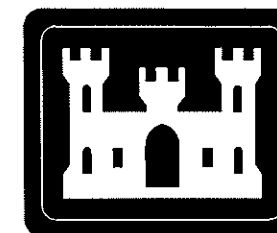


Appendix E

USACE Gunnuk Dam Drawings

ALASKA DISTRICT U.S. ARMY CORPS OF ENGINEERS

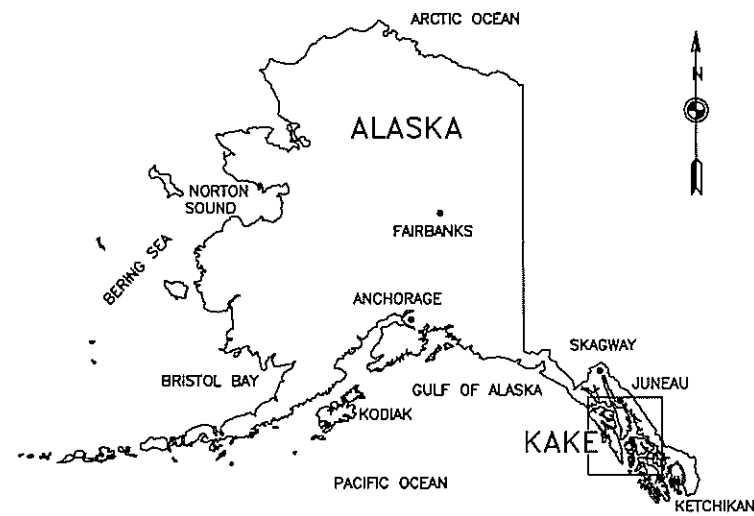


SCHEDULE OF DRAWINGS

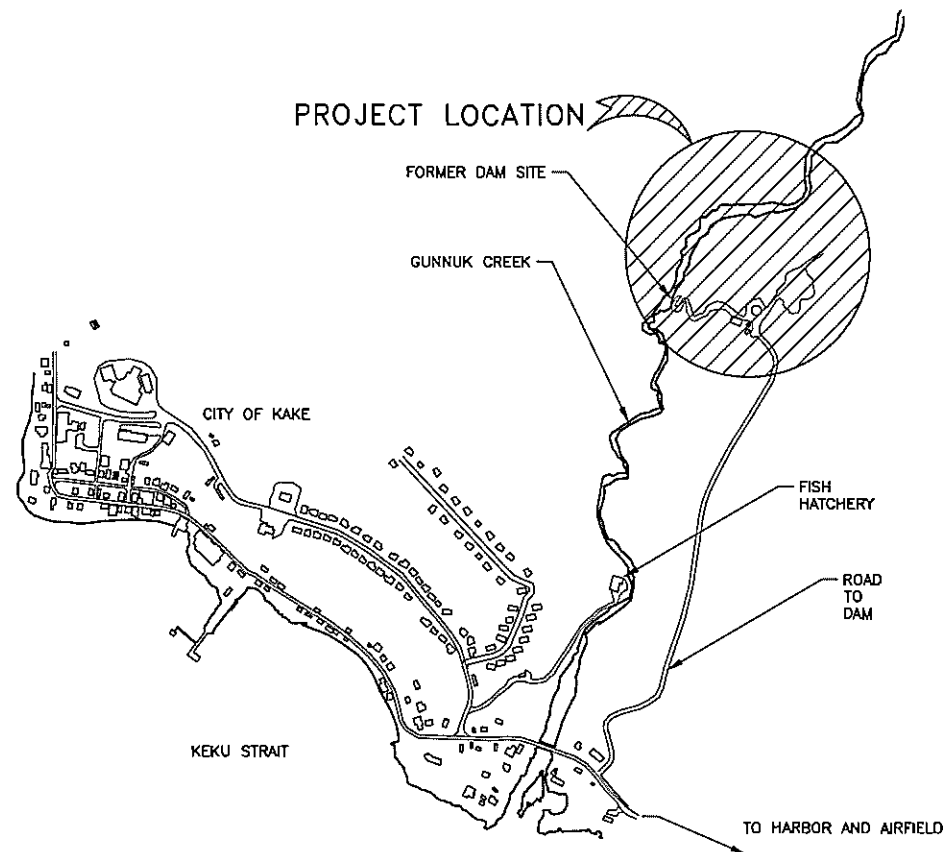
GENERAL		STRUCTURAL		ARCHITECTURAL		MECHANICAL		EXHIBIT DRAWINGS	
REF	SHEET TITLE	REF	SHEET TITLE	REF	SHEET TITLE	REF	SHEET TITLE	REF	SHEET TITLE
G-1	INDEX SHEET	S-6	INTAKE STRUCTURE PLAN AND SECTIONS II	A-1	PUMP HOUSE ABBREVIATIONS/CODE ANALYSIS/SYMBOLS	M-8	PHOTOS EXISTING PUMPHOUSE		
	CIVIL	S-7	INTAKE STRUCTURE PLAN AND SECTIONS III	A-2	PUMP HOUSE FLOOR PLAN	M-9	PHOTOS MECHANICAL DEMOLITION I		
REF	SHEET TITLE	S-8	INTAKE STRUCTURE TRASHRACK AND REMOVABLE HANDRAIL	A-3	PUMP HOUSE LOCATION ON DAM EQUIPMENT LAYOUT	M-10	PHOTOS MECHANICAL DEMOLITION II		
LV-1	LOCATION & VICINITY MAP	S-9	SPILLWAY BRIDGE SECTIONS AND DETAILS	A-4	PUMP HOUSE BUILDING ELEVATIONS	M-11	EXHIBIT DRAWING HYDRO-TURBINE SHOP DRAWING		
C-1	SITE PLAN	S-10	WALKWAY PLAN AND SECTIONS	A-5	PUMP HOUSE BUILDING ELEVATION AND ROOF DETAIL ROOM FINISH DATA/DOOR DATA				
C-2	DAM SITE	S-11	MISCELLANEOUS DETAILS I	A-6	PUMP HOUSE BUILDING SECTIONS		ELECTRICAL		
C-3	DEMOLITION PLAN	S-12	MISCELLANEOUS DETAILS II	A-7	PUMP HOUSE INTERIOR ELEVATIONS	REF	SHEET TITLE		
C-4	PLAN DEMOLITION & MECHANICAL	S-13	DAM STRUCTURE REINFORCEMENT I	A-8	PUMP HOUSE WALL AND WINDOW DETAILS	E-1	INDEX, ABBREVIATIONS, SYMBOLS, & NOTES		
C-5	EXCAVATION PLAN & SECTION	S-14	DAM STRUCTURE REINFORCEMENT II	A-9	PUMP HOUSE DOOR DETAILS	E-2	ELECTRICAL SITE PLAN I		
C-6	EXCAVATION SECTIONS	S-15	DAM STRUCTURE REINFORCEMENT III		MECHANICAL	E-3	ELECTRICAL SITE PLAN II		
C-7	PROFILE WALKWAY & STAIRWAY	S-16	INTAKE STRUCTURE REINFORCEMENT I	REF	SHEET TITLE	E-4	ELECTRICAL LIGHTING PLAN KAKE DAM PUMP ROOM I		
C-8	SOIL BORING LOG-AP9	S-17	INTAKE STRUCTURE REINFORCEMENT II	M-1	SITE MECHANICAL UTILITIES	E-5	ELECTRICAL POWER PLAN KAKE DAM PUMP ROOM II		
C-9	SOIL BORING LOG-AP10	S-18	INTAKE STRUCTURE REINFORCEMENT III	M-2	PLAN MECHANICAL	E-6	ELECTRICAL DETAILS POWER SINGLE LINE DIAGRAM		
	STRUCTURAL			M-3	PLAN ENLARGED MECHANICAL PLAN	E-7	ELECTRICAL DETAILS POWER SINGLE LINE DIAGRAM- NEW CONDITION		
REF	SHEET TITLE			M-4	SECTIONS SECTION THROUGH PUMP HOUSE	E-8	ELECTRICAL DETAILS		
S-0	ISOMETRIC VIEWS			M-5	SECTIONS INTAKE STRUCTURE				
S-1	SCHEDULE			M-6	SECTIONS MECHANICAL DETAILS I				
S-2	GENERAL PLAN			M-7	SECTIONS MECHANICAL CONTROLS				
S-3	DAM PLAN AND SECTIONS I								
S-4	DAM PLAN AND SECTIONS II								
S-5	INTAKE STRUCTURE PLAN AND SECTIONS I								

AS-BUILT SET

REFERENCE NUMBER: G-1



ALASKA MAP
SCALE: 1" : APPROX 200 MILES



KAKE AREA MAP
N.T.S.

PROJECT LOCATION

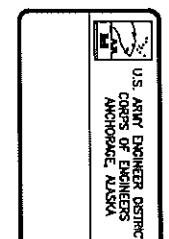
GULF OF ALASKA

SOUTHEAST ALASKA MAP
SCALE: 1" : APPROX 25 MILES



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	
DESIGNER	
PROJECT NO.	

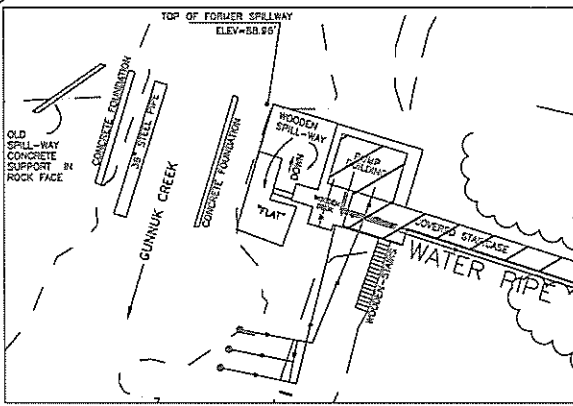
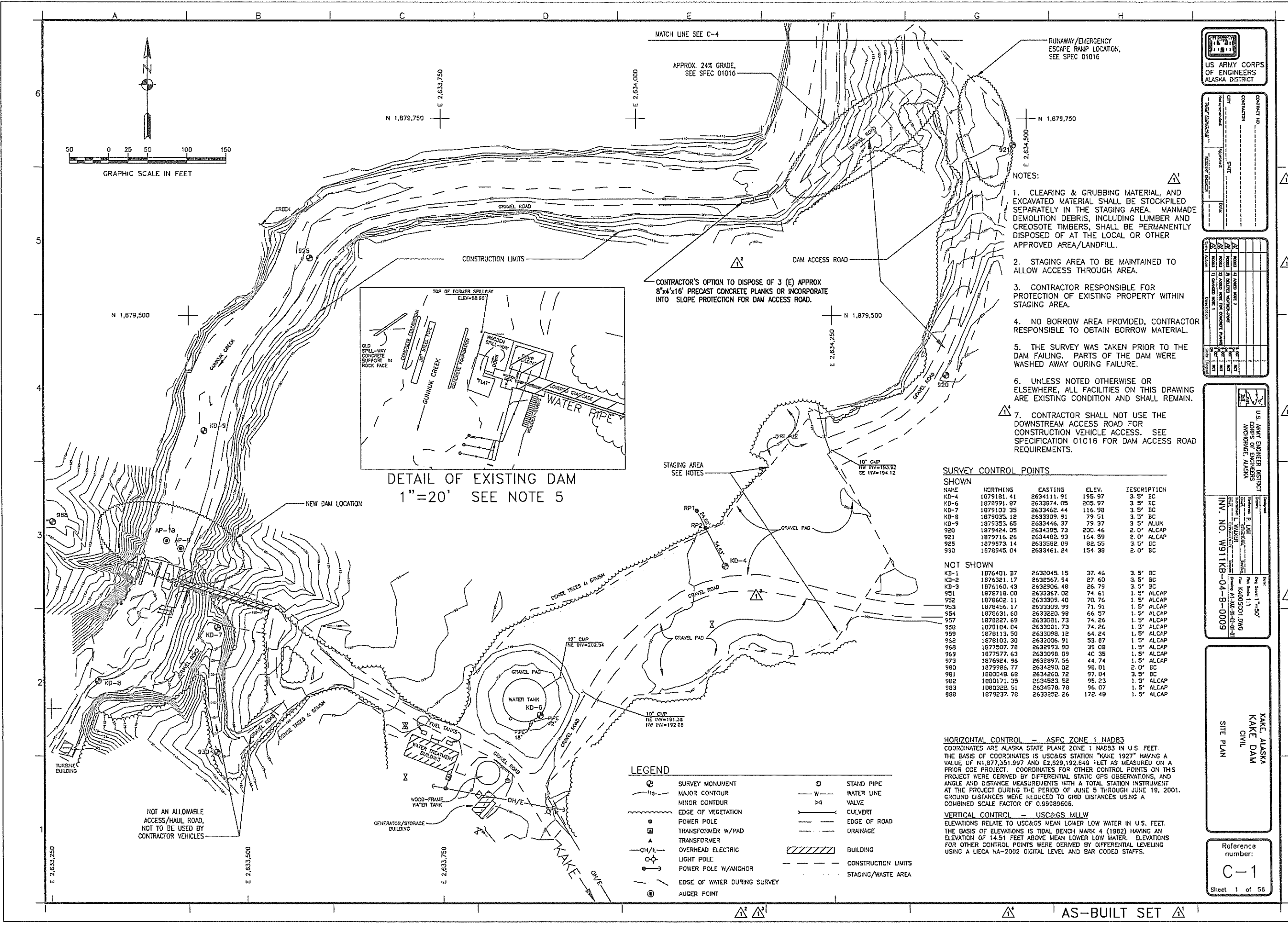
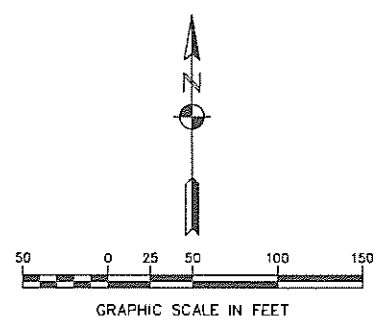
Scale	1" = 25 Miles
Projection	
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Zone	



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	
DESIGNER	
PROJECT NO.	
INVENTORY NO.	W911KB-04-B-0009

LOCATION	KAKE, ALASKA
PROJECT	KAKE DAM
TYPE	CIVIL
LOCATION VICINITY MAP	

Reference number:	LV-1
Sheet	1 of 1



- NOTES:
1. CLEARING & GRUBBING MATERIAL, AND EXCAVATED MATERIAL SHALL BE STOCKPILED SEPARATELY IN THE STAGING AREA. MANMADE DEMOLITION DEBRIS, INCLUDING LUMBER AND CREOSOTE TIMBERS, SHALL BE PERMANENTLY DISPOSED OF AT THE LOCAL OR OTHER APPROVED AREA/LANDFILL.
 2. STAGING AREA TO BE MAINTAINED TO ALLOW ACCESS THROUGH AREA.
 3. CONTRACTOR RESPONSIBLE FOR PROTECTION OF EXISTING PROPERTY WITHIN STAGING AREA.
 4. NO BORROW AREA PROVIDED, CONTRACTOR RESPONSIBLE TO OBTAIN BORROW MATERIAL.
 5. THE SURVEY WAS TAKEN PRIOR TO THE DAM FAILING. PARTS OF THE DAM WERE WASHED AWAY DURING FAILURE.
 6. UNLESS NOTED OTHERWISE OR ELSEWHERE, ALL FACILITIES ON THIS DRAWING ARE EXISTING CONDITION AND SHALL REMAIN.
 7. CONTRACTOR SHALL NOT USE THE DOWNSTREAM ACCESS ROAD FOR CONSTRUCTION VEHICLE ACCESS. SEE SPECIFICATION 01016 FOR DAM ACCESS ROAD REQUIREMENTS.

SURVEY CONTROL POINTS				
SHOWN				
NAME	NORTHING	EASTING	ELEV.	DESCRIPTION
KD-4	1879181.41	2634111.91	195.97	3.5' BC
KD-6	1878991.87	2633874.05	205.97	3.5' BC
KD-7	1879103.35	2633462.44	116.98	3.5' BC
KD-8	1879035.12	2633309.91	79.51	3.5' BC
KD-9	1879353.65	2633446.37	79.37	3.5' ALUM
920	1879424.05	2634395.73	200.46	2.0' ALCAP
921	1879716.26	2634482.93	164.59	2.0' ALCAP
925	1879573.14	2633582.95	82.55	3.5' BC
930	1878945.04	2633461.24	154.38	2.0' BC
NOT SHOWN				
KD-1	1876401.87	2632045.15	37.46	3.5' BC
KD-2	1876321.17	2632567.94	27.60	3.5' BC
KD-3	1876160.43	2632906.48	26.79	3.5' BC
951	1878718.08	2633367.02	74.61	1.5' ALCAP
952	1878602.11	2633309.40	70.76	1.5' ALCAP
953	1878456.17	2633309.99	71.91	1.5' ALCAP
954	1878531.60	2633220.98	66.57	1.5' ALCAP
957	1878227.69	2633081.73	74.26	1.5' ALCAP
958	1878184.84	2633081.73	74.26	1.5' ALCAP
959	1878113.50	2633098.12	64.24	1.5' ALCAP
962	1878103.30	2633006.91	53.07	1.5' ALCAP
968	1877507.78	2632993.50	39.08	1.5' ALCAP
969	1877577.63	2633098.09	40.35	1.5' ALCAP
973	1876924.96	2632897.55	44.74	1.5' ALCAP
980	1879986.77	2634250.02	98.01	2.0' BC
981	1880048.68	2634260.72	97.04	3.5' BC
982	1880171.35	2634523.52	95.23	1.5' ALCAP
983	1880322.51	2634578.78	96.07	1.5' ALCAP
988	1879237.78	2633252.26	172.49	1.5' ALCAP

- LEGEND
- | | | | |
|----------|-----------------------------|-------|---------------------|
| ⊕ | SURVEY MONUMENT | ⊙ | STAND PIPE |
| — 12' — | MAJOR CONTOUR | — W — | WATER LINE |
| — 10' — | MINOR CONTOUR | — V — | VALVE |
| — | EDGE OF VEGETATION | — C — | CULVERT |
| ⊙ | POWER POLE | — E — | EDGE OF ROAD |
| ⊕ | TRANSFORMER W/PAD | — D — | DRAINAGE |
| ⊕ | TRANSFORMER | ▨ | BUILDING |
| — OH/E — | OVERHEAD ELECTRIC | --- | CONSTRUCTION LIMITS |
| ⊕ | LIGHT POLE | --- | STAGING/WASTE AREA |
| ⊕ | POWER POLE W/ANCHOR | | |
| — | EDGE OF WATER DURING SURVEY | | |
| ⊕ | AUGER POINT | | |

HORIZONTAL CONTROL — ASPC ZONE 1 NAD83
COORDINATES ARE ALASKA STATE PLANE ZONE 1 NAD83 IN U.S. FEET. THE BASIS OF COORDINATES IS USCGS STATION "KAKE 1927" HAVING A VALUE OF N 1877351.997 AND E 2529192.649 FEET AS MEASURED ON A PRIOR COE PROJECT. COORDINATES FOR OTHER CONTROL POINTS ON THIS PROJECT WERE DERIVED BY DIFFERENTIAL STATIC GPS OBSERVATIONS, AND ANGLE AND DISTANCE MEASUREMENTS WITH A TOTAL STATION INSTRUMENT AT THE PROJECT DURING THE PERIOD OF JUNE 5 THROUGH JUNE 19, 2001. GROUND DISTANCES WERE REDUCED TO GRID DISTANCES USING A COMBINED SCALE FACTOR OF 0.99989608.

VERTICAL CONTROL — USC&GS MLLW
ELEVATIONS RELATE TO USC&GS MEAN LOWER LOW WATER IN U.S. FEET. THE BASIS OF ELEVATIONS IS TIDAL BENCH MARK 4 (1962) HAVING AN ELEVATION OF 14.51 FEET ABOVE MEAN LOWER LOW WATER. ELEVATIONS FOR OTHER CONTROL POINTS WERE DERIVED BY DIFFERENTIAL LEVELING USING A LEICA NA-2002 DIGITAL LEVEL AND BAR CODED STAFFS.

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. _____

CITY _____ STATE _____

APPROVED _____

DATE _____

DESIGNED BY _____

DRAWN BY _____

CHECKED BY _____

IN CHARGE _____

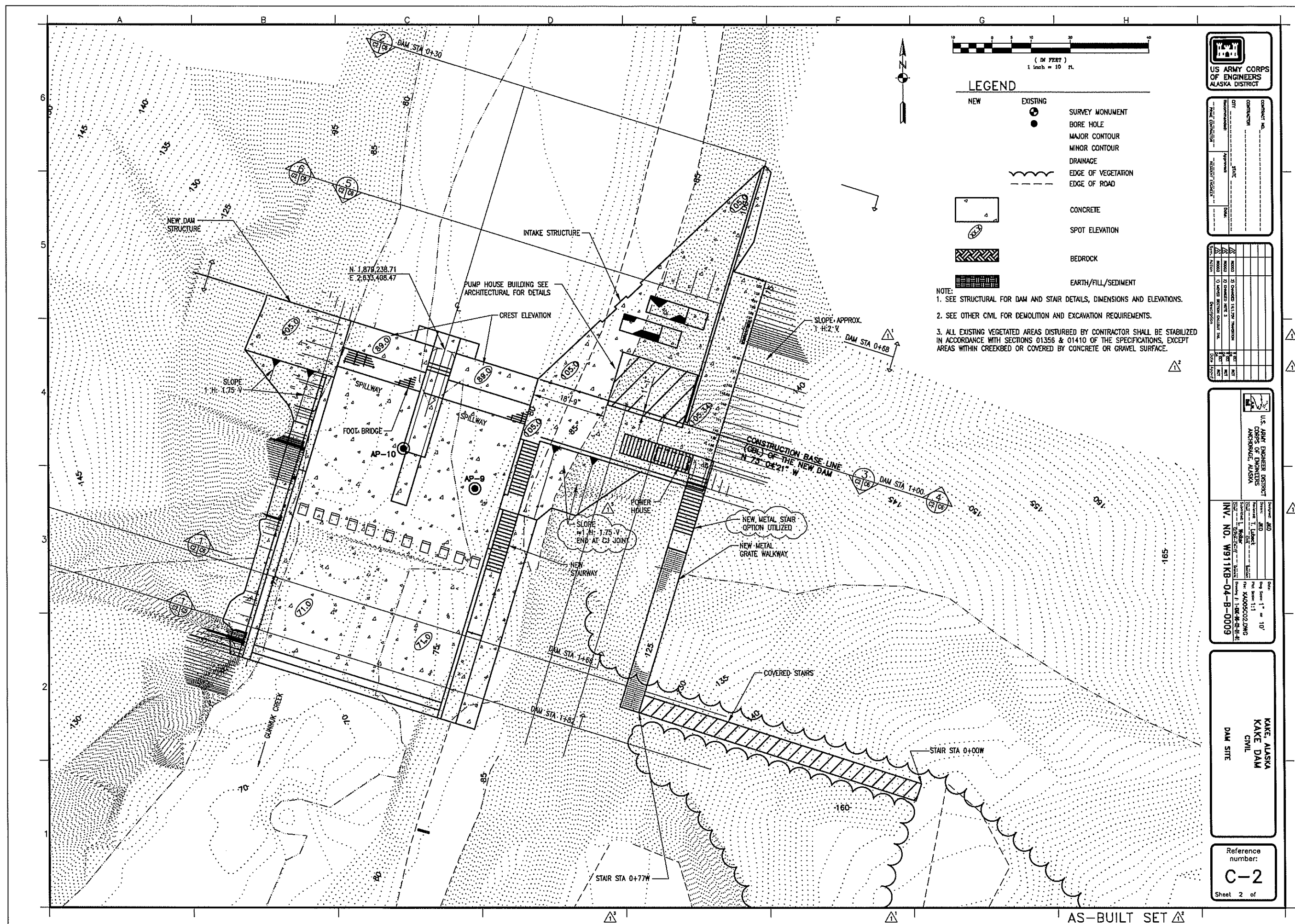
US ARMY ENGINEER DISTRICT
ANCHORAGE, ALASKA

INV. NO. W911KB-04-B-0009

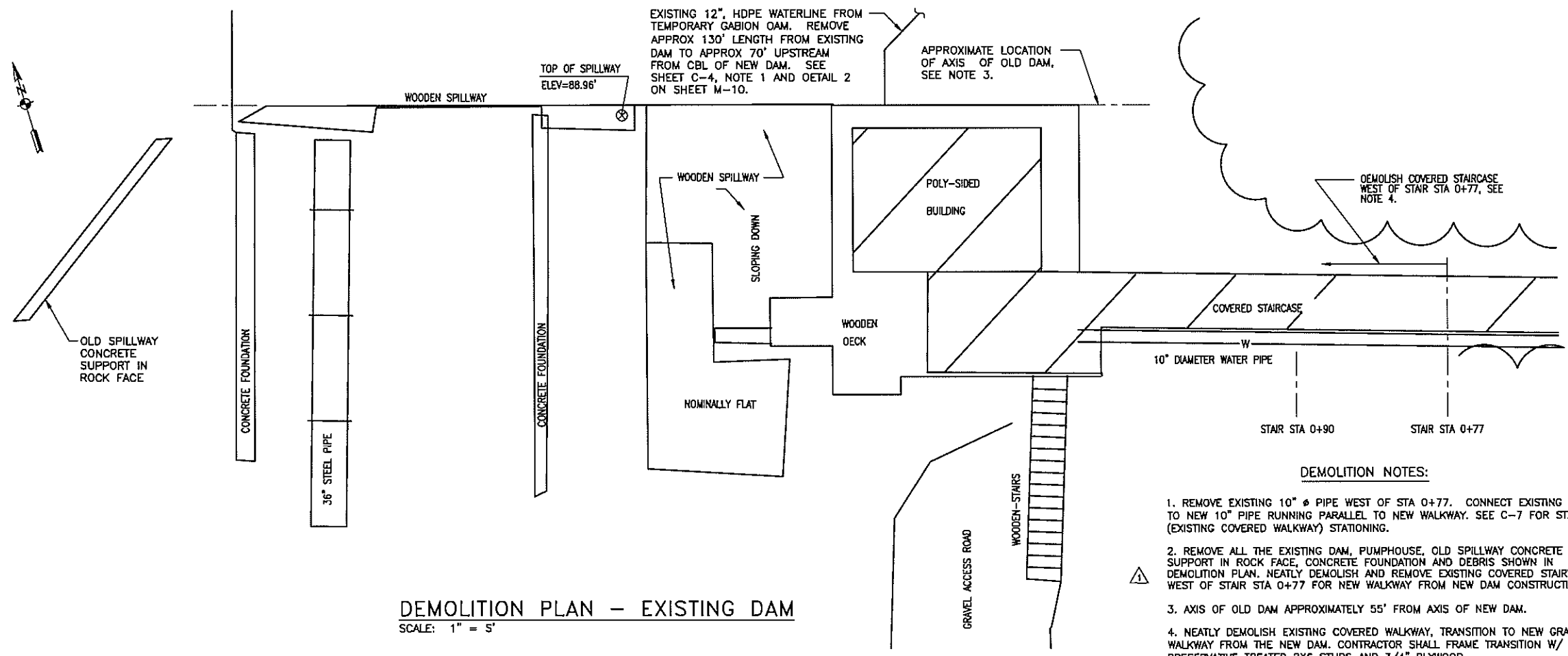
KAKE, ALASKA
KAKE DAM
CIVIL
SITE PLAN

Reference number:
C-1

Sheet 1 of 56



A B C D E F G H

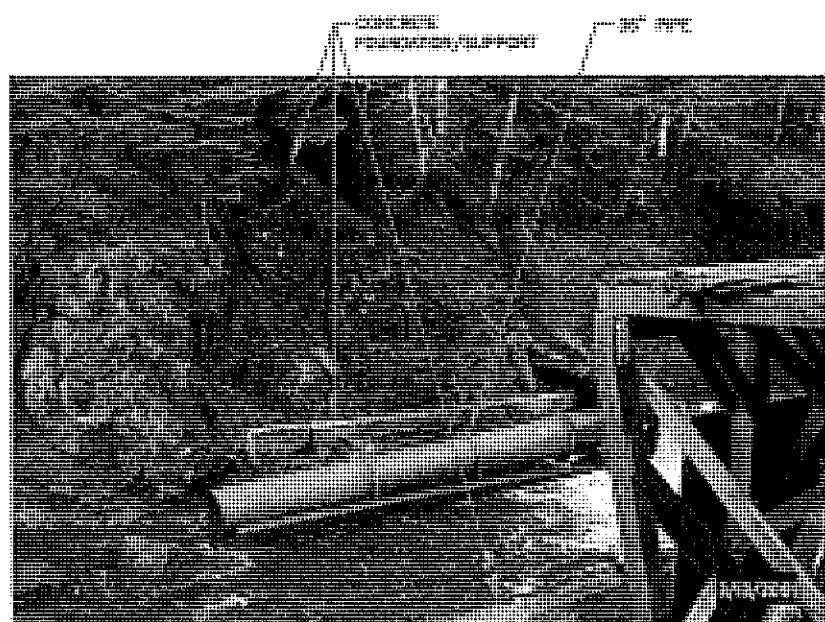


DEMOLITION PLAN - EXISTING DAM
SCALE: 1" = 5'

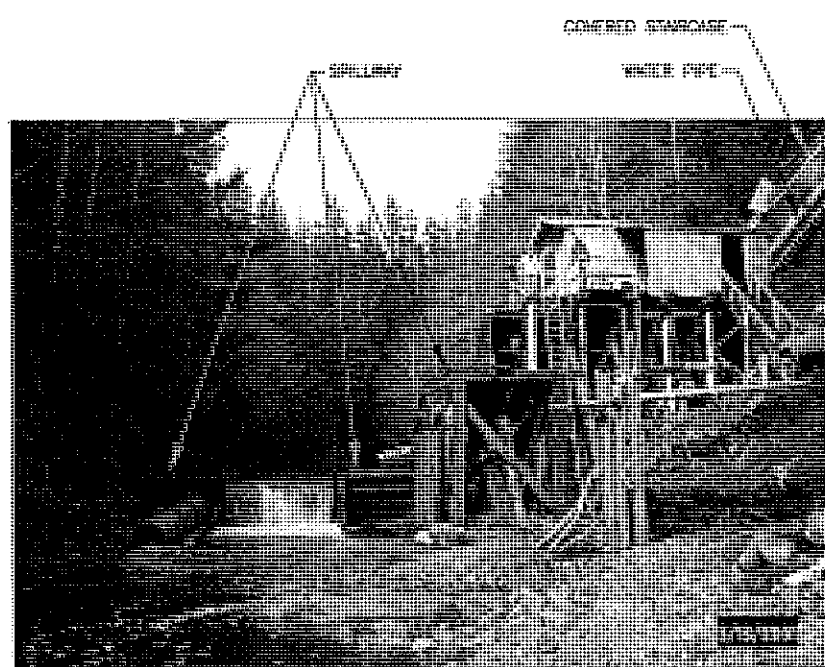
- DEMOLITION NOTES:
1. REMOVE EXISTING 10" Ø PIPE WEST OF STA 0+77. CONNECT EXISTING PIPE TO NEW 10" PIPE RUNNING PARALLEL TO NEW WALKWAY. SEE C-7 FOR STAIR (EXISTING COVERED WALKWAY) STATIONING.
 2. REMOVE ALL THE EXISTING DAM, PUMPHOUSE, OLD SPILLWAY CONCRETE SUPPORT IN ROCK FACE, CONCRETE FOUNDATION AND DEBRIS SHOWN IN DEMOLITION PLAN. NEATLY DEMOLISH AND REMOVE EXISTING COVERED STAIRWAY WEST OF STAIR STA 0+77 FOR NEW WALKWAY FROM NEW DAM CONSTRUCTION.
 3. AXIS OF OLD DAM APPROXIMATELY 55' FROM AXIS OF NEW DAM.
 4. NEATLY DEMOLISH EXISTING COVERED WALKWAY, TRANSITION TO NEW GRATED WALKWAY FROM THE NEW DAM. CONTRACTOR SHALL FRAME TRANSITION W/ PRESERVATIVE TREATED 2X6 STUDS AND 3/4" PLYWOOD.



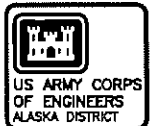
EXISTING DAM FROM DOWNSTREAM
NOT TO SCALE



EXISTING DAM - WEST SIDE
NOT TO SCALE

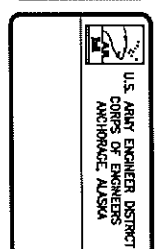


EXISTING DAM - EAST SIDE
NOT TO SCALE



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	

NO.	DESCRIPTION	DATE
1	1) ADDS PRELIMINARY TO NOTE 2	



INV. NO. W911KB-04-B-0009	DATE: 1-1-05
	BY: KA00SC03

DEMOLITION PLAN
KAKE, ALASKA
KAKE DAM
CML

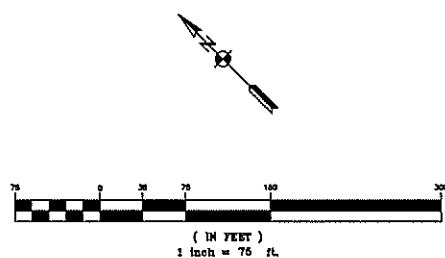
Reference number:
C-3
Sheet 3 of

NOTES:

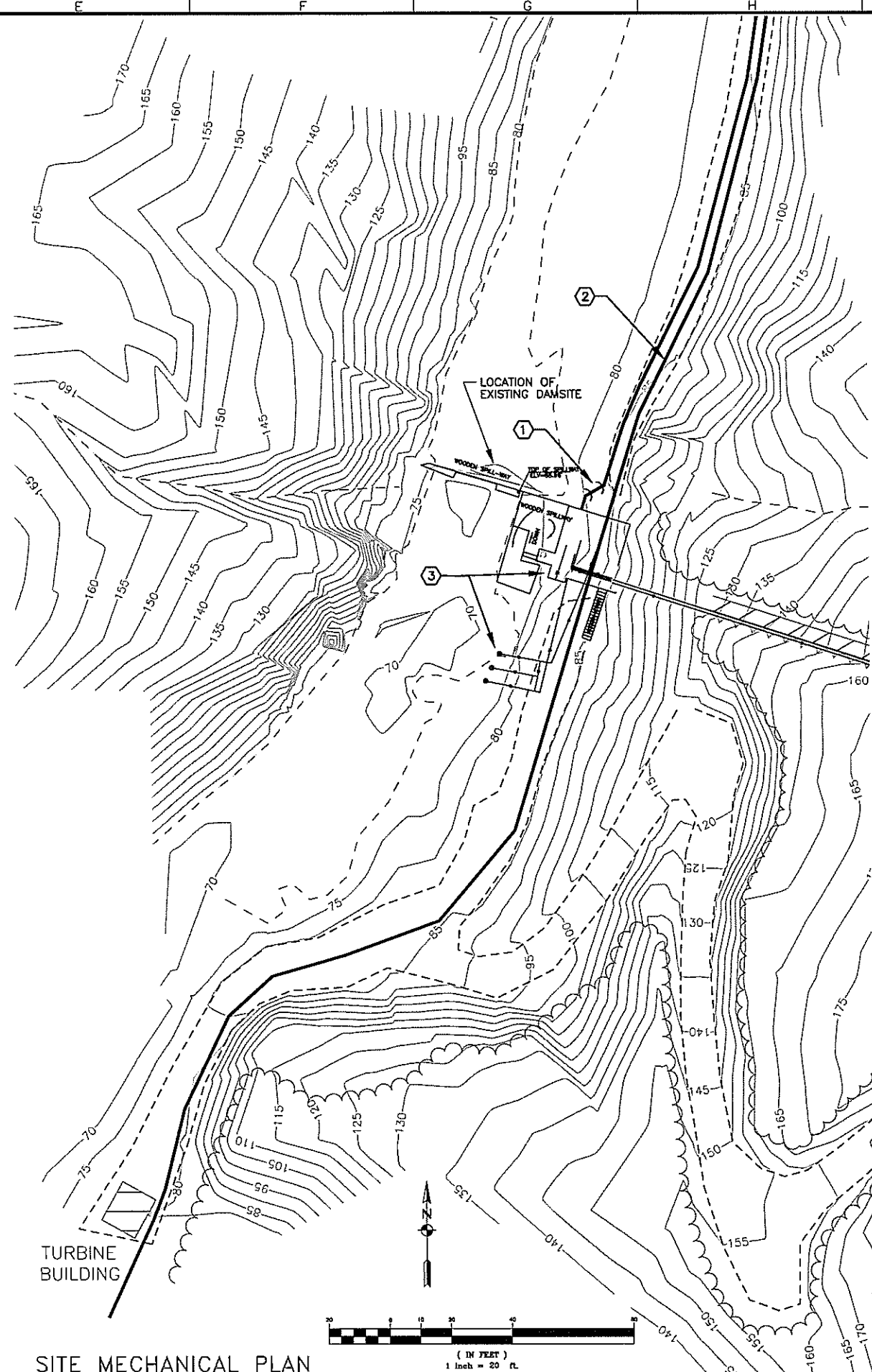
- ① CONTRACTOR SHALL EXPOSE AND REMOVE THE 12" HDPE WATER LINE (WHICH EXTENDS DOWNSTREAM FROM THE TEMPORARY GABION DAM TO THE EXISTING DAMSITE AND IS BURIED IN THE FILL THAT FORMS THE GRAVEL ROAD ALONG THE STREAM BED) FROM THE EXISTING DAMSITE, UPSTREAM A MIN 70' FROM THE CBL FOR THE NEW DAM (SEE DETAIL 2 ON SHEET M-10).
- ② CONTRACTOR SHALL EXPOSE, RELOCATE, AND PROTECT THE 10" DIAMETER FISH HATCHERY SUPPLY LINE (WHICH EXTENDS DOWNSTREAM FROM THE TEMPORARY GABION DAM PAST THE EXISTING DAMSITE TO THE FISH HATCHERY AND IS BURIED IN THE FILL THAT FORMS THE GRAVEL ROAD ALONG THE STREAM BED) AS NECESSARY DURING CONSTRUCTION SO THAT WATER SUPPLY IS MAINTAINED AT ALL TIMES. ALIGNMENT SHOWN IS APPROXIMATE. SEE SPECIFICATION SECTION 01016 FOR HATCHERY WATER FLOW REQUIREMENTS.
- ③ ALL WATER GALLERIES, PIPING, PUMPS, CONTROLS, AND VALVES ARE TO BE REMOVED FROM THE EXISTING DAM SITE. REFERENCE SHEETS M-8, M-9, AND M-10 FOR DETAILS.
- ④ OPTION 1: (SHOWN IN HATCHED REGION) IF AWARDED, THE CONTRACTOR SHALL REMOVE ALL PIPING, VALVES, AND FITTINGS BETWEEN THE NEW DAM SITE AND THE TEMPORARY GABION DAM APPROXIMATELY 1,300 FEET UPSTREAM, IN CONJUNCTION WITH REMOVAL OF ROAD FILL AND SEDIMENT FROM GUNNUK CREEK. THE TEMPORARY GABION DAM AND RELATED MANHOLE STRUCTURE SHALL ALSO BE REMOVED. EXCAVATE ROAD FILL FROM EAST EDGE OF ROAD AND SEDIMENT MATERIAL WITHIN THE STREAMBED DOWN TO BEDROCK. MATERIAL MOSTLY COMPRISED OF GRAVEL WITH SOME SILT AND COBBLES. LEVEL OF CLEANING REQUIRED SHALL BE WHAT CAN REASONABLY BE EXPECTED FROM A SMALL HYDRAULIC EXCAVATOR. REMOVE STREAMBED SEDIMENT UPSTREAM FROM THE TEMPORARY GABION DAM FOR APPROX 200 FEET, REMOVE DOWN TO BEDROCK AT GABION DAM WITH UNIFORM SLOPE IN SEDIMENT MATERIAL UP TO EXISTING GRADE AT END OF 200 FOOT EXTENT.

EXISTING TEMPORARY GABION DAM

MATCH LINE SEE C-1



OPTION 1 PLAN



SITE MECHANICAL PLAN

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. _____
CONTRACTOR _____
DESIGNER _____
DATE _____

NO. 1
NO. 2
NO. 3
NO. 4
NO. 5
NO. 6
NO. 7
NO. 8
NO. 9
NO. 10
NO. 11
NO. 12
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NO. 98
NO. 99
NO. 100

US ARMY PROJECT DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

PROJECT NO. W911KB-04-B-0009
DATE: _____
BY: _____
CHECKED: _____
APPROVED: _____

KAKE, ALASKA
KAKE DAM
CIVIL/MECHANICAL
DEMOLITION & MECHANICAL
PLAN

Reference number:
C-4
Sheet 4 of _____

AS-BUILT SET



CONTRACT NO.	
CONTRACTOR	
DESIGNER	
DATE	
BY	
CHECKED	
APPROVED	
DATE	
BY	
CHECKED	
APPROVED	
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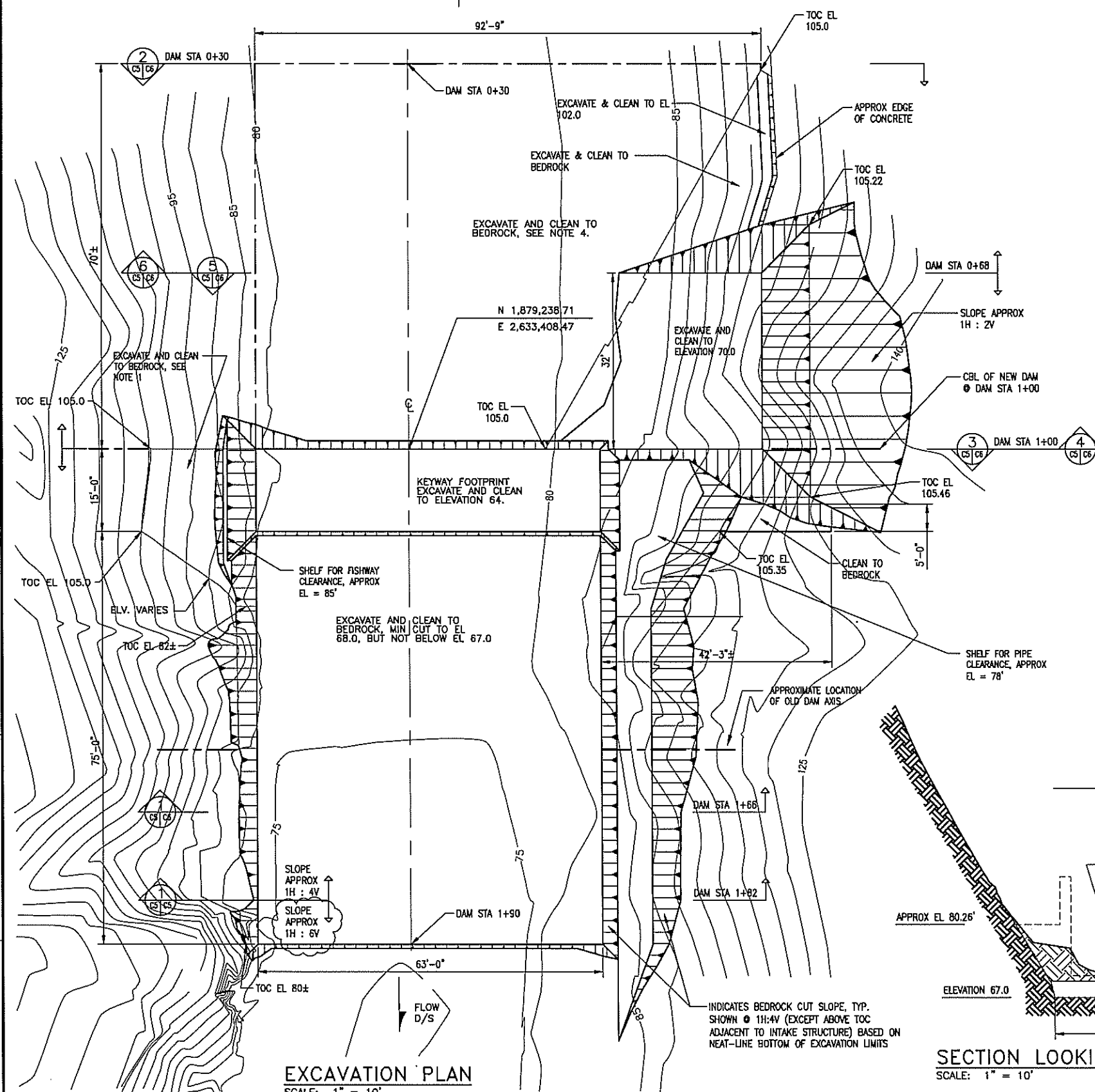
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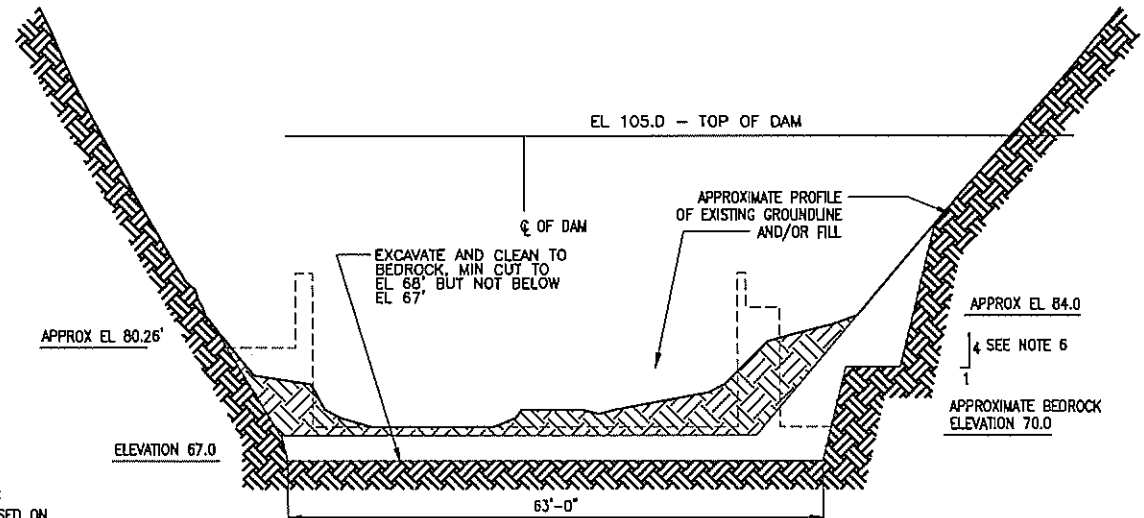
DEMOLITION AND GENERAL NOTES:

1. THE CONTRACTOR SHALL CLEAN ALL ROCK IN CONTACT W/ CONCRETE. THE CONTRACTOR SHALL OBTAIN CONTRACTING OFFICER'S APPROVAL BEFORE BEGINNING TO PLACE CONCRETE. SEE SPECIFICATION SECTION 02217.
2. CONTRACTOR SHALL PROVIDE A DIVERSION SYSTEM FOR GUNNUK CREEK FLOW DURING CONSTRUCTION. APPROVAL OF THE DIVERSION PLAN BY THE CONTRACTOR SHALL BE OBTAINED A MINIMUM OF 15 WORKING DAYS PRIOR TO BEGINNING OF ANY DIVERSION WORK. SEE SPECIFICATION 01016 FOR ESTIMATED FLOOD FLOW FREQUENCY AND ANNUAL FLOW DURATION CURVES.
3. CONCRETE FILL (DENTAL CONCRETE) SHALL BE PLACED ONLY AFTER THE EXCAVATION HAS BEEN CLEANED. POCKETS OR DEPRESSIONS THAT ARE GREATER THAN 3' DEEP, MEASURED FROM THE LOWEST POINT TO THE TOP OF THE DEPRESSION SHALL BE FILLED WITH CONCRETE AND BE CURED A MINIMUM OF 4 DAYS PRIOR TO PLACING CONCRETE FOR THE DAM.
4. CONTRACTOR SHALL CLEAN AND REMOVE TO BEDROCK, ALL LOOSE DEBRIS AND FILL MATERIAL IN STREAM BED UPSTREAM OF THE CBL TO DAM STA 0+30. AREA DOES NOT NEED TO BE CLEANED WITH HIGH PRESSURE WATER. FILL MATERIAL SHALL BE DEFINED AS GRAVEL, SILT OR LOOSE ROCKS. LEVEL OF CLEANING REQUIRED SHALL BE WHAT CAN REASONABLY BE EXPECTED FROM A SMALL HYDRAULIC EXCAVATOR IN COMBINATION WITH TYPICAL HOSE STREAM WASHING.
5. ALL DIMENSIONS ON THIS SHEET ARE APPROXIMATE. EXCAVATION WILL BE A MINIMUM TO BEDROCK EXCEPT AS SHOWN FOR STILLING BASIN. ADDITIONAL EXCAVATION MAY BE NECESSARY TO ACHIEVE THE DIMENSIONS SHOWN ON THE DRAWINGS.
6. ALL CUTS IN ROCK SHALL BE A MAXIMUM SLOPE OF 4 FEET VERTICAL TO 1 FOOT HORIZONTAL, OR FLATTER WHERE INDICATED. SEE SPECIFICATION SECTION 02222 FOR MAXIMUM PAYLINE.
7. 5' CONTOUR LINES SHOWN ARE EXISTING TOPOGRAPHY.

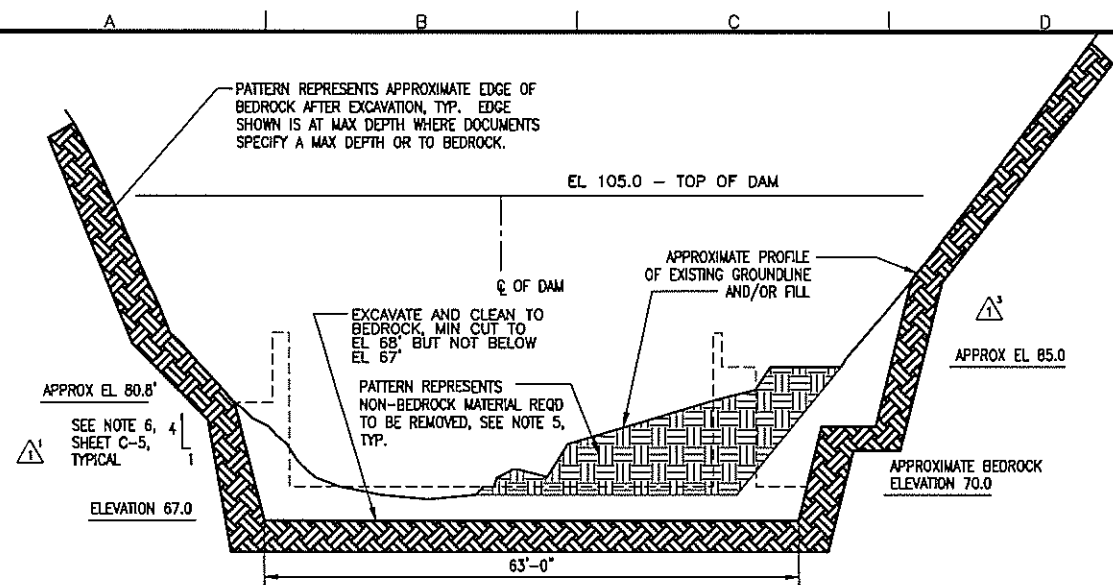
SLOPE ON WEST SIDE 1+82 - 1+90 6 FEET VERTICAL TO 1 FOOT HORIZONTAL



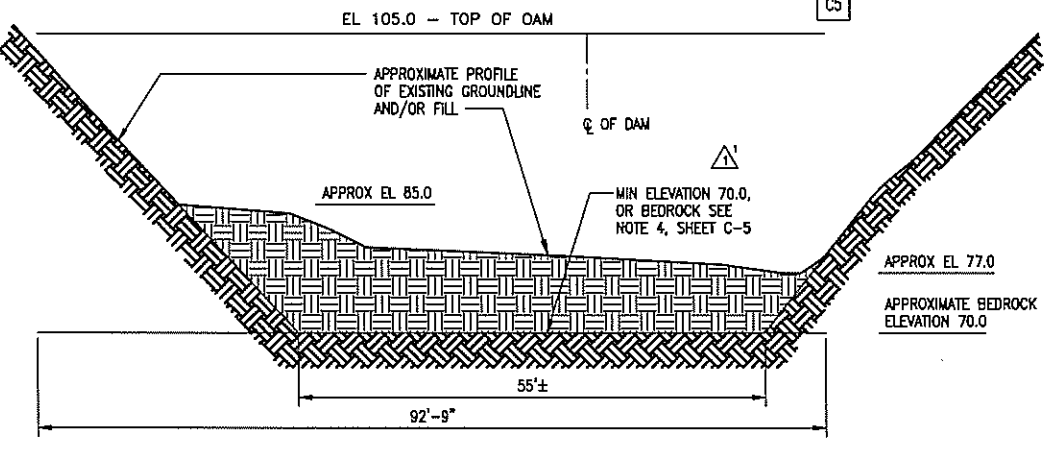
EXCAVATION PLAN
SCALE: 1" = 10'



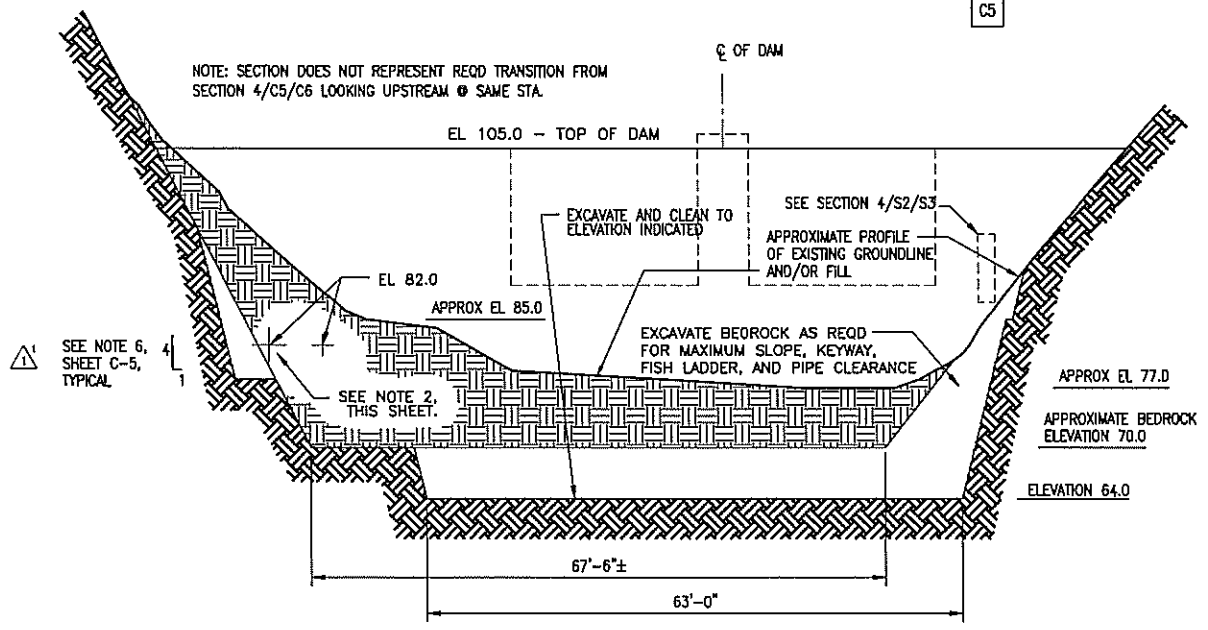
SECTION LOOKING UPSTREAM @ DAM STA 1+82
SCALE: 1" = 10'



SECTION LOOKING UPSTREAM @ DAM STA 1+66
SCALE: 1" = 10'



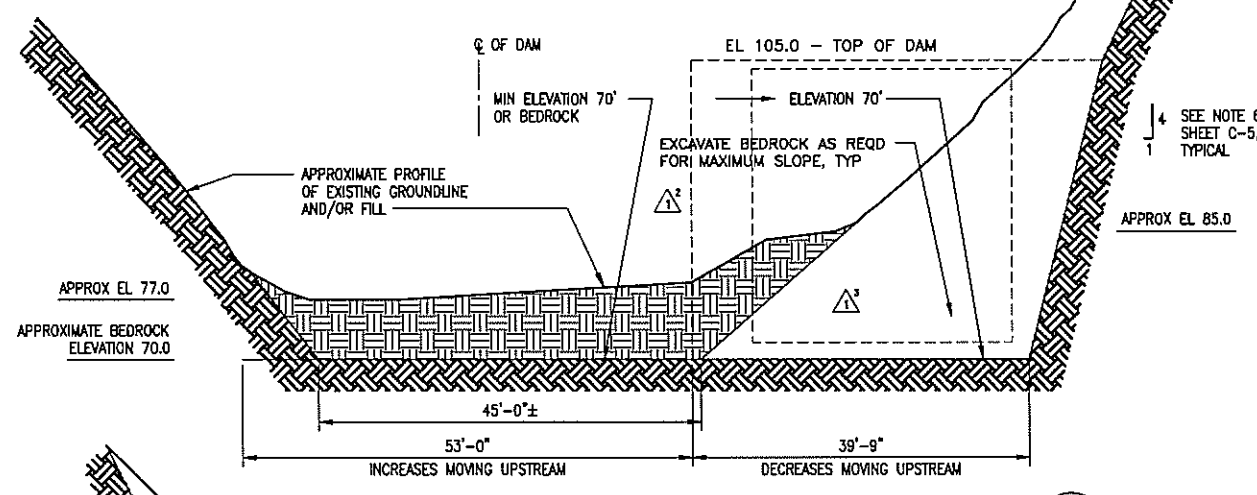
SECTION LOOKING DOWNSTREAM @ DAM STA 0+30
SCALE: 1" = 10'



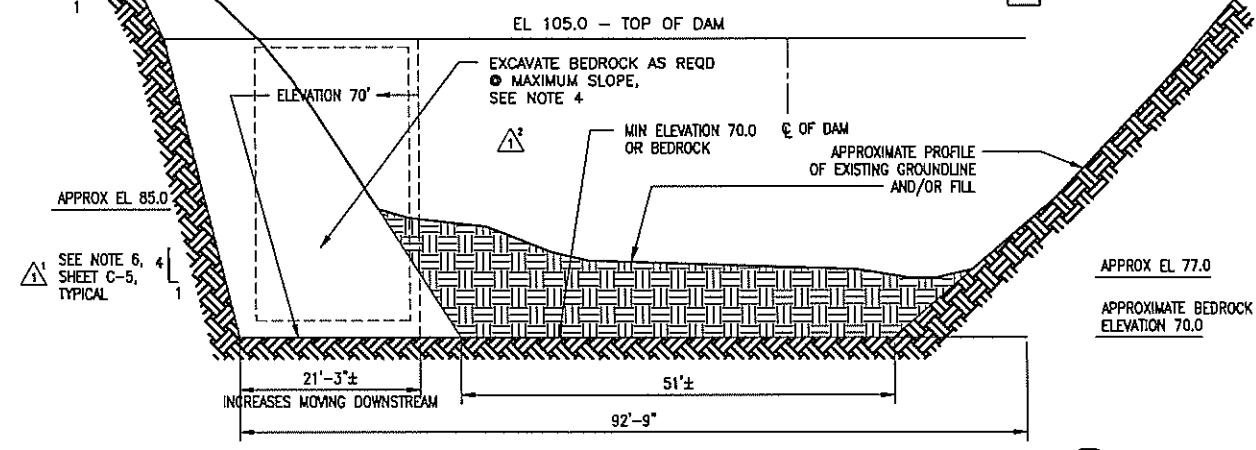
SECTION LOOKING DOWNSTREAM @ DAM STA 1+00
SCALE: 1" = 10'

DEMOLITION AND GENERAL NOTES:

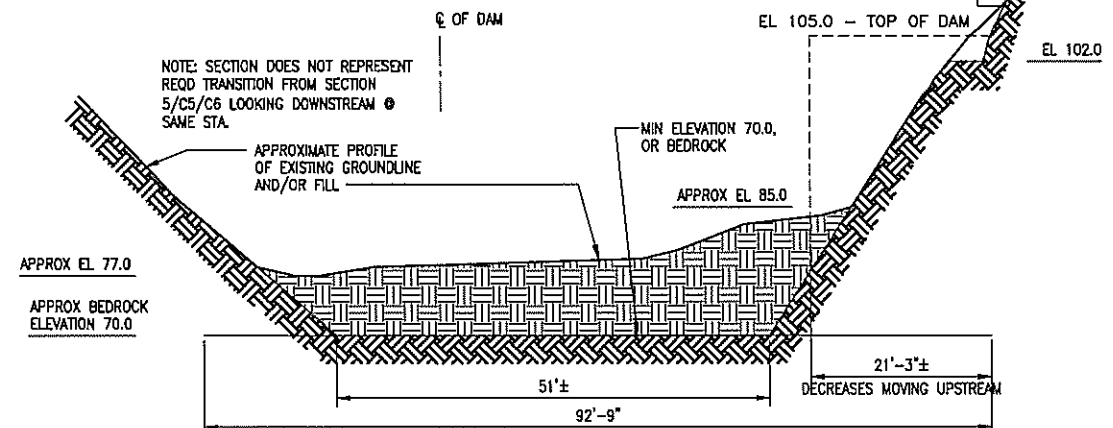
1. SEE SHEET C-5 FOR ADDITIONAL NOTES.
2. ROCK EXCAVATION SHALL MAINTAIN A MINIMUM OF 4' CLEARANCE FROM CENTERLINE OF PIPE THROUGH DAM.
3. CUT LINES ARE SHOWN STRAIGHT IN ROCK HOWEVER IT IS UNDERSTOOD THAT THIS IS ONLY A SCHEMATIC REPRESENTATION OF THE ACTUAL AS-BUILT CONDITION.
4. ROCK EXCAVATION SLOPES SHOWN AT MAX 1H:4V SLOPE, EXCEPT ABOVE EL 105' WHERE ROCK SLOPE SHALL BE AS SHOWN. WHERE EXCAVATED SLOPES DAYLIGHT IN SOIL RATHER THAN ROCK, SOIL SHALL BE CUT BACK TO 1.5H:1V.
5. EXTENT OF BEDROCK HAS BEEN APPROXIMATED FROM BORINGS WITH LIMIT PLACED LOW ENOUGH TO ENSURE SOUND BEDROCK AT THIS LIMIT. MATERIAL ABOVE THIS ELEVATION MAY REQUIRE ROCK EXCAVATION TECHNIQUES FOR REMOVAL. SEE BORE LOGS.



SECTION LOOKING UPSTREAM @ DAM STA 1+00
SCALE: 1" = 10'



SECTION LOOKING DOWNSTREAM @ DAM STA 0+68
SCALE: 1" = 10'



SECTION LOOKING UPSTREAM @ DAM STA 0+68
SCALE: 1" = 10'



CONTRACT NO.	W911KB-04-B-0009
PROJECT NAME	KAKE DAM
CITY	ANCHORAGE, ALASKA
STATE	ALASKA
DESIGNED BY	CH2M HILL
CHECKED BY	CH2M HILL
APPROVED BY	CH2M HILL
DATE	10/1/04

PROJECT NO.	W911KB-04-B-0009
PROJECT NAME	KAKE DAM
CITY	ANCHORAGE, ALASKA
STATE	ALASKA
DESIGNED BY	CH2M HILL
CHECKED BY	CH2M HILL
APPROVED BY	CH2M HILL
DATE	10/1/04

EXCAVATION SECTIONS
KAKE, ALASKA
KAKE DAM
CIVIL

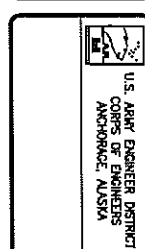
Reference number:
C-6
Sheet 6 of

AS-BUILT SET



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DESIGNER	
DATE	

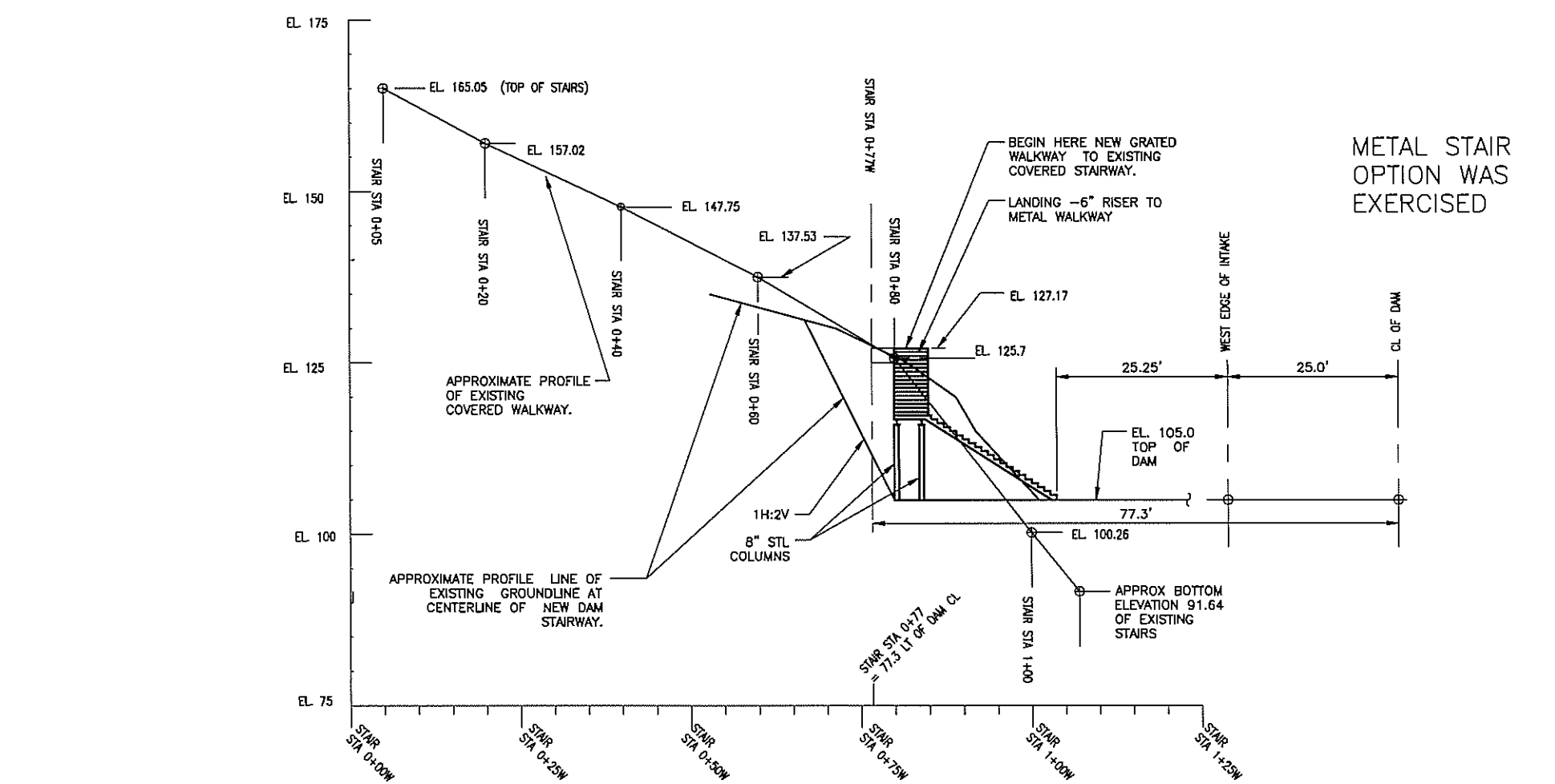
STATION	
DESCRIPTION	
DATE	



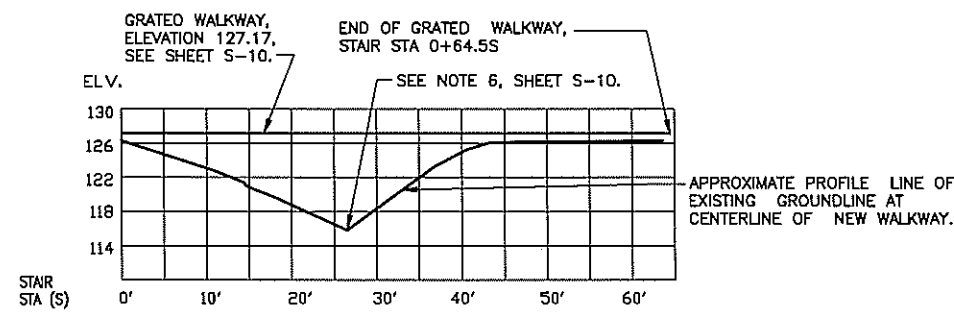
PROJECT NO.	W911KB-04-B-0009
PROJECT NAME	KAKE DAM
PROJECT LOCATION	ONIL
PROJECT TYPE	WALKWAY & STAIRWAY

KAKE, ALASKA
KAKE DAM
ONIL
PROFILE
WALKWAY & STAIRWAY

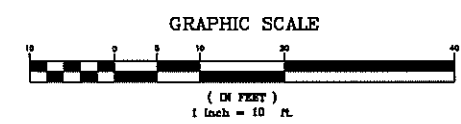
Reference number:
C-7
Sheet 7 of



SECTION A
SCALE: 1" = 10'



SECTION B
SCALE: 1" = 10'



- NOTES:
1. NEW STAIRWAY SHALL EXTEND FROM ELEVATION 105 (TOP OF DAM) TO ELEVATION 127.17.
 2. STAIRWAY SHALL HAVE 11.0" TREADS & 7.0" RISERS. GROUND PROFILE SHALL BE CLEANED TO BEDROCK, SLAB THICKNESS SHALL BE MIN OF 2' FROM STAIRWAY PROFILE LINE TO BEDROCK.
 3. FOR REINFORCEMENT OF THE STAIRWAY, SEE SHEET S-15 FOR DETAILS.

[illegible]

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART					
MAJOR DIVISIONS		SYMBOLS		DESCRIPTIONS	
COURSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	
		LITTLE OR NO FINES	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures	
		APPRECIABLE AMOUNT OF FINES	GC	Clayey gravels, gravel-sand-clay mixtures	
	SAND AND SANDY SOILS	CLEAN SANDS	SW	Well-graded sands, gravelly sands, little or no fines	
		LITTLE OR NO FINES	SP	Poorly graded sands, gravelly sands, little or no fines	
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES	SM	Silty sands, sand-silt mixtures	
		APPRECIABLE AMOUNT OF FINES	SC	Clayey sands, sand-clay mixtures	
	FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	Inorganic silts, very fine sands, rock flour, silty/clayey fine sands or clayey silts of slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly fine, sandy clay, silty clay, lean clay
MORE THAN 50% OF MATERIAL FINER THAN NO. 200 SIEVE SIZE			OL	Organic silts and organic silty clays of low plasticity	
			MH	Inorganic silts, micaceous or silty, silty clays	
SILTS AND CLAYS		LIQUID LIMIT GREATER THAN 50	CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of high plasticity, fat clays	
HIGHLY ORGANIC SOILS		PT	Peat humus, swamp soils with high organic content		

Soil Graphic and Layer Lines

— Distinct contact between soil/rock strata or abrupt change in lithology

— Approximate or inferred location of contact between soil/rock strata or gradational change in lithology

Sampling results
the number of sample 6 inch hammer falling

Other

Abt

Note: The reader must read the logs of boreholes in conjunction with the specific boring log made; they are not conditions of other

<p>ce is recorded for driven samples as sows required to advance driven (or distance noted) using a 300-lb inches</p> <p><u>Material Symbols</u></p> <p>asalt</p> <p>bbles and Boulders</p> <p>reccia</p> <p>ancrete</p> <p>edrock</p> <p>uff</p>	
<p><u>ations and Symbols</u></p> <p>Sampled Region</p> <p>Approximate depth of perched water or groundwater</p> <p>Nonplastic (Used to define fine material)</p> <p>refer to the discussion in the report text for a proper understanding of subsurface on the test borings apply only at the and at the time the test borings were wanted to be representative of subsurface tion or times.</p>	

[illegible]

ALASKA DISTRICT CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG

Project: Kake, Alaska Date: 4 Jul 2001

Drilling Agency: Alaska District Elevation Datum: MLLW

Location: Northings: 879,214 ft ± Easting: 2,633,398 ft ± Top of Hole Elevation: 79.1 ft

Hole Number: Field: Permanent: KD-2 AP-10 Operator: W. Tester Inspector: J. Saucedo

Type of Hole: other Core

Depth to Groundwater: NA Depth Drilled: 24.1 ft Total Depth: 24.1 ft

Hammer Weight: Split Spoon I.D.: Size and Type of Bit: Type of Equipment: Type of Samples:

Classification ASTM: D 2487 or D 2488

Grain Size (in) Max Size (in) Water

Description and Remarks

Visual observation while drilling - Brown, wet, subrounded to angular gravel and cobbles, few to coarse sand with wood pieces (tree stumps, roots, and branches) - Fill material intermixed with creek sediment deposition

Drilling becomes firm at 4.4 feet

Run 1: 4.4 to 4.8 feet; Run time = 30 minutes; Total run = 0.2 feet; Total recovery = 0.2 feet (100%); Longest single piece = 2.4 inches; Maximum bit pressure about 520 psi; Light brown to cream colored water from drill cuttings observed in creek

Run 2: 4.8 to 5.4 feet; Run time = 1hr and 45 minutes; Total run = 4.8 feet; Total recovery = 4.8 feet (100%); Longest single piece = 14 inches; Maximum bit pressure about 350 psi; Gray colored water from drill cuttings observed in creek

Gray rock with white calcite filled veins up to 1/16 inches thick; highly fractured; moderately hard - Could not advance any further due to misfire problems in the core bit

Back to green rock with white calcite filled veins up to 1/16 inches thick; highly fractured; moderately hard; cemented calcite zone at 8.4 feet

Rock unaltered - 75% cryptocrystalline quartz, 15% calcite and pyrite fissure fillings

Classification ASTM: D 2487 or D 2488

Grain Size (in) Max Size (in) Water

Description and Remarks

Run 3: 8.4 to 13.4 feet; Run time = 35 minutes; Total run = 5 feet; Total recovery = 3.2 feet (64%); Longest single piece = 6.6 inches; Maximum bit pressure about 500 psi; Gray colored water from drill cuttings observed in creek

Gray to black with white calcite filled veins up to 1/16 inches thick; silicified with horizontal movement at 12.4 feet; highly fractured; moderately hard; 2" shear zone at 13.1 feet; intense fractures from 12.9 to 13.4 feet

Rock unaltered - 75% white mica, 10% quartz, and 15% calcite with abundant calcite filling

Run 4: 13.4 to 18.4 feet; Run time = 50 minutes; Total run = 5 feet; Total recovery = 5 feet (100%); Longest single piece = 13 inches; Maximum bit pressure about 510 psi; Gray colored water from drill cuttings observed in creek

Gray/black to green with intense fractures from near vertical to 40 degrees; cemented calcite zones; highly fractured; moderately hard

Single Water Packer Test (0.8 to 17.9 feet) 20 psi = 22 gal/10 min. 30 psi = 30 gal/10 min.

Run 5: 18.4 to 22.8 feet; Run time = 45 minutes

Classification ASTM: D 2487 or D 2488

Grain Size (in) Max Size (in) Water

Description and Remarks

Total run = 4.4 feet; Total recovery = 4.4 feet (100%); Longest single piece = 9.5 inches; Maximum bit pressure about 500 psi; Gray colored water from drill cuttings observed in creek

Gray rock with white calcite filled veins up to 1/16 inches thick; intense to highly fractured (near vertical to about 50 degrees); moderately hard

Run 6: 22.8 to 24.1 feet; Run time = 30 minutes; Total run = 1.3 feet; Total recovery = 1.3 feet (100%); Longest single piece = 3 inches; Maximum bit pressure about 500 psi; Gray colored water from drill cuttings observed in creek

Gray rock with white calcite filled veins; intense to highly fractured (near vertical to about 55 degrees); moderately hard

Bottom of Hole 24.1 ft ±

Groundwater Measurement Not Applicable

Note: 1) Used 4-inch diameter steel pipe to case hole. Hole was cased to approximately 4.4 feet below ground surface. 2) Drilling was performed on steel deck supported by fill material on creek bed. 3) Drilling was terminated due to HQ pipe bending. Core barrel could not advance any further. 4) Absorbent pad beam utilized around drilling platform. 5) Silt curtain installed downstream of drilling location. 6) Boring location and elevation shown based on field measurements taken by the geotechnical engineer using surveyed control points.

NPA Form 19-E May 94 Prev. Ed. Obsolete

Project: Kake, Alaska

Hole Number: AP-10

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

MAJOR DIVISIONS

COURSE GRAINED SOILS

GRAVEL AND GRAVELLY SOILS

GRAVELS WITH FINES

SAND AND SANDY SOILS

SANDS WITH FINES

FINE GRAINED SOILS

SILTS AND CLAYS

SILTS AND CLAYS

LIQUID LIMIT LESS THAN 50

LIQUID LIMIT GREATER THAN 50

HIGHLY ORGANIC SOILS

Soil Graphic and Layer Lines

Distinct contact between soil/rock strata or abrupt change in lithology

Approximate or inferred location of contact between soil/rock strata or gradational change in lithology

Sampling resistance is recorded for driven samples as the number of blows required to advance driven sample 5 inches (or distance noted) using a 300-lb hammer falling 30 inches

Other Material Symbols

Basalt

Cobbles and Boulders

Breccia

Concrete

Bedrock

Tuff

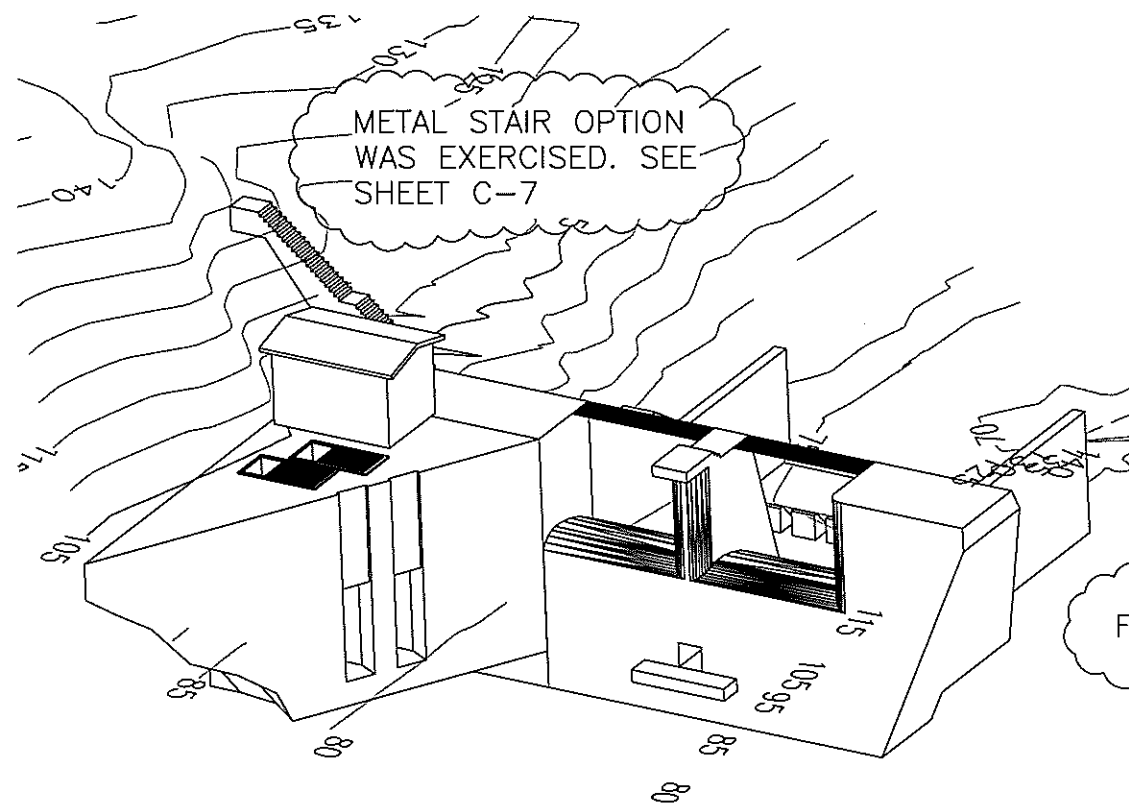
Abbreviations and Symbols

Sampled Region

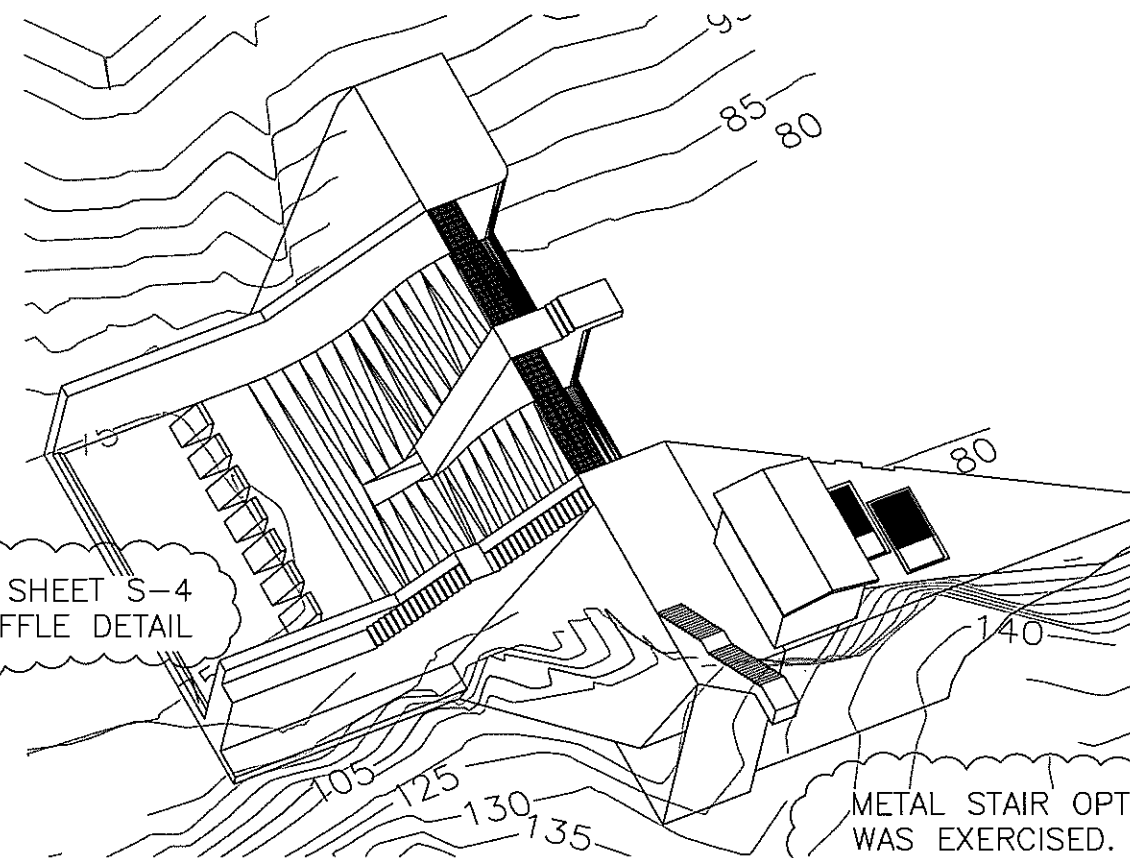
Approximate depth of perched water or groundwater

NP Nonplastic (Used to define fine material)

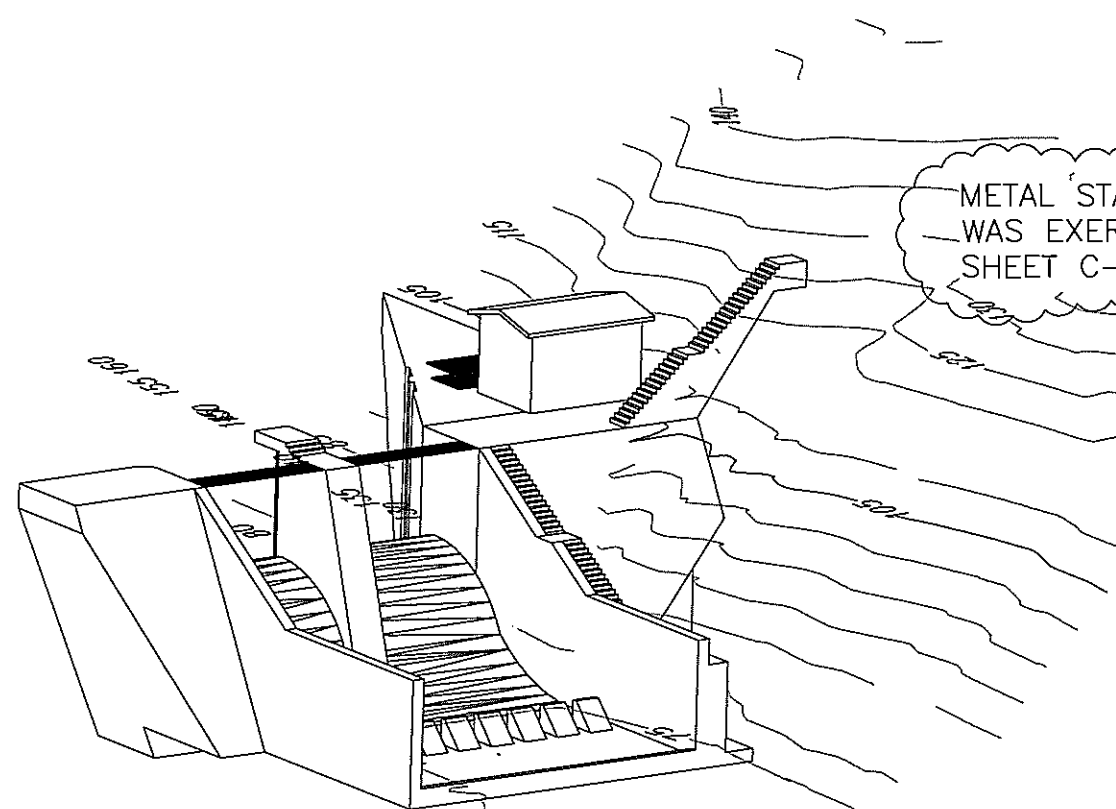
Note: The reader must refer to the discussion in the report text and the logs of borings for a proper understanding of subsurface conditions. Descriptions on the test borings apply only at the specific boring locations and at the time the test borings were made; they are not warranted to be representative of subsurface conditions at other location or times.



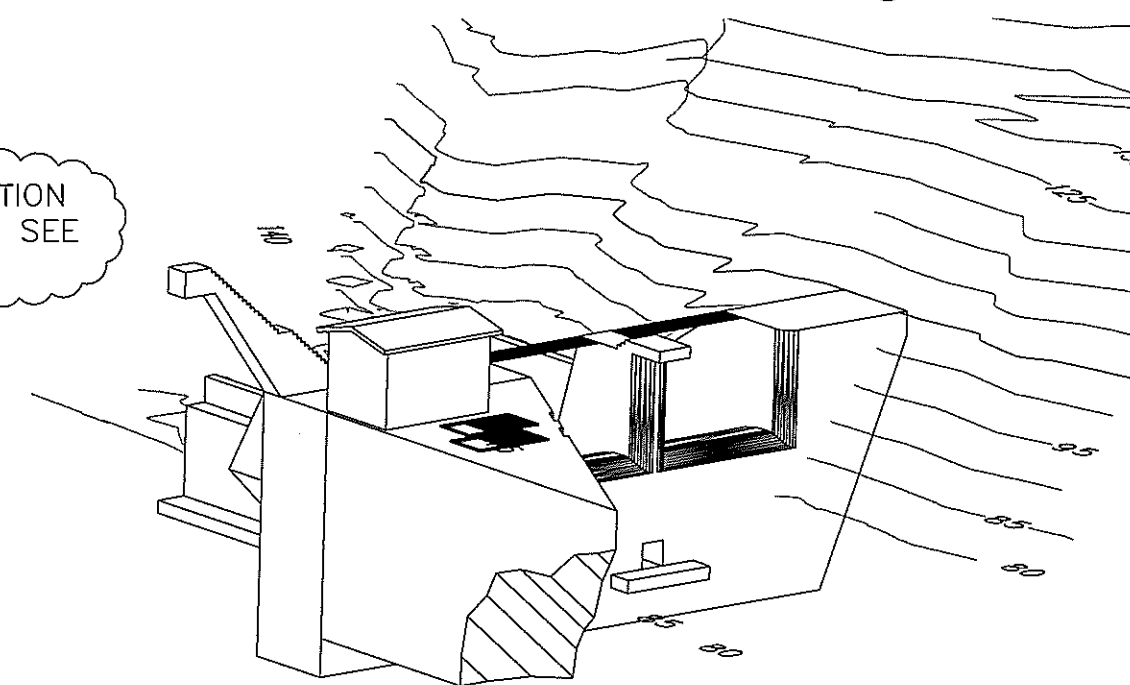
S.E. ISOMETRIC



N.W. ISOMETRIC



N.E. ISOMETRIC



S.W. ISOMETRIC

NOTE: FOR INFORMATION ONLY,
NOT TO BE USED FOR CONSTRUCTION.



CONTRACTOR _____	
CITY _____	STATE _____
Recommendation _____	Approval _____
PRIME CONTRACTOR _____	RESIDENT COUNCIL _____
Date _____	

[illegible]

CORPS OF ENGINEERS
ANCHORAGE, ALASKA

Unit:	B1	Req. desc: N1S
Purchased:	C. Vongvanit	Qty. scale: FIT
Sold:	MISCELLANEOUS	Part: KA005500.DW
Shipment:	L. Walker	Drinking # 1-KK-82-61
Date:	1982-12-17	

INV. NO. W911KB-04-B-0009

KAKE DAM STRUCTURAL ISOMETRIC VIEWS

Reference
number:
S-0
Sheet 10 of

ABBREVIATIONS

AB	ANCHOR BOLT	FD	FLOOR DRAIN	P/C	PRECAST
A/C	ASPHALTIC CONCRETE	FON	FOUNDATION	PERP OR	PERPENDICULAR
ACI	AMERICAN CONCRETE INSTITUTE	RIN	FINISH, FINISHED	R	PLATE (STEEL)
ADDL	ADDITIONAL	FF	FAR FACE	PL	PLACES
AGGR	AGGREGATE	FLG	FLANGE	PLCS	PLATE (WOOD)
ASC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	FLR	FLOOR	PP	PLYWOOD
ATC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION	FLS	FLASHING	PP	PARTIAL PENETRATION
ALT	ALTERNATE	FP	FACE OF STUDS	P/S	PRESTRESSED
ALUM	ALUMINUM	FS	FIREPROOF	PSF	POUNDS PER SQUARE FOOT
ARCH	ARCHITECT, ARCHITECTURAL	FT	FULL PENETRATION	PSI	POUNDS PER SQUARE INCH
APPROX	APPROXIMATELY	FTG	FOOT, FEET	P/T	POST TENSION
ASPH	ASPHALT	FUT	FOOTING	PVC	POLYVINYL CHLORIDE
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS	FV	FUTURE	PVMT	PAVEMENT
AWS	AMERICAN WELDING SOCIETY	GA	GAUGE, GAGE	R	RADIUS
&	AND	CAUV	GALVANIZED	RD	ROOF DRAIN, ROUND
B	BOTTOM (BEAM AND JOIST SCHEDULES ONLY)	GEN	GENERAL	#	REFERENCE
BD	BOARD	GIRD	GIRDER	REF	REINFORCING
BITUM	BITUMINOUS	GL	GLUE LAMINATED	REINF	REINFORCEMENT
BLDG	BUILDING	CNO	GROUND	REQD	REQUIRED
BLK	BLOCK	GR	GRADE	RO	ROUGH OPENING
BLKG	BLOCKING	GWB	GYPSON WALL BOARD	S	AMERICAN STANDARD
BM	BEAM	GYP	GYPSON	SCHED	STEEL SHAPE, SOUTH
BOD	BOTTOM OF DECK	HD	HOLDOWN	SECT	SECTION
BOT	BOTTOM	HEF	HORIZONTAL EACH FACE	SH PL	SHEAR PLATE
BRG	BEARING	HORIZ	HORIZONTAL	SHT	SHEET
BSMT	BASEMENT	HP	HIGH POINT, HP STEEL	SHTG	SHEETING
BTWN	BETWEEN	HSB	HIGH STRENGTH BOLT	SLR	SIMILAR
C	AMERICAN CHANNELS	HT	HEIGHT	SLBB	SHORT LEGS BACK
CB	CATCH BASIN	ID	INSIDE DIAMETER	SP	SPRAL
CG	CENTER OF GRAVITY	IE	INVERT ELEVATION	SPA	SPACE, SPACING,
CJ	CONSTRUCTION JOINT	IN OR "	INSIDE FACE	SPACES	SPECIFICATION
CIP	CAST-IN-PLACE	INCL	INCLUDE	SS	SQUARE
CJP	COMPLETE JOINT	INSUL	INSULATION, INSULATED	SSL	STAINLESS STEEL
CLKG	CAULKING	INT	INTERIOR	ST	SHORT SLOTTED HOLE
CLR	CLEAR	JT	JOINT	STA	STATION
CMP	CORRUGATED METAL PIPE	JST	JOIST	STD	STANDARD
CMU	CONCRETE MASONRY UNIT	K	KIP, KIPS	STIFF	STIFFENER
CO	CLEANOUT, CONCRETE OPENING	KSI	KIPS PER SQUARE INCH	STIRR	STIRRUP
COL	COLUMN	LB OR #	POUND	STL	STEEL
CONC	CONCRETE	LLBB	LONG LEG BACK TO BACK	STRUCT	STRUCTURAL
CONN	CONNECTION	LLH	LONG LEGS HORIZONTAL	SUP	STRUCTURAL USE PANEL
CONSTR	CONSTRUCTION	LLV	LONG LEGS VERTICAL	SUPT	SUPPORT
CONT	CONTINUOUS	LONGT	LONGITUDINAL	SUSP	SUSPENDED
CONTR	CONTRACTOR	LP	LOW POINT	SYMM	SYMMETRICAL
CONTR	CONTRACTOR	LSL	LONG SLOTTED HOLES	T	TOP
CTJ	CONTROL JOINT, CONTR JOINT	LT	LIGHT	TC	TOP OF CURB
CTR	CENTER	LT WT	LIGHT WEIGHT	T&G	TONGUE AND GROOVE
CTSK	COUNTERSUNK	L	ANGLE	TEMP	TEMPERATURE, TEMPORARY
CUB	CUBIC	M	MISCELLANEOUS SHAPE	THK	THICK
DBL	DOUBLE	MAS	MASONRY	THRU	THROUGH
DEPT	DEPARTMENT	MATL	MATERIAL	TOS	TOP OF CONCRETE
DET	DETAIL	MAX	MECHANICAL	TOW	TOP OF STEEL
DIA	DIAMETER	MECH	MECHANICAL	TP	TOP OF WALL
DIA	DIAGONAL	MEMB	MEMBRANE	TP	TOP OF PAVEMENT
DIAPH	DIAPHRAGM	MFR	MANUFACTURER	TRANS	TRANSVERSE
DIEB	DRIED-IN	MFRG	MANUFACTURING	TS	STRUCTURAL TUBE
DIM	EXPANSION BOLT	MIN	MINIMUM	TYP	TYPICAL
DN	DIMENSION	MISC	MISCELLANEOUS	UBC	UNIFORM BUILDING CODE
DO	DOWN	MT	STRUCTURAL TEE FROM M SERIES SECTION	UL	UNDERWRITERS
DOW	DOWEL	MTD	MOUNTED	UNO	UNLESS NOTED OTHERWISE
EA	EAST	MTL	METAL	UNOT	UNLESS OTHERWISE NOTED
EB	EACH	N	NORTH	UT	ULTRASONIC TEST
EF	EXPANSION BOLT	NF	NEAR FACE	VEF	VERTICAL EACH FACE
EW	EACH FACE	NIC	NOT IN CONTRACT	VERT	VERTICAL
EXJ	EXPANSION JOINT	NO OR #	NUMBER	VIF	VERTICAL INSIDE FACE
EL	ELEVATION (HEIGHT)	NOM	NOMINAL	VOF	VERTICAL OUTSIDE FACE
ELEC	ELECTRICAL	NTS	NOT TO SCALE	W	WEST, W SERIES
ELEV	ELEVATOR	OC	OVERALL	SECTION	SECTION
ENCL	ENCLOSURE	OD	ON CENTER	WITH	WITH
ENGR	ENGINEER	OF	OUTSIDE DIAMETER	WITHOUT	WITHOUT
EQ	EQUAL	OPNG	OPENING	WOOD	WOOD
EQJ	EARTHQUAKE JOINT	OPP	OPPOSITE	WEEP	WEEP HOLE
EQUIP	EQUIPMENT	OVS	OVERSIZED HOLES	WATERPROOF	WATERPROOF
ES	EACH SIDE			WORK POINT	WORK POINT
EW	EACH WAY			WEARWORN PLANE JOINT	WEARWORN PLANE JOINT
EXIST	EXISTING			WEIGHT, STRUCTURAL TEE FROM W SERIES SECTION	WEIGHT, STRUCTURAL TEE FROM W SERIES SECTION
EXP	EXPANSION			WELDED WIRE FABRIC	WELDED WIRE FABRIC
EXT	EXTERIOR			YD	YARD

GENERAL STRUCTURAL NOTES

THE FOLLOWING NOTES APPLY UNLESS INDICATED OTHERWISE:

CODE:

ASCE 7-98

DESIGN SOIL PRESSURE:

4000 PSF MAX DEAD + LIVE LOAD.

CAST FOOTINGS ON BEDROCK.

DESIGN LIVE LOADS:

SEISMIC = FROM MCE MAPS
= LAT= 56.9700 DEGREES
= LONG= -133.9300 DEGREES
= S_s = 0.2 SEC/50 YEARS = .32G
= S₁ = 1.0 SEC/50 YEARS = .23G

SNOW LOAD 50 PSF GROUND SNOW LOAD

REINFORCED CONCRETE:

ALL CONCRETE - f'c = 4000 PSI. SEE SPECIFICATIONS FOR ADMIXTURES.

UNLESS OTHERWISE NOTED, REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60. SUBMIT REINFORCING STEEL SHOP DRAWINGS WITH DETAILS PER ACI 315 MANUAL OF STANDARD PRACTICE.

LAP SPLICES IN CONCRETE:

UNLESS NOTED OTHERWISE, LAP SPLICES IN CONCRETE SHALL BE AS ACI 315, CLASS "B" SPLICE. ALTERNATE SPLICES A MINIMUM OF ONE LAP LENGTH. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT CORNERS AND INTERSECTION OF FOOTING AND WALLS. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE. CONCRETE DOWEL EMBEDMENT SHALL BE STANDARD COMPRESSION DOWEL EMBEDMENT LENGTH ACCORDING TO THE LATEST EDITION OF ACI 318.

WELDED WIRE FABRIC SHALL NOT BE USED

CONCRETE COVER:

FOOTINGS 4" TOP AND BOTTOM.
WALLS 3" AND 4" AGAINST EARTH.
SLABS ON GRADE 4" TOP AND 4" BOTTOM.
SPILLWAY 6" TOP AND 4" BOTTOM.

REBAR SPACING SHALL BE AS INDICATED ON DRAWINGS. BEGIN SPACING AS REQUIRED BY COVER STATED ABOVE.

CHAMFERS:

ALL EDGES AND CORNERS SHALL HAVE 1-1/2" CHAMFER EXCEPT WALLS AND PARAPETS 2" OR LESS IN THICKNESS SHALL HAVE 3/4" CHAMFERS.

SLABS:

RIGIDLY SUPPORT BARS WITH CONCRETE BLOCKS OR APPROVED ACCESSORIES.

PROVIDE SLAB REINFORCING BARS AS FOLLOWS:
#9 REINFORCING STEEL FOR SLABS, TOP AND BOTTOM, SPACED AT 12" O.C. EACH WAY UNLESS NOTED OTHERWISE

WALLS:

REINFORCE AS FOLLOWS:
VERTICAL STEEL SHALL BE #11 REINFORCING STEEL FOR WALLS, SPACED AT 12" O.C. UNLESS NOTED OTHERWISE
HORIZONTAL STEEL SHALL BE #9 REINFORCING STEEL FOR WALLS, SPACED AT 12" O.C. UNLESS NOTED OTHERWISE

AT CORNERS, PROVIDE CORNER BARS OF SAME SIZE AND SPACING AS HORIZONTAL BARS, 40 DIA. EACH LEG.

AT INTERSECTIONS, PROVIDE CORNER BARS OF SAME SIZE, NUMBER AND SPACING AS HORIZONTAL BARS OF INTERSECTING WALL, 40 DIA. EACH LEG.

PROVIDE VERTICAL DOWELS OF SAME SIZE, NUMBER AND SPACING AS VERTICAL BARS.

SPILLWAY:

RIGIDLY SUPPORT BARS WITH CONCRETE BLOCKS OR APPROVED ACCESSORIES. PROVIDE #5 SUPPORT BARS ALL SLABS.

PROVIDE SLAB REINFORCING BARS AS FOLLOWS:
#9 REINFORCING STEEL FOR SLABS AT TOP, SPACED AT 12" O.C. EACH WAY UNLESS NOTED OTHERWISE

GROUT:

GROUT - 5000 PSI MINIMUM 7-DAY CUBE STRENGTH PER ASTM C109. GROUT TO BE PREMIXED, NON-SHRINK "MASTERFLOW" BY MASTER BUILDERS OR APPROVED EQUAL. ICBO CERTIFICATION REQUIRED. USE SPECIFIC GROUT MIX RECOMMENDED BY MANUFACTURER FOR EACH GROUT APPLICATION AND FOLLOW MANUFACTURER'S INSTRUCTIONS.

DRILL-IN ADHESIVE BOLTS:

USE "EPICON A7" W/ THREADED STAINLESS STEEL ROD W/ STAINLESS STEEL NUT AND WASHER. PROVIDE NYLON WASHER GALVANIC BOND BREAKER OR EQUAL. INSTALLATION BY EPICON ADHESIVE ANCHORING SYSTEMS, "HIT HY-150" INTO CONCRETE BY HILT FASTENING SYSTEMS OR APPROVED EQUAL. ICBO CERTIFICATION REQUIRED.

DRILL-IN REINFORCEMENT ANCHORS:

USE NON-SHRINK GROUT FOR REINFORCEMENT ANCHORING APPLICATIONS. USE CENTRALIZERS TO MAINTAIN ANCHOR IN CENTER OF HOLE.

STRUCTURAL STEEL:

ALL STEEL ASTM A36, F_y = 36 KSI UNLESS NOTED OTHERWISE. FABRICATION AND ERECTION PER ASC SPECIFICATIONS.

WELDING PER AWS D1.1. MINIMUM SIZE WELDS 3/16" CONTINUOUS FILLET, UNO. USE WELDERS CERTIFIED PER AMERICAN WELDING SOCIETY FOR ROD AND POSITION.

ALL BOLTS SHALL BE PER ASTM 325. TYPICAL BOLTED CONNECTIONS - BEARING TYPE. PROVIDE TENSION AT LOCATIONS INDICATED "SLIP CRITICAL"

STAINLESS STEEL AND GALVANIZED GRATING SHALL CARRY A MIN OF 250 PSF FOR THE CLEAR SPAN. PROVIDE MATCHING MATERIAL WELD STUDS TO ANGLE FRAME AS REQ'D FOR SADDLE CLIPS, TYP.

STAINLESS STEEL:

ALL STRUCTURAL STEEL AND TUBING THAT IS A PART OF THE INTAKE STRUCTURE AND TRASHRACK SHALL BE TYPE 304, OR TYPE 316 STAINLESS STEEL OR APPROVED EQUAL.

STRUCTURAL SAWN LUMBER:

PLYWOOD OR OSB GRADE - APA RATED SHEATHING, EXP. 1 LAID FACE GRAIN PERPENDICULAR TO SUPPORT.

ROOF SHEATHING - 3/4" THICK, 48/24 SPAN RATING
WALL SHEATHING - 1/2" THICK, 32/16 SPAN RATING
FLOOR SHEATHING - 3/4" THICK, 48/24 SPAN RATING

MISCELLANEOUS:

ALL HANDRAIL PIPING SHALL BE MIN 1-1/4" EXTRA STRONG NOMINAL DIAMETER OR APPROVED EQUAL.

VERIFY ALL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE PRIOR TO STARTING WORK AND NOTIFY THE CONTRACTING OFFICER IMMEDIATELY OF ANY DISCREPANCIES.

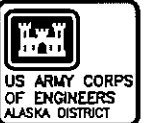
PROVIDE TEMPORARY ERECTION BRACING AND SHORING AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

BOND BREAKER SHALL BE EITHER/OR AN ASPHALTIC OR BITUTHENE SEALANT PRODUCT, OR AN APPROVED EQUAL.

CONTROL JOINT LOCATIONS SHOWN IN DAM ARE MANDATORY. CONTRACTOR SHALL PLACE CONCRETE BETWEEN CONTROL JOINTS MONOLITHICALLY WITH LIFTS AS SPECIFIED IN SPECIFICATION SECTION 03301. WHERE UNAVOIDABLE CIRCUMSTANCES REQUIRE THE ADDITION OF A VERTICAL CONSTRUCTION JOINT (AT LOCATIONS OTHER THAN THE CONTROL JOINT LOCATIONS SHOWN) SUCH JOINTS SHALL BE ORIENTED PARALLEL TO THE CBL. EXCEPT AS INDICATED BELOW, NO CONSTRUCTION JOINT SHALL BE PLACED IN THE LONGITUDINAL, OR PARALLEL TO STREAM FLOW, DIRECTION.

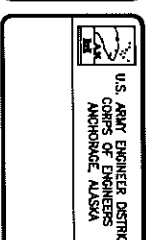
T-JOINTS IN WATERSTOPS @ INTERSECTIONS OF CONTROL JOINTS SHALL BE FACTORY FORMED WITH CENTERBULB MAINTAINED THRU JOINT. FIELD FABRICATION OF BUTT JOINTS IN WATERSTOP IS ACCEPTABLE USING MANUFACTURER RECOMMENDED EQUIPMENT AND PROCEDURE.

THE CONTRACTOR HAS THE OPTION TO INSTALL A SINGLE LONGITUDINAL CONSTRUCTION JOINT THROUGH THE SPILLWAY SECTION. THIS CONSTRUCTION JOINT, IF USED, SHALL BE A LONGITUDINAL EXTENSION OF ONE OF THE STILLING BASIN LONGITUDINAL CONTROL JOINTS, SHALL HAVE CONTINUOUS WATERSTOP AS SHOWN IN SECTION 1 ON SHEET S-11, SHALL HAVE CONCRETE COLD JOINT SURFACES PREPARED FOR THE CONSTRUCTION JOINT AS SPECIFIED FOR SUCH JOINTS IN SPECIFICATION SECTION 03301, AND SHALL HAVE ALL SPECIFIED REINFORCEMENT CARRIED THROUGH THE JOINT.



CONTRACT NO.	
CITY	
STATE	
PROJECT NO.	
DESIGN NO.	
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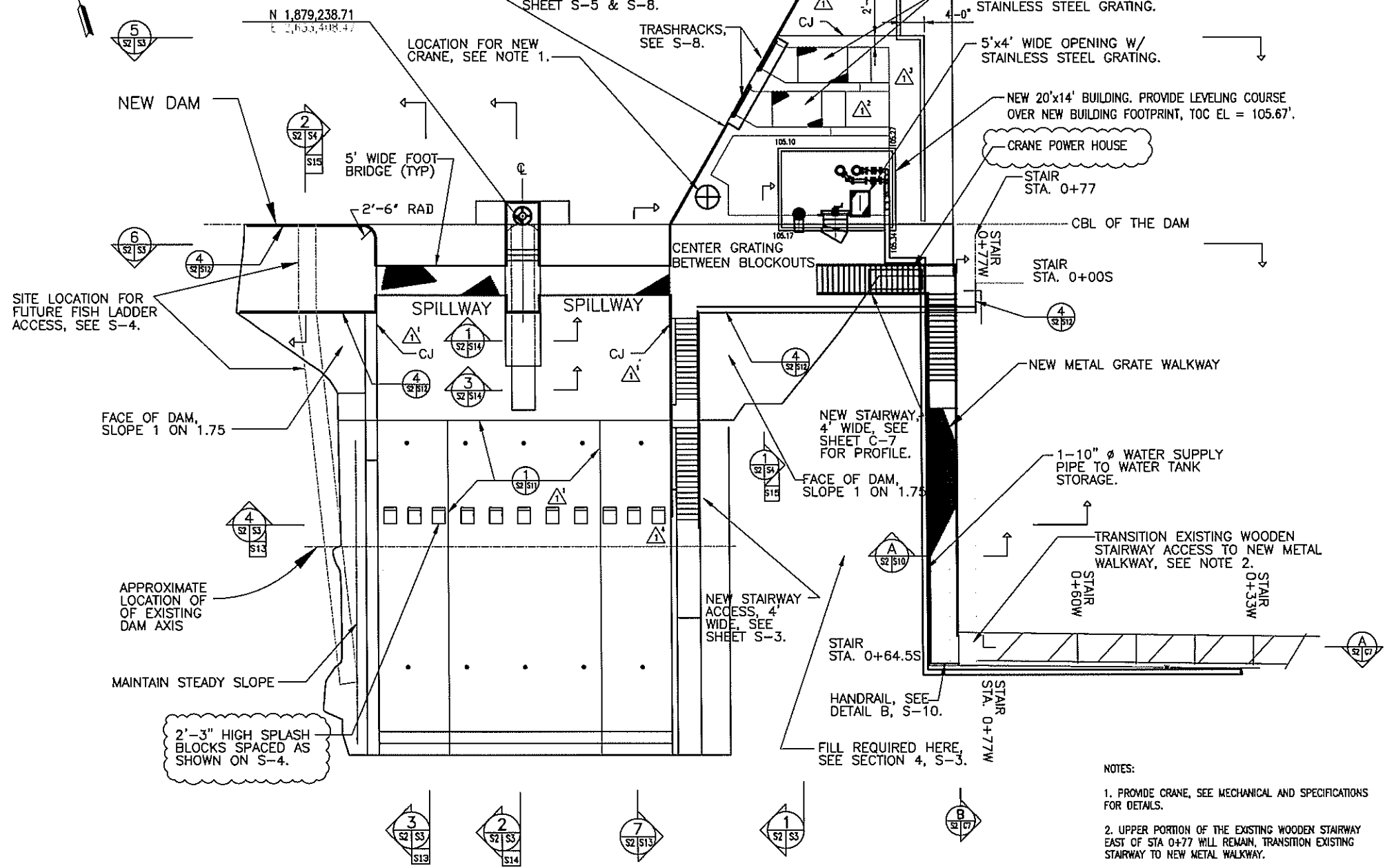
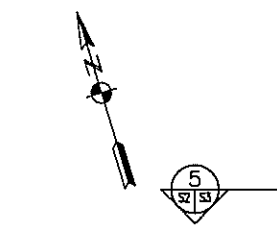
PROJECT NO.	
CONTRACT NO.	
CITY	
STATE	
PROJECT NO.	
DESIGN NO.	
DATE	

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NO.	DATE	BY	CHKD.
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Reference number:
S-1
Sheet 11 of

AS-BUILT SET



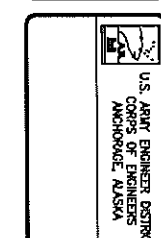
PLAN
SCALE: 1" = 10'

- NOTES:
1. PROVIDE CRANE, SEE MECHANICAL AND SPECIFICATIONS FOR DETAILS.
 2. UPPER PORTION OF THE EXISTING WOODEN STAIRWAY EAST OF STA 0+77 WILL REMAIN, TRANSITION EXISTING STAIRWAY TO NEW METAL WALKWAY.
 3. PROVIDE FULL WIDTH CONTROL JOINT (CJ) AT DAM STA 1+33.2117 WHICH IS AT THE POINT OF TANGENT (POT) AT THE BOTTOM OF THE CURVED SPILLWAY. PROVIDE TWO CJ'S SEPARATING STILLING BASIN INTO THREE SECTIONS DOWNSTREAM OF DAM STA 1+33.2117. PROVIDE ONE CJ @ EACH SIDE OF THE SPILLWAY SEPARATING IT FROM THE ADJACENT ABUTMENTS. PROVIDE CJ AS SHOWN IN INTAKE STRUCTURE @ POINT WHERE DECK WIDTH TRANSITIONS TO NARROWER SECTION LOOKING UPSTREAM. PROVIDE CJ SEPARATING INTAKE STRUCTURE FROM EAST DAM ABUTMENT (SHOWN ON OTHER SHEETS).



CONTRACT NO.	
CONTRACT NAME	
CITY	
STATE	
PROJECT NUMBER	
DESIGN NUMBER	
DATE	

NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

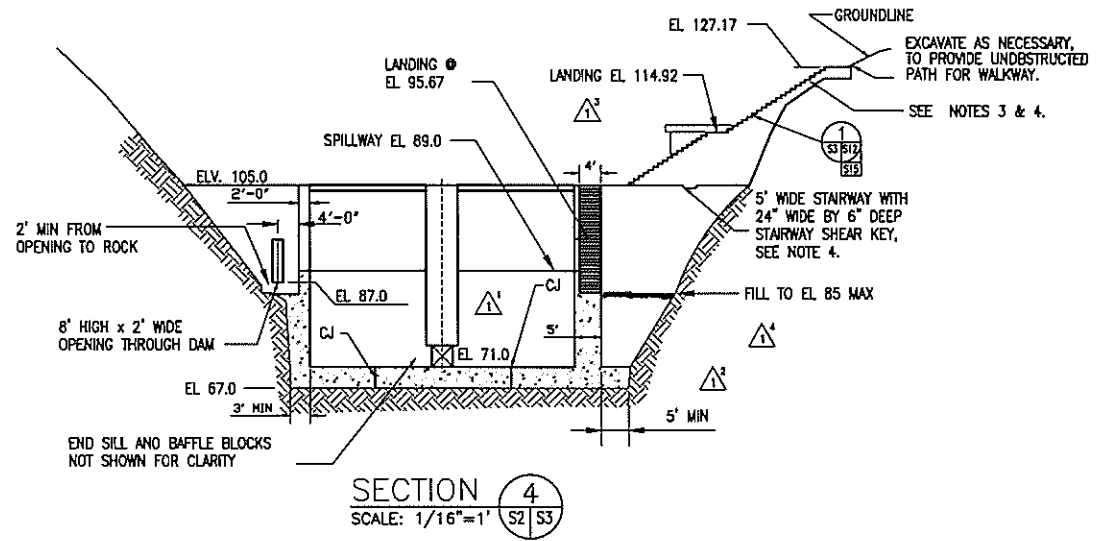


PROJECT NAME	KAKE DAM
PROJECT NO.	W911KB-04-B-0009
PROJECT LOCATION	AKUTIA, ALASKA
PROJECT TYPE	GENERAL PLAN
PROJECT DATE	1991
PROJECT SCALE	1" = 10'
PROJECT DRAWN BY	W911KB-04-B-0009
PROJECT CHECKED BY	W911KB-04-B-0009
PROJECT APPROVED BY	W911KB-04-B-0009

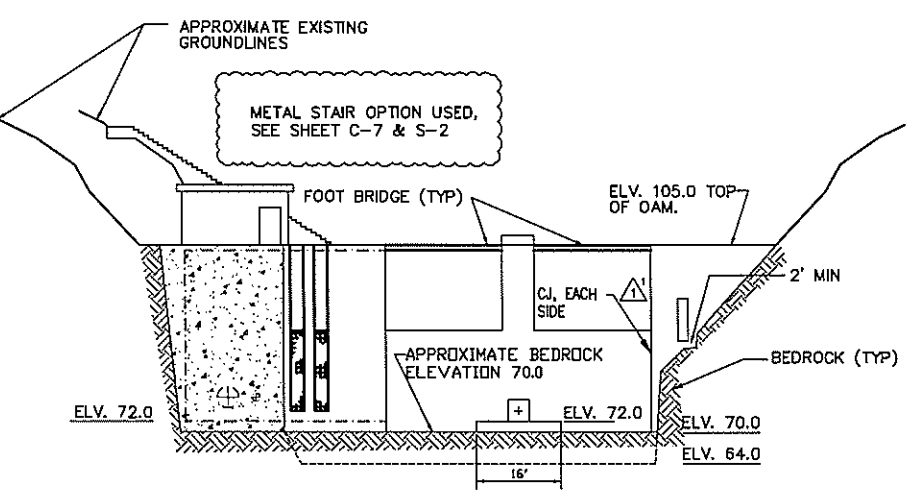
KAKE DAM
STRUCTURAL
GENERAL PLAN

Reference number:
S-2
Sheet 12 of

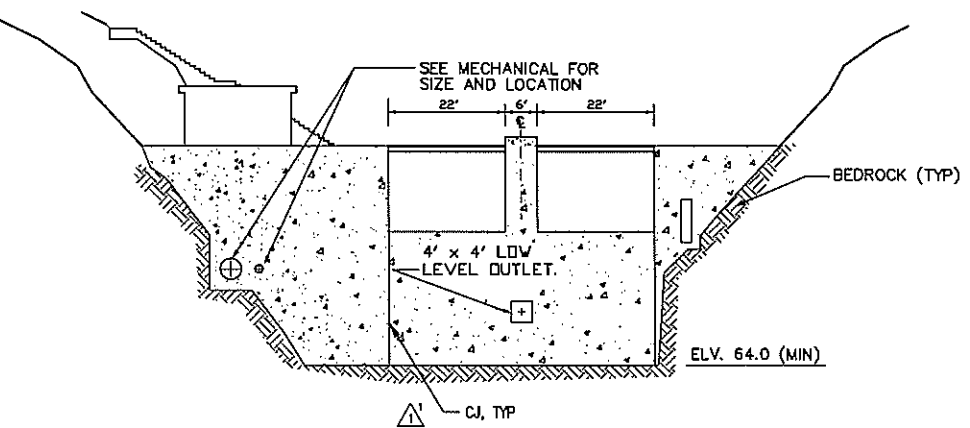
EL. 125
EL. 100
EL. 75
EL. 50



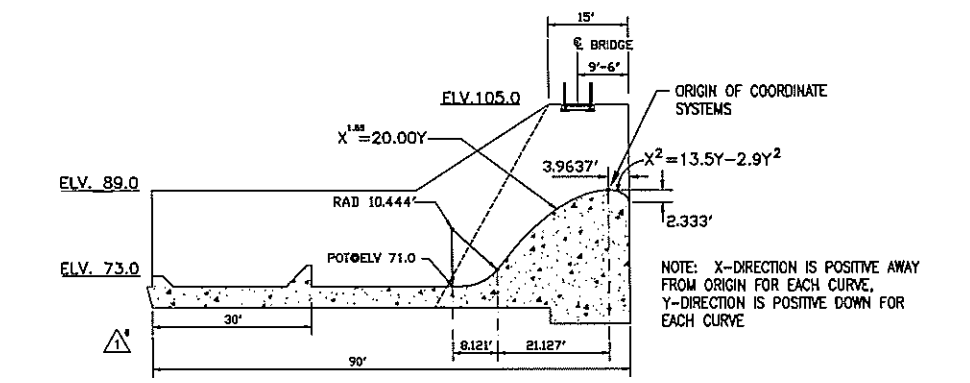
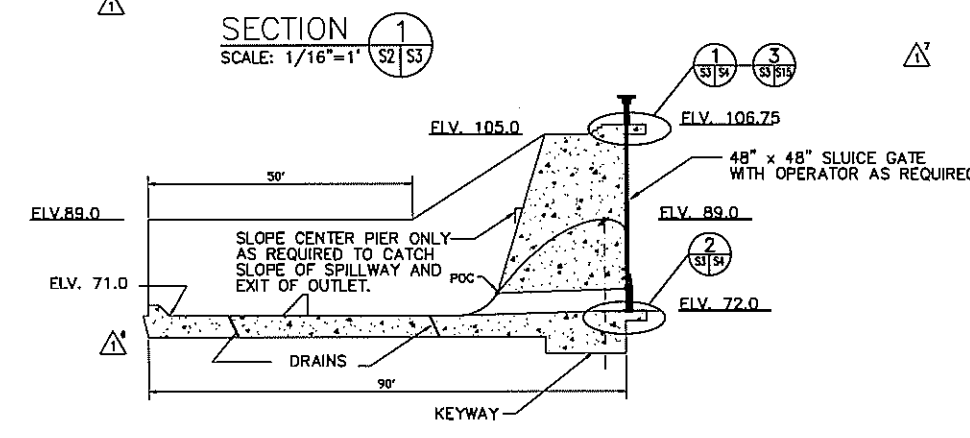
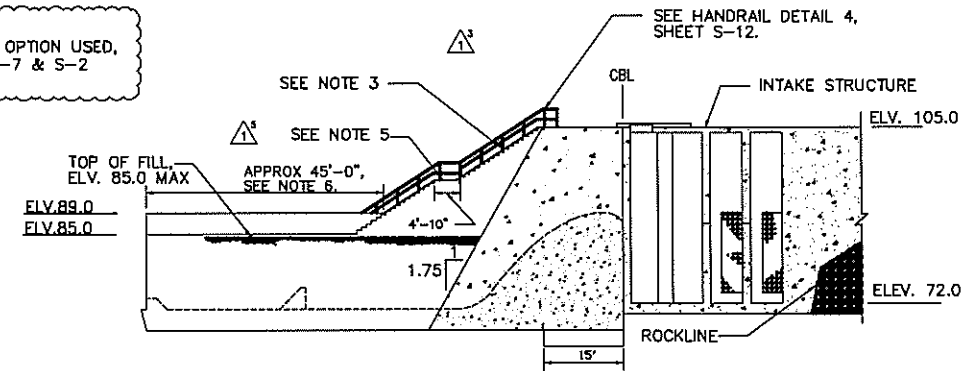
EL. 125
EL. 100
EL. 75
EL. 50



EL. 125
EL. 100
EL. 75
EL. 50



METAL STAIR OPTION USED,
SEE SHEET C-7 & S-2



- NOTES:
1. PROVIDE A SMOOTH TRANSITION FROM ONE CURVE TO THE NEXT AT THE SPILLWAY CREST AND FOR EACH P.O.T INDICATED FOR THE TRANSITION CURVES IN THE SPILLWAY CHUTE.
 2. PIER RADII SHALL BE 2'-6" FOR CENTER PIER, ES, AND FOR RIGHT ABUTMENT.
 3. STAIRS SHALL BE MIN 7" RISE BY 11" TREAD.
 4. CONTRACTOR MAY CONSTRUCT STAIRWAY AND LANDINGS USING GALVANIZED METAL IN UEL OF CONCRETE SUBJECT TO SUBMITTAL OF DESIGN BY A PROFESSIONAL ENGINEER AND APPROVAL BY THE CONTRACTING OFFICER. APPLIES TO UPPER STAIR ONLY, ABOVE EL 105'. CONCRETE BELOW UPPER STAIR SHALL BE ASSUMED TO BE ADEQUATE FOR OPTIONAL STEEL STAIR SUPPORTS.
 5. 1-1/2" GALVANIZED HANDRAIL, POSTS AT 4'-0" MAX ON CENTER. SEE SHEET S-12 FOR HANDRAIL DETAILS.
 6. ADJUST LENGTH TO FIT STAIRWAY AND STAIRWAY PARAPET, ALSO SEE NOTE 3.

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

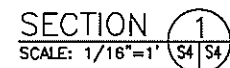
CONTRACT NO. 1
PROJECT NO. 1
SHEET NO. 13 OF 13

US ARMY ENGINEER DISTRICT
ANCHORAGE, ALASKA

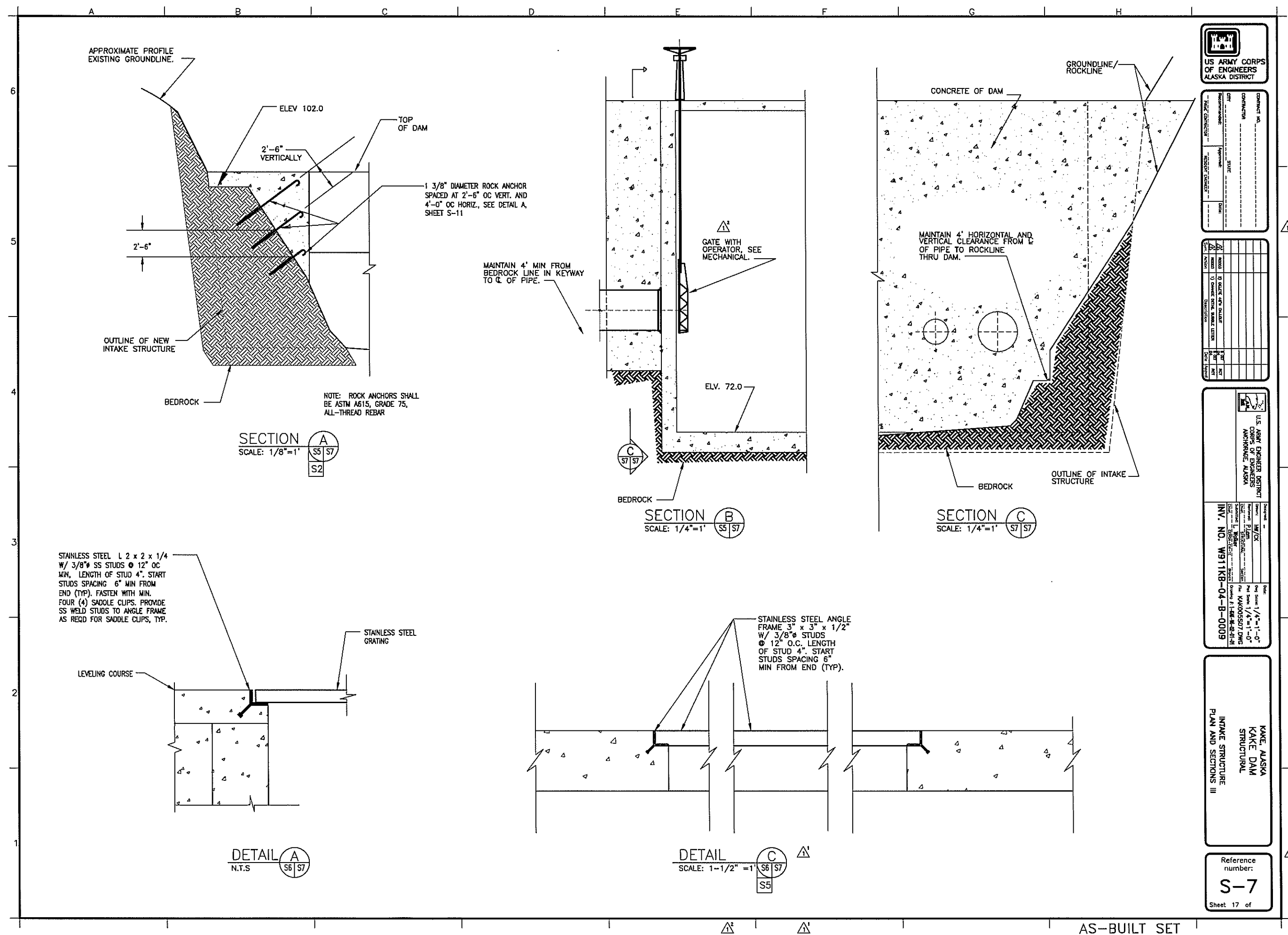
INV. NO. W911KB-04-B-0009

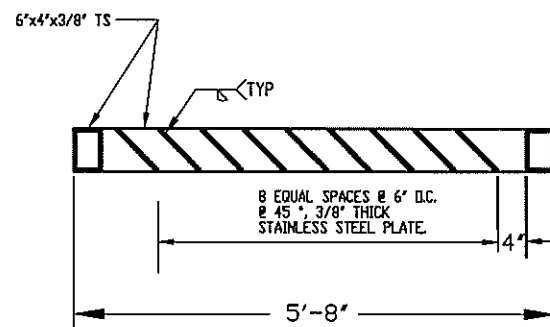
KAKE ALASKA
KAKE DAM
STRUCTURAL
DAM
PLAN AND SECTIONS 1

Reference number:
S-3
Sheet 13 of

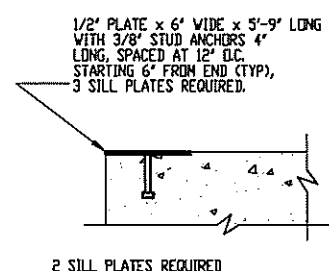


- Reference
number:
S-4
Sheet 14 of

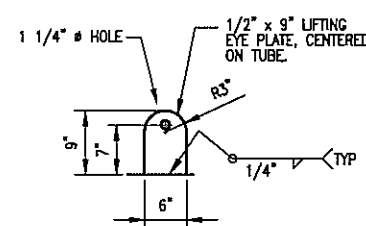




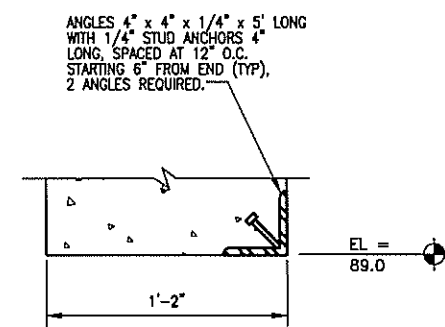
SECTION 1
SCALE 1/4" = 1'



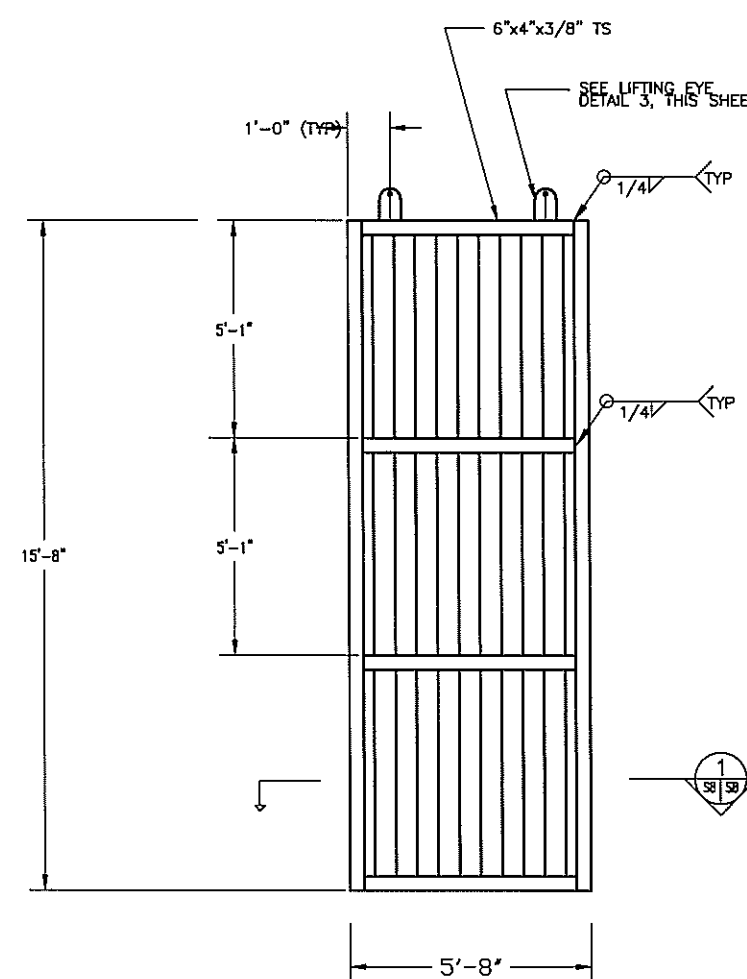
SILL PLATE DETAIL (TYP) 2
SCALE 2" = 1'



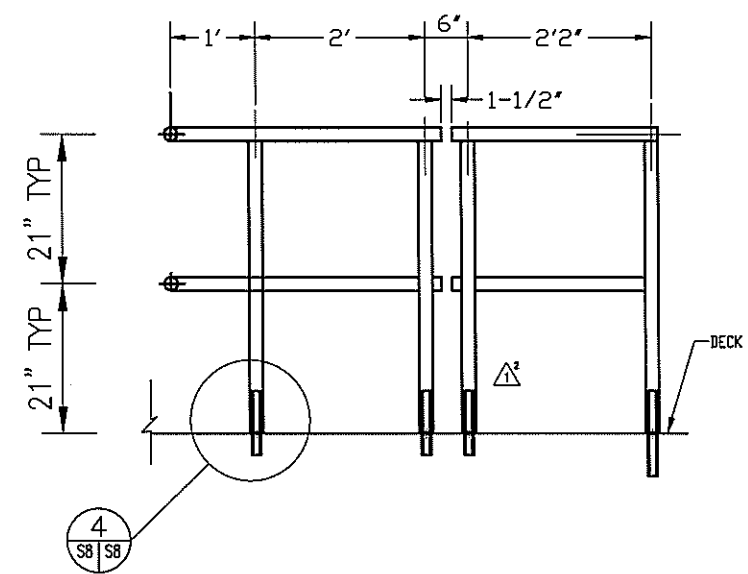
LIFTING EYE DETAIL (TYP) 3
SCALE 1" = 1'



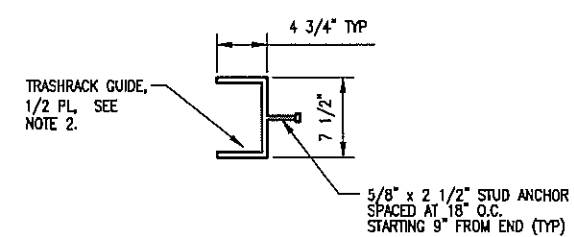
PROTECTION ANGLE DETAIL (TYP) 3
SCALE 2" = 1'



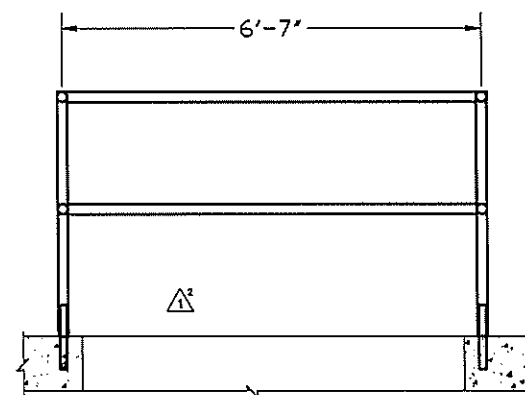
TRASHRACK DETAIL (TYP) 1
SCALE 1/2" = 1'



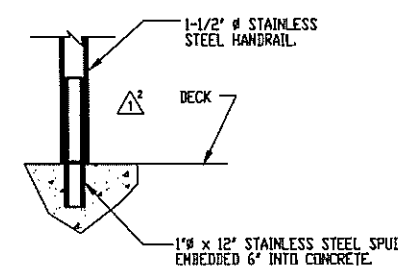
SECTION A
SCALE 1" = 1'



GUIDE DETAIL (TYP) 4
SCALE 1-1/2" = 1'



SECTION B
SCALE 3/4" = 1'



DETAIL 4
SCALE 2" = 1'

- GENERAL NOTES:
- ALL FASTENERS, WASHERS, AND FITTINGS SHALL BE TYPE 304 STAINLESS STEEL UNLESS NOTED OTHERWISE.
 - ENSURE 1/4" TOLERANCE IN PLUMBNESS FOR GUIDES IS MAINTAINED.

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. 1
PROJECT NO. 1
SHEET NO. 1

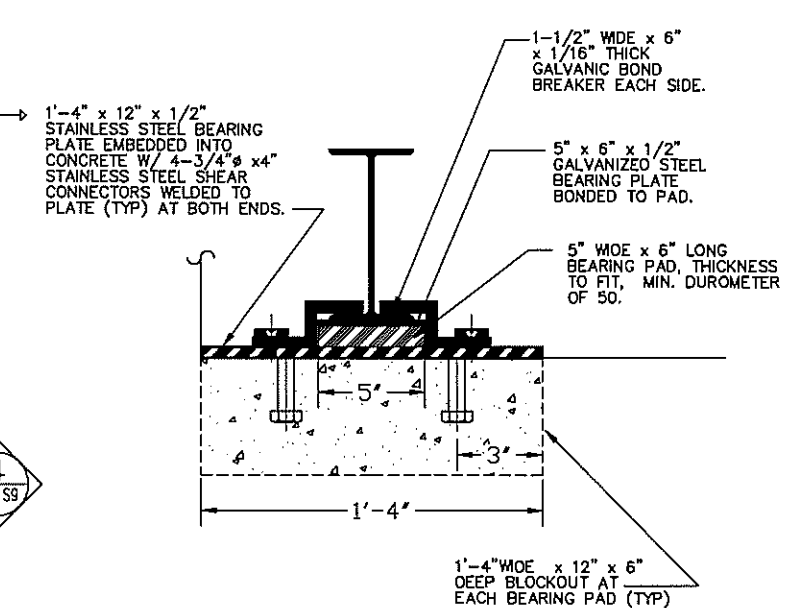
DATE: 1/1/00
BY: J. K. B. 1/1/00
CHECKED: J. K. B. 1/1/00
APPROVED: J. K. B. 1/1/00

U.S. ARMY CORPS OF ENGINEERS
ANCHORAGE DISTRICT
INVT. NO. W91K8-04-B-0009

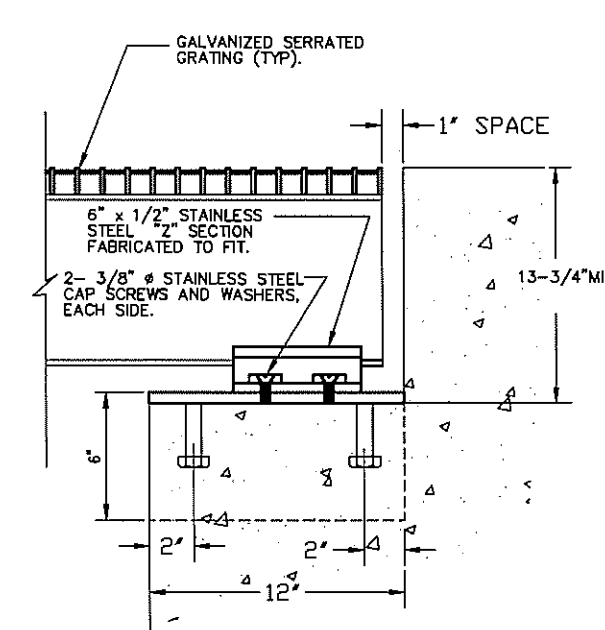
KAKE, ALASKA
KAKE DAM
STRUCTURAL
INTAKE STRUCTURE
HANDRAIL

Reference number:
S-8
Sheet 18 of

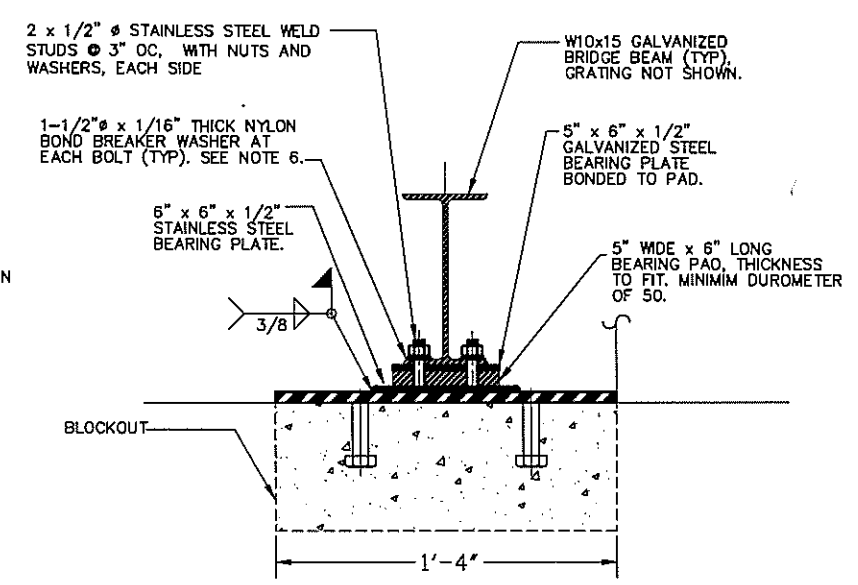
AS-BUILT SET



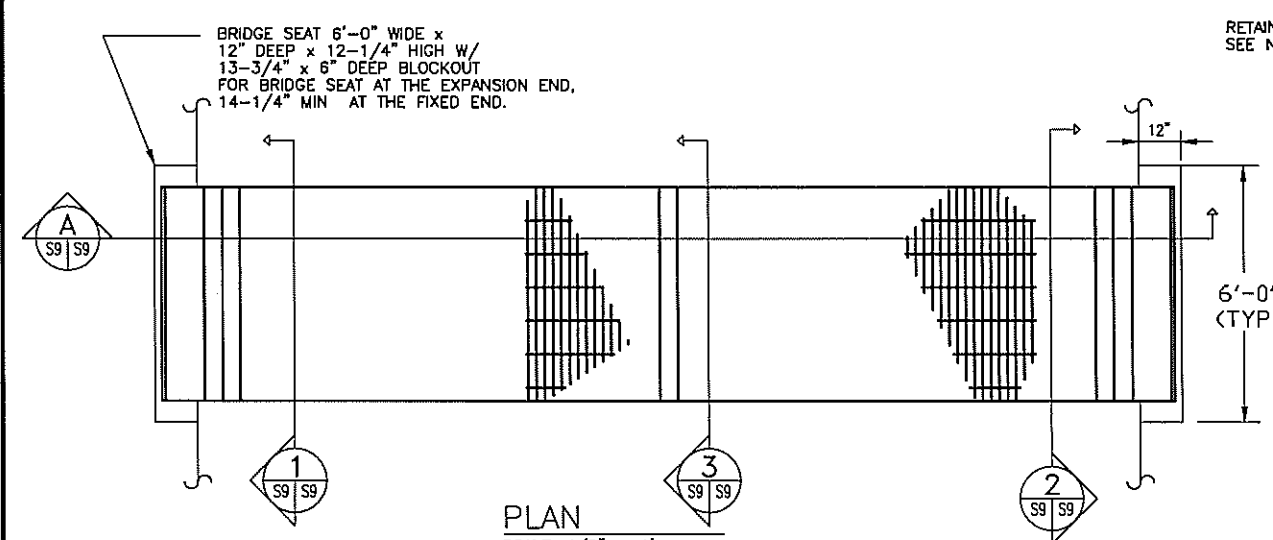
STEEL BRIDGE EXPANSION SEAT
SCALE: 3" = 1'



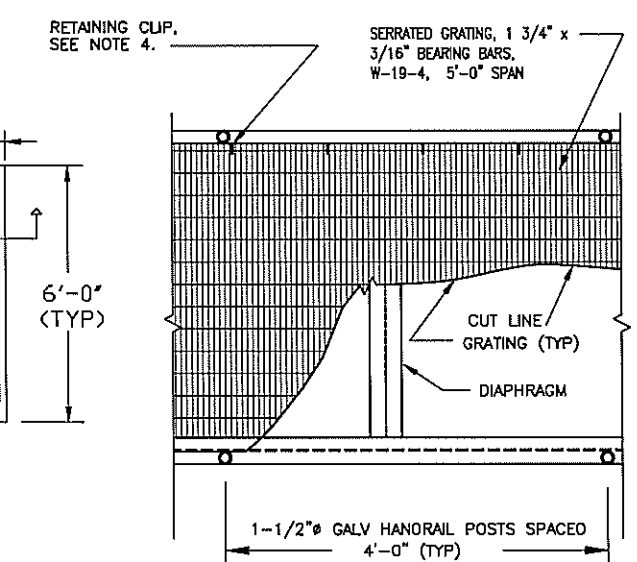
STEEL BRIDGE GRATING SECTION
SCALE: 3" = 1'



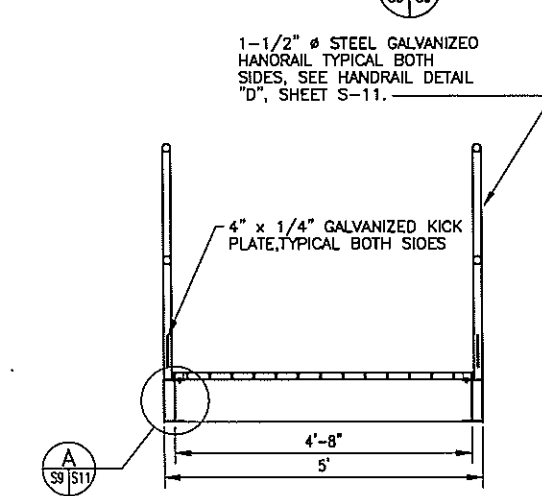
STEEL BRIDGE FIXED SEAT
SCALE: 3" = 1'



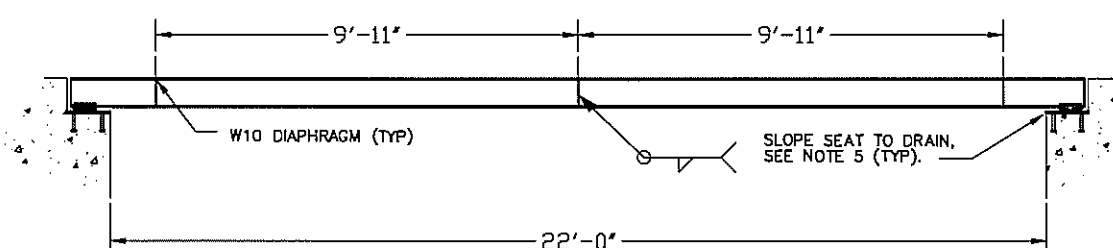
PLAN
SCALE: 1/2" = 1'



BRIDGE PLAN
SCALE: NTS



STEEL BRIDGE GRATING SECTION
SCALE: 3/4" = 1'



SECTION
SCALE: 1/2" = 1'

- GENERAL NOTES:
1. ALL FASTENERS, NUTS, WASHERS AND FITTING SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.
 2. ALL STRUCTURAL STEEL FOR THE BRIDGE SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.
 3. ALL STEEL FOR THE THE BRIDGE SEAT AT BOTH ENOS SHALL BE STAINLESS STEEL. ALL FASTENERS, NUTS, SCREWS AND FITTINGS SHALL BE STAINLESS STEEL.
 4. FASTEN EDGES OF GRATING TOGETHER WITH SADDLE CLIP TYPE FASTENER AT THE MANUFACTURER'S RECOMMENDED SPACING BUT NO LESS THAN 2' OC. EACH SIDE.
 5. SLOPE SEAT TO DRAIN, 1/8" PER FOOT.
 6. PROVIDE GALVANIC BONDBREAKER WHERE STAINLESS STEEL AND GALVANIZED METAL COME IN CONTACT.

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO. _____
PROJECT NO. _____
SHEET NO. _____

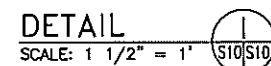
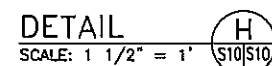
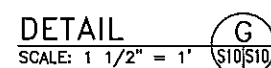
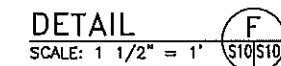
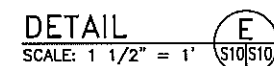
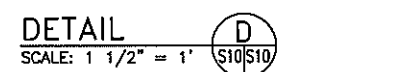
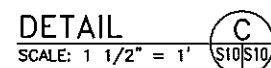
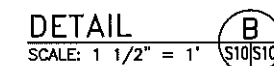
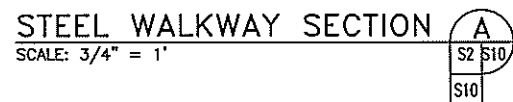
DESIGNED BY _____
CHECKED BY _____
APPROVED BY _____

DATE _____

PROJECT NAME: KAKE DAM
STRUCTURAL
SPILLWAY BRIDGE
SECTIONS AND DETAILS

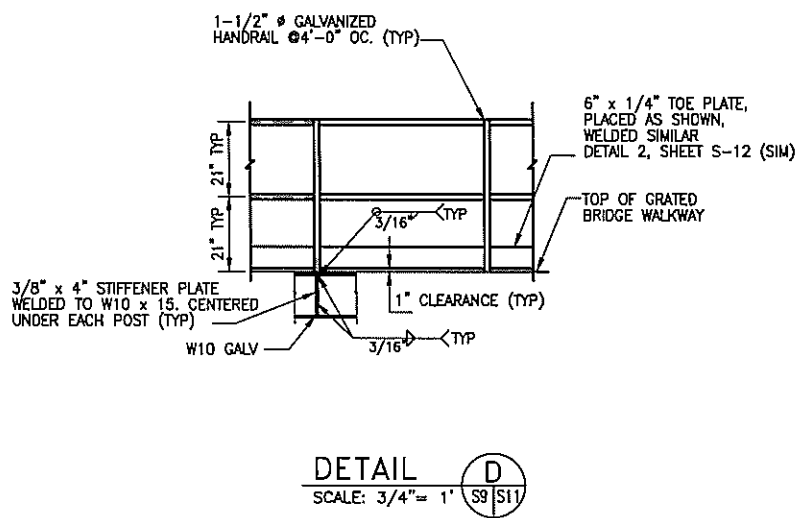
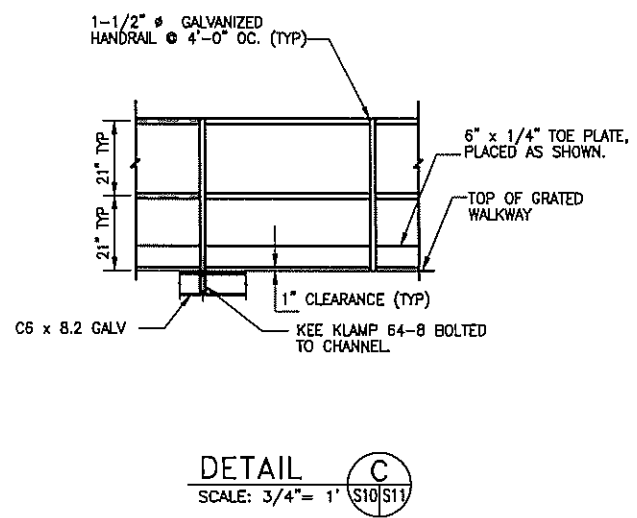
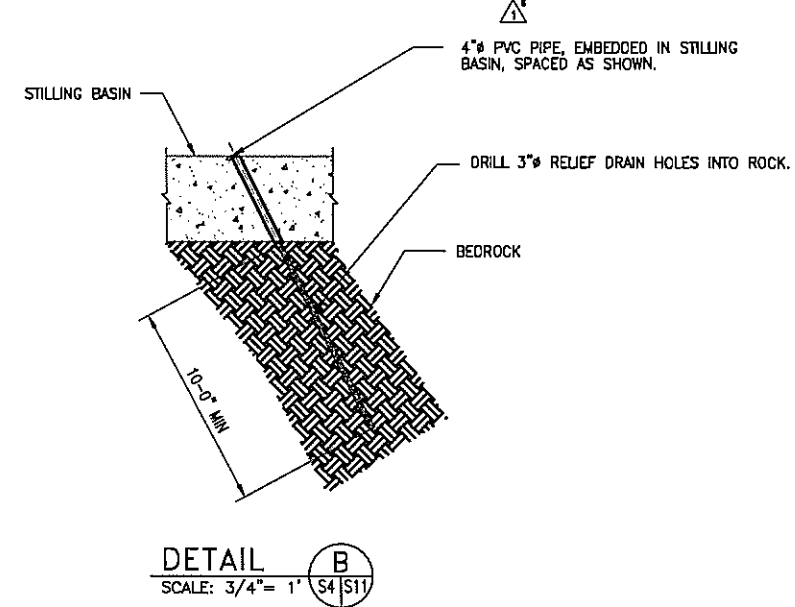
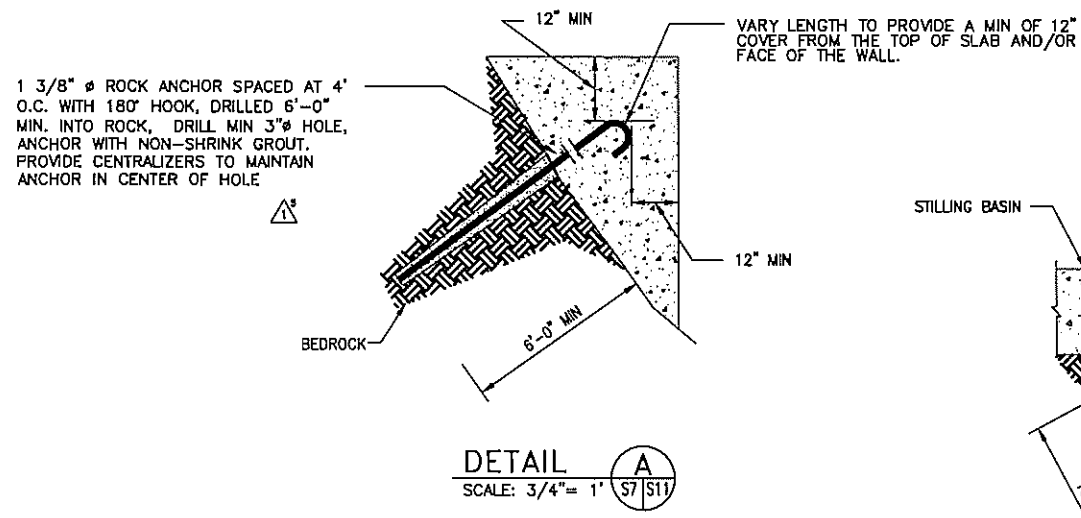
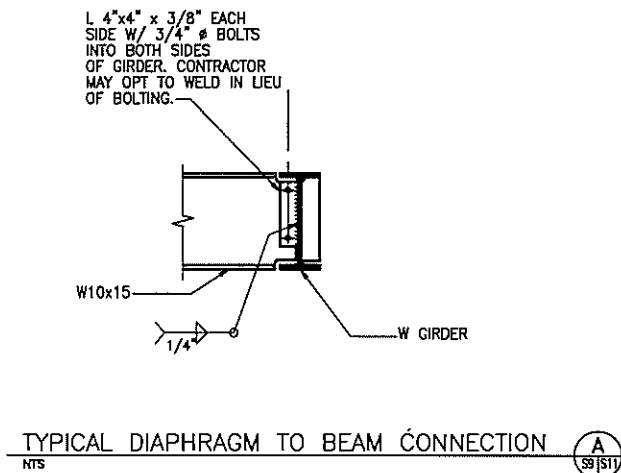
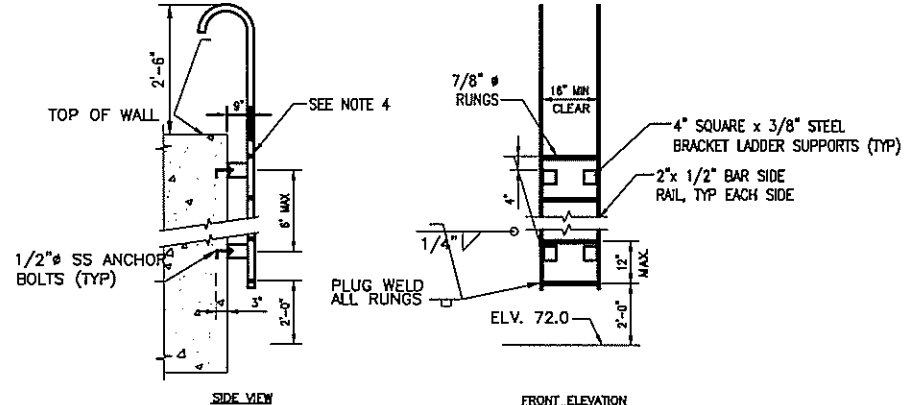
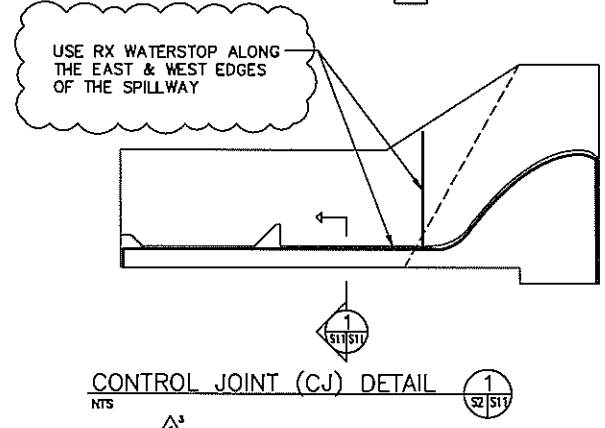
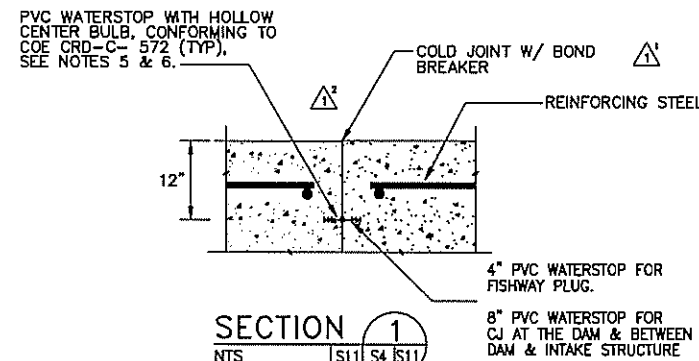
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S-9

SHEET 19 OF _____

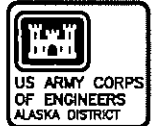


- 1) ALL FASTENERS, NUTS, WASHERS, CLIPS AND FITTINGS ON THIS DRAWING SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.
- 2) (2) FLAT WASHERS, (1) LOCK WASHER, AND NUT SHALL BE PROVIDED FOR ALL BOLTED CONNECTIONS.
- 3) ALL STRUCTURAL STEEL AND GRATING SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.
- 4) FASTEN GRATE TO STEEL CHANNELS WITH CLIPS PER MANUFACTURER'S RECOMMENDATIONS AT 18" O.C., FOUR (4) PER PANEL TWO (2) PER SIDE.
- 5) FASTEN ANGLE TO CONCRETE PAD W/5-3/8" x 5" LONG DRILL-IN ADHESIVE STEEL BOLTS, EQUALLY SPACED, DRILLED AND FASTEN W/ EPON ADHESIVE.
- 6) ADJUST WALKWAY PIPE SUPPORTS TO PROVIDE 12' CLEAR SPAN OVER DRAINAGE CREEK. PLACE SUPPORTS APPROX 6' EACH SIDE OF CENTERLINE OF DRAINAGE.

Reference number:
S-10
Sheet 20 of



- GENERAL NOTES:
1. ALL FASTENERS, NUTS, WASHERS AND FITTING SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.
 2. WASHERS, LOCK WASHERS, AND NUTS SHALL BE PROVIDED FOR ALL BOLTED CONNECTIONS.
 3. ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE.
 4. ALL STRUCTURAL STEEL FOR THE LADDER SHALL BE STAINLESS STEEL. STAINLESS STEEL ANCHOR BOLTS W/ EPON ADHESIVE MAY BE USED IN LIEU OF ANCHOR BOLTS EMBEDDED.
 5. CENTER 4" PVC WATERSTOP AS SHOWN ON S-11



CONTRACT NO.	CONTRACT NAME
PROJECT NO.	PROJECT NAME
DESIGN NO.	DESIGN NAME
DATE	DATE

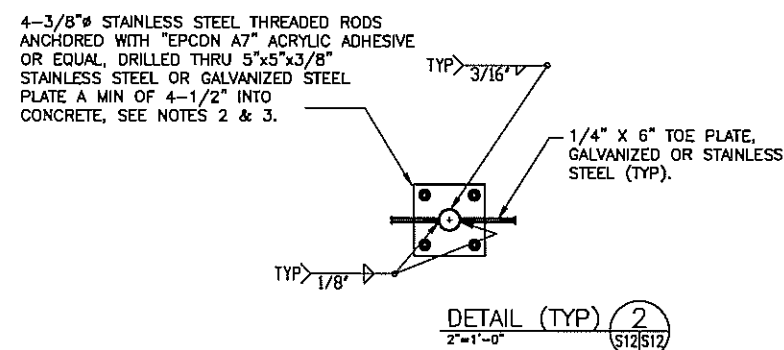
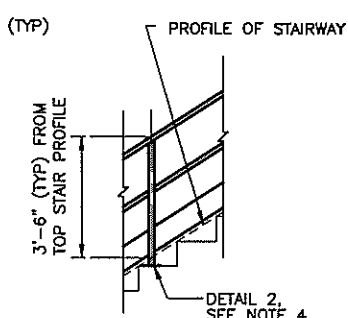
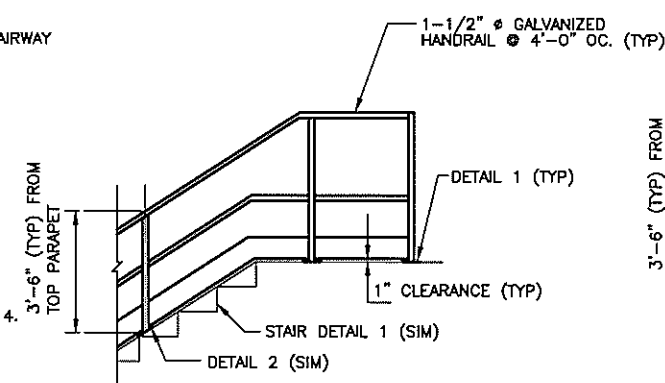
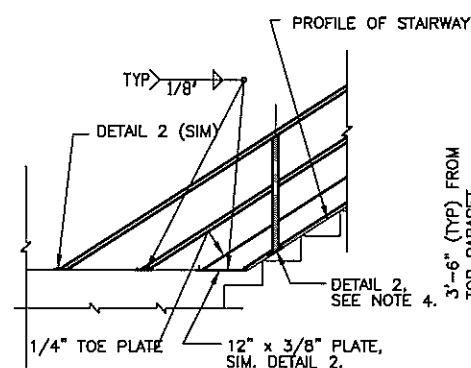
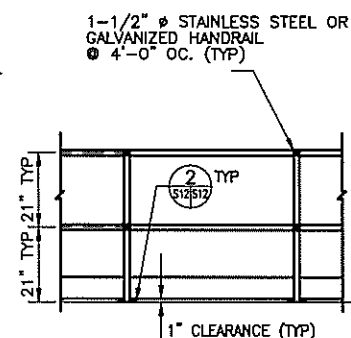
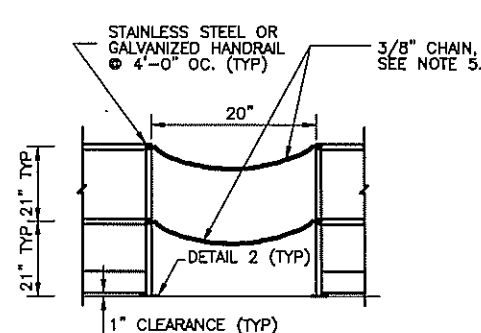
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1	ISSUED FOR CONSTRUCTION	10/1/00	WJ	WJ
2	REVISED TO ADD DETAIL 1	10/1/00	WJ	WJ
3	REVISED TO ADD DETAIL 2	10/1/00	WJ	WJ
4	REVISED TO ADD DETAIL 3	10/1/00	WJ	WJ
5	REVISED TO ADD DETAIL 4	10/1/00	WJ	WJ
6	REVISED TO ADD DETAIL 5	10/1/00	WJ	WJ
7	REVISED TO ADD DETAIL 6	10/1/00	WJ	WJ
8	REVISED TO ADD DETAIL 7	10/1/00	WJ	WJ
9	REVISED TO ADD DETAIL 8	10/1/00	WJ	WJ
10	REVISED TO ADD DETAIL 9	10/1/00	WJ	WJ

U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT
ANCHORAGE, ALASKA

INV. NO. W911KB-04-B-0009

KAKE, ALASKA
KAKE DAM
STRUCTURAL
MISCELLANEOUS
DETAILS 1

Reference number:
S-11
Sheet 21 of

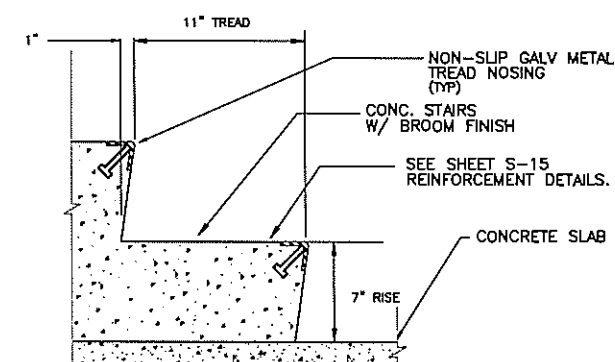


HANDRAIL DETAIL (TYP) 4

1/2"=1'-0"

S2 S12

S5



STAIR DETAIL (TYP) 1

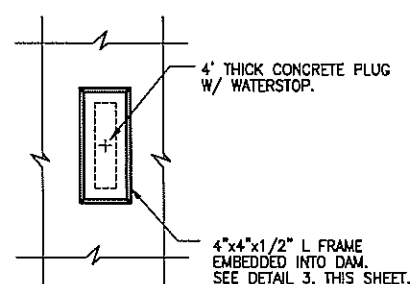
2"=1'-0"

S12 S12

C7

S3

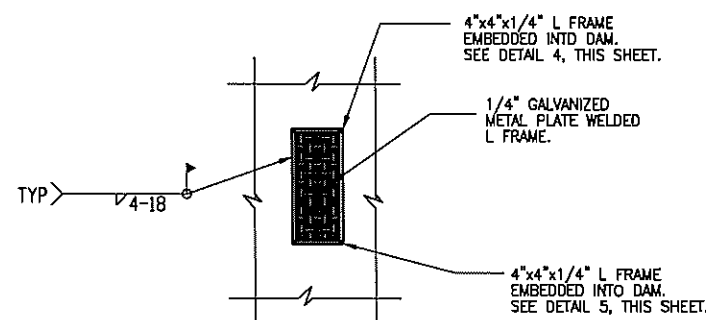
S4



SECTION 1

1/16"

S4 S12



SECTION 2

1/16"

S4 S12

L FRAME 1/2" x 4" x 4" WITH 3/8"-4" LONG STUD ANCHORS SPACED AT 12" O.C. STARTING 6" FROM END (TYP).



ANGLE DETAIL 3

1/2"=1'-0"

S4 S12

1/4" BENT PL W/ 4" LEGS WITH 1/4" STUD ANCHORS SPACED AT 12" O.C. STARTING 6" FROM END (TYP).



ANGLE DETAIL 4

1/2"=1'-0"

S4 S12

1/4" BENT PL W/ 4" LEGS WITH 1/4" STUD ANCHORS SPACED AT 12" O.C. STARTING 6" FROM END (TYP).



ANGLE DETAIL 5

1/2"=1'-0"

S4 S12

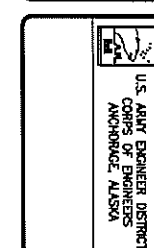
GENERAL NOTES:

1. ALL STRUCTURAL STEEL ON THIS SHEET SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL UNLESS NOTED OTHERWISE.
2. ANCHOR PLATE FOR HANDRAIL SHALL BE STAINLESS STEEL OR GALVANIZED AS NOTED ON DRAWINGS.
3. THREADED ANCHOR BOLTS, WASHERS AND NUTS SHALL ALL BE STAINLESS STEEL.
4. HANDRAIL LOCATED ON OTHER SIDE OF STAIRS, ANCHOR PLATE ON STAIRS.
5. 3/8" STAINLESS STEEL CHAIN WITH SNAP LOCATED AS SHOWN.



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	

DATE	
BY	
CHECKED	
APPROVED	



PROJECT NO.	W911KB-04-B-0009
PROJECT NAME	KAKE DAM
PROJECT LOCATION	ALASKA
PROJECT DESCRIPTION	STRUCTURAL
PROJECT STATUS	MISCELLANEOUS DETAILS II

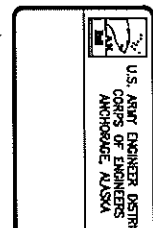
PROJECT NO.	W911KB-04-B-0009
PROJECT NAME	KAKE DAM
PROJECT LOCATION	ALASKA
PROJECT DESCRIPTION	STRUCTURAL
PROJECT STATUS	MISCELLANEOUS DETAILS II

Reference number:	S-12
Sheet 22 of	



CONTRACT No.	
PROJECT	
CITY	
STATE	
DESIGNED BY	
CHECKED BY	
APPROVED BY	
DATE	

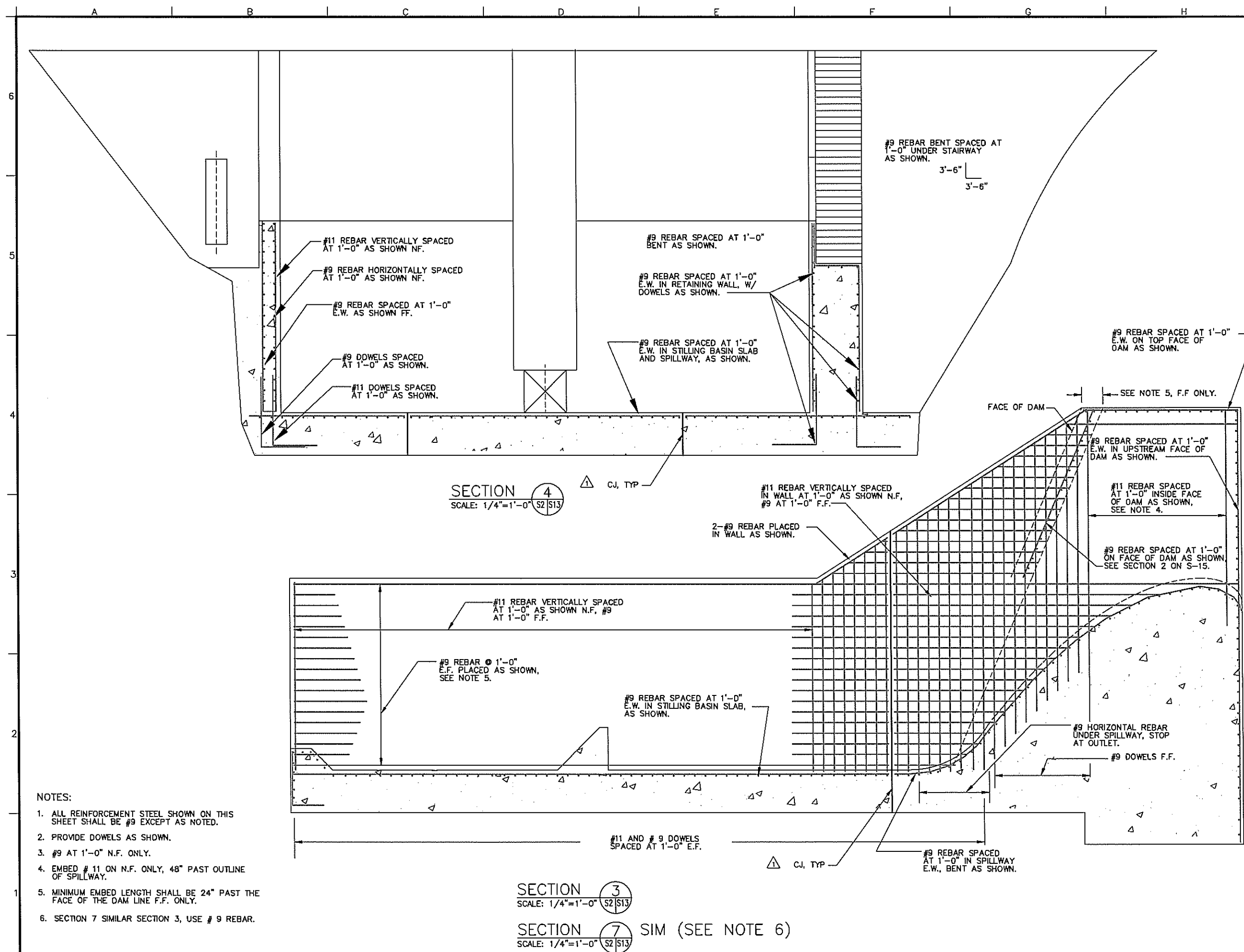
NO.	1
DATE	1/1/00
BY	J. J. J.
CHECKED BY	
APPROVED BY	
DATE	



PROJECT	
CITY	
STATE	
DESIGNED BY	
CHECKED BY	
APPROVED BY	
DATE	

KAKE, ALASKA
KAKE DAM
STRUCTURAL
REINFORCEMENT 1

Reference number:
S-13
Sheet 23 of



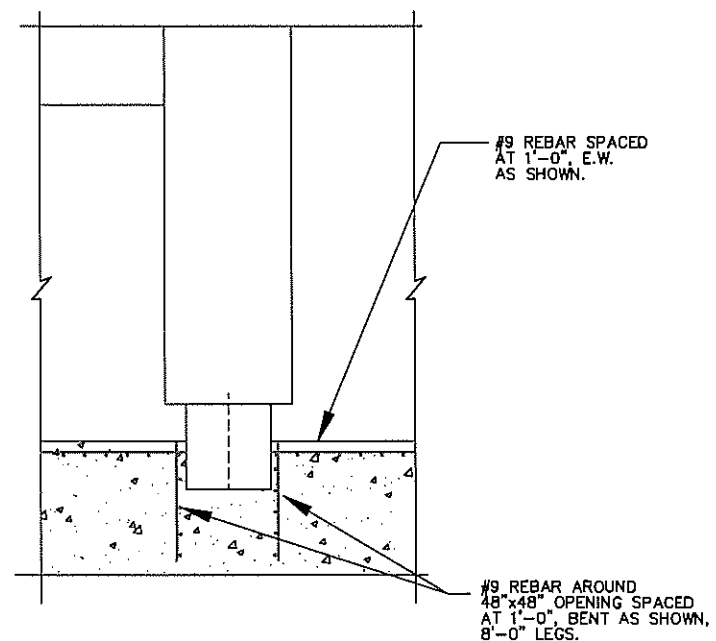
- NOTES:
- ALL REINFORCEMENT STEEL SHOWN ON THIS SHEET SHALL BE #9 EXCEPT AS NOTED.
 - PROVIDE DOWELS AS SHOWN.
 - #9 AT 1'-0" N.F. ONLY.
 - EMBED #11 ON N.F. ONLY, 48" PAST OUTLINE OF SPILLWAY.
 - MINIMUM EMBED LENGTH SHALL BE 24" PAST THE FACE OF THE DAM LINE F.F. ONLY.
 - SECTION 7 SIMILAR SECTION 3, USE #9 REBAR.

SECTION 4
SCALE: 1/4"=1'-0" S2 S13

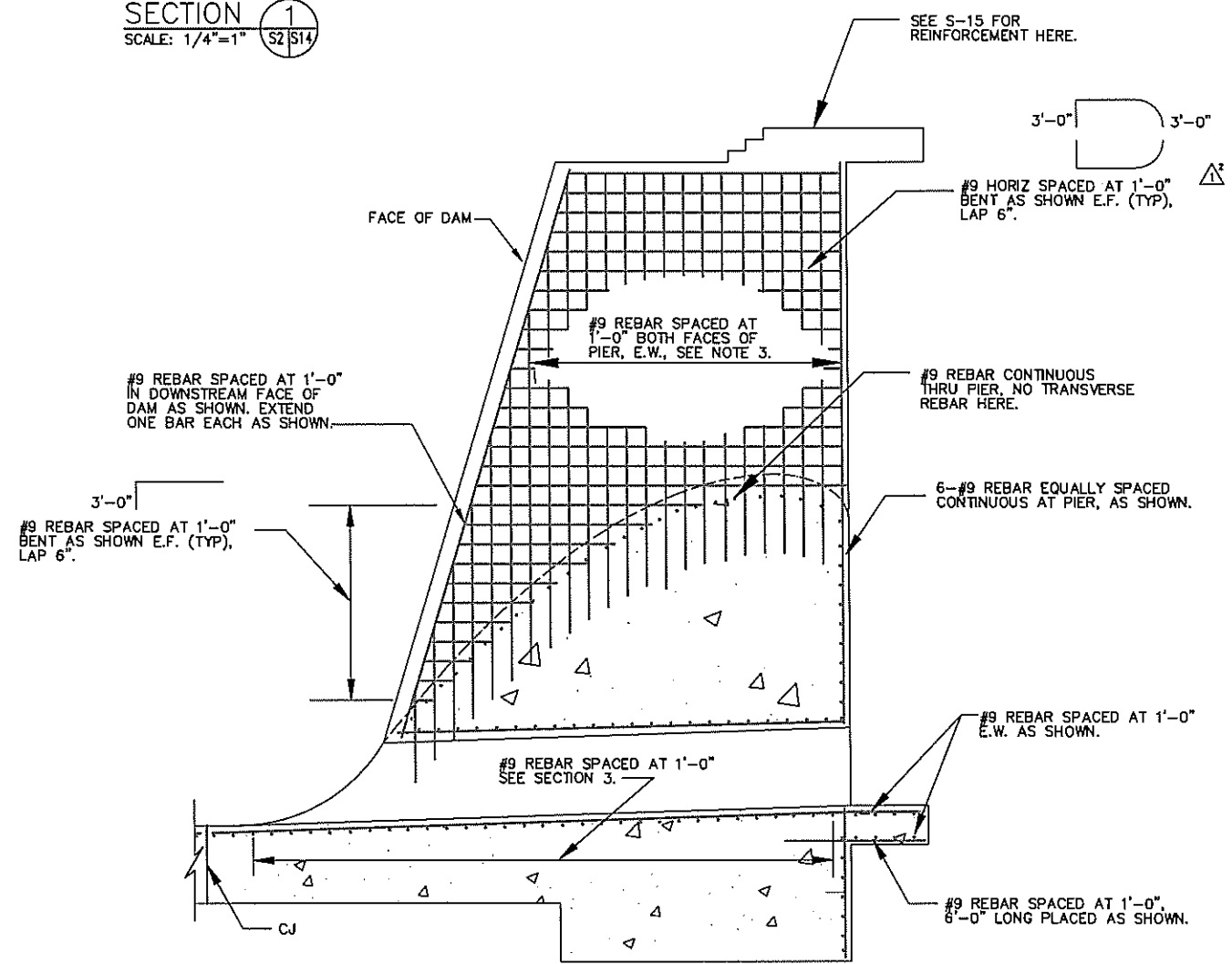
SECTION 3
SCALE: 1/4"=1'-0" S2 S13

SECTION 7 SIM (SEE NOTE 6)
SCALE: 1/4"=1'-0" S2 S13

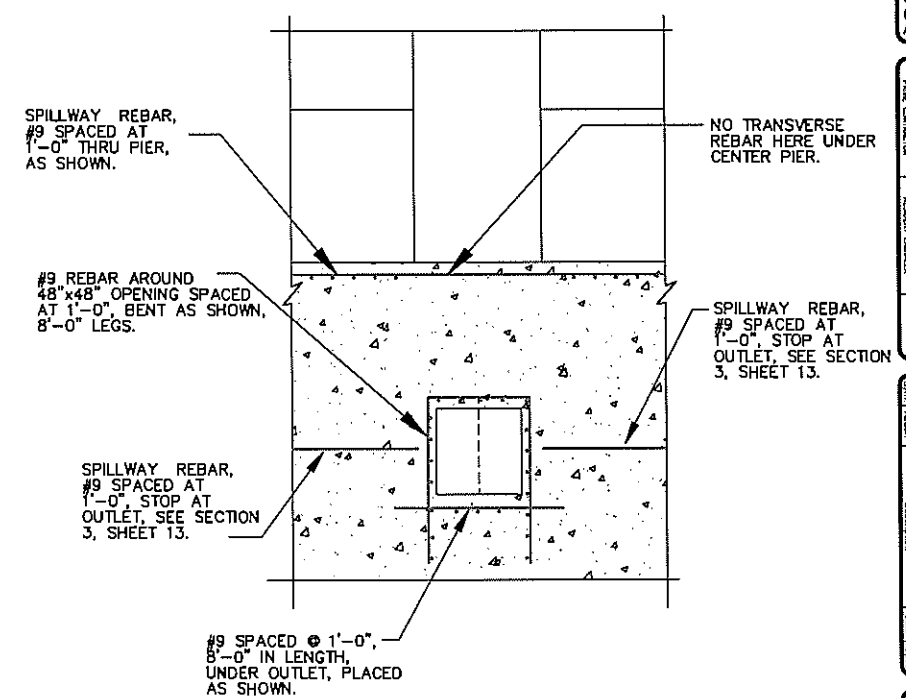
AS-BUILT SET



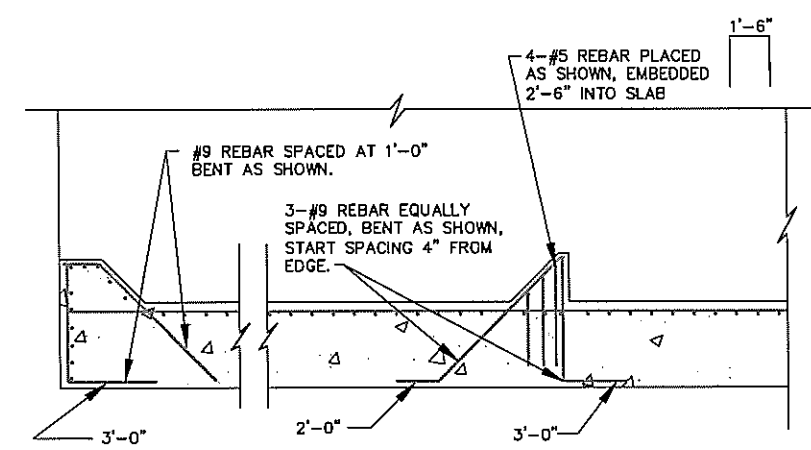
SECTION 1
SCALE: 1/4"=1'



SECTION 2
1/4"



SECTION 3
scale: 1/4"=1'



SECTION 4
1/4"

- NOTES:
1. ALL REINFORCEMENT STEEL SHOWN ON THIS SHEET SHALL BE #9 EXCEPT AS NOTED.
 2. PROVIDE DOWELS AS SHOWN.
 3. EMBED #9 ON BOTH FACES 48" PAST OUTLINE OF SPILLWAY.

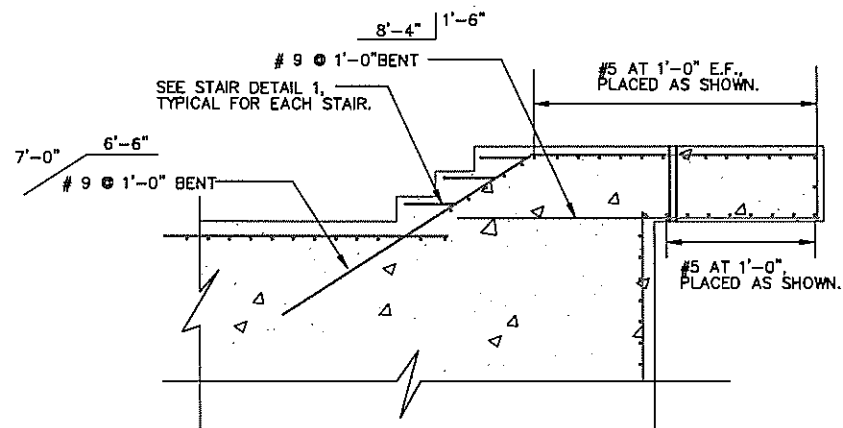


CONTRACT NO.	DATE
CITY	STATE
PROJECT NO.	DATE
DESIGN NO.	DATE
REVISION NO.	DATE
BY	CHK
DATE	DATE

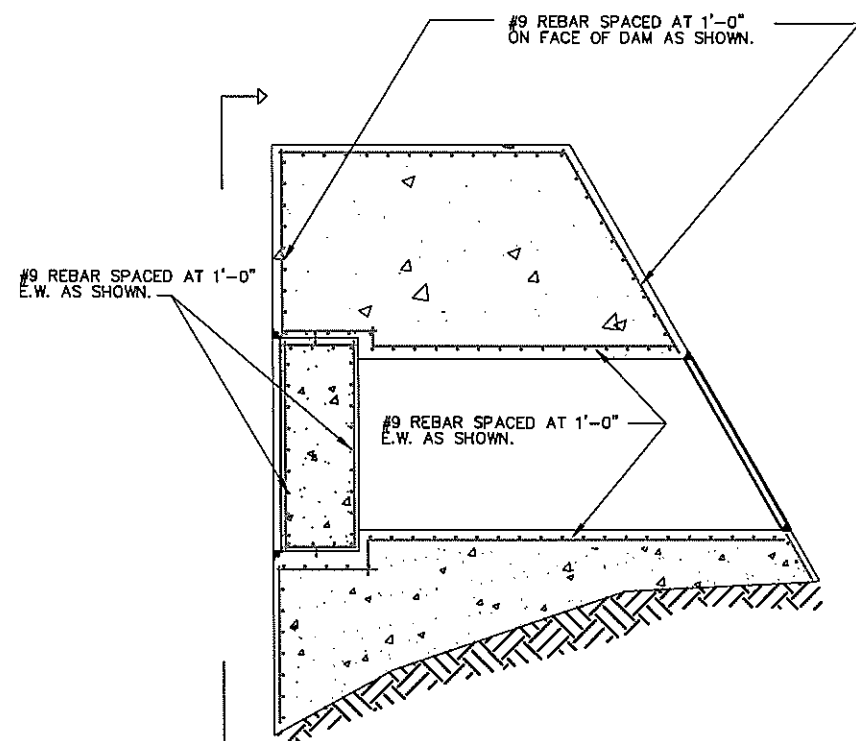
PROJECT NO.	DATE
CITY	STATE
PROJECT NO.	DATE
DESIGN NO.	DATE
REVISION NO.	DATE
BY	CHK
DATE	DATE

INV. NO. W911KB-04-B-0009

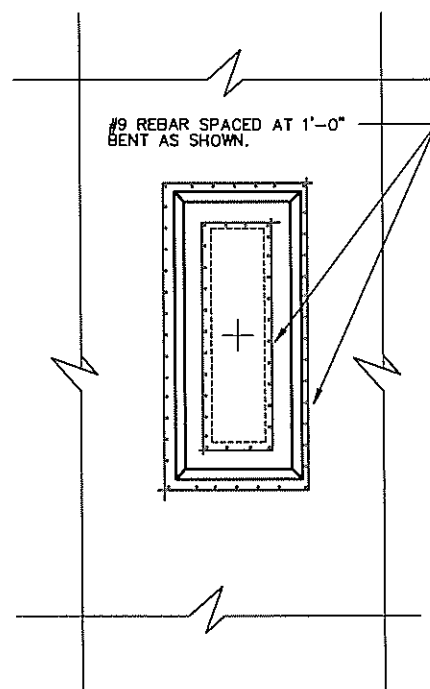
Reference number:
S-14
Sheet 24 of



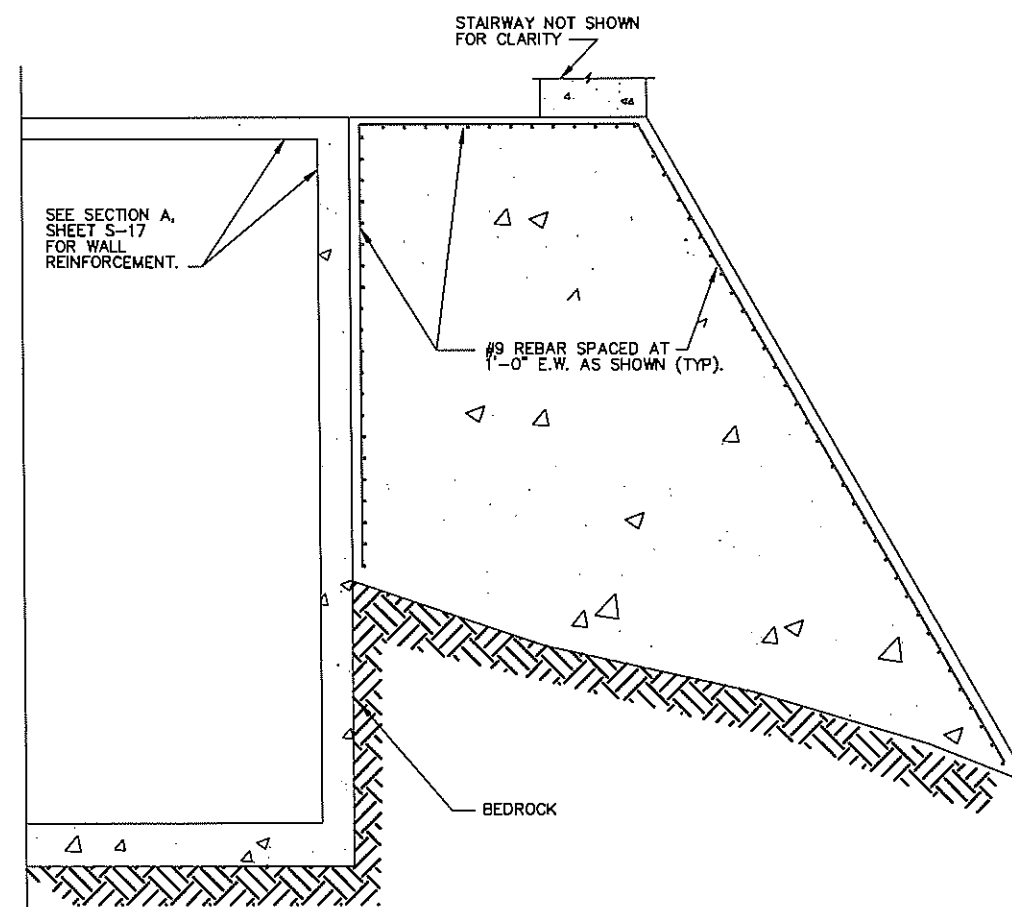
SECTION 3
SCALE: 1/2"=1'



SECTION 2
SCALE: 1/4"=1'

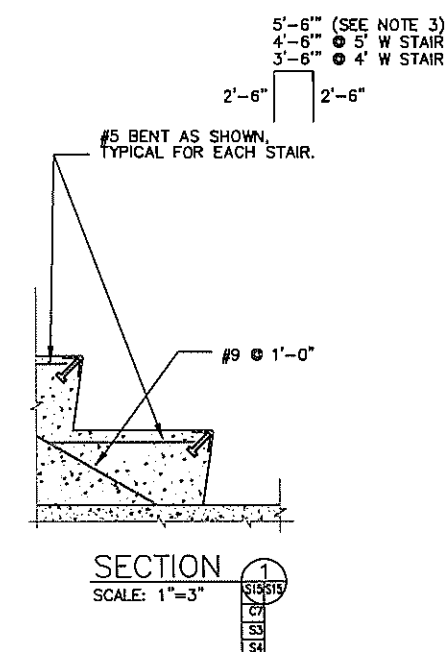


SECTION A
SCALE: 1/4"=1'



SECTION 1
SCALE: 1/4"=1'

- NOTES:
1. ALL REINFORCEMENT STEEL SHOWN ON THIS SHEET SHALL BE #9 EXCEPT AS NOTED.
 2. PROVIDE DOWELS AS SHOWN.
 3. FOR CENTER PIER STAIRS.

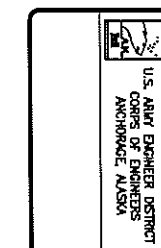


SECTION 1
SCALE: 1"=3'



CONTRACT NO.	DATE
PROJECT NO.	DATE
DESIGN NO.	DATE
REVISION NO.	DATE

NO.	DESCRIPTION	DATE
1	REVISION	DATE
2	REVISION	DATE
3	REVISION	DATE
4	REVISION	DATE
5	REVISION	DATE
6	REVISION	DATE
7	REVISION	DATE
8	REVISION	DATE
9	REVISION	DATE
10	REVISION	DATE



PROJECT NO.	DATE	
DESIGN NO.	DATE	
REVISION NO.	DATE	
NO.	DESCRIPTION	DATE
1	REVISION	DATE
2	REVISION	DATE
3	REVISION	DATE
4	REVISION	DATE
5	REVISION	DATE
6	REVISION	DATE
7	REVISION	DATE
8	REVISION	DATE
9	REVISION	DATE
10	REVISION	DATE

PROJECT NO.	DATE	
DESIGN NO.	DATE	
REVISION NO.	DATE	
NO.	DESCRIPTION	DATE
1	REVISION	DATE
2	REVISION	DATE
3	REVISION	DATE
4	REVISION	DATE
5	REVISION	DATE
6	REVISION	DATE
7	REVISION	DATE
8	REVISION	DATE
9	REVISION	DATE
10	REVISION	DATE

PROJECT NO.	DATE	
DESIGN NO.	DATE	
REVISION NO.	DATE	
NO.	DESCRIPTION	DATE
1	REVISION	DATE
2	REVISION	DATE
3	REVISION	DATE
4	REVISION	DATE
5	REVISION	DATE
6	REVISION	DATE
7	REVISION	DATE
8	REVISION	DATE
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10	REVISION	DATE



CONTRACT NO.	DATE
CONTRACTOR	STATE
PROJECT	DATE
DESIGNER	DATE
CHECKER	DATE
APPROVER	DATE

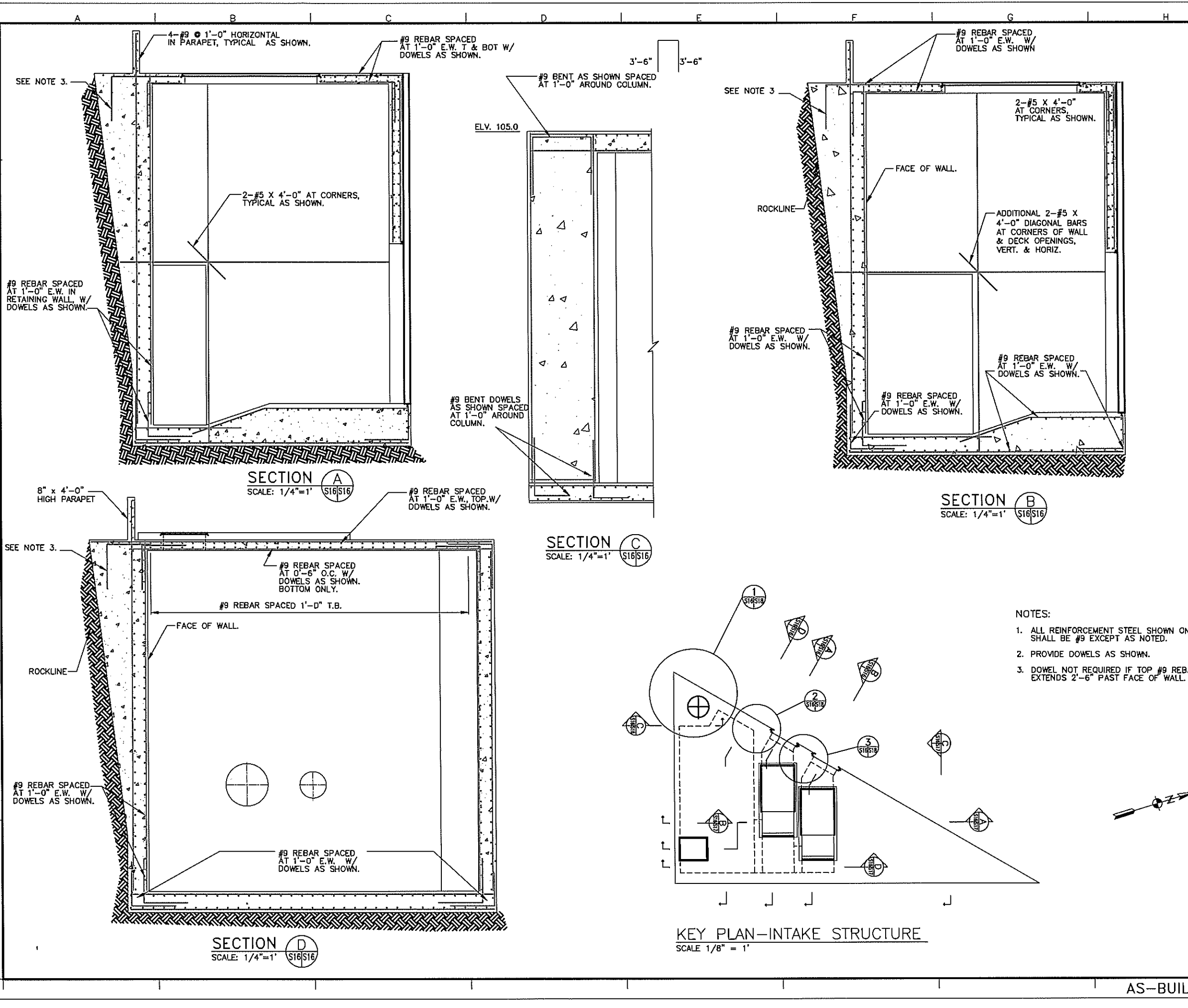
STATION	SECTION	DATE

U.S. ARMY ENGINEER DISTRICT	PROJECT
CORPS OF ENGINEERS	NO.
ANCHORAGE, ALASKA	

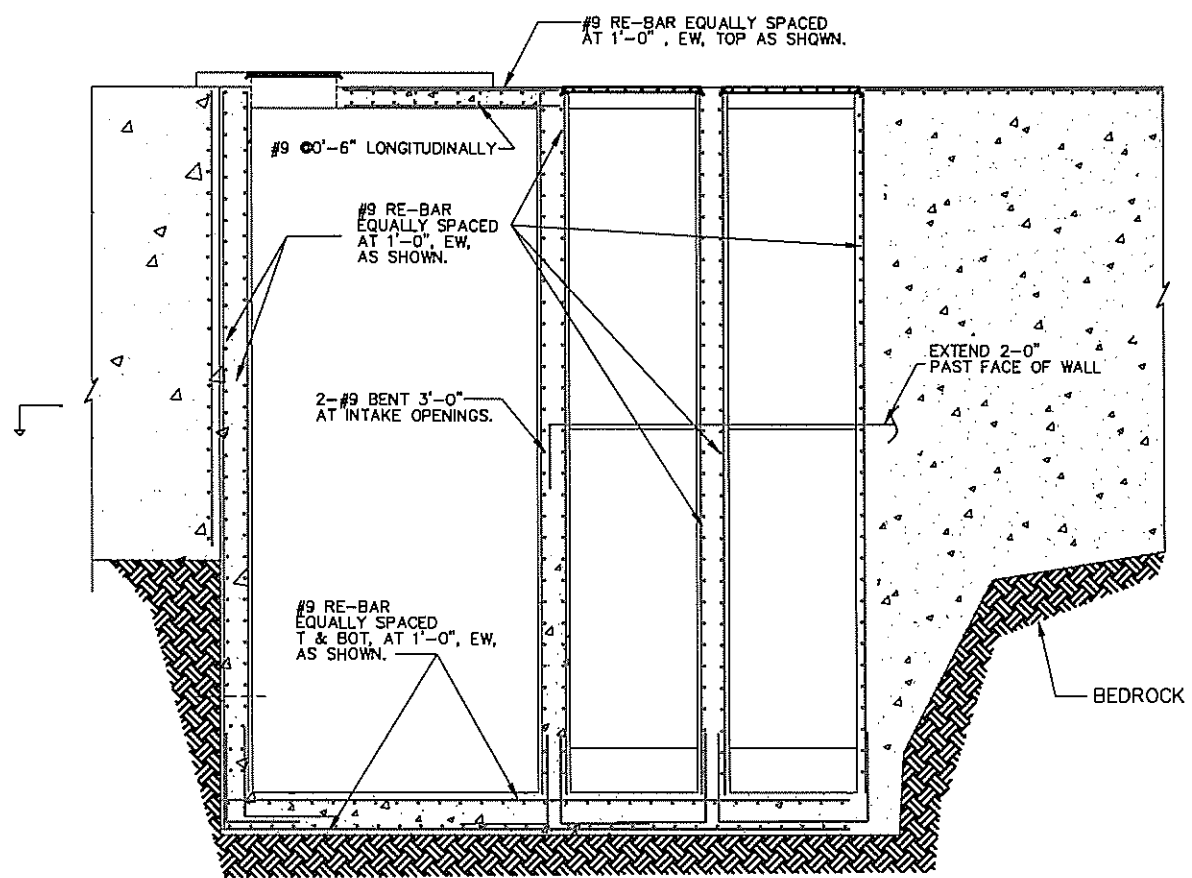
INV. NO. W911KB-04-B-0009	DATE

KAKE ALASKA	INTAKE STRUCTURE
KAKE DAM	REINFORCEMENT I
STRUCTURAL	

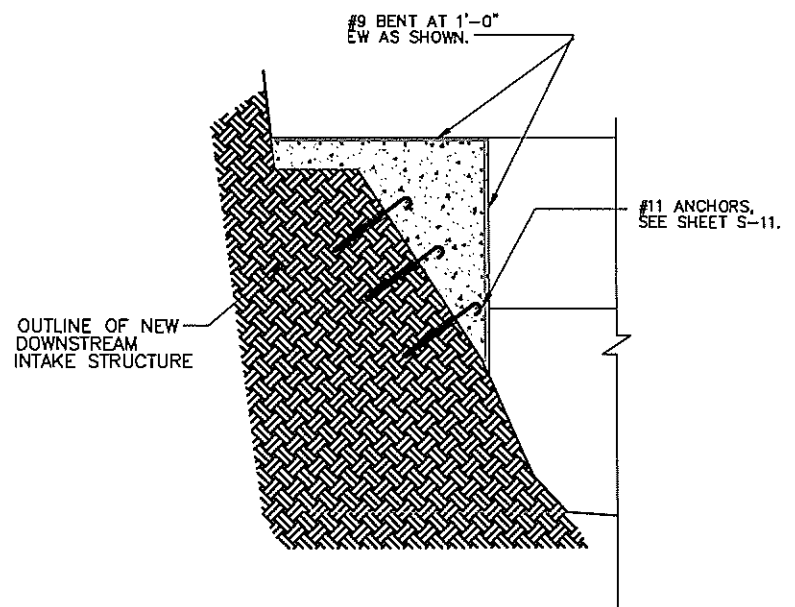
Reference number:
S-16
Sheet 26 of



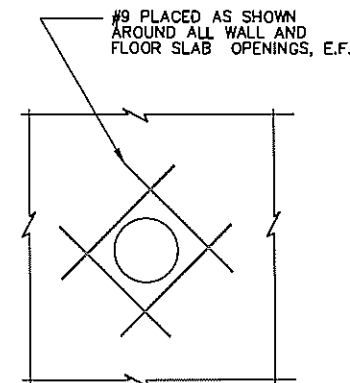
AS-BUILT SET



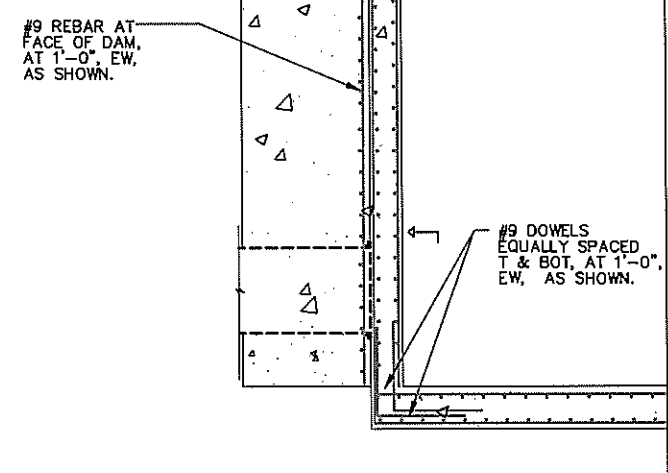
SECTION A
SCALE: 1/4"=1'



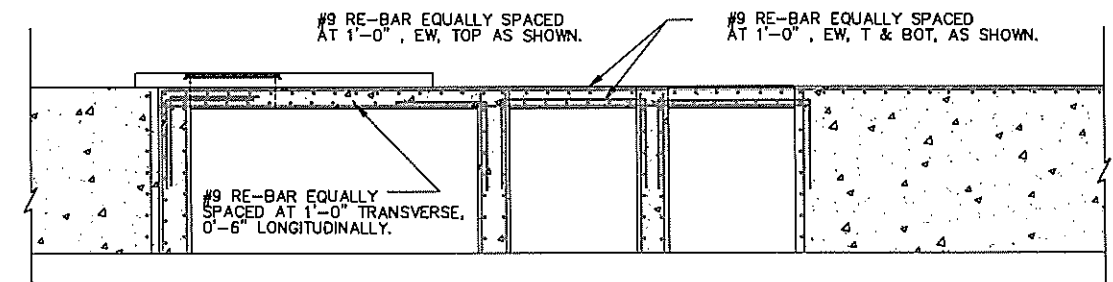
SECTION C
SCALE: 1/8"=1'



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

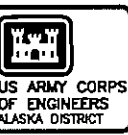


SECTION B
SCALE: 1/4"=1'-0"



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

- NOTES:
1. ALL REINFORCEMENT STEEL SHOWN ON THIS SHEET SHALL BE #9 EXCEPT AS NOTED.
 2. PROVIDE DOWELS AS SHOWN.



US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO.	PROJECT NO.	SHEET NO.	SHEET TOTAL

DATE	BY	CHECKED	APPROVED

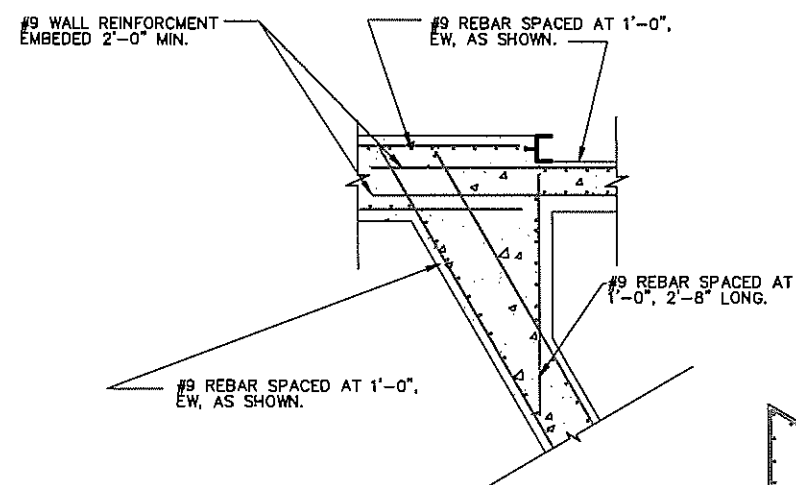
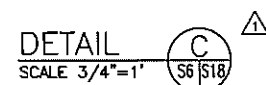
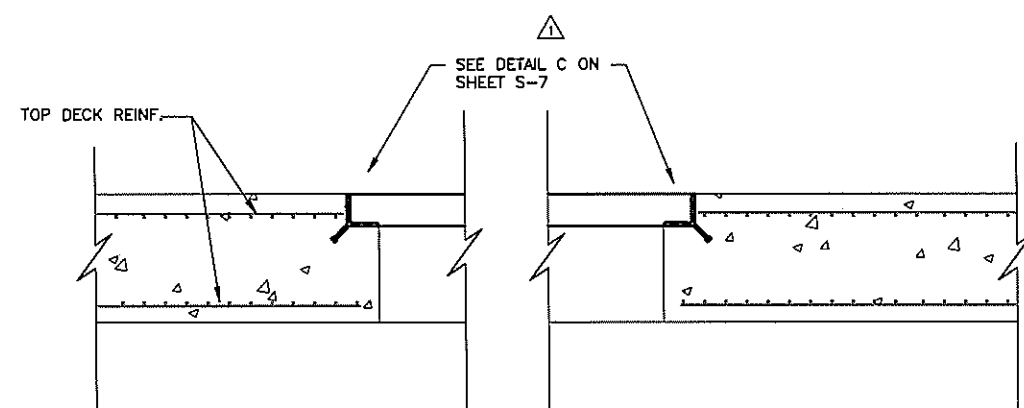
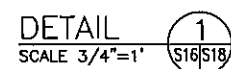
U.S. ARMY CORPS OF ENGINEERS
ANCHORAGE DISTRICT


INV. NO. W911KB-04-B-0009


KAKE DAM
STRUCTURAL
INTAKE STRUCTURE
REINFORCEMENT II

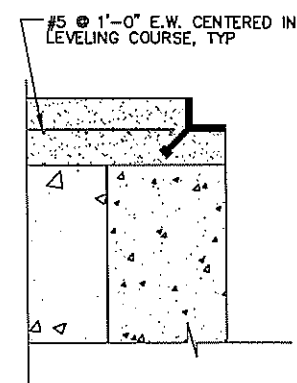
Reference number:
S-17

Sheet 27 of

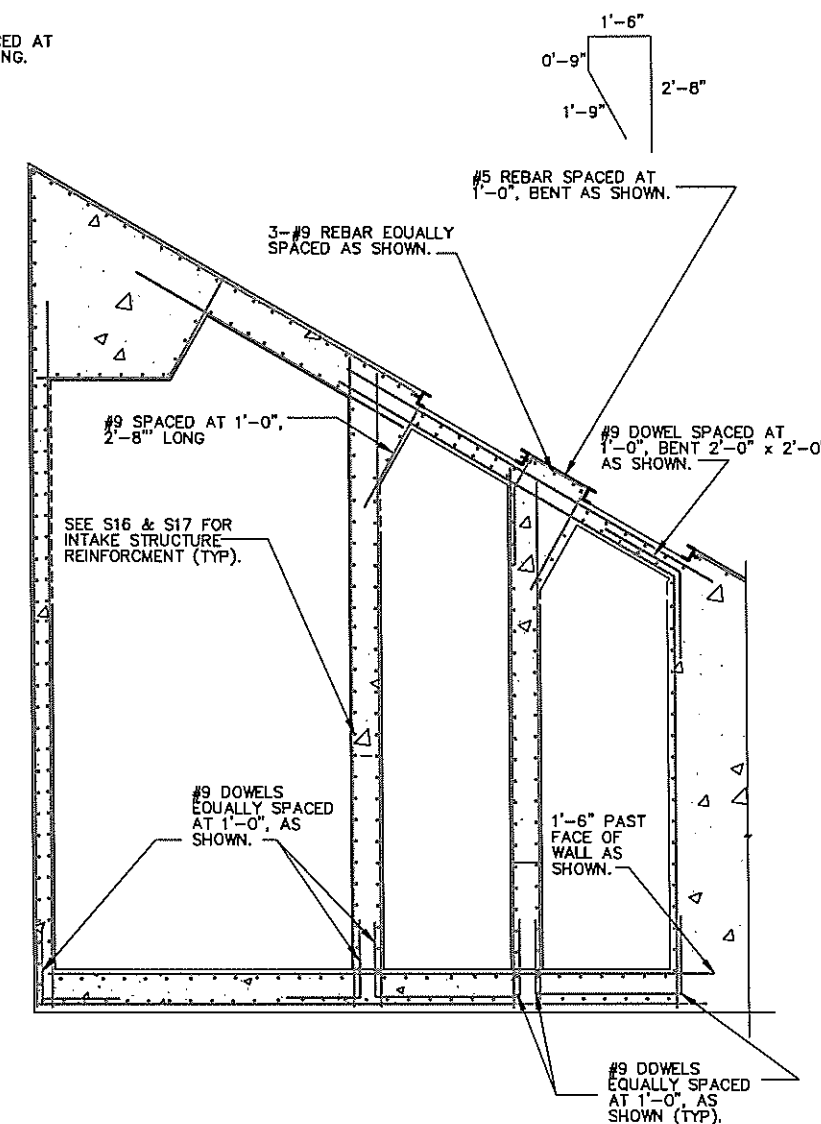


DETAIL  2
SCALE 3/4"=1' S16 S18

DETAIL  3 SIM.
SCALE 3/4"=1' S16 S18

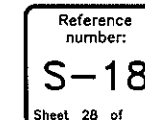


DETAIL A
SCALE 1/4"=1' S6 | S18



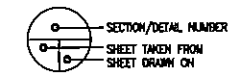
INTAKE STRUCTURE
PARTIAL PLAN
SCALE 1/2"=1' D
S17/S18

- NOTES:
1. ALL REINFORCEMENT STEEL SHOWN ON THIS SHEET SHALL BE #9 EXCEPT AS NOTED.
 2. PROVIDE DOWELS AS SHOWN.



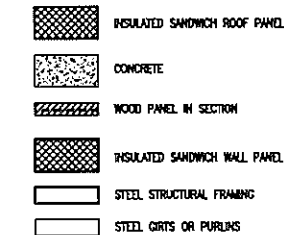
ABBREVIATIONS			
ALT	ALTERNATE	NTS	NOT TO SCALE
ALUM	ALUMINUM	OPP	OPPOSITE
APPROX	APPROXIMATELY	P	PAINT
ARCH	ARCHITECT, ARCHITECTURAL	PLWD	PLYWOOD
&	AND	PSF	POUNDS PER SQUARE FOOT
BD	BOARD	PSI	POUNDS PER SQUARE INCH
BLDG	BUILDING	REF	REFERENCE
BLK	BLOCK	REINF	REINFORCED, REINFORCING
BLKG	BLOCKING		REINFORCEMENT
B/W	BETWEEN	REQD	REQUIRED
CONC	CONCRETE	SHT	SHEET
CONSTR	CONSTRUCTION	SHTG	SHEATHING
CONT	CONTINUOUS	SIM	SIMILAR
CONTR	CONTRACTOR	SPEC	SPECIFICATION
DIM	DIMENSION	STRUCT	STRUCTURAL, STRUCTURE
DWG	DRAWING	SUSP	SUSPENDED
ELEC	ELECTRICAL	T & G	TONGUE AND GROOVE
ENGR	ENGINEER	TBHM	THERMAL BREAK HOLLOW METAL
EQUIP	EQUIPMENT	TYP	TYPICAL
EXT	EXTERIOR	UBC	UNIFORM BUILDING CODE
FIN	FINISH, FINISHED	W/	WITH
FLR	FLOOR	W/O	WITHOUT
FLASH	FLASHING	WD	WOOD
FRT	FIRE-RETARDANT TREATED		
IHM	INSULATED HOLLOW METAL		
INSL	INSULATED, INSULATION		
INSL G	INSULATED GLASS		
INT	INTERIOR		
MATL	MATERIAL		
MAX	MAXIMUM		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MFRG	MANUFACTURING		
MIN	MINIMUM		
MISC	MISCELLANEOUS		

SYMBOLS



101 DOOR NUMBER 1 WINDOW NUMBER

MATERIALS



CODE ANALYSIS FOR PUMP HOUSE BUILDING

MIL HANDBOOK 1008-C (JUNE 1997)

AUTOMATIC FIRE EXTINGUISHING SYSTEM: PER UBC 904.2.2 EXCEPTION #3
NOT REQUIRED
WALL MOUNTED PORTABLE FIRE EXTINGUISHER WILL BE PROVIDED

UNIFORM BUILDING CODE (UBC) (1997)

PUMP HOUSE BUILDING: 280 SQ. FT.
OCCUPANCY: PER UBC TABLE 3-A
GROUP F FACTORY/INDUSTRIAL, (DIVISION 2) LOW HAZARD PER UBC 306.1
OCCUPANCY SEPARATION: PER UBC TABLE 3-B
NO REQUIREMENT
FIRE RATING AT EXTERIOR WALLS: PER UBC TABLE 6-A
WALLS N/R, ROOF N/R
CONSTRUCTION TYPE: PER UBC TABLE 5-B
TYPE II N
ALLOWABLE HEIGHT (STORIES/FEET) - AREA: PER UBC TABLE 5-B
(2/55 FEET) - 18,000 SQ. FT.
ACTUAL HEIGHT (STORIES/FEET) - AREA:
(1/14.66 FEET) - 280 SQ. FT.

NFPA 101 - LIFE SAFETY CODE, 2000

OCCUPANCY: INDUSTRIAL (40.1.4.1. B)
OCCUPANT LOAD: N/A (TABLE 7.3.1.2)
SHALL NOT BE LESS THAN THE MAXIMUM PROBABLE NUMBER OF OCCUPANTS PRESENT
AT ANY TIME
MAXIMUM PROBABLE NUMBER < OR = 5 OCCUPANTS
MEANS OF EGRESS: PER NFPA 101 40.2.4.1. EXCEPTION = 1
MINIMUM CLEAR WIDTH: PER NFPA 101 7.2.1.2.3 EXCEPTION #2 = 28 INCHES
EXITS PROVIDED: 1 SINGLE HINGED INWARD OPENING DOOR
EXIT SIZE: WIDTH = 44 INCHES, HEIGHT = 82 INCHES
DEAD END CORRIDORS: N/A
TRAVEL DISTANCE: (40.2.6.1) ALLOWABLE 200 FT.
TRAVEL DISTANCE: (40.2.6.1) ACTUAL 20.25 FT.



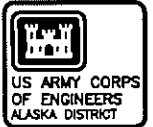
CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	

DATE	
DESCRIPTION	
DATE	

US ARMY ENGINEER DISTRICT ANCHORAGE, ALASKA	INSTRUMENT NO.	DATE
INV. NO. W911KB-04-B-0009	PROJECT NO.	DATE

AKA, ALASKA KAKE DAM ARCHITECTURE PUMP HOUSE ABBREVIATIONS/CODE ANALYSIS/SYMBOLS
--

Reference number: A-1 Sheet 29 of
--



CONTRACT NO.	
CONTRACTOR	
DATE	
APPROVED	
STATE	
DATE	

DATE	
REVISION	
DESCRIPTION	
DATE	

U.S. ARMY CORPS OF ENGINEERS ANCHORAGE, ALASKA	PROJECT NO. W911KB-04-B-0009
DATE	
REVISION	
DESCRIPTION	
DATE	

KAKE, ALASKA KAKE DAM ARCHITECTURE PUMP HOUSE FLOOR PLAN
--

Reference number: A-2
Sheet 30 of



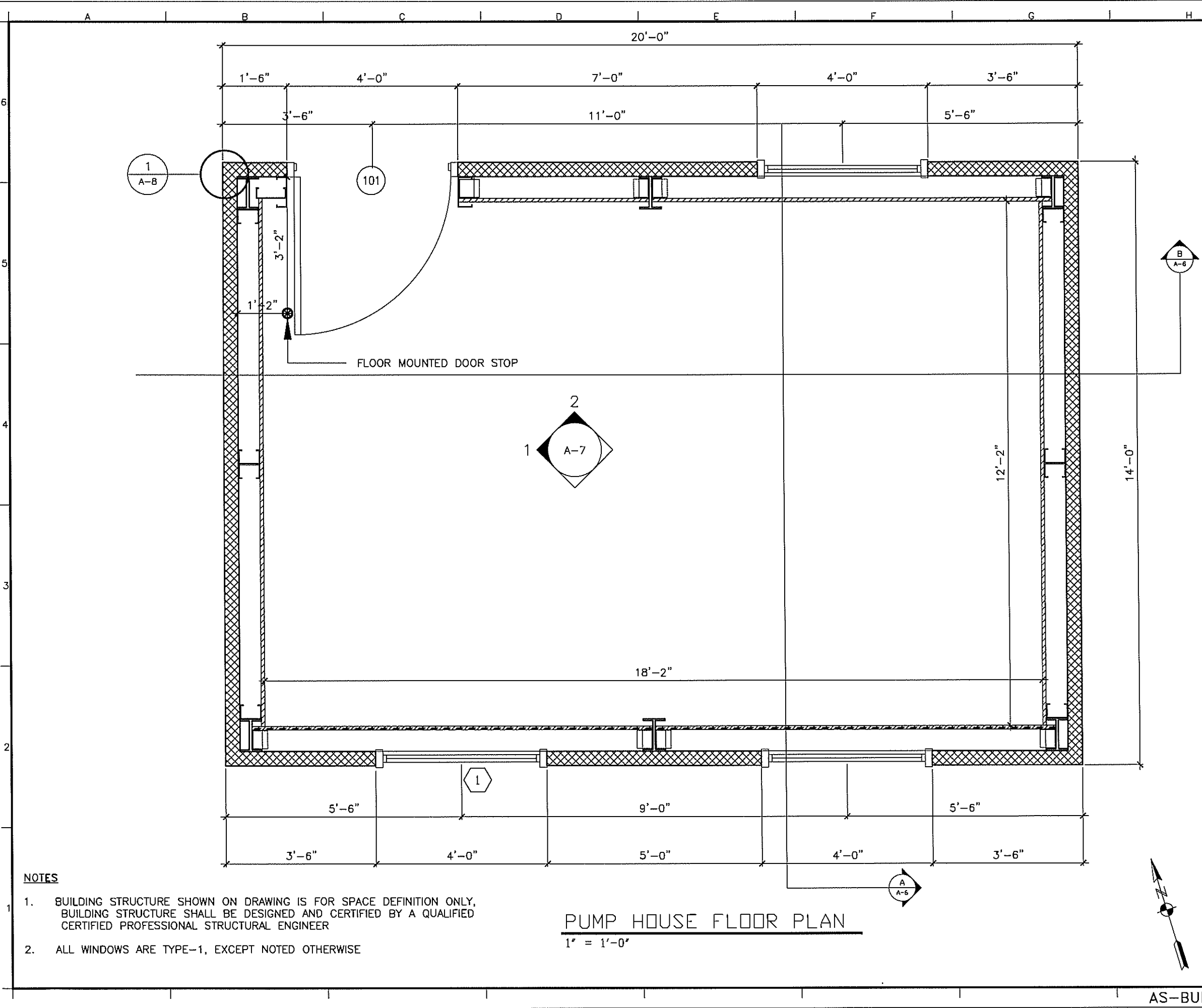
AS-BUILT SET

NOTES

1. BUILDING STRUCTURE SHOWN ON DRAWING IS FOR SPACE DEFINITION ONLY, BUILDING STRUCTURE SHALL BE DESIGNED AND CERTIFIED BY A QUALIFIED CERTIFIED PROFESSIONAL STRUCTURAL ENGINEER
2. ALL WINDOWS ARE TYPE-1, EXCEPT NOTED OTHERWISE

PUMP HOUSE FLOOR PLAN

1" = 1'-0"





CONTRACT NO.	_____
CONTRACTOR	_____
CITY	_____
STATE	_____
DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
APPROVED BY	_____
DATE	_____

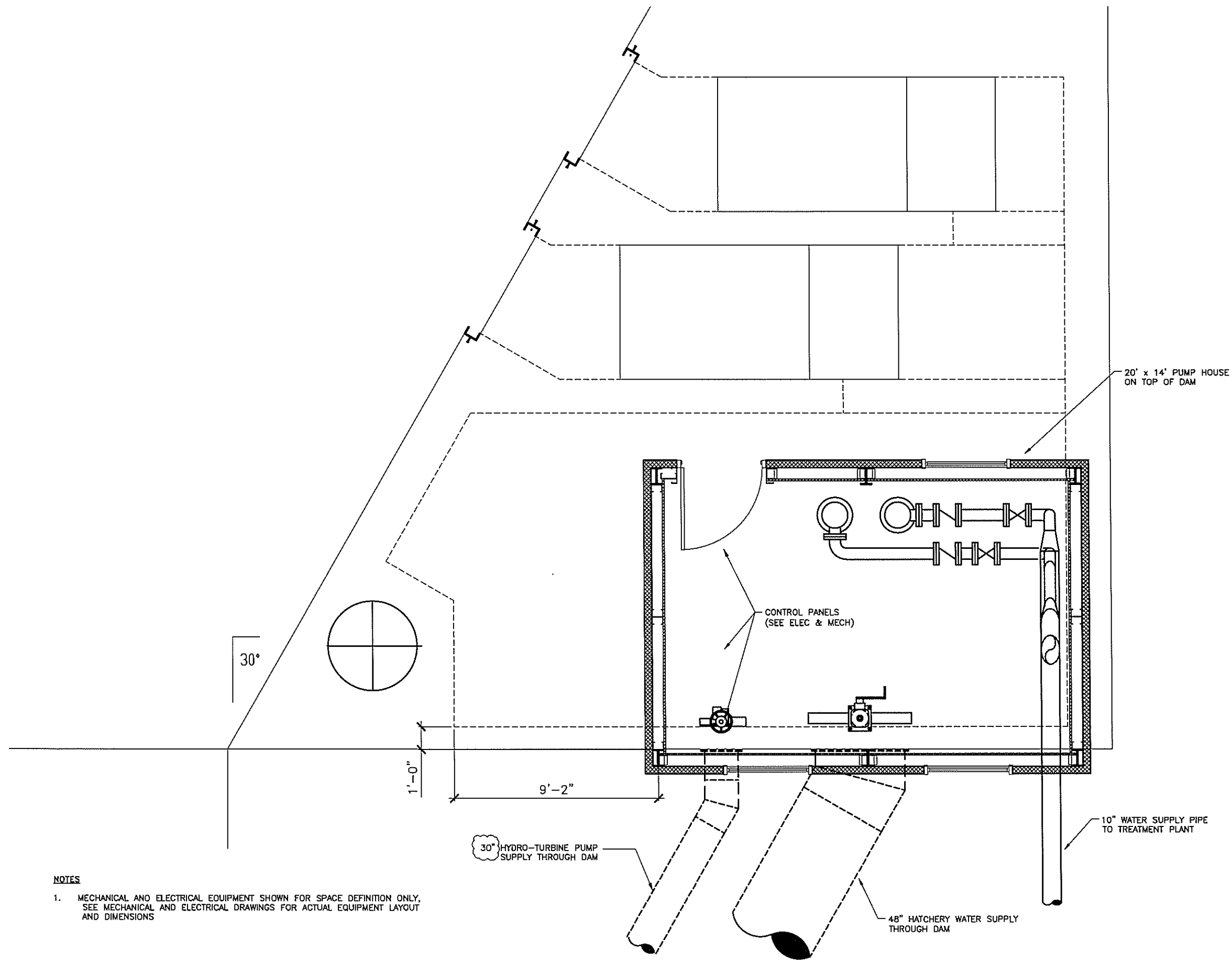
DATE	_____
DESCRIPTION	_____
DATE	_____
DESCRIPTION	_____
DATE	_____
DESCRIPTION	_____
DATE	_____
DESCRIPTION	_____

U.S. ARMY ENGINEER DISTRICT	ANCHORAGE, ALASKA
PROJECT NO.	W911KB-04-B-0009
DATE	_____
DESCRIPTION	_____
DATE	_____
DESCRIPTION	_____

DESIGNED BY	_____
CHECKED BY	_____
APPROVED BY	_____
DATE	_____
DESCRIPTION	_____
DATE	_____
DESCRIPTION	_____

KAKE, ALASKA	KAKE DAM
ARCHITECTURE	PUMP HOUSE
LOCATION ON DAM	EQUIPMENT LAYOUT

Reference number:	A-3
Sheet	31 of



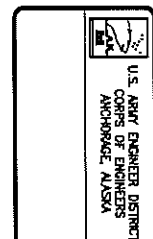
NOTES

1. MECHANICAL AND ELECTRICAL EQUIPMENT SHOWN FOR SPACE DEFINITION ONLY, SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ACTUAL EQUIPMENT LAYOUT AND DIMENSIONS



CONTRACT NO.	
CONSTRUCTION	
CITY	
STATE	
DESIGNER	
DATE	
APPROVED	
DESIGNER	

NO.	SECTION	DESCRIPTION	DATE
1			
2			
3			
4			
5			
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8			
9			
10			

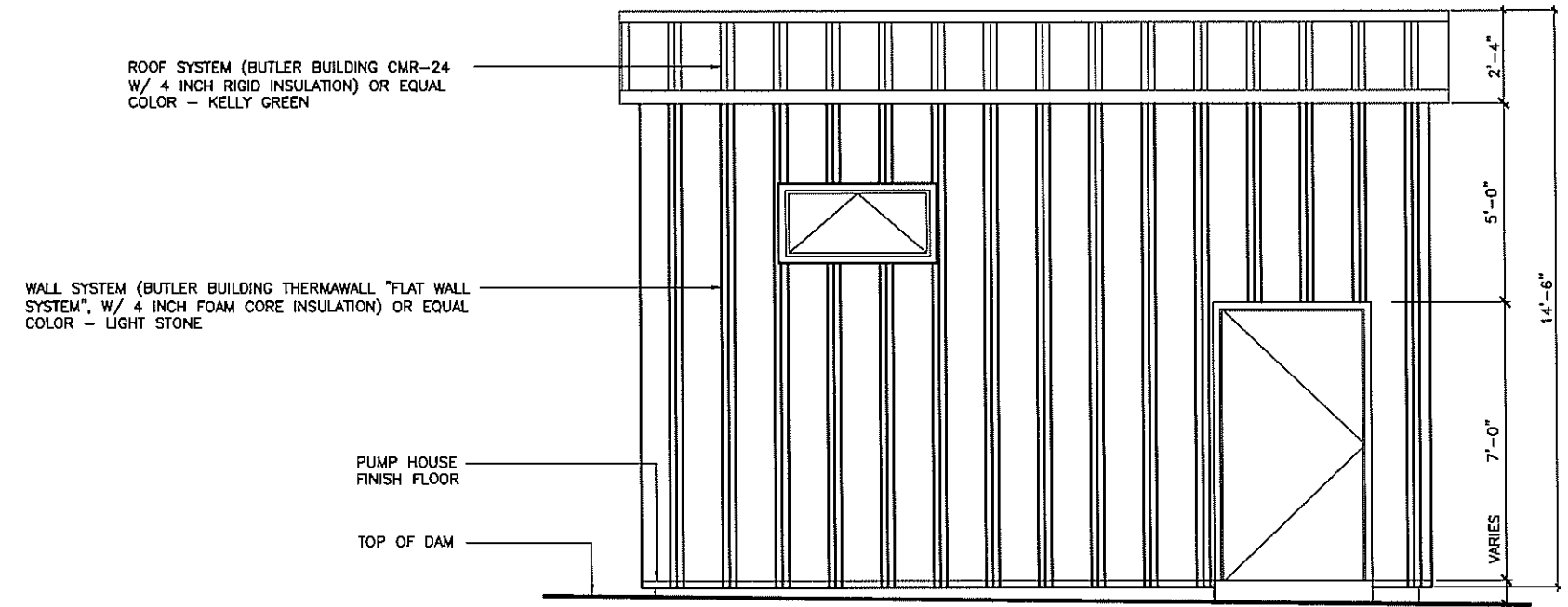


PROJECT NO.	INV. NO. W91K8-04-B-0009
PROJECT NAME	KAKE DAM ARCHITECTURE PUMP HOUSE BUILDING ELEVATIONS
PROJECT LOCATION	KAKE DAM ARCHITECTURE PUMP HOUSE BUILDING ELEVATIONS
PROJECT DATE	1/27/10
PROJECT SCALE	1/2" = 1'-0"
PROJECT DRAWN BY	1/27/10
PROJECT CHECKED BY	1/27/10
PROJECT APPROVED BY	1/27/10

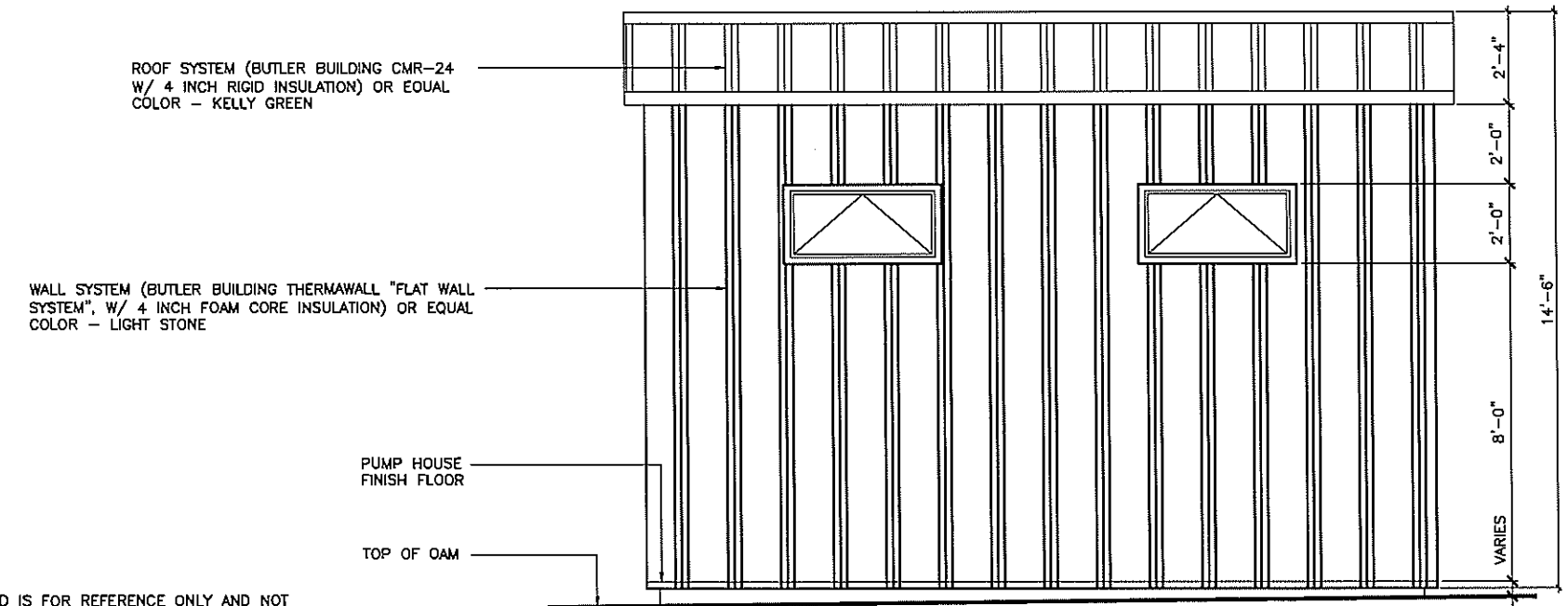
KAKE, ALASKA
KAKE DAM
ARCHITECTURE
PUMP HOUSE
BUILDING ELEVATIONS

Reference number:	A-4
Sheet 32 of	

AS-BUILT SET

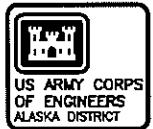


PUMP HOUSE NORTH ELEVATION
1/2" = 1'-0"



PUMP HOUSE SOUTH ELEVATION
1/2" = 1'-0"

- NOTES
1. MANUFACTURER LISTED IS FOR REFERENCE ONLY AND NOT INTENDED AS A RECOMMENDATION OR TO BE PROPRIETARY.



CONTRACT NO.	
CONTRACTOR	
PROJECT NAME	
STATE	
CITY	
DATE	

Rev	1
By	
Date	
Description	
Drawn	
Check	
Scale	



Project No.	
Sheet No.	1/2 of 1-0
Scale	1/2" = 1'-0"
Author	K. KAKOOSAKS
Checker	K. KAKOOSAKS
Drawn	K. KAKOOSAKS
Project Name	PUMP HOUSE
Project Location	AKA-04-B-0009

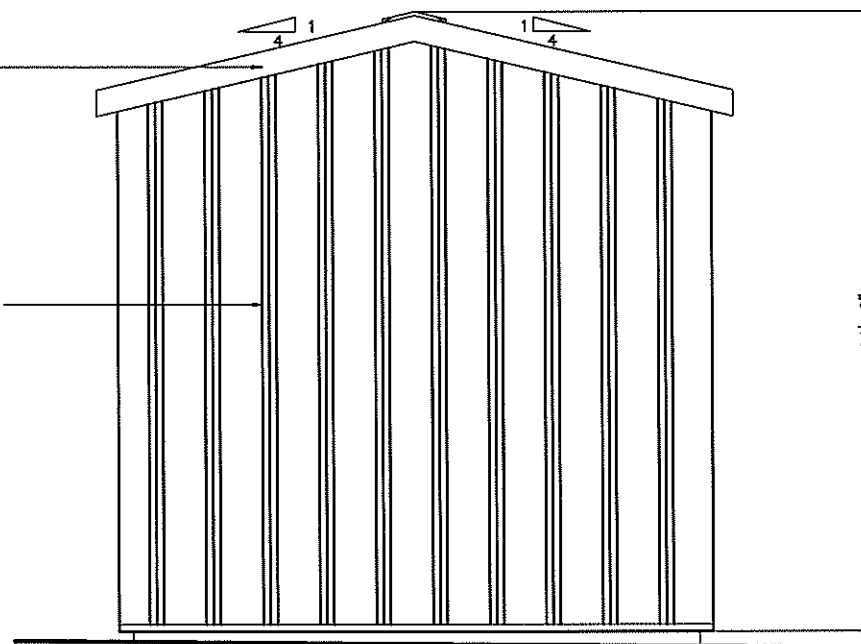
KAKE, ALASKA
KAKE DAM
ARCHITECTURE
PUMP HOUSE
BUILDING ELEVATION AND ROOF DETAIL
ROOM FINISH DATA/DOOR DATA

Reference number:
A-5
Sheet 33 of

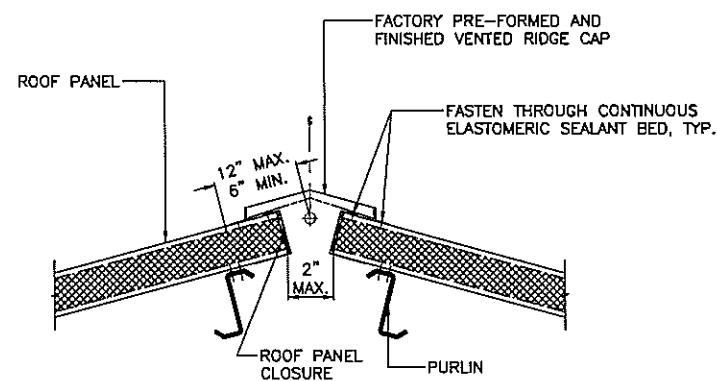
AS-BUILT SET

ROOF SYSTEM (BUTLER BUILDING CMR-24
W/ 4 INCH RIGID INSULATION) OR EQUAL
COLOR - KELLY GREEN

WALL SYSTEM (BUTLER BUILDING THERMAWALL "FLAT WALL
SYSTEM", W/ 4 INCH FOAM CORE INSULATION) OR EQUAL
COLOR - LIGHT STONE



PUMP HOUSE EAST ELEVATION (WEST ELEVATION SIMILAR)
1/2" = 1'-0"



ROOF RIDGE DETAIL
N.T.S.

NOTES

1. MANUFACTURER LISTED IS FOR REFERENCE ONLY AND NOT INTENDED AS A RECOMMENDATION OR TO BE PROPRIETARY.

ROOM FINISH DATA

FLOOR	SEALED, HARDENED CONCRETE, NATURAL CONCRETE COLOR
BASE	METAL TRIM, FACTORY COLOR FINISHED TO MATCH WALL COLOR
WAINSCOT	3/4" X 4' X 8' FRT PLYWOOD
WALLS	FACTORY FINISHED METAL PANEL
	COLOR BUTLER INTERIOR BIRCH WHITE OR EQUAL
CEILING	FACTORY FINISHED METAL PANEL
	COLOR BUTLER INTERIOR POLAR WHITE OR EQUAL

DOOR DATA

DOOR DATA													
DOOR	HWD SET	DOOR TYPE	DOOR SIZE	FRAME TYPE	DOOR		FRAME		DETAIL NUMBER				REMARKS
					MAT	FIN	MAT	FIN	HEAD	JAMB	JAMB	SILL	
101	1	A	3'-8"x6'-10"	1	IHM	P	TBHM	P	1/A-9	1/A-9	1/A-9	2/A-9	THRESHOLD REQD

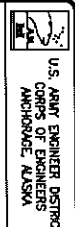
WINDOW DATA

WINDOW DATA											
WINDOW TYPE	WINDOW SIZE	WINDOW		FRAME		DETAIL NUMBER				REMARKS	
		MAT	FIN	MAT	FIN	HEAD	JAMB	JAMB	SILL		
1	2'-0"x4'-0"	INSL	G	P	TBHM	P	5/A-8	3/A-8	3/A-8	3/A-8	INSECT SCREEN REQD



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
ZIP	
PROJECT NO.	
PROJECT NAME	

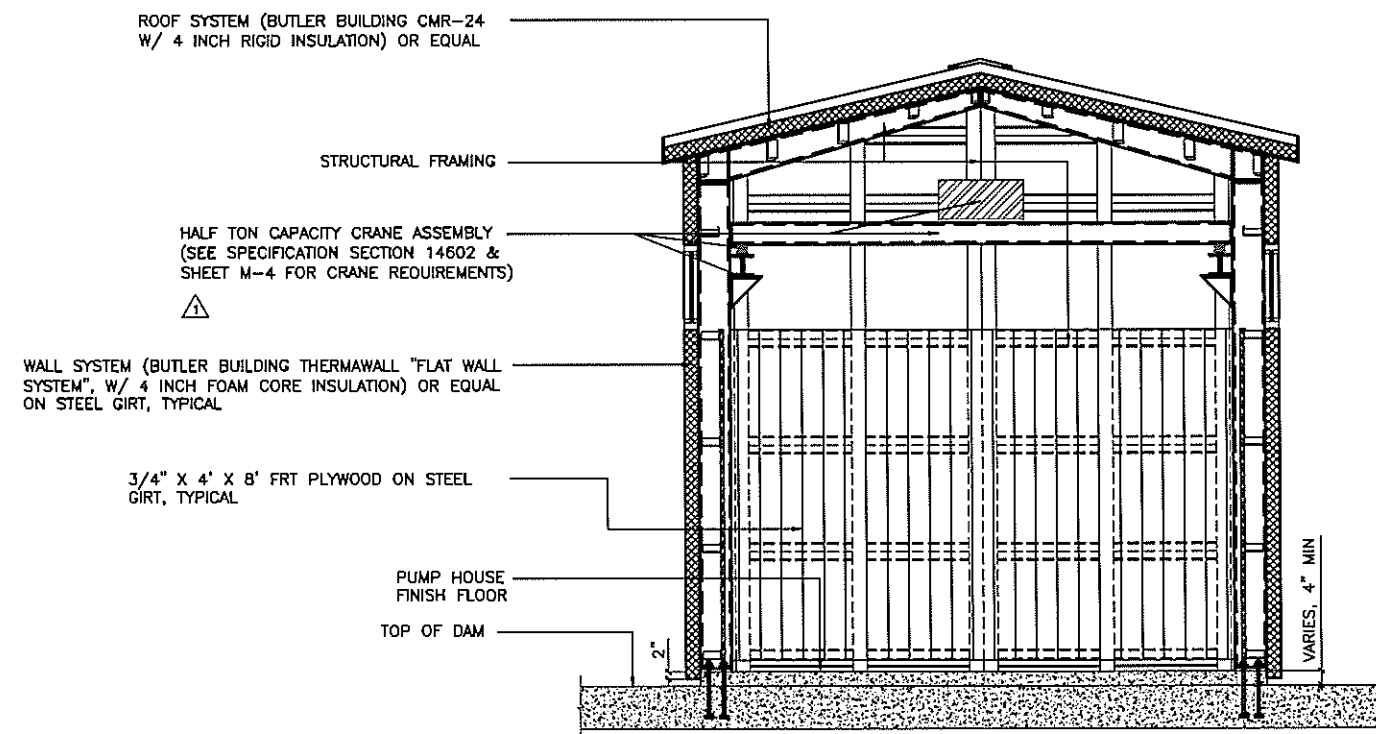
NO.	1
DESCRIPTION	1) CHANGING OUT FOR DAM #1
DATE	1/2/00
BY	...
CHECKED	...



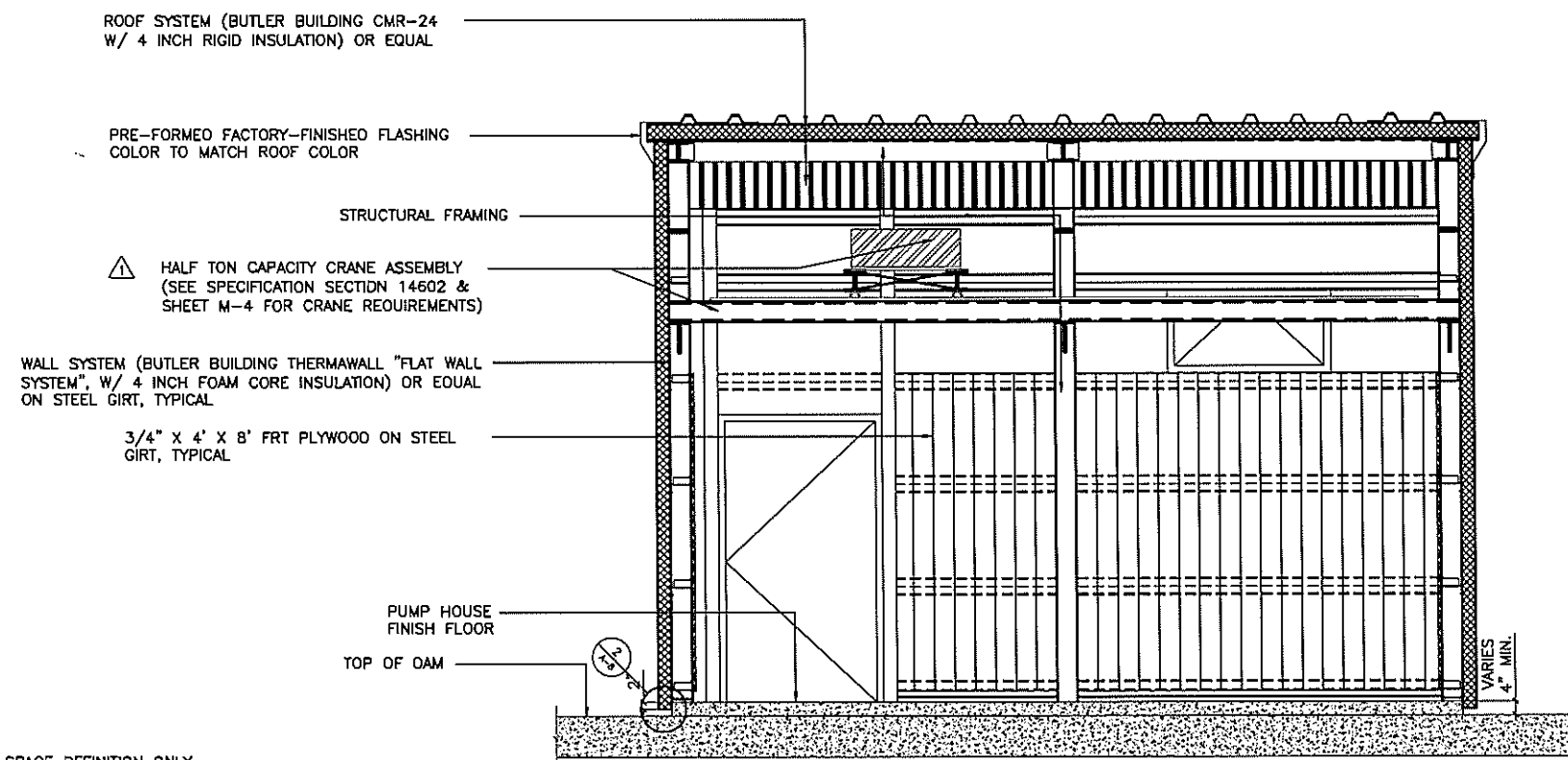
PROJECT NO.	W911KB-04-B-0009
PROJECT NAME	KAKE DAM
PROJECT LOCATION	AKA0005A08
PROJECT DESCRIPTION	PUMP HOUSE
PROJECT STATUS	...

KAKE, ALASKA
KAKE DAM
ARCHITECTURE
PUMP HOUSE
BUILDING SECTIONS

Reference number:
A-6
Sheet 34 of



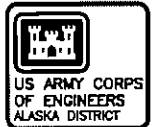
A PUMP HOUSE SECTION
1/2" = 1'-0"



B PUMP HOUSE SECTION
1/2" = 1'-0"

NOTES

1. BUILDING STRUCTURE SHOWN ON DRAWING IS FOR SPACE DEFINITION ONLY. BUILDING STRUCTURE SHALL BE DESIGNED AND CERTIFIED BY A QUALIFIED CERTIFIED PROFESSIONAL STRUCTURAL ENGINEER.
2. MANUFACTURER LISTED IS FOR REFERENCE ONLY AND NOT INTENDED AS A RECOMMENDATION OR TO BE PROPRIETARY.
3. SEE MECHANICAL SPECIFICATIONS FOR CRANE REQUIREMENTS.



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	
DESIGNER	
APPROVED	
DATE	

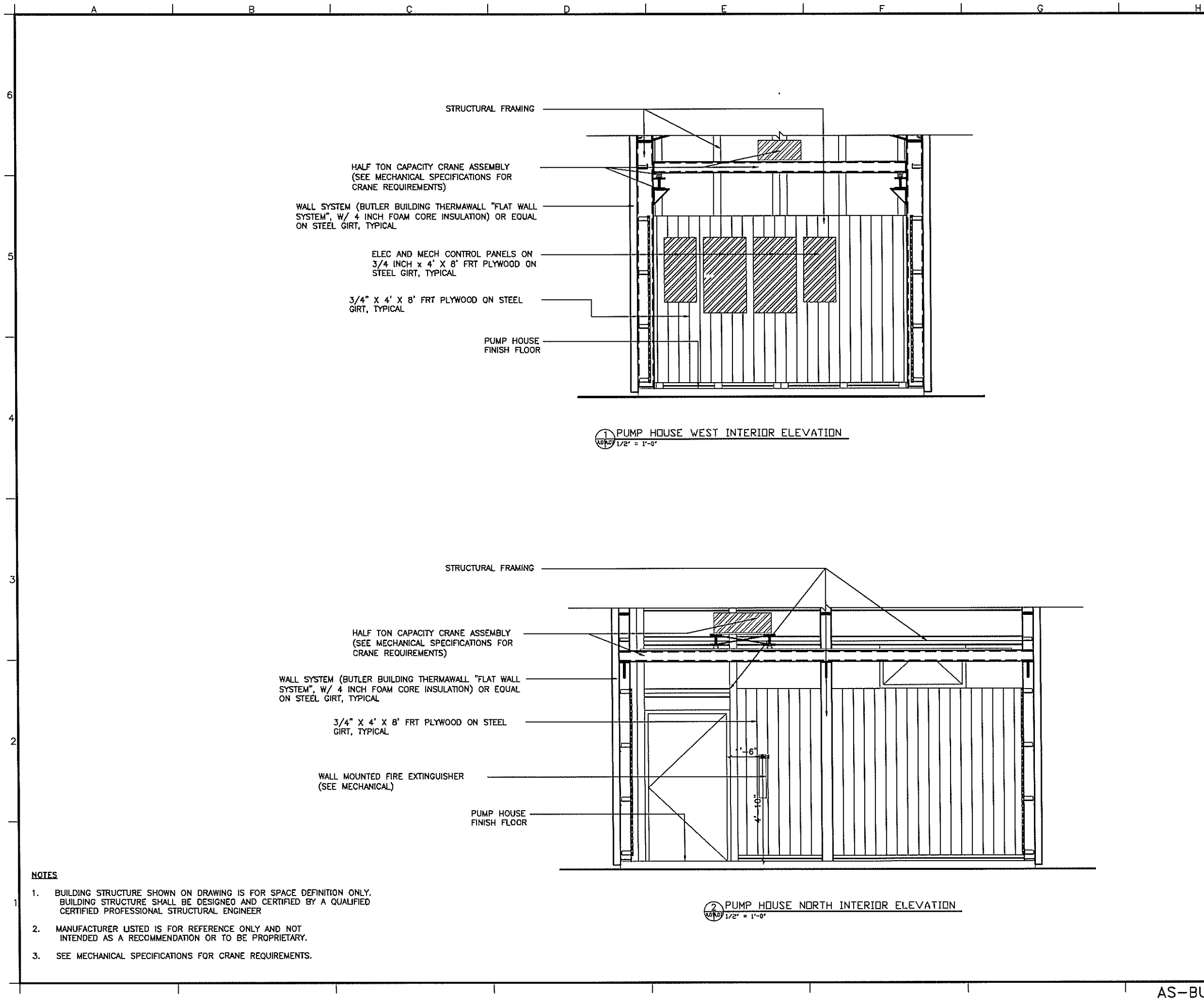
Sheet No.	
Revision	
Date	

U.S. ARMY CORPS OF ENGINEERS	
ANCHORAGE, ALASKA	

Project No.	
Sheet No.	
Scale	
Date	
Author	
Checker	
Engineer	
INSTR. NO. W91KB-04-B-0009	

KAKE, ALASKA	
KAKE DAM	
ARCHITECTURE	
PUMP HOUSE	
INTERIOR ELEVATIONS	

Reference number:	
A-7	
Sheet 35 of	



NOTES

1. BUILDING STRUCTURE SHOWN ON DRAWING IS FOR SPACE DEFINITION ONLY. BUILDING STRUCTURE SHALL BE DESIGNED AND CERTIFIED BY A QUALIFIED CERTIFIED PROFESSIONAL STRUCTURAL ENGINEER
2. MANUFACTURER LISTED IS FOR REFERENCE ONLY AND NOT INTENDED AS A RECOMMENDATION OR TO BE PROPRIETARY.
3. SEE MECHANICAL SPECIFICATIONS FOR CRANE REQUIREMENTS.

PRE-FORMED OUTSIDE CORNER FLASHING PER WALLPANEL MANUFACTURER

PRE-FORMED INSIDE CORNER FLASHING ON A CONTINUOUS SEALANT BED PER WALL PANEL MANUFACTURER

INSULATED WALL PANEL

FOAM-IN-PLACE INSL @ ALL VOIDS BTWN PANELS TYP. COVER W/ FLASHING

CONT. SEALANT TYP @ FLASHING EDGES

1 TYPICAL WALL CORNER
A-2A-B NTS

INSULATED WALL PANEL

PRE-FINISHED METAL FLASHING FOR WEATHER TIGHT SEAL PER PANEL MANUFACTURER

CAULK ALL AROUND ON EXTERIOR AND INTERIOR SIDES, TYP

WINDOW

FRAMING

STEEL THERMAL BREAK FRAMED WINDOW

PRE-FINISHED METAL FLASHING FOR WEATHER TIGHT SEAL PER PANEL MANUFACTURER

METAL FLASHING PER PANEL MANUFACTURER

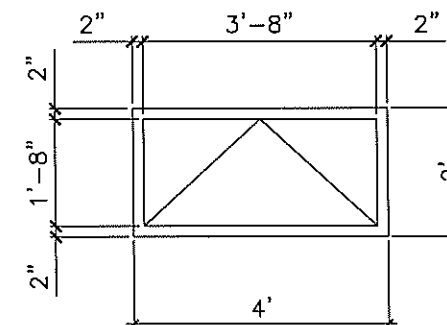
3 WINDOW HEAD AND SILL
A-8A-B NTS

INSULATED WALL PANEL

CONT. PERIMETER BASE ANGLE W/ CONT. SEALANT @ FLOOR AND WALL PANEL

PUMP HOUSE FLOOR SLAB 4" REINF CONC MIN. SLAB THICKNESS VARIES TO MATCH SLOPE OF DAM AND MAINTAIN A LEVEL FLOOR. (STEEL REINFORCEMENT SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH SPECIFICATION SECTION 03201)

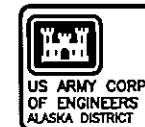
2 TYPICAL WALL BASE
A-6A-B NTS



NOTE:

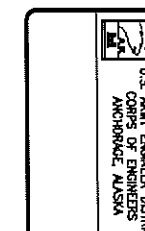
1. STEEL FRAMED WINDOW W/ INSULATED DOUBLE PANE GLAZING AND INSECT SCREEN. INTERIOR PANE OF GLAZING SHALL BE 1/4 INCH LAMINATED GLASS. EXTERIOR PANE SHALL BE 1/4 INCH TEMPERED GLASS. HARDWARE SHALL BE WINDOW MANUFACTURER'S STANDARD.

4 WINDOW TYPE - 1
A-8A-B 3/4" = 1'-0"



CONTRACT NO.	
DATE	
PROJECT	
LOCATION	
DESIGNER	
CHECKED	
APPROVED	

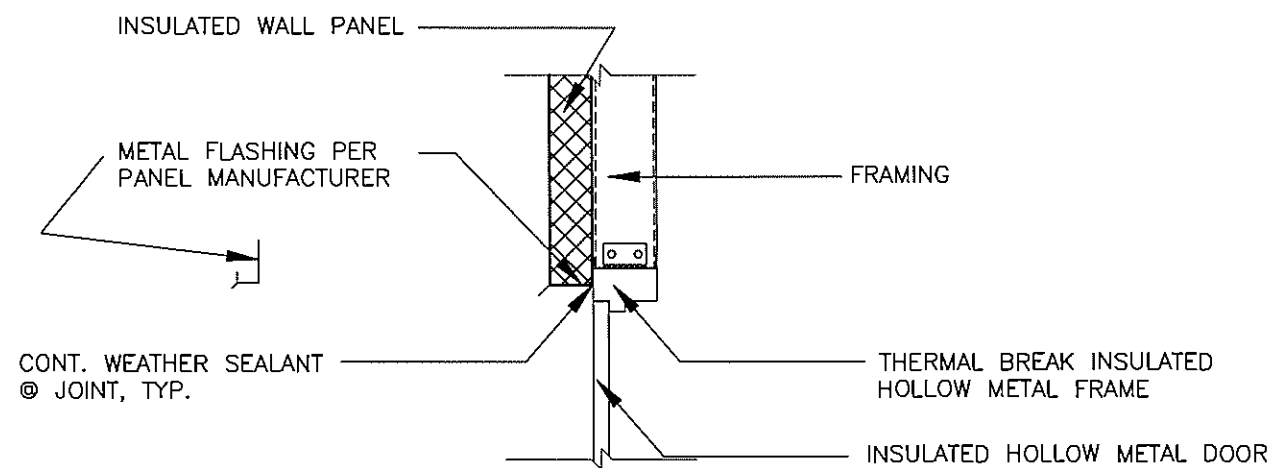
DATE	
PROJECT	
LOCATION	
DESIGNER	
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APPROVED	



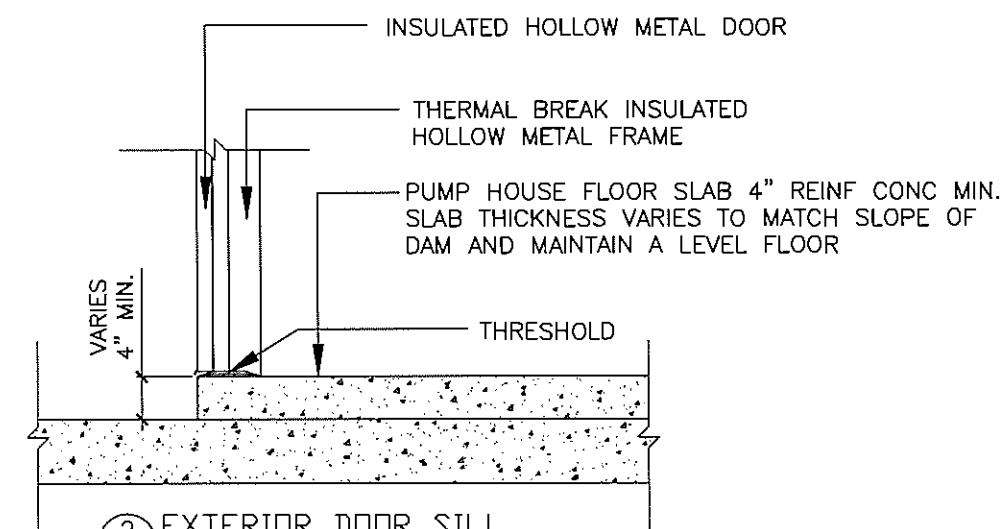
CONTRACT NO.	
DATE	
PROJECT	
LOCATION	
DESIGNER	
CHECKED	
APPROVED	

WALL AND WINDOW DETAILS

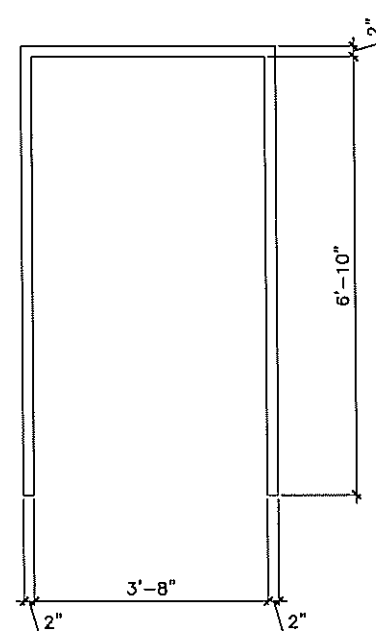
Reference number:
A-8
Sheet 36 of



1 EXTERIOR DOOR HEAD AND JAMB
A-9A-9 NTS

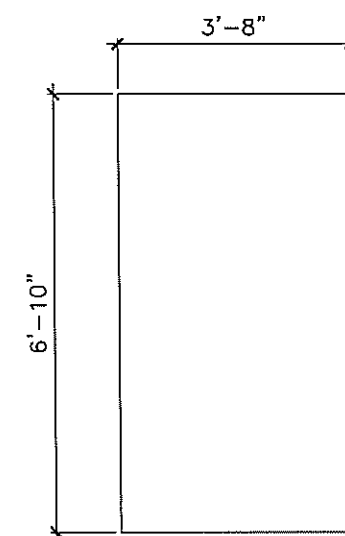


2 EXTERIOR DOOR SILL
A-9A-9 NTS



NOTE: 1. THERMAL BREAK INSULATED HOLLOW METAL FRAME

3 FRAME TYPE - 1
A-9A-9 3/4" = 1'-0"



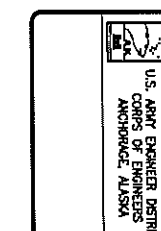
NOTE: 1. FLUSH PANEL INSULATED HOLLOW METAL DOOR.

4 DOOR TYPE - A
A-9A-9 3/4" = 1'-0"



CONTRACT NO.	
CONSTRUCTION	
DESIGNER	
APPROVED	
DATE	

SYMBOL	DESCRIPTION



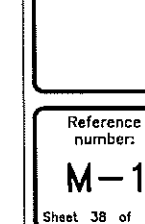
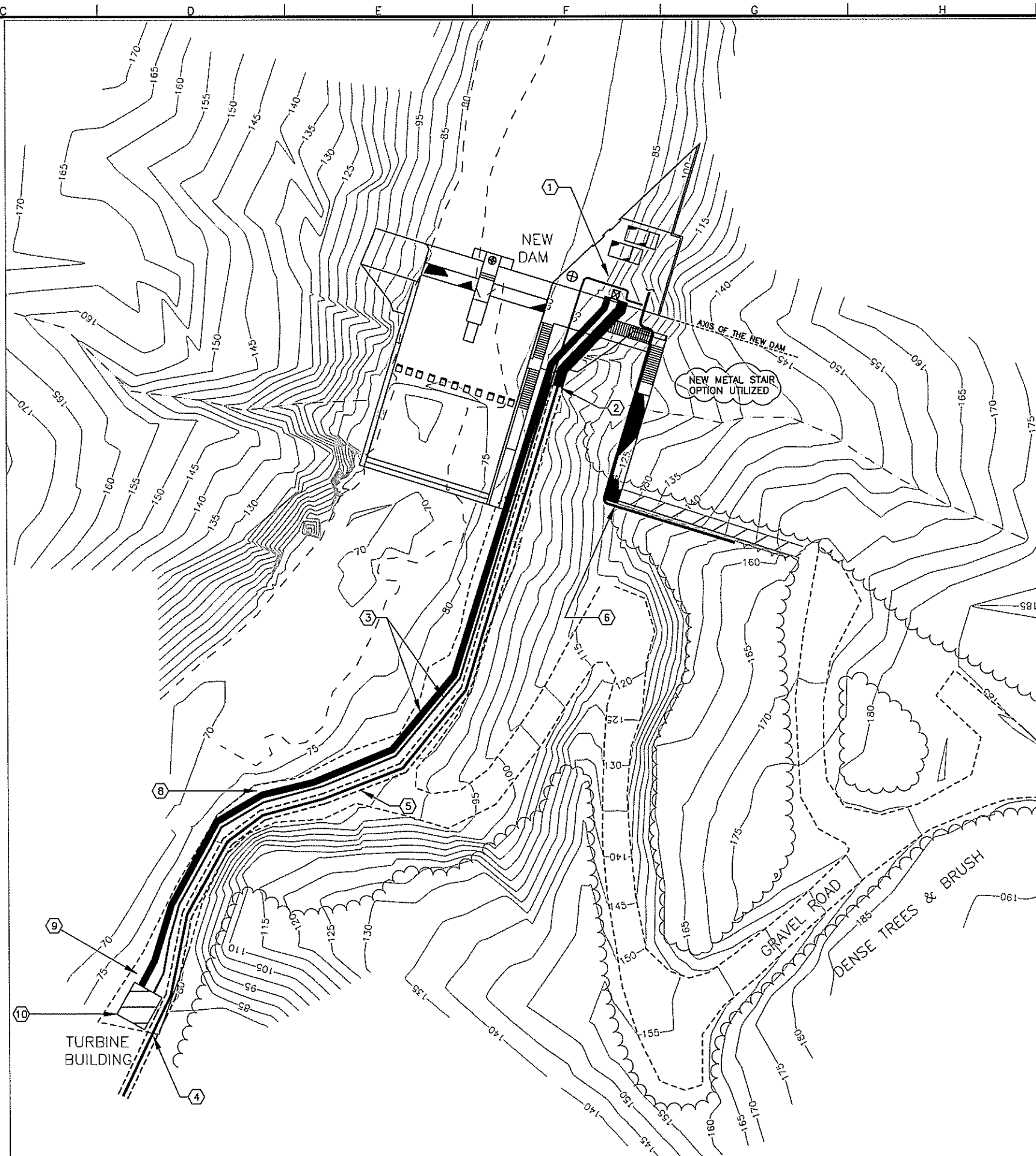
PROJECT NO.	
DATE	
BY	
CHECKED	
INCH. NO. W911KB-04-B-0009	

KAKE, ALASKA
KAKE DAM
ARCHITECTURE
PUMP HOUSE
DOOR DETAILS

Reference number:
A-9
Sheet 37 of

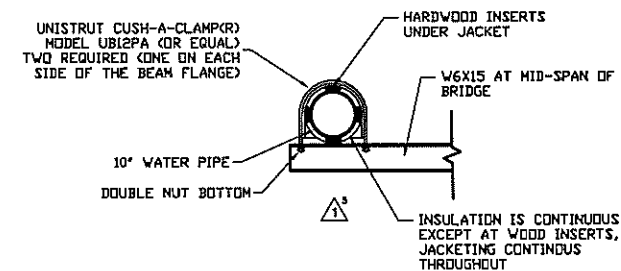
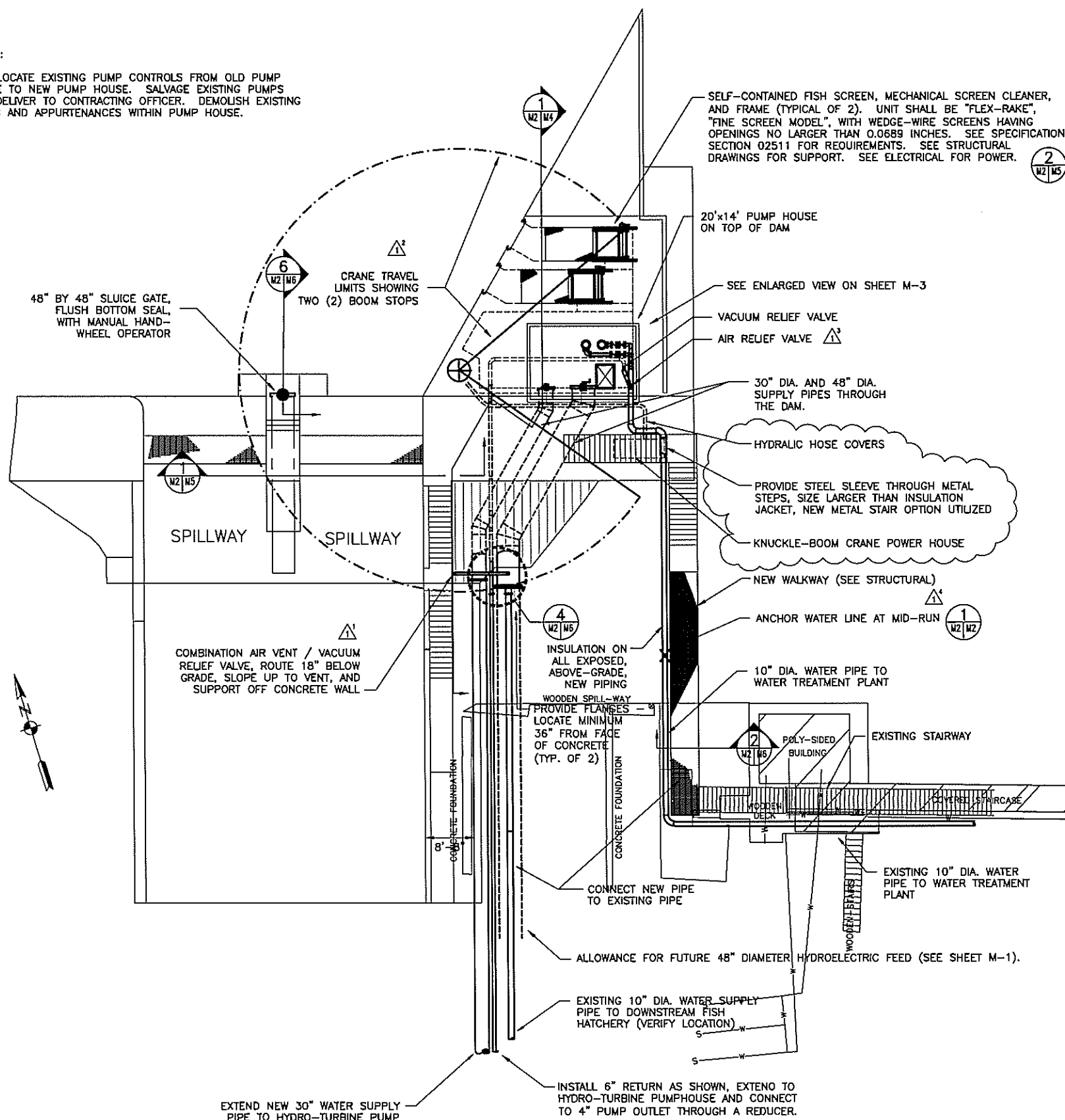
- > NEW WATER LINES AT THE DAM SHALL BE INSTALLED IN ACCORDANCE WITH SHEET M-2 AND M-3.
- > THE BOTTOM OF THE 48-INCH DIAMETER SUPPLY THROUGH THE DAM SHALL BE SET AT THE SAME ELEVATION AS THE BOTTOM OF THE 10-INCH FISH HATCHERY SUPPLY (SEE DETAIL 4 ON SHEET M-6).
- > A NEW 30-INCH DIAMETER SUPPLY LINE AND 6-INCH DIAMETER RETURN LINE SHALL BE INSTALLED BETWEEN THE DAM AND THE TURBINE BUILDING.
- > CONTRACTOR SHALL EXPOSE AND RE-ALIGN THE EXISTING 10-INCH DIAMETER FISH HATCHERY SUPPLY LINE UPSTREAM OF THE TURBINE BUILDING. THE LINE SHALL BE RE-GRADED AT 0-PERCENT SLOPE TO MATCH ITS ELEVATION ADJACENT TO THE TURBINE BUILDING. THE LINE THROUGH THE DAM AND UP TO THE INTAKE SLUICE GATE SHALL BE SET ACCORDINGLY.
- > CONTRACTOR SHALL MAINTAIN PIPE SEPARATION AND CLEARANCE TO OBSTACLES DOWNSTREAM OF THE DAM TO ALLOW FOR FUTURE EXTENSION OF THE 48" SUPPLY AS SHOWN BY THE DASHED LINES.
- > CONNECT THE NEW 10-INCH CITY WATER SUPPLY TO THE EXISTING 10-INCH LINE ADJACENT TO THE STAIRWAY. CONNECTION SHALL BE BY FLANGE.
- > NOT USED.
- > CONTRACTOR SHALL EXTEND AND STUB UP TWO (2) 3/4" CONDUITS TO THIS LOCATION TO SUPPORT POWER AND CONTROL SIGNALS BETWEEN THE STREAM GAUGING STATION (TO BE INSTALLED BY OTHERS) AND THE PUMP HOUSE. SEE ELECTRICAL FOR ADDITIONAL INFORMATION.
- > CONTRACTOR SHALL PROVIDE A TRUE-WYE 8" DIAMETER TAP FROM THE 30" SUPPLY. TRANSITION FROM 8" TO 6" WITH REDUCING FITTING AND CONNECT TO THE RETURN PUMP INLET BY 150-LB FLANGE. THE 30" HYDRO-TURBINE LINE SHALL BE SMOOTHLY REDUCED TO 16" O.D. AND CONNECTED TO THE TURBINE INLET WITH A COMPRESSION FITTING (SEE SHEET M-11).

1. SEE DETAIL 3 ON SHEET M-6 FOR TYPICAL BURIAL OF UNDERGROUND WATER LINES.



NOTES:

1. RELOCATE EXISTING PUMP CONTROLS FROM OLD PUMP HOUSE TO NEW PUMP HOUSE. SALVAGE EXISTING PUMPS AND DELIVER TO CONTRACTING OFFICER. DEMOLISH EXISTING PIPING AND APPURTENANCES WITHIN PUMP HOUSE.

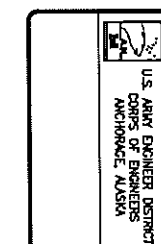


ANCHOR DETAIL
NOT TO SCALE



CONTRACT NO.	
CONTRACTOR	
DESIGNER	
DATE	
BY	
CHECKED	
APPROVED	
REVISION	
NO.	
DATE	
DESCRIPTION	
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REVISION	
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DESCRIPTION	
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APPROVED	
REVISION	
NO.	
DATE	
DESCRIPTION	
BY	
CHECKED	
APPROVED	



PROJECT NO.	
PROJECT NAME	
PROJECT LOCATION	
PROJECT DATE	
PROJECT BY	
PROJECT CHECKED	
PROJECT APPROVED	
PROJECT REVISION	
PROJECT NO.	
PROJECT DATE	
PROJECT DESCRIPTION	
PROJECT BY	
PROJECT CHECKED	
PROJECT APPROVED	

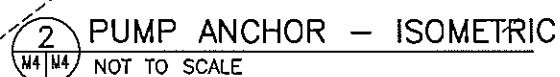
PROJECT NO.	
PROJECT NAME	
PROJECT LOCATION	
PROJECT DATE	
PROJECT BY	
PROJECT CHECKED	
PROJECT APPROVED	
PROJECT REVISION	
PROJECT NO.	
PROJECT DATE	
PROJECT DESCRIPTION	
PROJECT BY	
PROJECT CHECKED	
PROJECT APPROVED	

Reference number:	
M-2	
Sheet 39 of	

4. BRIDGE CRANE BEAM MAY BE UNDER-SLUNG OR TOP-RUNNING AS REQUIRED TO PROVIDE REQUIRED HOOK COVERAGE. CRANE TROLLEY/HOIST MAY BE UNDER-SLUNG OR TOP-RUNNING AS REQUIRED TO PROVIDE REQUIRED HOOK REACH.

QUANTITY	CAPACITY	HOOK COVERAGE	HOOK REACH	LIFT SPEED	SPEED
1 EACH	1000 POUNDS	WITHIN 12" OF WALL AT BEAM END WITHIN 16" OF WALL AT RAIL ENDS	40 FEET (MINIMUM) 8.5 FEET (HOOK TO FLOOR)	16 FPM	40 TO 60 FPM (BRIDGE)

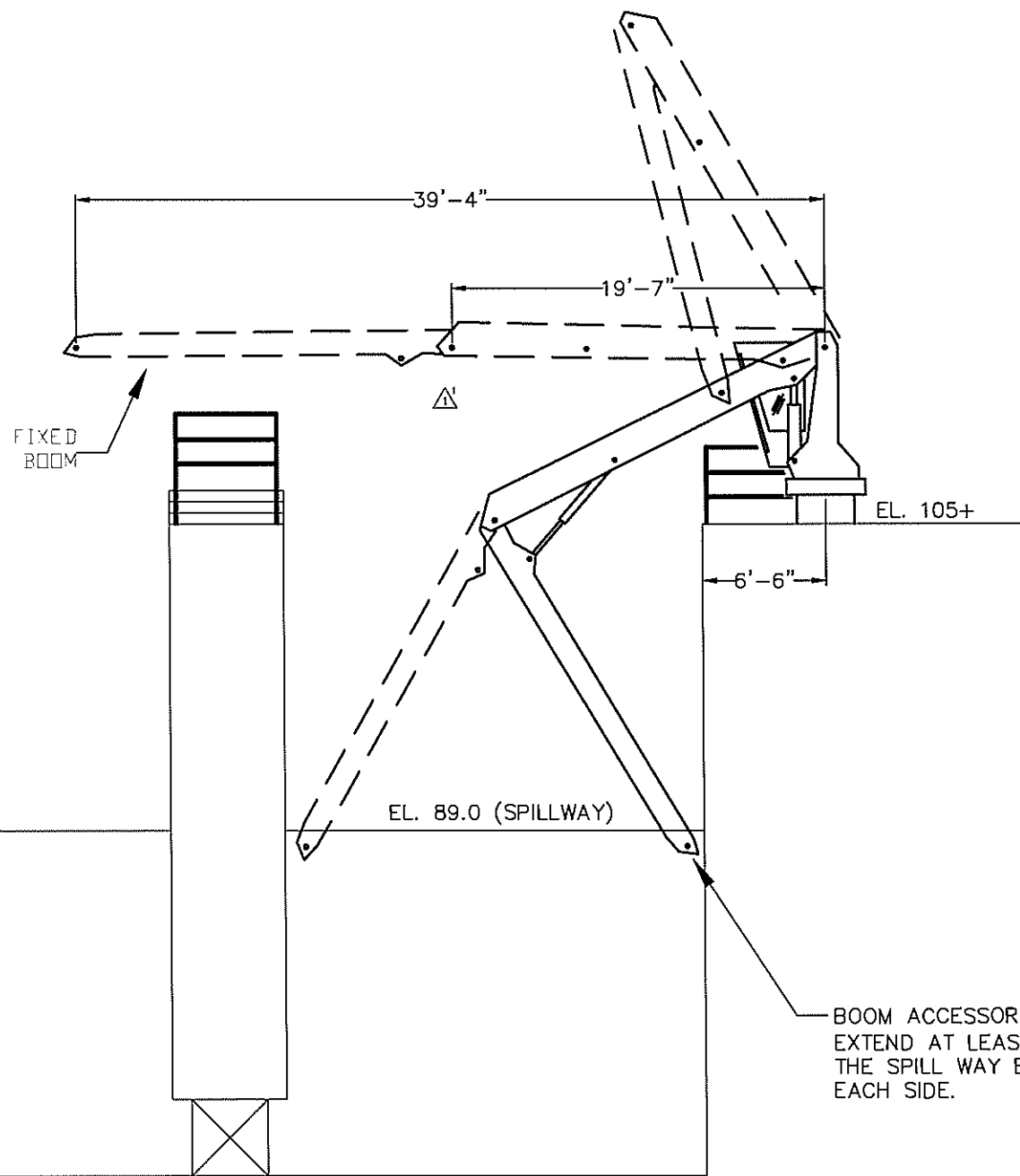
⑧ PIPE ANCHOR, DOUBLE-BOLT CLAMP W/
180-DEGREE SHIELD, SUPPORT FROM
BACK WALL, BRACE BOTTOM OF CLAMP
IN TWO DIRECTIONS TO BACK WALL.



SECTION - LOOKING EAST

Reference
number:
M-4
Sheet 41 of

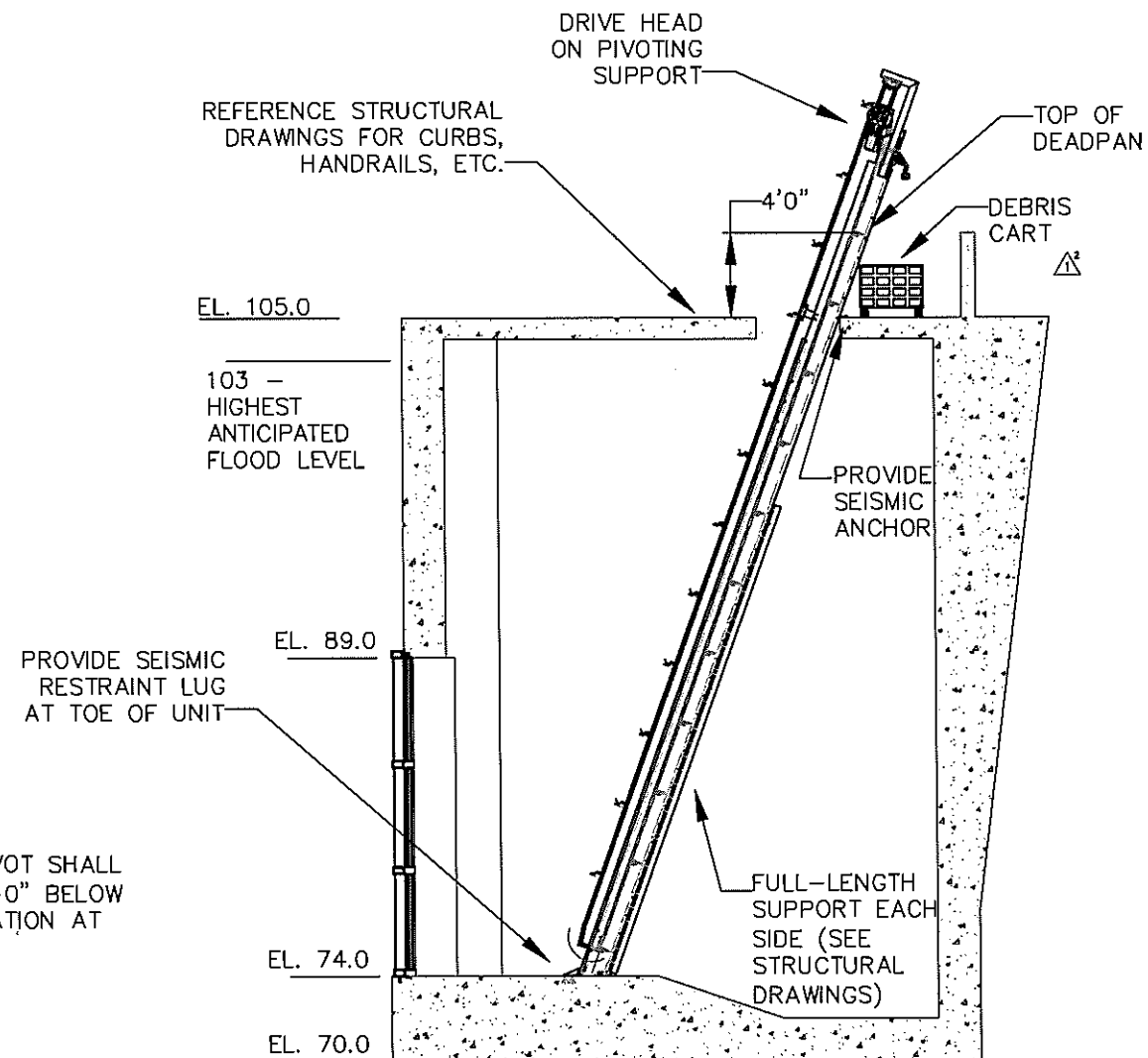
AS-BUILT SET



1 CRANE REACH REQUIREMENTS
NOT TO SCALE

NOTES:

1. CONFIGURATION OF CRANE IS GENERAL IN NATURE AND DOES NOT REPRESENT ANY PARTICULAR MANUFACTURER'S PRODUCT. A UNIT WITH EQUIVALENT BOOM REACH, FLEXIBILITY, AND CAPACITY SHALL BE PROVIDED. PROPULSION HOUSING TAIL SWING SHALL CLEAR HANDRAILS OR REMOVEABLE HANDRAIL SECTIONS SHALL BE PROVIDED.
2. CRANE SHALL HAVE A MINIMUM LIFT CAPACITY OF 3000 POUNDS WITH ITS BOOM IN A HORIZONTAL CONFIGURATION



2 SCREEN INSTALLATION
NOT TO SCALE

AS-BUILT SET



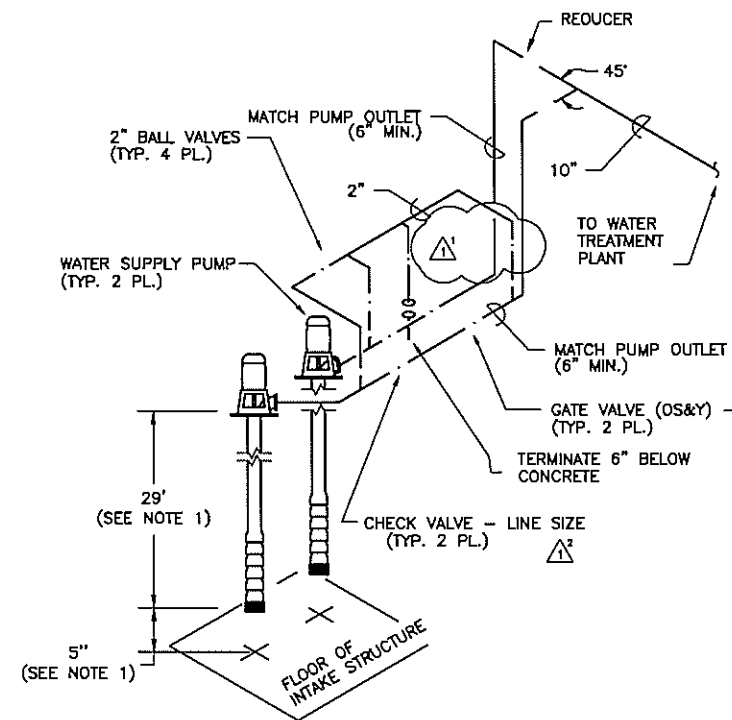
CONTRACT NO.	
CONTRACTOR	
DATE	
APPROVED	
REVISION	

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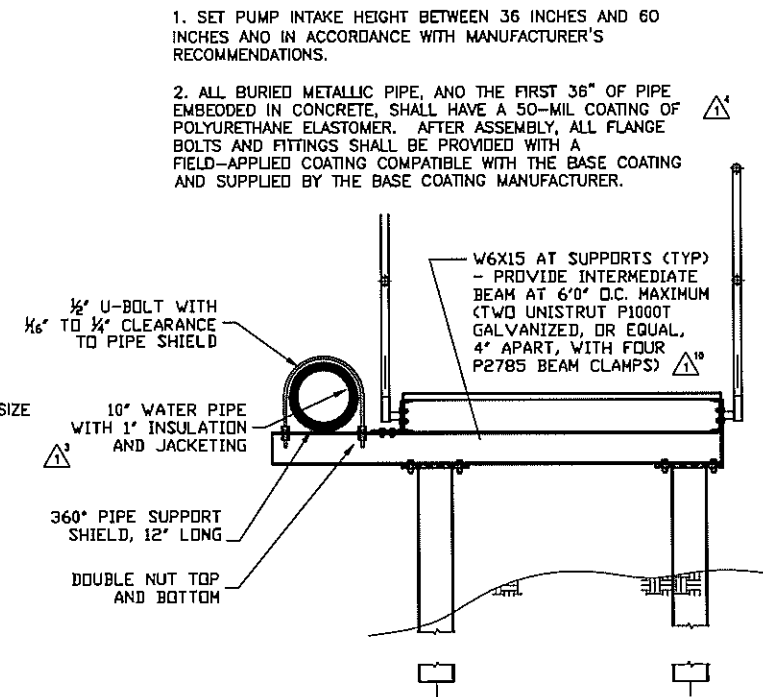
U.S. ARMY CORPS OF ENGINEERS ANCHORAGE, ALASKA	PROJECT NO. W911KB-04-B-0009
DESIGNED BY	CHECKED BY
DRAWN BY	IN CHARGE
DATE	DATE

KAKE, ALASKA KAKE DAM MECHANICAL SECTIONS INTAKE STRUCTURE
--

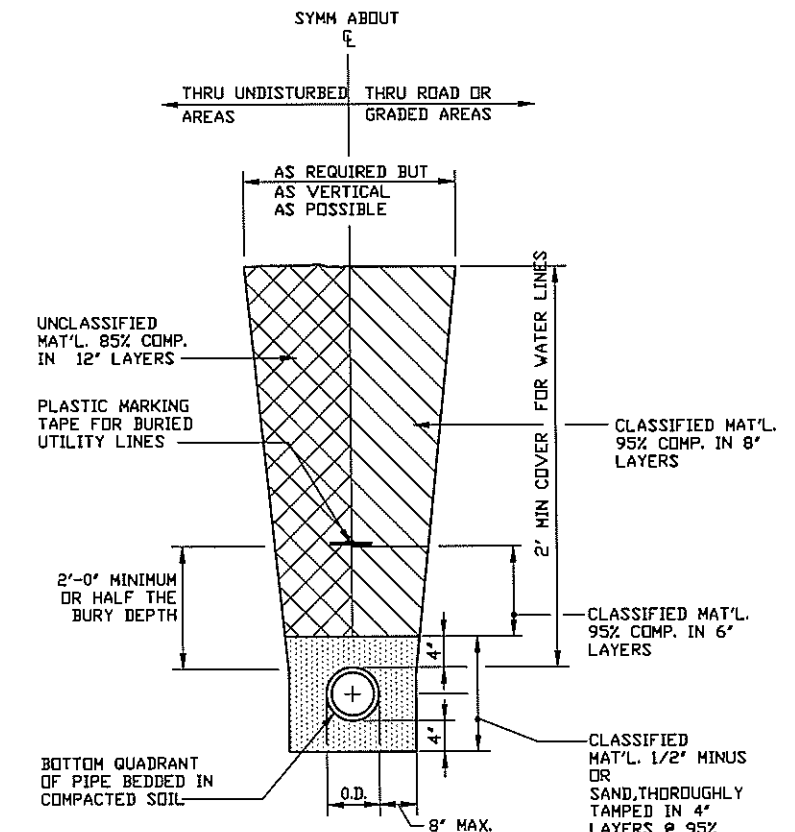
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Sheet 42 of



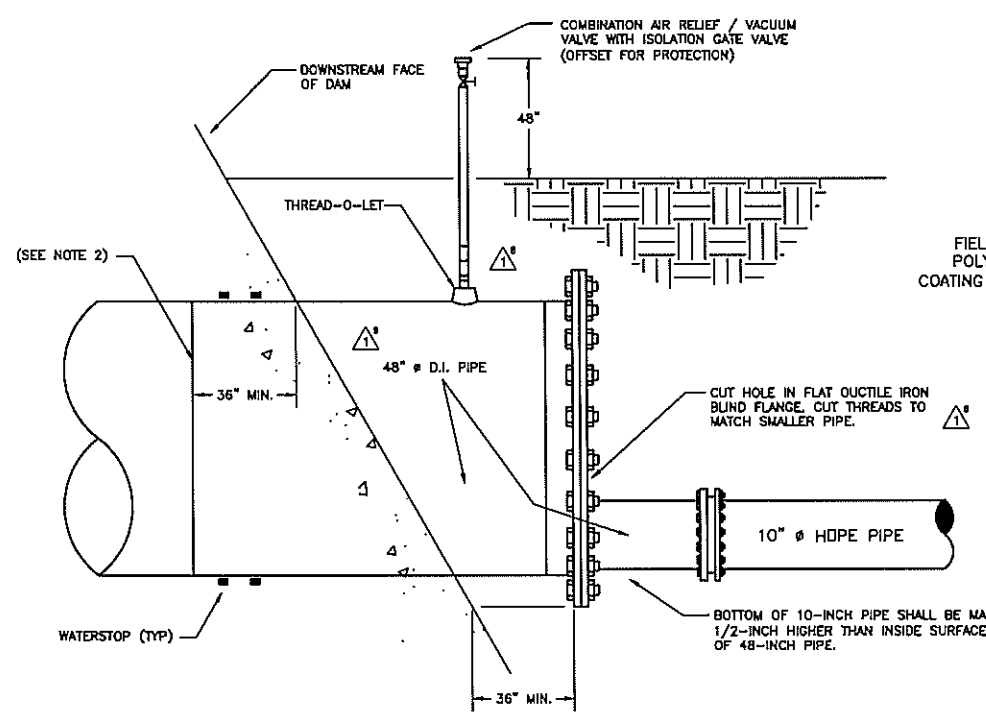
1 WATER PUMP ISOMETRIC
NOT TO SCALE



2 PIPE SUPPORT DETAIL
NOT TO SCALE

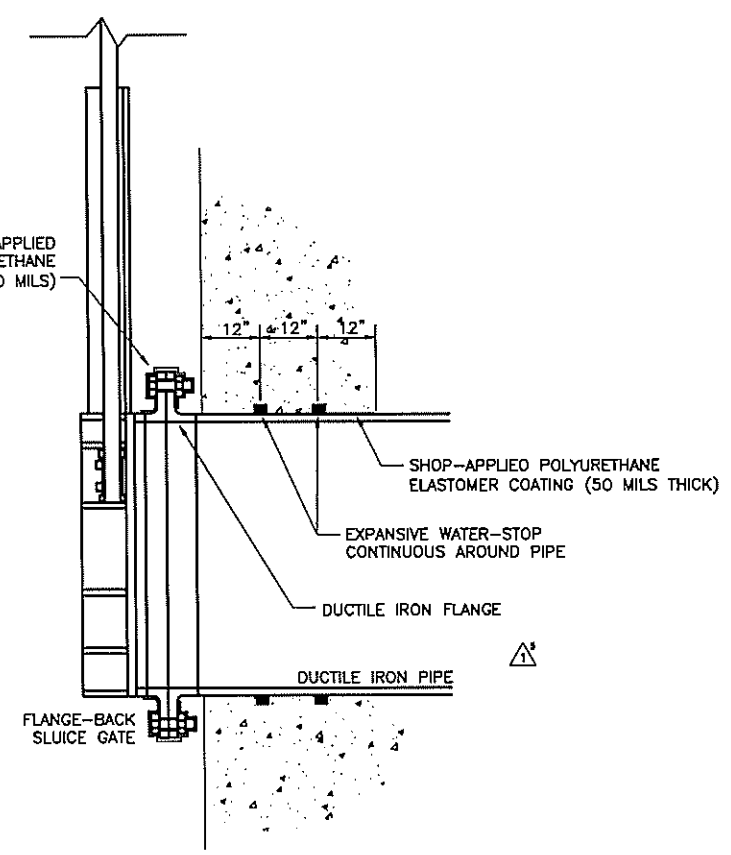


3 TYPICAL TRENCH SECTION
NOT TO SCALE

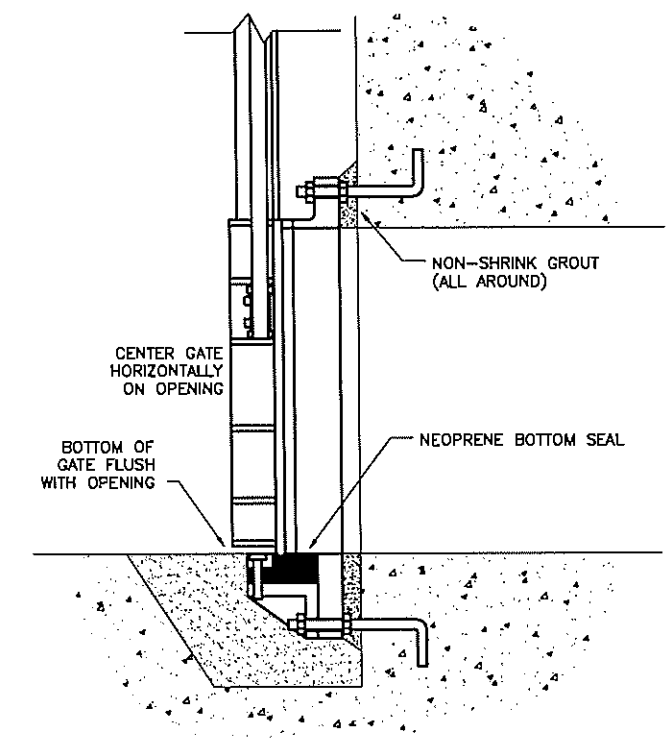


4 48" TO 10" TRANSITION DETAIL
NOT TO SCALE

ACCOMPLISHMENT OF THE 48" TO 10" TRANSITION MAY BE VIA ALTERNATE DETAILS AS PROPOSED BY THE CONTRACTOR. SUCH ALTERNATE DETAILS SHALL BE SUBJECT TO APPROVAL BY THE GOVERNMENT. APPROVAL WILL BE BASED ON ABILITY TO PROVIDE A WATER-TIGHT CONNECTION WITH INTERIOR SURFACES COATED AS REQUIRED TO MEET DRINKING WATER STANDARDS. EXTERIOR SURFACES SHALL BE COATED AS INDICATED.



5 SLUICE GATE DETAIL
NOT TO SCALE



6 FLUSH-BOTTOM GATE DETAIL
NOT TO SCALE

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

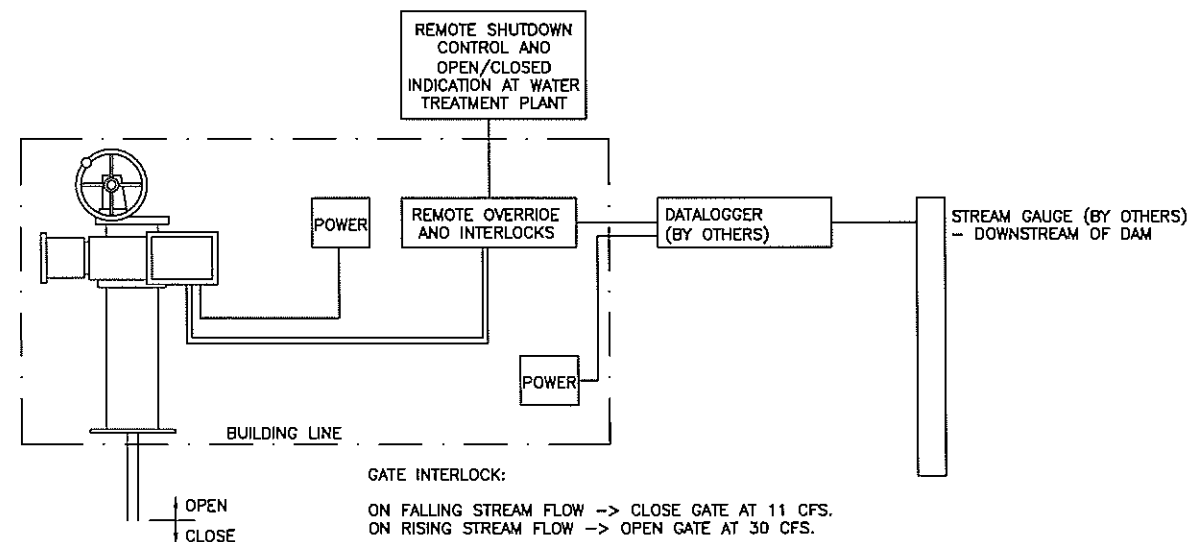
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CONTRACT NO. _____
DRAWING NO. _____
SHEET NO. _____

DESIGNED BY _____
CHECKED BY _____
APPROVED BY _____

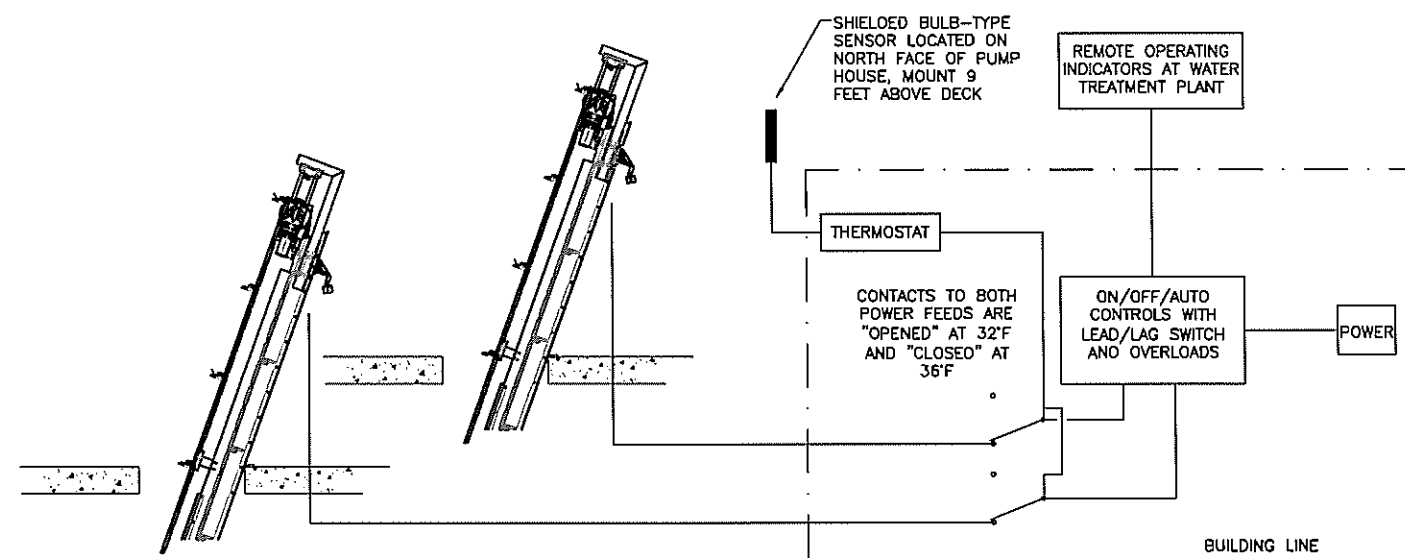
DATE _____

REFERENCE NUMBER:
M-6

SHEET 43 OF _____



HYDRO-TURBINE INLET CONTROLS 1
 NOT TO SCALE

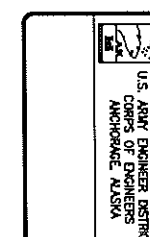


SCREEN CLEANING CONTROLS 2
 NOT TO SCALE



CONTRACT NO.	
CITY	
STATE	
DATE	

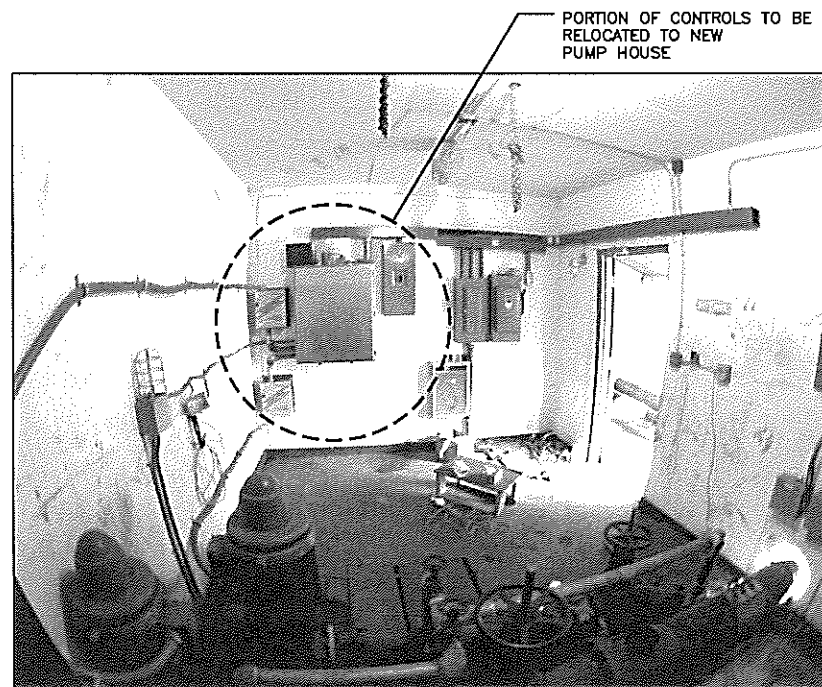
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REVISION	
DESCRIPTION	
BY	
CHECKED	



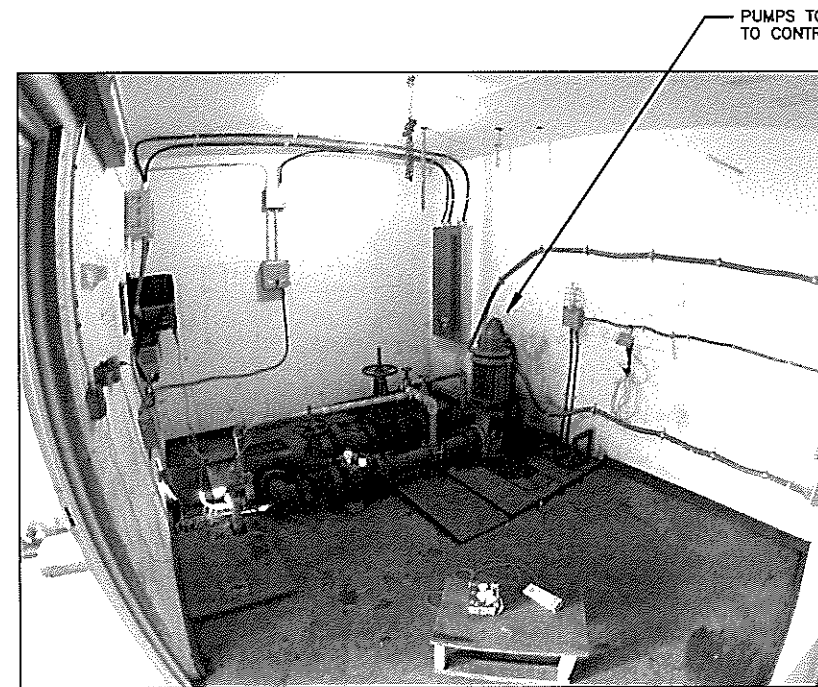
PROJECT NO.	INV. NO. W911KB-04-B-0009
PROJECT NAME	KAKE DAM
PROJECT LOCATION	KAKE DAM
PROJECT DESCRIPTION	MECHANICAL CONTROLS

PROJECT NO.	INV. NO. W911KB-04-B-0009
PROJECT NAME	KAKE DAM
PROJECT LOCATION	KAKE DAM
PROJECT DESCRIPTION	MECHANICAL CONTROLS

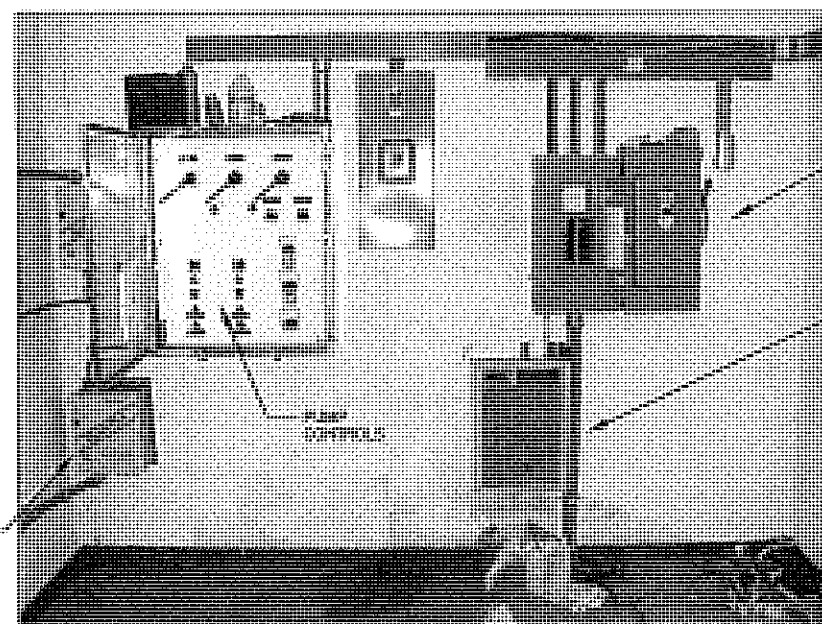
Reference number:	M-7
Sheet	44 of



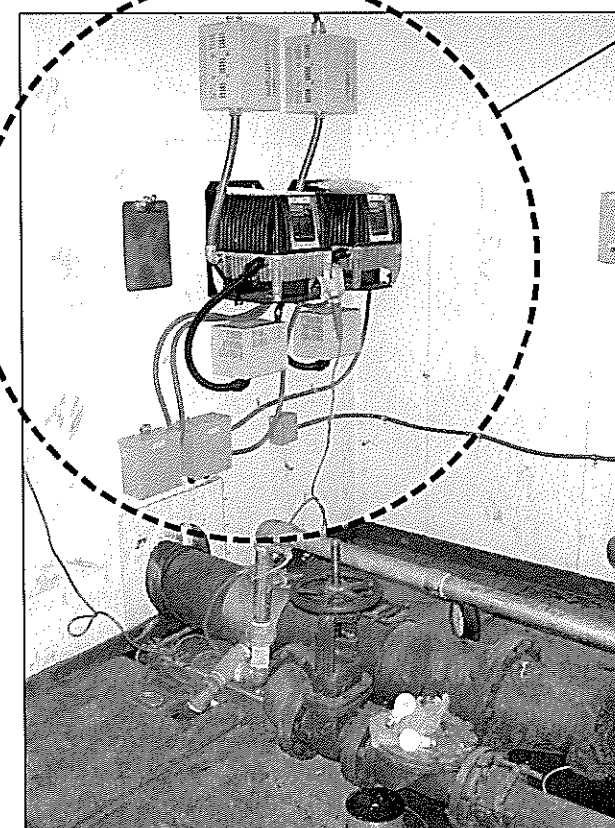
1 PUMP ROOM - EAST
C4/W3 NOT TO SCALE



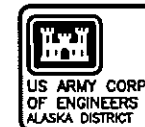
2 PUMP ROOM - WEST
C4/W3 NOT TO SCALE



3 CONTROLS - UP CLOSE
C4/W3 NOT TO SCALE



4 EXTERIOR PUMP CONTROLS
C4/W3 NOT TO SCALE



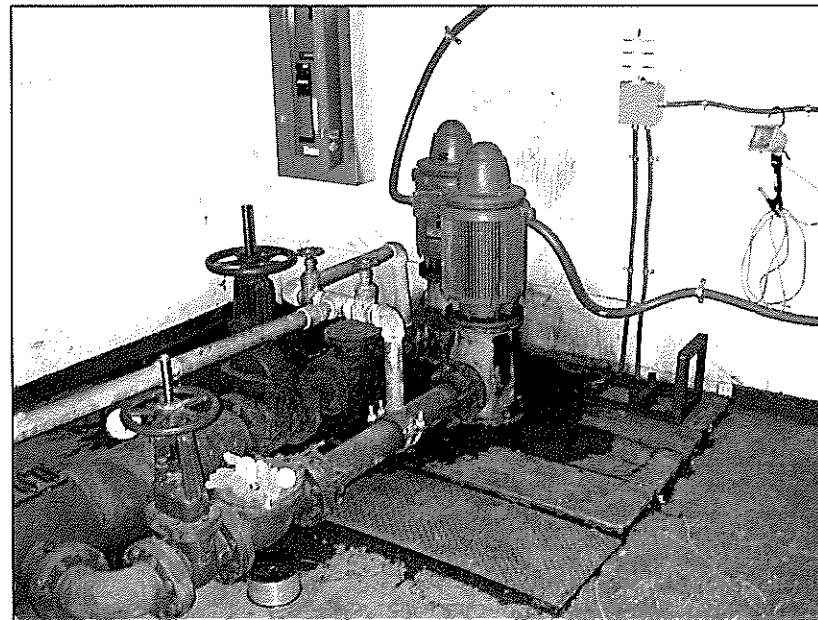
CONTRACT NO.	CONTRACTOR
CITY	STATE
DATE	TIME
BY	FOR

DATE	TIME
BY	FOR
DATE	TIME
BY	FOR

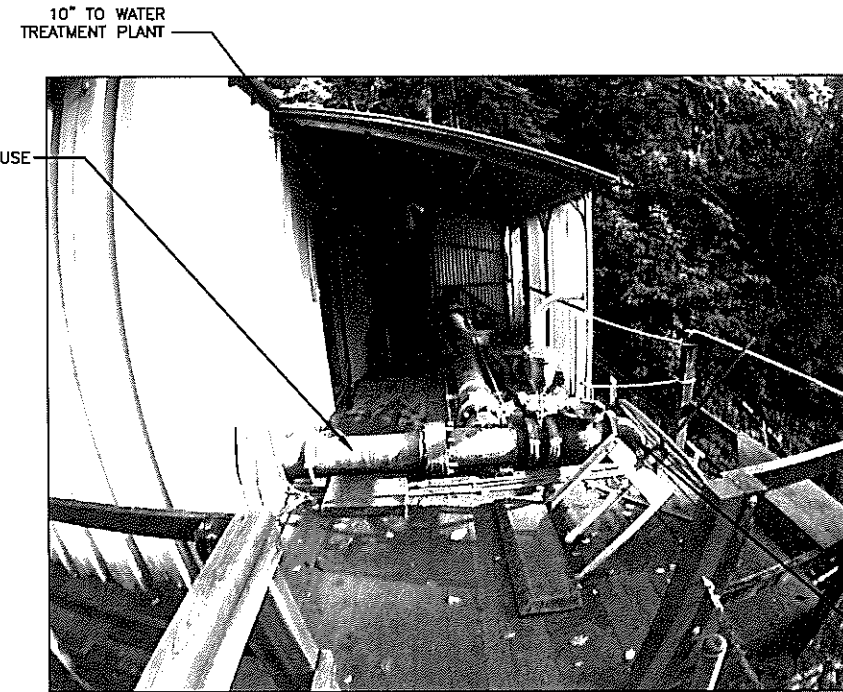
U.S. ARMY ENGINEER DISTRICT	ANCHORAGE, ALASKA
PROJECT NO.	W911KB-04-B-0009
DATE	DD MONTH YY
BY	NAME
FOR	NAME

KAKE, ALASKA
KAKE DAM
MECHANICAL
PHOTOS
EXISTING PUMPHOUSE

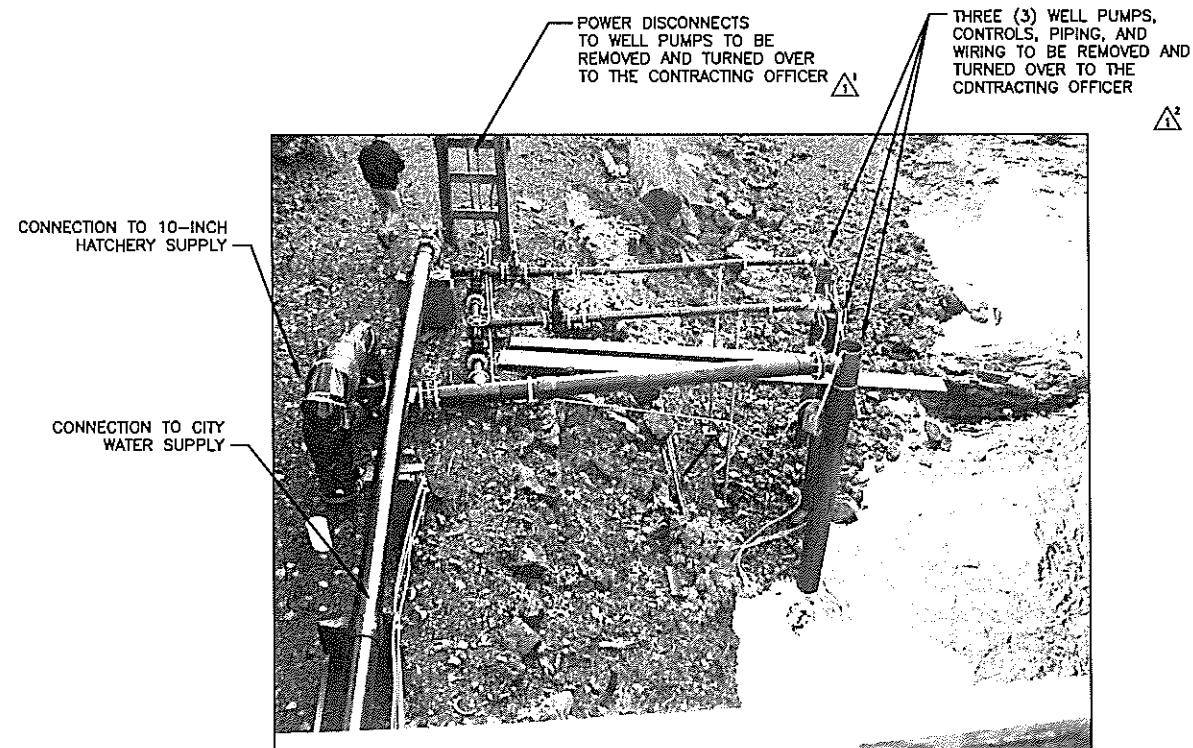
Reference number:
M-8
Sheet 45 of



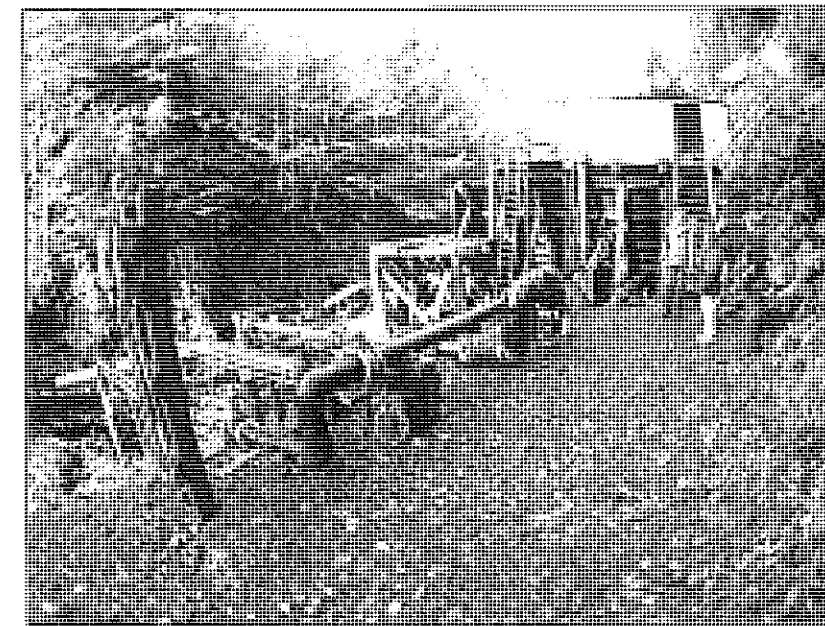
1 EXISTING PUMPS
C4 M7 NOT TO SCALE



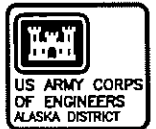
2 SUPPLY TO WATER TREATMENT PLANT
C4 M7 NOT TO SCALE



3 GALLERY PIPING - AERIAL
C4 M7 NOT TO SCALE



4 GALLERY PIPING - LOOKING NORTH
C4 M7 NOT TO SCALE



PROJECT NO.	CONTRACT NO.
CITY	STATE
PROJECT LOCATION	DATE

NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR CONSTRUCTION			
2	ISSUED FOR CONSTRUCTION			
3	ISSUED FOR CONSTRUCTION			
4	ISSUED FOR CONSTRUCTION			
5	ISSUED FOR CONSTRUCTION			
6	ISSUED FOR CONSTRUCTION			
7	ISSUED FOR CONSTRUCTION			
8	ISSUED FOR CONSTRUCTION			
9	ISSUED FOR CONSTRUCTION			
10	ISSUED FOR CONSTRUCTION			

U.S. ARMY ENGINEER DISTRICT ANCHORAGE, ALASKA	PROJECT NO. INV. NO. W91KB-04-B-0009
--	---

KAKE, ALASKA KAKE DAM MECHANICAL PHOTOS MECHANICAL DEMOLITION I

Reference number: M-9 Sheet 46 of

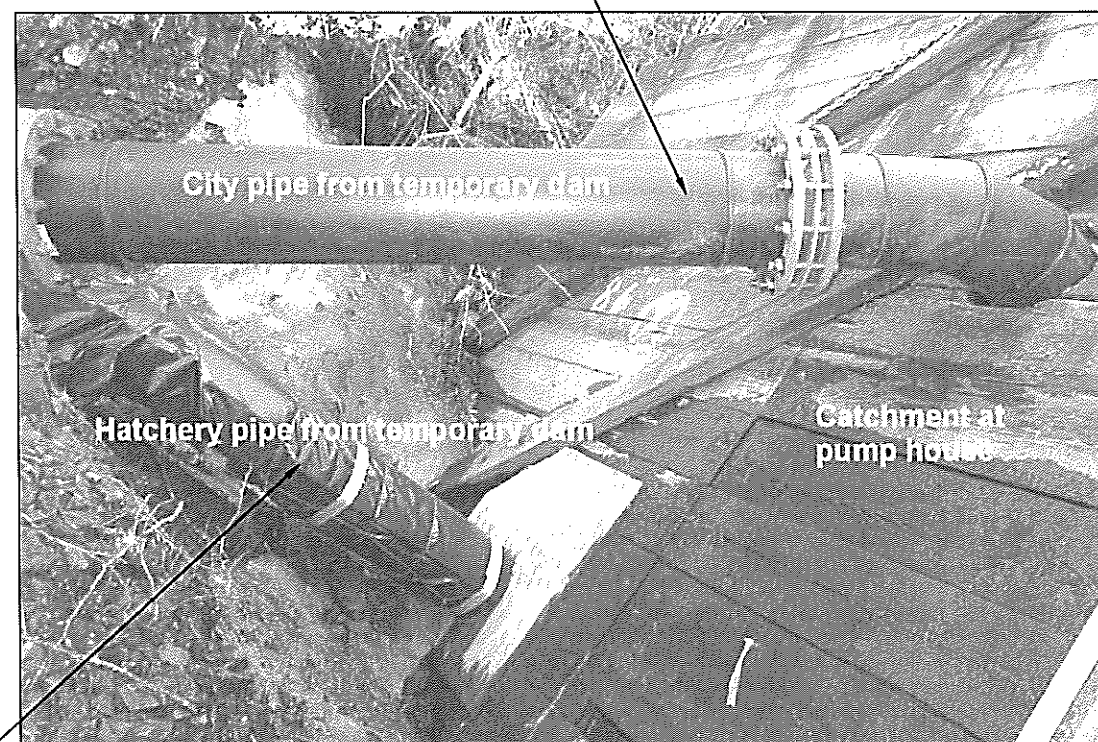


1 GALLERY SUPPLY
C4 M10 NOT TO SCALE

10-INCH CITY WATER
SUPPLY UP HILL TO
STORAGE TANK

8-INCH SUPPLY FROM
GALLERY TO CITY WATER
CONNECTION

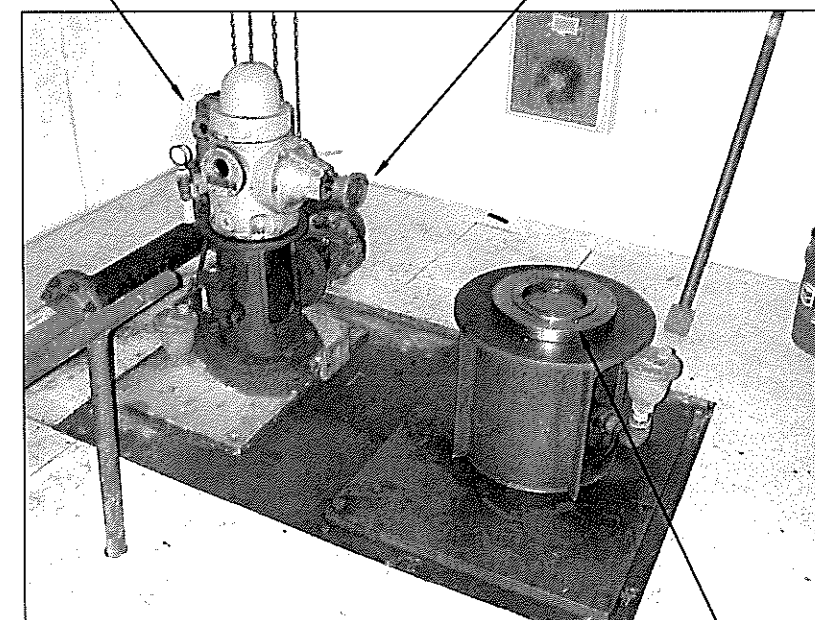
12" HDPE PIPING TO BE REMOVED FAR
ENOUGH UPSTREAM TO ALLOW
FOR CONSTRUCTION OF NEW DAM
(SEE CIVIL SHEET C-4 FOR LIMITS)



WATER TO HATCHERY MUST BE
MAINTAINED THROUGHOUT CONSTRUCTION
(SEE SPECIFICATION SECTION 01016).

2 TEMPORARY SUPPLIES AT EXISTING DAM
C4 M10 NOT TO SCALE

REPLACE EXISTING
RIGHT-ANGLE DRIVE UNIT



PROVIDE NEW CONNECTION
SHAFT BETWEEN RIGHT-
ANGLE DRIVE UNITS.

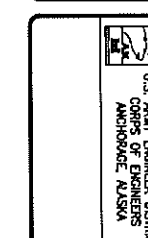
3 HYDRO-TURBINE REPAIRS
C4 M10 NOT TO SCALE

PROVIDE NEW
RIGHT-ANGLE DRIVE



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
DATE	

DATE	
TIME	
LOCATION	
DESCRIPTION	
DATE	

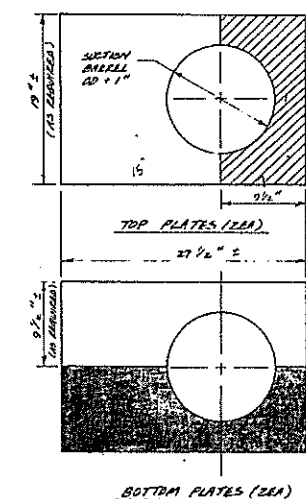
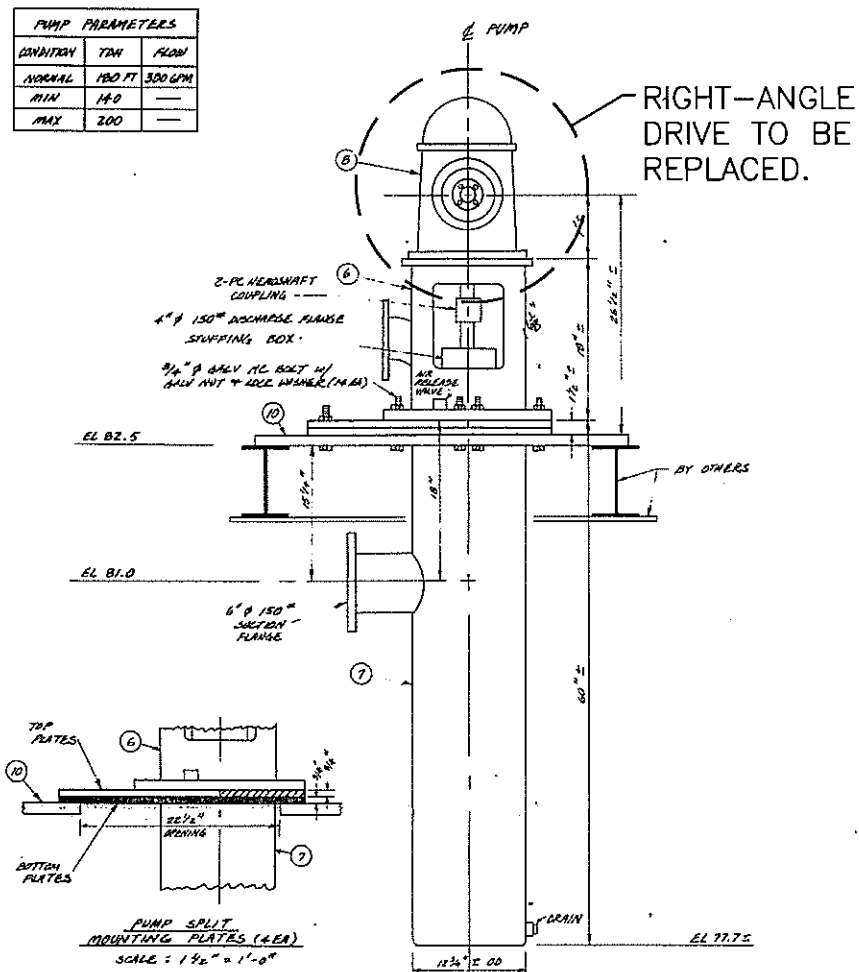


PROJECT	INV. NO. W911KB-04-B-0009
DATE	
TIME	
LOCATION	
DESCRIPTION	

KAKE ALASKA
KAKE DAM
MECHANICAL
PHOTOS
MECHANICAL DEMOLITION II

Reference
number:
M-10
Sheet 47 of

PUMP PARAMETERS		
CONDITION	TDH	FLOW
NORMAL	180 FT	300 GPM
MIN	140	—
MAX	200	—



NOTE :
SEE PLAN VIEW FOR BOLT HOLE
LOCATIONS AND DIMENSIONS

SECTION B-B
CANNED VERTICAL TURBINE
PUMP ELEVATION
BYRON JACKSON 84M-6 OR EQUAL
SCALE: 1/4" = 1'-0"

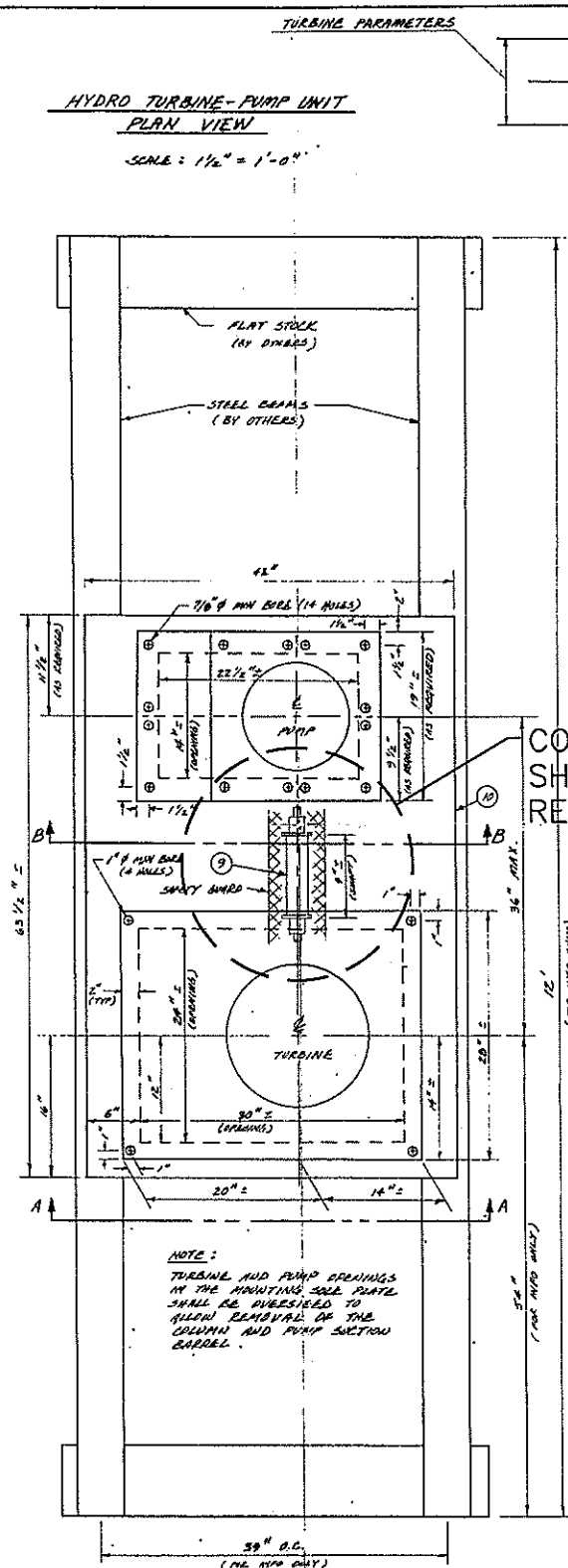
EQUIPMENT LIST		
NO	ITEM	NOTE
①	TURBINE - DOWN ASSY	STEVEN JACKSON 80% - 1" OR SMALL
②	DEPT TUBE	PROVIDED BY SUPPLIER
③	COLUMN ASSEMBLY	16" ID; W/ JOINTS SEE INSTRUMENT
④	INLET ELBOW	16" ID
⑤	HEAD STIFFENER	FABRICATED STEEL
⑥	PUMP DISCHARGE HEAD	FABRICATED STEEL OE EAST TERN
⑦	SUCTION BARREL (CON)	16" ID; 3/8" WALL THK
⑧	REAR ANGLE DRIVE	CEAS; JOINTS AND PROVIDED BY SUPPL
⑨	CONNECTION SHFT	WITHIN 8" OF DOWN
⑩	MOUNTING SOLE PLATE	16" x 63" = 1/4"

NOTES:

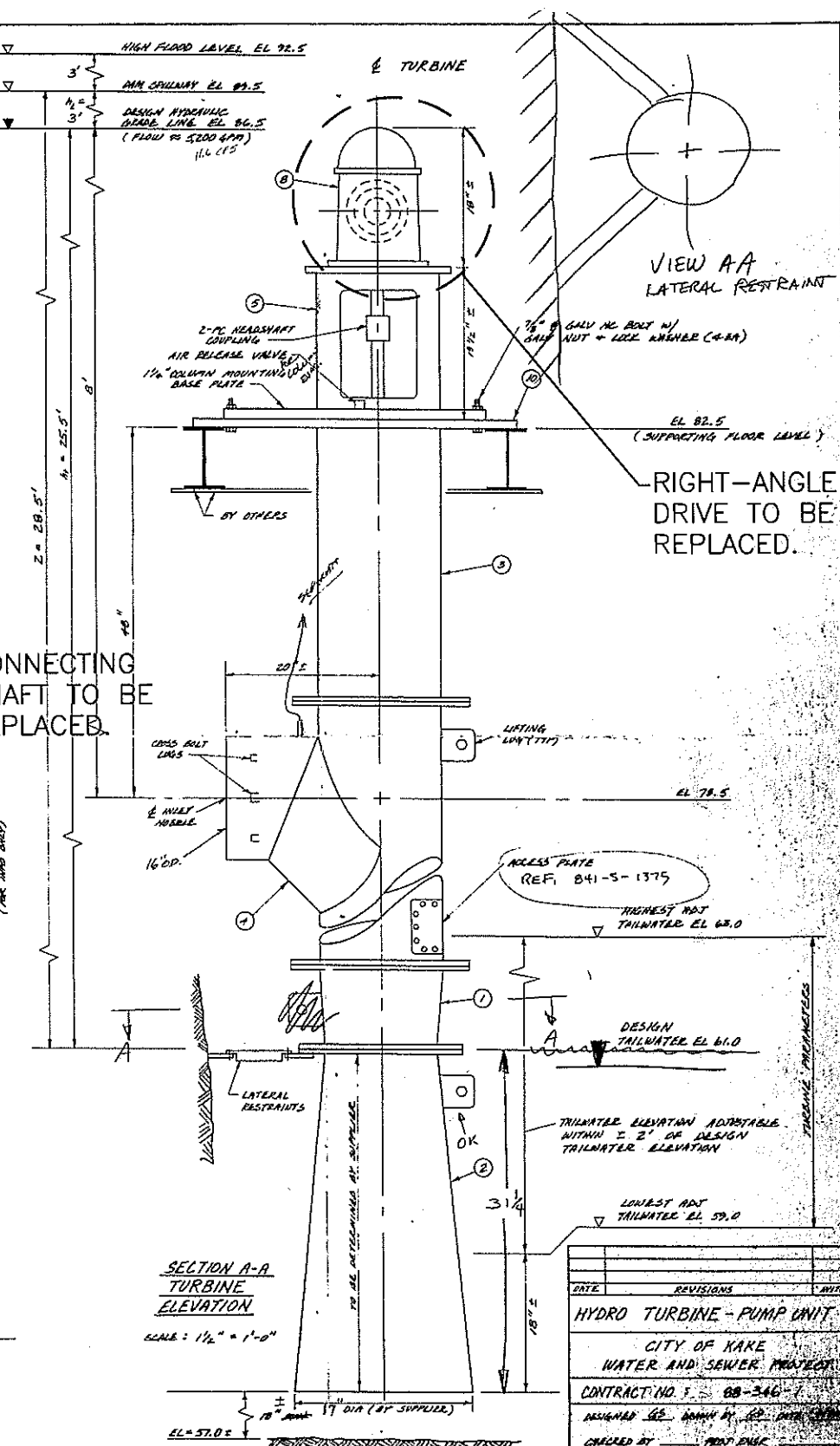
1. LUBRICATION FOR ALL EQUIPMENT SHALL BE A GREASE LUBRICATION SYSTEM.
2. ALL SURFACES REQUIRING PROTECTIVE COATING SHALL BE SHOP COATED AS PER THE TECHNICAL SPECIFICATIONS.

HYDRO TURBINE-PUMP UNIT
PLAN VIEW

SCALE: $1\frac{1}{2}" = 1'-0"$



CONNECTING
SHAFT TO BE
REPLACED.




SECTION A-A
TURBINE
ELEVATION
SCALE: $1\frac{1}{2}" = 1'-0"$

DATE	REVISIONS	BY	
HYDRO TURBINE - PUMP UNIT			
CITY OF KAKE			
WATER AND SEWER PROJECT			
CONTRACT NO. 5 - 88-346-1			
DESIGNED BY: BOHANNAN & CO. ENGINEERS			
CHECKED BY: MORT ENCE			

ORIGINAL BUILDER'S DRAWING FOR HYDRO-TURBINE PUMPING STATION (SEE SECTION 02511 FOR REQUIREMENTS AND DETAIL 3 ON SHEET M-10 FOR EXISTING CONDITIONS).

CONTRACT NO. _____	
COMMODITY _____	
CITY _____	STATE _____
Recommended: _____	Approved: _____
Print CONTRACTOR _____	Print DOCTOR _____

[illegible]

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

Owner	But	big size: 1"=20'
Contract		
Architect	C. Von der Pahlen	Plot sheet: 1"=1'
Contract	1873-1875	
Contract	1873-1875	
Surveying	Wiedner	The KADOD5MO
Contract	1873-1875	drawing 1:1 横本出寸

INV. NO. W911KB-04-B-0009

NAME: ALISSA
KAKE DAM
MECHANICAL
EXHIBIT DRAWING
HYDRO-TURBINE SHOP DRAWING



















SHEET INDEX

INDEX NO.	DRAWING NO.	TITLE
1	E-1	INDEX, ABBREVIATIONS, SYMBOLS, & NOTES
2	E-2	ELECTRICAL SITE PLAN I
3	E-3	ELECTRICAL SITE PLAN II
4	E-4	ELECTRICAL LIGHTING PLAN
5	E-5	ELECTRICAL POWER PLAN
6	E-6	POWER SINGLE LINE DIAGRAM
7	E-7	POWER SINGLE LINE DIAGRAM - NEW CONDITION
8	E-8	ELECTRICAL DETAILS

ABBREVIATIONS

A	-	AMPERE
AT	-	AMPERE TRIP
C	-	CONDUIT
Ø	-	DIAMETER
DIST	-	DISTRIBUTION
ELECT	-	ELECTRICAL
ENCL	-	ENCLOSURE
GFI	-	GROUND FAULT INTERRUPTER
GRD	-	GROUND
HP	-	HORSE POWER
HPS	-	HIGH PRESSURE SODIUM
HZ	-	HERTZ
IN	-	INCHES
KVA	-	KILOVOLTAMPERE
KW	-	KILOWATT
MTD	-	MOUNTED
NO	-	NUMBER
#	-	NUMBER
OL	-	OVERLOAD
P	-	POLES
PF	-	POWER FACTOR
RM	-	ROOM
RSC	-	RIGID STEEL CONDUIT
1-PHASE	-	SINGLE PHASE
TYP	-	TYPICAL
V	-	VOLTS

ELECTRICAL SYMBOLS

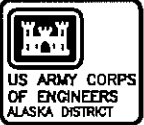
	FLUORESCENT LIGHT FIXTURE
	HIGH PRESSURE SODIUM
	SINGLE POLE SWITCH, 20A, 120V, WALL MOUNTED
	ELECTRICAL PANELBOARD 120/280V, 3Ø, 4W, 60HZ
	MAGNETIC MOTOR STARTER
	PAO-MOUNTED TRANSFORMER
	MOTOR, # DENOTES HP RATING
	GROUND
	POWER TRANSFORMER
	JUNCTION BOX
	MAGNETIC COIL
	POWER CONTACTS
	OVERLOAD
	LIQUID TIGHT FLEXIBLE CONDUIT
	DUPLEX RECEPTACLE, 20 A, 125V, GFCI, GROUND TYPE
	HASH MARK DENOTES NUMBER OF #12 HOT AND NEUTRAL WIRE CONDUIT SIZE PER CODE. PROVIDE GROUND WIRE, EVEN THOUGH IT IS NOT SHOWN. NO HASH MARK DENOTES 2-#12 FOR HDT AND NEUTRAL, 1-#12 FOR GROUND
	RACEWAY, CONCEALED/UNDERGROUND
	RACEWAY, EXPOSED

GENERAL NOTES

- COORDINATE ALL WORK WITH OTHER EXISTING UTILITIES - SEE CIVIL DRAWINGS.
- FIELD VERIFY ALL EXISTING SITE CONDITIONS.
- EXCAVATION WORK SHALL PROCEED WITH CAUTION TO AVOID DAMAGE TO EXISTING UNKNOWN CABLES. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING UNDERGROUND UTILITIES PRIOR TO EXCAVATION. HAND DIG WITH SHOVELS IN THE VICINITY OF ACTIVE UNDERGROUND UTILITIES AND BOXES.
- BEFORE BEGINNING ANY WORK, CONTRACTOR SHALL THOROUGHLY EXAMINE AND VERIFY ALL EXISTING CONDITIONS. POINTS OF CONNECTION, SIZES, LOCATIONS, ELEVATIONS, ETC. CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER OF ANY DISCREPANCIES BEFORE BEGINNING WORK.
- ALL EXPOSED CONDUITS, WIREMOLD RACEWAY AND BOXES SHALL BE PAINTED TO MATCH THE SURFACES WHERE INSTALLED.
- REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND EQUIPMENT AND MATERIAL APPROVED FOR USE UNDER THIS CONTRACT.
- EXISTING SITE CONDITIONS SHALL PREVAIL OVER DRAWINGS.
- UPDATE ALL POWER PANEL DIRECTORIES AND ELECTRICAL OUTLET IDENTIFICATION LABELS TO REFLECT NEW CONSTRUCTION.
- COORDINATE ANY POWER OUTAGES.

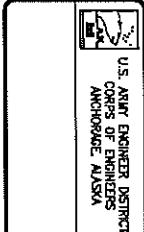
ELECTRICAL NOTES:

- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, 2002.
- ALL ELECTRICAL EQUIPMENT, DEVICES AND RACEWAYS WITH HATCH MARKS SHALL BE REMOVED.
- METALLIC ENCLOSURES, RACEWAYS AND ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH REQUIREMENTS OF N.E.C. ARTICLE 250. PROVIDE GROUND WIRE IN EVERY RACEWAY.
- COORDINATE WITH MECHANICAL SUBCONTRACTOR FOR EQUIPMENT REQUIREMENTS AND PROVIDE ALL WIRING AND PROTECTION REQUIRED.
- ALL EQUIPMENT AND MATERIALS SHALL BE UL LISTED WHERE LISTING IS AVAILABLE FOR THAT TYPE OF EQUIPMENT OR CONFORM TO ANSI OR NEMA STANDARDS.
- WORKMANSHIP SHALL CONFORM TO CONSTRUCTION PRACTICES RECOMMENDED BY THE AMERICAN ELECTRICIANS HANDBOOK BY CROFT (LATEST EDITION) AND SHALL BE SUBJECT TO THE APPROVAL OF THE AGENCY WHICH HAS JURISDICTION AND THE CONTRACTING OFFICER.
- THE CONTRACTOR SHALL PROVIDE ALL MOUNTING BRACKETS, HANGERS, CLIPS, ETC. AS NECESSARY TO MOUNT AND SECURE ELECTRICAL DEVICES, PANELS, LIGHT FIXTURES, CONDUITS, ETC. IN LOCATIONS SHOWN AND AS RECOMMENDED BY THE MANUFACTURER FOR THE APPLICATION INTENDED.



CONTRACT NO.	
CITY	
STATE	
DATE	

Sum	Action	Direction	Date	Record



Project	Inv. No.	W911KB-04-B-0009
Contract		
Drawn		
Check		
Scale		
Date		

INDEX, ABBREVIATIONS, SYMBOLS, & NOTES

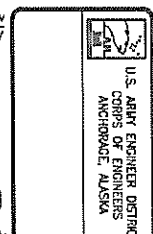
Reference number: E-1

Sheet 49 of



CONTRACT NO.	
PROJECT NO.	
DATE	
BY	
FOR	

DATE	
BY	
FOR	
REVISION	
DATE	
BY	
FOR	



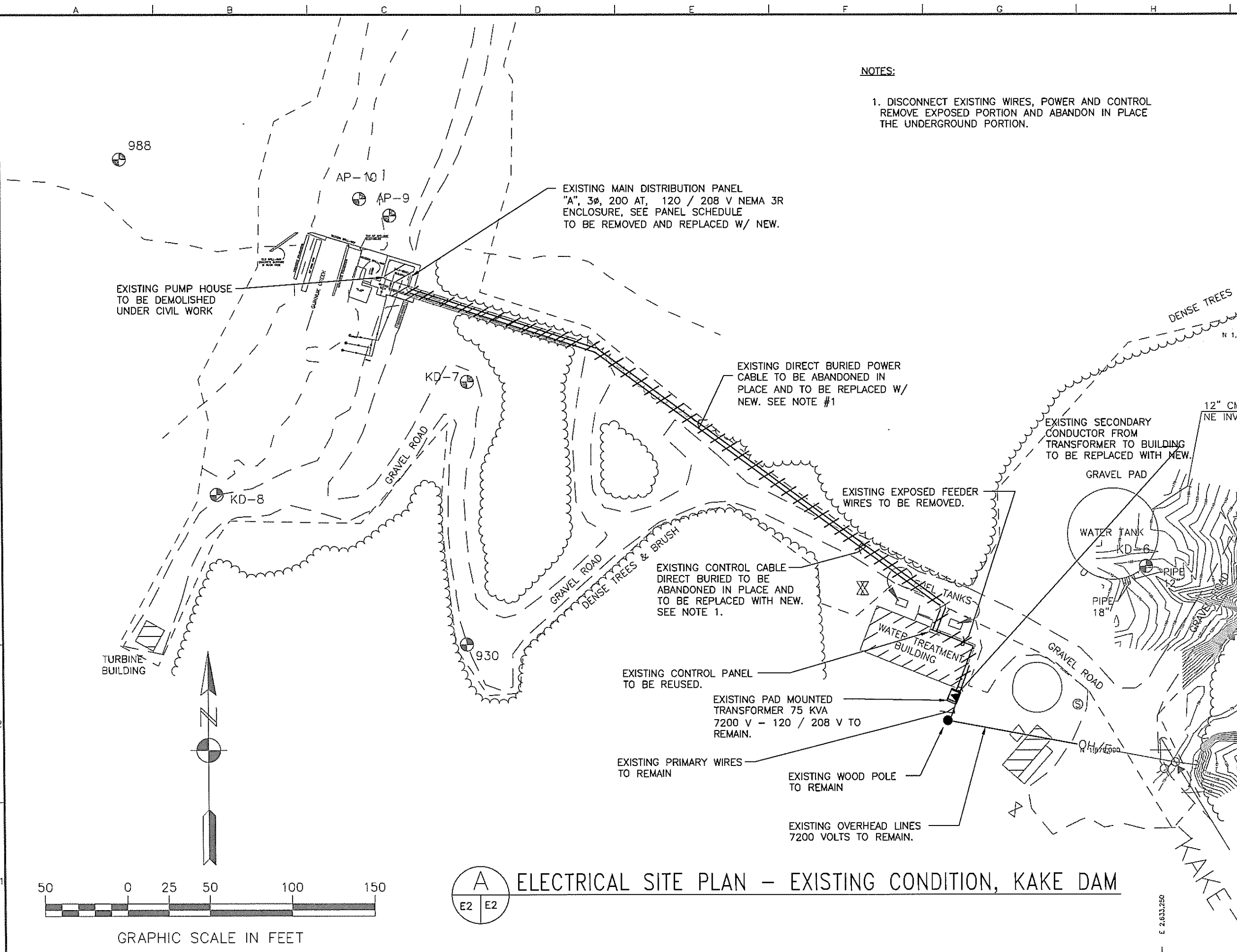
PROJECT NO.	
DATE	
BY	
FOR	
REVISION	
DATE	
BY	
FOR	

ELECTRICAL SITE PLAN I
KAKE, ALASKA
KAKE DAM
ELECTRICAL

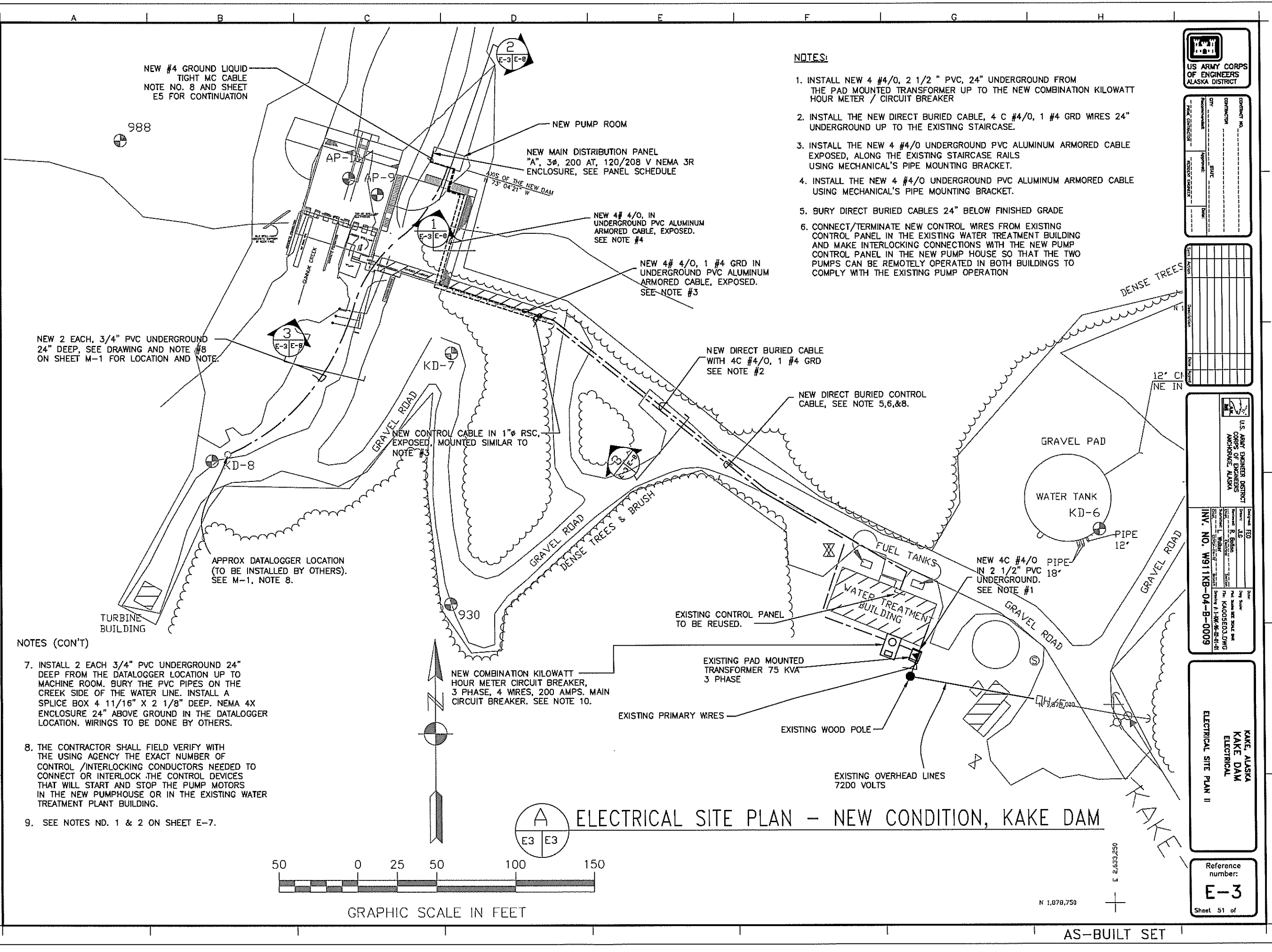
Reference number:
E-2
Sheet 50 of

NOTES:

1. DISCONNECT EXISTING WIRES, POWER AND CONTROL REMOVE EXPOSED PORTION AND ABANDON IN PLACE THE UNDERGROUND PORTION.



ELECTRICAL SITE PLAN - EXISTING CONDITION, KAKE DAM



NEW #4 GROUND LIQUID TIGHT MC CABLE
NOTE NO. 8 AND SHEET E5 FOR CONTINUATION

NEW 2 EACH, 3/4" PVC UNDERGROUND 24" DEEP, SEE DRAWING AND NOTE #8 ON SHEET M-1 FOR LOCATION AND NOTE.

APPROX DATALOGGER LOCATION (TO BE INSTALLED BY OTHERS). SEE M-1, NOTE 8.

NOTES (CON'T)

- 7. INSTALL 2 EACH 3/4" PVC UNDERGROUND 24" DEEP FROM THE DATALOGGER LOCATION UP TO MACHINE ROOM. BURY THE PVC PIPES ON THE CREEK SIDE OF THE WATER LINE. INSTALL A SPLICE BOX 4 11/16" X 2 1/8" DEEP. NEMA 4X ENCLOSURE 24" ABOVE GROUND IN THE DATALOGGER LOCATION. WIRINGS TO BE DONE BY OTHERS.
- 8. THE CONTRACTOR SHALL FIELD VERIFY WITH THE USING AGENCY THE EXACT NUMBER OF CONTROL /INTERLOCKING CONDUCTORS NEEDED TO CONNECT OR INTERLOCK THE CONTROL DEVICES THAT WILL START AND STOP THE PUMP MOTORS IN THE NEW PUMPHOUSE OR IN THE EXISTING WATER TREATMENT PLANT BUILDING.
- 9. SEE NOTES ND. 1 & 2 ON SHEET E-7.

- NOTES:
- 1. INSTALL NEW 4 #4/0, 2 1/2" PVC, 24" UNDERGROUND FROM THE PAD MOUNTED TRANSFORMER UP TO THE NEW COMBINATION KILOWATT HOUR METER / CIRCUIT BREAKER
 - 2. INSTALL THE NEW DIRECT BURIED CABLE, 4 C #4/0, 1 #4 GRD WIRES 24" UNDERGROUND UP TO THE EXISTING STAIRCASE.
 - 3. INSTALL THE NEW 4 #4/0 UNDERGROUND PVC ALUMINUM ARMORED CABLE EXPOSED, ALONG THE EXISTING STAIRCASE RAILS USING MECHANICAL'S PIPE MOUNTING BRACKET.
 - 4. INSTALL THE NEW 4 #4/0 UNDERGROUND PVC ALUMINUM ARMORED CABLE USING MECHANICAL'S PIPE MOUNTING BRACKET.
 - 5. BURY DIRECT BURIED CABLES 24" BELOW FINISHED GRADE
 - 6. CONNECT/TERMINATE NEW CONTROL WIRES FROM EXISTING CONTROL PANEL IN THE EXISTING WATER TREATMENT BUILDING AND MAKE INTERLOCKING CONNECTIONS WITH THE NEW PUMP CONTROL PANEL IN THE NEW PUMP HOUSE SO THAT THE TWO PUMPS CAN BE REMOTELY OPERATED IN BOTH BUILDINGS TO COMPLY WITH THE EXISTING PUMP OPERATION

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO.	PROJECT NO.
CITY	STATE
DATE	DATE
DESIGNED BY	CHECKED BY
DRAWN BY	DATE

U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

PROJECT NO.	PROJECT NAME
PROJECT LOCATION	PROJECT DESCRIPTION
PROJECT DATE	PROJECT STATUS

INV. NO. W911KB-04-B-0009

KAKE DAM
ELECTRICAL
ELECTRICAL SITE PLAN II

Reference number:
E-3
Sheet 51 of

ELECTRICAL SITE PLAN - NEW CONDITION, KAKE DAM

AS-BUILT SET



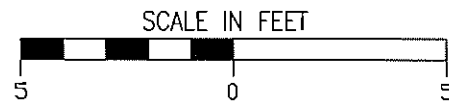
CONTRACT NO.	
CONTRACTOR	
DATE	
APPROVED	
BY	
FOR CONTRACTOR	
FOR DISTRICT	

DATE	REVISION	DESCRIPTION

U.S. ARMY ENGINEER DISTRICT ANCHORAGE, ALASKA	DESIGNED BY R. SWANSON	CHECKED BY R. SWANSON
INSTRUMENTED BY R. SWANSON	DATE 11/1/71	SCALE 1:1
PROJECT NO. W911KB-04-B-0009	PROJECT NAME KAKE DAM PUMP ROOM	PROJECT LOCATION KAKE DAM PUMP ROOM I

KAKE, ALASKA
KAKE DAM
ELECTRICAL
ELECTRICAL LIGHTING PLAN
KAKE DAM PUMP ROOM I

Reference
number:
E-4
Sheet 52 of



ELECTRICAL PANEL BOARD 'A', 3
PHASE, 4 WIRE, 120/208 VOLTS,
MAIN 200 AT W/ 30 CIRCUITS,
NEMA 3R ENCL, SEE PANEL SCHEDULE

30 KVA XFMR

PANEL A

PANEL B

JUNCTION BOX, 4"x1 1/2"
OCTAGONAL (TYP)

TOGGLE SWITCH, 20 AMPS, 120 VOLTS,
WALL SURFACE MOUNTED, HEAVY DUTY
INDUSTRIAL TYPE, MOUNTING HEIGHT,
48" FROM CENTER TO FINISH FLOOR

HIGH PRESSURE SODIUM LIGHT
FIXTURE, 100 WATTS, 120 VOLTS,
WALL SURFACE MOUNTED, WEATHER
PROOF WITH PHOTOCELL, MOUNTING
HEIGHT 12" BELOW ROOF LINE TYP.
FOR 5 EACH

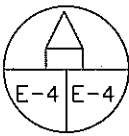
FLUORESCENT LIGHT FIXTURE, 120V WITH
3 LAMPS EACH FIXTURE, 32V PER LAMP,
12"x48" HEAVY DUTY INDUSTRIAL TYPE
FOR WET LOCATION. TYPICAL FOR 2
EACH. SUSPEND FIXTURE FROM PURLINS
AND VERIFY MOUNTING HEIGHT TO CLEAR
CRANE.

2 #12, 1 #12 GRD IN 1/2" RSC,
EXPOSED

2-#12, 1-#12 GRD IN
1/2" RSC, EXPOSED (TYP.)

NOTE:

ELECTRICAL SUBCONTRACTOR SHALL
COORDINATE CONDUIT RUNS WITH
LOCATION OF OVERHEAD CRANE
STRUCTURE. ENSURE THAT CONDUIT
RUNS WILL NOT OBSTRUCT THE CRANE'S
PATH OF TRAVEL.



ELECTRICAL LIGHTING PLAN - KAKE DAM PUMP ROOM

SCALE: 1/2" = 1' FOR FULL SIZE PLOT

AS-BUILT SET

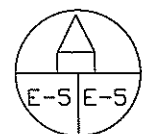
CONDUIT AND CONDUCTOR SCHEDULE

- 1 RSC IN CONCRETE SLAB, STUB UP NEAR MOTOR LOCATION. PROVIDE WITH CORROSION PROTECTION PER SPECS AND NEC 300.6 (B). CONDUIT SIZE SHALL BE THE SAME AS THE OTHER CONDUITS OF ASSIGNED CIRCUIT.
- 2 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT, EXPOSED. SUBCONTRACTOR TO PROVIDE ADAPTER FITTINGS IF NEEDED TO MATCH CONDUIT ENTRIES OF MOTOR TERMINAL BOX. CONDUIT SIZE SHALL BE THE SAME AS THE OTHER CONDUITS OF THE PARTICULAR CIRCUIT.
- 3 3-#4 AWG, 1-#8 AWG GRD IN 1" RSC, EXPOSED
- 4 4-#12 AWG CONTROL WIRES IN 1/2" RSC, EXPOSED.
- 5 2-#12 AWG, 1-#12 AWG GRD IN 1/2" RSC, EXPOSED
- 6 3-#12 AWG, 1-#12 AWG GRD IN 1/2" RSC, EXPOSED
- 7 3-#12 AWG, 1-#12 AWG GRD IN 1/2" RSC, EXPOSED
- 8 2-#12 AWG, 1-#12 AWG GRD IN 1/2" RSC IN CONCRETE SLAB, STUB UP TO PANELBOARD.

NOTES:

1. CONTRACTOR SHALL COORDINATE ALL EXPOSED CONDUIT RUNS WITH LOCATION OF CRANE STRUCTURE. ENSURE ALL CONDUIT RUNS ARE CLEAR OF THE CRANE PATH.
2. CIRCUIT FOR CRANE IS FOR INFORMATION ONLY. ELECTRICAL SUBCONTRACTOR SHALL PROVIDE THE WIRING AND PROTECTION RECOMMENDED BY THE MANUFACTURER OF THE ACTUAL OVERHEAD CRANE INSTALLED.
3. SUBCONTRACTOR SHALL COORDINATE WITH MECHANICAL ON THE ACTUAL ACTUATOR TO BE INSTALLED. IF CONTROLLER IS NOT AN INTEGRAL PART OF THE ACTUATOR, THE CONTRACTOR SHALL PROVIDE AND INSTALL THE APPROPRIATE SIZE CONTROLLER RECOMMENDED BY THE MANUFACTURER. TYPICAL CONTROL FUNCTION IS: OPEN LIFT GATE, STOP, CLOSE LIFT GATE. CONTRACTOR SHALL PROVIDE AND INSTALL THE CONTROL STATUS INDICATOR IF NOT AN INTEGRAL PART OF THE CONTROLLER.
4. OUTLET RECEPTACLES SHALL BE WEATHER PROOF GFCI, 20A, 120V, DUPLEX, WALL SURFACE MOUNTED 32" ABOVE FINISHED FLOOR TO CENTER OF DEVICE PLATE.
5. CONTRACTOR SHALL PROVIDE AND INSTALL STARTER AND DISCONNECT IF NOT AN INTEGRAL PART OF EQUIPMENT. CONTRACTOR SHALL PROVIDE MOUNTING BRACKET AND FRAME FOR ENCLOSURE. ENCLOSURE FOR CONTROLLER/DISCONNECT SHALL BE NEMA 4X. MOUNTING HEIGHT SHALL BE 48" ABOVE FINISHED FLOOR TO CENTER OF ENCLOSURE.
6. INSTALL 2 EACH - 3 / 4" DIA. RSC EXPOSED FROM CONDUIT BODY TO SPICE BOX
7. TRANSFORMER SHALL BE SET ON CONCRETE BASE. THE TOP ON THE CONCRETE BASE SHALL BE APPROXIMATELY 4" ABOVE THE FINISHED FLOOR. THE BASE SHALL BE OF ADEQUATE SIZE TO PROJECT AT LEAST 8" BEYOND THE EQUIPMENT ON EACH SIDE.

SCALE IN FEET



ELECTRICAL POWER PLAN - KAKE DAM PUMP ROOM

SCALE: 1/2" = 1' FOR FULL SIZE PLOT

ELECTRIC UNIT HEATER, WALL MTD, 2.6KW, 208V, 1Ø. COORDINATE MOUNTING HEIGHT WITH LOCATION OF CRANE BRIDGE STRUCTURE.

LIFT GATE ACTUATOR MOTOR, 0.5 HP, 480V, 3Ø, 60HZ

2 EACH CONDUIT BODY "LB" 3/4" DIA

2 EACH - PVC PIPES 3 / 4" DIA UNDERGROUND, SEE E-3, NOTE 7

ELECTRICAL PANELBOARD A, 3Ø, 4W, 208/120V, 100A MAIN BREAKER W/ 3Ø CIRCUITS. NEMA 3R ENCL. MOUNTING HEIGHT IS 60" ABOVE FINISHED FLOOR TO CENTER OF ENCLOSURE.

30KVA, 480V - 208/120V DRY TRANSFORMER IN 3R ENCLOSURE FLOOR MOUNTED ON EQUIPMENT PAD. SEE NOTE 8 FOR ADDITIONAL REQUIREMENT.

ELECTRICAL PANELBOARD B, 3Ø, 4W, 480/277V, 100A MAIN BREAKER W/ 3Ø CIRCUITS. NEMA 3R ENCL. MOUNTING HEIGHT IS 60" ABOVE FINISHED FLOOR TO CENTER OF ENCLOSURE.

MECHANICAL SCREEN CLEANER MOTOR, 1/8 HP, 120V, 1-Ø

MECHANICAL SCREEN CLEANER MOTOR, 1/8 HP, 120V, 1-Ø

FLEX RAKE CONTROLS

Panelboard A

Panelboard B

30KVA XFMR

B-2,4,6

A-17

A-18

A-14,16

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

A-19,21,23

B-1,3,5

A-13,15

A-8

NEW SOLID STATE REDUCED VOLTAGE STARTER, 3Ø, 480V, FOR PUMP MOTOR (MOTOR STARTER NO. 1). MOUNTING HEIGHT IS 60" ABOVE FINISHED FLOOR TO BASE OF ENCLOSURE.

NEW SOLID STATE REDUCED VOLTAGE STARTER, 3Ø, 480V, FOR PUMP MOTOR (MOTOR STARTER NO. 2). MOUNTING HEIGHT IS 60" ABOVE FINISHED FLOOR TO BASE OF ENCLOSURE.

ELECTRIC UNIT HEATER, 2.6KW, 208V, 3Ø, WALL SURFACE MOUNTED. COORDINATE MOUNTING HEIGHT WITH LOCATION OF CRANE BRIDGE STRUCTURE.

CRANE HOIST MOTOR, 208V, 3Ø

HOIST AND TRAVERSE MOTOR CONTROLLER

SPLICE BOX 6" X 6" X 4" NEMA PVC ENCL. WALL SURFACE MOUNTED, MOUNTING HEIGHT : 48" CENTER OF ENCLOSURE TO FINISH FLOOR. (FOR DATALOGGER CONTROLS)

4 # 4/0 IN 2" "EXPOSED" (TO ELECTRICAL PANEL BOARD). 1" TO CONTROLS AS REQD.

SEE NOTE NO. 5.

SEE NOTE NO. 5.

ELECTRICAL CONDUIT

PUMP MOTOR NO. 2, 20HP, 480V, 3Ø, 1750RPM

PUMP MOTOR NO. 1, 20HP, 480V, 3Ø, 1750RPM

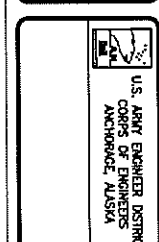
DISCONNECTS FOR FLEX RAKE MOTORS

ANCHORAGE RESIDENT OFFICE CORPS OF ENGINEERS ANCHORAGE, ALASKA	
REPLACE/UPGRADE KAKE DAM W911KB-05-C-0005	
DRWN BY: NGUYEN	DRAWING REF E-5
DATE JUNE 02 2006	SKETCH: #6-1
CASE# 6	



CONTRACT NO.	
CONTRACTOR	
DATE	
PROJECT	
LOCATION	
SCALE	
DATE	
BY	
CHECKED	
DATE	

DATE	
BY	
CHECKED	
DATE	



PROJECT	REPLACE/UPGRADE KAKE DAM
PROJECT NO.	W911KB-05-C-0005
PROJECT NAME	KAKE DAM PUMP ROOM II
PROJECT LOCATION	
PROJECT SCALE	
PROJECT DATE	
PROJECT BY	
PROJECT CHECKED	
PROJECT DATE	

PROJECT	REPLACE/UPGRADE KAKE DAM
PROJECT NO.	W911KB-05-C-0005
PROJECT NAME	KAKE DAM PUMP ROOM II
PROJECT LOCATION	
PROJECT SCALE	
PROJECT DATE	
PROJECT BY	
PROJECT CHECKED	
PROJECT DATE	

PROJECT	REPLACE/UPGRADE KAKE DAM
PROJECT NO.	W911KB-05-C-0005
PROJECT NAME	KAKE DAM PUMP ROOM II
PROJECT LOCATION	
PROJECT SCALE	
PROJECT DATE	
PROJECT BY	
PROJECT CHECKED	
PROJECT DATE	



CONTRACT NO.	
CONTRACTOR	
CITY	
STATE	
ZIP	
DATE	

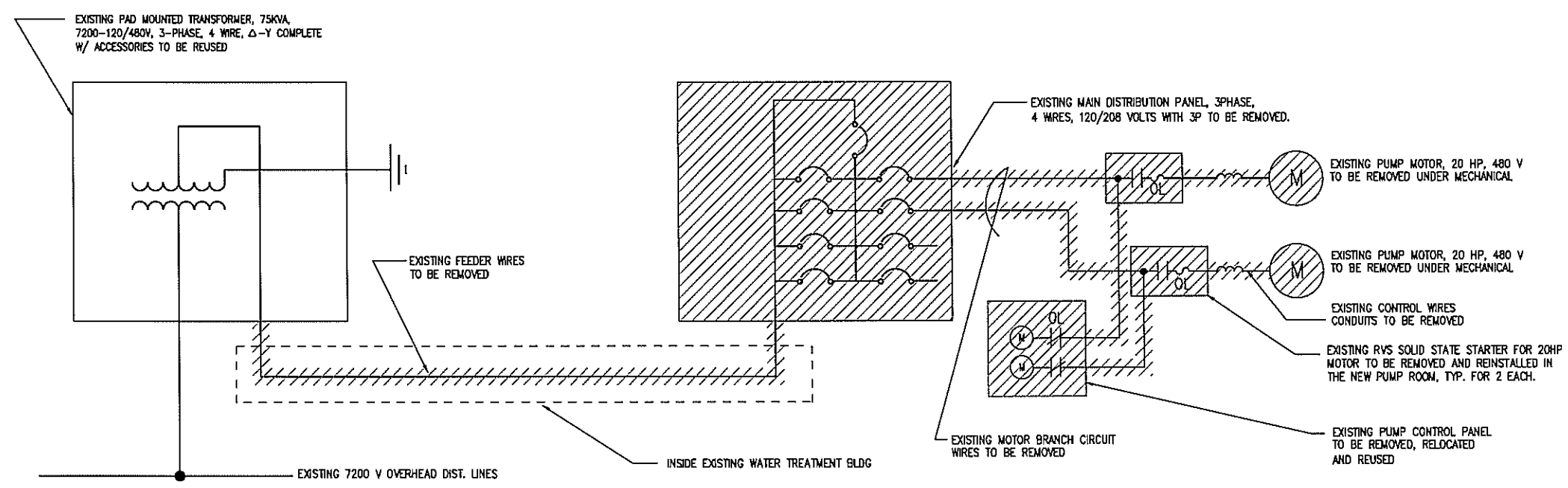
DATE	
REVISION	
DESCRIPTION	
BY	
CHKD	

U.S. ARMY ENGINEER DISTRICT ANCHORAGE, ALASKA	DESIGNED BY R. B. ROSS	DATE 11/1/81
INV. NO. W911KB-04-B-0009	PROJECT KAKE DAM	BY M. T. S.
	FOR KAKE DAM	DATE 11/1/81

KAKE, ALASKA KAKE DAM ELECTRICAL POWER SINGLE LINE DIAGRAM

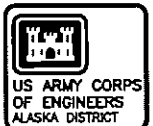
Reference number: E-6
Sheet 54 of

NOTE:
1. ALL ELECTRICAL EQUIPMENT, DEVICES AND
RACEWAYS WITH HATCH MARKS ARE TO BE REMOVED.



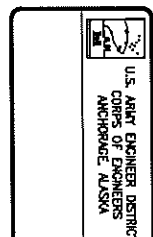
POWER SINGLE LINE DIAGRAM - EXISTING CONDITION (REMOVAL)
NOT TO SCALE





CONTRACT NO.	
CONTRACTOR	
DATE	
BY	
FOR	
REVISION	
DATE	
BY	
FOR	

NO.	DATE	BY	FOR
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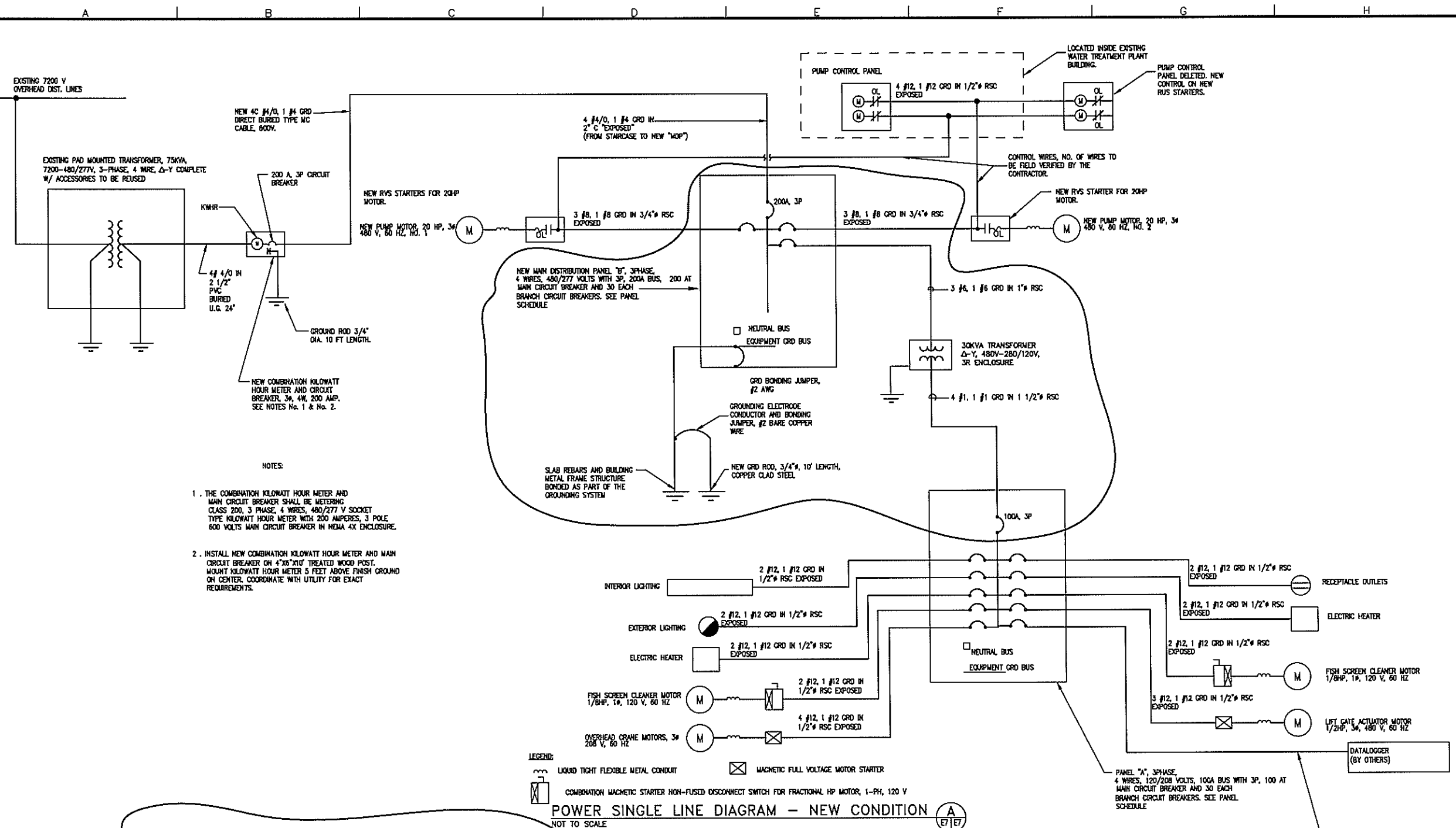


PROJECT	RENSON
DESIGNER	RENSON
CHECKED	RENSON
DATE	10/05/05
BY	RENSON
FOR	RENSON
NO.	W911KB-04-B-0009

PROJECT	KAKE DAM
DESIGNER	KAKE DAM
CHECKED	KAKE DAM
DATE	10/05/05
BY	KAKE DAM
FOR	KAKE DAM
NO.	W911KB-05-C-0005

Reference number:	E-7
Sheet 55 of	

AS-BUILT SET



PANEL B SCHEDULE										
480/277 VOLT				3 PHASE		4 WIR		22,000		
PANEL		PANEL BOARD "A"		BREAKER MIN AC		22,000				
WALL SURFACE MOUNTED				MTG		MAIN CIRCUIT BREAKER 200A, 480V, 3-P				
CKT	BREAKER	CONN			CONN			BREAKER	CKT	
No.	PLS	TRIP	LOAD DESCRIPTION	KVA	A	B	C	TRIP	PLS	No.
1	60		PUMP MOTOR NO.1	7.16	1	2	7.16	60	2	
3	3	60	"	7.16	3	4	7.16	60	3	4
5	60		"	7.16	5	6	7.16	60		6
7	50		30KVA DRY TYPE TRANSFORMER	6.29	7	8		20	1	8
9	3	50	"	6.995	9	10		20	1	10
11	50		"	4.975	11	12		20	1	12
13	2	20	CONTROL CIRCUIT *		13	14		20	2	14
15	20		SPACE		15	16		20		16
17	1	20	CONTROL CIRCUIT *		17	18		20		18
19	20		SPACE		19	20		20		20
21	3	20	SPACE		21	22		20	3	22
23	20		SPACE		23	24		20		24
25	1	20	SPACE	1.00	25	26		20		26
27	1	20	"	1.00	27	28		20		28
29	1	20	"	1.00	29	30		20		30
				Σ A	Σ B	Σ C	TOTAL CONN. KVA			
TOTAL CONN. KVA BOTH SIDES				19.99	20.695	18.676	59.361			
REMARKS:										

* NEW 20A 3-POLE CIRCUIT BREAKER FOR LIFT GATE ACTUATOR MOTOR

PANEL A SCHEDULE												
120/208 VOLT 3 PHASE 4 WGN												
PANEL PANEL BOARD "A" BREAKER MIN AC 22,000												
WALL SURFACE MOUNTED MTG MAIN CIRCUIT BREAKER 100A, 208V, 3-P												
CKT	BREAKER	LOAD DESCRIPTION			CONN	LOAD DESCRIPTION			BREAKER	CKT		
No.	PLS	TRIP			KVA	A	B	C	TRIP	PLS	No.	
1	1	50	TURBINE BUILDING **				1	2			1	2
3	1	50	"				3	4			1	4
5	1	50	"				5	6			1	6
7	1	20	LIGHTS			0.33	7	8	0.54		20	8
9	1	20	"			0.825	9	10	1.00		20	10
11	1	20	CONTROL CIRCUIT *			1.00	11	12	1.00		20	12
13	2	20	HEATER			1.75	13	14	1.75		20	14
15	20		"			1.75	15	16	1.75		20	16
17	1	20	FISH SCREEN CLEANER MOTOR			0.528	17	18	0.528		20	18
19	20		OVERHEAD CRANE			0.560	19	20	0.360		20	20
21	3	20	"			0.560	21	22	0.360		20	22
23	20		"			0.560	23	24	0.360		20	24
25	1	20	SPARE			1.00	25	26			20	26
27	1	20	"			1.00	27	28			20	28
29	1	20	"			1.00	29	30			20	30
TOTAL CONN. KVA BOTH SIDES					#A	#B			#C	TOTAL CONN. KVA		
					6.29	6.995			4.975	18.261		
REMARKS:												

* NEW 20A 3-POLE CIRCUIT BREAKER FOR LIFT GATE ACTUATOR MOTOR
** NEW #4-4C PVC JACKETED ARMORED CABLE TO TURBINE BLDG. DISCONNECT

ANCHORAGE RESIDENT OFFICE CORPS OF ENGINEERS ANCHORAGE, ALASKA	
REPLACE/UPGRADE KAKE DAM W911KB-05-C-0005	
DRWN BY: NGUYEN	DRAWING REF E-7
DATE JUNE 02 2005	SKETCH #8-2
CASE# 6	



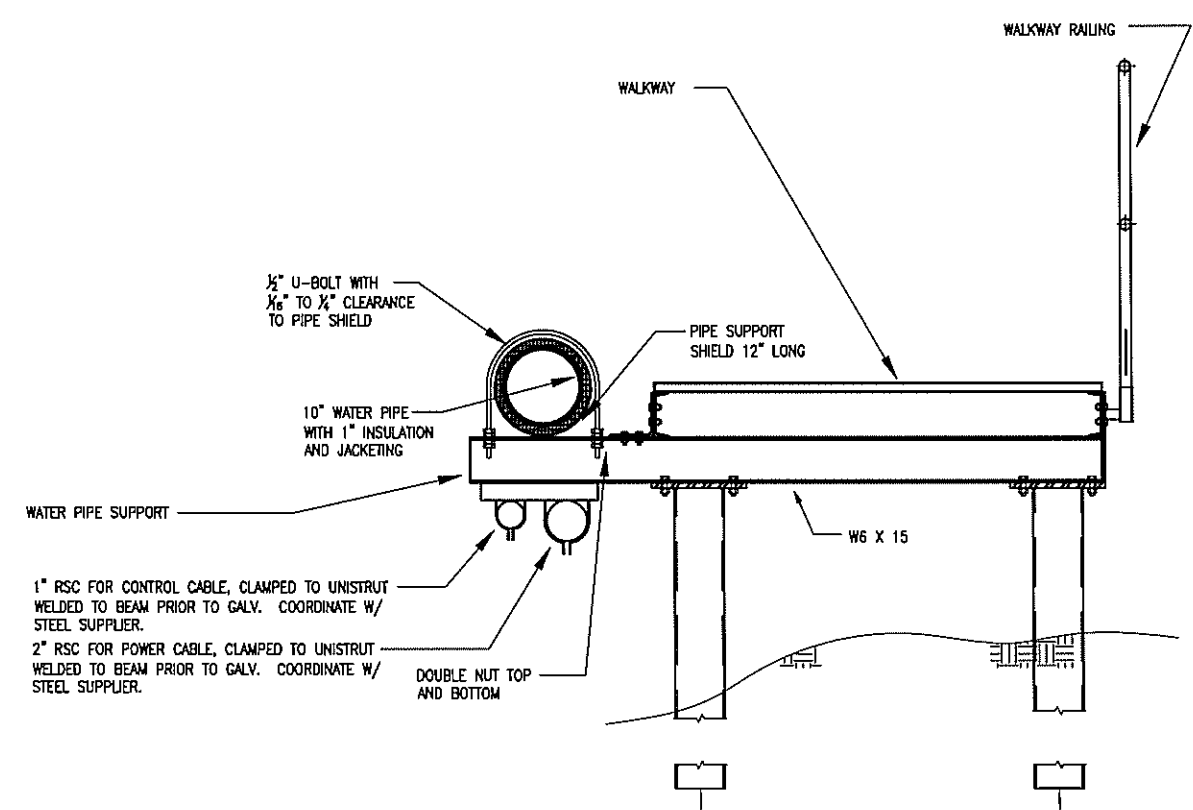
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COMPARISON	
CITY	STATE
DESIGNATION	DATE
DESIGNER	APPROVED
REVISION	REVISION

DATE	DESCRIPTION

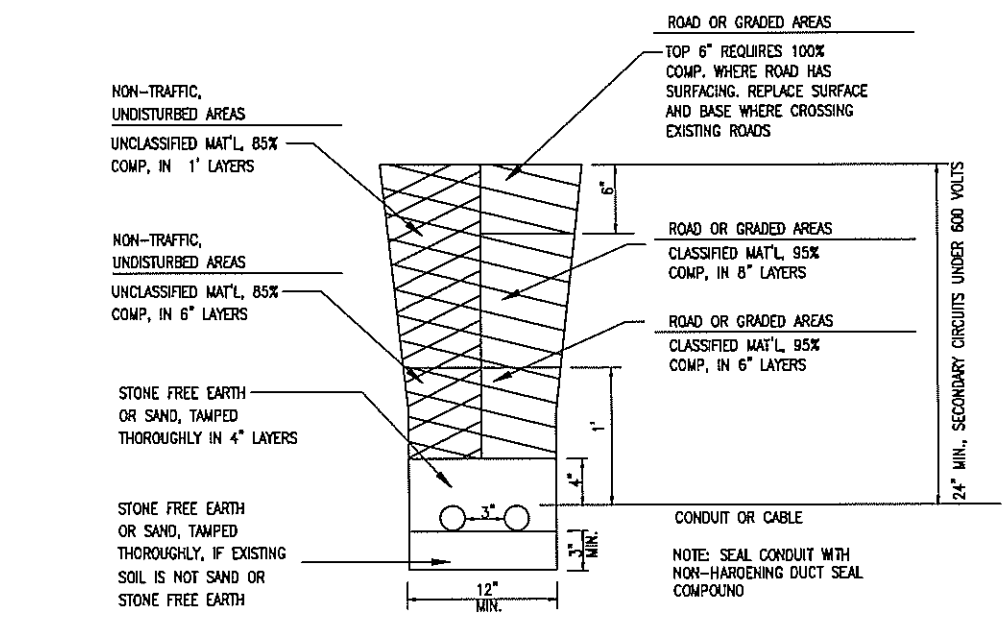
U.S. ARMY ENGINEER DISTRICT ANCHORAGE, ALASKA	
Project: R. B. T. W.	Design: R. B. T. W.
Contract: W. 911KB-04-B-0009	Drawn: J. L. H. & C. H. H.
Scale: FULL	Date:

KAKE, ALASKA KAKE DAM ELECTRICAL ELECTRICAL DETAILS
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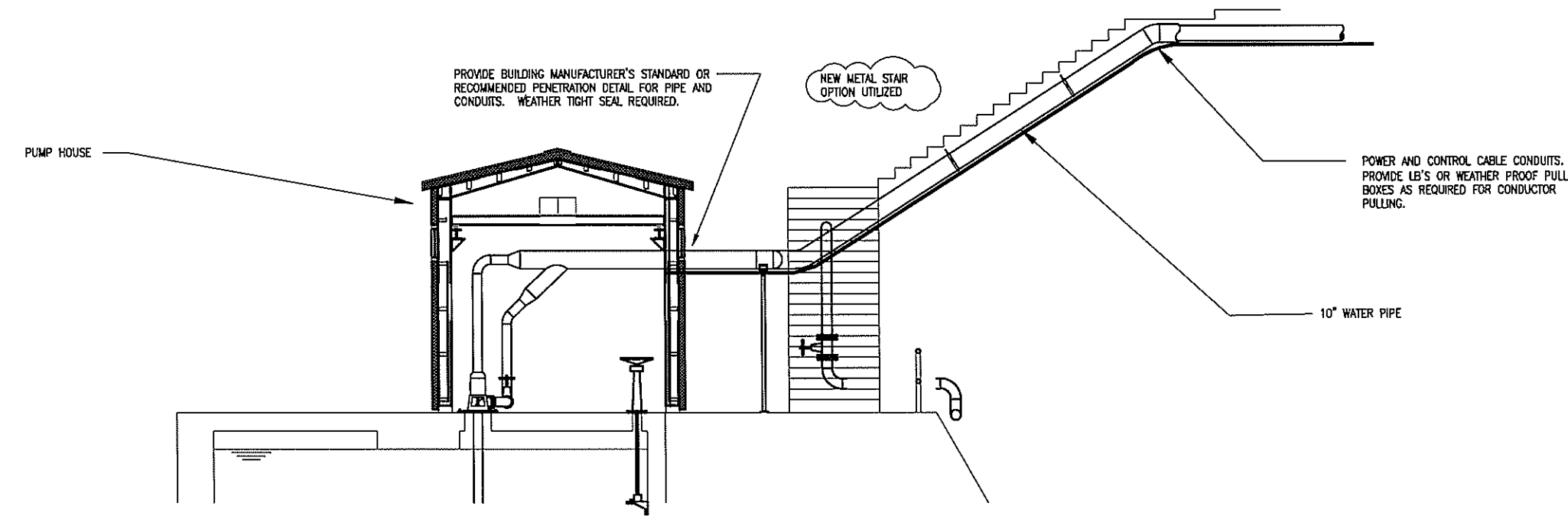
Reference number: E-8 Sheet 56 of 56



CONDUIT SUPPORT DETAIL 1
NOT TO SCALE



STEEL CONDUIT OR DIRECT BURIED CABLE TRENCH SECTION 3
NOT TO SCALE



ROUTE DETAIL FOR POWER AND CONTROL CONDUIT 2
NOT TO SCALE

Appendix F

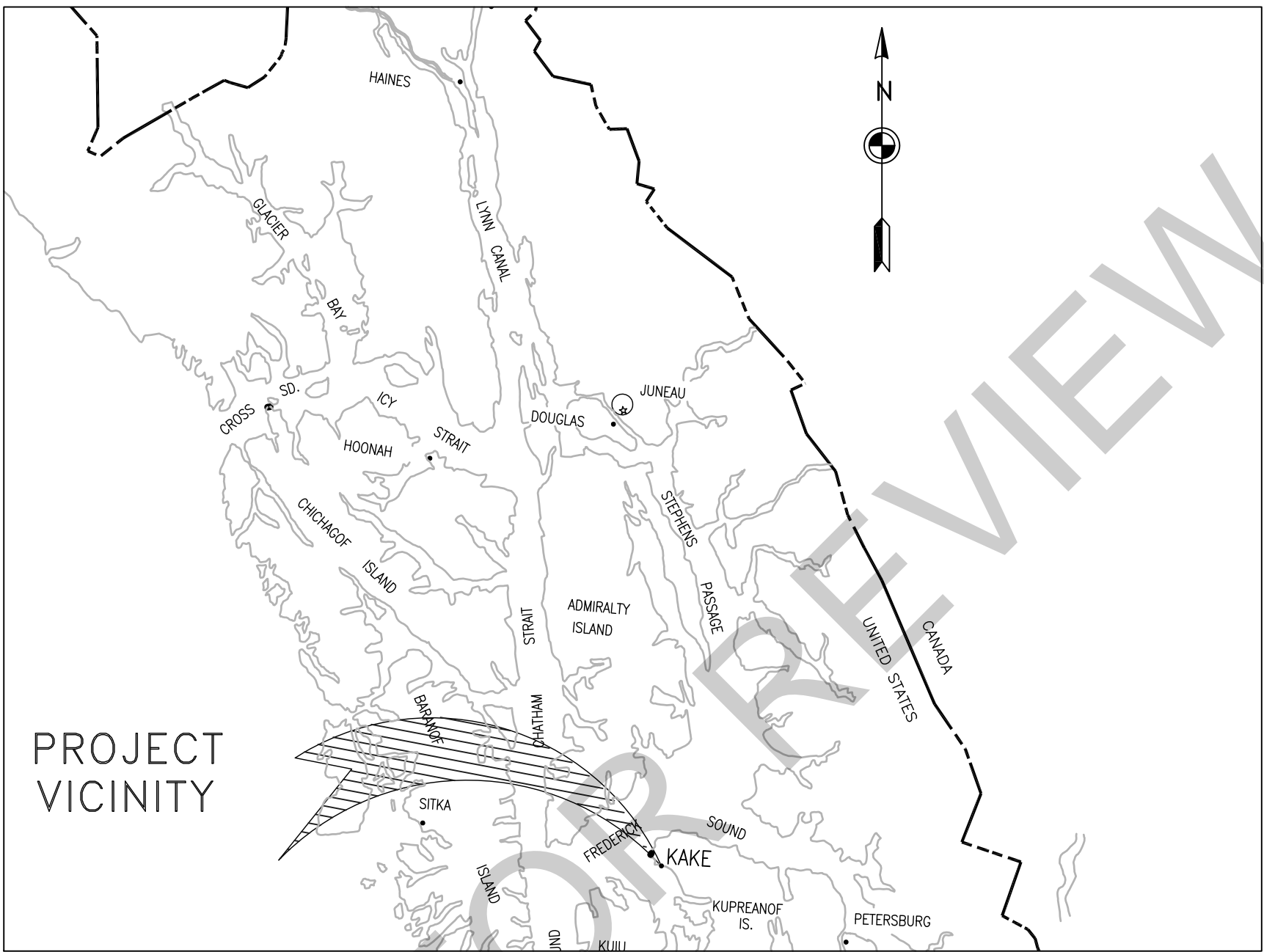
IPEC proposed Hydroelectric plans

GUNNUK CREEK HYDROELECTRIC PROJECT

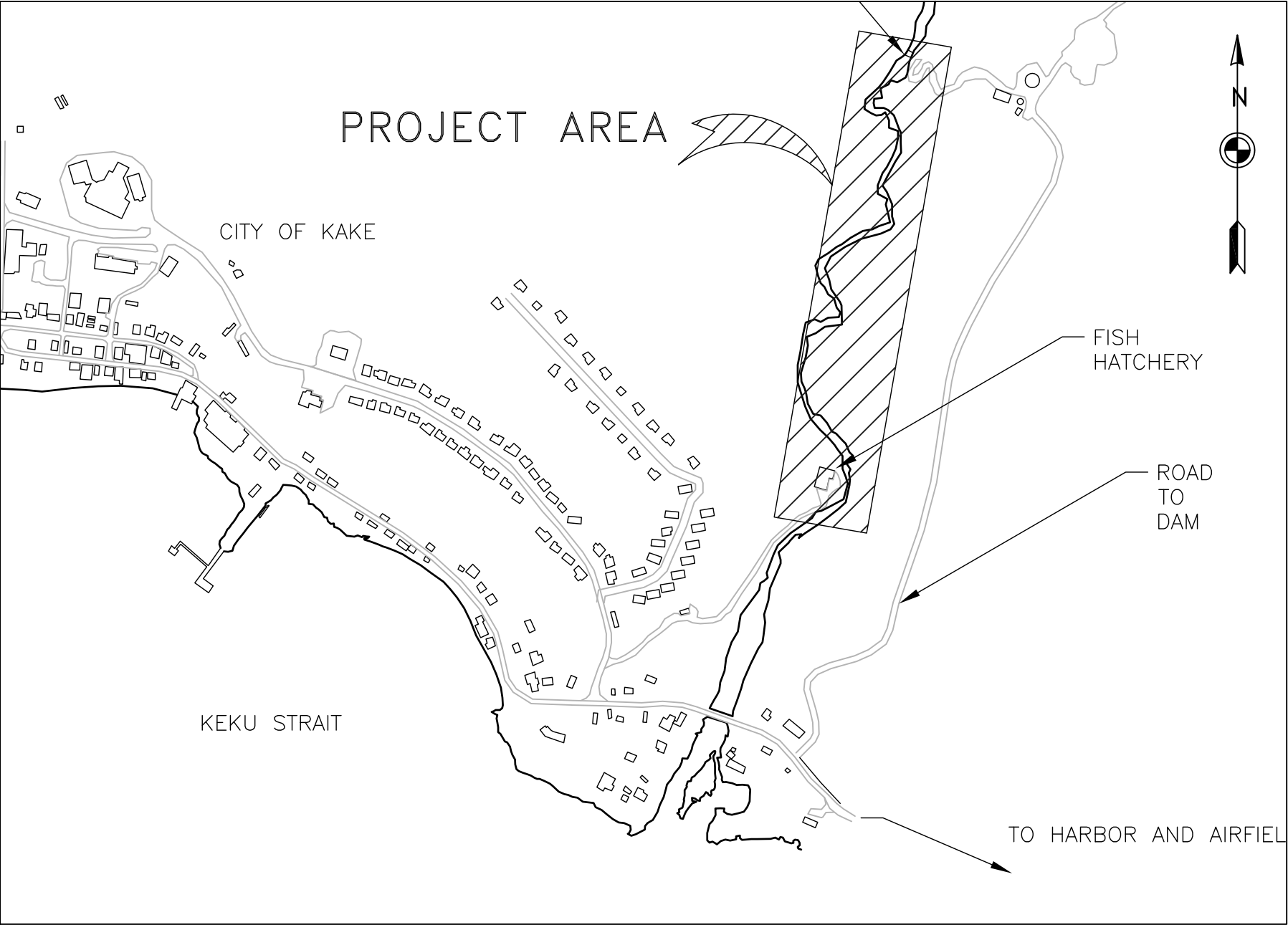
GENERAL CONSTRUCTION



PROJECT LOCATION MAP



PROJECT VICINITY MAP



PROJECT AREA MAP

DRAWING INDEX

GENERAL		ACCESS ROAD		MISCELLANEOUS DETAILS	
G-001	PROJECT MAPS & DRAWING INDEX	C-301	TEMPORARY ACCESS ROAD PLAN AND PROFILE, SHEET 1	C-801	MISCELLANEOUS STEEL DETAILS
G-002	PROJECT SITE PLAN OVERVIEW MAP	C-302	TEMPORARY ACCESS ROAD PLAN AND PROFILE, SHEET 2	C-802	MISCELLANEOUS CONCRETE DETAILS
G-003	GENERAL NOTES, ABBREVIATIONS, LEGEND & SYMBOLS				
PENSTOCK		POWERHOUSE		REFERENCE DRAWINGS	
C-201	PENSTOCK PLAN AND PROFILE Sta 1+00 TO Sta 6+00	C-501	POWERHOUSE SITE PLAN	M-2	PLAN, MECHANICAL, USCOE KAKE DAM
C-202	PENSTOCK PLAN AND PROFILE Sta 6+00 TO Sta 12+00	C-511	POWERHOUSE PLAN	M-3	PLAN, ENLARGED MECHANICAL PLAN, USCOE KAKE DAM
C-203	PENSTOCK PLAN AND PROFILE Sta 12+00 TO Sta 17+00	C-512	POWERHOUSE SECTIONS, SHEET 1	M-6	SECTION, MECHANICAL DETAILS, USCOE KAKE DAM
C-204	PENSTOCK PLAN AND PROFILE Sta 17+00 TO Sta 21+60.32	C-513	POWERHOUSE SECTIONS, SHEET 2		
C-205	PENSTOCK SECTIONS	C-530	POWERHOUSE REINFORCEMENT PLAN		
C-210	PENSTOCK DETAILS, SHEET 1	C-531	POWERHOUSE REINFORCEMENT SECTIONS		
C-211	PENSTOCK DETAILS, SHEET 2				
C-212	PENSTOCK DETAILS, SHEET 3				
C-213	PENSTOCK DETAILS, SHEET 4				
C-220	THRUST BLOCK REINFORCEMENT DETAIL				



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

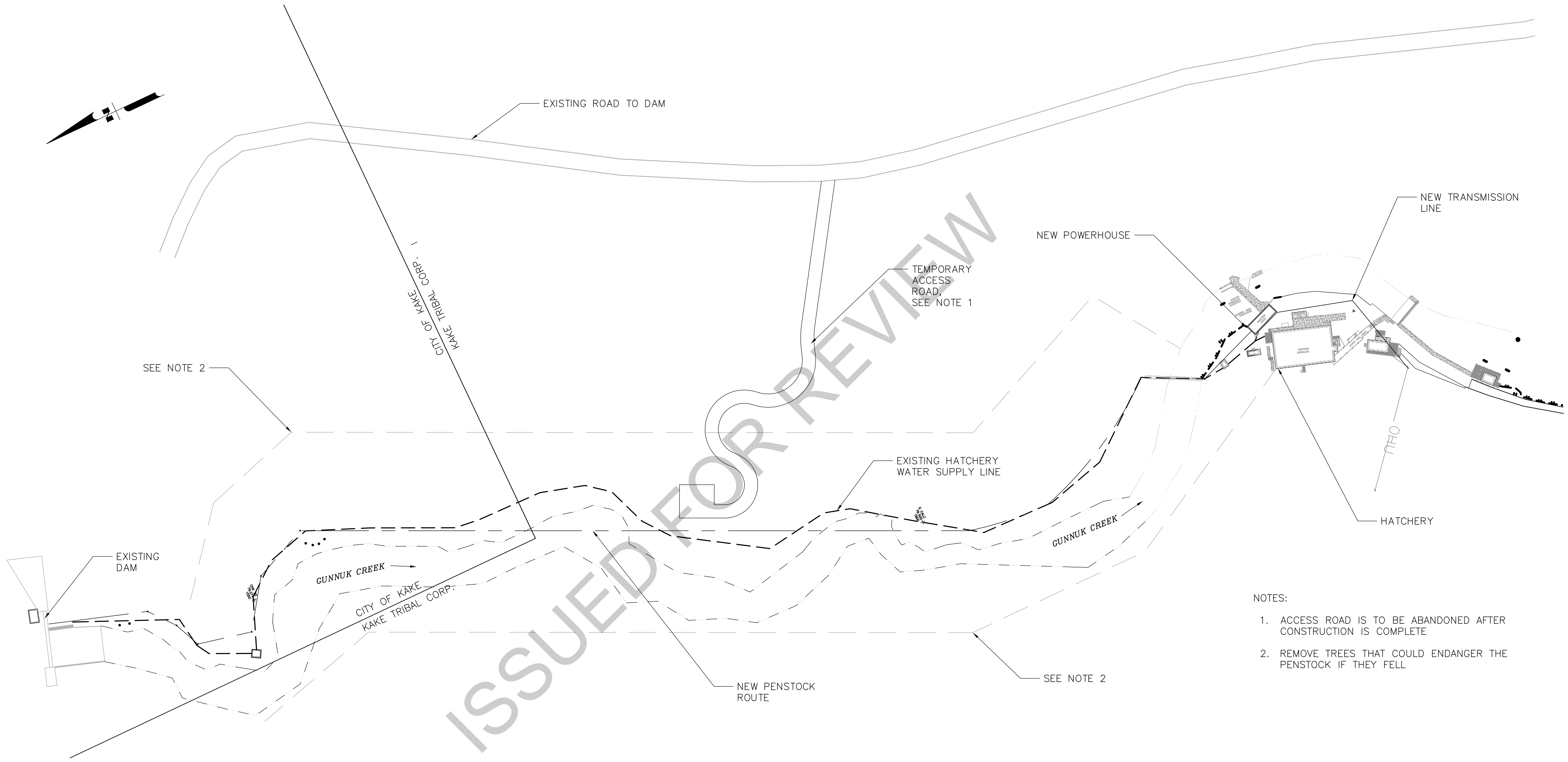
LOCATION AND VICINITY MAP
AND
DRAWING INDEX

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SCALE	N.T.S.

SHEET
G-001

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1 2 3 4 5 6 7 8



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DESIGNED	
CHECKED BY	
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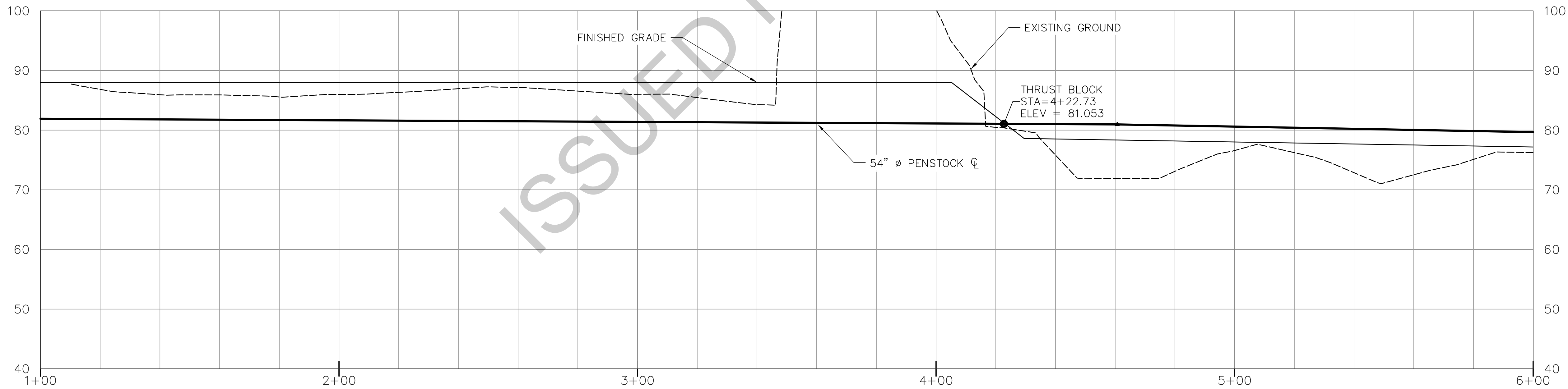
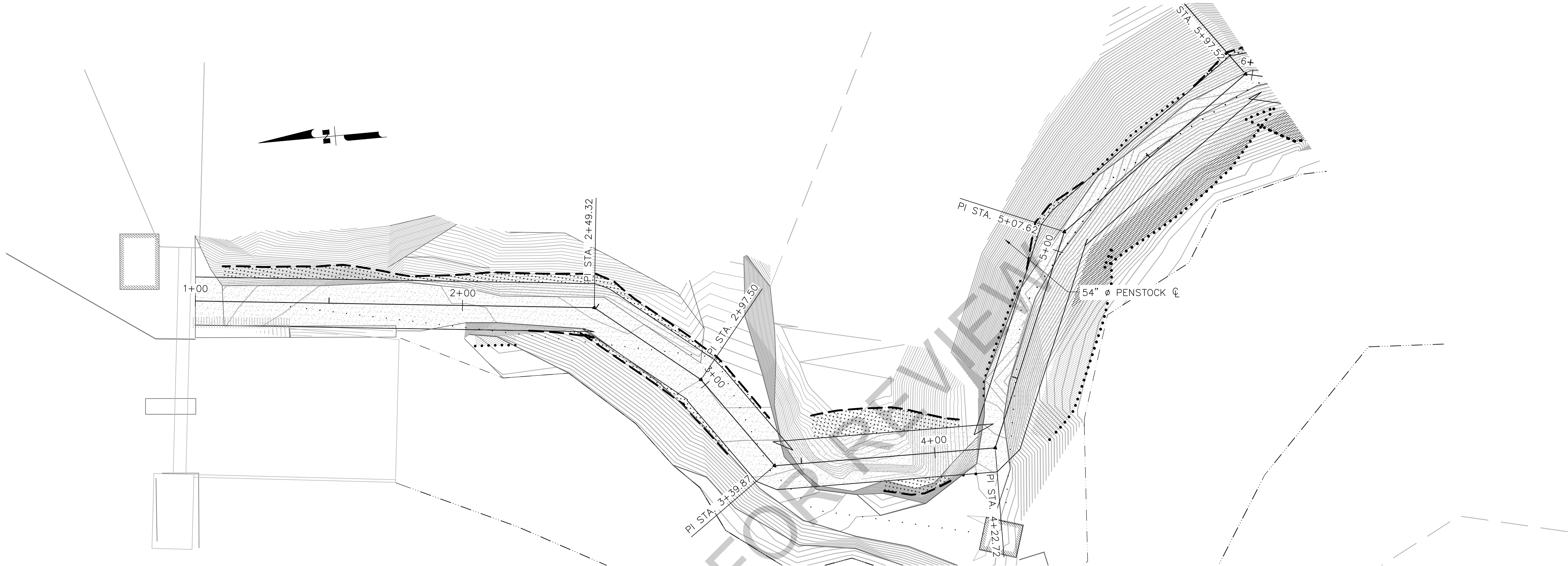
GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

PROJECT SITE PLAN
OVERVIEW MAP

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SHEET
G-002

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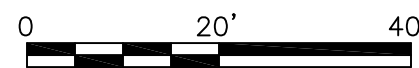
ISSUE	DATE	DESCRIPTION

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DESIGNED	
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DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



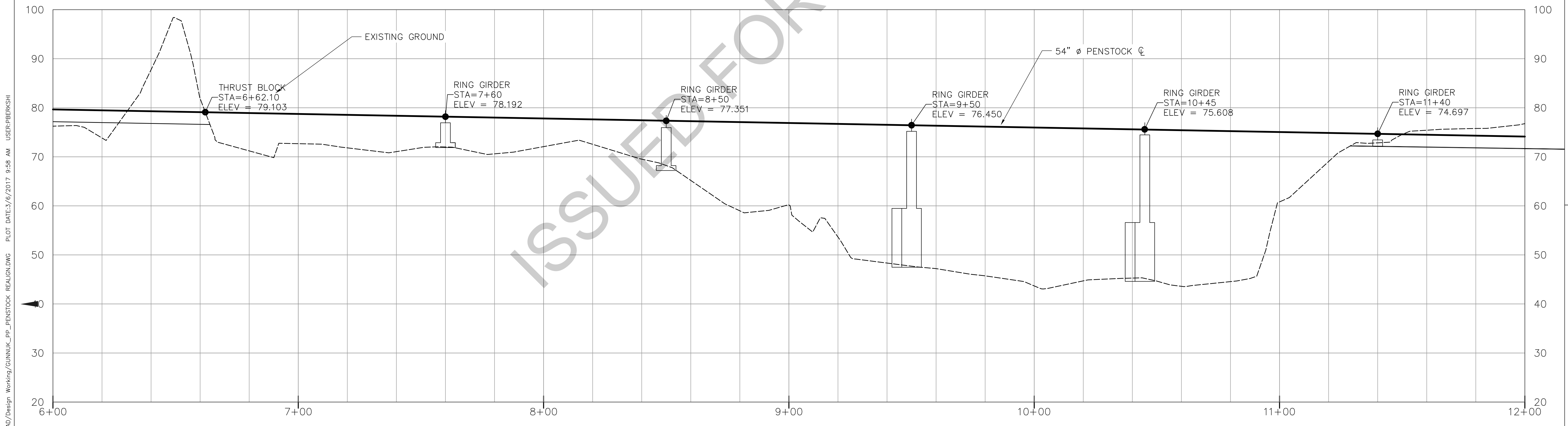
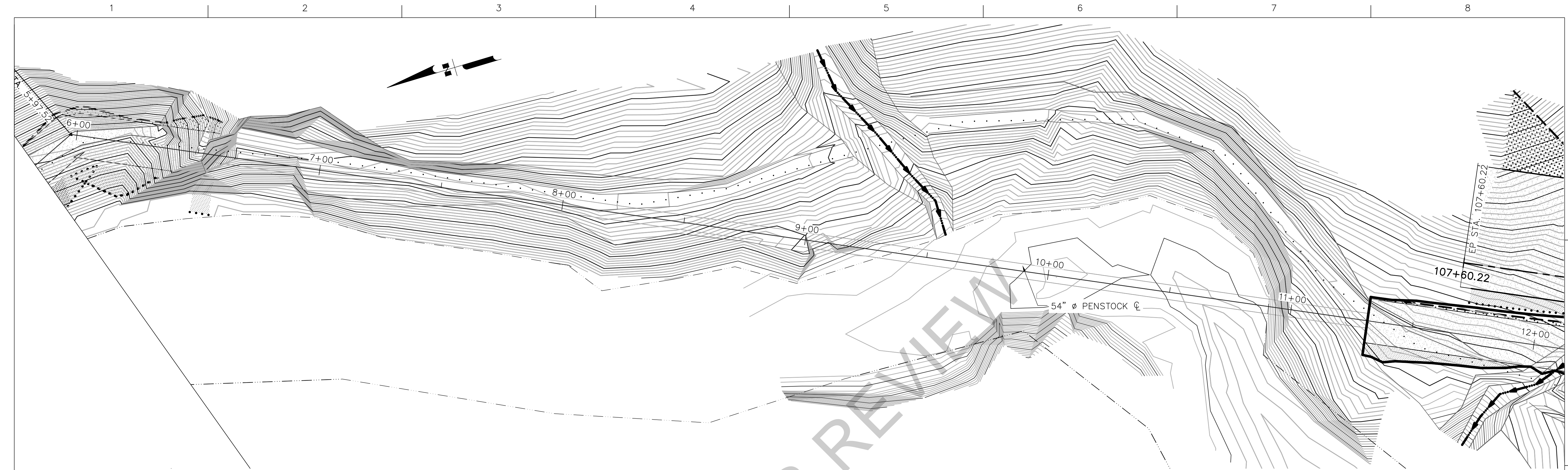
GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

PENSTOCK PLAN AND PROFILE
1+00 TO 6+00



FILENAME	Gunnuk_PP.dwg
SCALE	1"=20'

SHEET
C-201



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DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



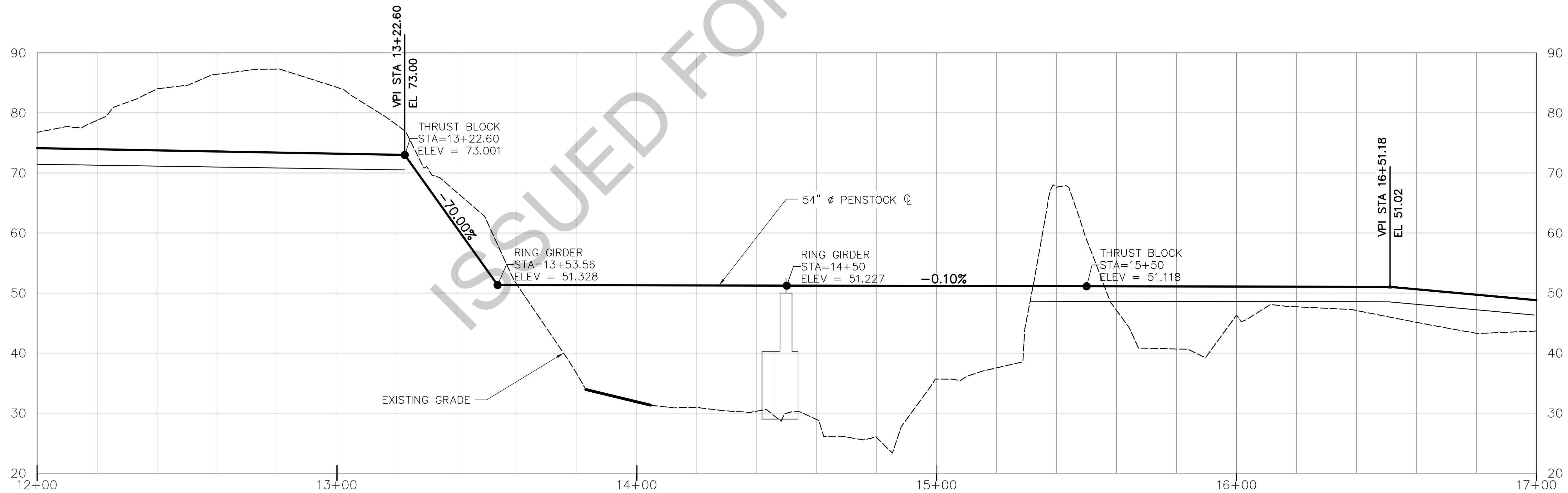
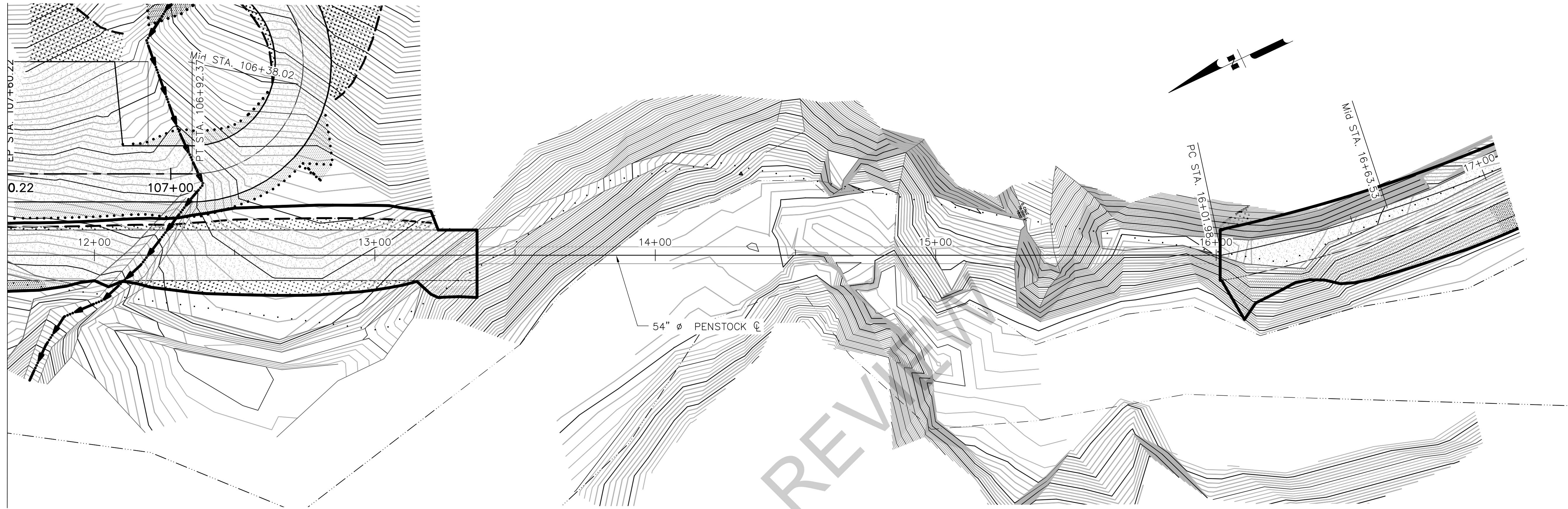
GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

PENSTOCK PLAN AND PROFILE
6+00 TO 12+00

0 20' 40'

FILENAME	Gunnuk_PP.dwg	SHEET
SCALE	1"=20'	C-202

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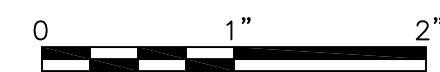
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

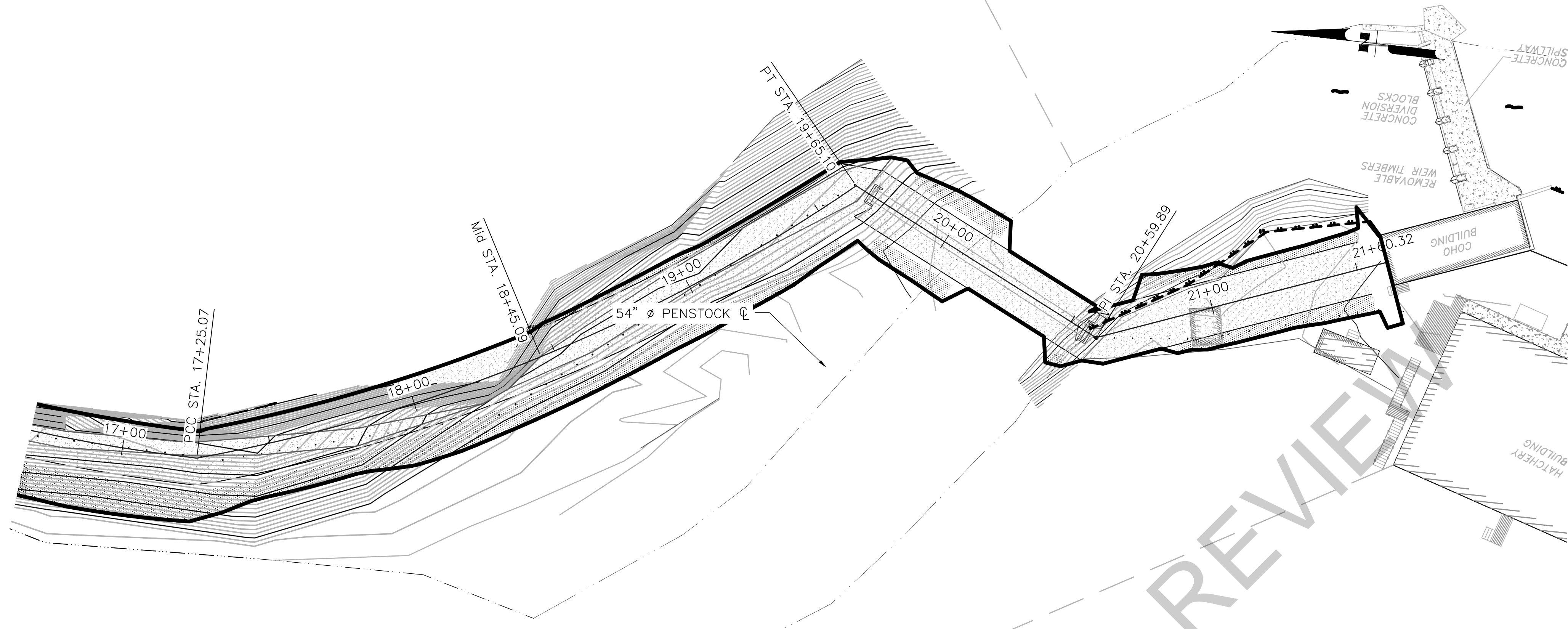
PENSTOCK PLAN AND PROFILE
12+00 TO 17+00



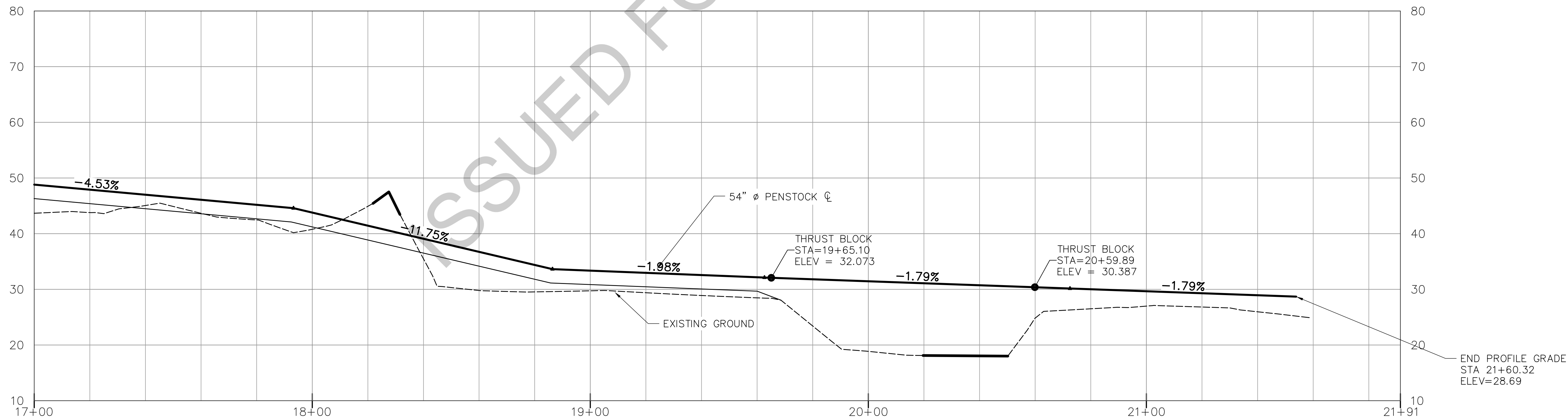
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SHEET
C-203

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PENSTOCK COORDINATES		
STA.	N.	E.
1+00	1879212.00	2633441.55
2+49.32	1879070.01	2633395.33
2+97.50	1879035.73	2633358.96
3+39.87	1879022.87	2633318.79
4+22.72	1878941.97	2633301.12
5+07.62	1878893.48	2633370.82
5+97.52	1878811.32	2633407.31
16+01.98	1877902.86	2632978.80
17+25.07	1877780.92	2632963.79
19+65.10	1877571.03	2633076.57
20+59.89	1877486.23	2633034.23
21+60.32	1877392.06	2633069.14



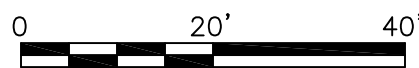
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

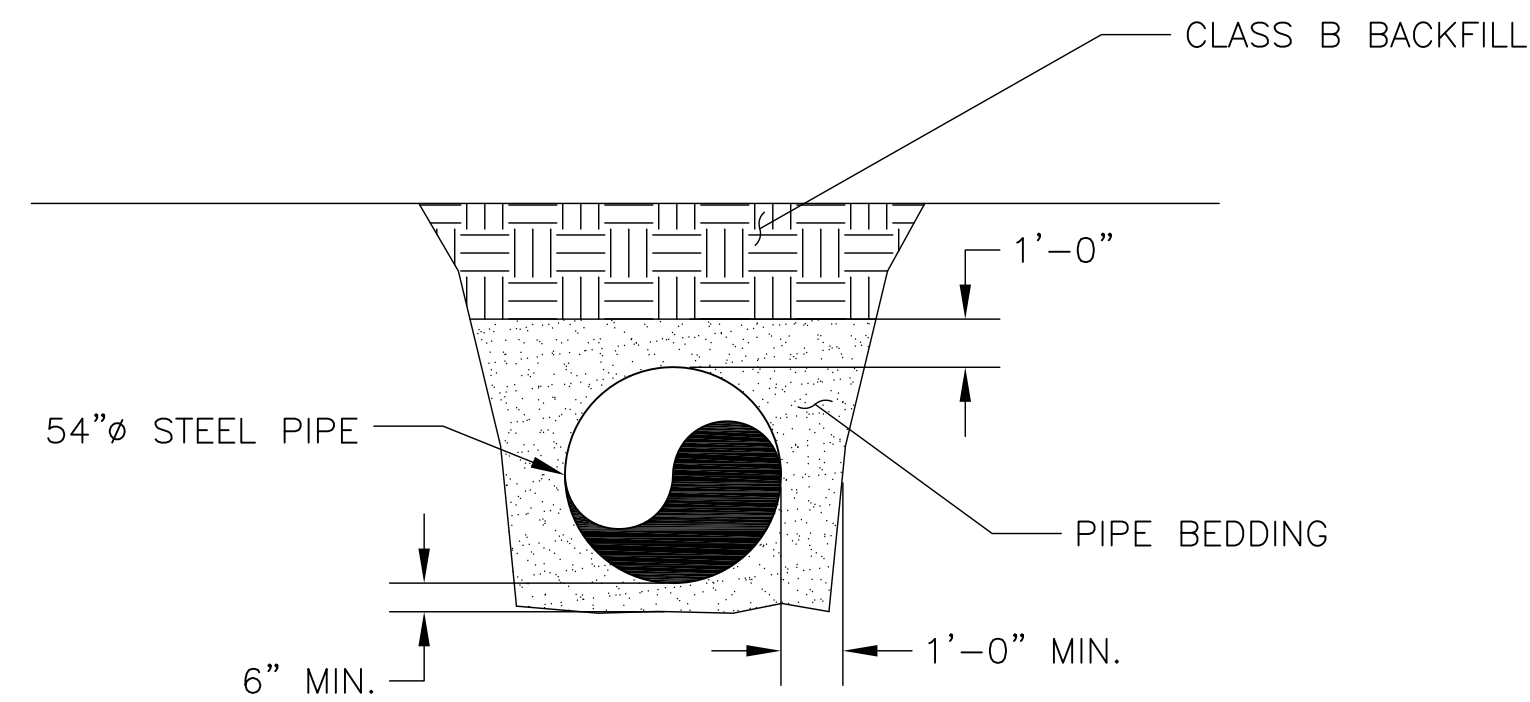
PENSTOCK PLAN AND PROFILE
17+00 TO 21+60.32



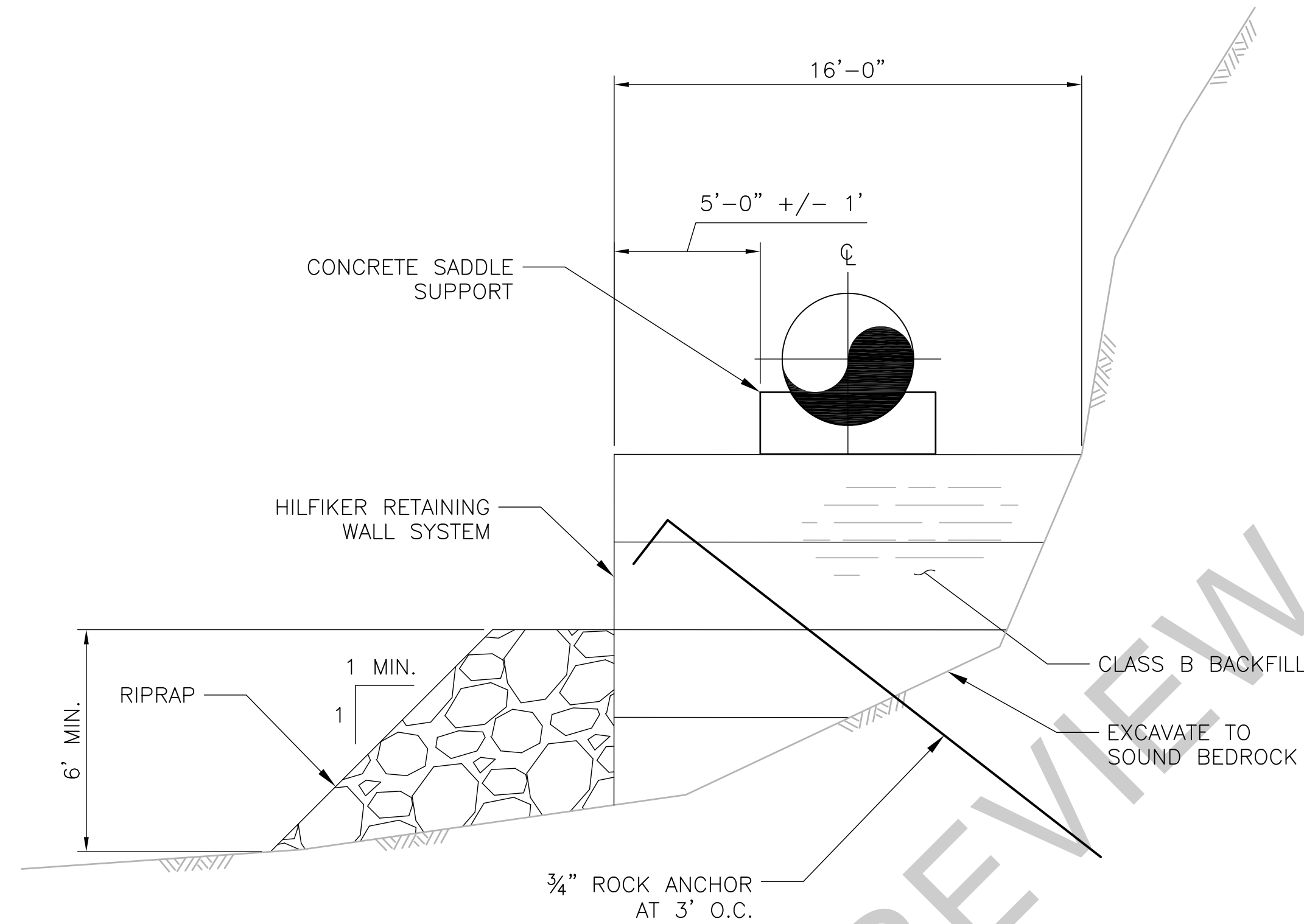
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C-204

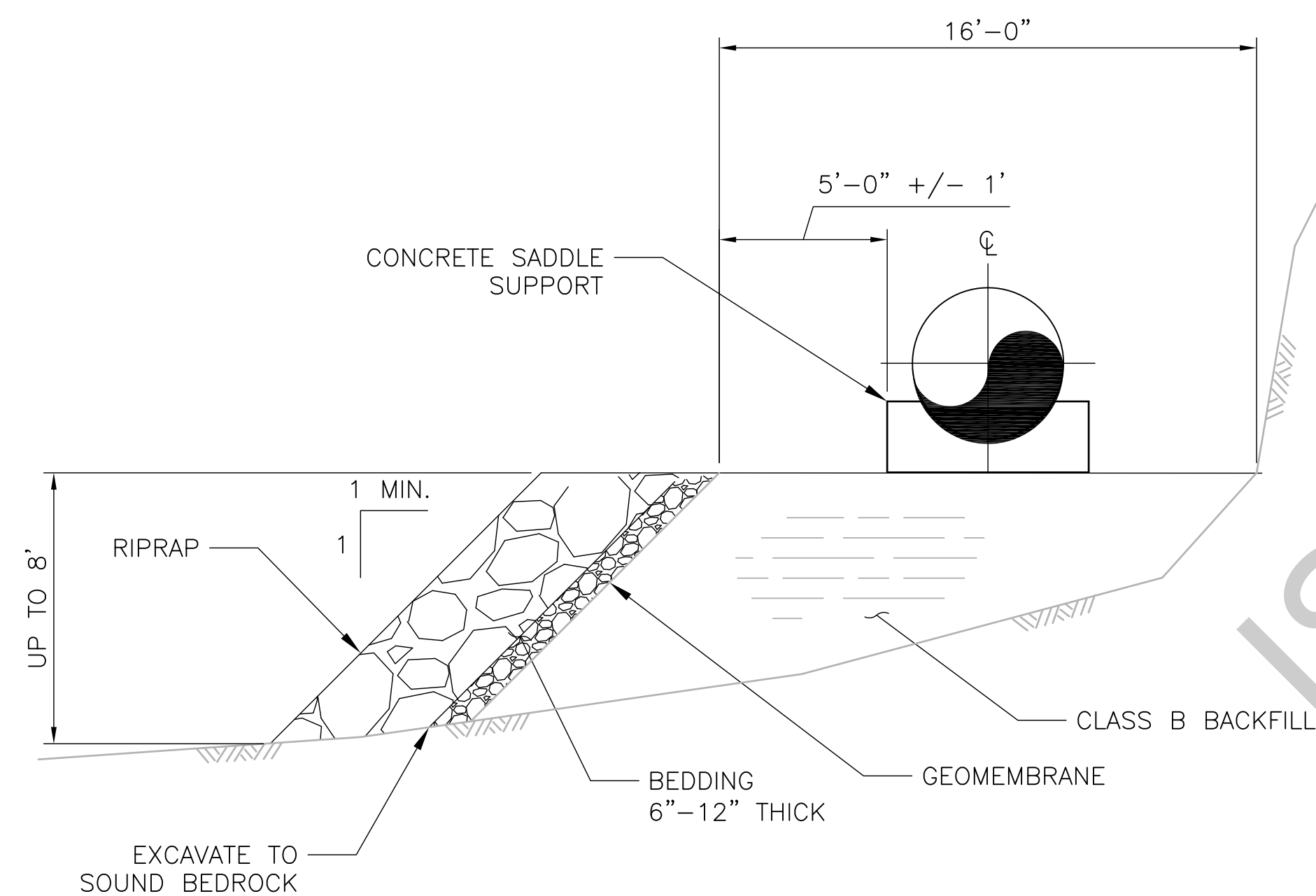
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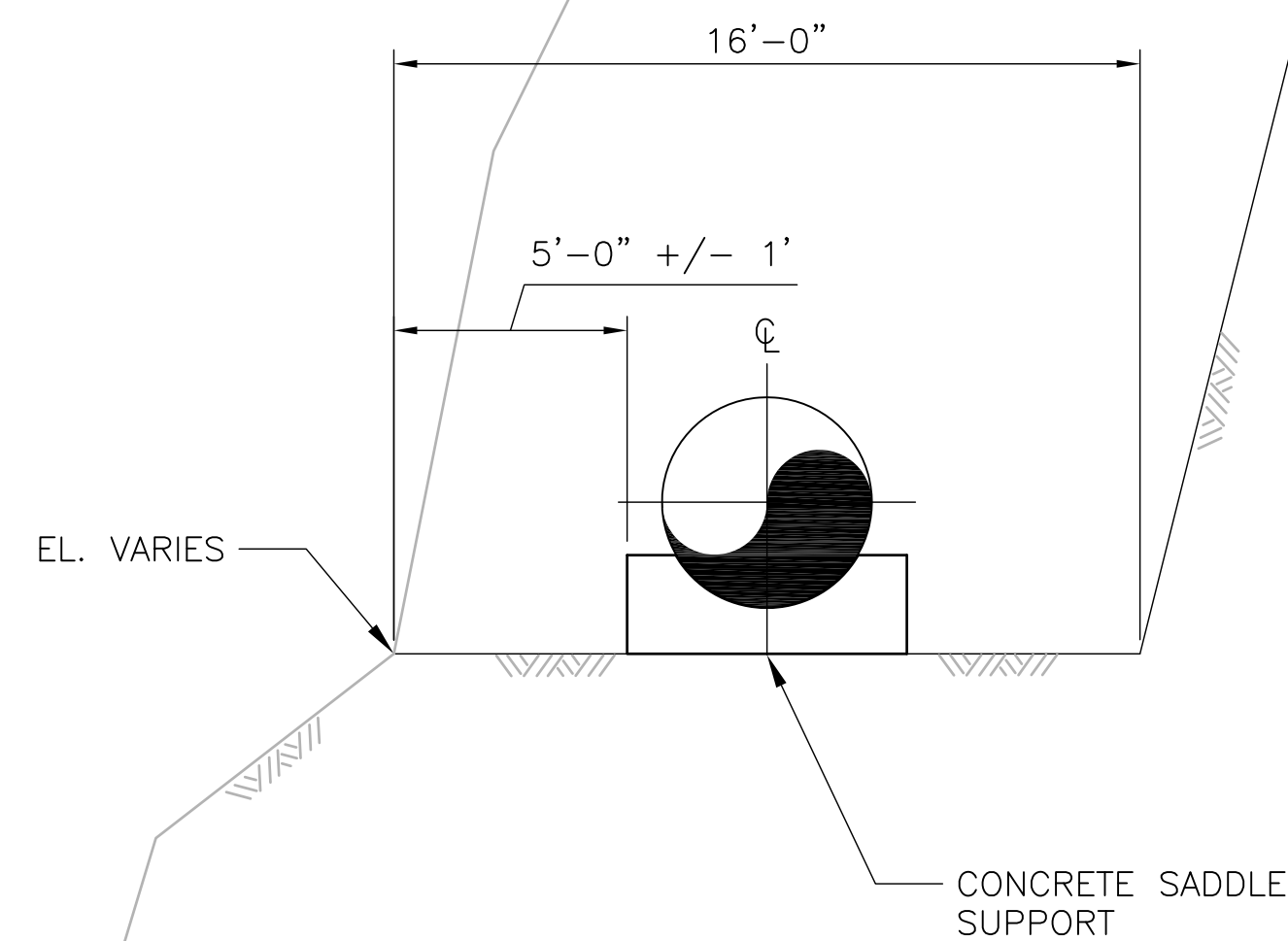
SECTION A
SCALE: 1/4"=1'-0"



SECTION B
SCALE: 1/4"=1'-0"



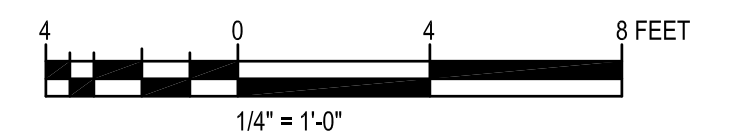
SECTION C
SCALE: 1/4"=1'-0"



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

PENSTOCK BASE SECTIONS

START STA.	END STA.	SECTION
1+00	4+22	A
4+22	6+25	B
6+25	6+62	C
11+50	13+22	C
15+25	15+60	C
15+60	16+10	B
16+10	19+65	D



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

PENSTOCK SECTIONS

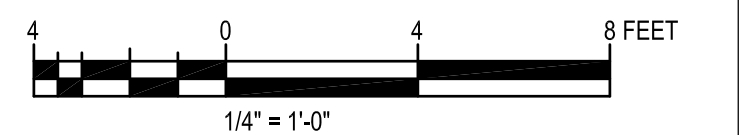
FILENAME	C-205	SHEET
SCALE	AS-SHOWN	C-205

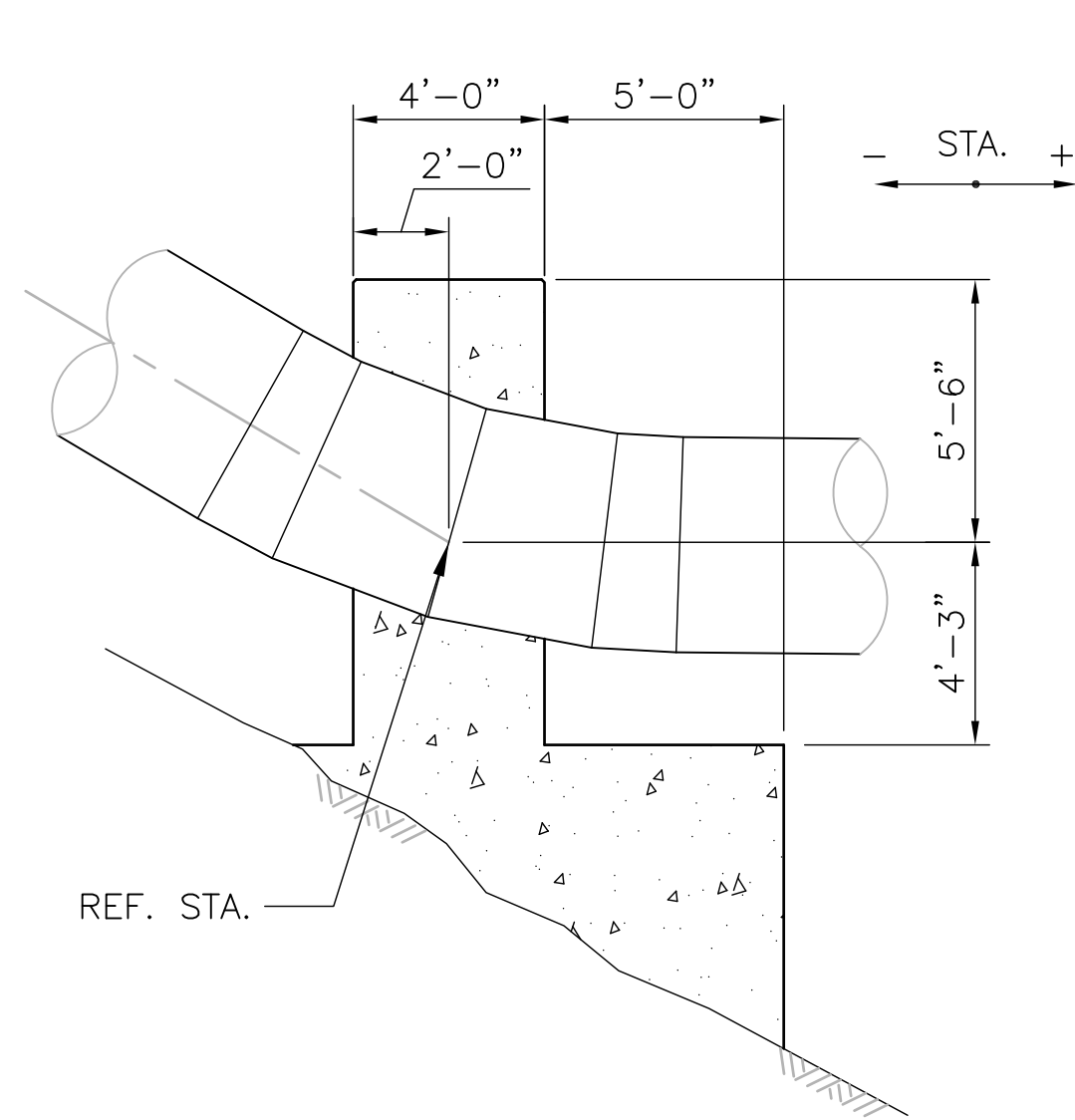
SCALE: 1/4"=1'-0"

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

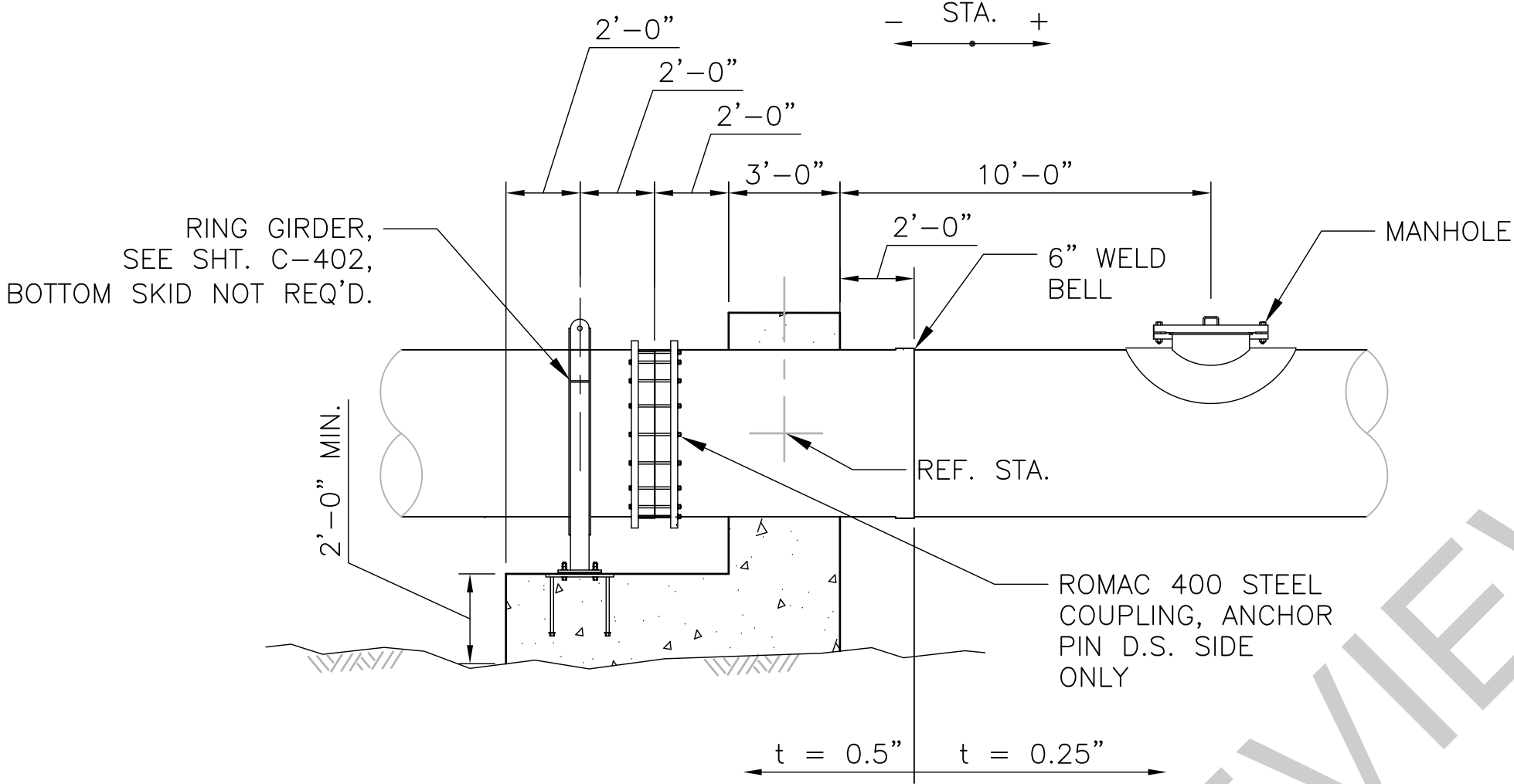
SCALE: 1/4"=1'-0'

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

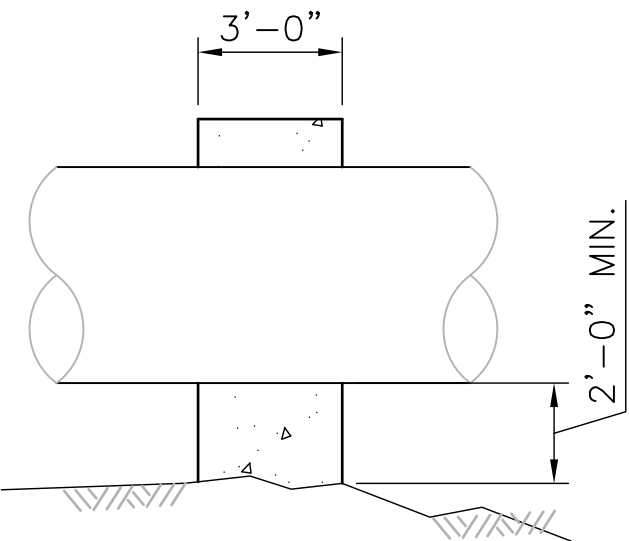
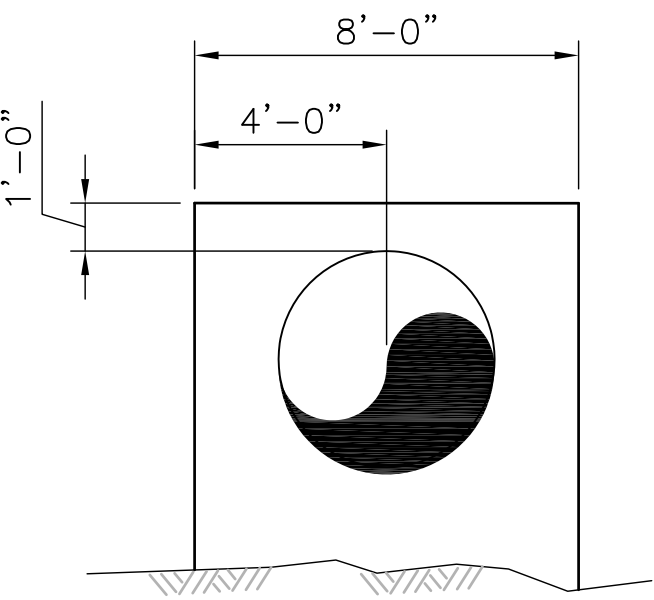




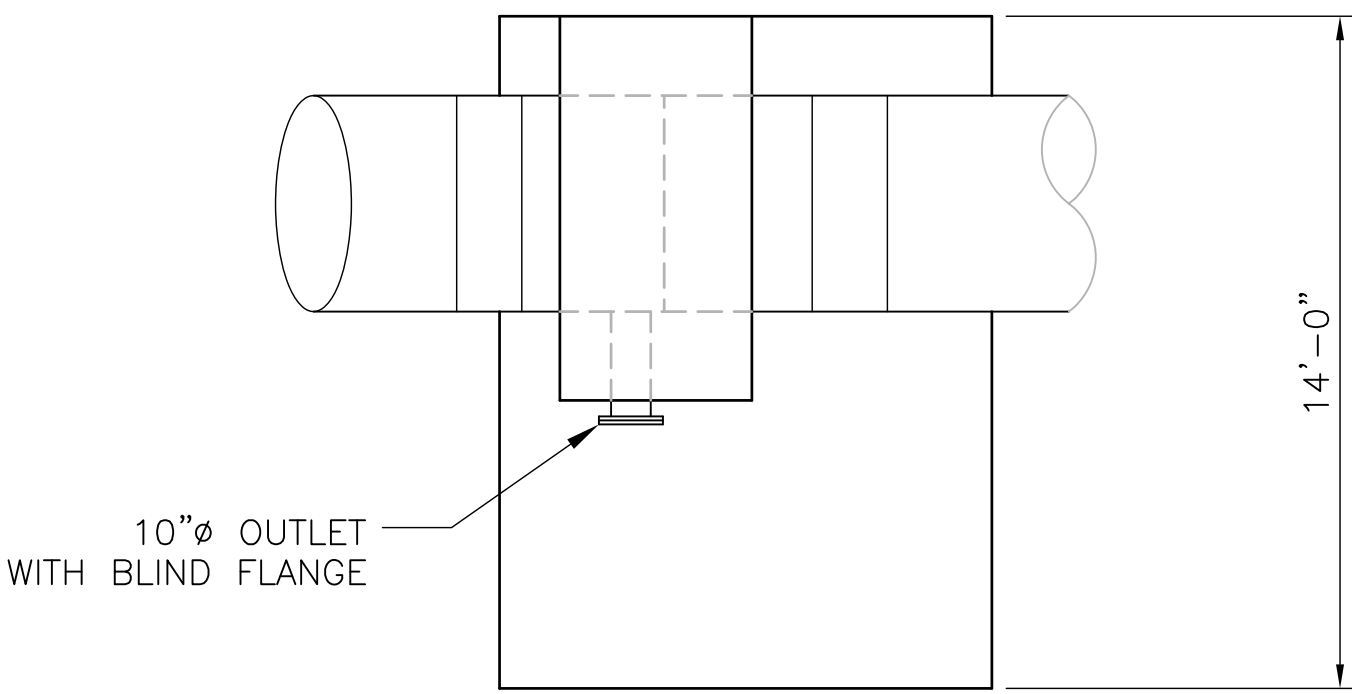
STA. 13+53.56 DETAIL
SCALE: 1/4"=1'-0"



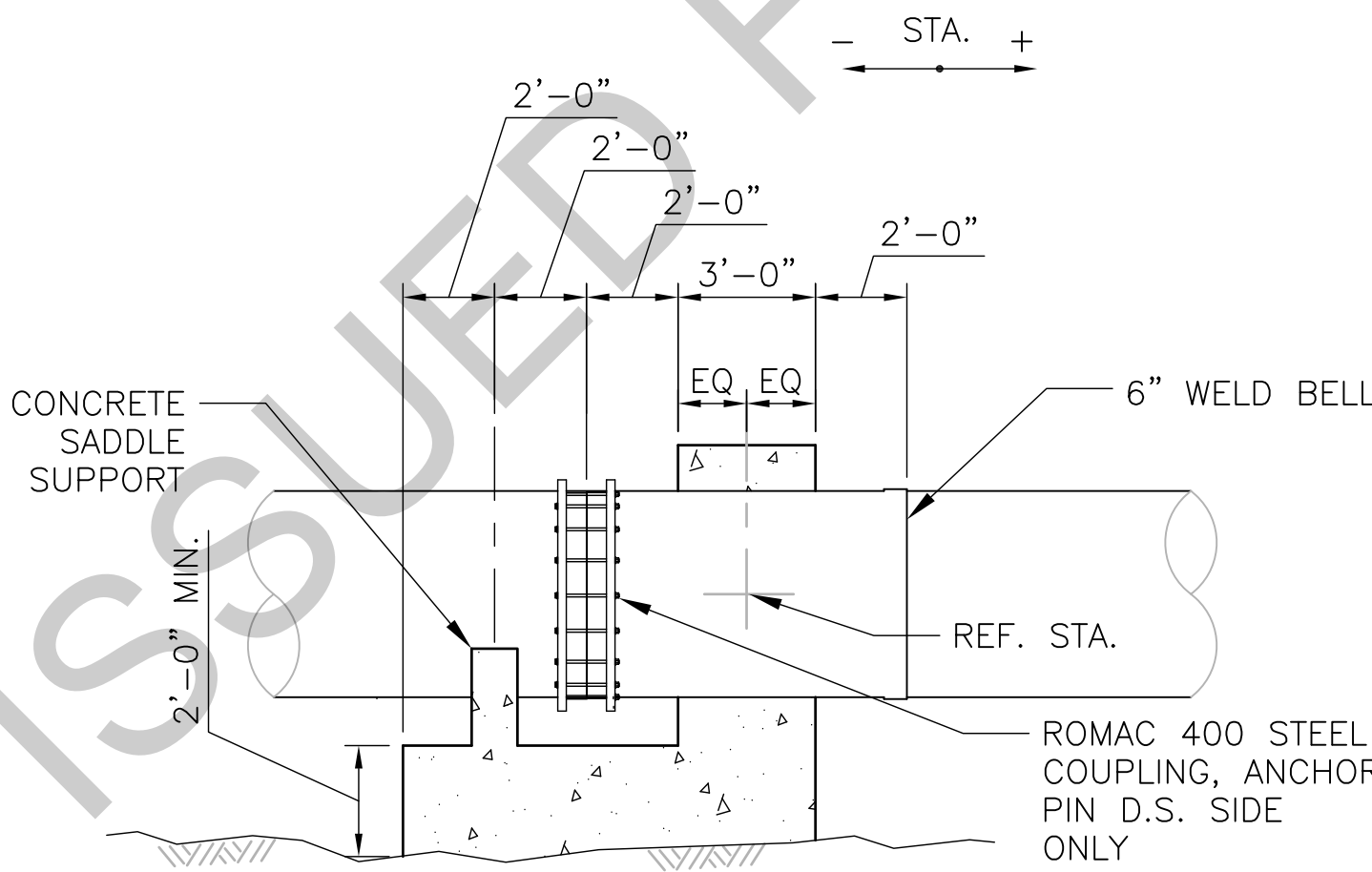
STA. 15+50 DETAIL
SCALE: 1/4"=1'-0"



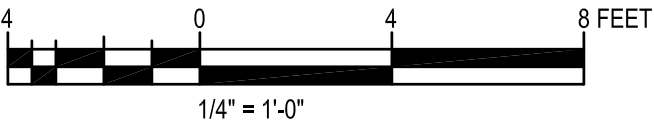
TYPICAL THRUST BLOCK
SCALE: 1/4"=1'-0"



STA. 13+91.06 PLAN
SCALE: 1/4"=1'-0"



STA. 19+55.1 DETAIL
SCALE: 1/4"=1'-0"



FILE: \\PATH\00000000234957\13.00_CAD\Sheet Files\C-211.DWG PLOT DATE: 3/3/2017 12:41 PM USER: PBERKSHI



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



IPEC

INSIDE PASSAGE ELECTRIC COOPERATIVE

GUNNUK CREEK HYDROELECTRIC PROJECT

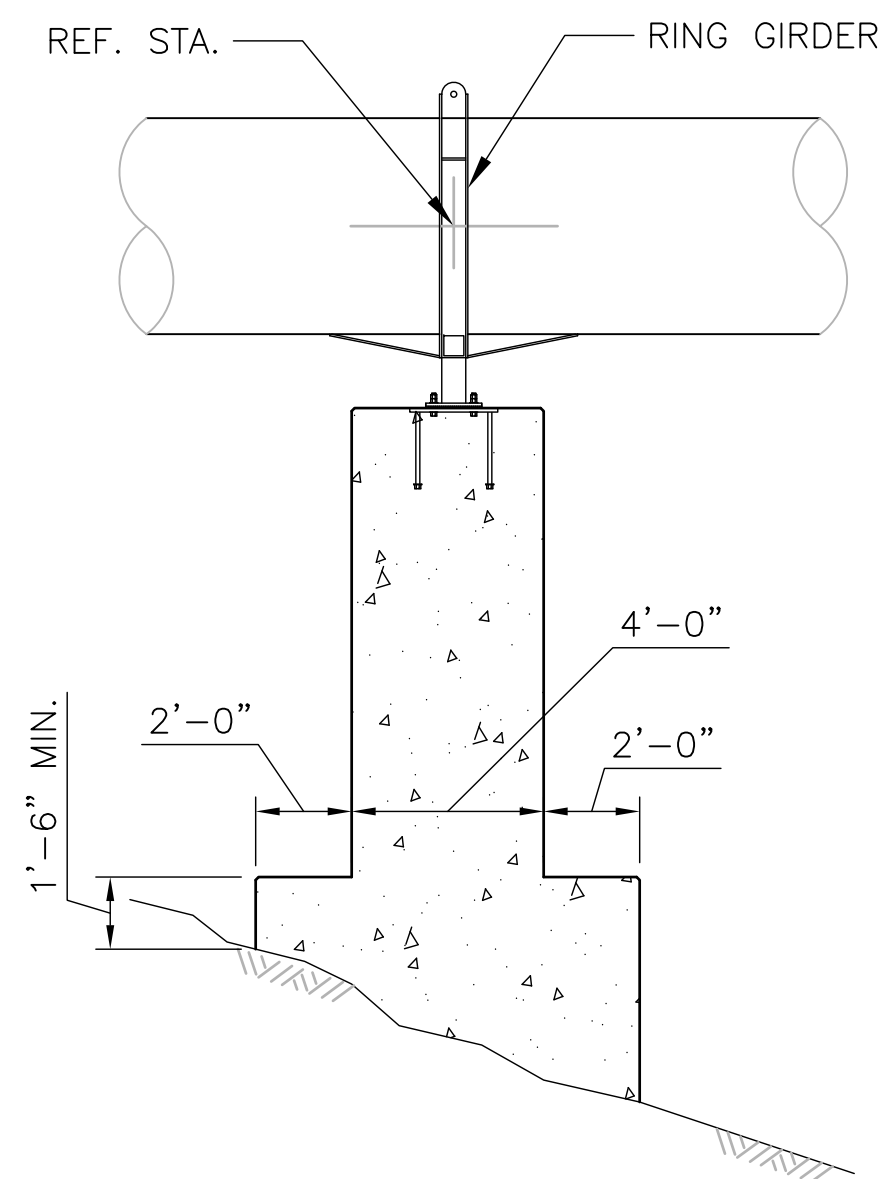
KAKE, ALASKA

PENSTOCK DETAILS
SHEET 2

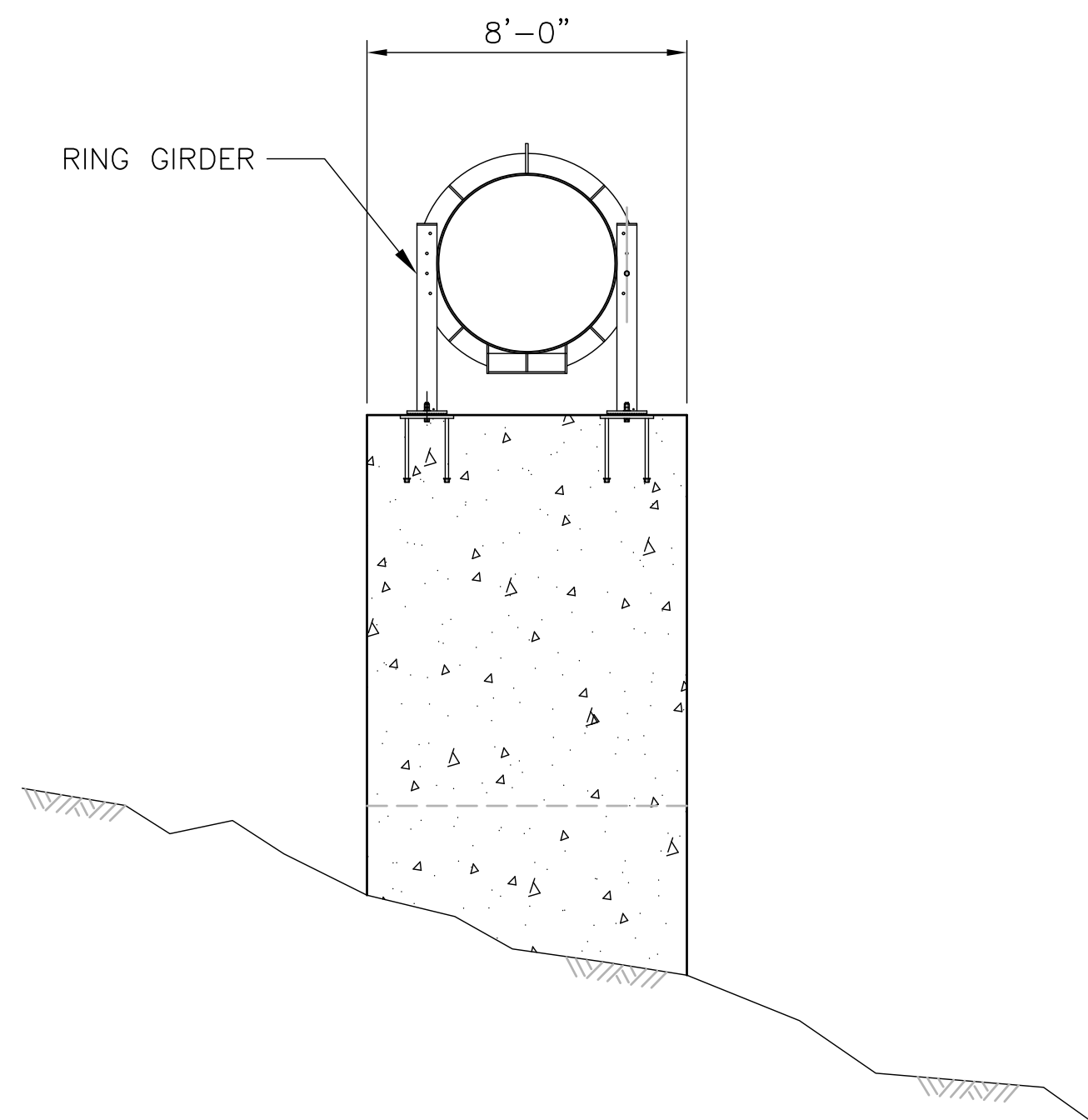
FILENAME	C-211
SCALE	AS-SHOWN

SHEET
C-211

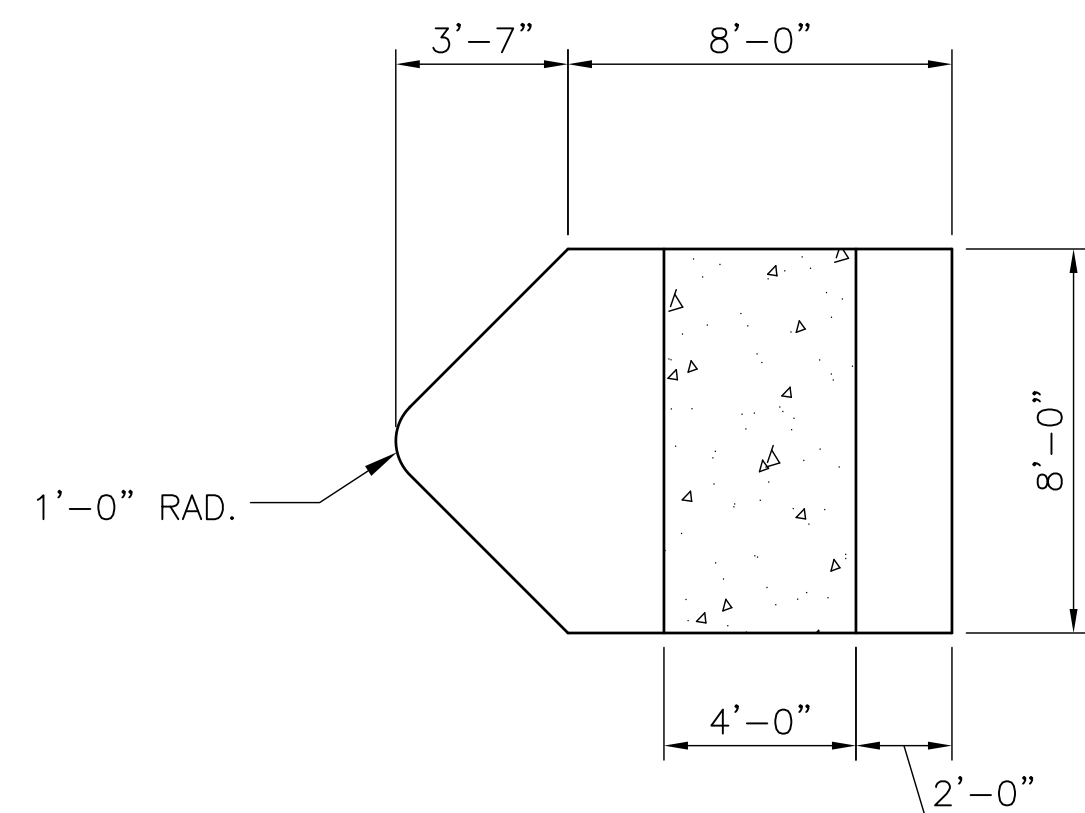
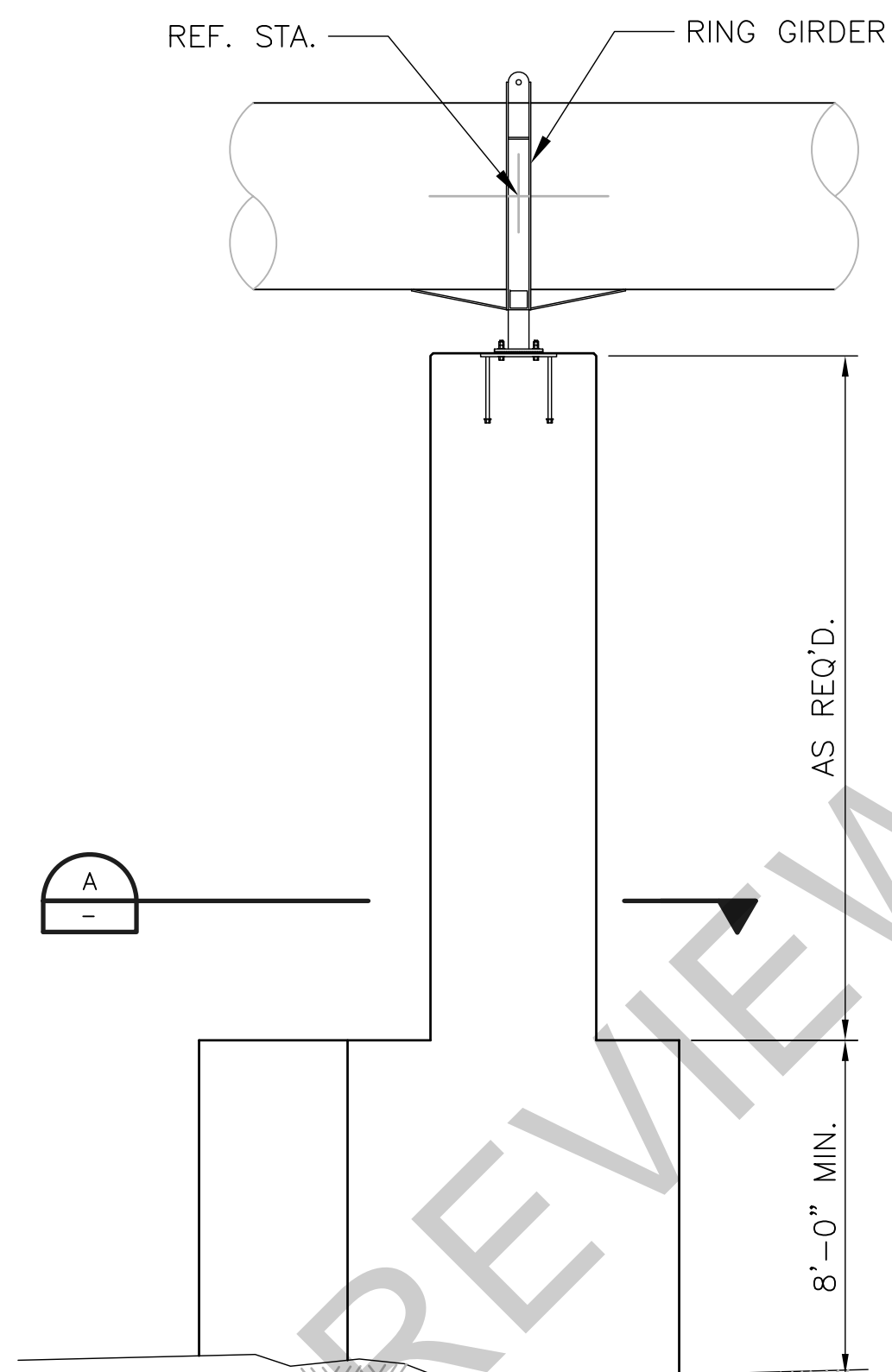
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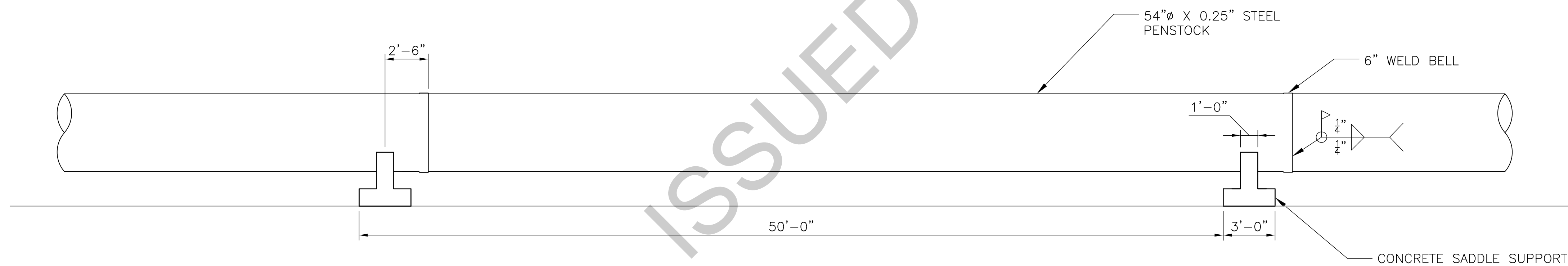
TYPICAL PIER
SUPPORT DETAIL
SCALE: 1/4"=1'-0"



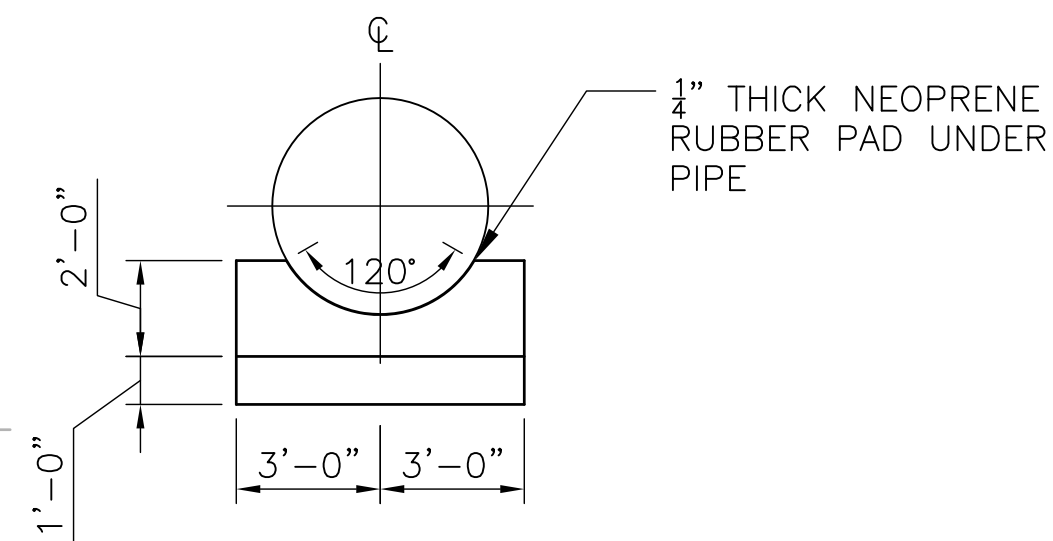
IN-WATER PIER
SUPPORT DETAIL
SCALE: 1/4"=1'-0"



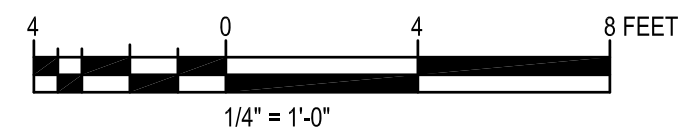
SECTION
SCALE: 1/4"=1'-0"



TYPICAL PENSTOCK SECTION
SCALE: 1/4"=1'-0"



CONCRETE SADDLE
SUPPORT DETAIL
SCALE: 1/4"=1'-0"



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



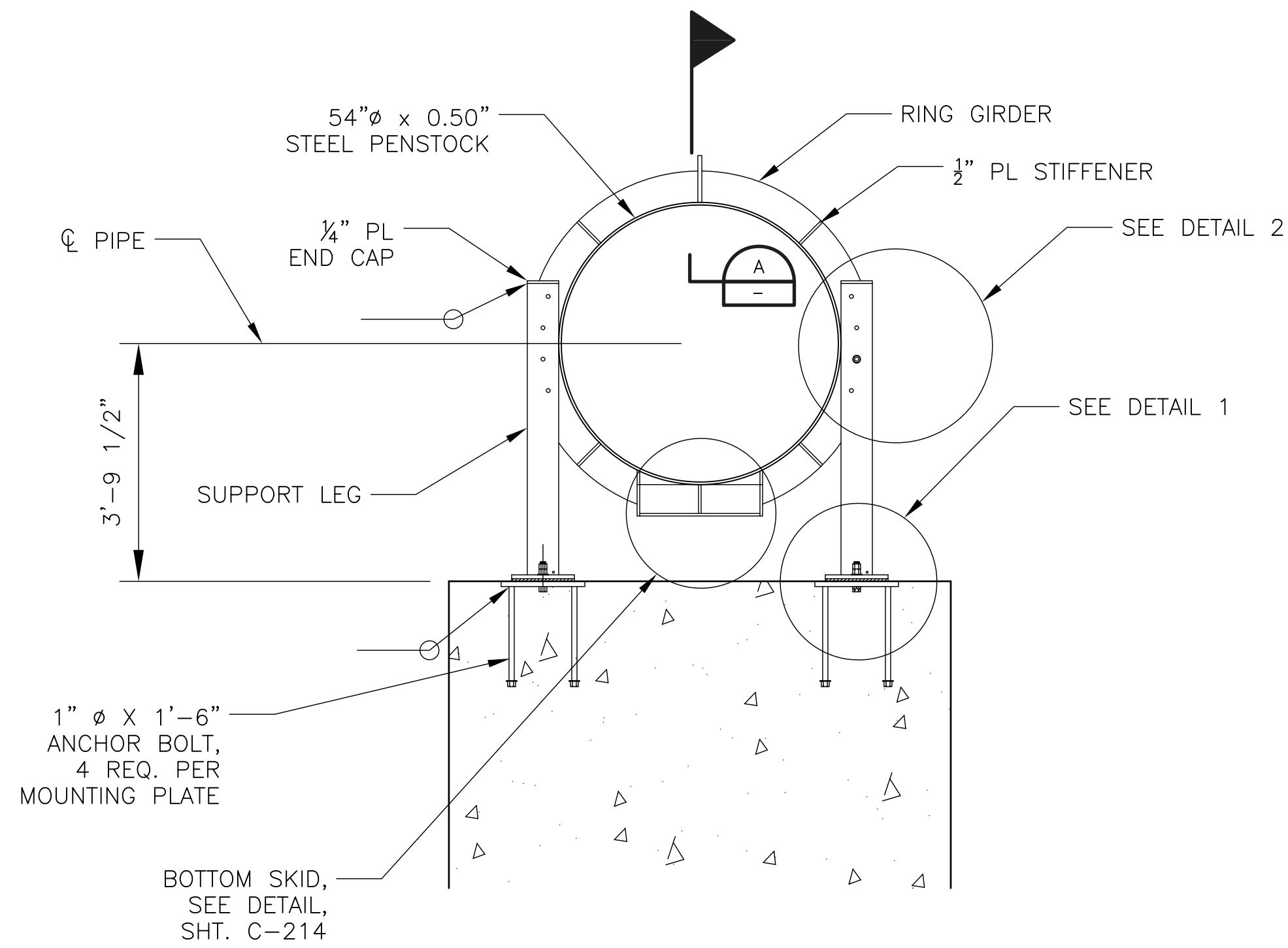
GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

PENSTOCK DETAILS
SHEET 3

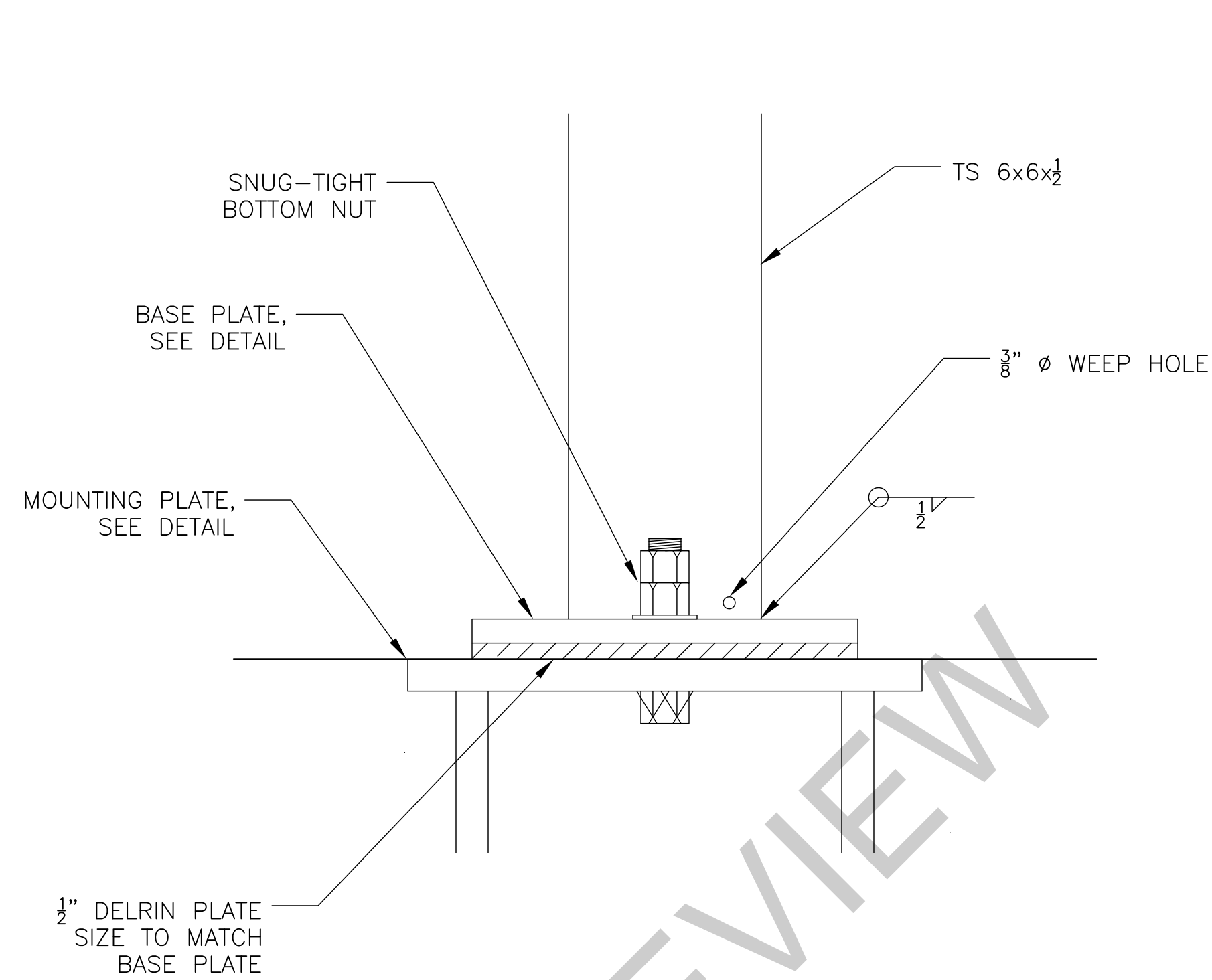
FILENAME	C-212
SCALE	AS-SHOWN

SHEET
C-212

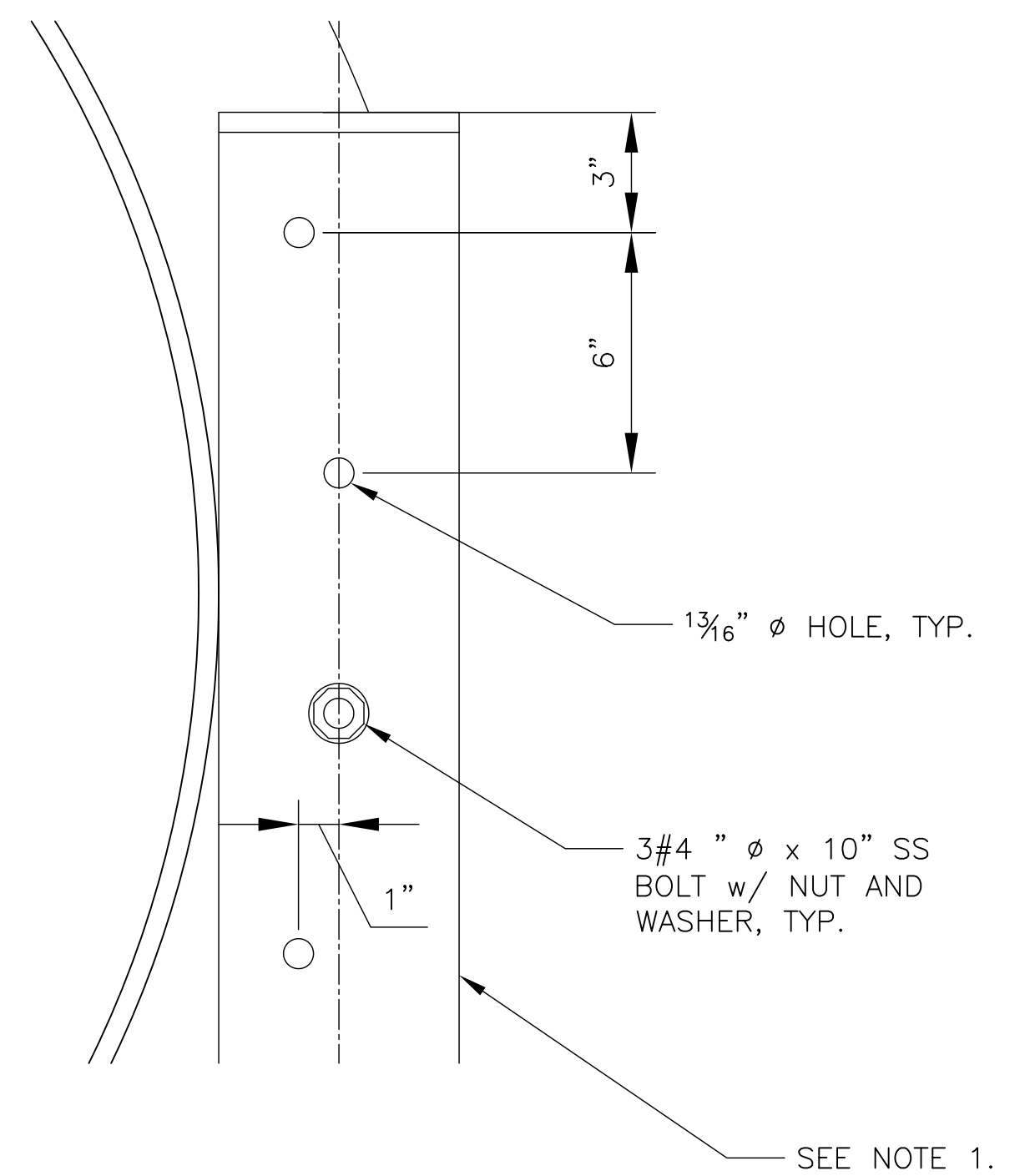
FILE PATH:000000000234957/13.00_CAD/Sheet Files/C-213.DWG PLOT DATE:3/3/2017 12:43 PM USER:PBKRSKI



**RING GIRDER
SUPPORT DETAIL**
SCALE: 1/2"=1'-0"



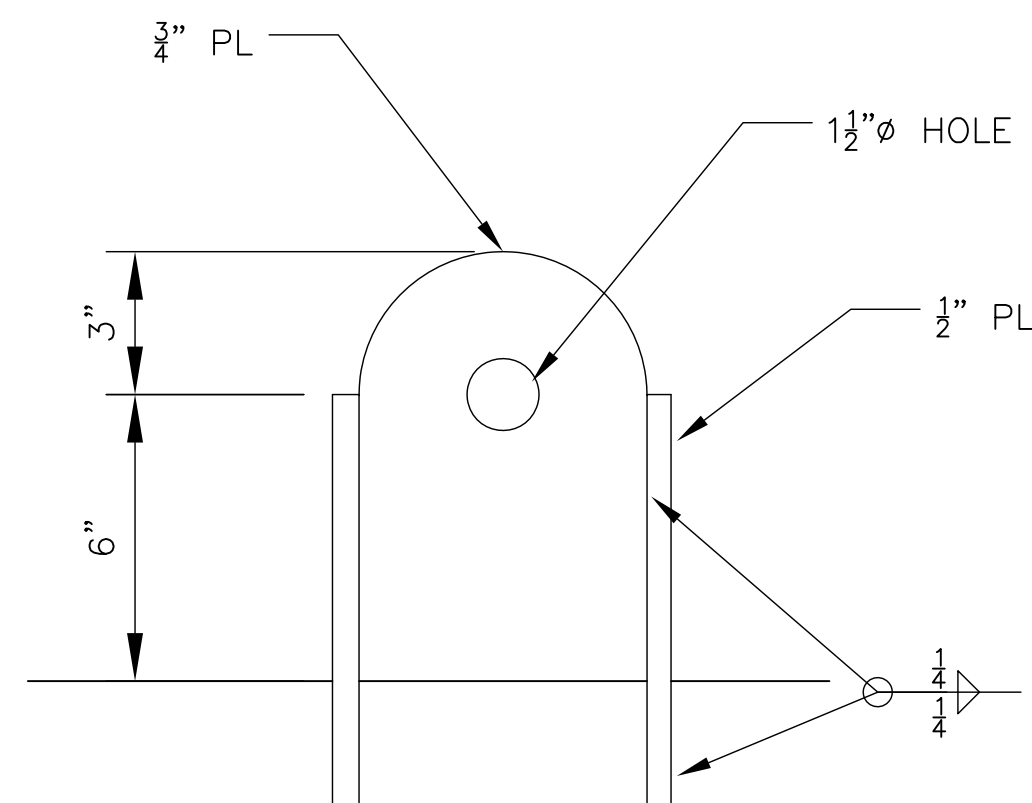
DETAIL 1
SCALE: 3/4"=1'-0"



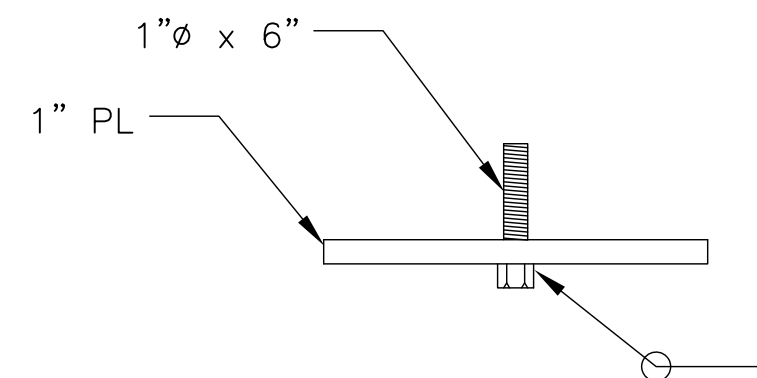
DETAIL 2
SCALE: 3/4"=1'-0"

NOTES:

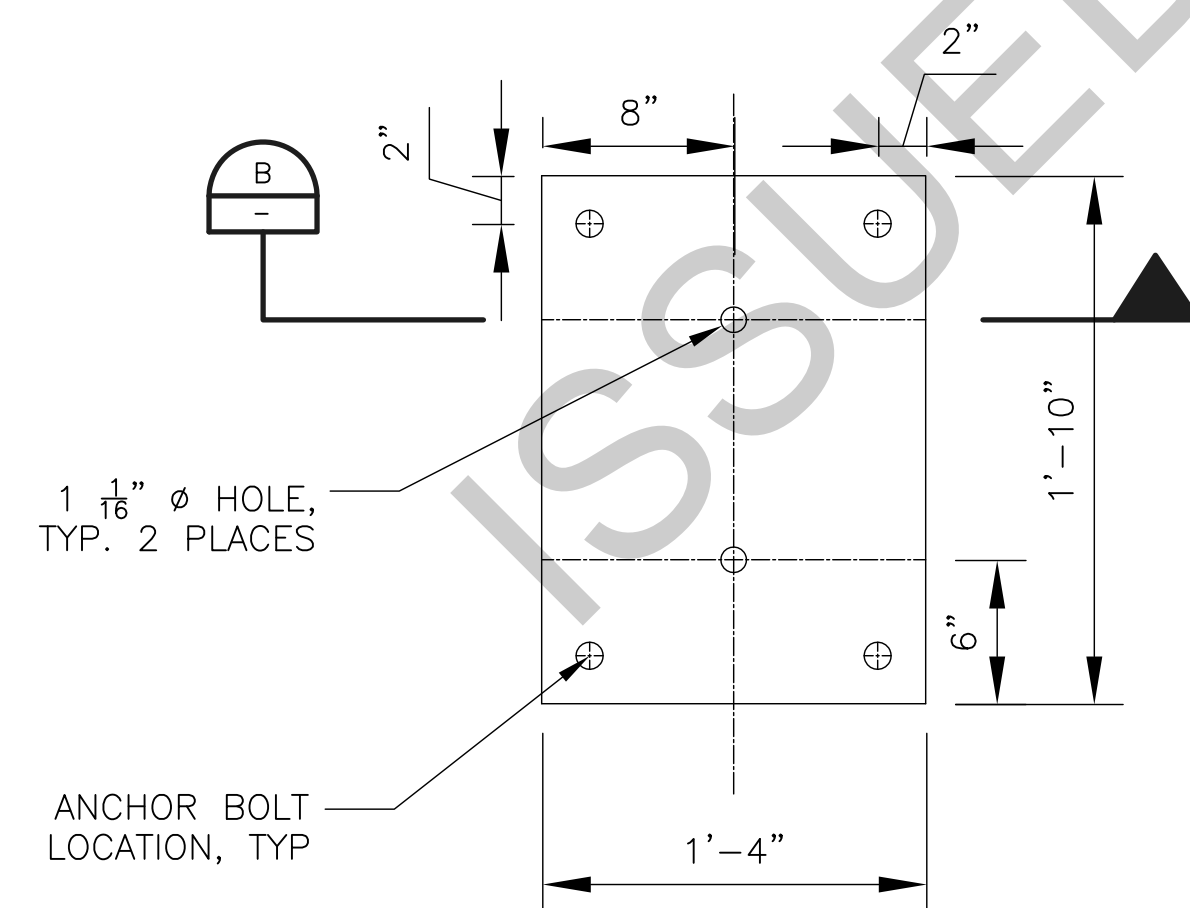
1. SHOP ASSEMBLE SUPPORT LEG TO RING GIRDER BEFORE APPLYING COATING. AFTER COATING, DISASSEMBLE AND SHIP LOOSE.



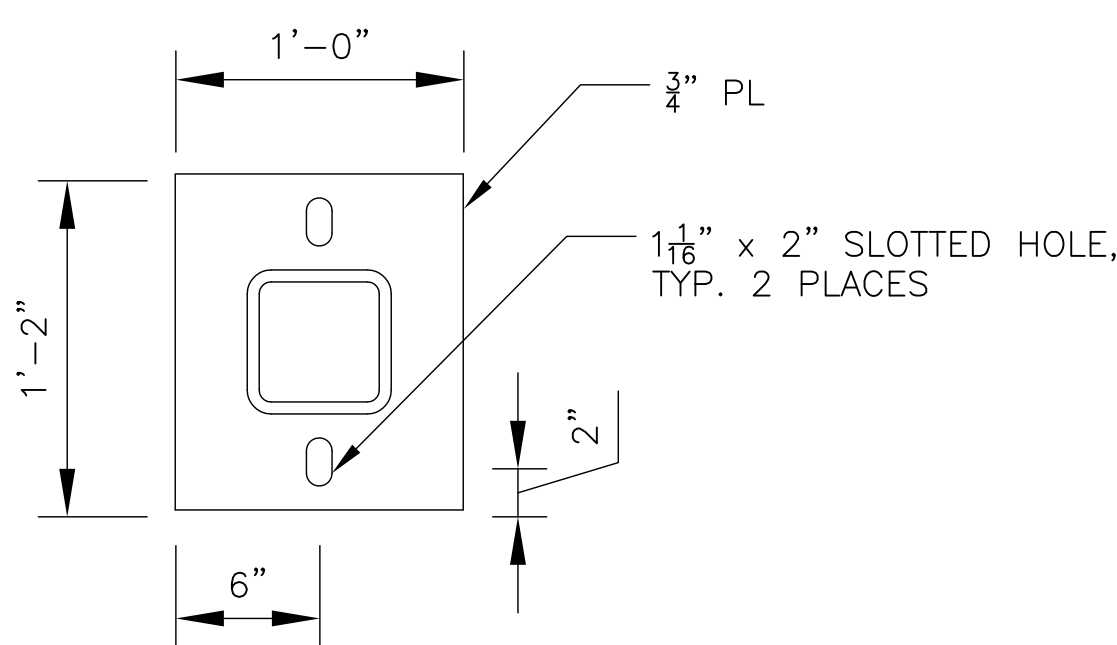
SECTION
SCALE: 3/4"=1'-0"



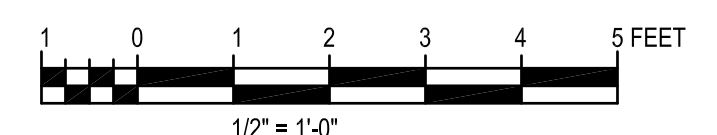
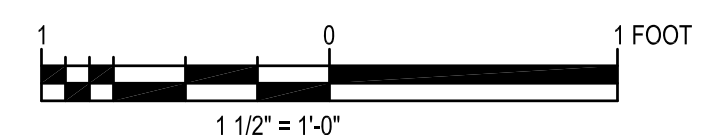
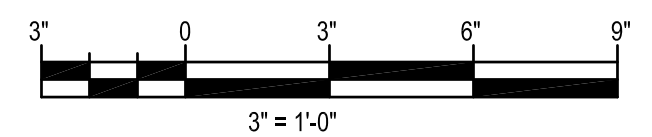
SECTION
SCALE: 1 1/2"=1'-0"



**MOUNTING PLATE
DETAIL**
SCALE: 1 1/2"=1'-0"



**BASE PLATE
DETAIL**
SCALE: 1 1/2"=1'-0"



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

**PENSTOCK DETAILS
SHEET 4**

FILENAME	C213.DWG
SCALE	AS-SHOWN

SHEET
C-213

FILE PATH:000000000234987/13.00_CAD/Sheet_Files/GUNNUK_MID_POINT_ACCESS.DWG PLOT DATE:3/2/2017 1:25 PM USER:PBKSHI



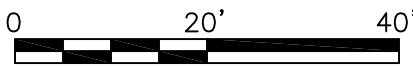
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

TEMPORARY ACCESS ROAD
PLAN AND PROFILE
SHEET 1



FILENAME	Gunnuk_PP.dwg
SCALE	1"=20'

SHEET
C-301

FILE PATH:00000000234987/13.00_CAD/Sheet Files/GUNNUK MID POINT ACCESS.DWG PLOT DATE:3/2/2017 1:28 PM USER:PBKSHI

1 2 3 4 5 6 7 8

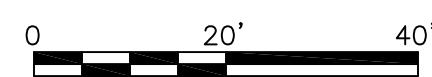


ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

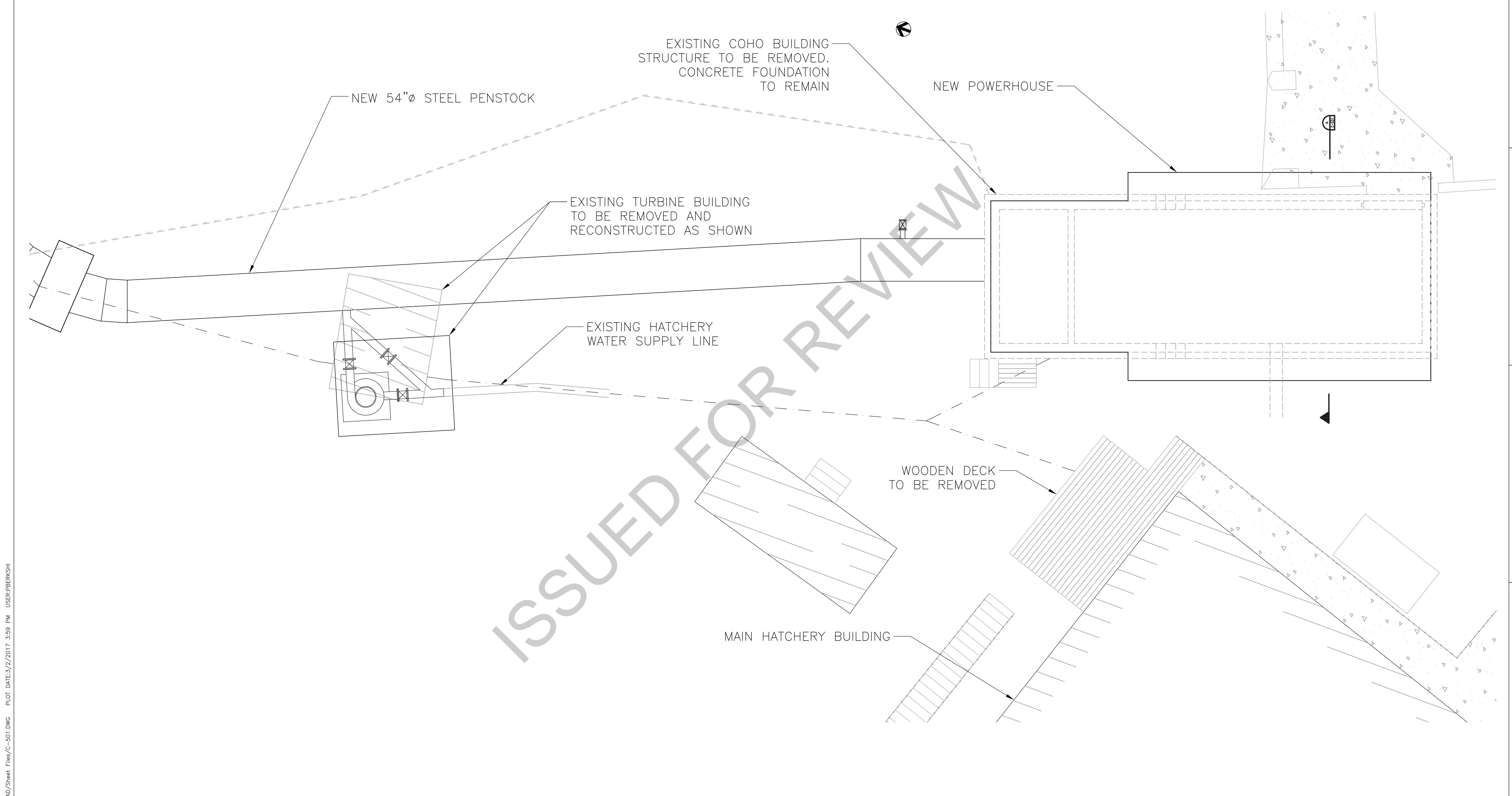


FILENAME	Gunnuk_PP.dwg
SCALE	1"=20'

SHEET
C-302

TEMPORARY ACCESS ROAD
PLAN AND PROFILE
SHEET 2

FILE PATH:00000000234957/13.00_CAD/Sheet Files/C-501.DWG PLOT DATE:3/2/2017 3:59 PM USER:PBKSHI



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

POWERHOUSE SITE PLAN

FILENAME	C-501
SCALE	AS-SHOWN

SHEET
C-501

FILE PATH:00000000234987/13.00_CAD/Sheet_Files/C-511.DWG PLOT DATE:3/2/2017 4:08 PM USER:PBKSHI



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839

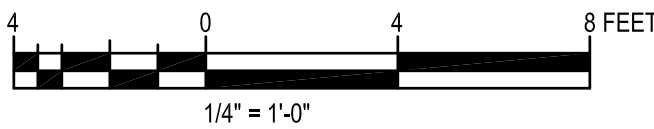
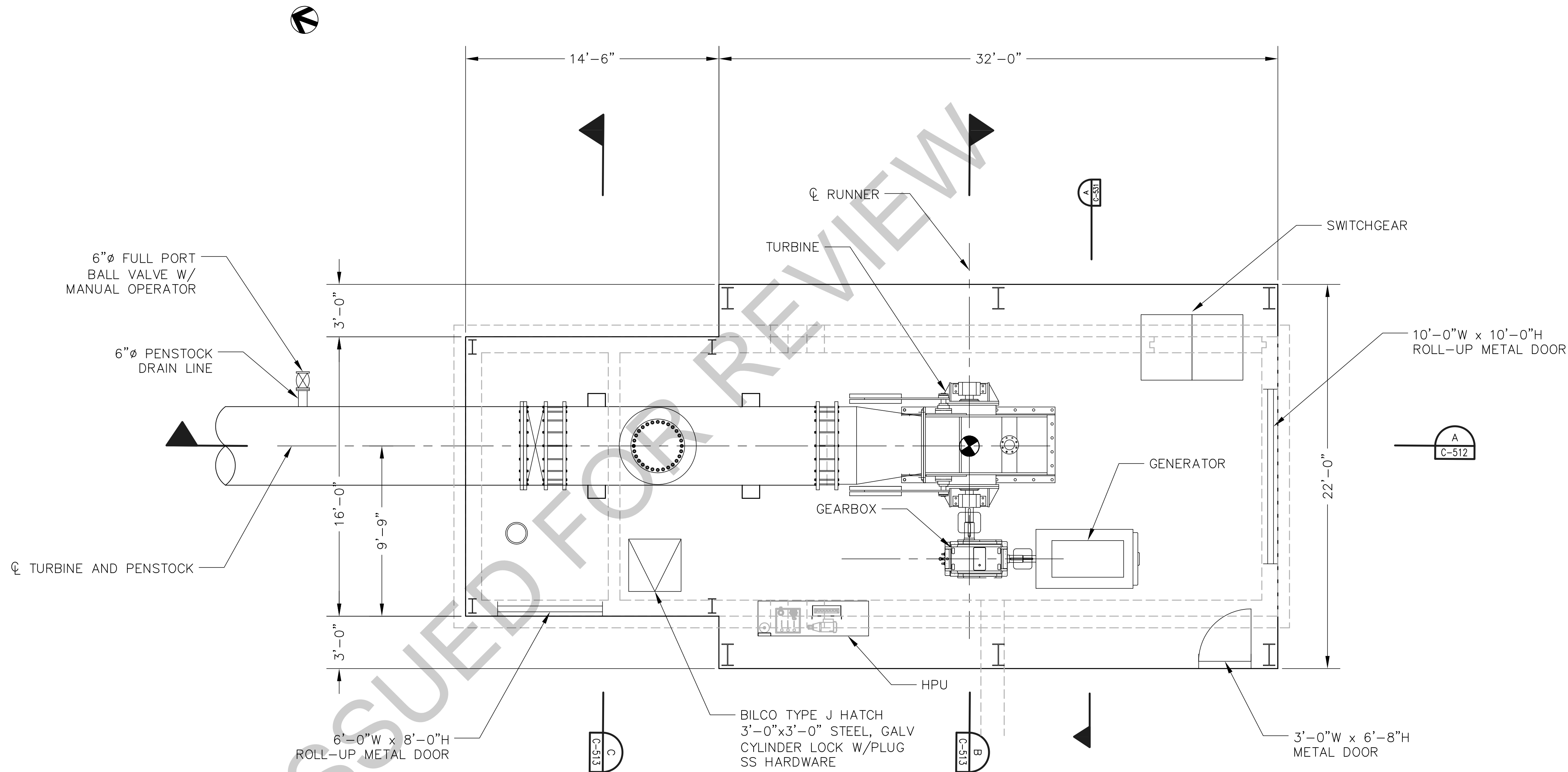


GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

POWERHOUSE PLAN

FILENAME	C-511.dwg
SCALE	AS-SHOWN

SHEET
C-511



FILE PATH:00000000234957/13.00_CAD/Structural Base Model Files/C-512.DWG PLOT DATE:3/2/2017 12:12 PM USER:PBKSHI



ISSUE	DATE	DESCRIPTION

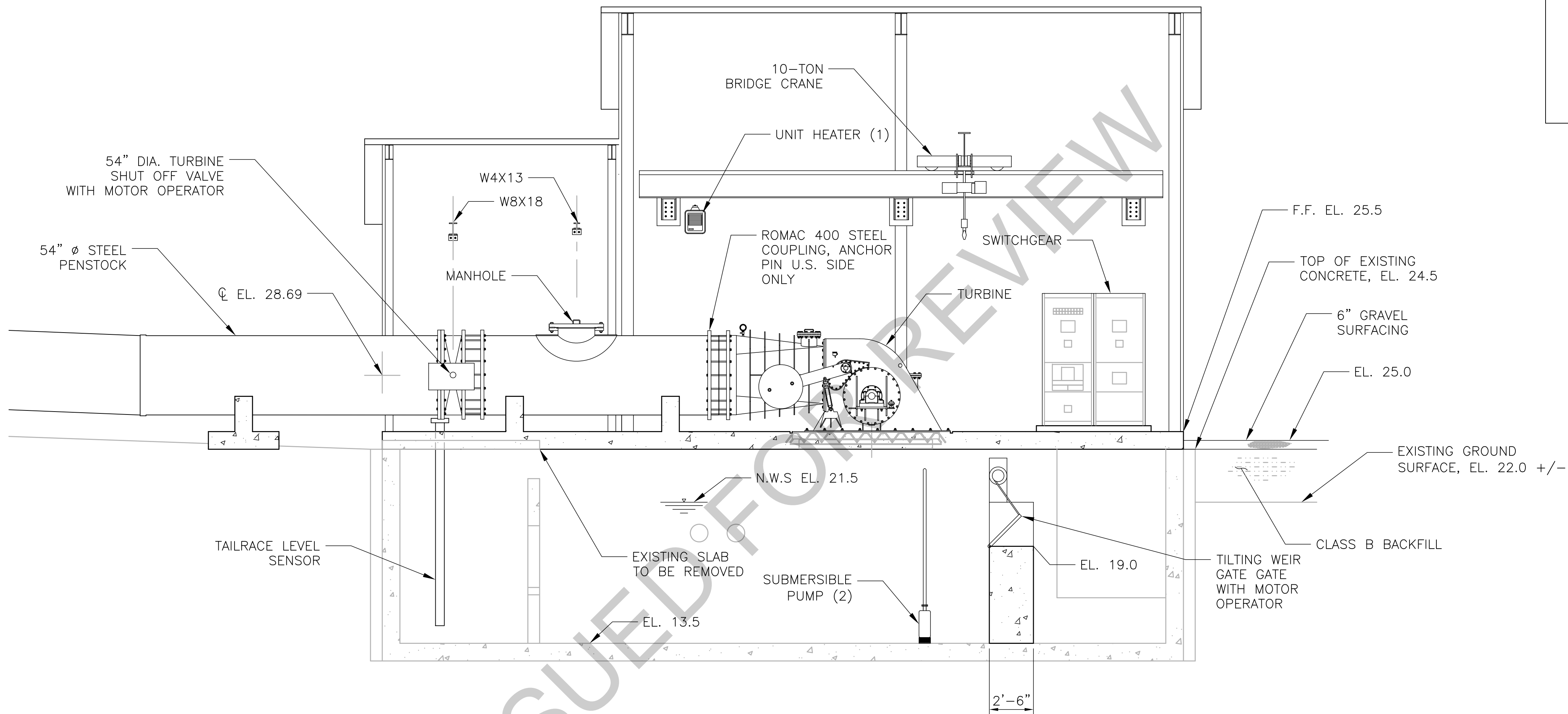
PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	136446



POWERHOUSE SECTIONS
SHEET 1

FILENAME	C-512
SCALE	AS-SHOWN

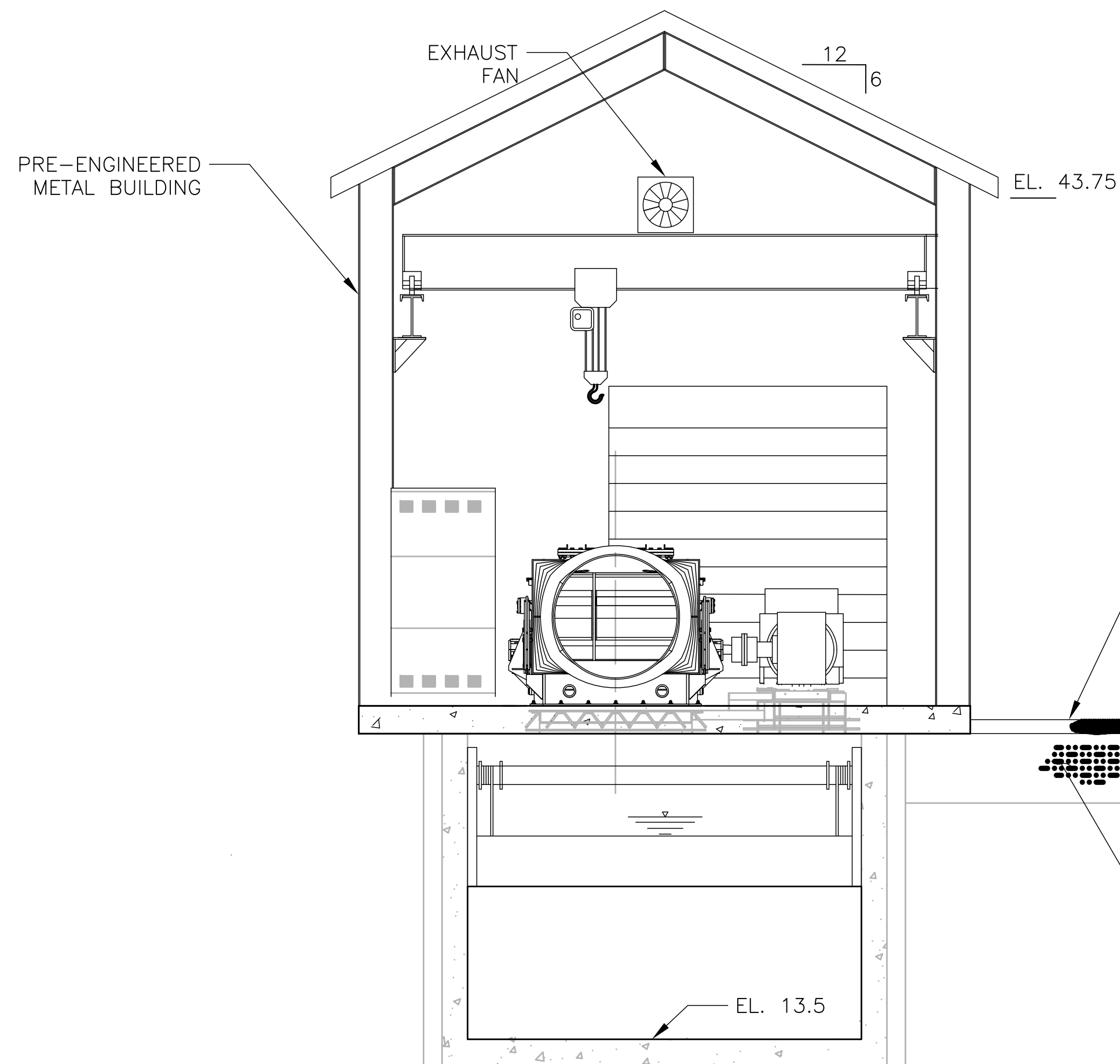
SHEET
C-512



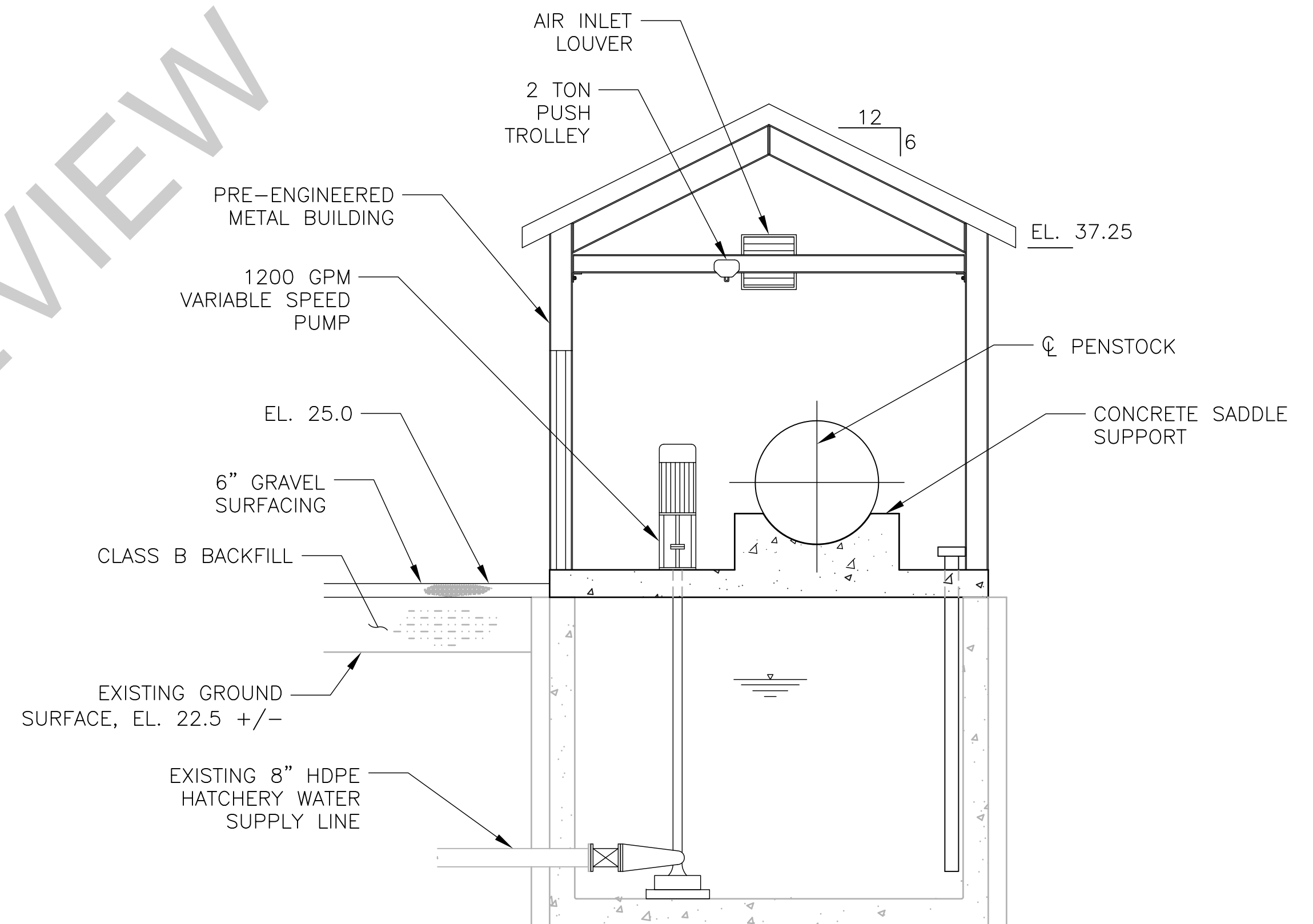
SECTION A
SCALE: 1/4"=1'-0"

EQUIPMENT SPECIFICATION	
ITEM	DESCRIPTION
1	ELECTRIC UNIT HEATER, 240V, SINGLE PHASE, 5 kW, 17,100 BTUs, WITH FAN MOTOR, WITH BUILT-IN THERMOSTATIC CONTROL, CHROMALOX MODEL LUH-D-05-21-00 OR APPROVED EQUAL
2	SUMP PUMP, 230 VAC, SINGLE PHASE, 60 Hz, 1½ HP, 10 FEET OF HEAD, THERMAL OVERLOAD PROTECTION, McMASTER-CARR MODEL 4184K82 OR APPROVED EQUAL

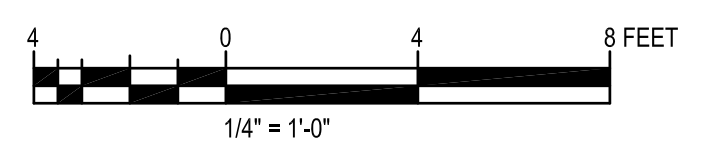
FILE PATH:00000000234957/13.00_CAD/Sheet Files/C-513.DWG PLOT DATE:3/2/2017 4:11 PM USER:PBKSHI



SECTION B
SCALE: 1/4"=1'-0"



SECTION C
SCALE: 1/4"=1'-0"



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

POWERHOUSE SECTIONS
SHEET 2

FILENAME	C-513
SCALE	AS-SHOWN

SHEET
C-513

FILE PATH:00000000234987/13.00_CAD/Sheet_Files/C-530.DWG PLOT DATE:2/28/2017 4:16 PM USER:PBBERKSHI

1

2

3

4

5

6

7

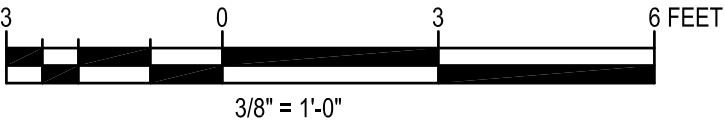
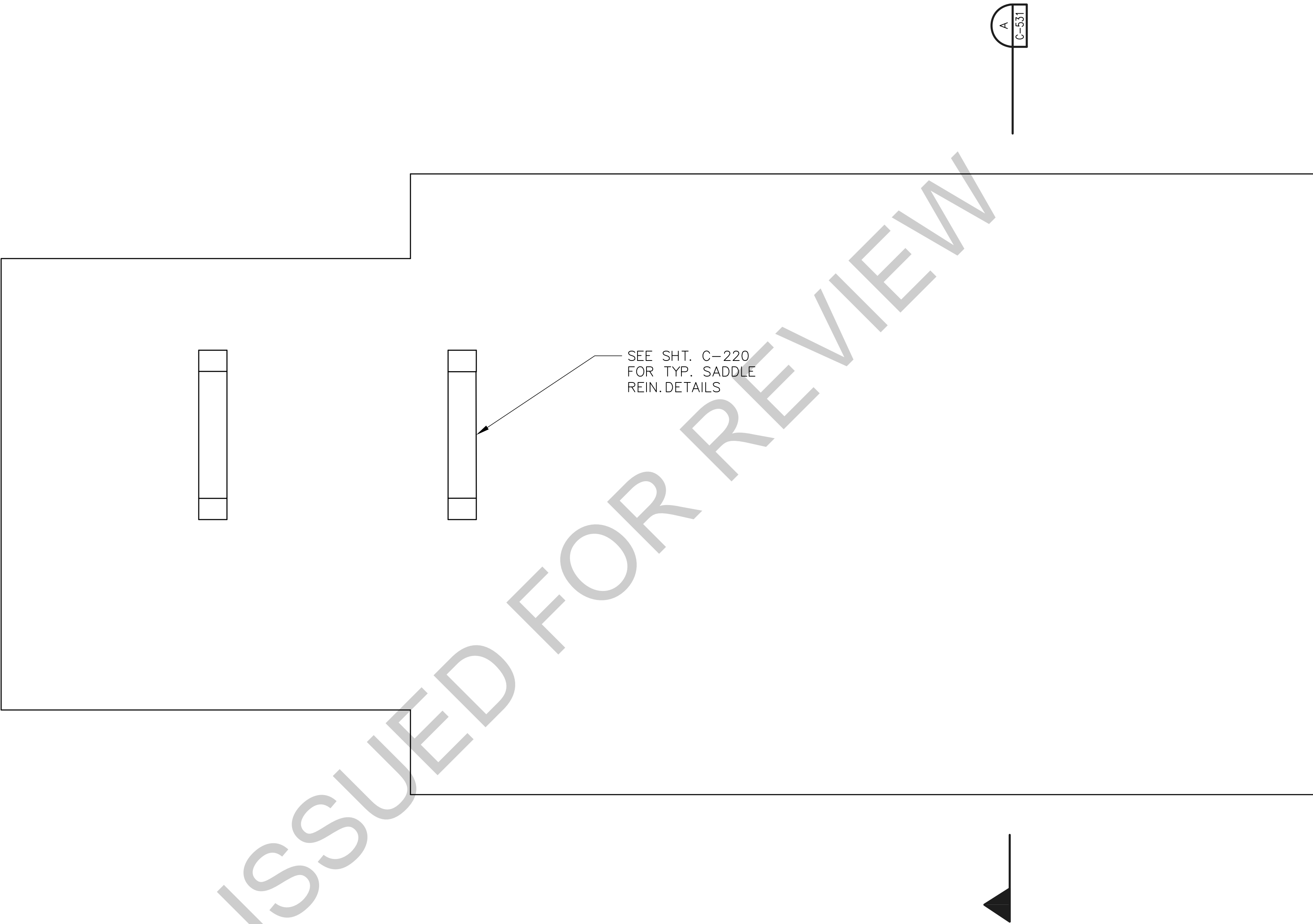
8

D

C

B

A



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

OPEN PLAN DESIGN TEMPLATE
DETAIL & SECTION SHEETS

FILENAME	GFFD_Template
SCALE	AS-SHOWN

SHEET
X-XX

FILE PATH:00000000234987/13.00_CAD/Sheet_Files/C-531.DWG PLOT DATE:3/2/2017 4:18 PM USER:PBKSHI



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839

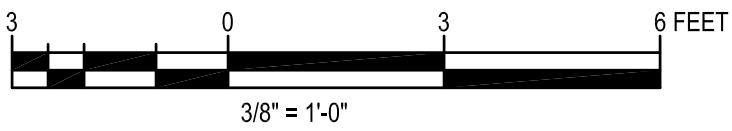
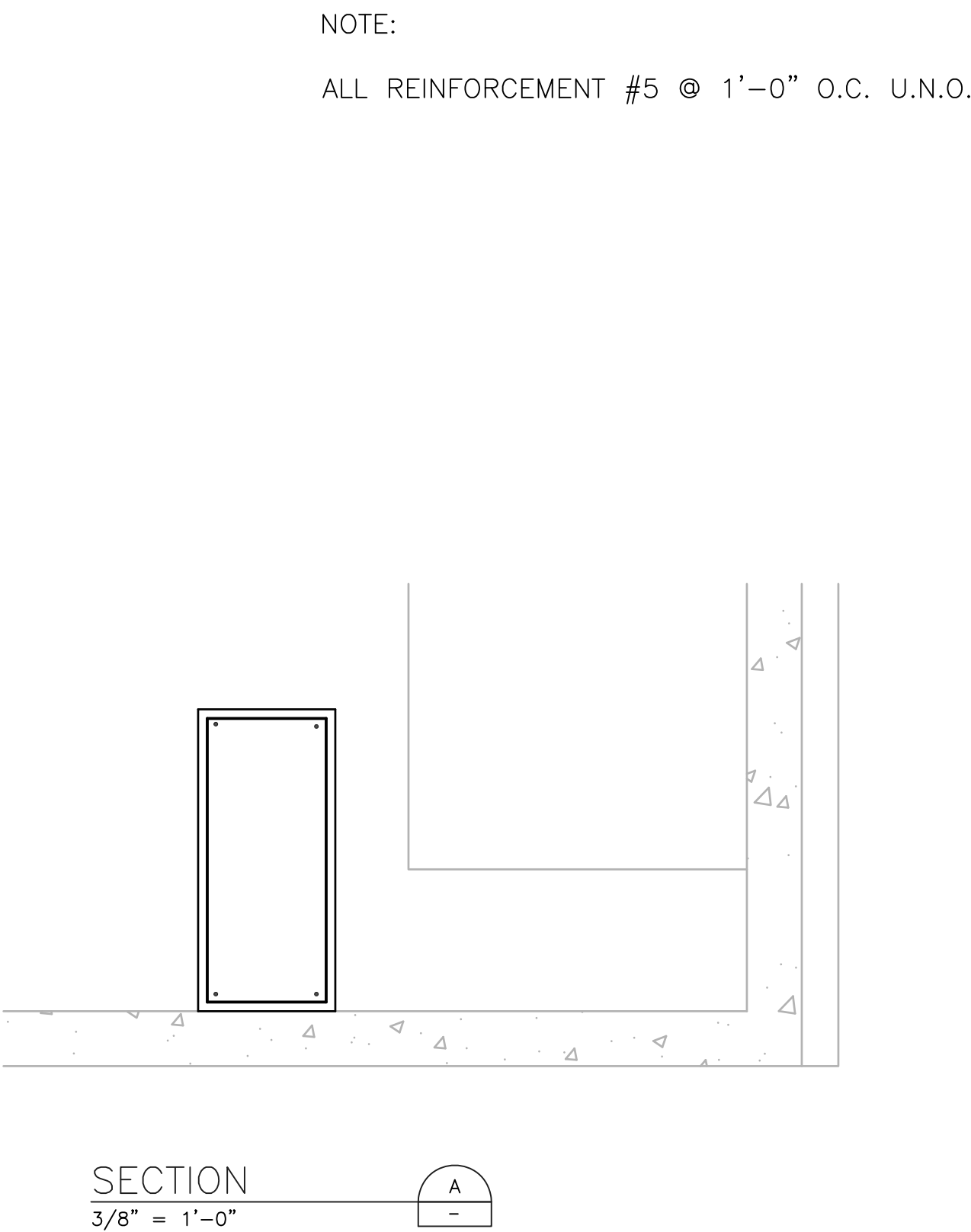
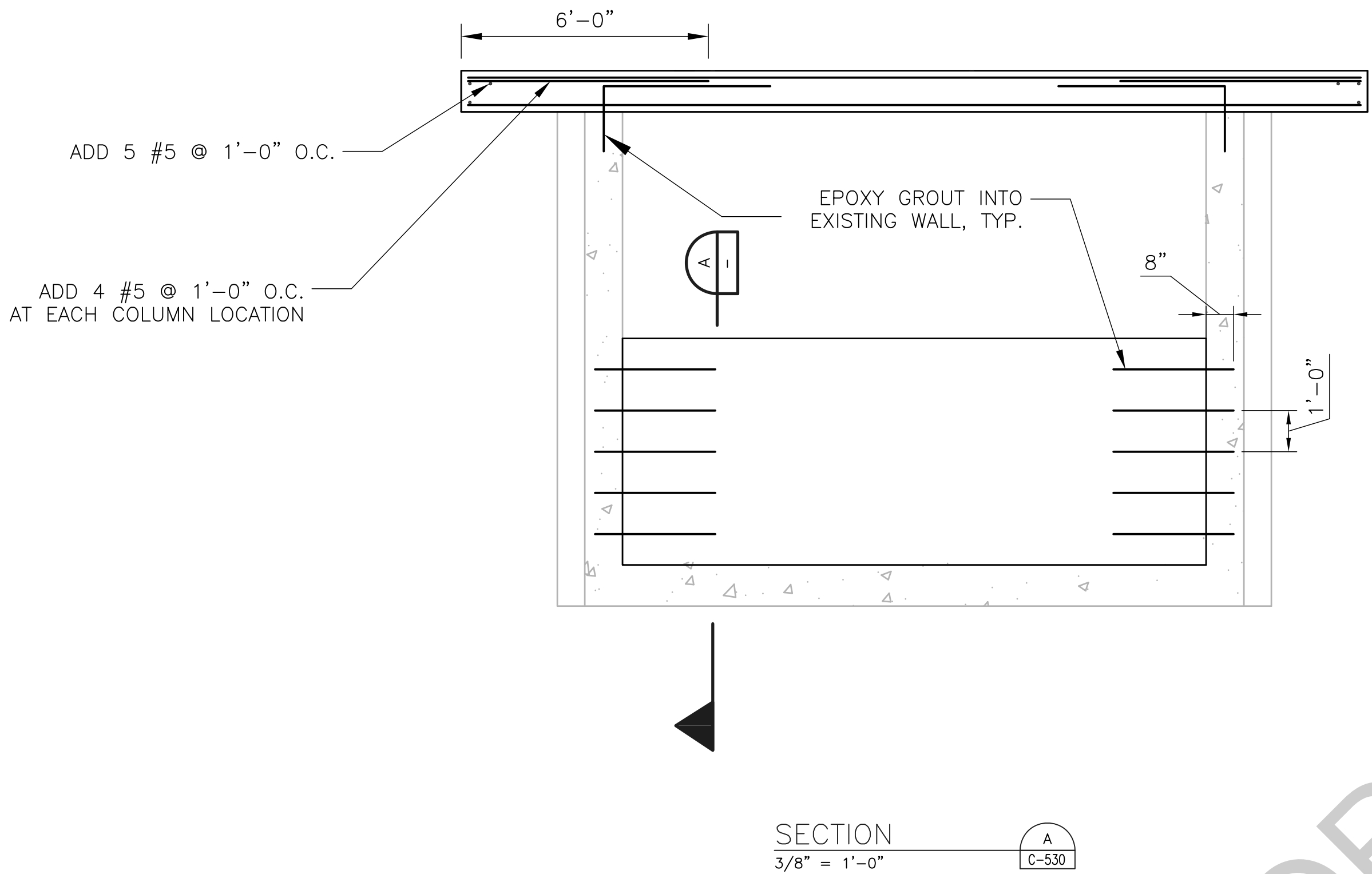


GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

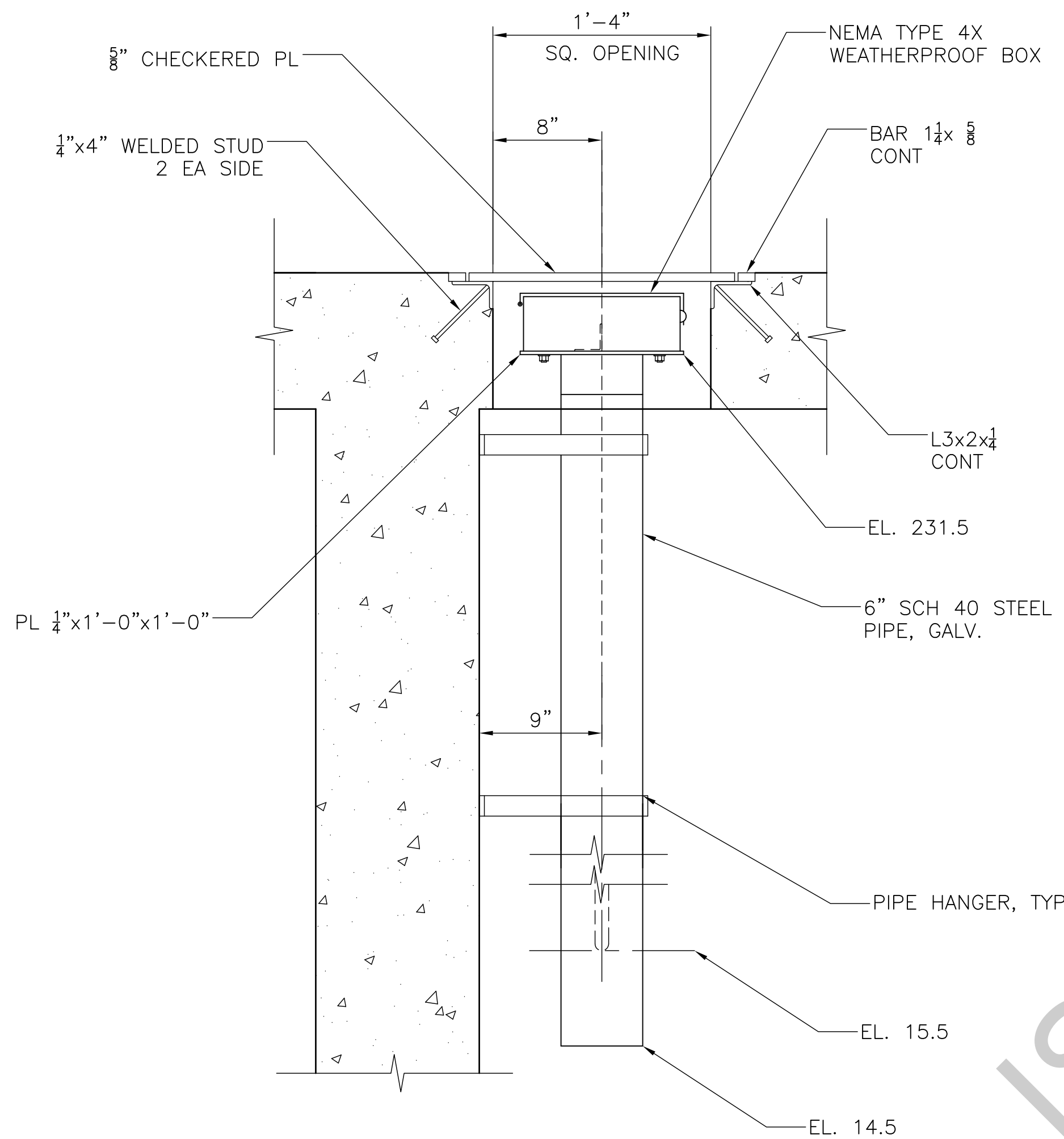
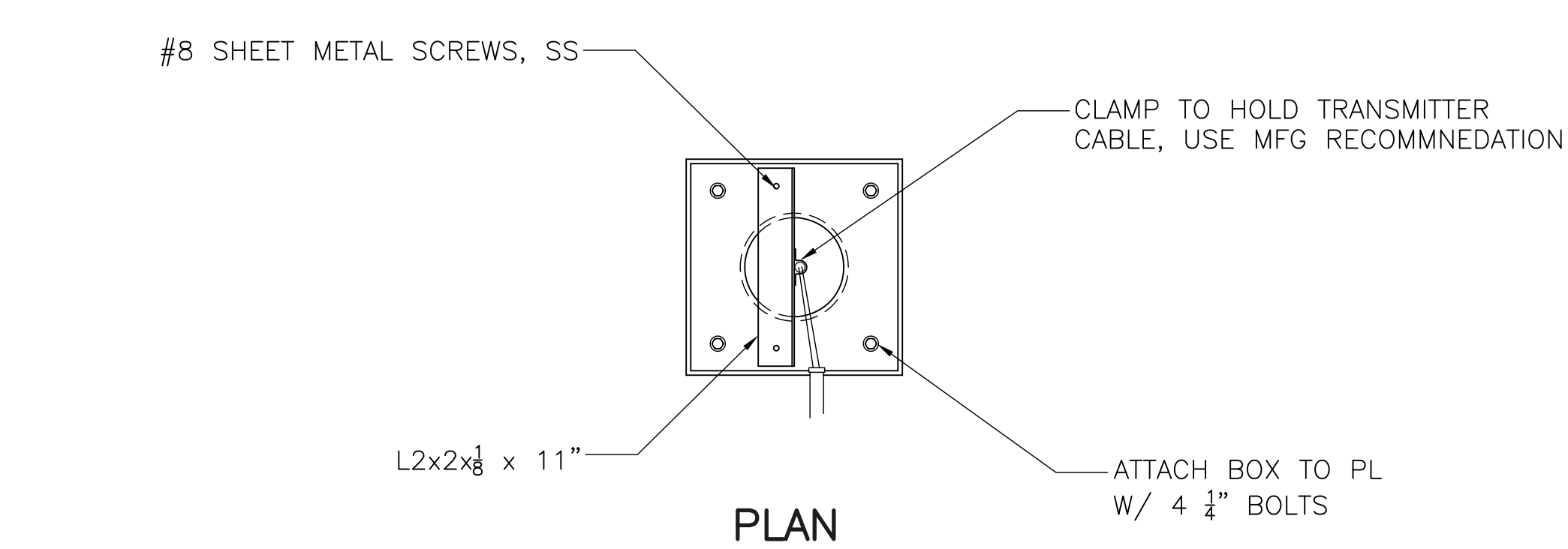
POWERHOUSE
REINFORCEMENT
SECTIONS

FILENAME	C-531
SCALE	AS-SHOWN

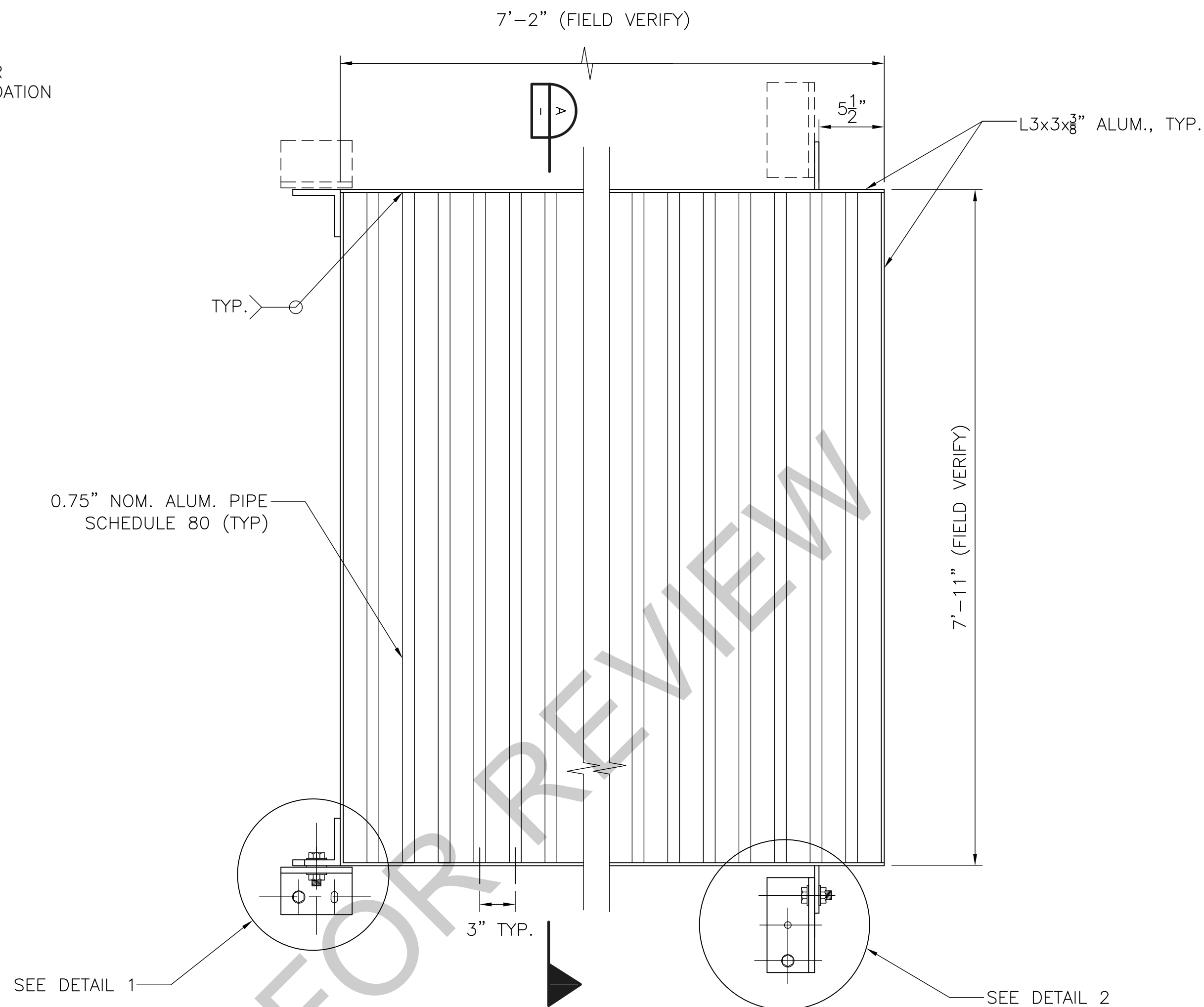
SHEET
C-531



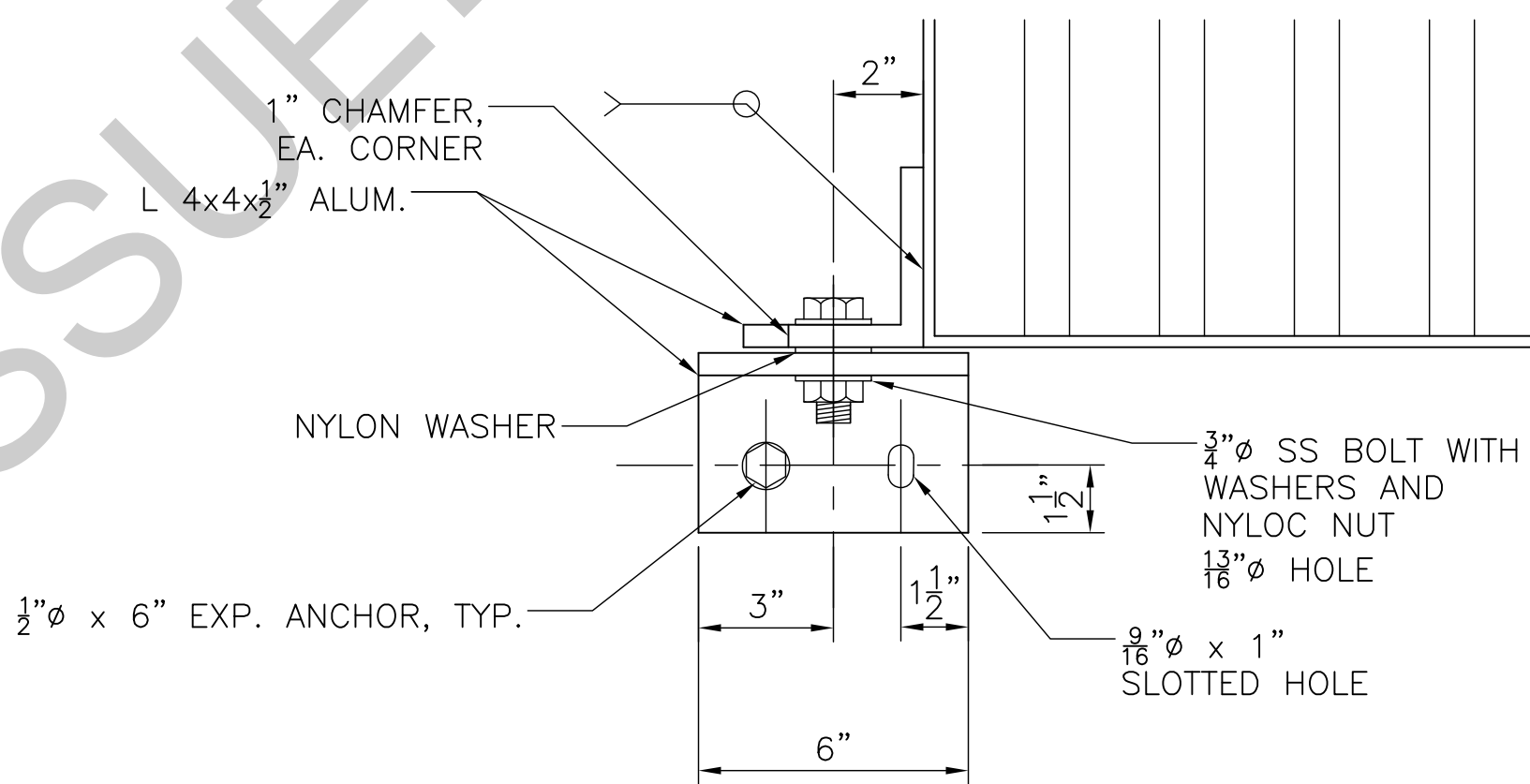
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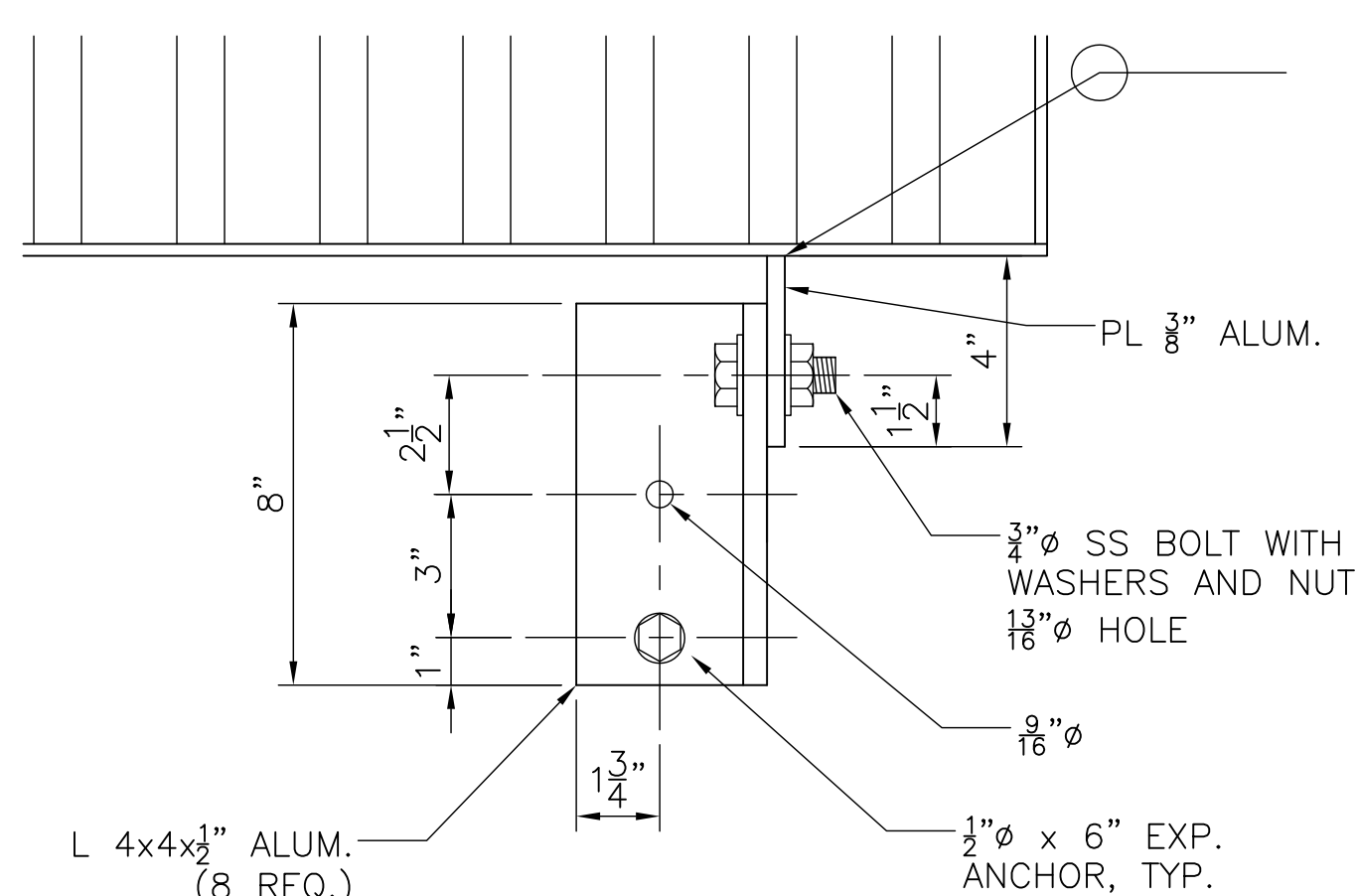
LEVEL TRANSMITTER ELEVATION
SCALE: 1 1/2"=1'-0"



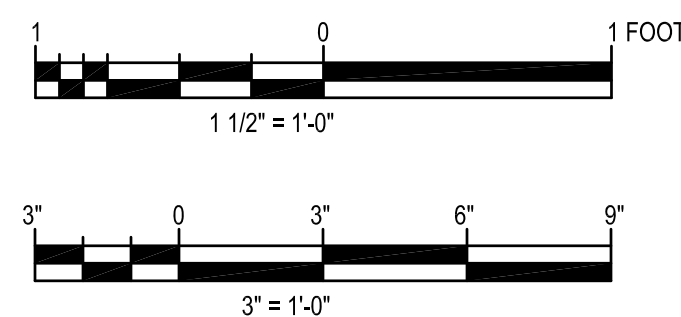
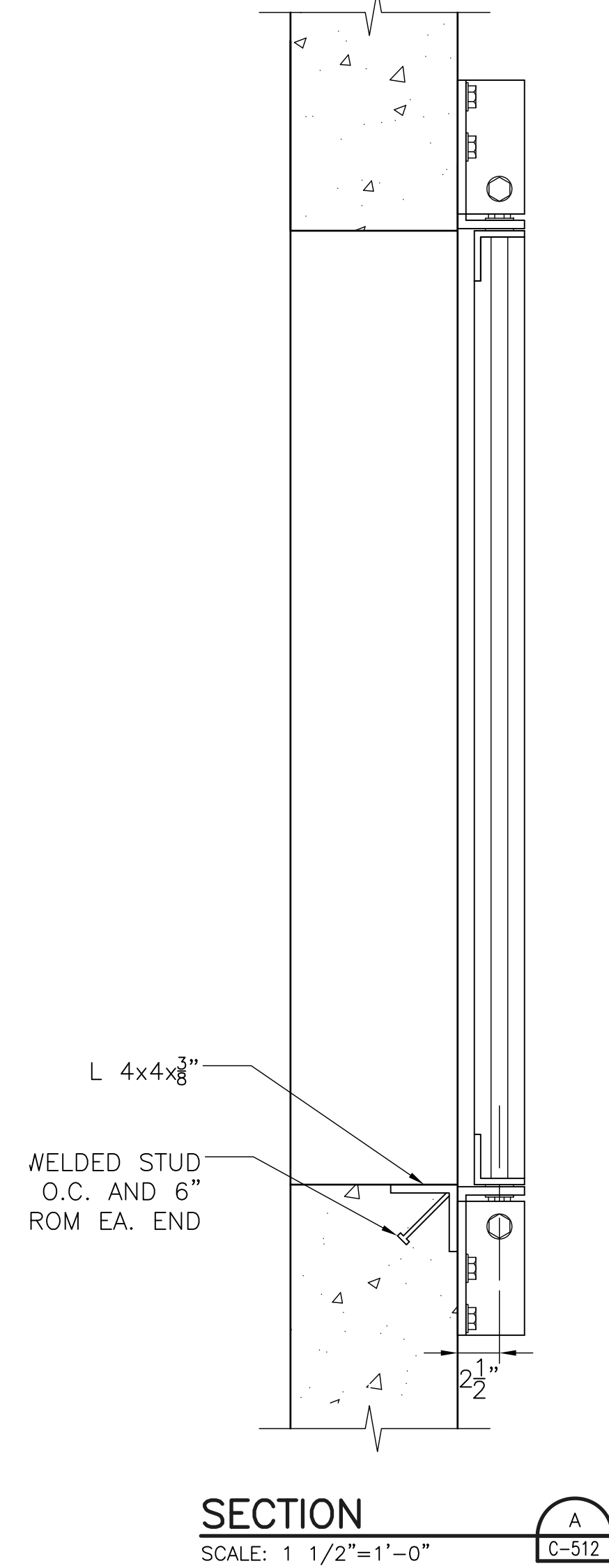
FISH PICKET FENCE DETAIL
N.T.S.



DETAIL 1
SCALE: 3"=1'-0"



DETAIL 2
SCALE: 3"=1'-0"



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839



GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

MISCELLANEOUS METAL DETAILS

FILENAME	C-801
SCALE	AS-SHOWN

SHEET
C-801

FILE PATH:00000000234987/13.00_CAD/Sheet Files/C-803.DWG PLOT DATE:3/1/2017 11:09 AM USER:PIERKSHI

1

2

3

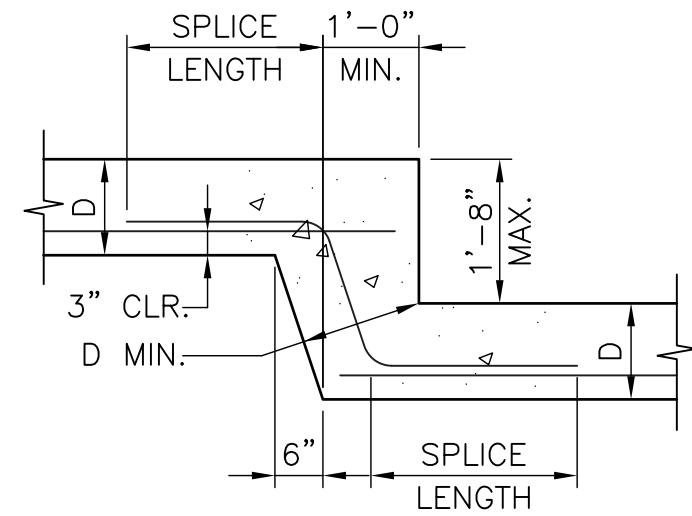
4

5

6

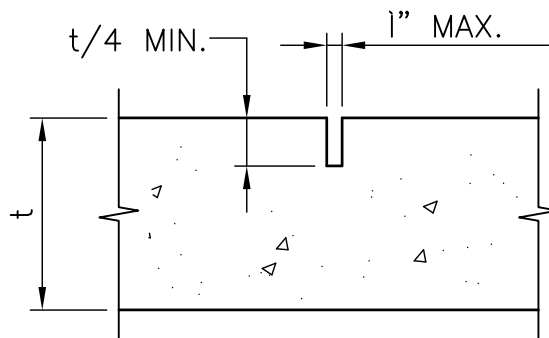
7

8

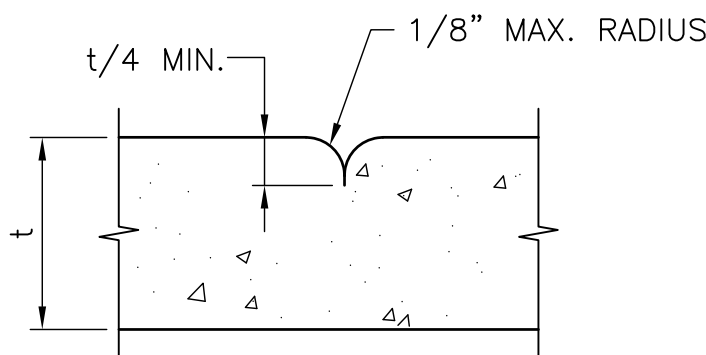


STEPPED FOOTING DETAIL

1/2" = 1'-0"



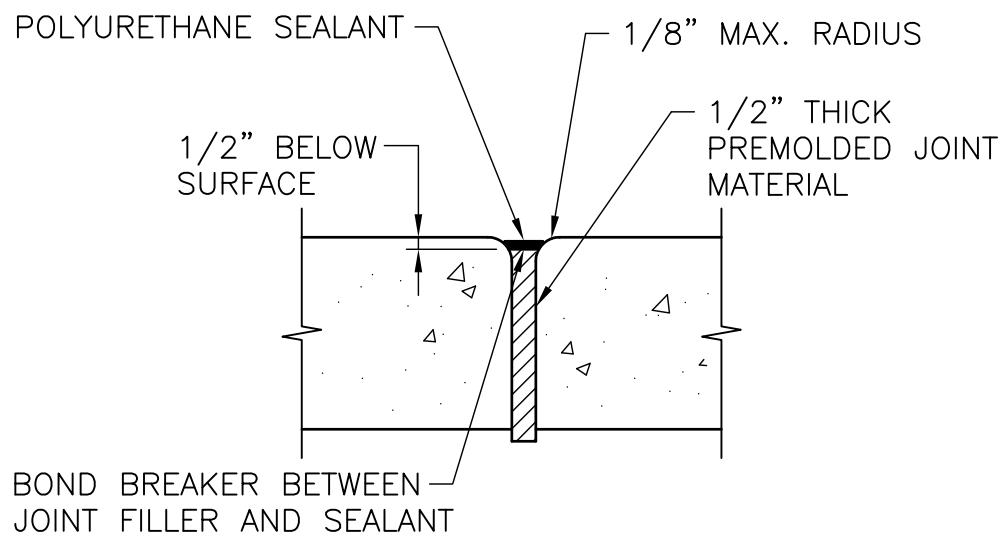
SAWED



HAND-TOOLED

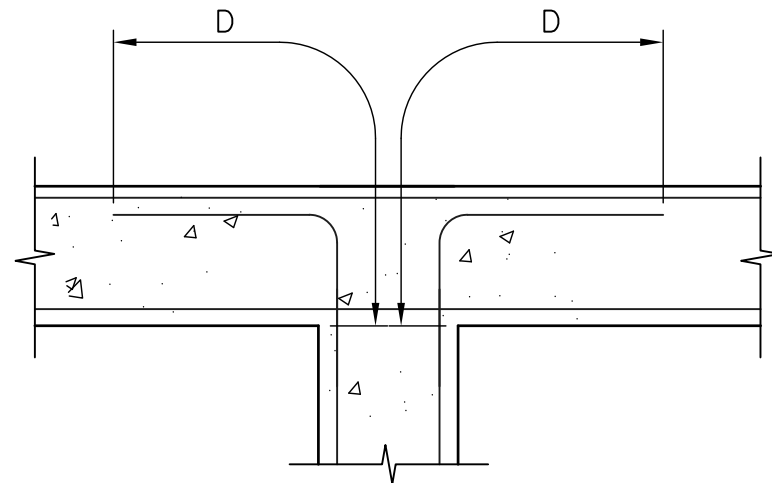
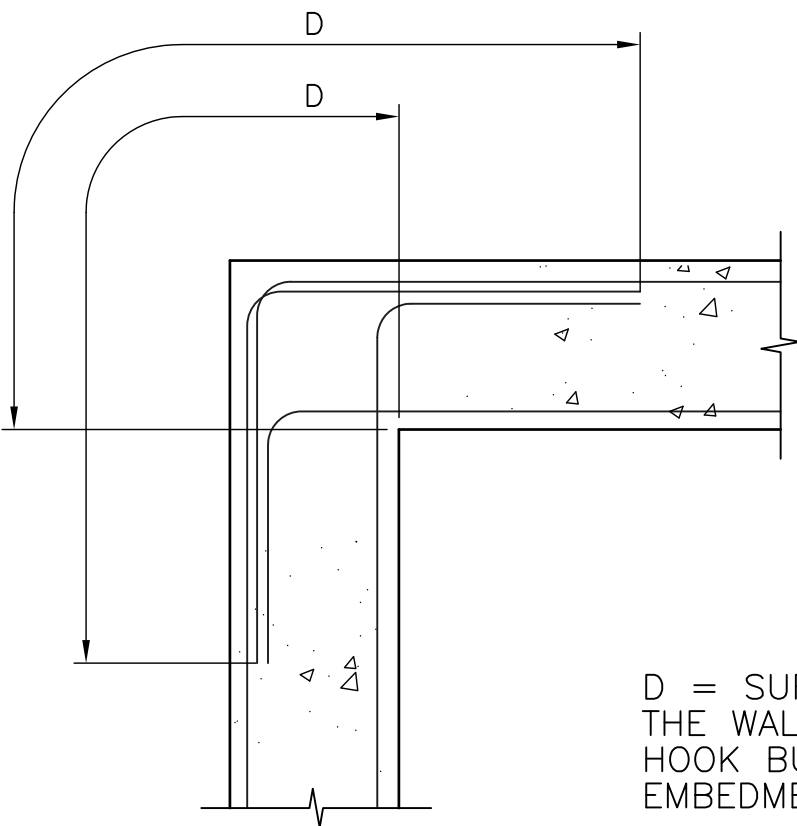
TYPICAL CONTRACTION JOINT

NTS



TYPICAL ISOLATION JOINT

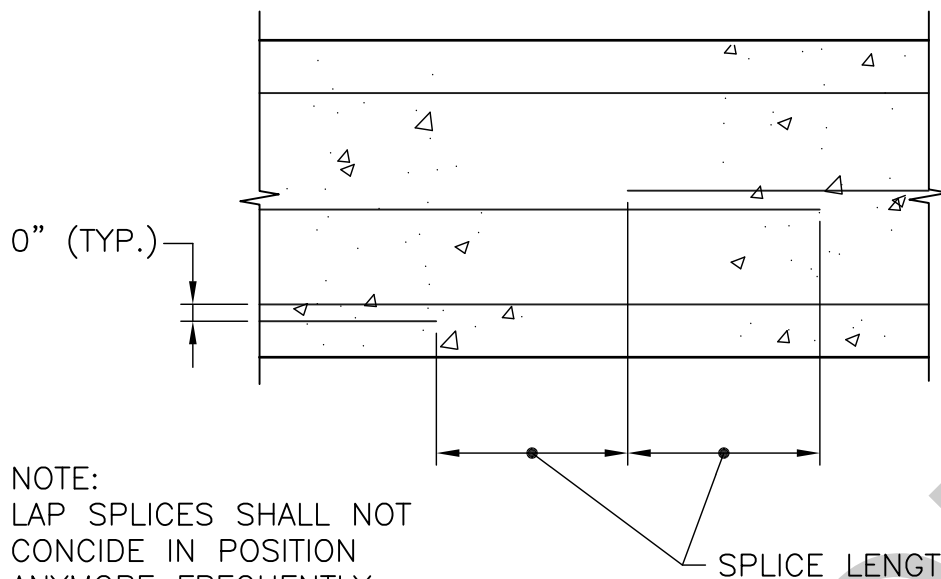
NTS



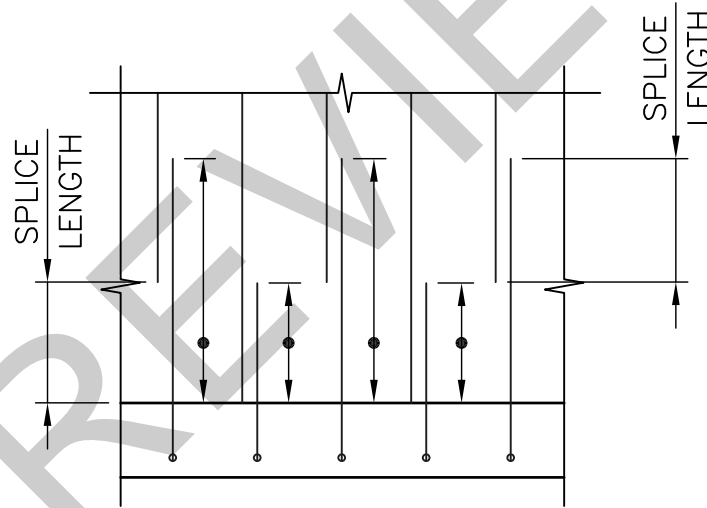
D = SUFFICIENT LENGTH TO PERMIT BARS TO EXTEND THROUGH THE WALL TO THE OPPOSITE FACE AND TERMINATE IN A STANDARD HOOK BUT SHALL NOT BE LESS THAN THE LENGTH REQUIRED FOR EMBEDMENT OF OTHER BARS, AS SHOWN ON THIS SHEET.

TYPICAL CORNER REINFORCING DETAILS

NTS



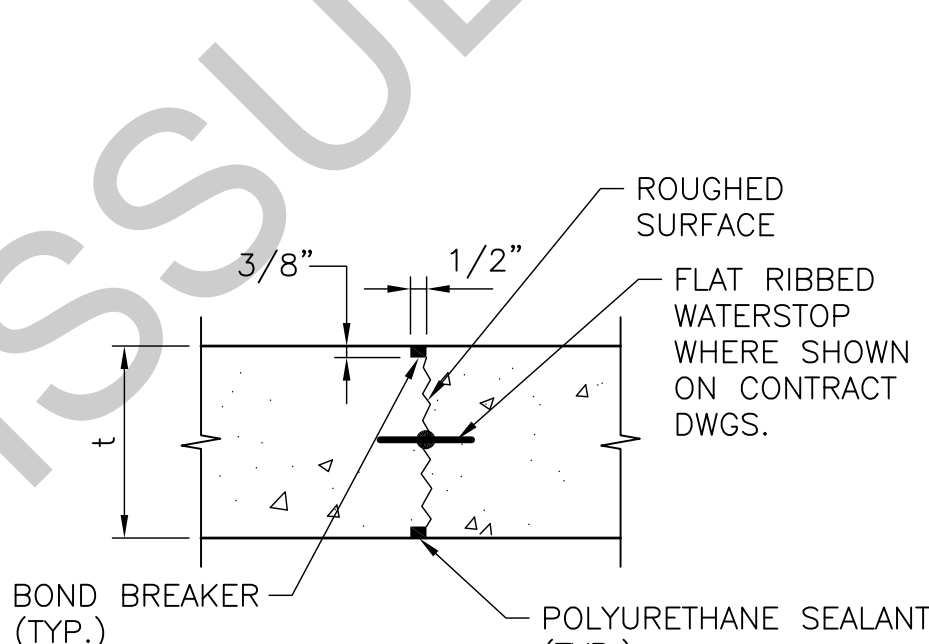
NOTE:
LAP SPLICES SHALL NOT
CONCIDE IN POSITION
ANYMORE FREQUENTLY
THAN EVERY THIRD BAR.



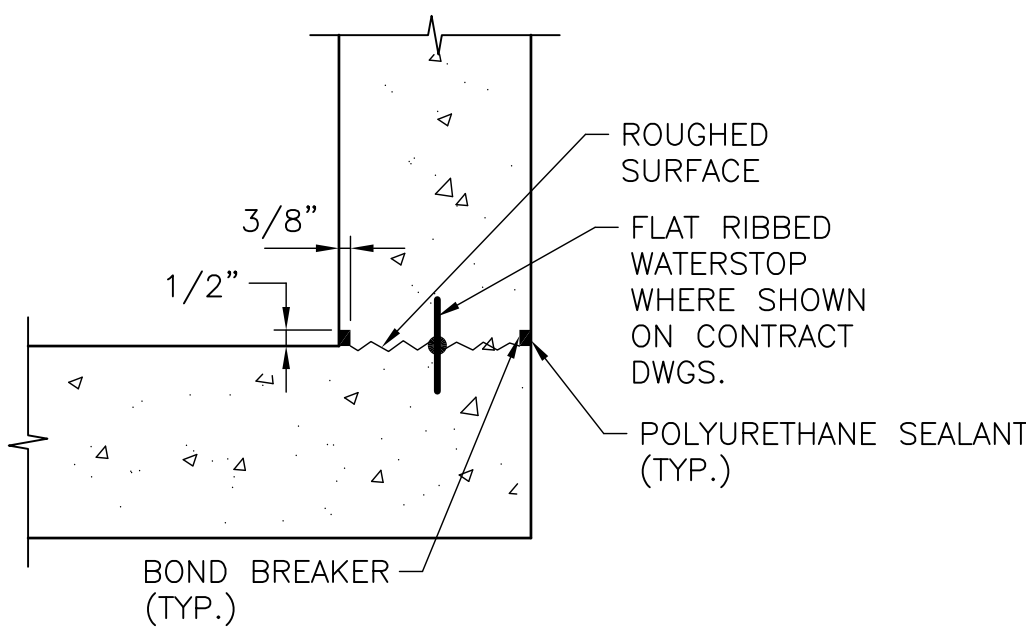
WALL ELEVATION

SLAB AND WALL REINFORCING
SPLICE DETAILS

NTS



VERTICAL

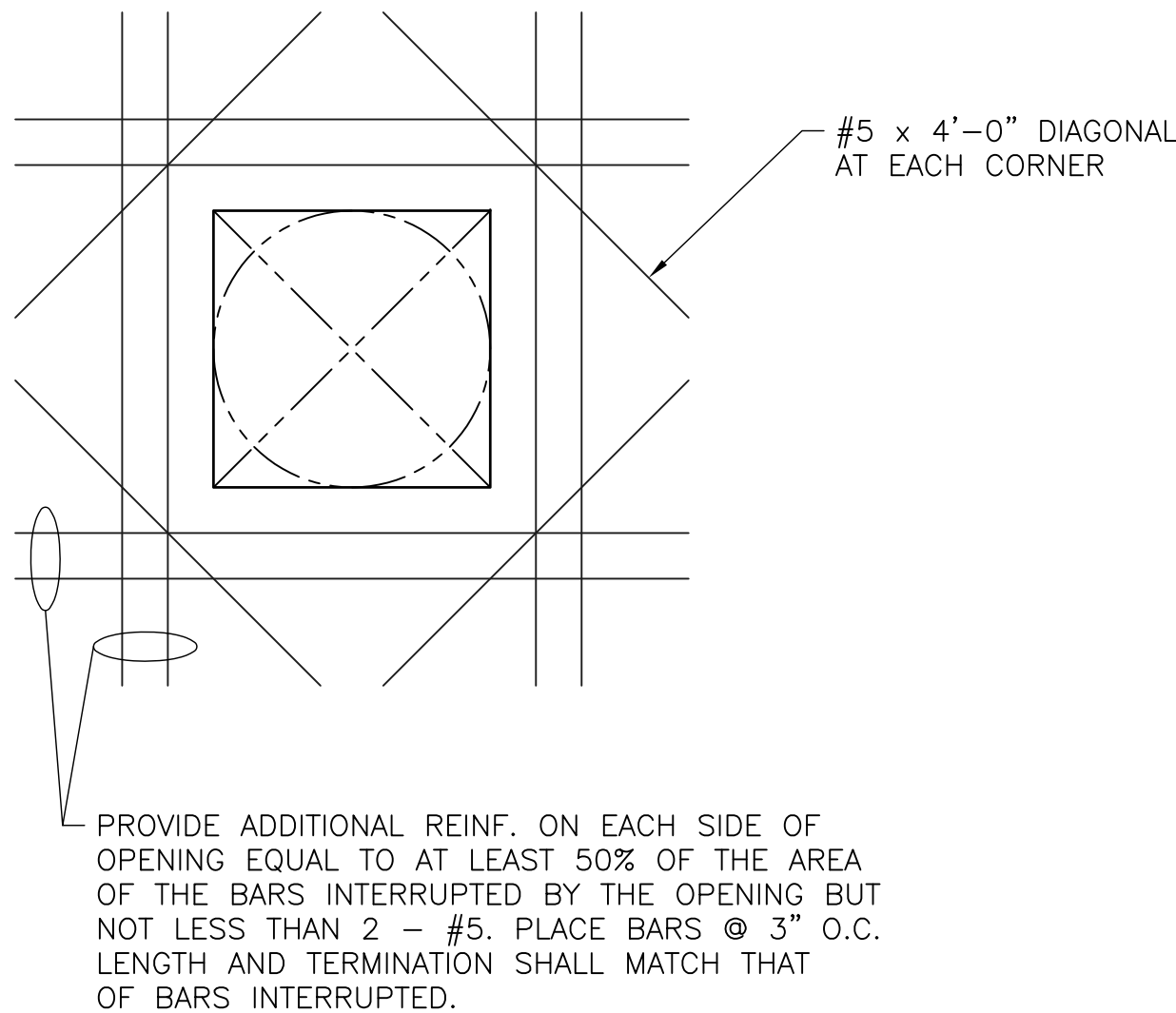


HORIZONTAL

NOTE: REINFORCING CONTINUOUS THROUGH JOINTS

TYPICAL CONSTRUCTION JOINT

NTS



PROVIDE ADDITIONAL REINF. ON EACH SIDE OF OPENING EQUAL TO AT LEAST 50% OF THE AREA OF THE BARS INTERRUPTED BY THE OPENING BUT NOT LESS THAN 2 - #5. PLACE BARS @ 3" O.C. LENGTH AND TERMINATION SHALL MATCH THAT OF BARS INTERRUPTED.

REINFORCING AROUND OPENINGS
IN SLABS AND WALLS

NTS

BAR SIZE	MIN. LAP SPLICE LENGTHS (INCHES)		TENSION EMBEDMENT LENGTHS L_{dh}
	OTHER BARS CLASS B	TOP BARS CLASS B	
3	16	20	12
4	21	28	16
5	27	35	20
6	35	46	27
7	40	62	36
8	63	82	48
9	80	104	61
10	101	132	78
11	124	162	96

(f'_c = 3ksi, f_y = 60ksi)



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	



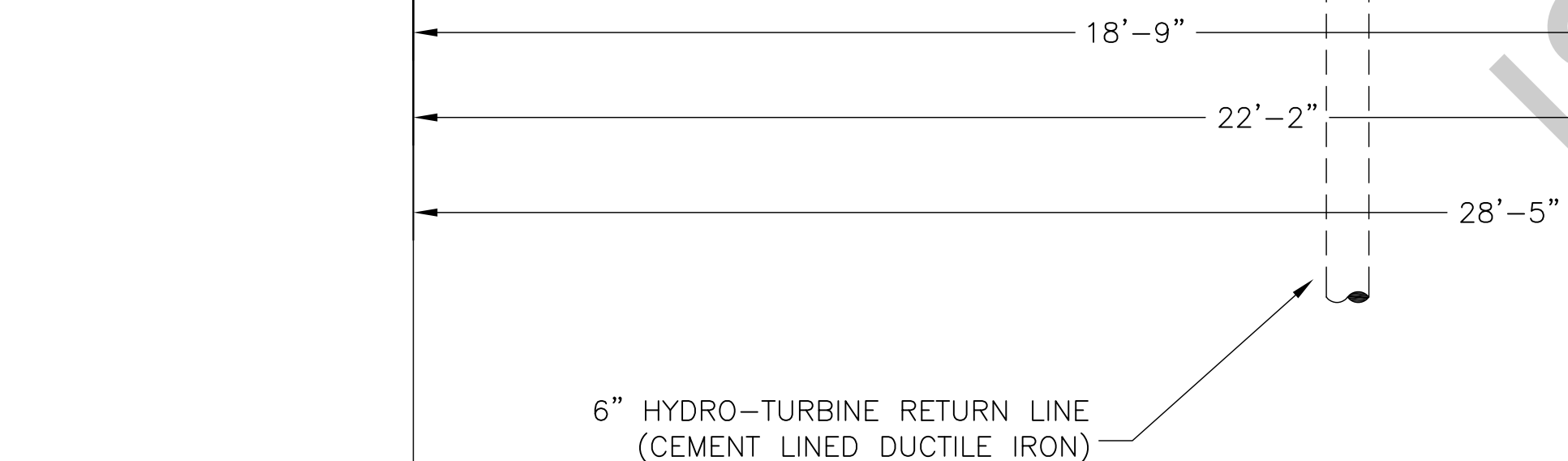
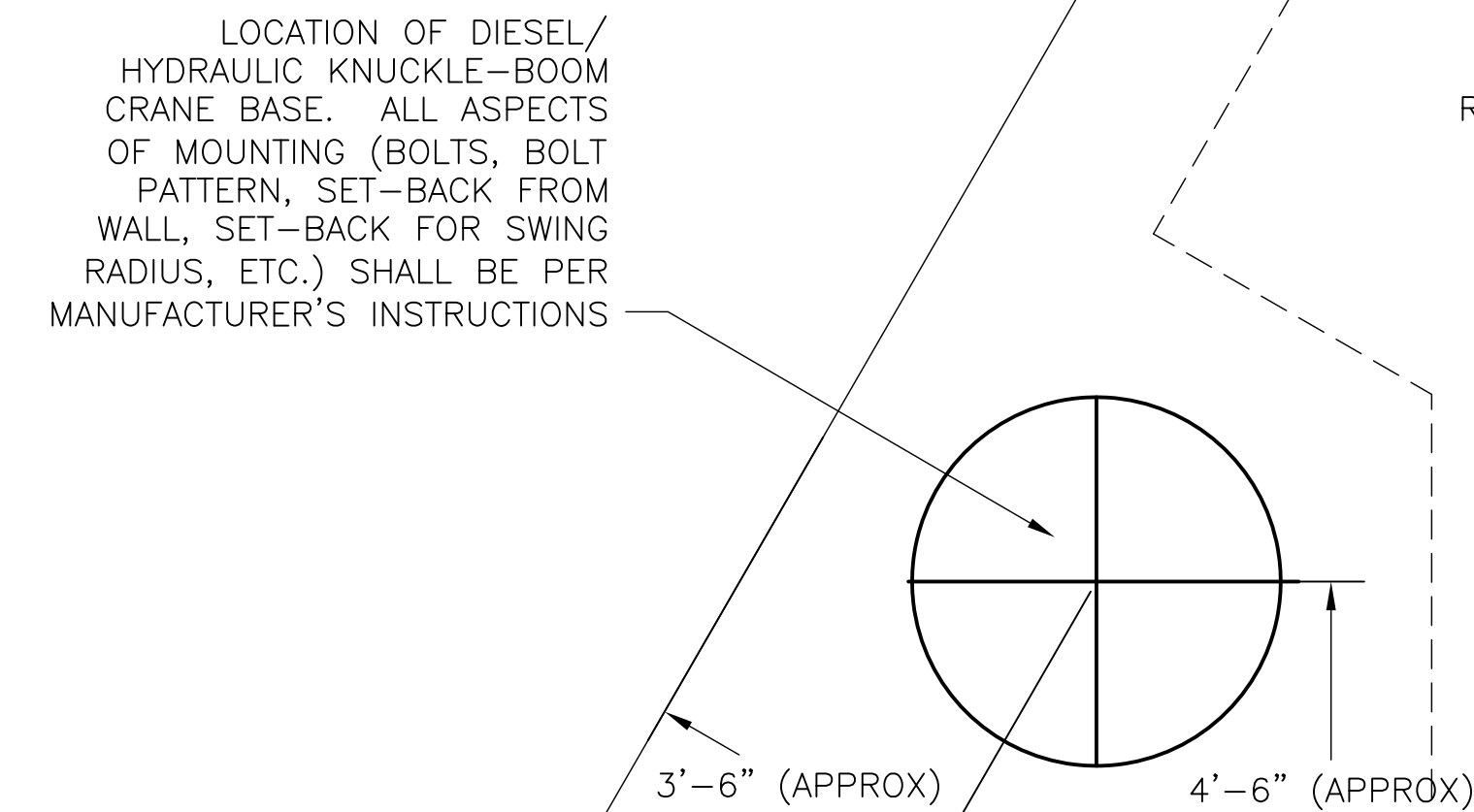
GUNNUK CREEK HYDROELECTRIC PROJECT
KAKE, ALASKA

**MISCELLANEOUS
CONCRETE DETAILS**

FILENAME	C-802
SCALE	AS SHOWN

SHEET
C-802

LOCATION OF DIESEL/
HYDRAULIC KNUCKLE-BOOM
CRANE BASE. ALL ASPECTS
OF MOUNTING (BOLTS, BOLT
PATTERN, SET-BACK FROM
WALL, SET-BACK FOR SWING
RADIUS, ETC.) SHALL BE PER
MANUFACTURER'S INSTRUCTIONS



- NOTES:
- COORDINATE PUMP SPACING AND DEPTH WITH THE PUMP MANUFACTURER'S RECOMMENDATIONS.
 - INSTALL PUMPS WITH ALL APPURTENANCES REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM. CONNECT PUMPS TO RELOCATED PUMP CONTROLS.

250 GPM @ 150 FT OF HEAD VERTICAL TURBINE WATER SUPPLY PUMP W/20 HP, 480 V, 3 PHASE, 1750 RPM MOTOR. PUMP SHALL HAVE AN EFFICIENCY OF 75 PERCENT, MINIMUM. PUMP SHALL BE SELF PRIMING AND WATER LUBRICATED W/ STAINLESS STEEL SHAFT AND BRONZE IMPELLERS. SEE NOTE 2.
(TYPICAL OF 2)

1

2
M3 M5

RELOCATED PUMP CONTROLS

32" MIN.
(SEE NOTE 1)

ELECTRIC UNIT HEATER
WALL HUNG, 208 V, 1Ø,
2.6 KW (TYP. OF 2),
MOUNT 7'-0" ABOVE
FLOOR WITH AIR DIRECTED
DOWN AT 45 DEGREES

20' x 14' PUMP HOUSE
ON TOP OF DAM, SEE
ARCHITECTURAL

AUTOMATIC VACUUM RELIEF
WITH ISOLATION GATE VALVE

CHECK VALVE IN RISER.

GATE VALVE W/ CHAIN OPERATOR

AUTOMATIC AIR VENT WITH ISOLATION
GATE VALVE (COORDINATE TO
PASS UNDER CRANE RAIL.

EXTEND INSULATION
AND JACKET INSIDE
PUMP HOUSE

1'-1"

PROVIDE WALL SLEEVE
WITH 1/2" ANNULUS,
SEAL WITH CAULK

BOTTOM OF PIPE
AT EL. 113'
(8 FEET CLEAR)

10" WATER SUPPLY PIPE
(HDPE) TO TREATMENT PLANT
(SEE DRAWING M-1 AND M-2)

54" SLUICE GATE
W/ SINGLE SPEED
GEARED GATE LIFT,
PEDESTAL, AND
HAND CRANK

36" SLUICE GATE W/
3-PHASE ELECTRIC
OPERATOR, MANUAL
OVERRIDE, AND
INTERLOCK TO
STREAM GAGE

6" HYDRO-TURBINE
RETURN LINE (HDPE)
UNDER FLOOR

6" HYDRO-TURBINE RETURN LINE
(CEMENT LINED DUCTILE IRON)

30" HYDRO-TURBINE PUMP
SUPPLY THROUGH DAM
(CEMENT LINED DUCTILE IRON)

3

48" HATCHERY WATER SUPPLY
THROUGH DAM
(CEMENT LINED DUCTILE IRON)

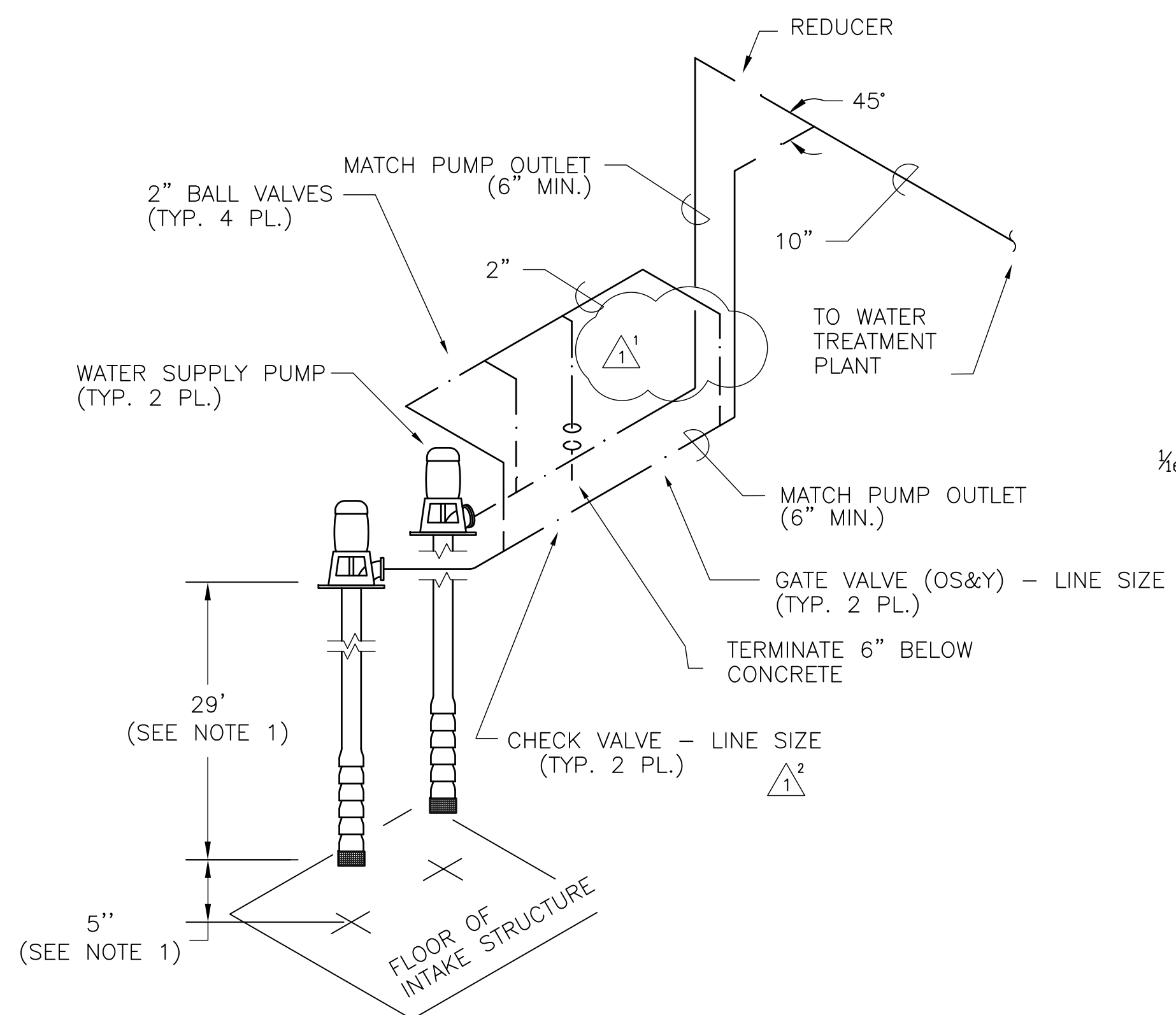
2' 0" (MIN)
THROUGH DAM

30'

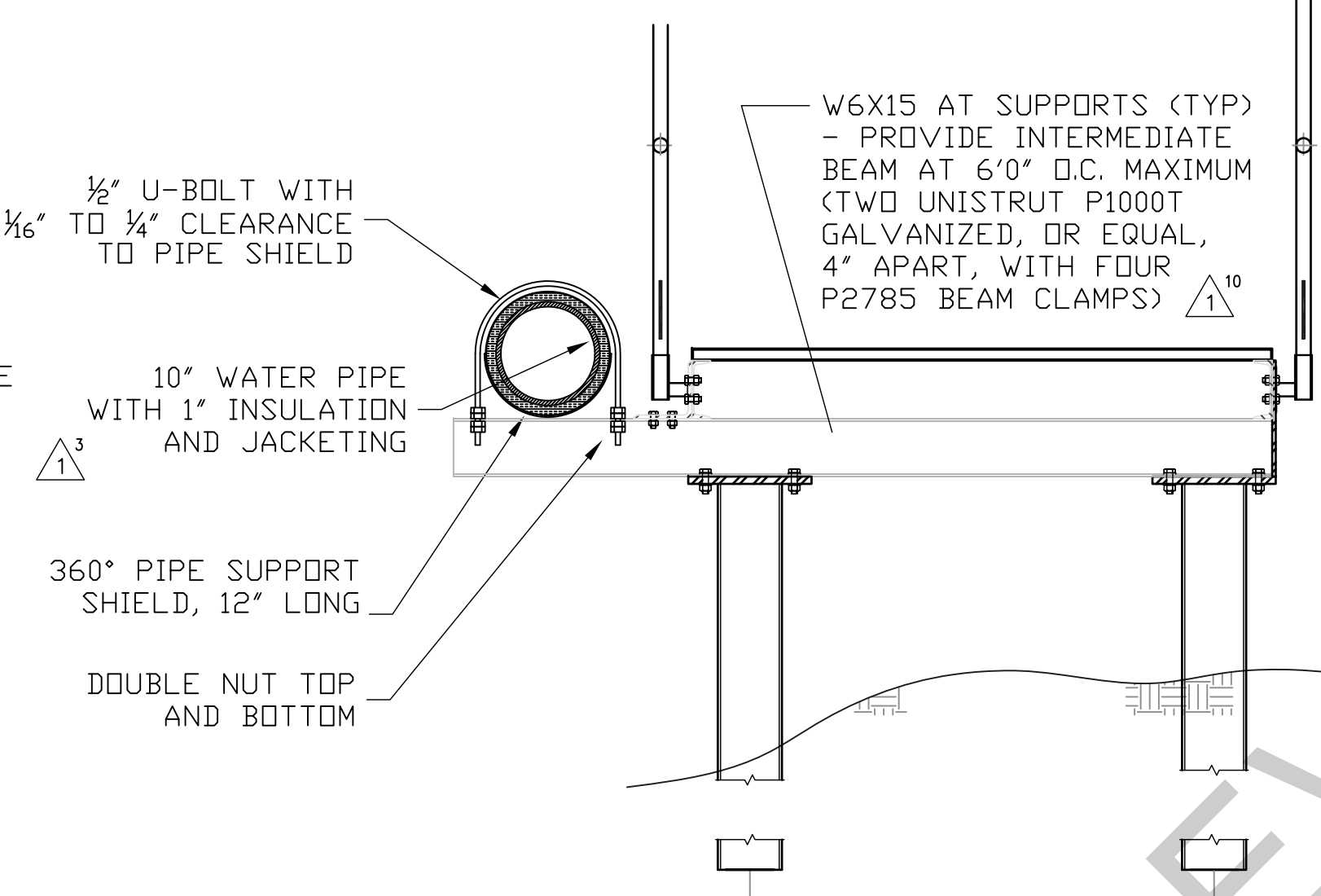
5
M3 M6

2" (TYP)

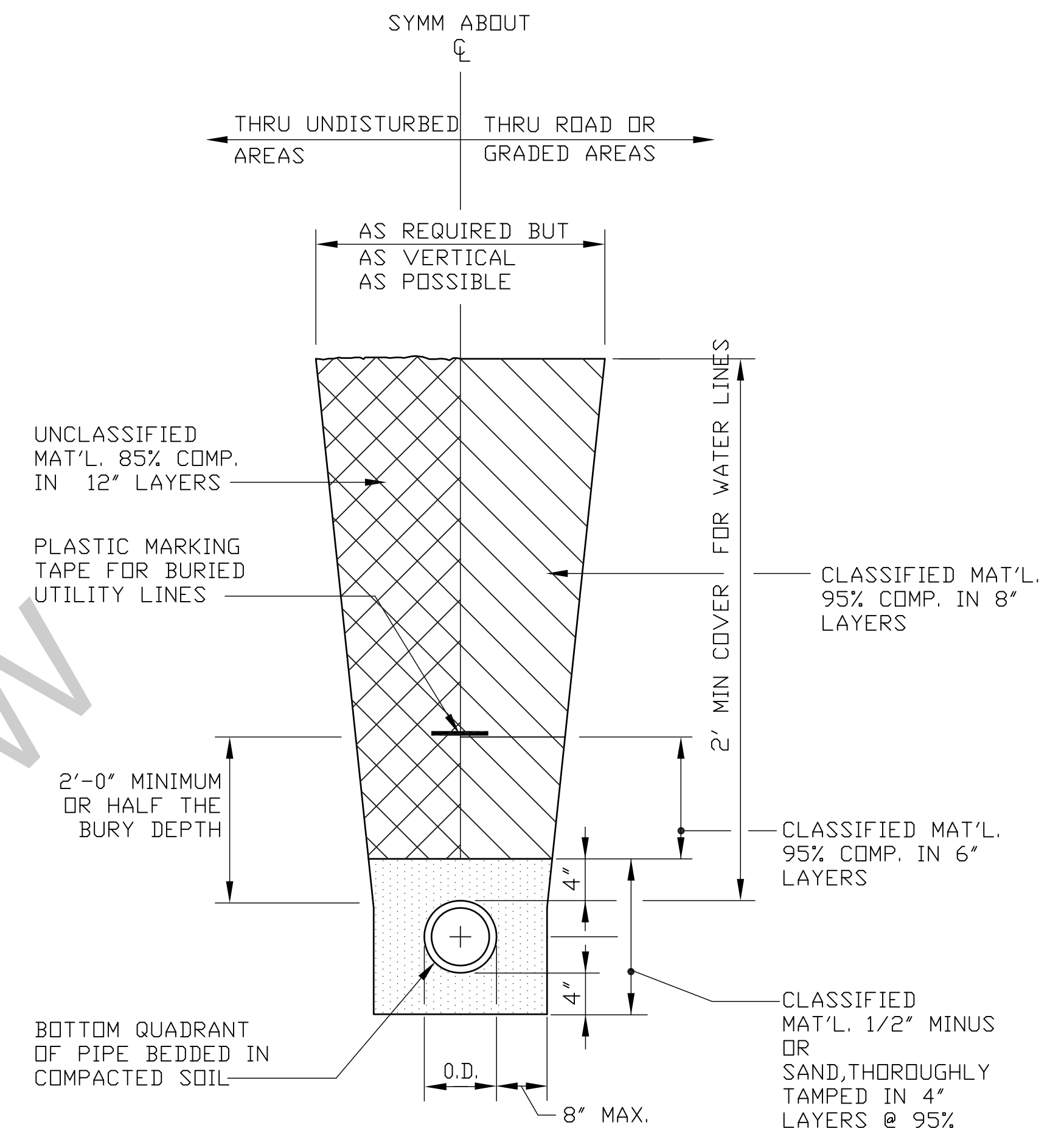
- NOTES:
1. SET PUMP INTAKE HEIGHT BETWEEN 36 INCHES AND 60 INCHES AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 2. ALL BURIED METALLIC PIPE, AND THE FIRST 36" OF PIPE EMBEDDED IN CONCRETE, SHALL HAVE A 50-MIL COATING OF POLYURETHANE ELASTOMER. AFTER ASSEMBLY, ALL FLANGE BOLTS AND FITTINGS SHALL BE PROVIDED WITH A FIELD-APPLIED COATING COMPATIBLE WITH THE BASE COATING AND SUPPLIED BY THE BASE COATING MANUFACTURER.



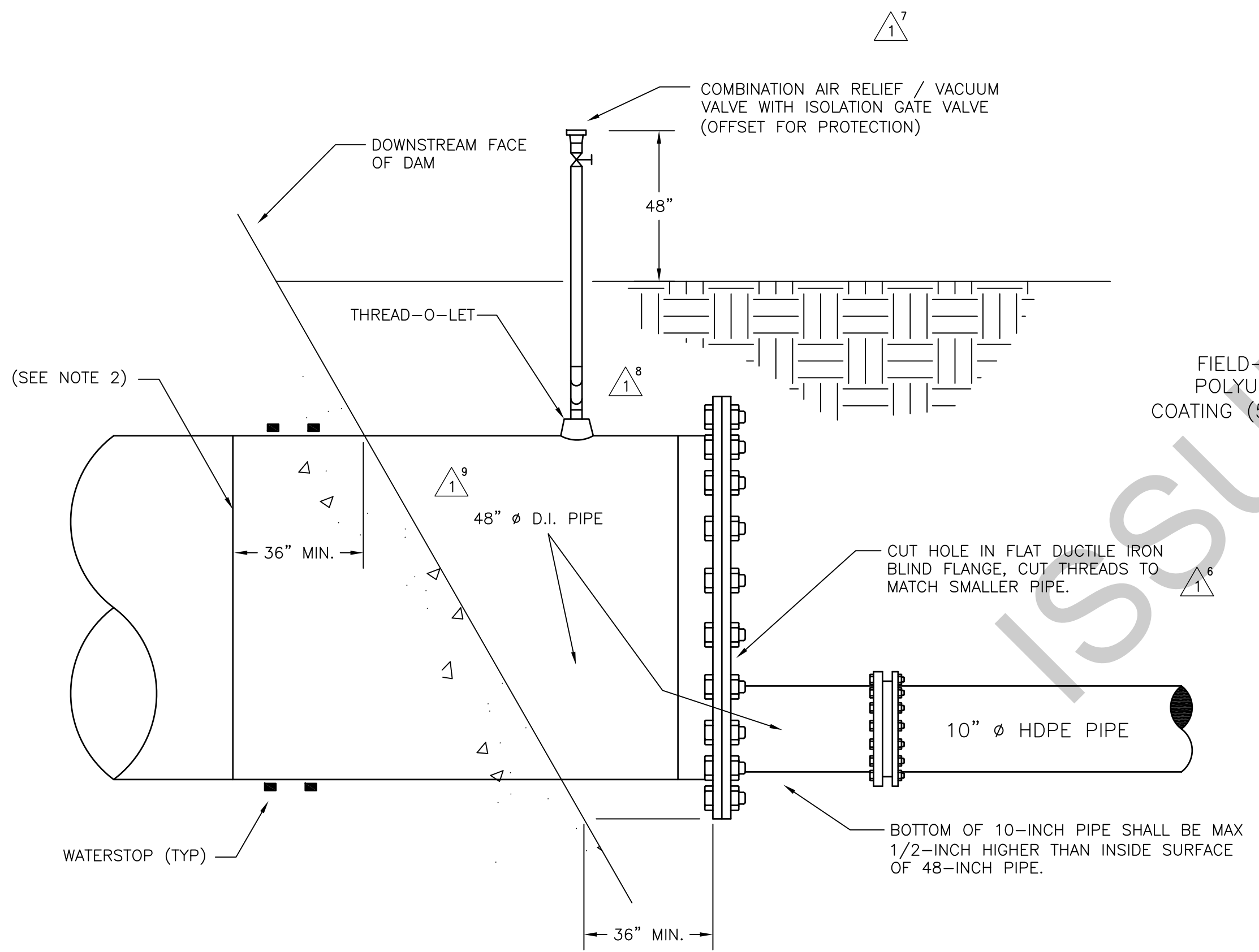
1 WATER PUMP ISOMETRIC
NOT TO SCALE



2 PIPE SUPPORT DETAIL
NOT TO SCALE

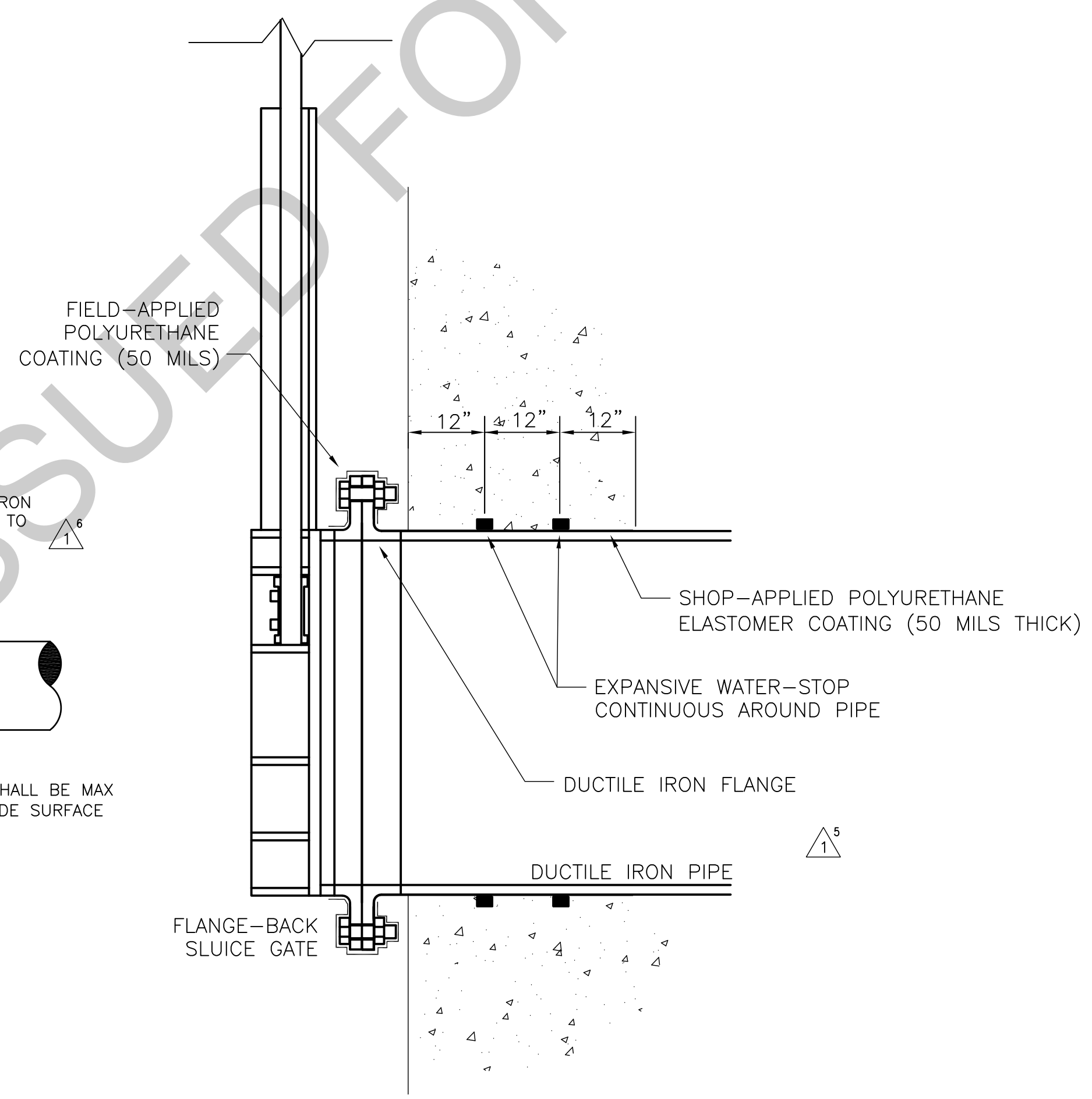


3 TYPICAL TRENCH SECTION
NOT TO SCALE

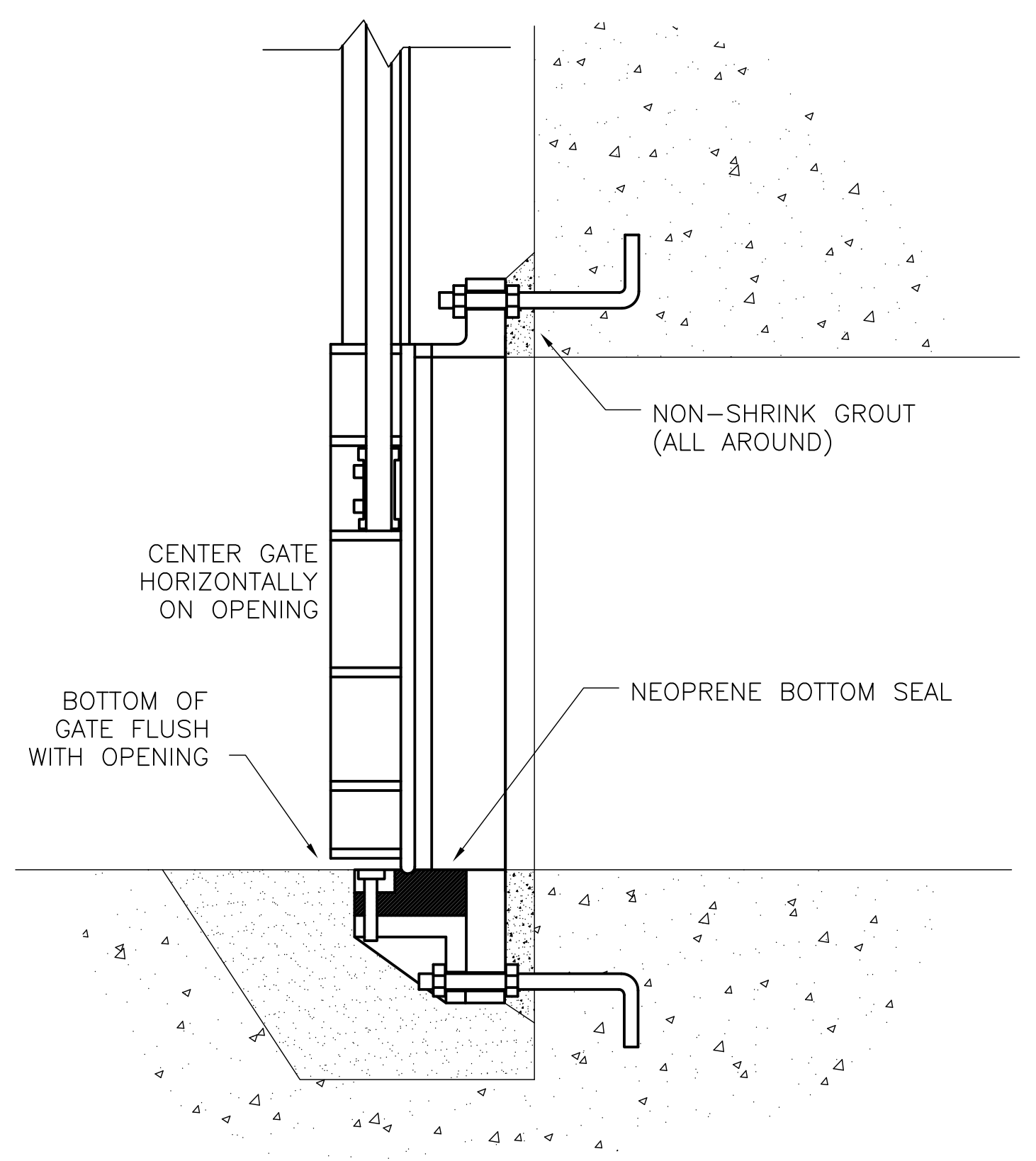


4 48" TO 10" TRANSITION DETAIL
NOT TO SCALE

ACCOMPLISHMENT OF THE 48" TO 10" TRANSITION MAY BE VIA ALTERNATE DETAILS AS PROPOSED BY THE CONTRACTOR. SUCH ALTERNATE DETAILS SHALL BE SUBJECT TO APPROVAL BY THE GOVERNMENT. APPROVAL WILL BE BASED ON ABILITY TO PROVIDE A WATER-TIGHT CONNECTION WITH INTERIOR SURFACES COATED AS REQUIRED TO MEET DRINKING WATER STANDARDS. EXTERIOR SURFACES SHALL BE COATED AS INDICATED.



5 SLUICE GATE DETAIL
NOT TO SCALE



6 FLUSH-BOTTOM GATE DETAIL
NOT TO SCALE

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO.	W911KB-04-B-0009
CONTRACTOR	KAKE, ALASKA
CITY	KAKE, ALASKA
Recommended by	STATE
Approved by	DATE
Project Engineer	

SYMBOL	ACTION	DESCRIPTION	DATE	APPROVAL
1	ADD	ADD GROUND FOR PIPE SIZE CHANGE	5/04	BT
2	ADD	ADD ADJ. SUPPORTS	5/04	BT
3	ADD	ADD VALVE (5) PIPE OFFSET (9) D.I. PIPE	5/04	BT
4	ADD	ADD D.I. PIPE (6) THREADED (7) RELIEF	5/04	BT
5	ADD	ADD INSULATION INSIDE (4) PIPE COATING	5/04	BT
6	ADD	ADD INSULATION INSIDE (2) PIPE SIZE	5/04	BT

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

Designed by	BT	Date	
Drawn by	BT	Proj. Scale	N.T.S.
Reviewed by	C. J. Jorgensen	Proj. Scale	FULL
Checked by	W. Jorgensen	Section	
Submitted by	L. Jorgensen	Drawn by	#1-KAK-04-02-11-01
Chief	W. Jorgensen	Drawn by	#1-KAK-04-02-11-01

INV. NO. W911KB-04-B-0009

MECHANICAL SECTIONS
KAKE, ALASKA
KAKE DAM
MECHANICAL
DETAILS I

Reference number:
M-6
Sheet 43 of