

**DOES NOT
CIRCULATE**

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR MAJOR PROJECT
SUSITNA HYDROELECTRIC PROJECT

VOLUME 3

EXHIBIT F

FEBRUARY 1983

Prepared by:

ACRES

ALASKA POWER AUTHORITY

**SUSITNA HYDROELECTRIC PROJECT
FERC LICENSE APPLICATION**

PROJECT NO. 7114-000

As accepted by FERC, July, 27, 1983

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR MAJOR PROJECT
SUSITNA HYDROELECTRIC PROJECT
VOLUME 3

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FEBRUARY 1983

Prepared by:



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT
FERC LICENSE APPLICATION
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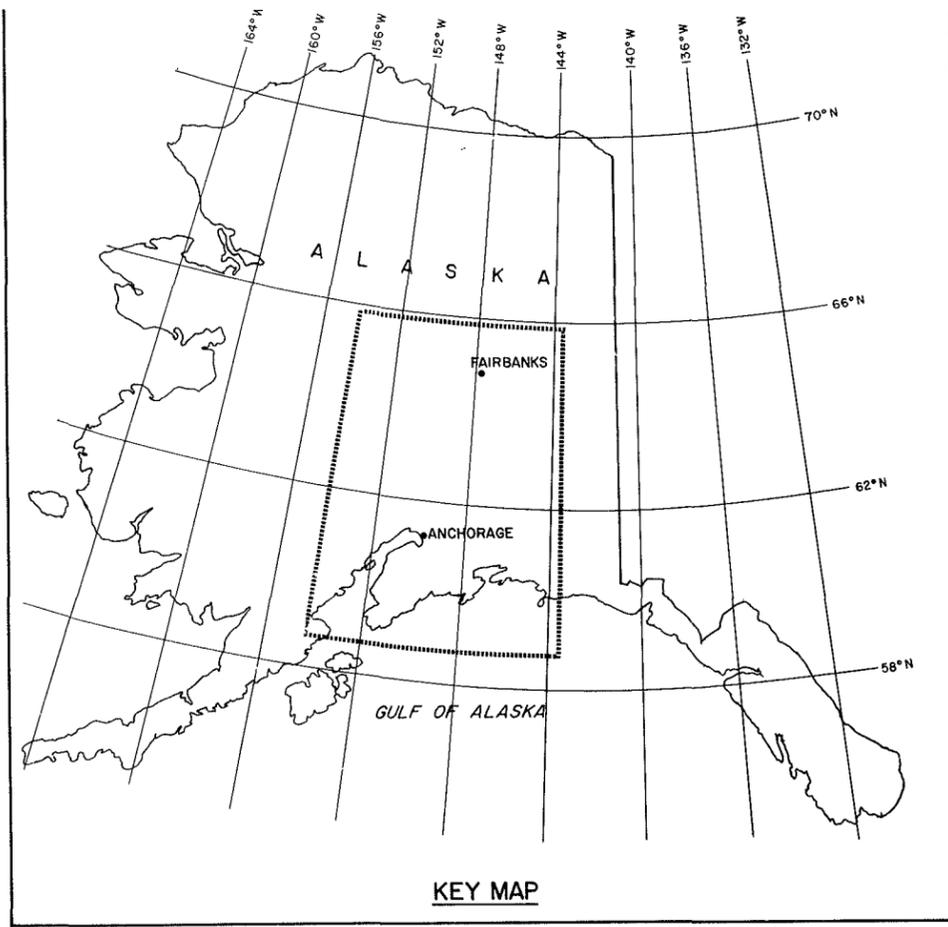
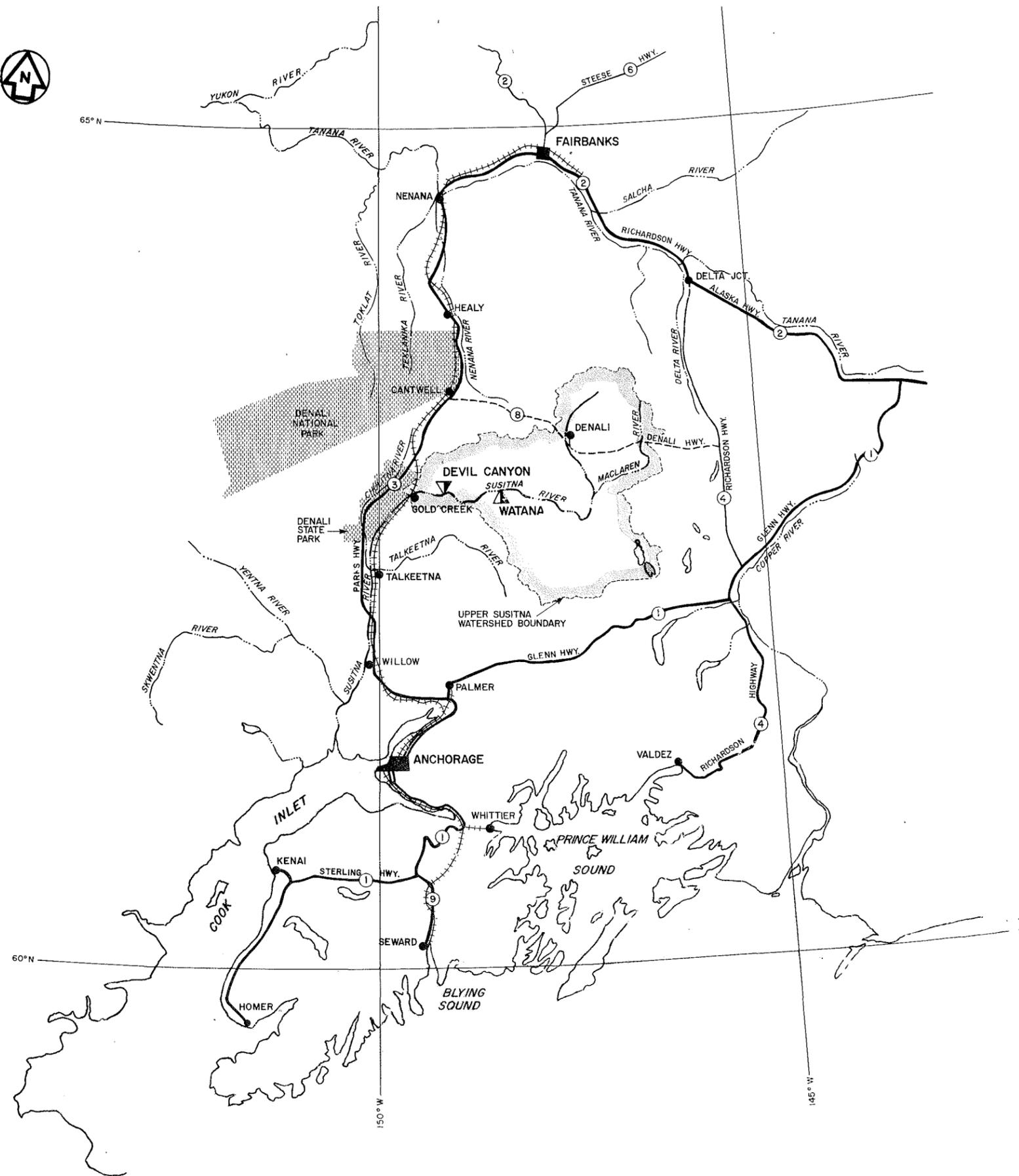
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

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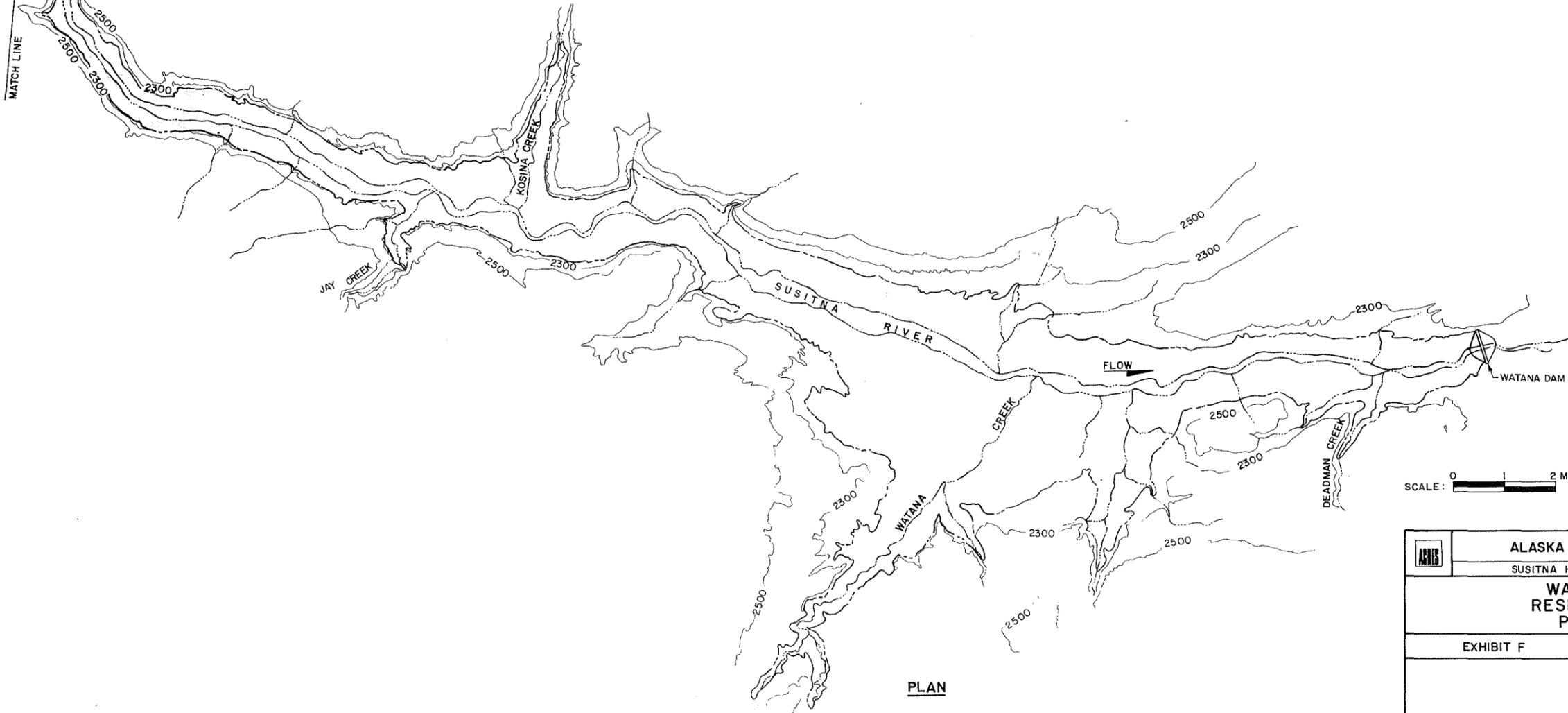
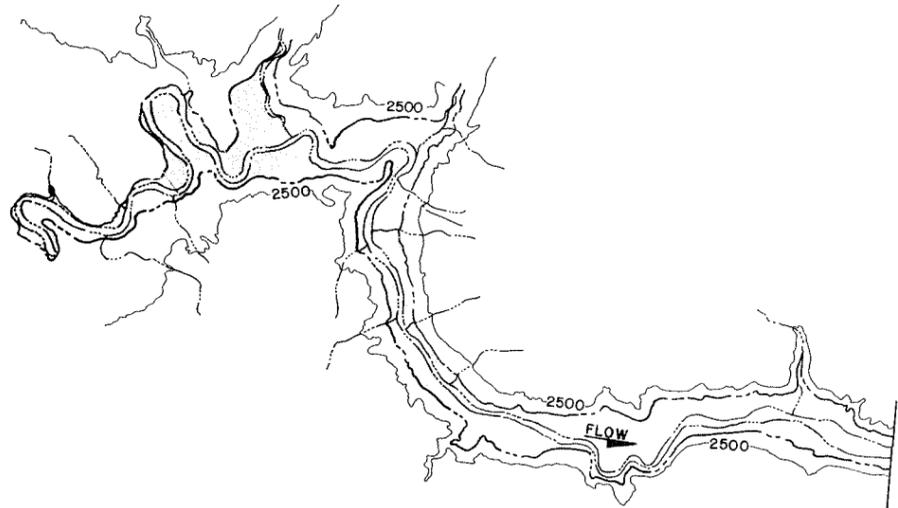
KEY MAP

LEGEND

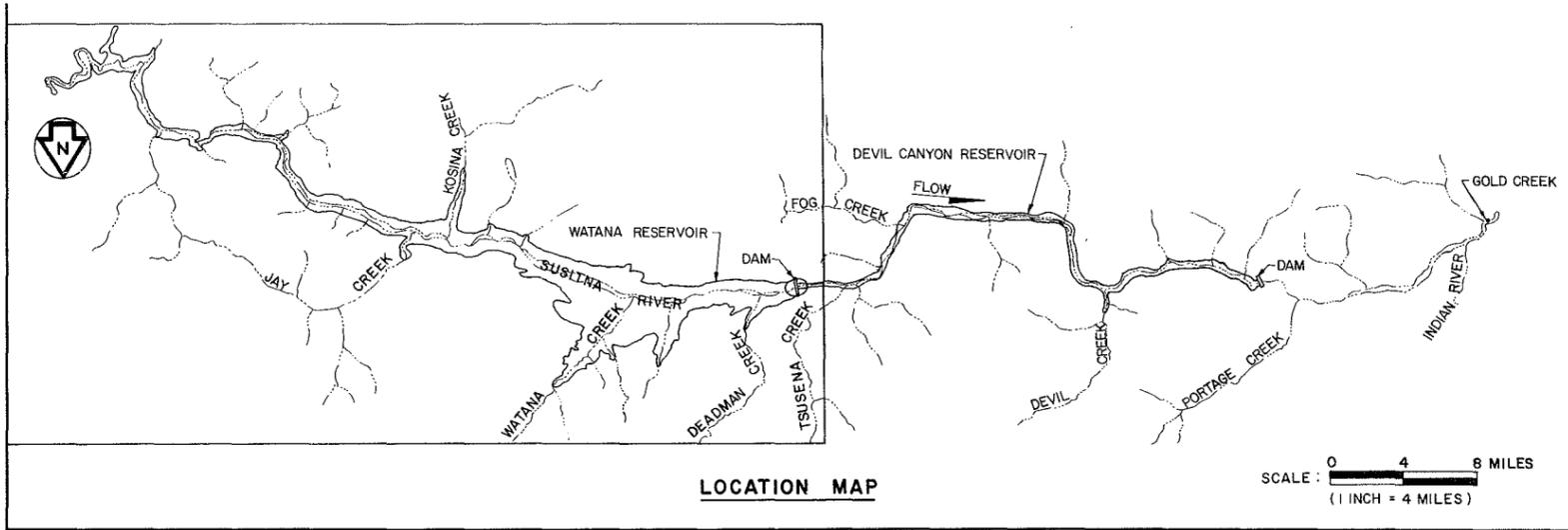
- PRIMARY PAVED UNDIVIDED HIGHWAY
- SECONDARY PAVED UNDIVIDED HIGHWAY
- SECONDARY GRAVEL HIGHWAY
- RAILROAD
- RIVER

SCALE 0 20 40 MILES (1 INCH = 20 MILES)

ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
RAILBELT AREA	
EXHIBIT F	PLATE F1



PLAN



LOCATION MAP

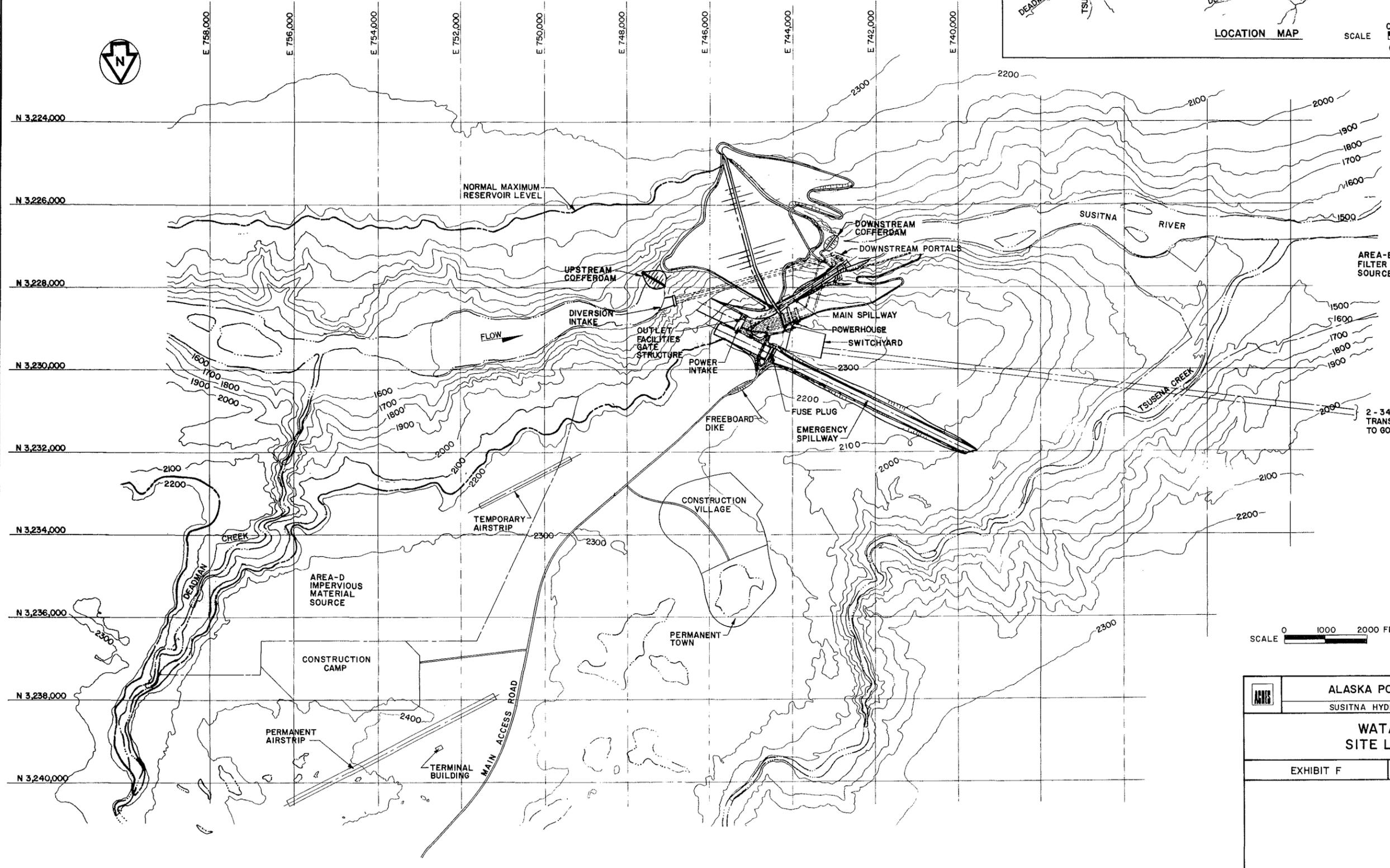
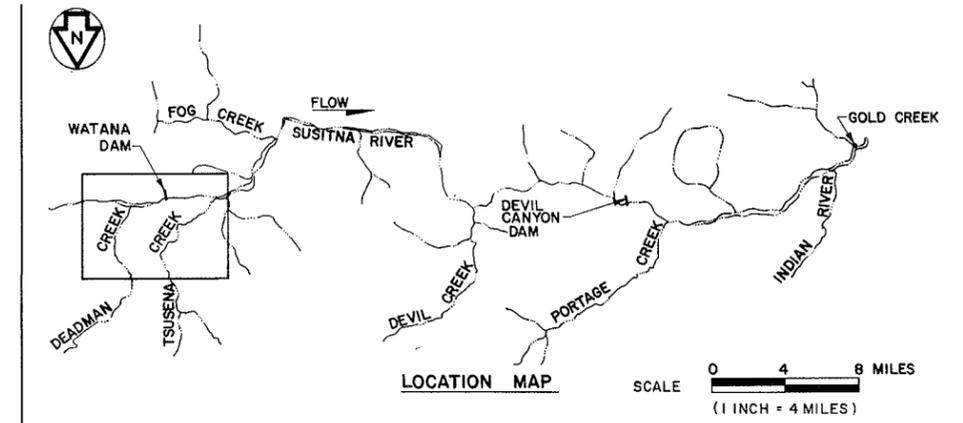
SCALE: 0 4 8 MILES
(1 INCH = 4 MILES)

LEGEND

-  NORMAL MAXIMUM OPERATING LEVEL EL. 2185'
-  2300 CONTOURS ARE IN FEET ABOVE MSL

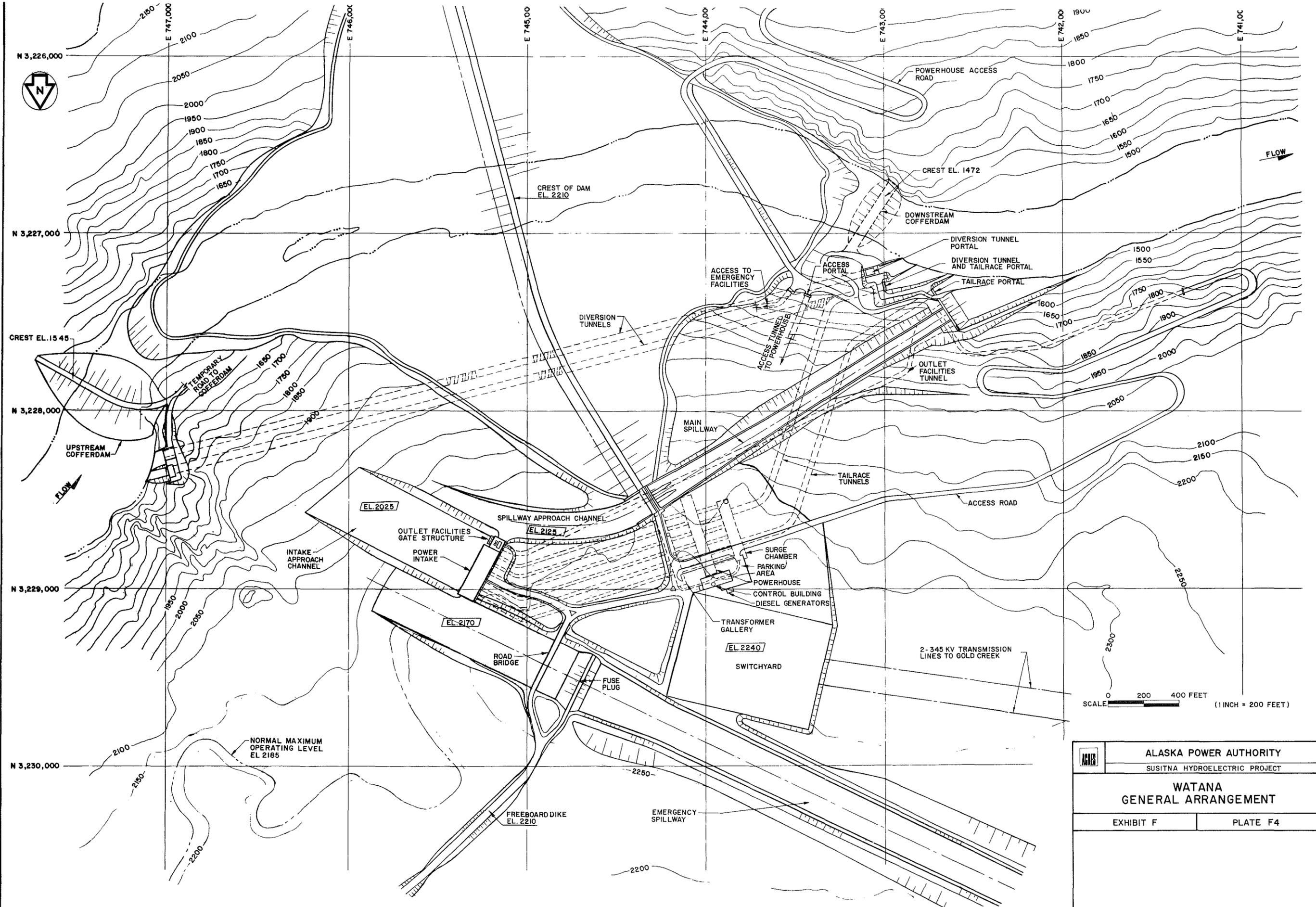
SCALE: 0 1 2 MILES
(1 INCH = 1 MILE)

	
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA RESERVOIR PLAN	
EXHIBIT F	PLATE F2

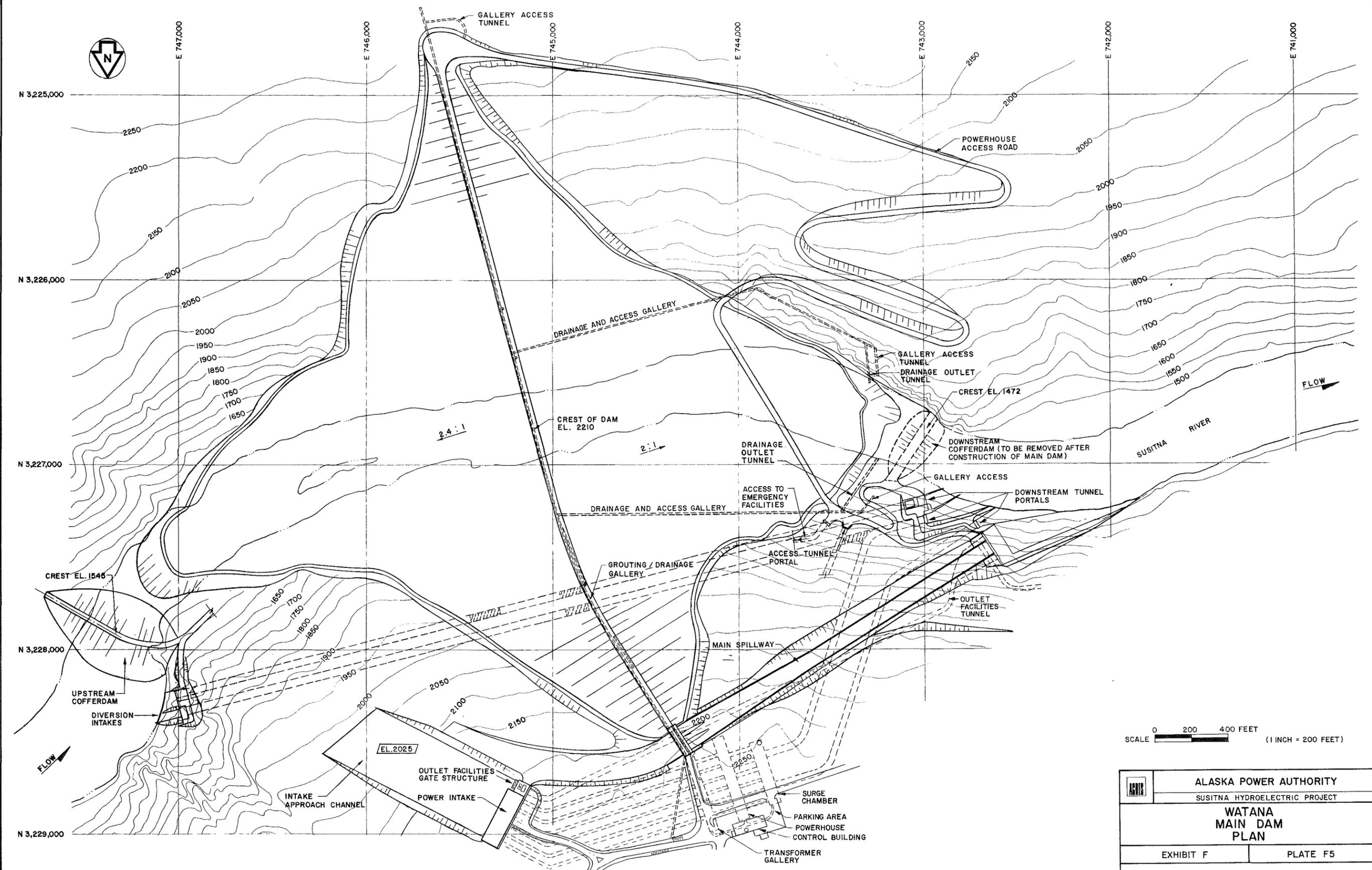


SCALE 0 1000 2000 FEET
(1 INCH = 1000 FEET)

APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA SITE LAYOUT		
EXHIBIT F	PLATE F3	

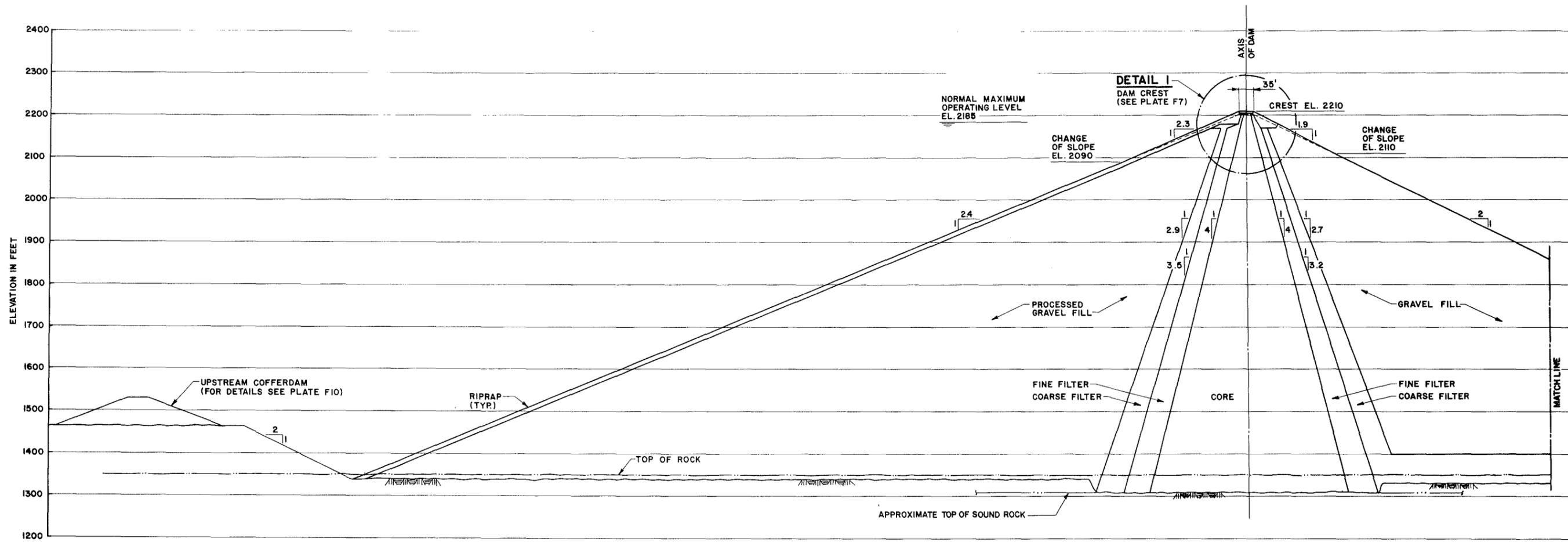


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL ARRANGEMENT		
EXHIBIT F	PLATE F4	

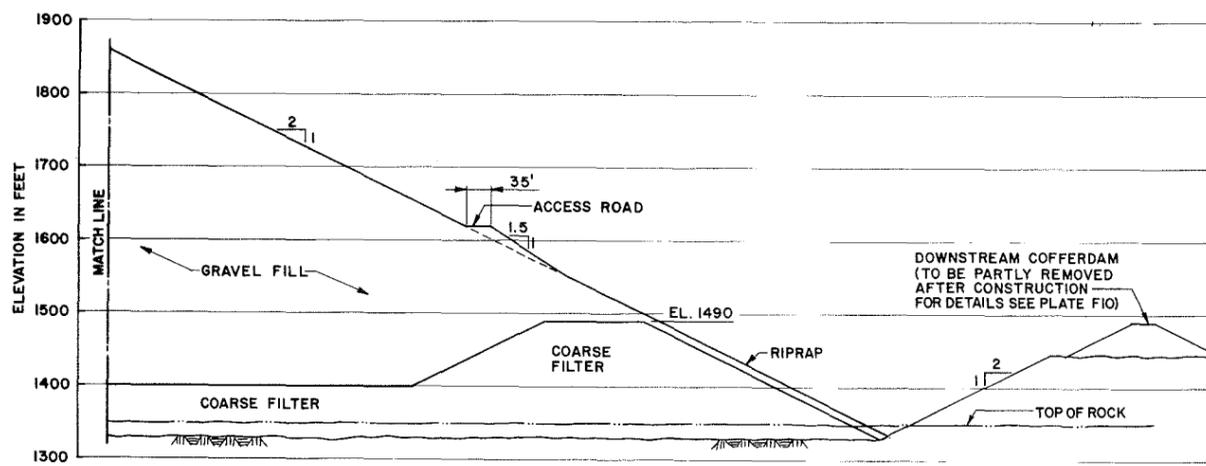


SCALE 0 200 400 FEET
(1 INCH = 200 FEET)

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM PLAN	
EXHIBIT F	PLATE F5



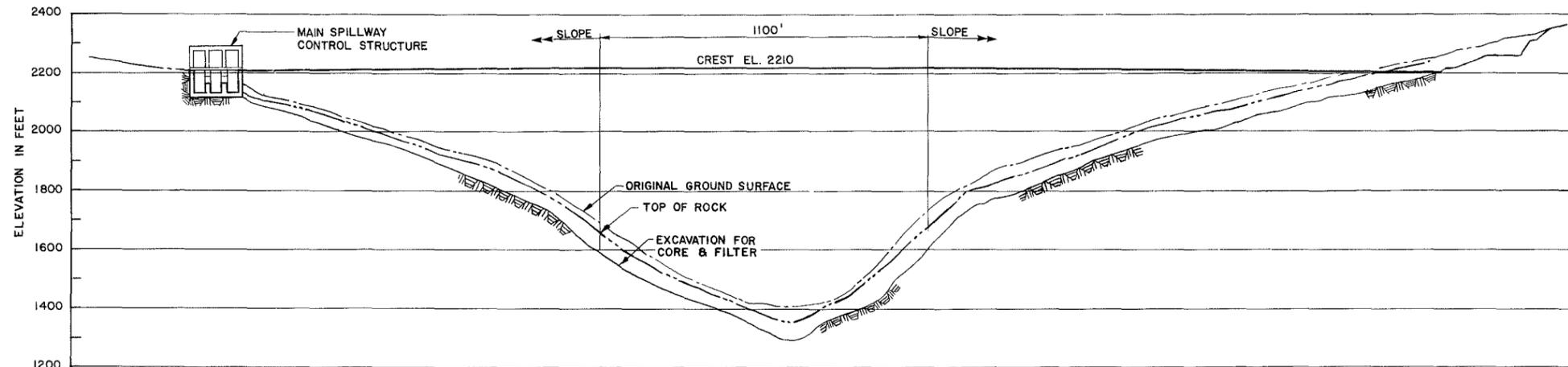
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT



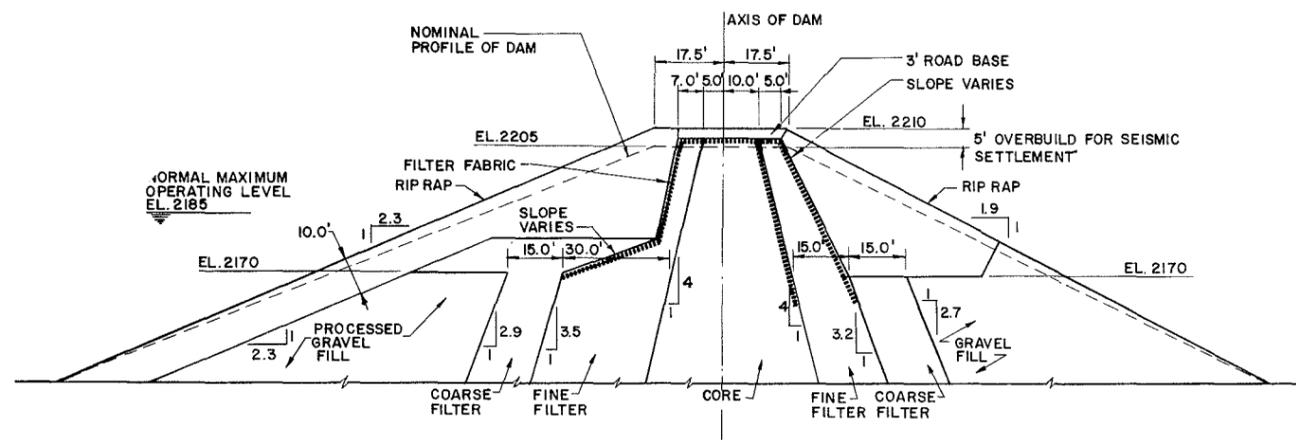
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT

SCALE 0 100 200 FEET (1 INCH = 100 FEET)

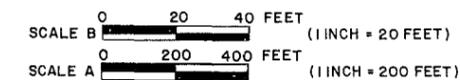
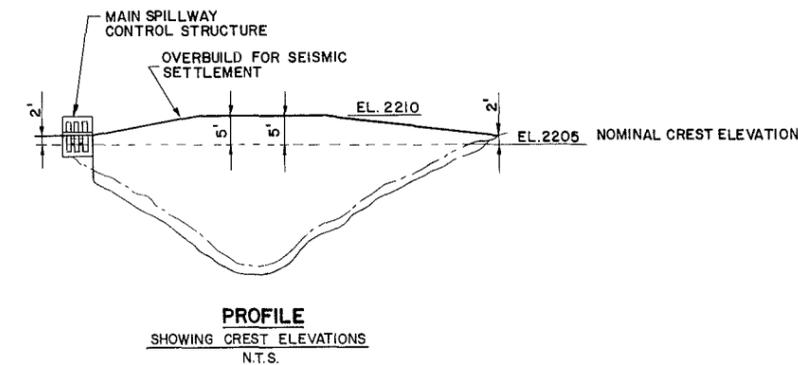
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM SECTION		
EXHIBIT F	PLATE F6	



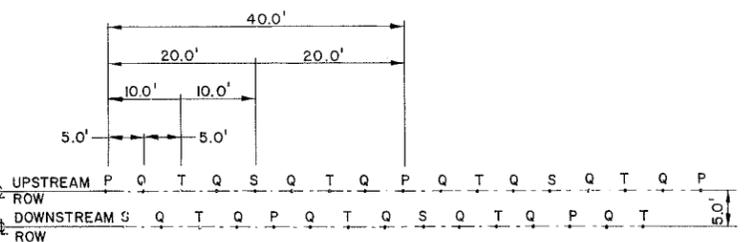
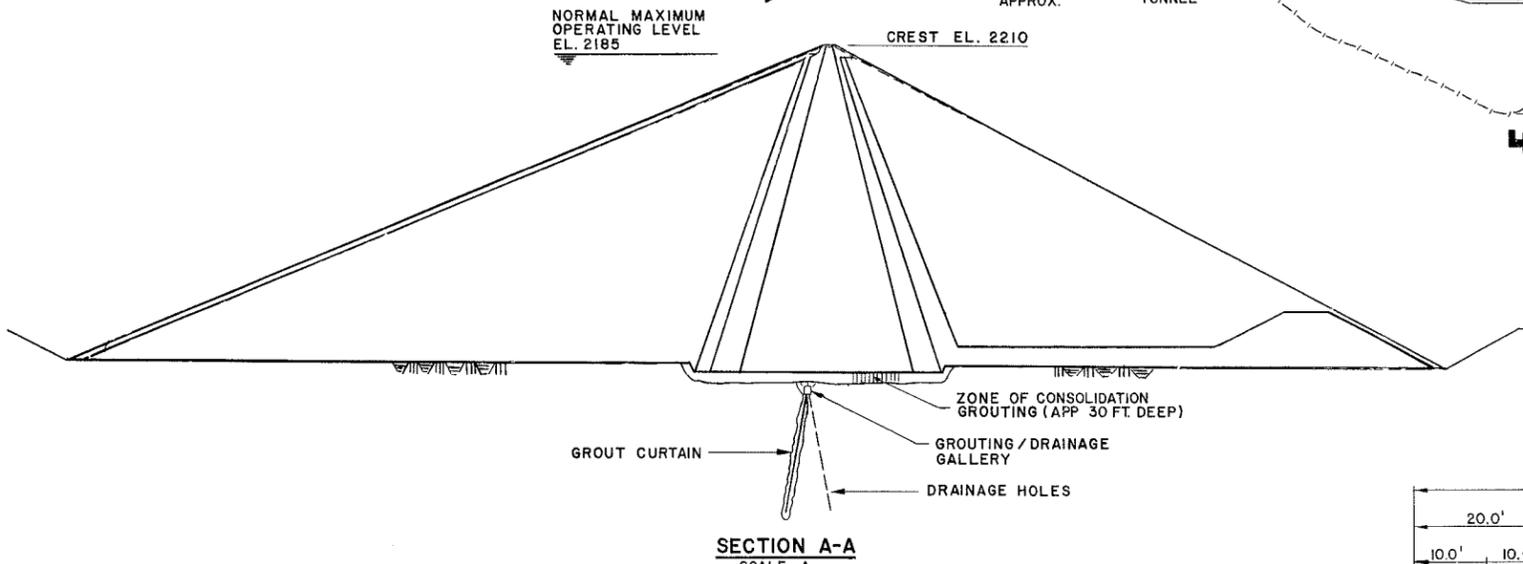
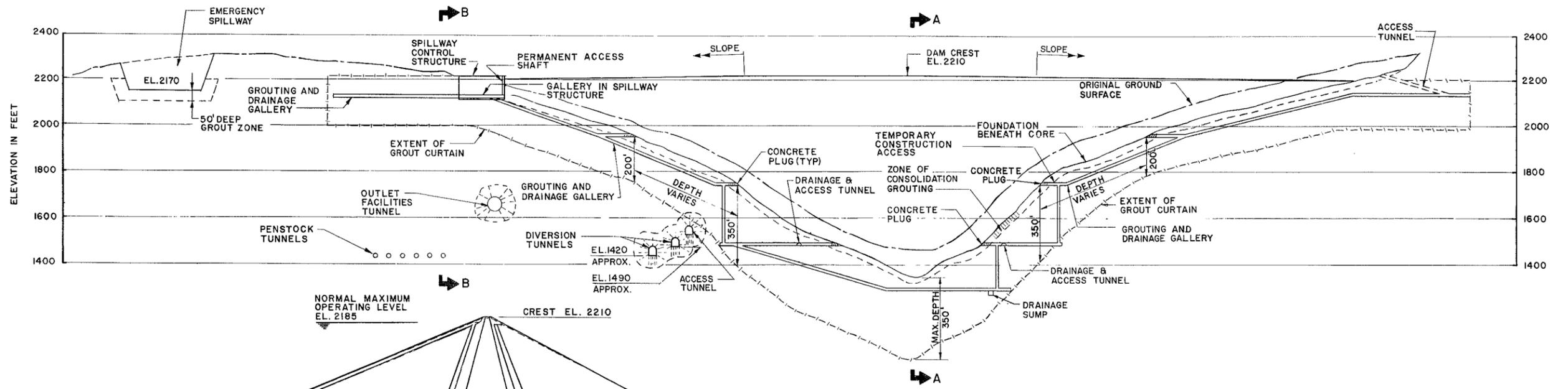
PROFILE (LOOKING UPSTREAM)
SCALE A



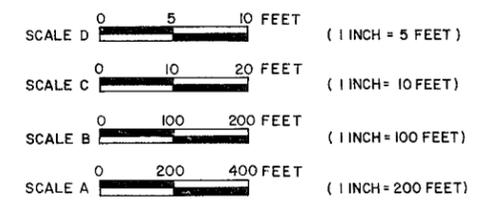
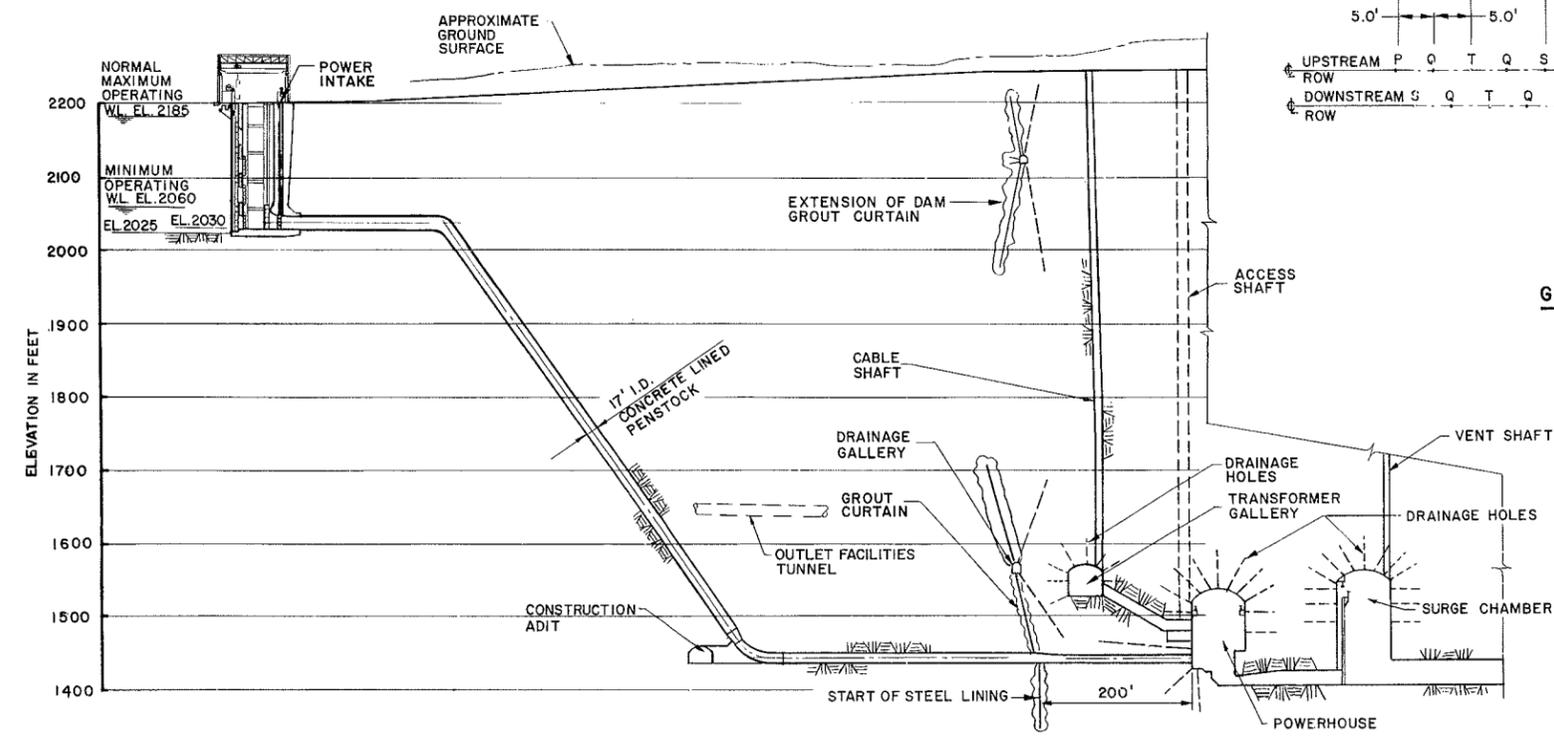
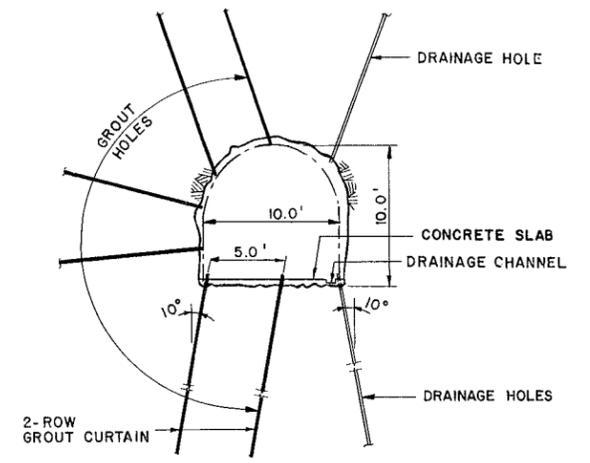
DETAIL I (PLATE F6)
SCALE B



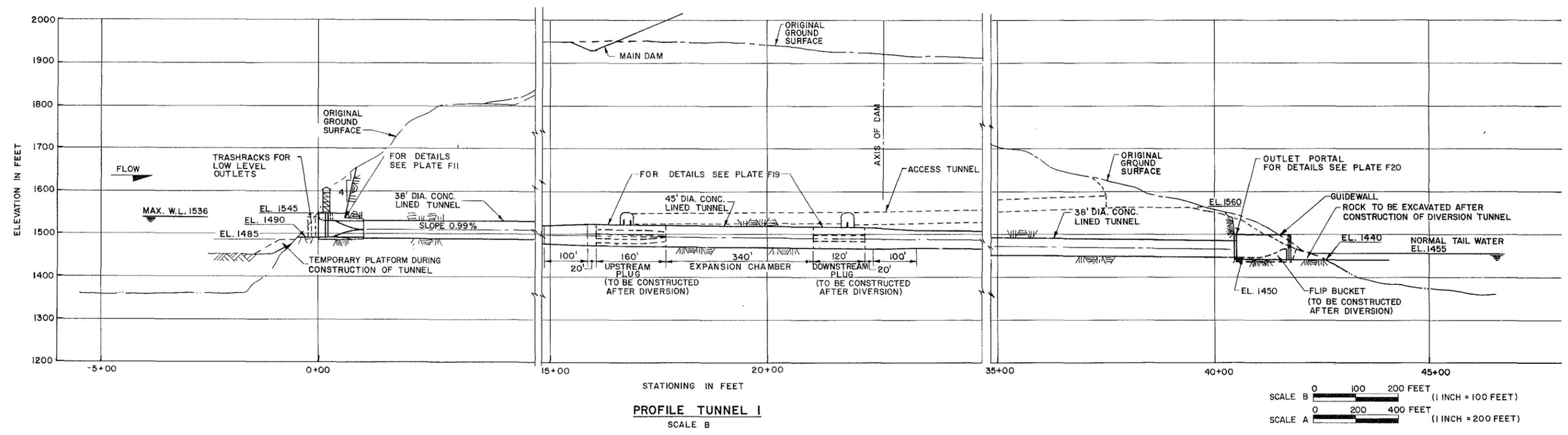
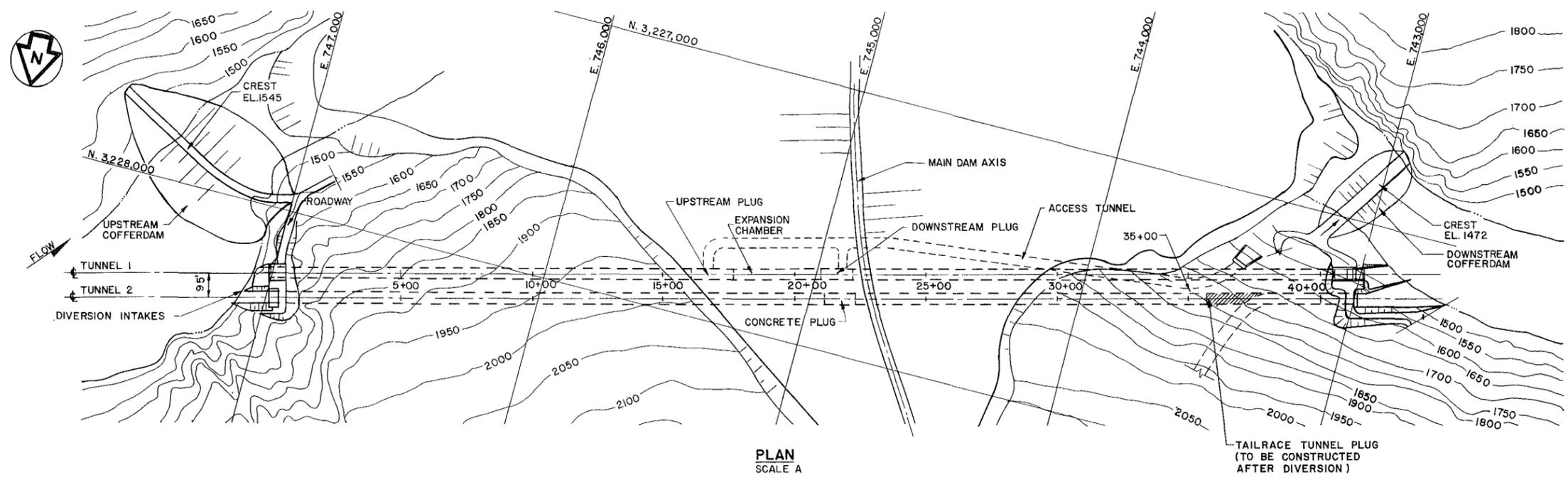
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM PROFILE AND DETAIL	
EXHIBIT F	PLATE F7



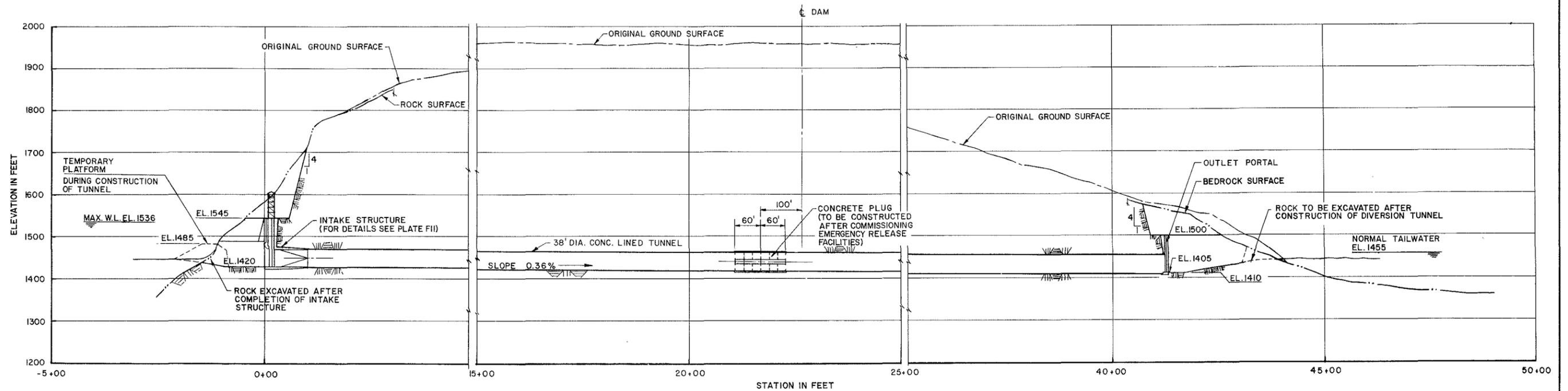
- P = PRIMARY GROUT HOLES
- S = SECONDARY " "
- T = TERTIARY " "
- Q = QUATERNARY " "



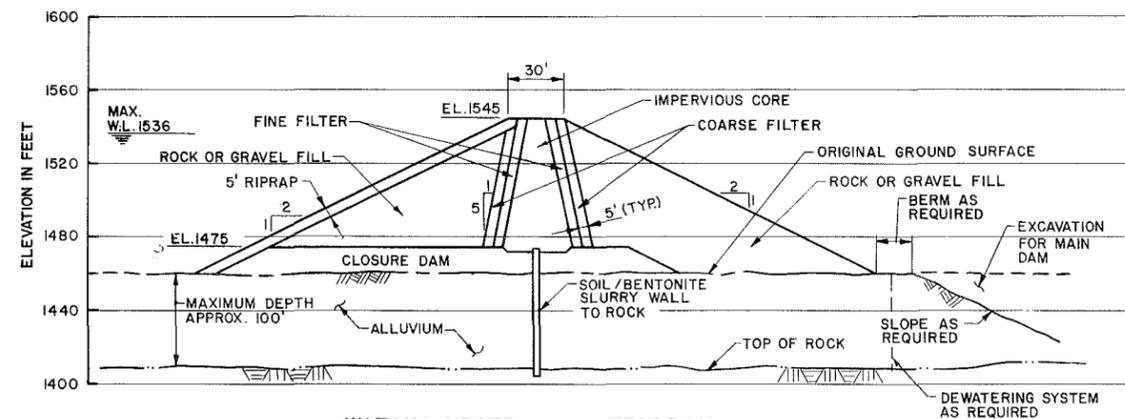
ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM GROUTING & DRAINAGE	
EXHIBIT F	PLATE F8



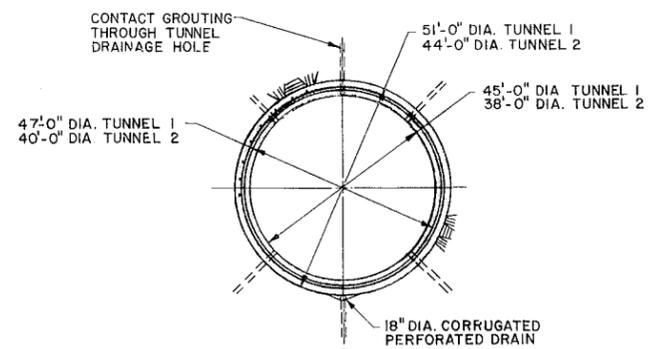
	
ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F9



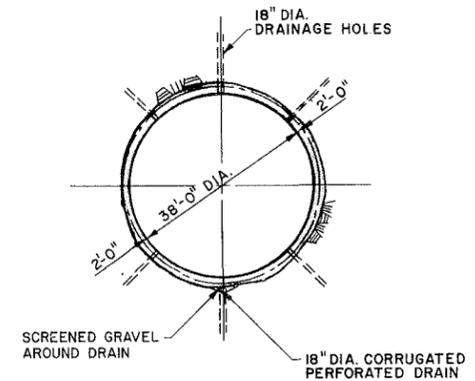
PROFILE - TUNNEL 2
SCALE A



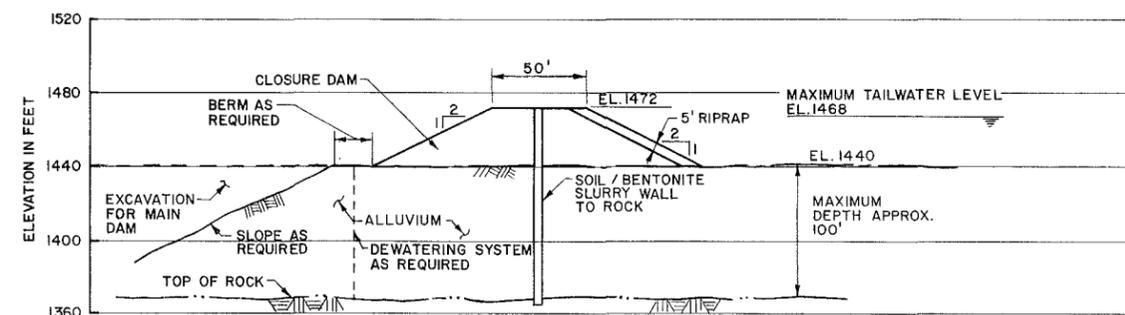
WATANA UPSTREAM COFFERDAM
SCALE B



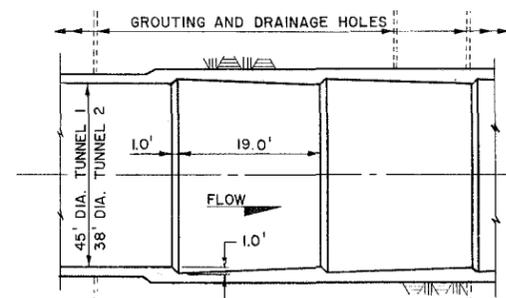
CROSS SECTION AT PLUG (TYPICAL)
N.T.S.



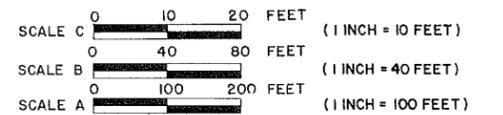
TYPICAL TUNNEL CROSS SECTION
N.T.S.



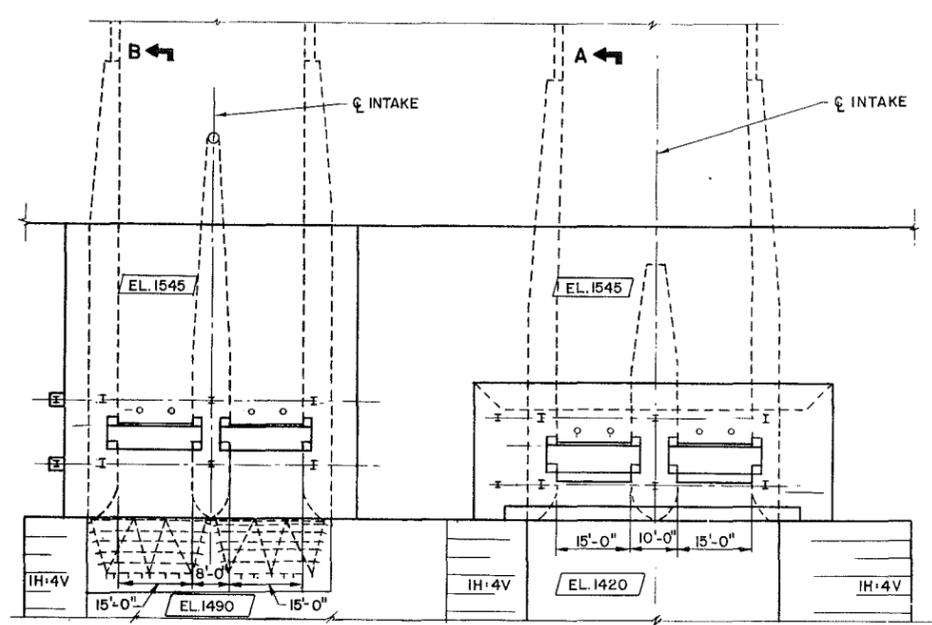
WATANA DOWNSTREAM COFFERDAM
SCALE B



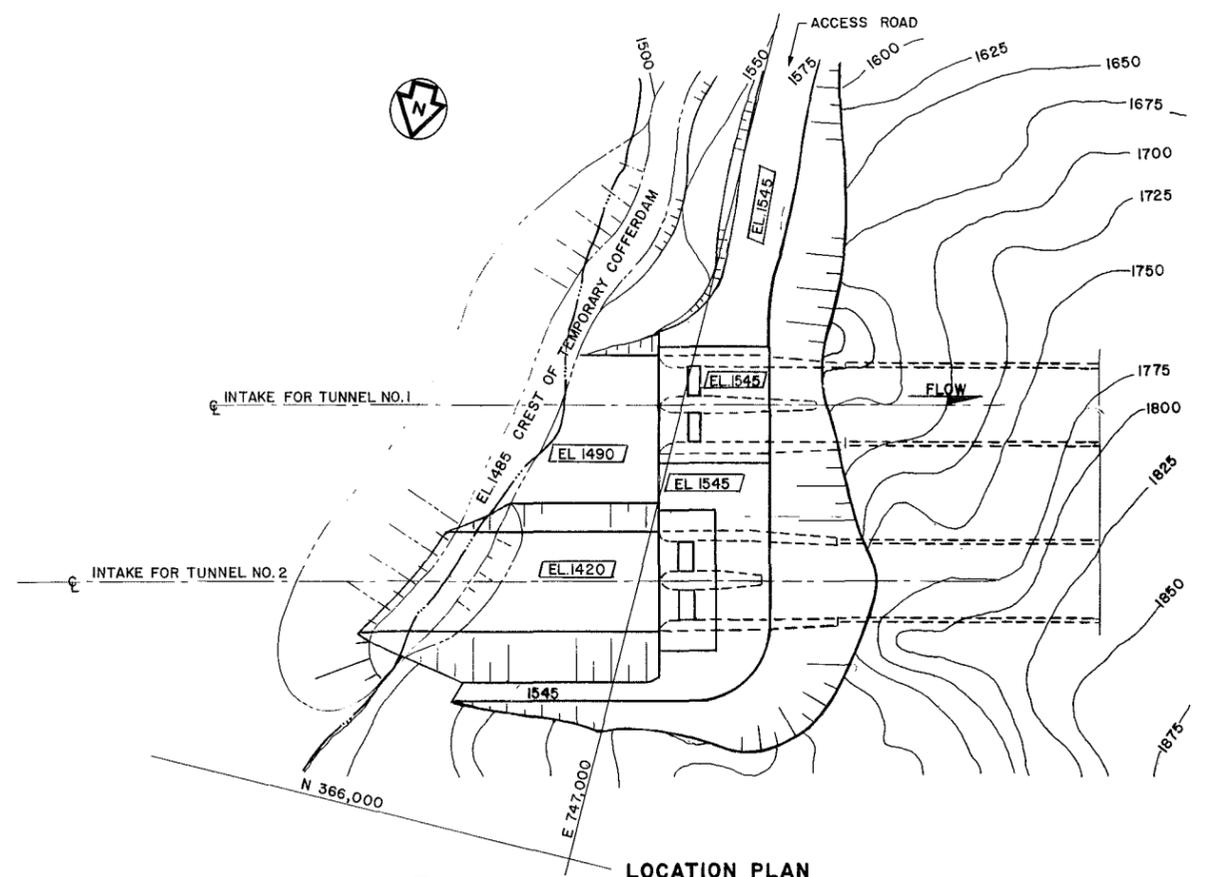
SECTION ALONG C OF TUNNEL AT PLUG LOCATION
SCALE C



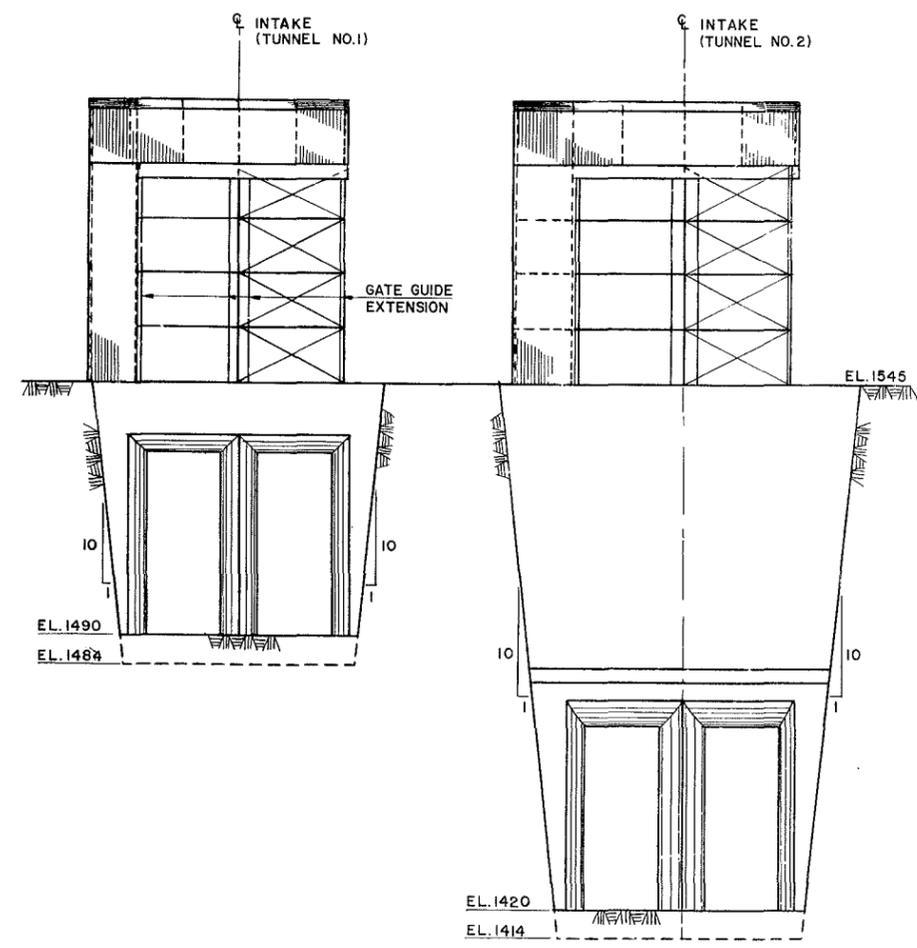
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION SECTIONS	
EXHIBIT F	PLATE F10



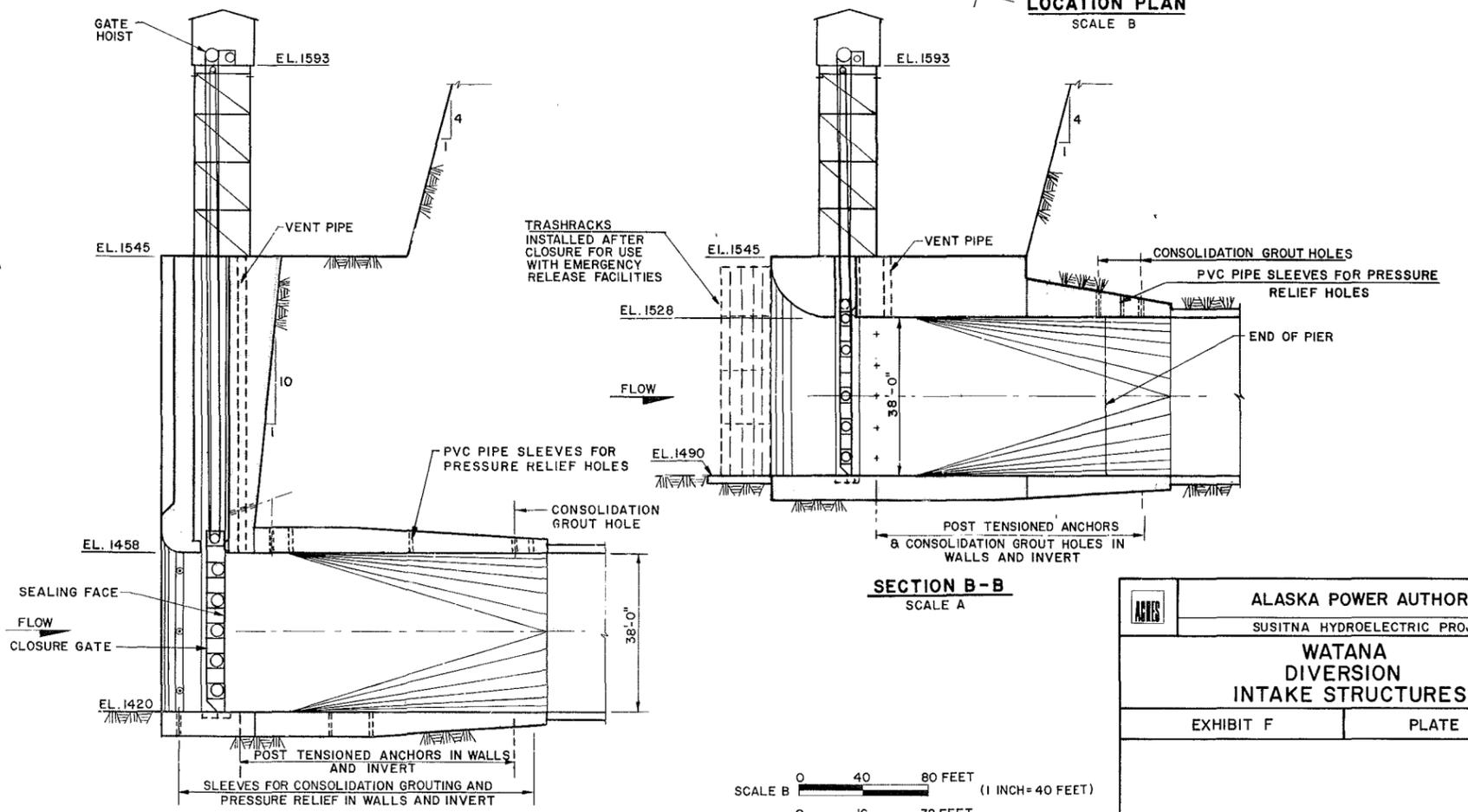
PLAN
AT EL. 1545
SCALE A



LOCATION PLAN
SCALE B

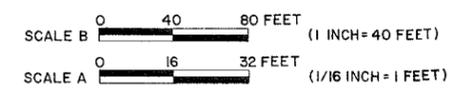


ELEVATION
SCALE A

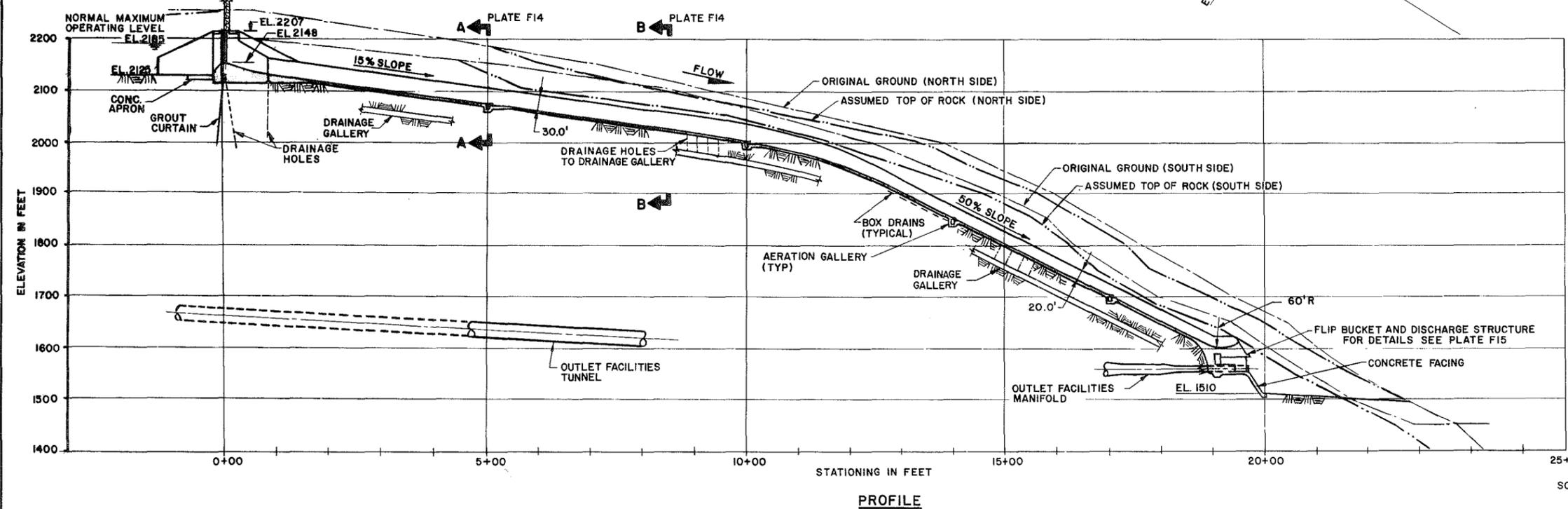
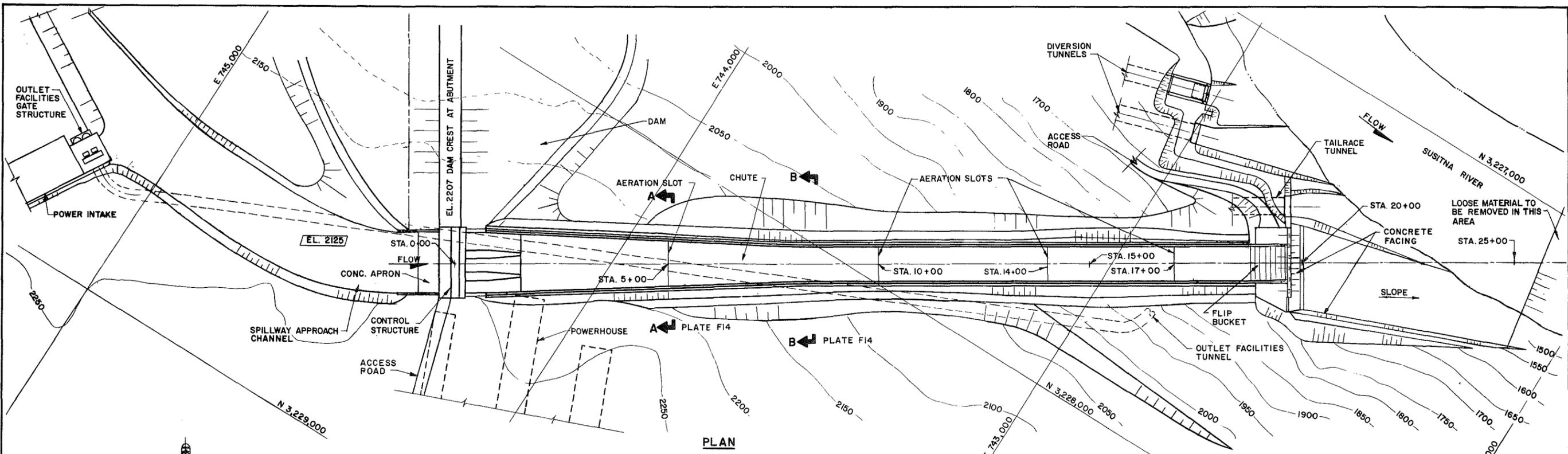


SECTION A-A
SCALE A

SECTION B-B
SCALE A



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION INTAKE STRUCTURES	
EXHIBIT F	PLATE F II



SCALE 0 100 200 FEET (1 INCH = 100 FEET)

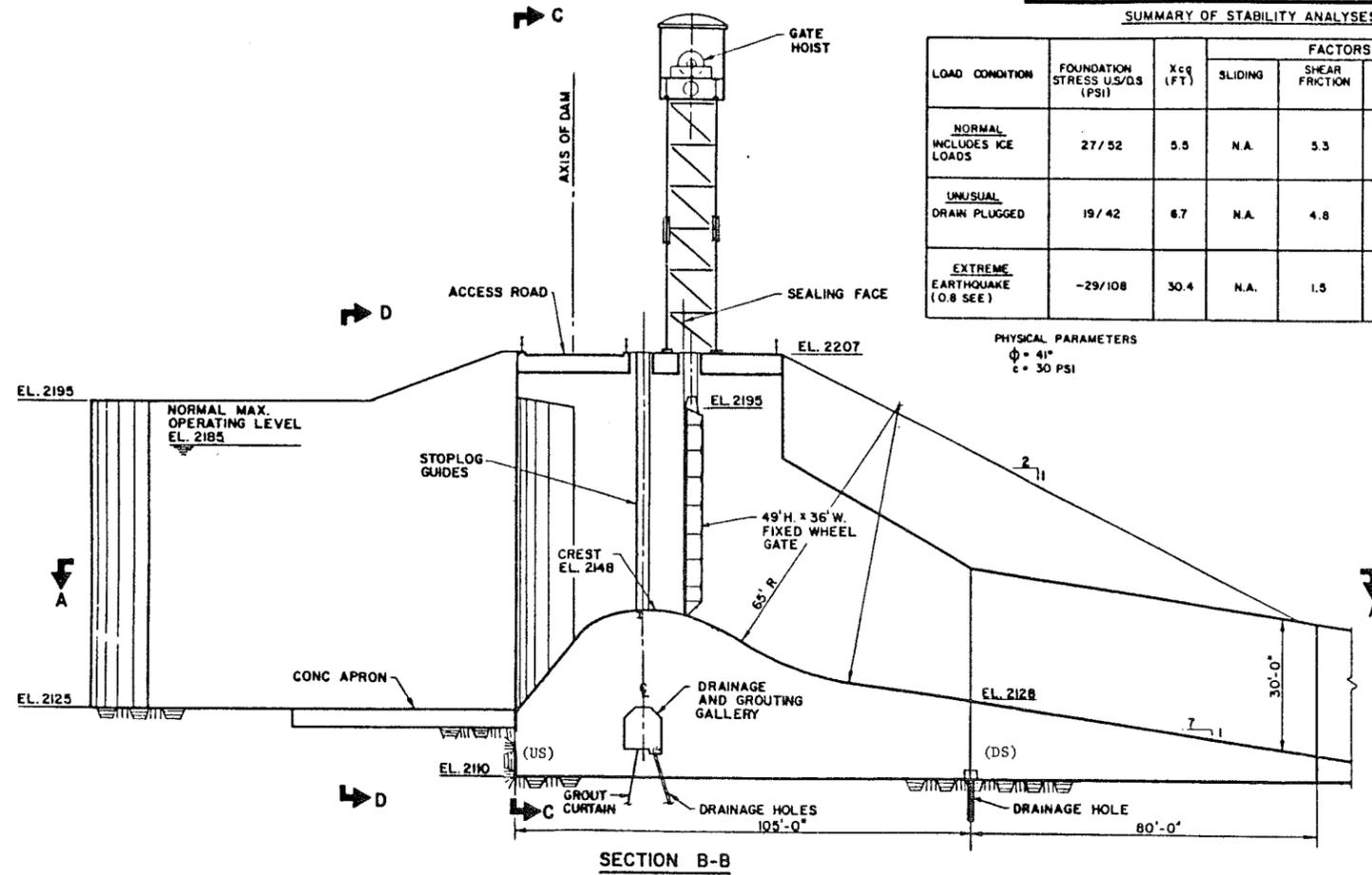
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F12

WATANA DAM SPILLWAY CONTROL STRUCTURE

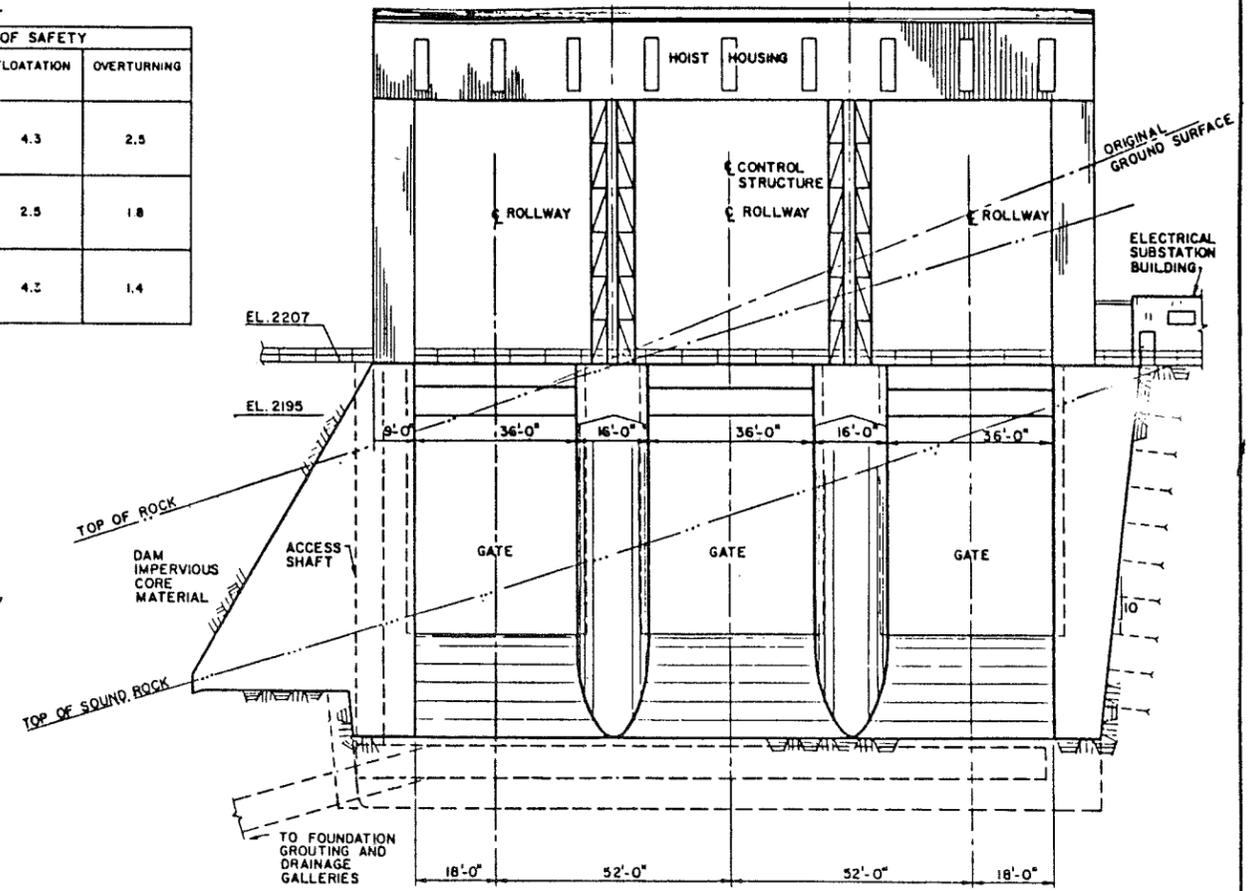
SUMMARY OF STABILITY ANALYSES

LOAD CONDITION	FOUNDATION STRESS US/D/S (PSI)	X _{CG} (FT)	FACTORS OF SAFETY			
			SLIDING	SHEAR FRICTION	FLOATATION	OVERTURNING
NORMAL INCLUDES ICE LOADS	27/52	5.5	N.A.	5.3	4.3	2.5
UNUSUAL DRAIN PLUGGED	19/42	6.7	N.A.	4.8	2.5	1.8
EXTREME EARTHQUAKE (0.8 SEE)	-29/108	30.4	N.A.	1.5	4.3	1.4

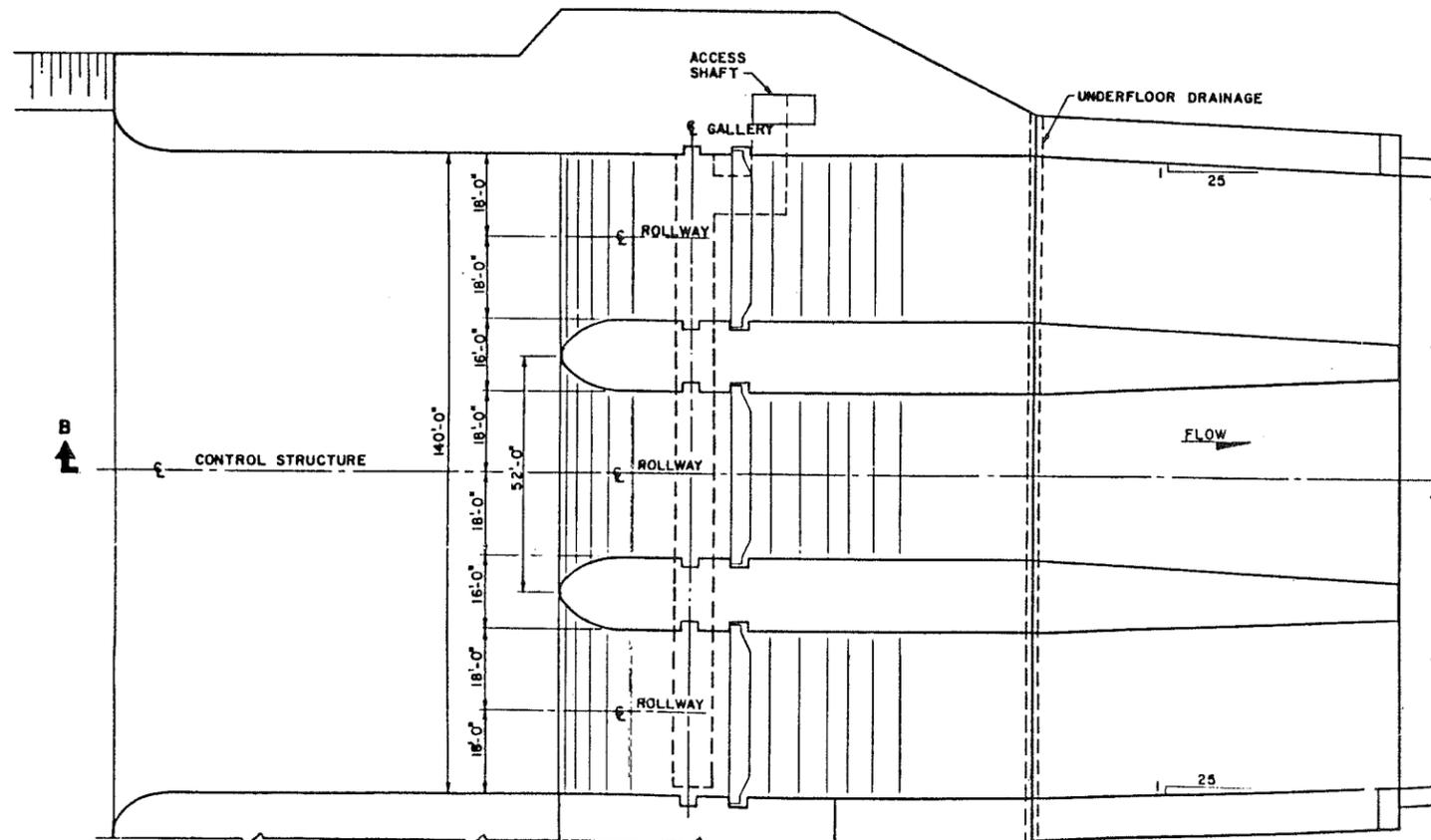
PHYSICAL PARAMETERS
 $\phi = 41^\circ$
 $c = 30 \text{ PSI}$



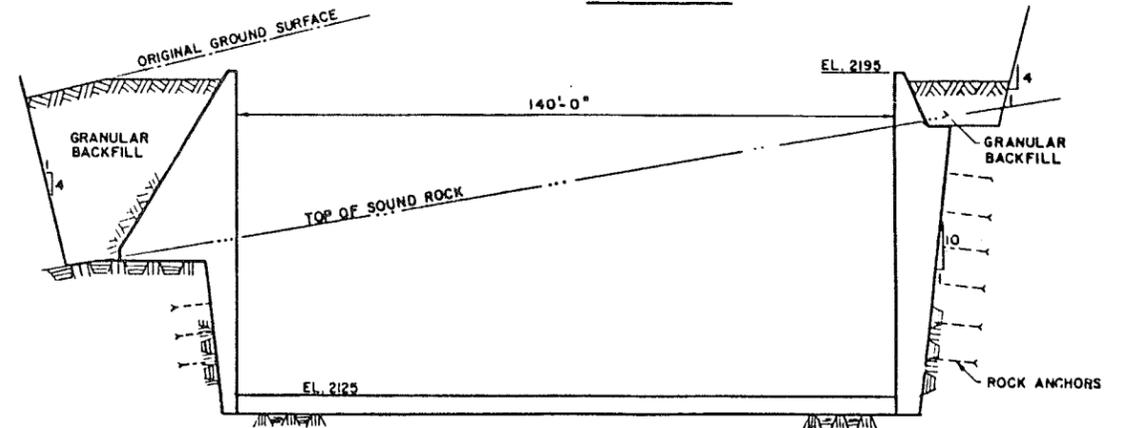
SECTION B-B



SECTION C-C



SECTION A-A

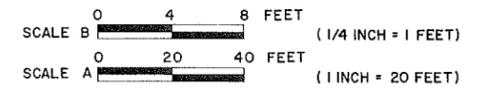
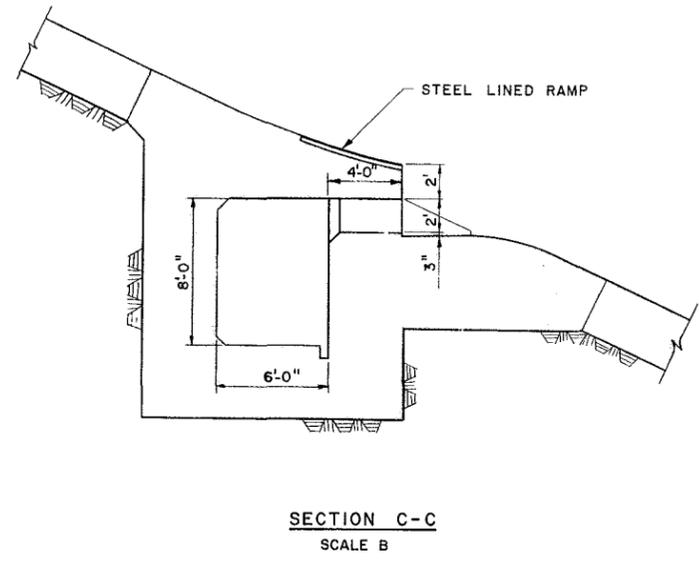
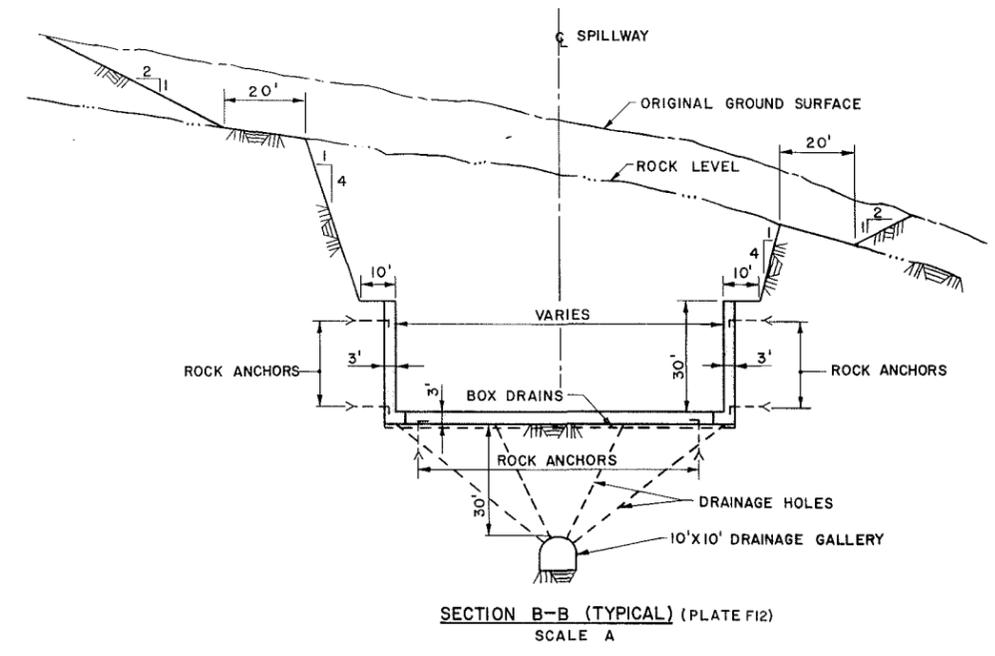
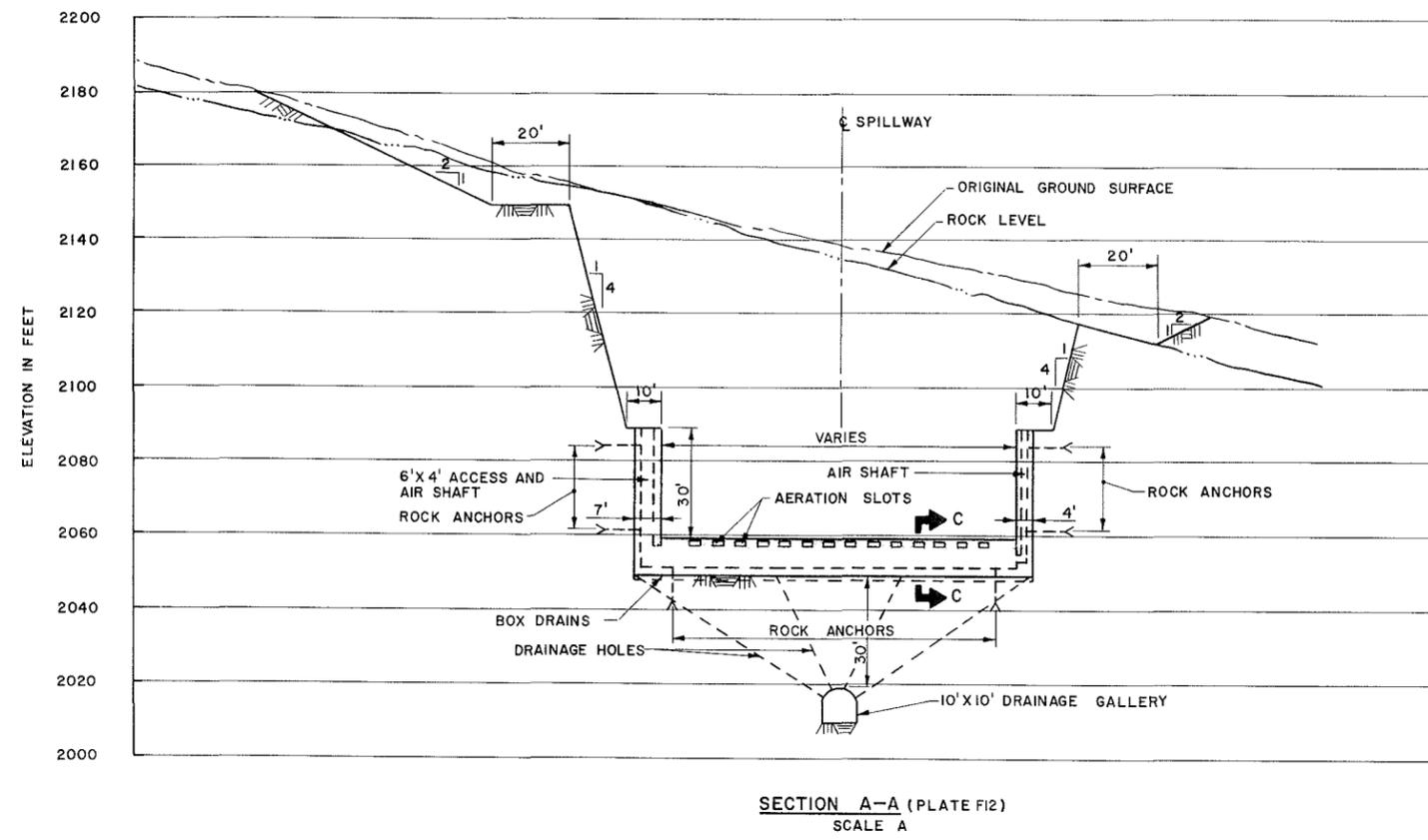


SECTION D-D

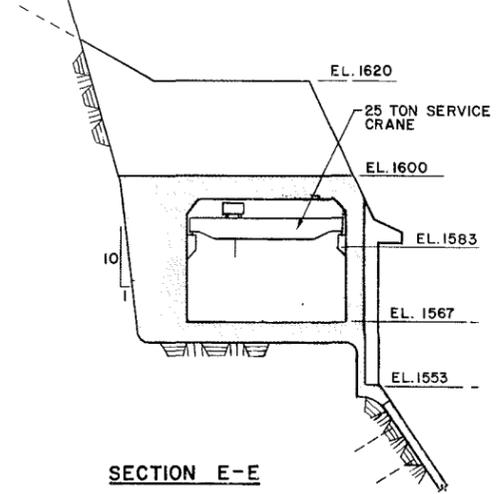
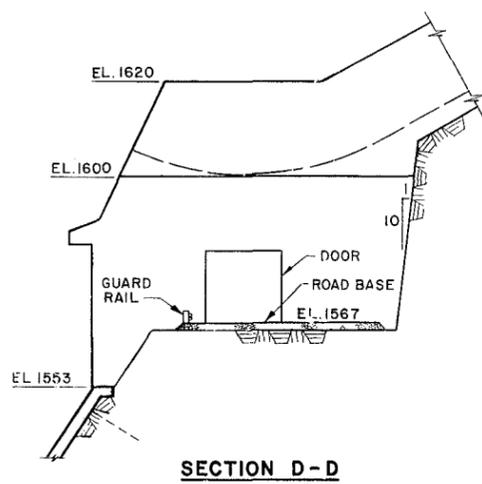
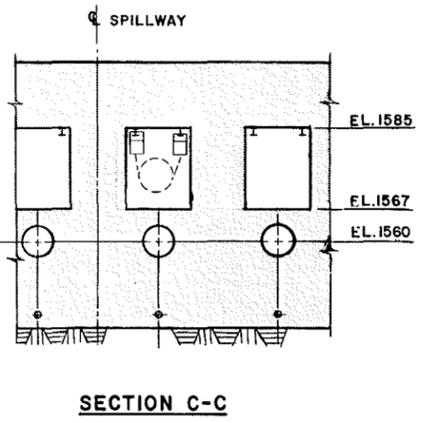
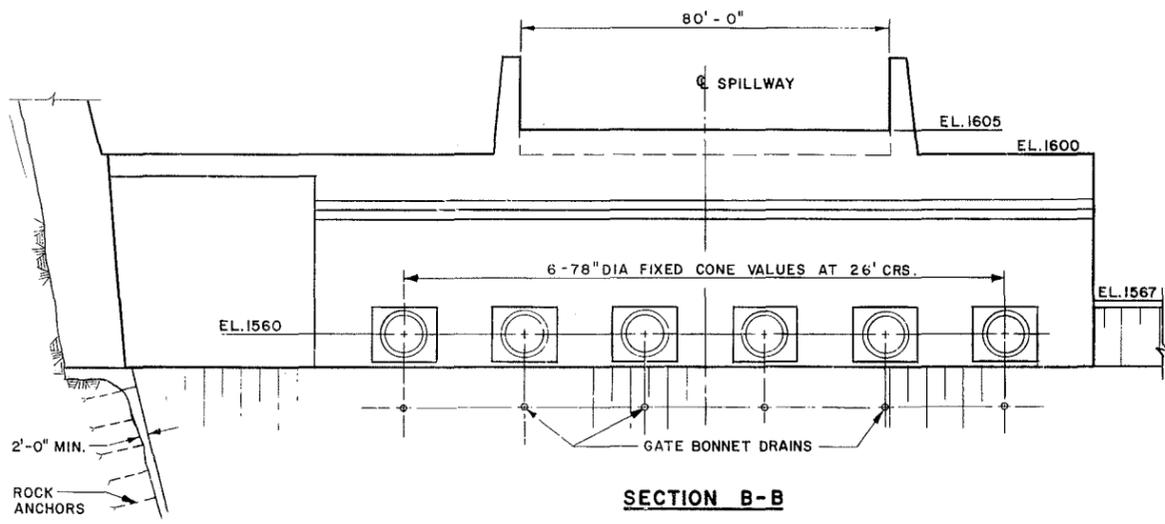
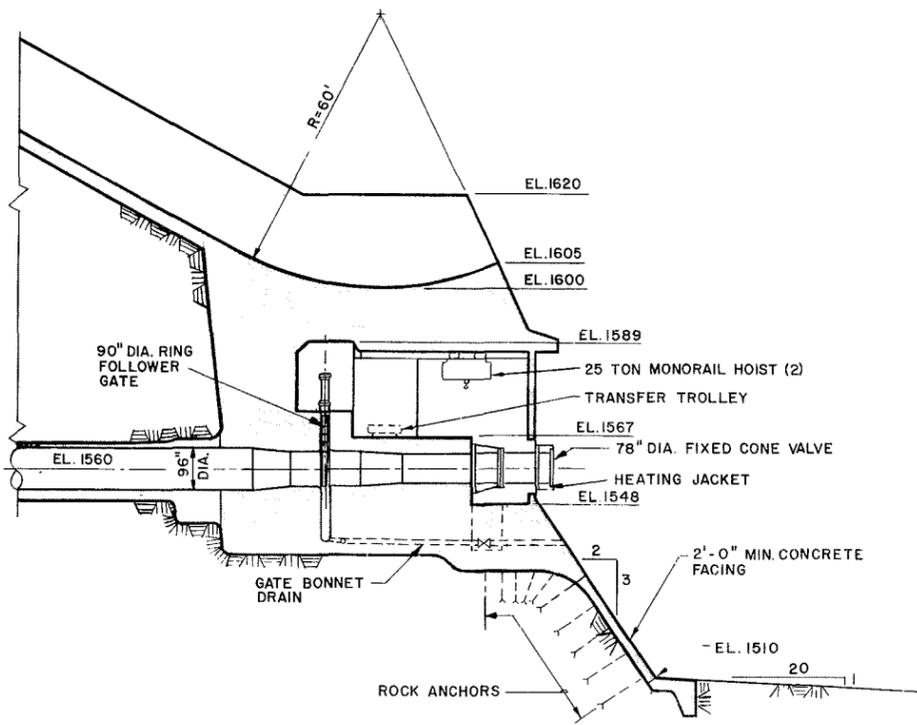
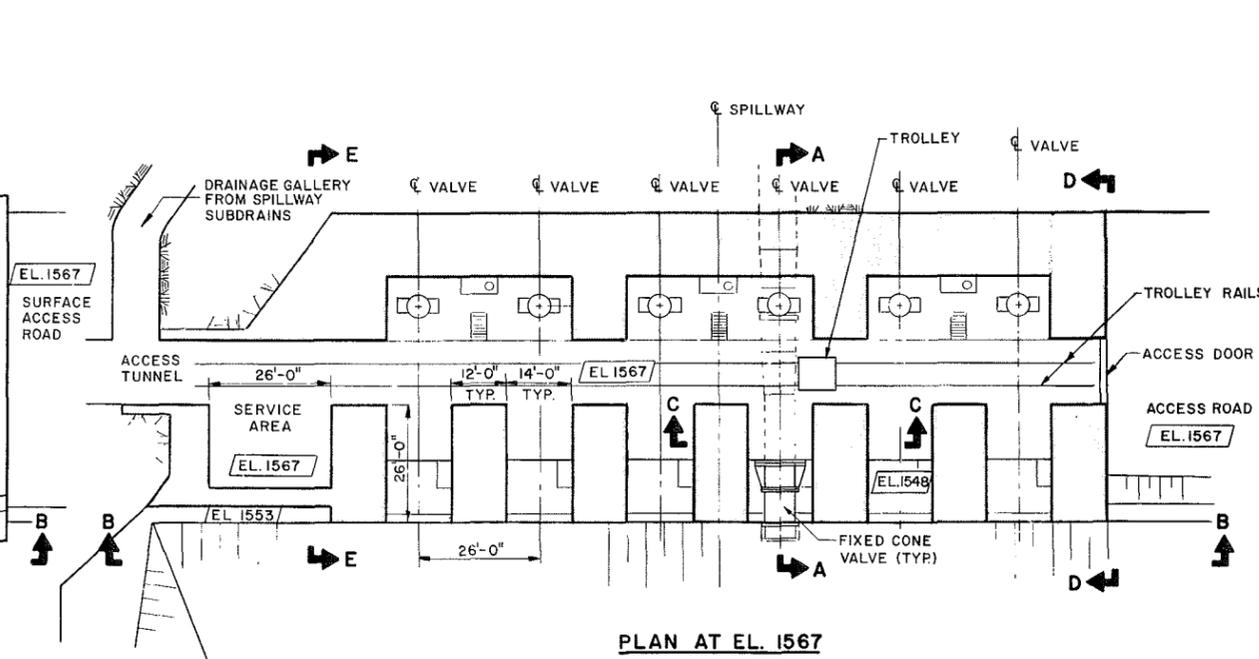
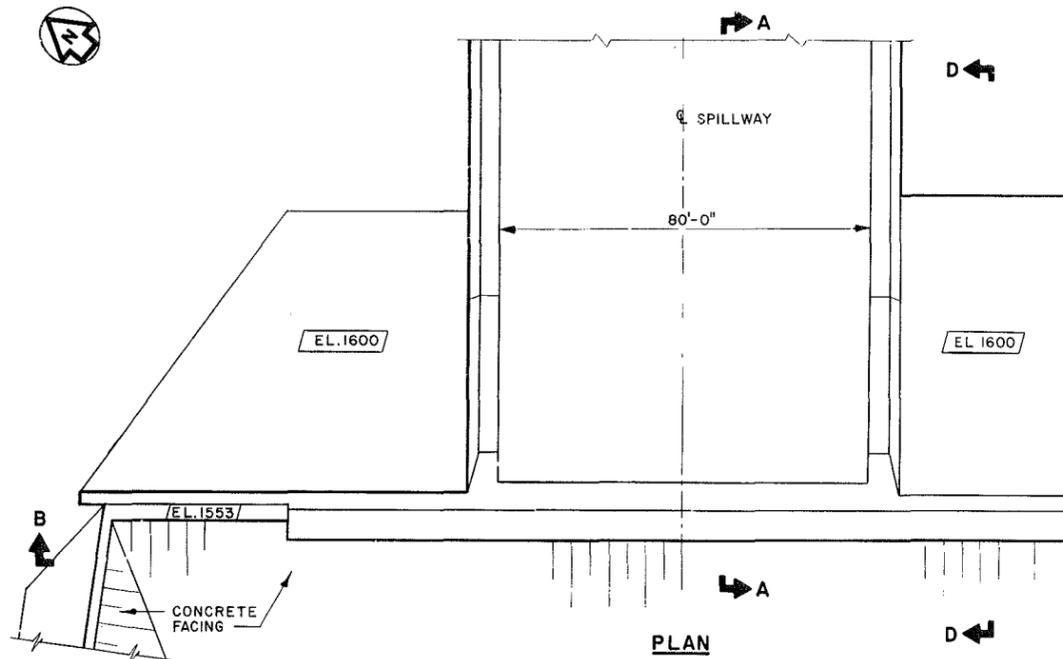
SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY CONTROL STRUCTURE	
EXHIBIT F	PLATE F13

PROJECT NO. 5700-CE-521
 DRAWING NO. 5700-CE-521
 SHEET NO. 1 OF 1
 DATE: 10/1/58
 DESIGNED BY: VE/58
 CHECKED BY: VE/58
 APPROVED BY: VE/58
 CONTRACT NO. 5700-CE-521
 PROJECT TITLE: SUSITNA HYDROELECTRIC PROJECT
 DRAWING TITLE: WATANA MAIN SPILLWAY CONTROL STRUCTURE
 SHEET NO.: 1 OF 1
 DATE: 10/1/58
 SCALE: AS SHOWN
 DRAWN BY: VE/58
 CHECKED BY: VE/58
 APPROVED BY: VE/58

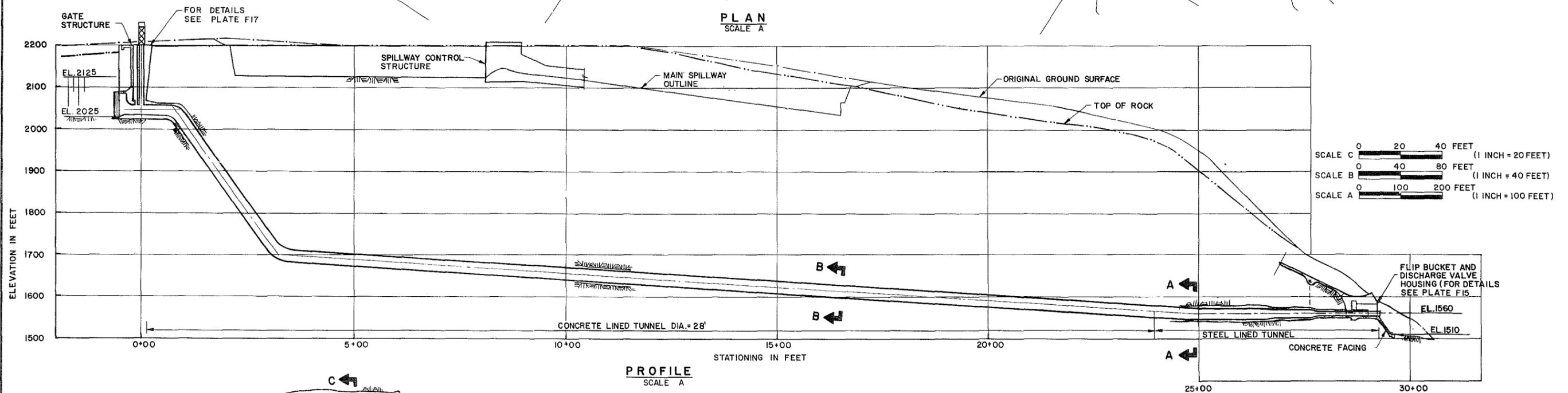
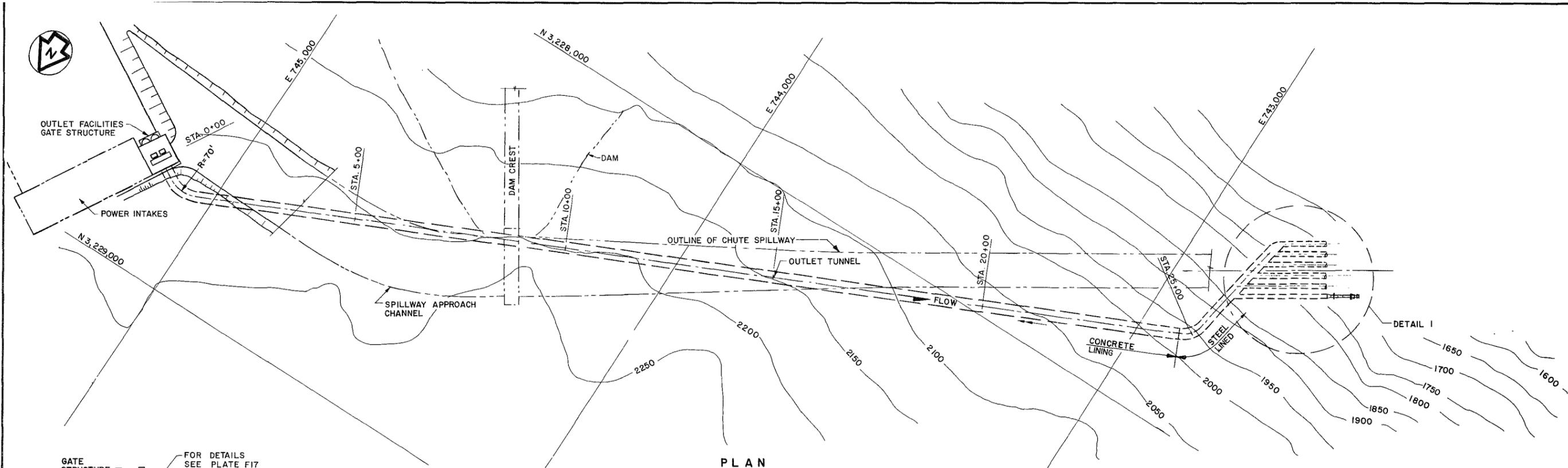


	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
WATANA MAIN SPILLWAY CHUTE SECTIONS	
EXHIBIT F	PLATE F14

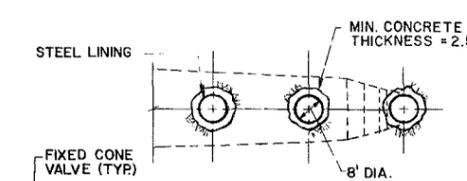
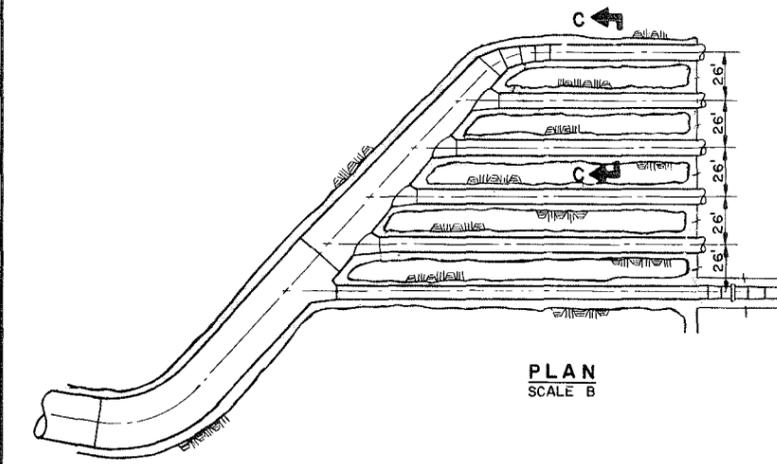


SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

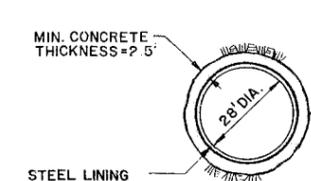
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY FLIP BUCKET	
EXHIBIT F	PLATE F15



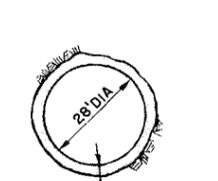
SCALE C 0 20 40 FEET (1 INCH = 20 FEET)
 SCALE B 0 40 80 FEET (1 INCH = 40 FEET)
 SCALE A 0 100 200 FEET (1 INCH = 100 FEET)



SECTION C-C
SCALE C



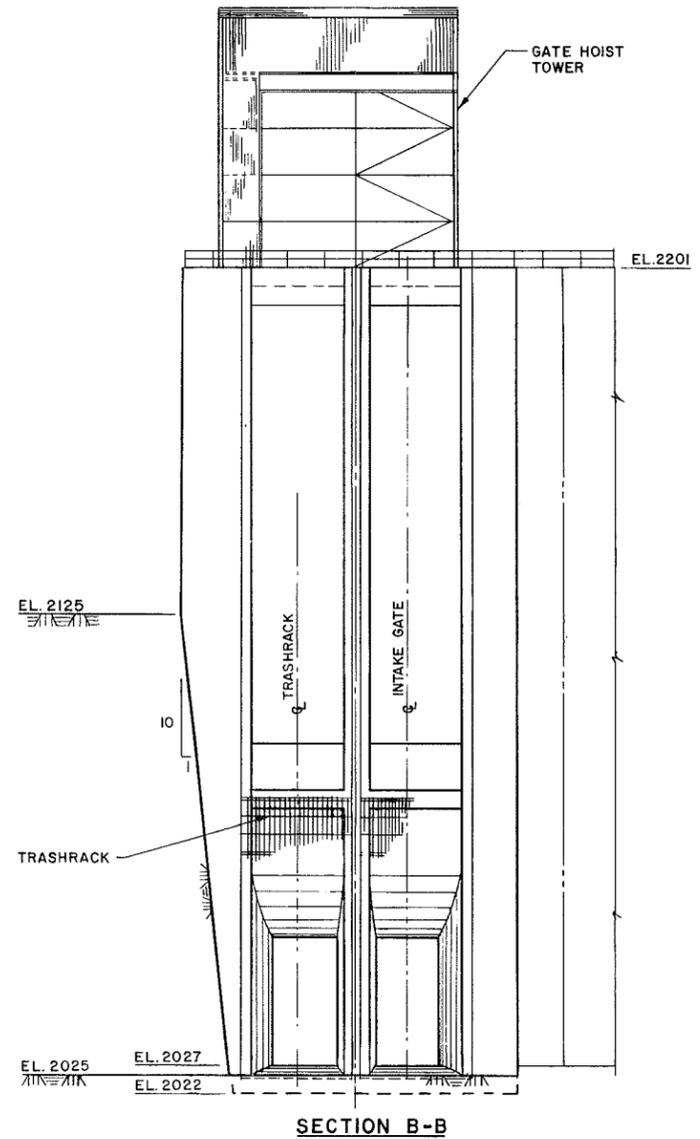
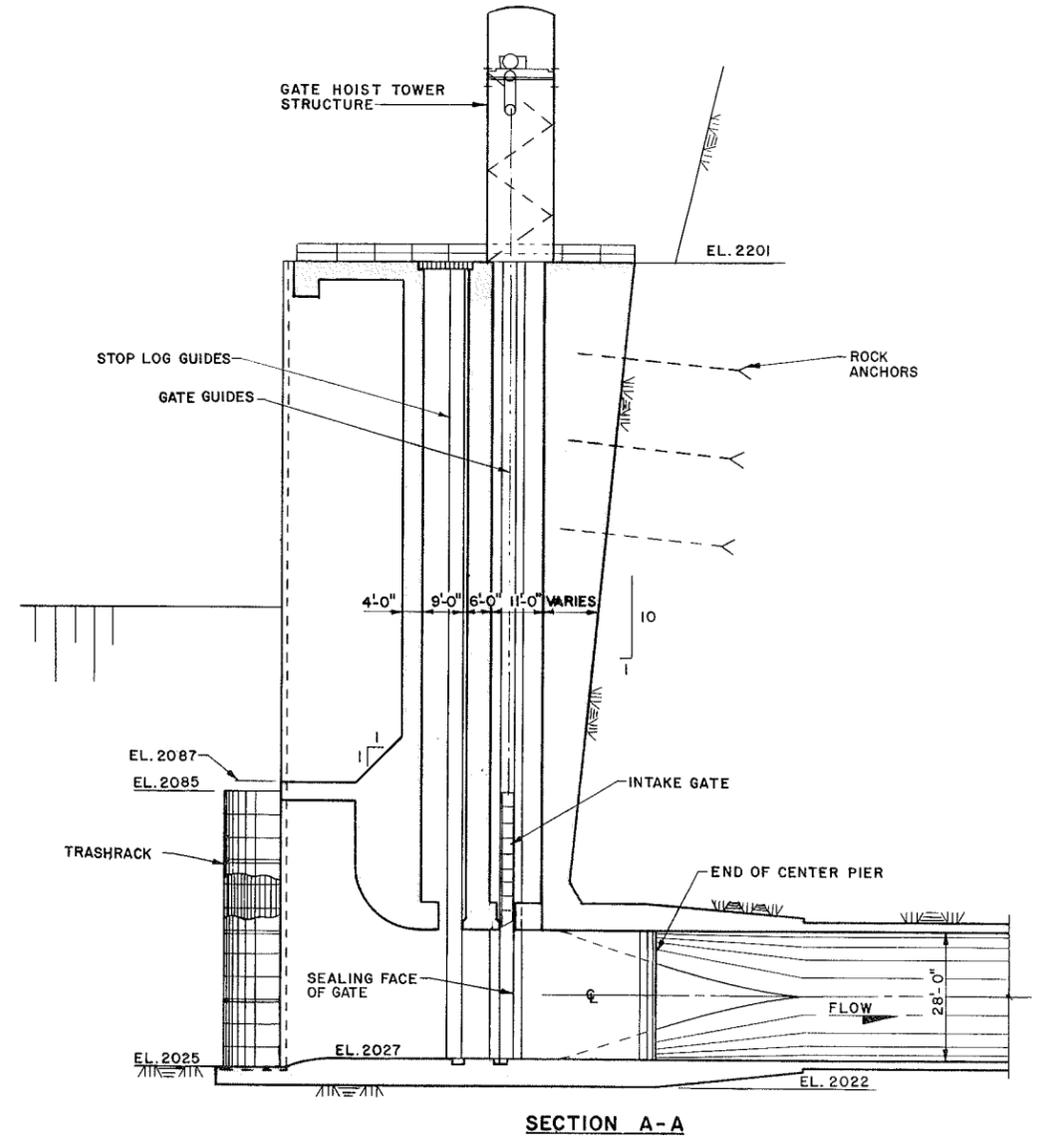
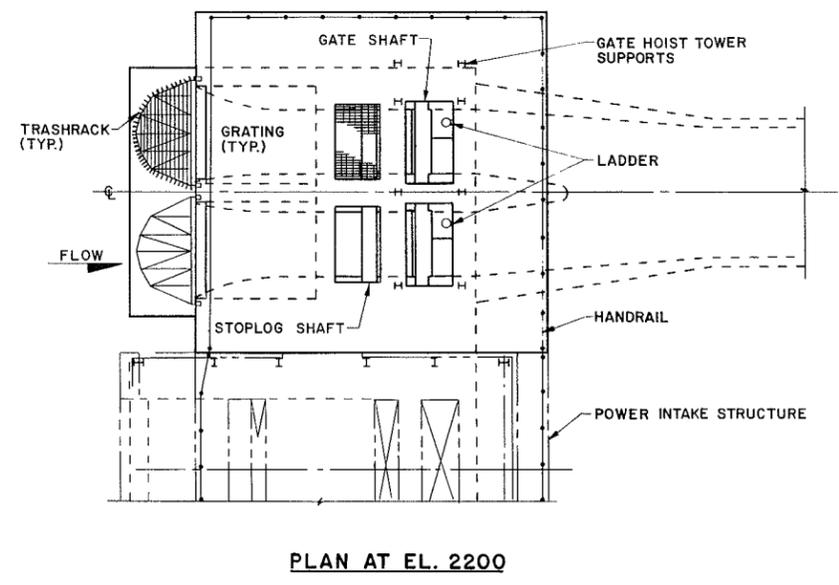
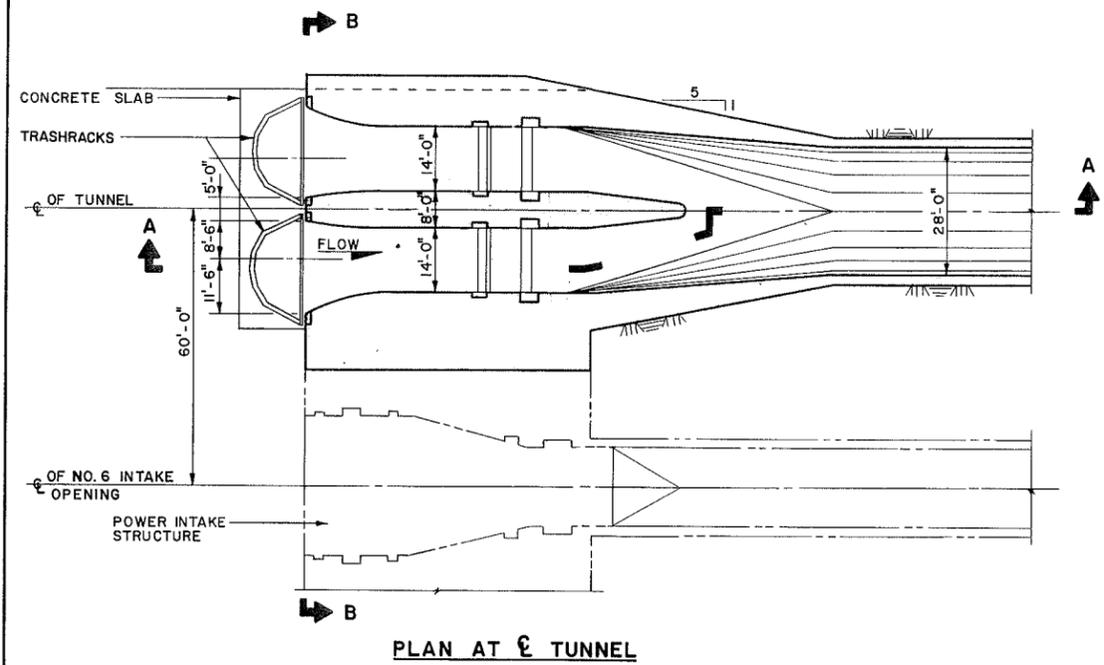
SECTION A-A
SCALE C



SECTION B-B
SCALE C

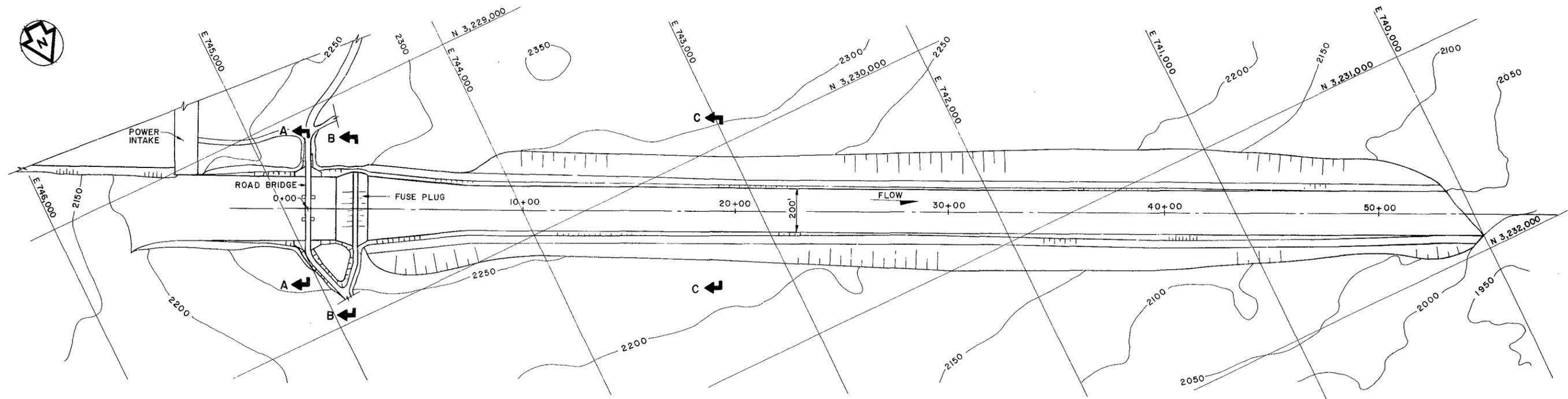
DETAIL I
STEEL MANIFOLD

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA OUTLET FACILITIES GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F16

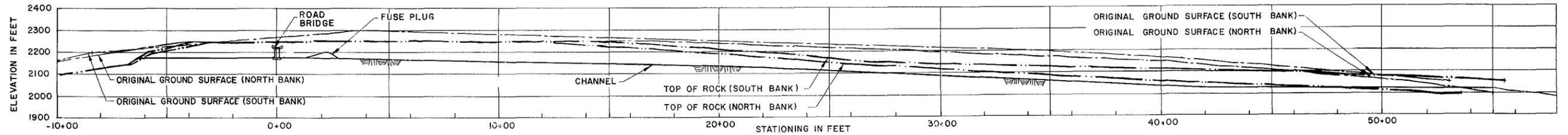


SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

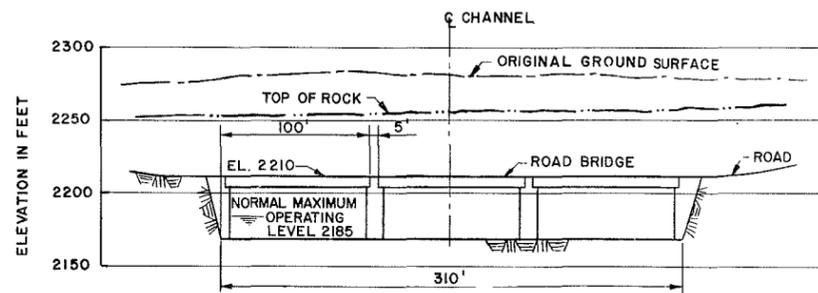
ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA OUTLET FACILITIES GATE STRUCTURE	
EXHIBIT F	PLATE F17



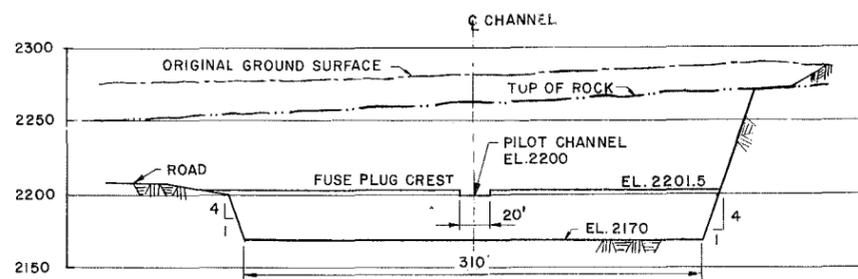
PLAN
SCALE A



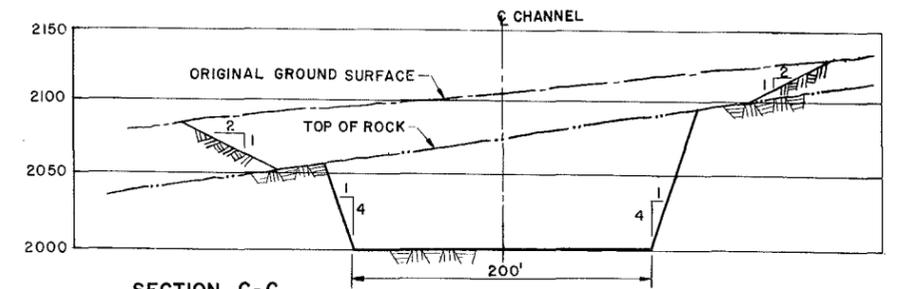
PROFILE
SCALE A



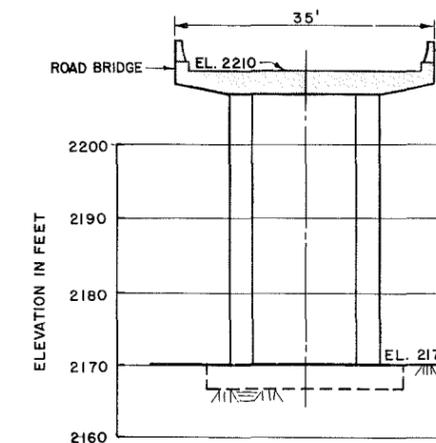
SECTION A-A
SCALE B



SECTION B-B FUSE PLUG
SCALE B

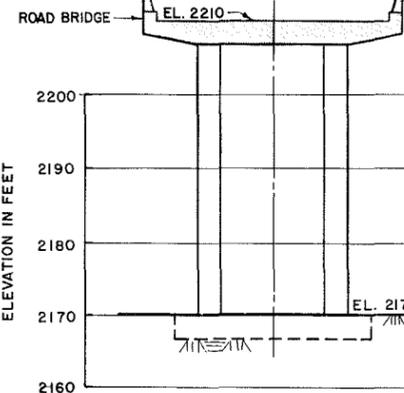


SECTION C-C
SCALE B



ELEVATION IN FEET

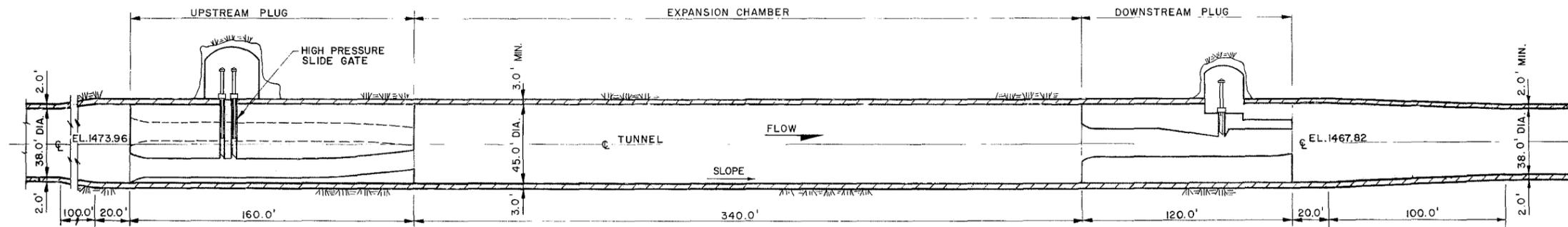
2200
2190
2180
2170
2160



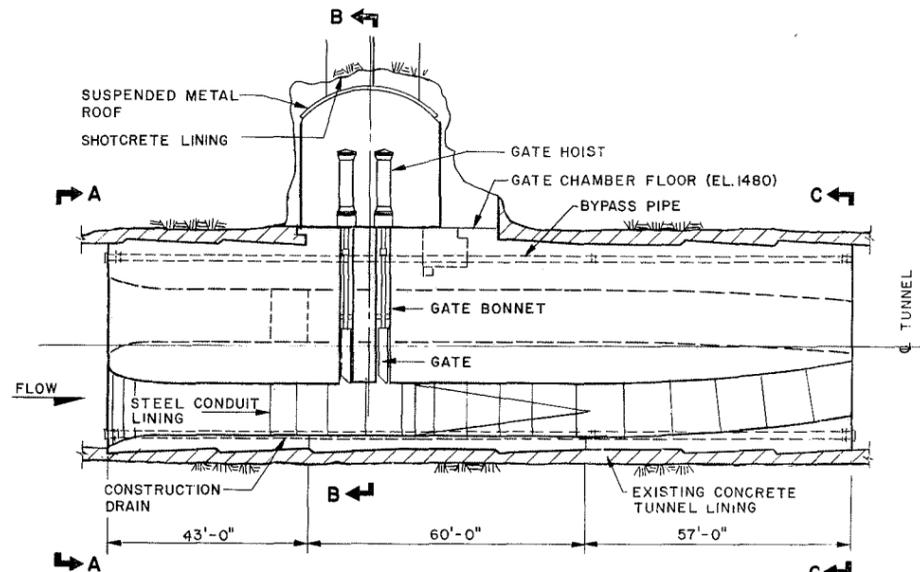
SECTION THROUGH FUSE PLUG
SCALE C



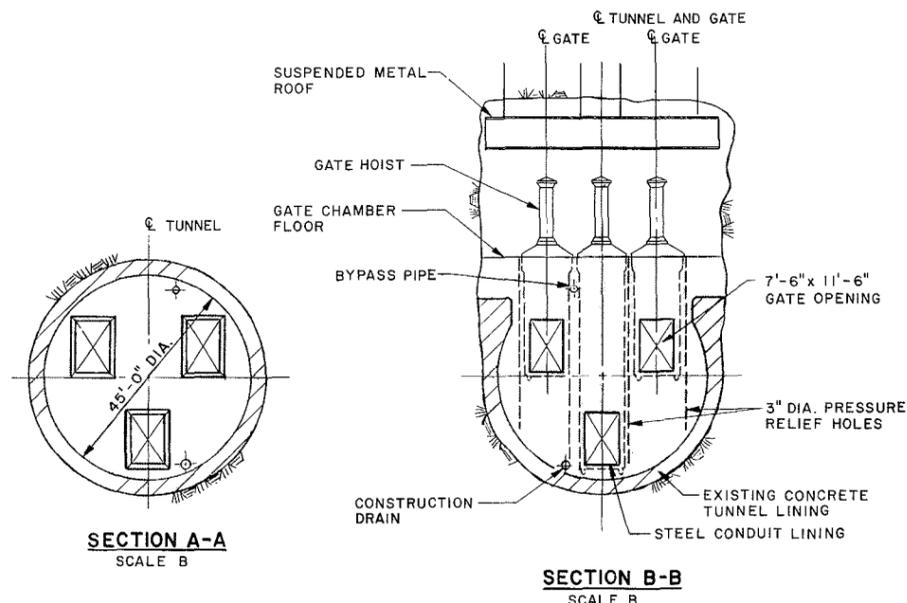
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY SPILLWAY	
EXHIBIT F	PLATE F18



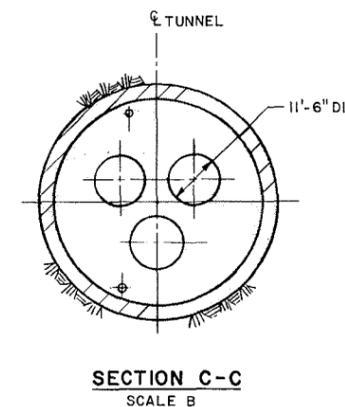
SECTION ALONG CL OF TUNNEL NO. 1
SCALE A



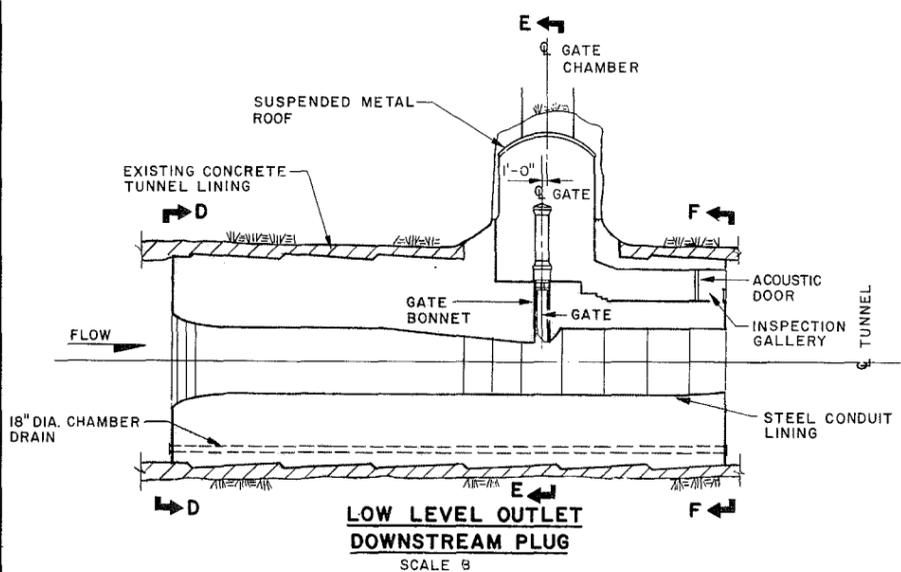
**LOW LEVEL OUTLET
UPSTREAM PLUG**
SCALE B



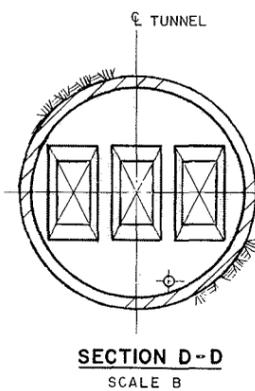
SECTION B-B
SCALE B



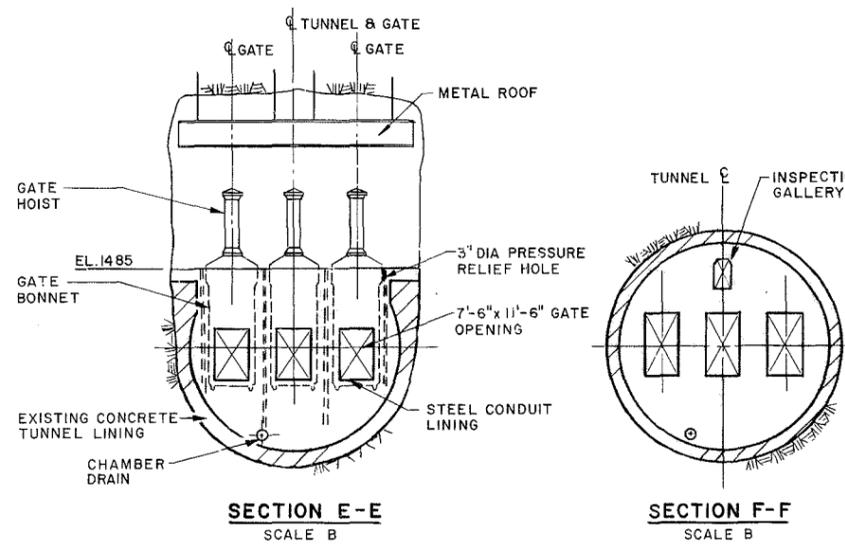
SECTION C-C
SCALE B



**LOW LEVEL OUTLET
DOWNSTREAM PLUG**
SCALE B

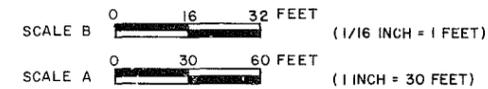


SECTION D-D
SCALE B

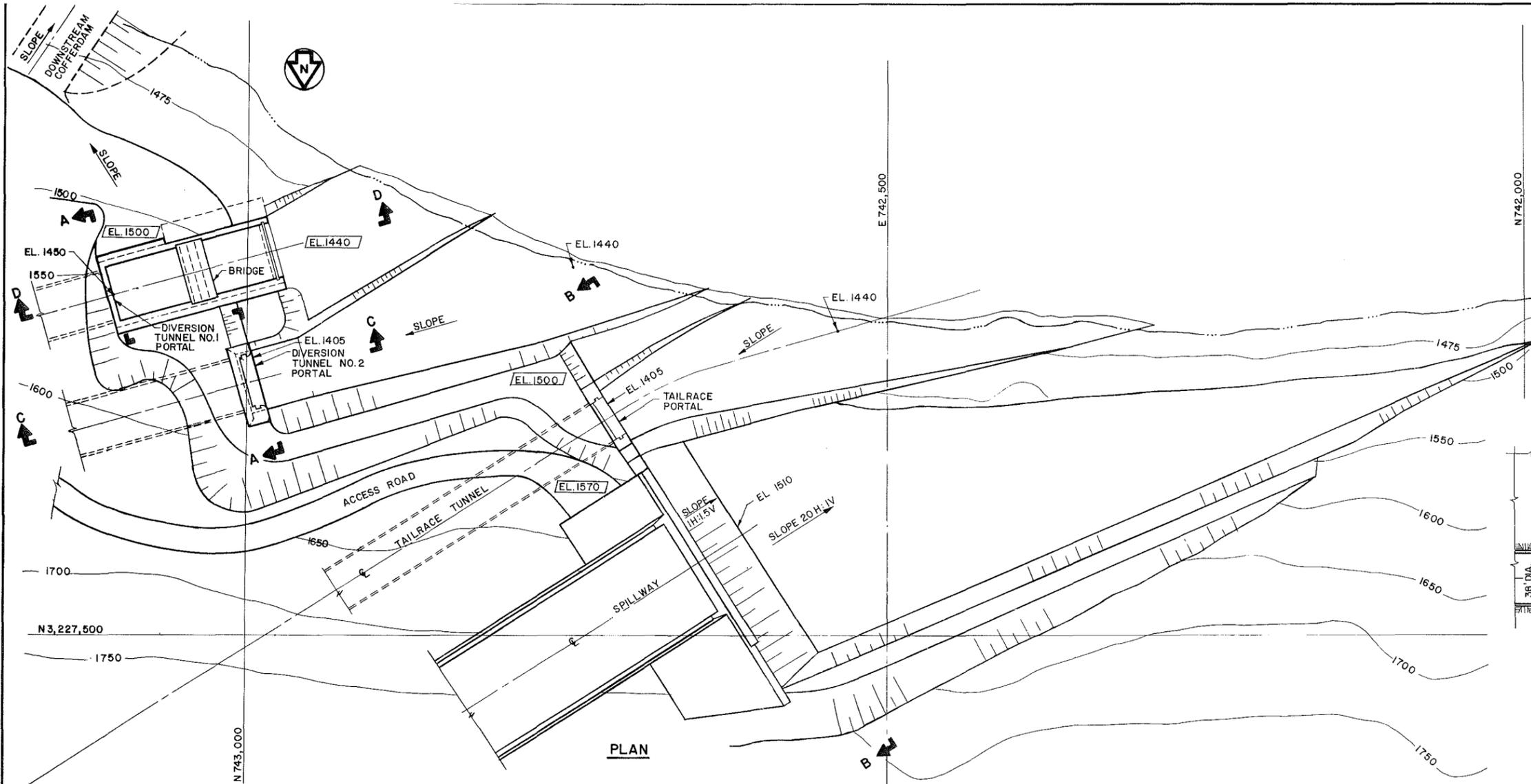


SECTION E-E
SCALE B

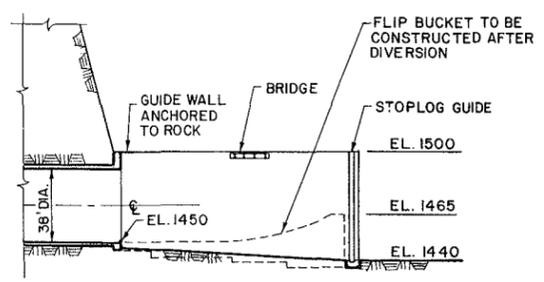
SECTION F-F
SCALE B



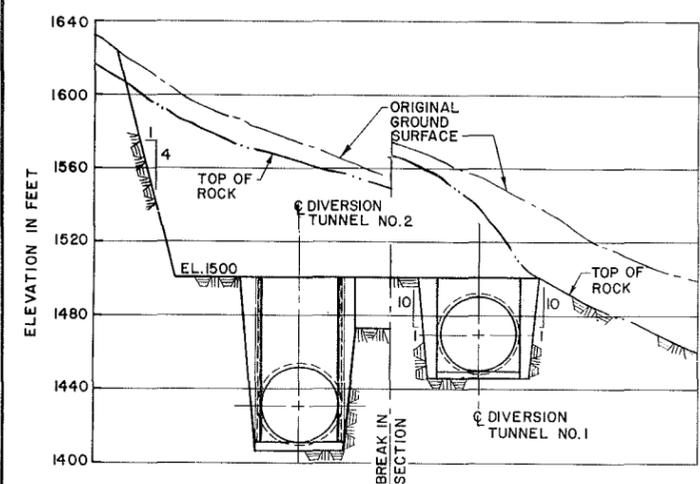
APAC	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY RELEASE SECTIONS		
EXHIBIT F	PLATE F 19	



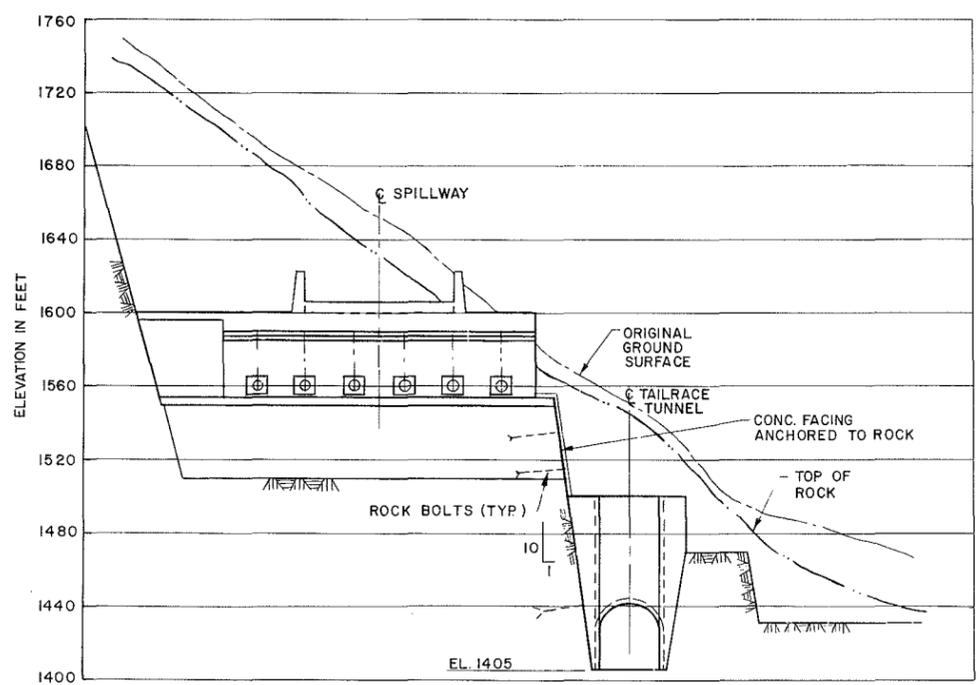
PLAN



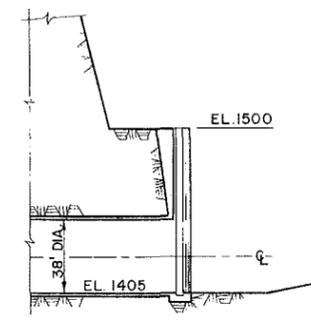
SECTION D-D



SECTION A-A



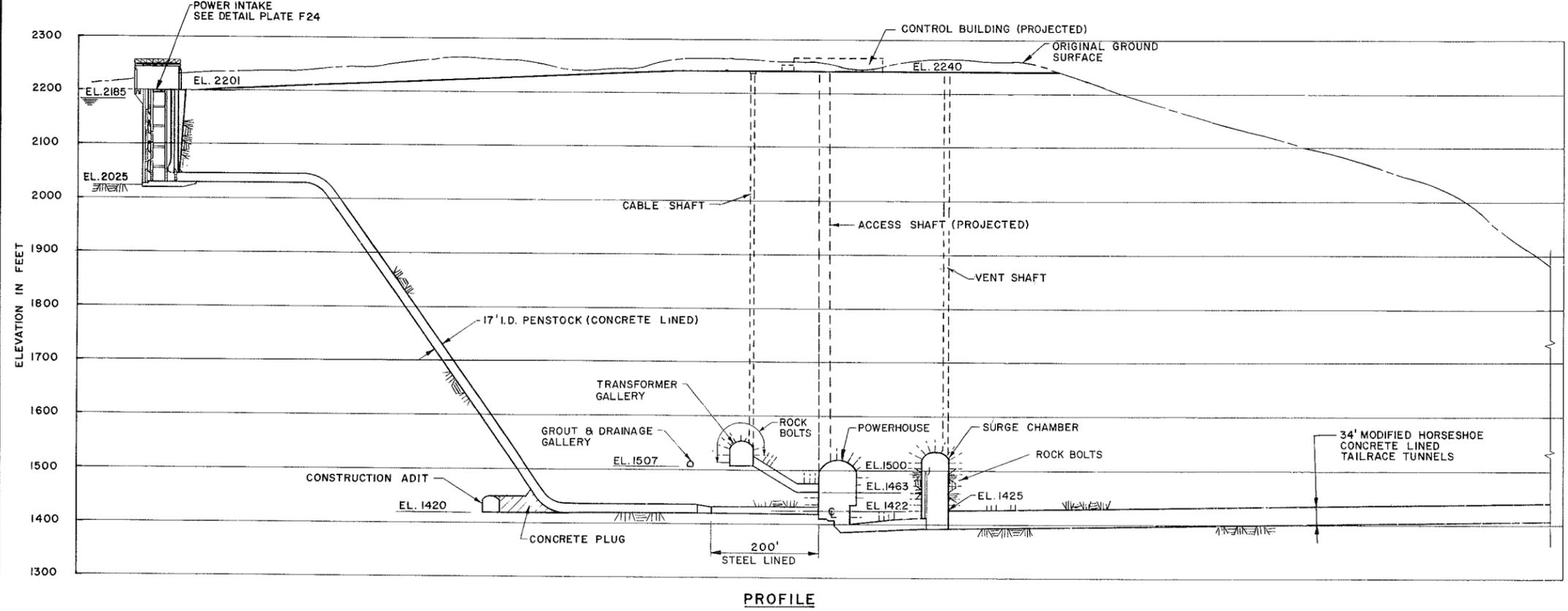
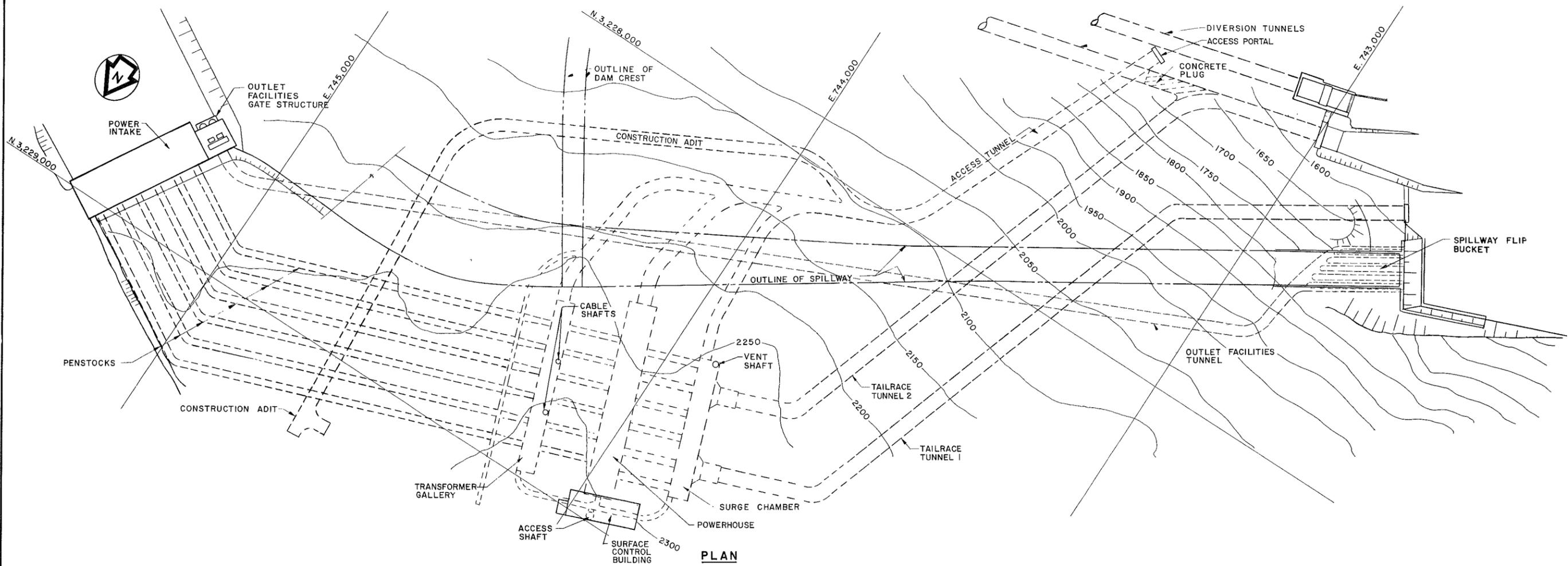
SECTION B-B



SECTION C-C

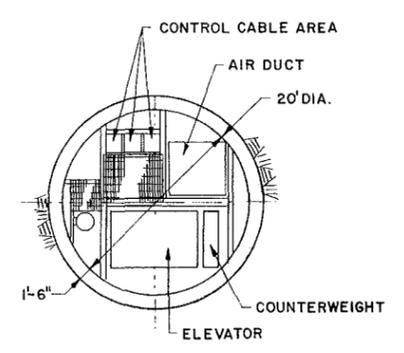
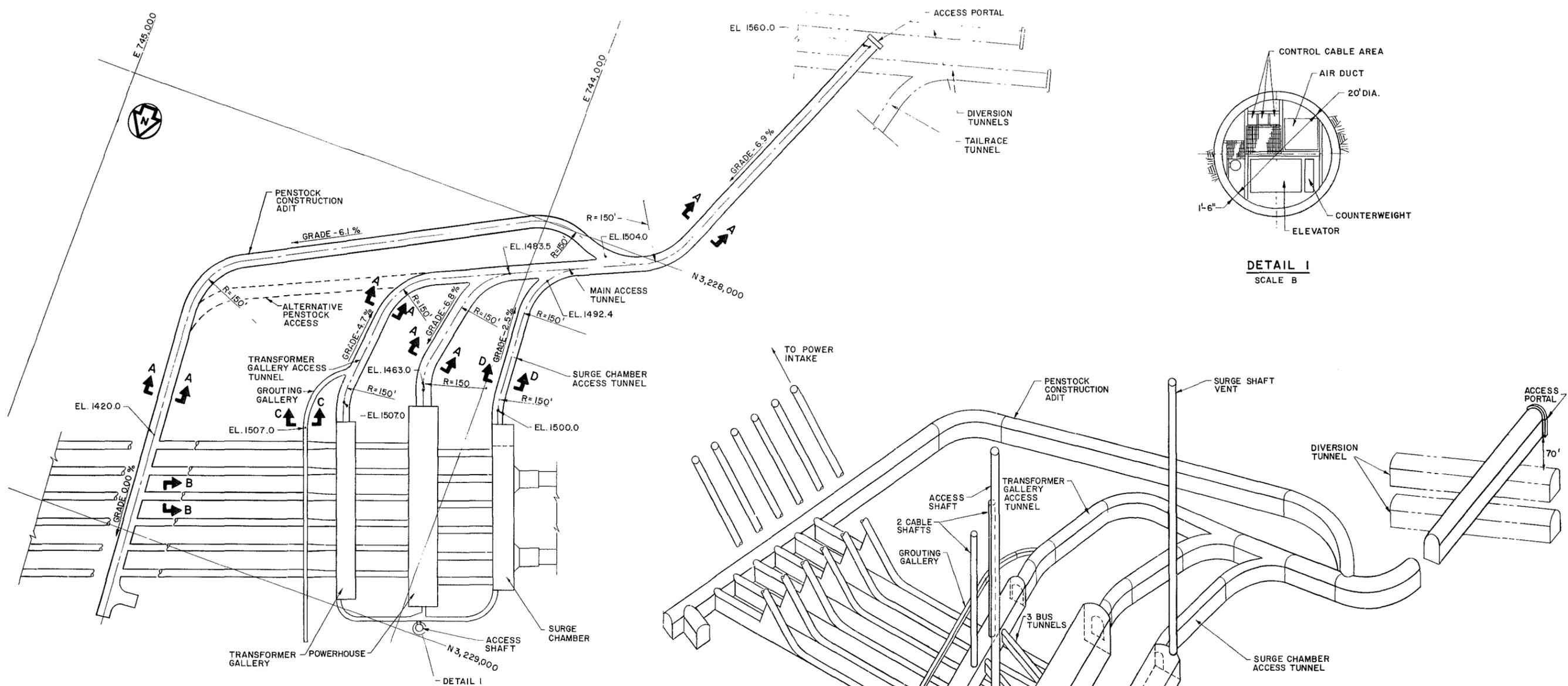


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA DOWNSTREAM PORTALS PLAN & SECTIONS		
EXHIBIT F	PLATE F20	



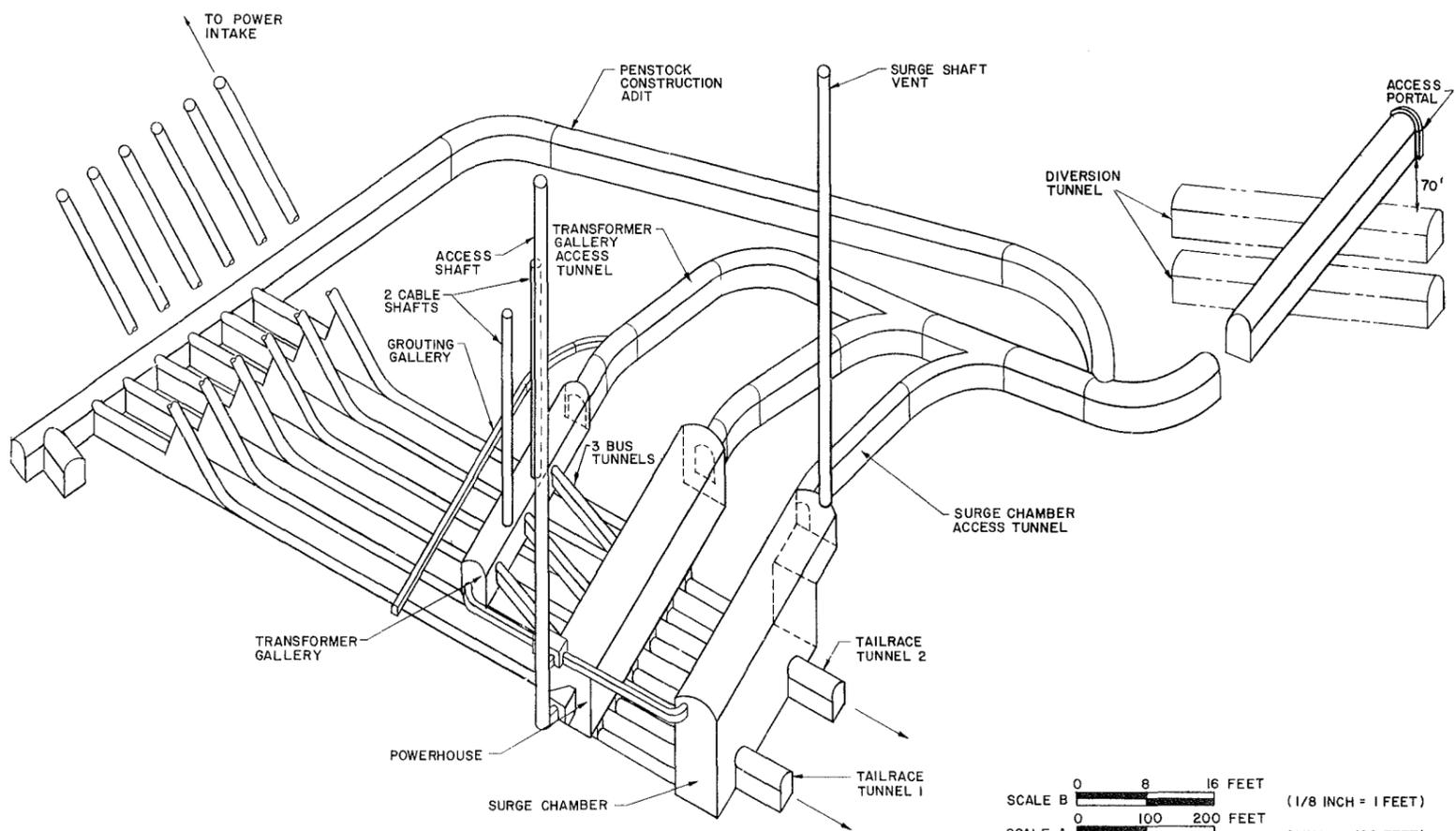
SCALE 0 100 200 FEET (1 INCH = 100 FEET)

APAC	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA		
POWER FACILITIES		
GENERAL ARRANGEMENT		
EXHIBIT F		PLATE F21

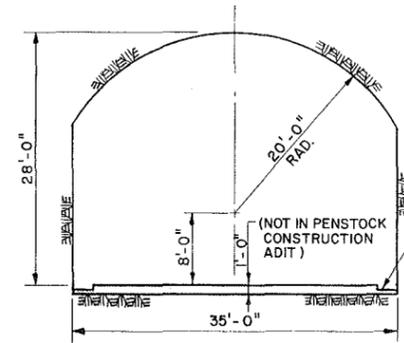
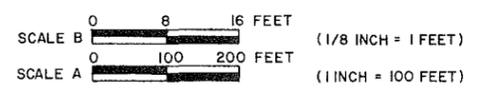


DETAIL I
SCALE B

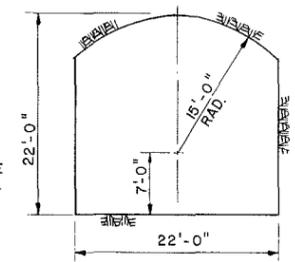
PLAN
SCALE A



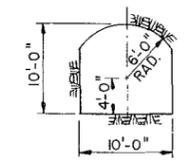
ISOMETRIC
SCALE A



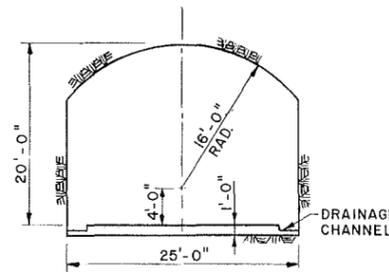
SECTION A-A
SCALE B



SECTION B-B
SCALE B

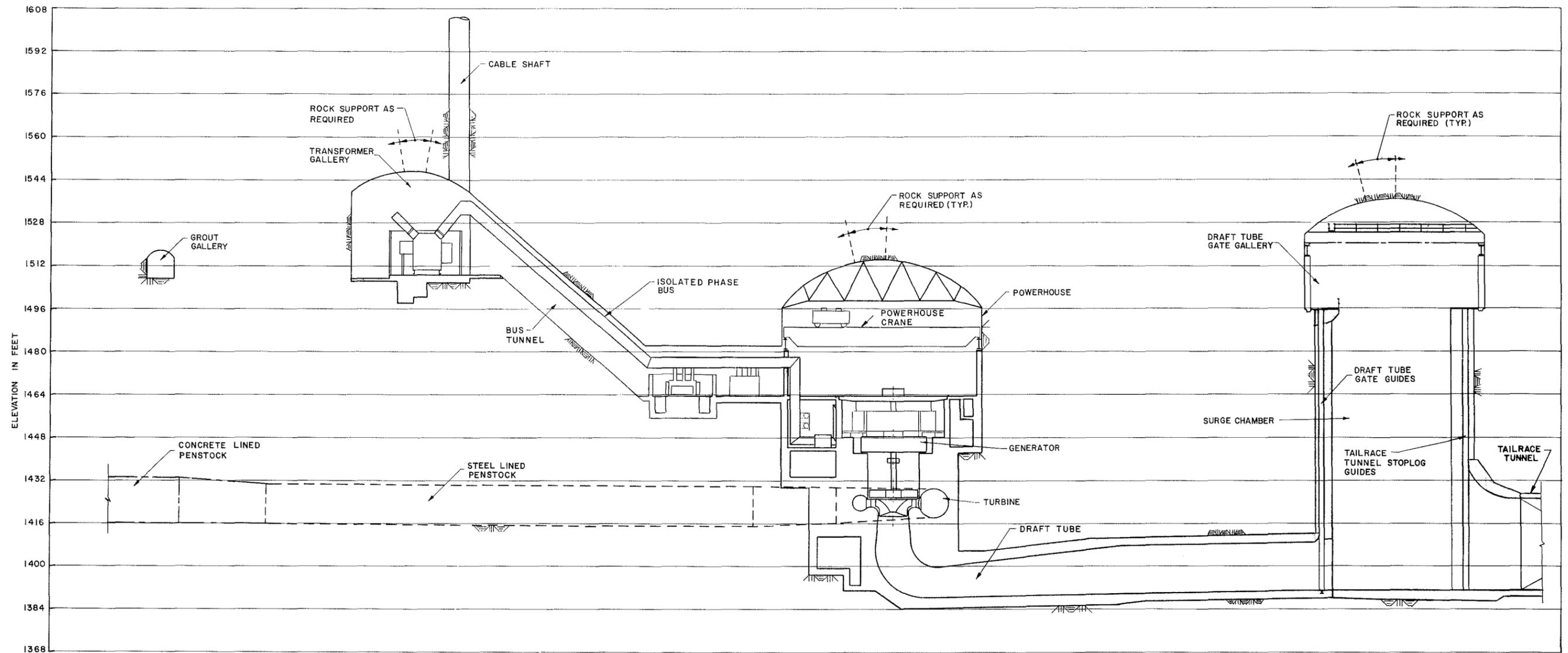


SECTION C-C
SCALE B

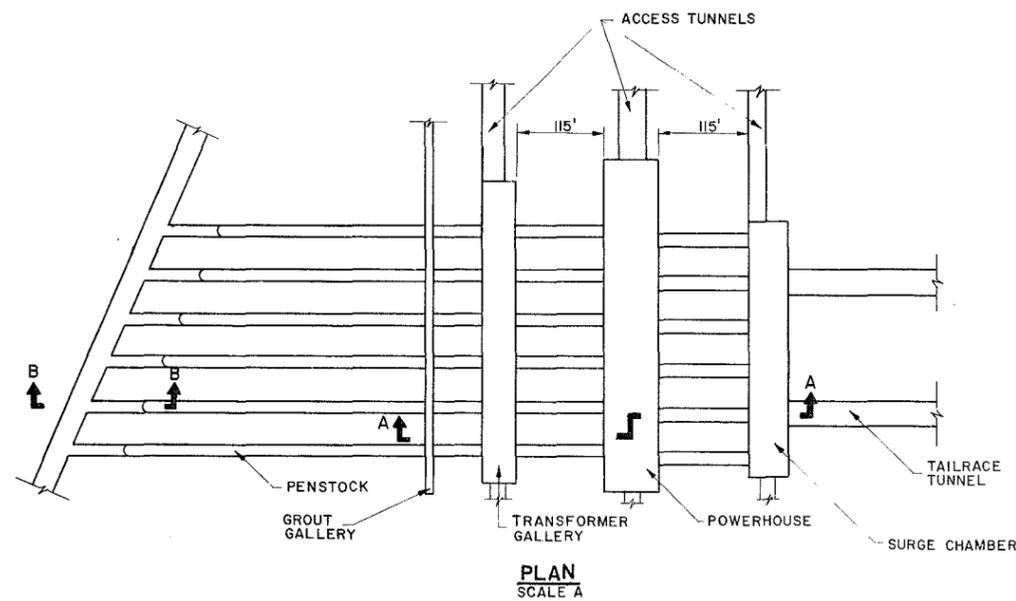


SECTION D-D
SCALE B

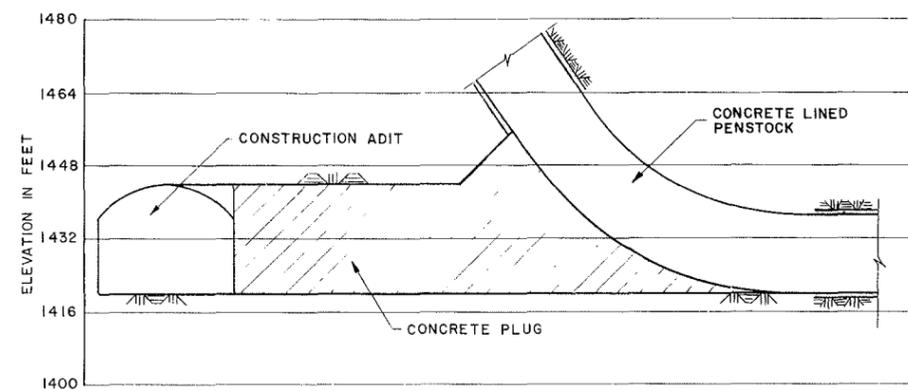
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA POWER FACILITIES ACCESS		
EXHIBIT F	PLATE F 22	



SECTION A-A
SCALE B



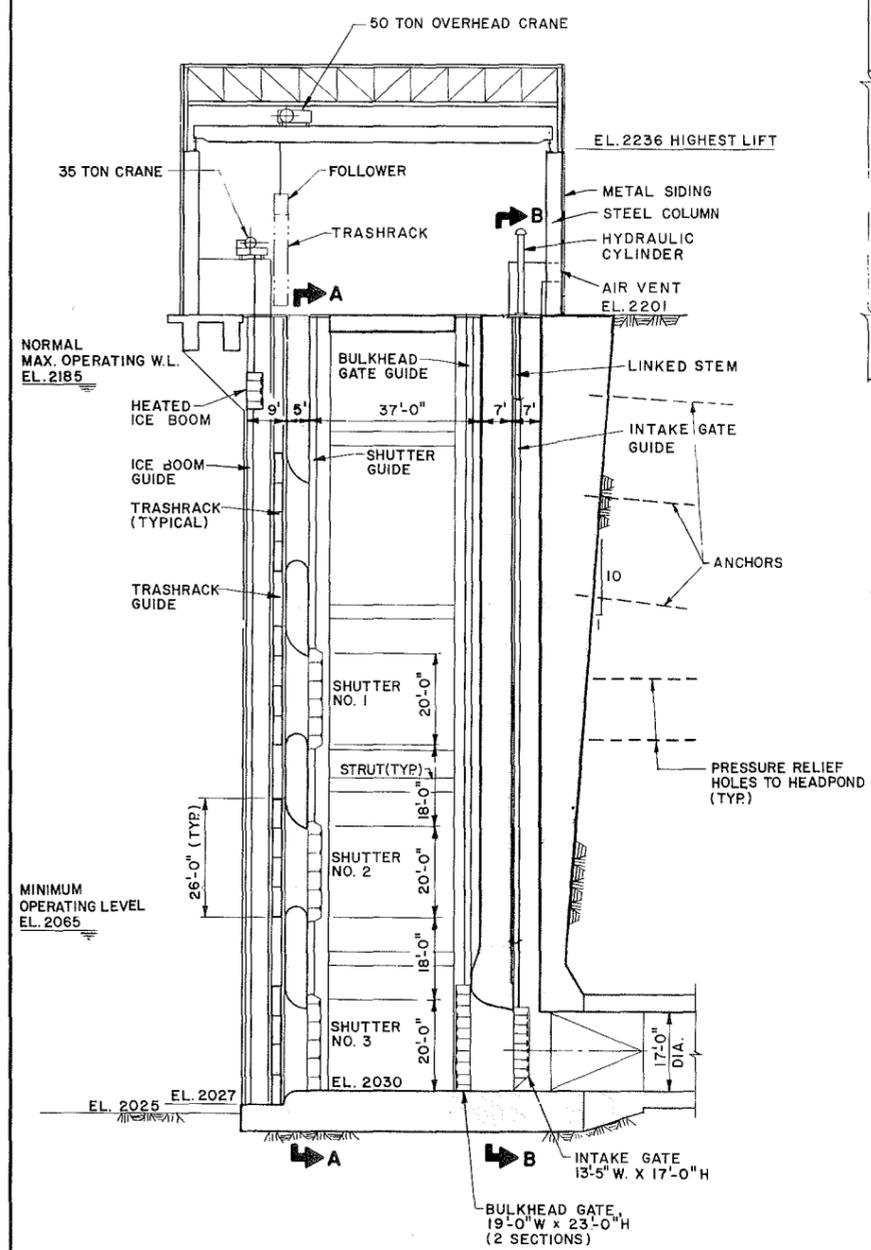
PLAN
SCALE A



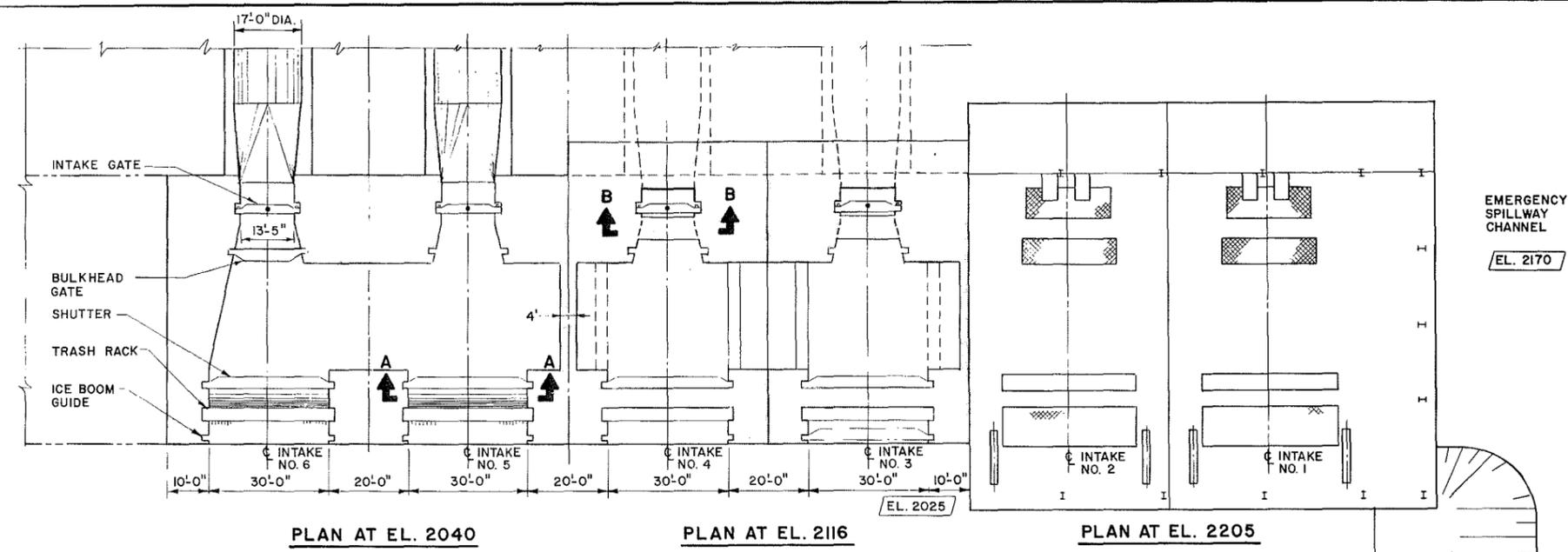
SECTION B-B
SCALE B



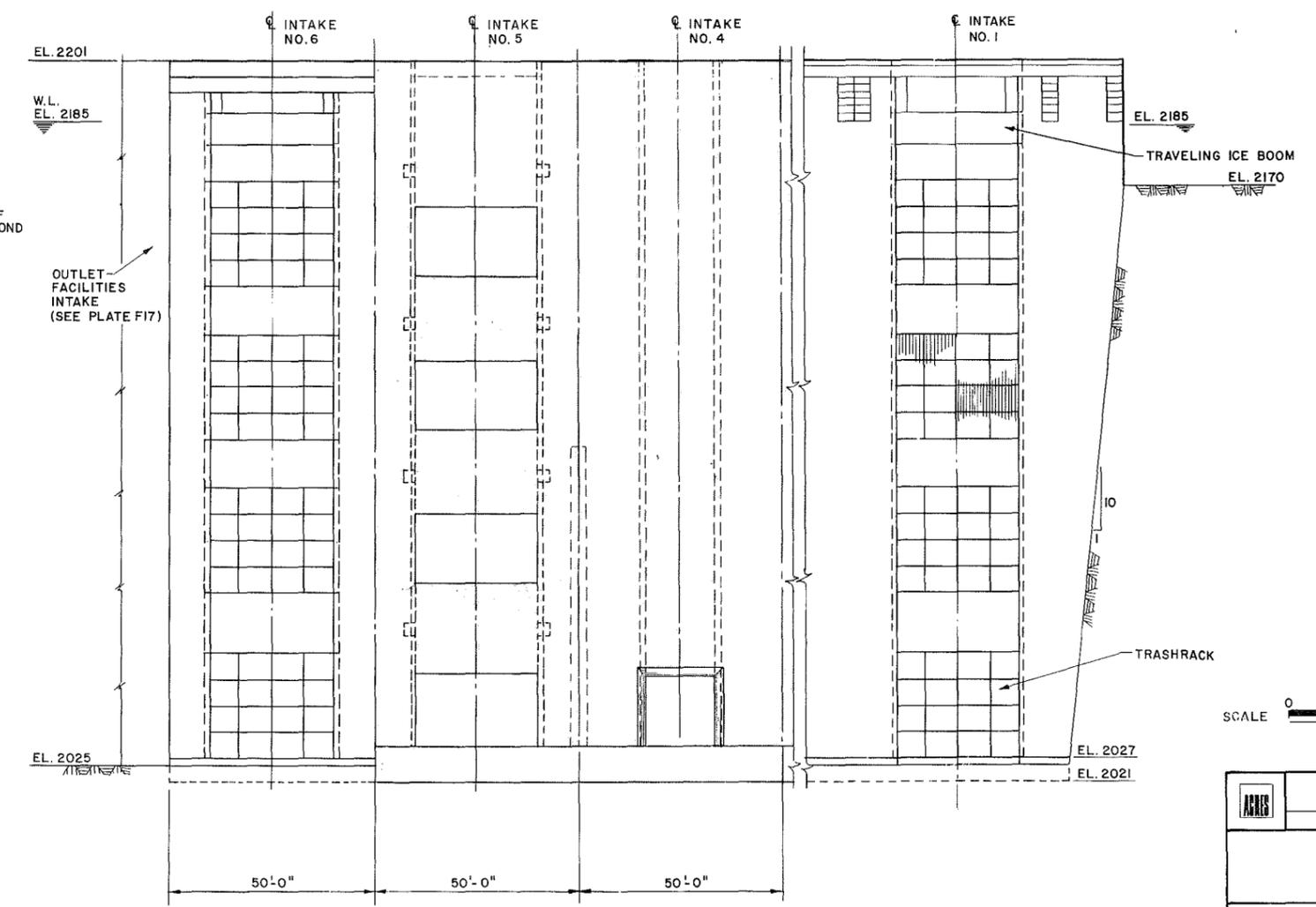
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA POWER FACILITIES PLAN & SECTIONS		
EXHIBIT F	PLATE F 23	



**SECTION THRU
INTAKE GATE CONTROL STRUCTURE**



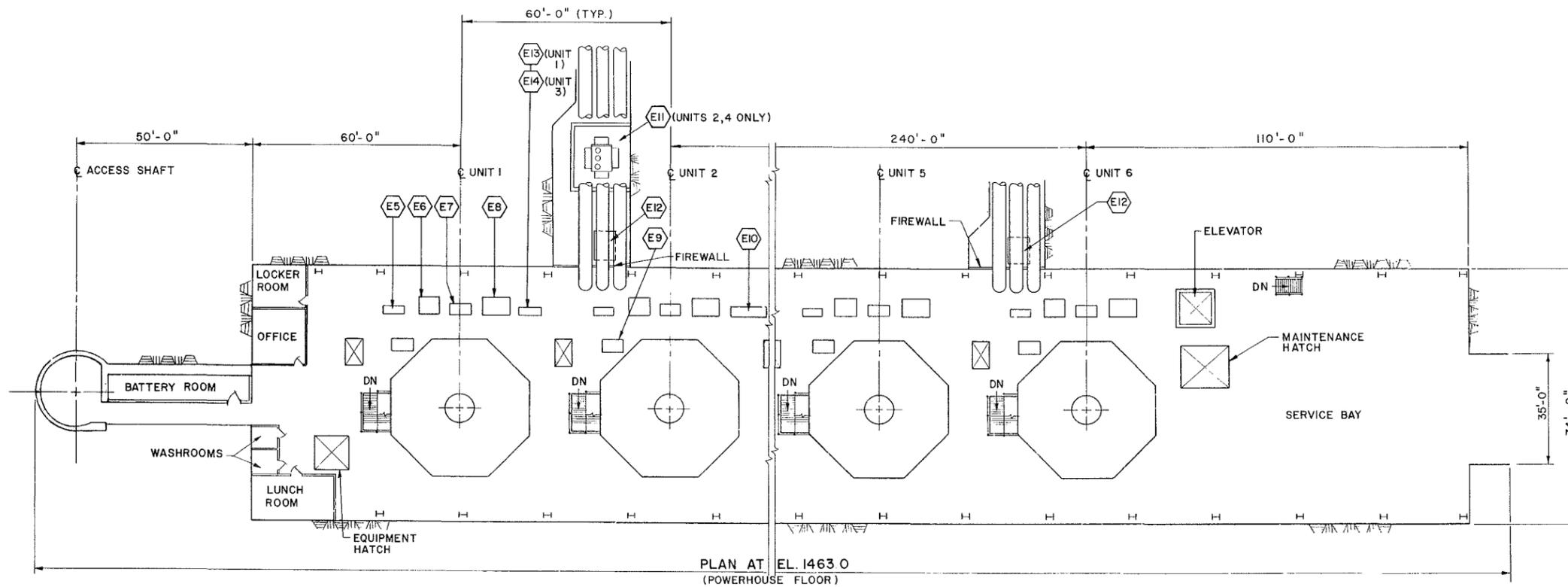
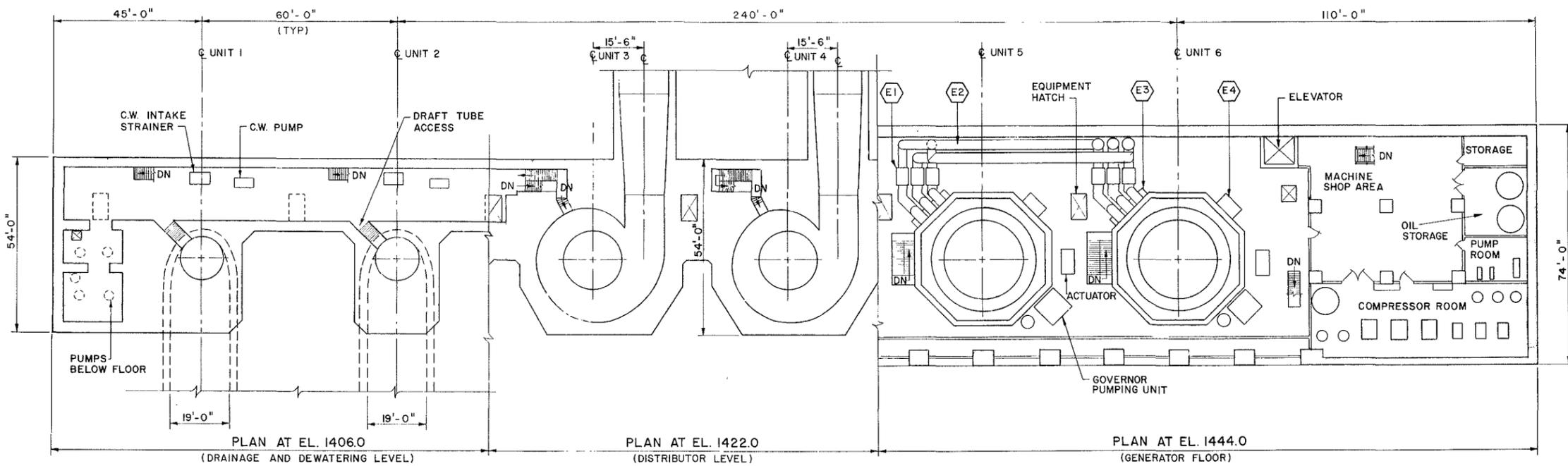
PLAN AT EL. 2040 PLAN AT EL. 2116 PLAN AT EL. 2205



**FRONT ELEVATION SECTION A-A
(SHUTTERS OMITTED FOR CLARITY) SECTION B-B UPSTREAM ELEVATION**

SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWER INTAKE SECTIONS	
EXHIBIT F	PLATE F 24



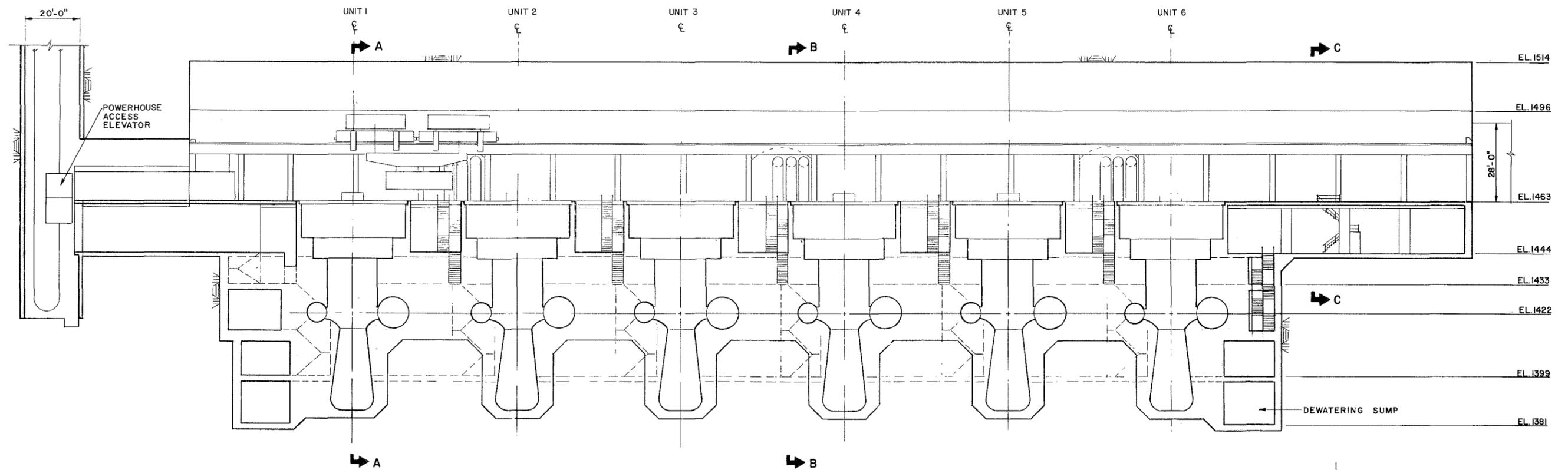
SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

LEGEND

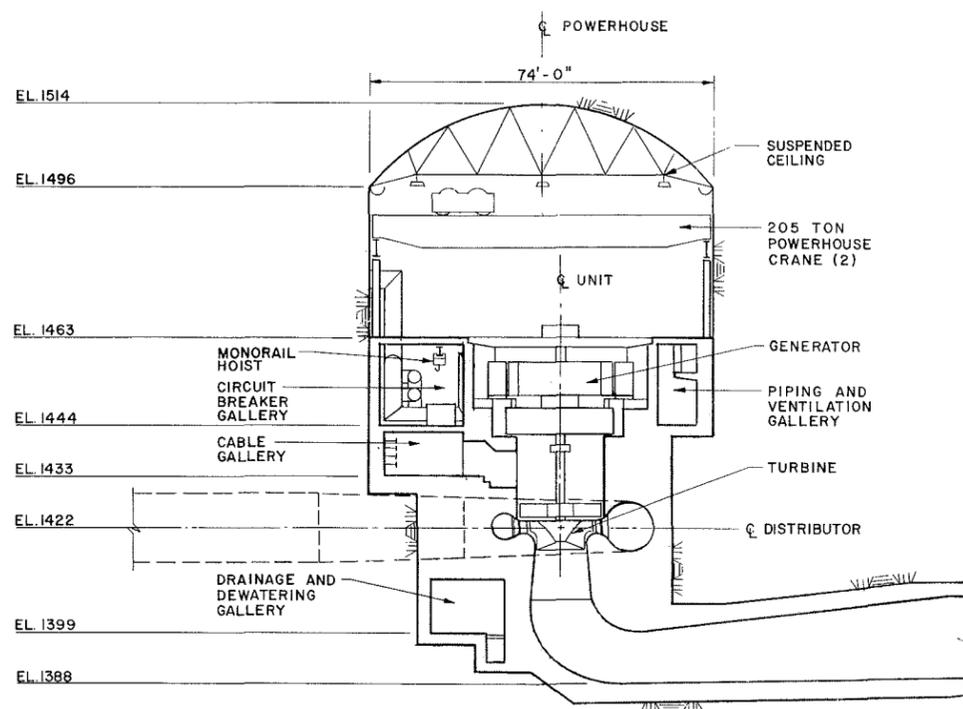
- E1 GENERATOR CIRCUIT BREAKERS
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY SERVICE TRANSFORMER 7.5/10 MVA
- E12 AUXILIARY SERVICE TRANSFORMER 2 MVA
- E13 GENERAL AUXILIARY SWITCHBOARD
- E14 ESSENTIAL SERVICES SWITCHBOARD

POWERHOUSE PLANS

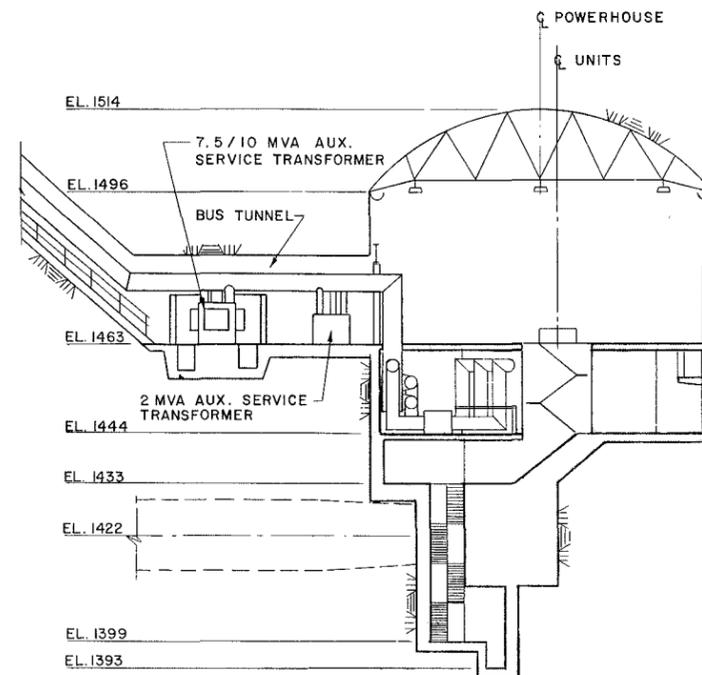
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE PLANS	
EXHIBIT F	PLATE F25



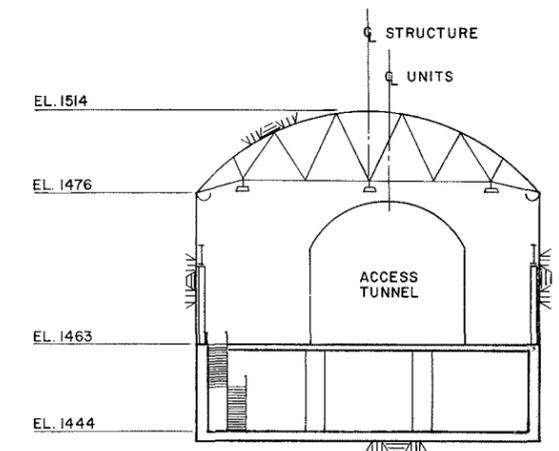
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS, UNITS NOT SHOWN)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



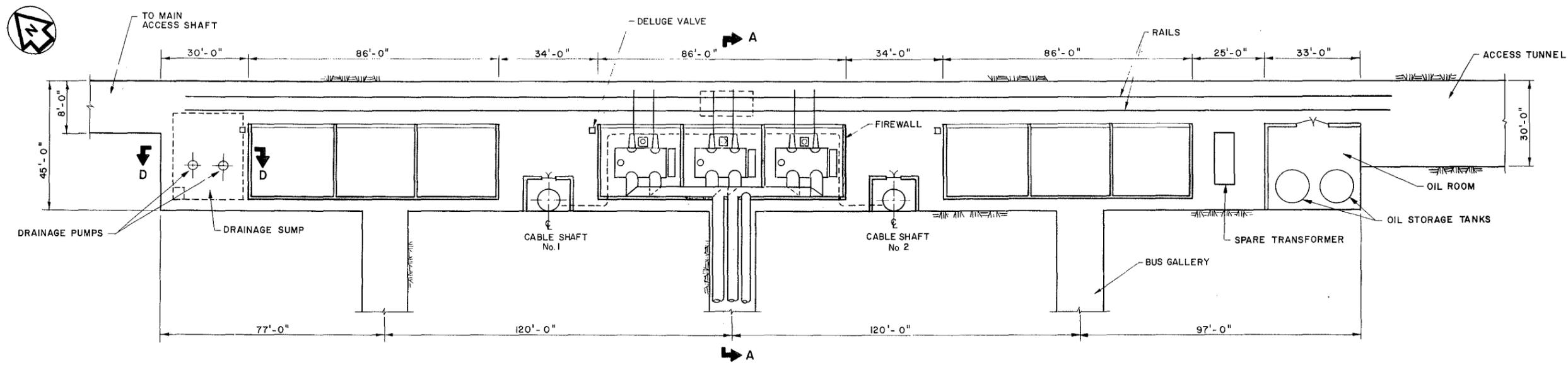
SECTION B-B (SECTION THRU BUS TUNNEL)



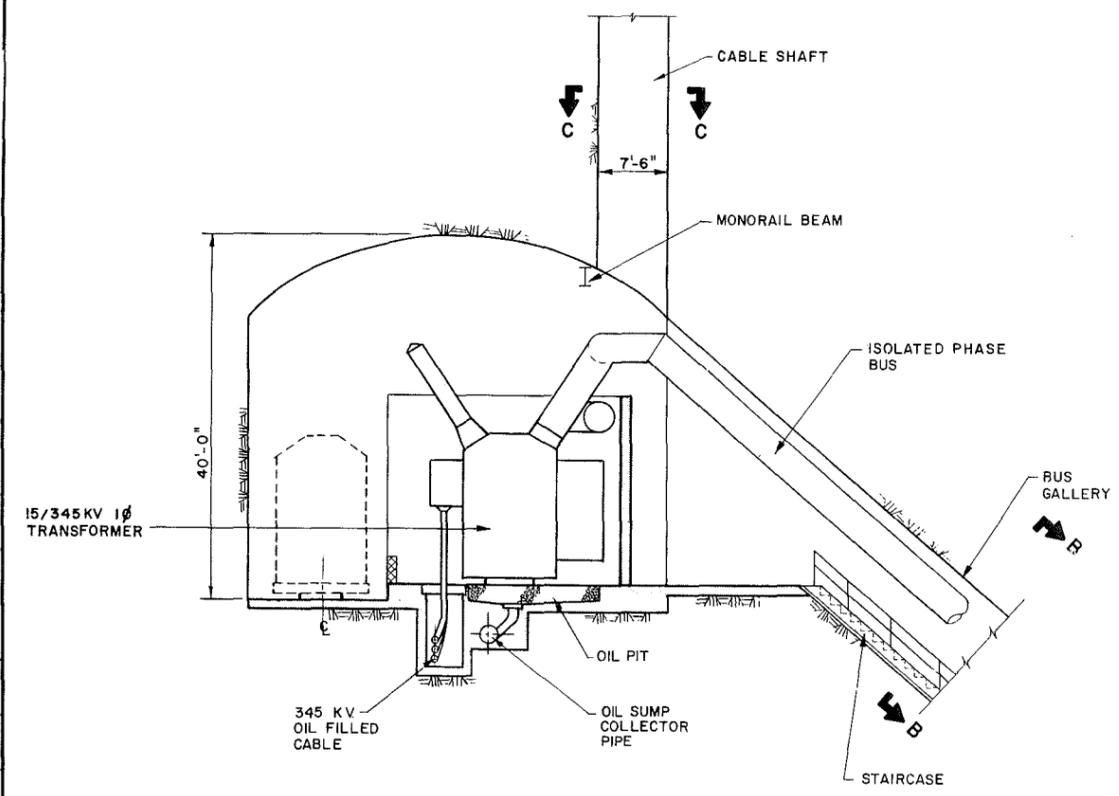
SECTION C-C
SECTION THRU SERVICE BAY

SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

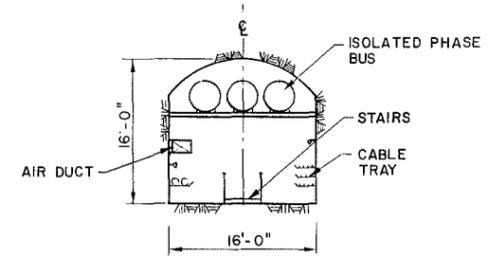
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F 26



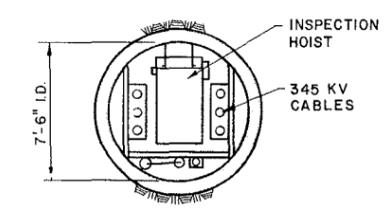
PLAN
SCALE A



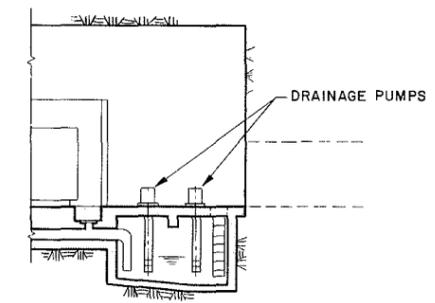
SECTION A-A
SCALE B



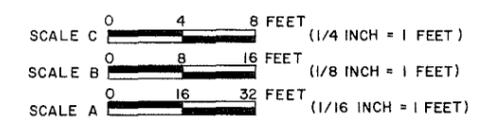
SECTION B-B
THROUGH BUS GALLERY
SCALE B



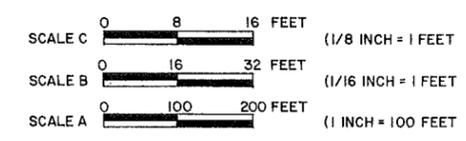
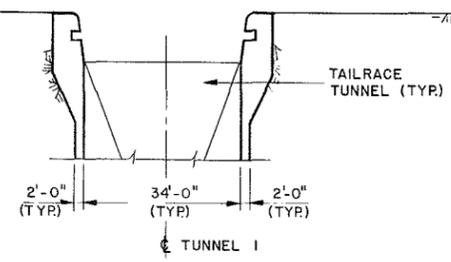
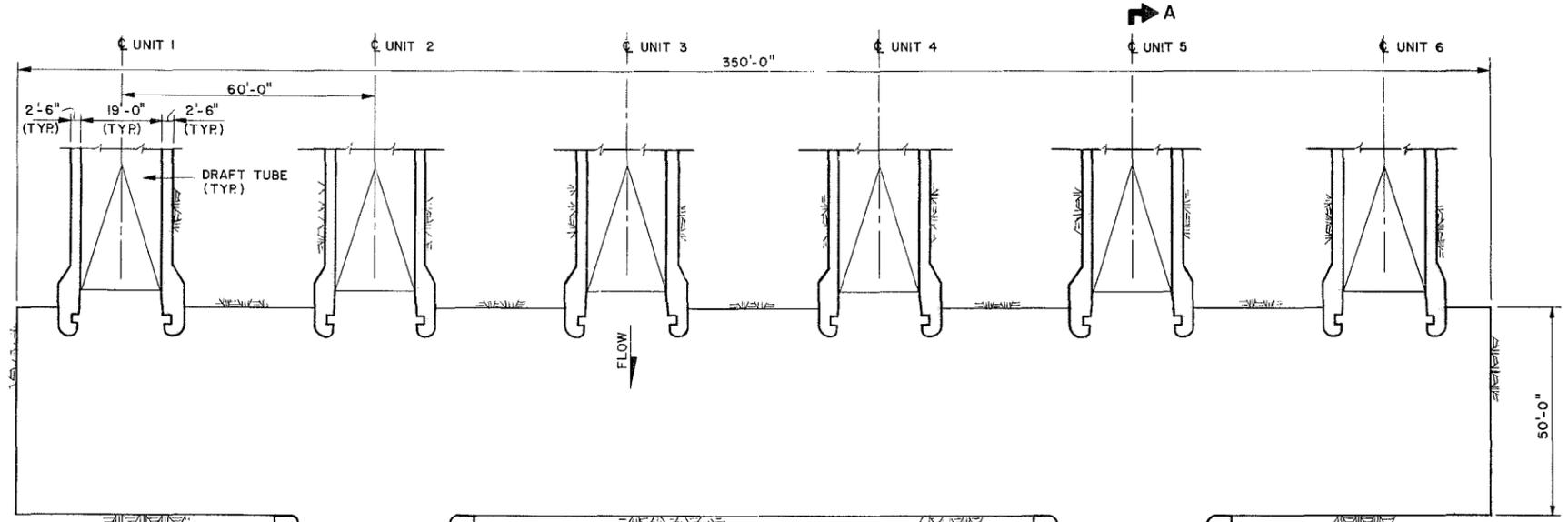
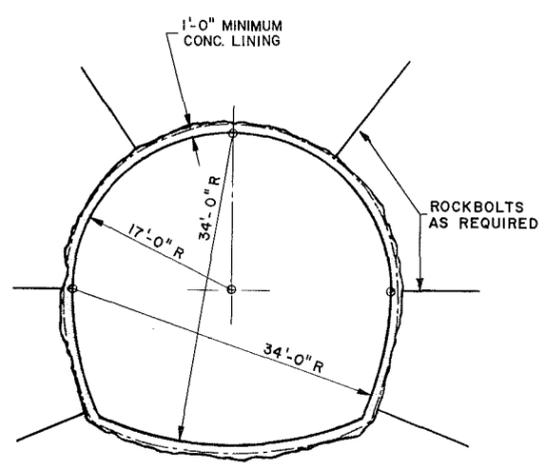
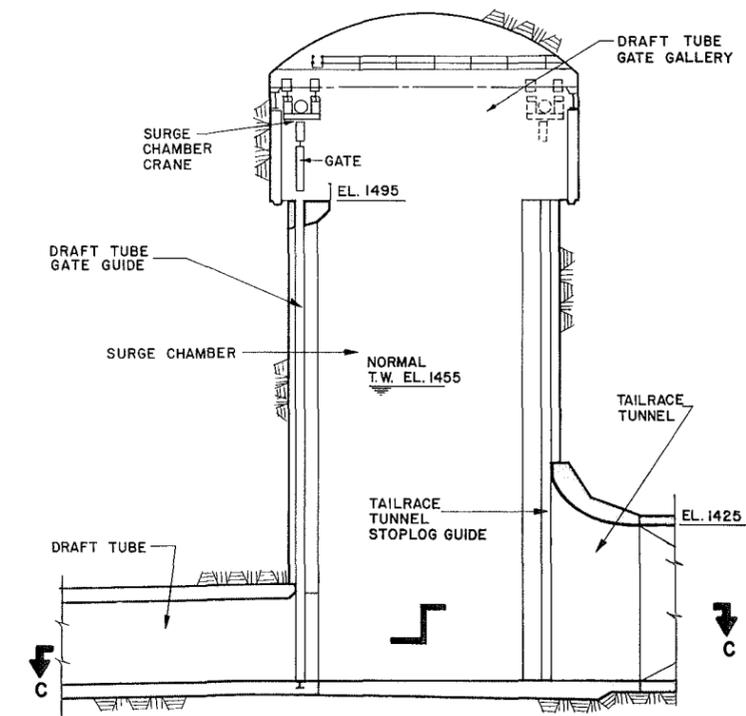
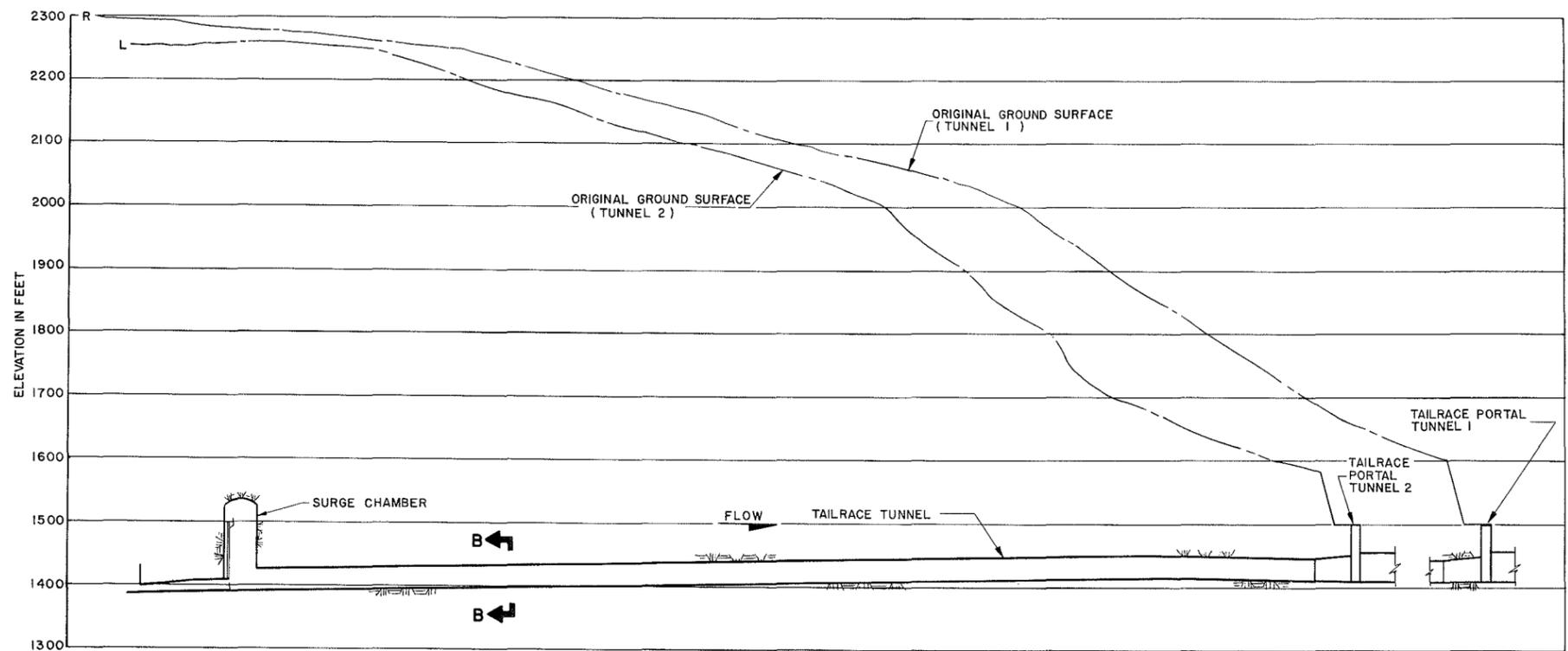
SECTION C-C
THROUGH CABLE SHAFT
SCALE C



SECTION D-D
THROUGH SUMP
SCALE A



ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA TRANSFORMER GALLERY PLAN & SECTIONS	
EXHIBIT F	PLATE F 27



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
SURGE CHAMBER AND TAILRACE SECTIONS	
EXHIBIT F	PLATE F28

LEGEND

- 21 — DISTANCE RELAY
- 21GB — GENERATOR BACK-UP RELAY
- 26 — TRANSFORMER THERMAL DEVICE

- 27 — UNDERVOLTAGE RELAY
- 40 — FIELD FAILURE RELAY
- 41 — FIELD CIRCUIT BREAKER
- 46 — NEGATIVE PHASE SEQUENCE RELAY
- 49 — THERMAL RELAY
- 50 — INSTANTANEOUS OVERCURRENT RELAY
- 51 — TIME OVERCURRENT RELAY
- 51N — TIME OVERCURRENT NEUTRAL RELAY

- 59 — OVERVOLTAGE RELAY
- 59VHZ — VOLTS PER HERTZ
- 60 — VOLTAGE BALANCE RELAY

- 63 — GAS PRESSURE RELAY
- 64F — GENERATOR FIELD GROUND PROTECTIVE RELAY
- 64G — GENERATOR STATOR GROUND PROTECTIVE RELAY

- 71 — OIL LEVEL RELAY
- 79 — RECLOSING RELAY
- 81 — FREQUENCY RELAY
- 84 — EXCITER VOLTAGE BUILD-UP MECHANISM
- 87 — DIFFERENTIAL PROTECTIVE RELAY

-  AC GENERATOR, 3 PHASE, 60HZ, WYE CONNECTED
-  TRANSFORMER
-  AUTO TRANSFORMER
-  CIRCUIT BREAKER
-  DRAWOUT CIRCUIT BREAKER
-  LOW VOLTAGE AIR CIRCUIT BREAKER
-  LINK IN ISOLATED PHASE BUS
-  DISCONNECT SWITCH
-  GROUND CONNECTION
-  RESISTOR
-  RESISTANCE TEMPERATURE DETECTOR
-  STANDARD DEVICE
-  CURRENT TRANSFORMER
-  TRANSFORMER CONNECTION 3 PHASE, 3 WIRE, DELTA
-  TRANSFORMER CONNECTION 3 PHASE, 3 WIRE, WYE
-  REACTOR
-  VOLTAGE TRANSFORMER
-  CAPACITOR BANK
-  BUSHING CURRENT TRANSFORMER

SYMBOLS:

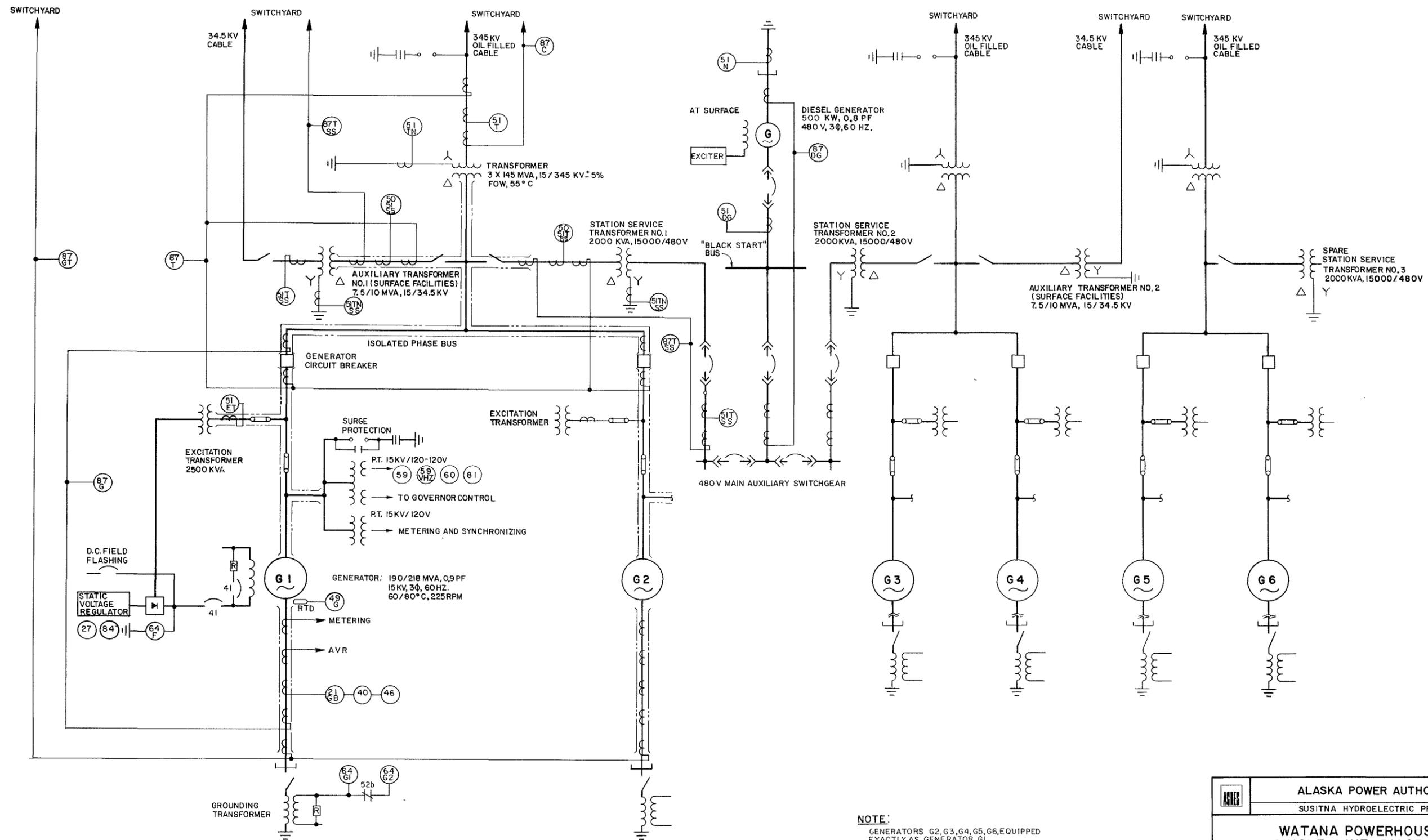
-  LIGHTNING ARRESTOR
-  CAPACITOR COUPLING VOLTAGE TRANSFORMER
-  RECTIFIER

NOTES

I. SUBSCRIPTS

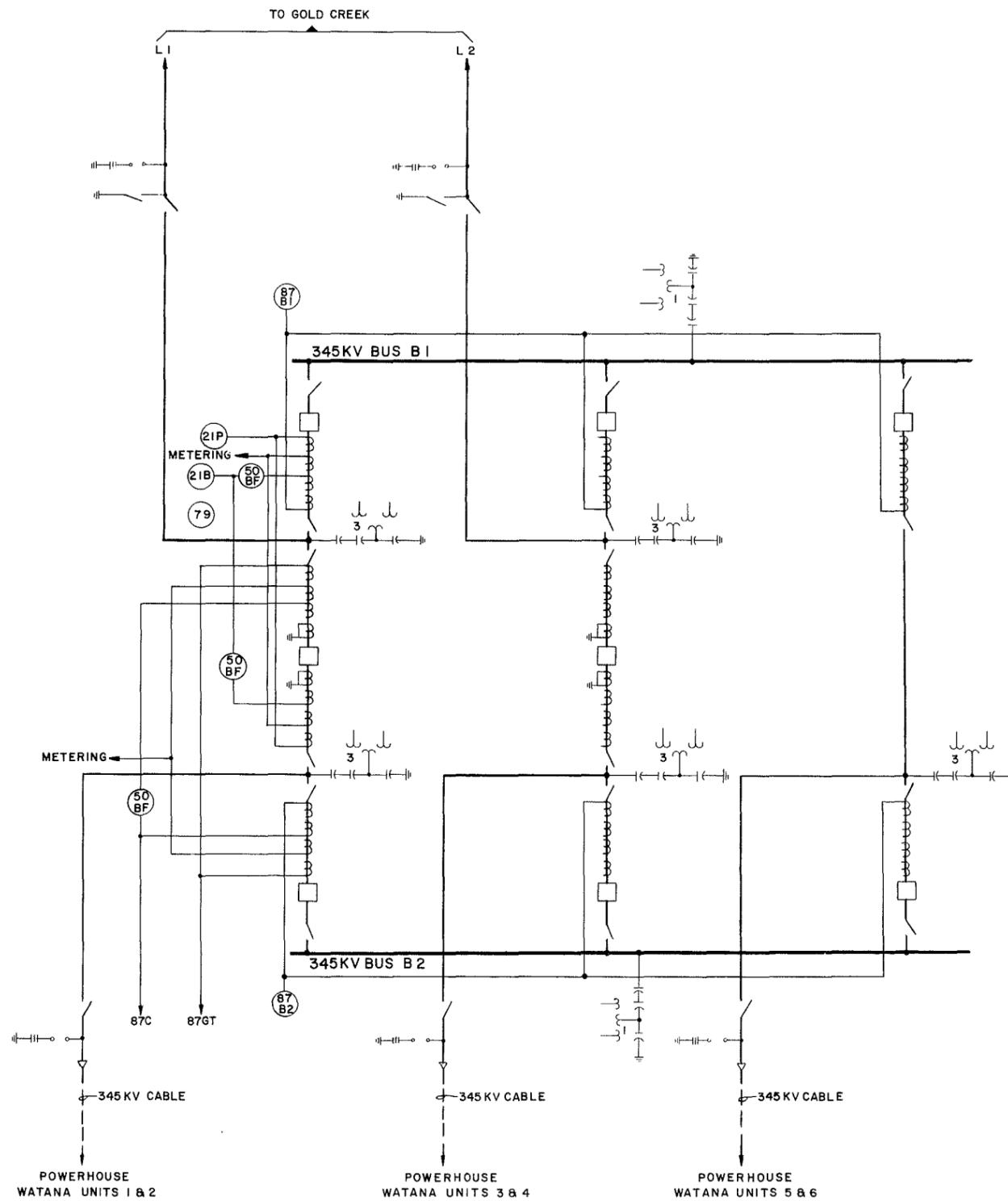
- T — TRANSFORMER
- TN — TRANSFORMER NEUTRAL
- TSS — STATION SERVICE TRANSFORMER
- ET — EXCITATION TRANSFORMER
- DG — DIESEL GENERATOR
- R — REACTOR
- GT — GENERATOR TRANSFORMER
- F — FIELD
- P — PRIMARY
- B — BACK UP
- BF — BREAKER FAILURE
- B1 — BUS NO. 1
- B2 — BUS NO. 2
- G — GENERATOR
- G1 — GENERATOR NO. 1
- G2 — GENERATOR NO. 2
- AT — AUTO TRANSFORMER
- C — HIGH VOLTAGE CABLE OR OVERHEAD CONDUCTOR
- TC — TRANSFORMER AND CABLE OR OVERHEAD CONDUCTOR

	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
ELECTRICAL LEGEND	
EXHIBIT F	PLATE F29

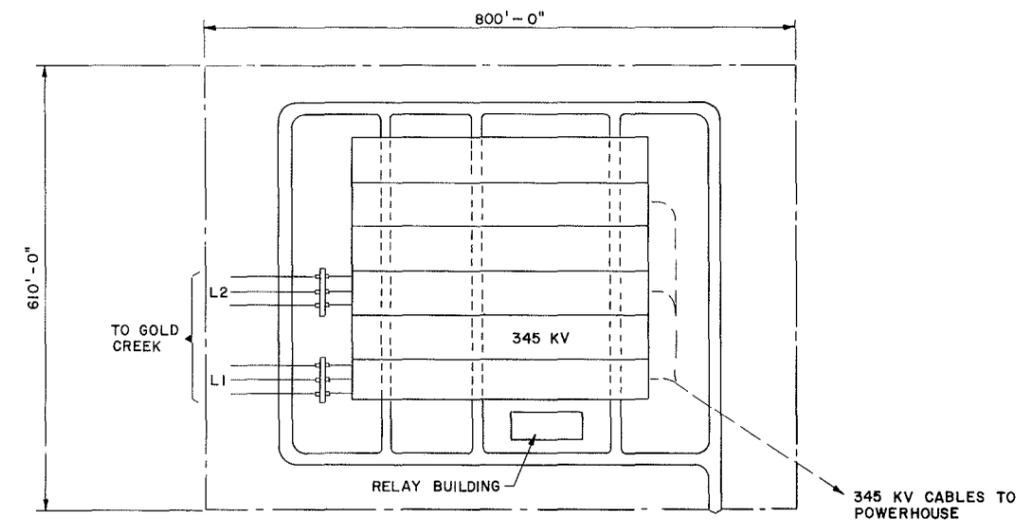


NOTE:
GENERATORS G2, G3, G4, G5, G6, EQUIPPED
EXACTLY AS GENERATOR G1.

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE SINGLE LINE DIAGRAM	
EXHIBIT F	PLATE F30



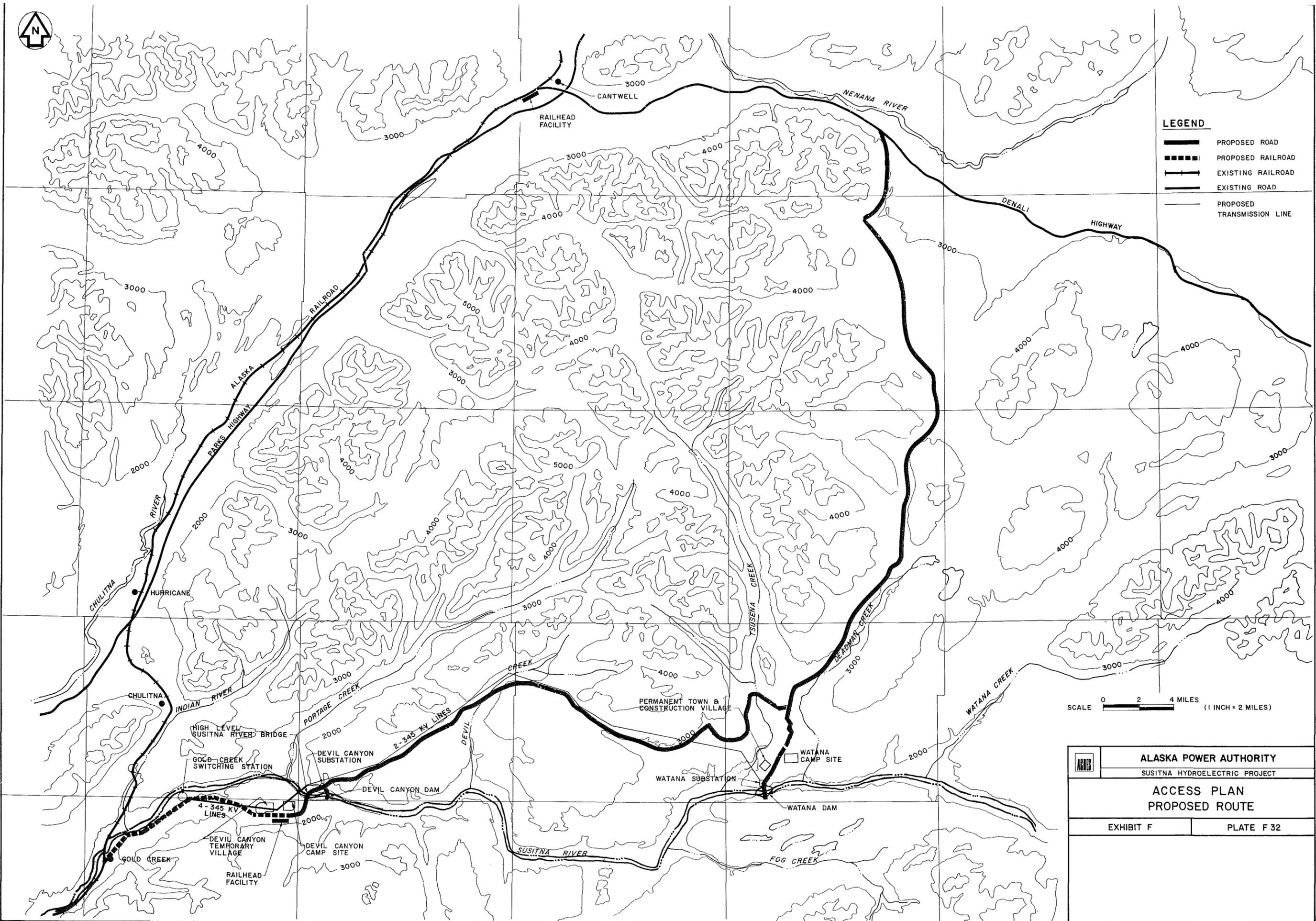
SINGLE LINE DIAGRAM



SWITCHYARD PLAN
SCALE A

SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA SWITCHYARD		
SINGLE LINE DIAGRAM AND PLAN		
EXHIBIT F		PLATE F31

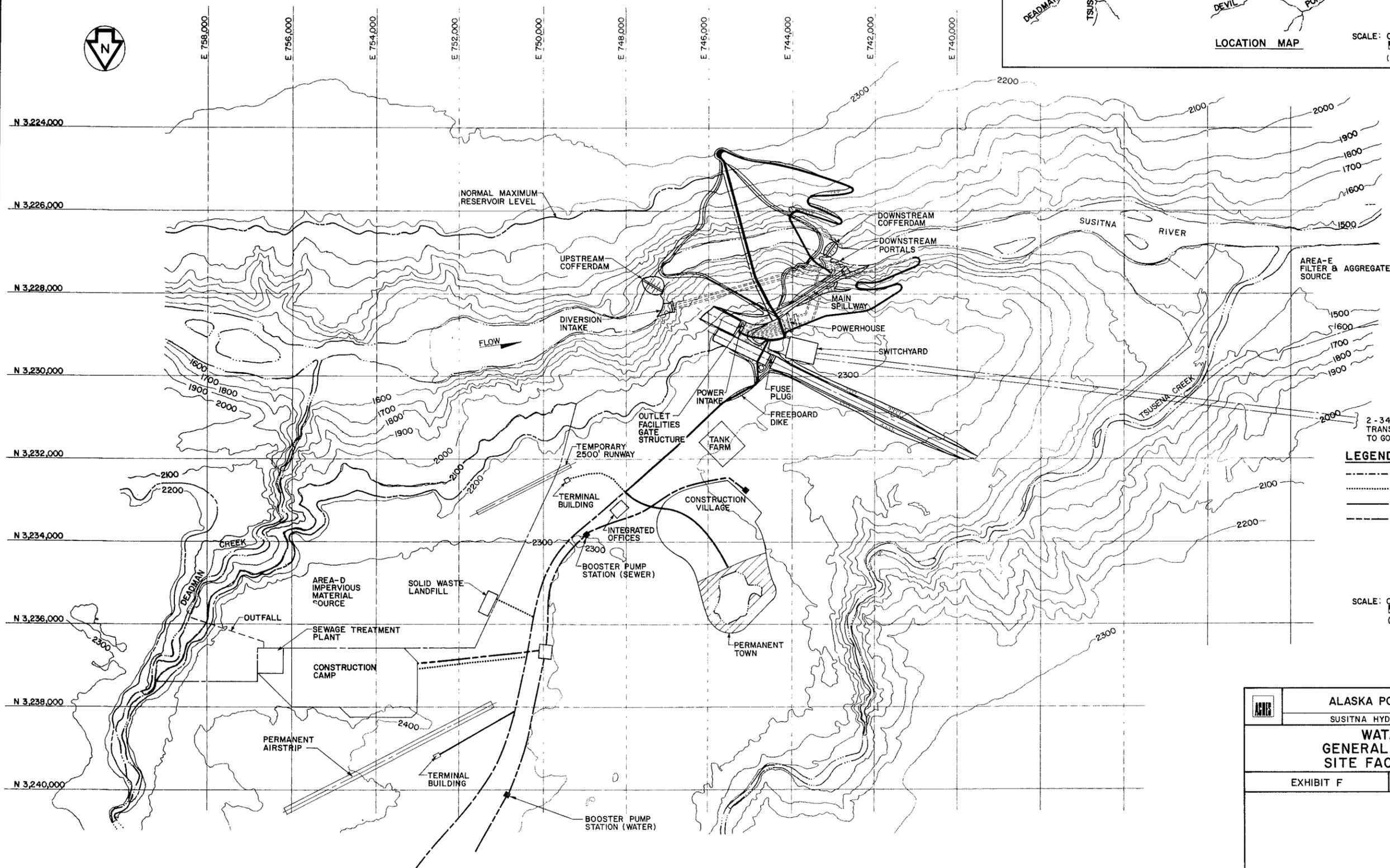
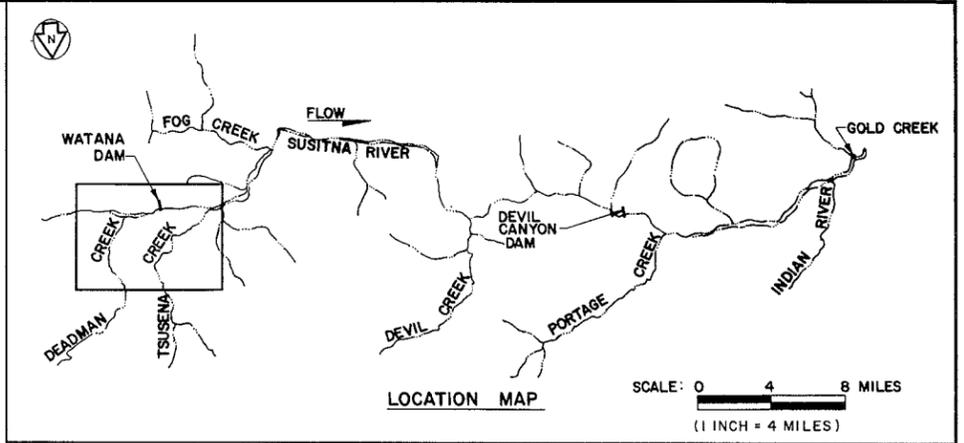


LEGEND

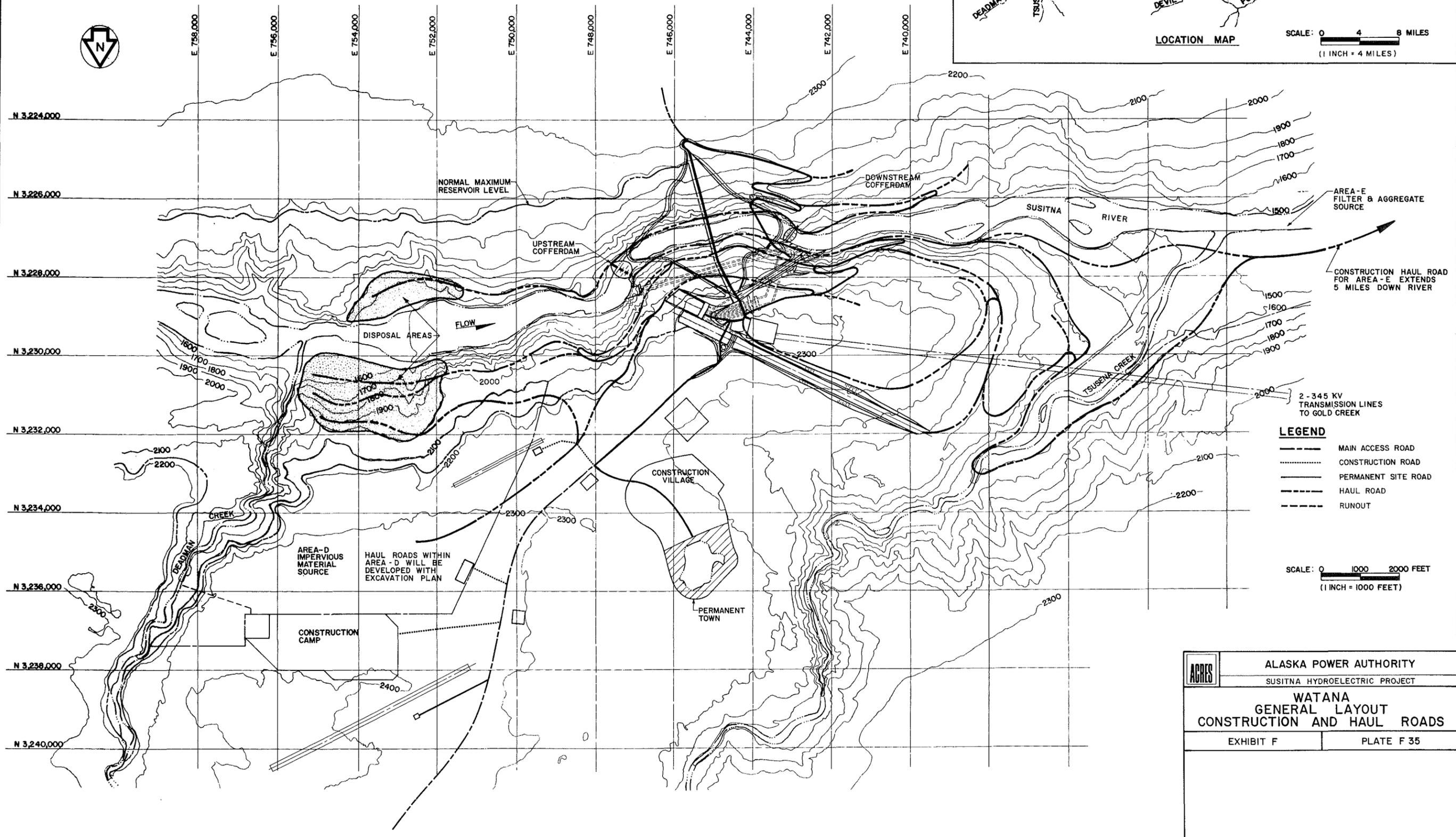
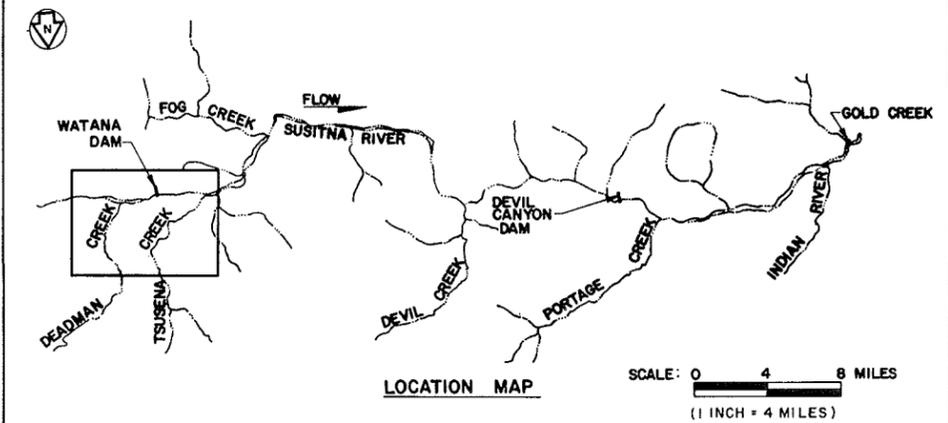
- PROPOSED ROAD
- PROPOSED RAILROAD
- EXISTING RAILROAD
- EXISTING ROAD
- PROPOSED TRANSMISSION LINE

SCALE 0 2 4 MILES (1 INCH = 2 MILES)

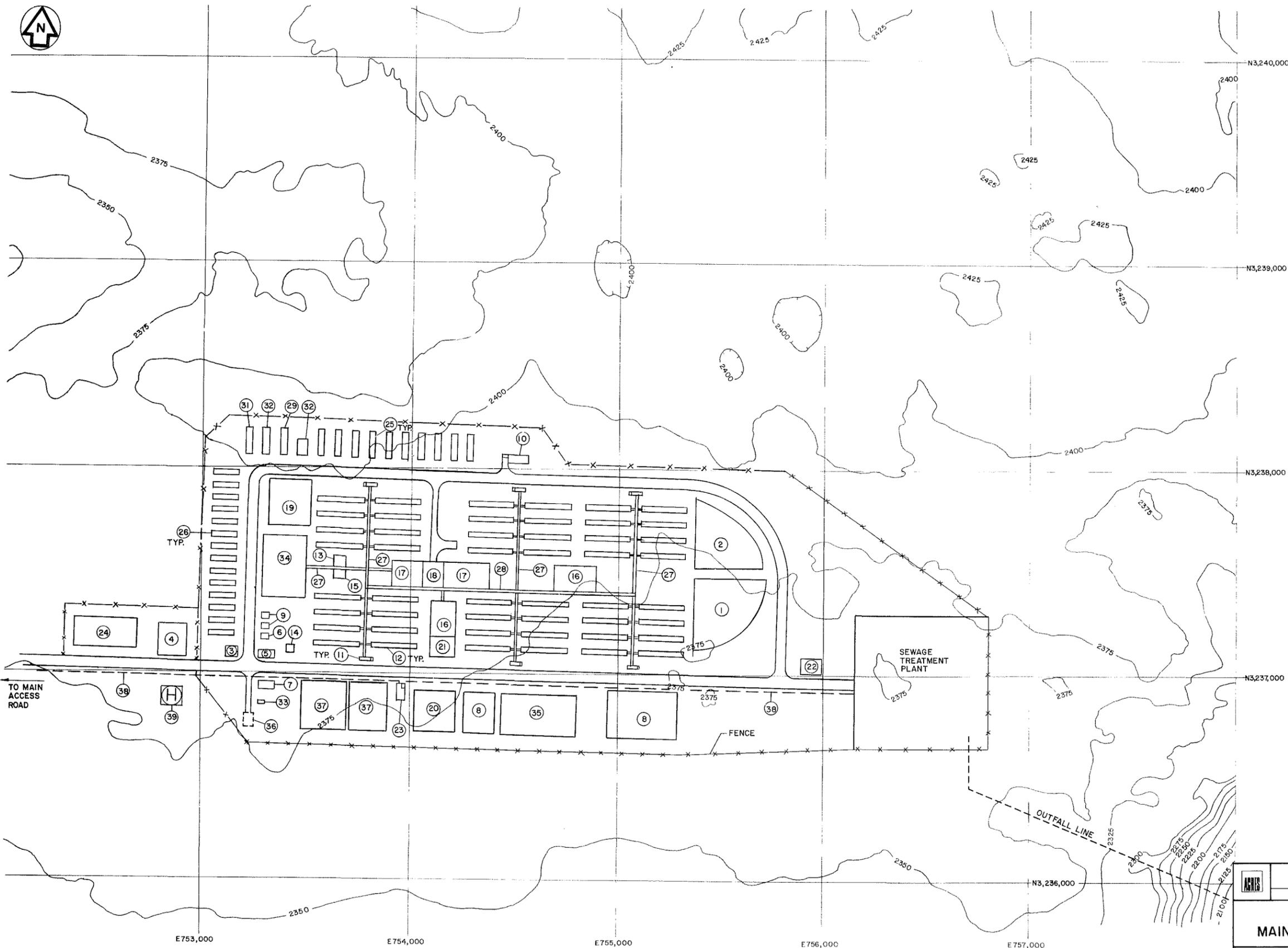
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
ACCESS PLAN		
PROPOSED ROUTE		
EXHIBIT F		PLATE F 32



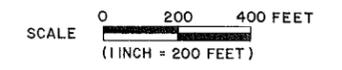
ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT SITE FACILITIES	
EXHIBIT F	PLATE F 34



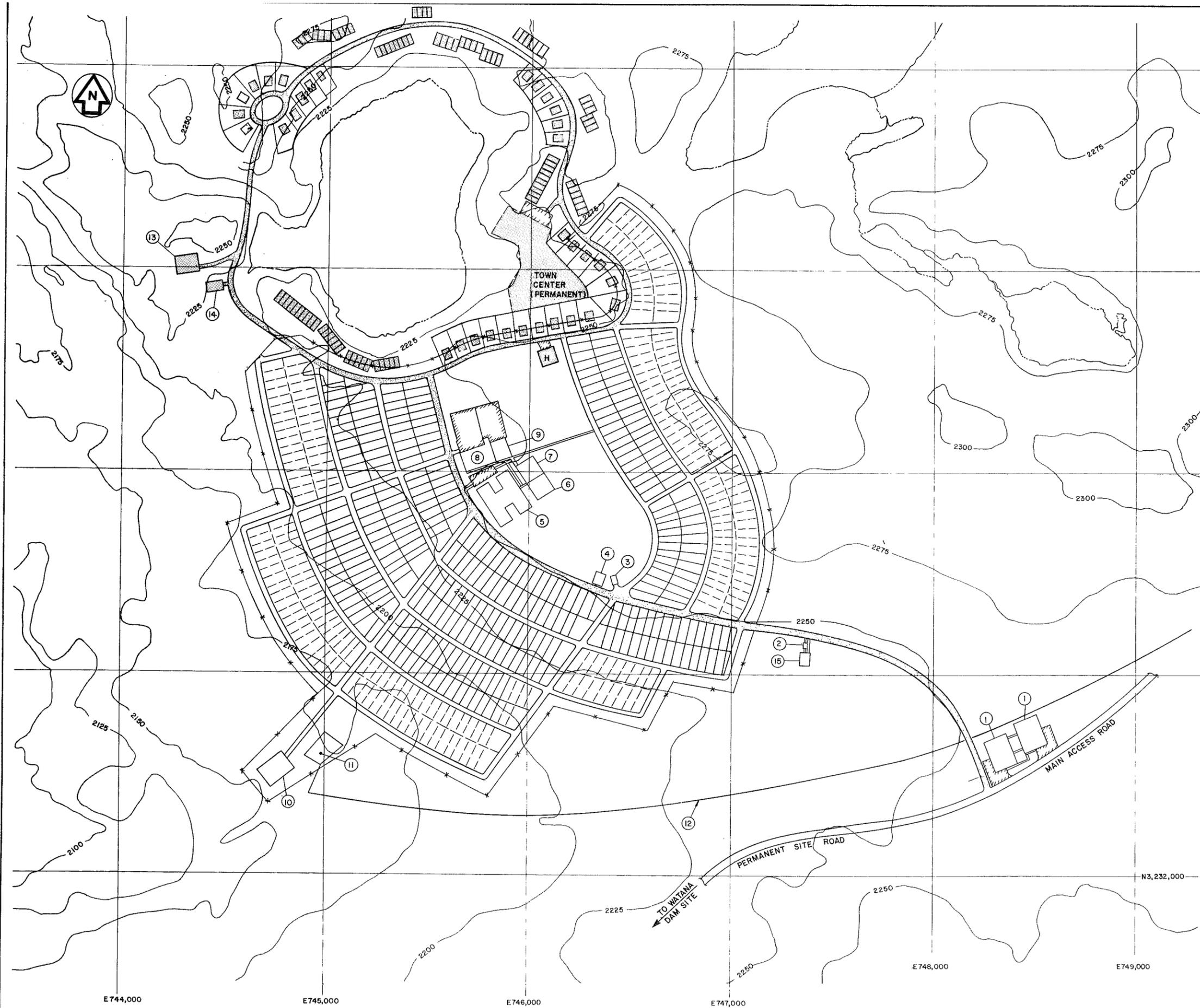
APRES	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT CONSTRUCTION AND HAUL ROADS		
EXHIBIT F	PLATE F 35	



- LEGEND**
- ① BASEBALL
 - ② SOFTBALL
 - ③ SECURITY
 - ④ HOSPITAL
 - ⑤ FIRE & OIL SPILL
 - ⑥ CAMP MANAGER'S OFFICE
 - ⑦ SOILS LAB
 - ⑧ PARKING AREAS
 - ⑨ ADMINISTRATION OFFICES
 - ⑩ STORE
 - ⑪ BUS SHELTERS
 - ⑫ DORMITORIES
 - ⑬ LAUNDRY
 - ⑭ COMMUNICATIONS CTR.
 - ⑮ BANK
 - ⑯ RECREATION HALL
 - ⑰ KITCHEN & DINING
 - ⑱ FOOD SERVICE WAREHOUSE
 - ⑲ WAREHOUSE
 - ⑳ GYMNASIUM
 - ㉑ SWIMMING POOL
 - ㉒ MAINTENANCE GARAGE
 - ㉓ PUMP HOUSE (WATER)
 - ㉔ HOCKEY RINK
 - ㉕ BACHELOR DORMS MGMT. TYPE A
 - ㉖ BACHELOR DORMS MGMT. TYPE B
 - ㉗ 10' PERMAWALK
 - ㉘ 16' PERMAWALK
 - ㉙ MANAGER'S GUEST HOUSE
 - ㉚ OWNER'S GUEST HOUSE
 - ㉛ CONTRACTOR'S GUEST HOUSE
 - ㉜ STAFF CLUBHOUSE
 - ㉝ GENERATING STATION
 - ㉞ RELOCATED CAMP HOUSING (160 SPACES)
 - ㉟ FOOTBALL FIELD
 - ㊱ FUEL STORAGE TANK
 - ㊲ WATER RESERVOIR
 - ㊳ UTILIDOR
 - ㊴ HELIPAD



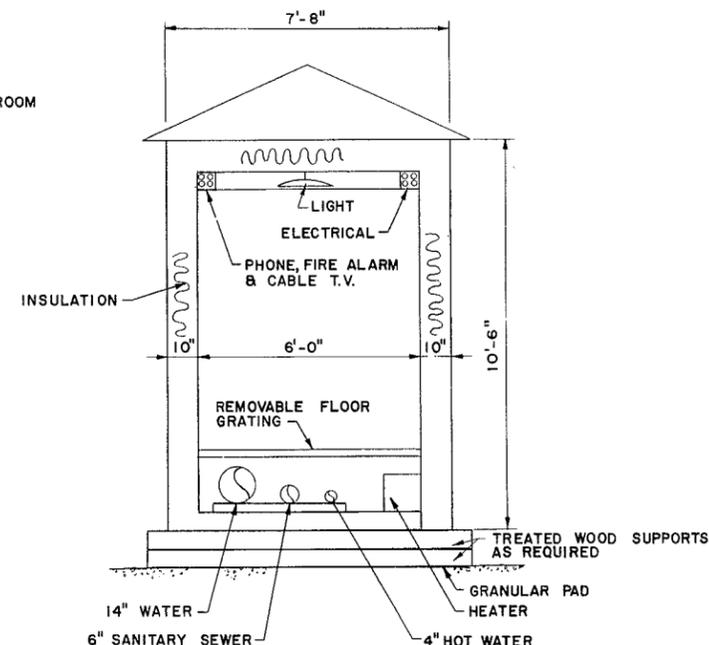
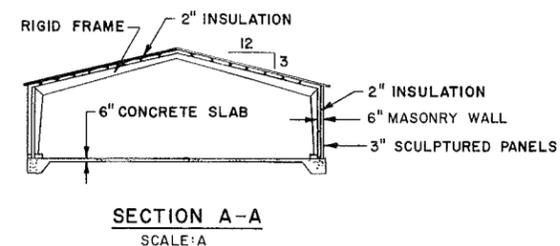
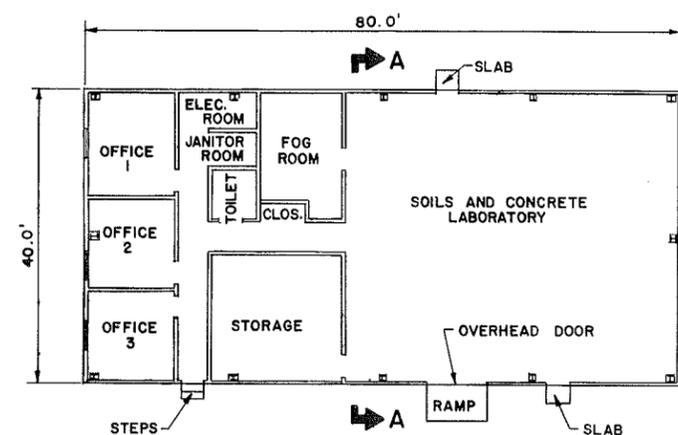
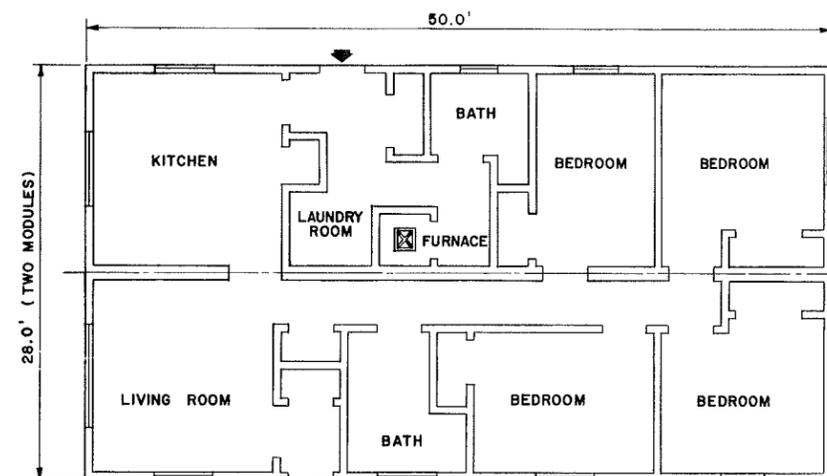
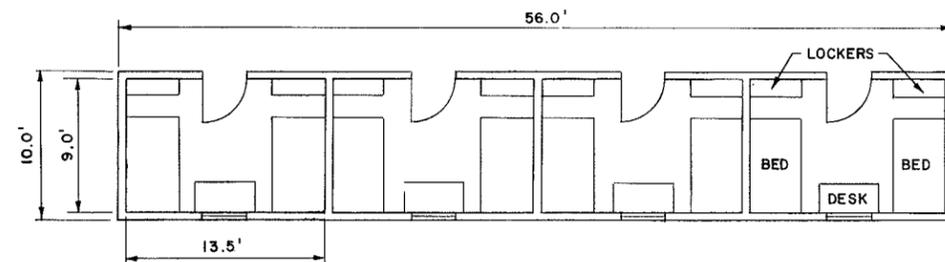
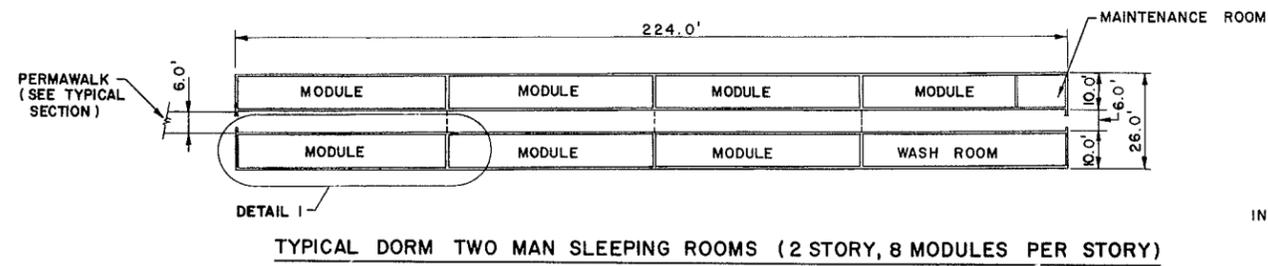
ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN CONSTRUCTION CAMP SITE	
EXHIBIT F	PLATE F 36



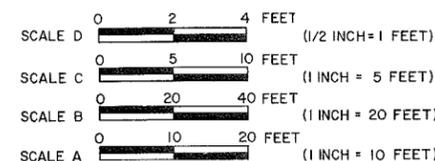
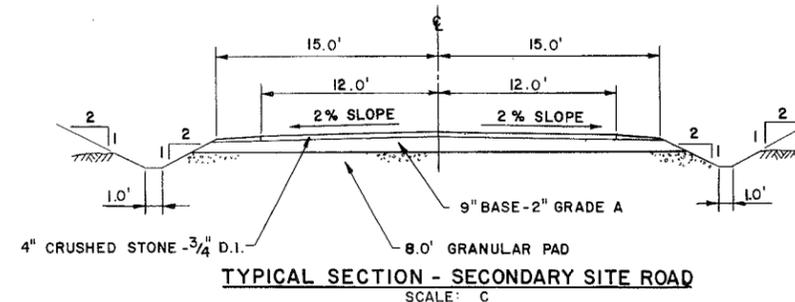
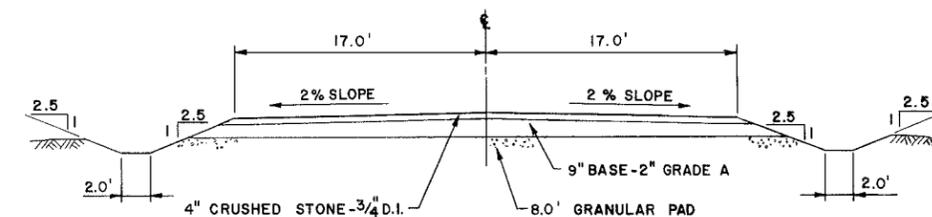
- LEGEND**
- PERMANENT NON-RESIDENTIAL BLDG.
 - PERMANENT ROAD
 - PERMANENT MULTIFAMILY DWELLINGS
72 UNITS FURNISHED BY YEAR 1992
16 UNITS " " " 2001
 - PERMANENT SINGLE FAMILY DWELLINGS
21 UNITS FURNISHED BY YEAR 1992
6 UNITS " " " 2001
 - PERMANENT HOSPITAL
 - TEMPORARY HOUSING/UTILITIES
FURNISHED BY OWNER
16 EA. - 4 BEDROOMS UNITS 28' x 50'
16 EA. - 2 " " " 24' x 50'
16 EA. - 3 " " " " " "
72 EA. - 2 " " " 14' x 60'
200 EA. - 3 " " " 14' x 60'
 - TEMPORARY LOTS/UTILITIES FURNISHED
BY OWNER
240 EA. - LOT SPACES
 - PARKING AREAS
 - 1 MANAGER'S OFFICES
 - 2 GENERATING STATION
 - 3 FIRE STATION
 - 4 GAS STATION
 - 5 SCHOOL
 - 6 SWIMMING POOL
 - 7 GYMNASIUM
 - 8 STORE
 - 9 RECREATION CENTER
 - 10 SEWAGE COLLECTION PUMP STATION
 - 11 WATER PUMP STATION
 - 12 UTILIDOR
 - 13 SEWAGE TREATMENT PLANT
 - 14 WATER TREATMENT PLANT
 - 15 FUEL STORAGE TANK (50,000 g)

SCALE 0 200 400 FEET (1 INCH = 200 FEET)

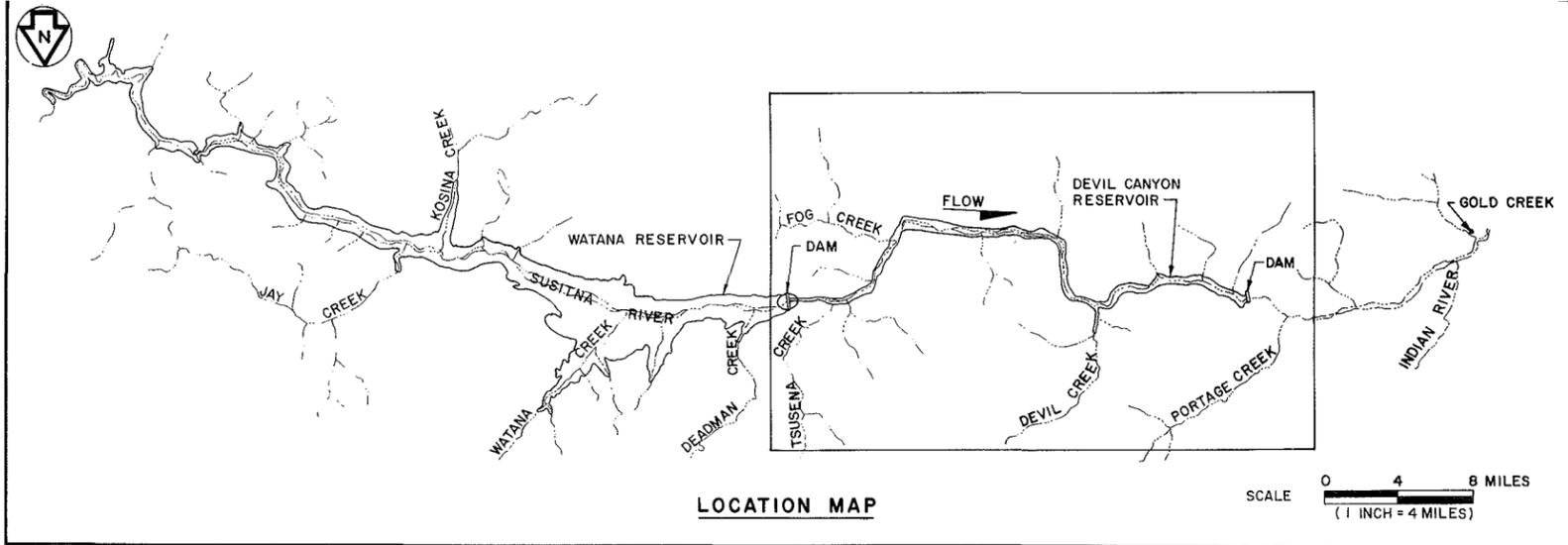
 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA VILLAGE AND TOWN SITE	
EXHIBIT F	PLATE F 37



PERMANENT VILLAGE HOUSING



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA AND DEVIL CANYON CONSTRUCTION CAMP DETAILS	
EXHIBIT F	PLATE F 38



LOCATION MAP

SCALE 0 4 8 MILES
(1 INCH = 4 MILES)

LEGEND

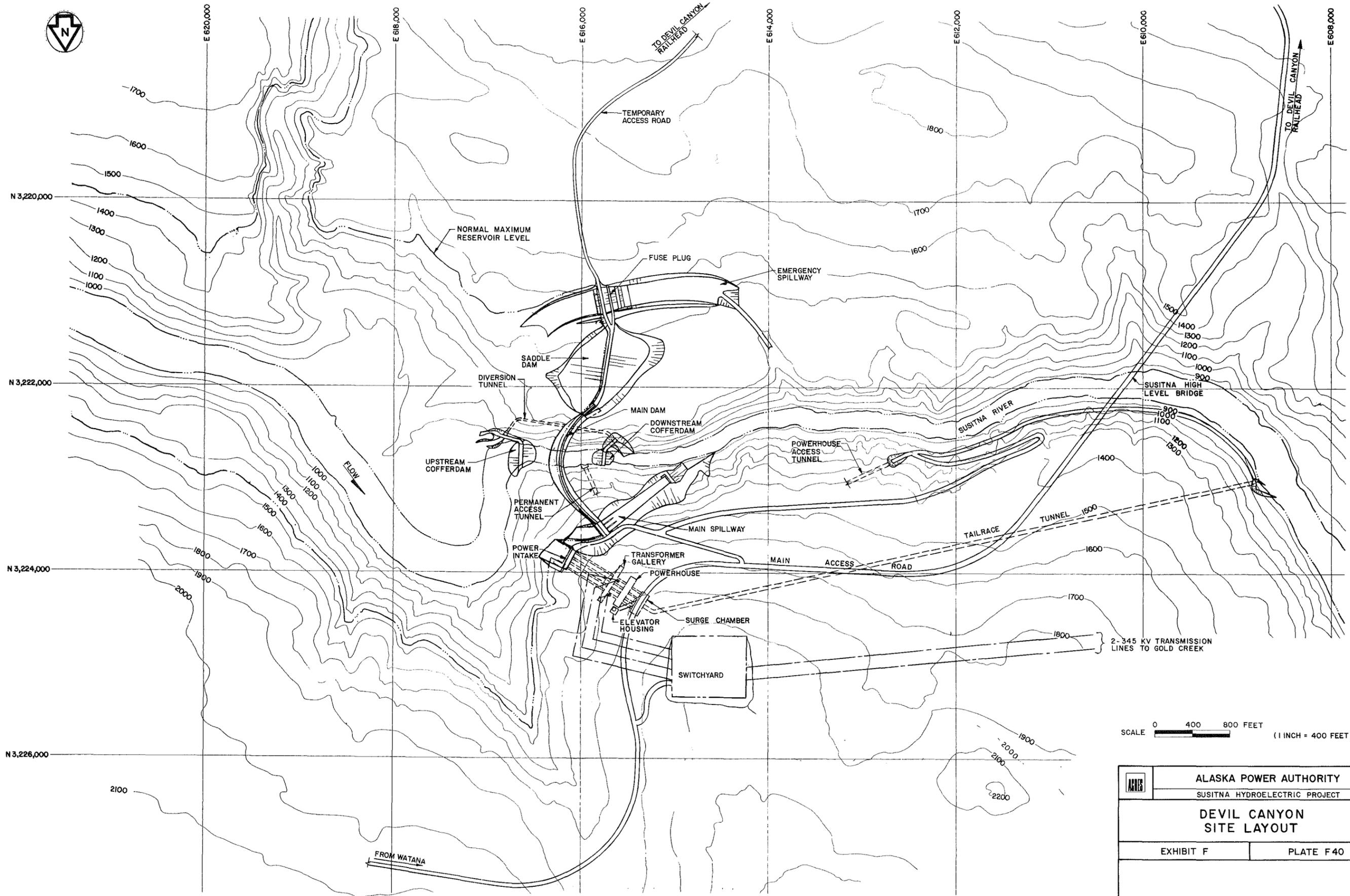
- NORMAL MAXIMUM OPERATING LEVEL EL. 1455
- 2000 CONTOUR IN FEET ABOVE MSL



PLAN

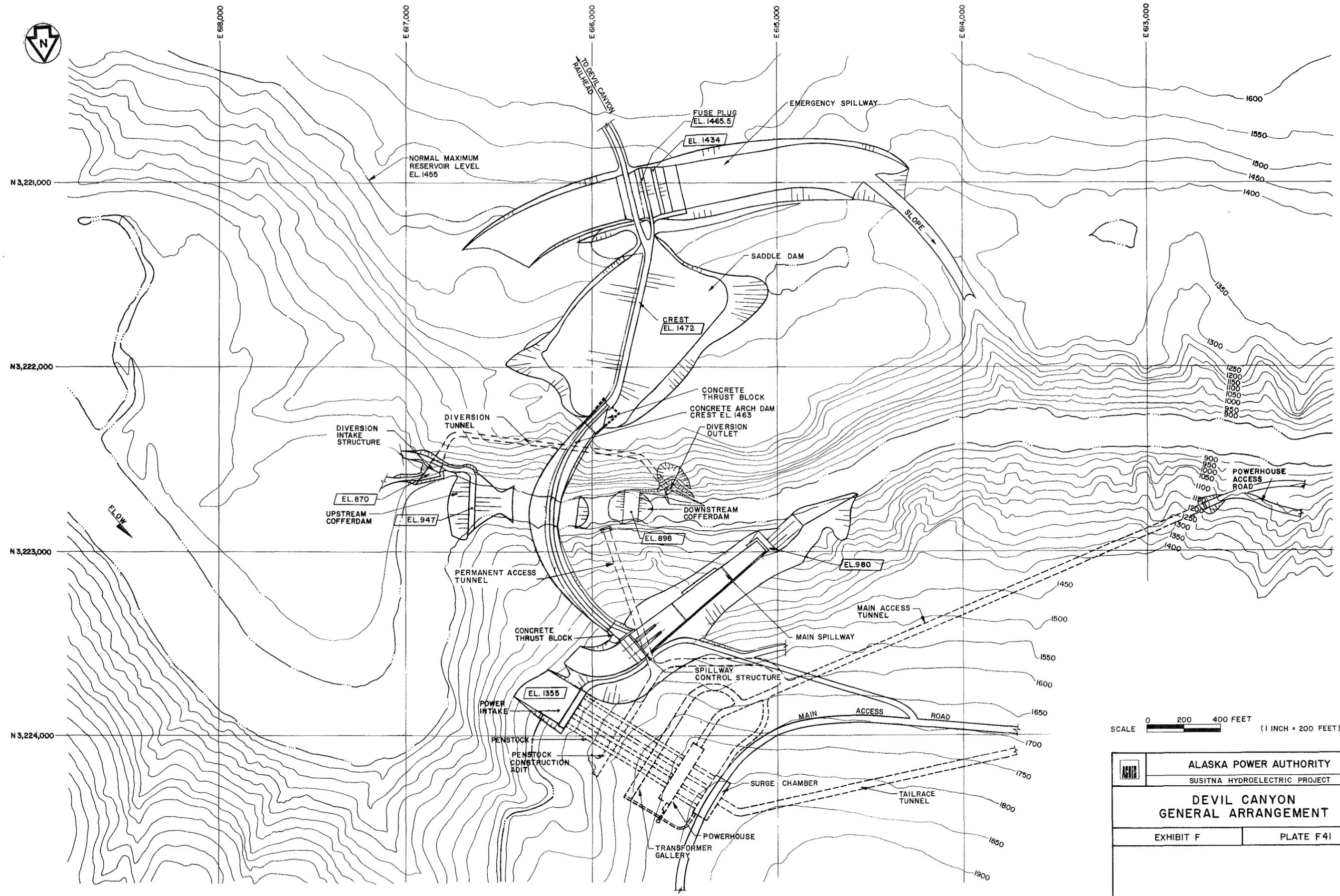
SCALE 0 1 2 MILES
(1 INCH = 1 MILE)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON RESERVOIR PLAN		
EXHIBIT F		PLATE F39



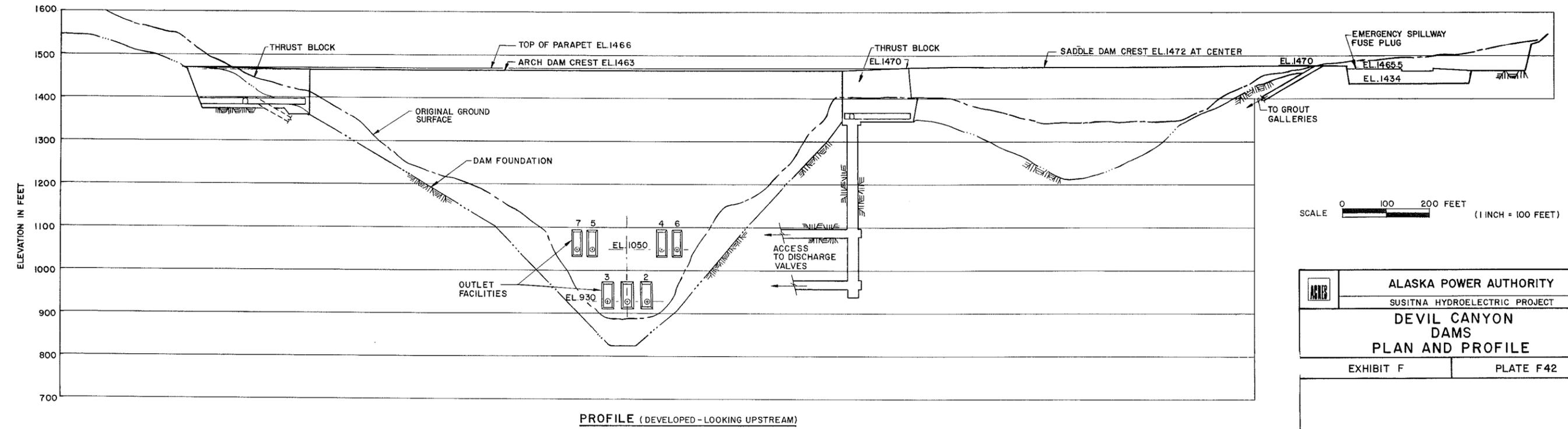
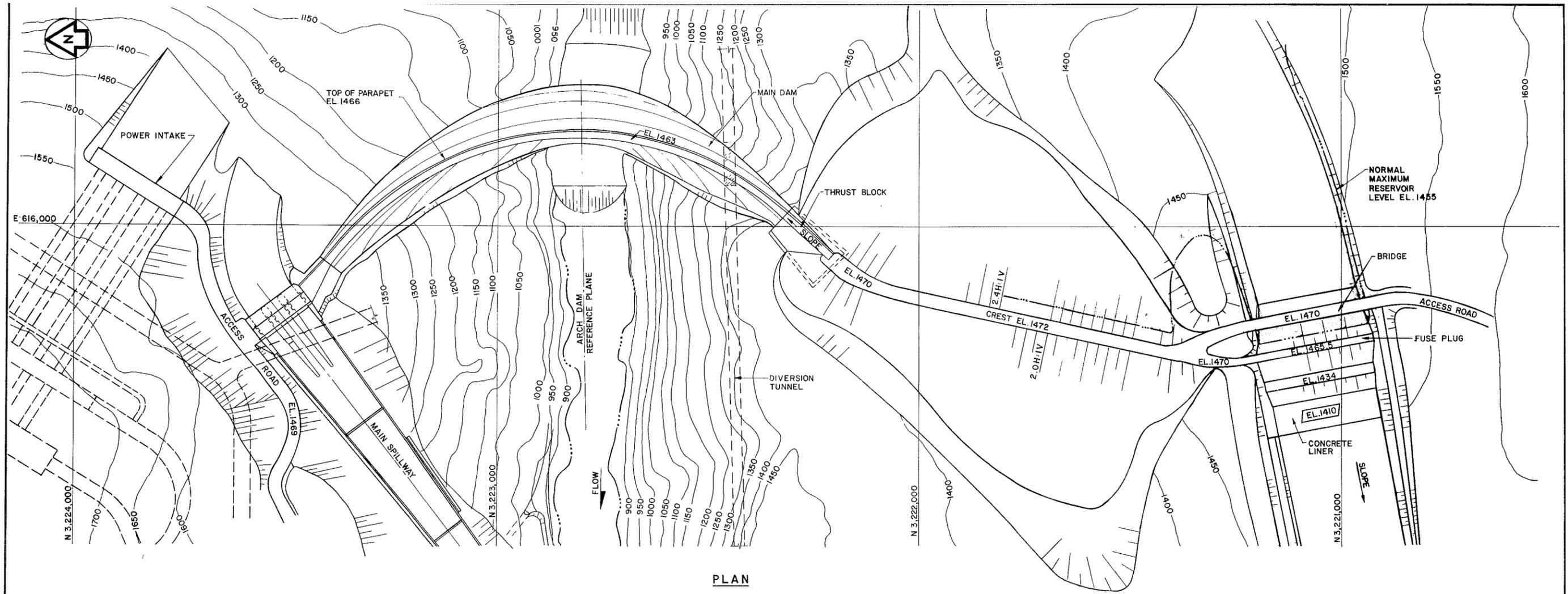
SCALE 0 400 800 FEET (1 INCH = 400 FEET)

	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON SITE LAYOUT	
EXHIBIT F	PLATE F40



SCALE 0 200 400 FEET (1 INCH = 200 FEET)

 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F41



	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON DAMS PLAN AND PROFILE	
EXHIBIT F	PLATE F42

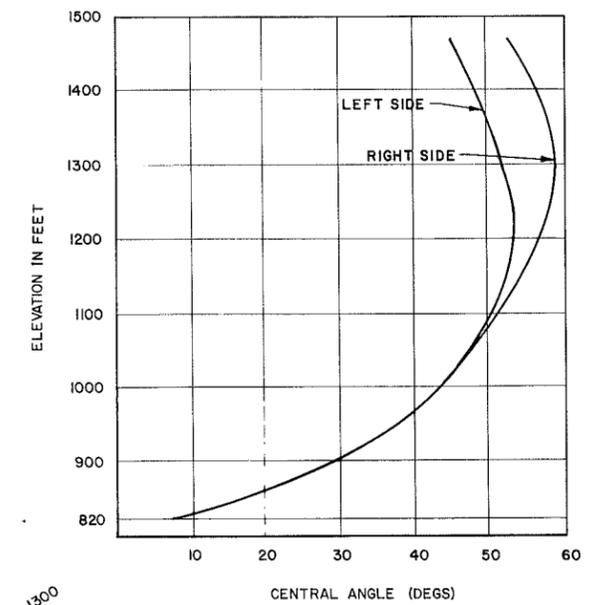
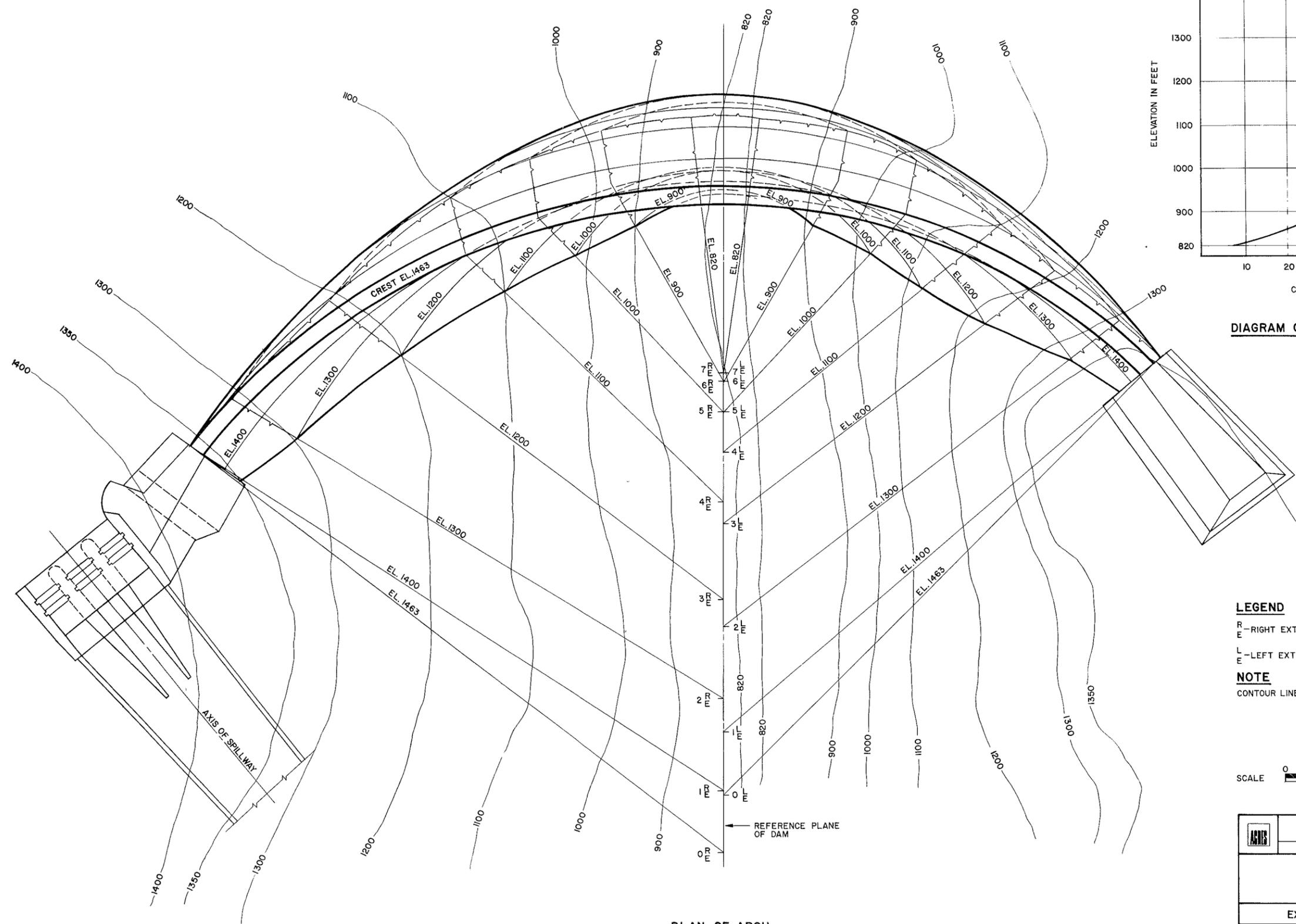


DIAGRAM OF CENTRAL ANGLES

LEGEND

- R - RIGHT EXTRADOS
- E - LEFT EXTRADOS

NOTE

CONTOUR LINES SHOW SOUND ROCK

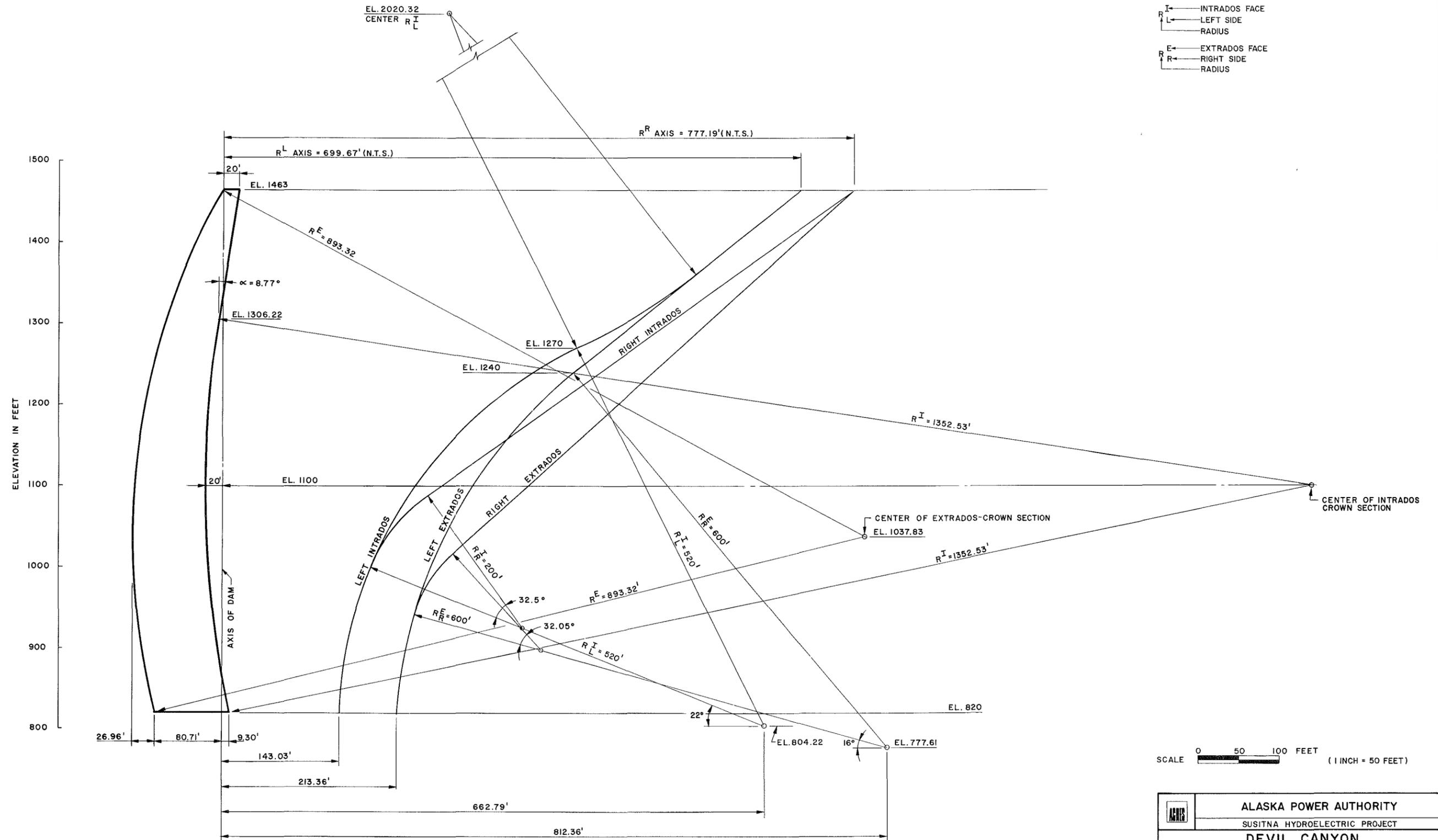
SCALE 0 50 100 FEET (1 INCH = 50 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM GEOMETRY		
EXHIBIT F	PLATE F 43	

PLAN OF ARCH

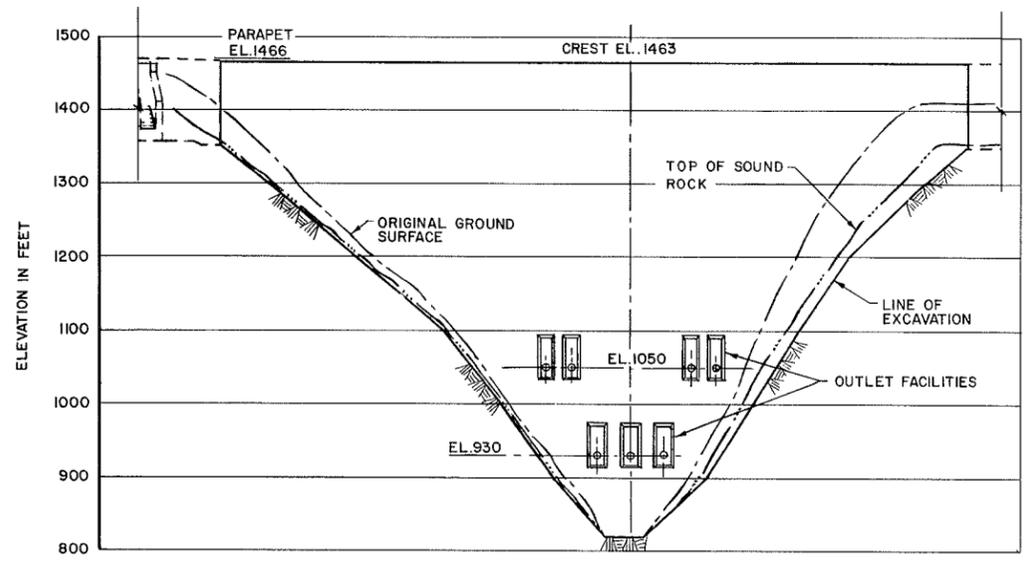
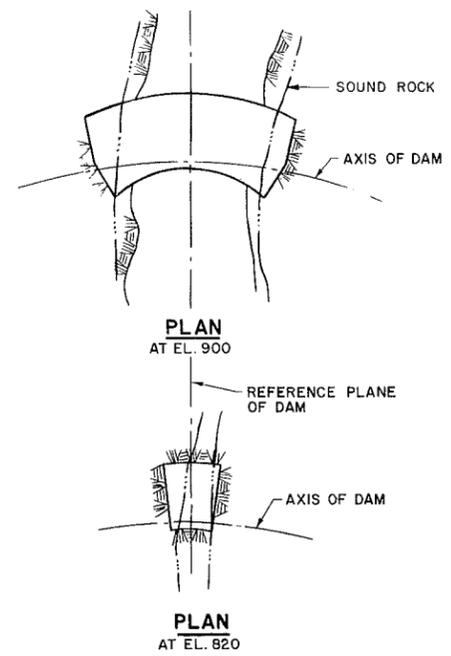
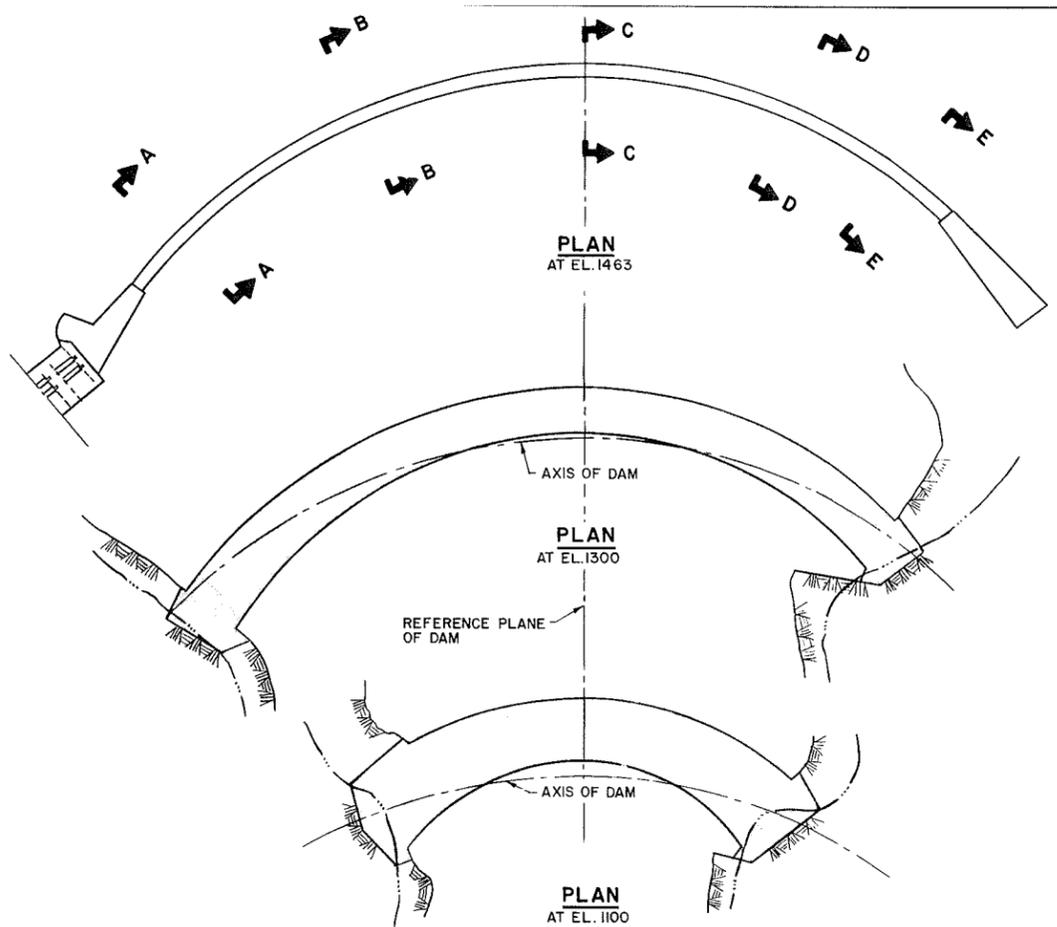
LEGEND

- I ← INTRADOS FACE
- R ← LEFT SIDE
- RADIUS
- E ← EXTRADOS FACE
- R ← RIGHT SIDE
- RADIUS

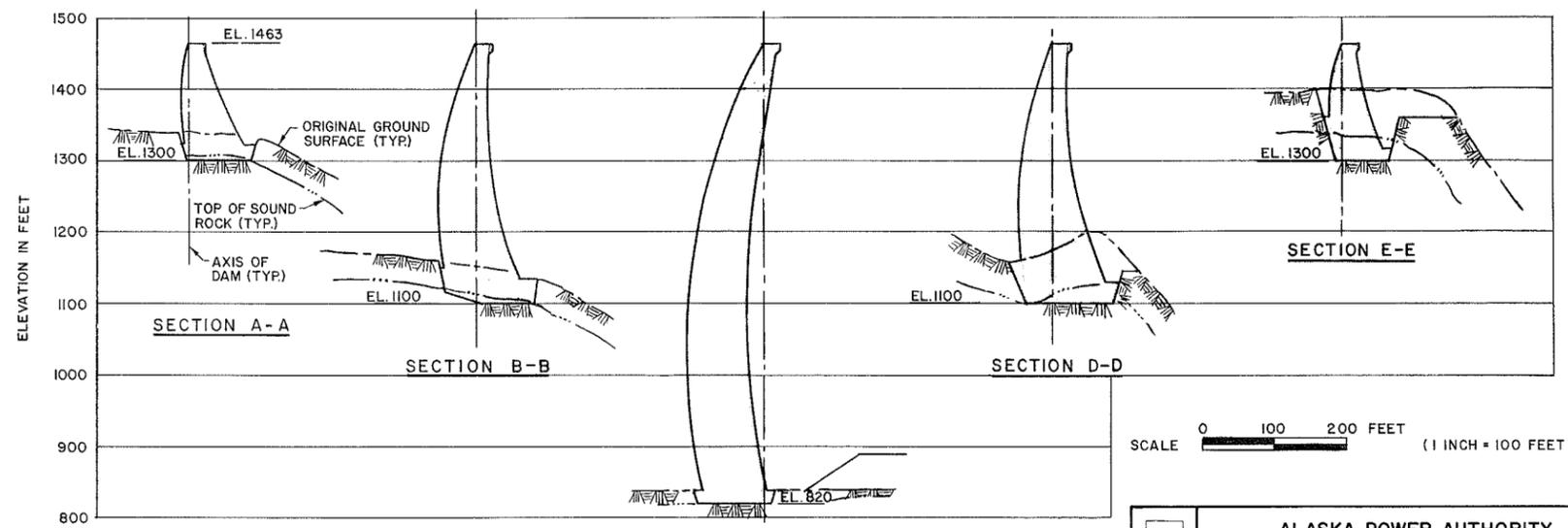


SCALE 0 50 100 FEET (1 INCH = 50 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM CROWN SECTION		
EXHIBIT F	PLATE F44	



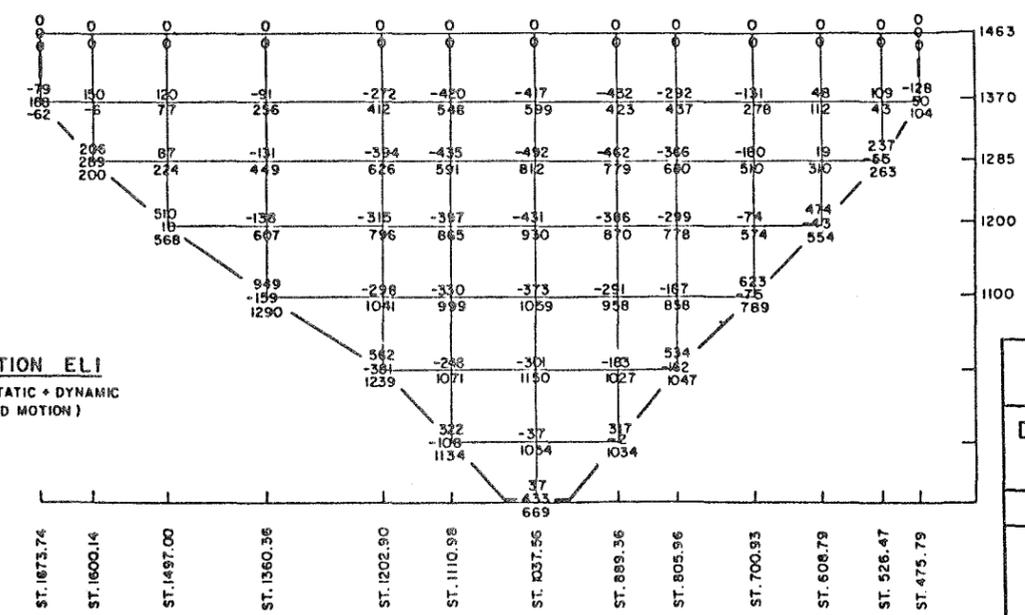
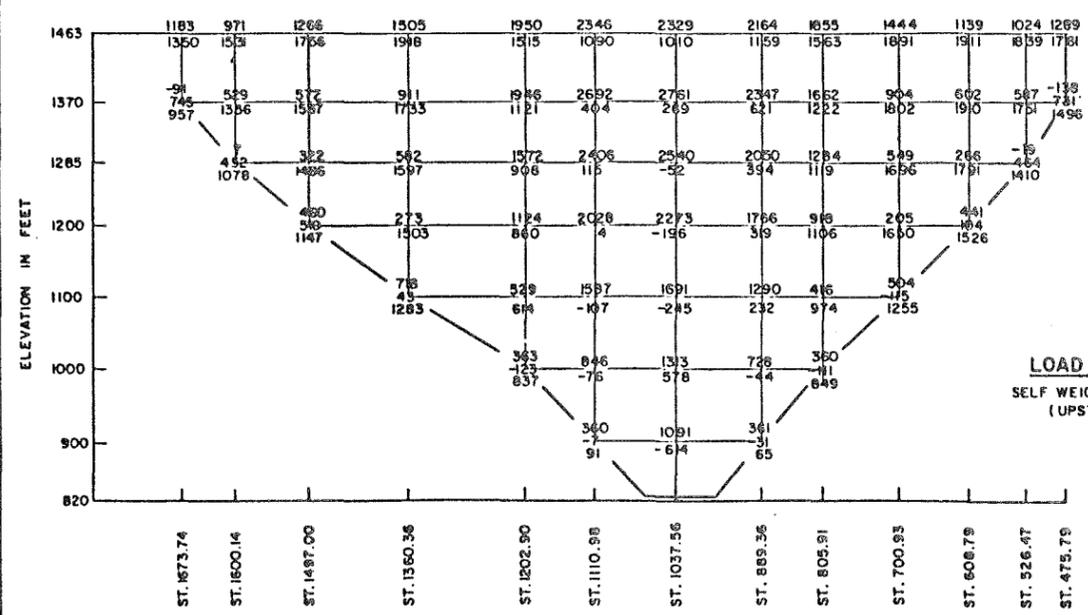
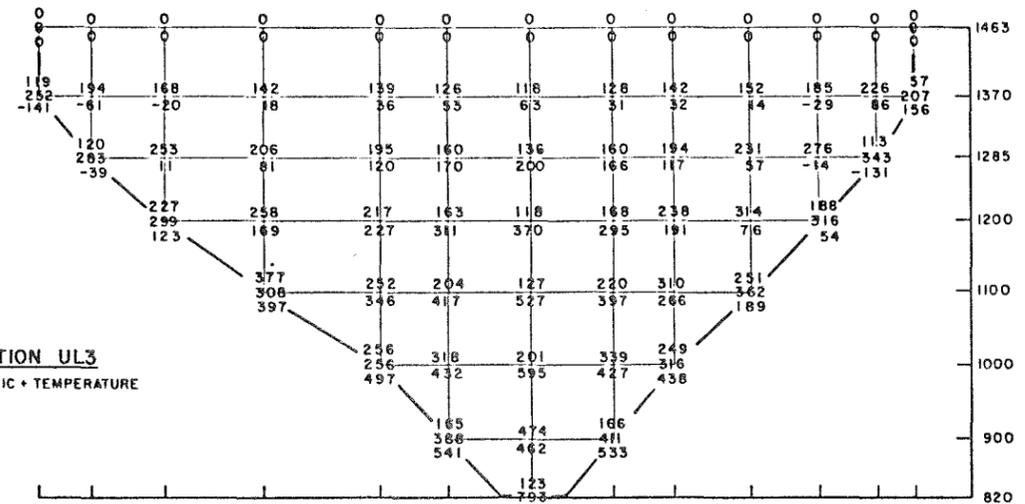
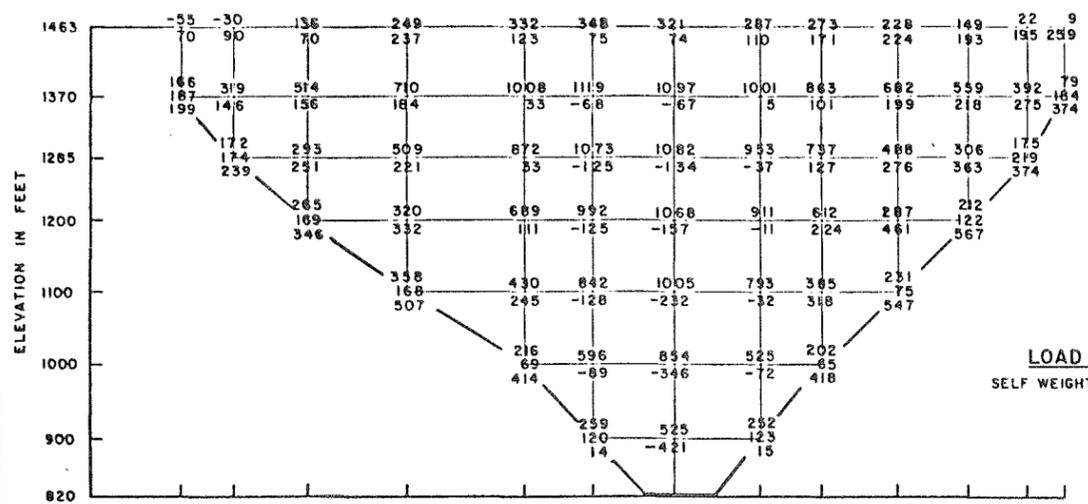
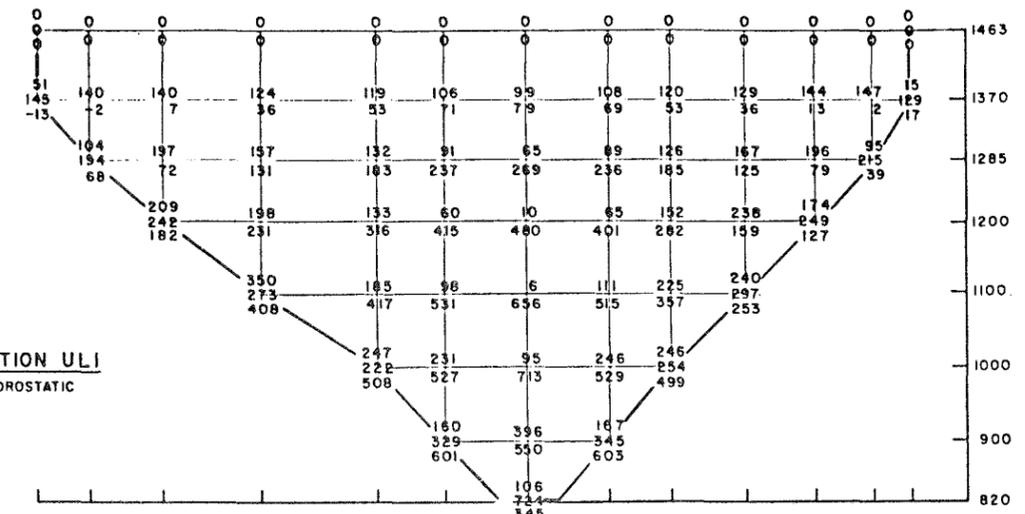
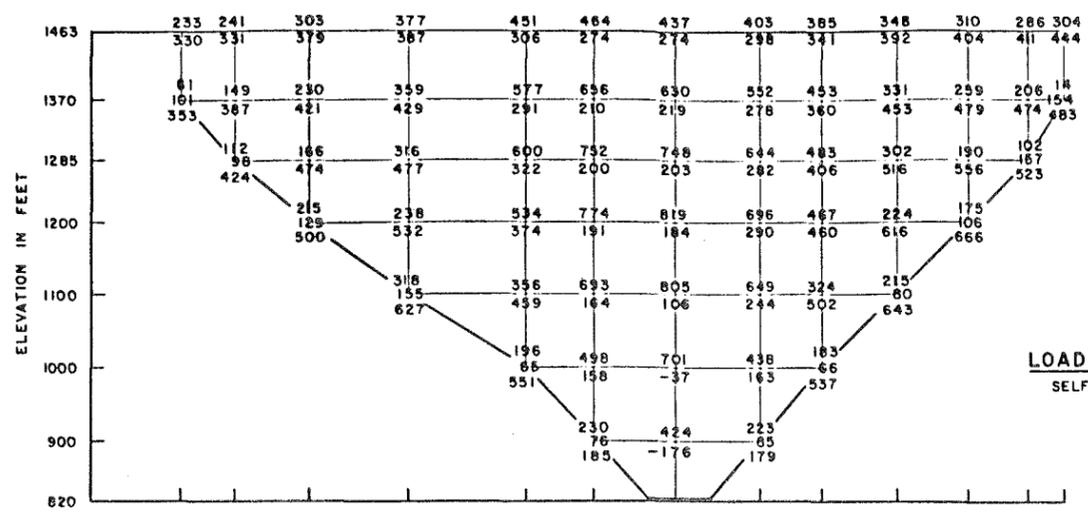
DAM PROFILE



DAM SECTIONS
(PARAPET NOT SHOWN)



	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON MAIN DAM SECTIONS	
EXHIBIT F	PLATE F 45



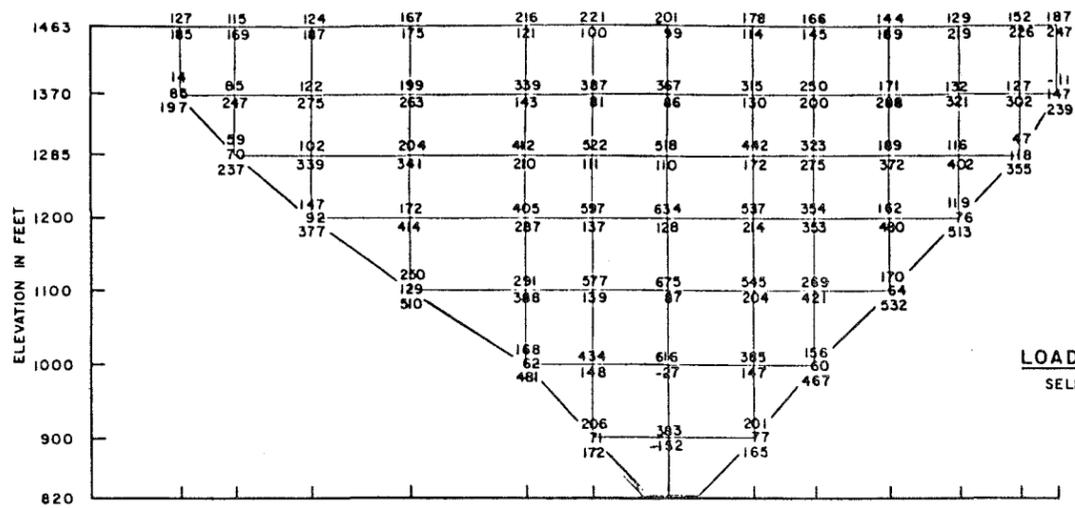
LEGEND

- (MINUS) INDICATES TENSION
- SHEAR STRESS IN P.S.I. WHERE SHOWN
- STRESS AT UPSTREAM OR EXTRADOS FACE
- STRESS AT DOWNSTREAM OR INTRADOS FACE

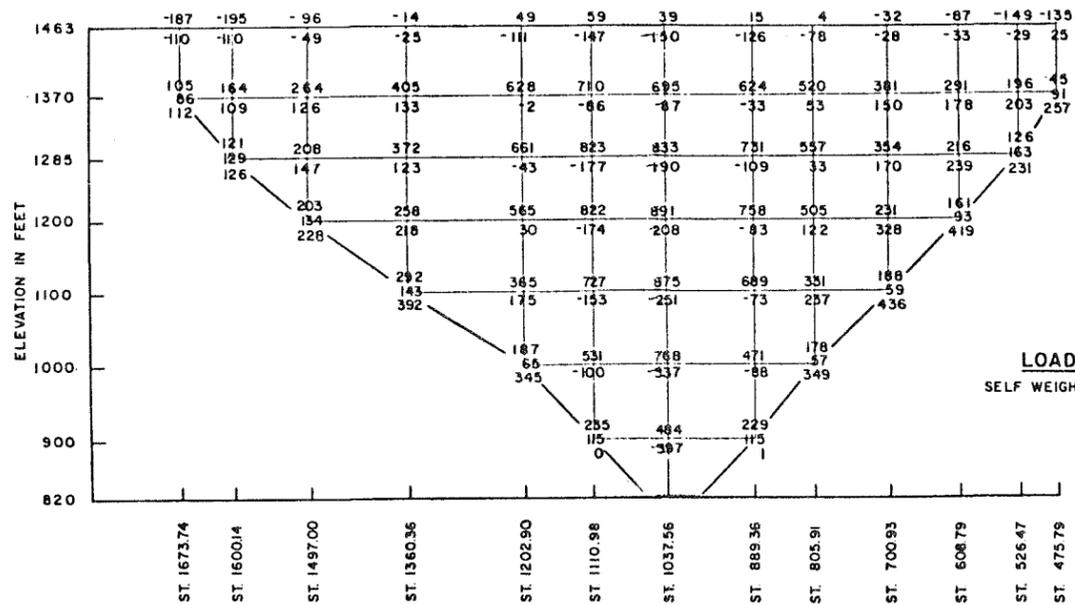
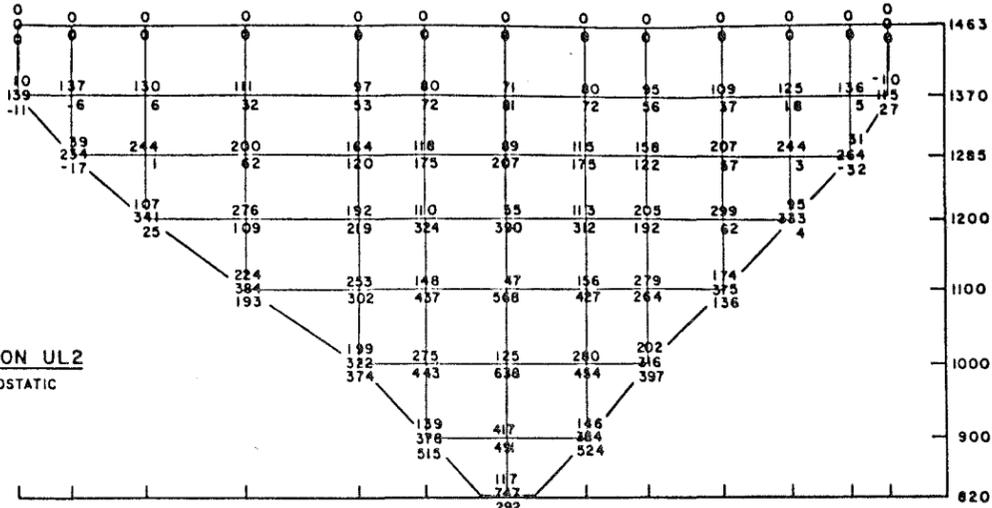
ARCH STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)

CANTILEVER STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)

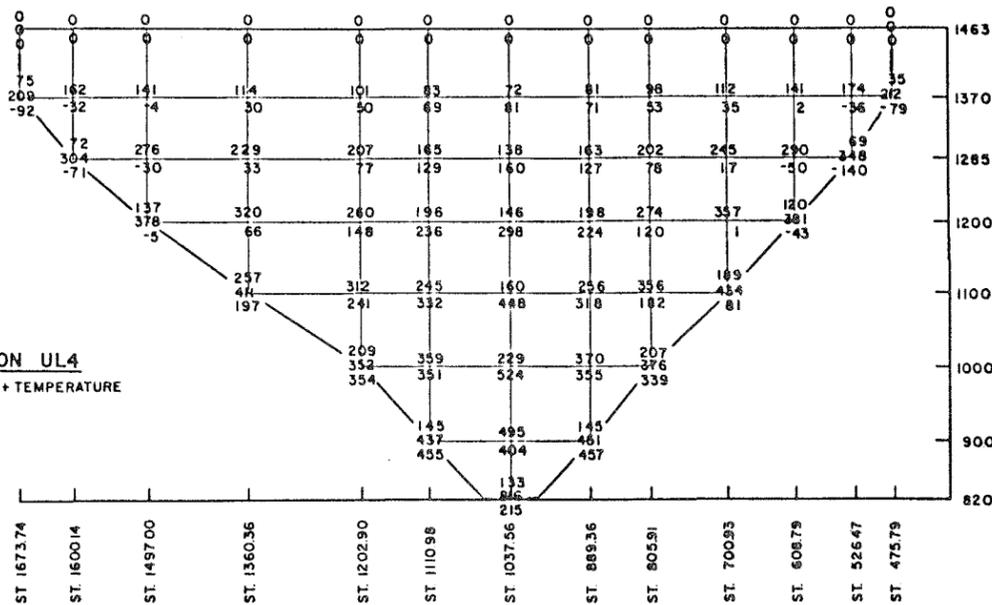
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON ARCH DAM STRESSES	
RESERVOIR AT EL. 1455	
EXHIBIT F	PLATE F45 A



LOAD COMBINATION UL2
SELF WEIGHT + HYDROSTATIC



LOAD COMBINATION UL4
SELF WEIGHT + HYDROSTATIC + TEMPERATURE



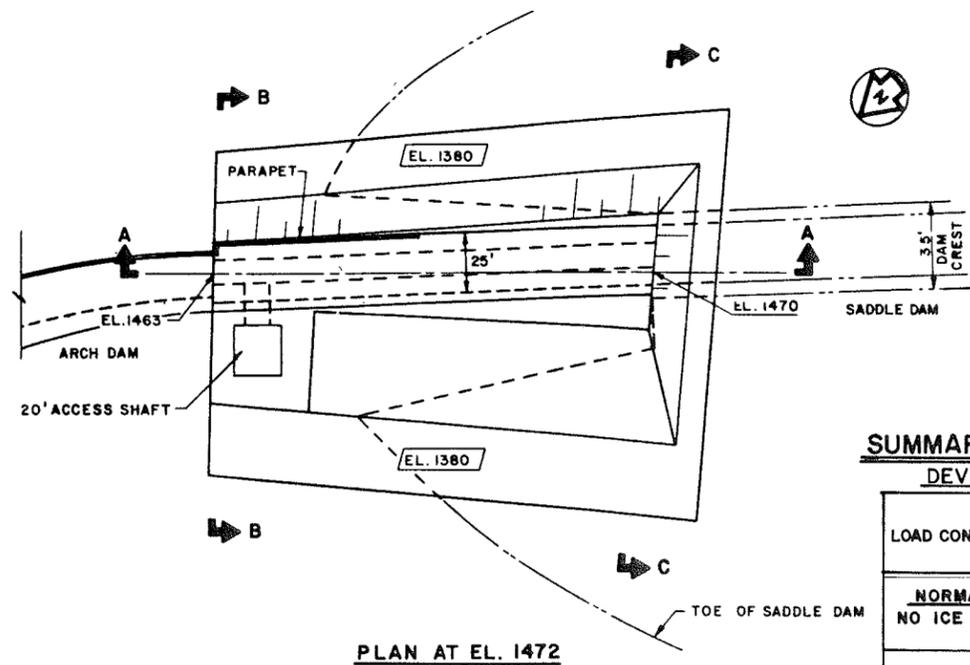
ARCH STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)

CANTILEVER STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)

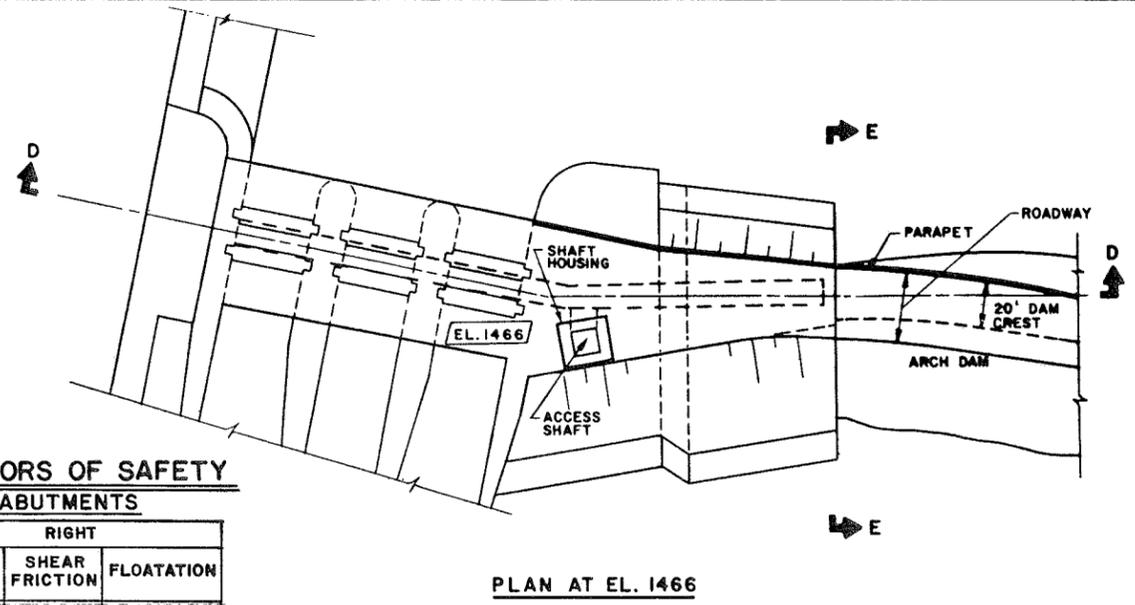
LEGEND

- (MINUS) INDICATES TENSION
- 580 SHEAR STRESS IN P.S.I. WHERE SHOWN
- 45 STRESS AT UPSTREAM OR EXTRADOS FACE
- 658 STRESS AT DOWNSTREAM OR INTRADOS FACE

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON ARCH DAM STRESSES	
RESERVOIR AT EL. 1405	
EXHIBIT F	PLATE F45 B



PLAN AT EL. 1472

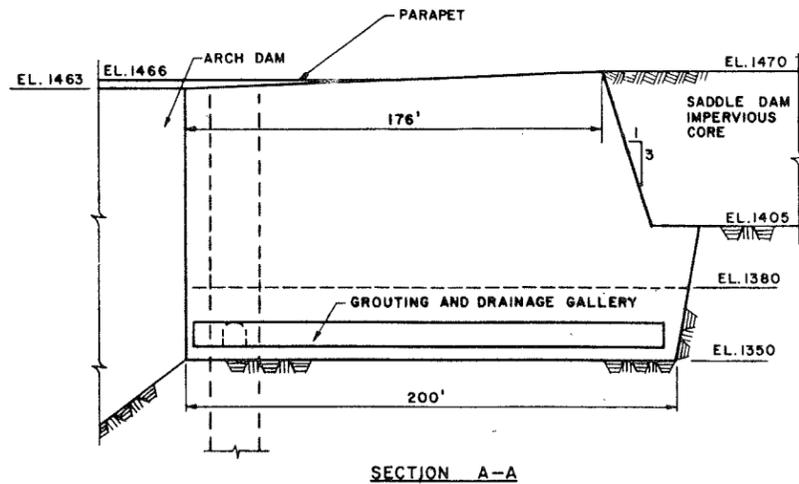


PLAN AT EL. 1466

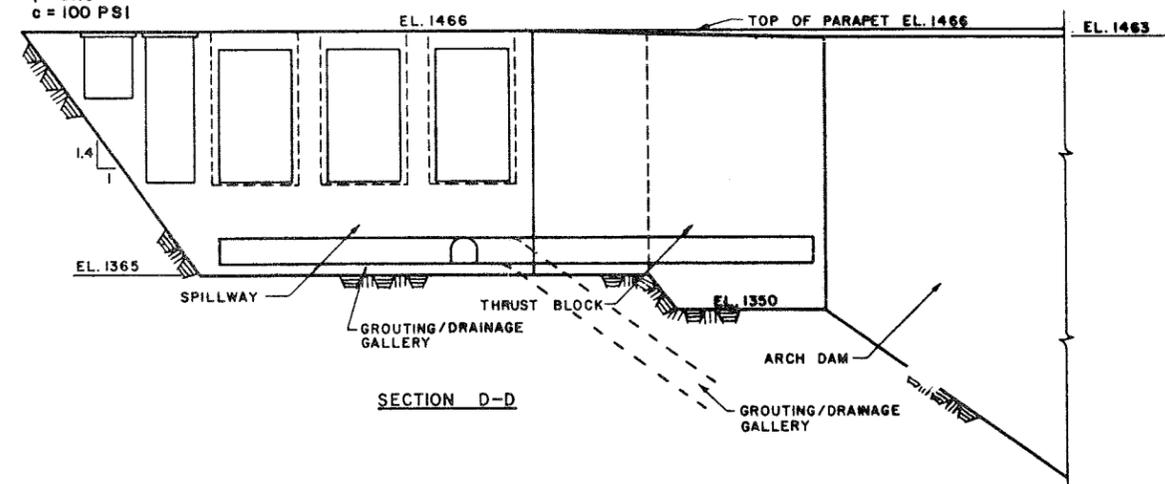
SUMMARY OF STABILITY ANALYSES FACTORS OF SAFETY
DEVIL CANYON ARCH DAM THRUST BLOCK ABUTMENTS

LOAD CONDITION	LEFT			RIGHT		
	SLIDING	SHEAR FRICTION	FLOATATION	SLIDING	SHEAR FRICTION	FLOATATION
NORMAL NO ICE	N.A.	4.54	6.37	N.A.	6.87	6.16
EXTREME EARTHQUAKE (0.8 SEE)	N.A.	1.04	6.45	N.A.	1.95	6.31

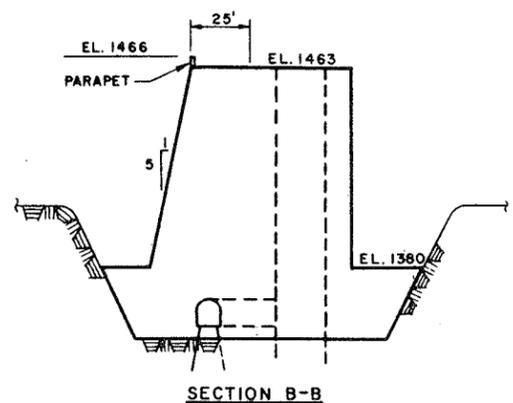
PHYSICAL PARAMETERS
 $\phi = 31.5^\circ$
 $c = 200 \text{ PSI}$



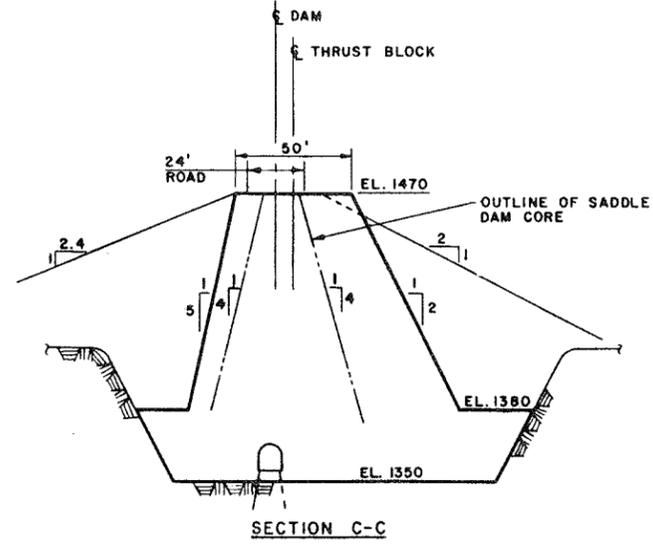
SECTION A-A



SECTION D-D

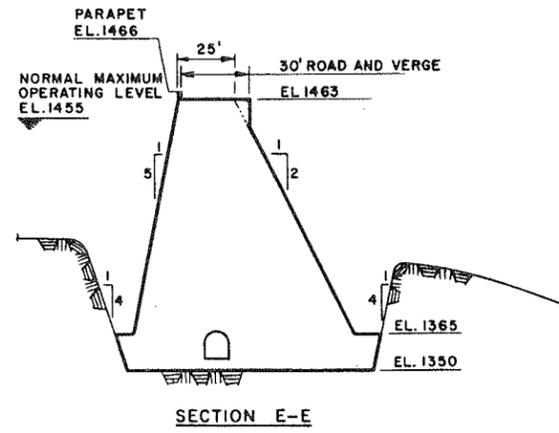


SECTION B-B



SECTION C-C

LEFT ABUTMENT THRUST BLOCK

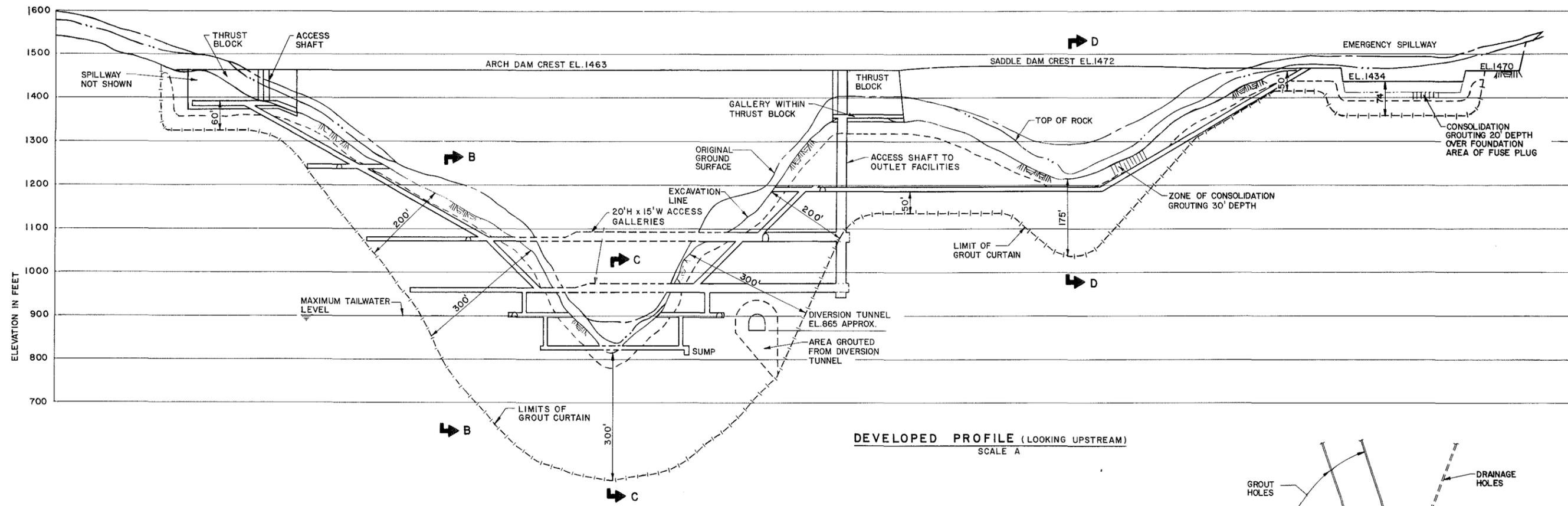


SECTION E-E

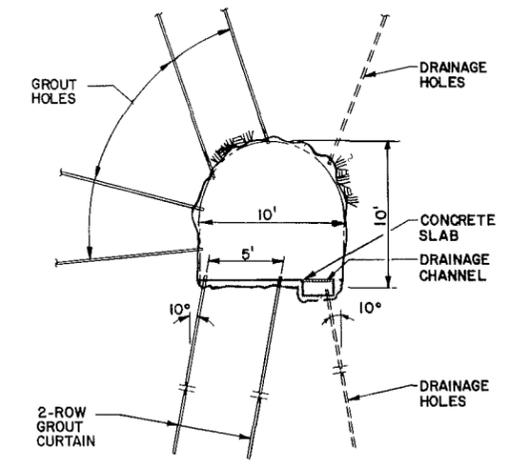
RIGHT ABUTMENT THRUST BLOCK

SCALE 0 30 60 FEET (1 INCH = 30 FEET)

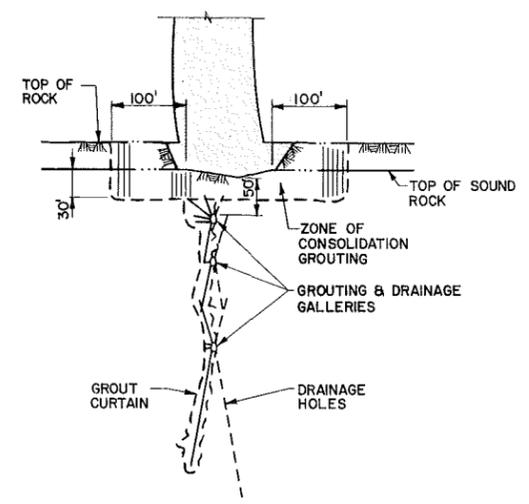
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM THRUST BLOCKS	
EXHIBIT F	PLATE F46



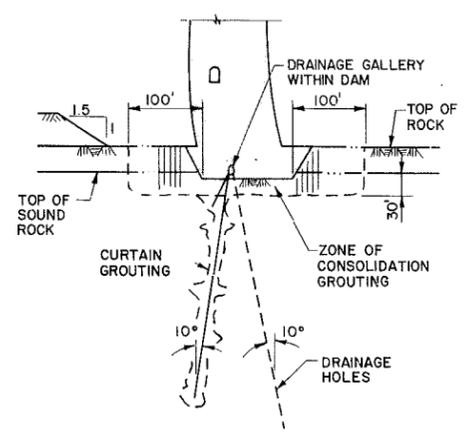
DEVELOPED PROFILE (LOOKING UPSTREAM)
SCALE A



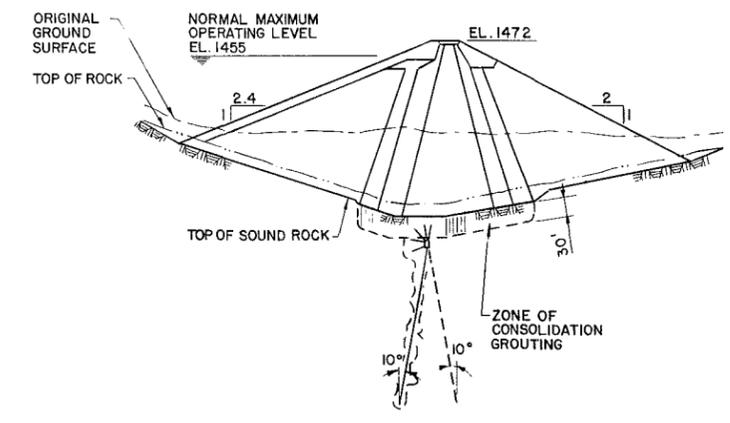
GALLERY DETAIL
SCALE B



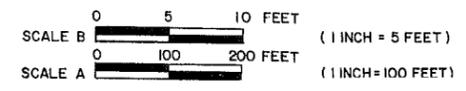
SECTION B-B
SCALE A



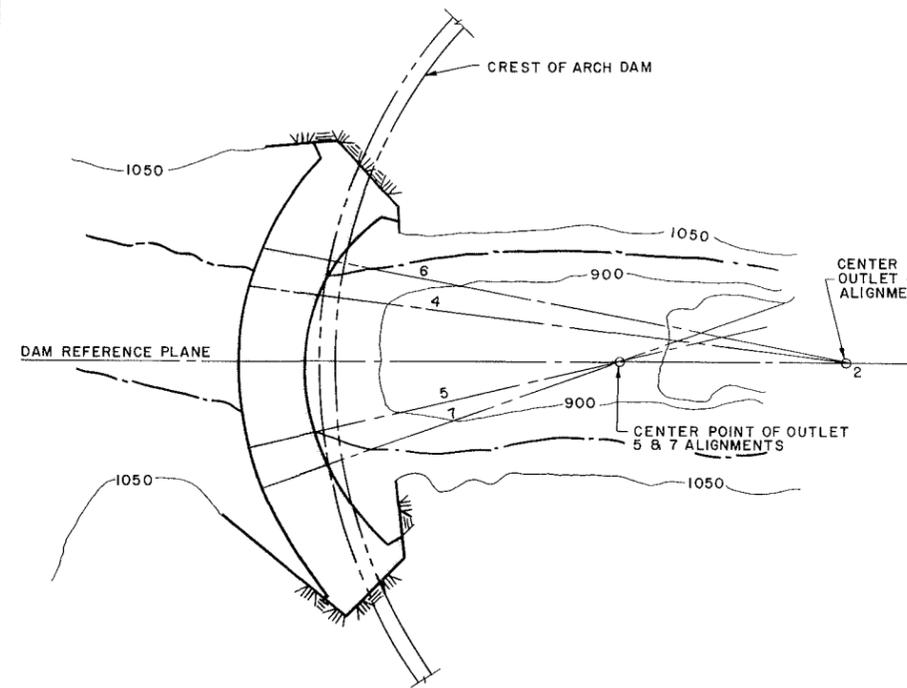
SECTION C-C
SCALE A



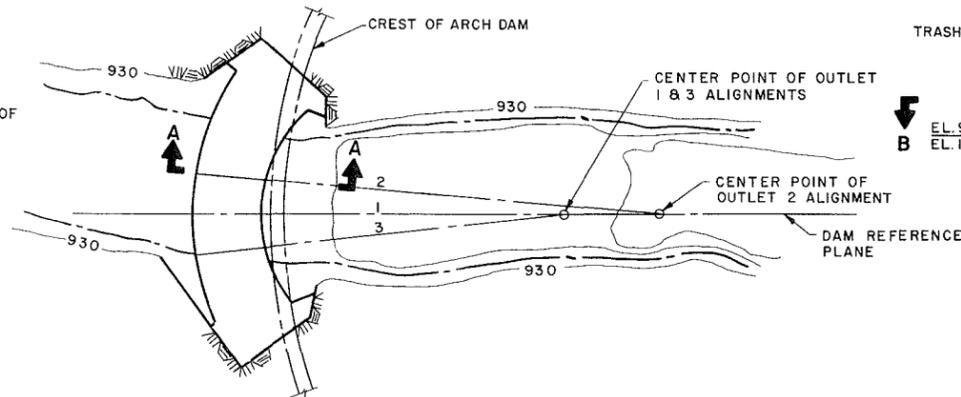
SECTION D-D
SCALE A



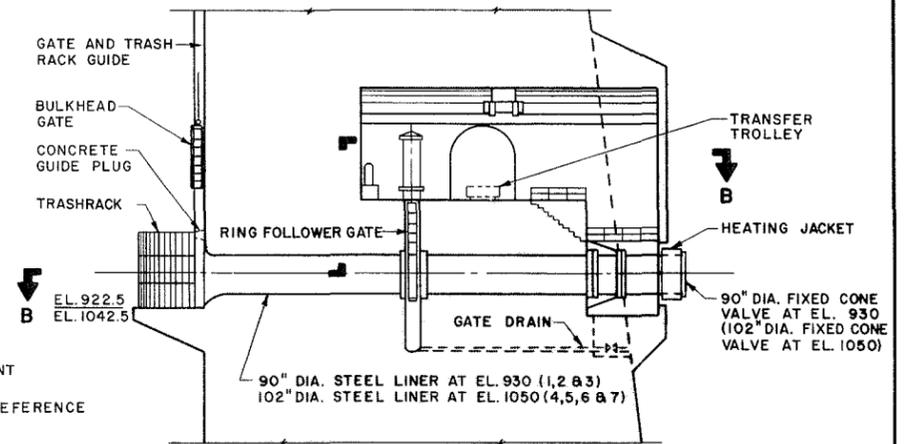
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM GROUTING AND DRAINAGE		
EXHIBIT F	PLATE F47	



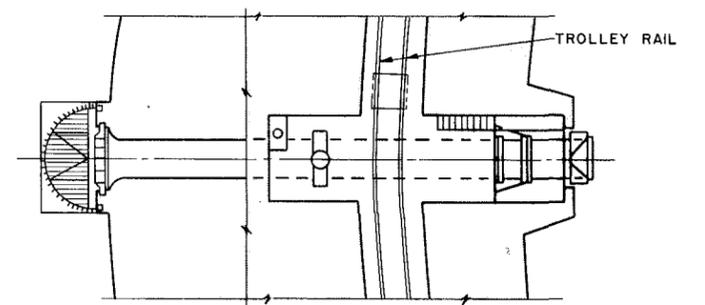
PLAN AT EL. 1050
SCALE A



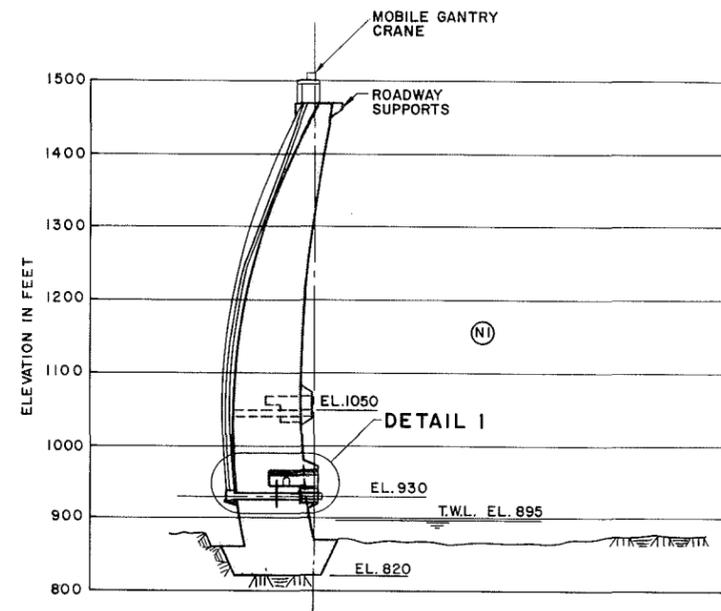
PLAN AT EL. 930
SCALE A



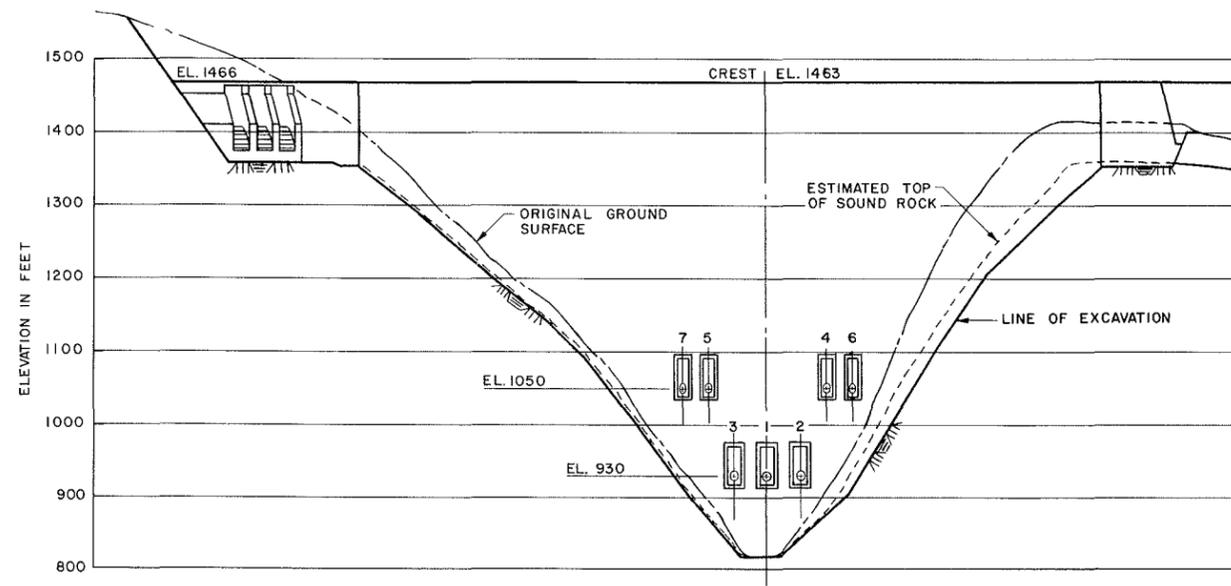
DETAIL I
SCALE B



SECTION B-B
SCALE B



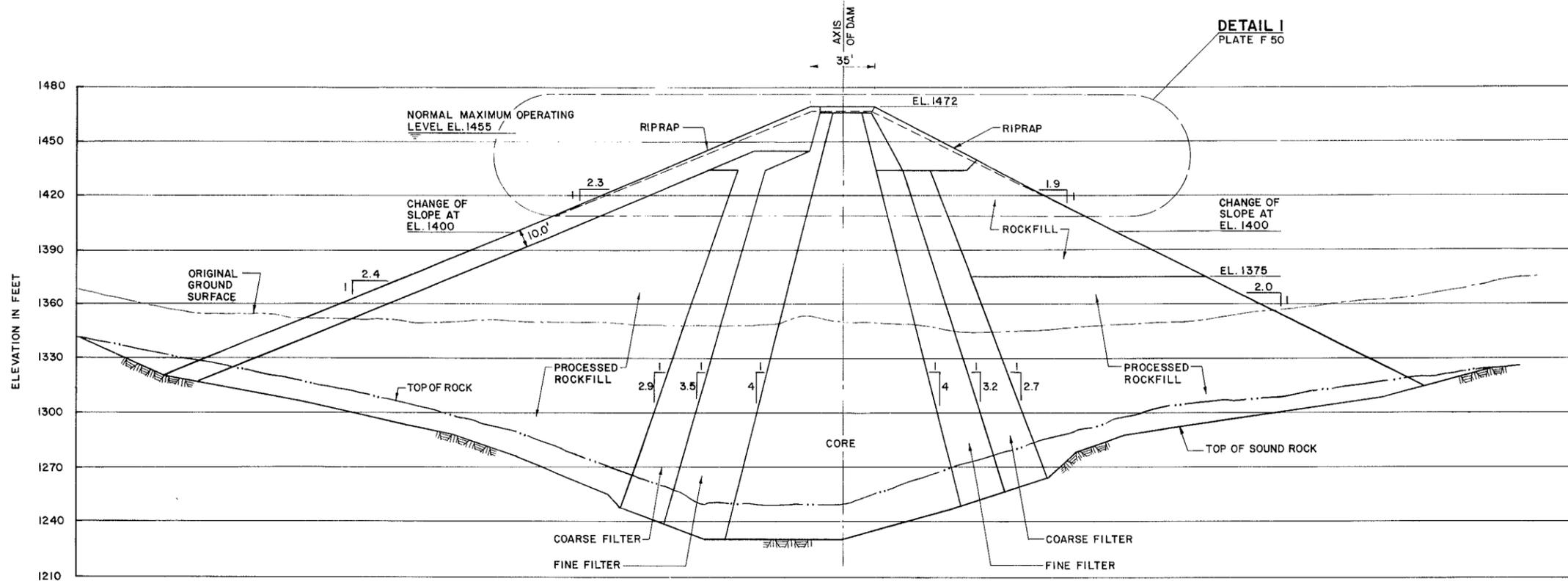
SECTION A-A (TYPICAL)
SCALE A



DAM PROFILE (PROJECTION-LOOKING UPSTREAM)
SCALE A

SCALE B: 0 16 32 FEET (1/16 INCH = 1 FEET)
SCALE A: 0 100 200 FEET (1 INCH = 100 FEET)

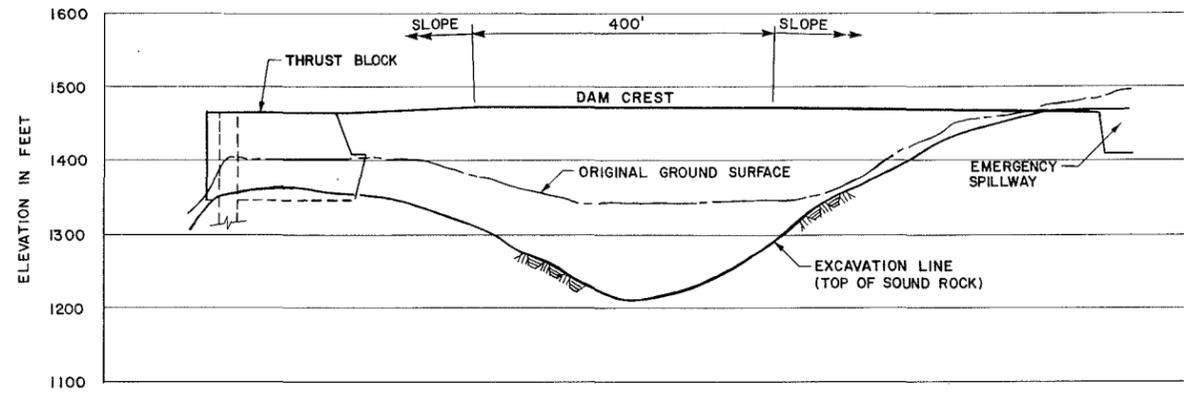
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM OUTLET FACILITIES	
EXHIBIT F	PLATE F 48



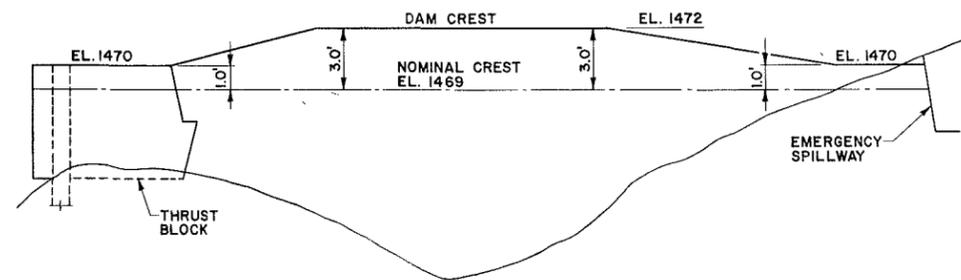
SECTION THROUGH SADDLE DAM
AT MAXIMUM HEIGHT

SCALE 0 30 60 FEET (1 INCH = 30 FEET)

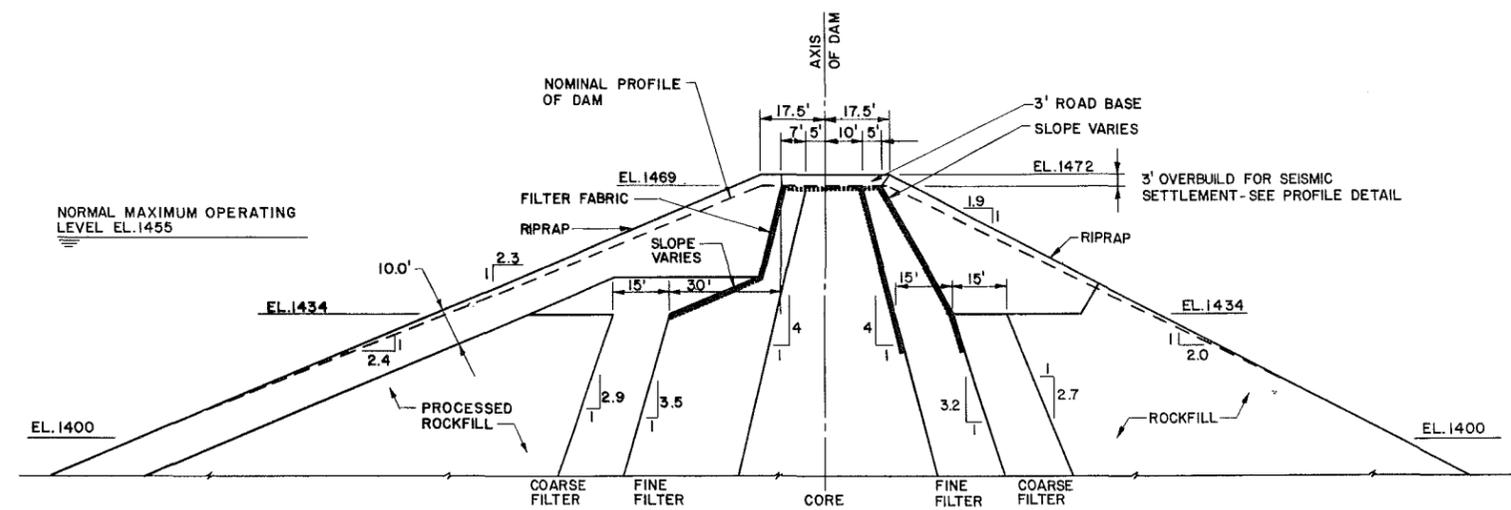
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SADDLE DAM SECTION		
EXHIBIT F	PLATE F49	



PROFILE (LOOKING UPSTREAM)
SCALE A



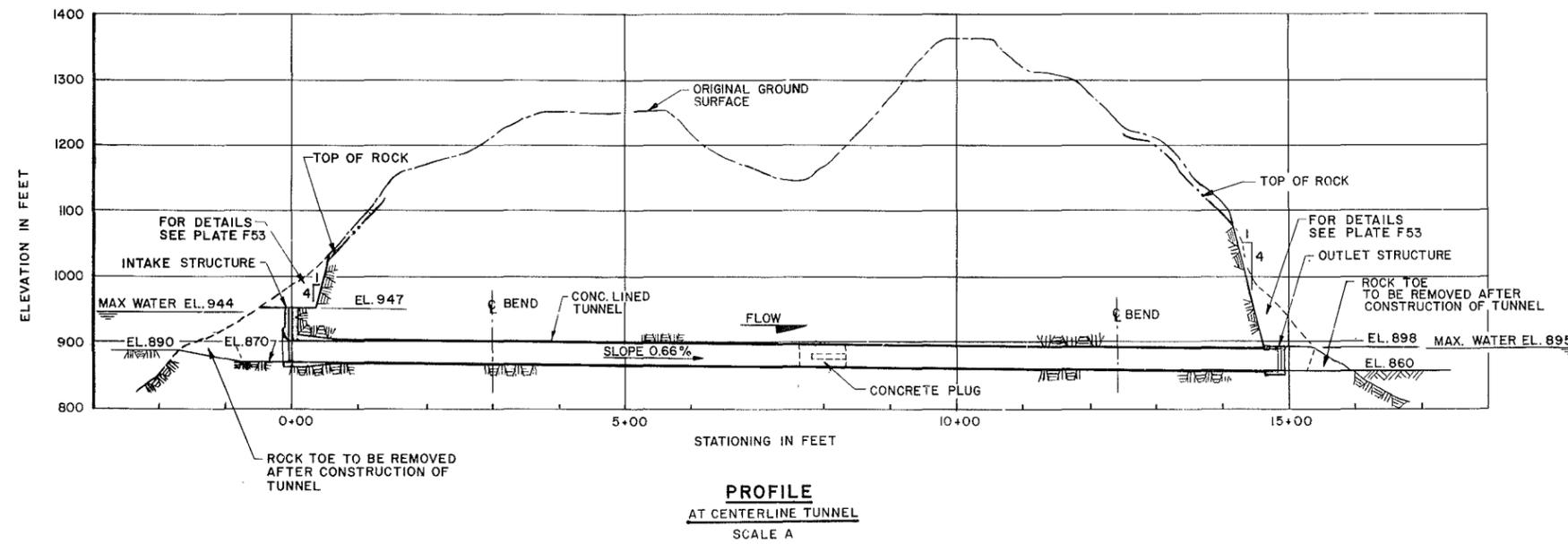
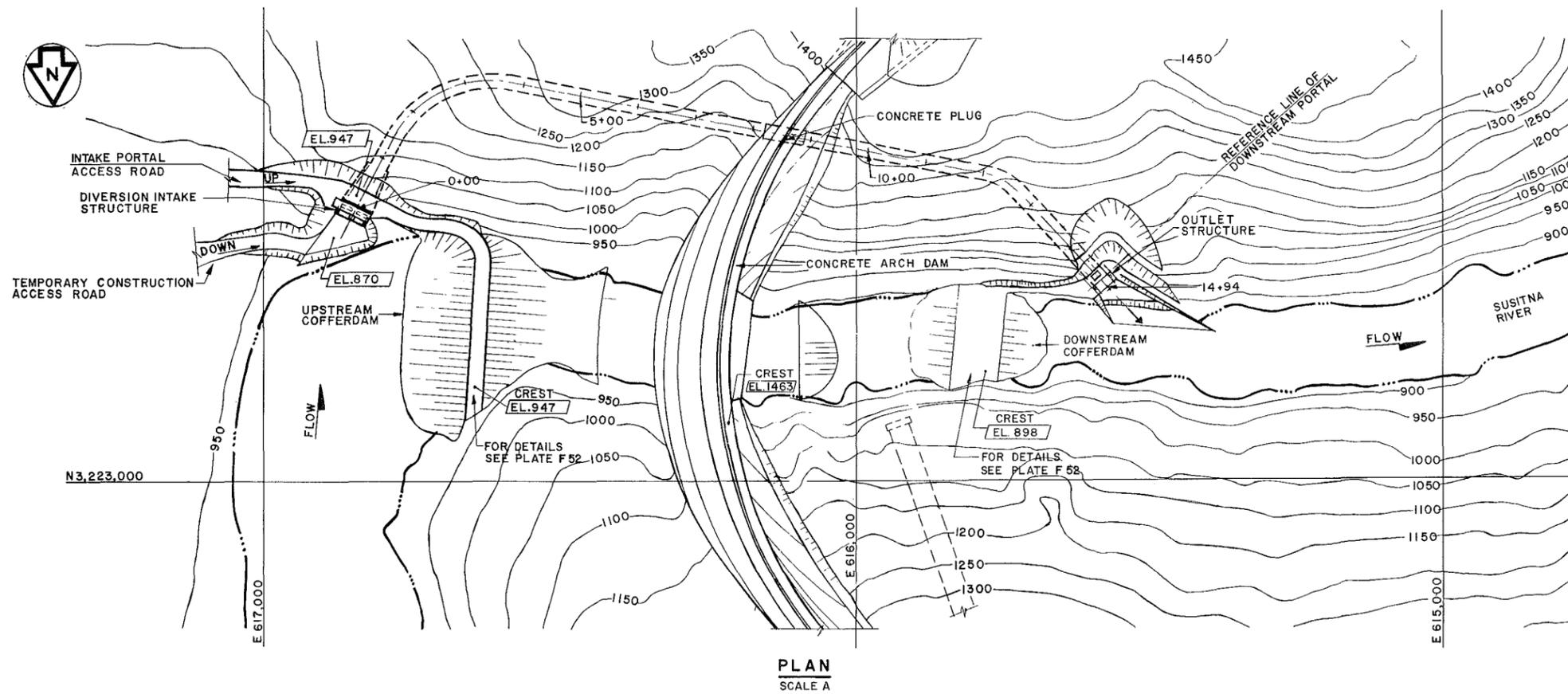
PROFILE
SHOWING CREST ELEVATIONS
N.T.S.



DETAIL I
SCALE B (PLATE F49)

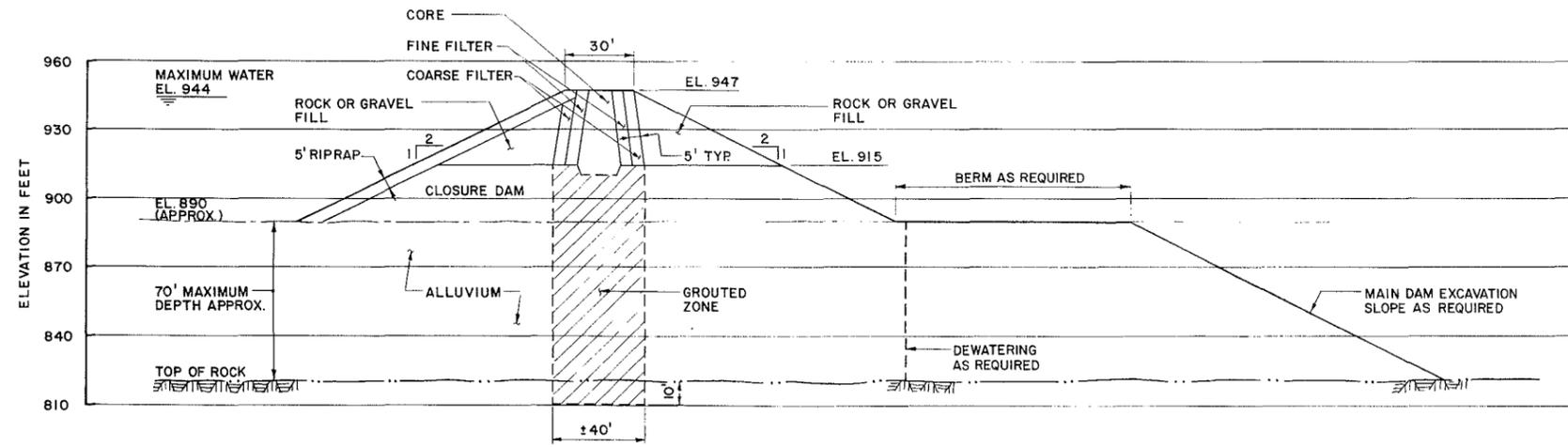
SCALE B 0 20 40 FEET (1 INCH = 20 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

APACIS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SADDLE DAM PROFILE AND DETAIL		
EXHIBIT F		PLATE F 50

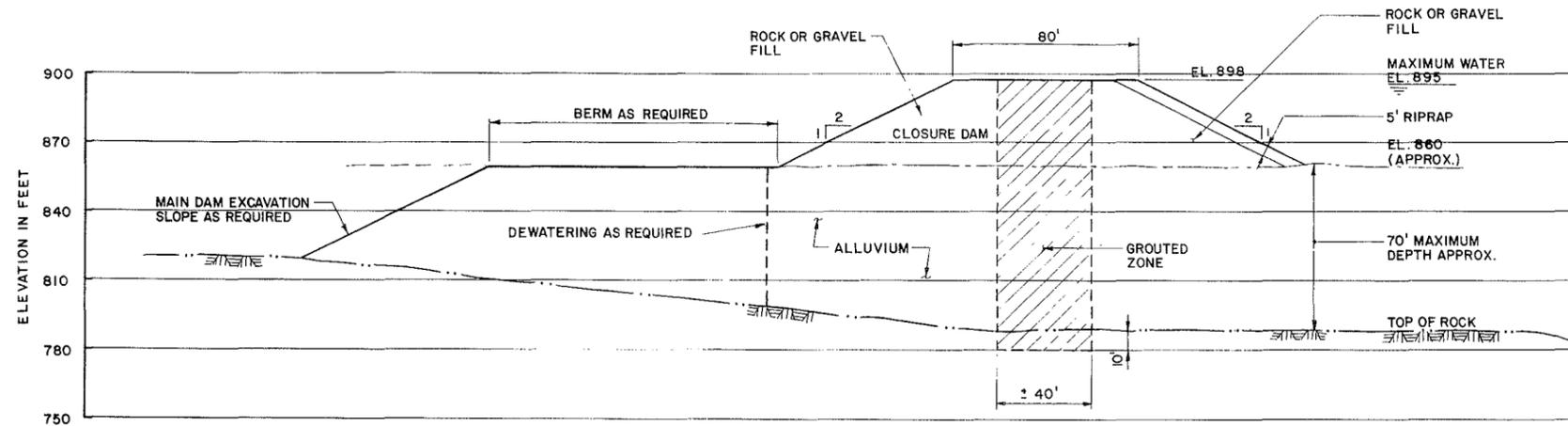


SCALE A (1 INCH = 100 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON DIVERSION GENERAL ARRANGEMENT		
EXHIBIT F	PLATE F51	



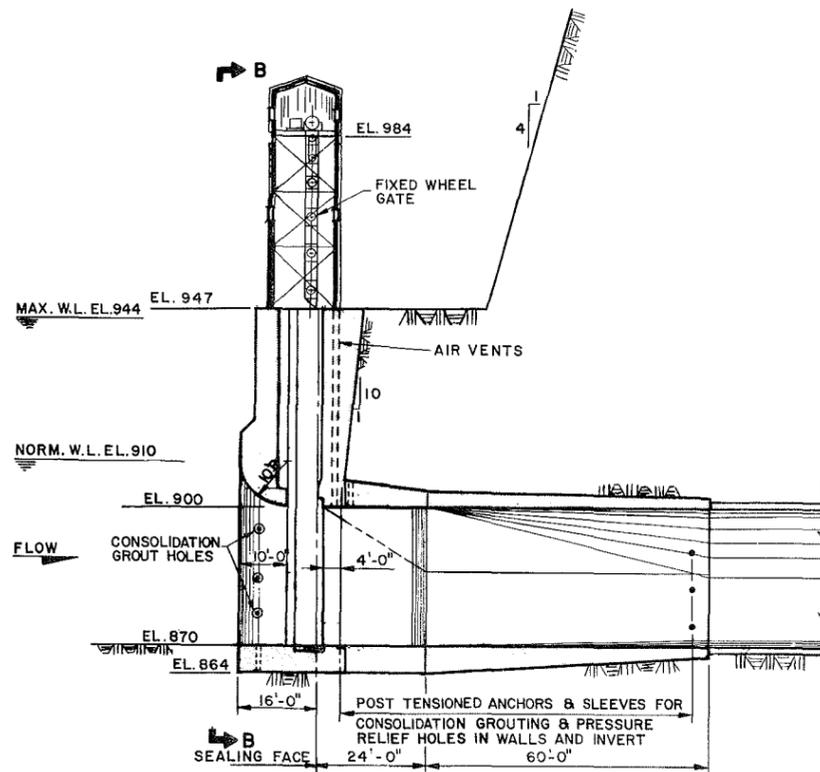
TYPICAL CROSS SECTION (PLATE F51)
UPSTREAM COFFERDAM



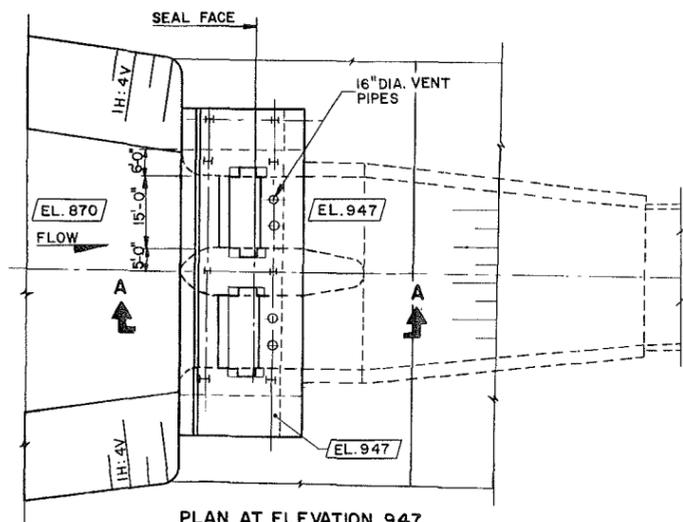
TYPICAL CROSS SECTION (PLATE F51)
DOWNSTREAM COFFERDAM

SCALE 0 30 60 FEET (1 INCH = 30 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON DIVERSION COFFERDAM SECTIONS		
EXHIBIT F	PLATE F52	

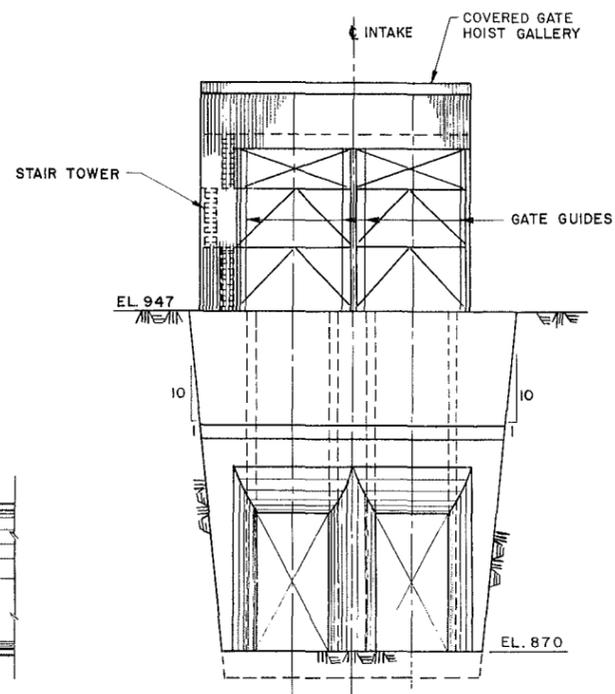


SECTION A-A
SCALE A

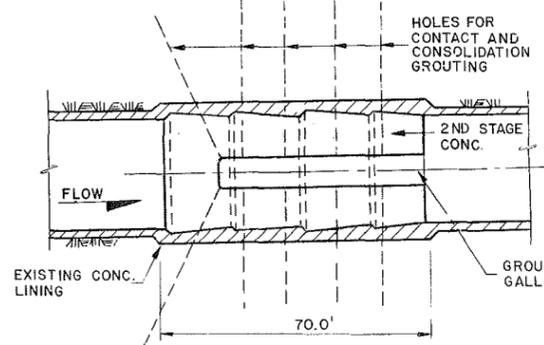


PLAN AT ELEVATION 947
SCALE A

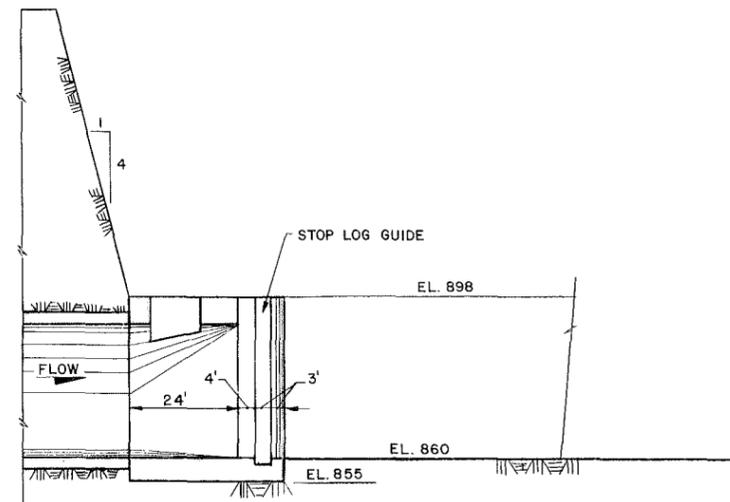
DIVERSION INTAKE STRUCTURE (PLATE F51)



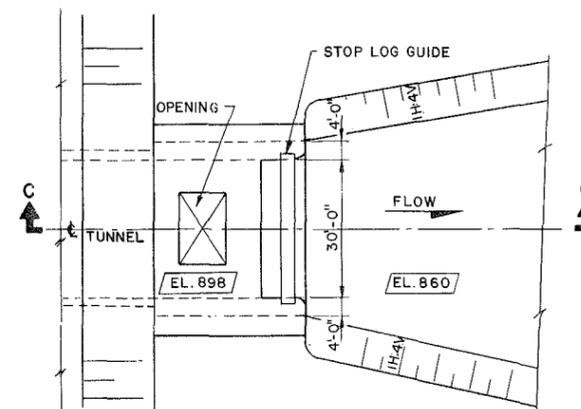
ELEVATION B-B
SCALE A



SECTION THRU PLUG
SCALE B

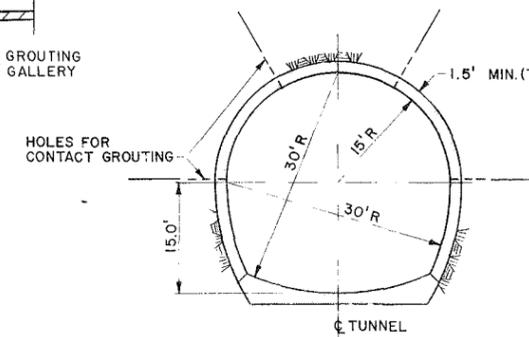


SECTION C-C
SCALE A

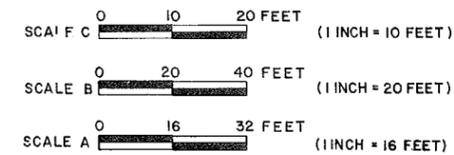


PLAN AT ELEVATION 898
SCALE A

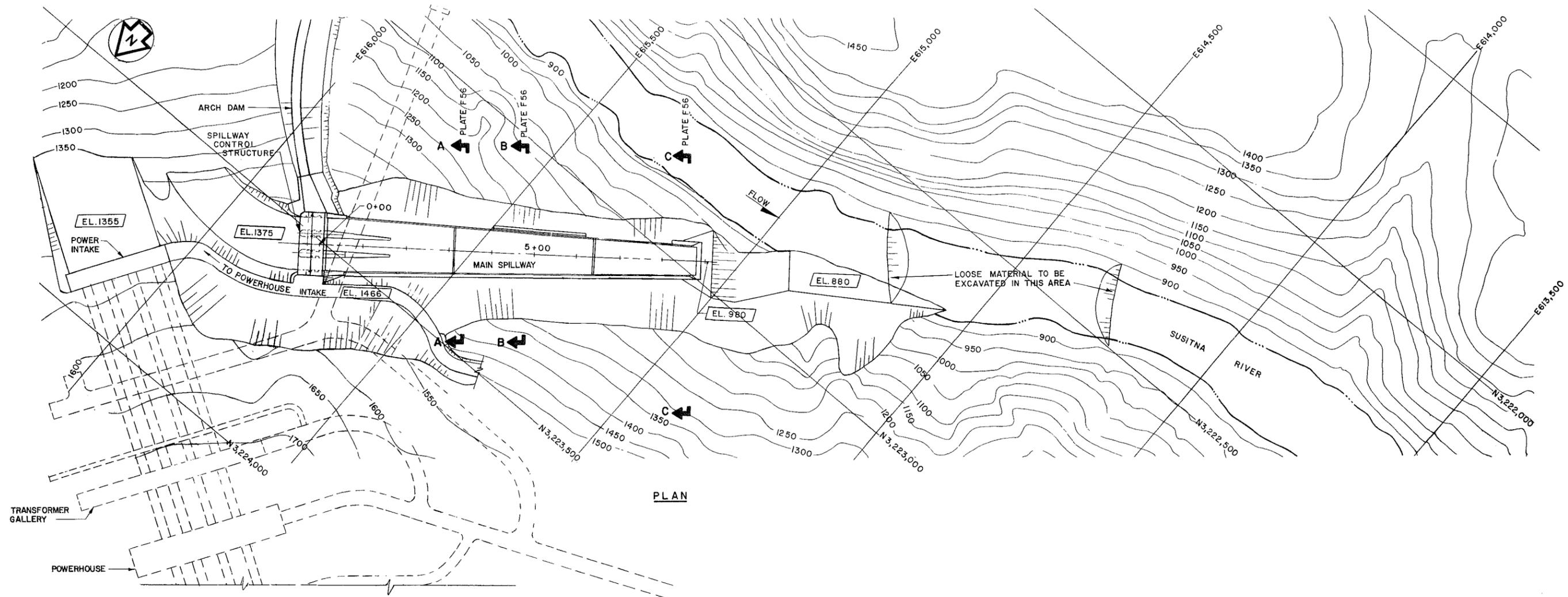
DIVERSION OUTLET STRUCTURE (PLATE F51)



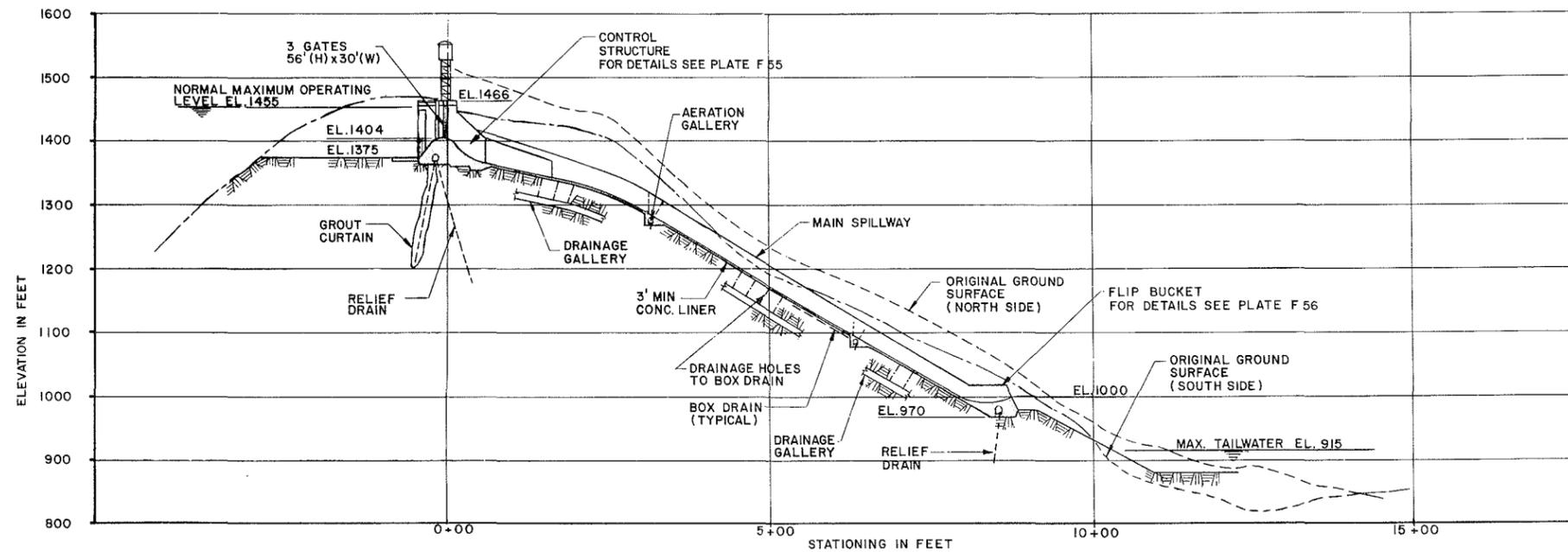
TYPICAL TUNNEL SECTIONS
SCALE C



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON DIVERSION SECTIONS	
EXHIBIT F	PLATE F53



PLAN



PROFILE

NOTE: FOR SECTIONS SEE PLATE F 56

SCALE 0 100 200 FEET (1 INCH = 100 FEET)

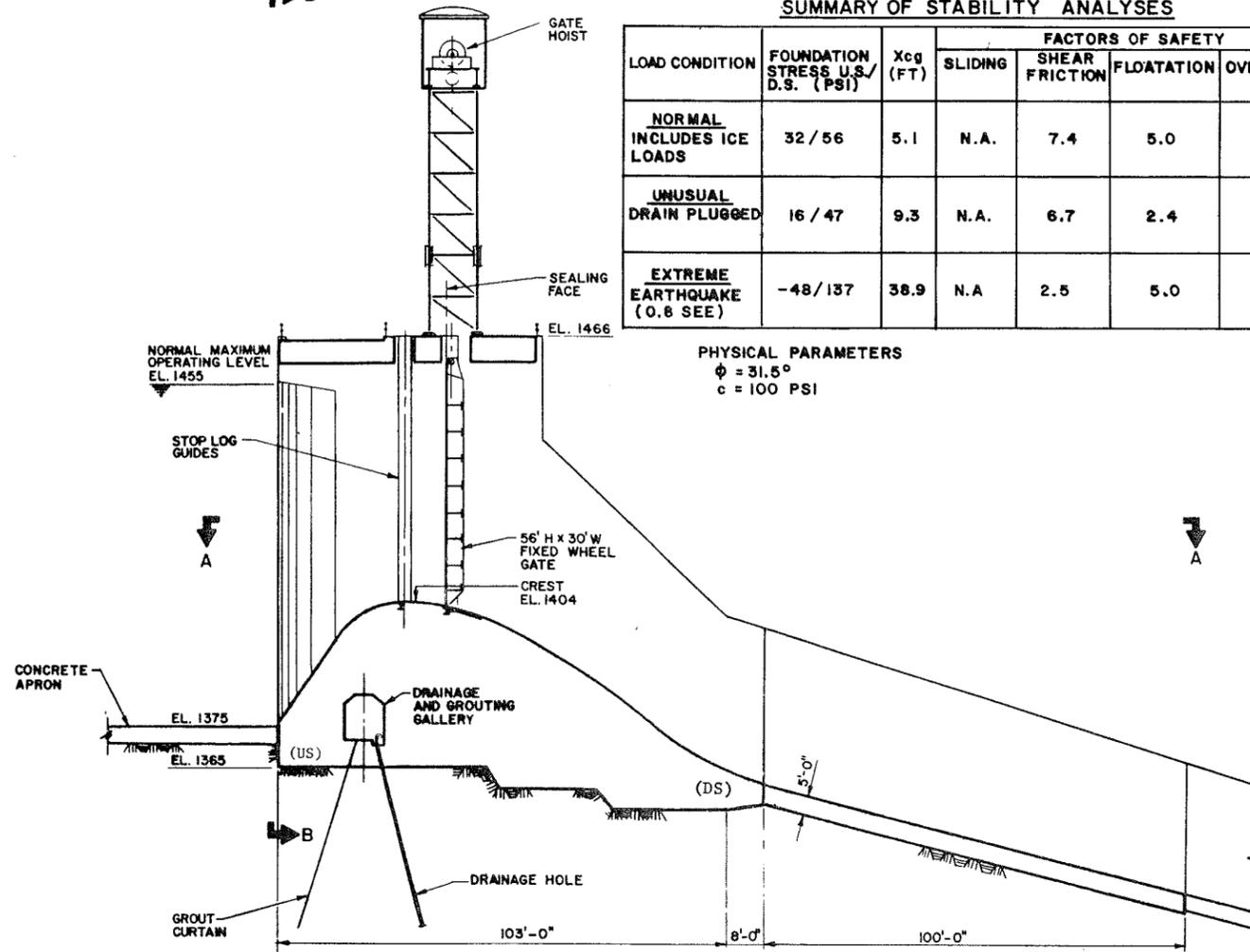
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F 54

DEVIL CANYON ARCH DAM SPILLWAY CONTROL STRUCTURE

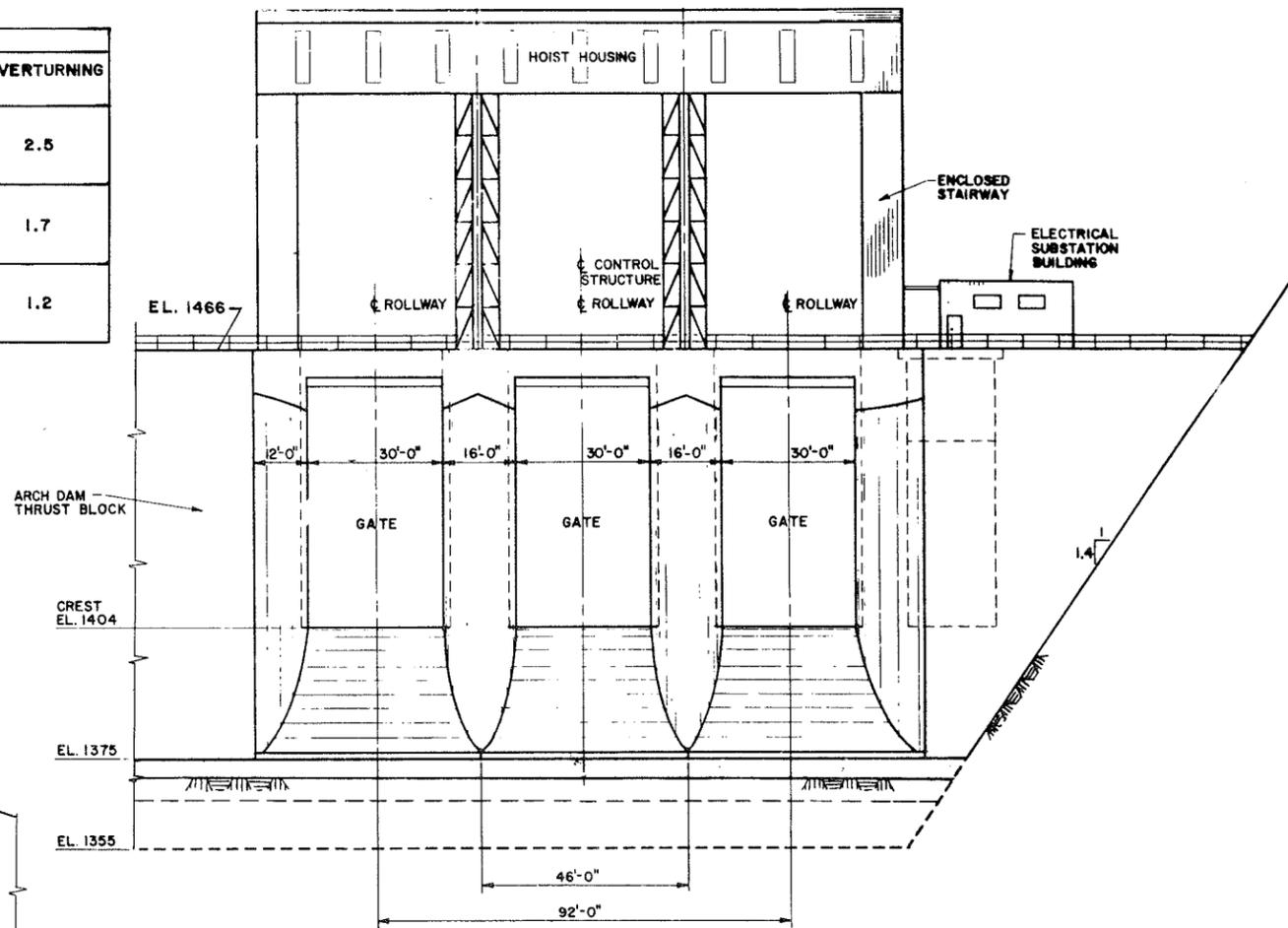
SUMMARY OF STABILITY ANALYSES

LOAD CONDITION	FOUNDATION STRESS U.S./D.S. (PSI)	Xcg (FT)	FACTORS OF SAFETY			
			SLIDING	SHEAR FRICTION	FLOATATION	OVERTURNING
NORMAL INCLUDES ICE LOADS	32 / 56	5.1	N.A.	7.4	5.0	2.5
UNUSUAL DRAIN PLUGGED	16 / 47	9.3	N.A.	6.7	2.4	1.7
EXTREME EARTHQUAKE (0.8 SEE)	-48 / 137	38.9	N.A.	2.5	5.0	1.2

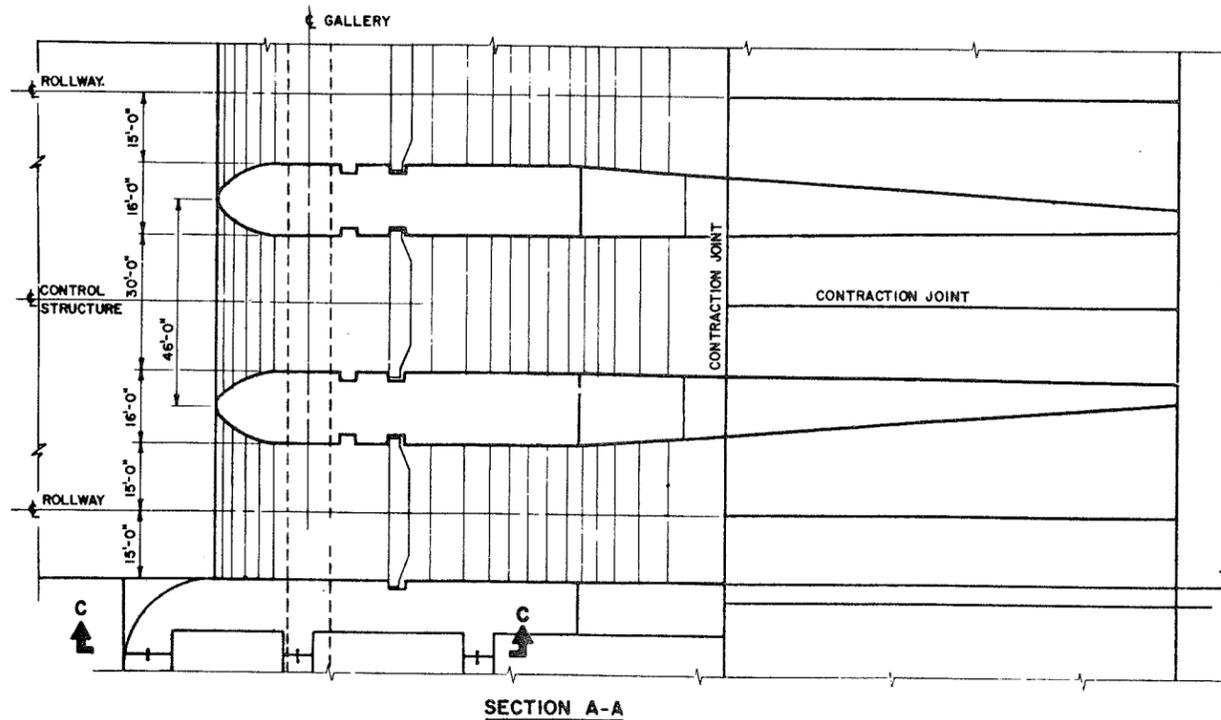
PHYSICAL PARAMETERS
 $\phi = 31.5^\circ$
 $c = 100 \text{ PSI}$



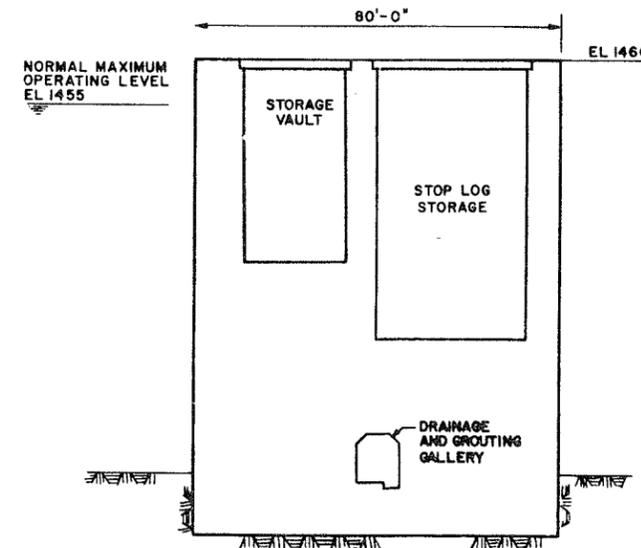
TYPICAL SECTION THRU CENTERLINE OF ROLLWAY



ELEVATION B-B



SECTION A-A

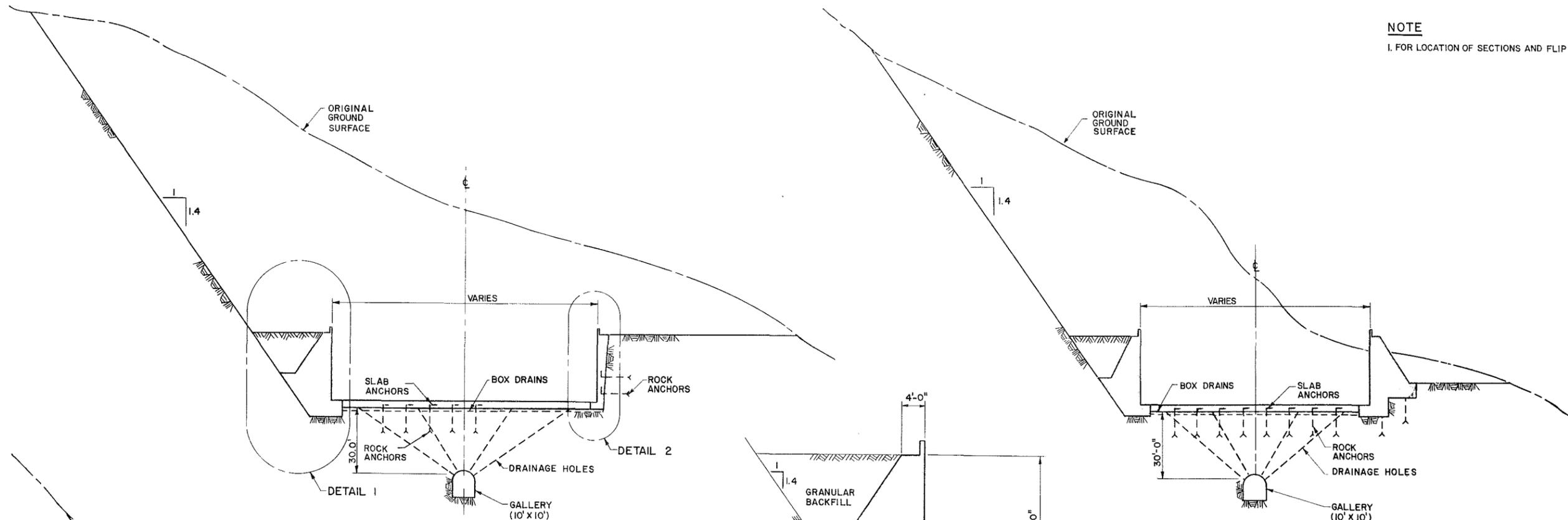


SECTION C-C

SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

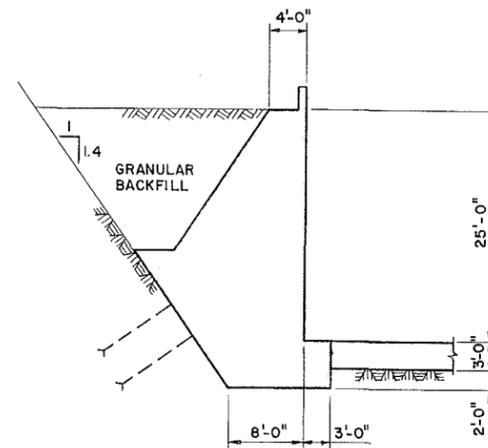
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY CONTROL STRUCTURE	
EXHIBIT F	PLATE F55

NOTE
 I. FOR LOCATION OF SECTIONS AND FLIP BUCKET, SEE PLATE F54

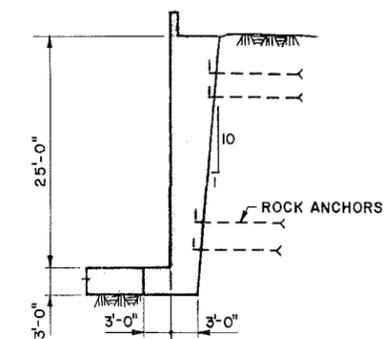


SECTION A-A
 SCALE A

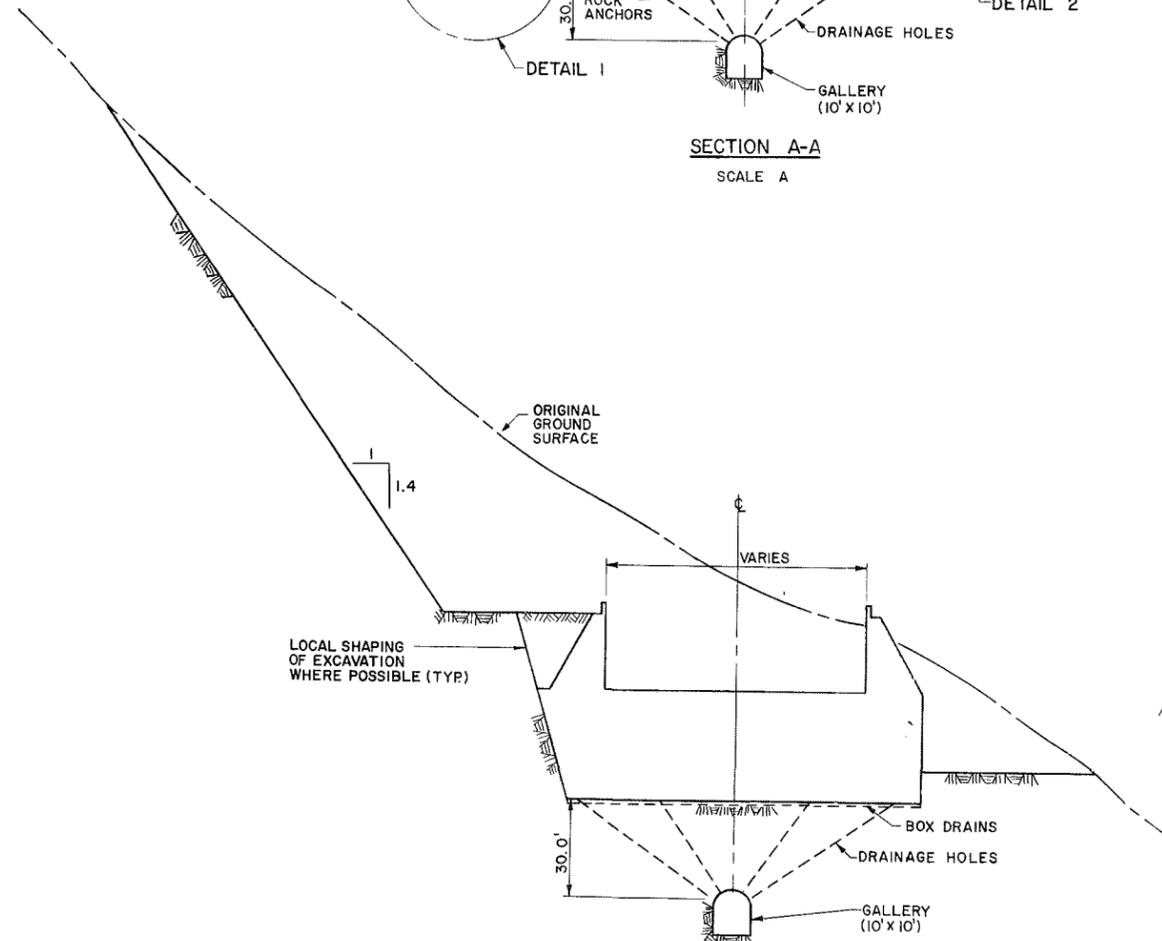
SECTION B-B
 SCALE A



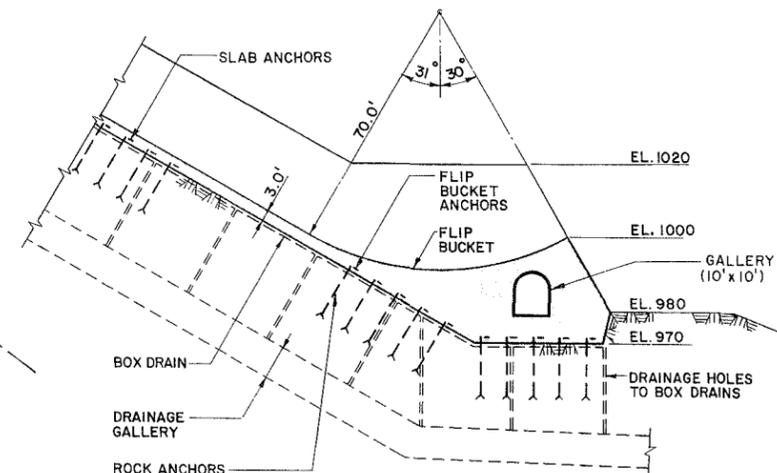
DETAIL I
 SCALE B



DETAIL 2
 SCALE B



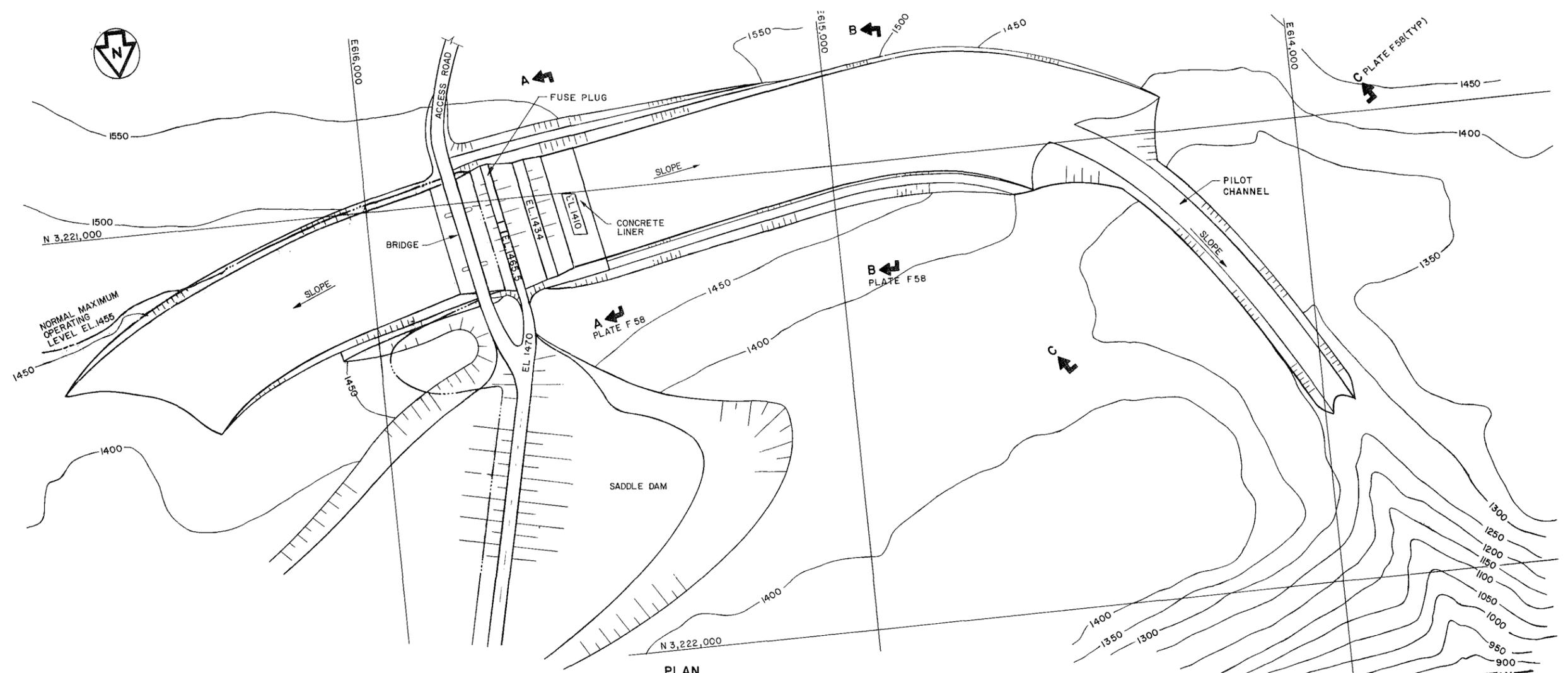
SECTION C-C
 SCALE A



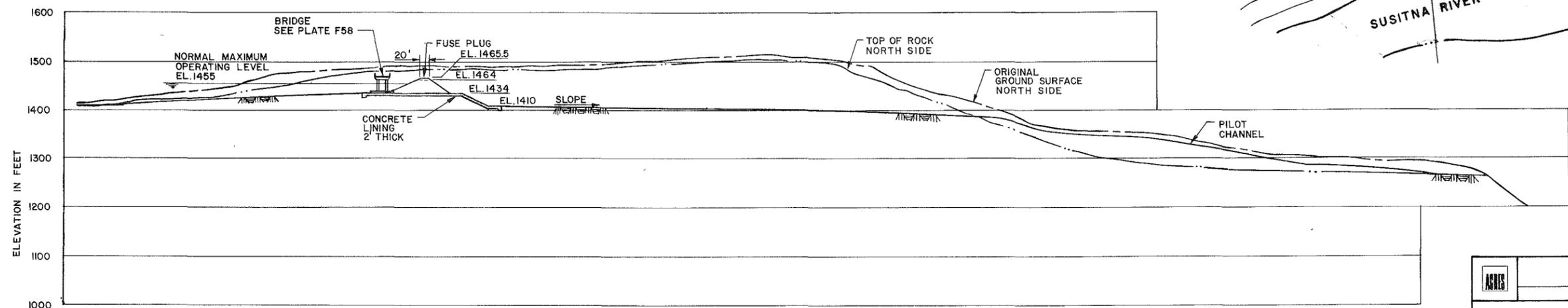
FLIP BUCKET DETAIL
 SCALE A

SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
 SCALE B 0 20 40 FEET (1/8 INCH = 1 FEET)
 SCALE A 0 20 40 FEET (1 INCH = 20 FEET)

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY CHUTE SECTIONS	
EXHIBIT F	PLATE F56



PLAN

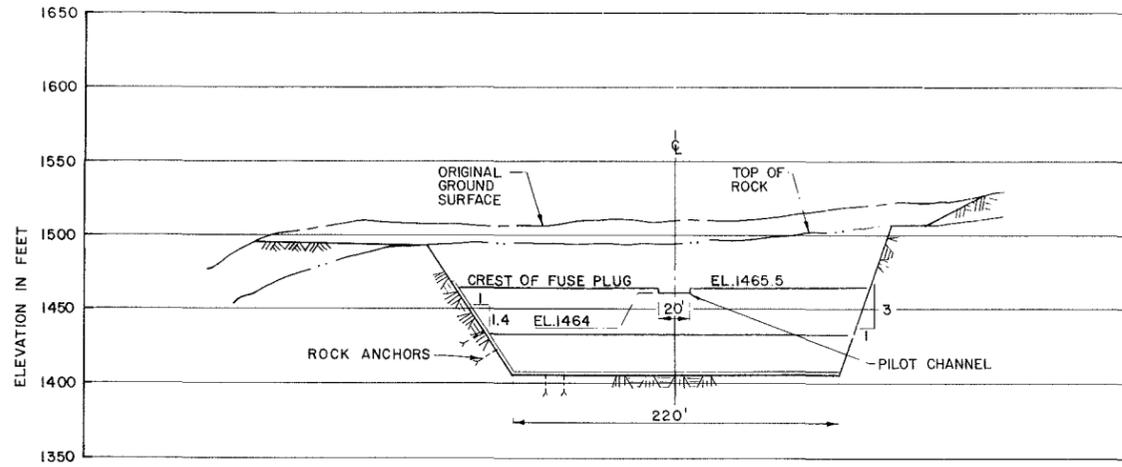


PROFILE

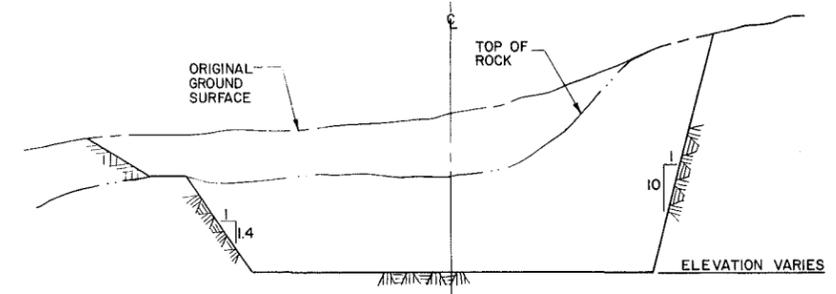
NOTE: FOR SECTIONS SEE PLATE F58

SCALE 0 100 200 FEET
(1 INCH = 100 FEET)

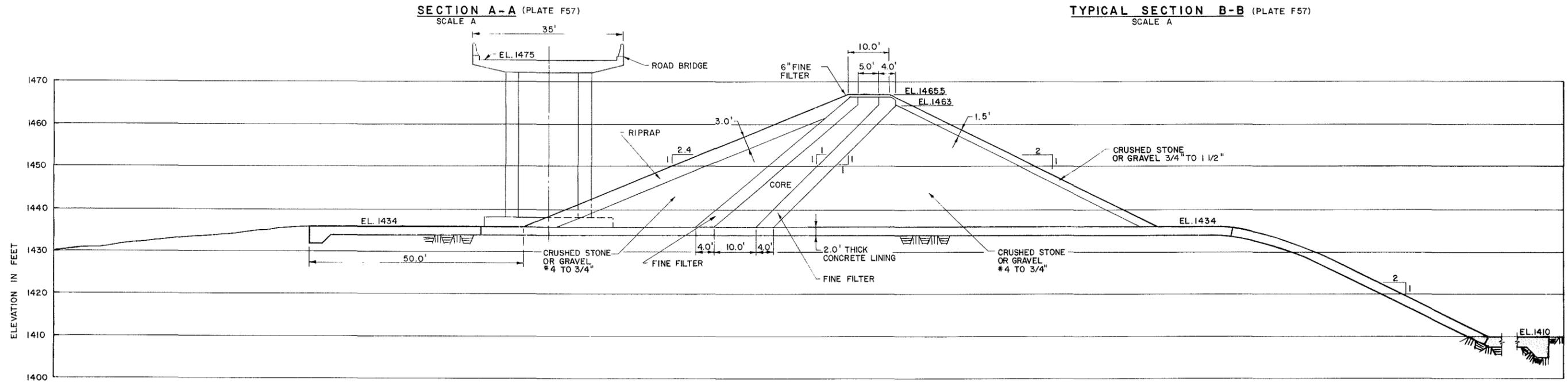
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON EMERGENCY SPILLWAY GENERAL ARRANGEMENT		
EXHIBIT F	PLATE F57	



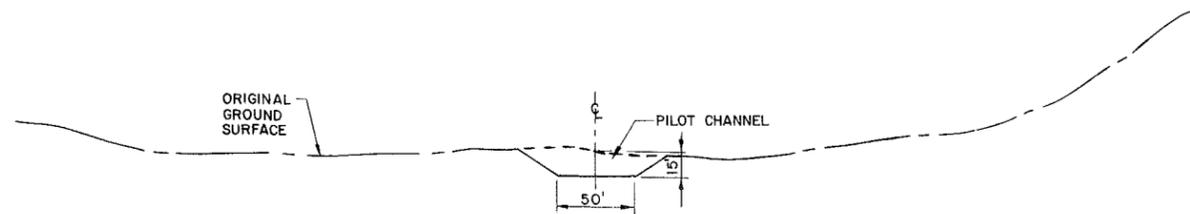
SECTION A-A (PLATE F57)
SCALE A



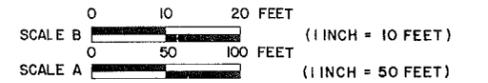
TYPICAL SECTION B-B (PLATE F57)
SCALE A



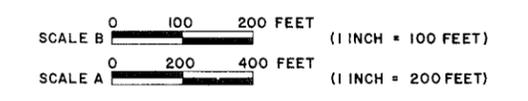
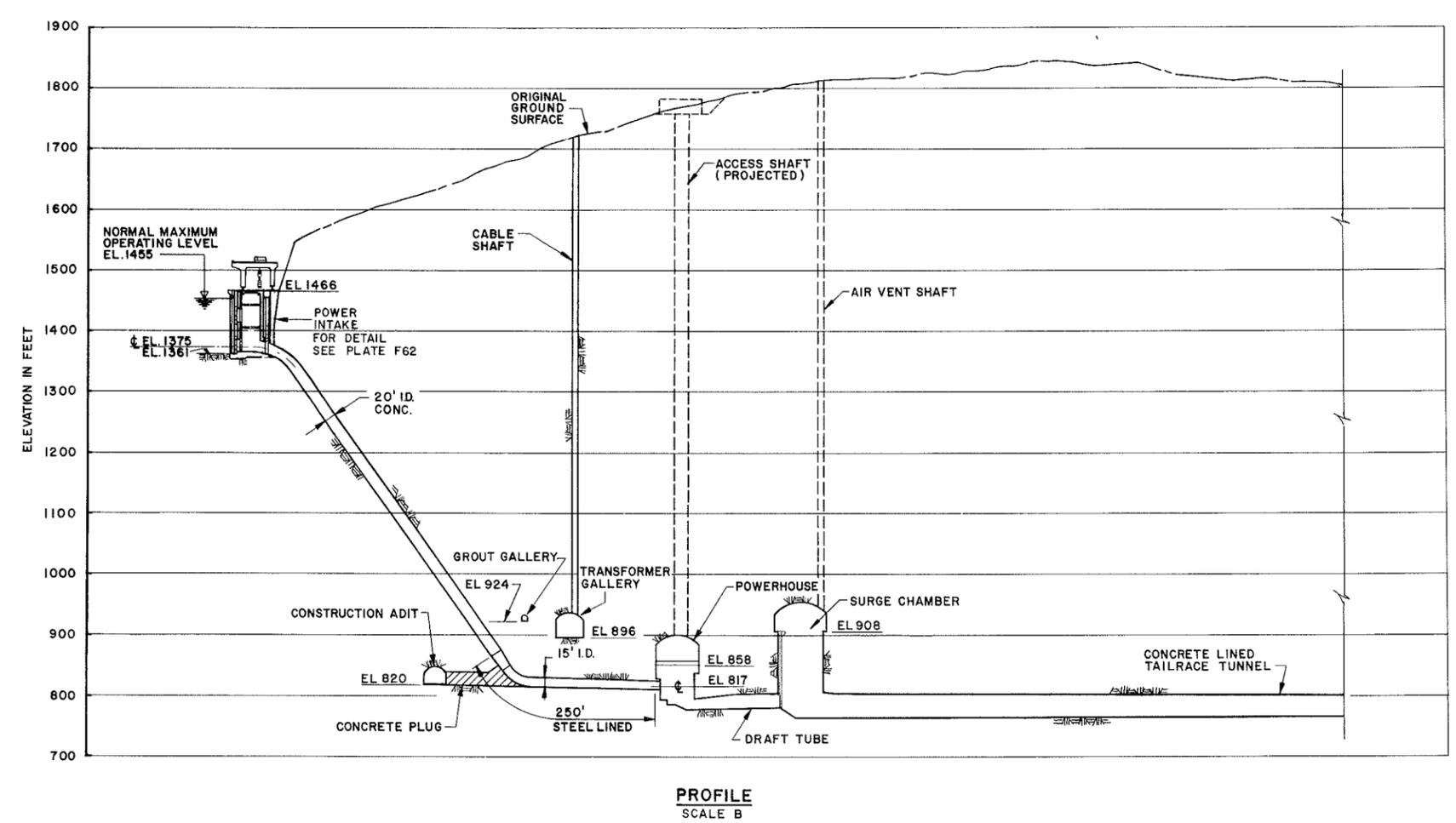
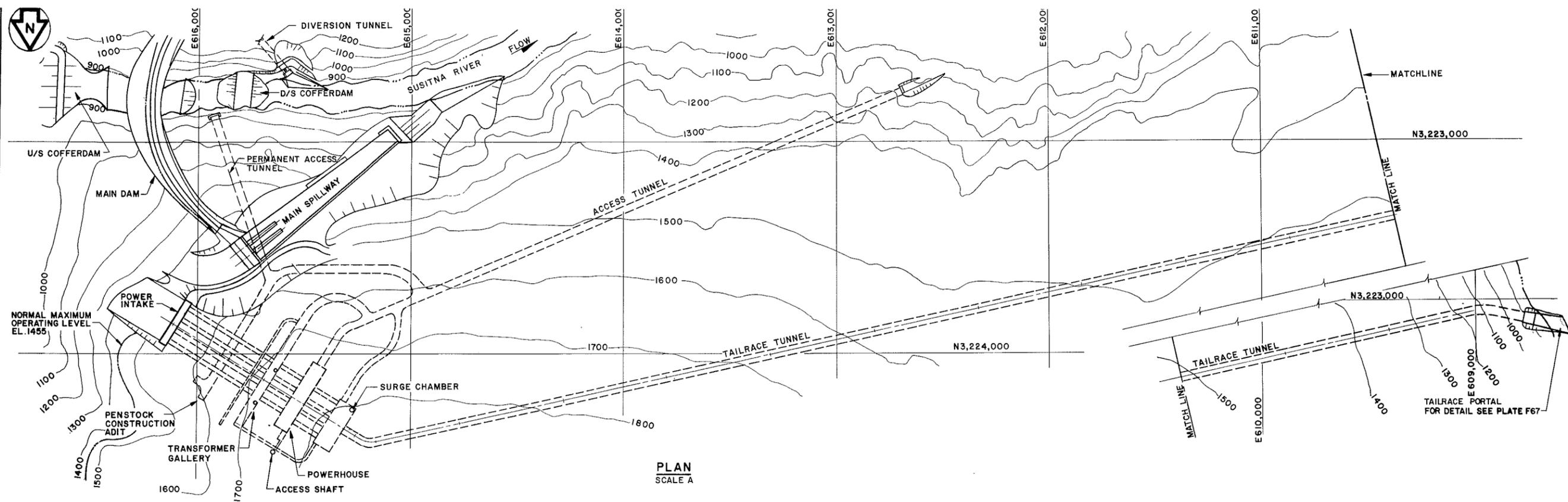
SECTION THROUGH FUSE PLUG (PLATE F57)
SCALE B



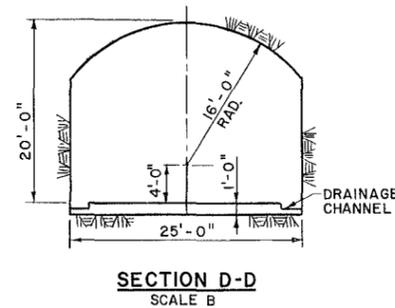
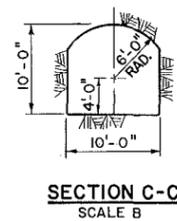
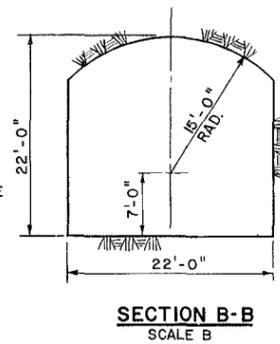
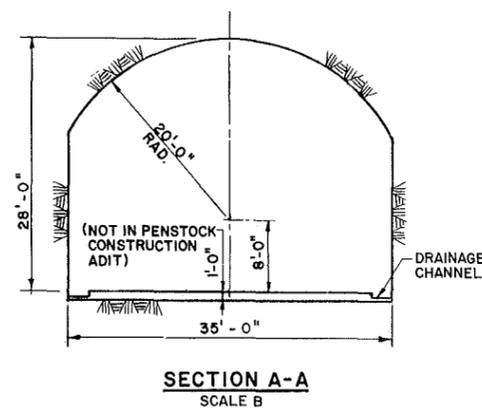
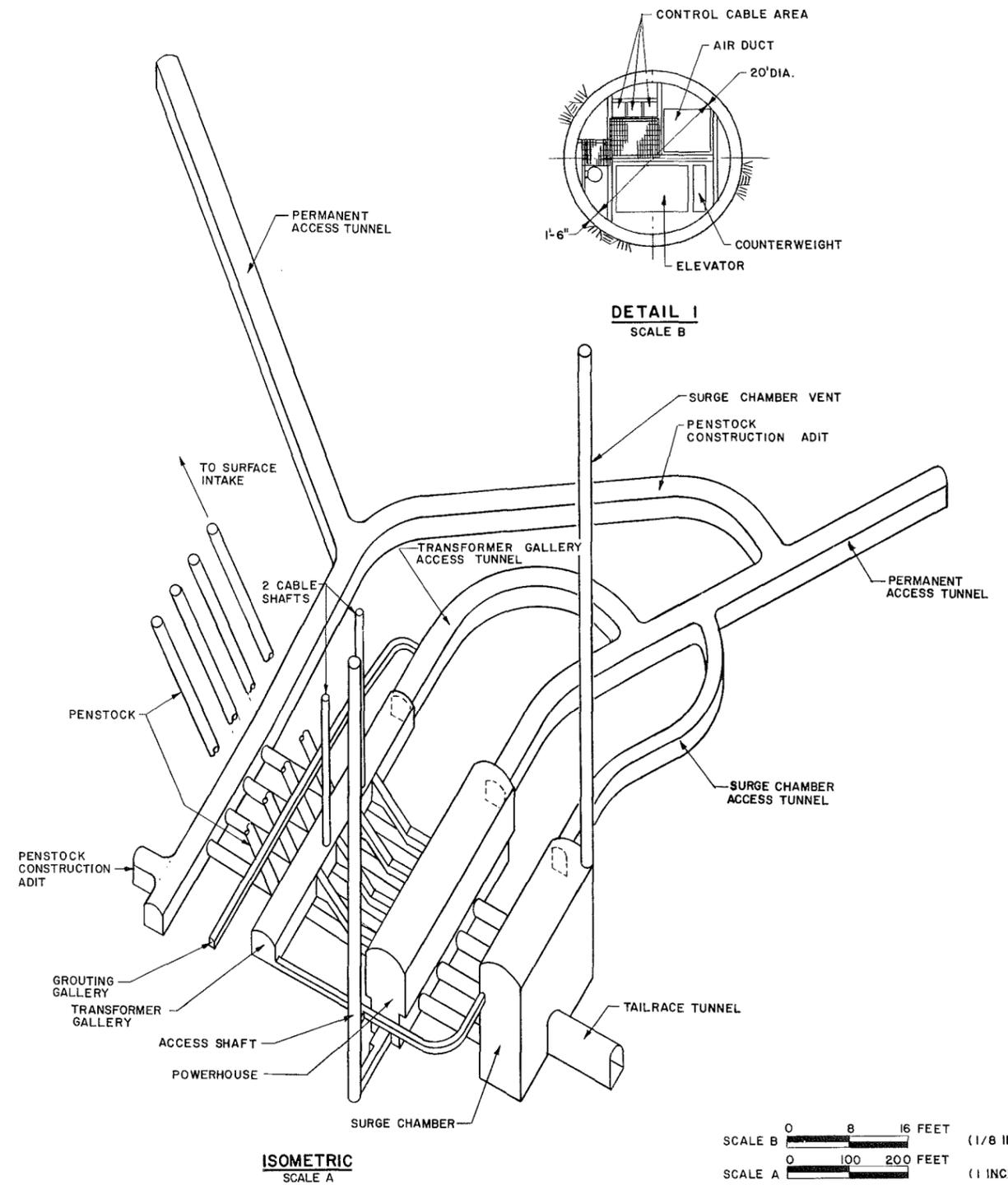
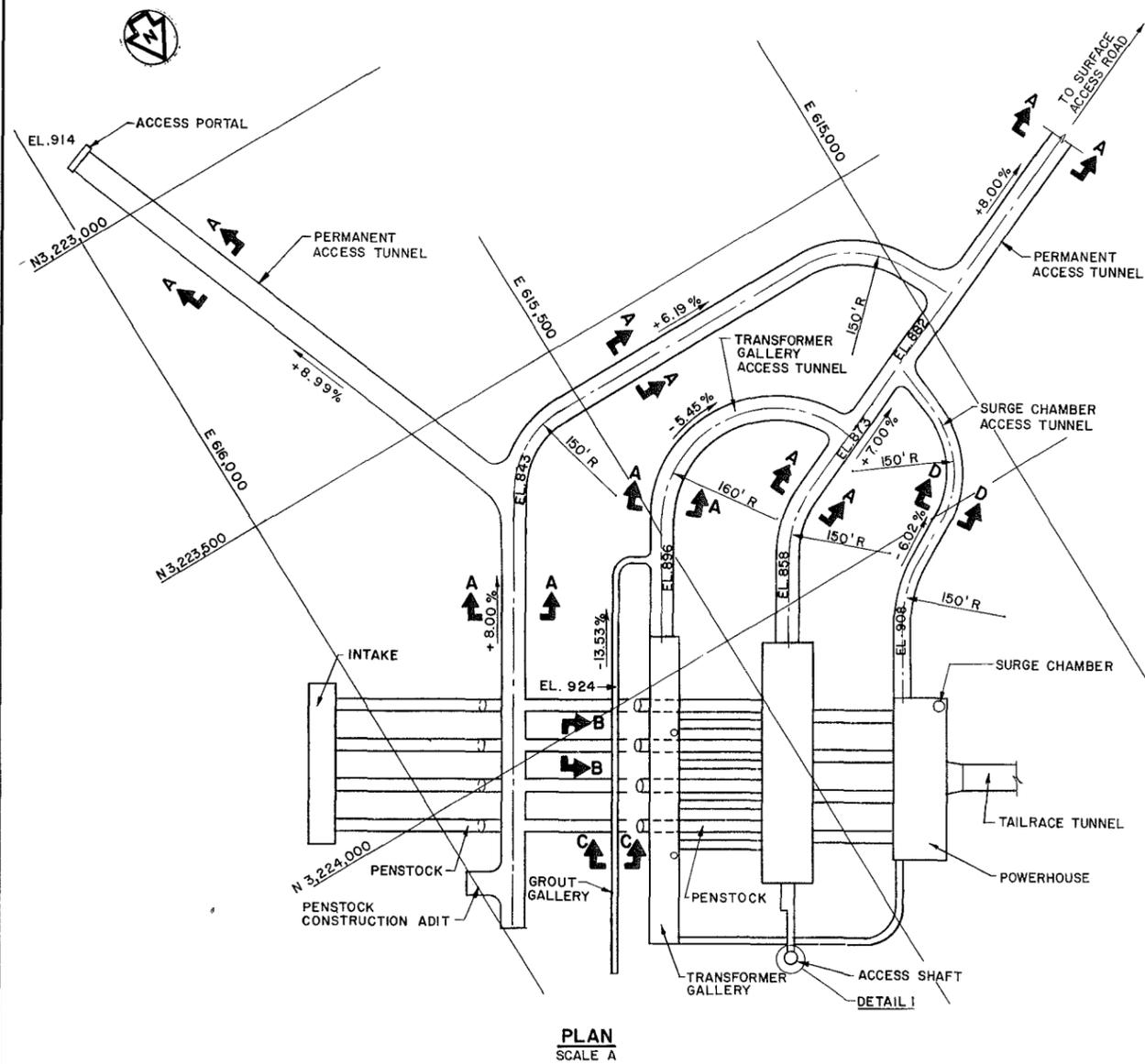
TYPICAL SECTION C-C (PLATE F57)
SCALE A



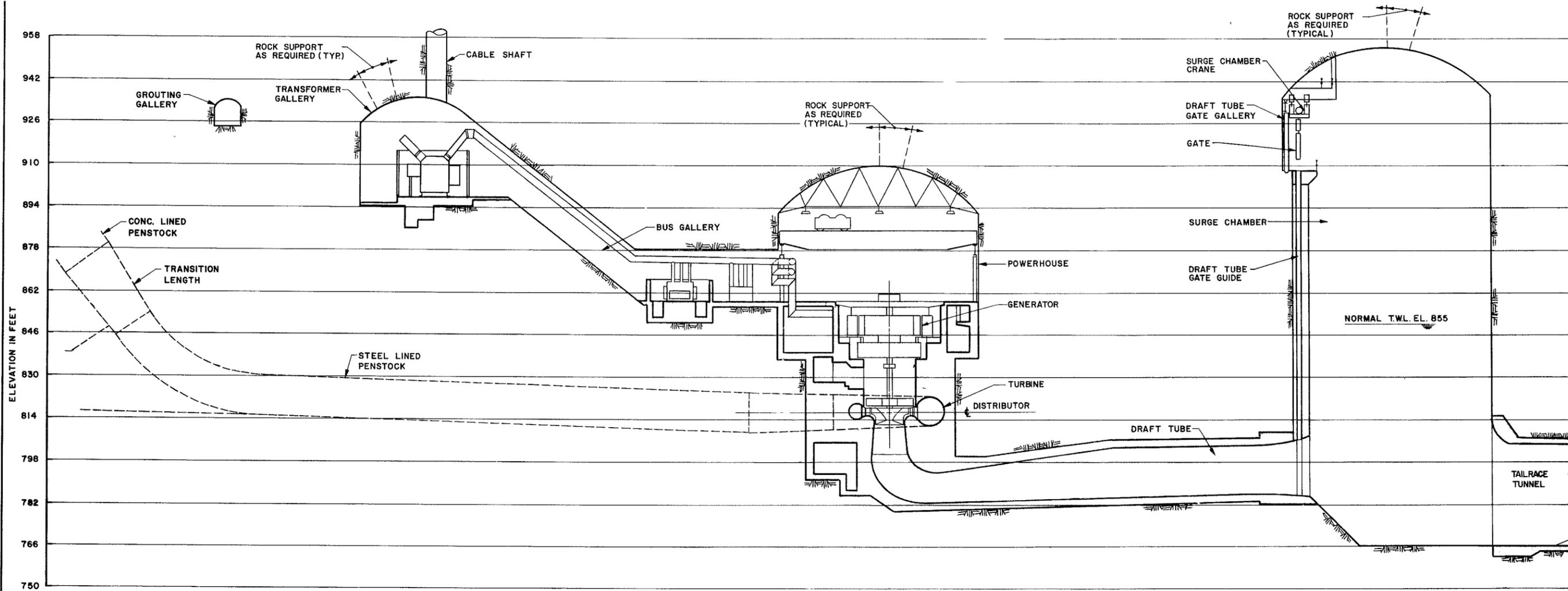
APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON EMERGENCY SPILLWAY SECTIONS		
EXHIBIT F		PLATE F 58



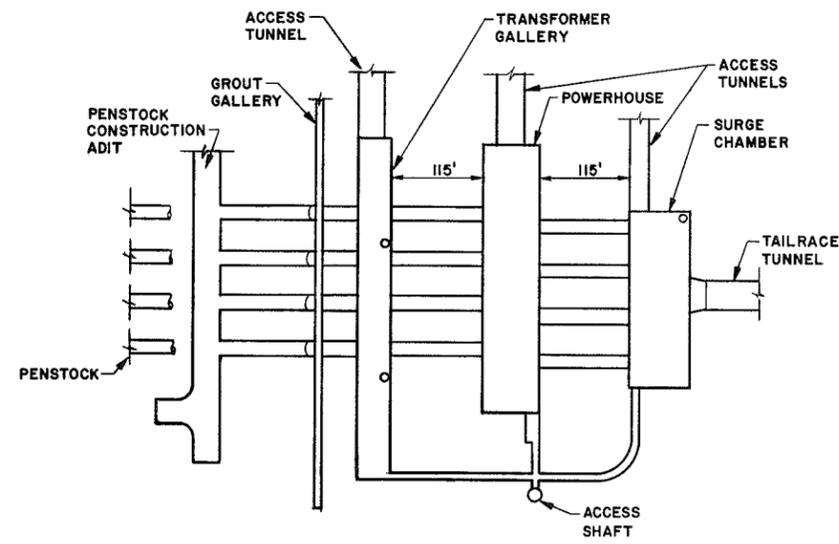
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F59



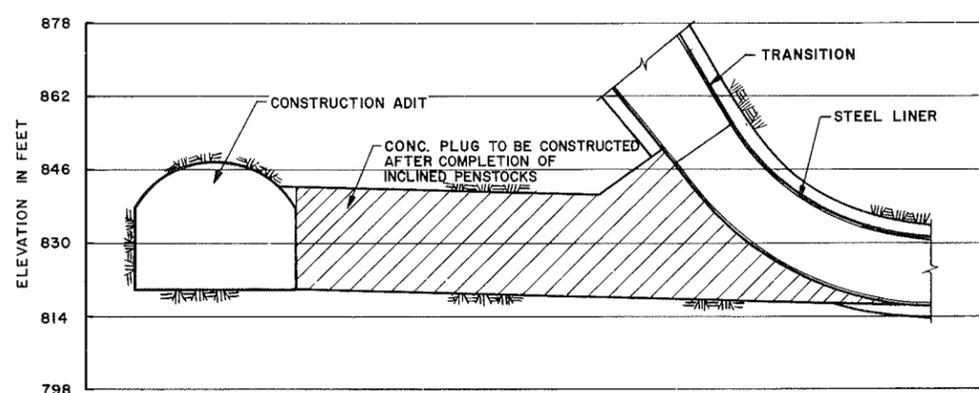
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES ACCESS	
EXHIBIT F	PLATE F60



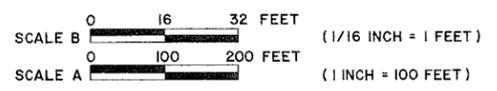
SECTION A-A
SCALE B



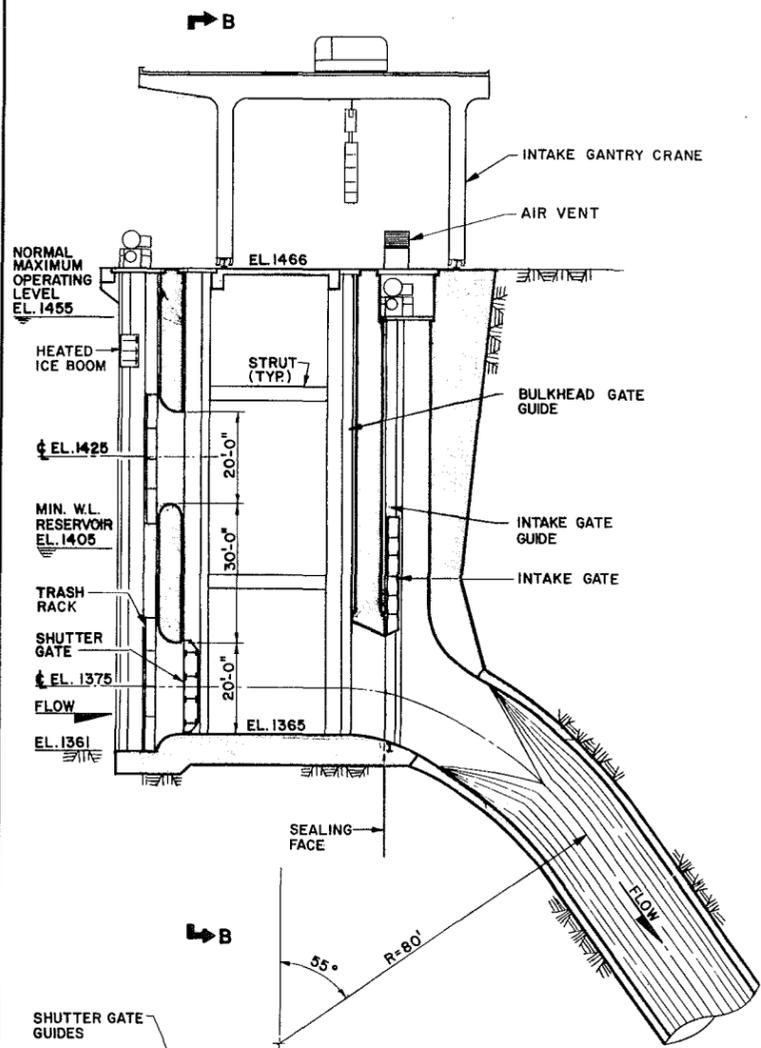
PLAN
SCALE A



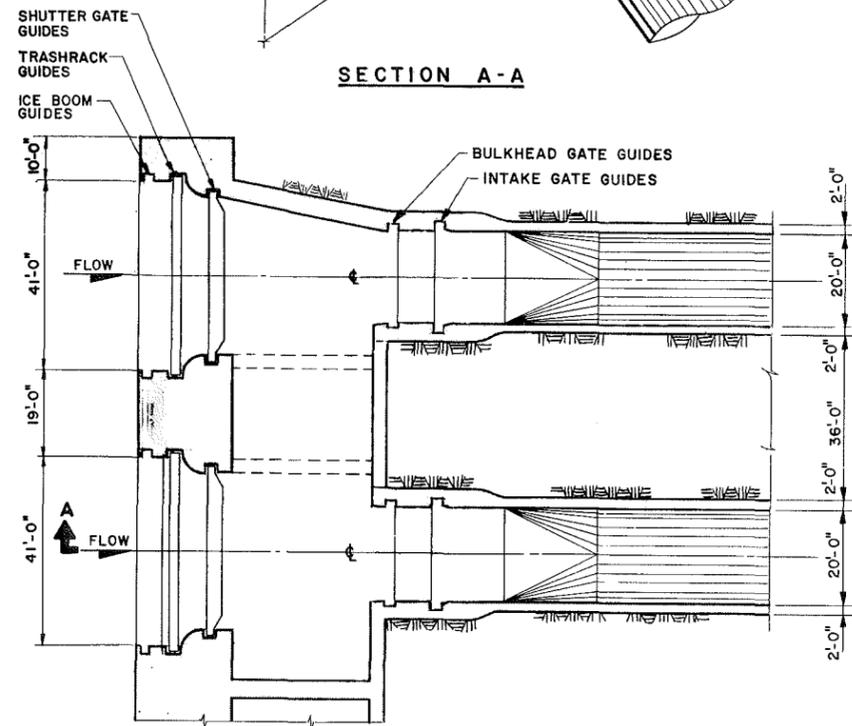
SECTION B-B
SCALE B



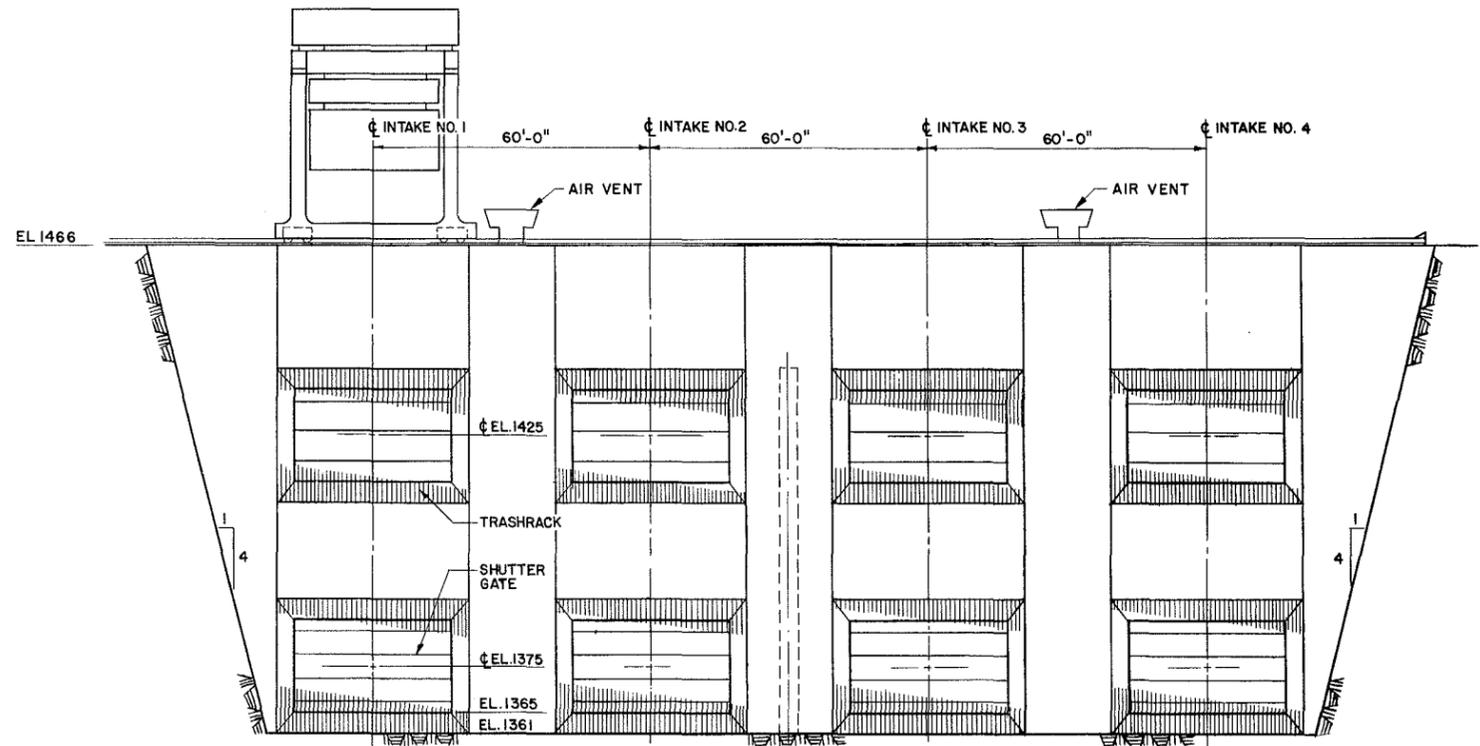
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES PLAN & SECTIONS		
EXHIBIT F	PLATE F61	



SECTION A-A



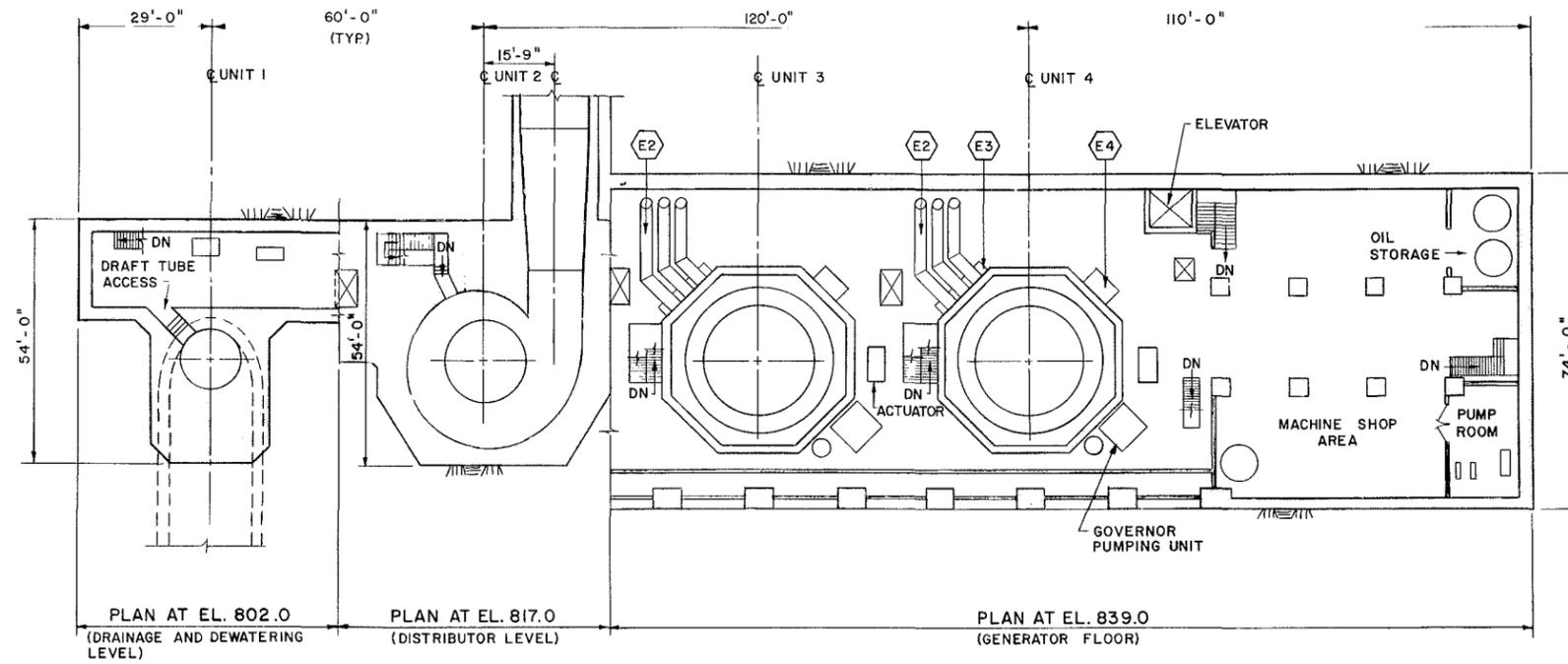
PLAN AT INTAKE CENTERLINE



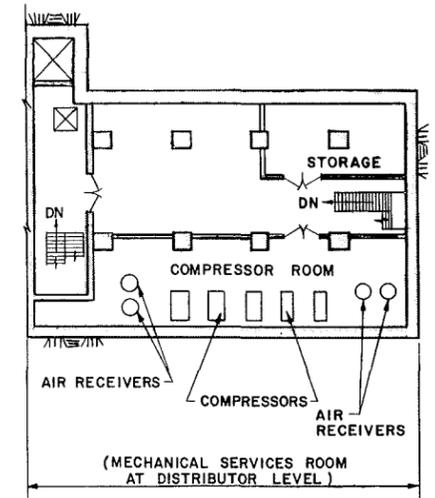
ELEVATION B-B

SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

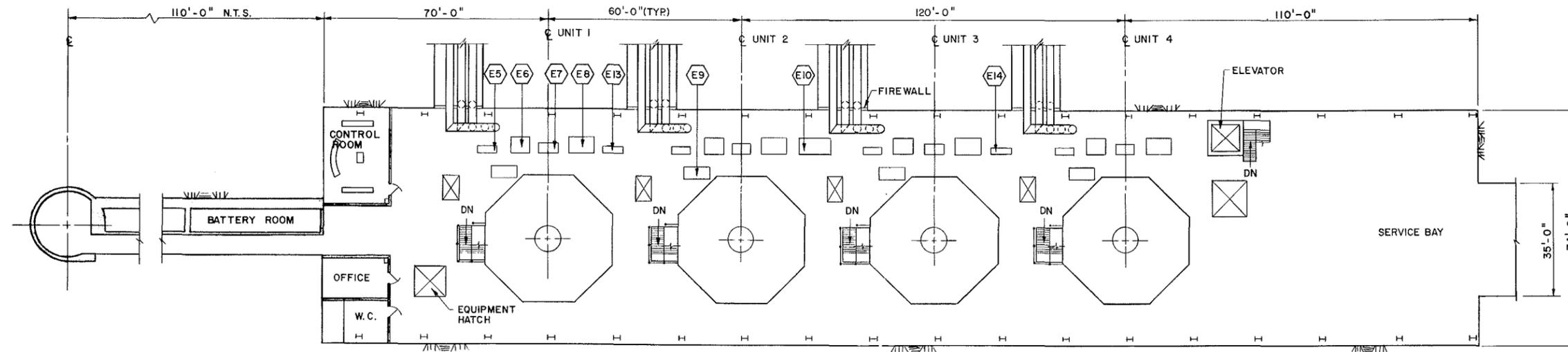
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER INTAKE SECTIONS	
EXHIBIT F	PLATE F 62



POWERHOUSE PLAN



PLAN AT EL. 817.0



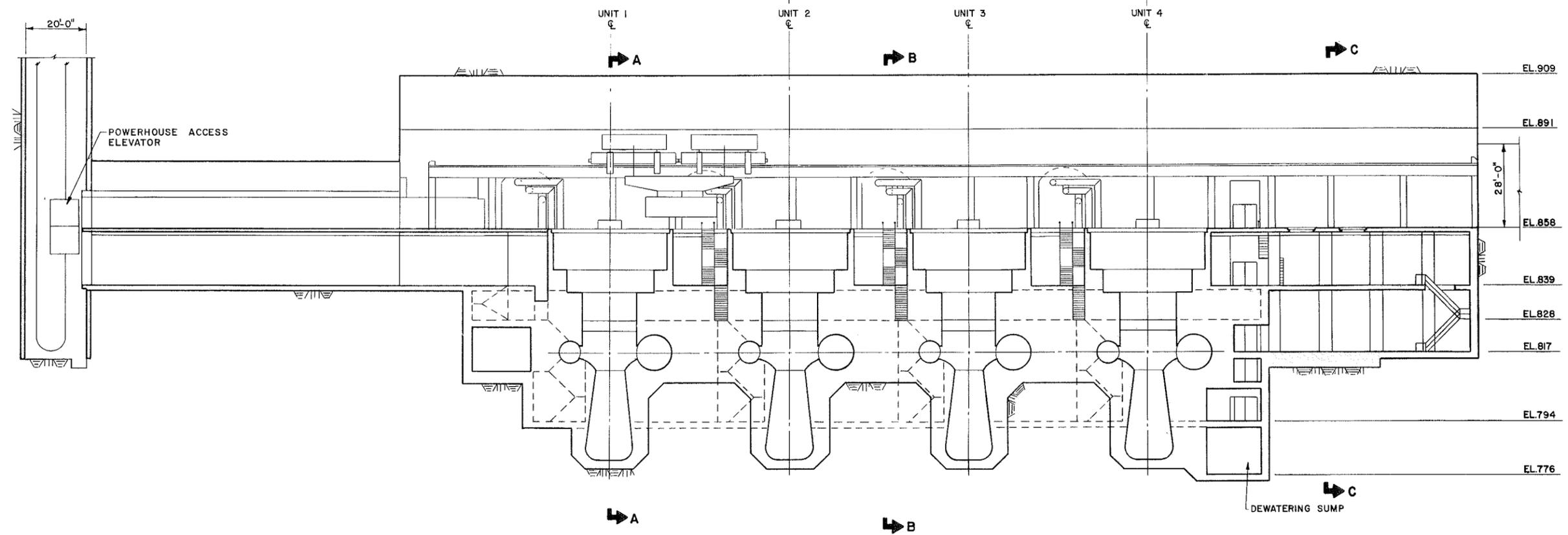
POWERHOUSE PLAN AT EL. 858.0

SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

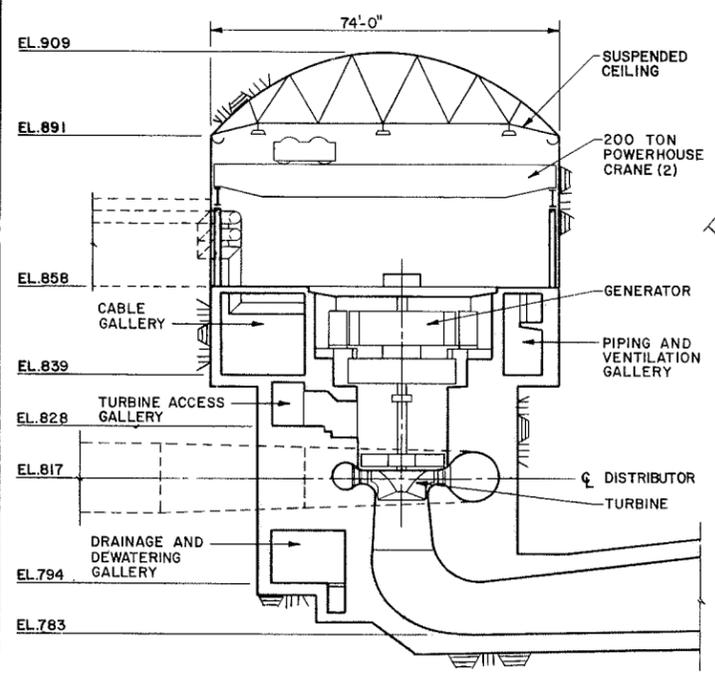
LEGEND

- E1 NOT USED
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE-GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY SERVICE TRANSFORMER (5/7.5 MVA) - PLATE F64
- E12 AUXILIARY SERVICE TRANSFORMER (2 MVA) - PLATE F64
- E13 GENERAL AUXILIARY SWITCHBOARD
- E14 ESSENTIAL SERVICES SWITCHBOARD

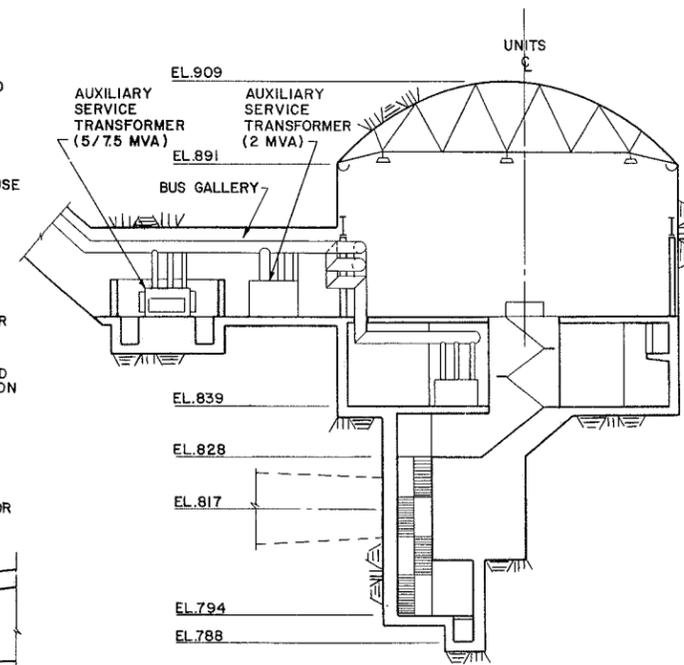
APAC	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE PLANS		
EXHIBIT F	PLATE F63	



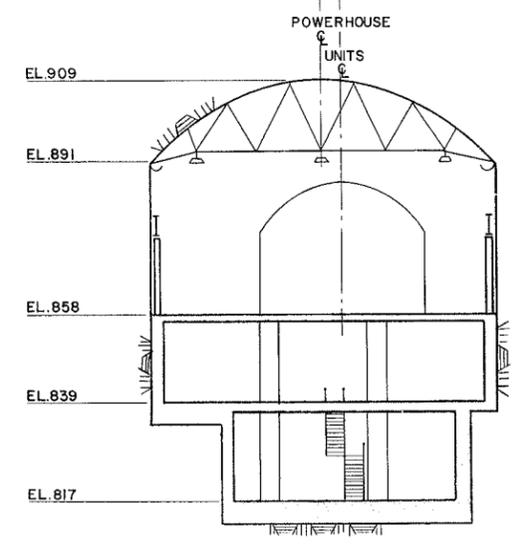
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



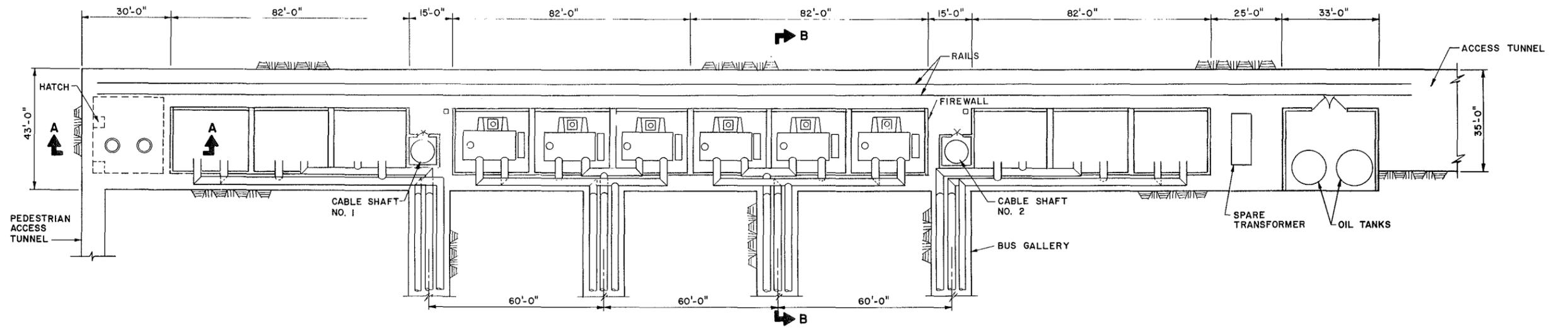
SECTION B-B (SECTION THRU BUS GALLERY)



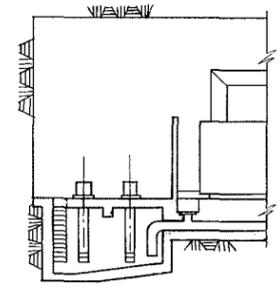
SECTION C-C (SECTION THRU SERVICE BAY)

SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

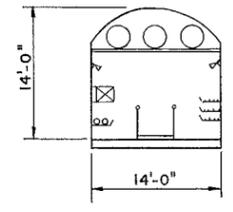
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F64



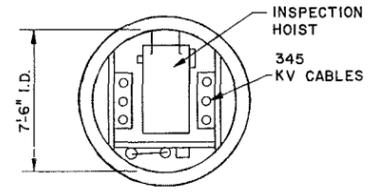
PLAN
SCALE A



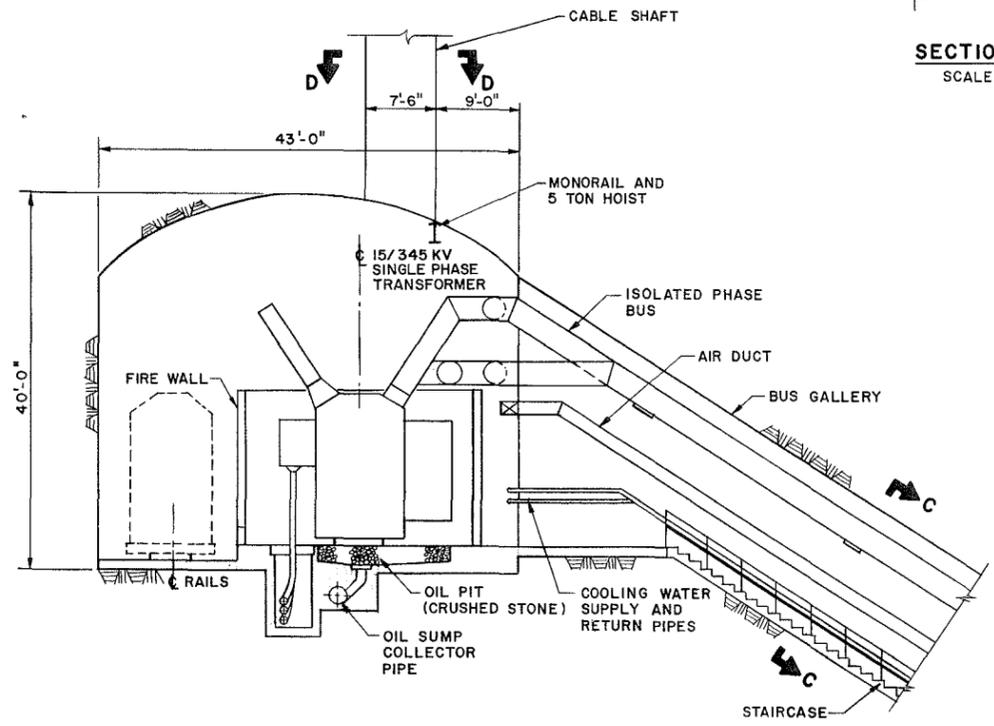
SECTION A-A
SCALE A



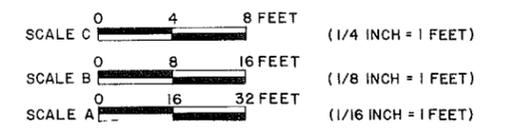
SECTION C-C
SCALE B



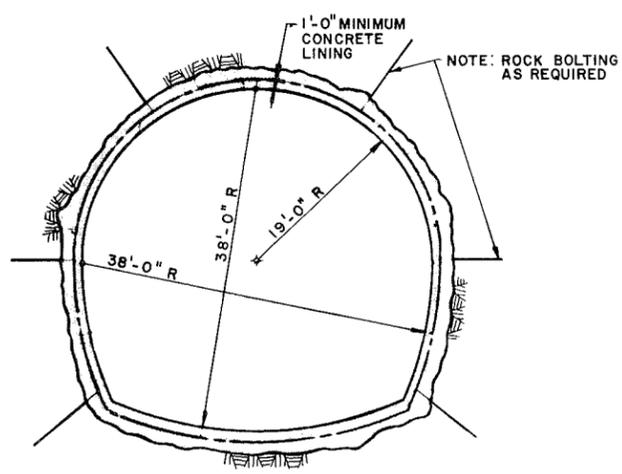
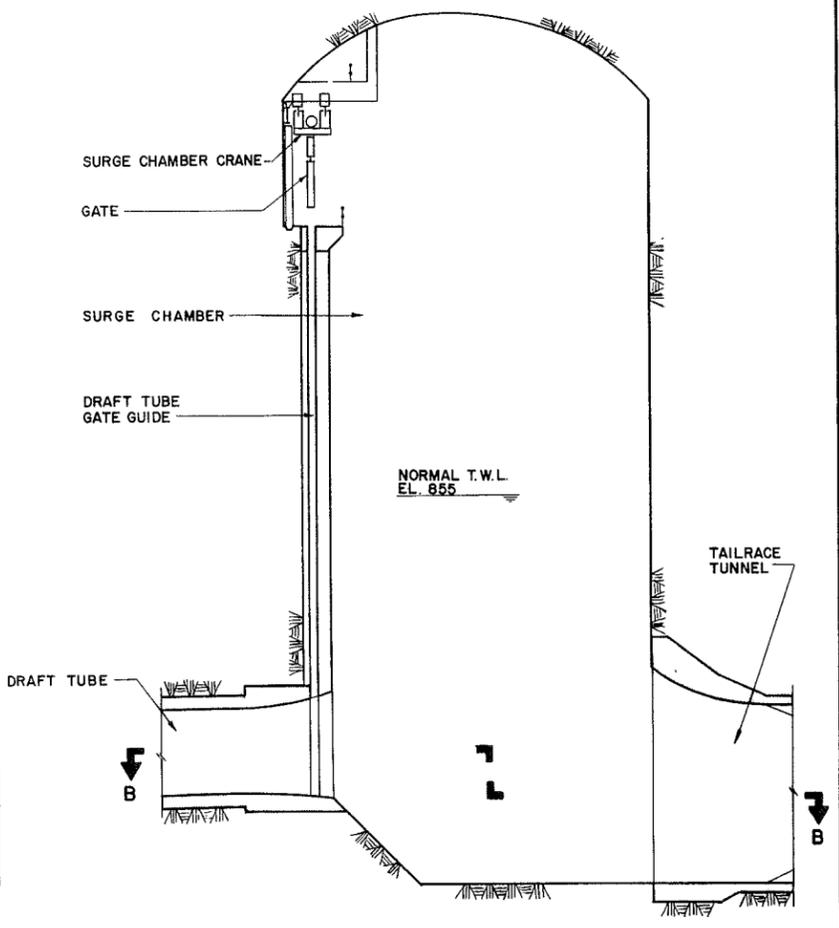
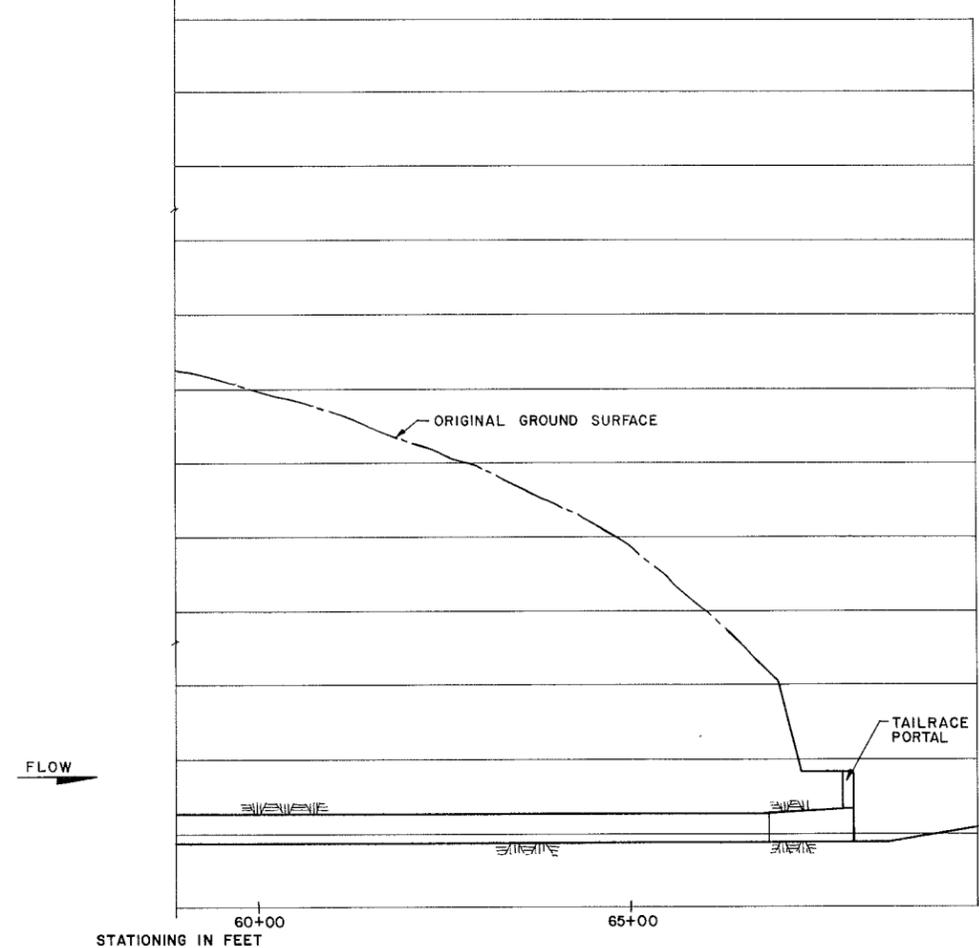
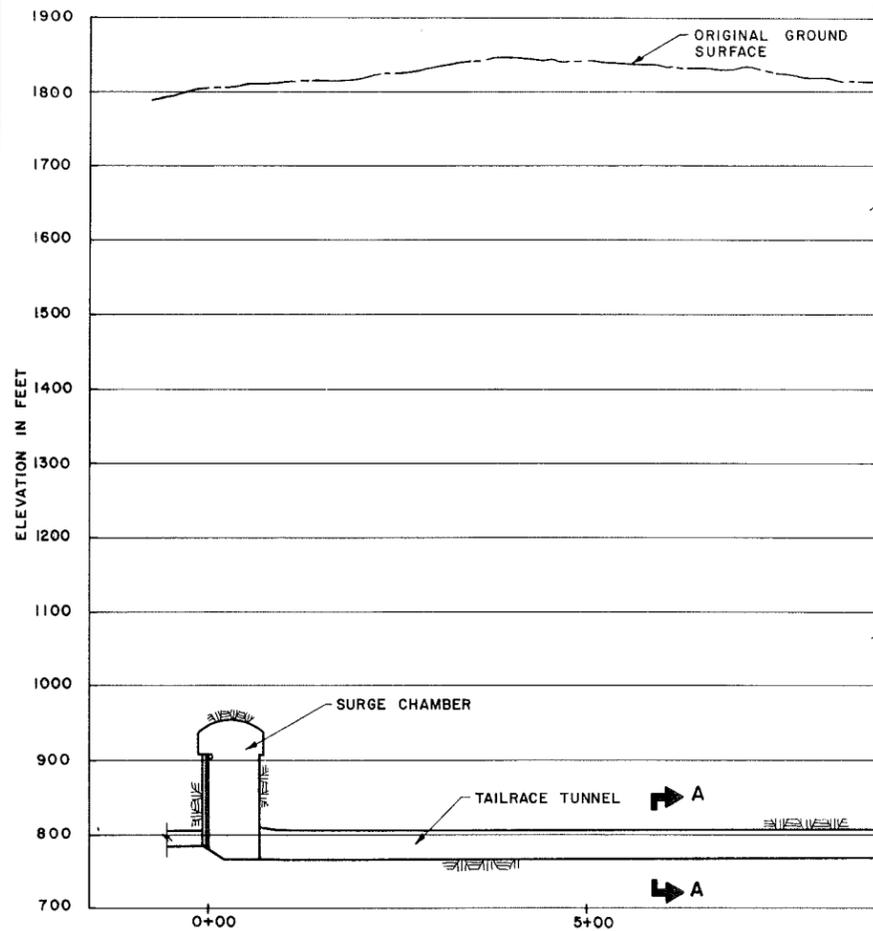
SECTION D-D
SCALE C



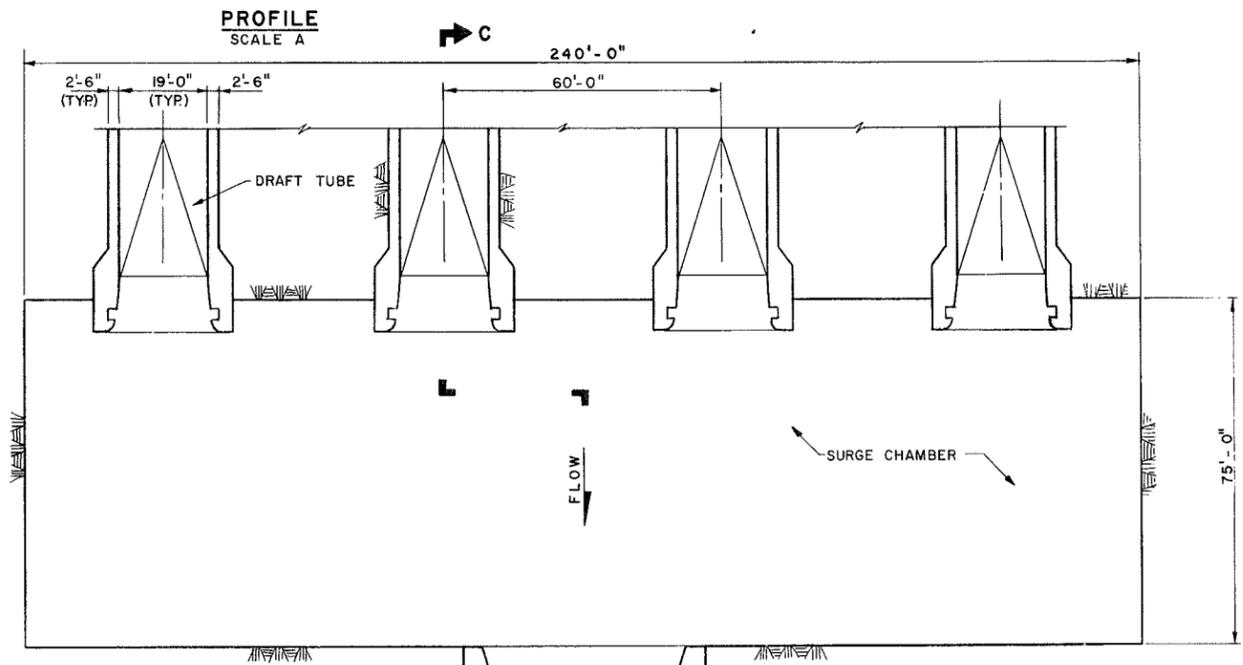
SECTION A-A
SCALE B



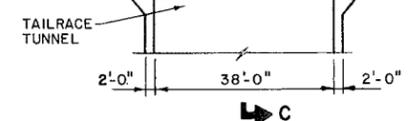
APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TRANSFORMER GALLERY PLAN AND SECTIONS		
EXHIBIT F		PLATE F65



SECTION A-A
CONCRETE LINED TAILRACE TUNNEL
SCALE C

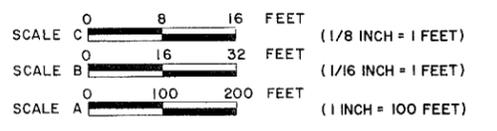


PROFILE
SCALE A

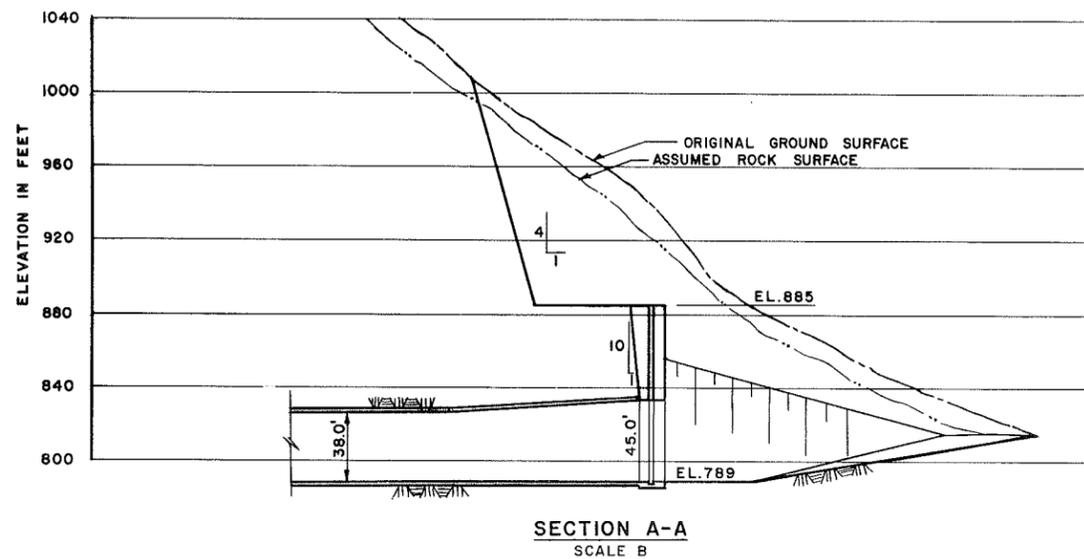
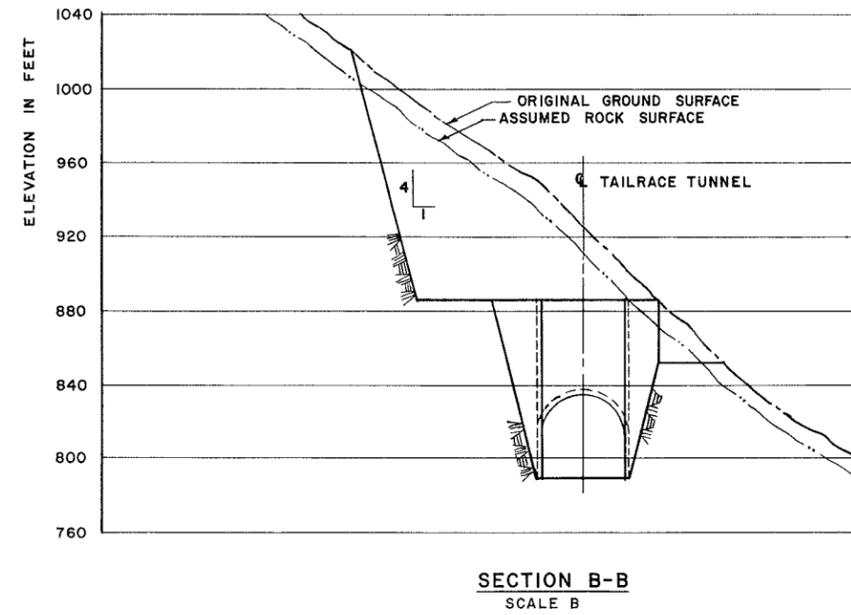
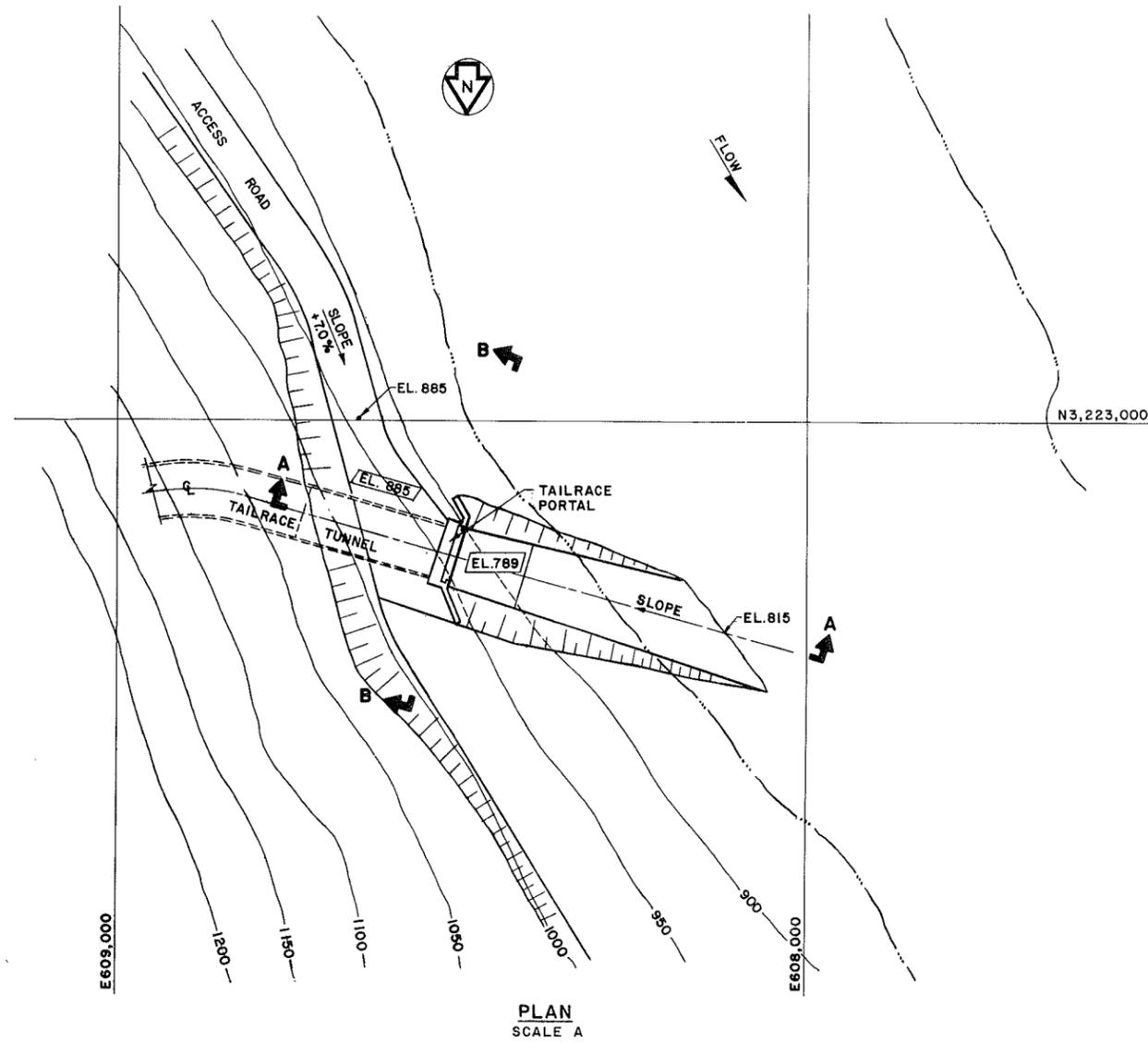


SECTION B-B
SCALE B

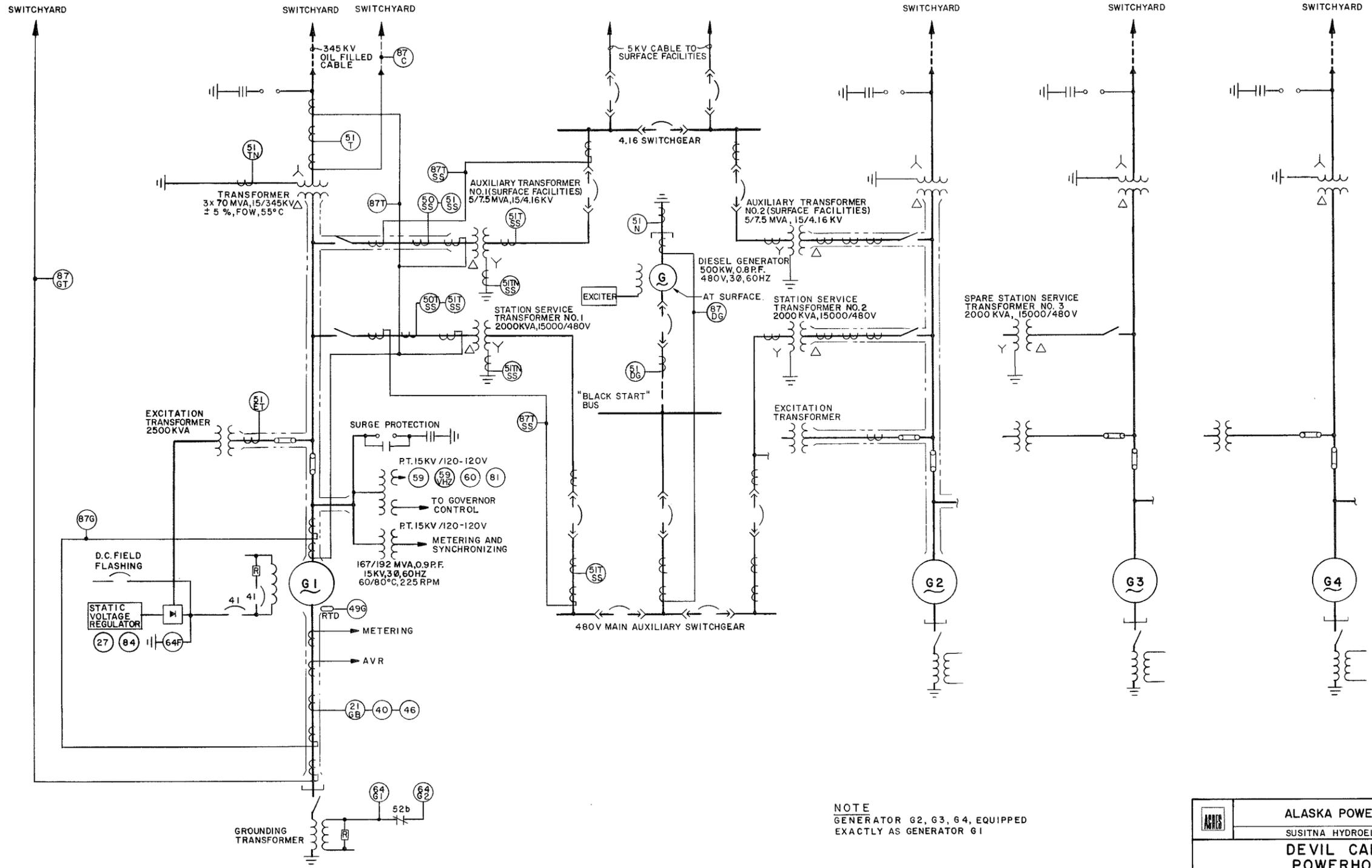
SECTION C-C
SCALE B



APAC	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SURGE CHAMBER AND TAILRACE SECTIONS		
EXHIBIT F		PLATE F 66

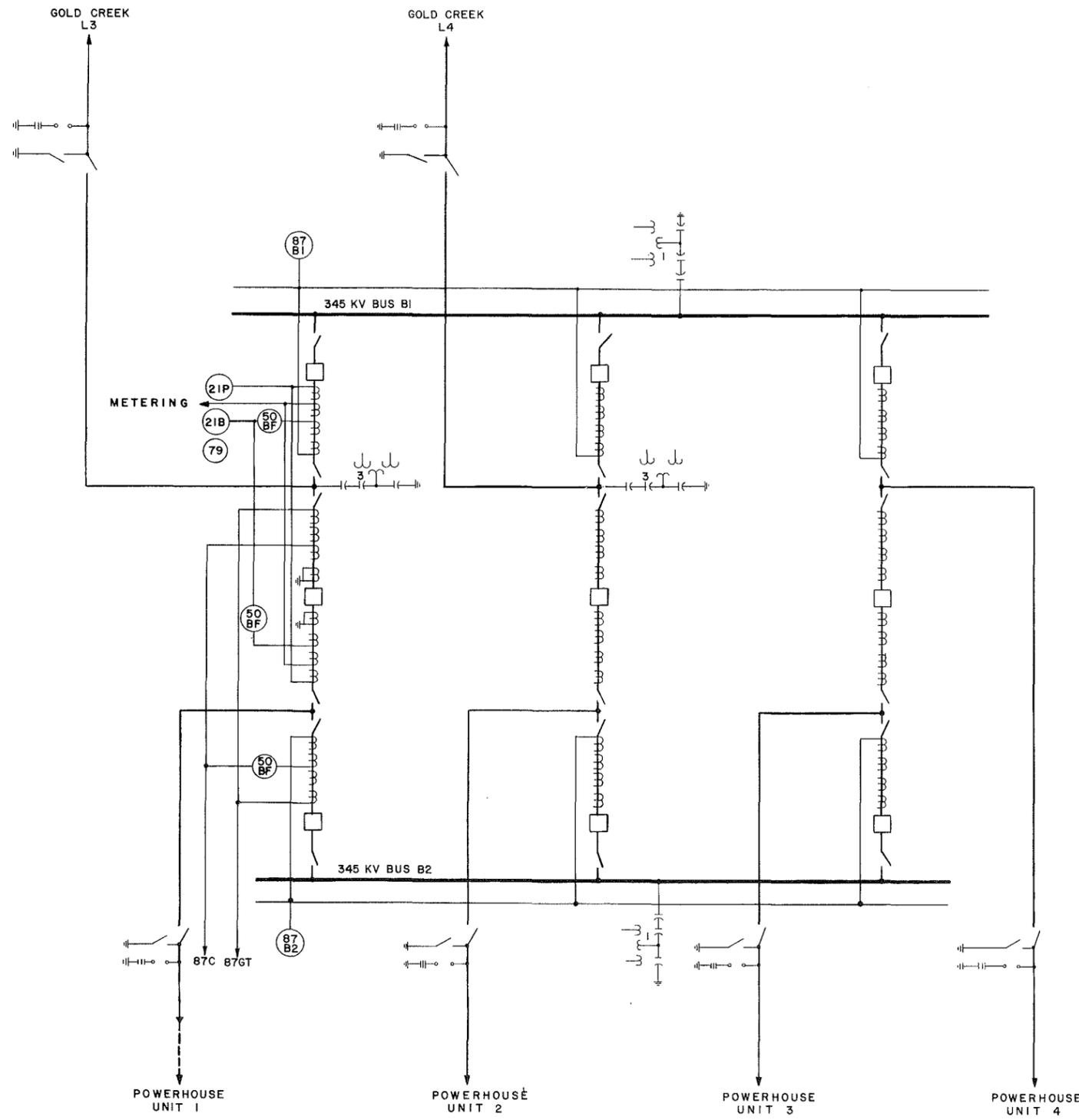


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TAILRACE PORTAL PLAN AND SECTIONS		
EXHIBIT F	PLATE F67	

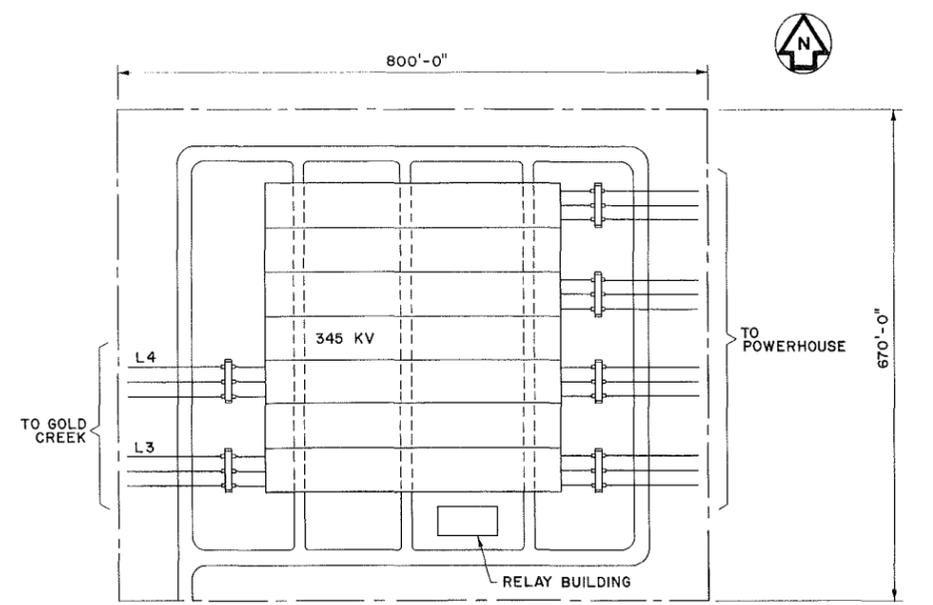


NOTE
 GENERATOR G2, G3, G4, EQUIPPED
 EXACTLY AS GENERATOR G1

APACIS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE SINGLE LINE DIAGRAM		
EXHIBIT F		PLATE F68



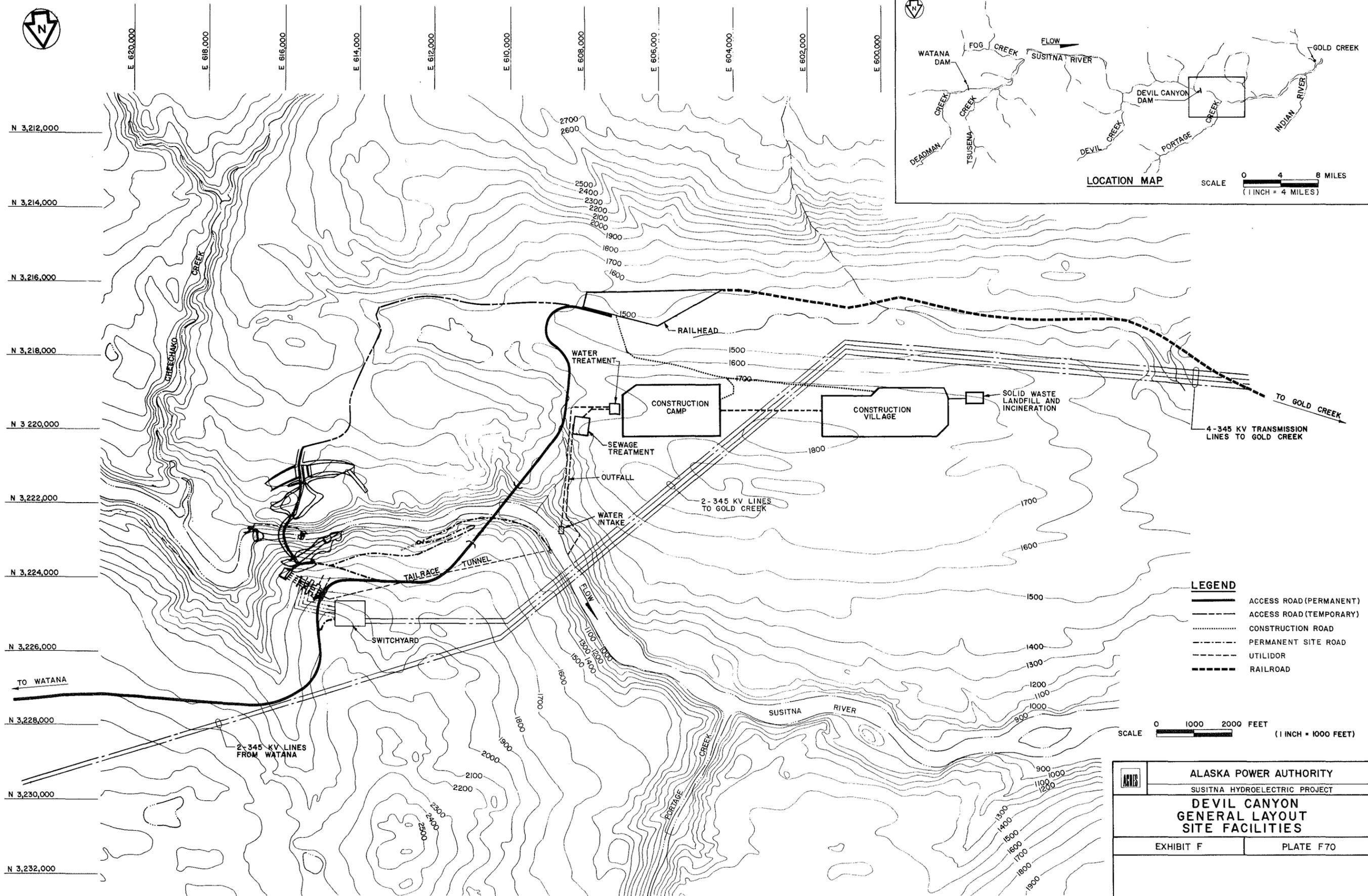
SINGLE LINE DIAGRAM



SWITCHYARD PLAN
SCALE A

SCALE A 0 100 200 FEET
(1 INCH = 100 FEET)

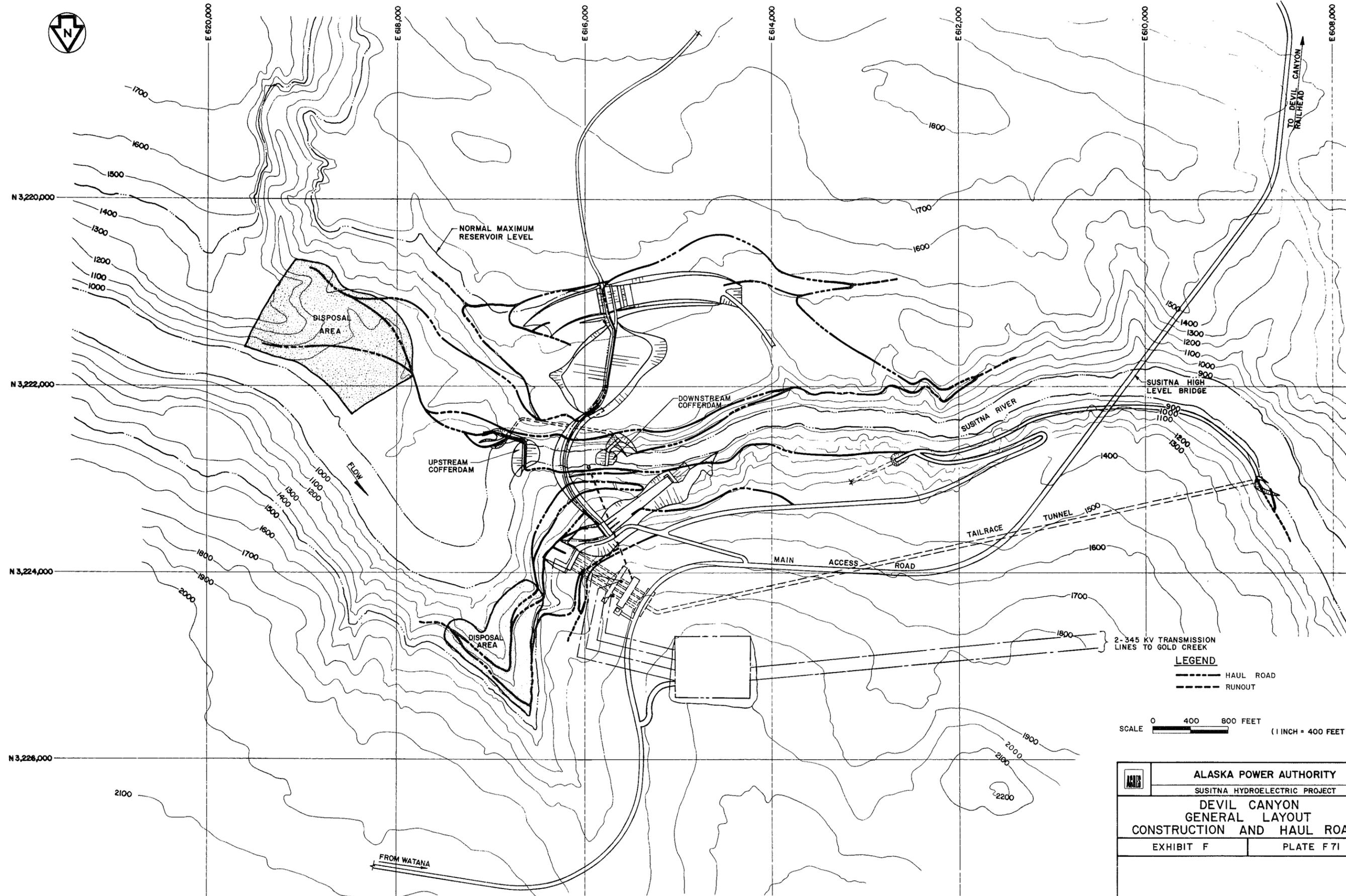
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SWITCHYARD SINGLE LINE DIAGRAM AND PLAN		
EXHIBIT F	PLATE F69	



- LEGEND**
- ACCESS ROAD (PERMANENT)
 - ACCESS ROAD (TEMPORARY)
 - CONSTRUCTION ROAD
 - PERMANENT SITE ROAD
 - UTILIDOR
 - RAILROAD

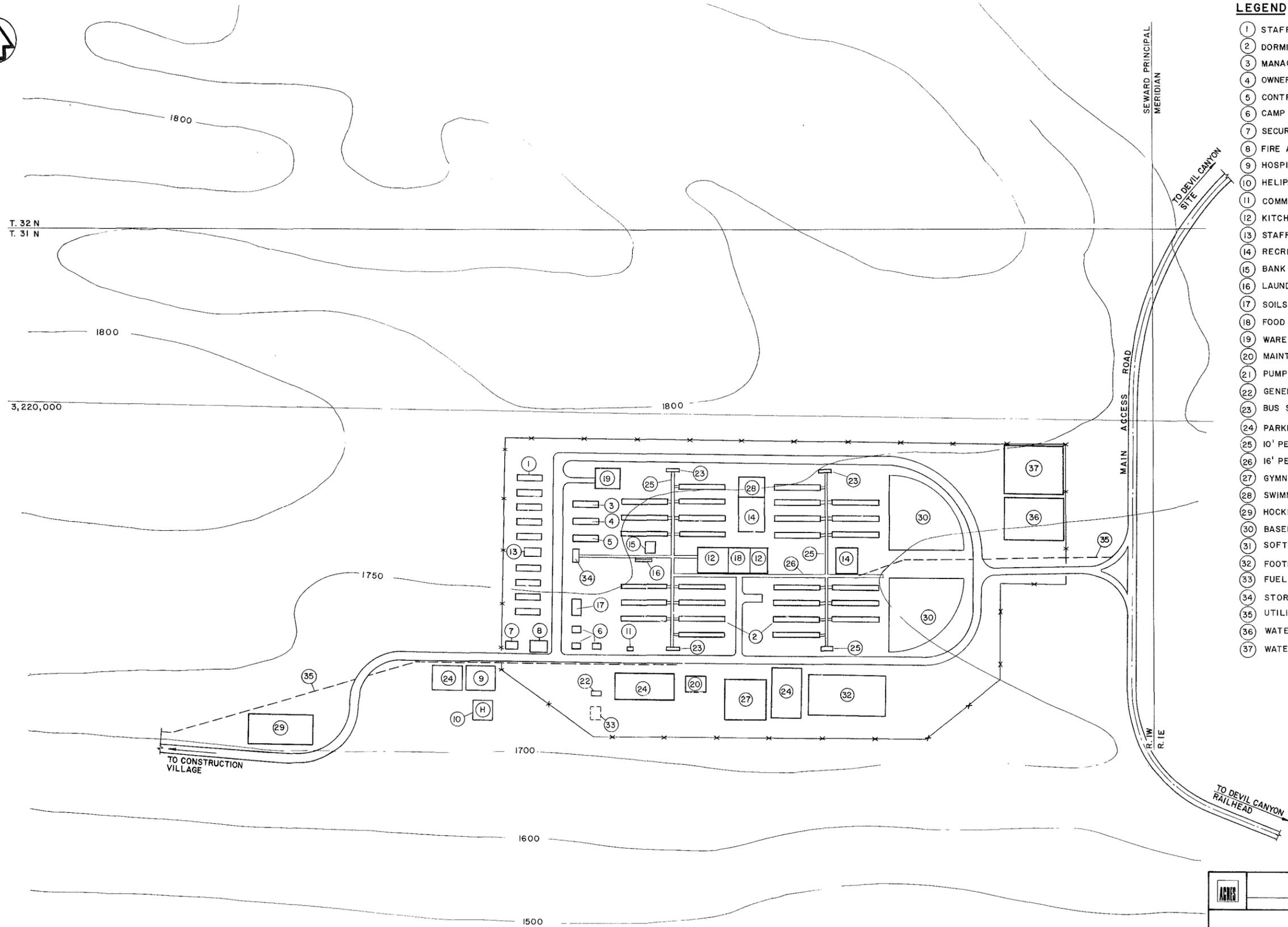
SCALE 0 1000 2000 FEET
(1 INCH = 1000 FEET)

ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON GENERAL LAYOUT SITE FACILITIES	
EXHIBIT F	PLATE F70



LEGEND
 - - - - - HAUL ROAD
 - - - - - RUNOUT
 SCALE 0 400 800 FEET
 (1 INCH = 400 FEET)

	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON GENERAL LAYOUT CONSTRUCTION AND HAUL ROADS	
EXHIBIT F	PLATE F71



- LEGEND**
- ① STAFF AND FOREMAN HOUSING
 - ② DORMITORIES
 - ③ MANAGER'S GUEST HOUSE
 - ④ OWNER'S GUEST HOUSE
 - ⑤ CONTRACTOR'S GUEST HOUSE
 - ⑥ CAMP MANAGER'S OFFICES
 - ⑦ SECURITY
 - ⑧ FIRE AND OIL SPILL
 - ⑨ HOSPITAL
 - ⑩ HELIPAD (MEDICAL EMERGENCY)
 - ⑪ COMMUNICATIONS CENTER
 - ⑫ KITCHEN AND DINING
 - ⑬ STAFF CLUBHOUSE
 - ⑭ RECREATION HALL
 - ⑮ BANK
 - ⑯ LAUNDRIES
 - ⑰ SOILS LAB
 - ⑱ FOOD SERVICE WAREHOUSE
 - ⑲ WAREHOUSE
 - ⑳ MAINTENANCE GARAGE
 - ㉑ PUMP HOUSE
 - ㉒ GENERATING STATION
 - ㉓ BUS STATION
 - ㉔ PARKING AND LAYDOWN AREAS
 - ㉕ 10' PERMAWALK
 - ㉖ 16' PERMAWALK
 - ㉗ GYMNASIUM
 - ㉘ SWIMMING POOL
 - ㉙ HOCKEY RINK
 - ㉚ BASEBALL FIELD
 - ㉛ SOFTBALL FIELD
 - ㉜ FOOTBALL FIELD
 - ㉝ FUEL STORAGE (50,000 GAL.)
 - ㉞ STORE
 - ㉟ UTILIDOR
 - ㊱ WATER TREATMENT PLANT
 - ㊲ WATER RESERVOIR

SCALE 0 200 400 FEET (1 INCH = 200 FEET)

 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN CONSTRUCTION CAMP SITE	
EXHIBIT F	PLATE F 72



LEGEND

 TEMPORARY HOUSING/UTILITIES FURNISHED BY OWNER.

 PARKING AREAS

VILLAGE HOUSING - 320 UNITS

- FAMILY HOUSING - 2 B.R. - 16 UNITS (24'x50')
- FAMILY HOUSING - 3 B.R. - 16 UNITS (24'x50')
- FAMILY HOUSING - 4 B.R. - 16 UNITS (28'x50')
- FAMILY HOUSING - 3 B.R. - 72 UNITS (14'x60')
- FAMILY HOUSING - 3 B.R. - 200 UNITS (14'x60')

- (106) SCHOOL - 30' x 35' (12 UNITS)
- (107) GYM - 100' x 100'
- (108) SWIMMING POOL - 100' x 100'
- (109) RECREATION CENTER 80' x 100'
- (110) STORE - 100' x 160'
- (111) FIRE STATION - 30' x 40'
- (112) GENERATING STATION - 20' x 30' (2 UNITS)
- (113) UTILIDOR
- (114) SEWER PUMPING STATION - 50' x 60'

3,220,000

1700

1750

1800

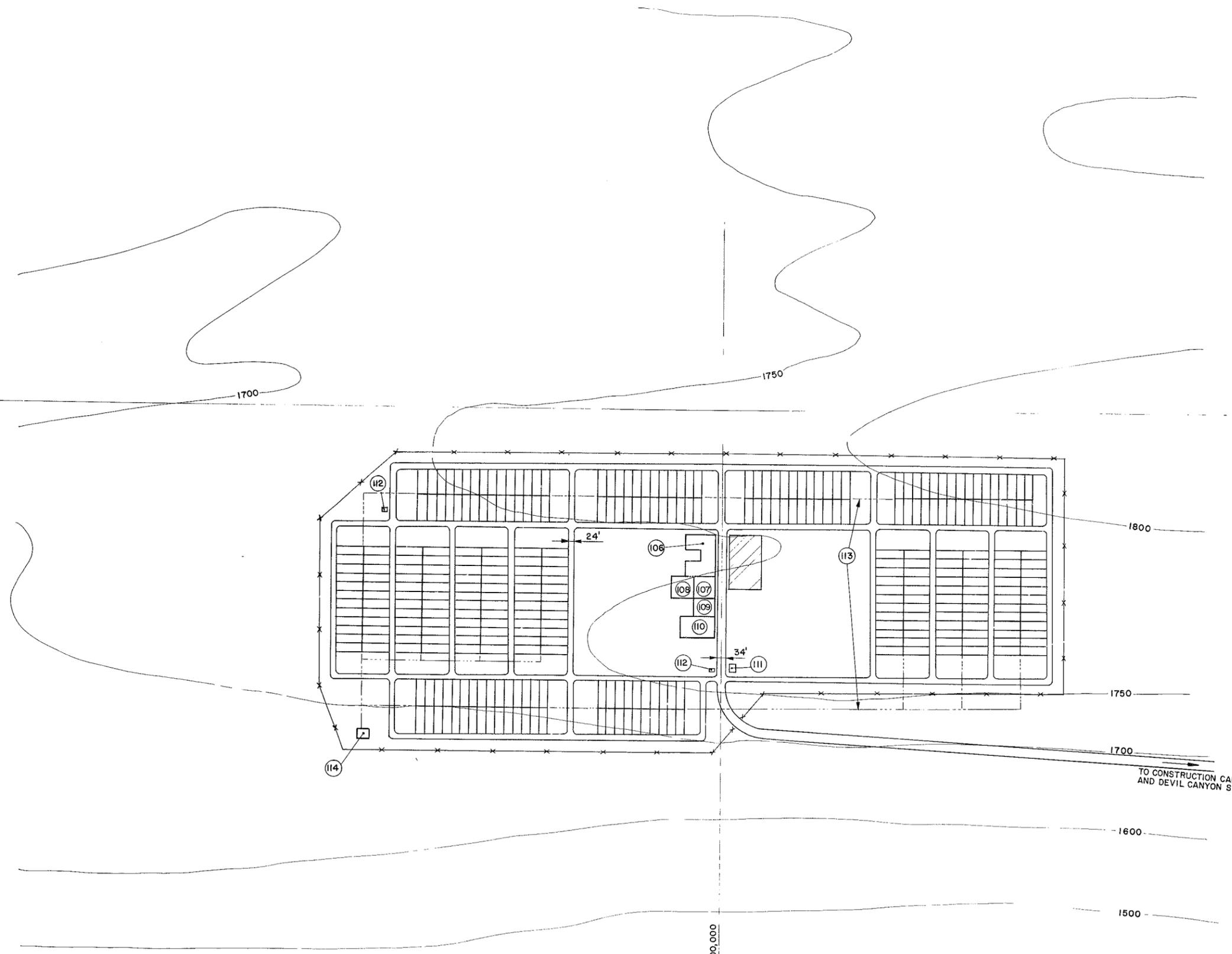
1750

1700

1600

1500

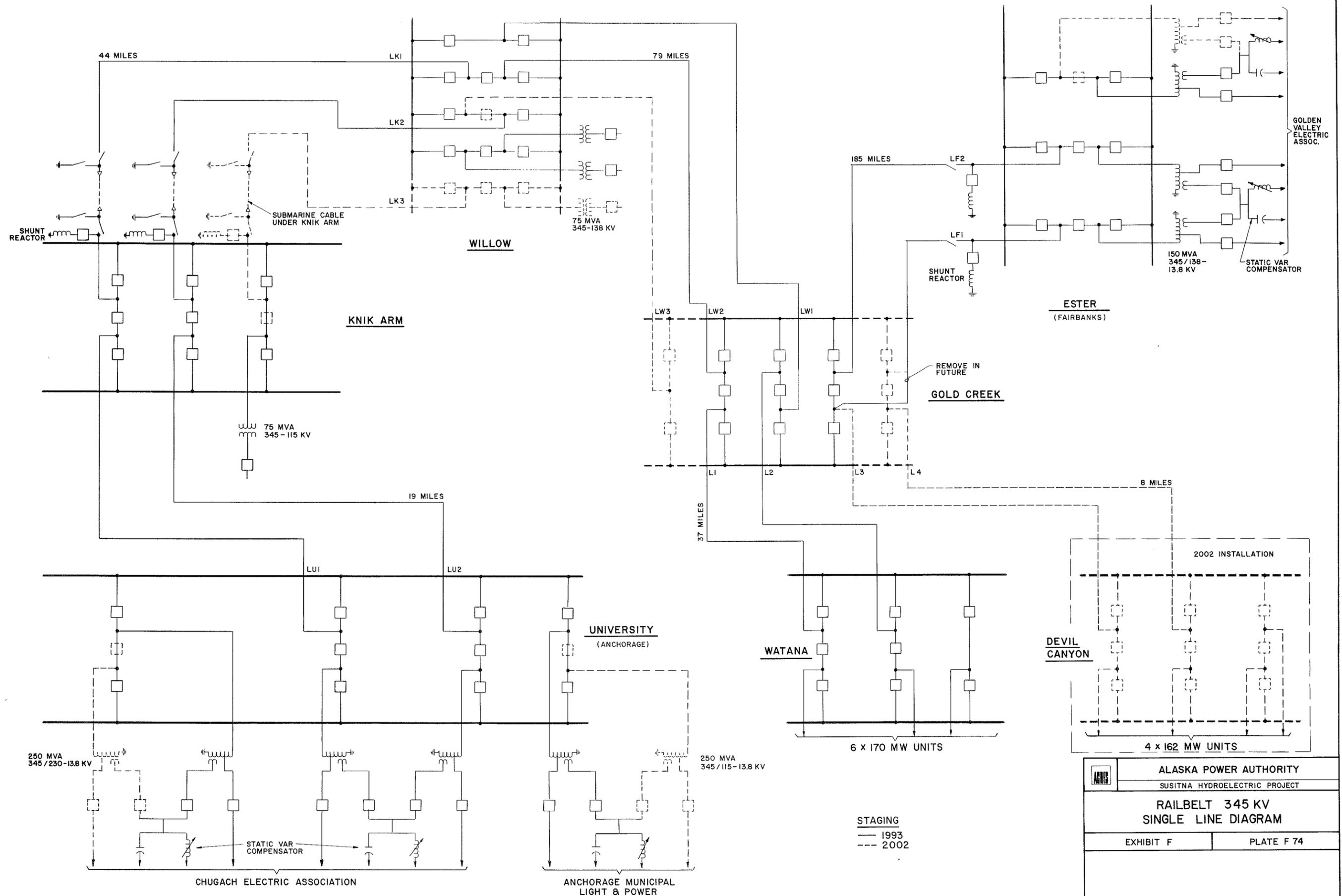
6,000,000



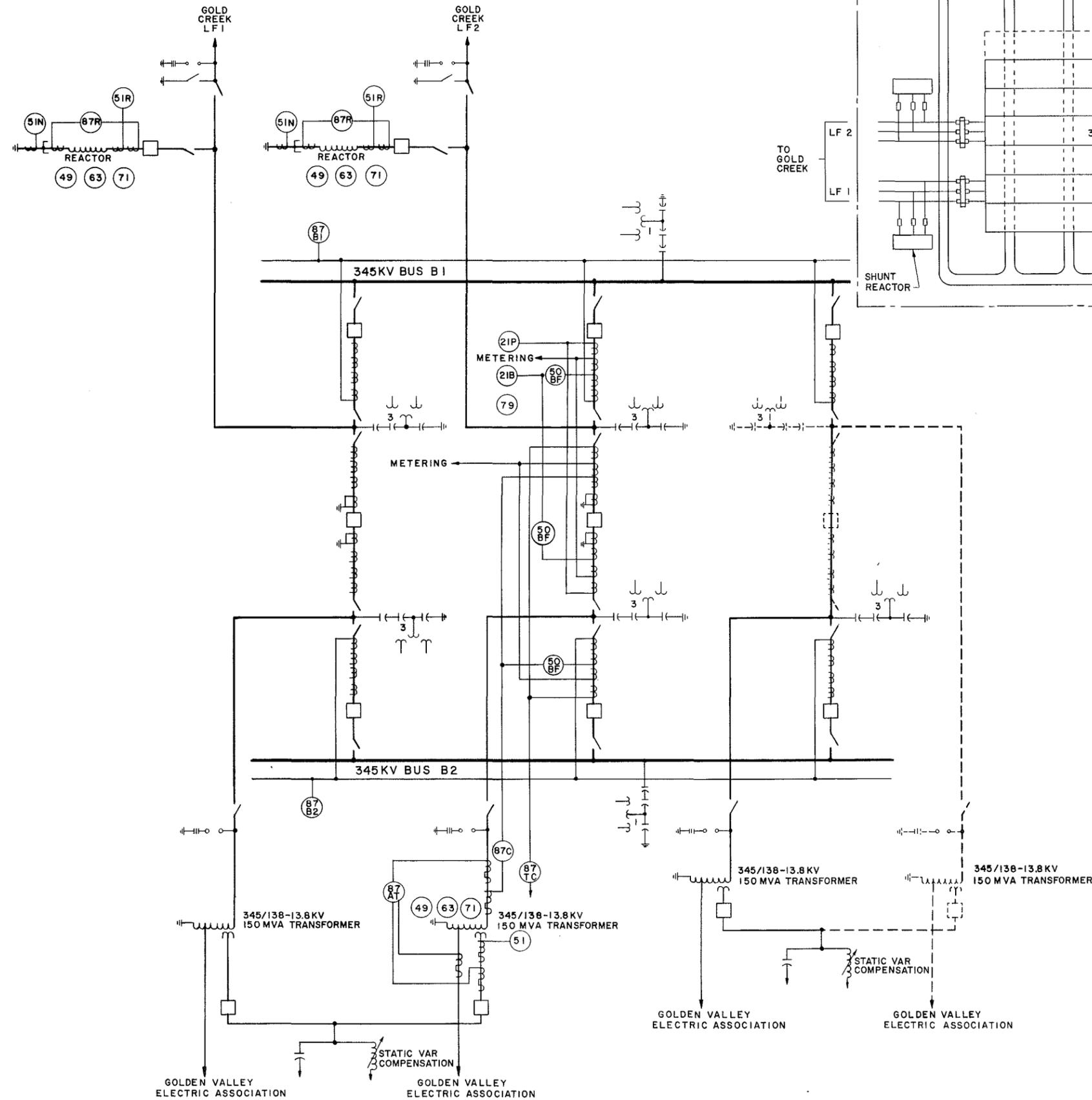
TO CONSTRUCTION CAMP AND DEVIL CANYON SITE

SCALE 0 200 400 FEET (1 INCH = 200 FEET)

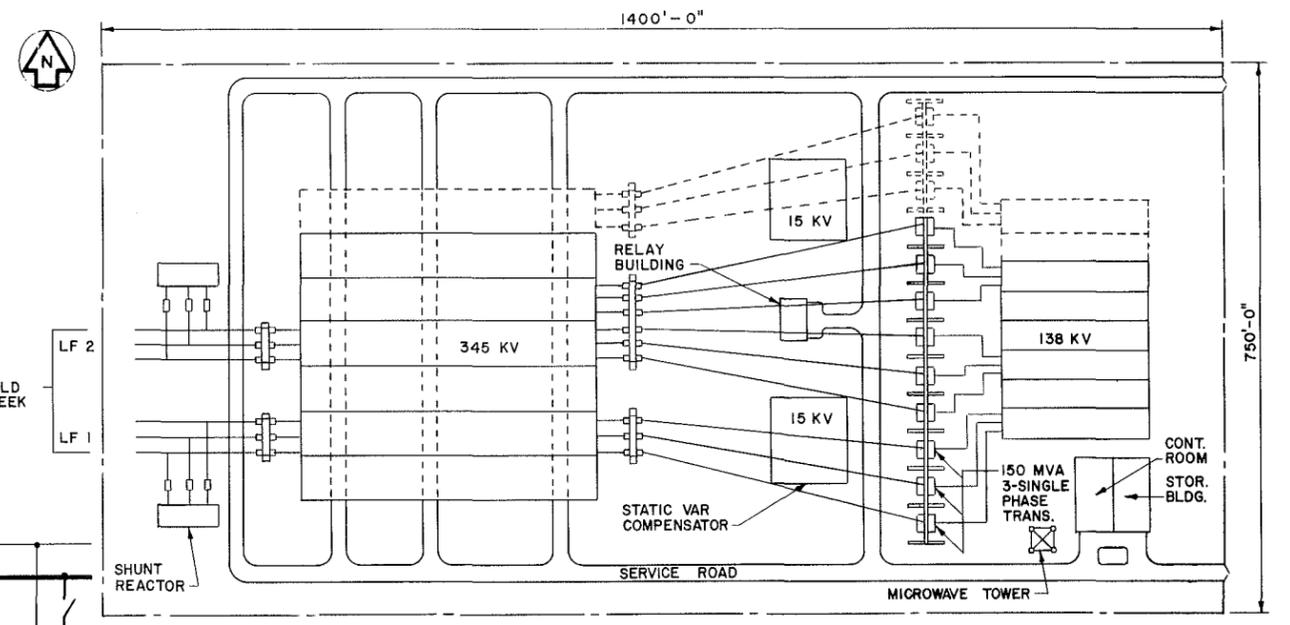
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TEMPORARY VILLAGE		
EXHIBIT F	PLATE F 73	



ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
RAILBELT 345 KV SINGLE LINE DIAGRAM	
EXHIBIT F	PLATE F 74



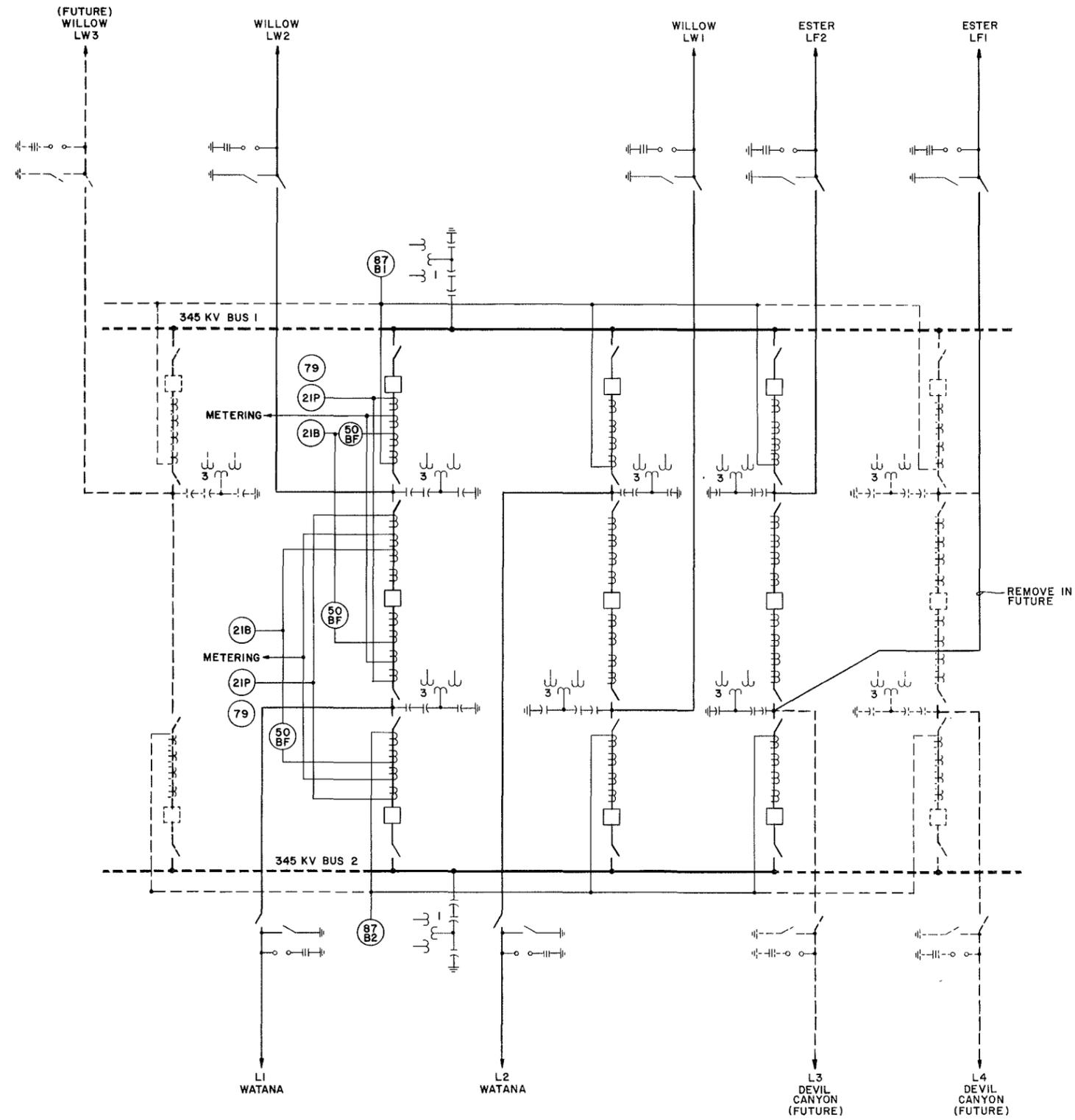
SINGLE LINE DIAGRAM



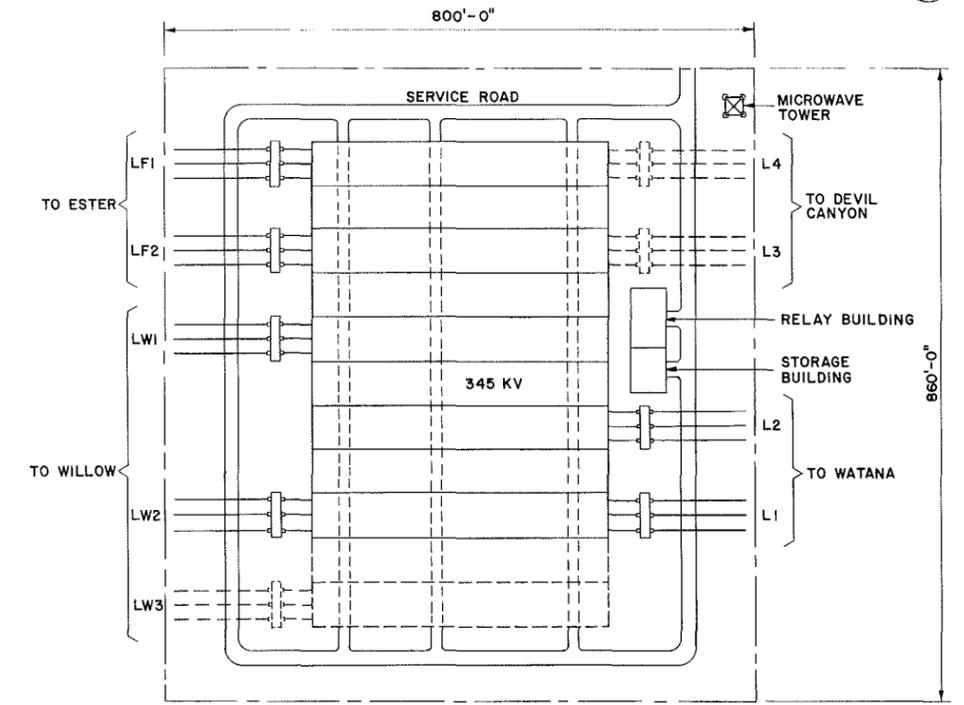
SUBSTATION PLAN
SCALE A



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
ESTER SUBSTATION	
SINGLE LINE DIAGRAM AND PLAN	
EXHIBIT F	PLATE F 75



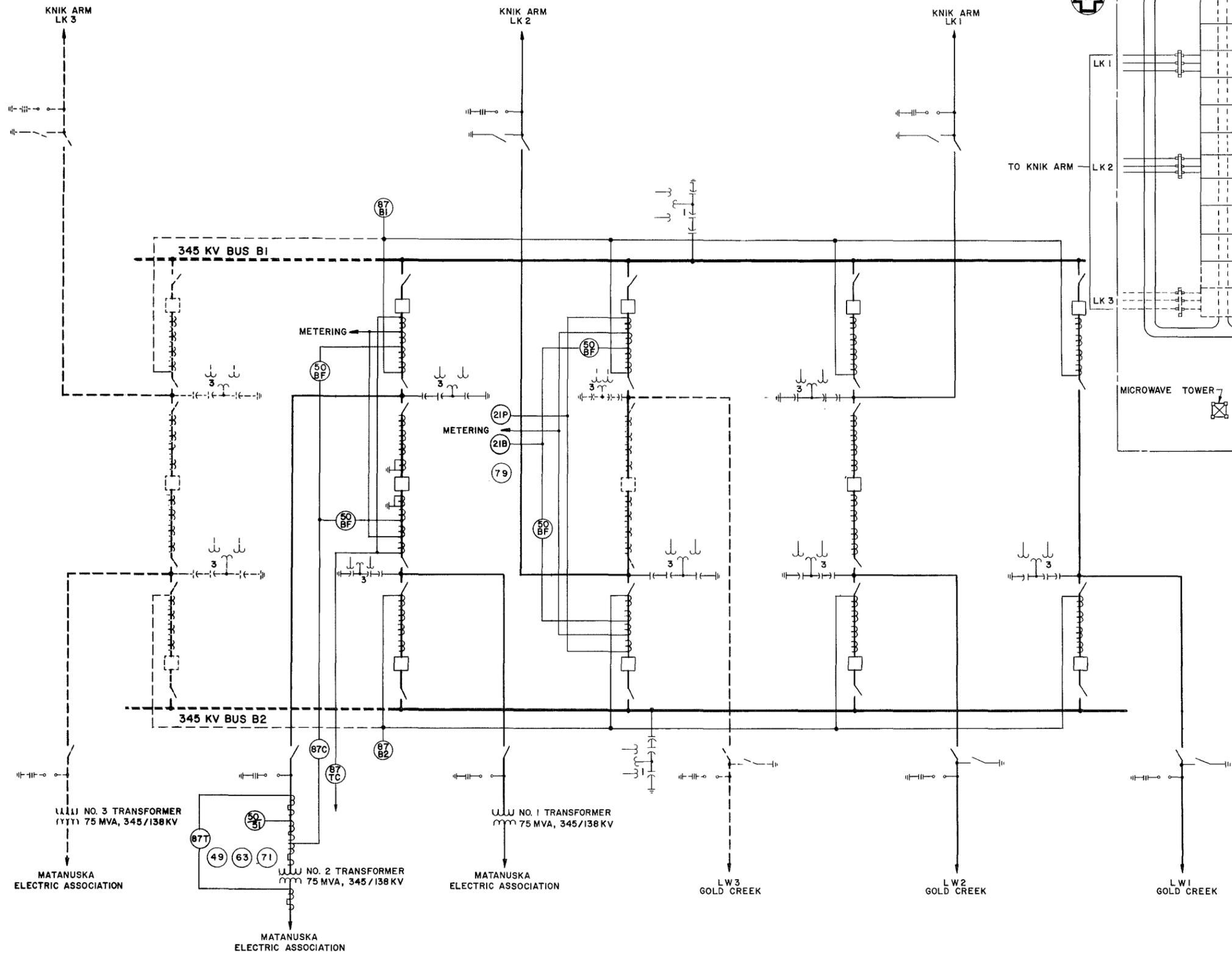
SINGLE LINE DIAGRAM



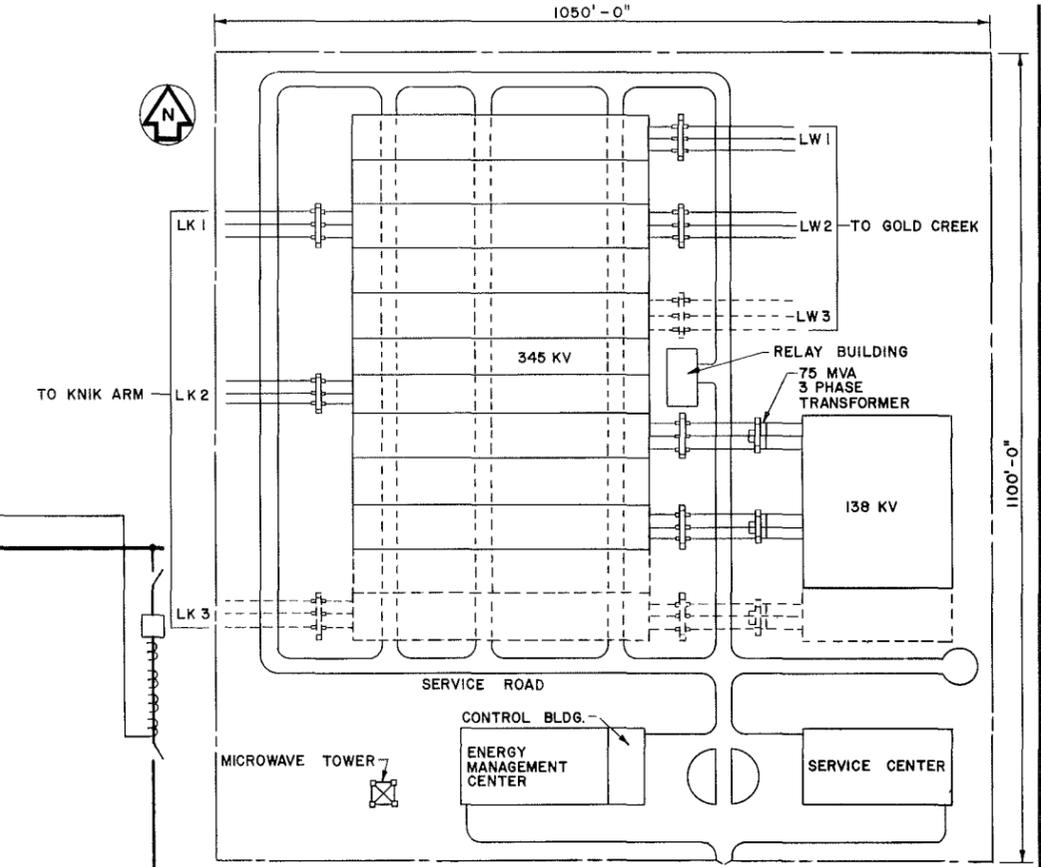
SWITCHYARD PLAN
SCALE A

SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
GOLD CREEK SWITCHYARD SINGLE LINE DIAGRAM AND PLAN		
EXHIBIT F	PLATE F 76	



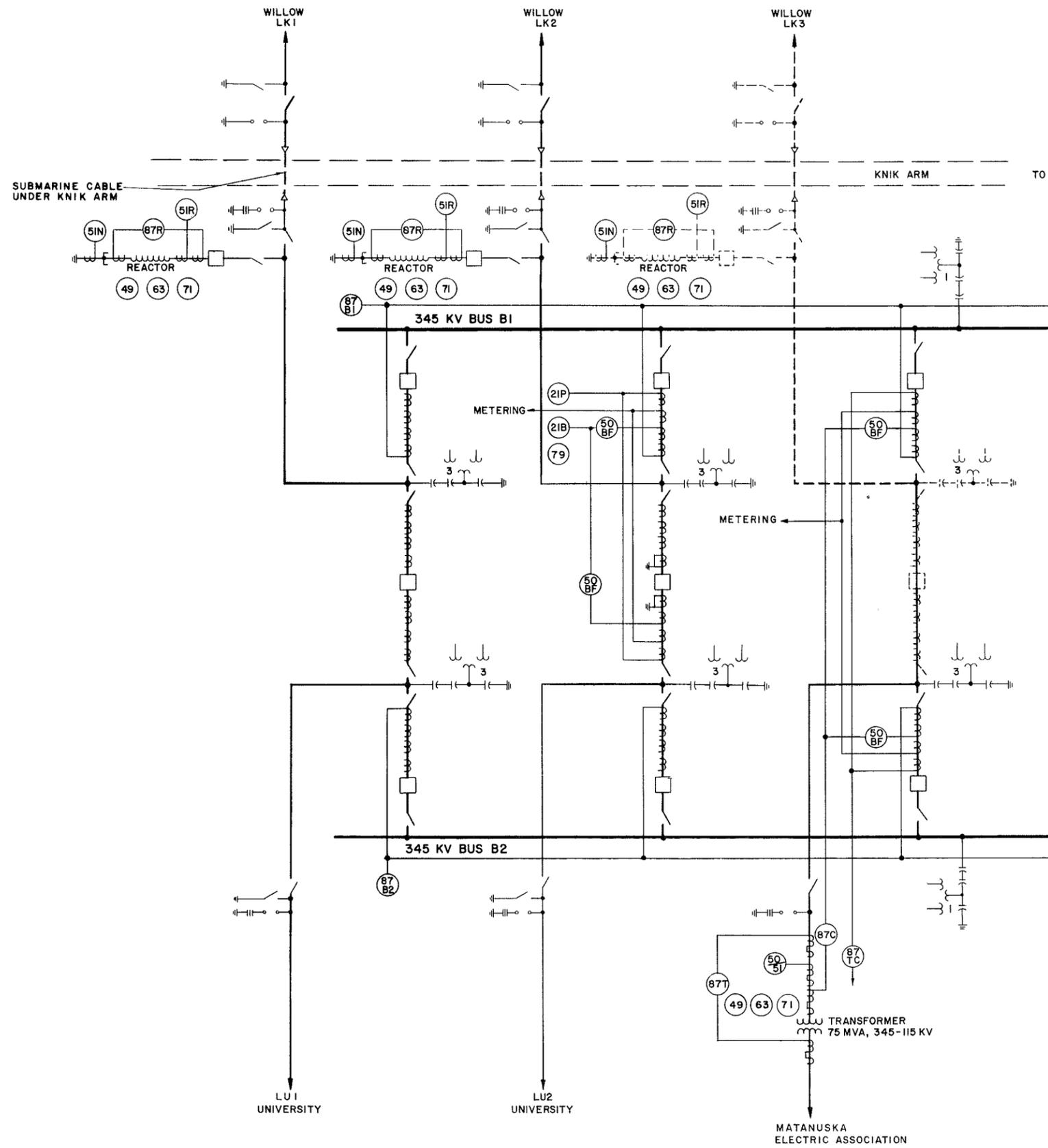
SINGLE LINE DIAGRAM



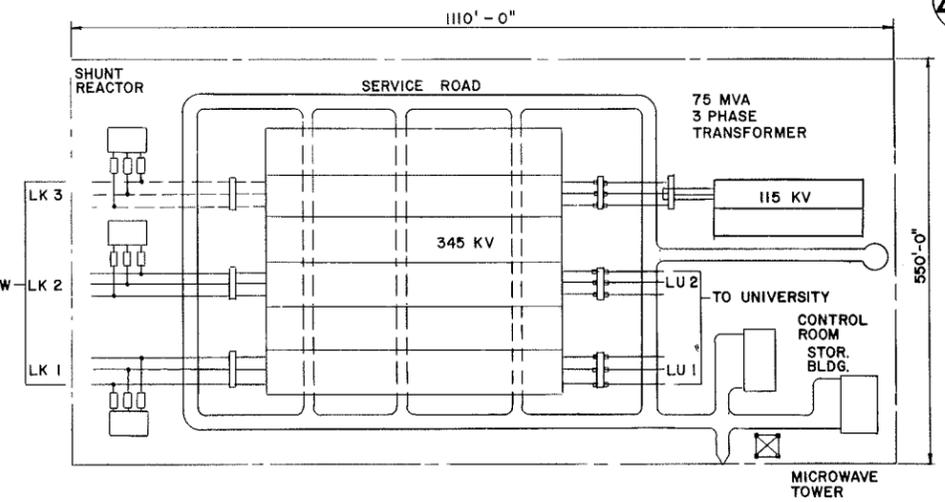
SUBSTATION PLAN
SCALE A



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WILLOW SUBSTATION SINGLE LINE DIAGRAM AND PLAN	
EXHIBIT F	PLATE F77



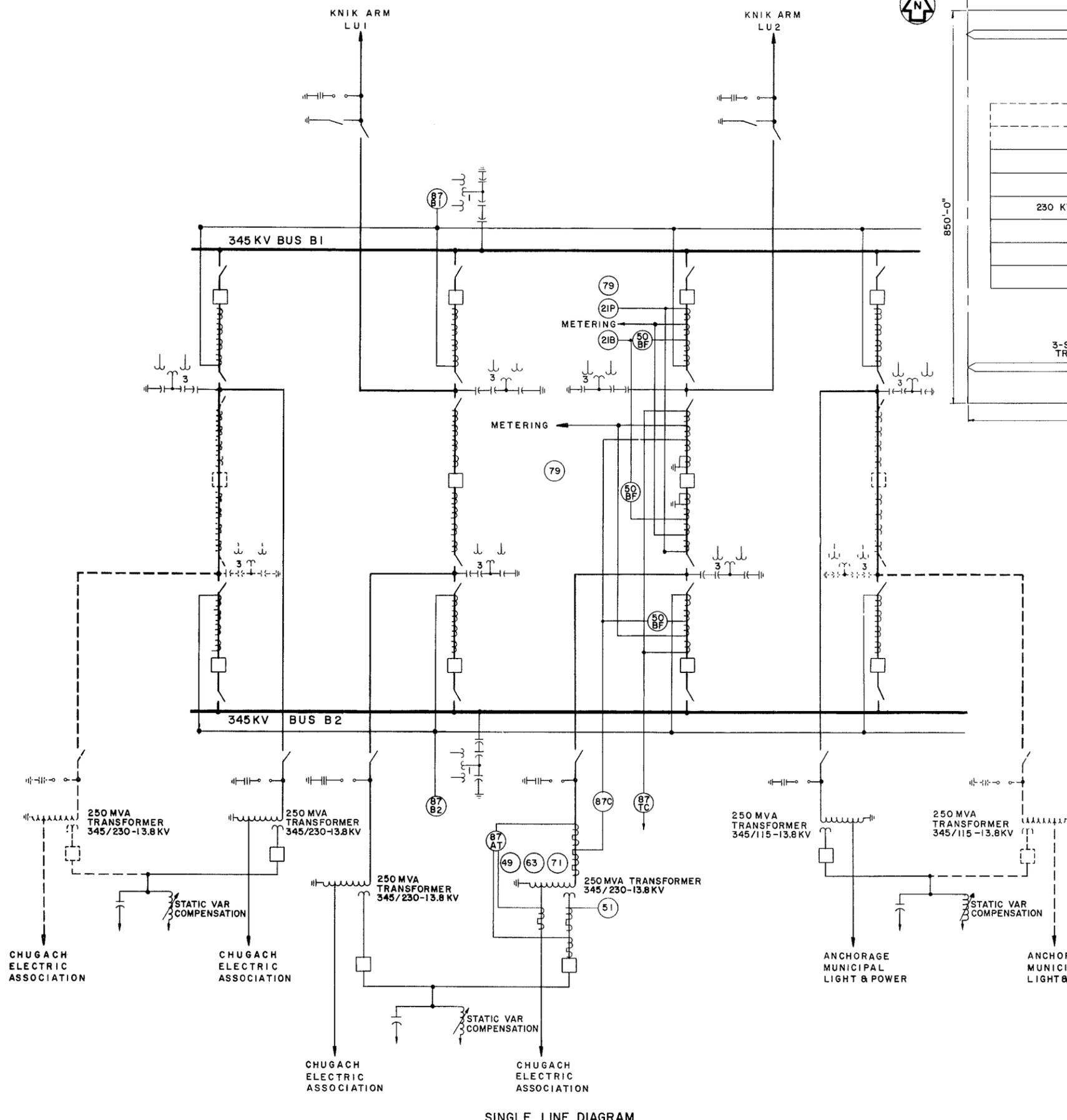
SINGLE LINE DIAGRAM



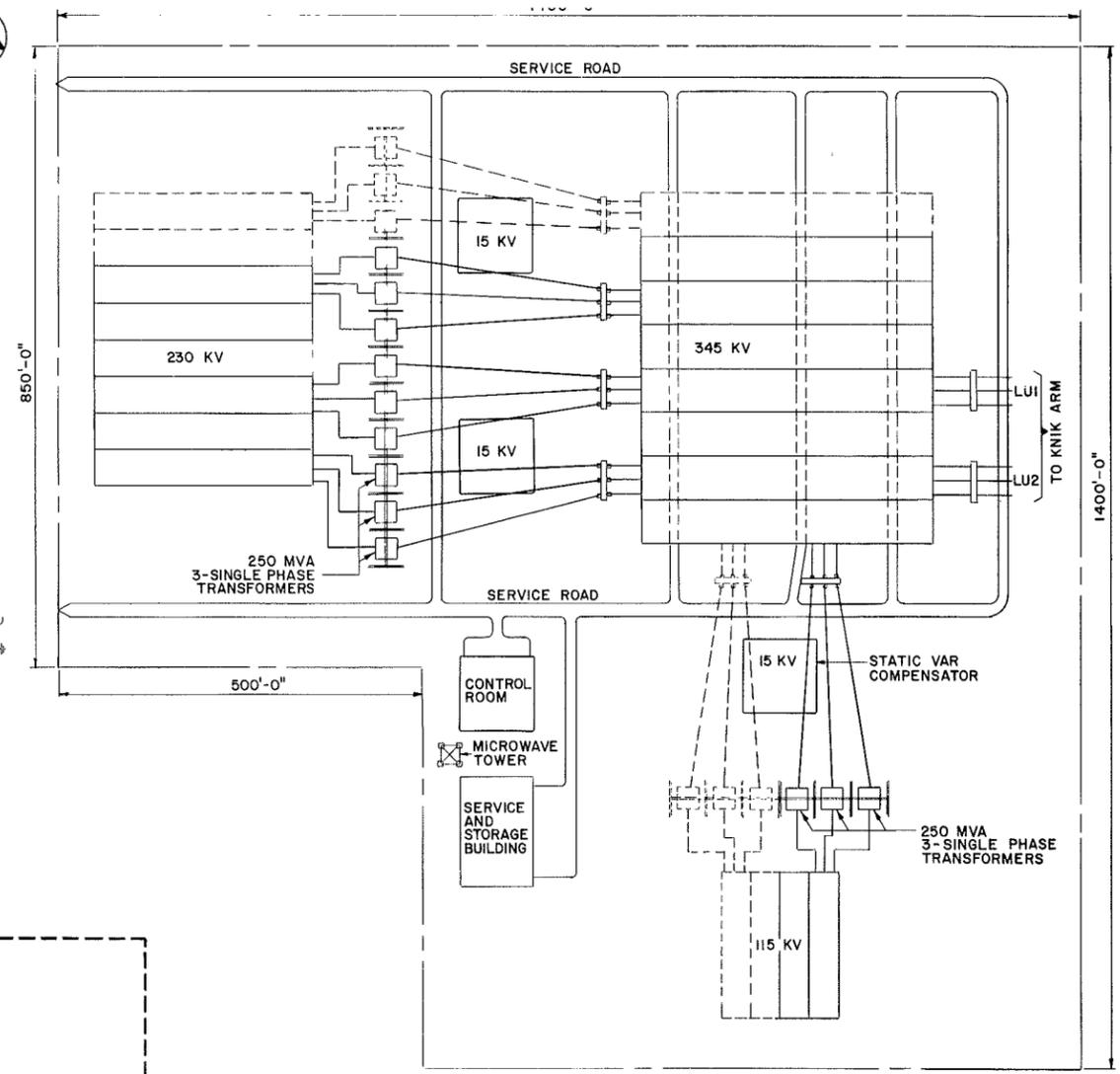
SUBSTATION PLAN
SCALE A

0 100 200 FEET
SCALE A (1 INCH = 100 FEET)

APRES	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
KNIK ARM SUBSTATION SINGLE LINE DIAGRAM AND PLAN		
EXHIBIT F	PLATE F 78	



SINGLE LINE DIAGRAM



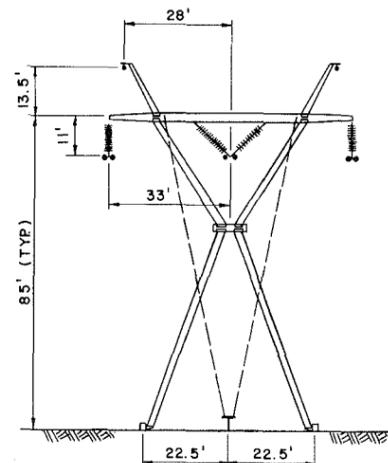
SUBSTATION PLAN
SCALE A

SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

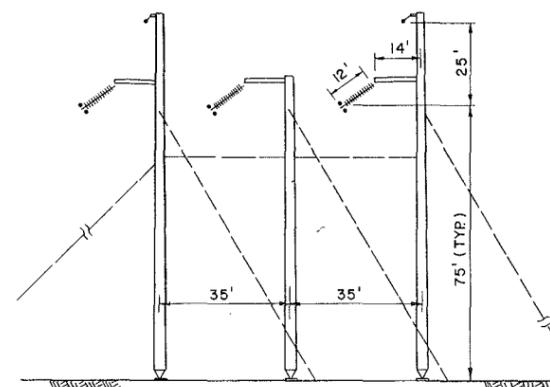
 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
UNIVERSITY SUBSTATION SINGLE LINE DIAGRAM AND PLAN	
EXHIBIT F	PLATE F 79

NOTES :

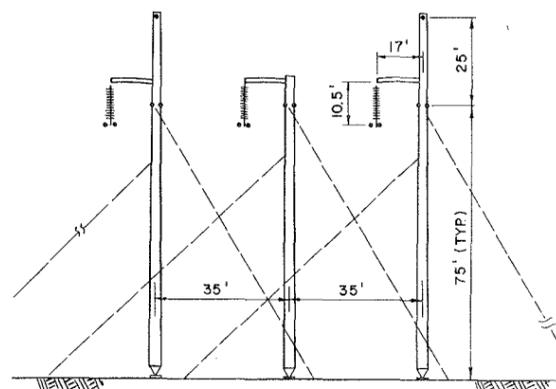
1. BASED ON PROPOSED STRUCTURES FOR INTERTIE PROJECT.
2. AVERAGE CONDUCTOR SAG - 37 FEET.
3. AVERAGE TOWER SPACING - 1400 FEET.



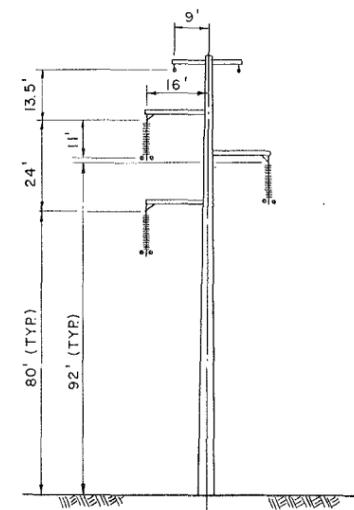
345 kV TANGENT OR LIGHT ANGLE STRUCTURE



345 kV MEDIUM ANGLE (8° - 30°) STRUCTURE



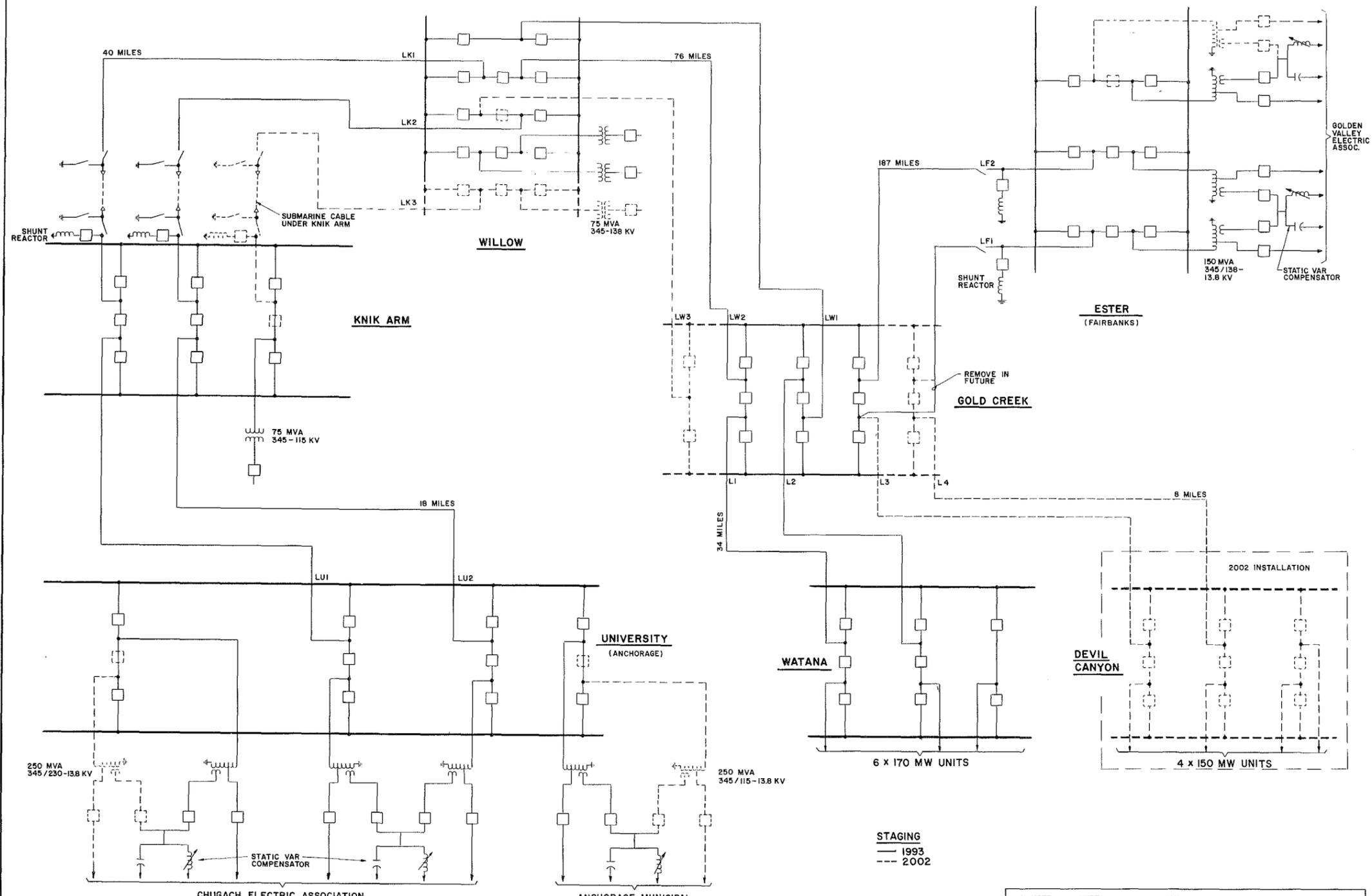
345 kV HEAVY ANGLE (8° - 50°) DEAD END STRUCTURE



345 kV SINGLE CIRCUIT TANGENT POLE

SCALE 0 20 40 FEET (1 INCH = 20 FEET)

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
TYPICAL TRANSMISSION LINE STRUCTURES		
EXHIBIT F		PLATE F80

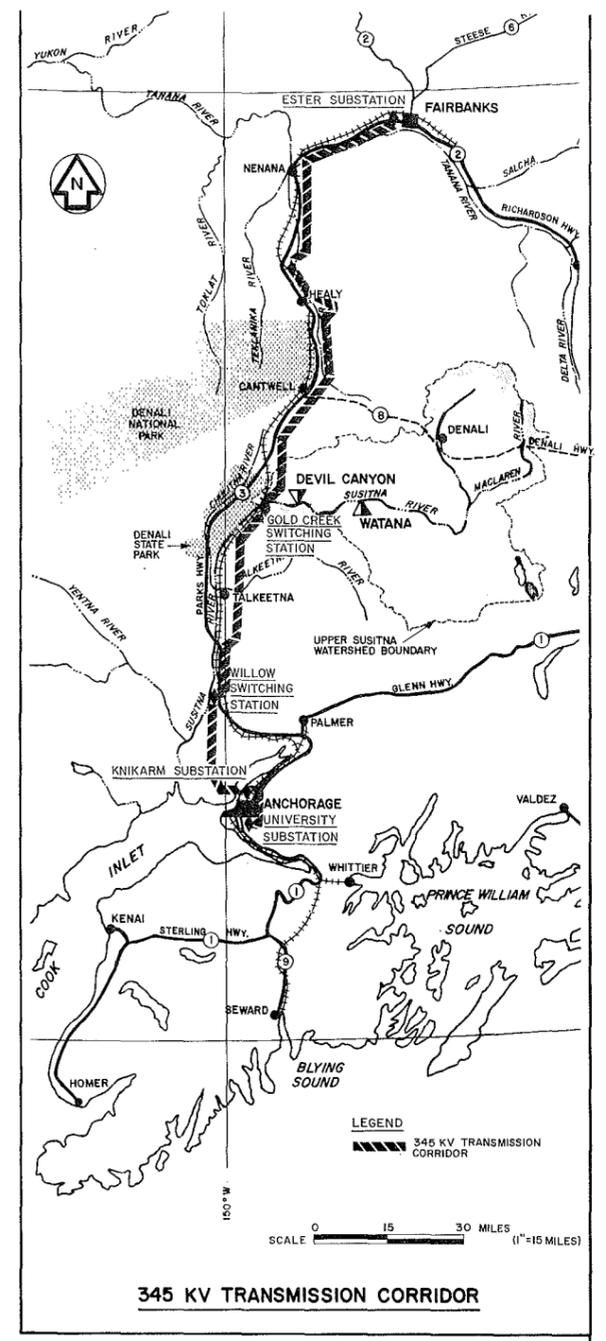


345 KV TRANSMISSION SYSTEM SINGLE LINE DIAGRAM

STAGING
 — 1993
 - - - 2002

NUMBER OF LINES	WIDTH OF R.O.W. (FT)	DISTANCE BETWEEN LINES (FT)	DISTANCE FROM LINE TO EDGE OF R.O.W. (FT)
1	190	—	95
2	300	105 ±	95
3	400	105 ±	95
4	510	105 ±	95

NOTE:
 1. ESTIMATED GROUND RESISTIVITY FOR DESIGN IS 50 OHMS.



345 KV TRANSMISSION CORRIDOR

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
345 KV SYSTEM SINGLE LINE DIAGRAM AND TRANSMISSION CORRIDOR	
EXHIBIT F	PLATE F 81