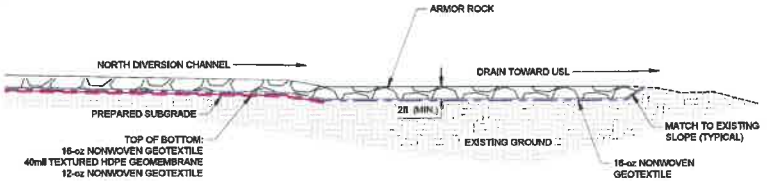
SCALE N.T.S. 34 024 TYPICAL ARMOR ROCK CHANNEL SECTION



SCALE N.T.S. 35 024 ARMOR ROCK CHANNEL SECTION NEAR DAM BUTTRESS



SCALE N.T.S. 36 024 PLAN - NORTH DIVERSION DISCHARGE TO USL



SCALE N.T.S. K 024 NORTH DIVERSION DISCHARGE TO USL - SECTION

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	KAV	KAV	CCS	SLA

SEAL

STATE OF ALASKA 49TH STATE STEVEN L. ANDERSON CE-9120 CERTIFIED PROFESSIONAL ENGINEER

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PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM FINAL CONSTRUCTION DRAWINGS

TITLE
NORTH DIVERSION DISCHARGE TO USL

PROJECT NO. 21460082 | REV. 0 | 024 of 024 | DRAWING 024

GENERAL NOTES

GENERAL REQUIREMENTS

1. ALL CODES, STANDARDS, SPECIFICATIONS, AND REGULATIONS SHALL BE THE LATEST EDITION, INCLUDING ADDENDA AND SUPPLEMENTS, IF ANY.
2. ALL DESIGN AND CONSTRUCTION WORK SHALL CONFORM TO:
   - INTERNATIONAL BUILDING CODE (IBC)
   - ASCE 7 - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
   - OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) AND REGULATION
3. ALL DIMENSIONS AND ELEVATIONS ARE IN FEET AND INCHES, U.N.O.
4. THE STRUCTURAL DRAWINGS SHALL NOT BE SCALED.
5. IN CASE OF ANY DISCREPANCIES BETWEEN THESE NOTES AND OTHER CONTRACT DOCUMENTS, INCLUDING DESIGN DRAWINGS AND PROJECT STANDARDS, THE MOST STRINGENT REQUIREMENT SHALL APPLY.
6. THE CONTRACTOR SHALL REVIEW THE STRUCTURAL DRAWINGS AGAINST ALL OTHER CONTRACT DOCUMENTS, INCLUDING CIVIL AND OTHER DISCIPLINES DRAWINGS, AND CONSTRUCTION SPECIFICATIONS, VERIFY ALL DIMENSIONS AND ELEVATIONS, AND REPORT ANY INCONSISTENCIES, ERRORS OR OMISSIONS TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS, VERIFY FIELD CONDITIONS, AND REPORT ANY INCONSISTENCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
8. NO OPENINGS THROUGH STRUCTURAL MEMBERS ARE ALLOWED WITHOUT WRITTEN CONSENT FROM THE ENGINEER.
9. THE DESIGN LOADS SHOWN SHALL NOT BE EXCEEDED DURING CONSTRUCTION. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISIONS TO SUPPORT CONSTRUCTION LOADS, INCLUDING TEMPORARY BRACING AND SHORING, AND KEEP THE STRUCTURE PLUMB AND IN TRUE ALIGNMENT AT ALL PHASES OF CONSTRUCTION.
10. THE CONTRACTOR SHALL SAFEGUARD ALL EXISTING STRUCTURES AFFECTED BY CONSTRUCTION.
11. WSP SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION SAFETY, MEANS, TECHNIQUES AND CONSTRUCTION PROCEDURES, OR ANY TEMPORARY WORK AS MAY BE REQUIRED BY THE CONTRACTOR TO BUILD AND COMPLETE THE STRUCTURE IN CONFORMITY WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OVERALL PROJECT SAFETY AND SHALL CONFORM TO ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH GUIDELINES AND REGULATIONS.

MATERIALS

ALL STRUCTURAL MATERIAL SHALL BE NEW AND FREE FROM DEFECTS IMPAIRING STRENGTH, DURABILITY AND/OR APPEARANCE. STRUCTURAL MATERIALS SHALL BE AS LISTED BELOW, U.N.O. ON THE DESIGN DRAWINGS.

1. MISCELLANEOUS STEEL SHAPES, ANGLES, CHANNELS, BARS, RODS, HANDRAILS, AND PLATES, INCLUDING GUSSET, KICKPLATES, BASEPLATES AND STIFFENERS:
   - ASTM A36, 36 ksi
2. STEEL SHEETING, GRATING AND STAIR TREADS:
   - ASTM A1011, GRADE 36 ksi
3. STRUCTURAL STEEL PIPES:
   - ASTM A53/A53M, TYPE E (WELDED) OR S (SEAMLESS), GRADE B, 35 ksi
4. FASTENERS:
   - HIGH-STRENGTH BOLTS
     a. ASTM F3125, GRADE A325, TYPE 1
     b. ASTM F3125, GRADE A490, TYPE 1
   - COMMON BOLTS
     a. ASTM A307, GRADE A
   - NUTS & JAM NUTS
     a. ASTM A563, GRADE DH
   - WASHERS
     a. ASTM F436, HARDENED, TYPE 1
5. WELDING ELECTRODES:
   - AWS D1.1 SERIES E70XX
6. WELDING FILLER METAL AND FLUX:
   - AWS D1.1 FILLER METALS AND ALLIED MATERIALS FOR METAL ARC WELDING
7. CONCRETE:
   - 28-DAYS COMPRESSIVE STRENGTH
     a. STRUCTURAL — MIN. 4500 psi
     b. LEAN, FILL OR BLINDING CONCRETE — MIN. 2000 psi
8. GROUT:
   - 28-DAYS COMPRESSIVE STRENGTH
     a. NON-SHRINK GROUT — MIN. 8000 psi
9. CONCRETE REINFORCEMENT:
   - DEFORMED BARS, ASTM A615, GRADE 60, 60 ksi
   - WELDED WIRE FABRIC, ASTM A1064, 70 ksi
10. ANCHOR RODS:
    - THREADED BARS, ASTM F1554, GRADE 36, 36 ksi
11. MEMBERS EMBEDDED IN OR ATTACHED TO CONCRETE:
    - ASTM A36, 36 ksi

STEEL NOTES

1. ALL STEEL SECTION DESIGNATIONS ARE IN IMPERIAL UNITS PER THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL.
2. ALL STEEL DESIGN AND CONSTRUCTION WORK SHALL CONFORM TO:
   - AISC 303 — CODE OF STANDARD PRACTICE FOR STEEL BUILDING AND BRIDGES
   - AISC 360 — SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
   - AISC 341 — SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS
   - AISC — STEEL CONSTRUCTION MANUAL
   - AISC — SEISMIC DESIGN MANUAL
   - RCSC — SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS
   - AWS D1.1 — STRUCTURAL WELDING CODE - STEEL
   - AISI S100 — NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
   - ASTM A123 — STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS
3. DIMENSIONS SHOWN ON THE DESIGN DRAWINGS ARE TO THE CENTERLINES OF HOLLOW STRUCTURAL SECTIONS,W-SHAPE MEMBERS AND PLATES AND TO THE BACK OF CHANNELS AND ANGLES.
4. ALL BEAM ELEVATIONS INDICATE THE TOP OF FLANGE, U.N.O.
5. CONNECTION DESIGN, SHOP DRAWINGS AND ERECTION DIAGRAMS SHALL BE SUBMITTED FOR THE ENGINEER'S REVIEW PRIOR TO FABRICATION.

CONNECTION DESIGN

1. ALL CONNECTIONS THAT ARE NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED AND SEALED BY THE FABRICATOR'S LICENSED ENGINEER REGISTERED IN THE STATE OF ALASKA.
2. ALL FIELD CONNECTIONS SHALL BE BOLTED, U.N.O.
3. ALL FORCES AND MOMENTS SHOWN ON THE STRUCTURAL DRAWINGS ARE FACTORED VALUES, U.N.O.
4. CONNECTIONS SHALL BE DESIGNED FOR THE FOLLOWING LOAD CAPACITY AND CONSIDERATIONS, U.N.O.:
   - BEAM CONNECTIONS SHALL BE DESIGNED TO RESIST A SHEAR FORCE AND AXIAL LOAD OF:
     a. ONE HALF OF THE TOTAL PERMITTED UNIFORM LOAD FOR THE GIVEN BEAM SIZE, SPAN AND GRADE OF STEEL, OR A FACTORED SHEAR OF 10 kips, WHICHEVER IS GREATER.
     b. AXIAL TENSION AND COMPRESSION LOADS NOT LESS THAN 15% OF THE BEAM TENSILE CAPACITY.
   - BRACING CONNECTIONS SHALL BE DESIGNED TO DEVELOP 50% OF THE CAPACITY OF THE NET SECTION IN TENSION, 100% OF THE CAPACITY IN COMPRESSION, OR THE PROVIDED BRACING FORCES, WHICHEVER IS GREATER. FORCES INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE INTERPRETED AS ACTING IN TENSION OR COMPRESSION.
   - MOMENT CONNECTIONS SHALL BE DESIGNED TO DEVELOP THE FULL FLEXURAL CAPACITY OF THE WEAKER ADJOINING MEMBER.
   - SPLICES SHALL BE DESIGNED TO DEVELOP THE FULL CAPACITY OF THE MEMBER BEING SPLICED. MEMBERS SHALL NOT BE SPLICED AT POINTS OF MAXIMUM STRESS. NO SPLICES SHALL BE MADE UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR REVIEWED AND APPROVED BY THE ENGINEER.
   - IN ADDITION TO FORCES SHOWN ON THE STRUCTURAL DRAWINGS, COLUMN BASE CONNECTIONS SHALL BE DESIGNED TO RESIST THE FACTORED HORIZONTAL FORCE COMPONENTS FROM BRACING, OR 5% OF THE AXIAL COMPRESSIVE RESISTANCE OF THE COLUMN APPLIED HORIZONTALLY, WHICHEVER IS GREATER.
5. GUSSET PLATES SHALL HAVE A MINIMUM THICKNESS OF 1/2" U.N.O.
6. WELDED STIFFENER PLATES WITH A MINIMUM THICKNESS OF 3/8" SHALL BE PROVIDED ON BOTH SIDES OF THE WEB OF BEAMS AT POINTS OF CONCENTRATED LOAD INCLUDING BEAMS SUPPORTING COLUMNS OR RUNNING OVER TOPS OF COLUMNS.
7. ALL CONNECTIONS SHALL BE DESIGNED AS SIMPLE (PINNED) SUPPORTS, U.N.O.

WELDING

1. WELDING PROCEDURES, MATERIALS, AND QUALITY STANDARDS SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1.
2. ALL WELDING, WHETHER IN THE SHOP OR IN THE FIELD, SHALL BE PERFORMED BY A FABRICATOR AND/OR AN ERECTOR CERTIFIED BY AWS D1.1.
3. ALL EXPOSED WELDS SHALL BE CONTINUOUS AND GROUND SMOOTH.
4. WELDED CONNECTIONS SHALL HAVE A MINIMUM FILLET WELD SIZE OF 1/4", U.N.O.
5. PLUG AND SLOT WELDS SHALL NOT BE USED IN THE DESIGN OF STRUCTURAL CONNECTIONS.
6. WHERE A STRUCTURE IS SUBJECT TO CYCLIC LOADING, AS INDICATED ON THE STRUCTURAL DRAWINGS, WELDING SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1 FOR DESIGN AND CONSTRUCTION OF CYCLICALLY LOADED STRUCTURES.

BOLTING

1. BOLTS FOR CONNECTIONS AND DESIGN OF JOINTS SHALL CONFORM TO THE FOLLOWING:
   - GRADE A325: GALVANIZED BOLTS, NUTS AND WASHERS SHALL BE USED ON PAINTED STRUCTURES/CONNECTIONS. PLAIN (NON-GALVANIZED) BOLTS, NUTS, AND WASHERS MAY BE USED FOR UNPAINTED STRUCTURES/CONNECTIONS.
   - ASTM A307: BOLTS FOR LADDERS, GUARDS, REMOVABLE FLOOR AND PLATFORM MEMBERS, PURLINS AND GIRTS.
2. ALL CONNECTIONS USING HIGH-STRENGTH BOLTS (ASTM F3125 GRADES A325 AND A490) SHALL BE "BEARING TYPE" CONNECTIONS CONSIDERING THREADS INCLUDED IN THE SHEAR PLANE, U.N.O.
3. "SLIP CRITICAL" CONNECTIONS SHALL BE USED WHERE VIBRATORY, DYNAMIC, OR REVERSAL LOADING OCCURS, AS NOTED ON THE DESIGN DRAWINGS.
4. ALL BOLTS SHALL BE A MINIMUM OF 3/4" IN DIAMETER, U.N.O.
5. THE FOLLOWING MINIMUM NUMBER OF BOLTS SHALL BE USED AT EACH CONNECTION:
   - STRUCTURAL TEE BRACING: 2 BOLTS (FLANGE CONNECTED)
   - ANGLE BRACING: 2 BOLTS PER ANGLE
   - BEAMS: 2 BOLTS
6. ALL EQUIPMENT BOLT HOLES SHALL BE LOCATED WITHIN 1/16" OF DESIGNED/DETAILED LOCATIONS.
7. ALL CONNECTION BOLTS WITHIN A PREFABRICATED MODULE SHALL BE PRETENSIONED TO AVOID LOOSENING DURING TRANSPORTATION.
8. ALL CONNECTIONS REQUIRING BOLTS TO BE PRETENSIONED SHALL BE NOTED ON THE SHOP DRAWINGS.
9. ALL HIGH STRENGTH BOLTED CONNECTIONS REQUIRED TO BE PRETENSIONED SHALL BE INSTALLED BY THE "TURN OF NUT" METHOD.
10. FOR "EXPANSION" SLOTTED CONNECTIONS, WHEN INDICATED ON THE DESIGN DRAWINGS, USE HORIZONTAL LONG SLOTS AS PER AISC 360, COMPLETE WITH ONE HEAVY HEX NUT AND ONE 5/16" THICK STRUCTURAL PLATE WASHER. NUTS SHALL BE SNUG TIGHTENED THEN BACKED OFF 1/4 TURN.
11. FOR "FIT-UP" SLOTTED CONNECTIONS, WHEN INDICATED ON THE DESIGN DRAWINGS, USE HORIZONTAL LONG SLOTS, AS PER AISC 360, COMPLETE WITH ONE HEAVY HEX NUT AND ONE 5/16" THICK STRUCTURAL PLATE WASHER. NUTS SHALL BE FULLY TIGHTENED USING "TURN OF NUT" METHOD.

PROTECTIVE SURFACE COATING

1. SURFACES SPECIFIED AS GALVANIZED SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.
2. DAMAGE TO GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A780.
3. FOR BOLTS AND NUTS TO BE GALVANIZED, APPROPRIATE MEASURES SHALL BE TAKEN, SUCH AS RE-TAPPING THE NUTS AFTER GALVANIZING, TO ENSURE THAT THE BOLTS, NUTS AND HARDWARE FIT PROPERLY.
4. ALL SHOP COATING SHALL BE EXCLUDED FROM AREAS WITHIN 2" OF JOINTS TO BE FIELD-WELDED. COATINGS OTHER THAN AISC 360 CLASS A OR B SHALL BE EXCLUDED FROM AREAS WITHIN 2" OF THE FAYING SURFACES FOR "SLIP CRITICAL" BOLTED CONNECTIONS. THE COATING CLASS SHALL BE CERTIFIED AND SHOWN ON THE SHOP DRAWINGS.
5. STEEL SURFACES IN CONTACT WITH FRICTION TYPE CONNECTIONS, FIELD WELDING, CONCRETE, OR THE TOP OF BEAMS SUPPORTING MASONRY, SHALL NOT BE PAINTED.
6. ALL GUARDS, HANDRAILS, KICK PLATES, LADDERS AND CAGES SHALL BE PAINTED "SAFETY YELLOW" AS PER CLIENT'S STANDARD PAINTING SPECIFICATIONS.

WELD INSPECTION

1. FIRMS UNDERTAKING WELD INSPECTION SHALL BE INDEPENDENT THIRD PARTY, AND CERTIFIED BY AWS. ALL WELDING INSPECTORS SHALL CERTIFIED BY AWS. RELEVANT CLASS INSPECTIONS AND TEST REPORTS SHALL BE SUBMITTED FOR REVIEW TO THE ENGINEER.
2. THE PROCEDURES AND ACCEPTANCE CRITERIA FOR INSPECTION OF ALL WELDS SHALL BE IN ACCORDANCE WITH AWD D1.1.
3. THE FABRICATOR SHALL VISUALLY INSPECT 100% OF WELDS.
4. NON-DESTRUCTIVE TESTING SHALL BE PERFORMED AS FOLLOWS:
   - 100% OF WELDS DESIGNATED ON THE DESIGN DRAWINGS AS COMPLETE PENETRATION SHALL BE INSPECTED BY ULTRASONIC TESTING.
   - 10% OF GROOVE WELDS SHALL BE INSPECTED BY ULTRASONIC TESTING.
   - 10% OF FILLET WELDS SHALL BE INSPECTED BY MAGNETIC PARTICLE TESTING.
   - 100% OF FILLET WELDS ON LIFTING LUGS SHALL BE INSPECTED BY MAGNETIC PARTICLE TESTING.
5. ALL WELDS THAT DO NOT MEET THE ACCEPTANCE CRITERIA OF AWD D1.1 SHALL BE REPAIRED AT THE CONTRACTOR'S COST.

ISSUED FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	BE	MM	WZ	SLA

SEAL

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PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
STRUCTURAL GENERAL NOTES

PROJECT NO.	REV.	of	DRAWING
22522194	0		S-001

CONCRETE NOTES

1. ALL CONCRETE DESIGN AND CONSTRUCTION WORK SHALL CONFORM TO:
   - ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE
   - ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - ACI 351.2 FOUNDATIONS FOR STATIC EQUIPMENT
   - ACI 351.3 FOUNDATIONS FOR DYNAMIC EQUIPMENT
   - ACI 351.4 SPECIFICATION FOR INSTALLATION OF CEMENTITIOUS GROUTING BETWEEN FOUNDATIONS AND EQUIPMENT BASES
   - ACI 360 DESIGN OF SLABS-ON-GROUND
   - ACI 308.1 SPECIFICATION FOR CURING CONCRETE
   - ACI 305.1 SPECIFICATION FOR HOT WEATHER CONCRETING
   - ACI 306.1 STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING
   - ASTM A123 STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS
   - ASTM A1064 STANDARD SPECIFICATION FOR CARBON-STEEL WIRE AND WELDED WIRE REINFORCEMENT, PLAIN AND DEFORMED, FOR CONCRETE
   - ASTM C150 STANDARD SPECIFICATION FOR PORTLAND CEMENT
   - AWS D1.4 STRUCTURAL WELDING CODE - STEEL REINFORCING BARS
   - CRSI MANUAL OF STANDARD PRACTICE
2. ALL CONCRETE DESIGN AND CONSTRUCTION FOR LIQUID/SLURRY RETAINING OR CONTAINMENT STRUCTURES SHALL CONFORM TO:
   - ACI 350 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
3. THE CONTRACTOR SHALL PLACE CONCRETE ONLY AFTER RECEIVING APPROVAL FROM THE OWNER'S INSPECTOR FOR FORMWORK, REINFORCEMENT AND ELECTRICAL GROUNDING CABLES.

FOUNDATIONS

1. ALL FOUNDATIONS ARE DESIGNED TO BEAR ON COMPETENT BEDROCK OR LEAN CONCRETE FILL CAPABLE OF SUSTAINING A GEOTECHNICAL RESISTANCE AT ULTIMATE LIMIT STATE OF 5000 psf, AND A SERVICEABILITY LIMIT STATE OF 3000 psf, BEARING CAPACITY SHALL BE VERIFIED BY THE OWNER'S GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION OF FOOTINGS. IF SUITABLE BEARING CAPACITY IS NOT ENCOUNTERED AT THE ELEVATION INDICATED ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
2. THE SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT, SPECIFICATIONS, AND CIVIL DRAWINGS.
3. BACKFILL SHALL NOT BE PLACED AGAINST WALLS RETAINING EARTH UNTIL ELEMENTS PROVIDING LATERAL SUPPORT AT TOP AND BOTTOM OF THE WALL ARE COMPLETE OR ADEQUATE TEMPORARY BRACING IS PROVIDED.
4. ALL BACKFILL UNDER ANY PORTION OF THE FOUNDATION SHALL BE COMPACTED IN MAXIMUM 8" LOOSE LIFTS.
5. FOR AREAS TO RECEIVE CONCRETE OR FILL, PREPARE SUBGRADE BY SCARIFYING, PROOF ROLLING, REMOVING SOFT SPOTS AND COMPACTING TO 98% MODIFIED STANDARD PROCTOR MAXIMUM DRY DENSITY IN 8" LOOSE LIFTS.
6. IN CASE OF OVER-EXCAVATION BENEATH THE FOUNDATION BASE ELEVATION, PLACE LEAN CONCRETE TO GAIN THE CORRECT ELEVATION. CONTROLLED LOW STRENGTH MATERIAL MAY BE SUBSTITUTED FOR LEAN CONCRETE IN LOCATIONS.
7. TEMPORARY EXCAVATION SLOPES SHALL BE DETERMINED BY THE CONTRACTOR BASED ON THE GEOTECHNICAL INVESTIGATION RECOMMENDATIONS AND APPLICABLE OCCUPATIONAL SAFETY AND HEALTH REGULATIONS.

CONCRETE

1. MAXIMUM AGGREGATE SIZE SHALL BE 3/4".
2. ALL CONCRETE SHALL BE AIR ENTRAINED TO AN AIR CONTENT OF 4.5% TO 7.5%. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. ASTM C150 TYPE II PORTLAND CEMENT SHALL BE USED.
4. EXPOSURE CLASS:
   - ALL CONCRETE, U.N.O.: C1
5. MAXIMUM WATER CEMENT RATIO 0.42.
6. CONCRETE COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS, U.N.O.:
   - CONCRETE PLACED AGAINST EARTH: 3"
   - CONCRETE PLACED IN FORMS THEN EXPOSED TO EARTH OR WEATHER: 2"
   - CONCRETE NOT EXPOSED TO EARTH OR WEATHER: 1 1/2"
   - INTERIOR SLABS: 1"
7. ALL EMBEDDED STEEL MEMBERS SHALL BE HOT DIP GALVANIZED, U.N.O.
8. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN CONCRETE.
9. OPENINGS AND EMBEDDED ITEMS SHALL NOT INTERRUPT REINFORCING. WHERE CONFLICTS OCCUR APPORTION REINFORCING TO SIDES OF OPENINGS AND HOOK THE INTERRUPTED REINFORCING.
10. NO OPENINGS OR EMBEDDED ITEMS, SUCH AS CONDUITS, SHALL BE PLACED WITHIN THE CONCRETE STRUCTURE WITHOUT APPROVAL FROM THE ENGINEER.
11. ALL REINFORCEMENT AND EMBEDMENTS SHALL BE IN PLACE, TIED AND SECURED PRIOR TO CONCRETE PLACEMENT.
12. PRIOR TO PLACING NEW CONCRETE ON HARDENED CONCRETE, THE EXISTING SURFACES SHALL BE ROUGHENED AND WASHED TO REMOVE ALL DELETERIOUS SUBSTANCES OR UNSOUND CONCRETE AND TO EXPOSE COARSE AGGREGATES, THE PREPARED SURFACES SHALL BE FREE OF ANY LOOSE SUBSTANCES.
13. A COAT OF APPROVED EPOXY BONDING AGENT SHALL BE APPLIED THOROUGHLY OVER THE EXISTING DRY SURFACES PRIOR TO THE PLACEMENT OF NEW CONCRETE.
14. THE PROCEDURES USED TO MIX AND PLACE EPOXY BONDING AGENT SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

REINFORCEMENT

1. REINFORCING BAR SIZES ON DESIGN DRAWINGS INDICATE THE REBAR DIAMETER IN FRACTIONS OF 1/8 INCH.
2. NO WELDING OF REBAR SHALL BE PERFORMED WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
3. WELDERS OF REINFORCEMENT OR STEEL HARDWARE SHALL BE CERTIFIED BY AWS AND SHALL MEET THE REQUIREMENTS OF AWS D1.4 AND ASTM A1064. THE WELDER CERTIFICATION MUST BE VALID AND IN FORCE DURING THE CONSTRUCTION PERIOD. WELDING SHALL NOT BE PERFORMED ON THE PORTION OF A REINFORCING BAR THAT HAS BEEN COLD BENT.
4. LAP SPLICES SHALL BE LOCATED AS FOLLOWS, U.N.O.:
   BEAMS AND ELEVATED SLABS:
   - AT MID SPANS FOR TOP REINFORCEMENT
   - AT SUPPORTS FOR BOTTOM REINFORCEMENT

   FOOTINGS AND SLABS-ON-GRADE:
   - AT COLUMN/PEDESTAL LOCATIONS FOR TOP REINFORCEMENT
   - AT MID SPANS FOR BOTTOM REINFORCEMENT
5. SPLICES SHALL BE STAGGERED SUCH THAT NO MORE THAN 50% OCCUR AT ANY GIVEN LOCATION.
6. ALL LAP SPLICES SHALL BE CLASS B SPLICES.
7. ALL HOOKS AND BENDS SHALL CONFORM TO ACI 318 AND CRSI.
8. WELDED STEEL WIRE FABRICS SHALL CONFORM TO ASTM A1064. PROVIDE FLAT SHEETS ONLY. WELDED WIRE FABRIC SPLICES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318.

CURING AND PROTECTION

1. CONCRETE SHALL BE CURED AND PROTECTED IN ACCORDANCE WITH ACI 308.1.
2. FOR HOT WEATHER CONCRETING, THE CONCRETE SHALL BE PROTECTED IN ACCORDANCE WITH ACI 305.1.

SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT REBAR SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. THE SHOP DRAWINGS SHALL INDICATE REINFORCING BAR SIZES, GRADES, SPACING, LOCATIONS, QUANTITIES, LAP SPLICES, LENGTHS, BENDING AND CUTTING SCHEDULES.
2. THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGN TO THE ENGINEER FOR REVIEW, BASED ON PROJECT REQUIREMENTS.
3. THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S TEST DATA AND CERTIFICATION BY QUALIFIED INDEPENDENT INSPECTION AND TESTING LABORATORY TO SHOW THAT ALL MATERIALS USED IN THE PRODUCTION OF CONCRETE MEET THE SPECIFIED REQUIREMENTS.

FIELD RECORDS

1. DETAILED CONCRETE PLACEMENT RECORDS SHALL BE MAINTAINED AT THE JOB SITE AND AVAILABLE FOR INSPECTION AT ANY TIME. AS A MINIMUM, THESE RECORDS SHALL CONTAIN THE FOLLOWING INFORMATION:
   - NAME OF PROJECT
   - DATE AND TIME OF BATCHING
   - DATE AND TIME OF SAMPLING
   - LOCATION OF TESTING (LAB OR FIELD)
   - NAME OF SUPPLIER
   - CONCRETE MIX IDENTIFICATION NUMBER
   - DELIVERY SLIP NUMBER
   - IDENTIFICATION OF SAMPLING AND TESTING TECHNICIAN
   - EXACT LOCATION OF STRUCTURE OR CONCRETE SAMPLED
   - CONCRETE TEMPERATURE
   - AMBIENT AIR TEMPERATURE
   - TEMPERATURE INSIDE ENCLOSURE FOR COLD WEATHER CONCRETING
   - WEATHER CONDITION
   - SLUMP
   - AIR CONTENT
   - COMPRESSIVE STRENGTH AT 7 DAYS & 28 DAYS

ABBREVIATIONS

@	AT
&	AND
'	FOOT
"	INCH
#	NUMBER
BO	BOTTOM OF
BOS	BOTTOM OF STEEL
BOT	BOTTOM
C	ROLLED CHANNEL
CL OR ℄	CENTERLINE
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
DIA	DIAMETER
EF	EACH FACE
EL	ELEVATION
EMBD	EMBEDMENT
EQ	EQUAL OR EQUALLY
EW	EACH WAY
FDN	FOUNDATION
ft	FOOT
GA	GAUGE
Gr	GRADE
L	ROLLED ANGLE
LOC	LOCATION
MAX	MAXIMUM
MIN	MINIMUM
No.	NUMBER
OC	ON CENTER
PL	PLATE
PROJ	PROJECTION
REINF	REINFORCEMENT
TO	TOP OF
TOC	TOP OF CONCRETE
TOG	TOP OF GRATING
TOS	TOP OF STEEL
TYP	TYPICAL
T&B	TOP AND BOTTOM
U.N.O.	UNLESS NOTED OTHERWISE
U/S	UNDER SIDE

ISSUED FOR
CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2023-03-31	ISSUED FOR CONSTRUCTION	BE	MM	WZ	SLA

SEAL

CLIENT
COEUR ALASKA, INC.
KENSINGTON MINE

COEUR ALASKA™

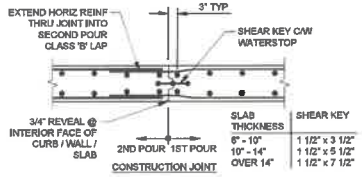
CONSULTANT

GOLDER ASSOCIATES USA INC.
1400 W BENSON BLVD, SUITE 420
ANCHORAGE , ALASKA
USA
(907) 344-6001

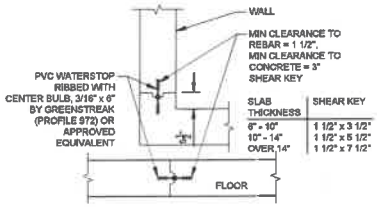
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
STRUCTURAL GENERAL NOTES

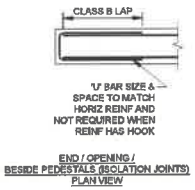
PROJECT NO.	REV.	of	DRAWING
22522194	0		S-002

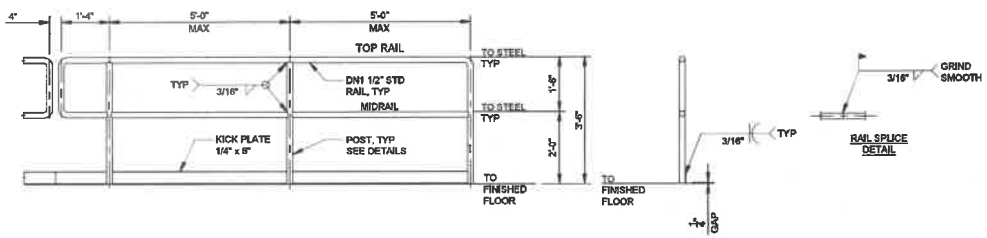


C1.1 CONSTRUCTION JOINT DETAIL

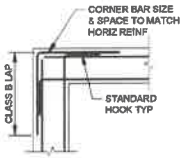


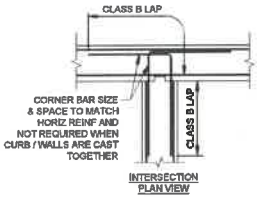
C1.2 WATERSTOP DETAIL



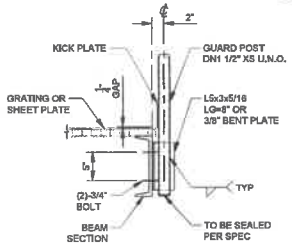


S1.1 TYPICAL GUARD ELEVATION

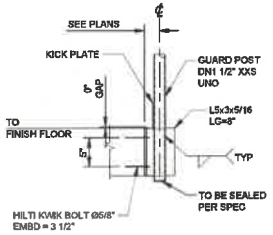




C1.3 CURB / WALL HORIZONTAL REINFORCING



GUARD CONNECTION
S1.2 STEEL SUPPORT



GUARD CONNECTION
S1.3 TO EDGE OF CONCRETE

TENSION DEVELOPMENT LENGTH (Ld)

BAR GRADE = 60
- TABLE DEVELOPED FOR BLACK BARS; FOR EPOXY BARS W/COVER < 3d_b OR CLEAR SPACE < 6d_b, MULTIPLY TABLE VALUES BY 1.5; FOR OTHER EPOXY COATED BARS, MULTIPLY TABLE VALUES BY 1.2
- FOR LOW DENSITY CONCRETE MULTIPLY TABLE VALUES BY 1.3; FOR SEMI-LOW DENSITY CONCRETE MULTIPLY TABLE VALUES BY 1.2;
- "TOP" MEANS THAT THERE IS MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR

BAR SIZE	f'c = 3.5 ksi		f'c = 4.5 ksi		f'c = 5 ksi		f'c = 6 ksi	
	NON TOP	TOP	NON TOP	TOP	NON TOP	TOP	NON TOP	TOP
#4	15	19	13	17	12	16	12	15
#5	18	24	16	21	15	20	14	18
#6	22	29	19	25	18	24	17	22
#8	37	48	32	42	31	40	28	36
#10	43	56	38	50	35	47	33	43
#11	50	65	44	58	42	55	38	50

TENSION LAP SPLICES

TENSION CLASS B LAP SPLICE = 1.3 x Ld

MINIMUM TENSION EMBEDMENT WITH STANDARD END HOOKS (Lhb)

BAR GRADE = 60
- FOR BARS WHERE THE SIDE COVER (NORMAL TO PLANE OF HOOK) IS LESS THAN 2 3/8", AND FOR 90° HOOKS WHERE THE COVER ON THE BAR EXTENSION BEYOND THE HOOK IS NOT LESS THAN 2", MULTIPLY TABLE Lhb VALUES BY 0.7
- FOR EPOXY BARS MULTIPLY TABLE VALUES BY 1.2
- FOR LOW DENSITY CONCRETE MULTIPLY TABLE VALUES BY 1.3

BAR SIZE	f'c = 3.5 ksi	f'c = 4.5 ksi	f'c = 5 ksi	f'c = 6 ksi
#4	10	9	8	8
#5	13	11	11	10
#6	15	13	13	12
#8	20	18	17	16
#10	24	21	20	18
#11	28	25	23	21

COMPRESSION DEVELOPMENT LENGTH (Ldb)

BAR GRADE = 60
- FOR NORMAL DENSITY CONCRETE ONLY

COMPRESSION LAP SPLICES

BAR SIZE	f'c = 3.5 ksi	f'c = 4.5 ksi	f'c = 5 ksi	f'c = 6 ksi	STANDARD LAP
#4	10	9	8	8	15
#5	12	11	10	9	18
#6	15	13	12	11	22
#8	19	17	16	15	29
#10	23	20	19	18	35
#11	27	24	22	20	40

NOTE: DEVELOPMENT LENGTHS ON THE TABLES ARE ROUNDED TO THE NEAREST INCH.

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USA
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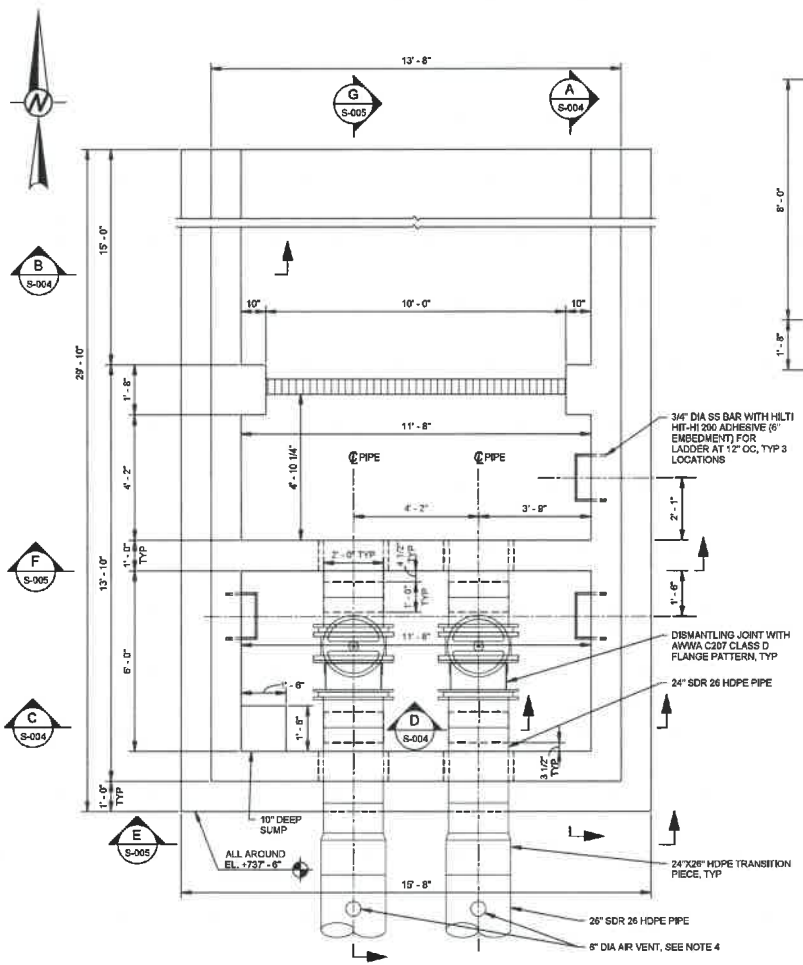
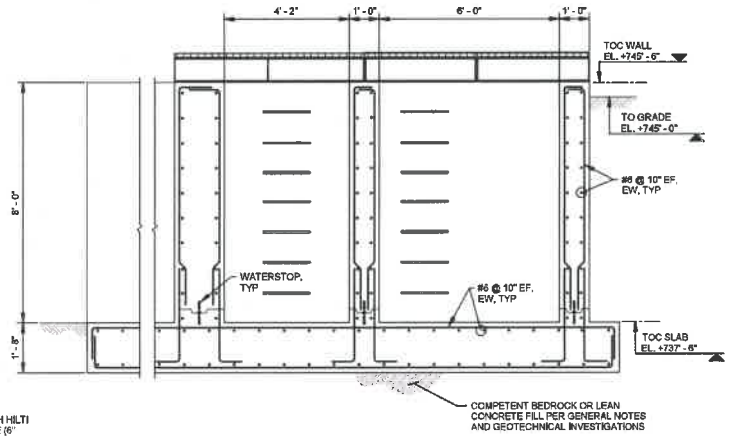
PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
TYPICAL DETAILS

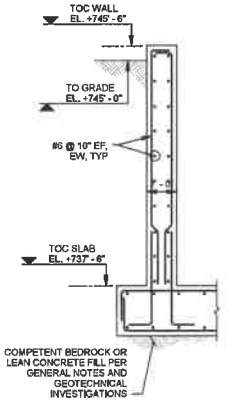
PROJECT NO. 22522194
REV. 0
of
DRAWING S-003



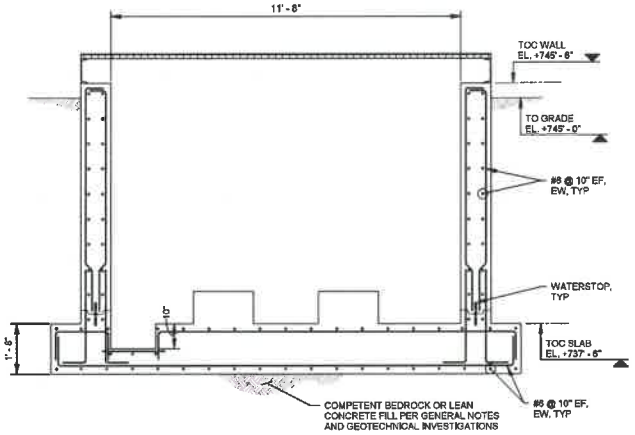
FOUNDATION PLAN
SCALE: 1/2" = 1'-0"



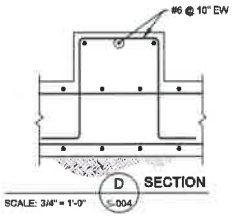
A SECTION
SCALE: 1/2" = 1'-0"



B SECTION
SCALE: 1/2" = 1'-0"



C SECTION
SCALE: 1/2" = 1'-0"



D SECTION
SCALE: 3/4" = 1'-0"

NOTES:

1. SEE DWG. S-001, 002 AND 003 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. FOR THE LOCATION OF INTAKE STRUCTURE, REFER TO CIVIL/SITE PLAN DRAWING.
3. CONTRACTOR TO FOLLOW UP WITH CLIENT TO REUSE THE EXISTING 24" KNIFE GATE VALVES.
4. EXISTING TAPPING SADDLE MAY BE REUSED SUBJECT TO CONDITION ASSESSMENT.

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KENSINGTON MINE

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PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
INTAKE STRUCTURE
CONCRETE
PLAN AND SECTIONS

PROJECT No. 22522194
REV. 0
of
S-004

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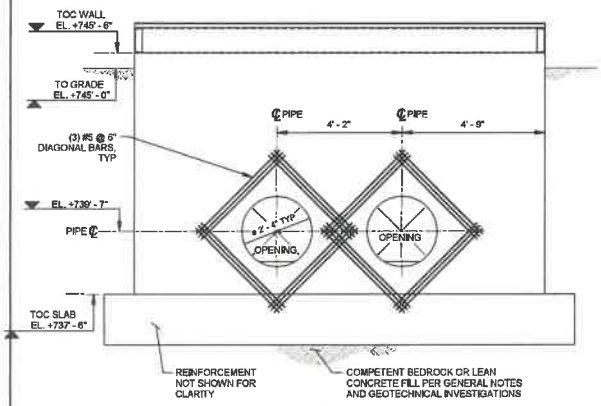
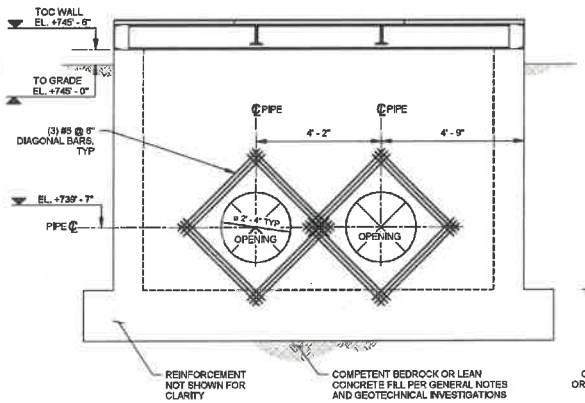


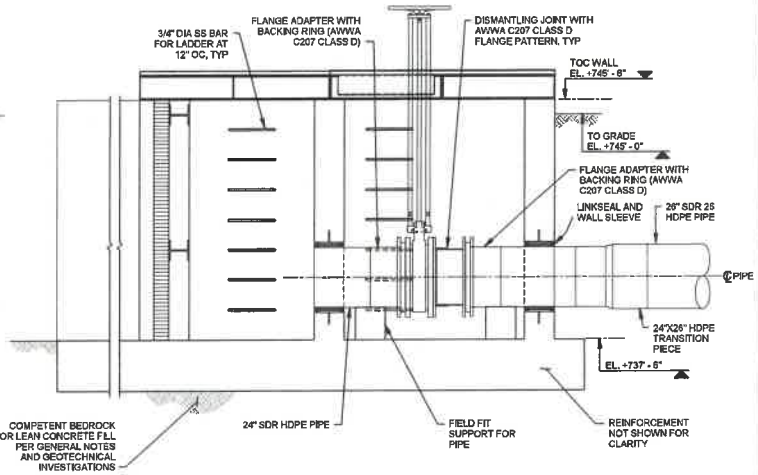
E SECTION

SCALE: 1/2" = 1'-0"



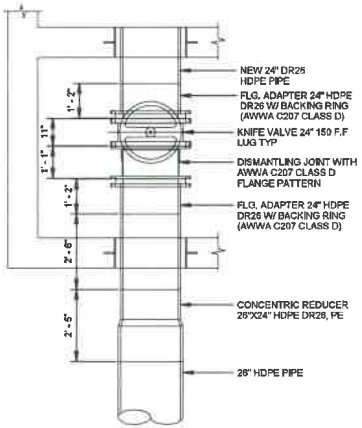
F SECTION

SCALE: 1/2" = 1'-0"



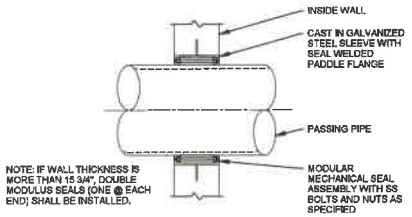
G SECTION

SCALE: 1/2" = 1'-0"



PIPE LAYOUT

SCALE: 1/2" = 1'-0"



1 TYPICAL DETAIL FOR PIPE PENETRATION

SCALE: 3/4" = 1'-0"

NOTES:

1. SEE DWG. S-001, 002 AND 003 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. MODULAR SEAL AND SLEEVE SHALL BE MANUFACTURED BY GARLOCK OR APPROVED EQUIVALENT.

   PIPE SIZE: 24"
   SLEEVE MODEL: WSG-28-37-S-12
   LINKSEAL MODEL: LS-475-S-316
3. INSTALL WALL SLEEVE AND LINKSEAL AS PER MANUFACTURER'S INSTRUCTIONS.
4. INSTALL DISMANTLING JOINT AS PER MANUFACTURER'S INSTRUCTIONS.
5. CONTRACTOR TO VERIFY EXISTING VALVE DIMENSION (F-F) AND ADJUST PIPE SPOOL ACCORDINGLY TO SUIT.
6. CONTRACTOR SHALL INSPECT EXISTING VALVE BOLTING HARDWARE TO CONFIRM CONDITIONS. REPLACE WITH NEW SETS IF REQUIRED.
7. GASKET USED ON EXISTING VALVE SHALL BE REPLACED WITH NEW, GARLOCK MULTI-SWELL STYLE 3750 OR APPROVED EQUIVALENT IS ACCEPTABLE.

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STATE OF ALASKA — 49 21 — Wes Zhang — No. CE 13870

CLIENT
COEUR ALASKA, INC.
KENSINGTON MINE

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PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
INTAKE STRUCTURE
CONCRETE
SECTIONS AND PIPE LAYOUT

PROJECT No. 22522194

REV. 0

of

S-005

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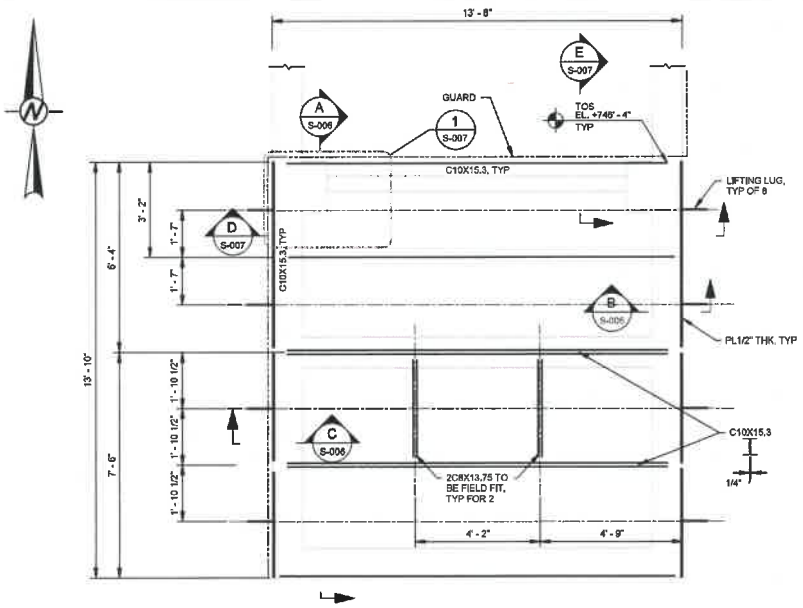
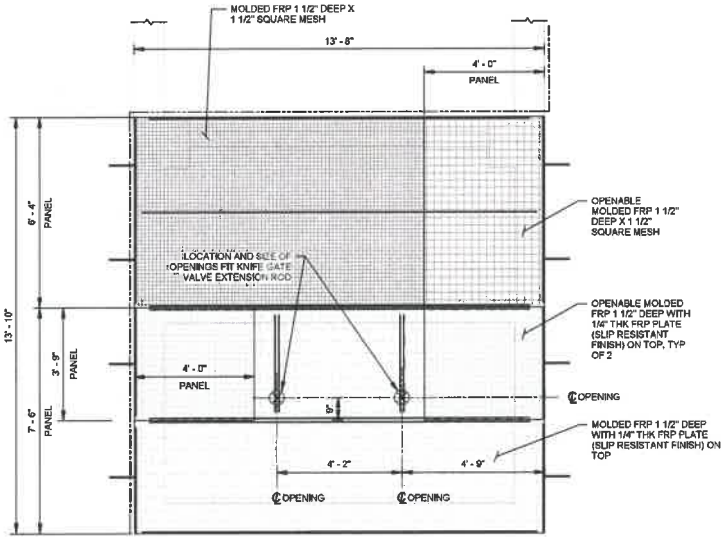


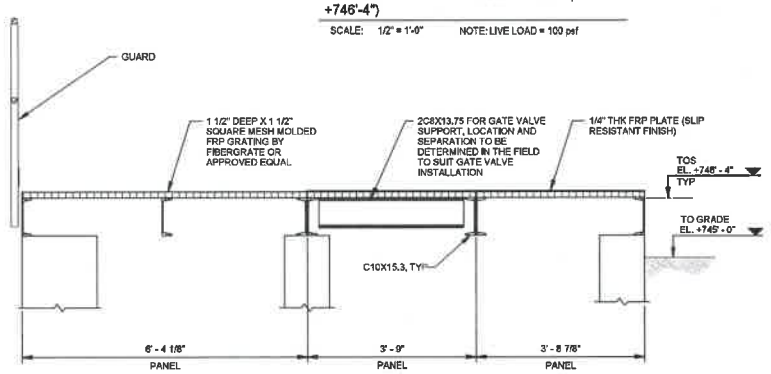
GRATING SUPPORT FRAMING PLAN (TOS EL +746'-4")

SCALE: 1/2" = 1'-0" NOTE: LIVE LOAD = 100 psf



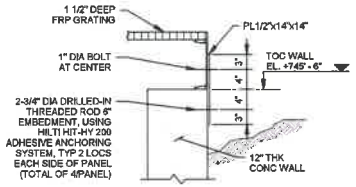
FLOOR PLAN

SCALE: 1/2" = 1'-0"



A SECTION

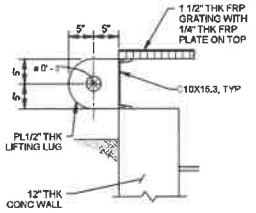
SCALE: 3/4" = 1'-0" S-006



NOTE: SOIL TO BE GRADED 6" BELOW PLATE

B SECTION

SCALE: 1" = 1'-0" S-006



C SECTION

SCALE: 1" = 1'-0" S-006

NOTES:

1. SEE DWG. S-001, 002 AND 003 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. HOLD DOWN CLIPS FOR FRP GRATING SHALL BE FIBERGRATE CLIP ASSEMBLY TYPE M-2 (316 STAINLESS STEEL) AT MAXIMUM 3'-0" SPACING, MINIMUM 4 CLIPS PER PANEL, OR APPROVED EQUIVALENT.
3. ALL STEEL BEAMS AND CONNECTION BOLTS TO BE HOT DIPPED GALVANIZED.

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PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
INTAKE STRUCTURE
STEEL
PLAN AND SECTIONS

PROJECT No. 22522194

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S-006

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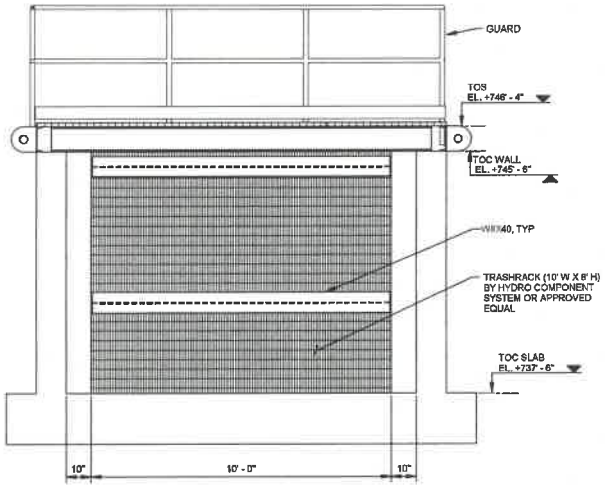
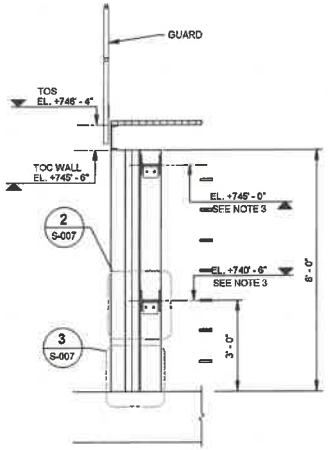
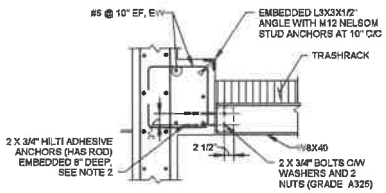


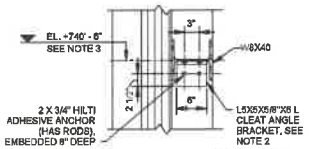
D SECTION
SCALE: 1/2" = 1'-0" S-006



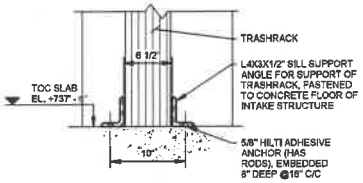
E SECTION
SCALE: 1/2" = 1'-0" S-006



1 DETAIL
SCALE: 3/4" = 1'-0" S-006



2 DETAIL
SCALE: 1" = 1'-0" S-007



3 DETAIL
SCALE: 1 1/2" = 1'-0" S-007

NOTES:

1. SEE DWG. S-001, 002 AND 003 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. TRASHRACK SUPPORT BEAMS LINED UP WITH TRASHRACK FASTENING BRACKETS PRIOR TO MARKING AND POSITIONING OF WALL ANGLE BRACKET HOLES. HOLES DRILLED INTO TRASHRACK SUPPORT BEAMS FOR FASTENING BRACKETS IN ACCORDANCE TO TRASHRACK SUPPLIER'S INFORMATION.
3. ELEVATION SHOWN WITH REGARD TO TRASHRACK SUPPORT BEAM ARE IN REFERENCE TO BEAM'S CENTERLINE.
4. ALL STEEL BEAMS AND CONNECTION BOLTS TO BE HOT DIPPED GALVANIZED.
5. ALL ANCHOR BOLTS TO BE STAINLESS STEEL SS316.

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PROJECT
LOWER SLATE LAKE TAILINGS TREATMENT FACILITY
STAGE 4A EXPANSION - BACK DAM DETAILED DESIGN DRAWINGS

TITLE
INTAKE STRUCTURE
STEEL
SECTIONS AND DETAILS

PROJECT No. 22522194
REV. 0
S-007

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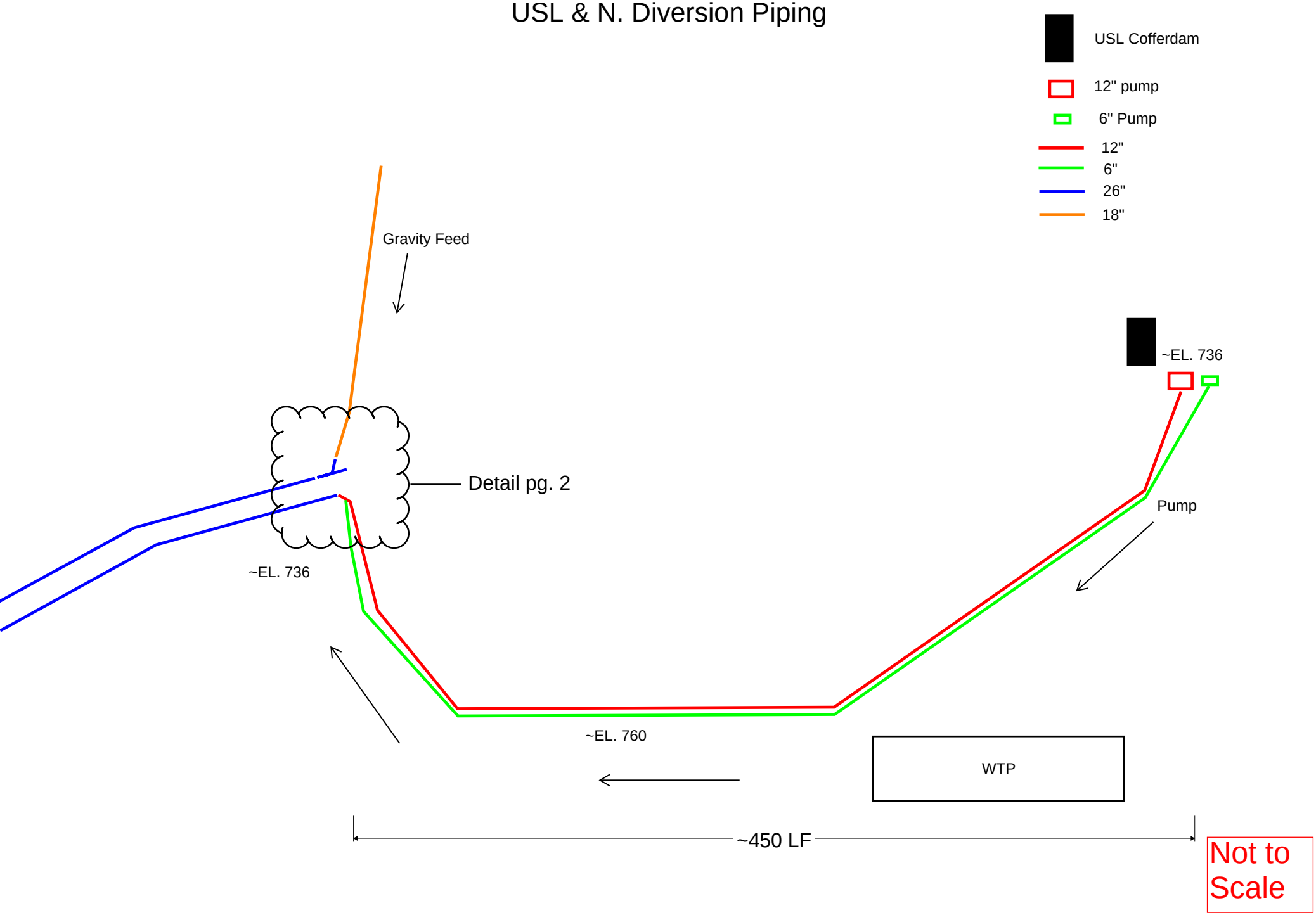
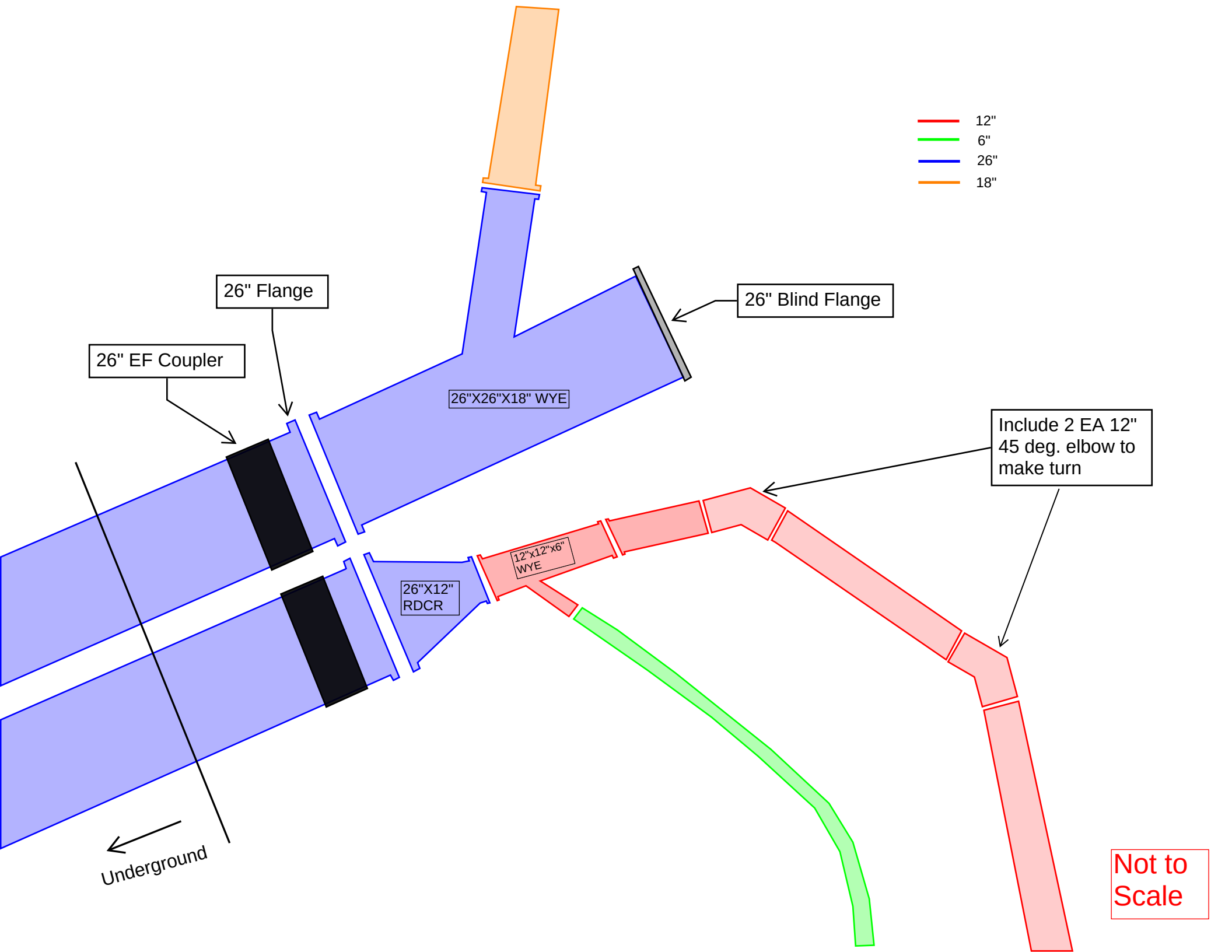
6/1/2023

USL & N. Diversion Piping




12"
6"
26"
18"
26" Flange
26" Blind Flange
26" EF Coupler
26"X26"X18" WYE
Include 2 EA 12" 45 deg. elbow to make turn
12"x12"x6" WYE
26"X12" RDCR
Underground
Not to Scale

COEUR ALASKA
KENSINGTON GOLD MINE

Alaska Aggregate Products

Temporary USL Diversion Pumping System

AAP plans to have one 12 inch pump with a pumping capacity to pump 5,080 GPM and a 6-inch pump with capacity of 2,750 GPM (Combined 7,800 GPM). We believe the 12-inch pump will be running for most of the time and the 6-inch pump will handle flow increases during any high precipitation days. The current system data shows flows that have averaged 7500 gallons per minute over the last 5 years. There has been a couple peak flow days the past 3 years that have gone over 9,600. However, much of that water flows from the 18" North Diversion Pipe into the structure. The 18" pipe will be diverted and tied into the 26" diversion pipe LSL side of the new back dam footprint. The water from the 18" pipe will have sufficient fall to gravity flow into the 26" diversion pipe, therefore that water will not need to be pumped.

On the east side of the USL cofferdam, a pad will be fit for the 12" and 6" diversion pumps and the intakes will be set upstream of the cofferdam toe. Upstream of the pumps, a ¼" galvanized mesh screen panel will be installed across width of the stream and anchored down to the bottom. The panel will be fabricated with angle iron around the perimeter and some vertical supports in between. The top of the fish screen panel will match the same elevation as USL cofferdam crest (742') and will be inspected regularly for any obstructions. Inspections will be performed weekly, and any day proceeding a storm event. In the event the screen falls over or is damaged, a pump fish screen will be available for placing on the pump intake until the original screen is fixed and operational.

We will also have a secondary 6" pump available in Juneau if needed. The elevation change at the pump location (~739') and where diversion piping crests at the WTP (~760') is about 20-25 feet at any given time, which has very minimal effect on these pump performances as shown in the attached pump charts.

Prior to any pump diversion from USL, the LSL and USL cofferdams will be constructed with general waste rock fill and a central geomembrane liner. During the construction of the cofferdams, the diversion piping will be welded, and the fittings will be in place ready for installing into the 26" diversion pipe prior to switching over to the Diversion pumps.

AAP will maintain and monitor the USL pumping system and the Temporary N. Diversion System (covered in item 2.2.10) until the owner approves pumping system shutdown.

- Attachments
  - 12-Inch DPC300 Pump Specifications
  - 6-Inch DV150i Centrifugal Pump Specifications
  - Diversion Piping Plan Drawing