

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

SUSITNA HYDROELECTRIC PROJECT

VOLUME 3

GOVERNMENT PUBLICATIONS
SECTION

AUG 01 2001

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EXHIBIT F

FEBRUARY 1983

Prepared by:

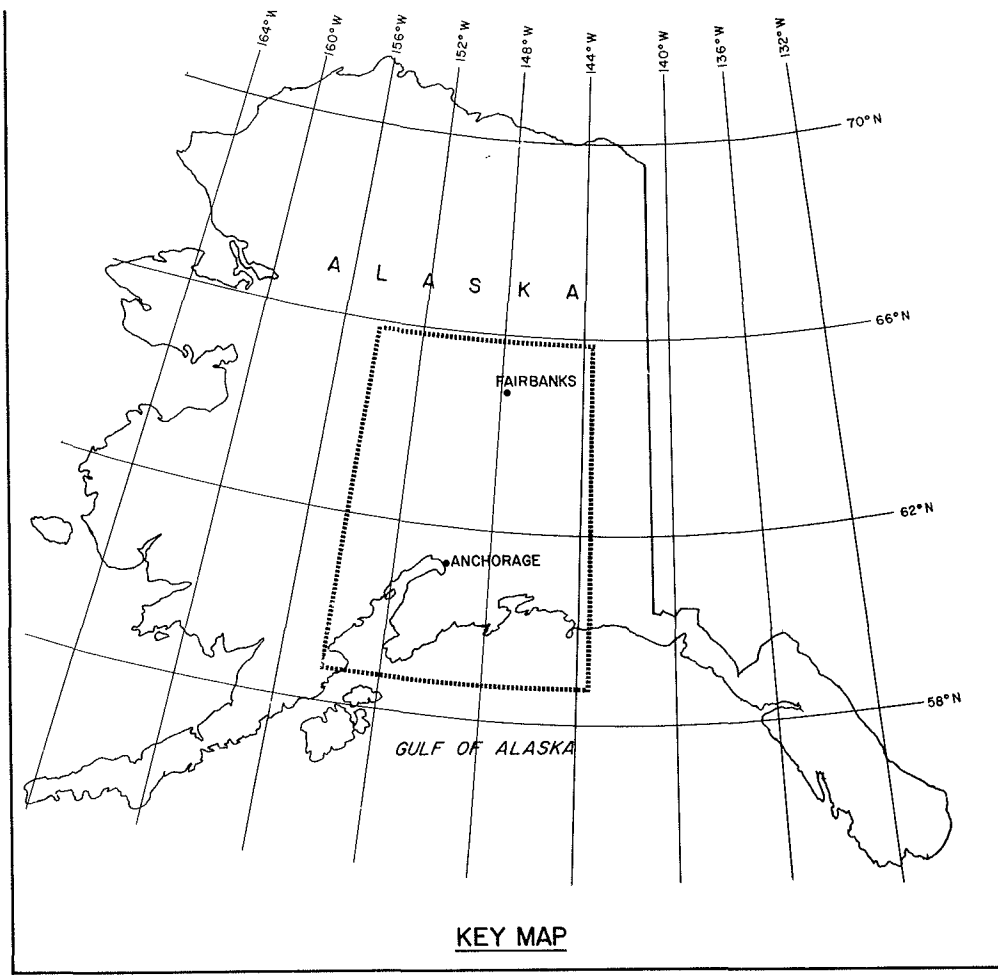
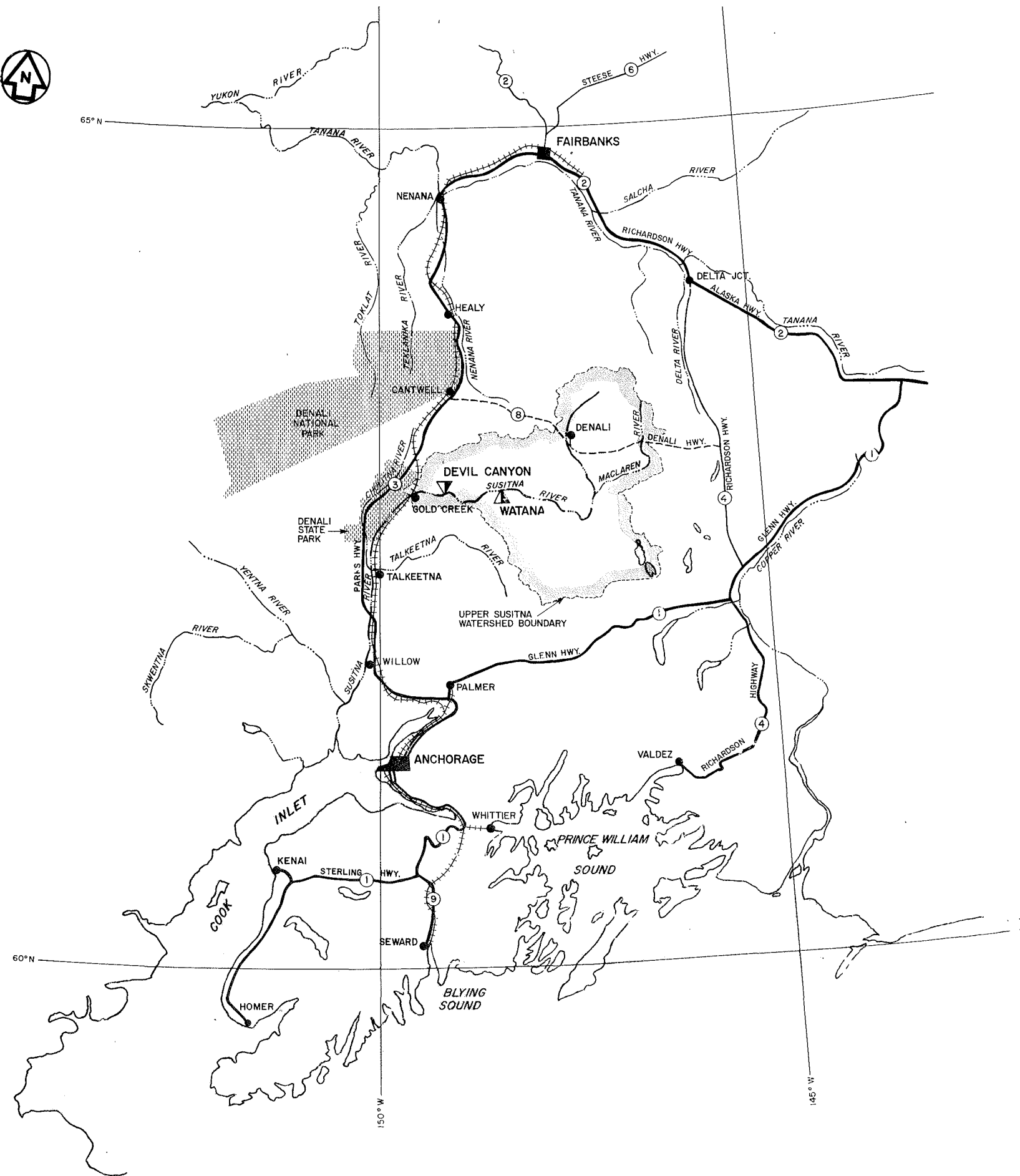


ALASKA POWER AUTHORITY

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
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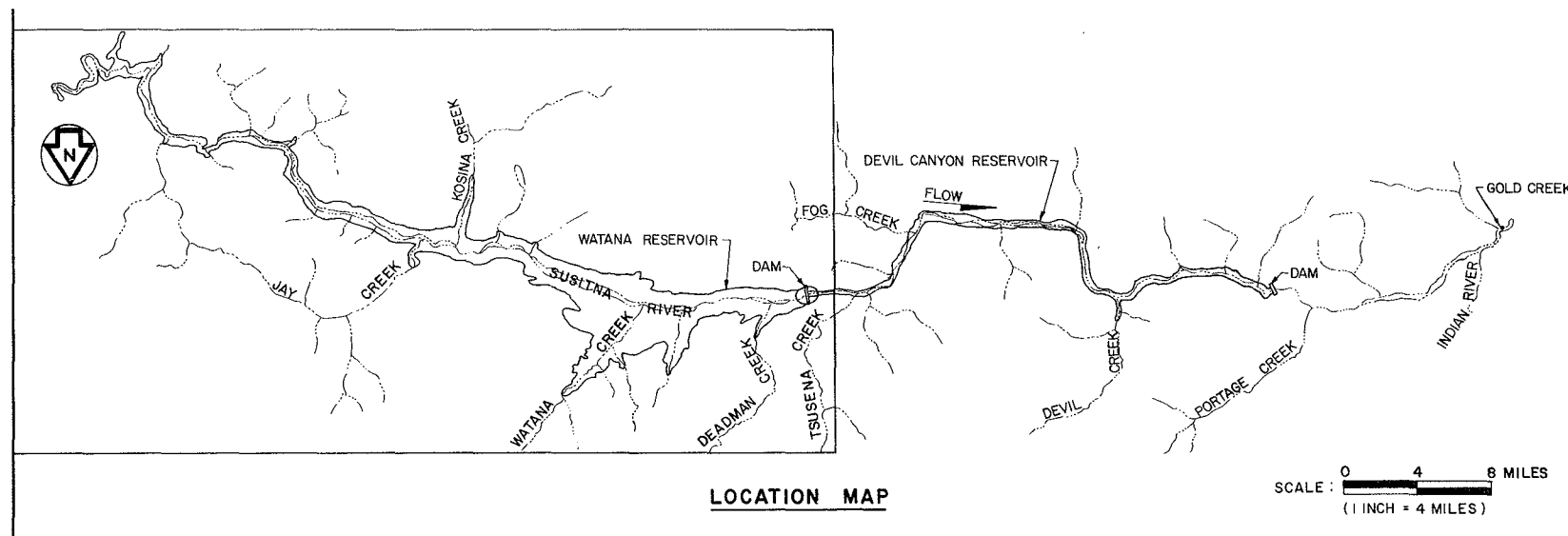


LEGEND

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

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

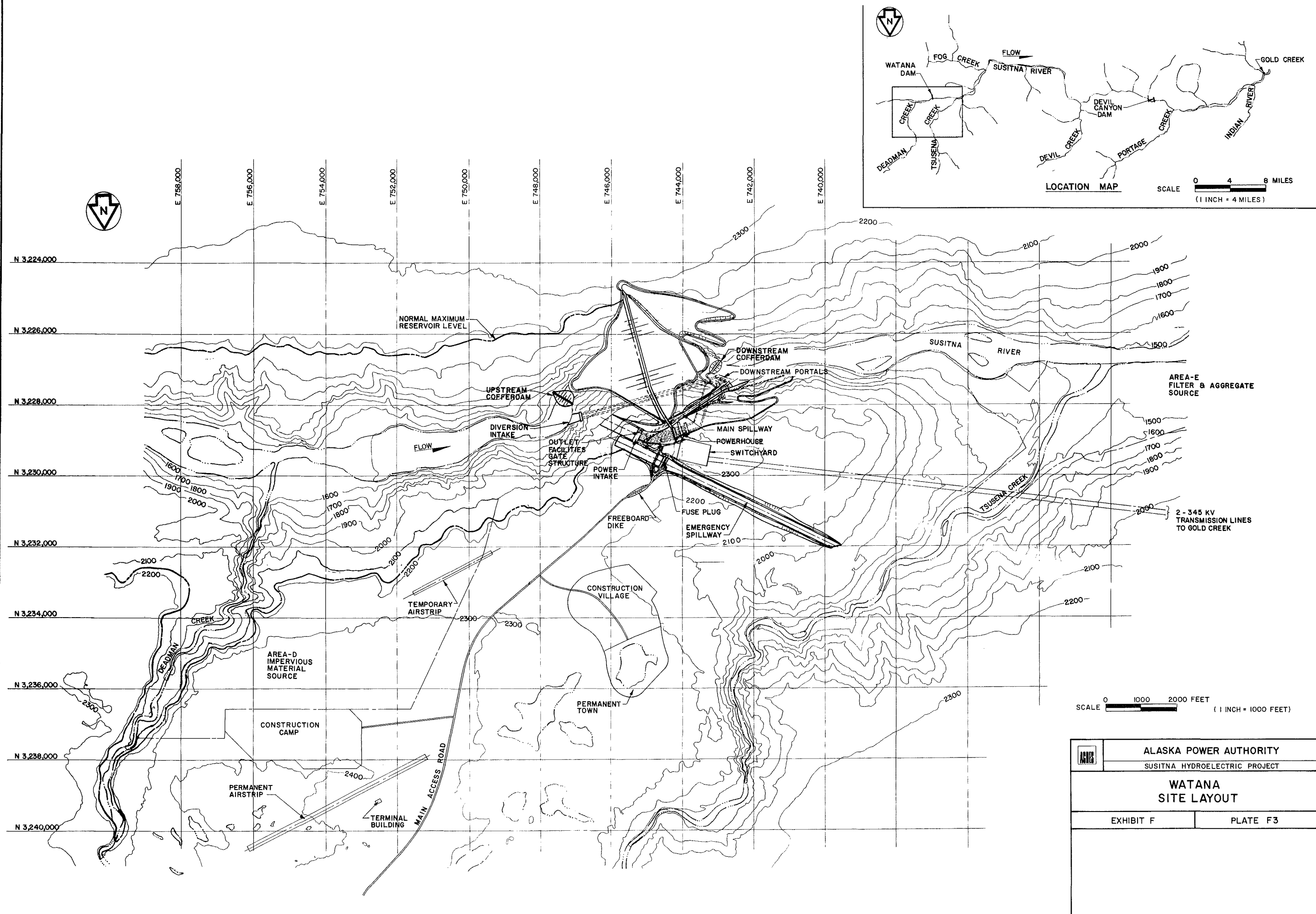
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
RAILBELT AREA		
EXHIBIT F		PLATE F I



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

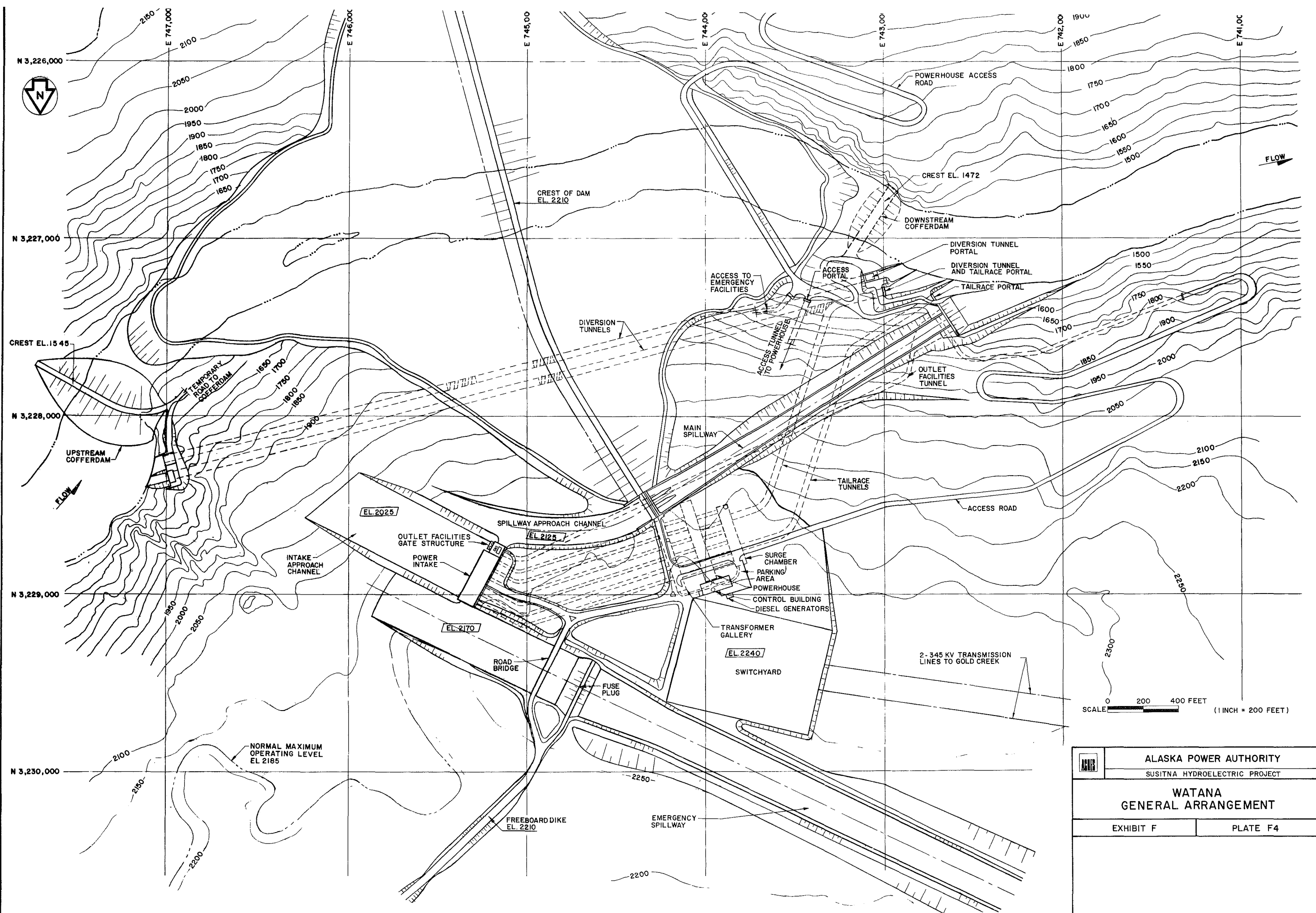
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	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA RESERVOIR PLAN	
	EXHIBIT F	PLATE F2

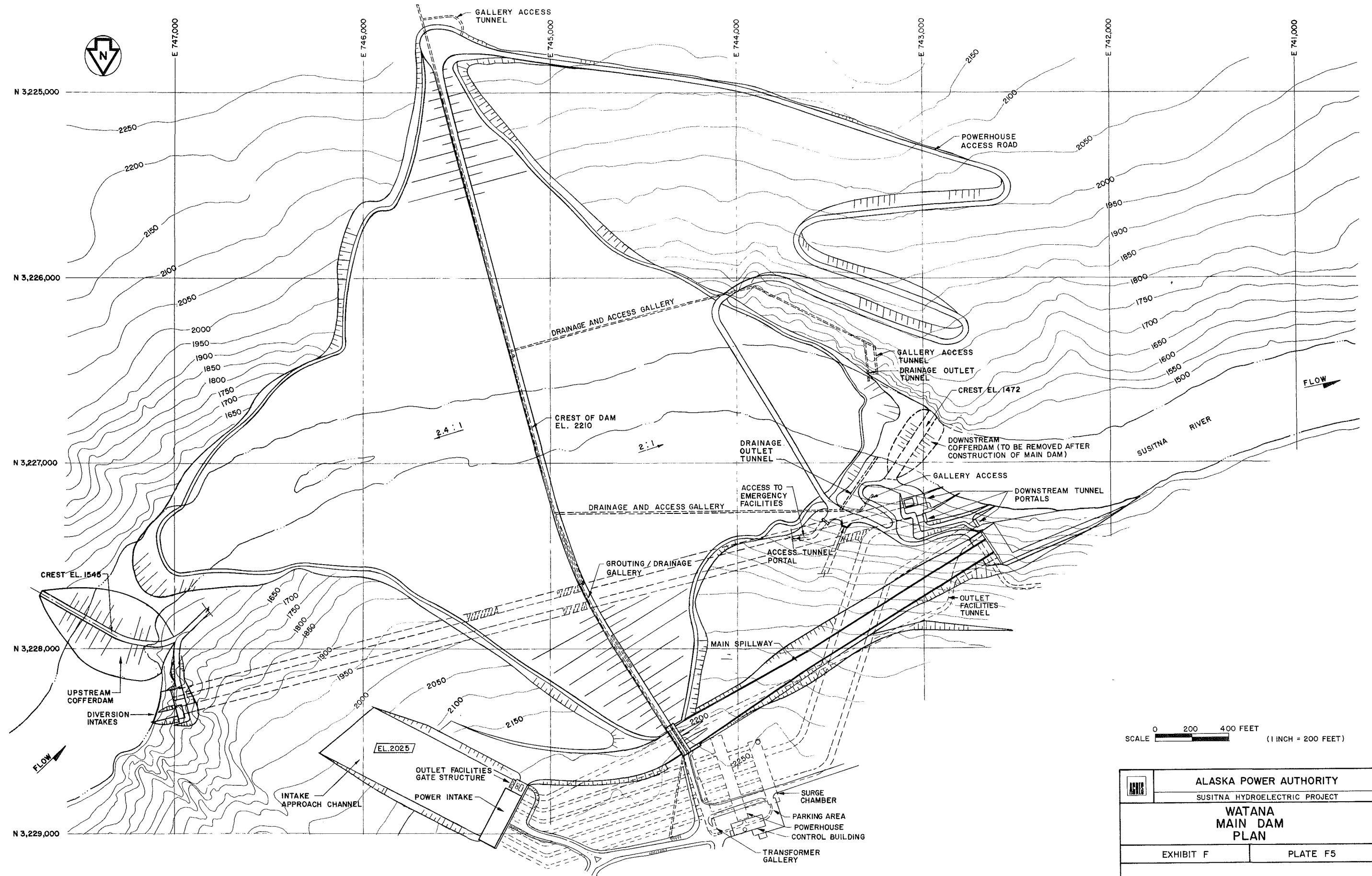


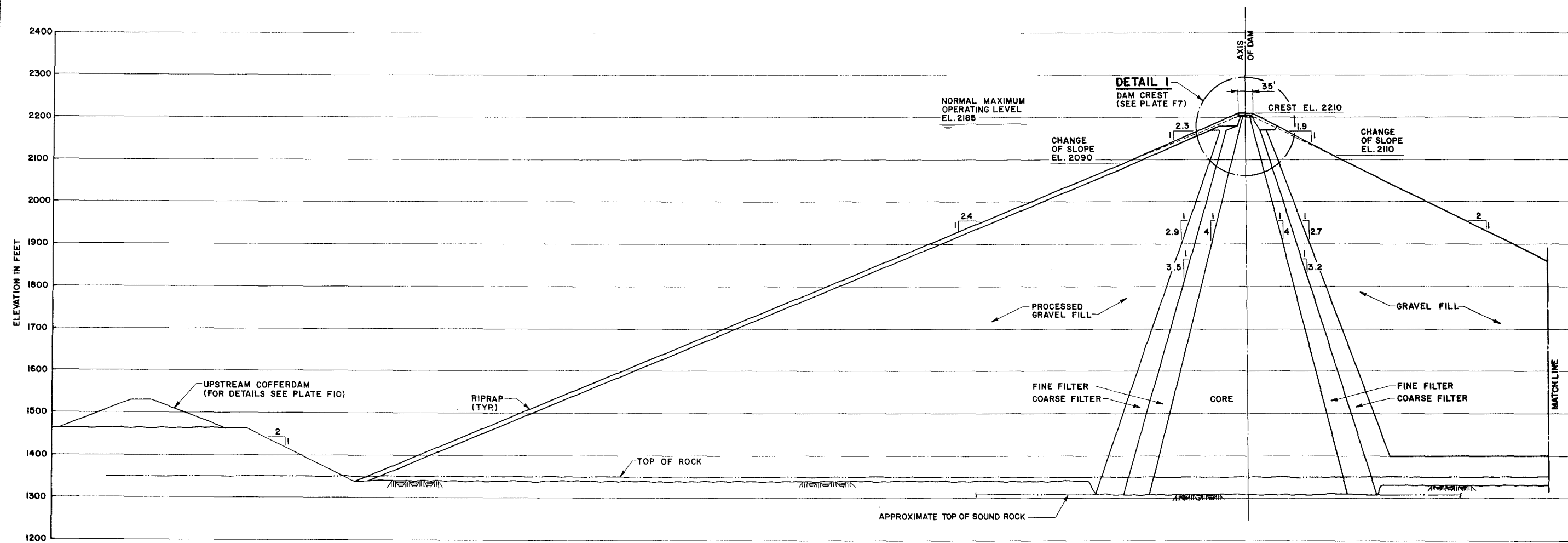
SCALE 0 1000 2000 FEET
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	SUSITNA HYDROELECTRIC PROJECT	
WATANA SITE LAYOUT		
EXHIBIT F		PLATE F3

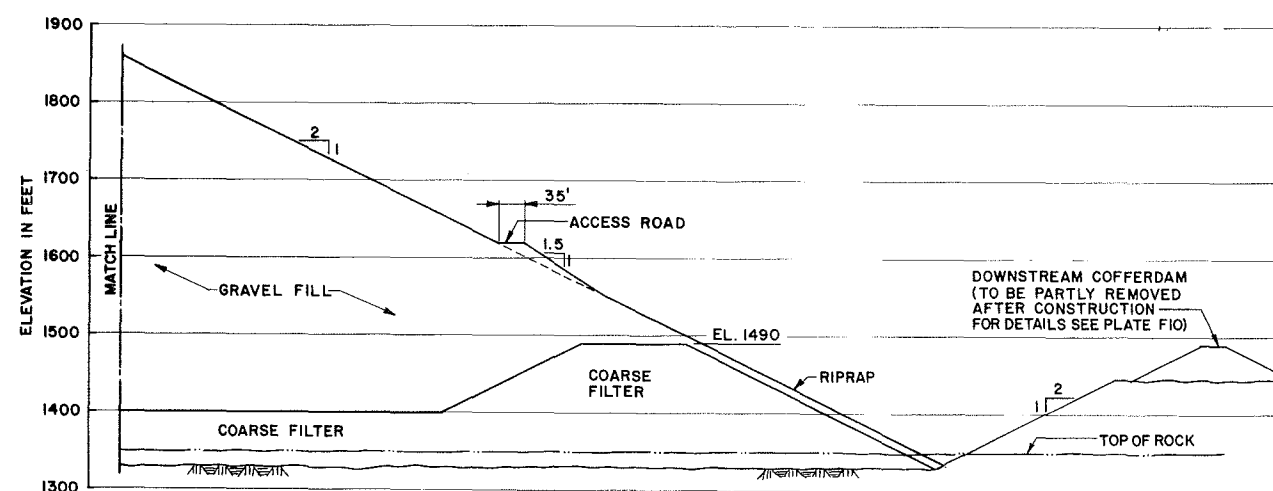


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL ARRANGEMENT		
EXHIBIT F		PLATE F4





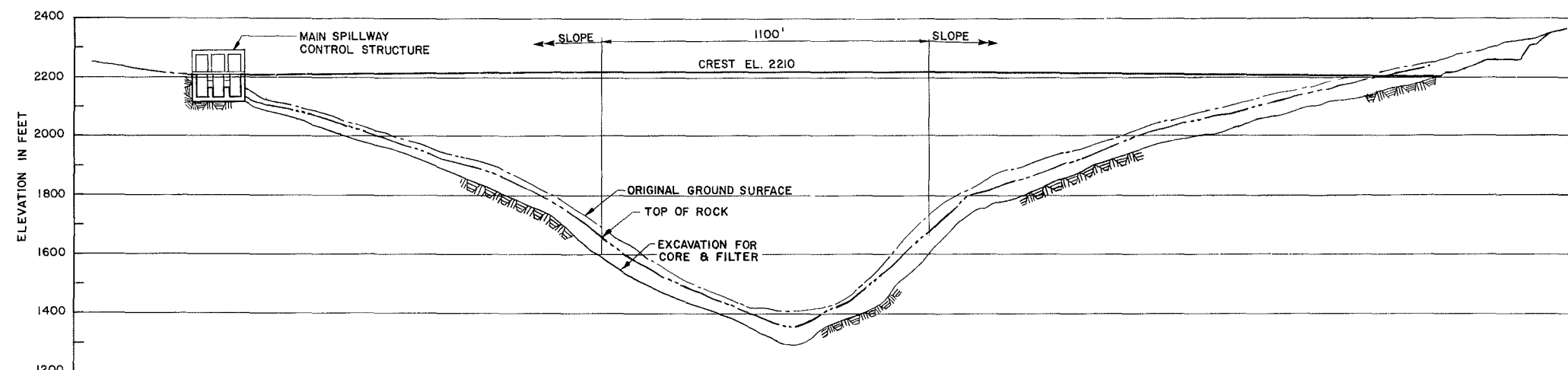
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT



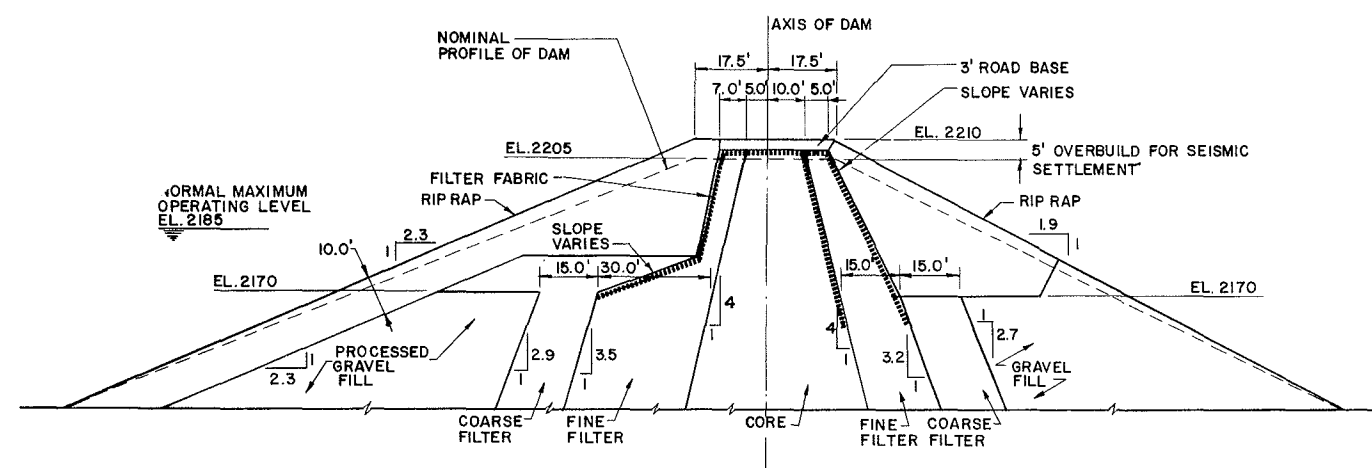
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT

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

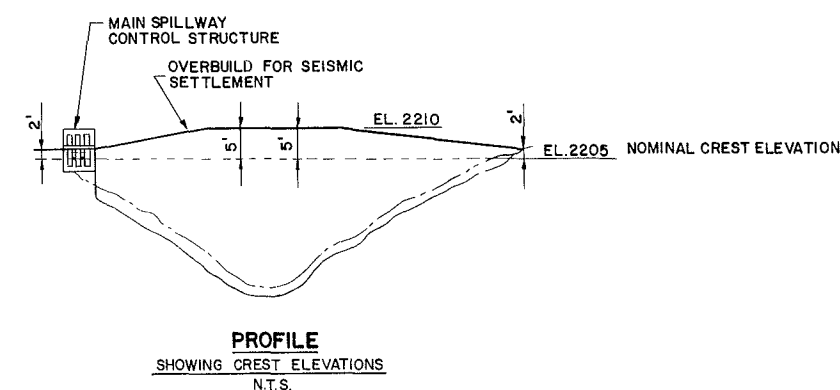
APRIS	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
WATANA MAIN DAM SECTION	
EXHIBIT F	PLATE F6



PROFILE (LOOKING UPSTREAM)
SCALE A

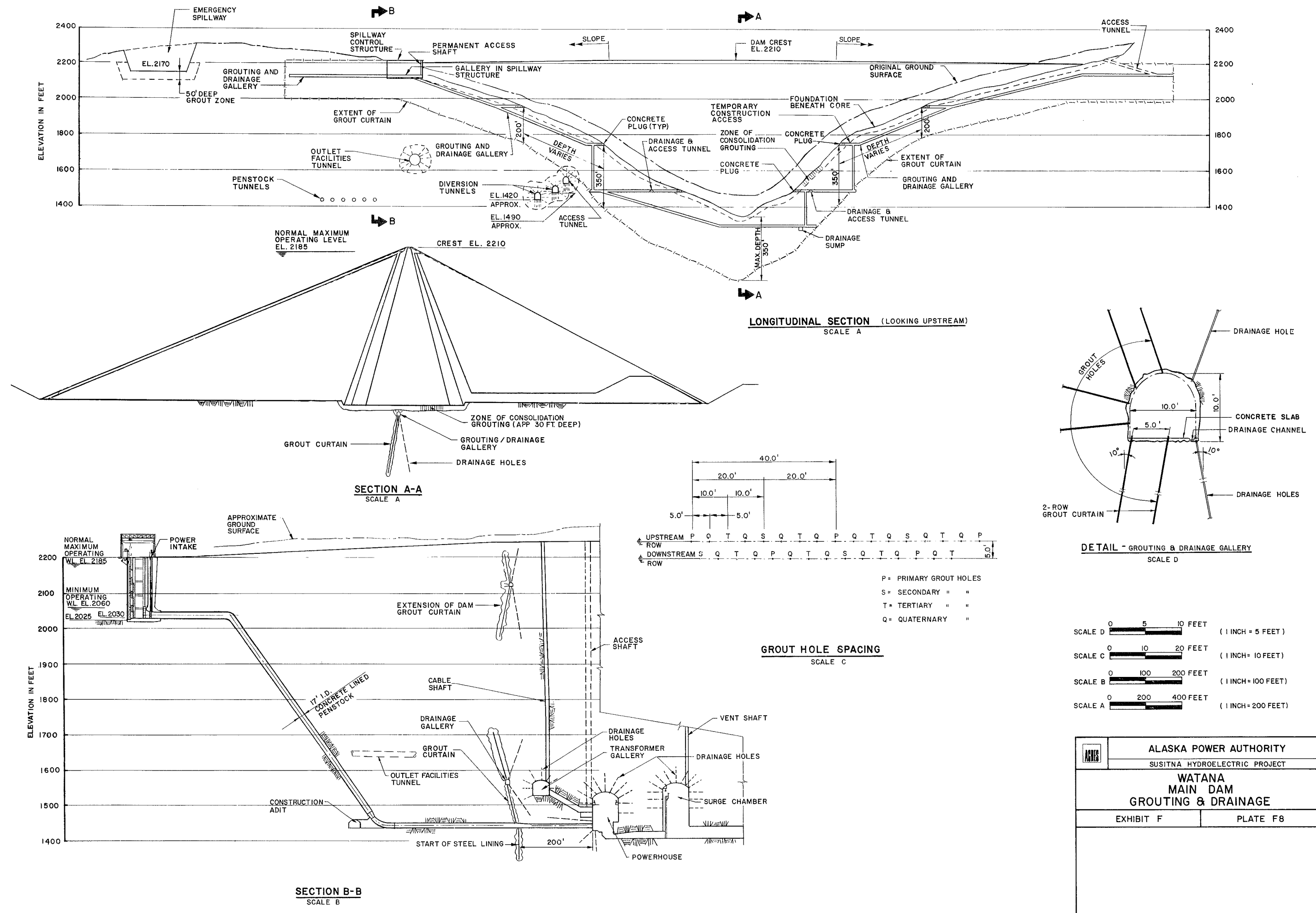


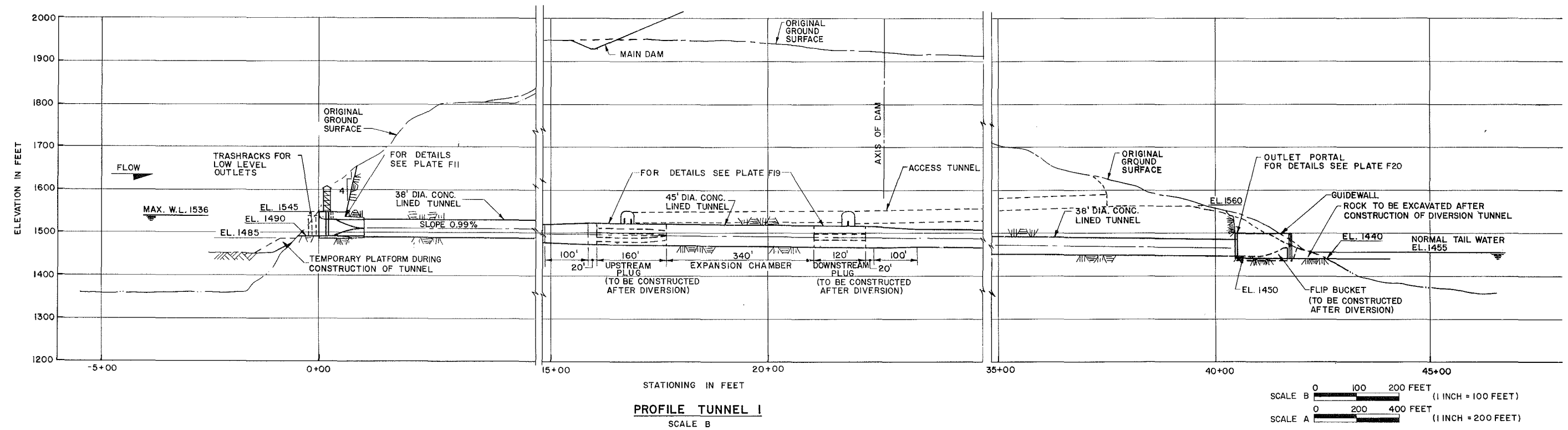
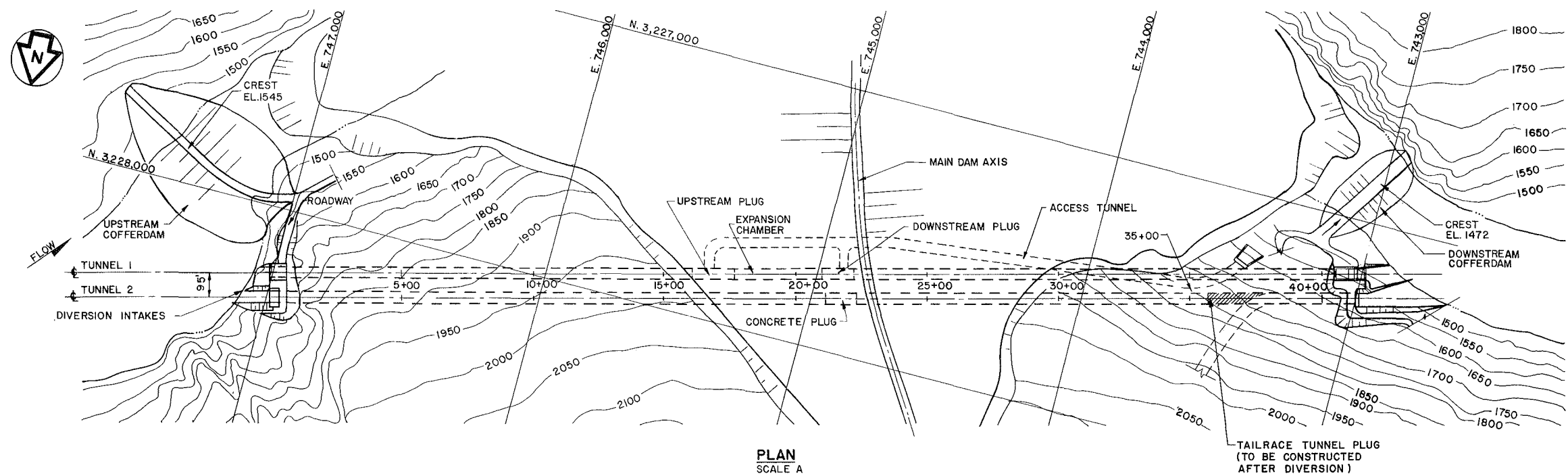
DETAIL I (PLATE F6)
SCALE B



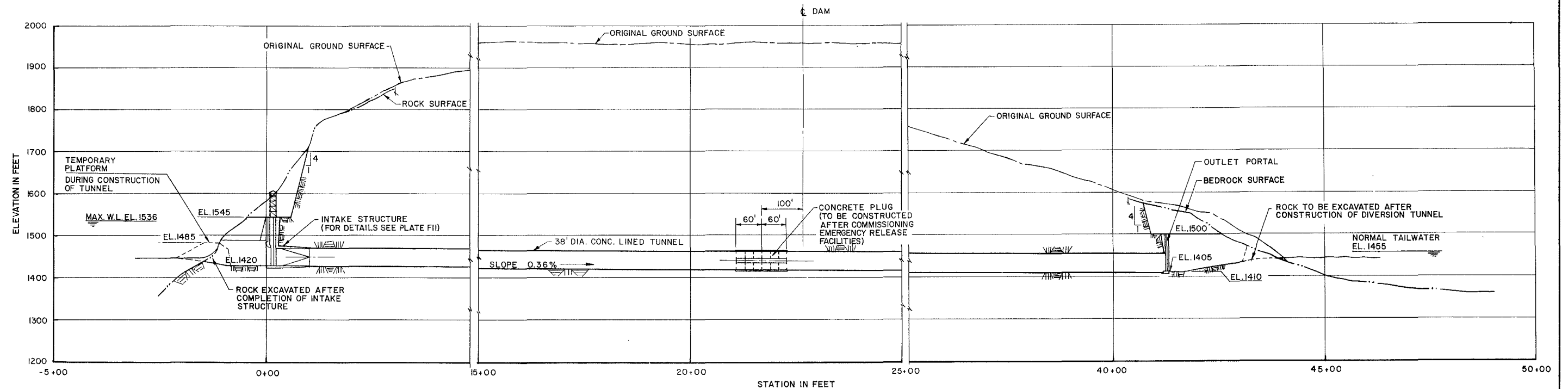
SCALE B 0 20 40 FEET (1 INCH = 20 FEET)
SCALE A 0 200 400 FEET (1 INCH = 200 FEET)

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

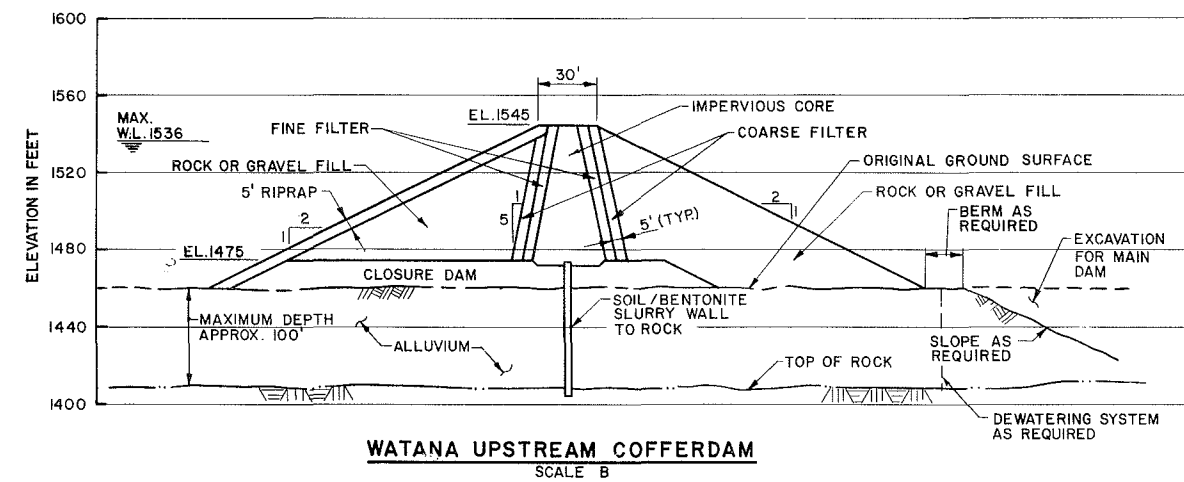




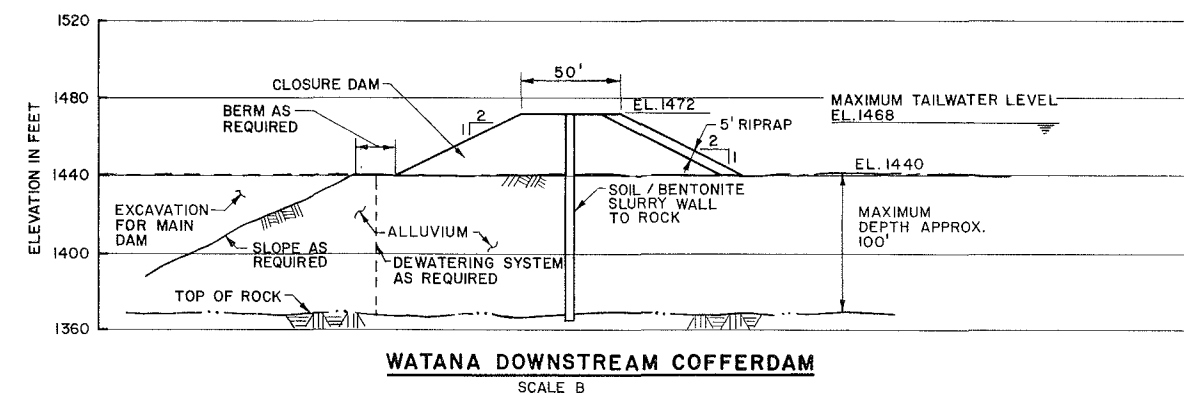
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F9



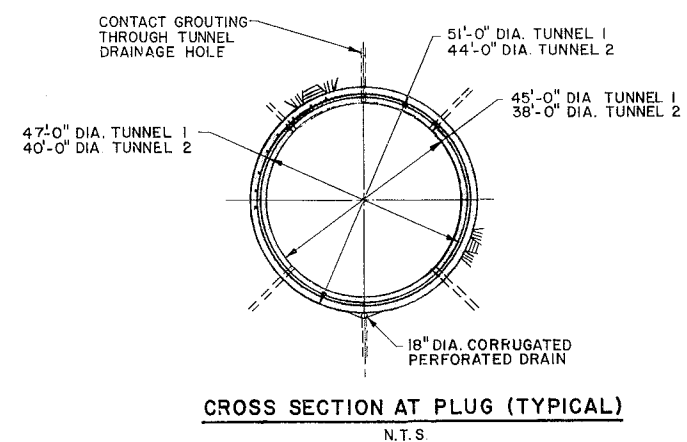
PROFILE - TUNNEL 2
SCALE A



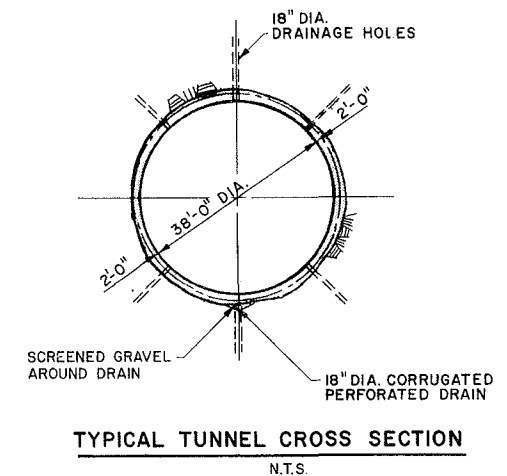
WATANA UPSTREAM COFFERDAM
SCALE B



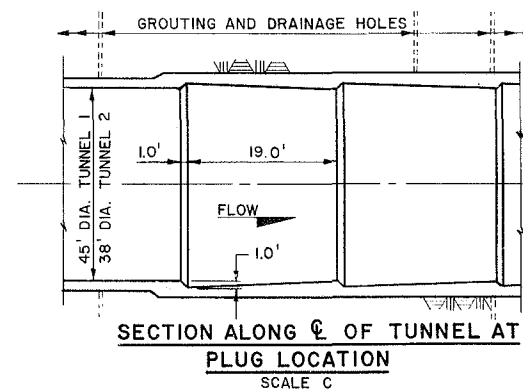
WATANA DOWNSTREAM COFFERDAM
SCALE B



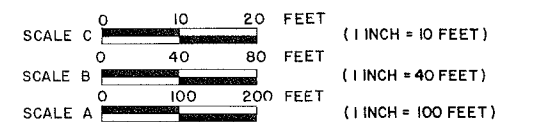
CROSS SECTION AT PLUG (TYPICAL)
N.T.S.



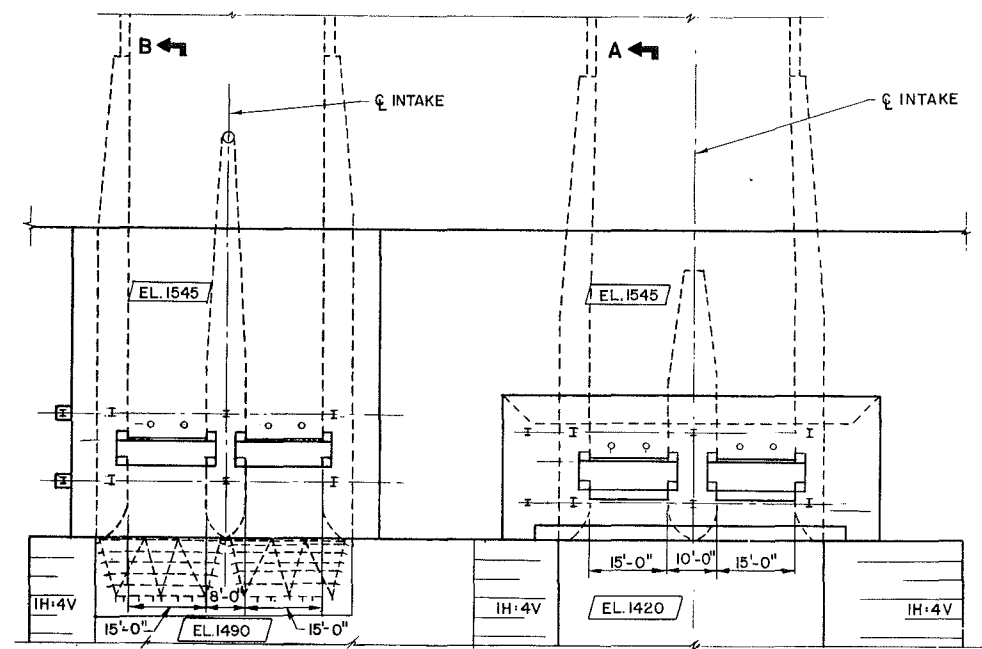
TYPICAL TUNNEL CROSS SECTION
N.T.S.



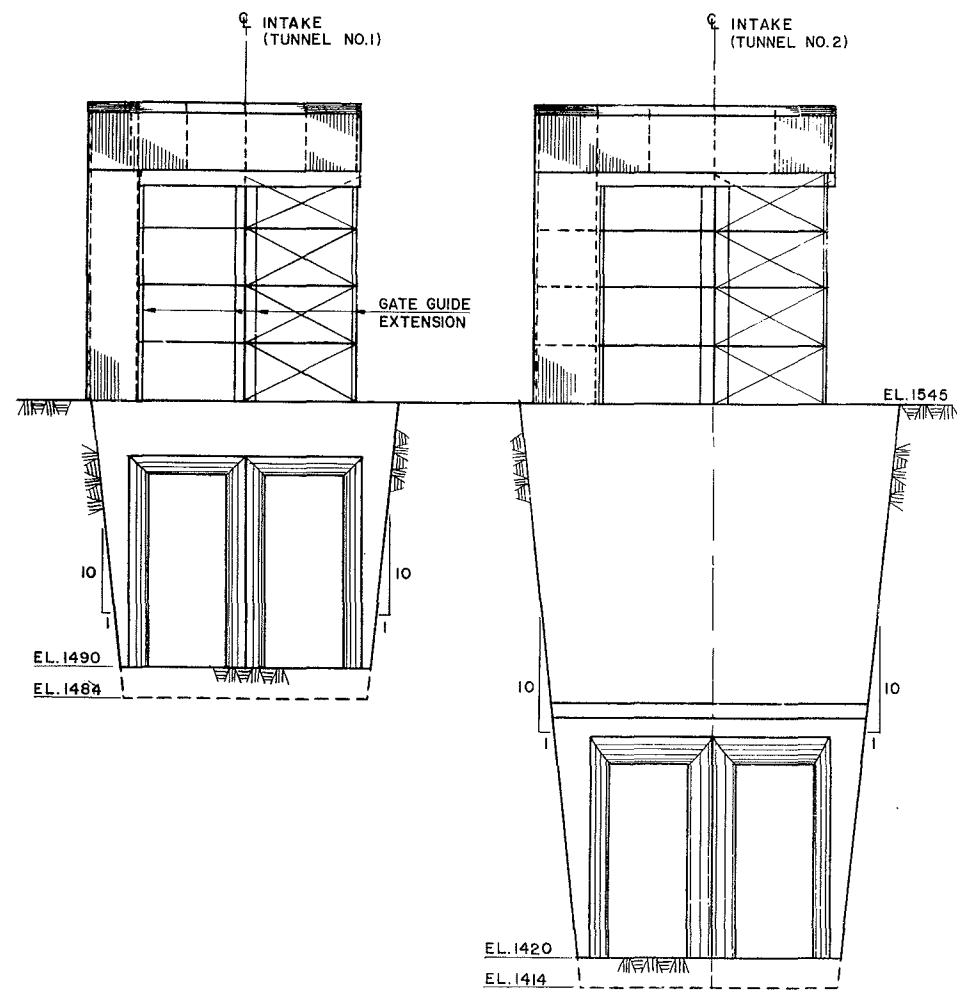
SECTION ALONG C OF TUNNEL AT
PLUG LOCATION
SCALE C



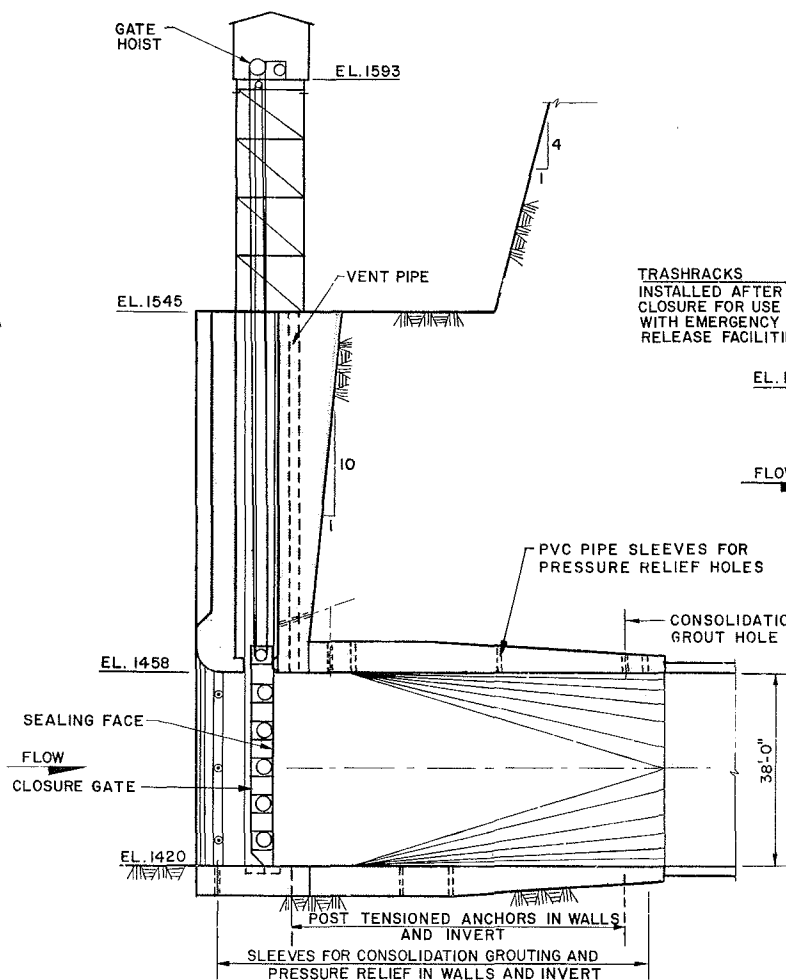
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION SECTIONS	
EXHIBIT F	PLATE F10



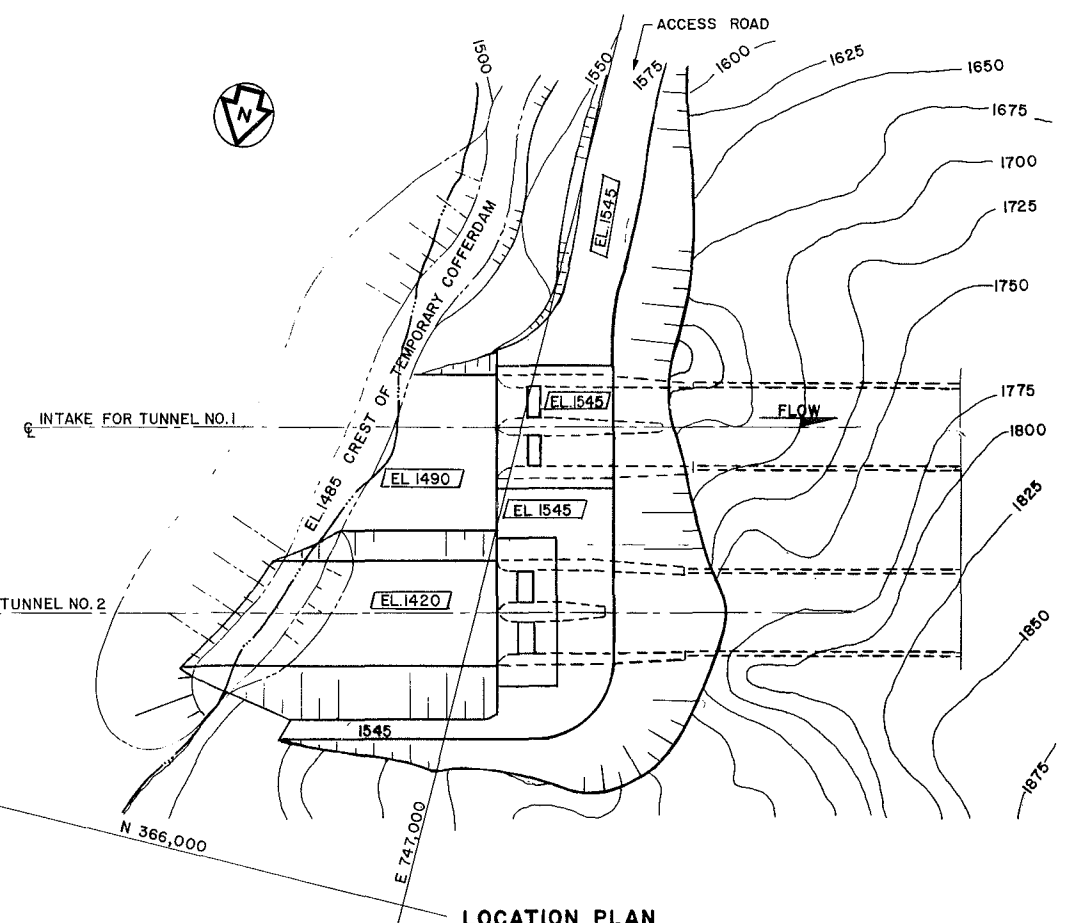
PLAN
AT EL. 1545
SCALE A



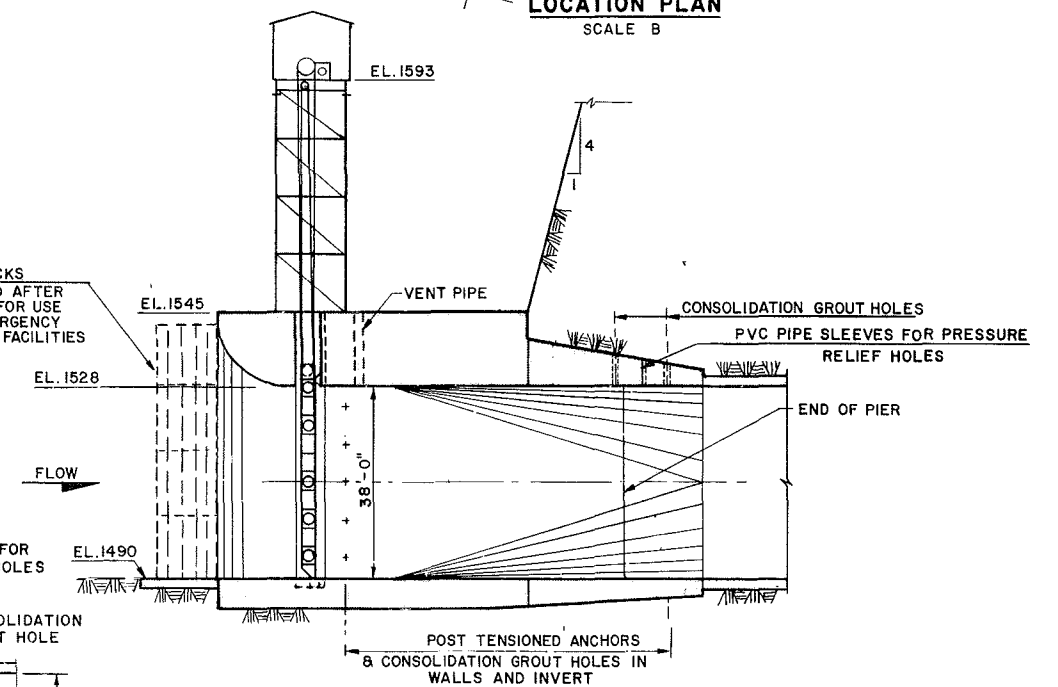
ELEVATION
SCALE A



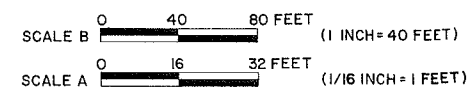
SECTION A-A
SCALE A



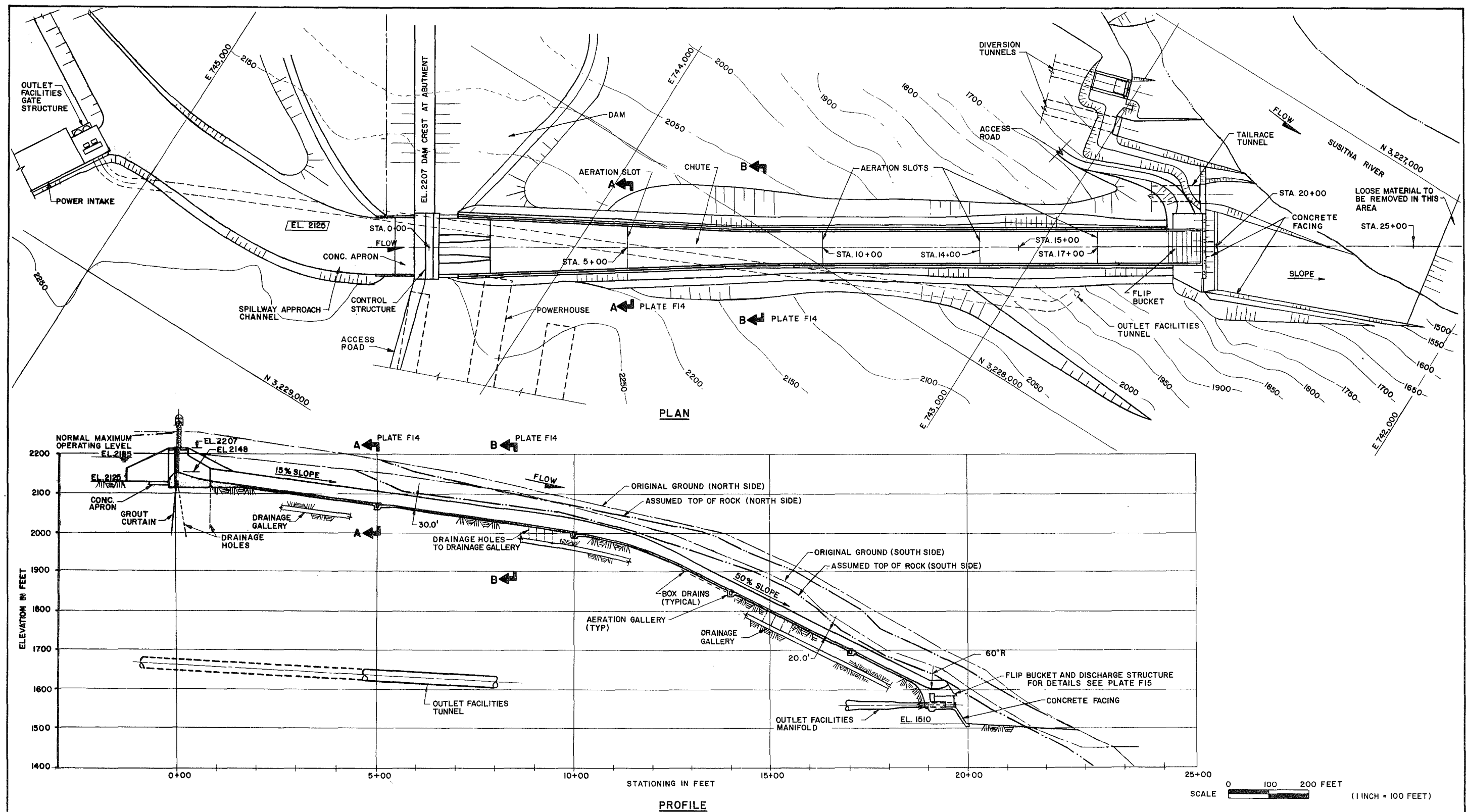
LOCATION PLAN
SCALE B



SECTION B-B
SCALE A



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



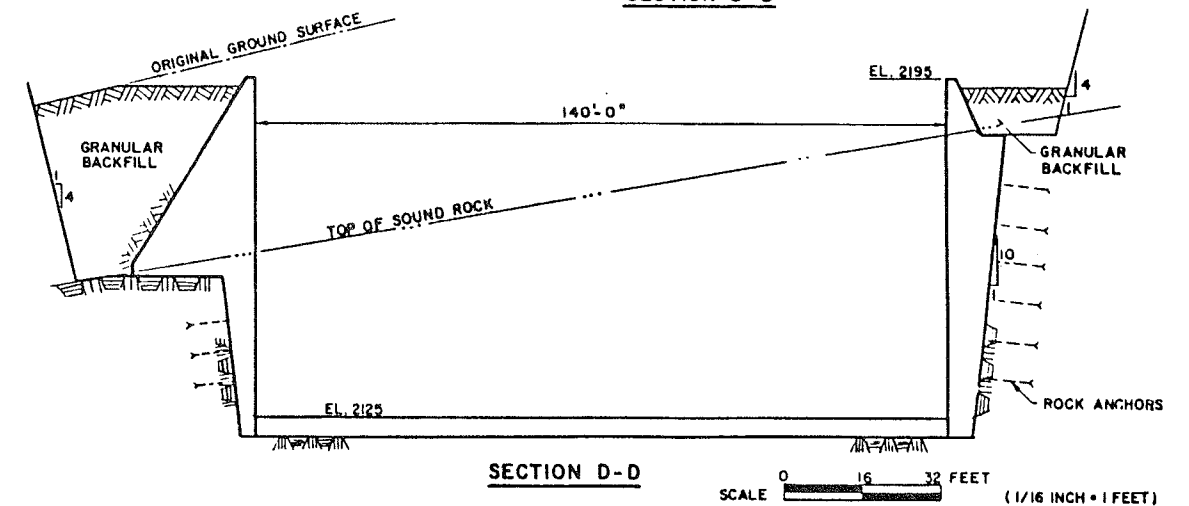
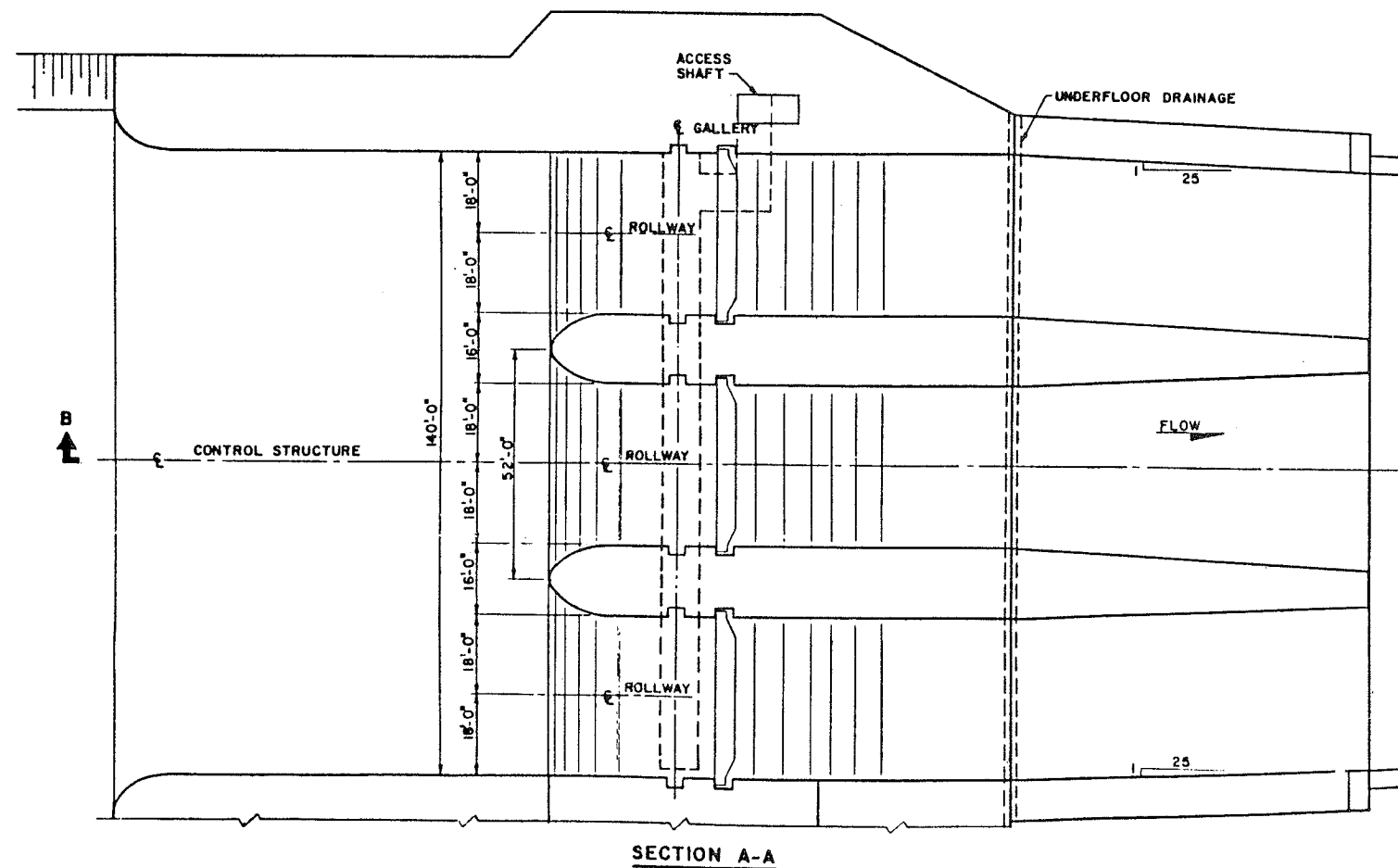
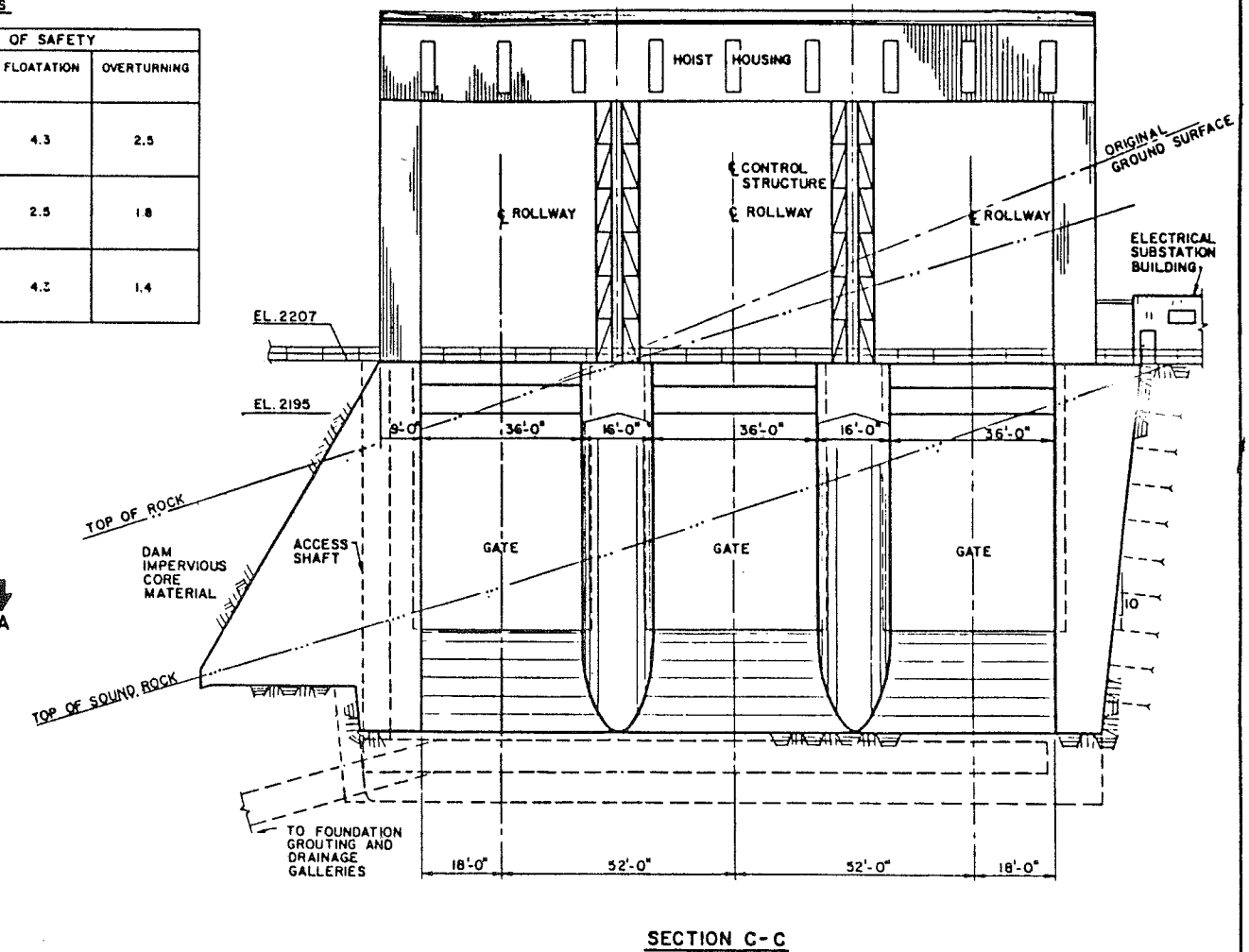
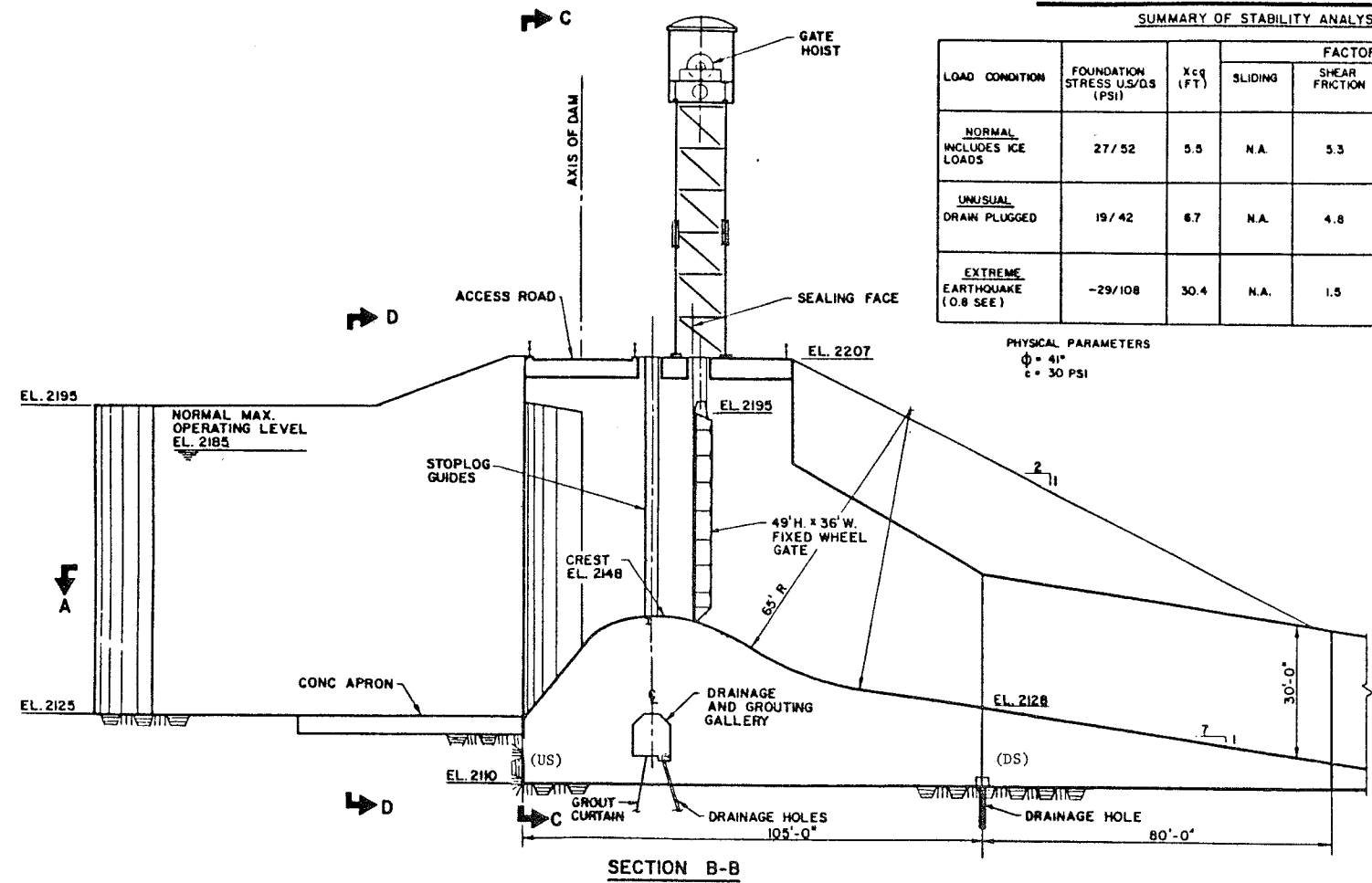
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY GENERAL ARRANGEMENT		
EXHIBIT F		PLATE F12

WATANA DAM SPILLWAY CONTROL STRUCTURE

SUMMARY OF STABILITY ANALYSES

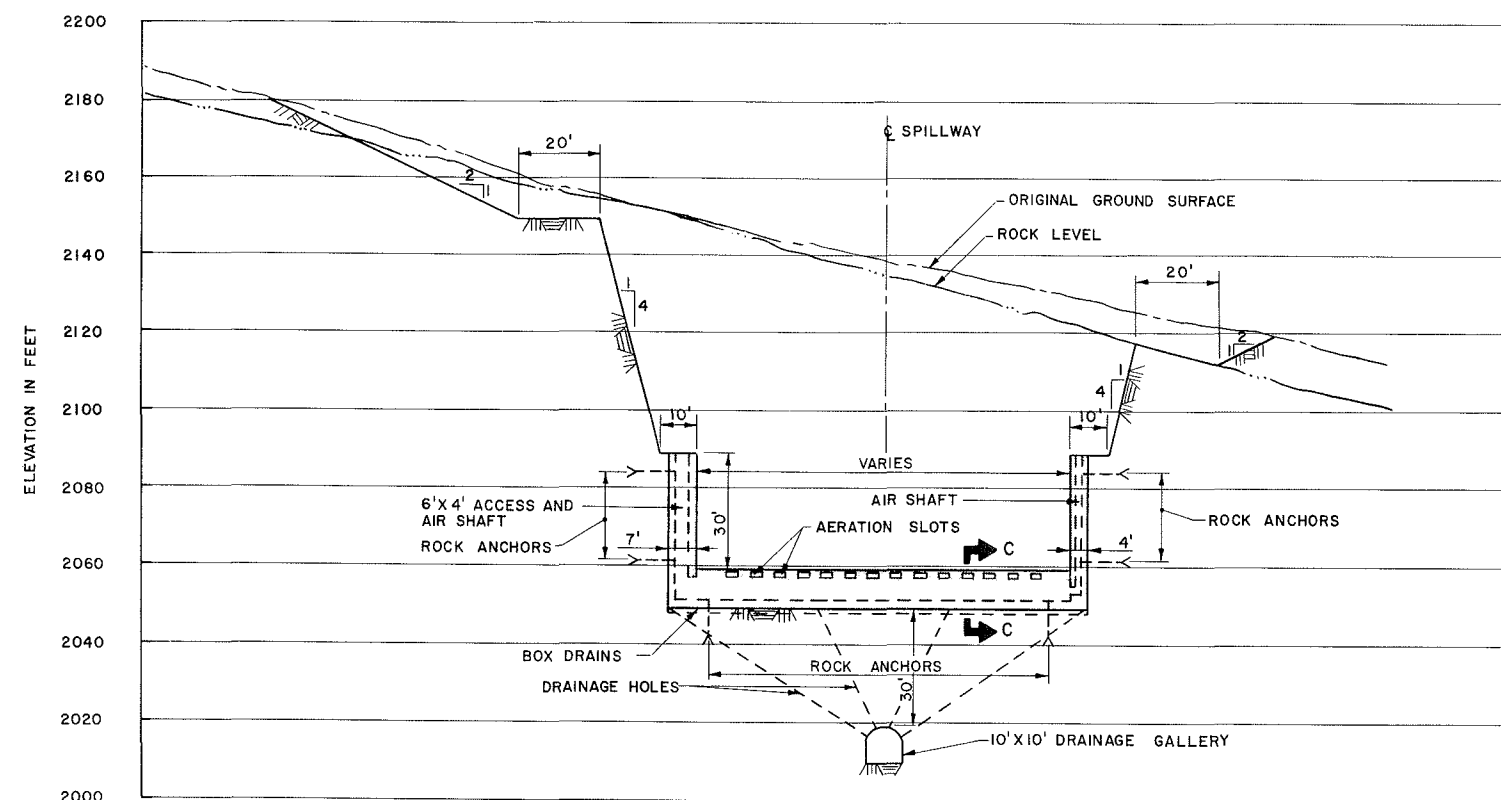
LOAD CONDITION	FOUNDATION STRESS US/D.S (PSI)	X CG (FT)	FACTORS OF SAFETY			
			SLIDING	SHEAR FRICTION	FLOATATION	OVERTURNING
NORMAL INCLUDES ICE LOADS	27 / 52	5.5	N.A.	5.3	4.3	2.5
UNUSUAL DRAIN PLUGGED	19 / 42	6.7	N.A.	4.8	2.5	1.8
EXTREME EARTHQUAKE (0.8 SEE)	-29 / 108	30.4	N.A.	1.5	4.2	1.4

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

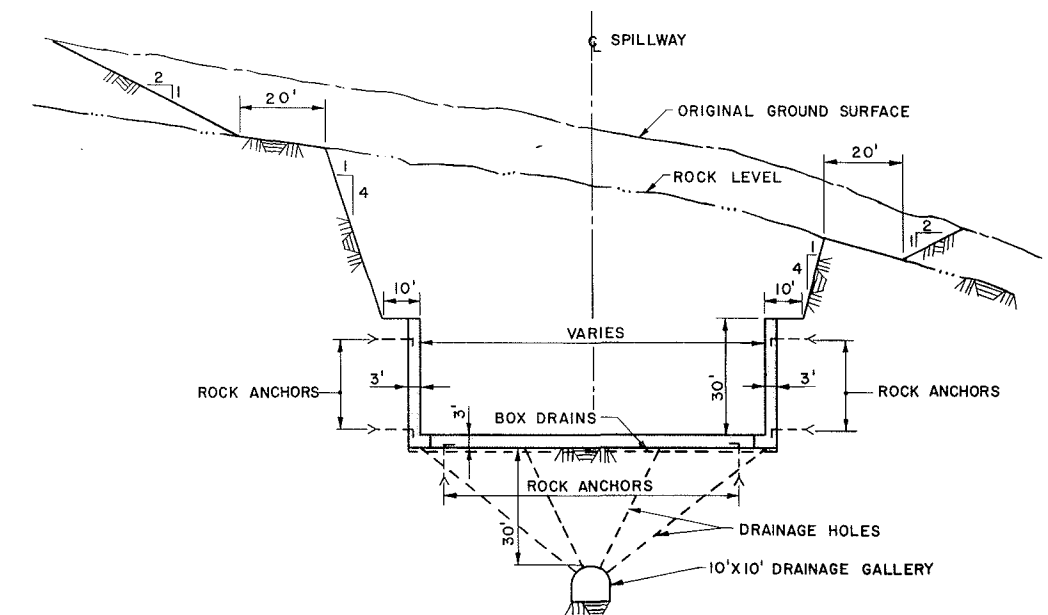


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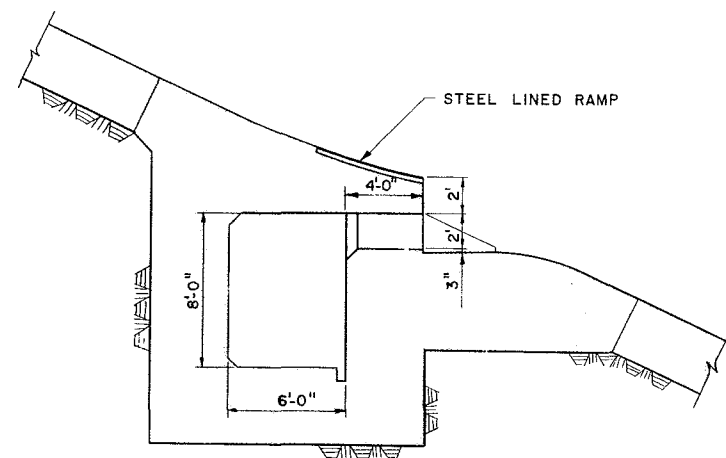
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY CONTROL STRUCTURE	
EXHIBIT F	PLATE F13



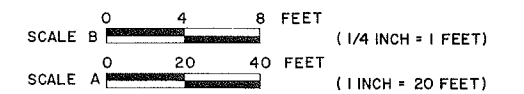
SECTION A-A (PLATE F12)
SCALE A



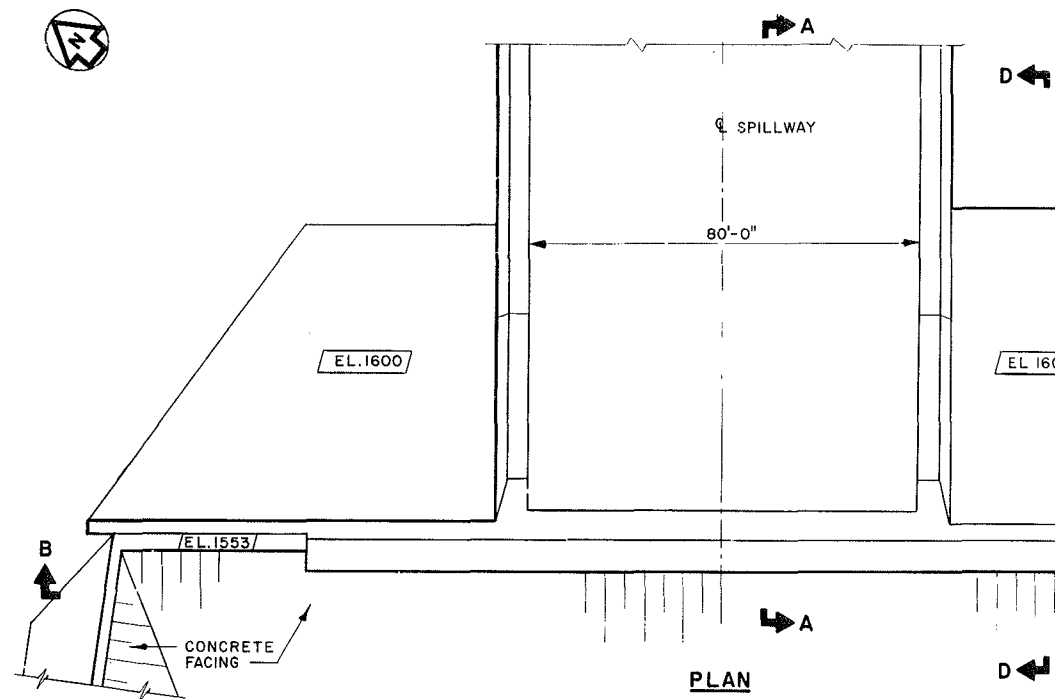
SECTION B-B (TYPICAL) (PLATE F12)
SCALE A



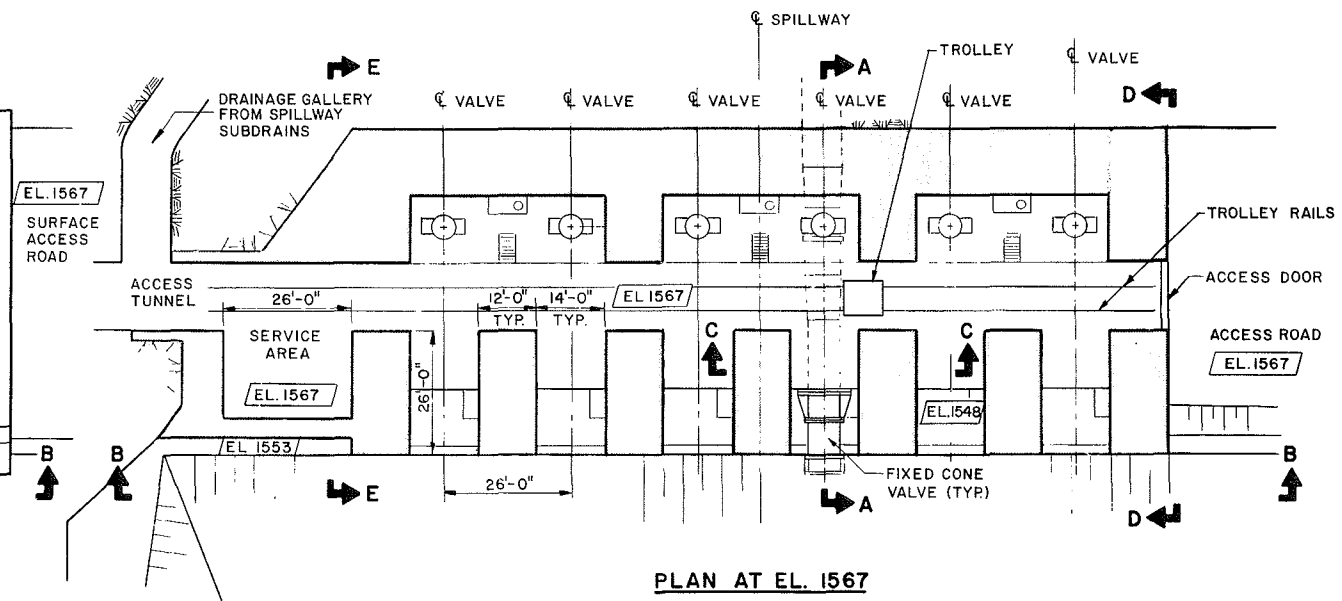
SECTION C-C
SCALE B



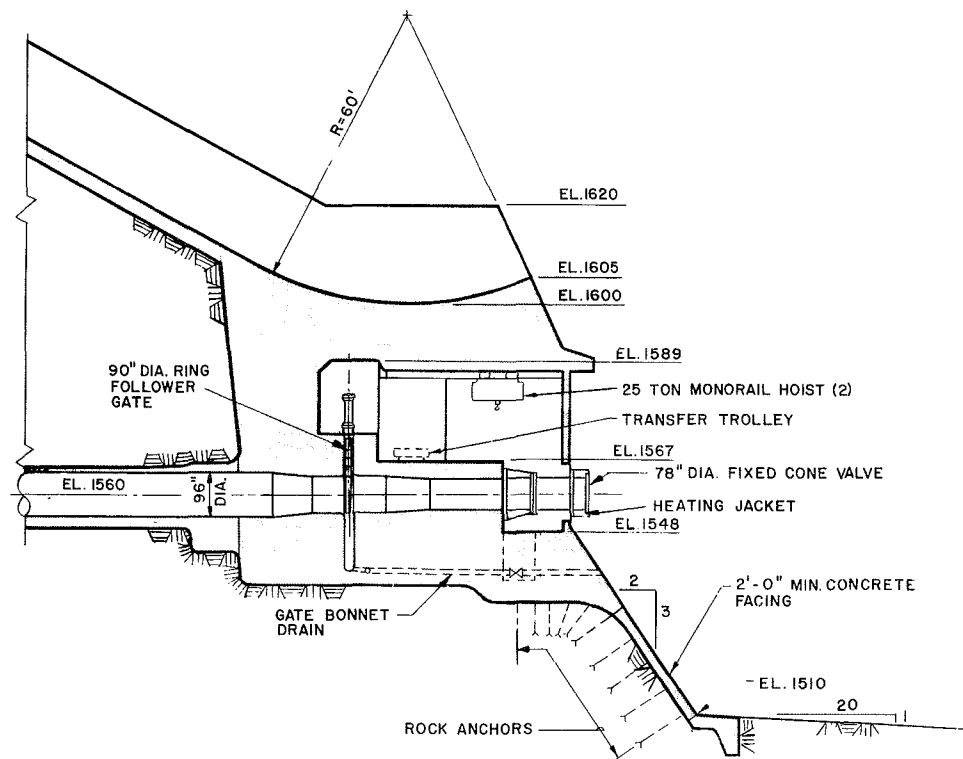
	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
	WATANA MAIN SPILLWAY CHUTE SECTIONS
EXHIBIT F	PLATE F14



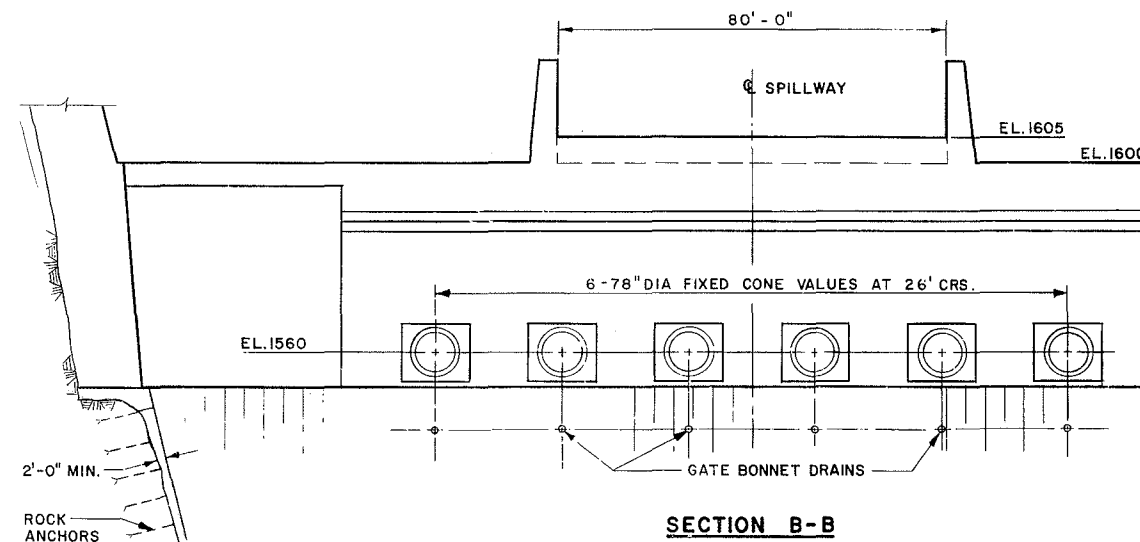
PLAN



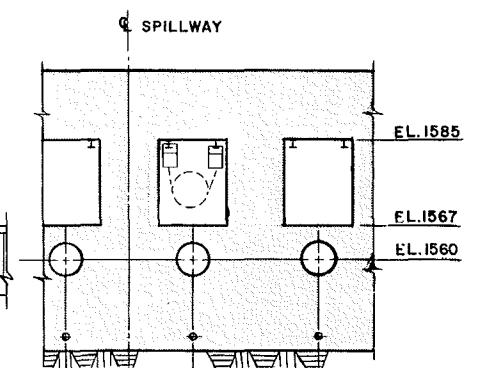
PLAN AT EL. 1567



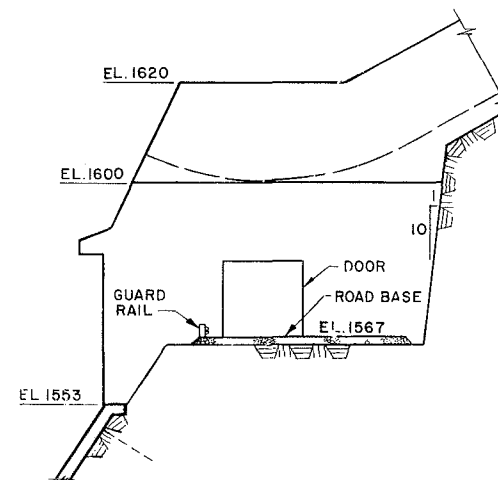
SECTION A-A (TYPICAL)



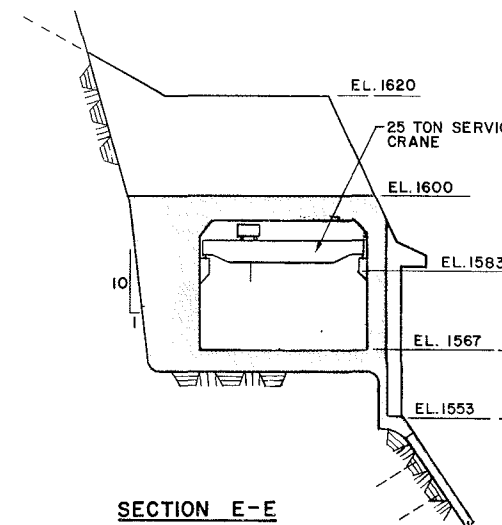
SECTION B-B



SECTION C-C



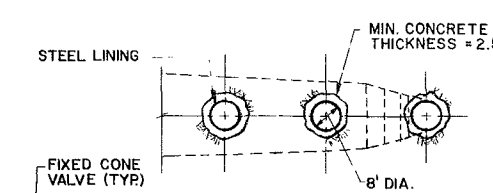
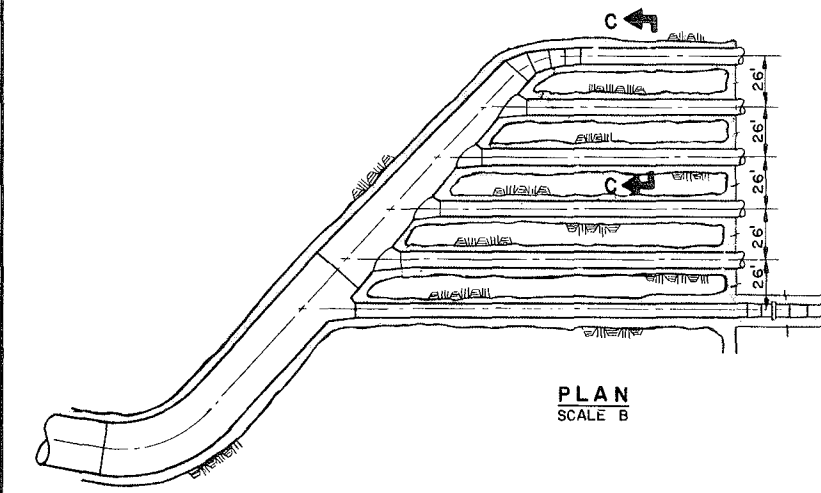
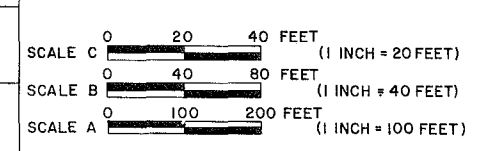
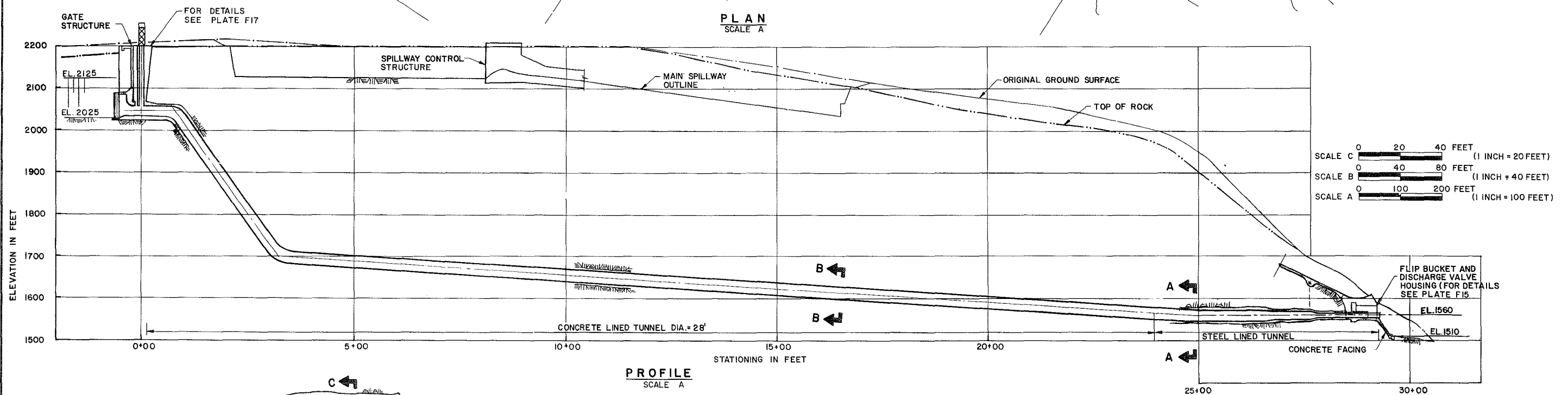
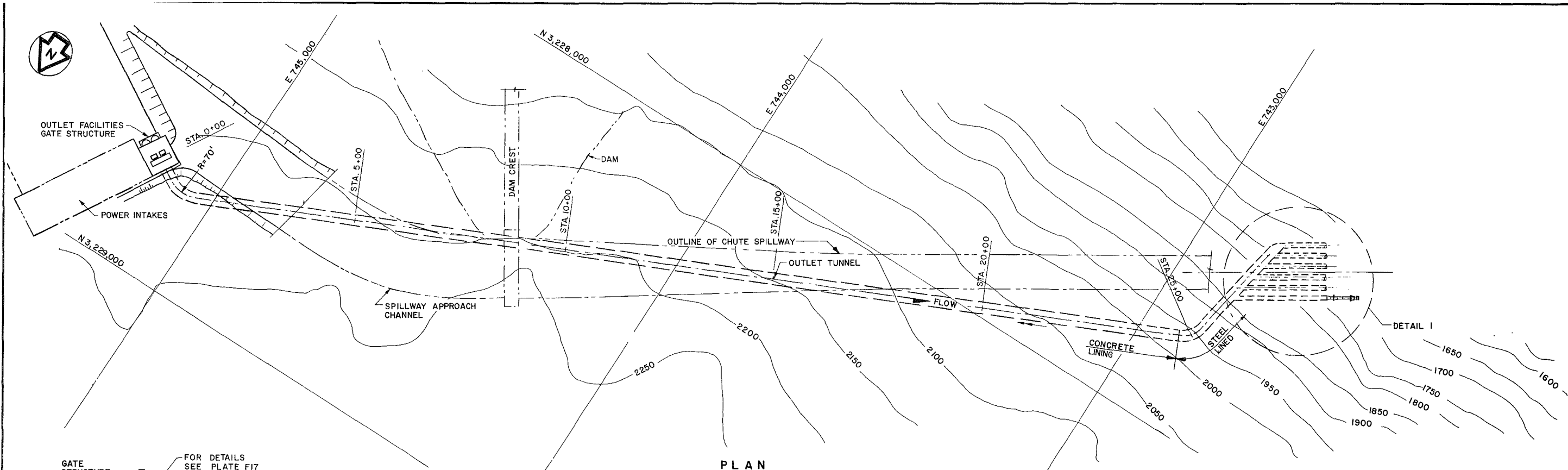
SECTION D-D



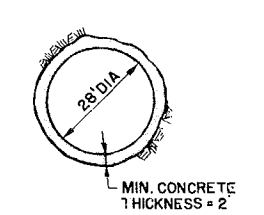
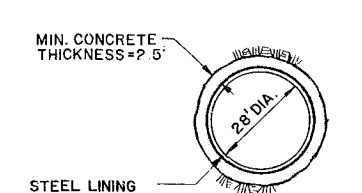
SECTION E-E

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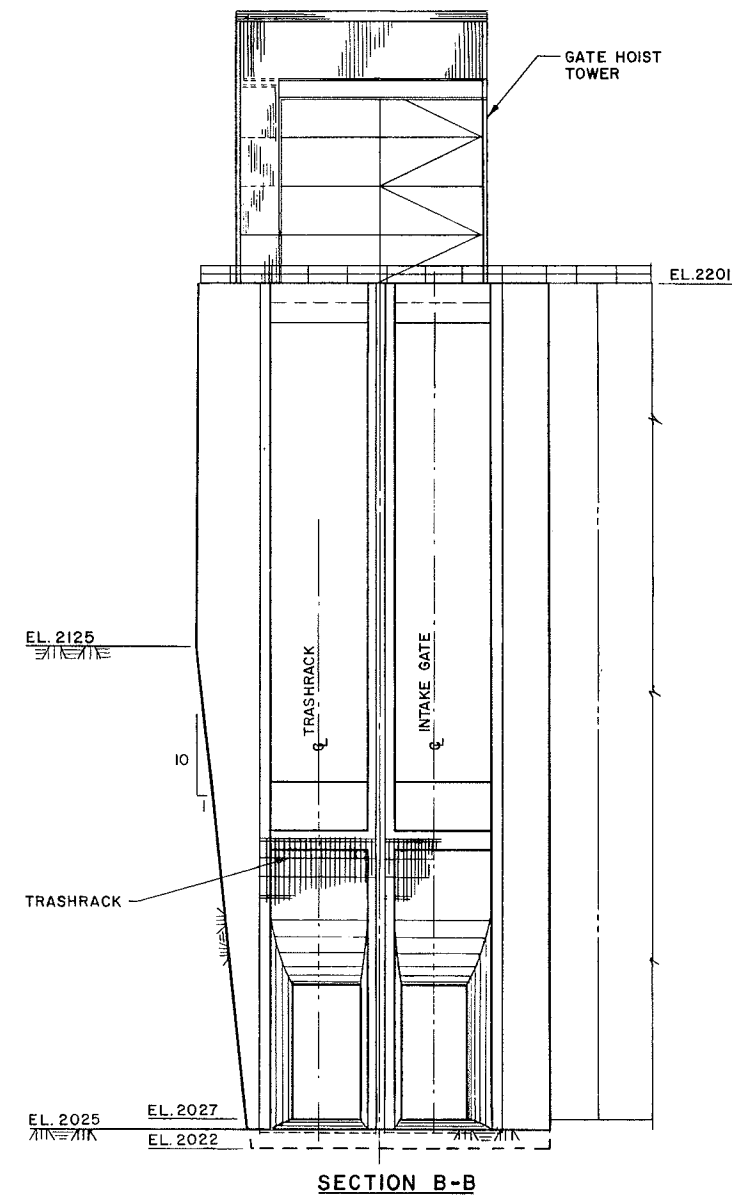
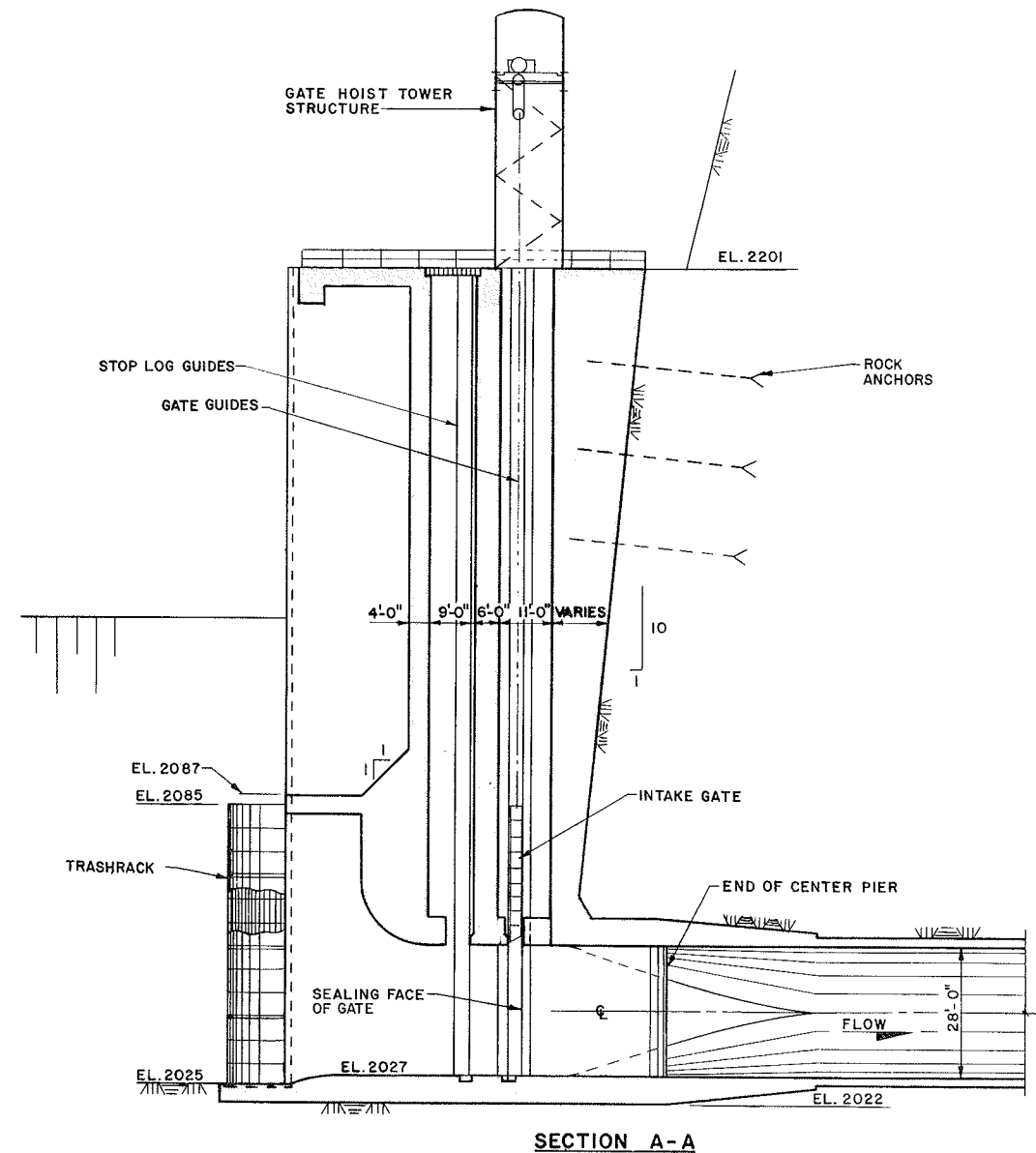
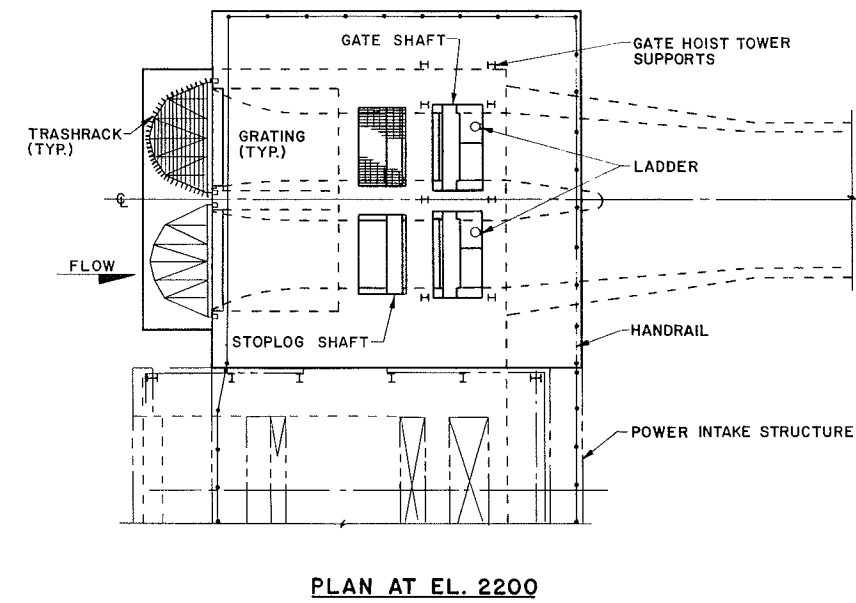
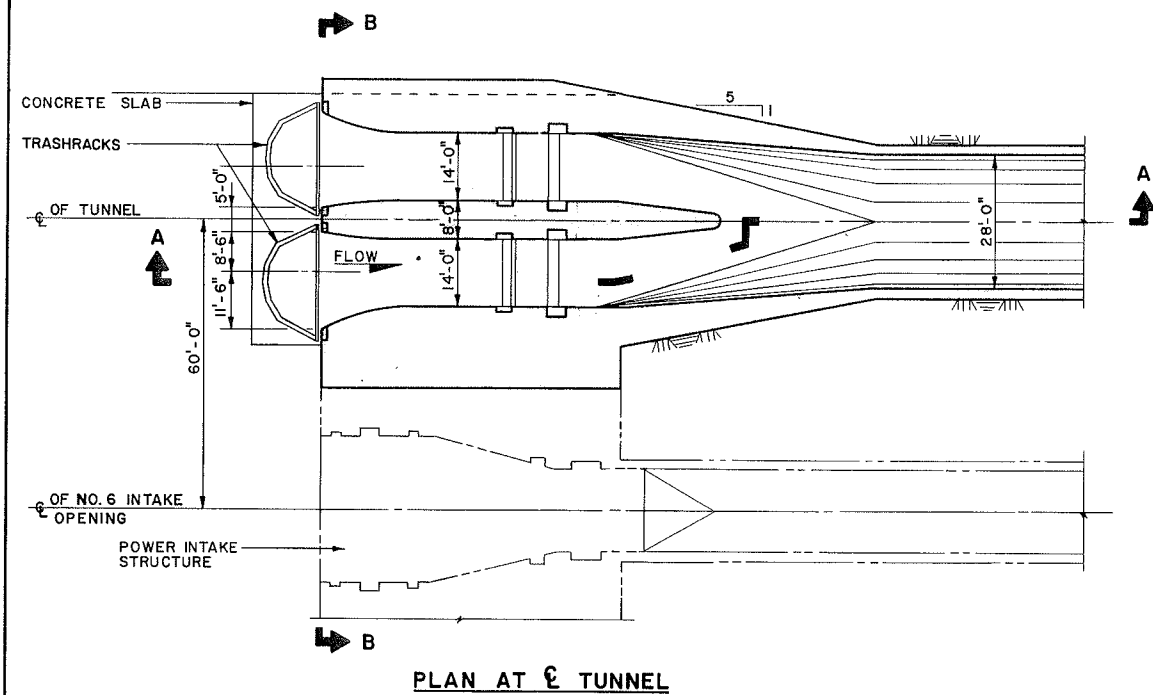
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SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY FLIP BUCKET	
EXHIBIT F	PLATE F15



DETAIL I
STEEL MANIFOLD

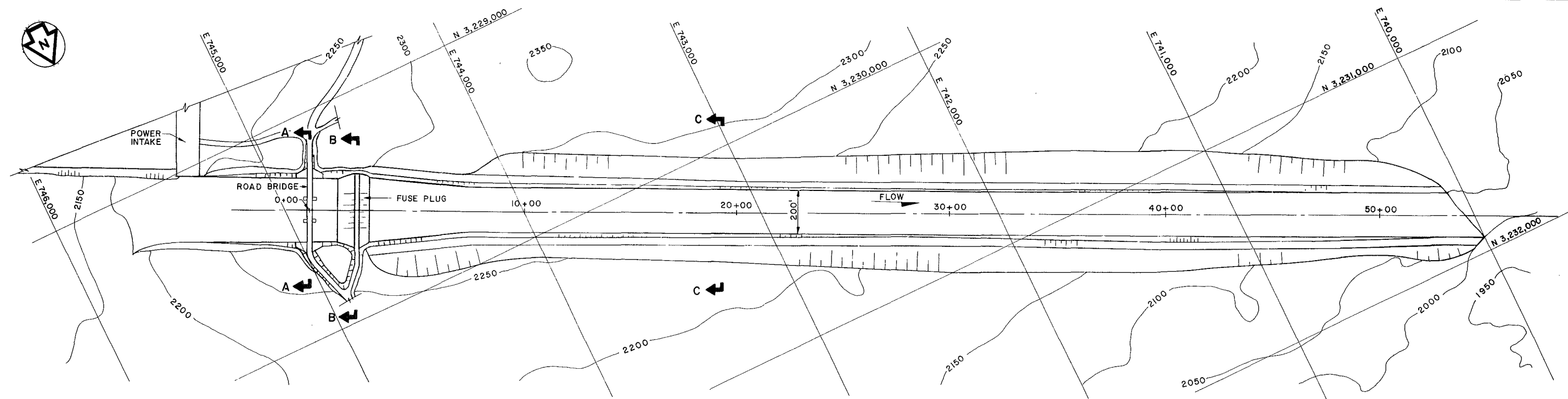


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA OUTLET FACILITIES GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F16

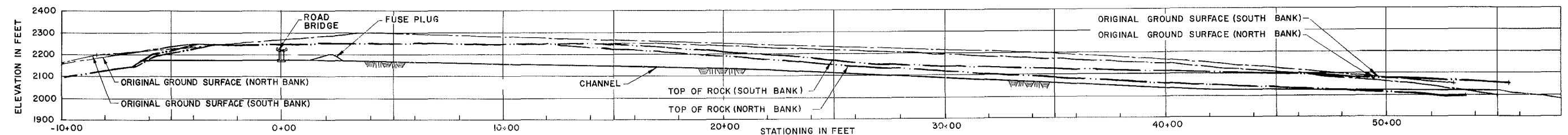


SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

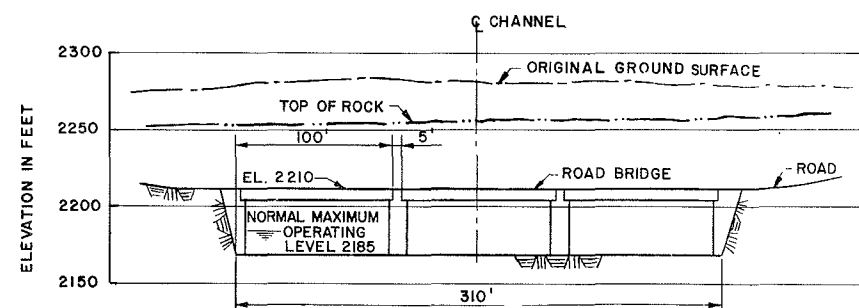
APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA OUTLET FACILITIES GATE STRUCTURE	
	EXHIBIT F	PLATE F17



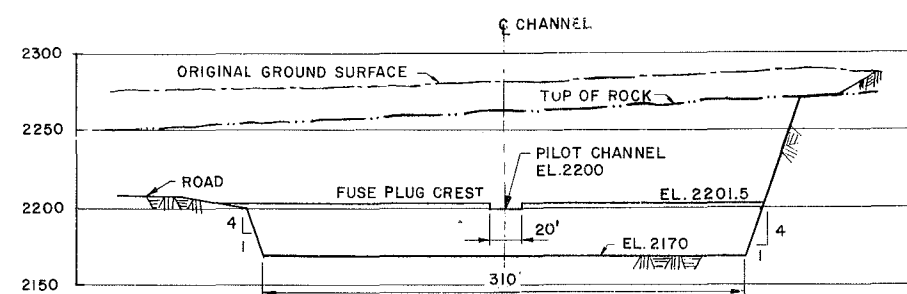
PLAN
SCALE A



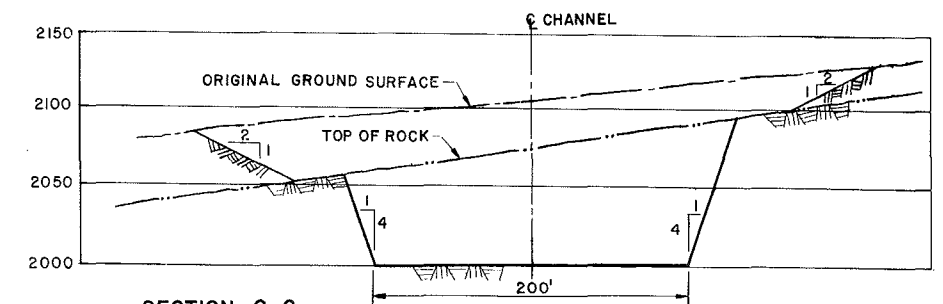
PROFILE
SCALE A



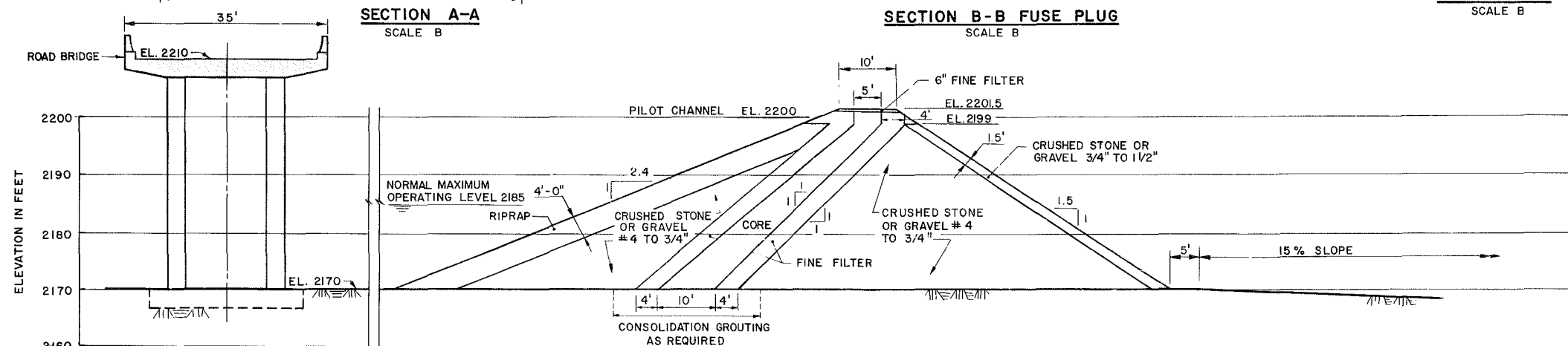
SECTION A-A
SCALE B



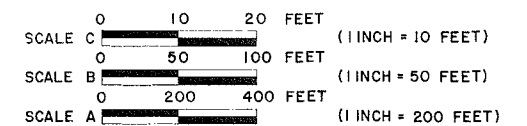
SECTION B-B FUSE PLUG
SCALE B



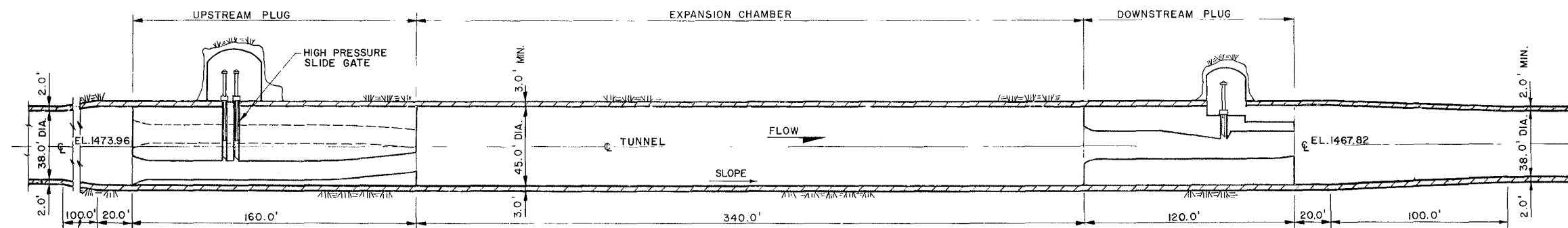
SECTION C-C
SCALE B



SECTION THROUGH FUSE PLUG
SCALE C

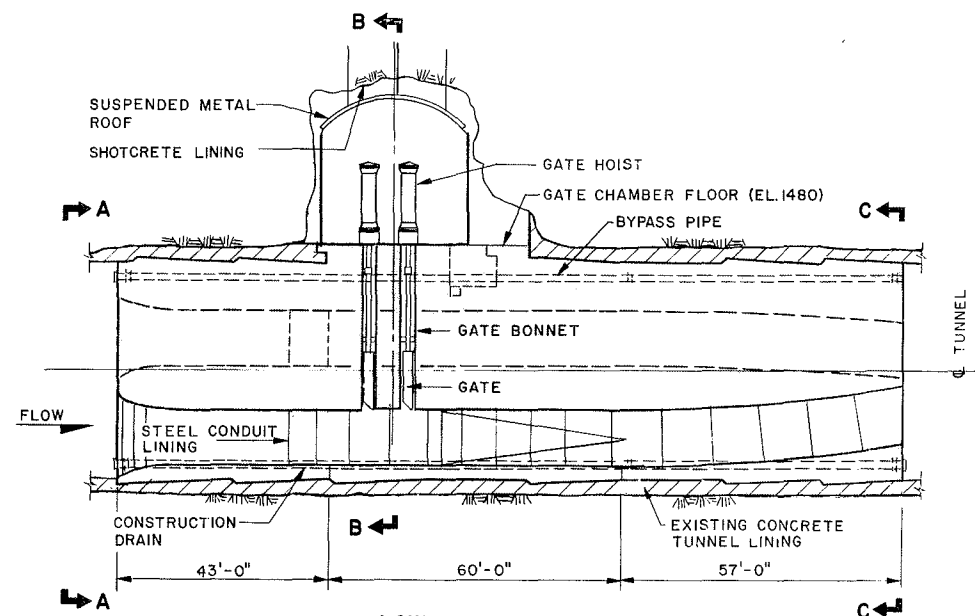


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY SPILLWAY	
EXHIBIT F	PLATE F18



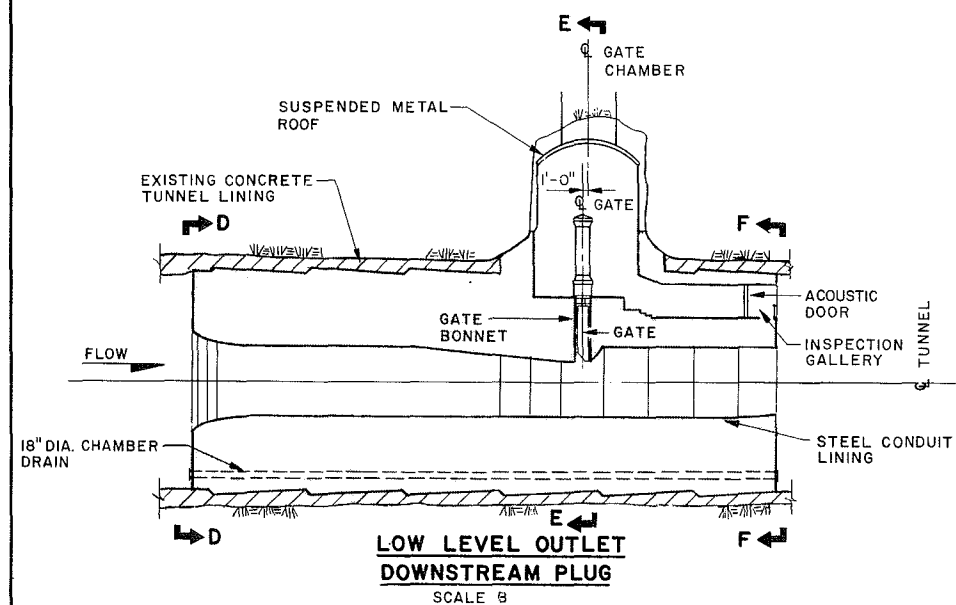
SECTION ALONG CL OF TUNNEL NO. 1

SCALE A



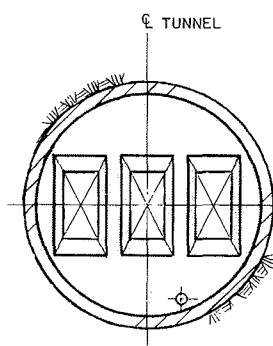
LOW LEVEL OUTLET
UPSTREAM PLUG

SCALE B



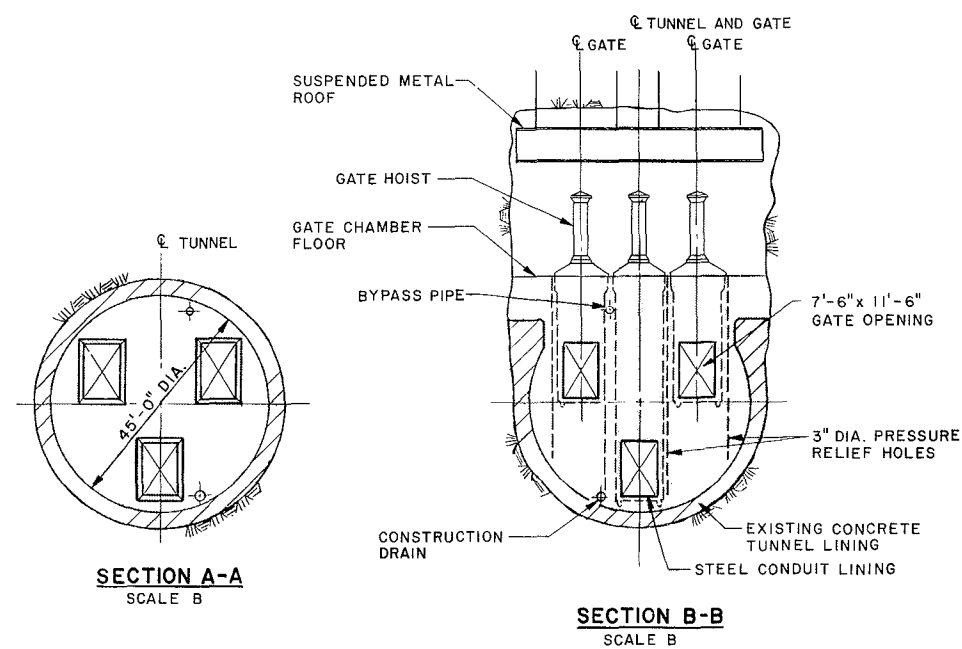
LOW LEVEL OUTLET
DOWNSTREAM PLUG

SCALE B



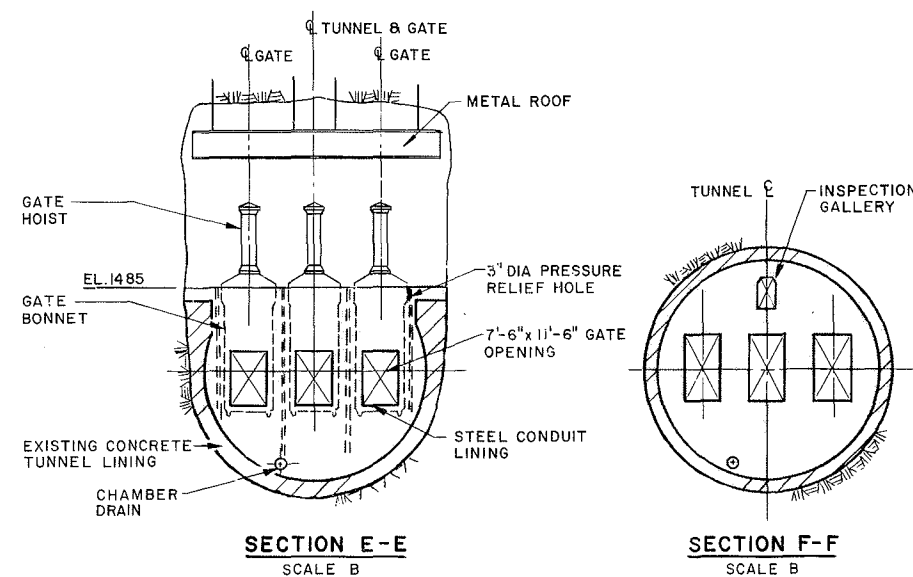
SECTION D-D

SCALE B



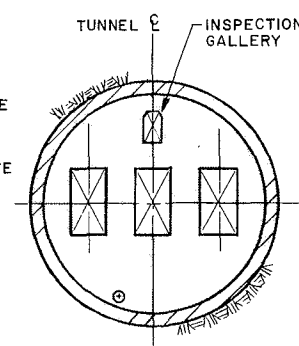
SECTION B-B

SCALE B



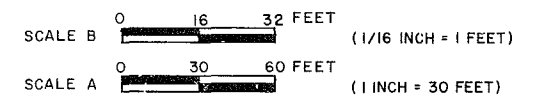
SECTION E-E

SCALE B

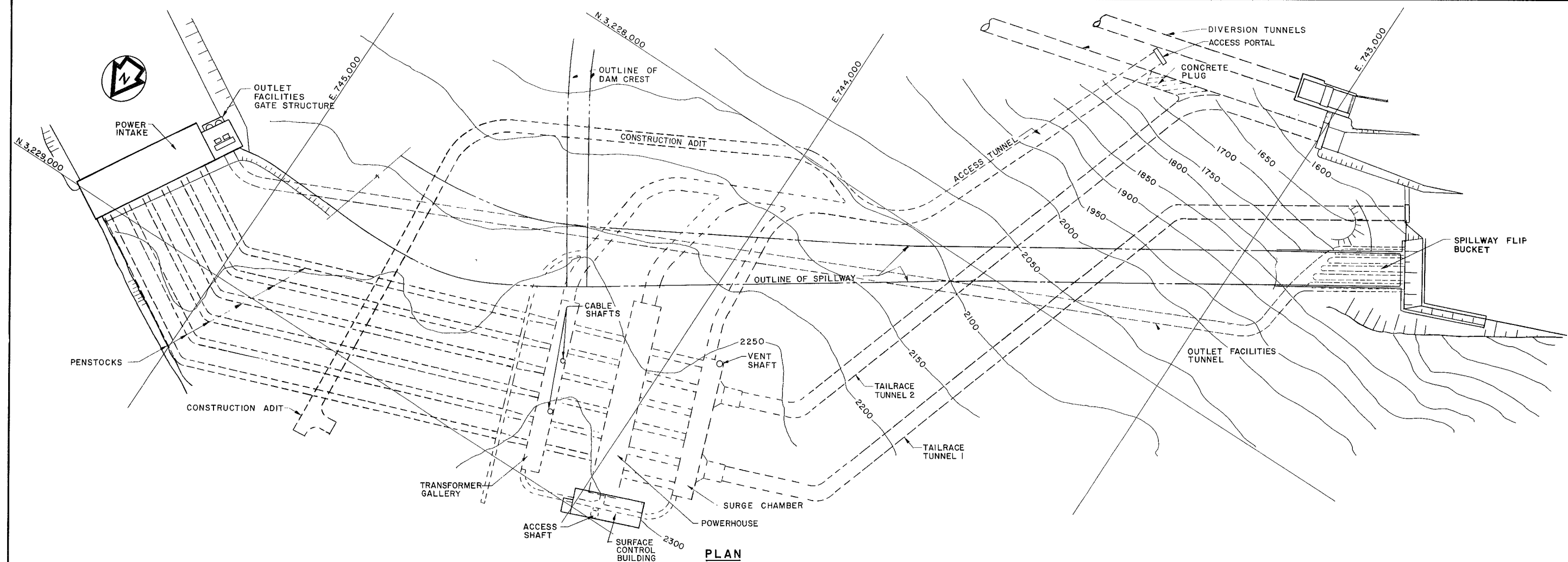


SECTION F-F

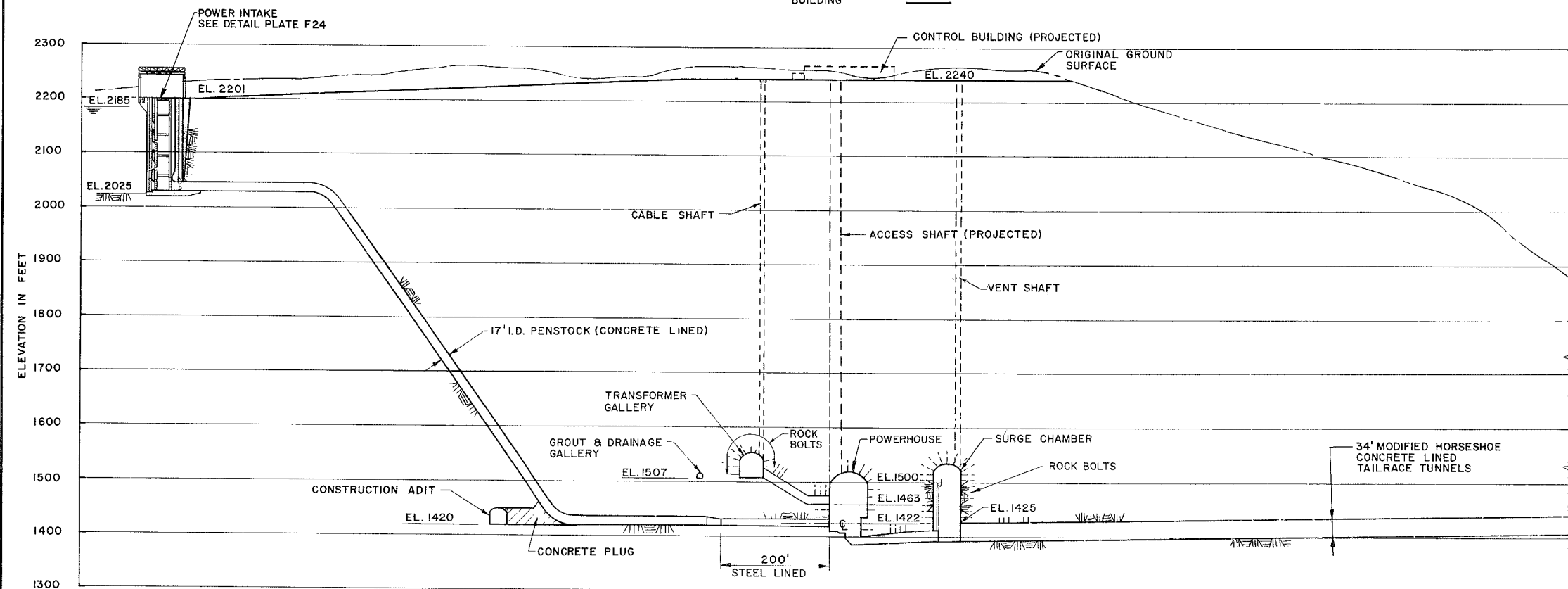
SCALE B



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



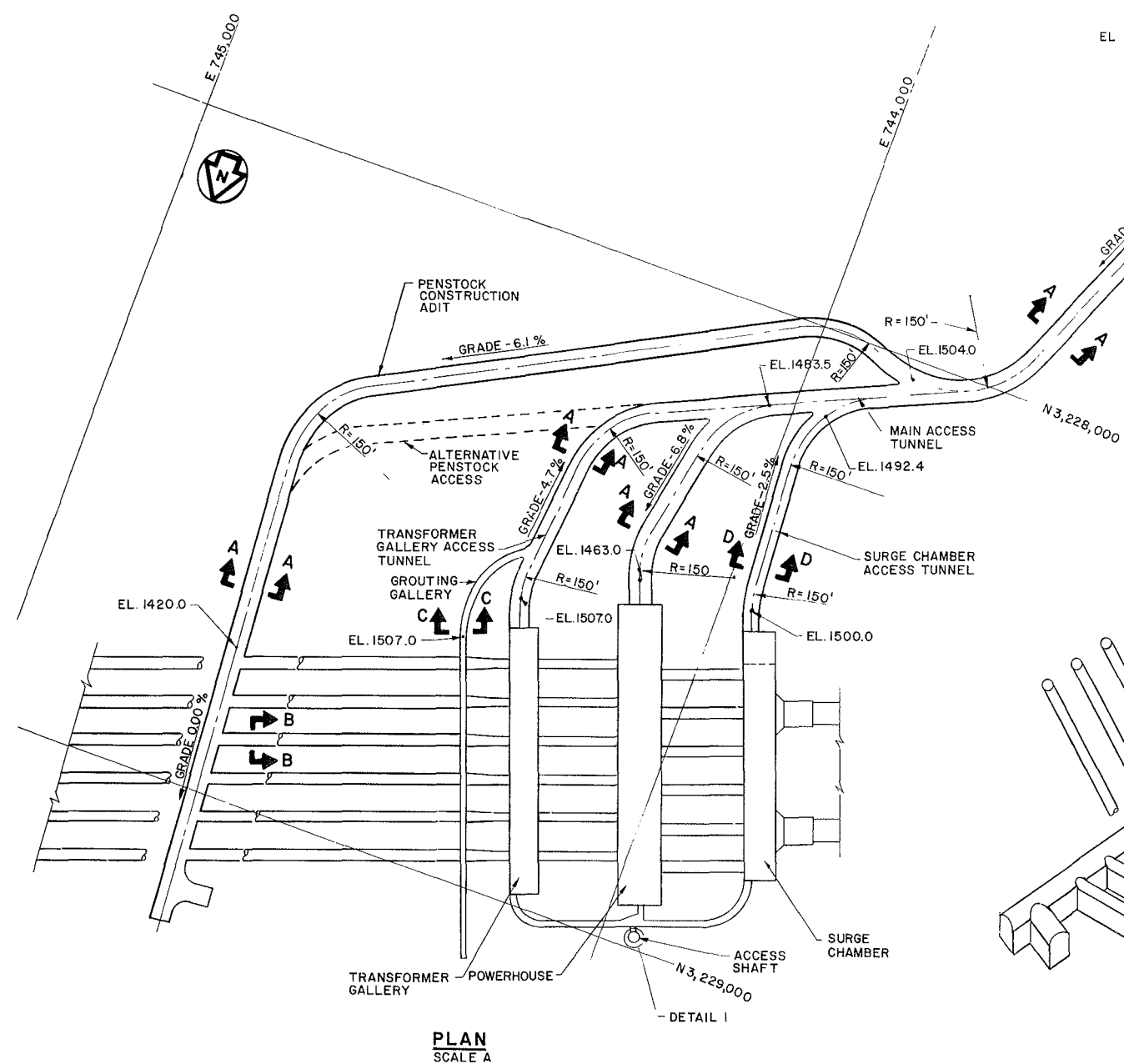
PLAN



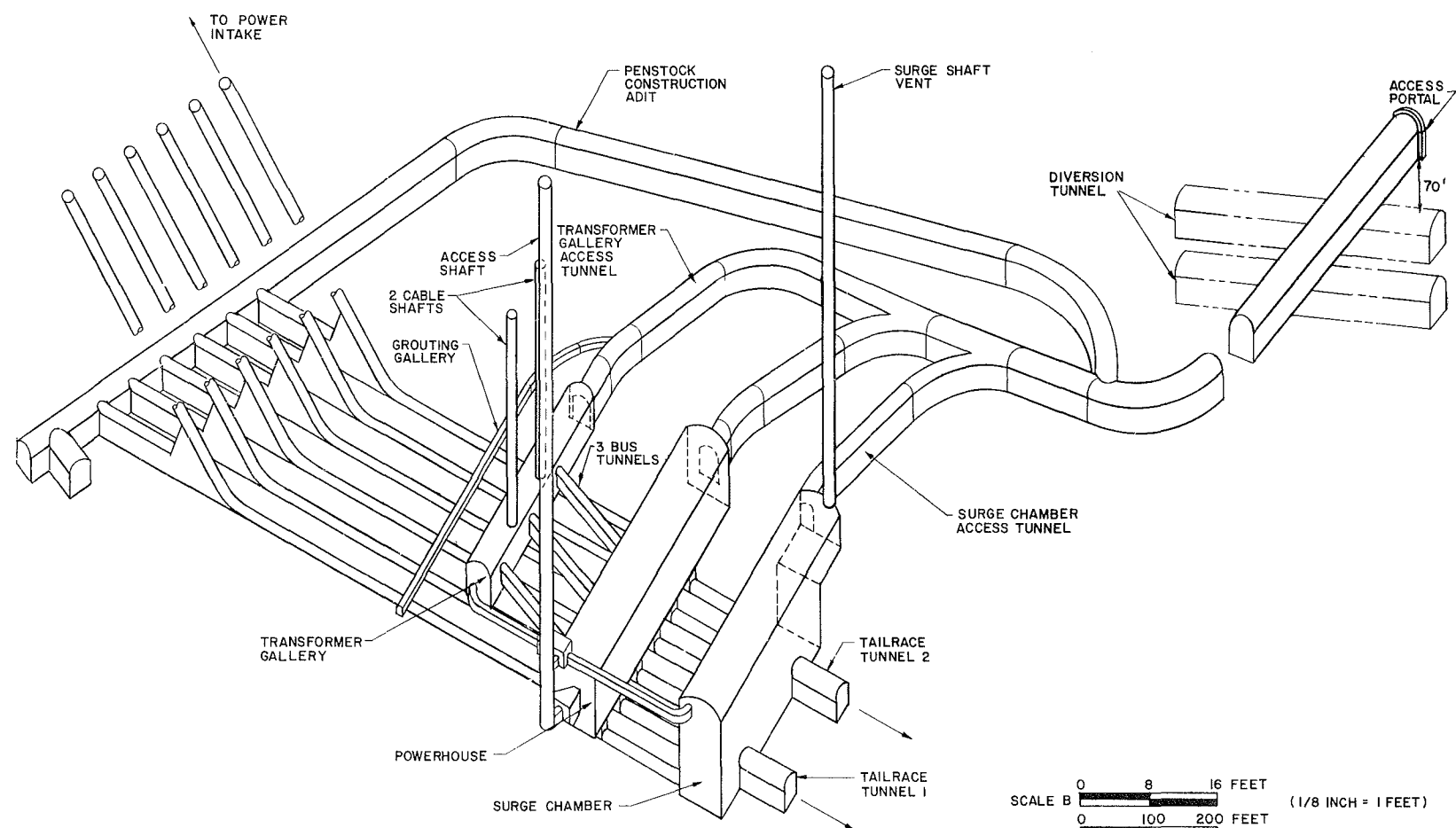
PROFILE

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

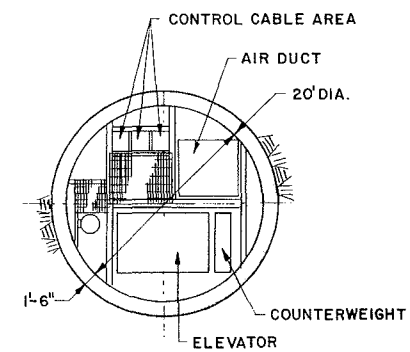
APRIS	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
WATANA POWER FACILITIES GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F21



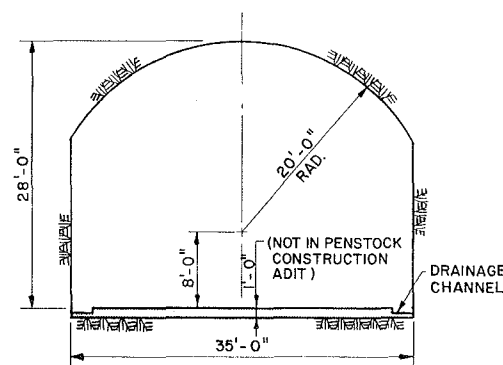
PLAN
SCALE A



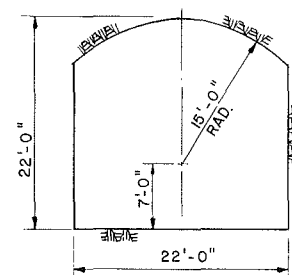
ISOMETRIC
SCALE A



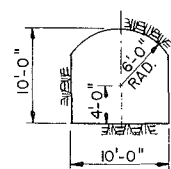
DETAIL 1
SCALE B



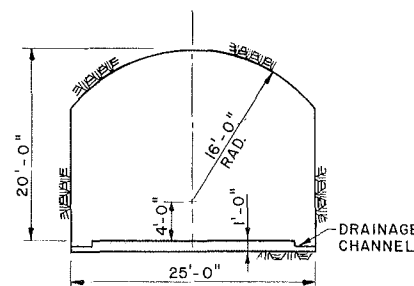
SECTION A-A
SCALE B



SECTION B-B
SCALE B



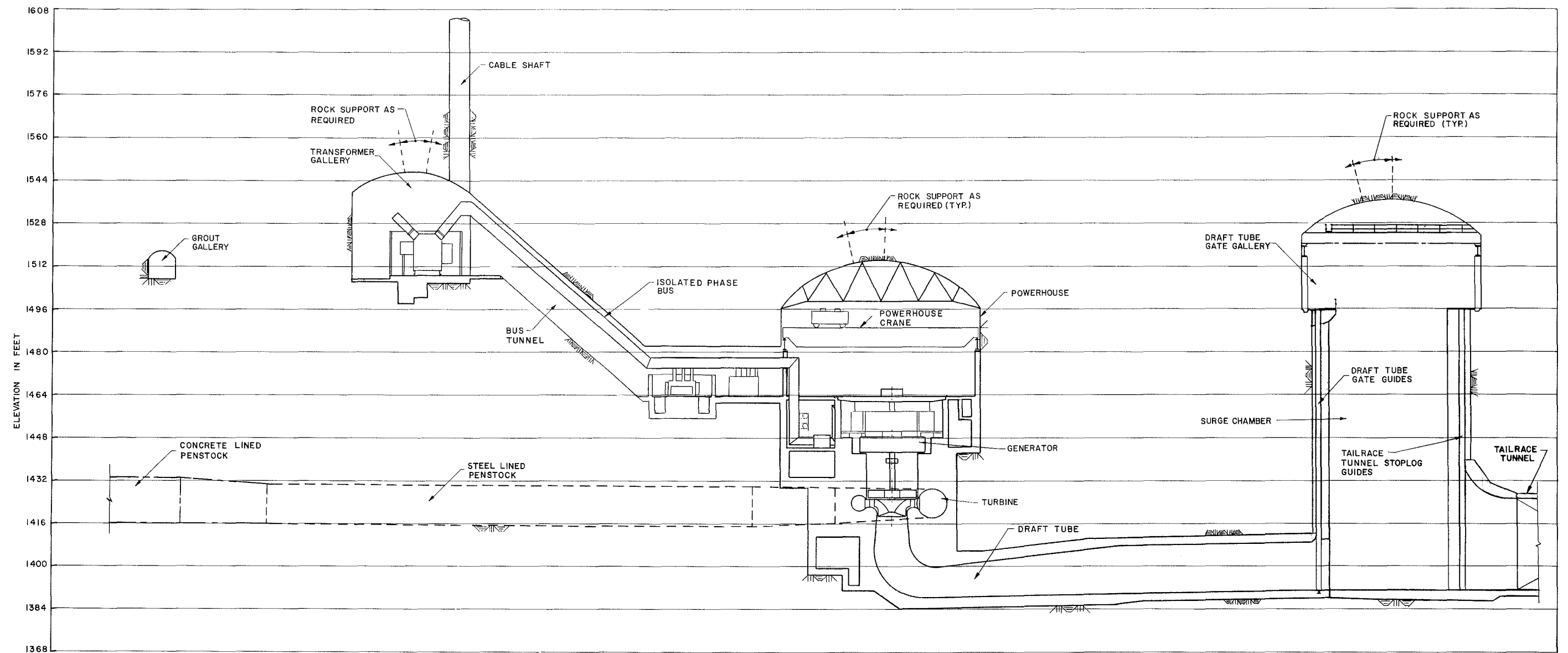
SECTION C-C
SCALE B



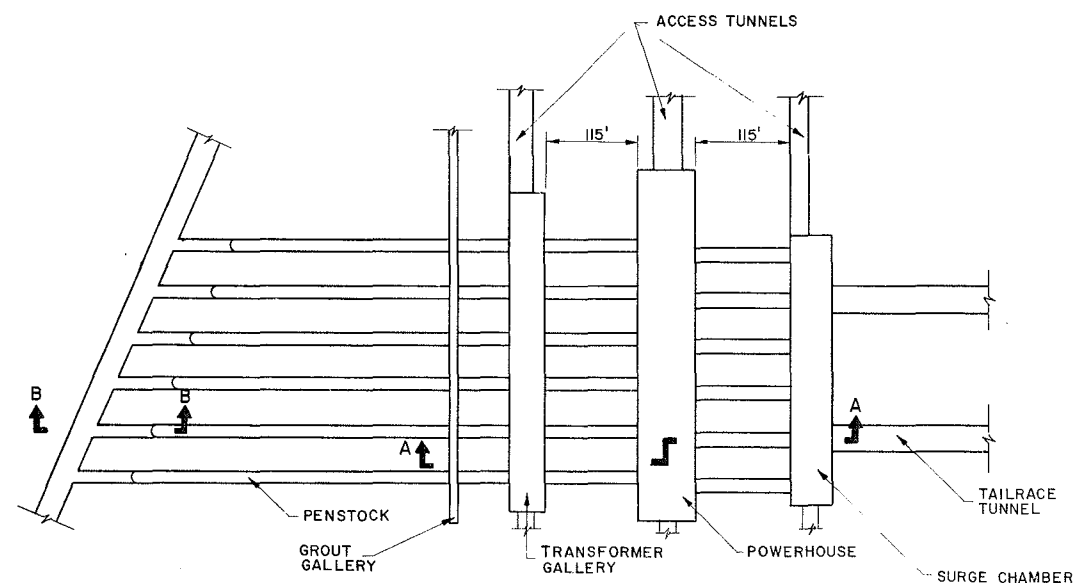
SECTION D-D
SCALE B

SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

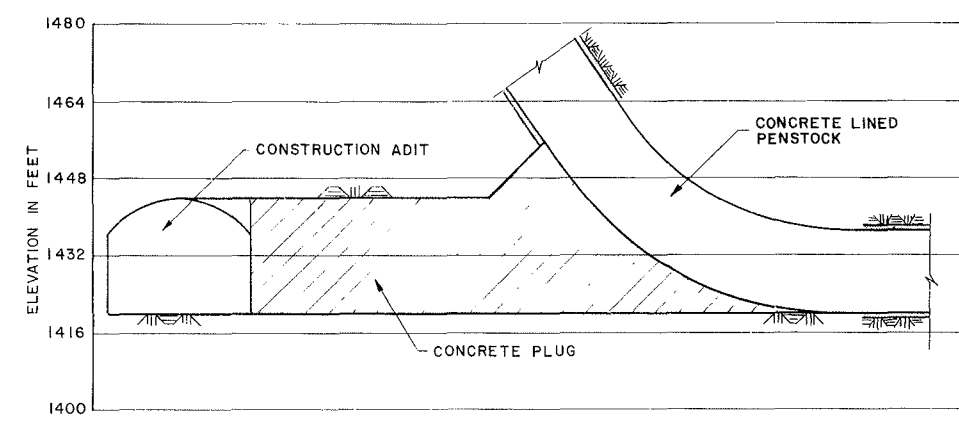
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWER FACILITIES ACCESS	
EXHIBIT F	PLATE F 22



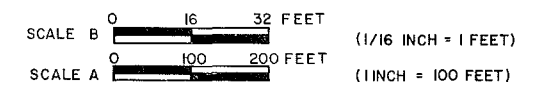
SECTION A-A
SCALE B



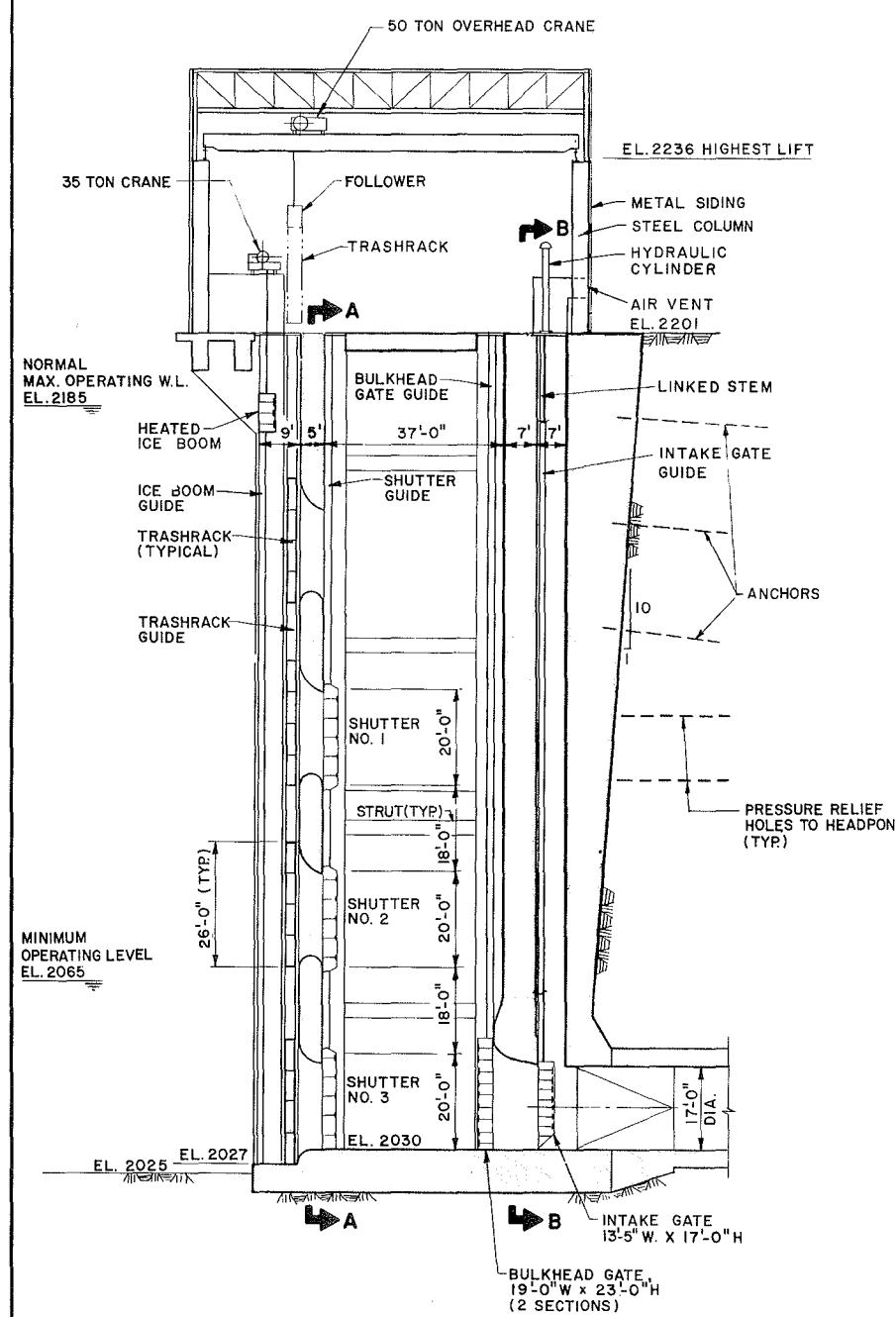
PLAN
SCALE A



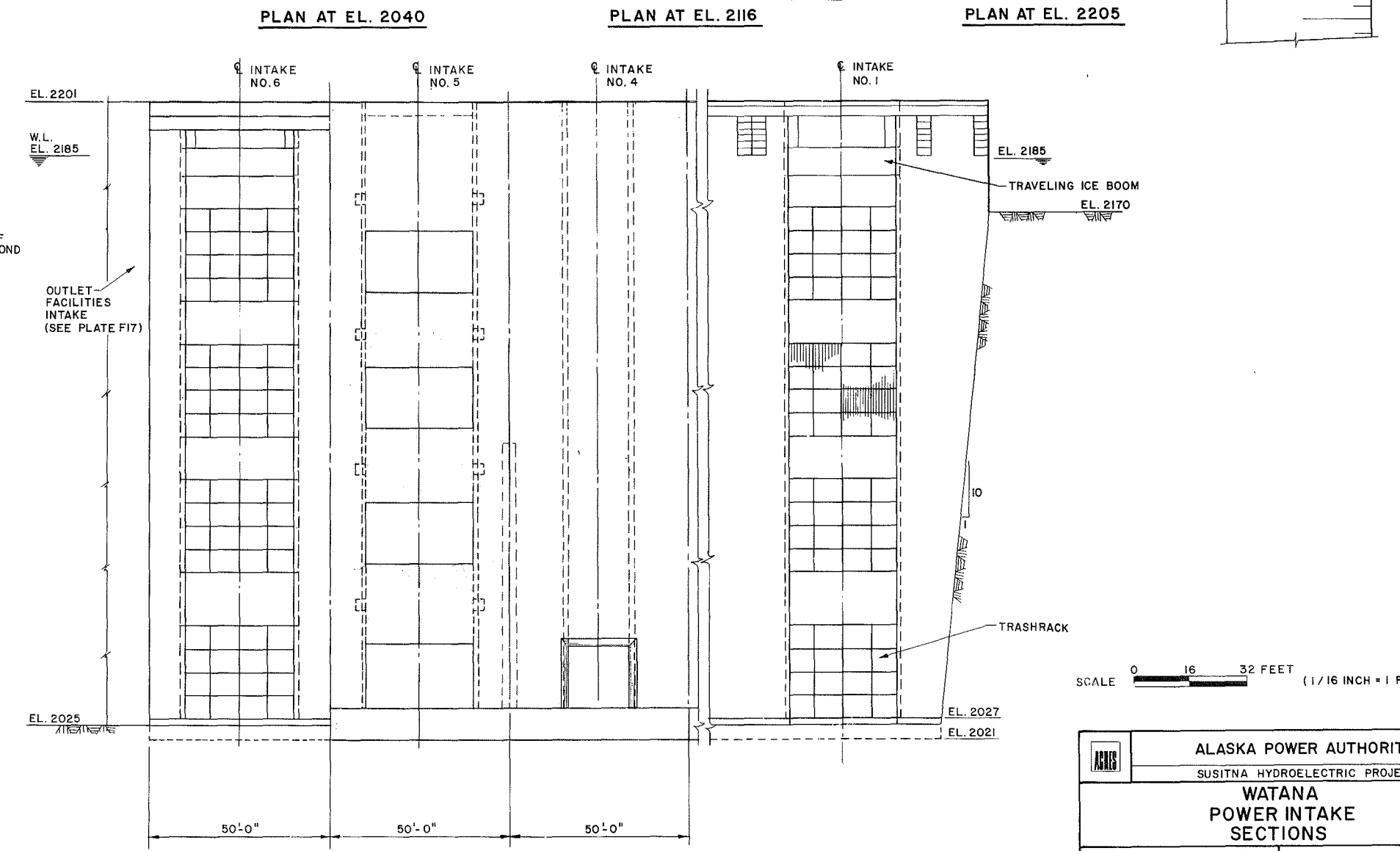
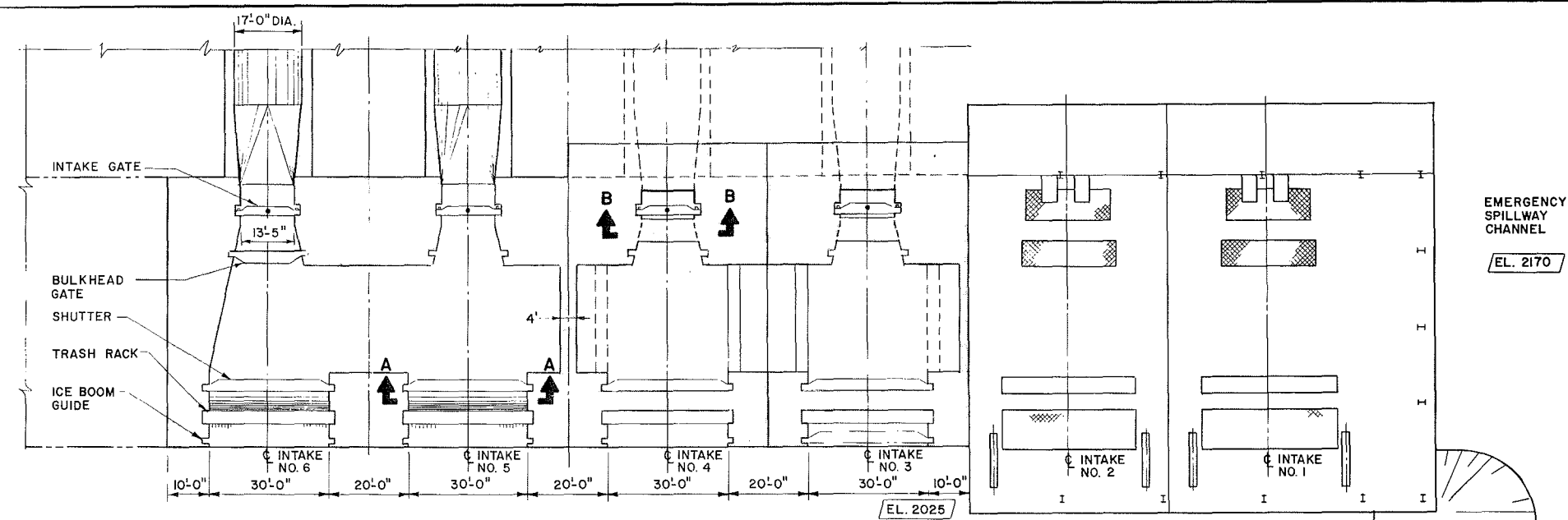
SECTION B-B
SCALE B



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

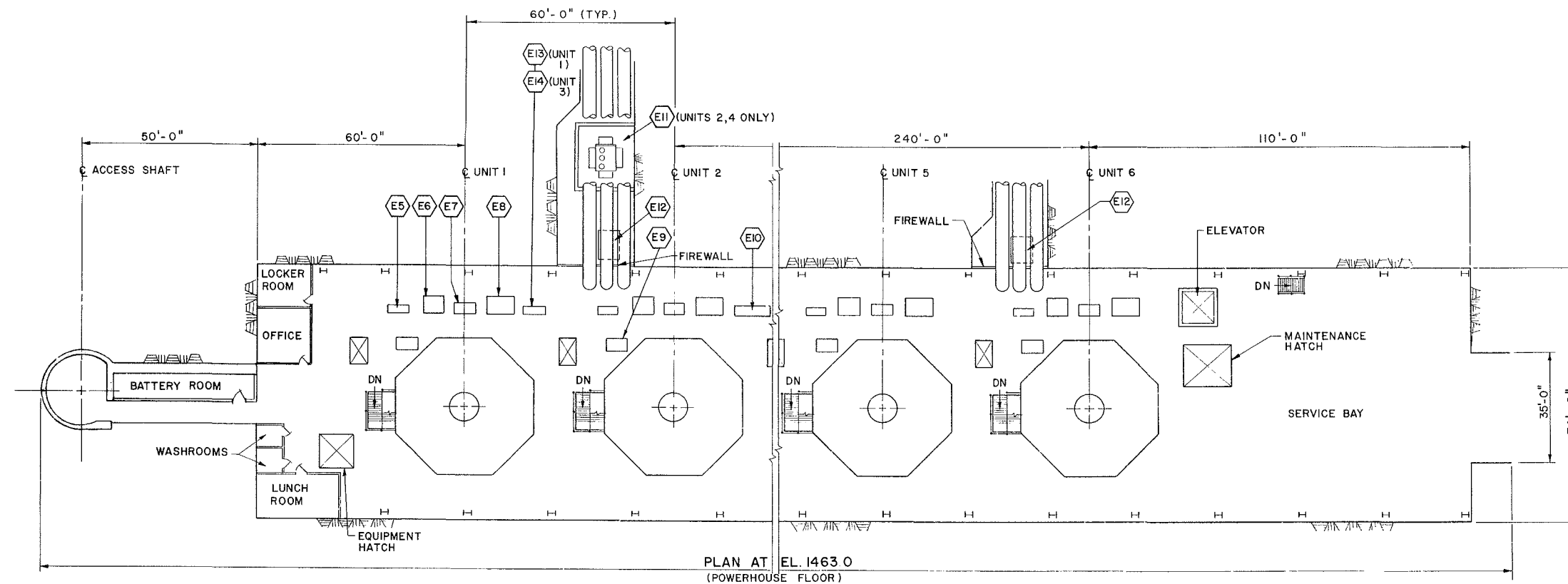
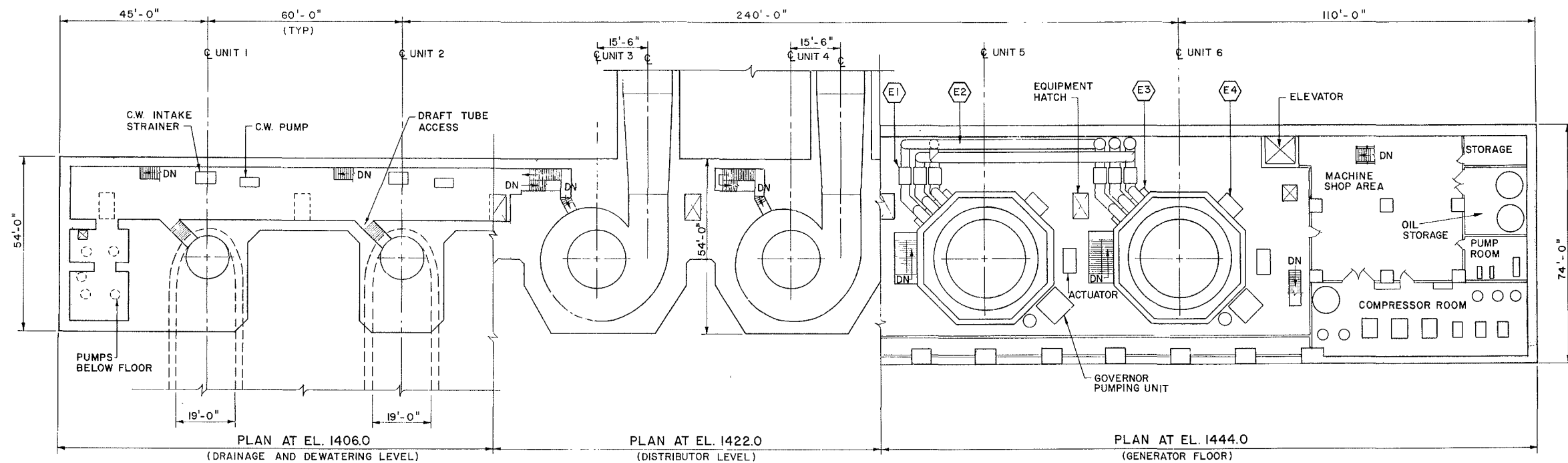


**SECTION THRU
INTAKE GATE CONTROL STRUCTURE**



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



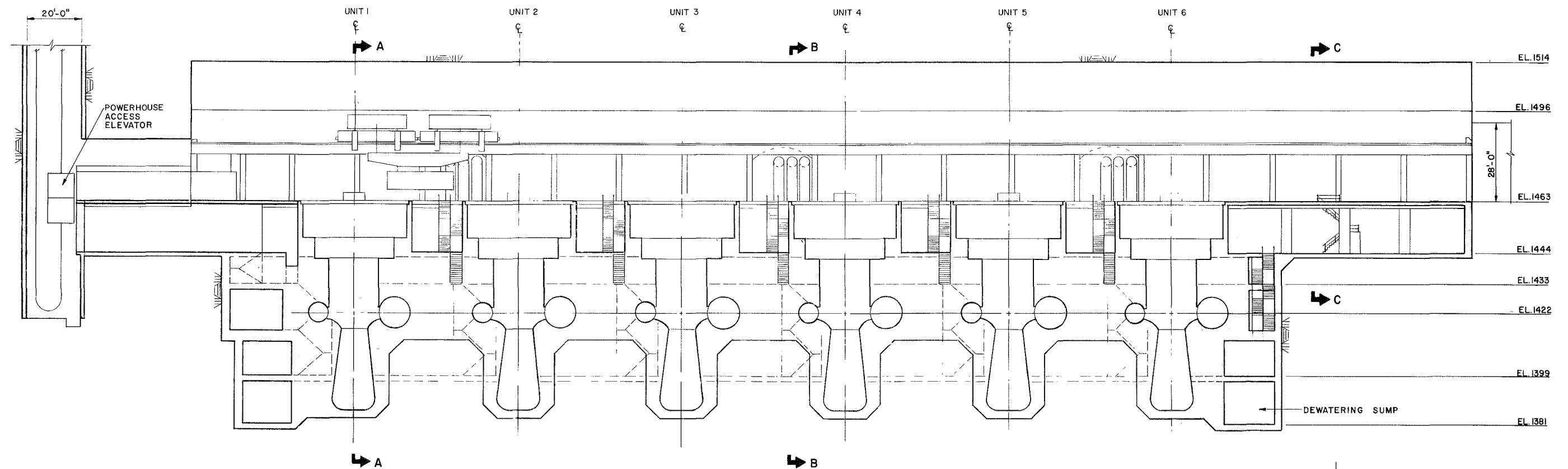
SCALE 0 16 32 FEET
(1/16 INCH = 1 FEET)

LEGEND

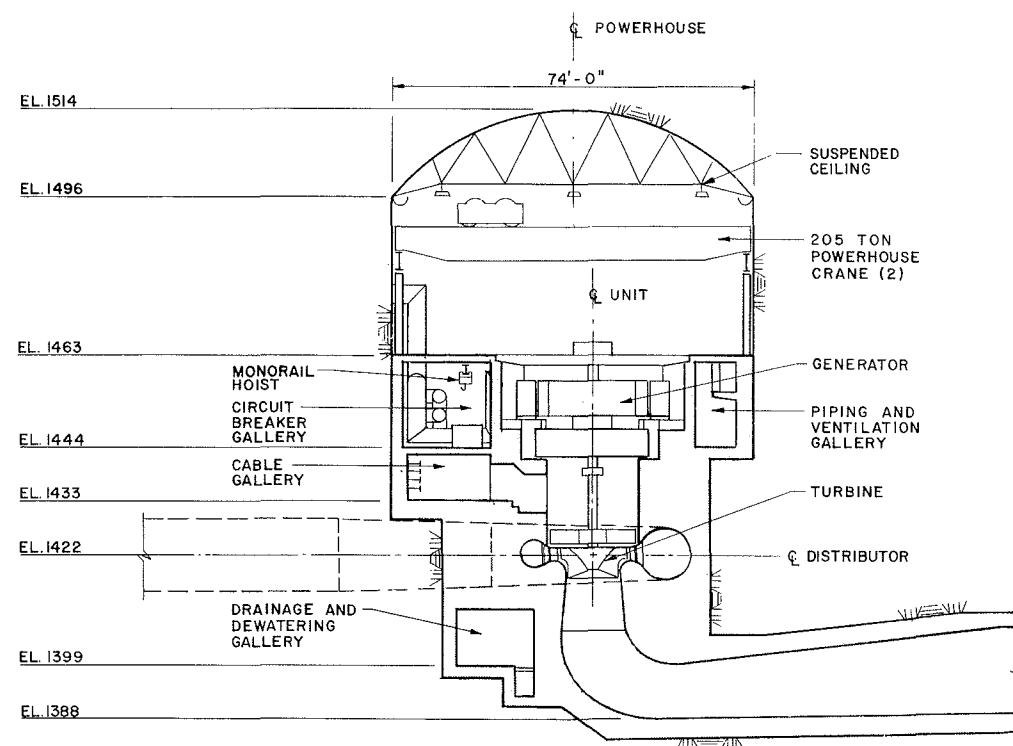
- E1 GENERATOR CIRCUIT BREAKERS
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY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

POWERHOUSE PLANS

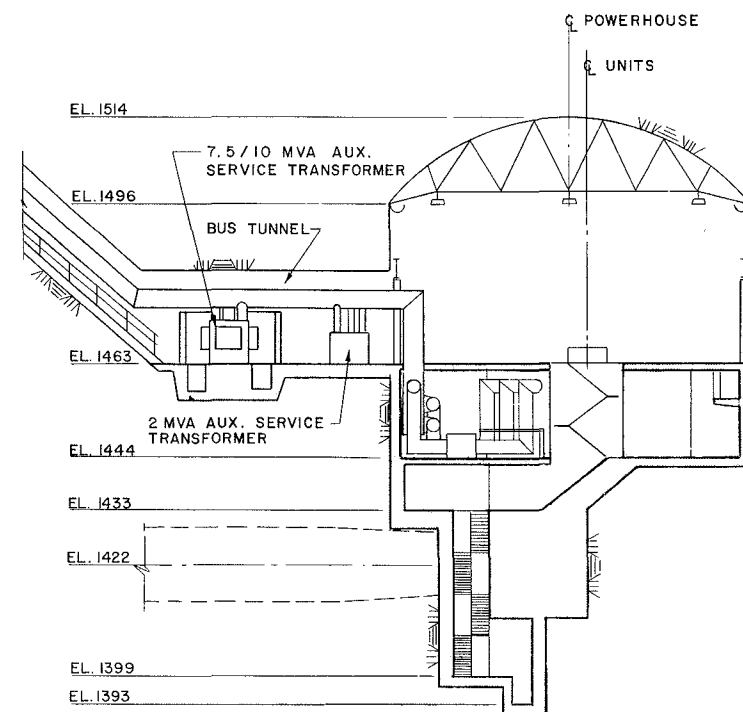
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE PLANS	
EXHIBIT F	PLATE F 25



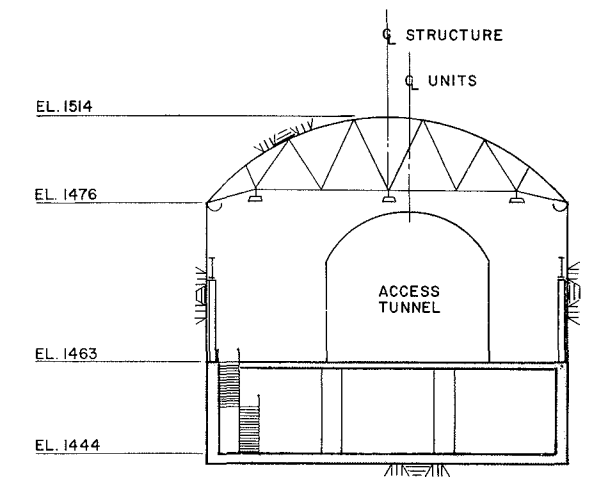
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS, UNITS NOT SHOWN)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



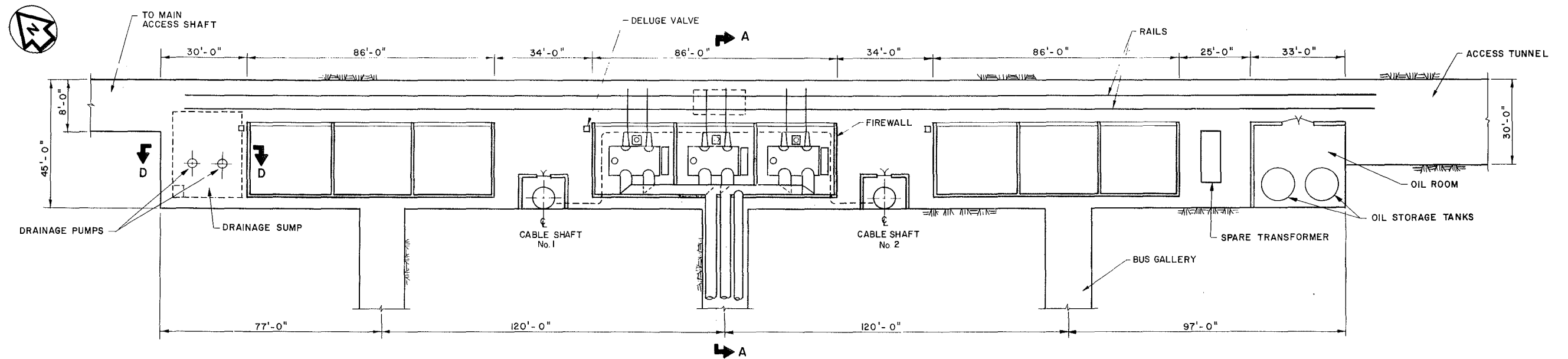
SECTION B-B (SECTION THRU BUS TUNNEL)



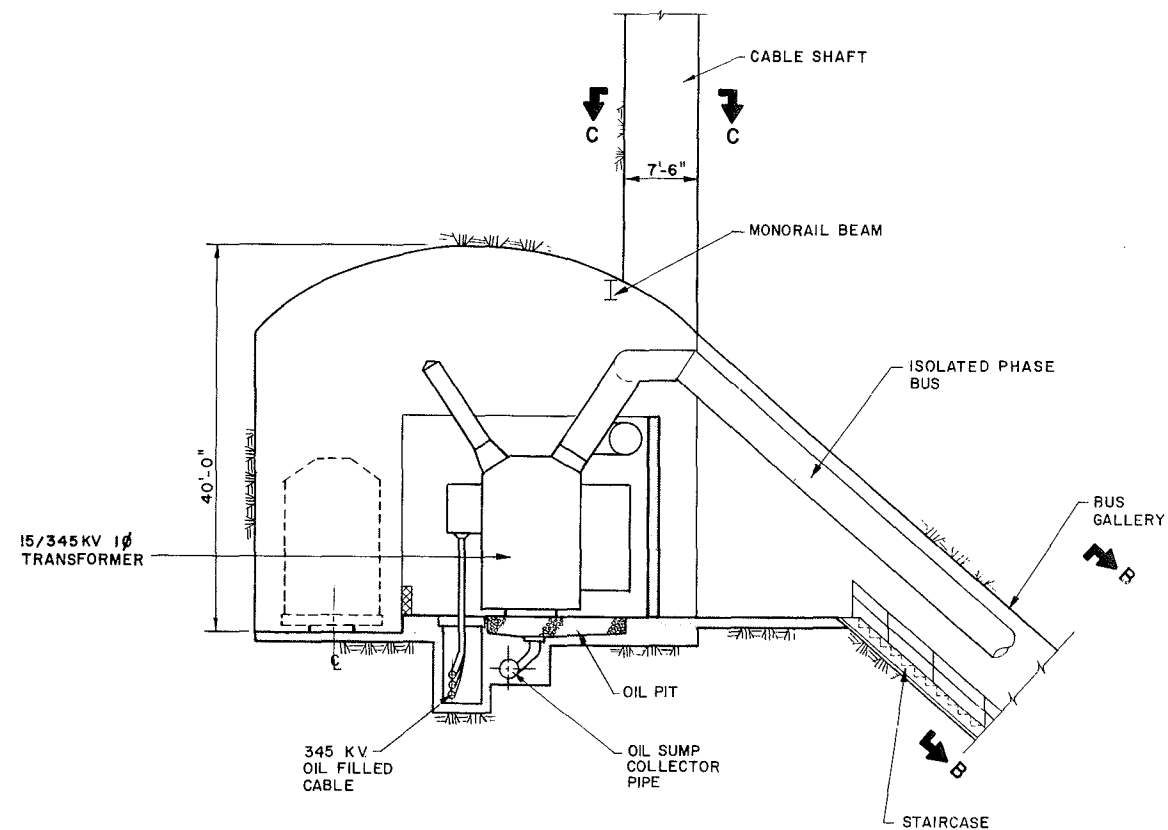
SECTION C-C
SECTION THRU SERVICE BAY

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

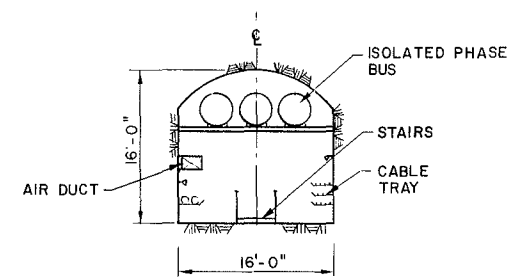
	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
WATANA POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F 26



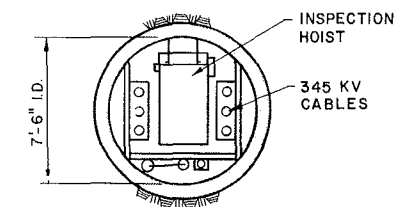
PLAN
SCALE A



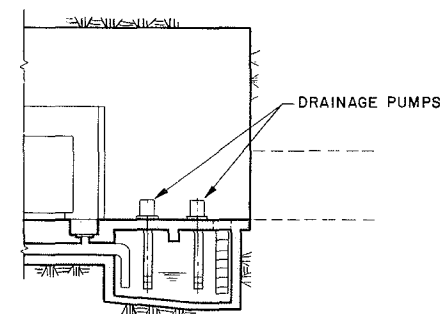
SECTION A-A
SCALE B



SECTION B-B
THROUGH BUS GALLERY
SCALE B



SECTION C-C
THROUGH CABLE SHAFT
SCALE C



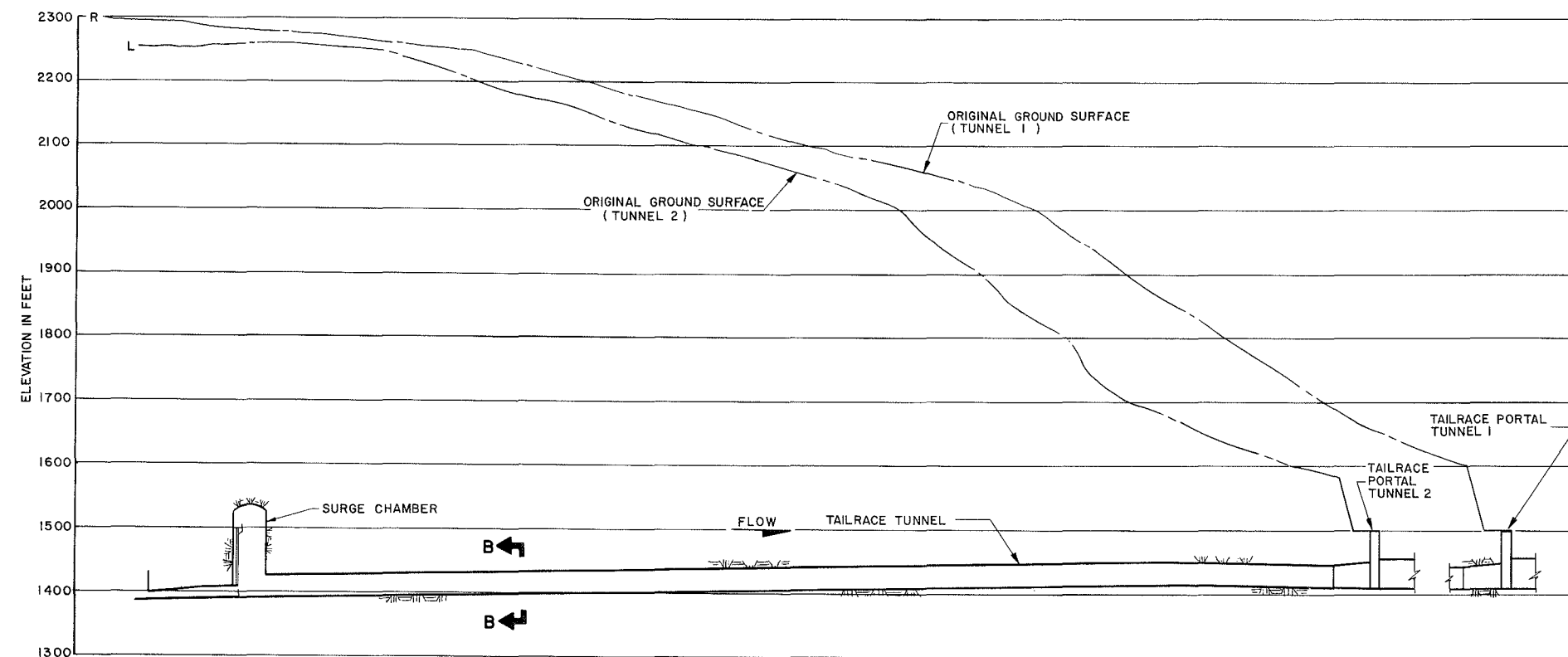
SECTION D-D
THROUGH SUMP
SCALE A

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

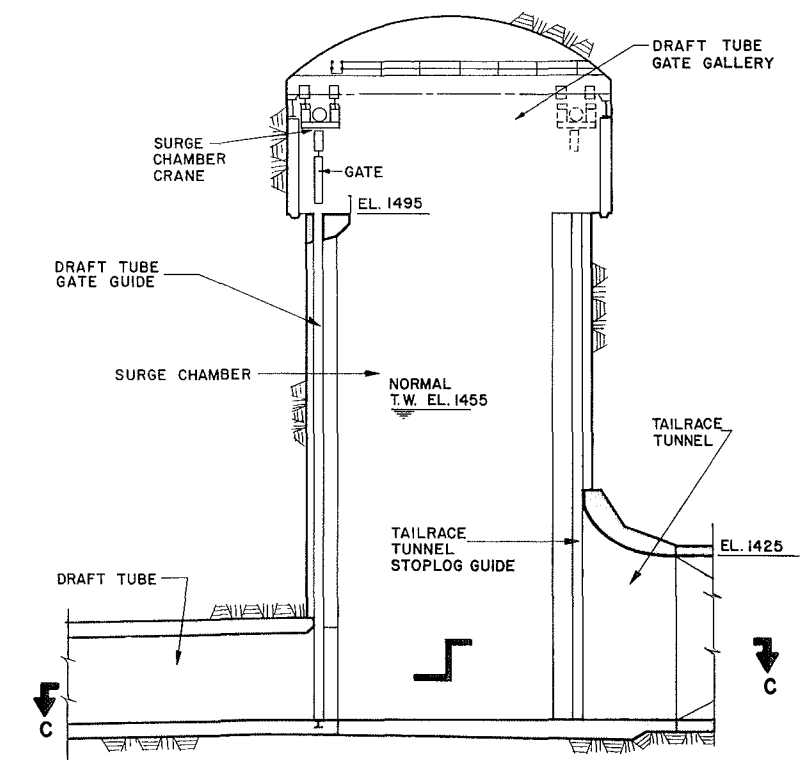
SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)

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

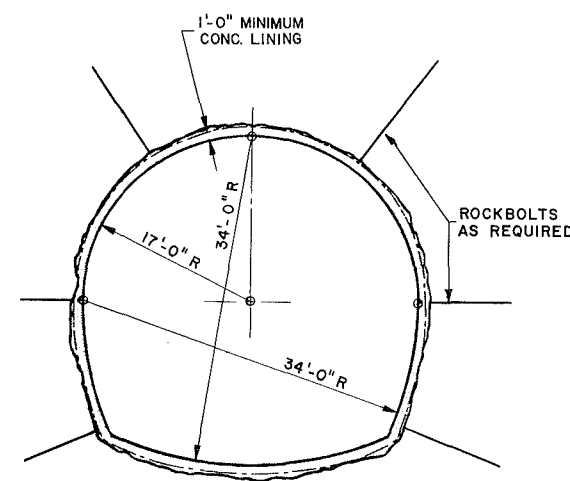
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA TRANSFORMER GALLERY PLAN & SECTIONS	
	EXHIBIT F	PLATE F 27



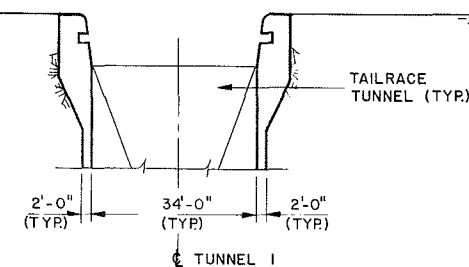
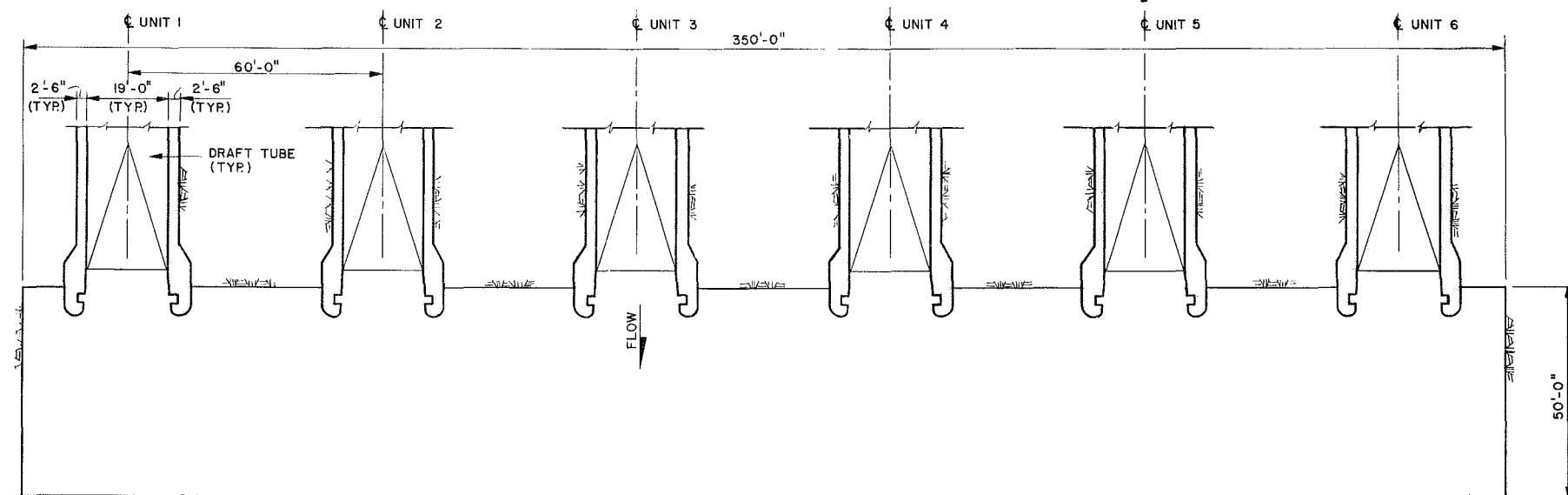
PROFILE
SCALE A



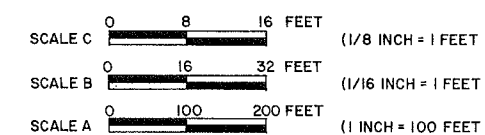
SECTION A-A
SCALE B



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
- 

LIGHTNING ARRESTOR
- 

CAPACITOR COUPLING VOLTAGE TRANSFORMER
- 

RECTIFIER

SYMBOLS:

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

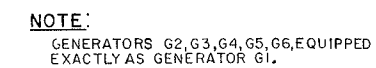
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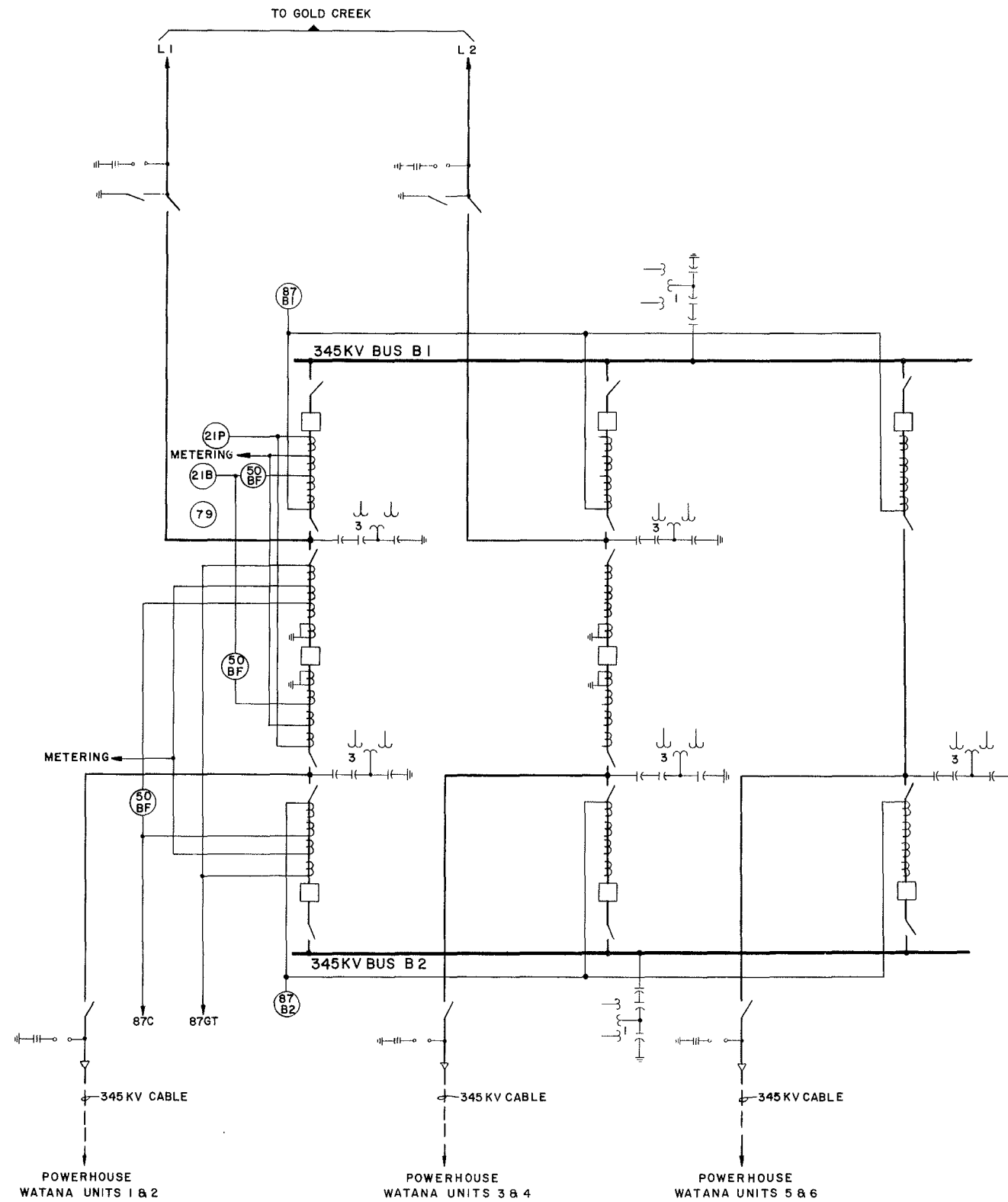
HIGH VOLTAGE CABLE OR OVERHEAD CONDUCTOR
- TC

—

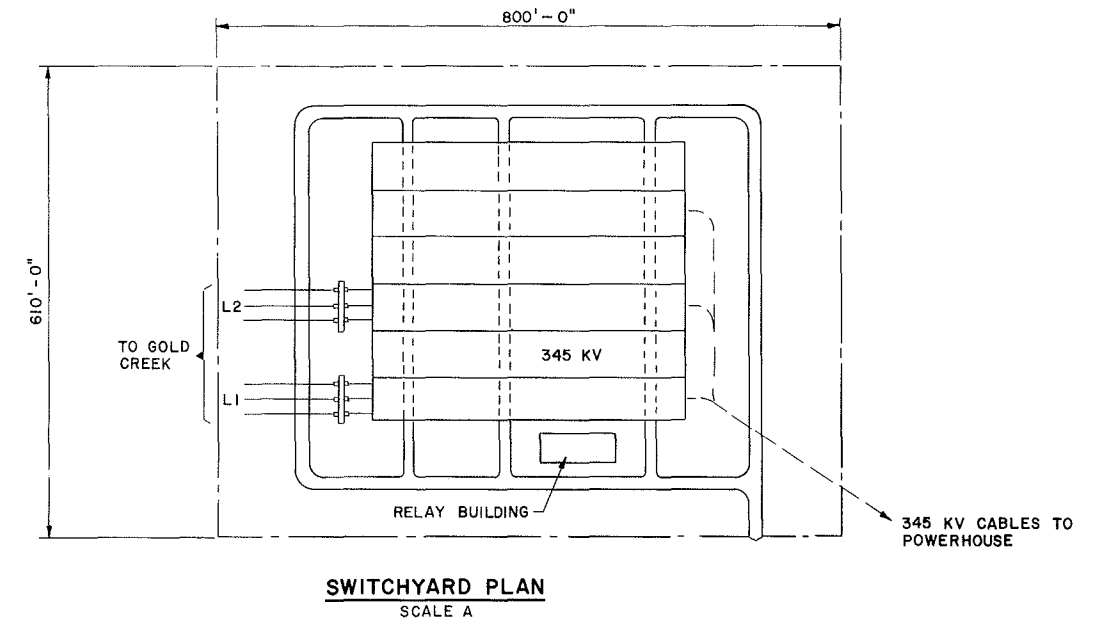
TRANSFORMER AND CABLE OR OVERHEAD CONDUCTOR

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



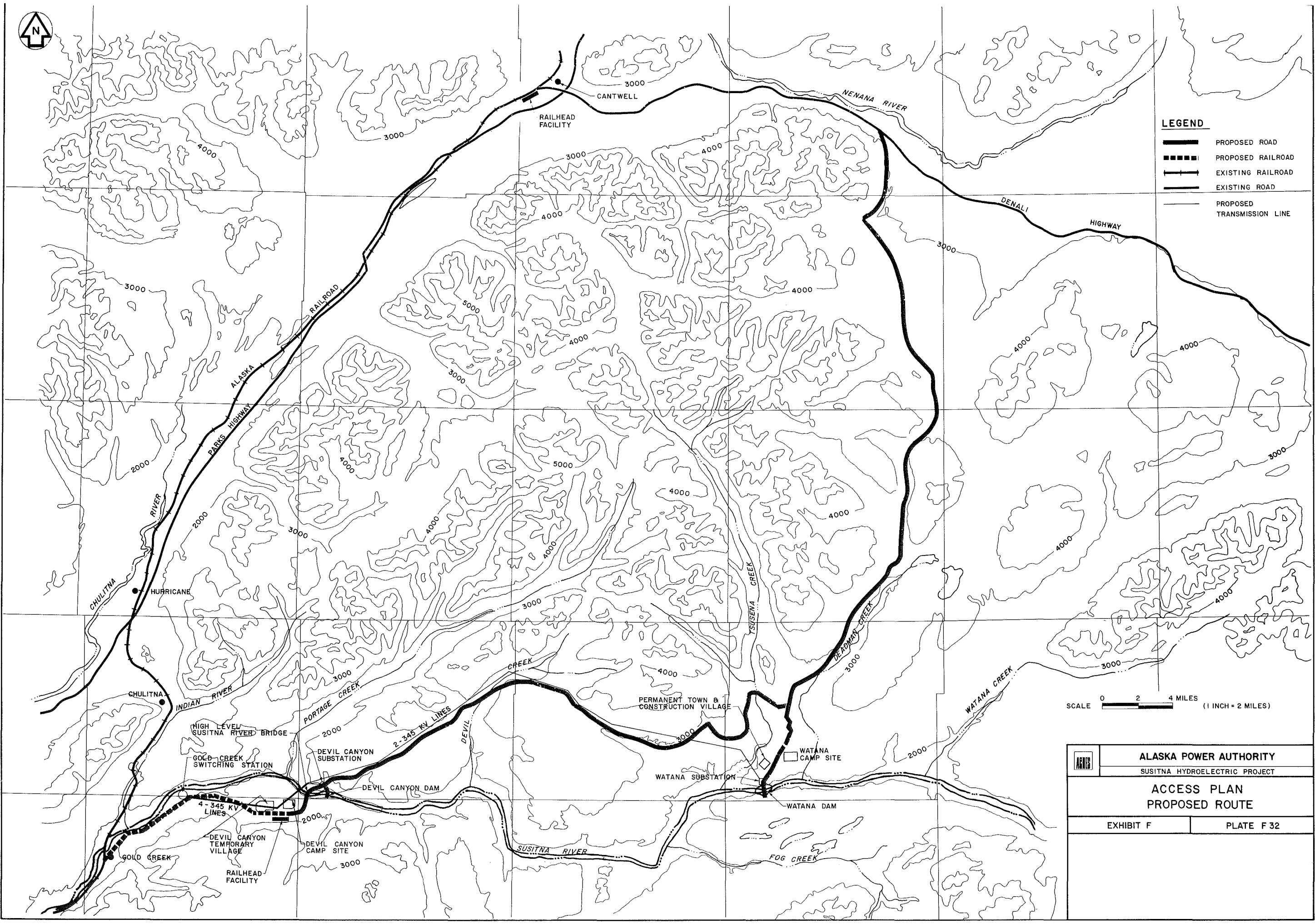


SINGLE LINE DIAGRAM



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

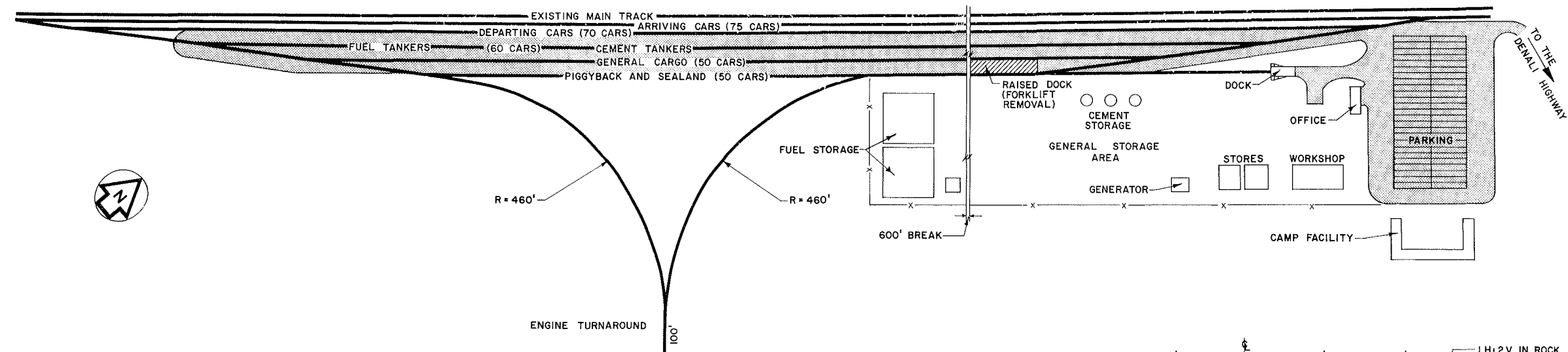


LEGEND

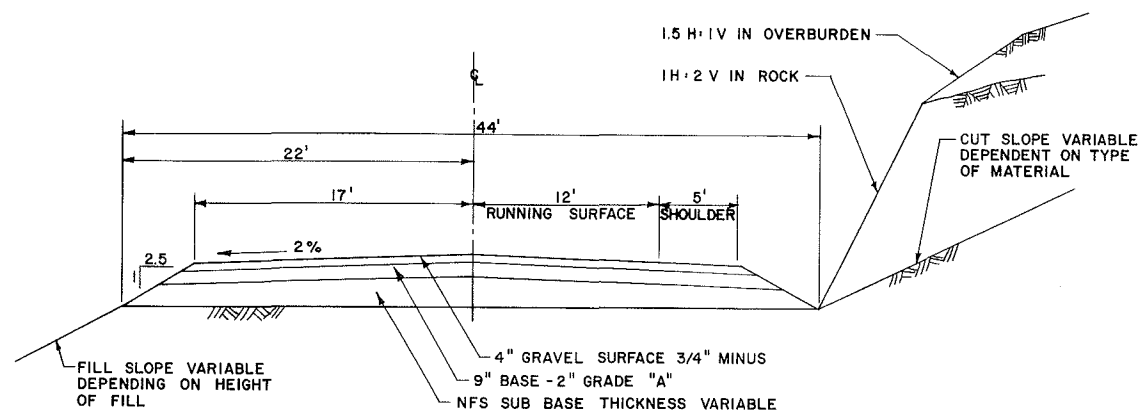
- PROPOSED ROAD
- PROPOSED RAILROAD
- EXISTING RAILROAD
- EXISTING ROAD
- PROPOSED TRANSMISSION LINE

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

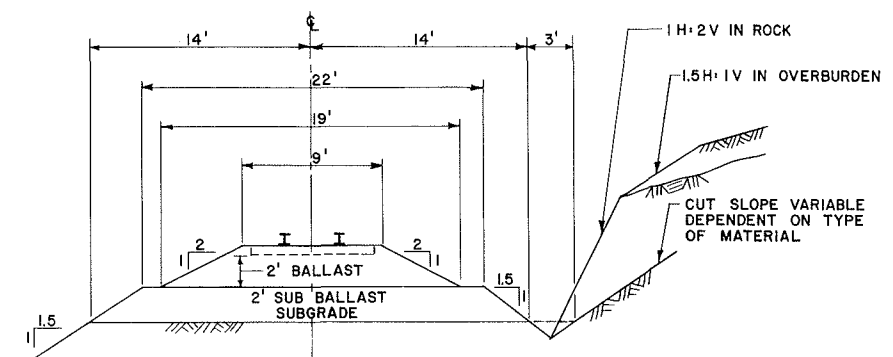
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	ACCESS PLAN PROPOSED ROUTE	
	EXHIBIT F	PLATE F 32



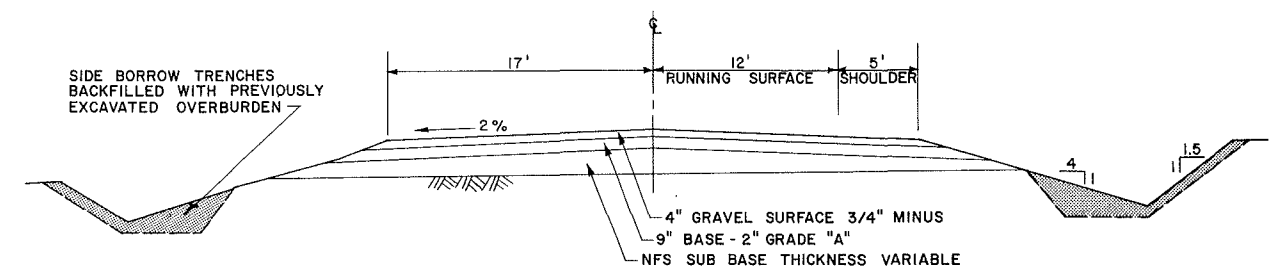
RAILHEAD FACILITY AT CANTWELL - PLAN
SCALE A



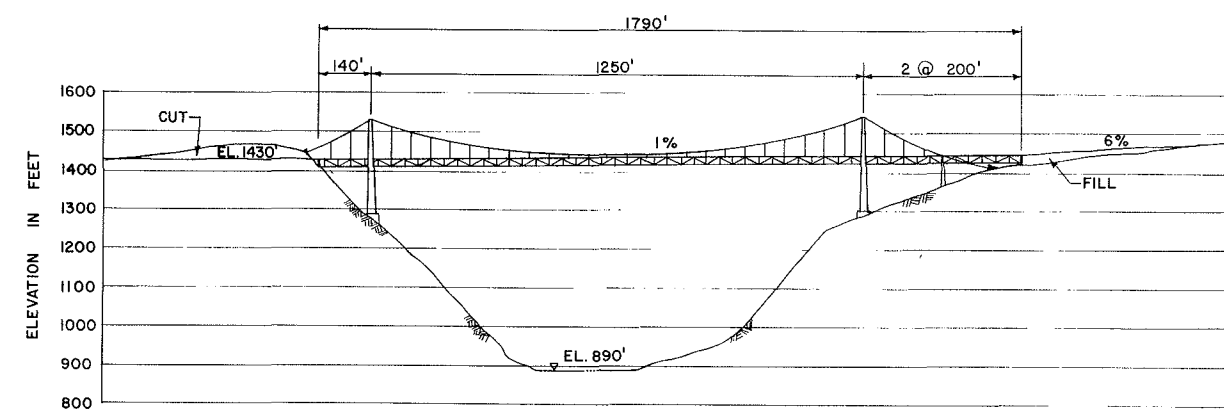
TYPICAL 'SIDEHILL CUT' SECTION
SCALE B



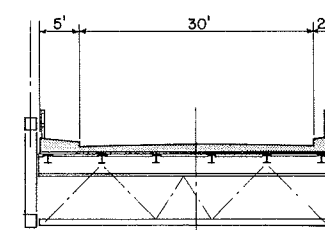
TYPICAL RAILROAD CROSS SECTION
SCALE B



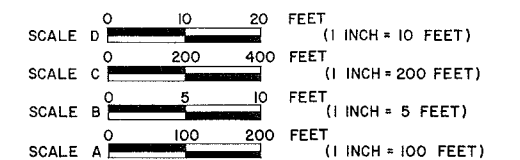
TYPICAL 'SIDE BORROW' SECTION
SCALE B



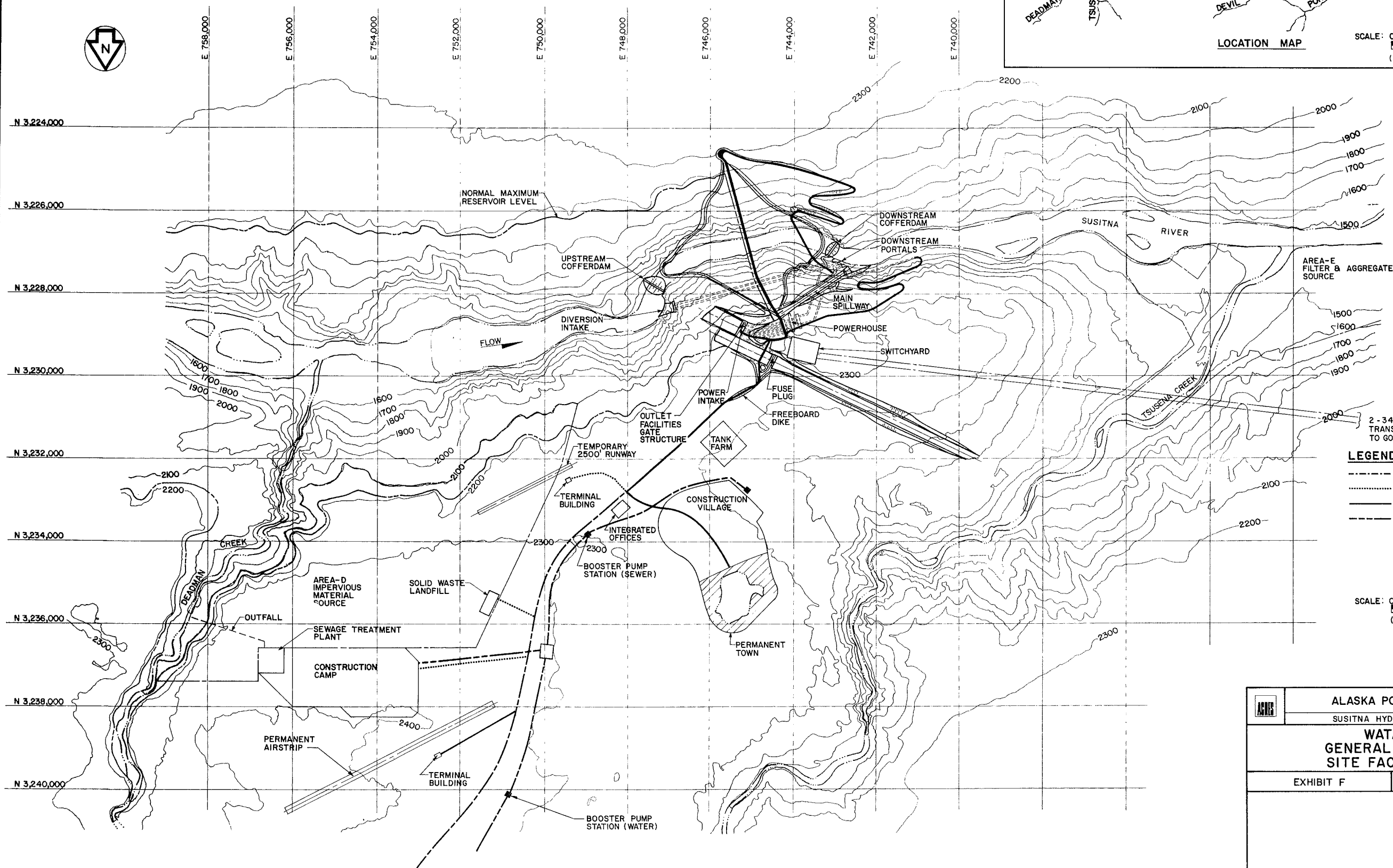
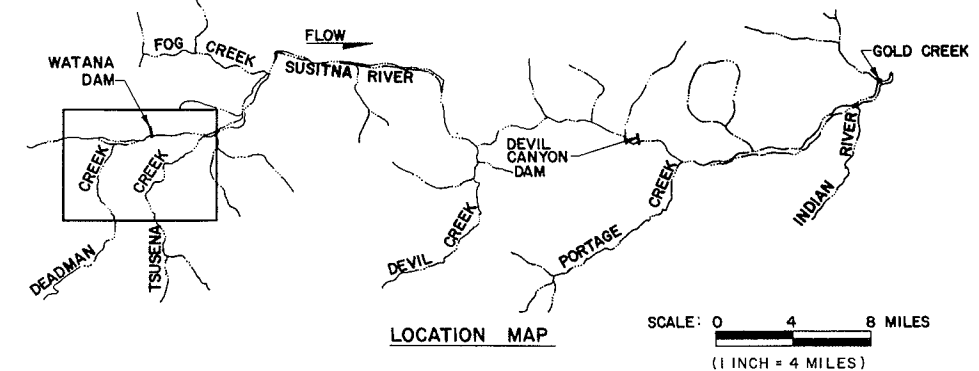
HIGH LEVEL SUSITNA RIVER BRIDGE
SCALE C



TYPICAL CROSS SECTION
HIGH LEVEL SUSITNA RIVER BRIDGE
SCALE D



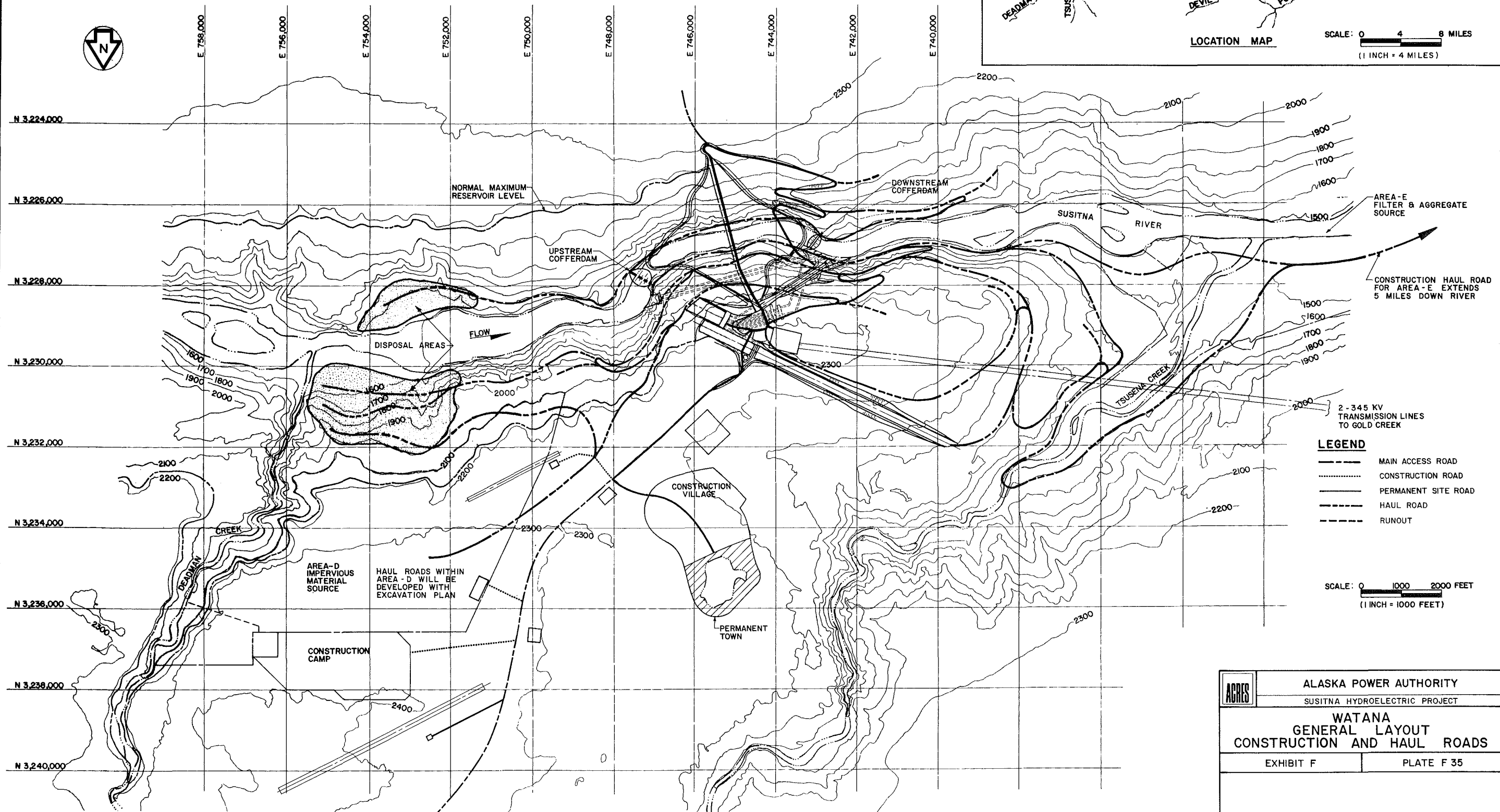
APAC	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
ACCESS PLAN TYPICAL DETAILS	
EXHIBIT F	PLATE F 33



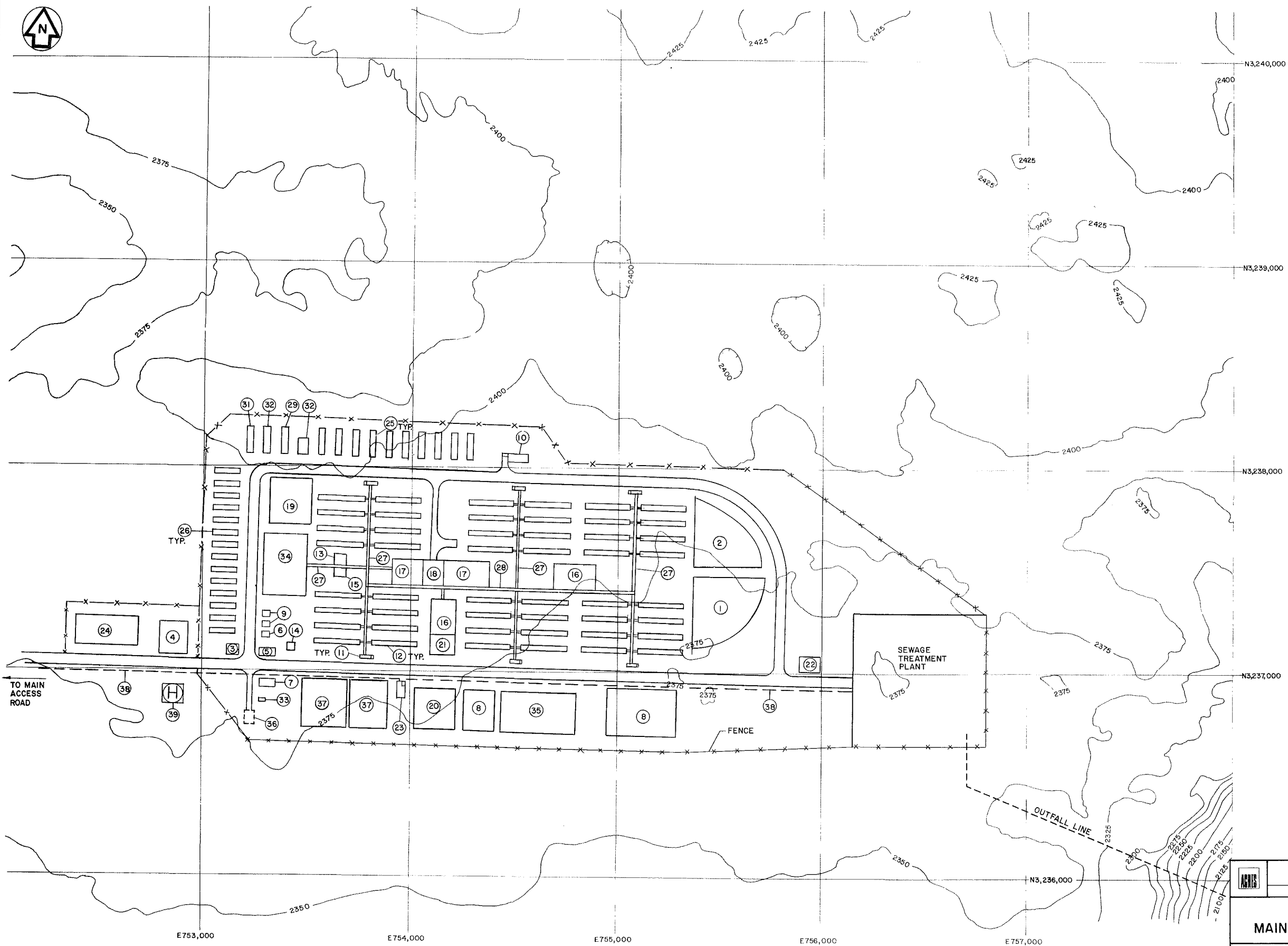
- LEGEND**
- MAIN ACCESS ROAD
 - CONSTRUCTION ROAD
 - PERMANENT SITE ROAD
 - - - UTILIDOR

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

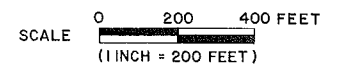
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT SITE FACILITIES		
EXHIBIT F		PLATE F 34



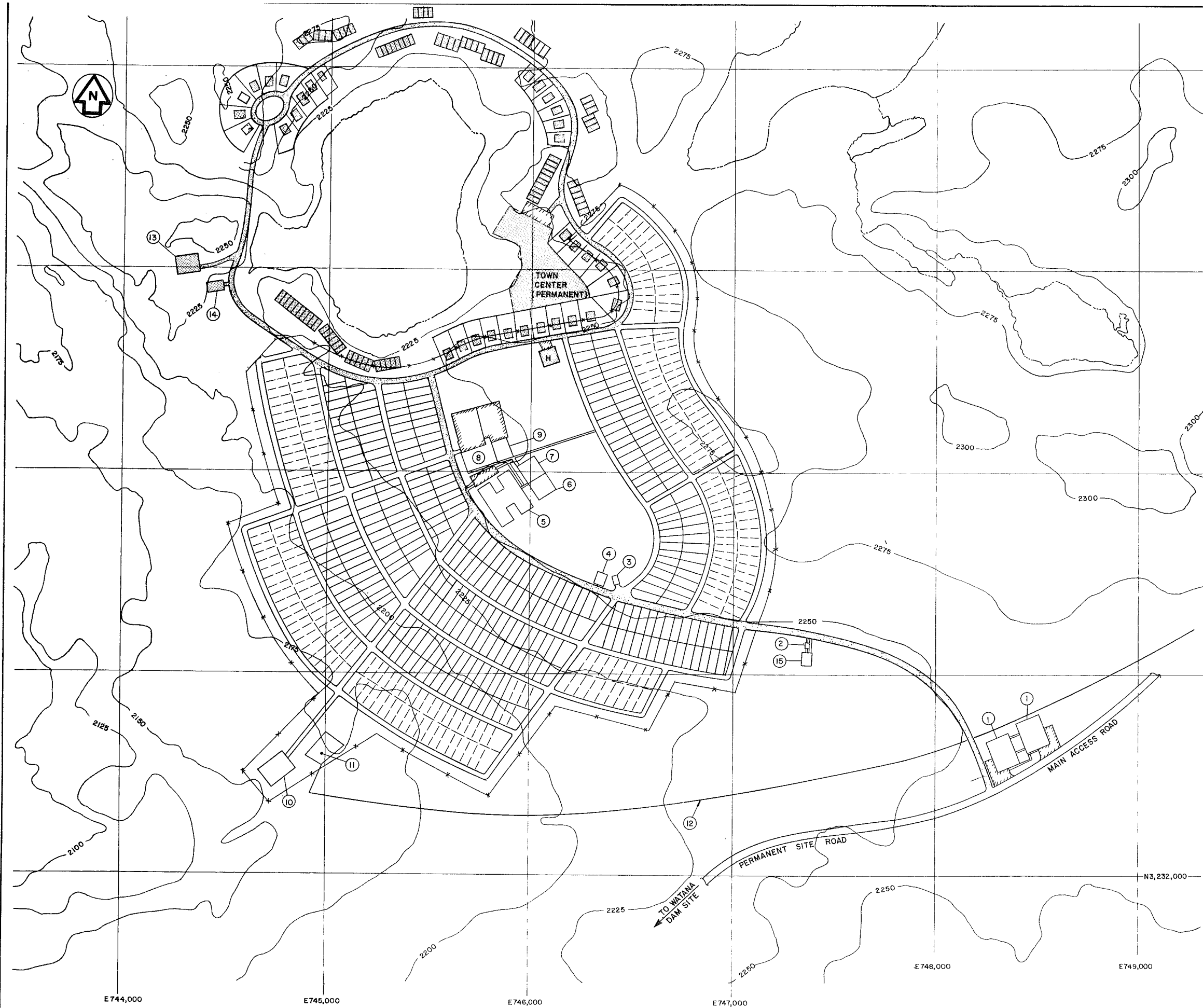
ACRES	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT CONSTRUCTION AND HAUL ROADS		
EXHIBIT F		PLATE F 35



- 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



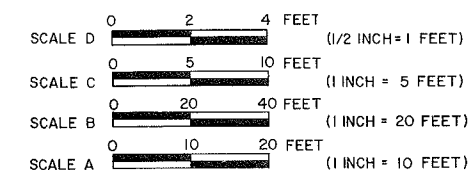
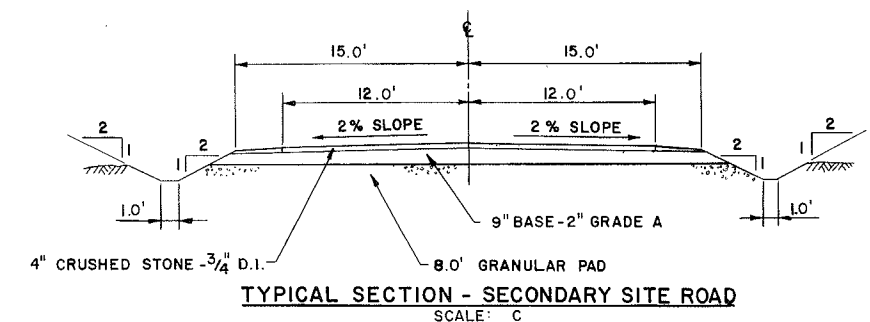
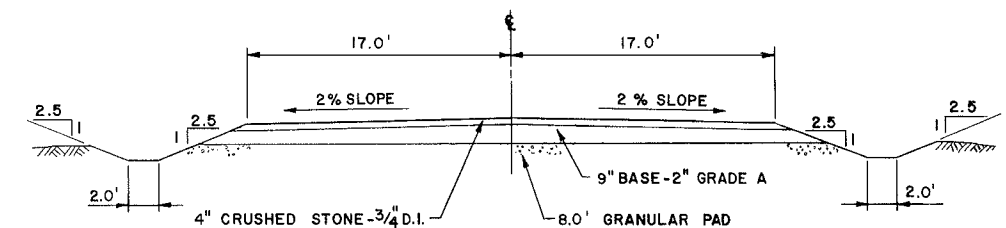
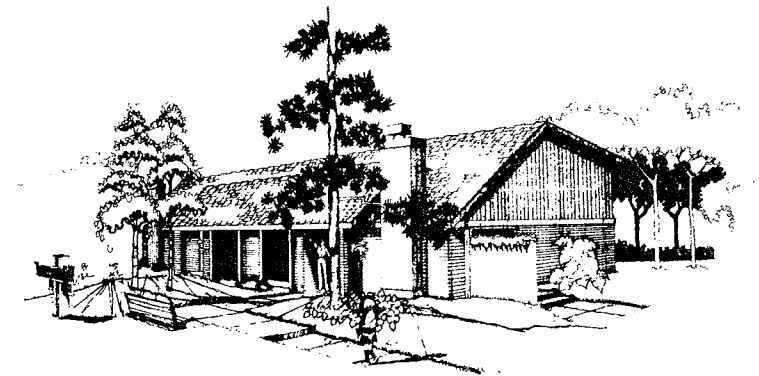
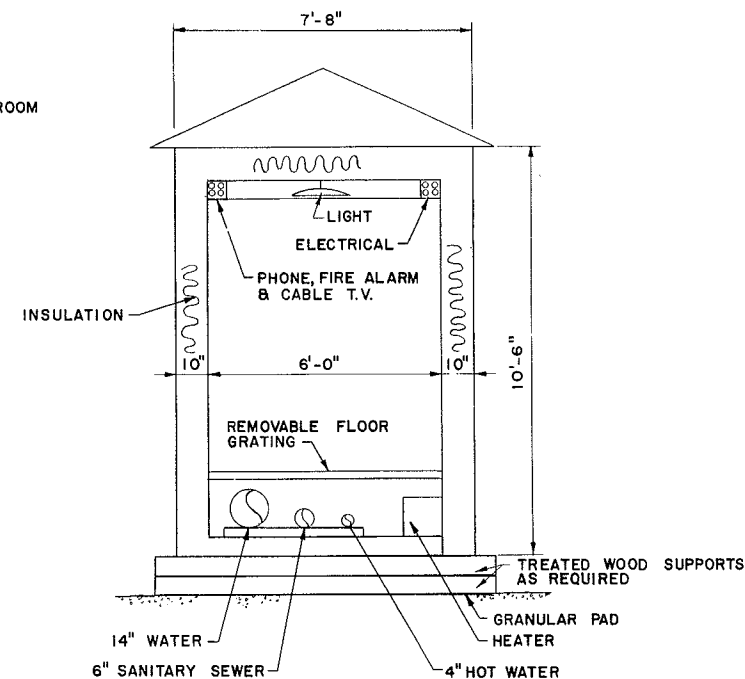
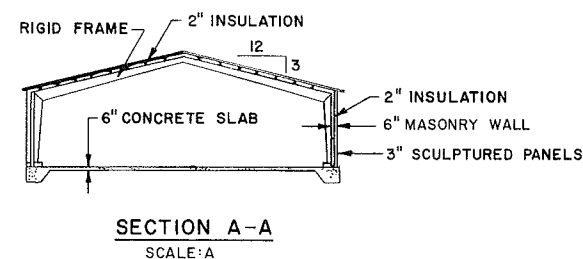
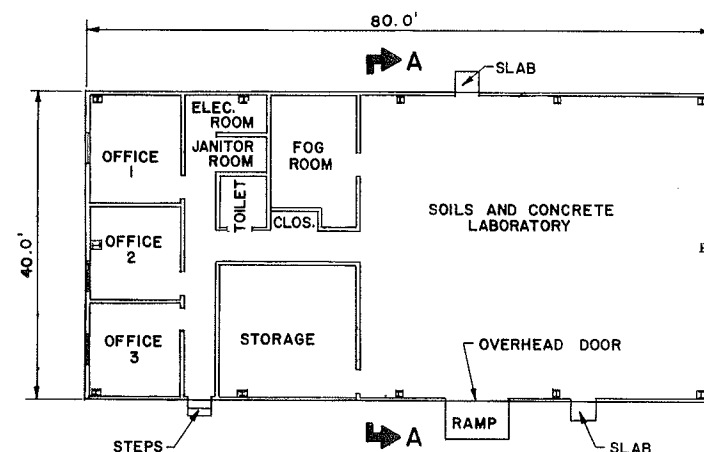
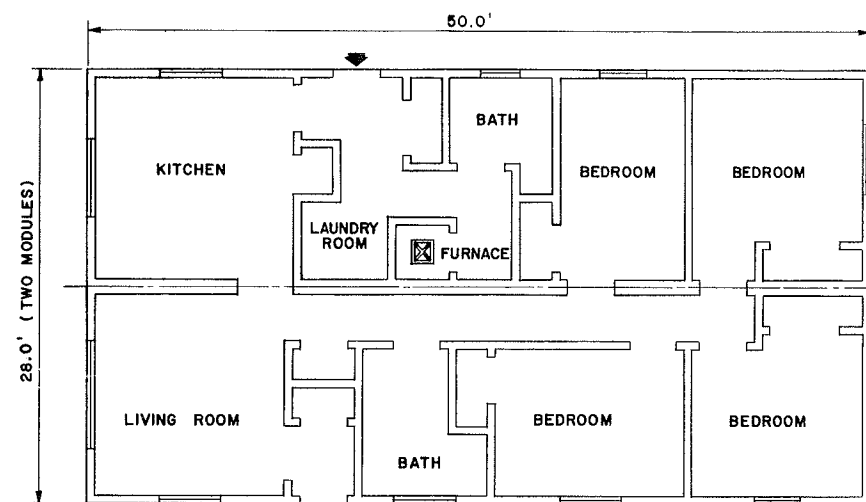
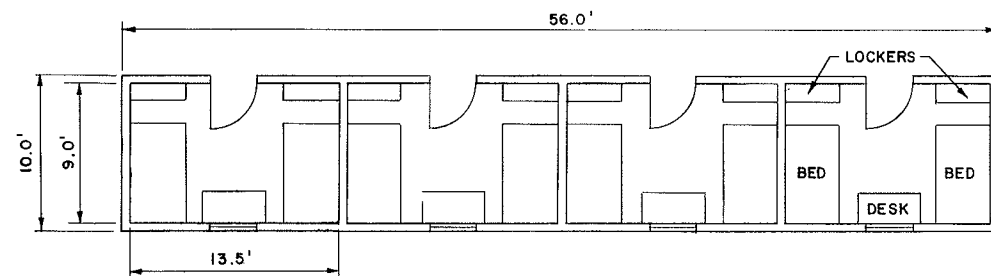
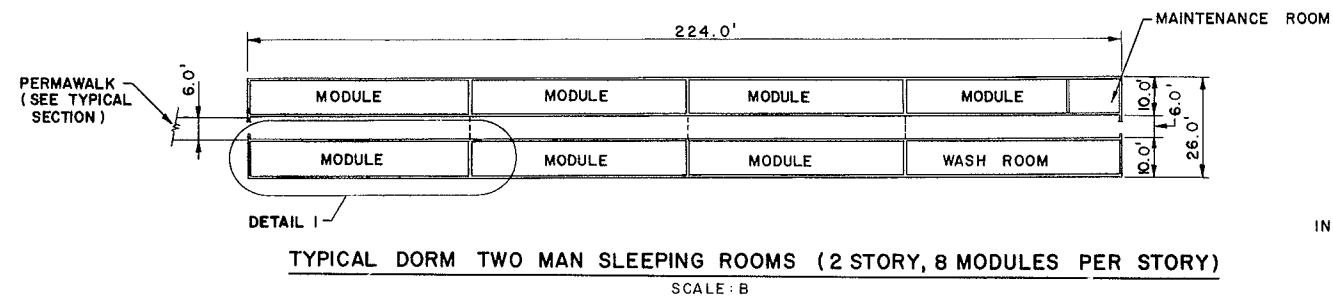
 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN CONSTRUCTION CAMP SITE	
EXHIBIT F	PLATE F36



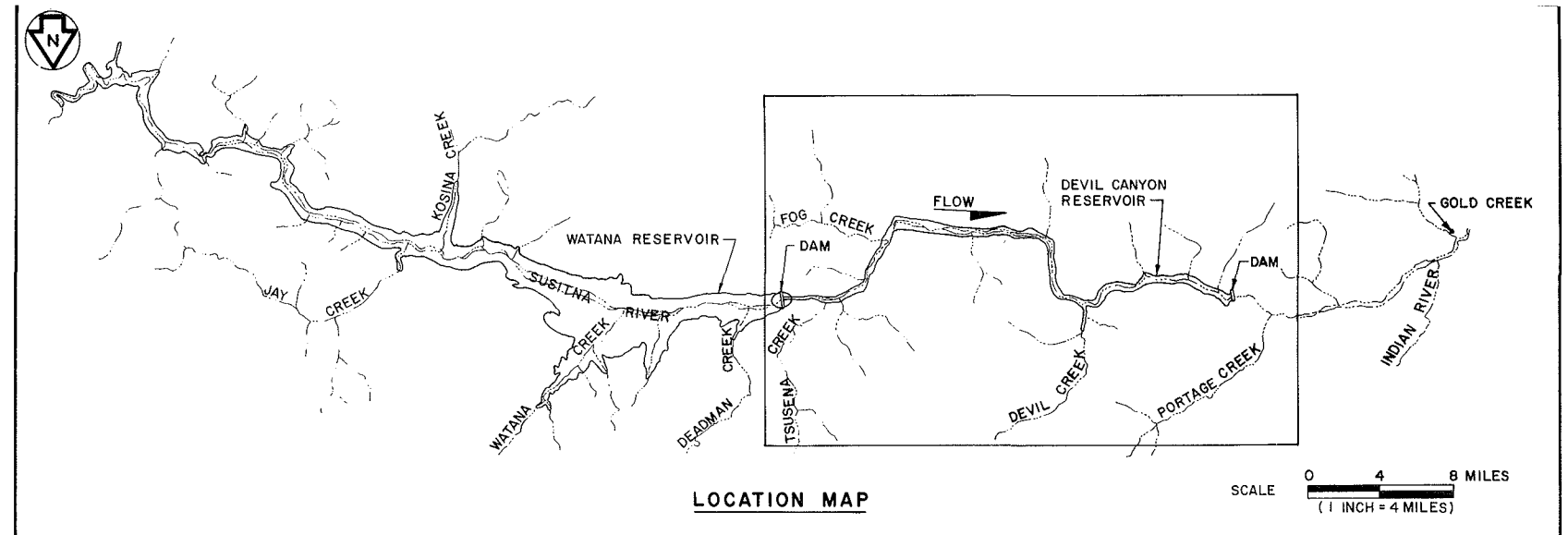
- LEGEND**
-  PERMANENT NON-RESIDENTIAL BLDG.
 -  PERMANENT ROAD
 -  PERMANENT MULTIFAMILY DWELLINGS
72 UNITS FURNISHED BY YEAR 1992
16 UNITS " " " 2001
 -  PERMANENT SINGLE FAMILY DWELLINGS
21 UNITS FURNISHED BY YEAR 1992
6 UNITS " " " 2001
 -  PERMANENT HOSPITAL
 -  TEMPORARY HOUSING/UTILITIES
FURNISHED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

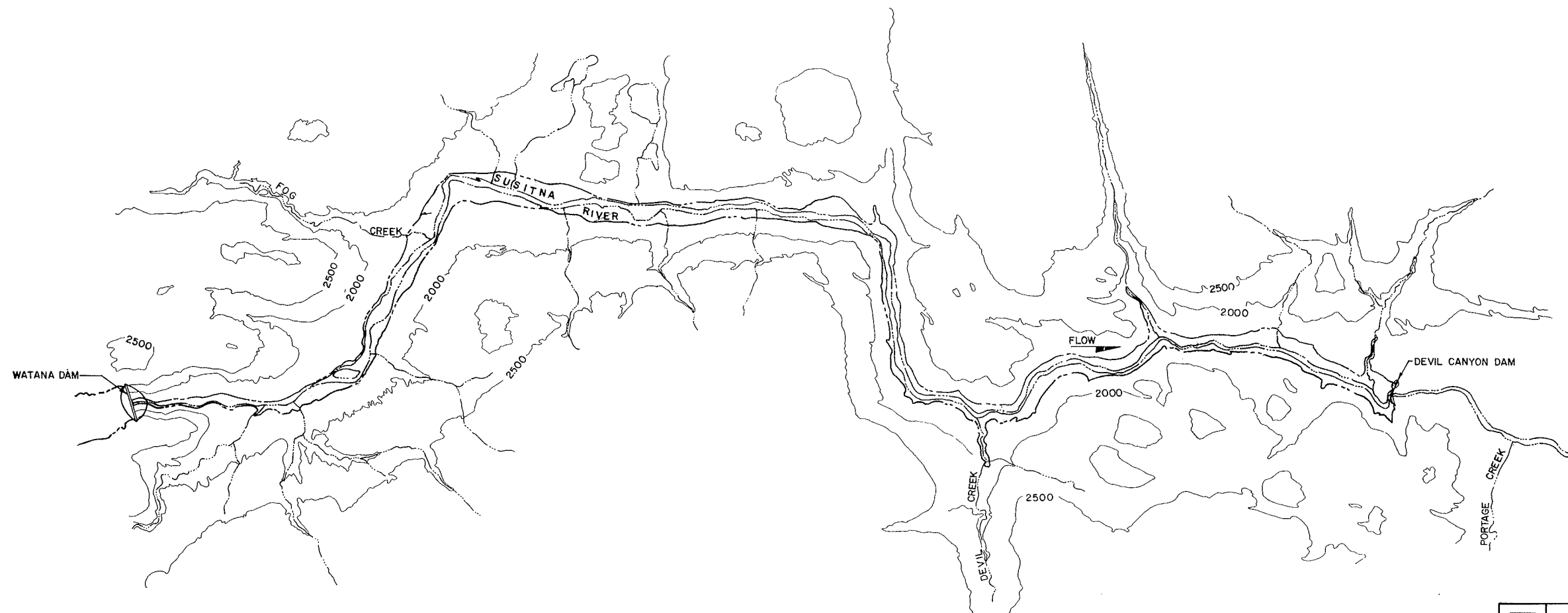


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA AND DEVIL CANYON CONSTRUCTION CAMP DETAILS		
EXHIBIT F		PLATE F 38

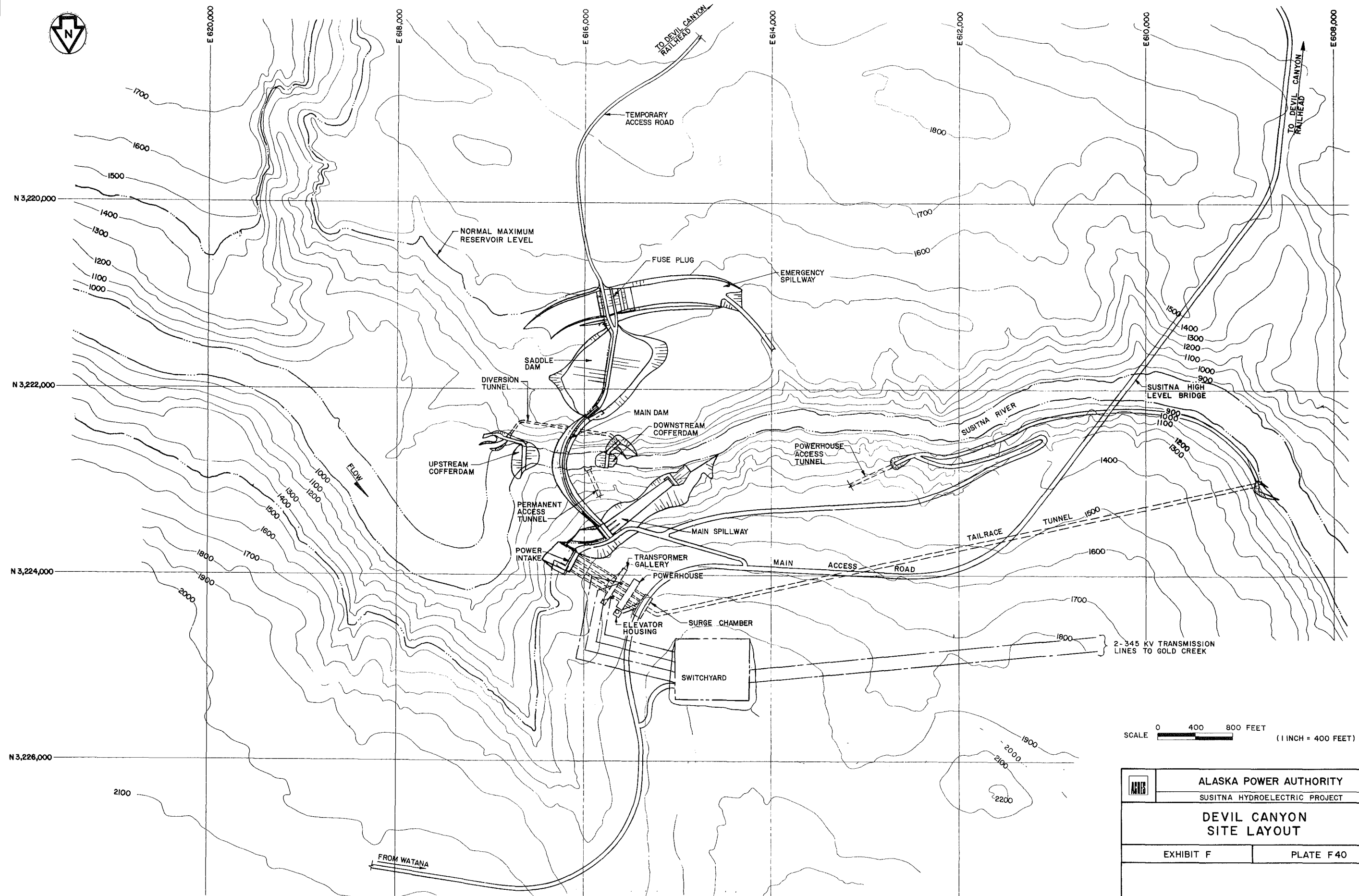


LEGEND

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

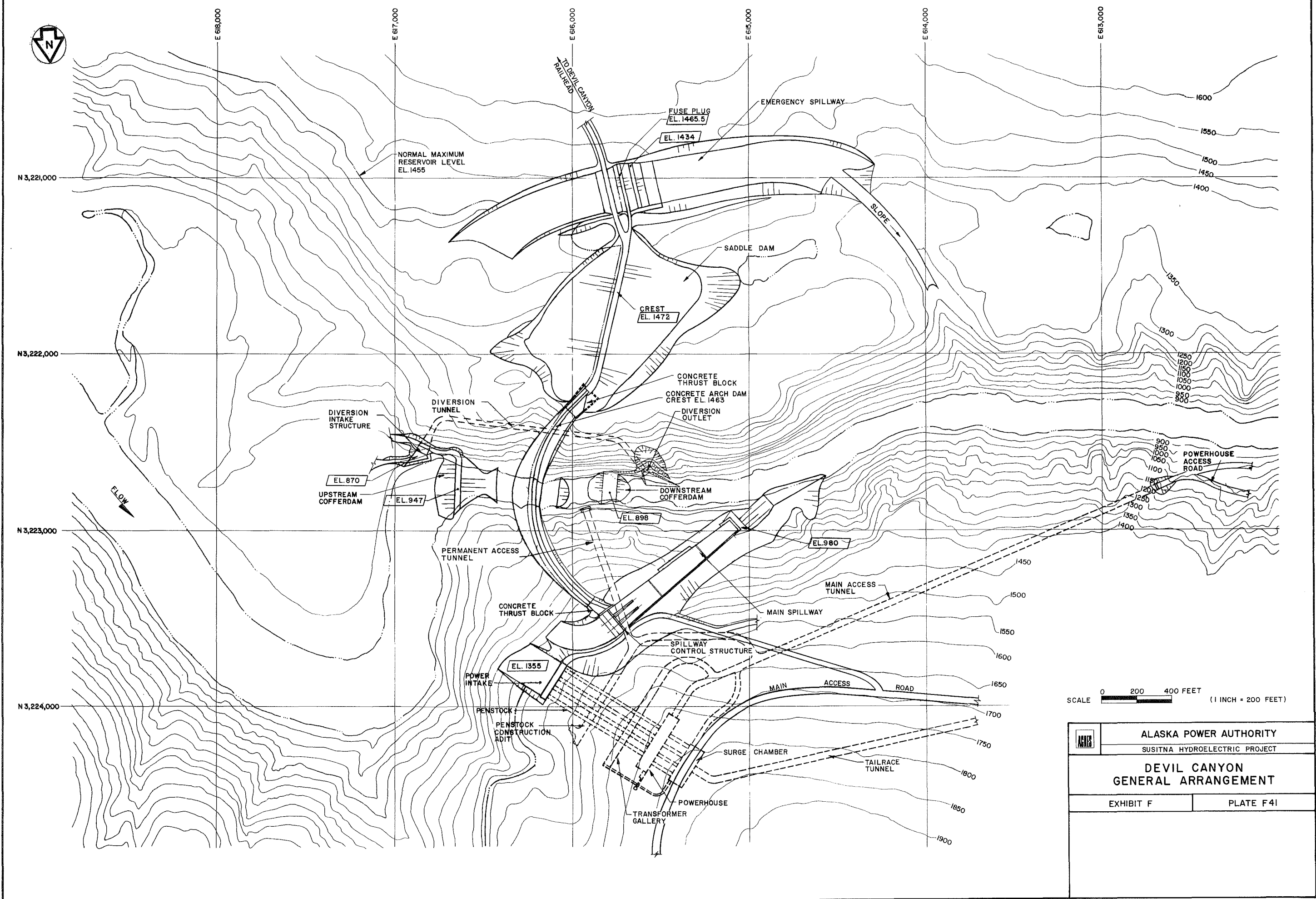


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON RESERVOIR PLAN		
EXHIBIT F		PLATE F 39

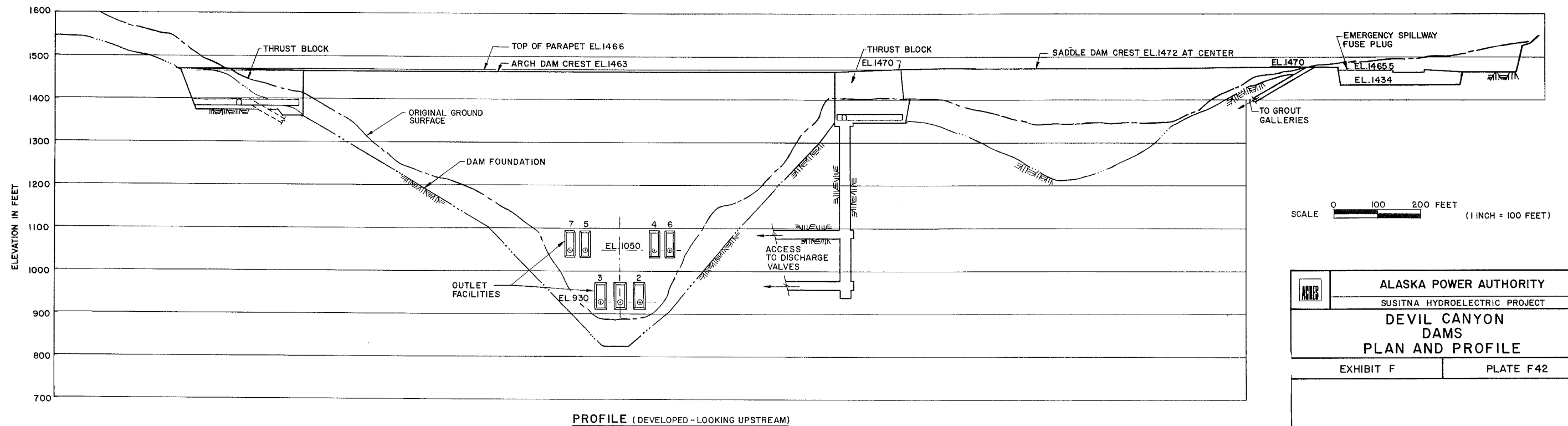
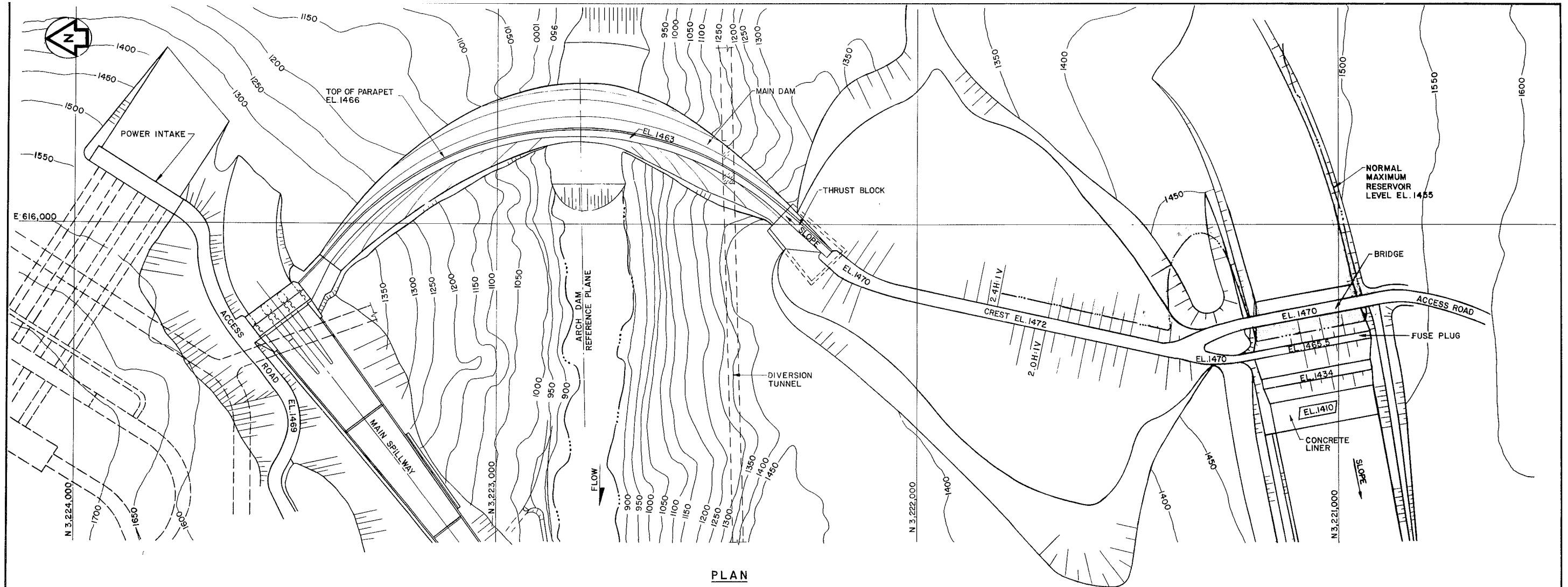


SCALE 0 400 800 FEET (1 INCH = 400 FEET)

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



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



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

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

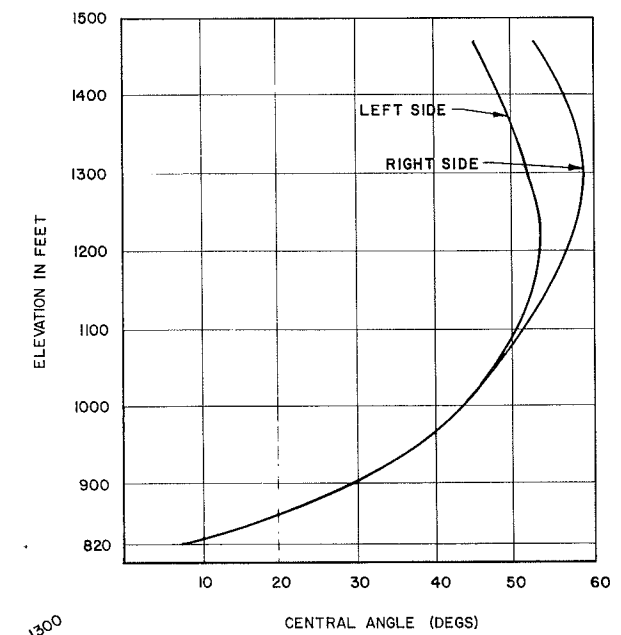
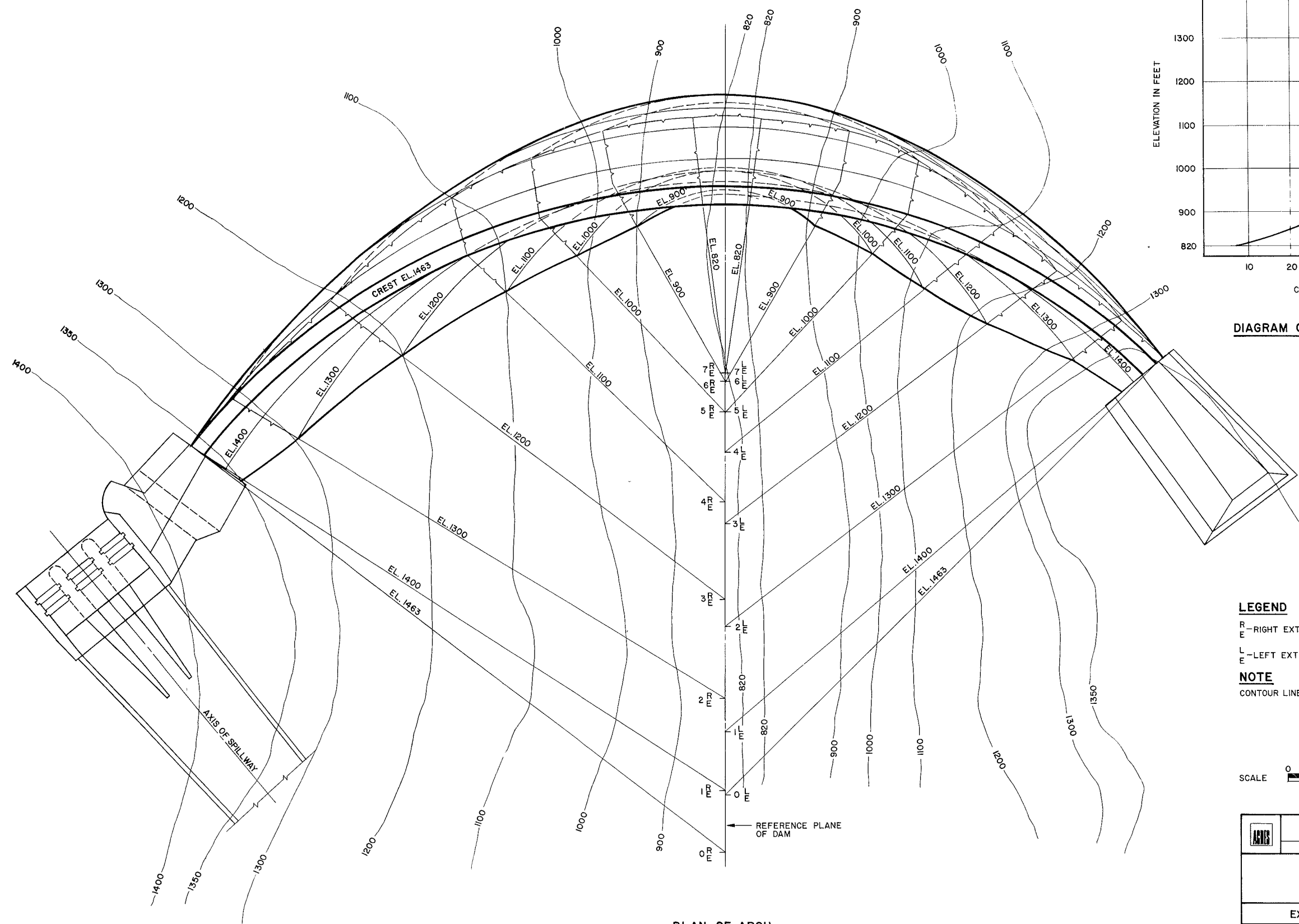


DIAGRAM OF CENTRAL ANGLES

LEGEND

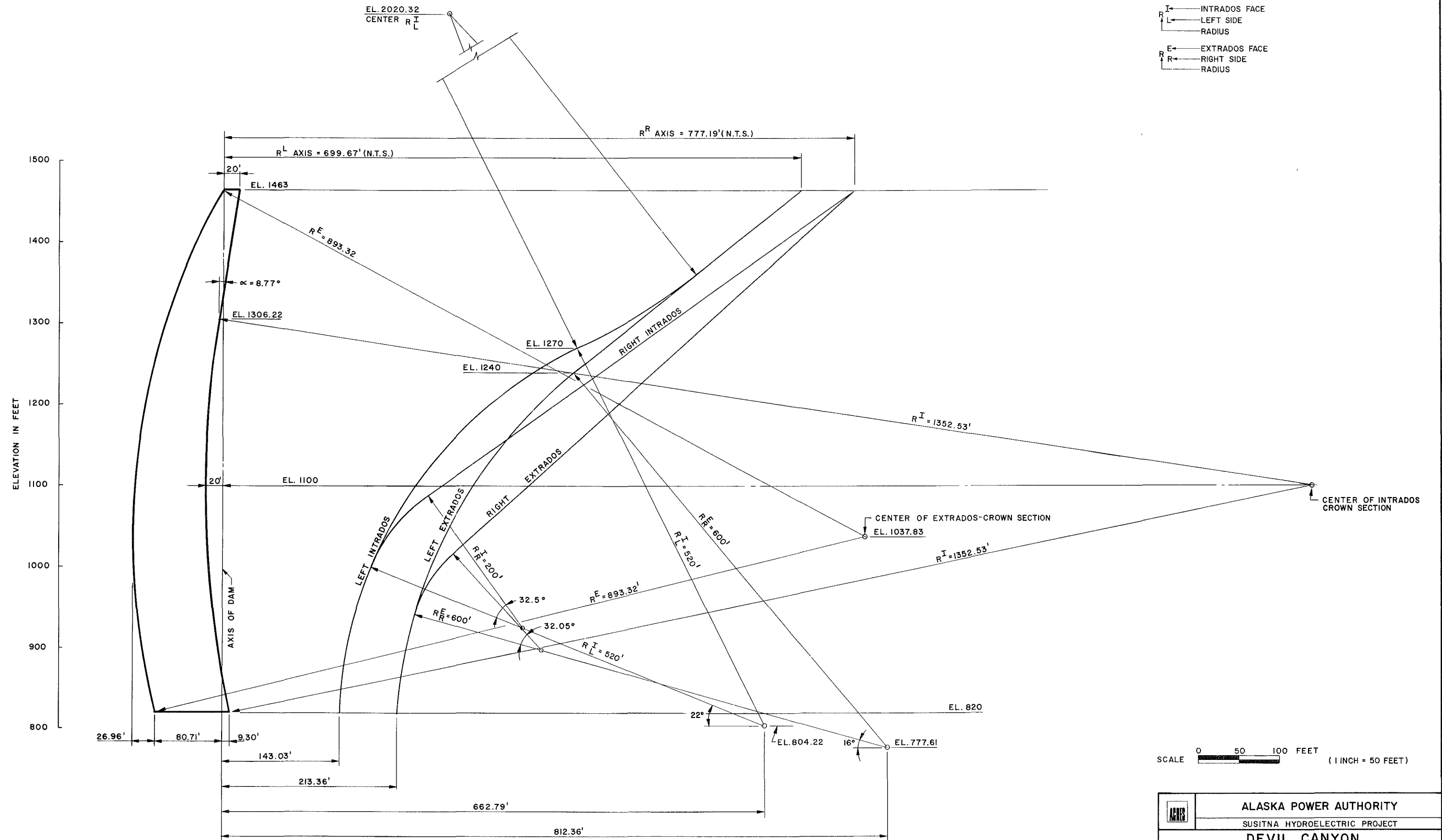
- R
E — RIGHT EXTRADOS
- L
E — LEFT EXTRADOS

NOTE

CONTOUR LINES SHOW SOUND ROCK

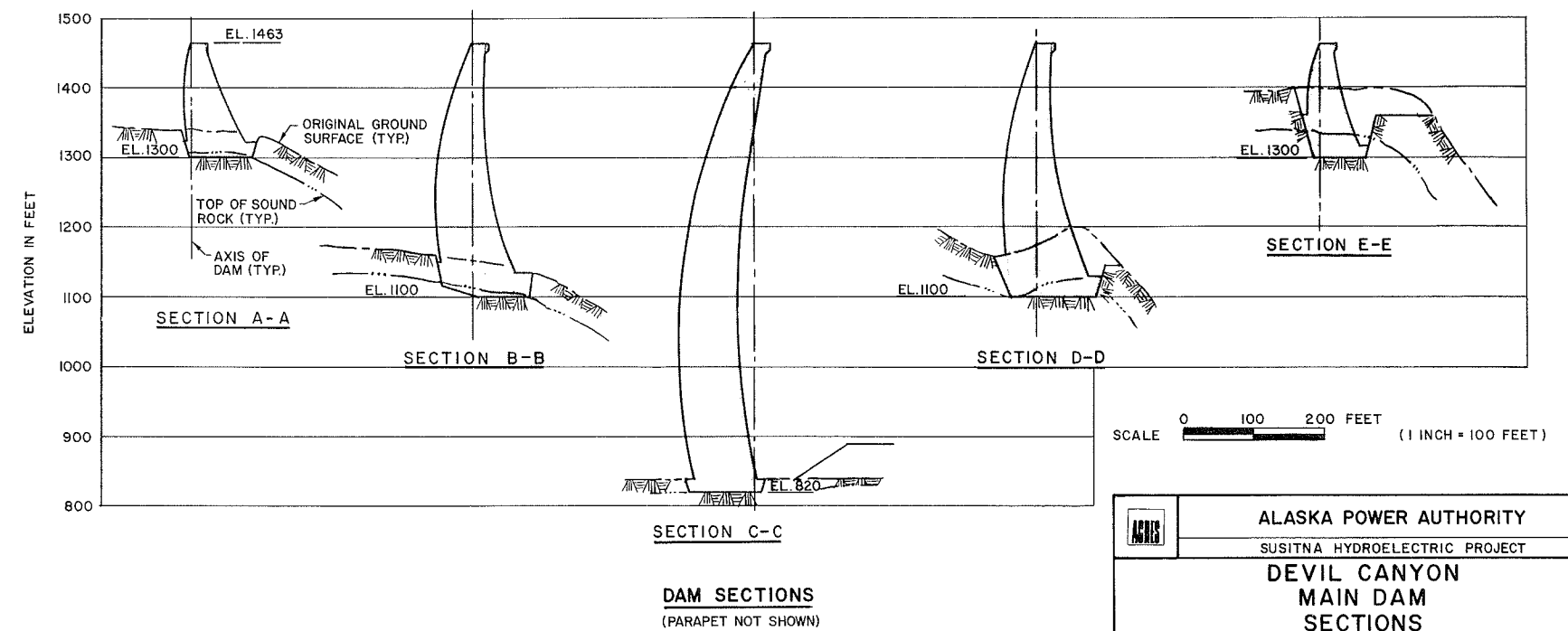
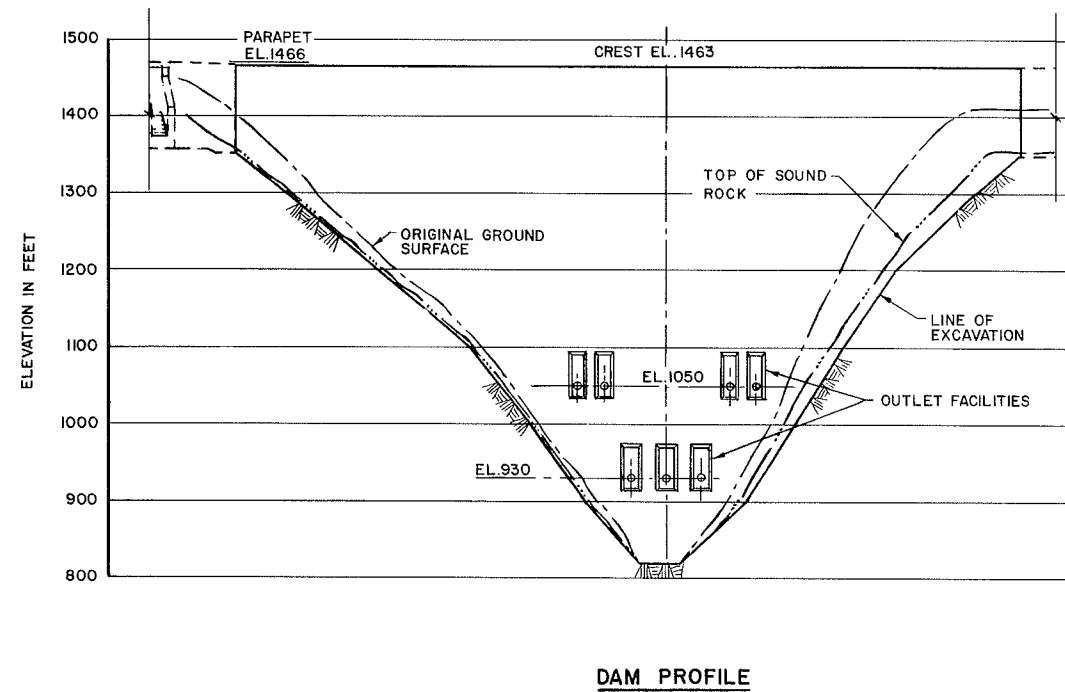
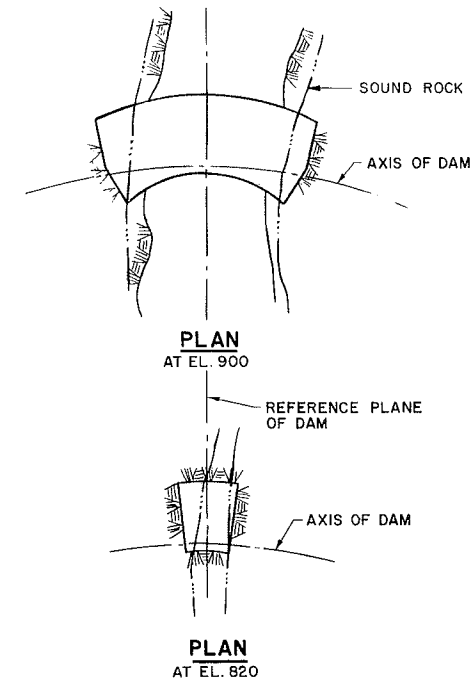
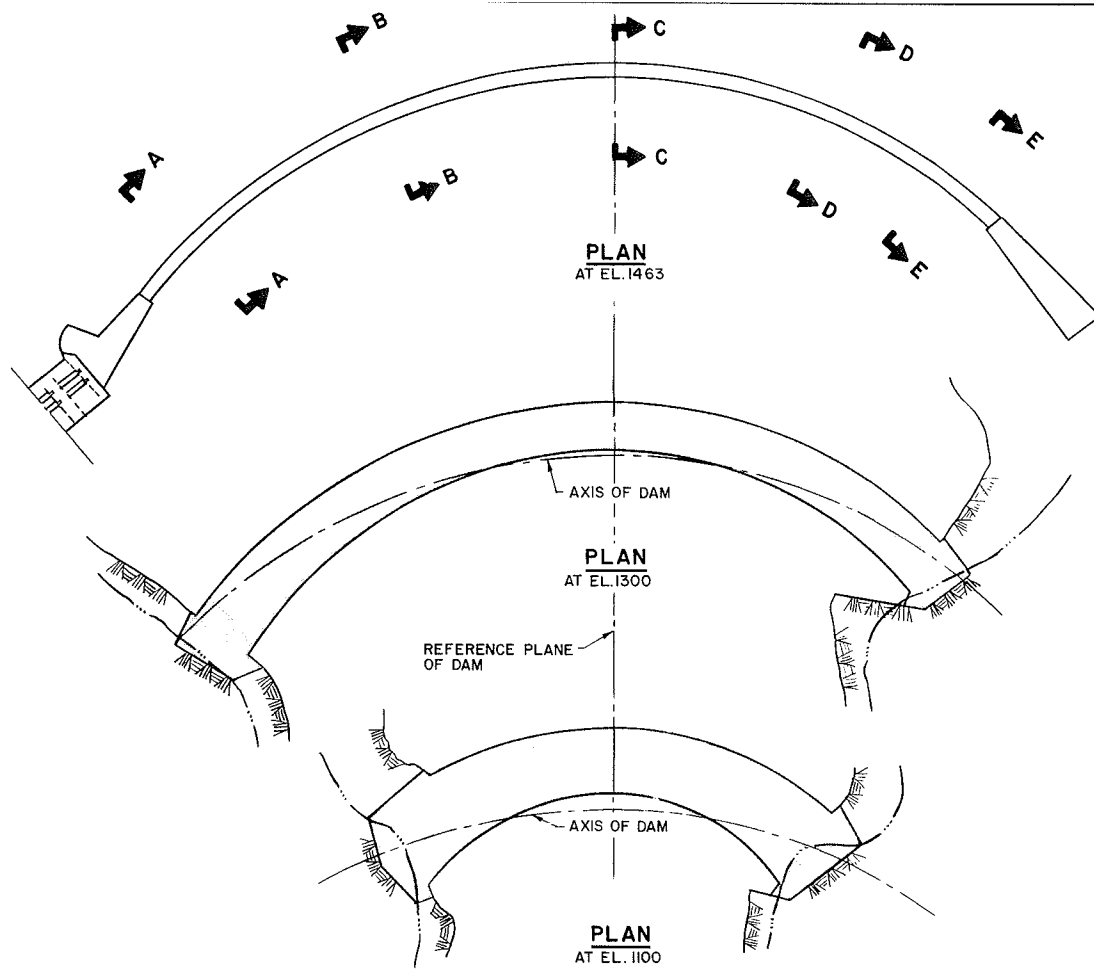
SCALE 0 50 100 FEET (1 INCH = 50 FEET)

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

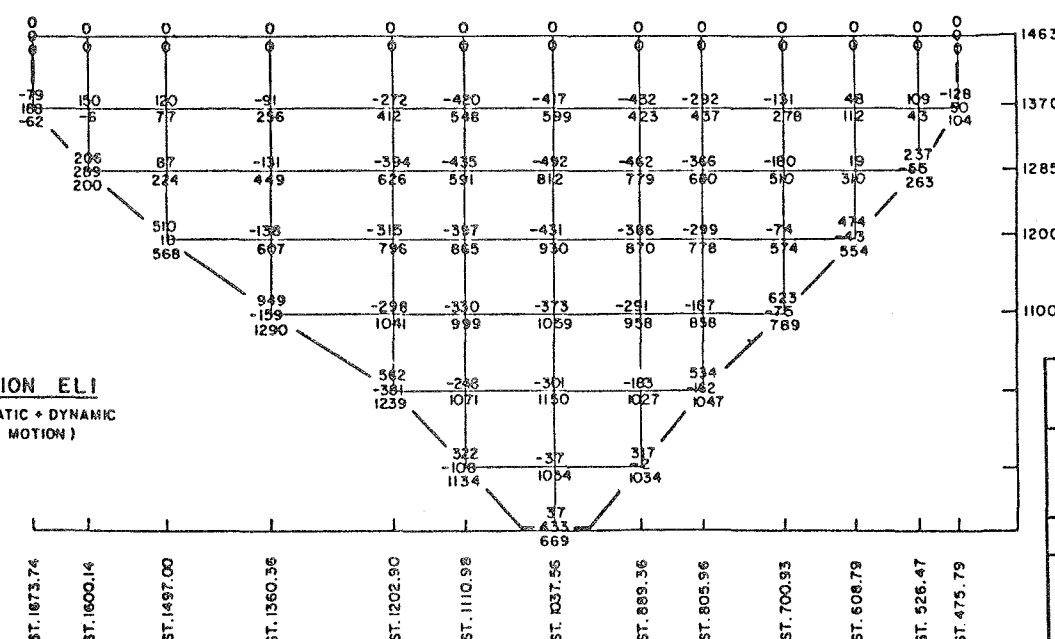
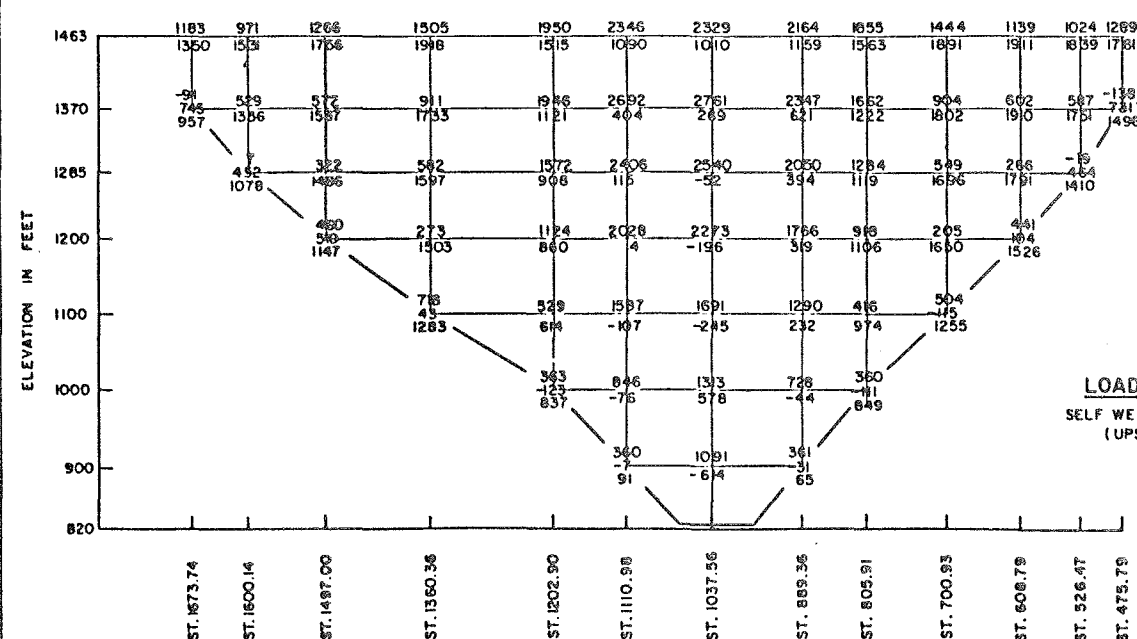
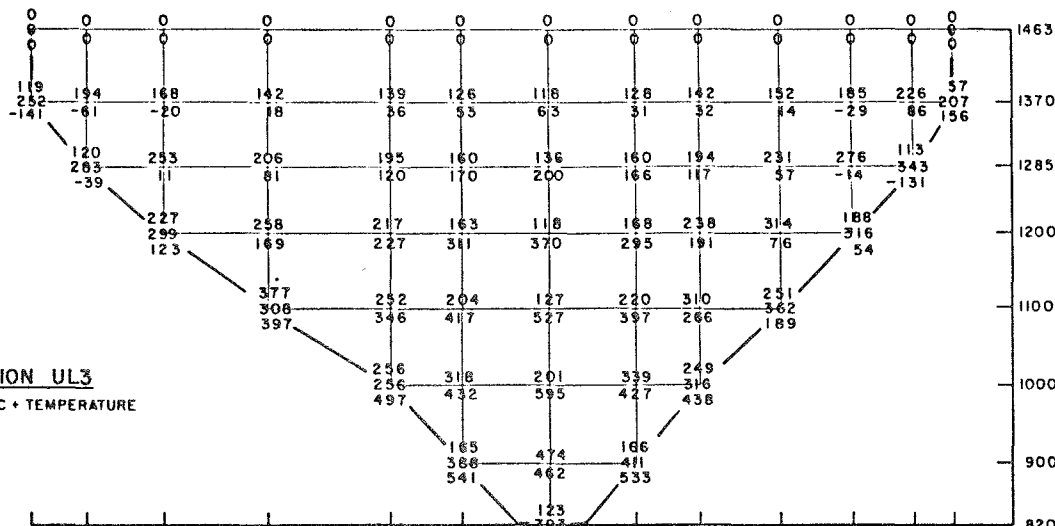
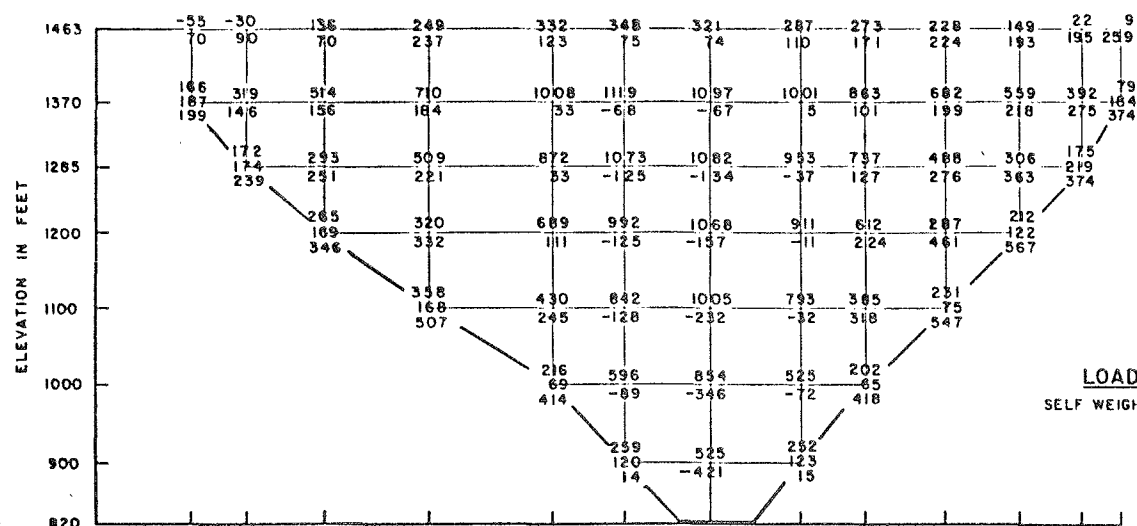
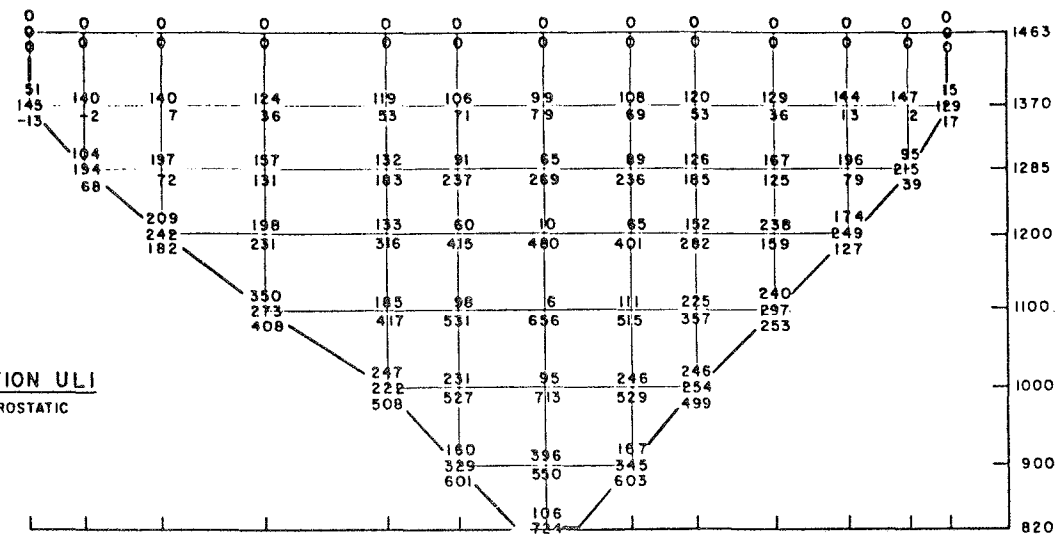
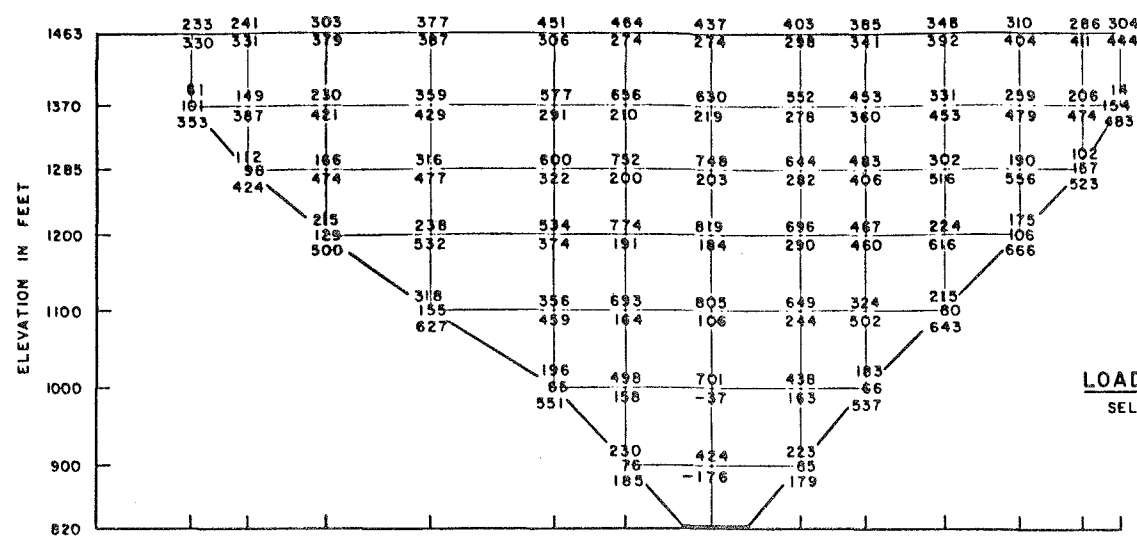


SCALE 0 50 100 FEET (1 INCH = 50 FEET)

APAS	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



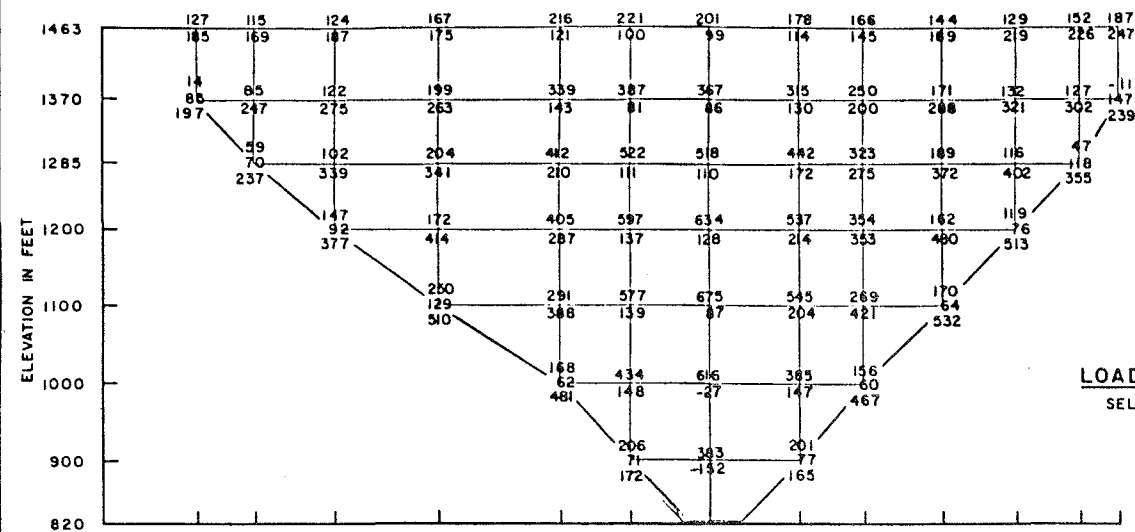
LEGEND

- (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

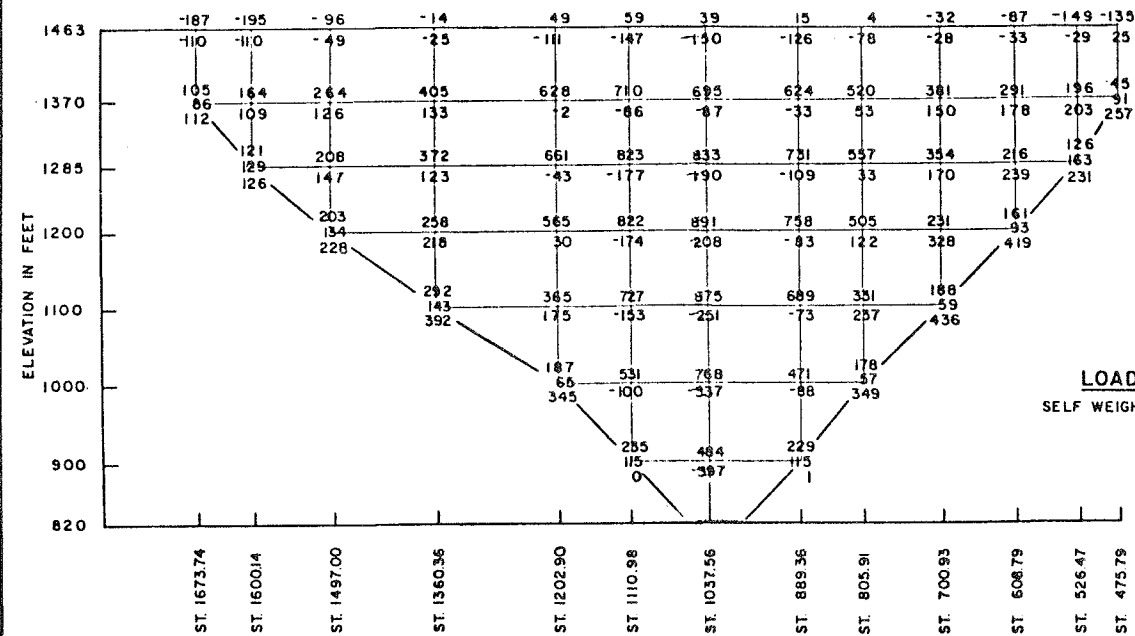
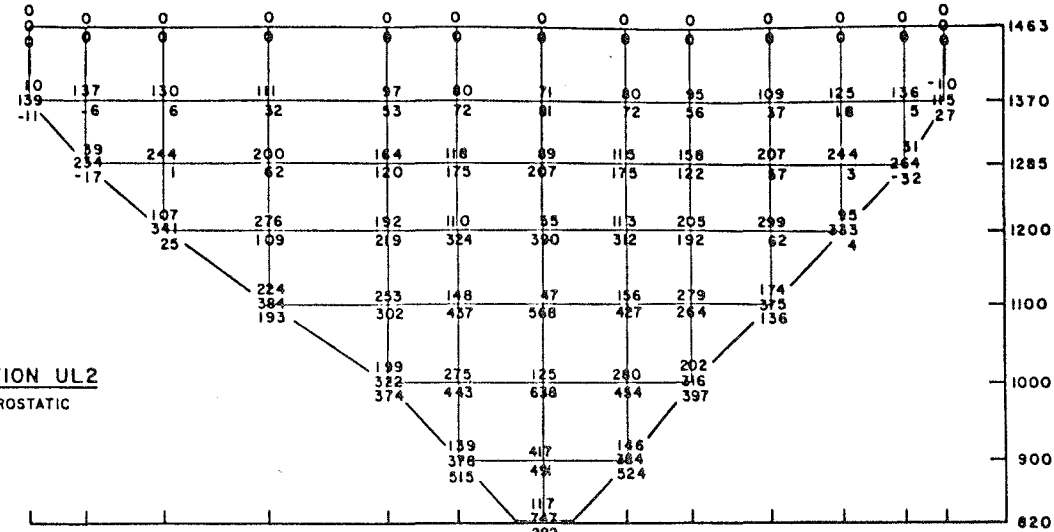
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
**DEVIL CANYON ARCH DAM STRESSES
RESERVOIR AT EL. 1455**
EXHIBIT F PLATE F45 A

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

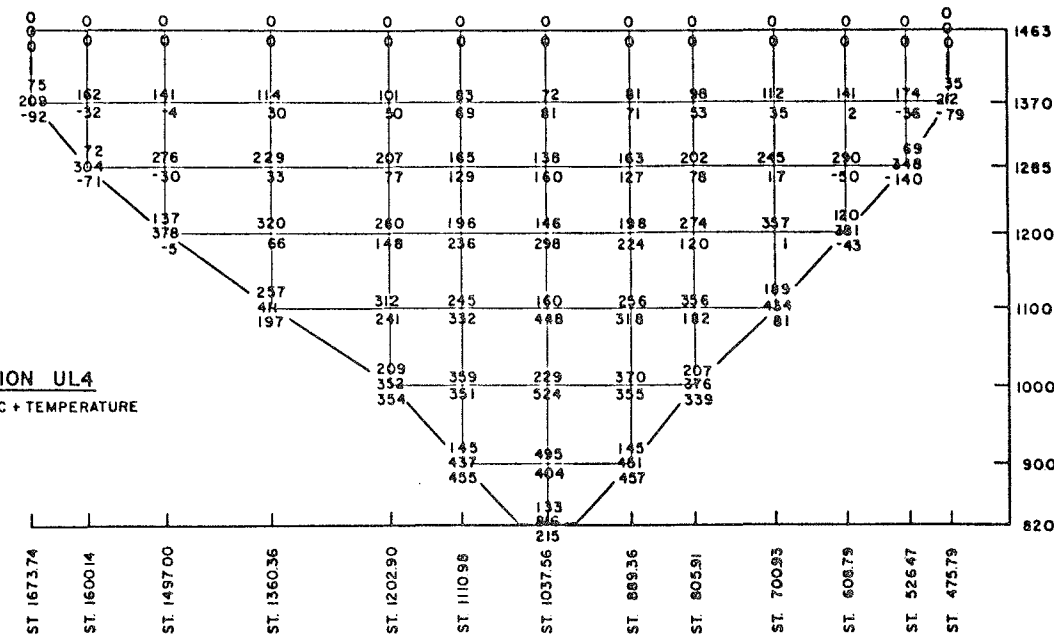
CANTILEVER STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)



LOAD COMBINATION UL2
SELF WEIGHT + HYDROSTATIC



LOAD COMBINATION UL4
SELF WEIGHT + HYDROSTATIC + TEMPERATURE



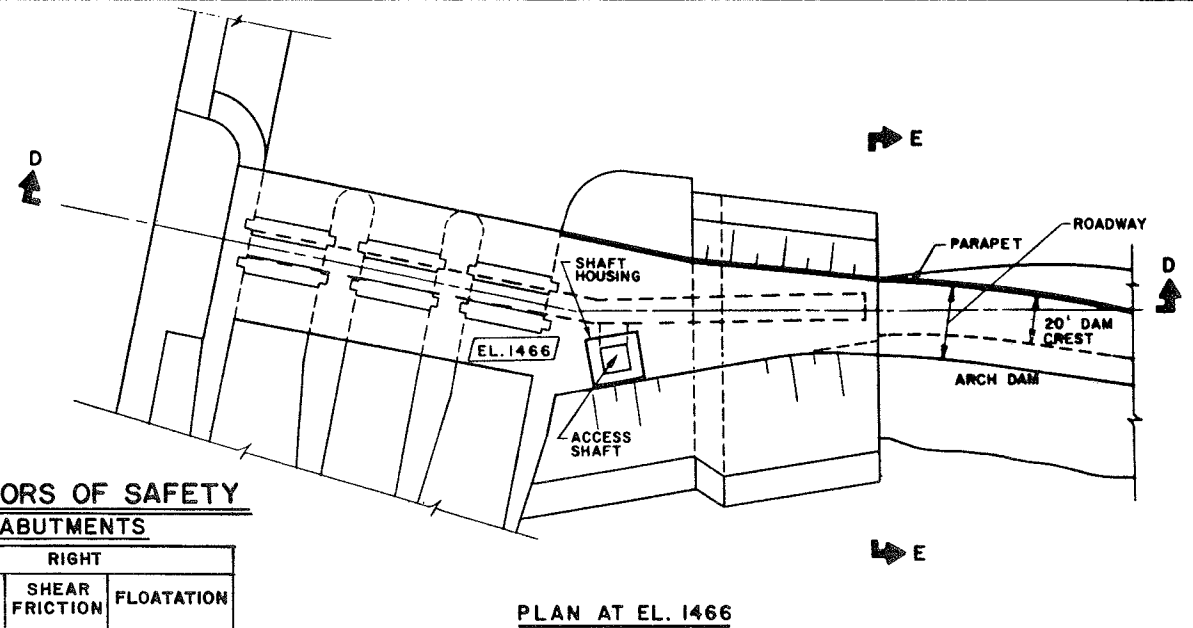
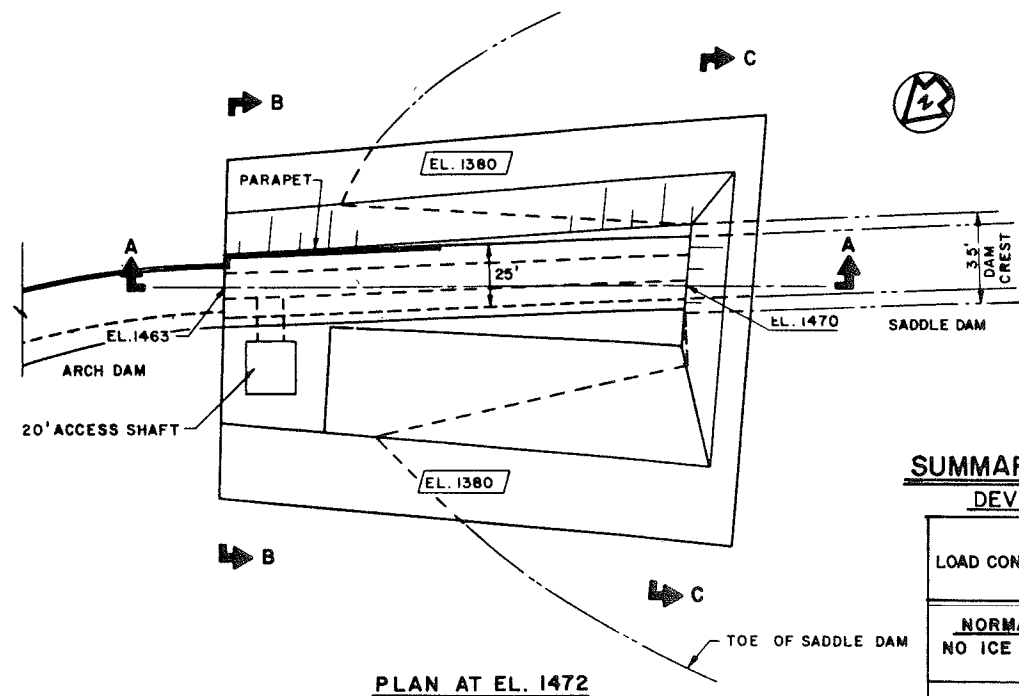
ARCH STRESSES (PARALLEL TO THE FACE OF THE DAM LOOKING UPSTREAM)

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

LEGEND

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

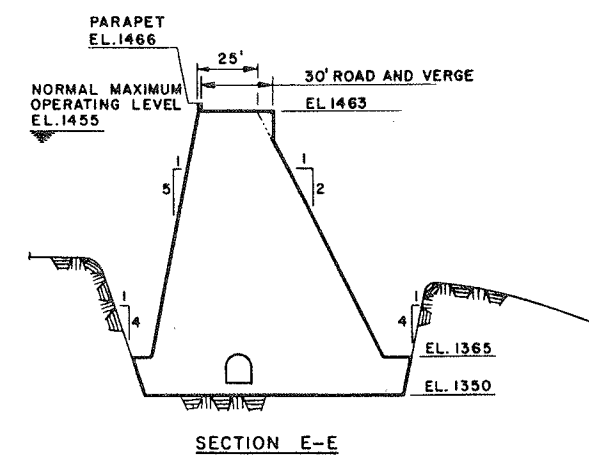
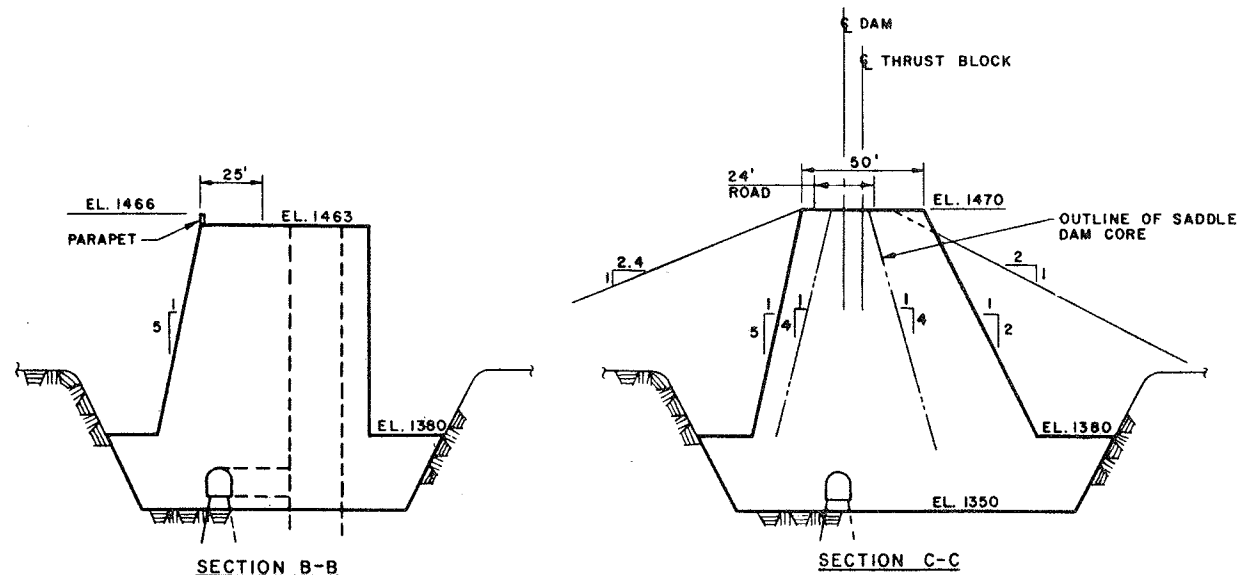
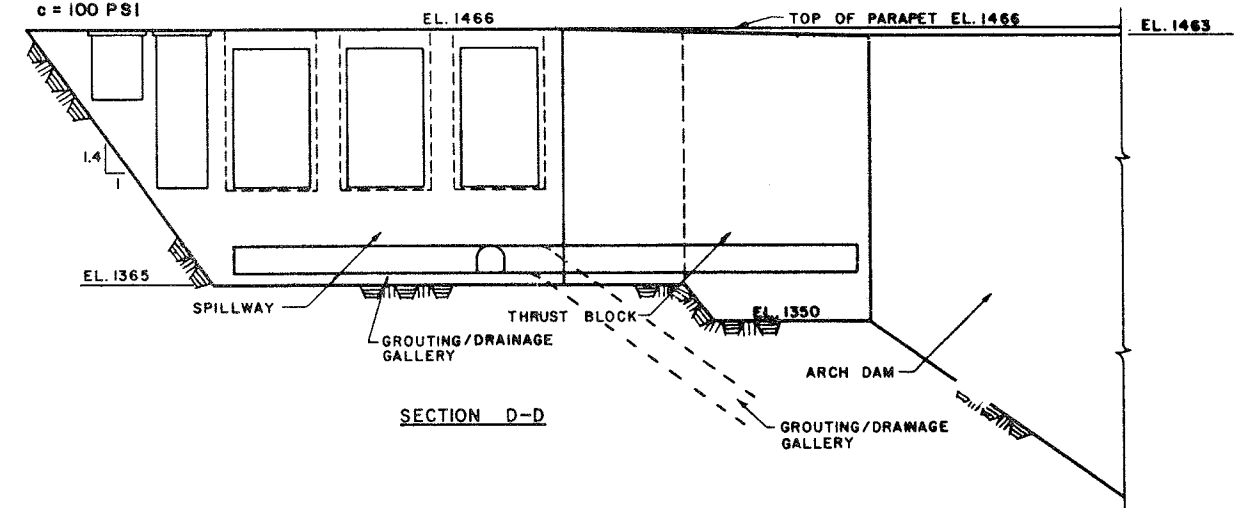
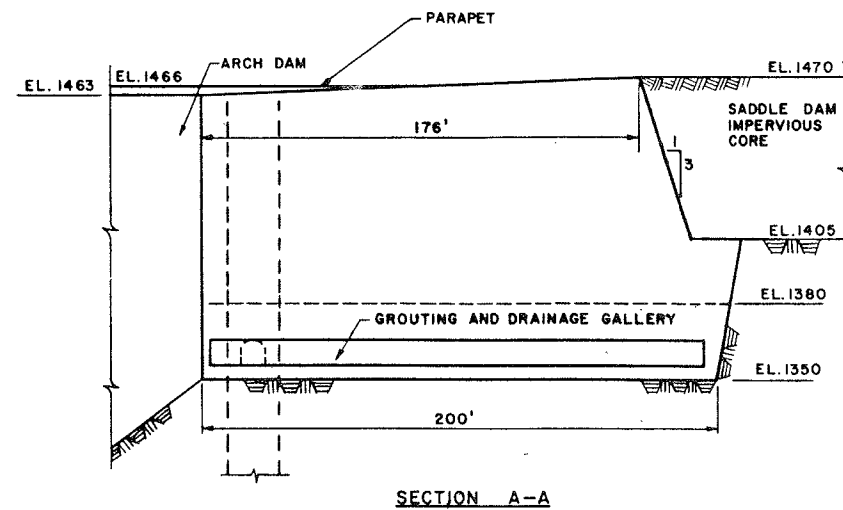
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON ARCH DAM STRESSES RESERVOIR AT EL. 1405	
EXHIBIT F	PLATE F45 B



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

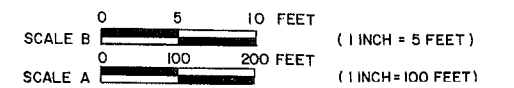
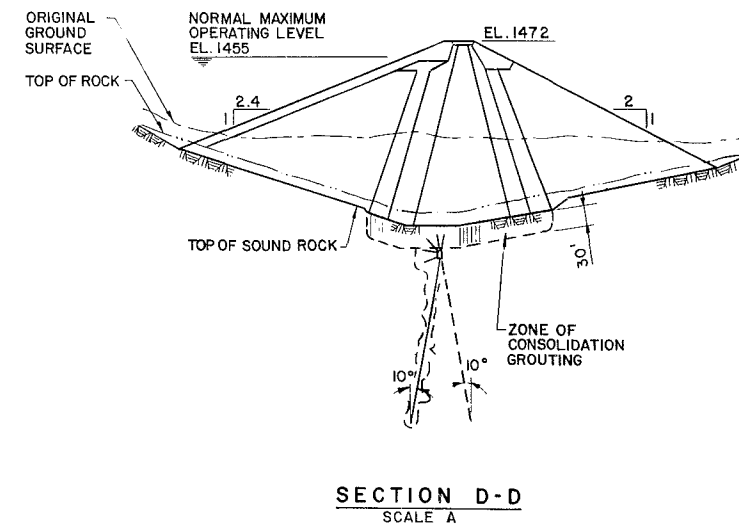
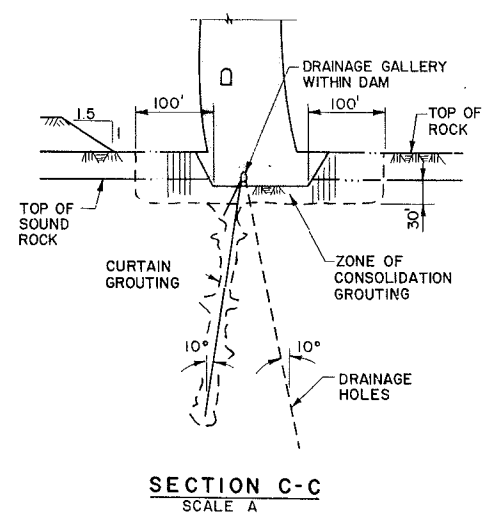
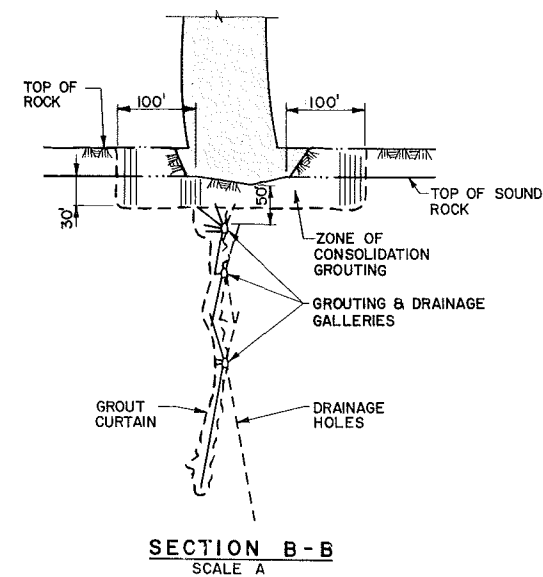
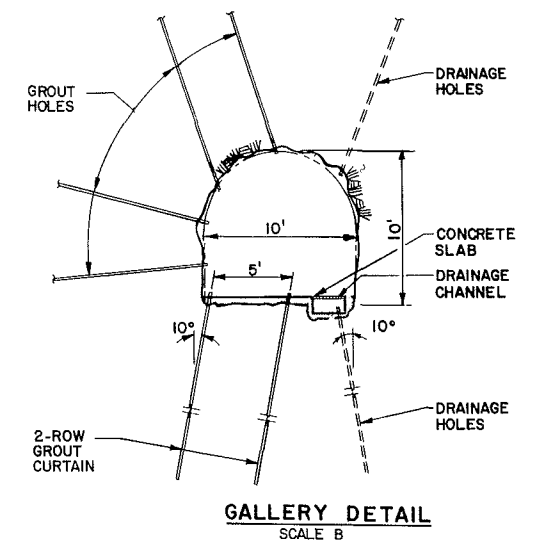
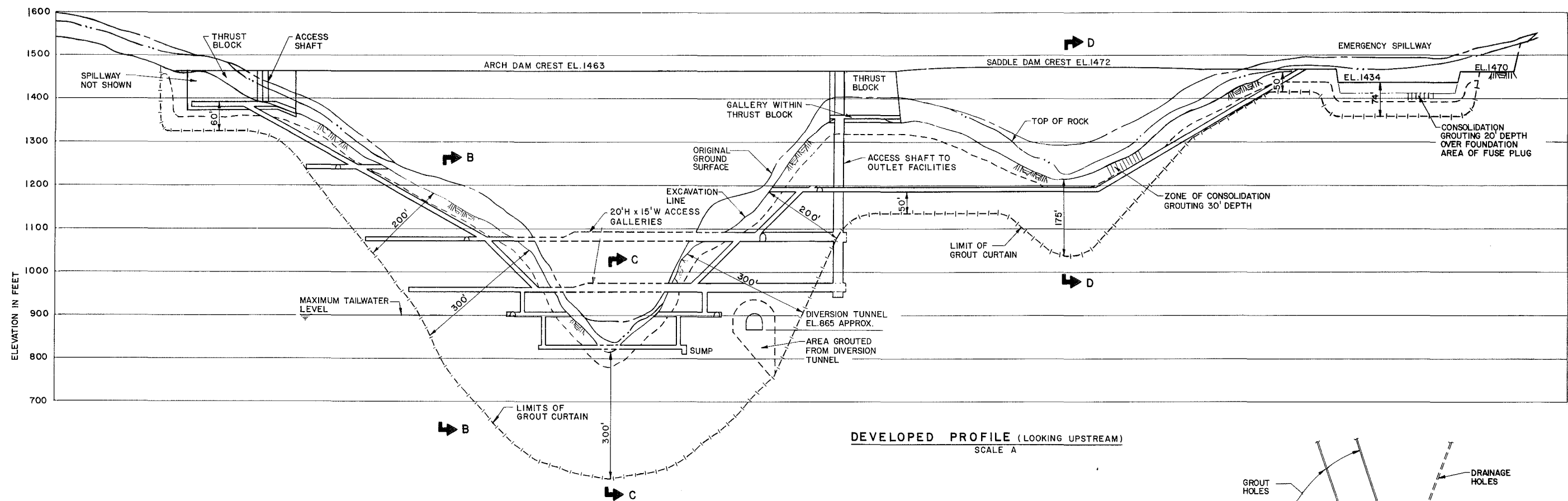


SCALE 0 30 60 FEET
(1 INCH = 30 FEET)

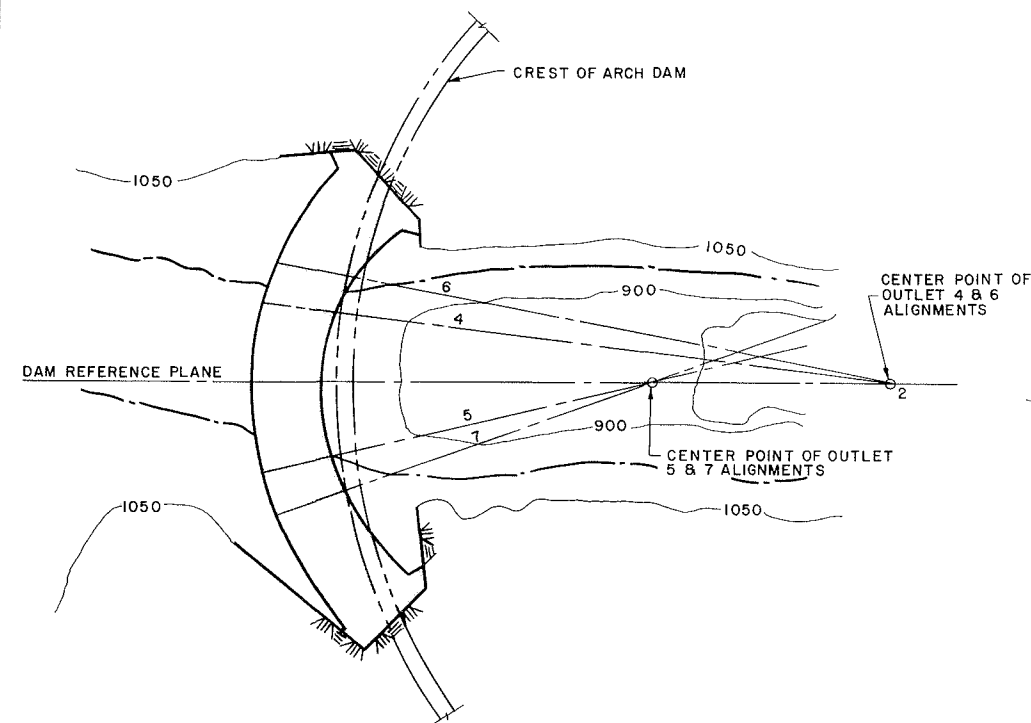
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM THRUST BLOCKS	
EXHIBIT F	PLATE F46

LEFT ABUTMENT THRUST BLOCK

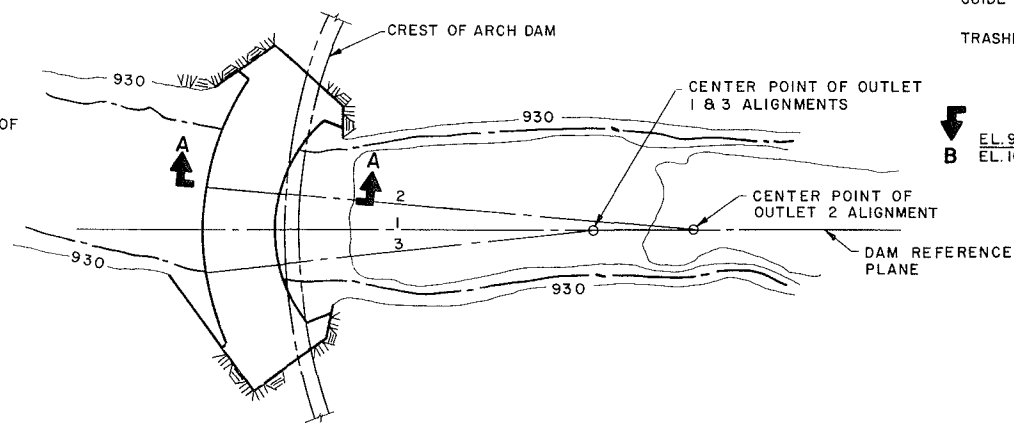
RIGHT ABUTMENT THRUST BLOCK



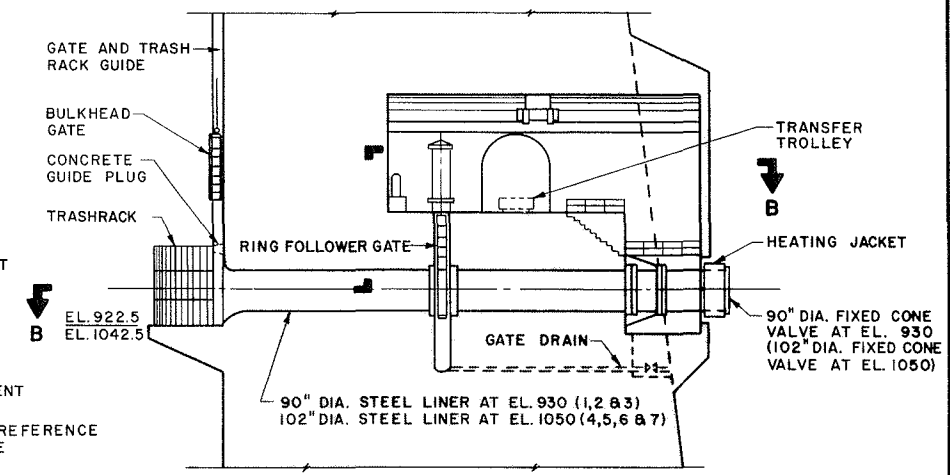
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM GROUTING AND DRAINAGE		
EXHIBIT F	PLATE F47	



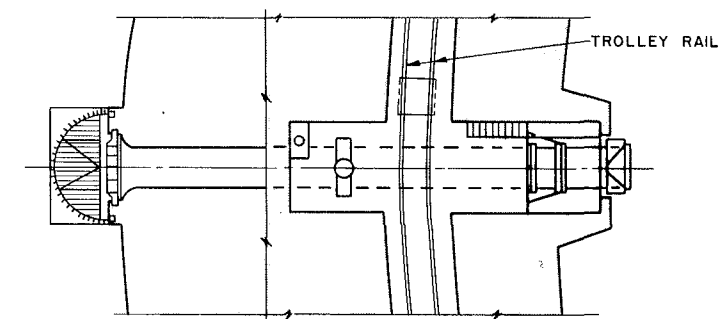
PLAN AT EL. 1050
SCALE A



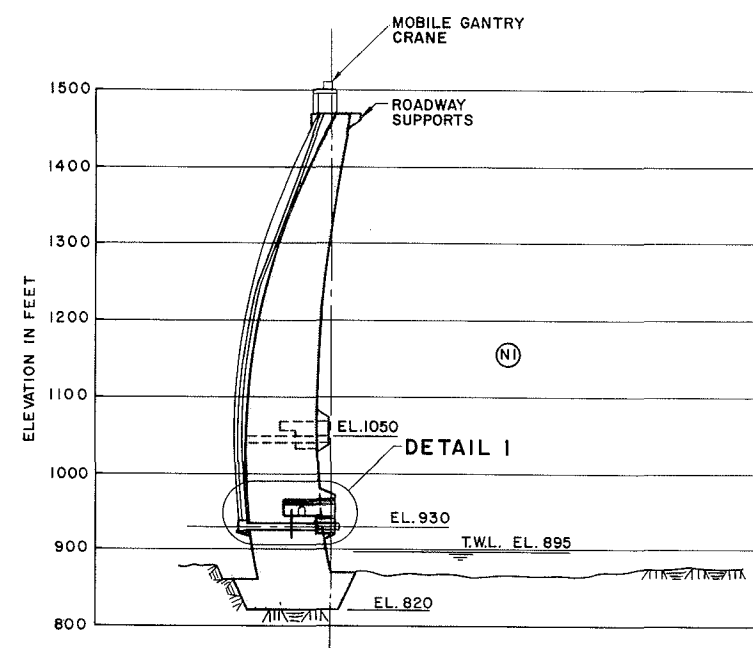
PLAN AT EL. 930
SCALE A



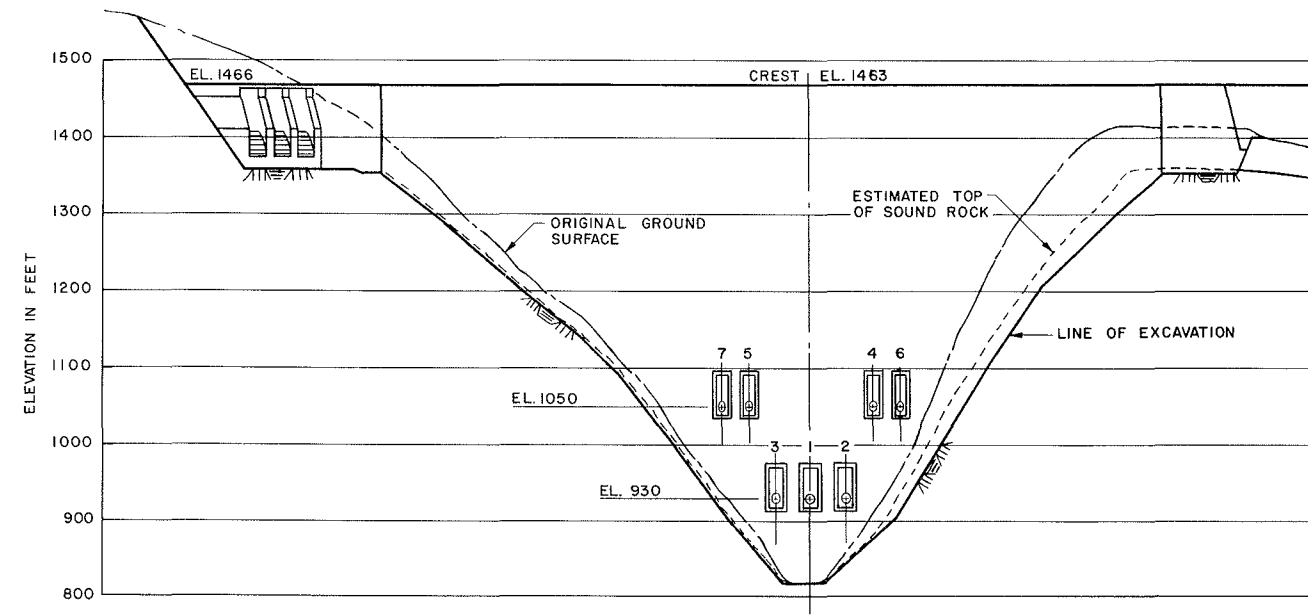
DETAIL I
SCALE B



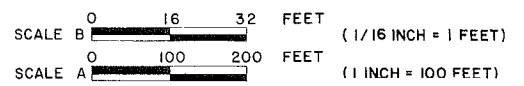
SECTION B-B
SCALE B



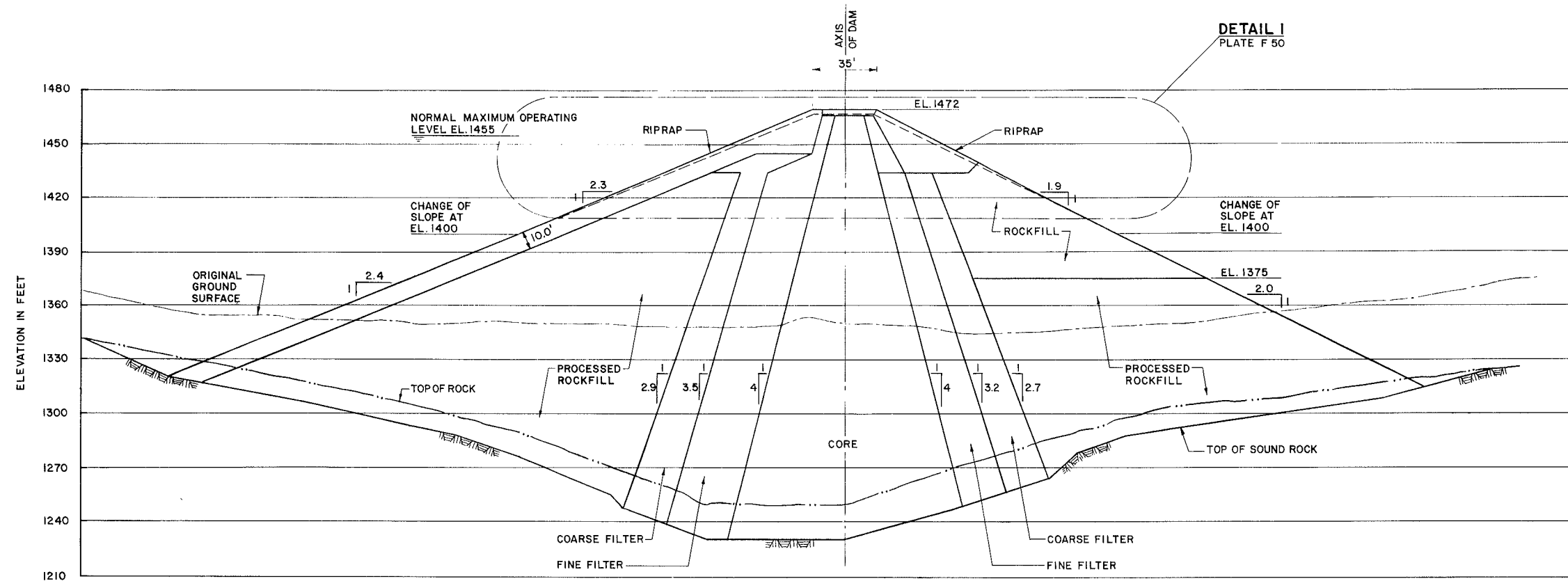
SECTION A-A (TYPICAL)
SCALE A



DAM PROFILE (PROJECTION-LOOKING UPSTREAM)
SCALE A



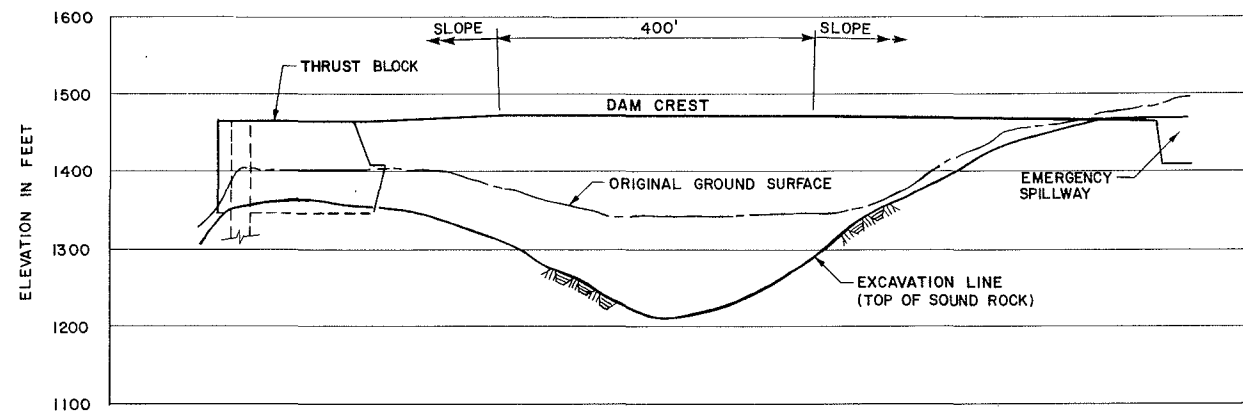
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM OUTLET FACILITIES	
EXHIBIT F	PLATE F 48



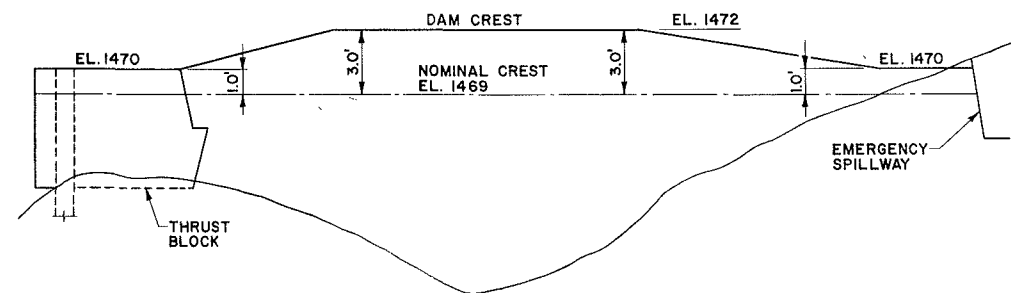
SECTION THROUGH SADDLE DAM
AT MAXIMUM HEIGHT

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

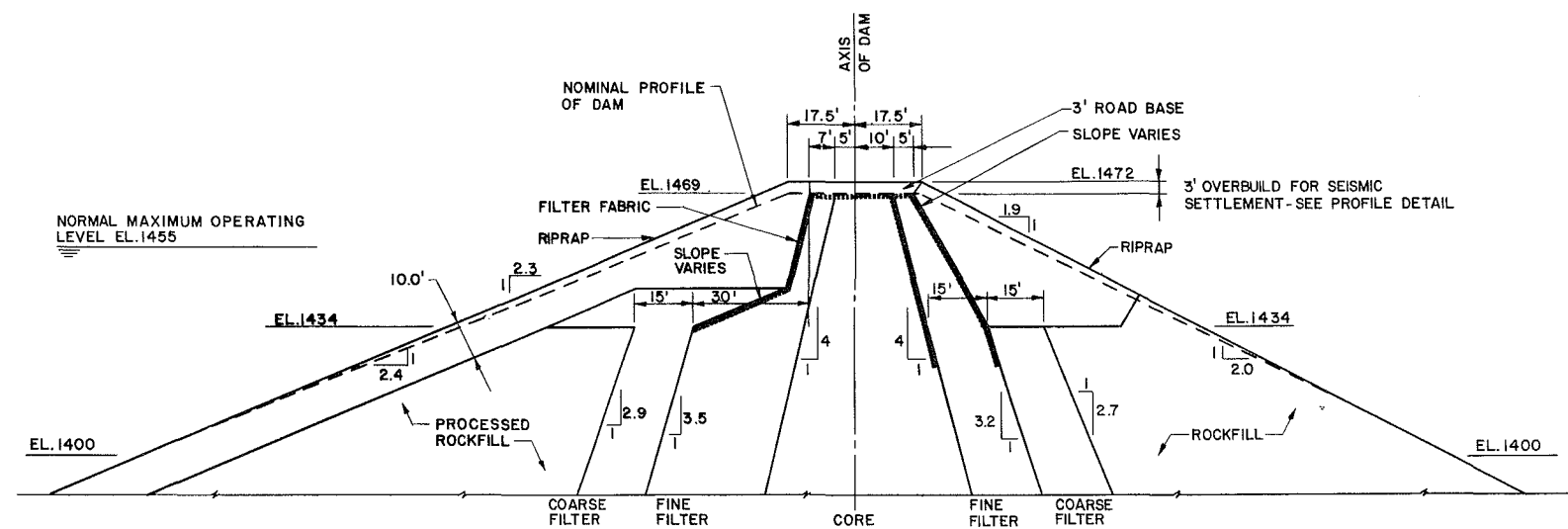
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SADDLE DAM SECTION		
EXHIBIT F		PLATE F49



PROFILE (LOOKING UPSTREAM)
SCALE A



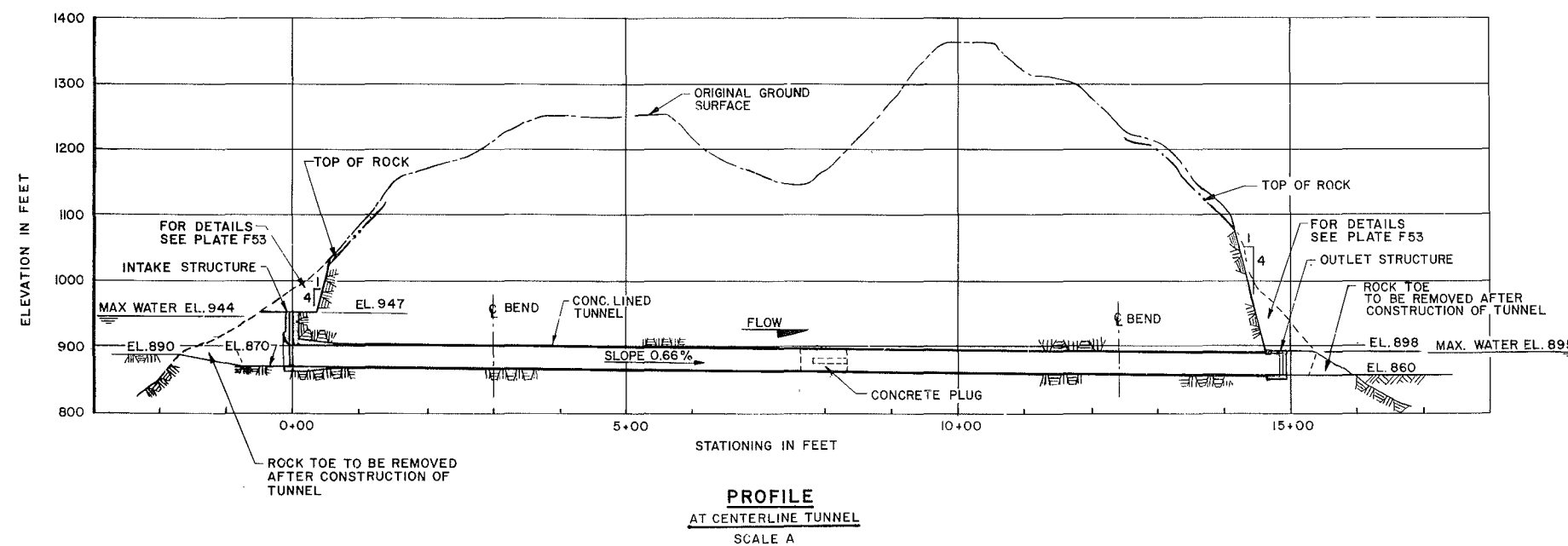
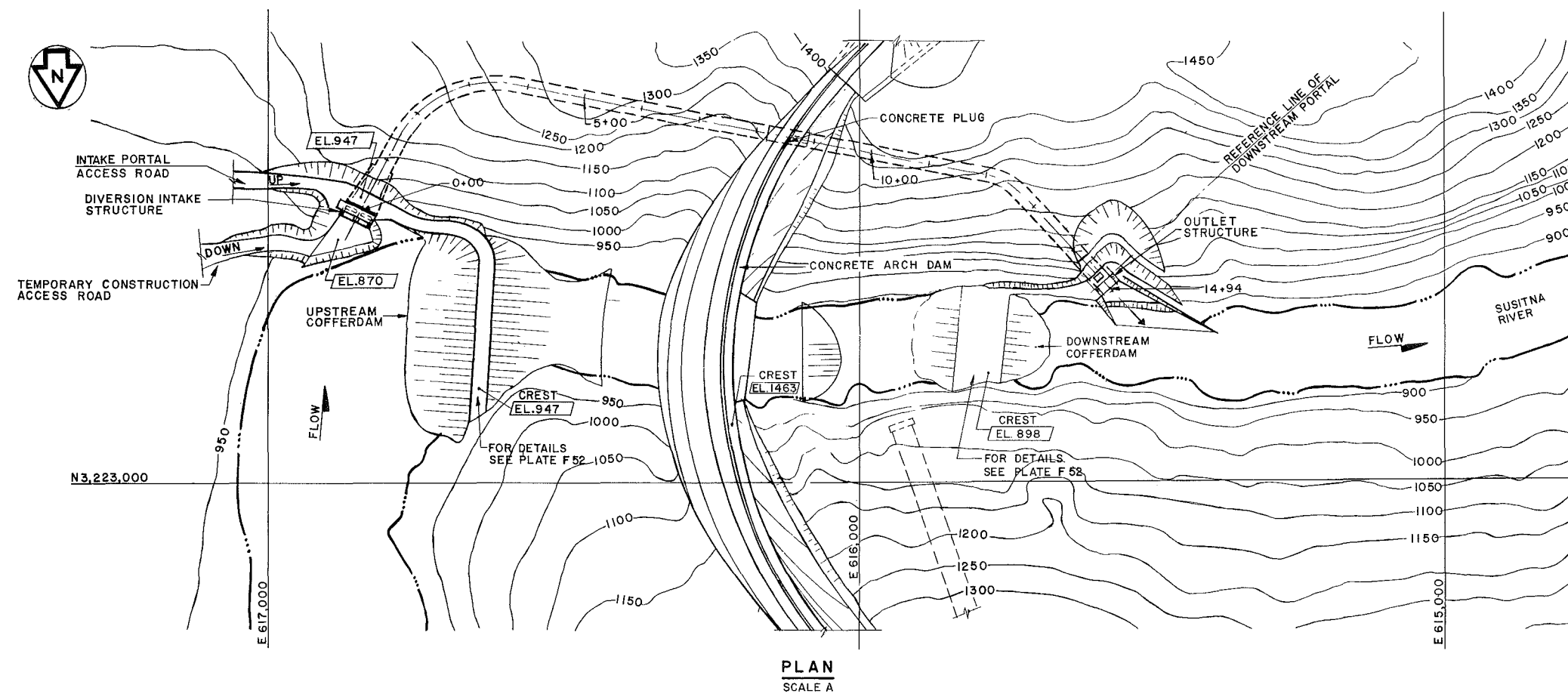
PROFILE
SHOWING CREST ELEVATIONS
N.T.S.



DETAIL I
SCALE B (PLATE F49)

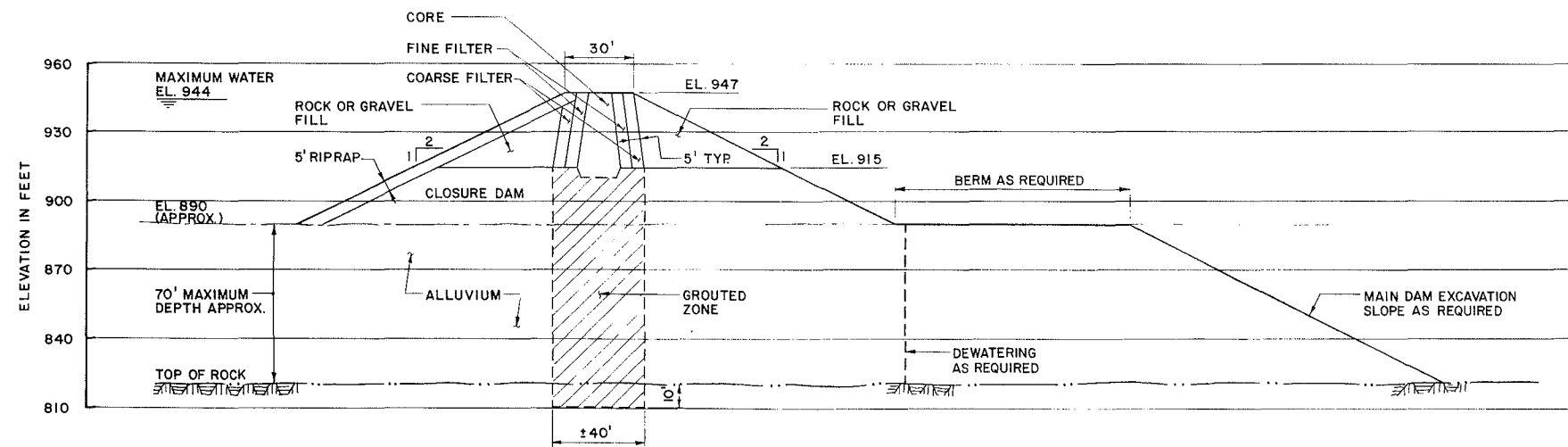
SCALE B 0 20 40 FEET (1 INCH = 20 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

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

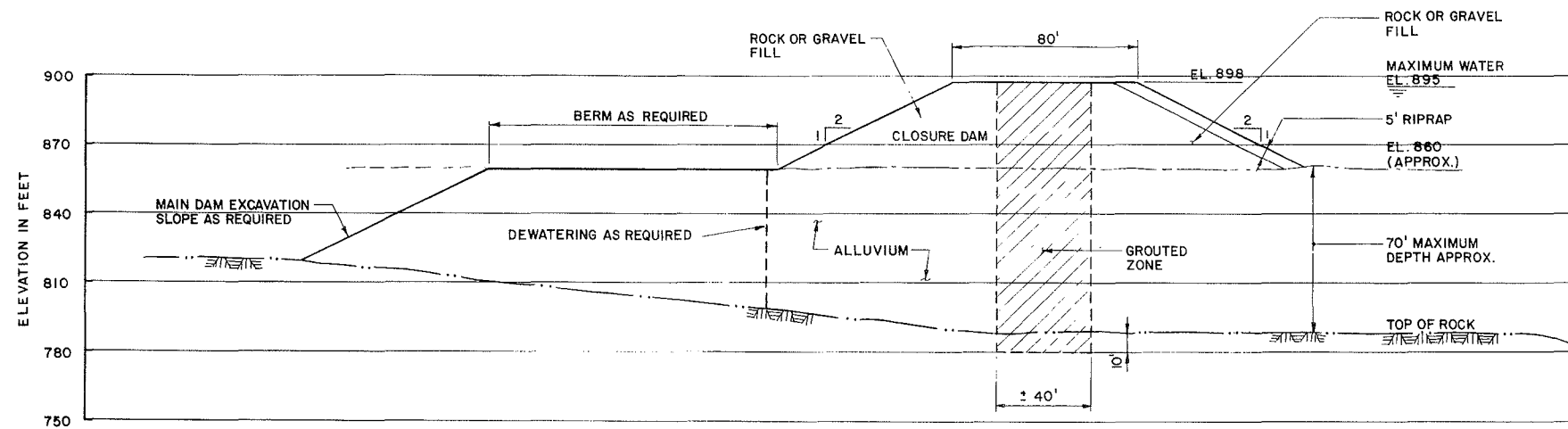


SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

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



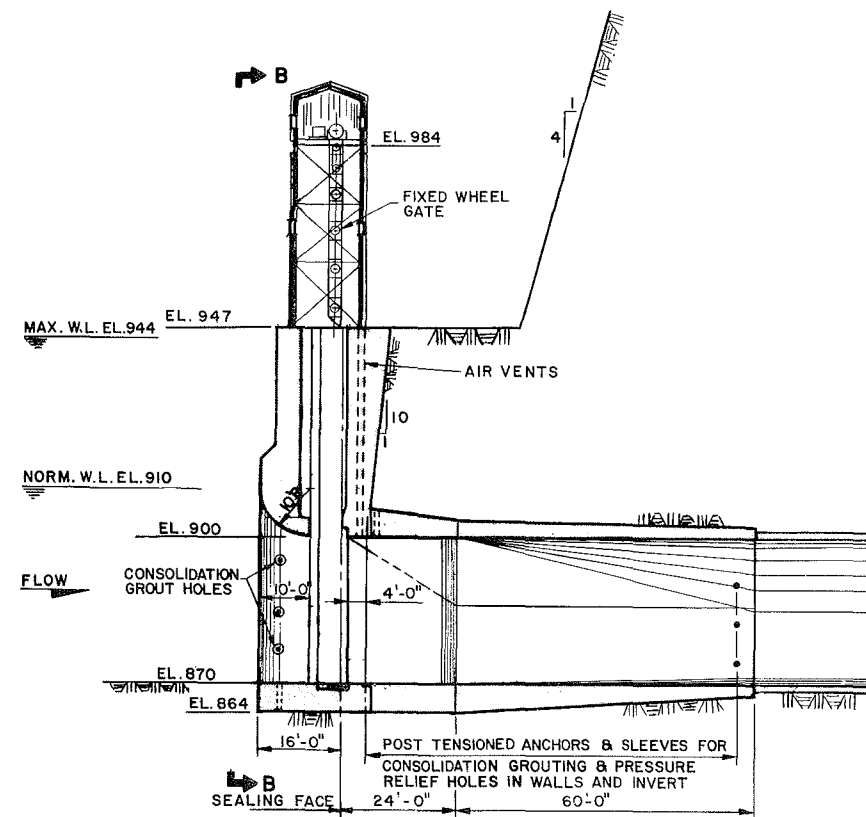
TYPICAL CROSS SECTION (PLATE F 51)
UPSTREAM COFFERDAM



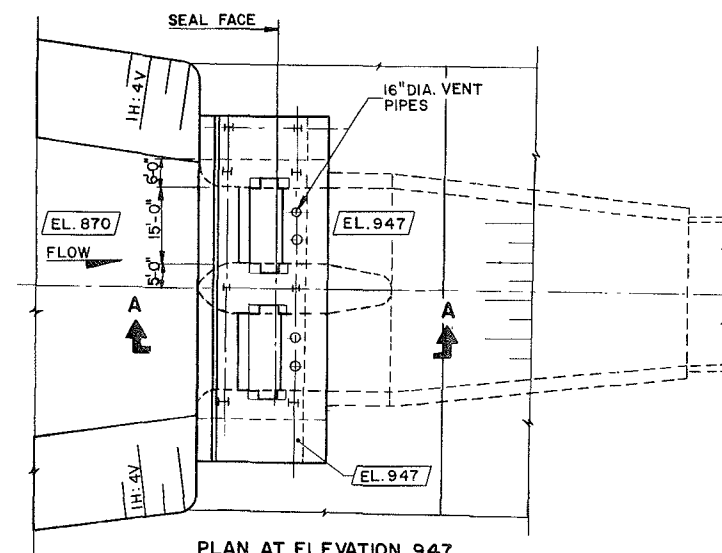
TYPICAL CROSS SECTION (PLATE F 51)
DOWNSTREAM COFFERDAM

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

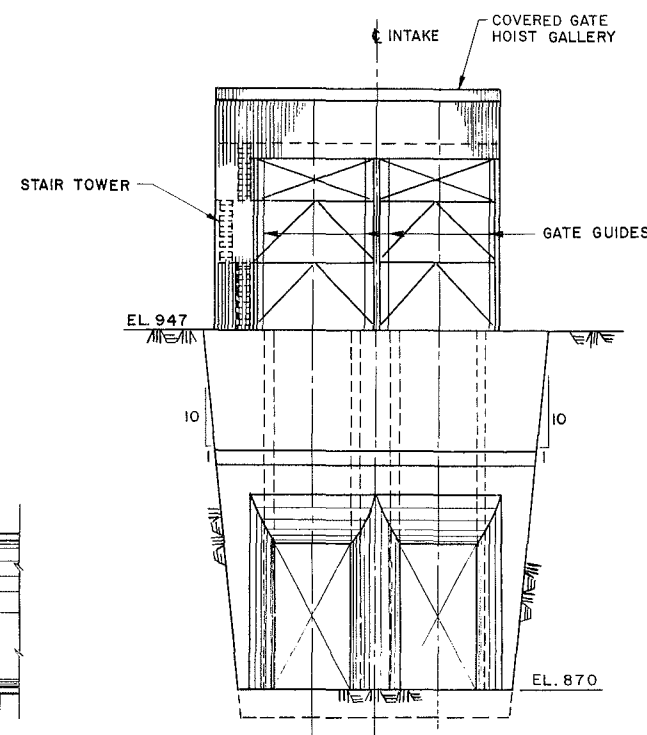


SECTION A-A
SCALE A

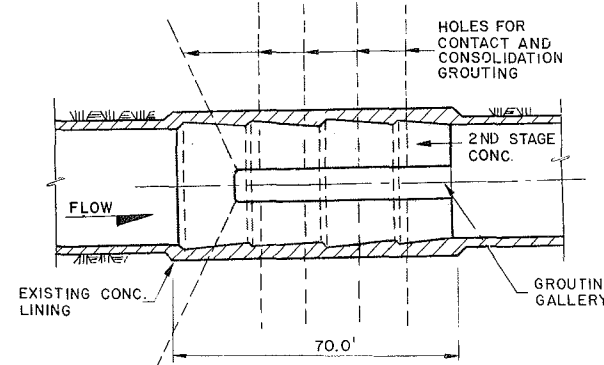


PLAN AT ELEVATION 947
SCALE A

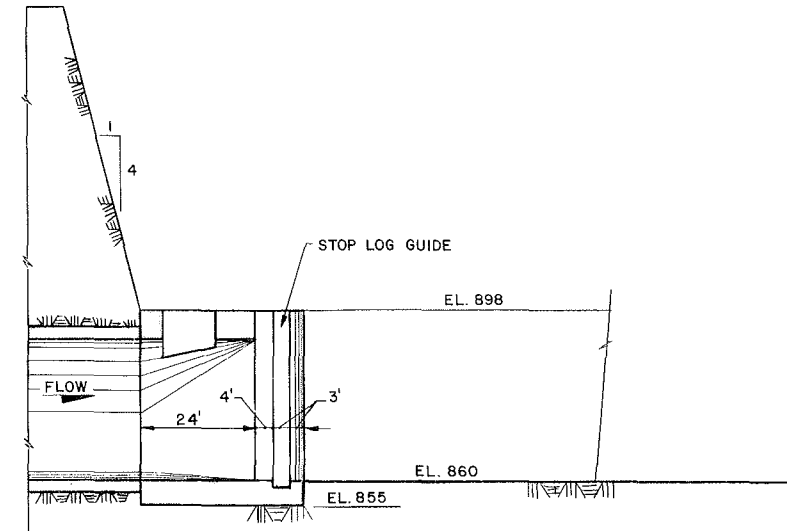
DIVERSION INTAKE STRUCTURE (PLATE F51)



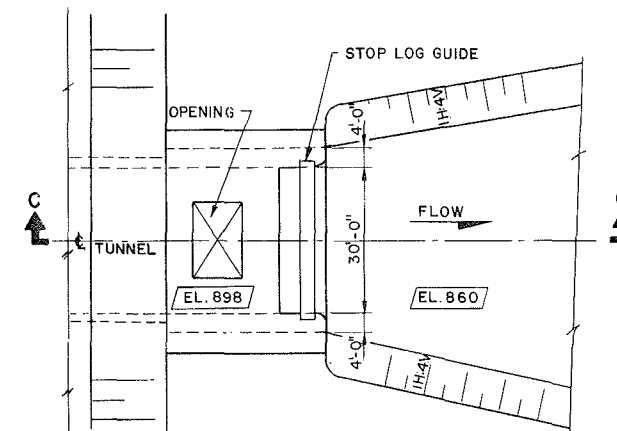
ELEVATION B-B
SCALE A



SECTION THRU PLUG
SCALE B

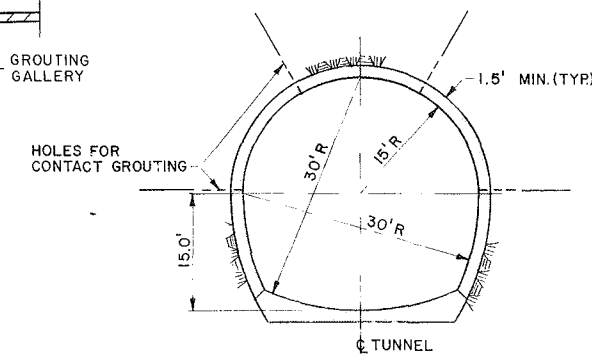


SECTION C-C
SCALE A

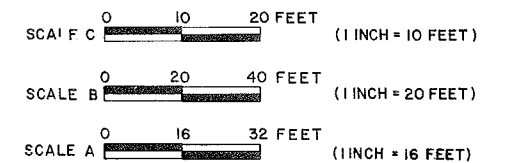


PLAN AT ELEVATION 898
SCALE A

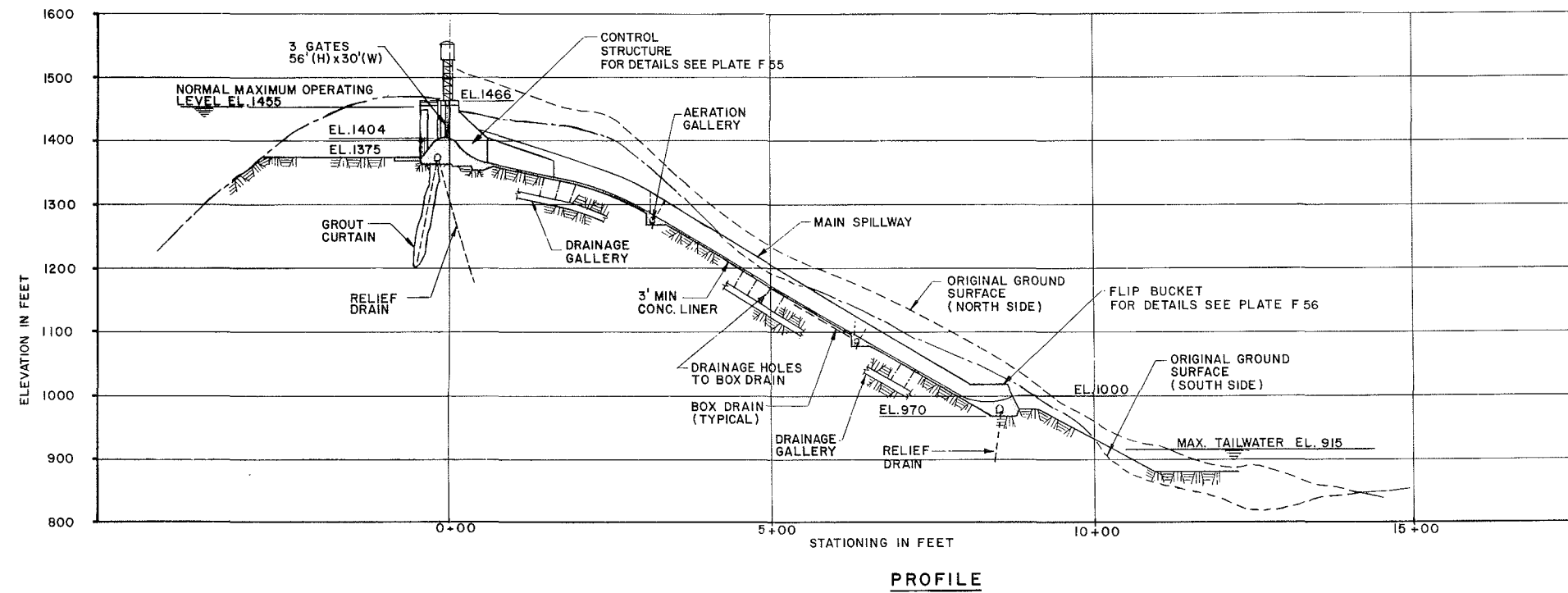
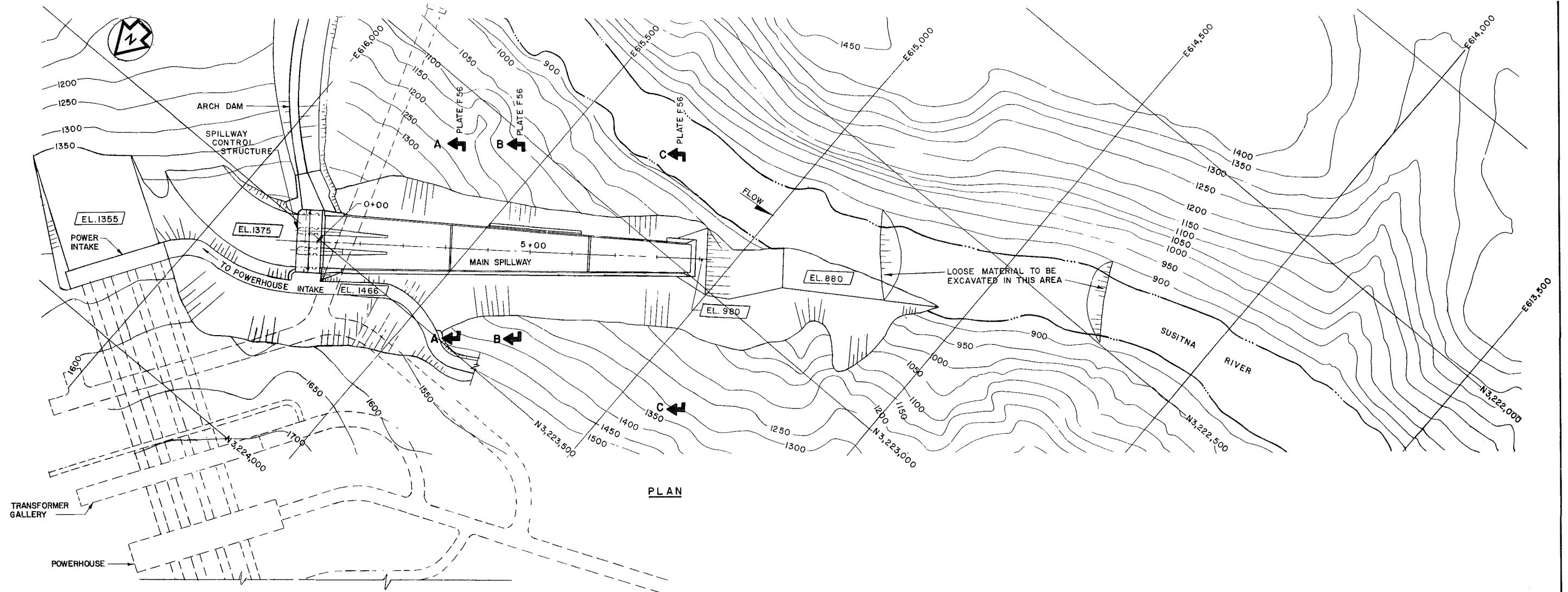
DIVERSION OUTLET STRUCTURE (PLATE F51)



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)

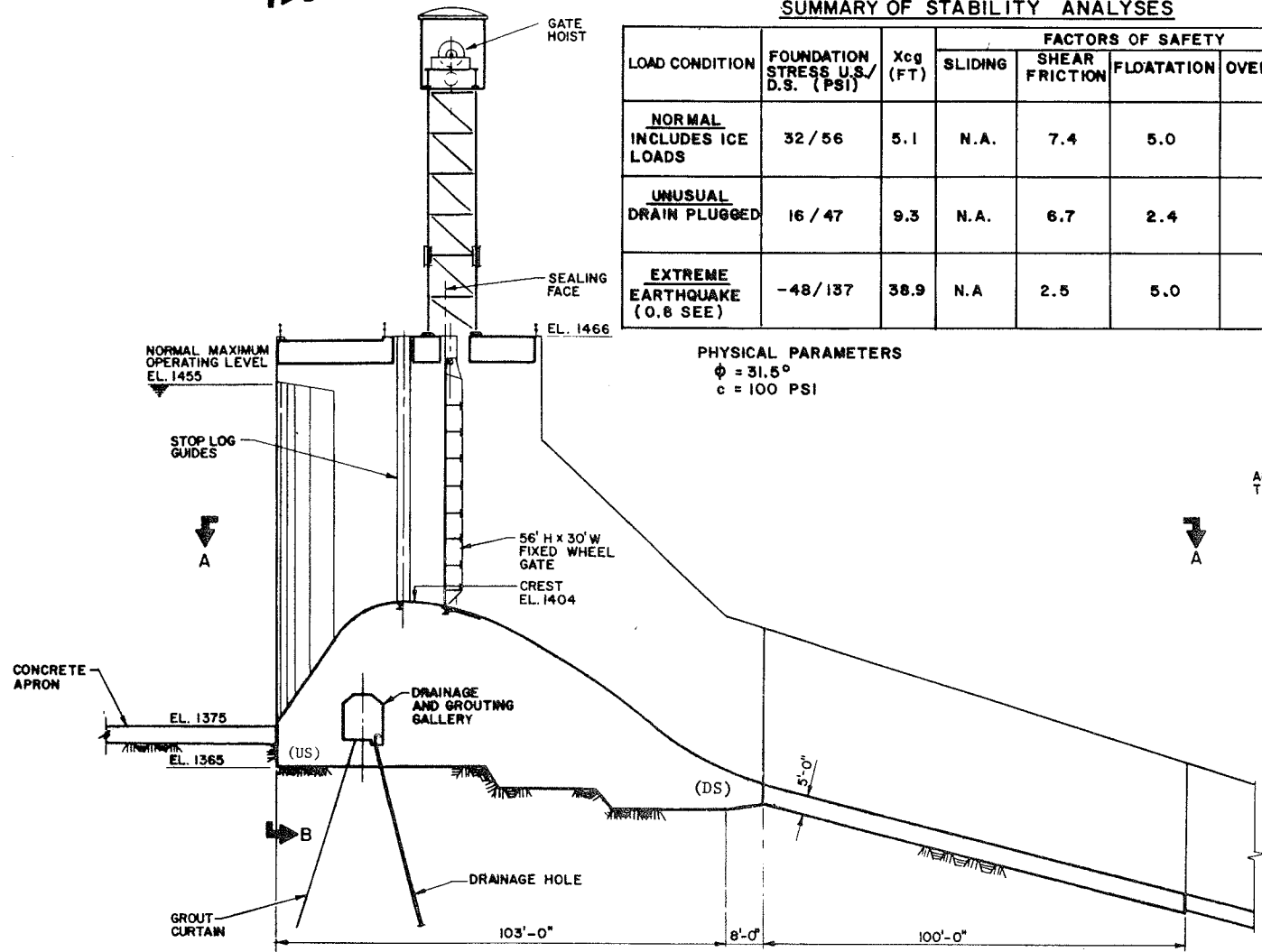
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F54

DEVIL CANYON ARCH DAM SPILLWAY CONTROL STRUCTURE

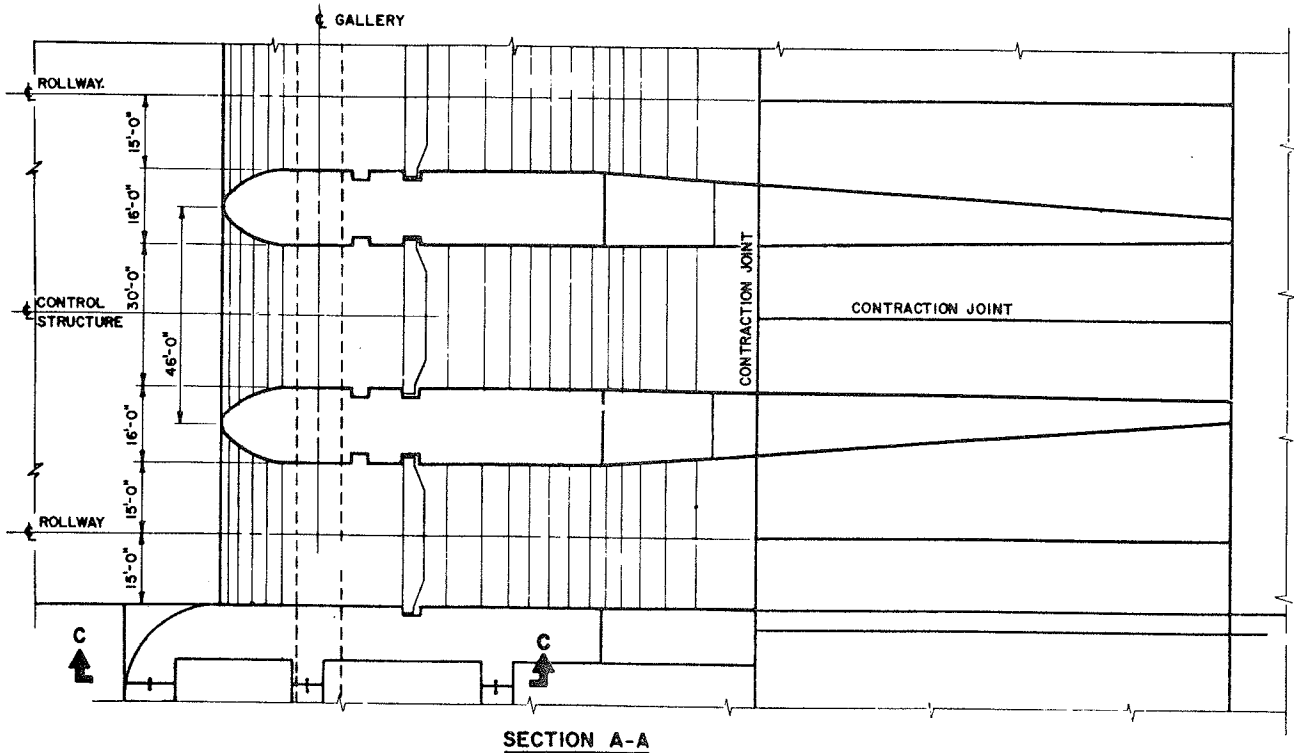
SUMMARY OF STABILITY ANALYSES

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

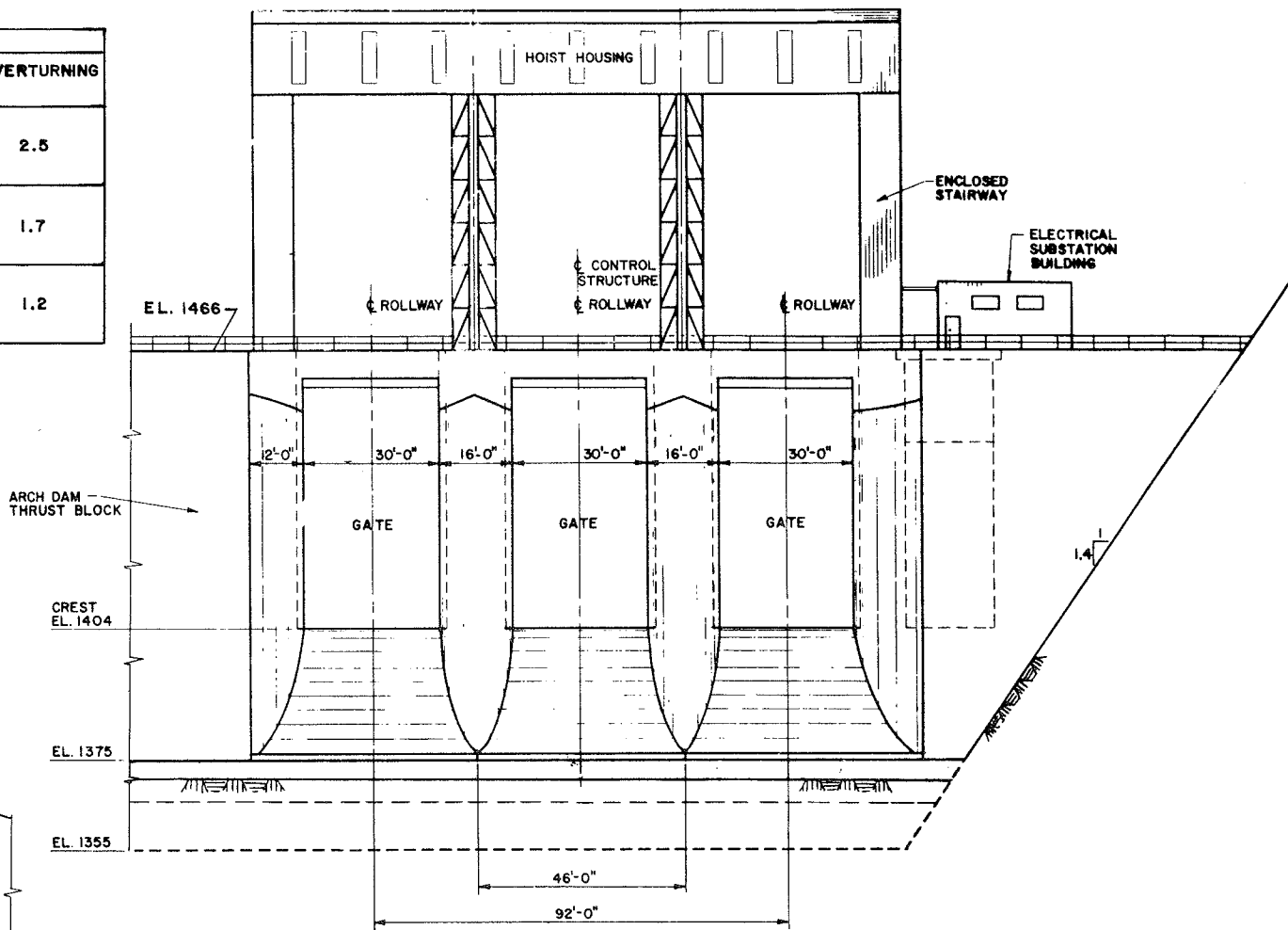
PHYSICAL PARAMETERS
 $\phi = 31.5^\circ$
 $c = 100 \text{ PSI}$



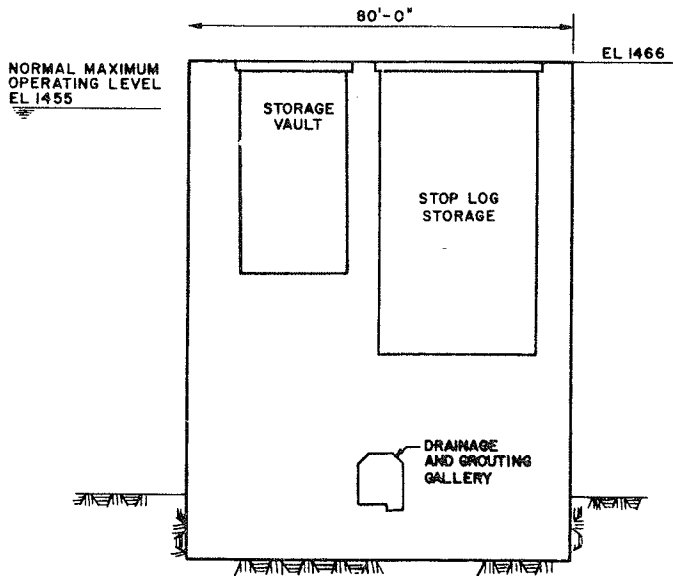
TYPICAL SECTION THRU CENTERLINE OF ROLLWAY



SECTION A-A



ELEVATION B-B

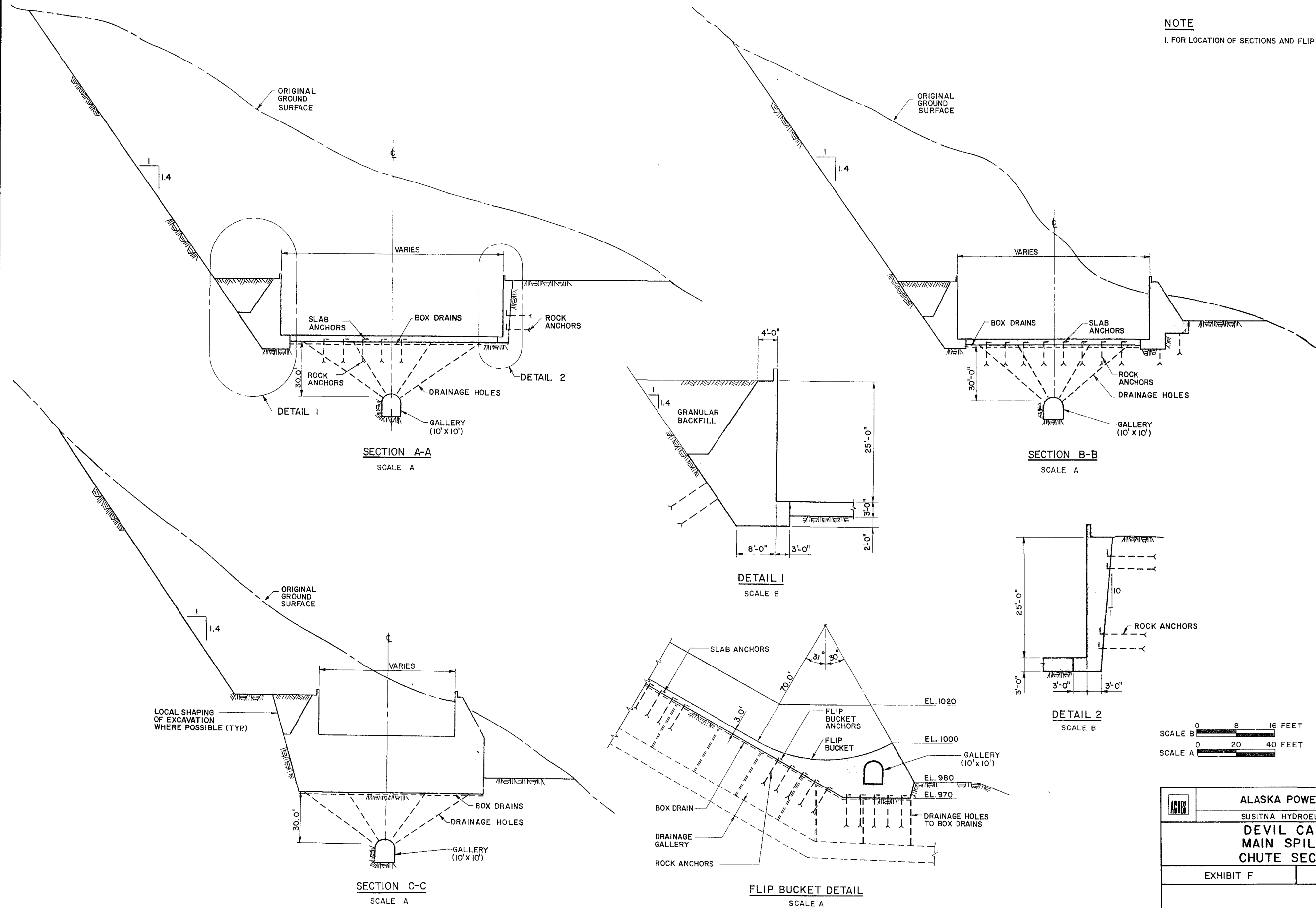


SECTION C-C

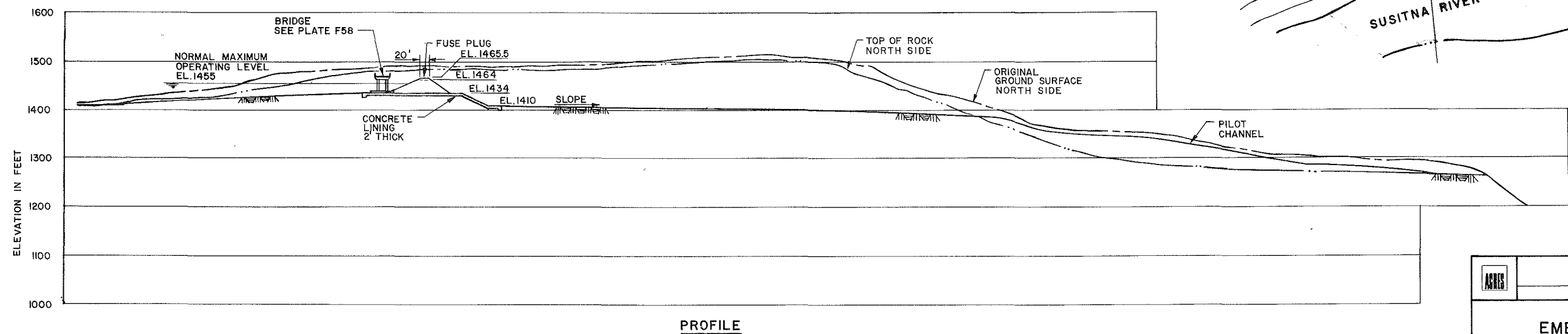
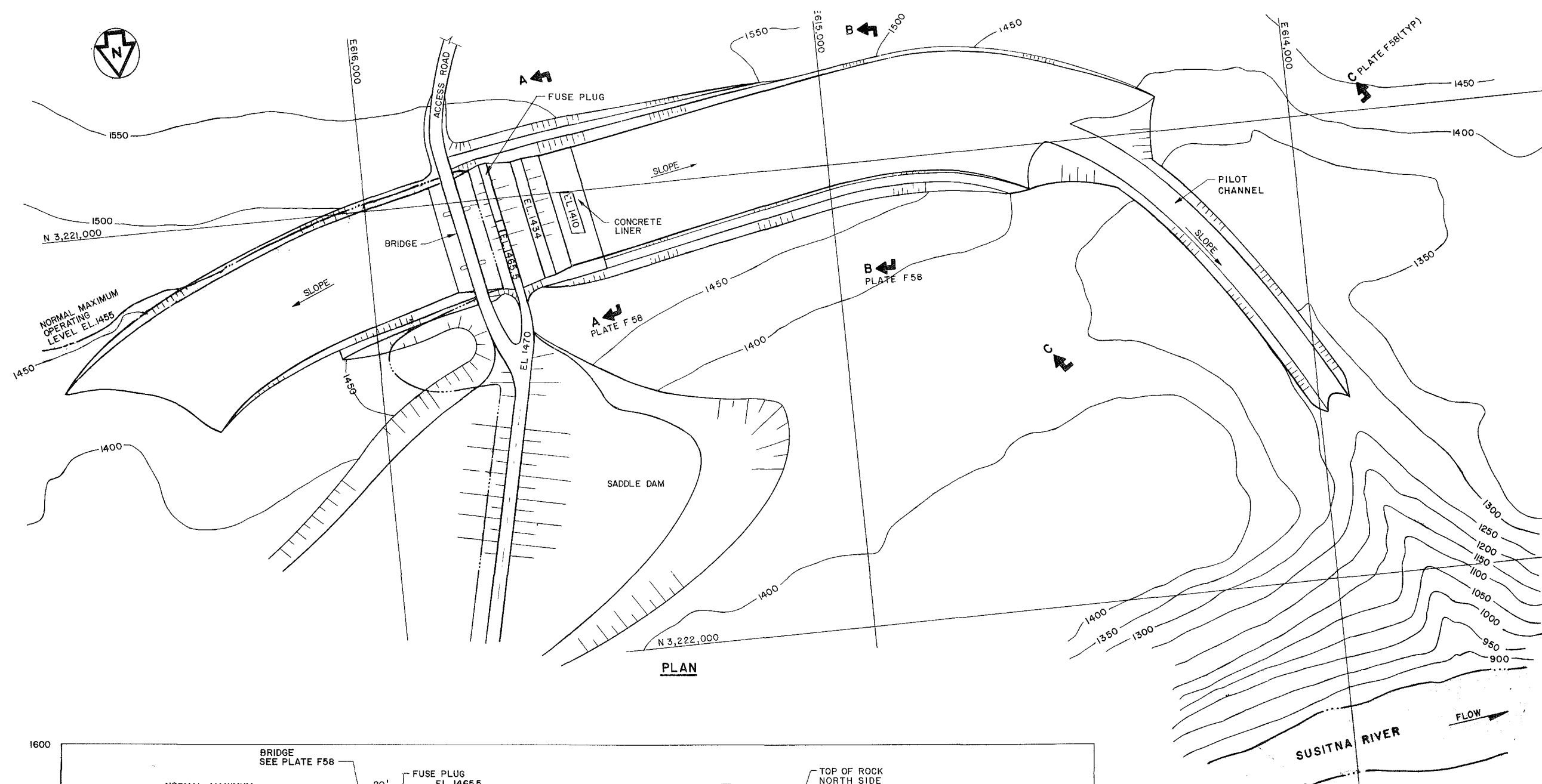
SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

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

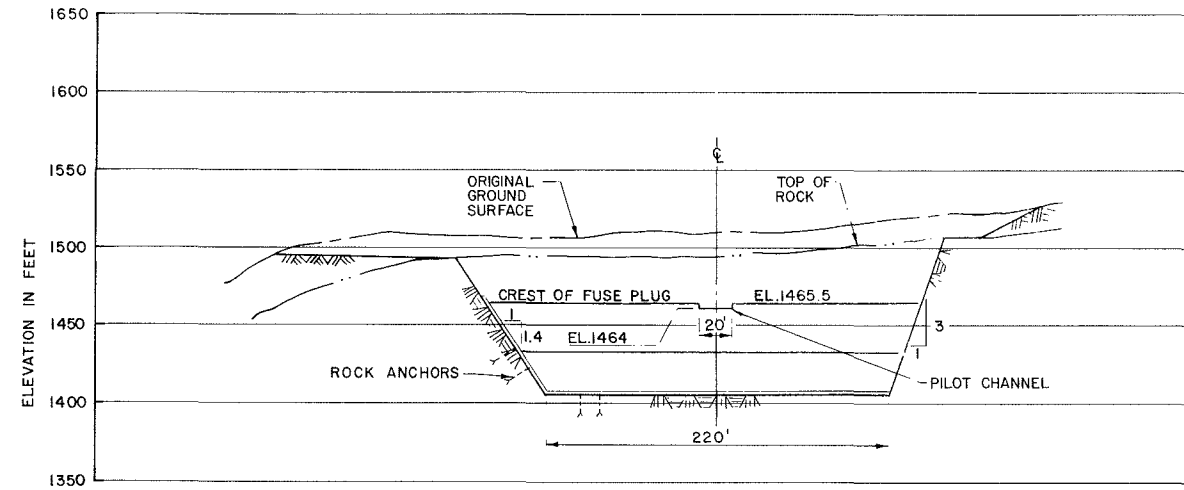
NOTE
1. FOR LOCATION OF SECTIONS AND FLIP BUCKET, SEE PLATE F54



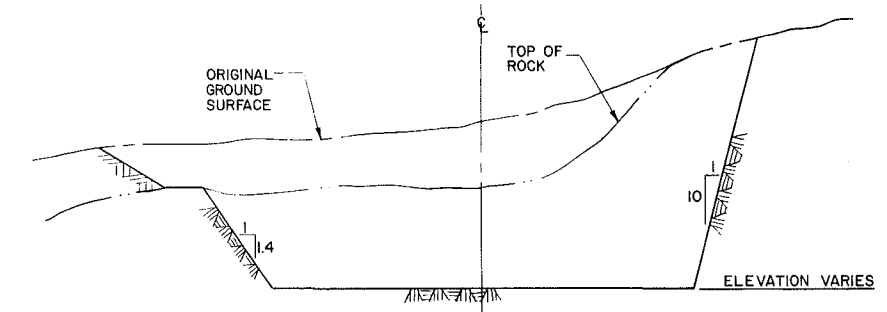
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY CHUTE SECTIONS	
EXHIBIT F	PLATE F56



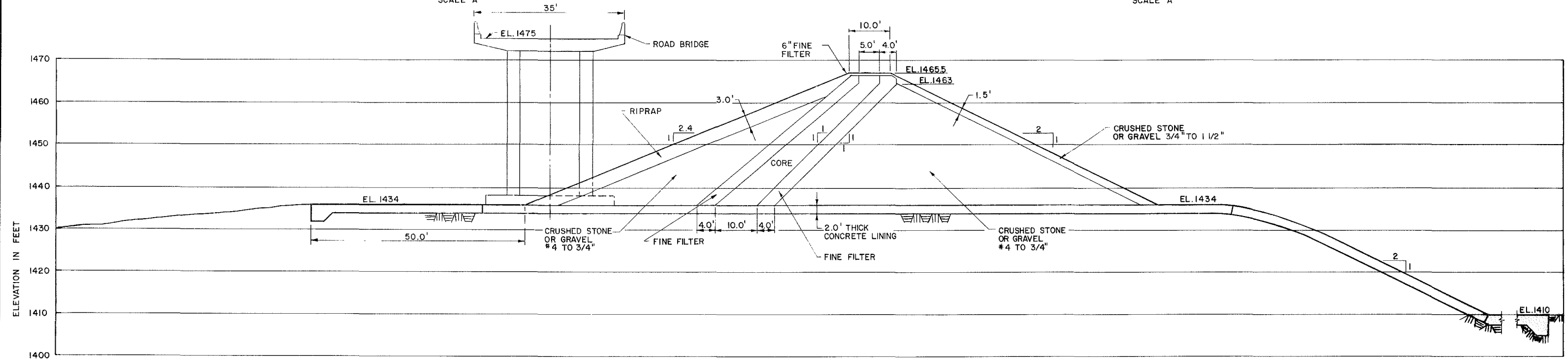
	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON EMERGENCY SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F57



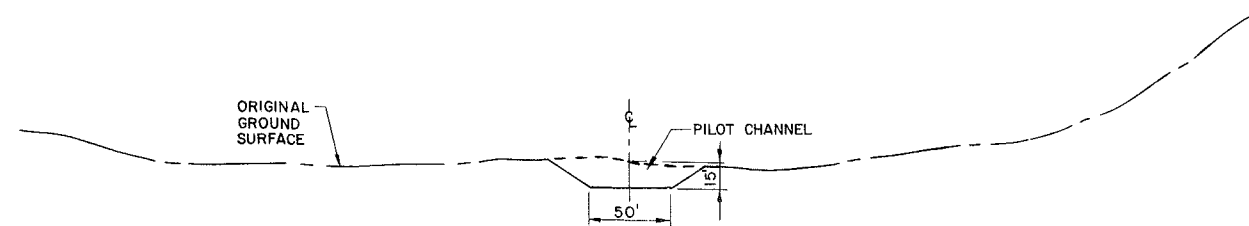
SECTION A-A (PLATE F57)
SCALE A



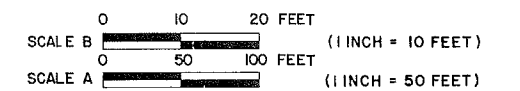
TYPICAL SECTION B-B (PLATE F57)
SCALE A



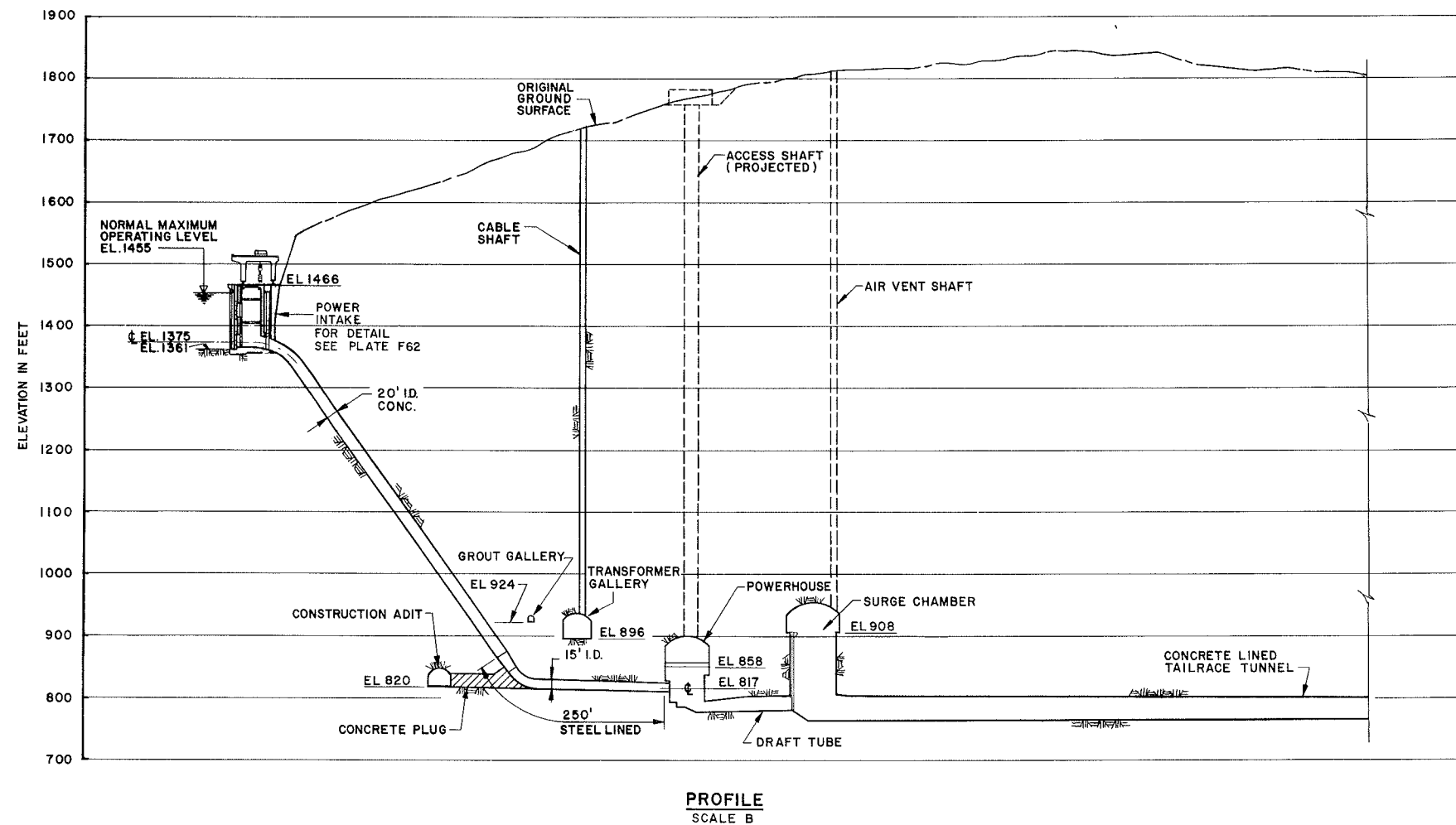
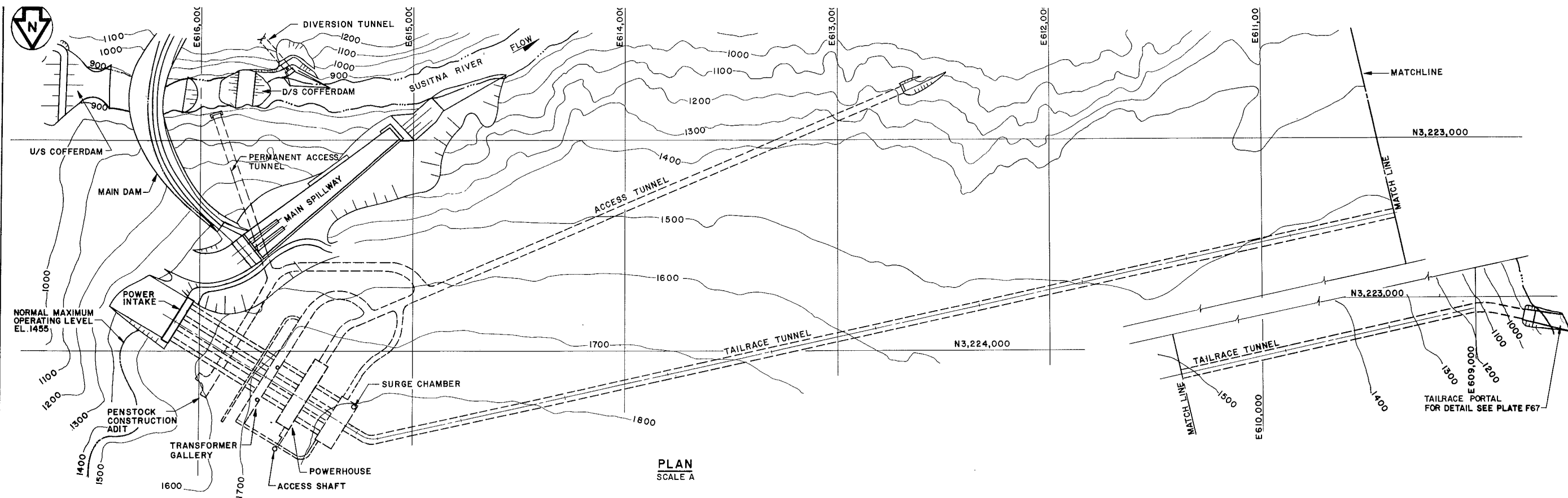
SECTION THROUGH FUSE PLUG (PLATE F57)
SCALE B



TYPICAL SECTION C-C (PLATE F57)
SCALE A

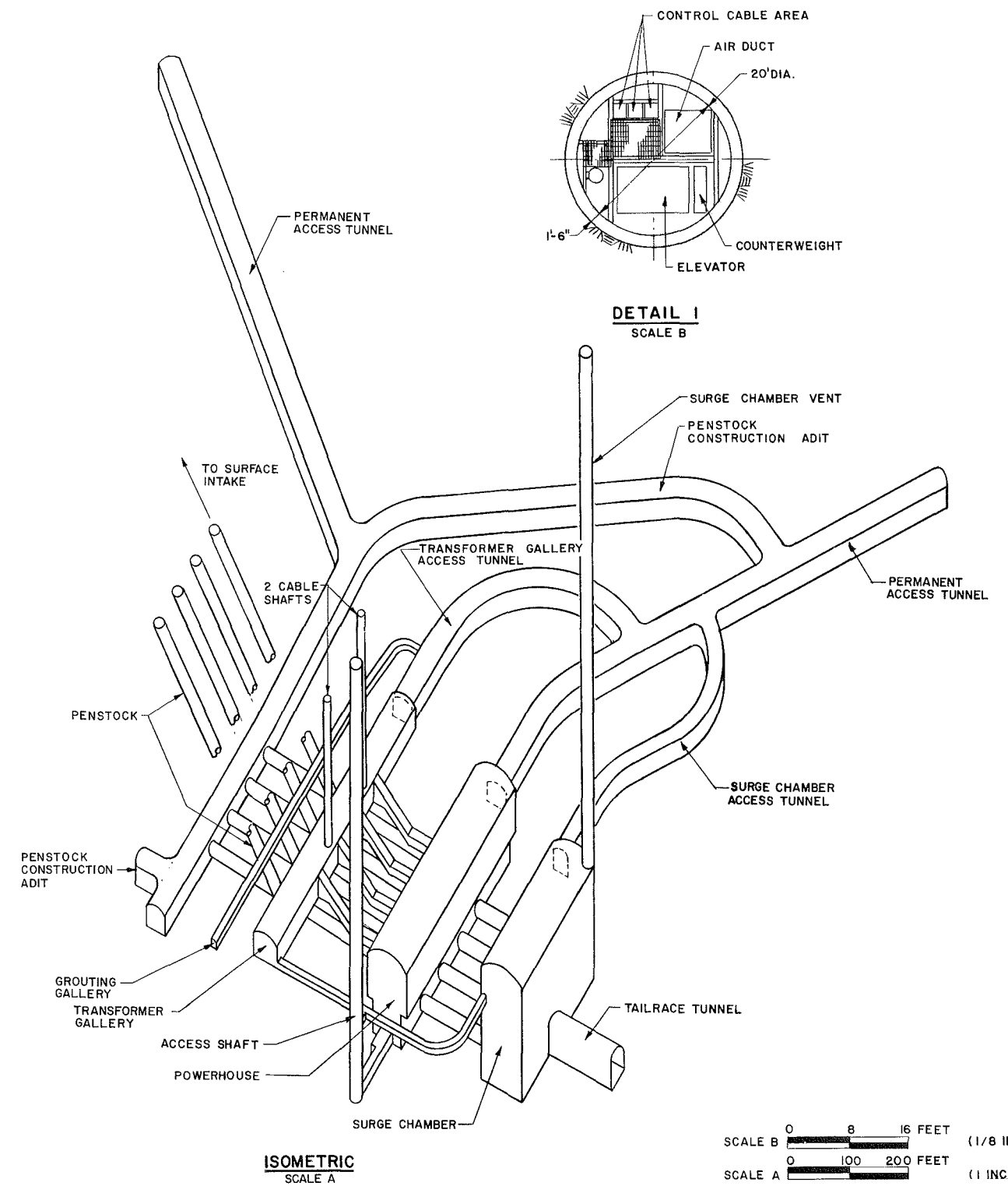
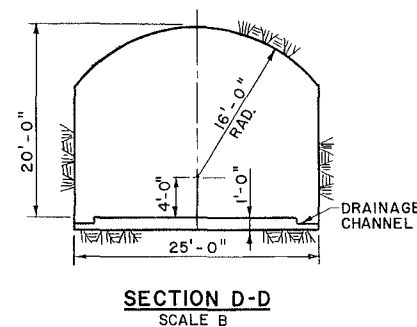
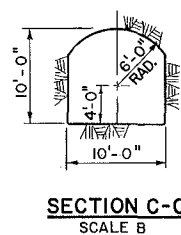
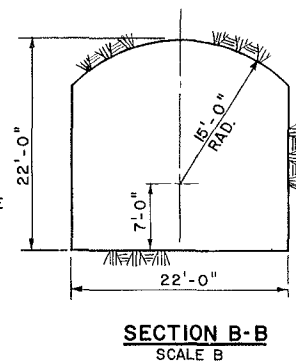
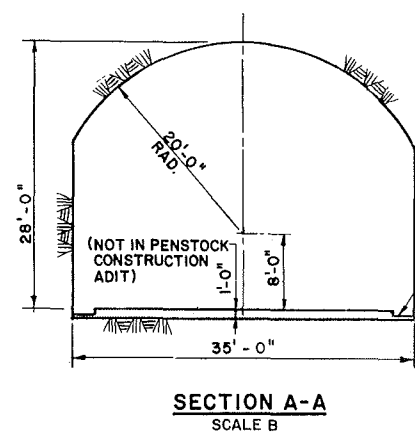
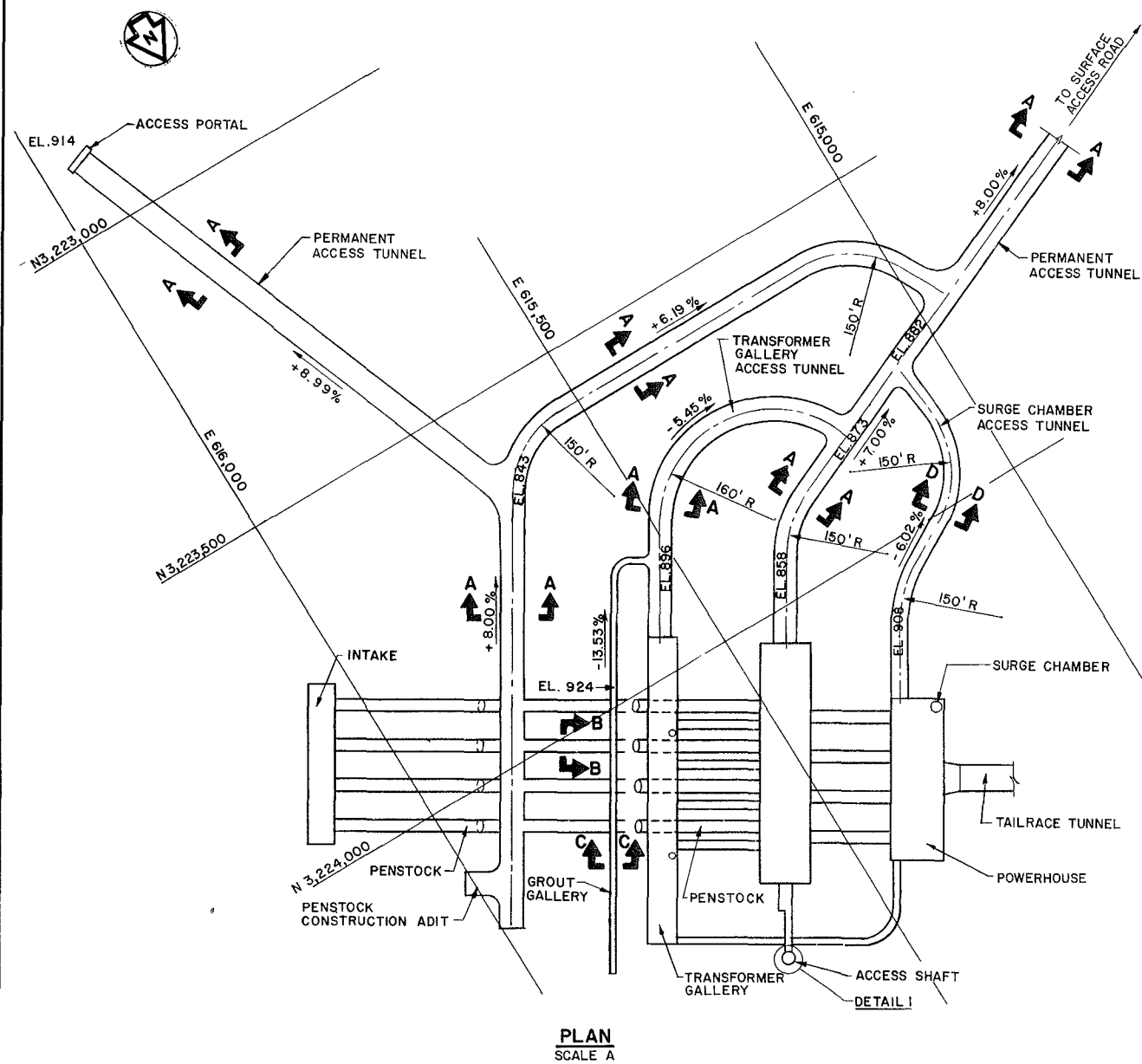


APAS	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON EMERGENCY SPILLWAY SECTIONS	
	EXHIBIT F	PLATE F58



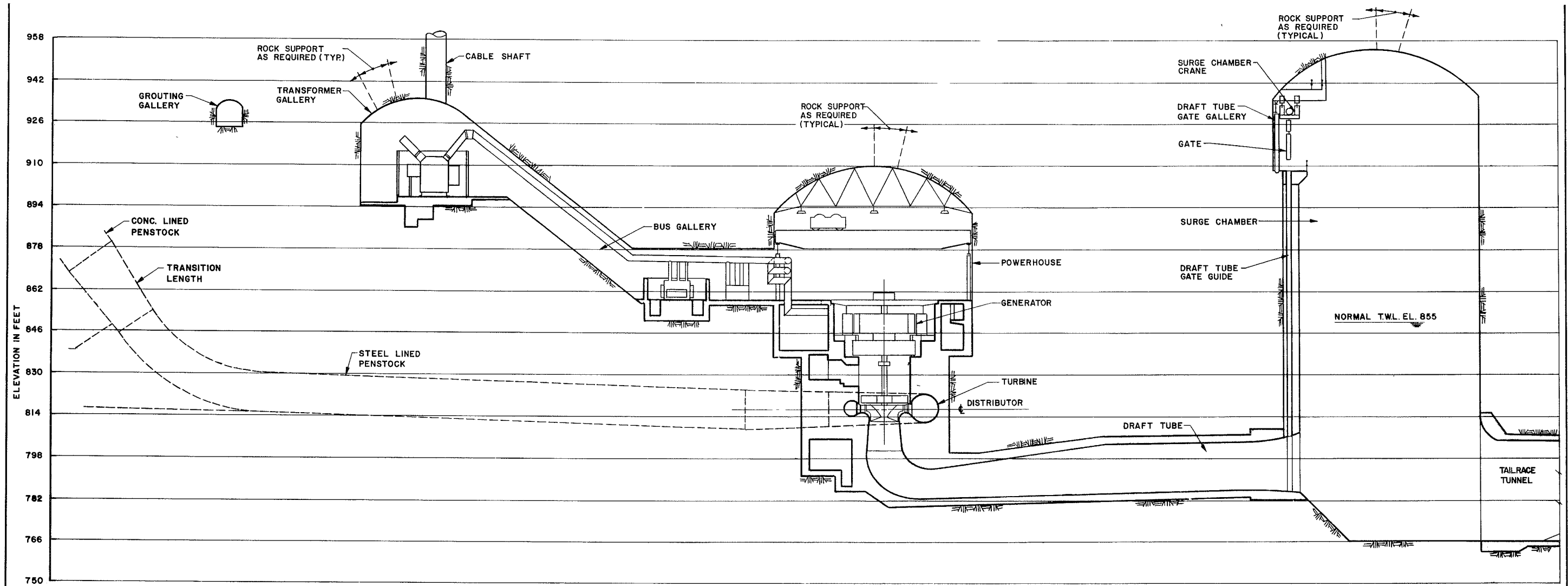
SCALE B 0 100 200 FEET (1 INCH = 100 FEET)
 SCALE A 0 200 400 FEET (1 INCH = 200 FEET)

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

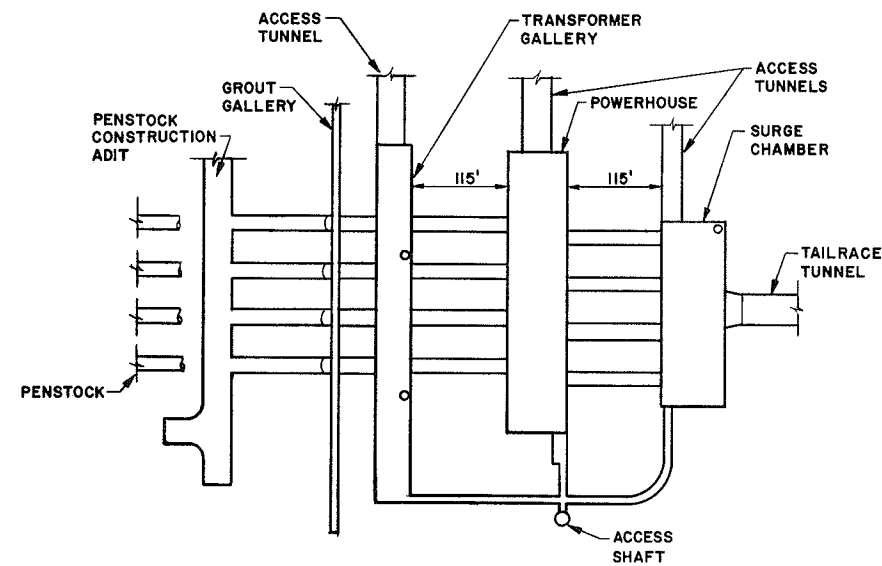


SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

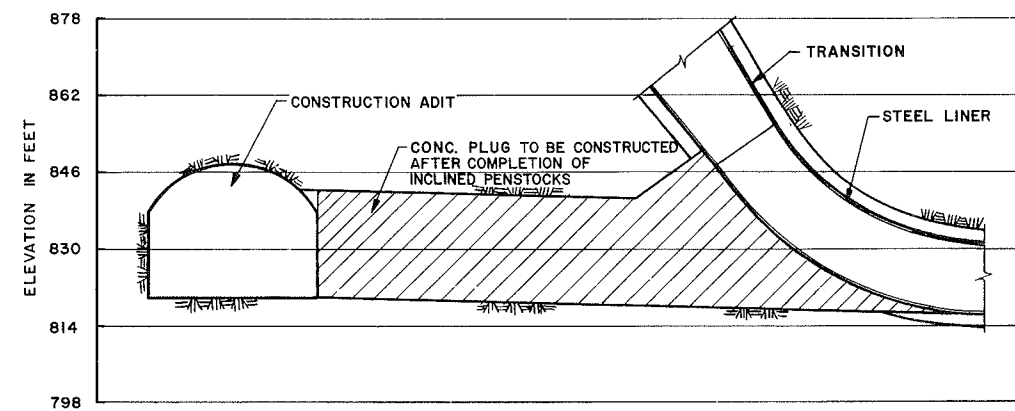
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON POWER FACILITIES ACCESS	
	EXHIBIT F	PLATE F60



SECTION A-A
SCALE B



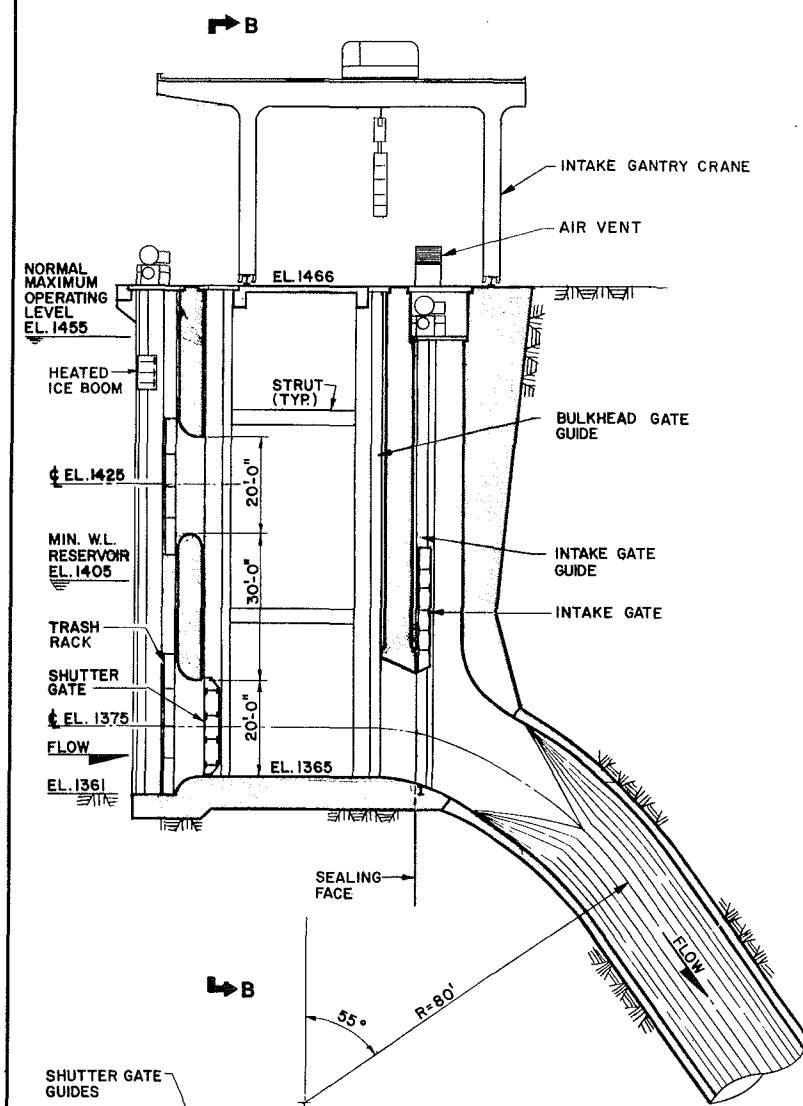
PLAN
SCALE A



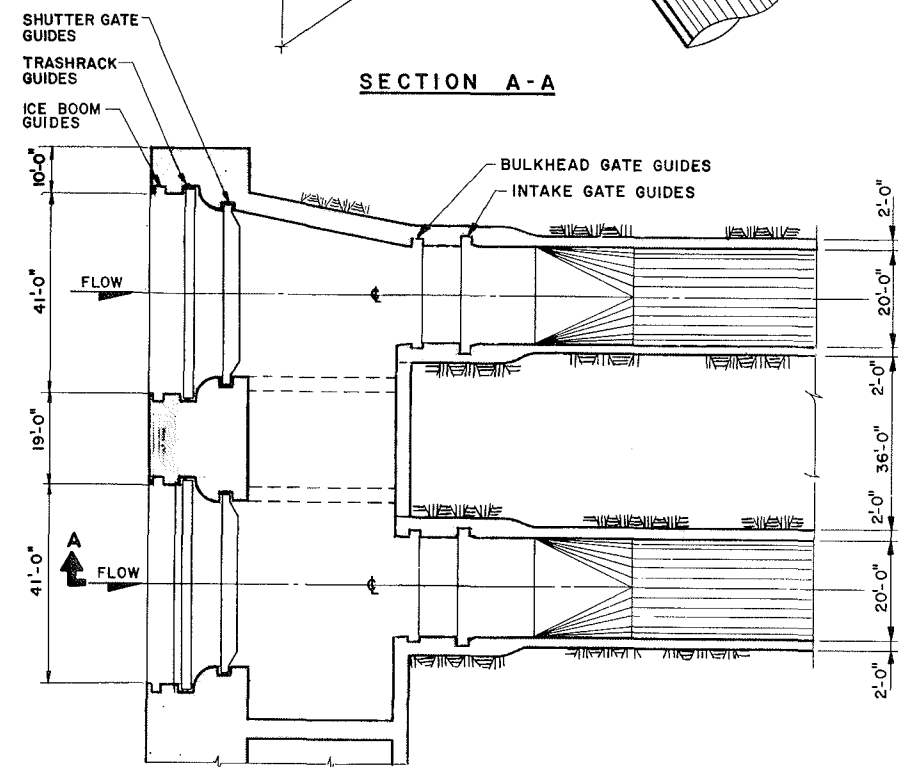
SECTION B-B
SCALE B



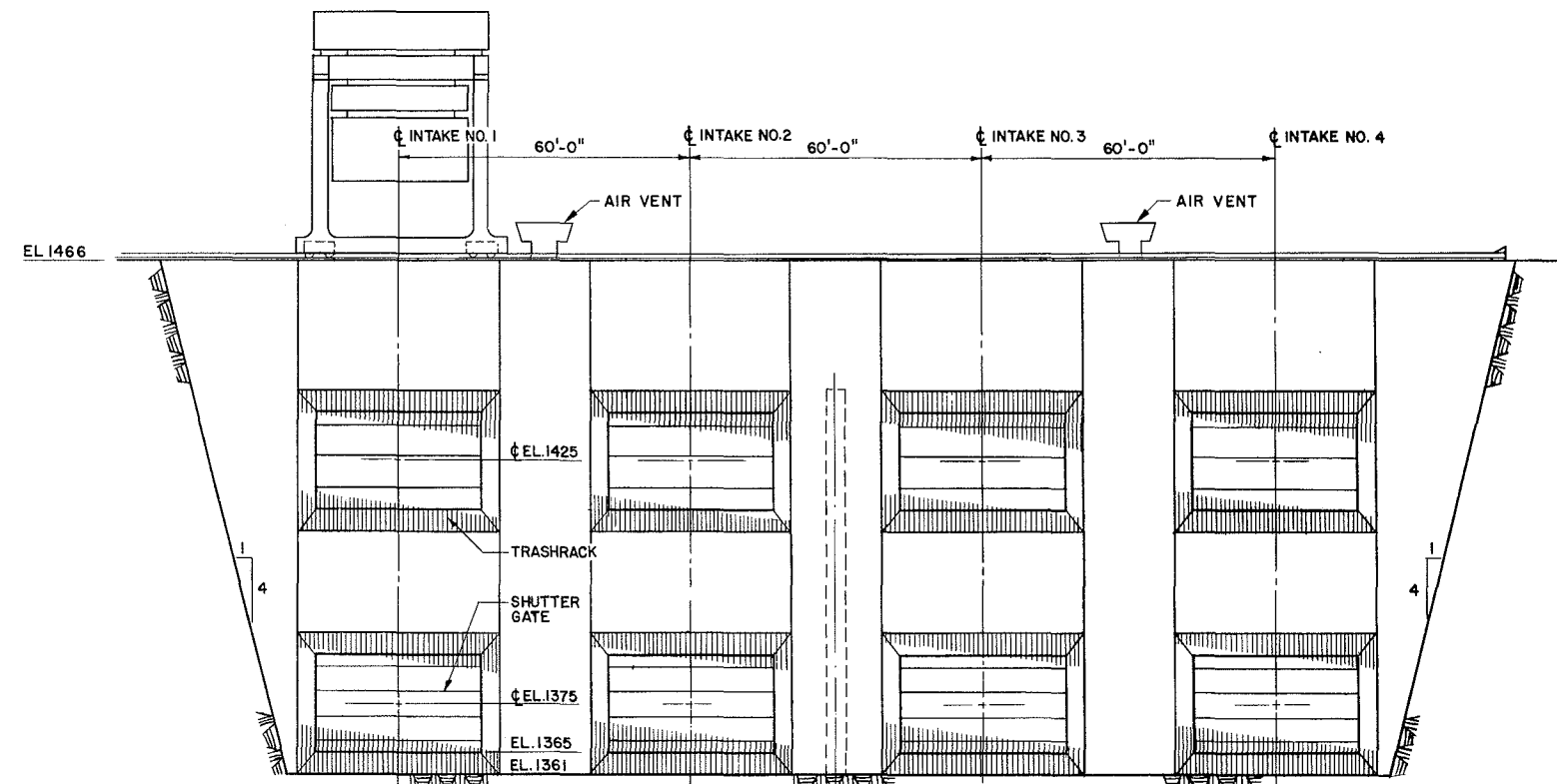
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON POWER FACILITIES PLAN & SECTIONS	
	EXHIBIT F	PLATE F61



SECTION A-A



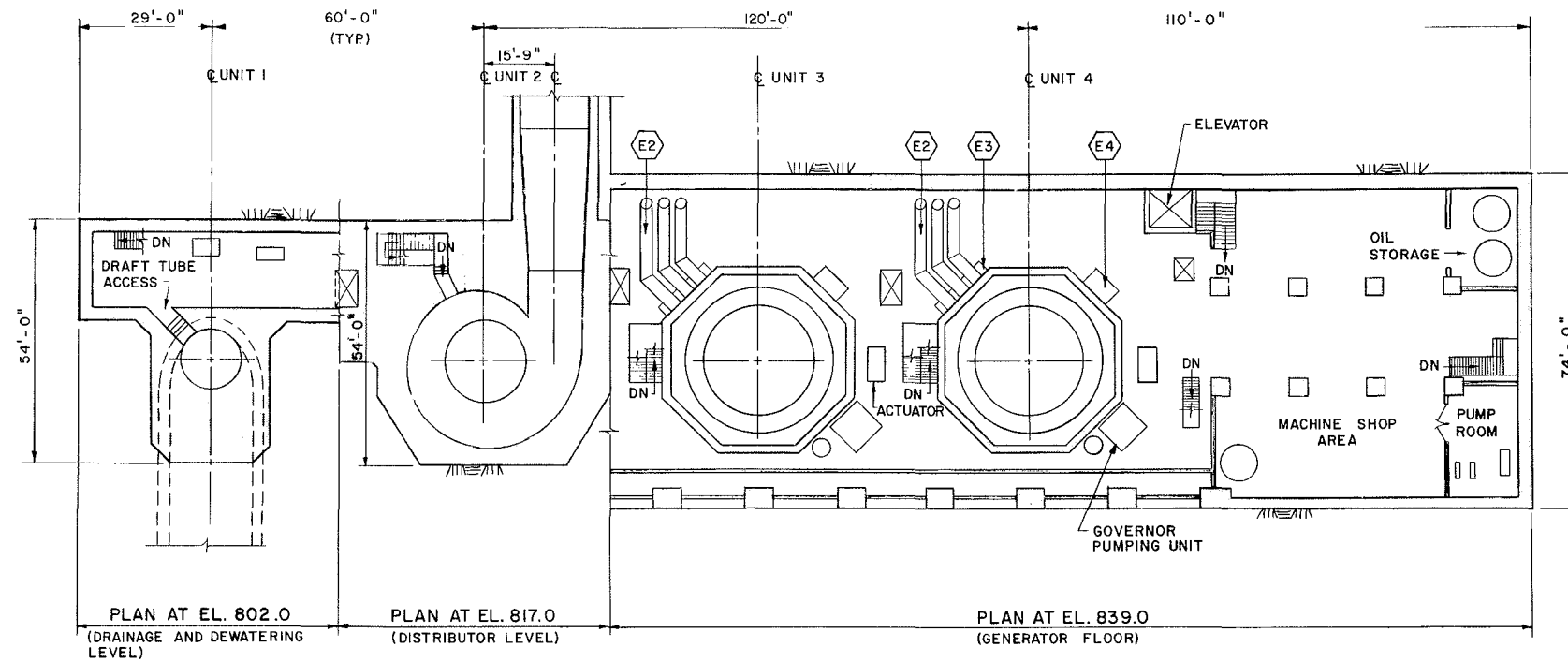
PLAN AT INTAKE CENTERLINE



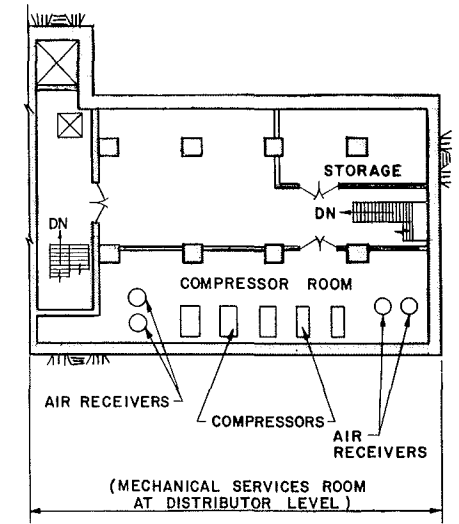
ELEVATION B-B

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

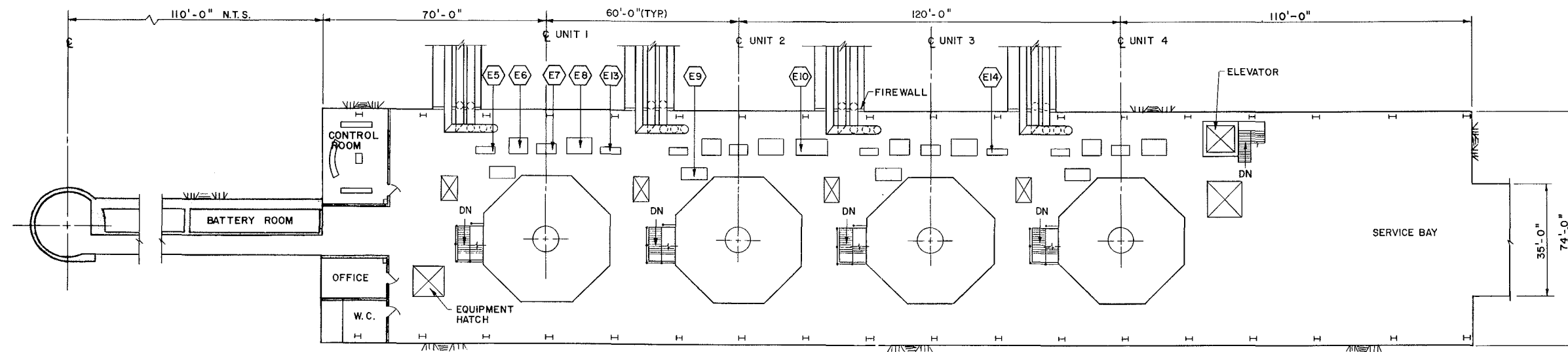
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER INTAKE SECTIONS	
EXHIBIT F	PLATE F 62



POWERHOUSE PLAN



**PLAN
AT EL. 817.0**



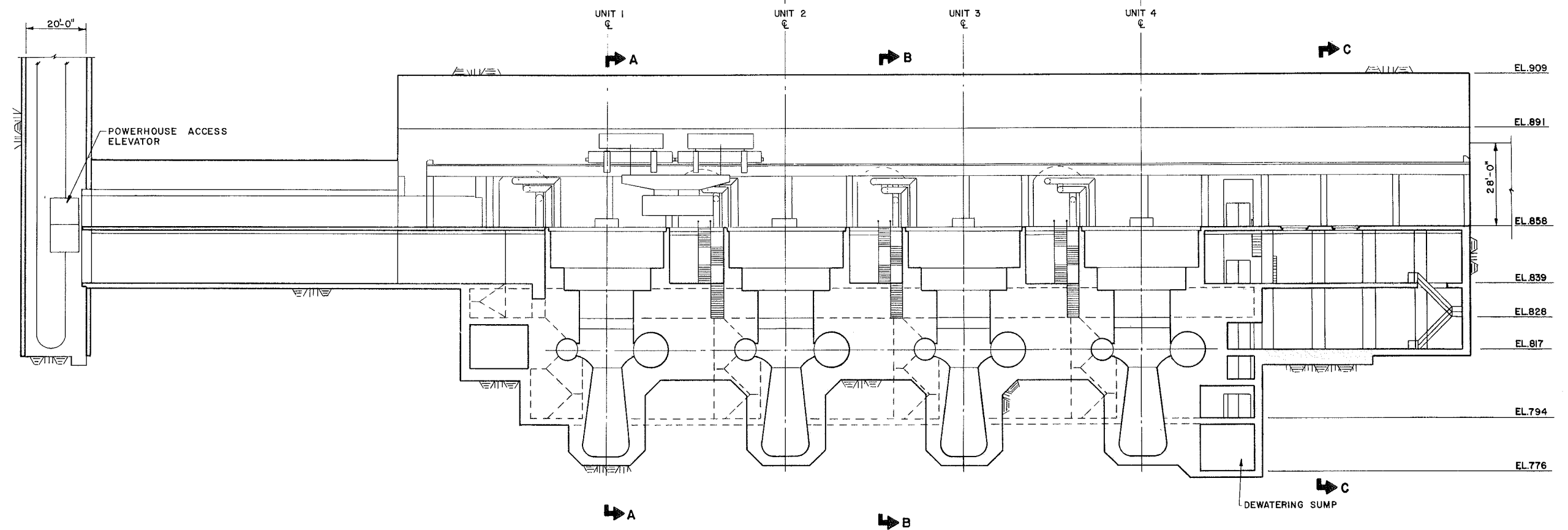
**POWERHOUSE PLAN
AT EL. 858.0**

LEGEND

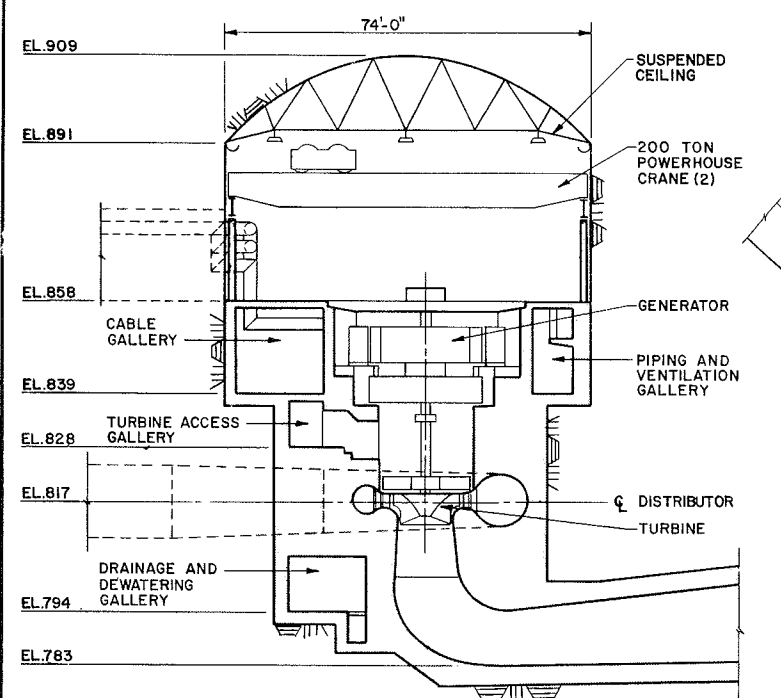
- E1 NOT USED
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE-GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY SERVICE TRANSFORMER (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)

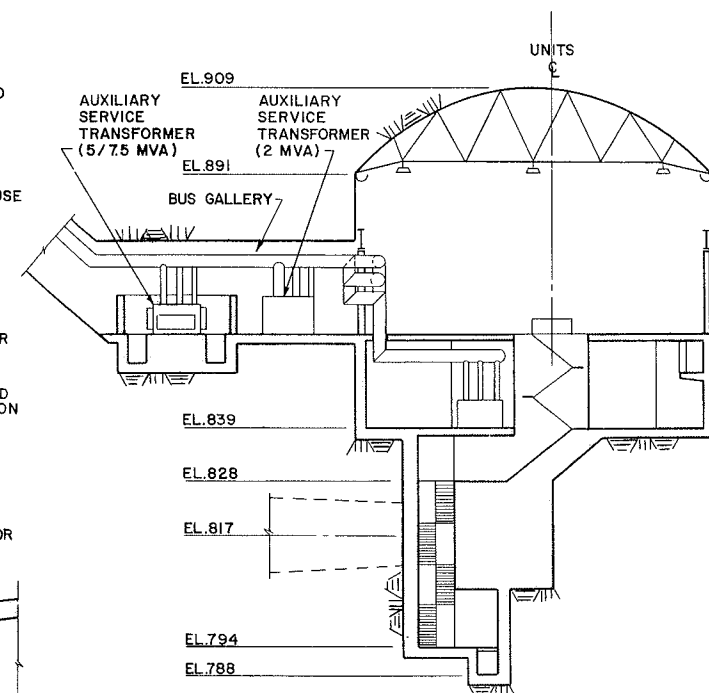
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE PLANS		
EXHIBIT F		PLATE F63



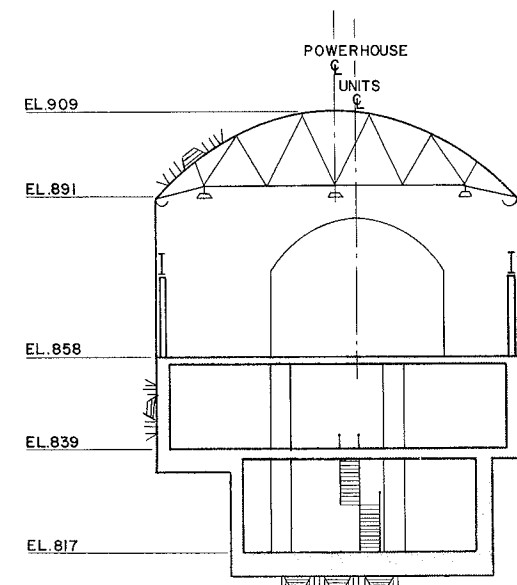
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



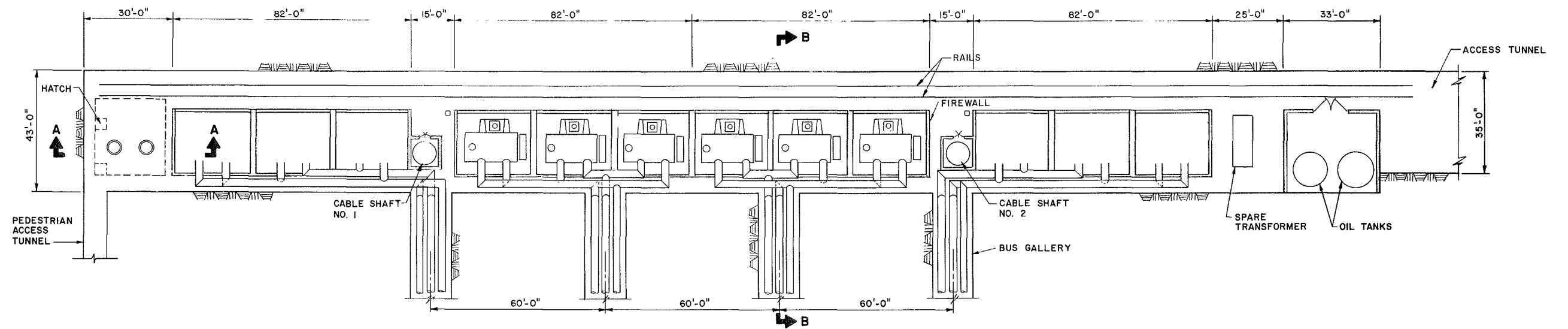
SECTION B-B (SECTION THRU BUS GALLERY)



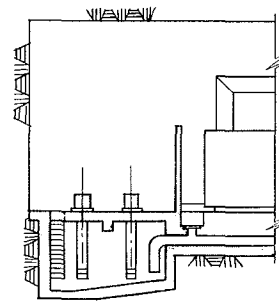
SECTION C-C (SECTION THRU SERVICE BAY)

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

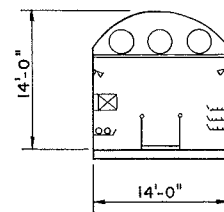
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F64



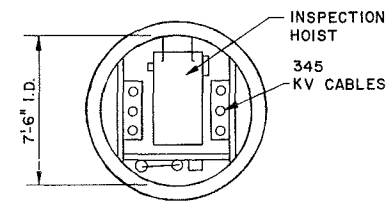
PLAN
SCALE A



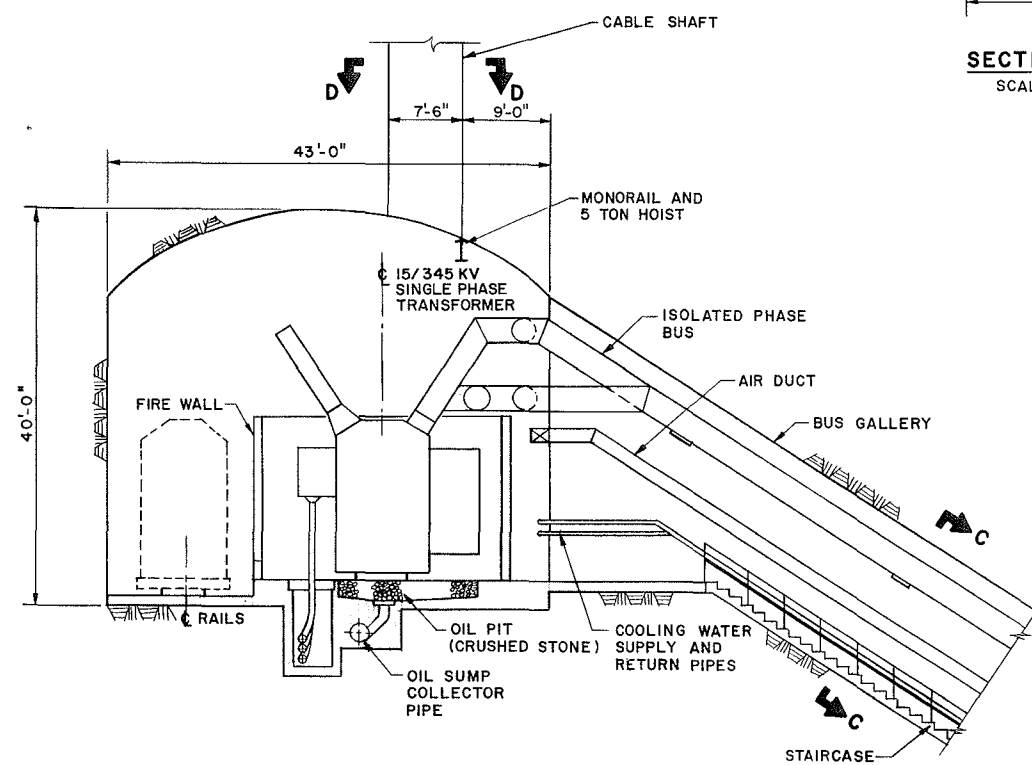
SECTION A-A
SCALE A



SECTION C-C
SCALE B



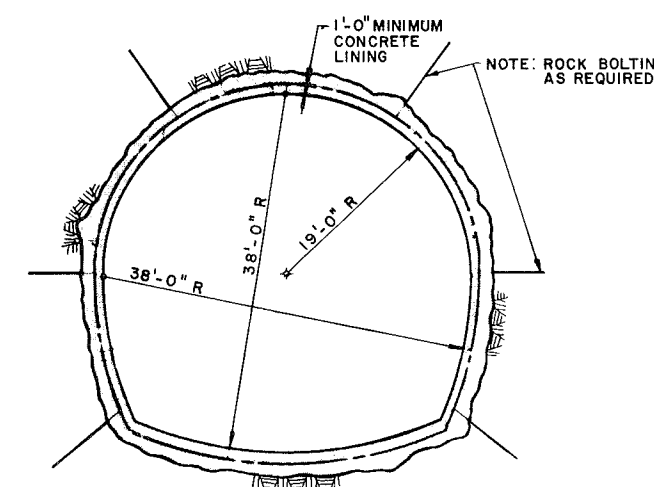
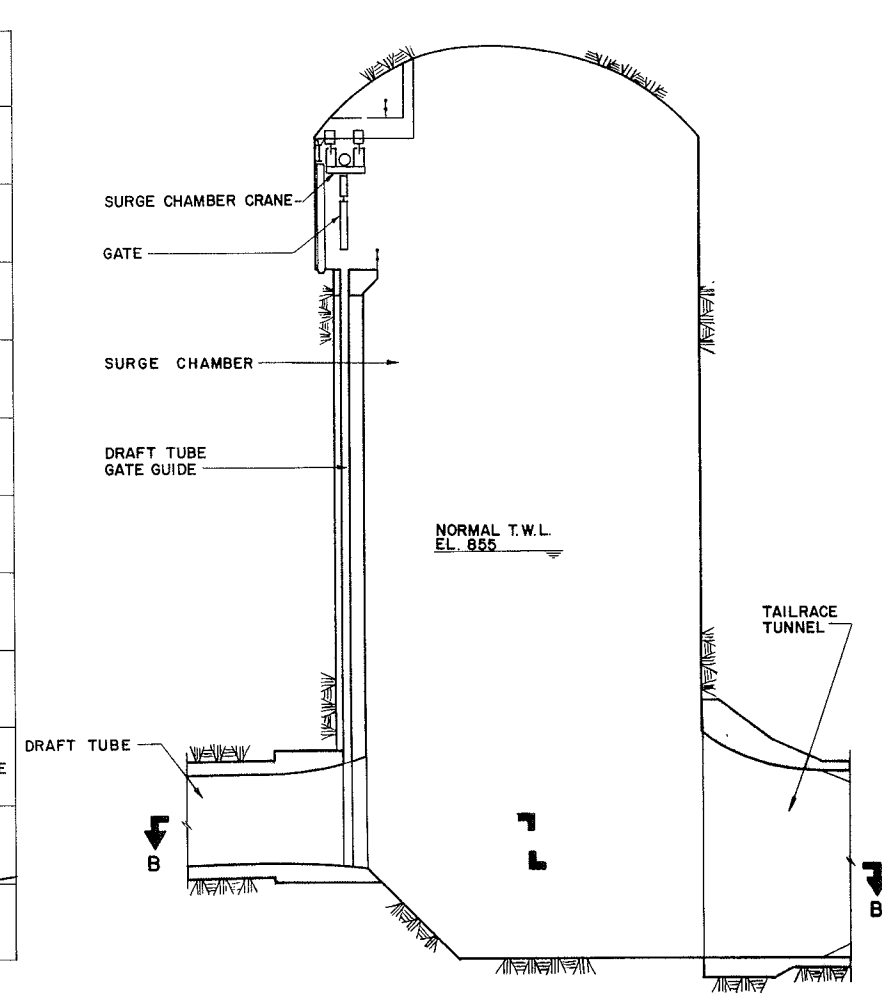
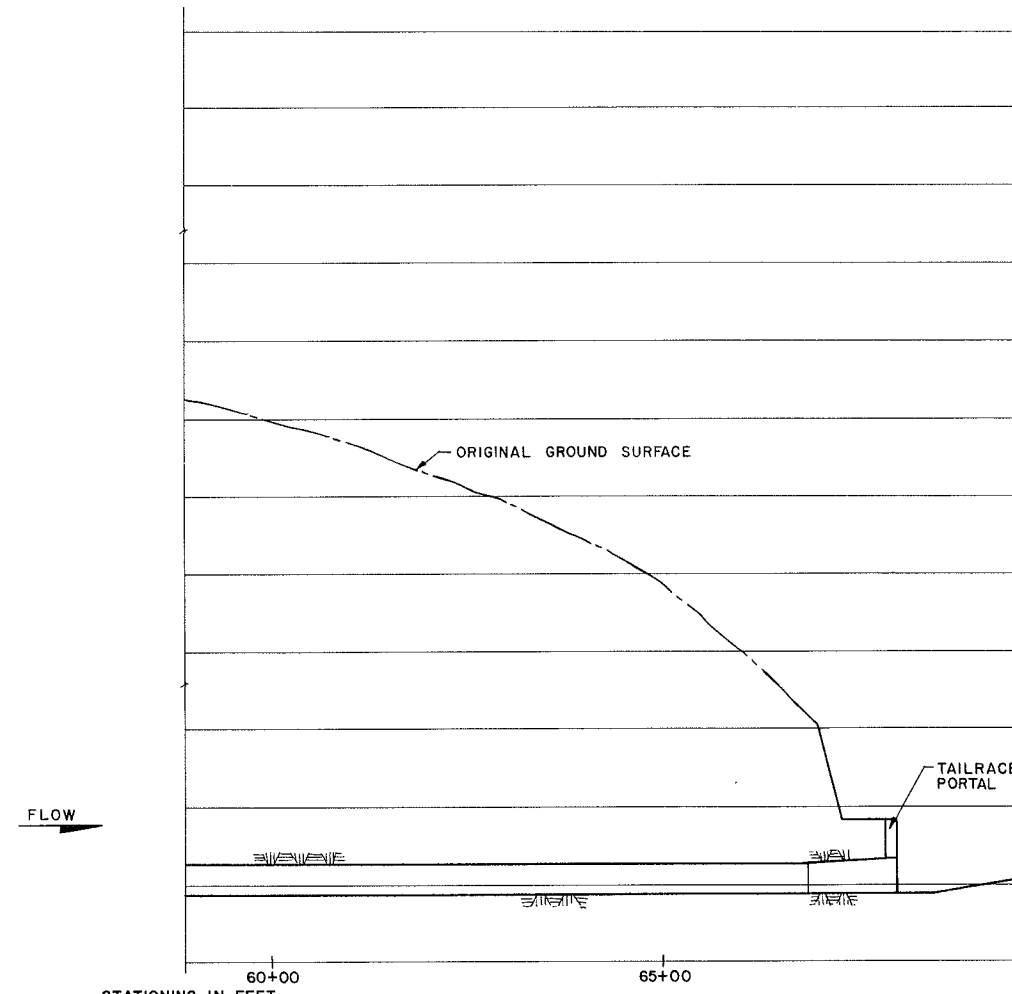
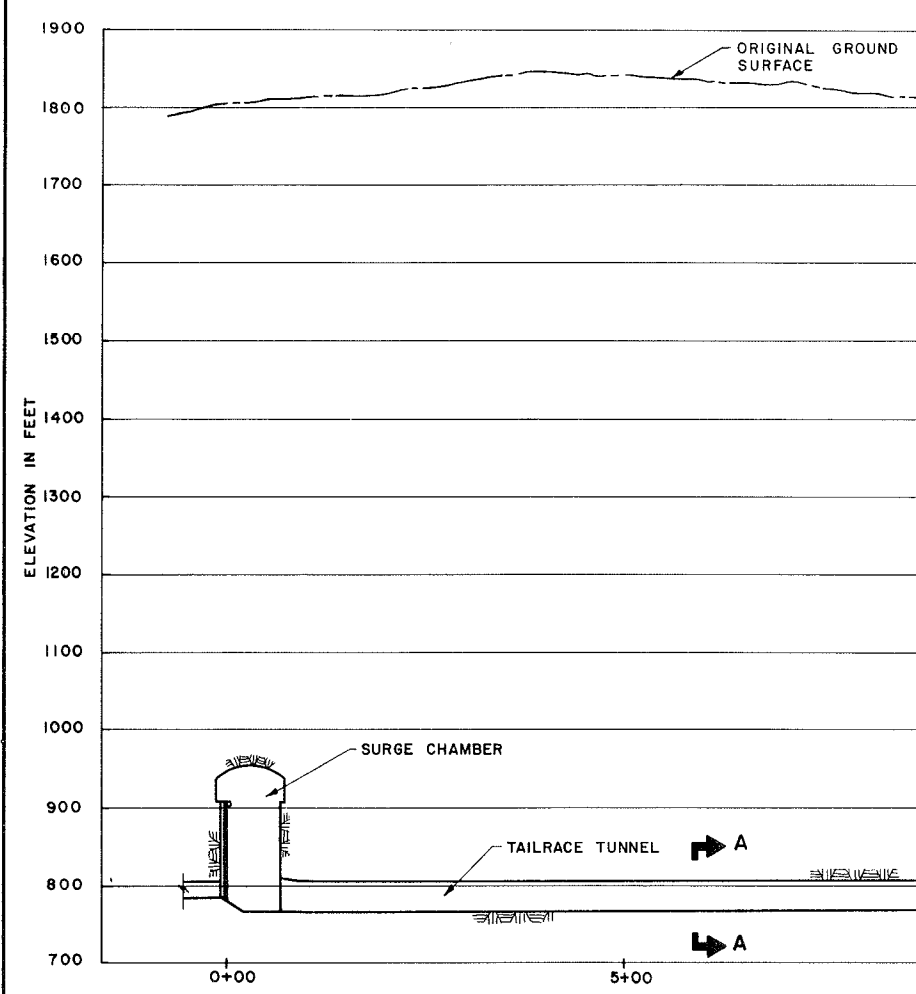
SECTION D-D
SCALE C



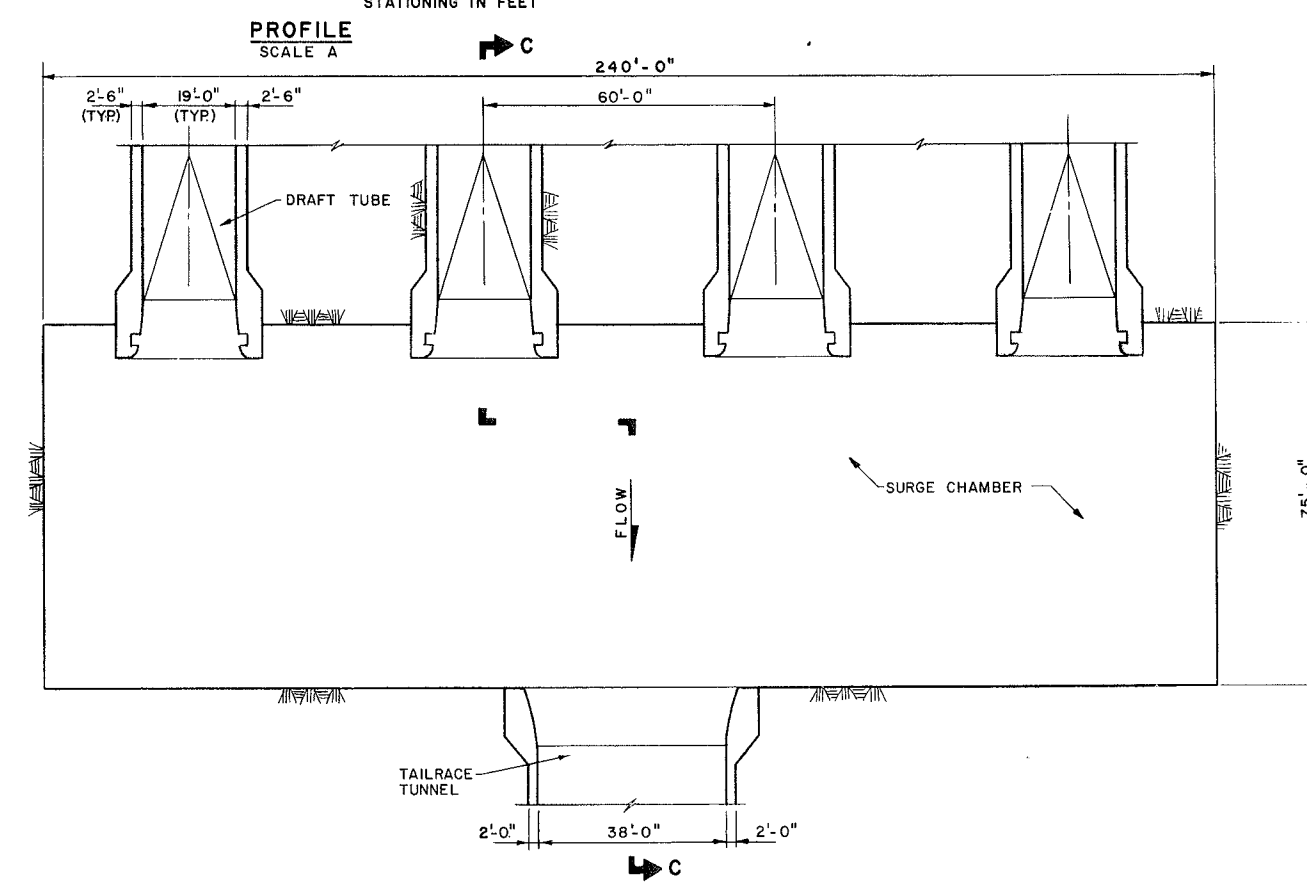
SECTION A-A
SCALE B

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)

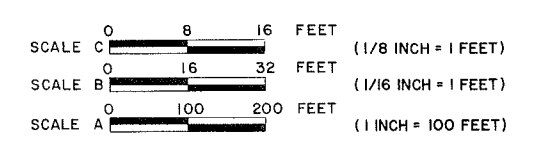
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TRANSFORMER GALLERY PLAN AND SECTIONS		
EXHIBIT F	PLATE F65	



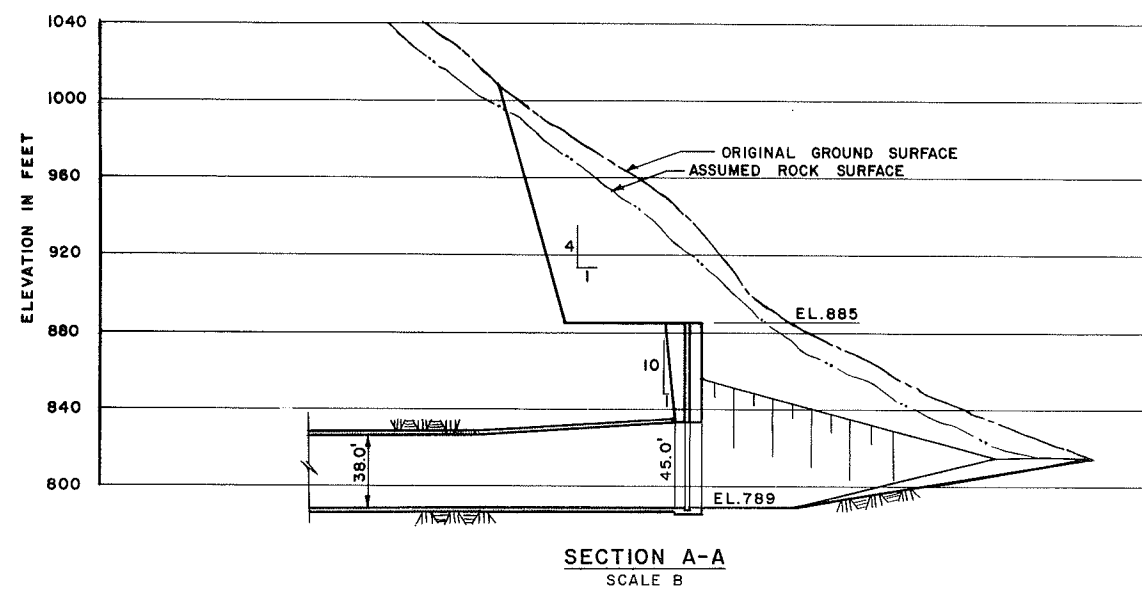
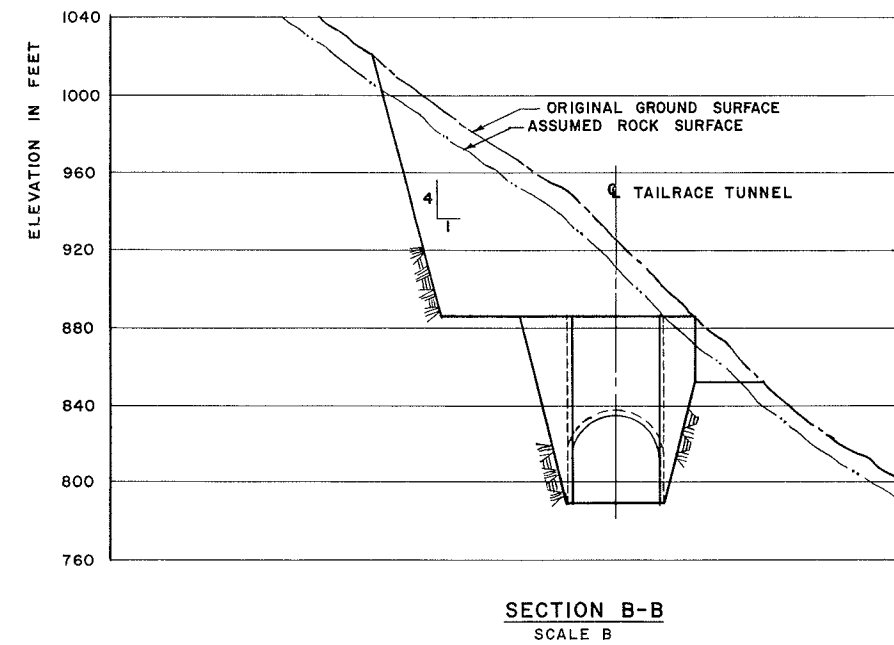
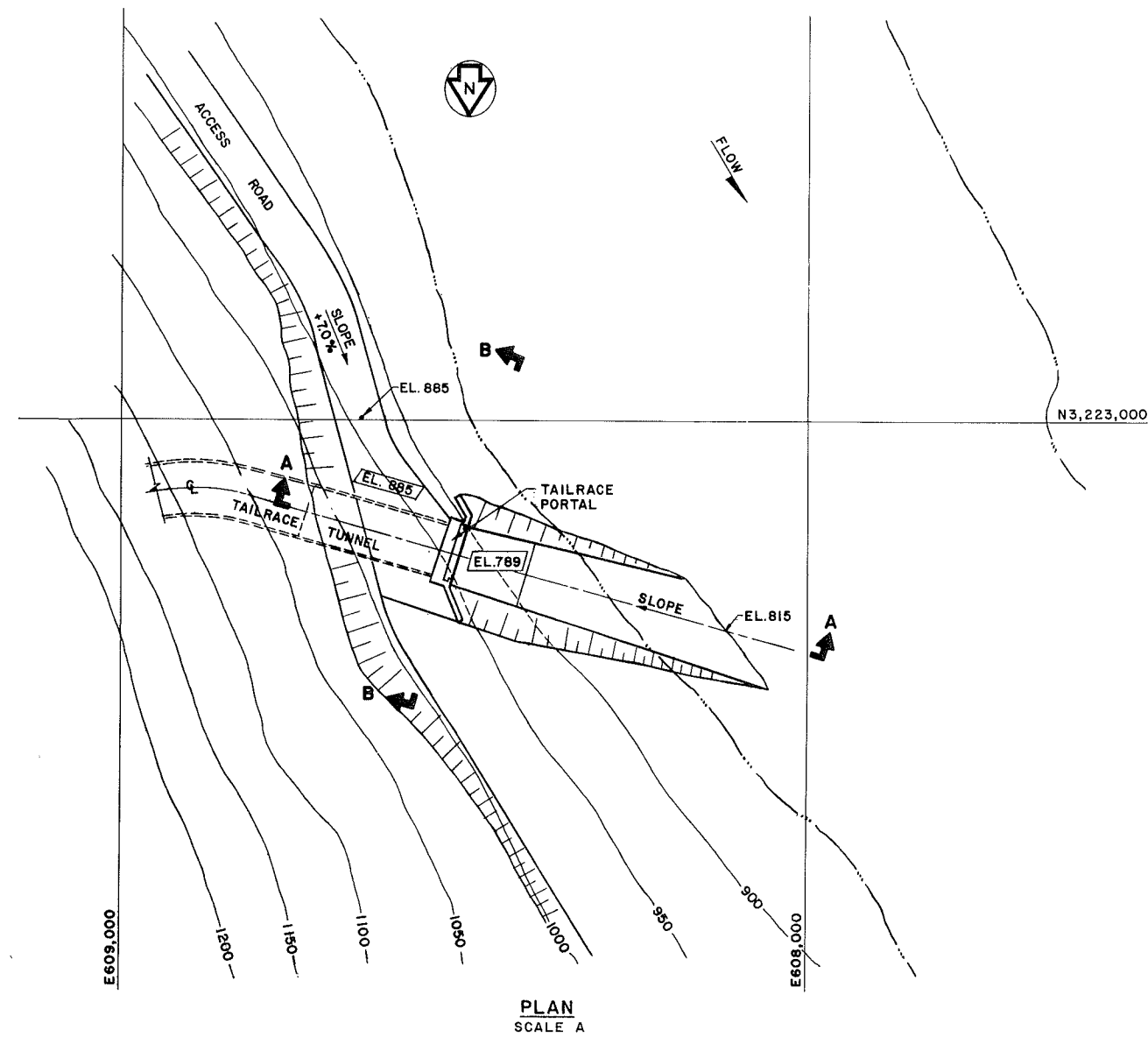
SECTION A-A
CONCRETE LINED TAILRACE TUNNEL
SCALE C



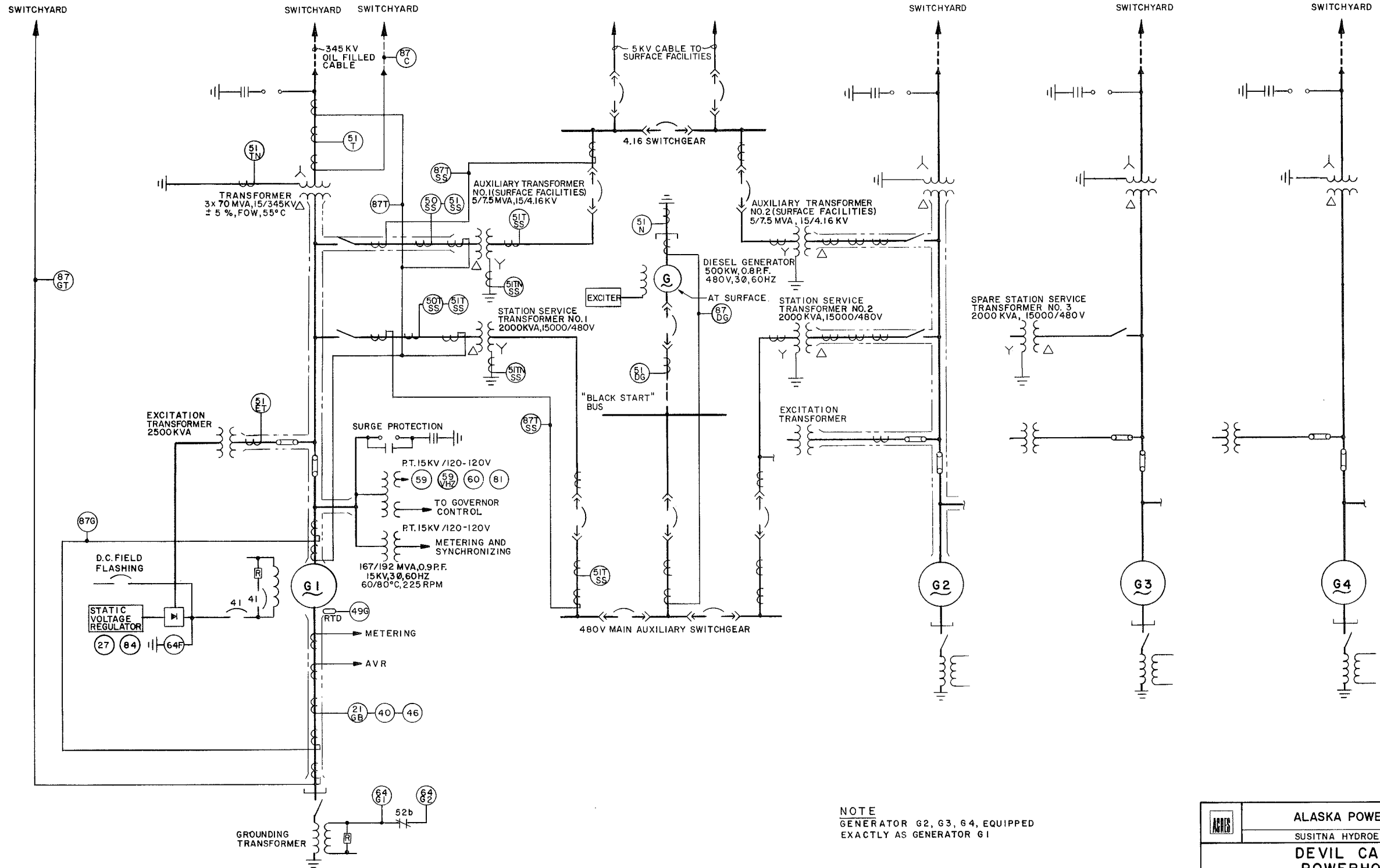
SECTION B-B
SCALE B



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

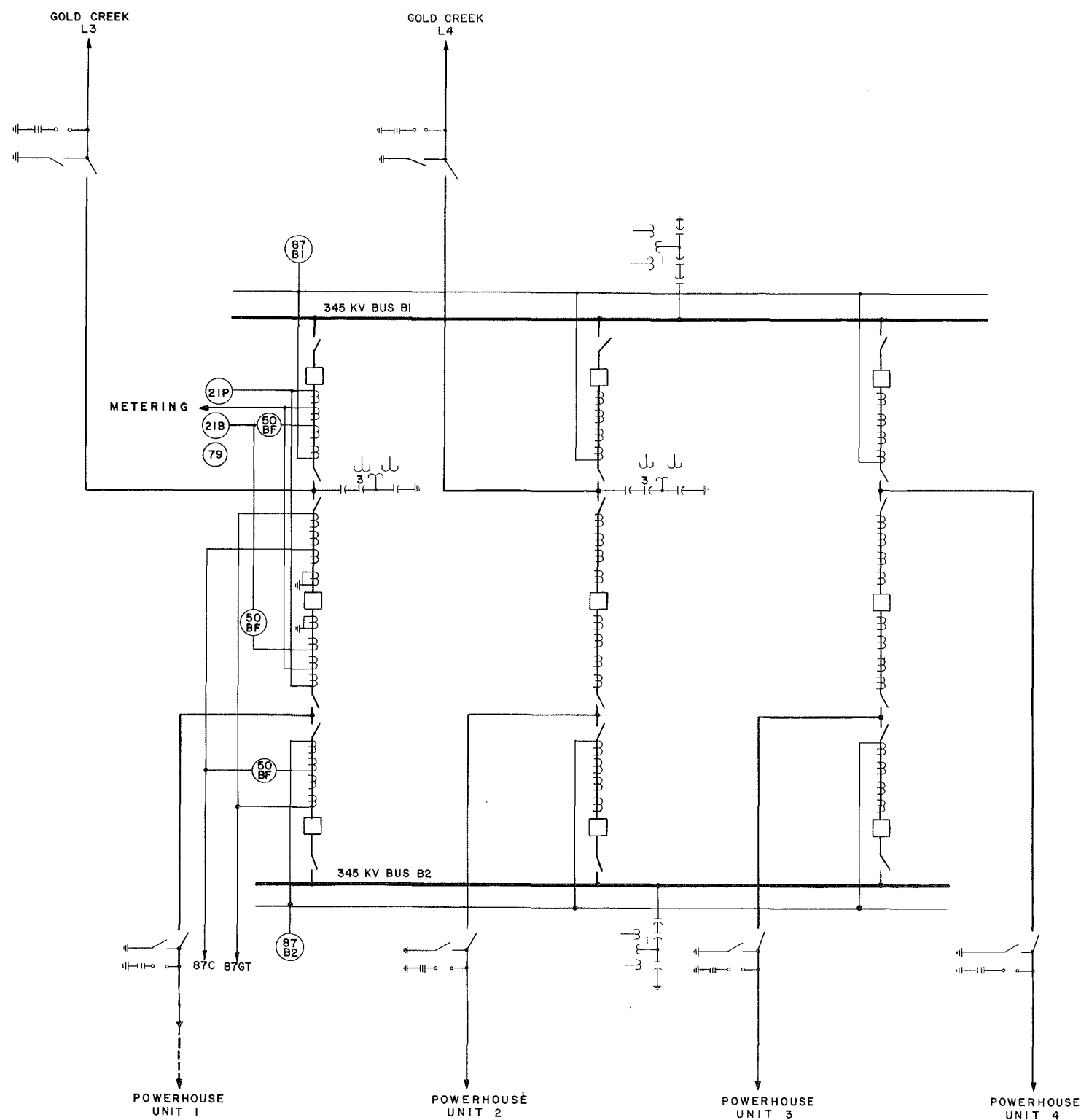


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TAILRACE PORTAL PLAN AND SECTIONS		
EXHIBIT F		PLATE F67

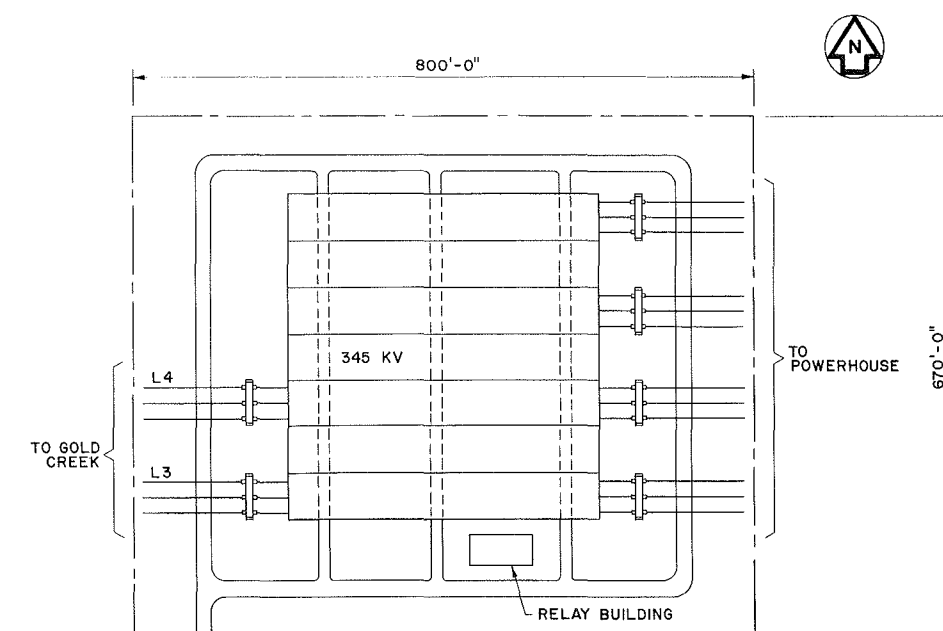


NOTE
GENERATOR G2, G3, G4, EQUIPPED
EXACTLY AS GENERATOR G1

APRIS	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

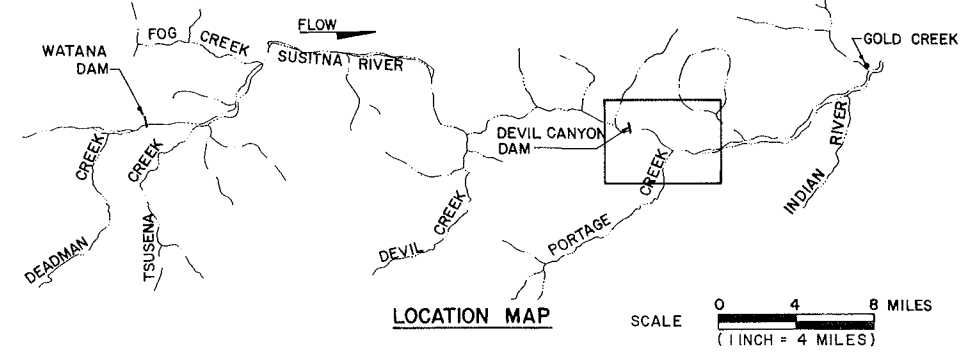
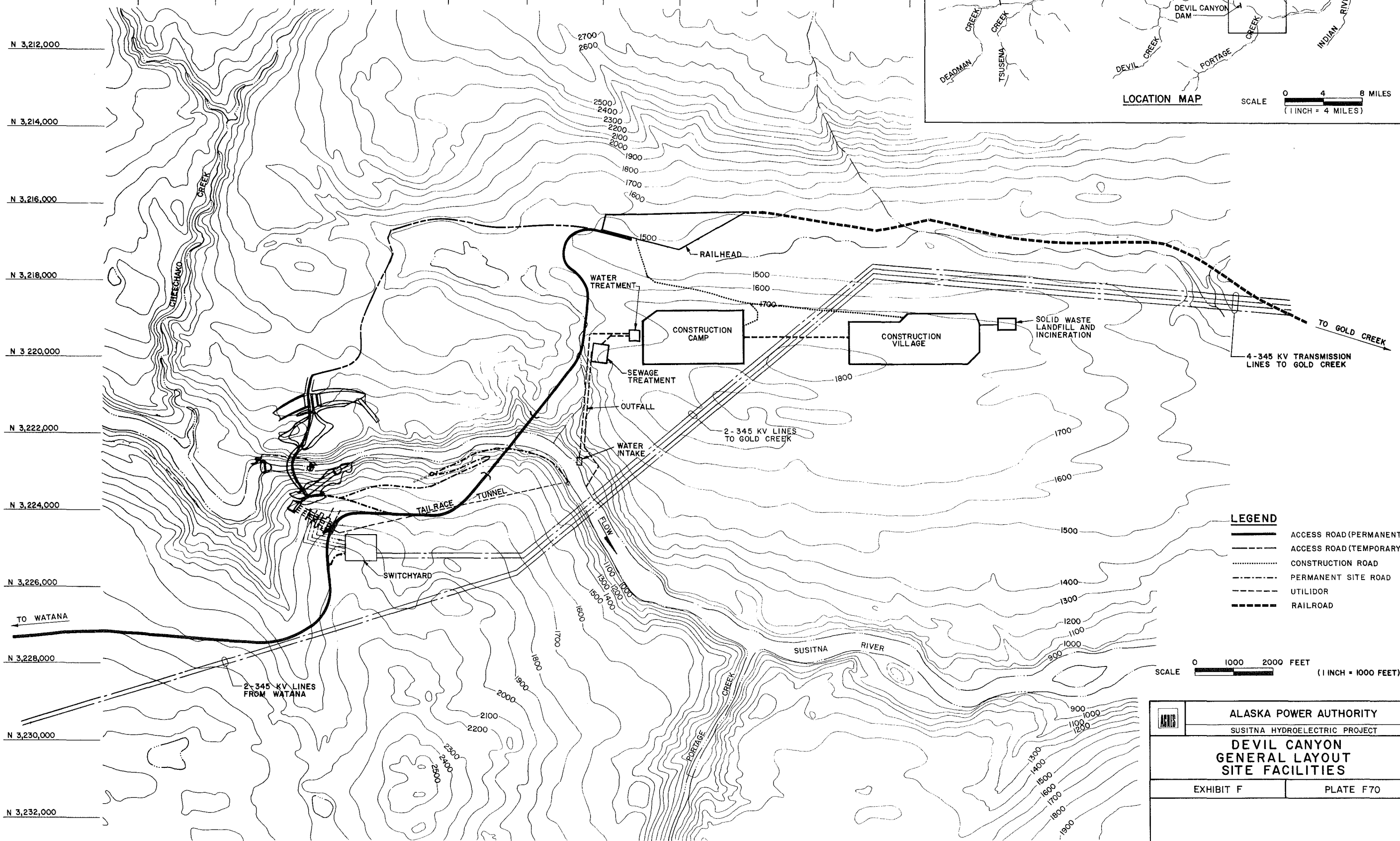
E 608,000

E 606,000

E 604,000

E 602,000

E 600,000



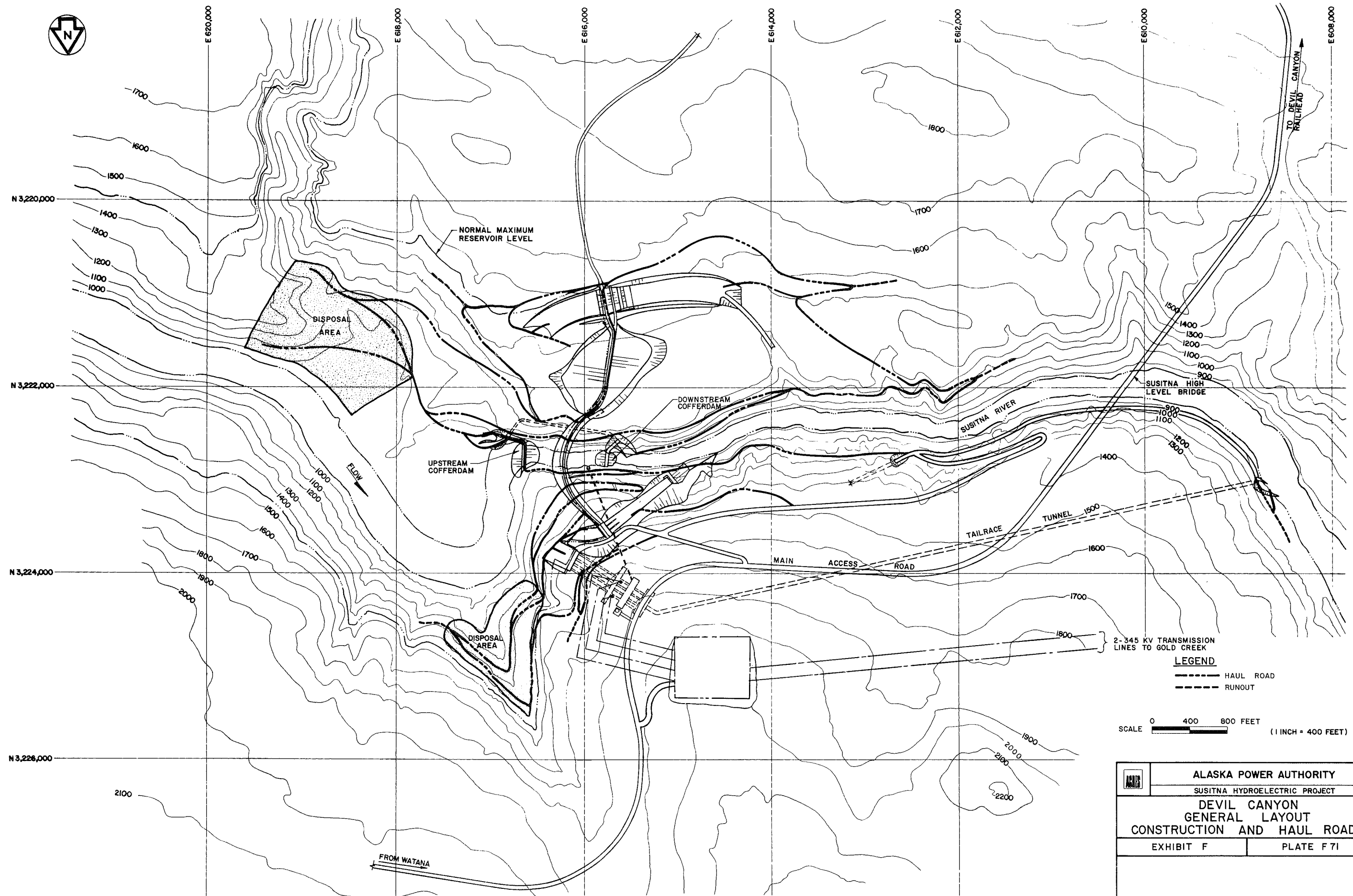
LOCATION MAP
SCALE 0 4 8 MILES
(1 INCH = 4 MILES)

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

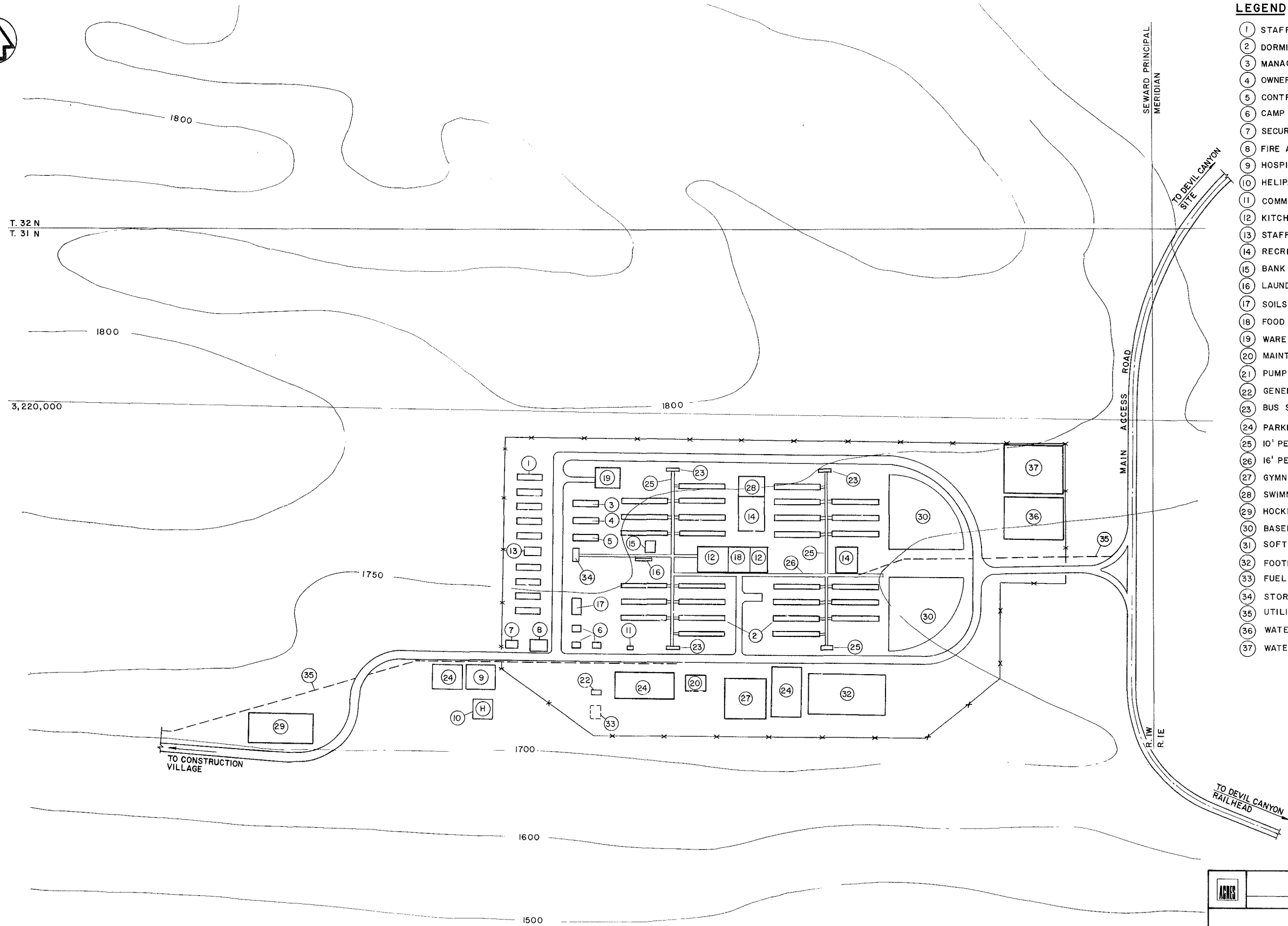


LEGEND

- 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



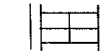
LEGEND

- 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

	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

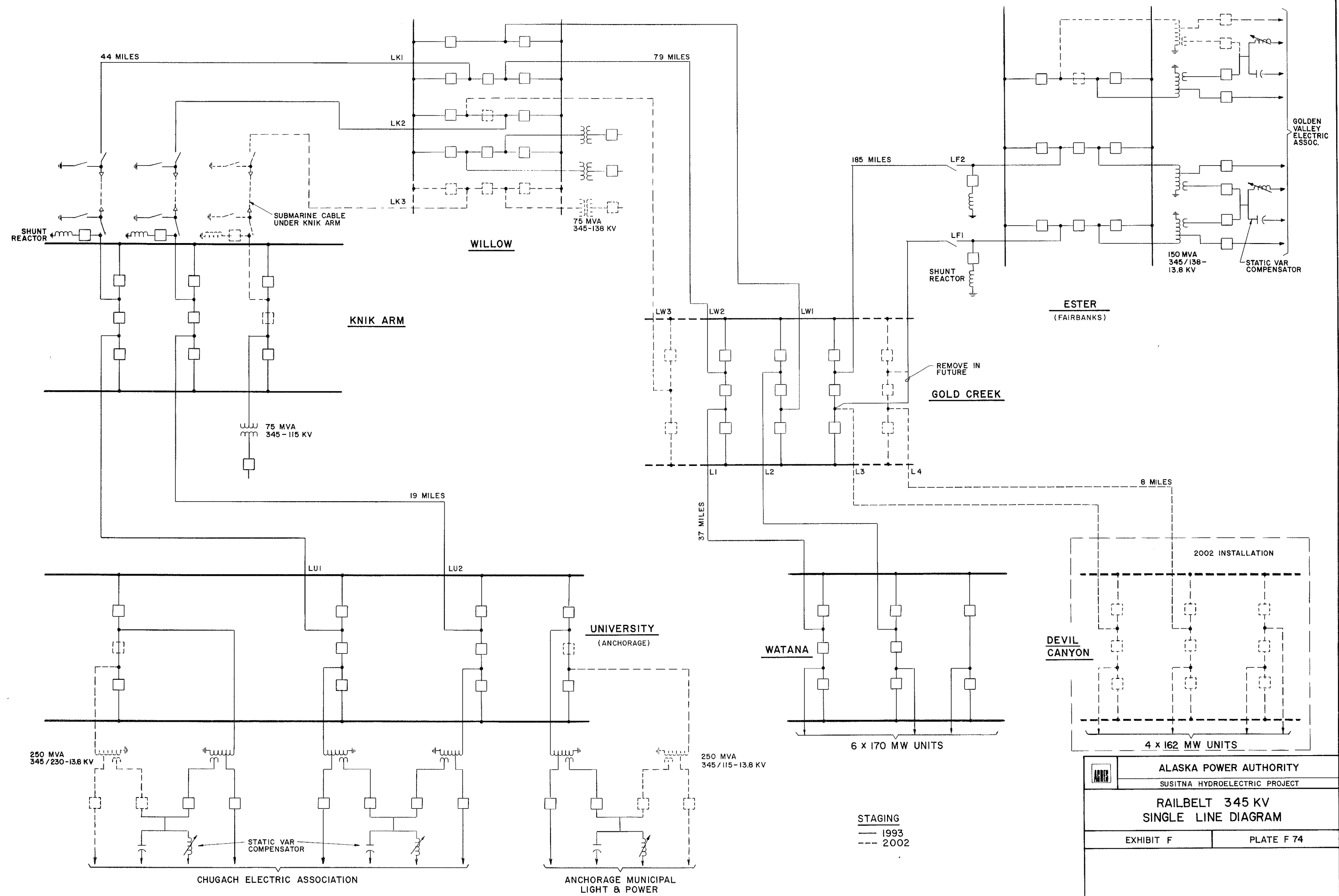
1500

6,000,000

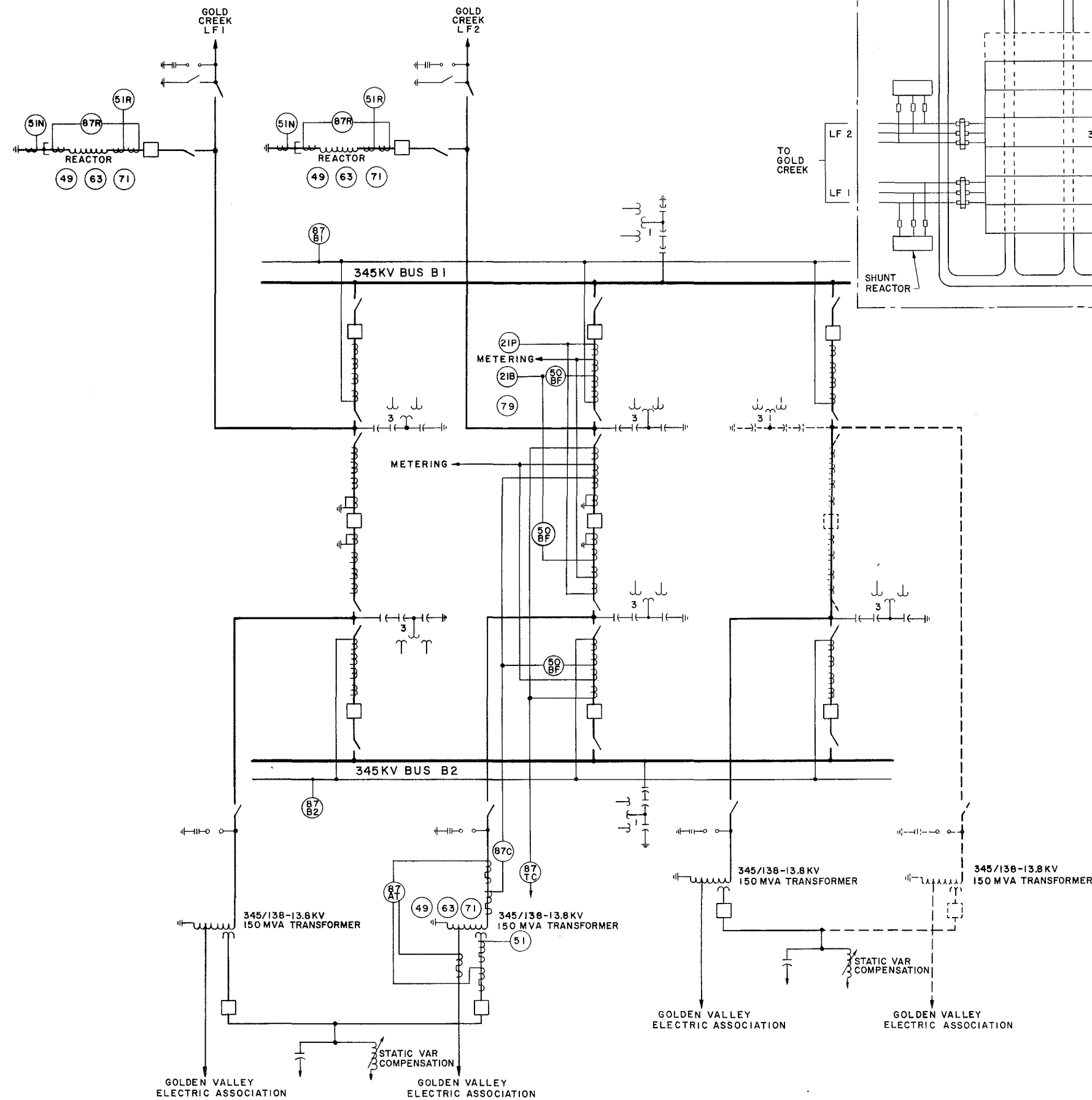
TO CONSTRUCTION CAMP
AND DEVIL CANYON SITE

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

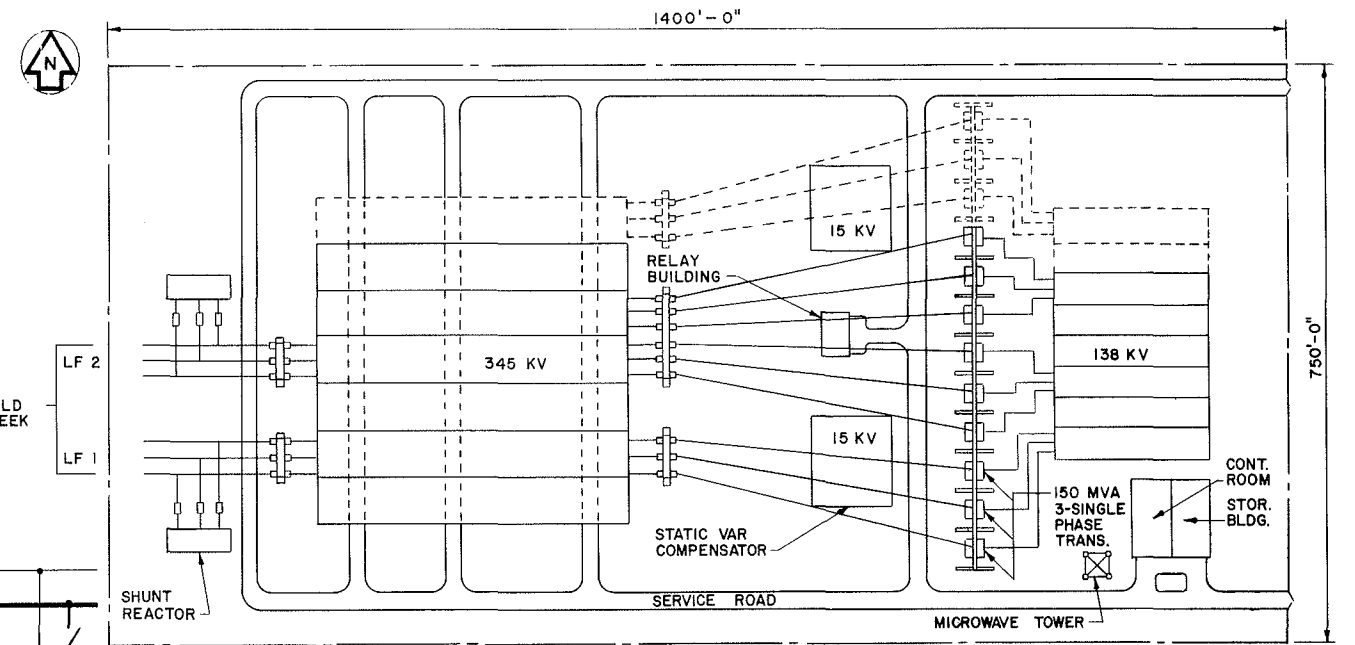
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TEMPORARY VILLAGE		
EXHIBIT F		PLATE F 73



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



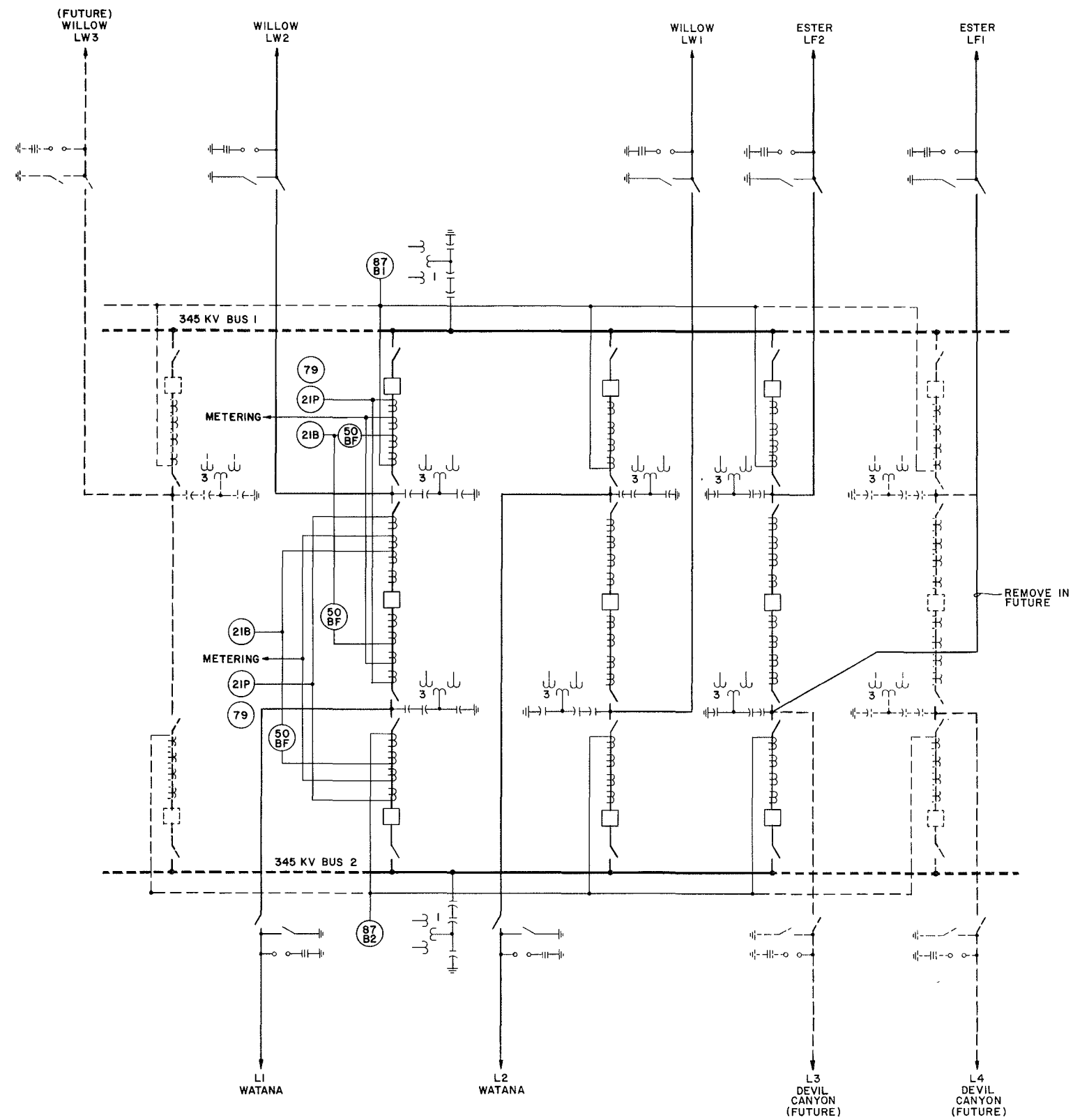
SINGLE LINE DIAGRAM



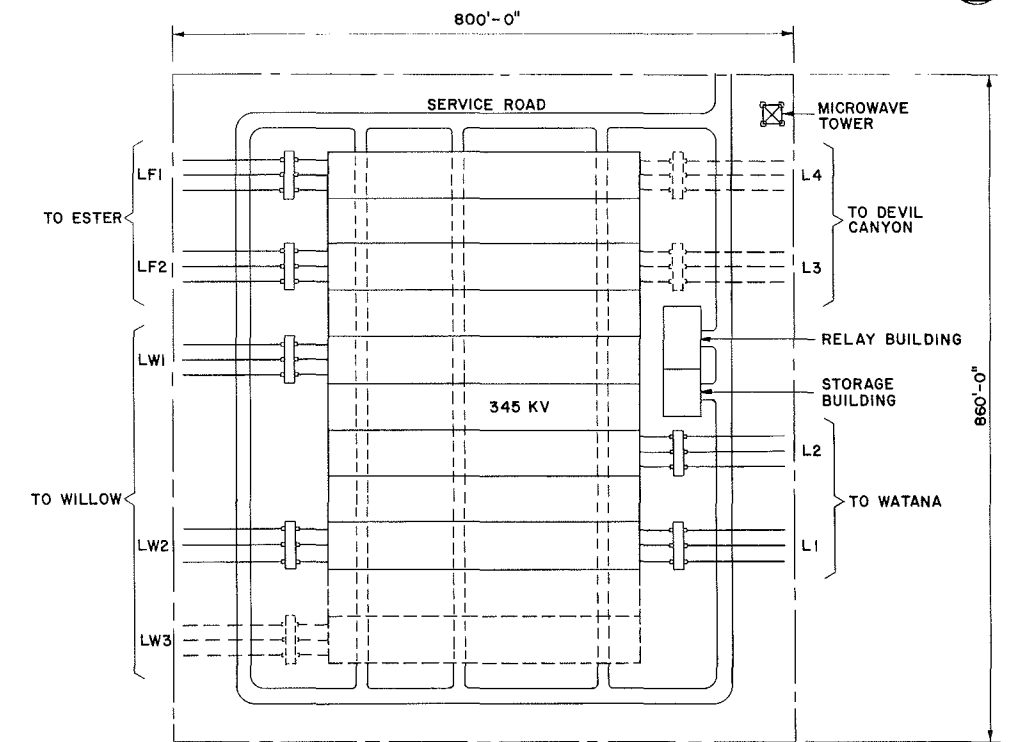
SUBSTATION PLAN
SCALE A

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



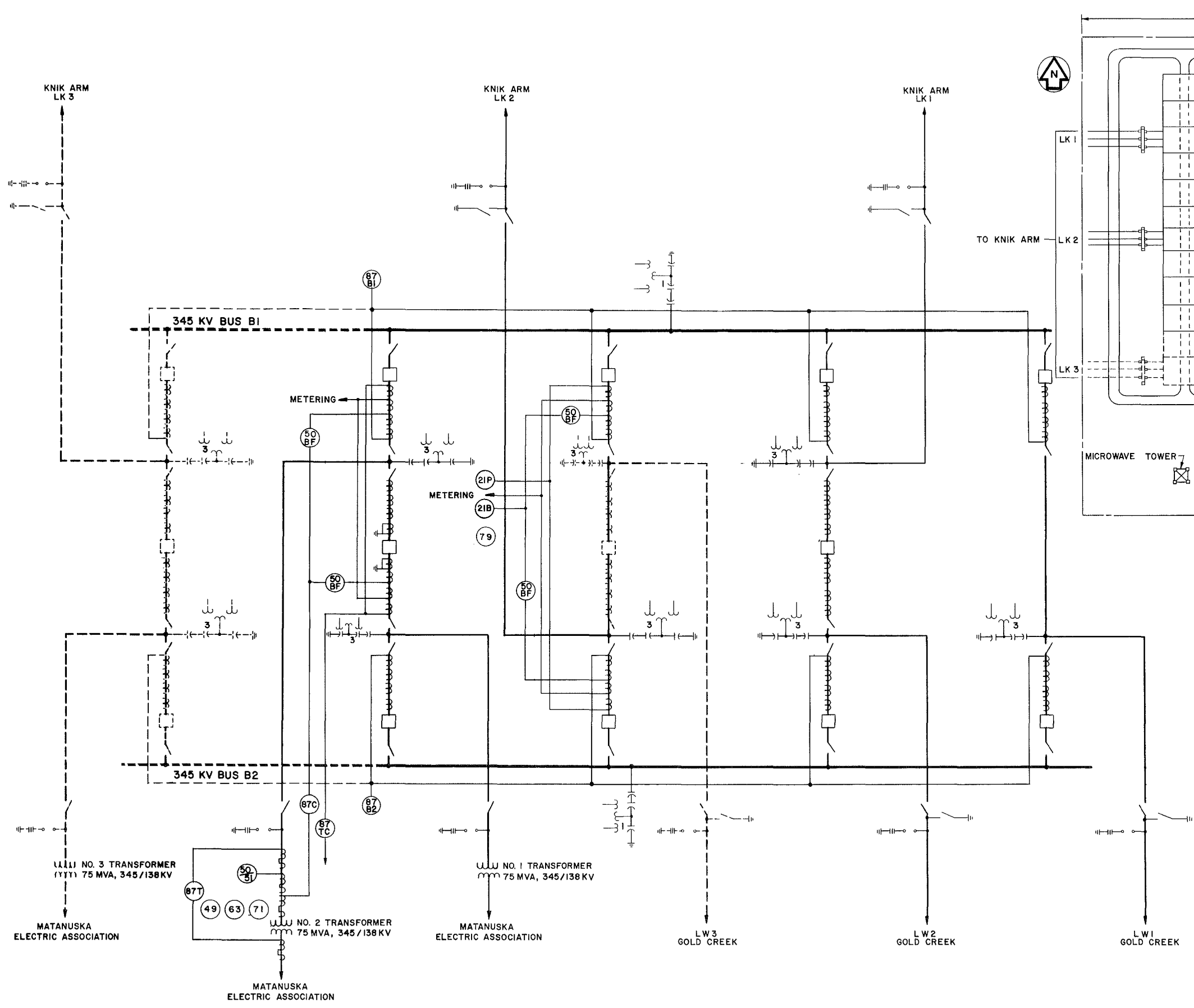
SINGLE LINE DIAGRAM



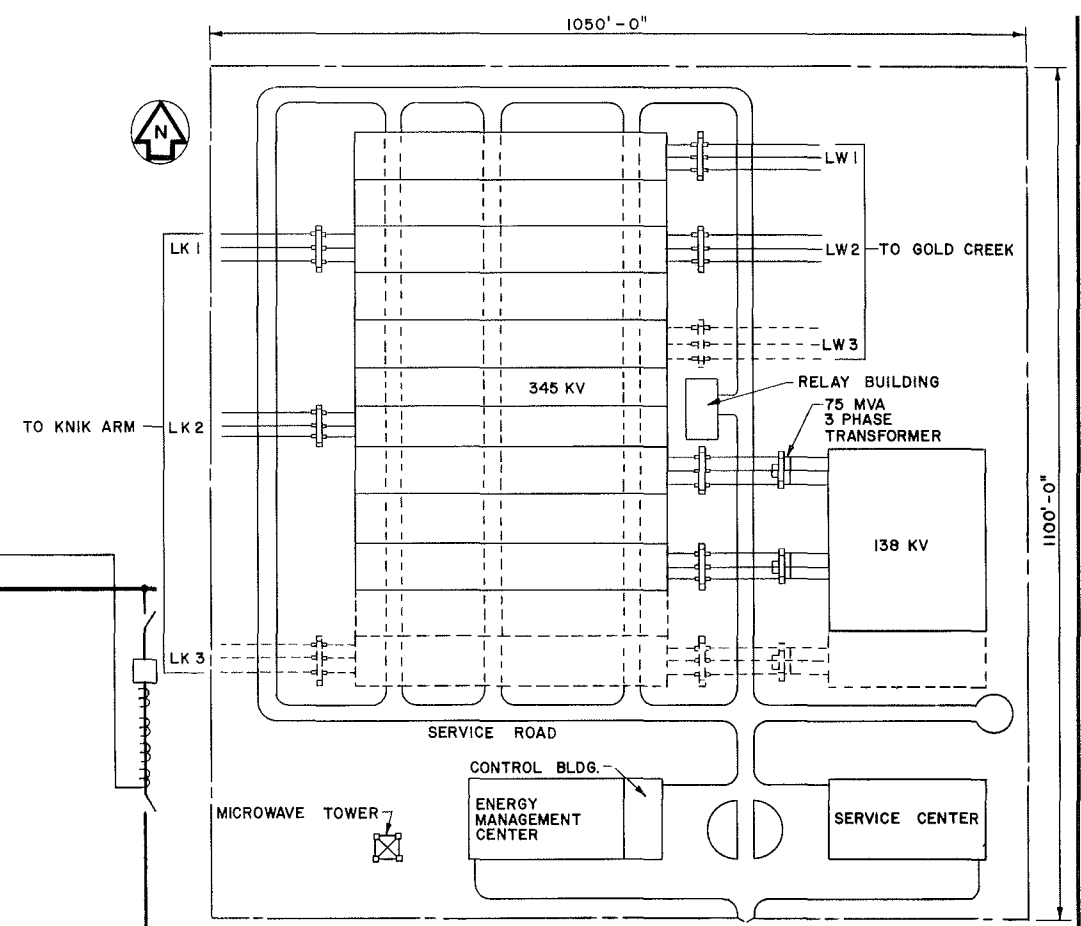
SWITCHYARD PLAN
SCALE A

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



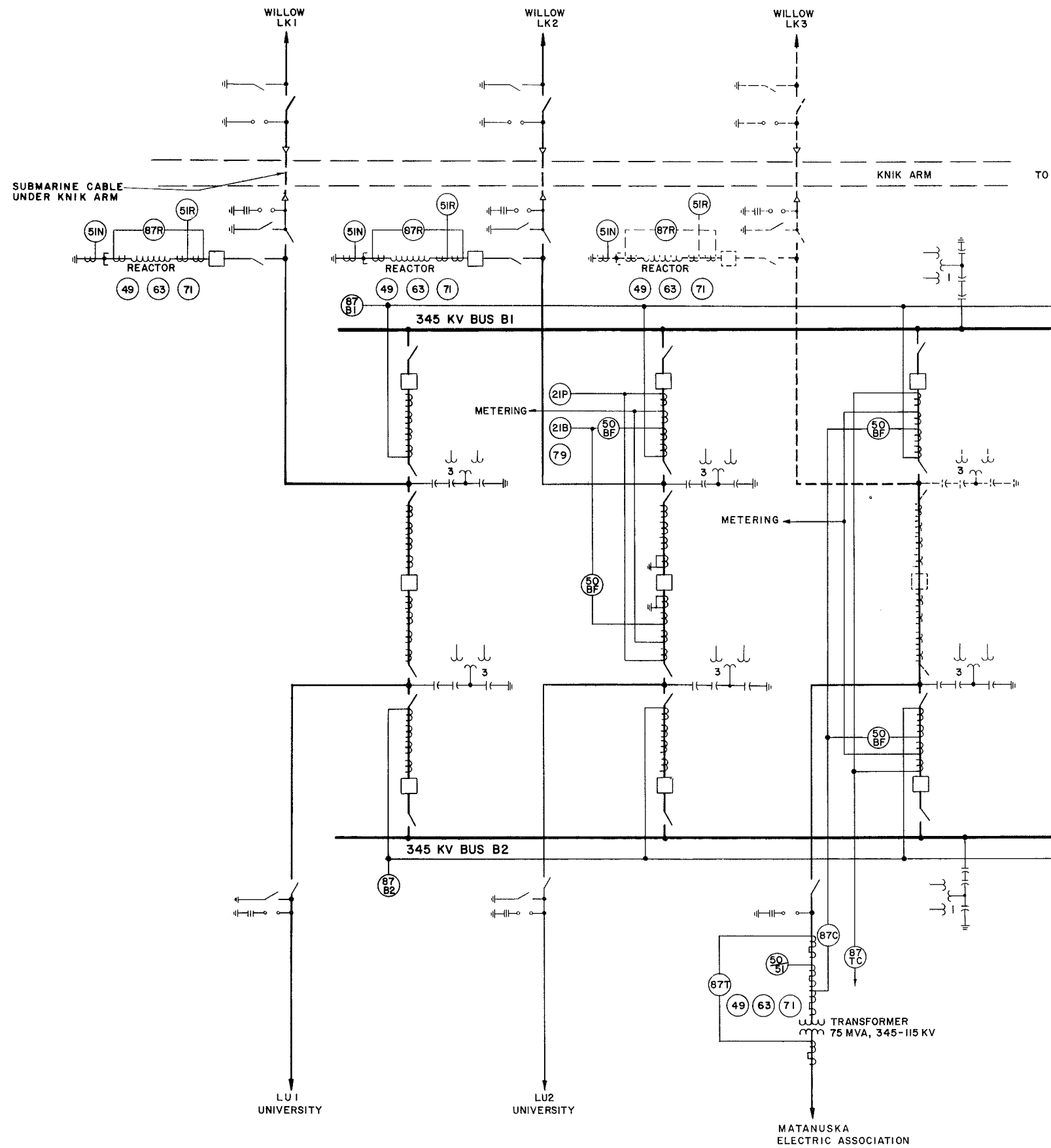
SINGLE LINE DIAGRAM



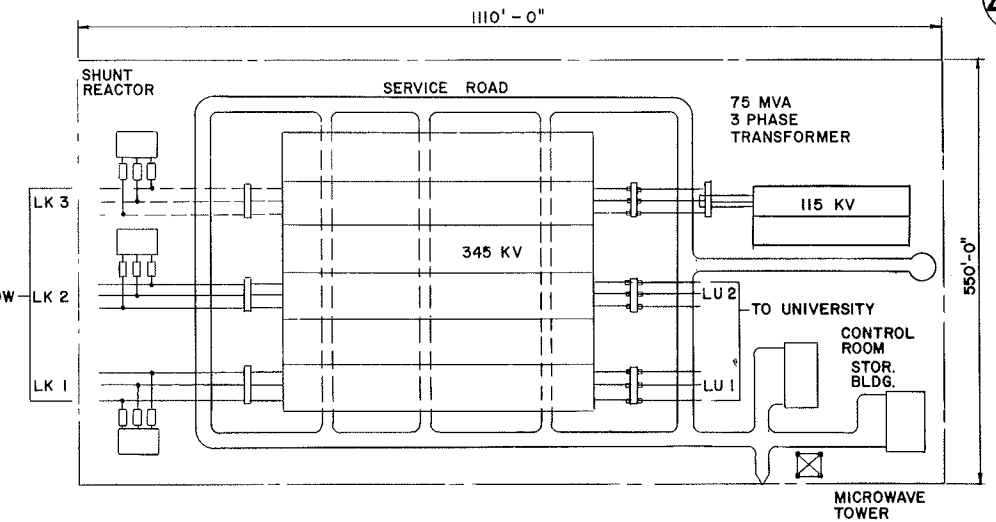
SUBSTATION PLAN
SCALE A

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

APRIS	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

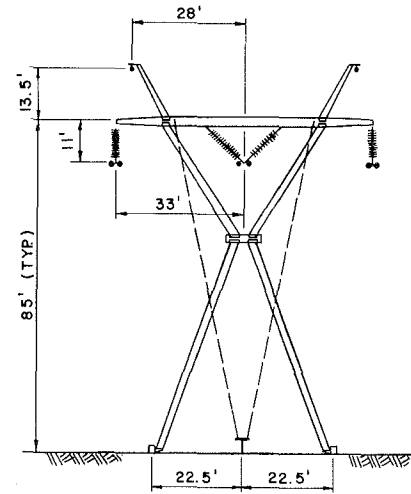
**KNIK ARM SUBSTATION
SINGLE LINE DIAGRAM AND PLAN**

EXHIBIT F

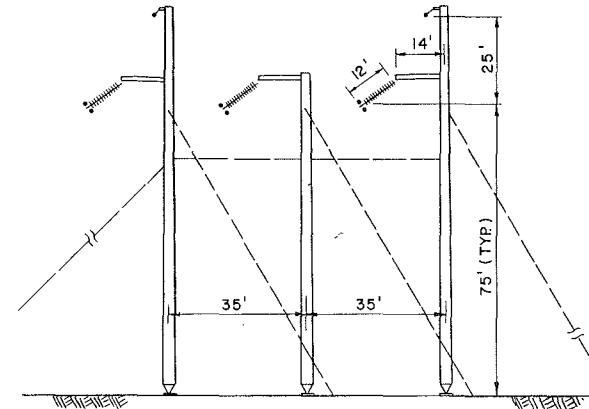
PLATE F 78

NOTES:

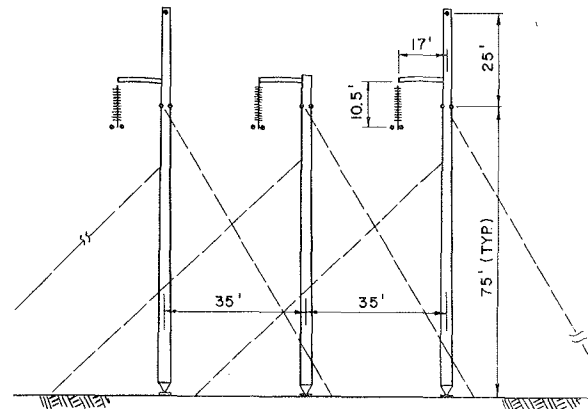
1. BASED ON PROPOSED STRUCTURES FOR INTERTIE PROJECT.
2. AVERAGE CONDUCTOR SAG - 37 FEET.
3. AVERAGE TOWER SPACING - 1400 FEET.



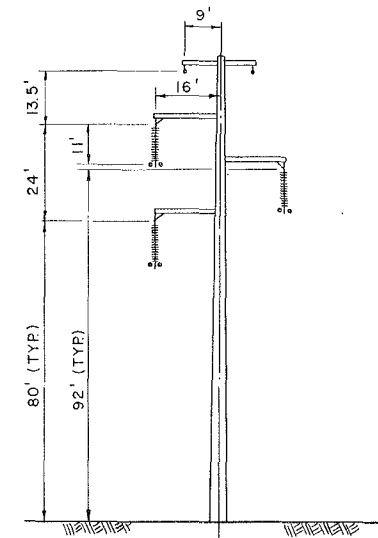
345 kV TANGENT OR LIGHT ANGLE STRUCTURE



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



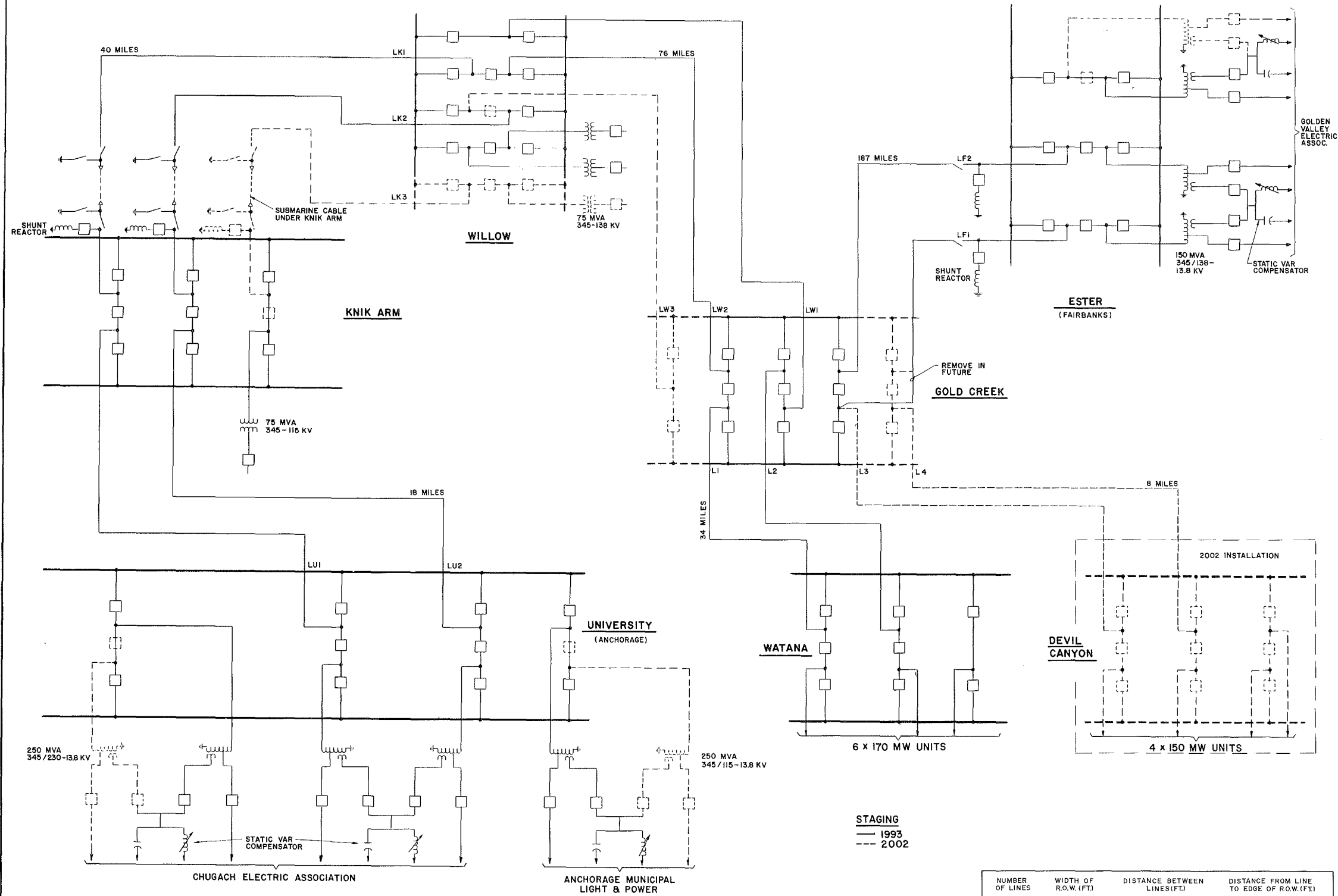
345 kV HEAVY ANGLE (8° - 50°) DEAD END STRUCTURE



345 kV SINGLE CIRCUIT TANGENT POLE

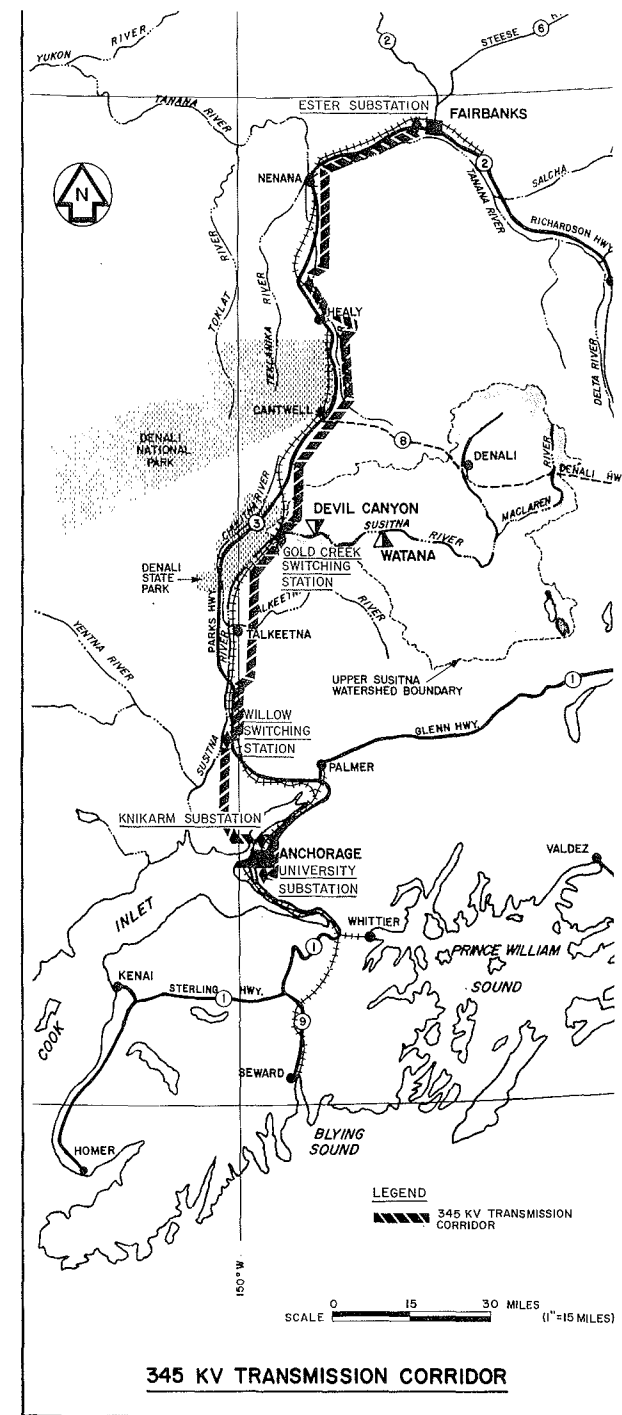
SCALE 0 20 40 FEET (1 INCH = 20 FEET)

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



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.



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