

SUSITNA HYDROELECTRIC PROJECT

FEASIBILITY REPORT

SUPPLEMENT

VOLUME 2

PLATES

APRIL 1983

prepared by:

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ALASKA POWER AUTHORITY



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Prepared by:



ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

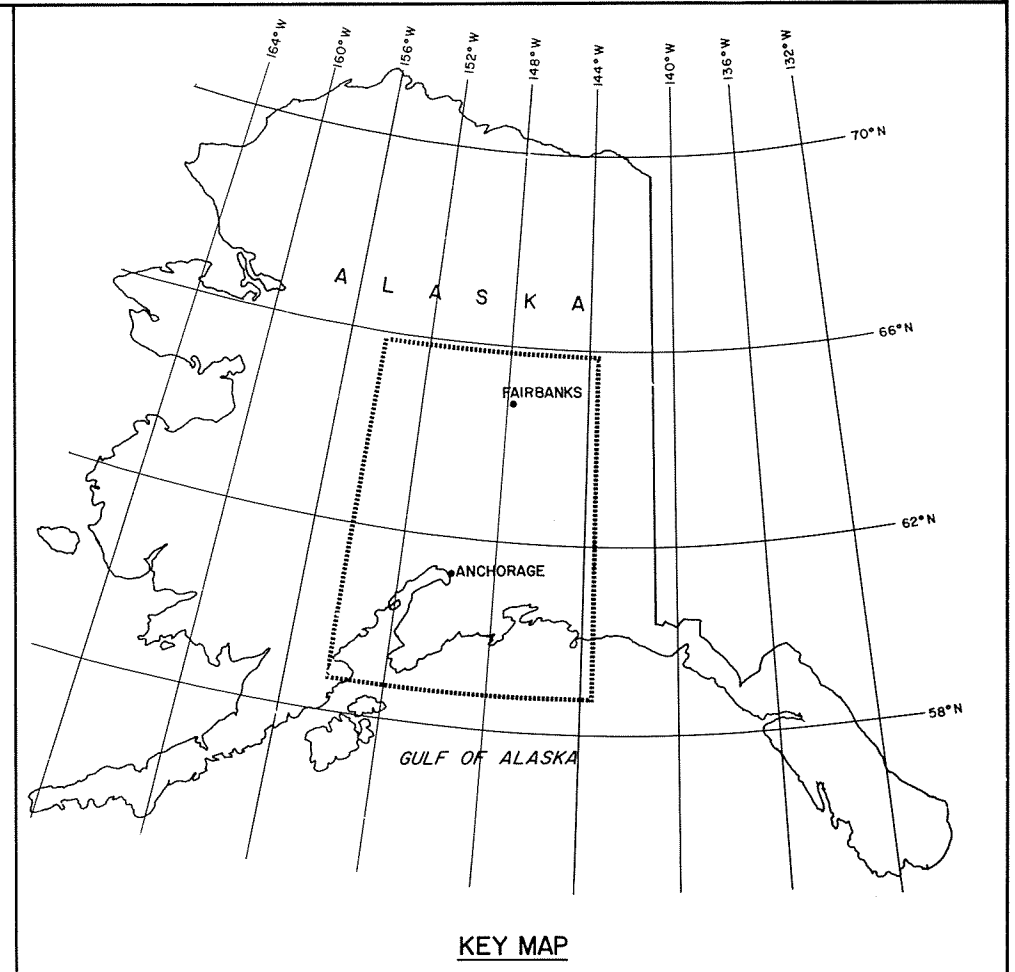
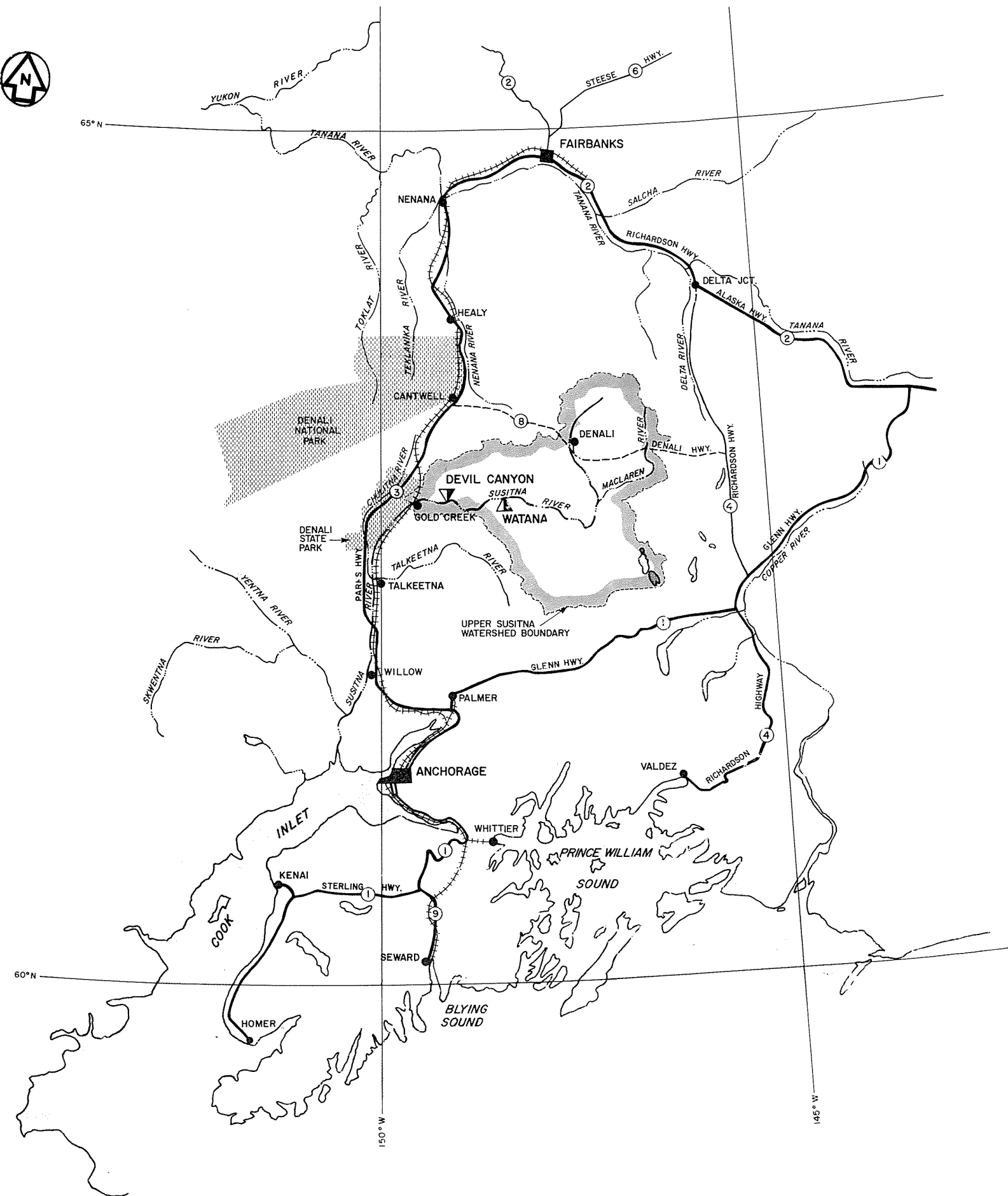
ALASKA POWER AUTHORITY

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SUSITNA HYDROELECTRIC PROJECT

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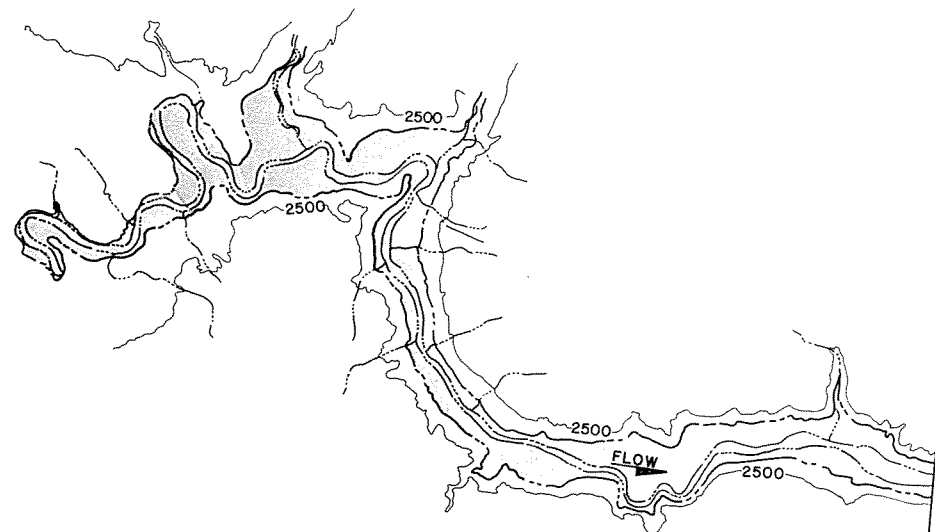
KEY MAP

LEGEND

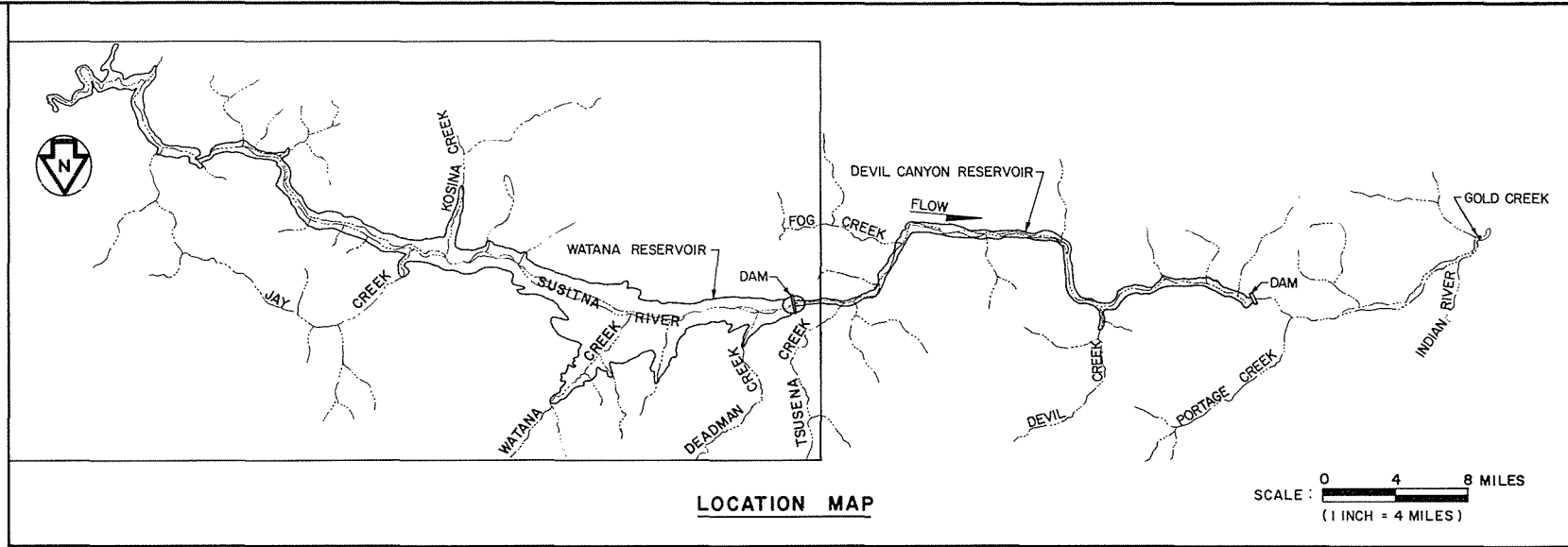
- ③ PRIMARY PAVED UNDIVIDED HIGHWAY
- SECONDARY PAVED UNDIVIDED HIGHWAY
- - - SECONDARY GRAVEL HIGHWAY
- + + + + RAILROAD
- RIVER

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

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

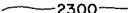


PLAN



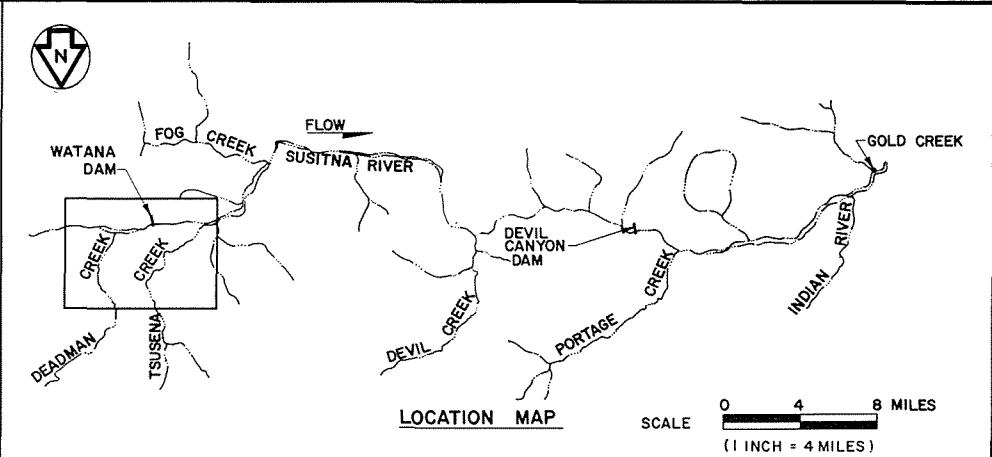
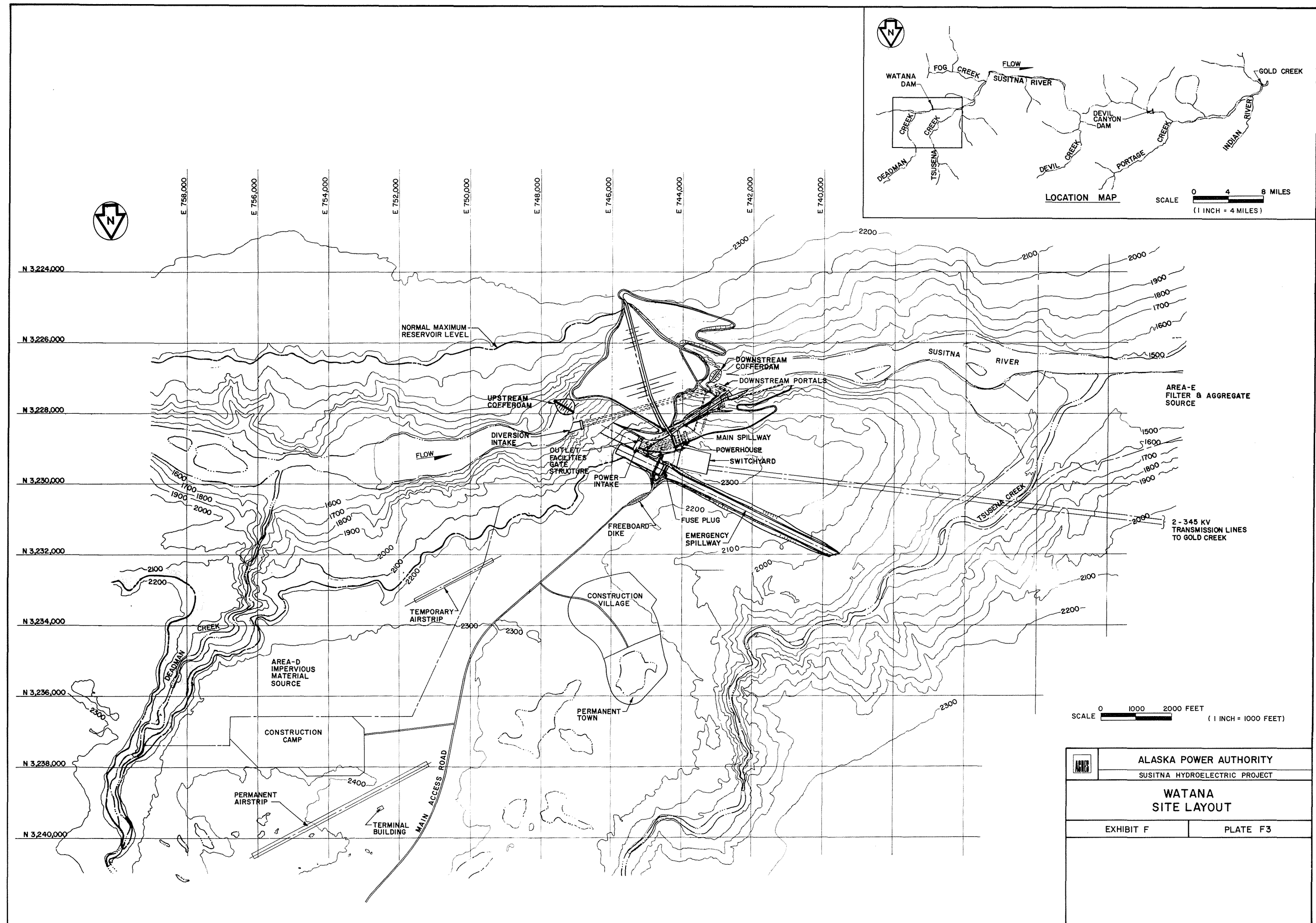
LOCATION MAP

LEGEND

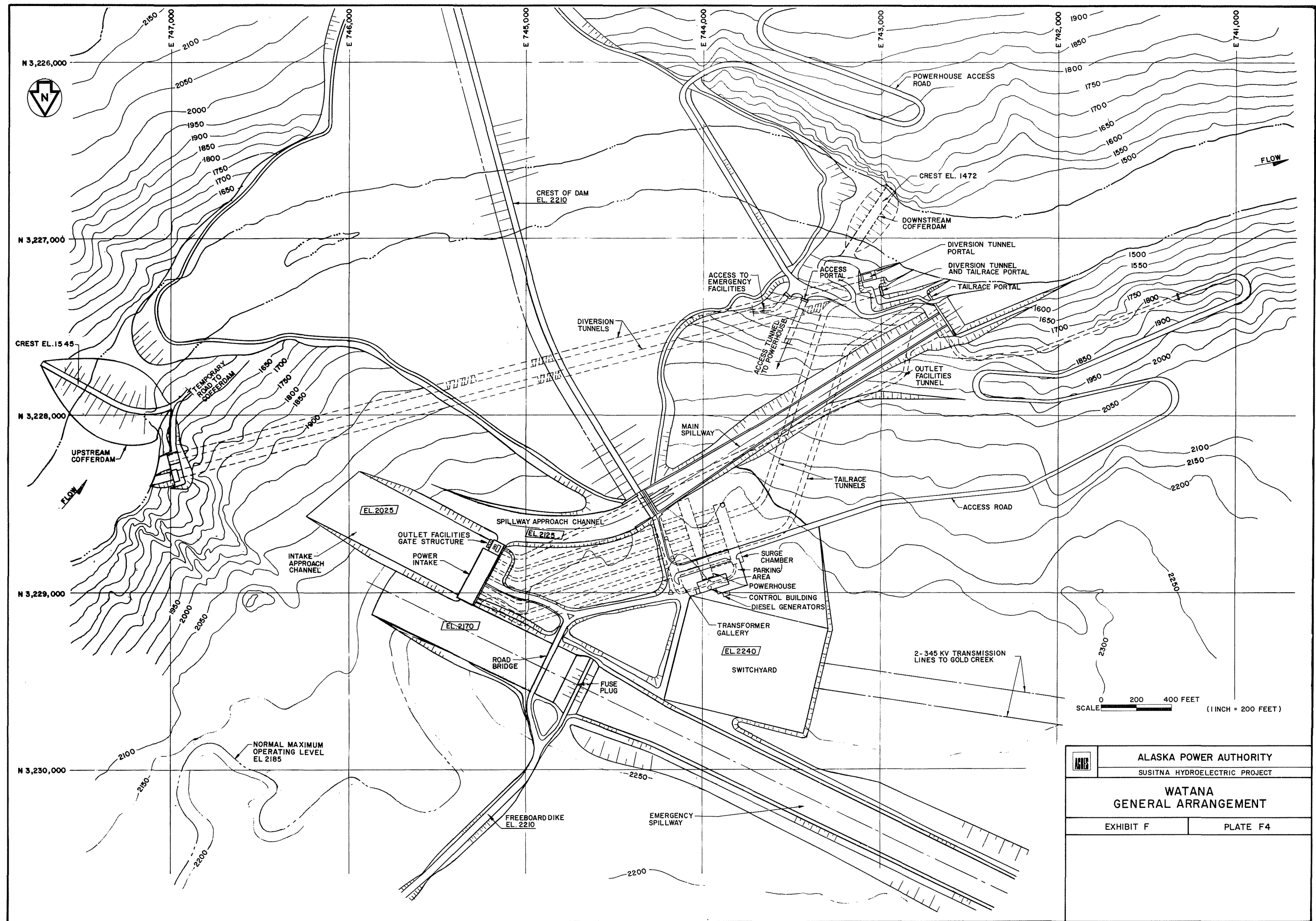
-  NORMAL MAXIMUM OPERATING LEVEL EL. 2185'
-  2300 — CONTOURS ARE IN FEET ABOVE MSL

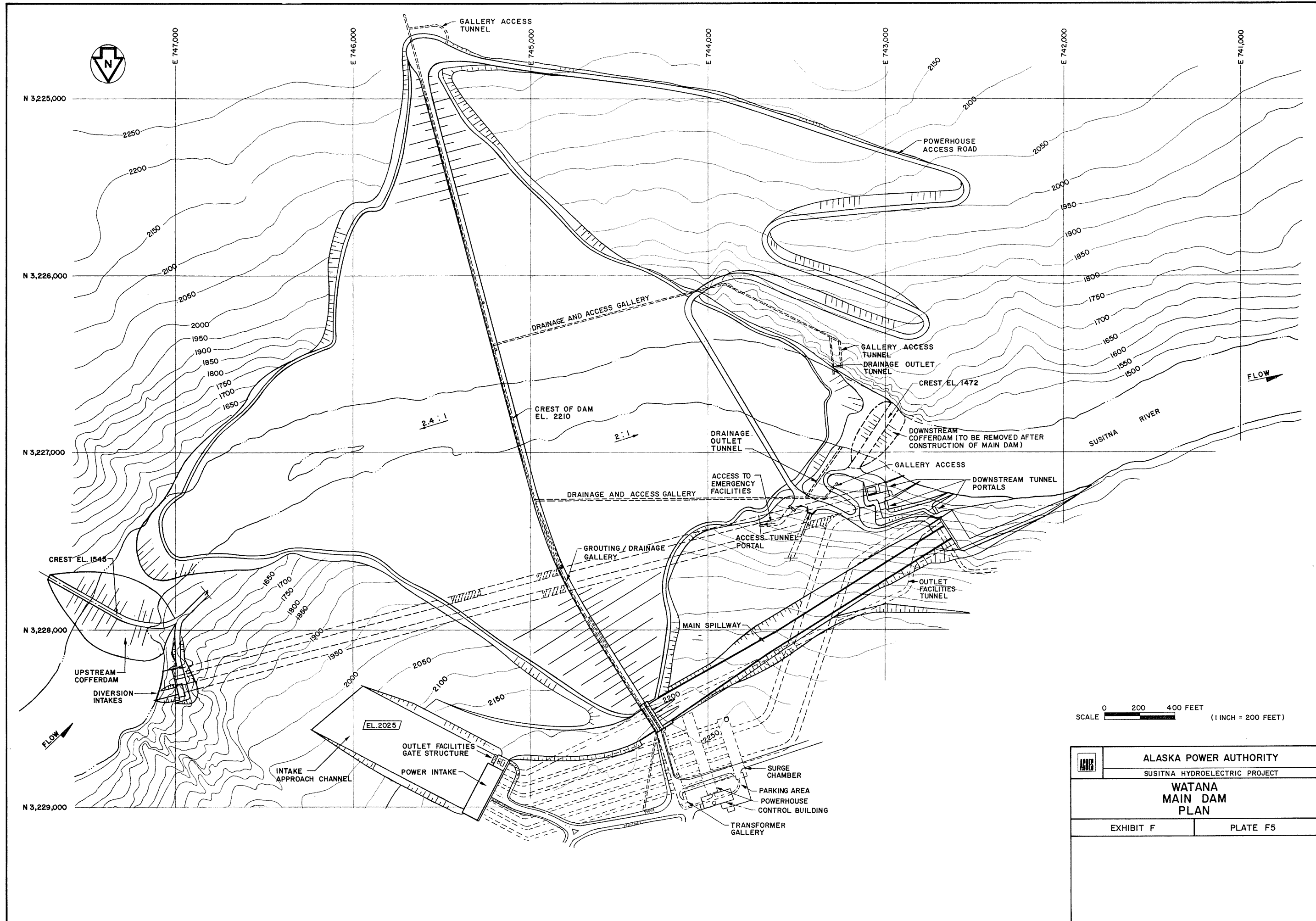
SCALE:  0 1 2 MILES
(1 INCH = 1 MILE)

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



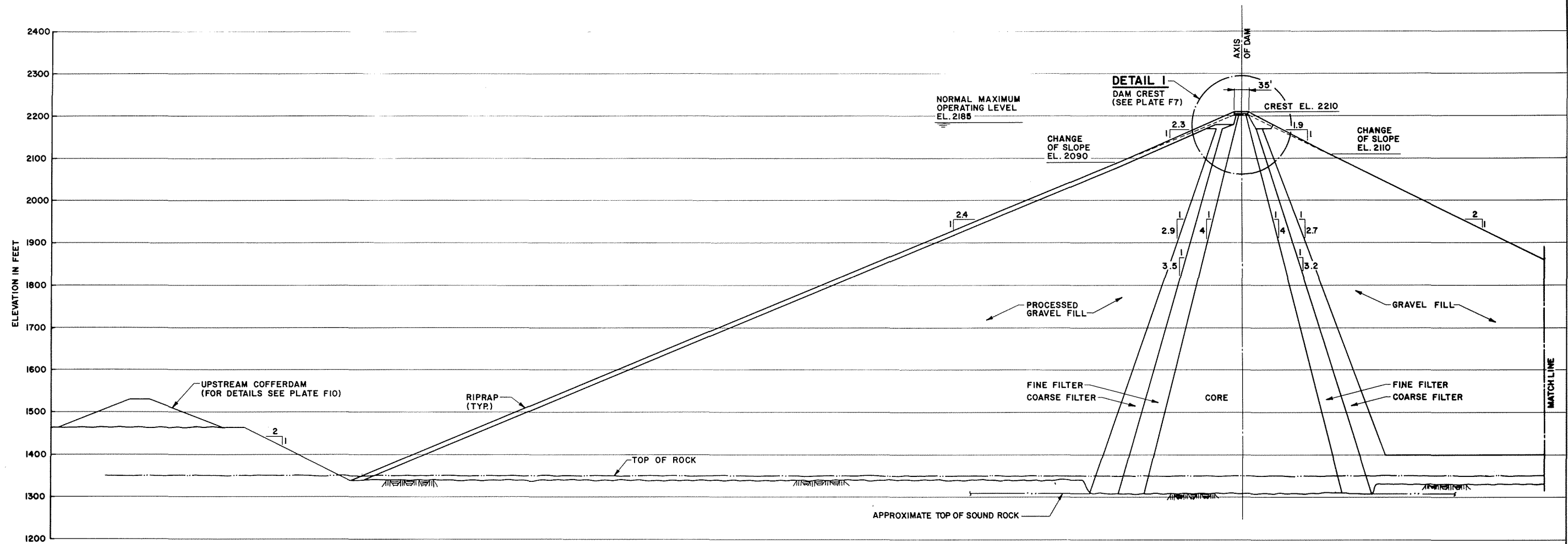
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA SITE LAYOUT	
EXHIBIT F	PLATE F3



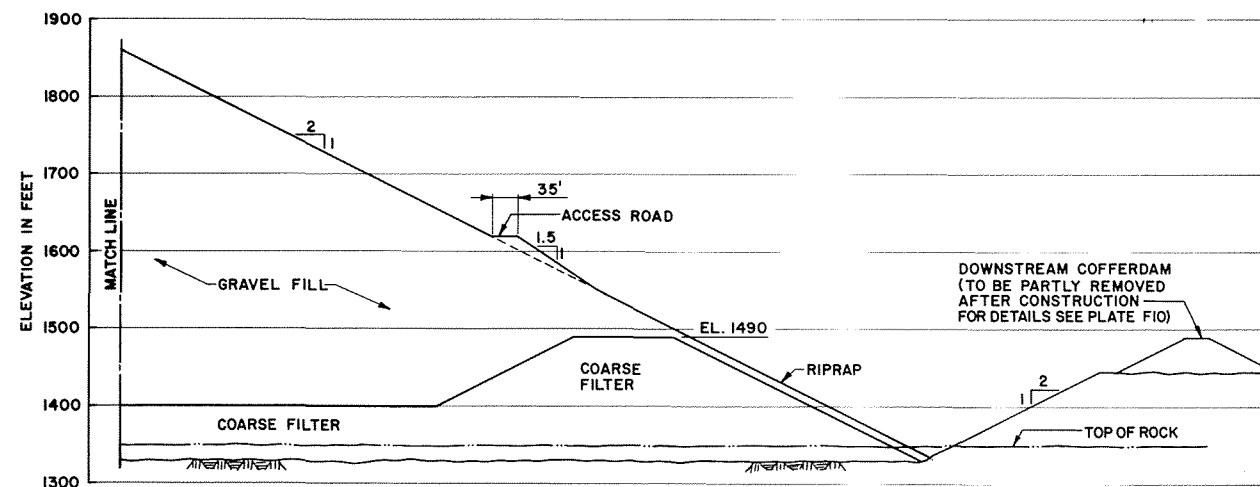


SCALE 0 200 400 FEET
(1 INCH = 200 FEET)

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



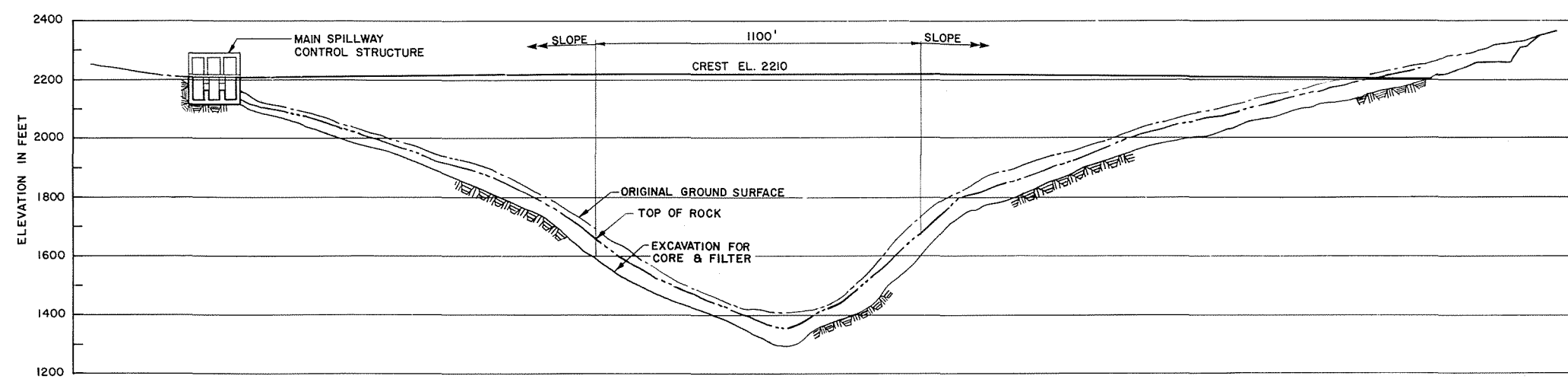
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT



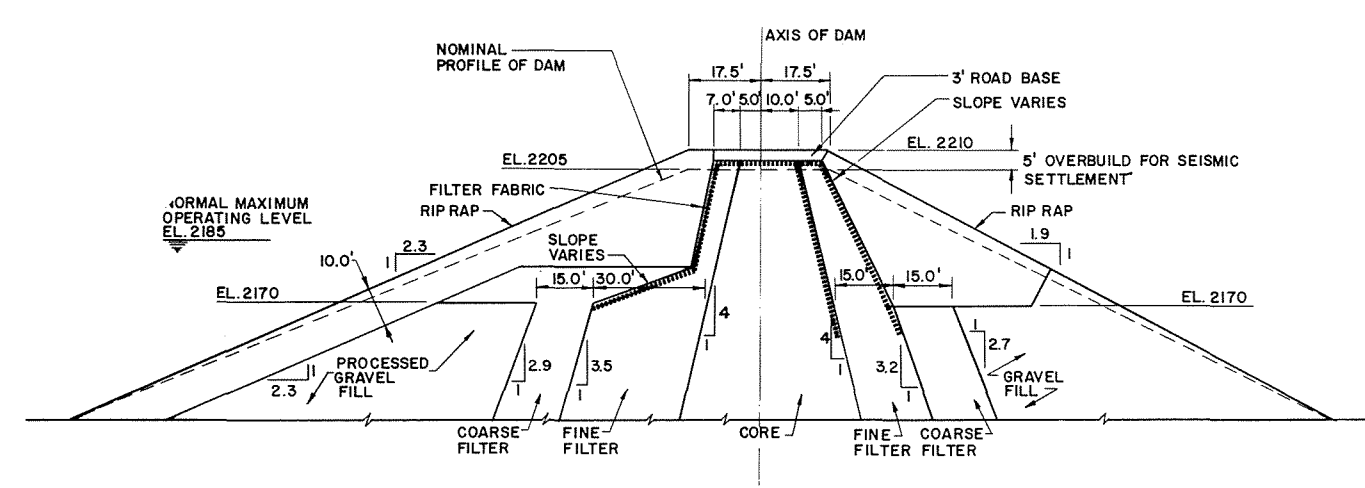
PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT

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

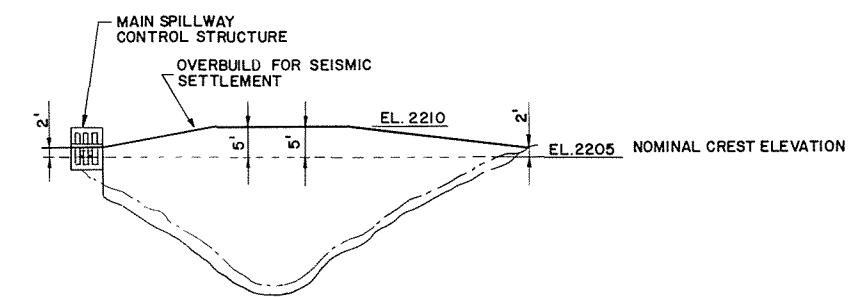
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	SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM SECTION		
EXHIBIT F		PLATE F6



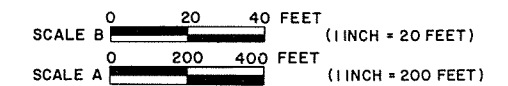
PROFILE (LOOKING UPSTREAM)
SCALE A



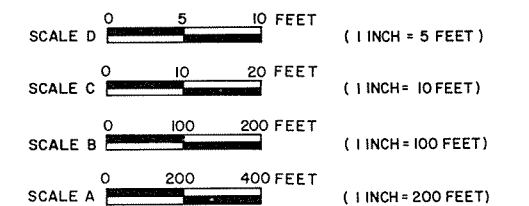
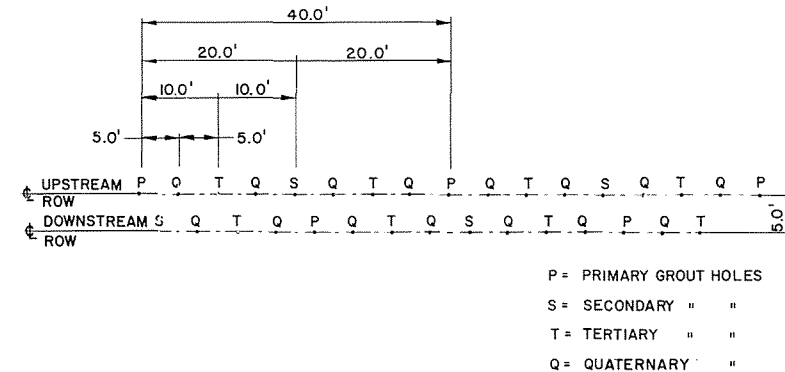
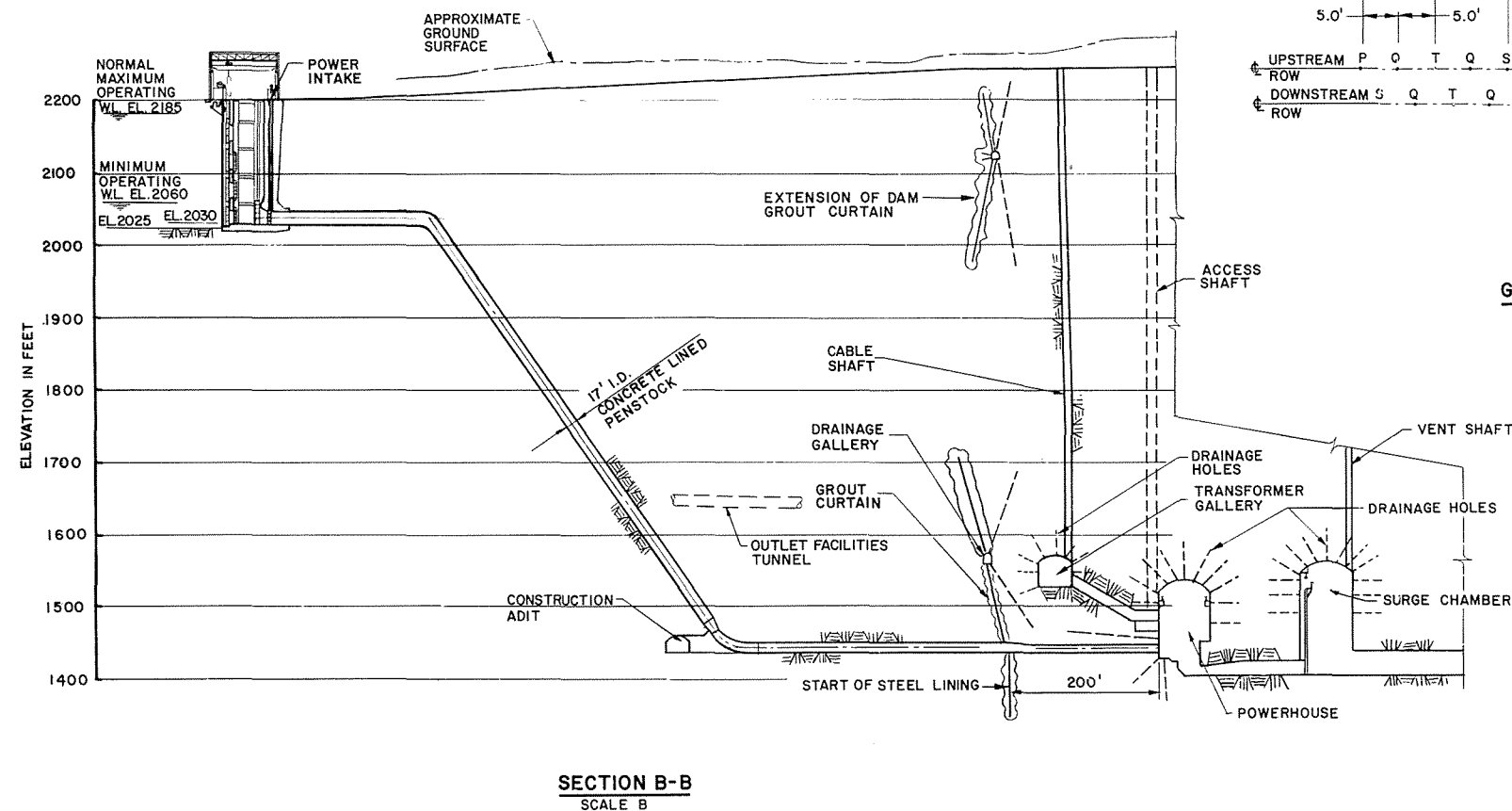
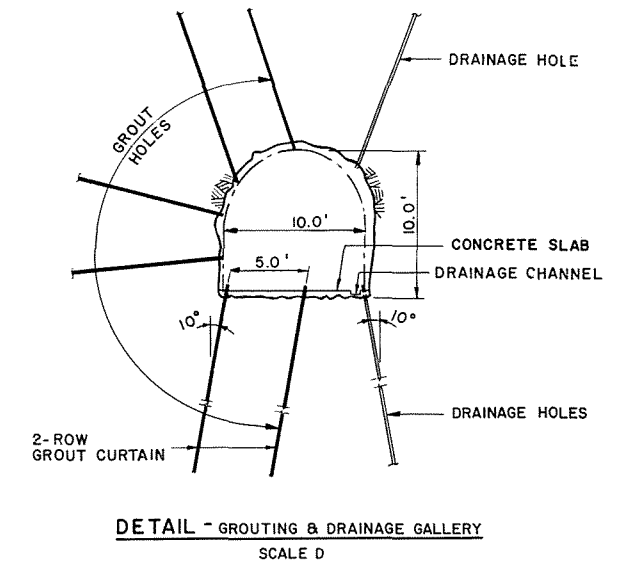
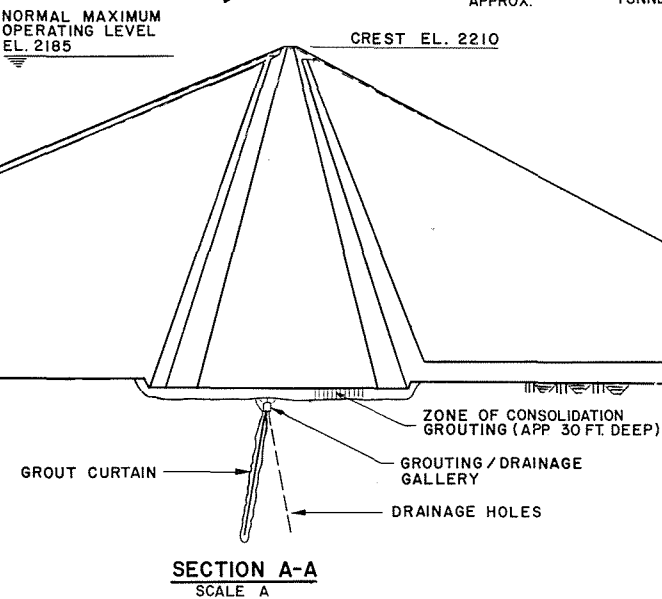
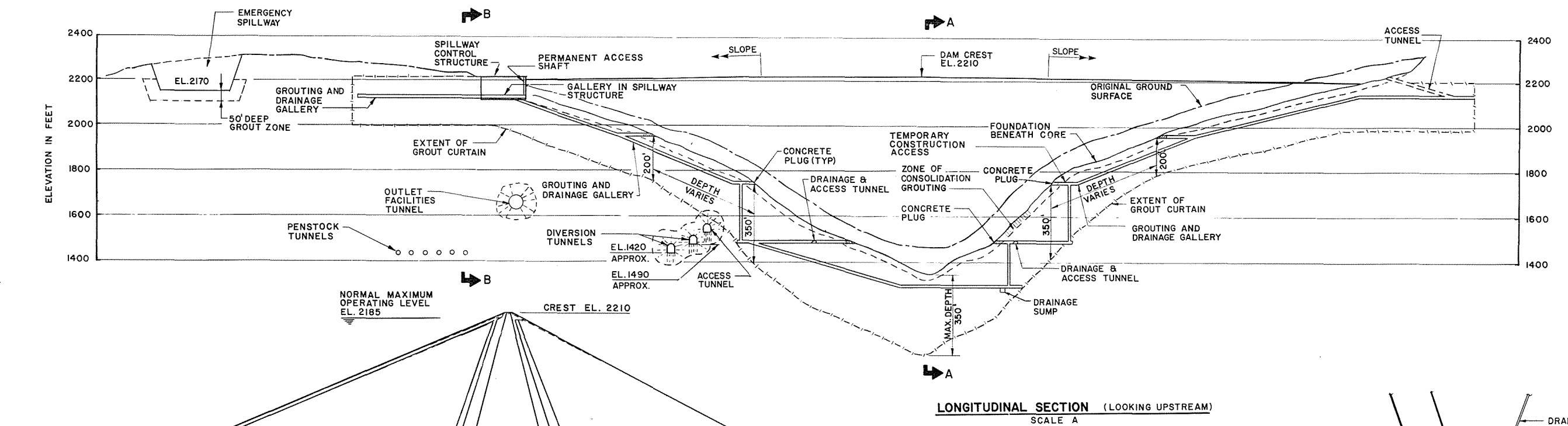
DETAIL I (PLATE F6)
SCALE B



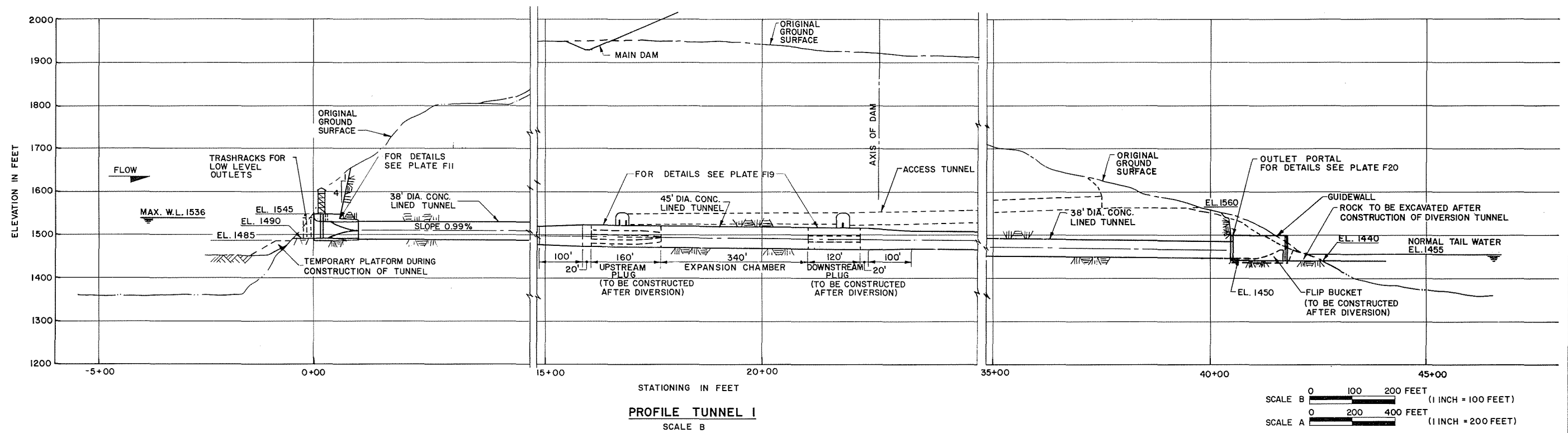
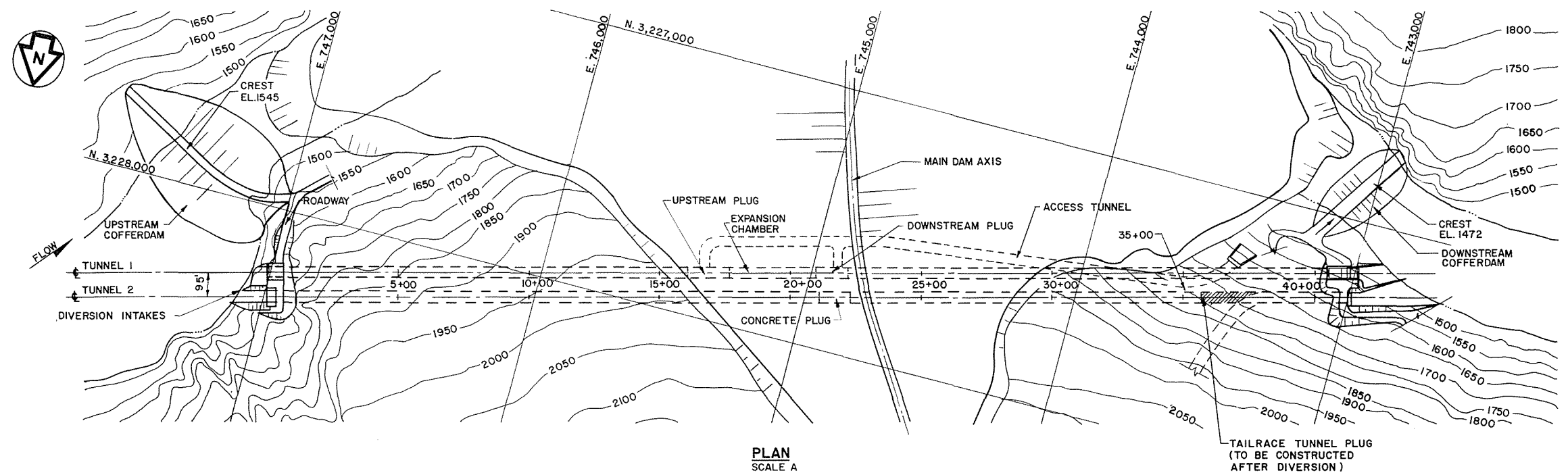
PROFILE
SHOWING CREST ELEVATIONS
N.T.S.



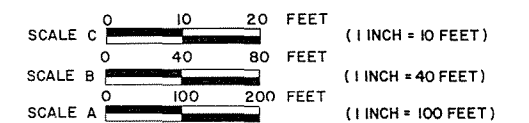
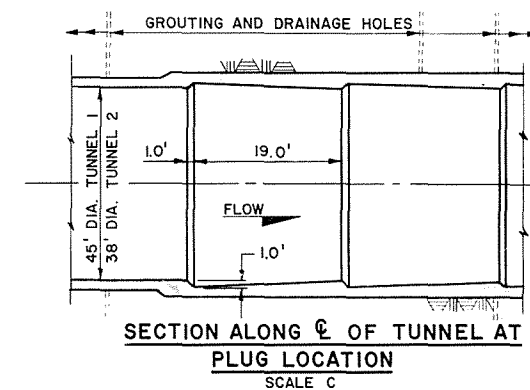
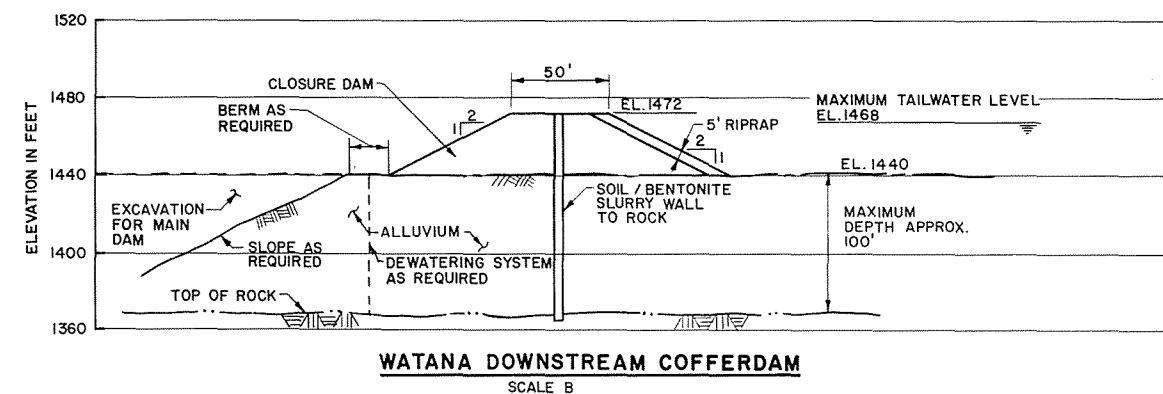
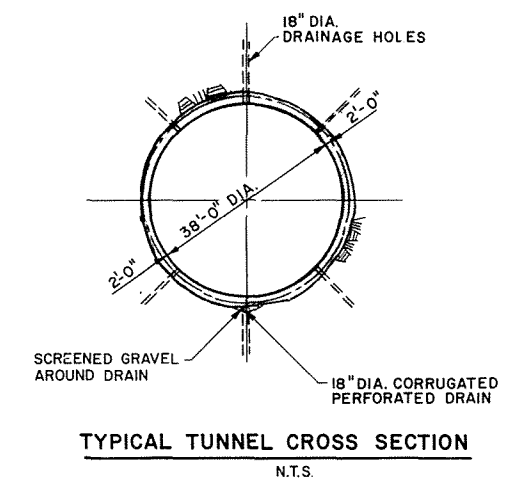
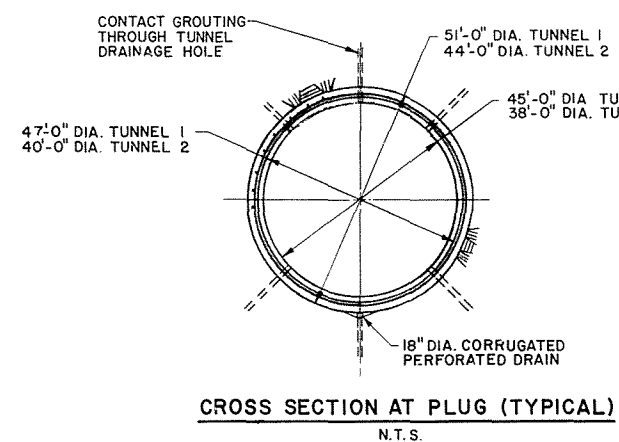
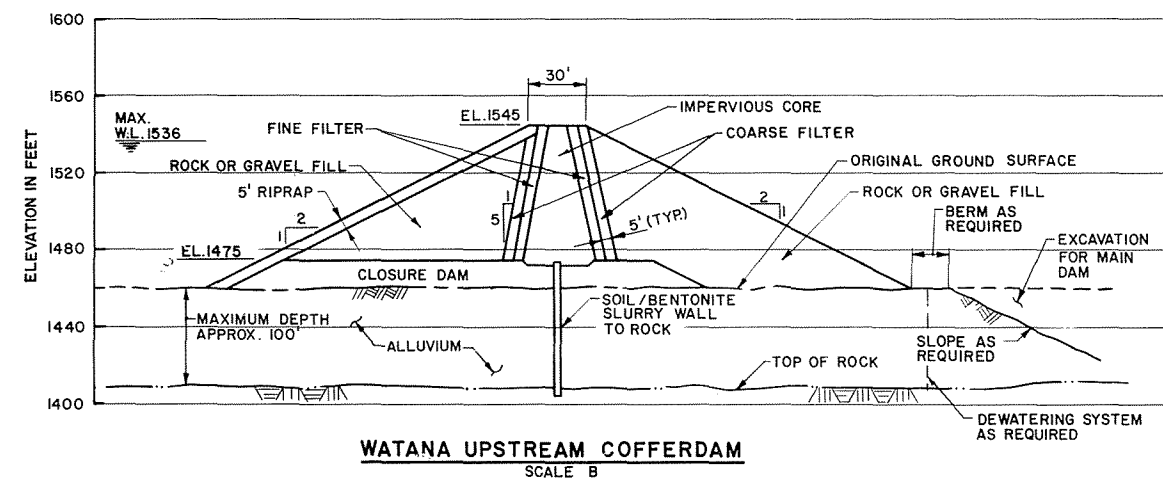
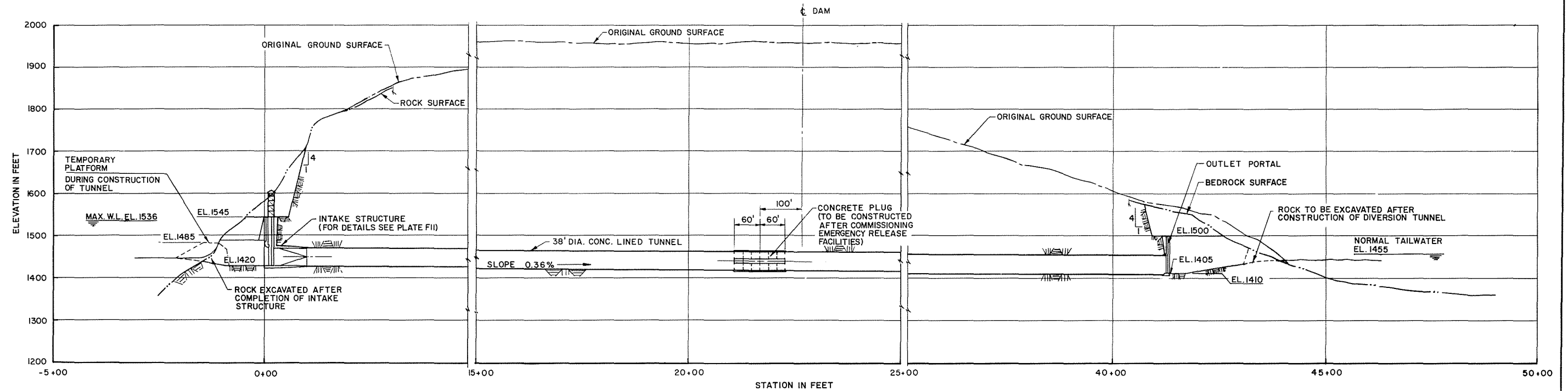
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA MAIN DAM	
	PROFILE AND DETAIL	
EXHIBIT F		PLATE F7



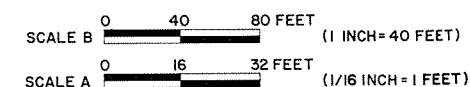
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM GROUTING & DRAINAGE	
EXHIBIT F	PLATE F8

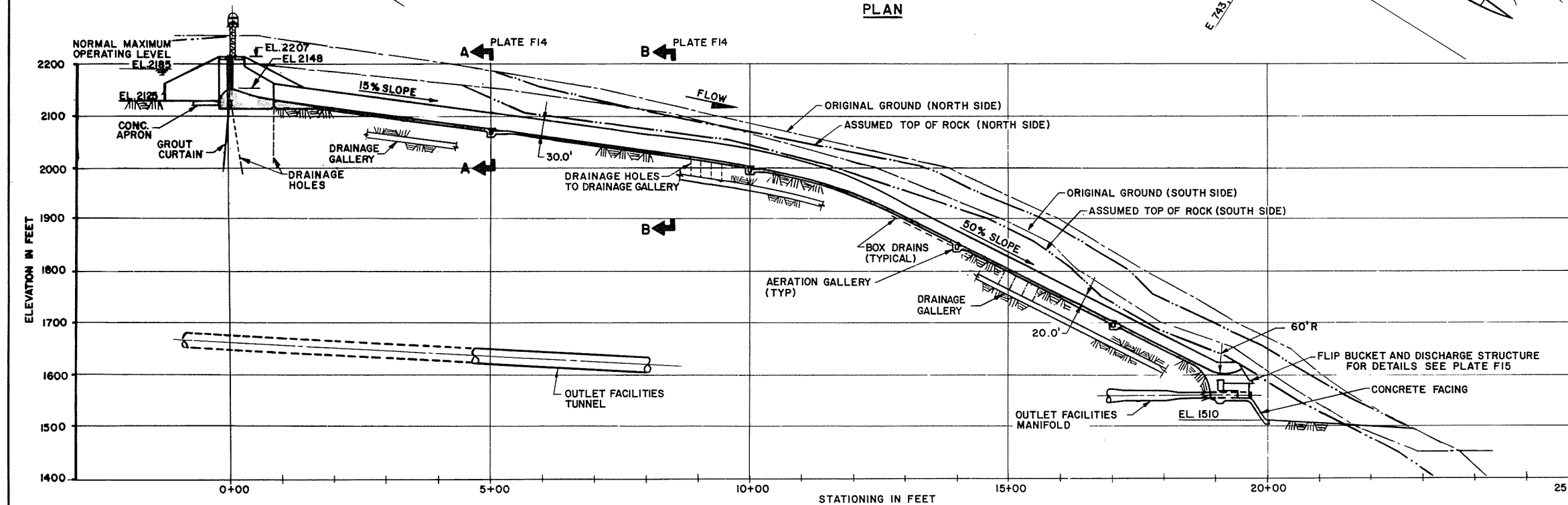
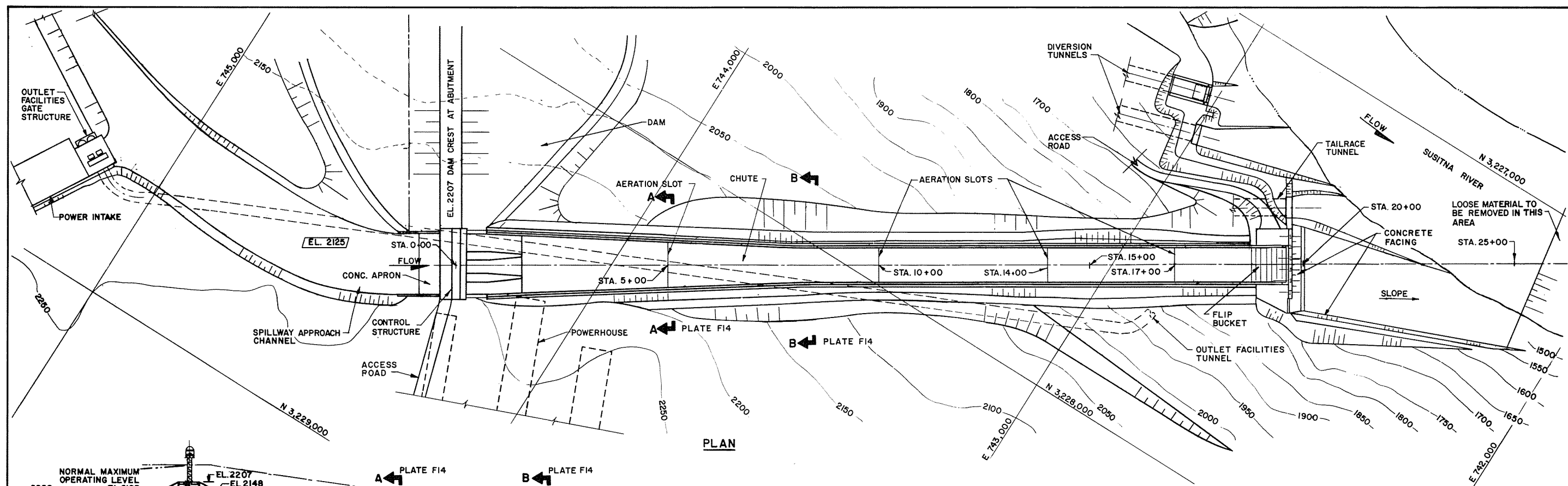


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F9



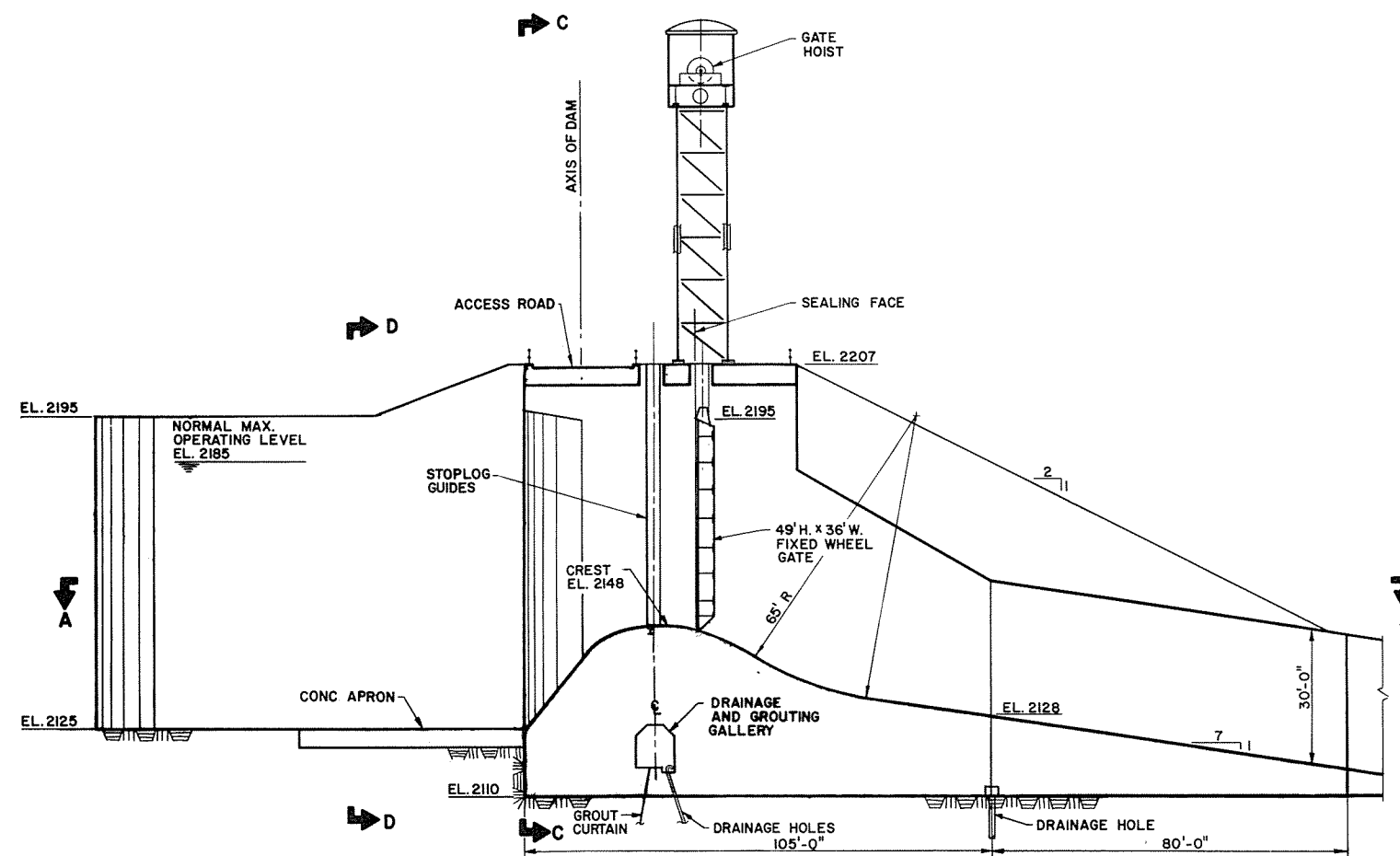
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION SECTIONS	
EXHIBIT F	PLATE F 10



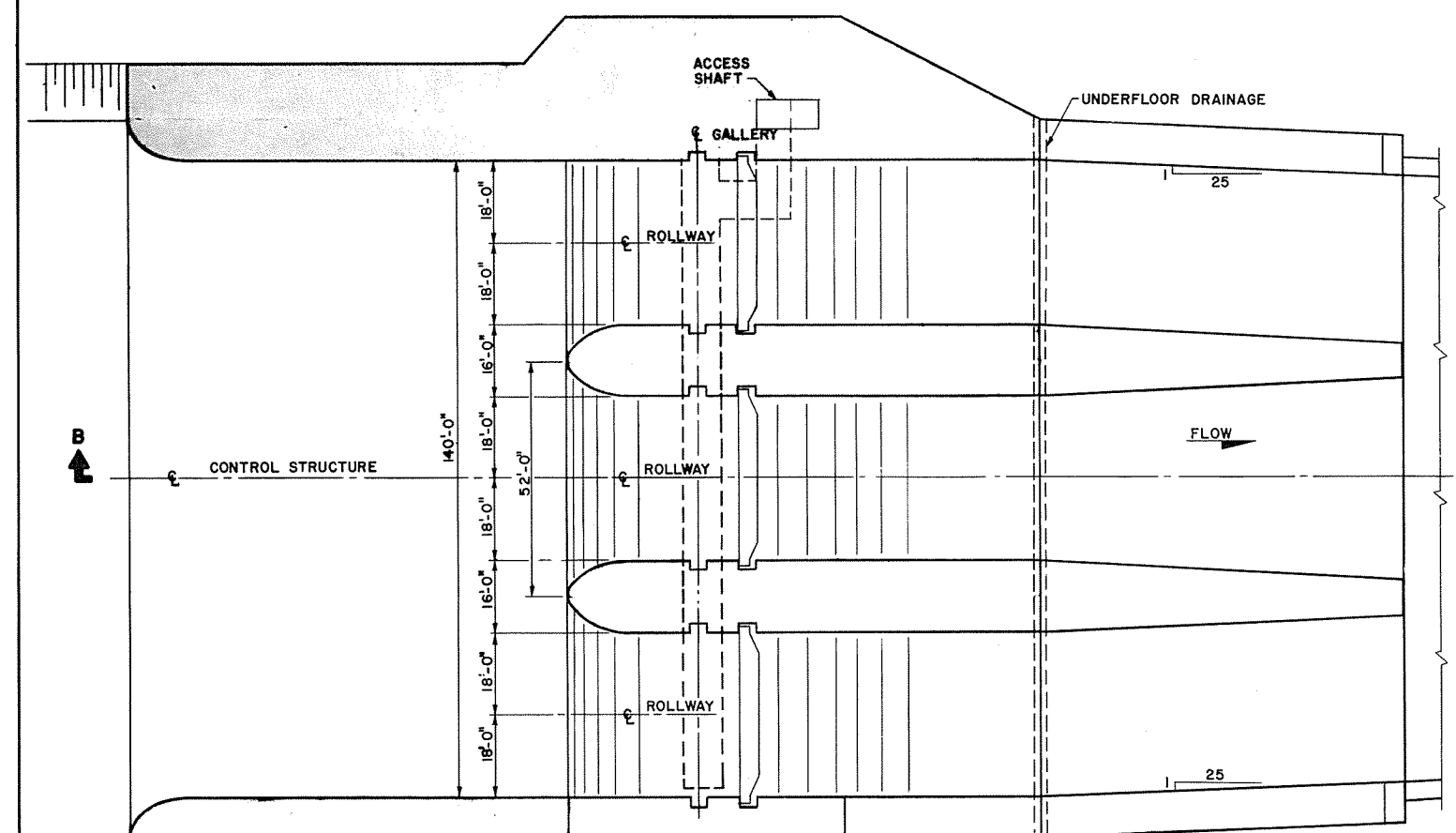


SCALE 0 100 200 FEET
(1 INCH = 100 FEET)

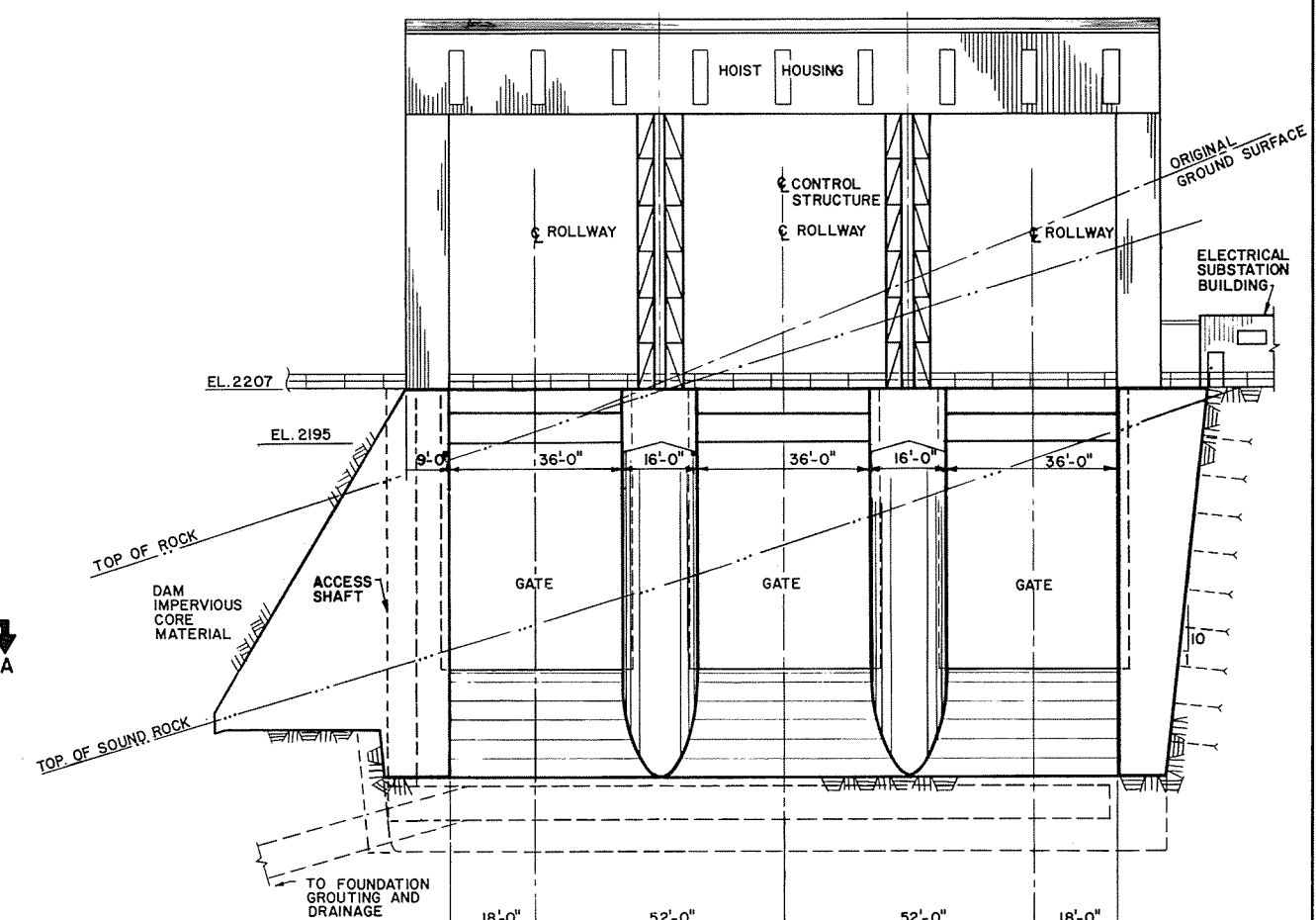
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F12



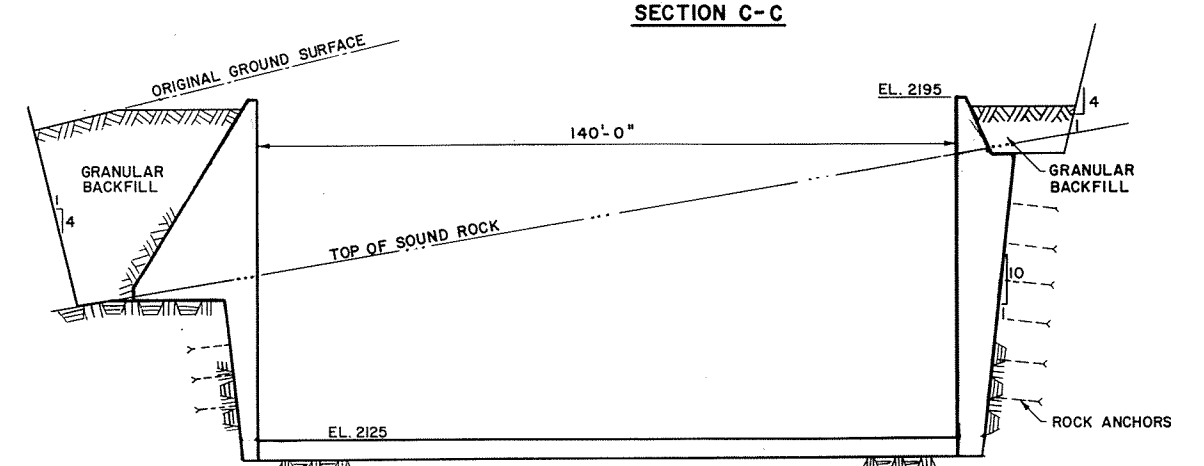
SECTION B-B



SECTION A-A



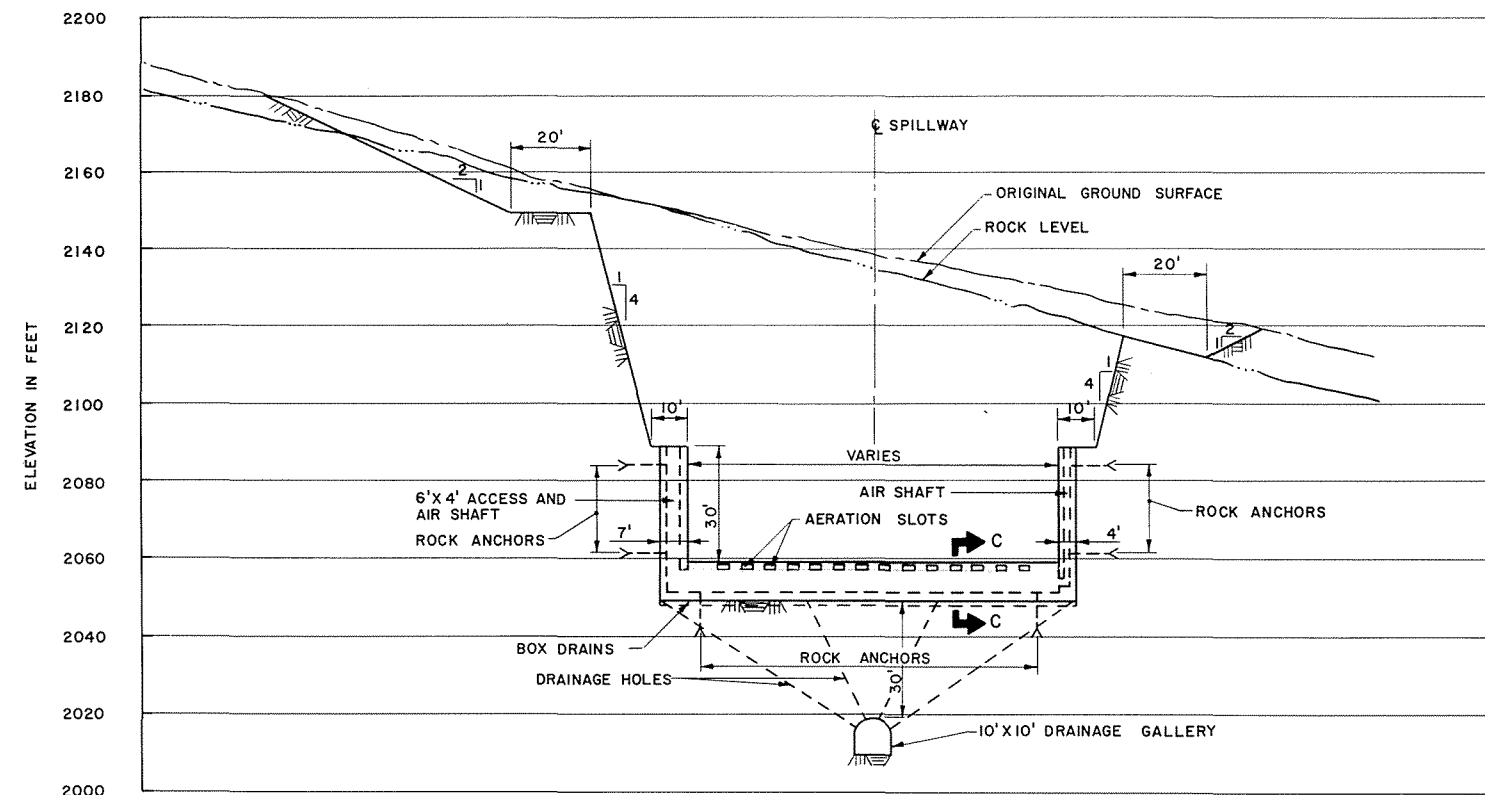
SECTION C-C



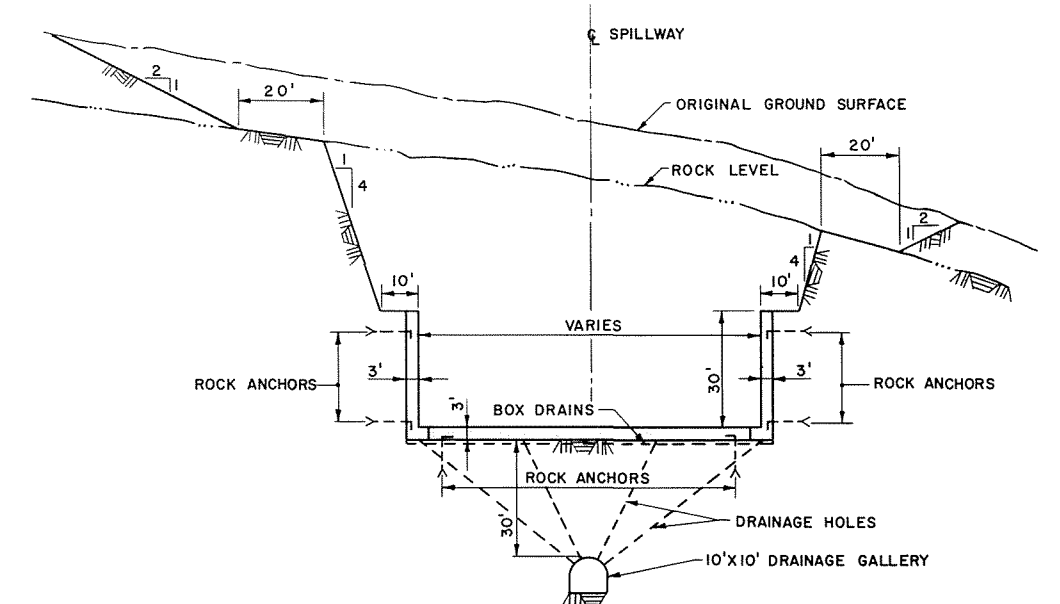
SECTION D-D

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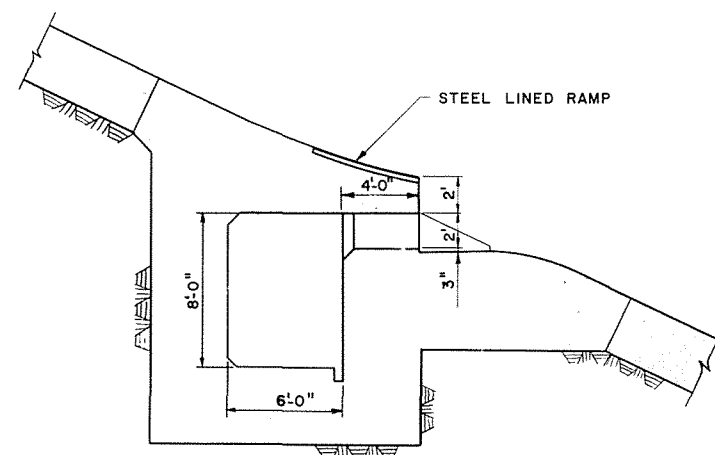
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
MAIN SPILLWAY	
CONTROL STRUCTURE	
EXHIBIT F	PLATE F13



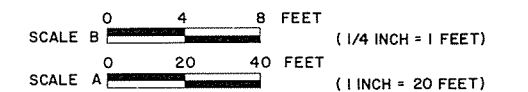
SECTION A-A (PLATE F12)
SCALE A



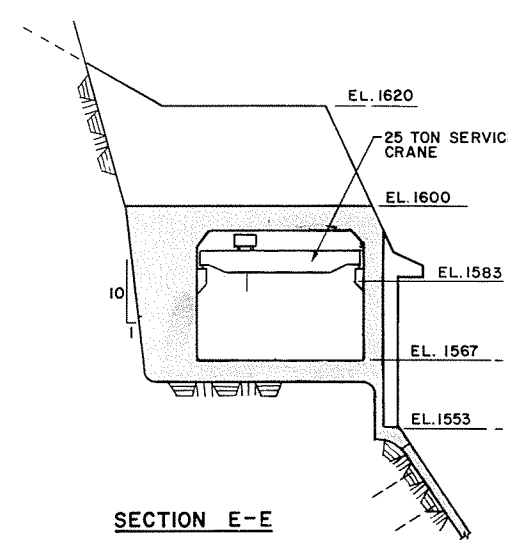
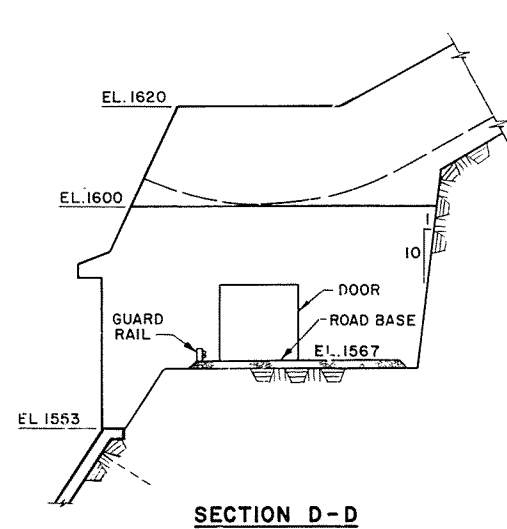
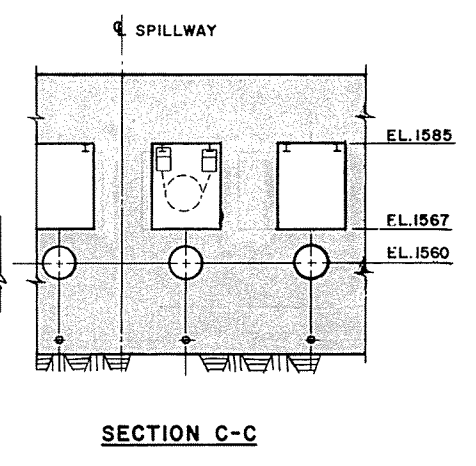
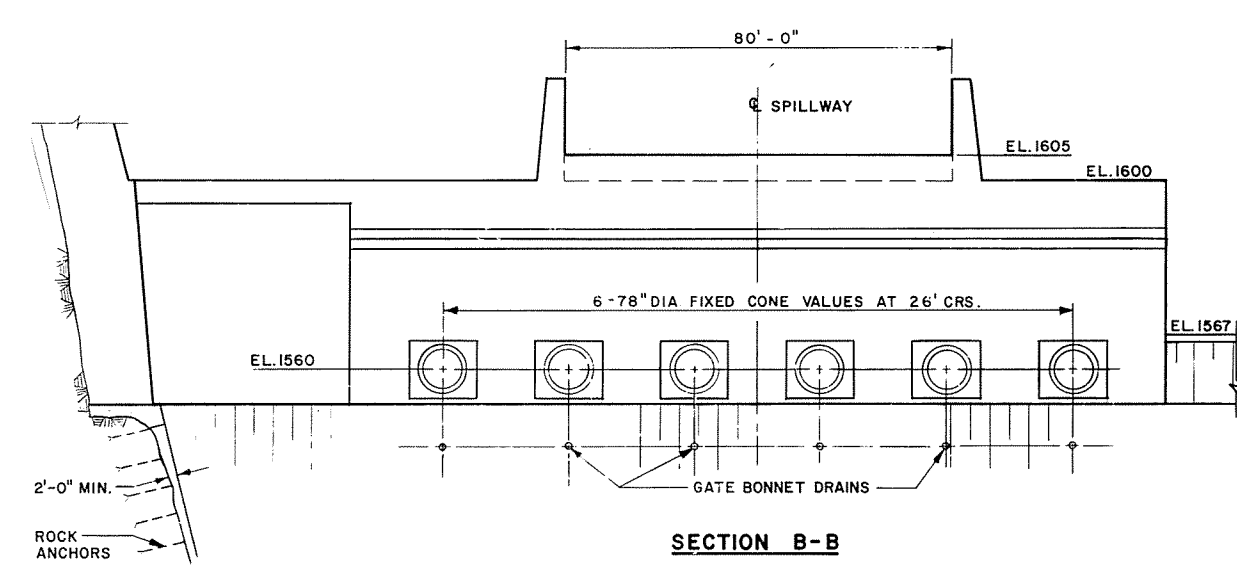
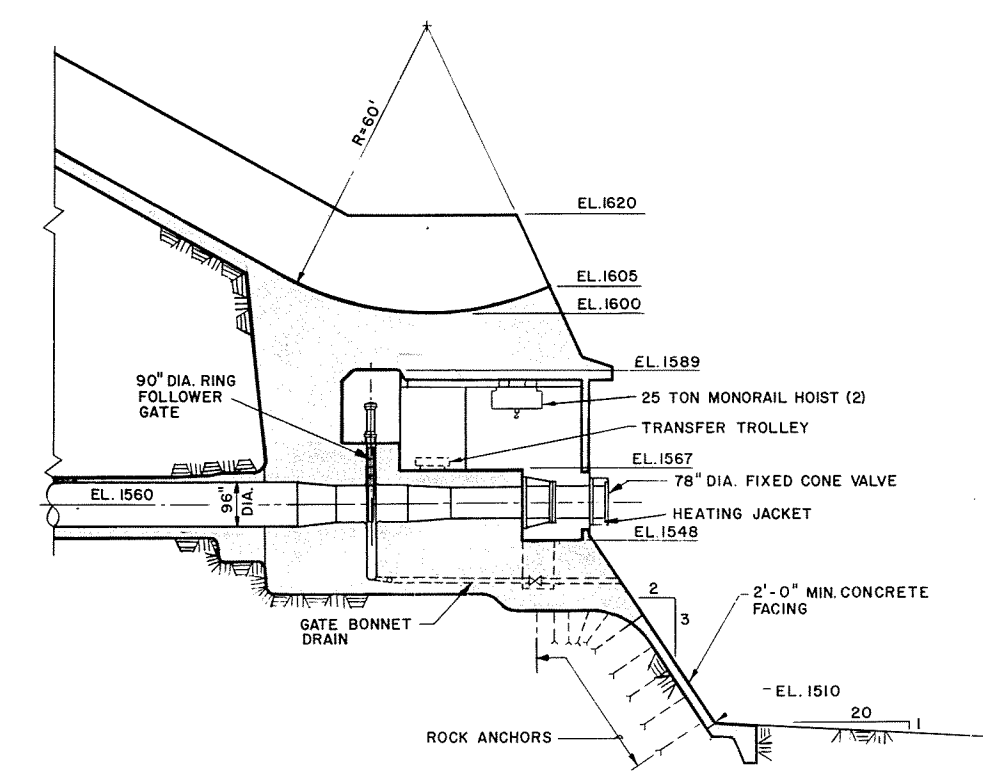
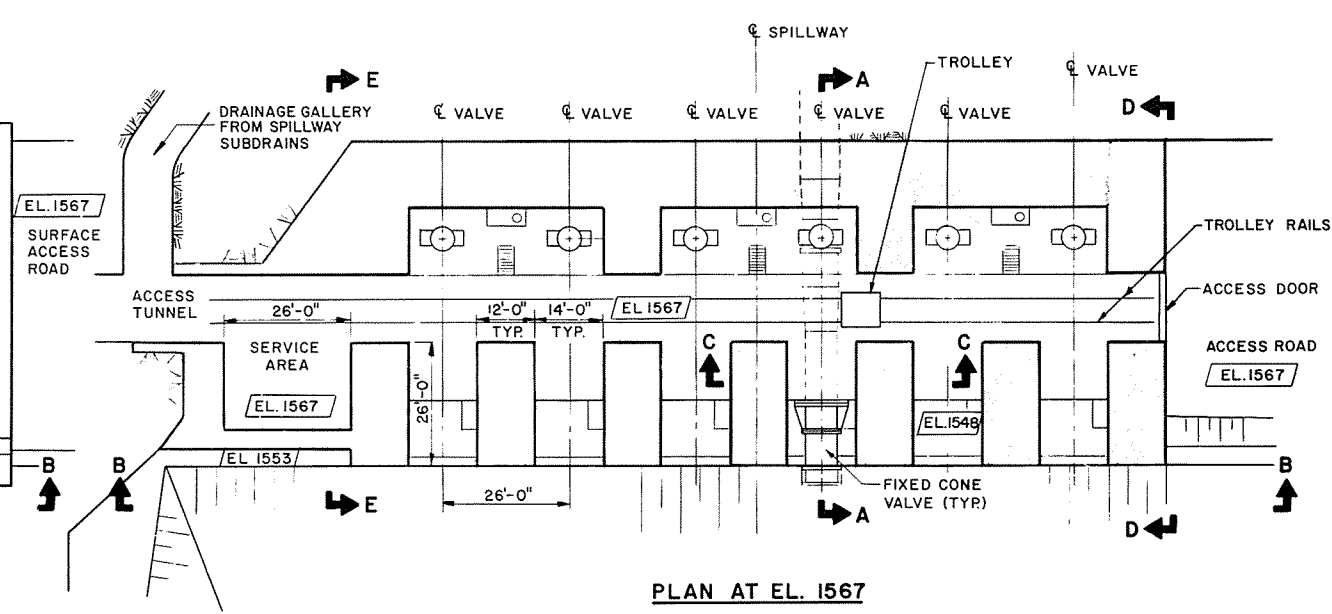
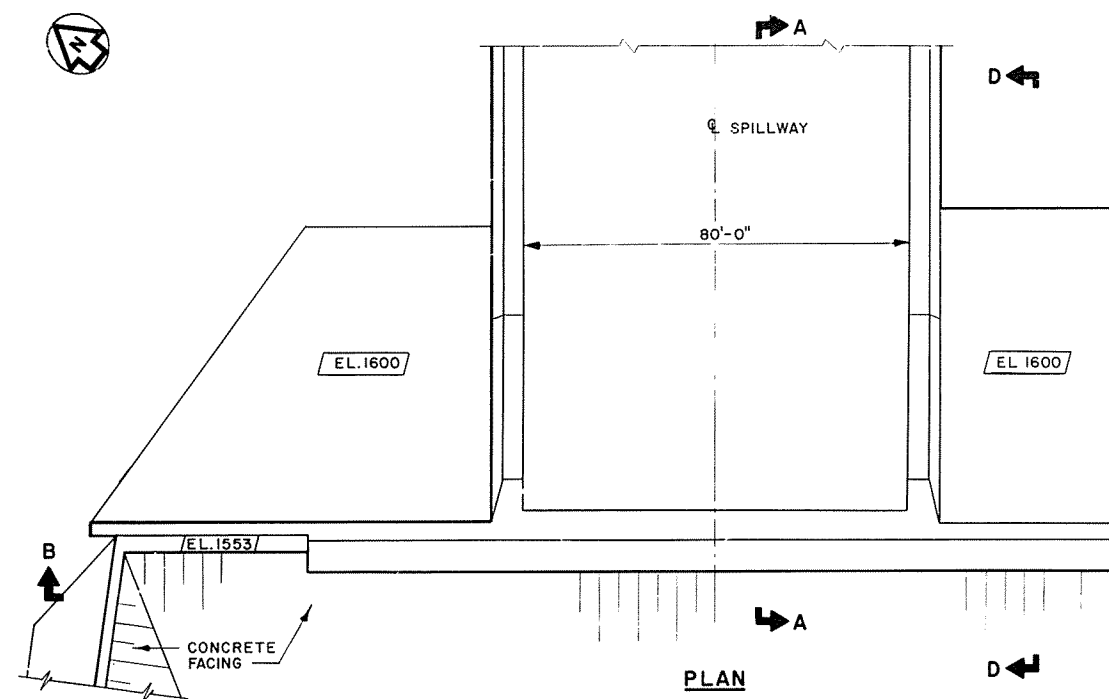
SECTION B-B (TYPICAL) (PLATE F12)
SCALE A



SECTION C-C
SCALE B

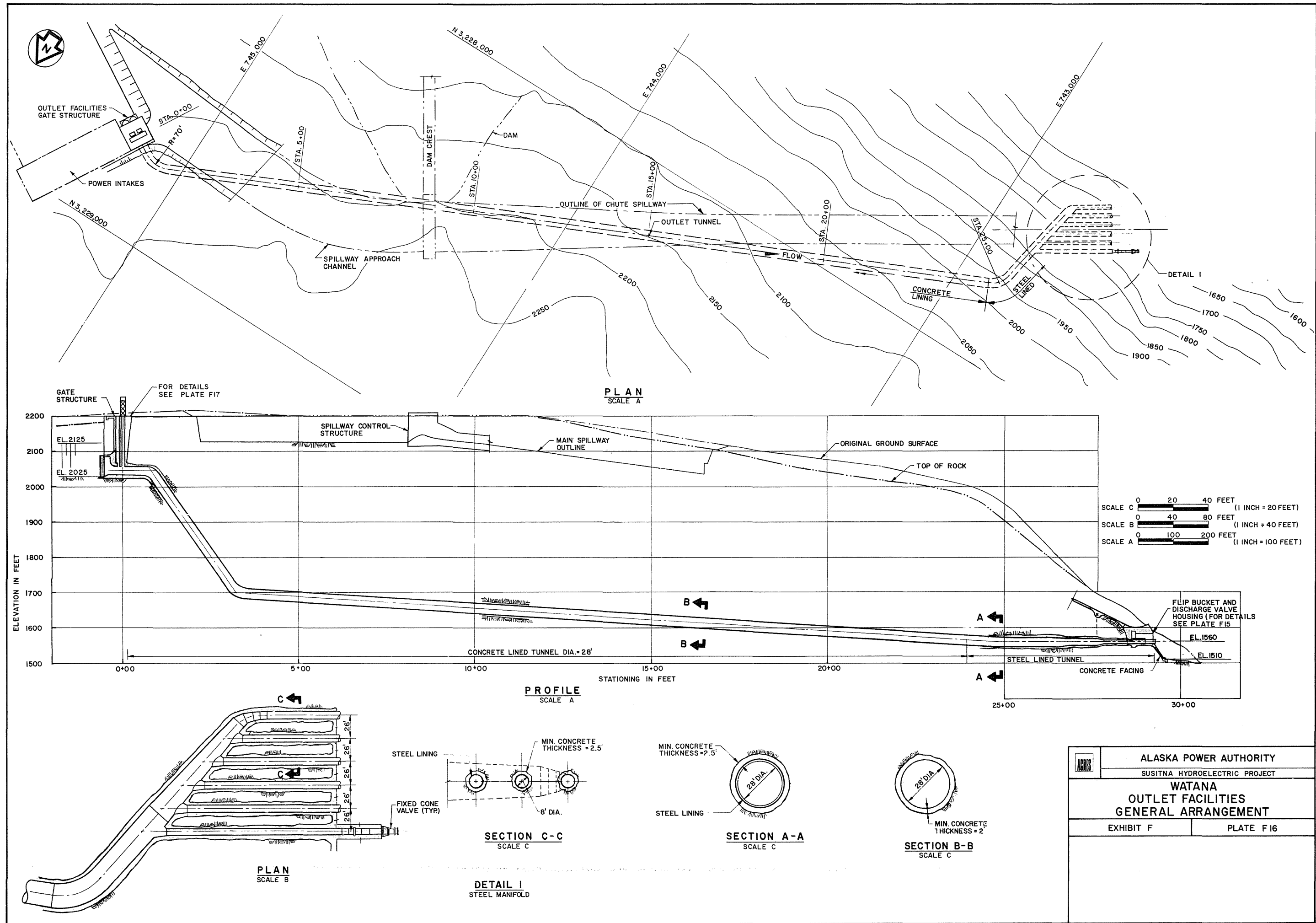


	ALASKA POWER AUTHORITY
	SUSITNA HYDROELECTRIC PROJECT
WATANA MAIN SPILLWAY CHUTE SECTIONS	
EXHIBIT F	PLATE F14

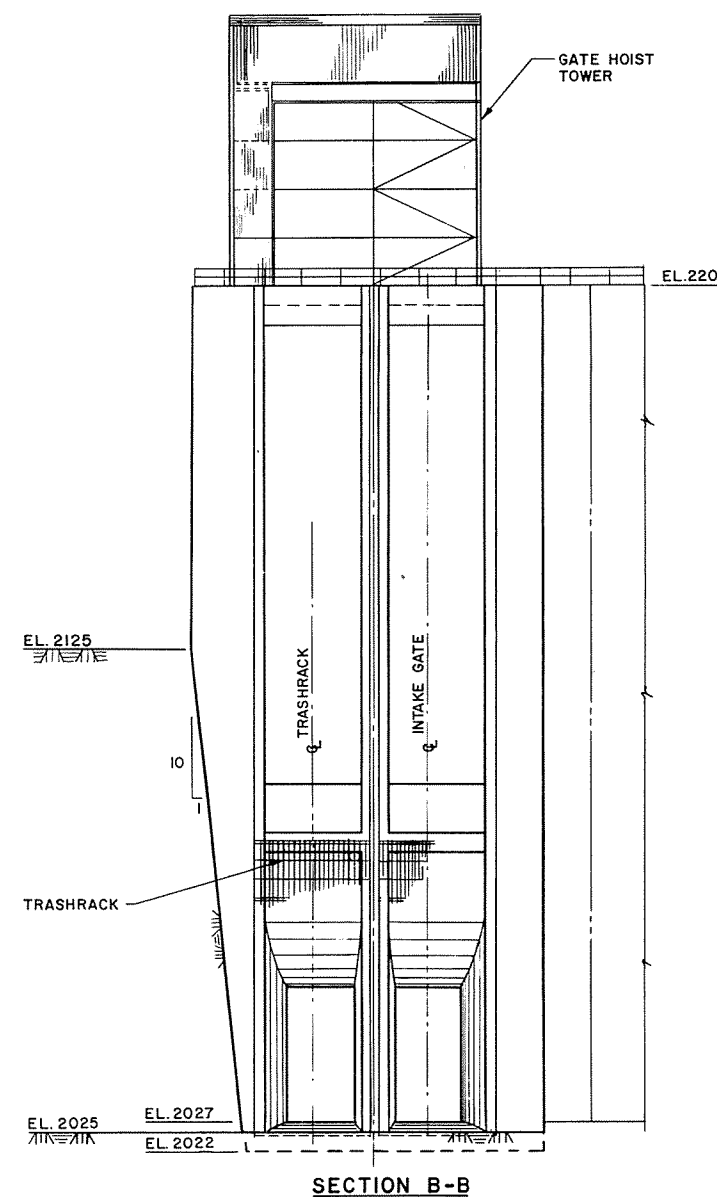
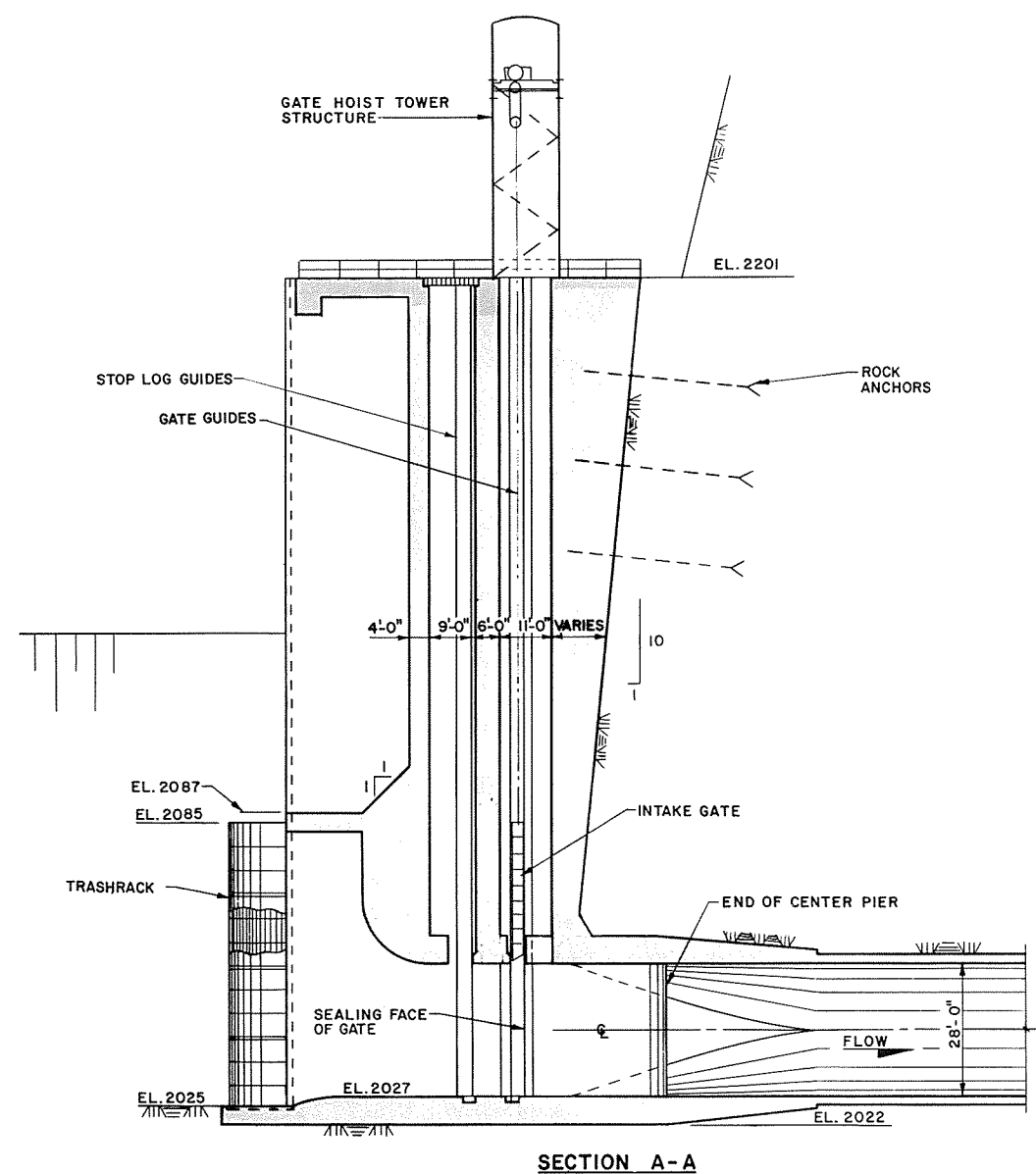
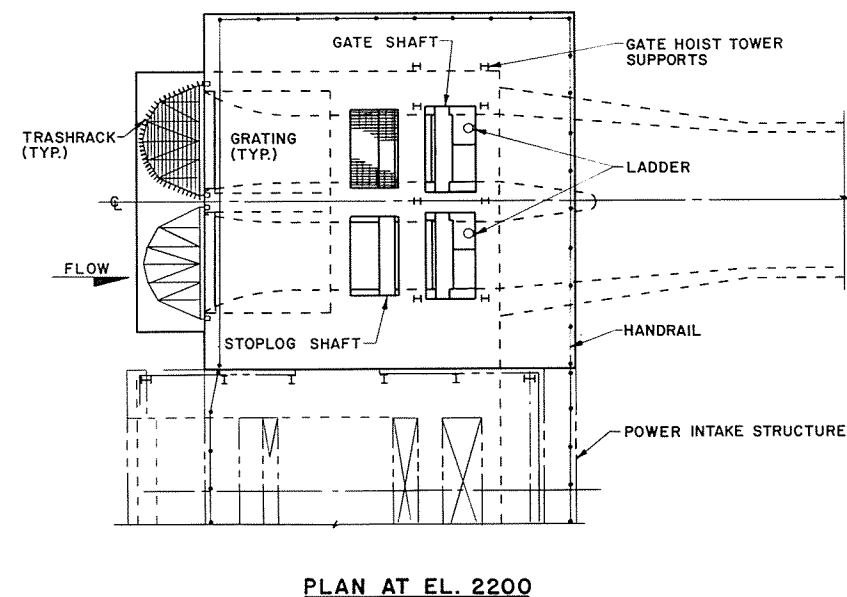
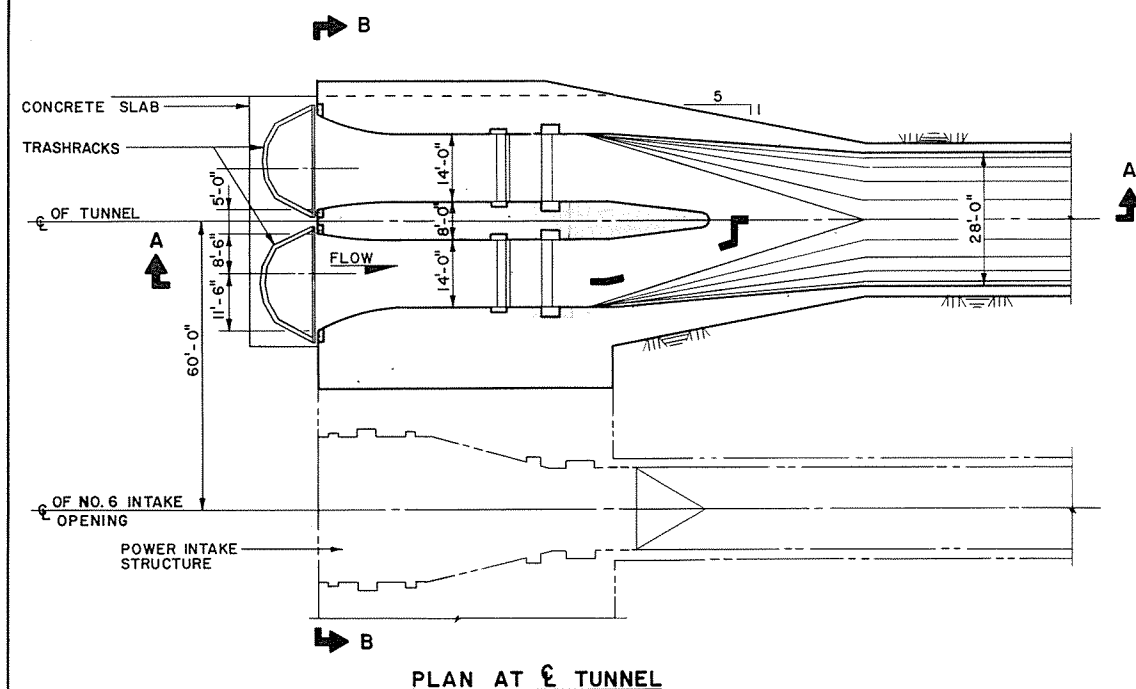


SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

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

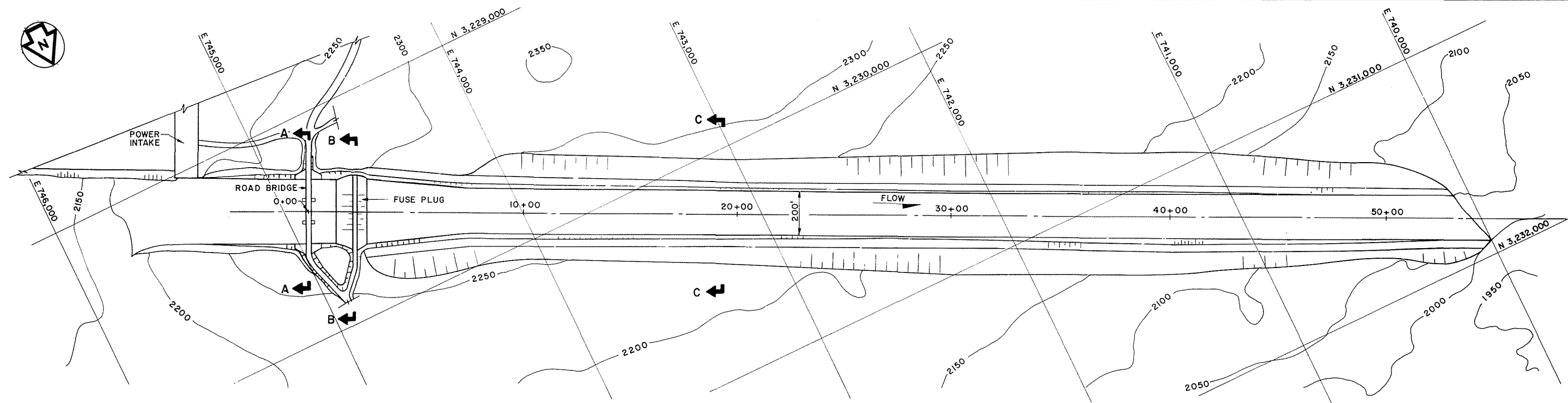


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
OUTLET FACILITIES	
GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F16

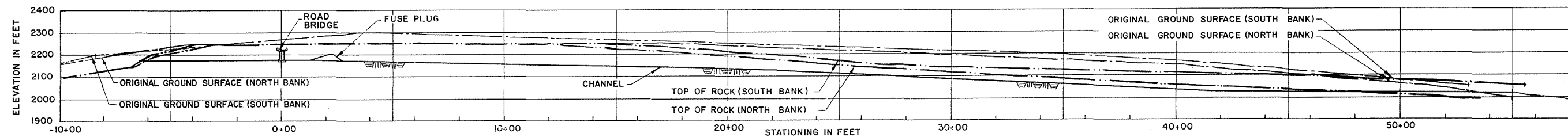


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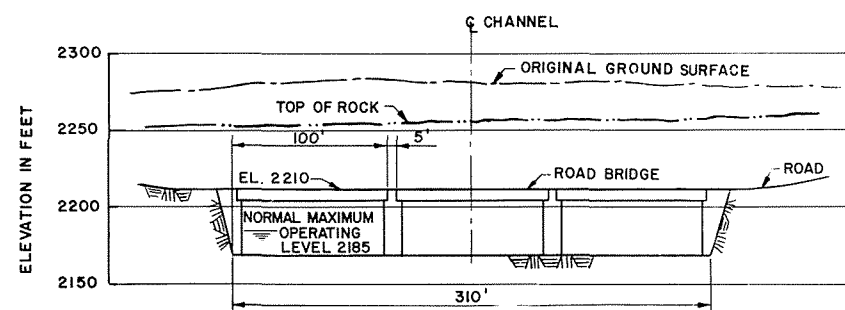
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
OUTLET FACILITIES	
GATE STRUCTURE	
EXHIBIT F	PLATE F17



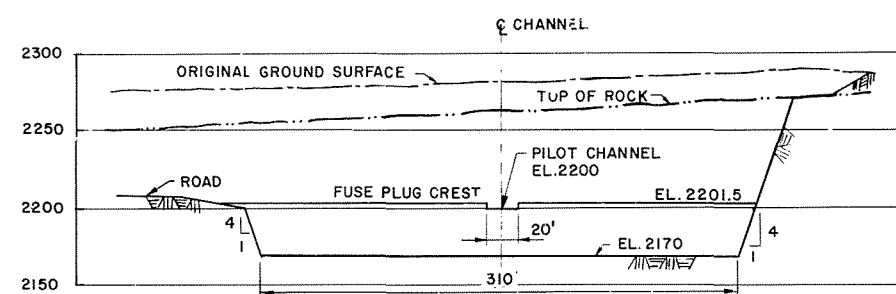
PLAN
SCALE A



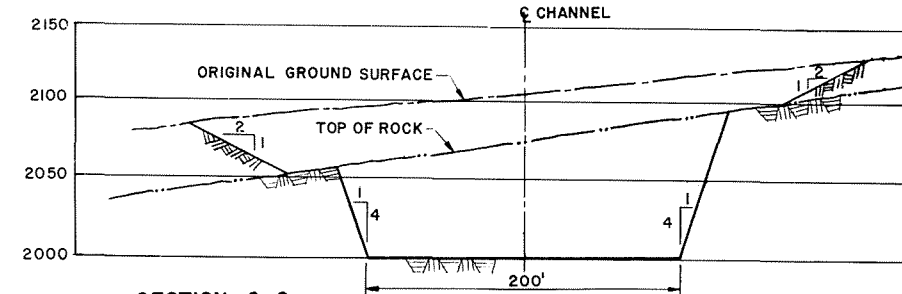
PROFILE
SCALE A



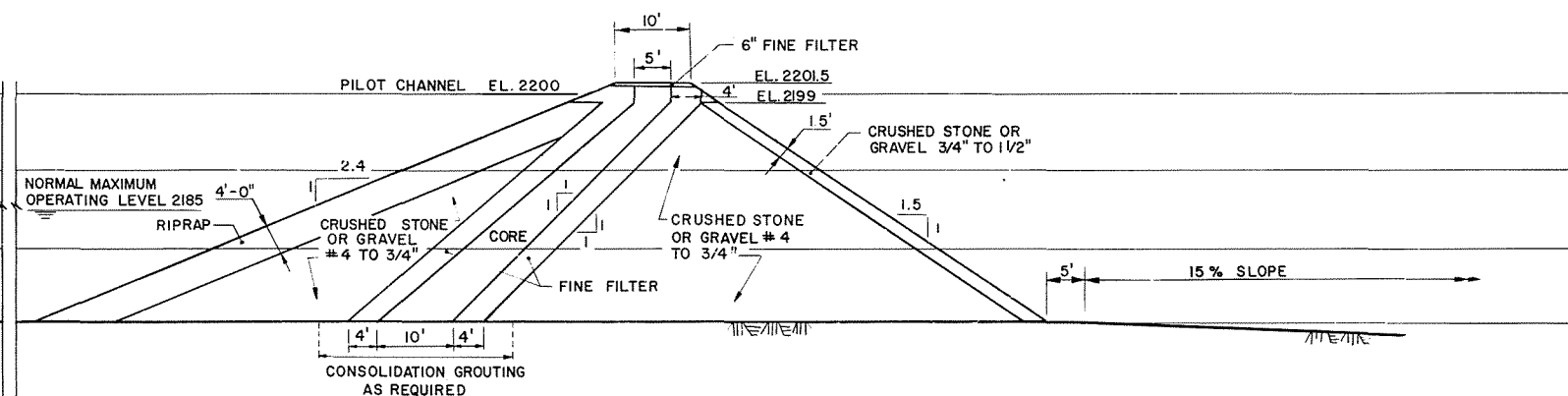
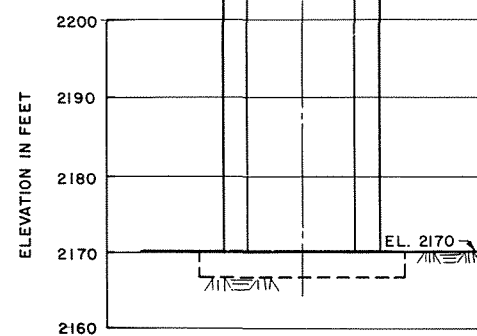
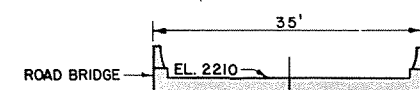
SECTION A-A
SCALE B



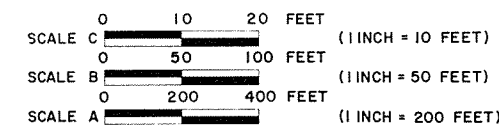
SECTION B-B FUSE PLUG
SCALE B



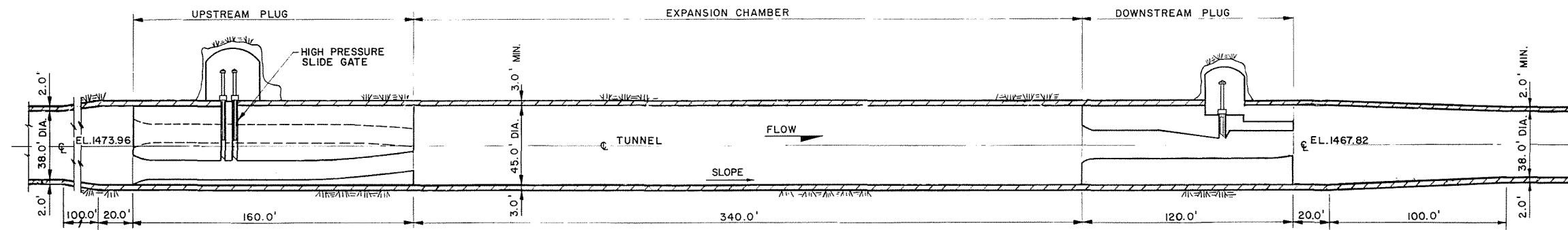
SECTION C-C
SCALE B



SECTION THROUGH FUSE PLUG
SCALE C

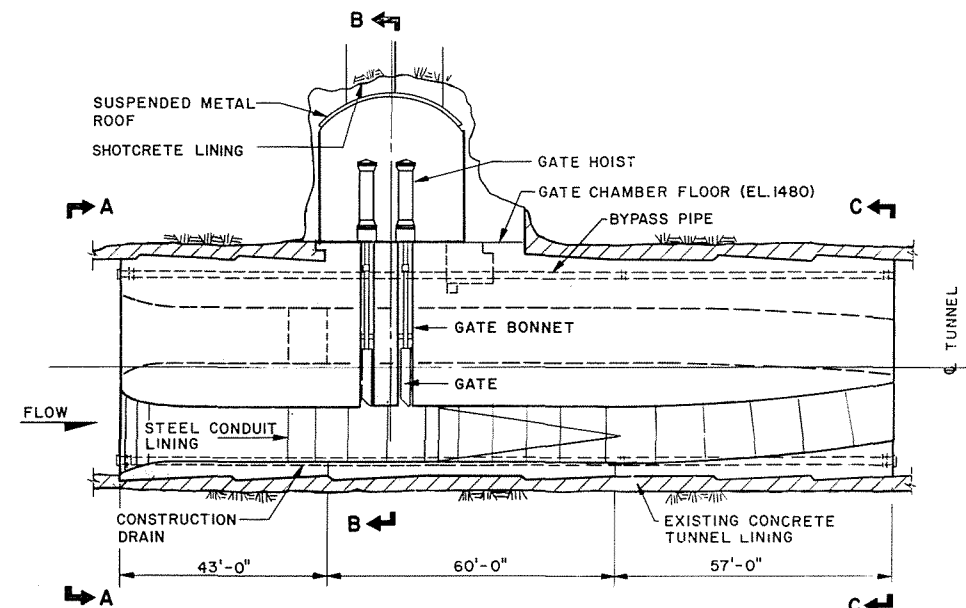


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY SPILLWAY	
EXHIBIT F	PLATE F18



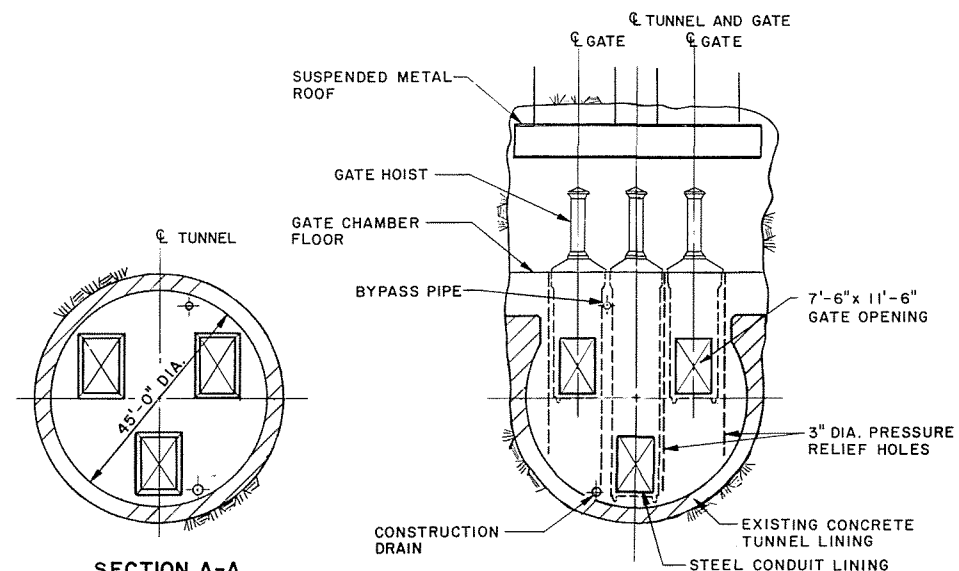
SECTION ALONG CL OF TUNNEL NO. 1

SCALE A



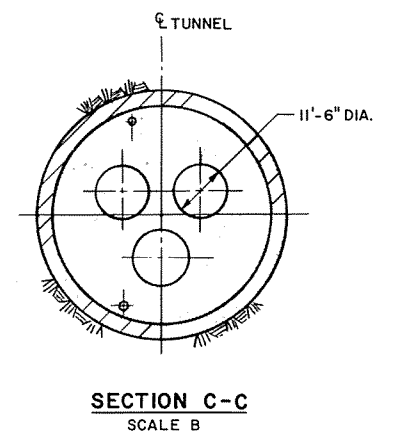
LOW LEVEL OUTLET
UPSTREAM PLUG

SCALE B

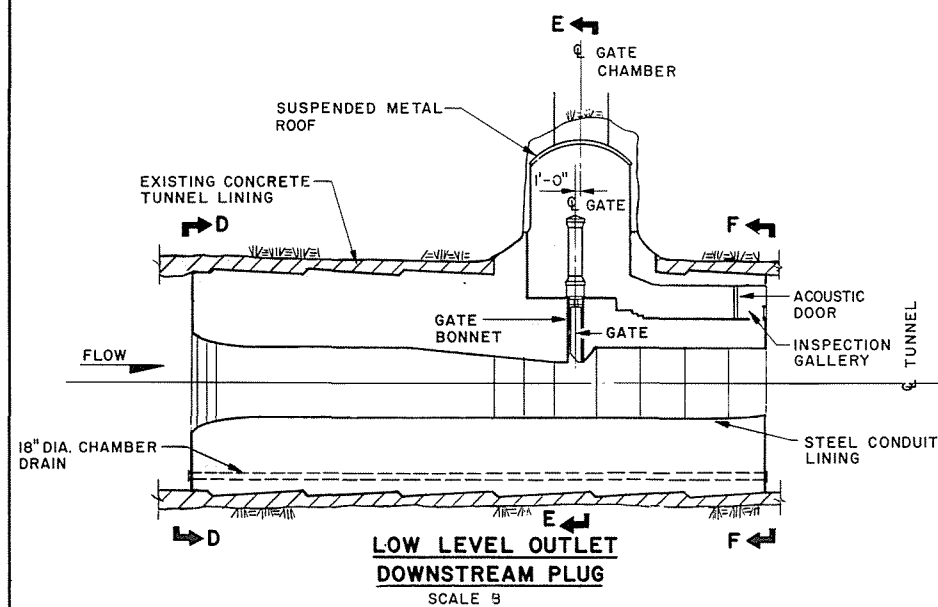


SECTION A-A
SCALE B

SECTION B-B
SCALE B

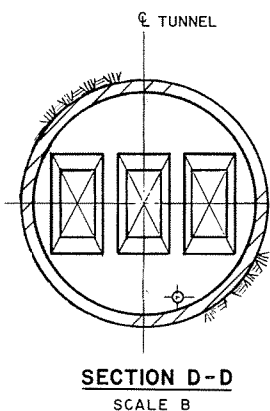


SECTION C-C
SCALE B

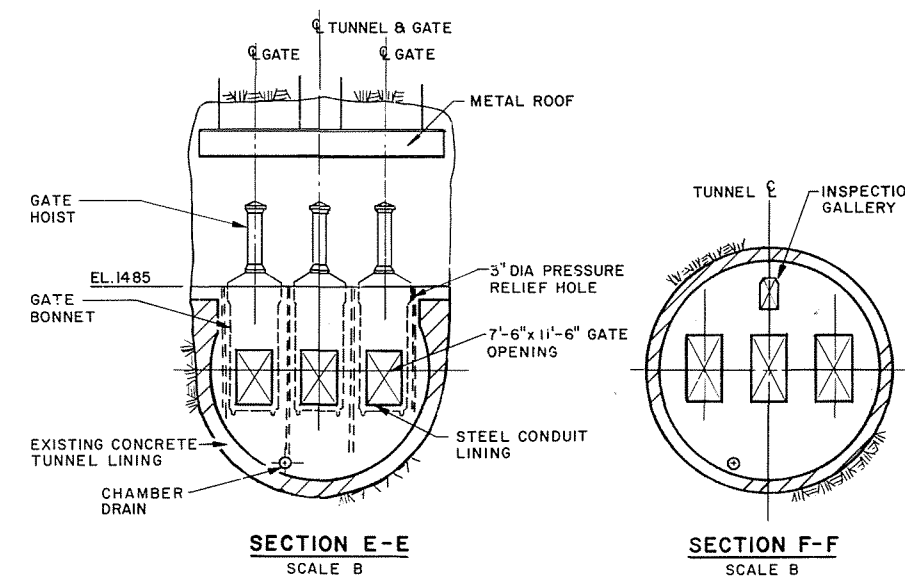


LOW LEVEL OUTLET
DOWNSTREAM PLUG

SCALE B

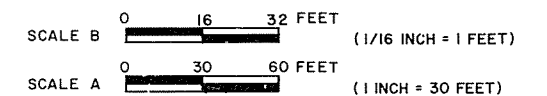


SECTION D-D
SCALE B

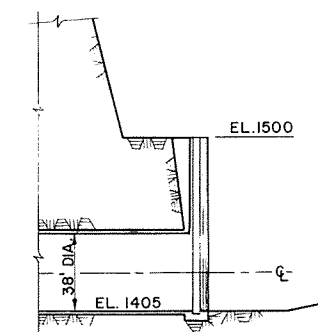
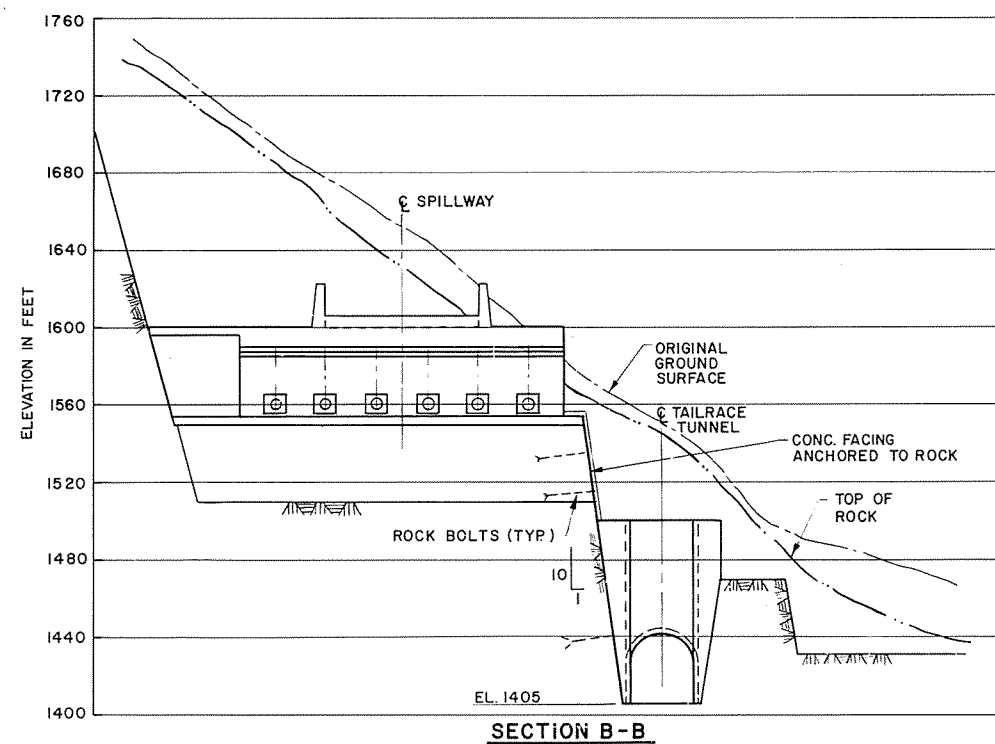
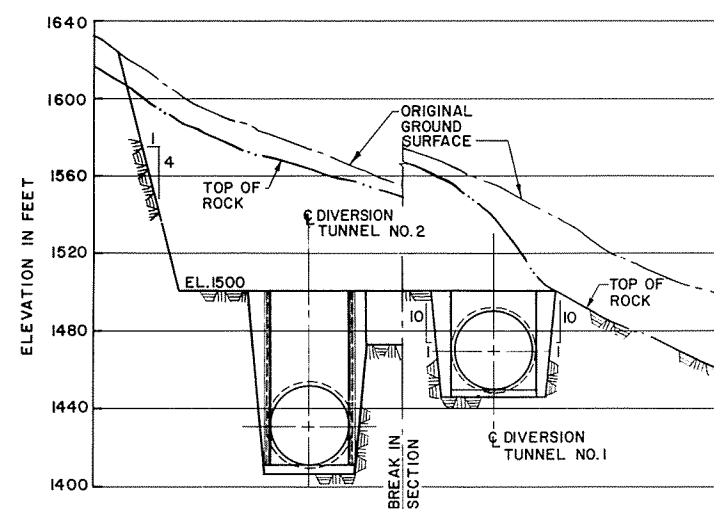
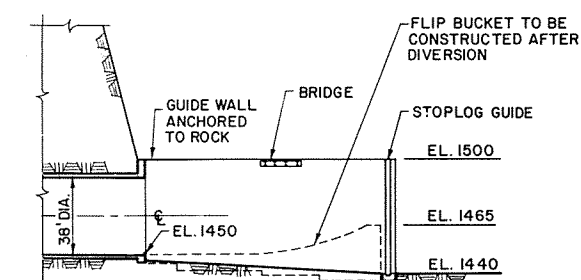
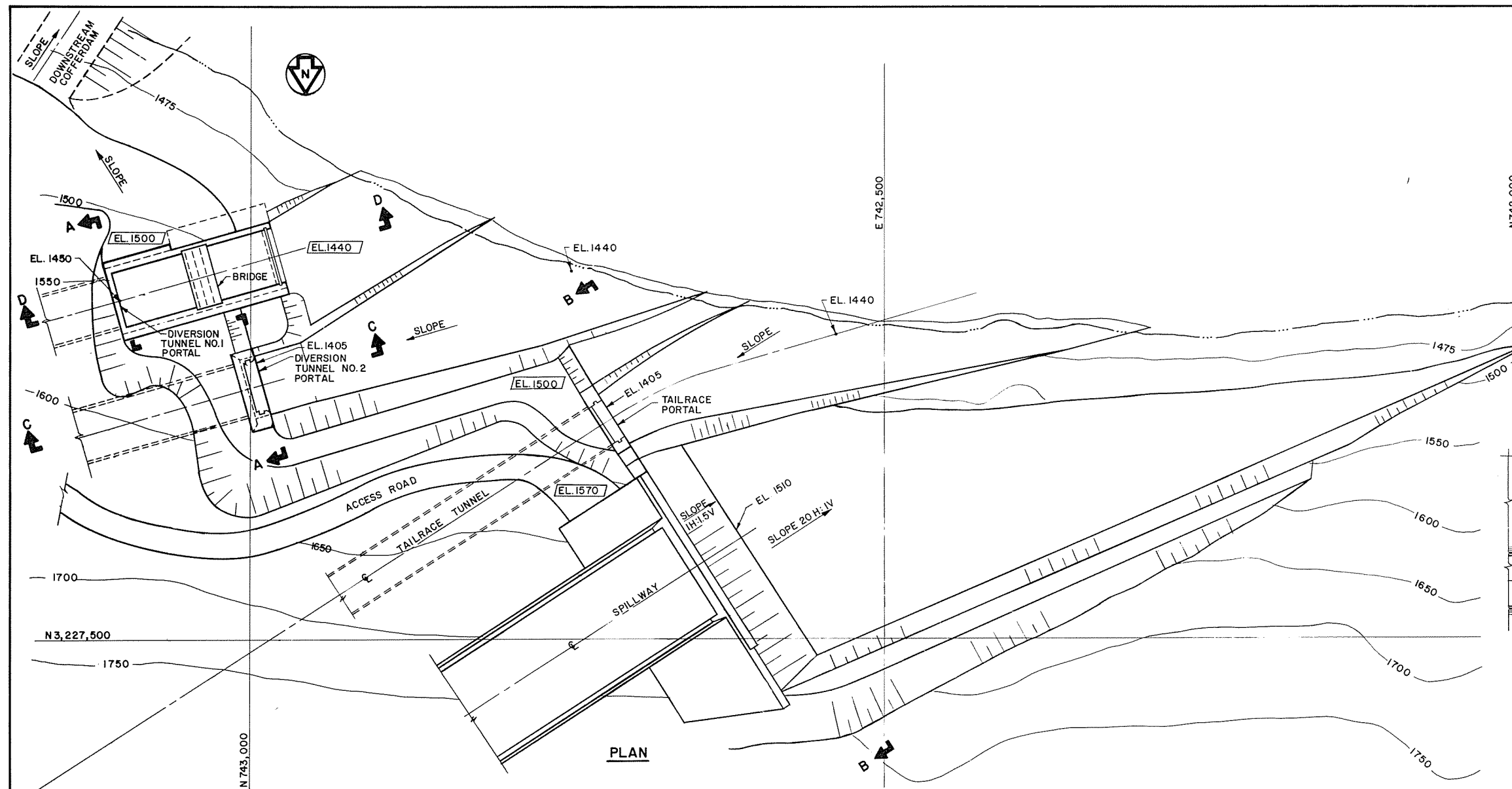


SECTION E-E
SCALE B

SECTION F-F
SCALE B



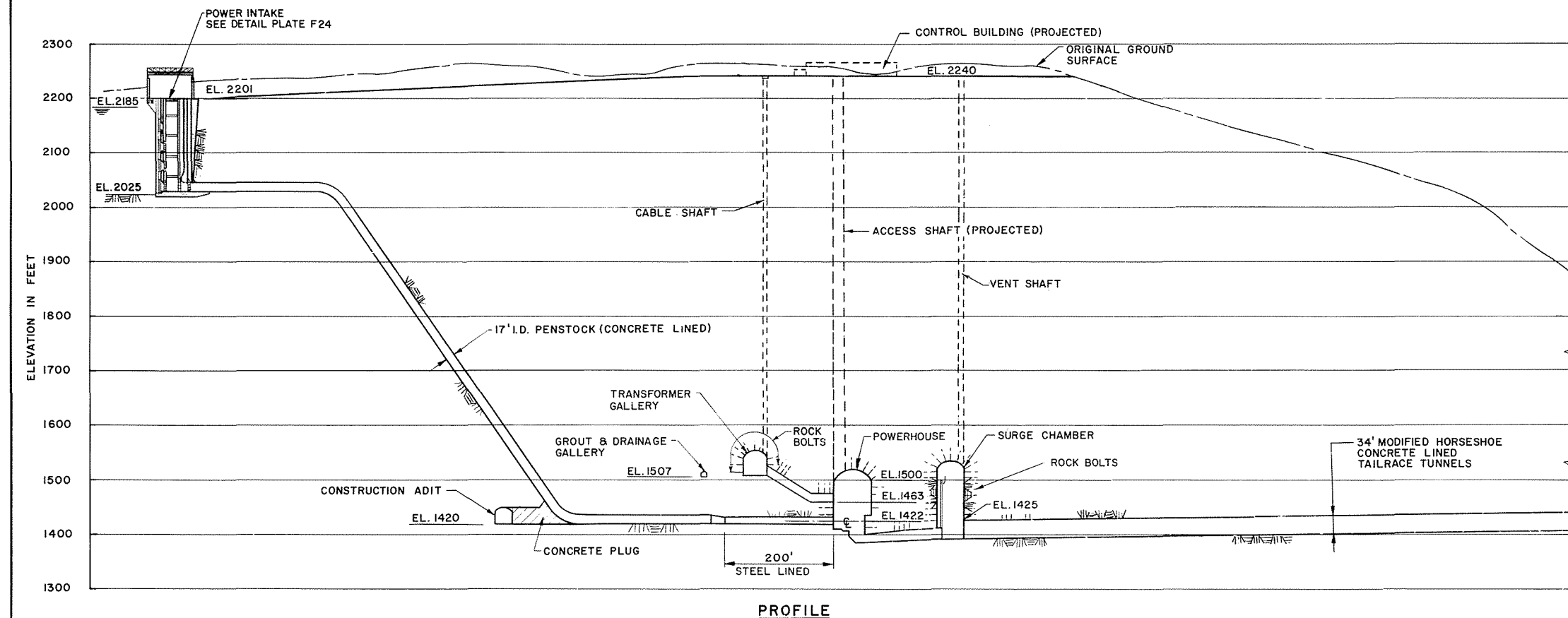
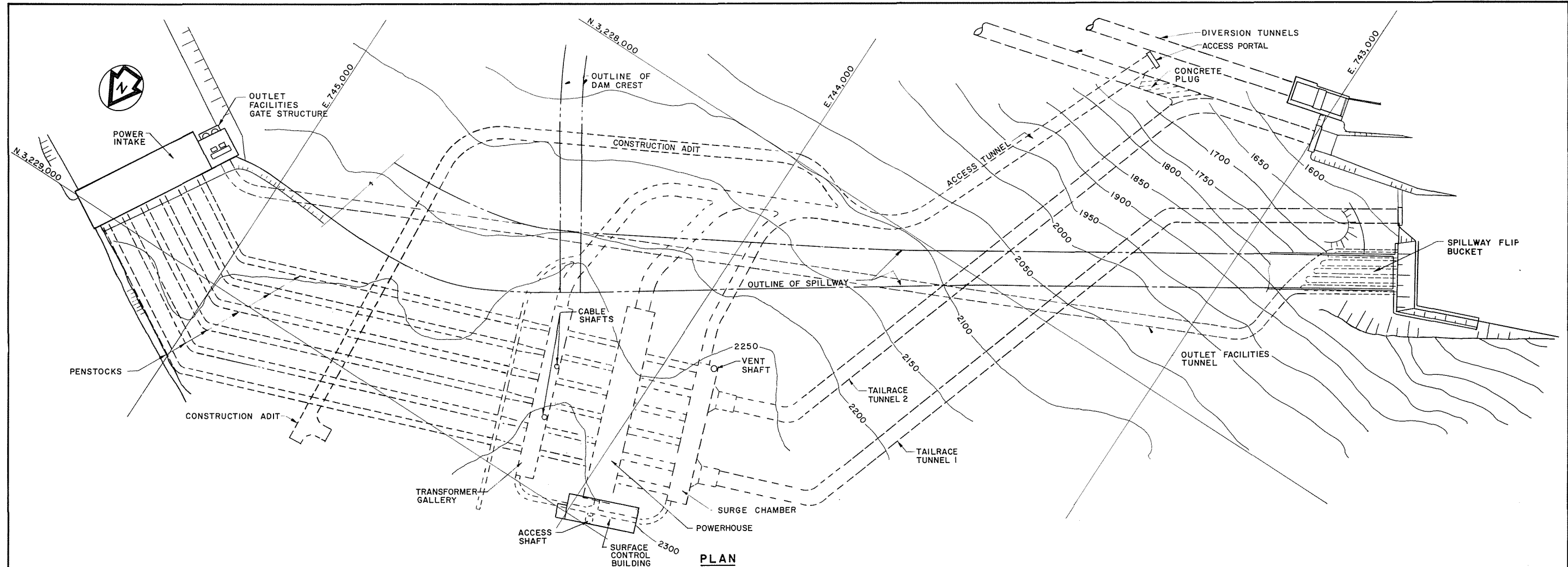
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA EMERGENCY RELEASE SECTIONS	
	EXHIBIT F	PLATE F19



SCALE 0 40 80 FEET (1 INCH = 40 FEET)

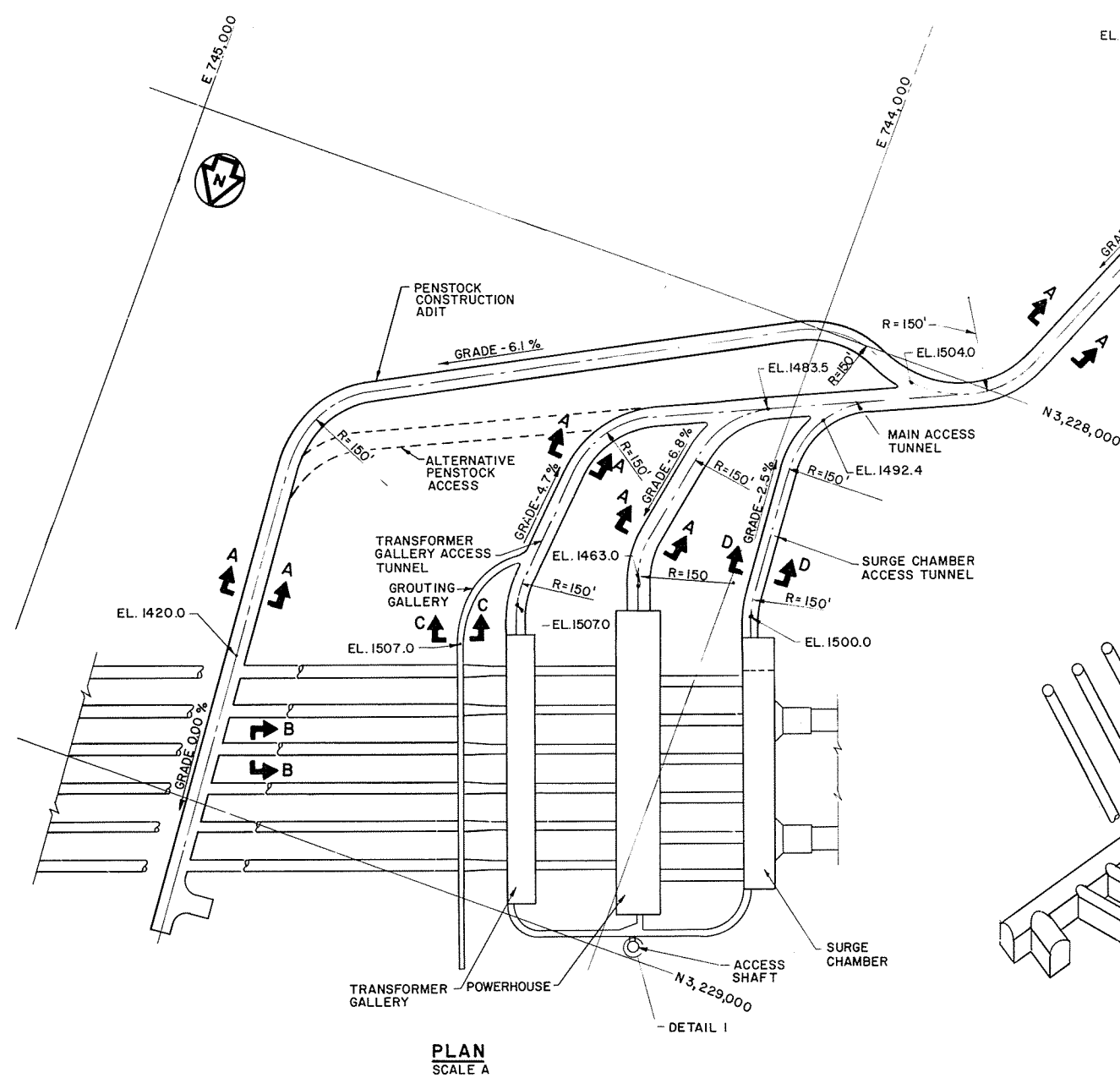
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
DOWNSTREAM PORTALS	
PLAN & SECTIONS	
EXHIBIT F	PLATE F20

ALASKA RESOURCES LIBRARY
U.S. DEPT. OF INTERIOR

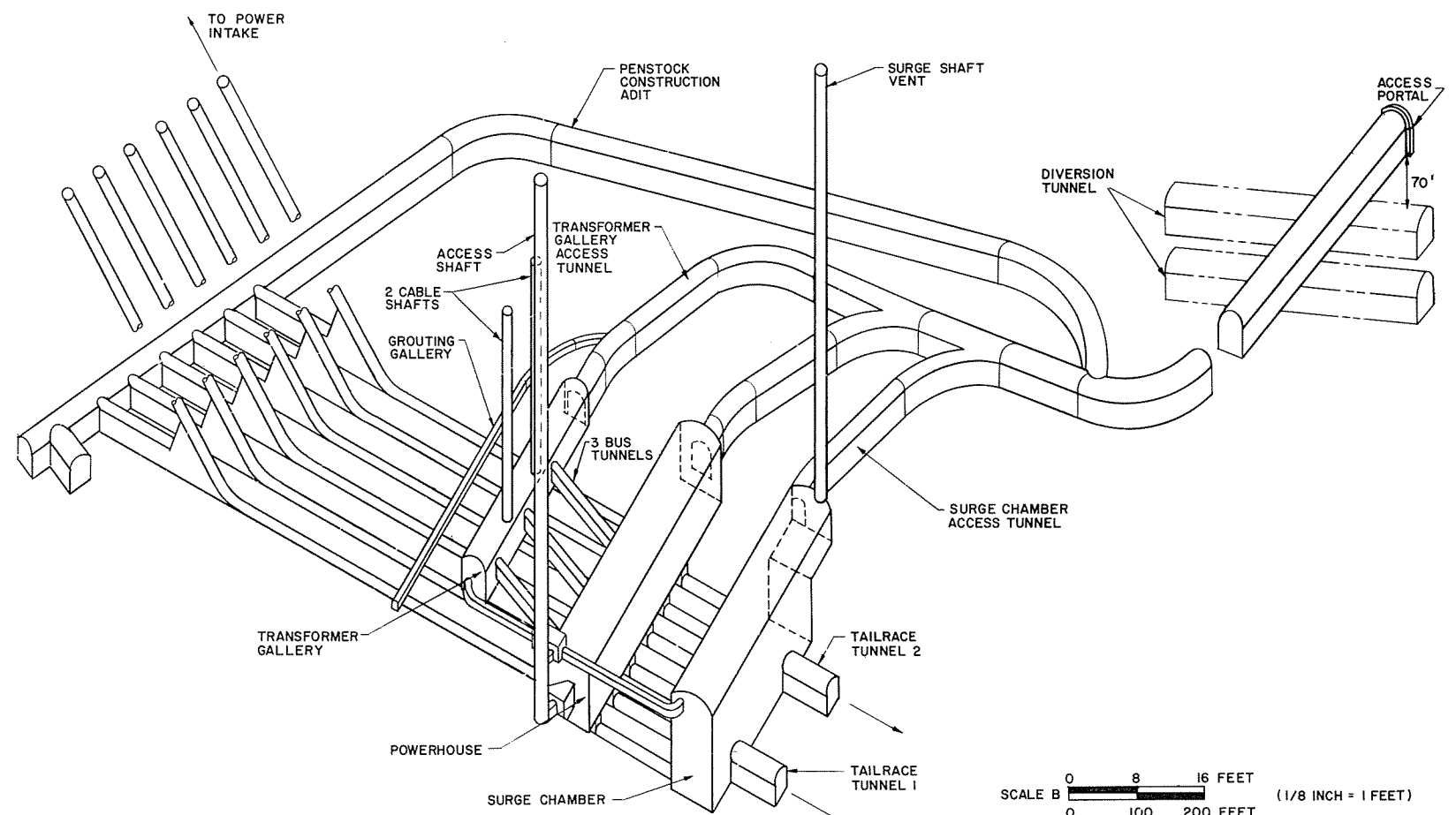


SCALE 0 100 200 FEET (1 INCH = 100 FEET)

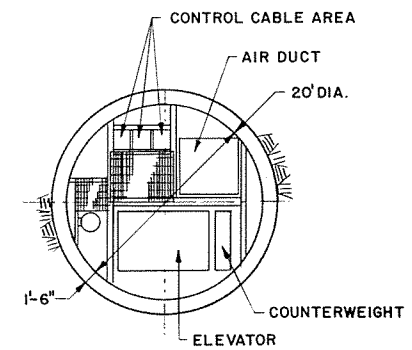
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	WATANA	
	POWER FACILITIES	
GENERAL ARRANGEMENT		
EXHIBIT F		PLATE F21



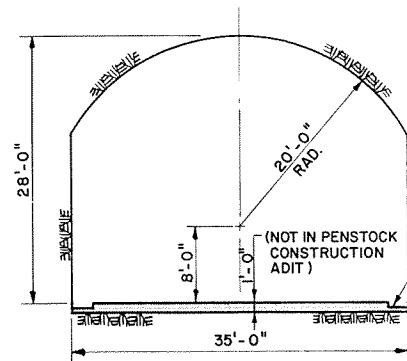
PLAN
SCALE A



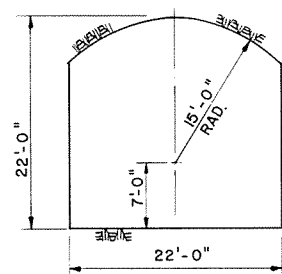
ISOMETRIC
SCALE A



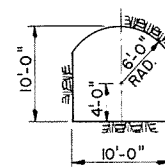
DETAIL I
SCALE B



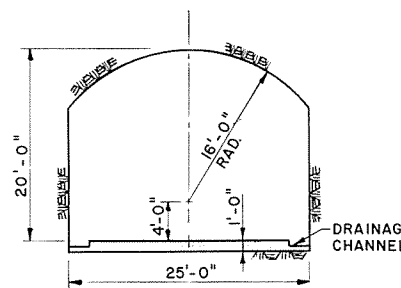
SECTION A-A
SCALE B



SECTION B-B
SCALE B



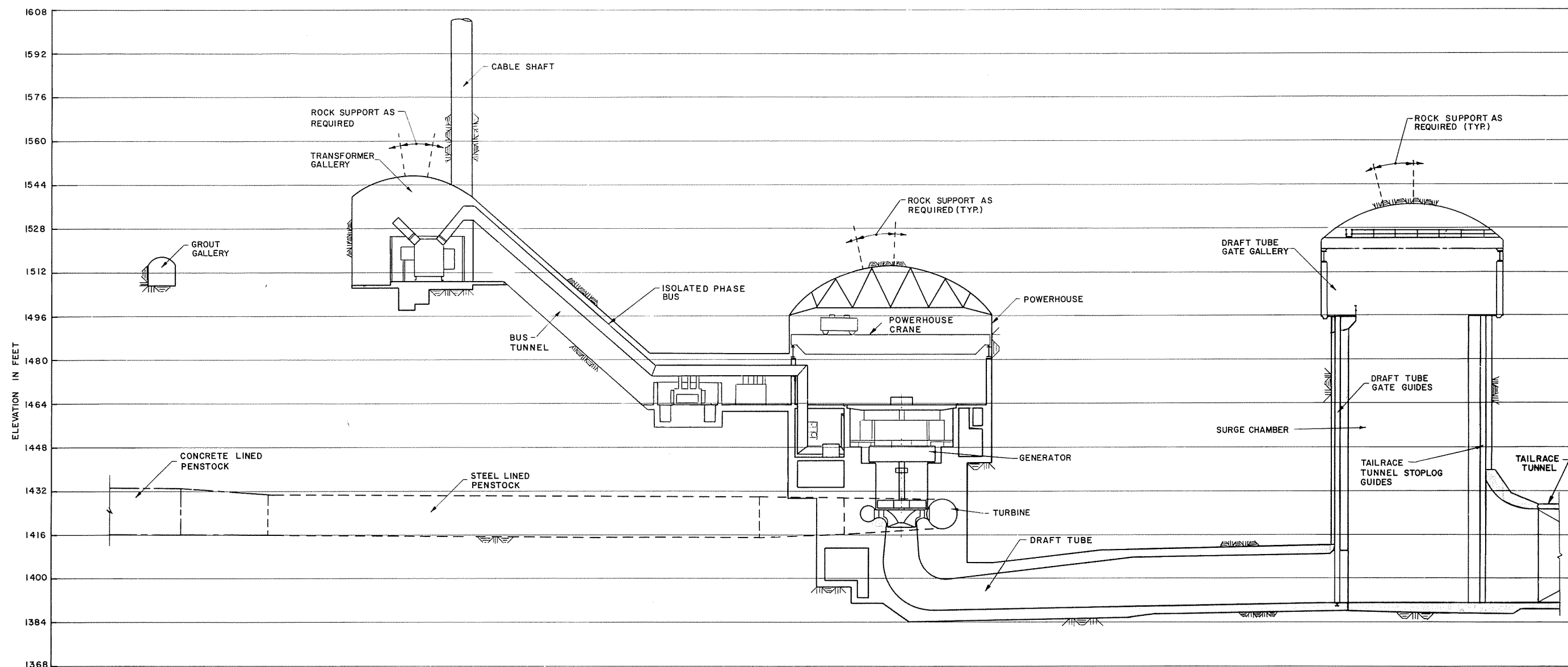
SECTION C-C
SCALE B



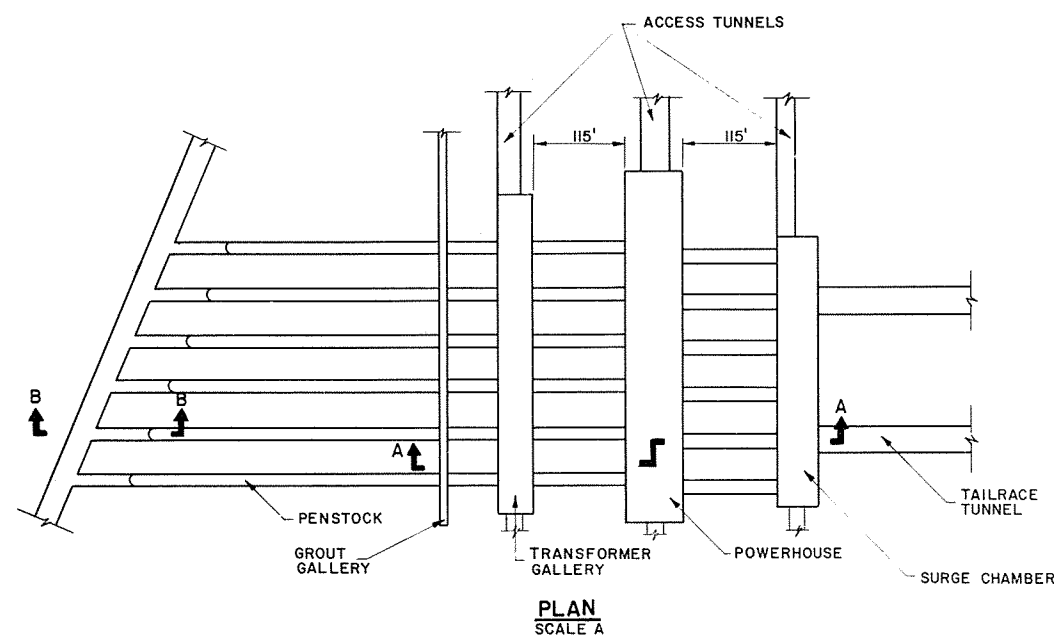
SECTION D-D
SCALE B

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

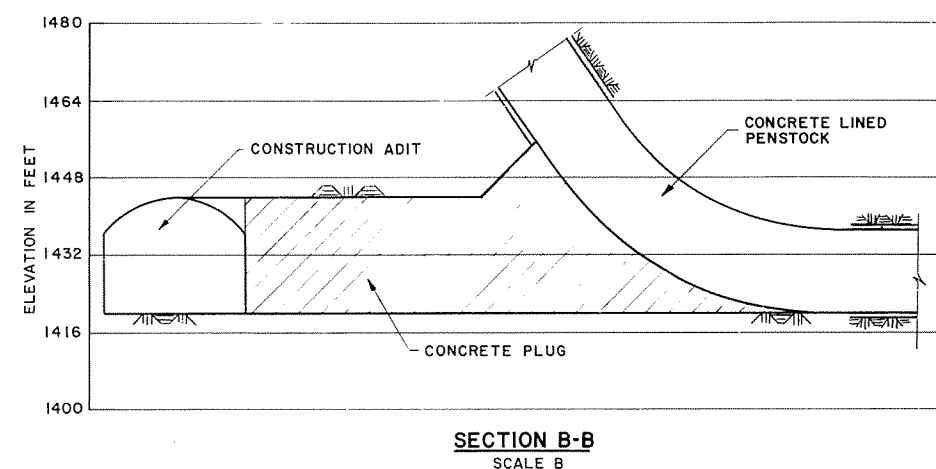
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWER FACILITIES ACCESS	
EXHIBIT F	PLATE F 22



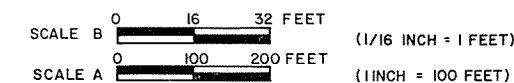
SECTION A-A
SCALE B



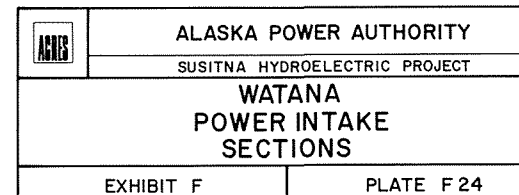
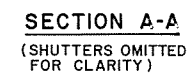
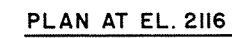
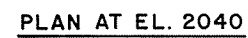
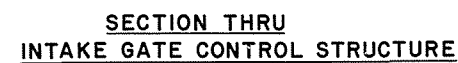
PLAN
SCALE A

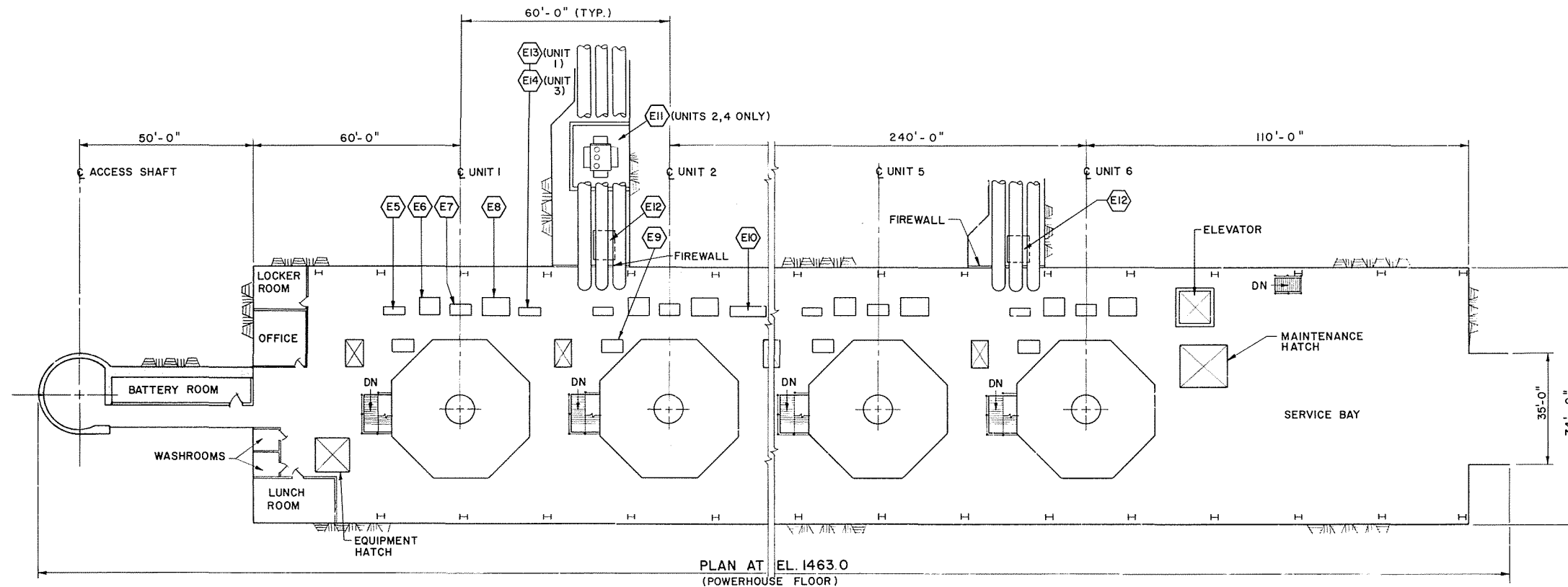
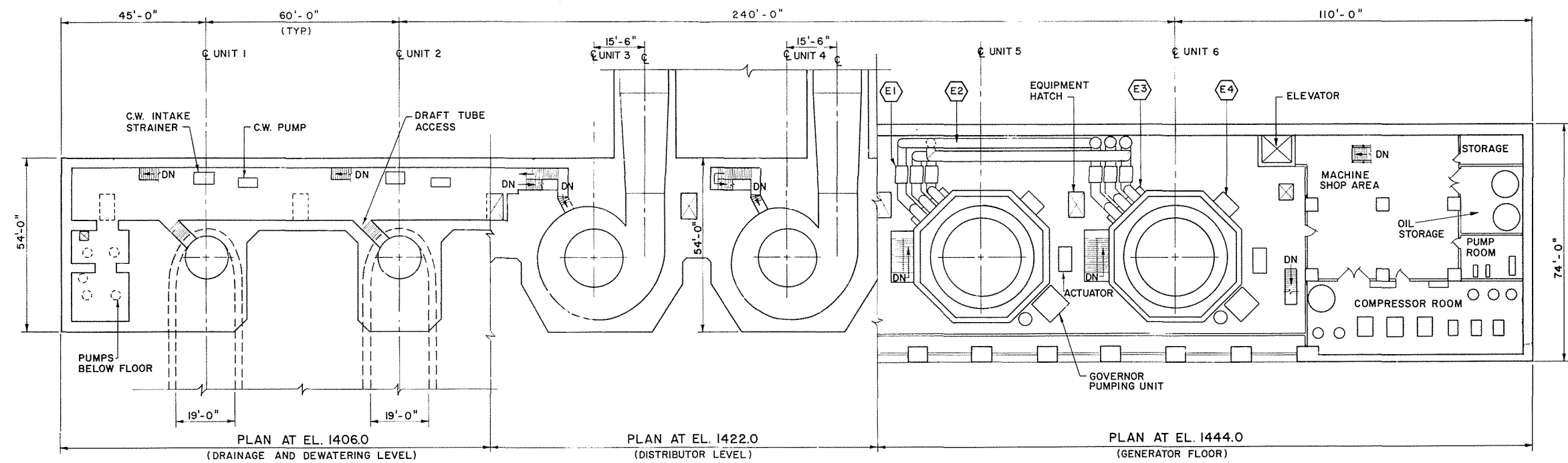


SECTION B-B
SCALE B



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





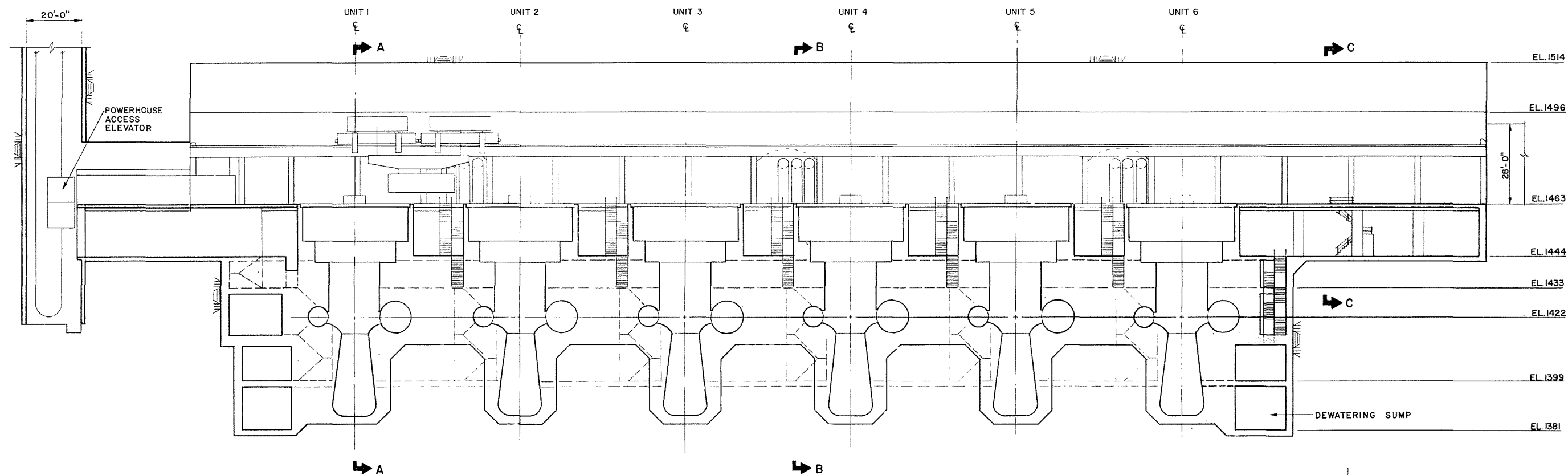
LEGEND

- 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

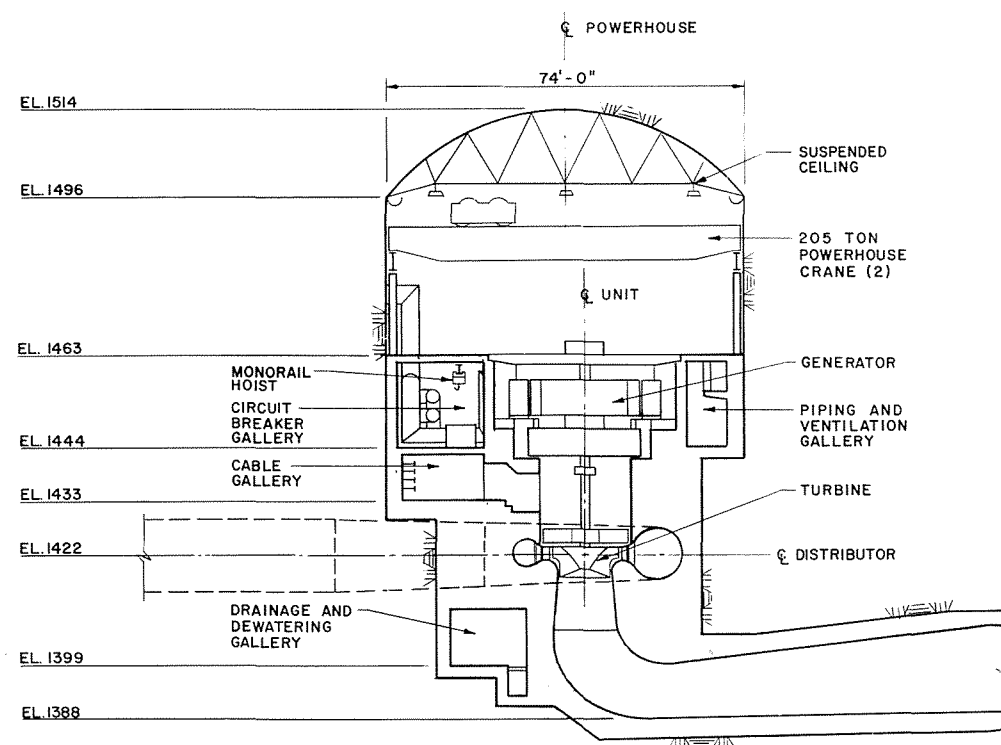
POWERHOUSE PLANS

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

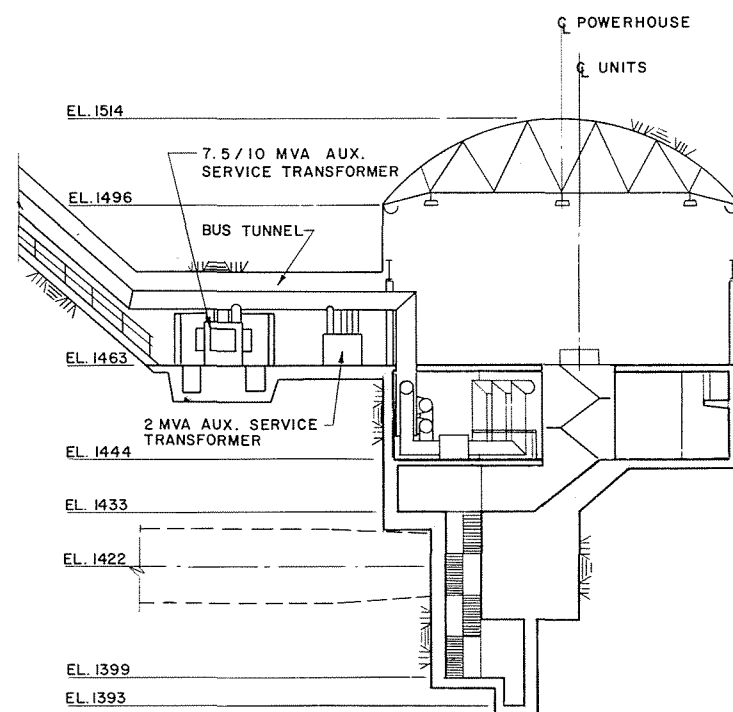
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE PLANS	
EXHIBIT F	PLATE F 25



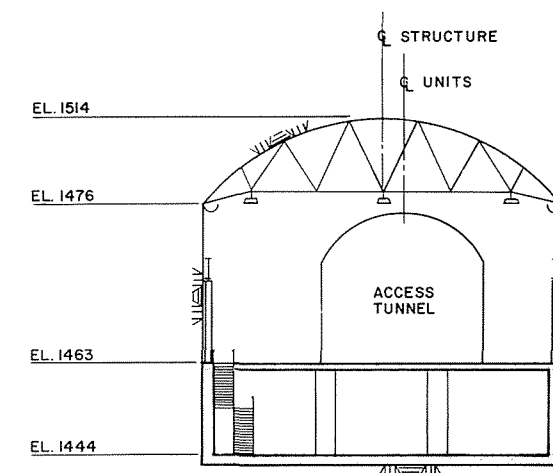
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS, UNITS NOT SHOWN)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



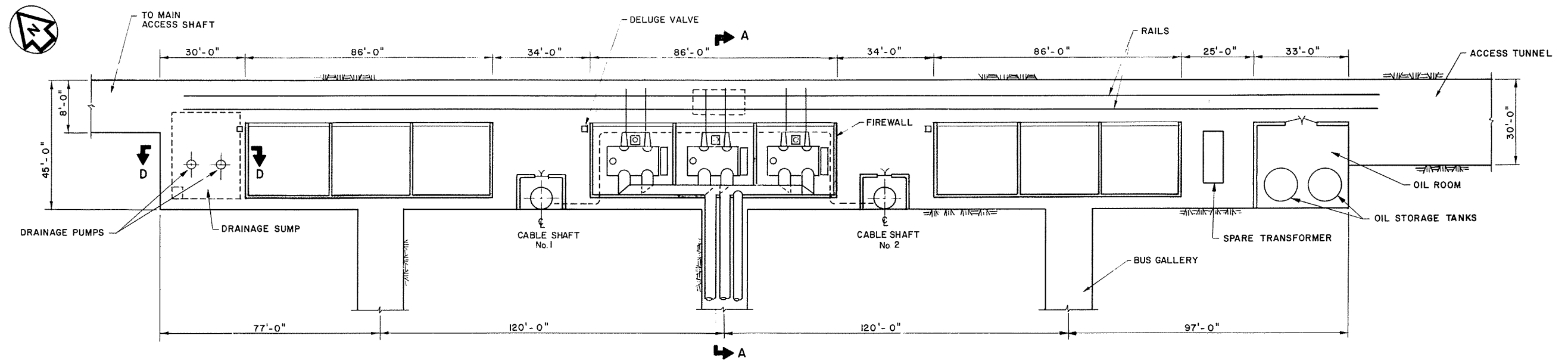
SECTION B-B (SECTION THRU BUS TUNNEL)



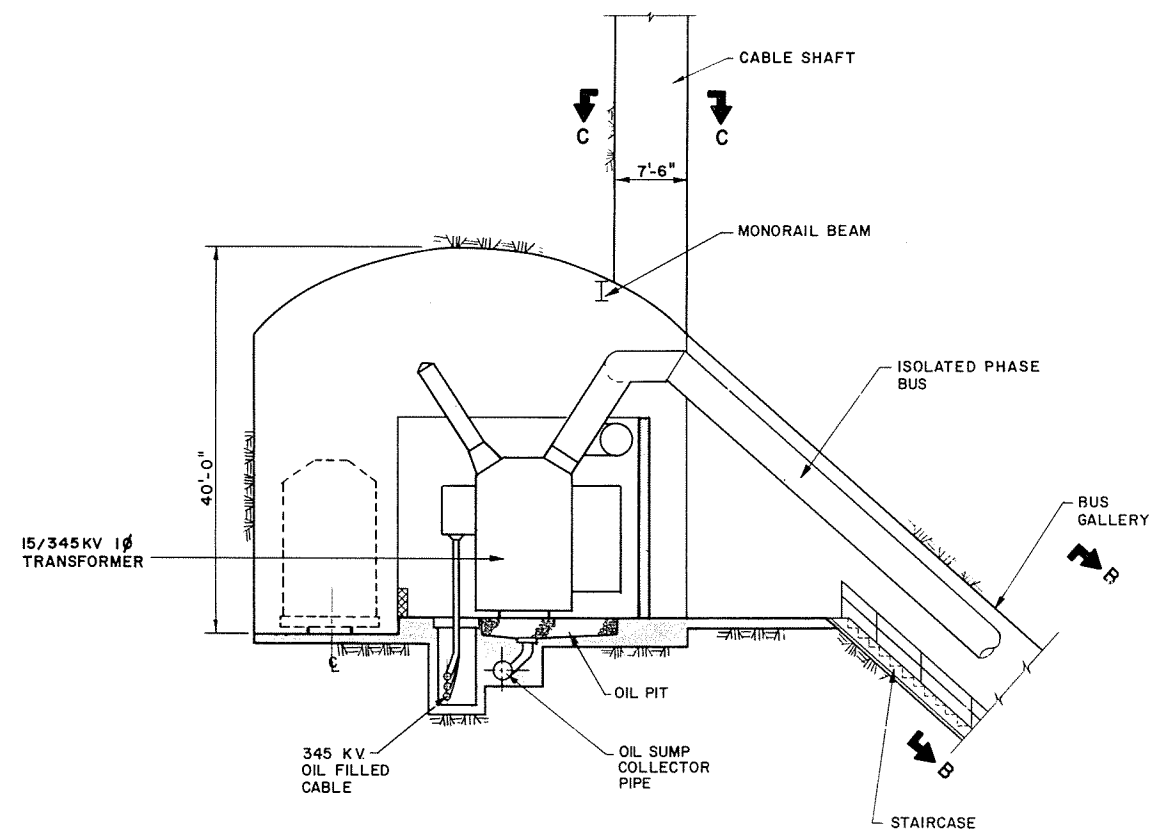
SECTION C-C
SECTION THRU SERVICE BAY

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

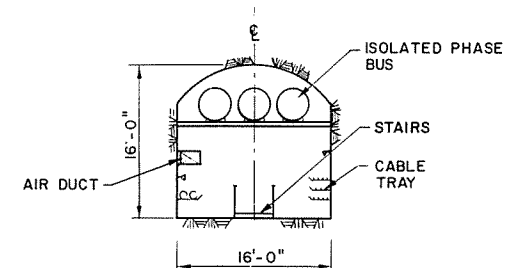
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F 26



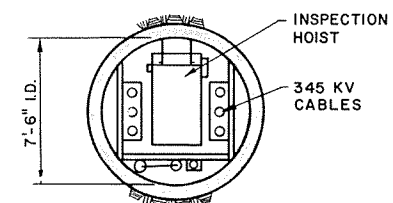
PLAN
SCALE A



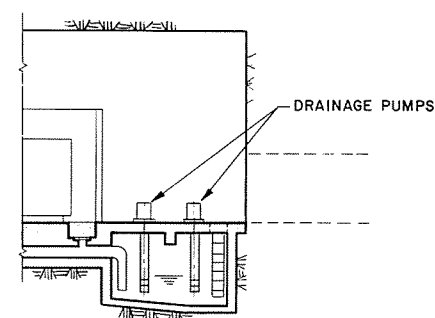
SECTION A-A
SCALE B



SECTION B-B
THROUGH BUS GALLERY
SCALE B



SECTION C-C
THROUGH CABLE SHAFT
SCALE C



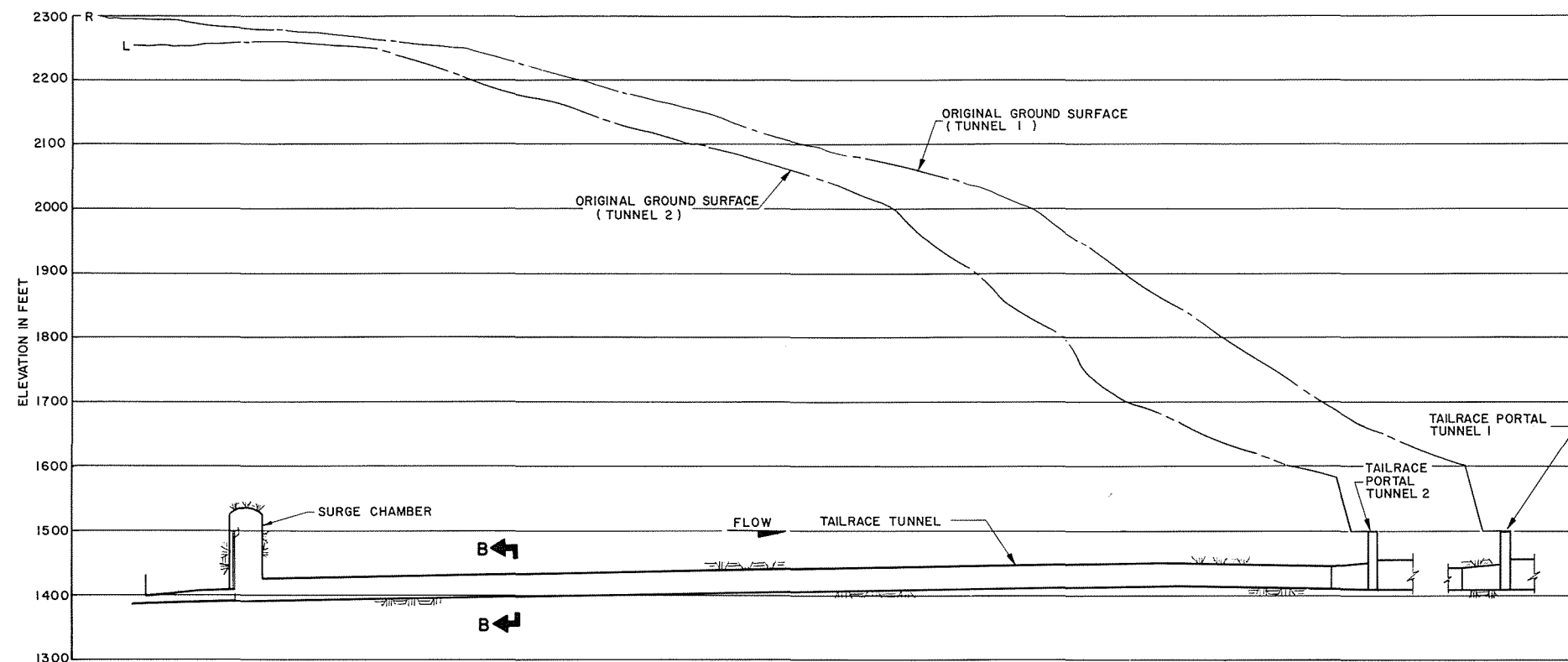
SECTION D-D
THROUGH SUMP
SCALE A

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

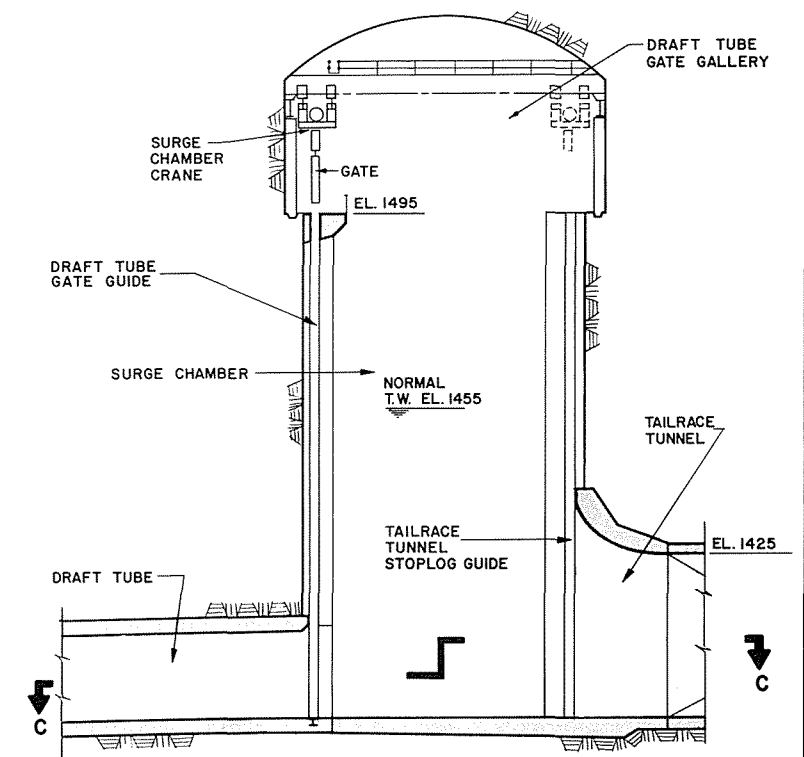
SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)

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

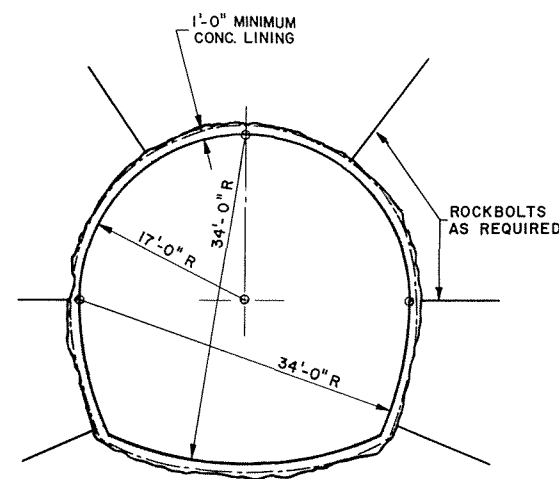
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
WATANA TRANSFORMER GALLERY PLAN & SECTIONS		
EXHIBIT F		PLATE F 27



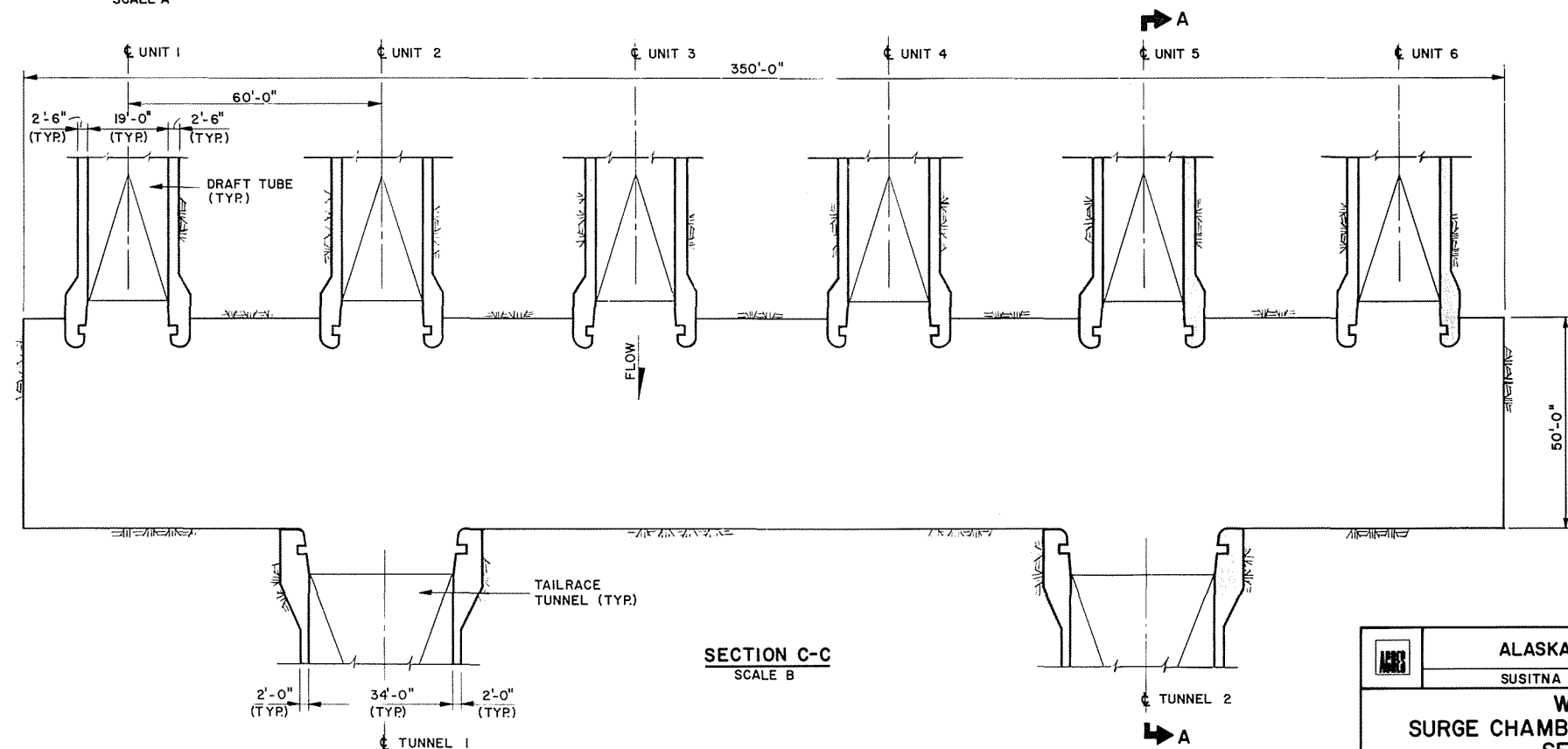
PROFILE
SCALE A



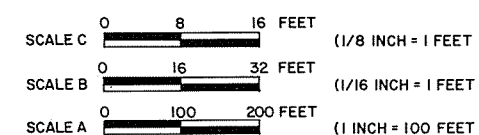
SECTION A-A
SCALE B



SECTION B-B
CONCRETE LINED TAILRACE TUNNEL
SCALE C



SECTION C-C
SCALE B



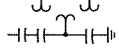
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
SURGE CHAMBER AND TAILRACE SECTIONS	
EXHIBIT F	PLATE F28

LEGEND

21	—	DISTANCE RELAY
21GB	—	GENERATOR BACK-UP RELAY
26	—	TRANSFORMER THERMAL DEVICE
27	—	UNDERVOLTAGE RELAY
40	—	FIELD FAILURE RELAY
41	—	FIELD CIRCUIT BREAKER
46	—	NEGATIVE PHASE SEQUENCE RELAY
49	—	THERMAL RELAY
50	—	INSTANTANEOUS OVERCURRENT RELAY
51	—	TIME OVERCURRENT RELAY
51N	—	TIME OVERCURRENT NEUTRAL RELAY
59	—	OVERVOLTAGE RELAY
59VHZ	—	VOLTS PER HERTZ
60	—	VOLTAGE BALANCE RELAY
63	—	GAS PRESSURE RELAY
64F	—	GENERATOR FIELD GROUND PROTECTIVE RELAY
64G	—	GENERATOR STATOR GROUND PROTECTIVE RELAY
71	—	OIL LEVEL RELAY
79	—	RECLOSING RELAY
81	—	FREQUENCY RELAY
84	—	EXCITER VOLTAGE BUILD-UP MECHANISM
87	—	DIFFERENTIAL PROTECTIVE RELAY

	AC GENERATOR, 3 PHASE, 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

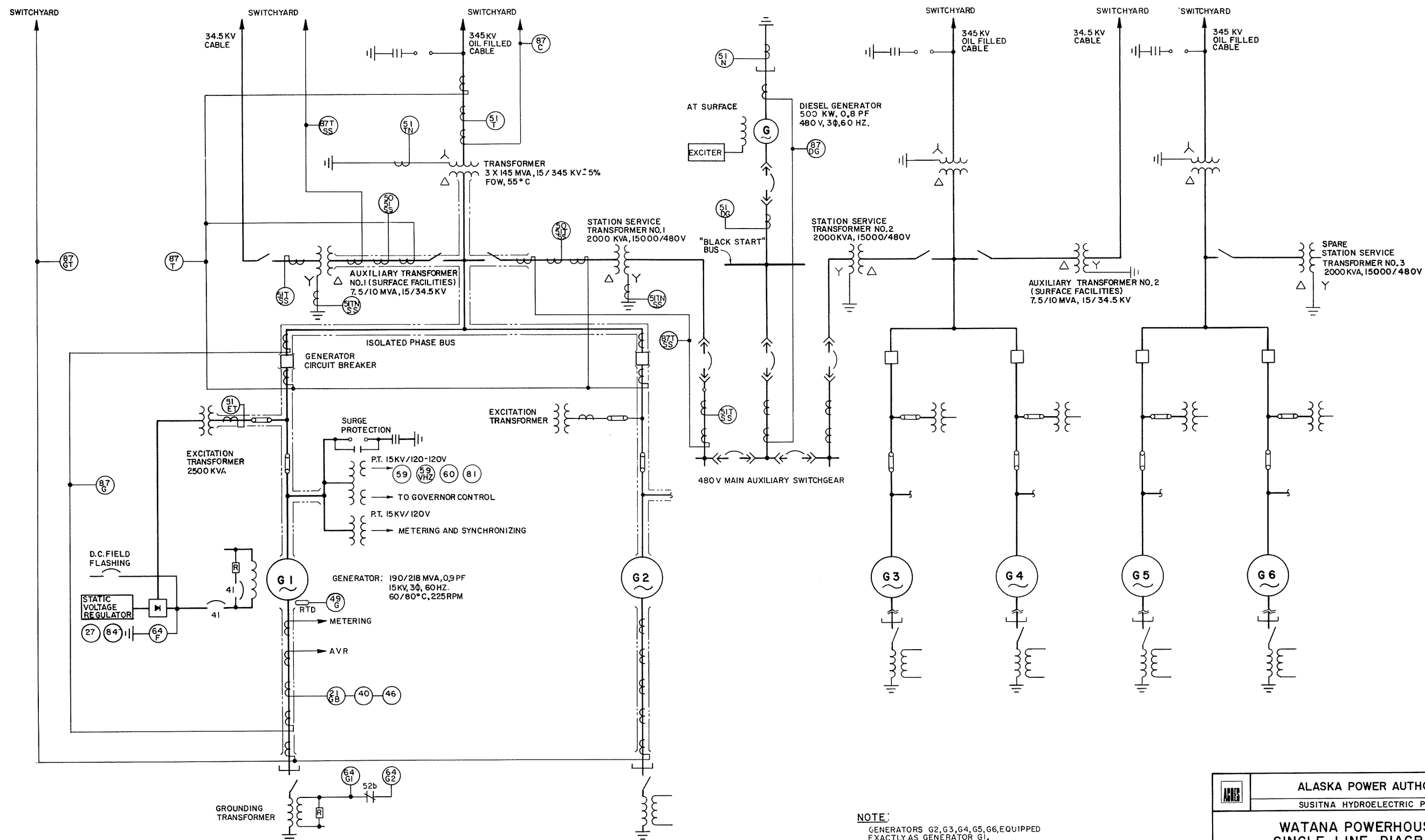
SYMBOLS:

	LIGHTNING ARRESTOR
	CAPACITOR COUPLING VOLTAGE TRANSFORMER
	RECTIFIER

NOTES

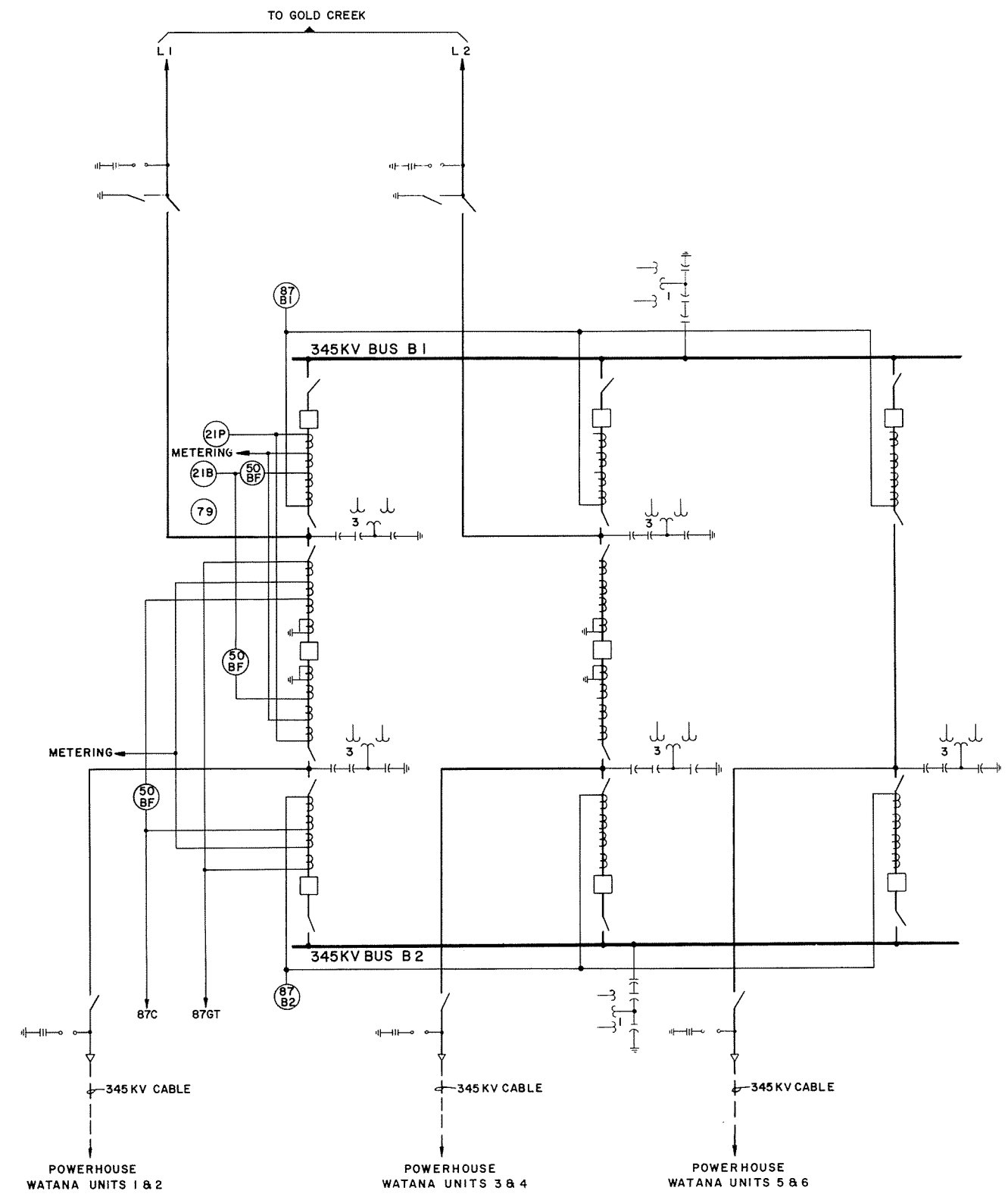
I. SUBSCRIPTS
T — TRANSFORMER
TN — TRANSFORMER NEUTRAL
TSS — STATION SERVICE TRANSFORMER
ET — EXCITATION TRANSFORMER
DG — DIESEL GENERATOR
R — REACTOR
GT — GENERATOR TRANSFORMER
F — FIELD
P — PRIMARY
B — BACK UP
BF — BREAKER FAILURE
B1 — BUS NO. 1
B2 — BUS NO. 2
G — GENERATOR
G1 — GENERATOR NO. 1
G2 — 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

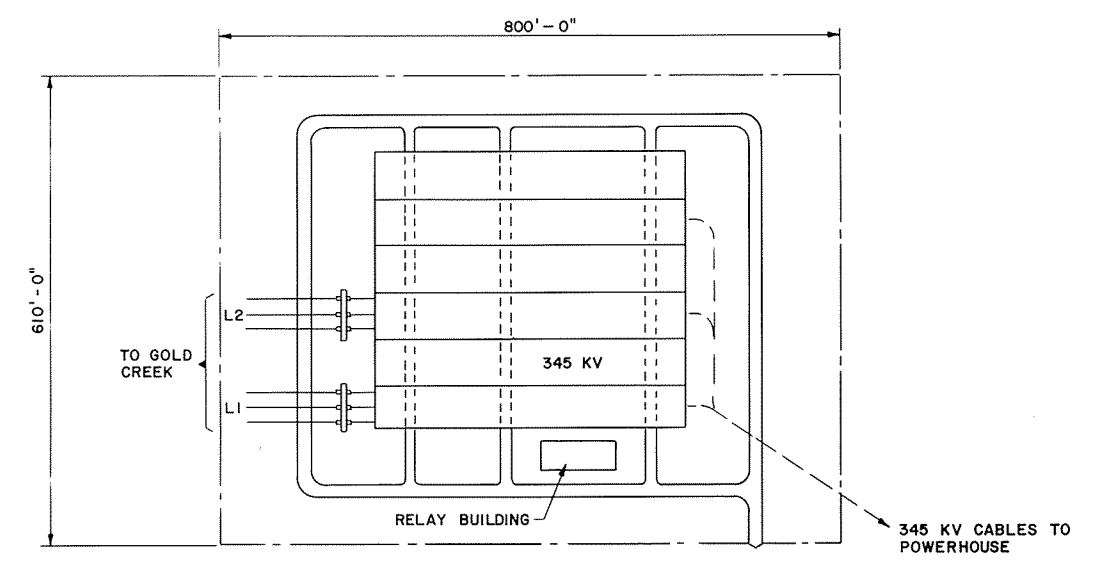


NOTE:
GENERATORS G2, G3, G4, G5, G6, EQUIPPED EXACTLY AS GENERATOR G1.

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



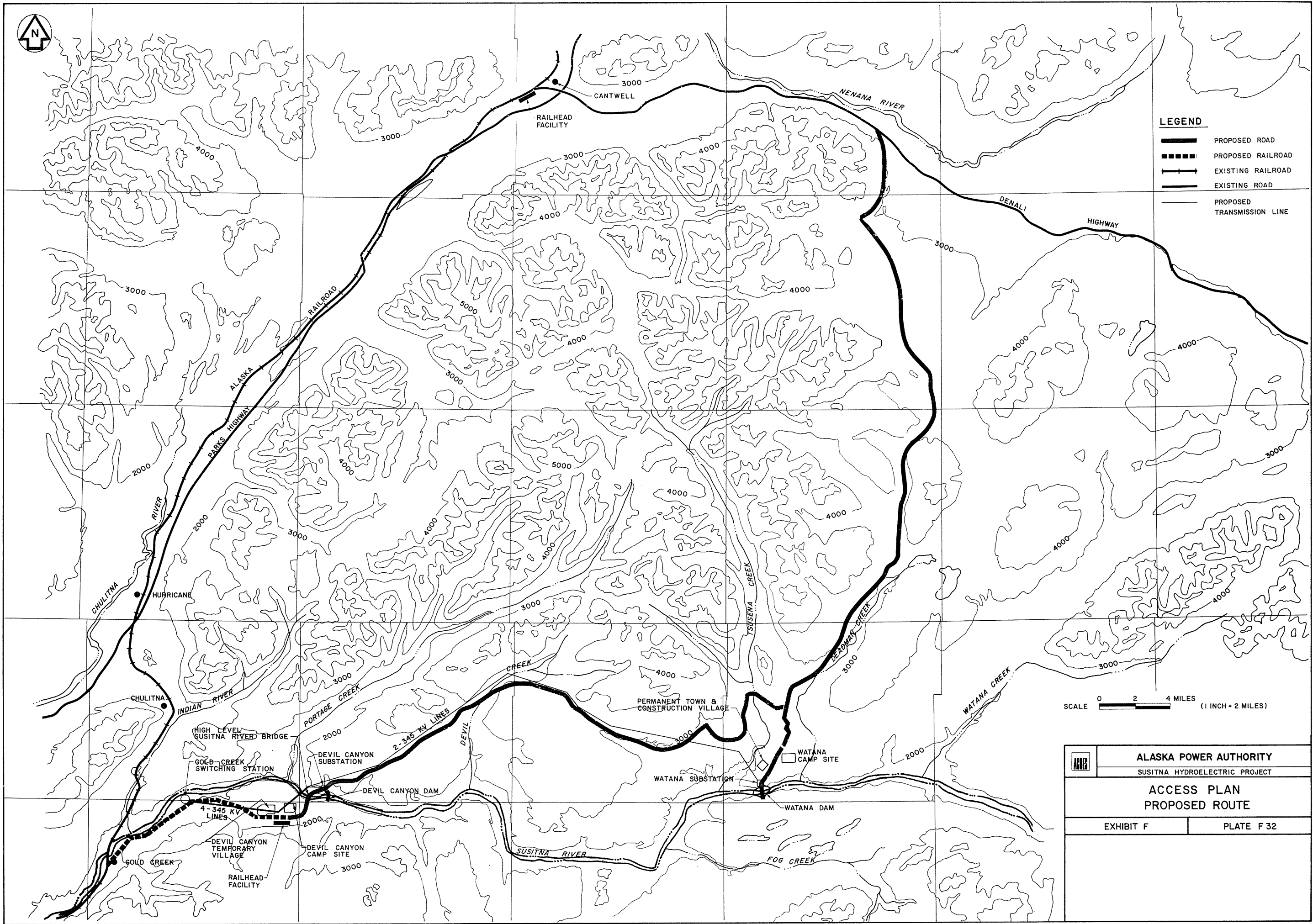
SINGLE LINE DIAGRAM

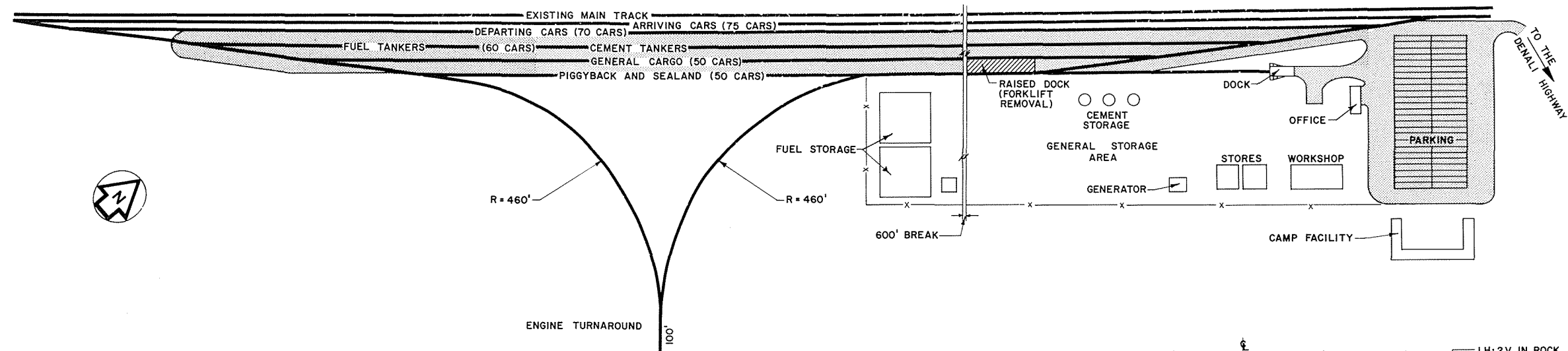


SWITCHYARD PLAN
SCALE A

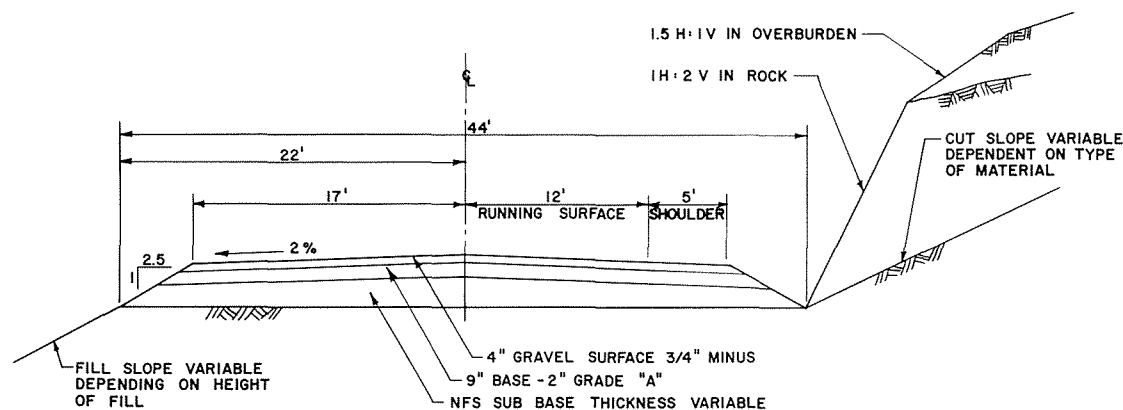
SCALE A 0 100 200 FEET
(1 INCH = 100 FEET)

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

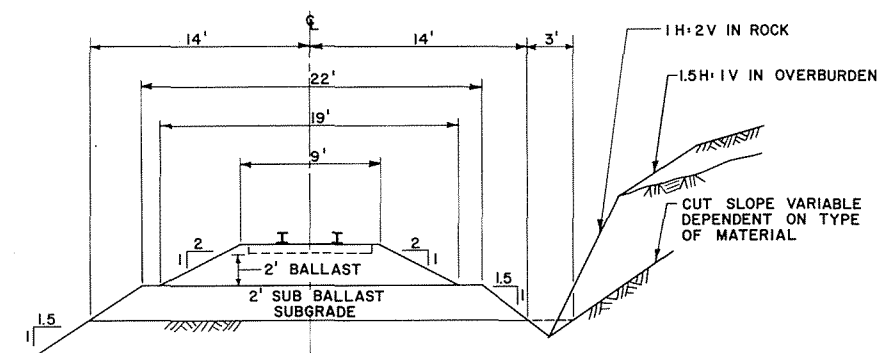




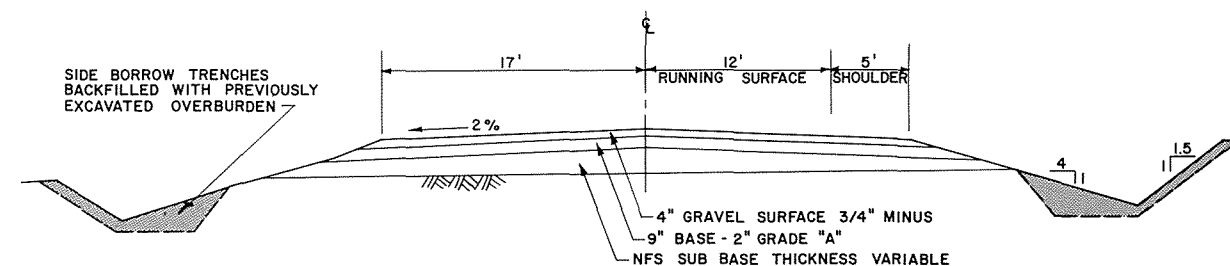
RAILHEAD FACILITY AT CANTWELL - PLAN
SCALE A



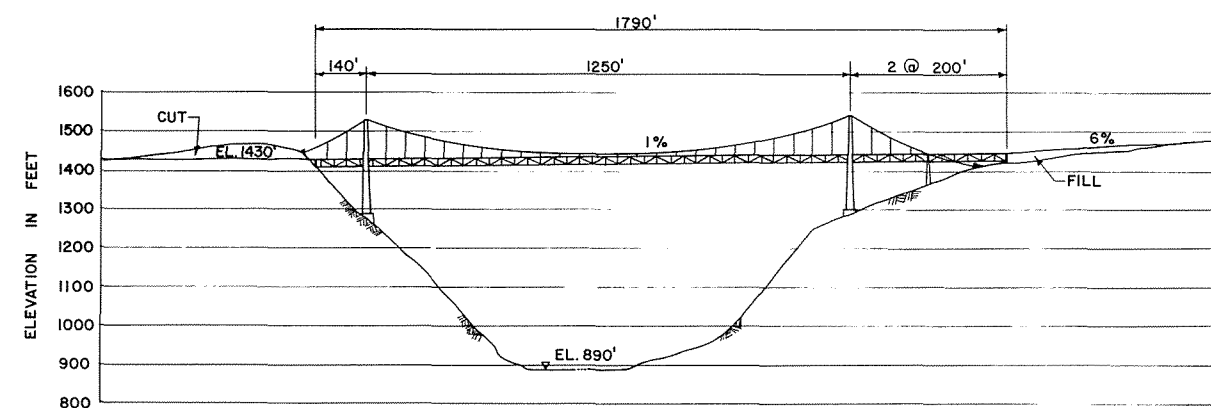
TYPICAL 'SIDEHILL CUT' SECTION
SCALE B



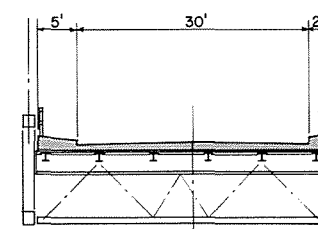
TYPICAL RAILROAD CROSS SECTION
SCALE B



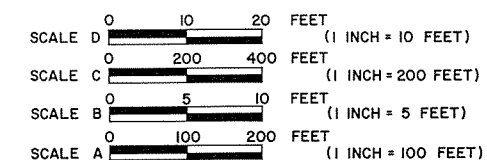
TYPICAL 'SIDE BORROW' SECTION
SCALE B



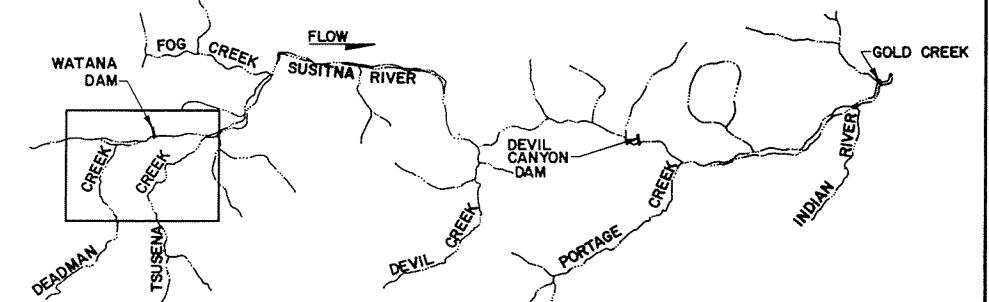
HIGH LEVEL SUSITNA RIVER BRIDGE
SCALE C



TYPICAL CROSS SECTION
HIGH LEVEL SUSITNA RIVER BRIDGE
SCALE D

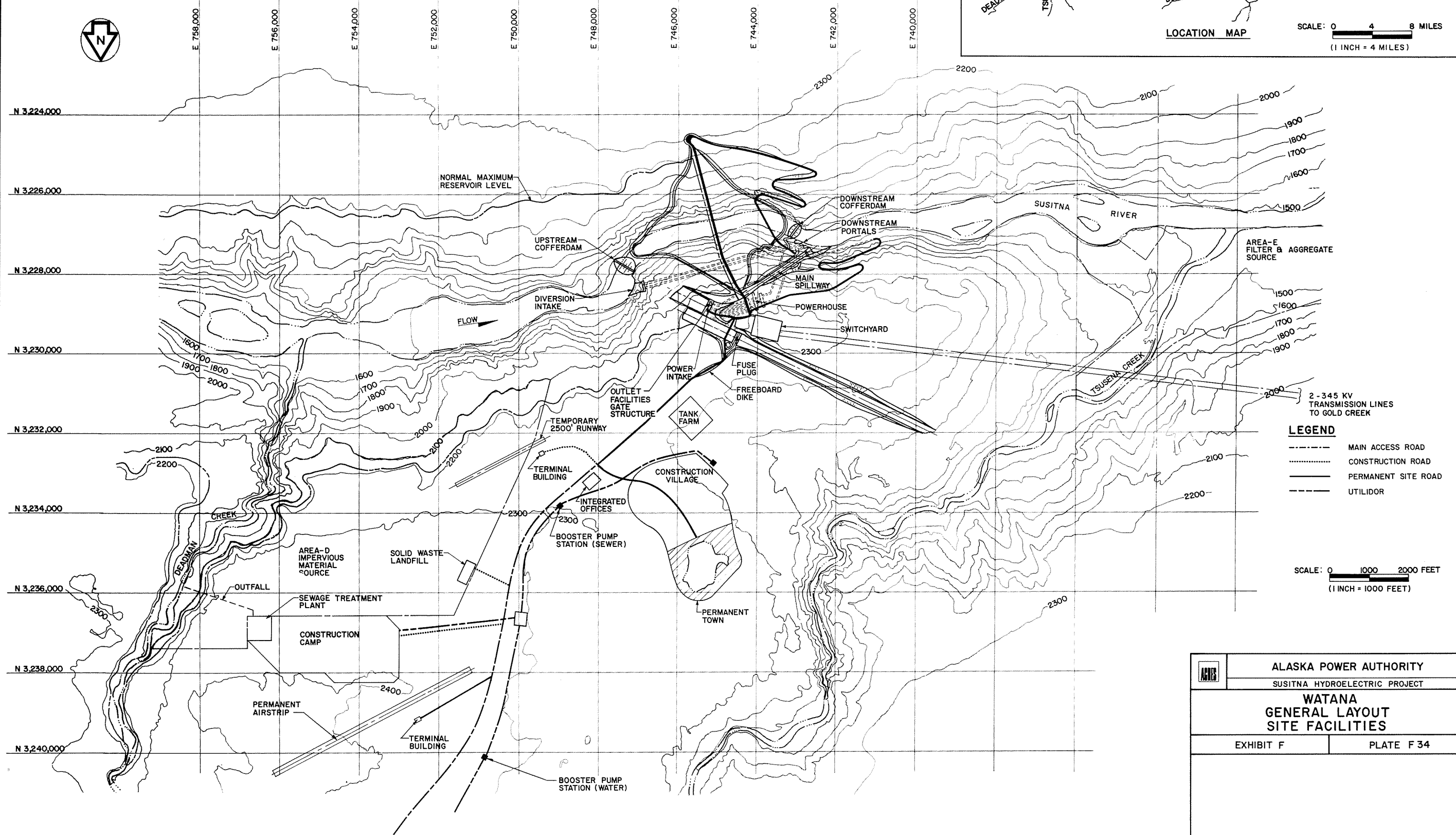


	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
ACCESS PLAN TYPICAL DETAILS	
EXHIBIT F	PLATE F 33



LOCATION MAP

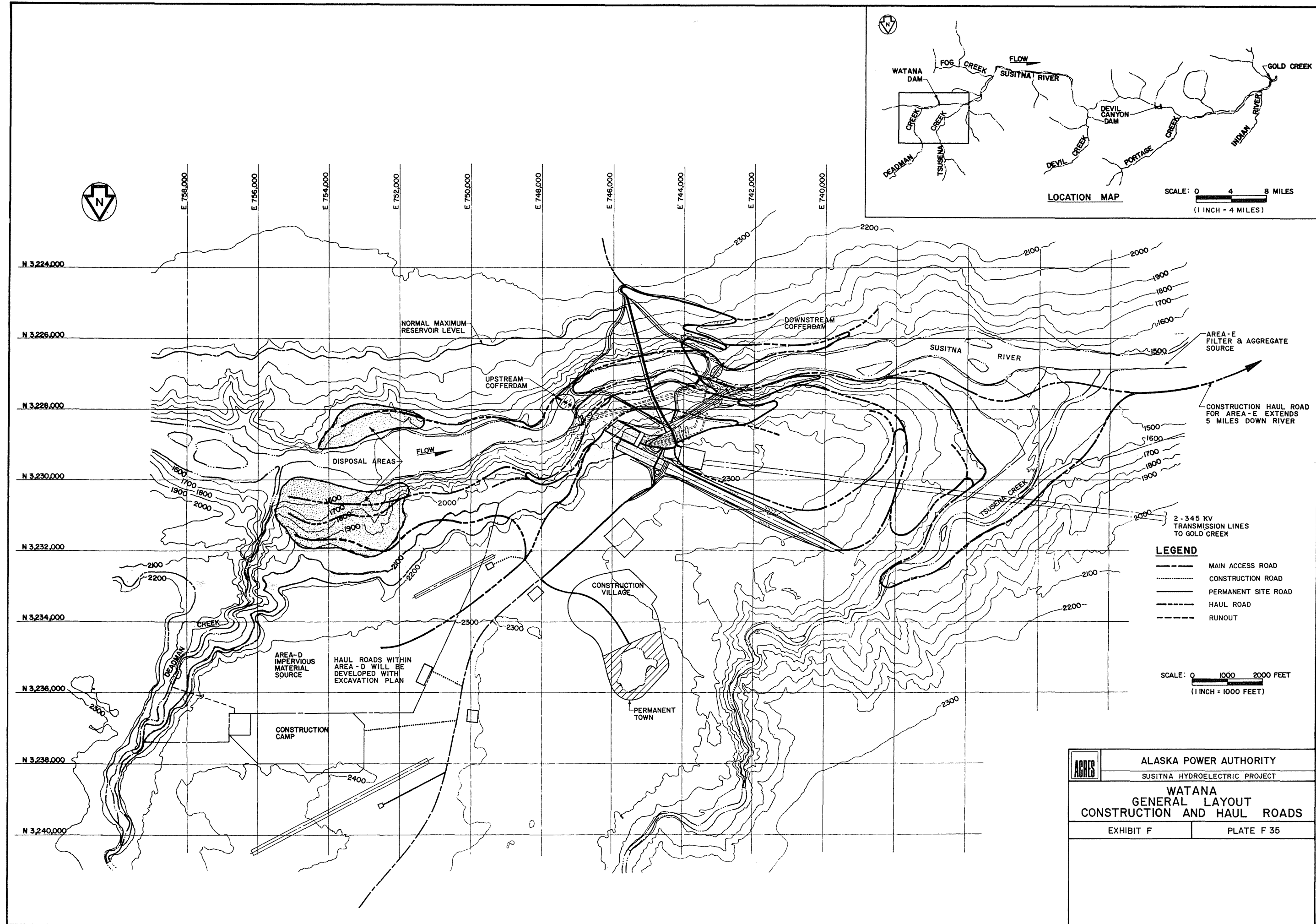
SCALE: 0 4 8 MILES
(1 INCH = 4 MILES)



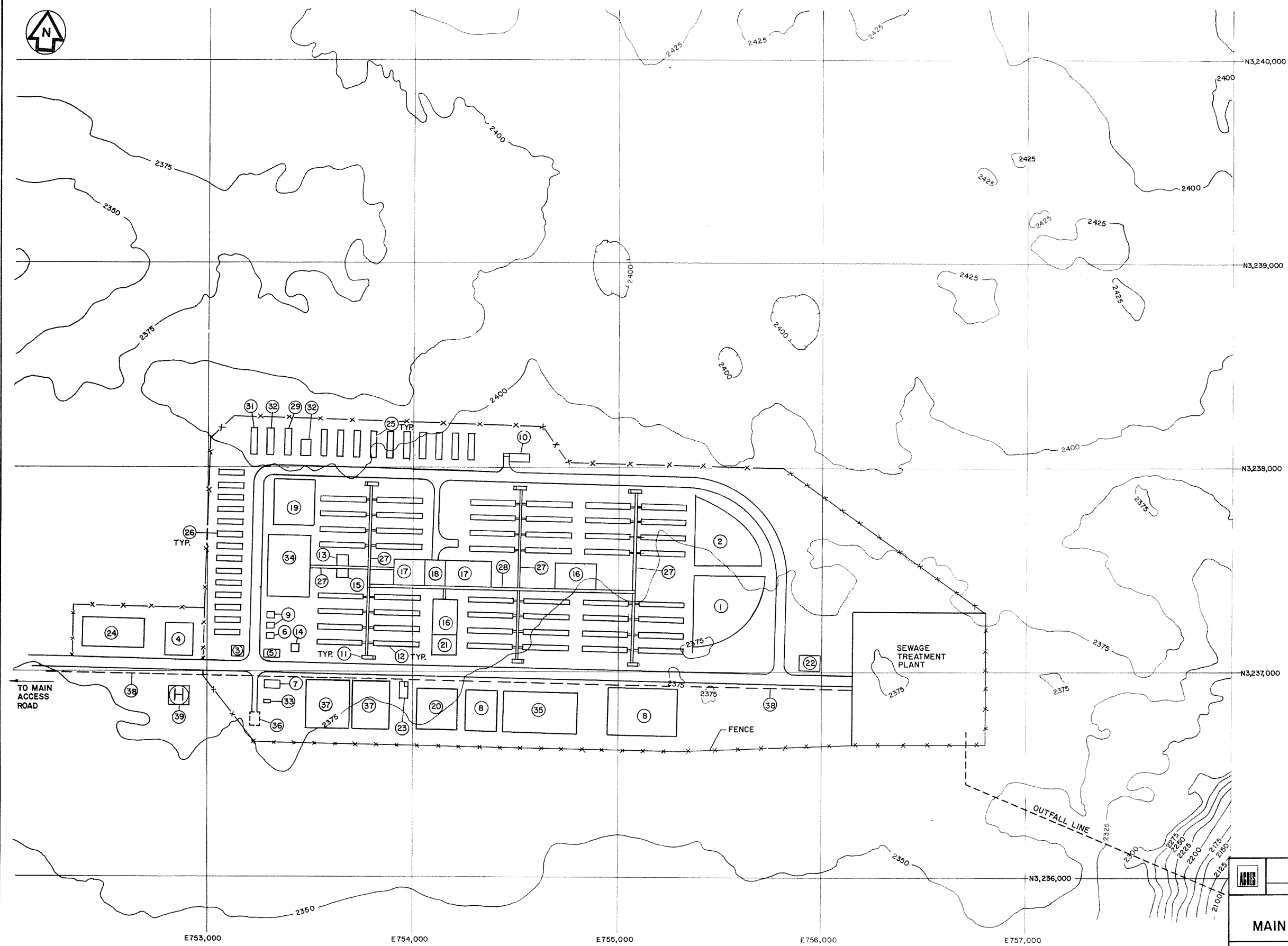
- LEGEND**
- MAIN ACCESS ROAD
 - CONSTRUCTION ROAD
 - PERMANENT SITE ROAD
 - - - UTILIDOR

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



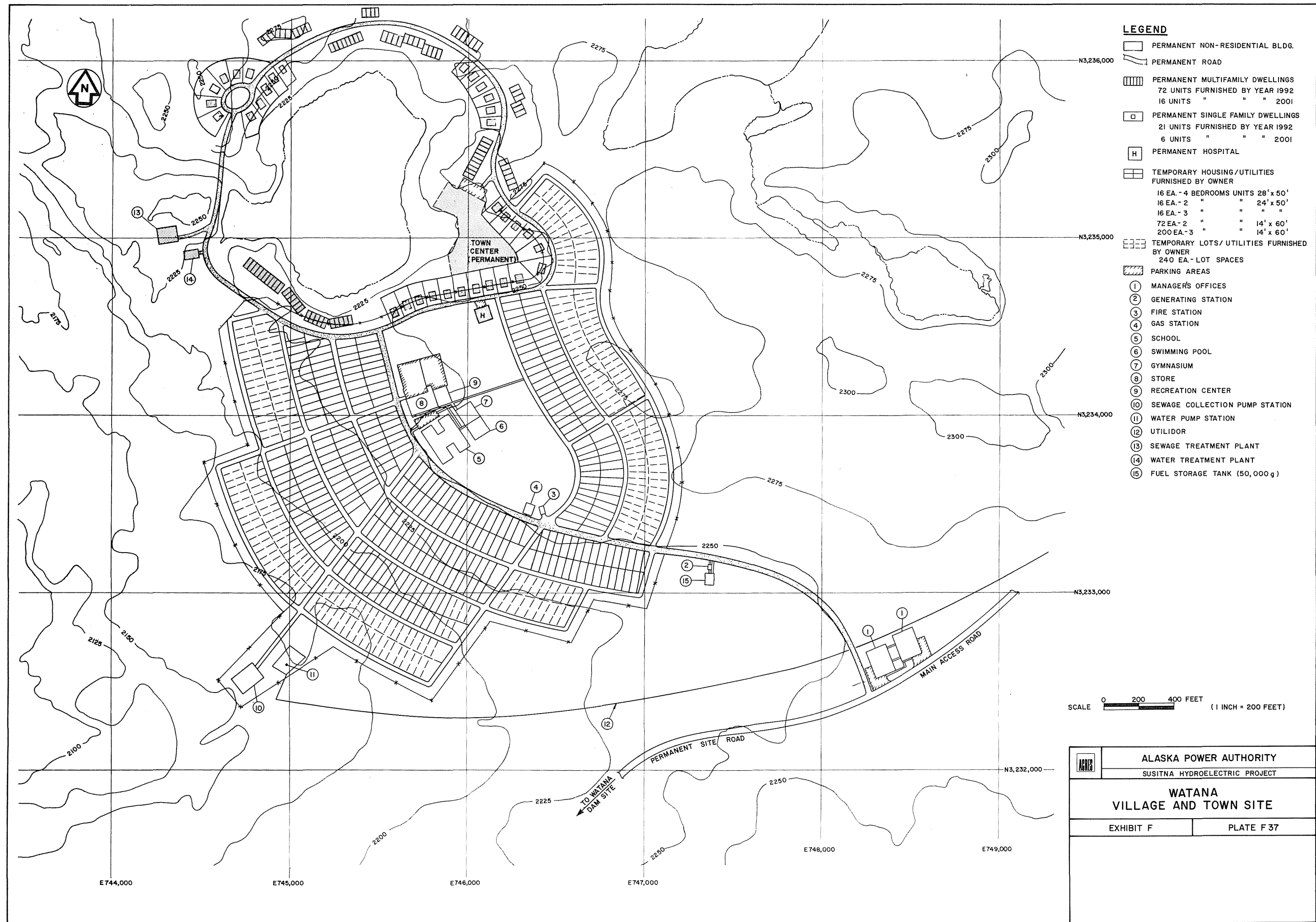
LEGEND

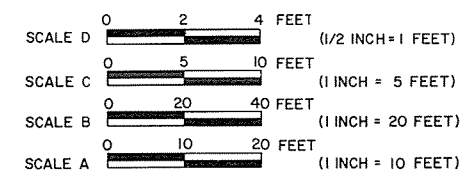
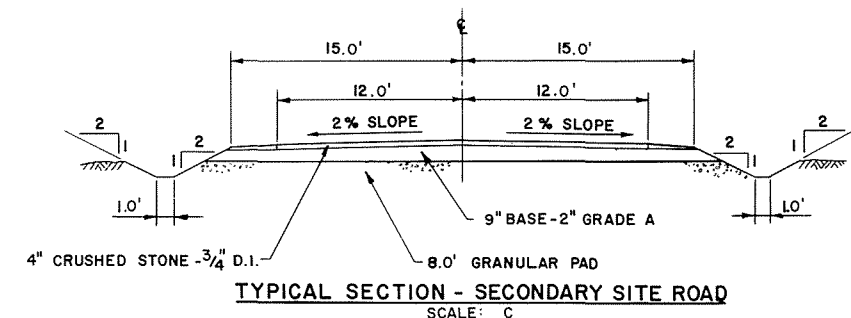
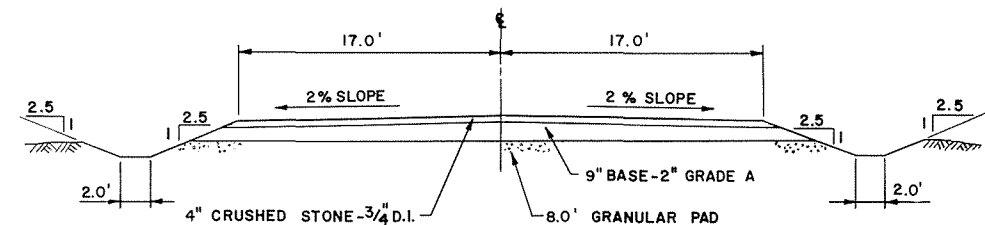
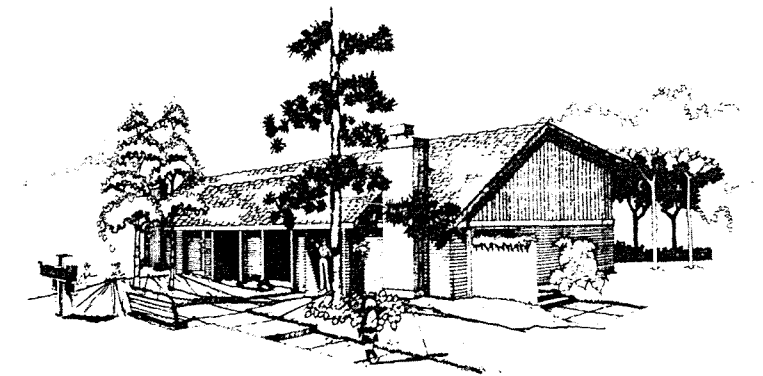
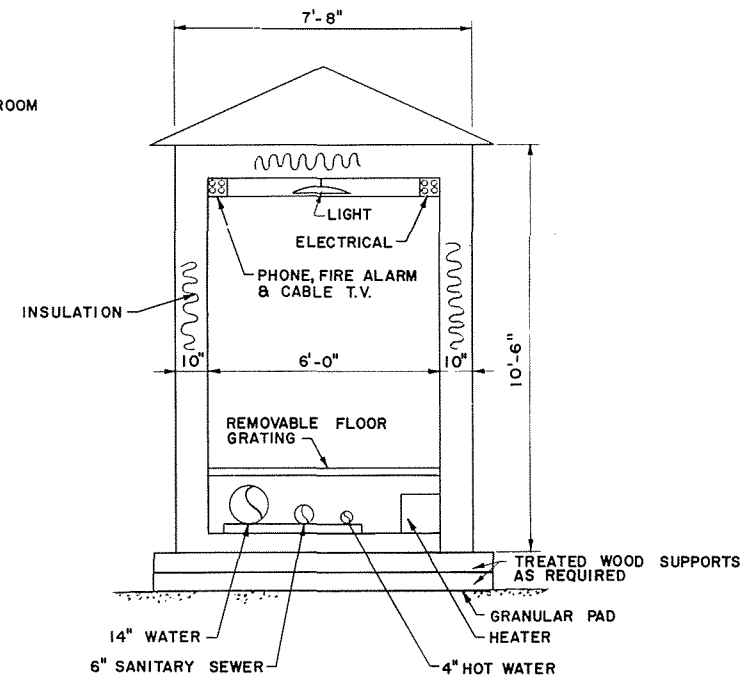
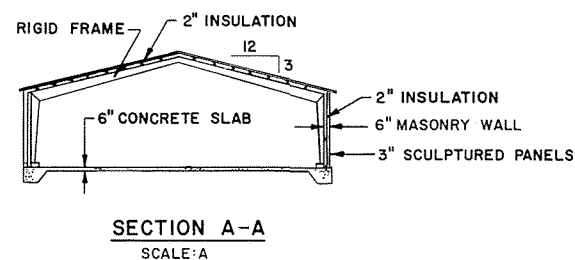
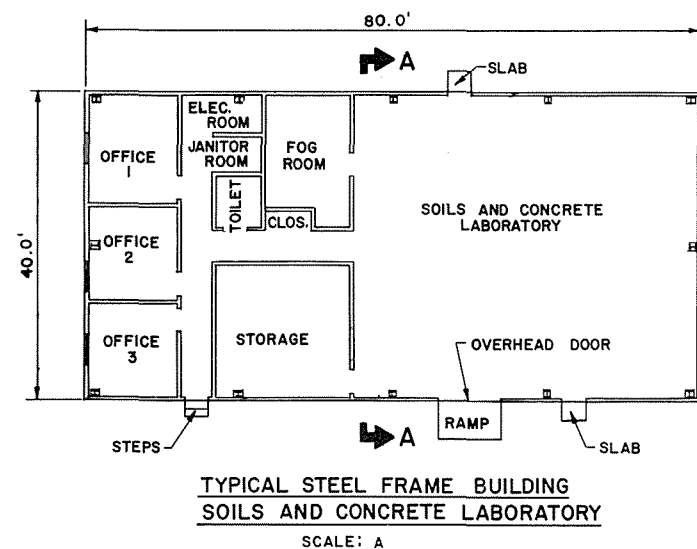
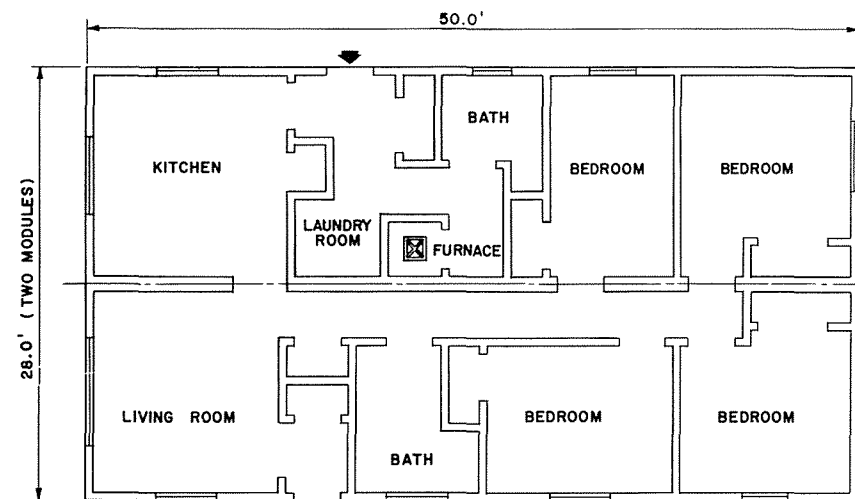
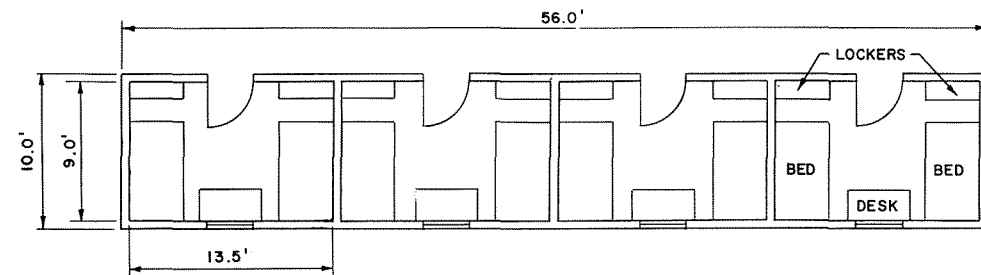
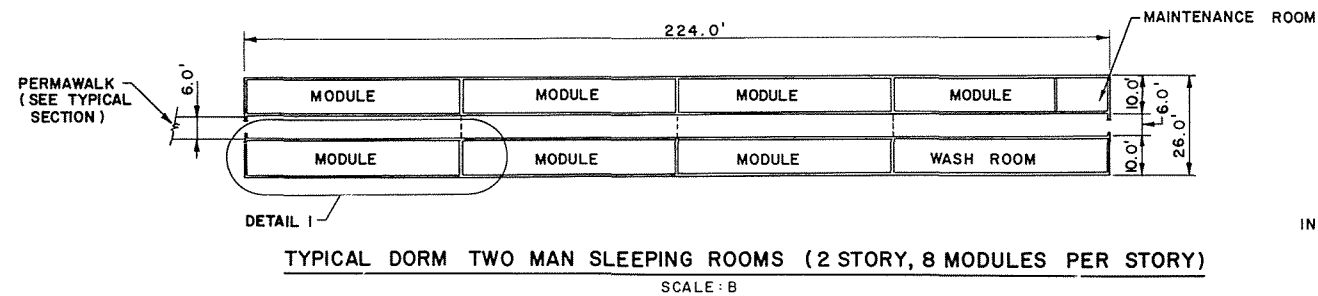
- 1 BASEBALL
- 2 SOFTBALL
- 3 SECURITY
- 4 HOSPITAL
- 5 FIRE & OIL SPILL
- 6 CAMP MANAGER'S OFFICE
- 7 SOILS LAB
- 8 PARKING AREAS
- 9 ADMINISTRATION OFFICES
- 10 STORE
- 11 BUS SHELTERS
- 12 DORMITORIES
- 13 LAUNDRY
- 14 COMMUNICATIONS CTR.
- 15 BANK
- 16 RECREATION HALL
- 17 KITCHEN & DINING
- 18 FOOD 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

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

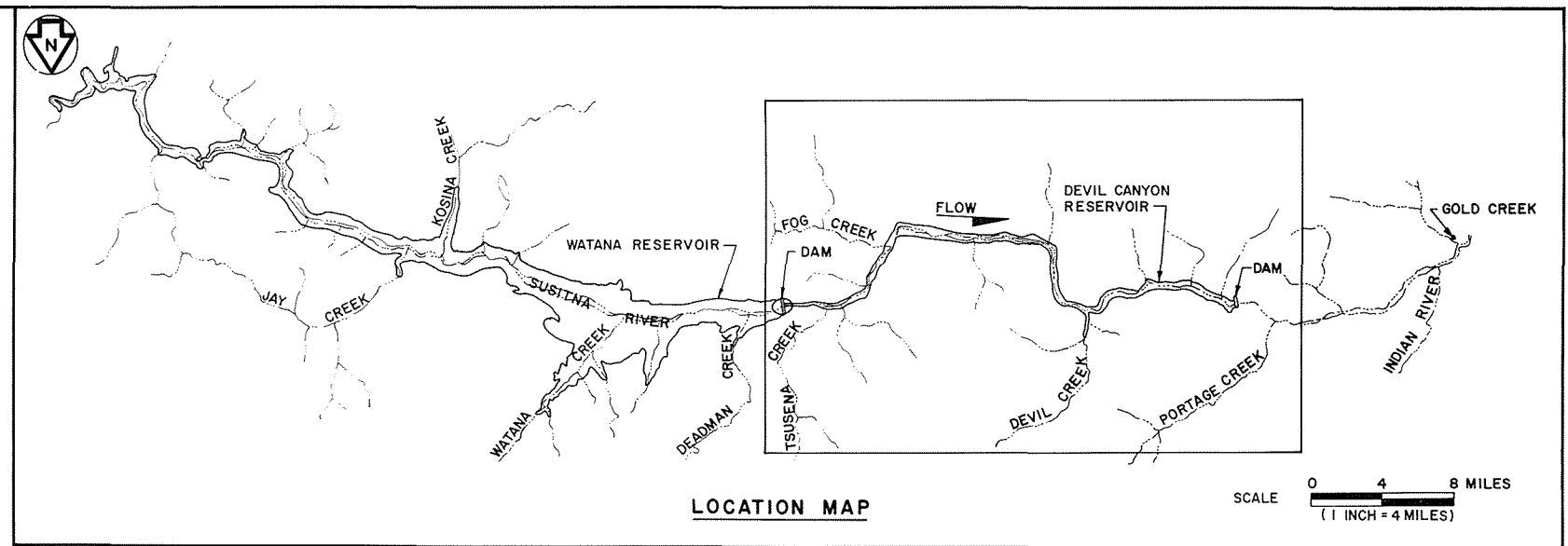


ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
**WATANA
MAIN CONSTRUCTION CAMP SITE**
EXHIBIT F PLATE F36





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



LOCATION MAP

LEGEND

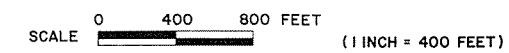
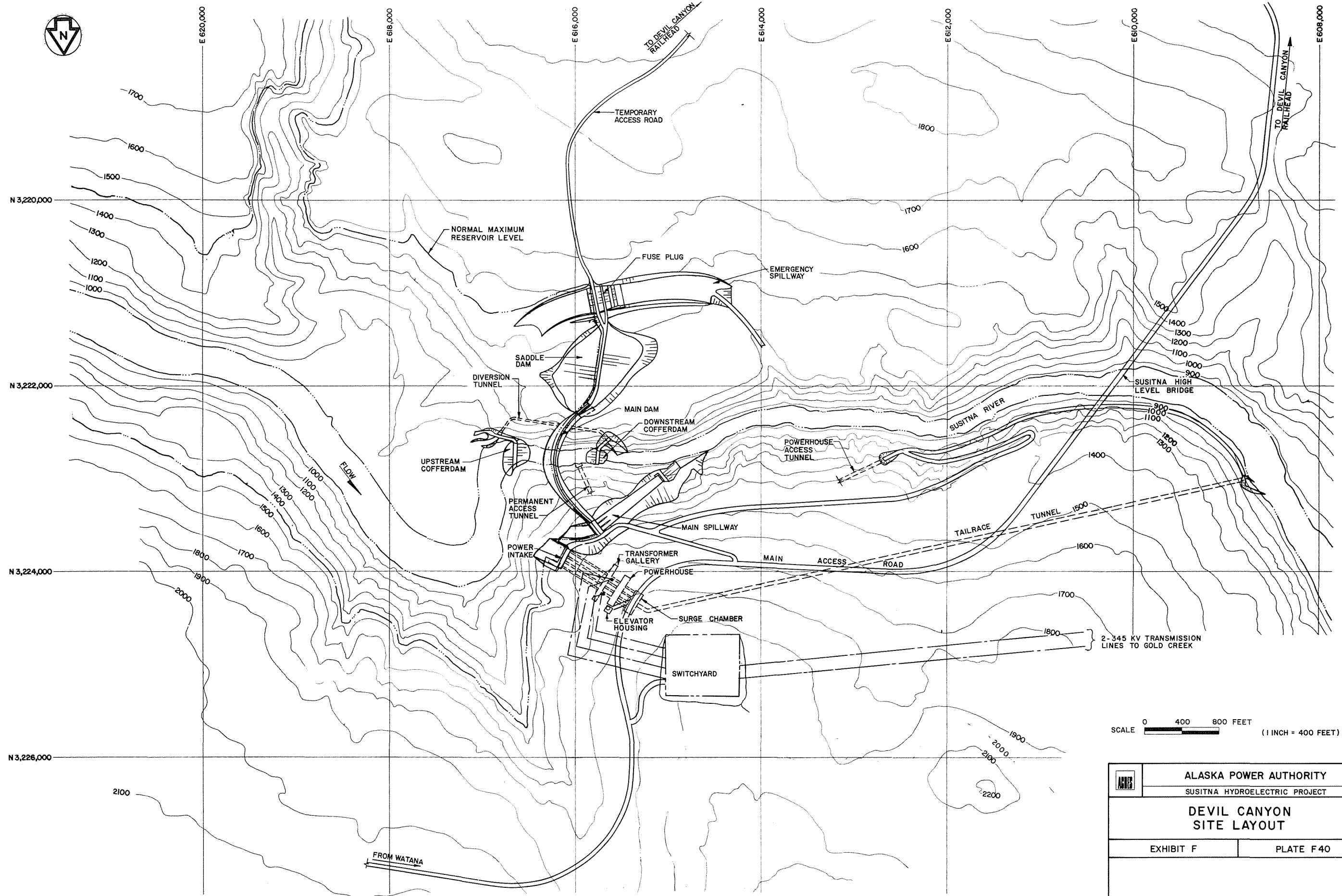
- NORMAL MAXIMUM OPERATING LEVEL EL. 1455
- 2000 CONTOUR IN FEET ABOVE MSL



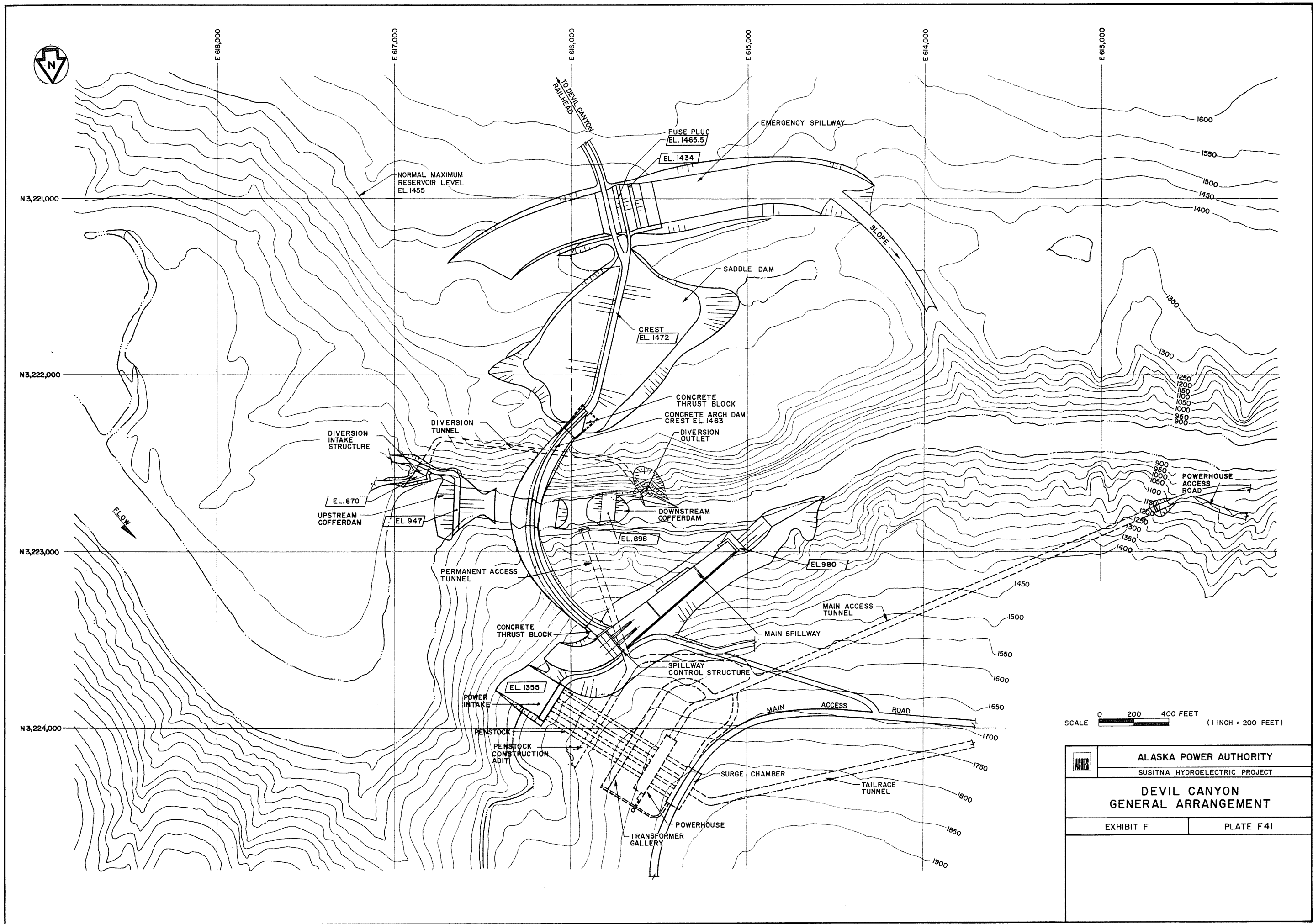
PLAN

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

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

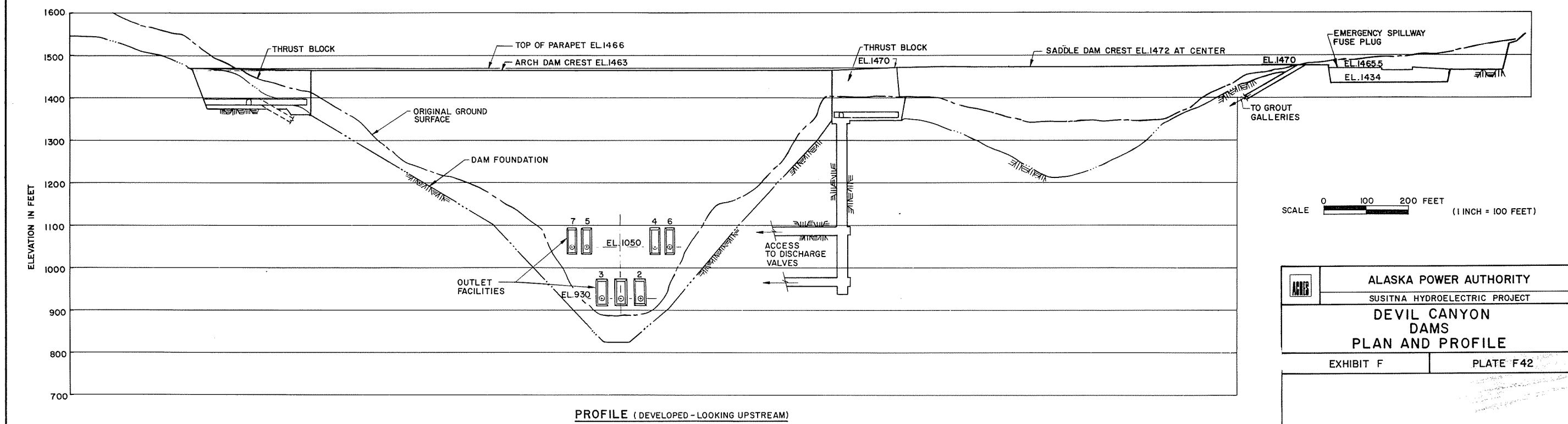
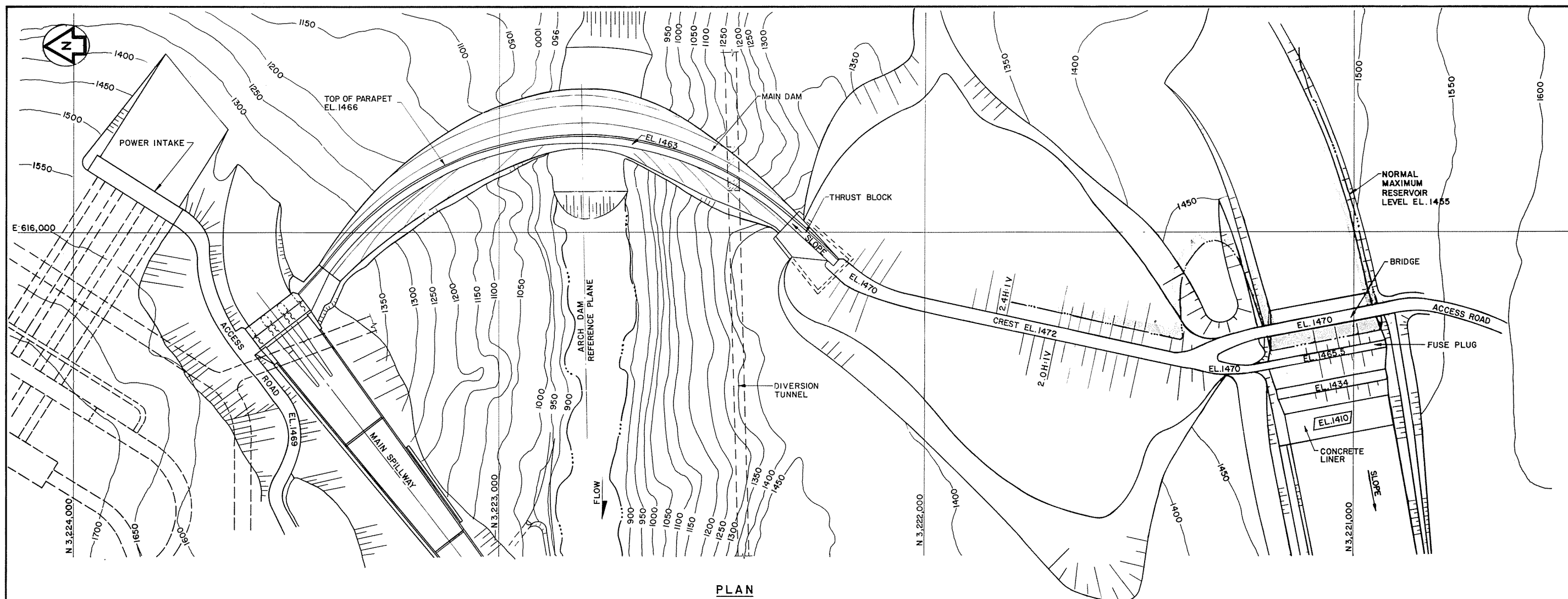


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SITE LAYOUT		
EXHIBIT F		PLATE F40



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

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



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

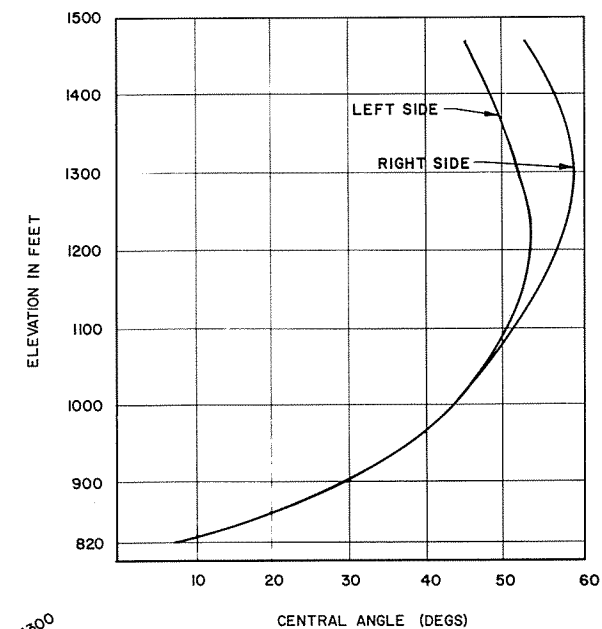
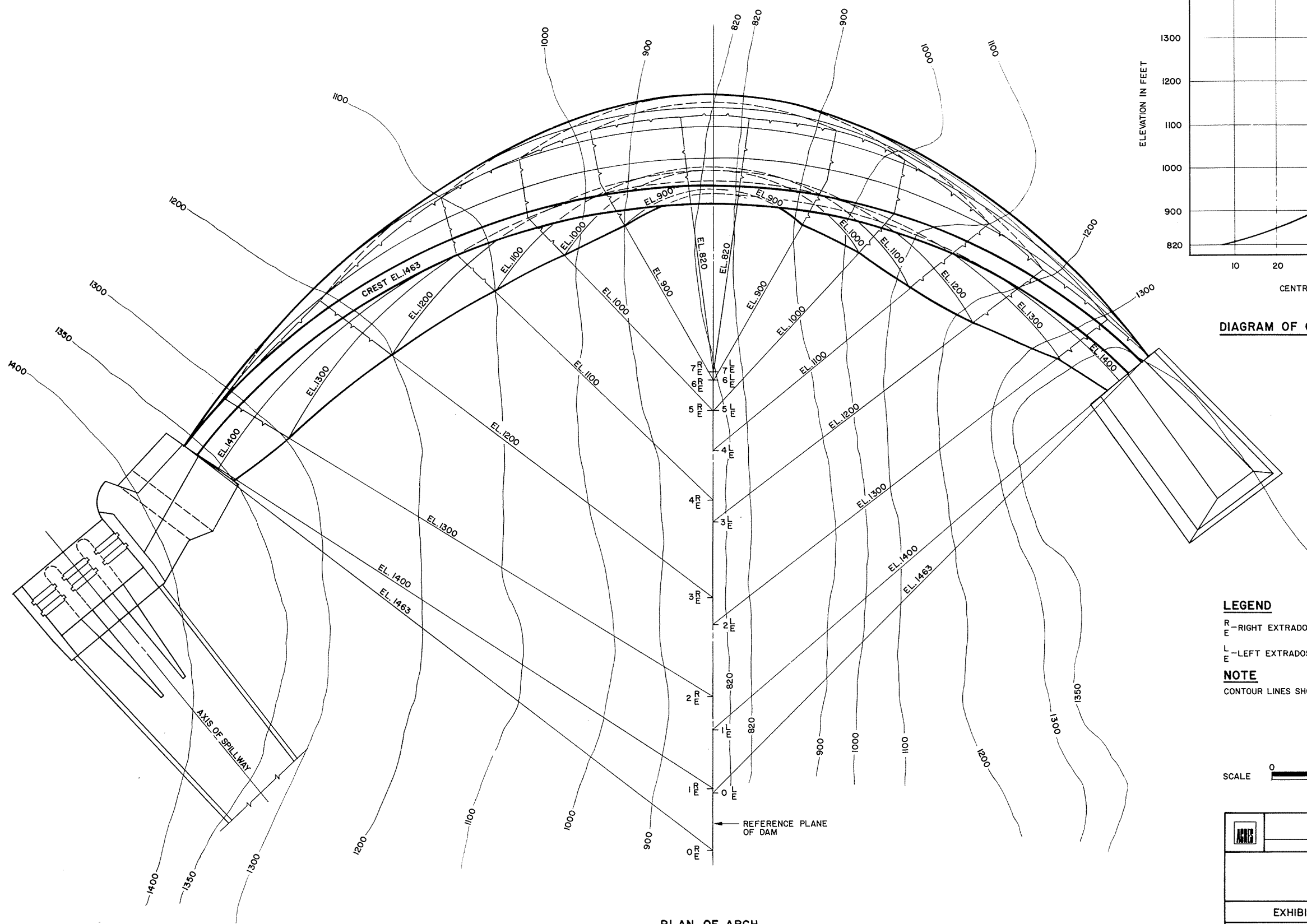


DIAGRAM OF CENTRAL ANGLES

LEGEND

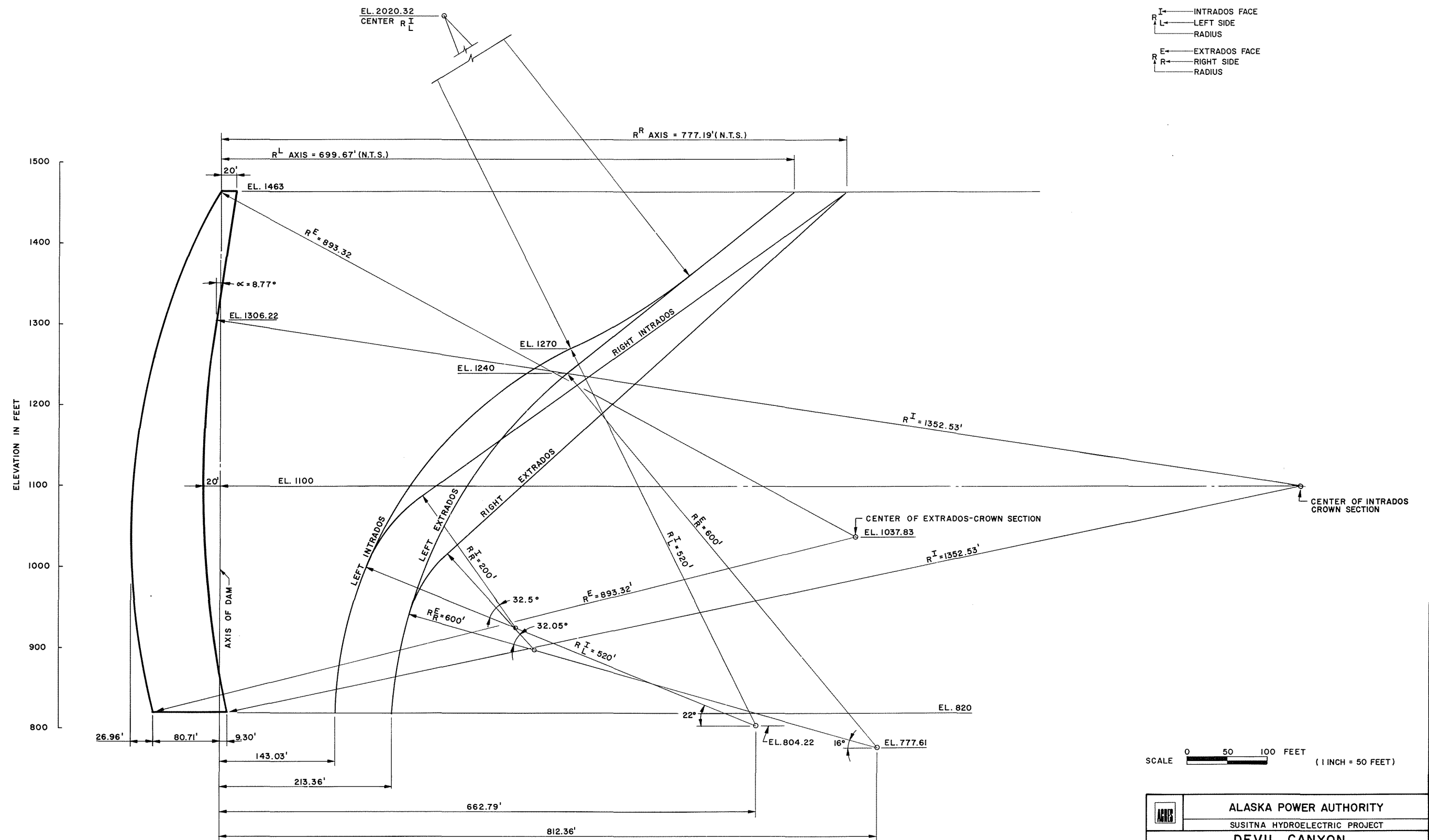
R
E — RIGHT EXTRADOS
L
E — LEFT EXTRADOS

NOTE

CONTOUR LINES SHOW SOUND ROCK

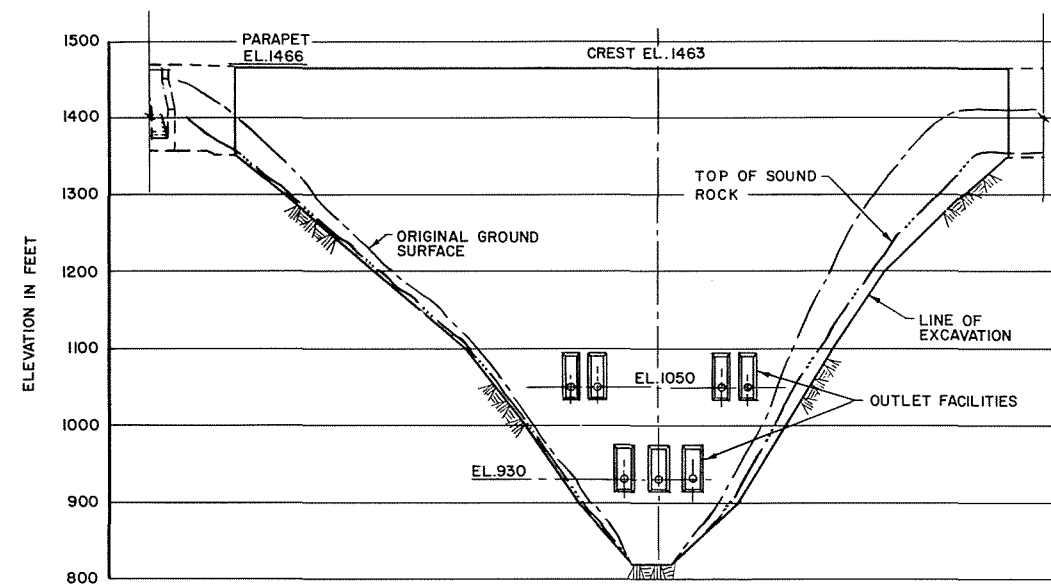
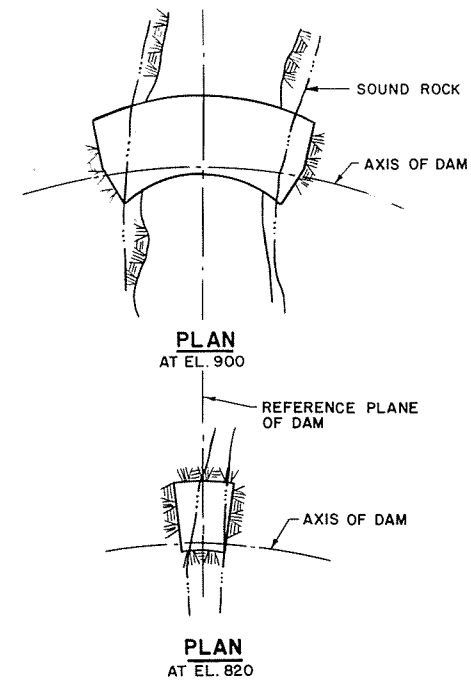
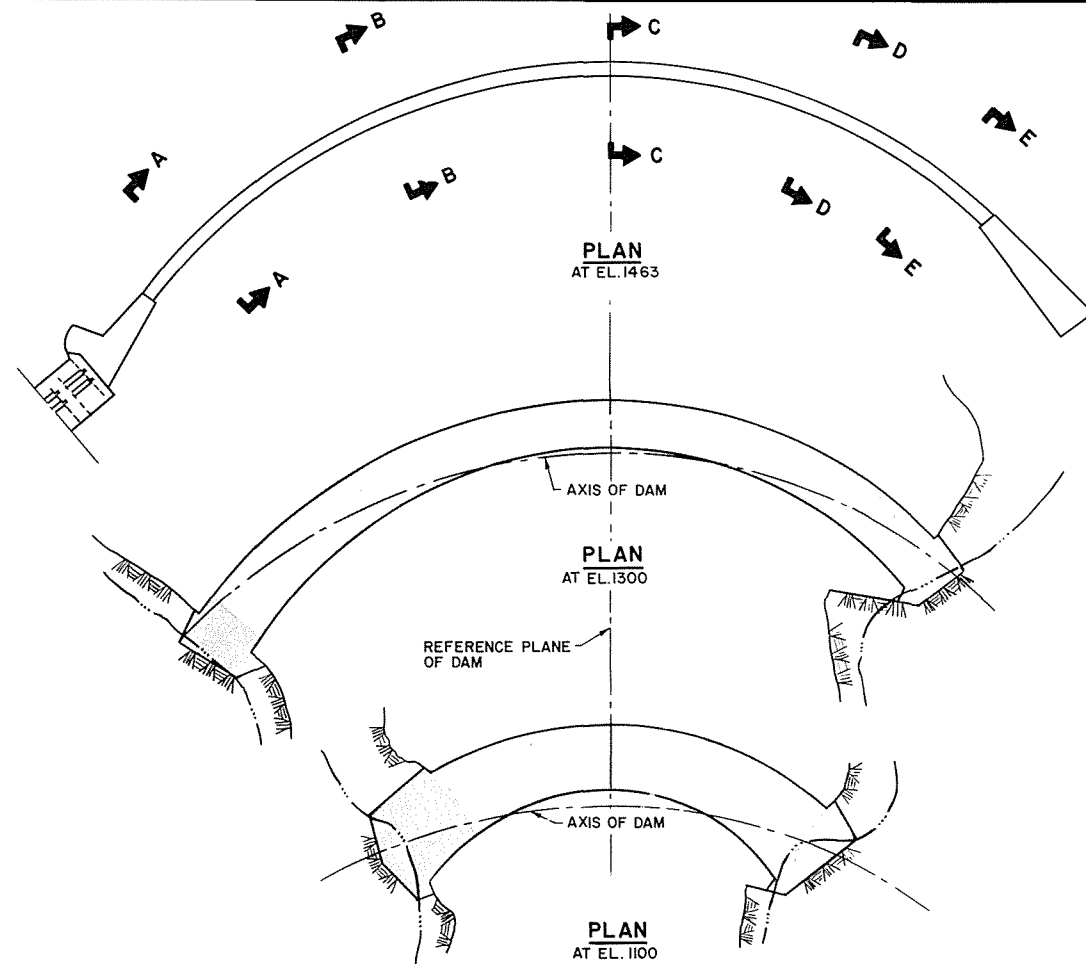
SCALE 0 50 100 FEET (1 INCH = 50 FEET)

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

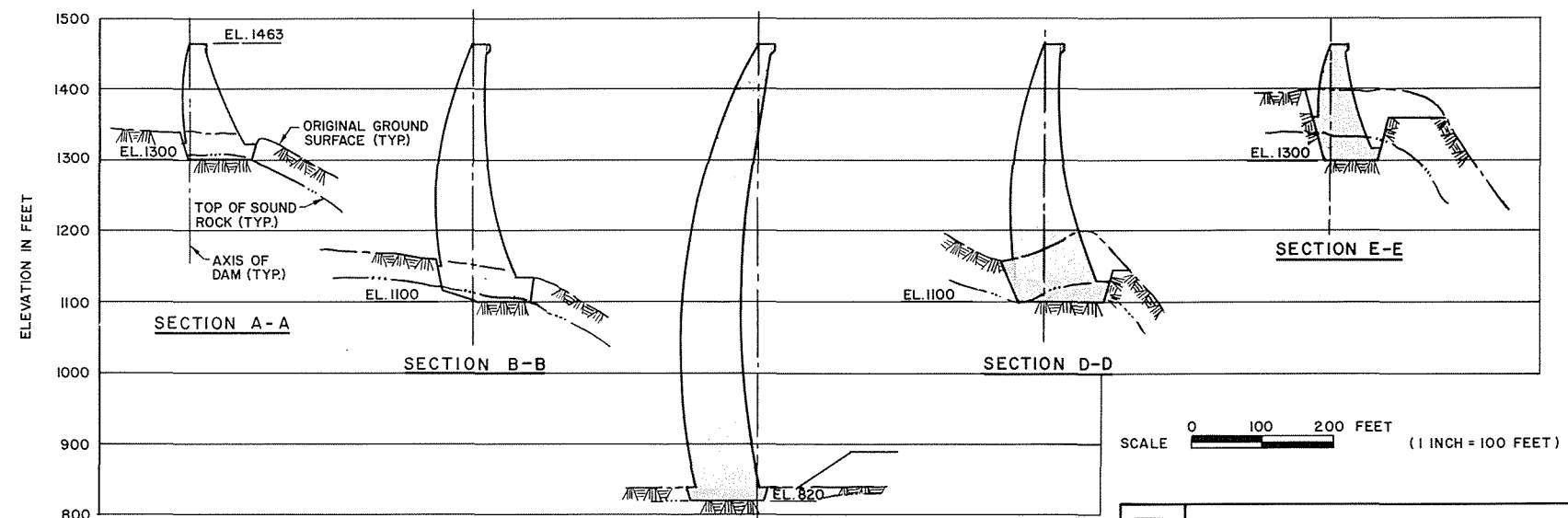


SCALE 0 50 100 FEET (1 INCH = 50 FEET)

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



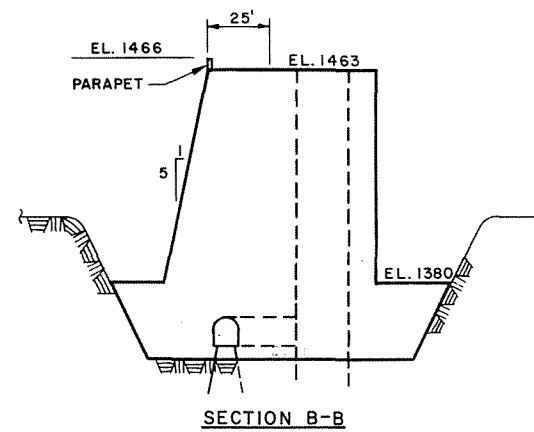
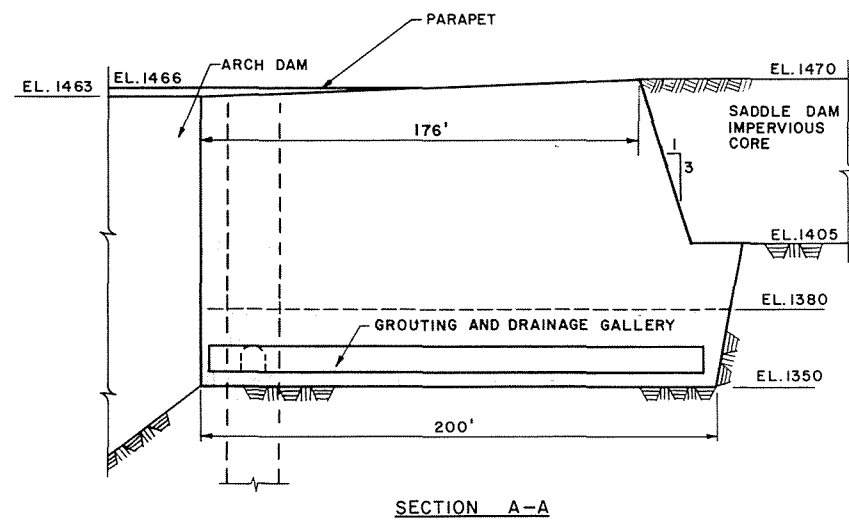
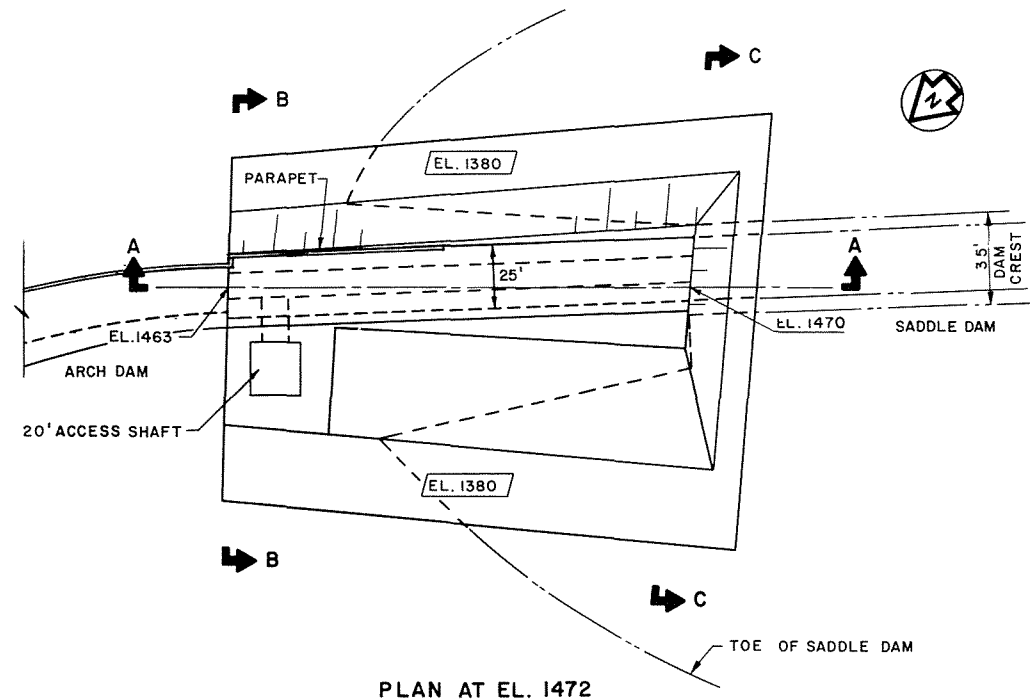
DAM PROFILE



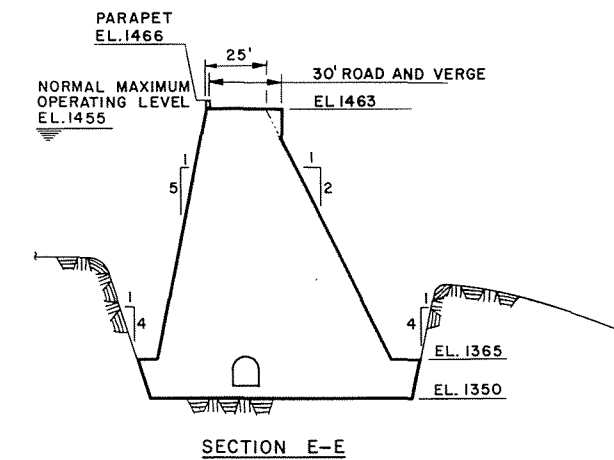
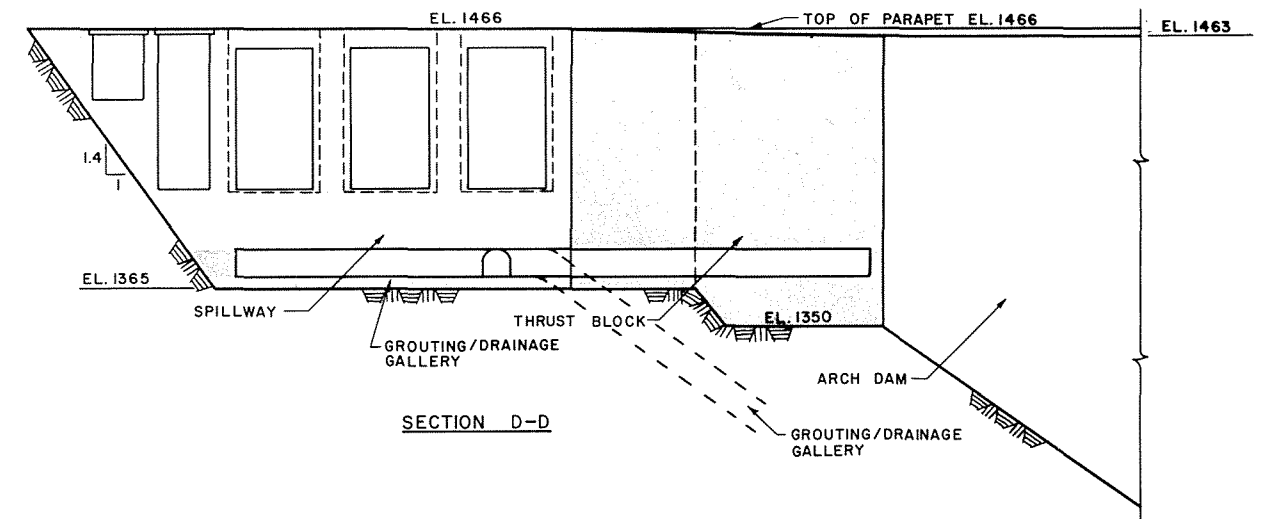
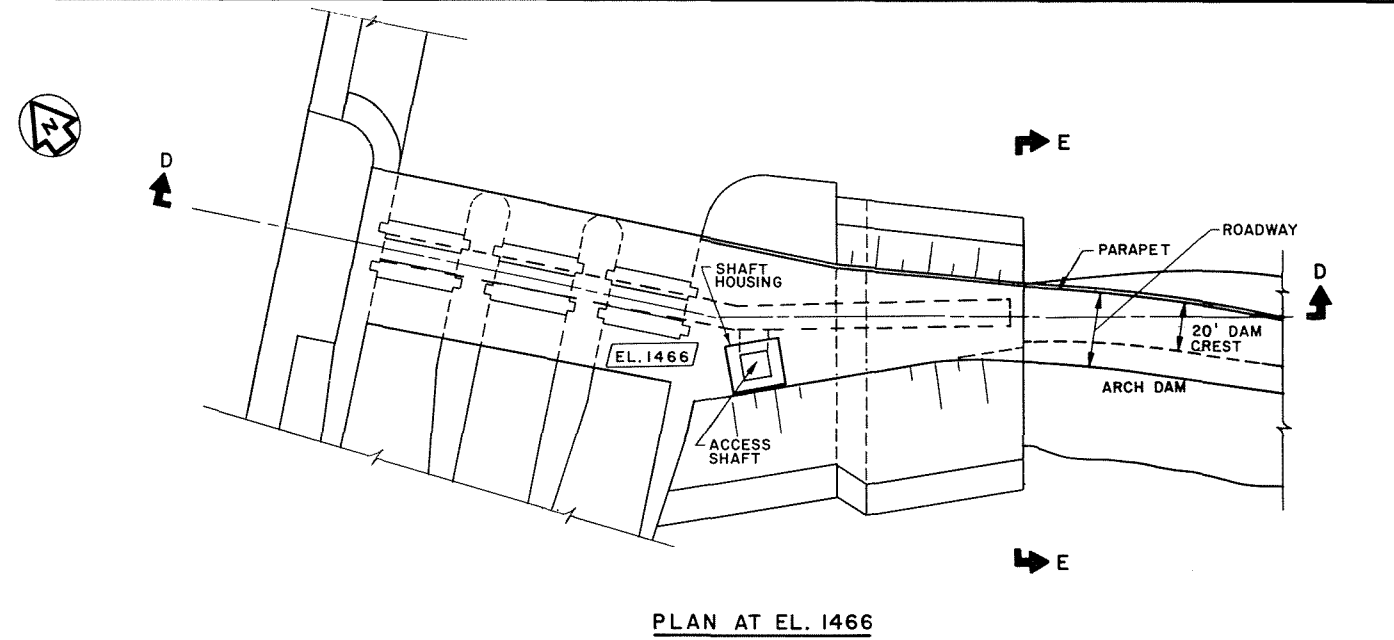
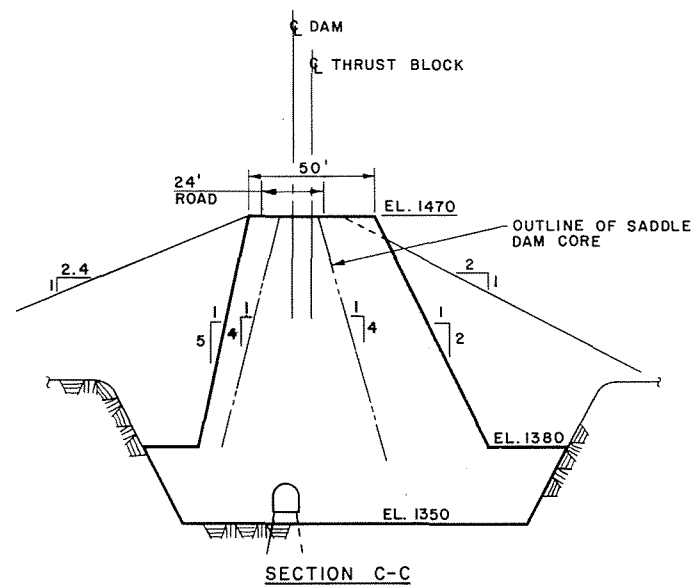
DAM SECTIONS
(PARAPET NOT SHOWN)

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

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



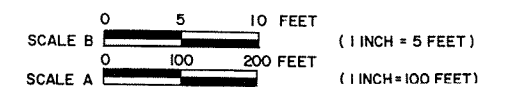
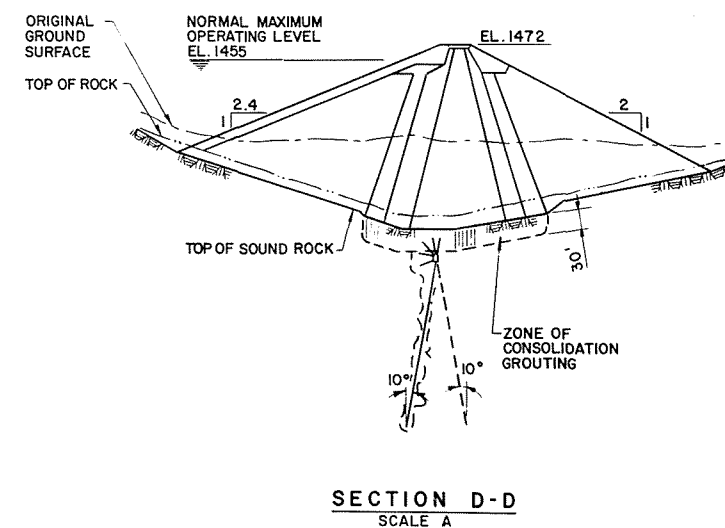
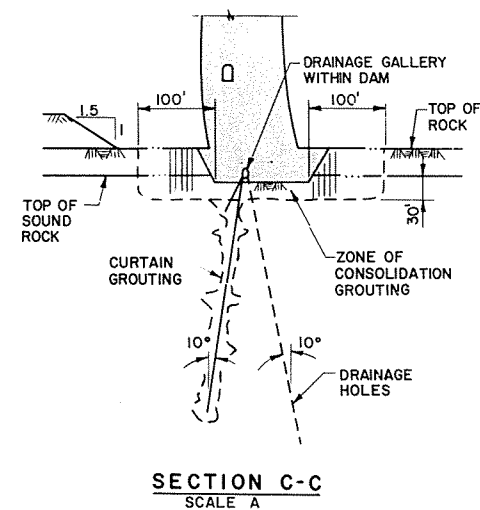
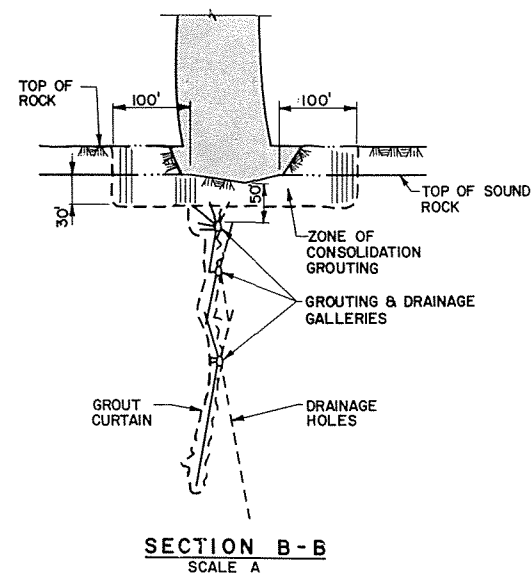
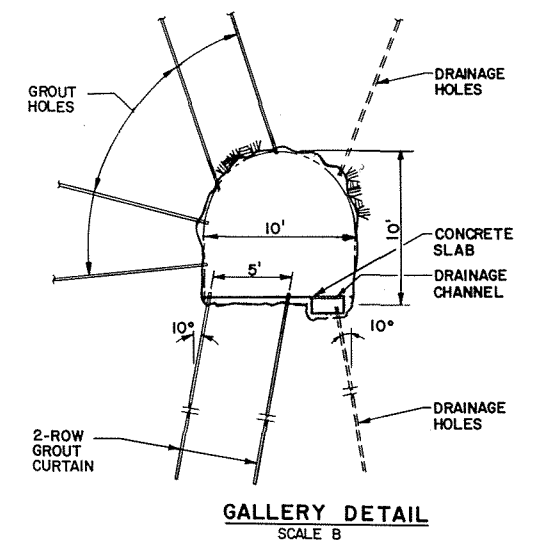
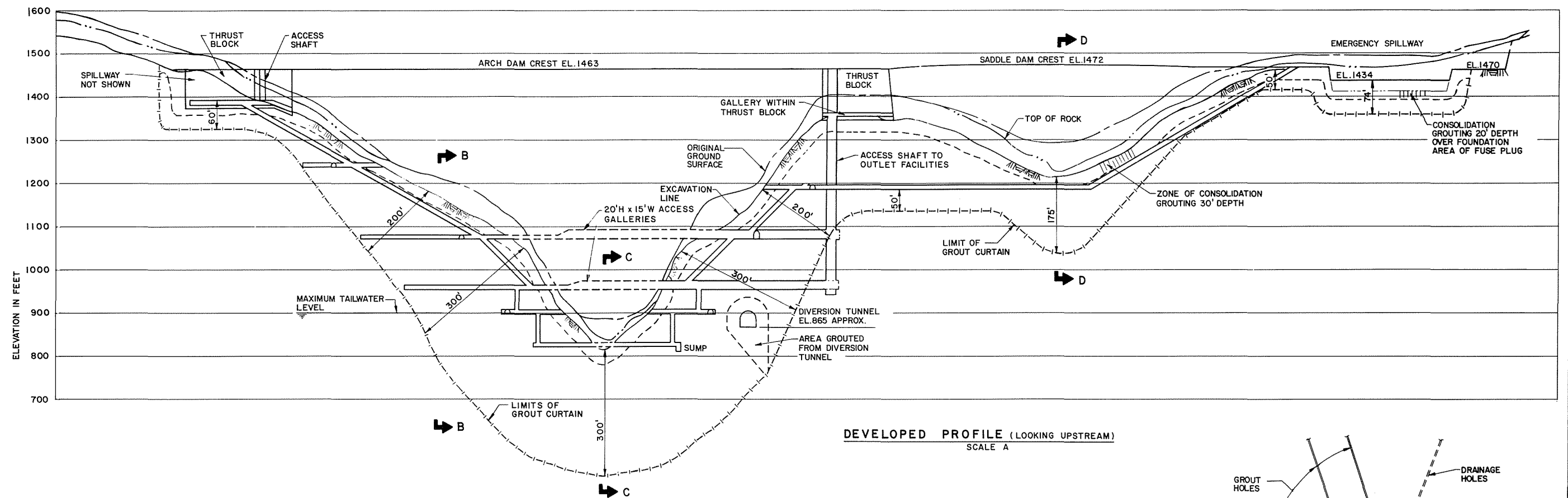
LEFT ABUTMENT THRUST BLOCK



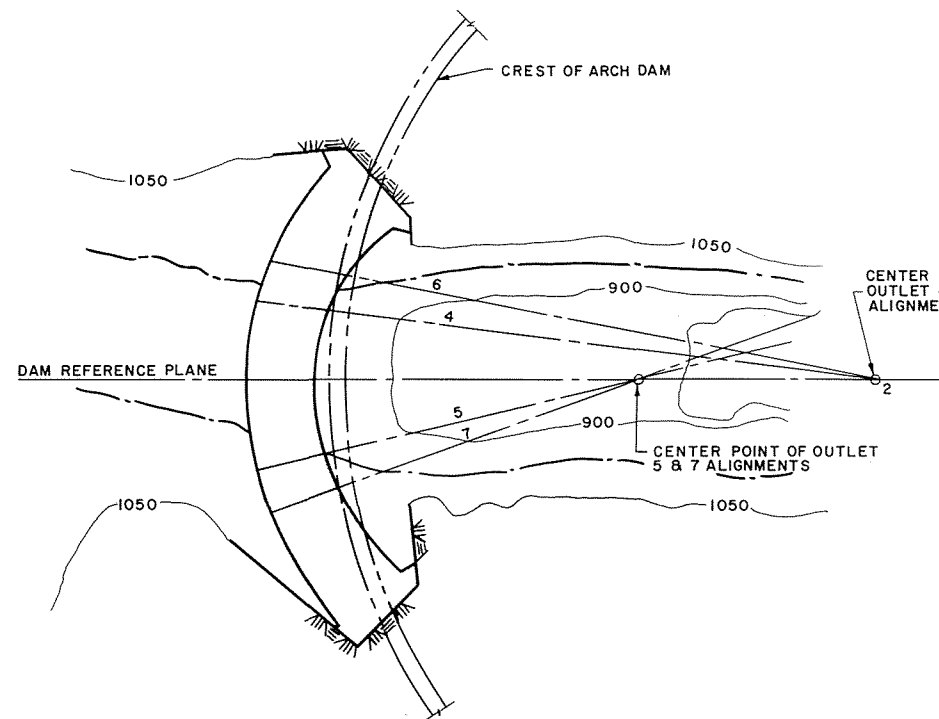
RIGHT ABUTMENT THRUST BLOCK

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

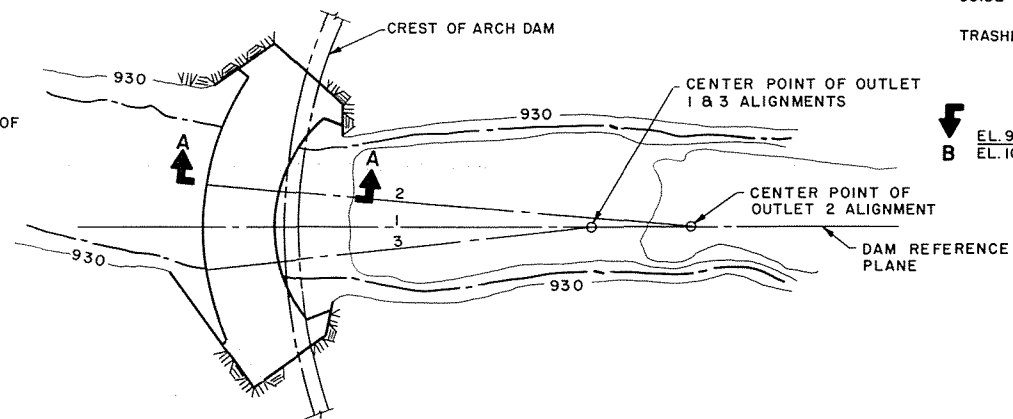
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM THRUST BLOCKS	
EXHIBIT F	PLATE F46



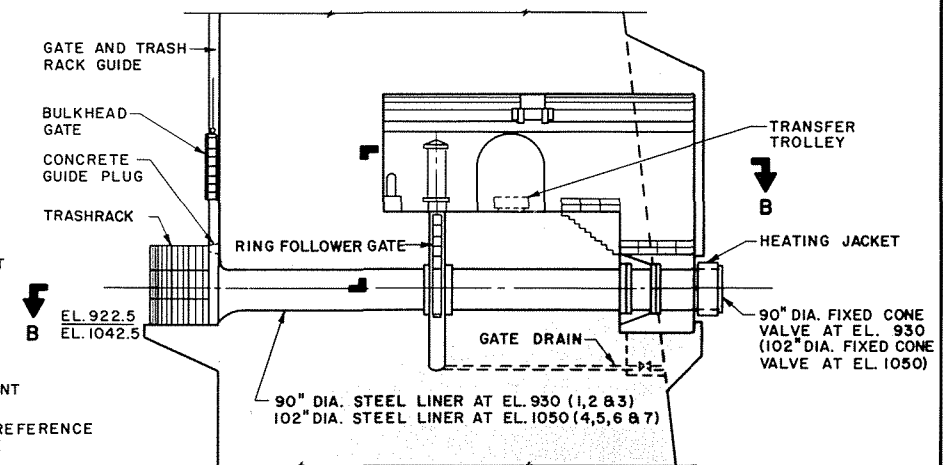
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON MAIN DAM GROUTING AND DRAINAGE	
	EXHIBIT F	PLATE F47



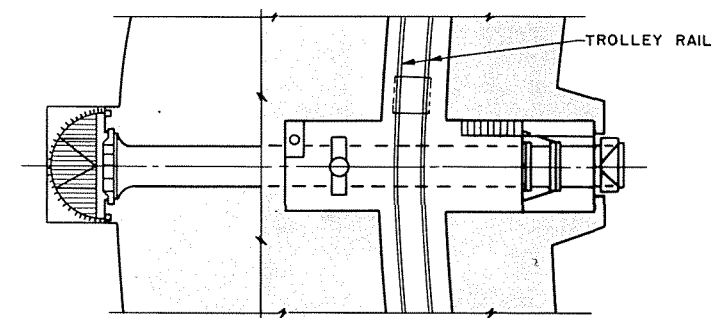
PLAN AT EL. 1050
SCALE A



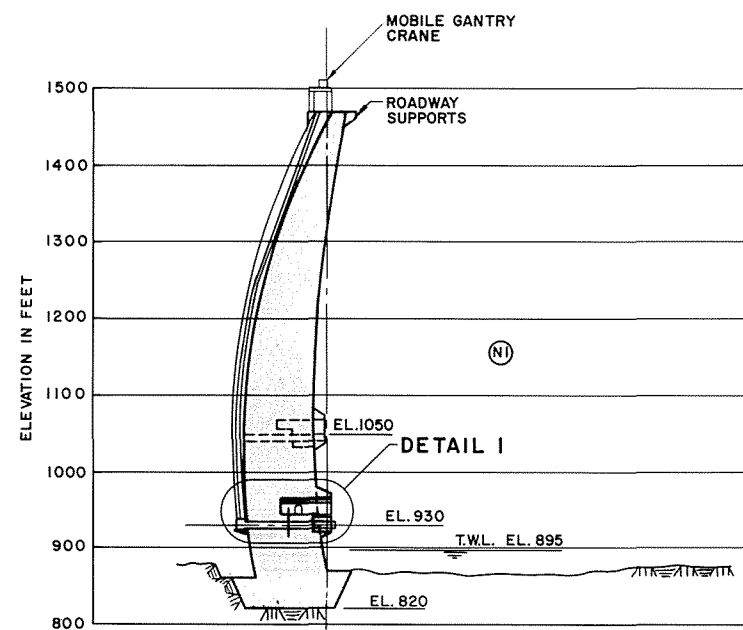
PLAN AT EL. 930
SCALE A



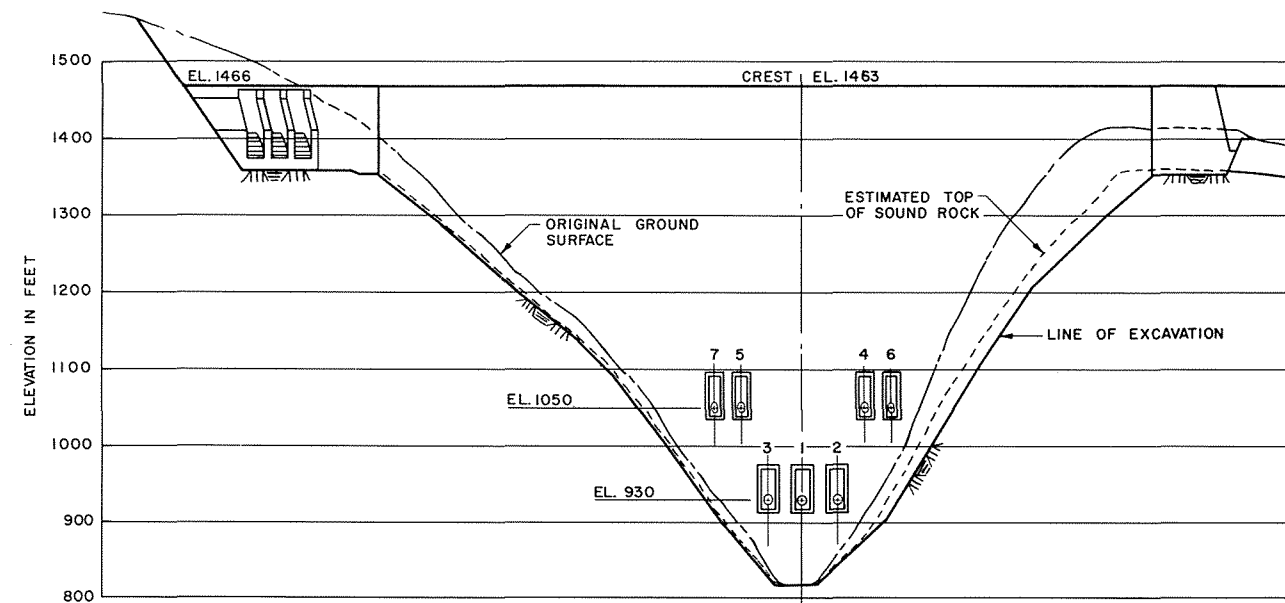
DETAIL I
SCALE B



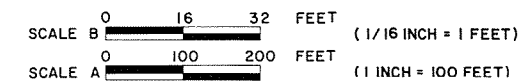
SECTION B-B
SCALE B



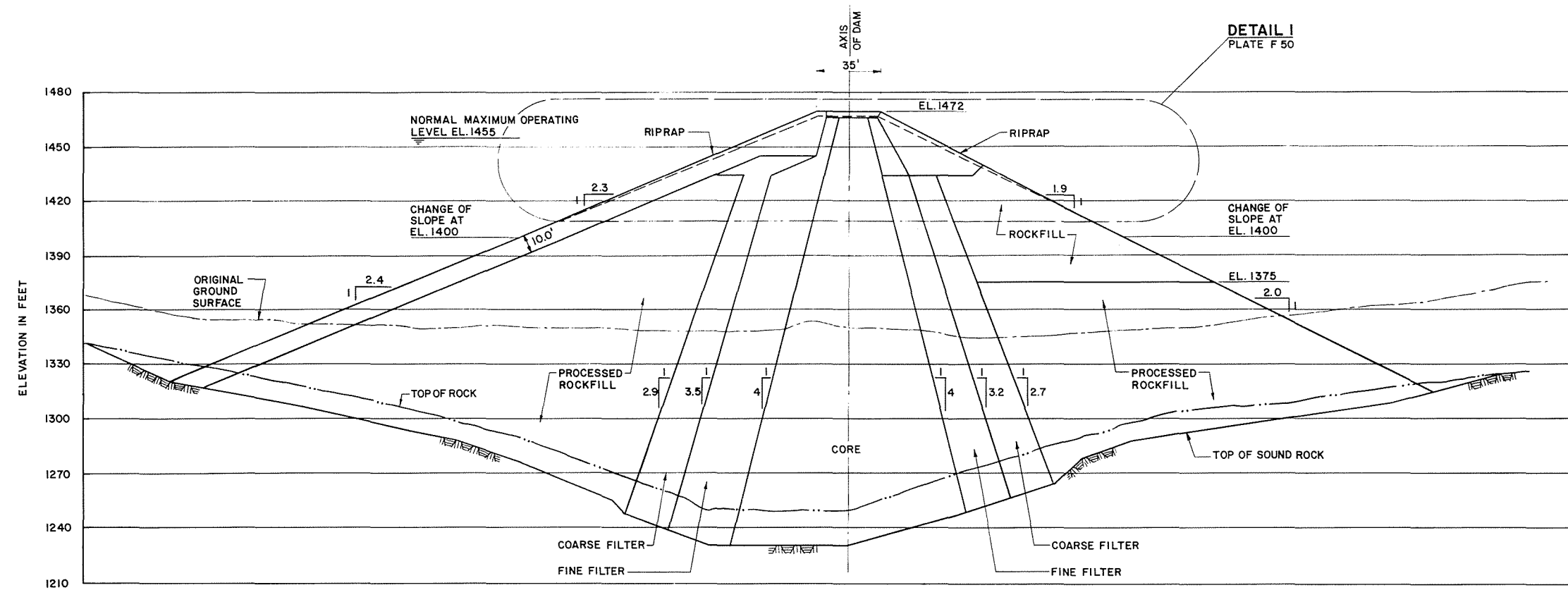
SECTION A-A (TYPICAL)
SCALE A



DAM PROFILE (PROJECTION-LOOKING UPSTREAM)
SCALE A



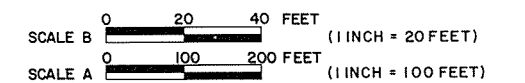
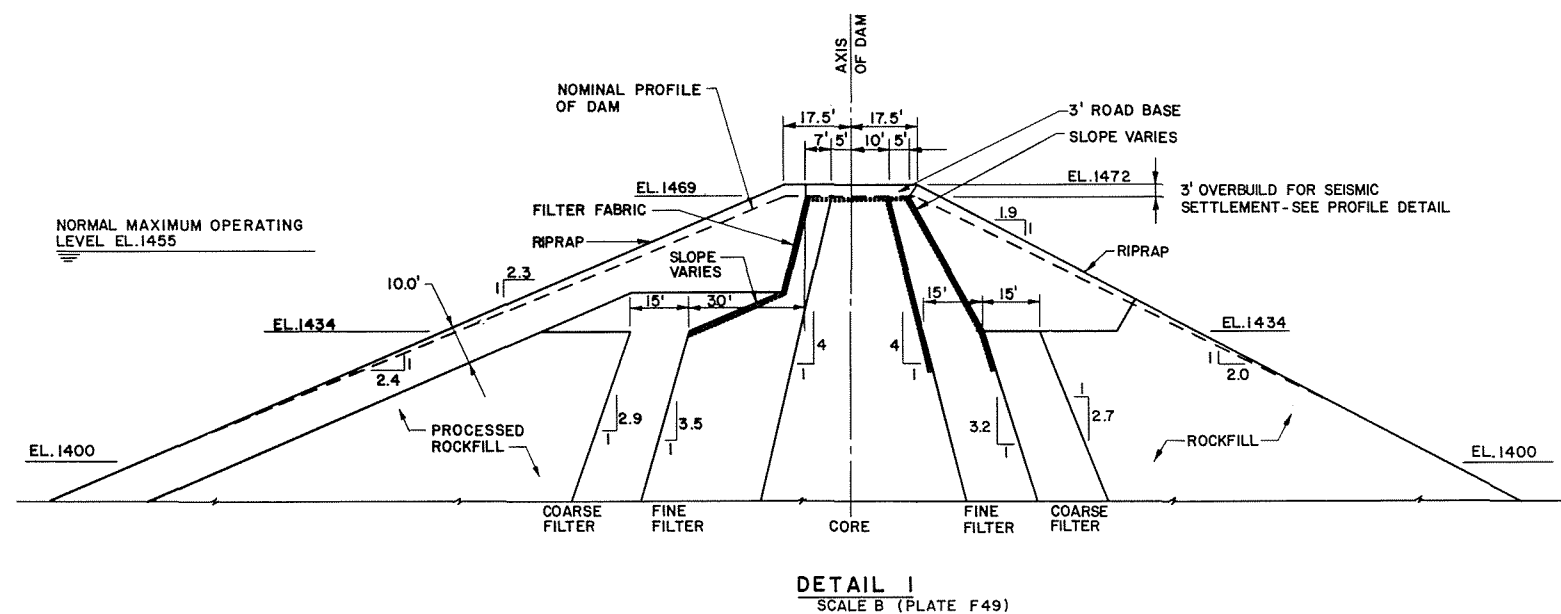
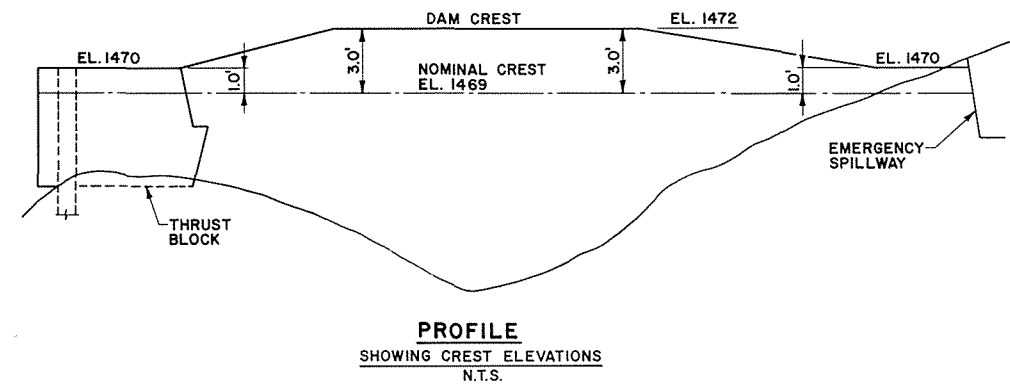
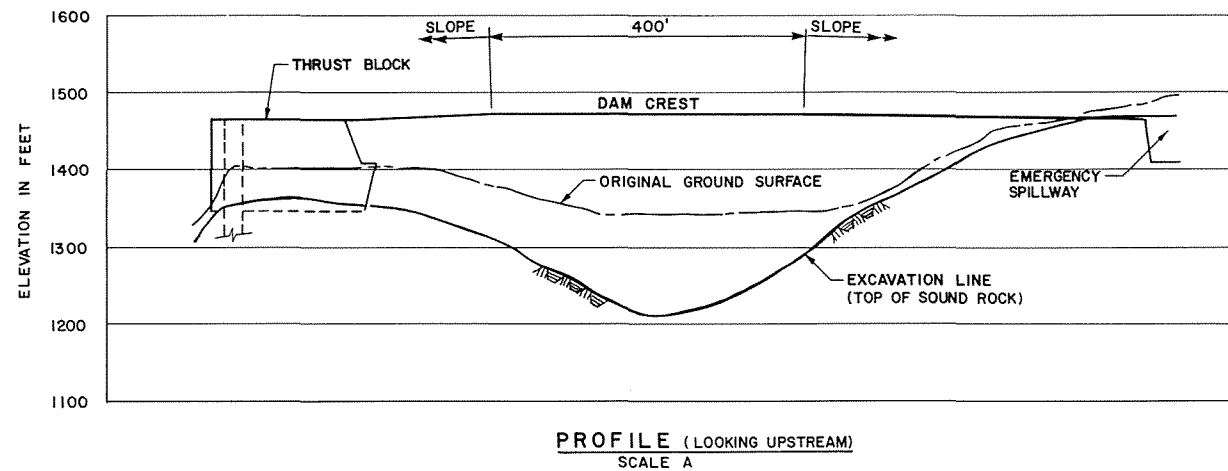
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON MAIN DAM OUTLET FACILITIES	
	EXHIBIT F	PLATE F 48



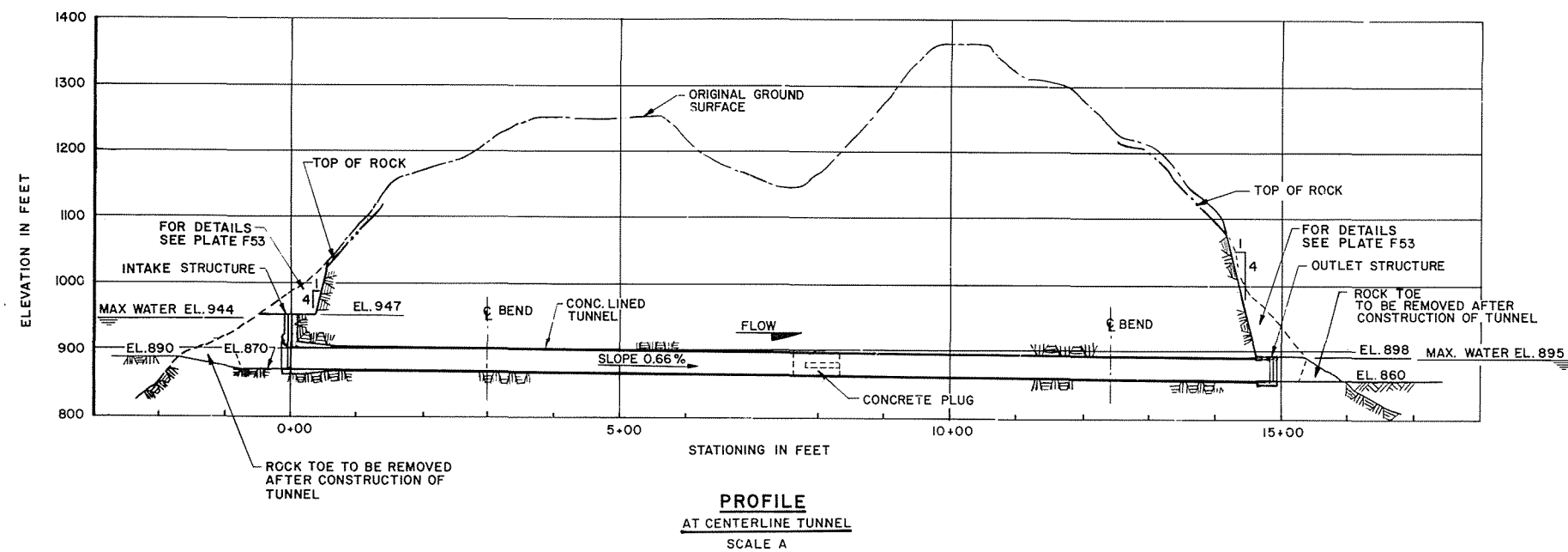
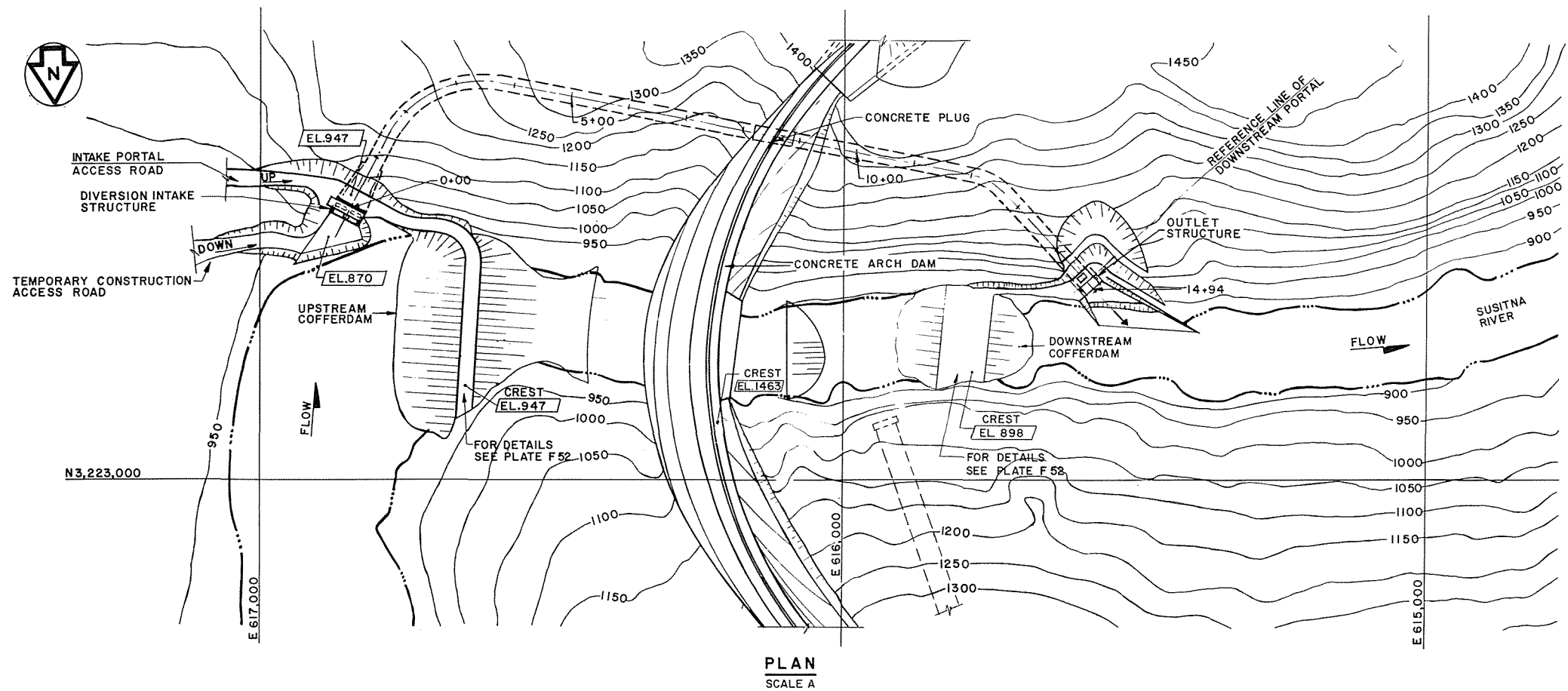
SECTION THROUGH SADDLE DAM
AT MAXIMUM HEIGHT

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

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

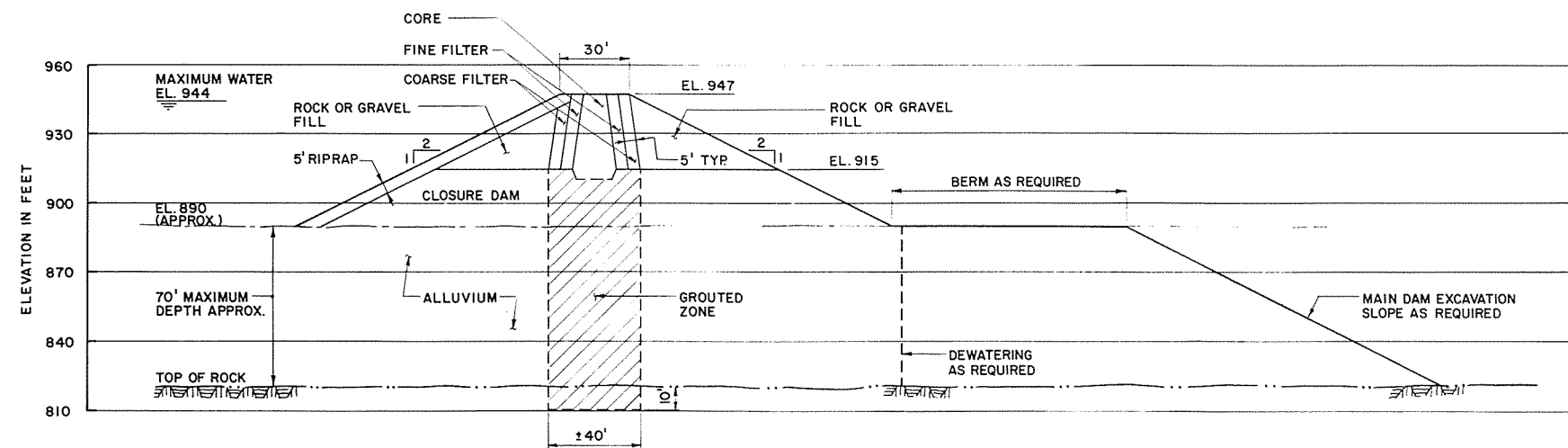


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON SADDLE DAM PROFILE AND DETAIL	
EXHIBIT F	PLATE F50

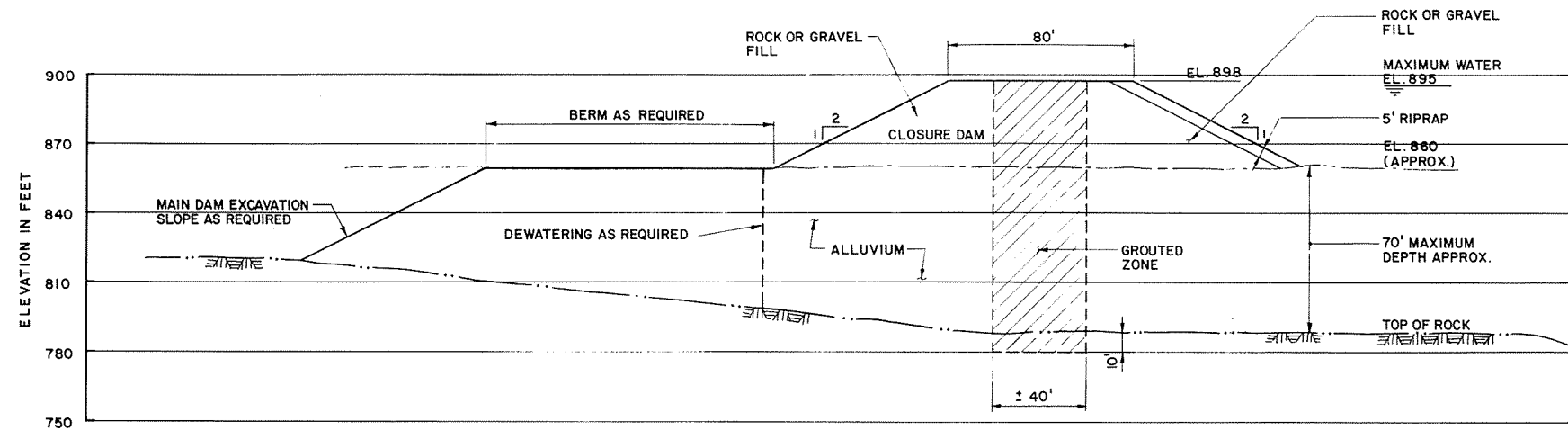


SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

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



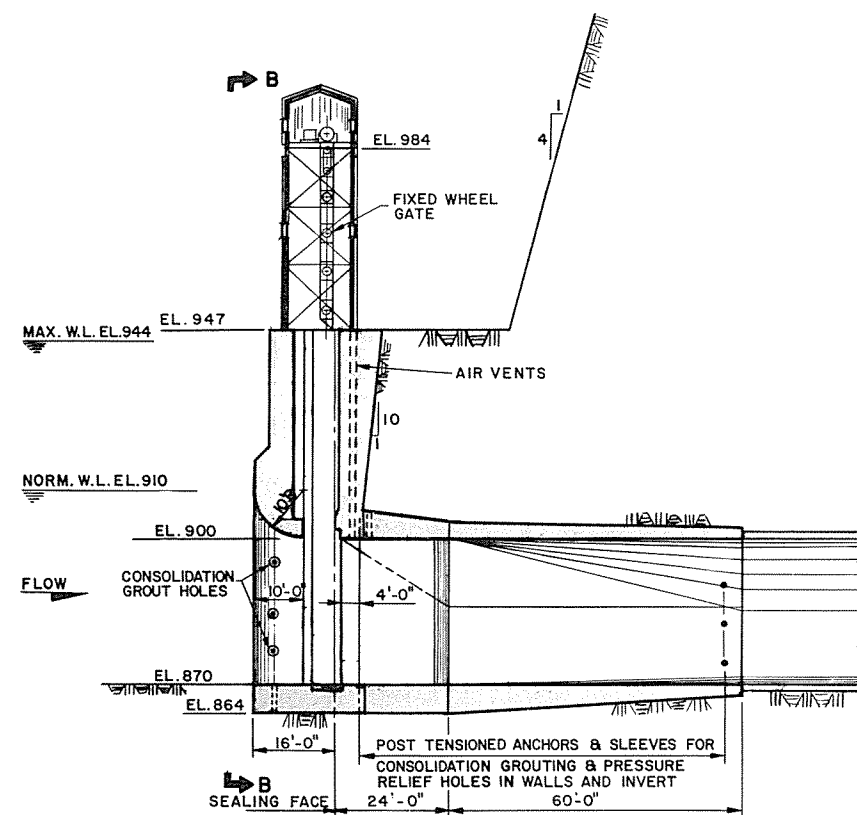
TYPICAL CROSS SECTION (PLATE F 51)
UPSTREAM COFFERDAM



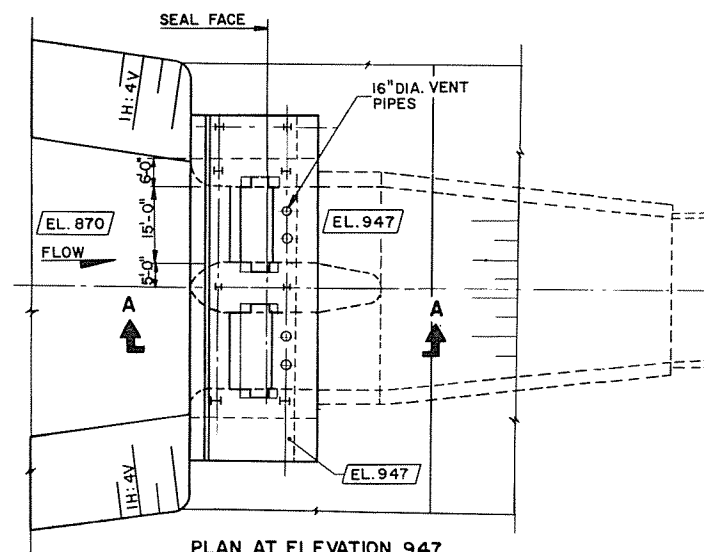
TYPICAL CROSS SECTION (PLATE F 51)
DOWNSTREAM COFFERDAM

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	

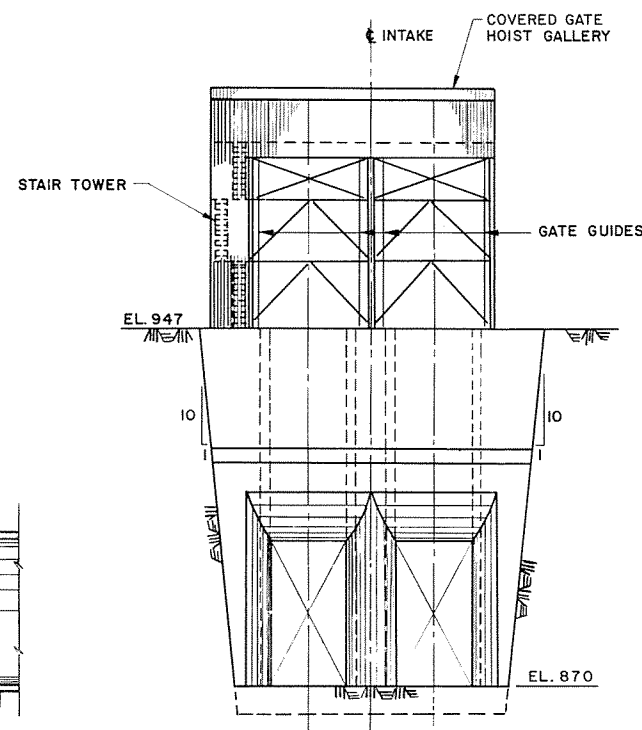


SECTION A-A
SCALE A

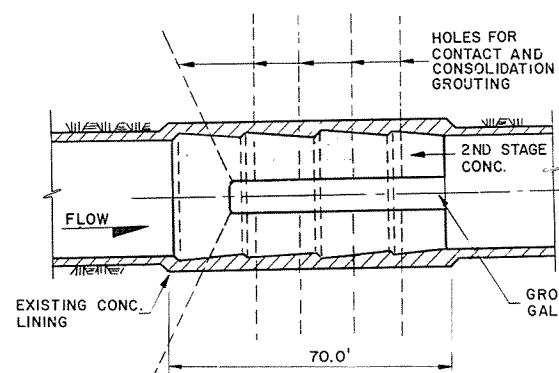


PLAN AT ELEVATION 947
SCALE A

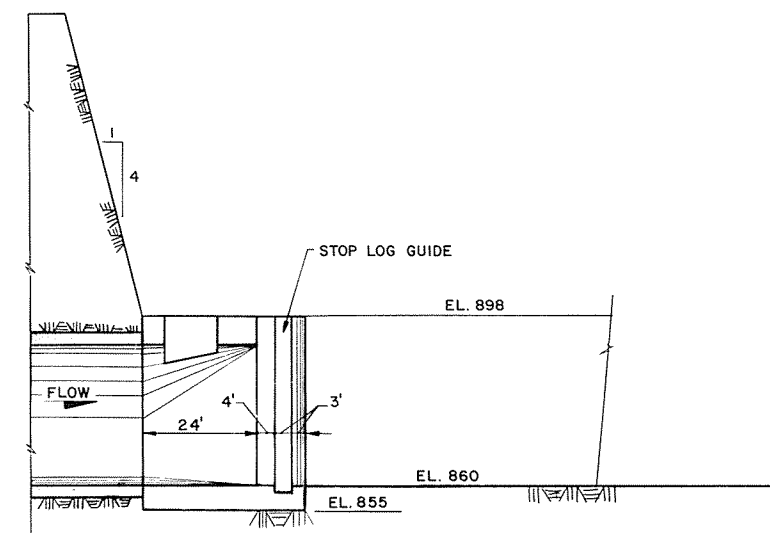
DIVERSION INTAKE STRUCTURE (PLATE F51)



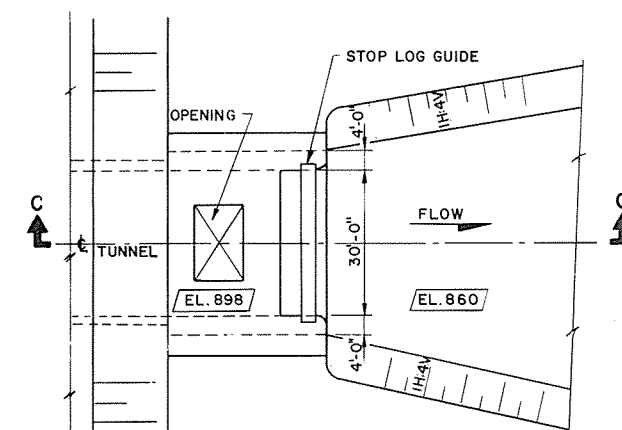
ELEVATION B-B
SCALE A



SECTION THRU PLUG
SCALE B

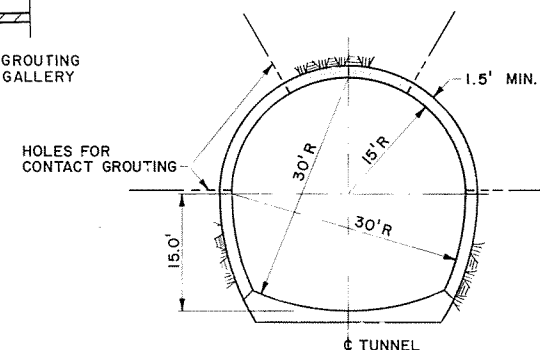


SECTION C-C
SCALE A

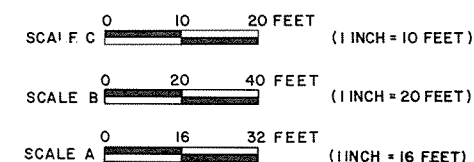


PLAN AT ELEVATION 898
SCALE A

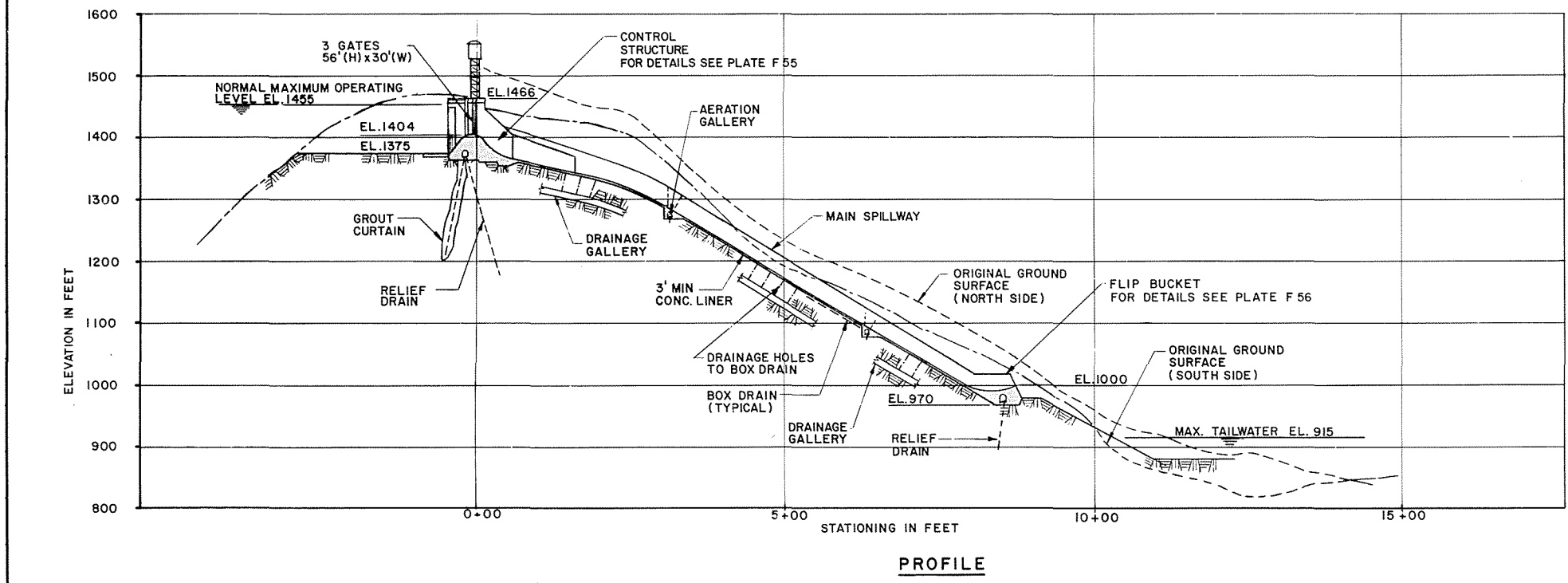
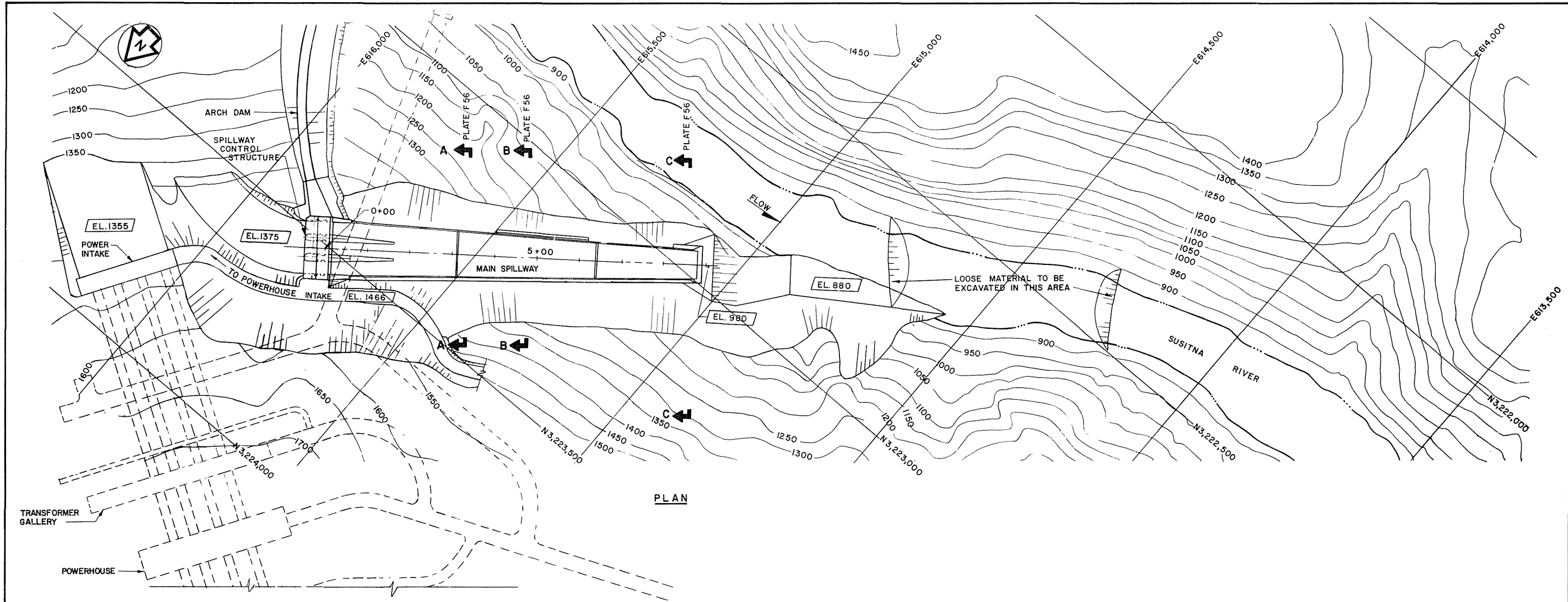
DIVERSION OUTLET STRUCTURE (PLATE F51)



TYPICAL TUNNEL SECTIONS
SCALE C



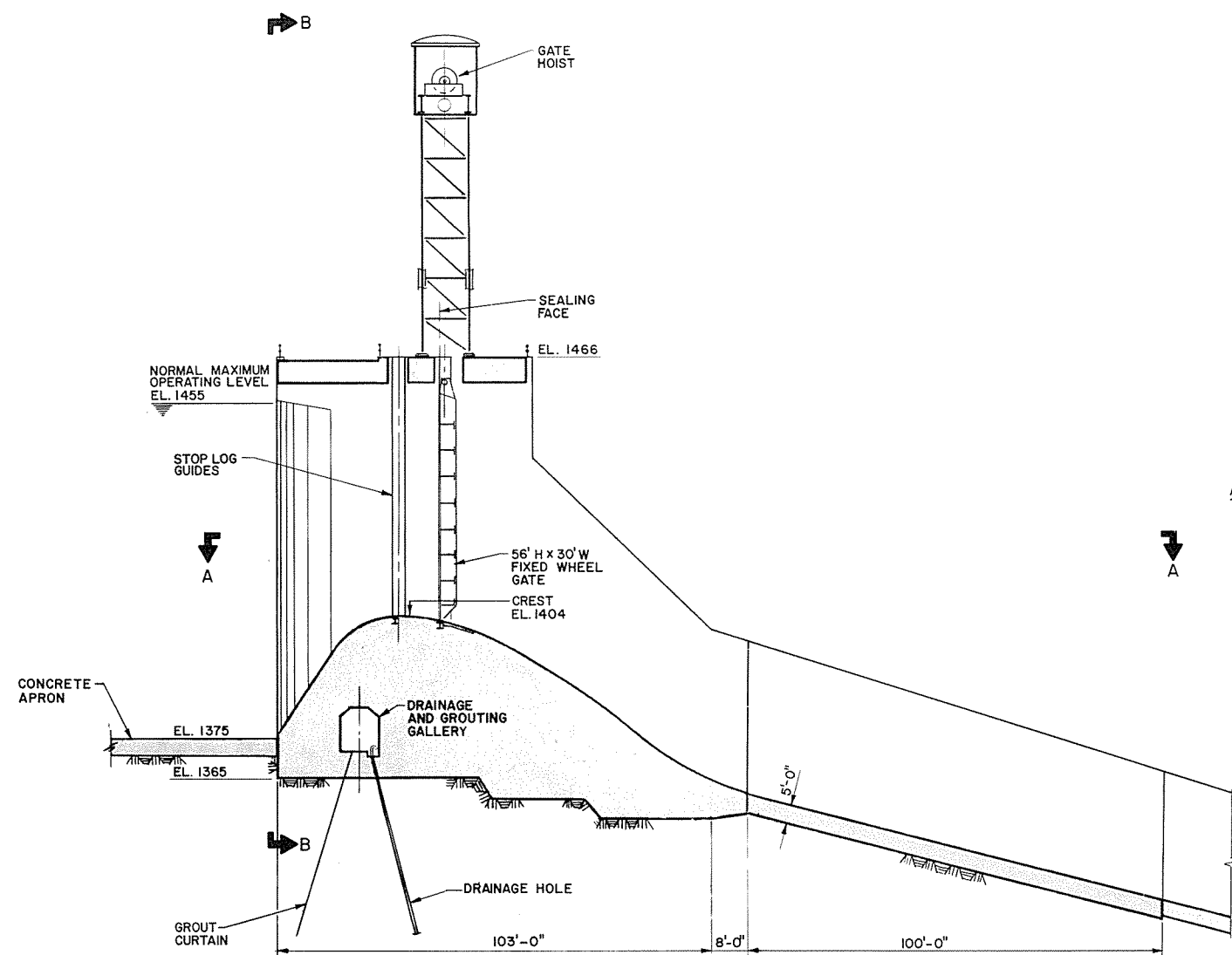
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON DIVERSION SECTIONS	
	EXHIBIT F	PLATE F53



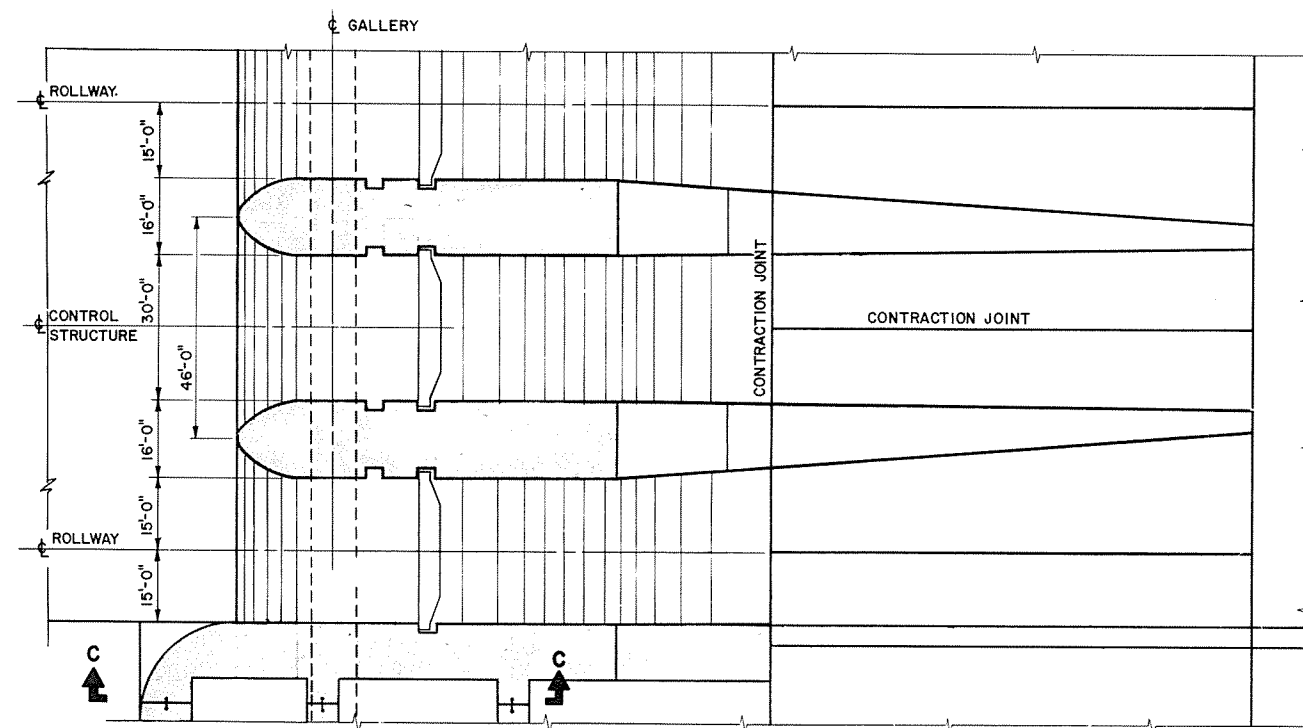
NOTE: FOR SECTIONS SEE PLATE F56

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

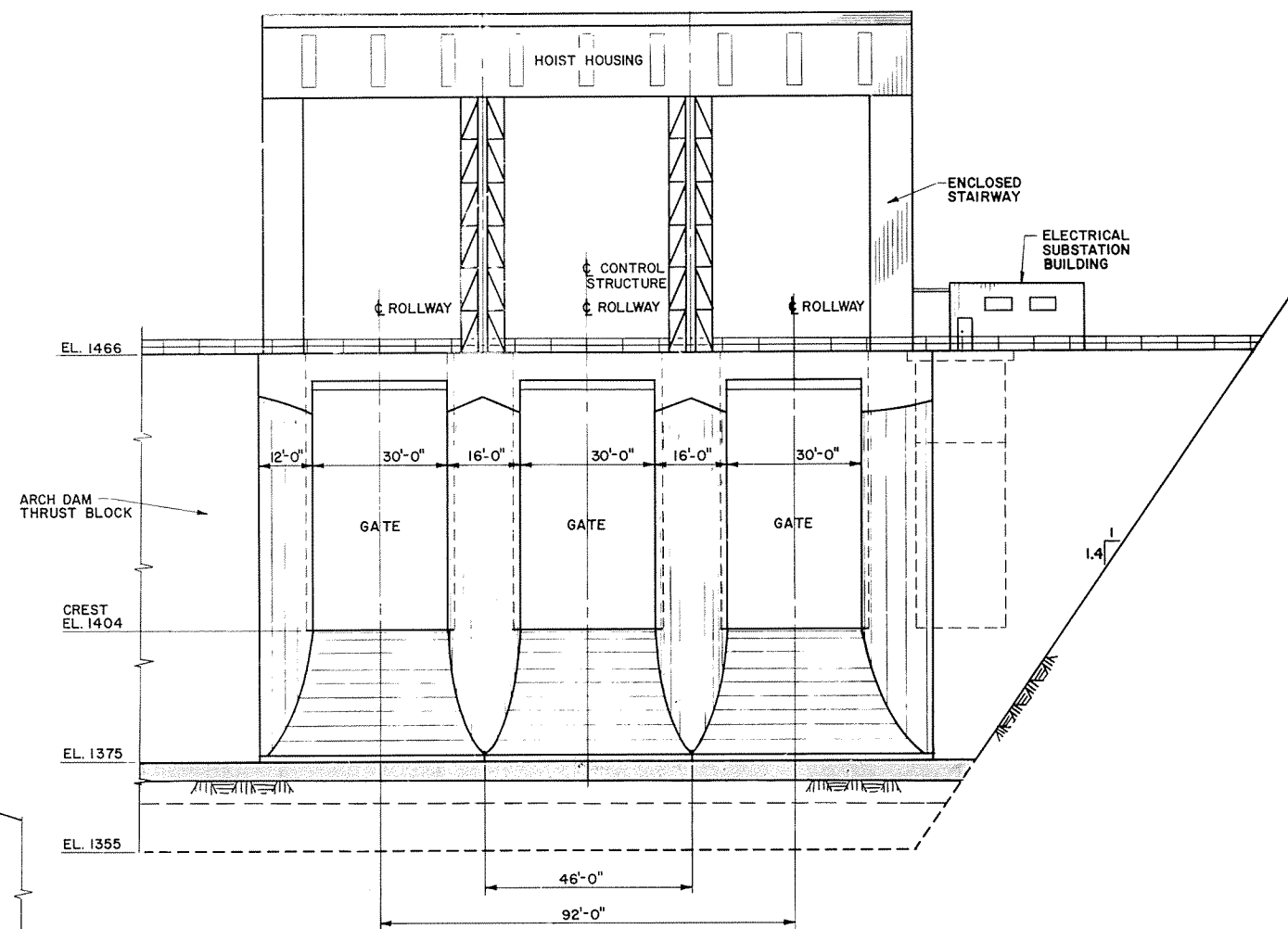
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F54



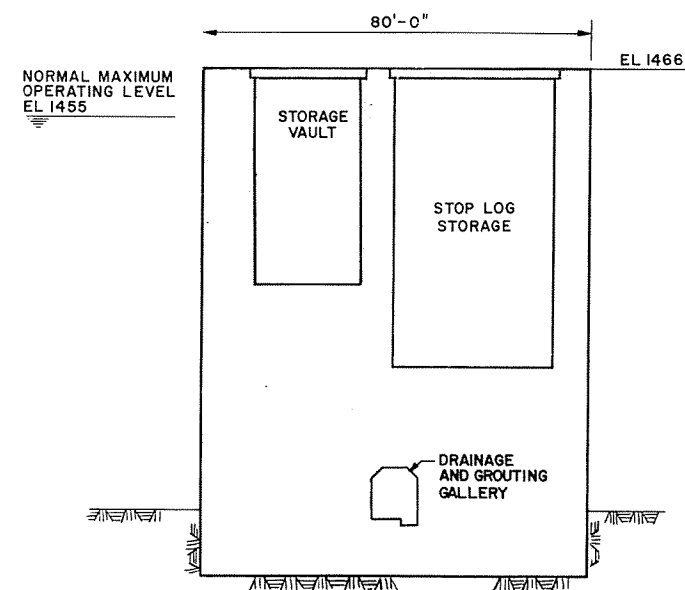
TYPICAL SECTION THRU CENTERLINE OF ROLLWAY



SECTION A-A



ELEVATION B-B

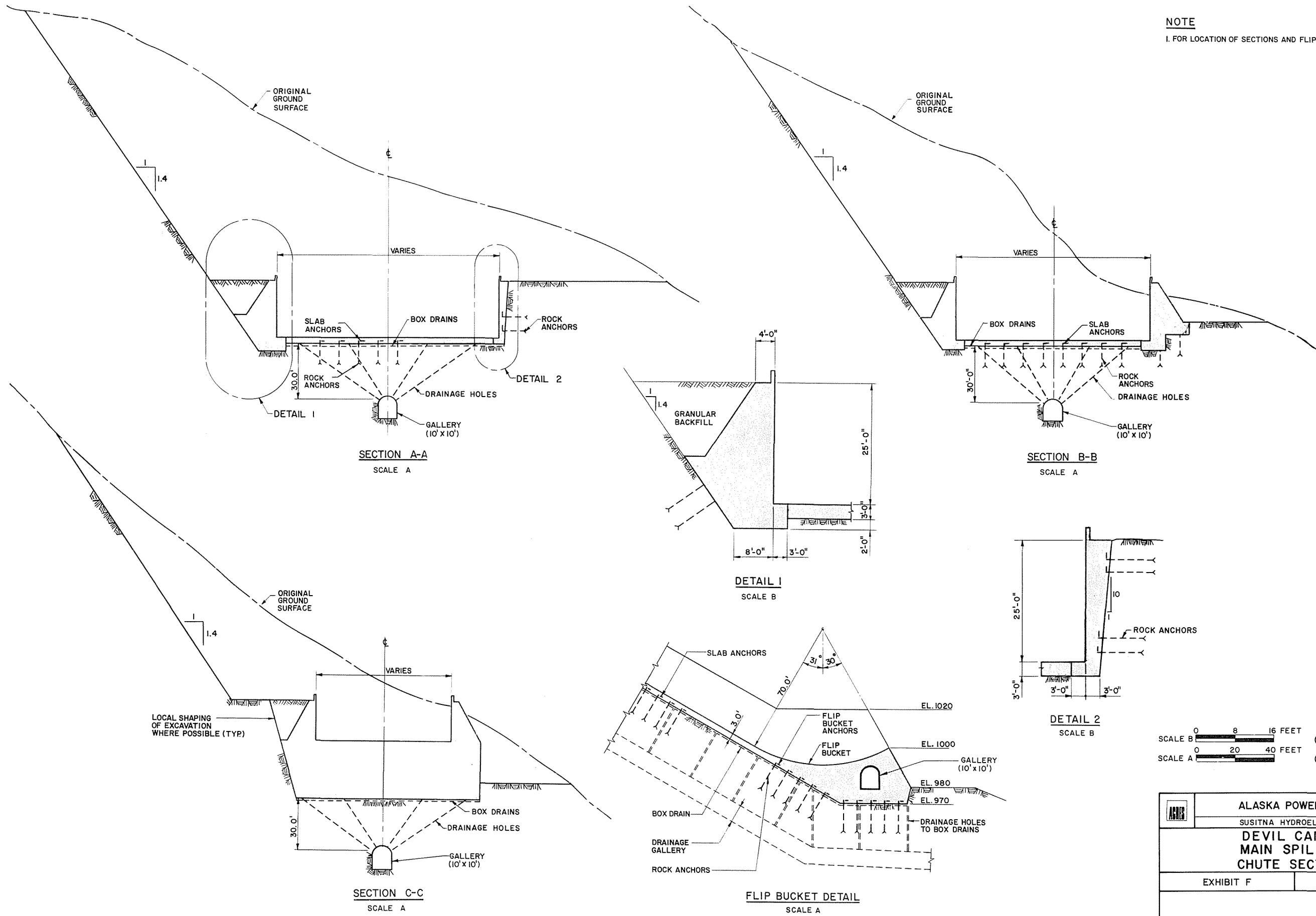


SECTION C-C

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

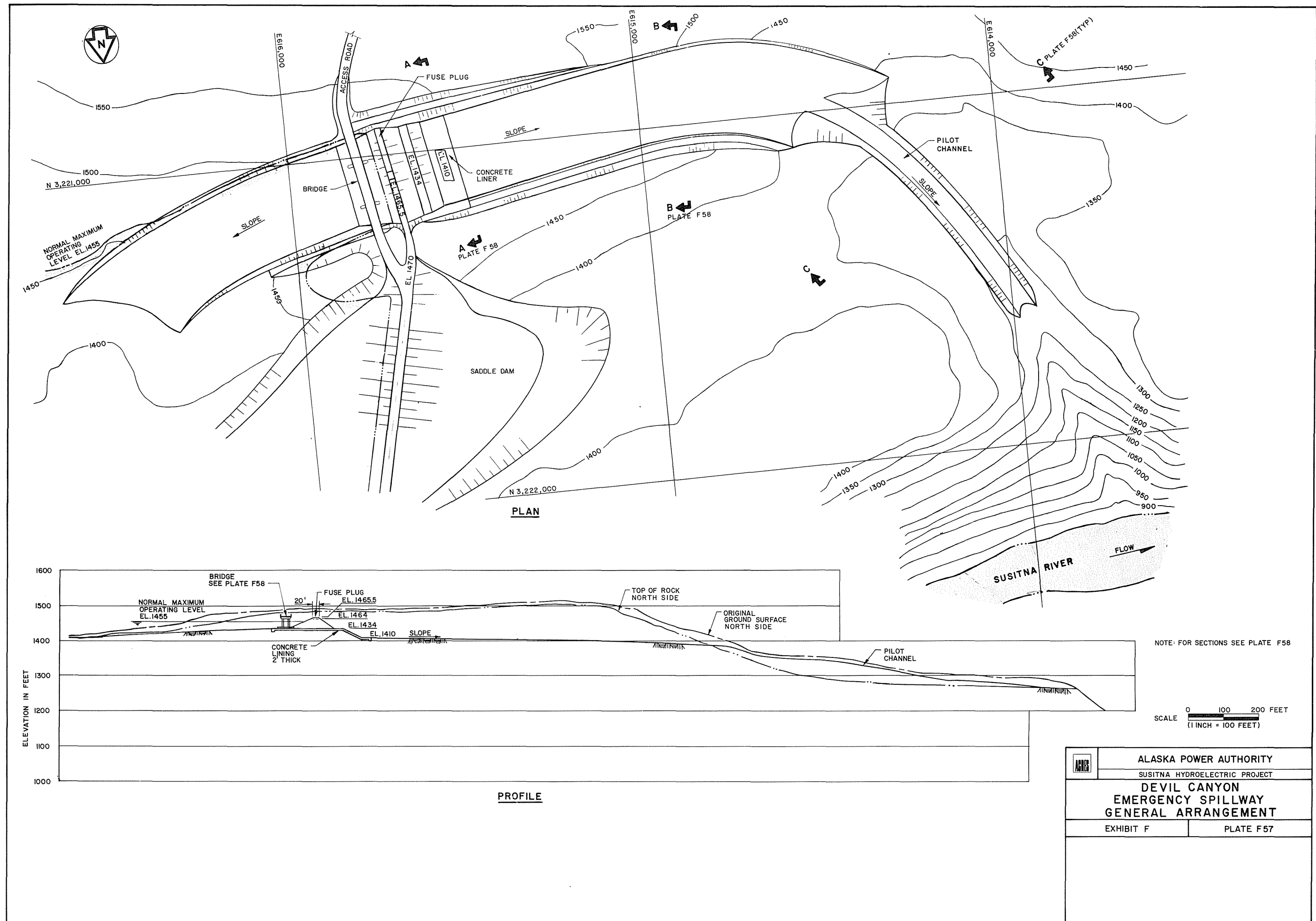
APAC	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON MAIN SPILLWAY CONTROL STRUCTURE	
	EXHIBIT F	PLATE F55

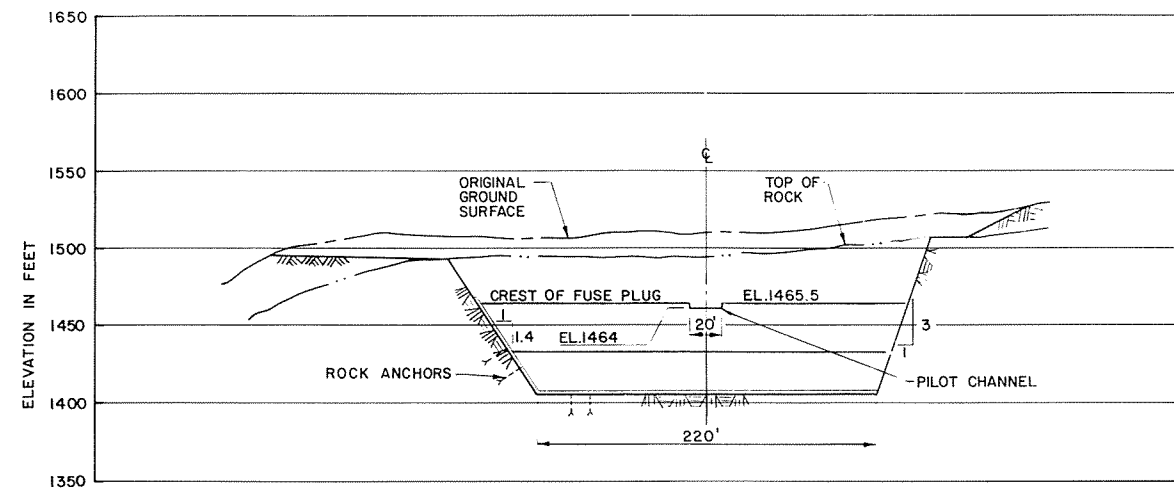
NOTE
1. FOR LOCATION OF SECTIONS AND FLIP BUCKET, SEE PLATE F54



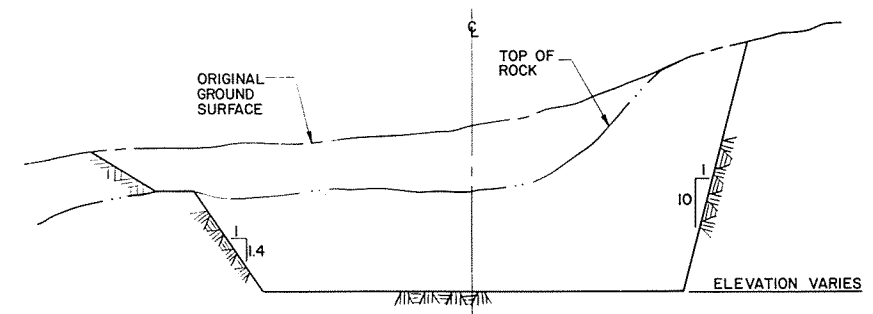
SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE A 0 20 40 FEET (1 INCH = 20 FEET)

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

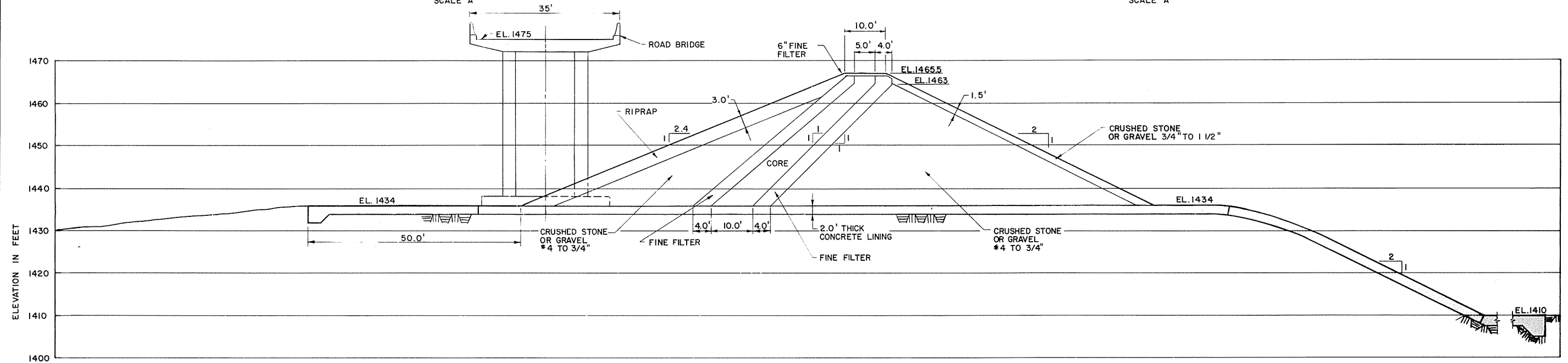




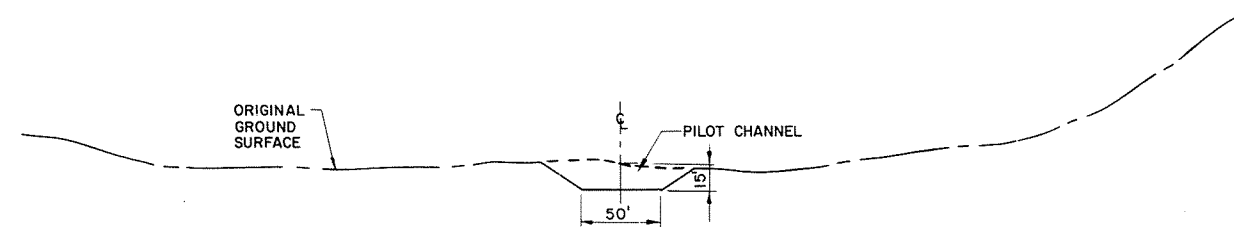
SECTION A-A (PLATE F57)
SCALE A



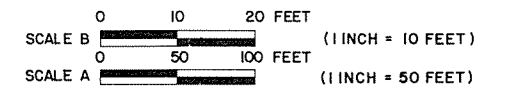
TYPICAL SECTION B-B (PLATE F57)
SCALE A



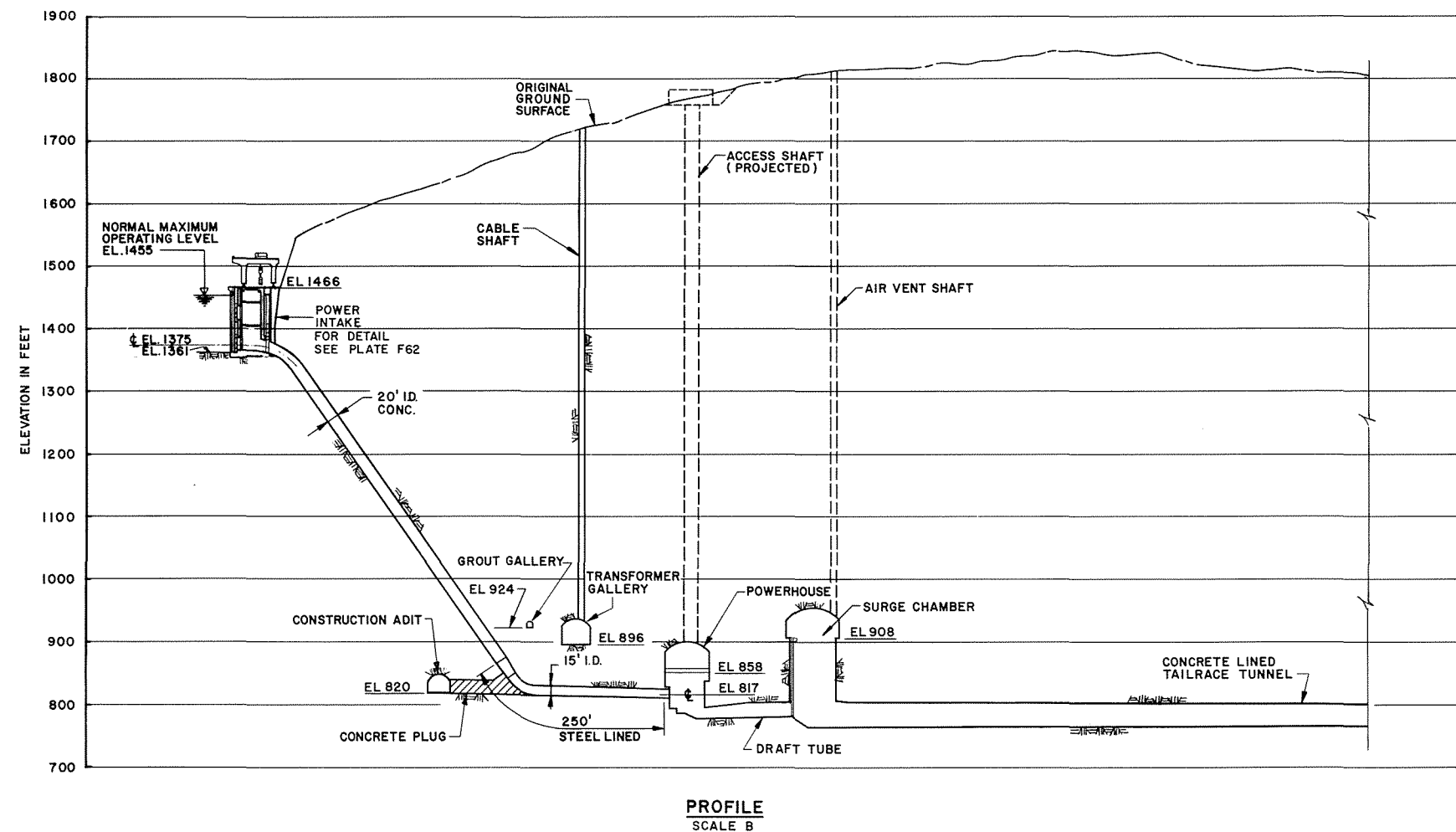
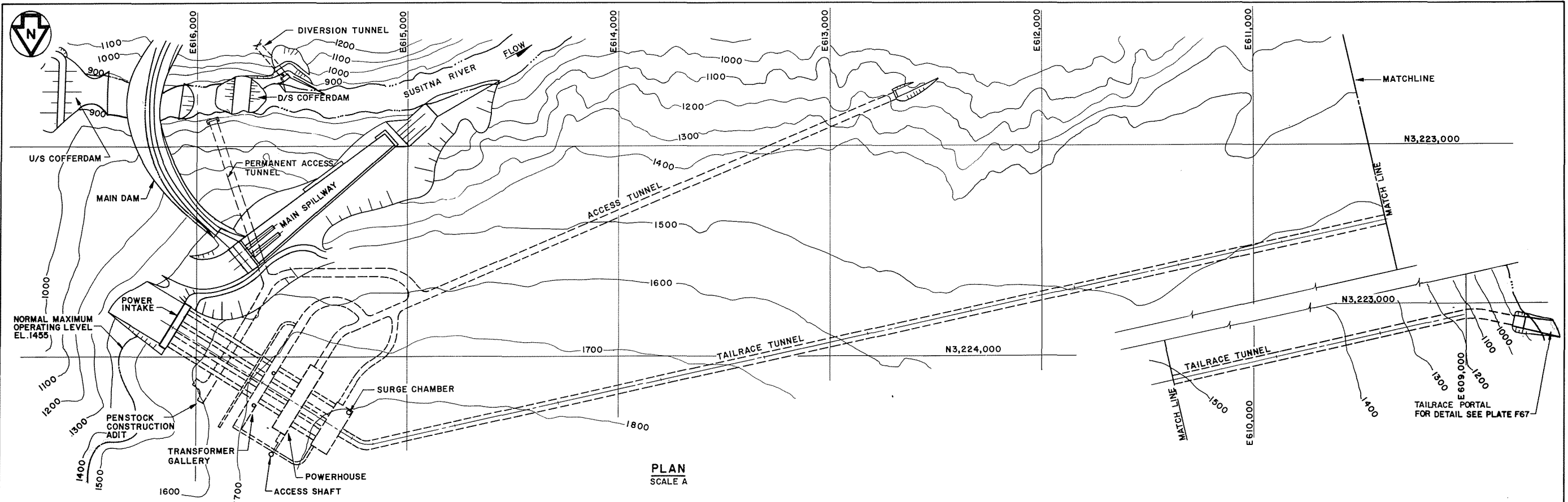
SECTION THROUGH FUSE PLUG (PLATE F57)
SCALE B



TYPICAL SECTION C-C (PLATE F57)
SCALE A

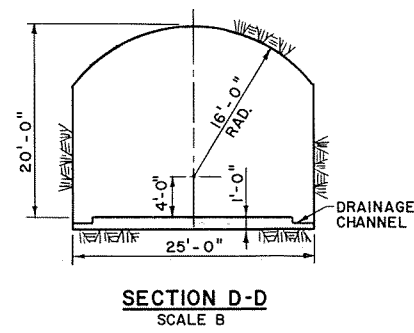
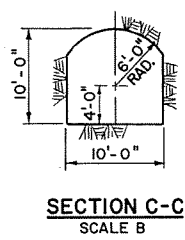
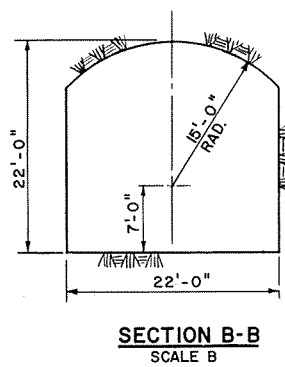
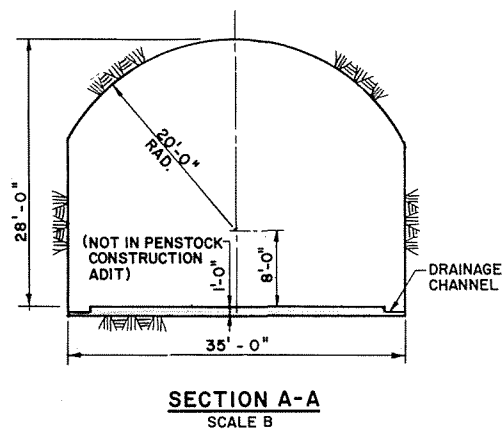
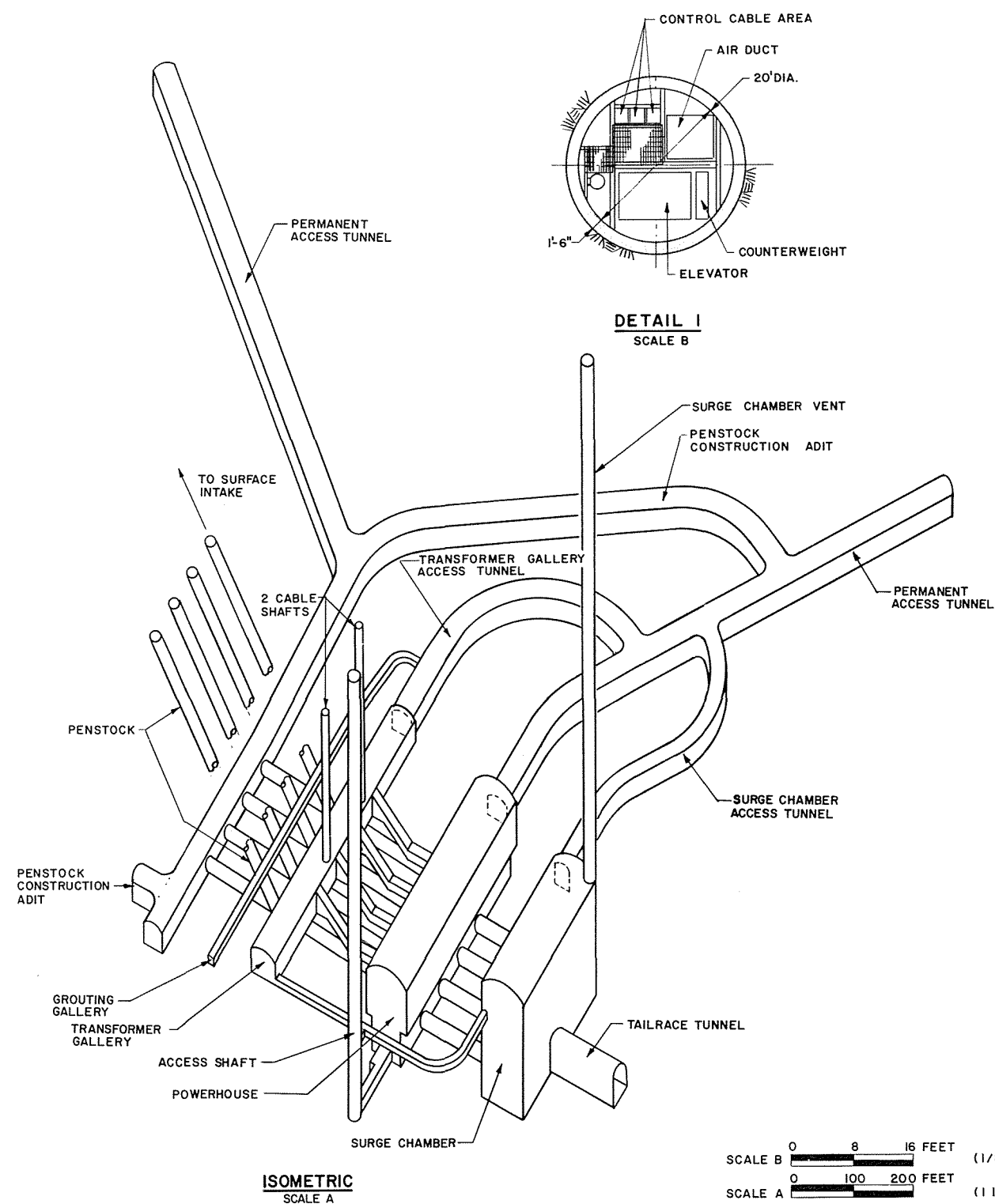
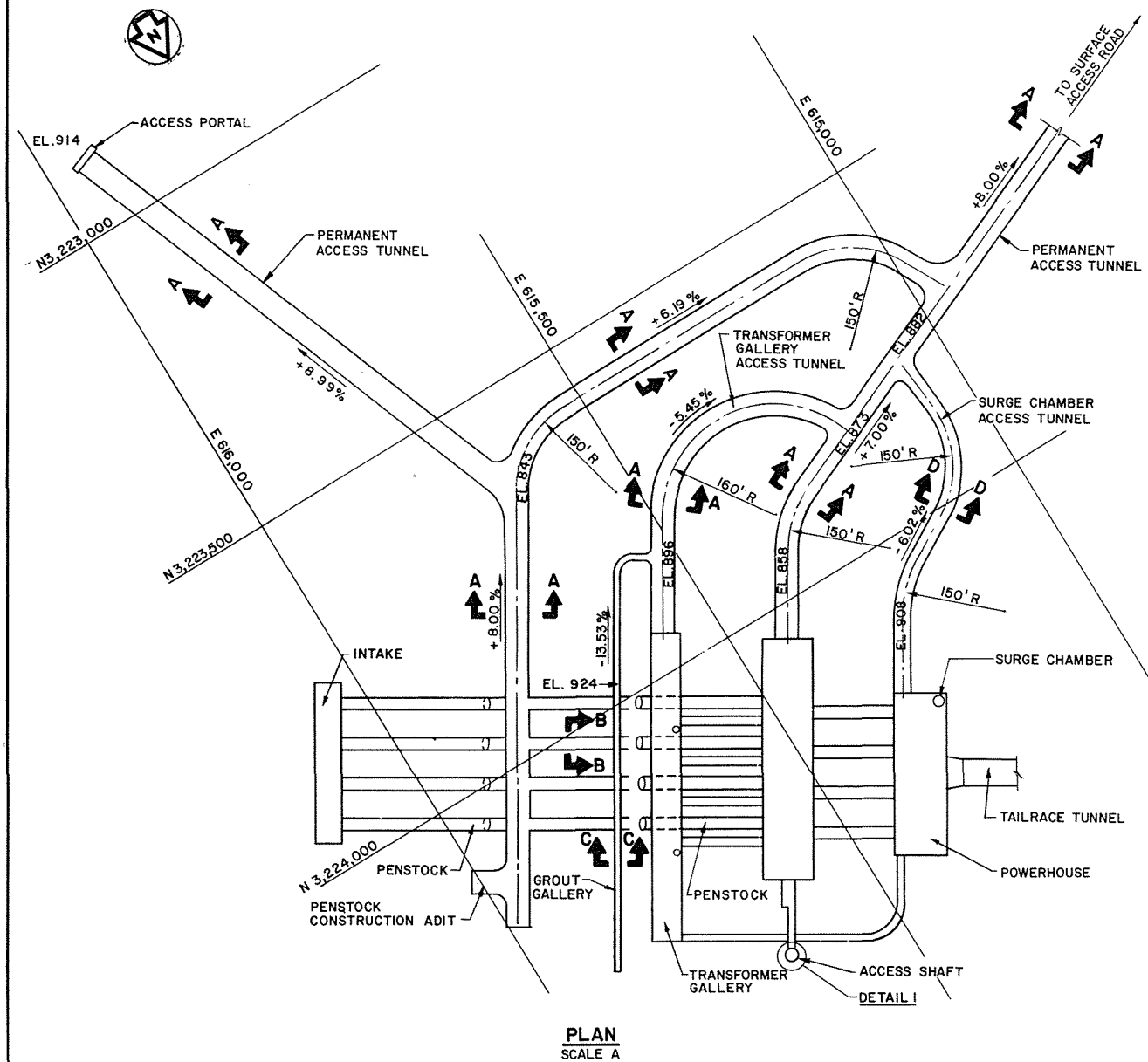


	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON EMERGENCY SPILLWAY SECTIONS		
EXHIBIT F		PLATE F58



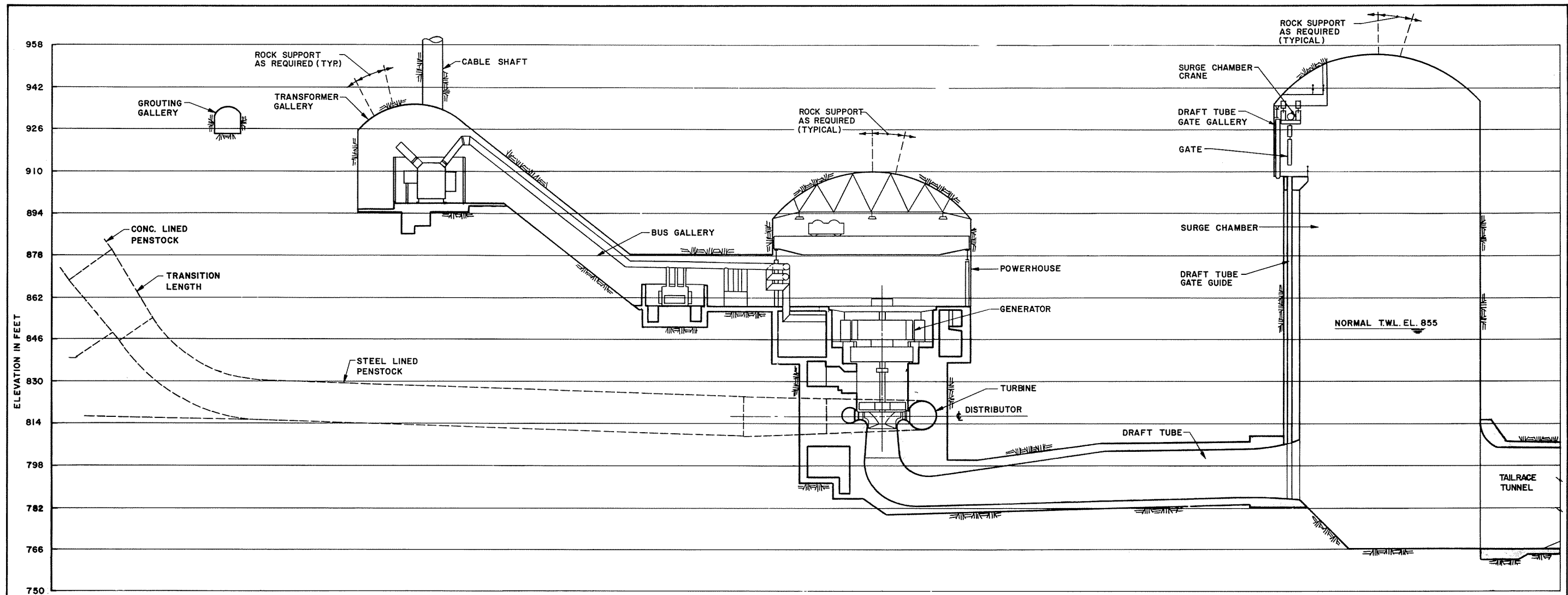
SCALE B 0 100 200 FEET (1 INCH = 100 FEET)
 SCALE A 0 200 400 FEET (1 INCH = 200 FEET)

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

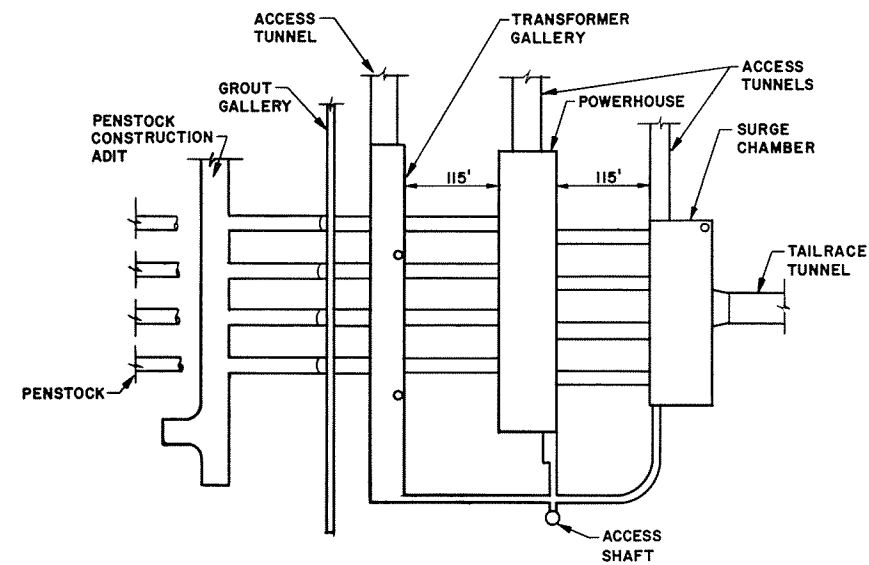


SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

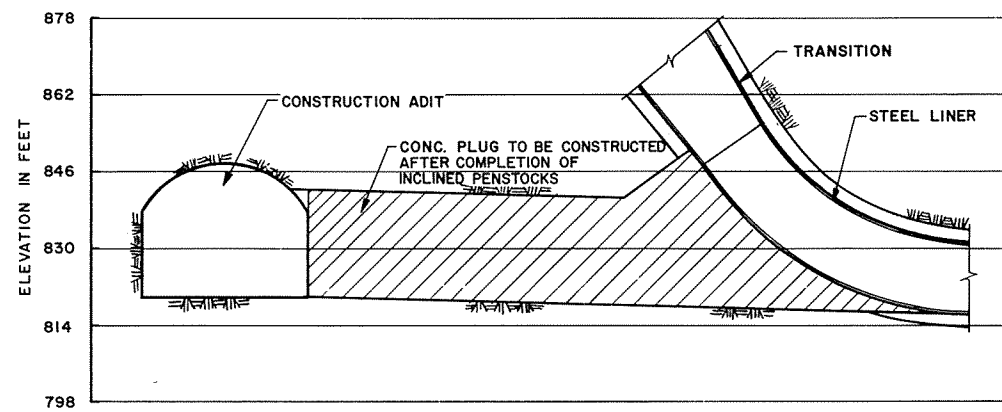
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES ACCESS	
EXHIBIT F	PLATE F60



SECTION A-A
SCALE B



PLAN
SCALE A

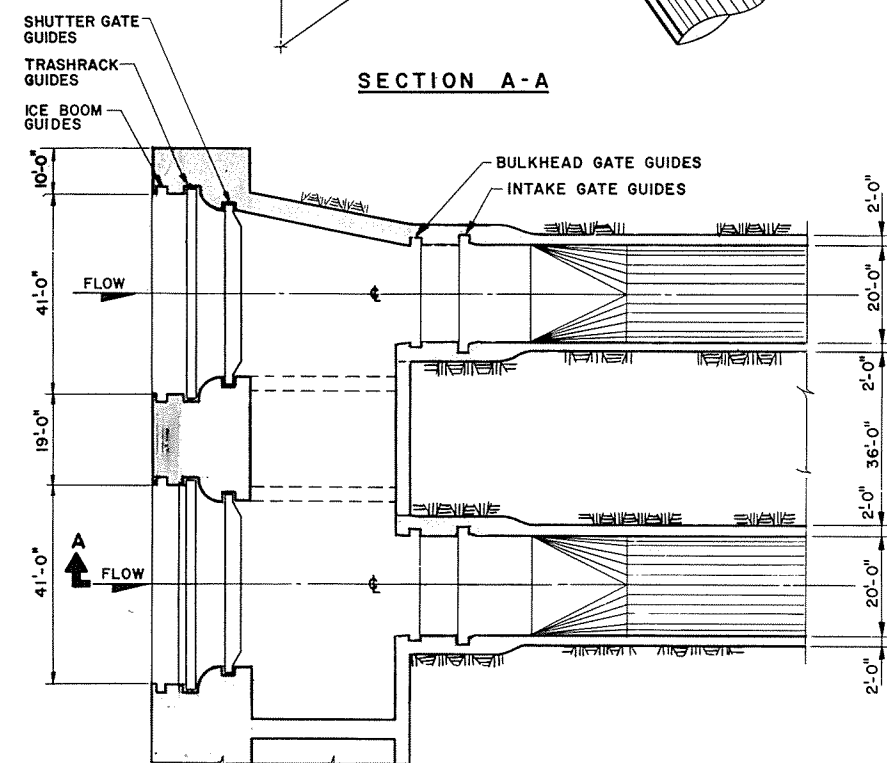


SECTION B-B
SCALE B

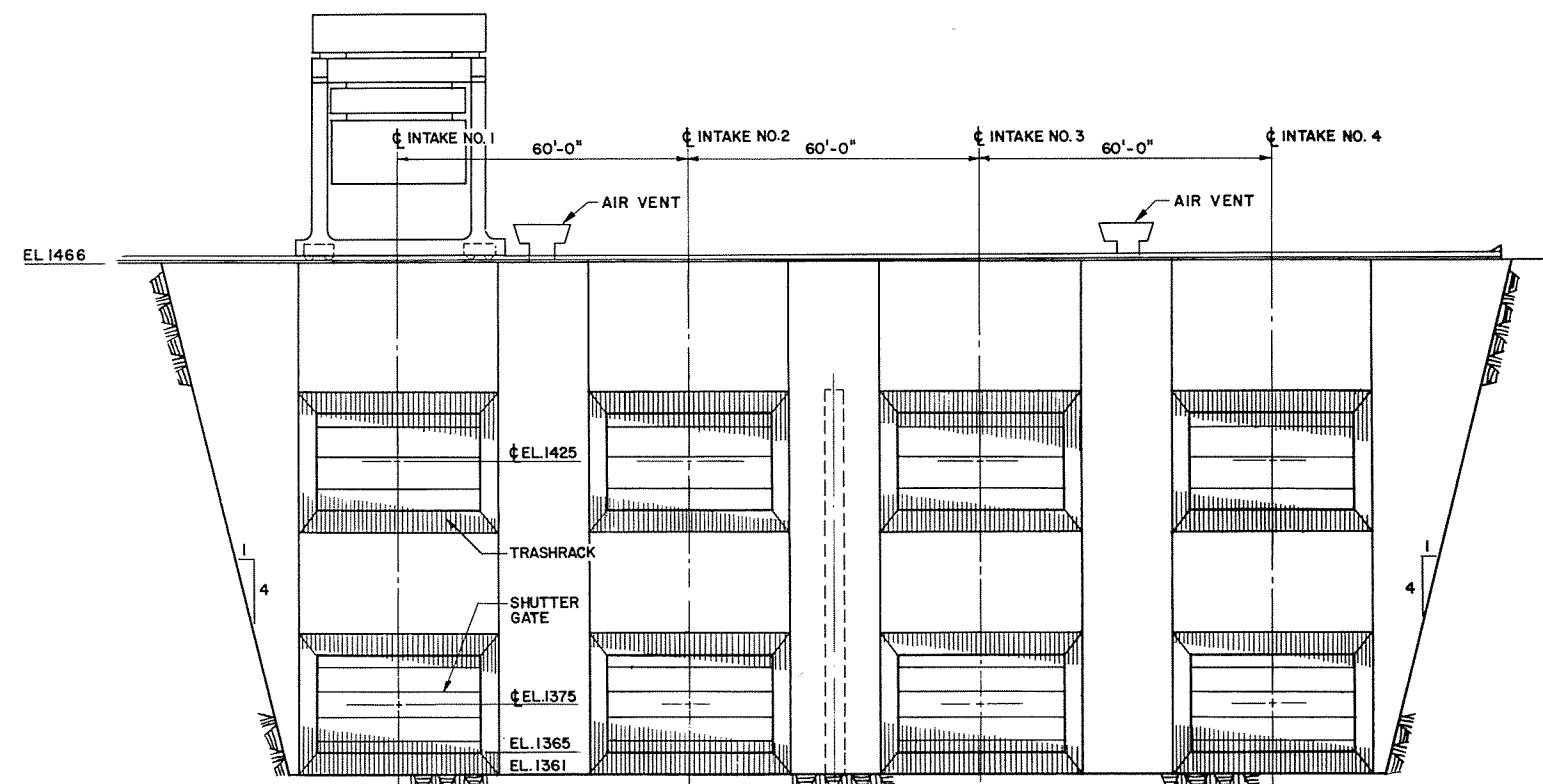


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWER FACILITIES PLAN & SECTIONS	
EXHIBIT F	PLATE F 61

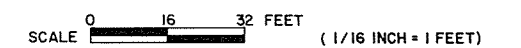
SECTION A-A



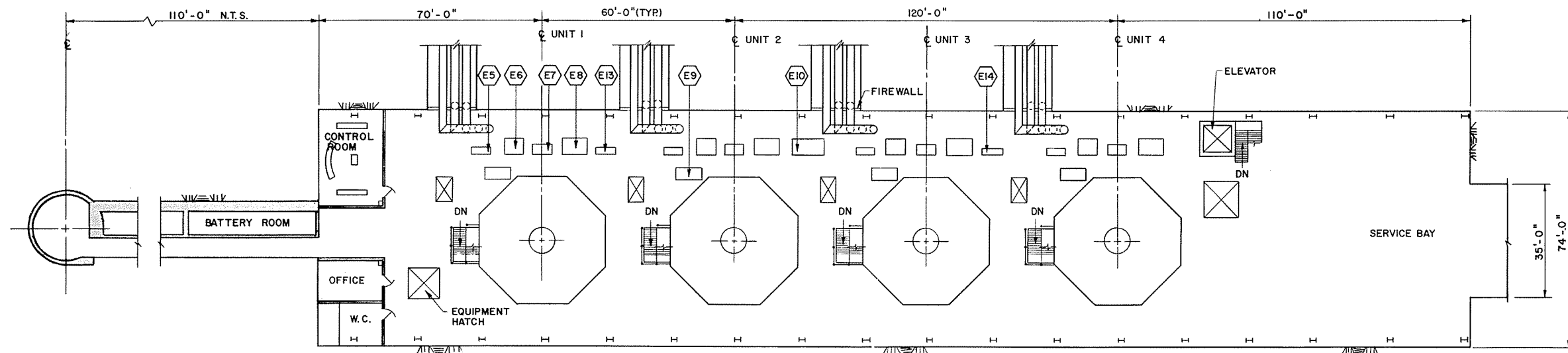
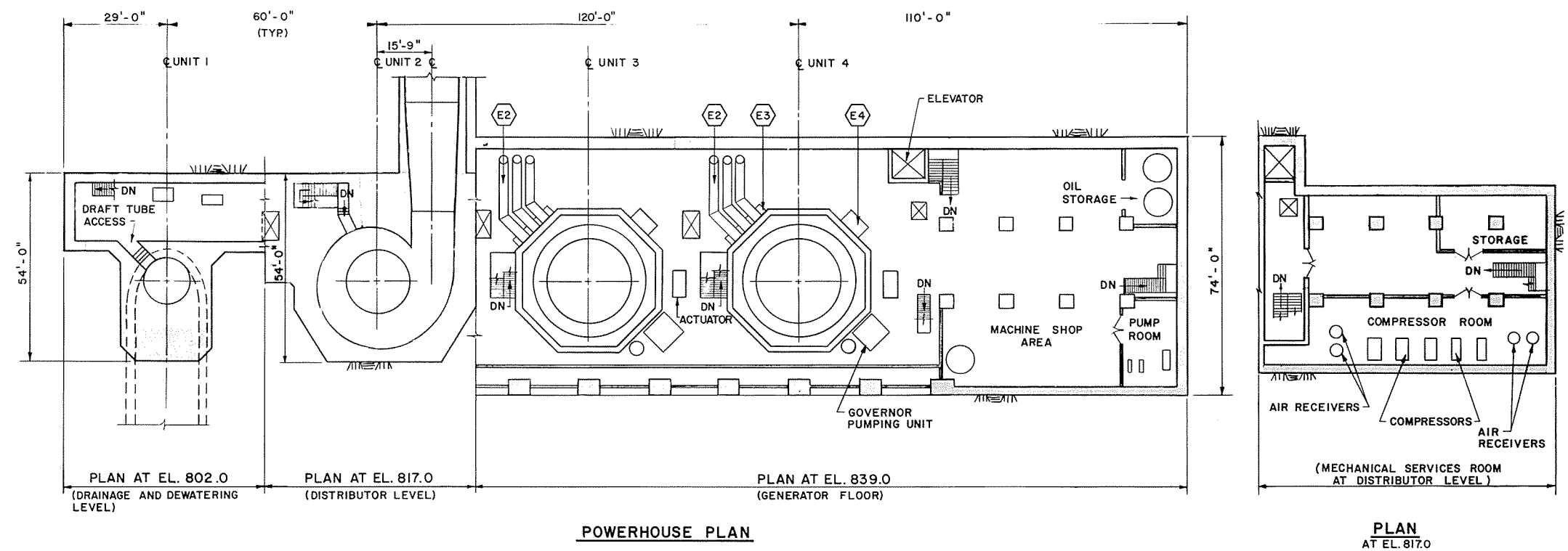
PLAN AT INTAKE CENTERLINE



ELEVATION B-B



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

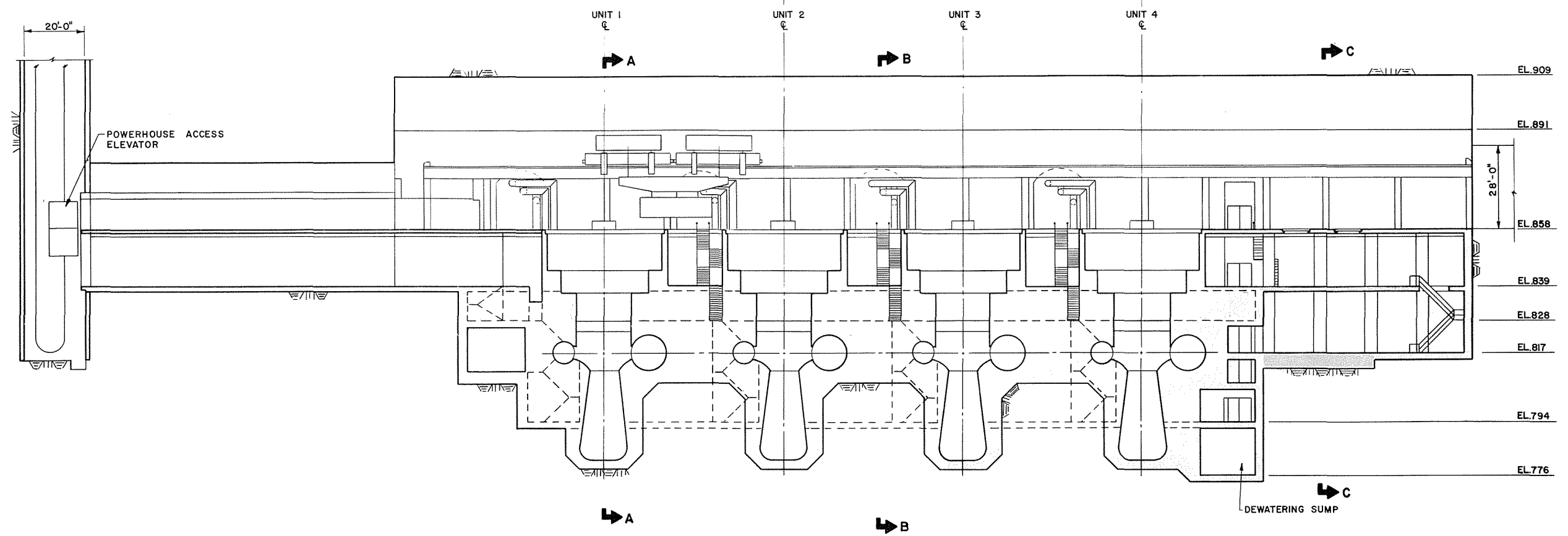


SCALE 0 16 32 FEET
(1/16 INCH = 1 FEET)

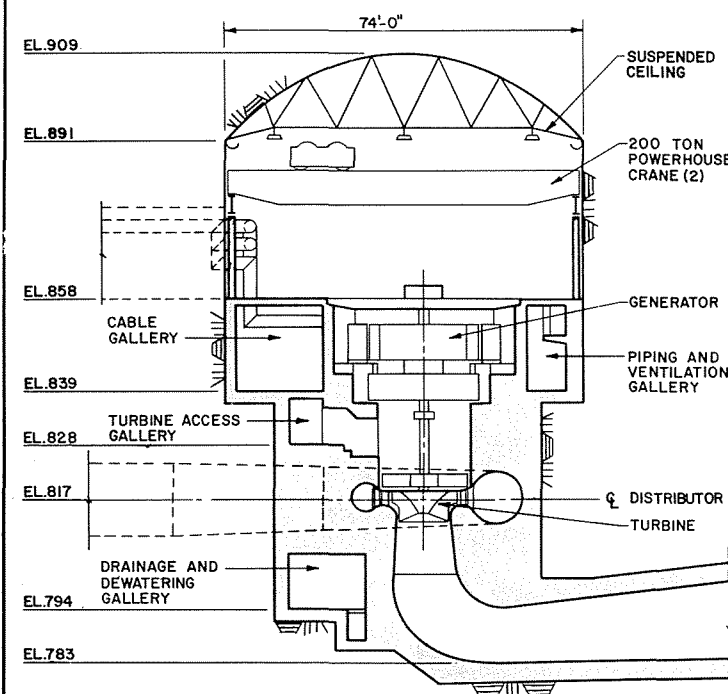
LEGEND

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

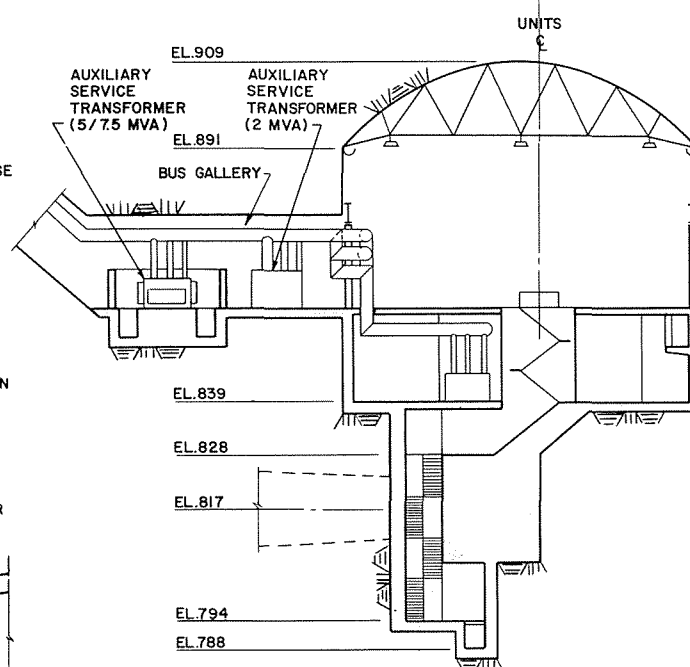
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON POWERHOUSE PLANS	
EXHIBIT F	PLATE F63



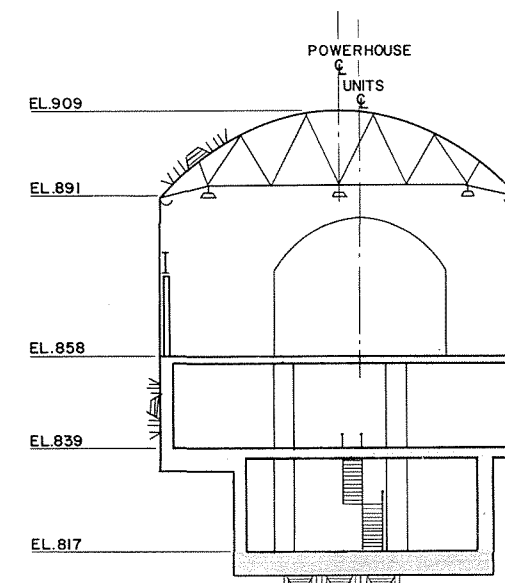
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS)



SECTION A-A (SECTION THRU CENTERLINE OF UNIT)



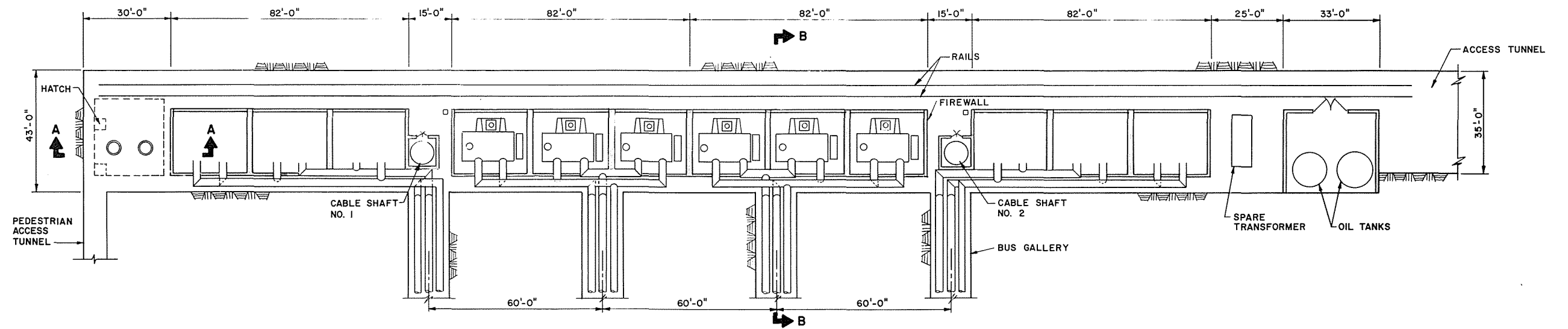
SECTION B-B (SECTION THRU BUS GALLERY)



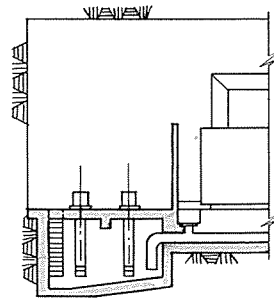
SECTION C-C (SECTION THRU SERVICE BAY)

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

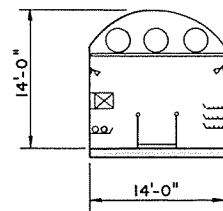
AP	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
	DEVIL CANYON POWERHOUSE SECTIONS	
	EXHIBIT F	PLATE F64



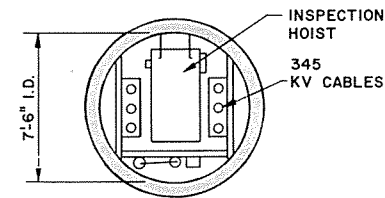
PLAN
SCALE A



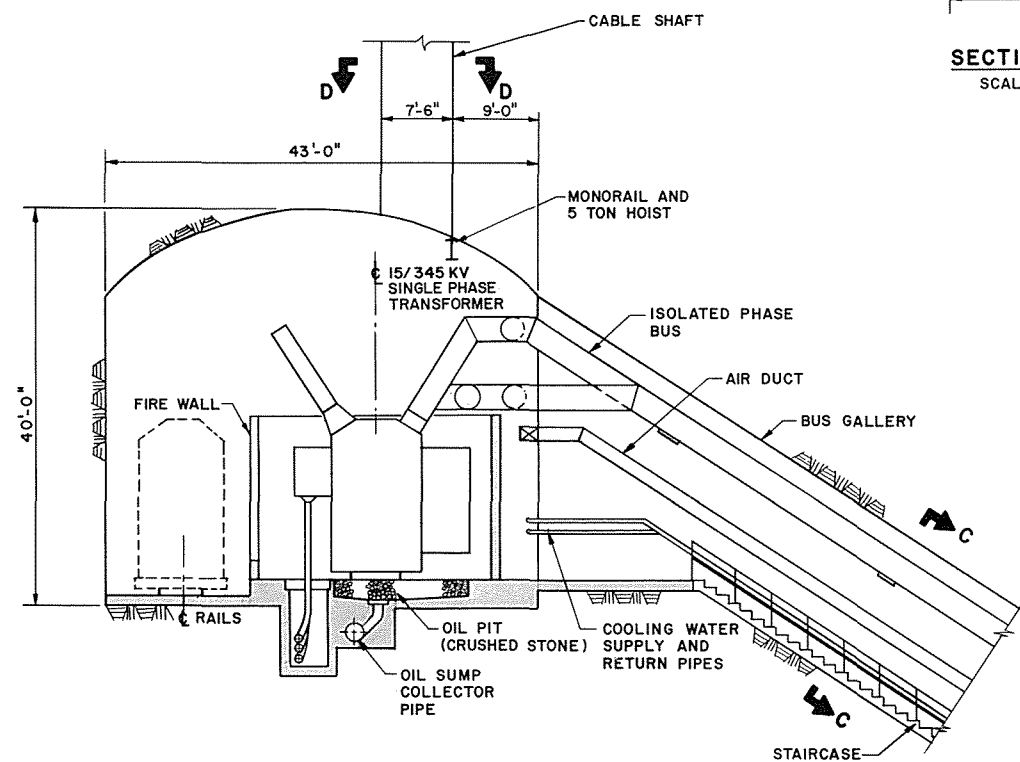
SECTION A-A
SCALE A



SECTION C-C
SCALE B



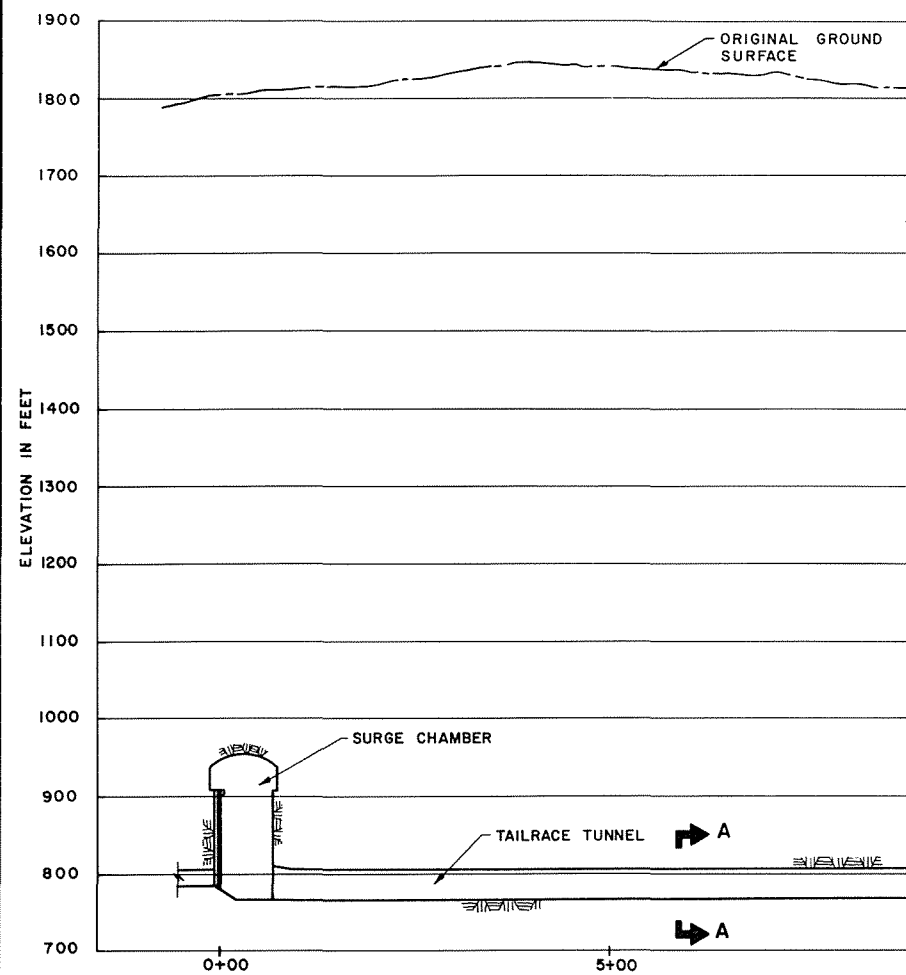
SECTION D-D
SCALE C



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



FLOW

60+00 65+00

PROFILE
SCALE A

C

240'-0"

19'-0" (TYP.)

2'-6" (TYP.)

2'-6" (TYP.)

60'-0"

DRAFT TUBE

75'-0"

FLOW

SURGE CHAMBER

TAILRACE TUNNEL

2'-0"

38'-0"

2'-0"

C

SECTION B-B
SCALE B

TAILRACE TUNNEL

2'-0"

38'-0"

2'-0"

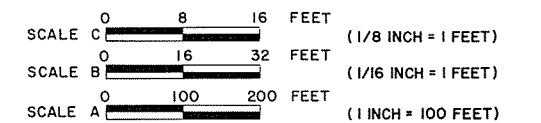
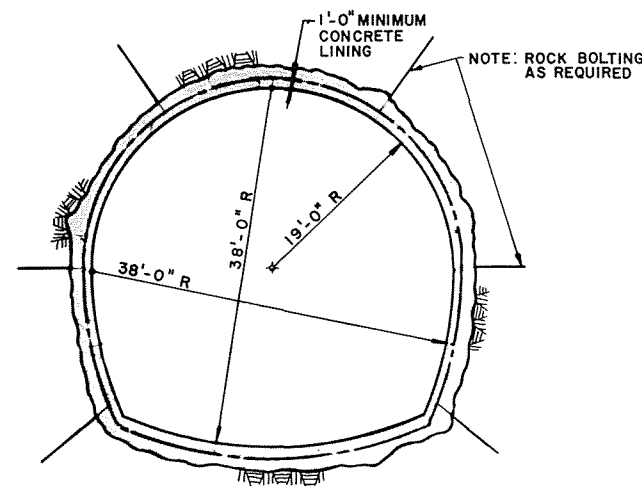
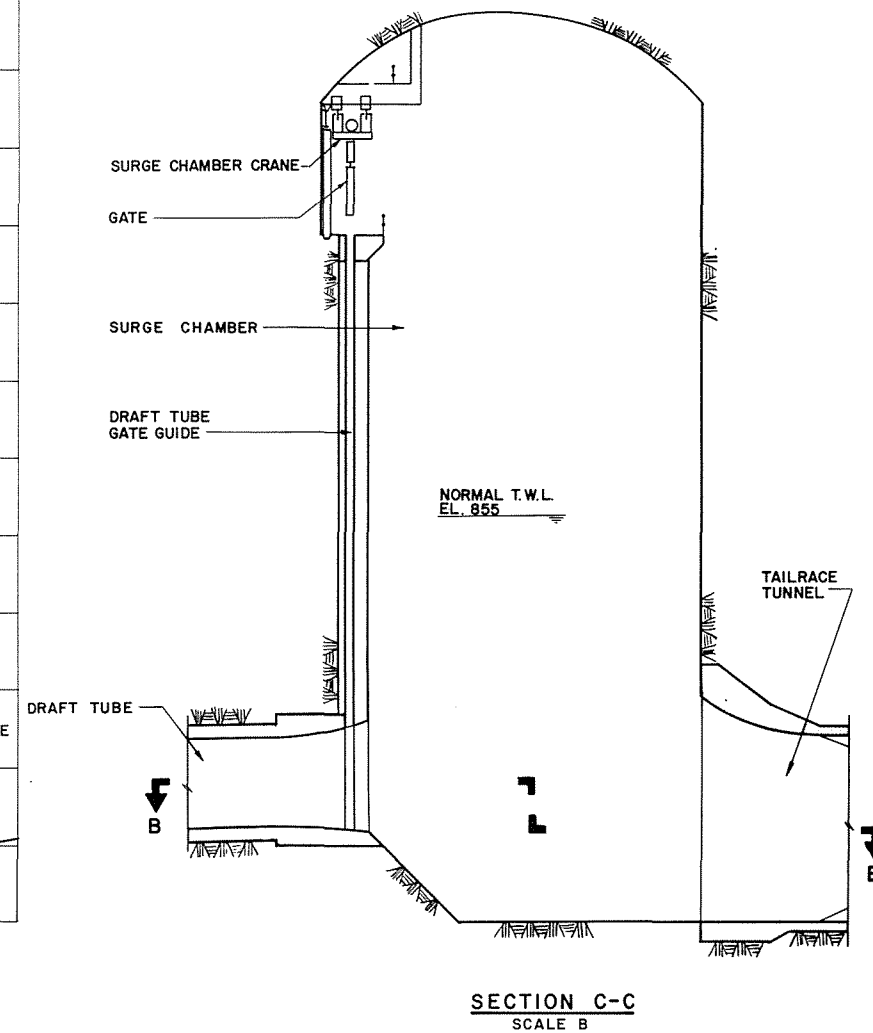
C

SECTION C-C

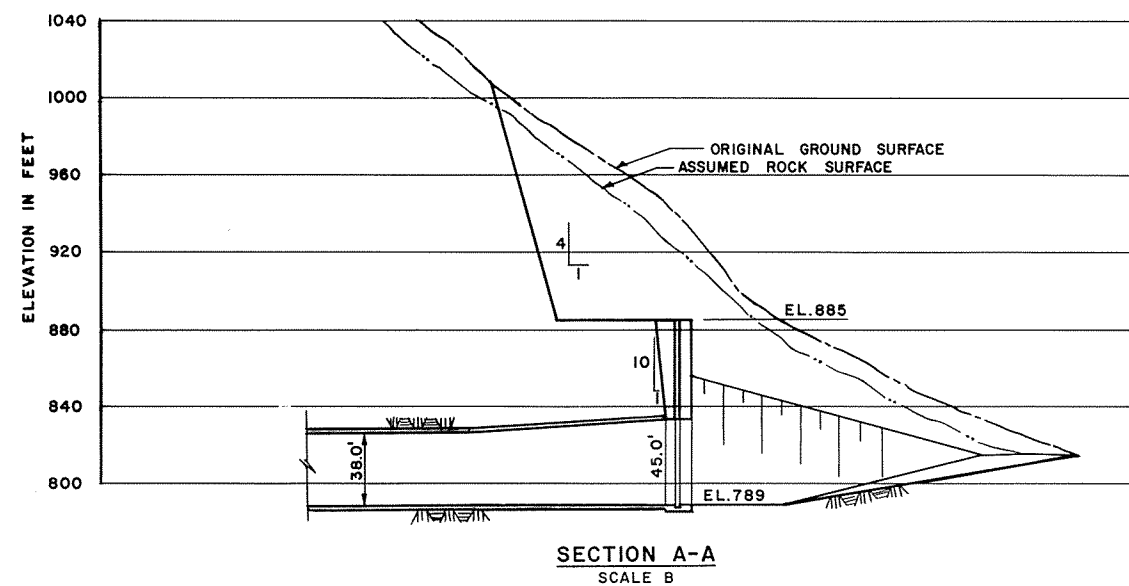
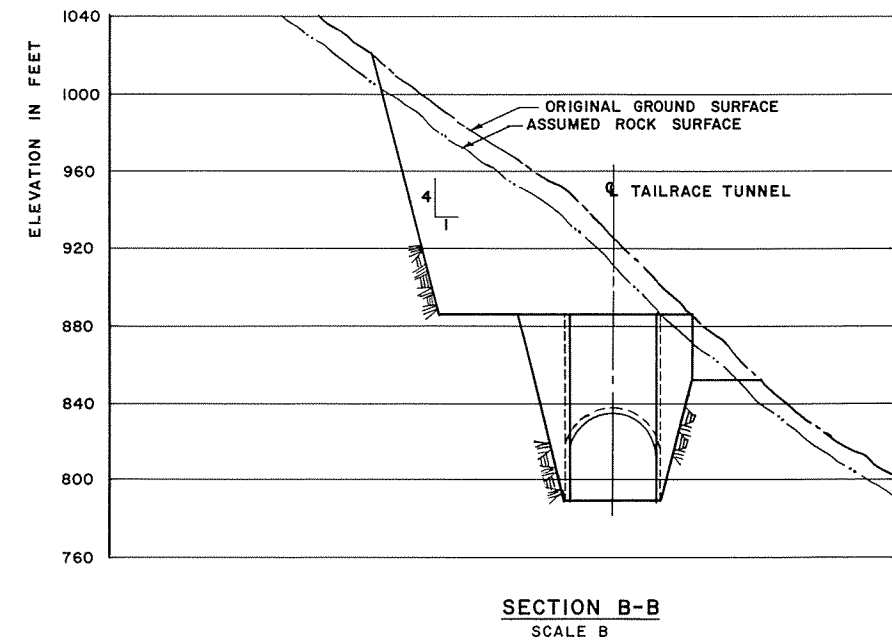
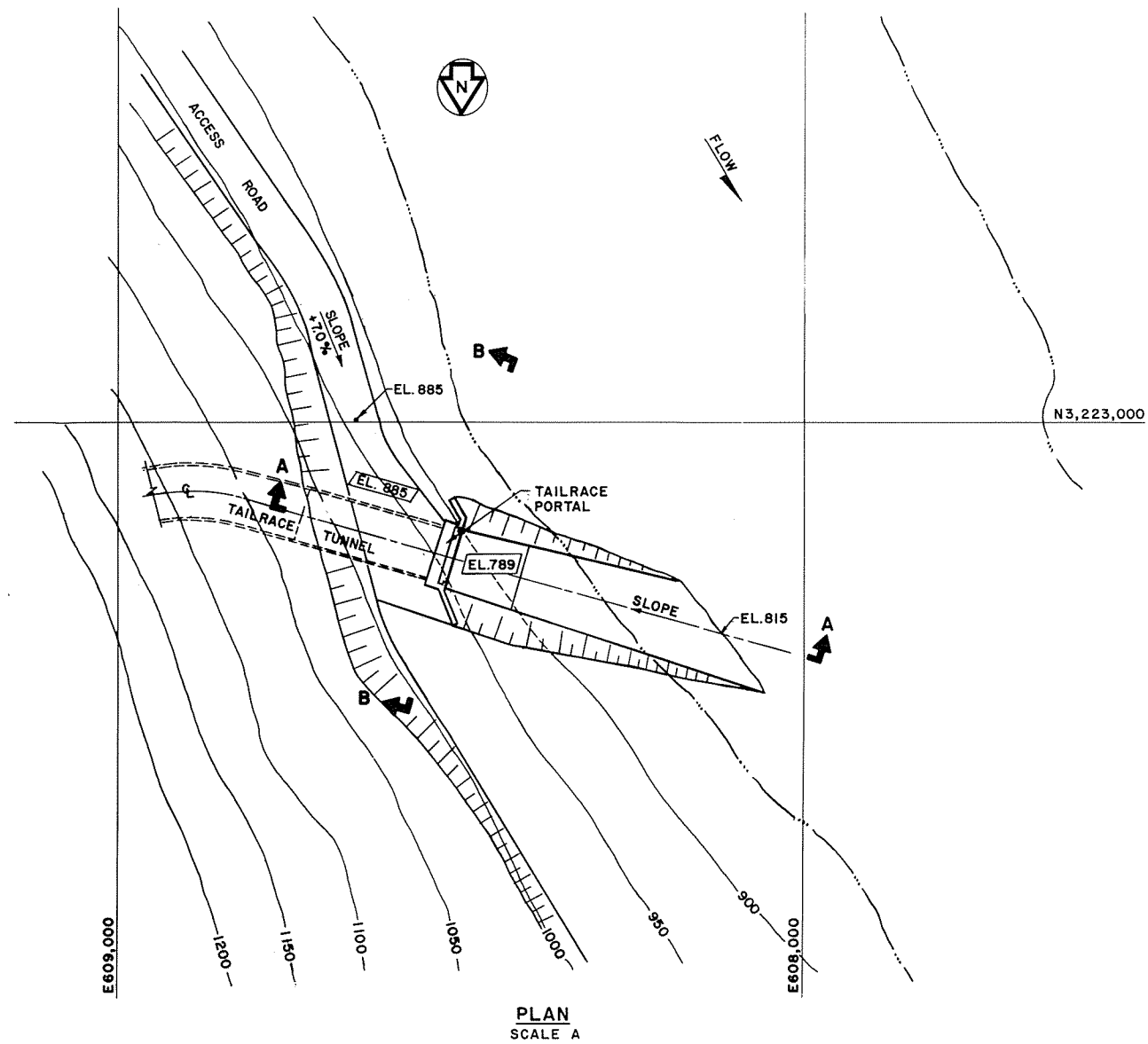
SCALE B

SECTION C-C

SCALE B

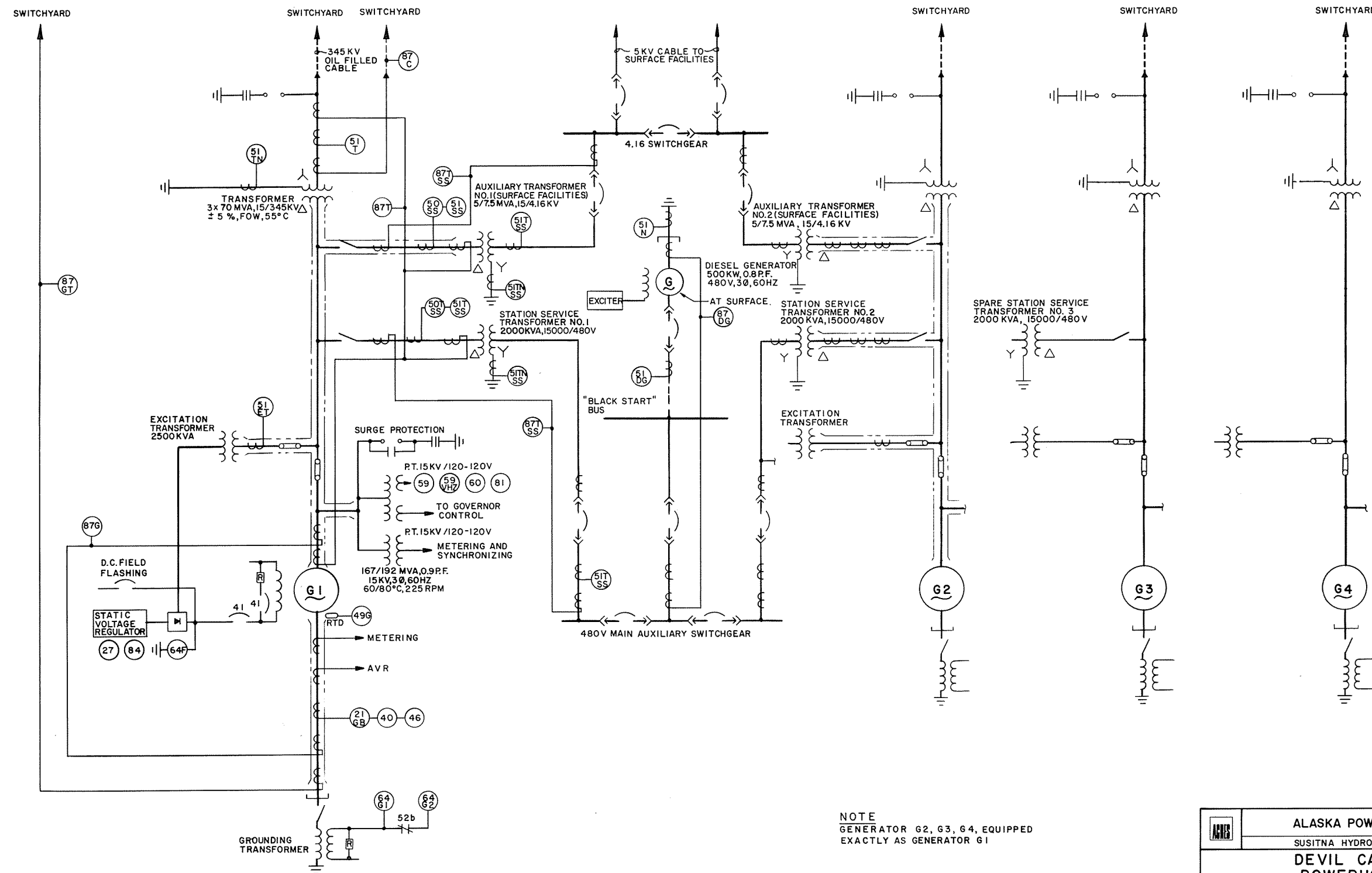


APWA	ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT
DEVIL CANYON SURGE CHAMBER AND TAILRACE SECTIONS	
EXHIBIT F	PLATE F 66

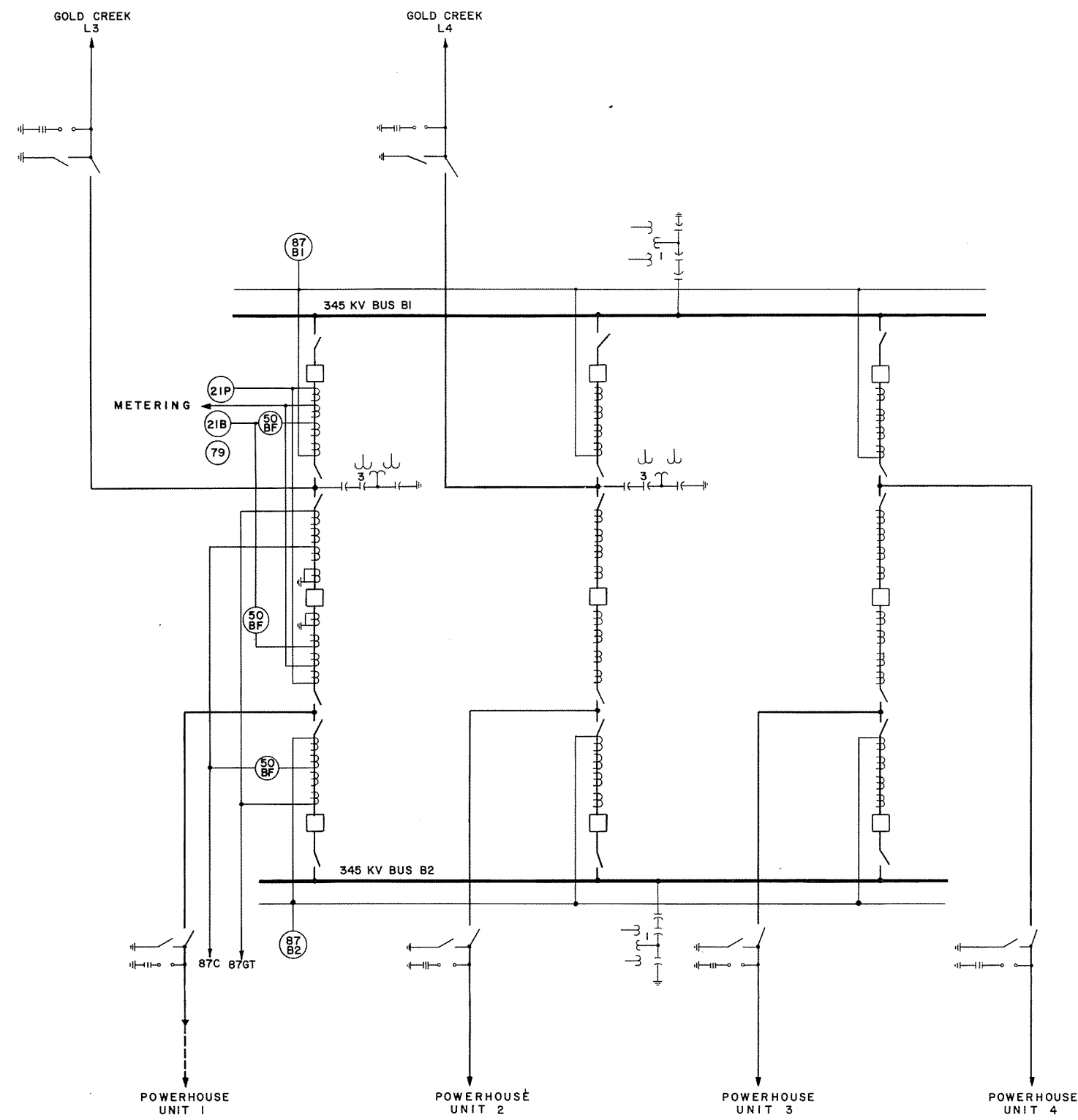


SCALE B 0 40 80 FEET (1 INCH = 40 FEET)
SCALE A 0 50 100 FEET (1 INCH = 50 FEET)

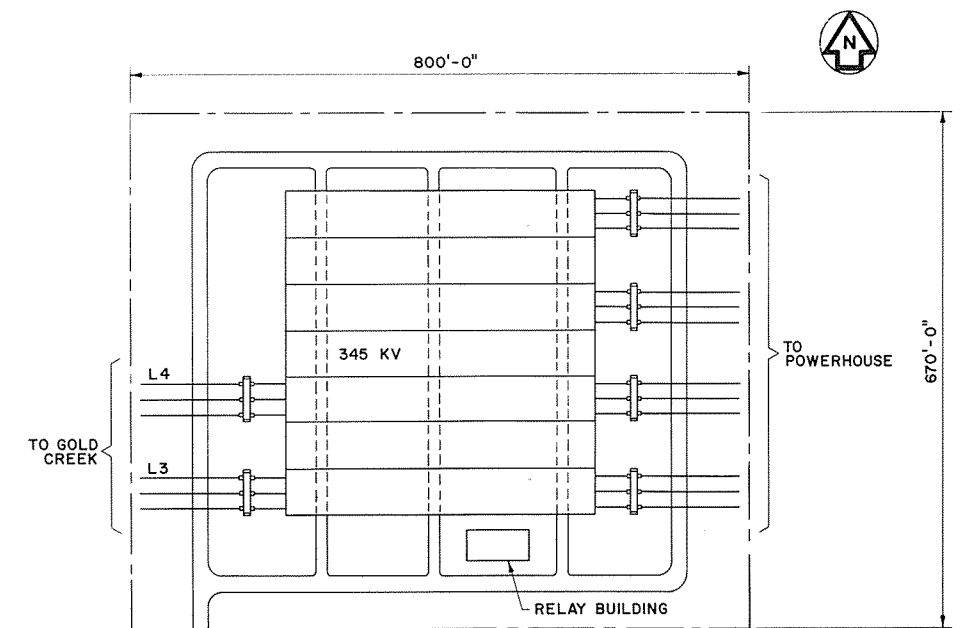
	ALASKA POWER AUTHORITY	
	SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON TAILRACE PORTAL PLAN AND SECTIONS		
EXHIBIT F		PLATE F67



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



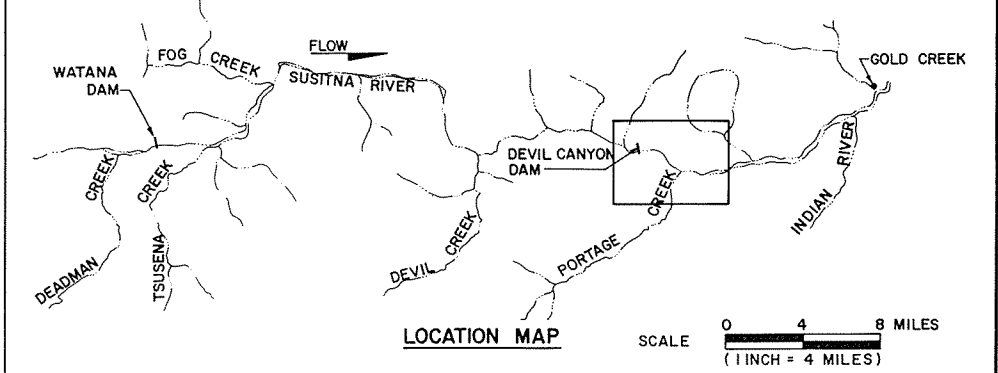
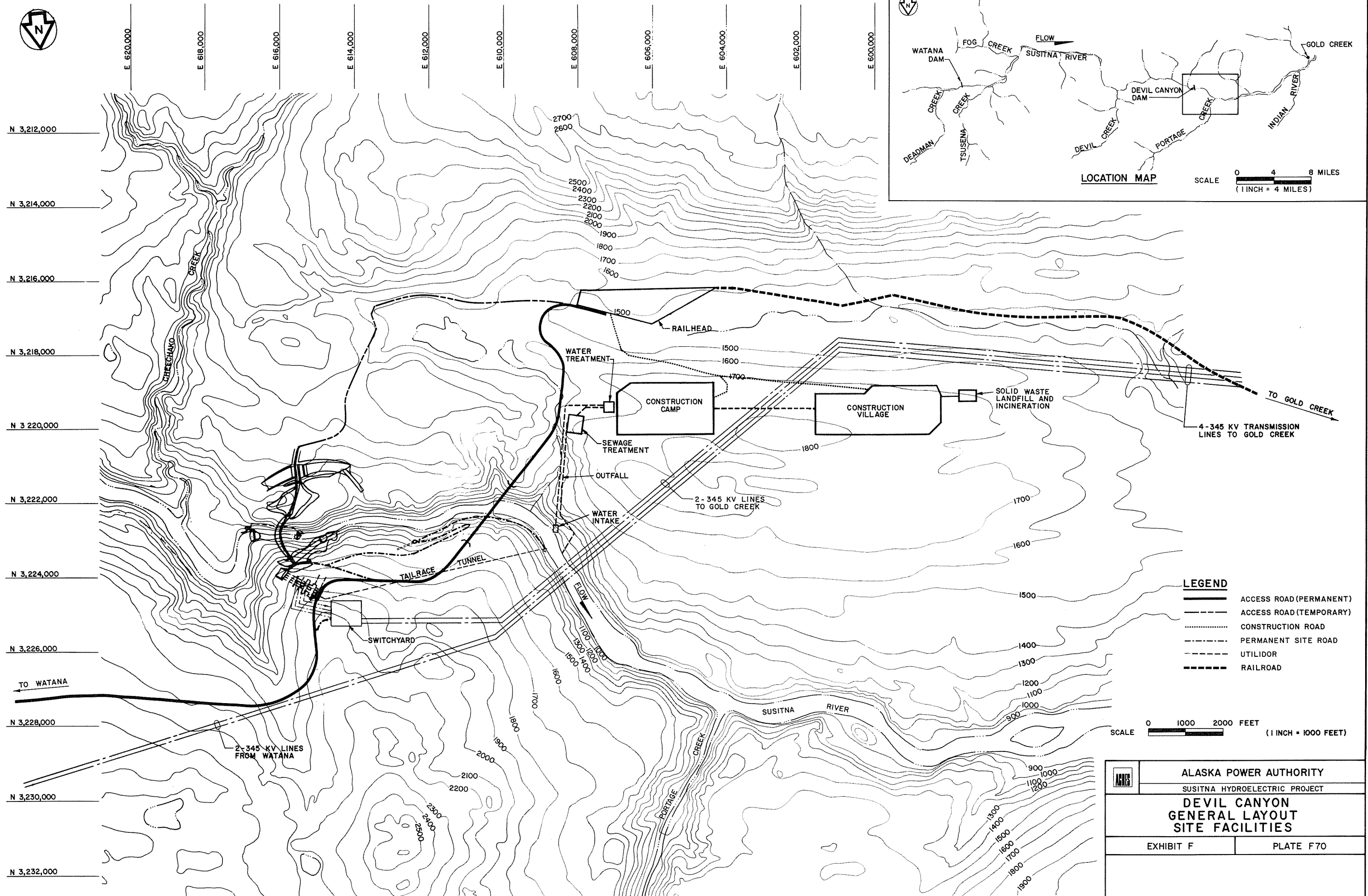
SINGLE LINE DIAGRAM



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
		

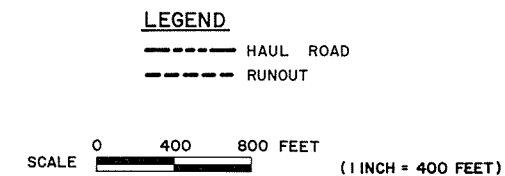
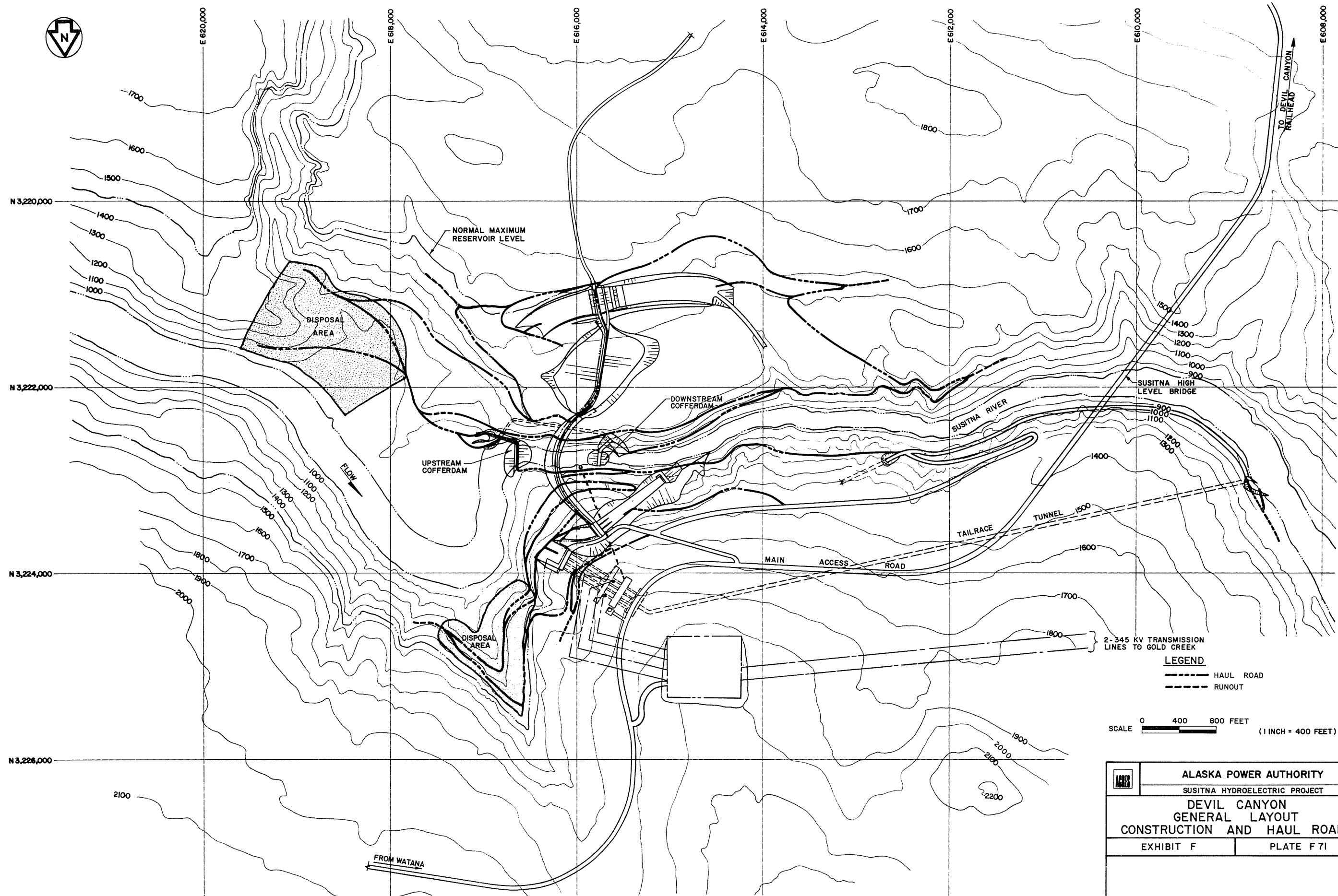


LEGEND

- 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



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



T. 32 N
T. 31 N

3,220,000



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

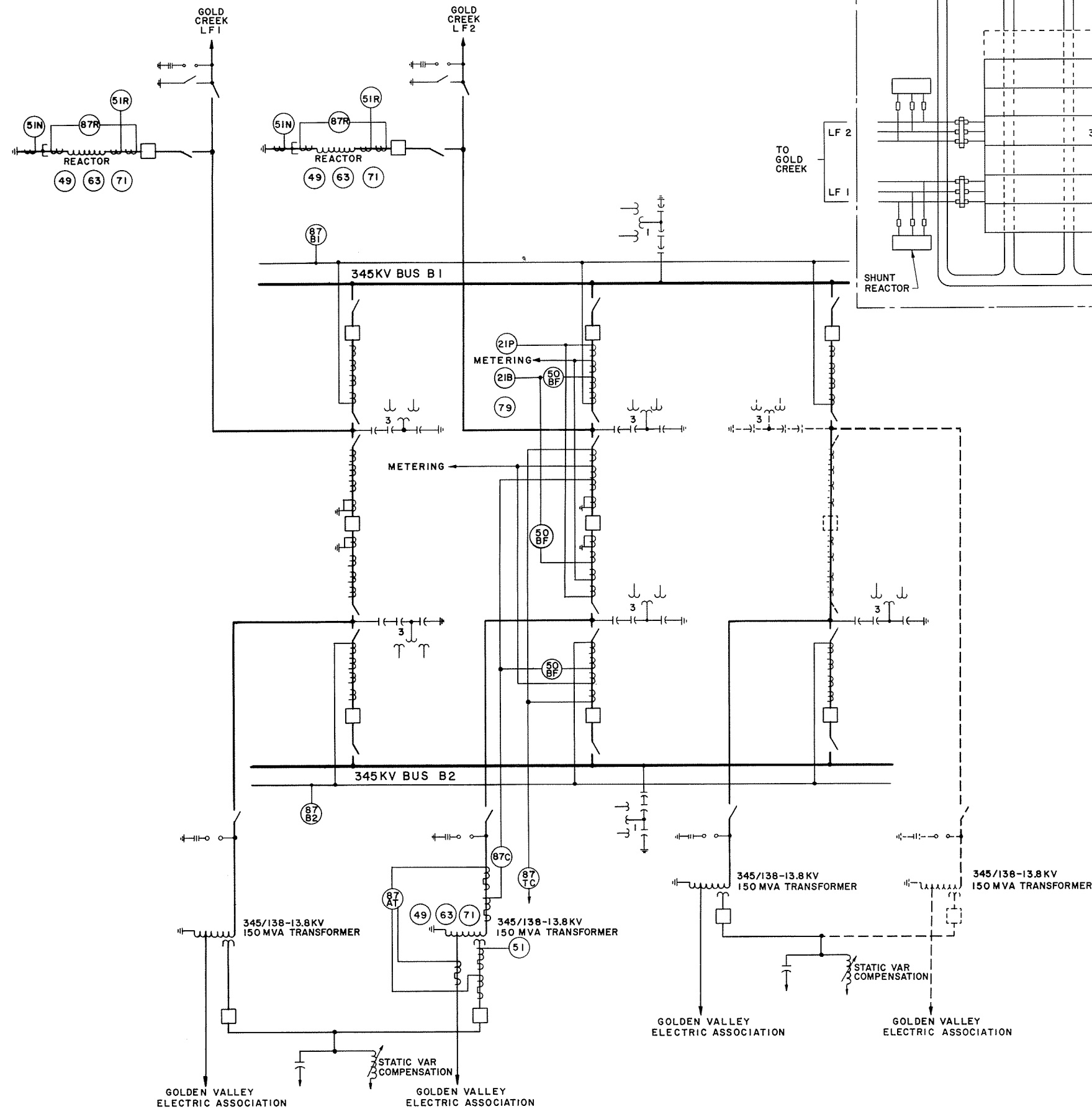
1500

6,000,000

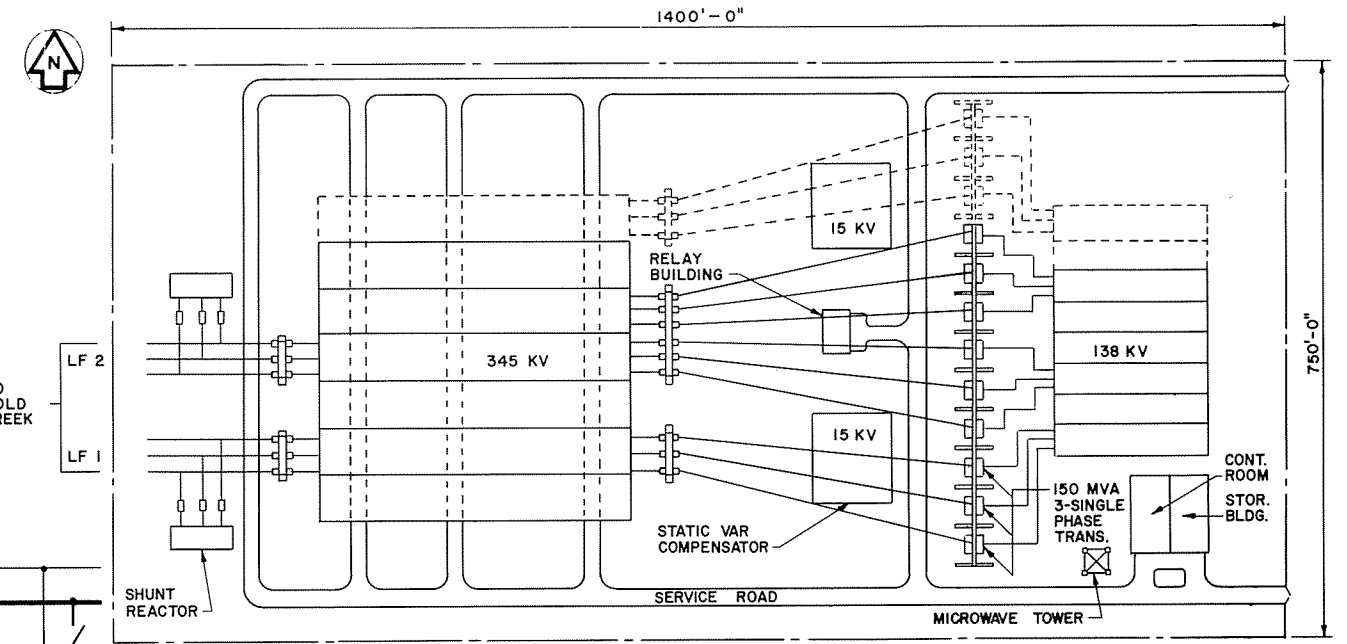
TO CONSTRUCTION CAMP
AND DEVIL CANYON SITE

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

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



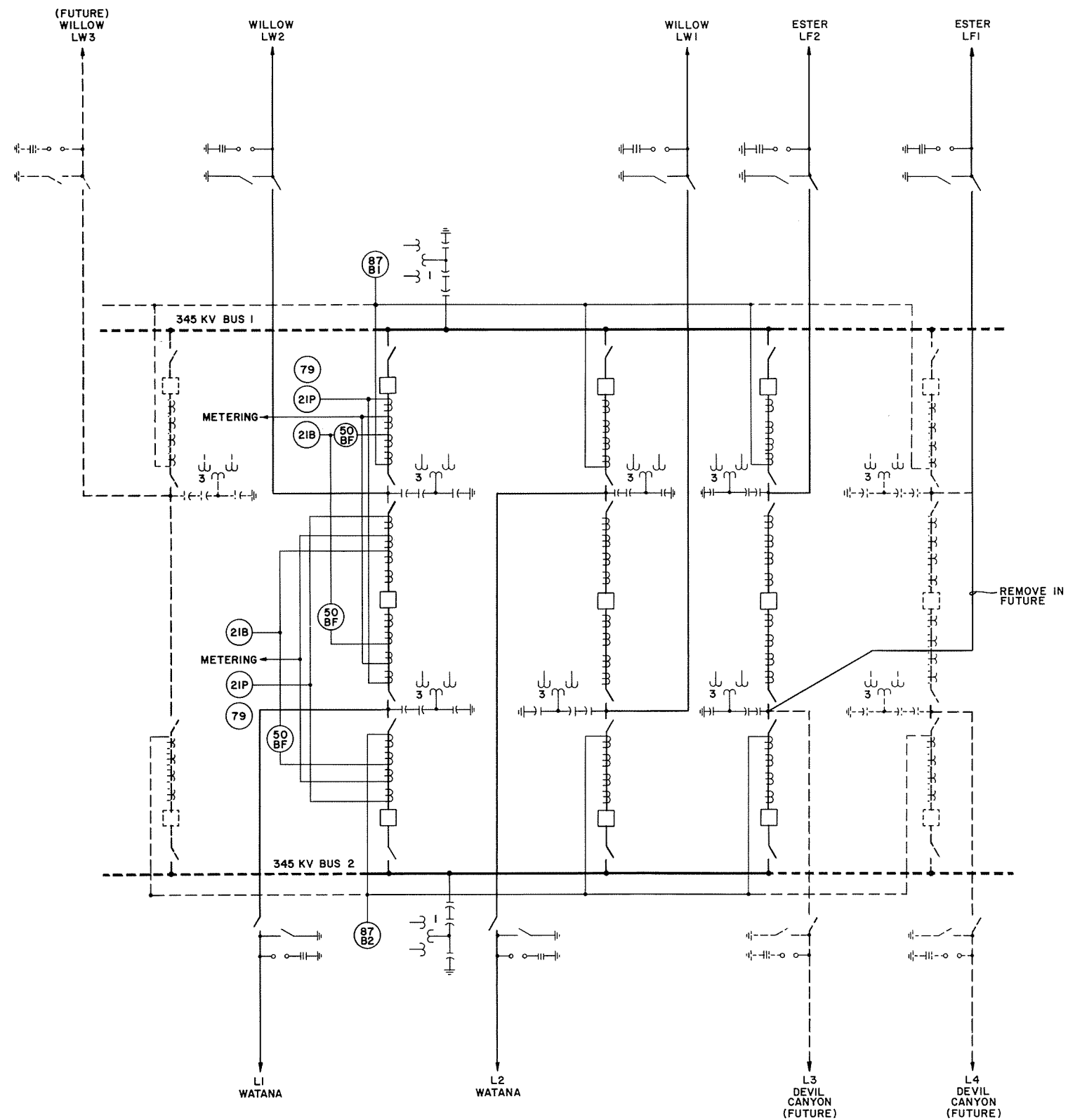
SINGLE LINE DIAGRAM



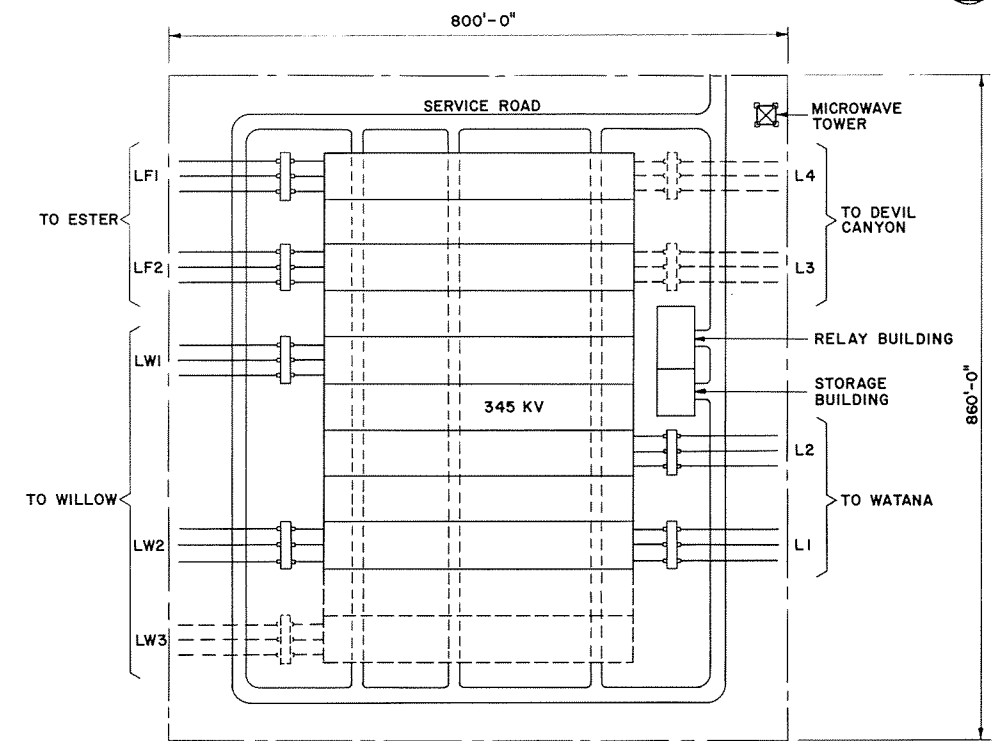
SUBSTATION PLAN
SCALE A

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

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



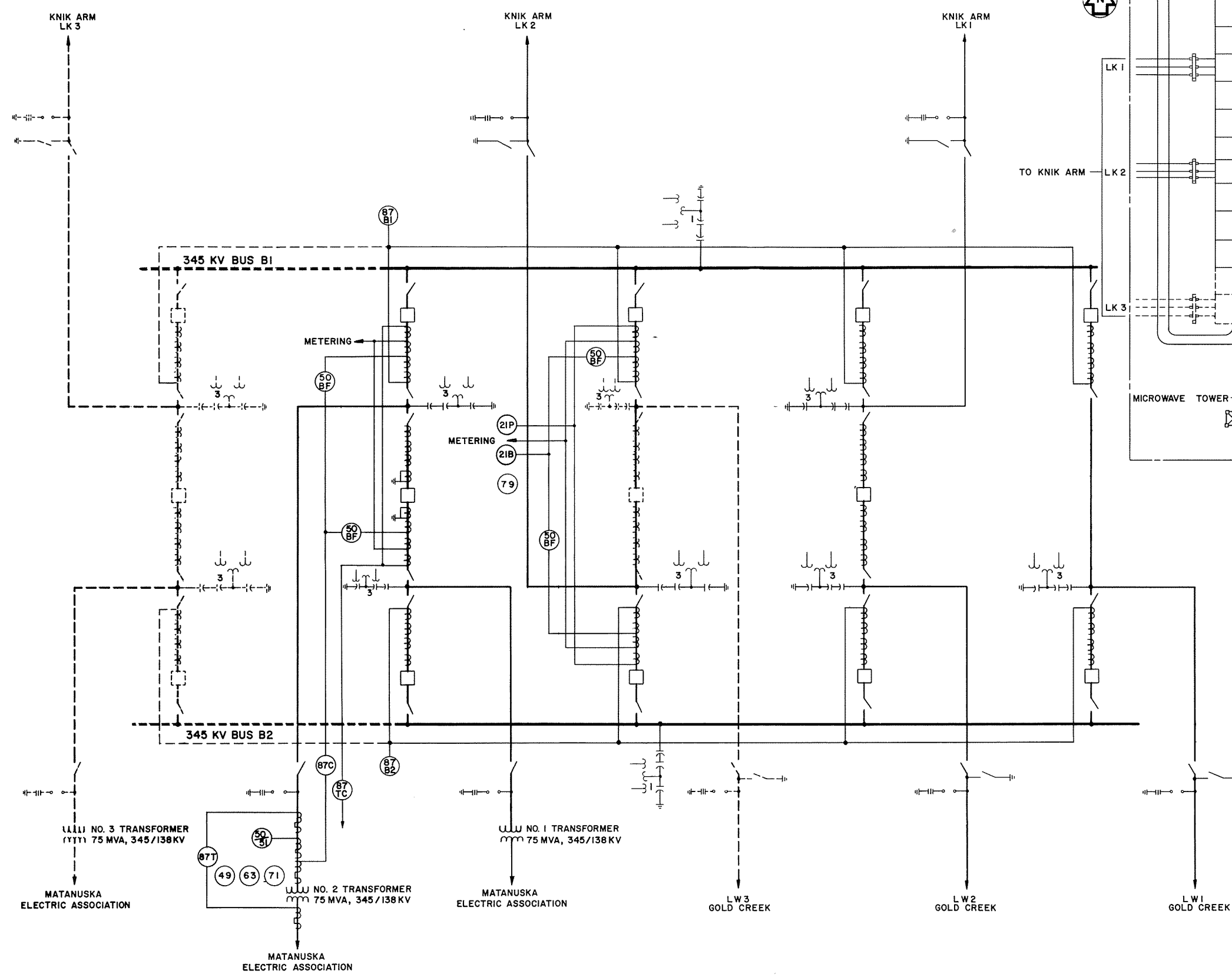
SINGLE LINE DIAGRAM



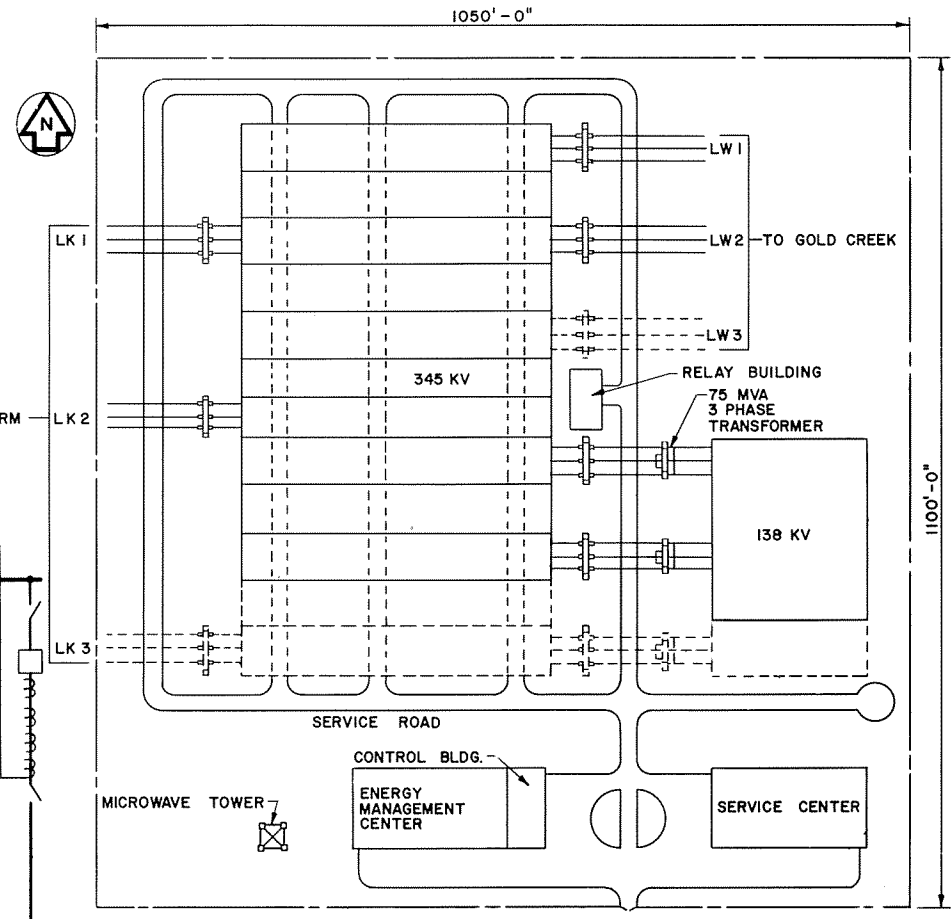
SWITCHYARD PLAN
SCALE A

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



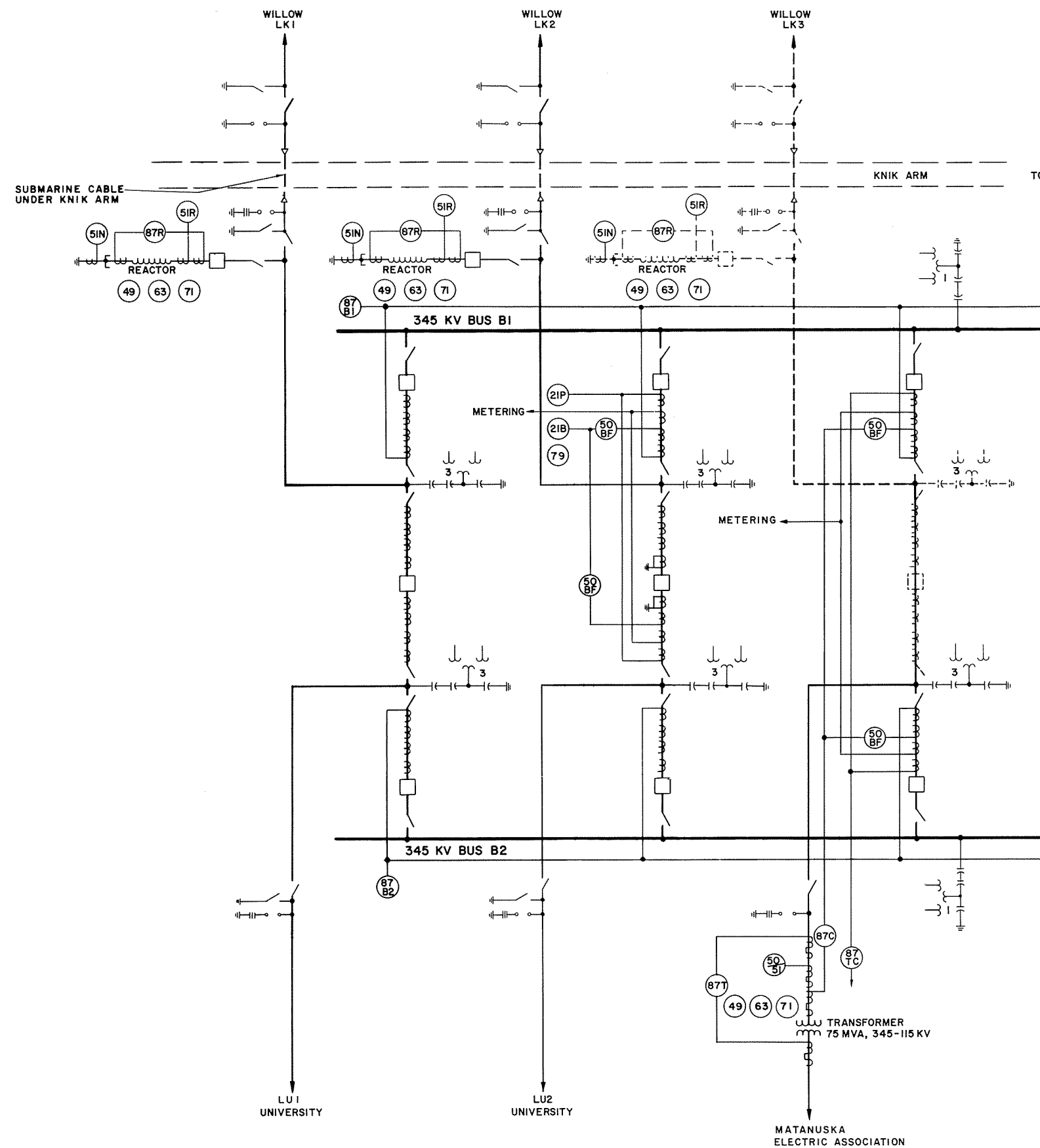
SINGLE LINE DIAGRAM



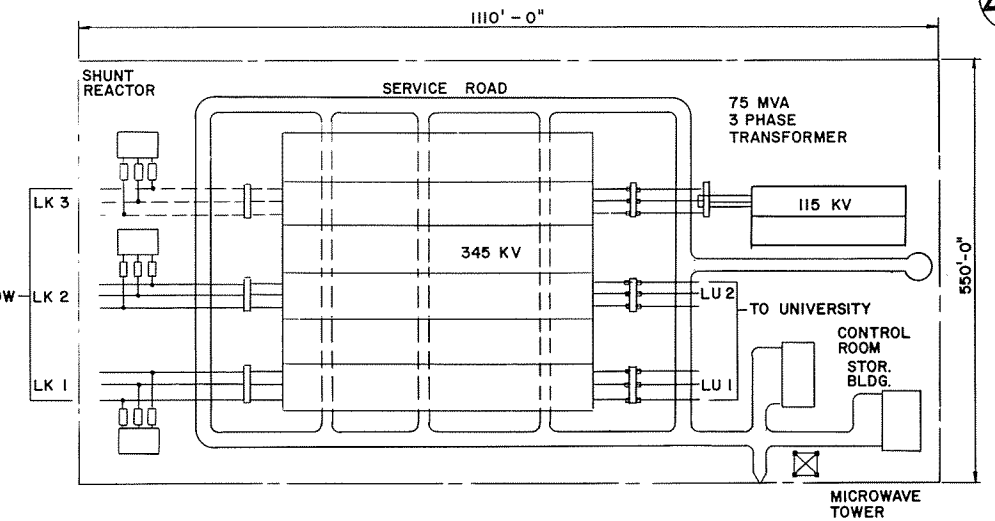
SUBSTATION PLAN
SCALE A

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



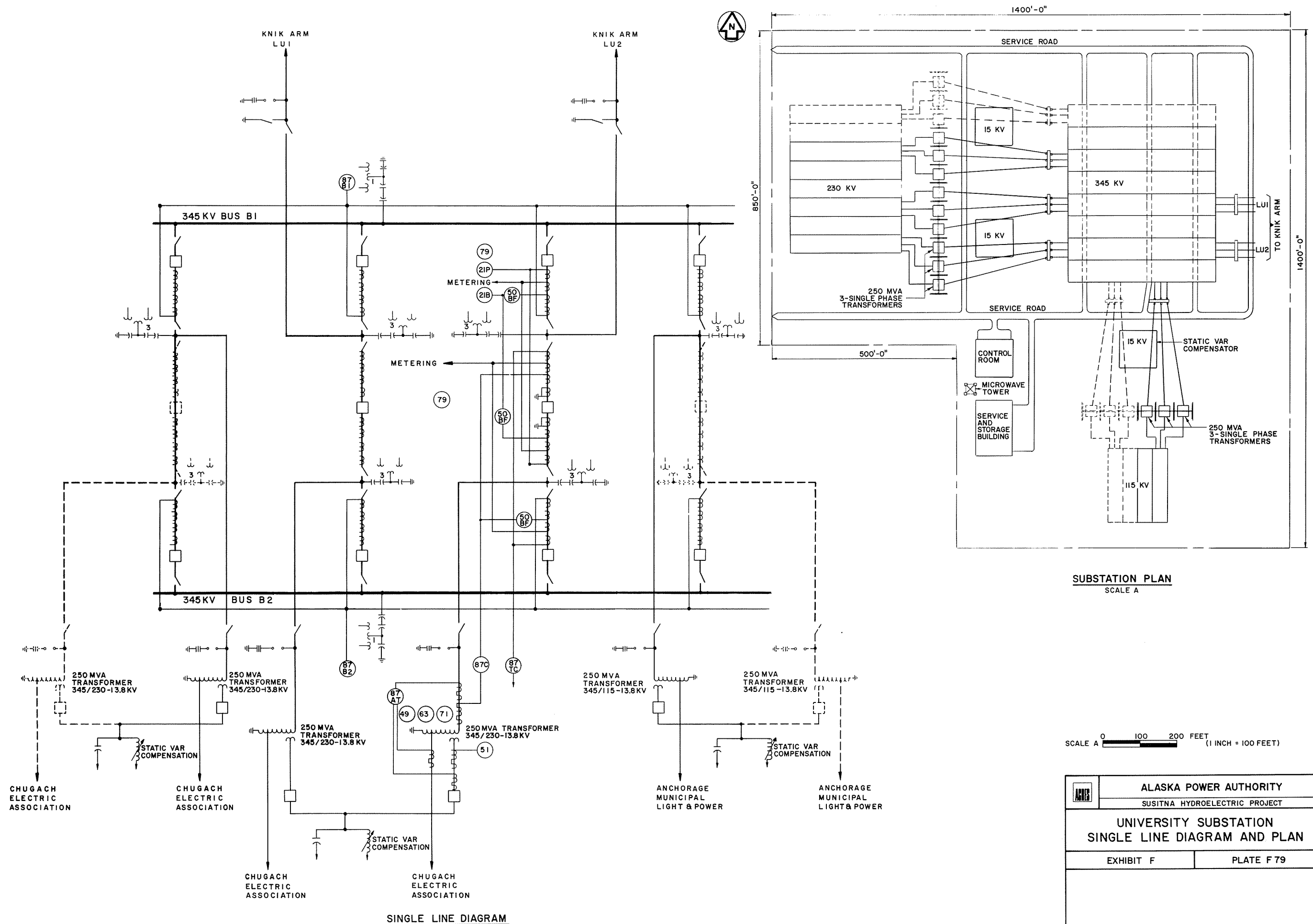
SINGLE LINE DIAGRAM



SUBSTATION PLAN
SCALE A

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

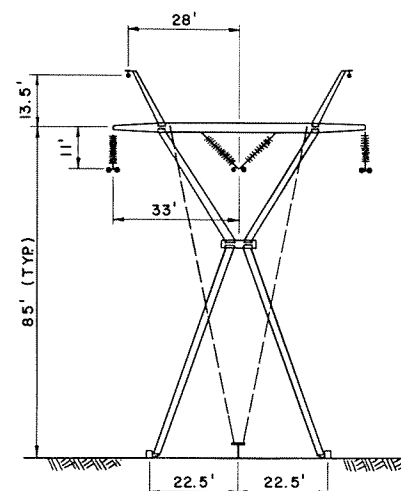
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
KNIK ARM SUBSTATION SINGLE LINE DIAGRAM AND PLAN	
EXHIBIT F	PLATE F 78



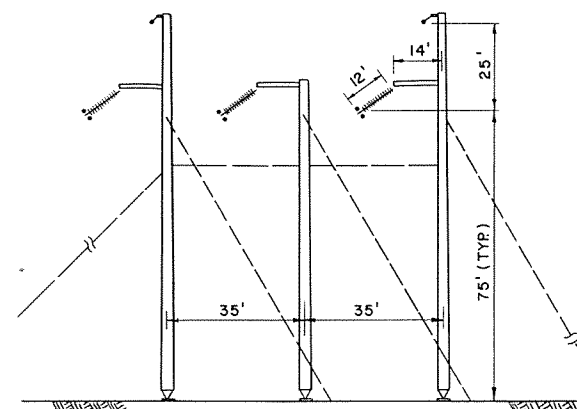
 ALASKA POWER AUTHORITY SUSITNA HYDROELECTRIC PROJECT	
UNIVERSITY SUBSTATION SINGLE LINE DIAGRAM AND PLAN	
EXHIBIT F	PLATE F 79

NOTES :

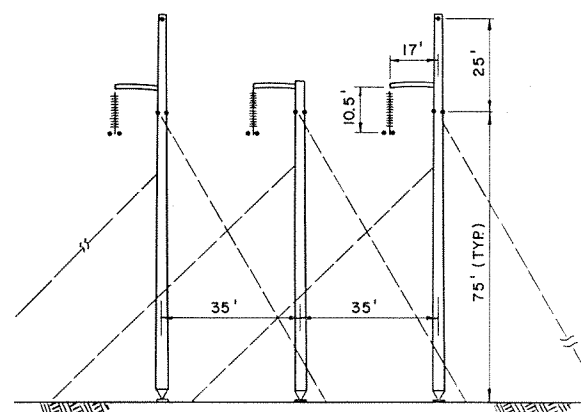
1. BASED ON PROPOSED STRUCTURES FOR INTERTIE PROJECT.
2. AVERAGE CONDUCTOR SAG - 37 FEET.
3. AVERAGE TOWER SPACING - 1400 FEET.



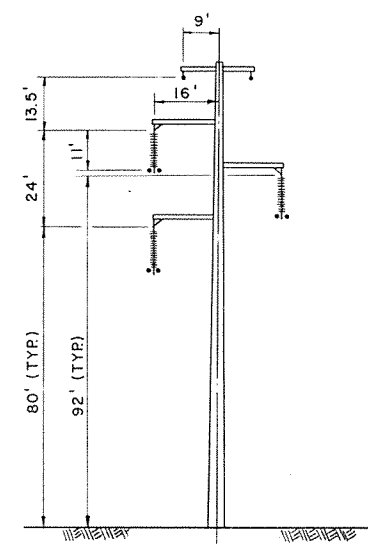
345 kV TANGENT OR LIGHT ANGLE STRUCTURE



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



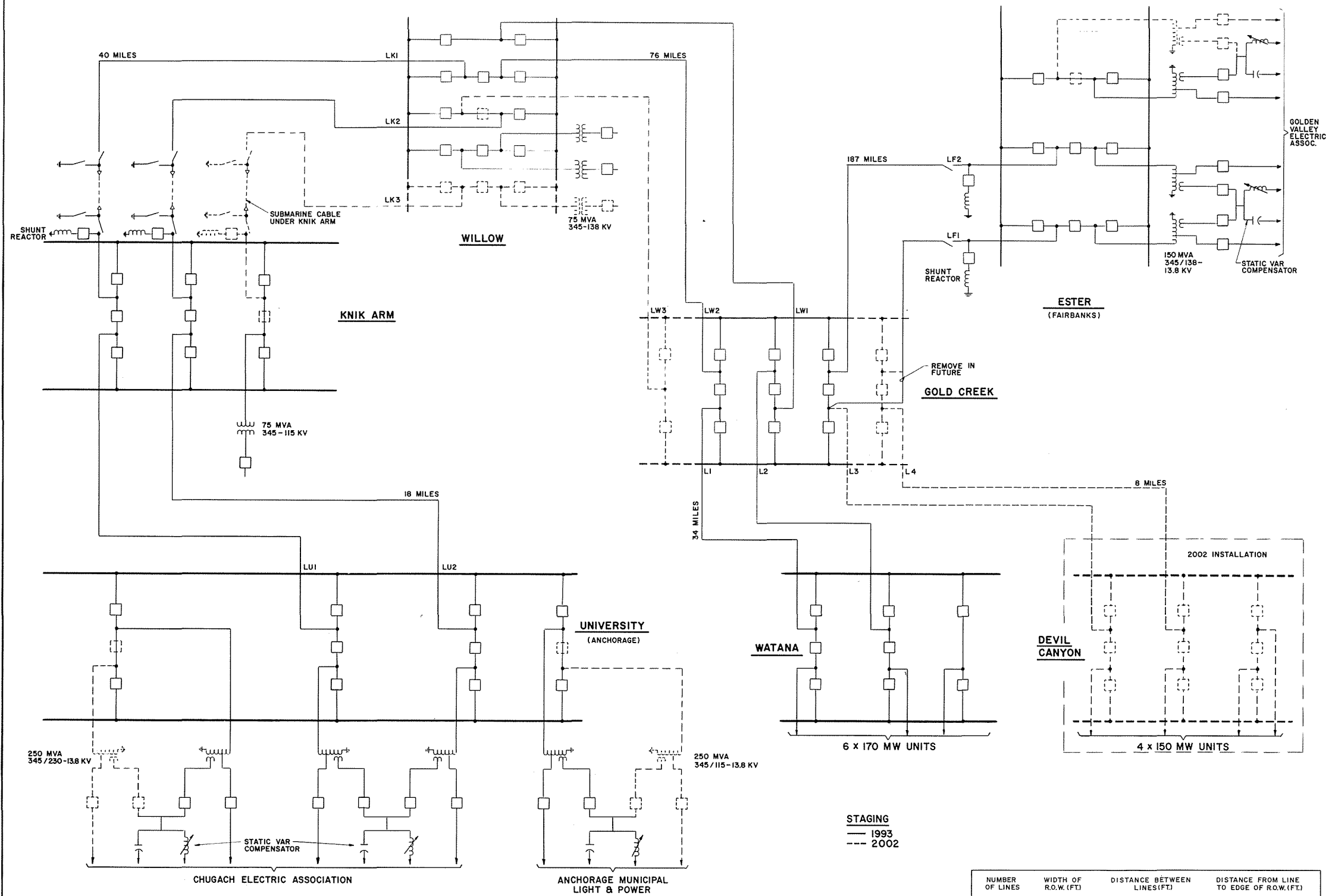
345 kV HEAVY ANGLE (8° - 50°) DEAD END STRUCTURE



345 kV SINGLE CIRCUIT TANGENT POLE

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

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

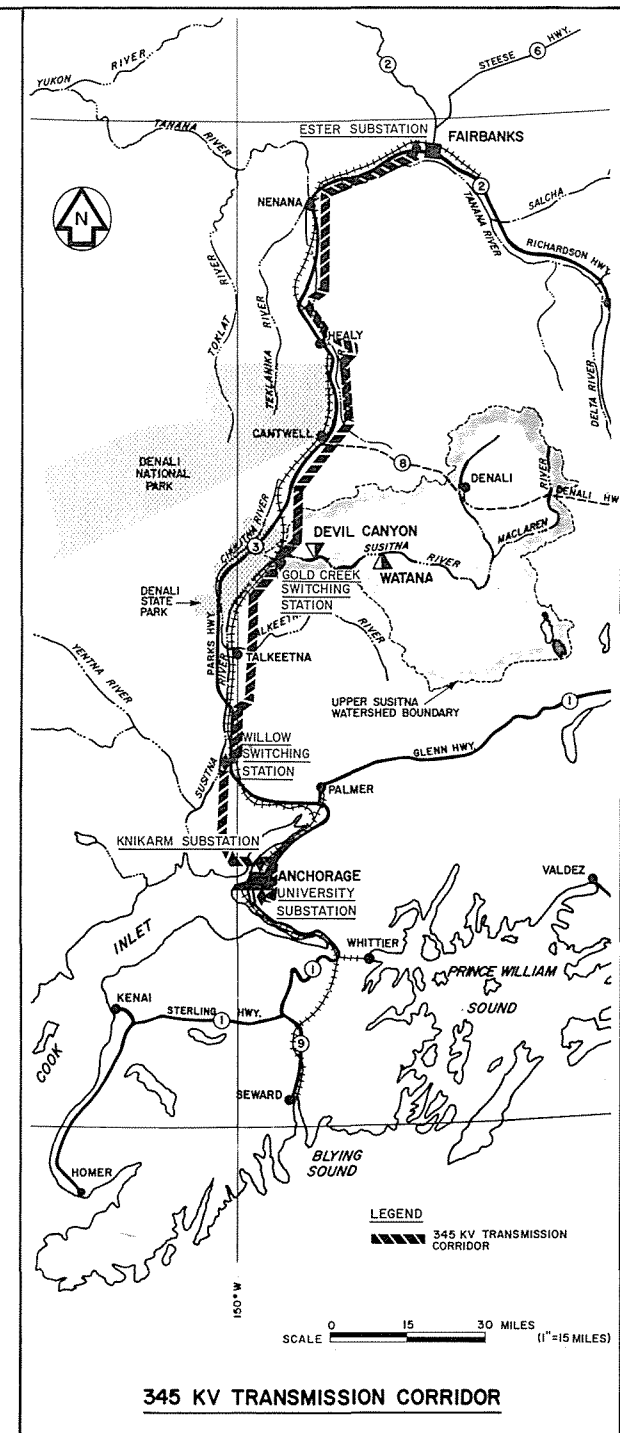


345 KV TRANSMISSION SYSTEM SINGLE LINE DIAGRAM

STAGING
 — 1993
 --- 2002

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

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



345 KV TRANSMISSION CORRIDOR

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