

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

VOLUME 3

EXHIBIT F

FEBRUARY 1983

Prepared by:



ALASKA POWER AUTHORITY

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

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SUSITNA HYDROELECTRIC PROJECT
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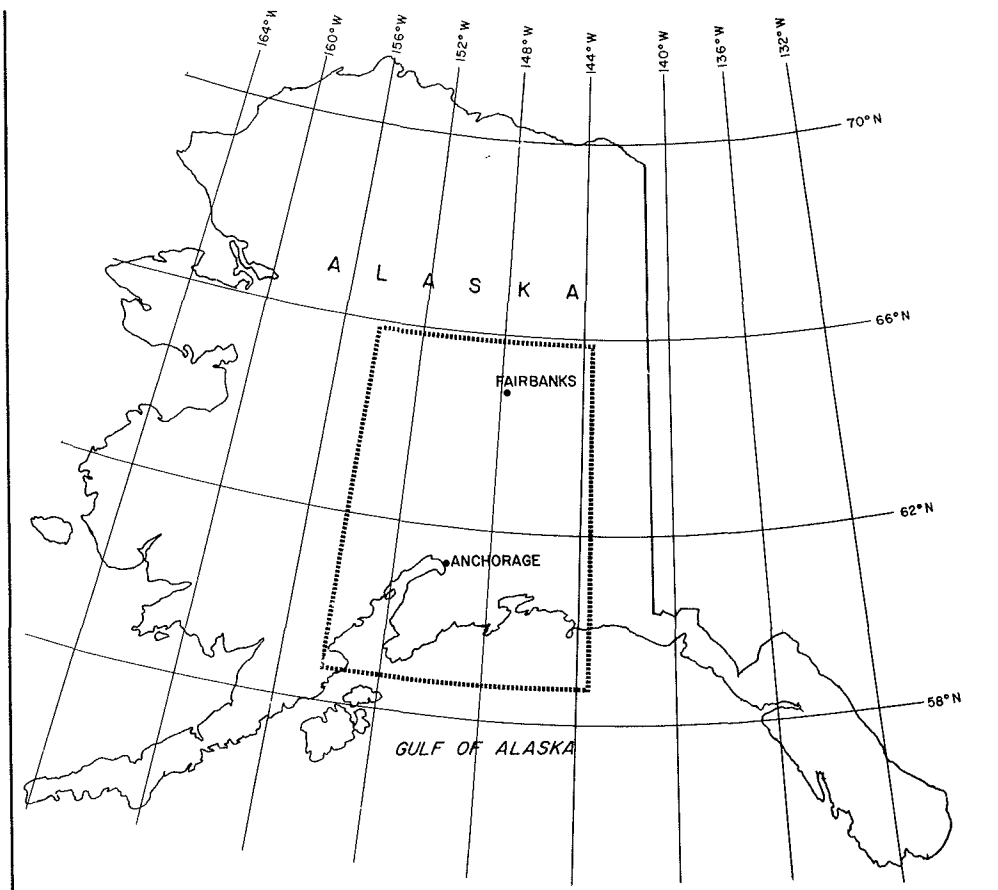
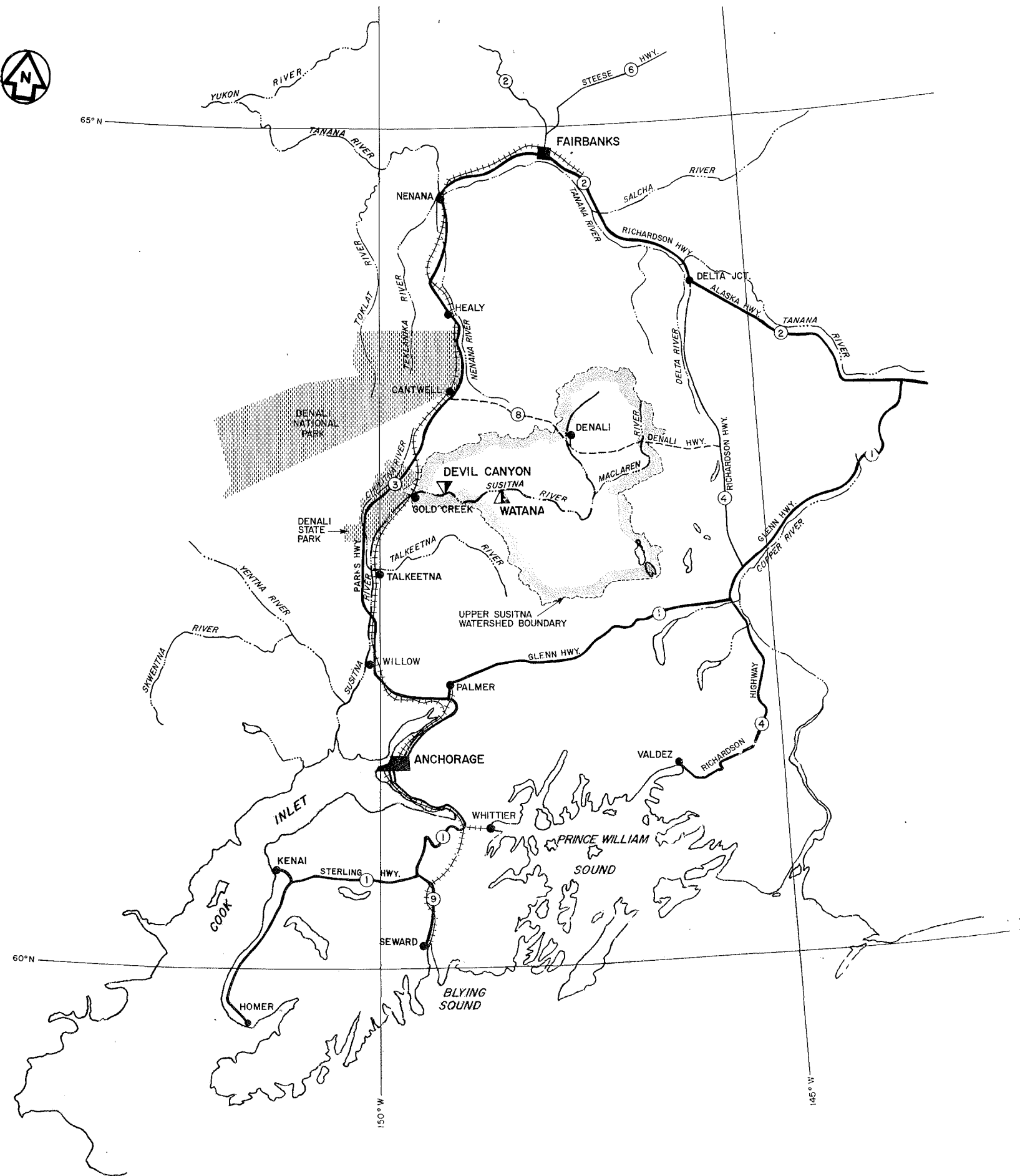


ALASKA POWER AUTHORITY

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
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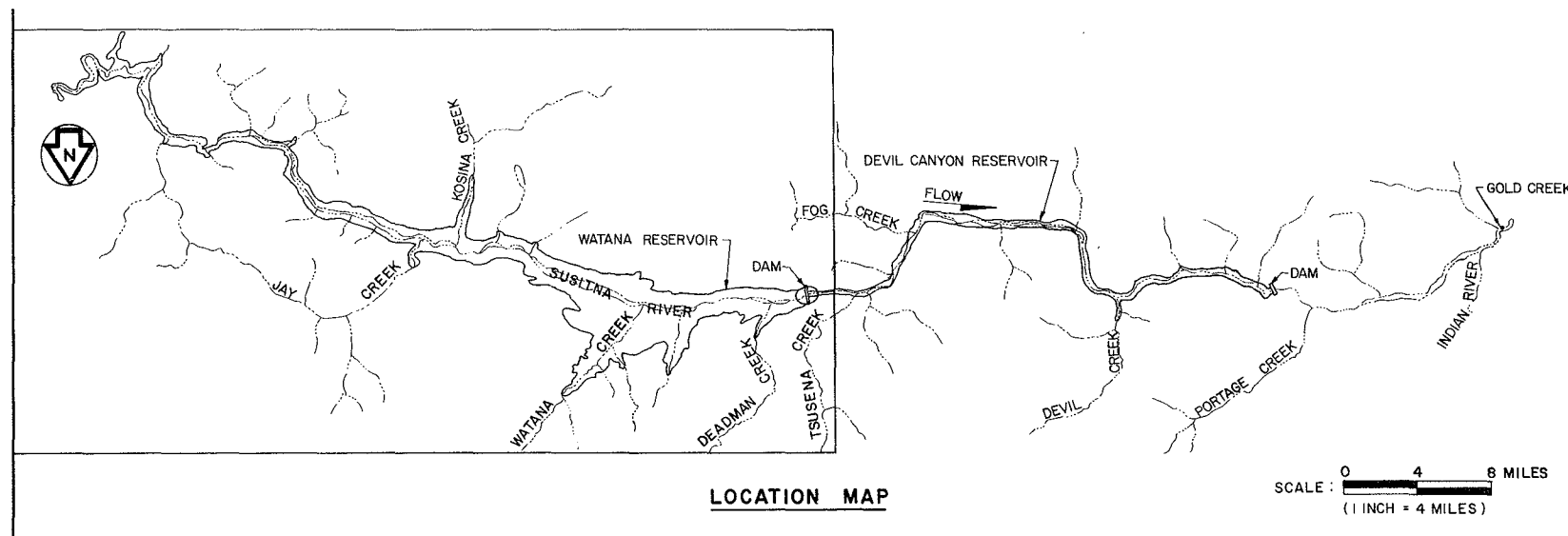
KEY MAP

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 F I

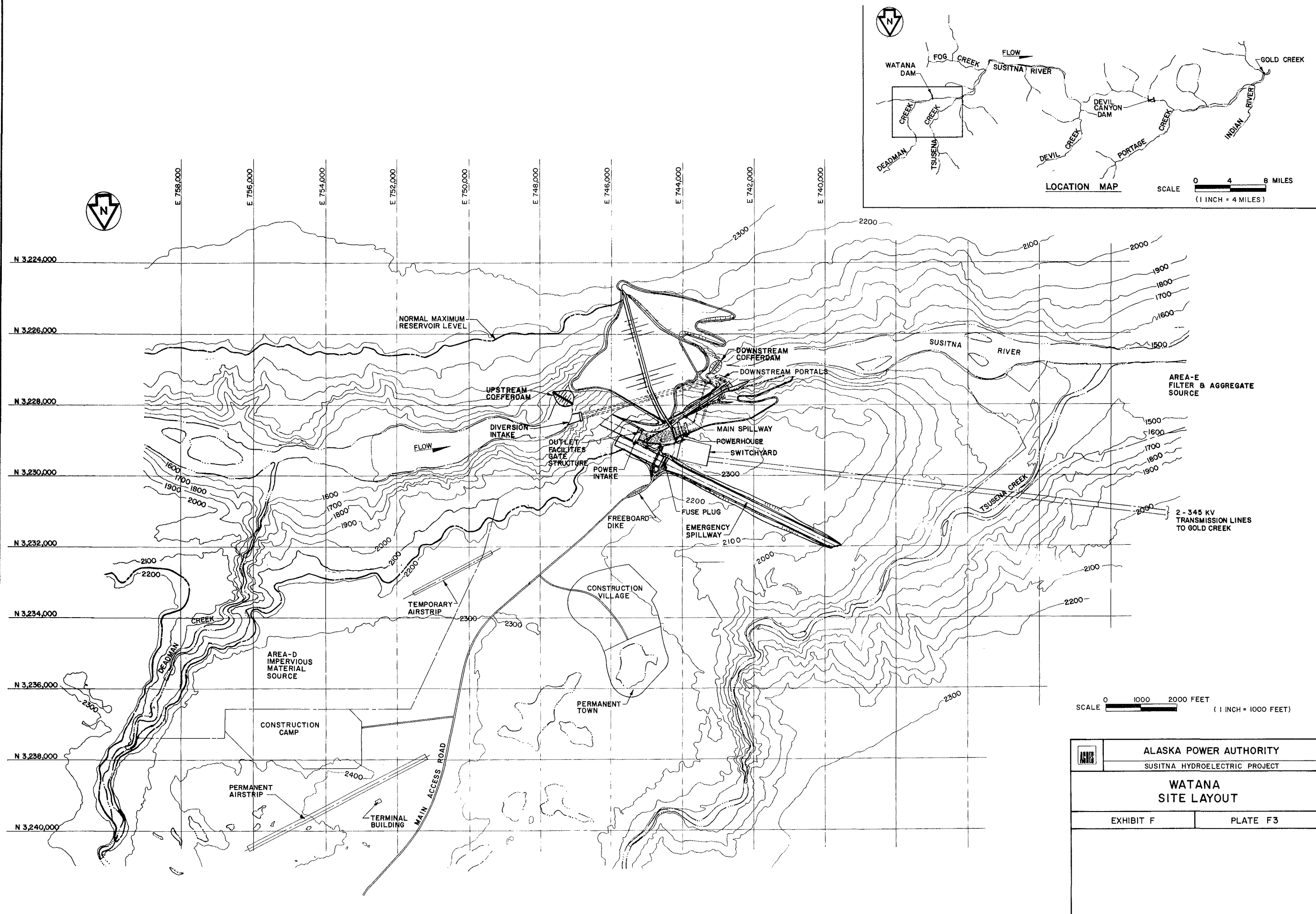


LEGEND

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

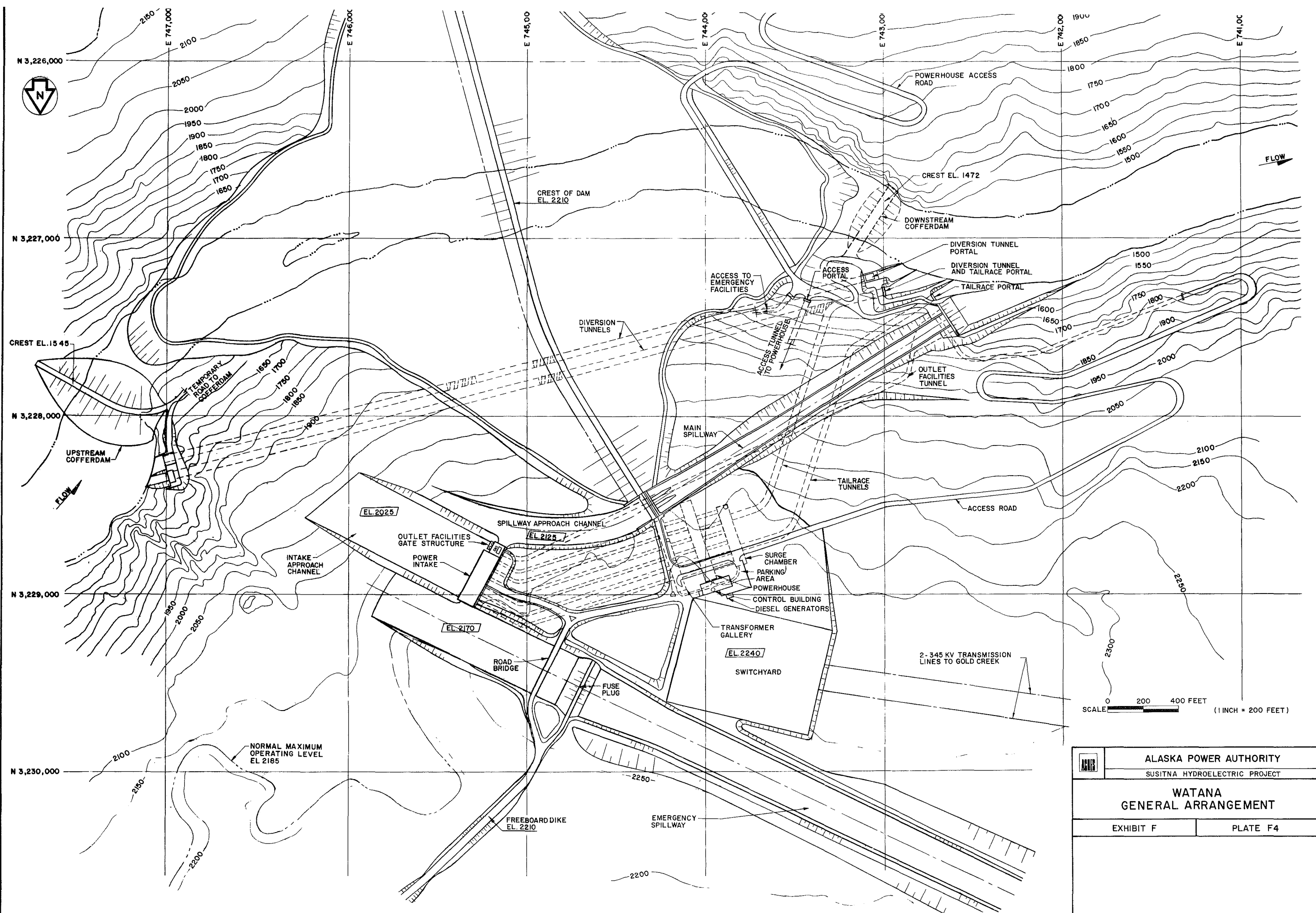
SCALE: 0 1 2 MILES
(1 INCH = 1 MILE)

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

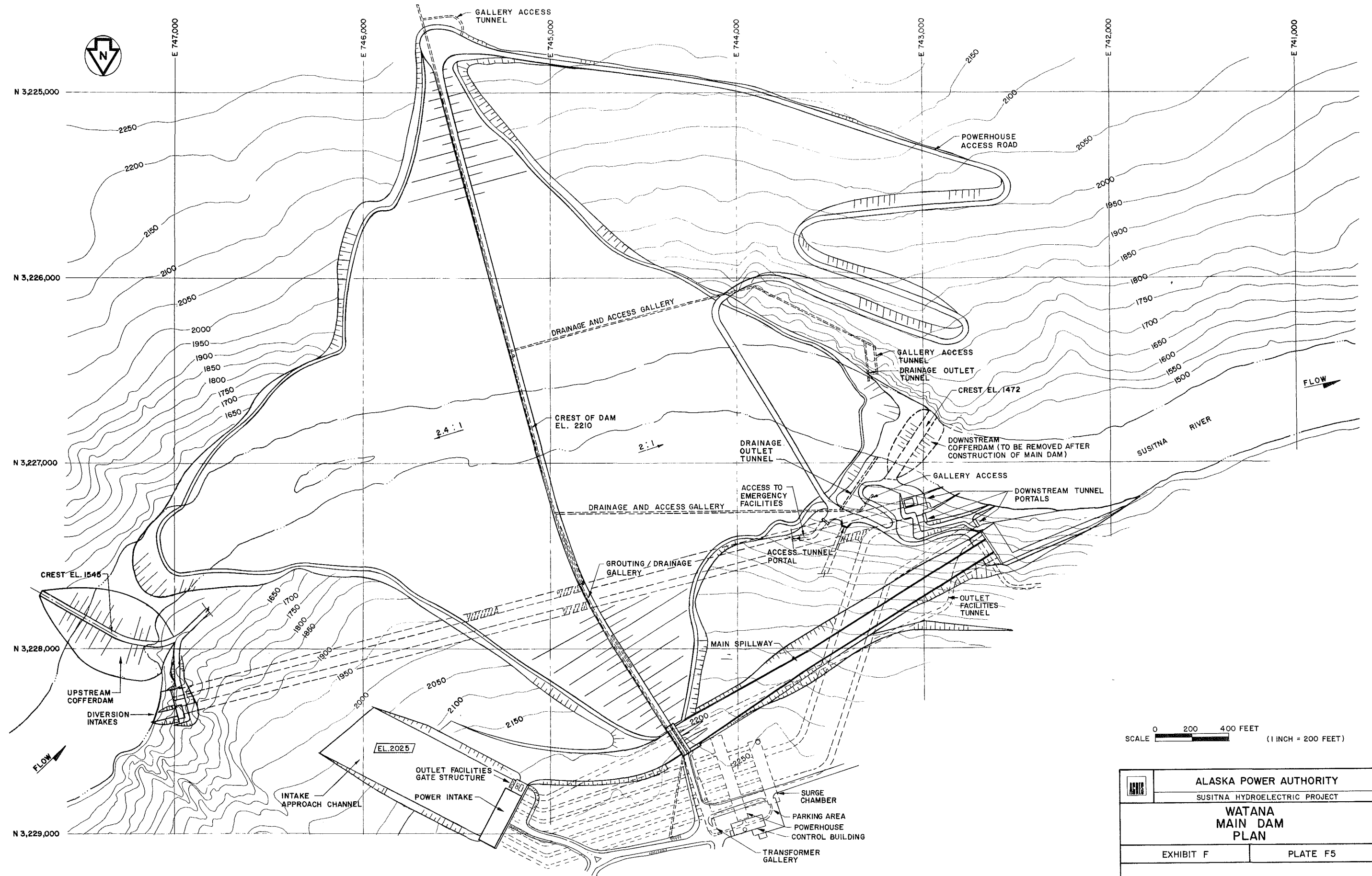


SCALE 0 1000 2000 FEET
(1 INCH = 1000 FEET)

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

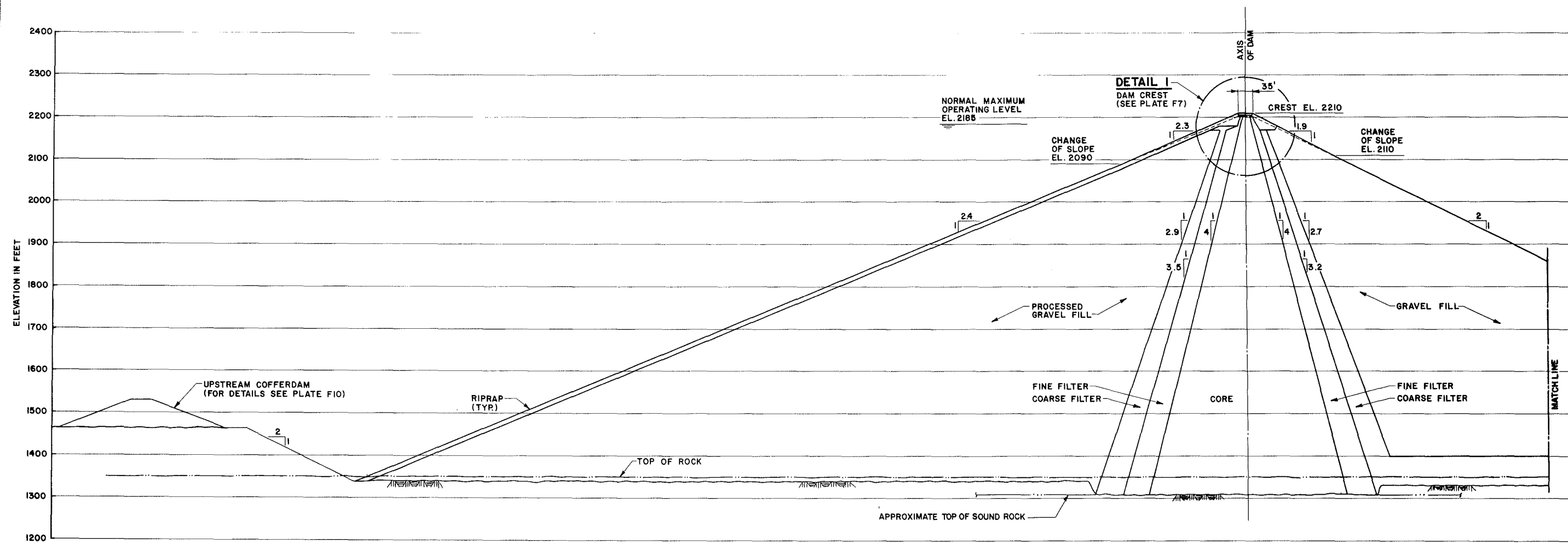


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL ARRANGEMENT		
EXHIBIT F		PLATE F4

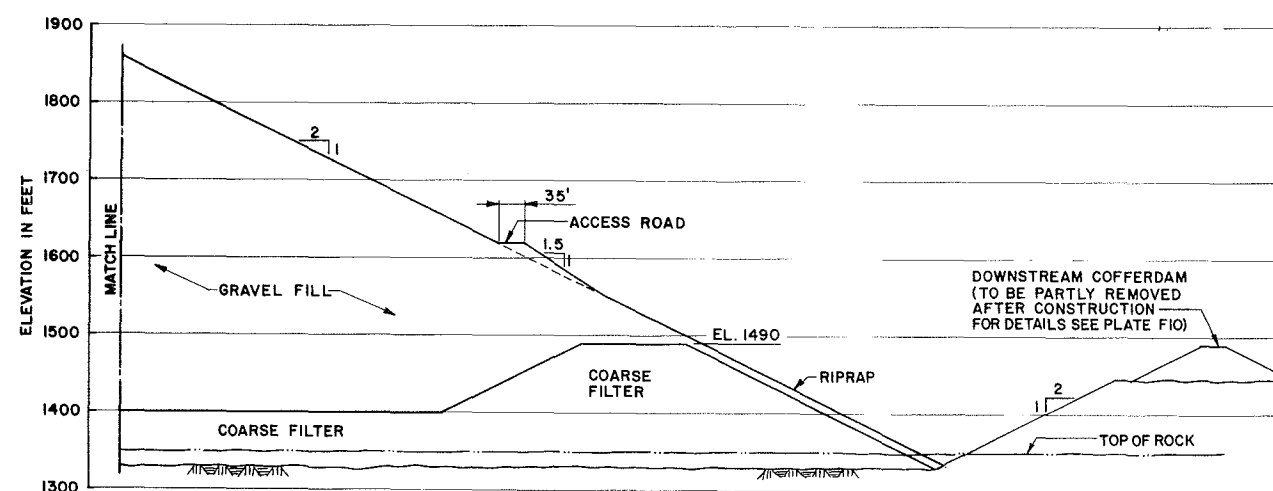


SCALE 0 200 400 FEET
(1 INCH = 200 FEET)

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



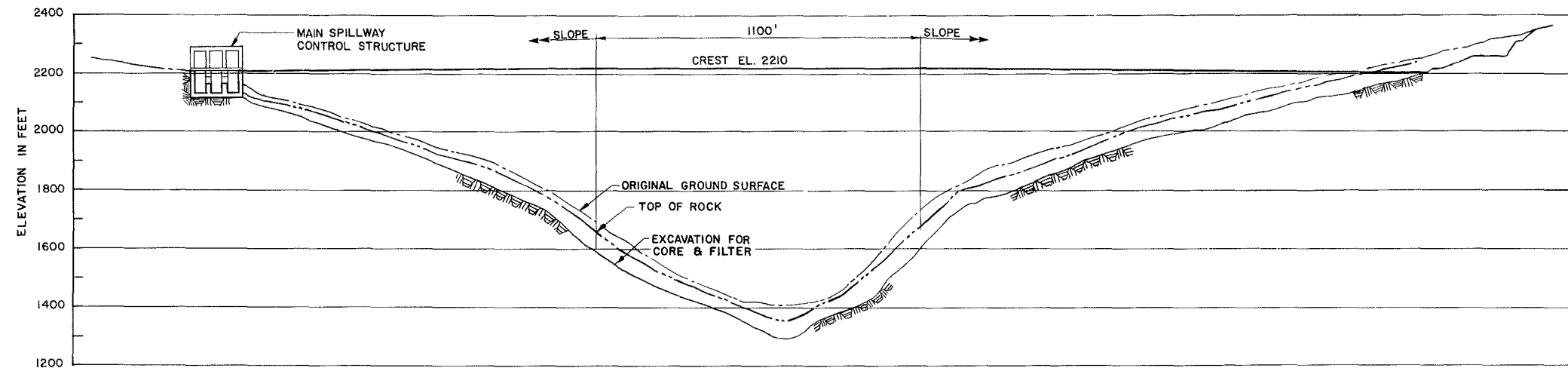
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT



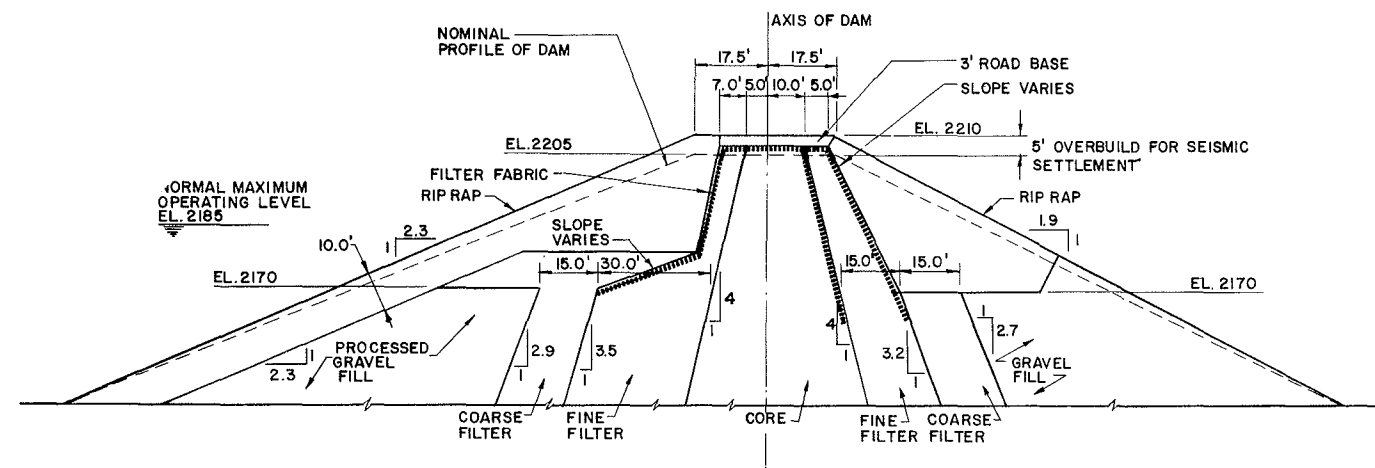
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT

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

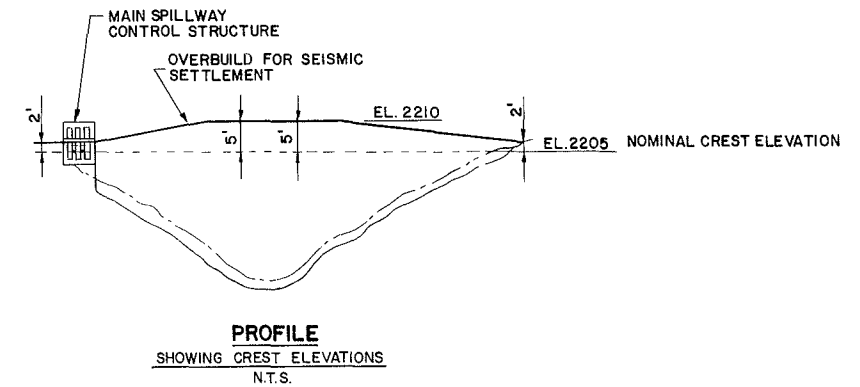
APRIS	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
WATANA MAIN DAM SECTION	
EXHIBIT F	PLATE F6



PROFILE (LOOKING UPSTREAM)
SCALE A

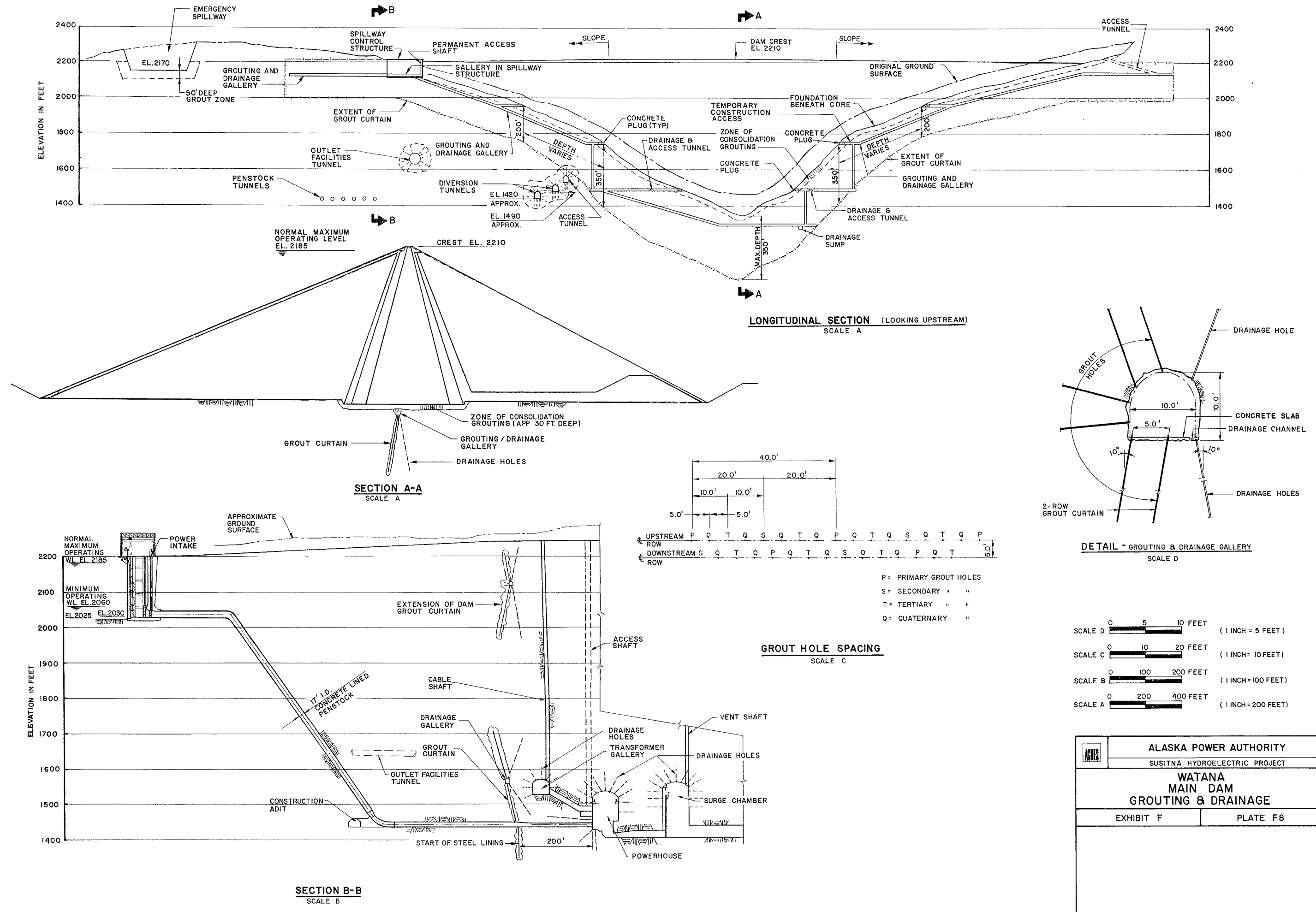


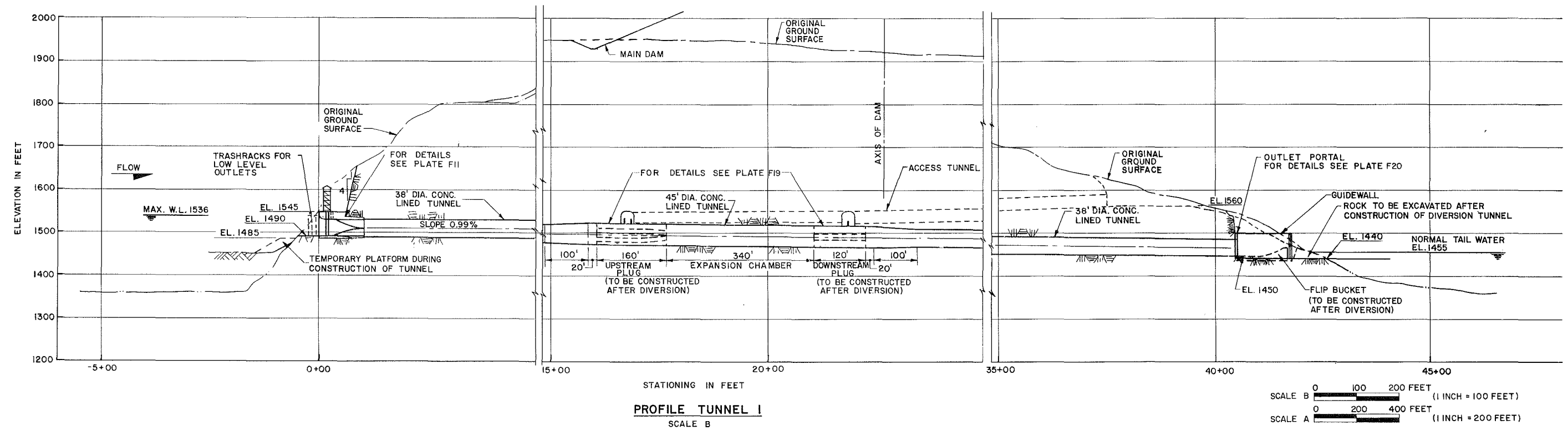
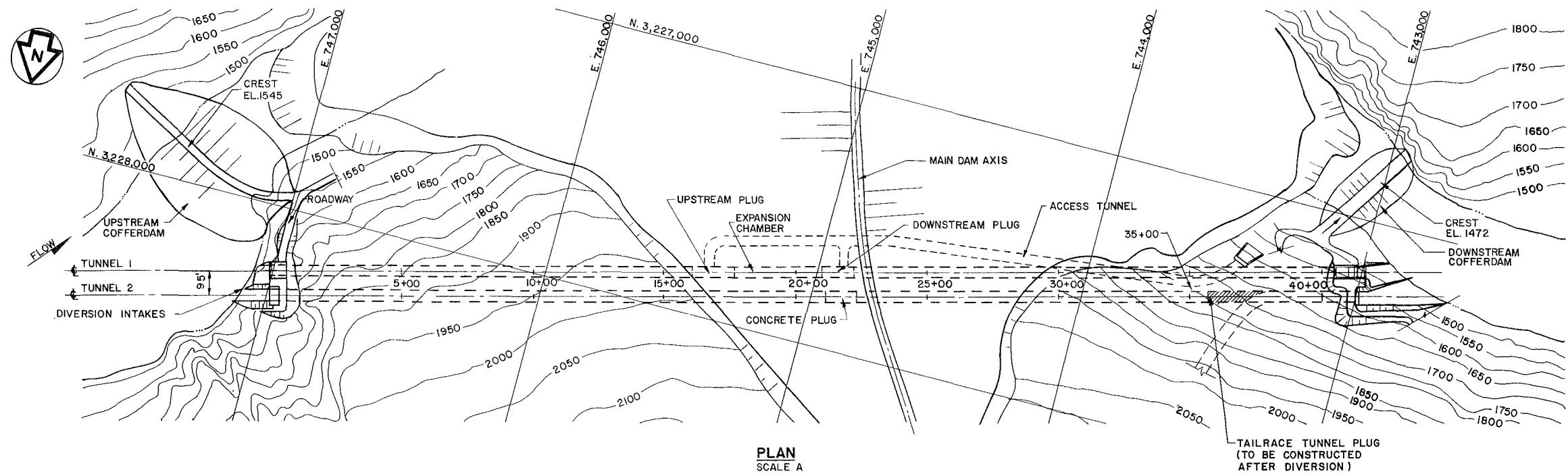
DETAIL I (PLATE F6)
SCALE B



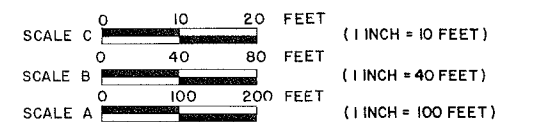
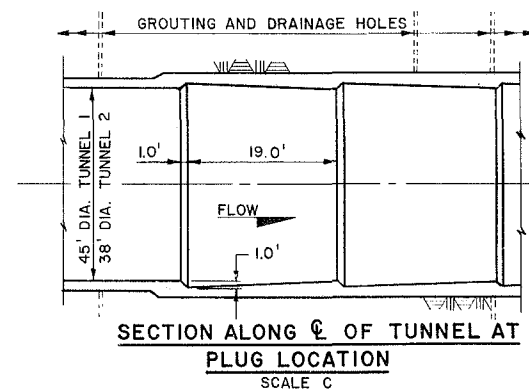
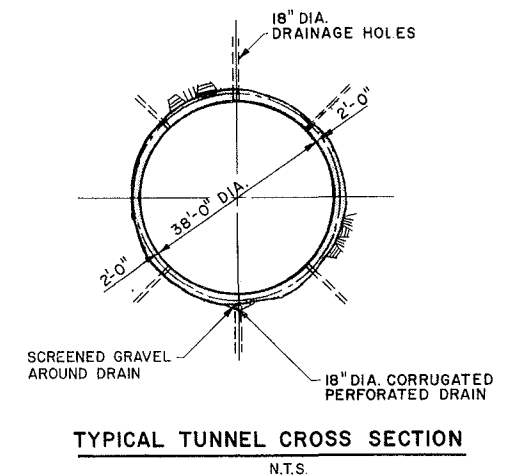
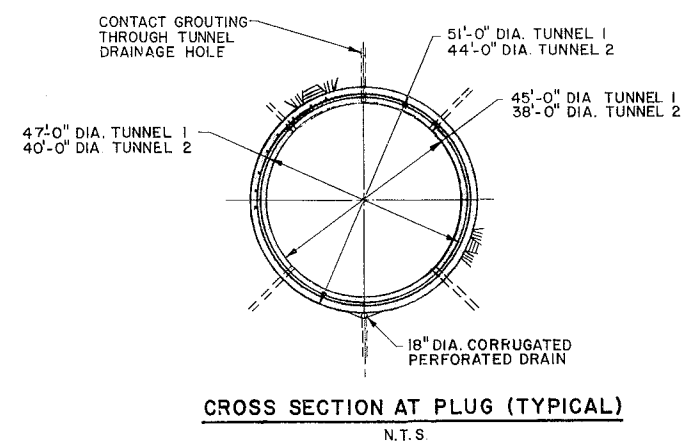
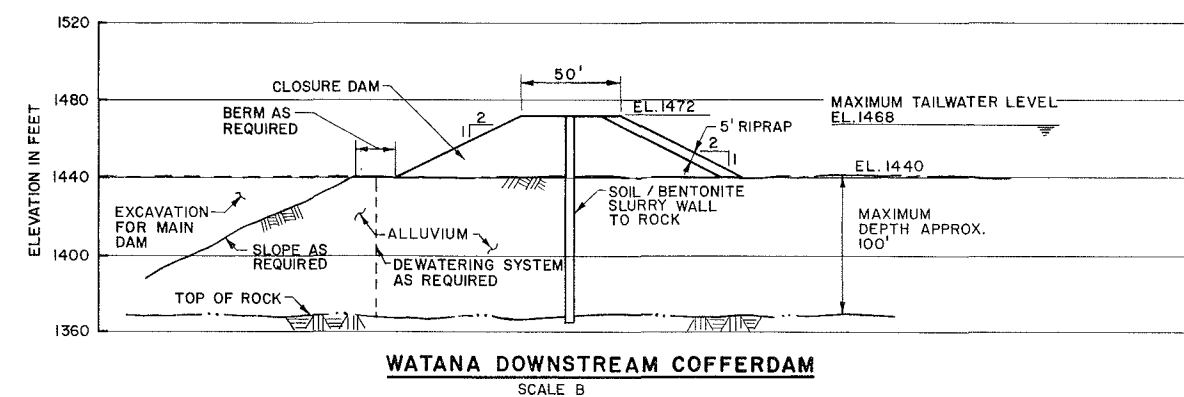
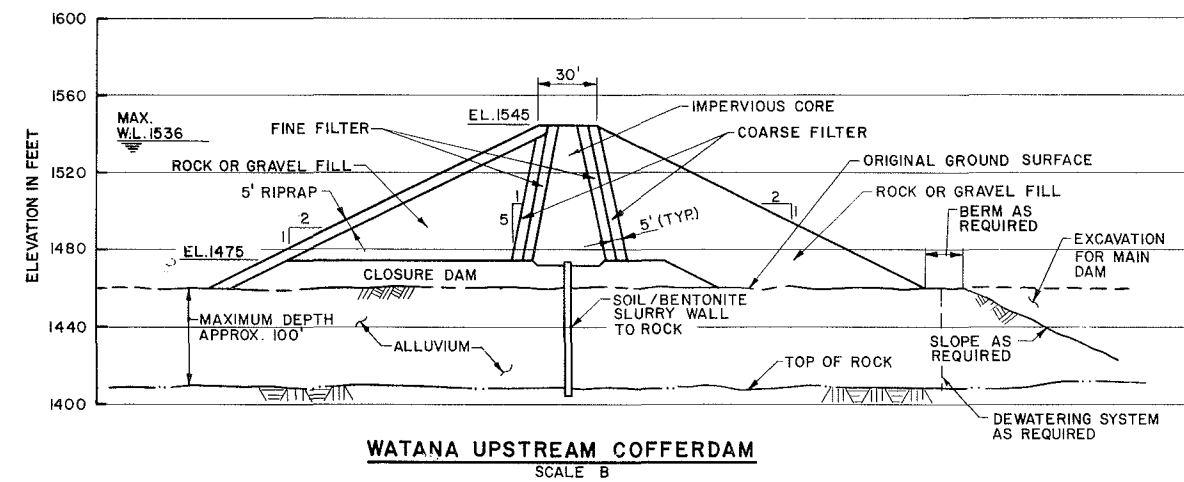
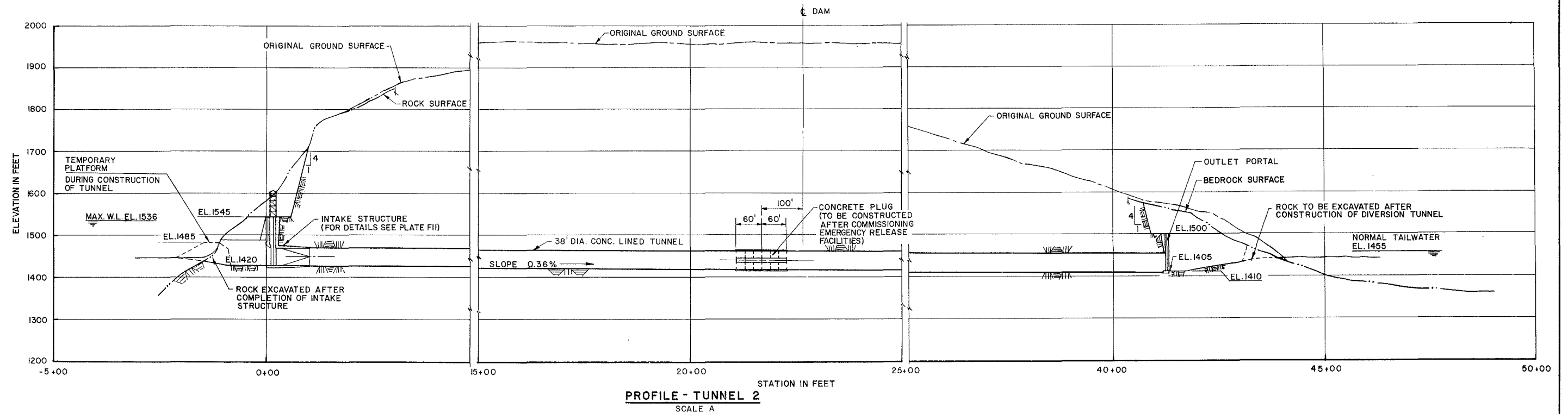
SCALE B 0 20 40 FEET (1 INCH = 20 FEET)
SCALE A 0 200 400 FEET (1 INCH = 200 FEET)

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

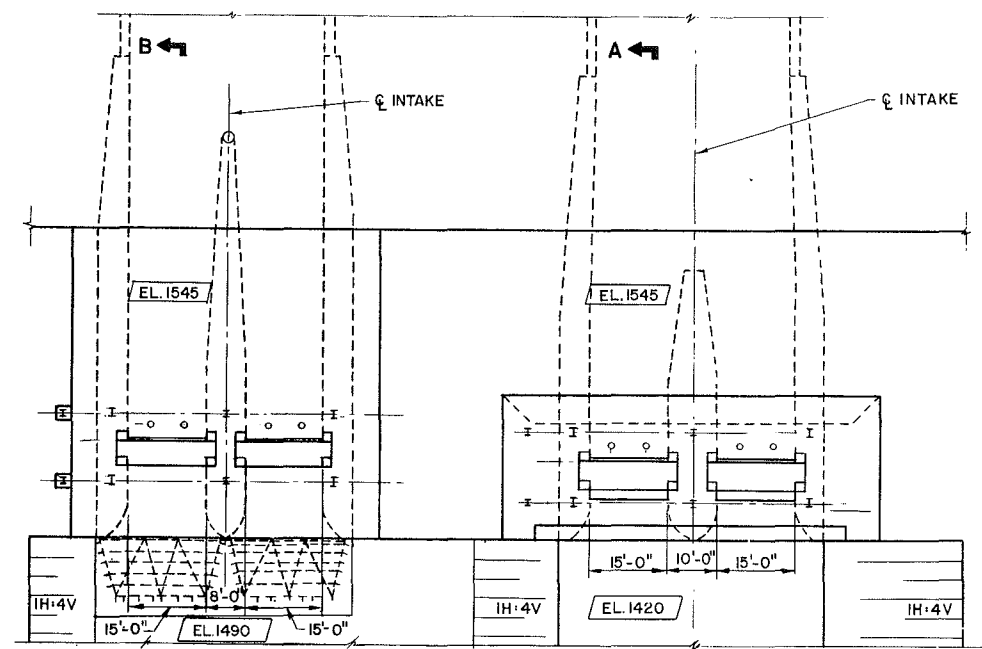




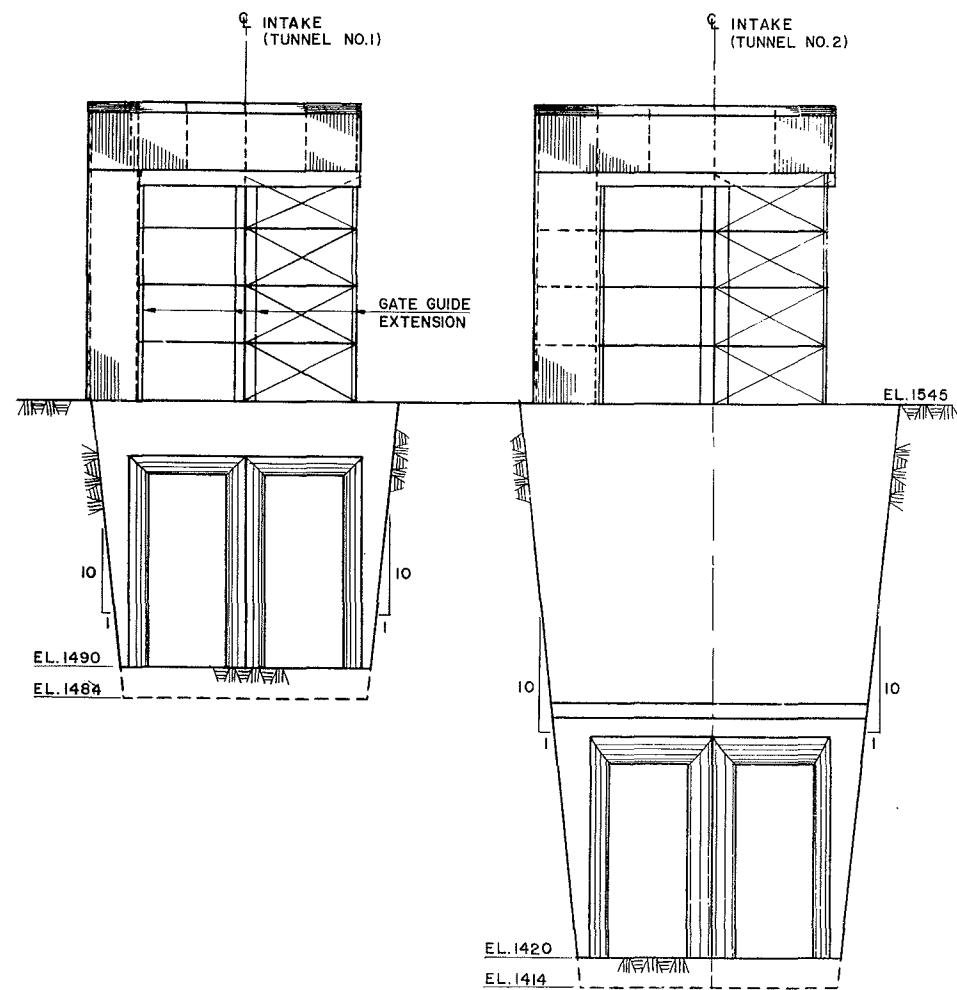
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F9



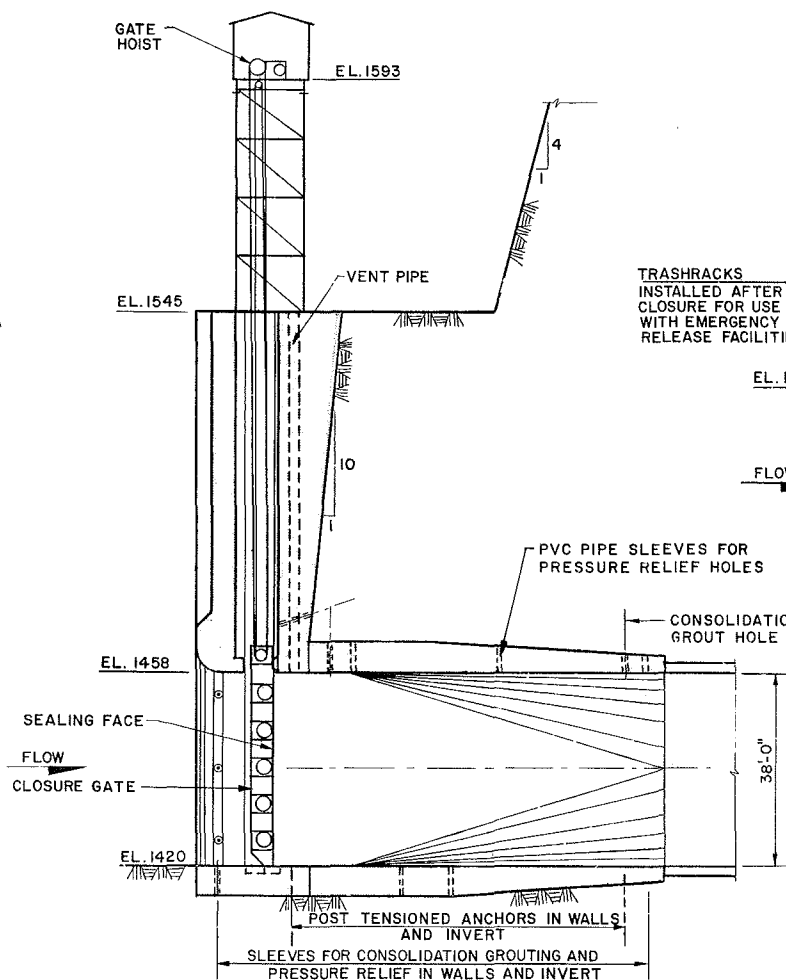
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION SECTIONS	
EXHIBIT F	PLATE F10



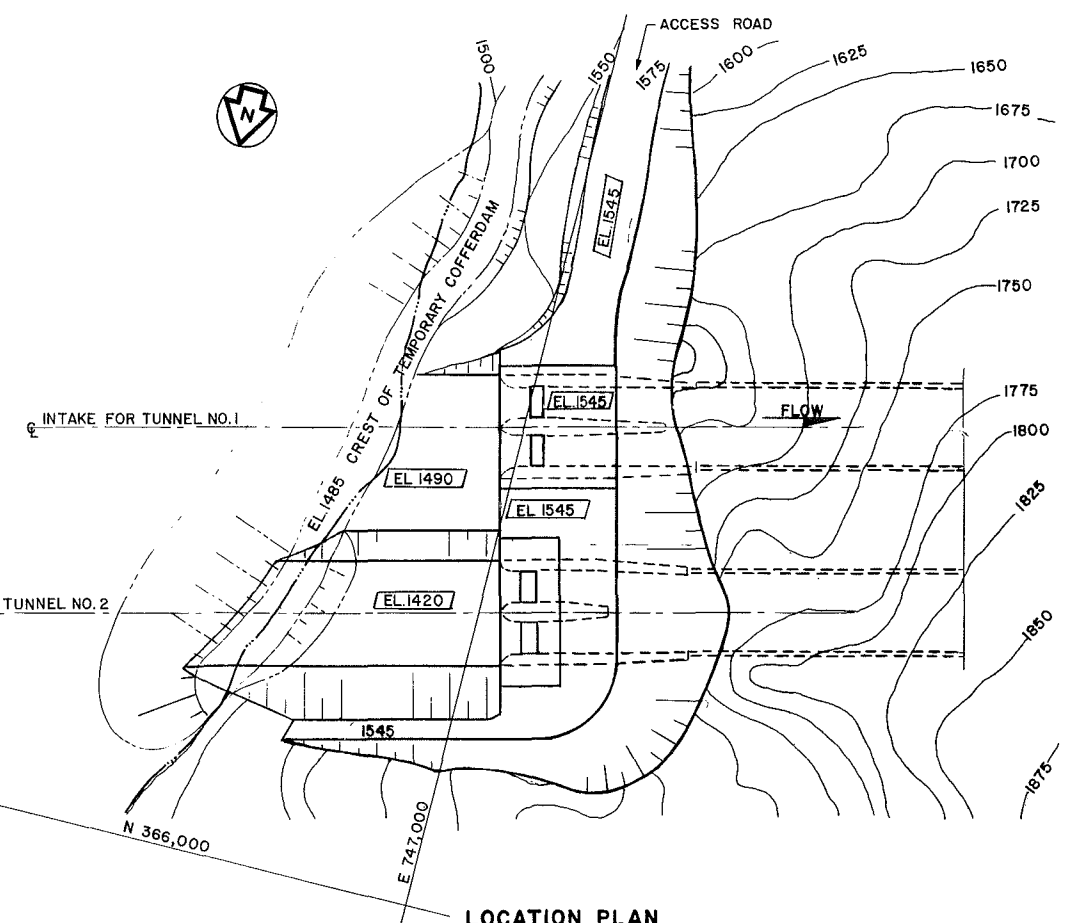
PLAN
AT EL. 1545
SCALE A



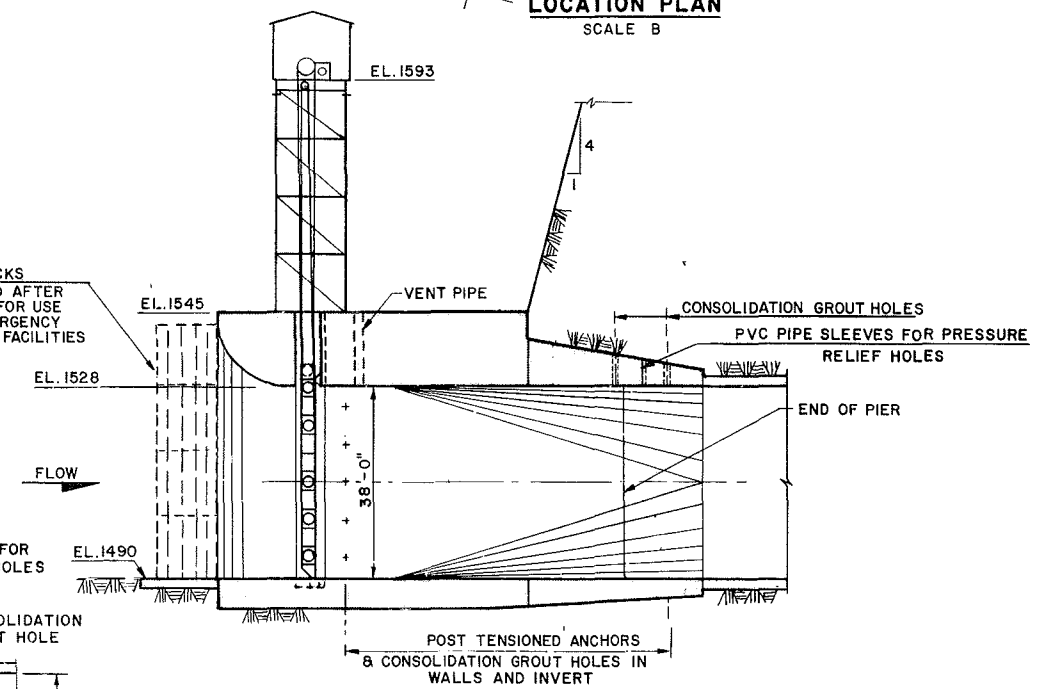
ELEVATION
SCALE A



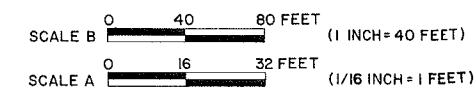
SECTION A-A
SCALE A



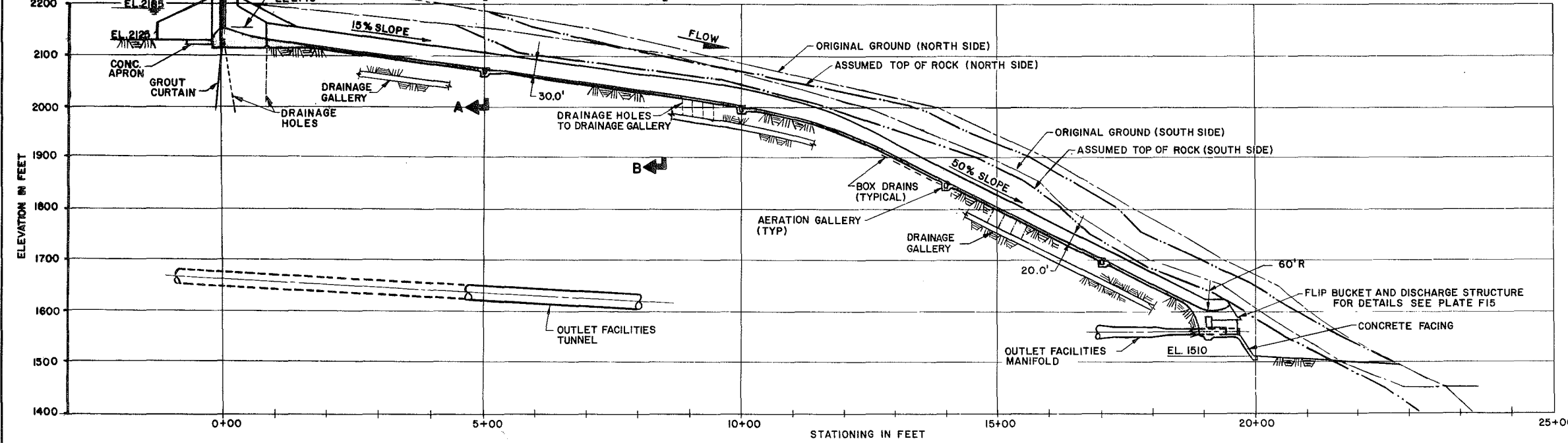
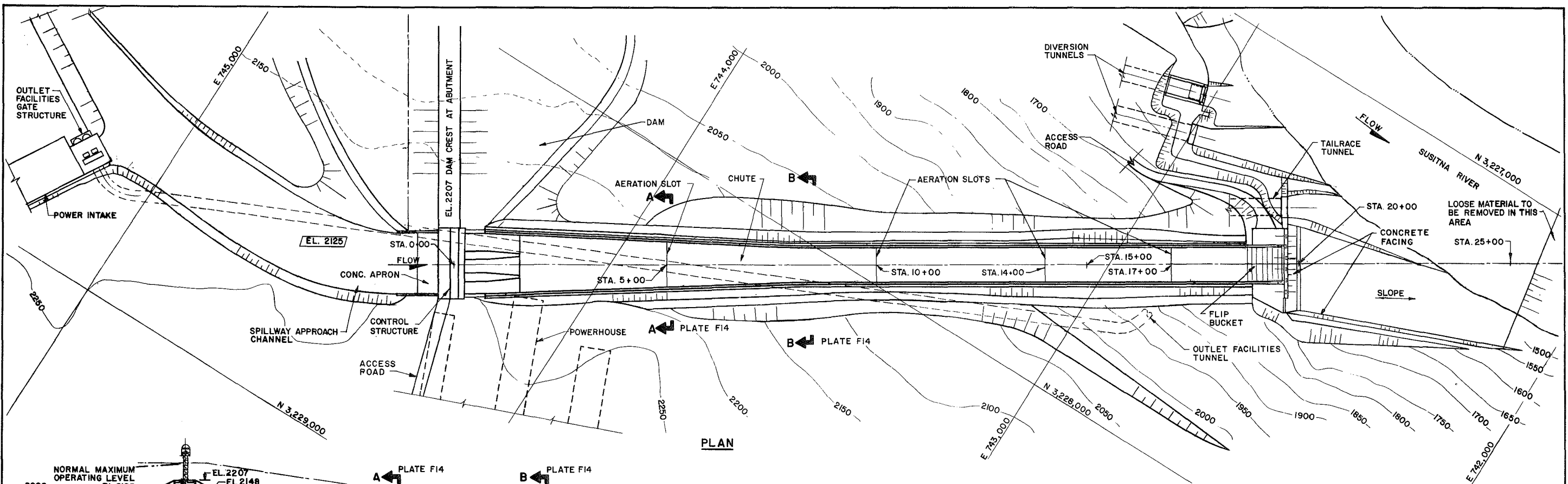
LOCATION PLAN
SCALE B



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)

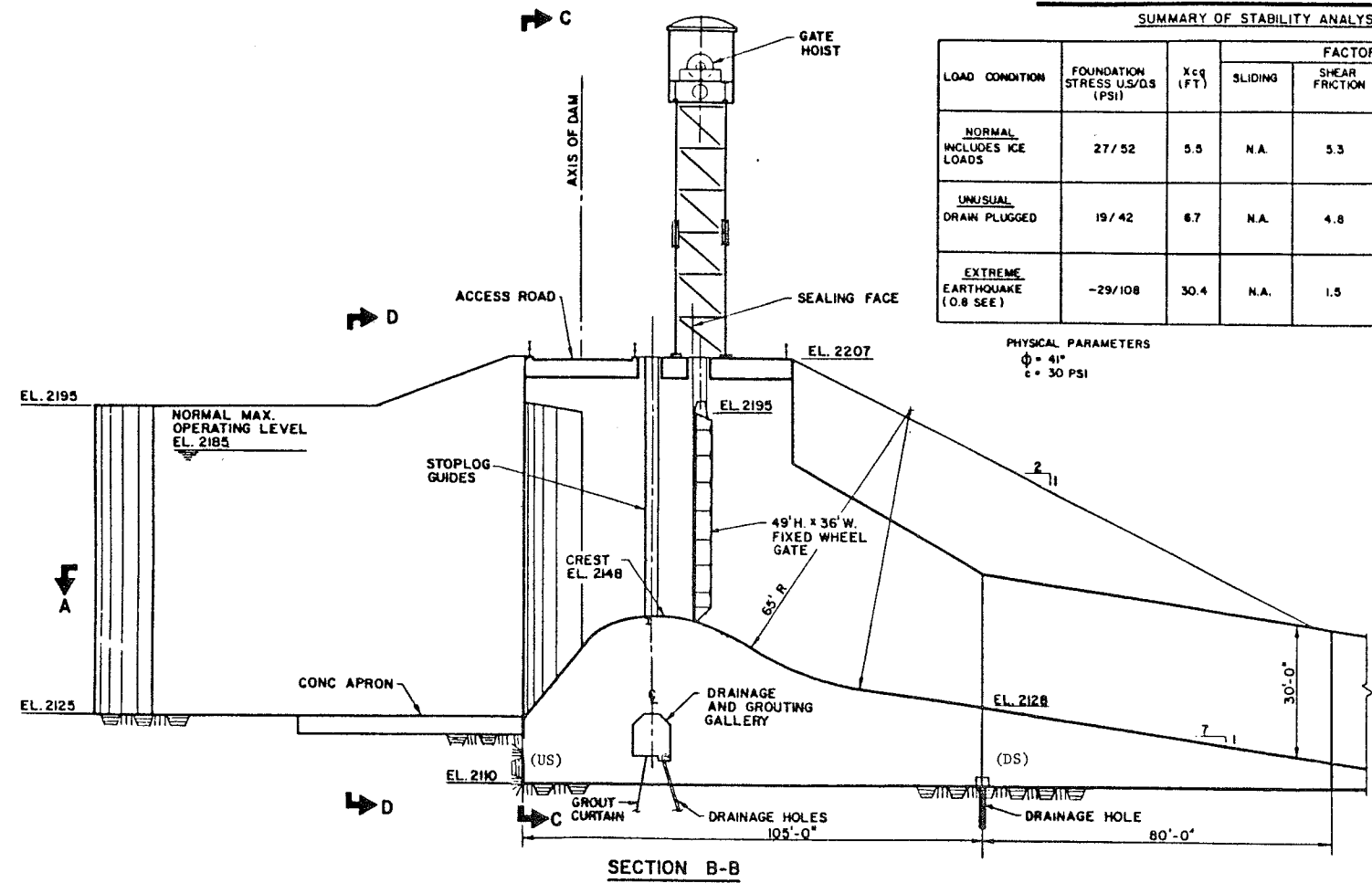
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F12

WATANA DAM SPILLWAY CONTROL STRUCTURE

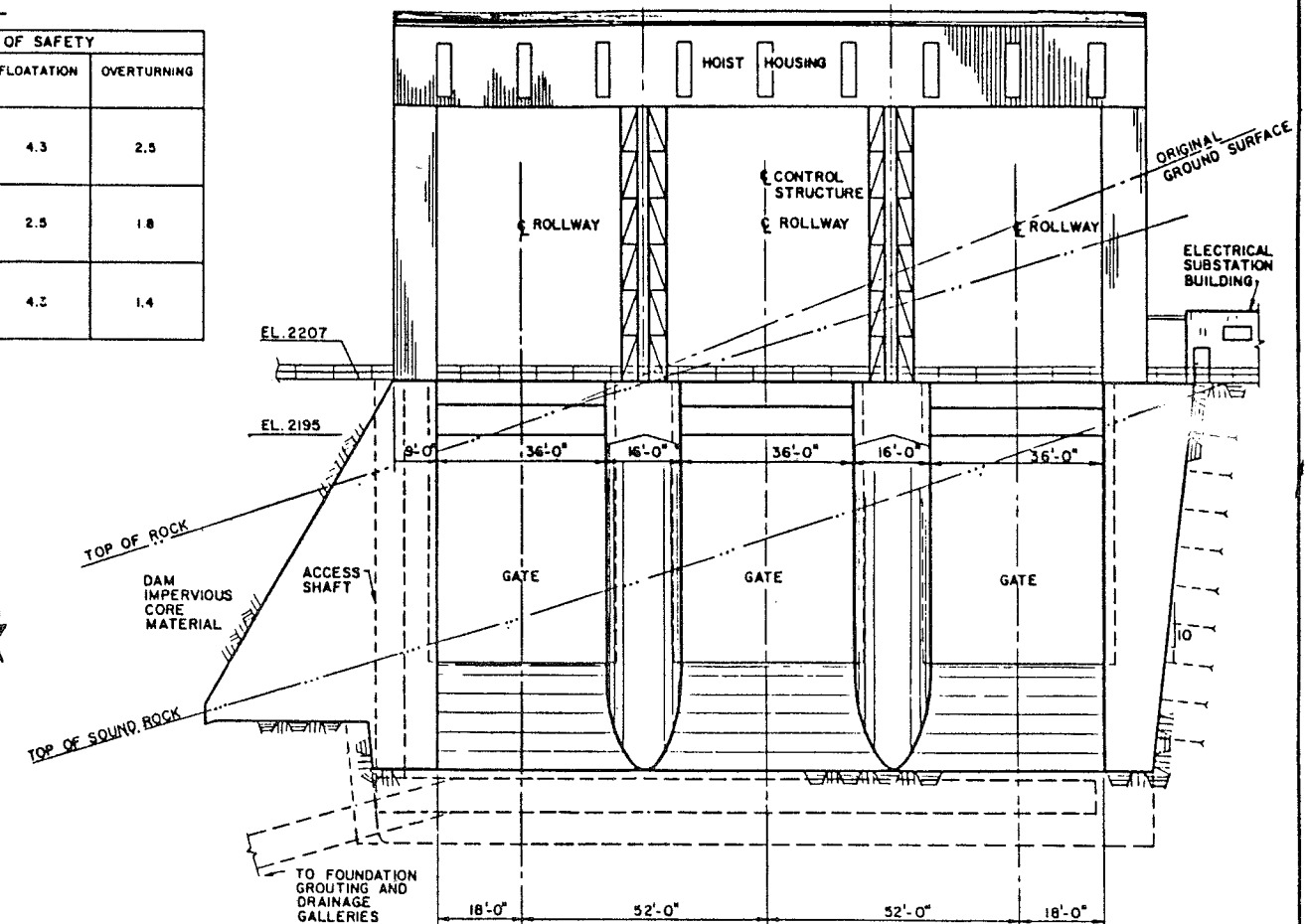
SUMMARY OF STABILITY ANALYSES

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	4.2	1.4

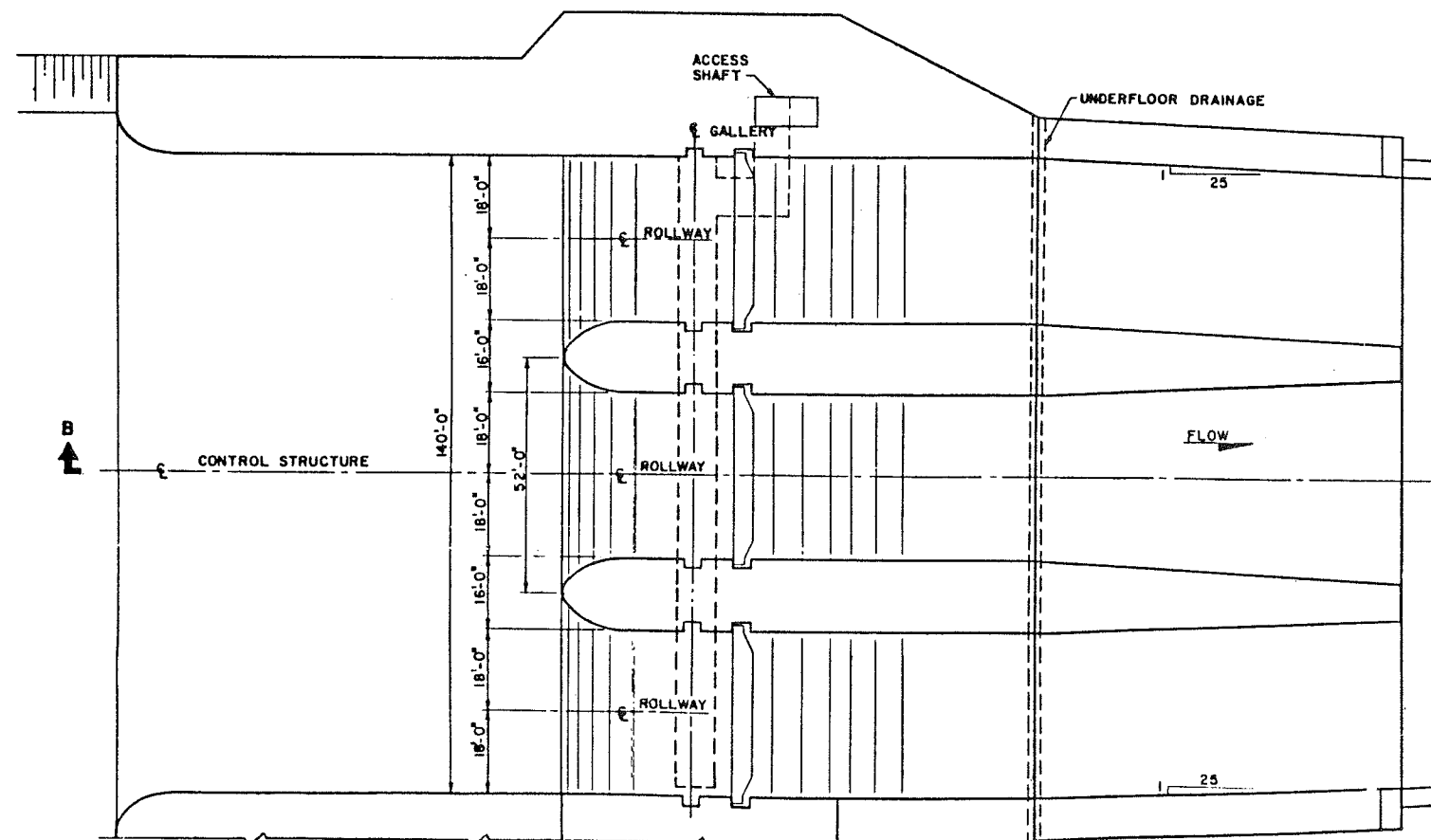
PHYSICAL PARAMETERS
 $\phi = 41^\circ$
 $c = 30$ PSI



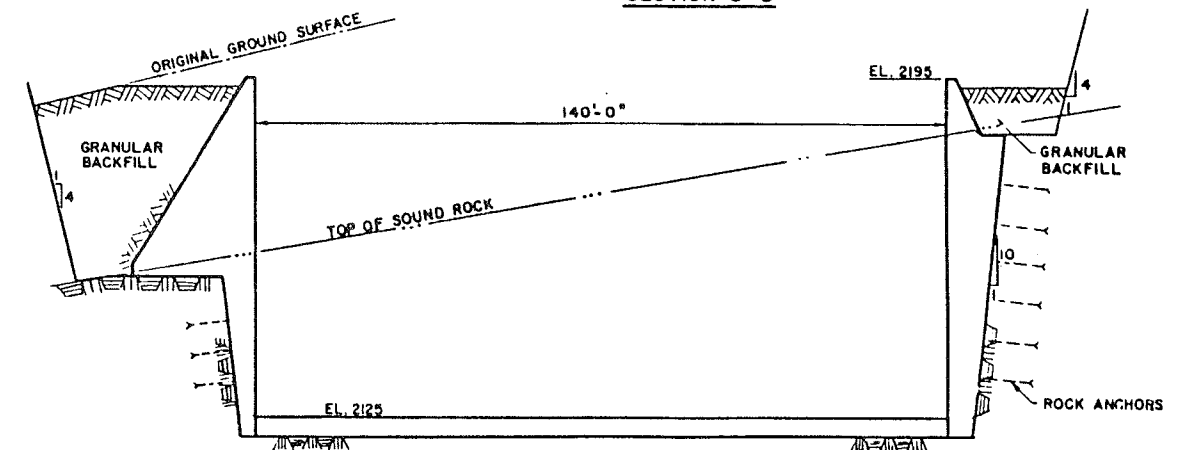
SECTION B-B



SECTION C-C



SECTION A-A

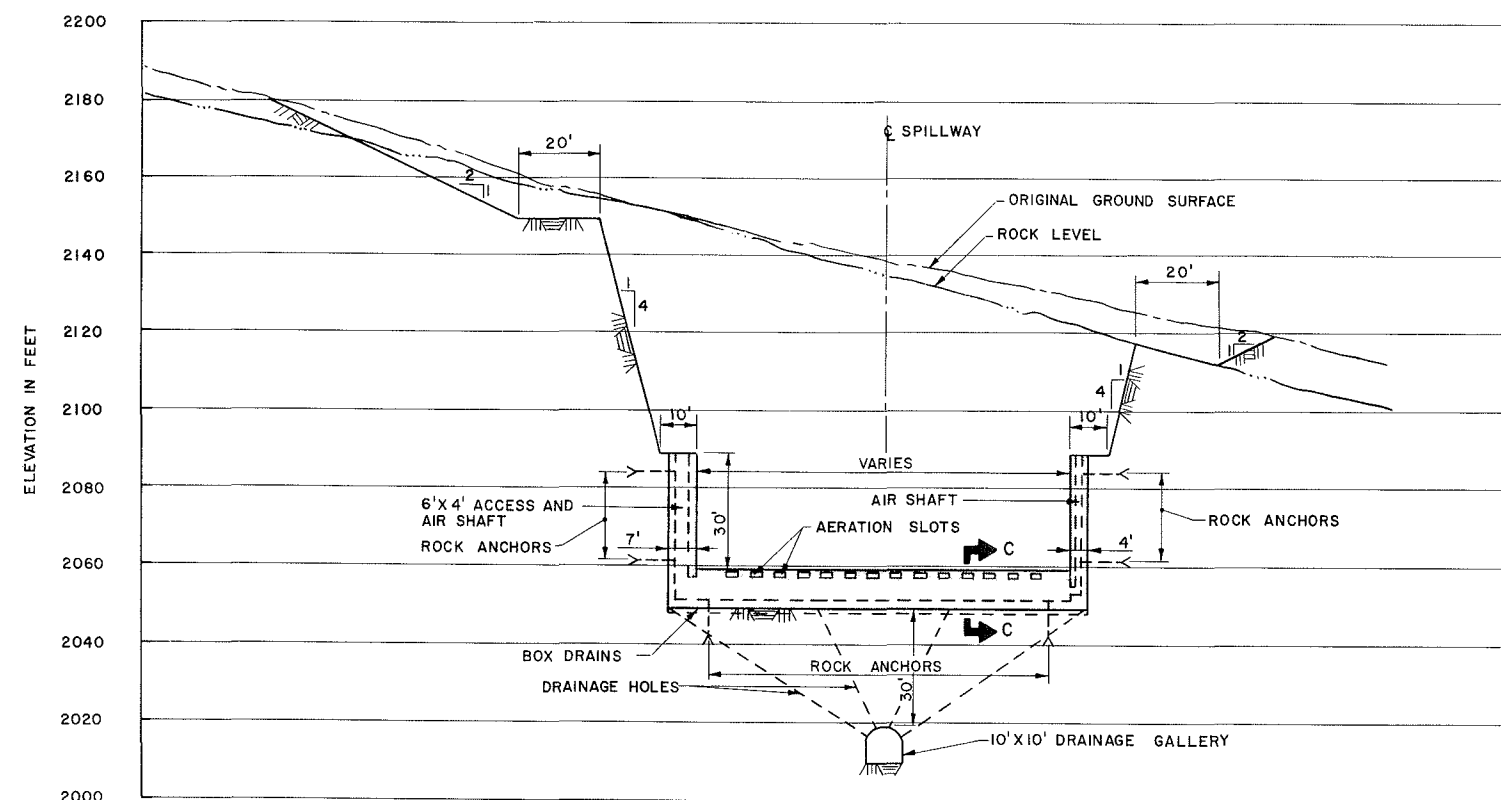


SECTION D-D

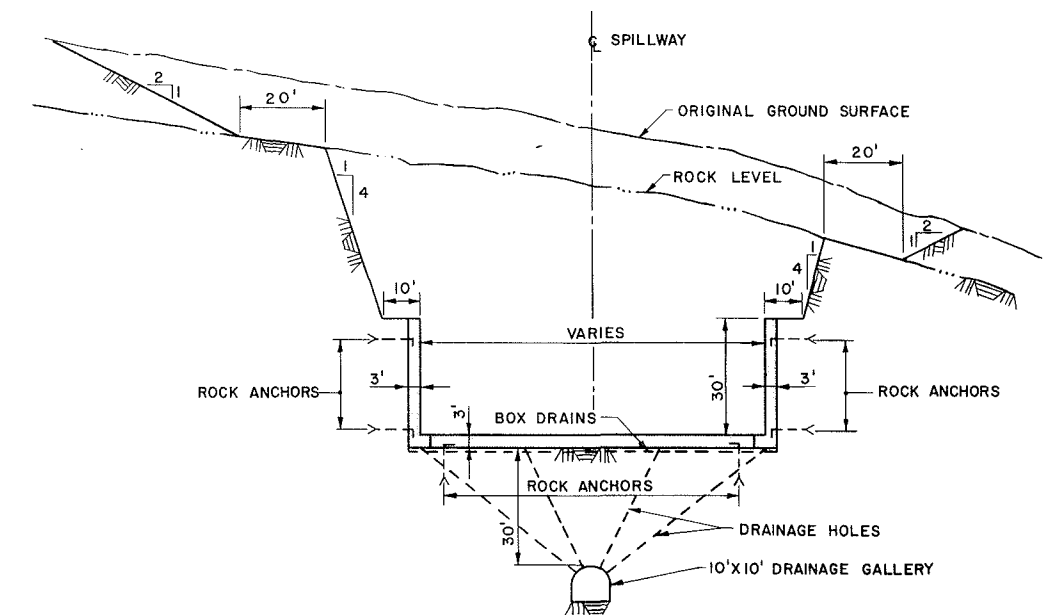
SCALE 0 16 32 FEET
 (1/16 INCH = 1 FEET)

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

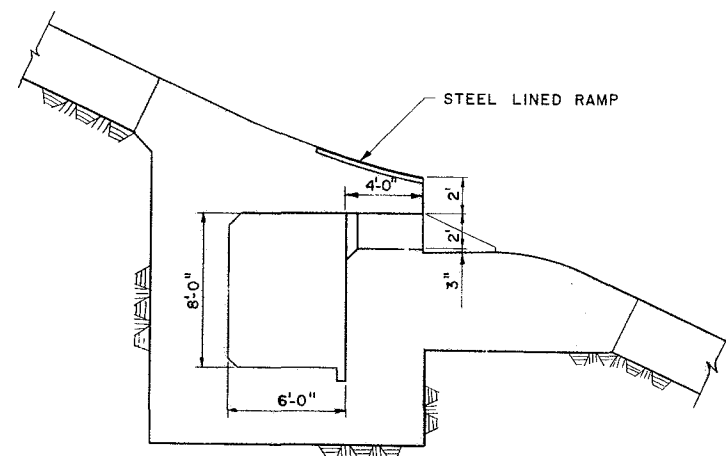
REVISIONS
 NO. 1
 DATE 10/1/58
 BY J.E. HARRIS
 CHECKED BY J.E. HARRIS
 APPROVED BY J.E. HARRIS
 PROJECT NO. 5700-CE-521



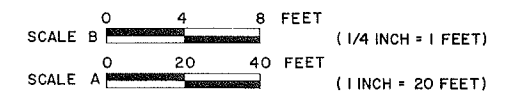
SECTION A-A (PLATE F12)
SCALE A



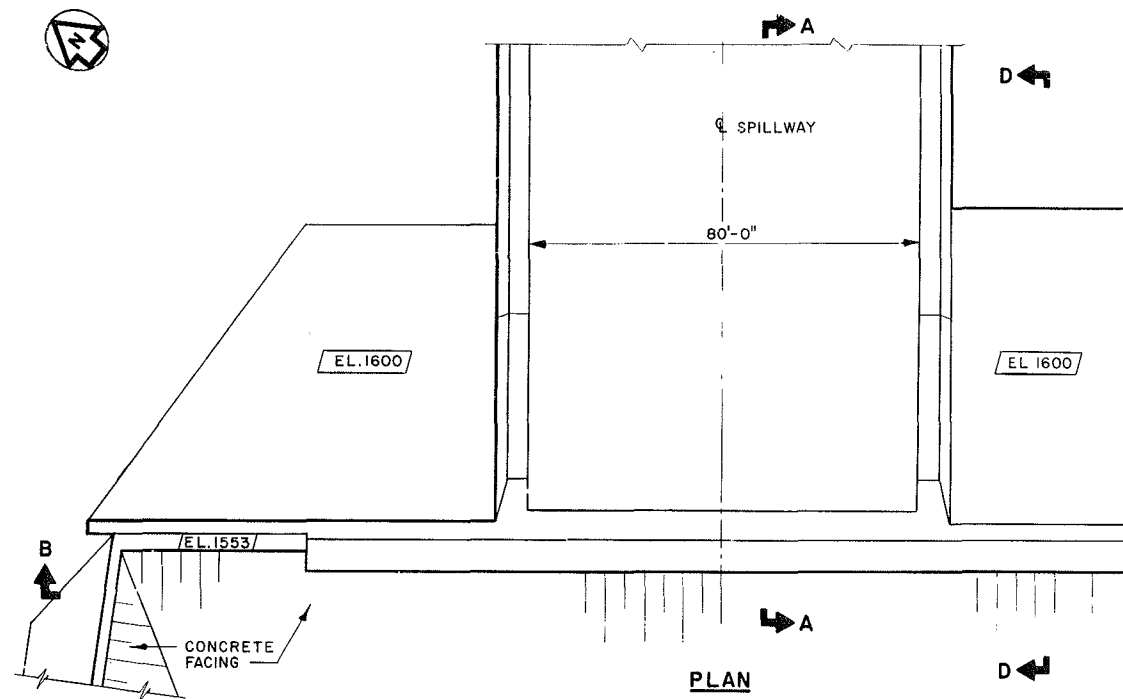
SECTION B-B (TYPICAL) (PLATE F12)
SCALE A



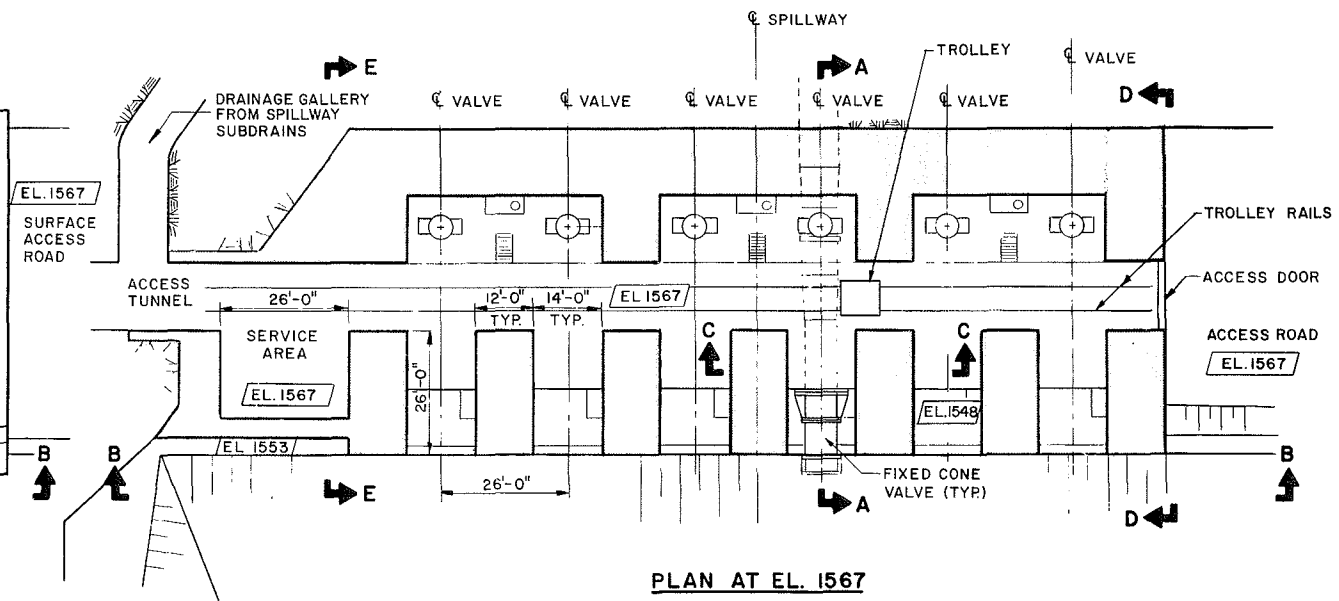
SECTION C-C
SCALE B



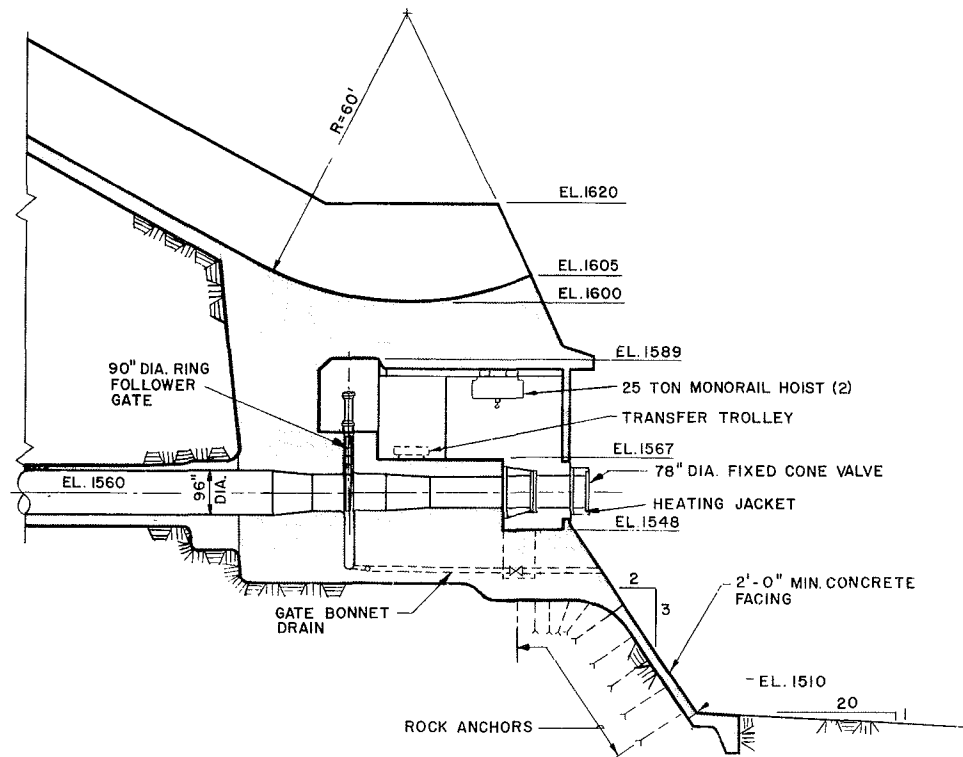
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY CHUTE SECTIONS		
EXHIBIT F	PLATE F14	



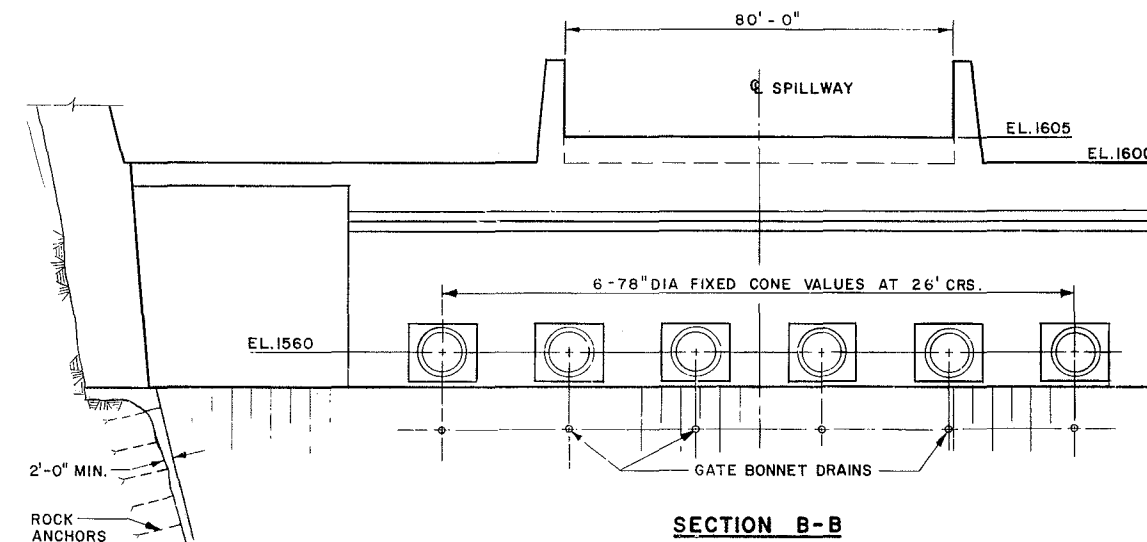
PLAN



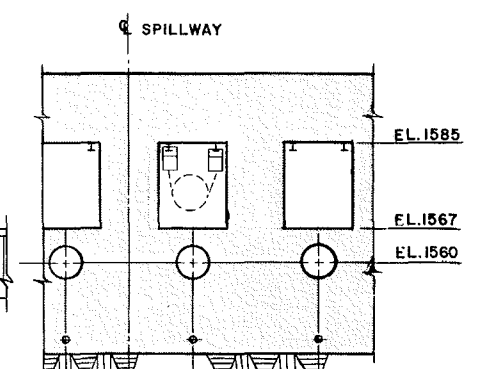
PLAN AT EL. 1567



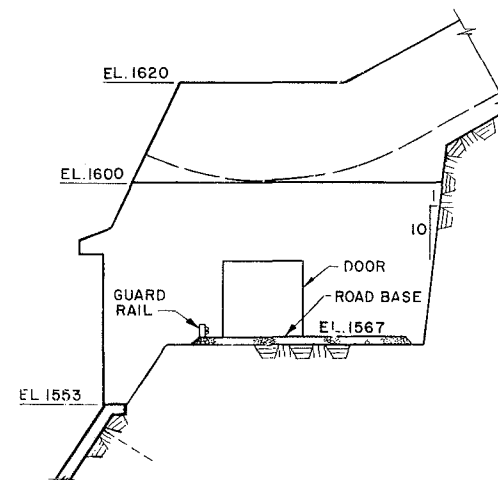
SECTION A-A (TYPICAL)



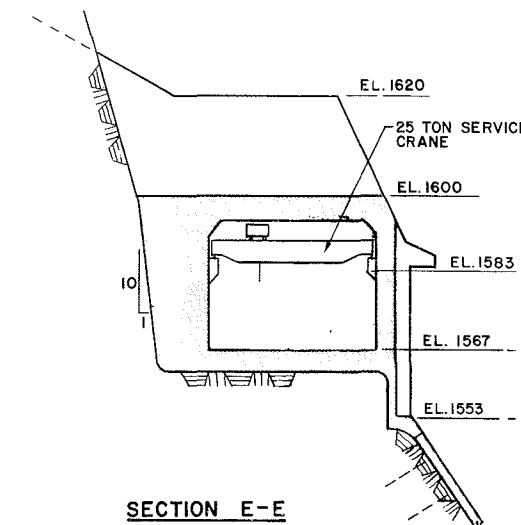
SECTION B-B



SECTION C-C



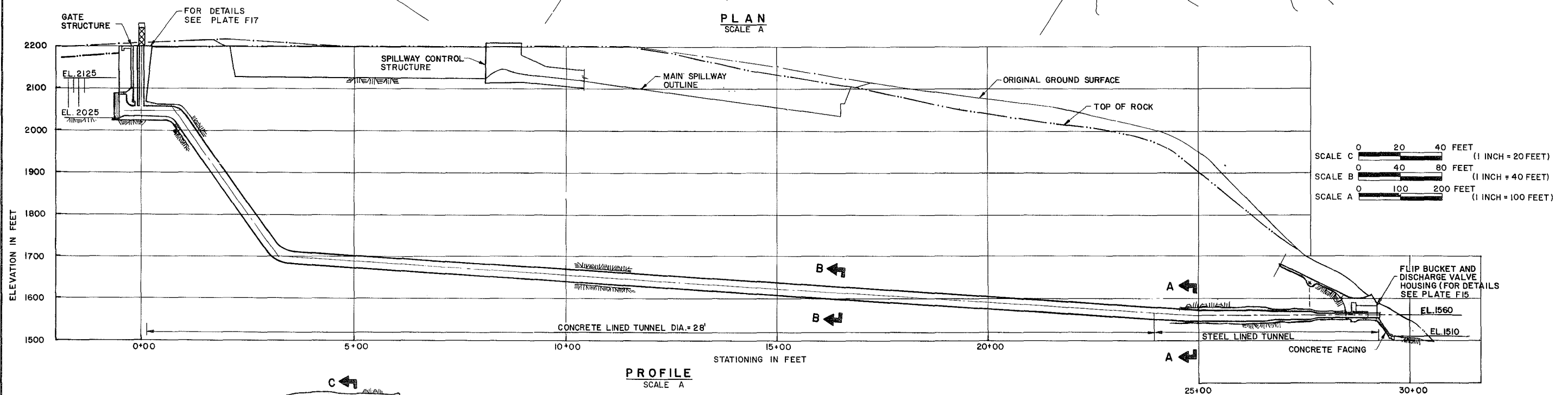
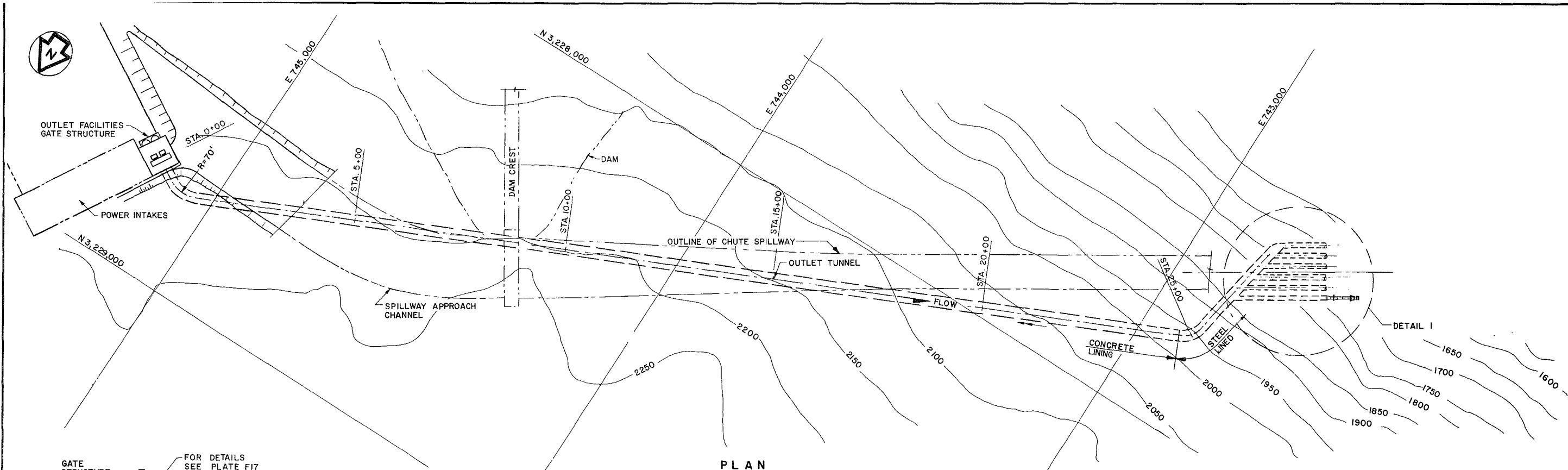
SECTION D-D



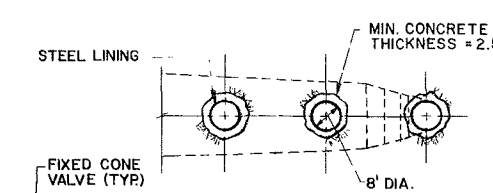
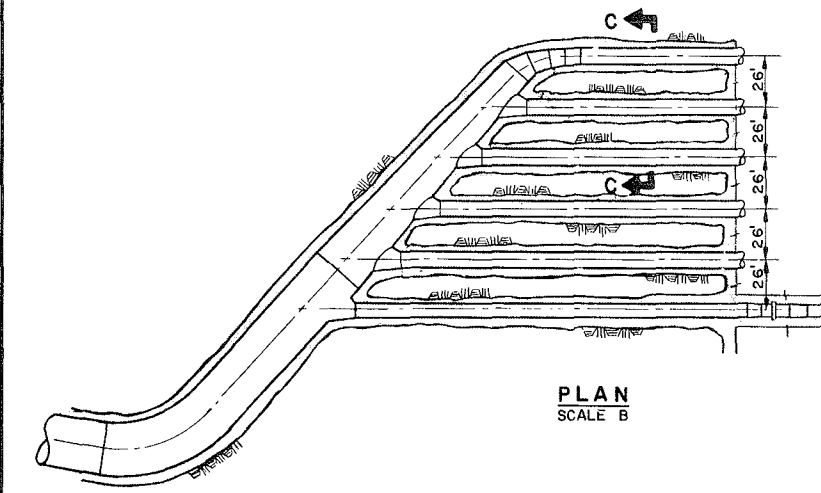
SECTION E-E

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

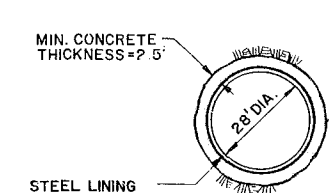


SCALE C 0 20 40 FEET (1 INCH = 20 FEET)
 SCALE B 0 40 80 FEET (1 INCH = 40 FEET)
 SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

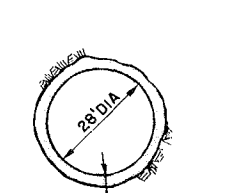


SECTION C-C
SCALE C

DETAIL I
STEEL MANIFOLD

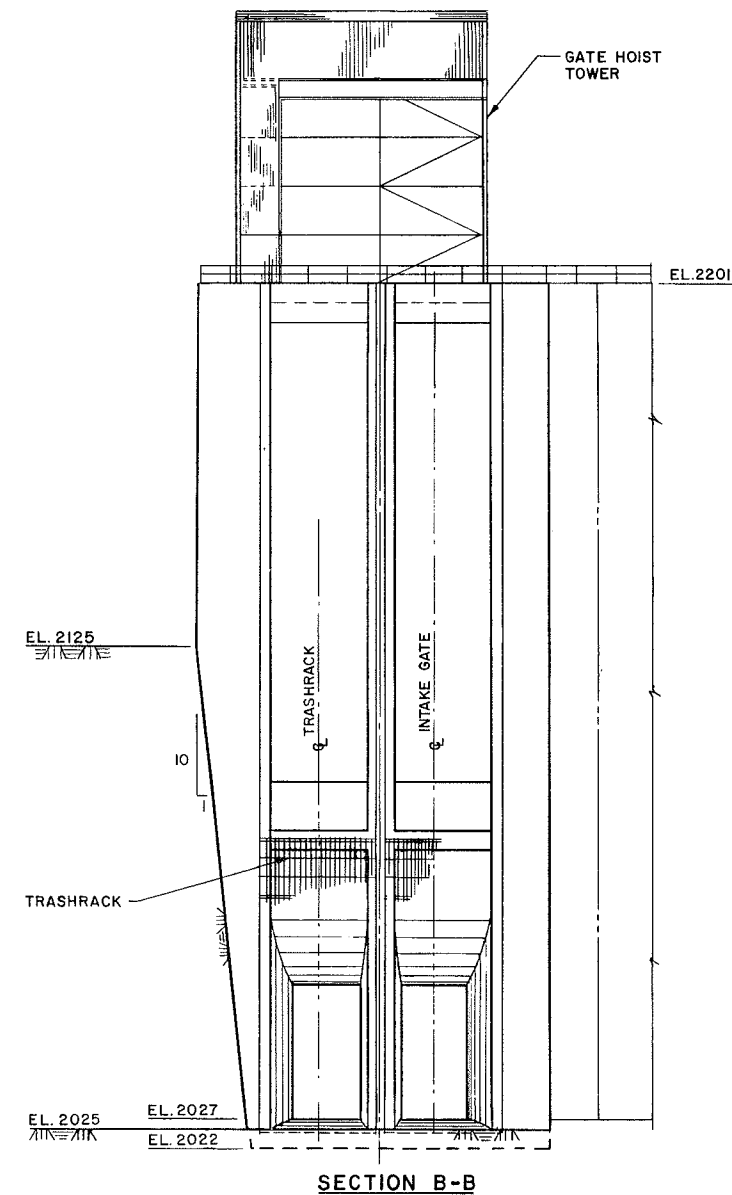
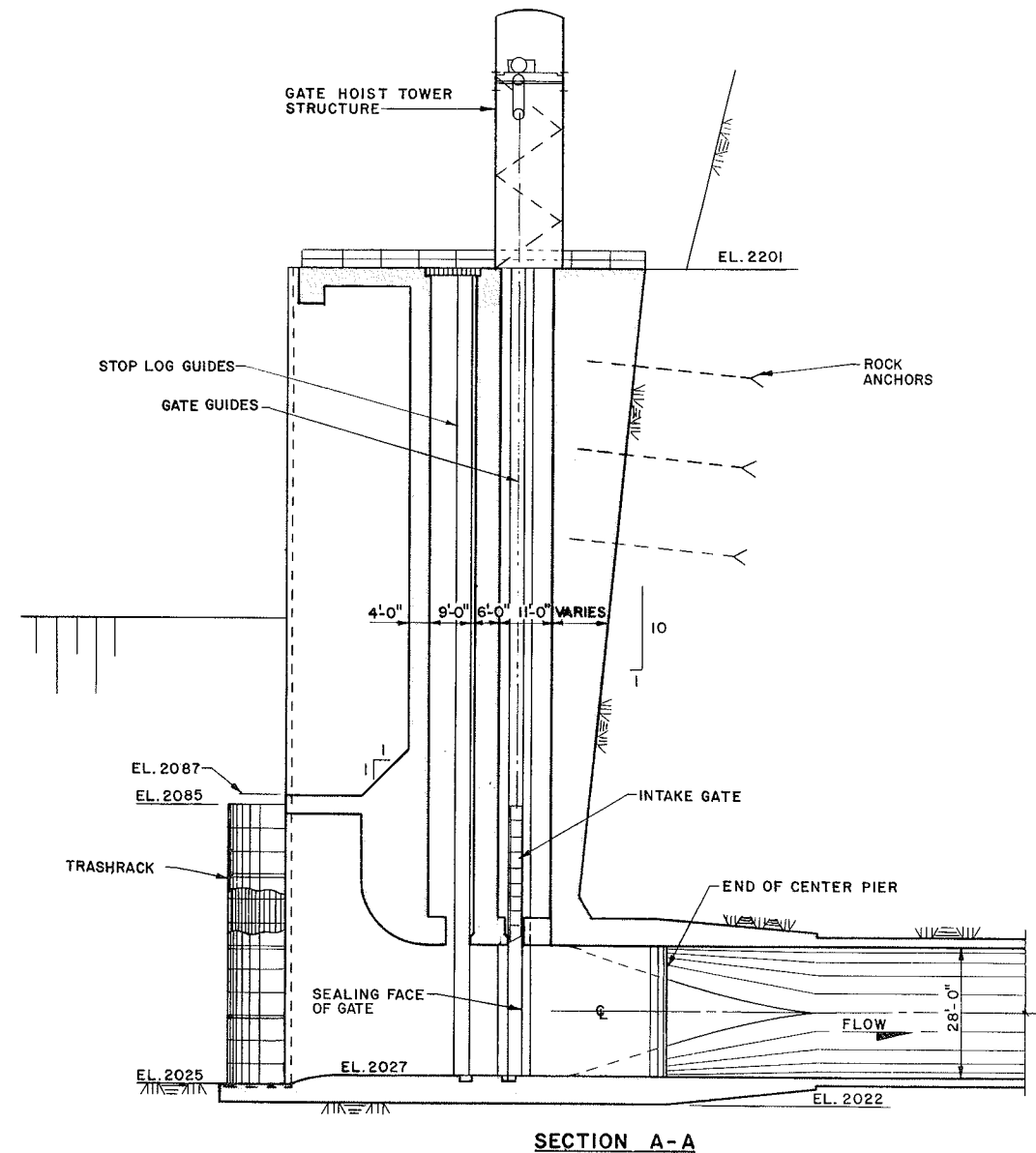
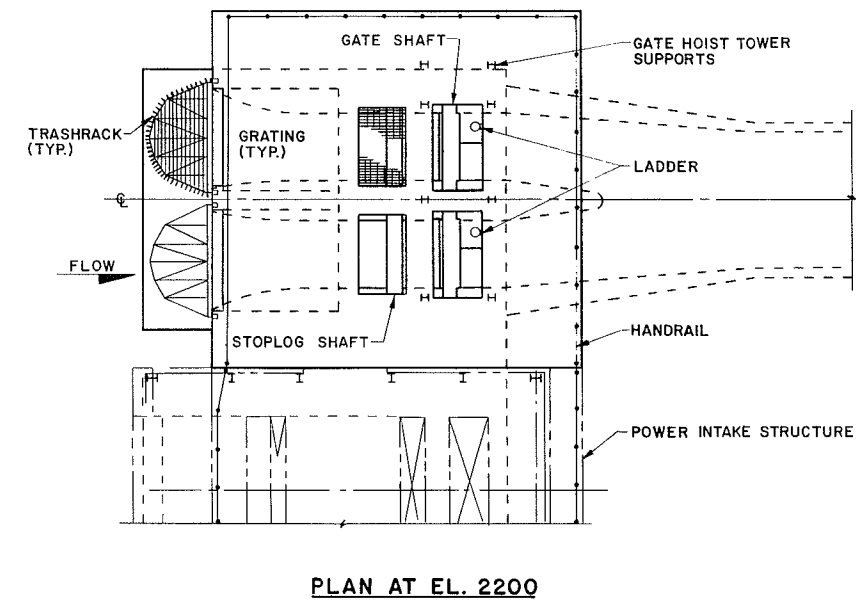
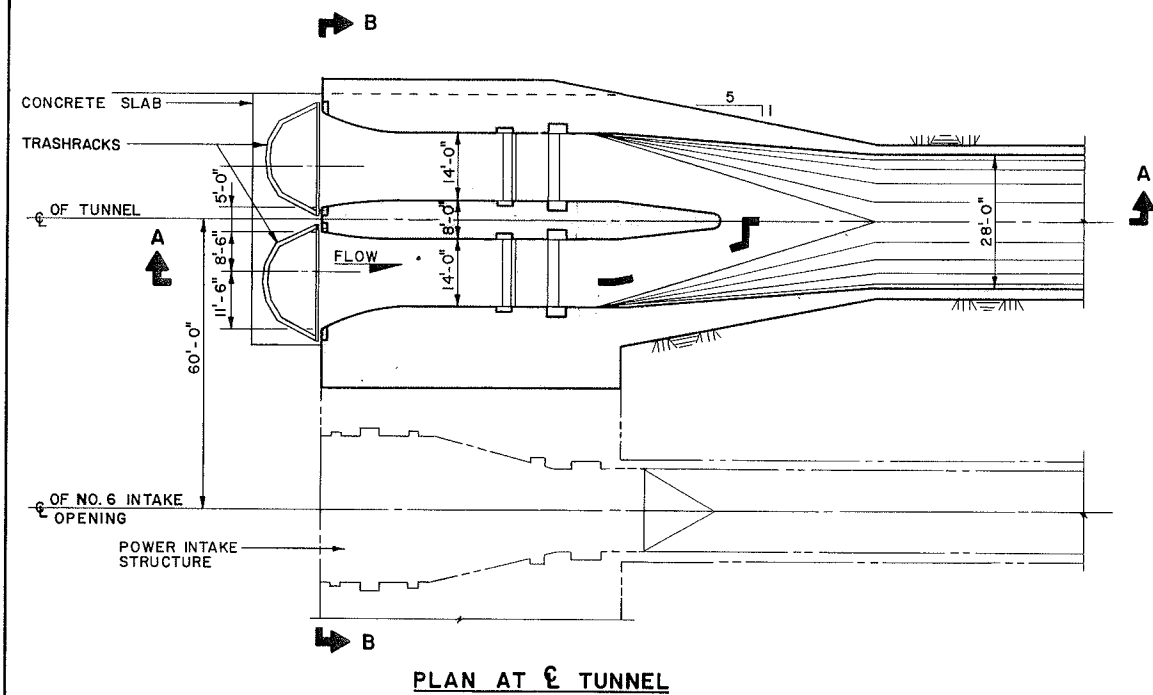


SECTION A-A
SCALE C



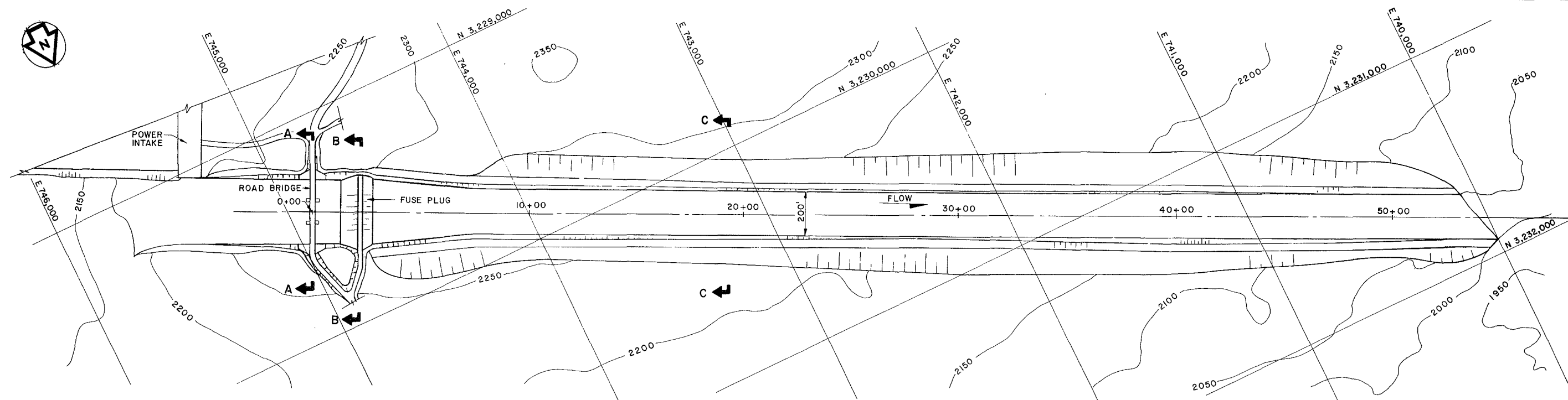
SECTION B-B
SCALE C

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

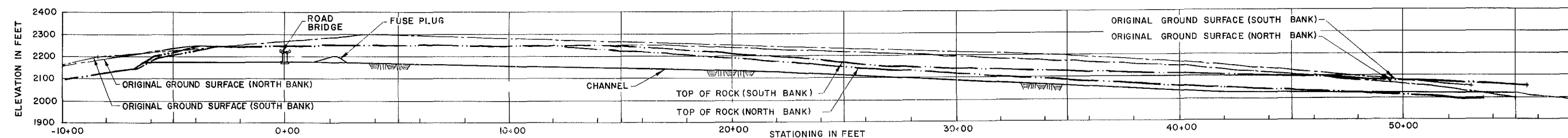


SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

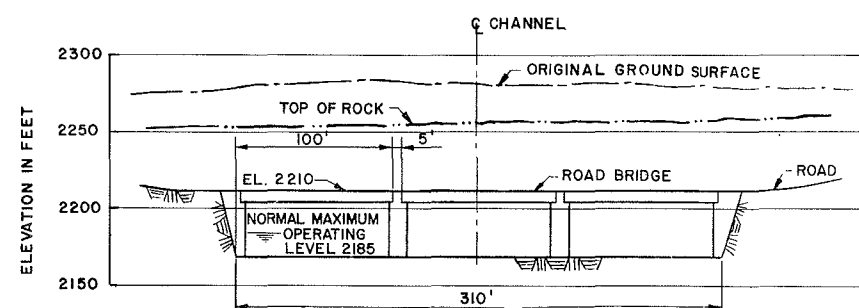
APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA OUTLET FACILITIES GATE STRUCTURE	
	EXHIBIT F	PLATE F17



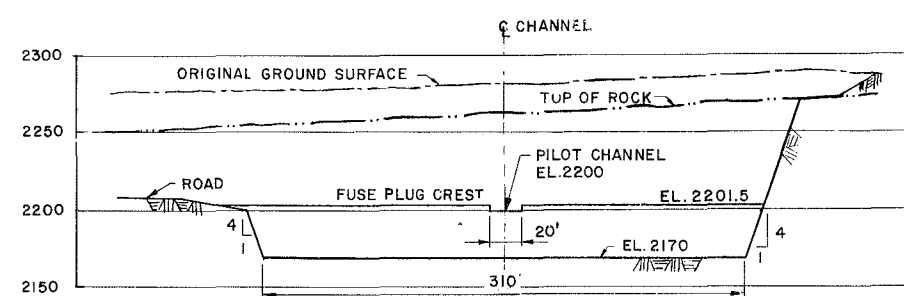
PLAN
SCALE A



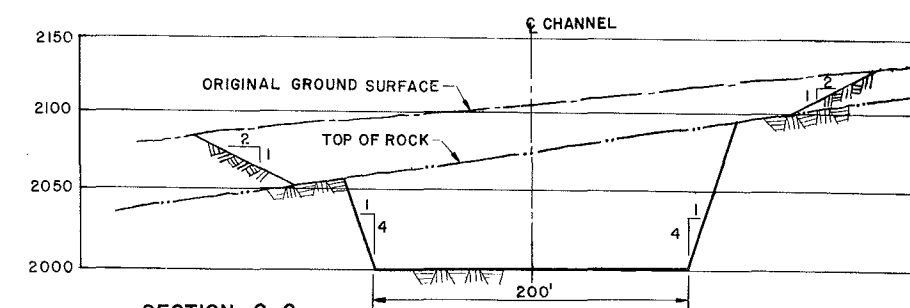
PROFILE
SCALE A



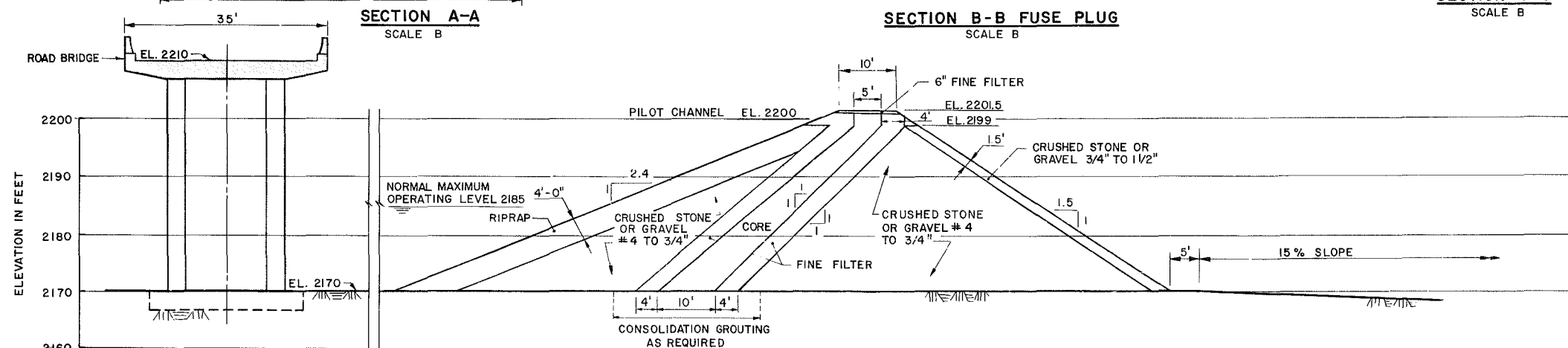
SECTION A-A
SCALE B



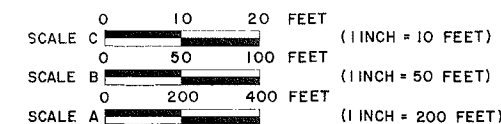
SECTION B-B FUSE PLUG
SCALE B



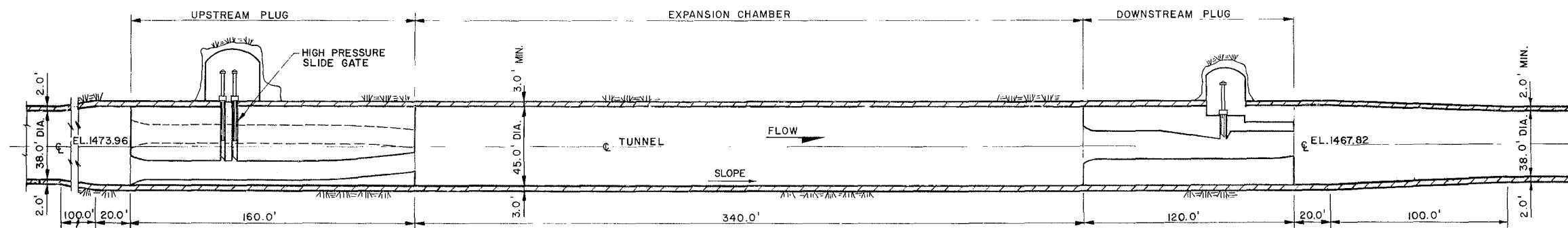
SECTION C-C
SCALE B



SECTION THROUGH FUSE PLUG
SCALE C

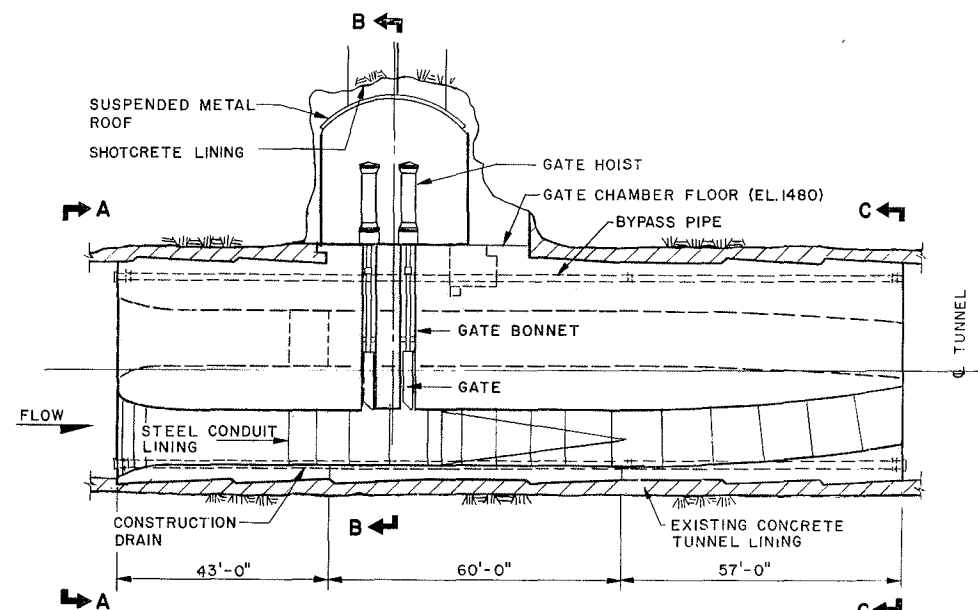


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY SPILLWAY	
EXHIBIT F	PLATE F18



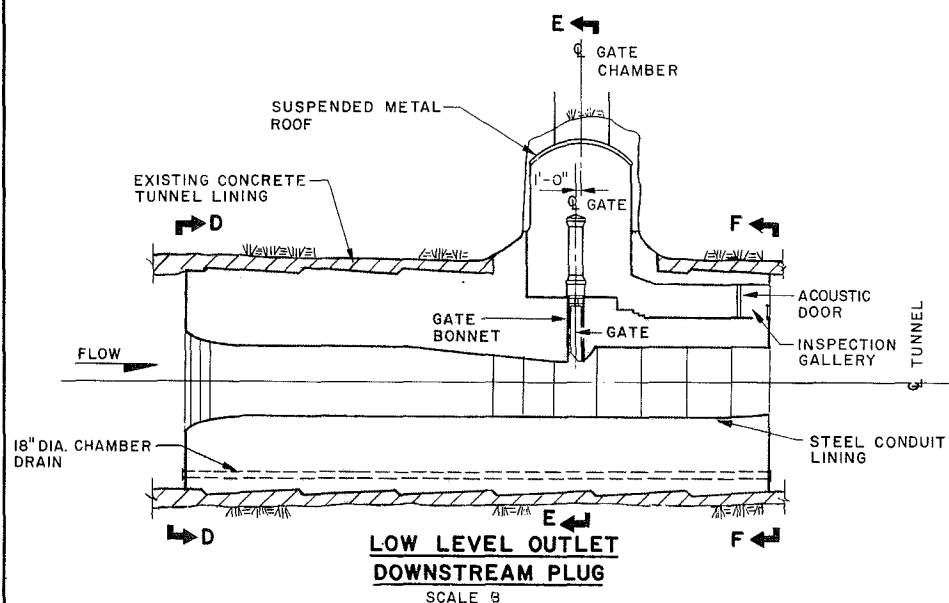
SECTION ALONG CL OF TUNNEL NO. 1

SCALE A



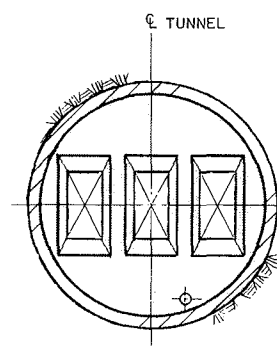
LOW LEVEL OUTLET
UPSTREAM PLUG

SCALE B



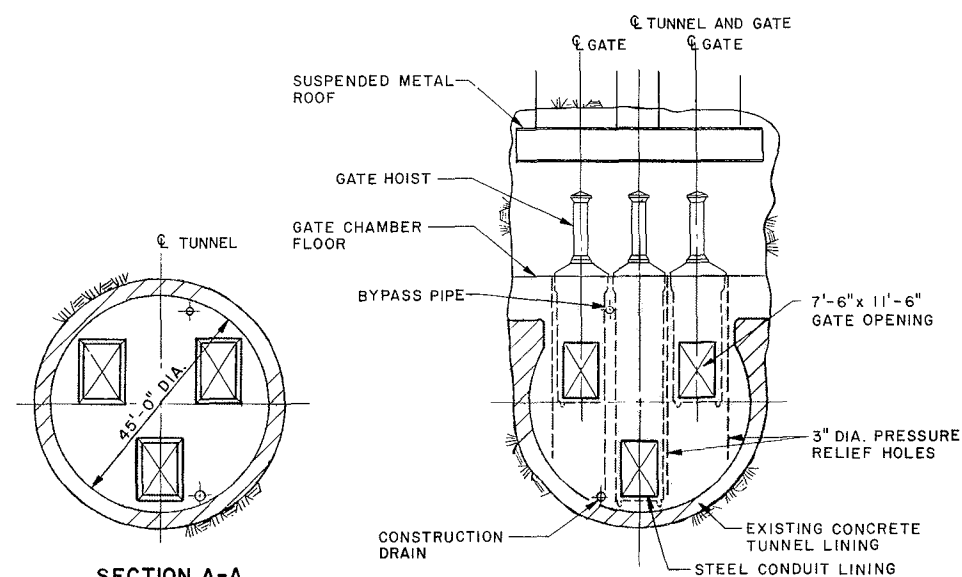
LOW LEVEL OUTLET
DOWNSTREAM PLUG

SCALE B



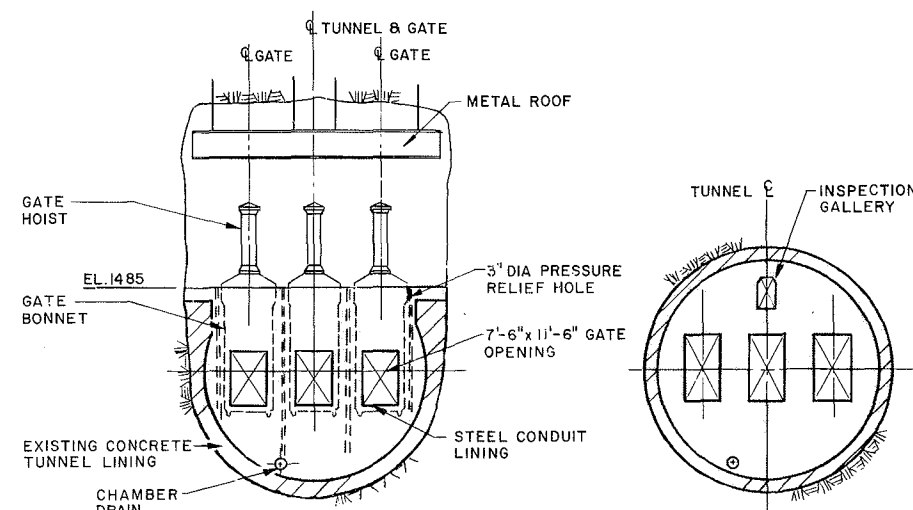
SECTION D-D

SCALE B



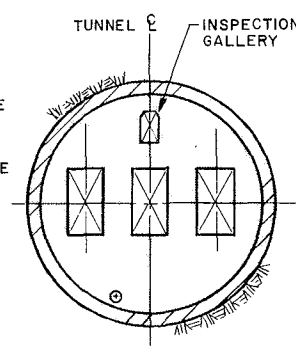
SECTION B-B

SCALE B



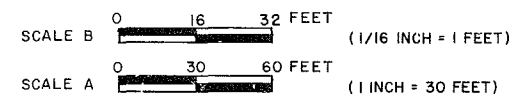
SECTION E-E

SCALE B

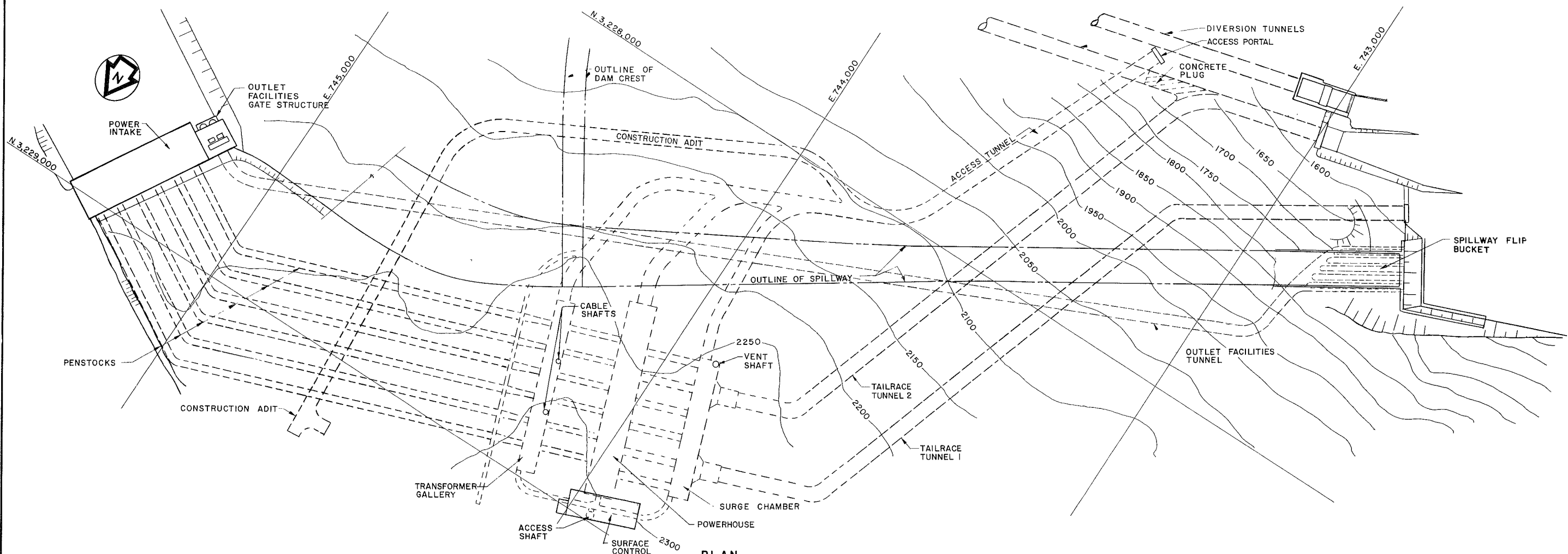


SECTION F-F

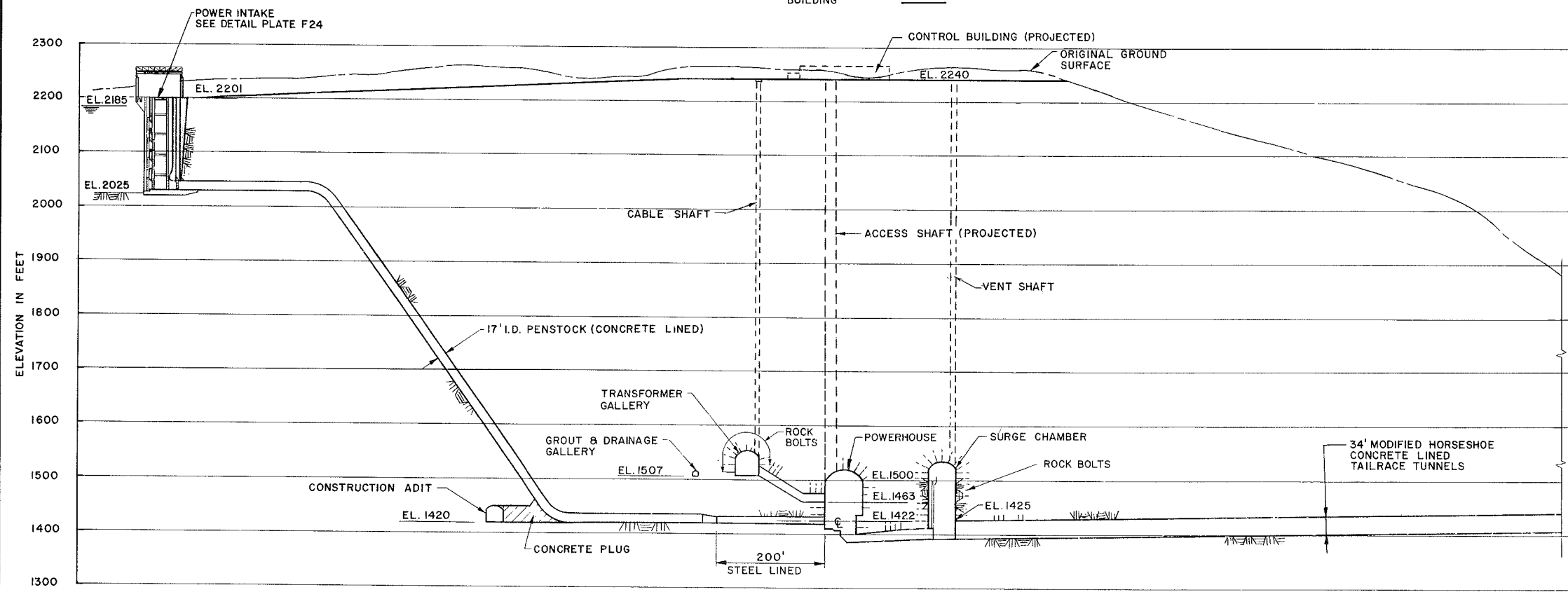
SCALE B



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



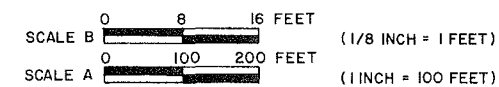
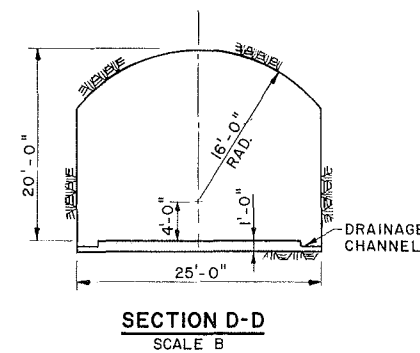
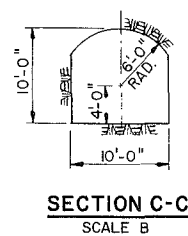
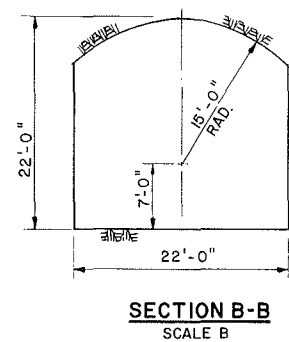
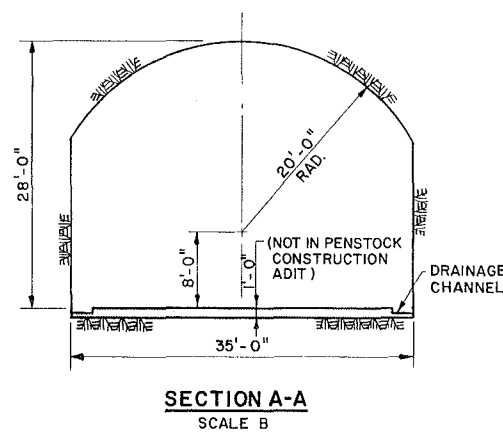
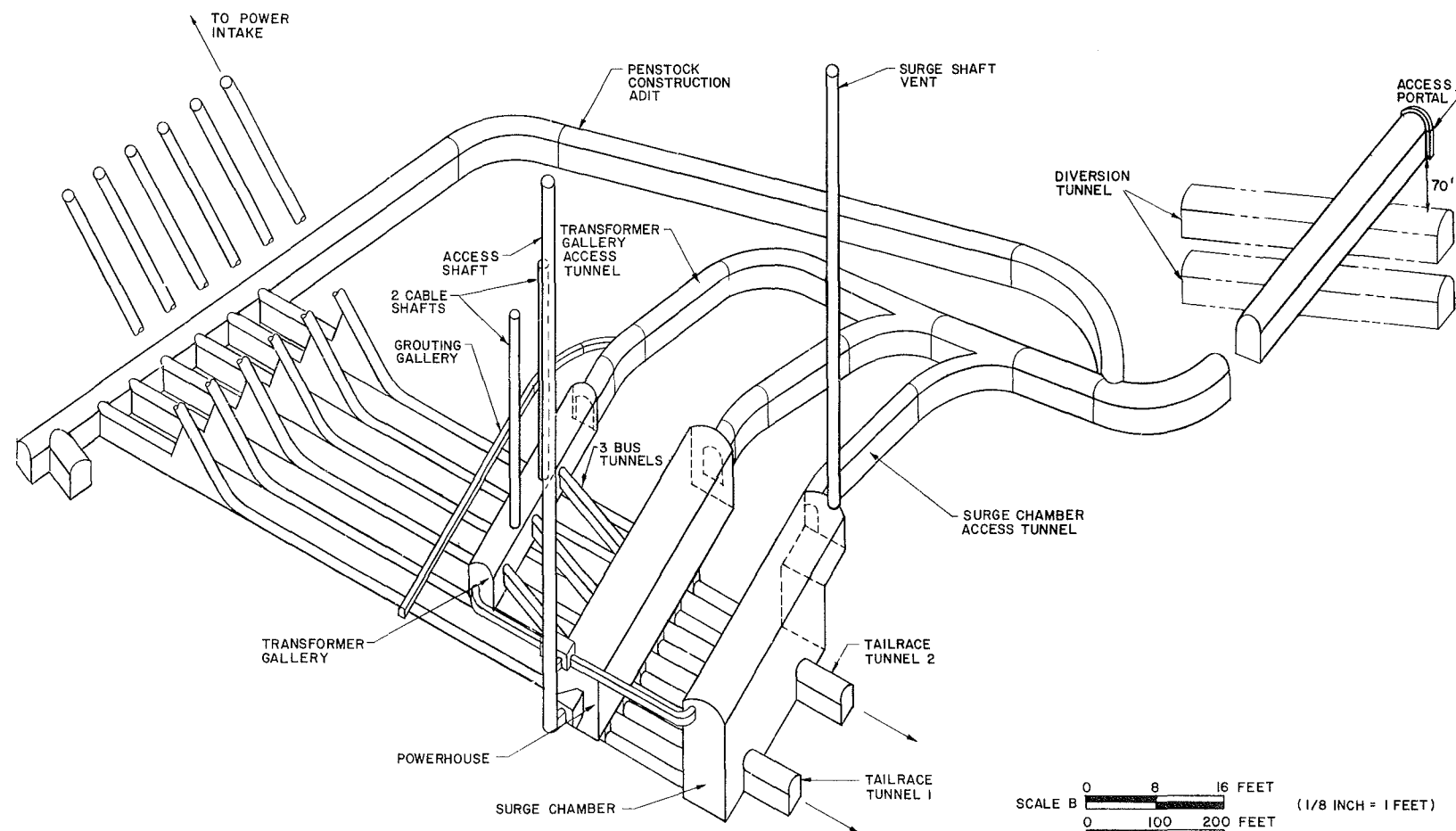
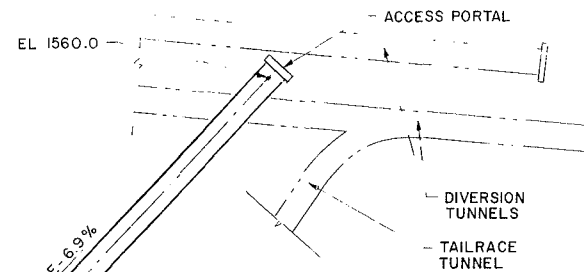
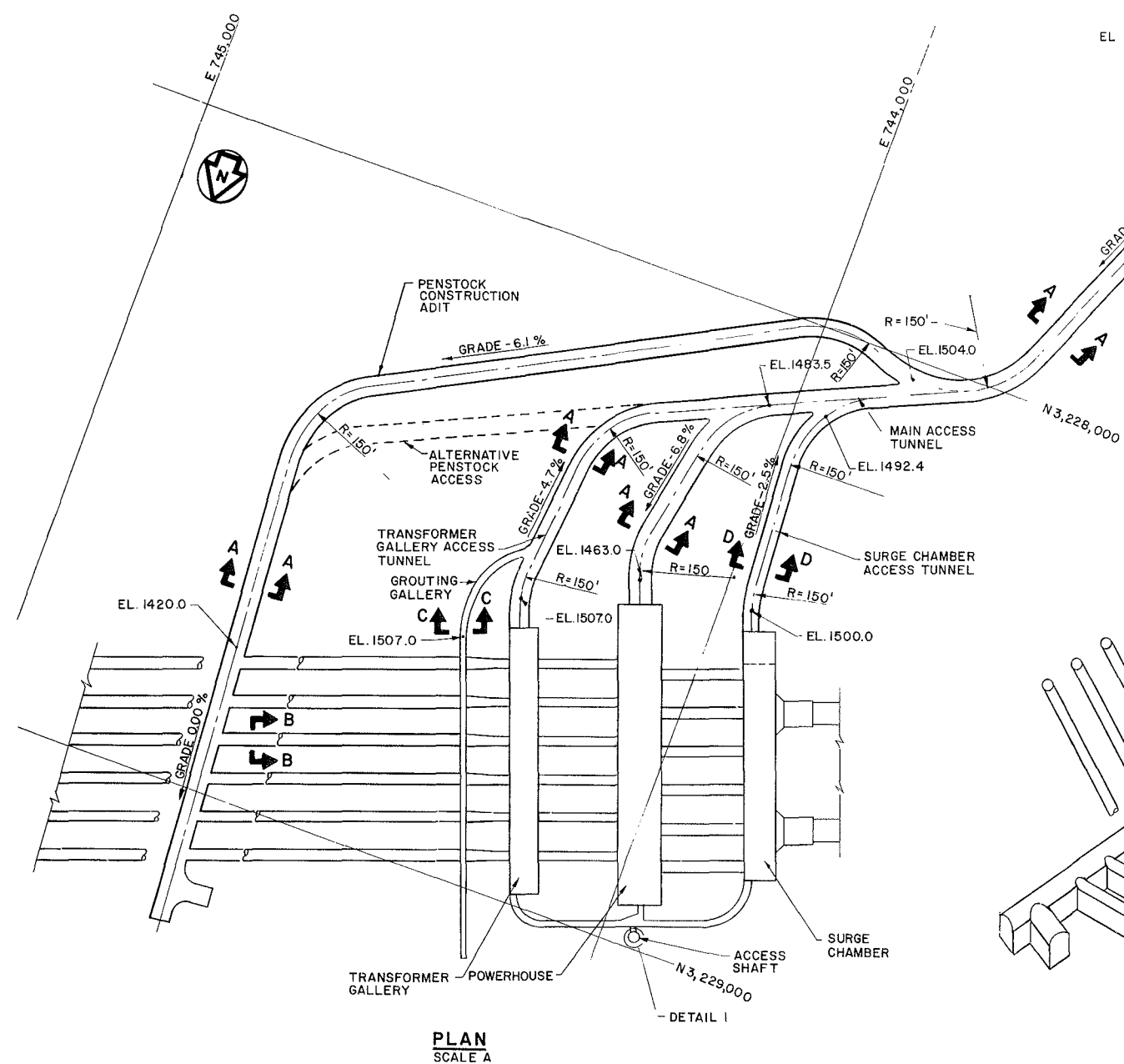
PLAN



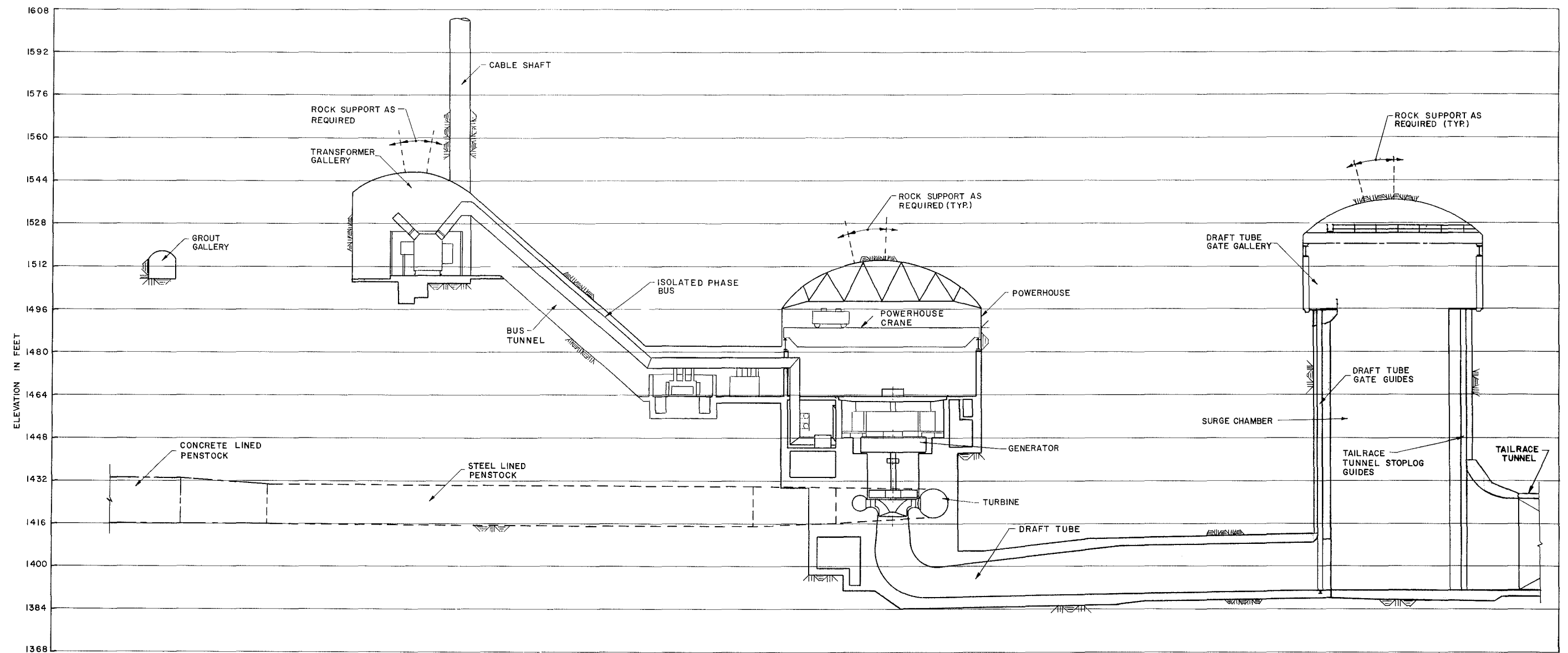
PROFILE

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

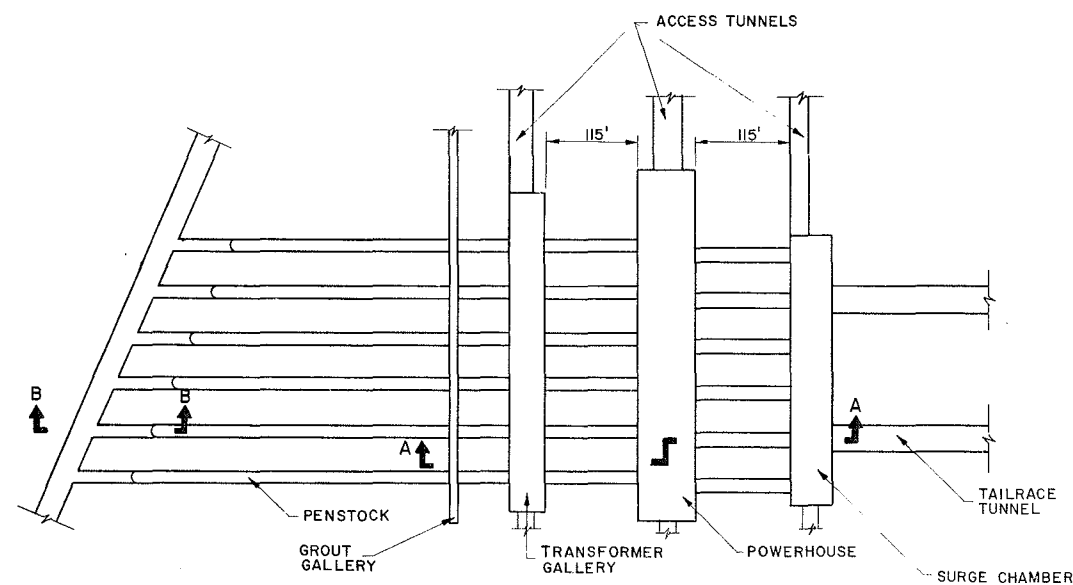
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA POWER FACILITIES GENERAL ARRANGEMENT	
	EXHIBIT F	PLATE F21



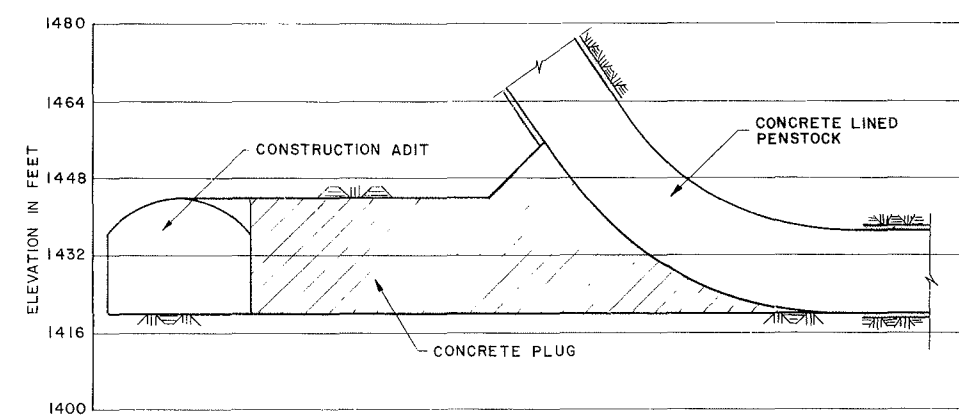
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
POWER FACILITIES	
ACCESS	
EXHIBIT F	PLATE F 22



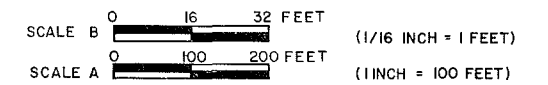
SECTION A-A
SCALE B



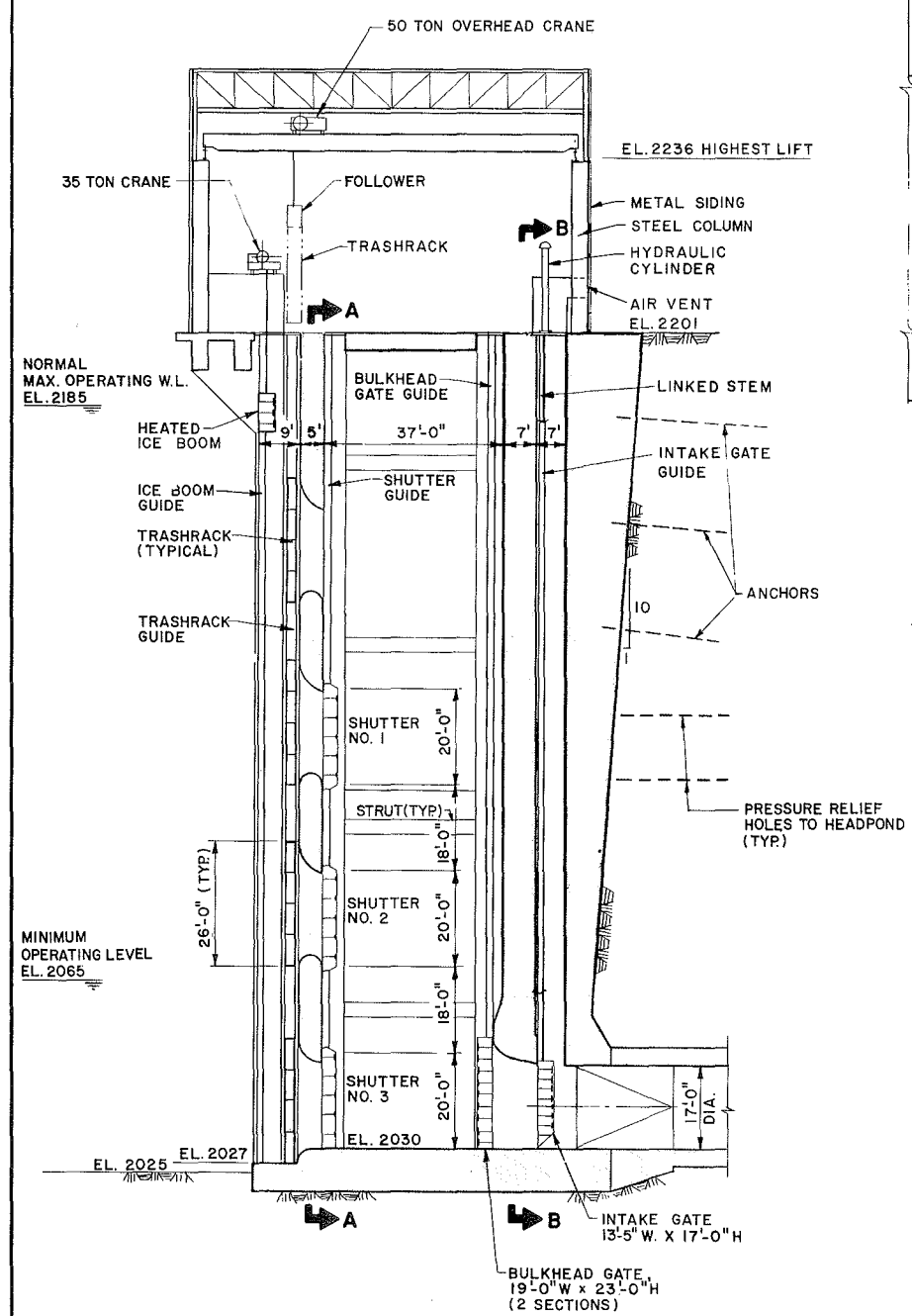
PLAN
SCALE A



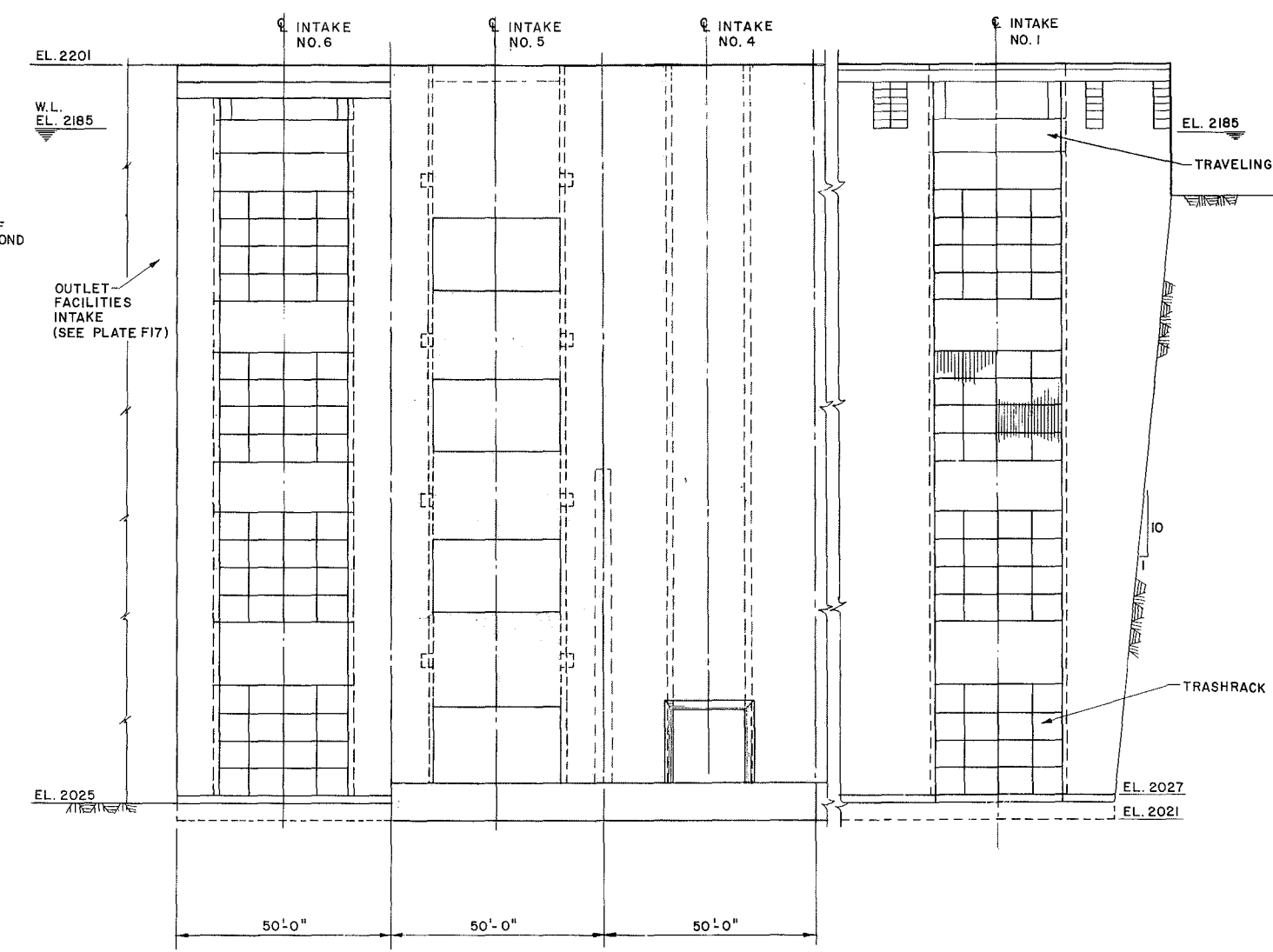
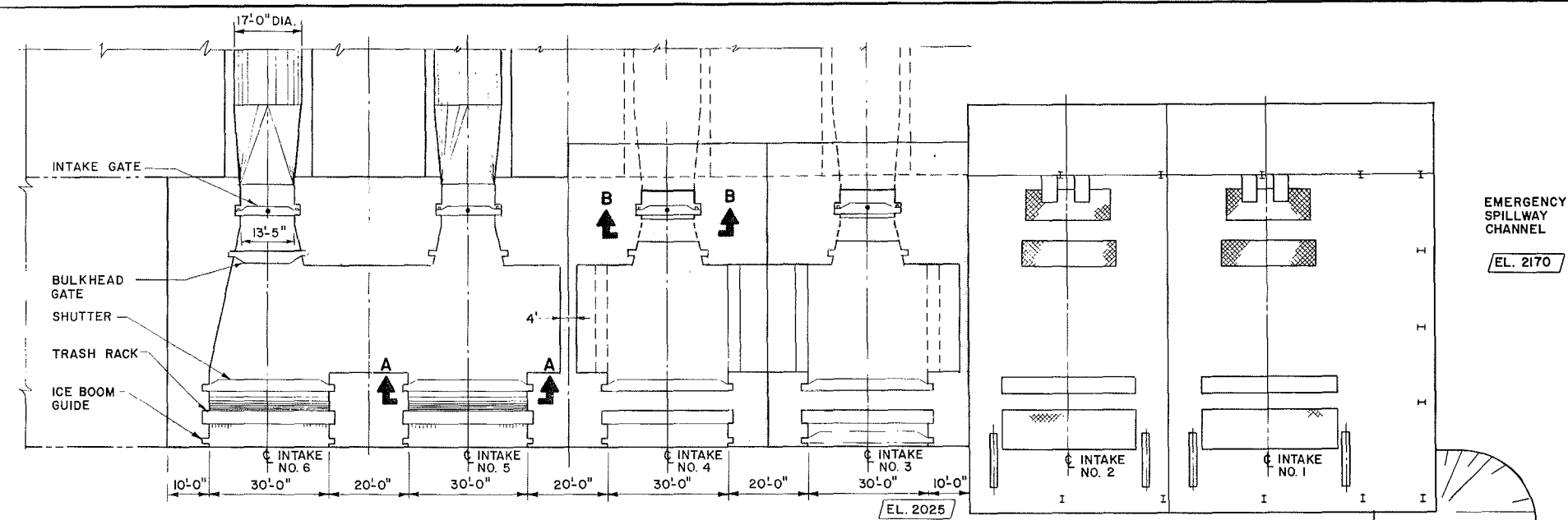
SECTION B-B
SCALE B



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



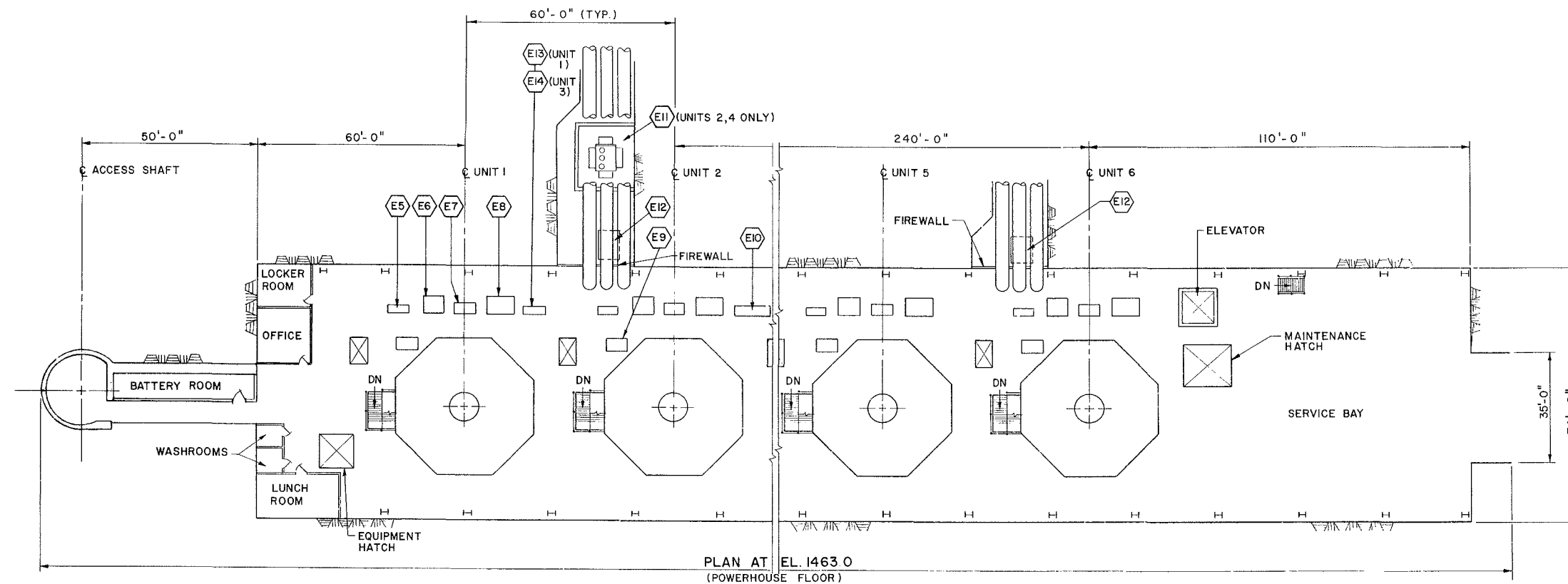
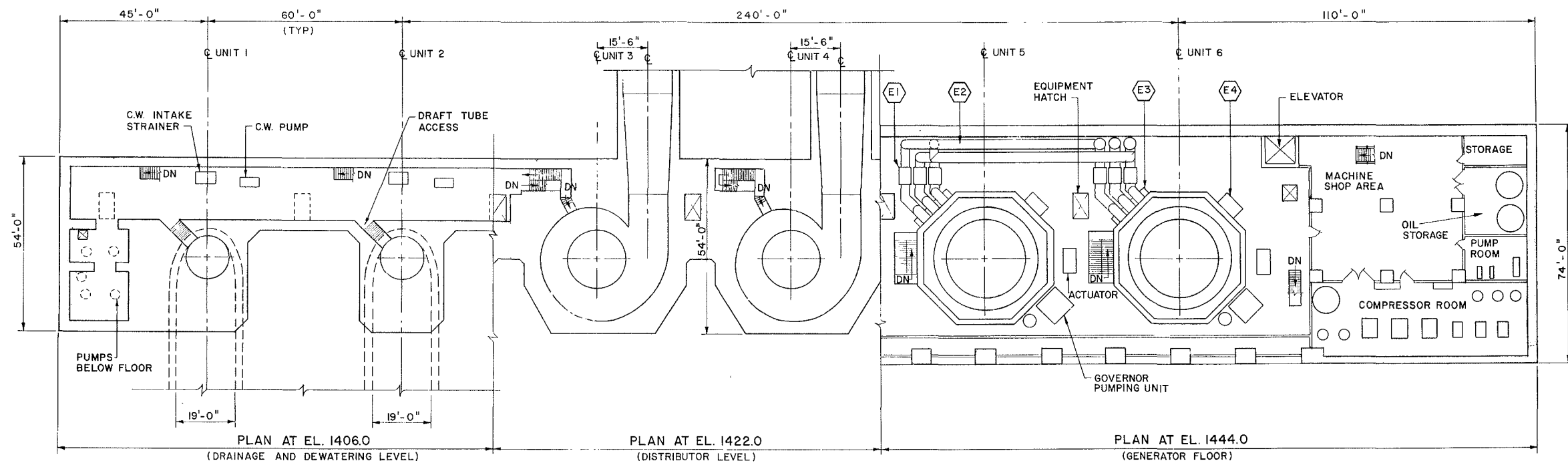
**SECTION THRU
INTAKE GATE CONTROL STRUCTURE**



**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



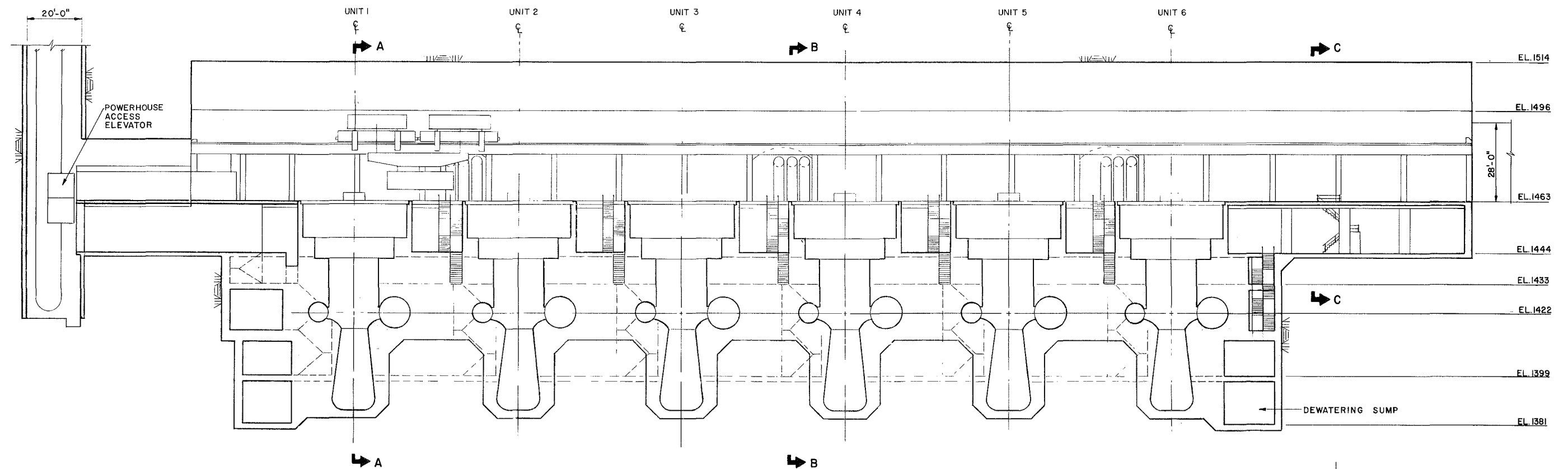
SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

LEGEND

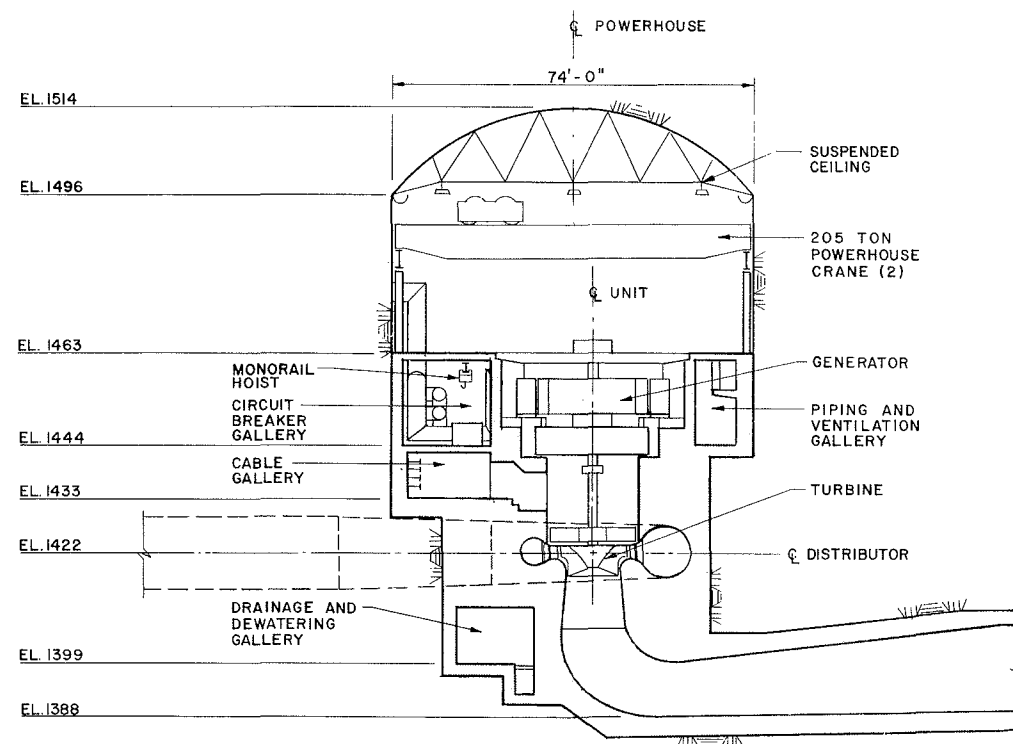
- E1 GENERATOR CIRCUIT BREAKERS
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY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

POWERHOUSE PLANS

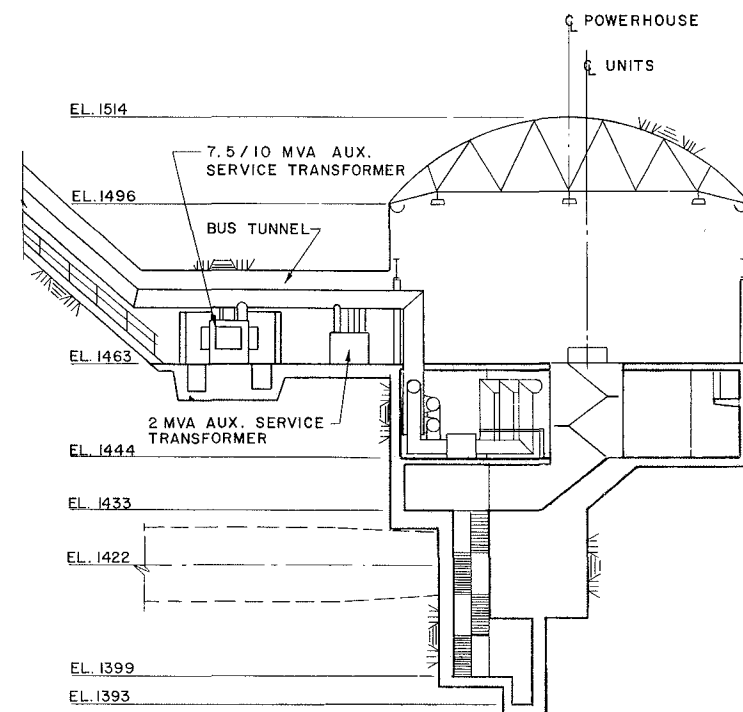
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE PLANS	
EXHIBIT F	PLATE F 25



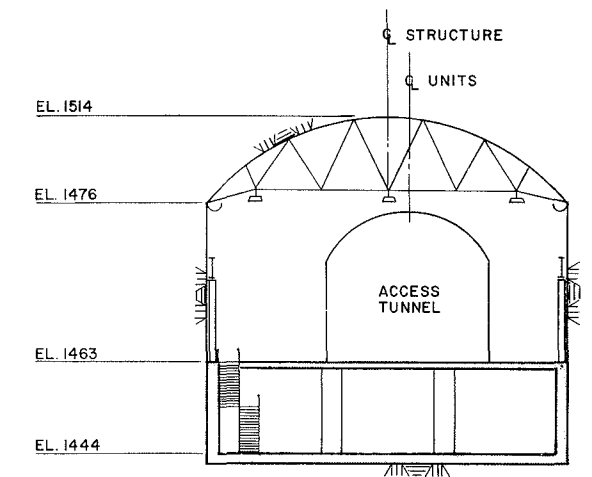
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS, UNITS NOT SHOWN)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



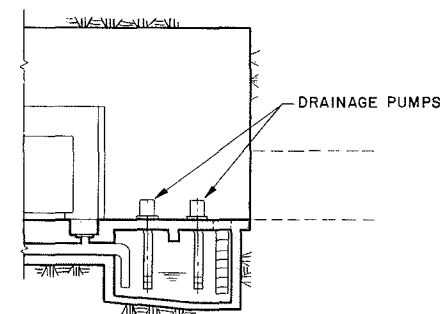
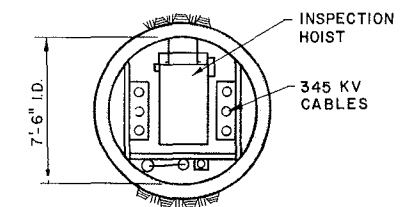
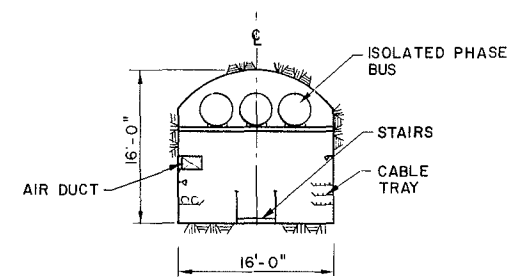
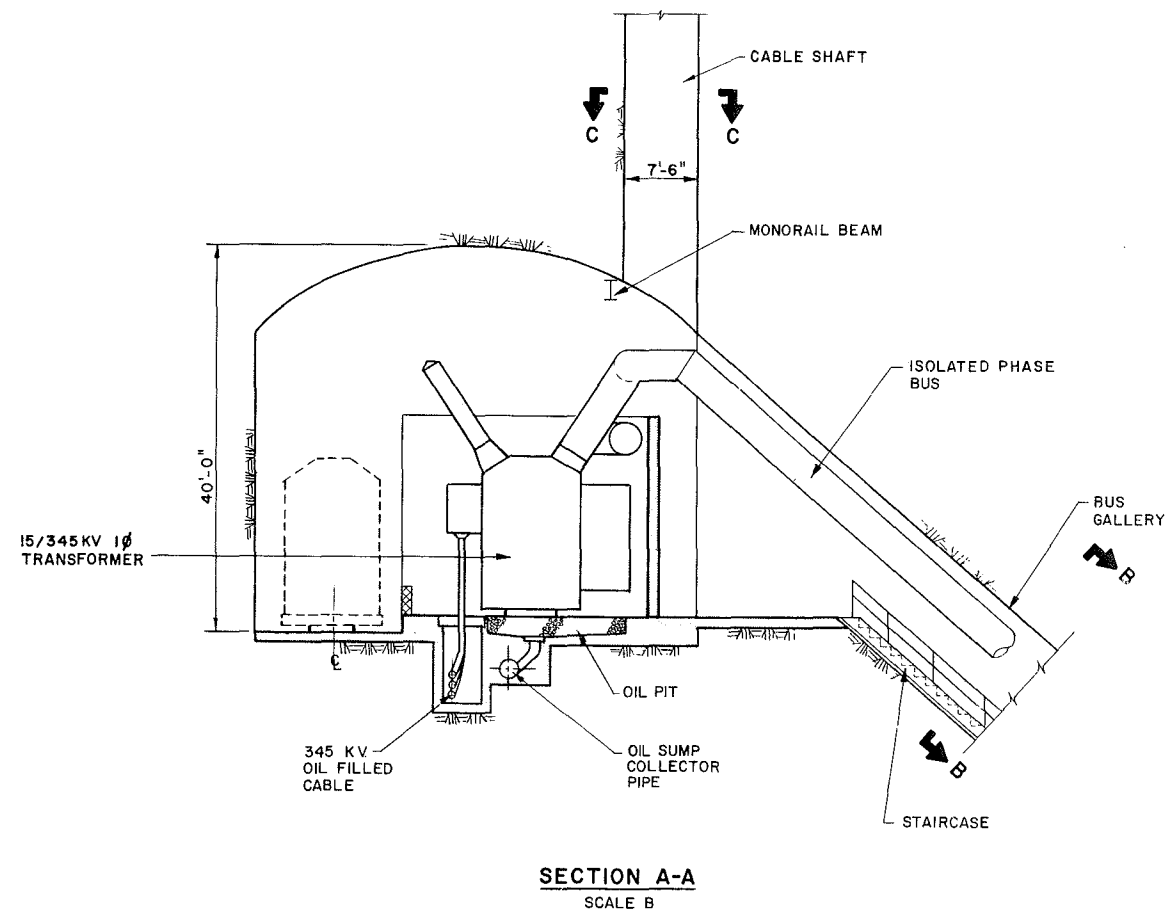
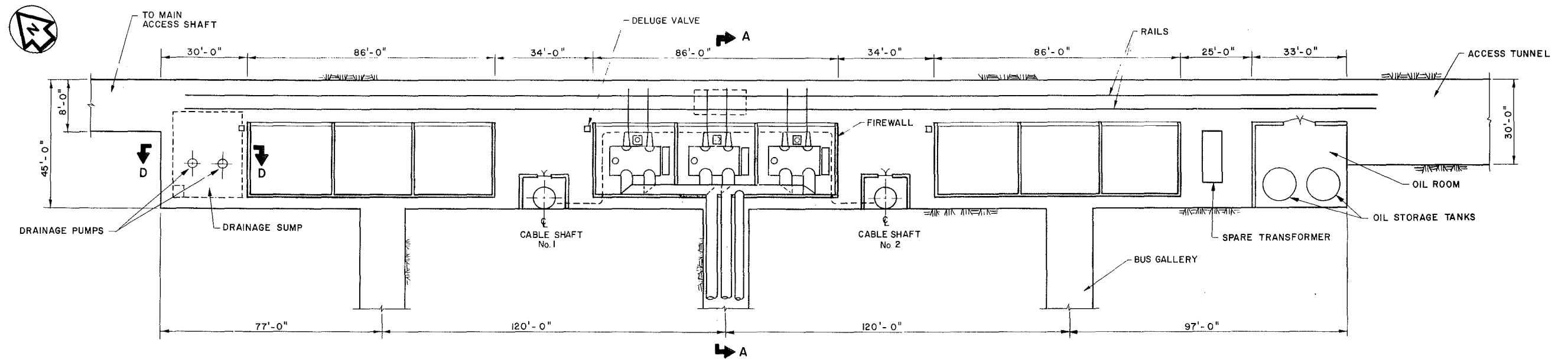
SECTION B-B (SECTION THRU BUS TUNNEL)



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

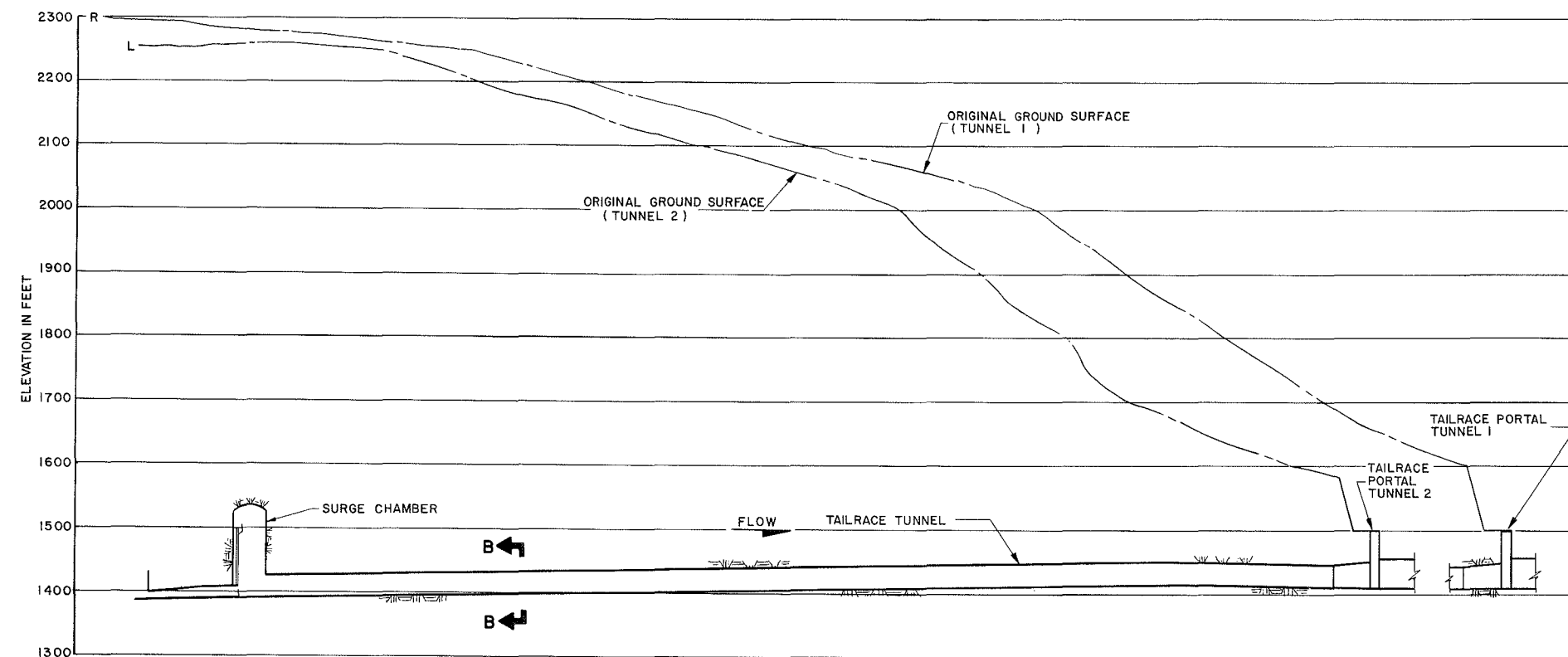


SCALE C 0 4 8 FEET (1/4 INCH = 1 FEET)

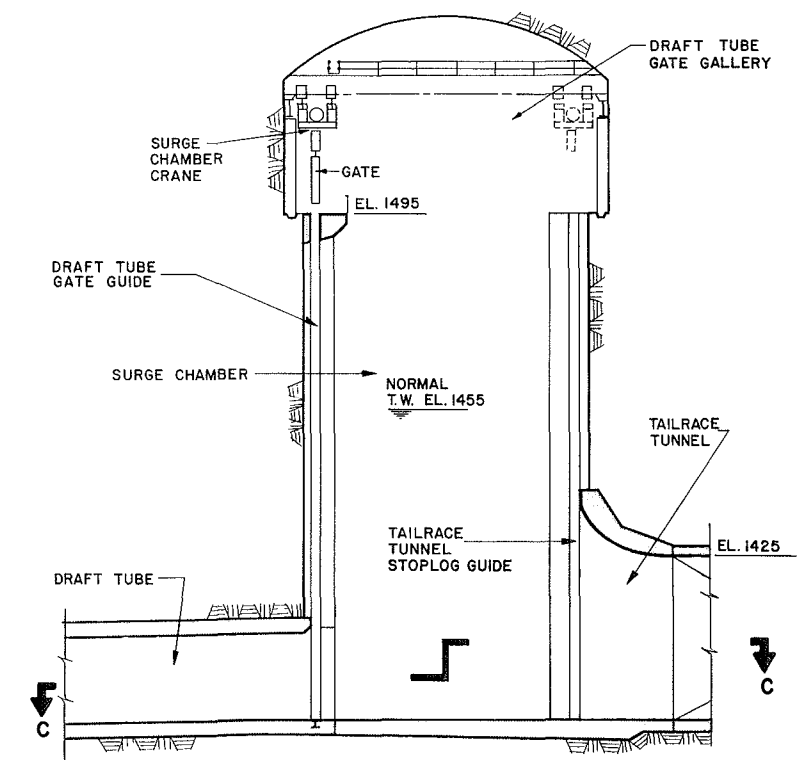
SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)

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

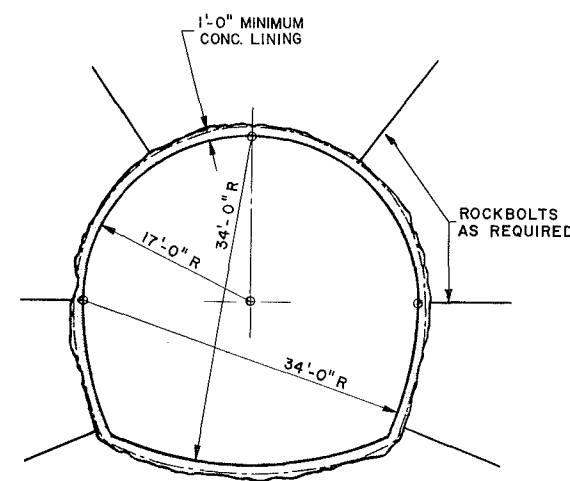
APROS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA TRANSFORMER GALLERY PLAN & SECTIONS	
	EXHIBIT F	PLATE F 27



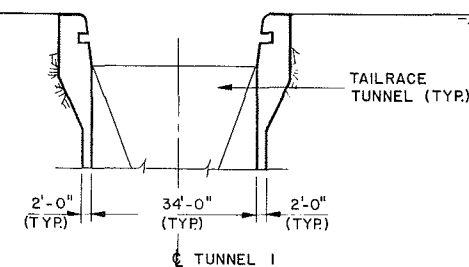
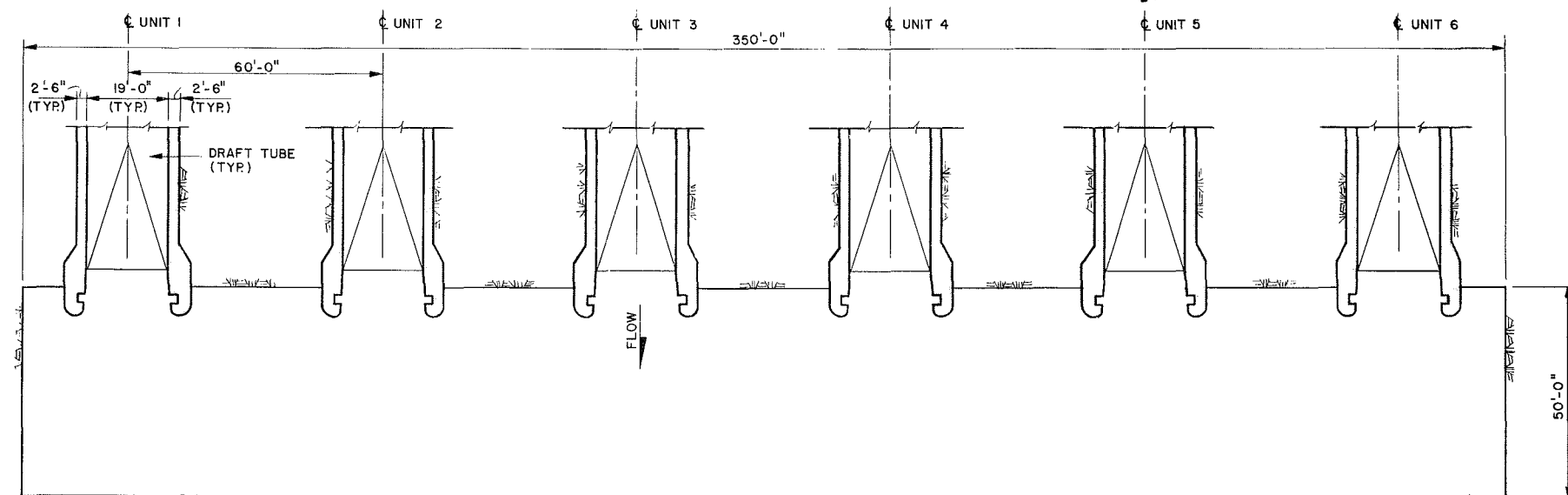
PROFILE
SCALE A



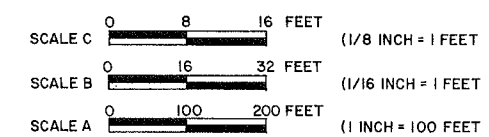
SECTION A-A
SCALE B



SECTION B-B
CONCRETE LINED TAILRACE TUNNEL
SCALE C



SECTION C-C
SCALE B



ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
SURGE CHAMBER AND TAILRACE SECTIONS	
EXHIBIT F	PLATE F 28

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, 60 HZ, 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

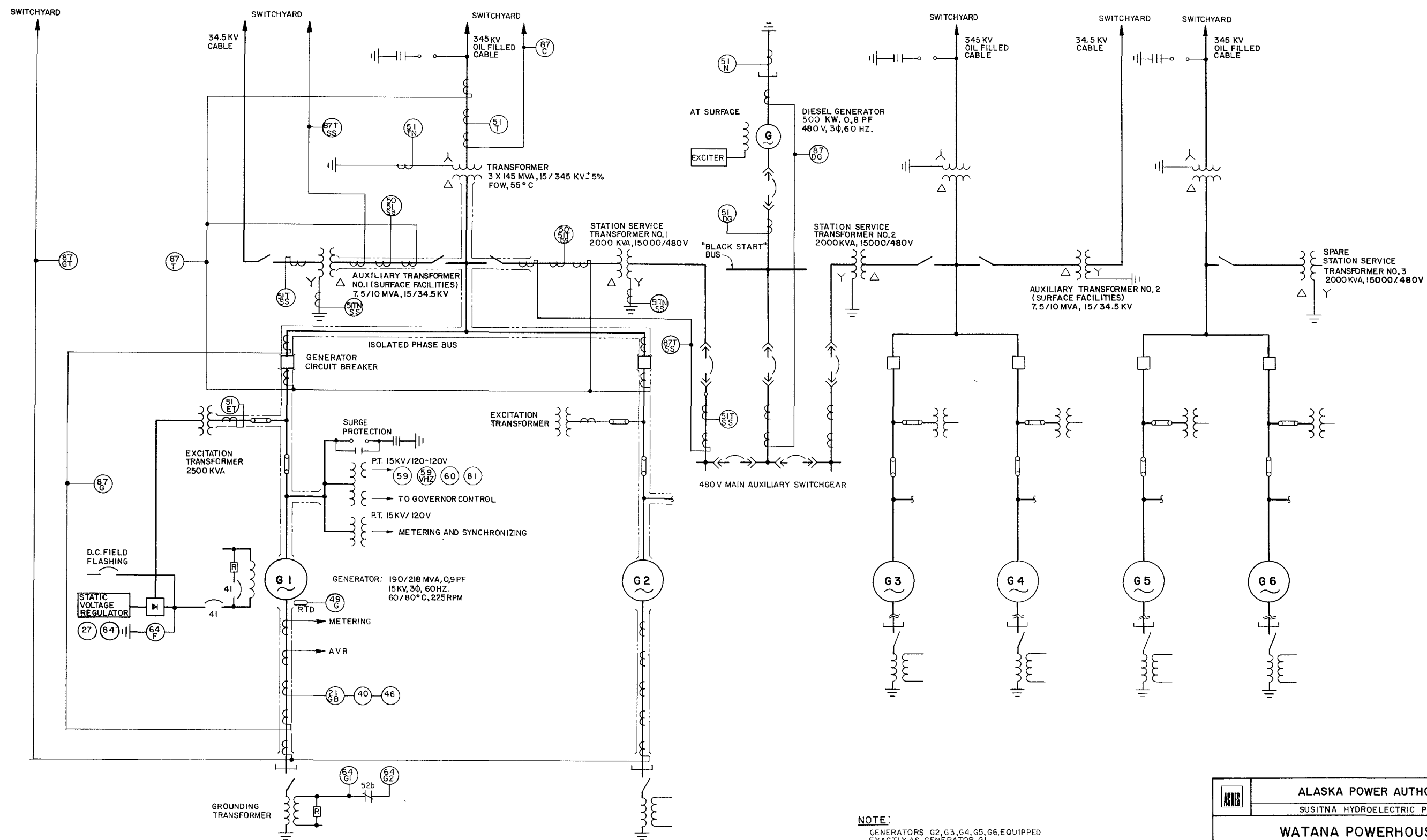


ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ELECTRICAL LEGEND

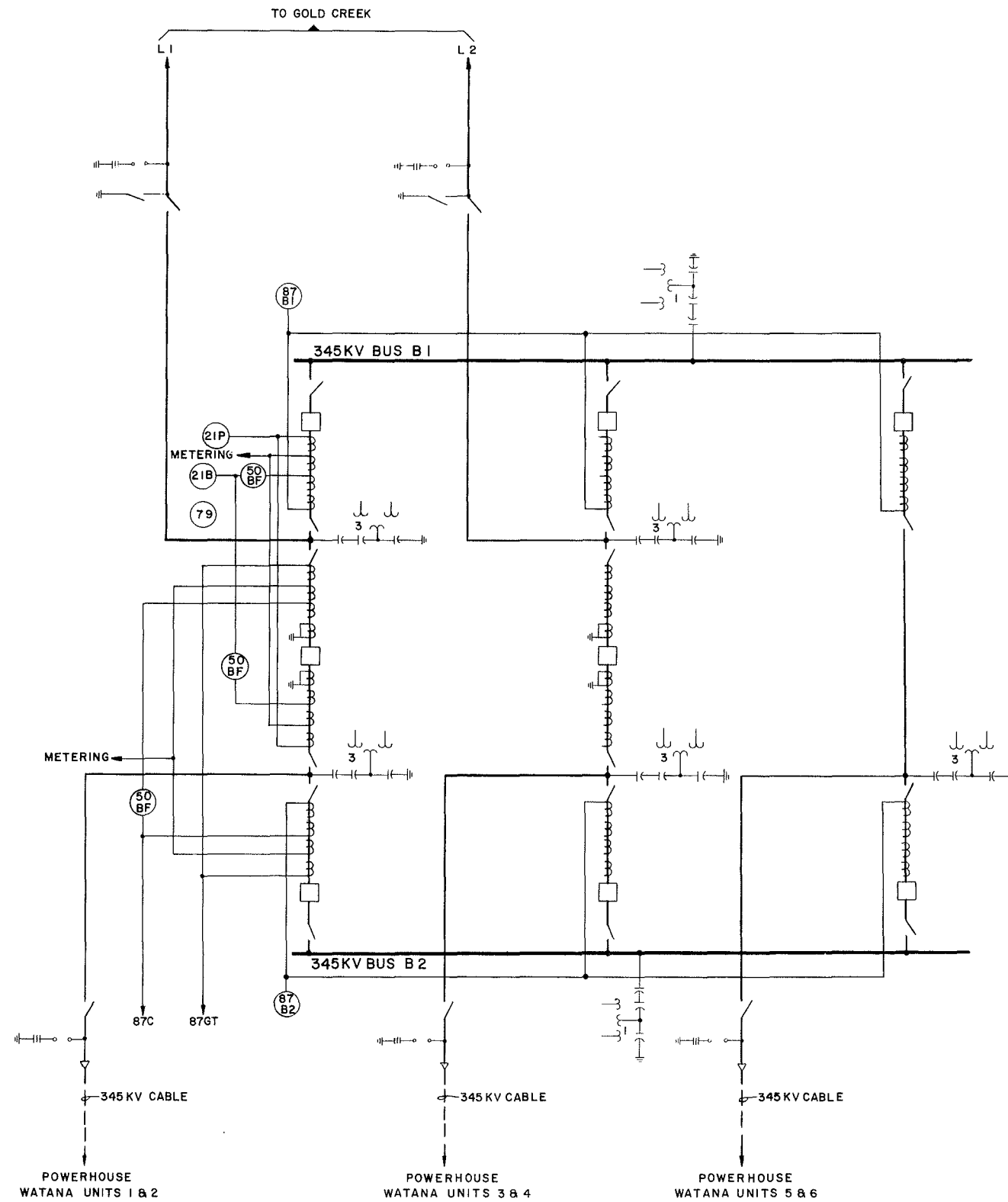
EXHIBIT F

PLATE F29

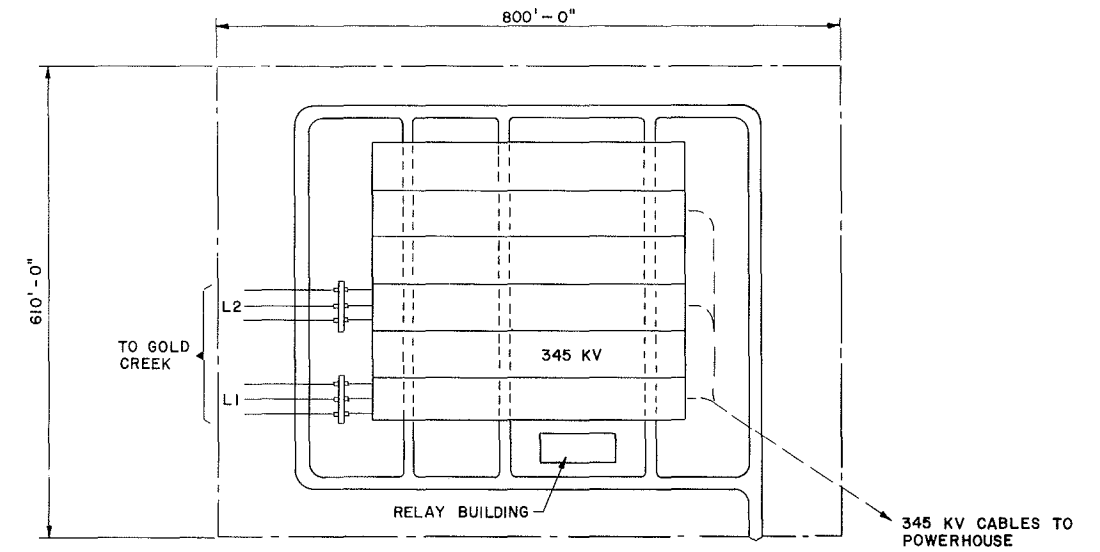


NOTE:
GENERATORS G2, G3, G4, G5, G6, EQUIPPED
EXACTLY AS GENERATOR G1.

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



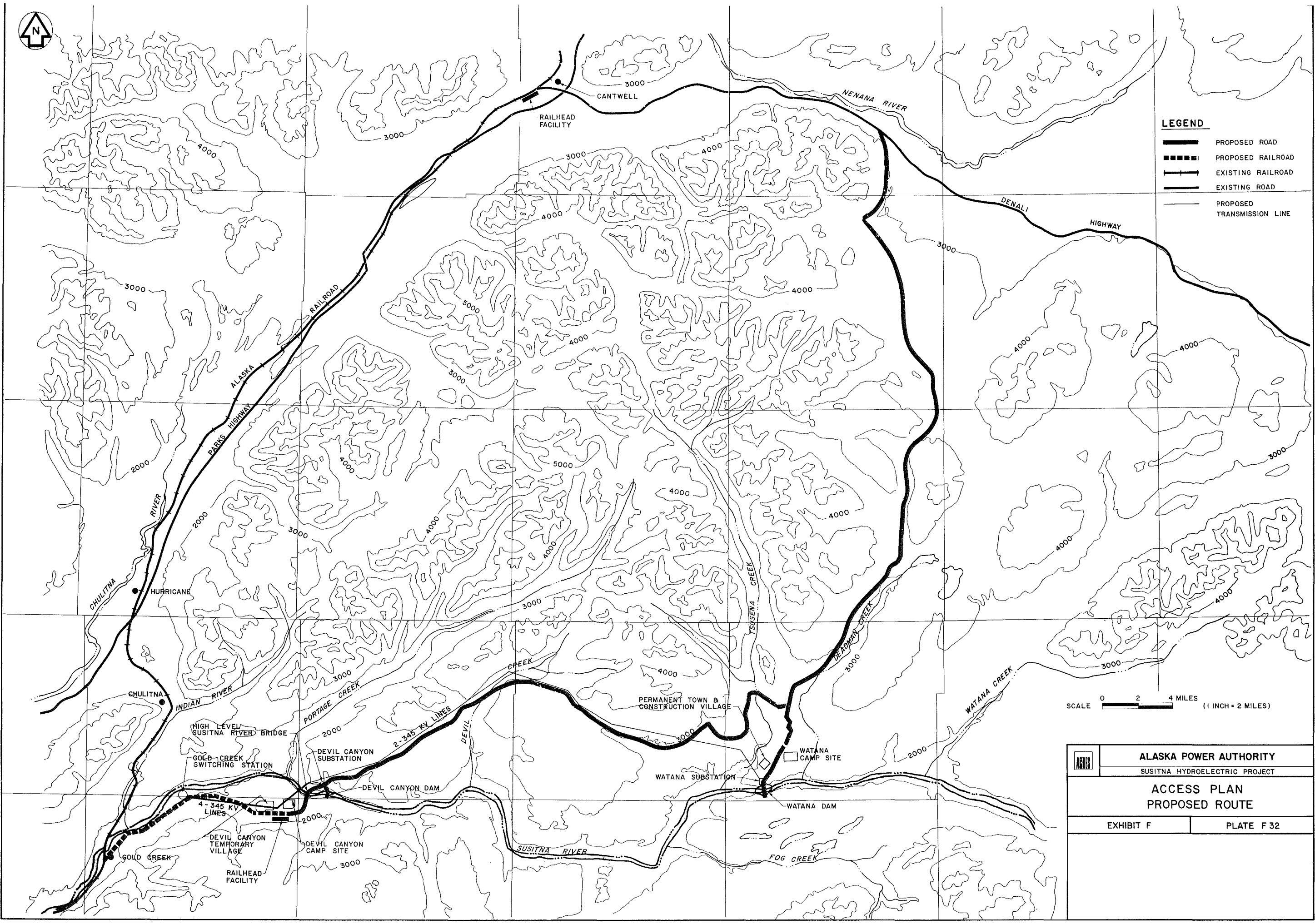
SINGLE LINE DIAGRAM



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
		

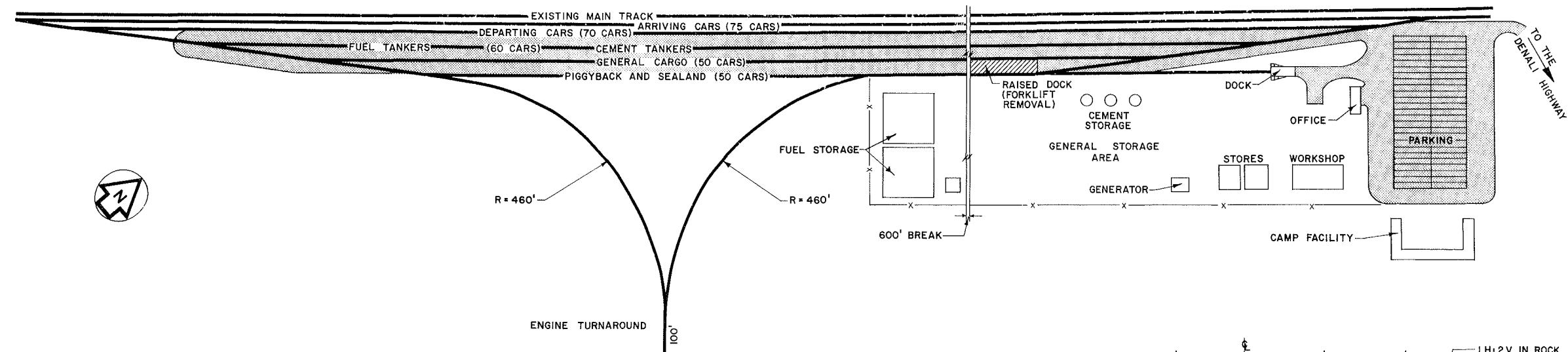


LEGEND

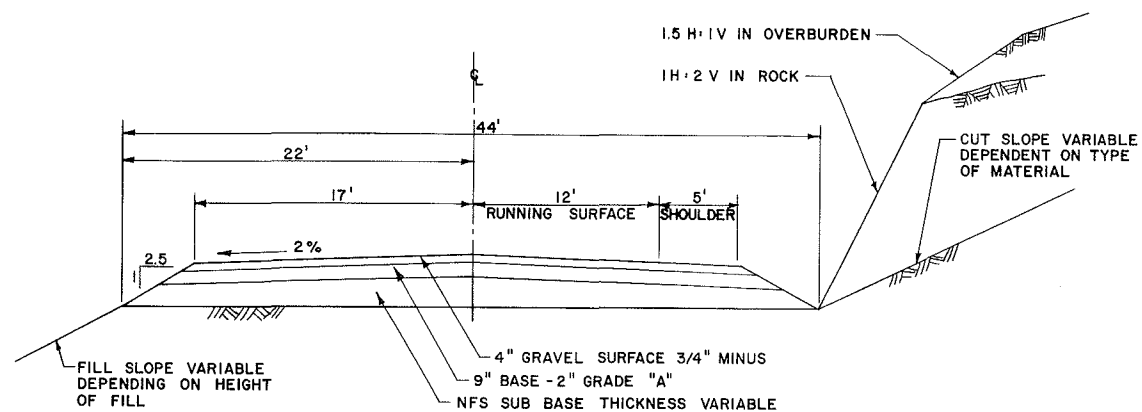
- PROPOSED ROAD
- PROPOSED RAILROAD
- EXISTING RAILROAD
- EXISTING ROAD
- PROPOSED TRANSMISSION LINE

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

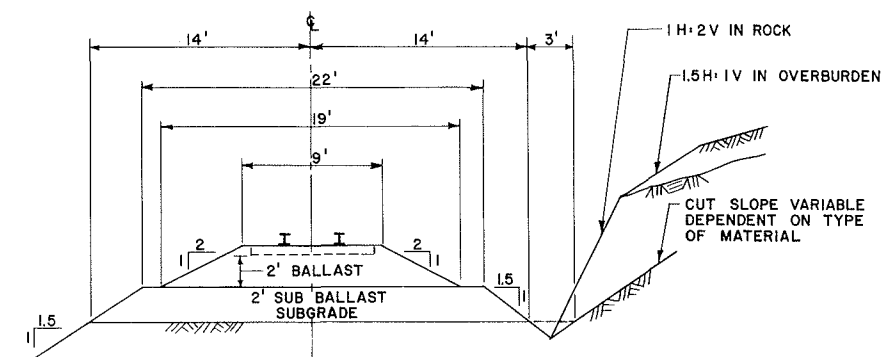
 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
ACCESS PLAN PROPOSED ROUTE	
EXHIBIT F	PLATE F 32



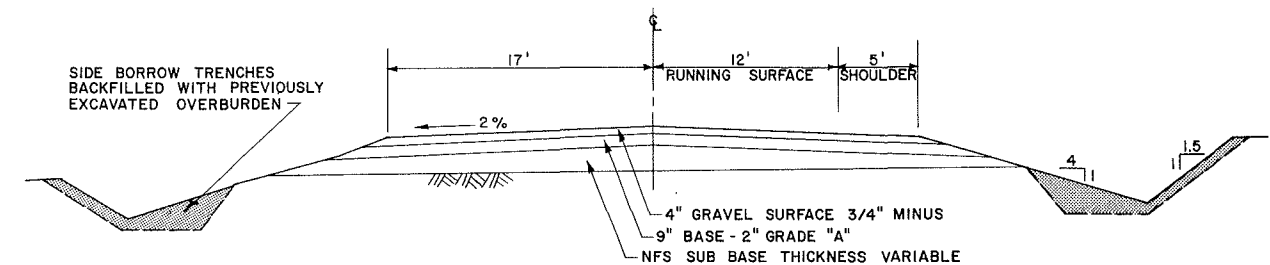
RAILHEAD FACILITY AT CANTWELL - PLAN
SCALE A



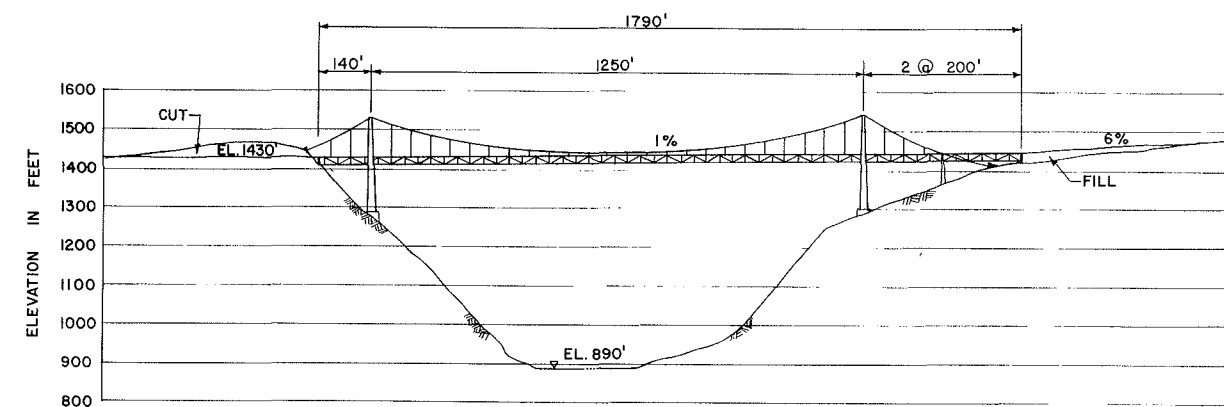
TYPICAL 'SIDEHILL CUT' SECTION
SCALE B



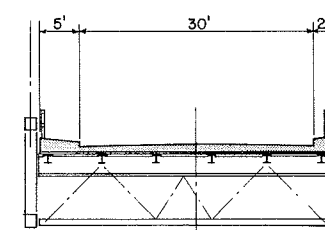
TYPICAL RAILROAD CROSS SECTION
SCALE B



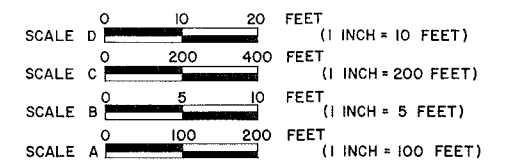
TYPICAL 'SIDE BORROW' SECTION
SCALE B



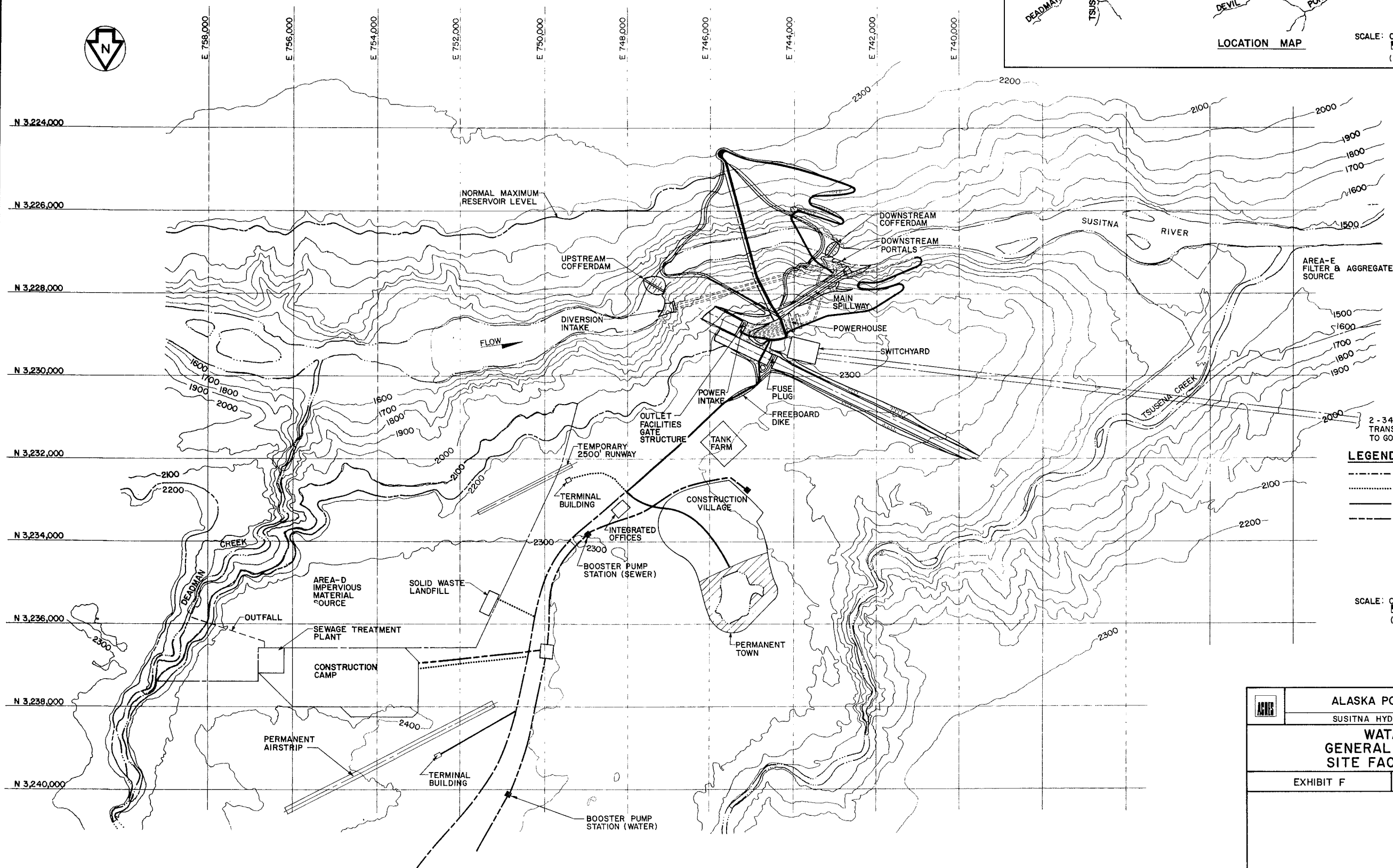
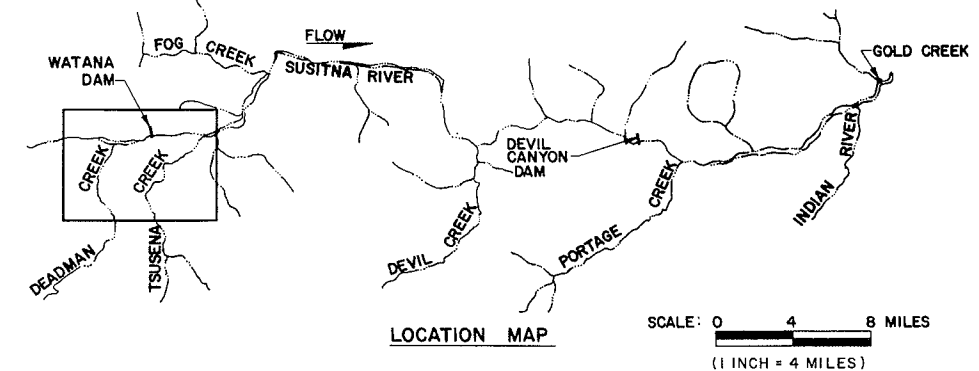
HIGH LEVEL SUSITNA RIVER BRIDGE
SCALE C



TYPICAL CROSS SECTION
HIGH LEVEL SUSITNA RIVER BRIDGE
SCALE D



APAC	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
ACCESS PLAN TYPICAL DETAILS	
EXHIBIT F	PLATE F 33

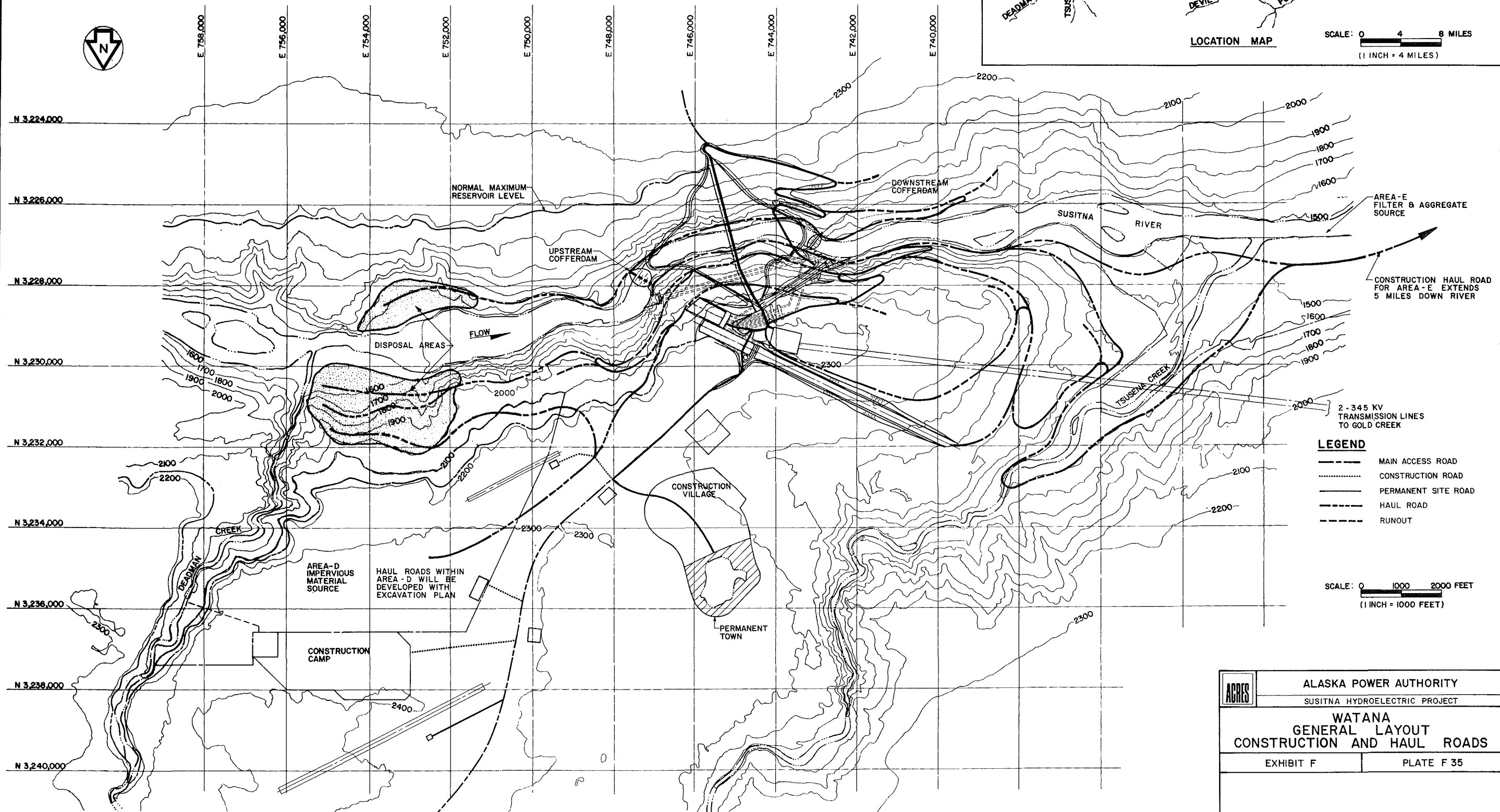


LEGEND

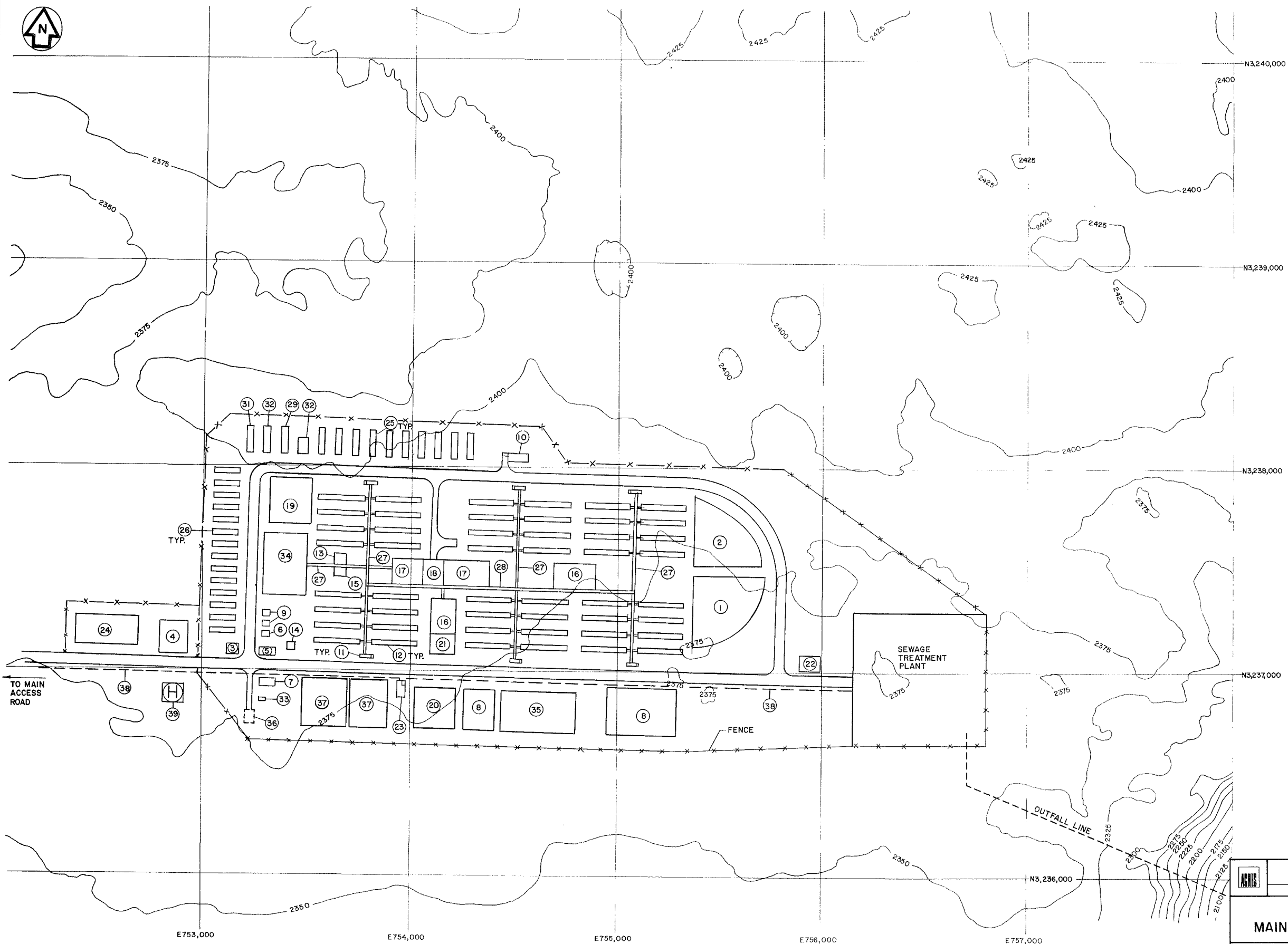
- MAIN ACCESS ROAD
- CONSTRUCTION ROAD
- PERMANENT SITE ROAD
- - - UTILIDOR

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

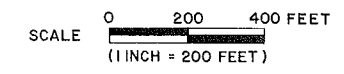
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT SITE FACILITIES		
EXHIBIT F		PLATE F 34



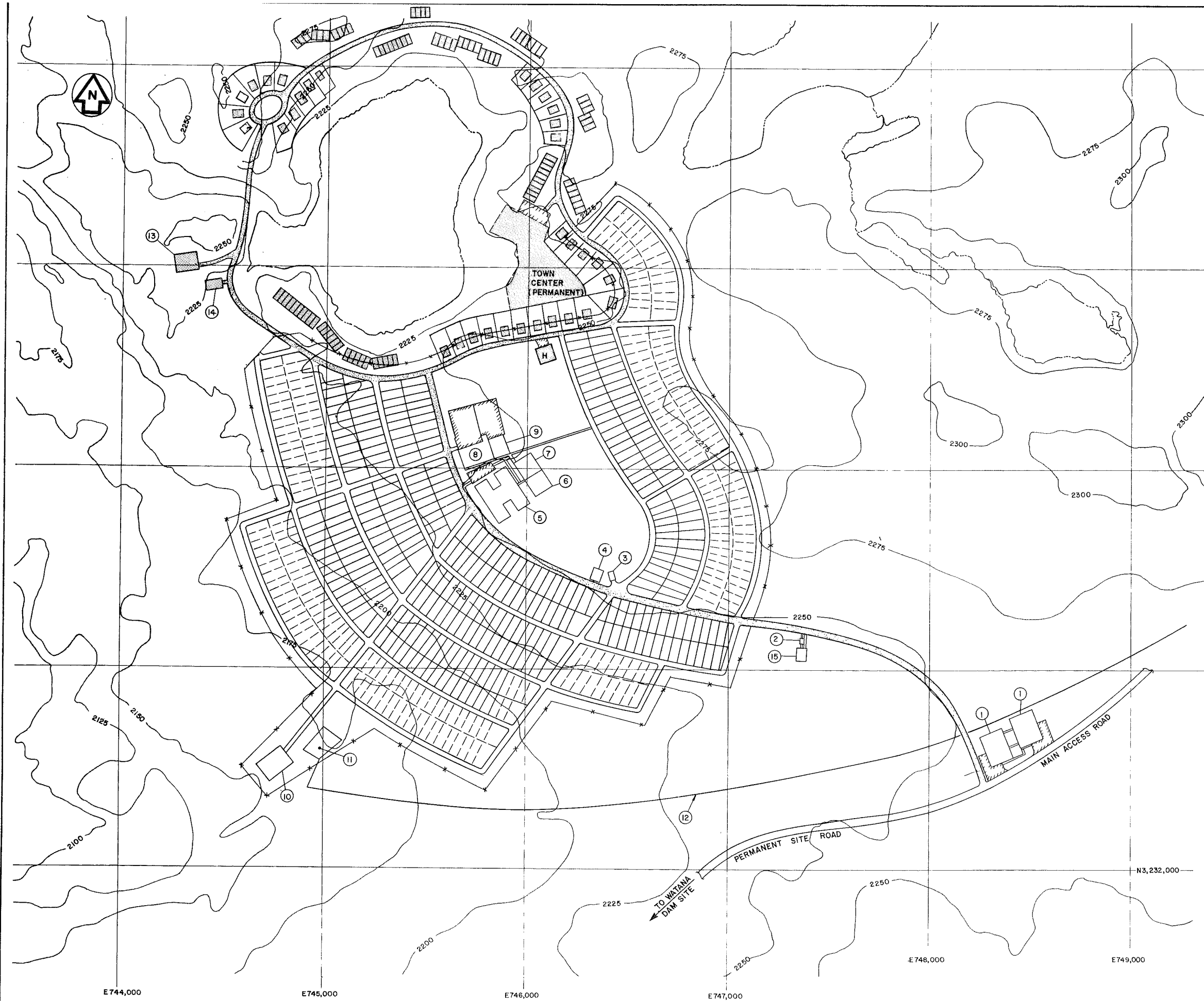
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT CONSTRUCTION AND HAUL ROADS		
EXHIBIT F		PLATE F 35



- 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



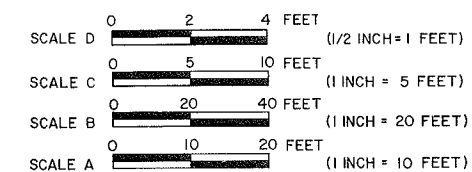
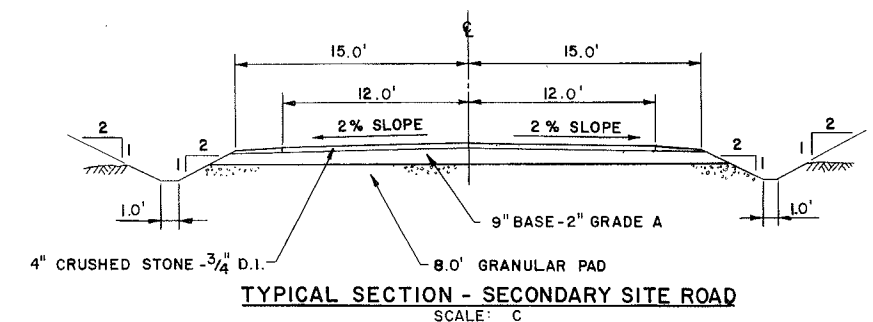
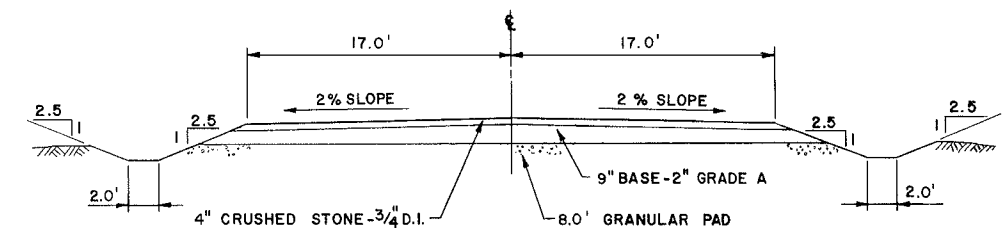
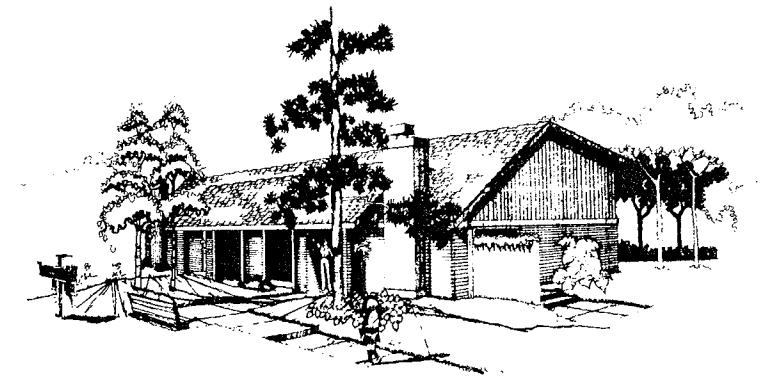
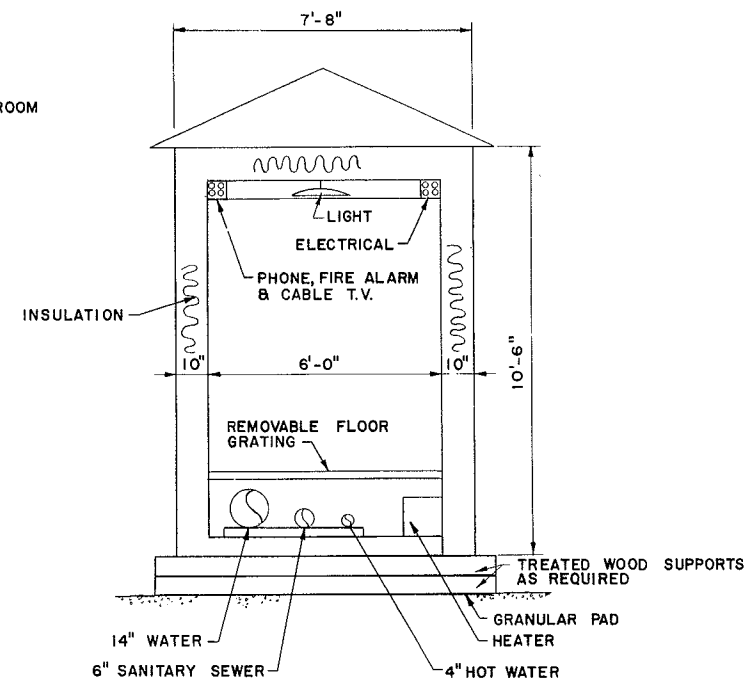
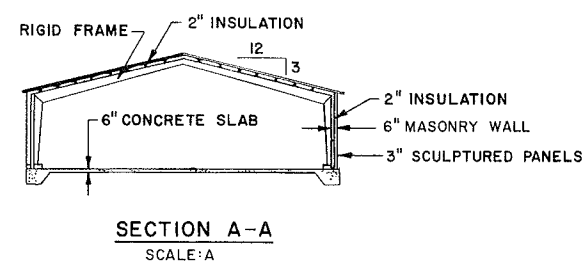
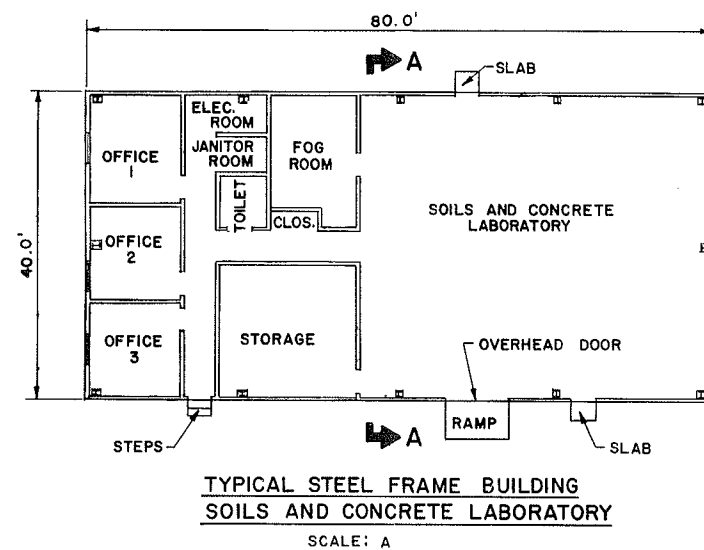
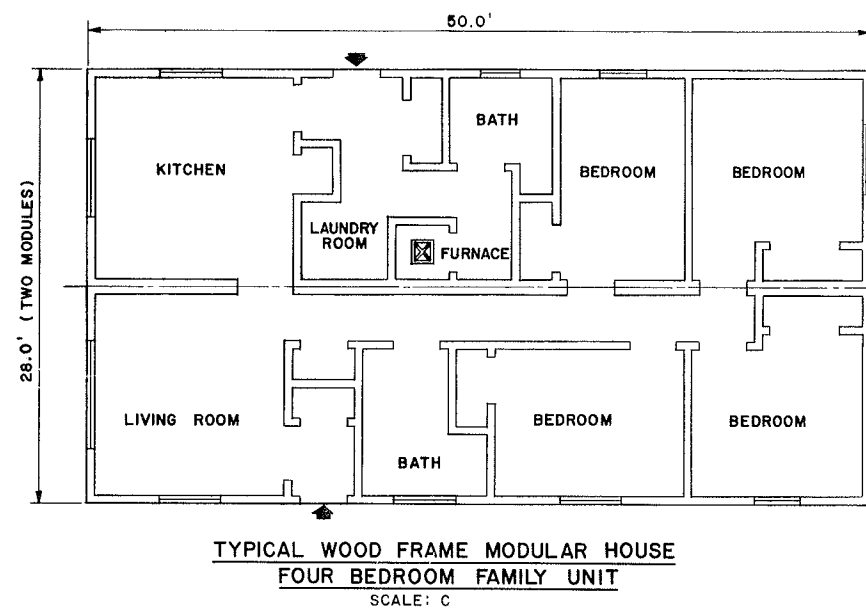
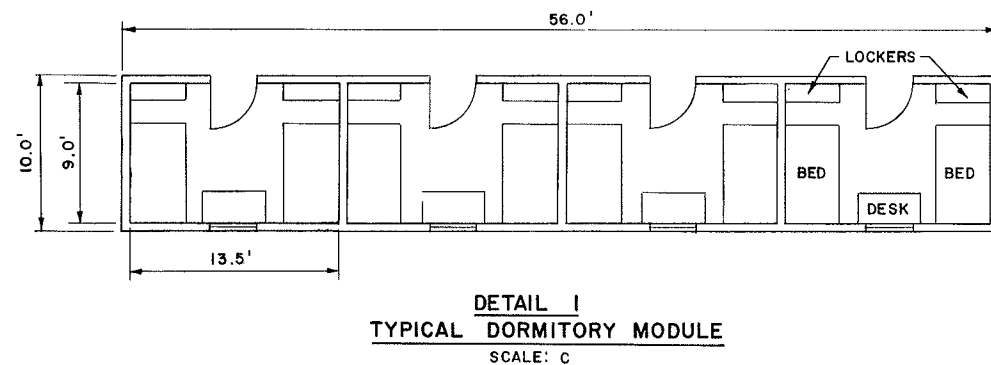
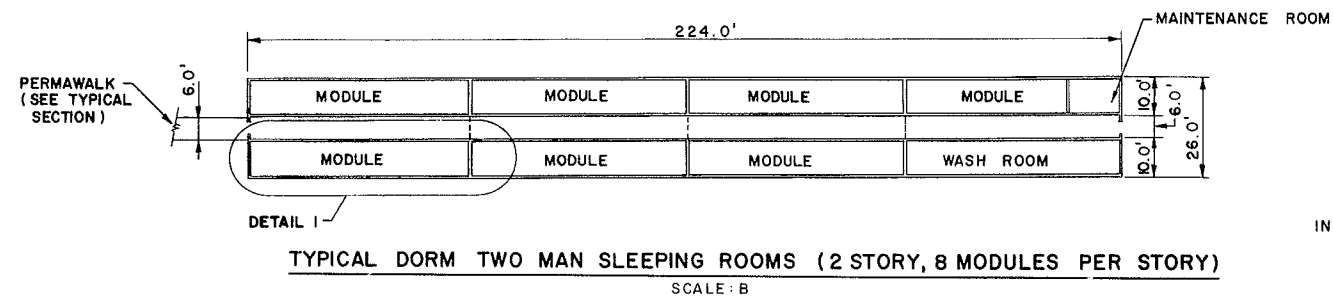
 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN CONSTRUCTION CAMP SITE	
EXHIBIT F	PLATE F36



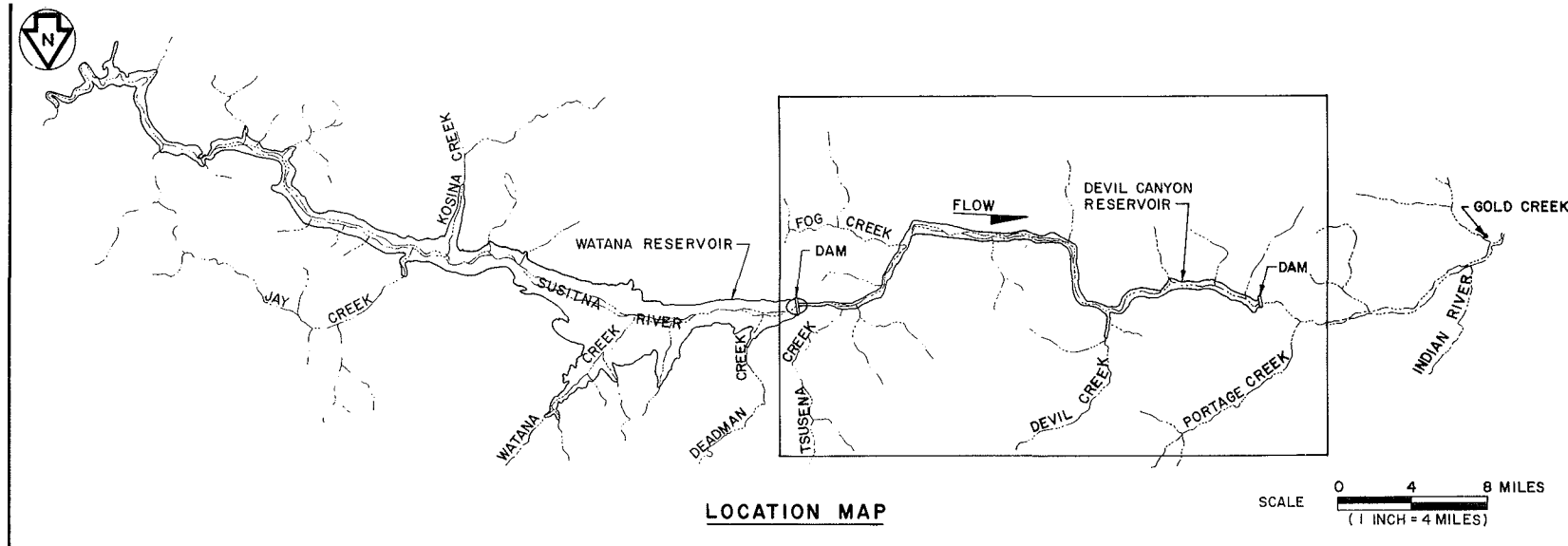
- LEGEND**
- PERMANENT NON-RESIDENTIAL BLDG.
 - PERMANENT ROAD
 - PERMANENT MULTIFAMILY DWELLINGS
72 UNITS FURNISHED BY YEAR 1992
16 UNITS " " " 2001
 - PERMANENT SINGLE FAMILY DWELLINGS
21 UNITS FURNISHED BY YEAR 1992
6 UNITS " " " 2001
 - PERMANENT HOSPITAL
 - TEMPORARY HOUSING/UTILITIES
FURNISHED 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 MANAGERS 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



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



LOCATION MAP

LEGEND

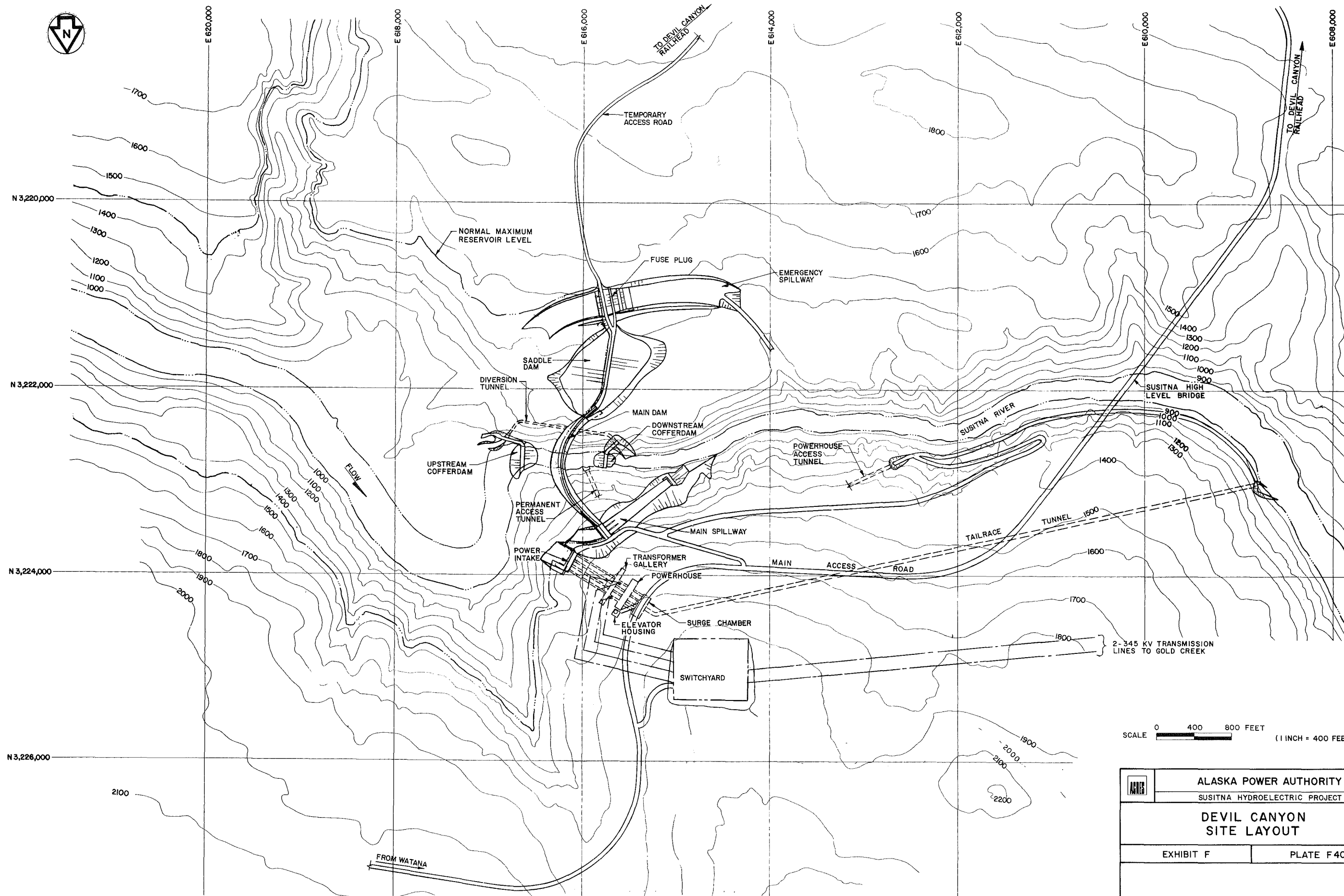
- NORMAL MAXIMUM OPERATING LEVEL EL. 1455
- 2000 CONTOUR IN FEET ABOVE MSL



PLAN

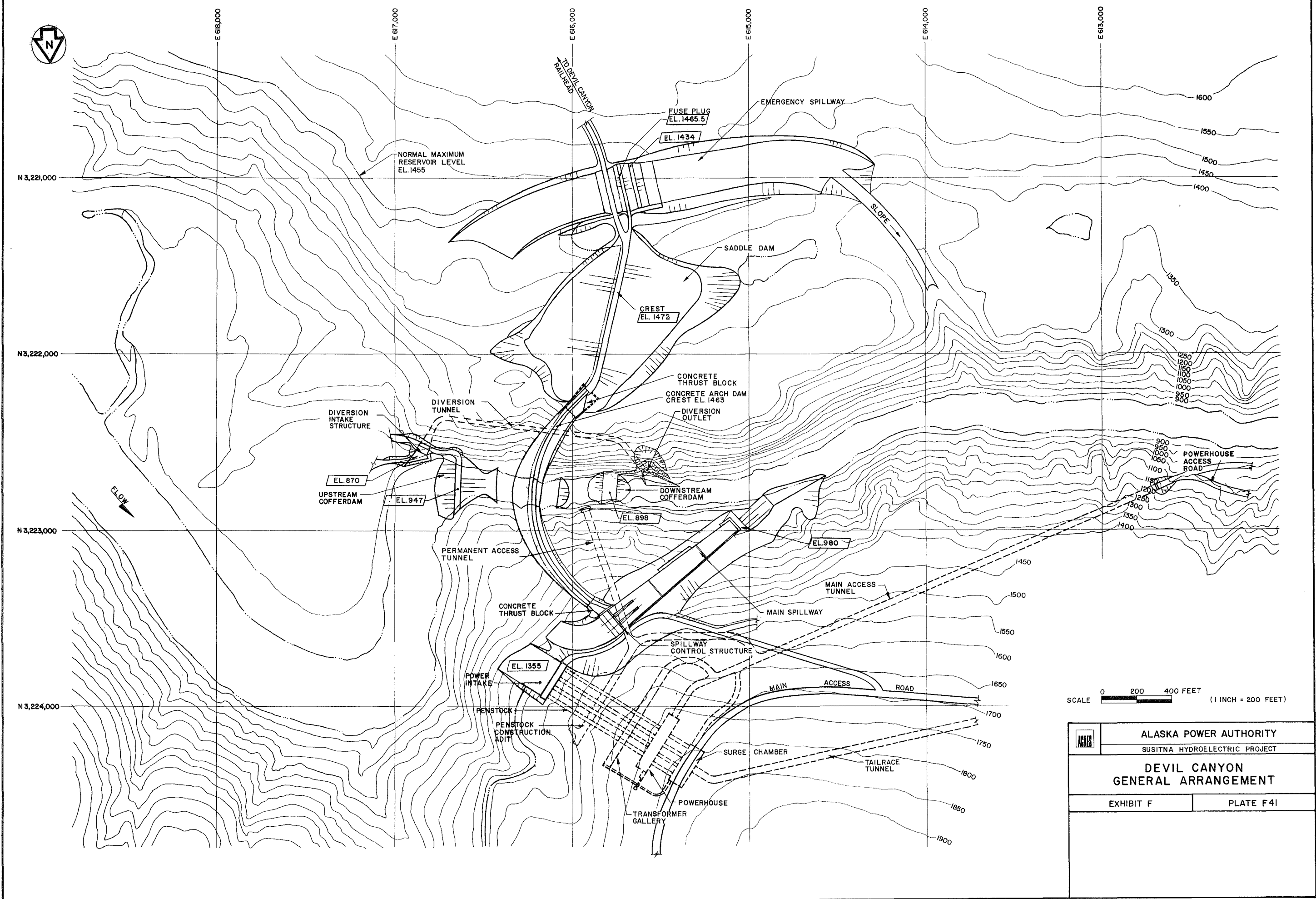
SCALE 0 1 2 MILES
(1 INCH = 1 MILE)

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



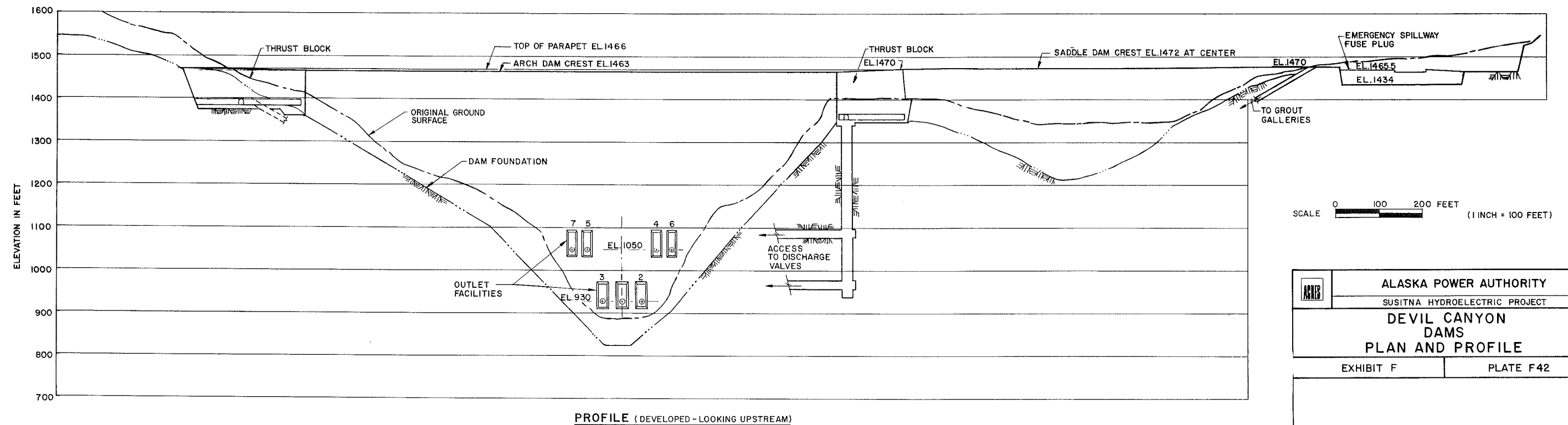
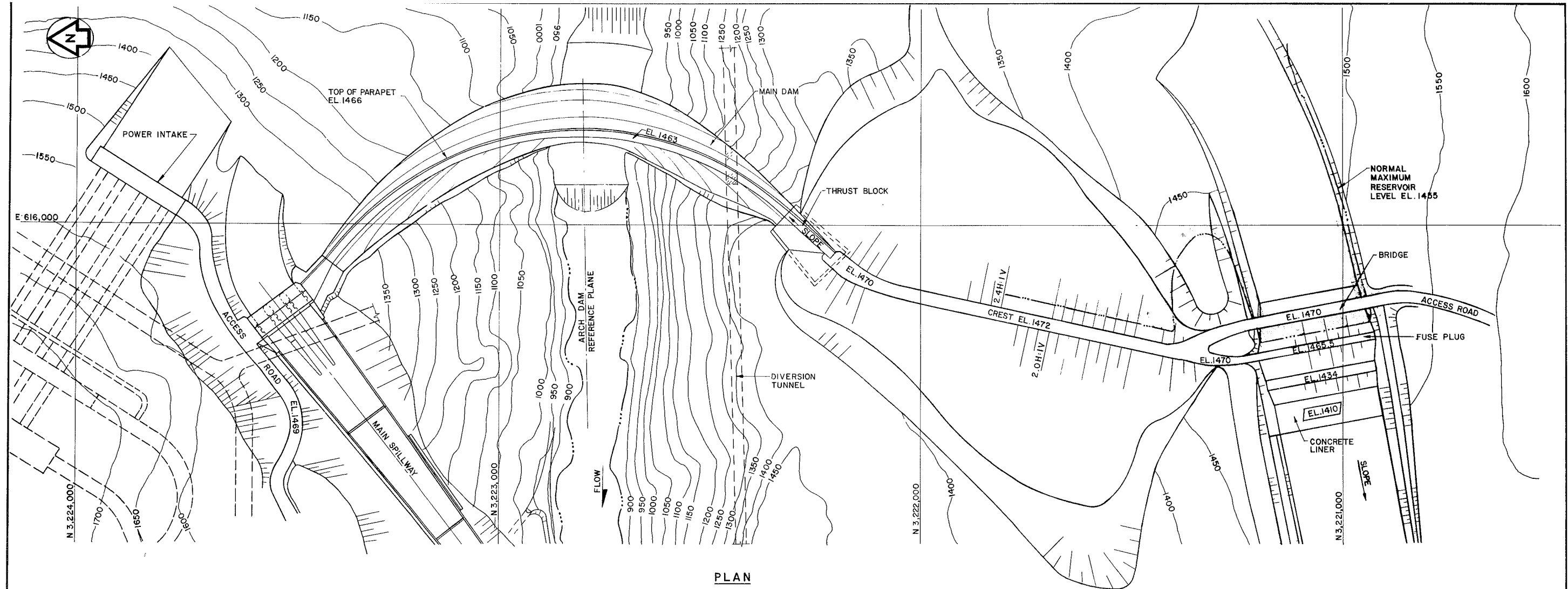
SCALE 0 400 800 FEET
(1 INCH = 400 FEET)

	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



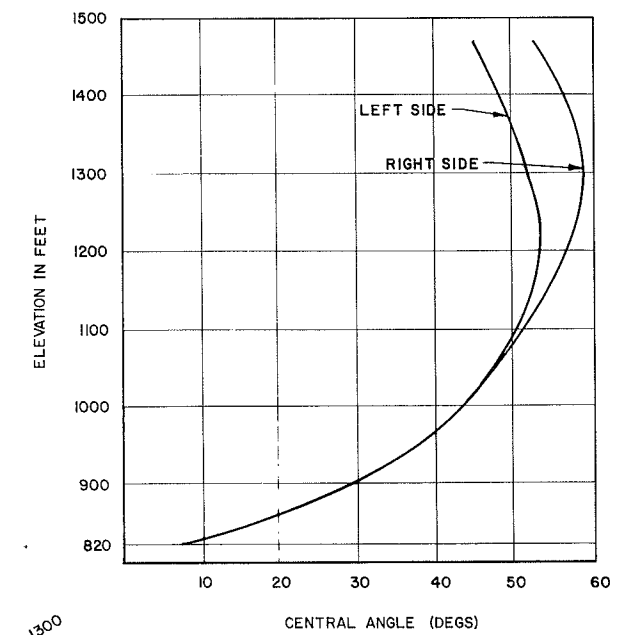
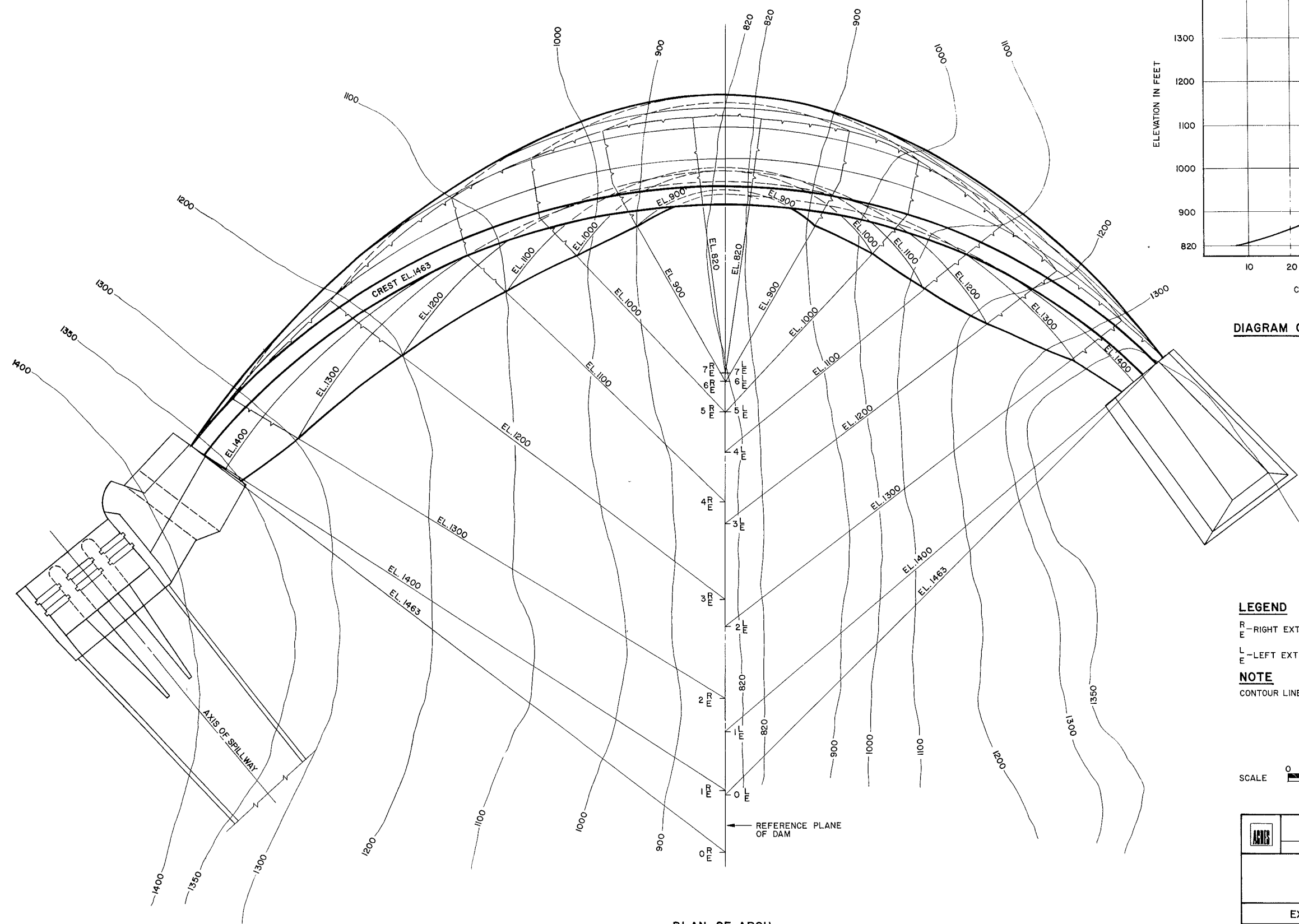


DIAGRAM OF CENTRAL ANGLES

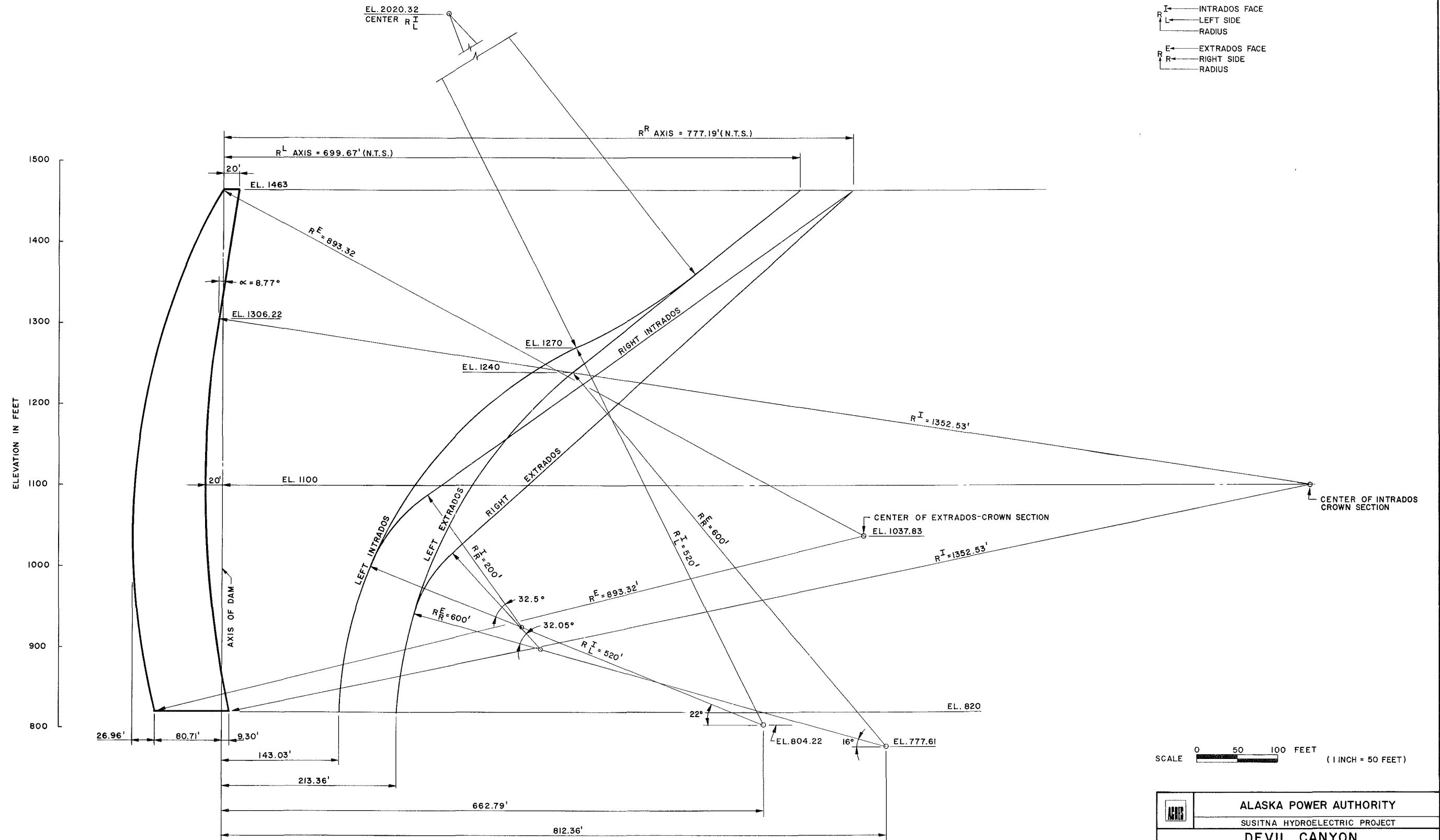
LEGEND
 R
E
-RIGHT EXTRADOS
 L
E
-LEFT EXTRADOS

NOTE
 CONTOUR LINES SHOW SOUND ROCK

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

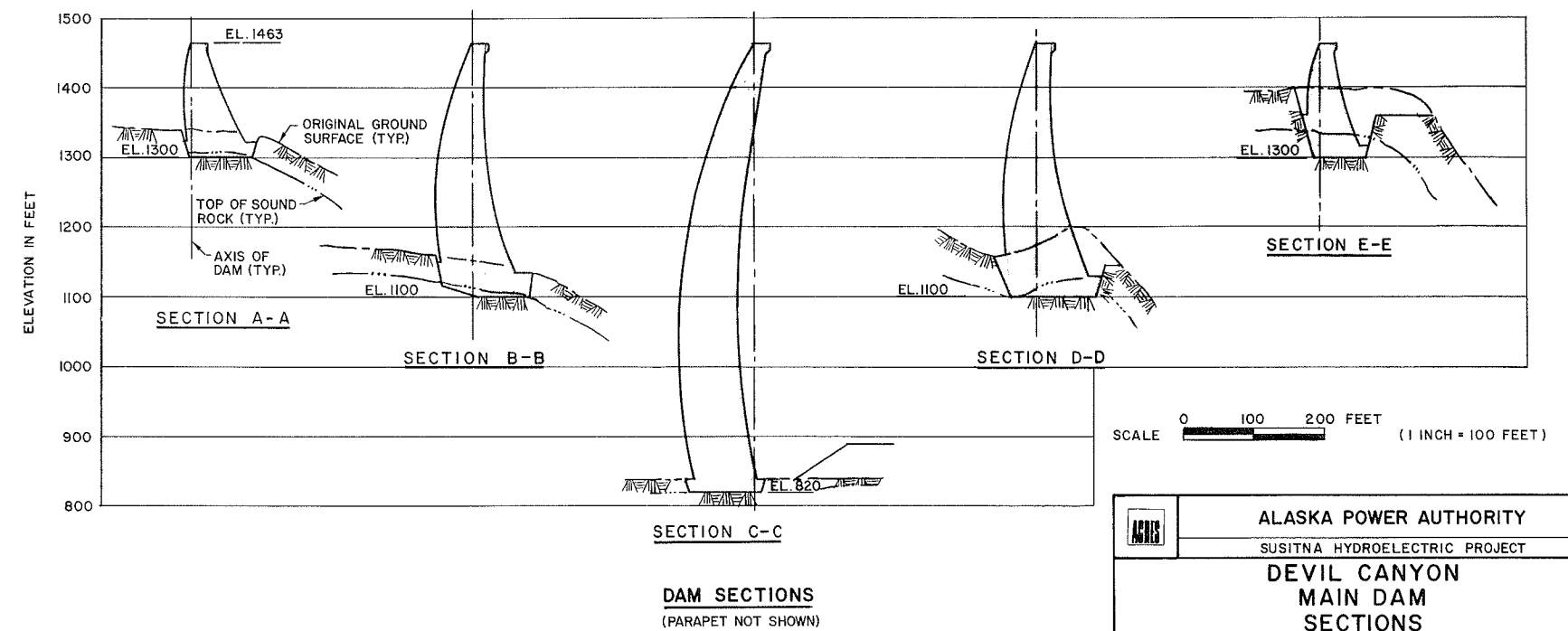
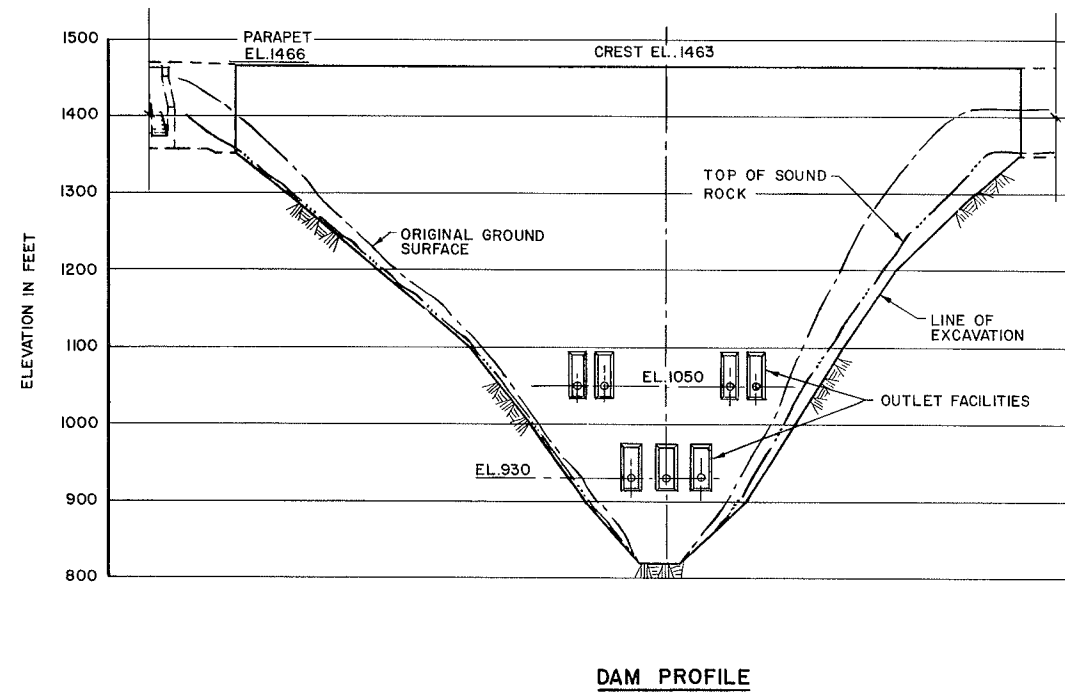
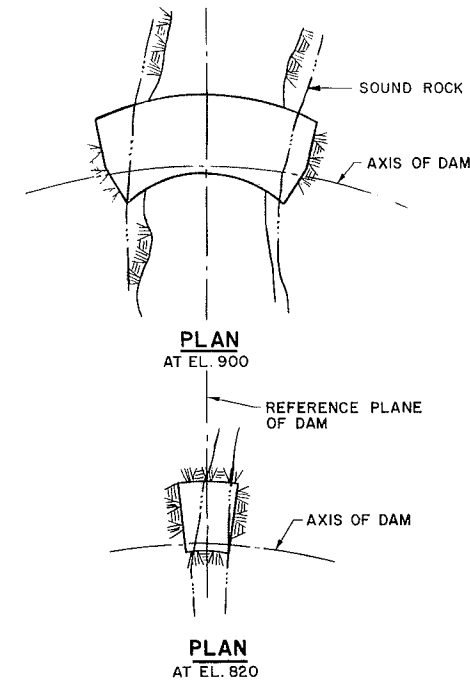
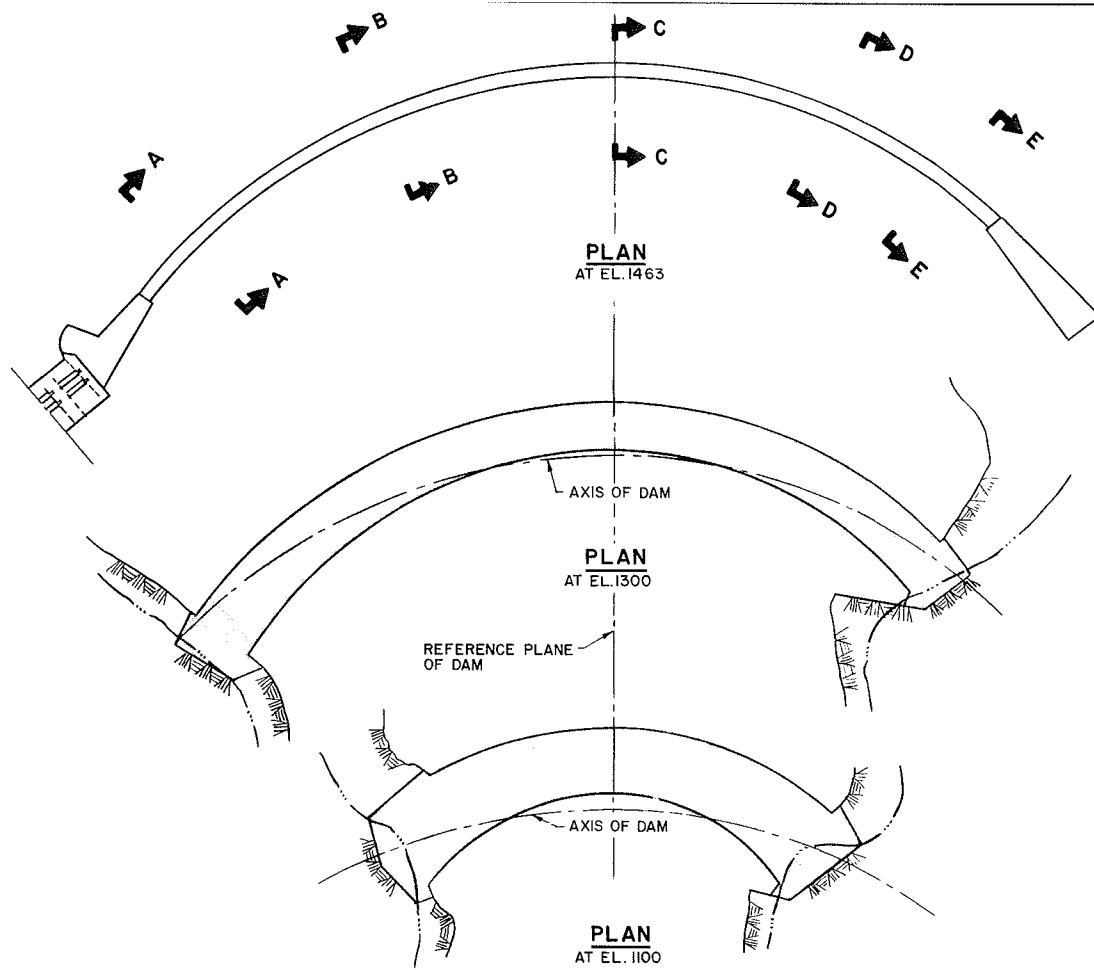
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM GEOMETRY	
EXHIBIT F	PLATE F 43

PLAN OF ARCH

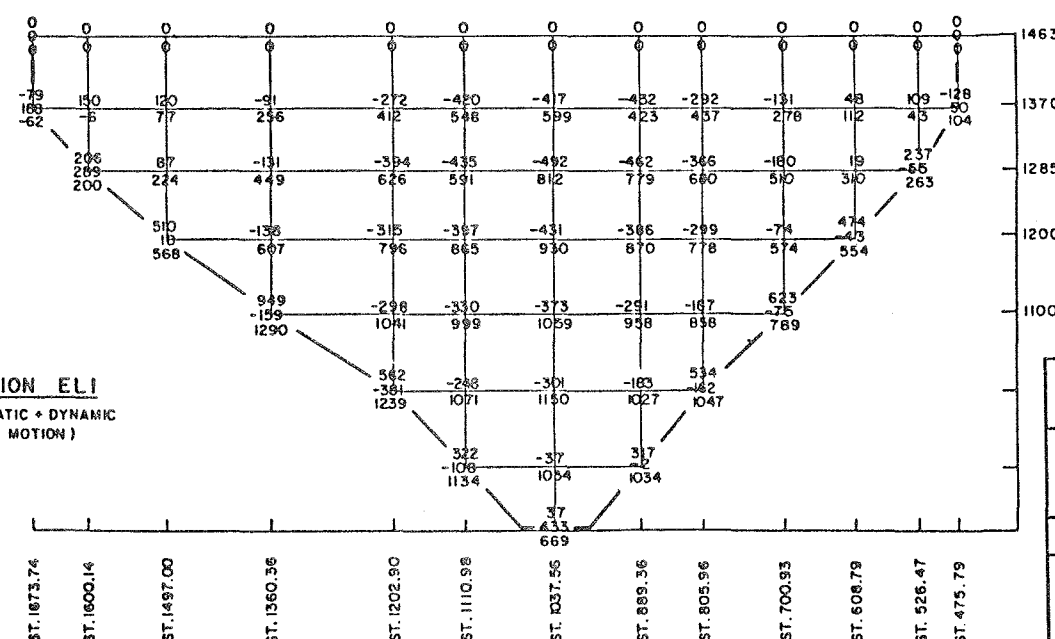
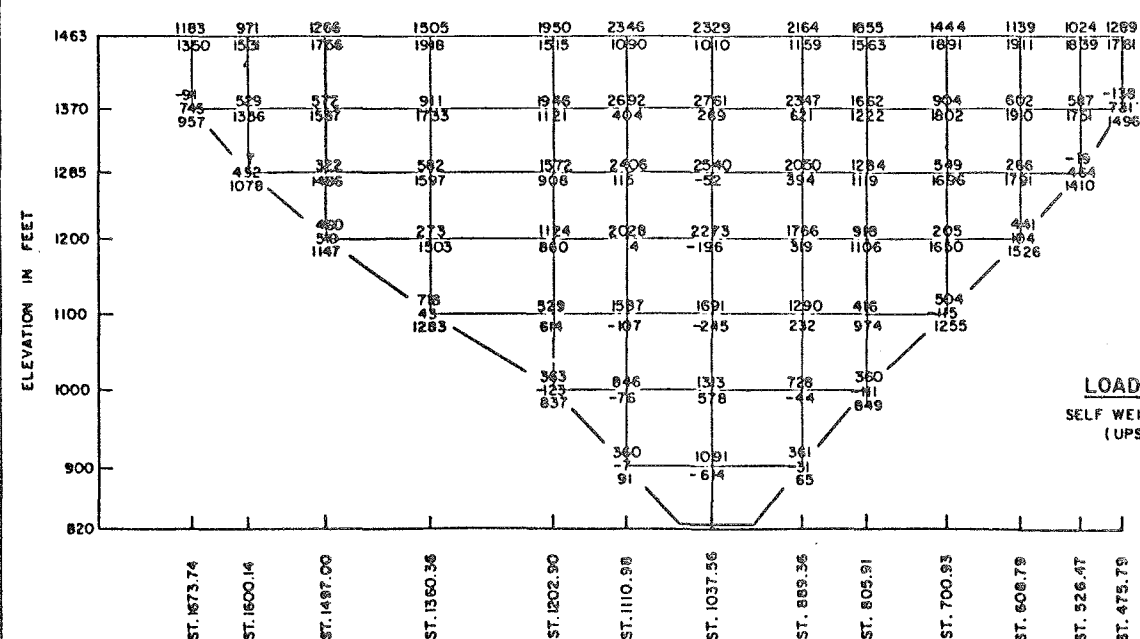
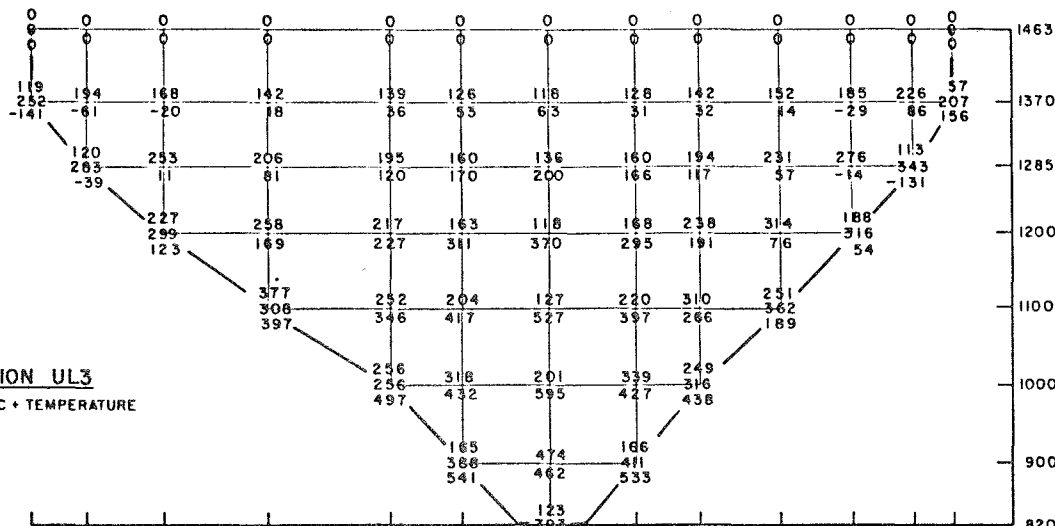
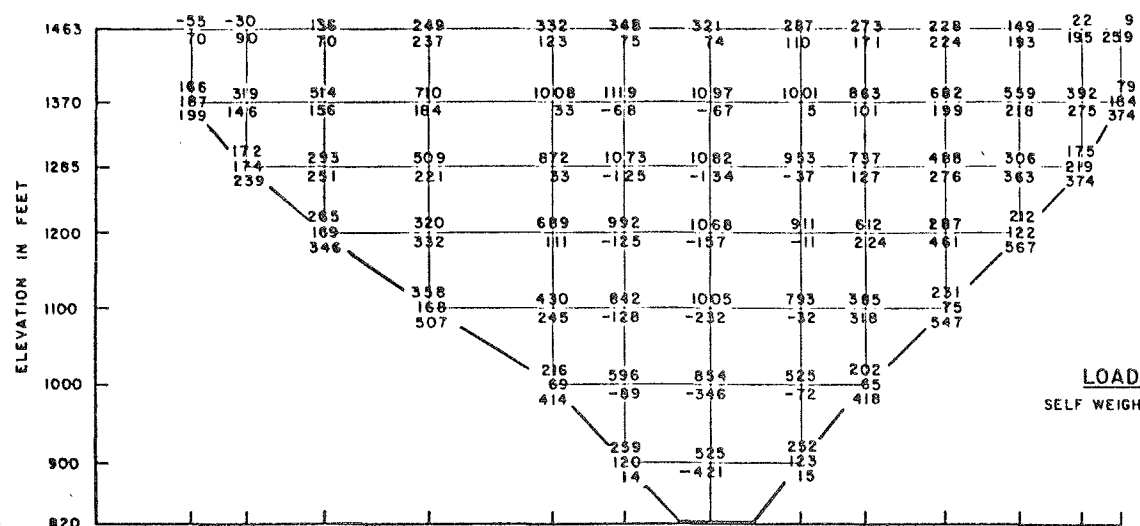
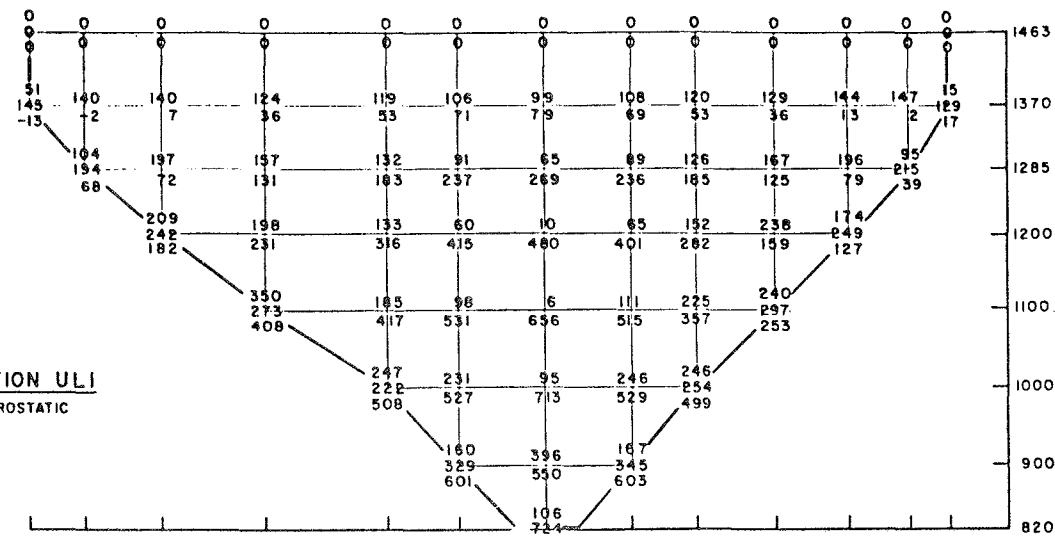
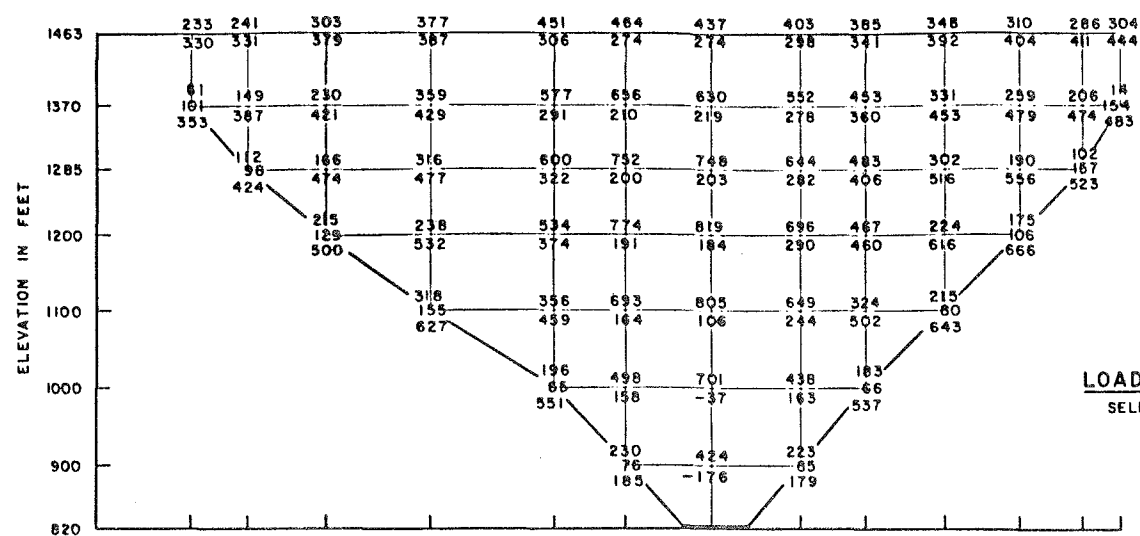


SCALE 0 50 100 FEET (1 INCH = 50 FEET)

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



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



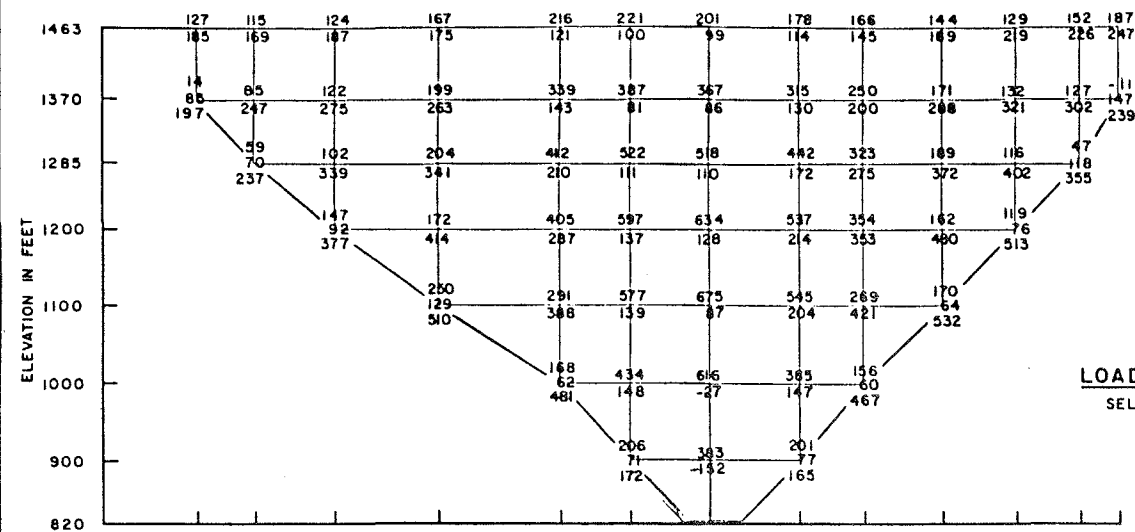
LEGEND

- (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

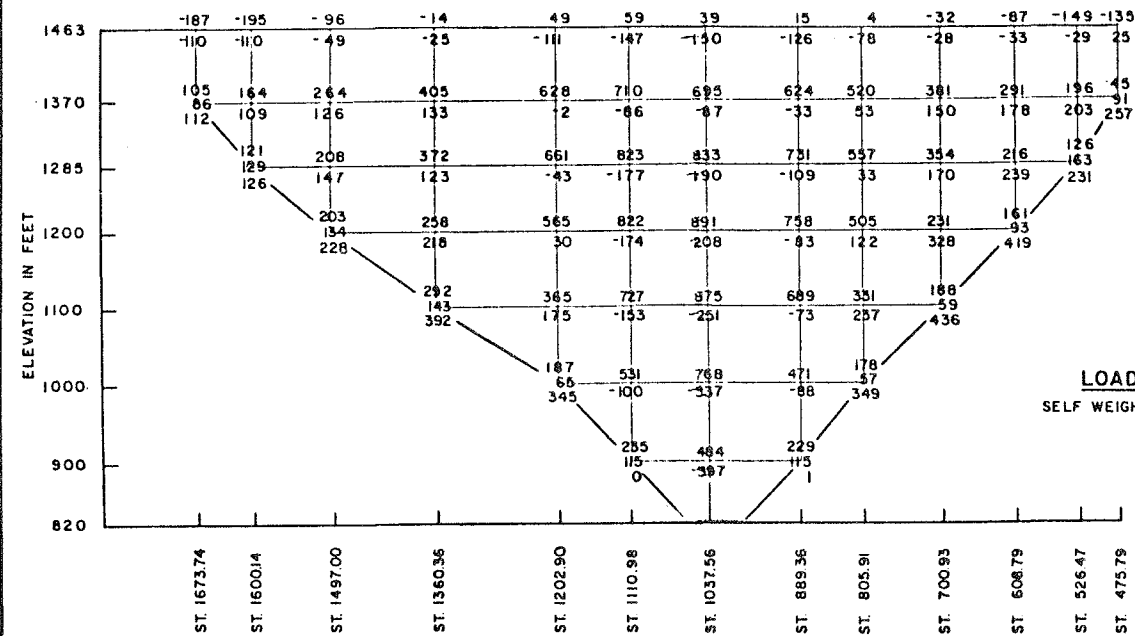
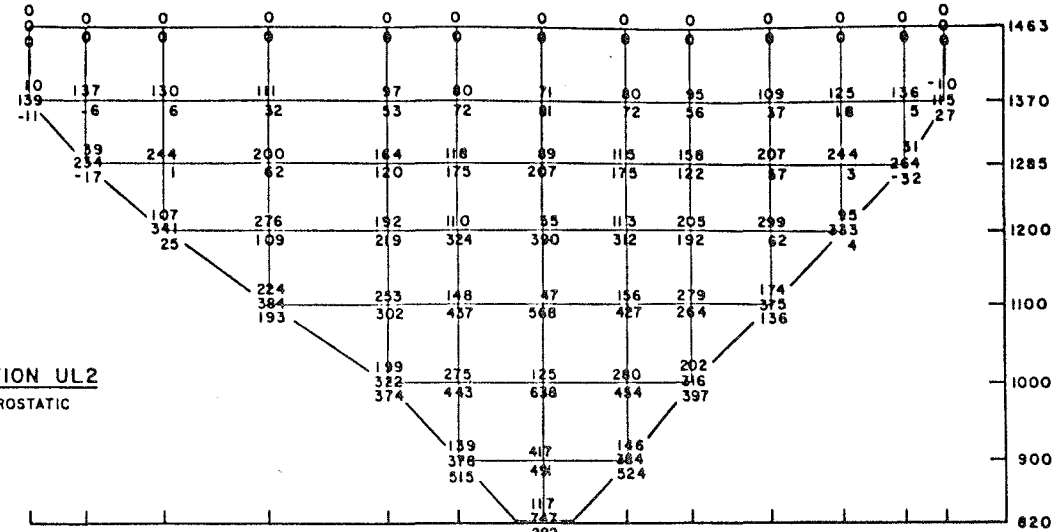
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
**DEVIL CANYON ARCH DAM STRESSES
RESERVOIR AT EL. 1455**
EXHIBIT F PLATE F45 A

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

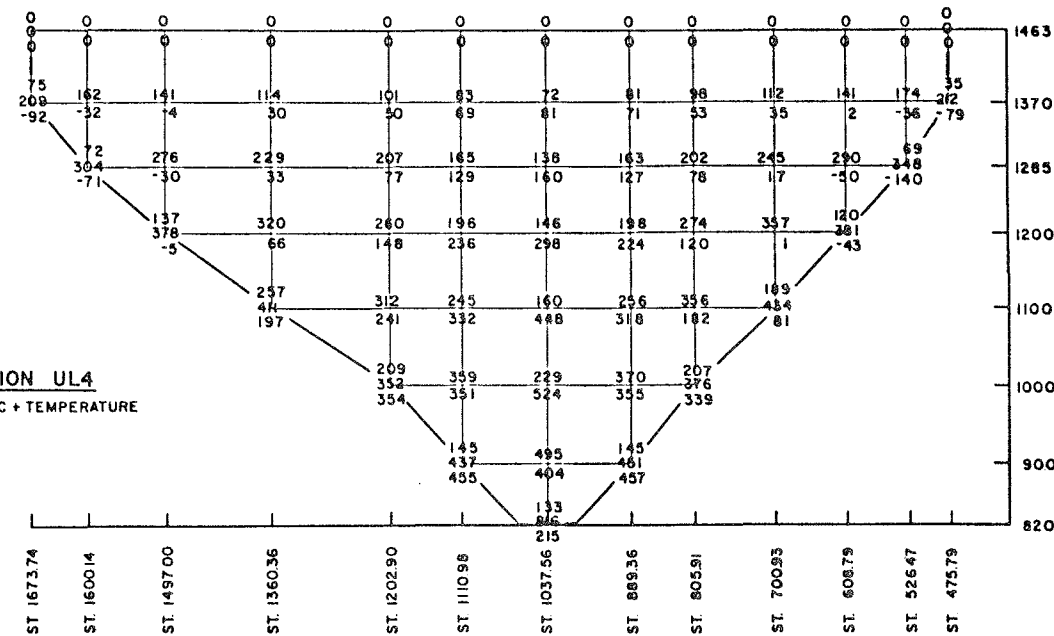
CANTILEVER STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)



LOAD COMBINATION UL2
SELF WEIGHT + HYDROSTATIC



LOAD COMBINATION UL4
SELF WEIGHT + HYDROSTATIC + TEMPERATURE



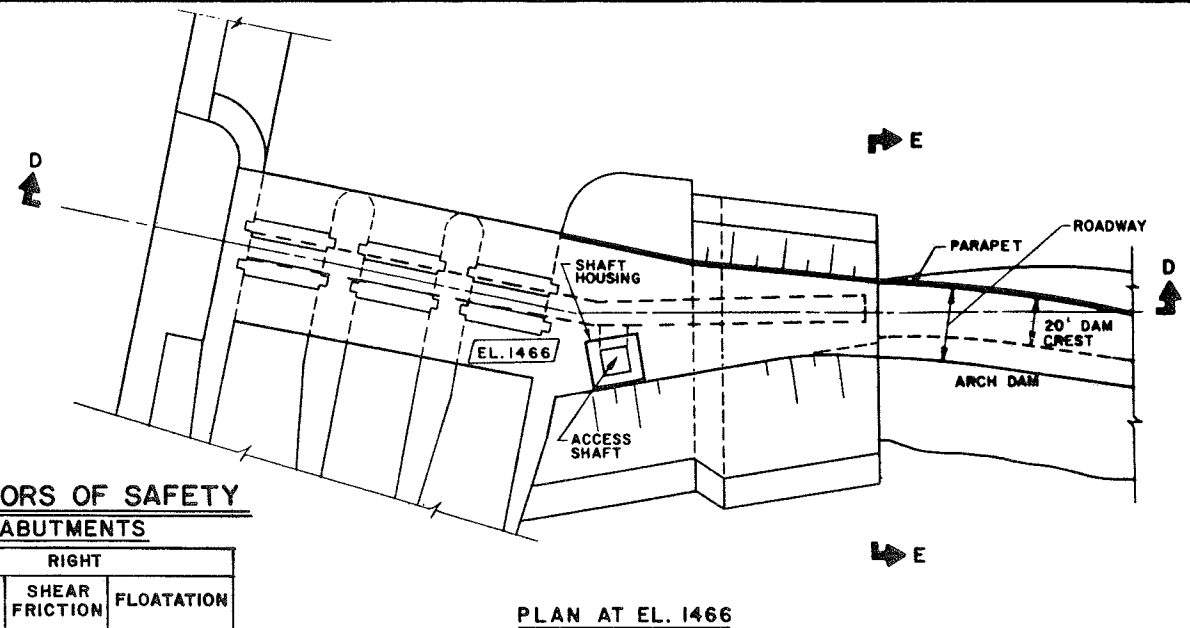
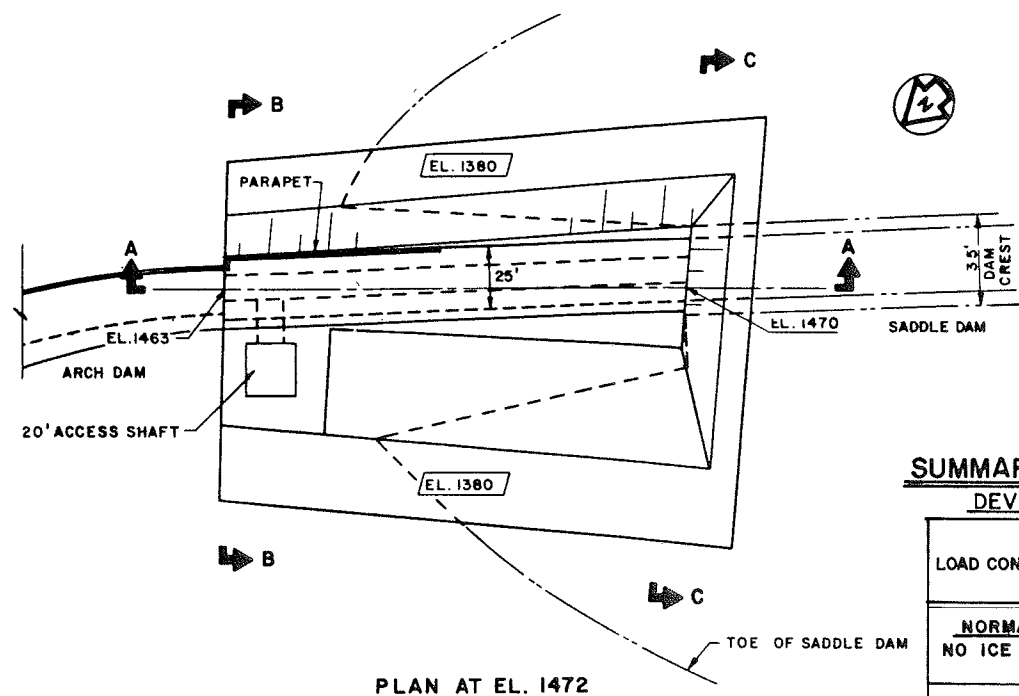
ARCH STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)

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

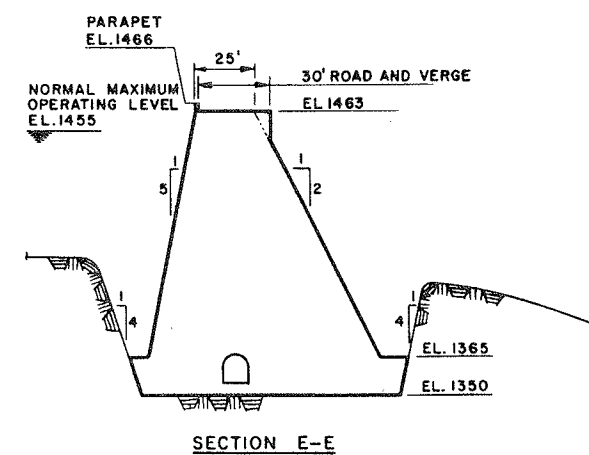
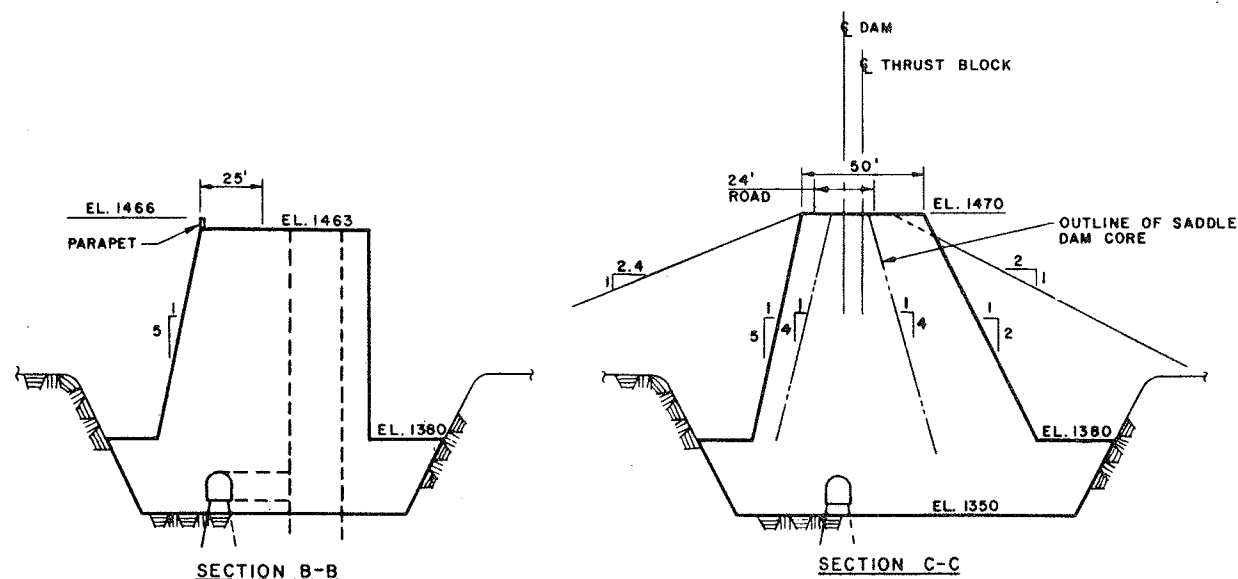
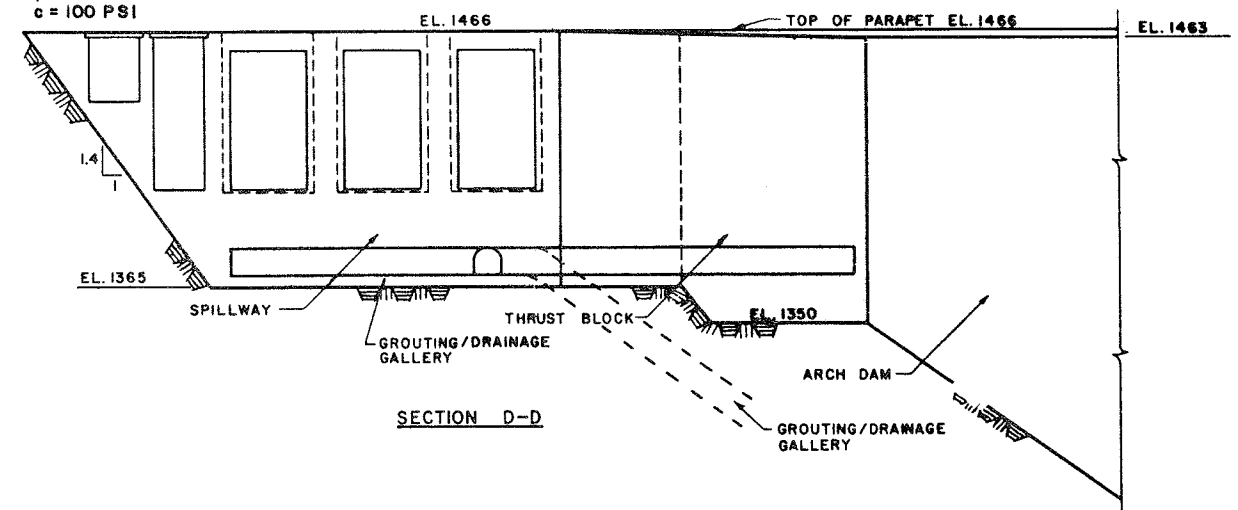
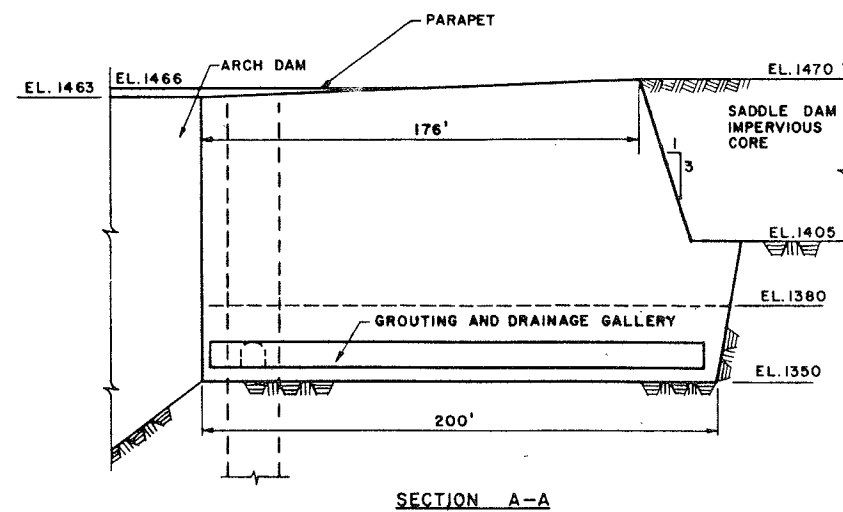
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON ARCH DAM STRESSES RESERVOIR AT EL. 1405	
EXHIBIT F	PLATE F45 B



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
<u>NORMAL</u> NO ICE	N.A.	4.54	6.37	N.A.	6.87	6.16
<u>EXTREME</u> EARTHQUAKE (0.8 SEE)	N.A.	1.04	6.45	N.A.	1.95	6.31

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

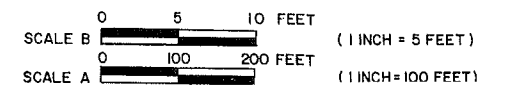
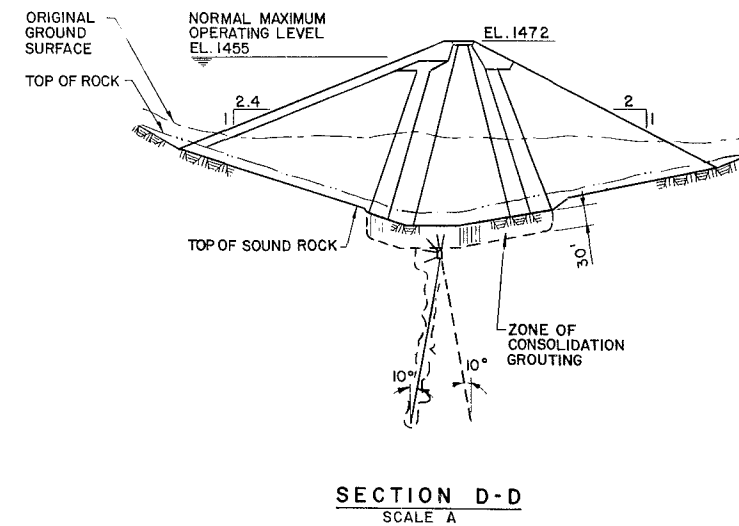
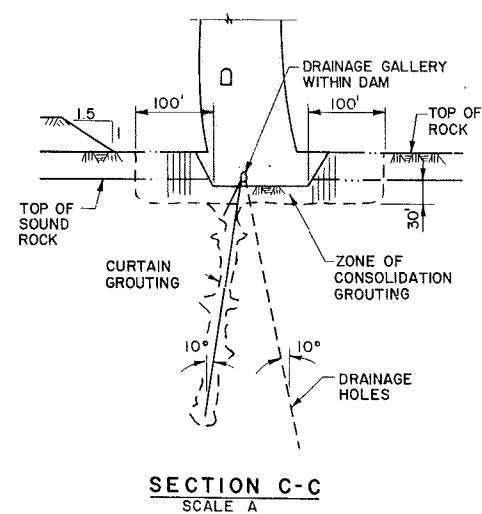
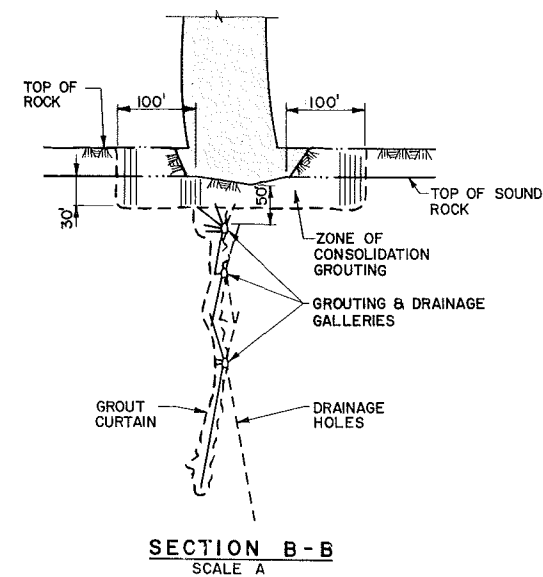
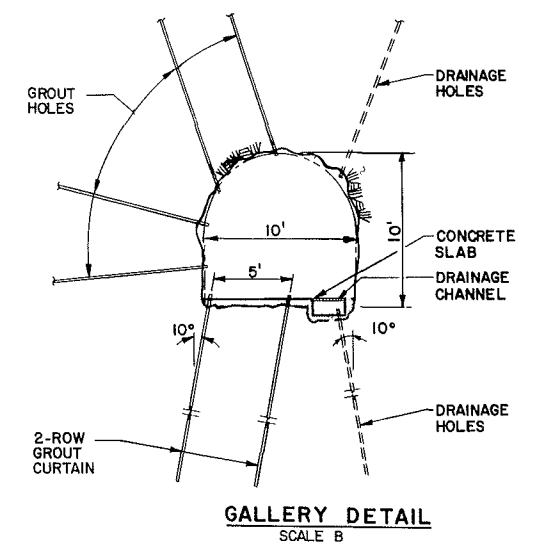
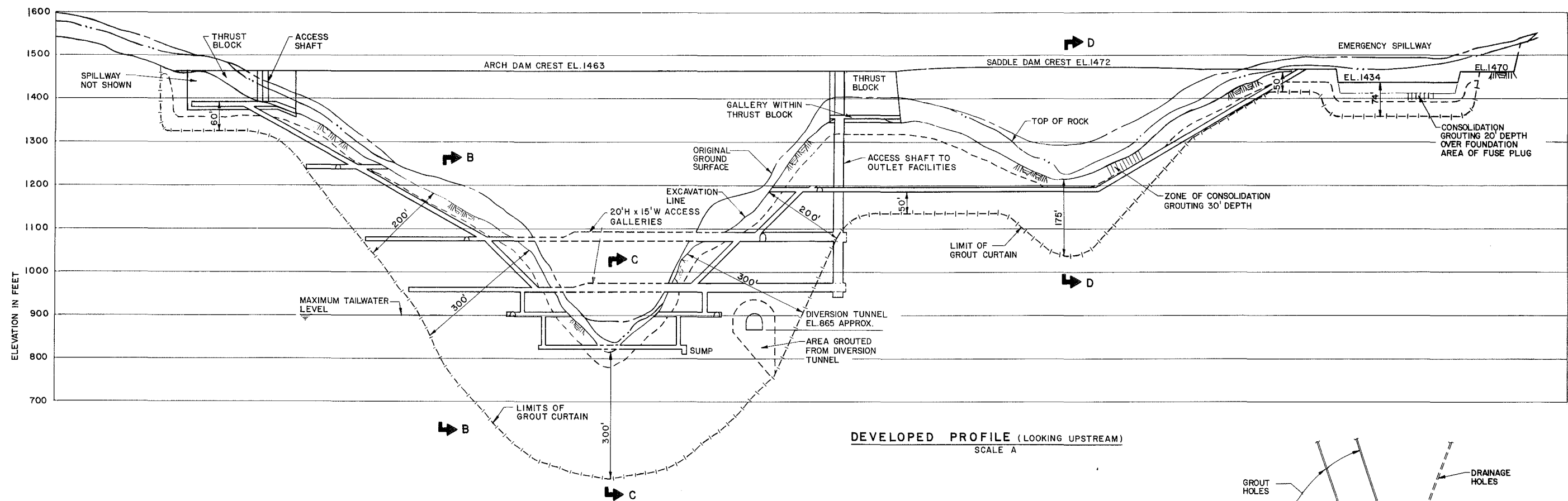


SCALE 0 30 60 FEET
(1 INCH = 30 FEET)

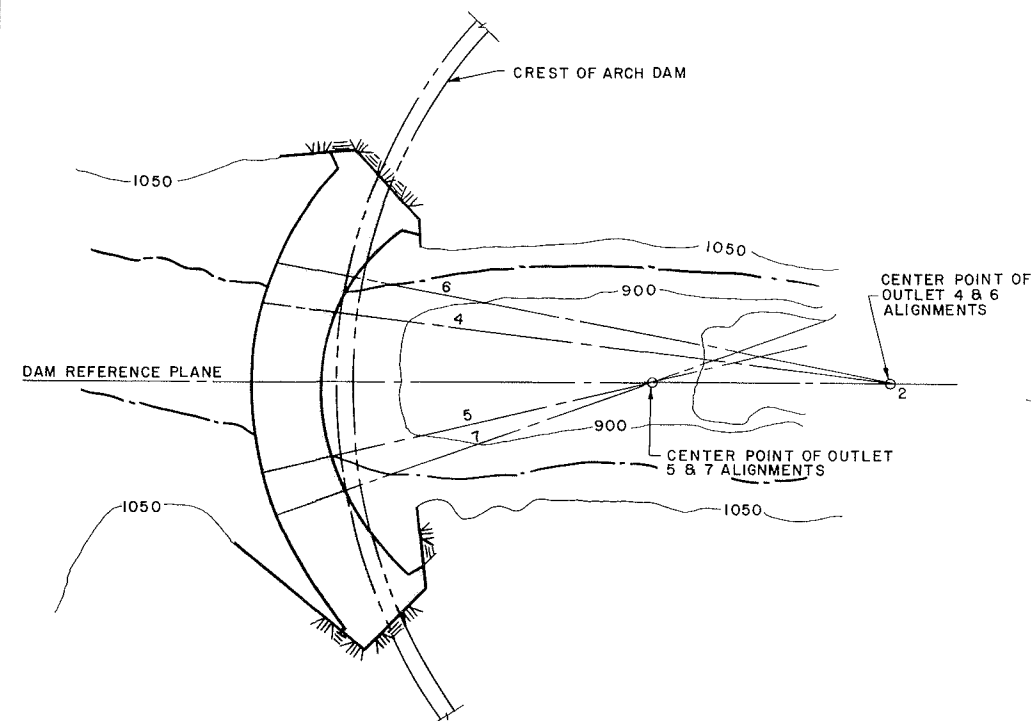
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM THRUST BLOCKS	
EXHIBIT F	PLATE F46

LEFT ABUTMENT THRUST BLOCK

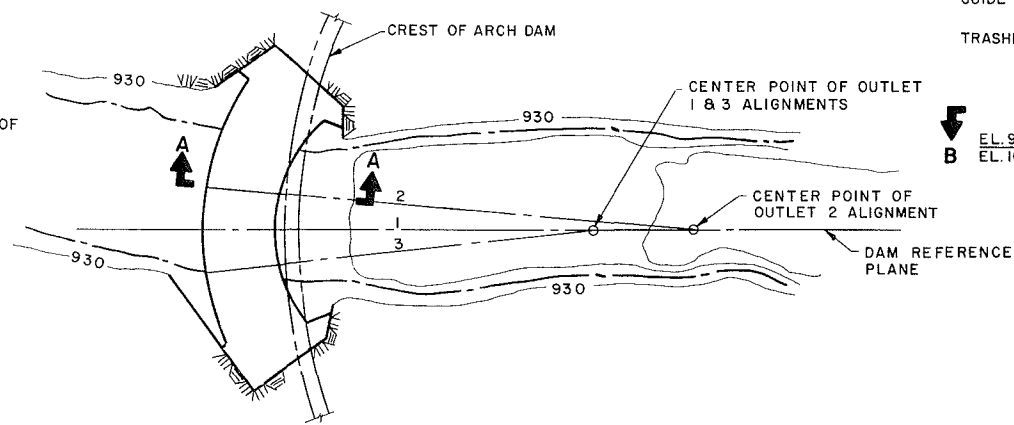
RIGHT ABUTMENT THRUST BLOCK



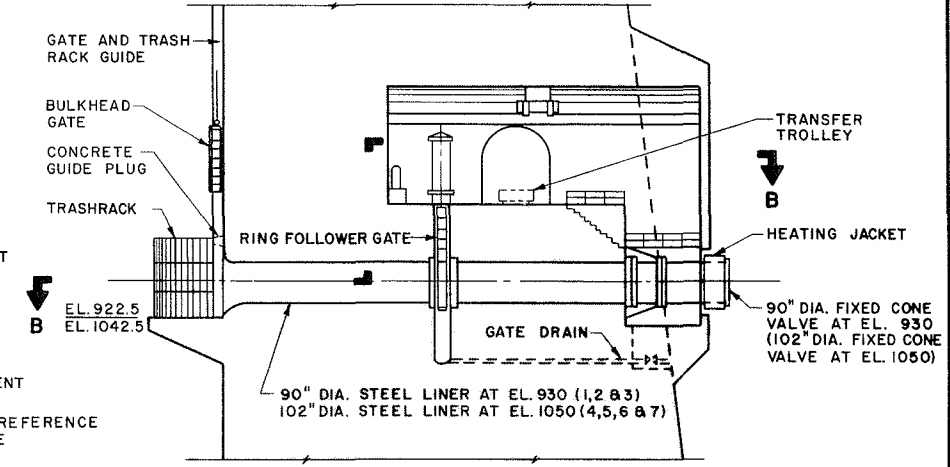
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM GROUTING AND DRAINAGE		
EXHIBIT F	PLATE F47	



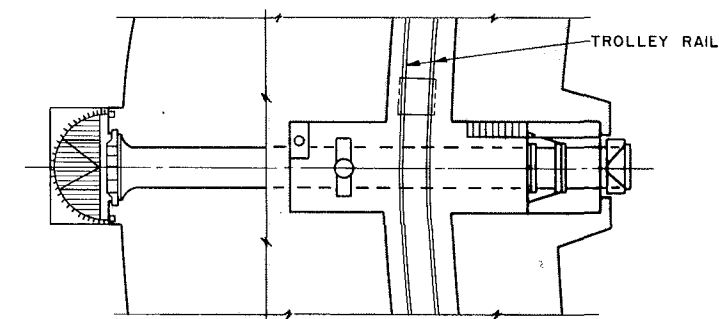
PLAN AT EL. 1050
SCALE A



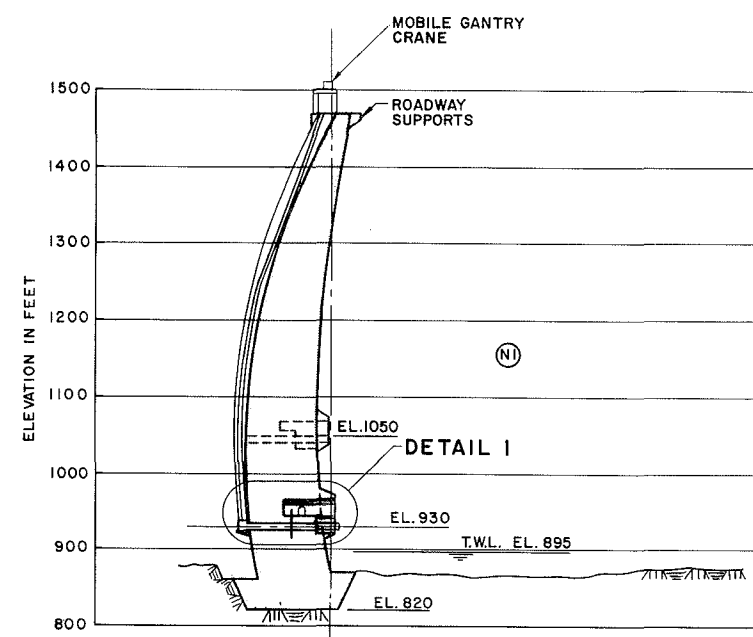
PLAN AT EL. 930
SCALE A



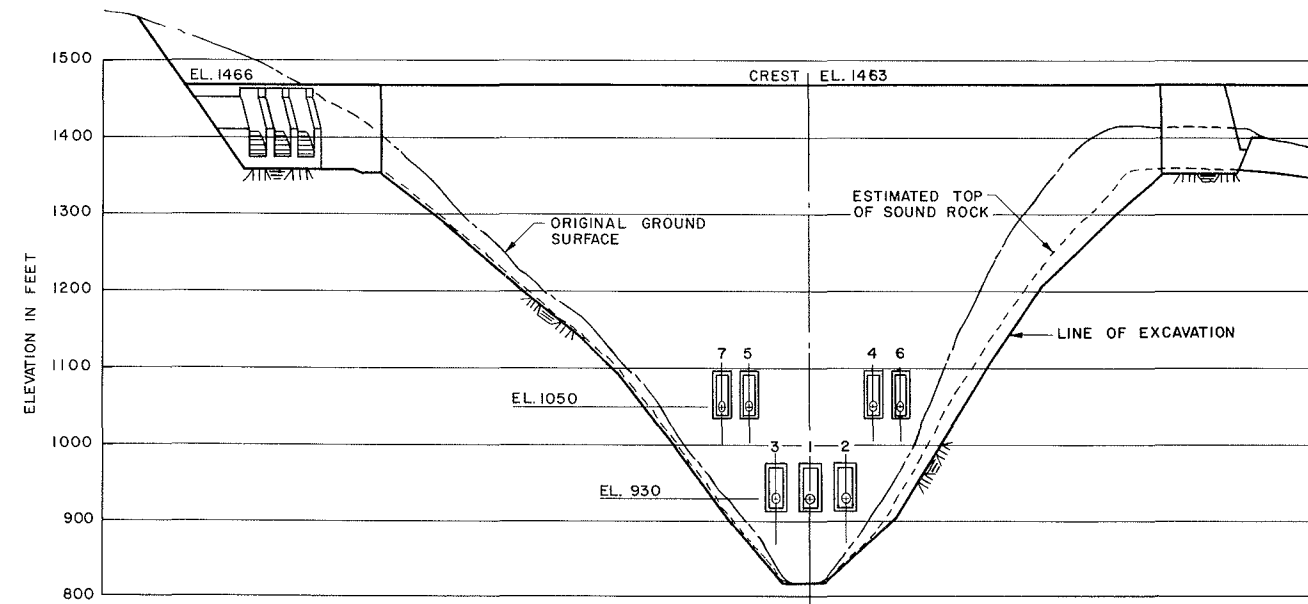
DETAIL I
SCALE B



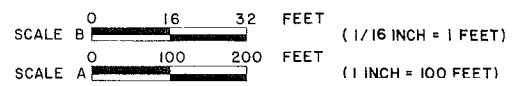
SECTION B-B
SCALE B



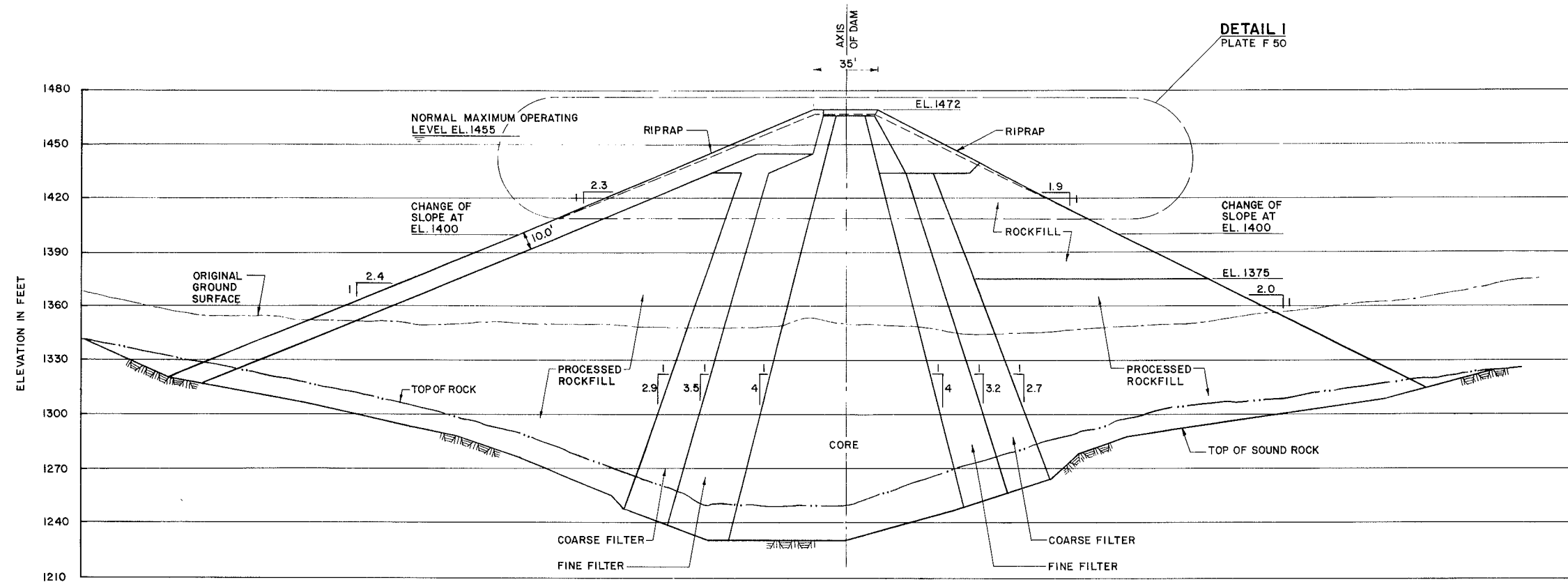
SECTION A-A (TYPICAL)
SCALE A



DAM PROFILE (PROJECTION-LOOKING UPSTREAM)
SCALE A



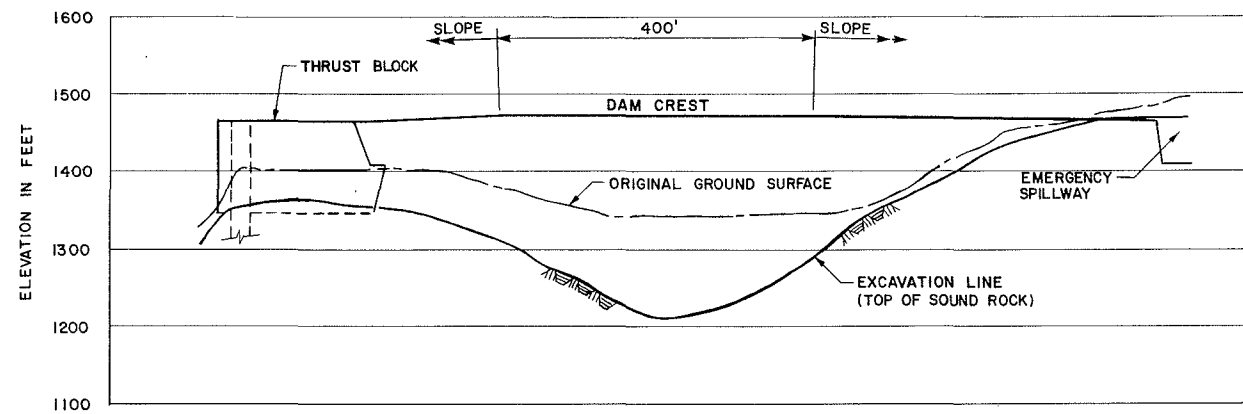
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM OUTLET FACILITIES	
EXHIBIT F	PLATE F 48



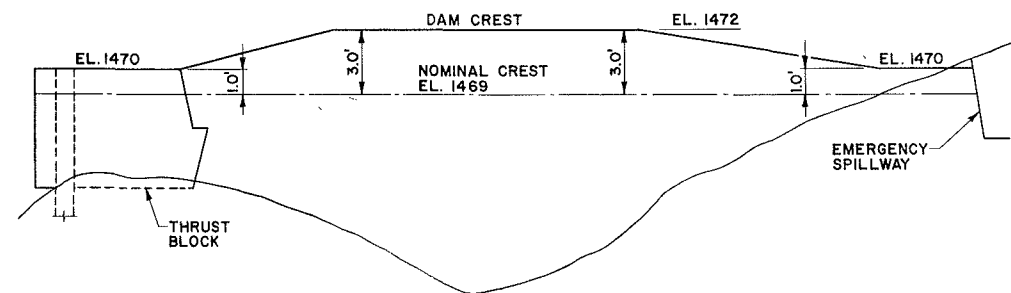
SECTION THROUGH SADDLE DAM
AT MAXIMUM HEIGHT

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

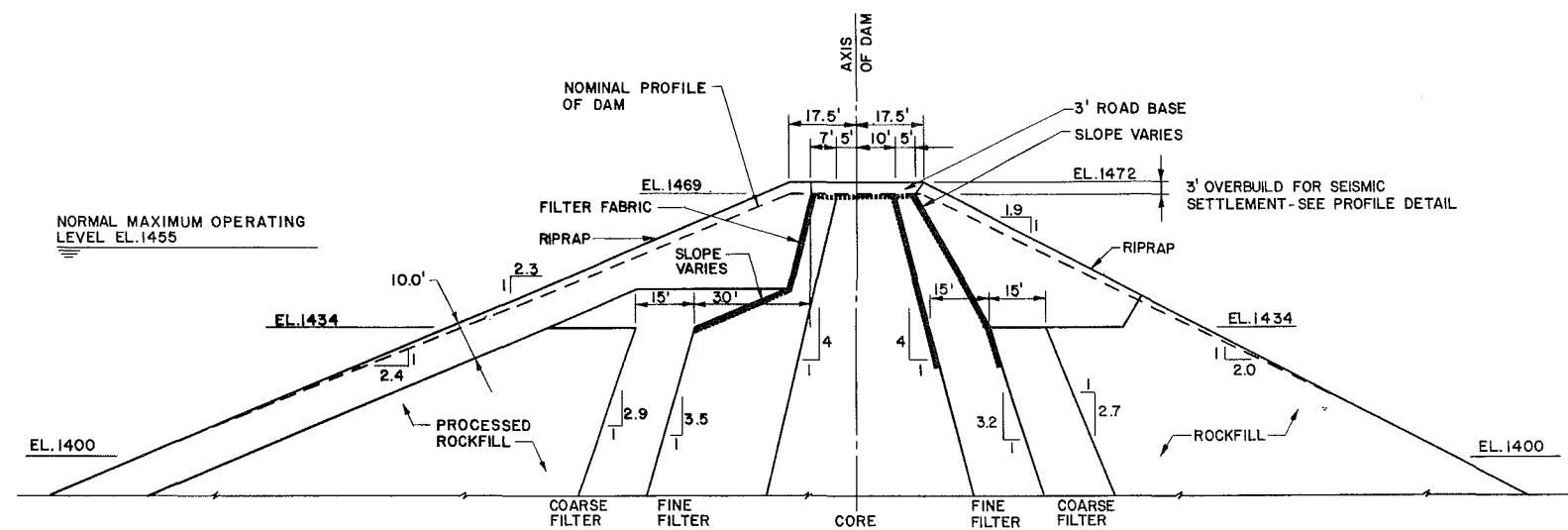
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SADDLE DAM SECTION		
EXHIBIT F		PLATE F49



PROFILE (LOOKING UPSTREAM)
SCALE A



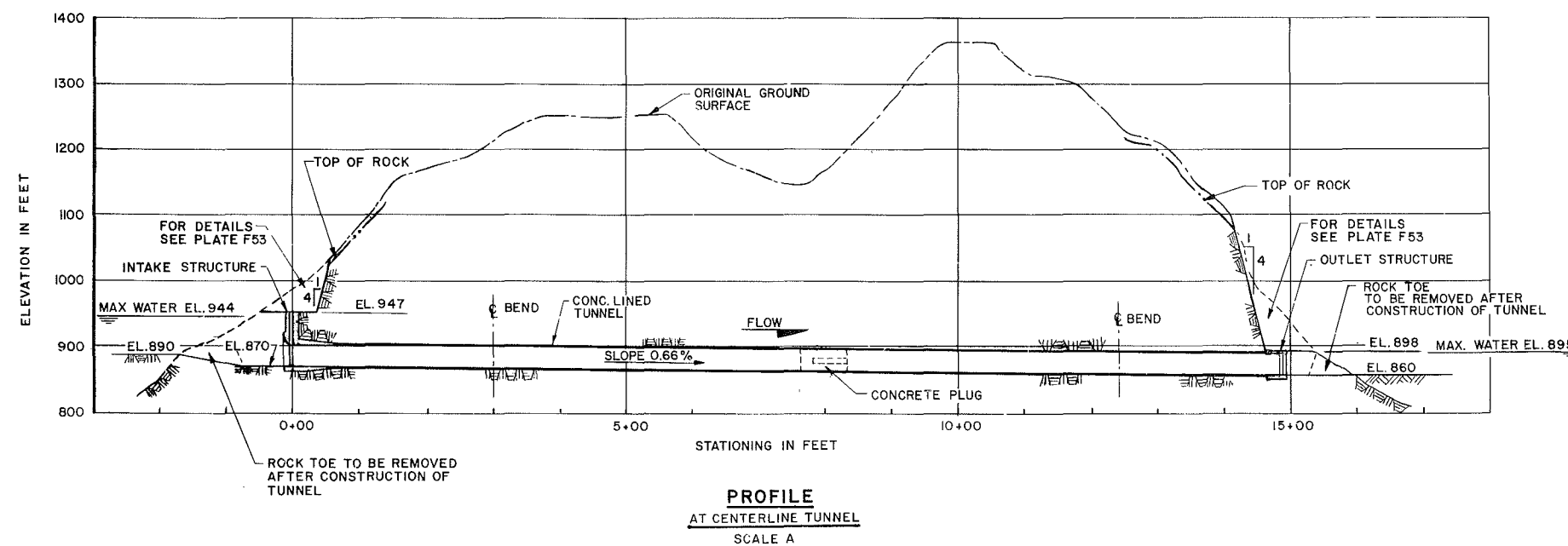
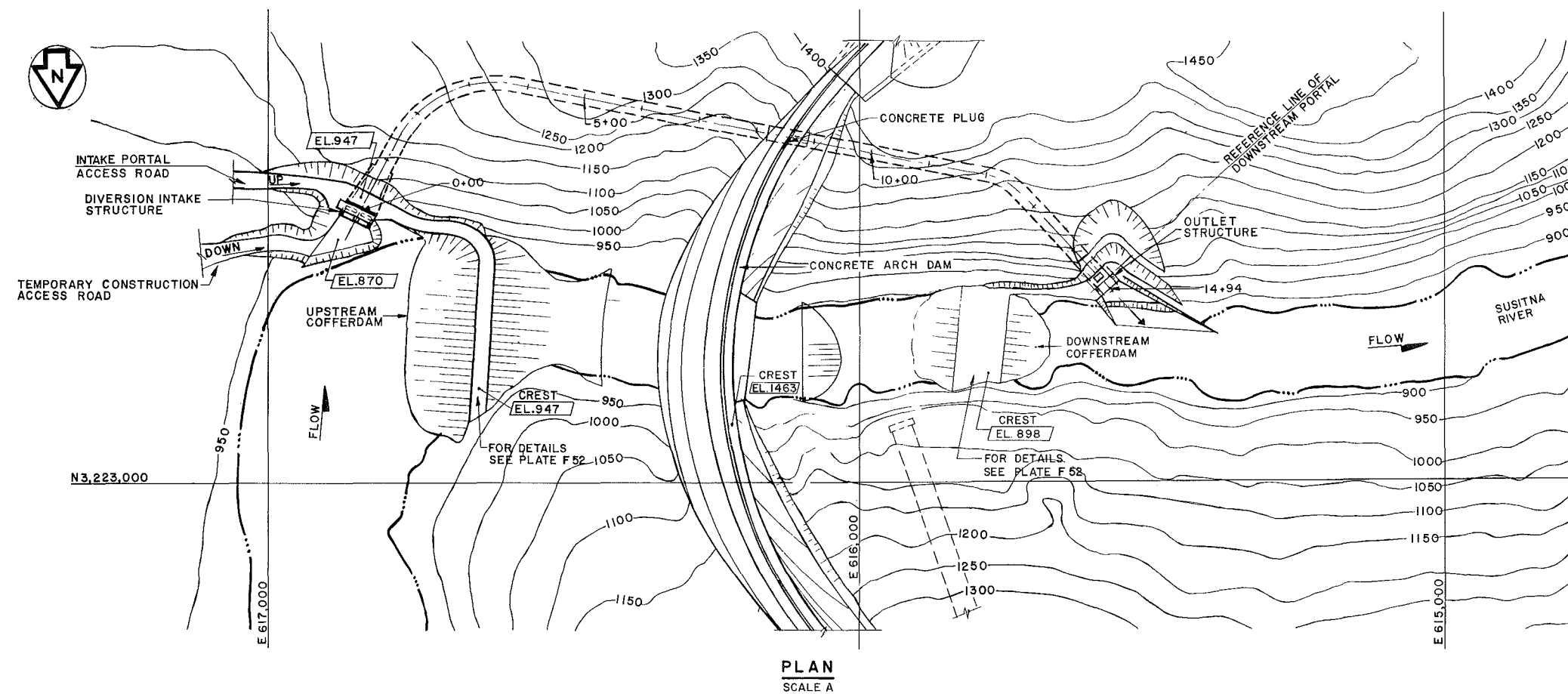
PROFILE
SHOWING CREST ELEVATIONS
N.T.S.



DETAIL I
SCALE B (PLATE F49)

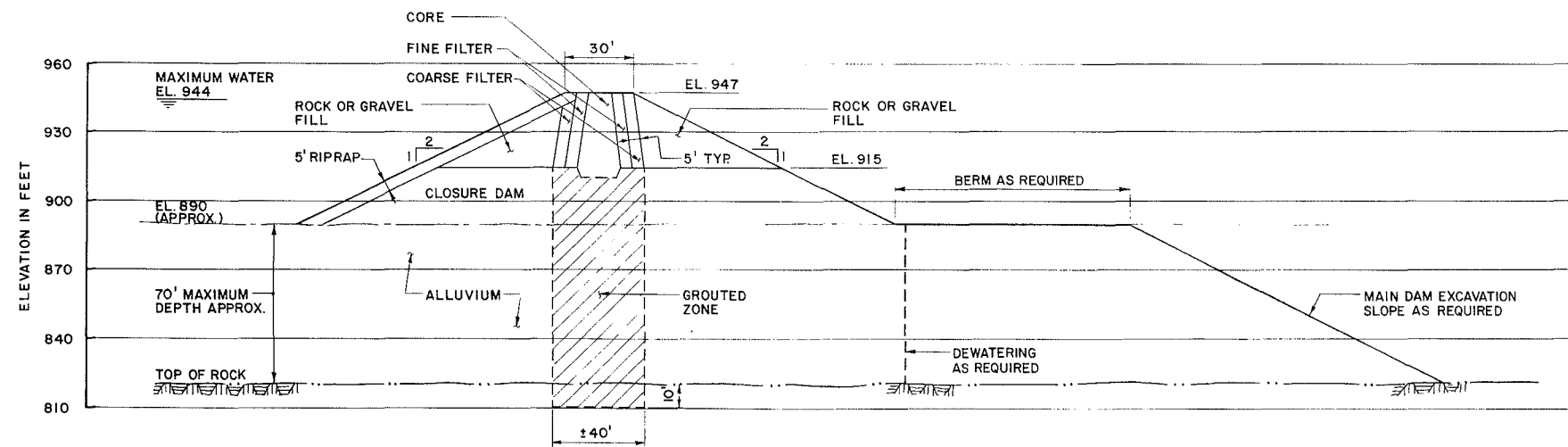
SCALE B 0 20 40 FEET (1 INCH = 20 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

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

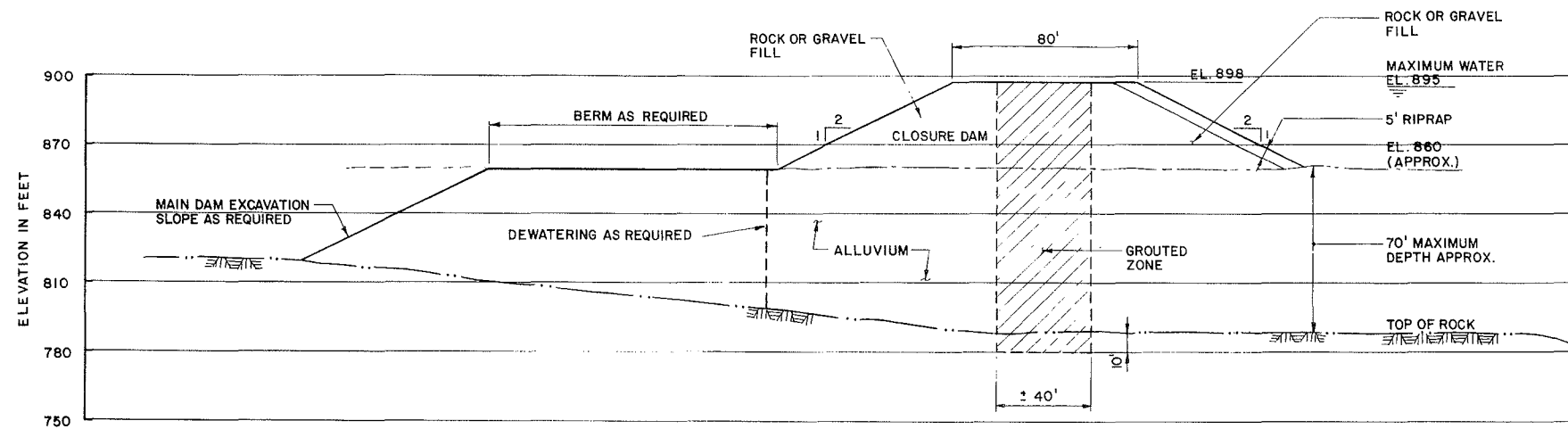


SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

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



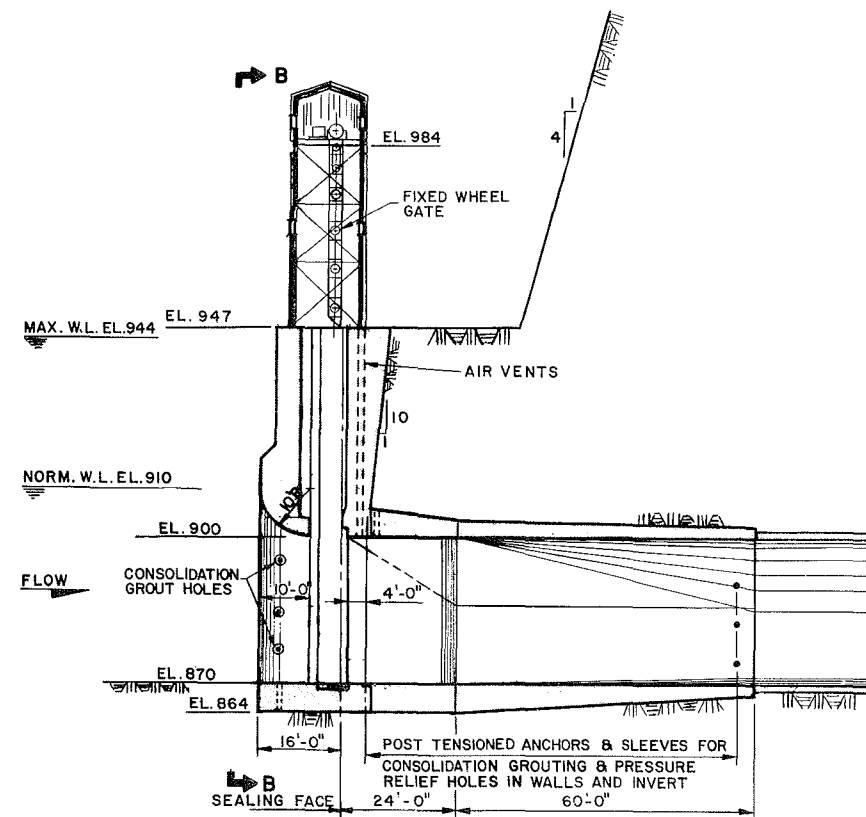
TYPICAL CROSS SECTION (PLATE F 51)
UPSTREAM COFFERDAM



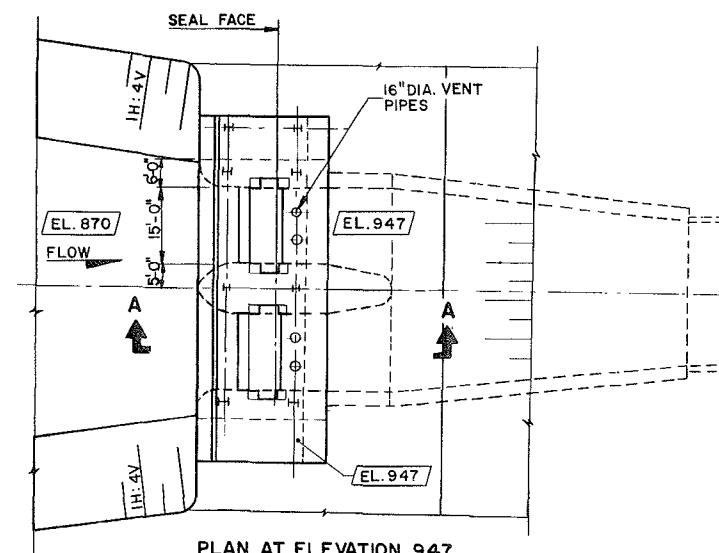
TYPICAL CROSS SECTION (PLATE F 51)
DOWNSTREAM COFFERDAM

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

	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON DIVERSION COFFERDAM SECTIONS	
	EXHIBIT F	PLATE F 52

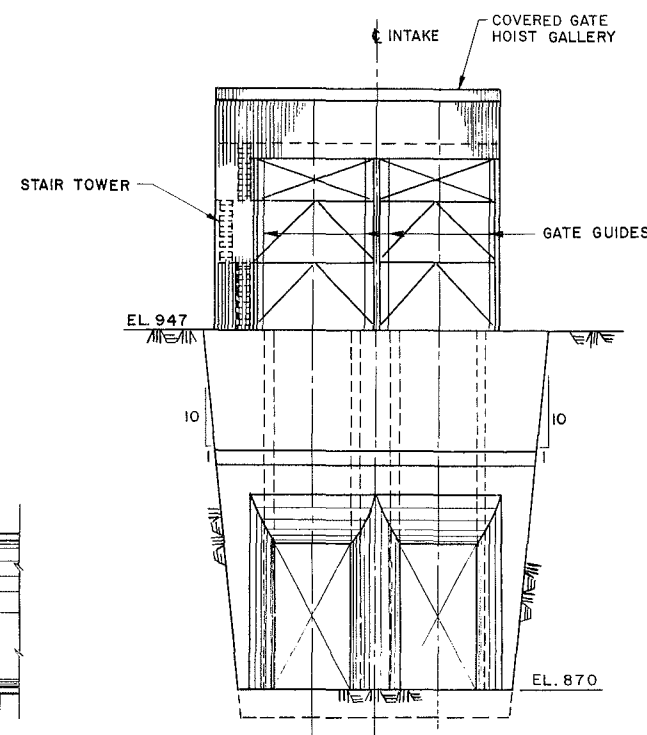


SECTION A-A
SCALE A

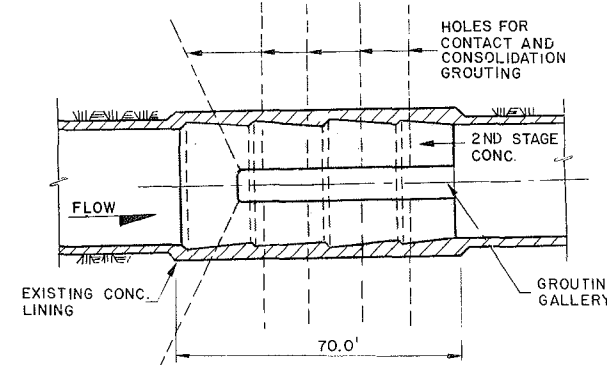


PLAN AT ELEVATION 947
SCALE A

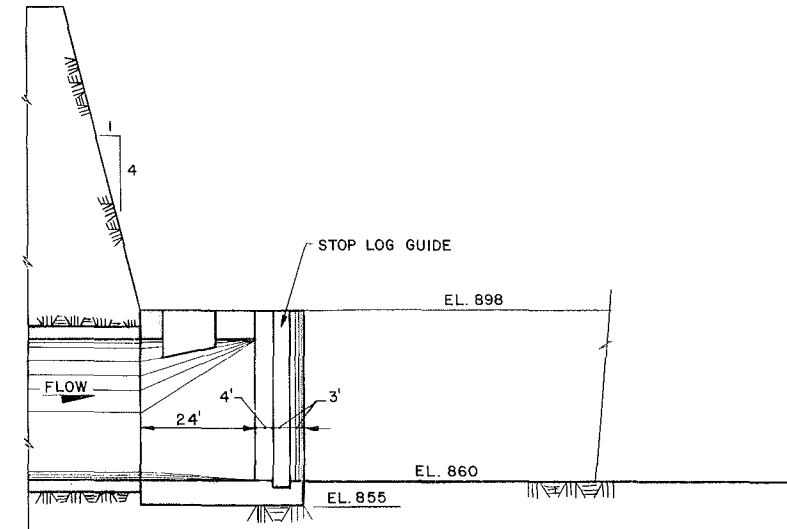
DIVERSION INTAKE STRUCTURE (PLATE F51)



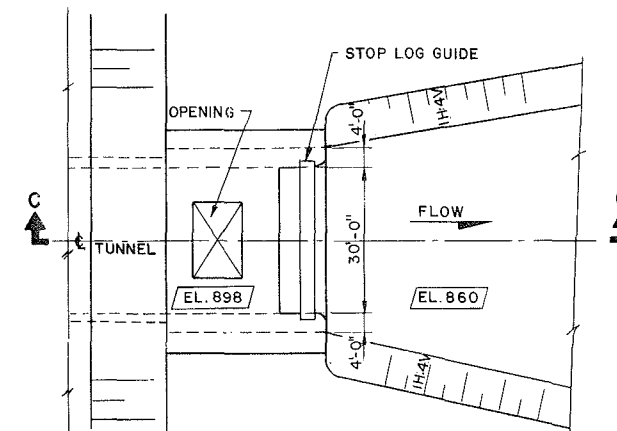
ELEVATION B-B
SCALE A



SECTION THRU PLUG
SCALE B

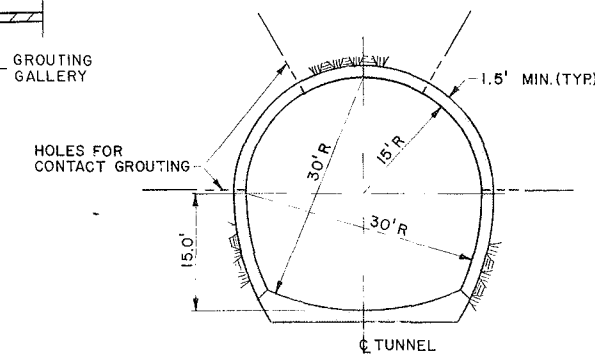


SECTION C-C
SCALE A

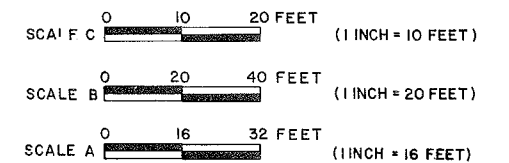


PLAN AT ELEVATION 898
SCALE A

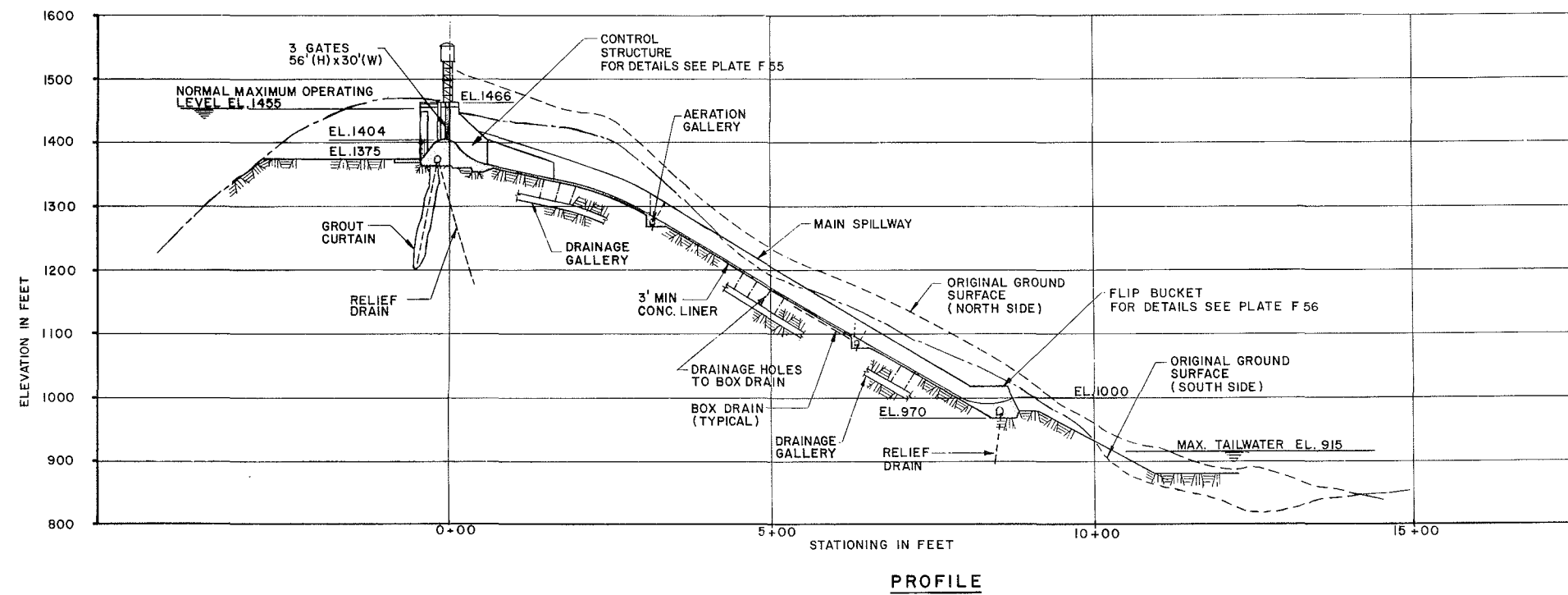
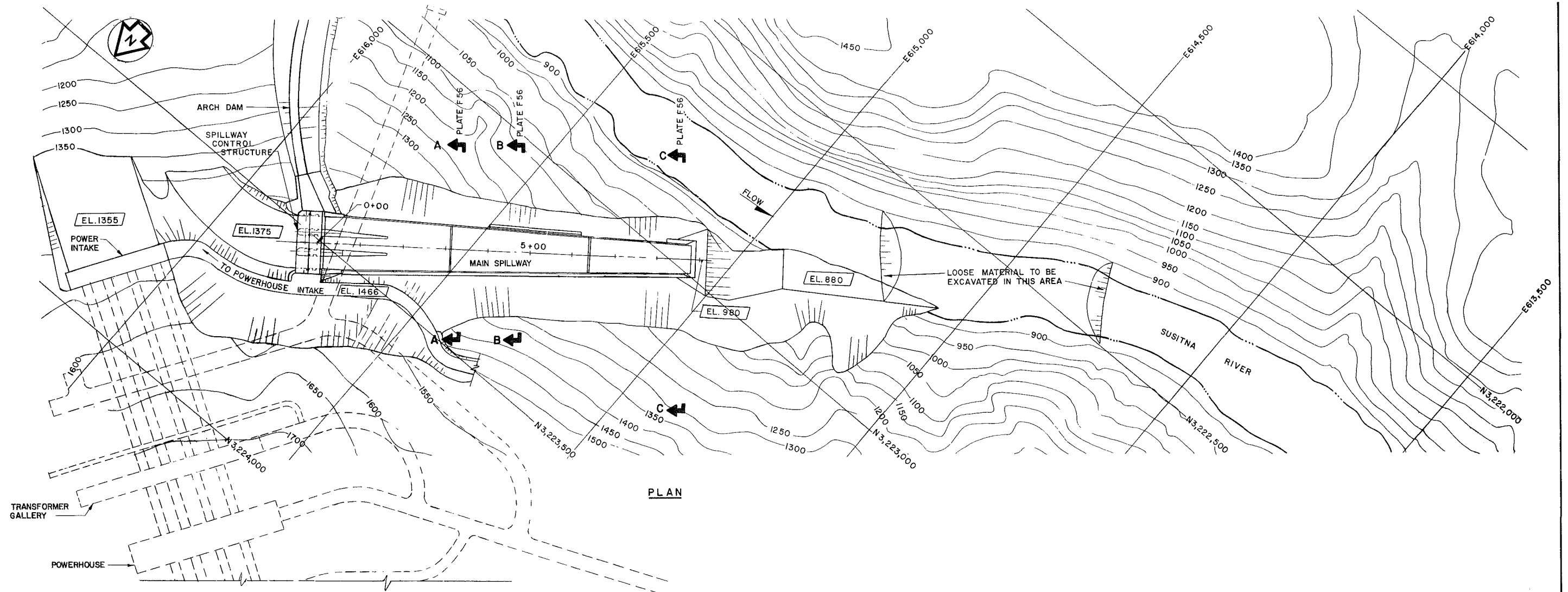
DIVERSION OUTLET STRUCTURE (PLATE F51)



TYPICAL TUNNEL SECTIONS
SCALE C



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



NOTE: FOR SECTIONS SEE PLATE F56

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

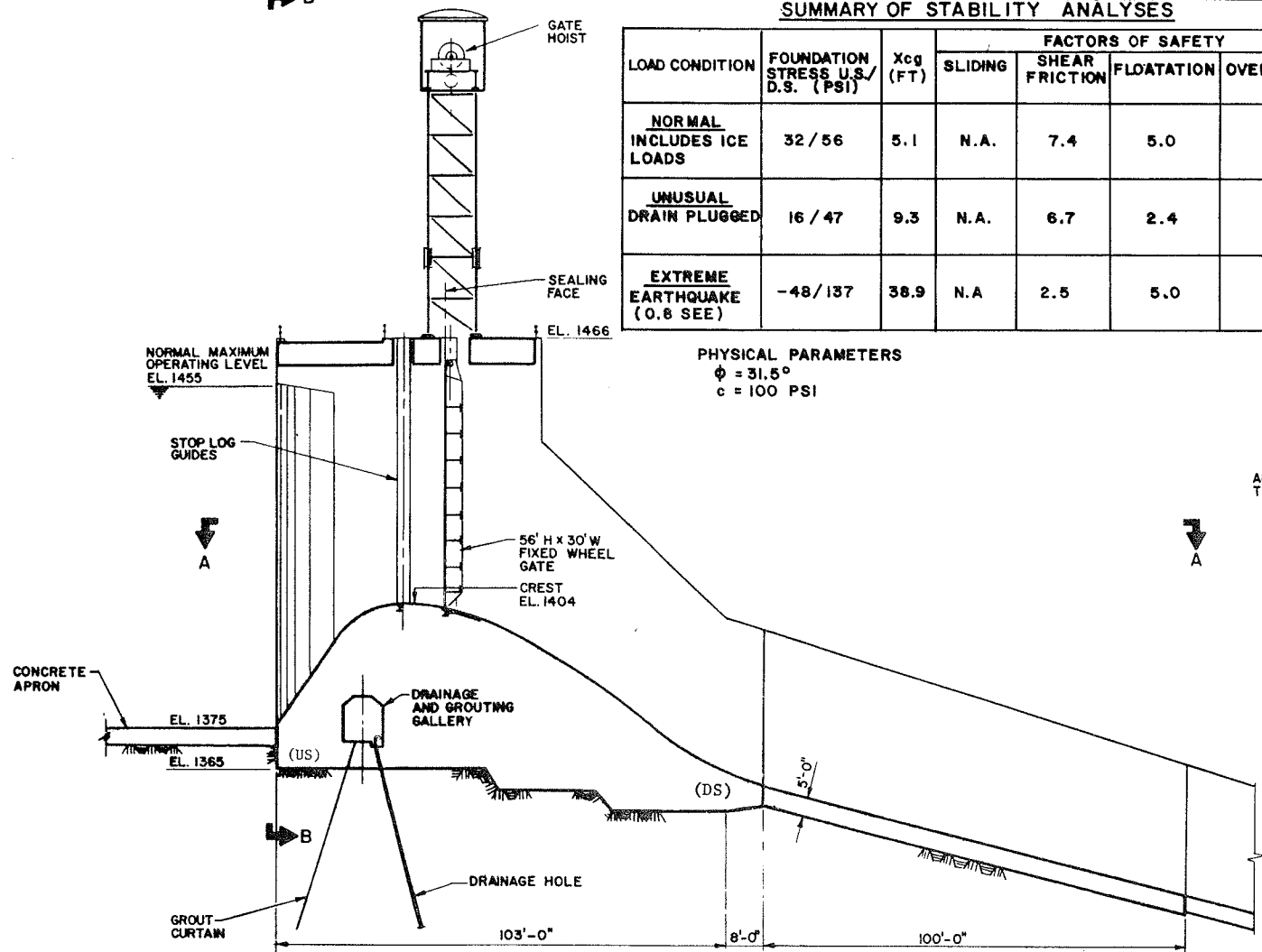
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F54

DEVIL CANYON ARCH DAM SPILLWAY CONTROL STRUCTURE

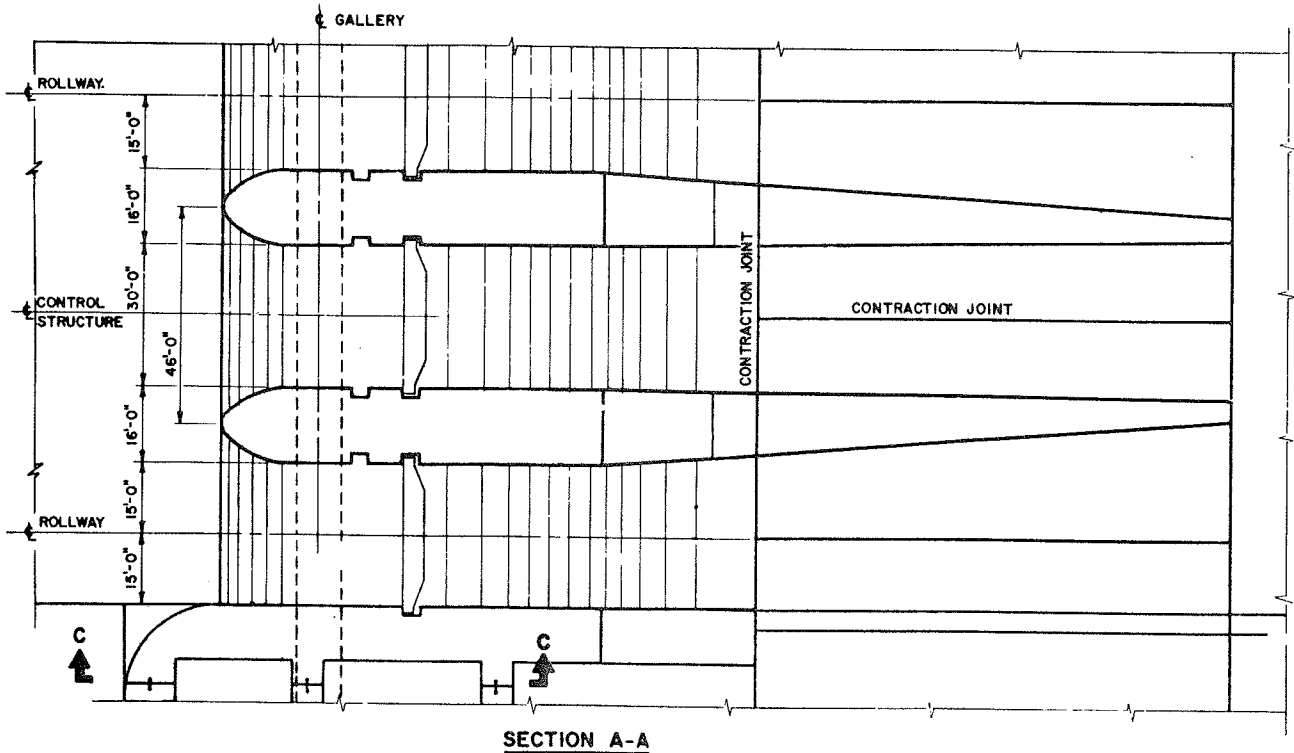
SUMMARY OF STABILITY ANALYSES

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

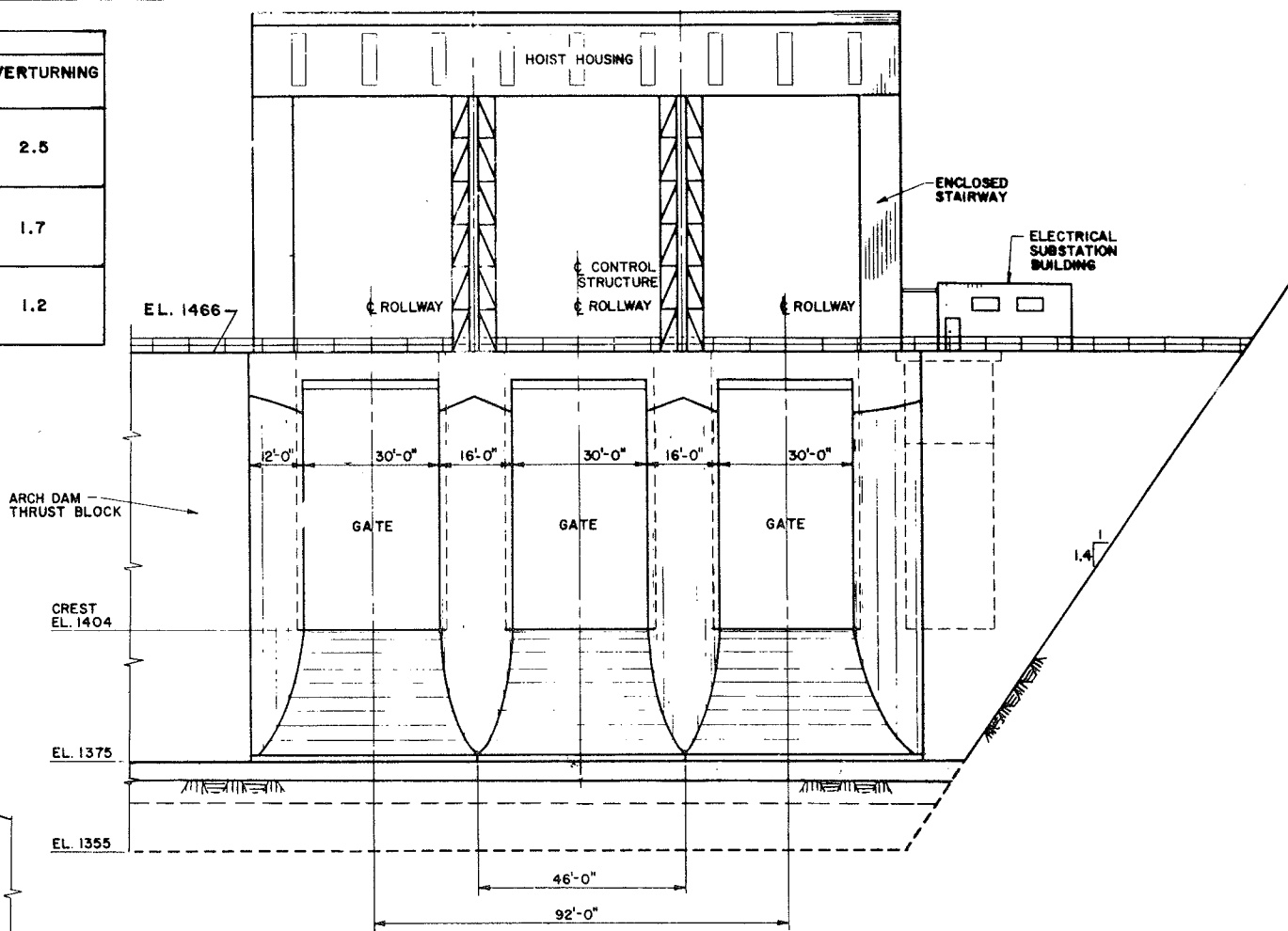
PHYSICAL PARAMETERS
 $\phi = 31.5^\circ$
 $c = 100 \text{ PSI}$



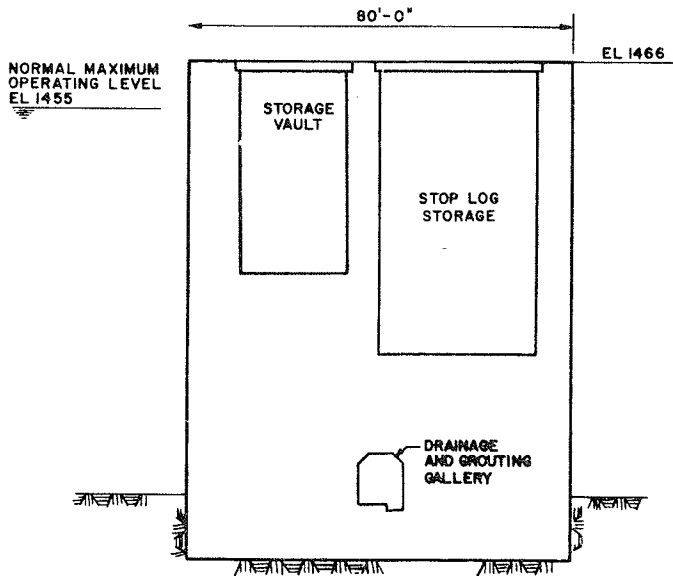
TYPICAL SECTION THRU CENTERLINE OF ROLLWAY



SECTION A-A



ELEVATION B-B

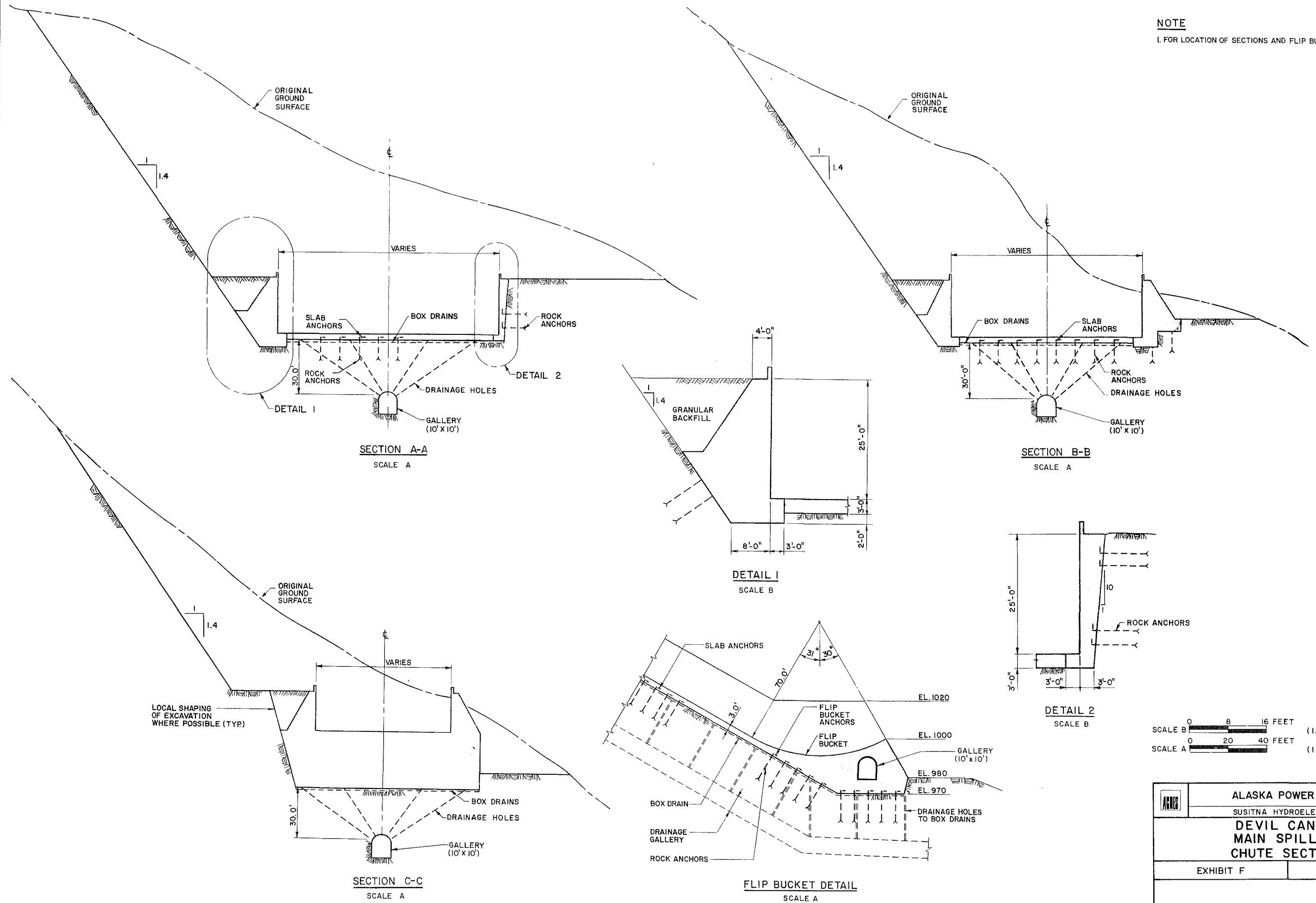


SECTION C-C

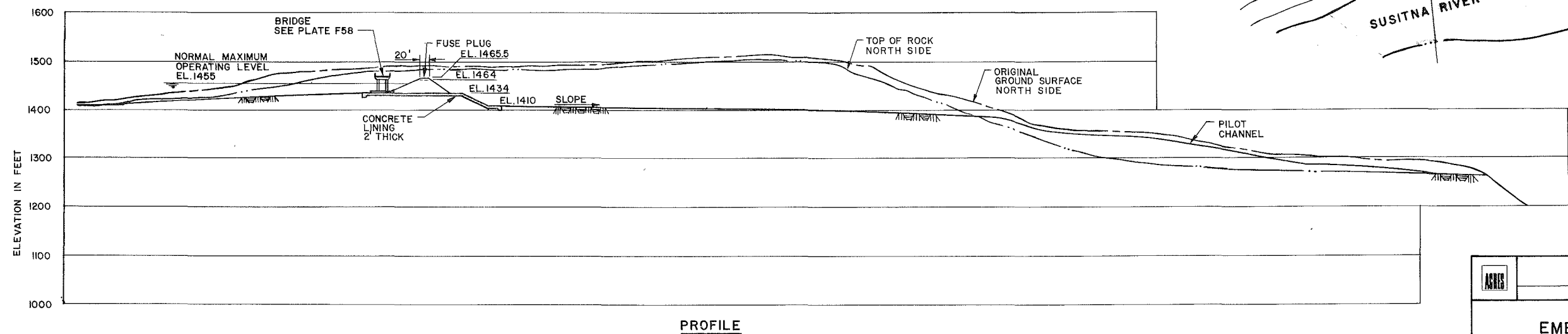
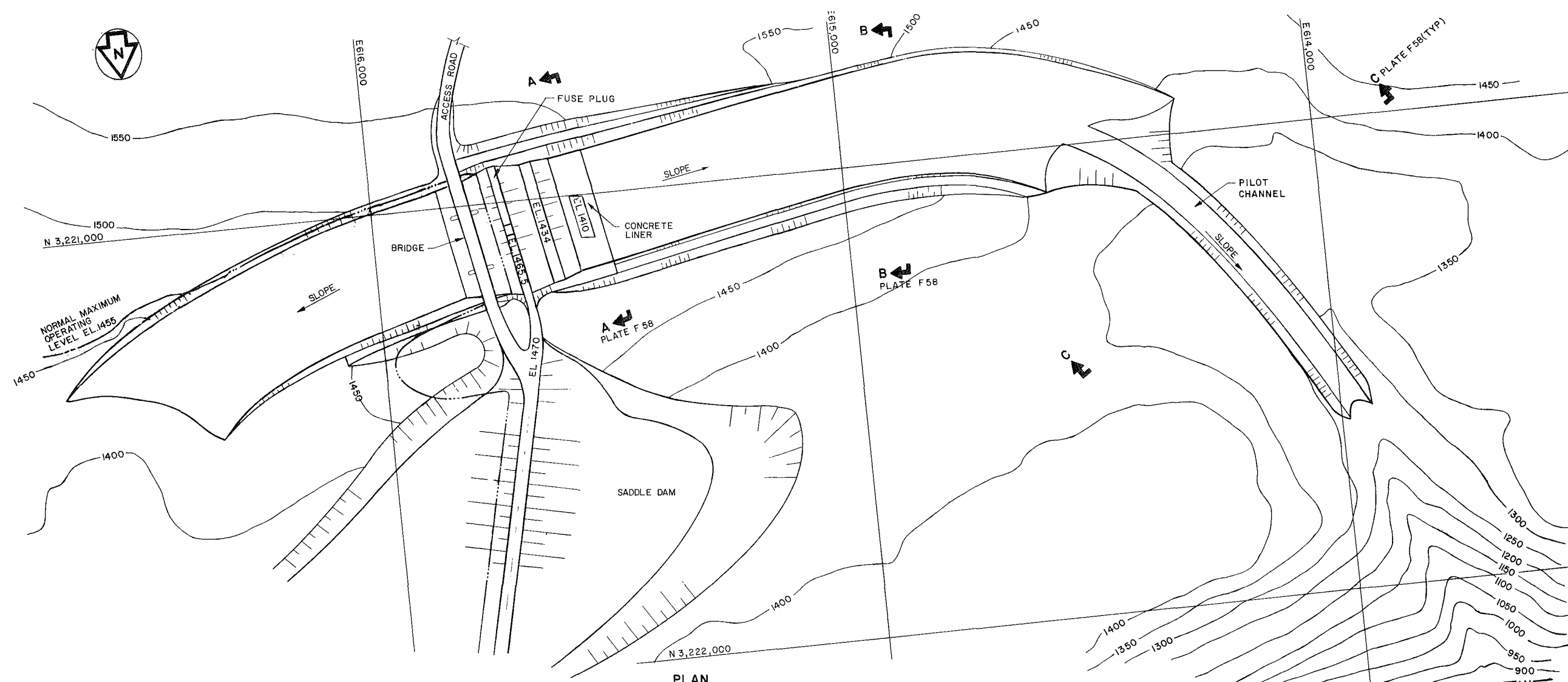
SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

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



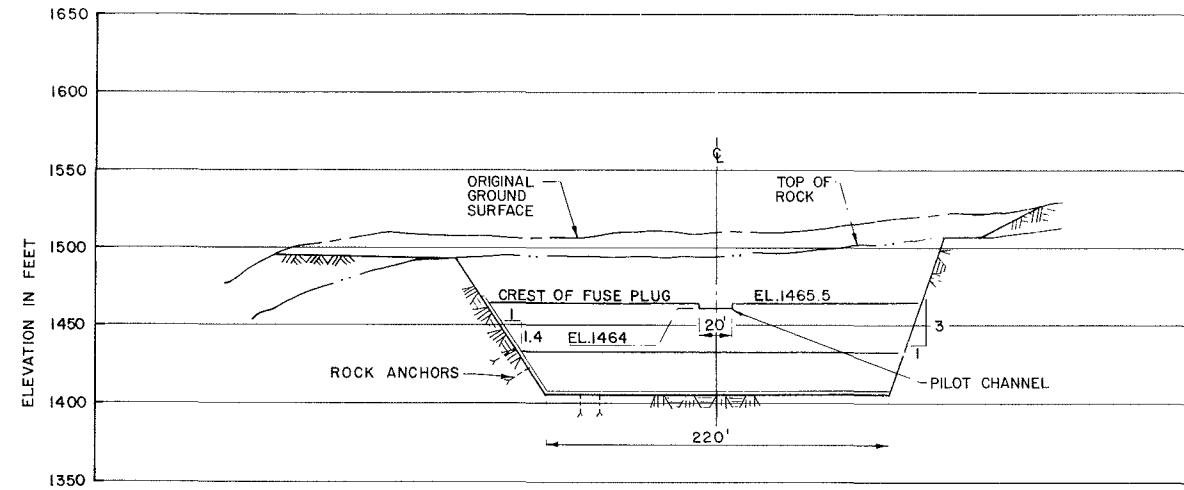
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY CHUTE SECTIONS	
EXHIBIT F	PLATE F56



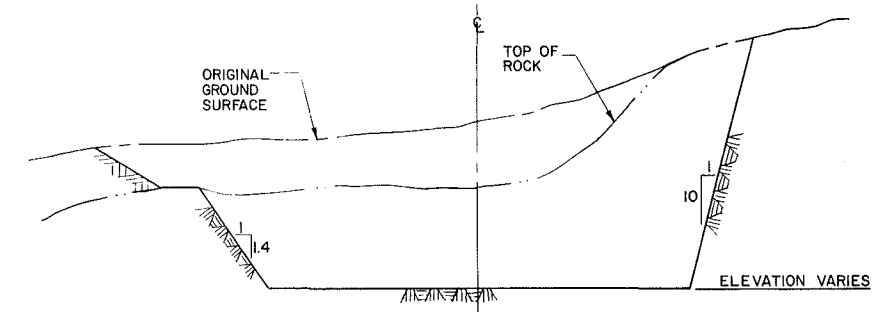
NOTE: FOR SECTIONS SEE PLATE F58

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

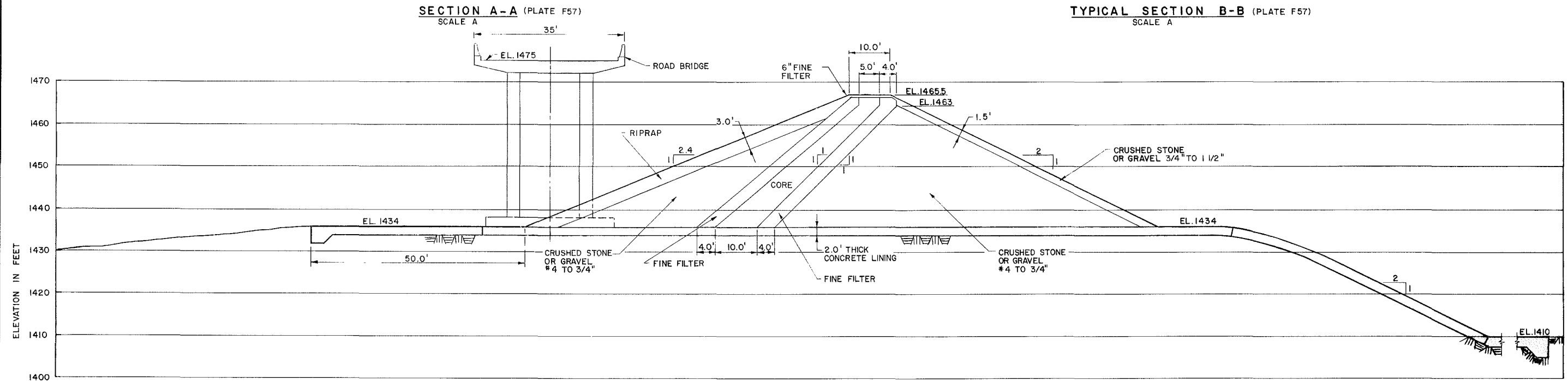
APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON EMERGENCY SPILLWAY GENERAL ARRANGEMENT	
	EXHIBIT F	PLATE F57



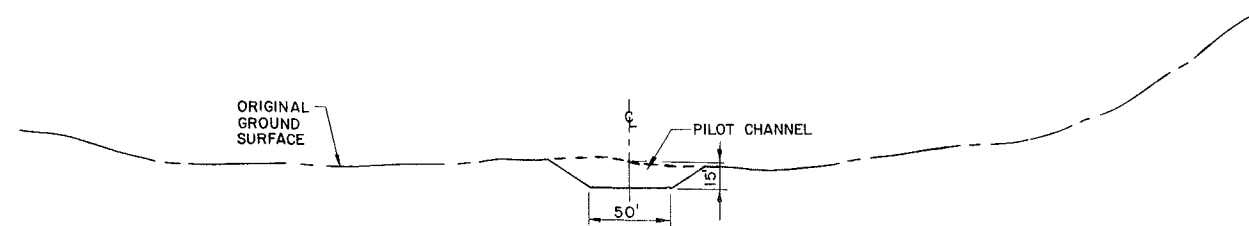
SECTION A-A (PLATE F57)
SCALE A



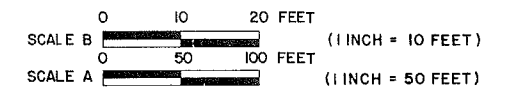
TYPICAL SECTION B-B (PLATE F57)
SCALE A



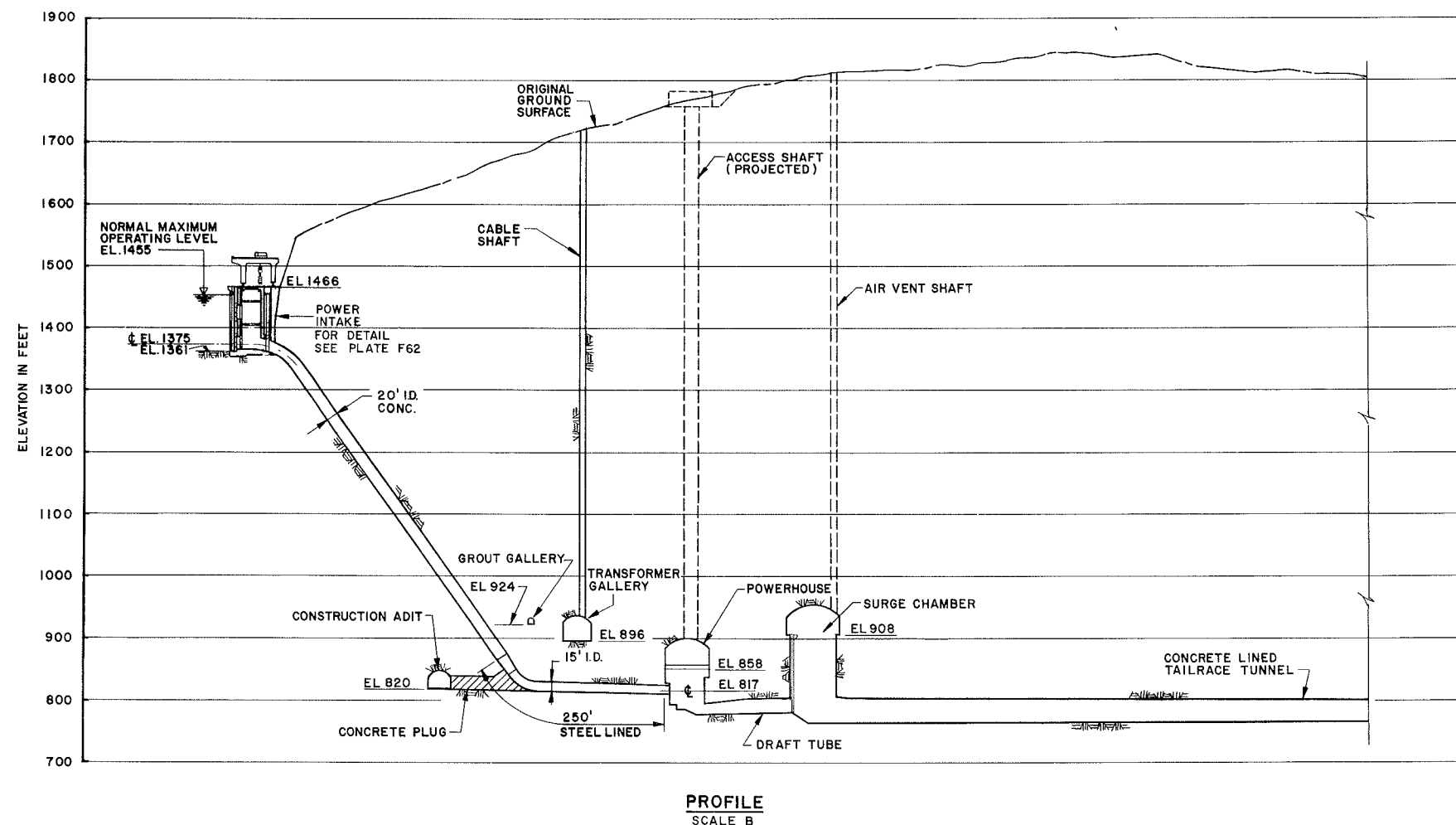
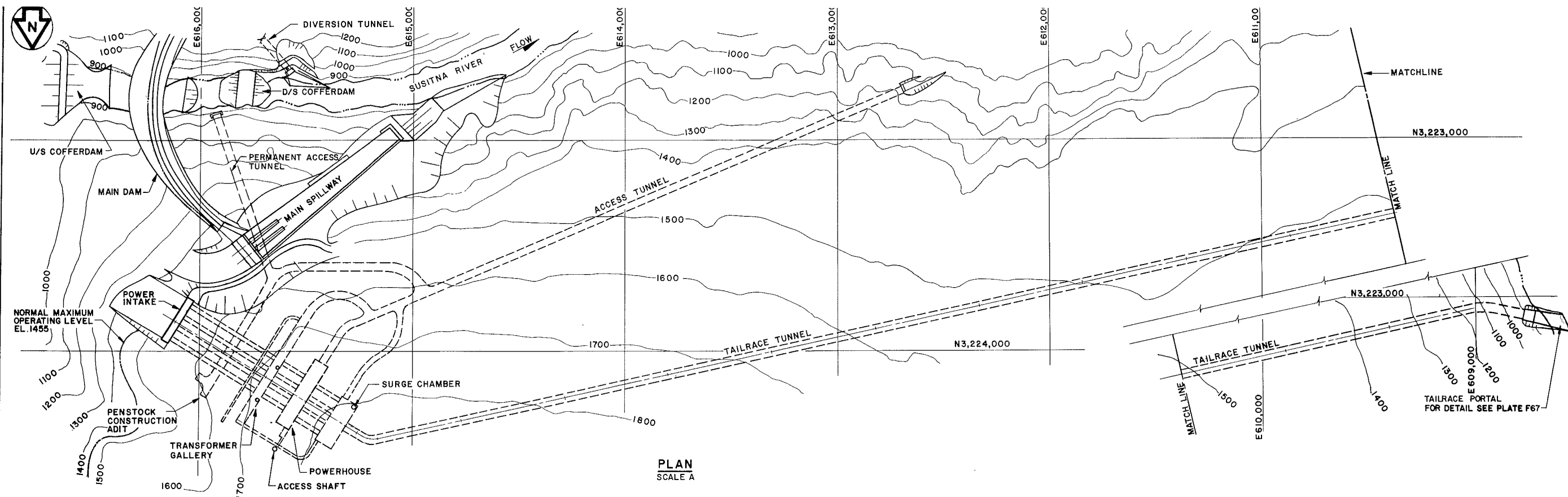
SECTION THROUGH FUSE PLUG (PLATE F57)
SCALE B



TYPICAL SECTION C-C (PLATE F57)
SCALE A

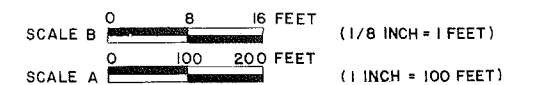
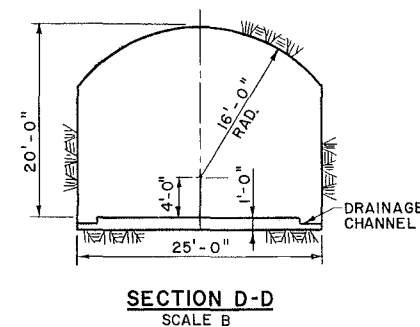
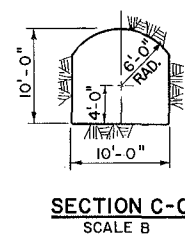
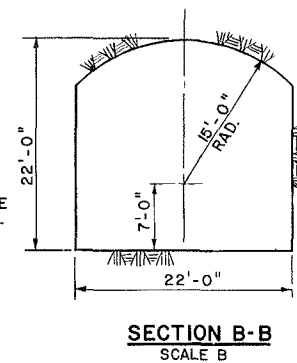
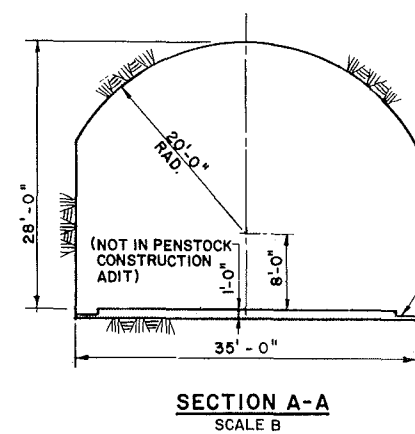
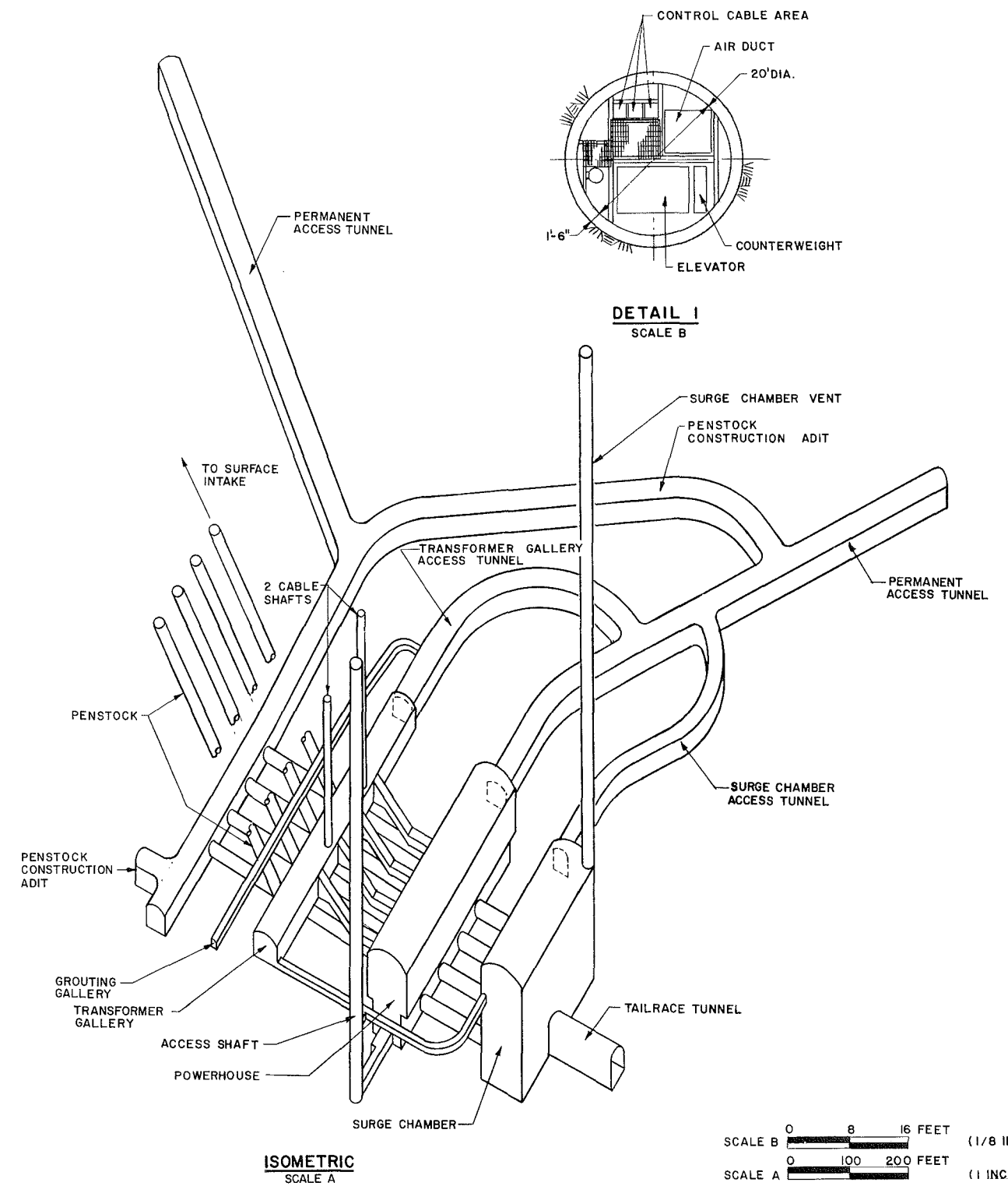
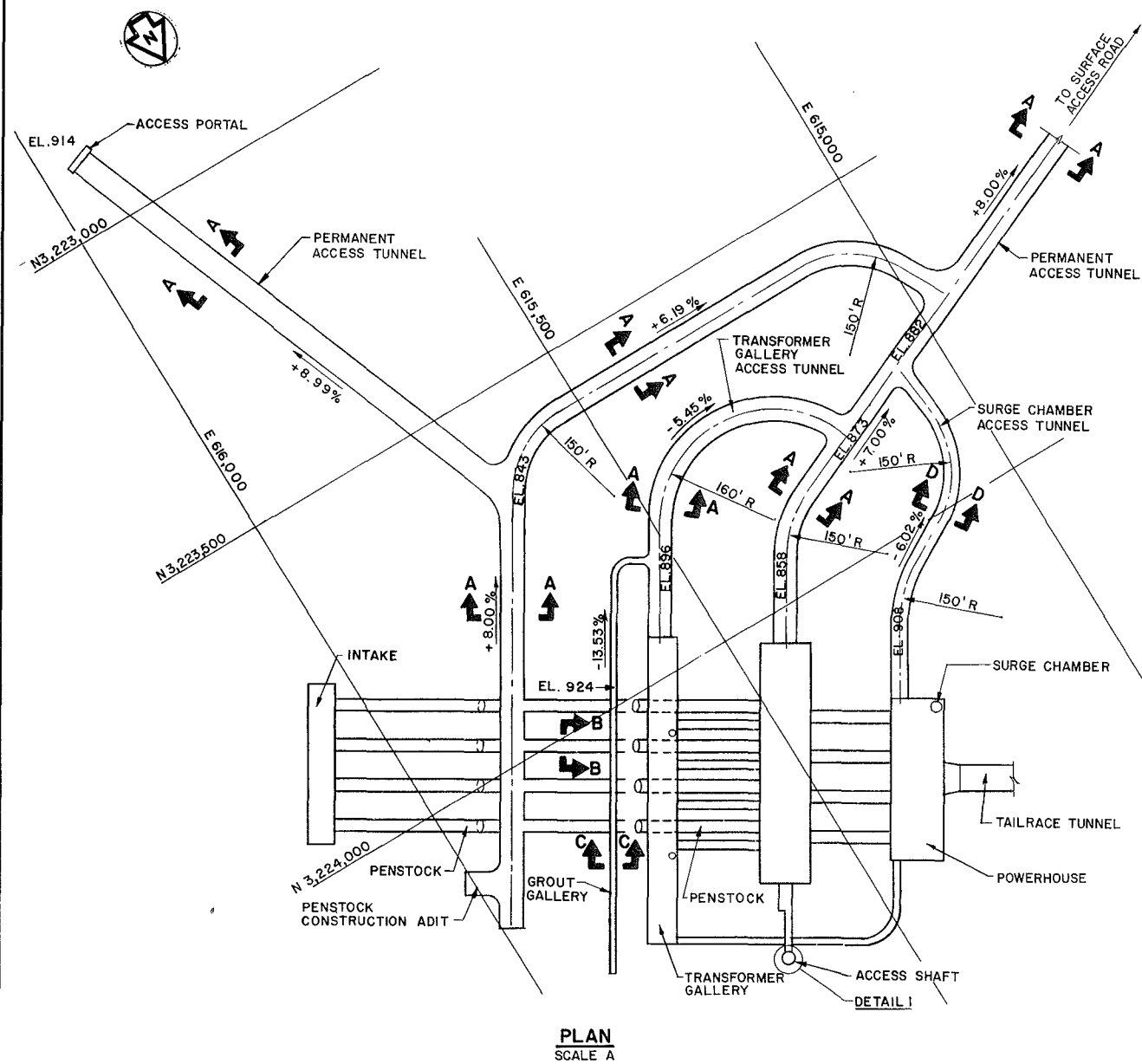


APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON EMERGENCY SPILLWAY SECTIONS	
EXHIBIT F		PLATE F58

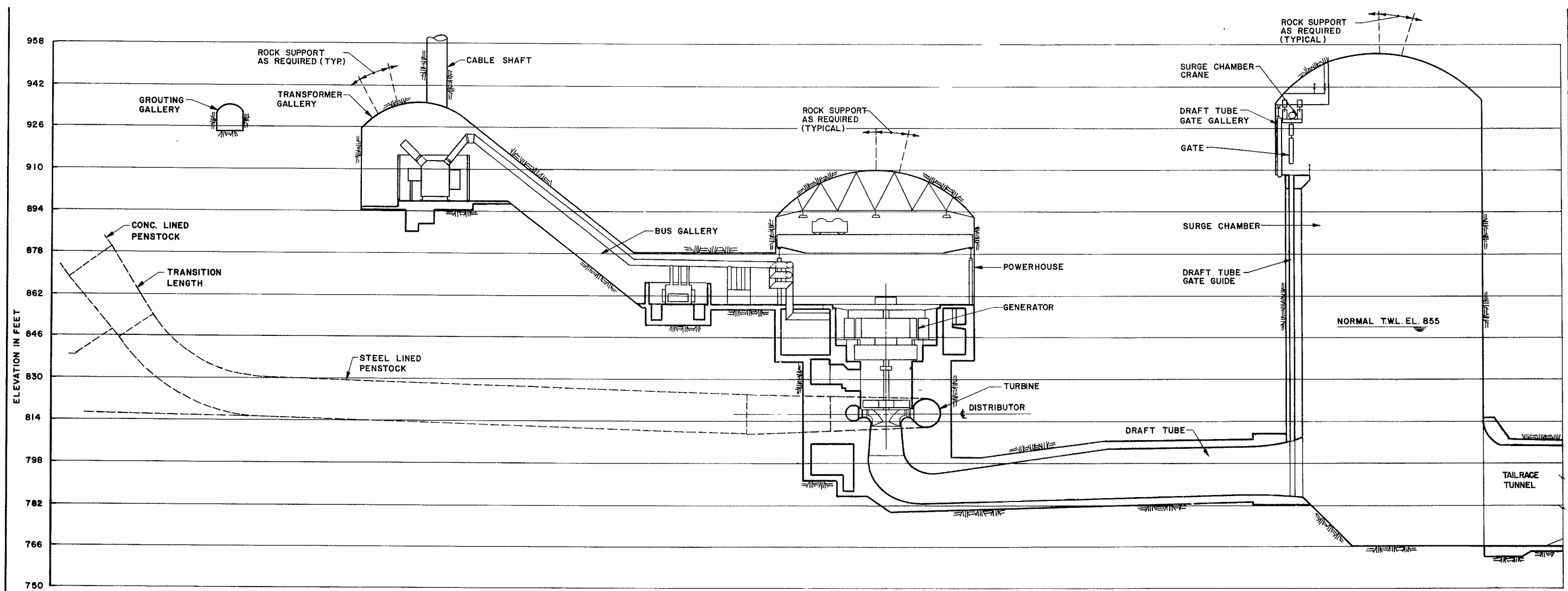


SCALE B 0 100 200 FEET (1 INCH = 100 FEET)
 SCALE A 0 200 400 FEET (1 INCH = 200 FEET)

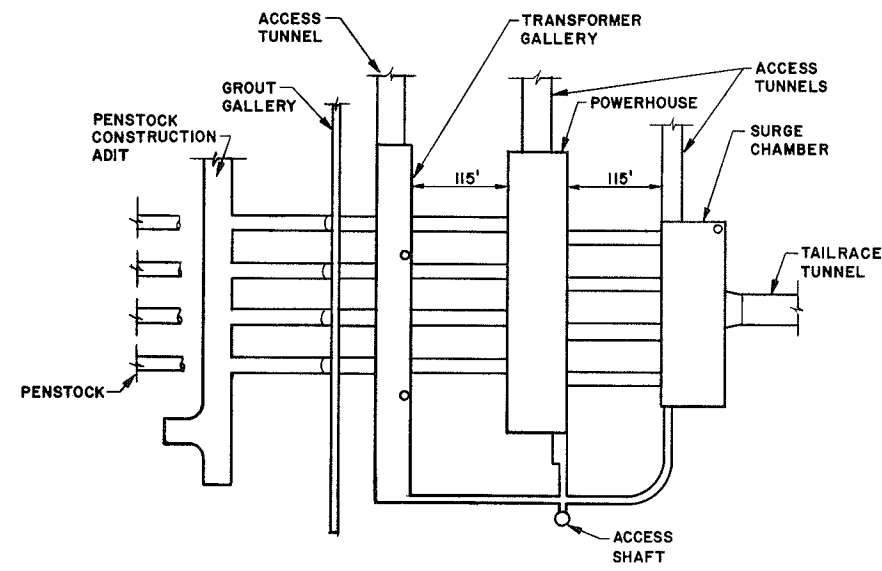
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F59



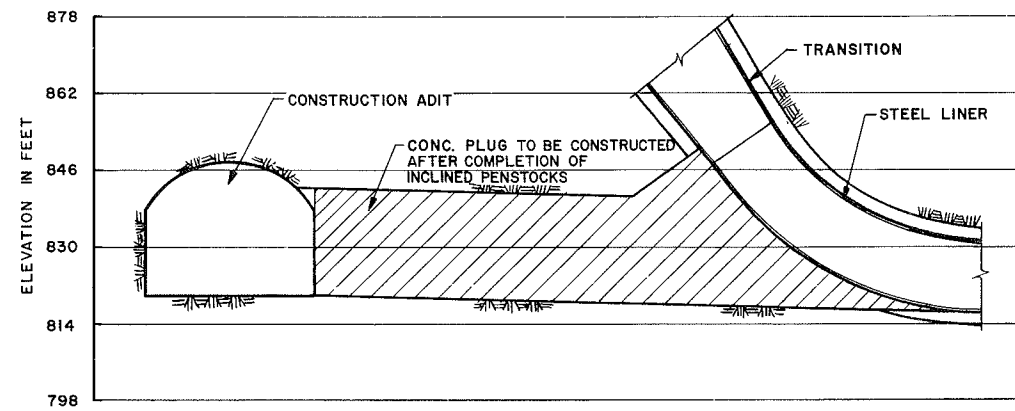
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES ACCESS	
EXHIBIT F	PLATE F60



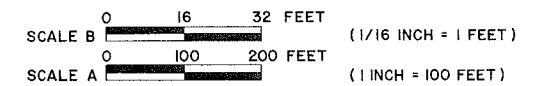
SECTION A-A
SCALE B



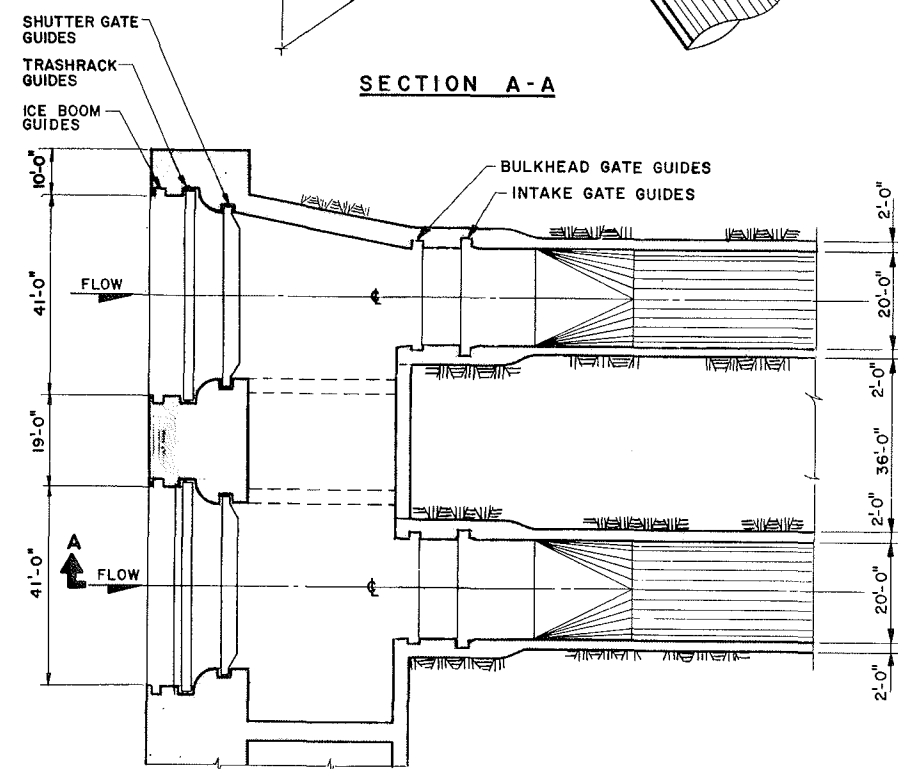
PLAN
SCALE A



SECTION B-B
SCALE B



	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON POWER FACILITIES PLAN & SECTIONS	
	EXHIBIT F	PLATE F6I

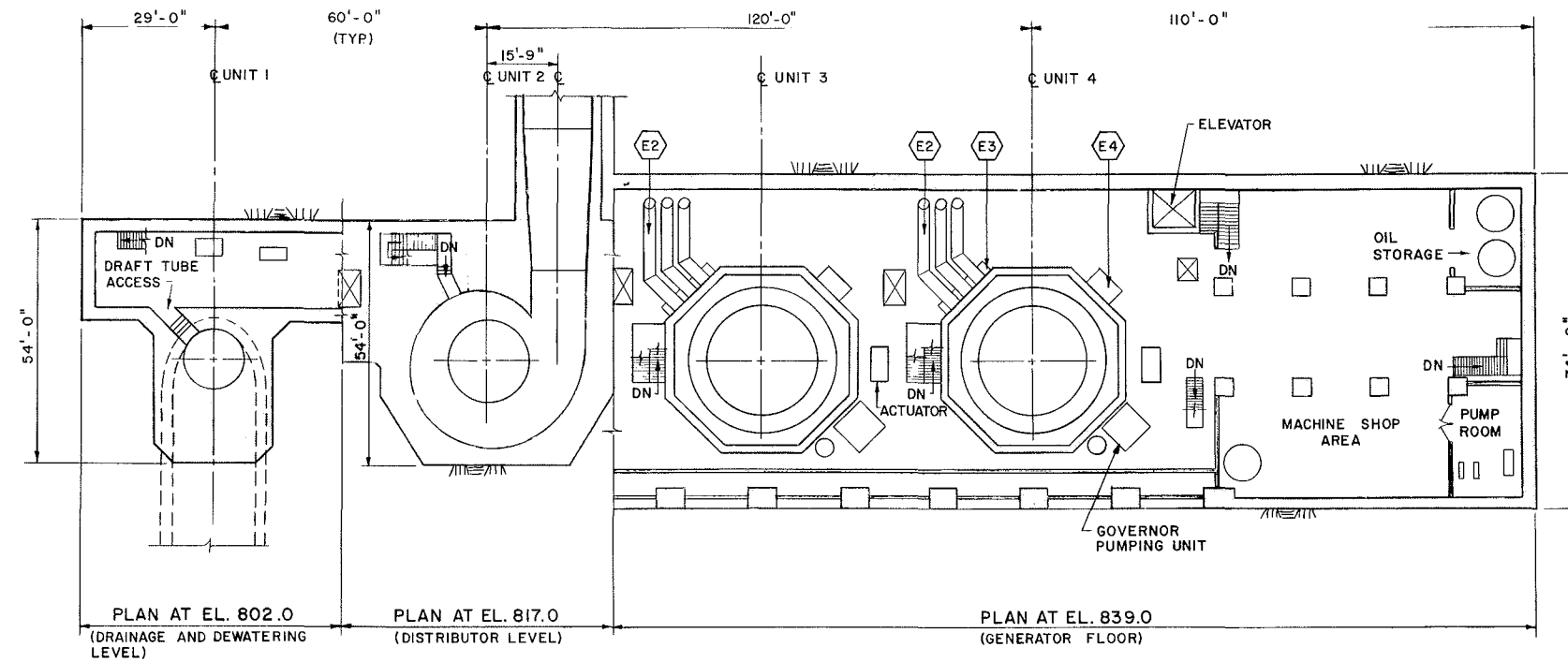


PLAN AT INTAKE CENTERLINE

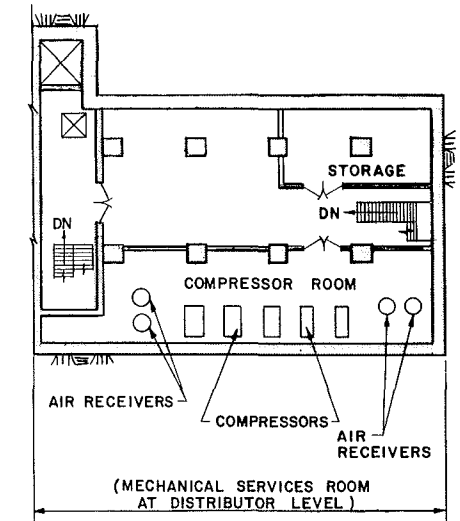


SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

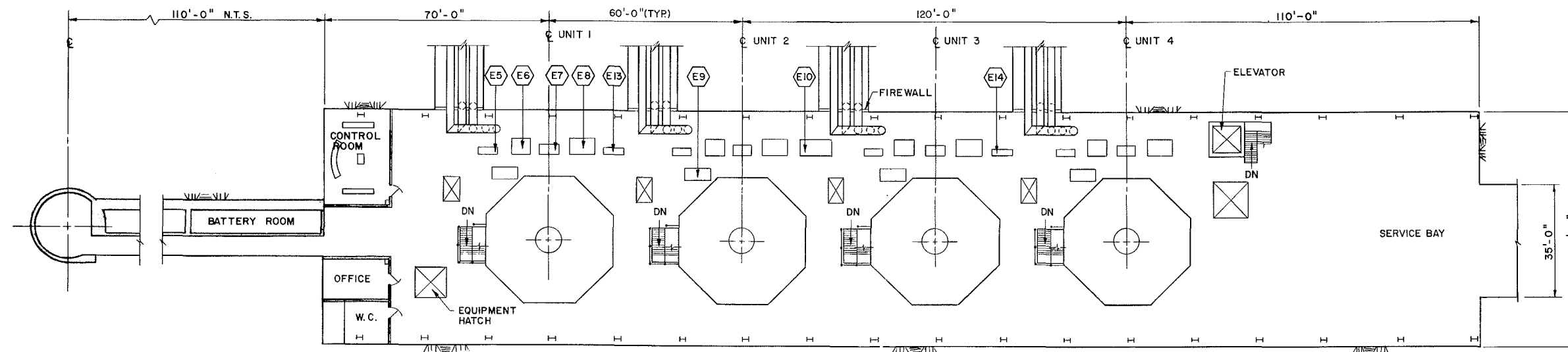
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER INTAKE SECTIONS		
EXHIBIT F		PLATE F 62
		



POWERHOUSE PLAN



PLAN AT EL. 817.0



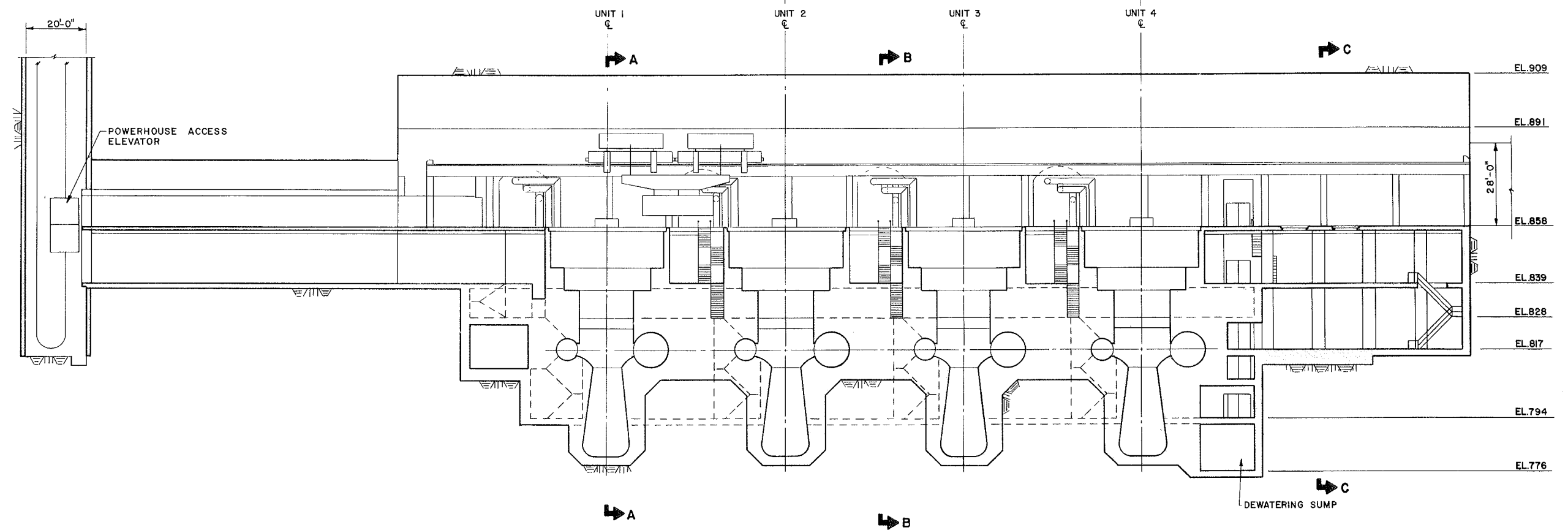
POWERHOUSE PLAN AT EL. 858.0

LEGEND

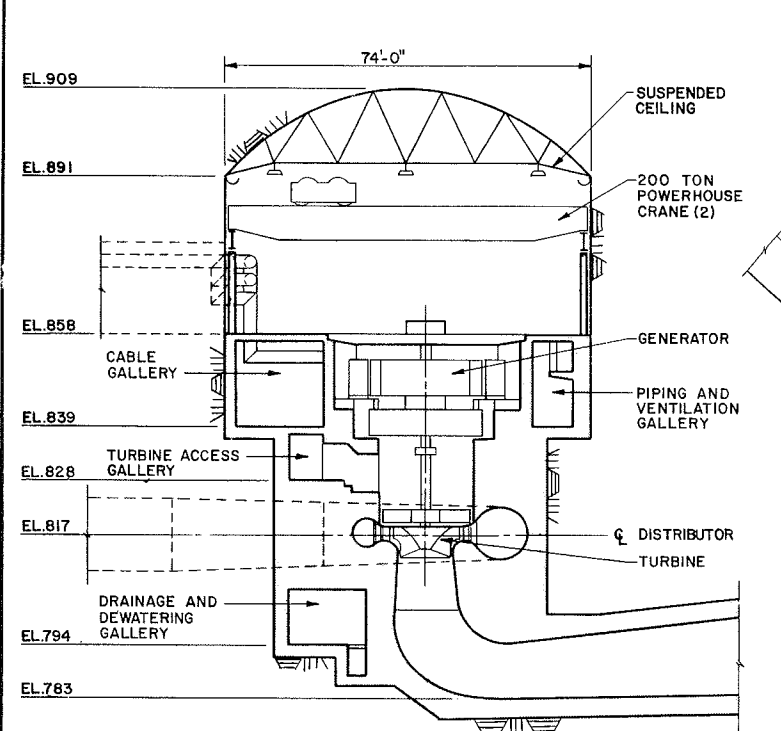
- E1 NOT USED
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE-GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY SERVICE TRANSFORMER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

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

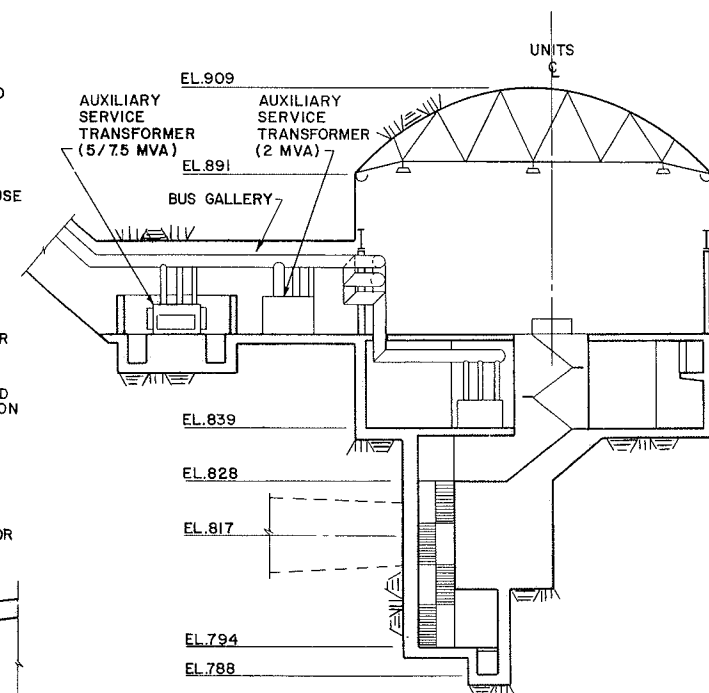
APAC	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON POWERHOUSE PLANS	
	EXHIBIT F	PLATE F63



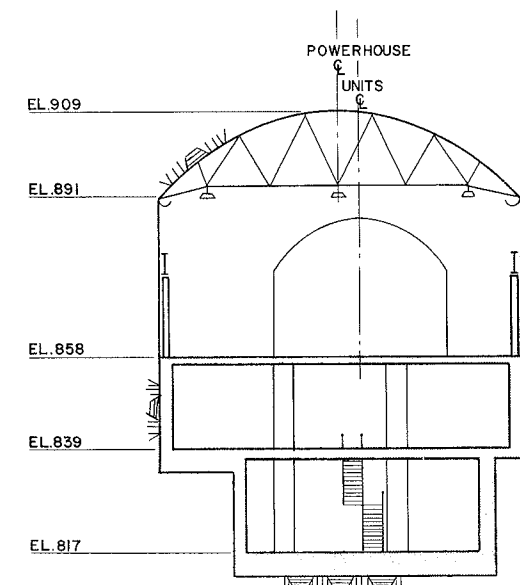
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



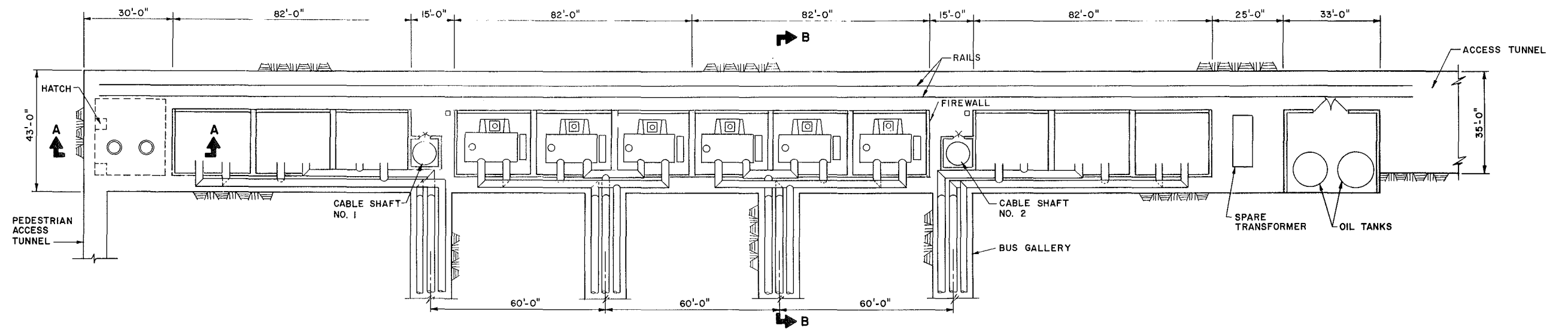
SECTION B-B (SECTION THRU BUS GALLERY)



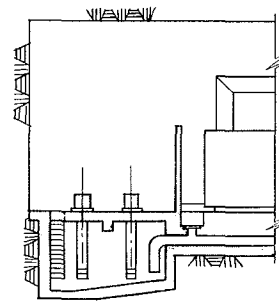
SECTION C-C (SECTION THRU SERVICE BAY)

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

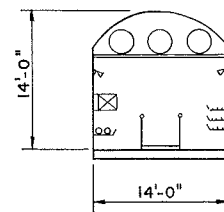
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F64



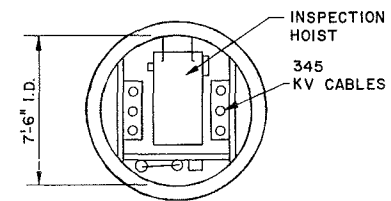
PLAN
SCALE A



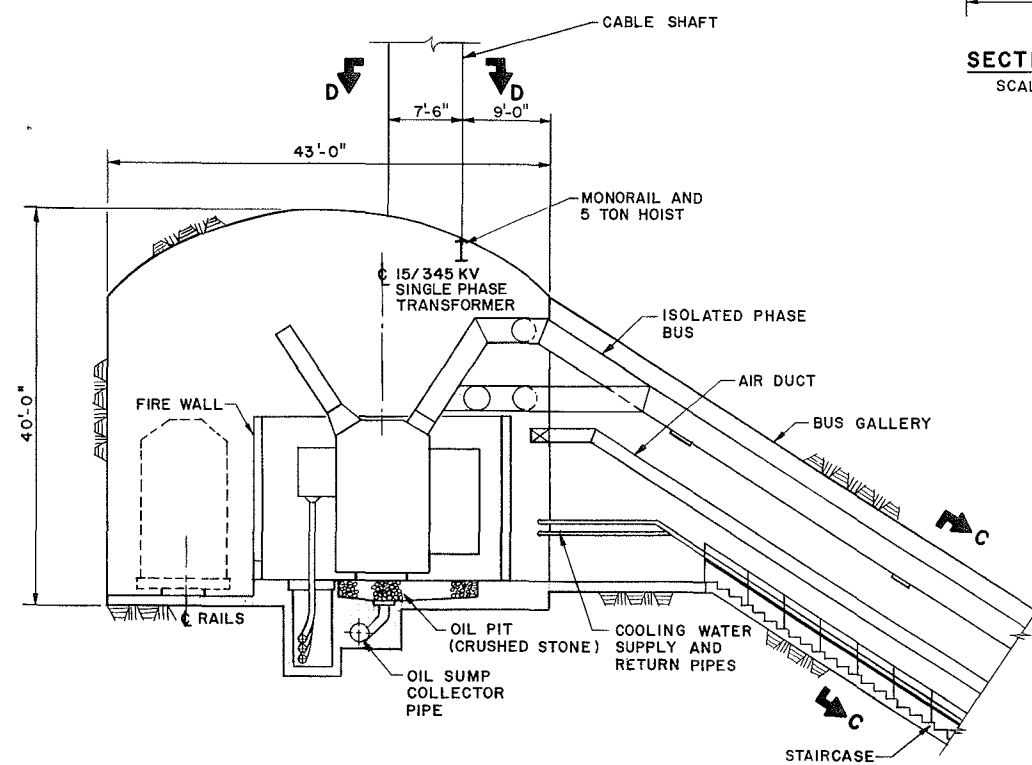
SECTION A-A
SCALE A



SECTION C-C
SCALE B



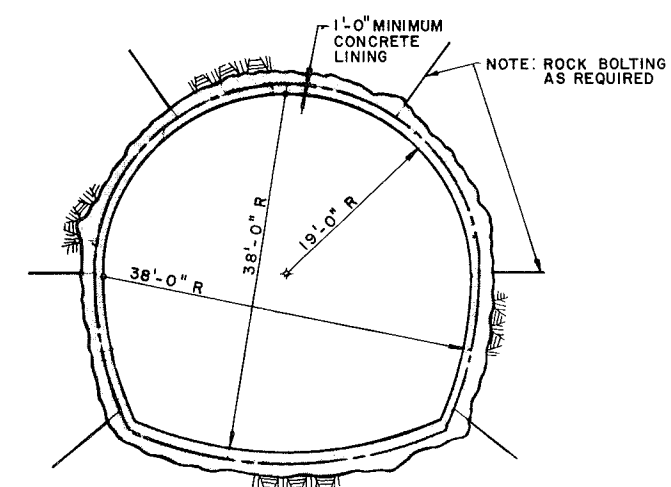
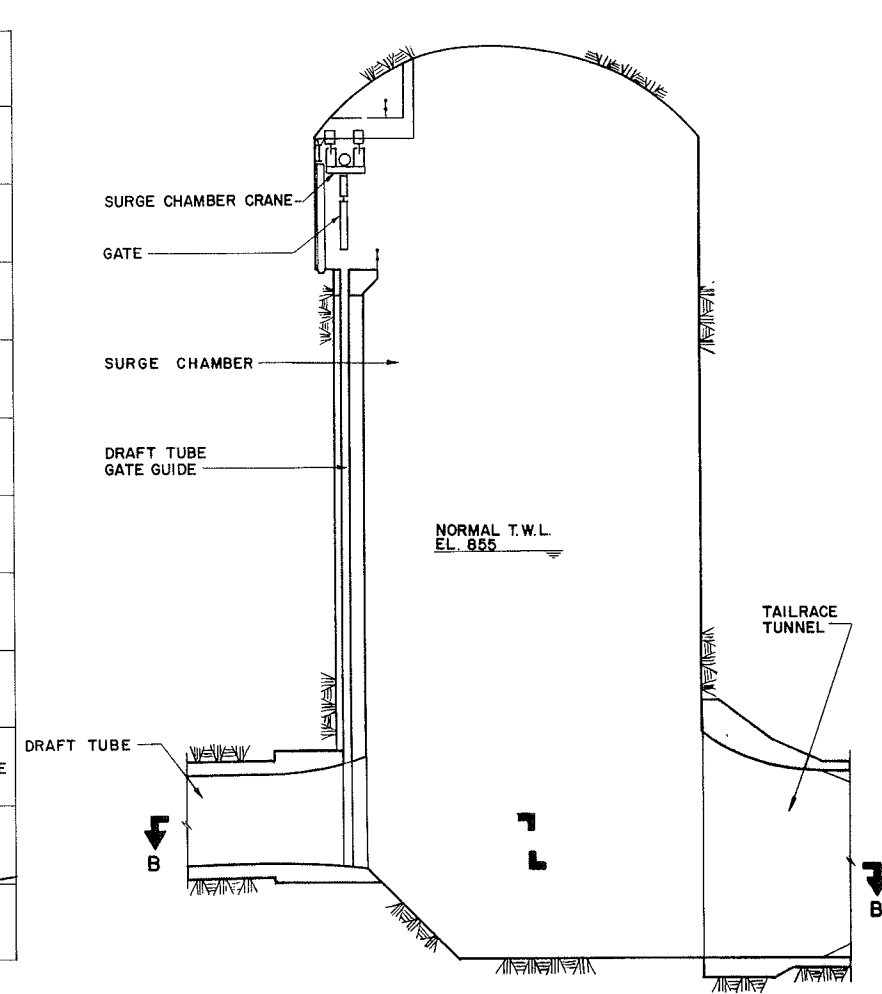
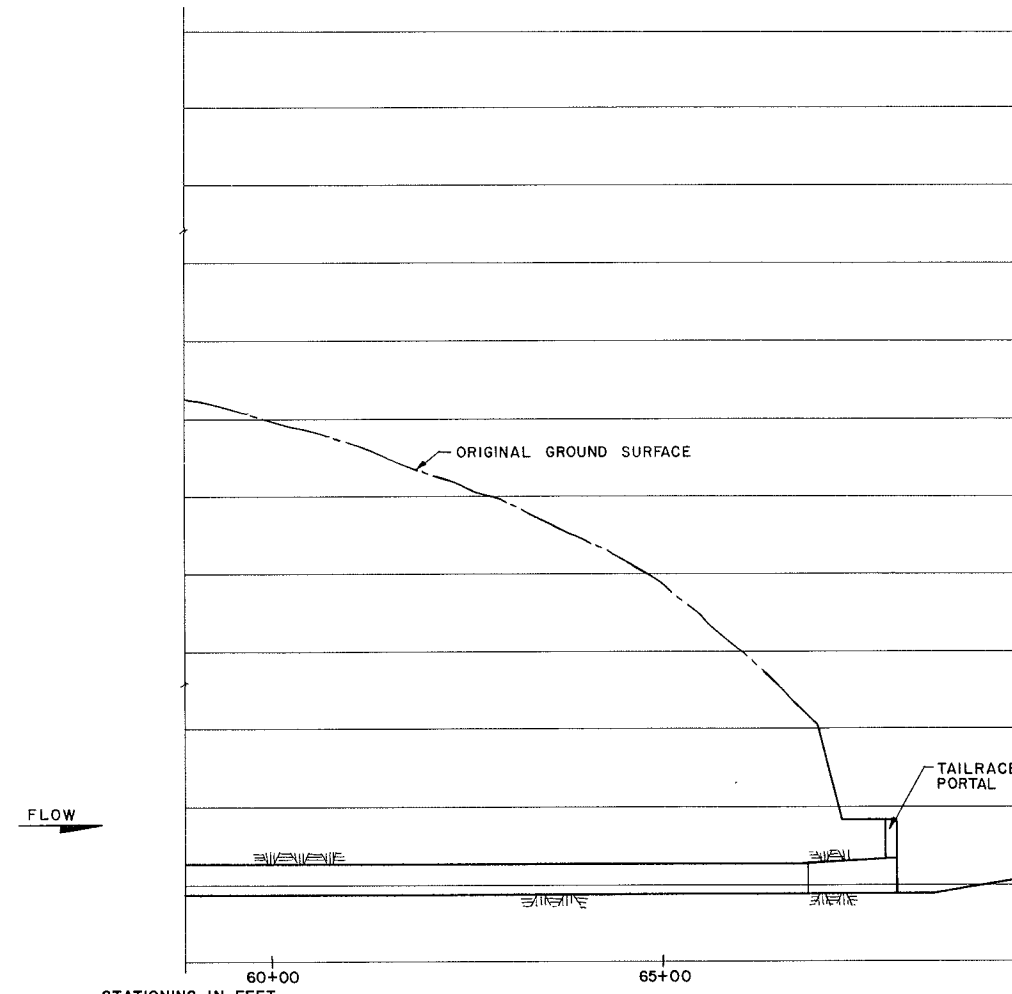
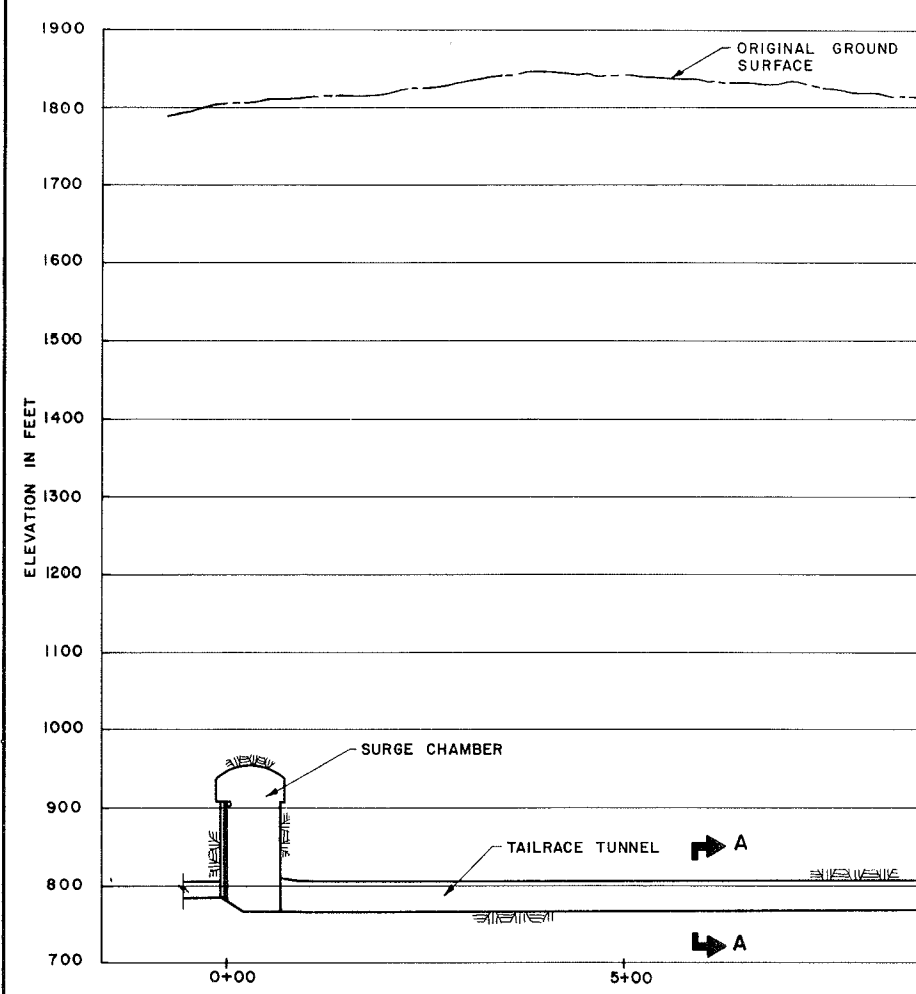
SECTION D-D
SCALE C



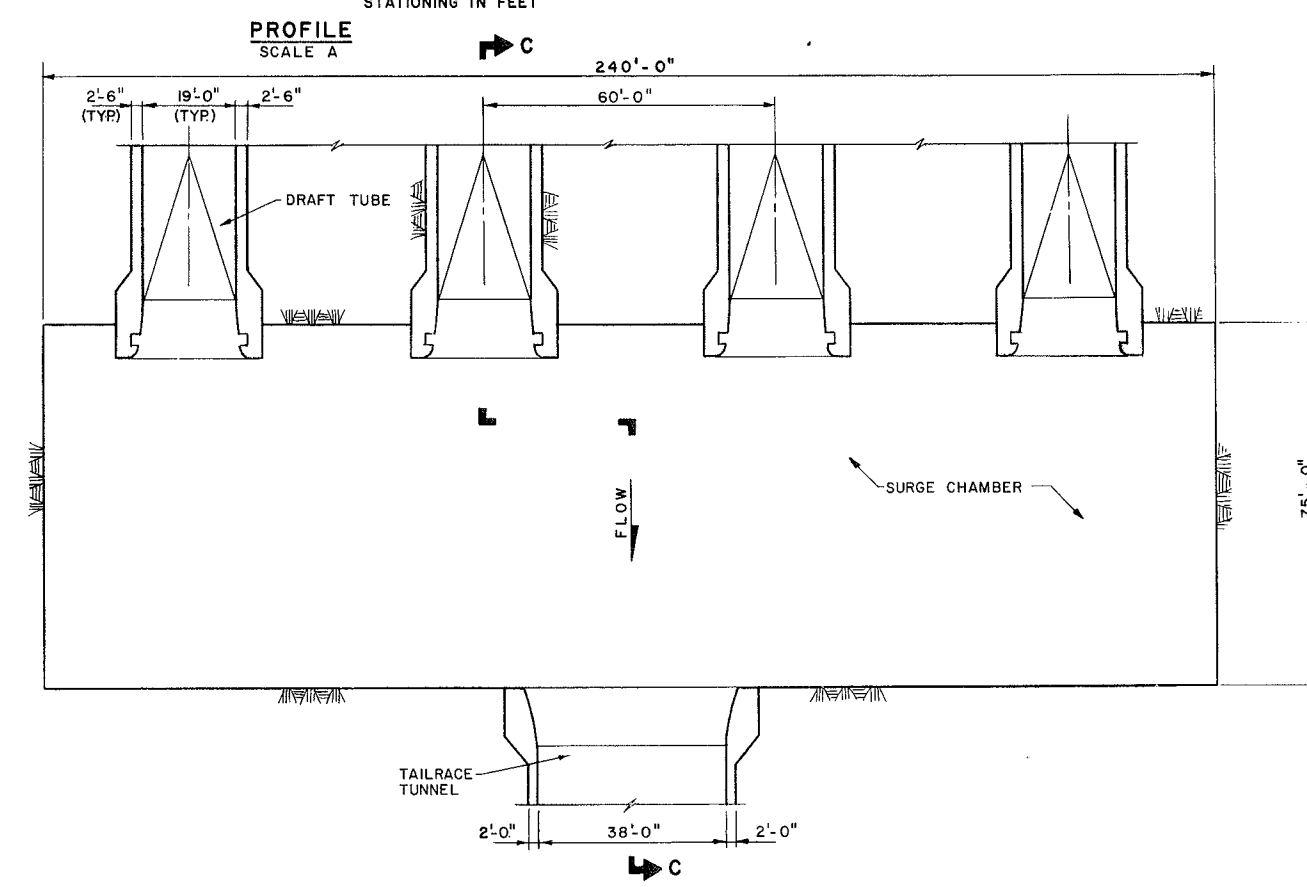
SECTION A-A
SCALE B

SCALE C 0 4 8 FEET (1/4 INCH = 1 FEET)
SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE A 0 16 32 FEET (1/16 INCH = 1 FEET)

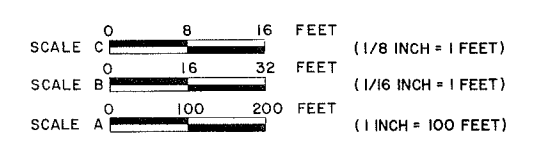
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TRANSFORMER GALLERY PLAN AND SECTIONS		
EXHIBIT F		PLATE F65



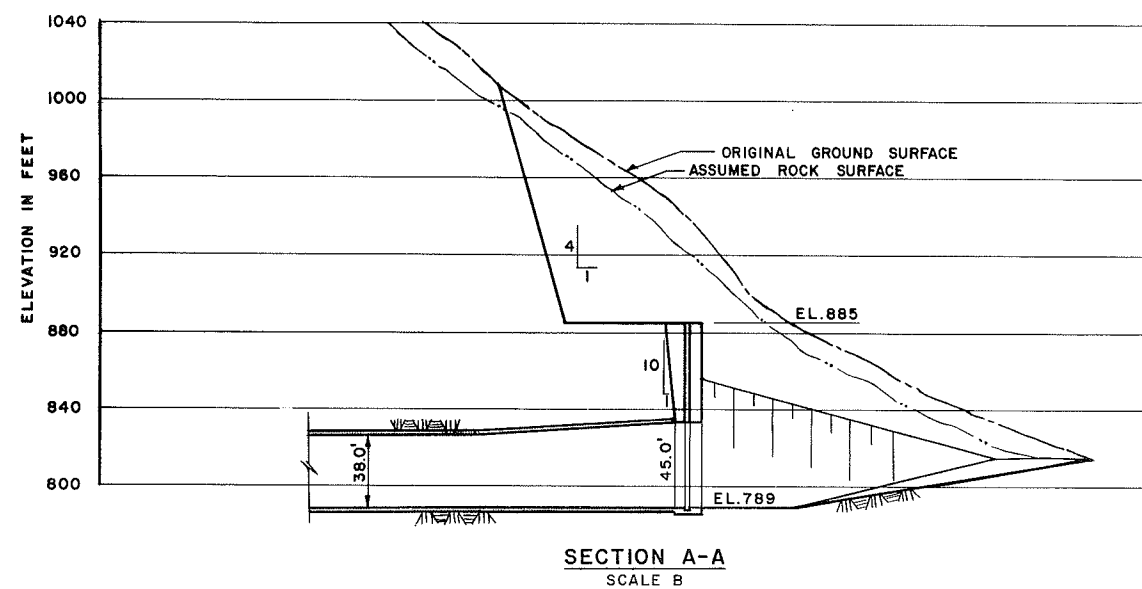
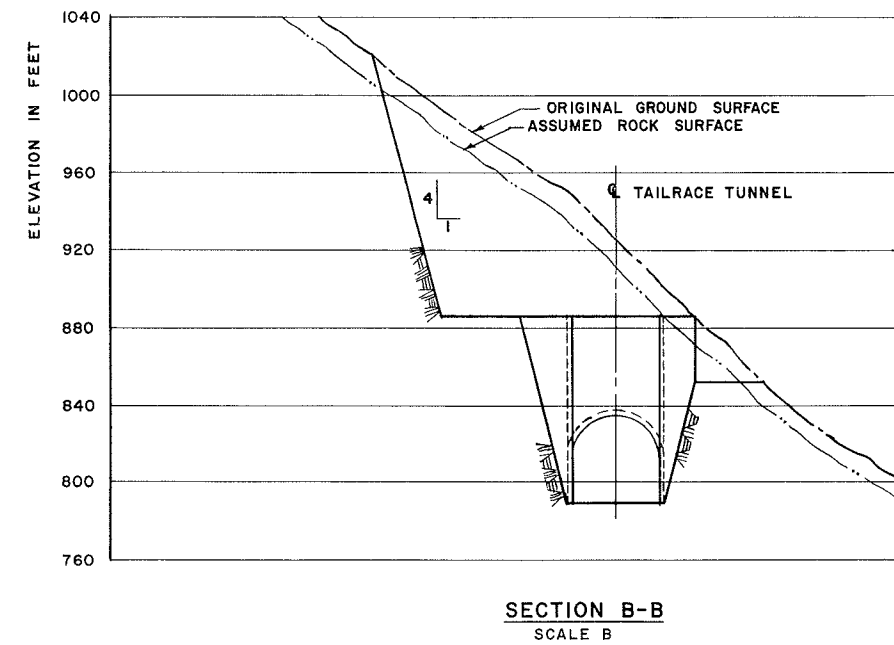
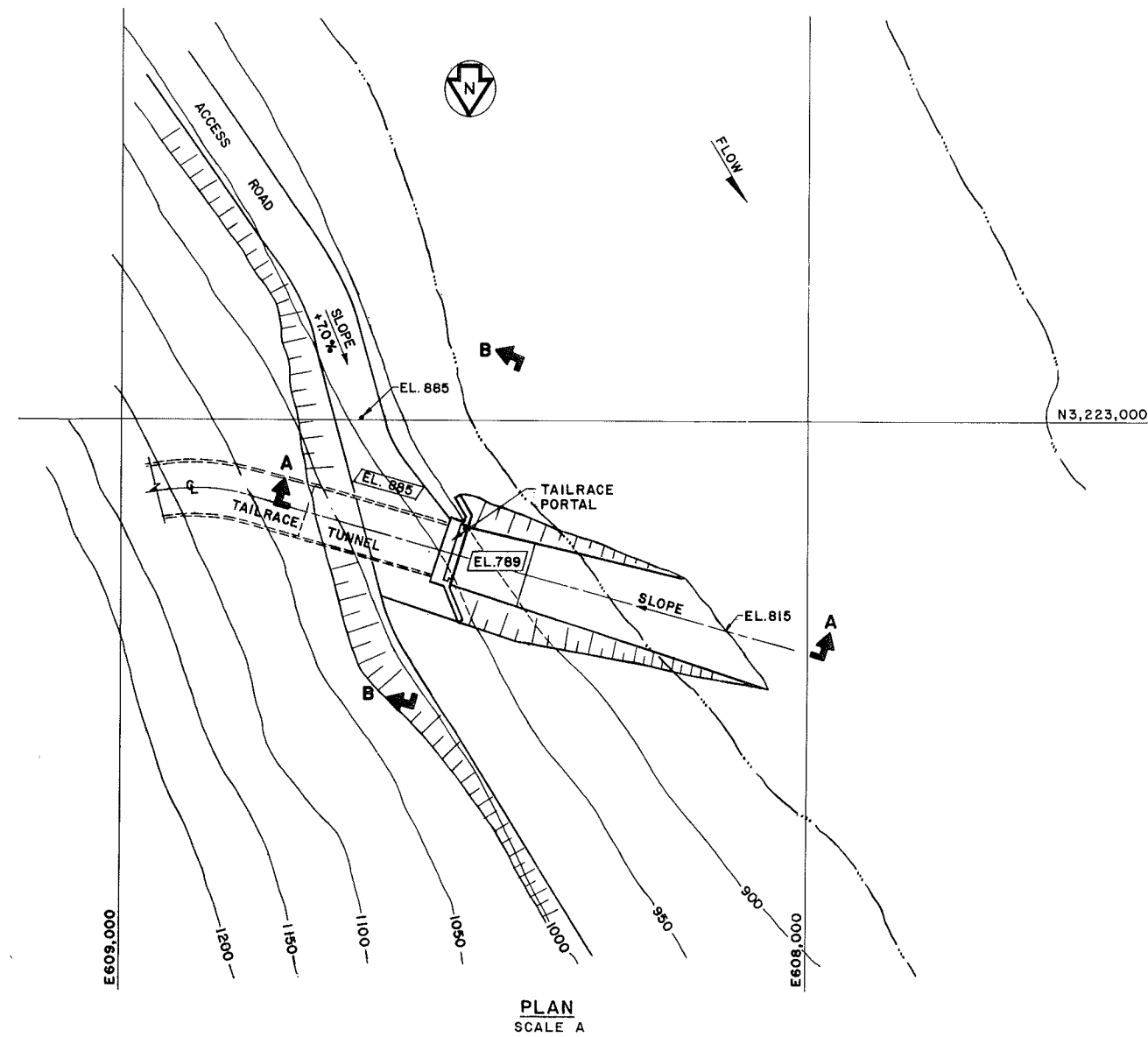
SECTION A-A
CONCRETE LINED TAILRACE TUNNEL
SCALE C



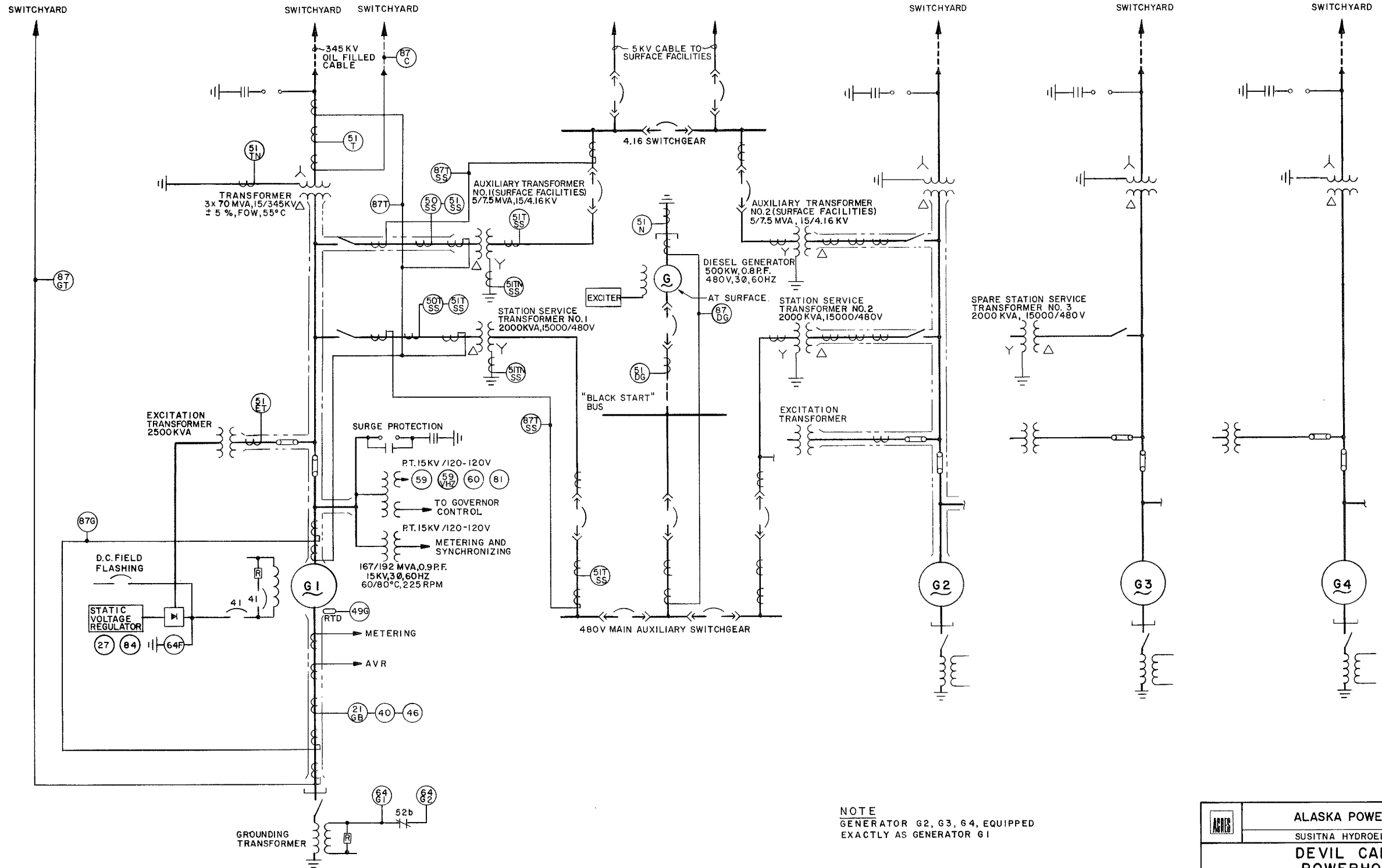
SECTION B-B
SCALE B



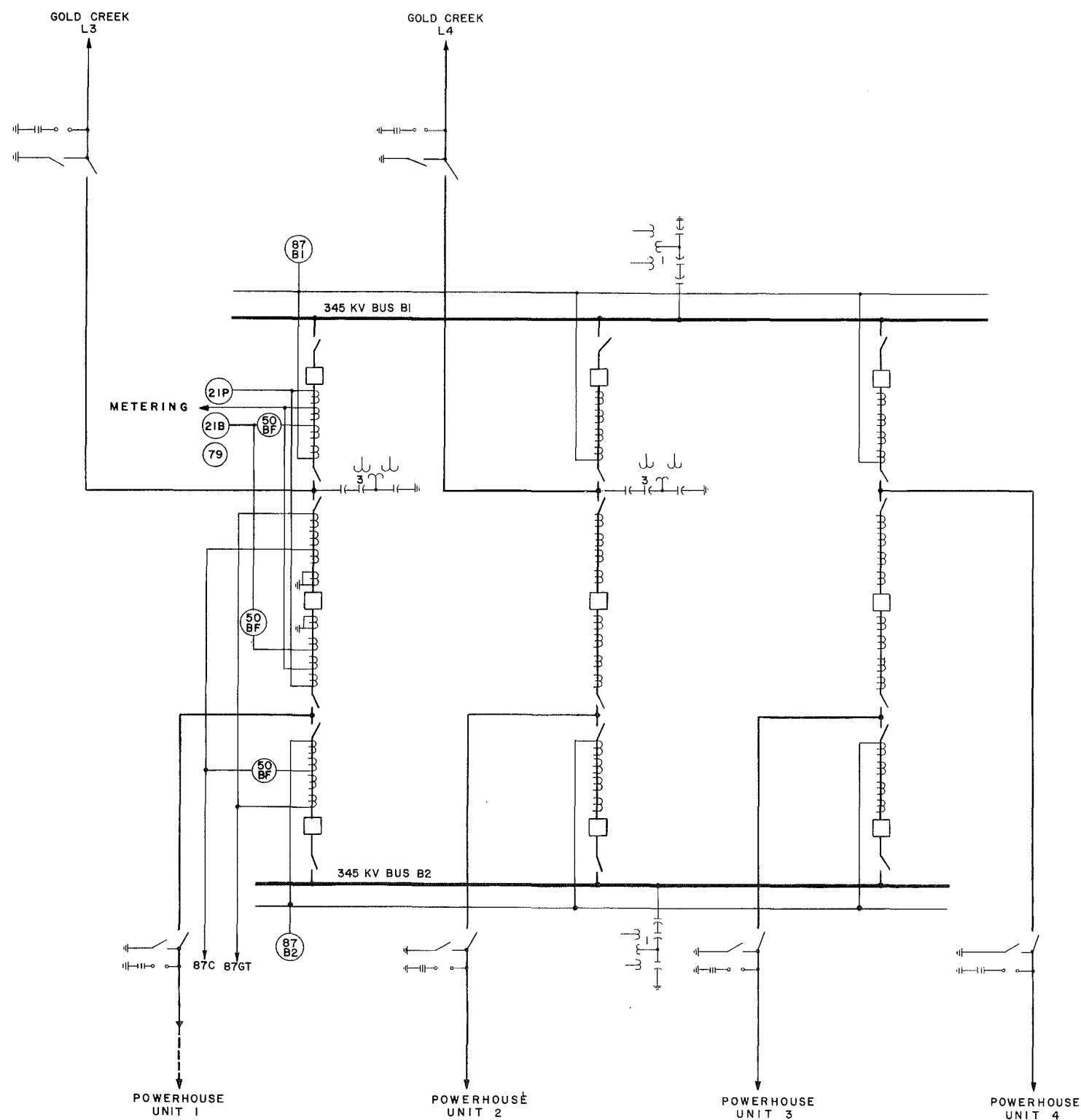
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON	
SURGE CHAMBER AND TAILRACE	
SECTIONS	
EXHIBIT F	PLATE F 66



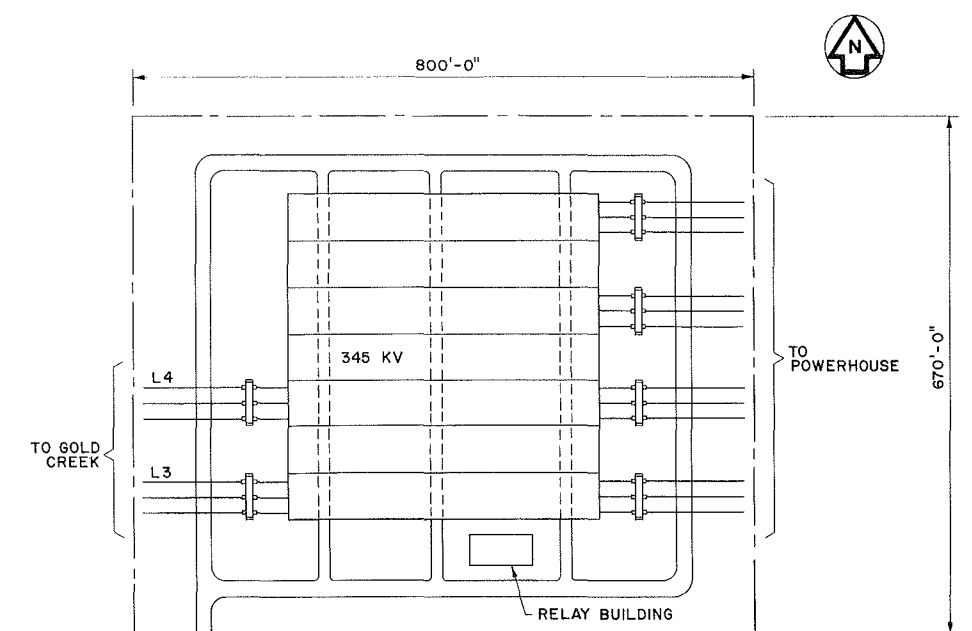
	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON TAILRACE PORTAL PLAN AND SECTIONS	
EXHIBIT F	PLATE F67



	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



N 3,212,000

N 3,214,000

N 3,216,000

N 3,218,000

N 3,220,000

N 3,222,000

N 3,224,000

N 3,226,000

N 3,228,000

N 3,230,000

N 3,232,000

E 620,000

E 618,000

E 616,000

E 614,000

E 612,000

E 610,000

E 608,000

E 606,000

E 604,000

E 602,000

E 600,000

TO WATANA

2-345 KV LINES
FROM WATANA

SWITCHYARD

TAIL RACE

TUNNEL

WATER INTAKE

OUTFALL

SEWAGE TREATMENT

CONSTRUCTION CAMP

CONSTRUCTION VILLAGE

SOLID WASTE
LANDFILL AND
INCINERATION

2-345 KV LINES
TO GOLD CREEK

4-345 KV TRANSMISSION
LINES TO GOLD CREEK

TO GOLD CREEK

SUSITNA RIVER

PORTAGE CREEK

CHIECHAKO CREEK

2700

2600

2500

2400

2300

2200

2100

2000

1900

1800

1700

1600

RAILHEAD

1500

1600

1700

1800

1700

1600

1500

1400

1300

1200

1100

1000

900

1000

1100

1200

1300

1400

1500

1600

1700

1800

1900



WATANA DAM

DEADMAN CREEK

TSUSENA CREEK

FOG CREEK

SUSITNA RIVER

FLOW

DEVIL CANYON DAM

DEVIL CREEK

PORTAGE CREEK

INDIAN RIVER

GOLD CREEK

LOCATION MAP

SCALE

0 4 8 MILES
(1 INCH = 4 MILES)

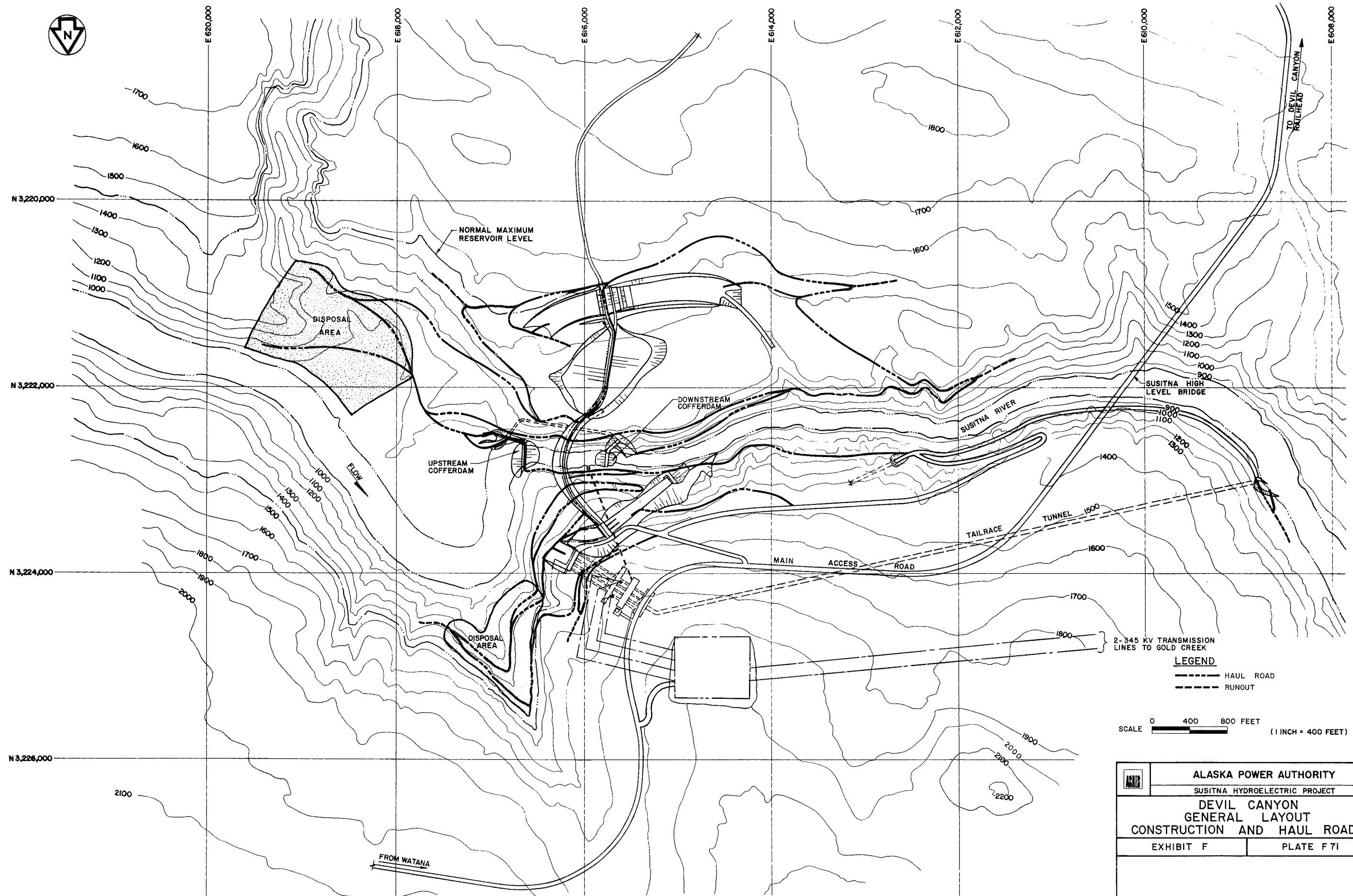
LEGEND

- 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

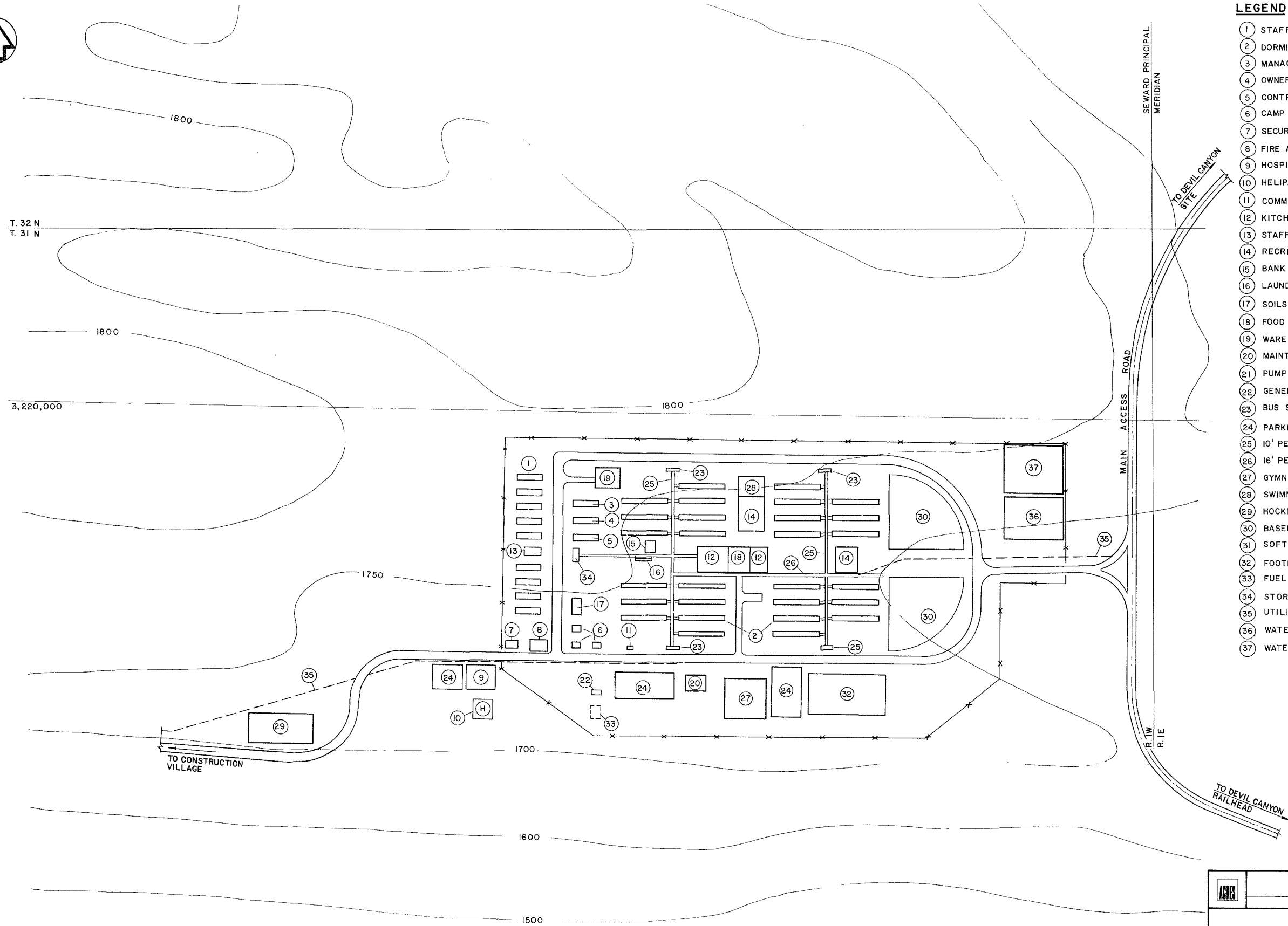


LEGEND

- 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

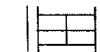
- ① STAFF AND FOREMAN HOUSING
- ② DORMITORIES
- ③ MANAGER'S GUEST HOUSE
- ④ OWNER'S GUEST HOUSE
- ⑤ CONTRACTOR'S GUEST HOUSE
- ⑥ CAMP MANAGER'S OFFICES
- ⑦ SECURITY
- ⑧ FIRE AND OIL SPILL
- ⑨ HOSPITAL
- ⑩ HELIPAD (MEDICAL EMERGENCY)
- ⑪ COMMUNICATIONS CENTER
- ⑫ KITCHEN AND DINING
- ⑬ STAFF CLUBHOUSE
- 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' x 50')
- FAMILY HOUSING - 3 B.R. - 16 UNITS (24' x 50')
- FAMILY HOUSING - 4 B.R. - 16 UNITS (28' x 50')
- FAMILY HOUSING - 3 B.R. - 72 UNITS (14' x 60')
- FAMILY HOUSING - 3 B.R. - 200 UNITS (14' x 60')

- (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

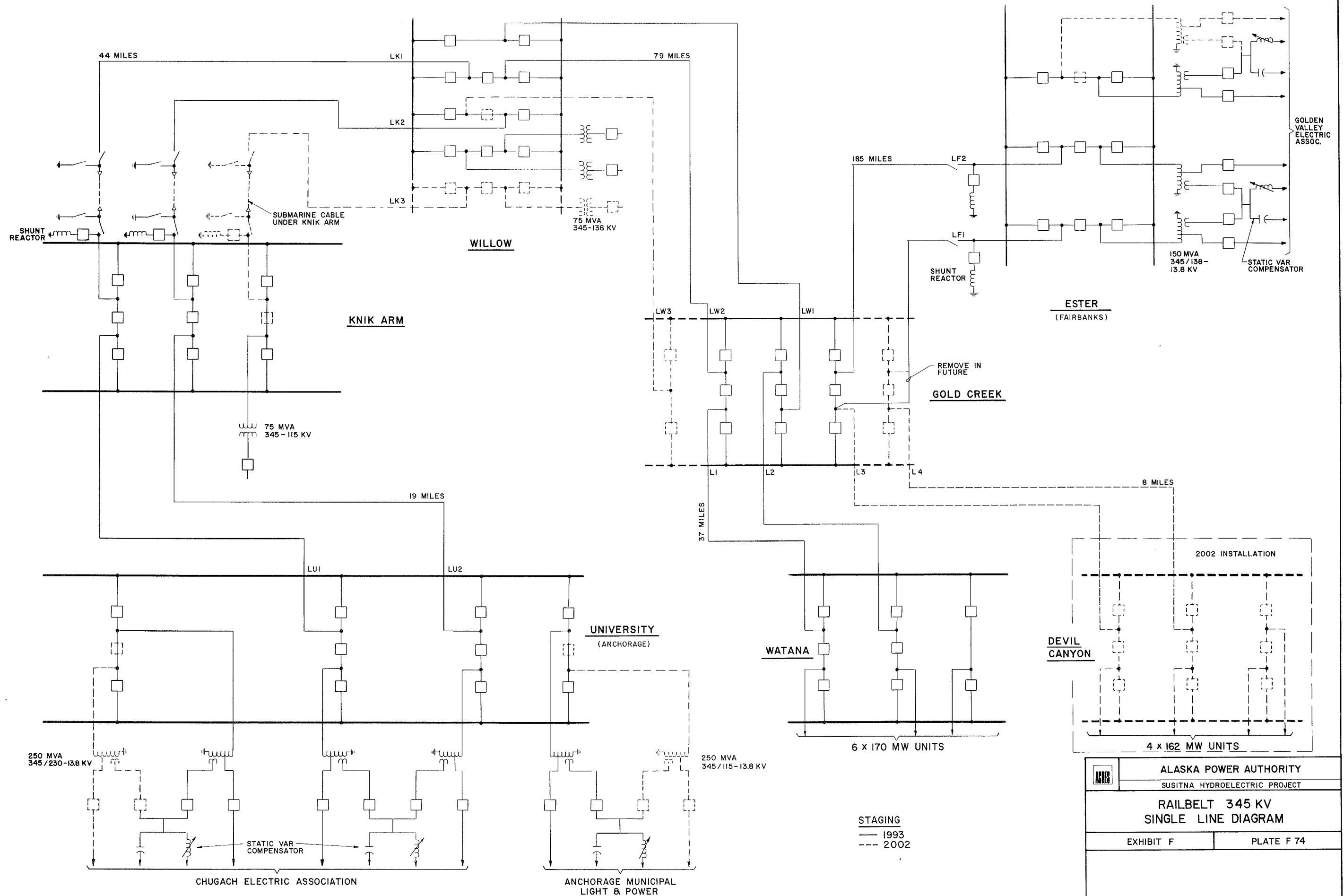
1500

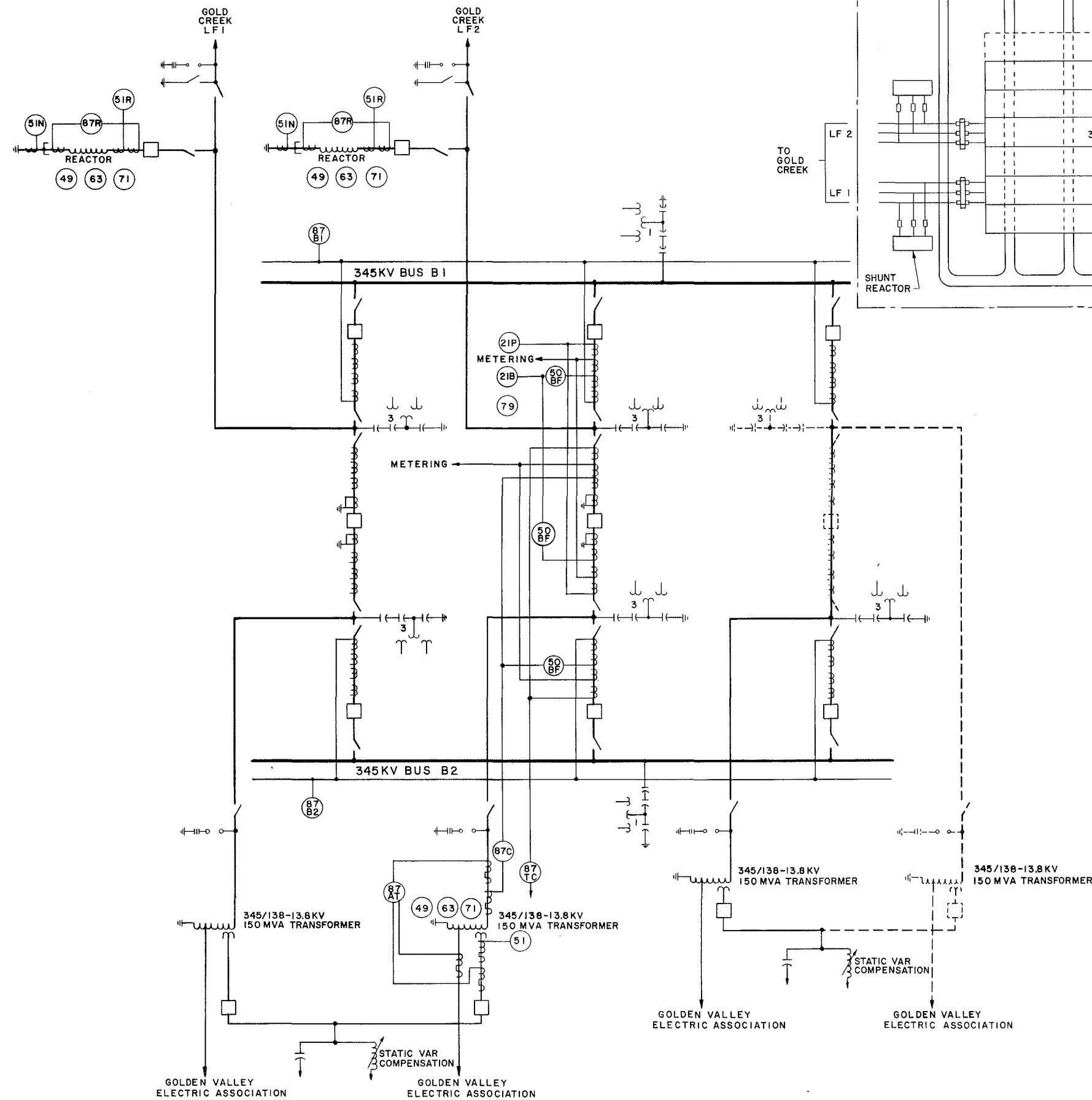
6,000,000

TO CONSTRUCTION CAMP
AND DEVIL CANYON SITE

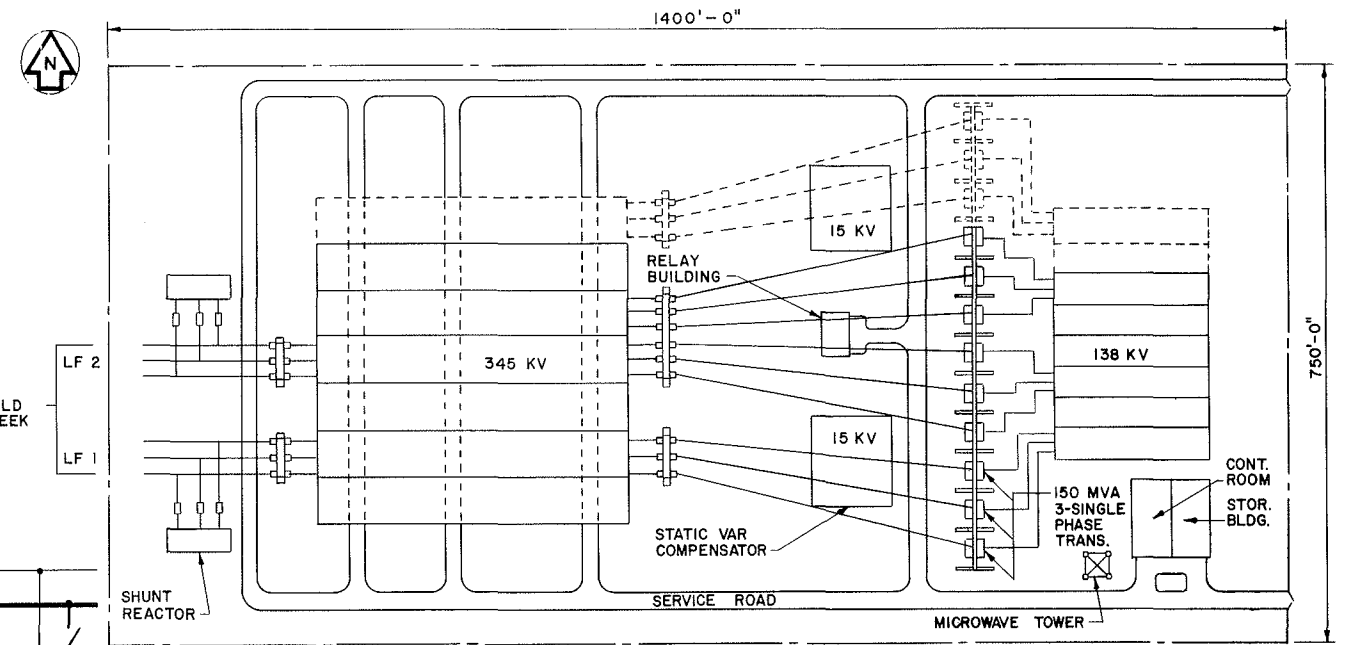
SCALE 0 200 400 FEET
(1 INCH = 200 FEET)

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





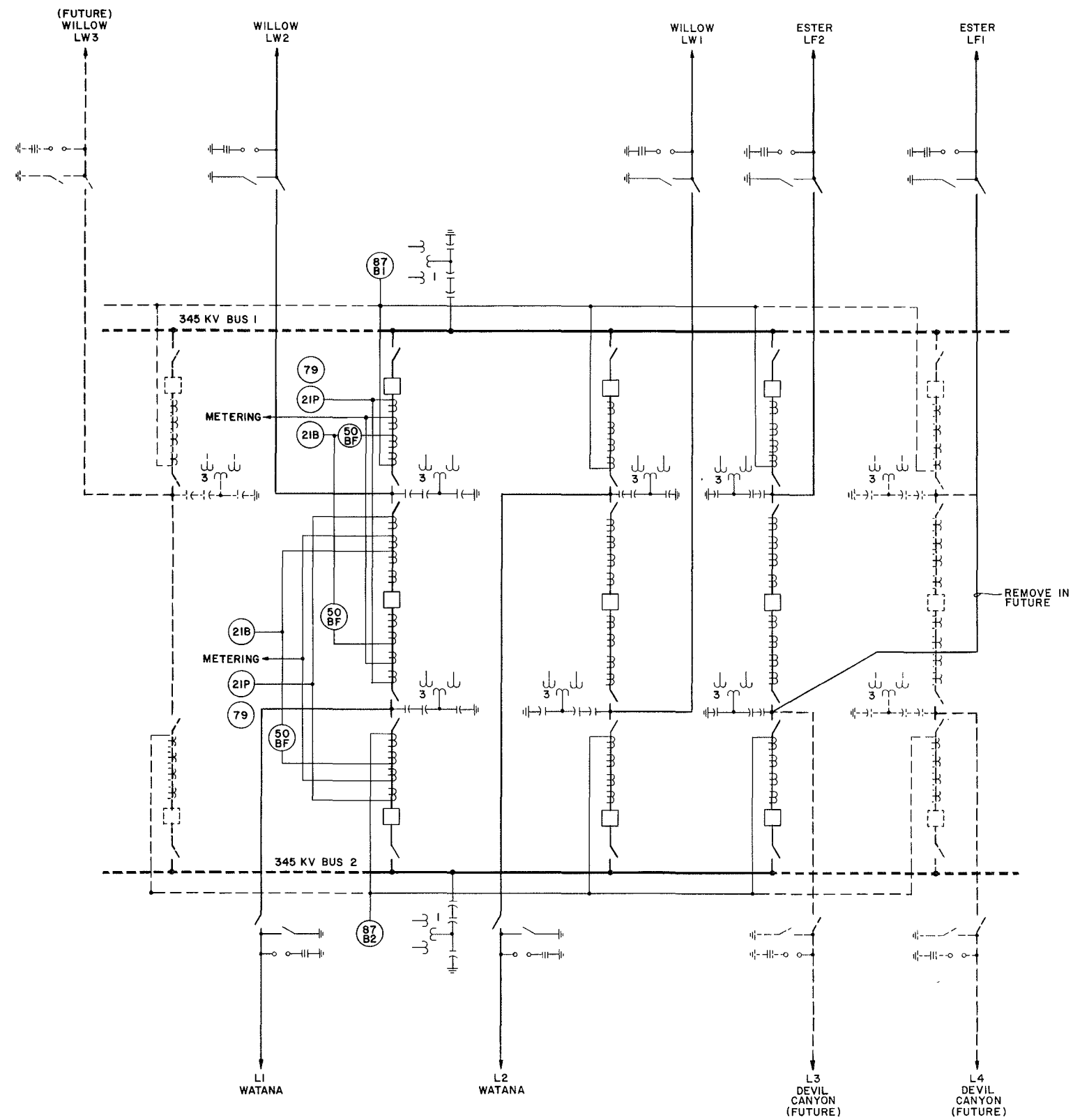
SINGLE LINE DIAGRAM



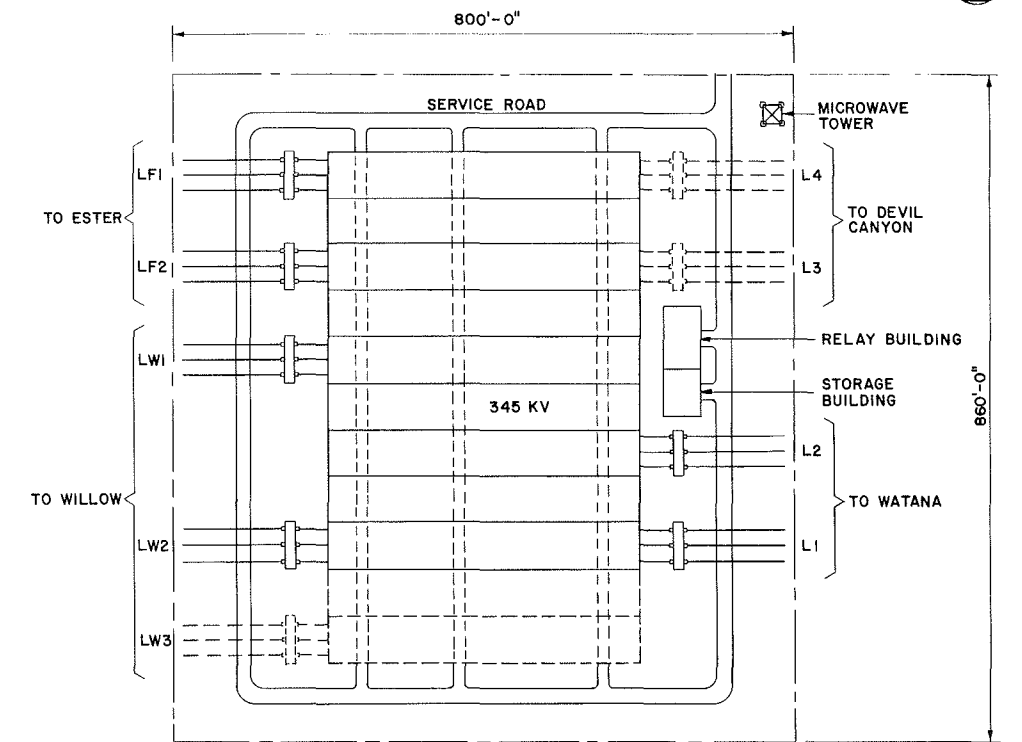
SUBSTATION PLAN
SCALE A

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

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



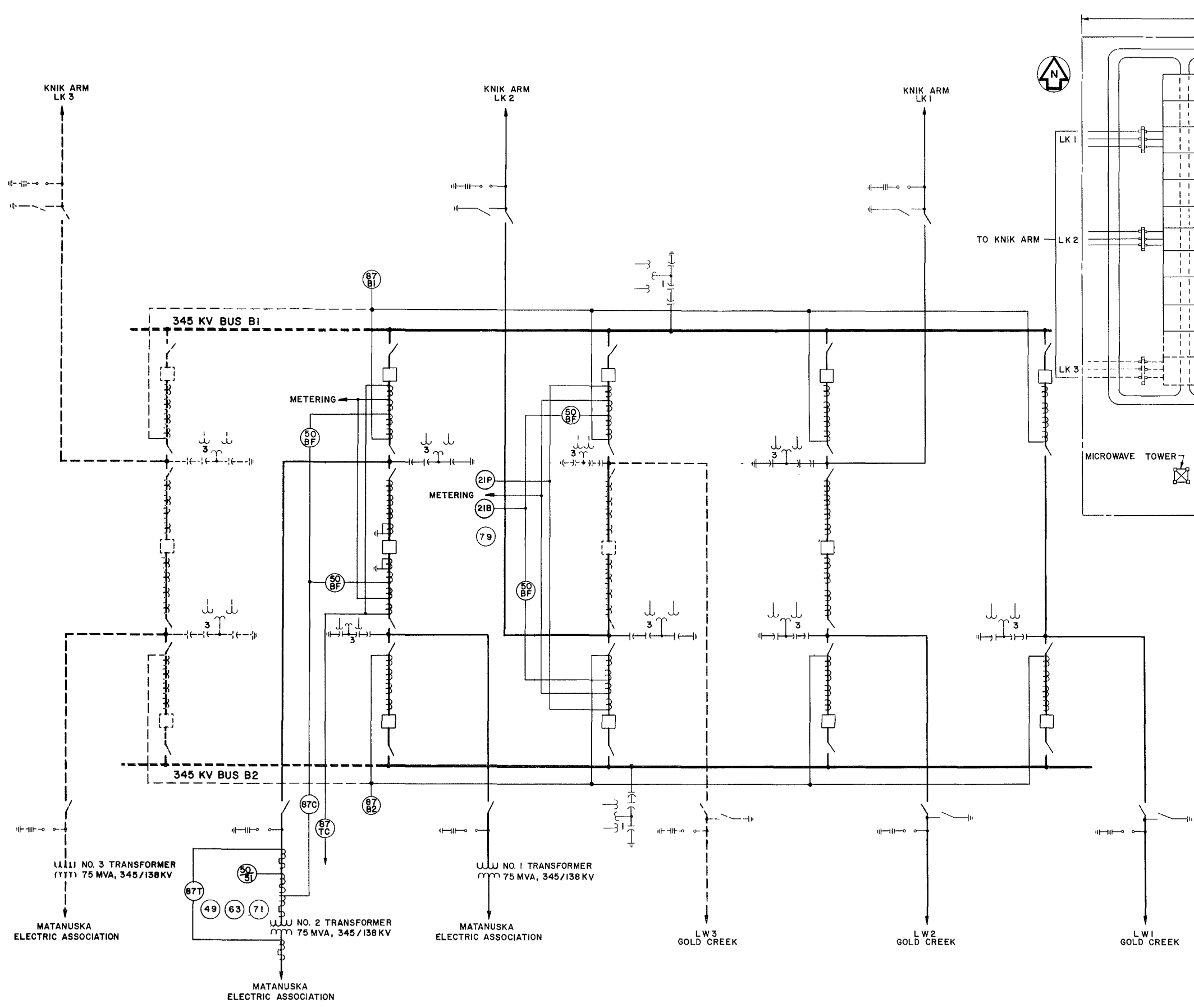
SINGLE LINE DIAGRAM



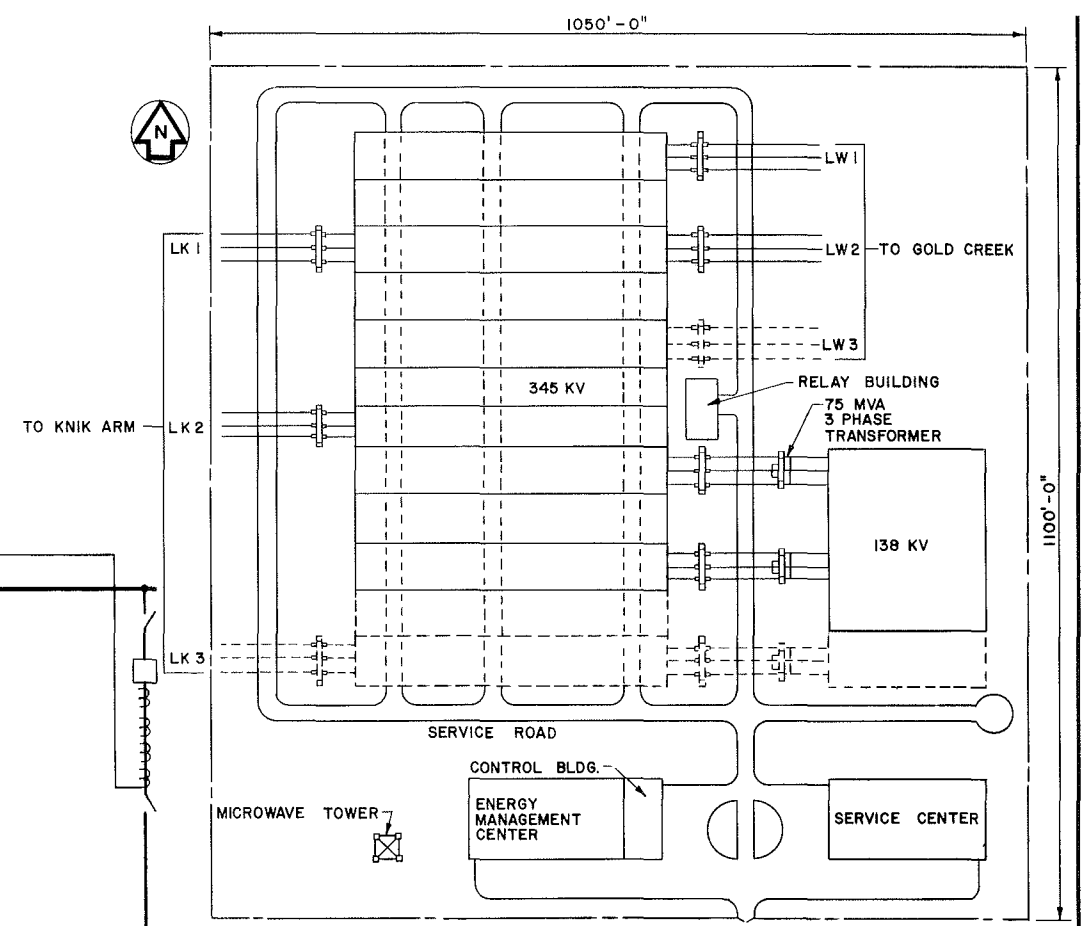
SWITCHYARD PLAN
SCALE A

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
		



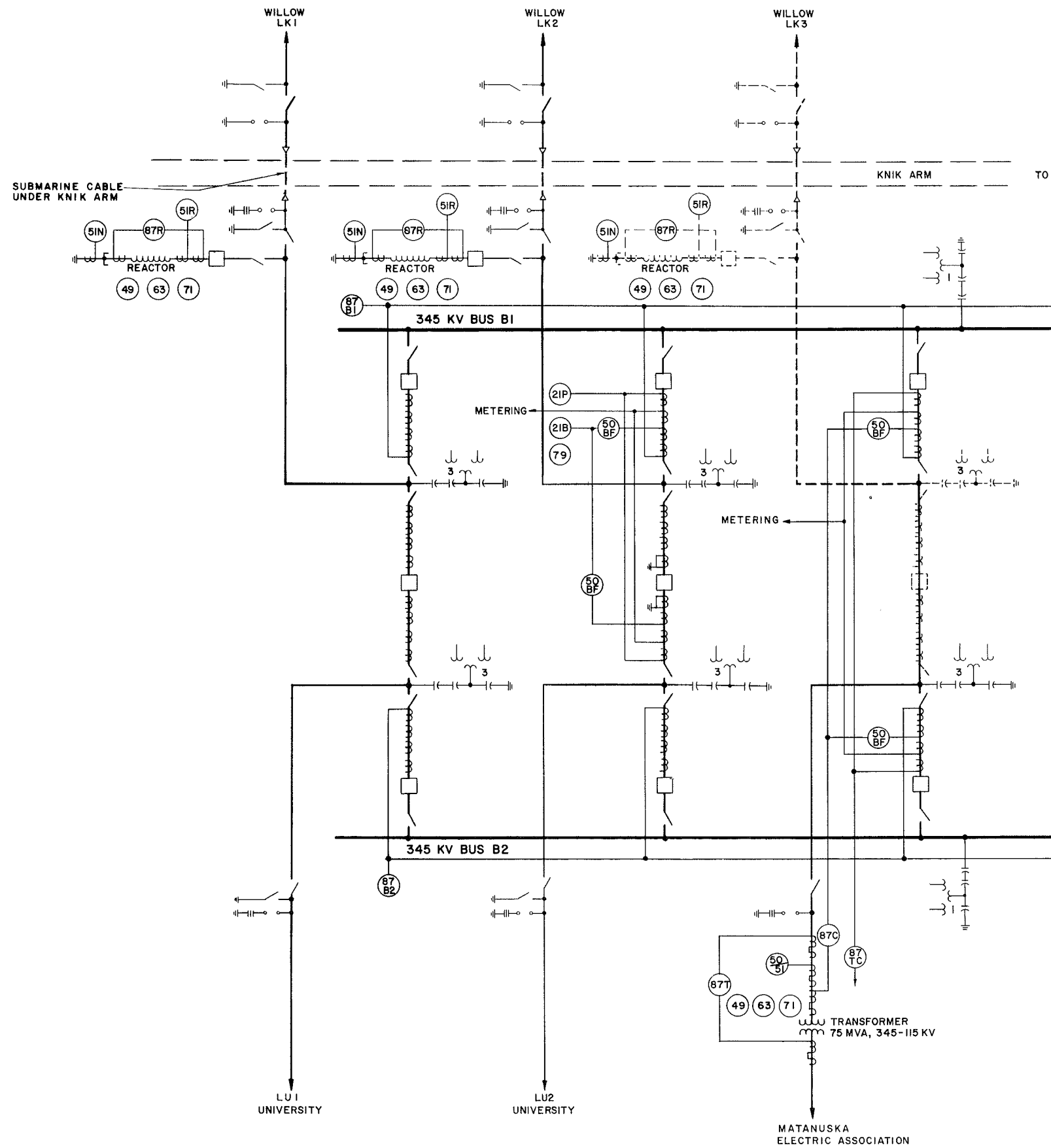
SINGLE LINE DIAGRAM



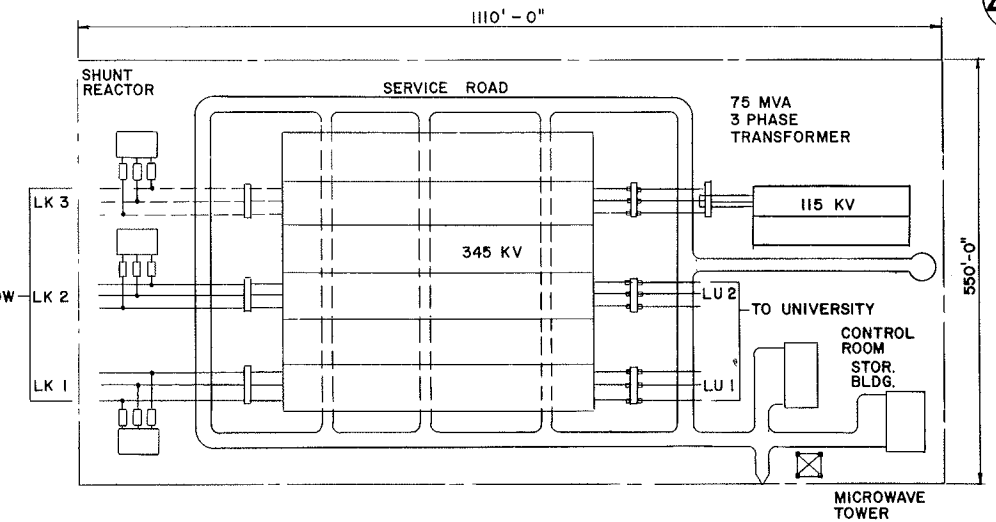
SUBSTATION PLAN
SCALE A

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

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



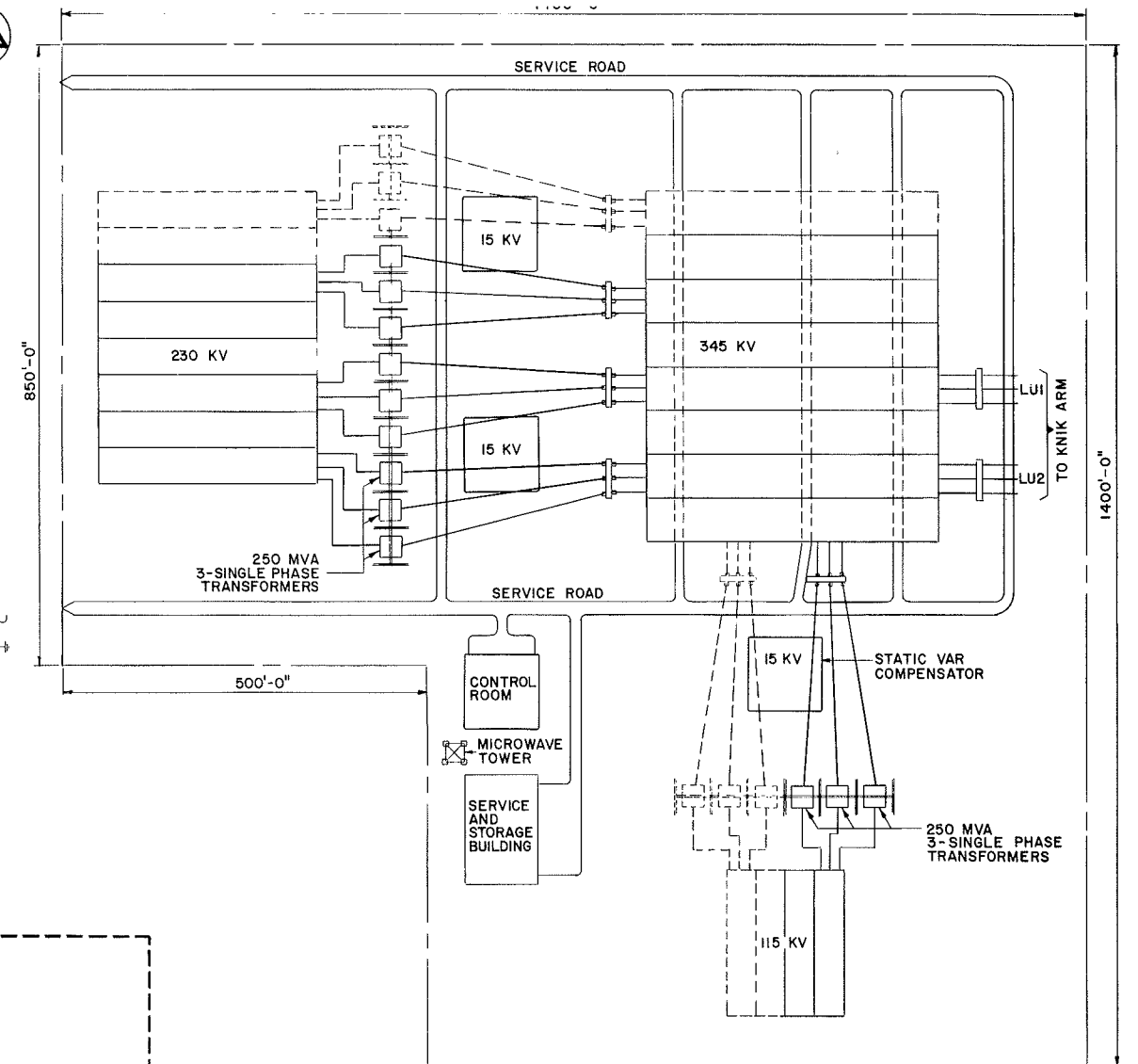
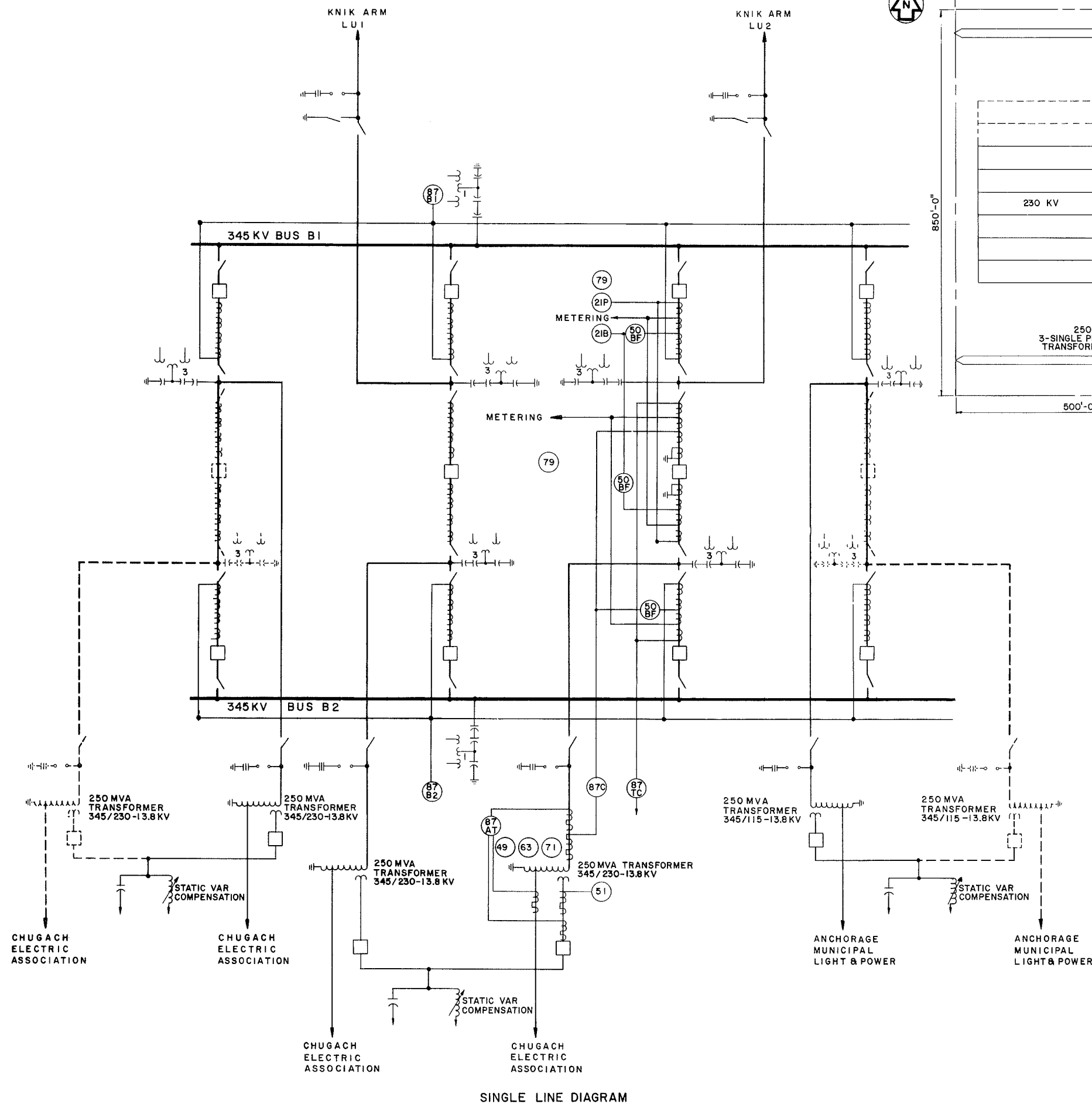
SINGLE LINE DIAGRAM



SUBSTATION PLAN
SCALE A

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

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

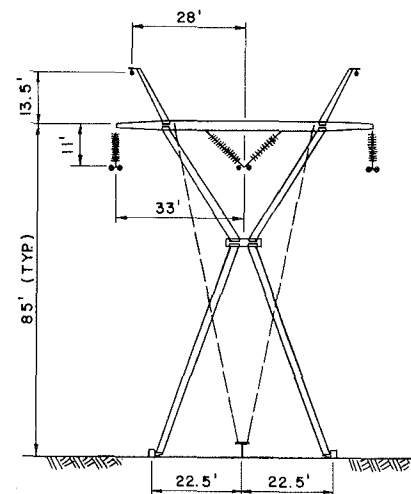


SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

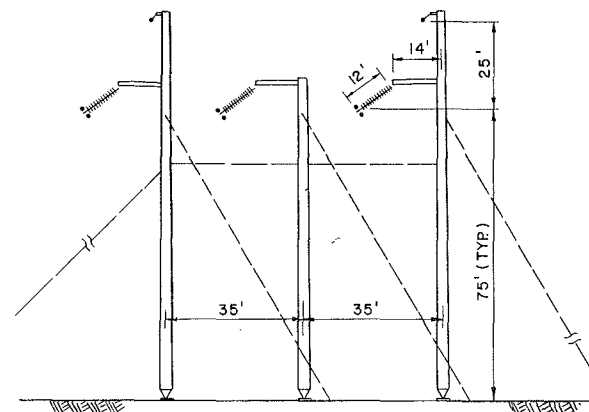
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
UNIVERSITY SUBSTATION	
SINGLE LINE DIAGRAM AND PLAN	
EXHIBIT F	PLATE F 79

NOTES:

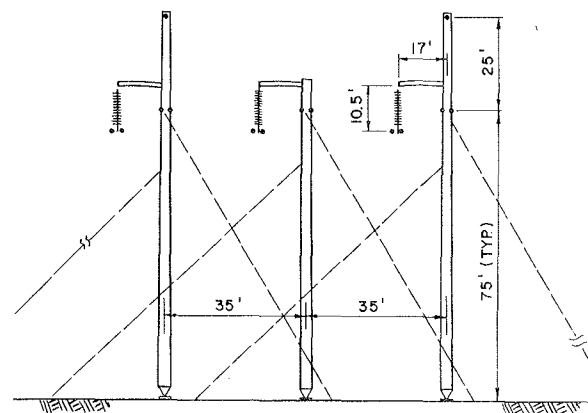
1. BASED ON PROPOSED STRUCTURES FOR INTERTIE PROJECT.
2. AVERAGE CONDUCTOR SAG - 37 FEET.
3. AVERAGE TOWER SPACING - 1400 FEET.



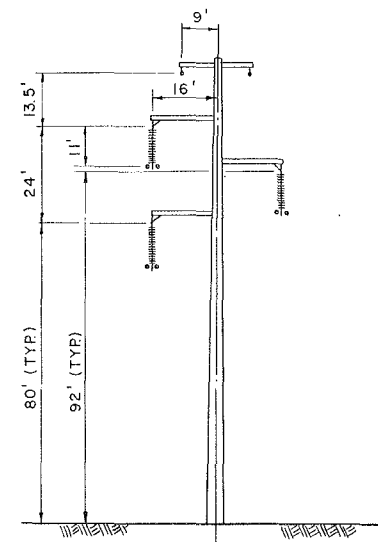
345 kV TANGENT OR LIGHT ANGLE STRUCTURE



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



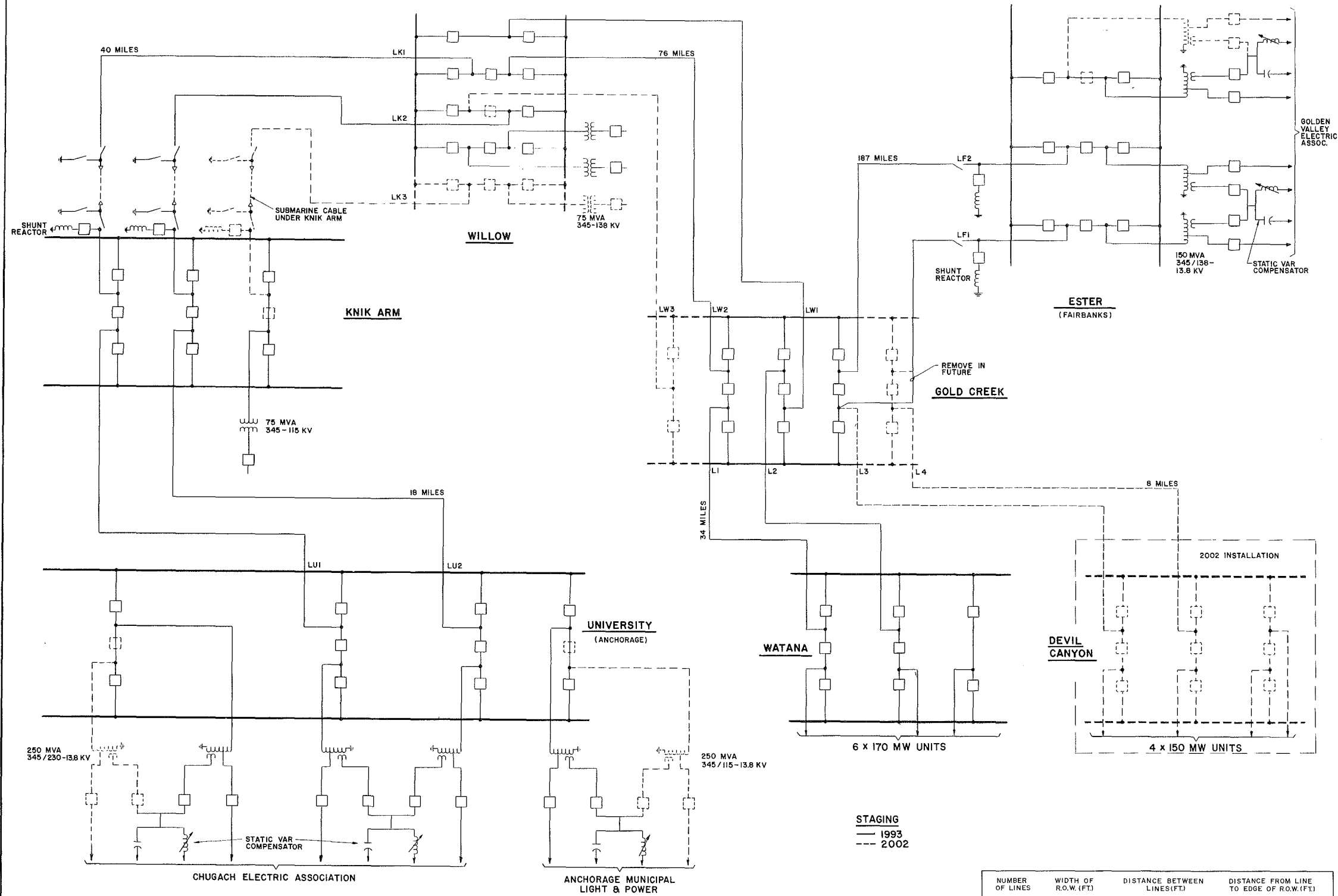
345 kV HEAVY ANGLE (8° - 50°) DEAD END STRUCTURE



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

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.

