LGL

SUSITNA HYDROELECTRIC PROJECT

FEASIBILITY REPORT

VOLUME 3

PLATES

FINAL DRAFT

Prepared by:

ACRES

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

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SUSITNA HYDROELECTRIC PROJECT

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WATANA

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CONSTRUCTION SCHEDULES

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75	WATANA - CONSTRUCTION SCHEDULE
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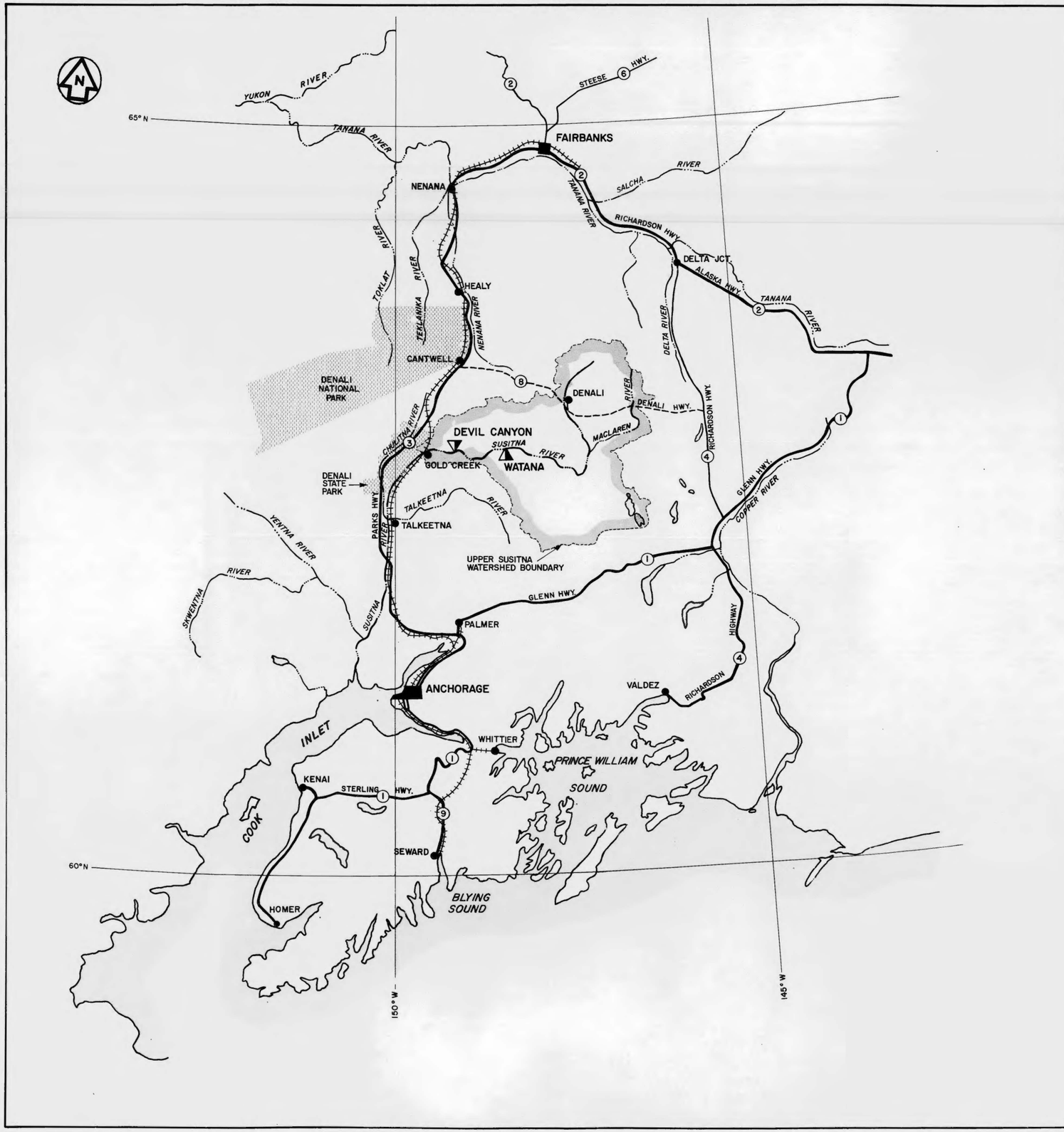

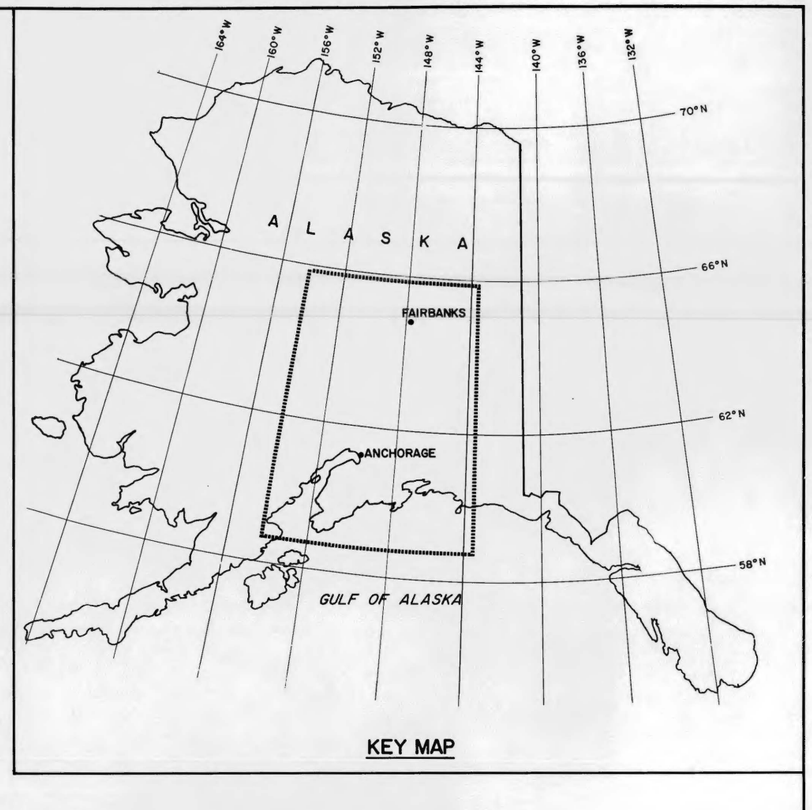

KEY MAP

LEGEND

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

SCALE 0 20 40 MILES

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RAILBELT AREA

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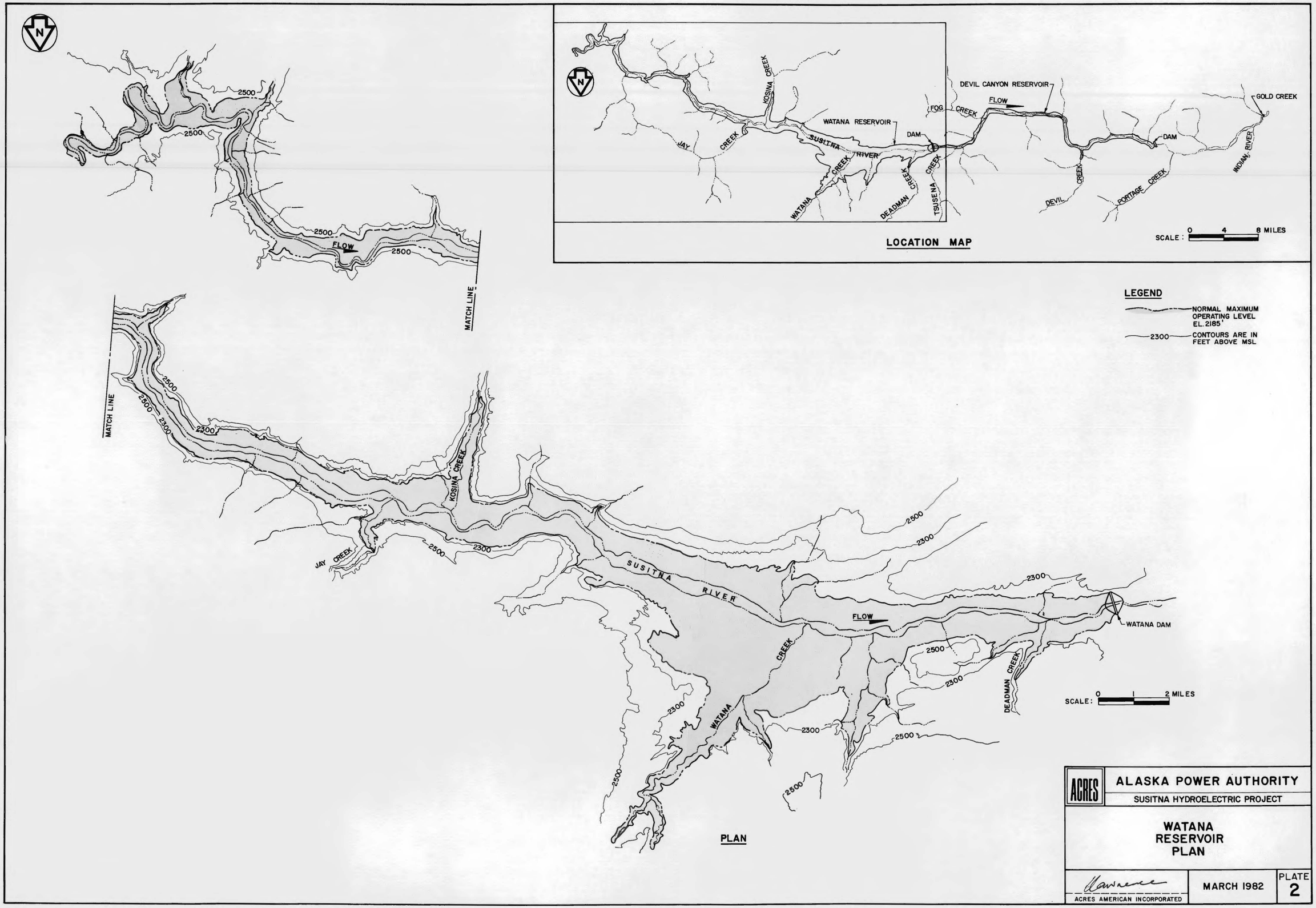
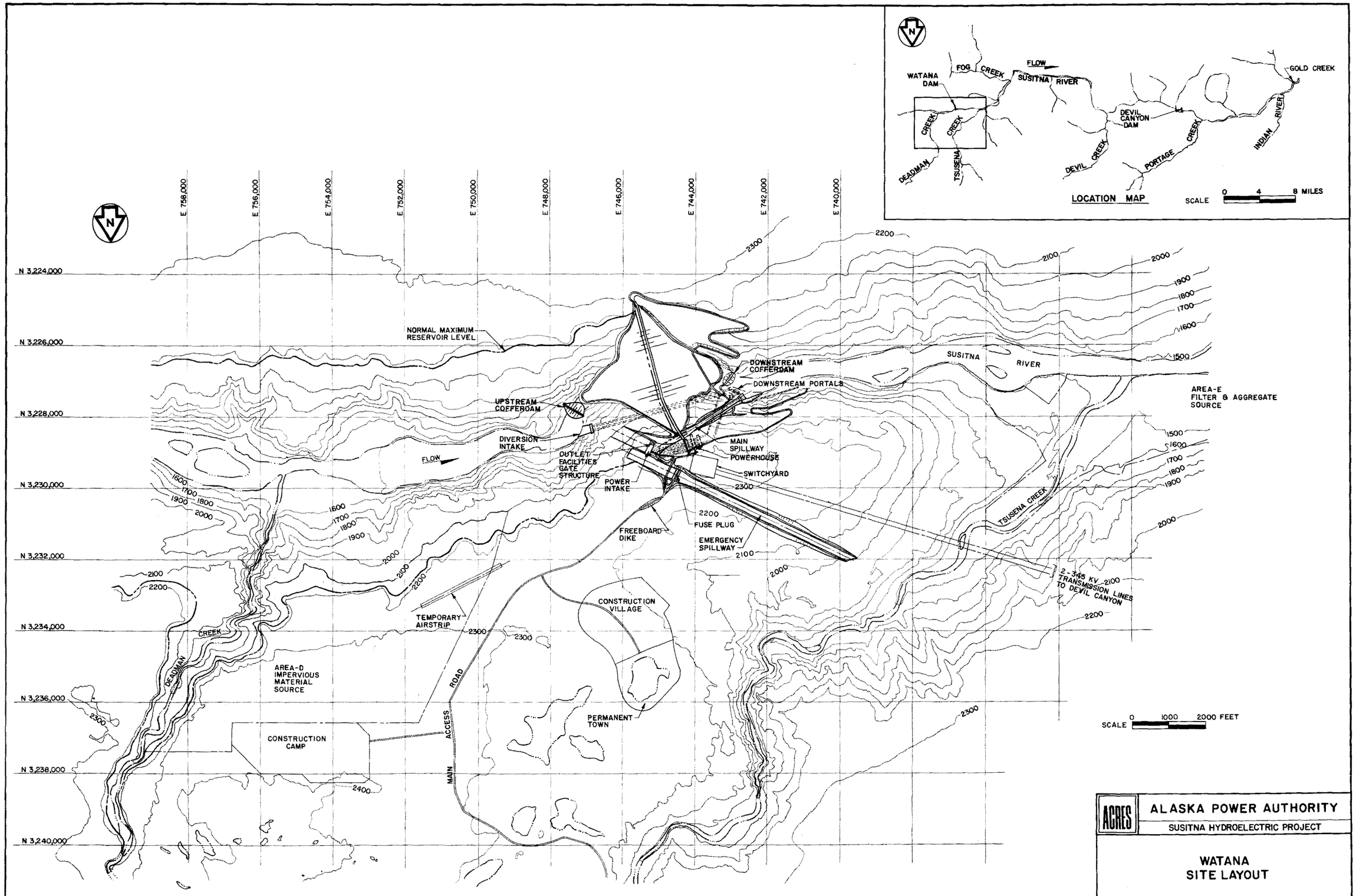
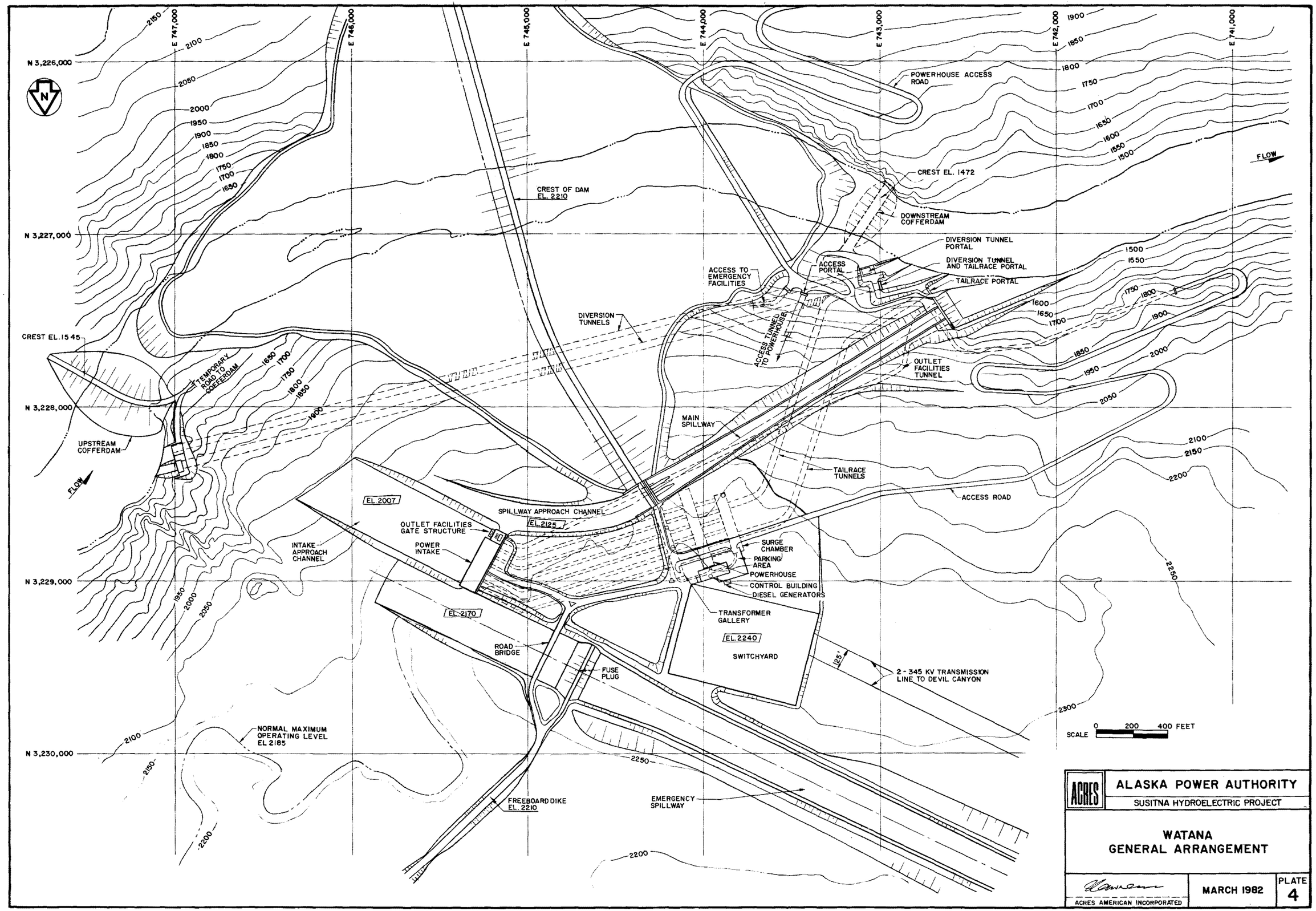
PLATE 1


2500
FLOW
MATCH LINE
2300
KOSINA CREEK
JAY CREEK
SUSITNA RIVER
WATANA CREEK
DEADMAN CREEK
WATANA DAM
SCALE: 0 1 2 MILES
PLAN
WATANA RESERVOIR
DAM
FOG CREEK
DEVIL CANYON RESERVOIR
DEVIL CREEK
PORTAGE CREEK
INDIAN RIVER
GOLD CREEK
TSUSENA CREEK
SCALE: 0 4 8 MILES
LOCATION MAP
LEGEND
NORMAL MAXIMUM OPERATING LEVEL EL. 2185'
2300 CONTOURS ARE IN FEET ABOVE MSL
ACRES
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
WATANA RESERVOIR PLAN
ACRES AMERICAN INCORPORATED
MARCH 1982
PLATE 2


LOCATION MAP
SCALE 0 4 8 MILES
WATANA DAM
FOG CREEK
FLOW
SUSITNA RIVER
GOLD CREEK
DEVIL CANYON DAM
DEVIL CREEK
PORTAGE CREEK
INDIAN RIVER
DEADMAN CREEK
TSUSENA CREEK
E 758,000
E 756,000
E 754,000
E 752,000
E 750,000
E 748,000
E 746,000
E 744,000
E 742,000
E 740,000
N 3,224,000
N 3,226,000
N 3,228,000
N 3,230,000
N 3,232,000
N 3,234,000
N 3,236,000
N 3,238,000
N 3,240,000
NORMAL MAXIMUM RESERVOIR LEVEL
DOWNSTREAM COFFERDAM
DOWNSTREAM PORTALS
UPSTREAM COFFERDAM
DIVERSION INTAKE
OUTLET FACILITIES GATE STRUCTURE
POWER INTAKE
MAIN SPILLWAY
POWERHOUSE
SWITCHYARD
FUSE PLUG
EMERGENCY SPILLWAY
FREEBOARD DIKE
TEMPORARY AIRSTRIP
CONSTRUCTION VILLAGE
PERMANENT TOWN
CONSTRUCTION CAMP
AREA-D IMPERVIOUS MATERIAL SOURCE
AREA-E FILTER & AGGREGATE SOURCE
MAIN ACCESS ROAD
2-345 KV TRANSMISSION LINES TO DEVIL CANYON
SCALE 0 1000 2000 FEET
ACRES
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
WATANA SITE LAYOUT
ACRES AMERICAN INCORPORATED
MARCH 1982
PLATE 3


N 3,226,000
N 3,227,000
N 3,228,000
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N 3,230,000
E 747,000
E 746,000
E 745,000
E 744,000
E 743,000
E 742,000
E 741,000
N
FLOW
POWERHOUSE ACCESS ROAD
CREST EL. 1472
CREST OF DAM EL. 2210
DOWNSTREAM COFFERDAM
DIVERSION TUNNEL PORTAL
DIVERSION TUNNEL AND TAILRACE PORTAL
TAILRACE PORTAL
ACCESS PORTAL
ACCESS TO EMERGENCY FACILITIES
ACCESS TUNNEL TO POWERHOUSE
DIVERSION TUNNELS
CREST EL. 1545
TEMPORARY ROAD TO COFFERDAM
UPSTREAM COFFERDAM
OUTLET FACILITIES TUNNEL
MAIN SPILLWAY
TAILRACE TUNNELS
ACCESS ROAD
EL. 2007
SPILLWAY APPROACH CHANNEL
EL. 2125
OUTLET FACILITIES GATE STRUCTURE
INTAKE APPROACH CHANNEL
POWER INTAKE
SURGE CHAMBER
PARKING AREA
POWERHOUSE
CONTROL BUILDING
DIESEL GENERATORS
TRANSFORMER GALLERY
EL. 2170
EL. 2240
SWITCHYARD
ROAD BRIDGE
FUSE PLUG
125'
2 - 345 KV TRANSMISSION LINE TO DEVIL CANYON
NORMAL MAXIMUM OPERATING LEVEL EL 2185
FREEBOARD DIKE EL. 2210
EMERGENCY SPILLWAY
SCALE 0 200 400 FEET
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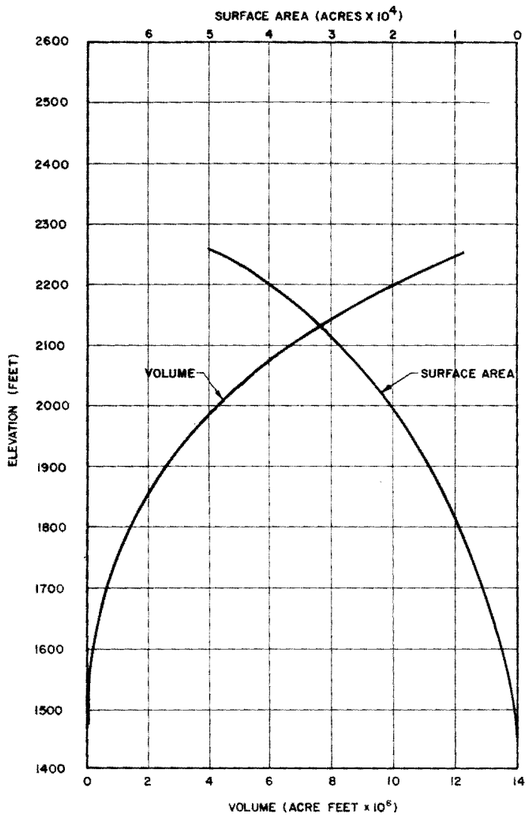
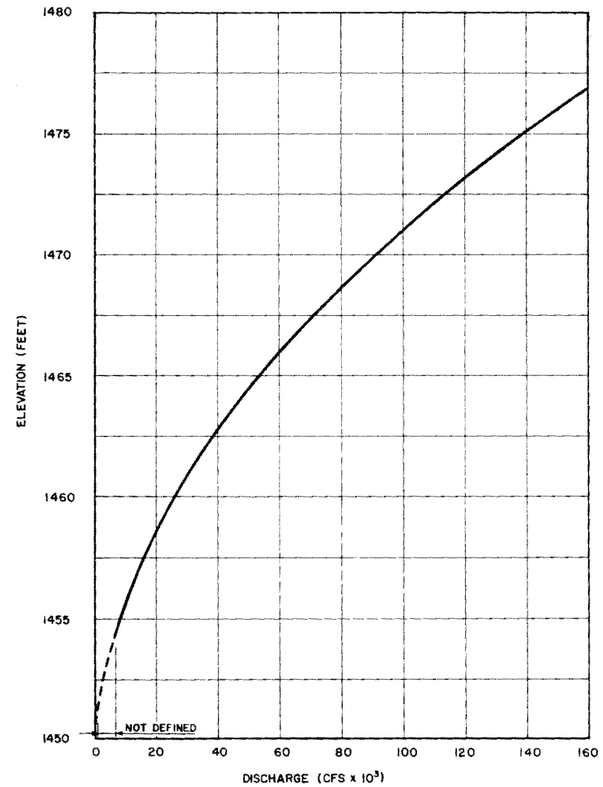
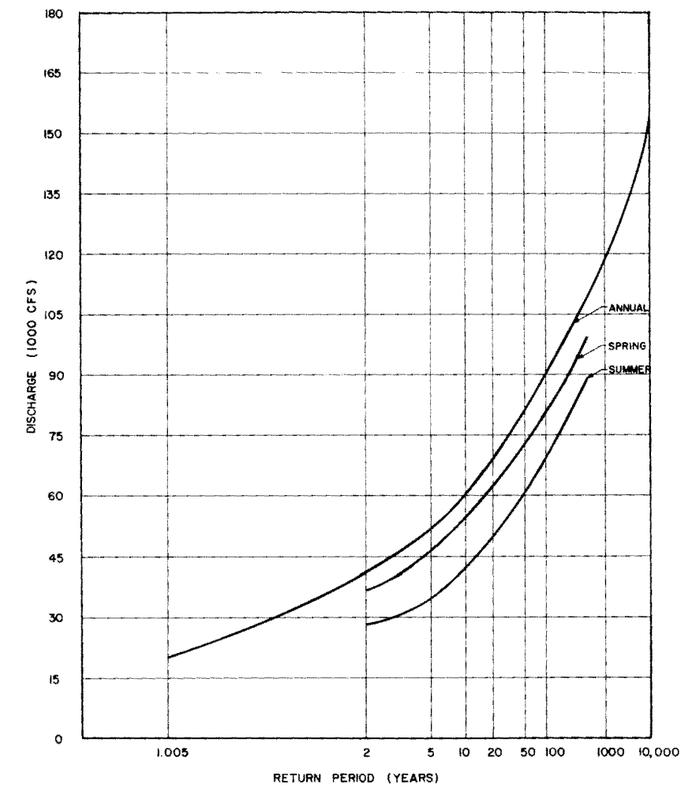
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
WATANA
GENERAL ARRANGEMENT
ACRES AMERICAN INCORPORATED
MARCH 1982
PLATE 4



RESERVOIR VOLUME AND SURFACE AREA



TAILWATER RATING



INFLOW FLOOD FREQUENCY

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SUSITNA HYDROELECTRIC PROJECT

WATANA
HYDRLOGICAL DATA
SHEET I

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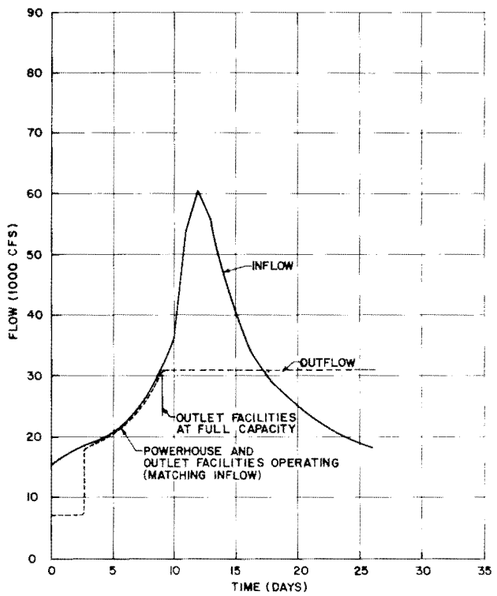
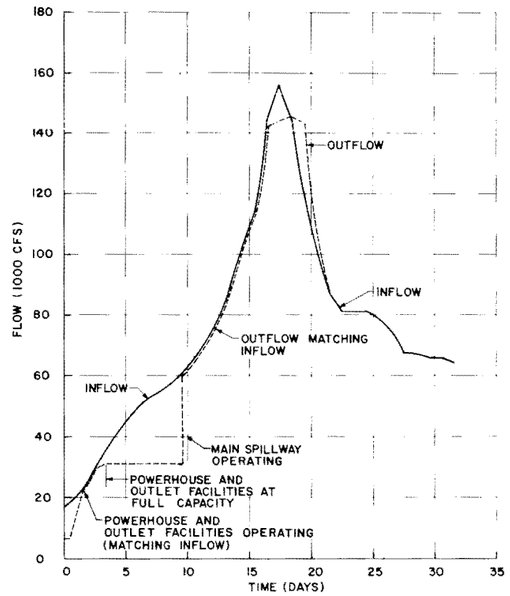
MARCH 1982

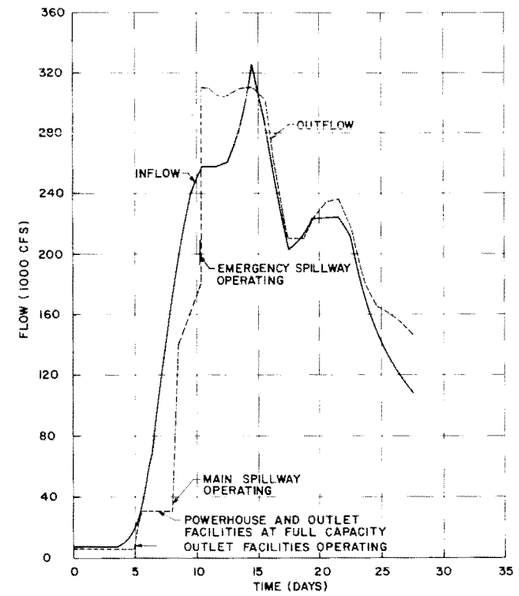
PLATE 5



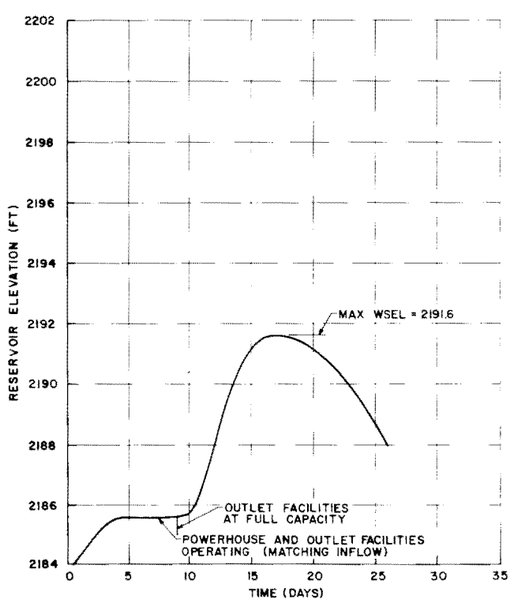
1:50 YEAR FLOOD
(SUMMER)



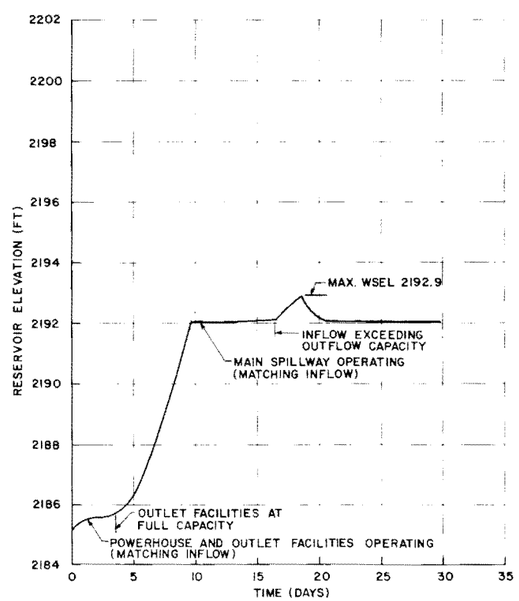
1:10,000 YEAR FLOOD



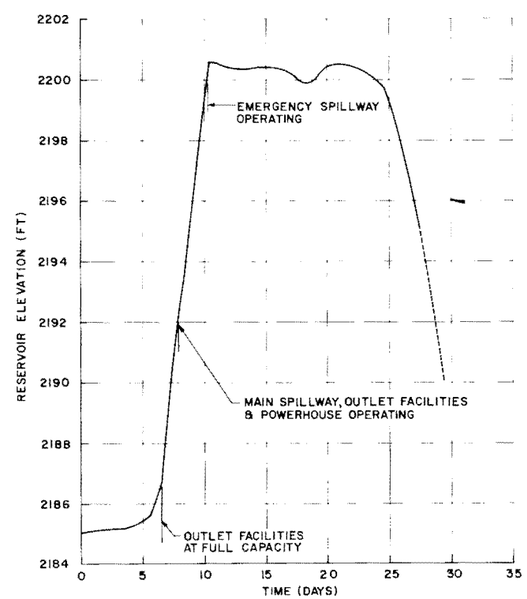
PROBABLE MAXIMUM FLOOD



1:50 YEAR FLOOD
(SUMMER)



1:10,000 YEAR FLOOD



PROBABLE MAXIMUM FLOOD

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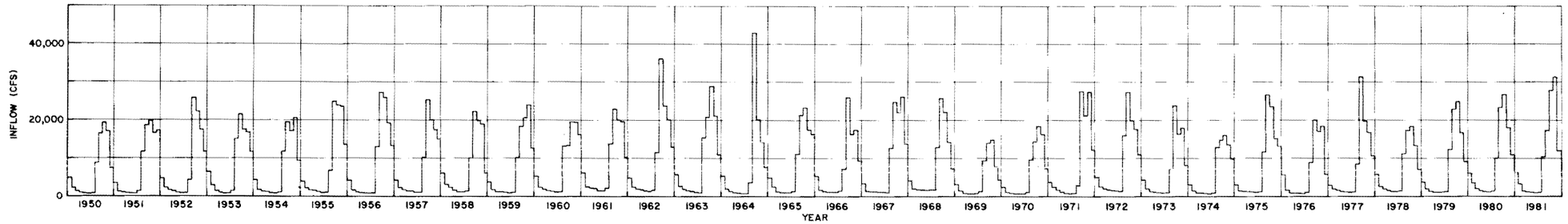
SUSITNA HYDROELECTRIC PROJECT

WATANA
HYDROLOGICAL DATA
SHEET 2

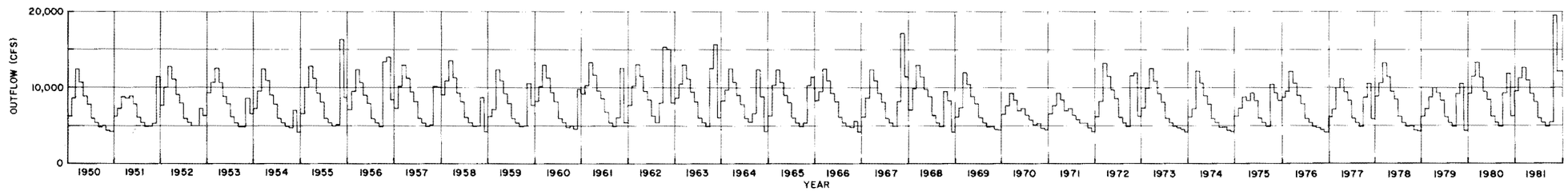
ACRES AMERICAN INCORPORATED

MARCH 1982

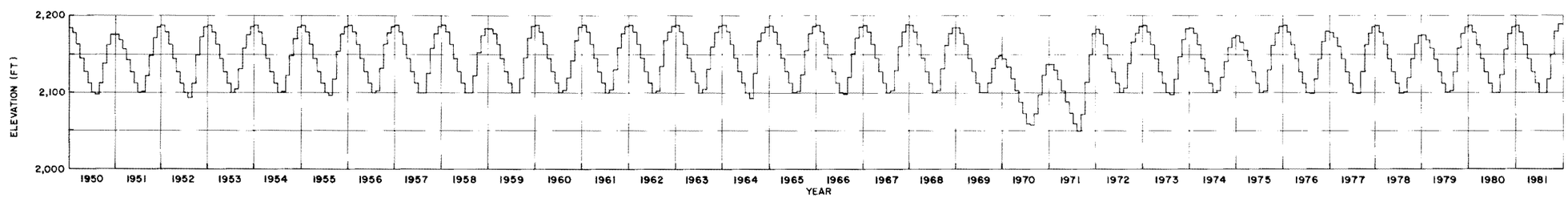
PLATE 6



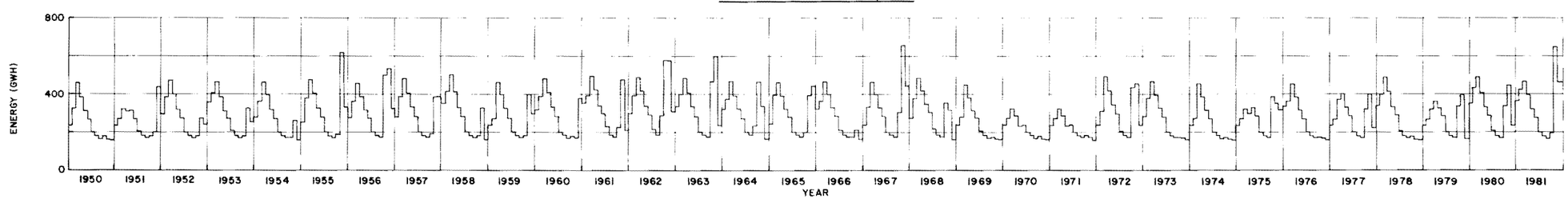
WATANA
INFLOW-CFS



WATANA
TOTAL OUTFLOW-CFS



WATANA
RESERVOIR ELEVATION-FT



WATANA
ENERGY-GWH/MONTH

NOTES:

1. ALL YEARS ARE WATER YEARS: OCTOBER THROUGH SEPTEMBER.

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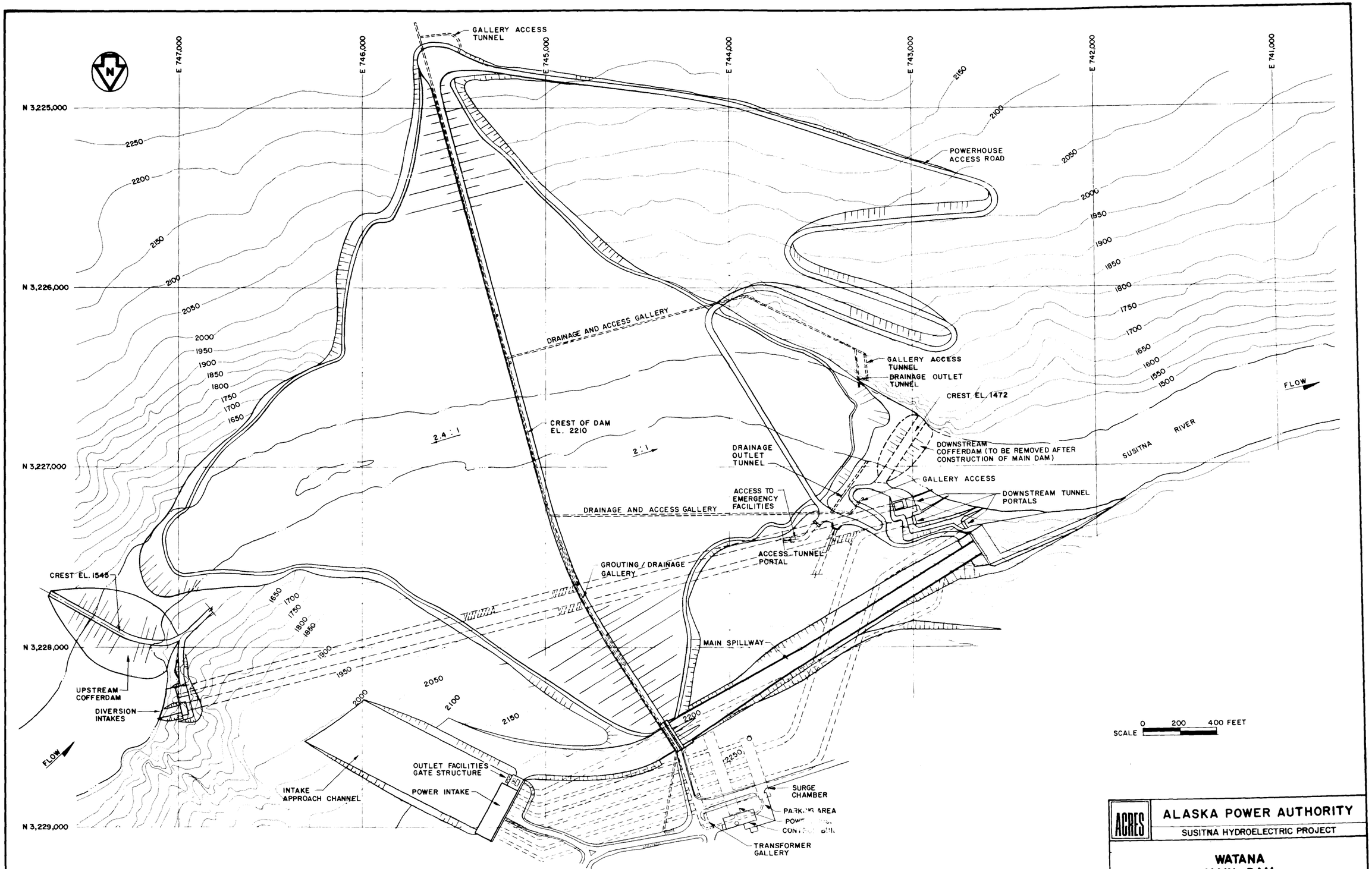
	SUSITNA HYDROELECTRIC PROJECT
	WATANA SIMULATED RESERVOIR OPERATION
Clawrence ACRES AMERICAN INCORPORATED	MARCH 1982 — PLATE 7



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ALASKA POWER AUTHORITY

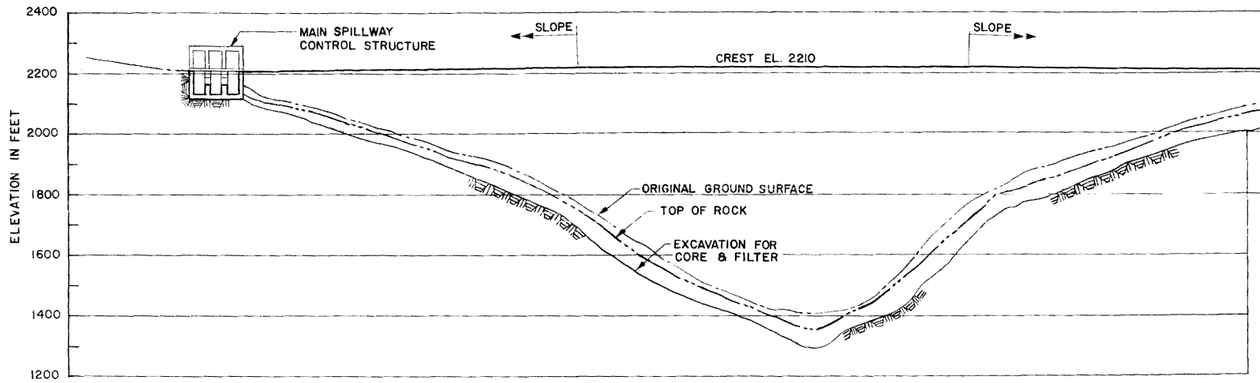
SUSITNA HYDROELECTRIC PROJECT

WATANA
MAIN DAM
PLAN

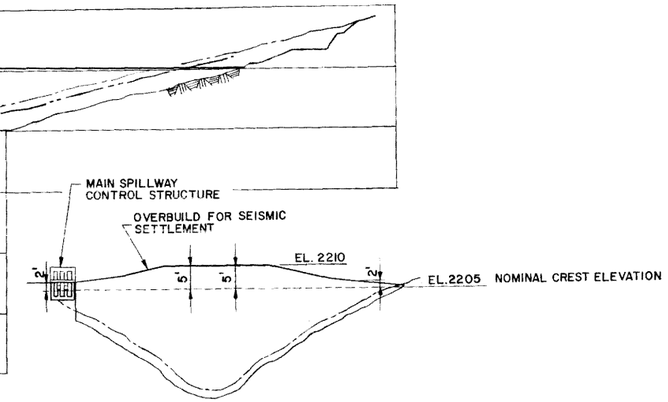
ACRES AMERICAN INCORPORATED

MARCH 1982

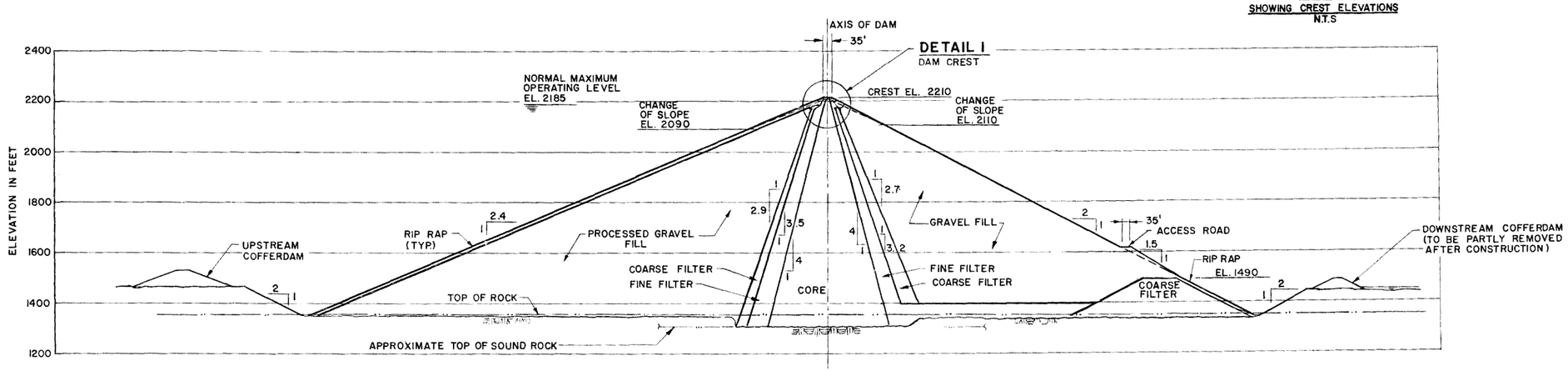
PLATE 8



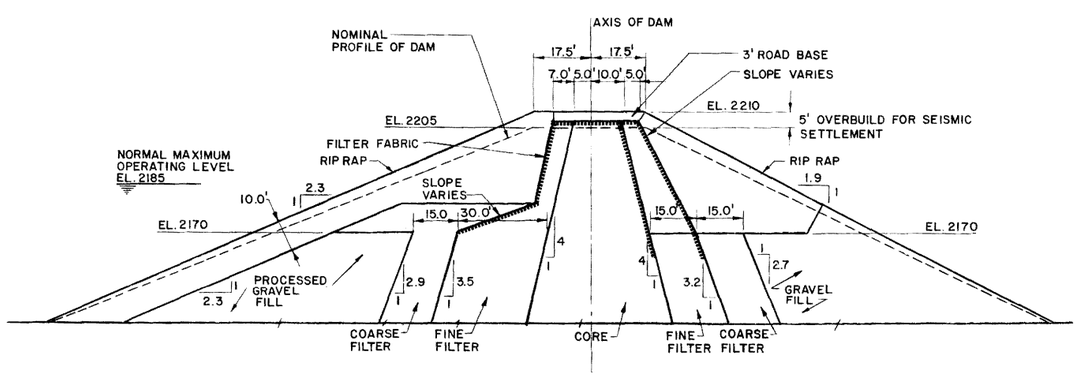
PROFILE (LOOKING UPSTREAM)
SCALE A



PROFILE
SHOWING CREST ELEVATIONS
N.T.S



SECTION THROUGH MAIN DAM
AT MAXIMUM HEIGHT
SCALE A



DETAIL I
SCALE B

SCALE B 0 20 40 FEET
SCALE A 0 200 400 FEET

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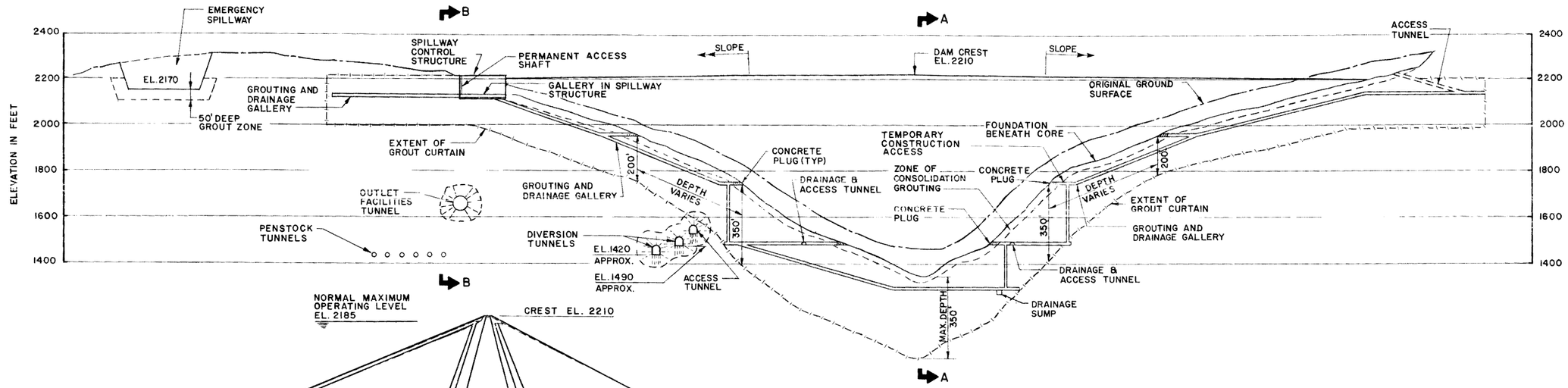
SUSITNA HYDROELECTRIC PROJECT

WATANA MAIN DAM SECTIONS

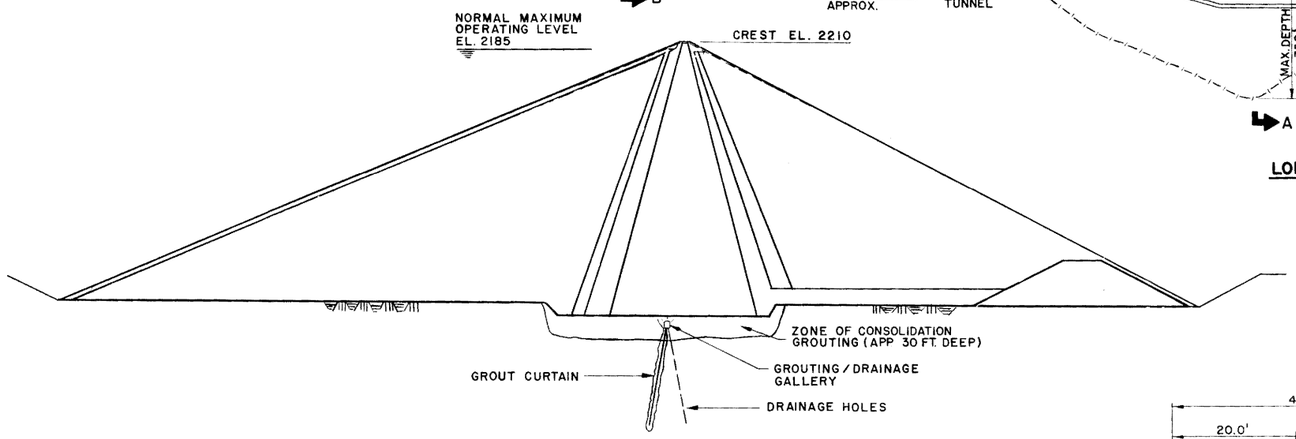
Lawrence
ACRES AMERICAN INCORPORATED

MARCH 1982

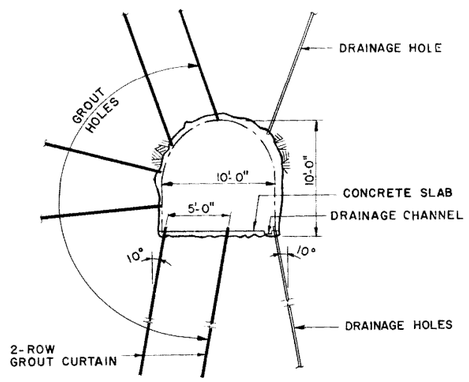
PLATE 9



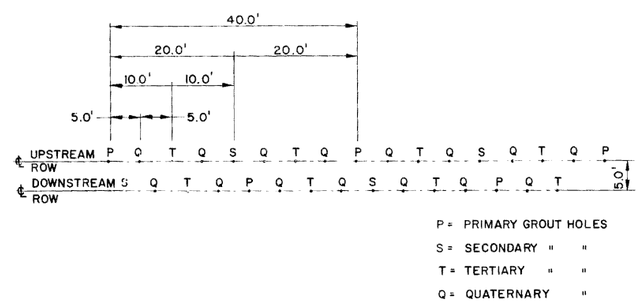
LONGITUDINAL SECTION (LOOKING UPSTREAM)
SCALE A



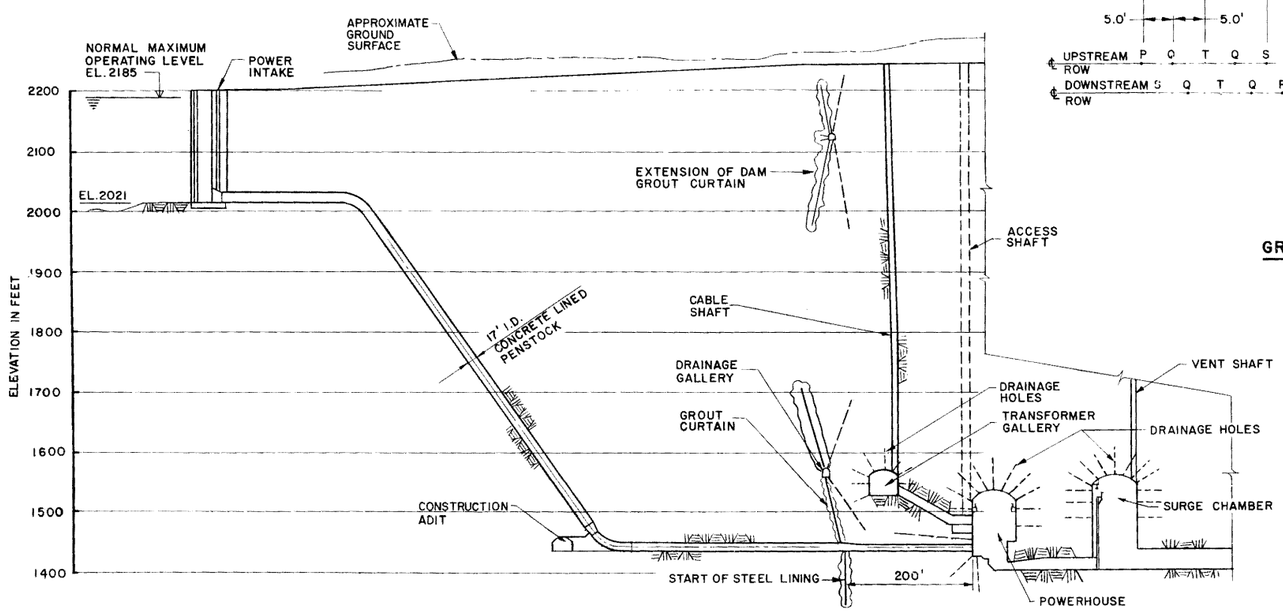
SECTION A-A
SCALE A



DETAIL - GROUTING & DRAINAGE GALLERY
SCALE D



GROUT HOLE SPACING
SCALE C



SECTION B-B
SCALE B

SCALE D 0 5 10 FEET
SCALE C 0 10 20 FEET
SCALE B 0 100 200 FEET
SCALE A 0 200 400 FEET

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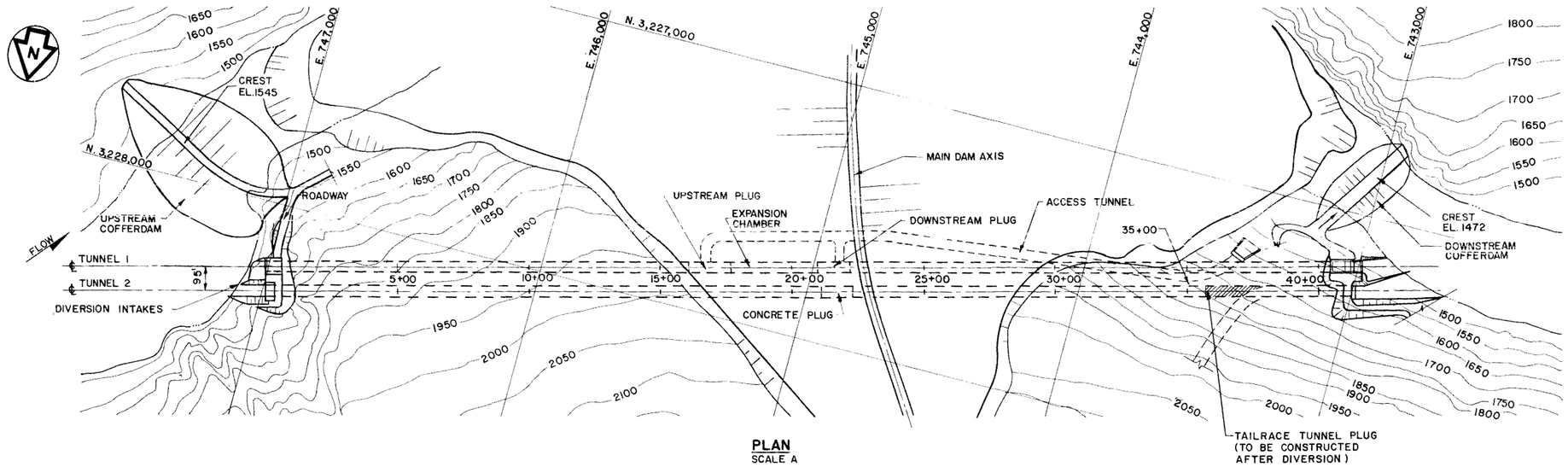
SUSITNA HYDROELECTRIC PROJECT

WATANA
MAIN DAM
GROUTING & DRAINAGE

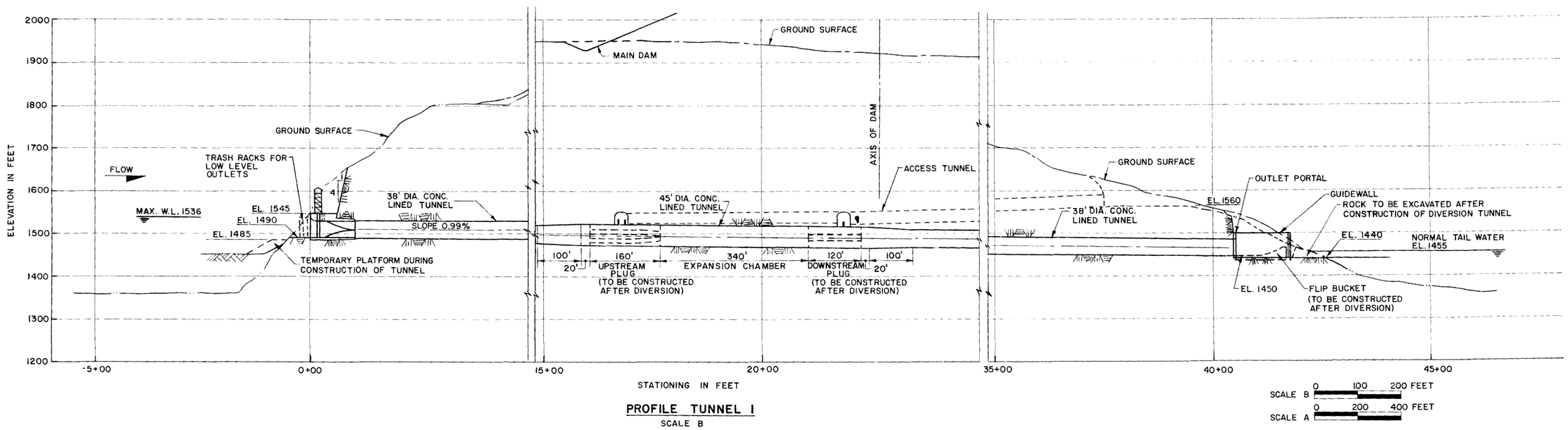
ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 10



PLAN
SCALE A



PROFILE TUNNEL I
SCALE B

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ALASKA POWER AUTHORITY

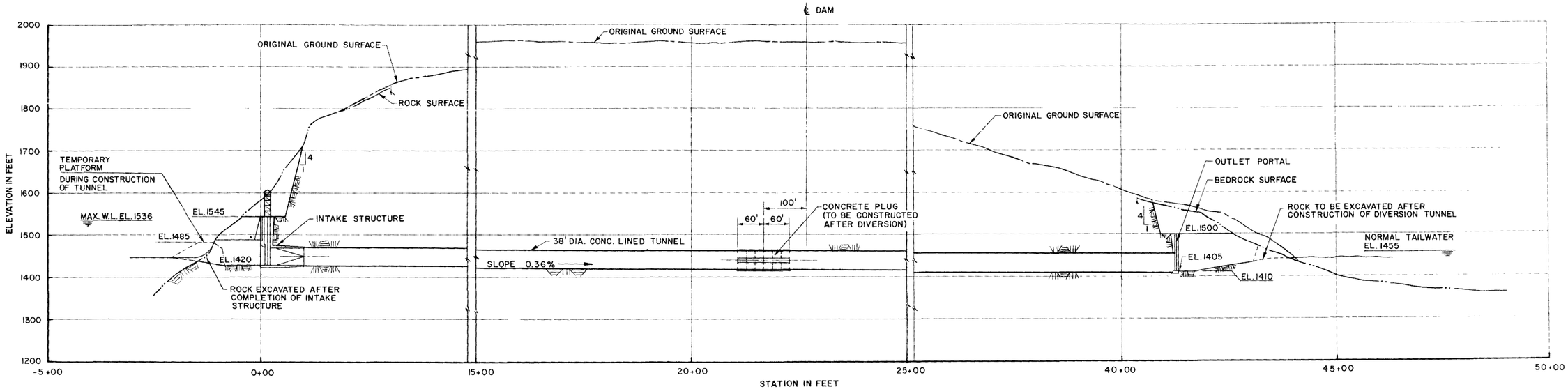
SUSITNA HYDROELECTRIC PROJECT

WATANA
DIVERSION
GENERAL ARRANGEMENT

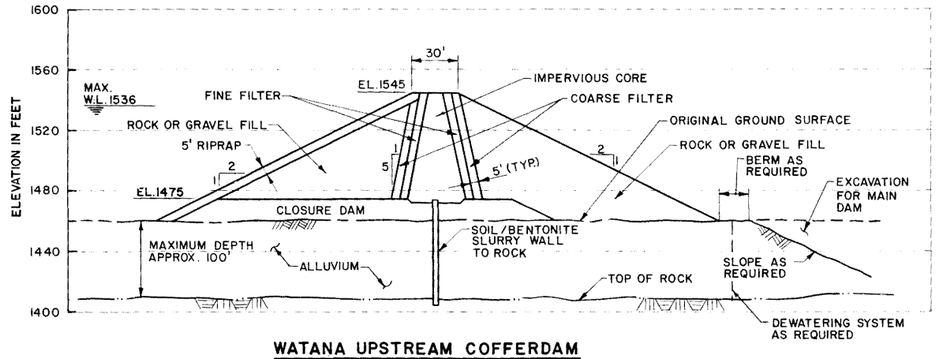
Lawrence
ACRES AMERICAN INCORPORATED

MARCH 1982

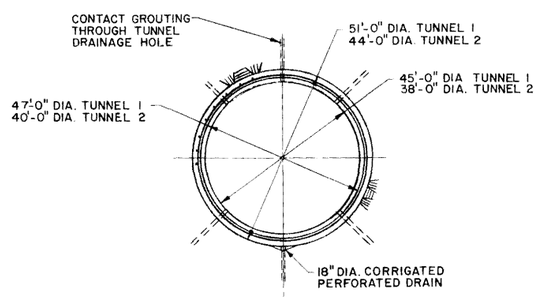
PLATE
11



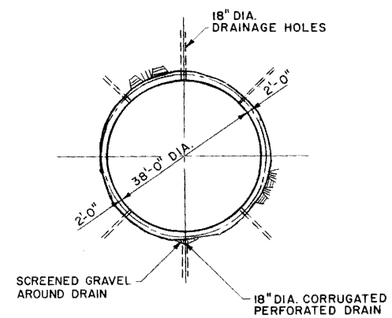
PROFILE - TUNNEL 2
SCALE A



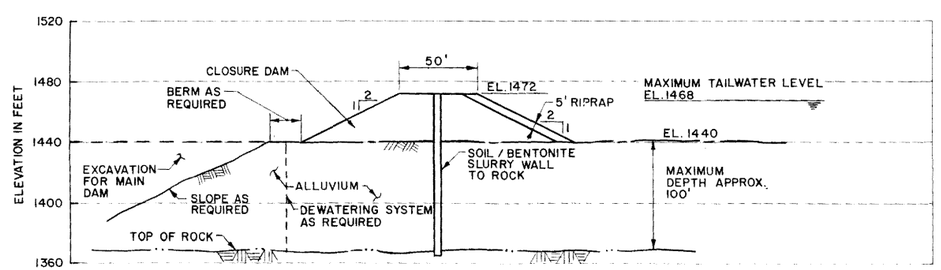
WATANA UPSTREAM COFFERDAM
SCALE B



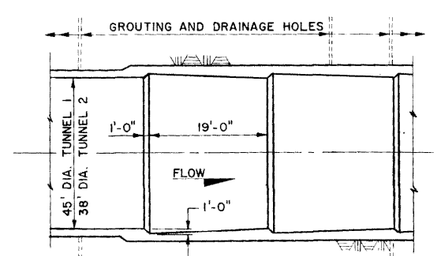
CROSS SECTION AT PLUG (TYPICAL)
N.T.S.



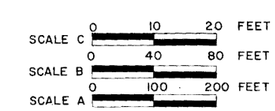
TYPICAL TUNNEL CROSS SECTION
N.T.S.



WATANA DOWNSTREAM COFFERDAM
SCALE B



SECTION ALONG ℄ OF TUNNEL AT PLUG LOCATION
SCALE C



ACRES

ALASKA POWER AUTHORITY

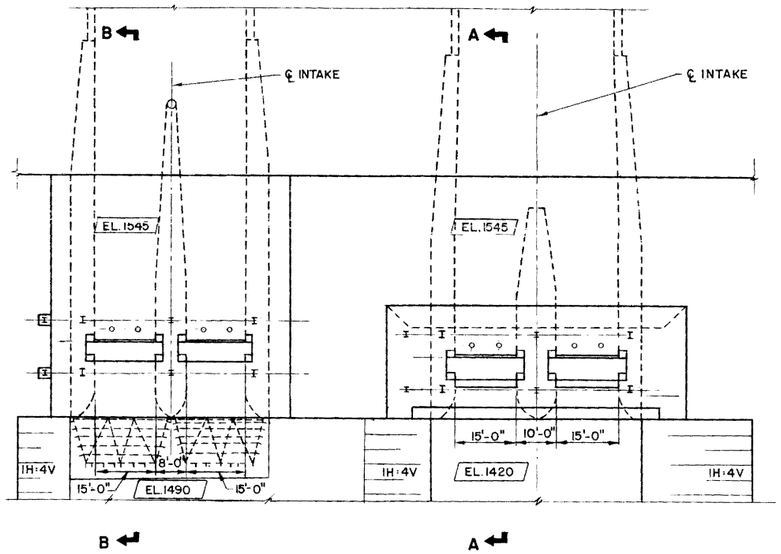
SUSITNA HYDROELECTRIC PROJECT

WATANA DIVERSION SECTIONS

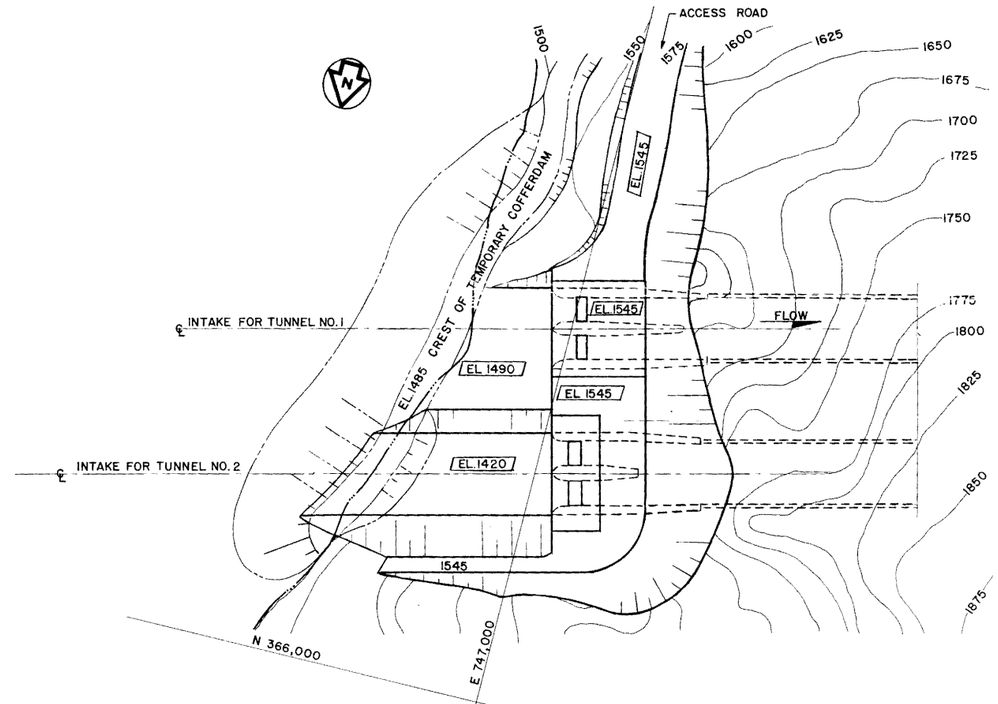
ACRES AMERICAN INCORPORATED

MARCH 1982

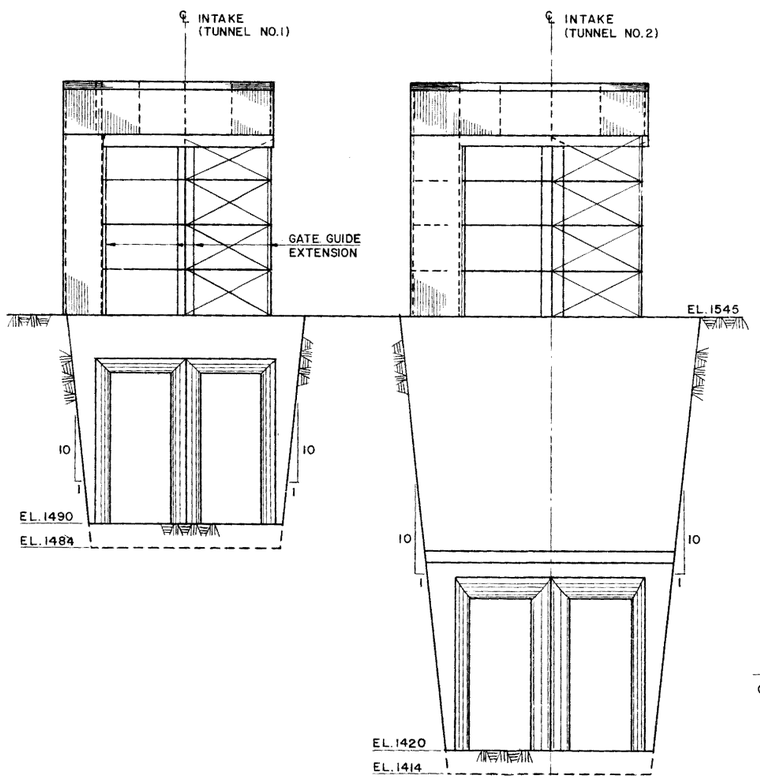
PLATE 12



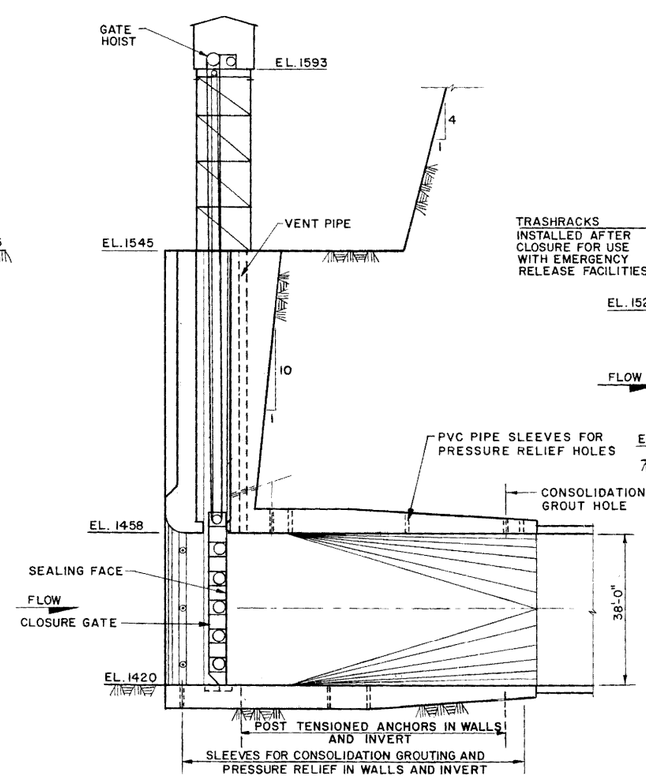
PLAN
AT EL. 1545
SCALE A



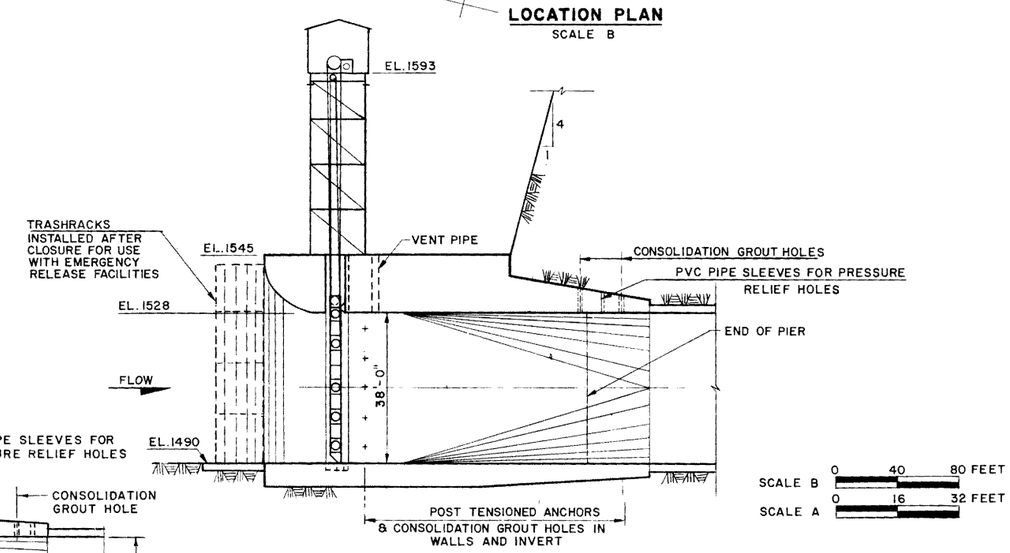
LOCATION PLAN
SCALE B



ELEVATION
SCALE A



SECTION A-A
SCALE A



SECTION B-B
SCALE A

ACRES

ALASKA POWER AUTHORITY

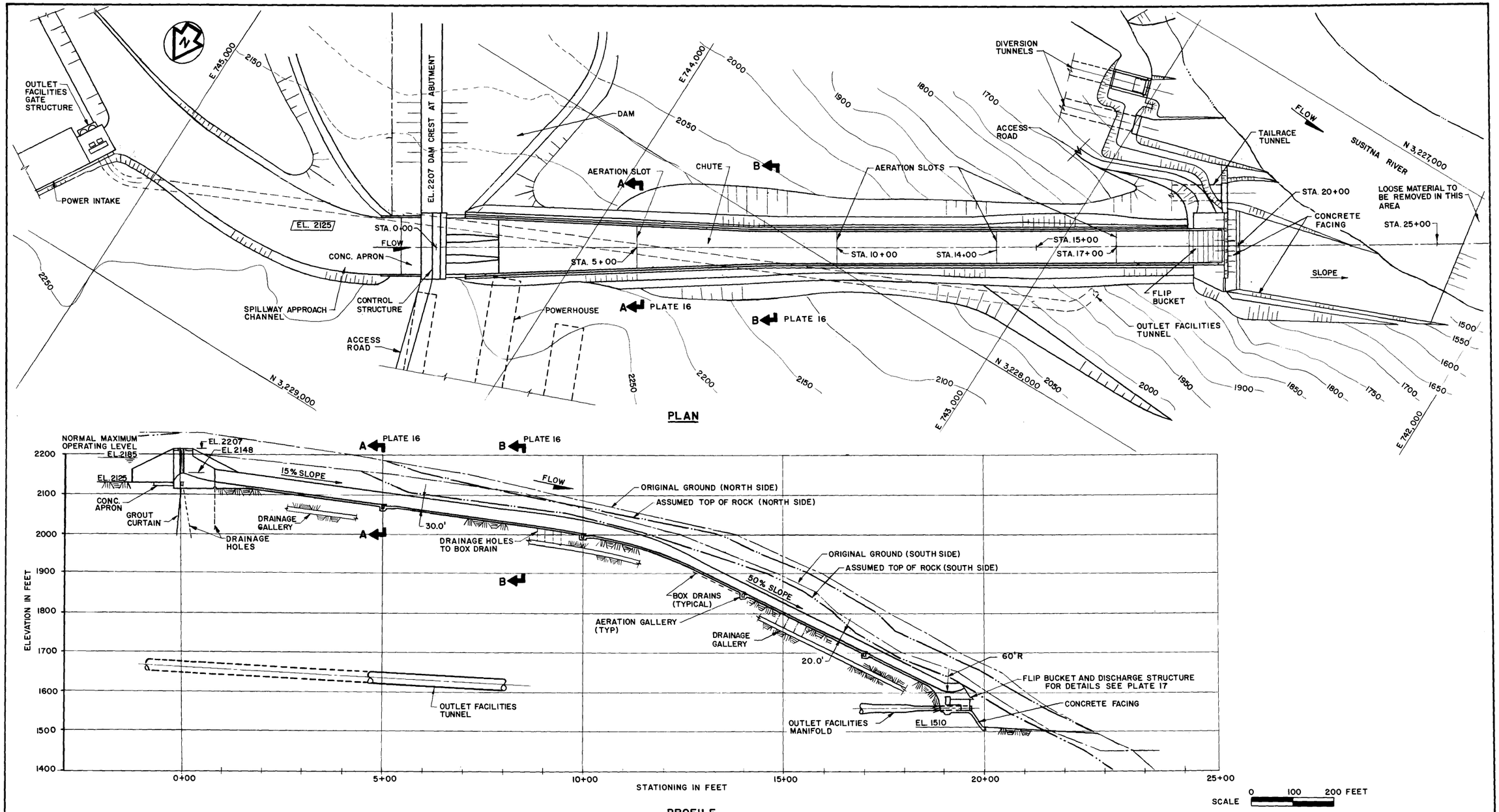
SUSITNA HYDROELECTRIC PROJECT

WATANA DIVERSION INTAKE STRUCTURES

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 13



ACRES

ALASKA POWER AUTHORITY

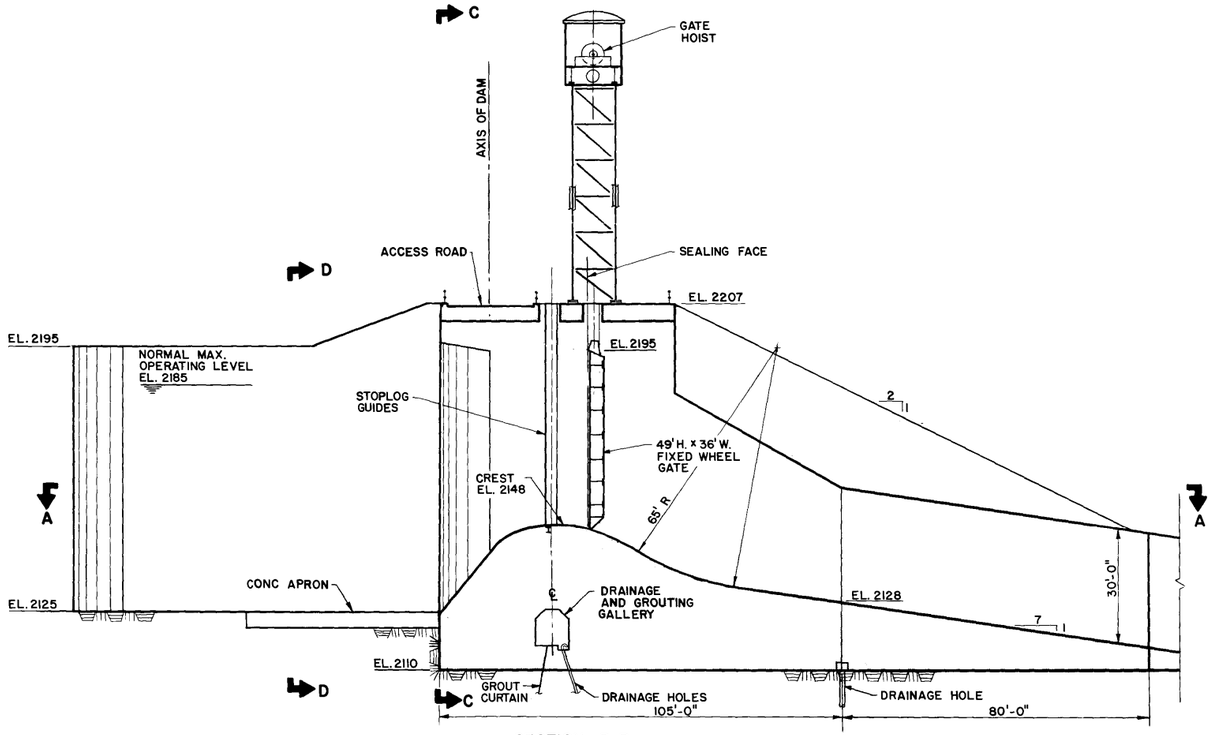
SUSITNA HYDROELECTRIC PROJECT

WATANA
MAIN SPILLWAY
GENERAL ARRANGEMENT

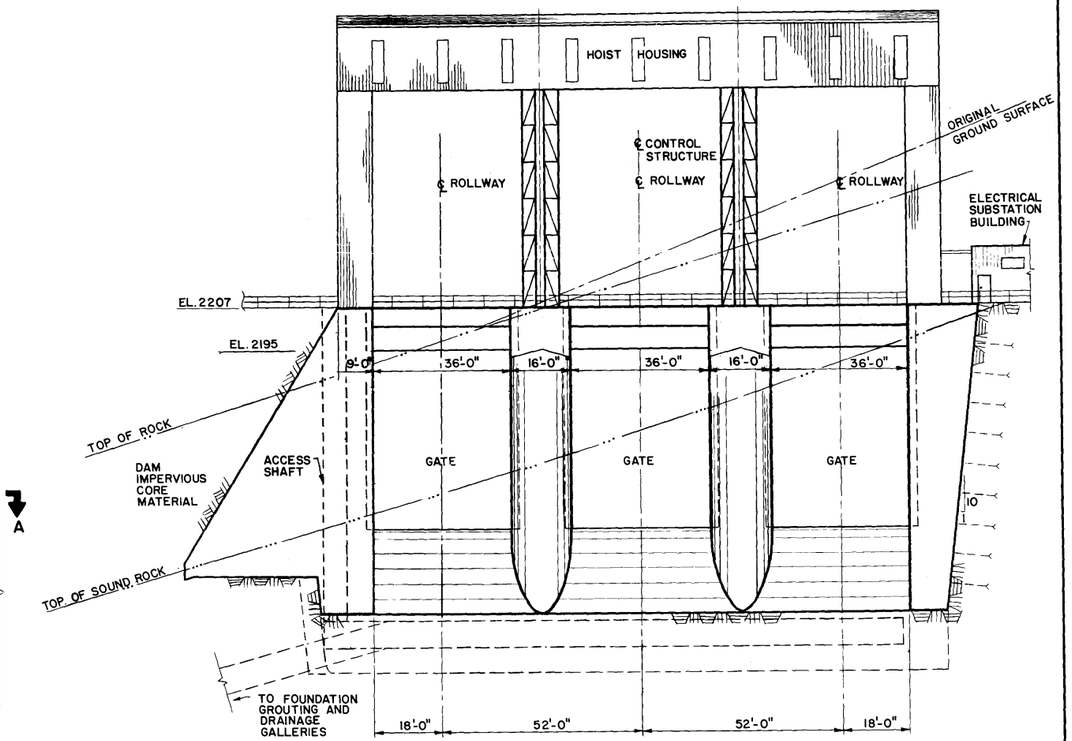
ACRES AMERICAN INCORPORATED

MARCH 1982

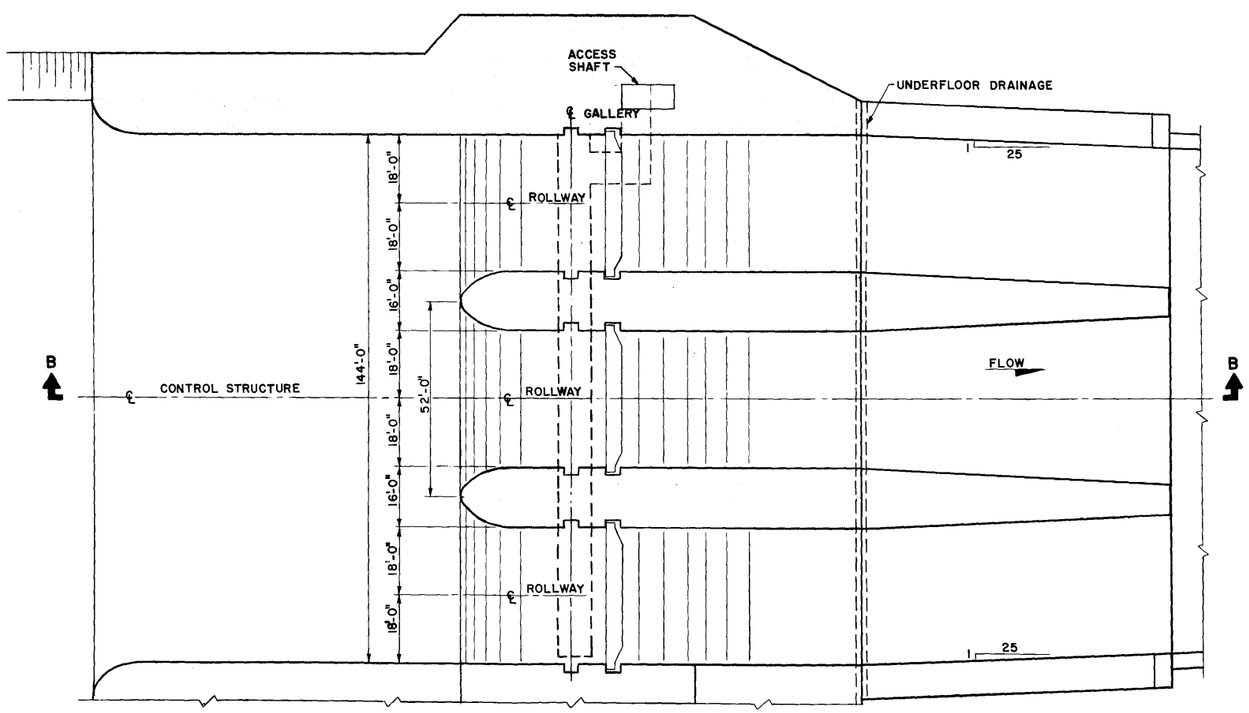
PLATE 14



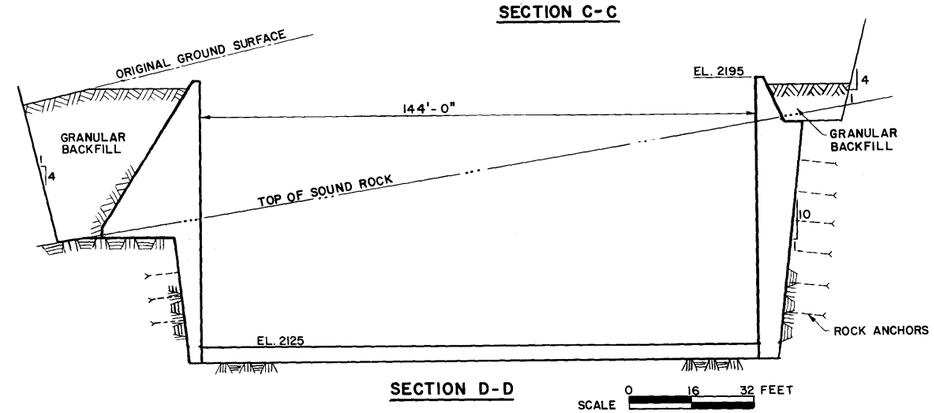
SECTION B-B



SECTION C-C



SECTION A-A



SECTION D-D

ACRES

ALASKA POWER AUTHORITY

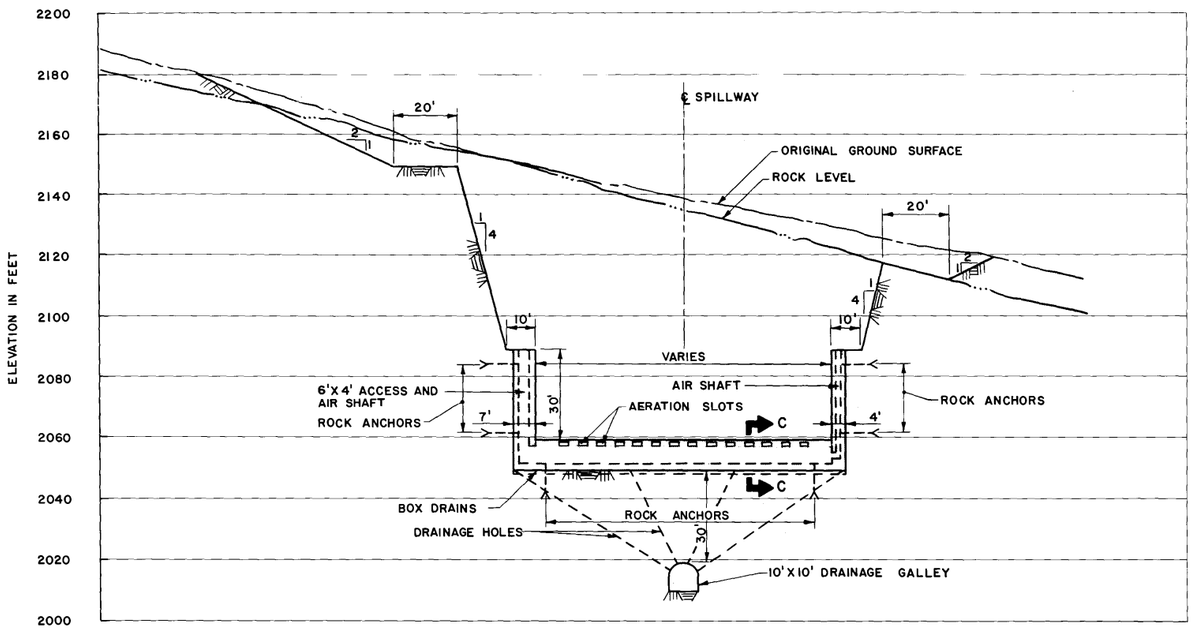
SUSITNA HYDROELECTRIC PROJECT

WATANA
MAIN SPILLWAY
CONTROL STRUCTURE

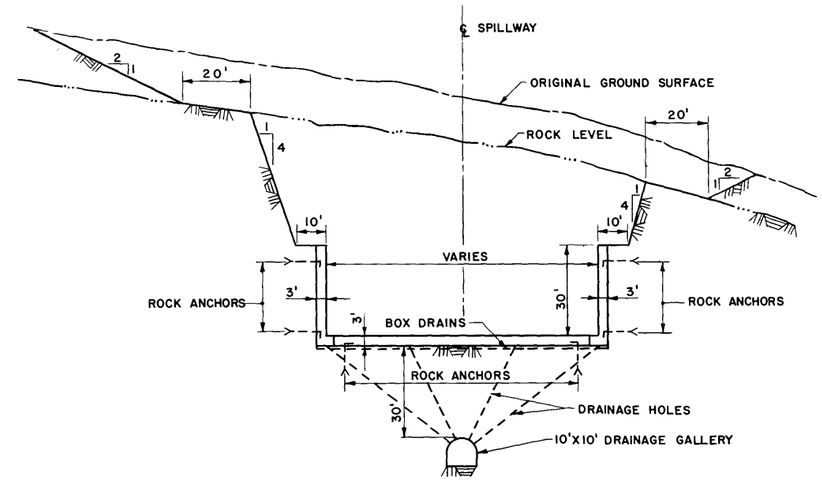
ACRES AMERICAN INCORPORATED

MARCH 1982

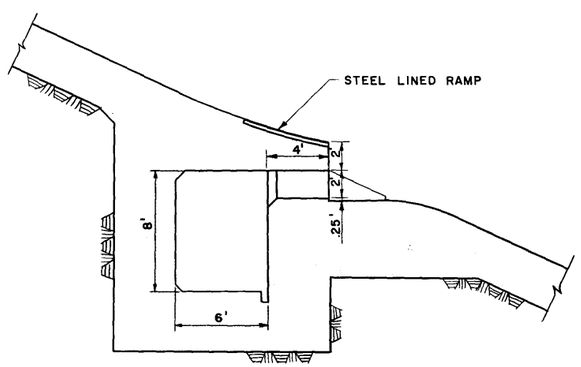
PLATE 15



SECTION A–A (PLATE 14)
SCALE A



SECTION B–B (TYPICAL) (PLATE 14)
SCALE A



SECTION C–C
SCALE B

SCALE B 0 4 8 FEET
SCALE A 0 20 40 FEET

ACRES

ALASKA POWER AUTHORITY

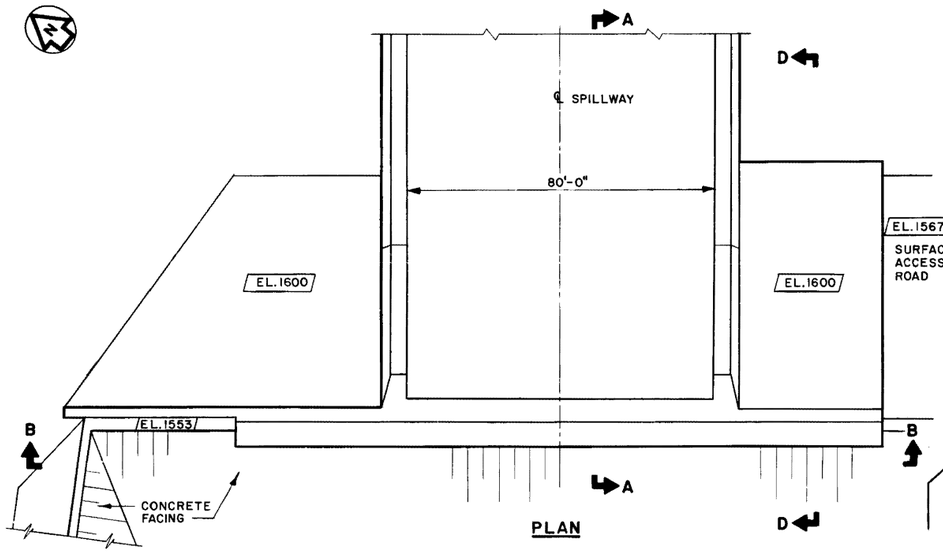
SUSITNA HYDROELECTRIC PROJECT

WATANA
MAIN SPILLWAY
CHUTE SECTIONS

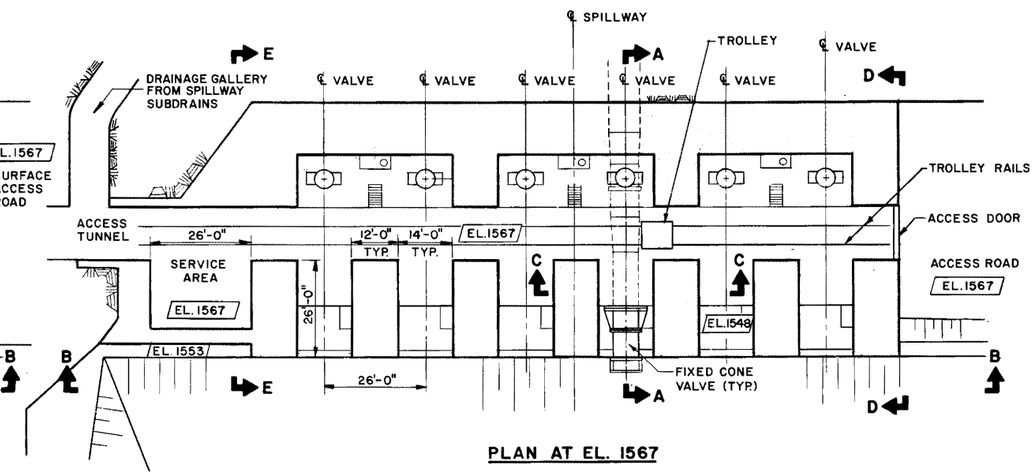
ACRES AMERICAN INCORPORATED

MARCH 1982

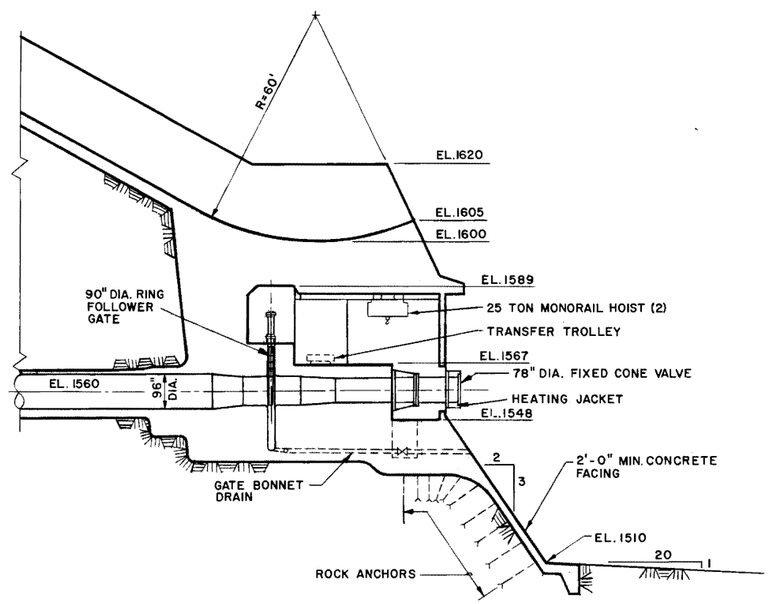
PLATE 16



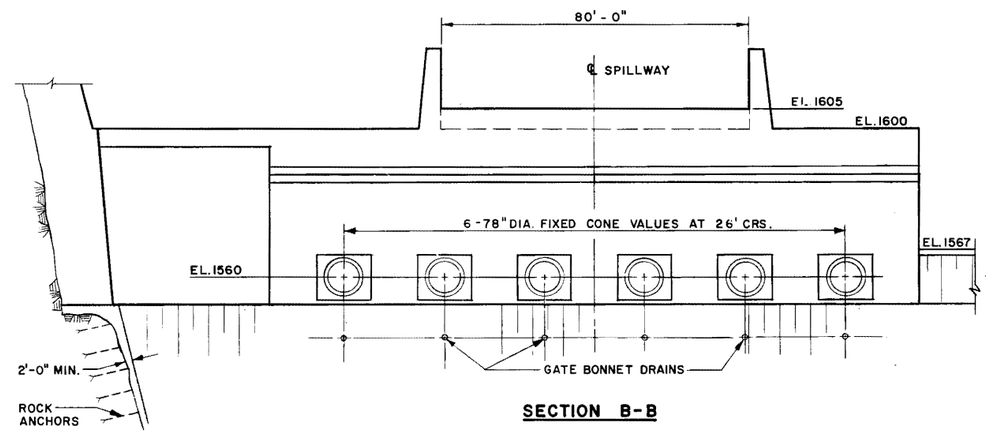
PLAN



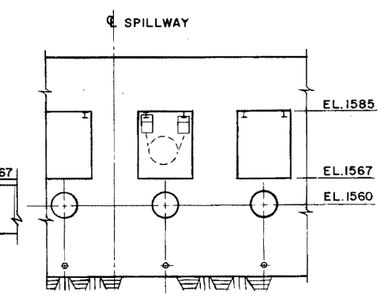
PLAN AT EL. 1567



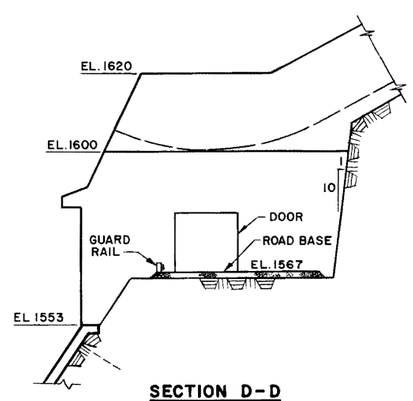
SECTION A-A (TYPICAL)



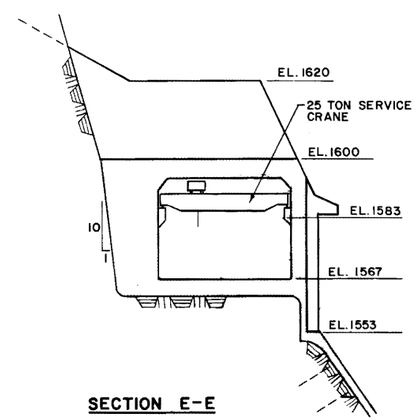
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

SCALE 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

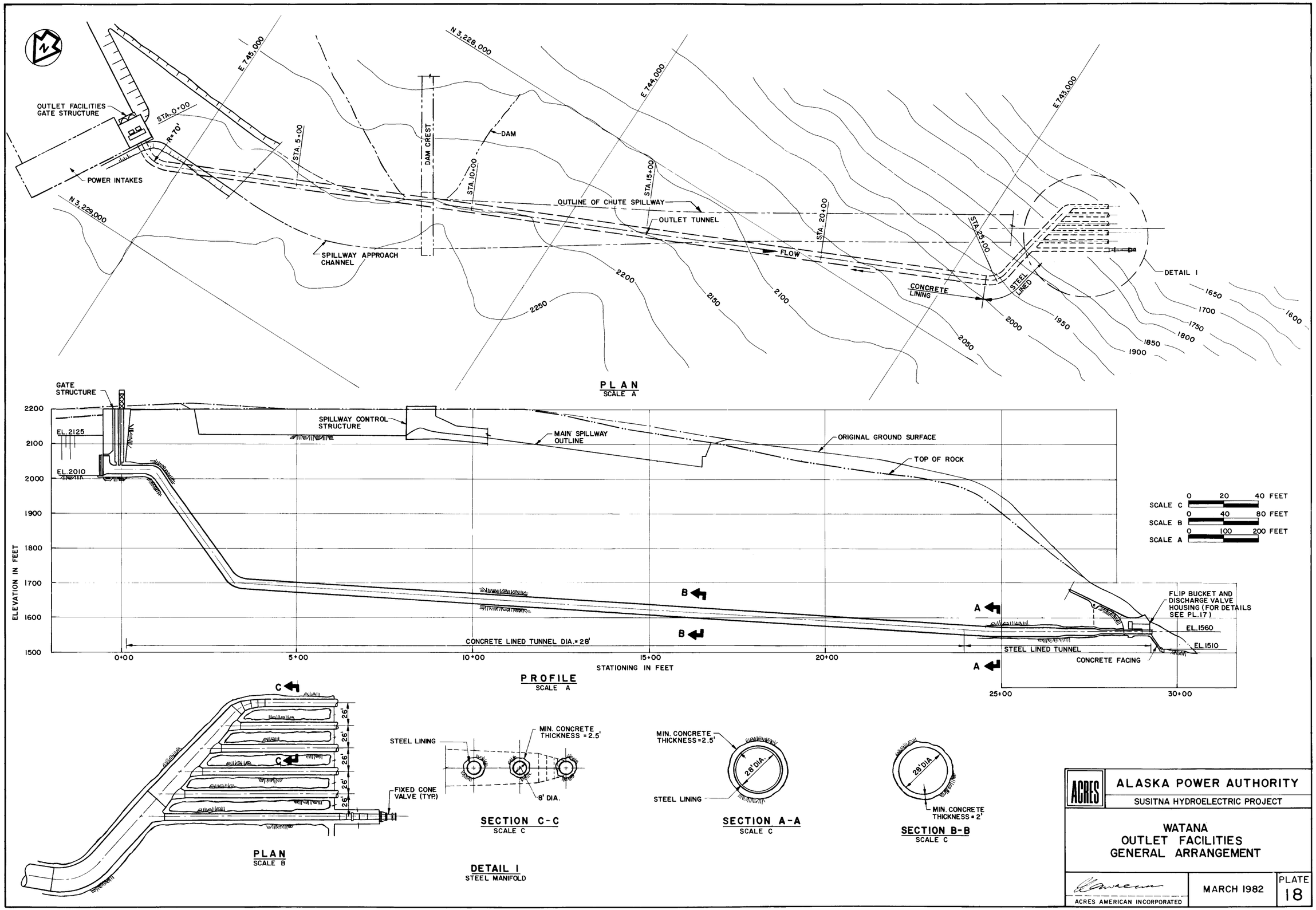
SUSITNA HYDROELECTRIC PROJECT

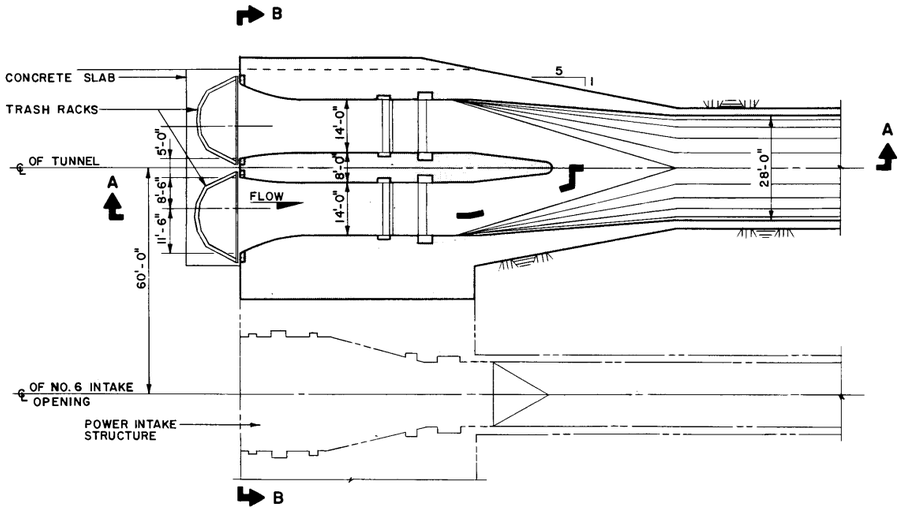
WATANA
MAIN SPILLWAY
FLIP BUCKET

ACRES AMERICAN INCORPORATED

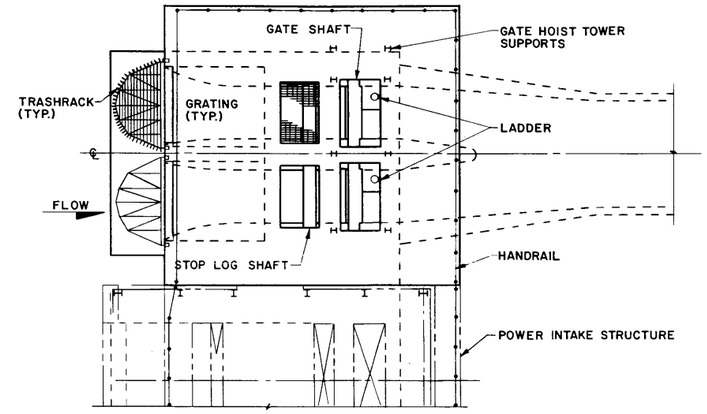
MARCH 1982

PLATE 17

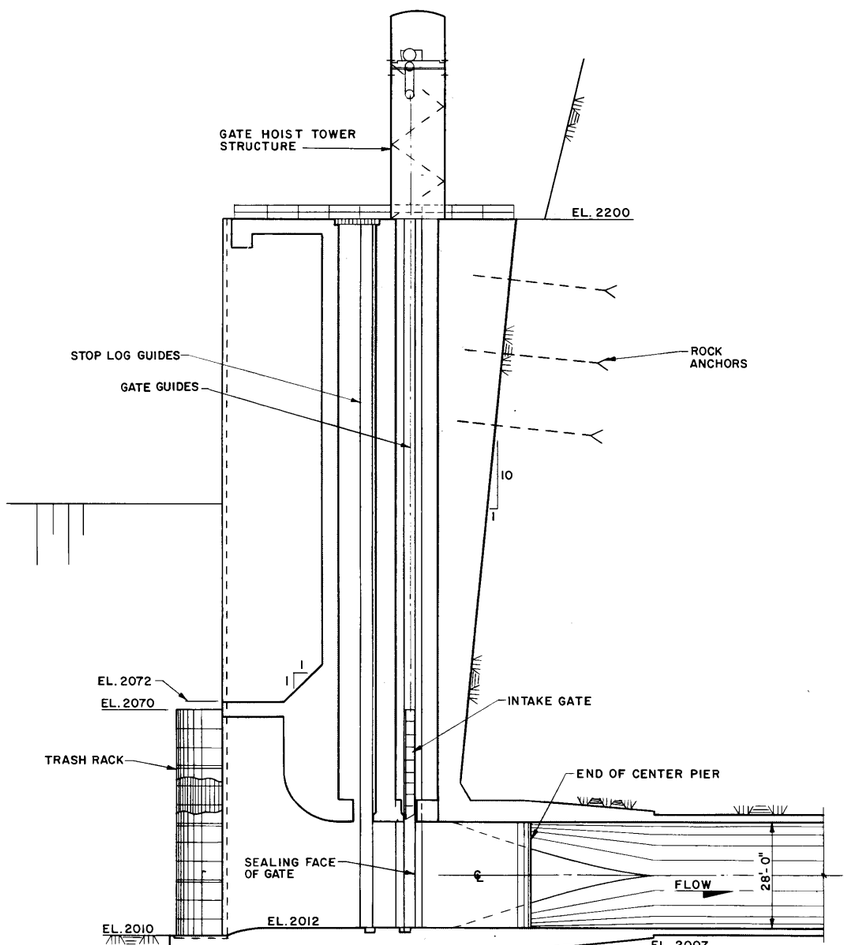

OUTLET FACILITIES GATE STRUCTURE
STA. 0+00
R=70'
POWER INTAKES
N 3,229,000
E 745,000
STA. 5+00
DAM CREST
DAM
N 3,228,000
E 744,000
STA. 10+00
STA. 15+00
OUTLINE OF CHUTE SPILLWAY
OUTLET TUNNEL
STA. 20+00
STA. 25+00
E 743,000
SPILLWAY APPROACH CHANNEL
FLOW
CONCRETE LINING
STEEL LINED
DETAIL I
2250
2200
2150
2100
2050
2000
1950
1900
1850
1800
1750
1700
1650
1600
PLAN
SCALE A
GATE STRUCTURE
SPILLWAY CONTROL STRUCTURE
MAIN SPILLWAY OUTLINE
ORIGINAL GROUND SURFACE
TOP OF ROCK
EL. 2125
EL. 2010
ELEVATION IN FEET
2200
2100
2000
1900
1800
1700
1600
1500
SCALE C 0 20 40 FEET
SCALE B 0 40 80 FEET
SCALE A 0 100 200 FEET
B
A
FLIP BUCKET AND DISCHARGE VALVE HOUSING (FOR DETAILS SEE PL. 17)
EL. 1560
EL. 1510
CONCRETE LINED TUNNEL DIA.=28'
STEEL LINED TUNNEL
CONCRETE FACING
0+00
5+00
10+00
15+00
20+00
25+00
30+00
STATIONING IN FEET
PROFILE
SCALE A
C
26'
STEEL LINING
MIN. CONCRETE THICKNESS = 2.5'
FIXED CONE VALVE (TYP.)
8' DIA.
SECTION C-C
SCALE C
MIN. CONCRETE THICKNESS=2.5'
28' DIA.
STEEL LINING
SECTION A-A
SCALE C
28' DIA.
MIN. CONCRETE THICKNESS = 2'
SECTION B-B
SCALE C
PLAN
SCALE B
DETAIL I
STEEL MANIFOLD
ACRES
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
WATANA
OUTLET FACILITIES
GENERAL ARRANGEMENT
ACRES AMERICAN INCORPORATED
MARCH 1982
PLATE
18



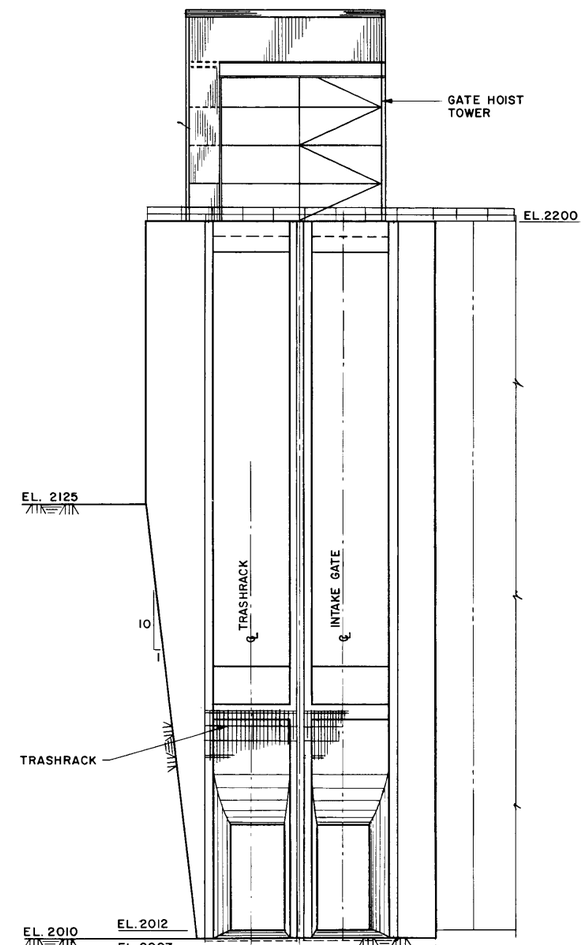
PLAN AT ℄ TUNNEL



PLAN AT EL. 2200



SECTION A-A



SECTION B-B

SCALE 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

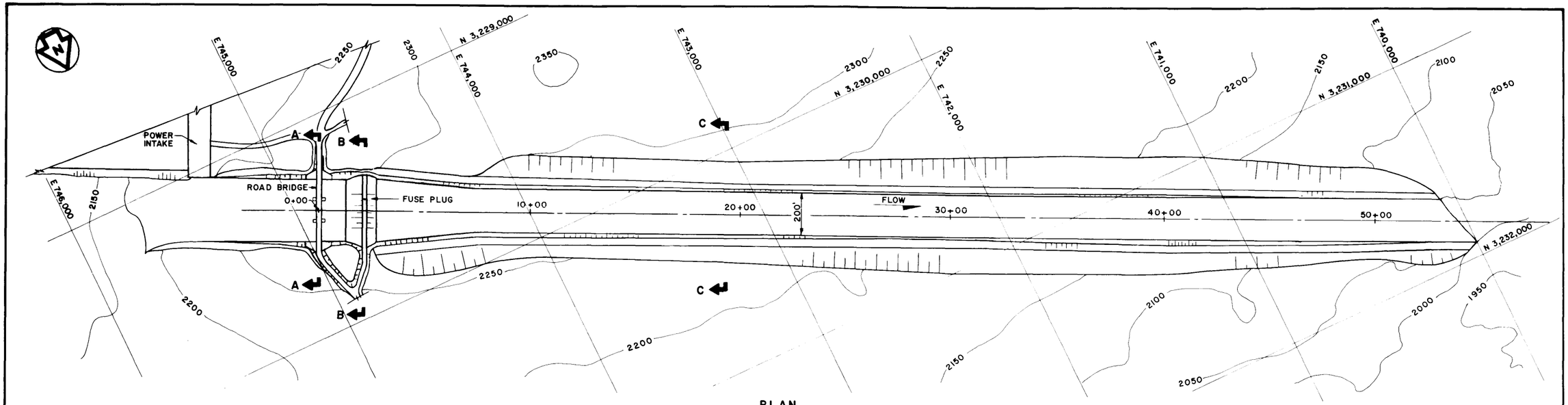
SUSITNA HYDROELECTRIC PROJECT

WATANA
OUTLET FACILITIES
GATE STRUCTURE

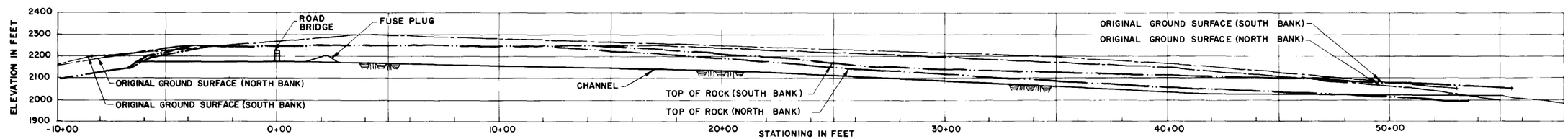
ACRES AMERICAN INCORPORATED

MARCH 1982

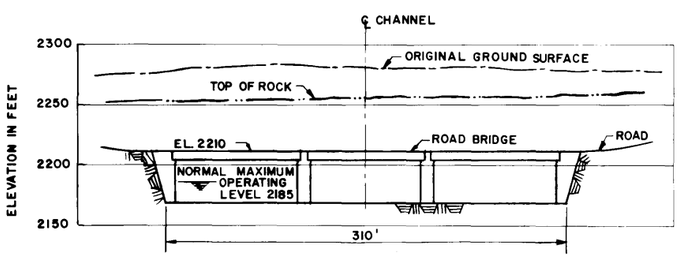
PLATE 19



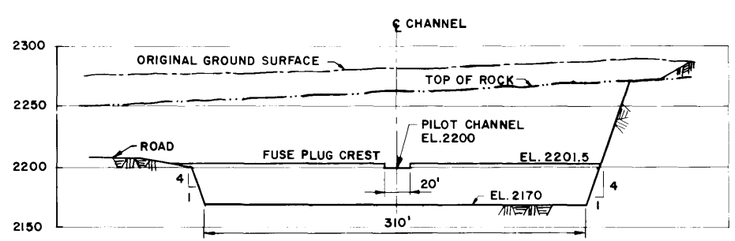
PLAN
SCALE A



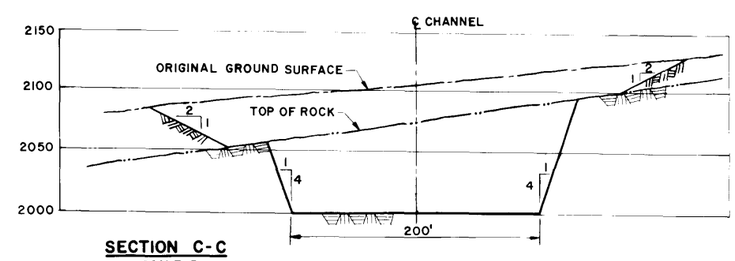
PROFILE
SCALE A



SECTION A-A
SCALE B

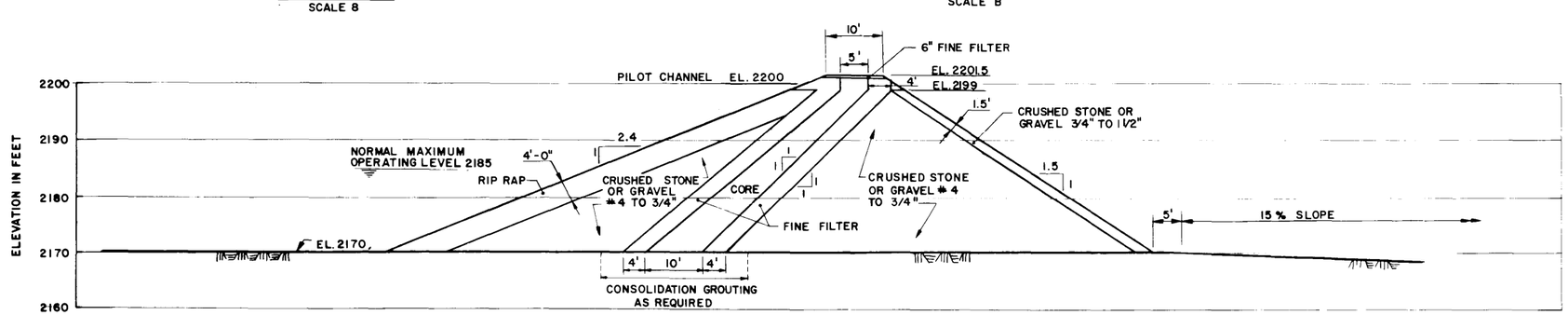


SECTION B-B FUSE PLUG
SCALE B



SECTION C-C
SCALE B

SCALE C 0 10 20 FEET
SCALE B 0 50 100 FEET
SCALE A 0 200 400 FEET



SECTION THROUGH FUSE PLUG
SCALE C

ACRES

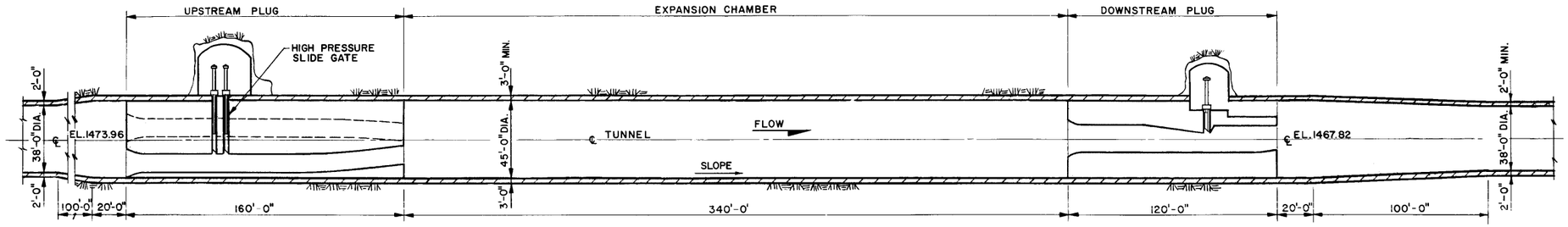
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

WATANA EMERGENCY SPILLWAY

ACRES AMERICAN INCORPORATED

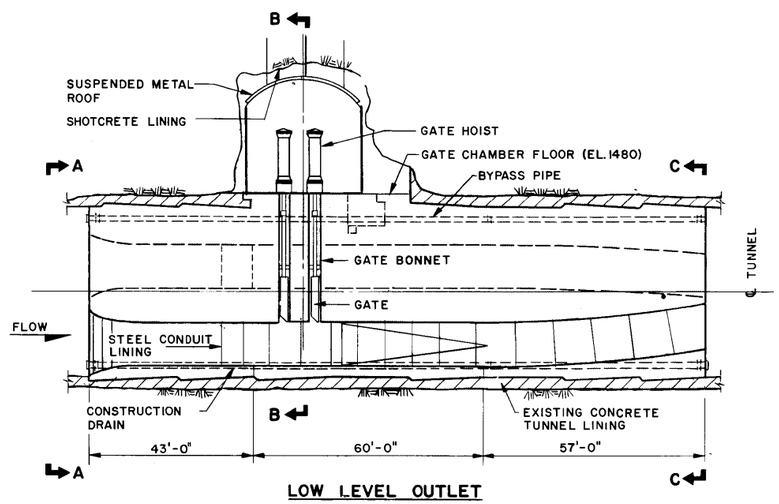
MARCH 1982

PLATE 20



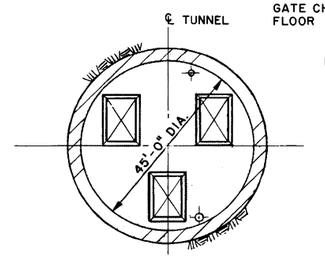
SECTION ALONG ℄ OF TUNNEL NO. 1

SCALE A



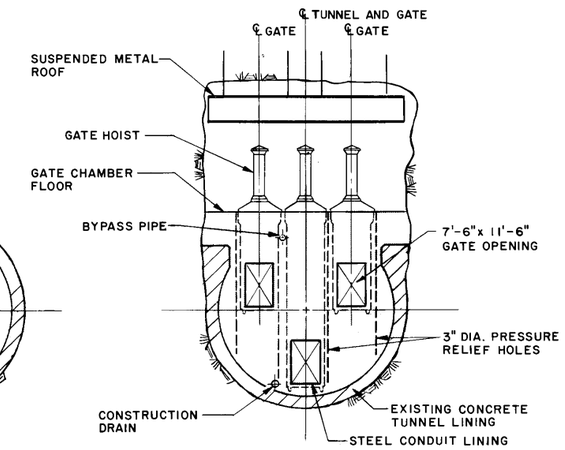
LOW LEVEL OUTLET UPSTREAM PLUG

SCALE B



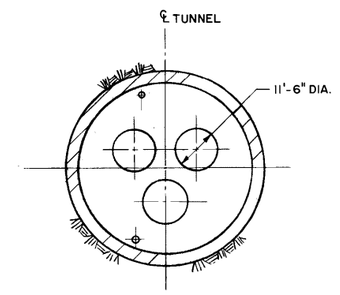
SECTION A-A

SCALE B



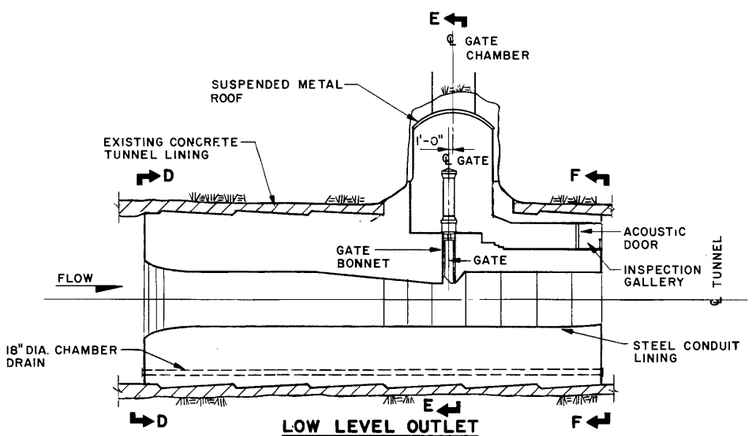
SECTION B-B

SCALE B



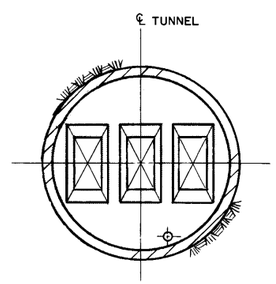
SECTION C-C

SCALE B



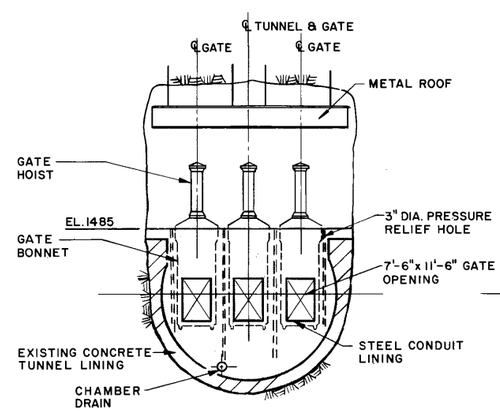
LOW LEVEL OUTLET DOWNSTREAM PLUG

SCALE B



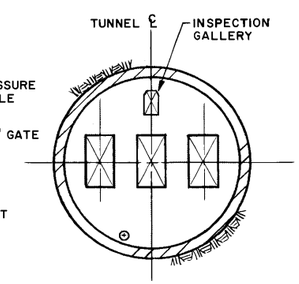
SECTION D-D

SCALE B



SECTION E-E

SCALE B



SECTION F-F

SCALE B

SCALE B 0 16 32 FEET

SCALE A 0 30 60 FEET

ACRES

ALASKA POWER AUTHORITY

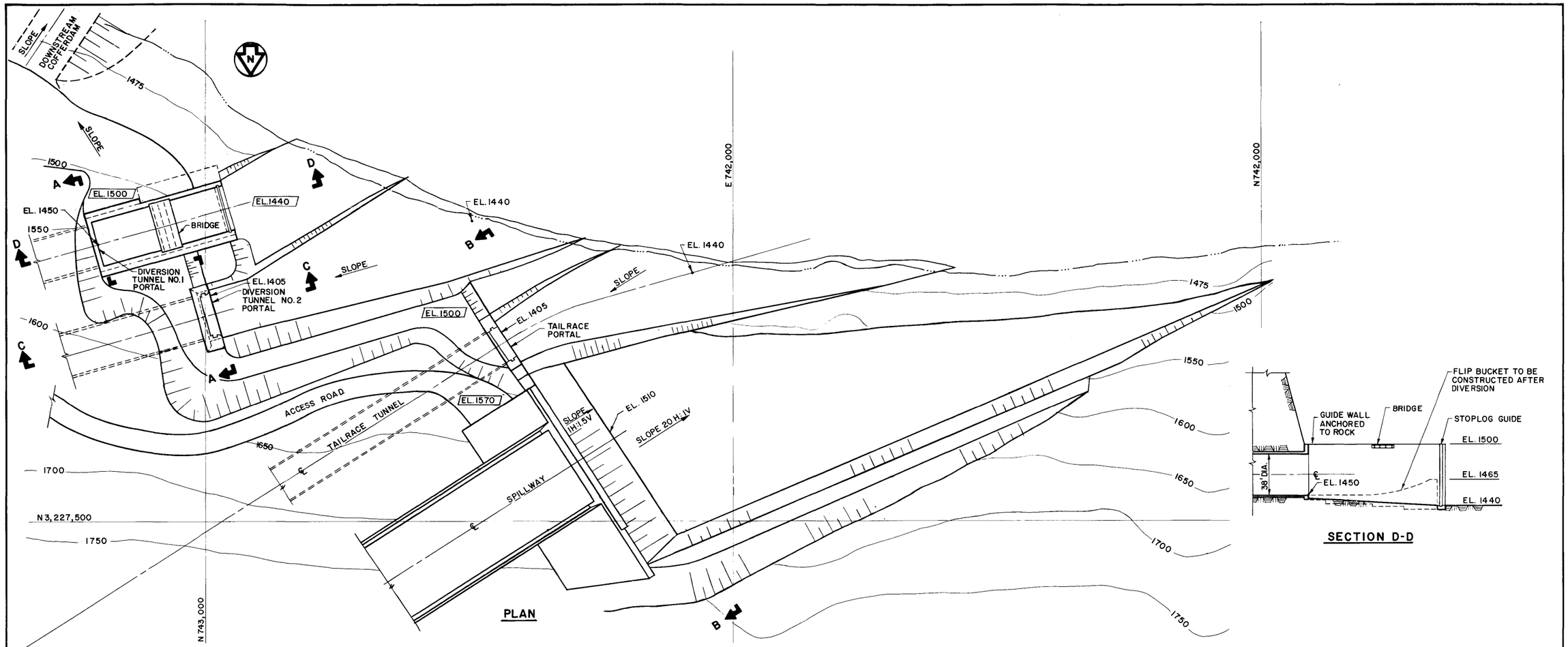
SUSITNA HYDROELECTRIC PROJECT

WATANA
EMERGENCY RELEASE
SECTIONS

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 21



ACRES

ALASKA POWER AUTHORITY

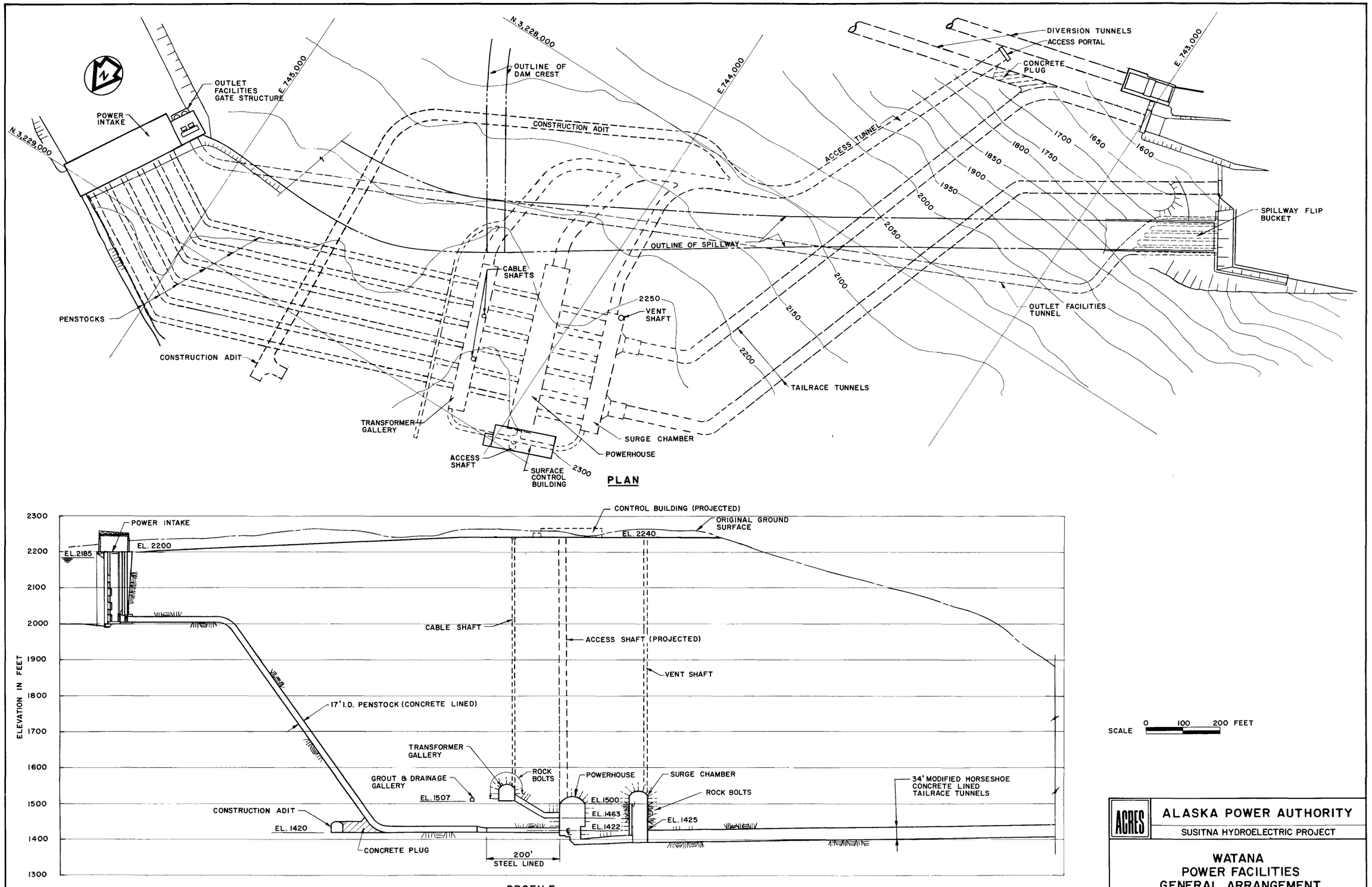
SUSITNA HYDROELECTRIC PROJECT

WATANA
DOWNSTREAM PORTALS
PLAN & SECTIONS

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 22



ACRES

ALASKA POWER AUTHORITY

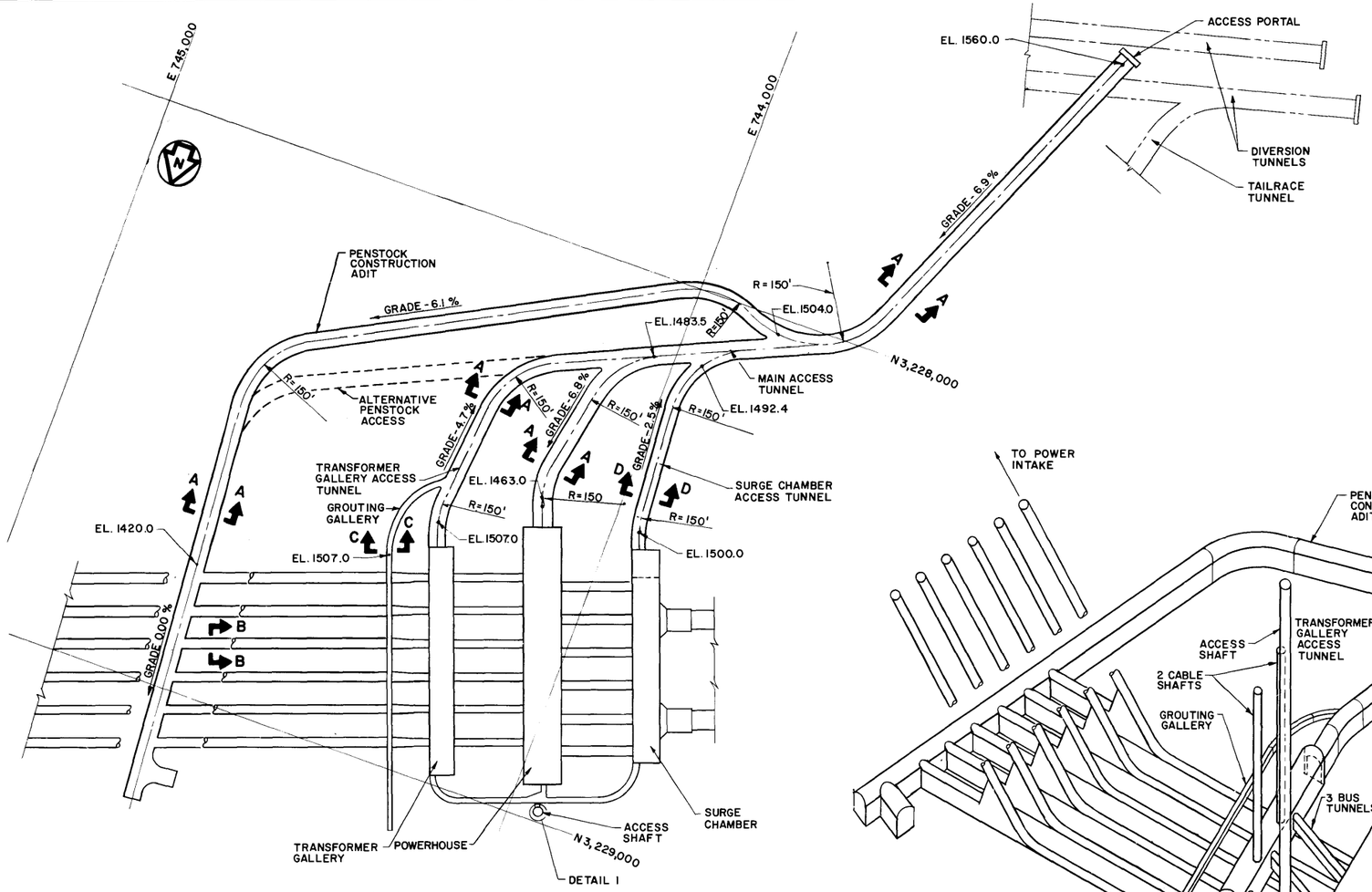
SUSITNA HYDROELECTRIC PROJECT

WATANA
POWER FACILITIES
GENERAL ARRANGEMENT

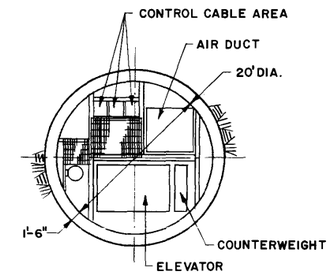
ACRES AMERICAN INCORPORATED

MARCH 1982

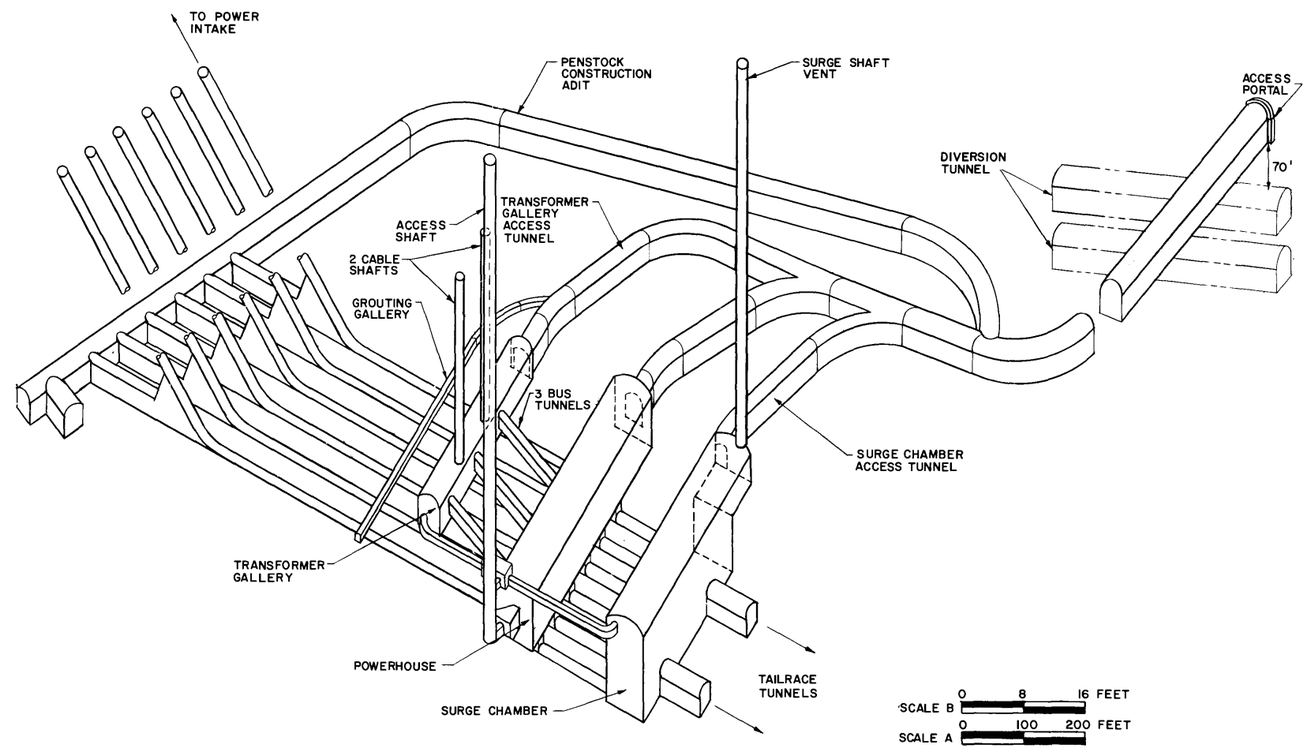
PLATE 23



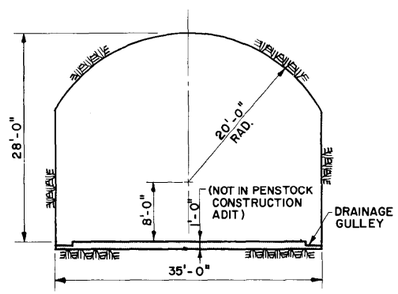
PLAN
SCALE A



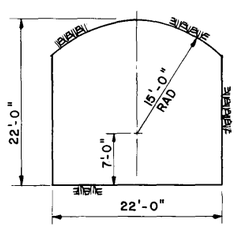
DETAIL I
SCALE B



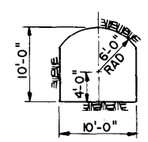
ISOMETRIC
SCALE A



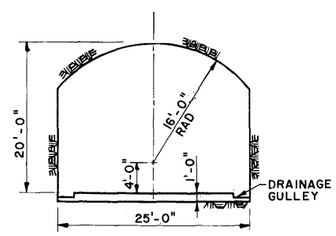
SECTION A-A
SCALE B



SECTION B-B
SCALE B



SECTION C-C
SCALE B



SECTION D-D
SCALE B

ACRES

ALASKA POWER AUTHORITY

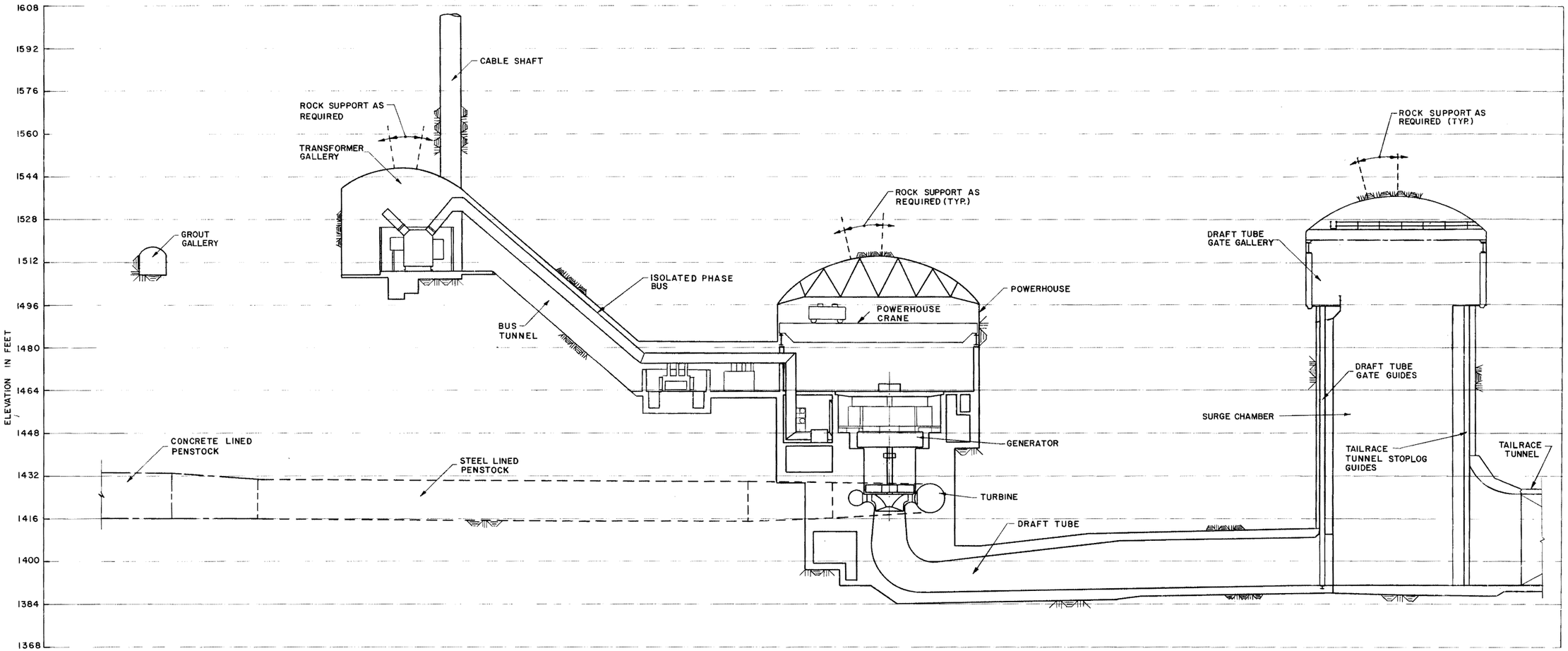
SUSITNA HYDROELECTRIC PROJECT

WATANA
POWER FACILITES
ACCESS

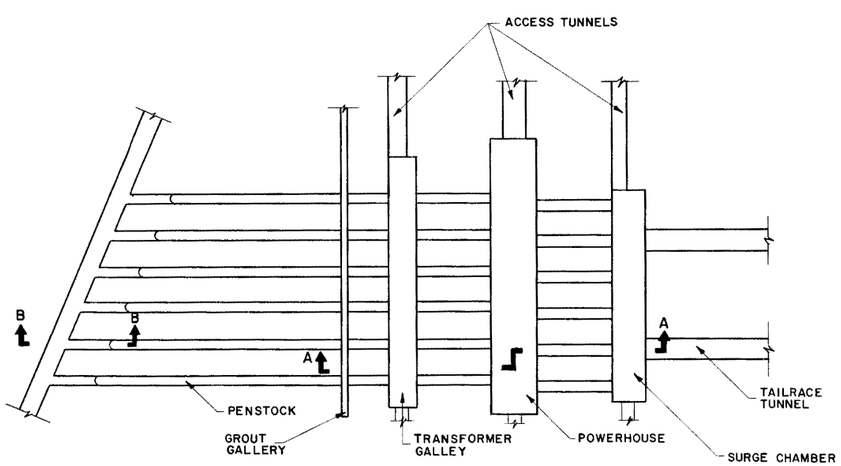
ACRES AMERICAN INCORPORATED

MARCH 1982

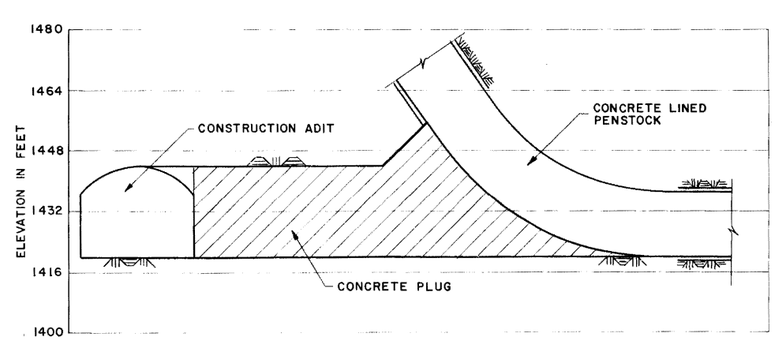
PLATE 24



SECTION A-A
SCALE B



PLAN
SCALE A



SECTION B-B
SCALE B

SCALE B 0 16 32 FEET
SCALE A 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

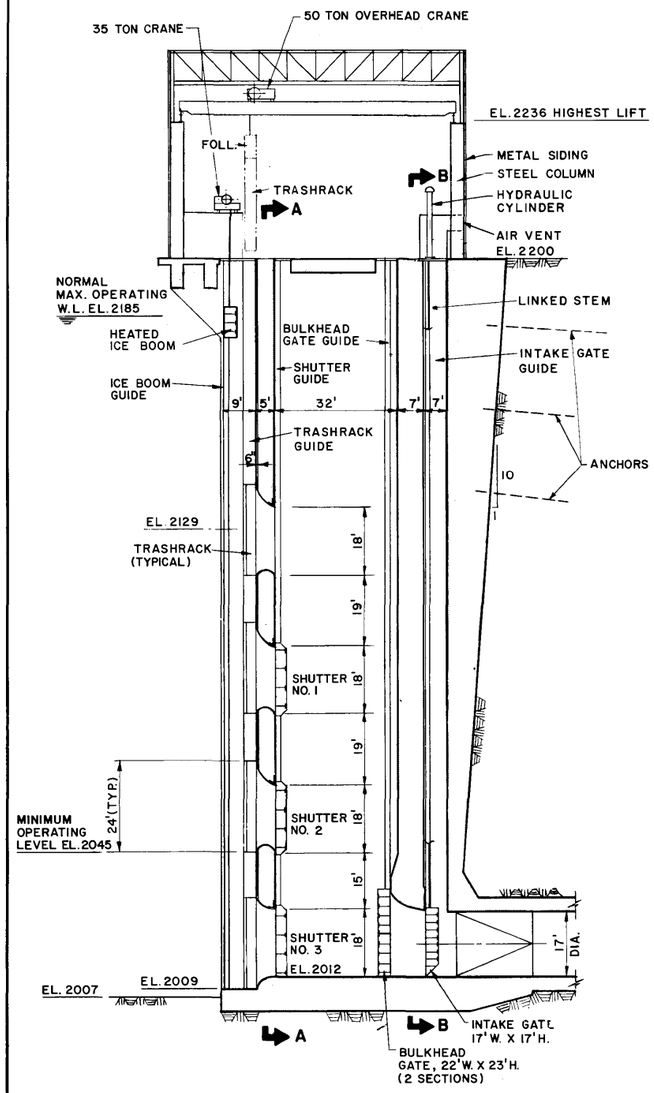
SUSITNA HYDROELECTRIC PROJECT

WATANA
POWER FACILITIES
PLAN & SECTIONS

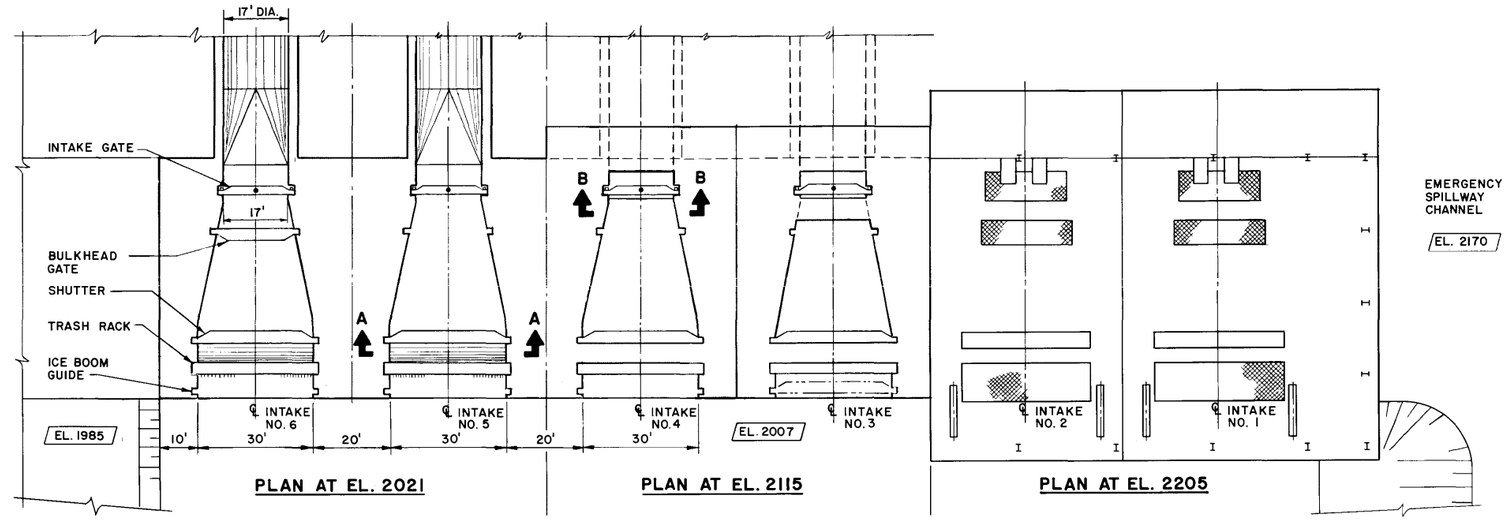
ACRES AMERICAN INCORPORATED

MARCH 1982

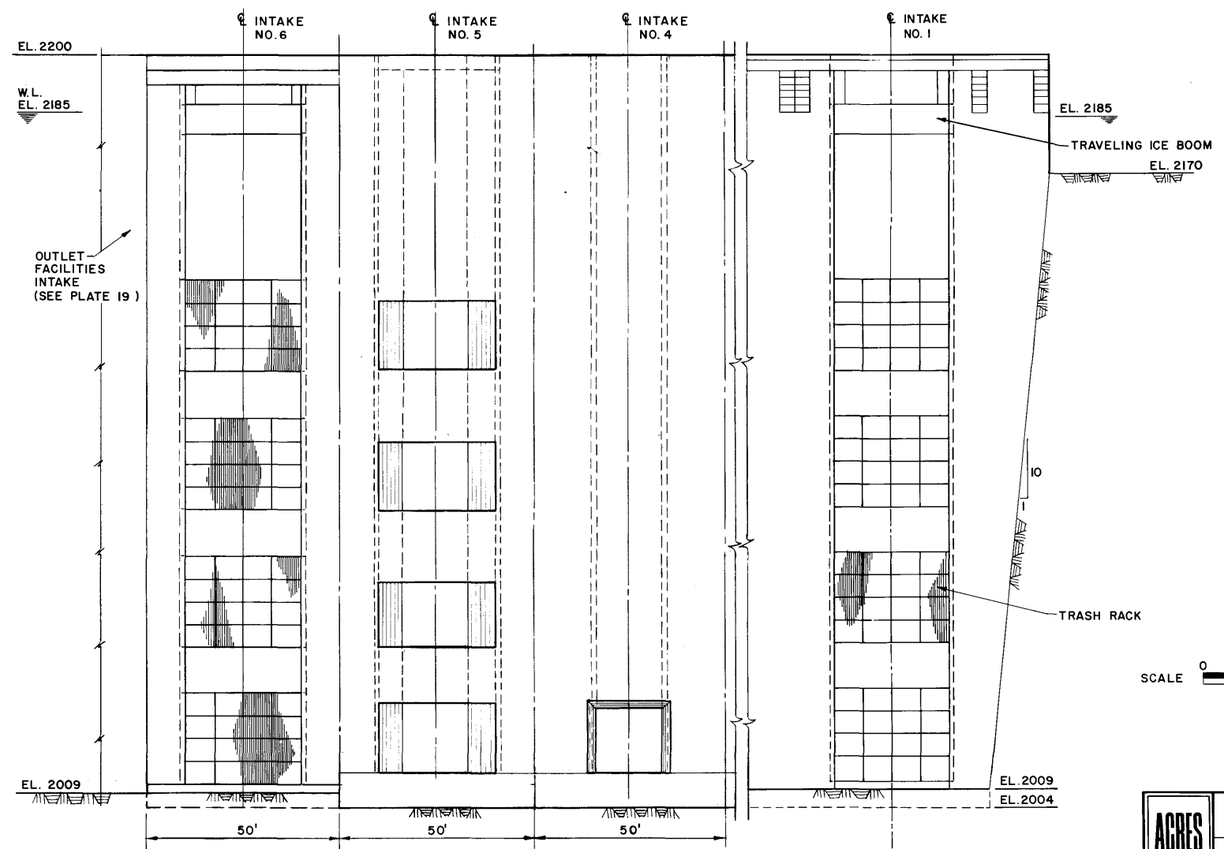
PLATE 25



SECTION THRU
INTAKE GATE CONTROL STRUCTURE



PLAN AT EL. 2021 PLAN AT EL. 2115 PLAN AT EL. 2205



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

SCALE 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

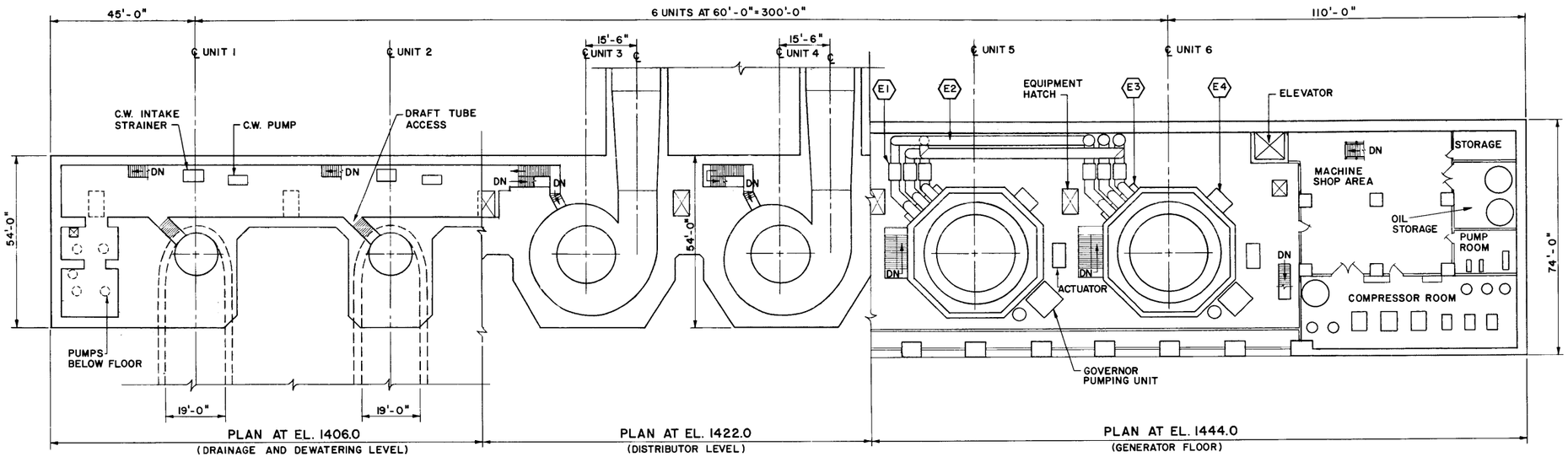
SUSITNA HYDROELECTRIC PROJECT

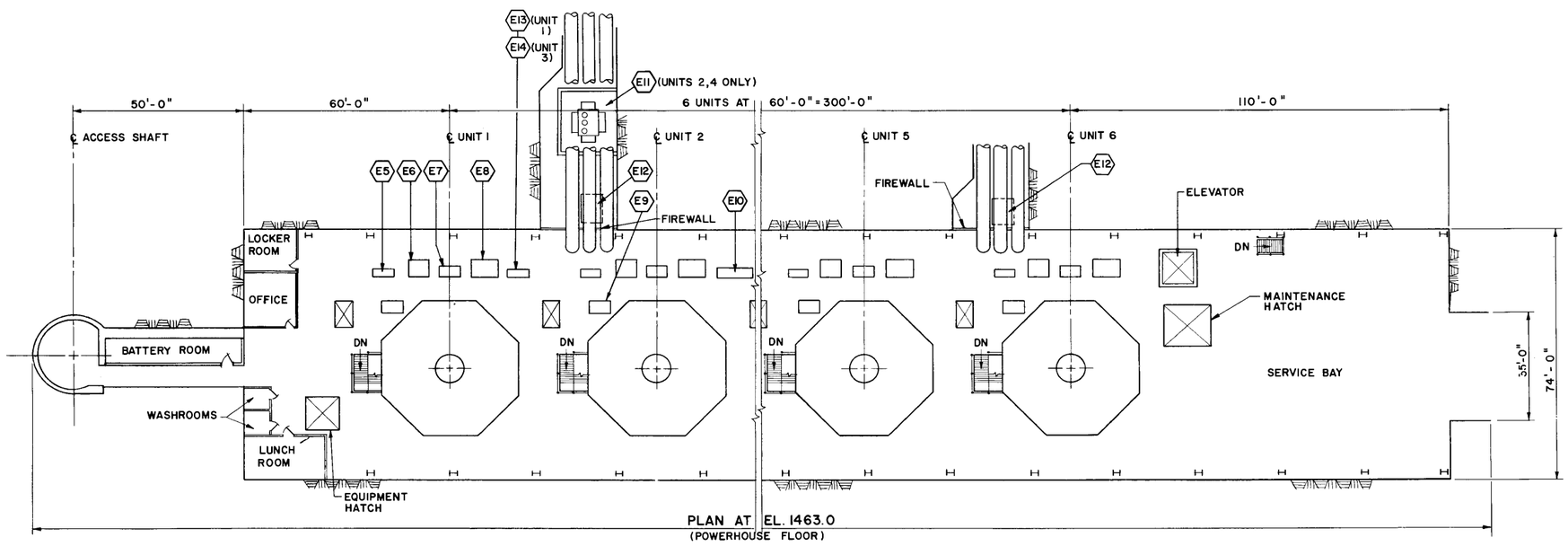
WATANA
POWER INTAKE
SECTIONS

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 26





SCALE 0 16 32 FEET

LEGEND

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

POWERHOUSE PLANS

ACRES

ALASKA POWER AUTHORITY

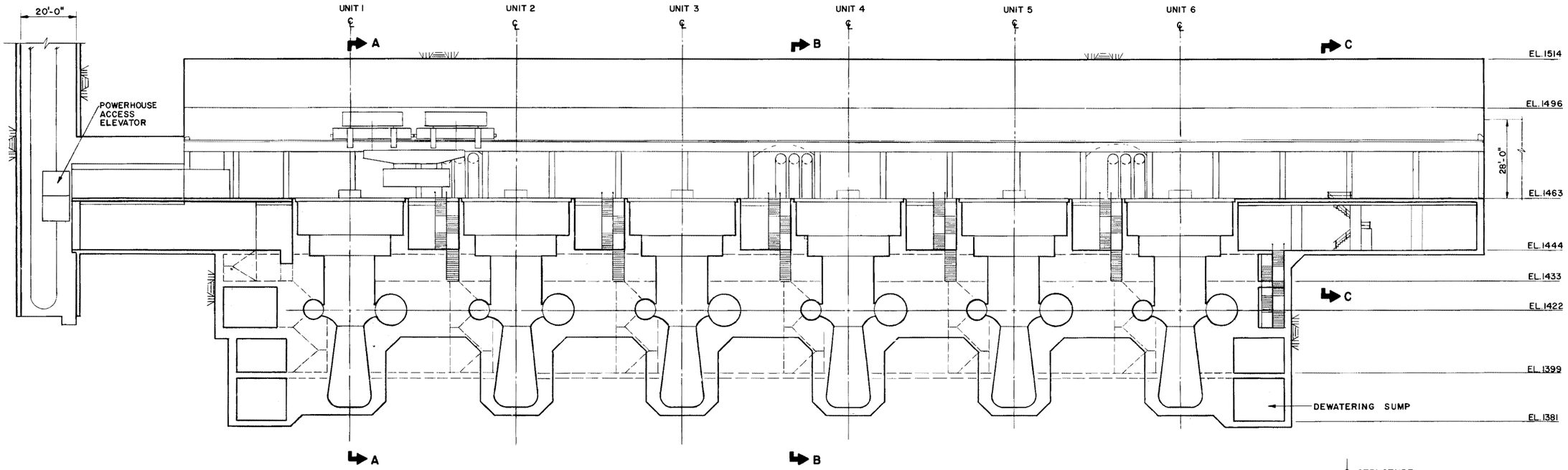
SUSITNA HYDROELECTRIC PROJECT

WATANA POWERHOUSE PLANS

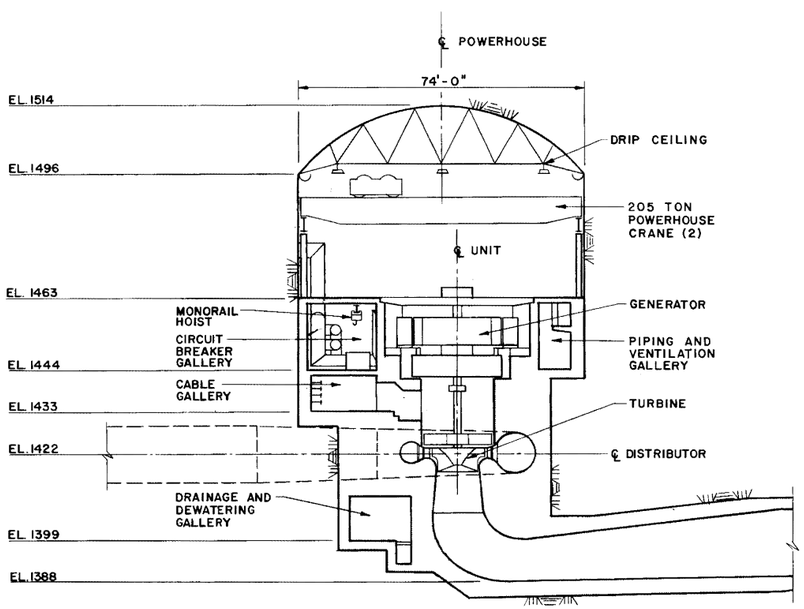
ACRES AMERICAN INCORPORATED

MARCH 1982

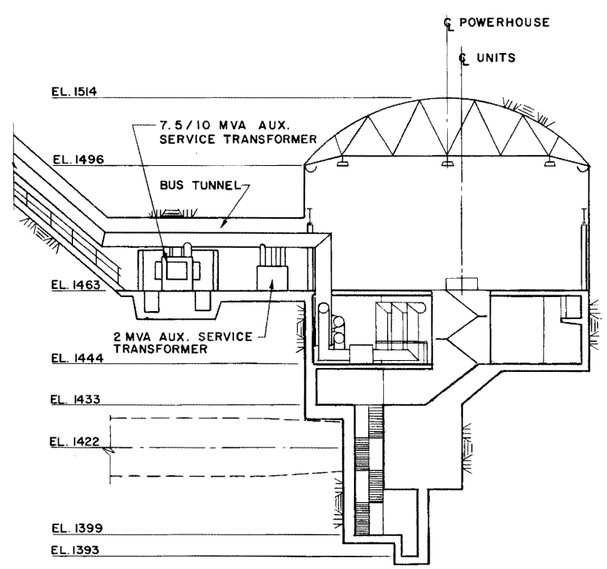
PLATE 27



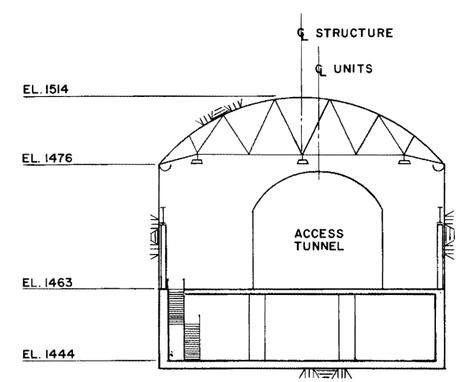
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS, UNITS NOT SHOWN)



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

ACRES

ALASKA POWER AUTHORITY

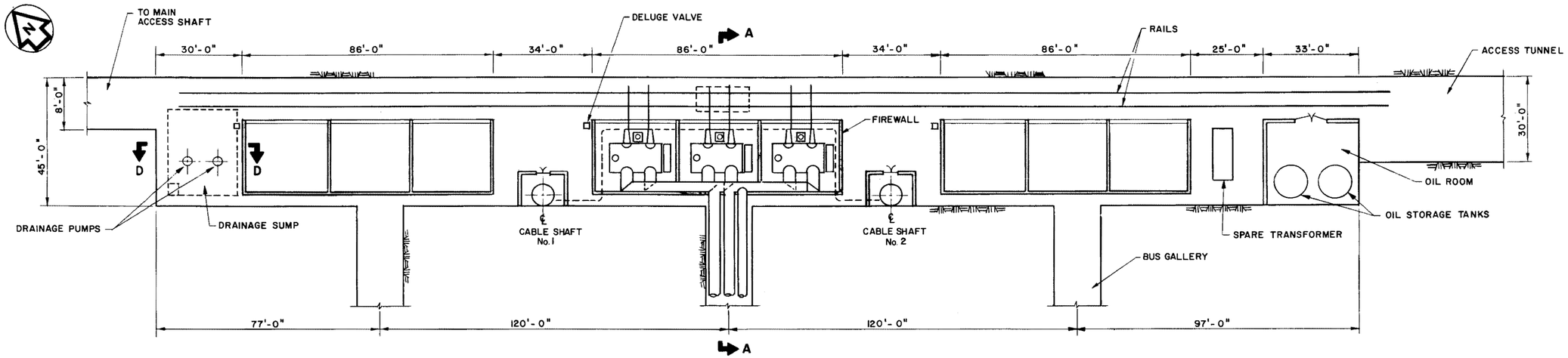
SUSITNA HYDROELECTRIC PROJECT

WATANA POWERHOUSE SECTIONS

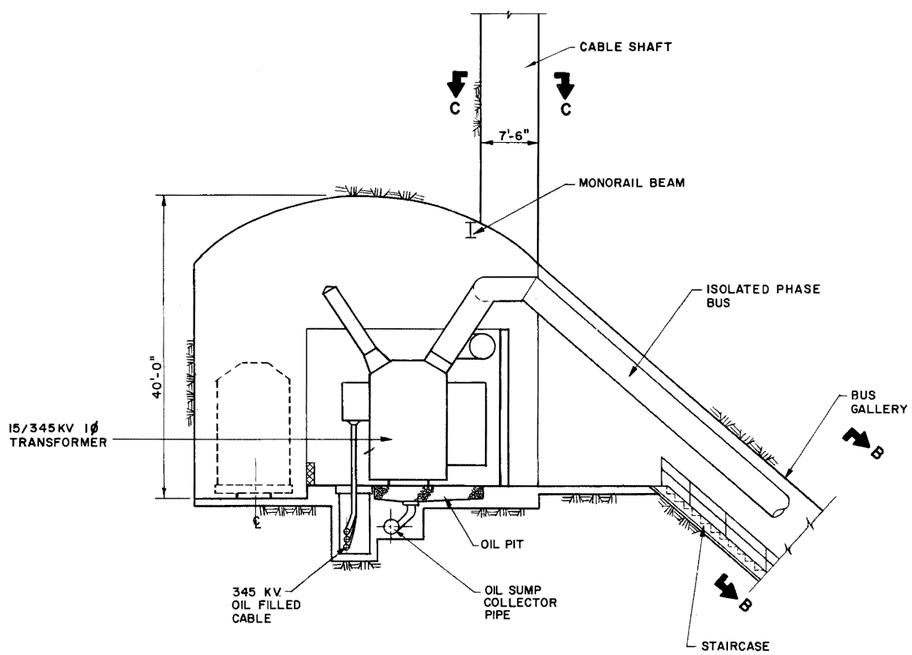
ACRES AMERICAN INCORPORATED

MARCH 1982

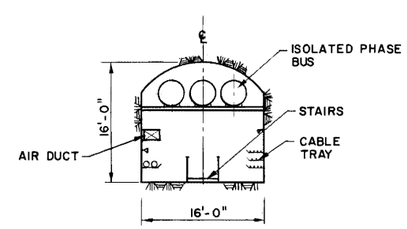
PLATE 28



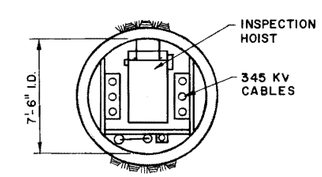
PLAN
SCALE A



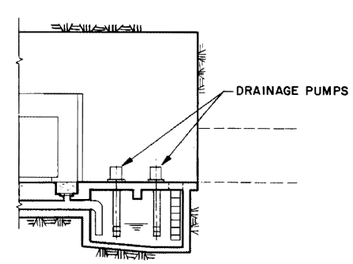
SECTION A-A
SCALE B



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
SCALE B 0 8 16 FEET
SCALE A 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

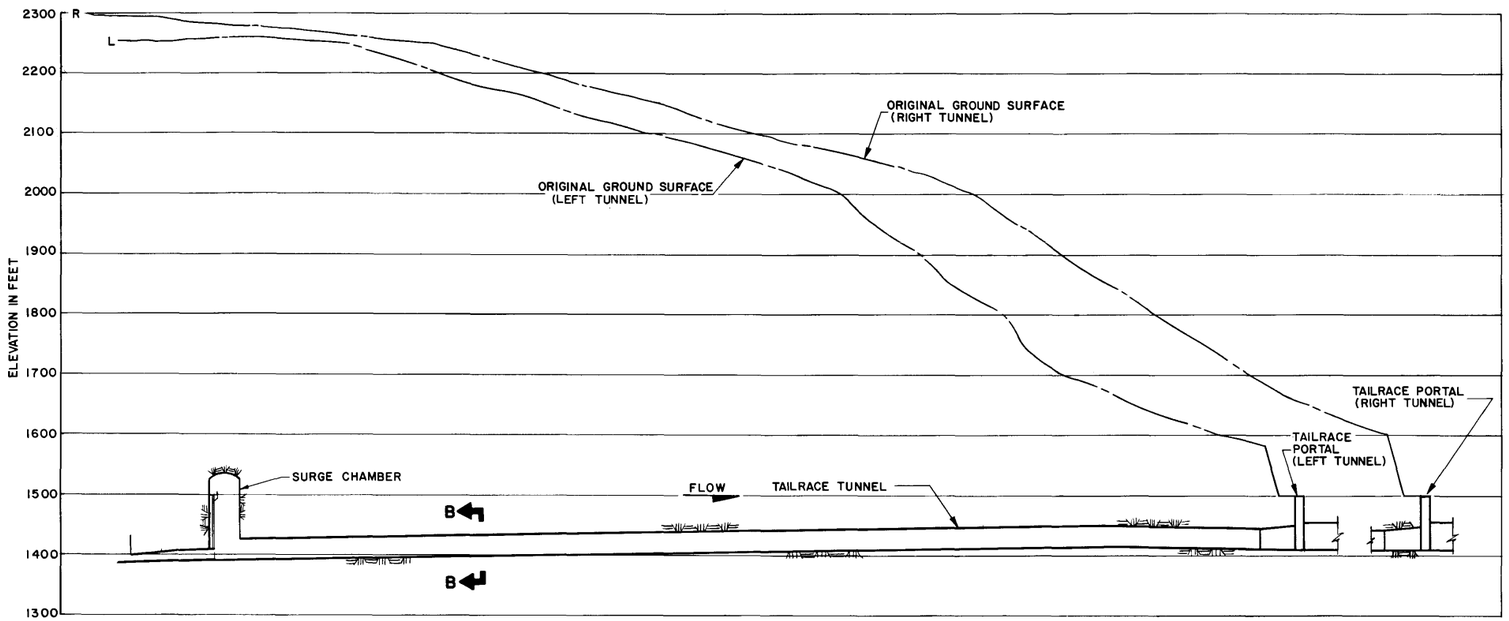
SUSITNA HYDROELECTRIC PROJECT

WATANA
TRANSFORMER GALLERY
PLAN & SECTIONS

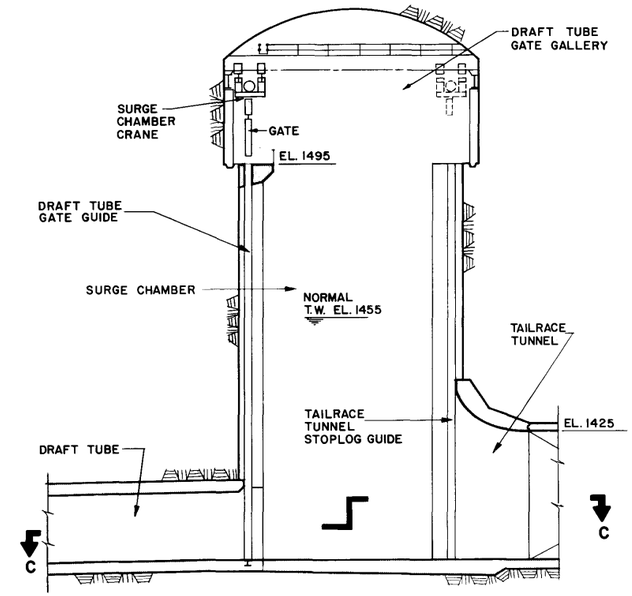
ACRES AMERICAN INCORPORATED

MARCH 1982

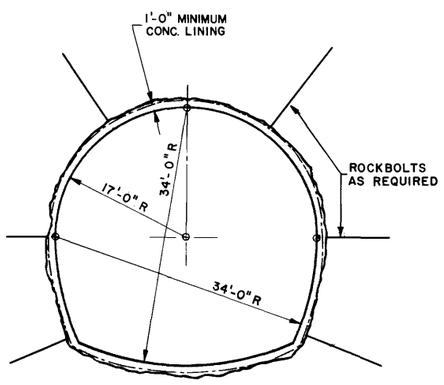
PLATE 29



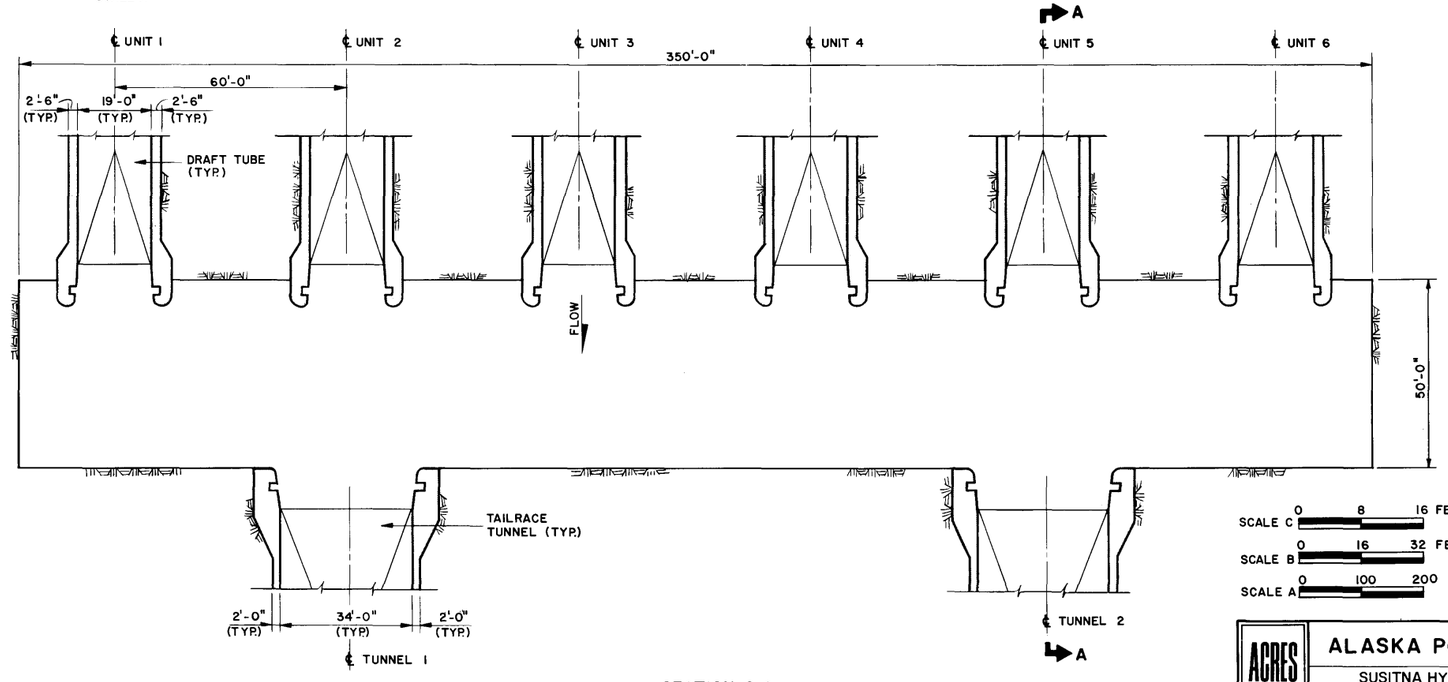
PROFILE
SCALE A



SECTION A-A
SCALE B



SECTION B-B
CONCRETE LINED TAILRACE TUNNEL
SCALE C



SECTION C-C
SCALE B

SCALE C 0 8 16 FEET
SCALE B 0 16 32 FEET
SCALE A 0 100 200

ACRES

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

WATANA
SURGE CHAMBER AND TAILRACE SECTIONS

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 30

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

SYMBOLS:

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

NOTES

1. 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

ACRES

ALASKA POWER AUTHORITY

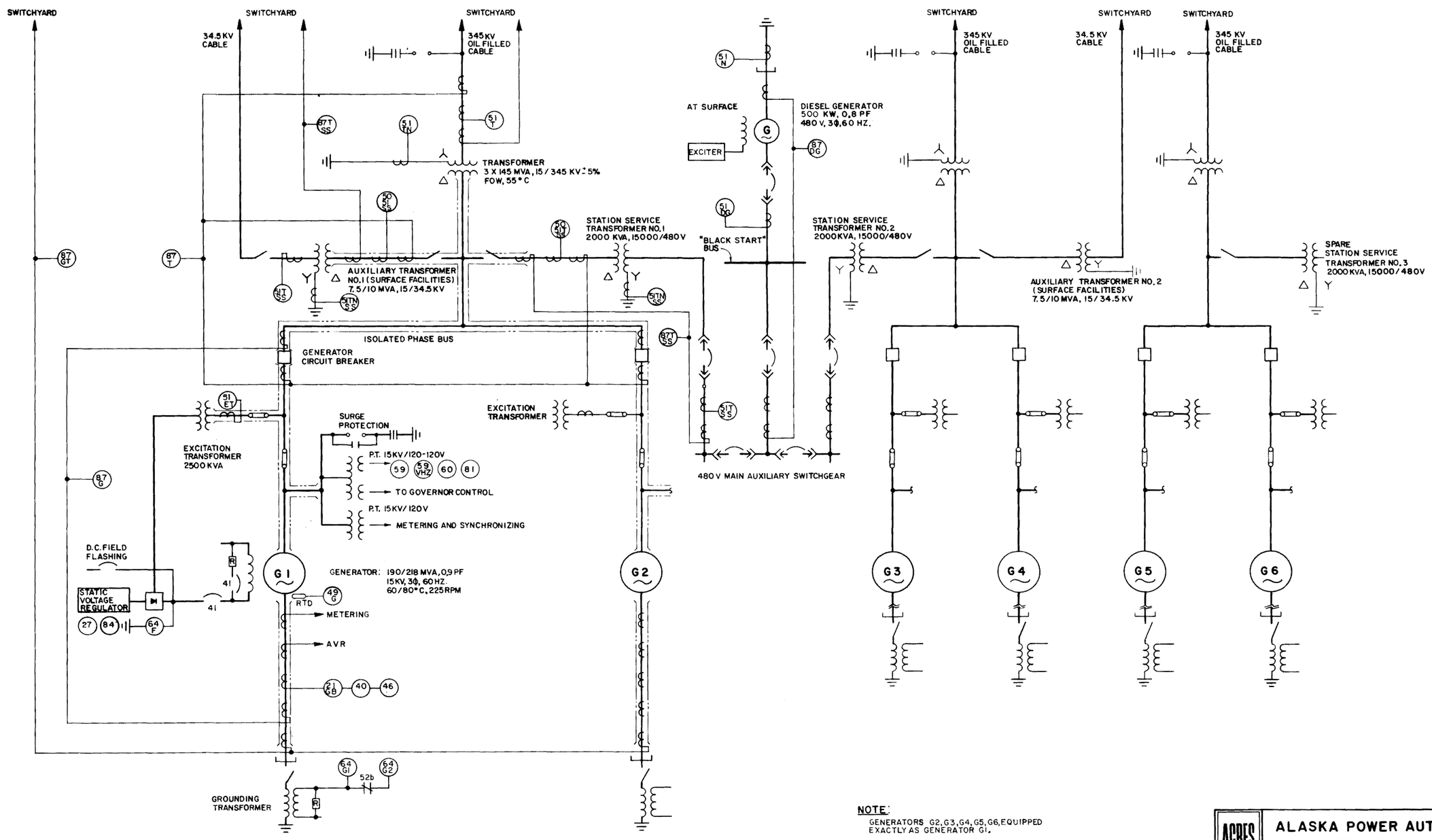
SUSITNA HYDROELECTRIC PROJECT

ELECTRICAL LEGEND

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 31



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

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ALASKA POWER AUTHORITY

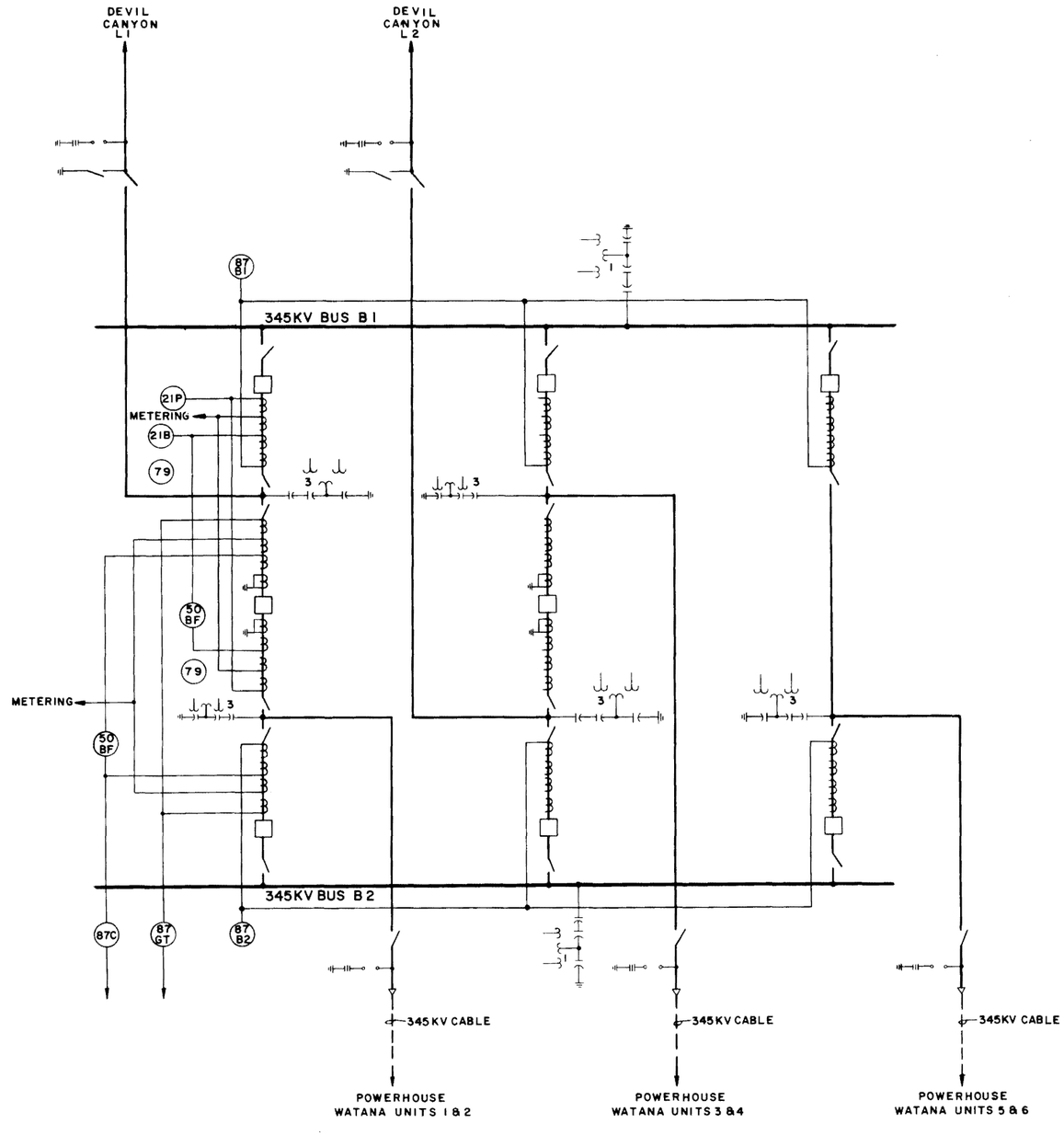
SUSITNA HYDROELECTRIC PROJECT

WATANA POWERHOUSE
SINGLE LINE DIAGRAM

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 32



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ALASKA POWER AUTHORITY

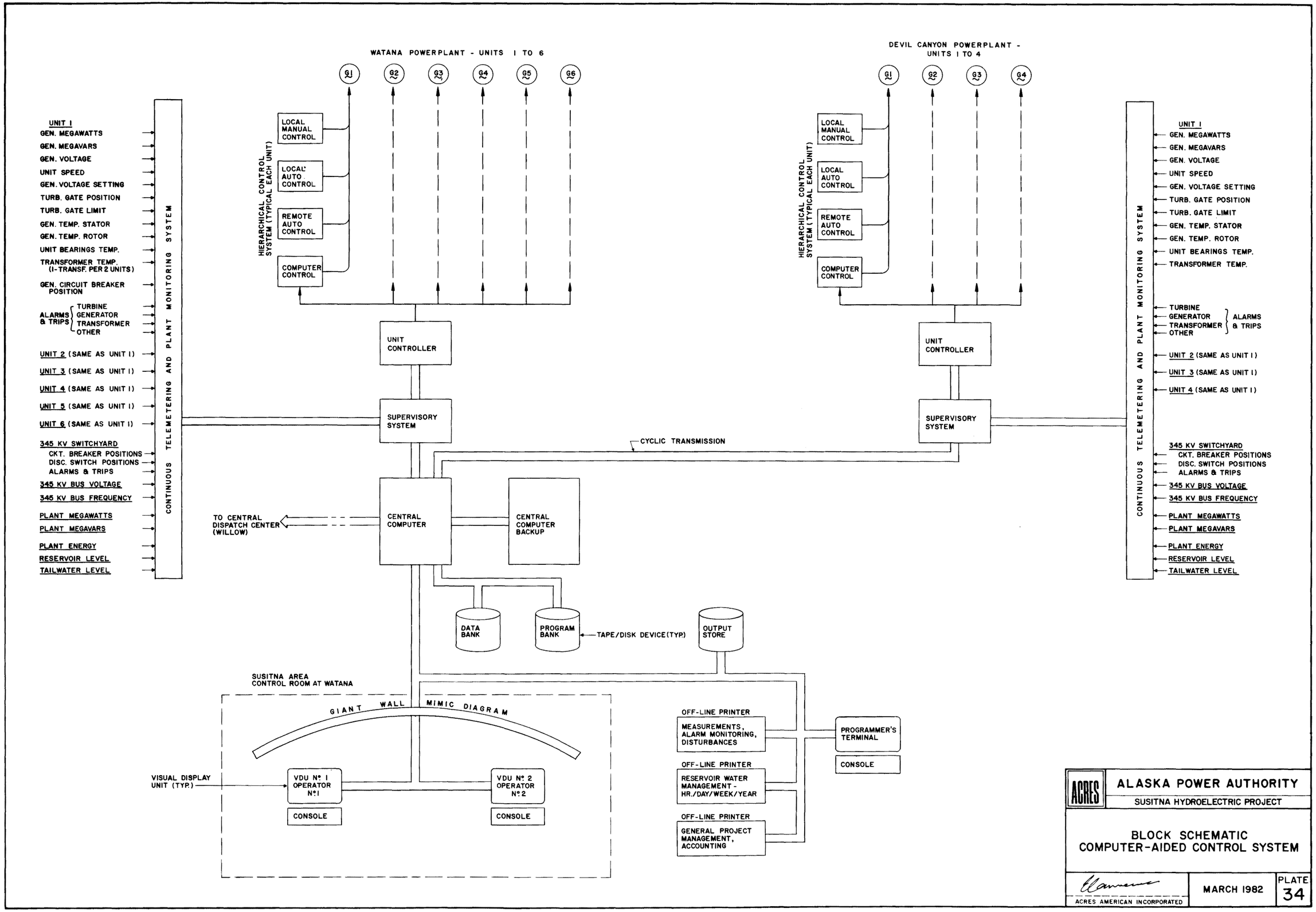
SUSITNA HYDROELECTRIC PROJECT

WATANA SWITCHYARD
SINGLE LINE DIAGRAM

ACRES AMERICAN INCORPORATED

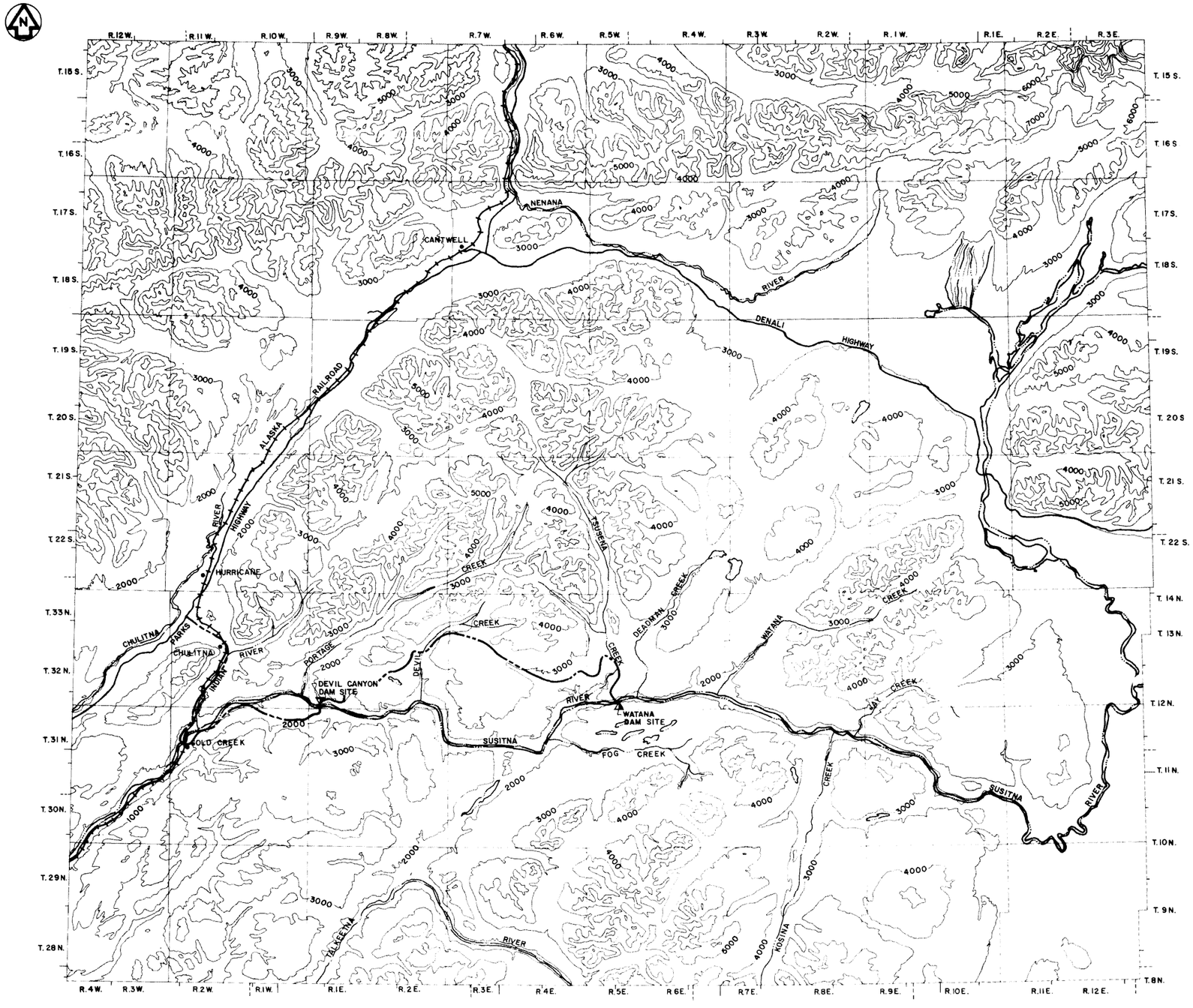
MARCH 1982

PLATE 33


WATANA POWERPLANT - UNITS 1 TO 6
G1
G2
G3
G4
G5
G6
HIERARCHICAL CONTROL SYSTEM (TYPICAL EACH UNIT)
LOCAL MANUAL CONTROL
LOCAL AUTO CONTROL
REMOTE AUTO CONTROL
COMPUTER CONTROL
UNIT CONTROLLER
SUPERVISORY SYSTEM
CONTINUOUS TELEMETERING AND PLANT MONITORING SYSTEM
UNIT 1
GEN. MEGAWATTS
GEN. MEGAVARS
GEN. VOLTAGE
UNIT SPEED
GEN. VOLTAGE SETTING
TURB. GATE POSITION
TURB. GATE LIMIT
GEN. TEMP. STATOR
GEN. TEMP. ROTOR
UNIT BEARINGS TEMP.
TRANSFORMER TEMP. (1-TRANSF. PER 2 UNITS)
GEN. CIRCUIT BREAKER POSITION
ALARMS & TRIPS
TURBINE
GENERATOR
TRANSFORMER
OTHER
UNIT 2 (SAME AS UNIT 1)
UNIT 3 (SAME AS UNIT 1)
UNIT 4 (SAME AS UNIT 1)
UNIT 5 (SAME AS UNIT 1)
UNIT 6 (SAME AS UNIT 1)
345 KV SWITCHYARD
CKT. BREAKER POSITIONS
DISC. SWITCH POSITIONS
ALARMS & TRIPS
345 KV BUS VOLTAGE
345 KV BUS FREQUENCY
PLANT MEGAWATTS
PLANT MEGAVARS
PLANT ENERGY
RESERVOIR LEVEL
TAILWATER LEVEL
CYCLIC TRANSMISSION
TO CENTRAL DISPATCH CENTER (WILLOW)
CENTRAL COMPUTER
CENTRAL COMPUTER BACKUP
DATA BANK
PROGRAM BANK
TAPE/DISK DEVICE (TYP)
OUTPUT STORE
SUSITNA AREA CONTROL ROOM AT WATANA
GIANT WALL MIMIC DIAGRAM
VISUAL DISPLAY UNIT (TYP.)
VDU Nº 1 OPERATOR Nº1
VDU Nº 2 OPERATOR Nº2
CONSOLE
OFF-LINE PRINTER
MEASUREMENTS, ALARM MONITORING, DISTURBANCES
RESERVOIR WATER MANAGEMENT - HR./DAY/WEEK/YEAR
GENERAL PROJECT MANAGEMENT, ACCOUNTING
PROGRAMMER'S TERMINAL
DEVIL CANYON POWERPLANT - UNITS 1 TO 4
ACRES
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
BLOCK SCHEMATIC
COMPUTER-AIDED CONTROL SYSTEM
ACRES AMERICAN INCORPORATED
MARCH 1982
PLATE 34

LEGEND

RECOMMENDED ROUTE



SCALE 0 4 8 MILES

REFERENCE: BASE MAP FROM USGS, 1:250,000
HEALY, ALASKA
TALKEETNA MOUNTAINS, ALASKA

ACRES

ALASKA POWER AUTHORITY

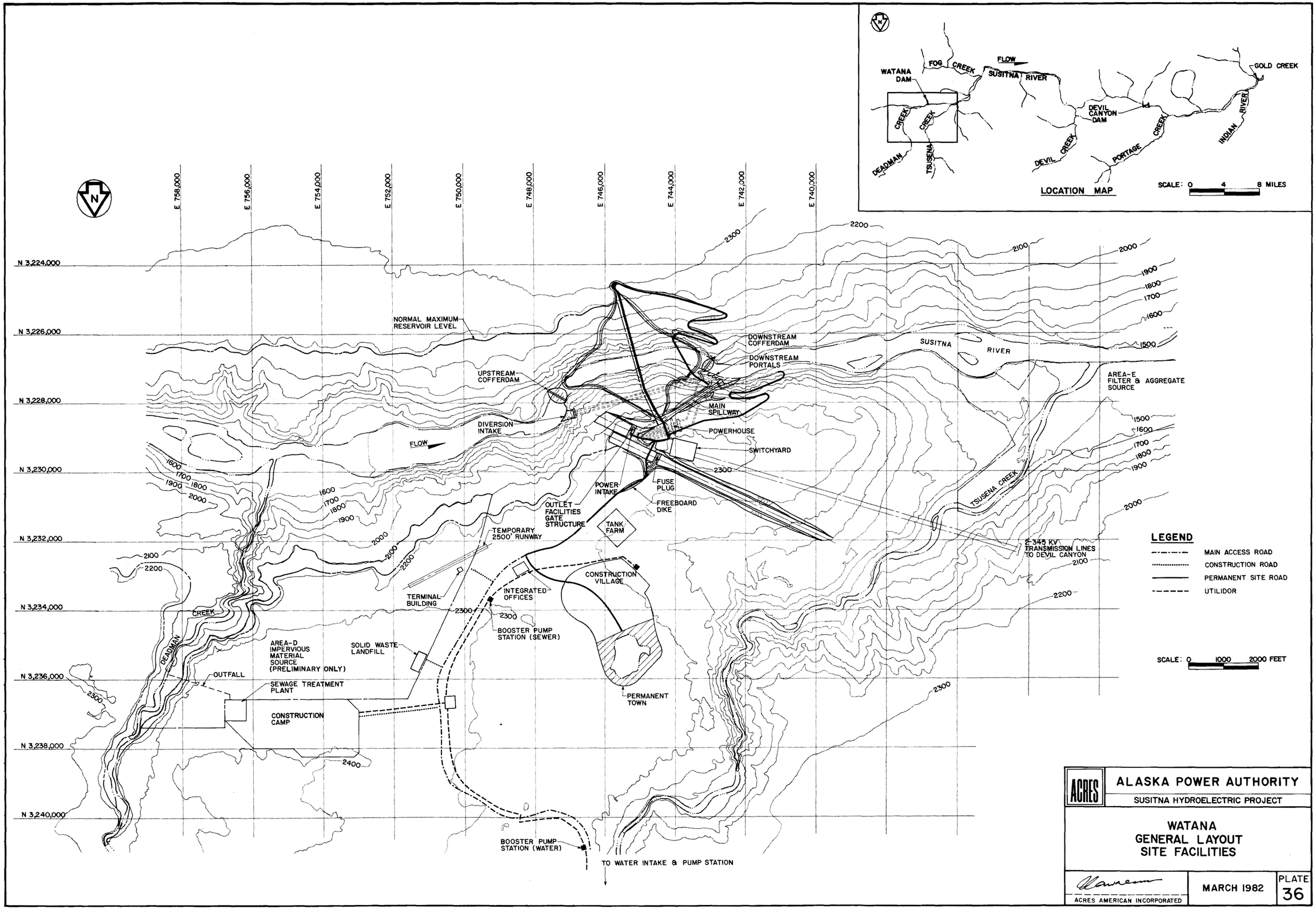
SUSITNA HYDROELECTRIC PROJECT

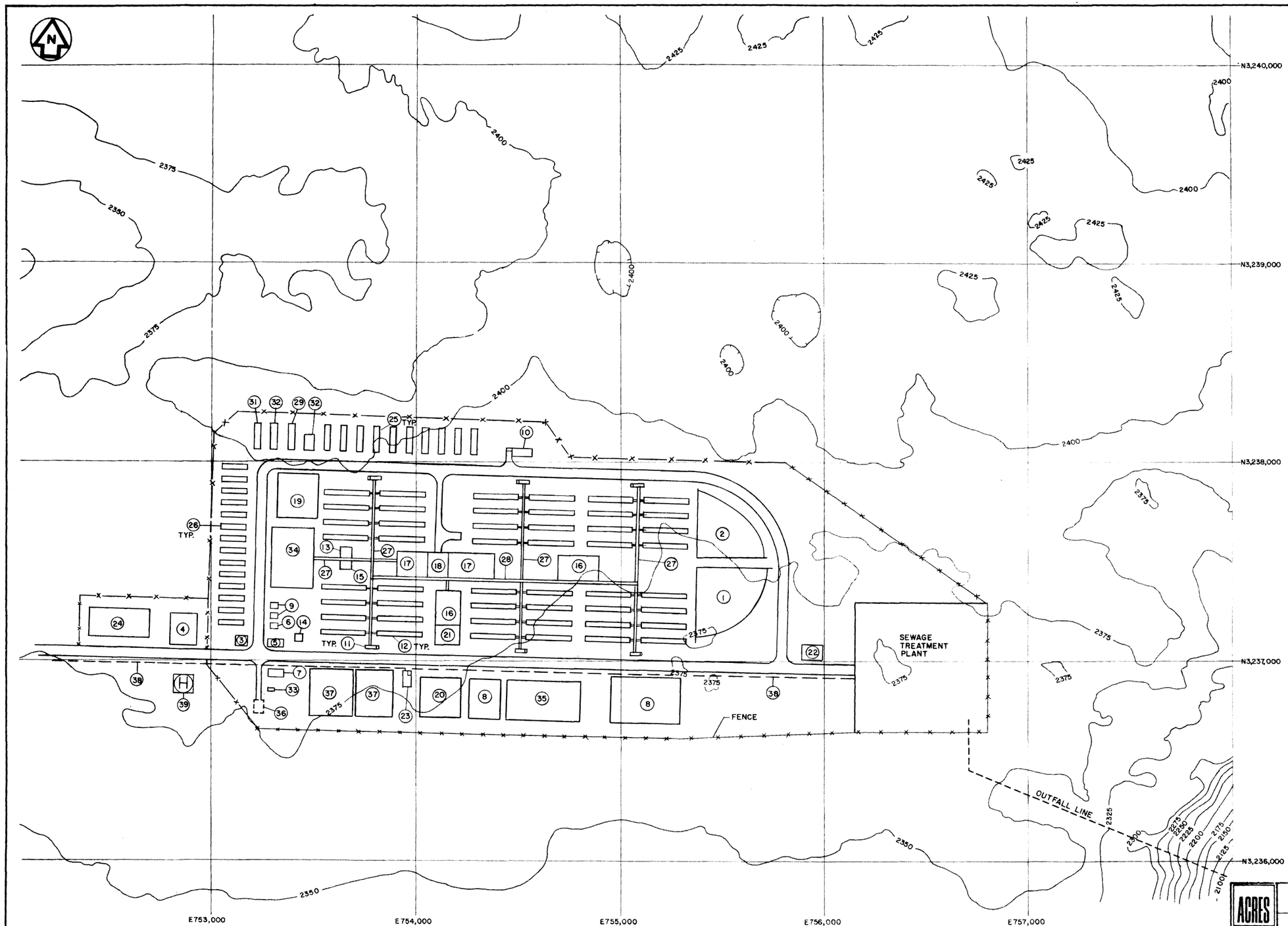
ACCESS PLAN
RECOMMENDED ROUTE

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 35


LOCATION MAP
SCALE: 0 4 8 MILES
WATANA DAM
FOG CREEK
FLOW
SUSITNA RIVER
GOLD CREEK
DEVIL CANYON DAM
DEADMAN CREEK
TSUSENA CREEK
DEVIL CREEK
PORTAGE CREEK
INDIAN RIVER
E 758,000
E 756,000
E 754,000
E 752,000
E 750,000
E 748,000
E 746,000
E 744,000
E 742,000
E 740,000
N 3,224,000
N 3,226,000
N 3,228,000
N 3,230,000
N 3,232,000
N 3,234,000
N 3,236,000
N 3,238,000
N 3,240,000
NORMAL MAXIMUM RESERVOIR LEVEL
DOWNSTREAM COFFERDAM
DOWNSTREAM PORTALS
SUSITNA RIVER
AREA-E FILTER & AGGREGATE SOURCE
UPSTREAM COFFERDAM
MAIN SPILLWAY
DIVERSION INTAKE
POWERHOUSE
SWITCHYARD
FLOW
POWER INTAKE
FUSE PLUG
FREEBOARD DIKE
OUTLET FACILITIES GATE STRUCTURE
TANK FARM
TEMPORARY 2500' RUNWAY
TSUSENA CREEK
2-345 KV TRANSMISSION LINES TO DEVIL CANYON
CONSTRUCTION VILLAGE
TERMINAL BUILDING
INTEGRATED OFFICES
BOOSTER PUMP STATION (SEWER)
DEADMAN CREEK
AREA-D IMPERVIOUS MATERIAL SOURCE (PRELIMINARY ONLY)
SOLID WASTE LANDFILL
OUTFALL
SEWAGE TREATMENT PLANT
CONSTRUCTION CAMP
PERMANENT TOWN
BOOSTER PUMP STATION (WATER)
TO WATER INTAKE & PUMP STATION
LEGEND
MAIN ACCESS ROAD
CONSTRUCTION ROAD
PERMANENT SITE ROAD
UTILIDOR
SCALE: 0 1000 2000 FEET
ACRES
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
WATANA
GENERAL LAYOUT
SITE FACILITIES
ACRES AMERICAN INCORPORATED
MARCH 1982
PLATE 36



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

ACRES

ALASKA POWER AUTHORITY

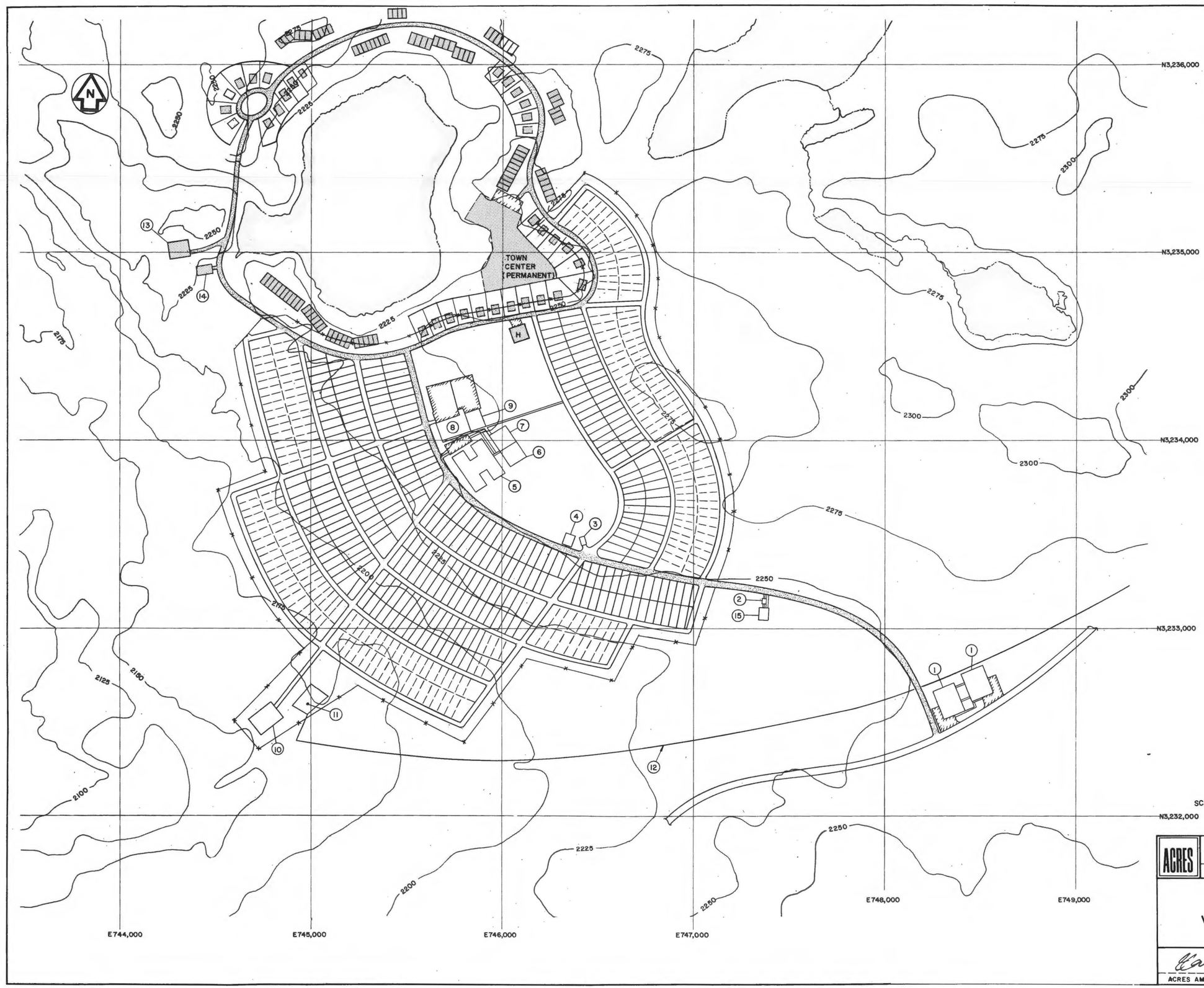
SUSITNA HYDROELECTRIC PROJECT

WATANA
MAIN CONSTRUCTION CAMP SITE

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 37



LEGEND

- PERMANENT NON-RESIDENTIAL BLDG.
- PERMANENT ROAD
- PERMANENT MULTIFAMILY DWELLINGS
  - 72 UNITS FURNISHED BY YEAR 1992
  - 16 UNITS " " " 2001
- PERMANENT SINGLE FAMILY DWELLINGS
  - 21 UNITS FURNISHED BY YEAR 1992
  - 6 UNITS " " " 2001
- PERMANENT HOSPITAL
- TEMPORARY HOUSING/UTILITIES FURNISHED BY OWNER
  - 16 EA.-4 BEDROOMS UNITS 28'x50'
  - 16 EA.-2 " " 24'x50'
  - 16 EA.-3 " " " "
  - 72 EA.-2 " " 14'x60'
  - 200 EA.-3 " " 14'x60'
- TEMPORARY LOTS/UTILITIES FURNISHED BY OWNER
  - 240 EA.-LOT SPACES
- PARKING AREAS
- (1) MANAGER'S OFFICES
- (2) GENERATING STATION
- (3) FIRE STATION
- (4) GAS STATION
- (5) SCHOOL
- (6) SWIMMING POOL
- (7) GYMNASIUM
- (8) STORE
- (9) RECREATION CENTER
- (10) SEWAGE COLLECTION PUMP STATION
- (11) WATER PUMP STATION
- (12) UTILIDOR
- (13) SEWAGE TREATMENT PLANT
- (14) WATER TREATMENT PLANT
- (15) FUEL STORAGE TANK (50,000 g)

ACRES

ALASKA POWER AUTHORITY

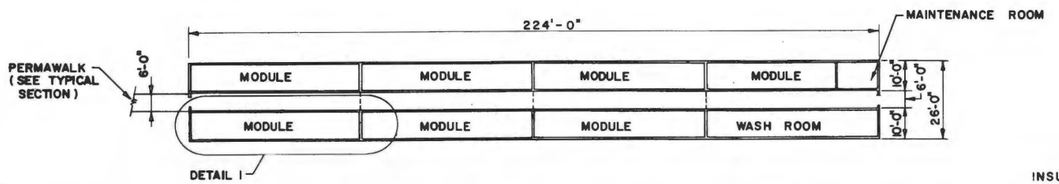
SUSITNA HYDROELECTRIC PROJECT

WATANA VILLAGE AND TOWN SITE

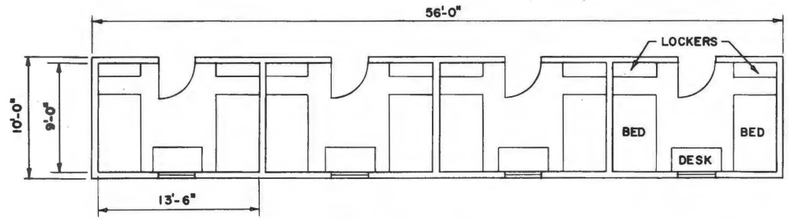
ACRES AMERICAN INCORPORATED

MARCH 1982

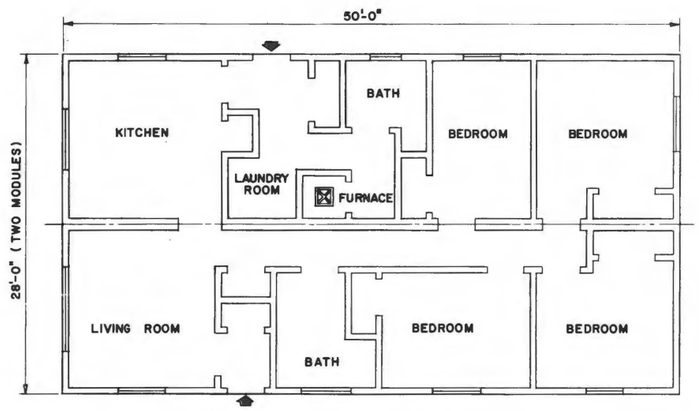
PLATE 38



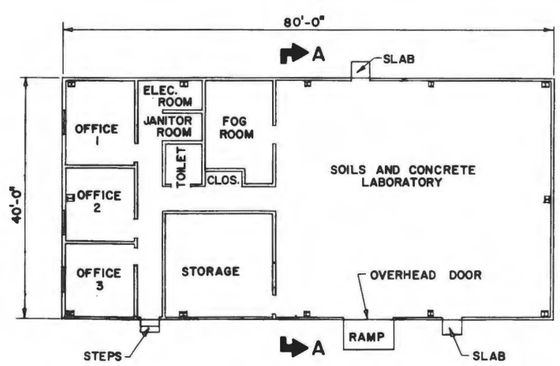
TYPICAL DORM TWO MAN SLEEPING ROOMS (2 STORY, 8 MODULES PER STORY)



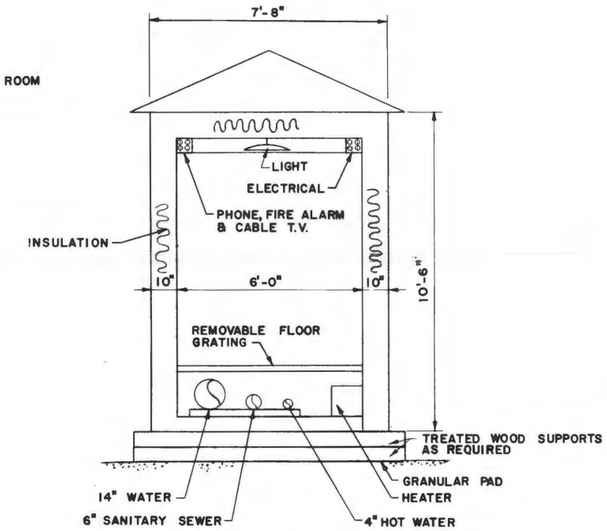
DETAIL I
TYPICAL DORMITORY MODULE
SCALE: C



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

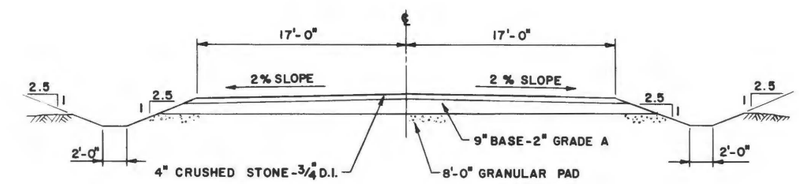


TYPICAL STEEL FRAME BUILDING
SOILS AND CONCRETE LABORATORY
SCALE: A

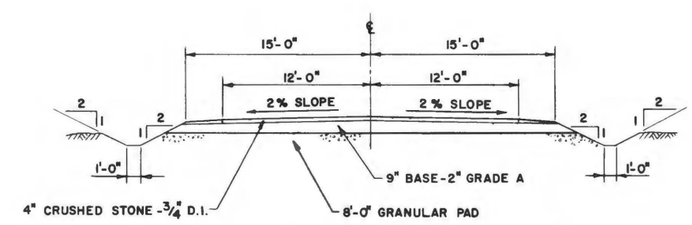


TYPICAL PERMAWALK
WITH UTILIDOR (AT DORMS)
SCALE: B

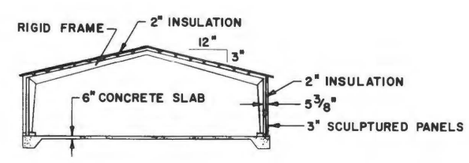
PERMANENT VILLAGE HOUSING



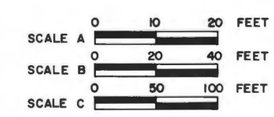
TYPICAL SECTION – MAIN ROAD
SCALE: C



TYPICAL SECTION–SECONDARY ROAD
SCALE: C



SECTION A-A



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ALASKA POWER AUTHORITY

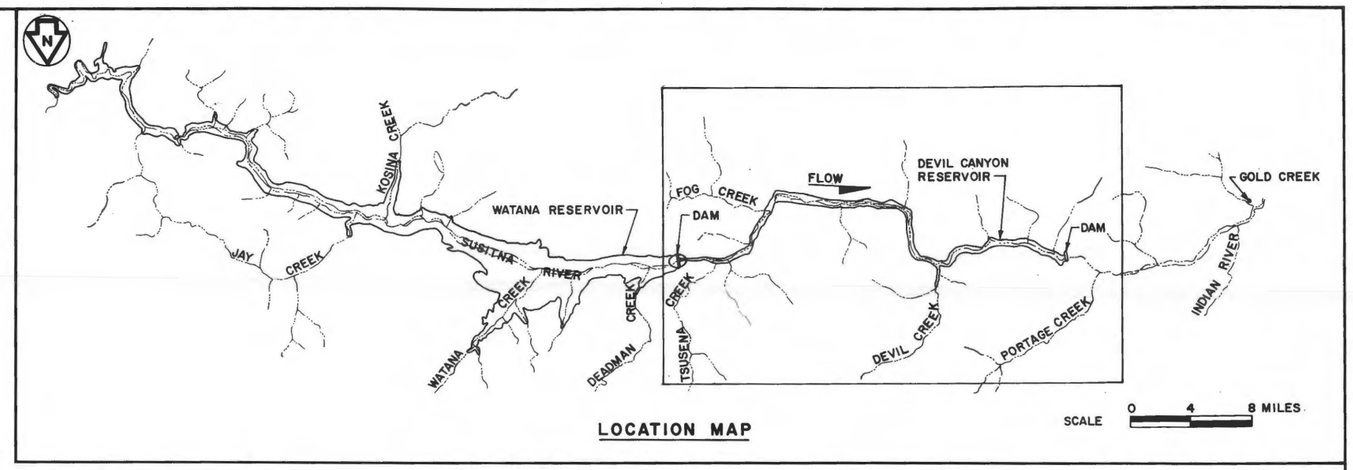
SUSITNA HYDROELECTRIC PROJECT

WATANA AND DEVIL CANYON
CONSTRUCTION CAMP DETAILS

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 39



LOCATION MAP

LEGEND

NORMAL MAXIMUM OPERATING LEVEL EL. 1455

2000 CONTOUR IN FEET ABOVE MSL

PLAN

ACRES

ALASKA POWER AUTHORITY

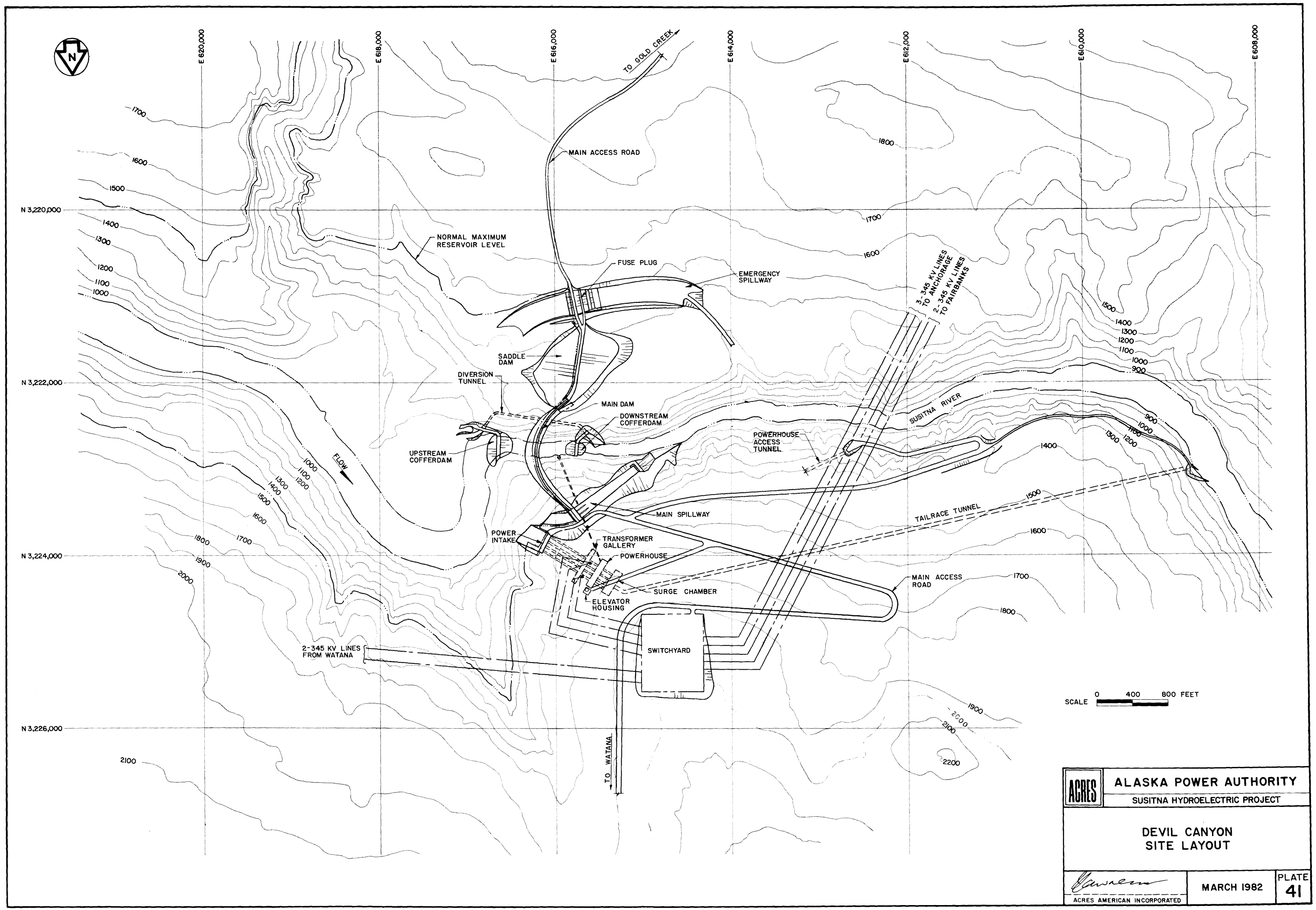
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON RESERVOIR PLAN

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 40



ACRES

ALASKA POWER AUTHORITY

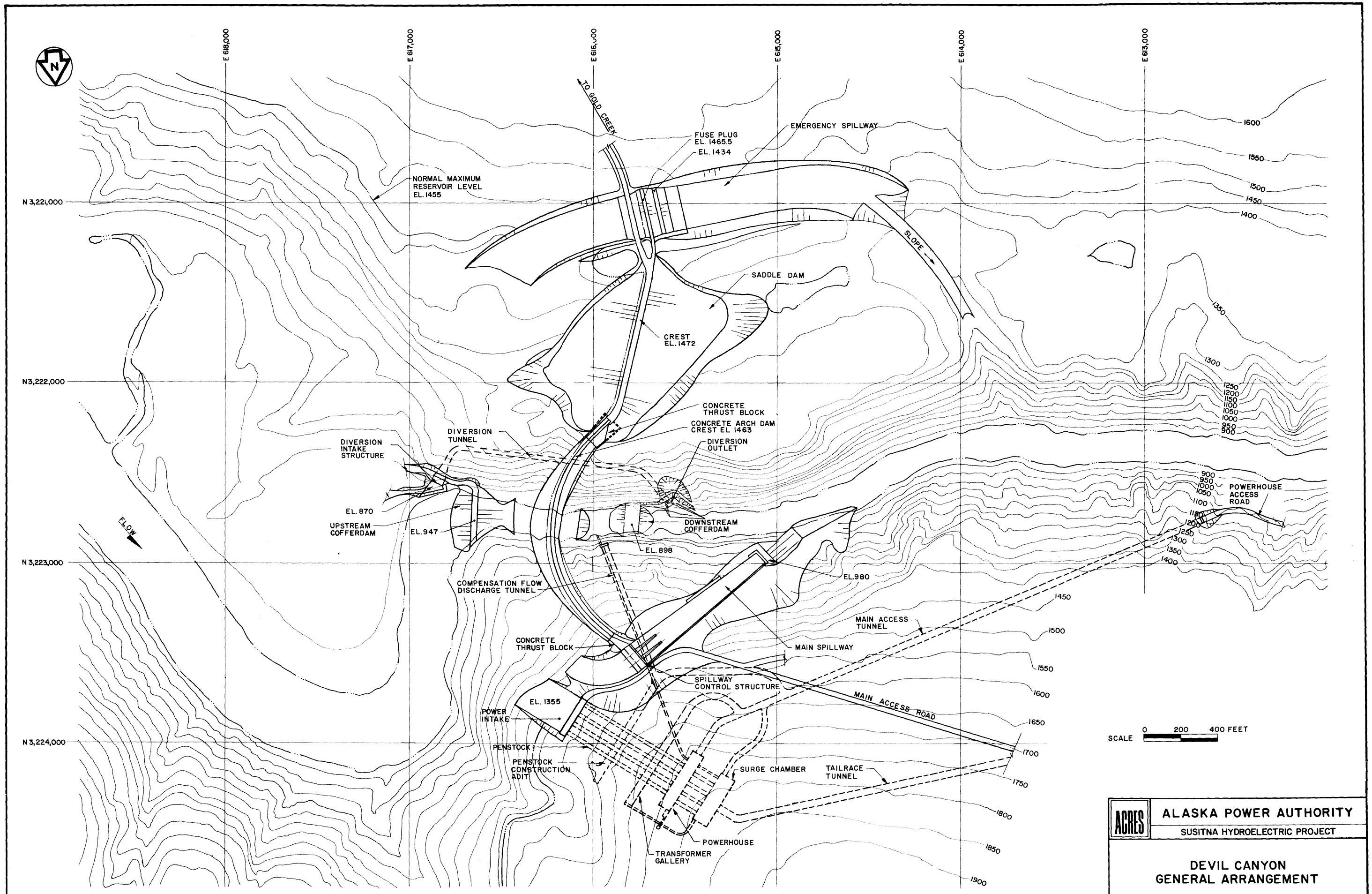
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
SITE LAYOUT

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 41



ACRES

ALASKA POWER AUTHORITY

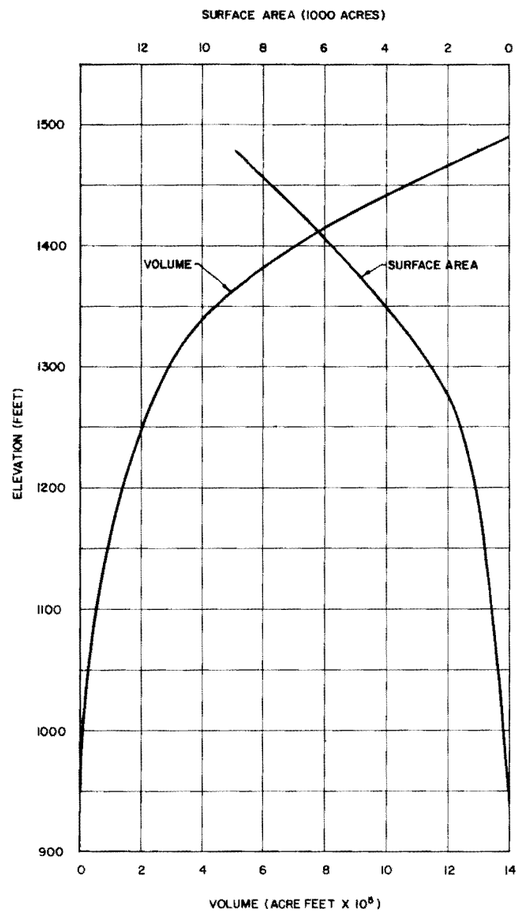
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
GENERAL ARRANGEMENT

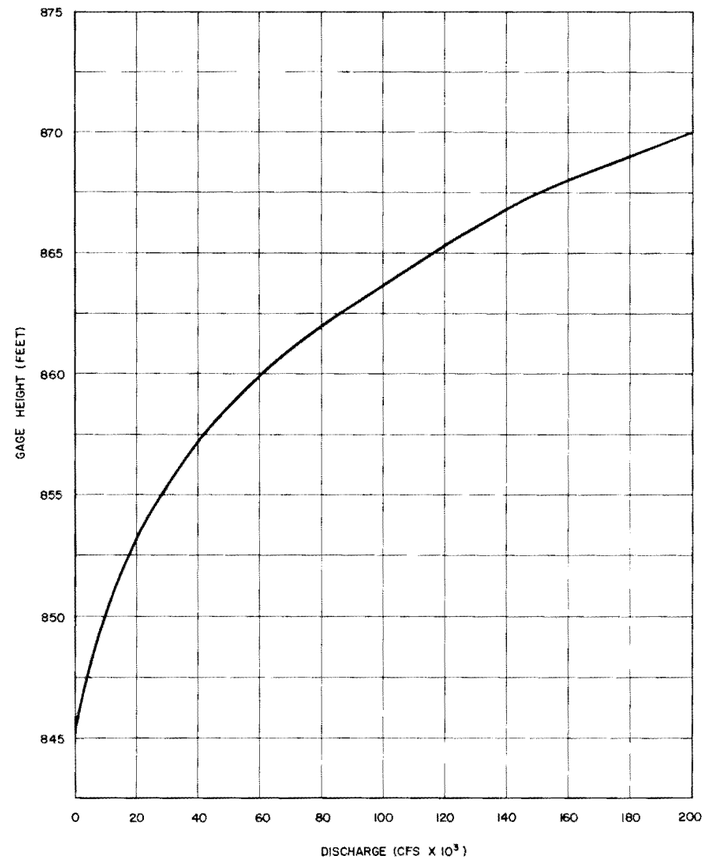
ACRES AMERICAN INCORPORATED

MARCH 1982

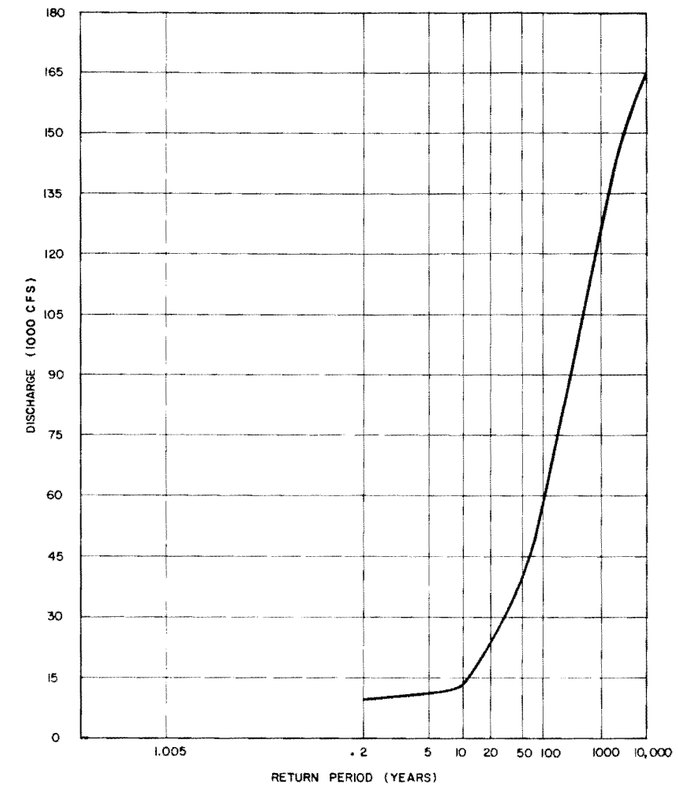
PLATE
42



RESERVOIR VOLUME AND SURFACE AREA



TAILWATER RATING CURVE



FLOOD FREQUENCY CURVE
(INFLOW AFTER ROUTING THROUGH WATANA)

ACRES

ALASKA POWER AUTHORITY

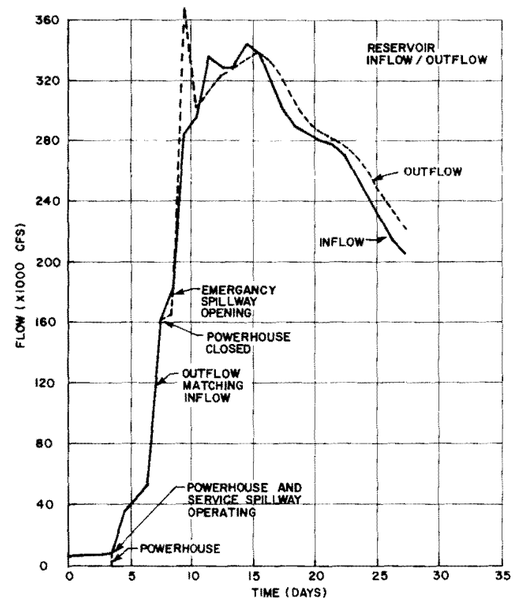
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
HYDROLOGICAL DATA
SHEET I

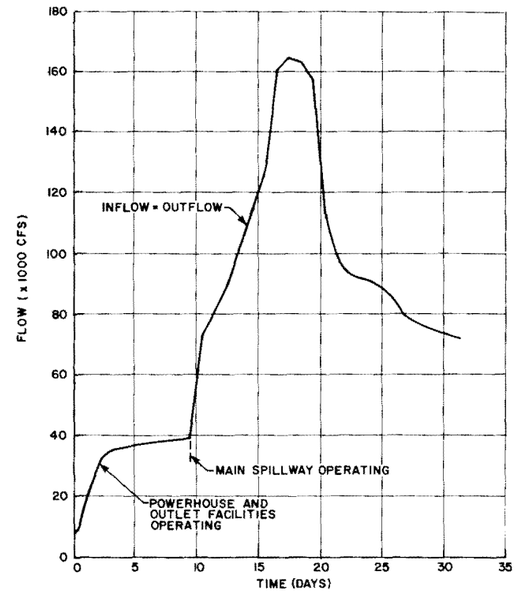
ACRES AMERICAN INCORPORATED

MARCH 1982

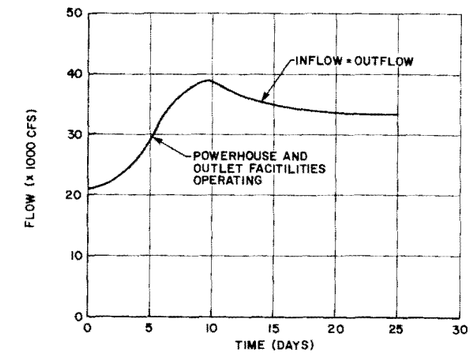
PLATE 43



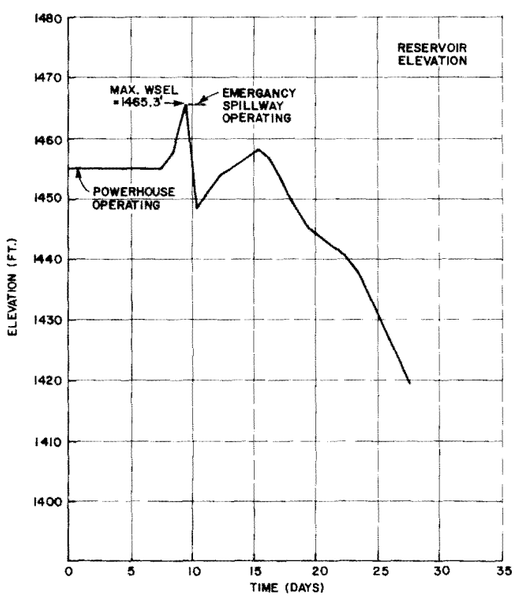
PROBABLE MAXIMUM FLOOD



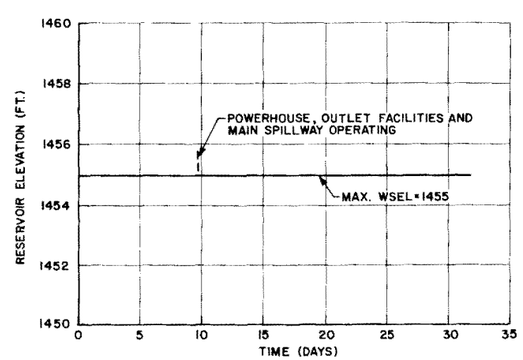
RESERVOIR ROUTING
1:10,000 YR. FLOOD



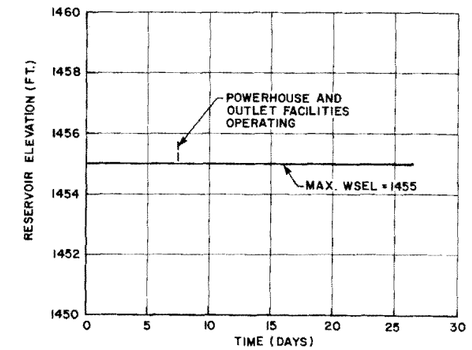
RESERVOIR ROUTING
1:50 YR. SUMMER FLOOD



PROBABLE MAXIMUM FLOOD



RESERVOIR ROUTING
1:10,000 YR. FLOOD



RESERVOIR ROUTING
1:50 YR. SUMMER FLOOD

ACRES

ALASKA POWER AUTHORITY

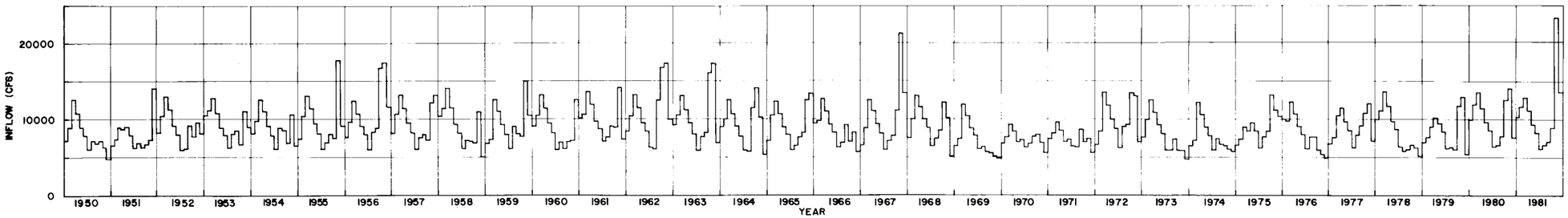
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
HYDROLOGICAL DATA
SHEET 2

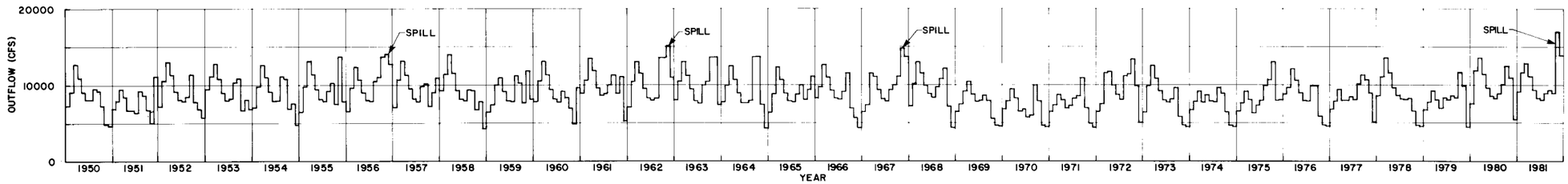
ACRES AMERICAN INCORPORATED

MARCH 1982

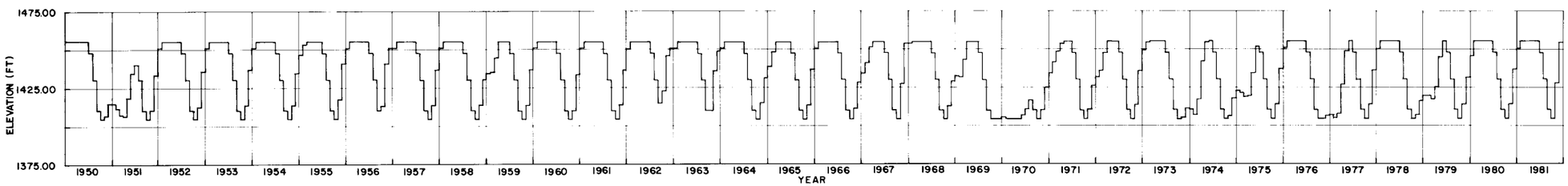
PLATE 44



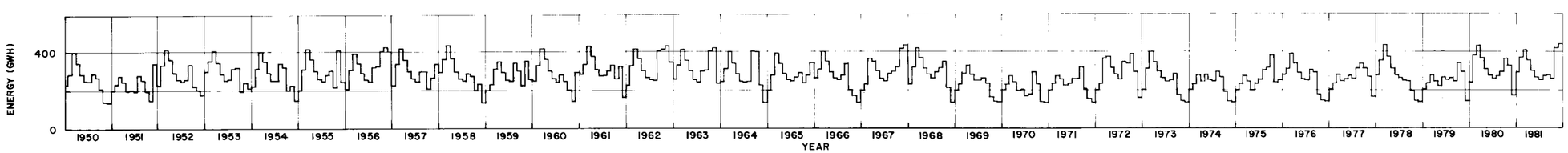
DEVIL CANYON
INFLOW(2) - CFS



DEVIL CANYON
TOTAL OUTFLOW - CFS



DEVIL CANYON
RESERVOIR ELEVATION - FT



DEVIL CANYON
ENERGY - GWH

NOTES:

1. ALL YEARS ARE WATER YEARS: OCTOBER THROUGH SEPTEMBER.
2. INFLOW TO DEVIL CANYON EQUALS TOTAL OUTFLOW FROM WATANA PLUS CONTRIBUTION FLOW FROM INTERVENING AREA BETWEEN DAM SITES.

ACRES

ALASKA POWER AUTHORITY

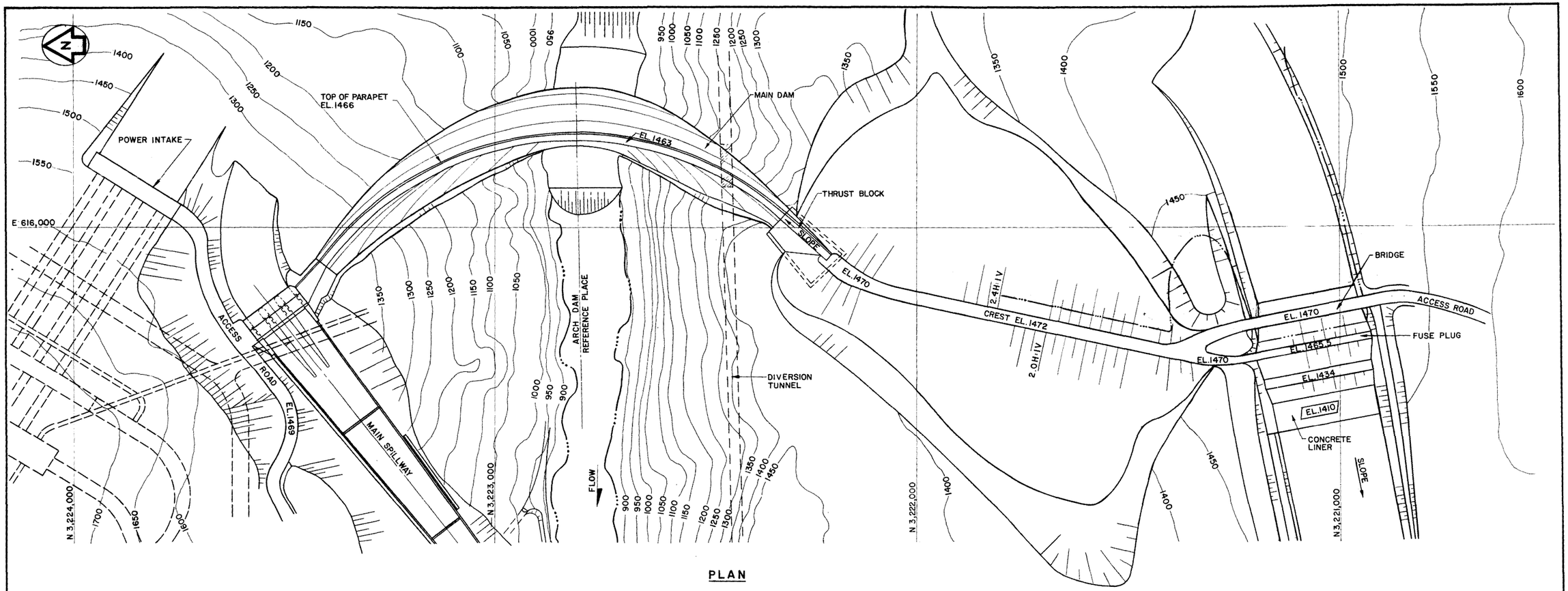
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
SIMULATED RESERVOIR OPERATION

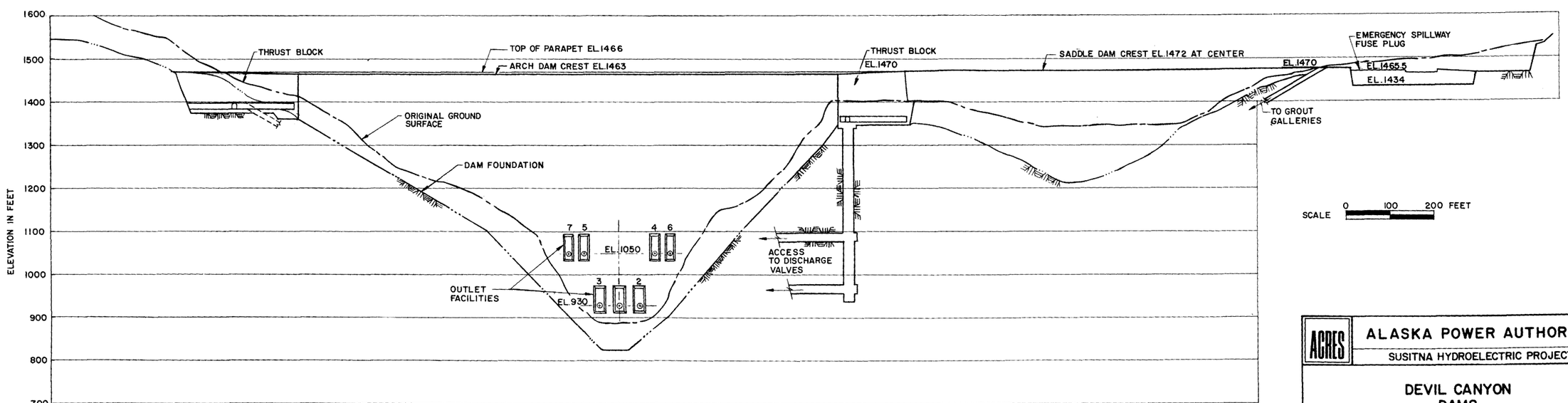
ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 45



PLAN



PROFILE (DEVELOPED - LOOKING UPSTREAM)

ACRES

ALASKA POWER AUTHORITY

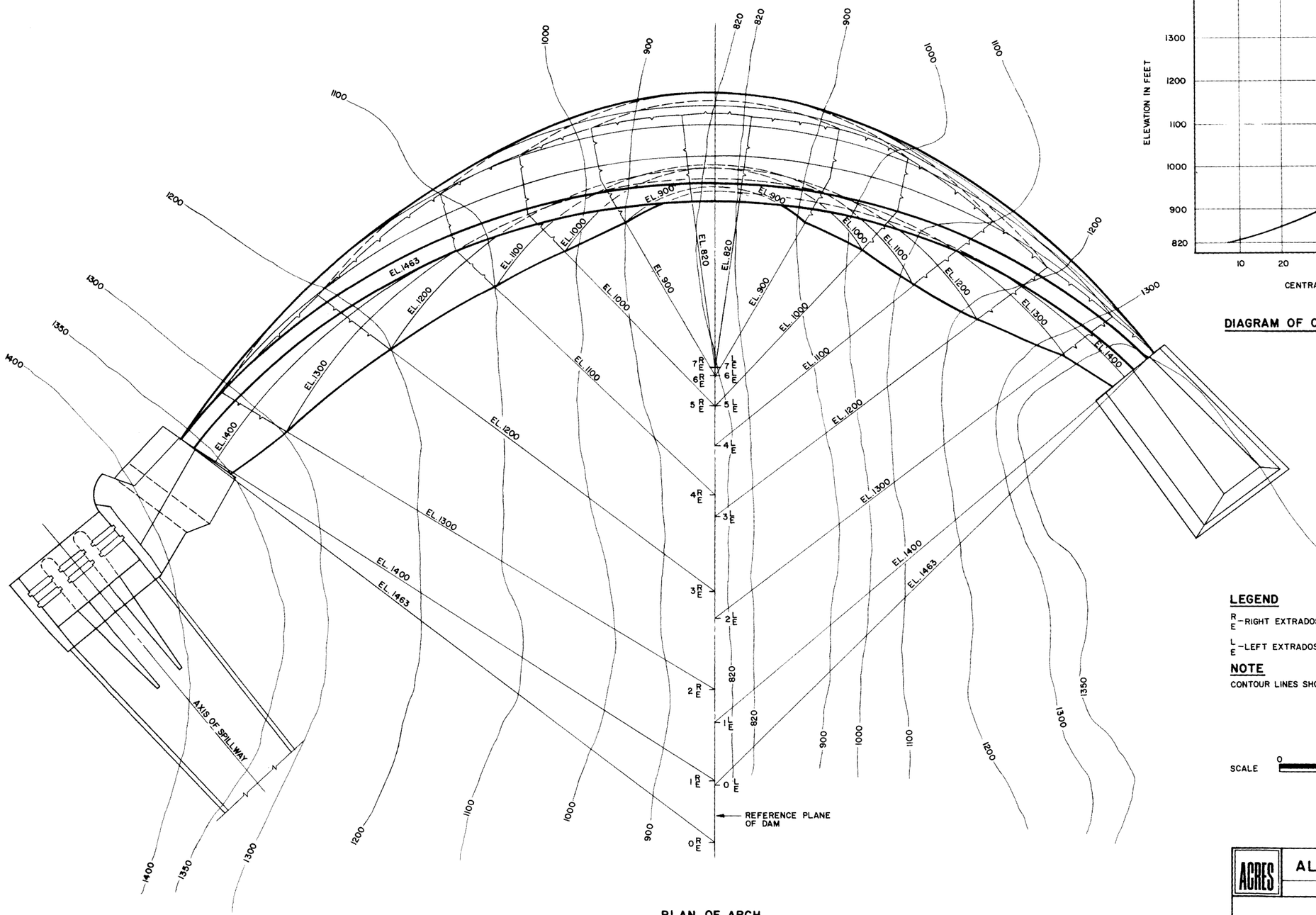
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
DAMS
PLAN AND PROFILE

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 46



PLAN OF ARCH

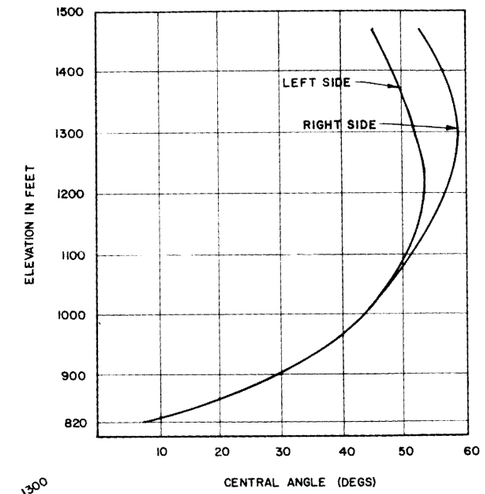


DIAGRAM OF CENTRAL ANGLES

LEGEND

RE – RIGHT EXTRADOS

LE – LEFT EXTRADOS

NOTE

CONTOUR LINES SHOW SOUND ROCK

SCALE 0 50 100 FEET

ACRES

ALASKA POWER AUTHORITY

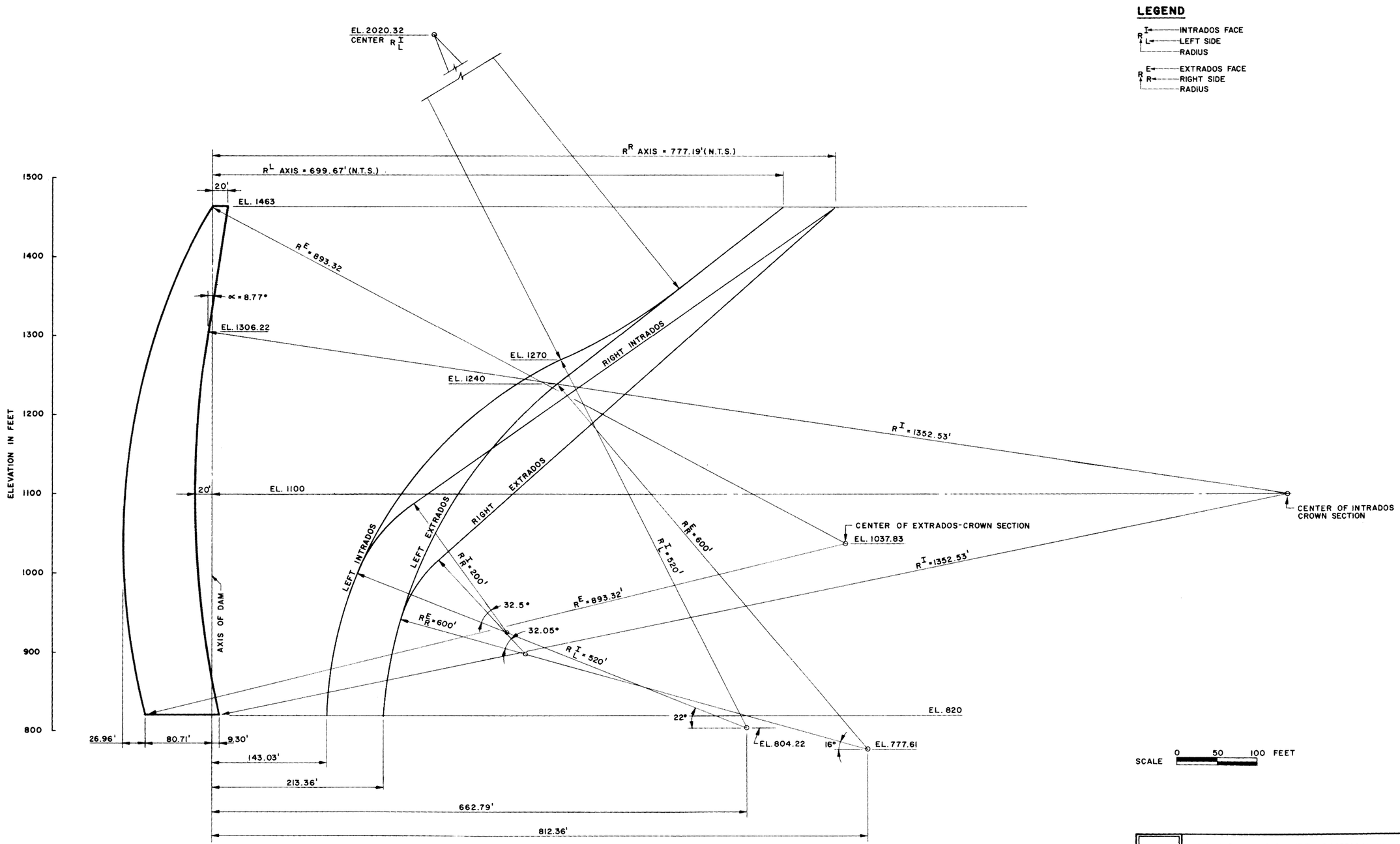
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN DAM
GEOMETRY

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 47



ACRES

ALASKA POWER AUTHORITY

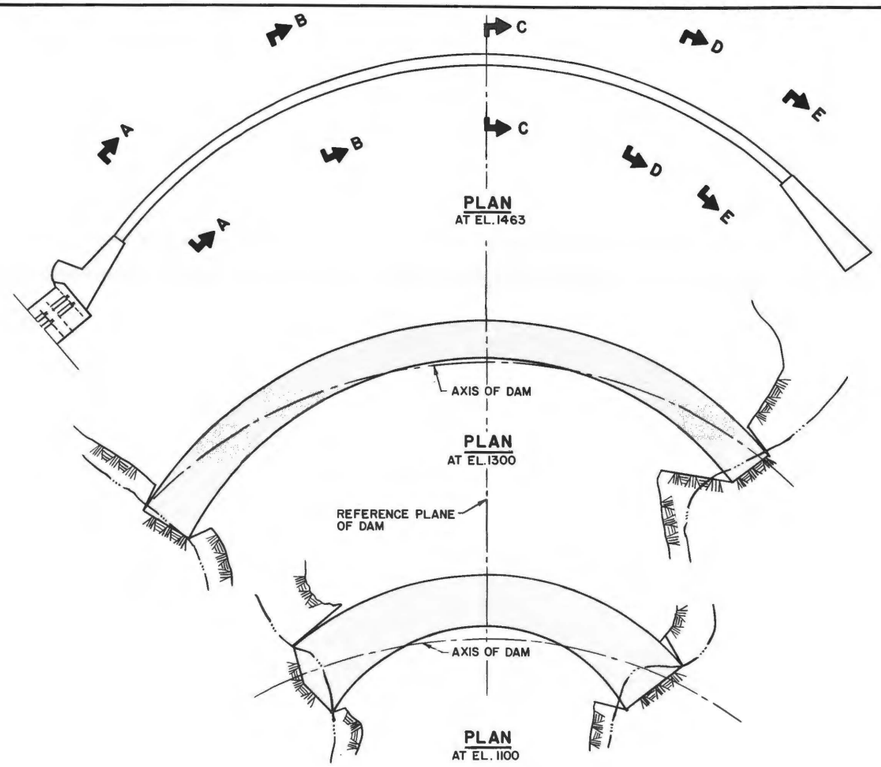
SUSITNA HYDROELECTRIC PROJECT

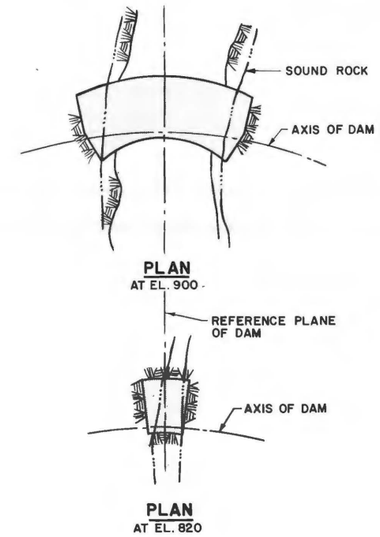
DEVIL CANYON
MAIN DAM
CROWN SECTION

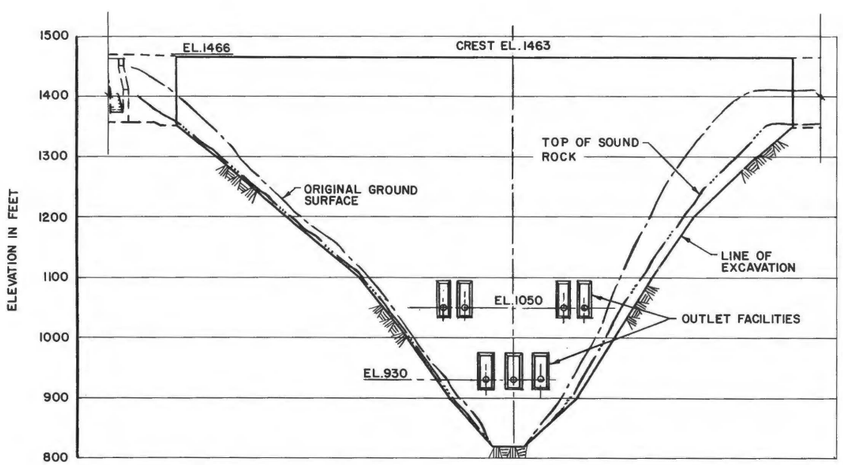
ACRES AMERICAN INCORPORATED

MARCH 1982

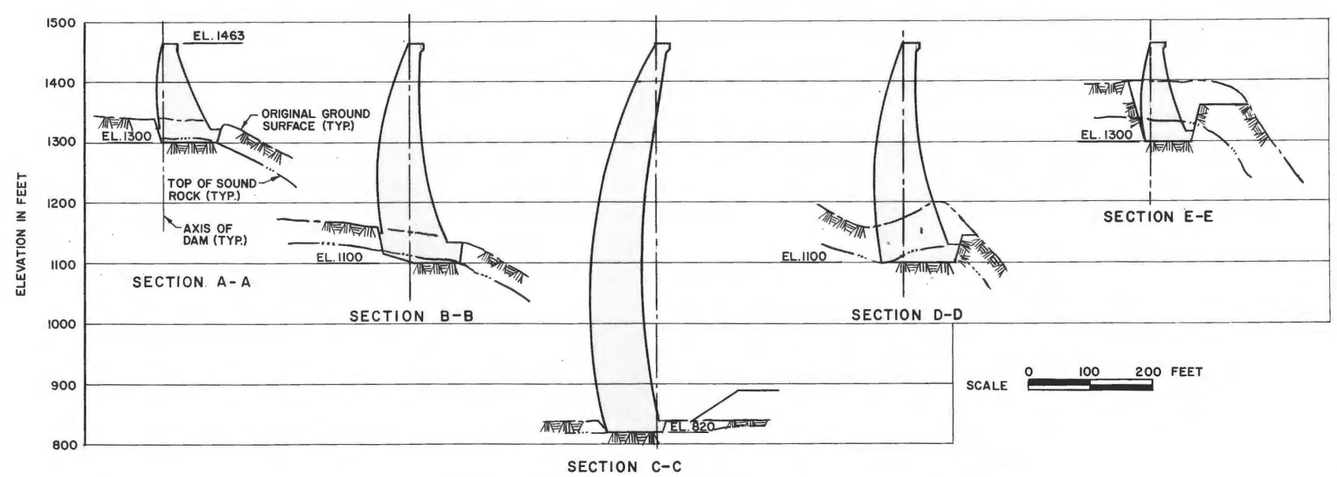
PLATE 48







DAM PROFILE



DAM SECTIONS

ACRES

ALASKA POWER AUTHORITY

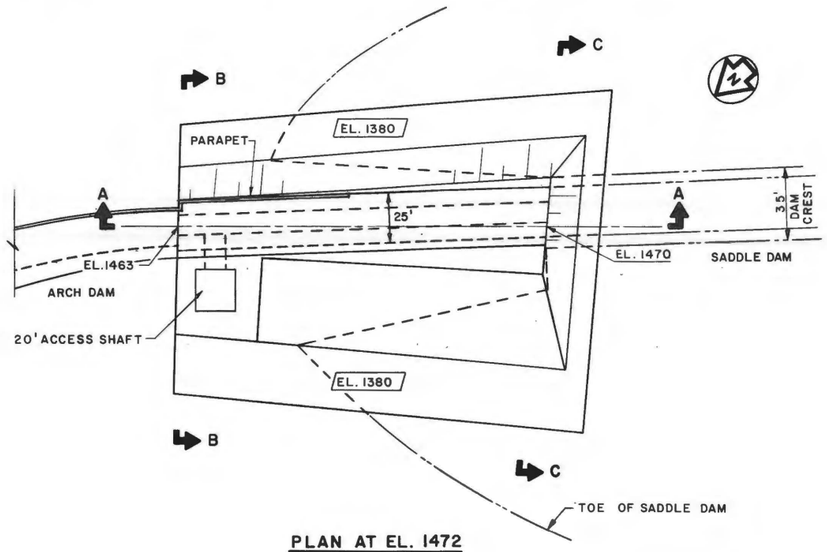
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN DAM
SECTIONS

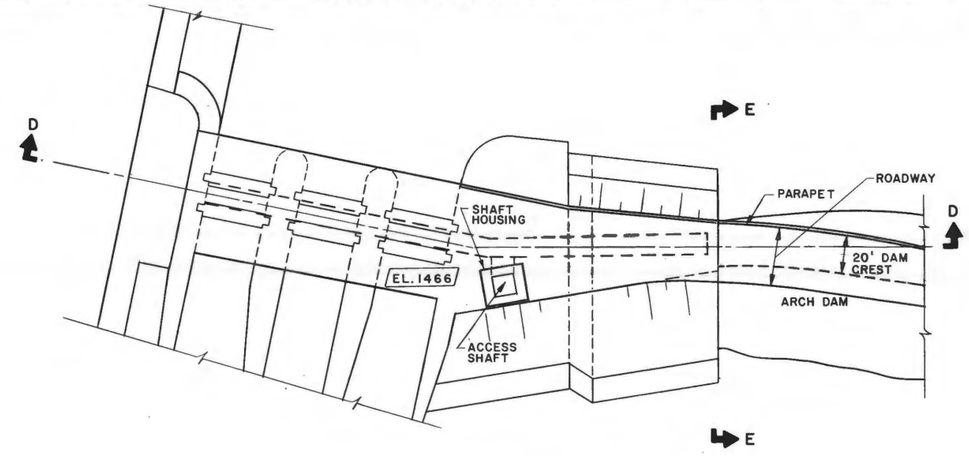
ACRES AMERICAN INCORPORATED

MARCH 1982

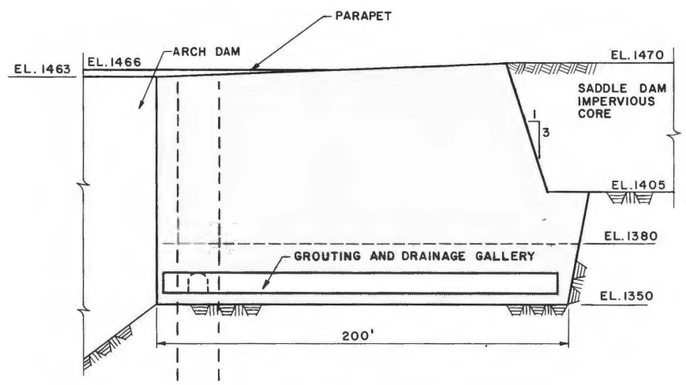
PLATE 49



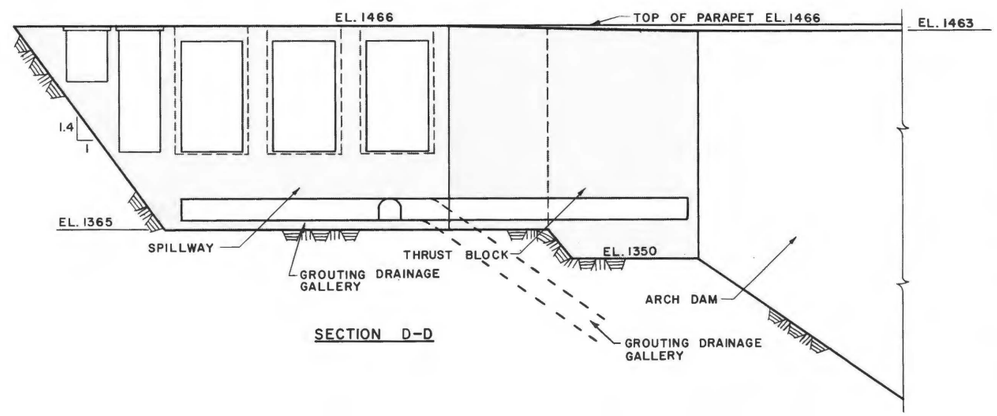
PLAN AT EL. 1472



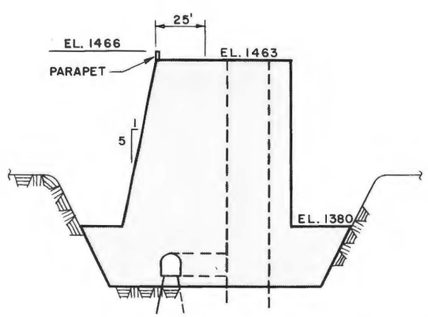
PLAN AT EL. 1466



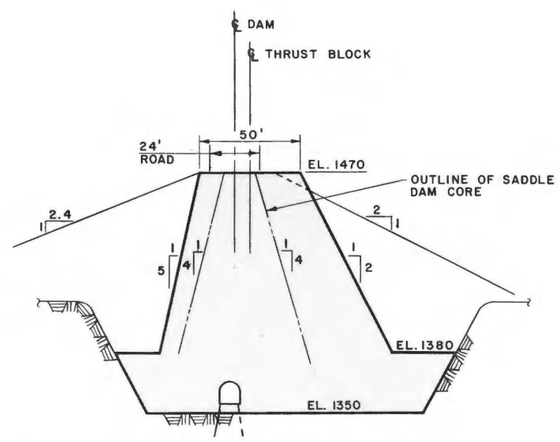
SECTION A-A



SECTION D-D

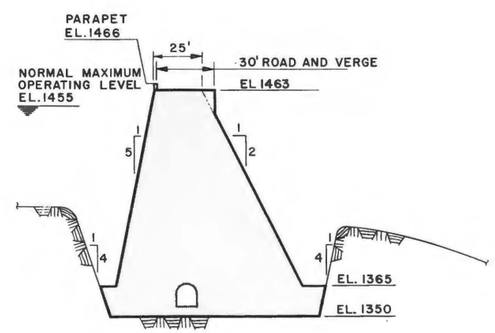


SECTION B-B



SECTION C-C

LEFT ABUTMENT THRUST BLOCK



SECTION E-E

RIGHT ABUTMENT THRUST BLOCK

SCALE 0 30 60 FEET

ACRES

ALASKA POWER AUTHORITY

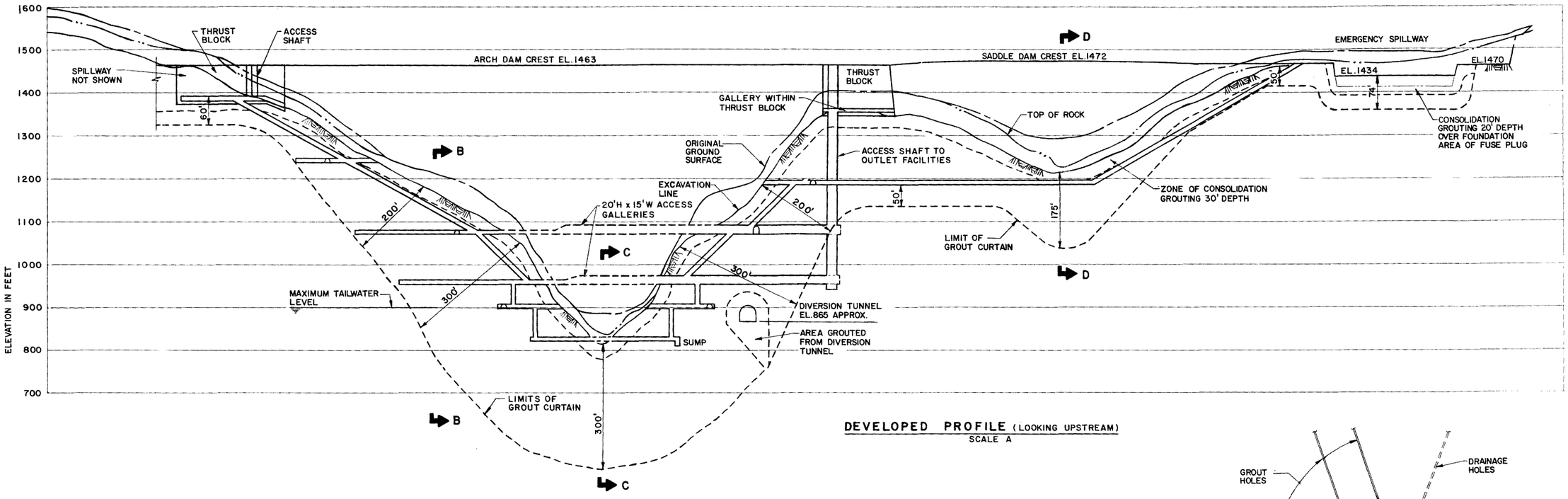
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN DAM
THRUST BLOCKS

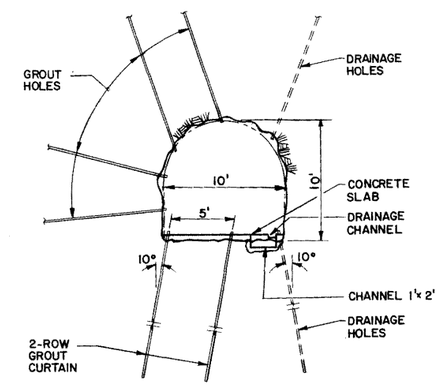
ACRES AMERICAN INCORPORATED

MARCH 1982

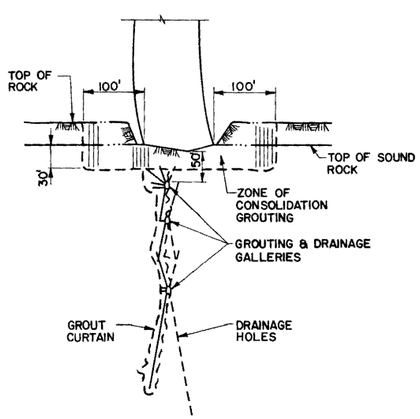
PLATE 50



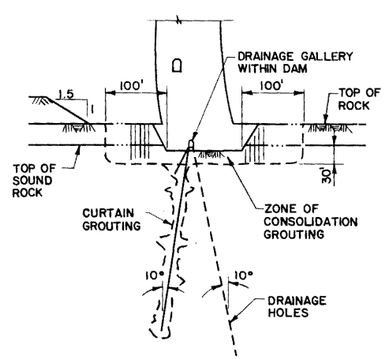
DEVELOPED PROFILE (LOOKING UPSTREAM)
SCALE A



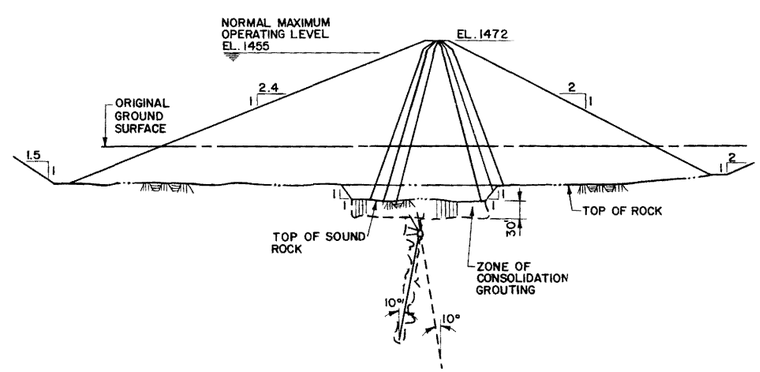
GALLERY DETAIL
SCALE B



SECTION B-B
SCALE A



SECTION C-C
SCALE A



SECTION D-D
SCALE A

SCALE B 0 5 10 FEET
SCALE A 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

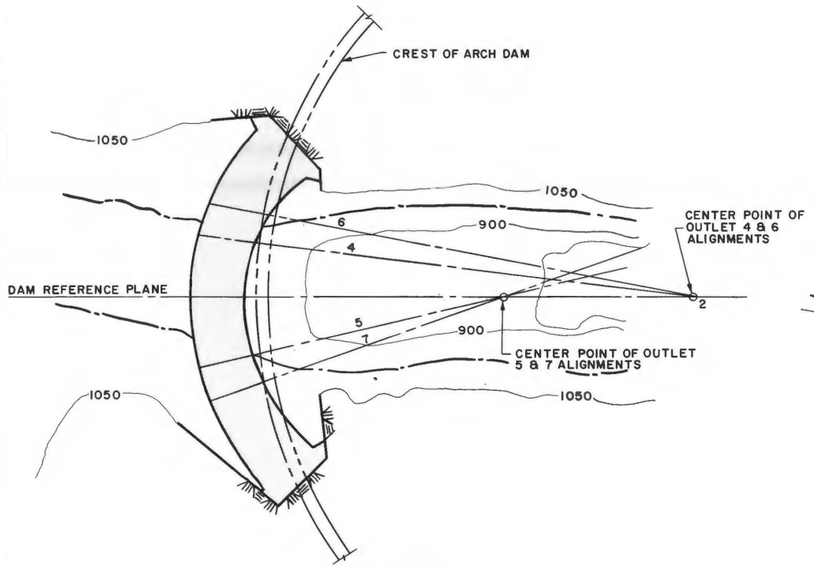
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN DAM
GROUTING AND DRAINAGE

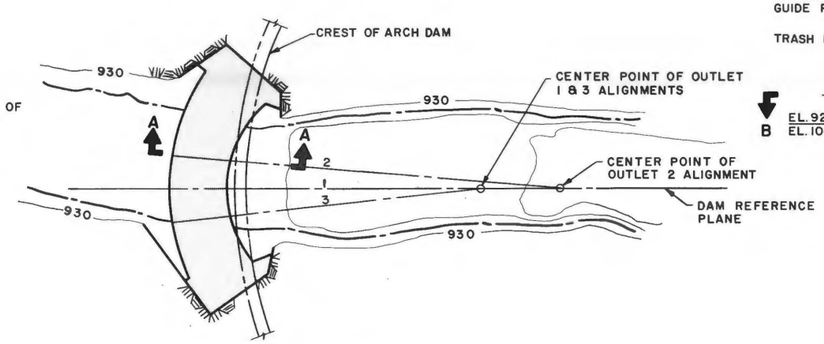
ACRES AMERICAN INCORPORATED

MARCH 1982

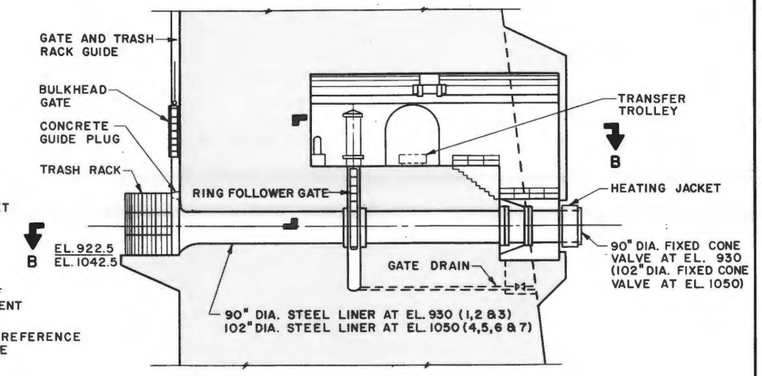
PLATE 51



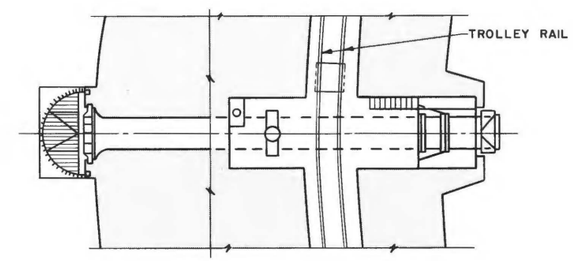
PLAN AT EL. 1050
SCALE A



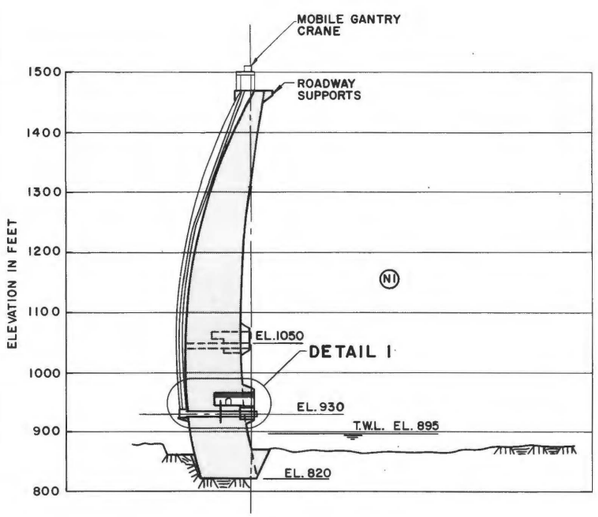
PLAN AT EL. 930
SCALE A



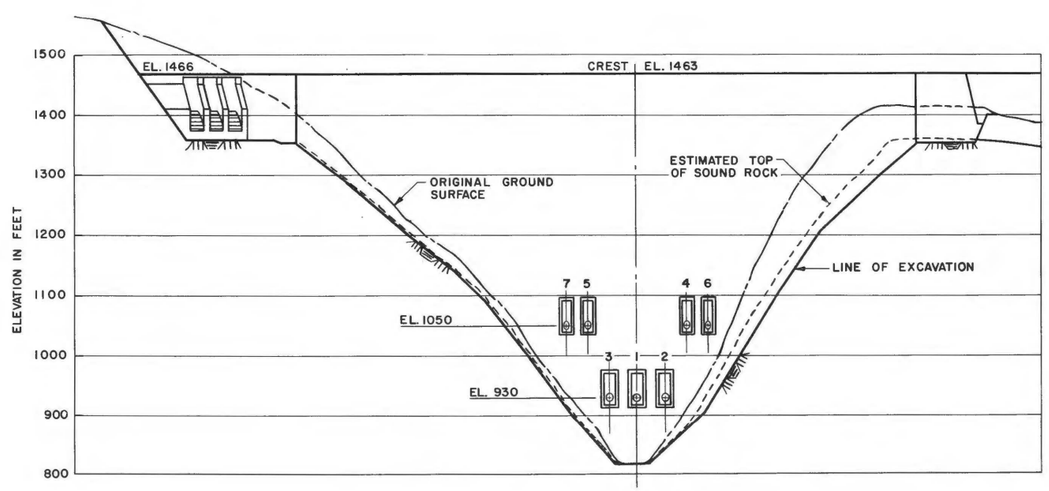
DETAIL I
SCALE B



SECTION B-B
SCALE B



SECTION A-A (TYPICAL)
SCALE A



DAM PROFILE (PROJECTION-LOOKING UPSTREAM)
SCALE A

SCALE B 0 16 32 FEET
SCALE A 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

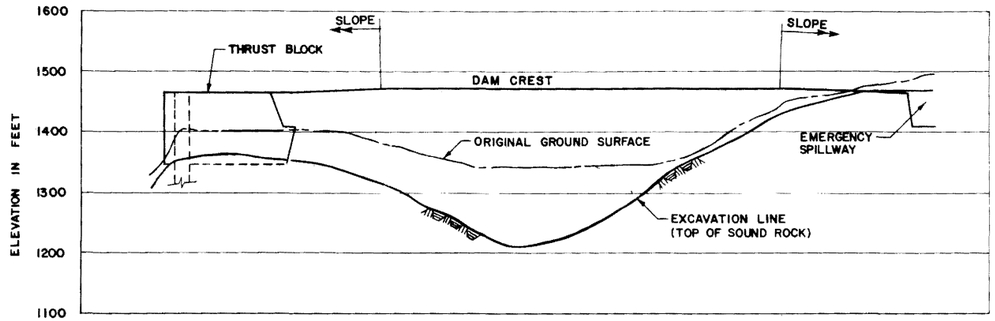
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN DAM
OUTLET FACILITIES

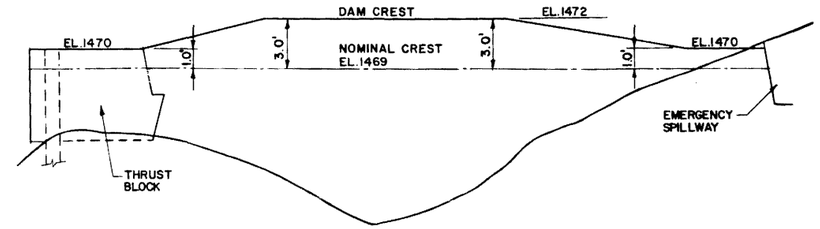
ACRES AMERICAN INCORPORATED

MARCH 1982

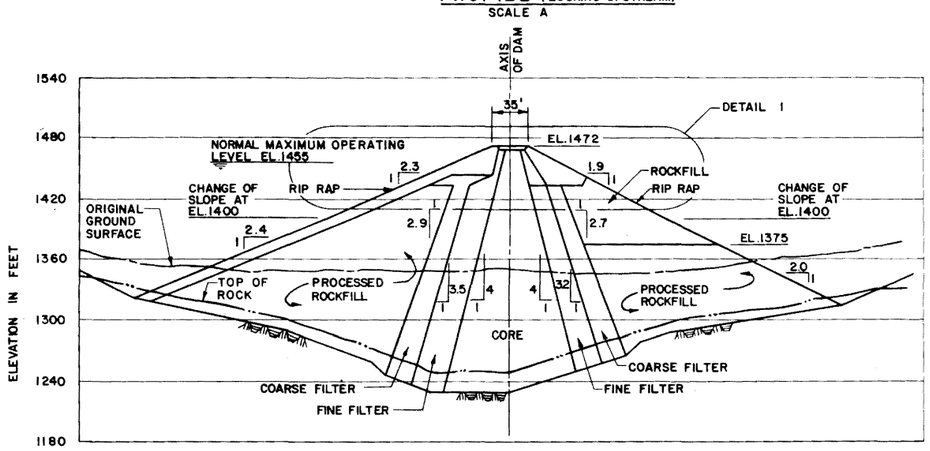
PLATE 52



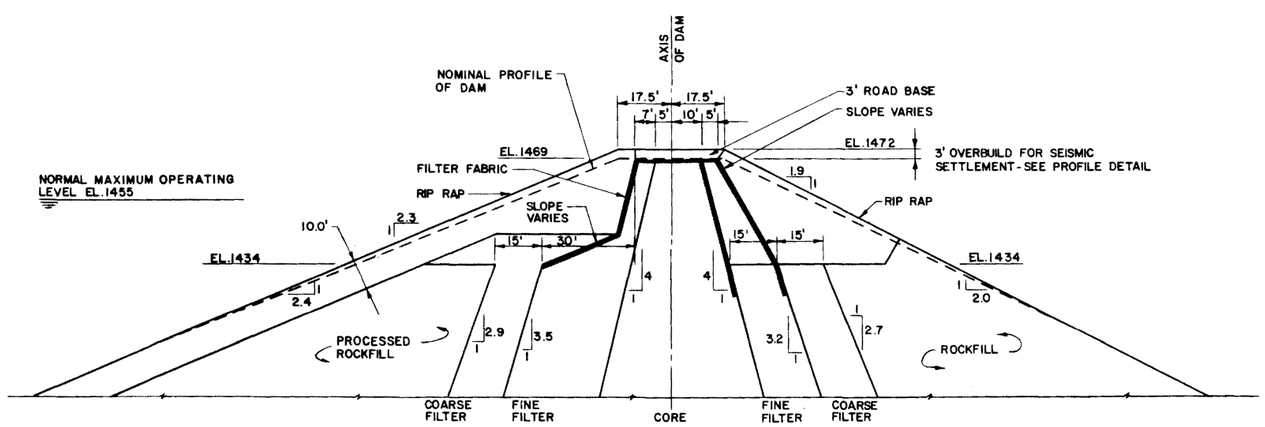
PROFILE (LOOKING UPSTREAM)
SCALE A



PROFILE
SHOWING CREST ELEVATIONS
N.T.S.



SECTION THROUGH SADDLE DAM
SCALE B



DETAIL 1
SCALE C

SCALE C 0 20 40 FEET
SCALE B 0 60 120 FEET
SCALE A 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

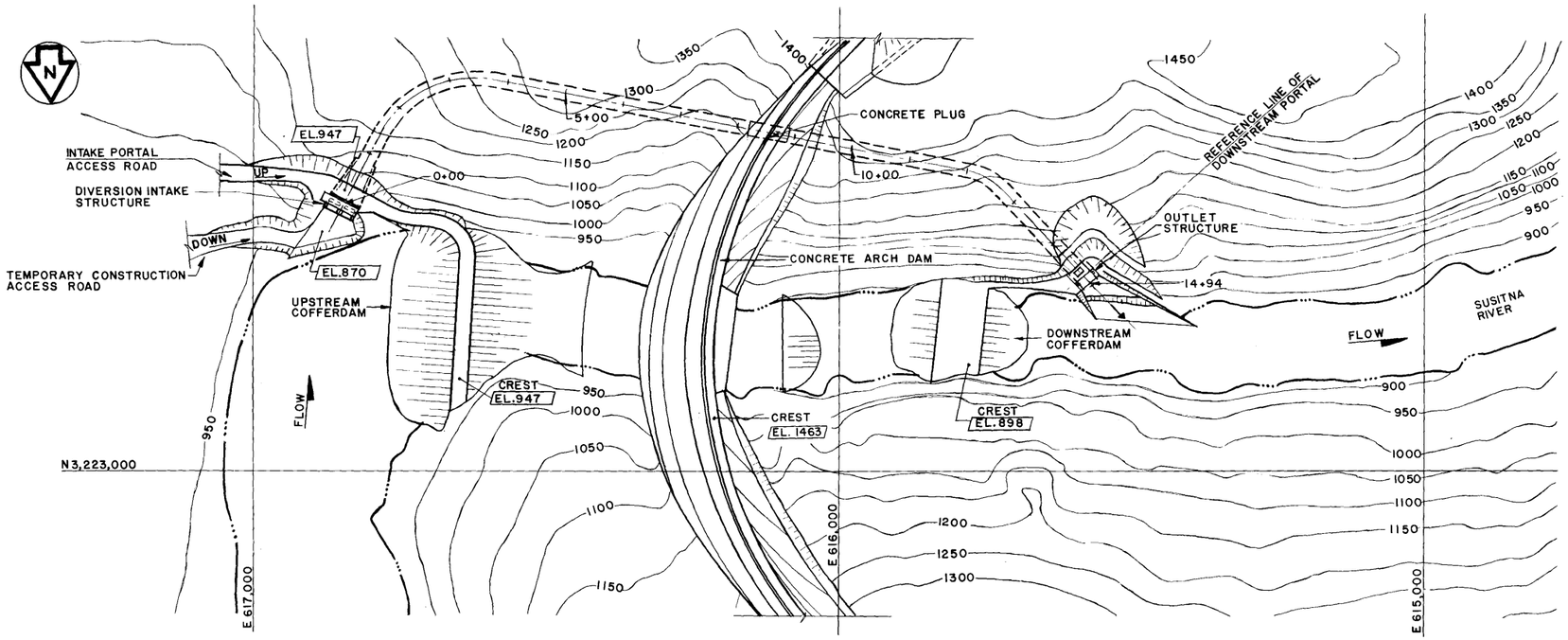
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
SADDLE DAM
SECTIONS

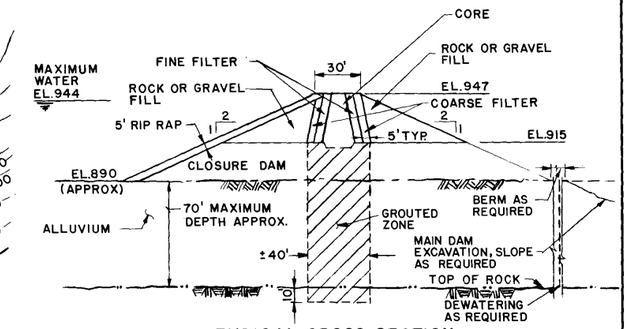
ACRES AMERICAN INCORPORATED

MARCH 1982

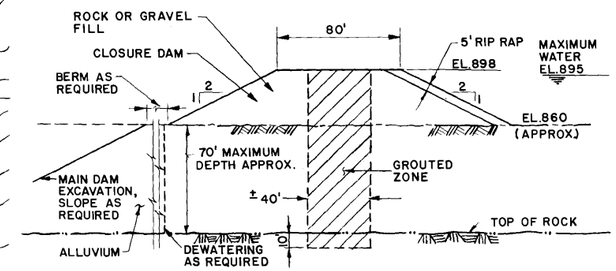
PLATE 53



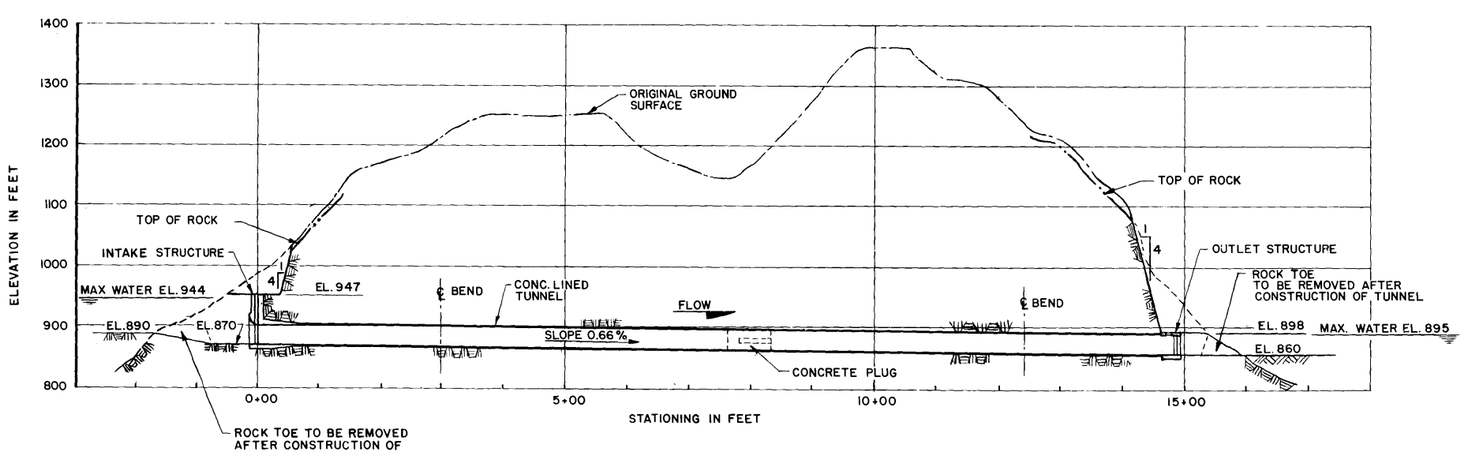
PLAN
SCALE A



TYPICAL CROSS SECTION
UPSTREAM COFFERDAM
SCALE B



TYPICAL CROSS SECTION
DOWNSTREAM COFFERDAM
SCALE B



PROFILE
AT CENTERLINE TUNNEL
SCALE A

SCALE B 0 40 80 FEET
SCALE A 0 100 200 FEET

ACRES

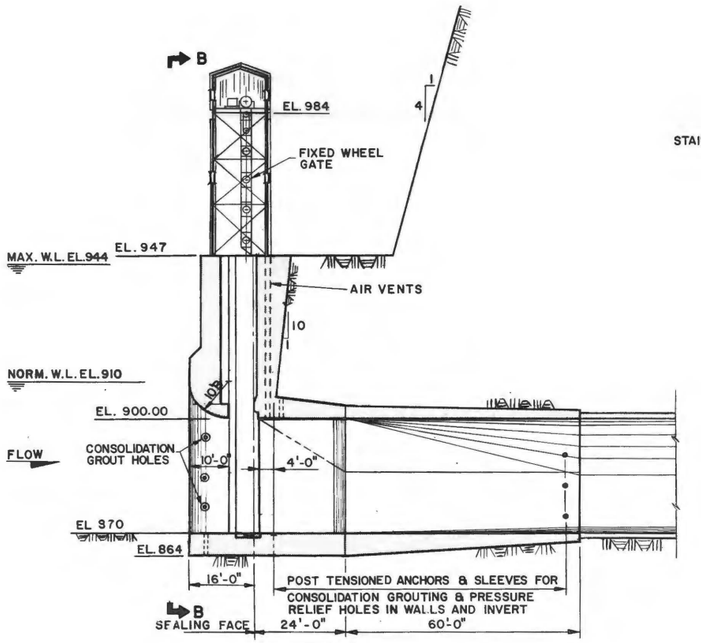
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON DIVERSION GENERAL ARRANGEMENT

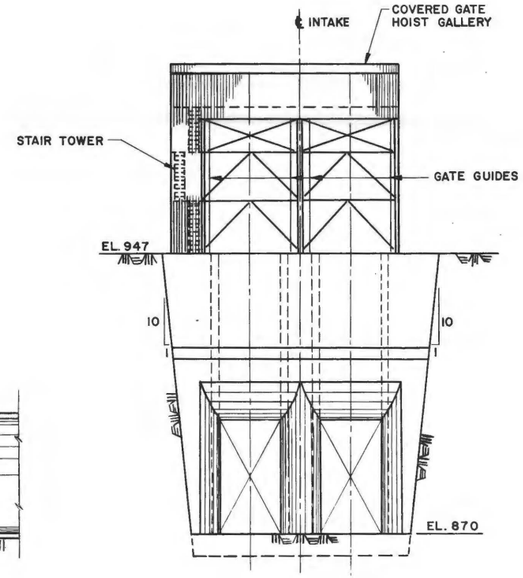
ACRES AMERICAN INCORPORATED

MARCH 1982

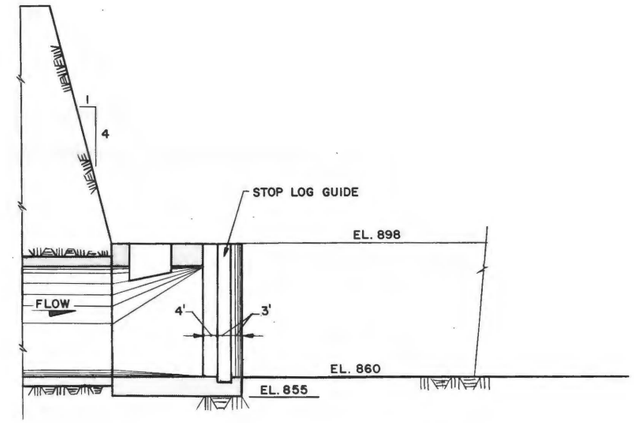
PLATE 54



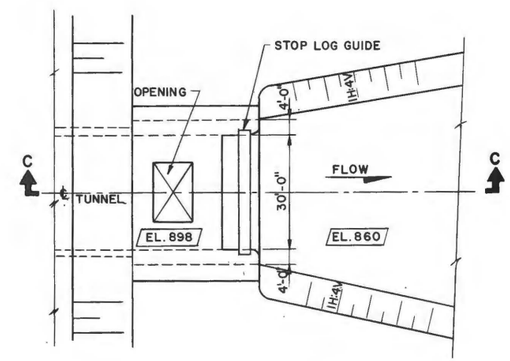
SECTION A-A
SCALE A



ELEVATION B-B
SCALE A

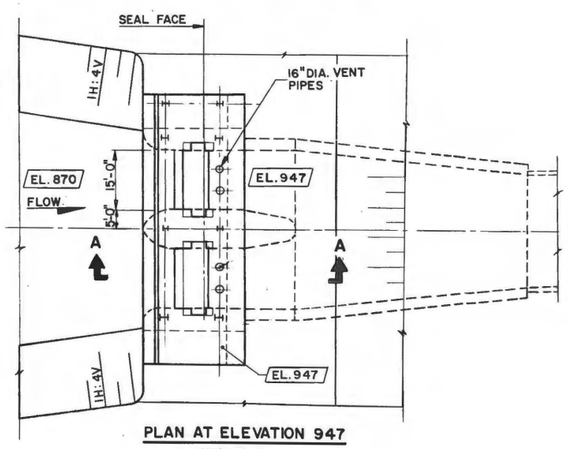


SECTION C-C
SCALE A



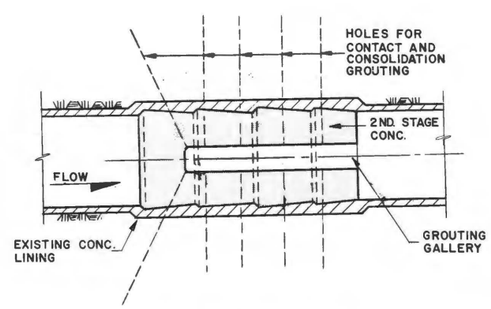
PLAN AT ELEVATION 898
SCALE A

DIVERSION OUTLET STRUCTURE



PLAN AT ELEVATION 947
SCALE A

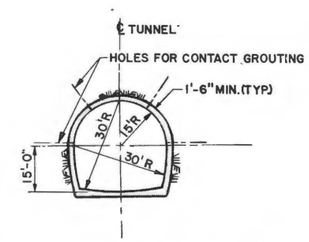
DIVERSION INLET STRUCTURE



SECTION THRU PLUG
SCALE B

SCALE B 0 20 40 FEET

SCALE A 0 16 32 FEET



TYPICAL TUNNEL SECTIONS
SCALE B

ACRES

ALASKA POWER AUTHORITY

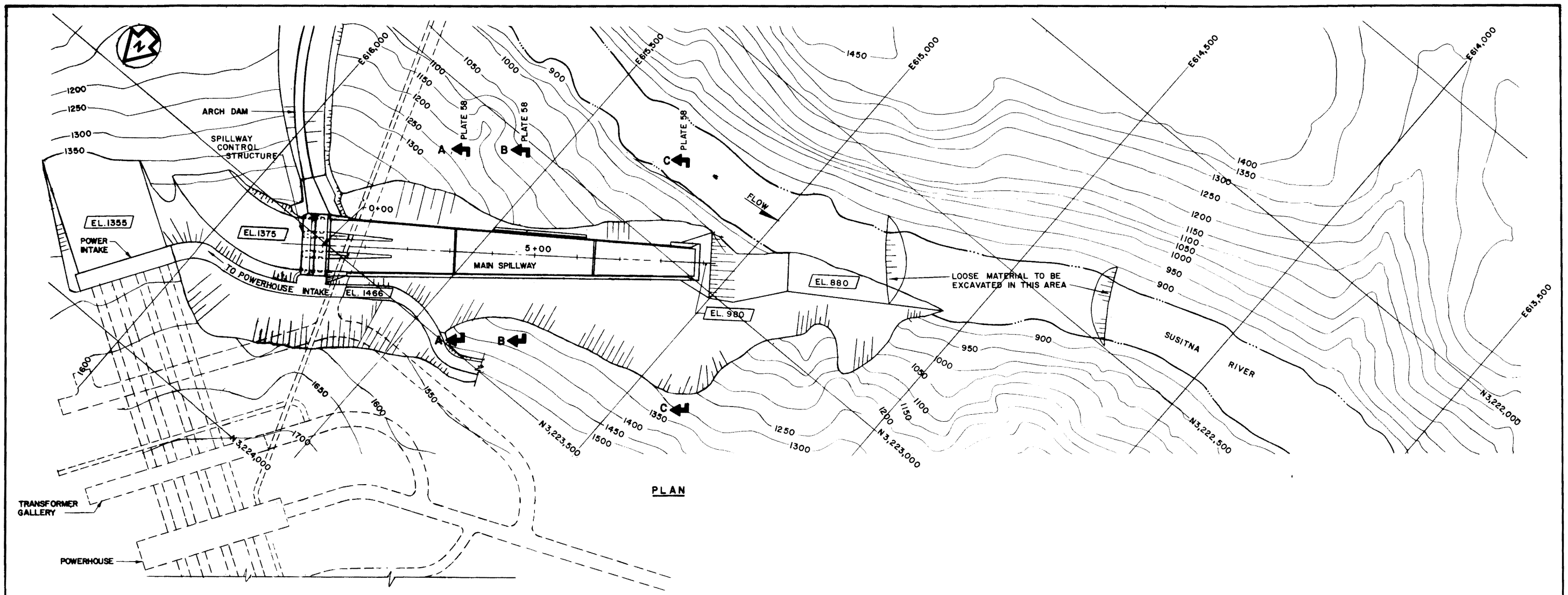
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON DIVERSION SECTIONS

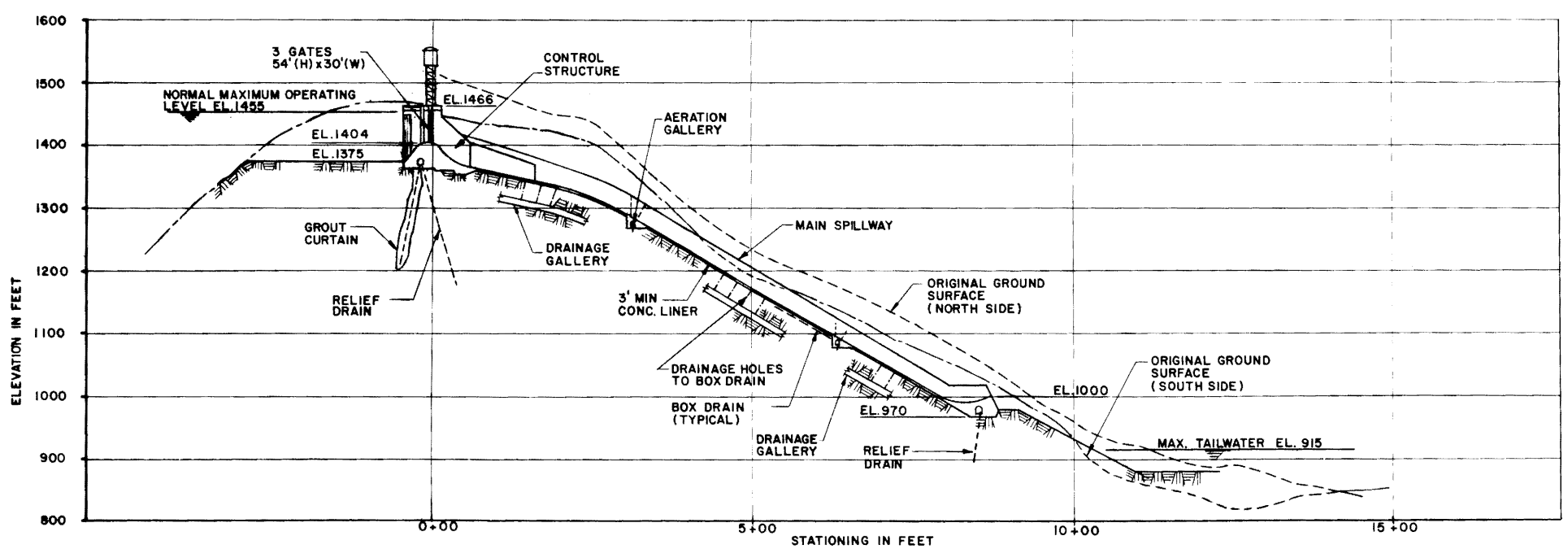
ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 55



PLAN



PROFILE

NOTE: FOR SECTIONS SEE PLATE 58

SCALE 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

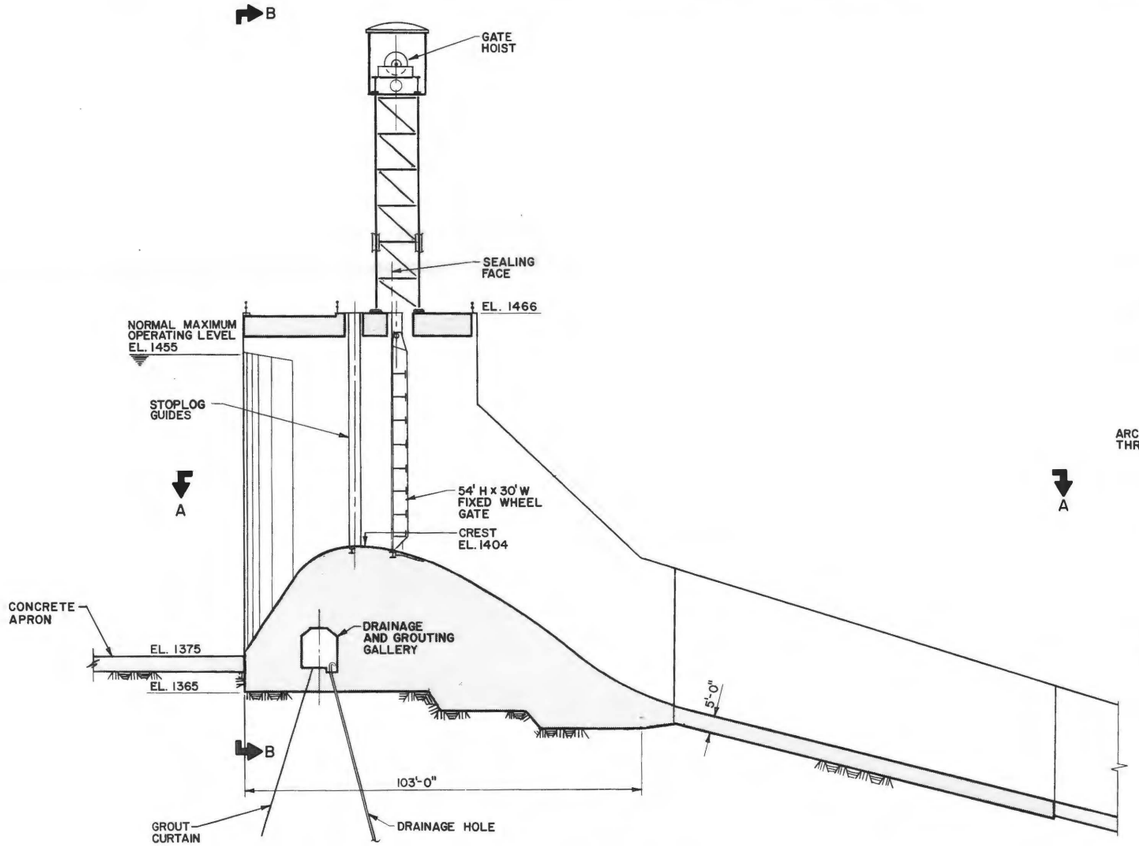
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN SPILLWAY
GENERAL ARRANGEMENT

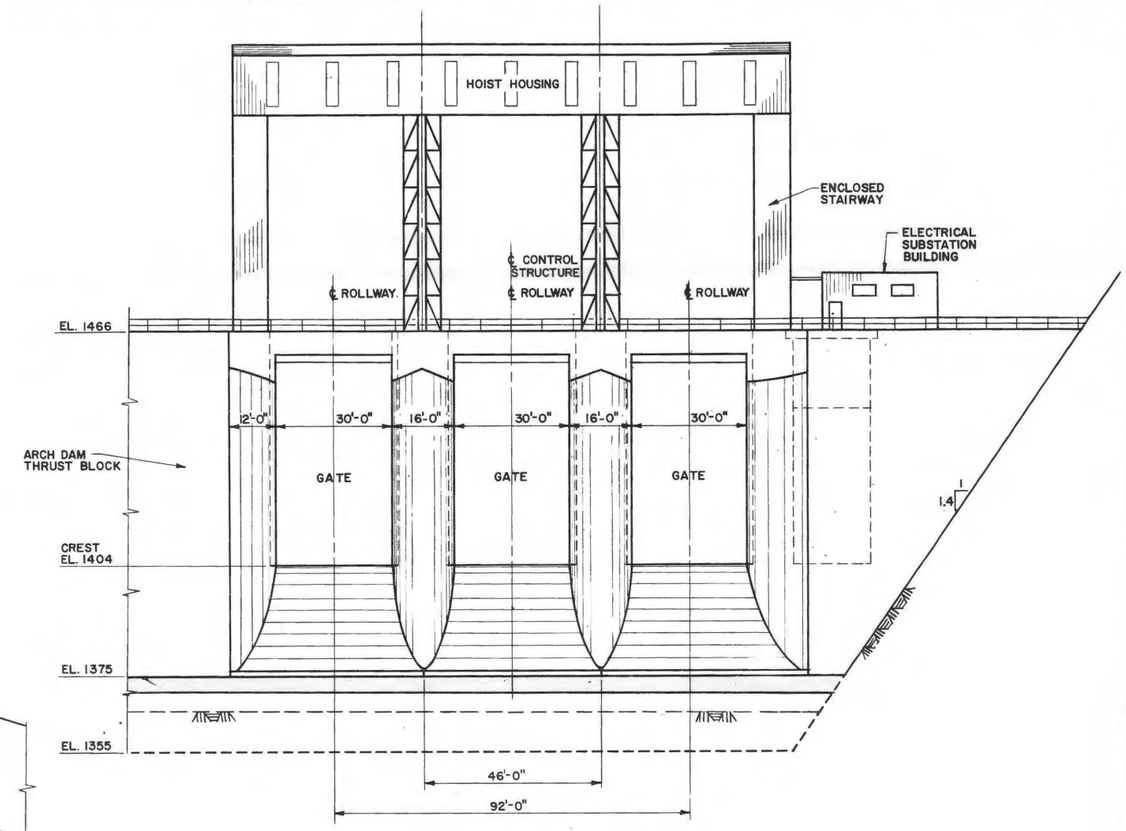
ACRES AMERICAN INCORPORATED

MARCH 1982

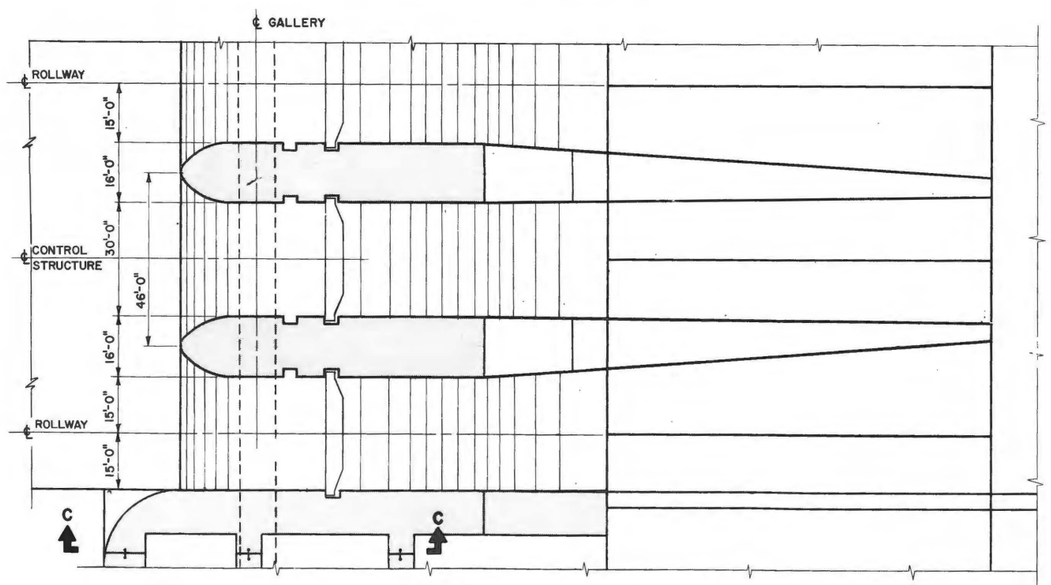
PLATE 56



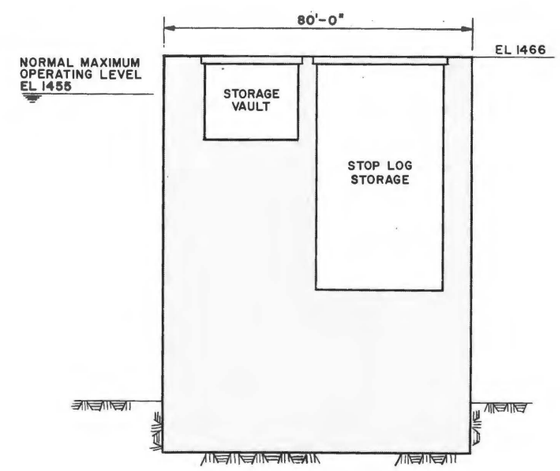
TYPICAL SECTION THRU CENTERLINE OF ROLLWAY



ELEVATION B-B



SECTION A-A



SECTION C-C

SCALE 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

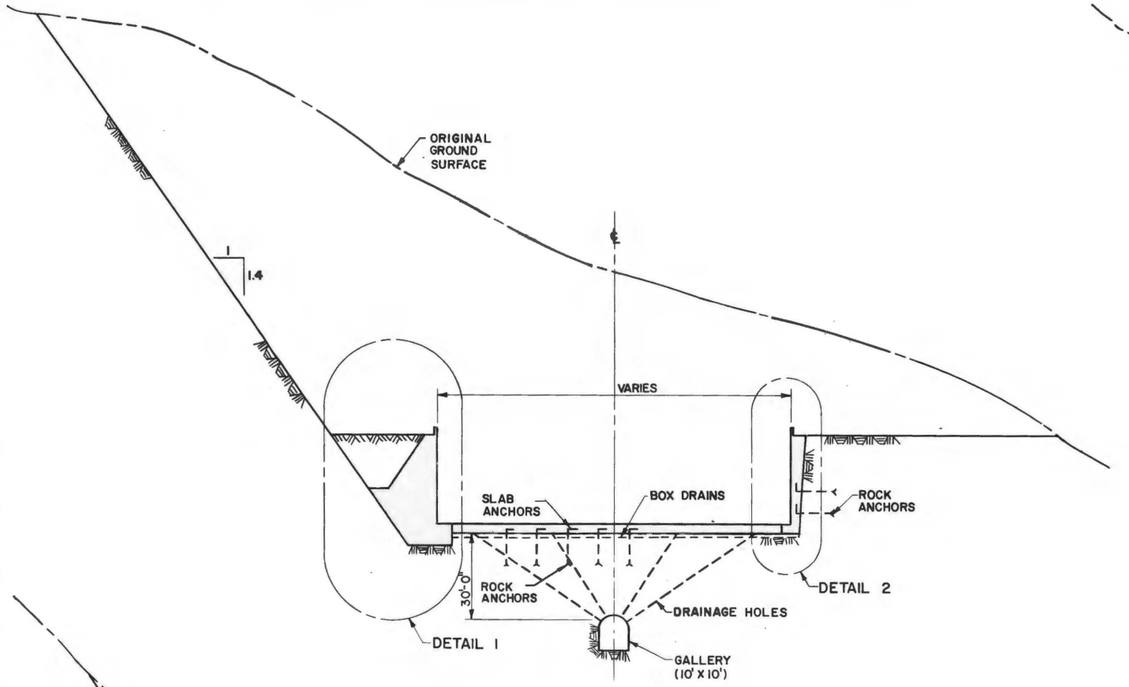
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN SPILLWAY
CONTROL STRUCTURE

ACRES AMERICAN INCORPORATED

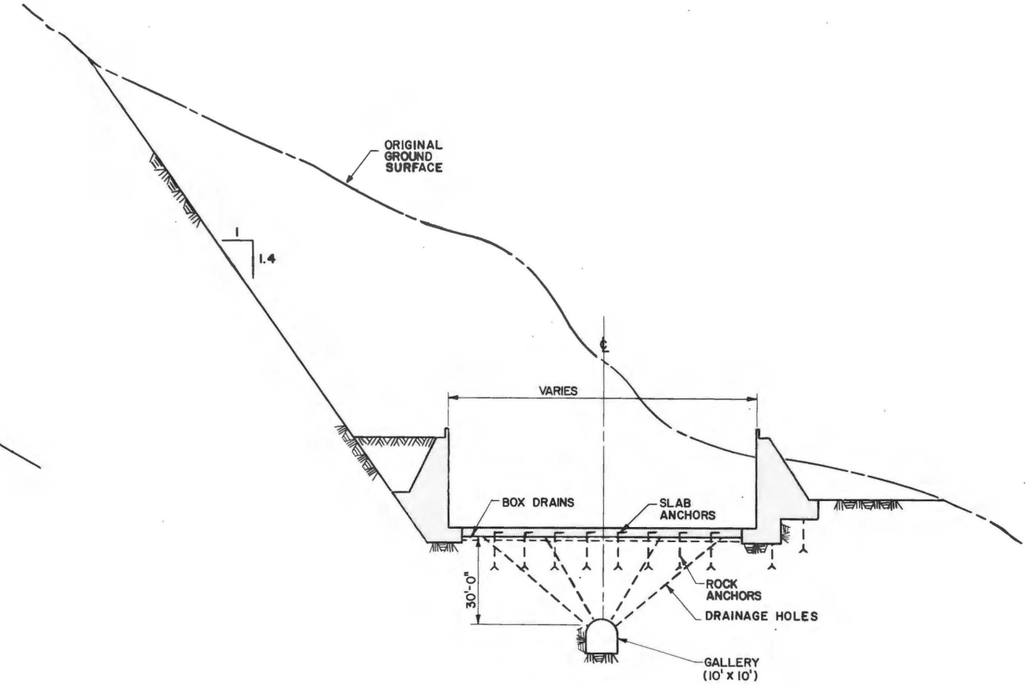
MARCH 1982

PLATE 57



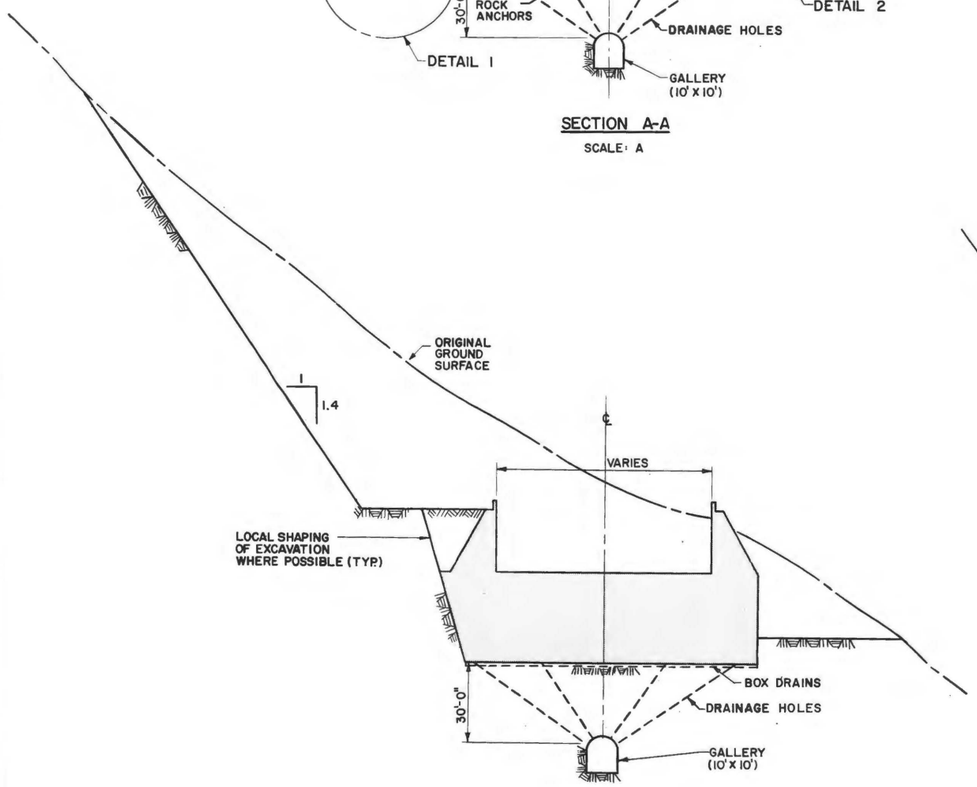
SECTION A-A

SCALE: A



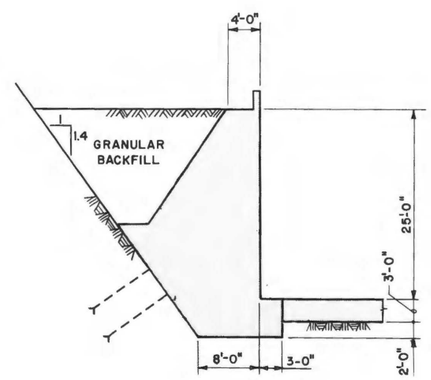
SECTION B-B

SCALE: A



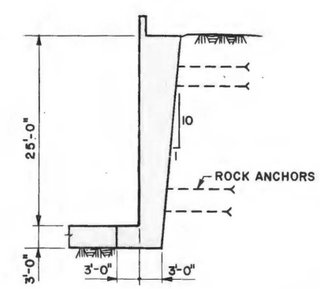
SECTION C-C

SCALE: A



DETAIL 1

SCALE: B



DETAIL 2

SCALE: B

SCALE B 0 8 16 FEET

SCALE A 0 20 40 FEET

ACRES

ALASKA POWER AUTHORITY

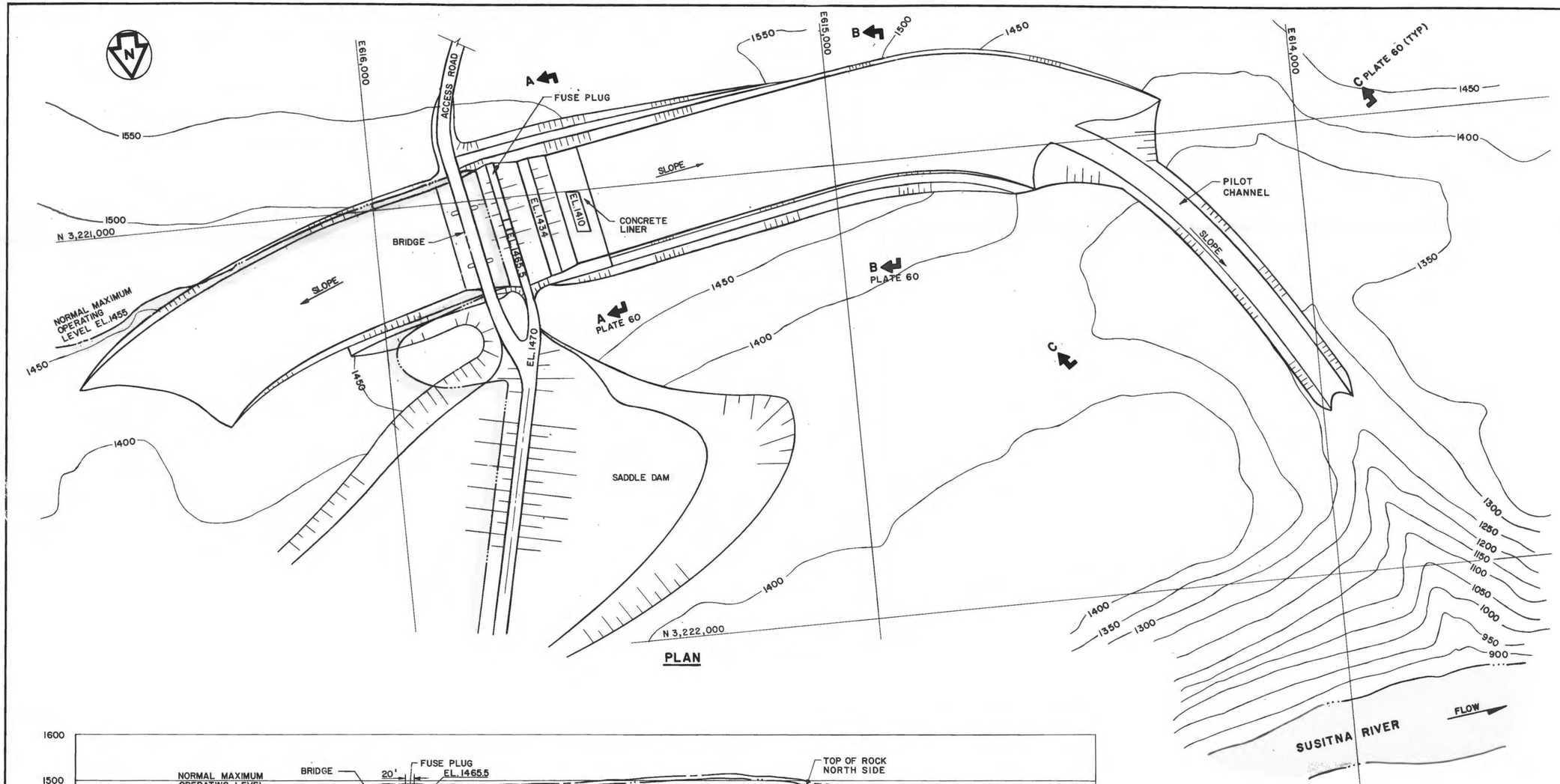
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
MAIN SPILLWAY
CHUTE SECTIONS

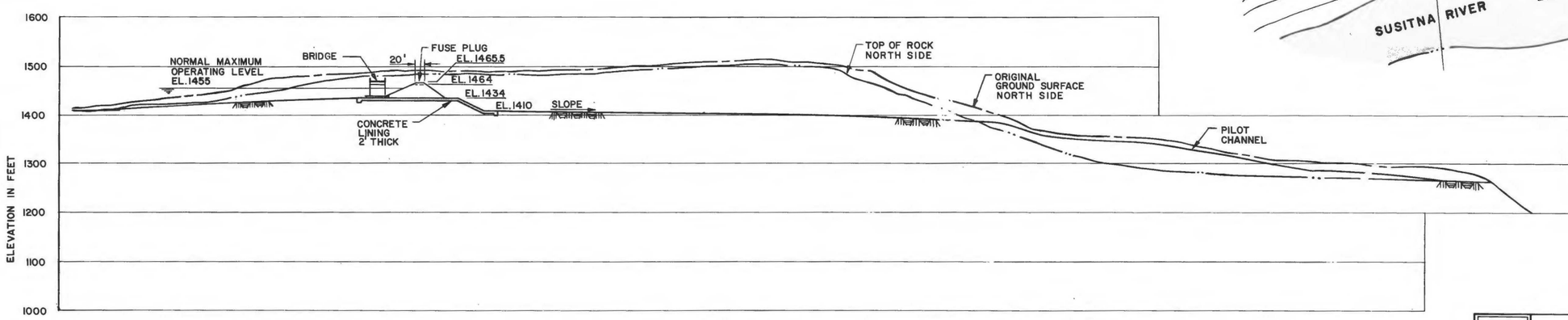
ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 58



PLAN



PROFILE

NOTE: FOR SECTIONS SEE PLATE 60

SCALE 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

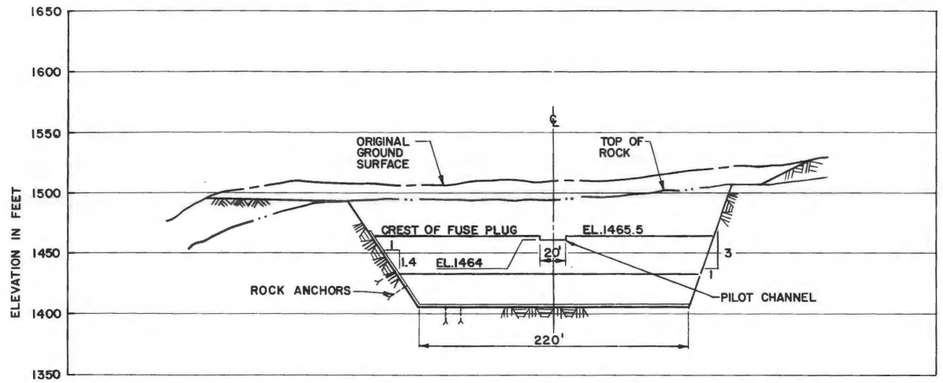
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
EMERGENCY SPILLWAY
GENERAL ARRANGEMENT

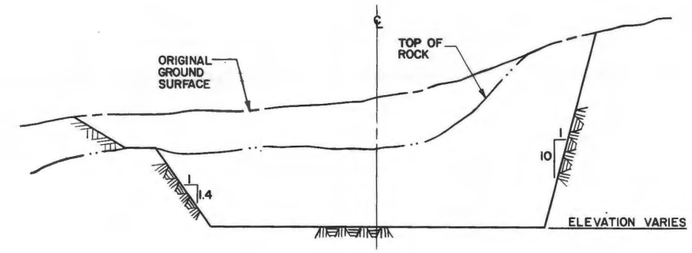
ACRES AMERICAN INCORPORATED

MARCH 1982

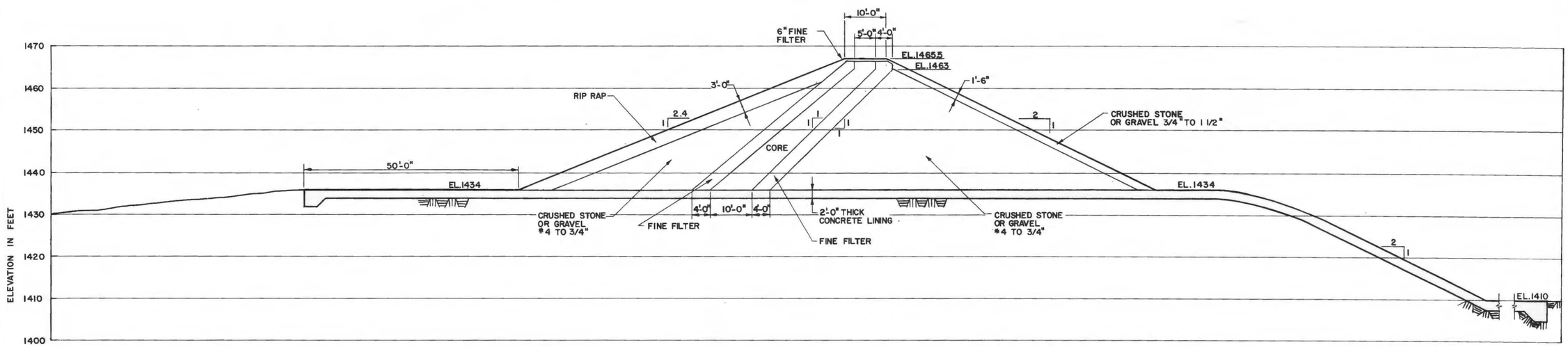
PLATE 59



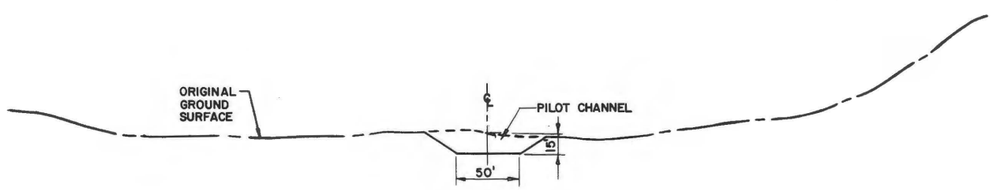
SECTION A-A (PLATE 59)
SCALE A



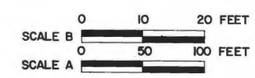
TYPICAL SECTION B-B (PLATE 59)
SCALE A



SECTION THROUGH FUSE PLUG
SCALE B



TYPICAL SECTION C-C (PLATE 59)
SCALE A



ACRES

ALASKA POWER AUTHORITY

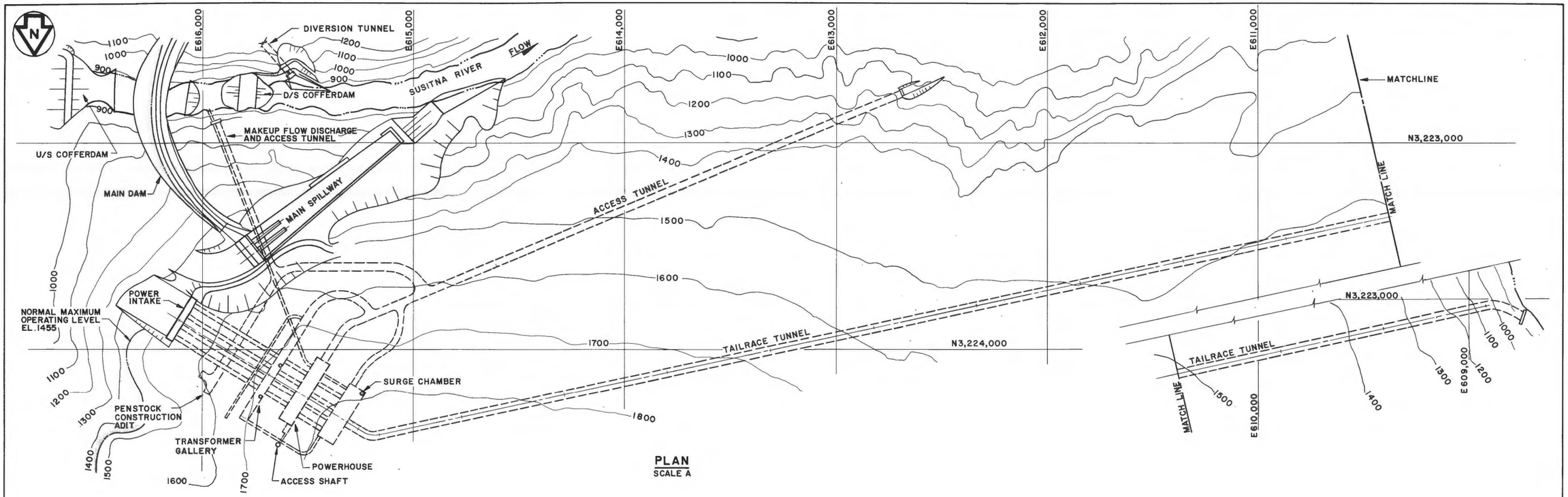
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
EMERGENCY SPILLWAY
SECTIONS

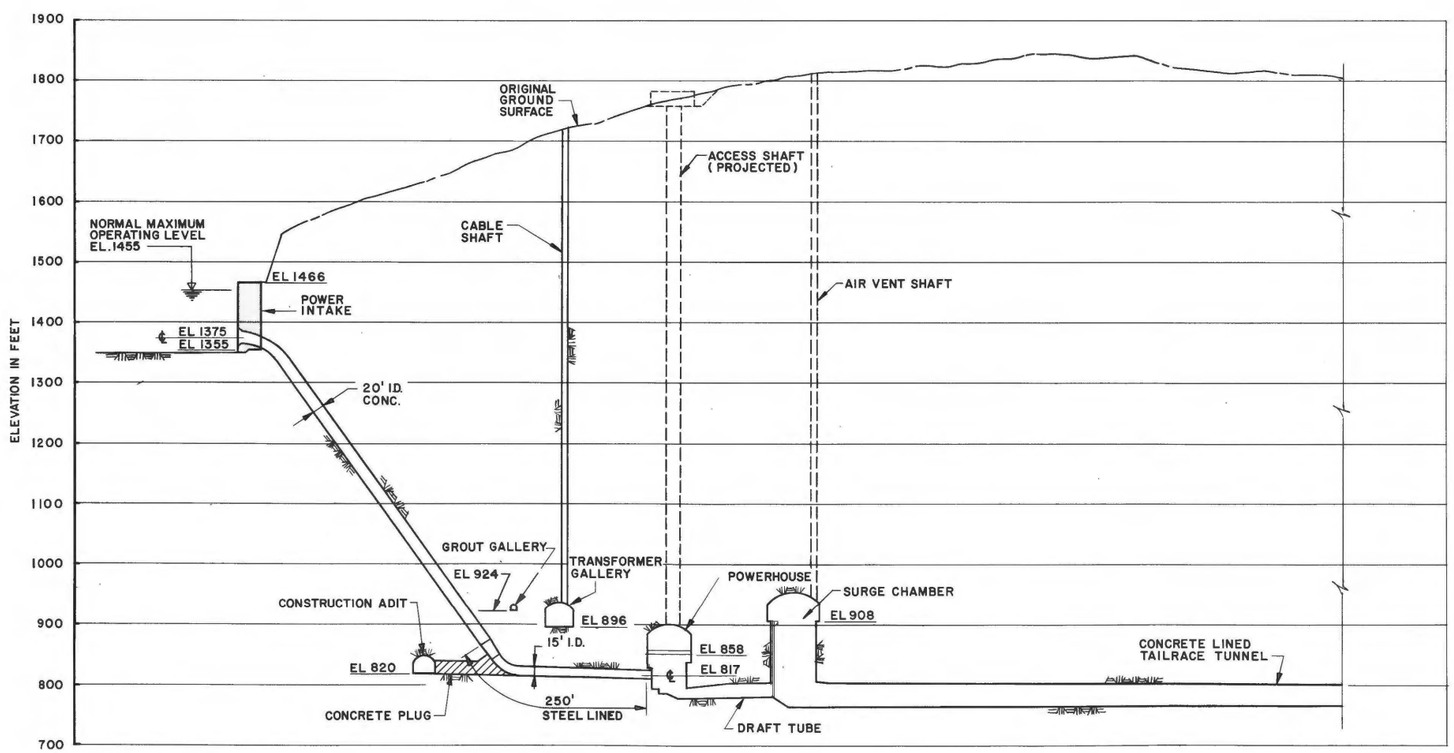
ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 60



PLAN
SCALE A



PROFILE
SCALE B

SCALE B 0 100 200 FEET
SCALE A 0 200 400 FEET

ACRES

ALASKA POWER AUTHORITY

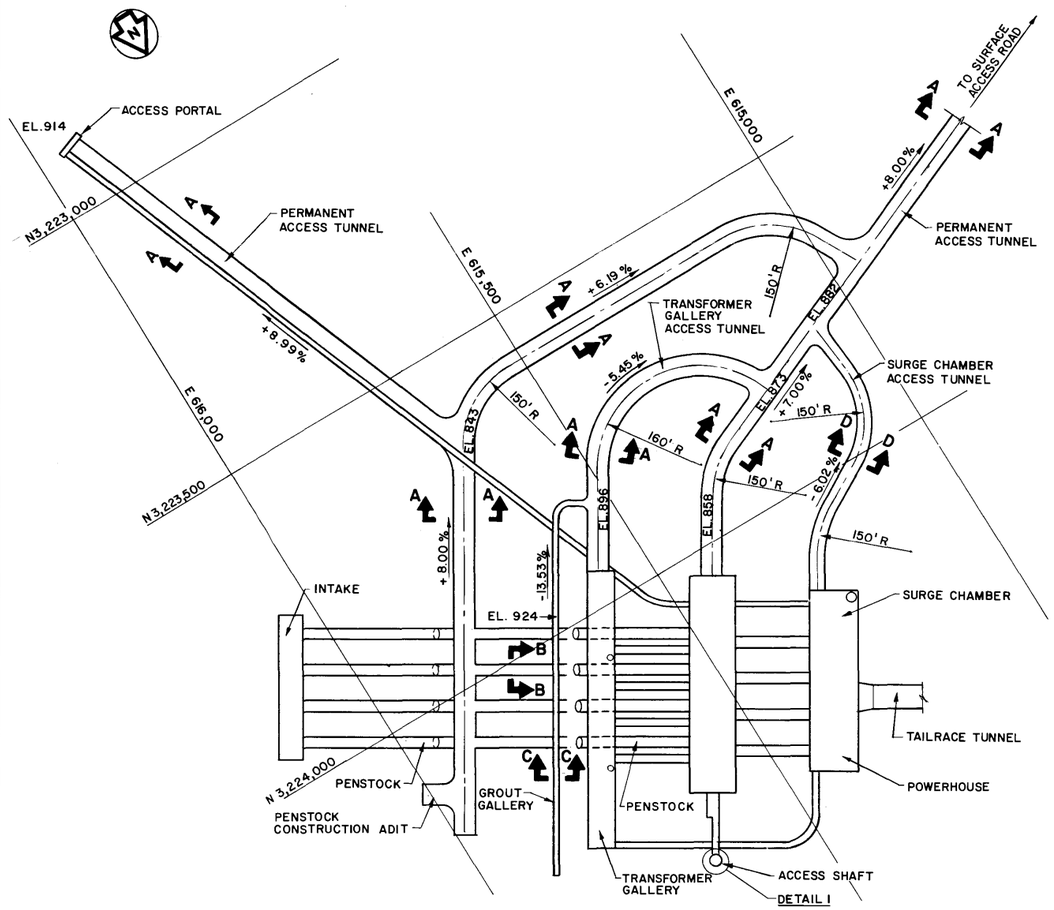
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON POWER FACILITIES GENERAL ARRANGEMENT

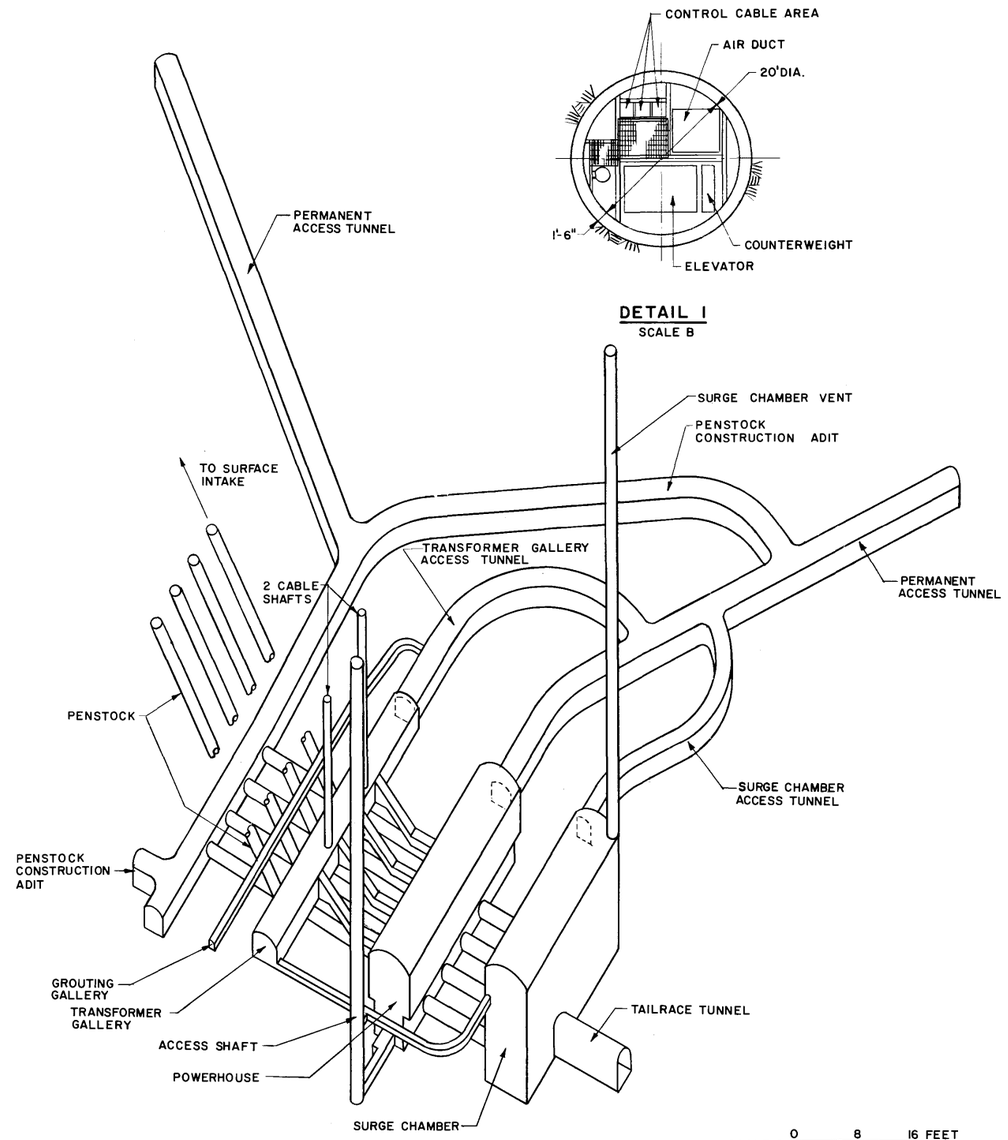
ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 61



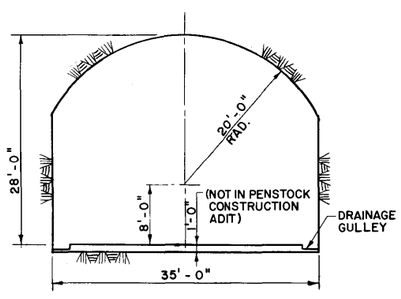
PLAN
SCALE A



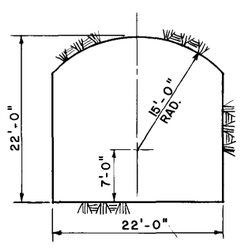
DETAIL I
SCALE B

ISOMETRIC
SCALE A

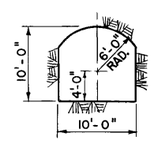
SCALE B 0 8 16 FEET
SCALE A 0 100 200 FEET



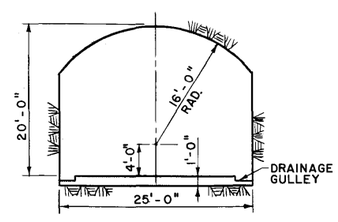
SECTION A-A
SCALE B



SECTION B-B
SCALE B



SECTION C-C
SCALE B



SECTION D-D
SCALE B

ACRES

ALASKA POWER AUTHORITY

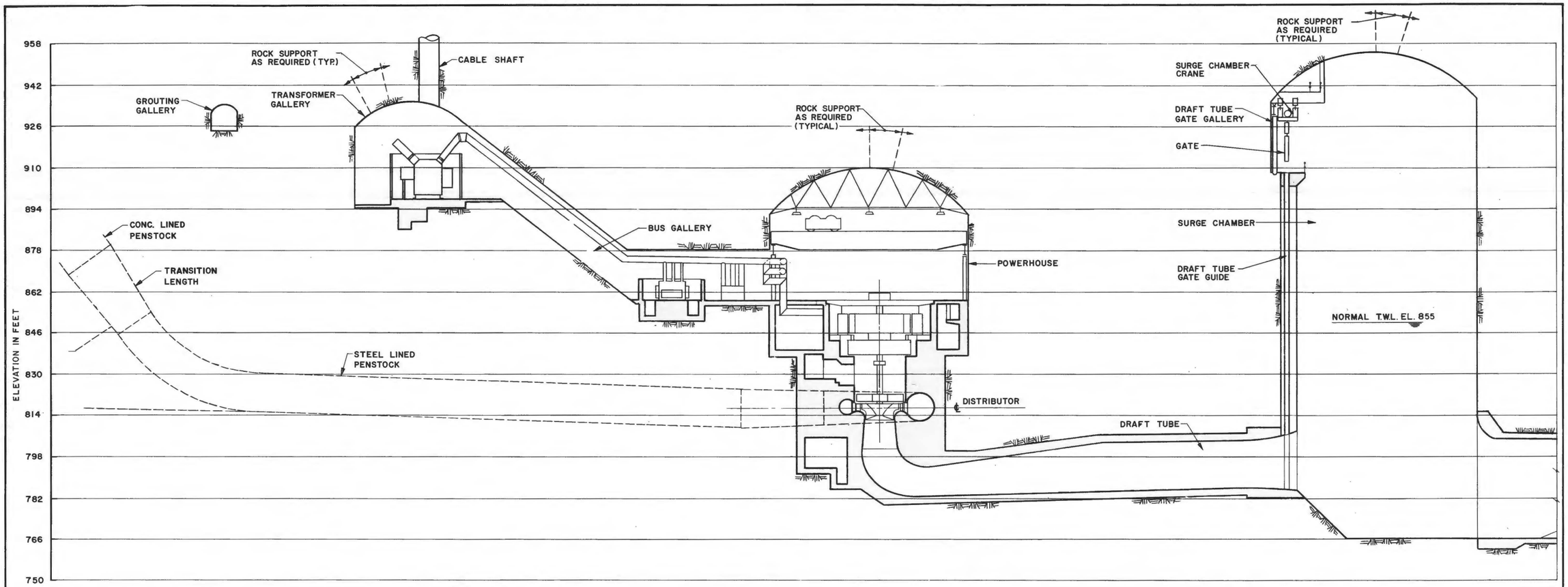
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
POWER FACILITIES
ACCESS

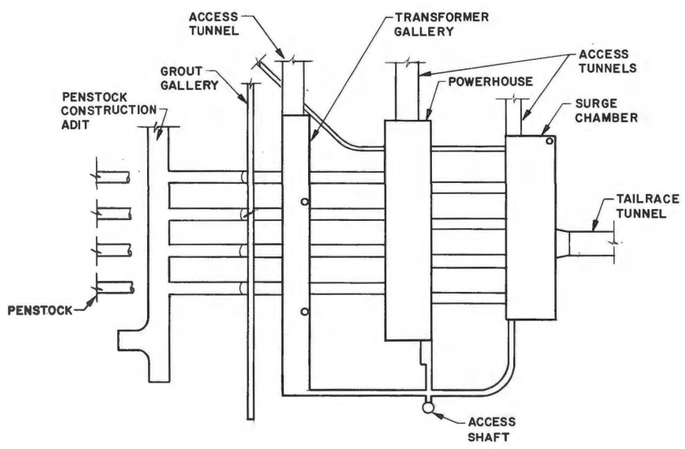
ACRES AMERICAN INCORPORATED

MARCH 1982

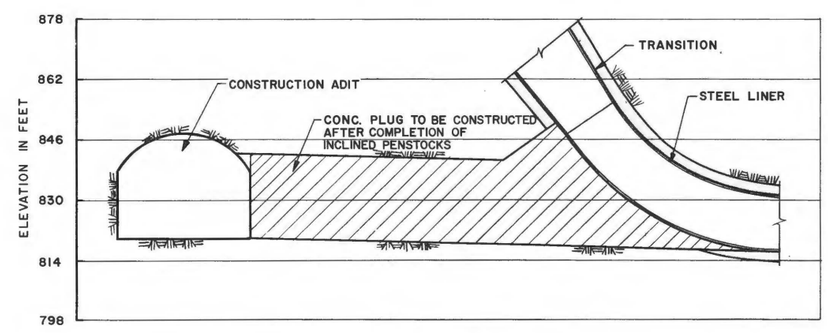
PLATE 62



SECTION A-A
SCALE B



PLAN
SCALE A



SECTION B-B
SCALE B

SCALE B 0 16 32 FEET
SCALE A 0 100 200 FEET

ACRES

ALASKA POWER AUTHORITY

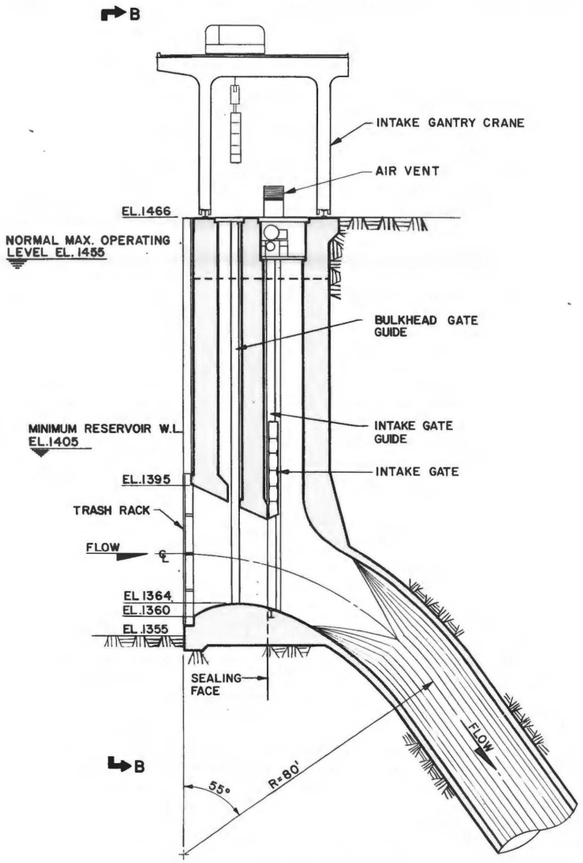
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
POWERHOUSE
PLAN & SECTIONS

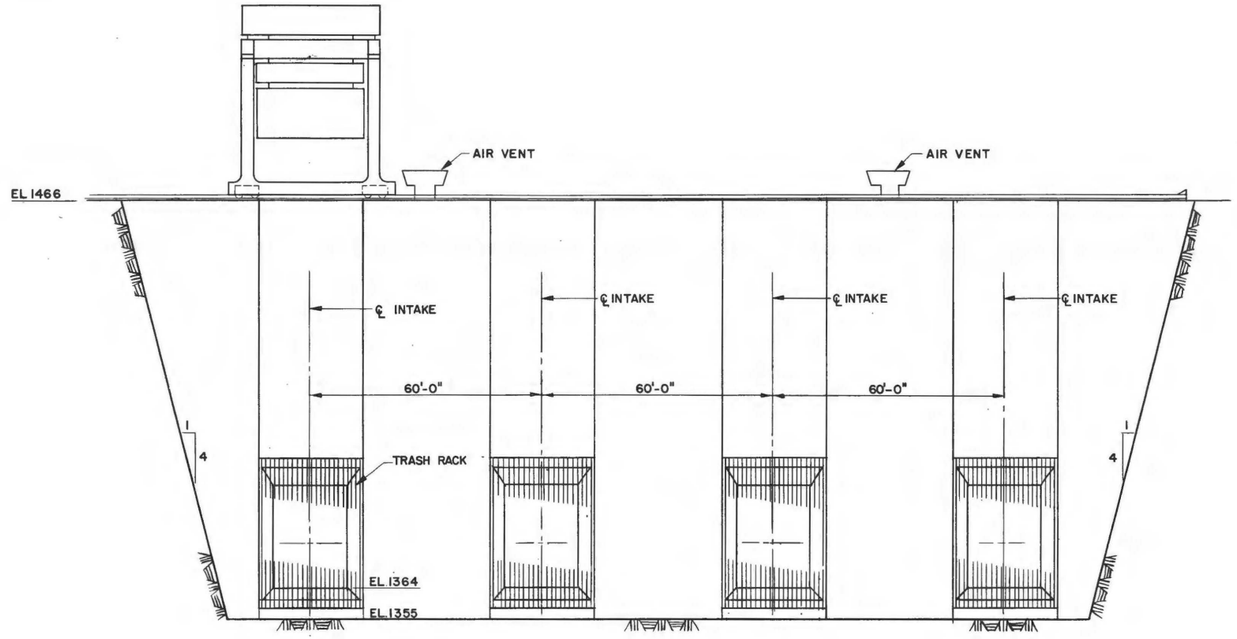
ACRES AMERICAN INCORPORATED

MARCH 1982

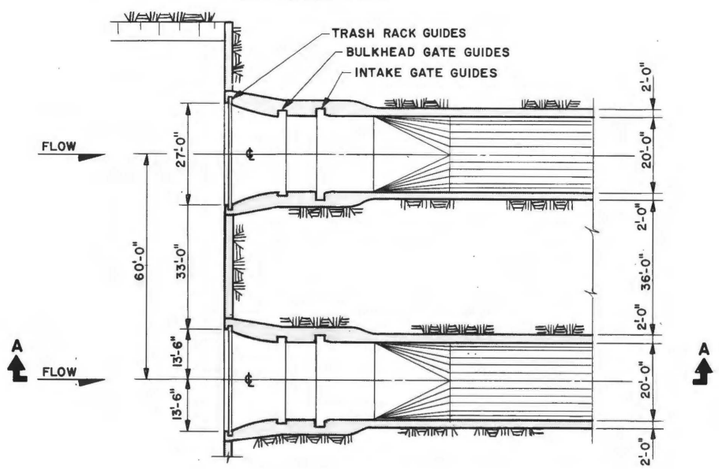
PLATE 63



SECTION A-A



ELEVATION B-B



PLAN AT CENTERLINE

SCALE 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

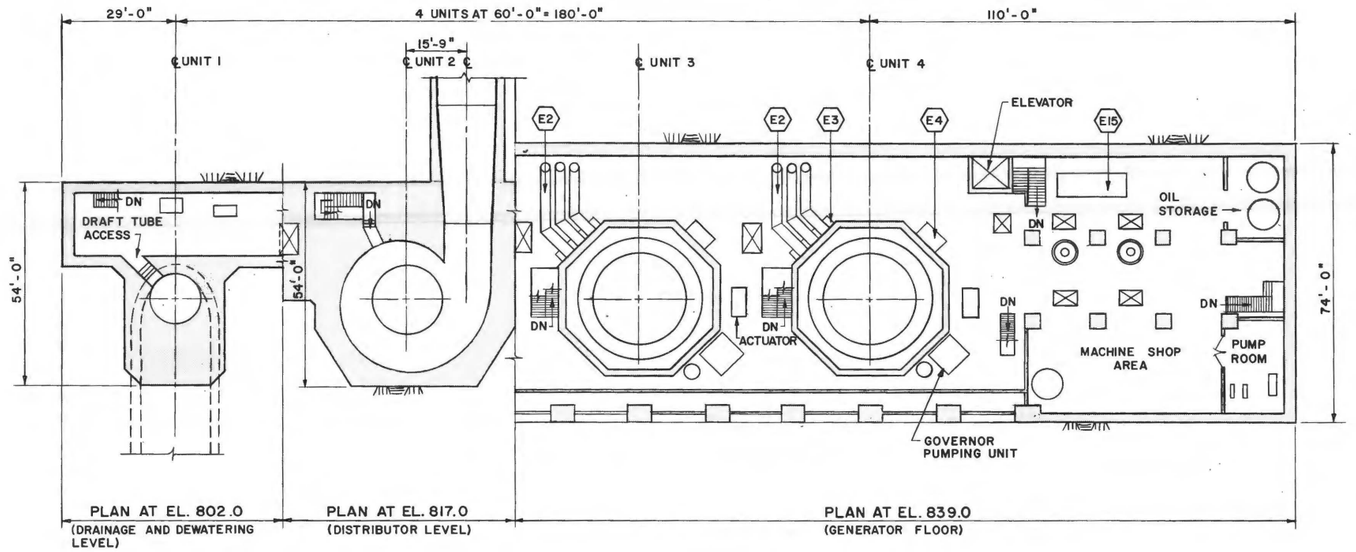
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
POWER INTAKE
SECTIONS

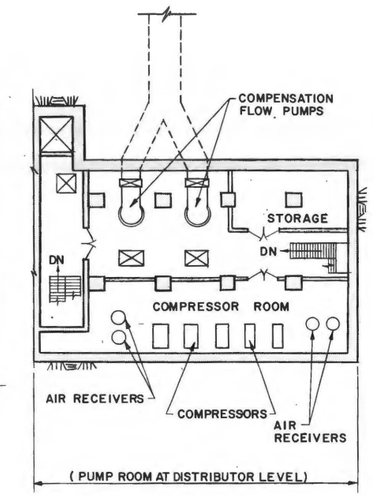
ACRES AMERICAN INCORPORATED

MARCH 1982

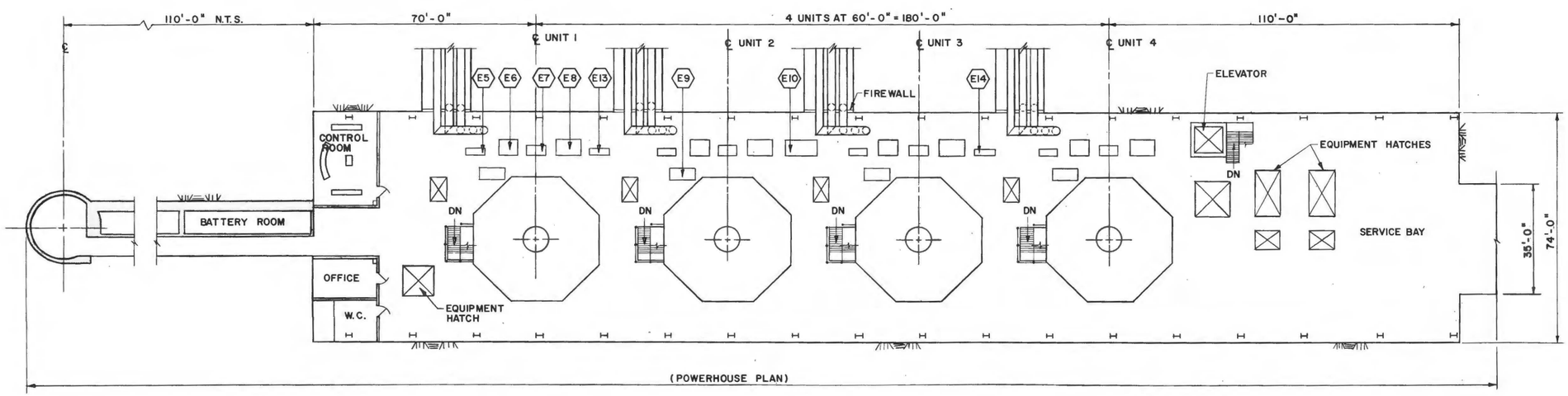
PLATE 64



POWERHOUSE PLAN



PLAN
AT EL. 817.0



POWERHOUSE PLAN
AT EL. 858.0

SCALE 0 16 32 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 66
E12	AUXILIARY SERVICE TRANSFORMER (2 MVA) - PLATE 66
E13	GENERAL AUXILIARY SWITCHBOARD
E14	ESSENTIAL SERVICES SWITCHBOARD
E15	COMPENSATION PUMP SWITCHGEAR

ACRES

ALASKA POWER AUTHORITY

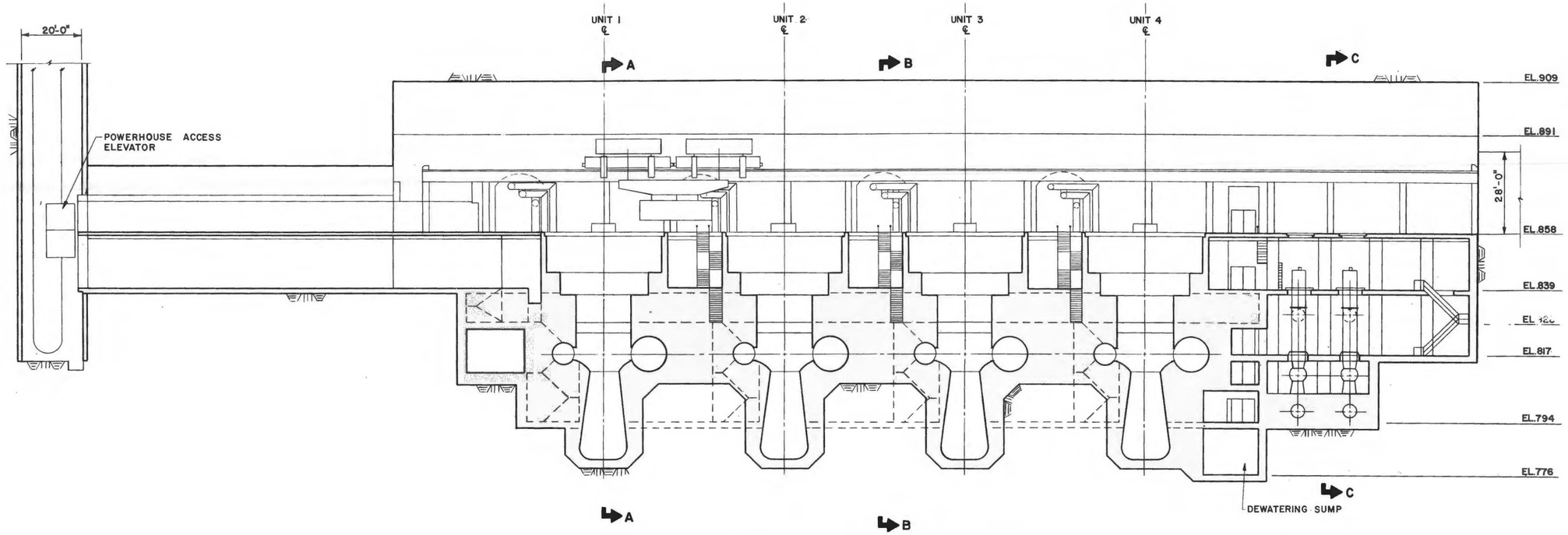
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
POWERHOUSE
PLANS

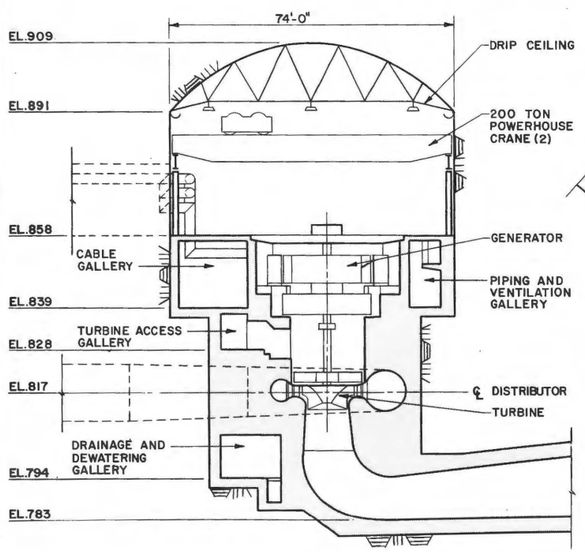
ACRES AMERICAN INCORPORATED

MARCH 1982

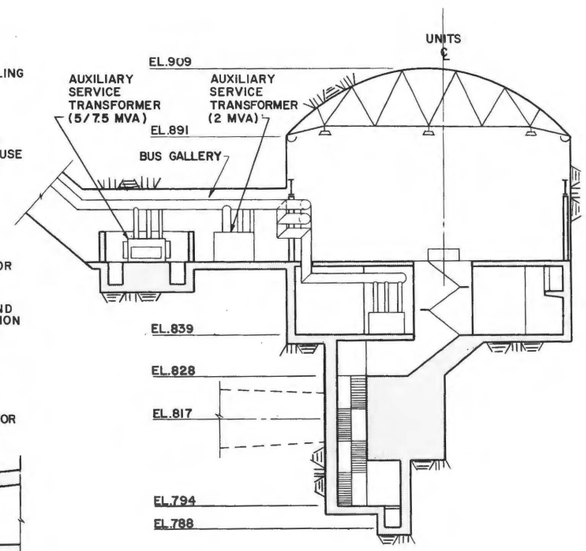
PLATE 65



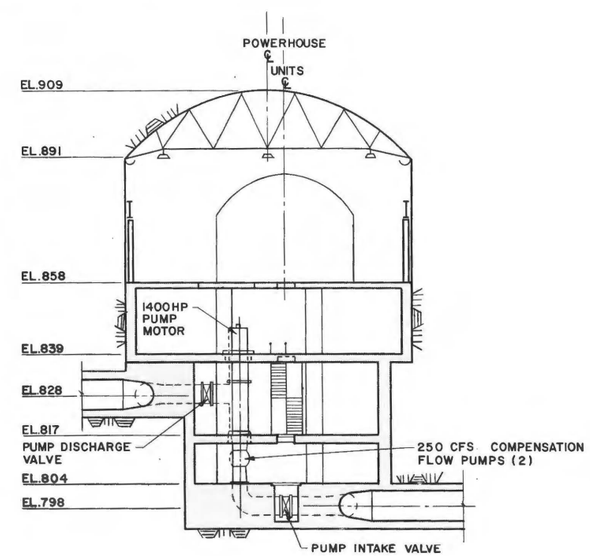
LONGITUDINAL SECTION (THRU CENTERLINE OF UNITS)



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

ACRES

ALASKA POWER AUTHORITY

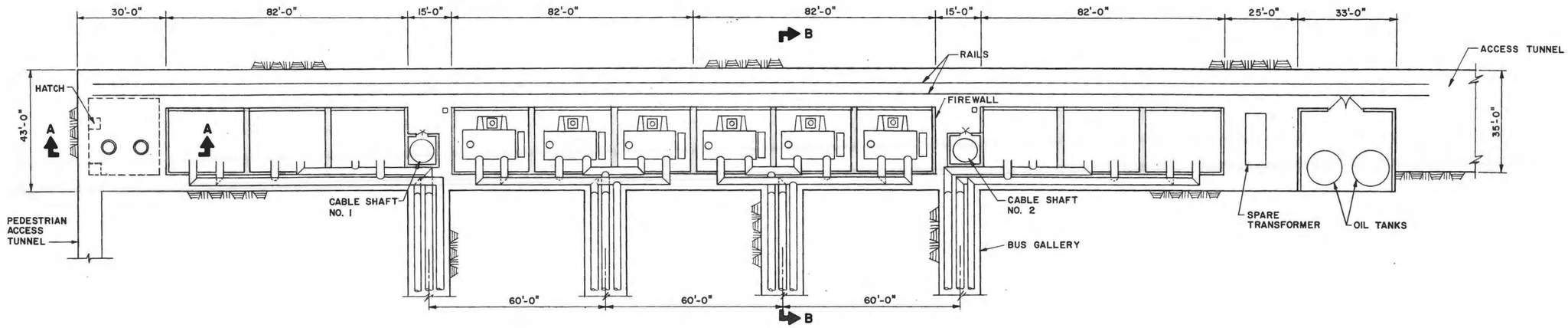
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON POWERHOUSE SECTIONS

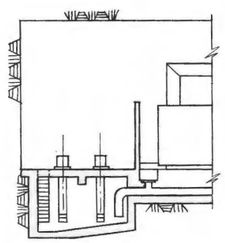
ACRES AMERICAN INCORPORATED

MARCH 1982

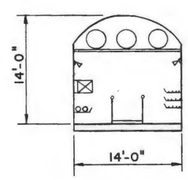
PLATE 66



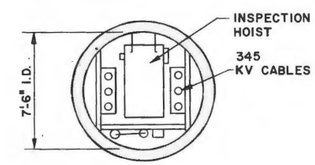
PLAN
SCALE A



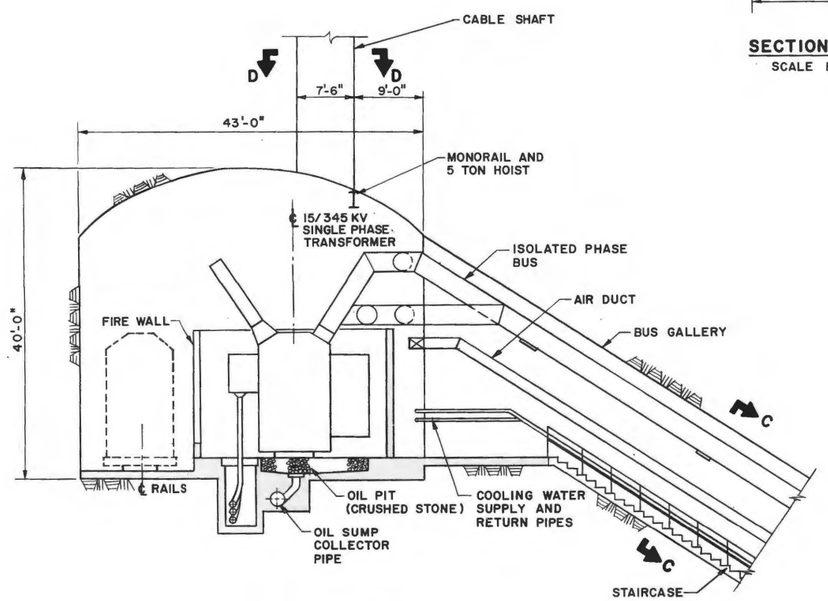
SECTION A-A
SCALE A



SECTION C-C
SCALE B



SECTION D-D
SCALE C



SECTION A-A
SCALE B

SCALE C 0 4 8 FEET
SCALE B 0 8 16 FEET
SCALE A 0 16 32 FEET

ACRES

ALASKA POWER AUTHORITY

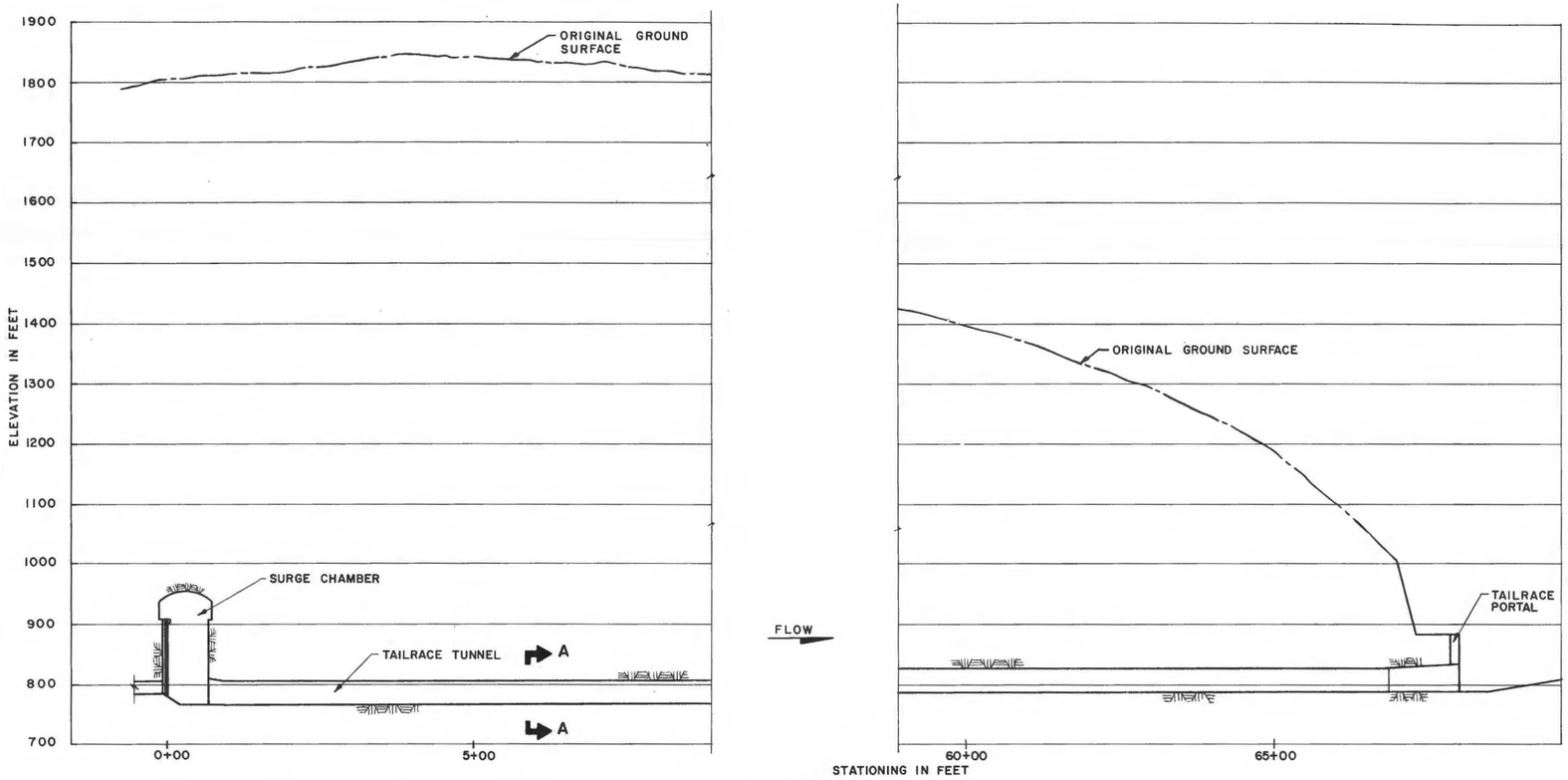
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
TRANSFORMER GALLERY
PLAN AND SECTIONS

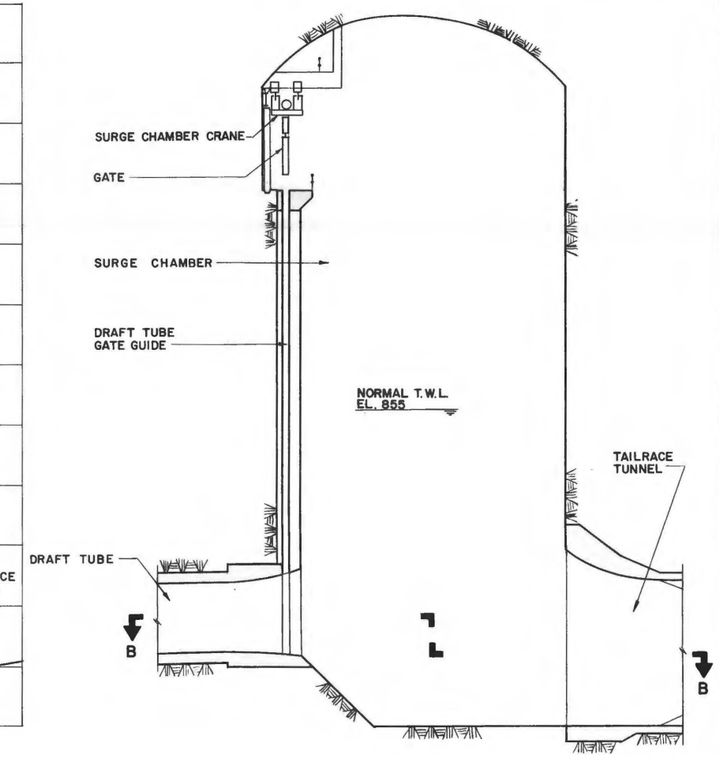
ACRES AMERICAN INCORPORATED

MARCH 1982

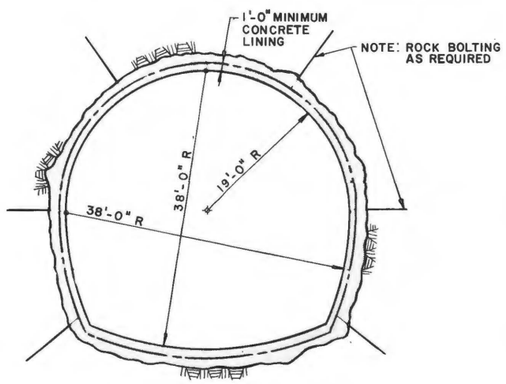
PLATE 67



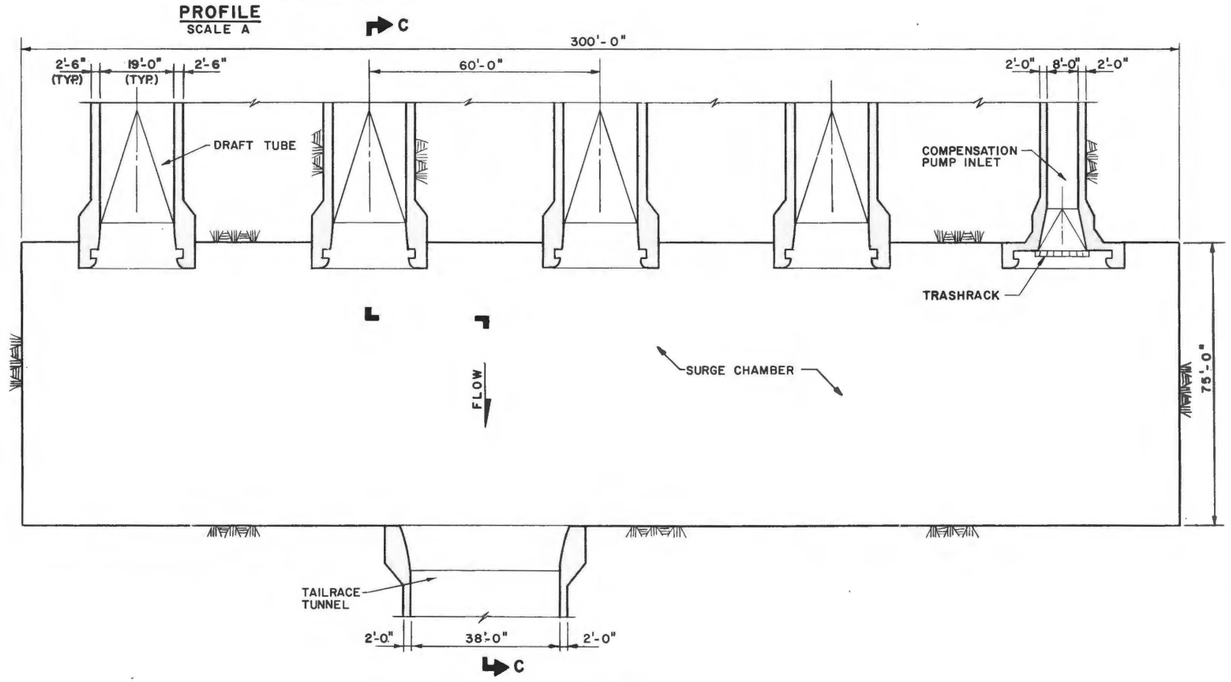
PROFILE
SCALE A



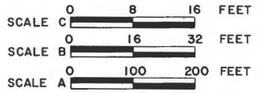
SECTION C-C
SCALE B



SECTION A-A
CONCRETE LINED TAILRACE TUNNEL
SCALE C



SECTION B-B
SCALE B



ACRES

ALASKA POWER AUTHORITY

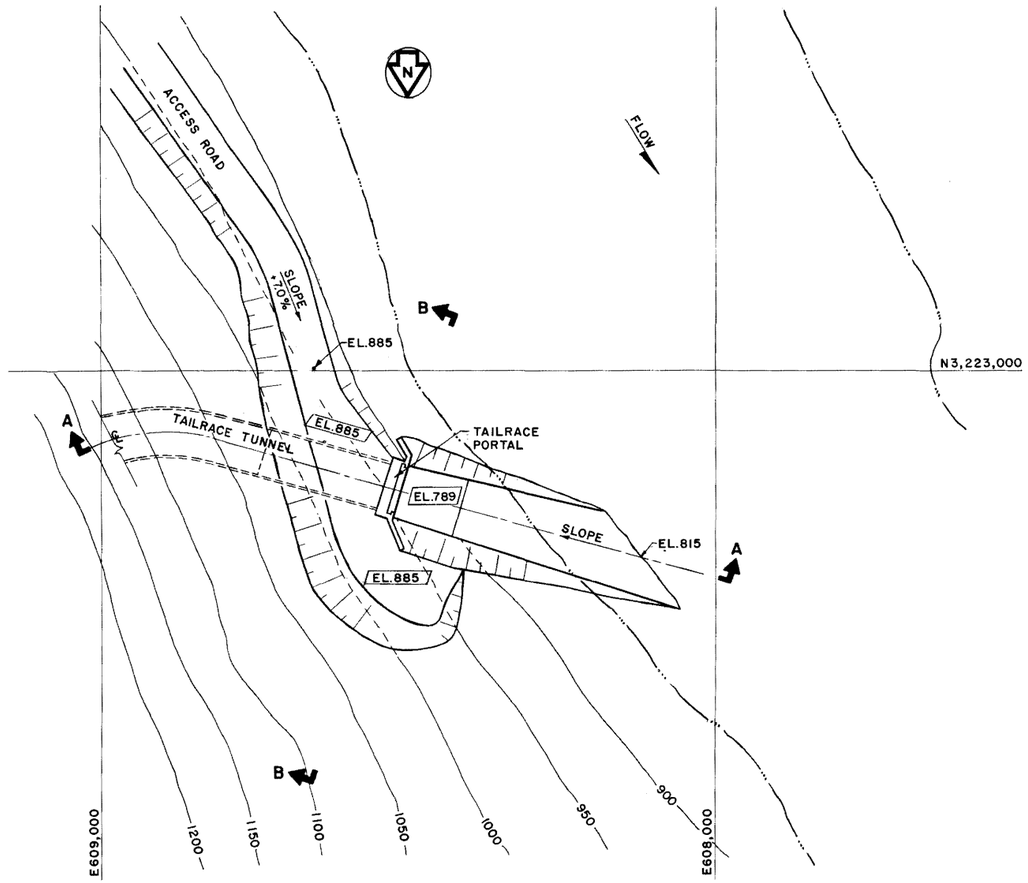
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
SURGE CHAMBER AND TAILRACE
SECTIONS

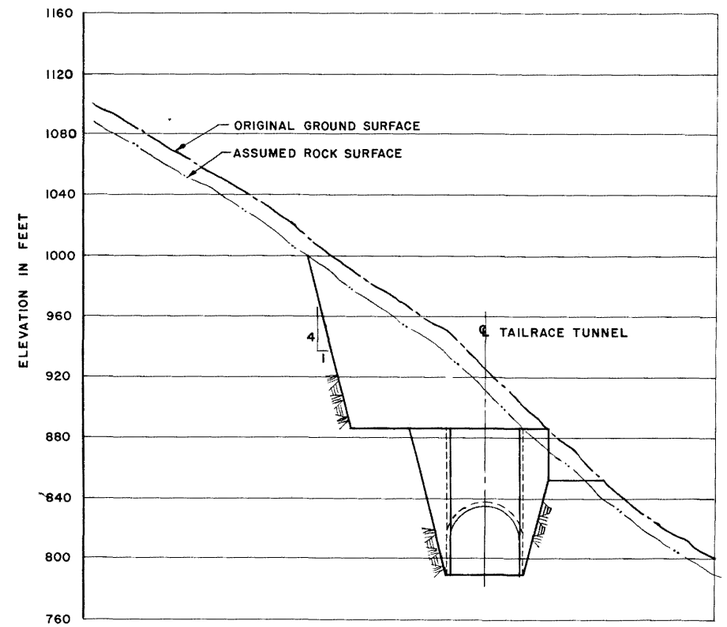
ACRES AMERICAN INCORPORATED

MARCH 1982

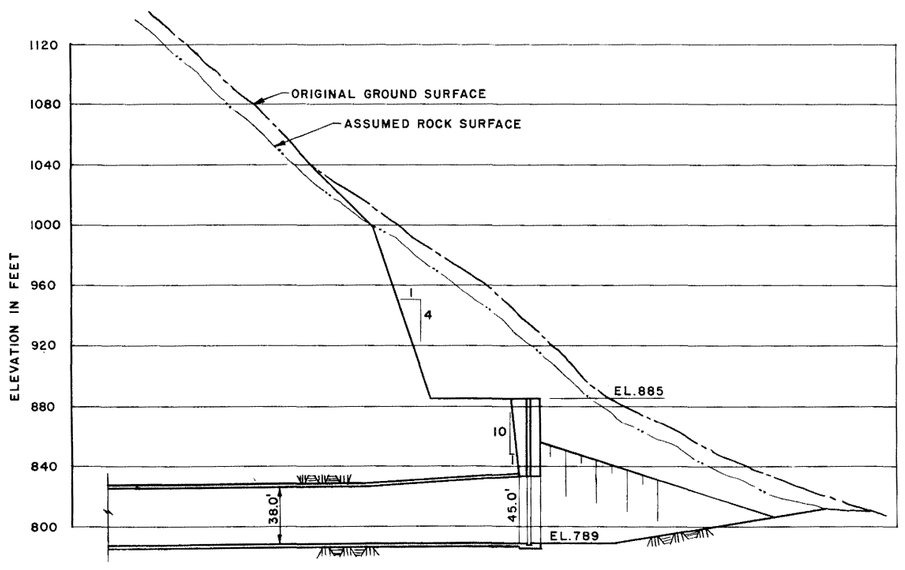
PLATE 68



PLAN
SCALE A



SECTION B-B
SCALE B



SECTION A-A
SCALE B

SCALE B 0 40 80 FEET
SCALE A 0 50 100 FEET

ACRES

ALASKA POWER AUTHORITY

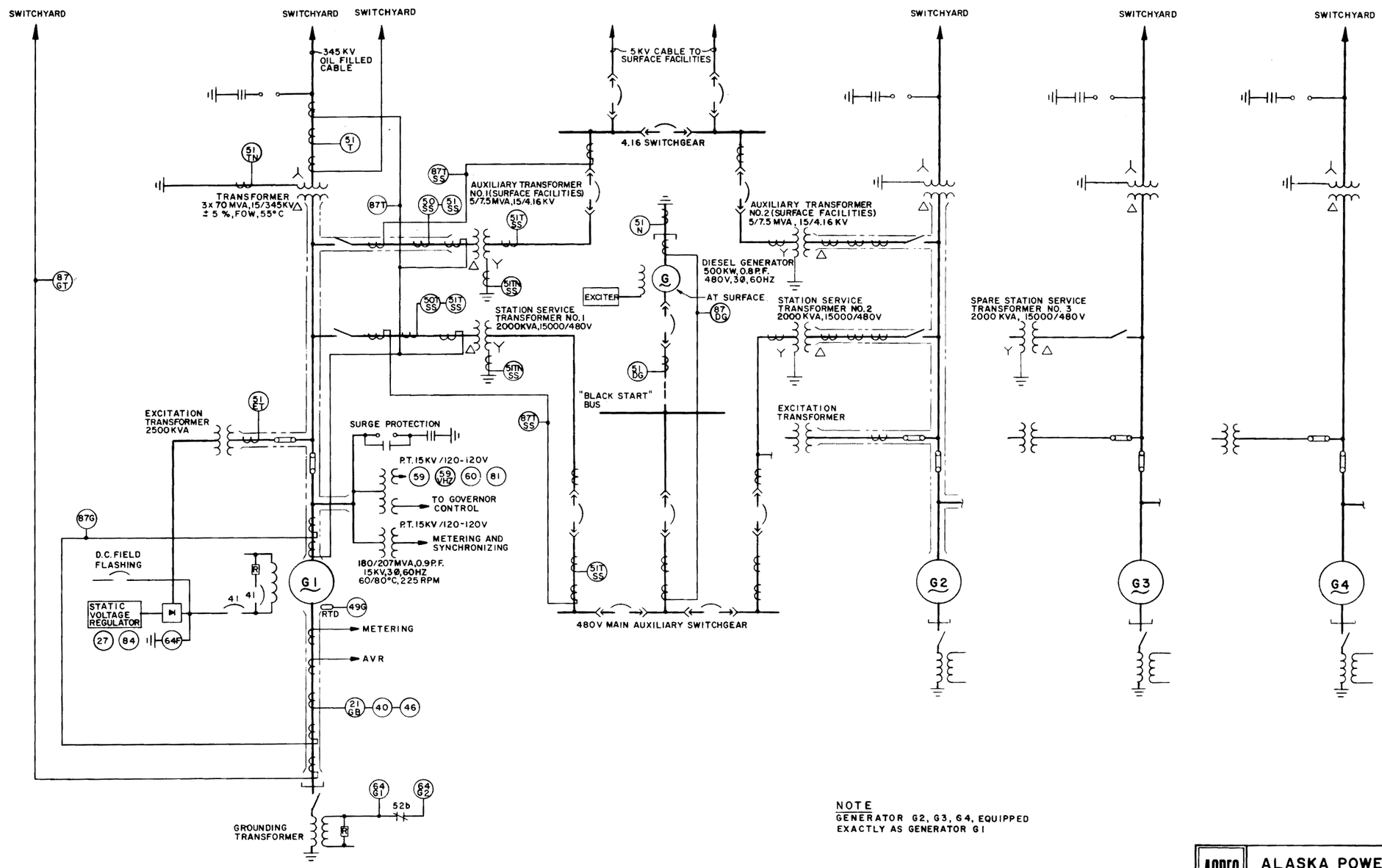
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
TAILRACE PORTAL
PLAN AND SECTIONS

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 69



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

ACRES

ALASKA POWER AUTHORITY

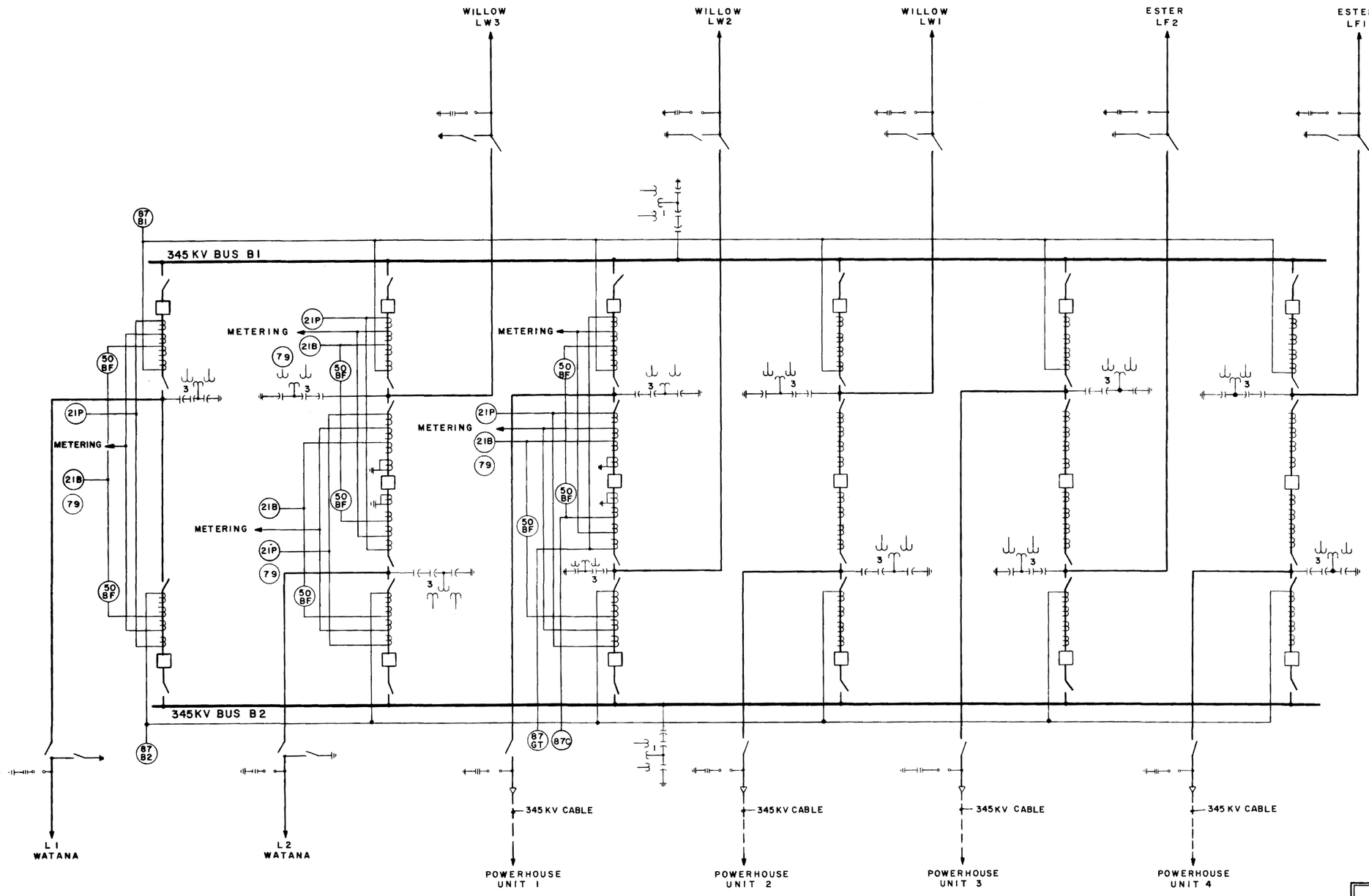
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON POWERHOUSE
SINGLE LINE DIAGRAM

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 70



ACRES

ALASKA POWER AUTHORITY

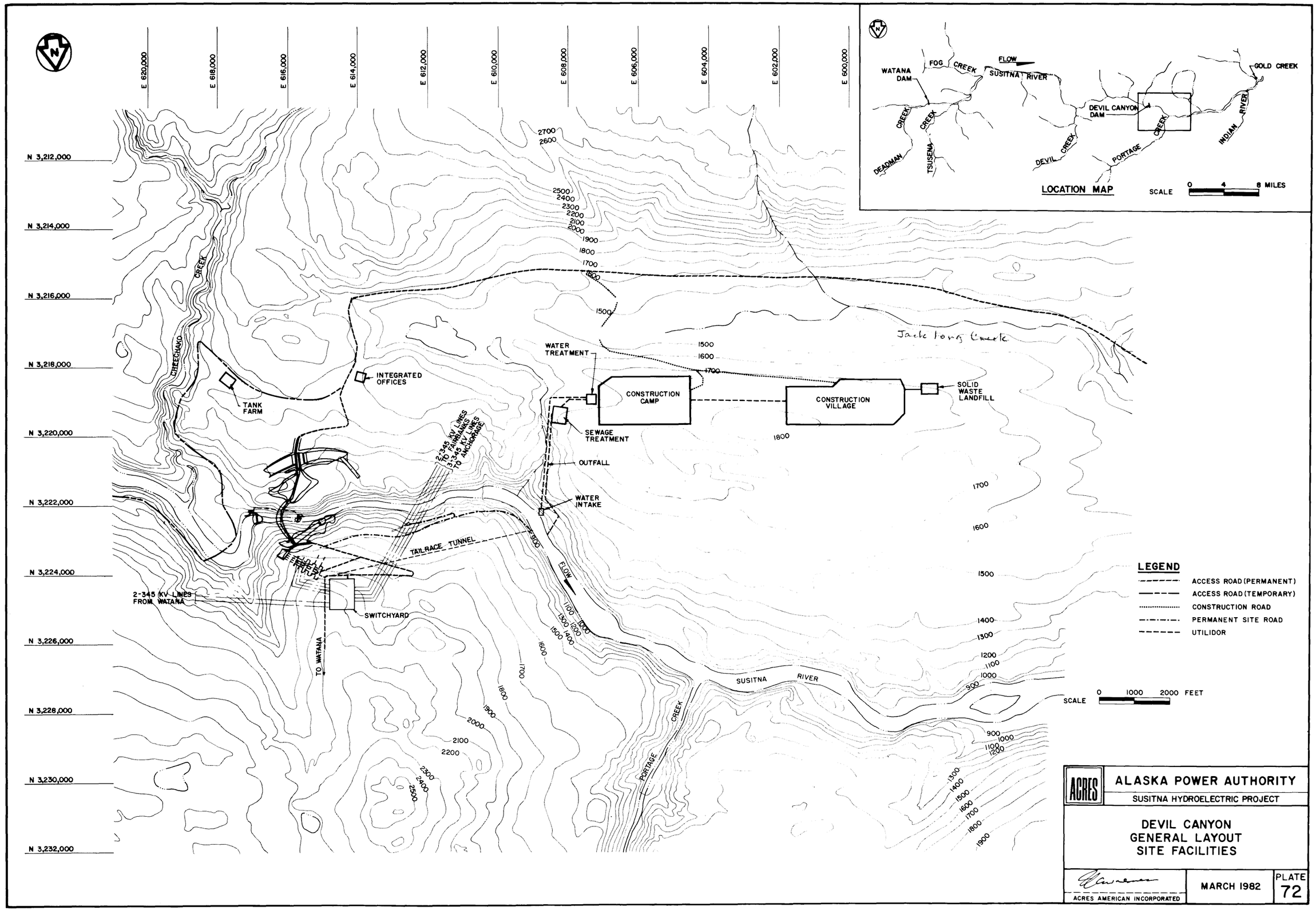
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON SWITCHYARD
SINGLE LINE DIAGRAM

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 71



ACRES

ALASKA POWER AUTHORITY

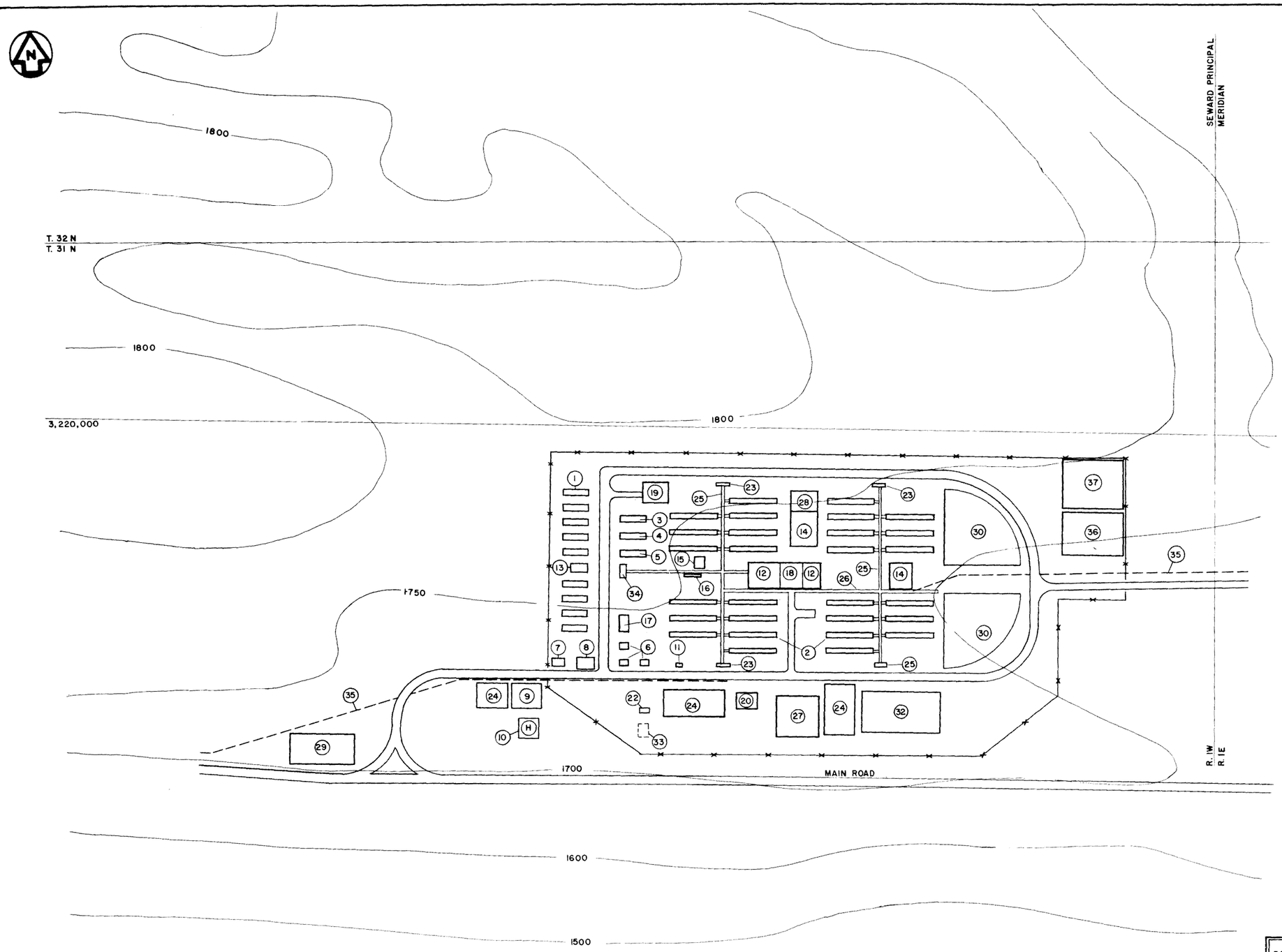
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
GENERAL LAYOUT
SITE FACILITIES

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 72



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

ACRES

ALASKA POWER AUTHORITY

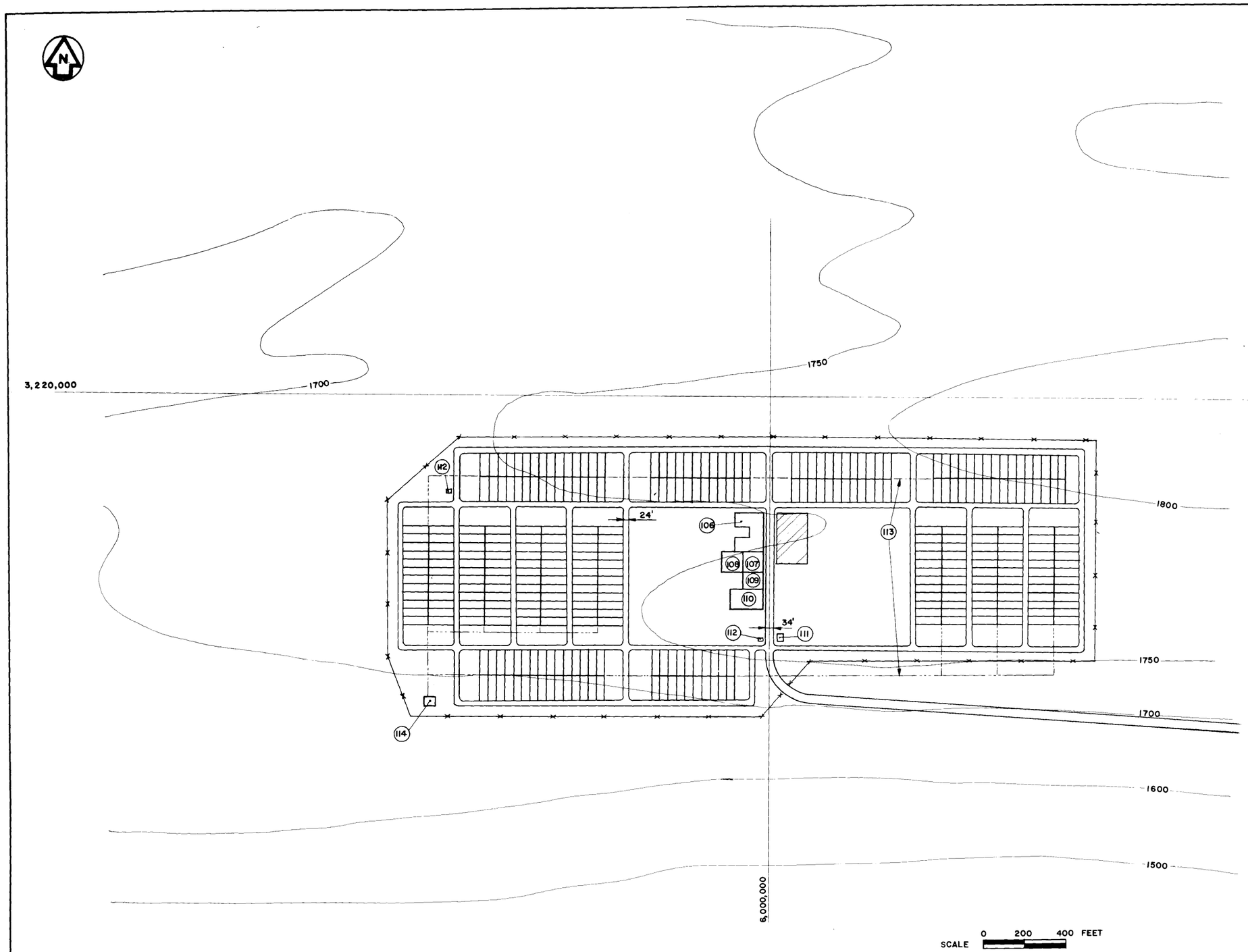
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON CONSTRUCTION CAMP PLAN

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 73



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'

ACRES

ALASKA POWER AUTHORITY

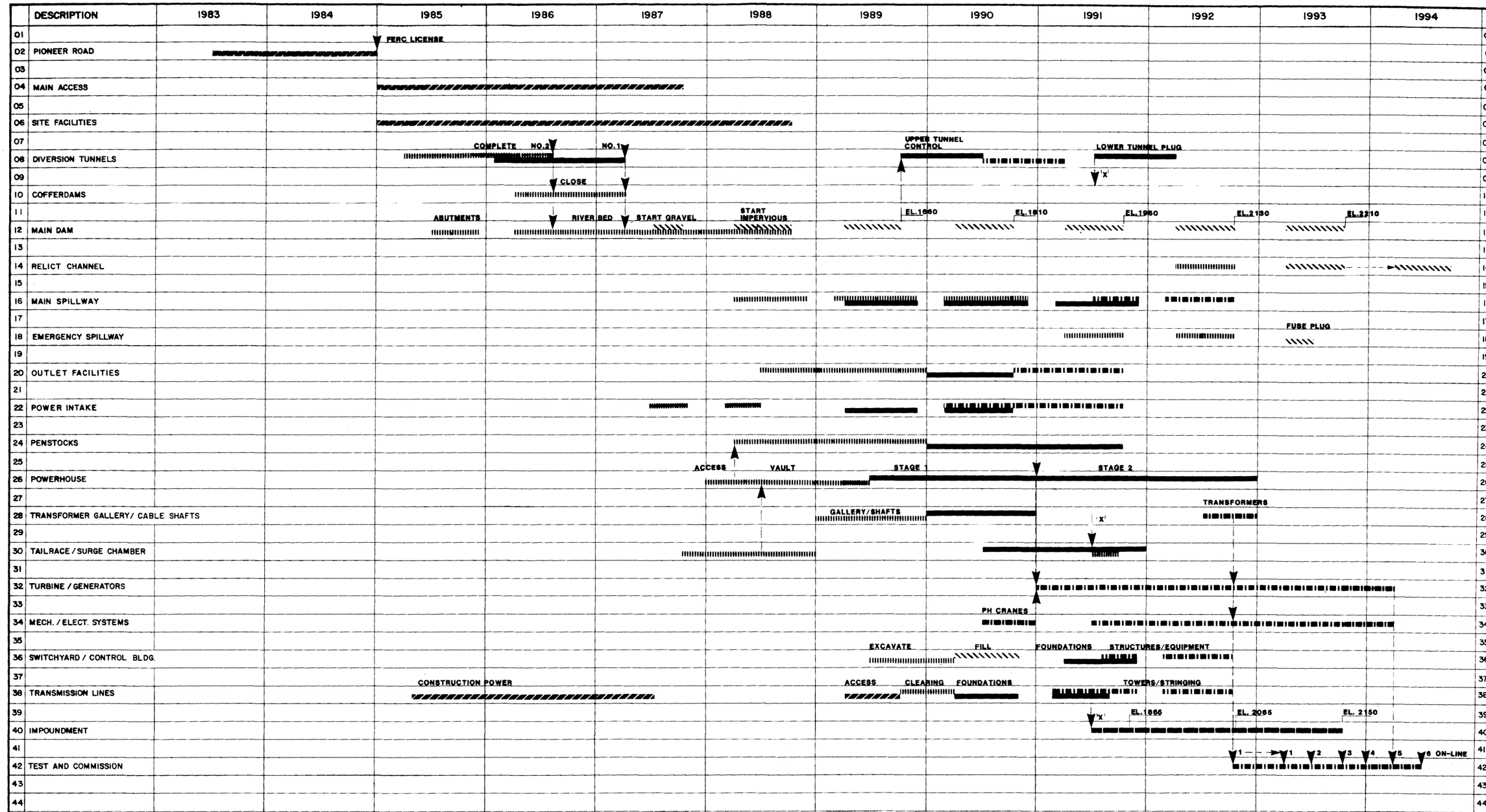
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
TEMPORARY VILLAGE

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 74



LEGEND

- ACCESS/FACILITIES
- EXCAVATION/FOUNDATION TREATMENT
- FILL
- CONCRETE
- MECHANICAL/ELECTRICAL
- IMPOUNDMENT

ACRES

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

WATANA
CONSTRUCTION SCHEDULE

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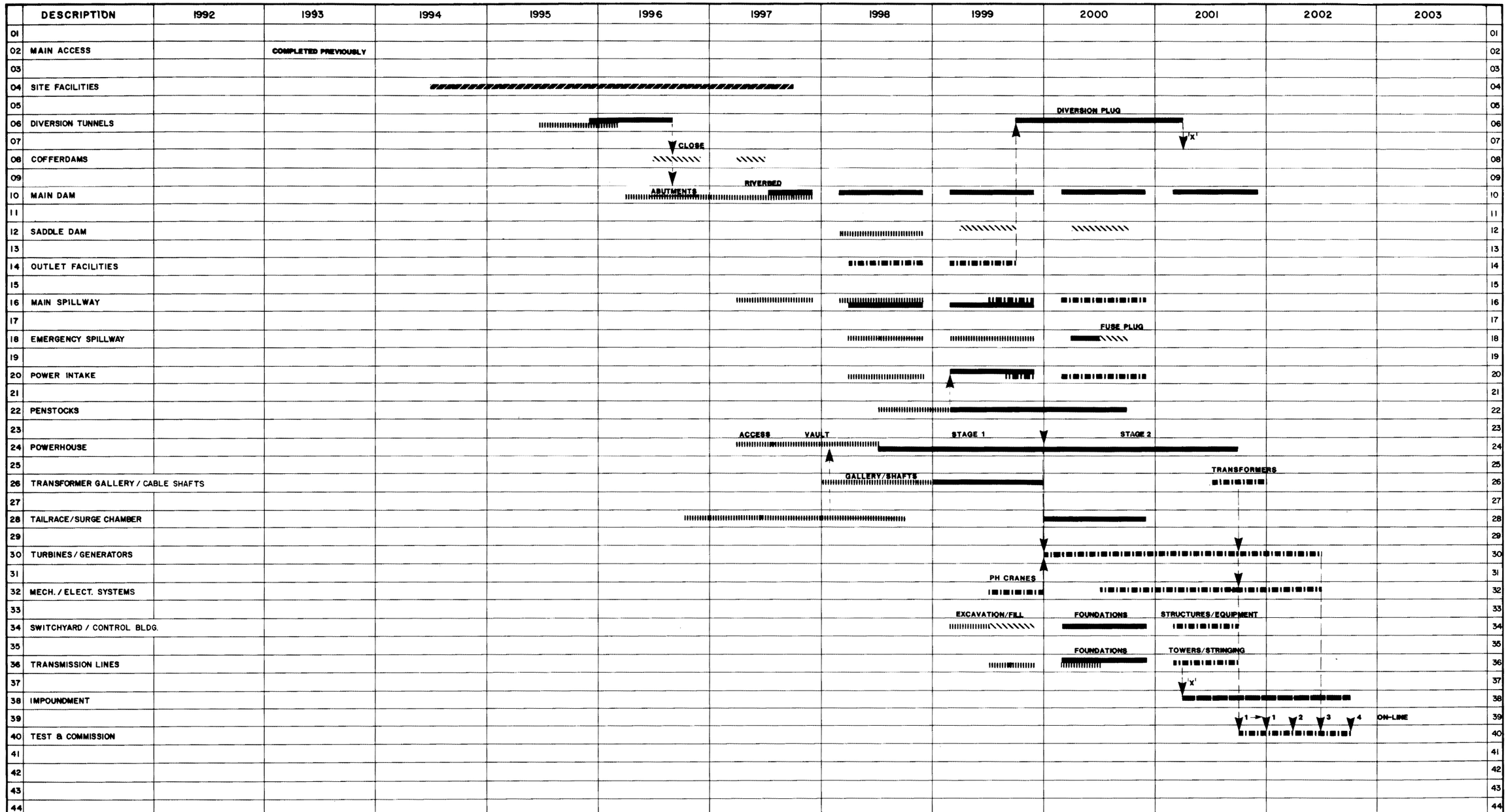
PLATE 75



ACRES

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON
CONSTRUCTION SCHEDULE

ACRES AMERICAN INCORPORATED

MARCH 1982

PLATE 76