

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

VOLUME 3

EXHIBIT F

FEBRUARY 1983

Prepared by:



ALASKA POWER AUTHORITY

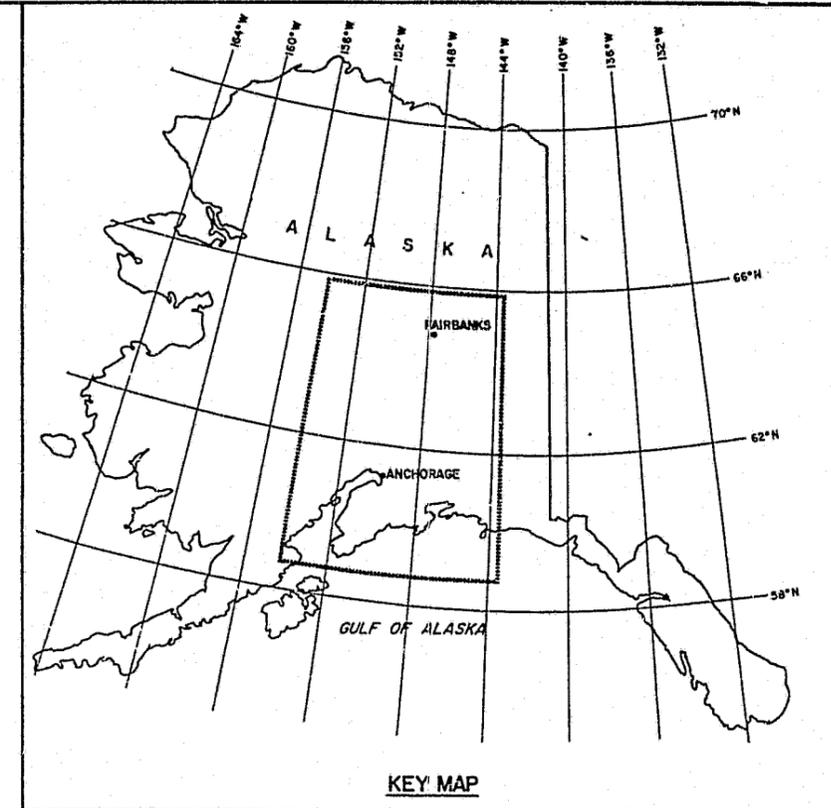
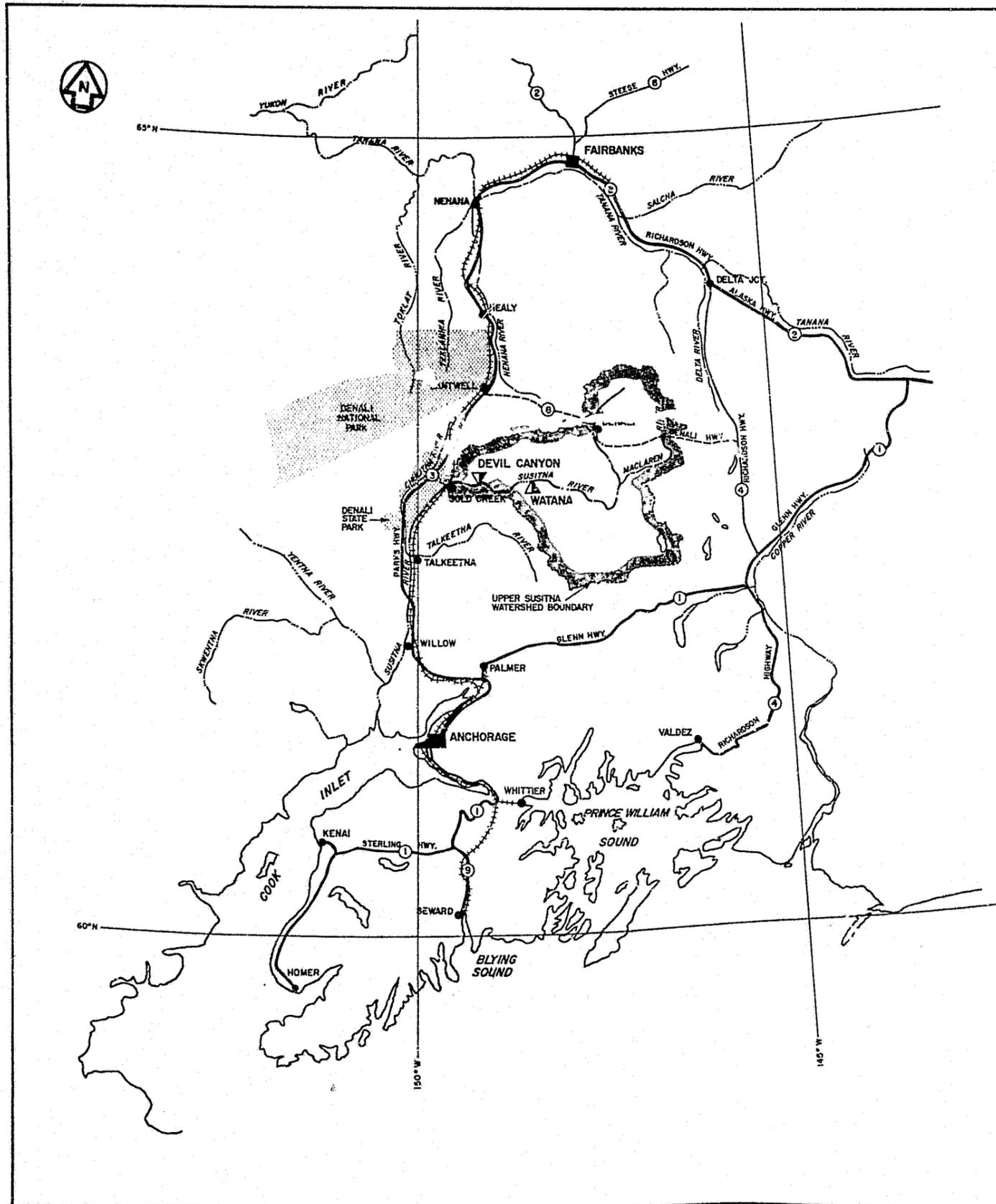
SUSITNA HYDROELECTRIC PROJECT
FERC LICENSE APPLICATION
PROJECT NO. 7114-000
As accepted by FERC, July, 29, 1983

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

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KEY MAP

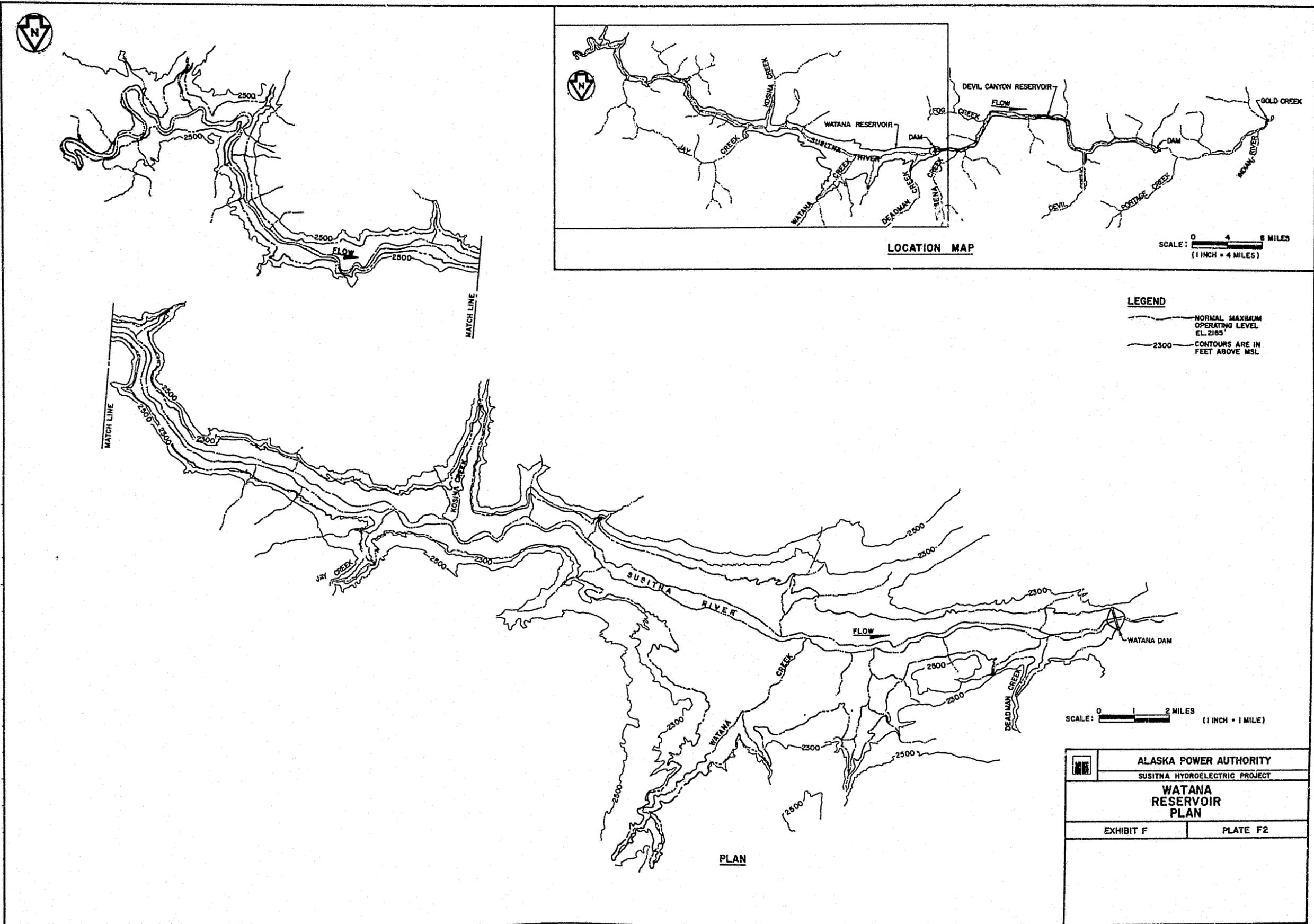
LEGEND

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

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

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

FOLD LENGTH
12
11
8.5
8
AUTO
MANUAL
FEED



LOCATION MAP

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

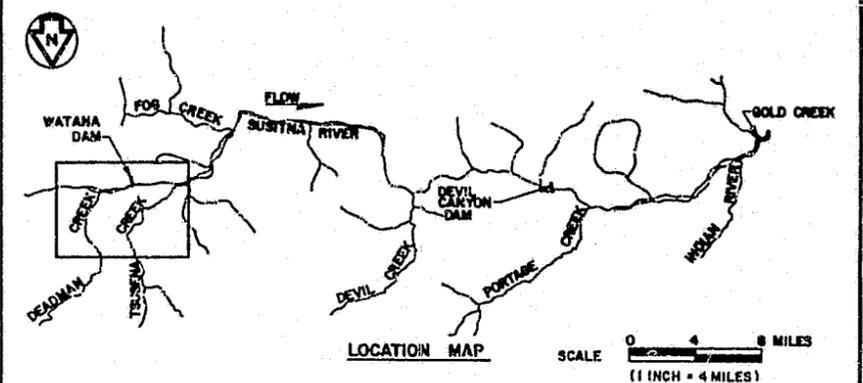
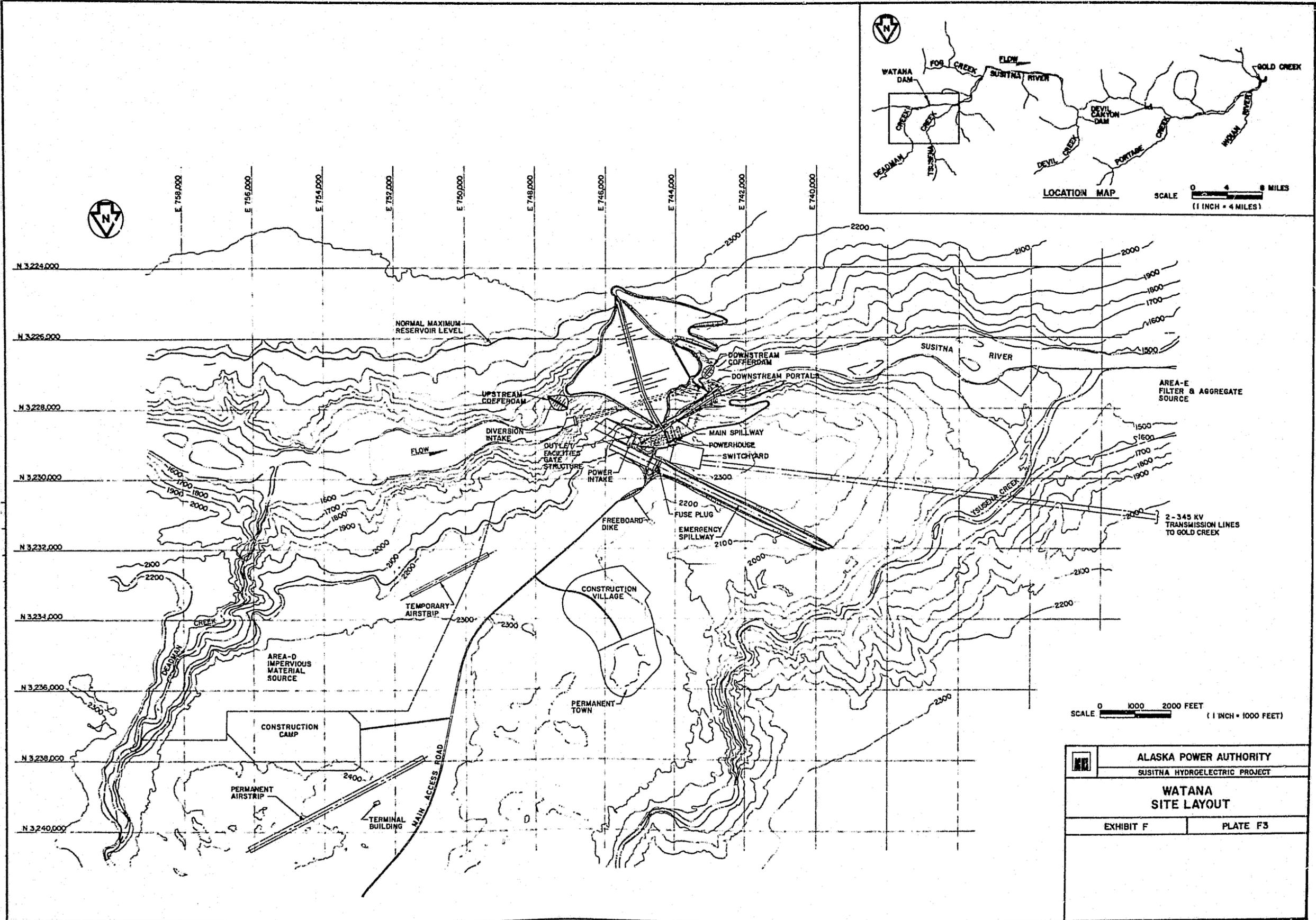
LEGEND

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

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

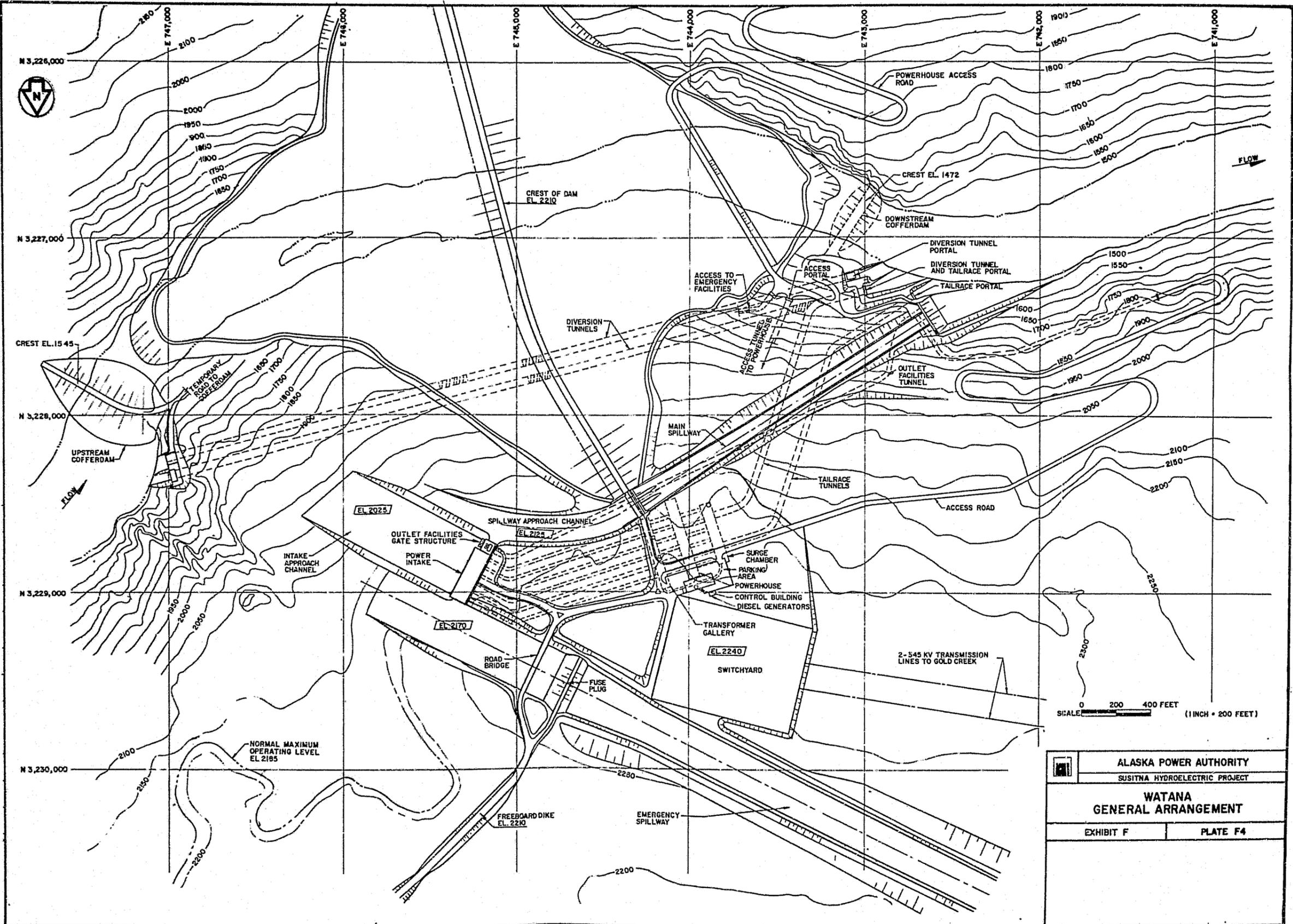
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA RESERVOIR PLAN	
EXHIBIT F	PLATE F2

PLAN



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

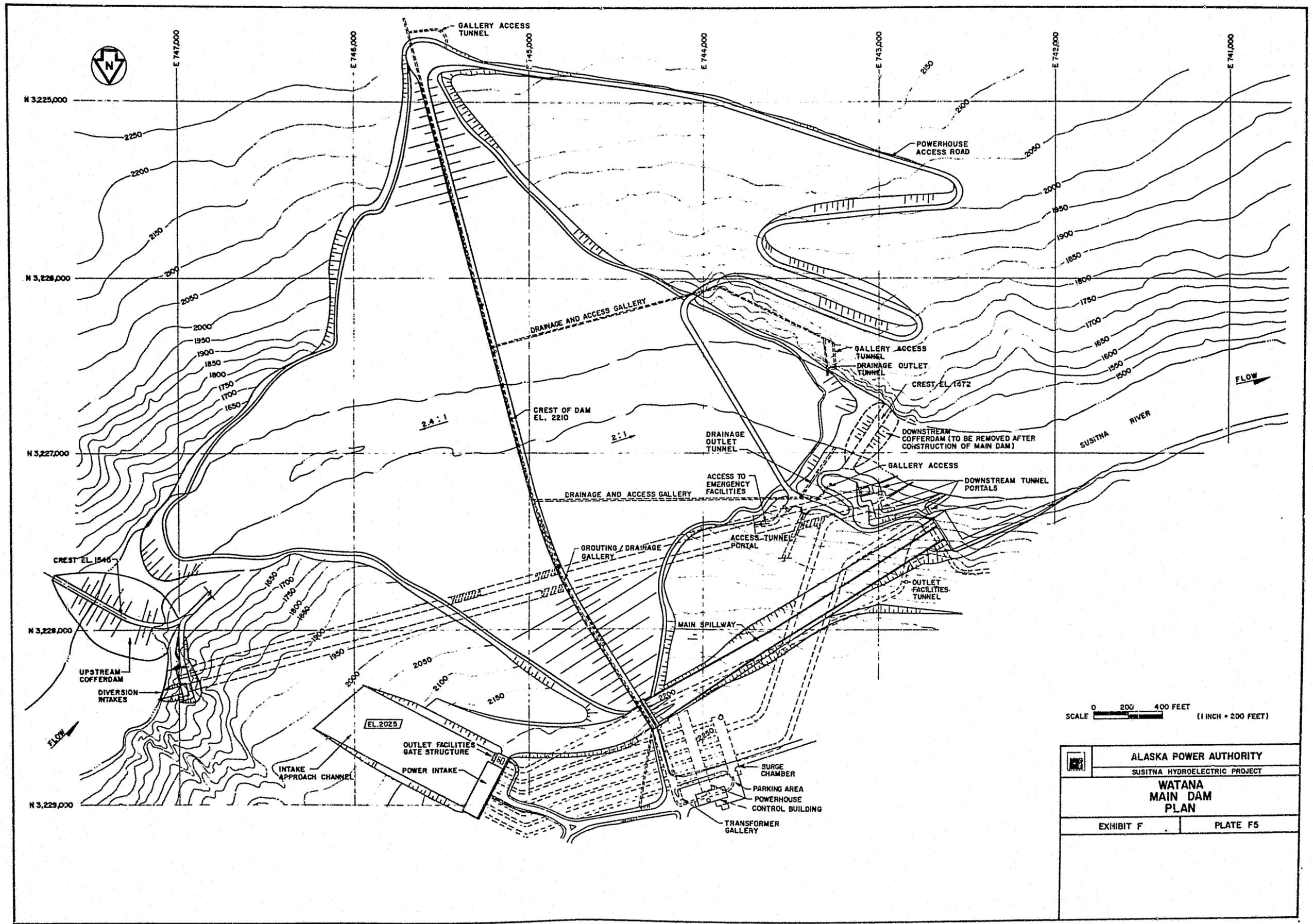
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA SITE LAYOUT	
EXHIBIT F	PLATE F3



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

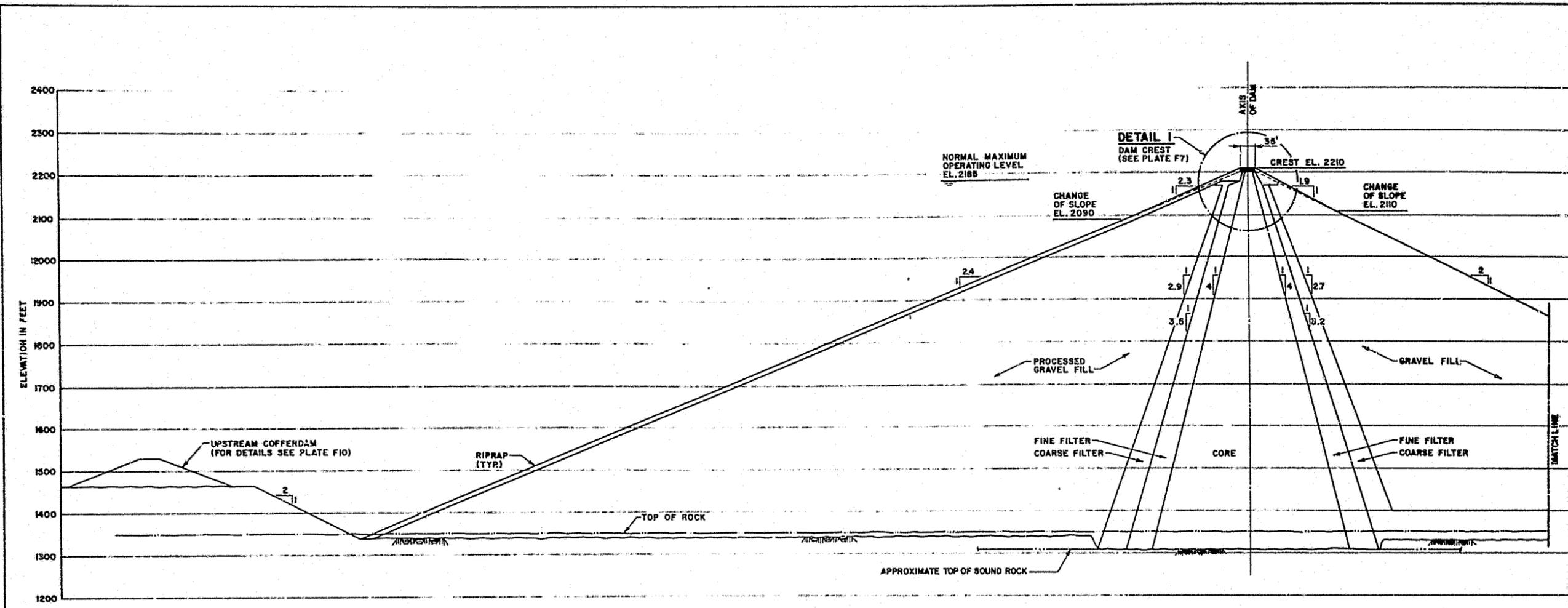
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F4

FOLD LENGTH
12
11
8.5
8
FEET

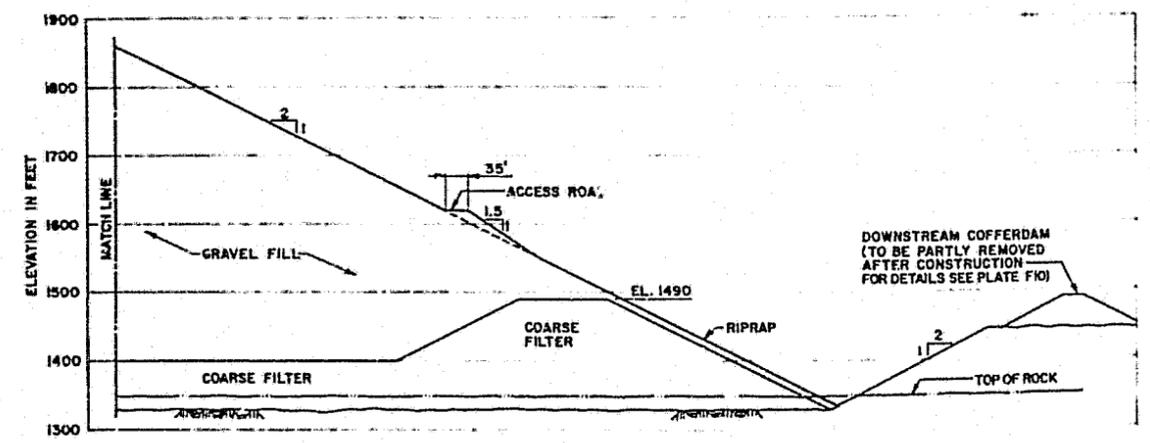


SCALE 0 200 400 FEET
(1 INCH = 200 FEET)

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



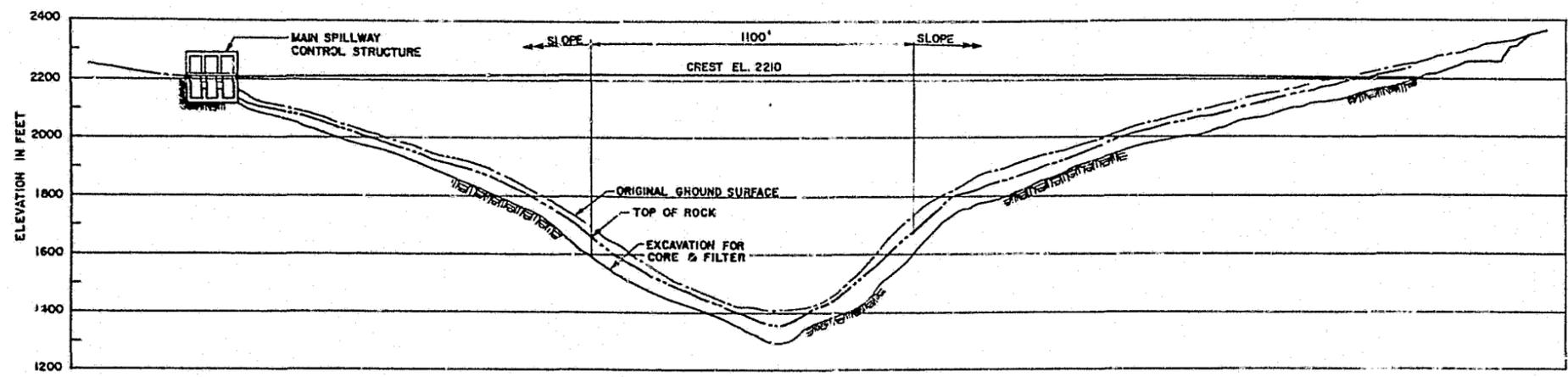
**PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT**



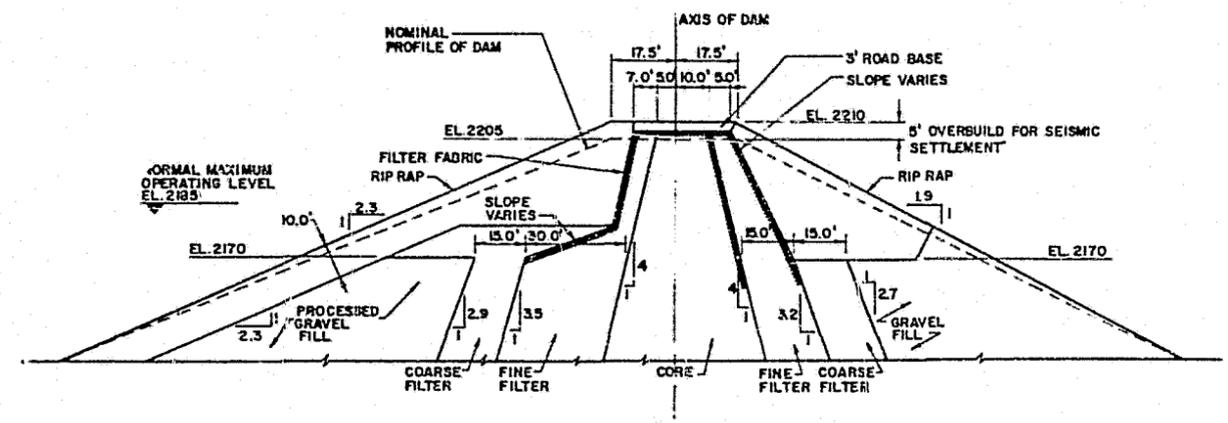
**PARTIAL SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT**

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

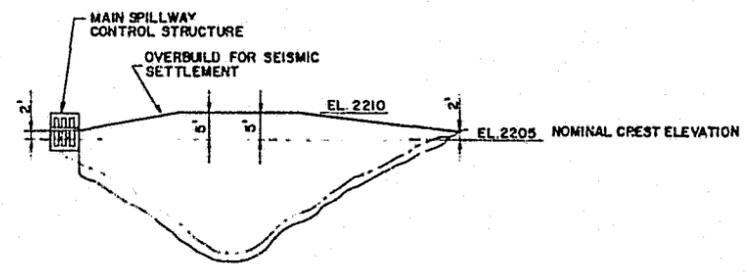
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM SECTION	
EXHIBIT F	PLATE F6



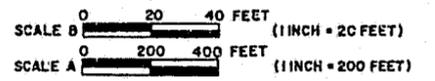
PROFILE (LOOKING UPSTREAM)
SCALE A



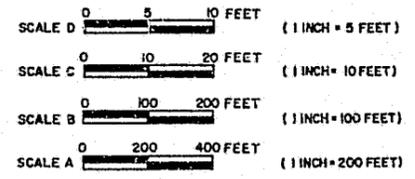
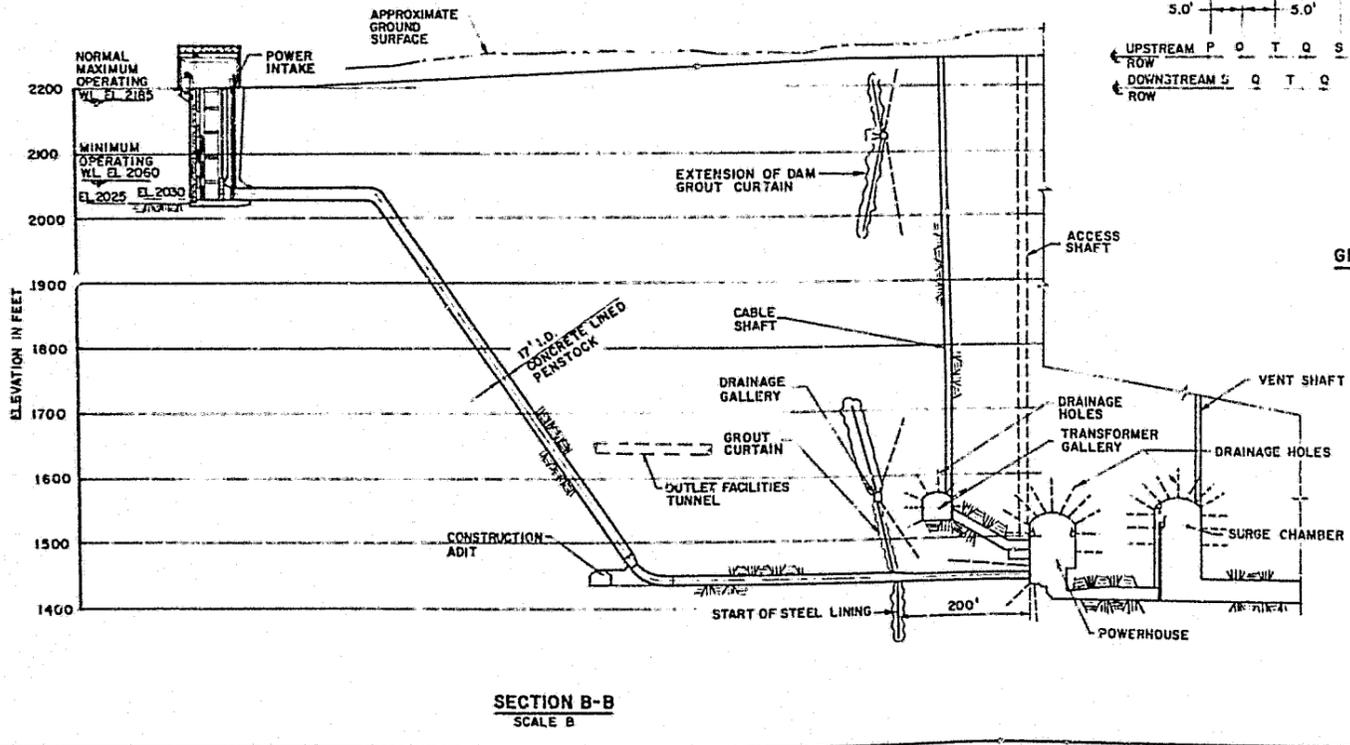
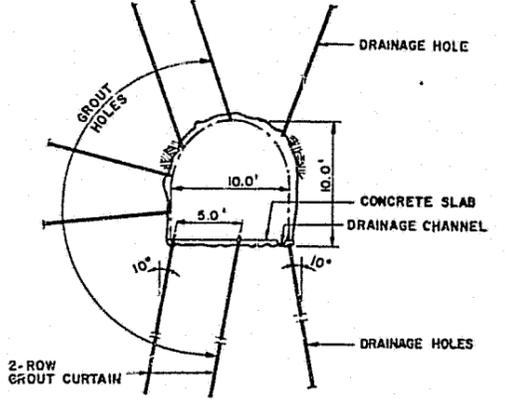
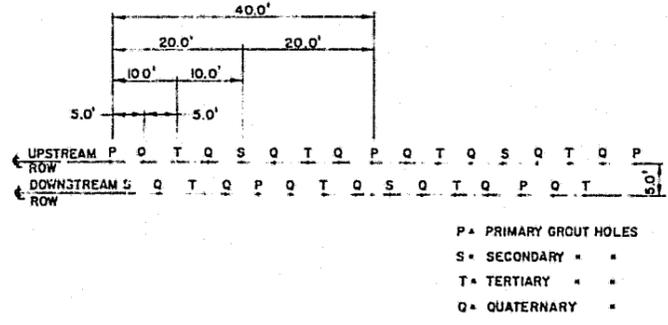
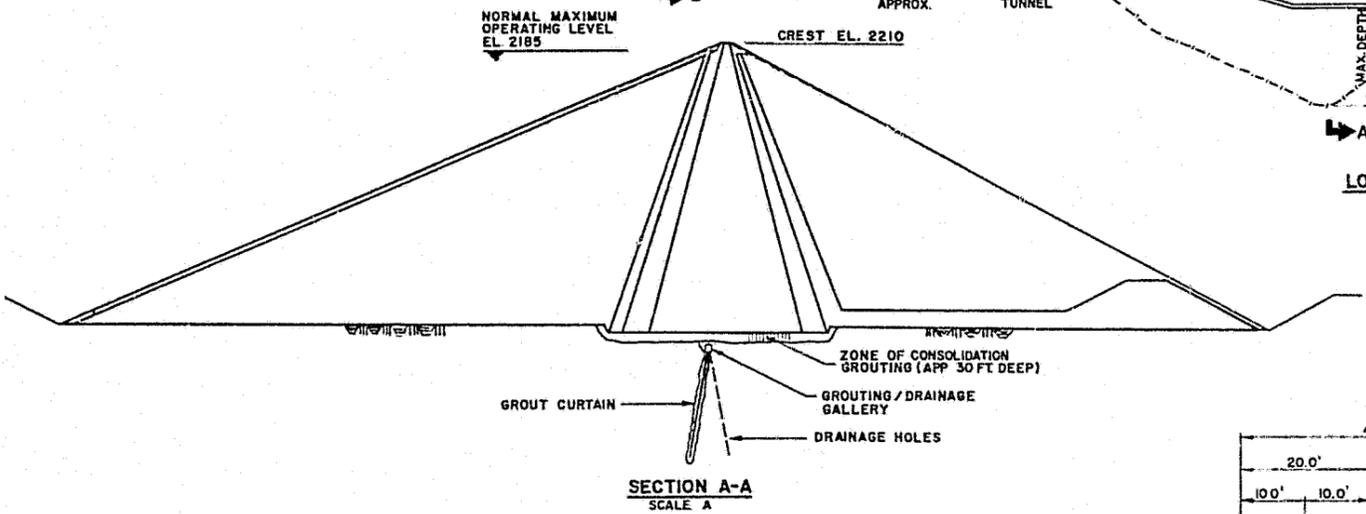
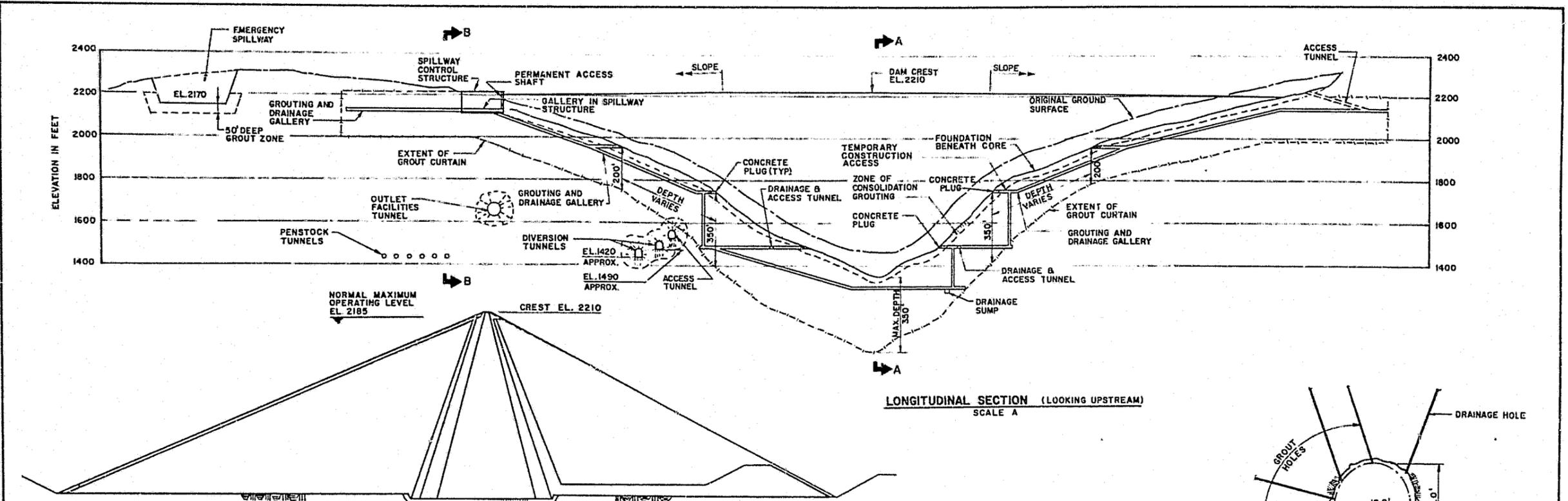
DETAIL I (PLATE F6)
SCALE B



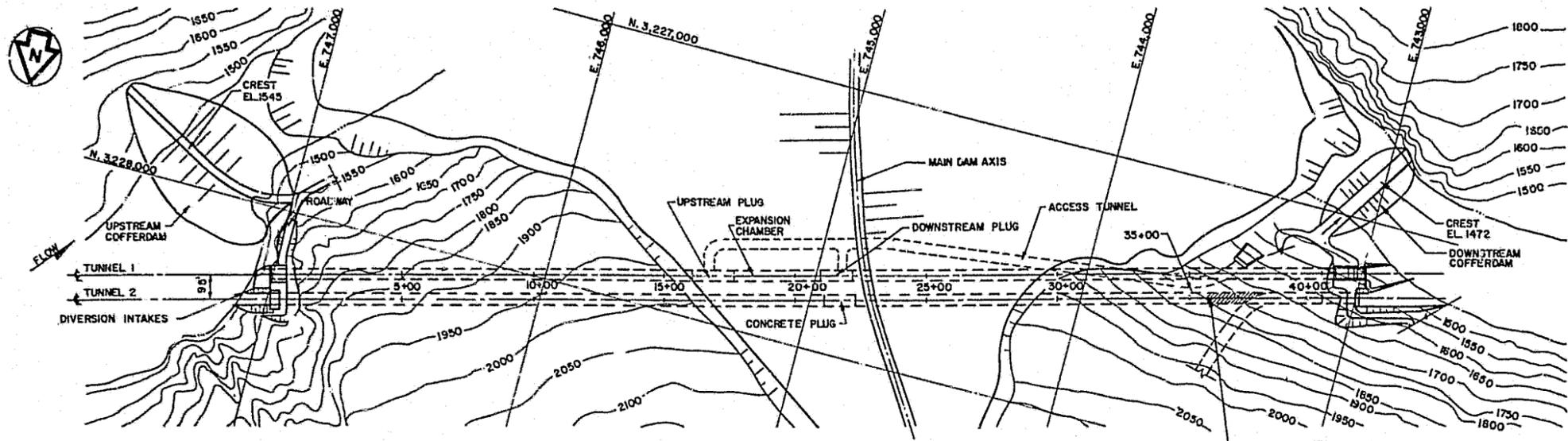
PROFILE
SHOWING CREST ELEVATIONS
N.T.S.



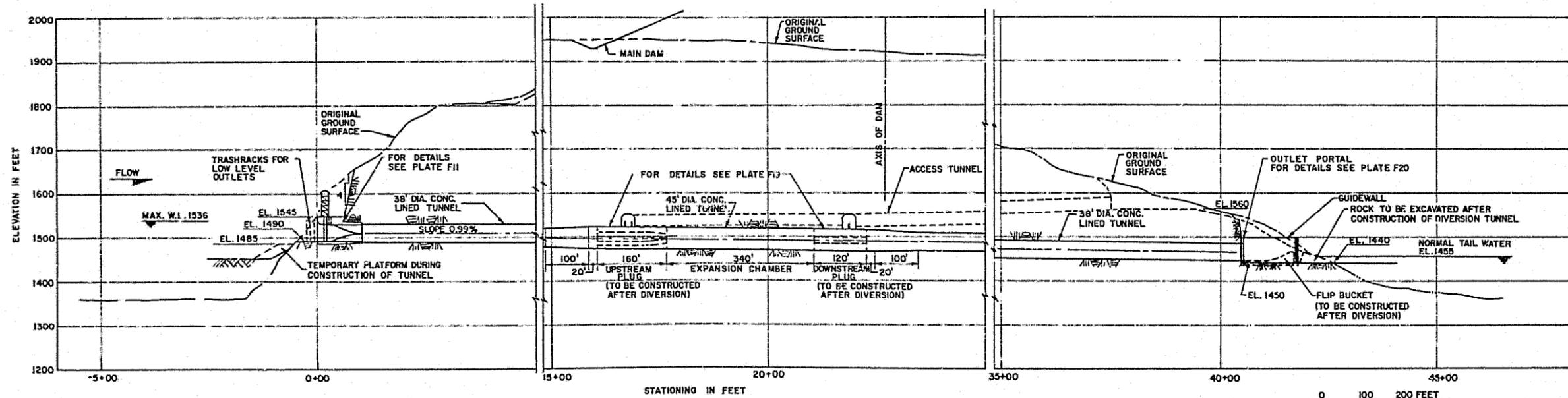
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM	
PROFILE AND DETAIL	
EXHIBIT F	PLATE F7



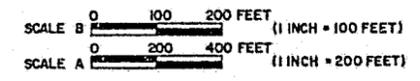
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN DAM	
GROUTING & DRAINAGE	
EXHIBIT F	PLATE F8



PLAN
SCALE A

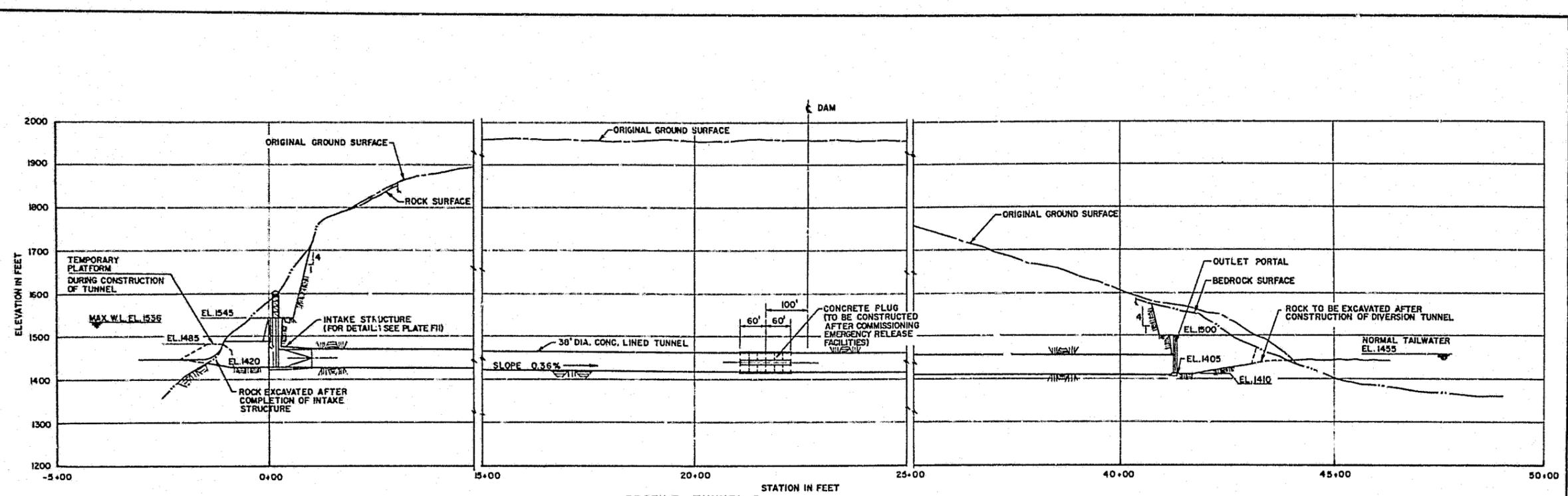


PROFILE TUNNEL
SCALE B

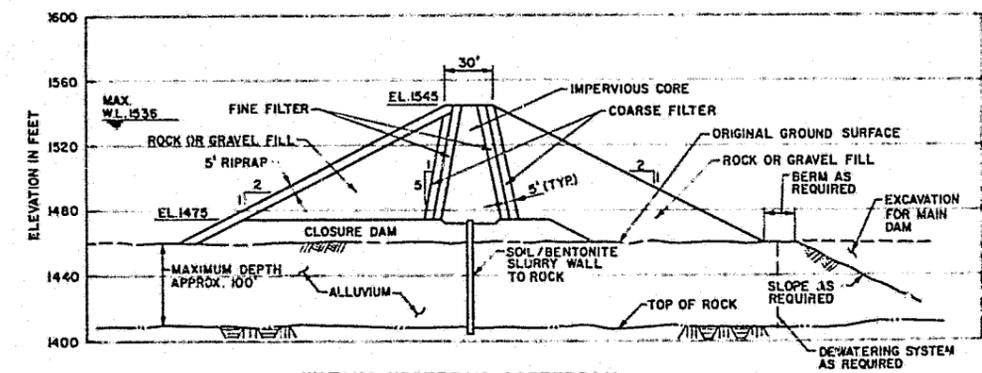


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F9

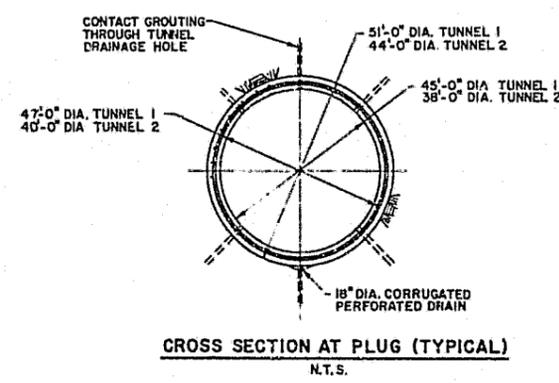
FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



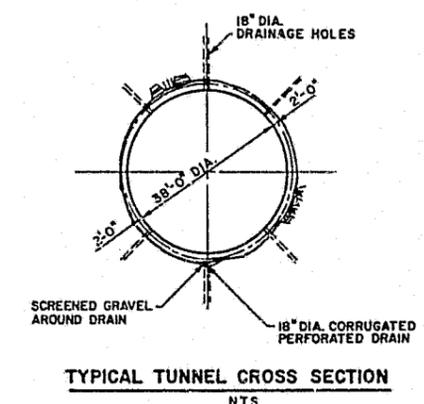
PROFILE - TUNNEL 2
SCALE A



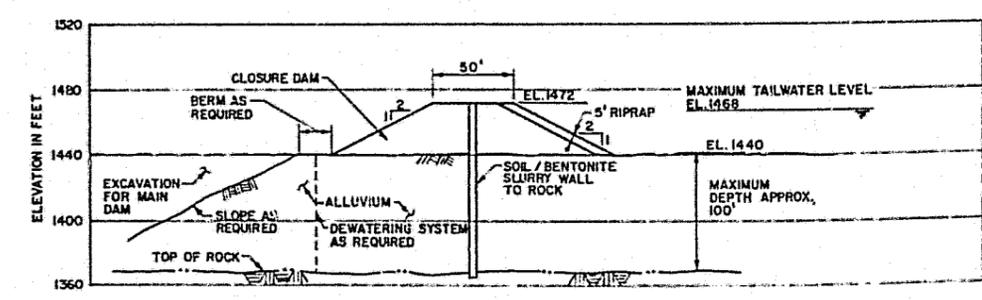
WATANA UPSTREAM COFFERDAM
SCALE D



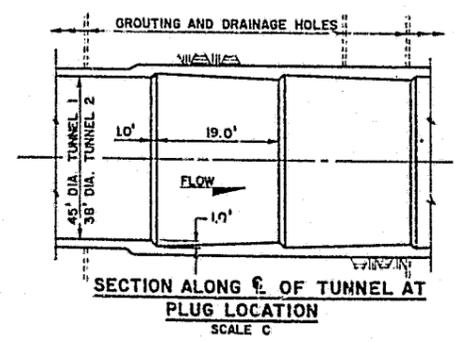
CROSS SECTION AT PLUG (TYPICAL)
N.T.S.



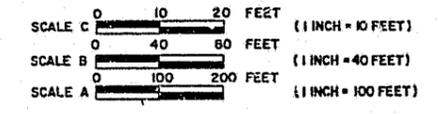
TYPICAL TUNNEL CROSS SECTION
N.T.S.



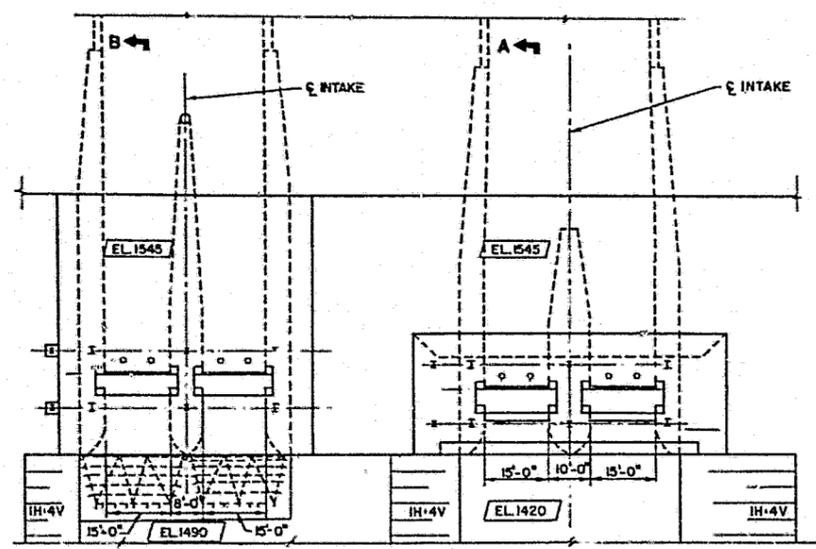
WATANA DOWNSTREAM COFFERDAM
SCALE B



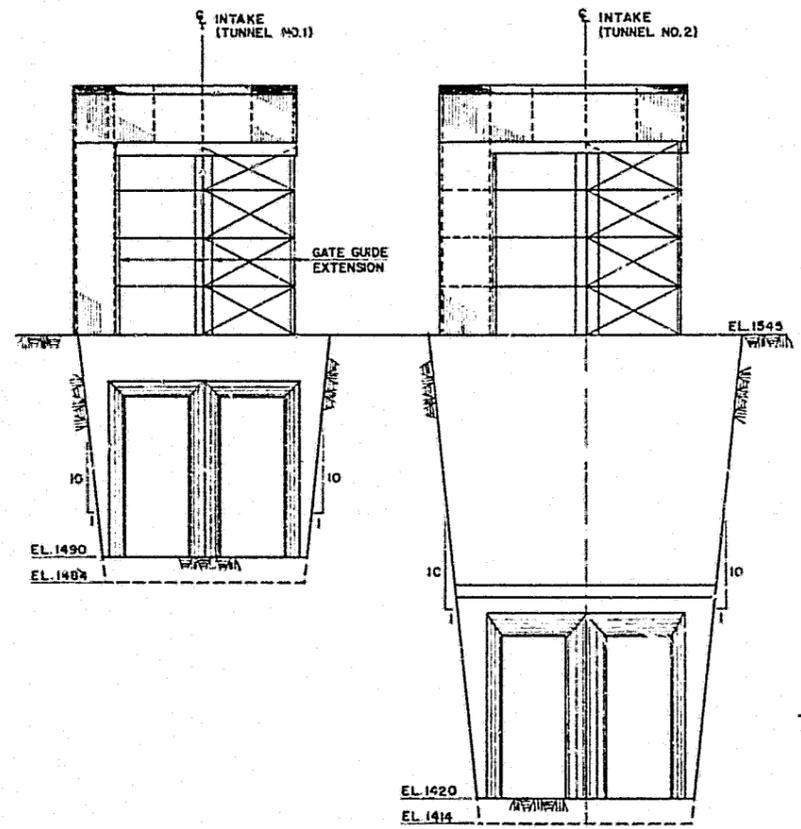
SECTION ALONG C-C OF TUNNEL AT
PLUG LOCATION
SCALE C



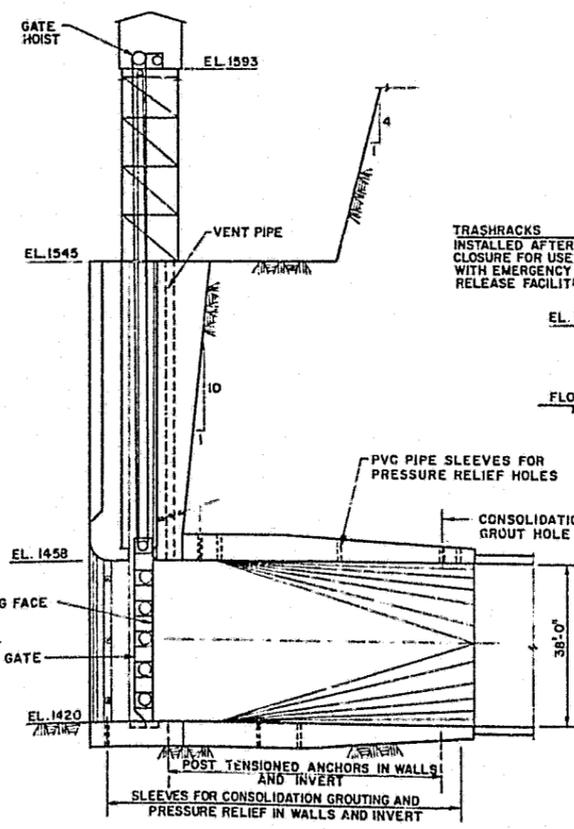
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA DIVERSION SECTIONS	
EXHIBIT F	PLATE F10



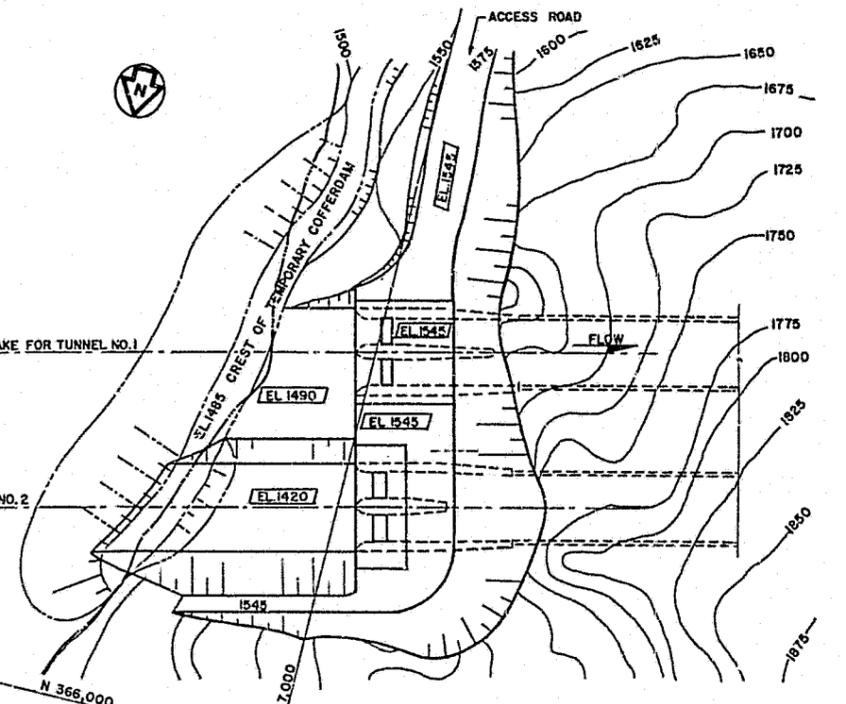
PLAN
AT EL. 1545
SCALE A



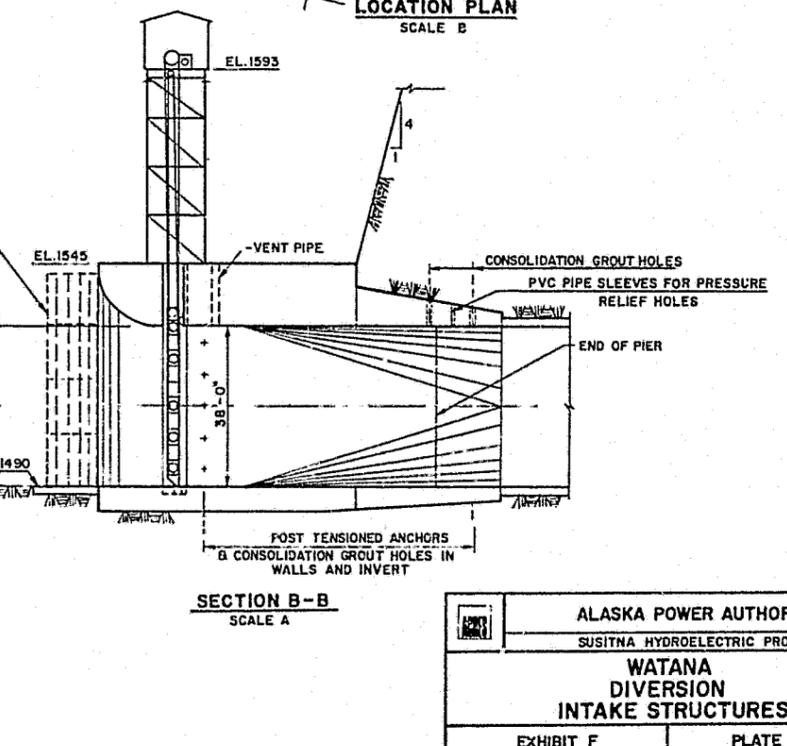
ELEVATION
SCALE A



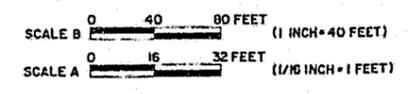
SECTION A-A
SCALE A



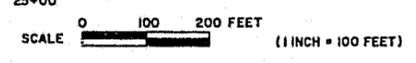
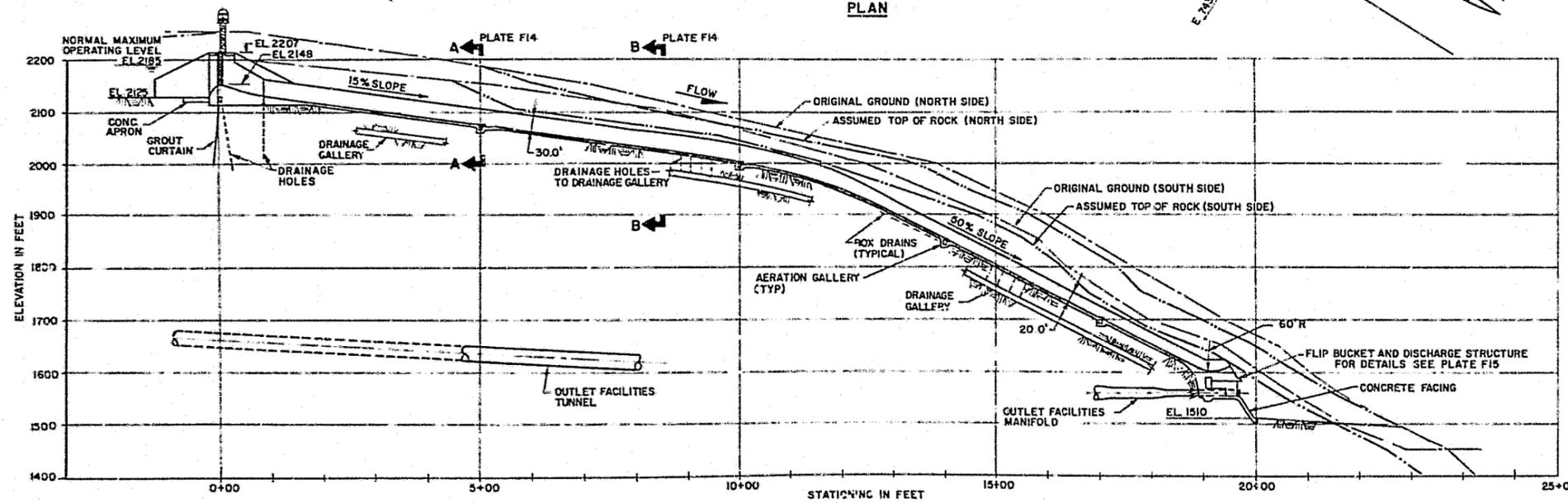
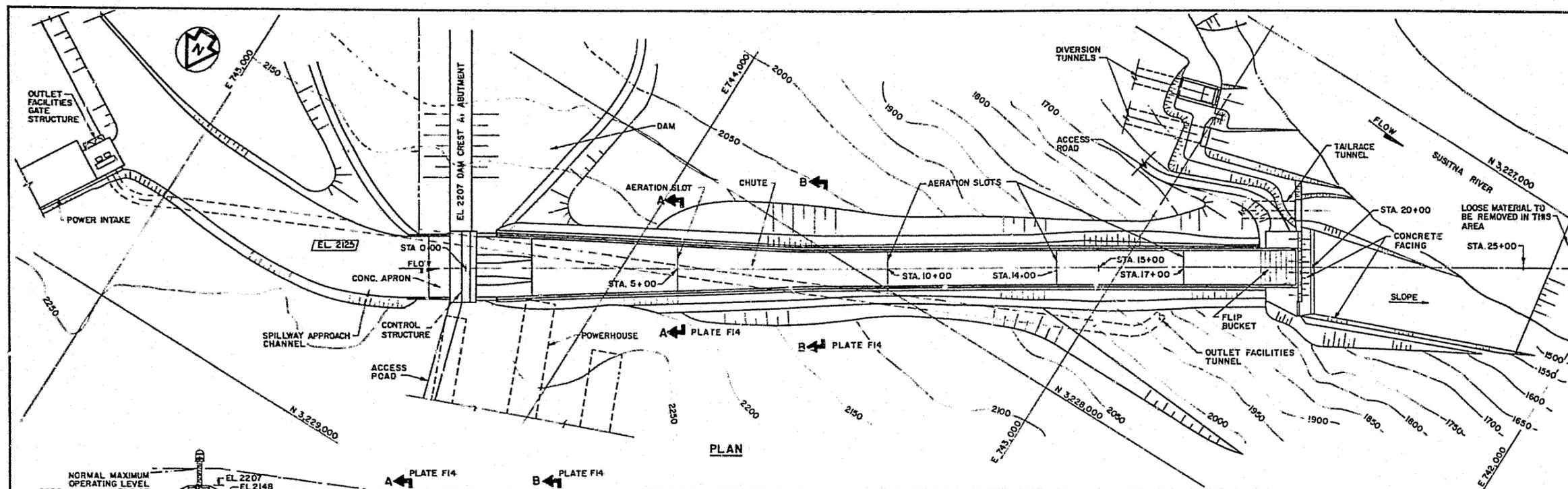
LOCATION PLAN
SCALE B



SECTION B-B
SCALE A



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



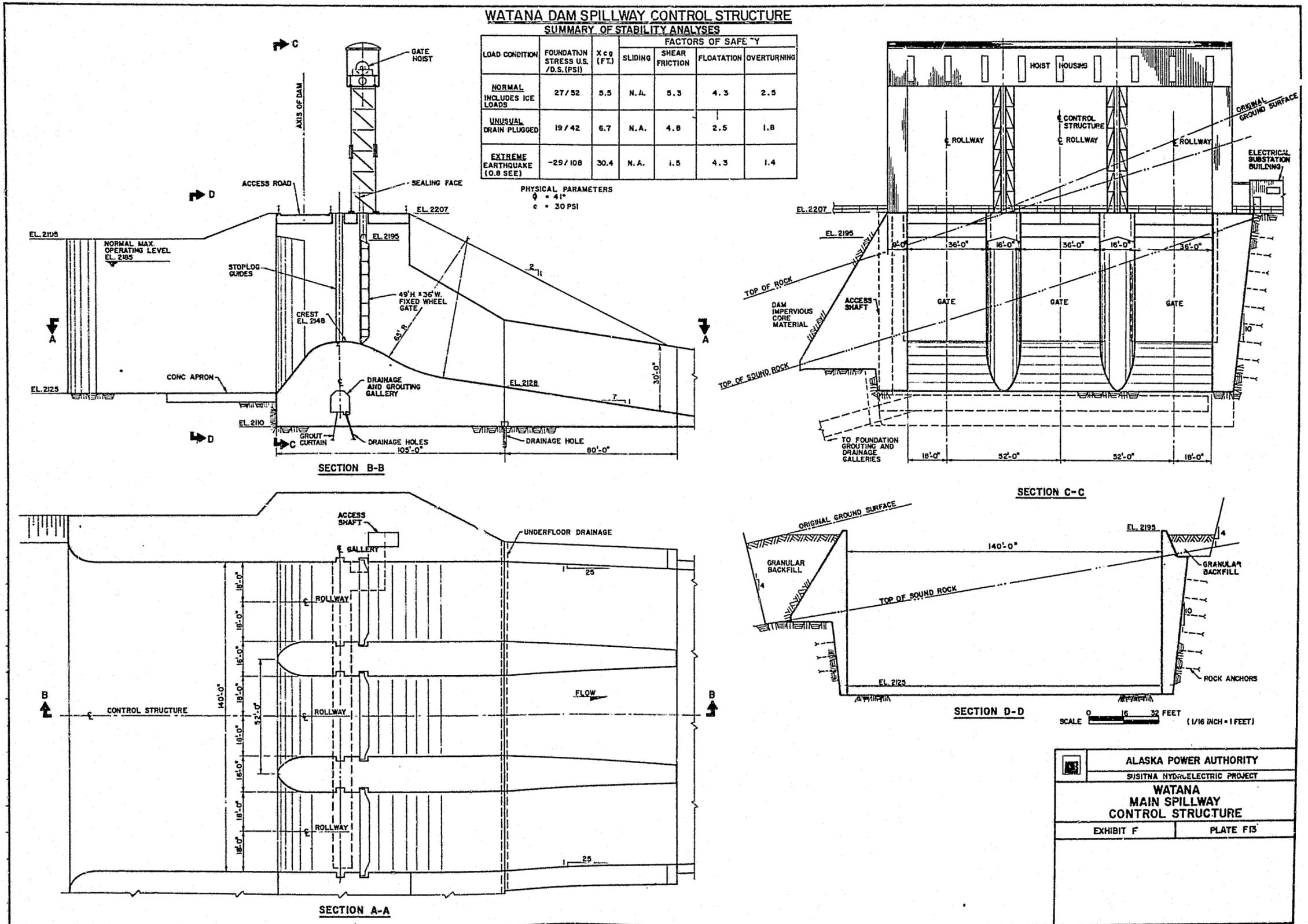
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F12

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED

WATANA DAM SPILLWAY CONTROL STRUCTURE
SUMMARY OF STABILITY ANALYSES

LOAD CONDITION	FOUNDATION STRESS U.S. / D.S. (PSI)	X c 0 (FT)	FACTORS OF SAFETY			
			SLIDING	SHEAR FRICTION	FLOATATION	OVERTURNING
NORMAL INCLUDES ICE LOADS	27 / 52	5.5	N.A.	5.3	4.3	2.5
UNUSUAL DRAIN PLUGGED	19 / 42	6.7	N.A.	4.8	2.5	1.8
EXTREME EARTHQUAKE (0.8 SEE)	-29 / 108	30.4	N.A.	1.5	4.3	1.4

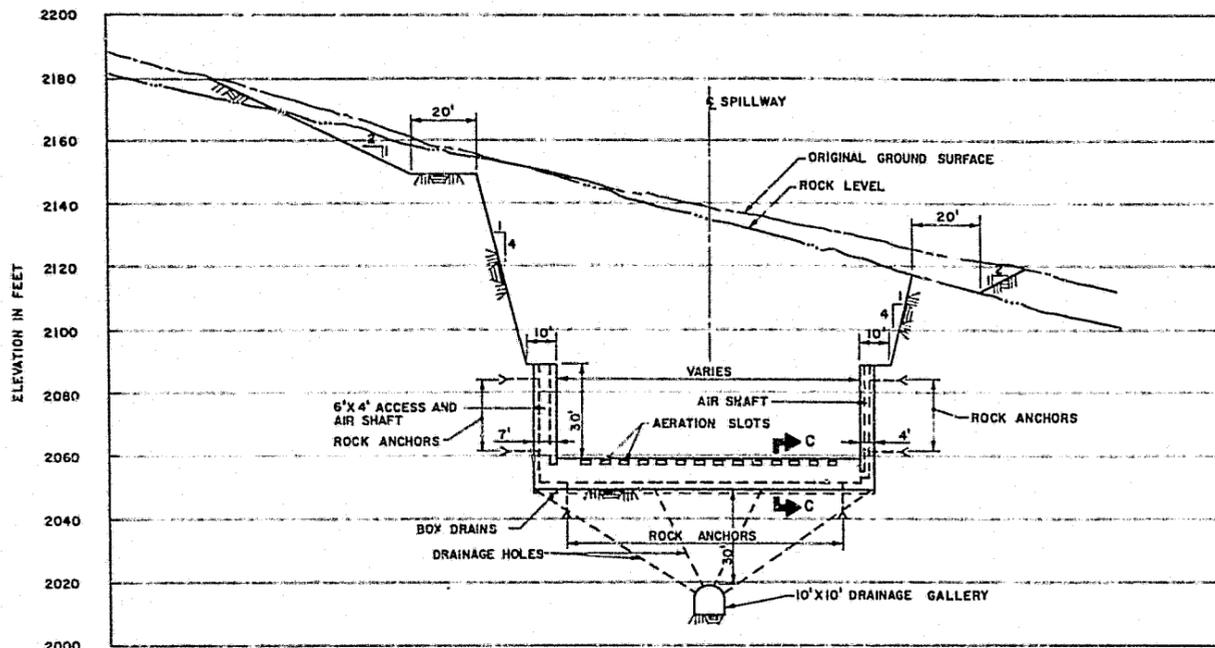
PHYSICAL PARAMETERS
 $\phi = 41^\circ$
 $c = 30 \text{ PSI}$



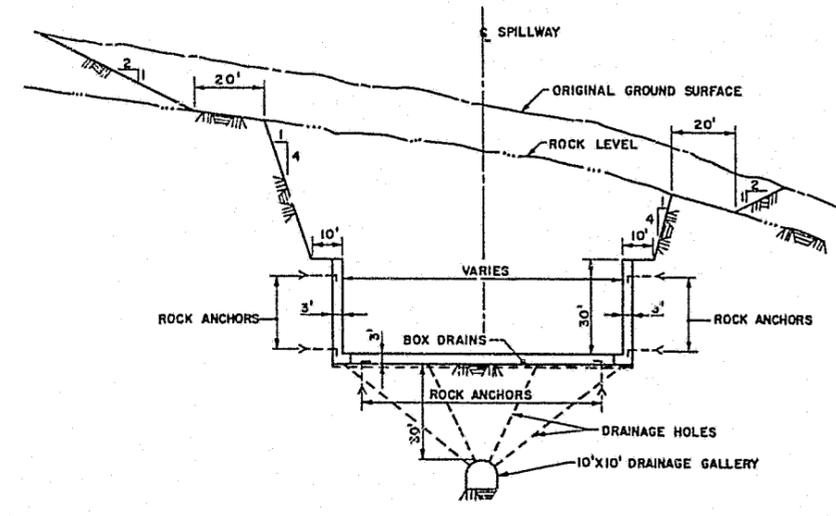
ALASKA POWER AUTHORITY	
SISITNA HYDRO-ELECTRIC PROJECT	
WATANA MAIN SPILLWAY CONTROL STRUCTURE	
EXHIBIT F	PLATE F15

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

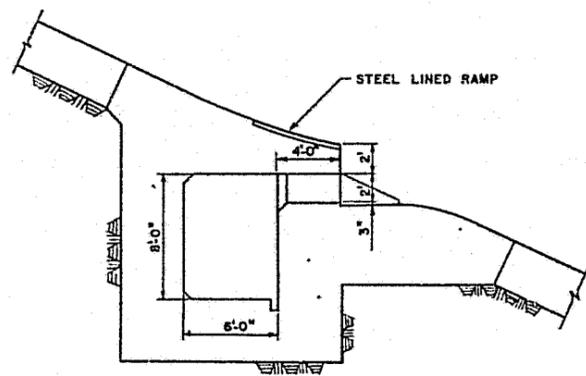
FOLD LENGTH
 12
 11
 8.5
 6
 AUTO
 MANUA
 FEED



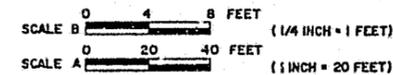
SECTION A-A (PLATE F12)
SCALE A



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

FOLD
LENGTH

12

11

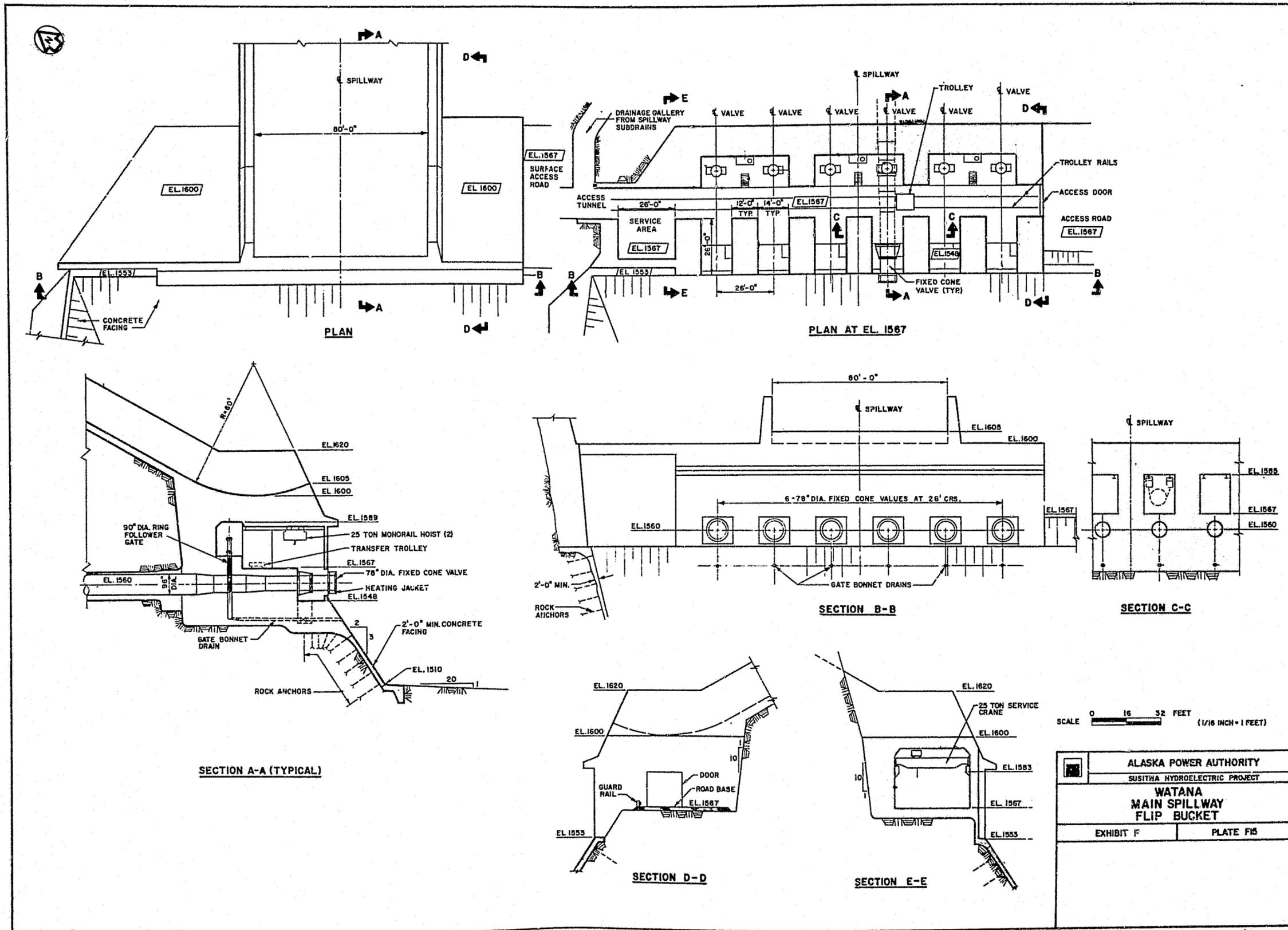
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8

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MANUA

FEED



FOLD LENGTH

12

11

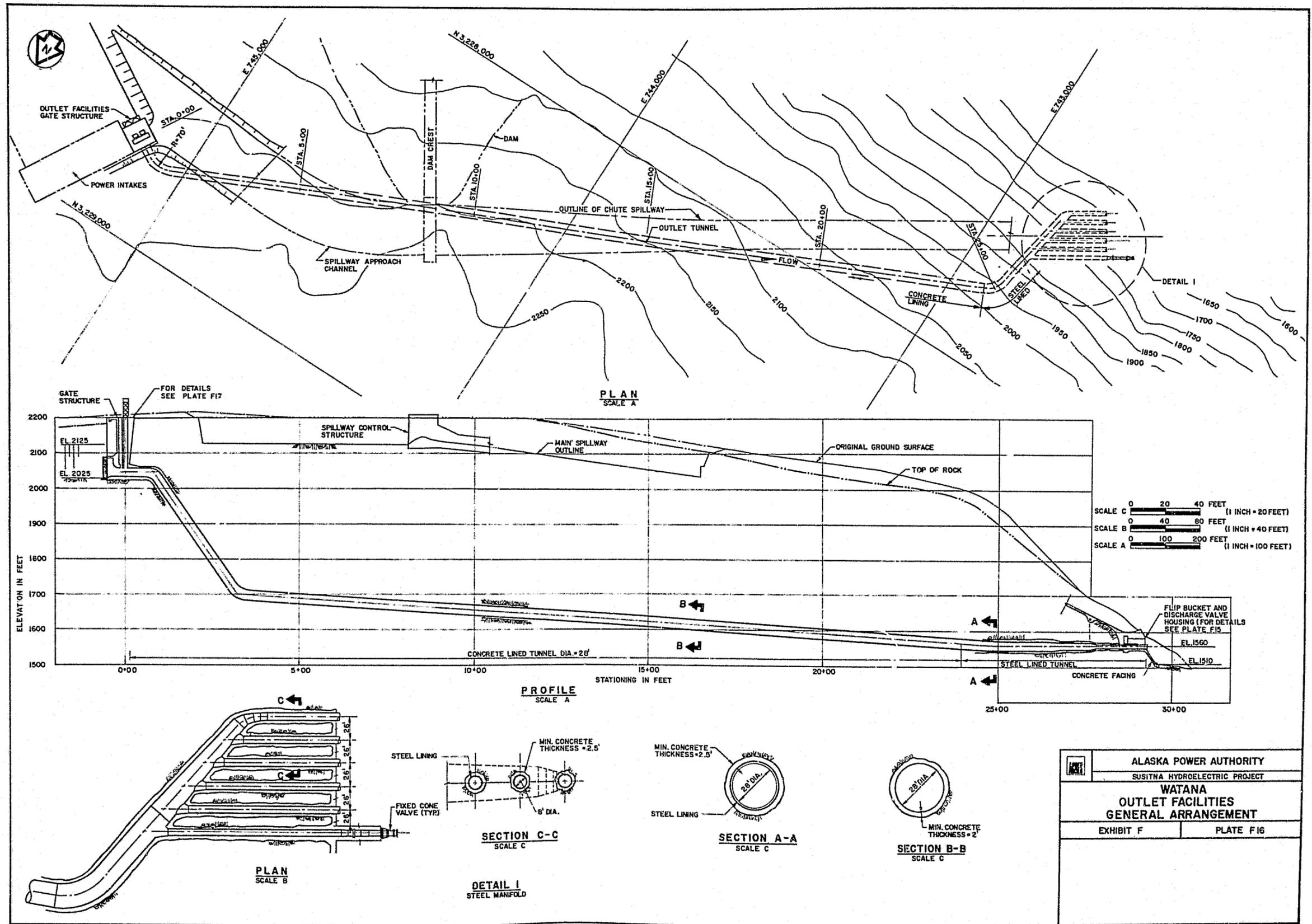
8.5

8

AUTO

MANUA

FEED



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

FOLD LENGTH

12

11

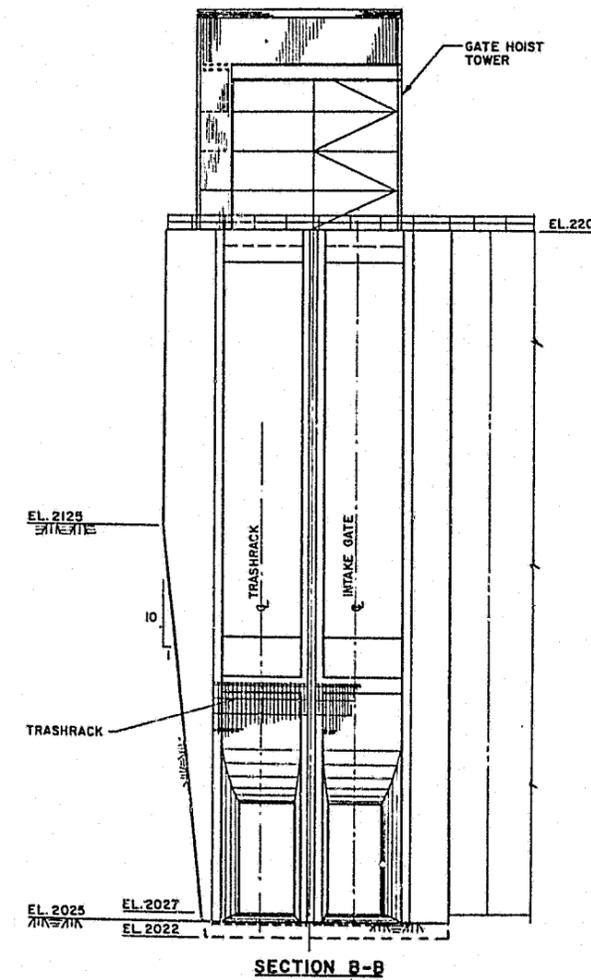
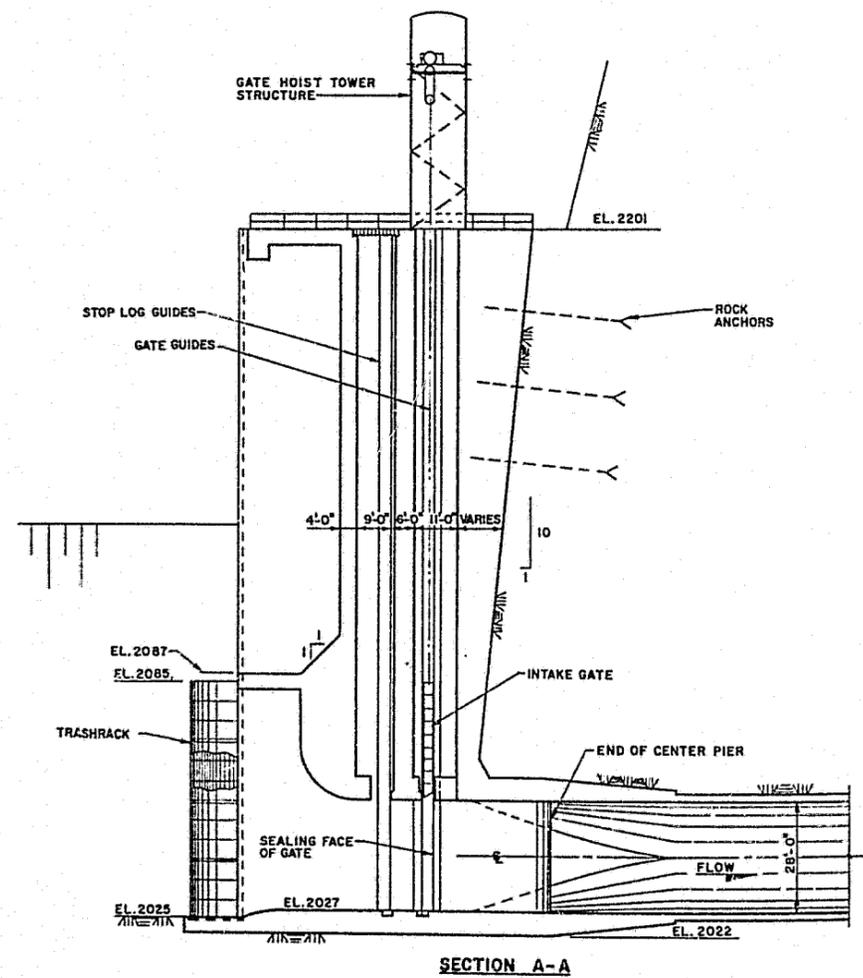
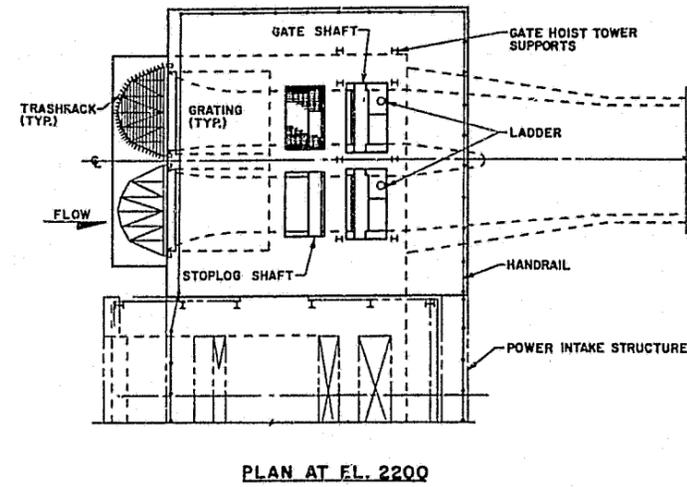
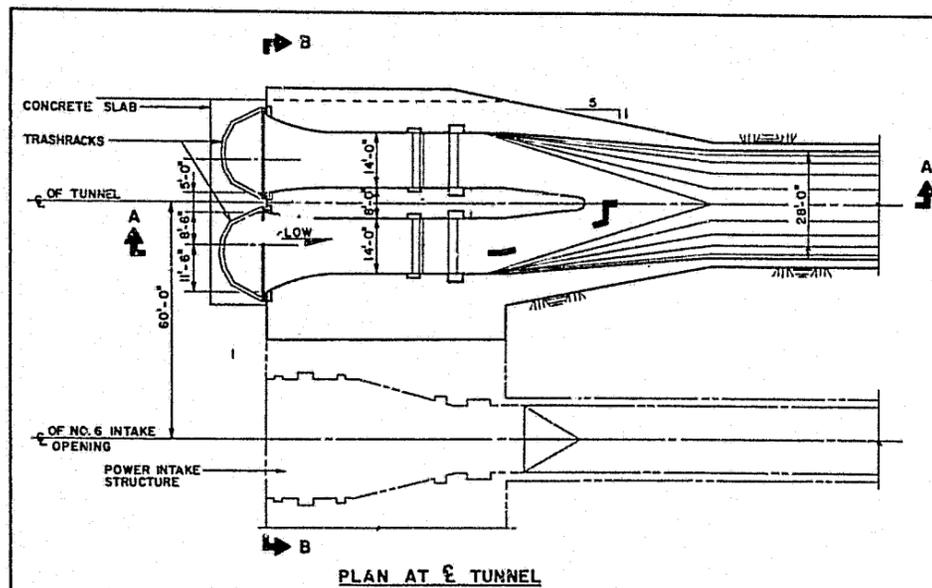
8.5

8

AUTO

MANUA

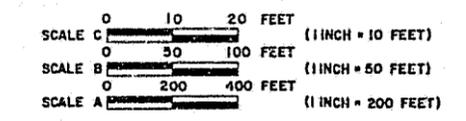
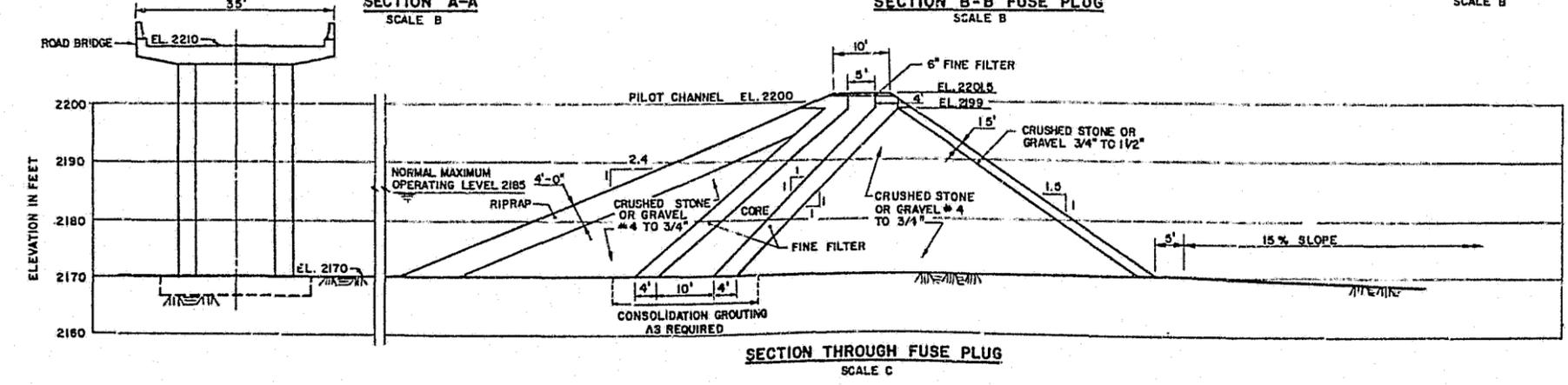
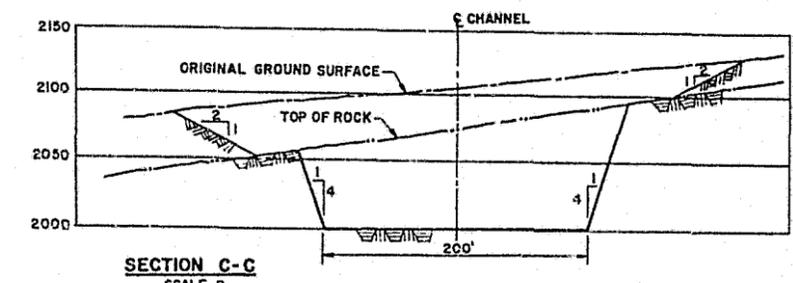
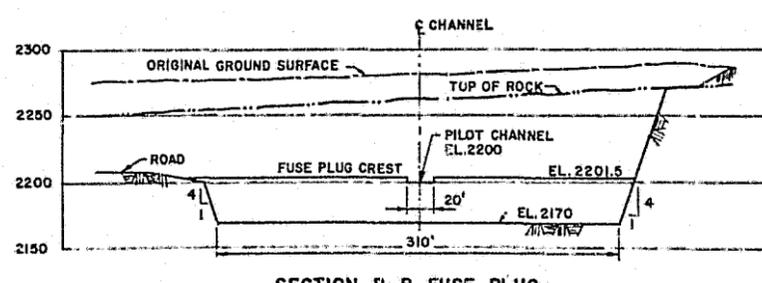
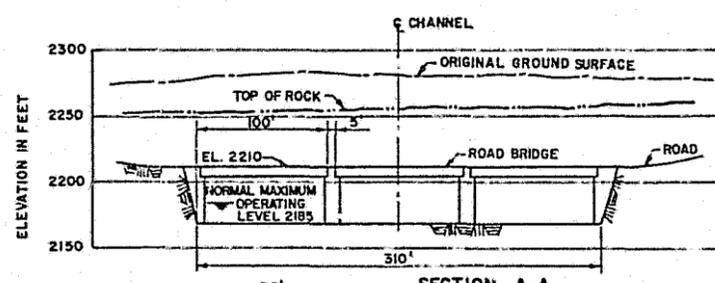
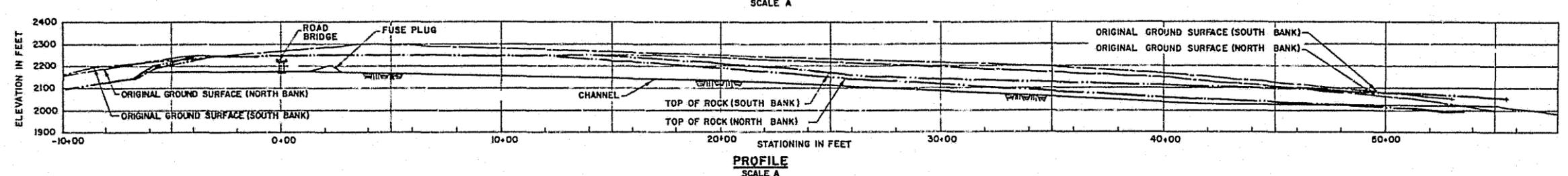
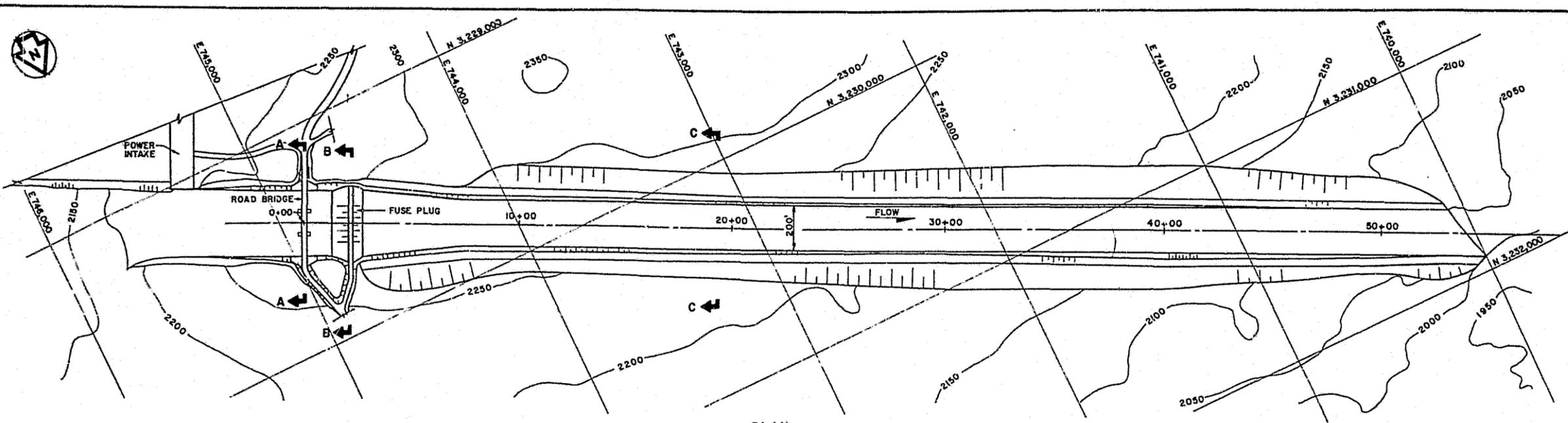
FEED



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

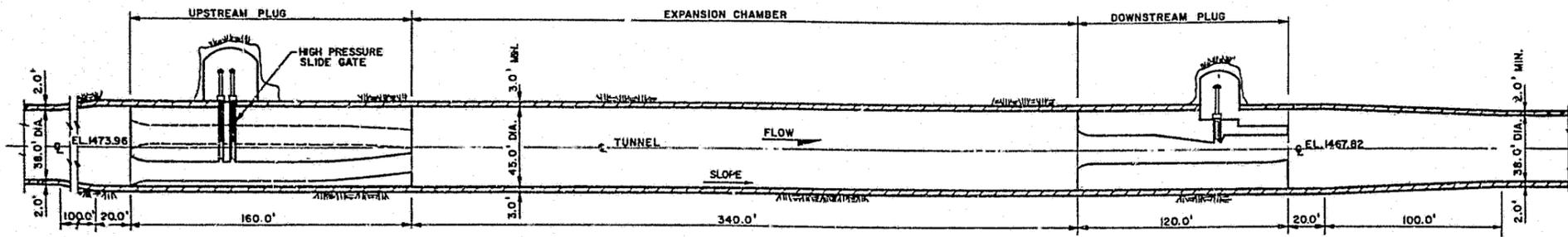
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA	
OUTLET FACILITIES	
GATE STRUCTURE	
EXHIBIT F	PLATE F17

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED

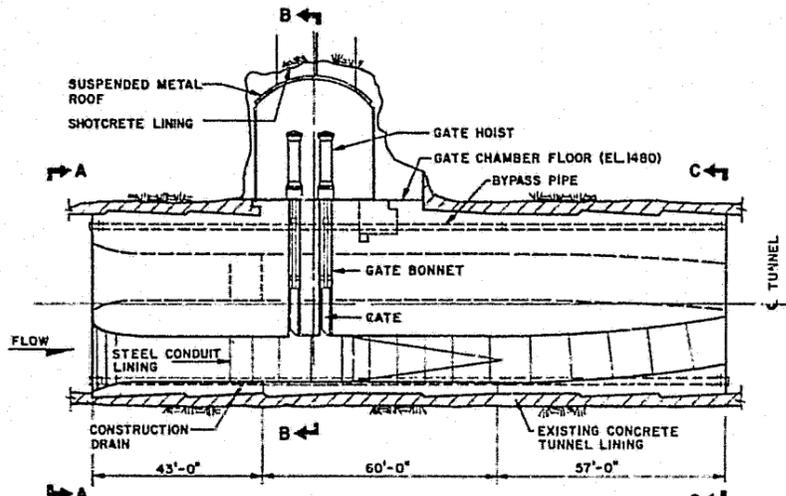


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY SPILLWAY	
EXHIBIT F	PLATE F.18

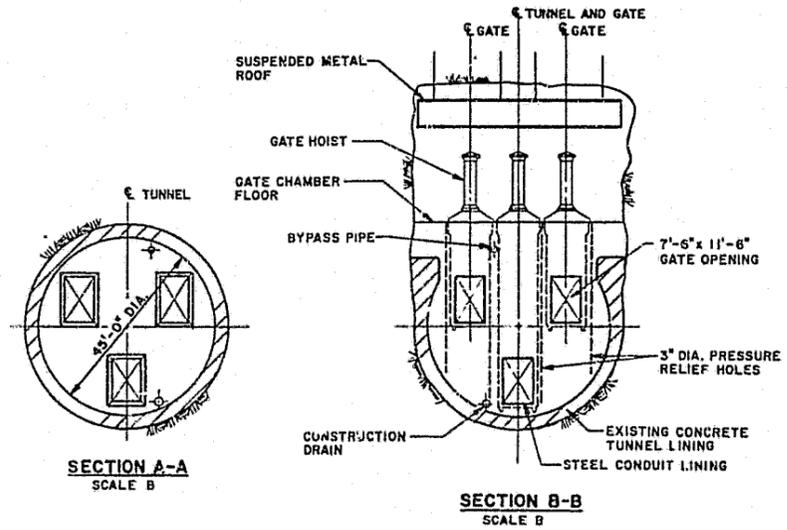
FOLD LENGTH 12 11 8.5 8 AUTO MANUA FEED



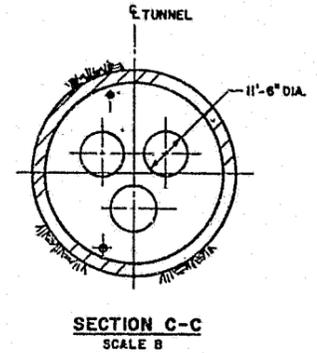
SECTION ALONG C-C OF TUNNEL NO. 1
SCALE A



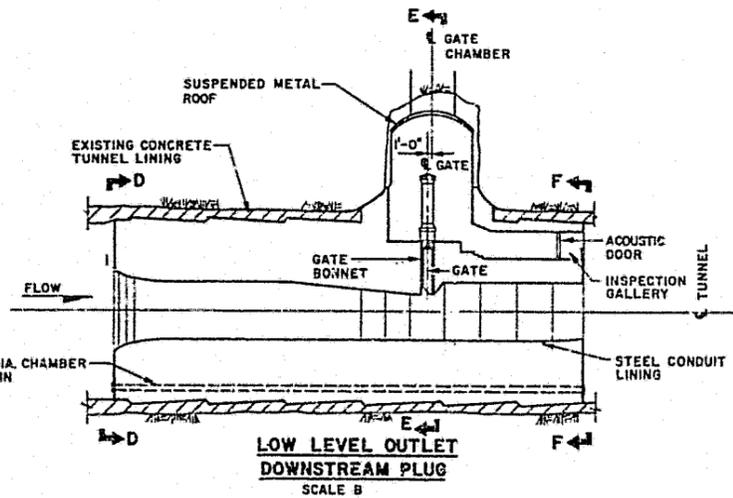
LOW LEVEL OUTLET
UPSTREAM PLUG
SCALE B



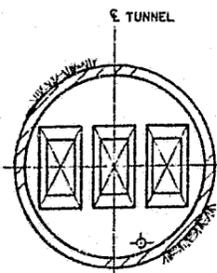
SECTION B-B
SCALE B



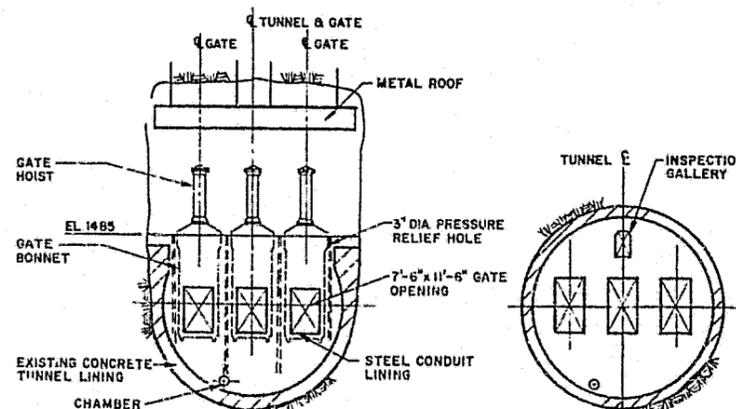
SECTION C-C
SCALE B



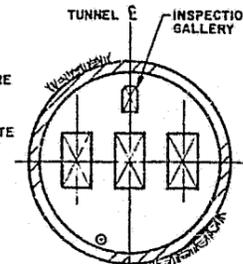
LOW LEVEL OUTLET
DOWNSTREAM PLUG
SCALE B



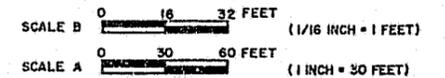
SECTION D-D
SCALE B



SECTION E-E
SCALE B

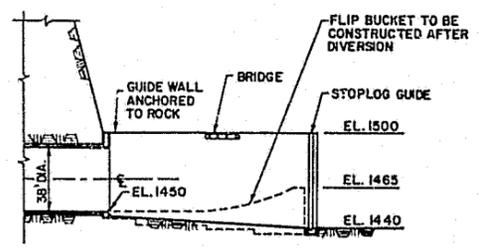
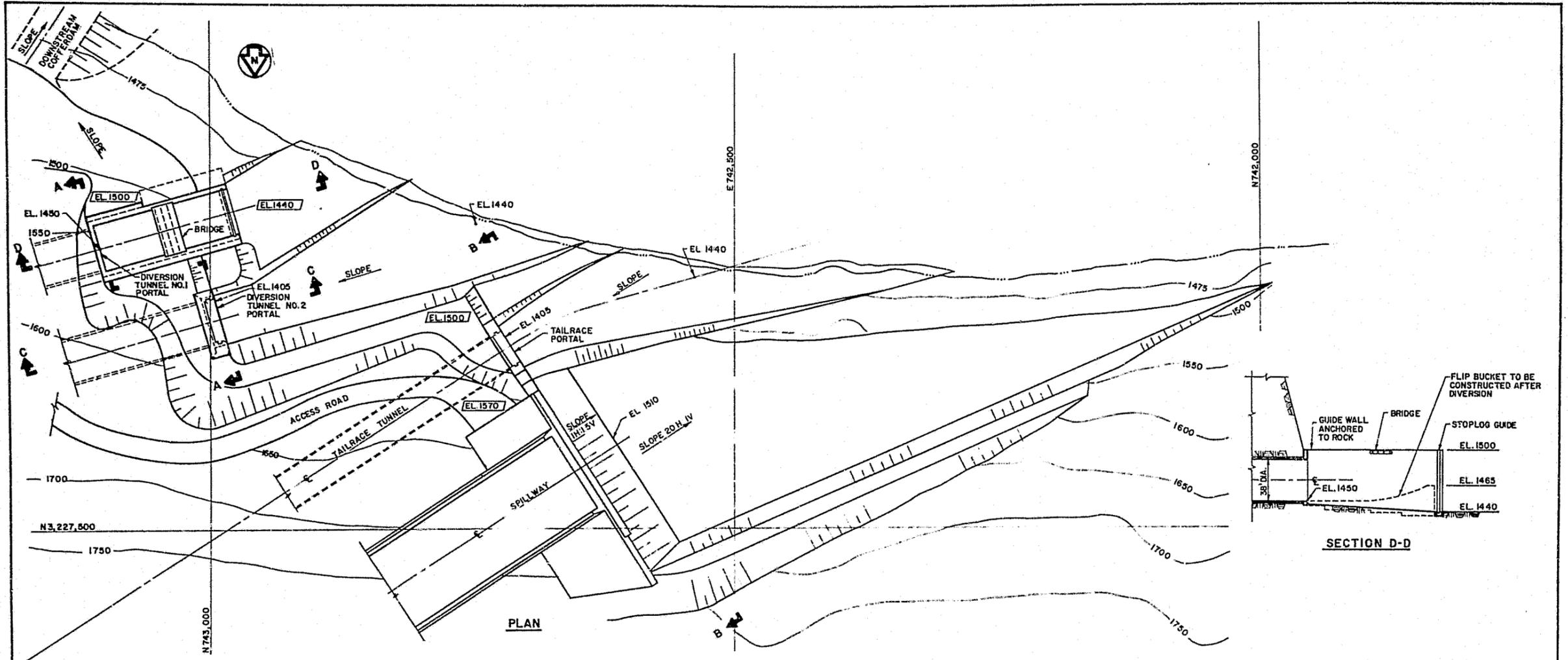


SECTION F-F
SCALE B



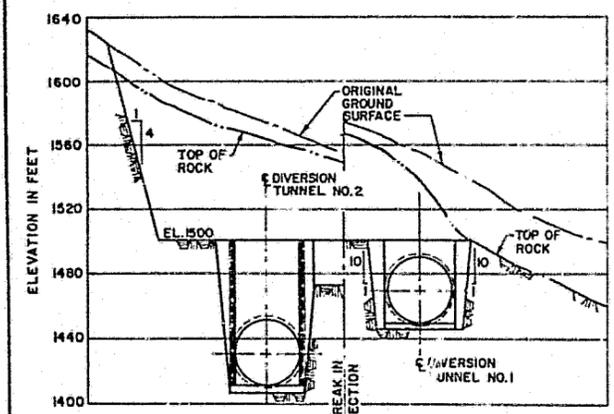
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA EMERGENCY RELEASE SECTIONS	
EXHIBIT F	PLATE F19

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED

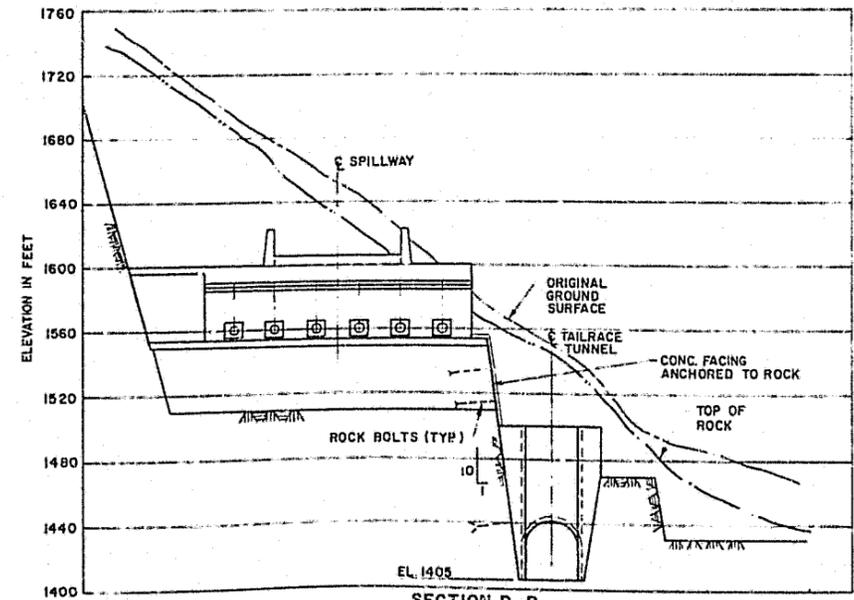


SECTION D-D

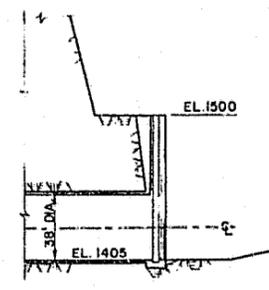
PLAN



SECTION A-A



SECTION B-B



SECTION C-C

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

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

FOLD LENGTH

12

11

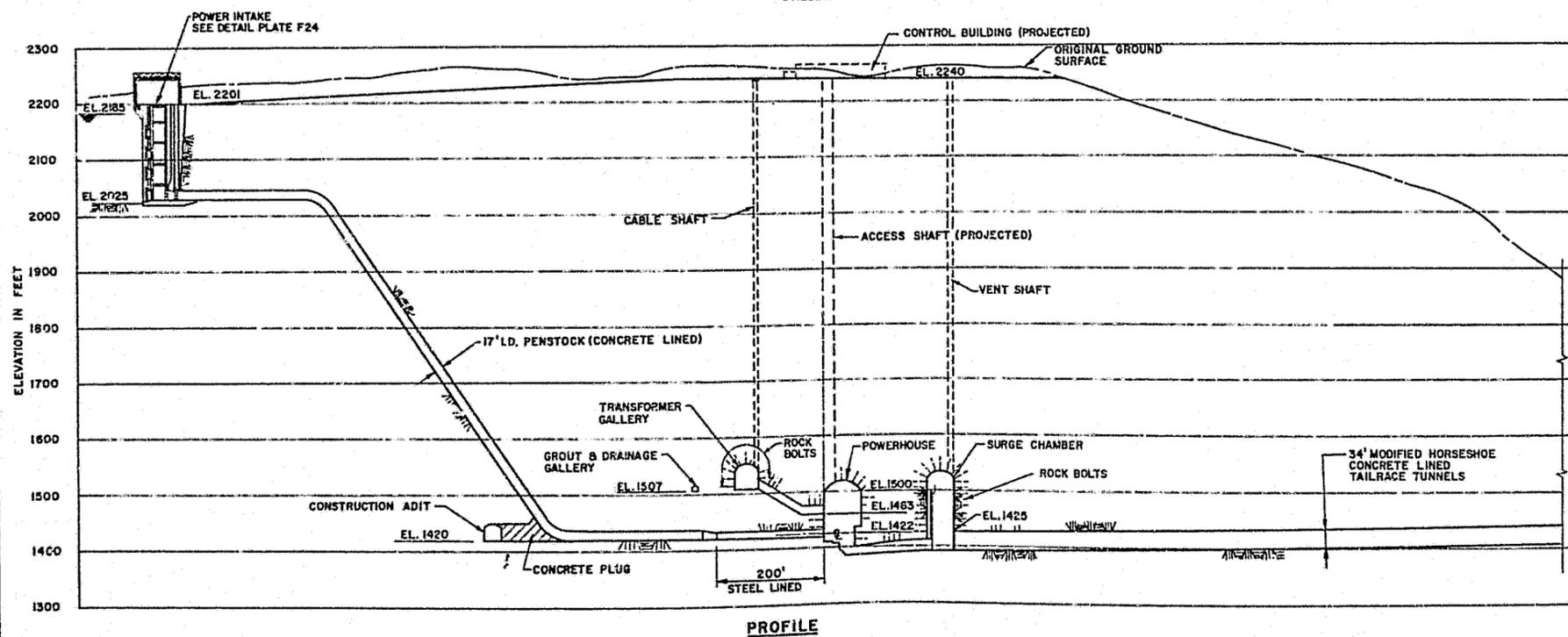
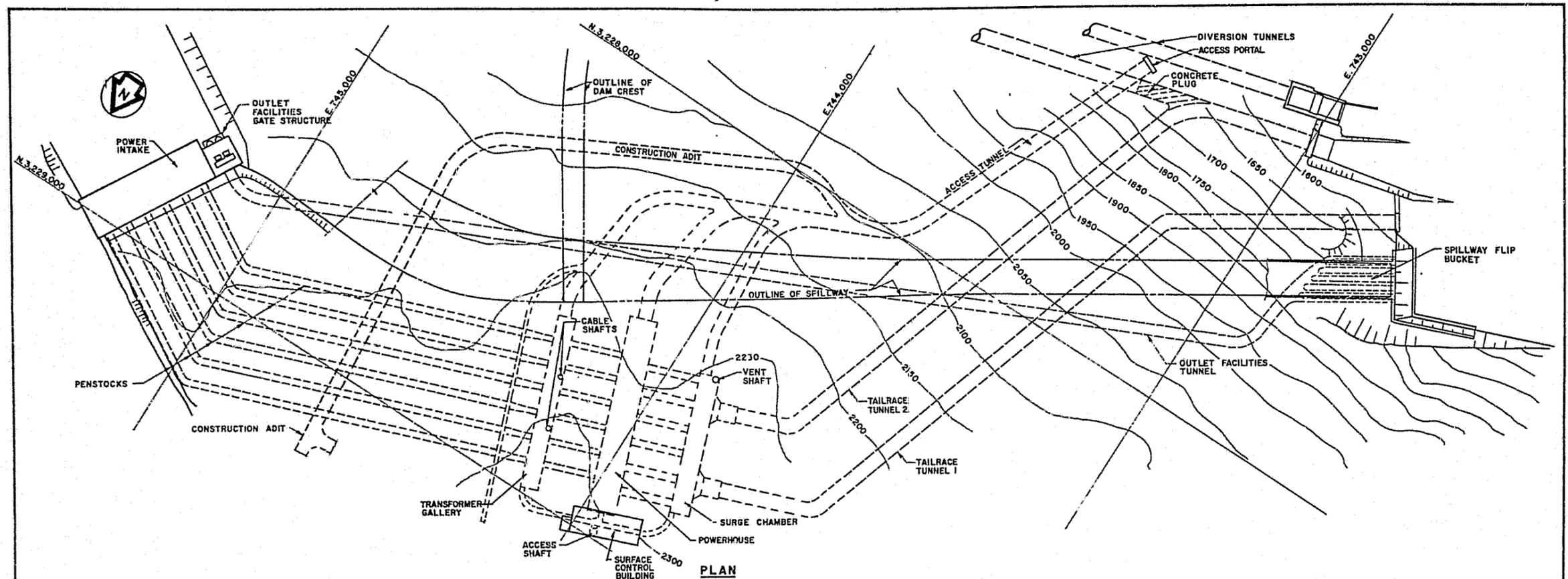
8.5

8

AUTO

MANUA

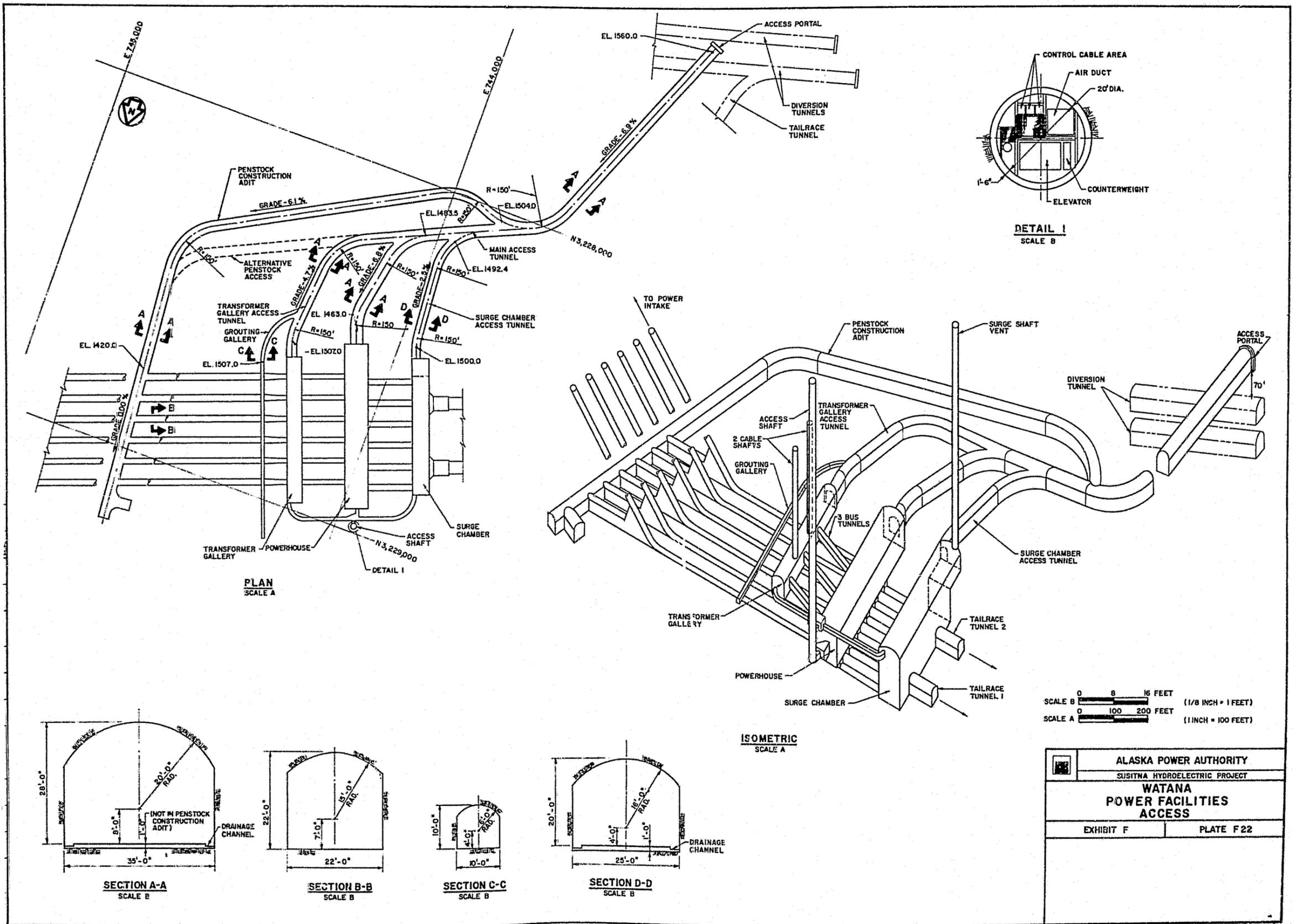
FEED



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

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

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



FOLD LENGTH

12

11

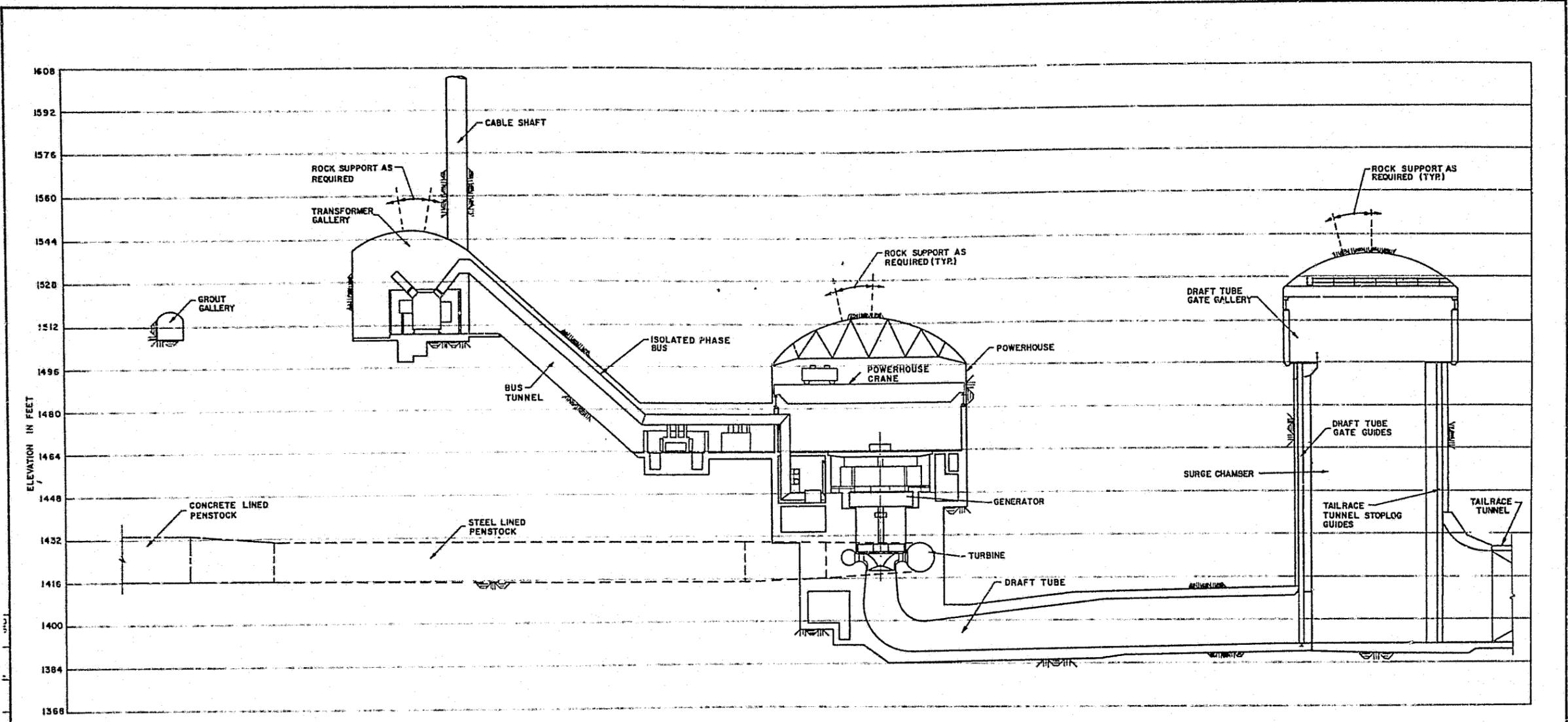
8.5

8

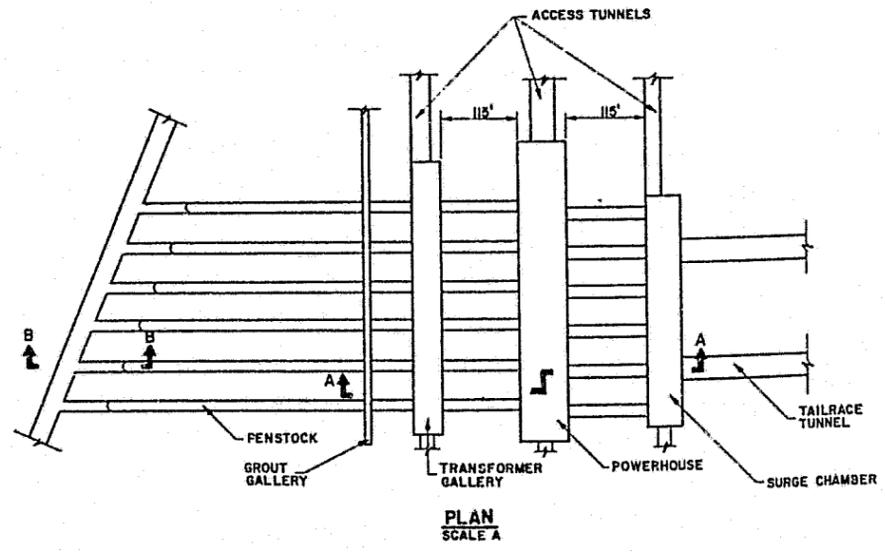
AUTO

MANUA

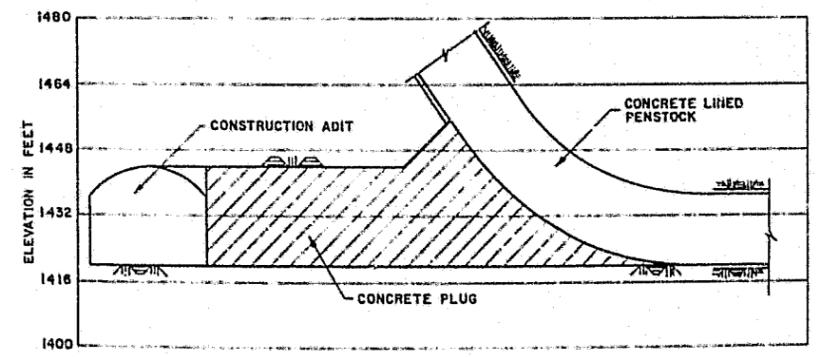
FEED



SECTION A-A
SCALE B



PLAN
SCALE A

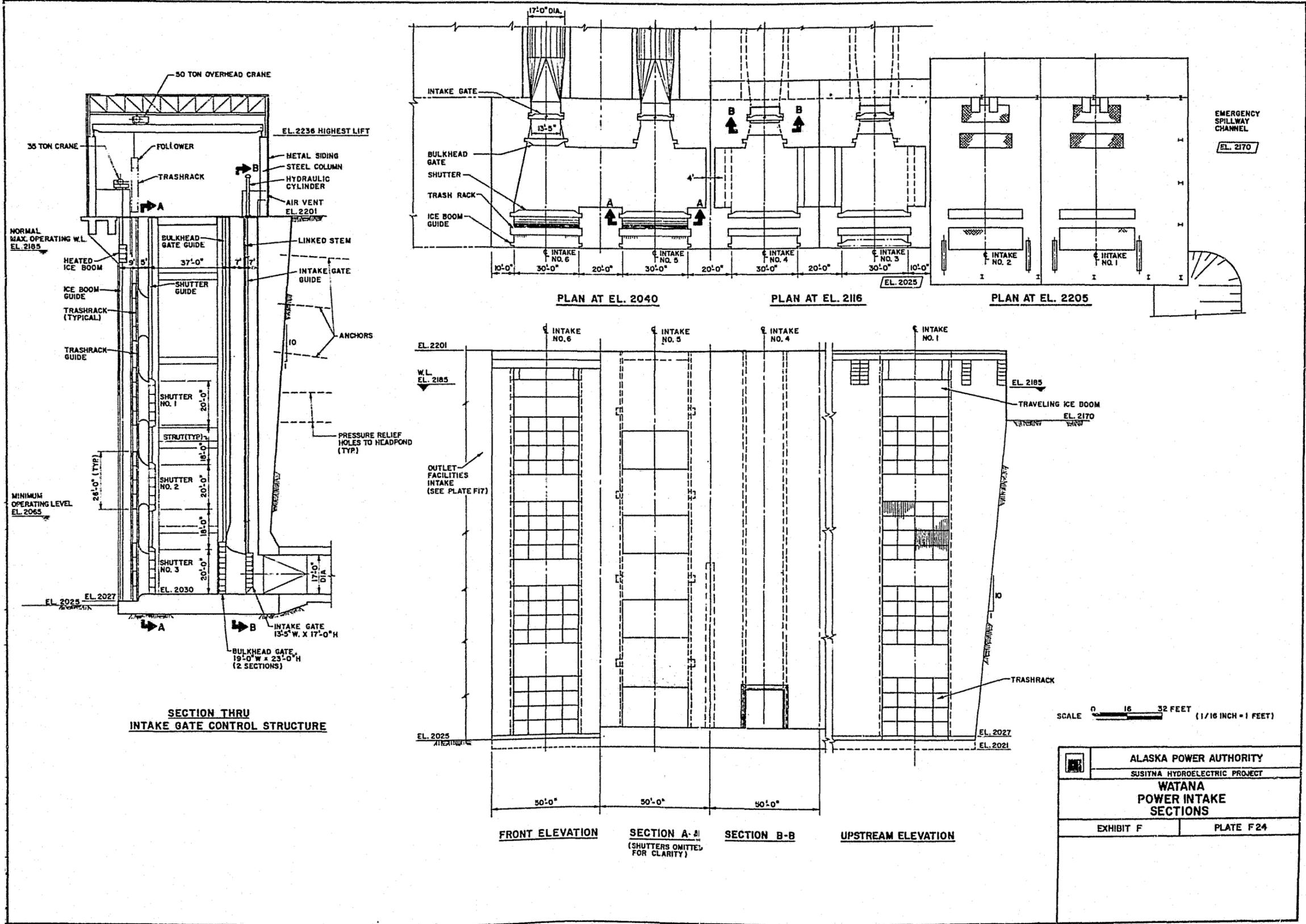


SECTION B-B
SCALE B

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

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWER FACILITIES PLAN & SECTIONS	
EXHIBIT F	PLATE F23

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



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

FOLD LENGTH

12

11

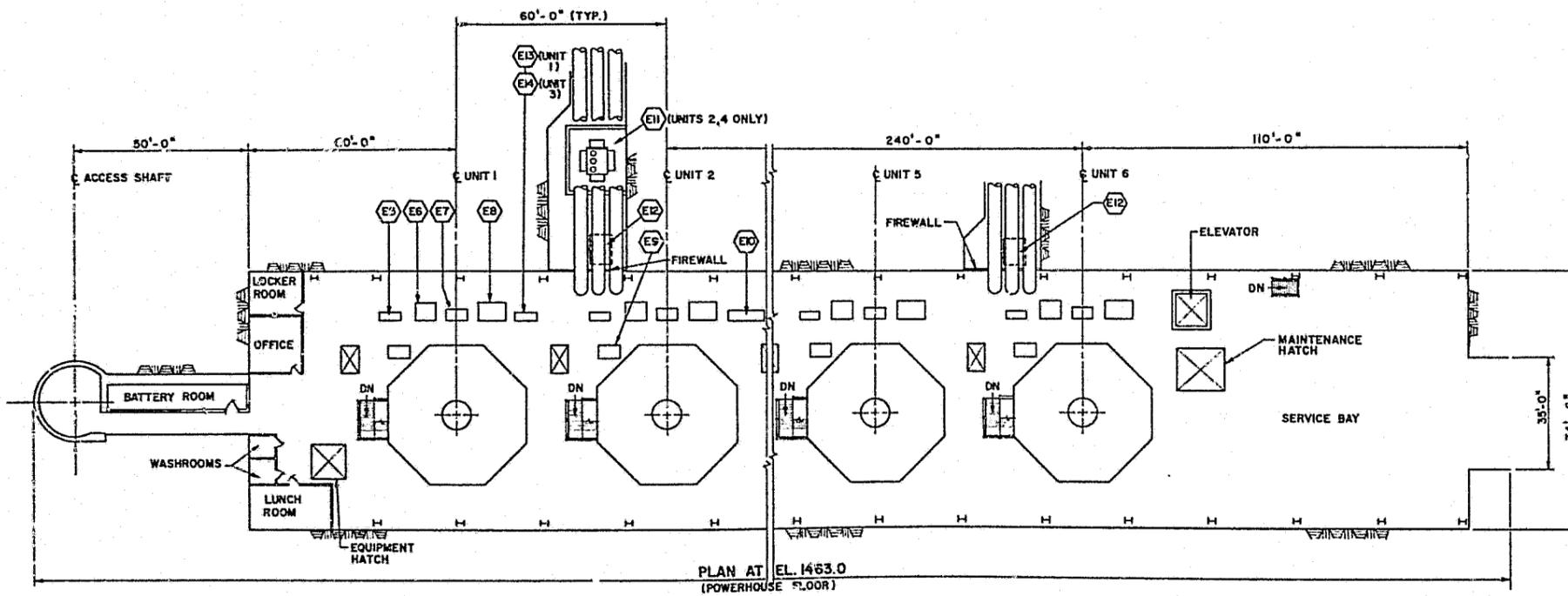
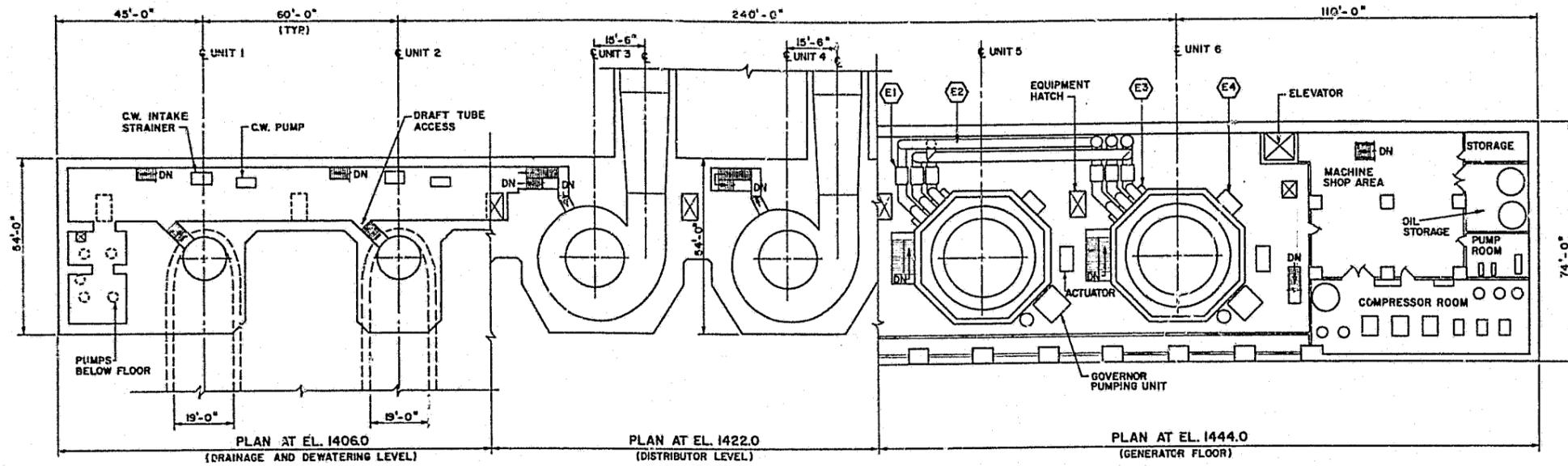
8.5

8

AUTO

MANUA

FEED



LEGEND

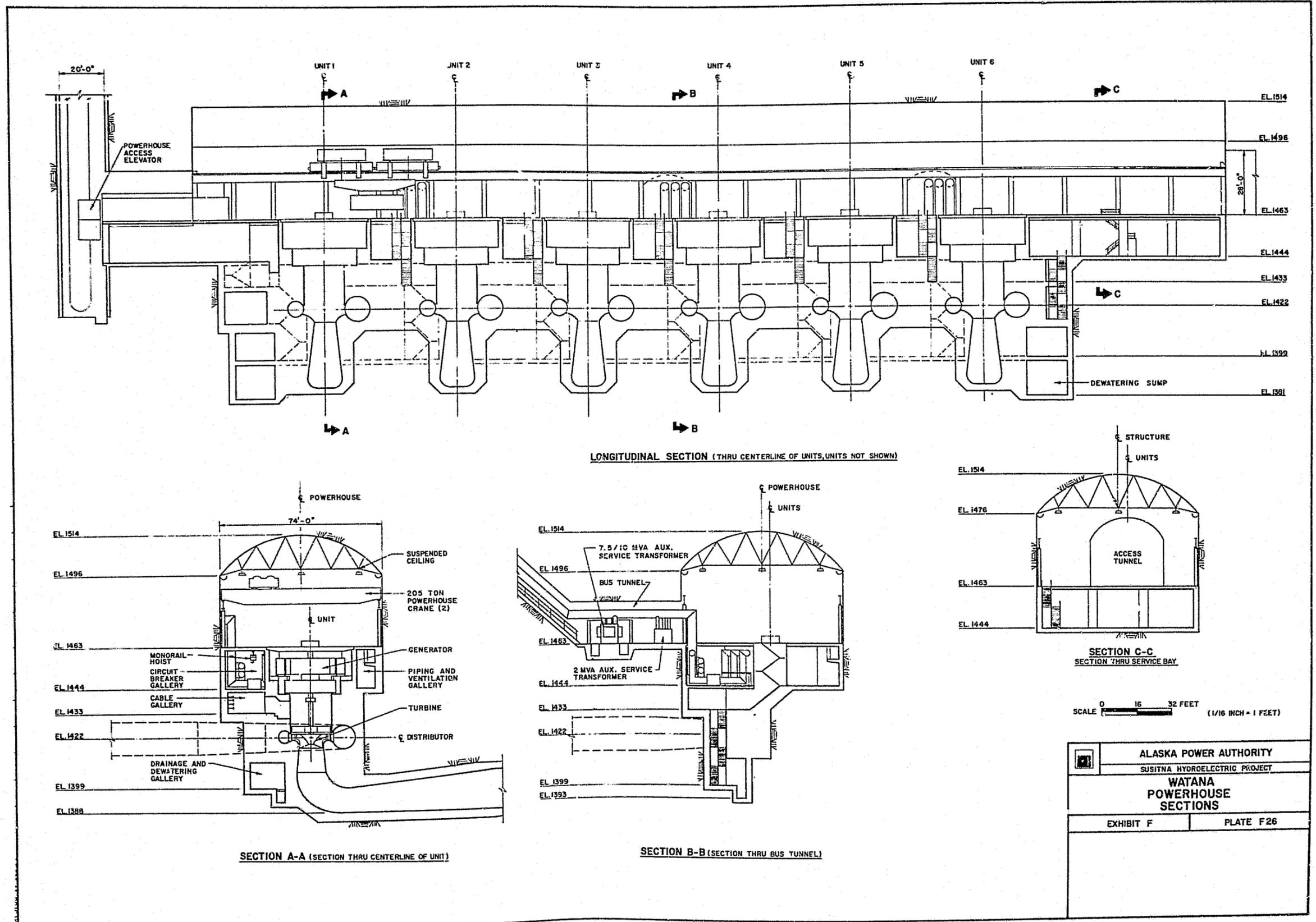
- E1 GENERATOR CIRCUIT BREAKERS
- E2 15 KV ISOLATED PHASE BUS
- E3 GENERATOR TERMINAL CUBICAL
- E4 GENERATOR NEUTRAL CUBICAL
- E5 UNIT AUXILIARY SWITCHBOARD
- E6 RELAY BOARD
- E7 TURBINE GENERATOR CONTROL BOARD
- E8 EXCITATION BOARD
- E9 EXCITATION TRANSFORMER
- E10 MAIN AUXILIARY SWITCHGEAR
- E11 AUXILIARY 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)

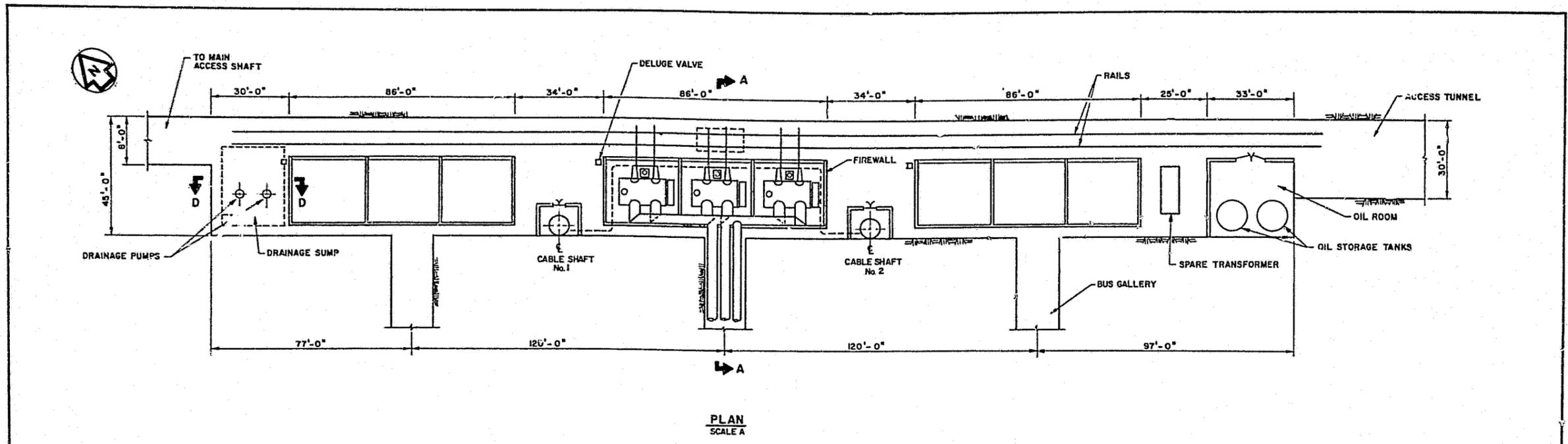
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA POWERHOUSE PLANS	
EXHIBIT F	PLATE F 25

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED

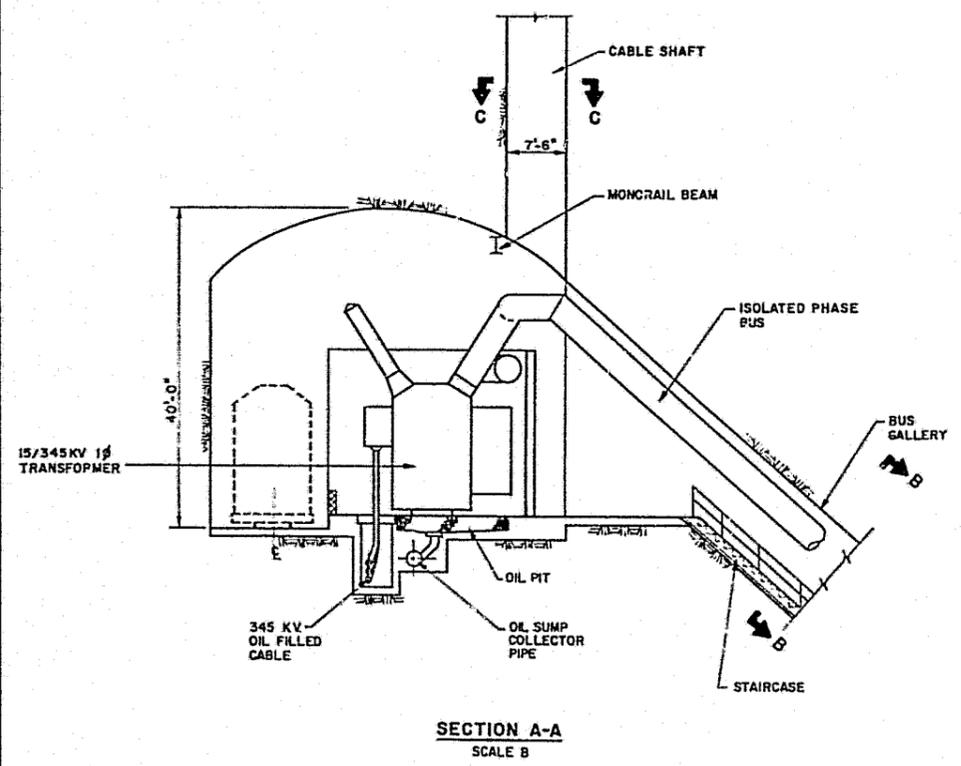


ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANAH POWERHOUSE SECTIONS	
EXHIBIT F	PLATE F26

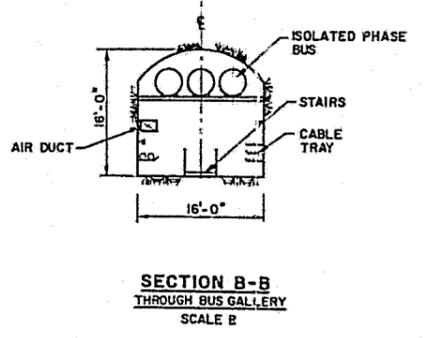
FOLD LENGTH 12 11 8.5 8
 AUTO MANUA FEED



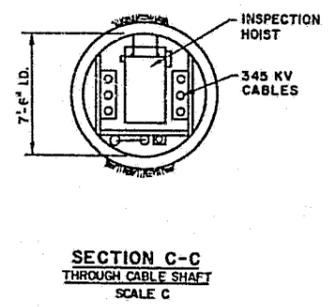
PLAN
SCALE A



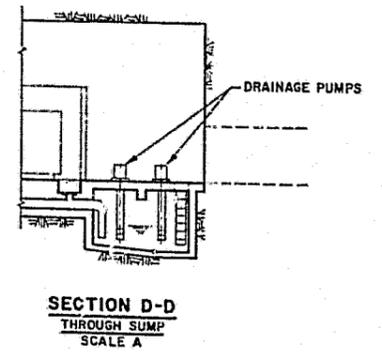
SECTION A-A
SCALE B



SECTION B-B
THROUGH BUS GALLERY
SCALE B



SECTION C-C
THROUGH CABLE SHAFT
SCALE C

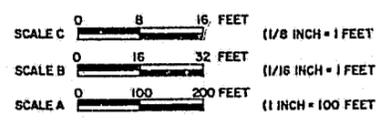
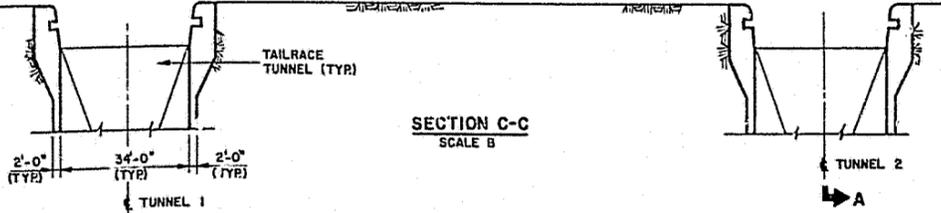
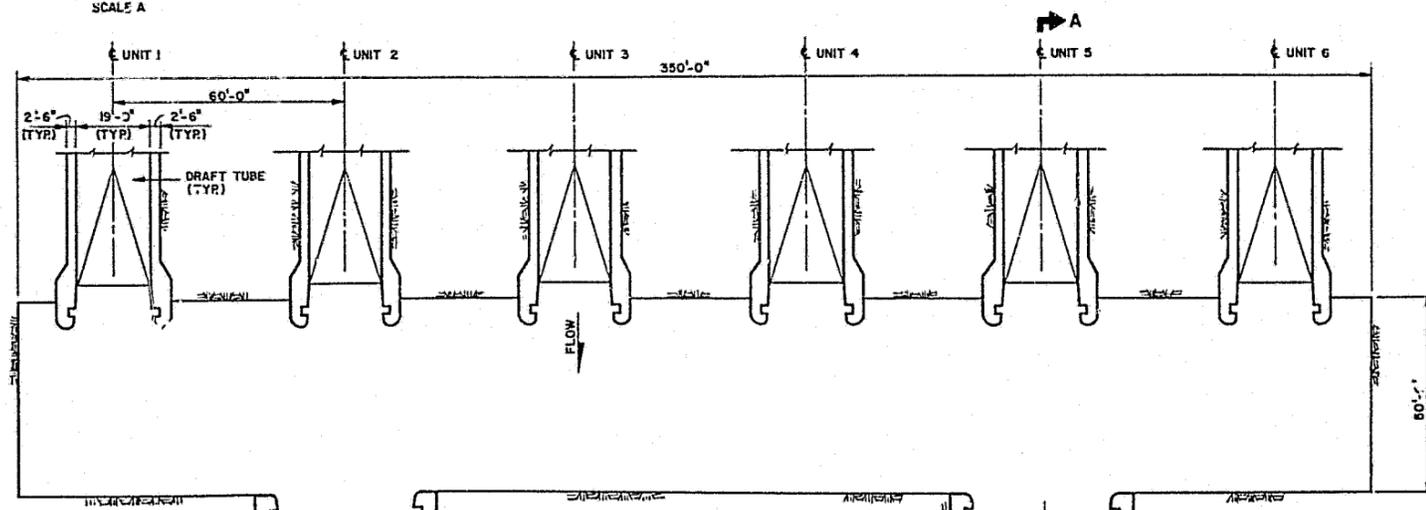
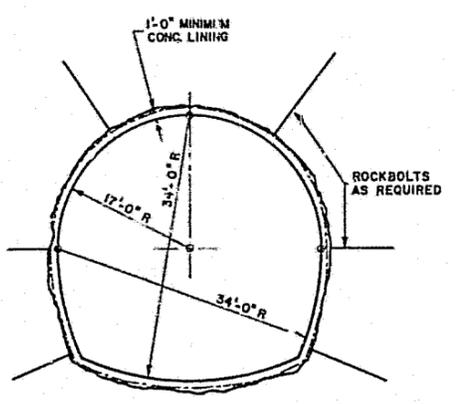
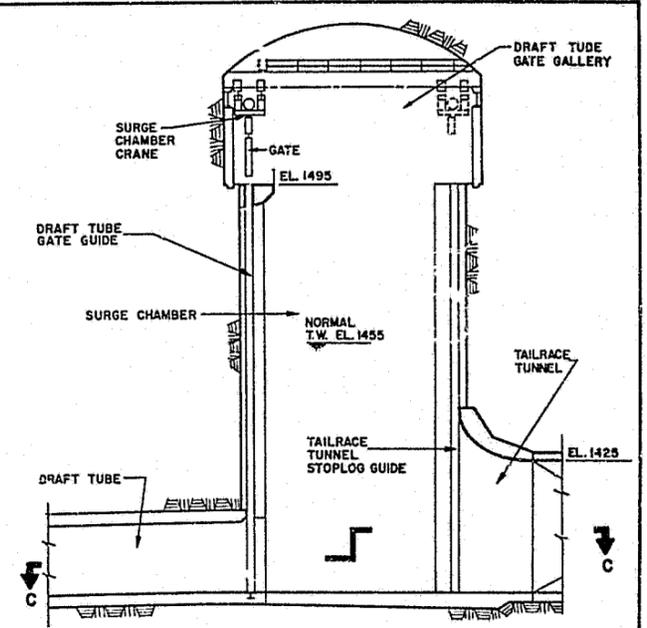
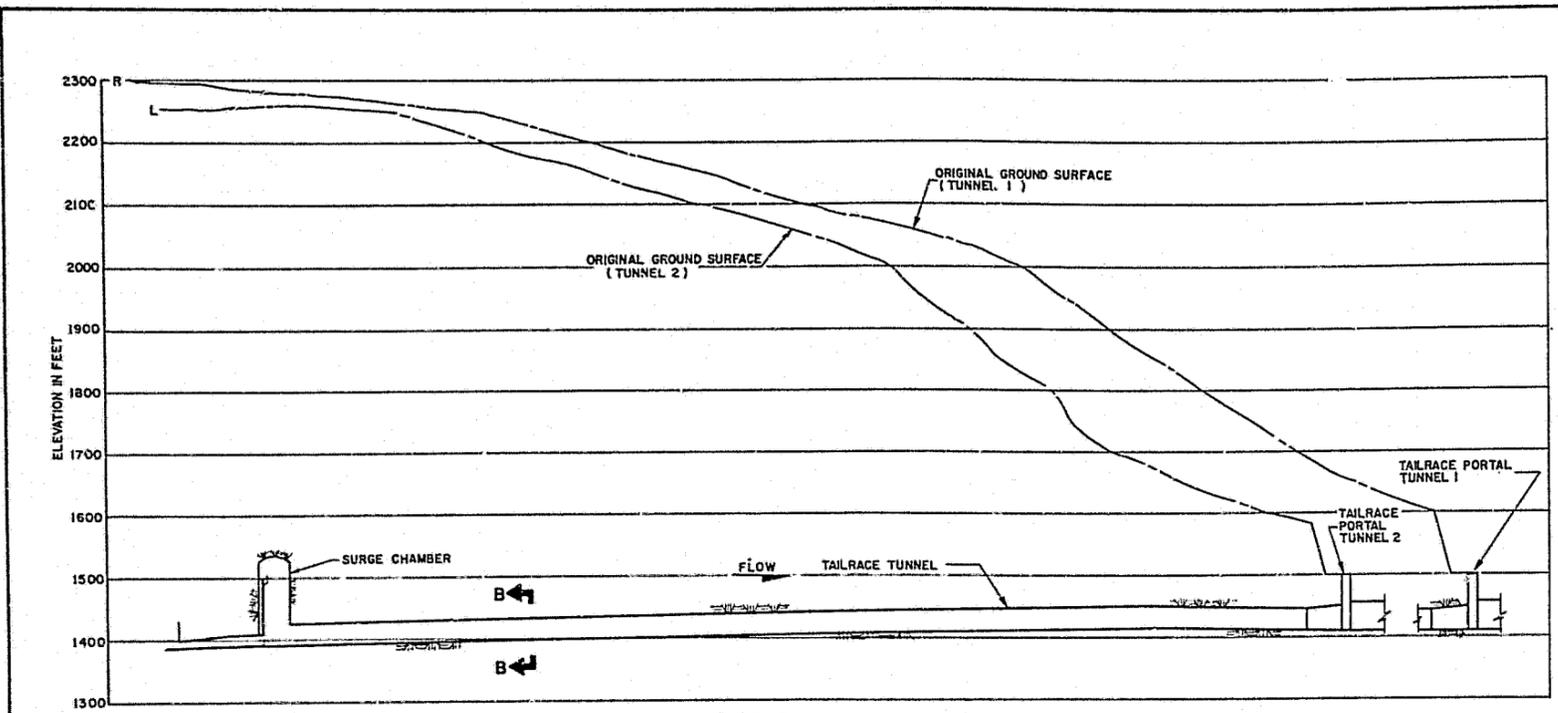


SECTION D-D
THROUGH SUMP
SCALE A

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 F27

FOLD LENGTH
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEED



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

FOLD LENGTH
12
11
8.5
8
CAUTION
MANUAL
FEED

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

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

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

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

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

SYMBOLS:

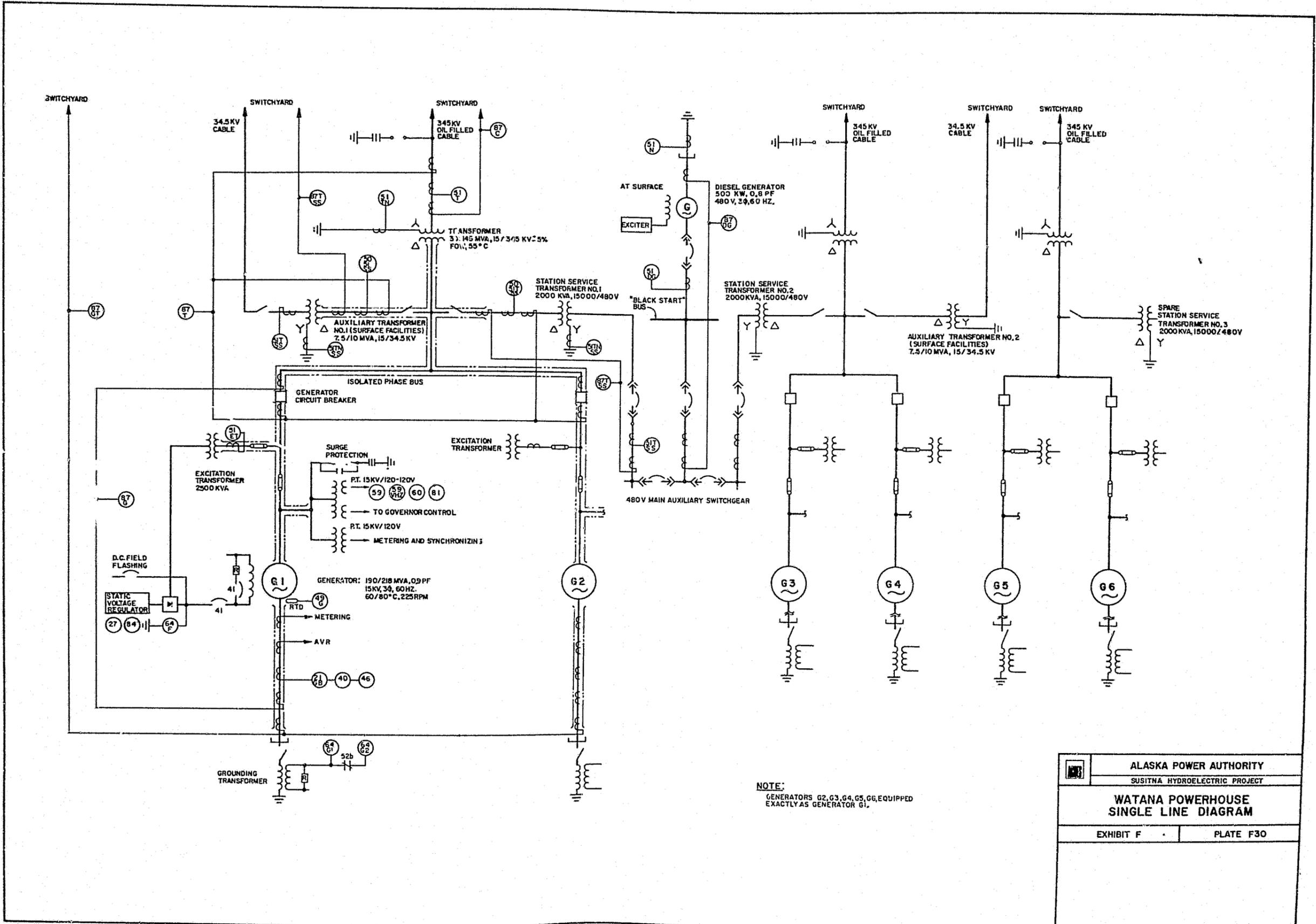
-  LIGHTNING ARRESTOR
-  CAPACITOR COUPLING VOLTAGE TRANSFORMER
-  RECTIFIER

NOTES

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

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

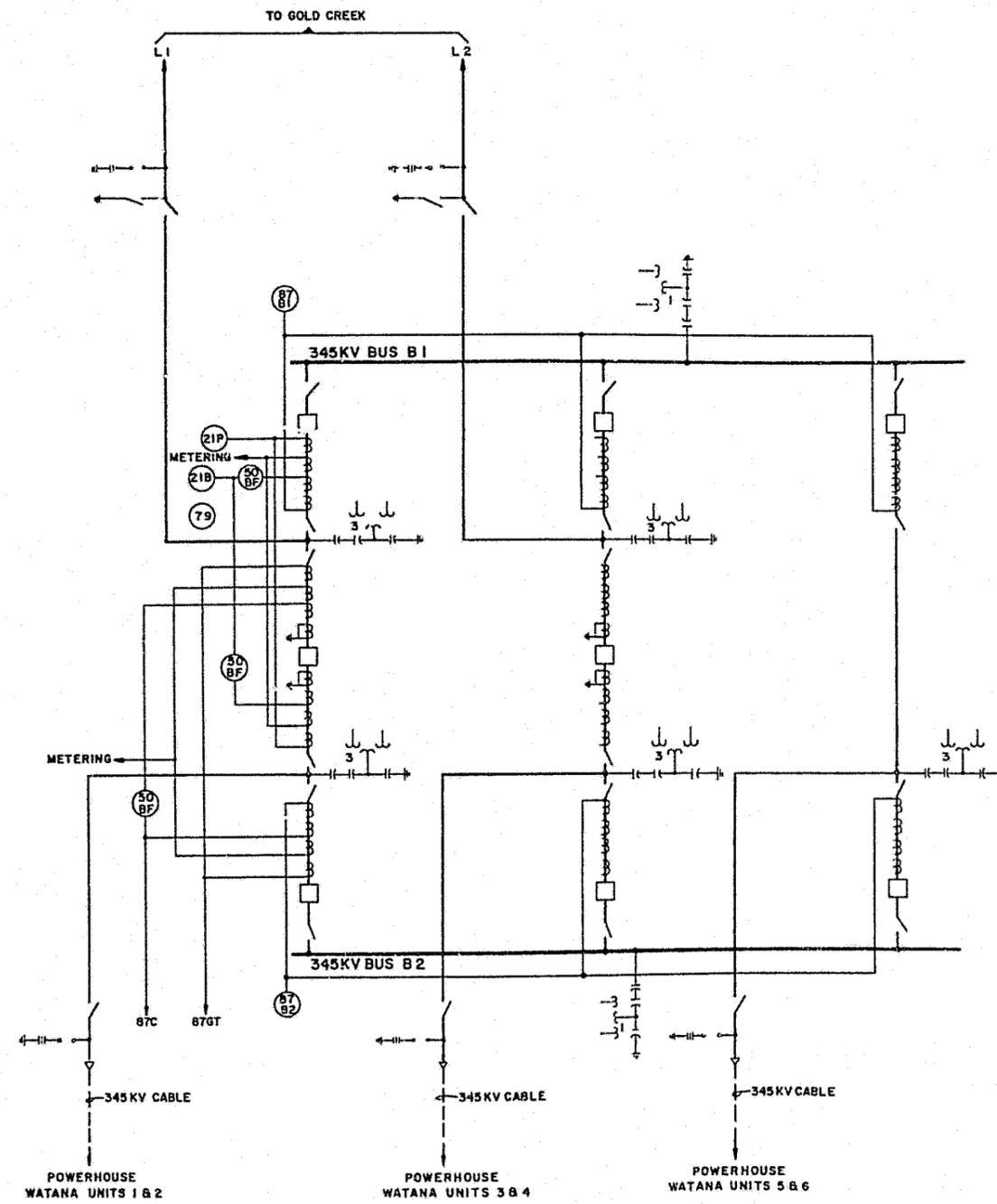
FOLD LENGTH
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEED



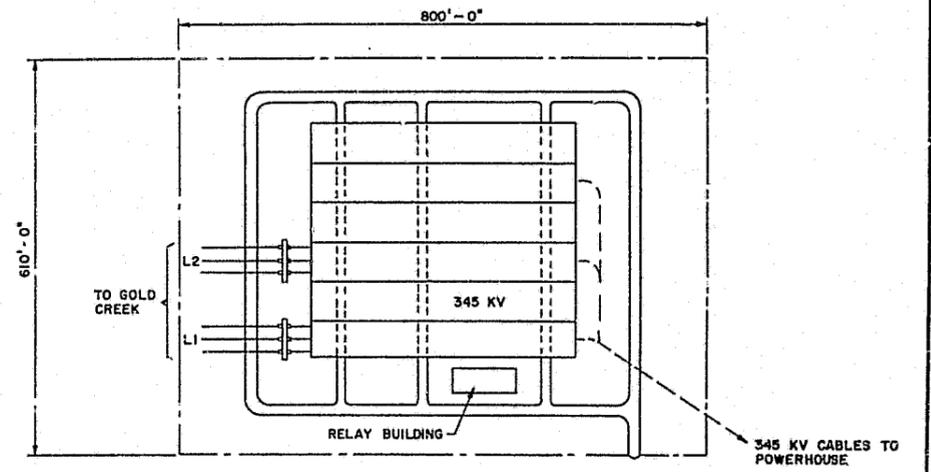
NOTE:
 GENERATORS G2, G3, G4, G5, G6, EQUIPPED
 EXACTLY AS GENERATOR G1.

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

FOLD LENGTH
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEED



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

FOLD LENGTH

12

11

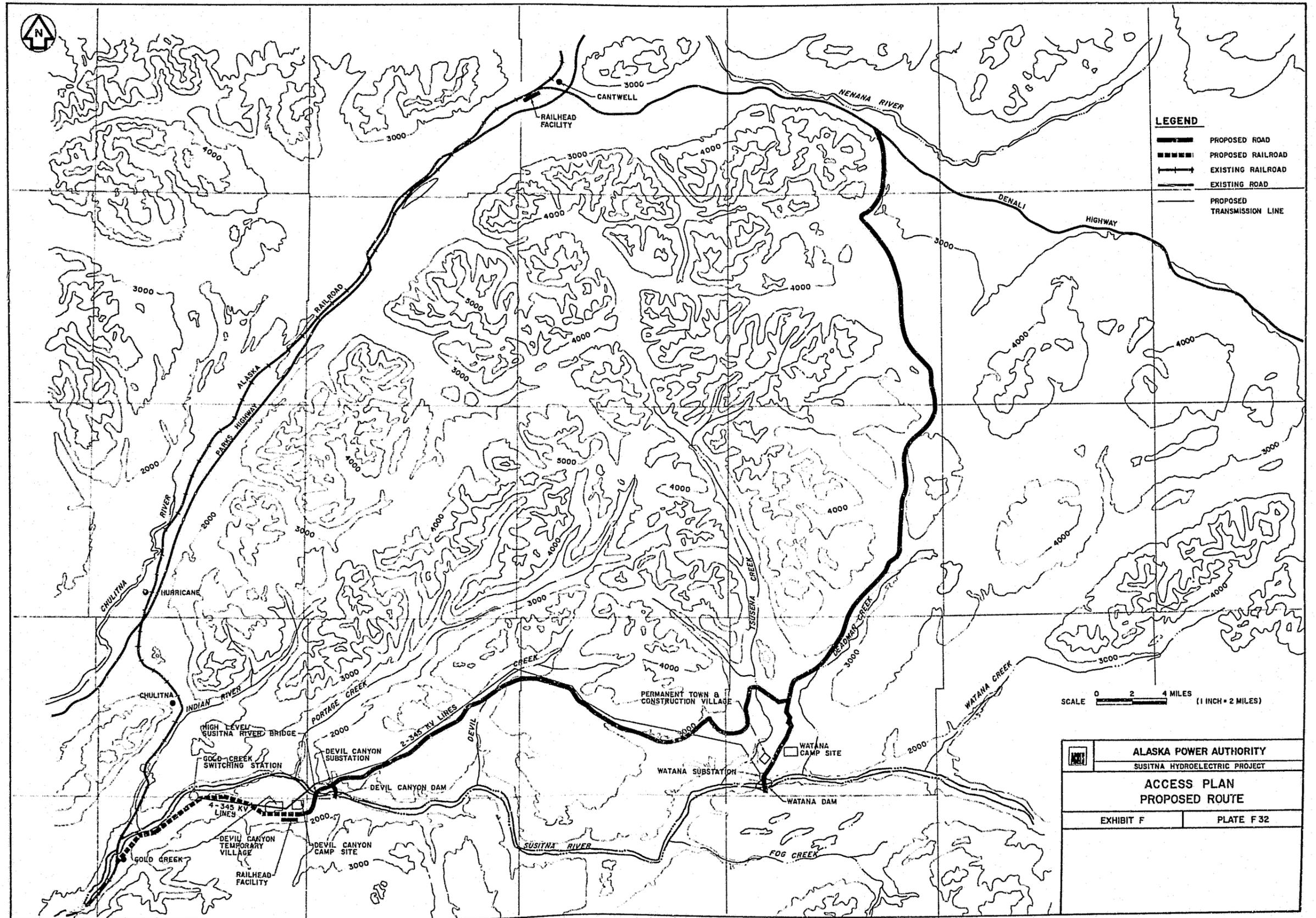
9

8

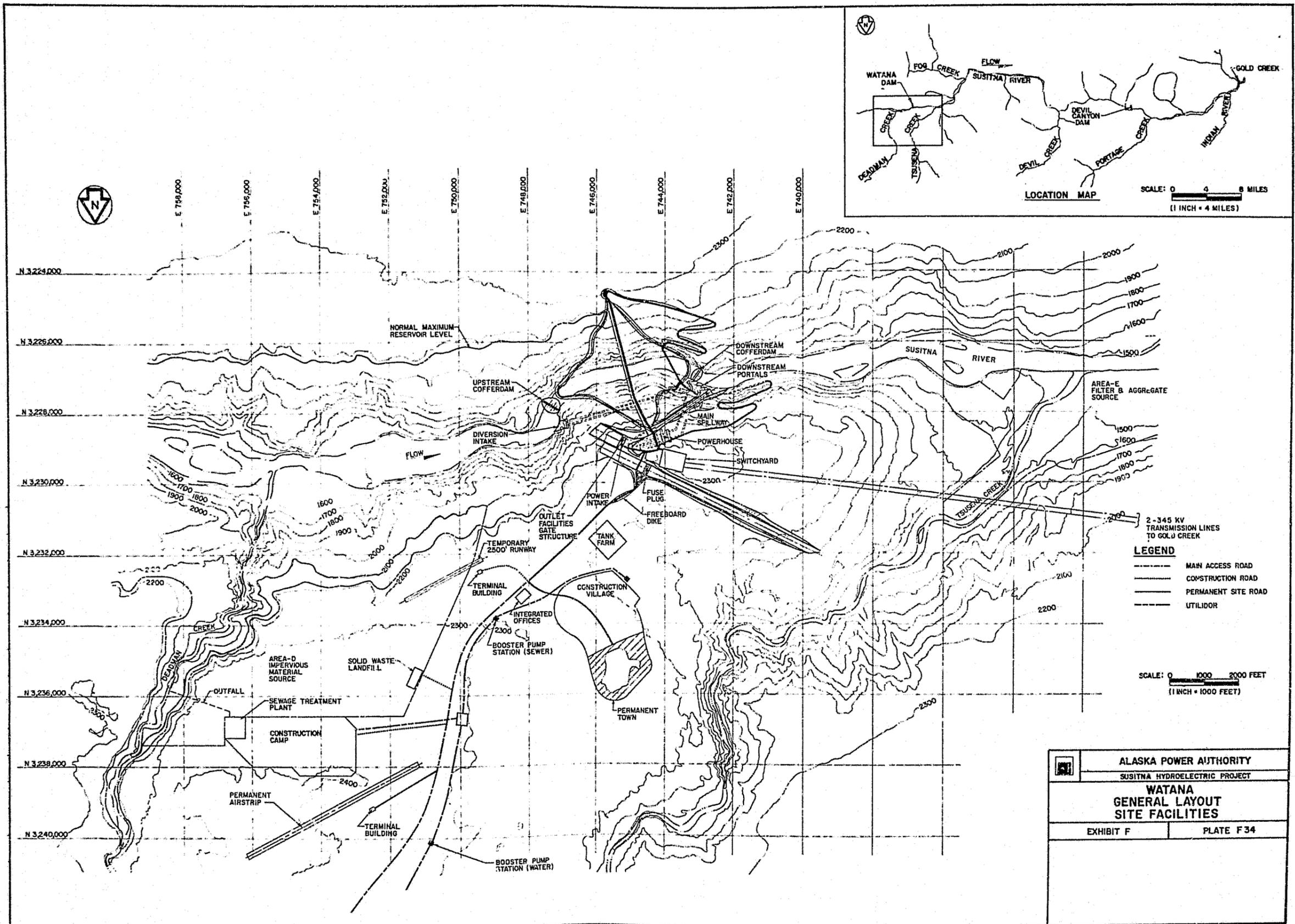
AUTO

MANUA

FEED

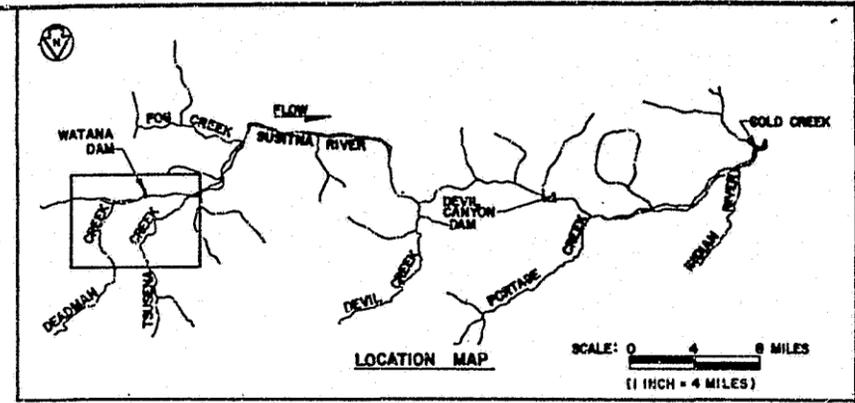
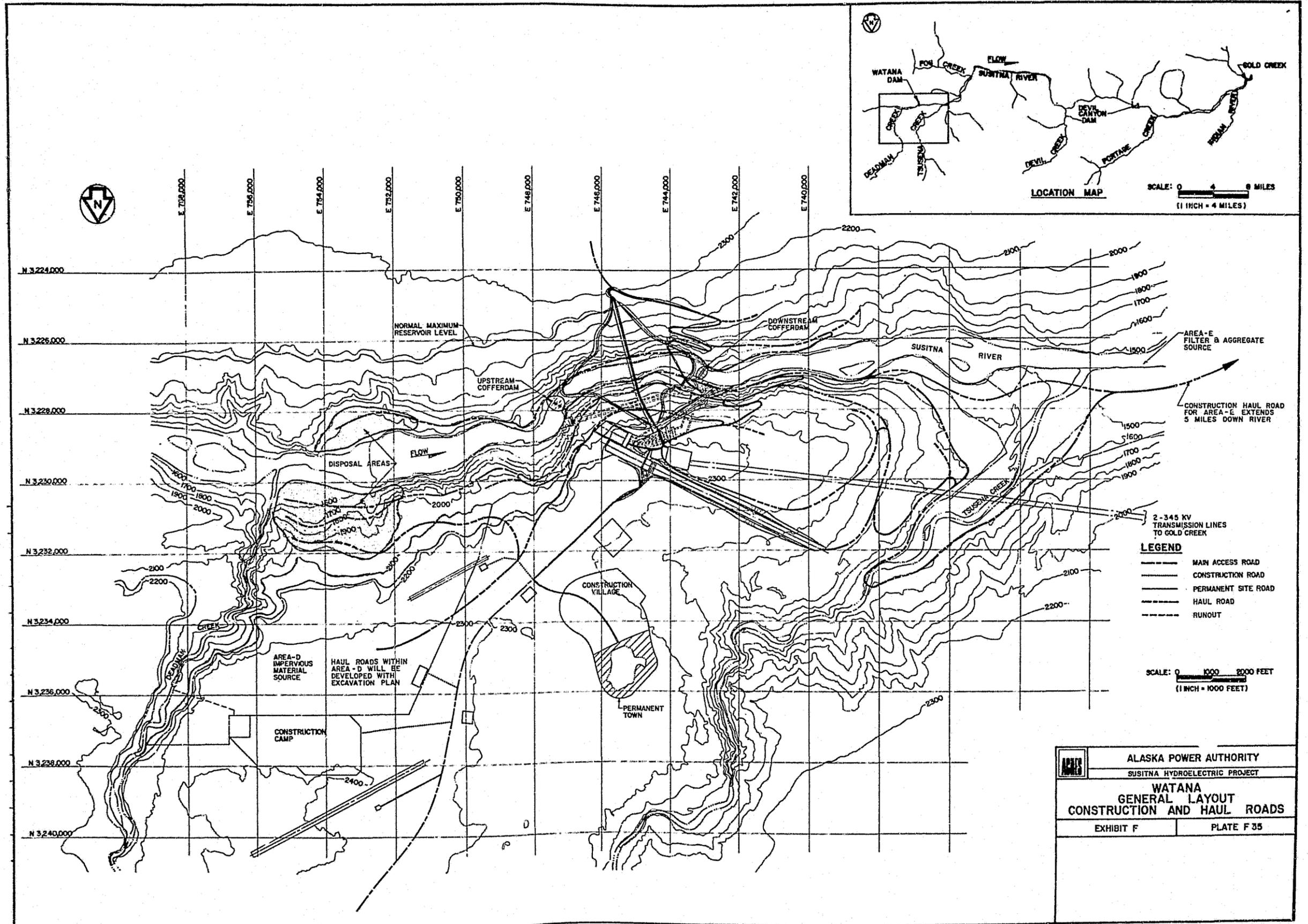


1
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEED



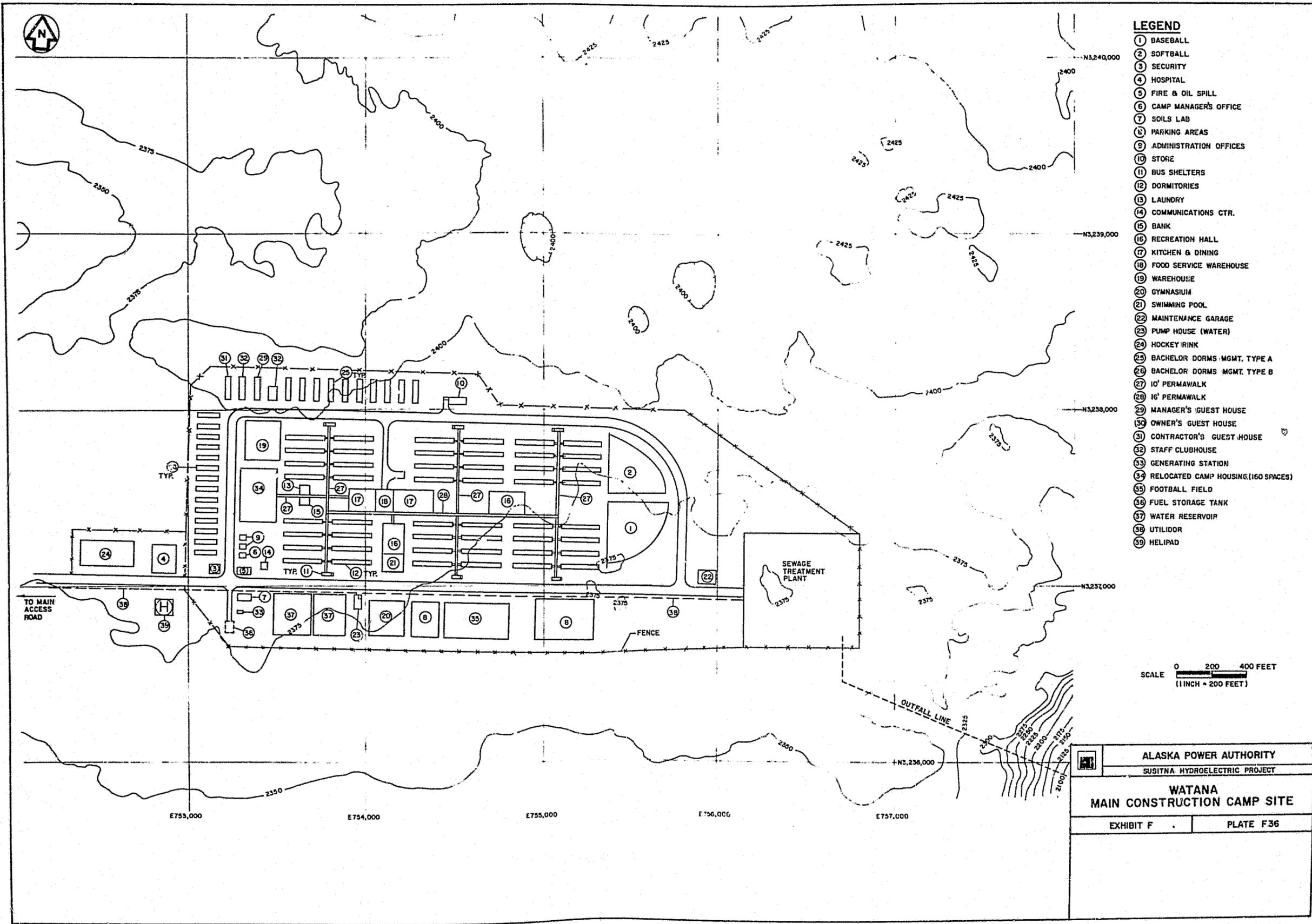
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
WATANA GENERAL LAYOUT SITE FACILITIES	
EXHIBIT F	PLATE F34

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



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

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED

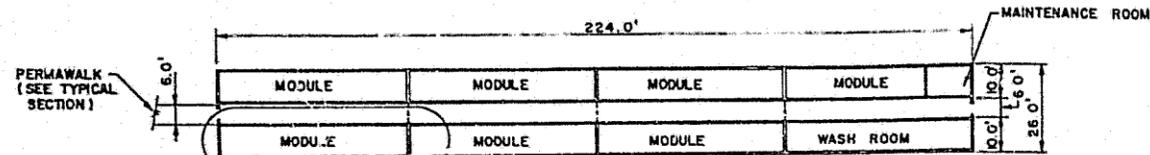


- LEGEND**
- ① BASEBALL
 - ② SOFTBALL
 - ③ SECURITY
 - ④ HOSPITAL
 - ⑤ FIRE & OIL SPILL
 - ⑥ CAMP MANAGER'S OFFICE
 - ⑦ SOILS LAB
 - ⑧ PARKING AREAS
 - ⑨ ADMINISTRATION OFFICES
 - ⑩ STORE
 - ⑪ BUS SHELTERS
 - ⑫ DORMITORIES
 - ⑬ LAUNDRY
 - ⑭ COMMUNICATIONS CTR.
 - ⑮ BANK
 - ⑯ RECREATION HALL
 - ⑰ KITCHEN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

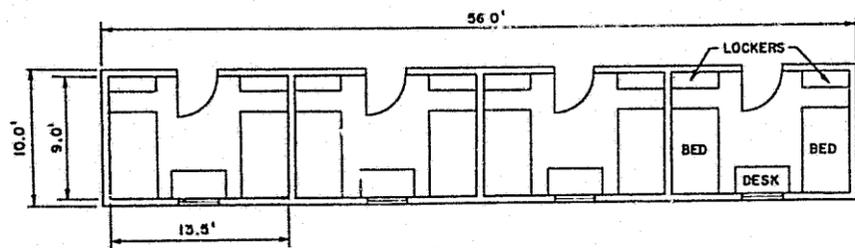
SCALE 0 200 400 FEET
(1 INCH = 200 FEET)

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

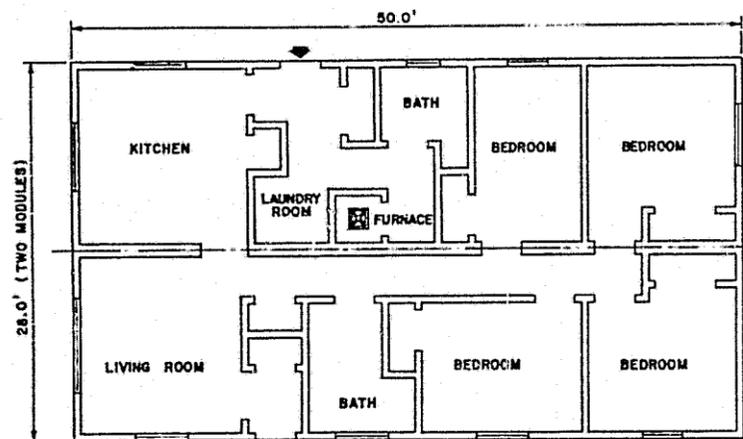
FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



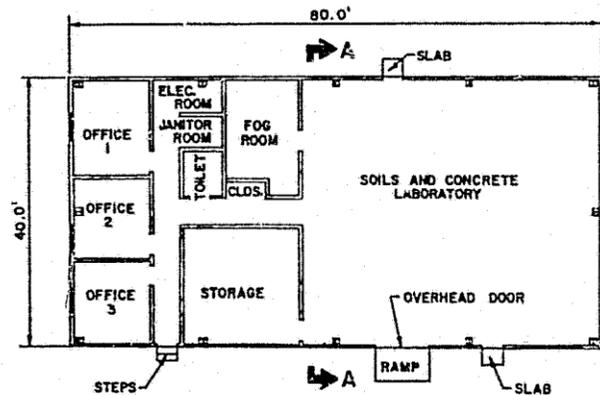
TYPICAL DORM TWO MAN SLEEPING ROOMS (2 STORY, 8 MODULES PER STORY)
SCALE: B



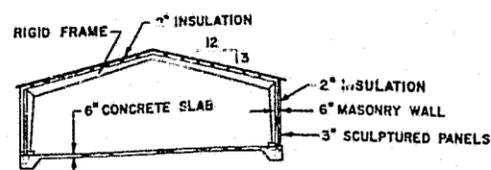
DETAIL I
TYPICAL DORMITORY MODULE
SCALE: C



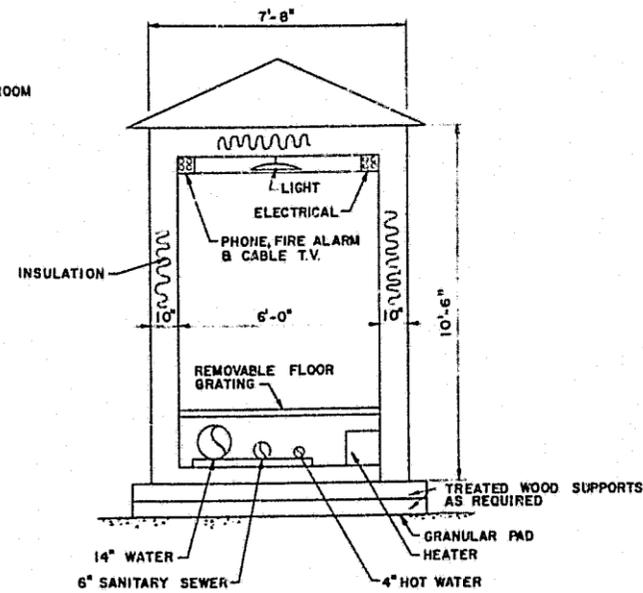
TYPICAL WOOD FRAME MODULAR HOUSE
FOUR BEDROOM FAMILY UNIT
SCALE: C



TYPICAL STEEL FRAME BUILDING
SOILS AND CONCRETE LABORATORY
SCALE: A



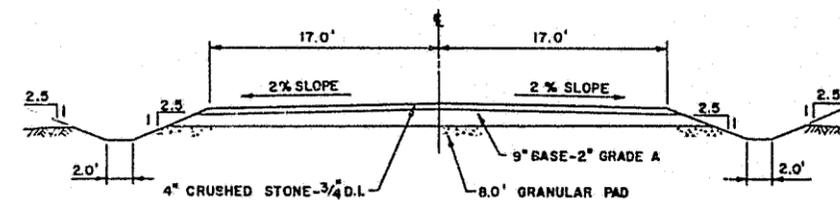
SECTION A-A
SCALE: A



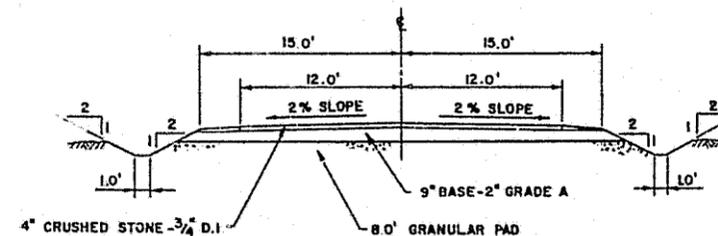
TYPICAL PERAWALK
WITH UTILIDOR (AT DORMS)
SCALE: D



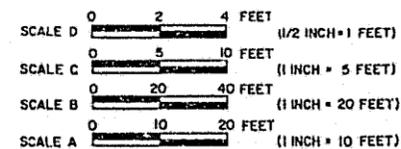
PERMANENT VILLAGE HOUSING



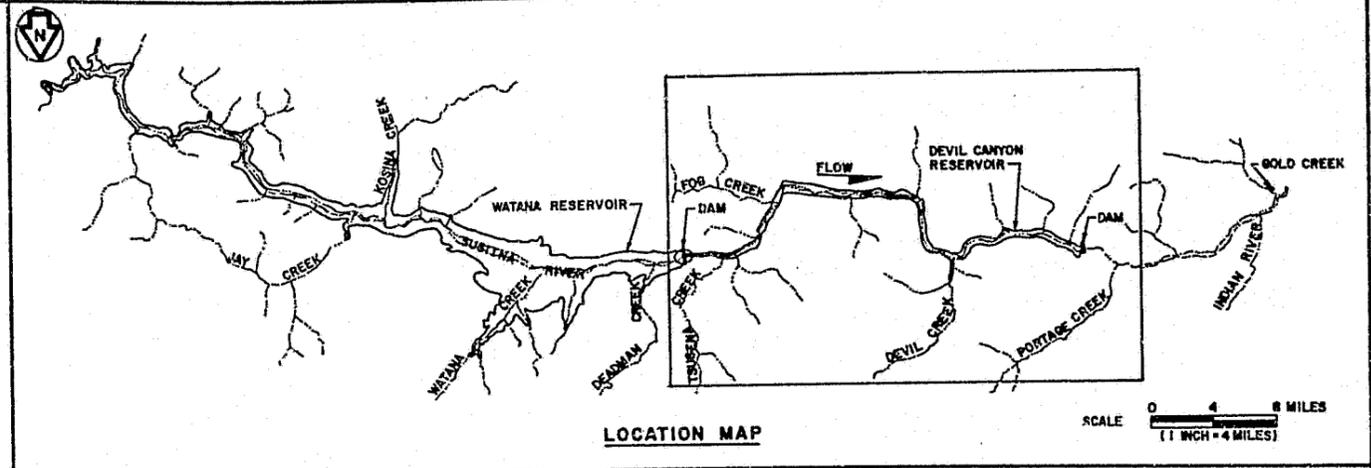
TYPICAL SECTION - PERMANENT SITE ROAD
SCALE: C



TYPICAL SECTION - SECONDARY SITE ROAD
SCALE: C



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

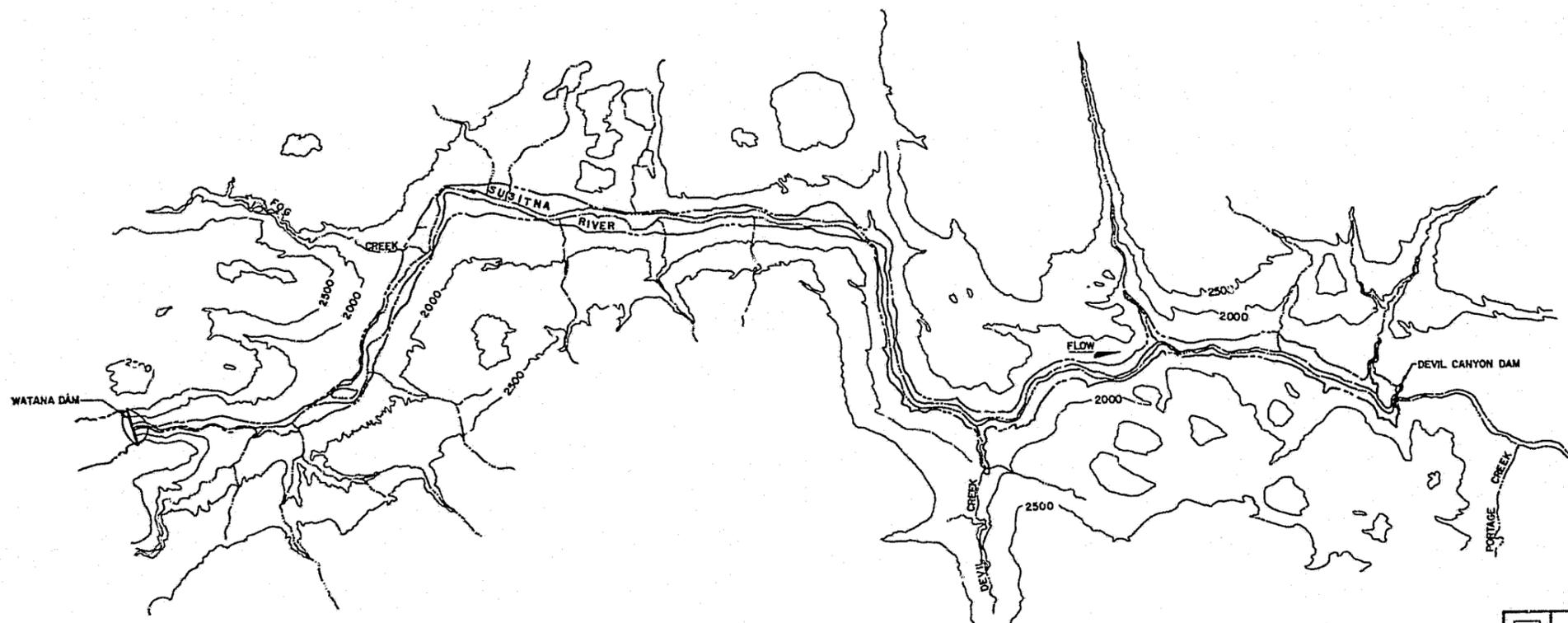


LOCATION MAP

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

LEGEND

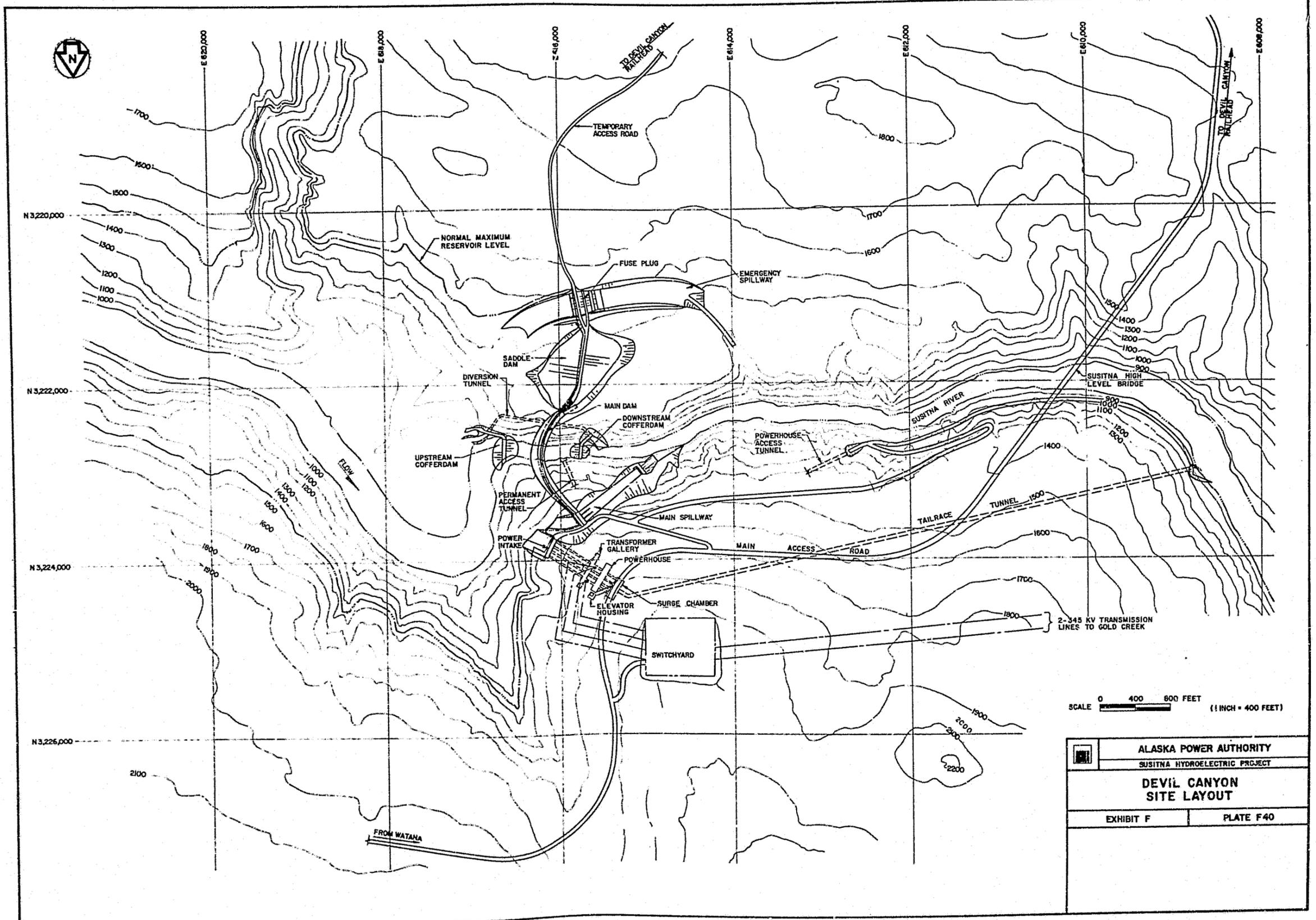
- NORMAL MAXIMUM OPERATING LEVEL EL. 1455
- 2000 CONTOUR IN FEET ABOVE MSL



PLAN

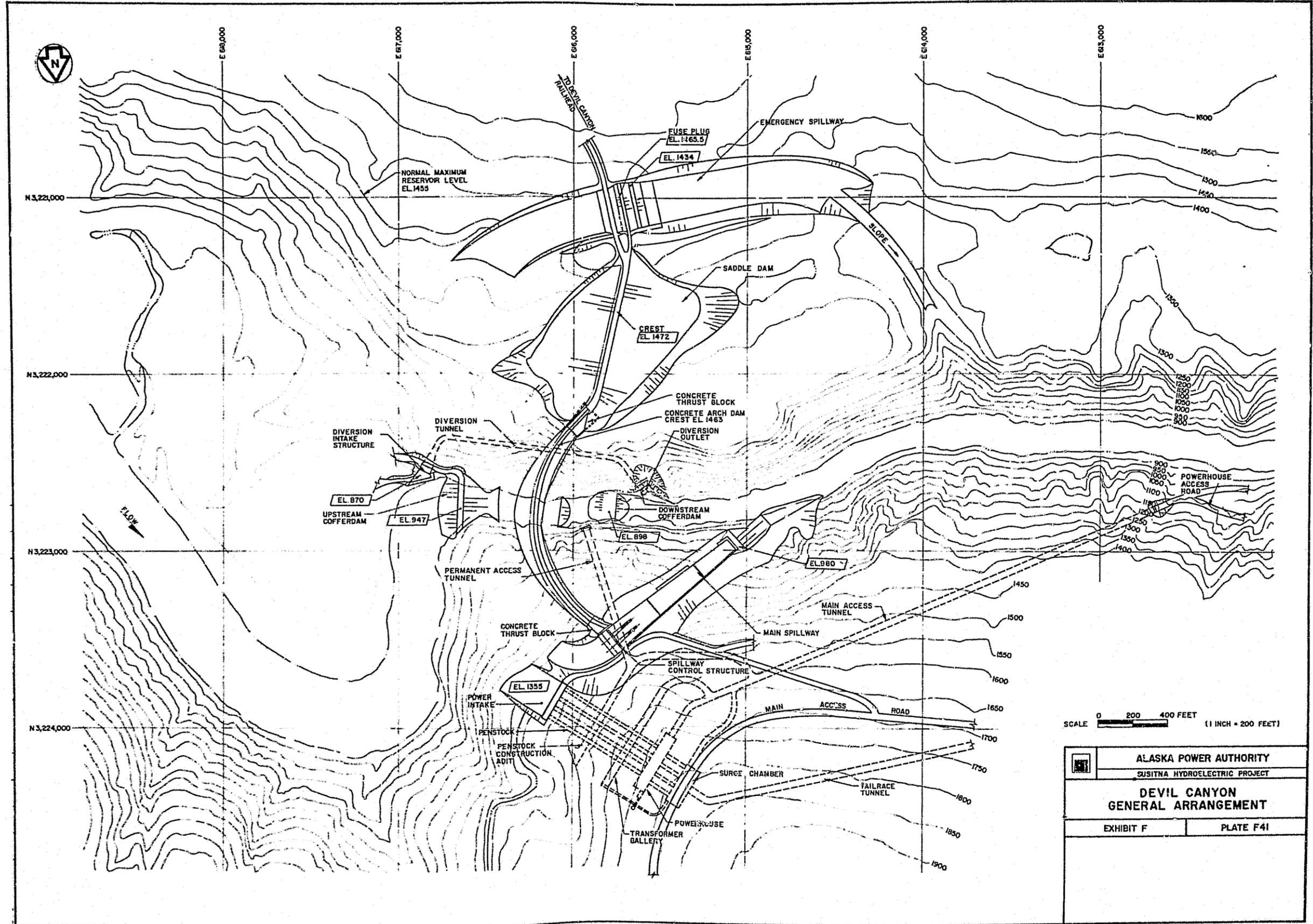
SCALE 0 1 2 MILES
(1 INCH = 1 MILE)

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



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

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

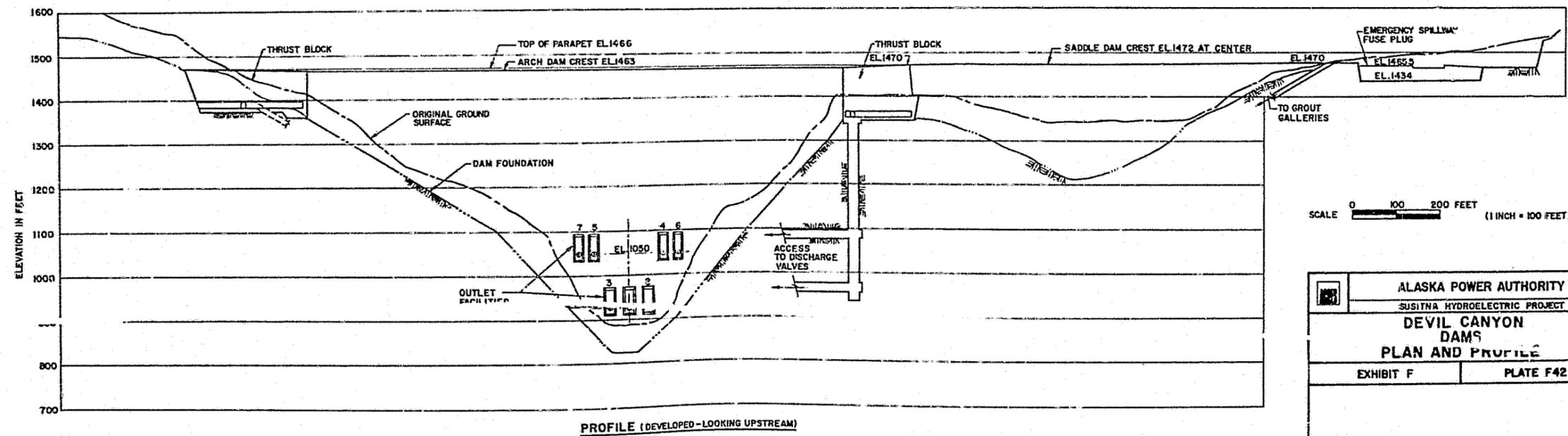
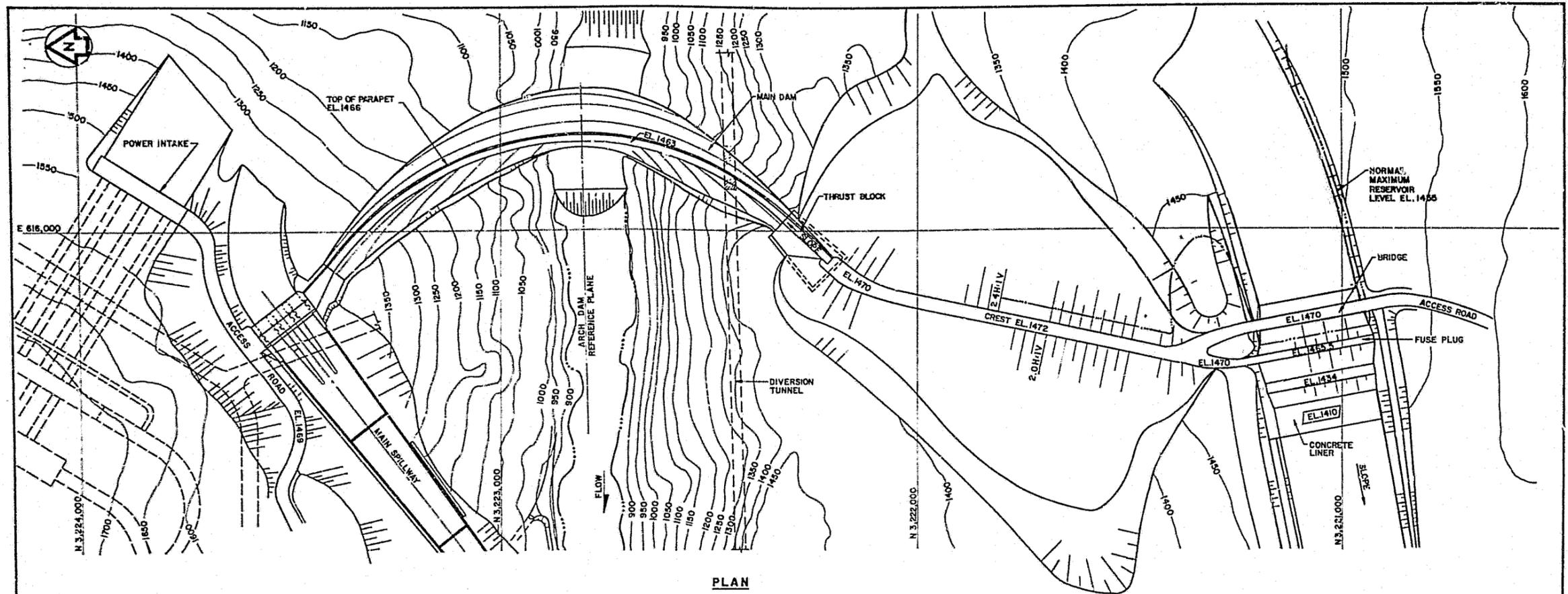


SCALE 0 200 400 FEET (1 INCH = 200 FEET)

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

FOLD LENGTH 12 11 8.5 8

AUTO
MANUA
FEED



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

FOLD LENGTH
12
11
8.5
8
AUTO
FEED

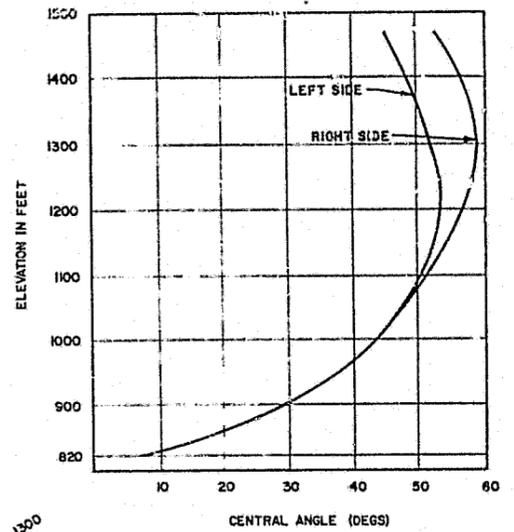
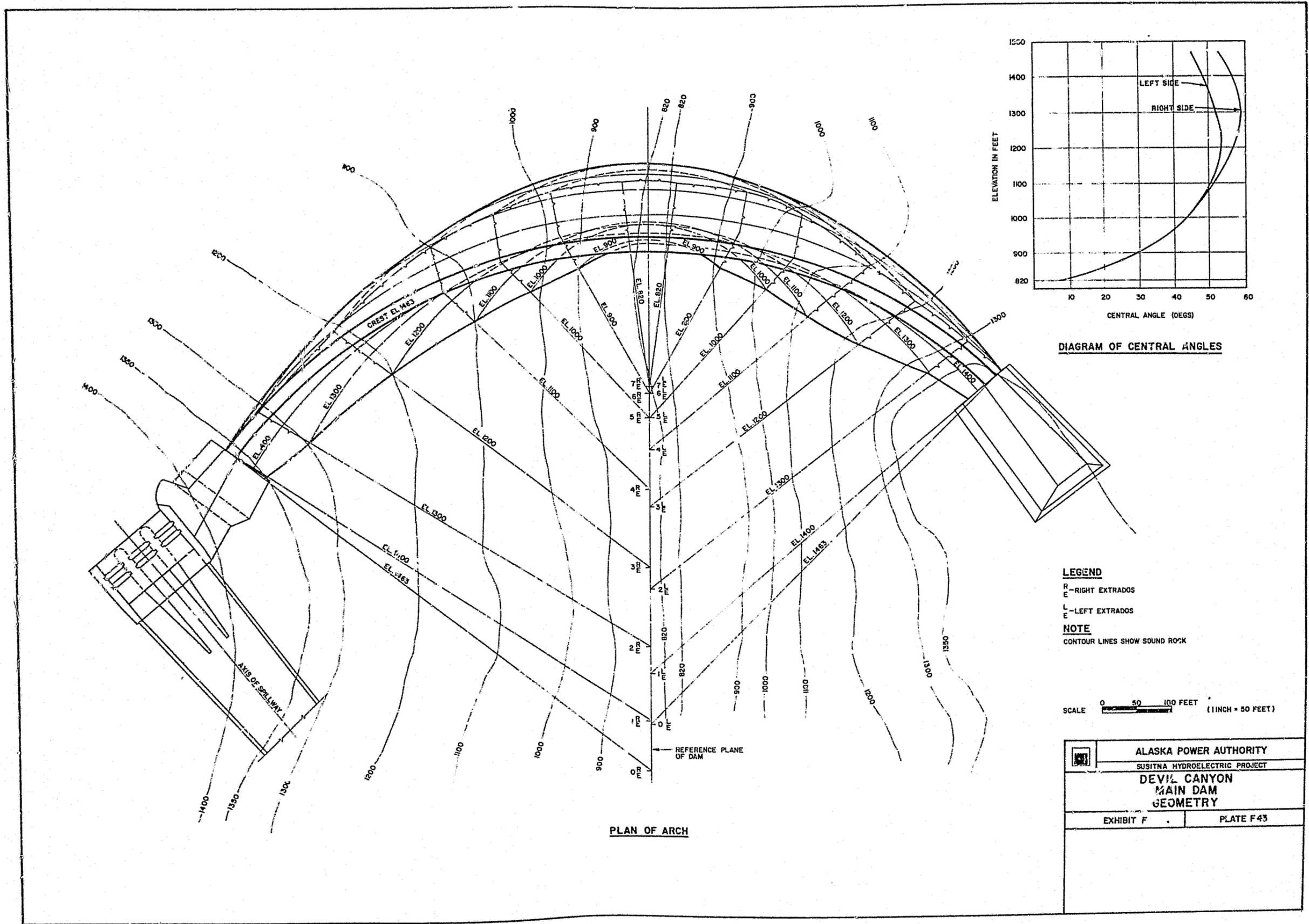


DIAGRAM OF CENTRAL ANGLES

LEGEND

- R - RIGHT EXTRADOS
- E - LEFT EXTRADOS

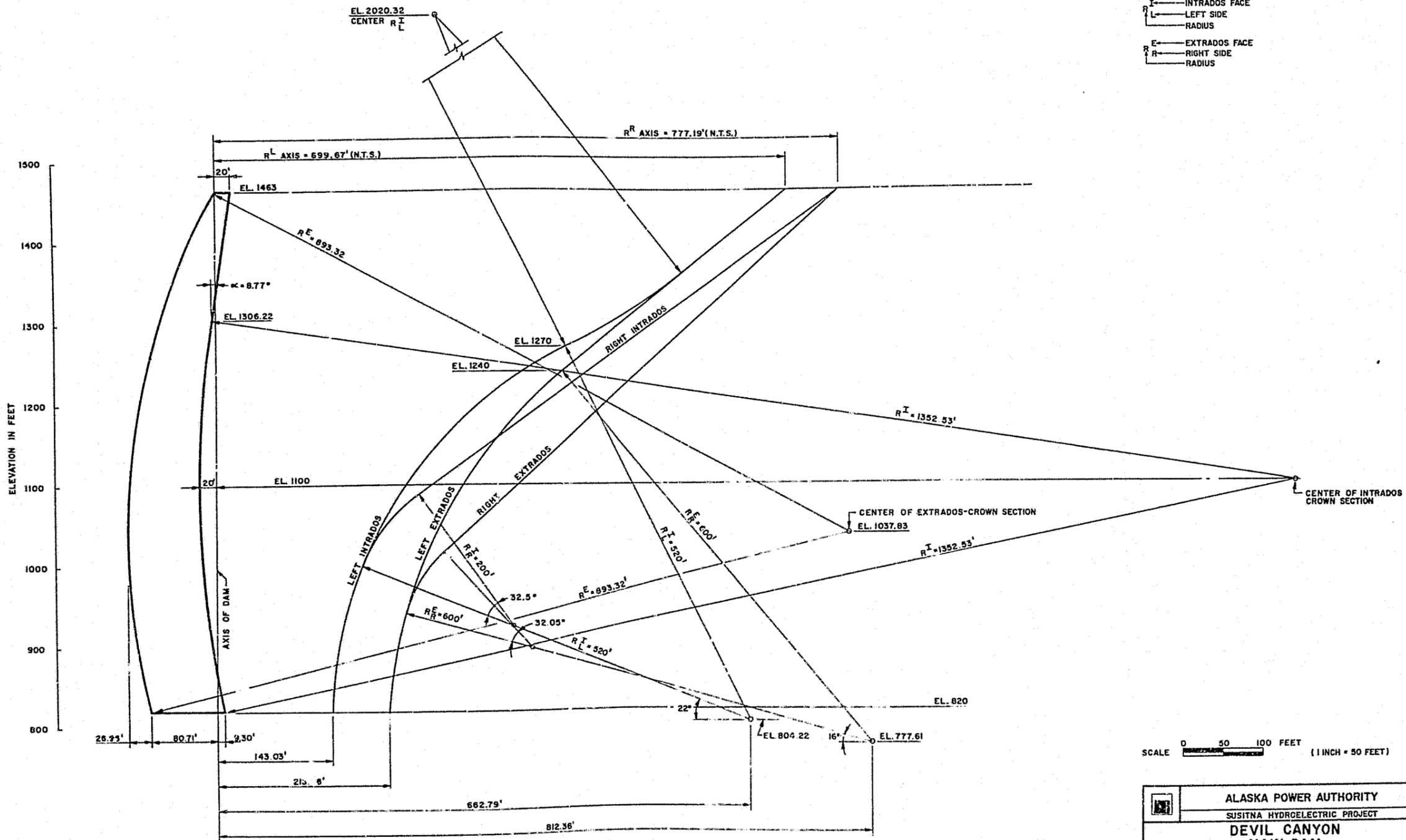
NOTE

CONTOUR LINES SHOW SOUND ROCK

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

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM GEOMETRY	
EXHIBIT F	PLATE F43

PLAN OF ARCH



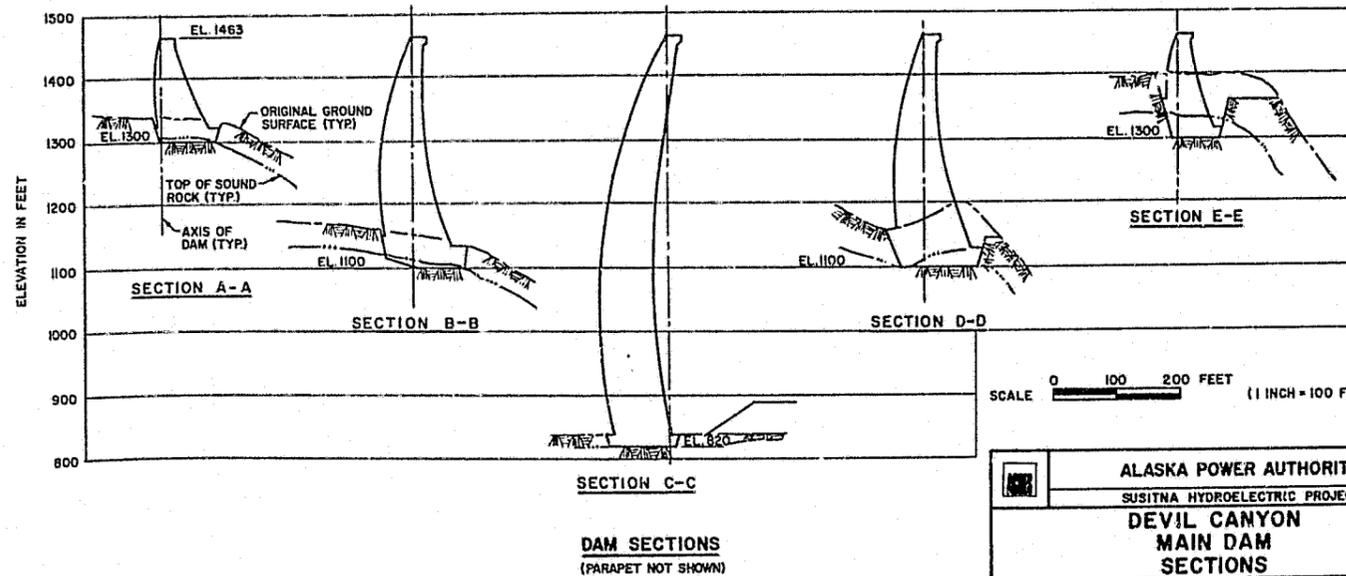
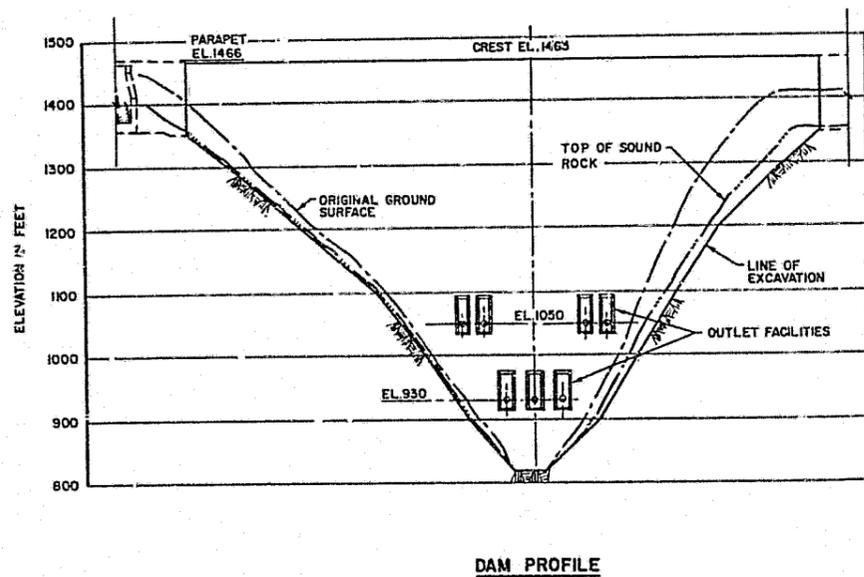
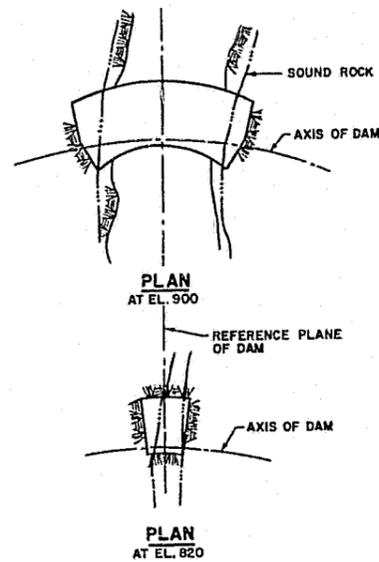
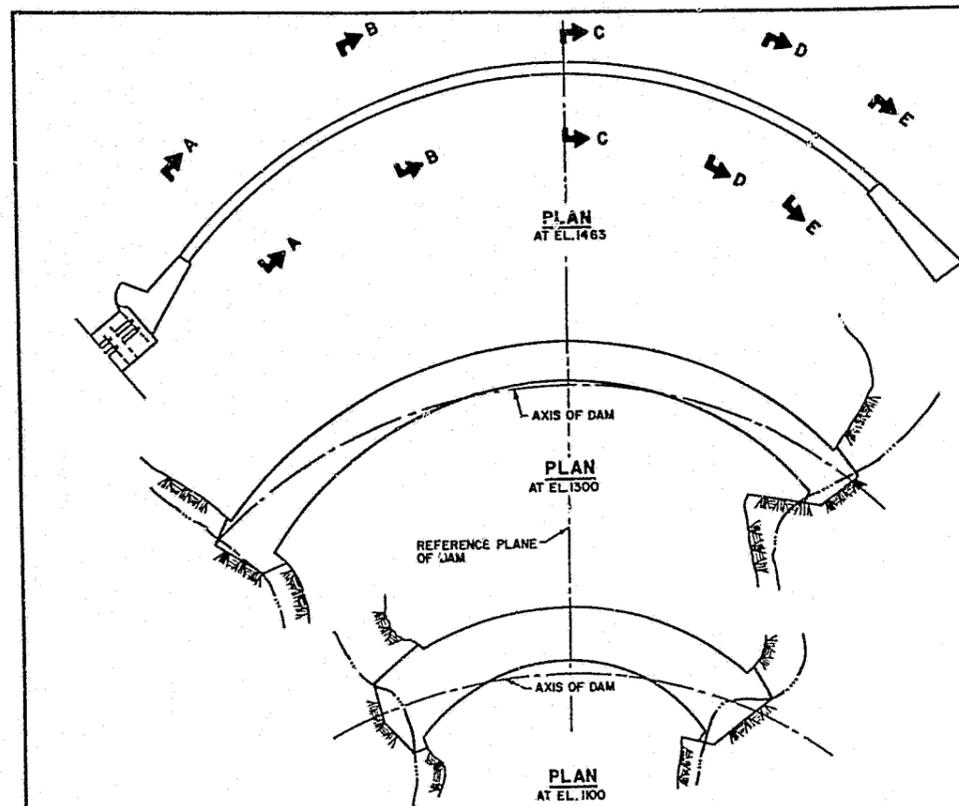
LEGEND

- I — INTRADOS FACE
- L — LEFT SIDE
- R — RIGHT SIDE
- E — EXTRADOS FACE
- R — RADIUS

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

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

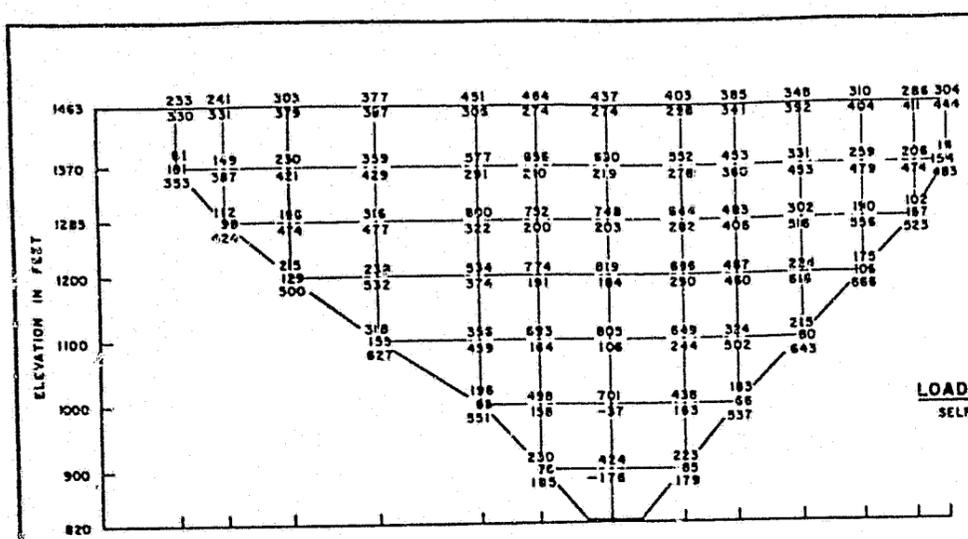
FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



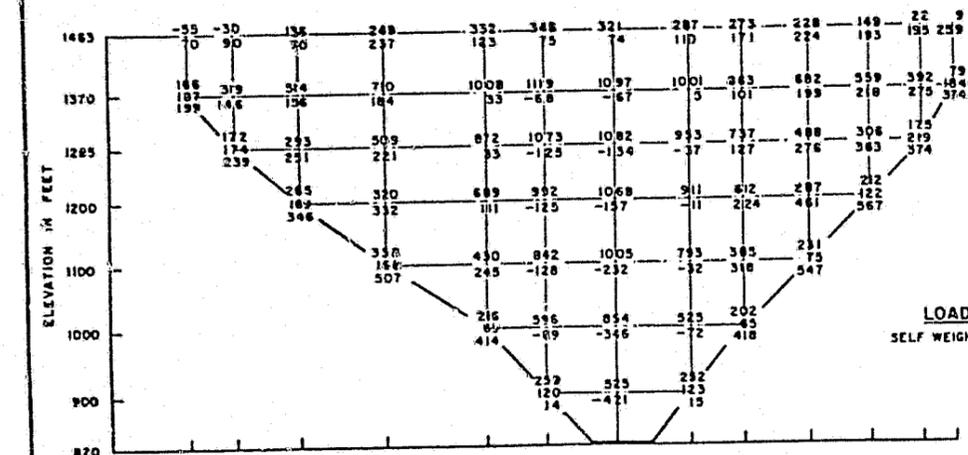
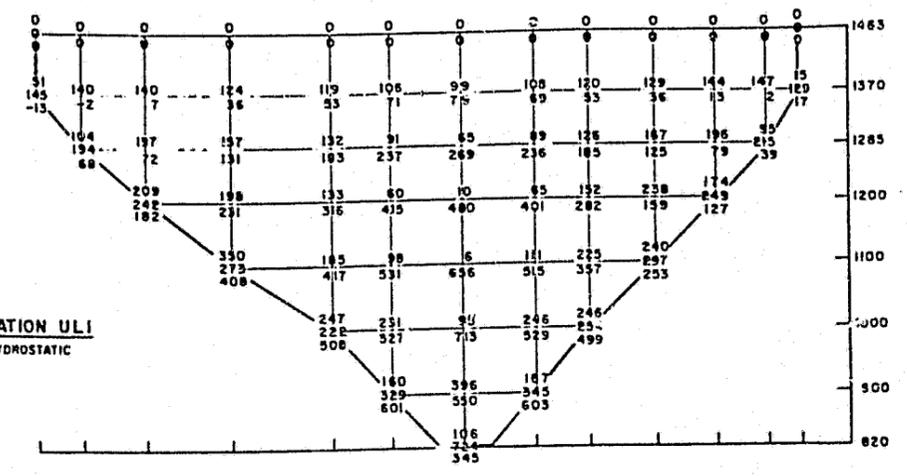
SCALE 0 100 200 FEET (1 INCH = 100 FEET)

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM SECTIONS	
EXHIBIT F	PLATE F45

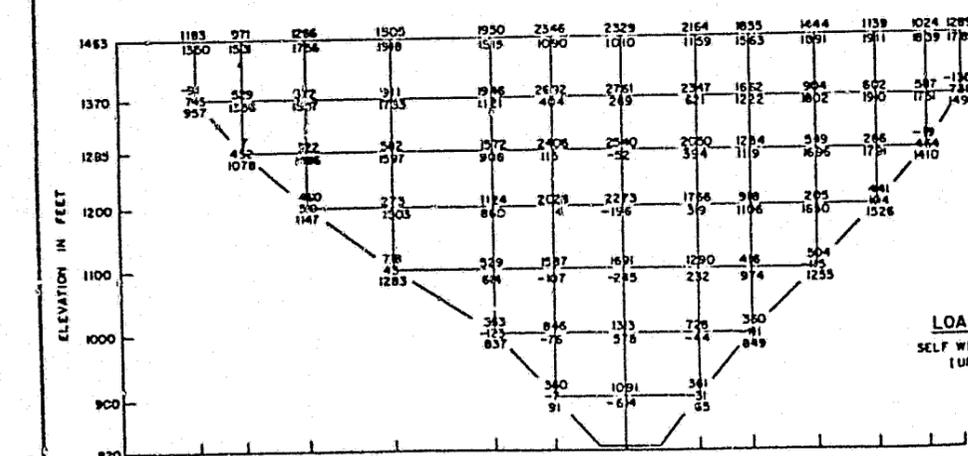
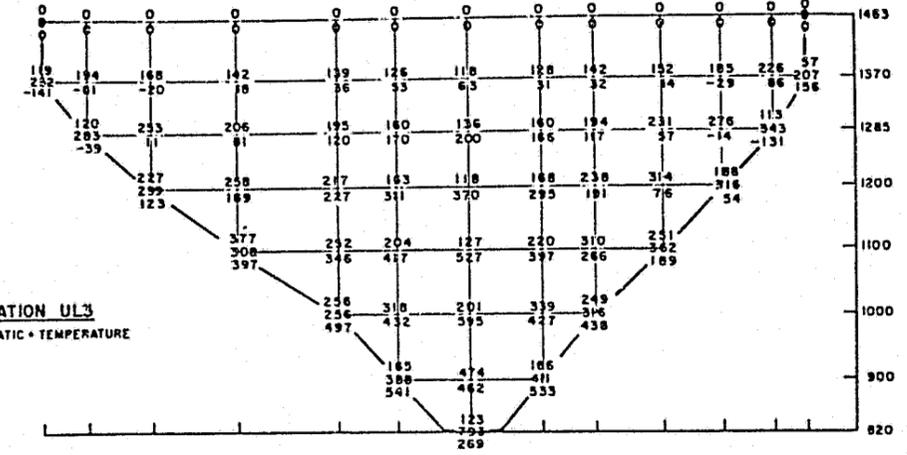
FOLD LENGTH 12 11 8.5 8 FEET



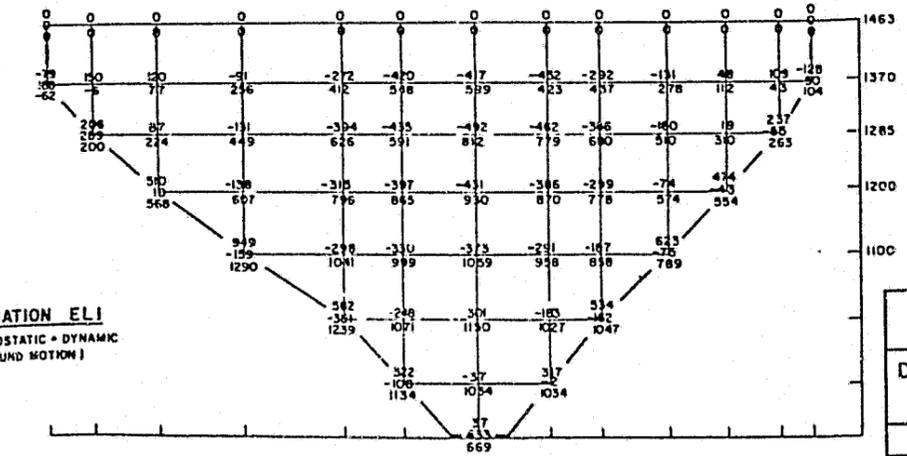
LOAD COMBINATION UL1
SELF WEIGHT + HYDROSTATIC



LOAD COMBINATION UL3
SELF WEIGHT + HYDROSTATIC + TEMPERATURE



LOAD COMBINATION EL1
SELF WEIGHT + HYDROSTATIC + DYNAMIC
(UPSTREAM GROUND MOTION)



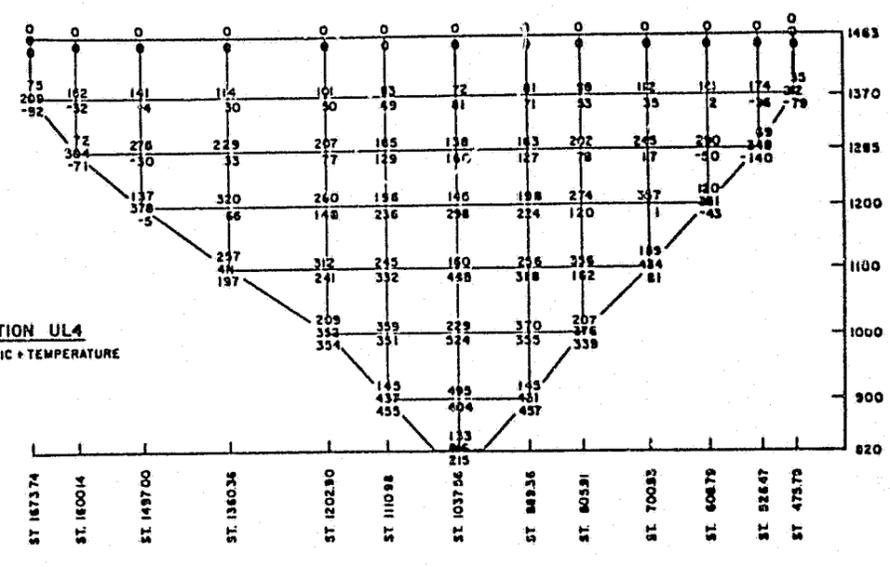
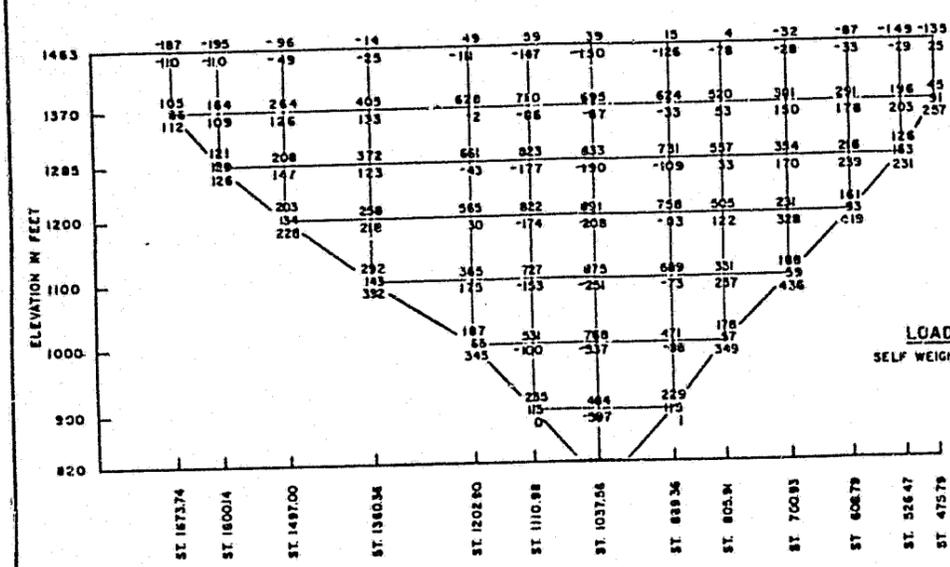
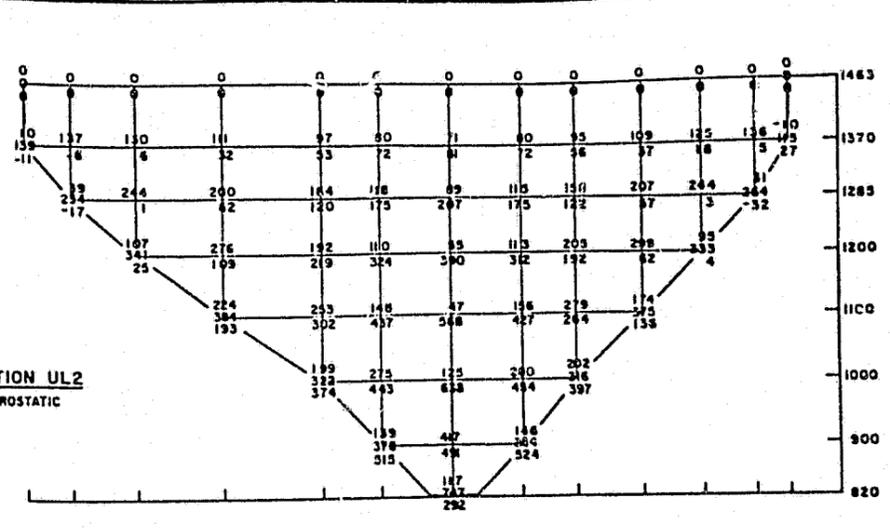
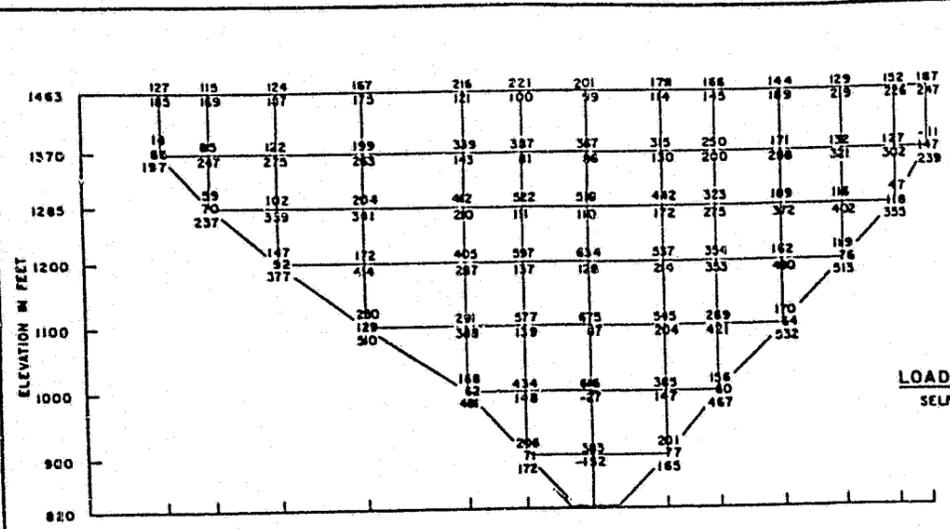
LEGEND
- (MINUS) INDICATES TENSION
500 SHEAR STRESS IN P.S.I. WHERE SHOWN
900 STRESS AT UPSTREAM OR EXTRADOS FACE
600 STRESS AT DOWNSTREAM OR INTRADOS FACE

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

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

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

FOLD LENGTH
12
11
8.5
8
AUTO
MANUAL
FEED



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 & 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

FOLD LENGTH

12

11

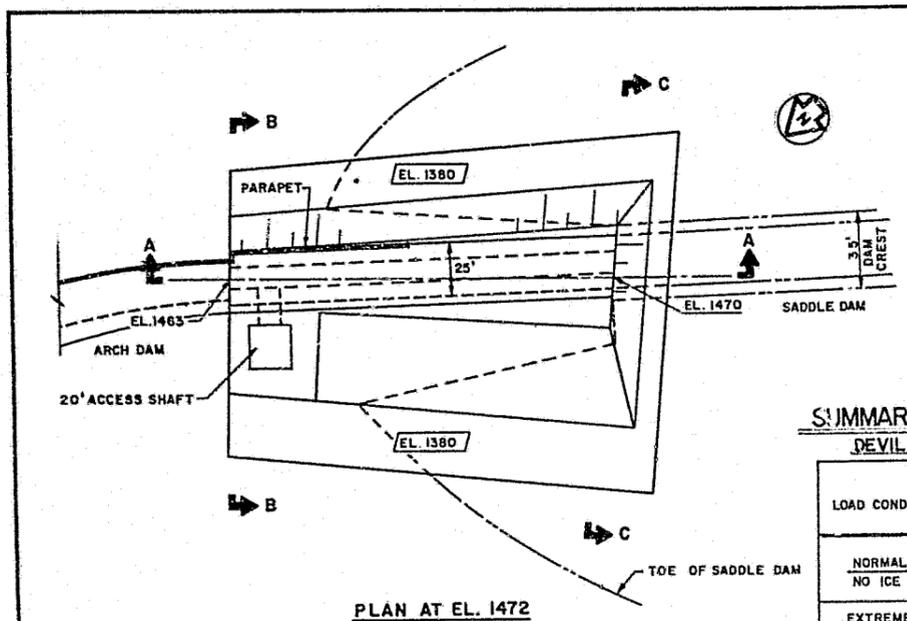
8.5

8

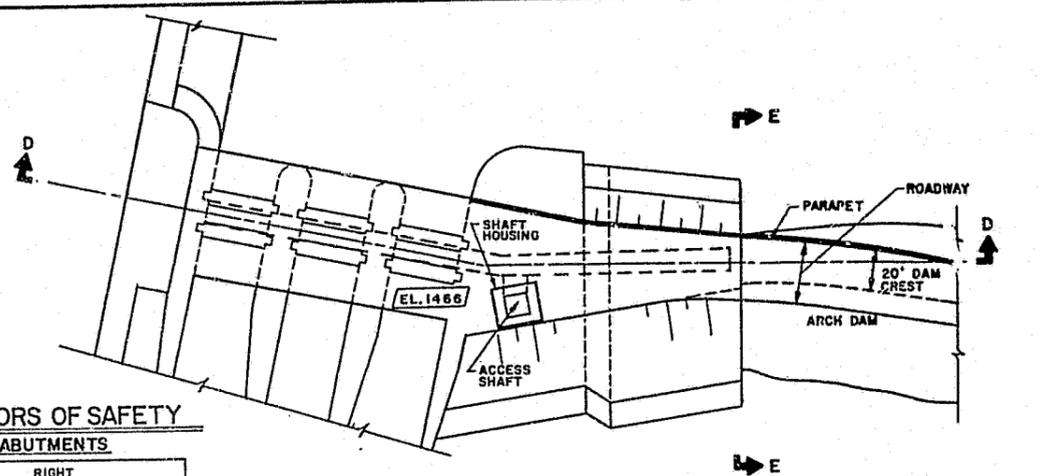
AUTO

MANUA

FEED



PLAN AT EL. 1472

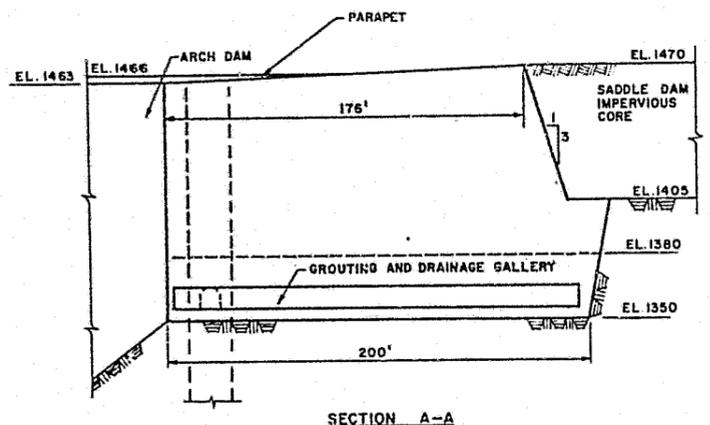


PLAN AT EL. 1466

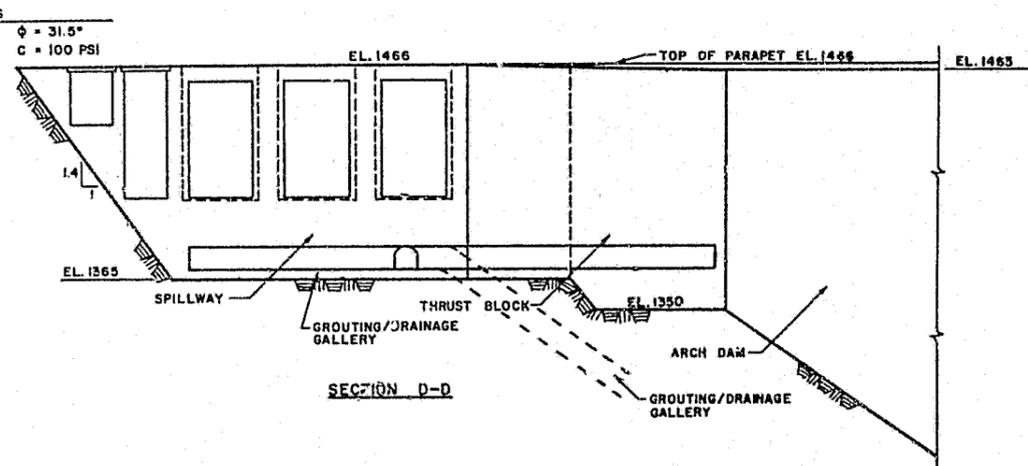
SUMMARY OF STABILITY ANALYSES FACTORS OF SAFETY
DEVIL CANYON ARCH DAM THRUST BLOCK ABUTMENTS

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

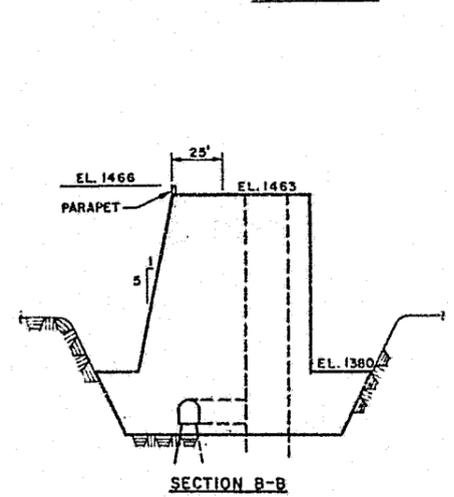
PHYSICAL PARAMETERS
 $\phi = 31.5^\circ$
 $c = 200 \text{ PSI}$



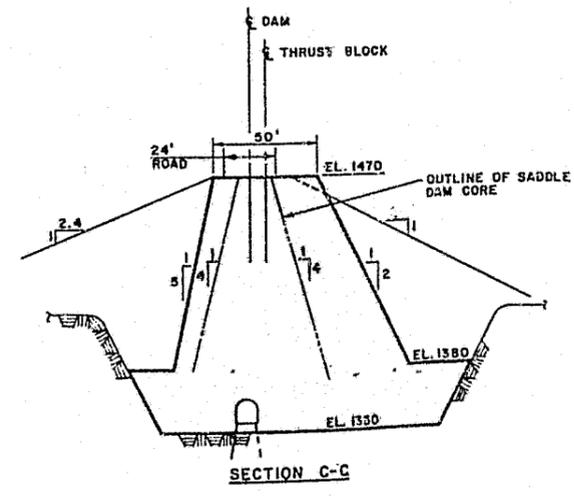
SECTION A-A



SECTION D-D

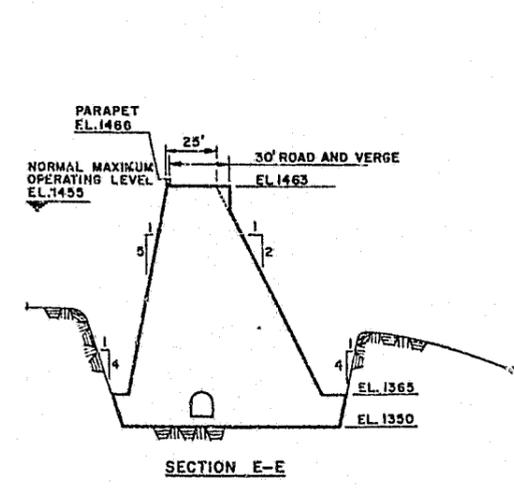


SECTION B-B



SECTION C-C

LEFT ABUTMENT THRUST BLOCK



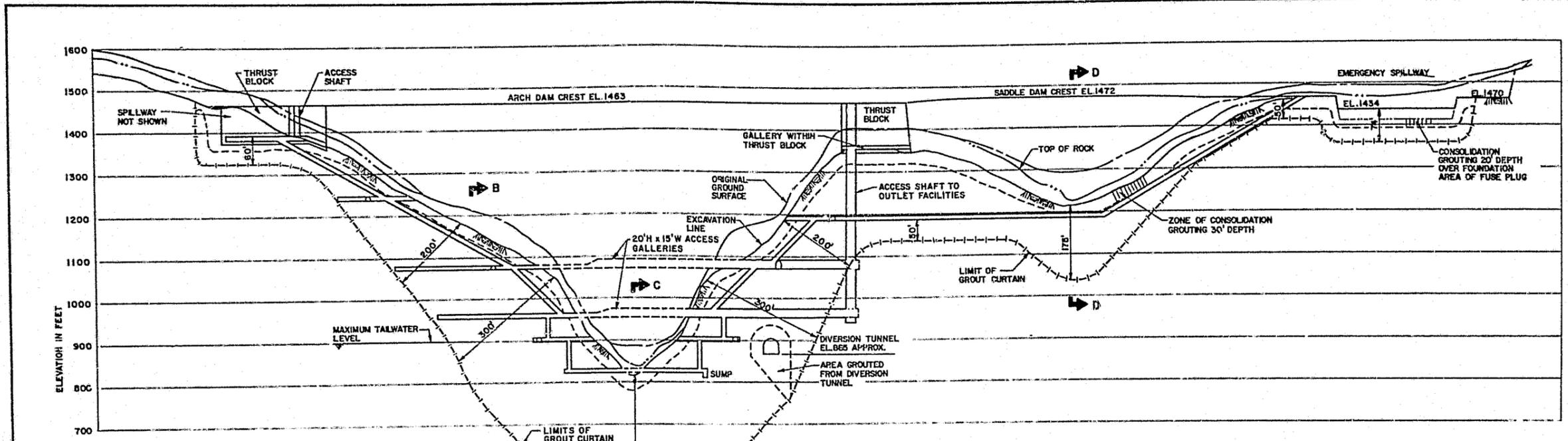
SECTION E-E

RIGHT ABUTMENT THRUST BLOCK

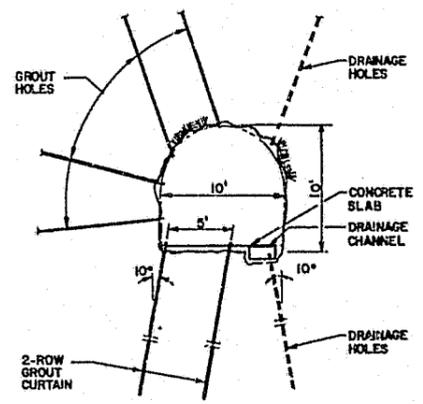
SCALE 0 30 60 FEET (1 INCH = 30 FEET)

ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN DAM THRUST BLOCKS	
EXHIBIT F	PLATE F48

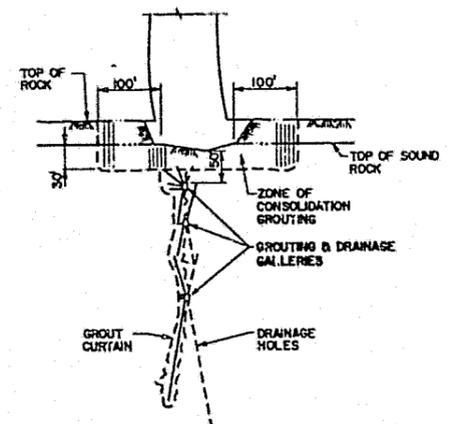
FOLD LENGTH
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEED



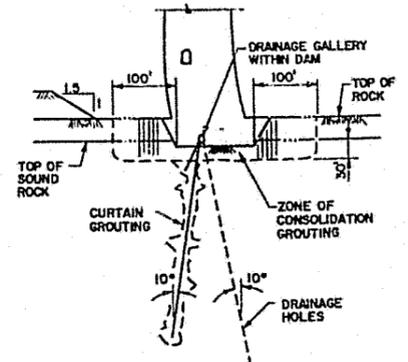
DEVELOPED PROFILE (LOOKING UPSTREAM)
SCALE A



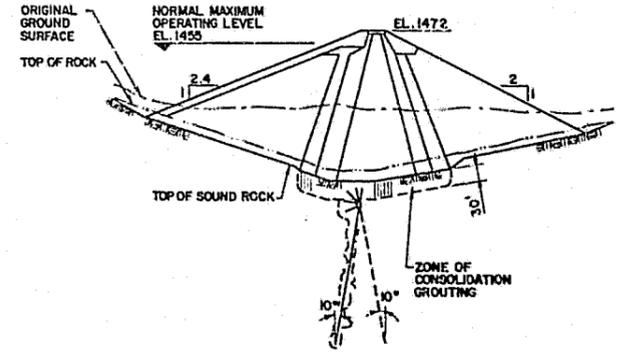
GALLERY DETAIL
SCALE B



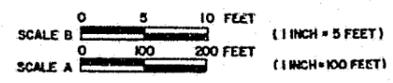
SECTION B-B
SCALE A



SECTION C-C
SCALE A

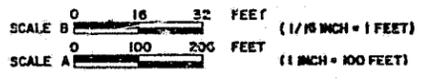
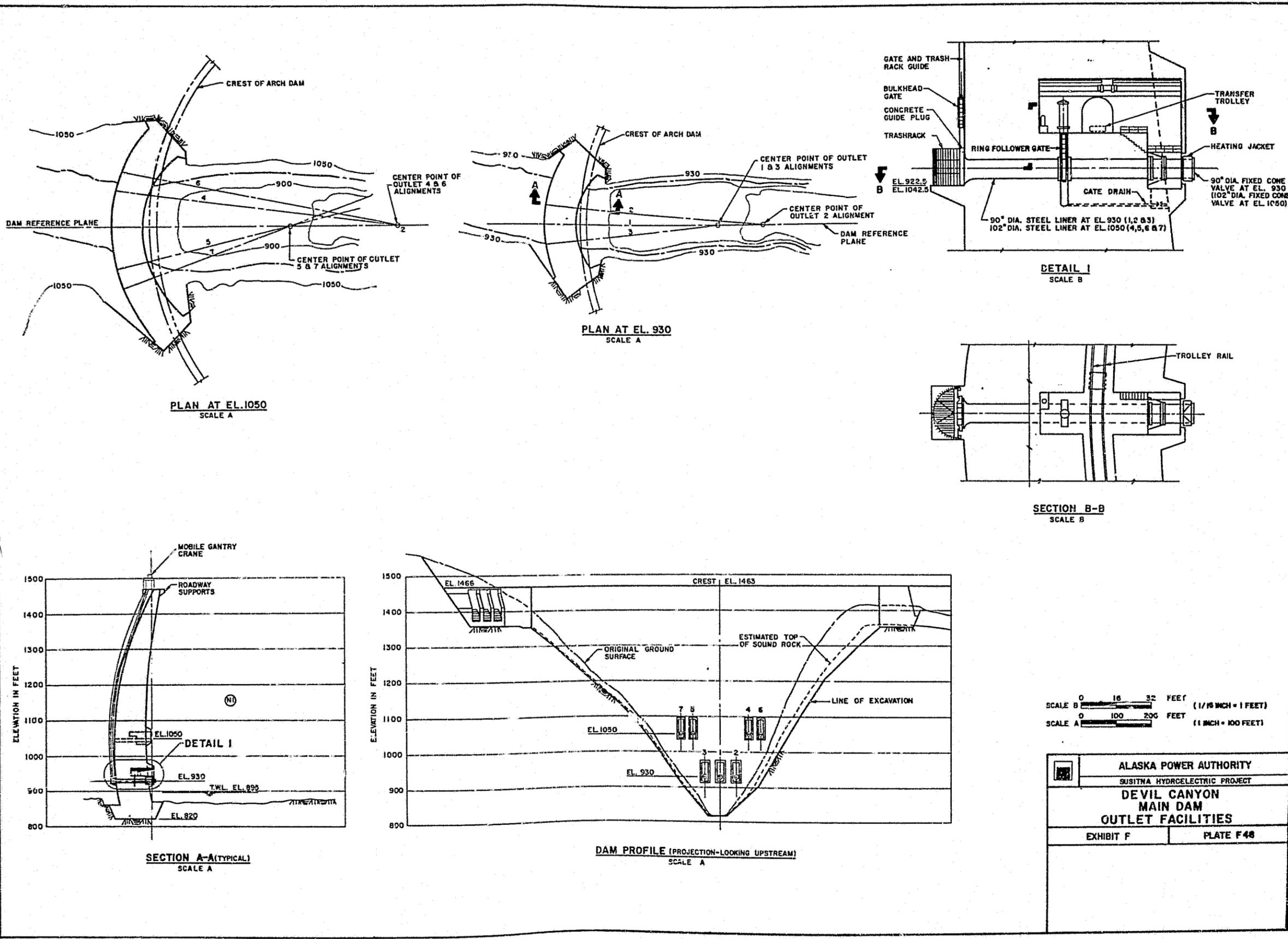


SECTION D-D
SCALE A



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

FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



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

FOLD LENGTH

12

11

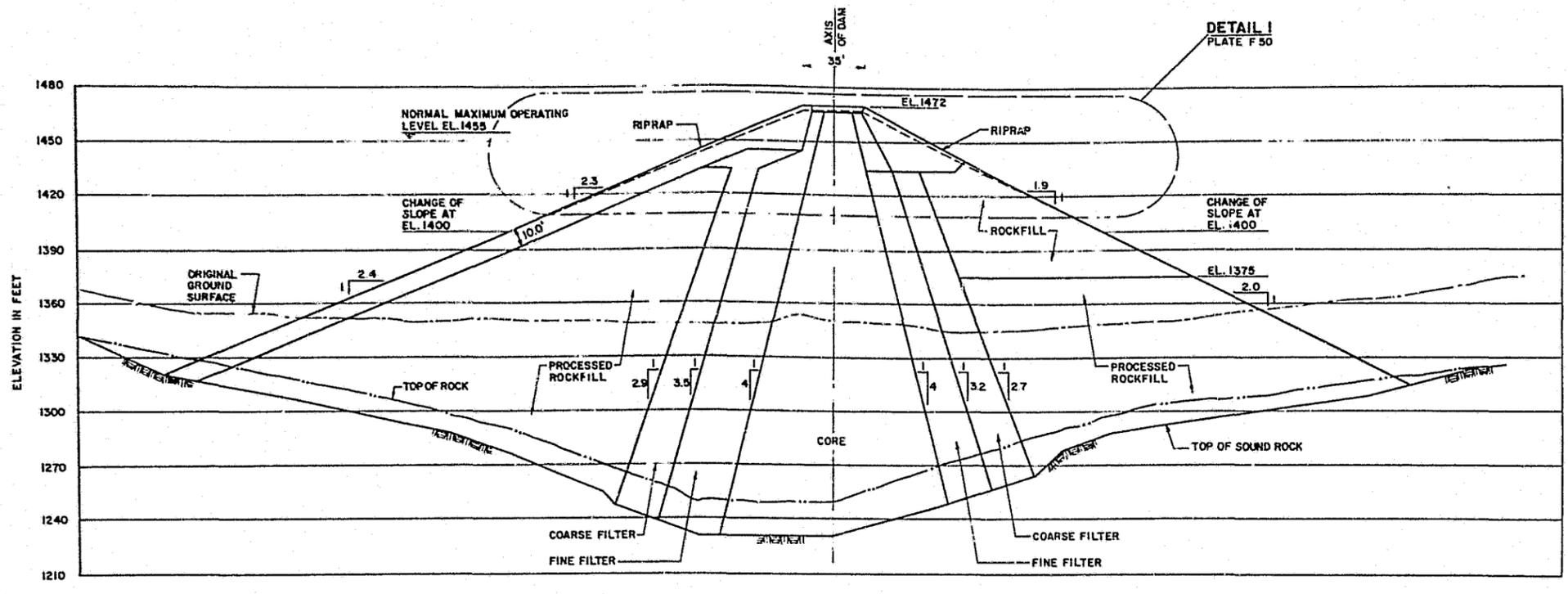
8.5

8

AUTO

MANUA

FEED

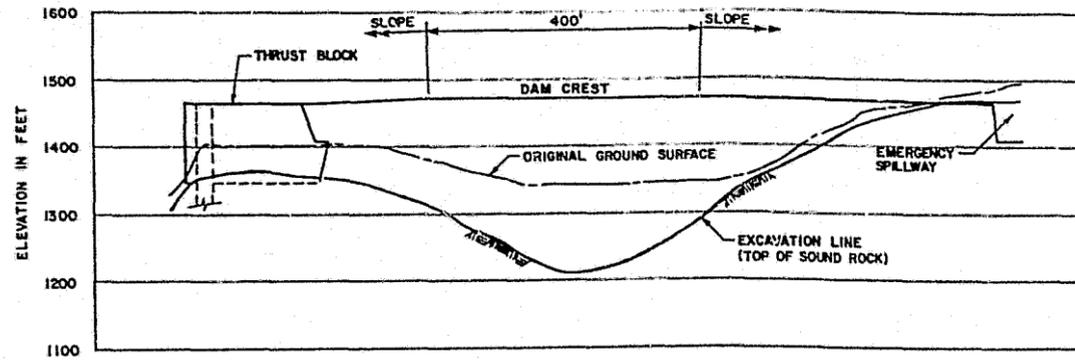


SECTION THROUGH SADDLE DAM
AT MAXIMUM HEIGHT

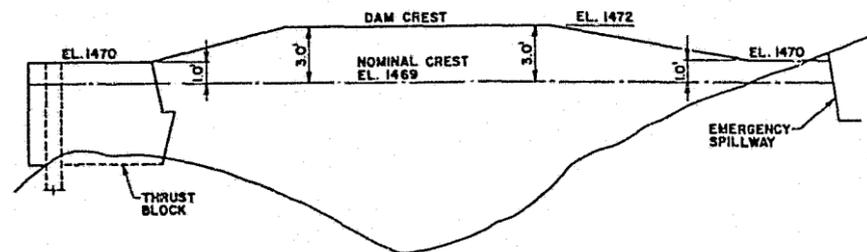
SCALE 0 30 60 FEET (1 INCH = 30 FEET)

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

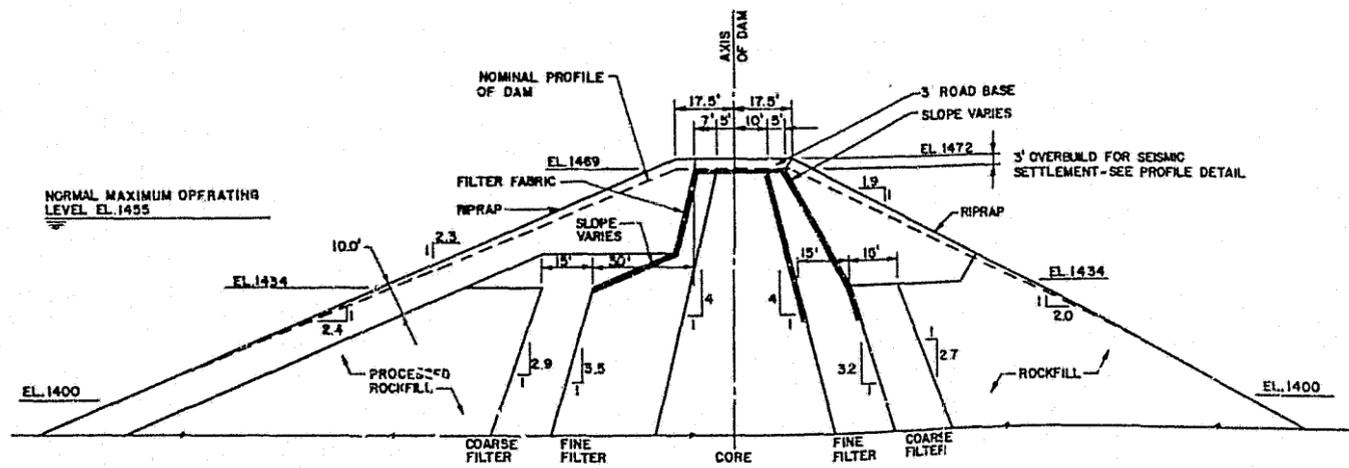
FOL
LENC
12
11
8.5
8
AUT
MANU
FEE



PROFILE (LOOKING UPSTREAM)
SCALE A



PROFILE
SHOWING CREST ELEVATIONS
N.T.S.

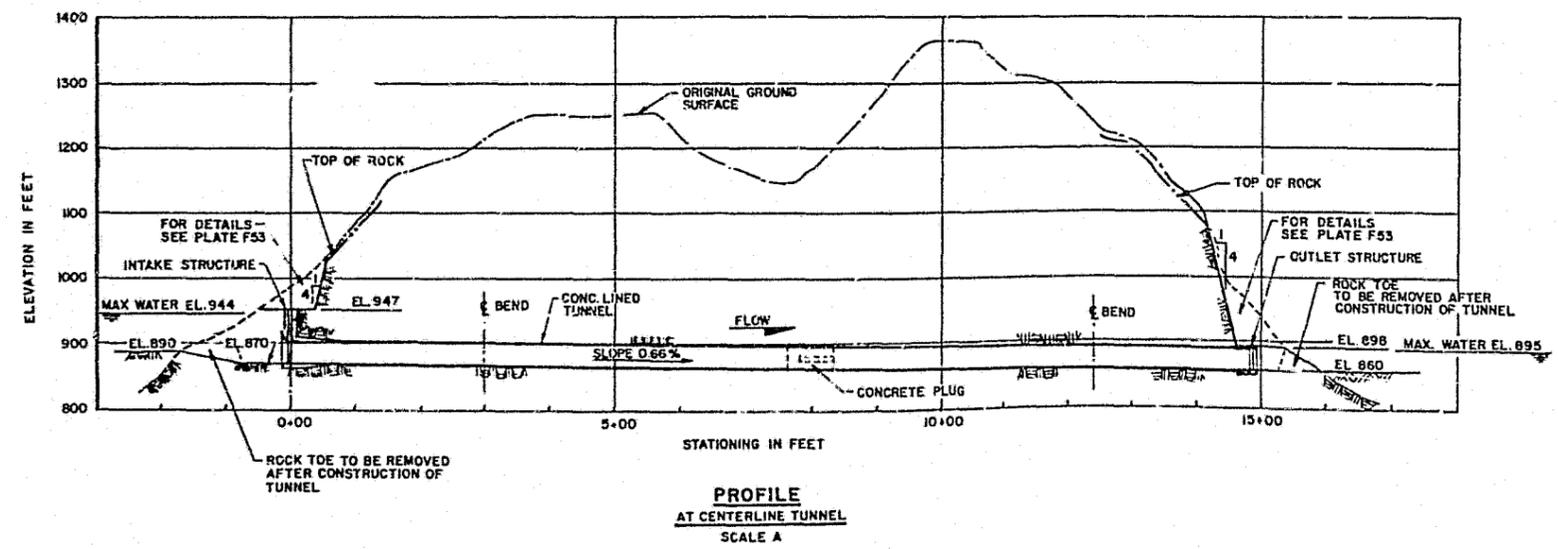
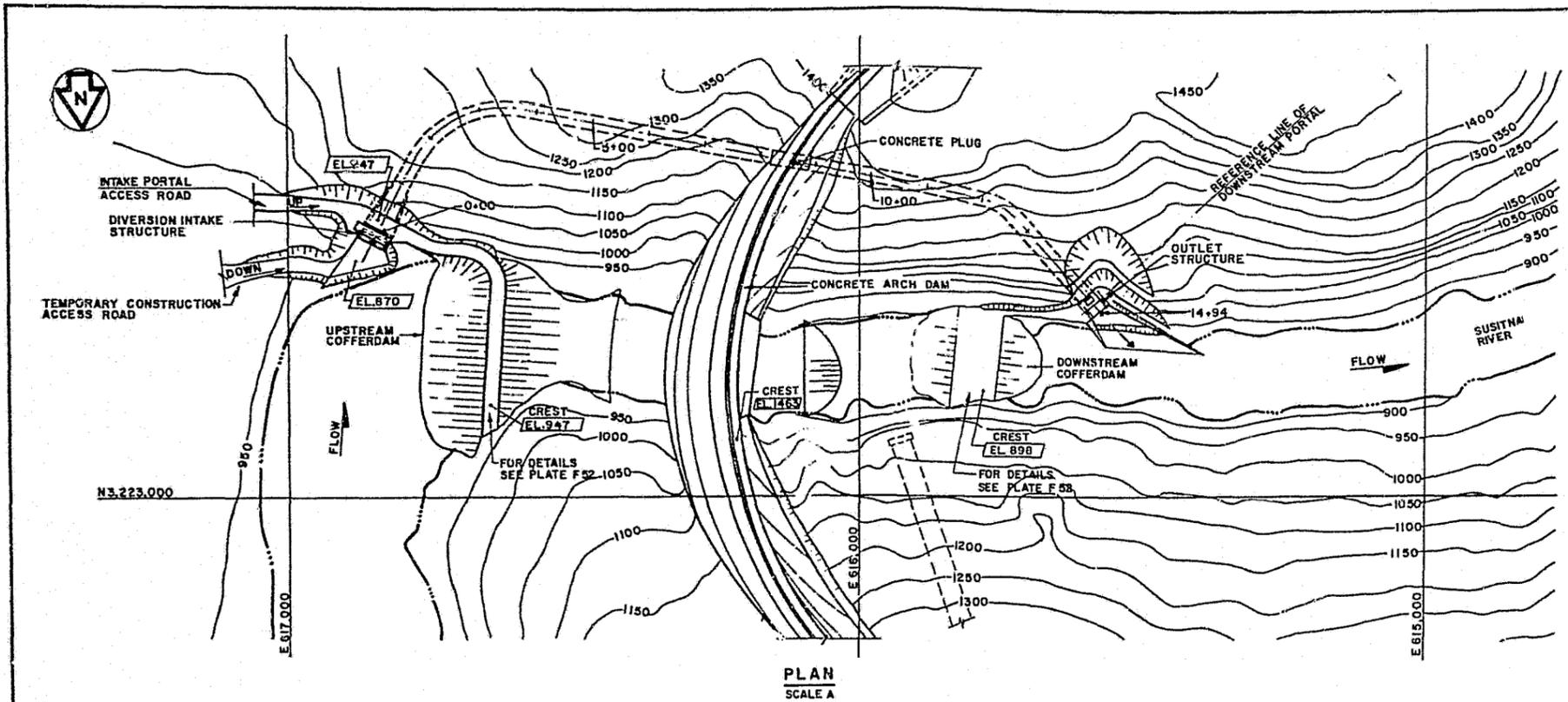


DETAIL I
SCALE B (PLATE F49)

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 F50

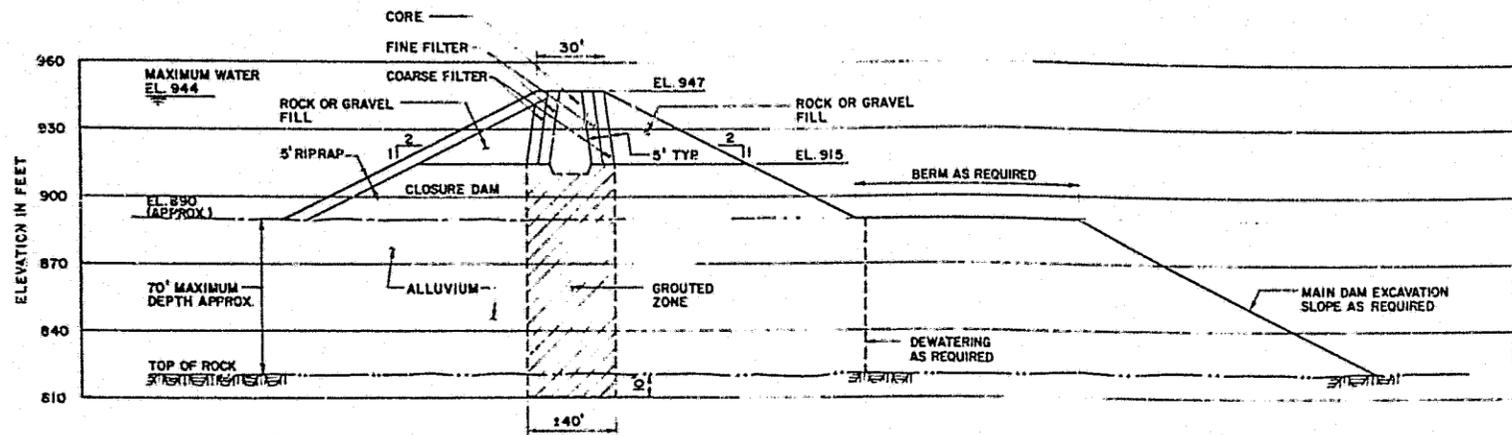
FOL
LENG
12
11
8.5
8
AUT
MAN
FEE



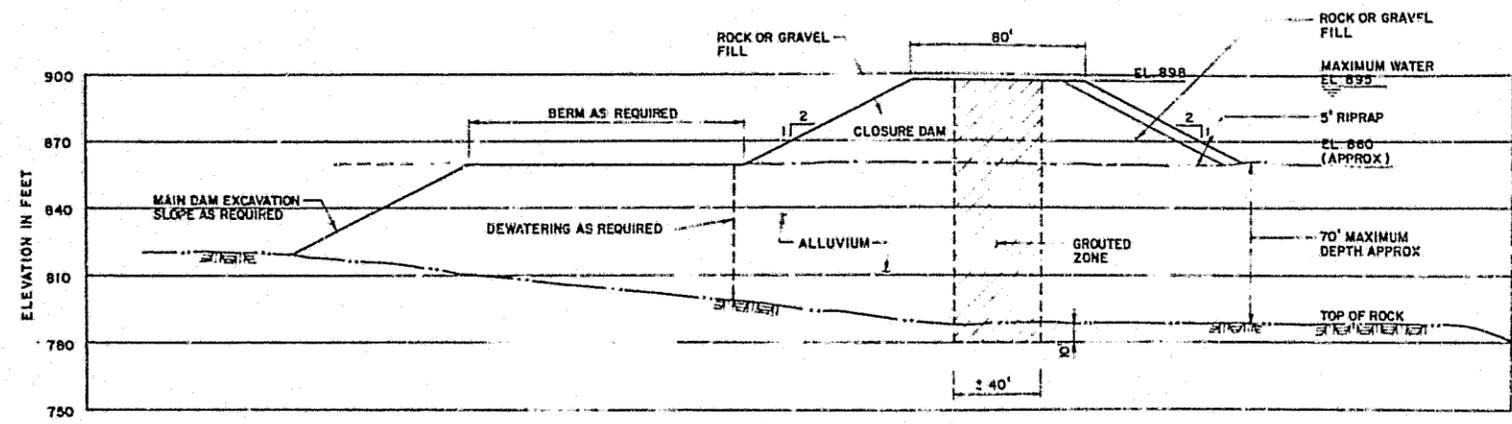
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

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

FOL LENG
12
11
8.5
8
AUT
MANU
FEE



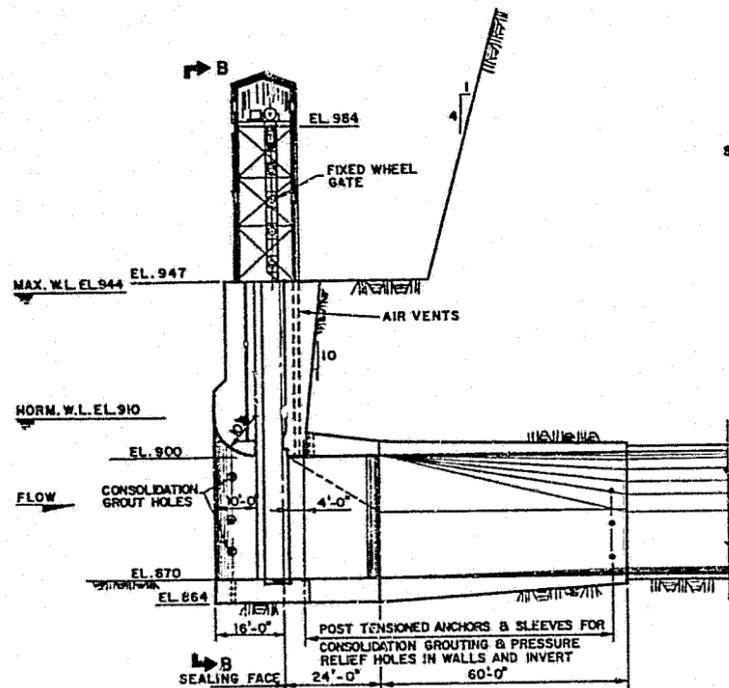
TYPICAL CROSS SECTION (PLATE F 51)
UPSTREAM COFFERDAM



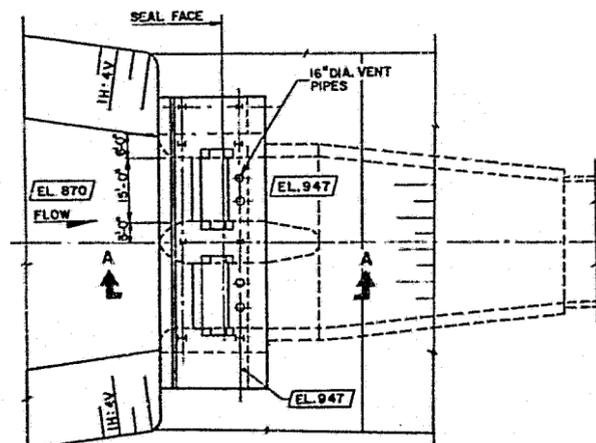
TYPICAL CROSS SECTION (PLATE F 51)
DOWNSTREAM COFFERDAM

SCALE 0 30 50 FEET (1 INCH = 30 FEET)

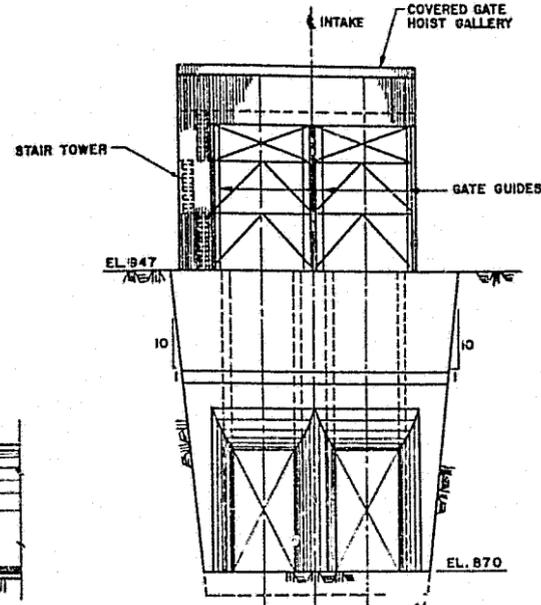
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON DIVERSION COFFERDAM SECTIONS	
EXHIBIT F	PLATE F52



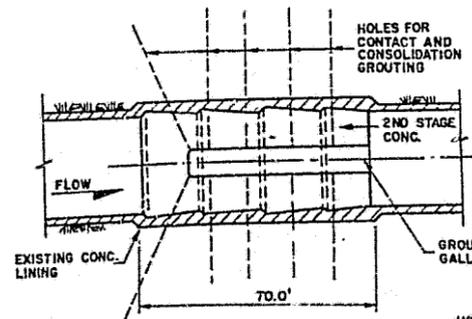
SECTION A-A
SCALE A



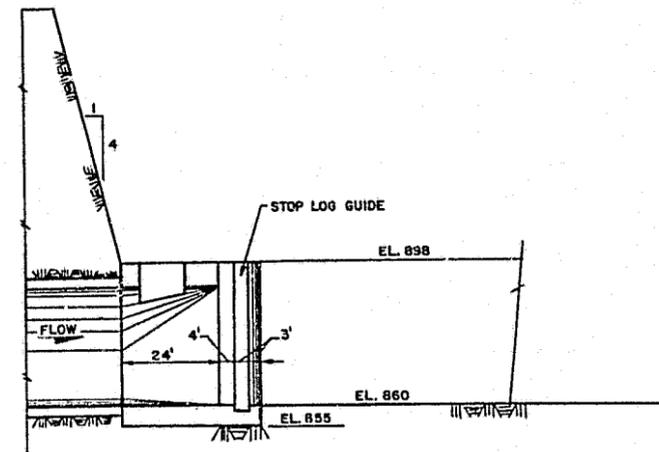
PLAN AT ELEVATION 947
SCALE A
DIVERSION INTAKE STRUCTURE (PLATE F51)



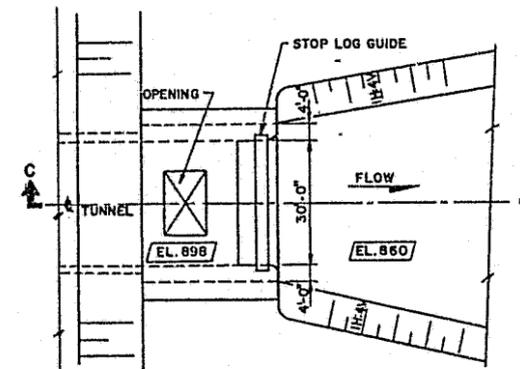
ELEVATION B-B
SCALE A



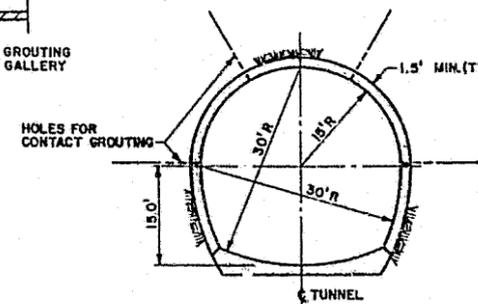
SECTION THRU PLUG
SCALE B



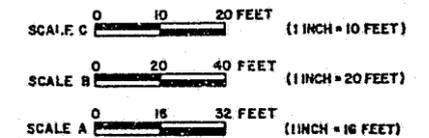
SECTION C-C
SCALE A



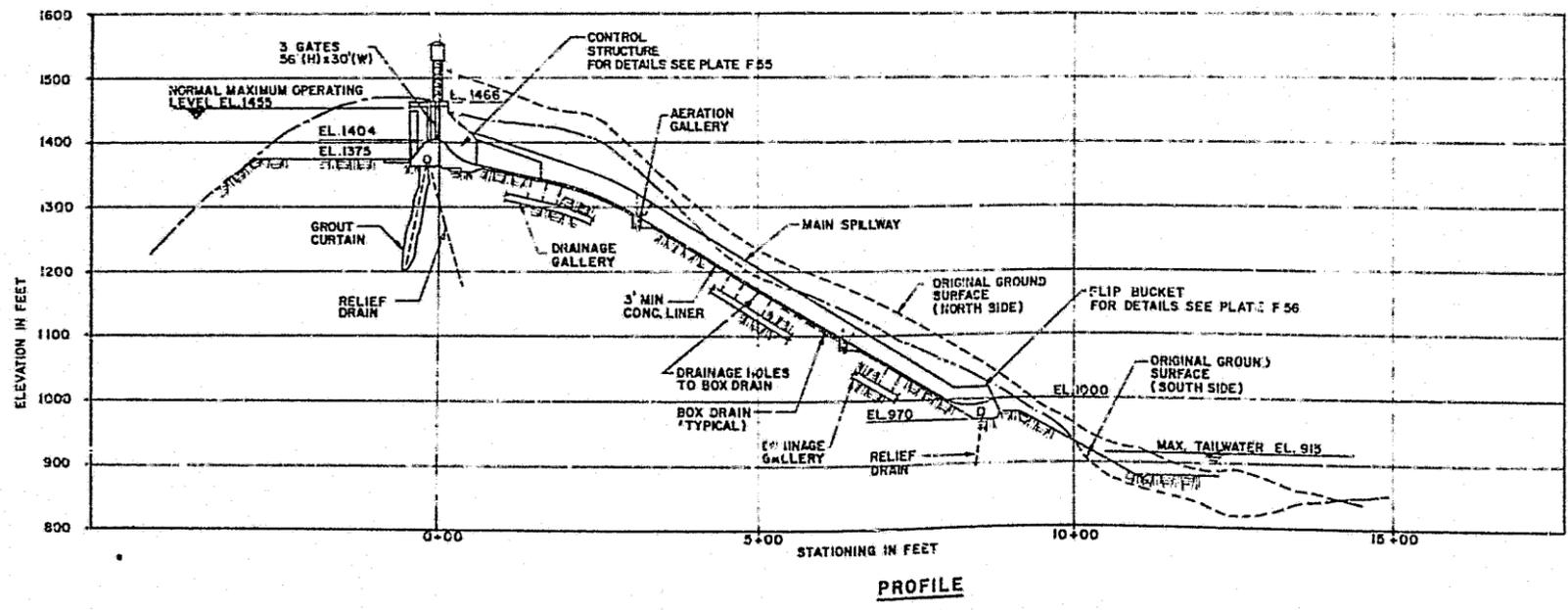
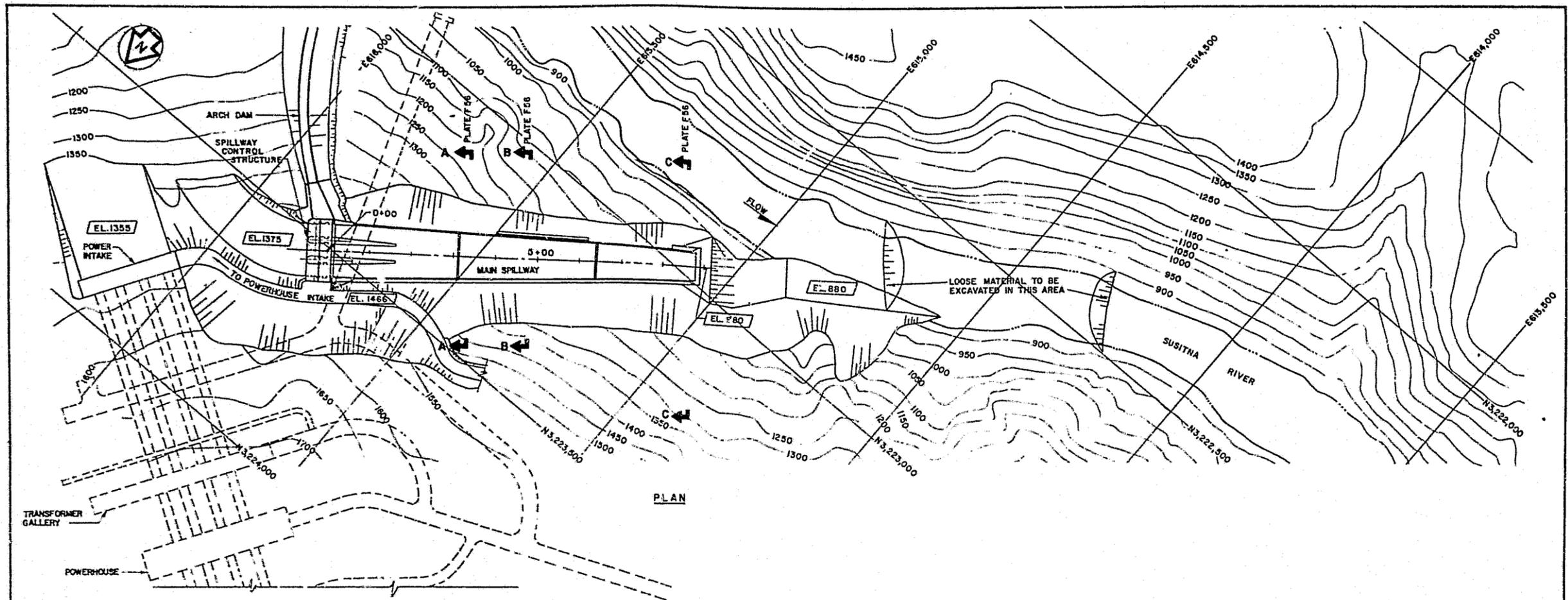
PLAN AT ELEVATION 898
SCALE A
DIVERSION OUTLET STRUCTURE (PLATE F61)



TYPICAL TUNNEL SECTIONS
SCALE C



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



NOTE: FOR SECTIONS SEE PLATE F56

SCALE 0 100 200 FEET (1 IN. = 100 FEET)

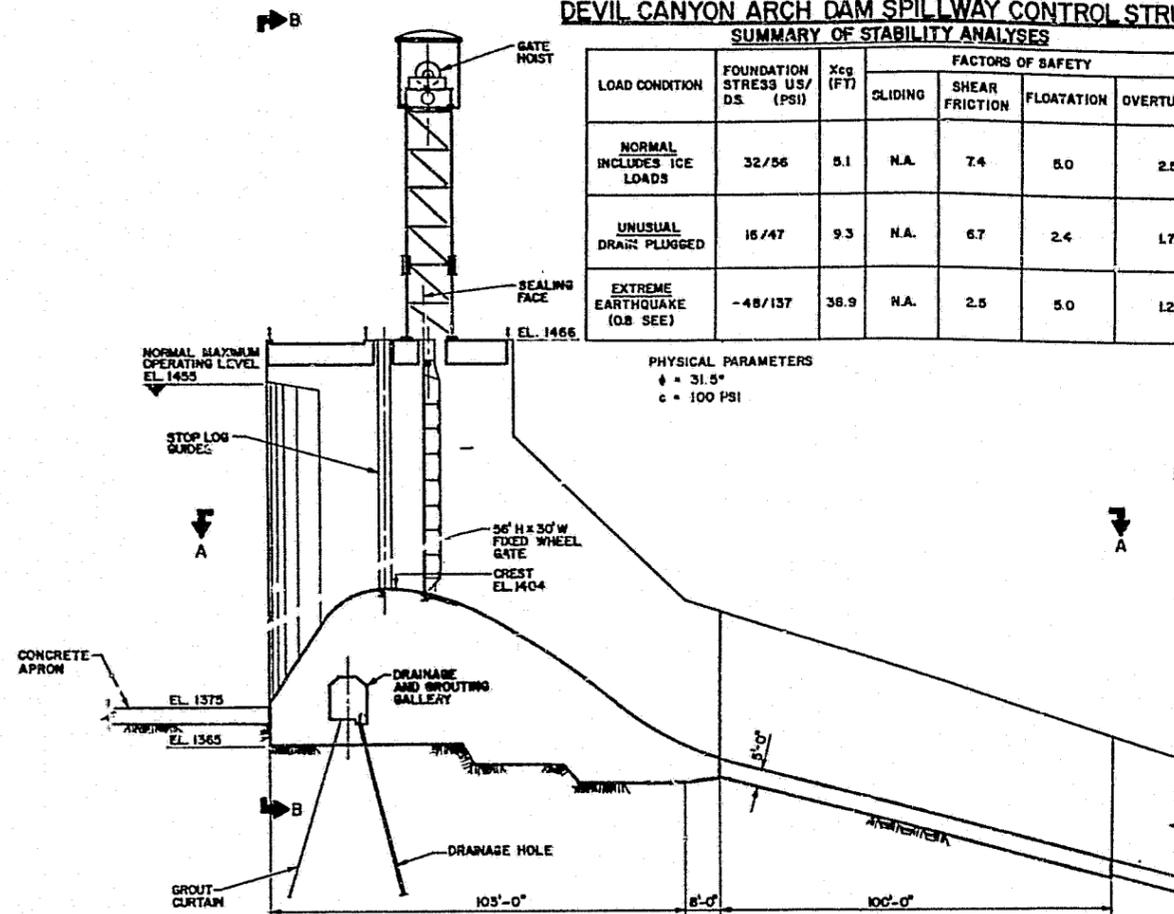
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON MAIN SPILLWAY GENERAL ARRANGEMENT	
EXHIBIT F	PLATE F54

DEVIL CANYON ARCH DAM SPILLWAY CONTROL STRUCTURE

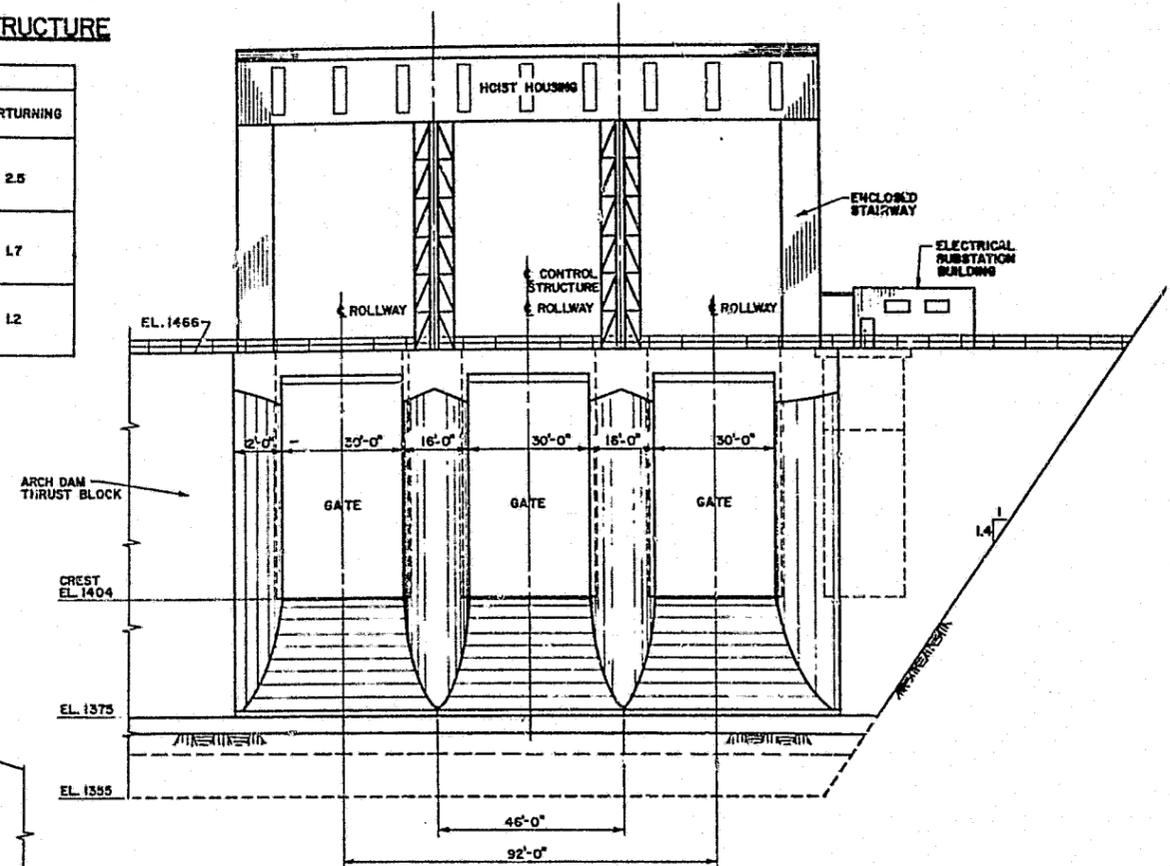
SUMMARY OF STABILITY ANALYSES

LOAD CONDITION	FOUNDATION STRESS US/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 (QB SEE)	-48/137	38.9	N.A.	2.5	5.0	1.2

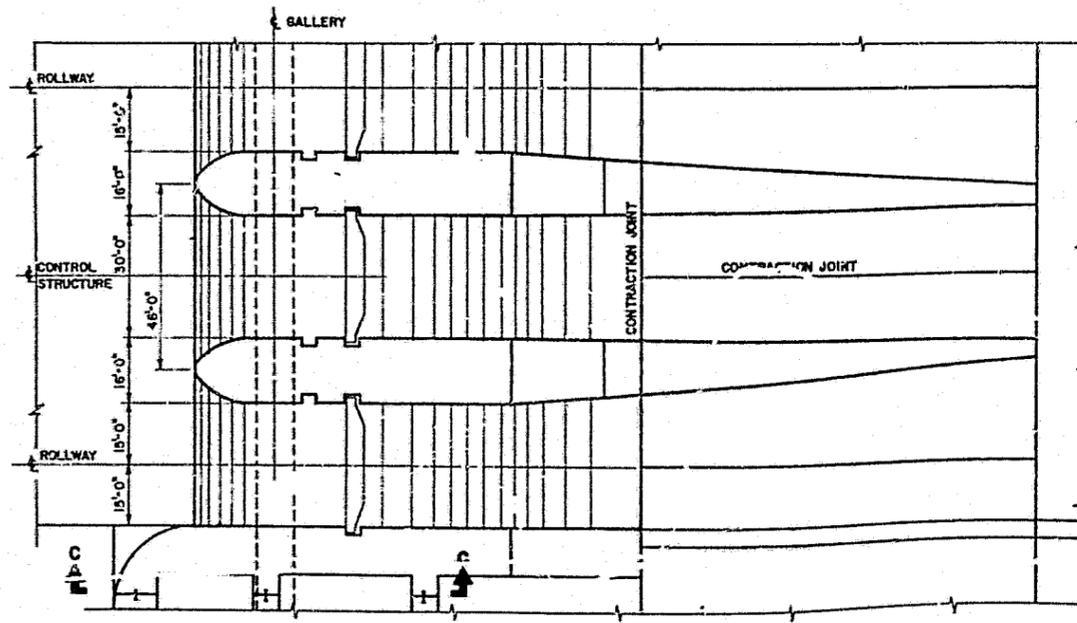
PHYSICAL PARAMETERS
 φ = 31.5°
 c = 100 PSI



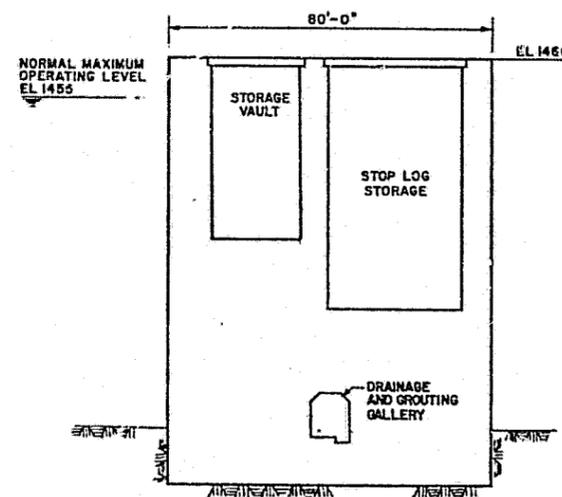
TYPICAL SECTION THRU CENTERLINE OF ROLLWAY



ELEVATION B-B



SECTION A-A

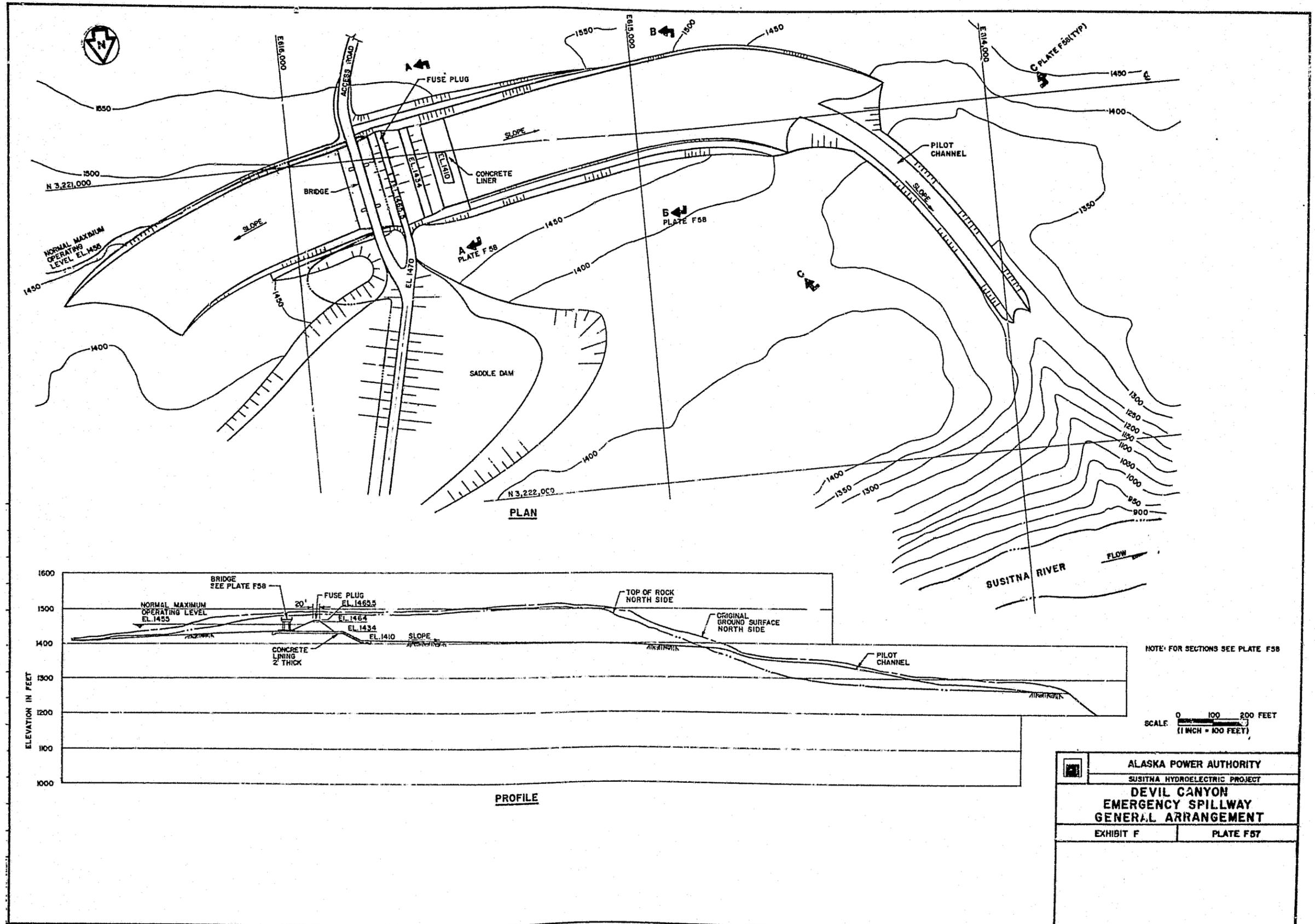


SECTION C-C

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

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

FOLD LENGTH
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEEL



FOLD LENGTH

12

11

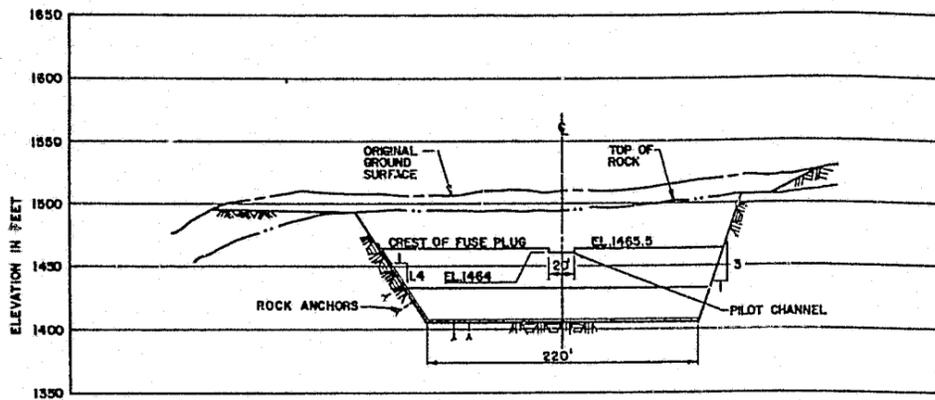
8.5

8

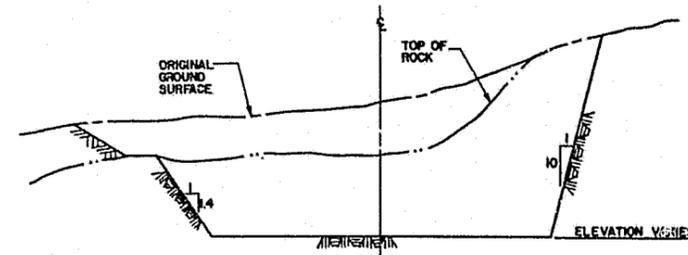
AUTO

MANUA

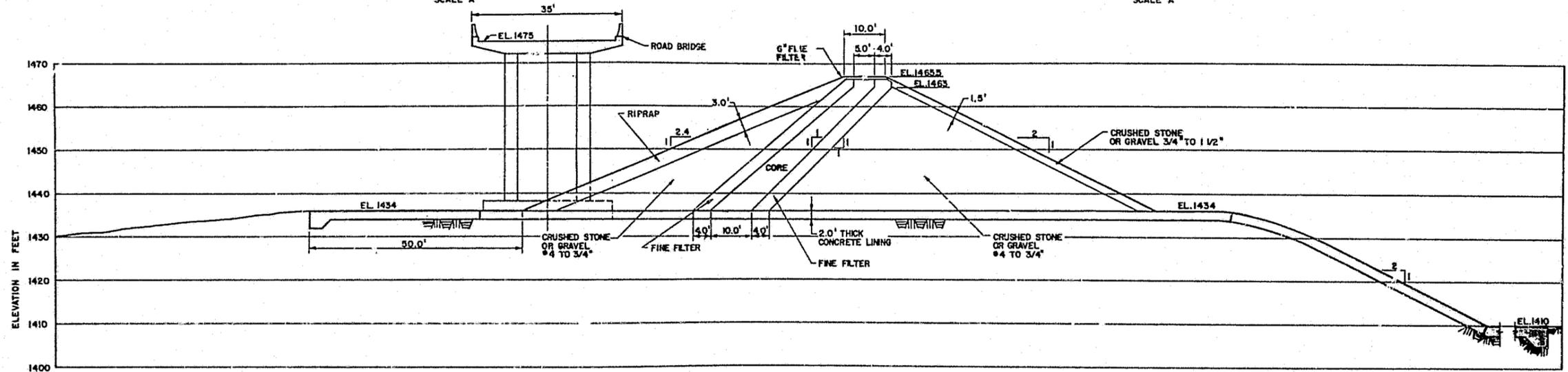
FEED



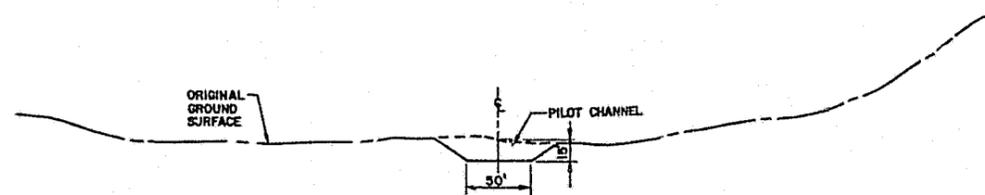
SECTION A-A (PLATE F57)
SCALE A



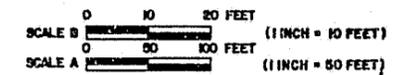
TYPICAL SECTION B-B (PLATE F57)
SCALE A



SECTION THROUGH FUSE PLUG (PLATE F57)
SCALE B



TYPICAL SECTION C-C (PLATE F57)
SCALE A



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

FOLD LENGTH

12

11

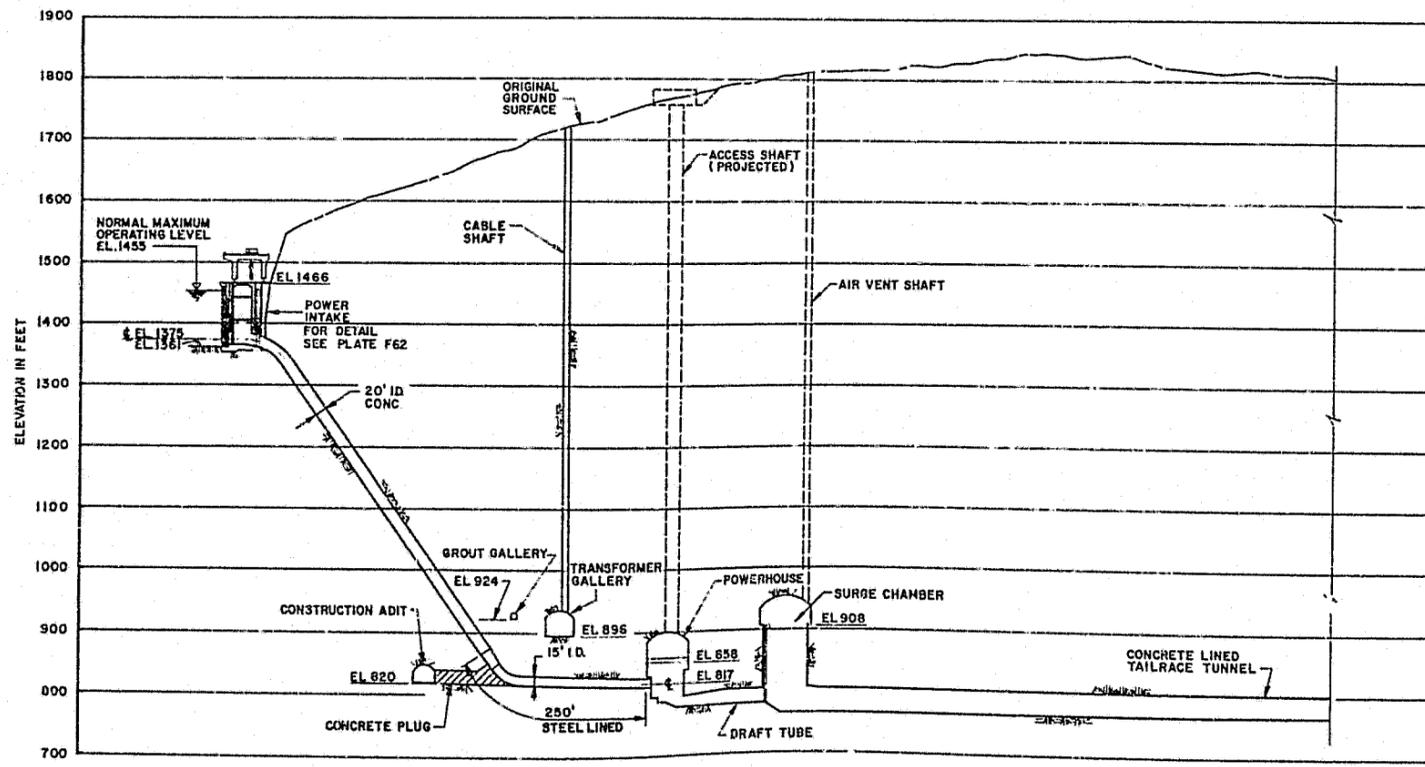
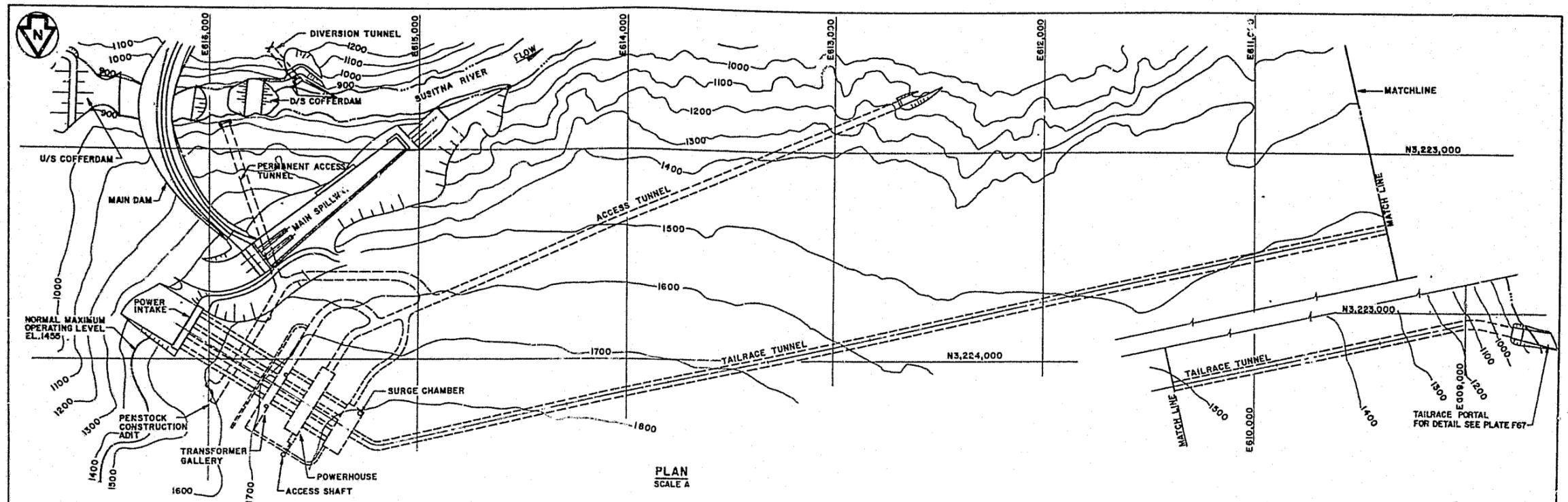
8.5

8

AUTO

MANUA

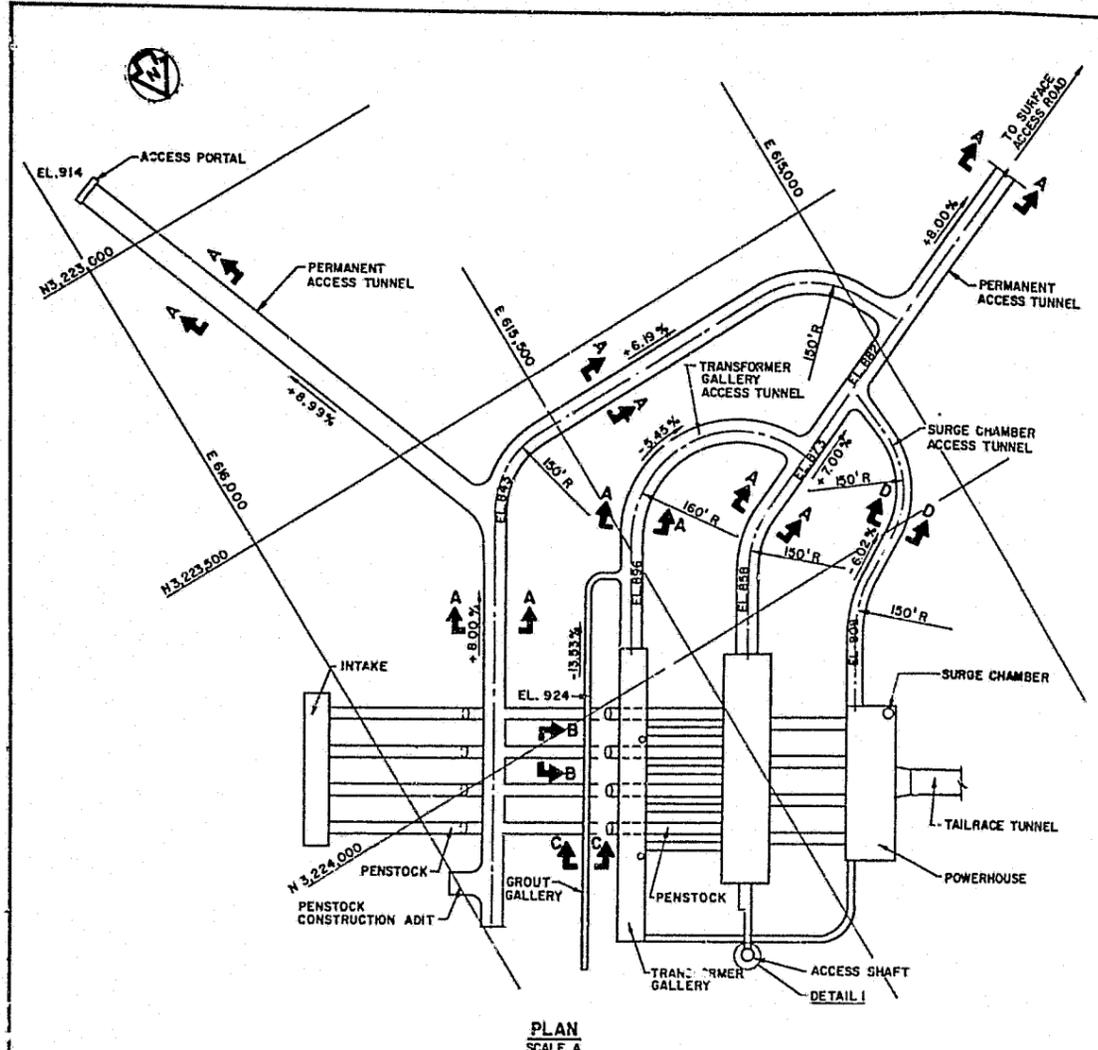
FEED



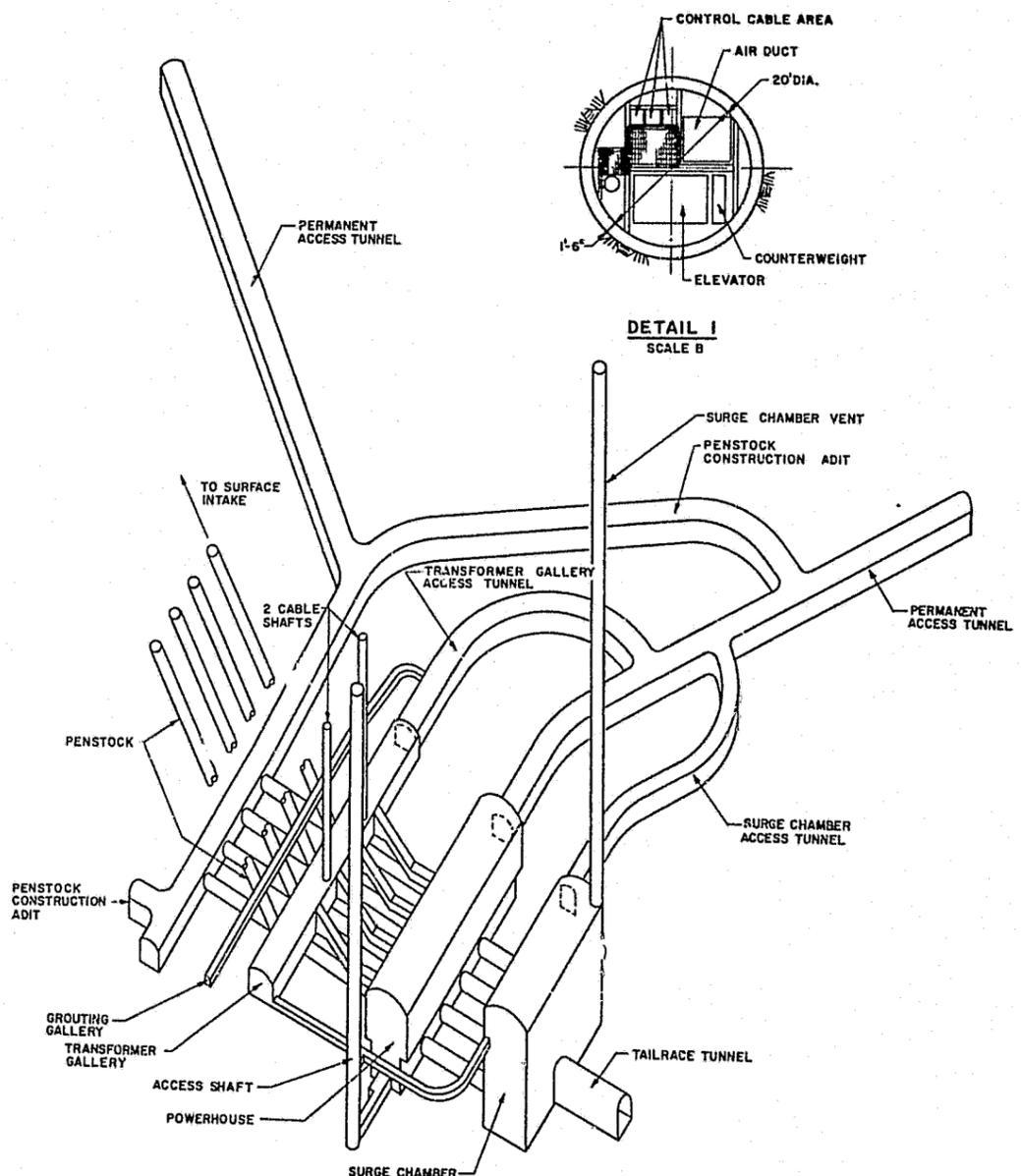
SCALE B 0 100 200 FEET (1 INCH = 100 FEET)
 SCALE A 0 200 400 FEET (1 INCH = 200 FEET)

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

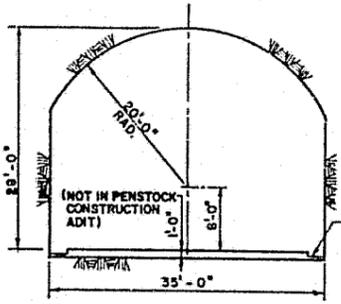
FOLD LENGTH
 12
 11
 8.5
 8
 AUTO
 MANUA
 FEED



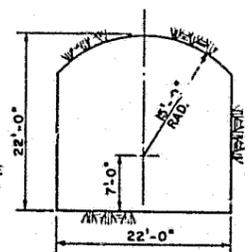
PLAN SCALE A



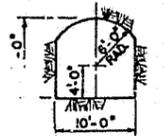
ISOMETRIC SCALE A



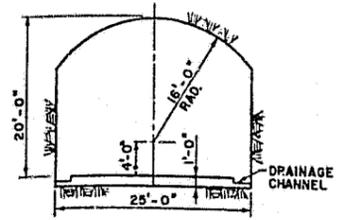
SECTION A-A SCALE B



SECTION B-B SCALE B



SECTION C-C SCALE B



SECTION D-D SCALE B

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

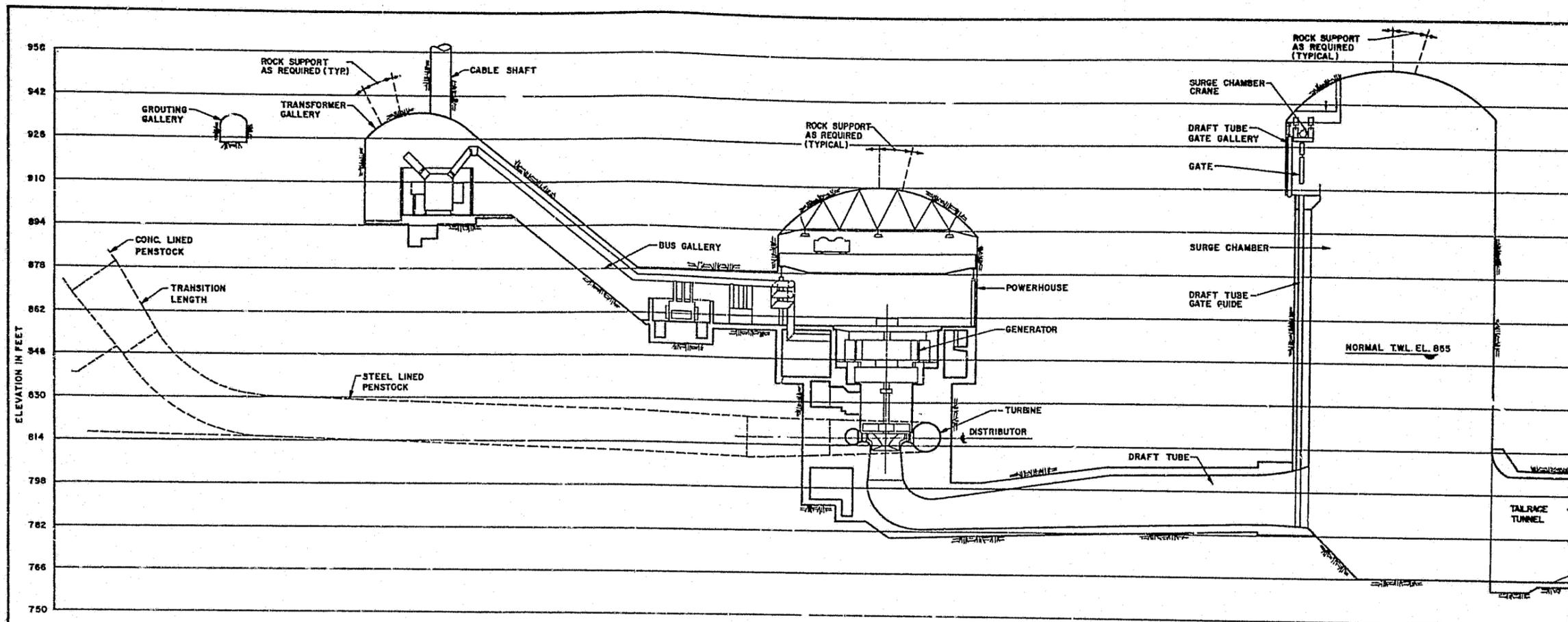
FOLD LENGTH

12
11
8.5
8

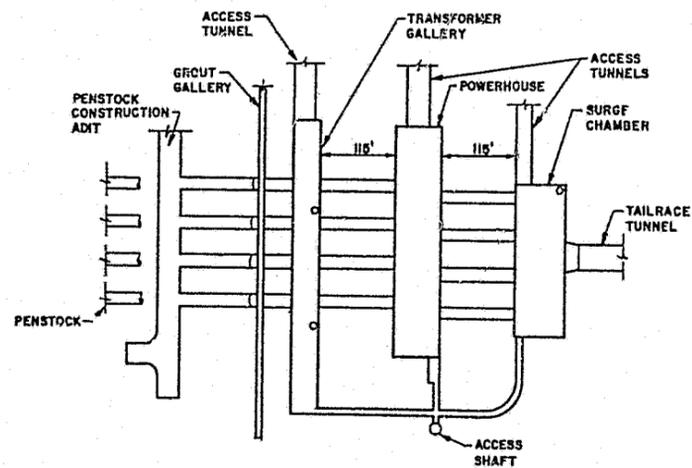
AUTO

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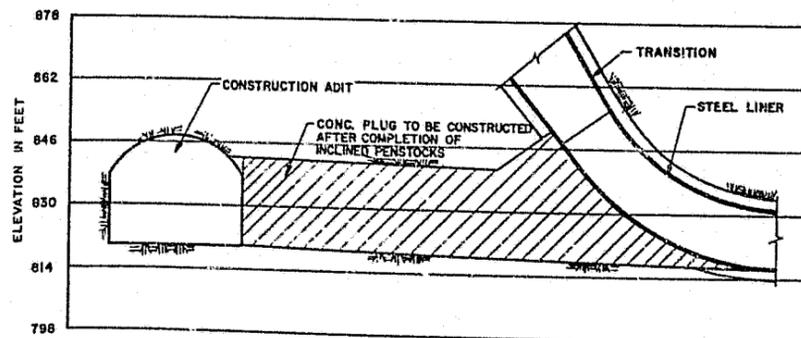
FEEU



SECTION A-A
SCALE B



PLAN
SCALE A



SECTION B-B
SCALE B

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

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

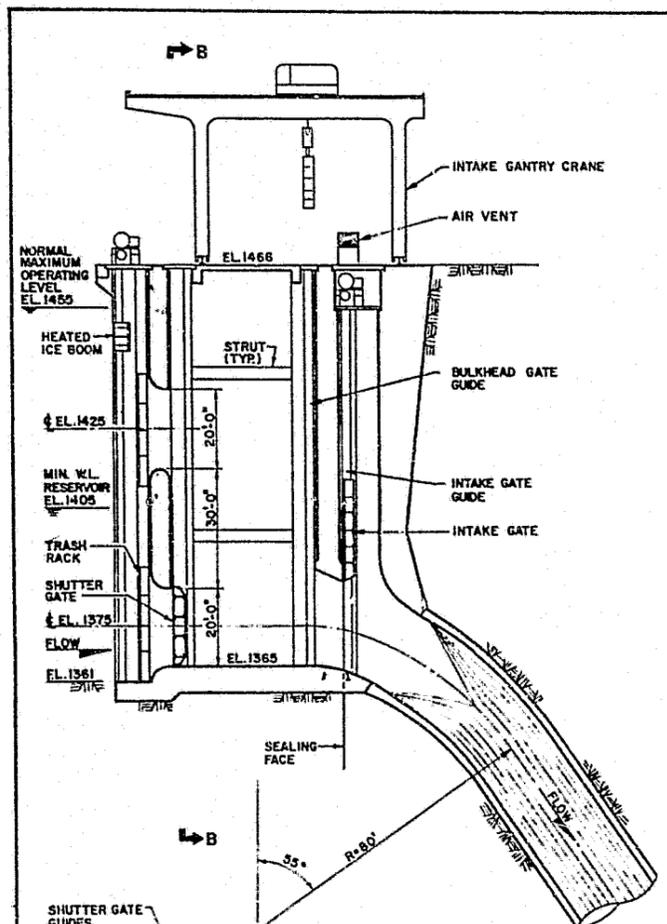
FOLD LENGTH

12
11
8.5
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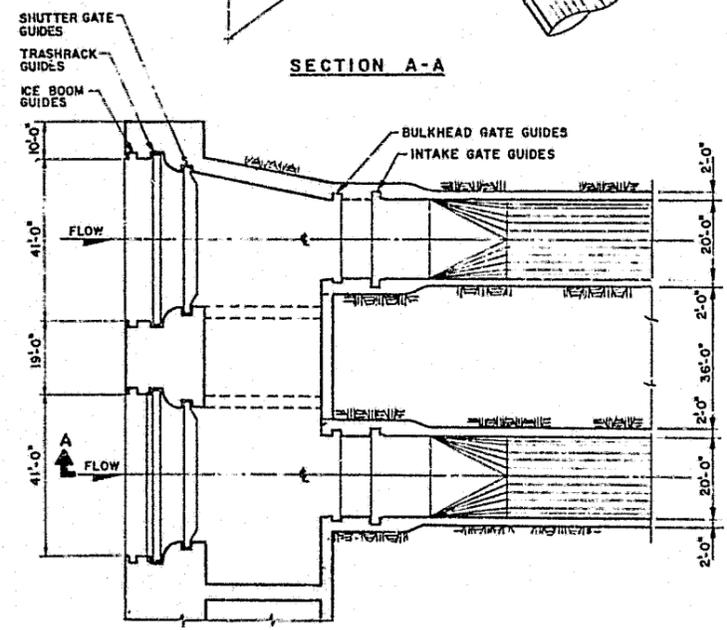
AUTO

MANUA

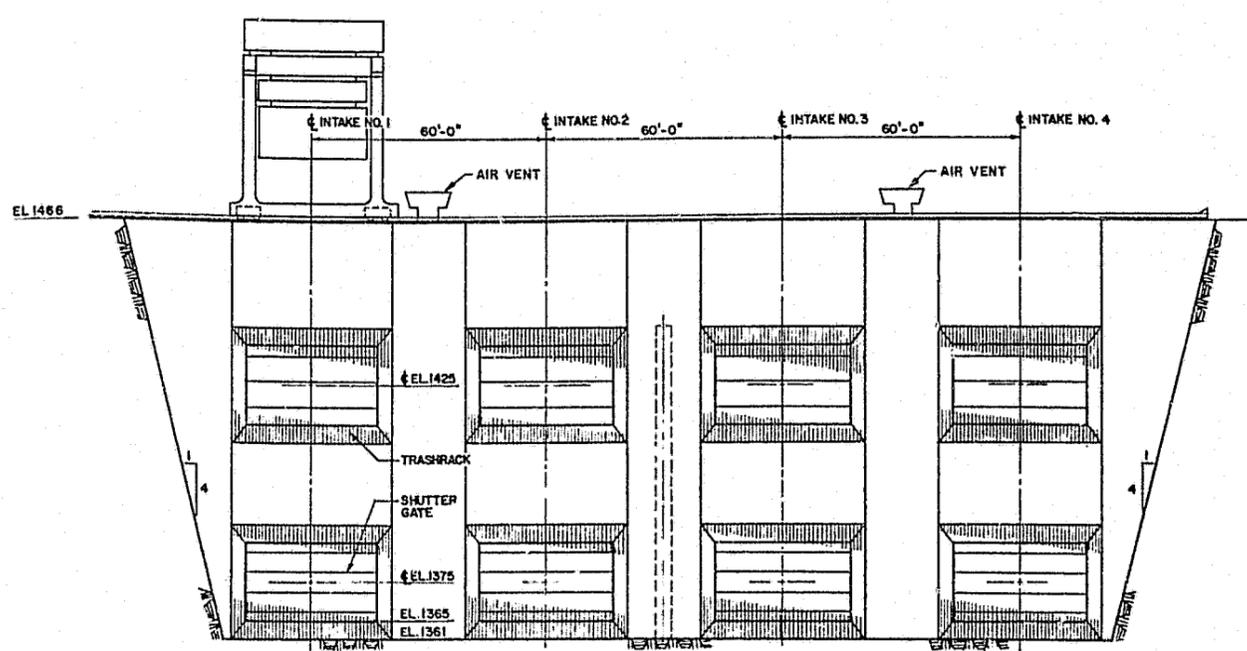
FEED



SECTION A-A



PLAN AT INTAKE CENTERLINE

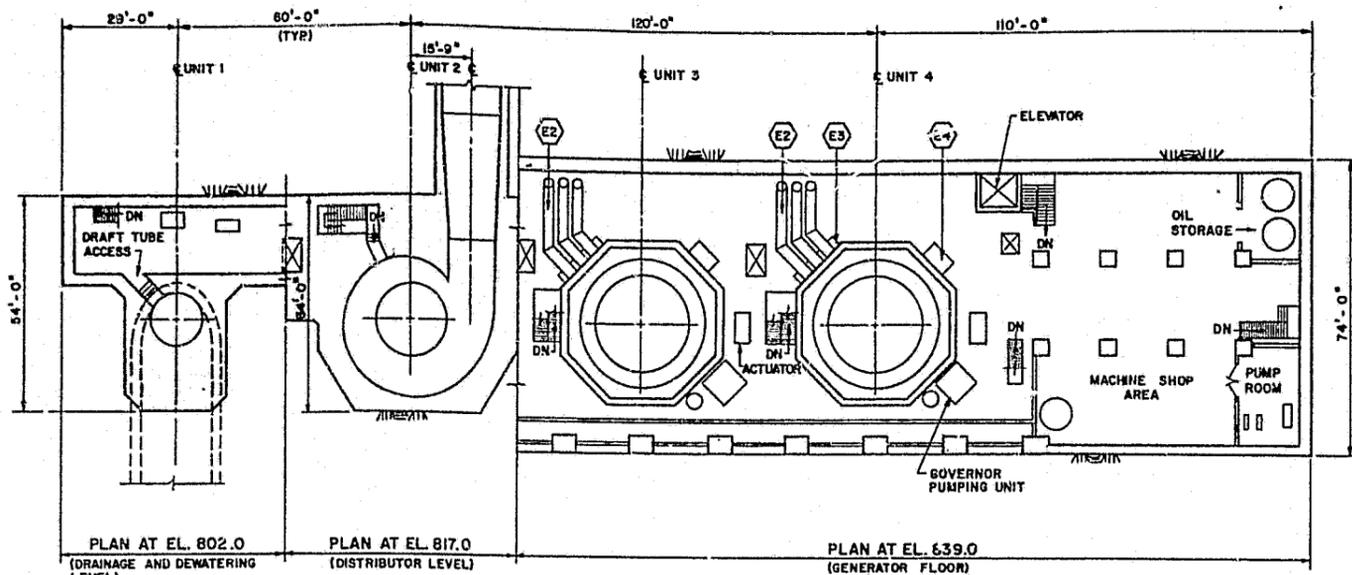


ELEVATION B-B

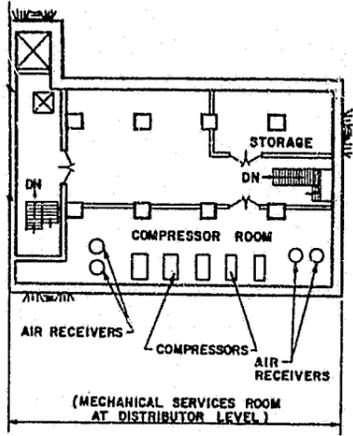
SCALE 0 16 32 FEET (1/16 INCH = 1 FEET)

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

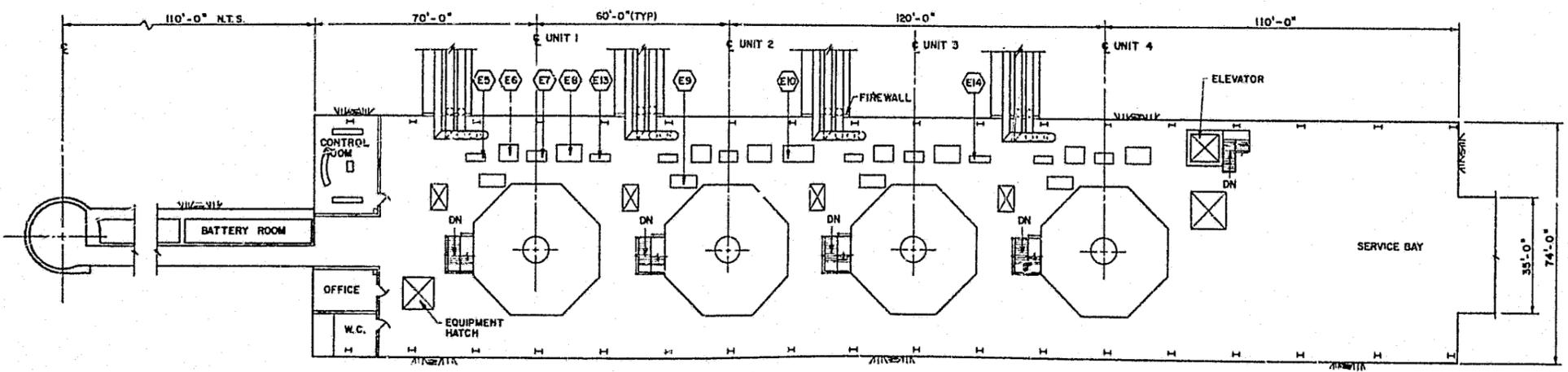
FOLD LENGTH
12
11
8.5
8
AUTO
MANUA
FEED



POWERHOUSE PLAN



PLAN AT EL. 812.0



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

FOLD LENGTH

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11

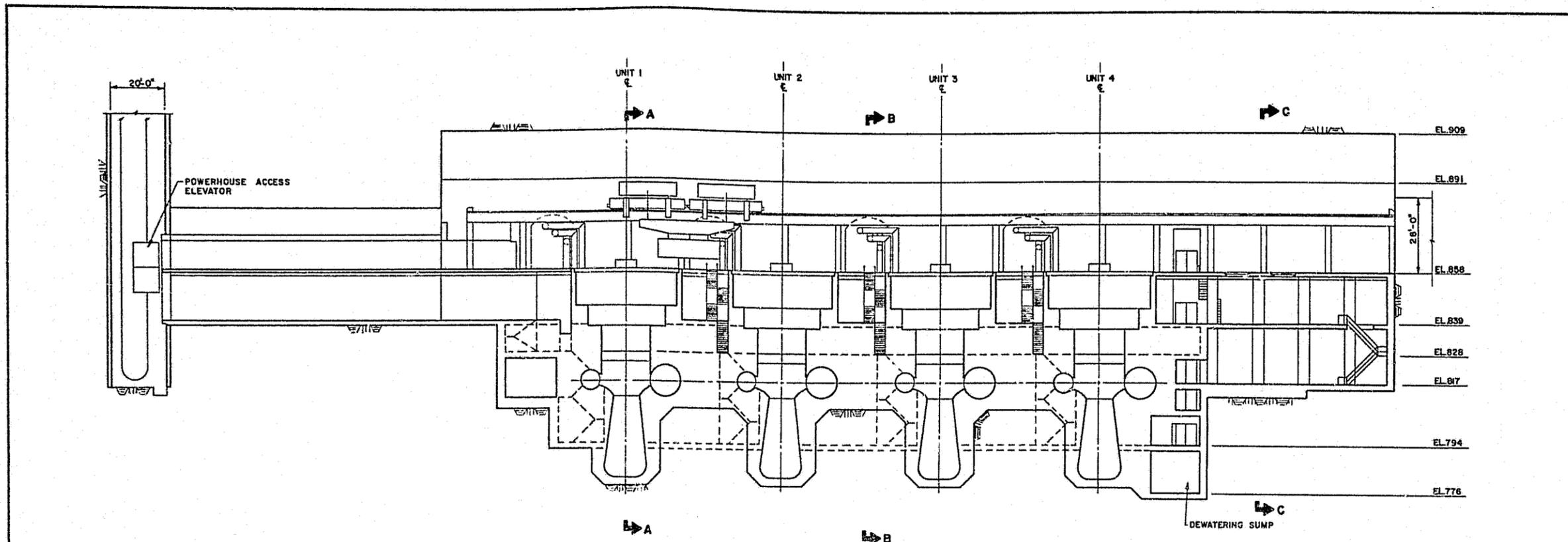
8.5

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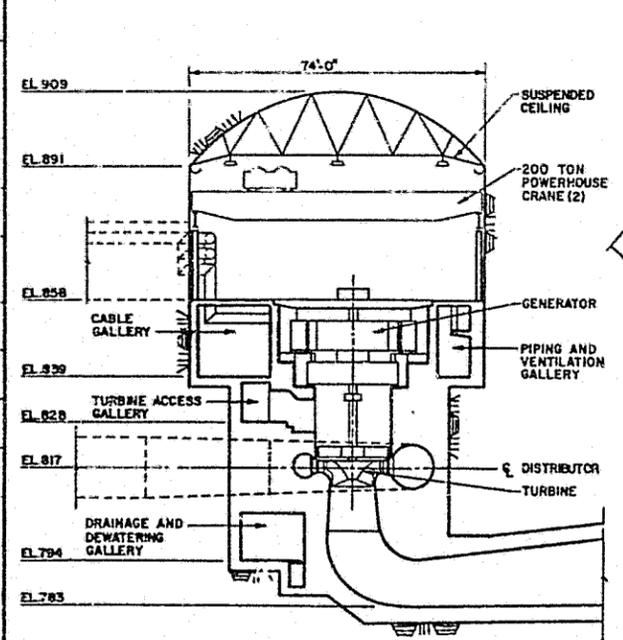
AUTO

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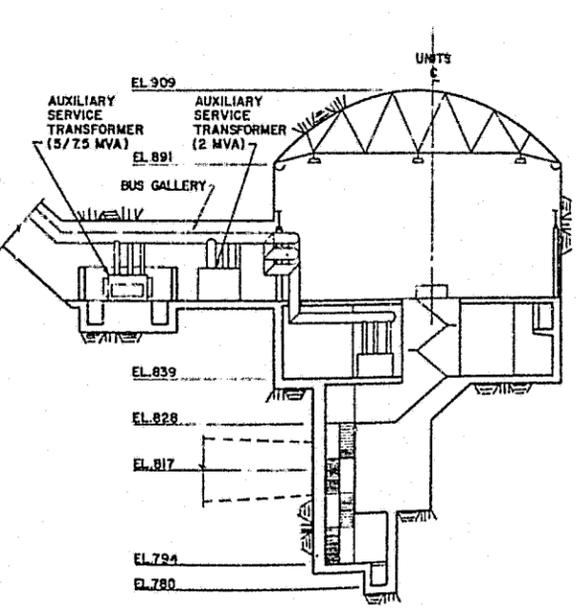
FEED



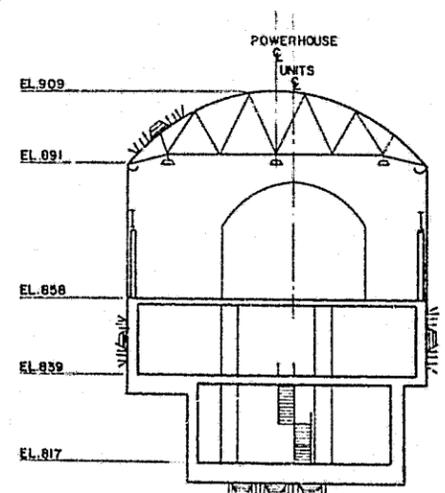
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS)



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

FOLD LENGTH

12

11

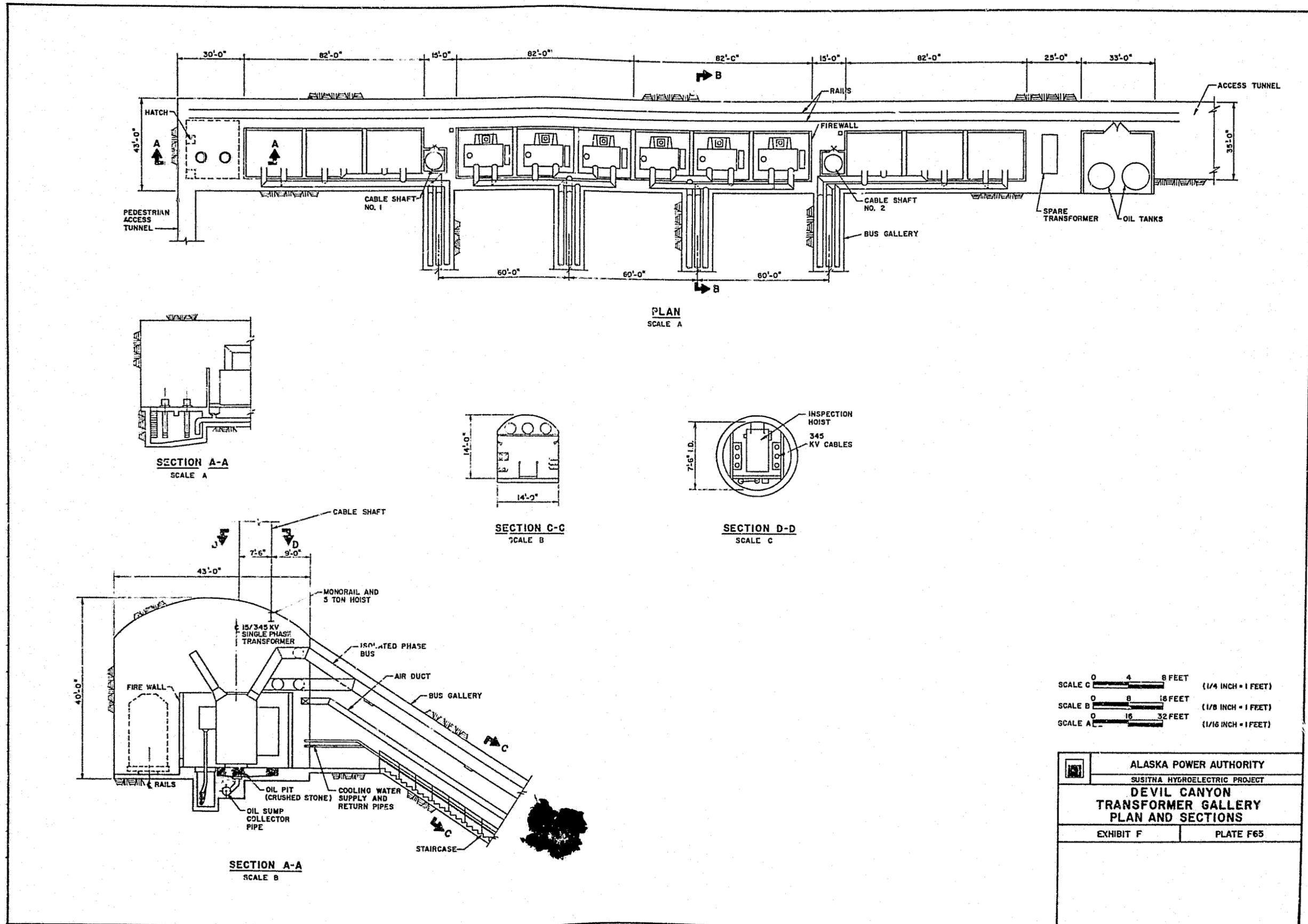
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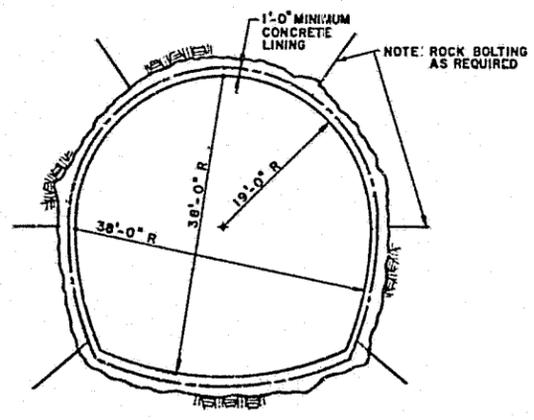
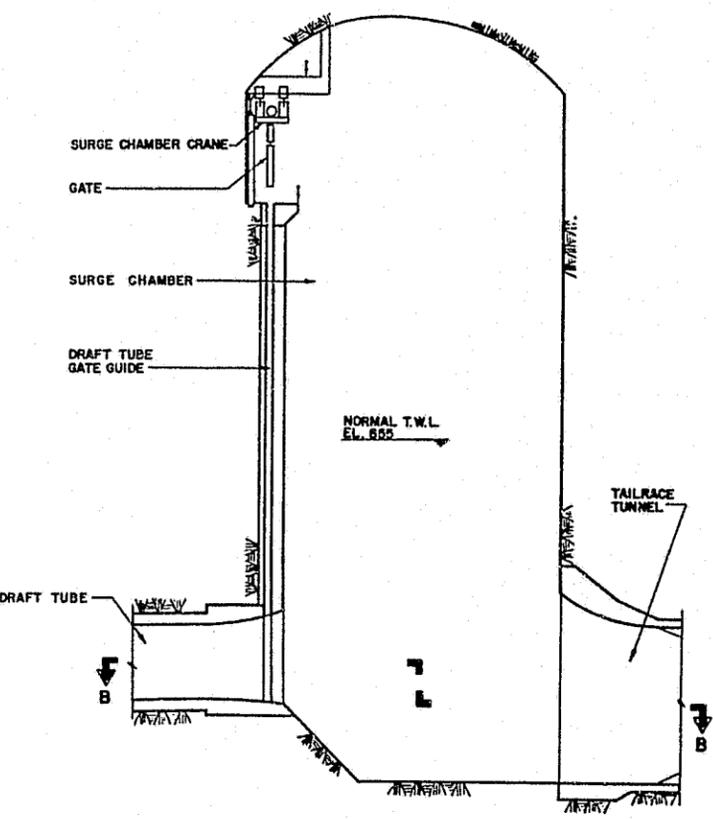
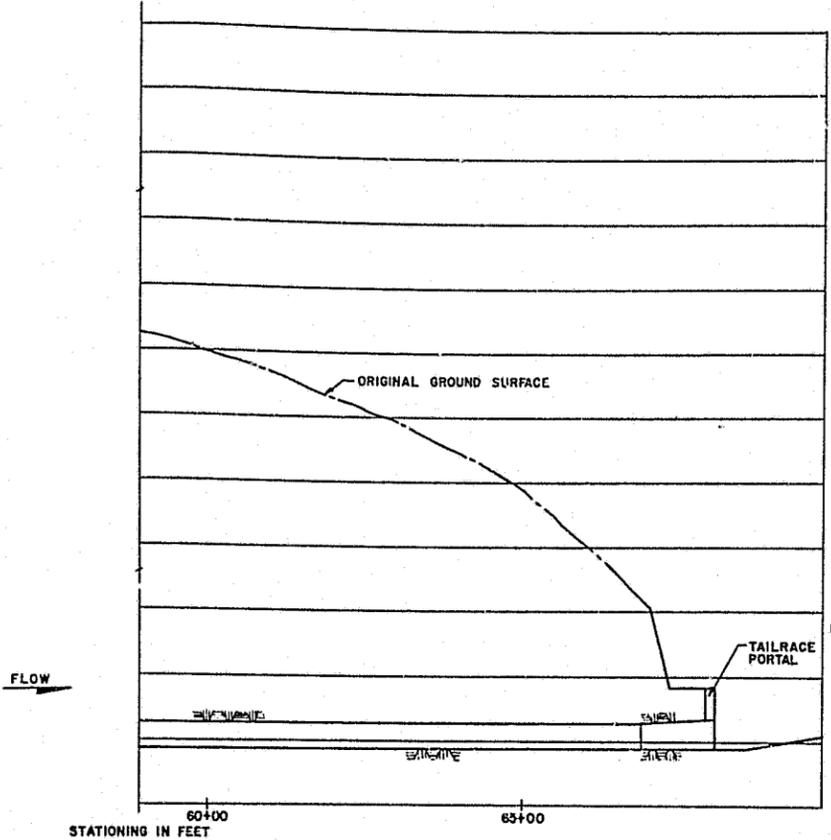
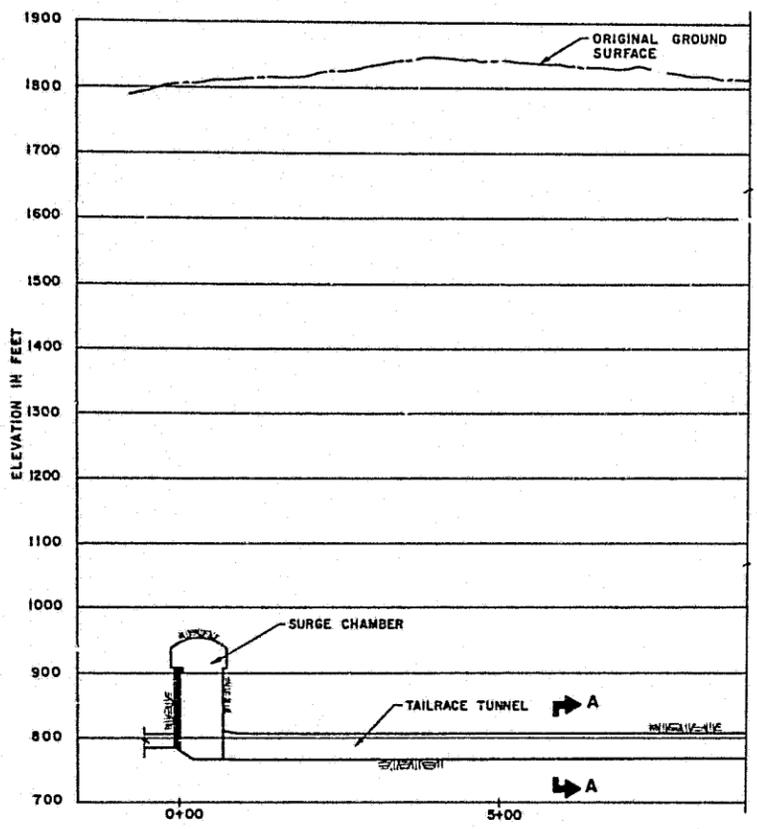
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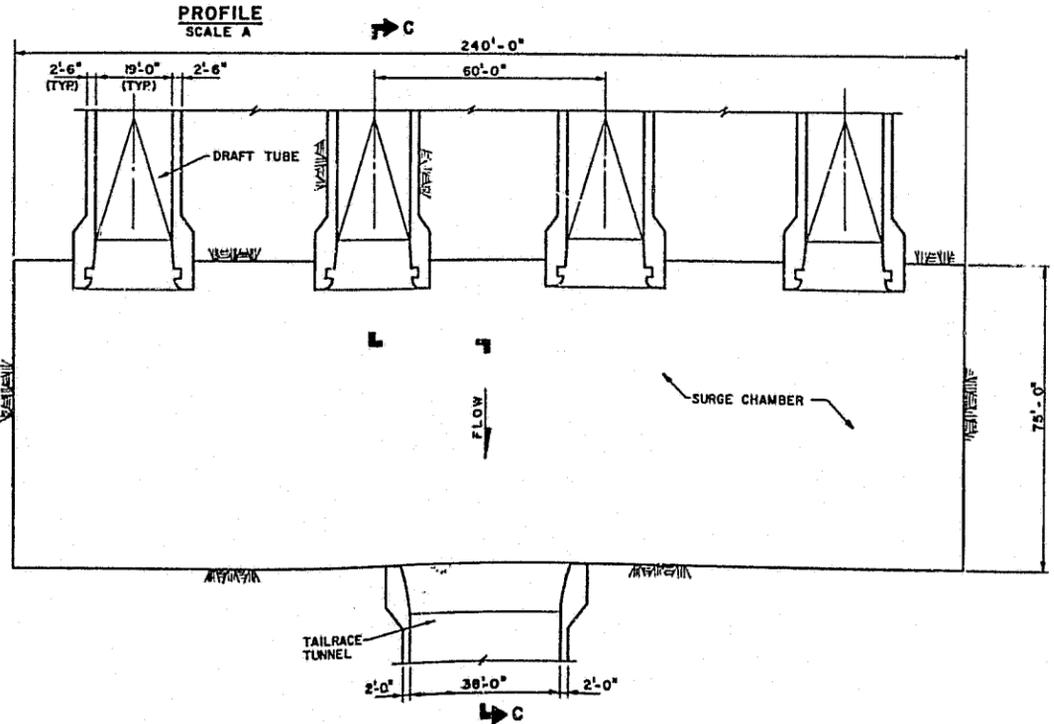


SCALE C 0 4 8 FEET (1/4 INCH = 1 FEET)
SCALE B 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE A 0 16 32 FEET (1/16 INCH = 1 FEET)

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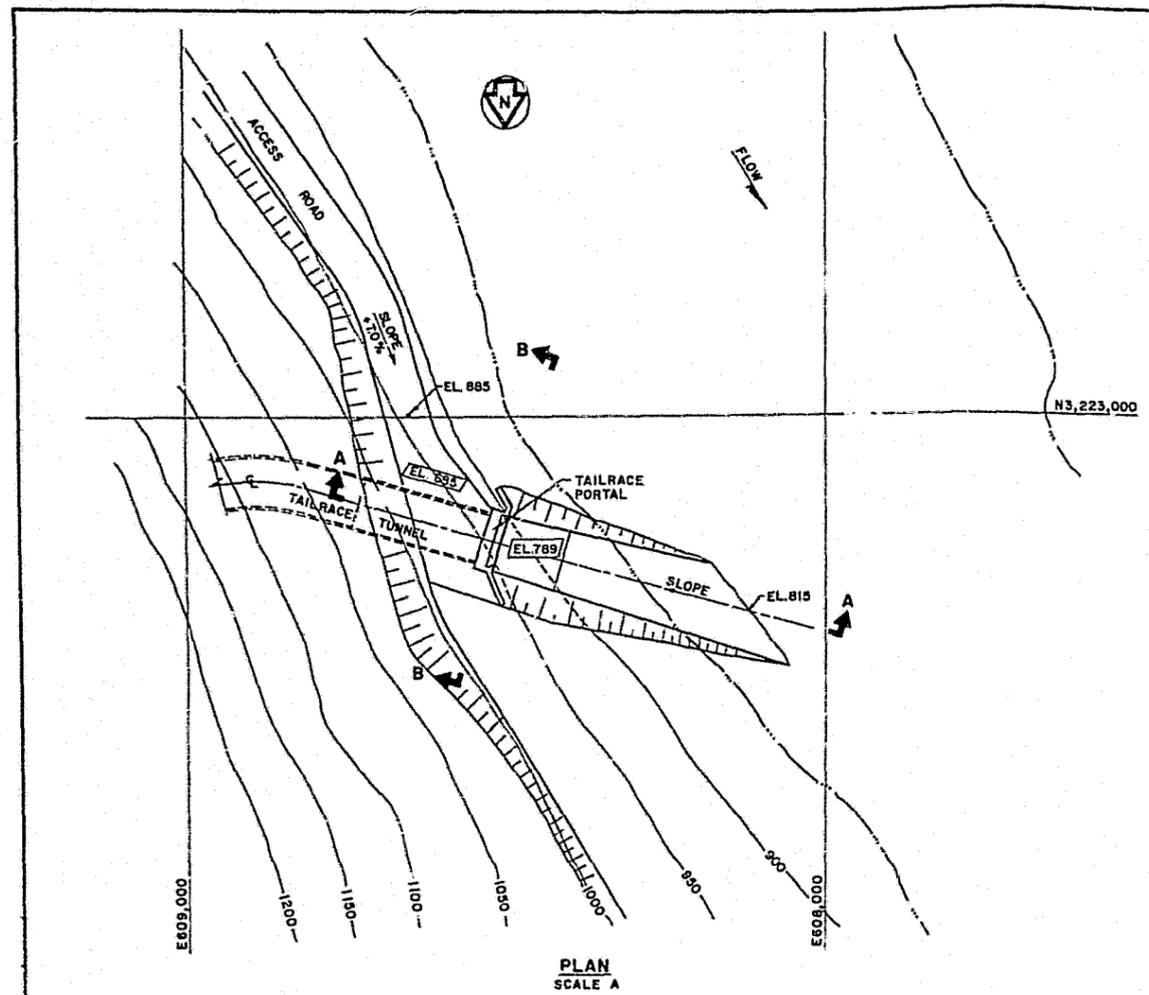
SECTION A-A
CONCRETE LINED TAILRACE TUNNEL
SCALE C



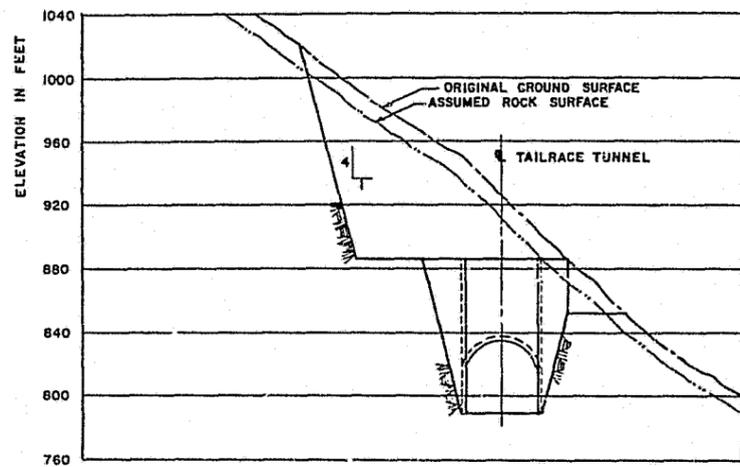
SECTION B-B
SCALE B

SCALE C 0 8 16 FEET (1/8 INCH = 1 FEET)
SCALE B 0 16 32 FEET (1/16 INCH = 1 FEET)
SCALE A 0 100 200 FEET (1 INCH = 100 FEET)

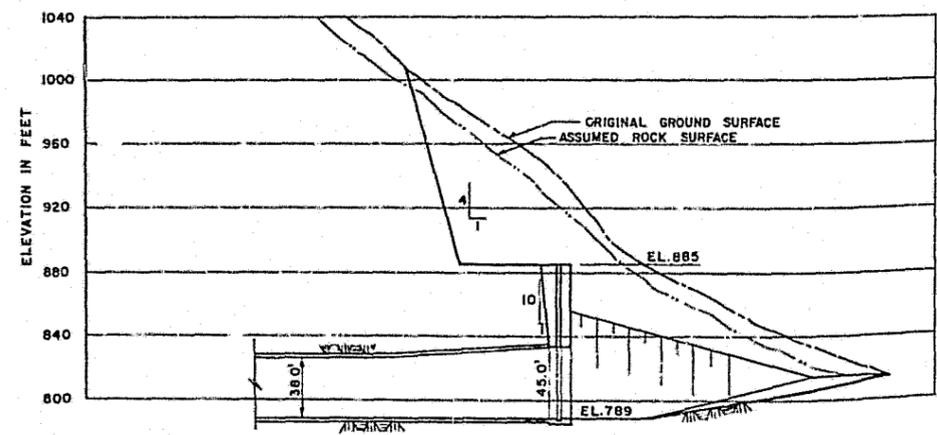
ALASKA POWER AUTHORITY	
SUSITNA HYDROELECTRIC PROJECT	
DEVIL CANYON	
SURGE CHAMBER AND TAILRACE SECTIONS	
EXHIBIT F	PLATE F 66



PLAN
SCALE A



SECTION B-B
SCALE B

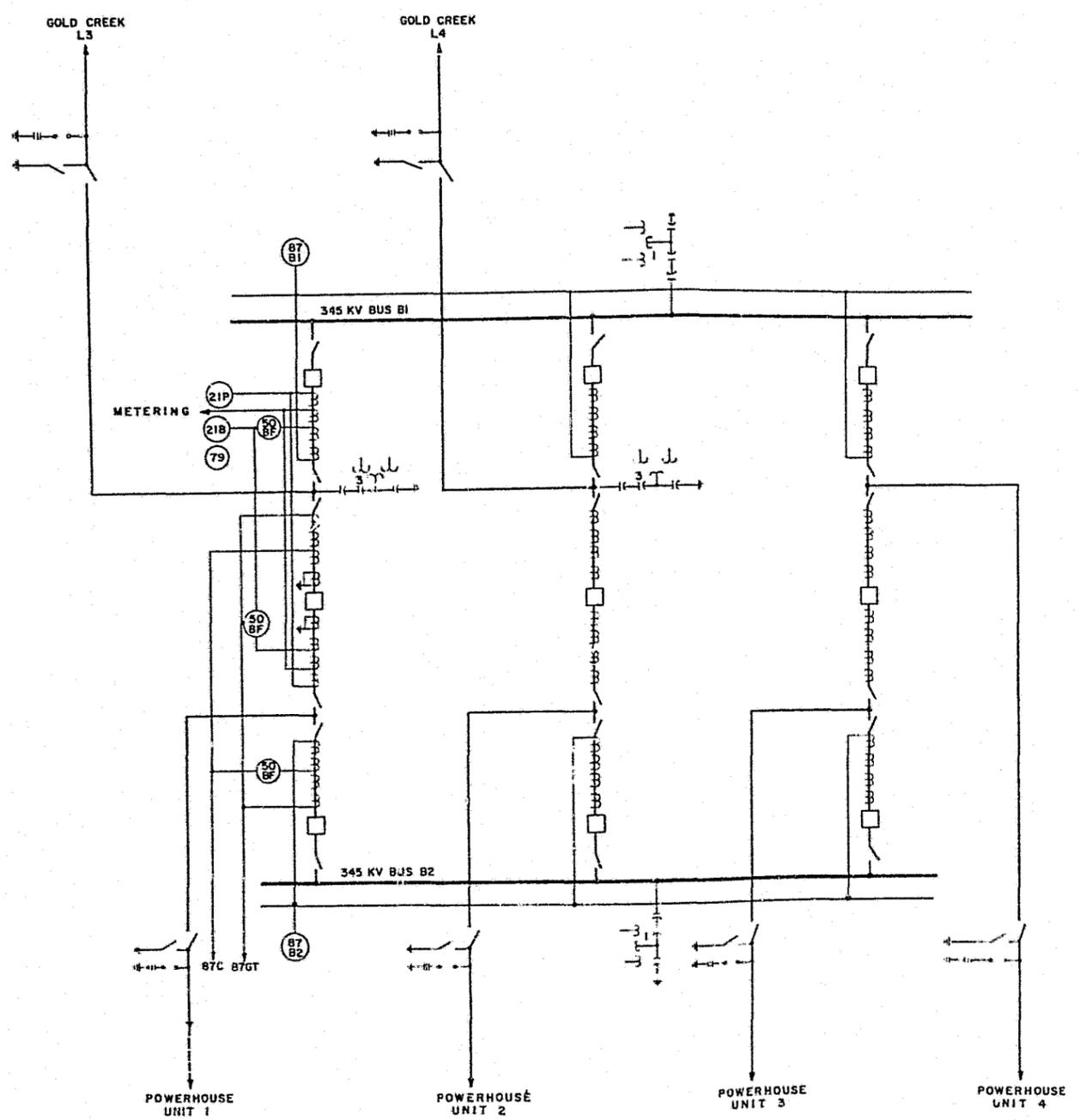


SECTION A-A
SCALE B

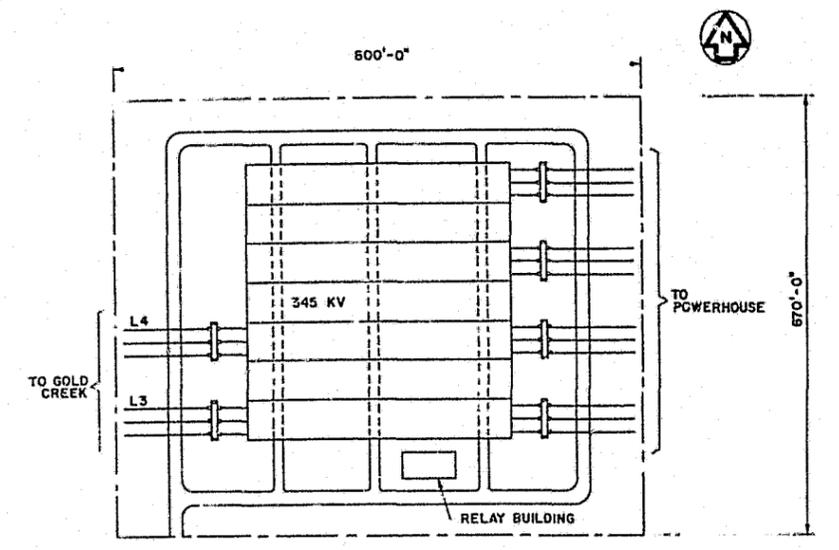
SCALE B 0 40 80 FEET (1 INCH = 40 FEET)
SCALE A 0 50 100 FEET (1 INCH = 50 FEET)

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

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SINGLE LINE DIAGRAM

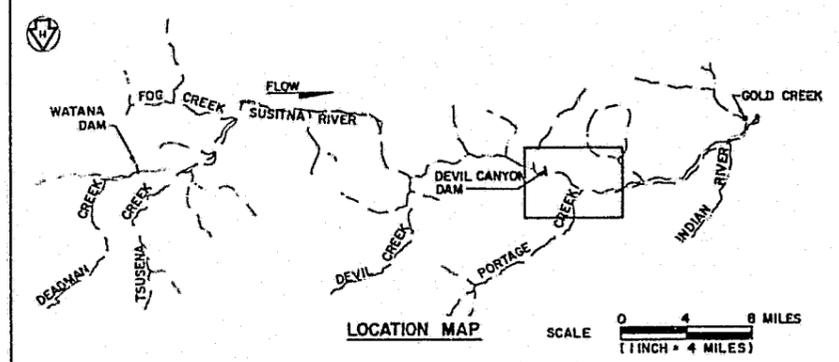
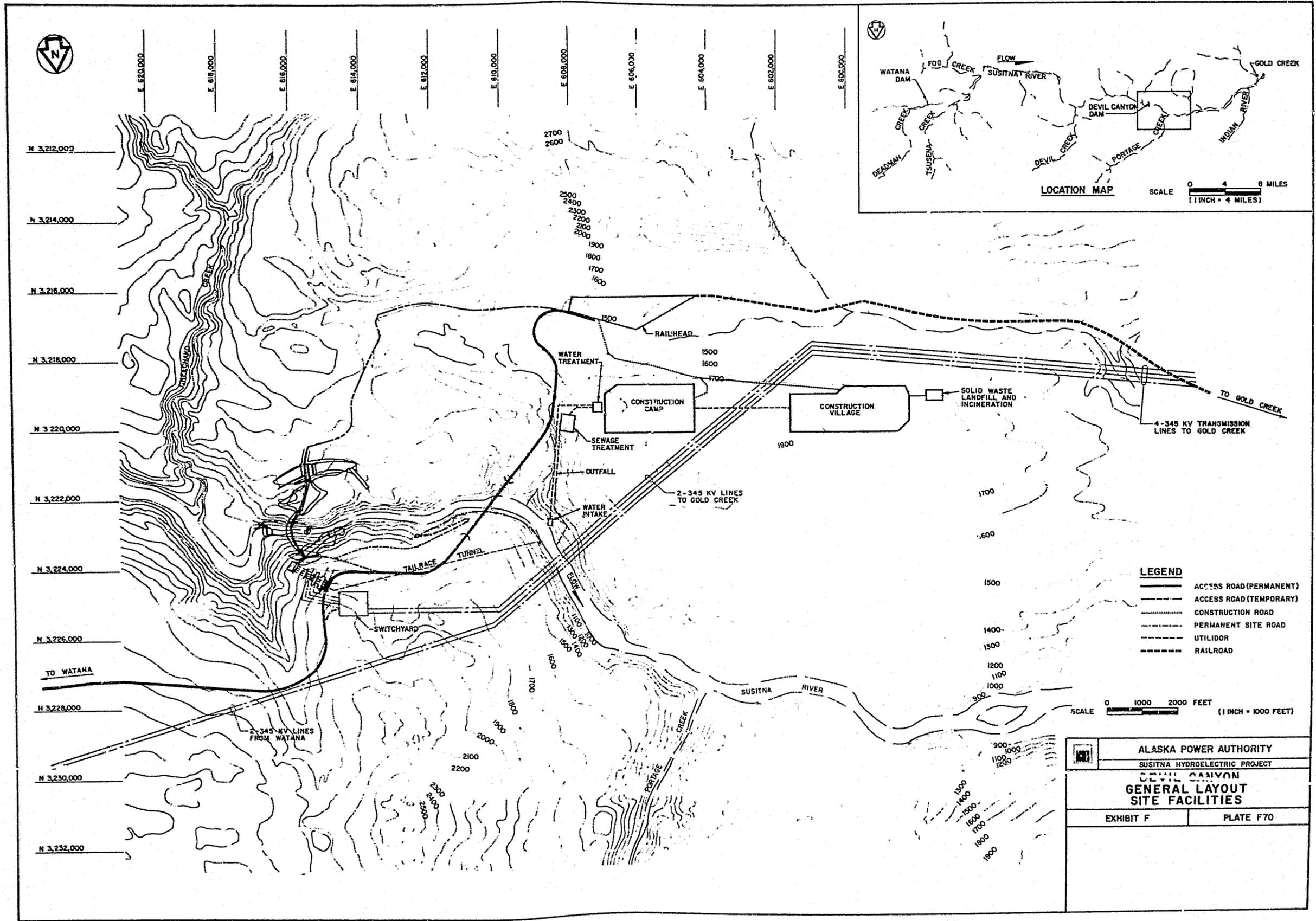


SWITCHYARD PLAN SCALE A

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

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- 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

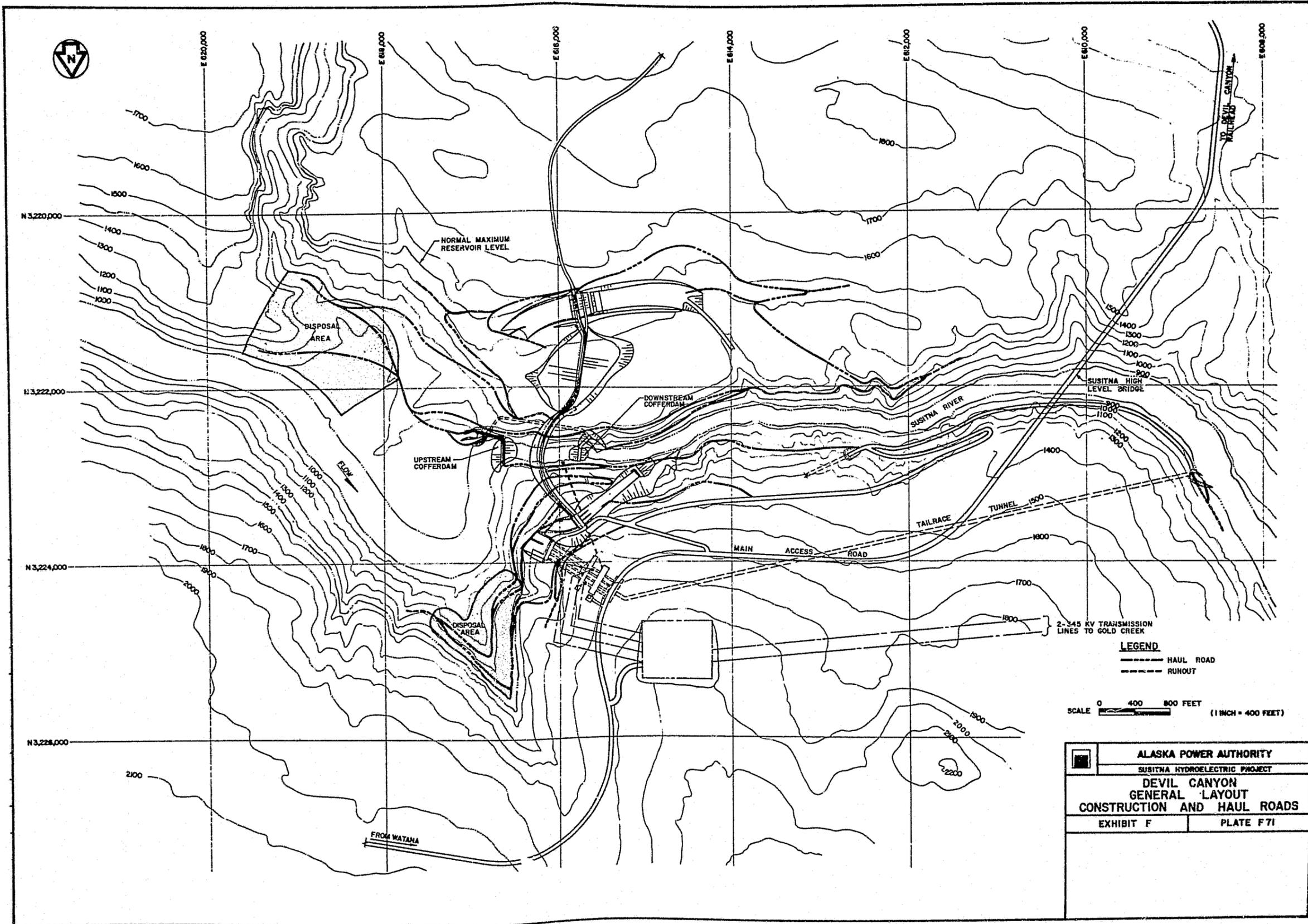
FOLD LENGTH

- 12
- 11
- 8.5
- 8

AUTO

MANUA

FEED



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

FOLD LENGTH
12
11
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AUTO
MANUA
FEED



T. 32 N
T. 31 N

3,220,000

1800

1800

1800

1750

1700

1600

1500

TO CONSTRUCTION VILLAGE

SEWARD PRINCIPAL MERIDIAN

MAIN ACCESS ROAD

TO DEVIL CANYON SITE

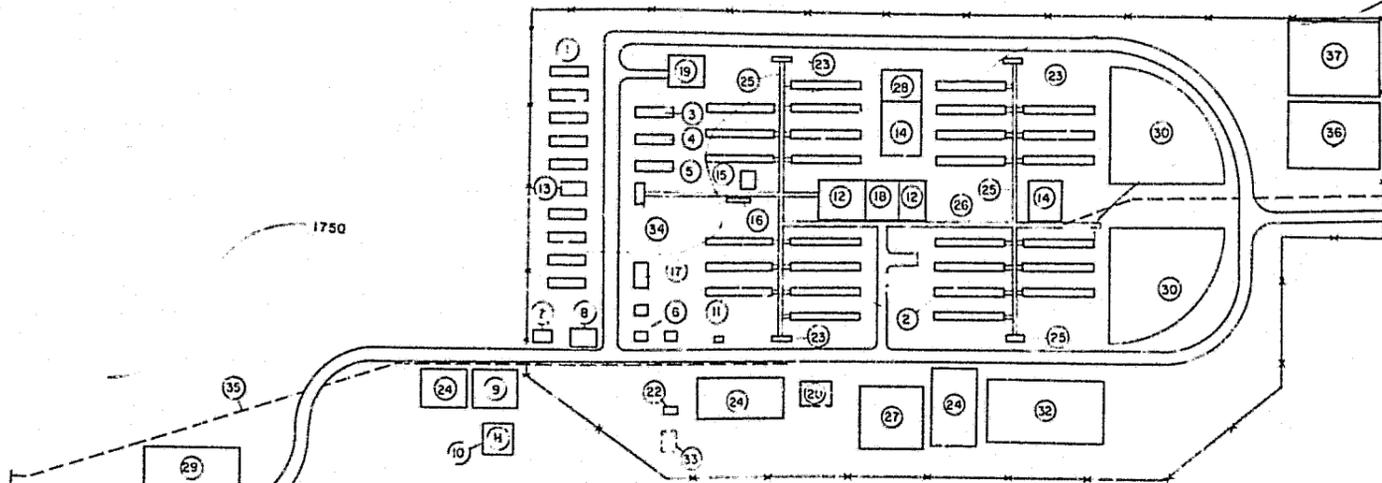
R.W.

R.I.E.

TO DEVIL CANYON RAILHEAD

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

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LEGEND

-  TEMPORARY HOUSING/UTILITIES FURNISHED BY OWNER.
-  PARKING AREAS

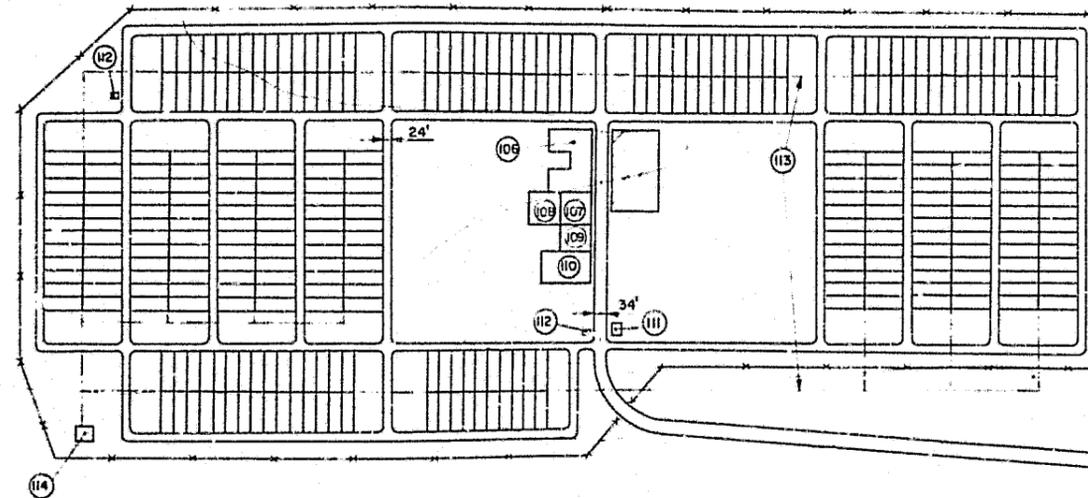
VILLAGE HOUSING - 320 UNITS

- FAMILY HOUSING - 2 B.R. - 16 UNITS (24'x50')
- FAMILY HOUSING - 3 B.R. - 16 UNITS (24'x50')
- FAMILY HOUSING - 4 B.R. - 16 UNITS (28'x50')
- FAMILY HOUSING - 3 B.R. - 72 UNITS (14'x60')
- FAMILY HOUSING - 3 B.R. - 200 UNITS (14'x60')
- (106) SCHOOL - 30'x35' (12 UNITS)
- (107) GYM - 100'x100'
- (108) SWIMMING POOL - 100'x100'
- (109) RECREATION CENTER 80'x100'
- (110) STORE - 100'x160'
- (111) FIRE STATION - 30'x40'
- (112) GENERATING STATION - 20'x30' (2 UNITS)
- (113) UTILIDOR
- (114) SEWER PUMPING STATION - 50'x60'

3,220,000

1700

1750



1800

1750

1700

1600

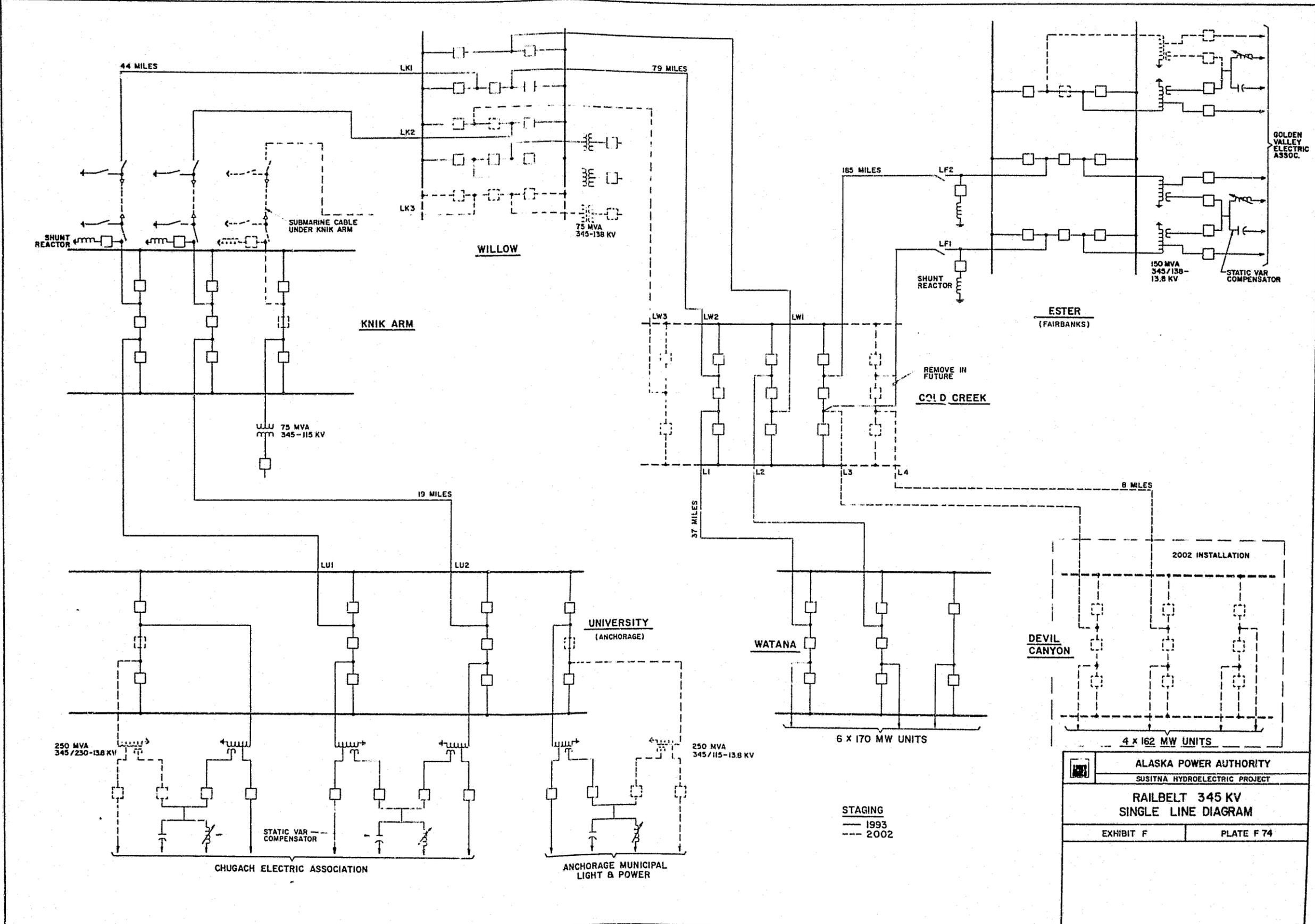
1500

6,000,000

TO CONSTRUCTION CAMP AND DEVIL CANYON SITE

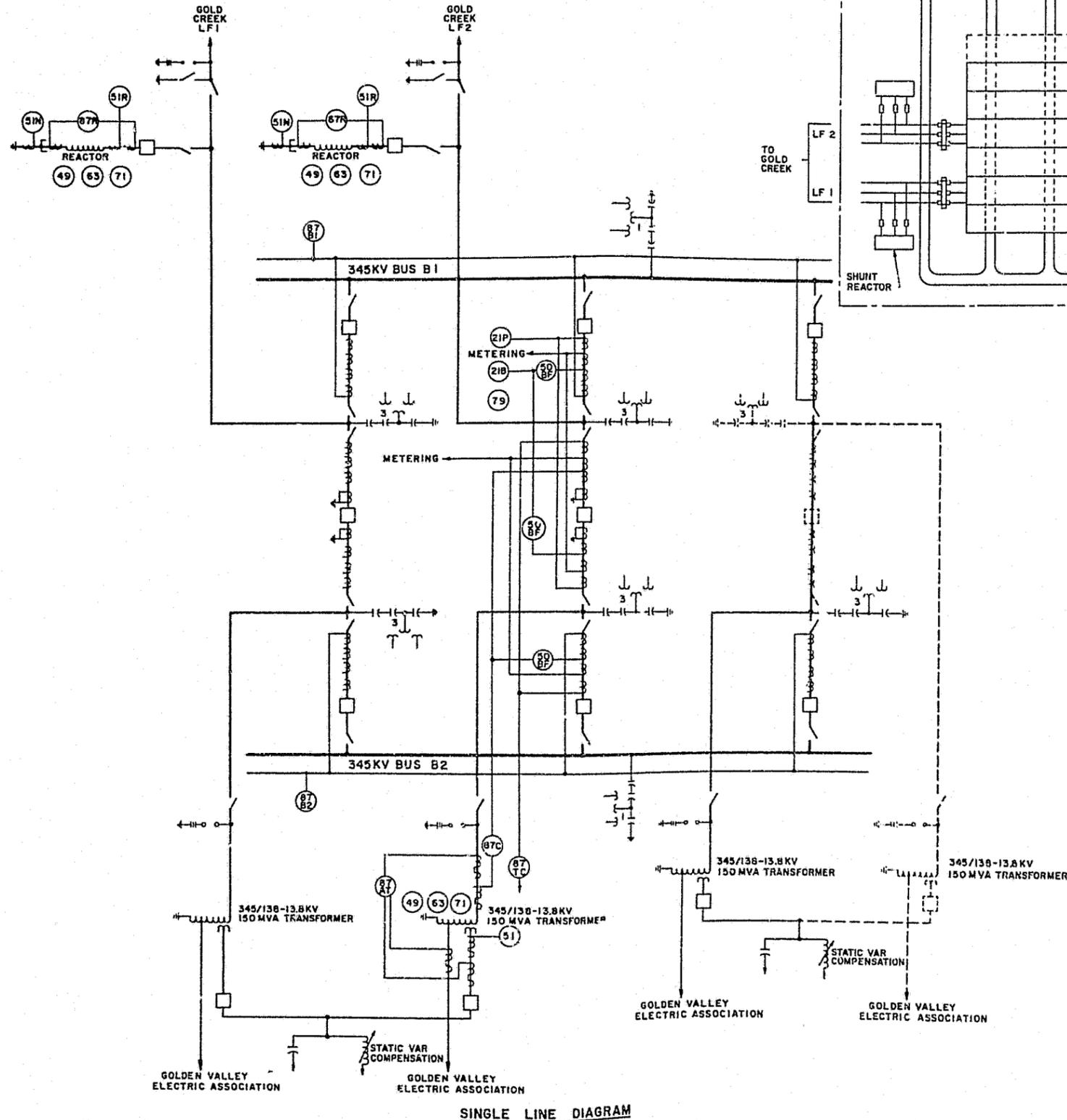
SCALE 0 200 400 FEET (1 INCH = 200 FEET)

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

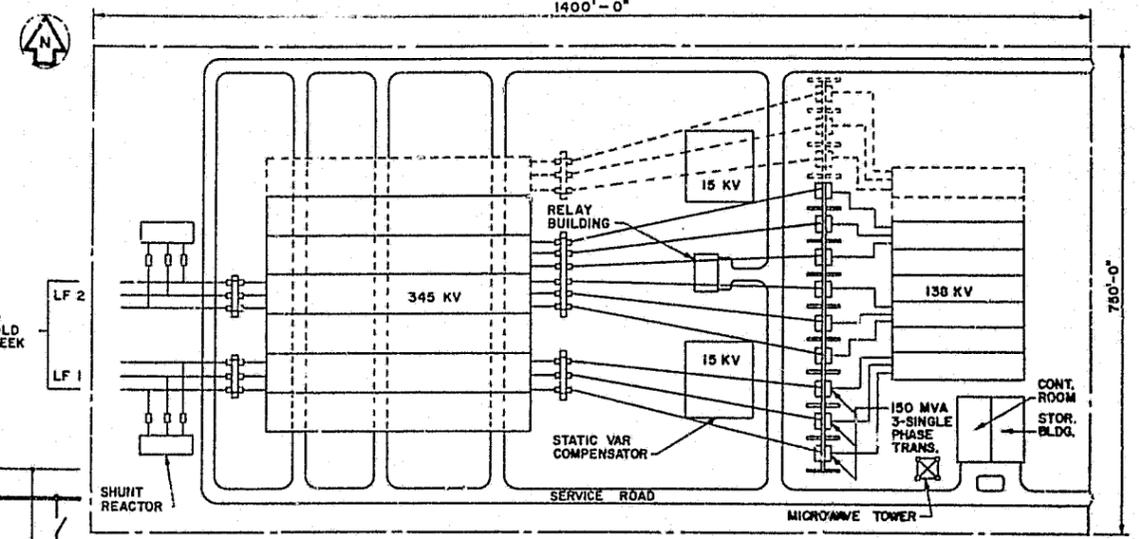


STAGING
 — 1993
 - - - 2002

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



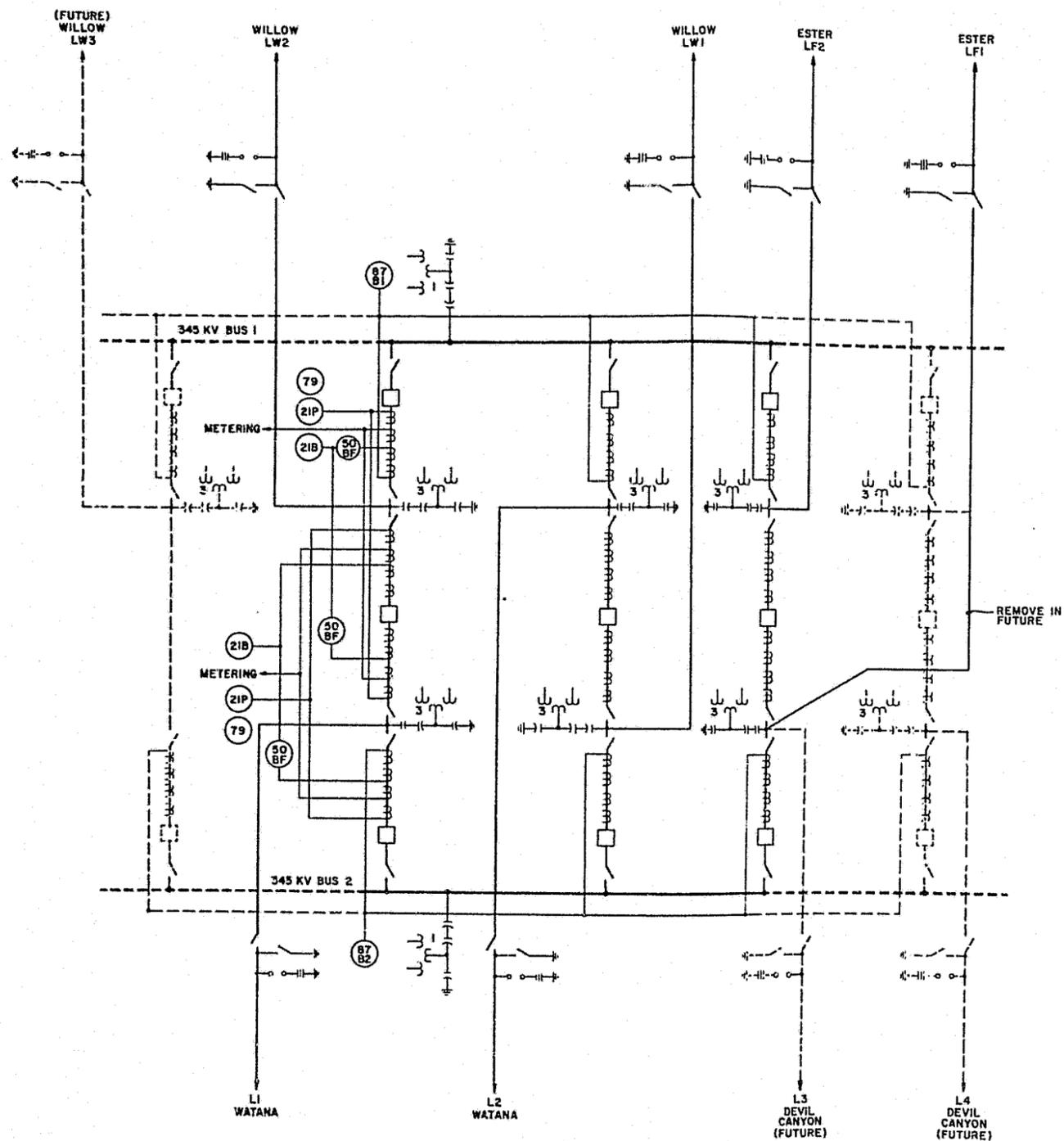
SINGLE LINE DIAGRAM



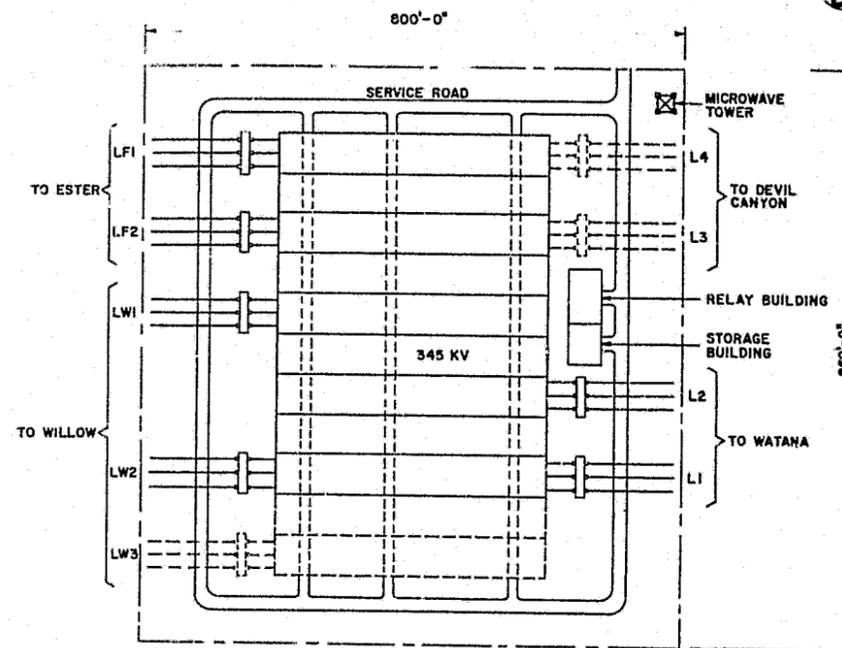
SUBSTATION PLAN
SCALE A

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 F75



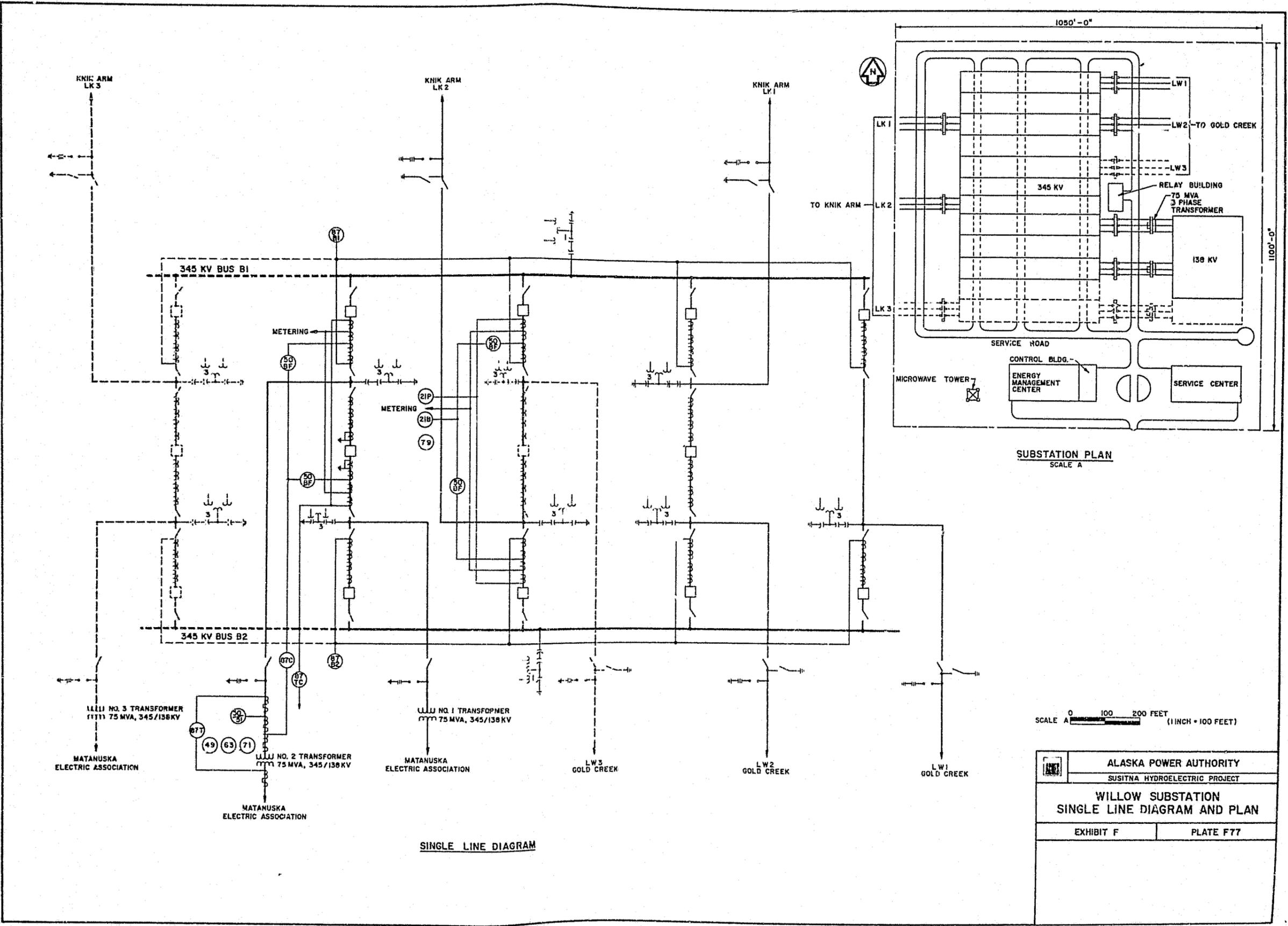
SINGLE LINE DIAGRAM



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 36



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

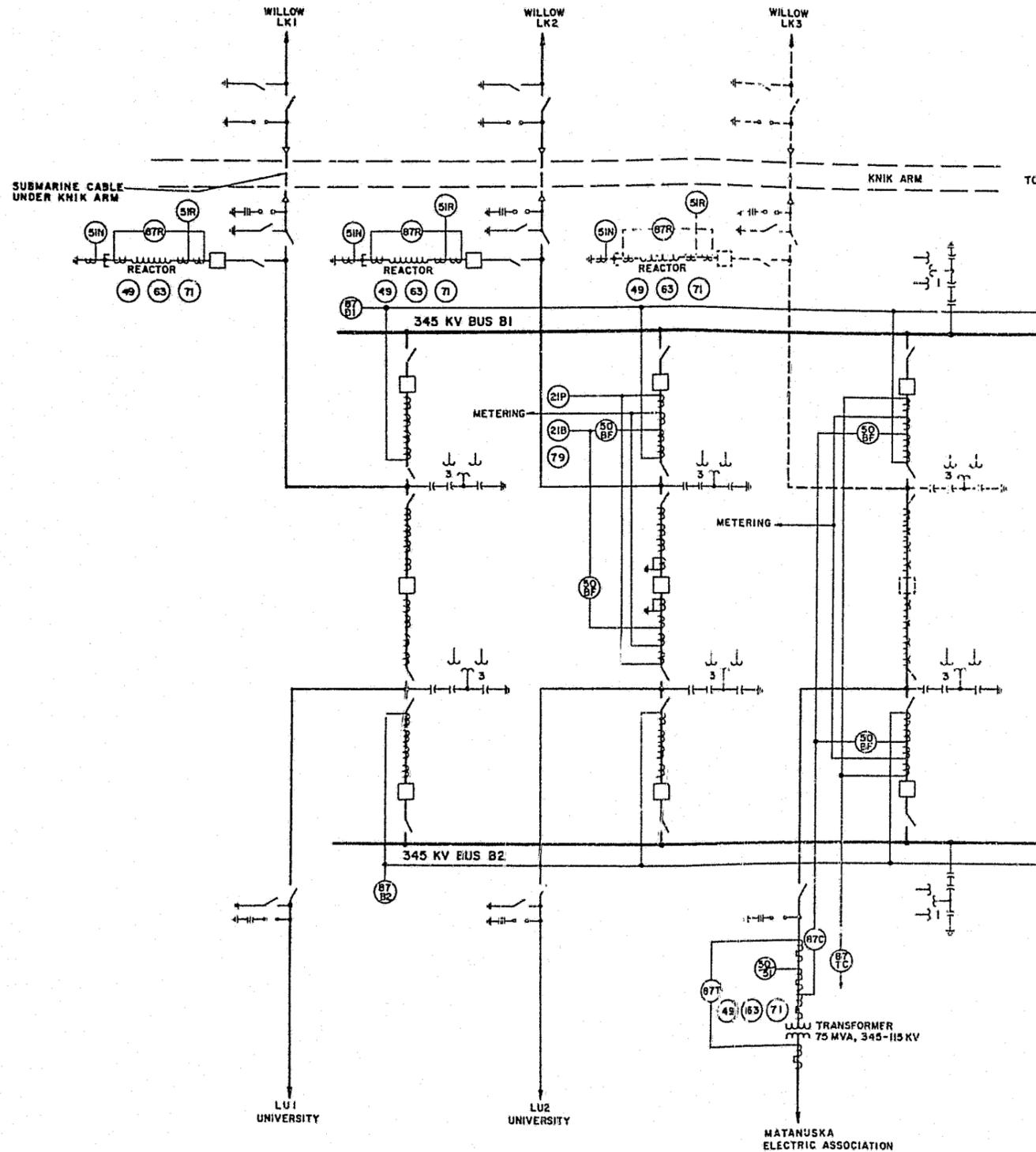
FOLD LENGTH

12
11
8.5
8

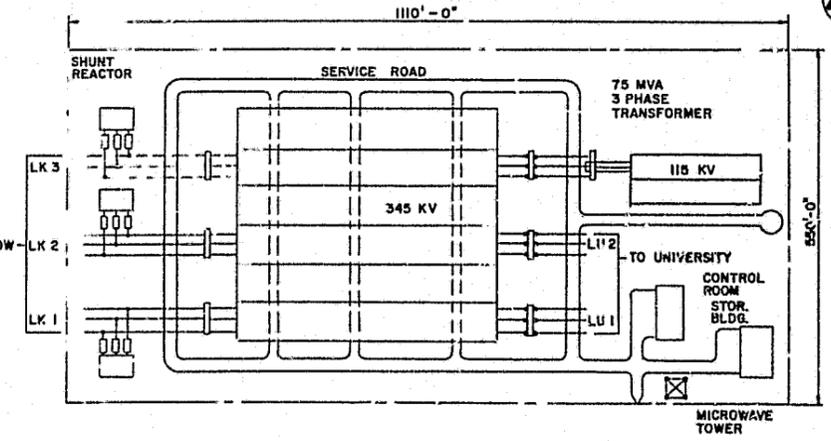
AUTO

MANUA

FEED



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

FOLD LENGTH

12

11

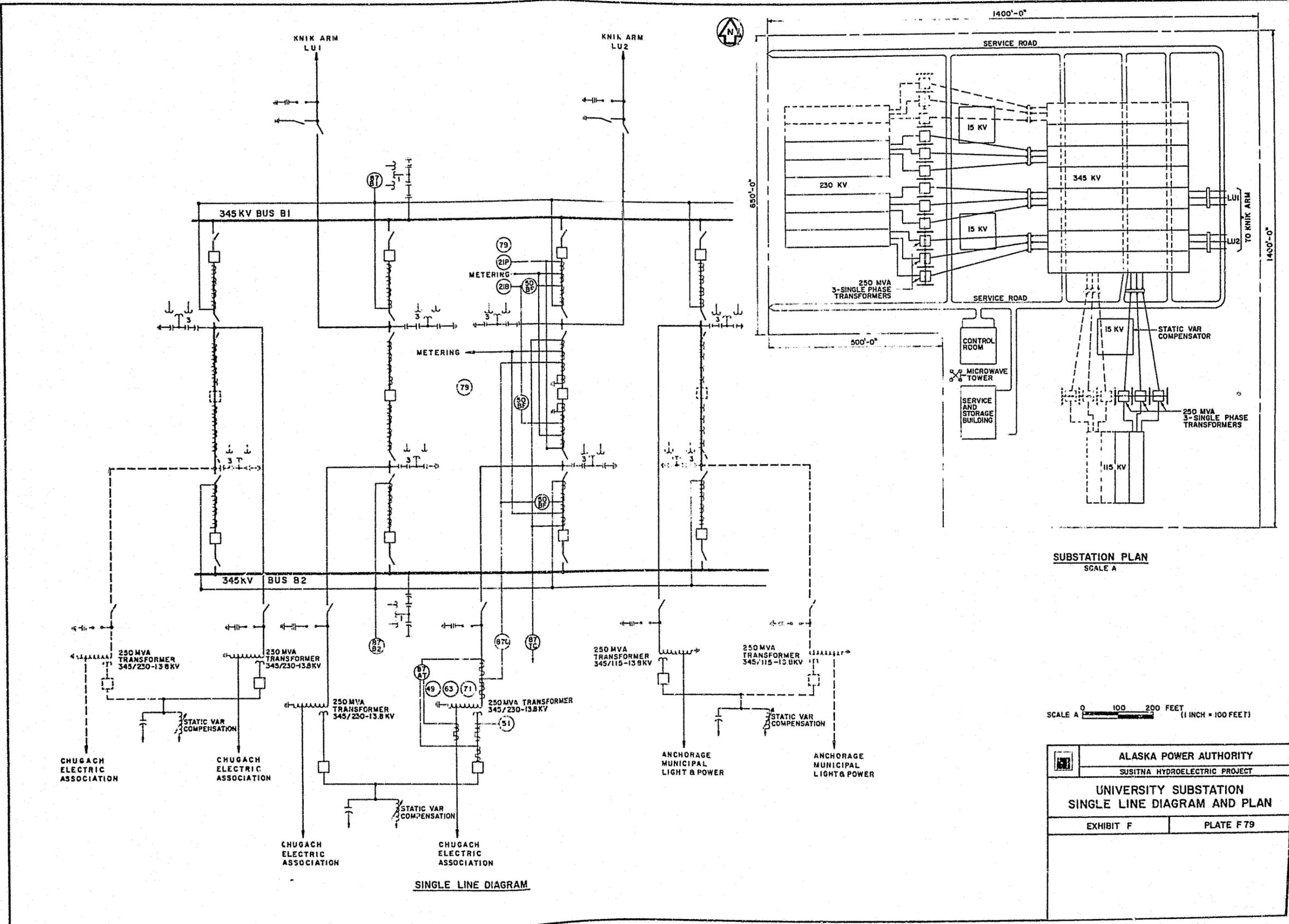
8.5

8

AUTO

MANUA

FEED



SUBSTATION PLAN
SCALE A

SINGLE LINE DIAGRAM

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

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

FOLD LENGTH

12

11

8.5

8

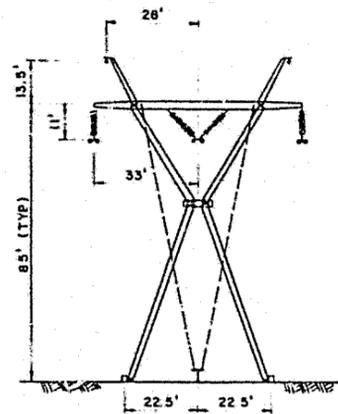
AUTO

MANUA

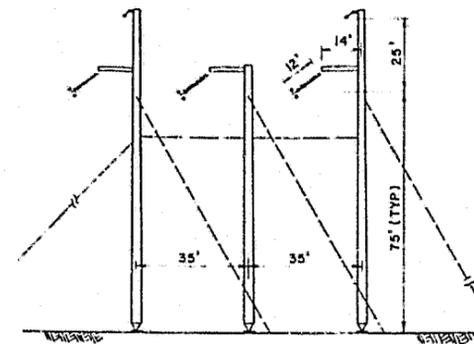
FEED

NOTES:

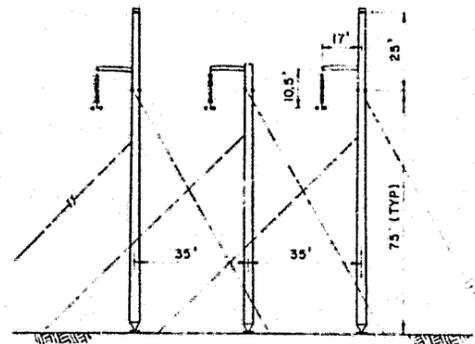
- 1. BASED ON PROPOSED STRUCTURES FOR INTERTIE PROJECT.
- 2. AVERAGE CONDUCTOR SAG - 37 FEET.
- 3. AVERAGE TOWER SPACING - 1400 FEET.



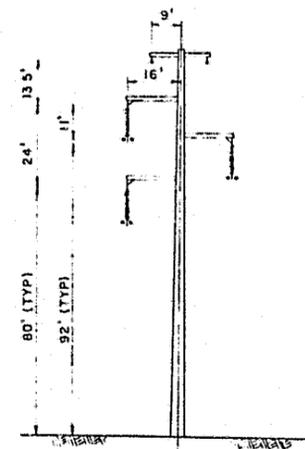
345 kV TANGENT OR LIGHT ANGLE STRUCTURE



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

FOLD LENGTH

12

11

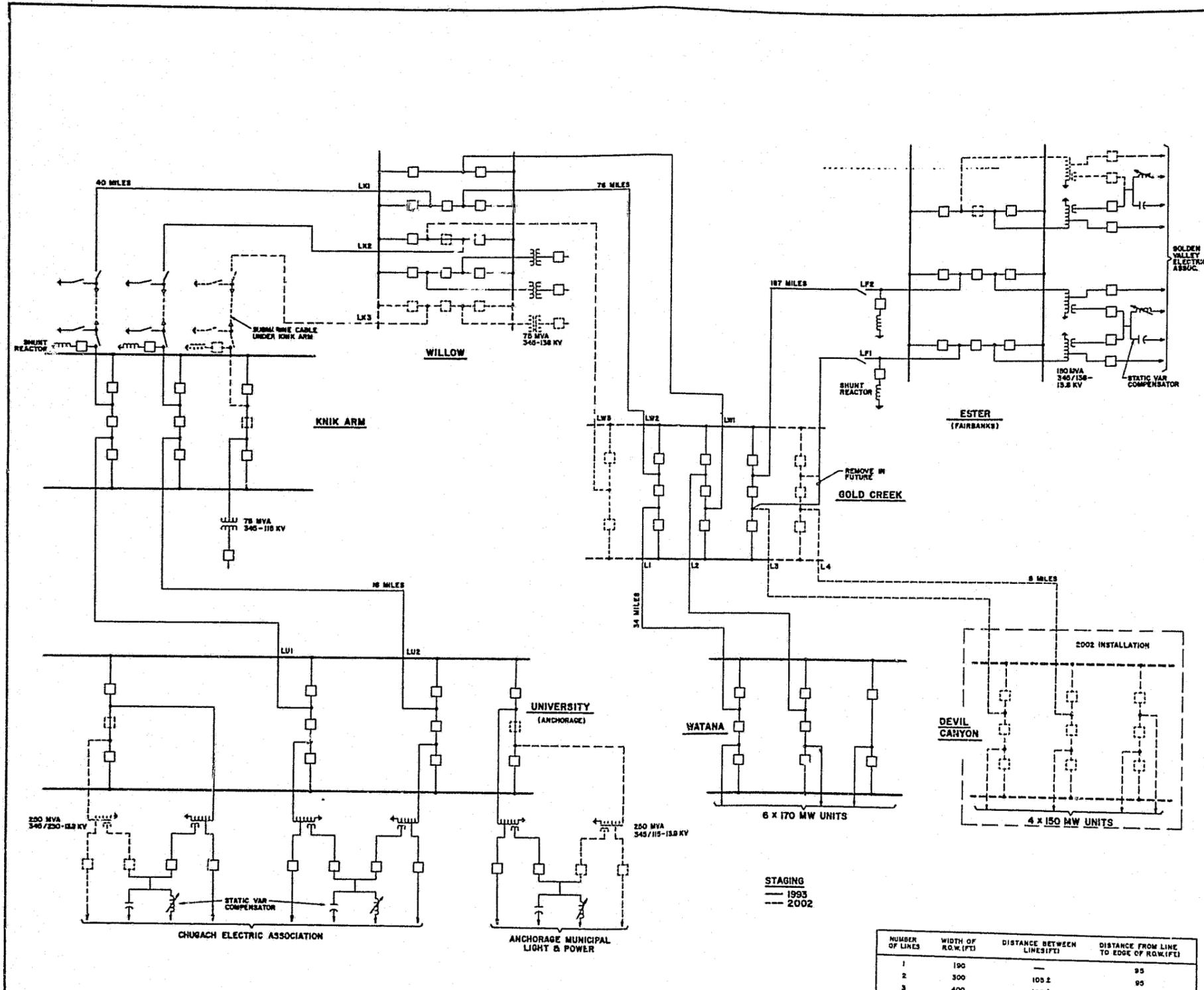
8.5

8

AUTO

MANUAL

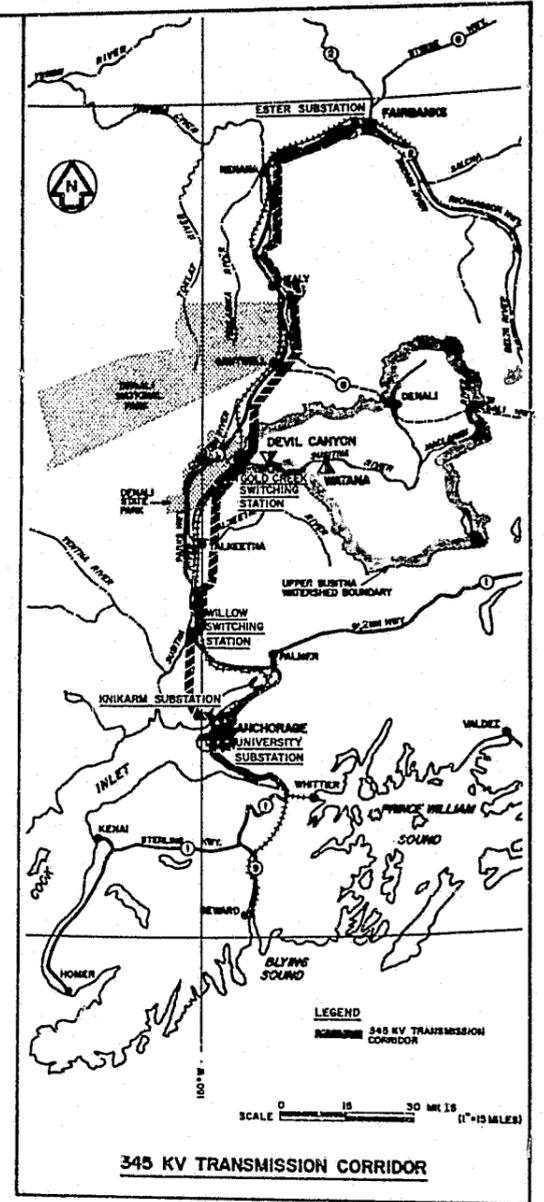
FEED



345 KV TRANSMISSION SYSTEM SINGLE LINE DIAGRAM

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

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



345 KV TRANSMISSION CORRIDOR

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

**345 KV SYSTEM SINGLE LINE DIAGRAM
AND TRANSMISSION CORRIDOR**

EXHIBIT F PLATE F81