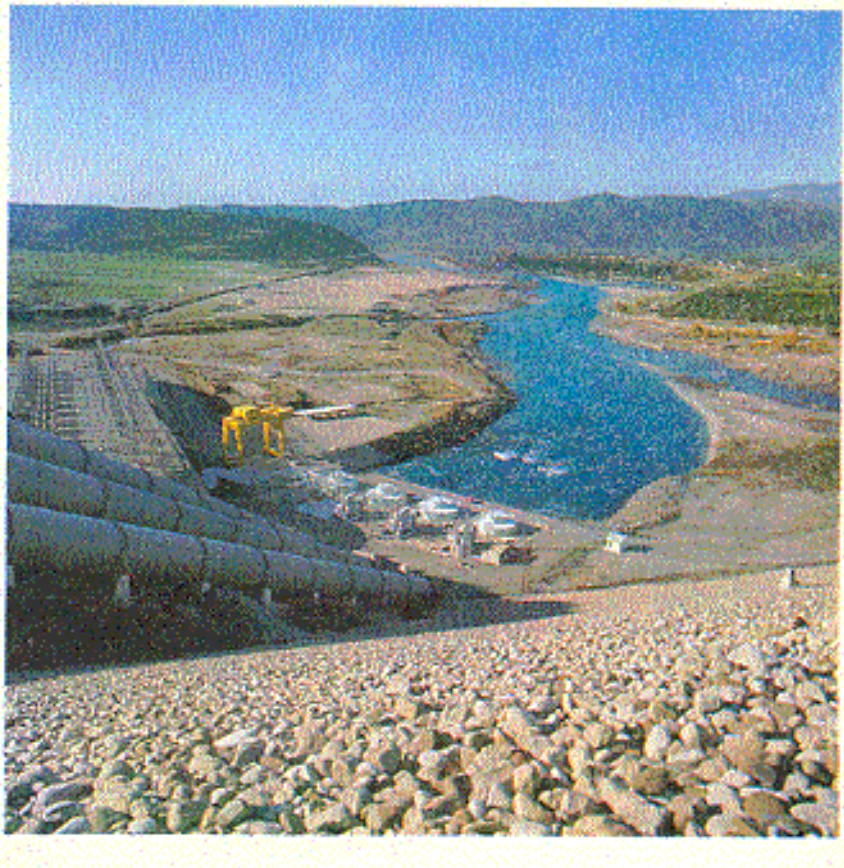
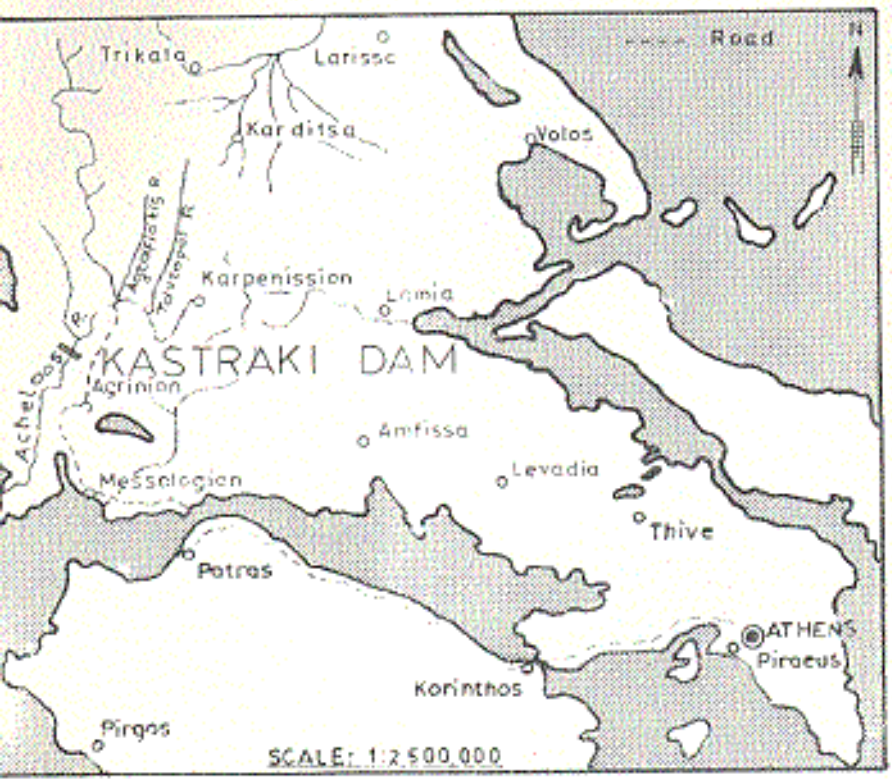
PUBLIC POWER CORPORATION
ADMINISTRATION FOR ENGINEERING
AND CONSTRUCTION OF HYDROELECTRIC PROJECTS

ACHELOOS RIVER
KASTRAKI
H-E PROJECT



ATHENS - GREECE

PROJECT LOCATION



The Kastraki Project site, on Acheloos River, is located at about 35 km downstream the Kremasta Dam, approximately 310 km from Athens.

CHARACTERISTIC DATES

Final Design started	March 1964
Construction started	May 1966
Power Plant commissioned	May 1969

DESIGN AND CONSTRUC

HYDROLOGY

Net drainage Area	4118	km^2
Mean annual flow	179.93	m^3/sec
Max. design flood peak at Kremasta	9800	m^3/sec
Max. design flood volume at Kremasta	1950	millions m^3
Spillway discharge at Kremasta	3000	m^3/sec
Max. design flood peak at Kastraki	3700	m^3/sec

RESERVOIR

Normal reservoir	El. 144.2	m
Volume at El. 144.2	785	millions m^3
Max reservoir	El. 150.0	m
Volume at El. 150.0	950	millions m^3
Min. Reservoir	El. 142.0	m
Area at El. 150.0	28	km^2

POWER AND ENERGY

Installed capacity	320	MW
Primary annual energy	705	GWh
Secondary mean annual energy	225	GWh
Total mean annual energy	930	GWh

DIVERSION AND IRRIGATION RELEASE

Tunnel, horseshoe section, height and width	8.0	m
Tunnel length	393	m
Accomodated flow	2900	m^3/sec
Closure Structure	Fixed wheel steel gate 8.41 m × 6.31 m	
Permanent closure	Concrete Plug	

DAM

Type	Gravel fill with clay core	
Max. Height	95.7	m
Crest Elevation	154.0	m
Crest width	8.0	m
Length	547.0	m
Max. width at base	375.0	m
Total volume	5 218 000	m^3
Shell	3 814 000	m^3
Core	978 000	m^3
Filter	275 000	m^3
Upstream protection	126 000	m^3
Downstream protection	25 000	m^3
Instrumentation		
Geodetical Settlement Monuments	30	
Piezometers: Vibrating Wire type	23	
Stand Pipe type	23	
Cross Arms, U.S.S.R. type	6	
Slope Indicators	17	
Earth pressure Cells	30	

SPILLWAY

Type,	Ungated overflow with lined chute	
Length of Spillway crest	120.0	m
Crest Elevation	144.2	m
Energy dissipation	Ski jump	

CTION PROJECT DATA

INTAKE	
Type	Vertical
Number of openings	4
Shutoff controls	
Fixed wheel gates	Opening 5.8 × 5.0 m
Steel stop-log panels	
Trash protection,	Inclined 1/4 steel rack panels
Type of hoist	Winch type
PENSTOCKS	
Number	4
Diameter	5.8 m
Centerline at intake	El. 135.0 m
Centerline at power house	El. 66.5 m
POWER STATION	
Type	Semi outdoor
Turbines	4 Vertical shaft, Francis
Design net head	74,5 m
Capacity under design net head	84 000 KW
Max. operat. net head	75.7 m
Min. operat. net head	72.2 m
Speed	166.7 r.p.m.
Generators	4 Vertical shaft, synchronous umbrella type
Capacity	77 390 KVA for Δt = 60°C
	89 000 KVA for Δt = 80°C
Power factor	0.90
Frequency	50 cycles
Power transformers	4
Type	Three phase, outdoor
Class	FOA
Capacity	90 000 KVA
Rated voltage	161.25/15.75 KV
Operating conditions	H.V. winding : grounded, Wye
	L.V. winding : ungrounded, Delta
Power Plant Crane	1 trolley Gantry
Capacity of main hoist	250 metric tons
Capacity of auxiliary hoist	25 metric tons

FINAL DESIGN-SUPERVISION

Ebasco Services Inc., New York U.S.A.

CONSTRUCTION OF CIVIL WORKS-INSTALLATION OF TURBINES

Constructors Joint Venture Odon & Odostromaton S.A., Domiki S.A., EDOK S.A., ETER S.A. Greece

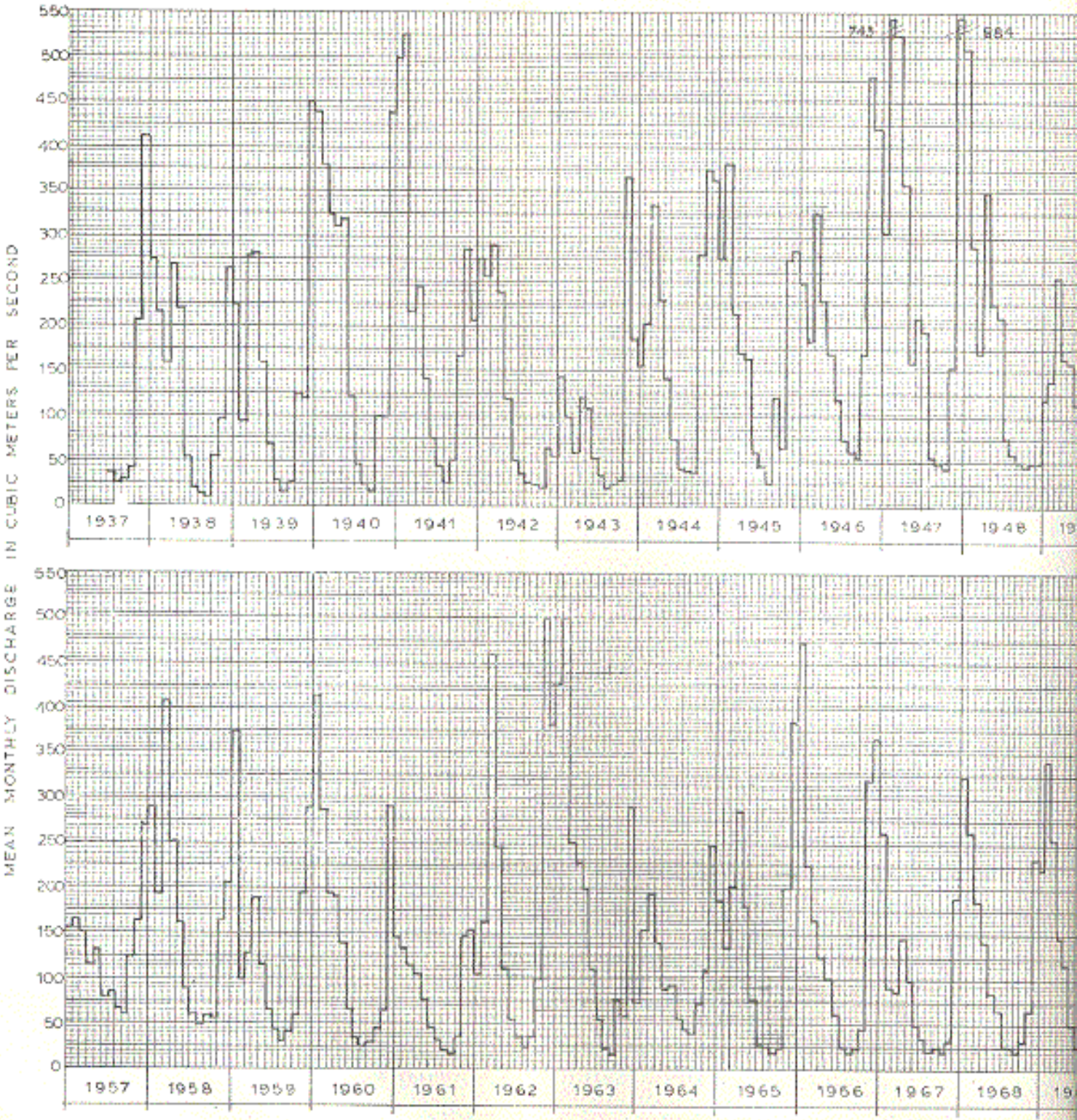
MAIN ELECTRICAL & MECHANICAL WORKS

Turbines manufacturing & Supervision of Erection:
Baldwin-Lima-Hamilton Corporation U.S.A.

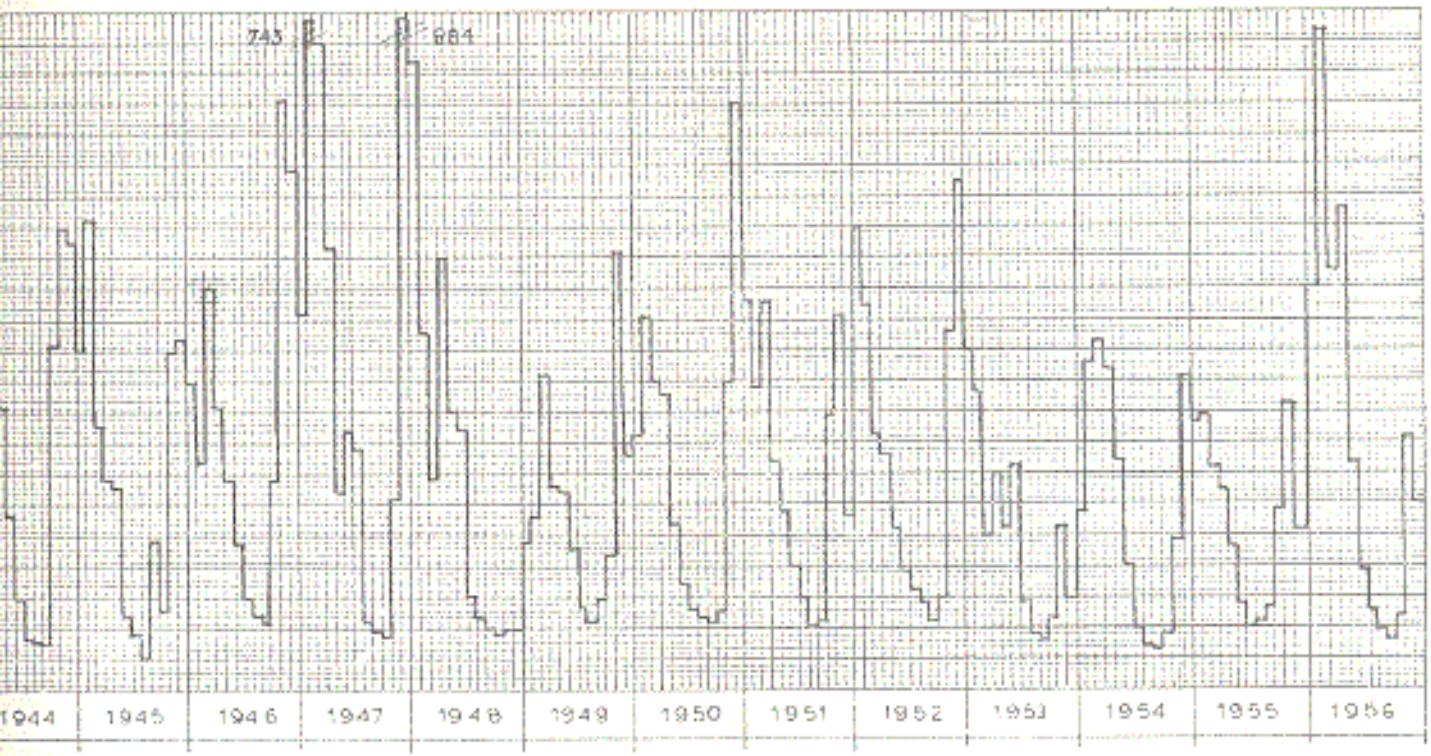
Penstocks, Gates, Guides, Trashracks etc. Manufacturing & Erection:
Vereinigte Osterreische Eisen und Stahlwerke A.G., Austria.

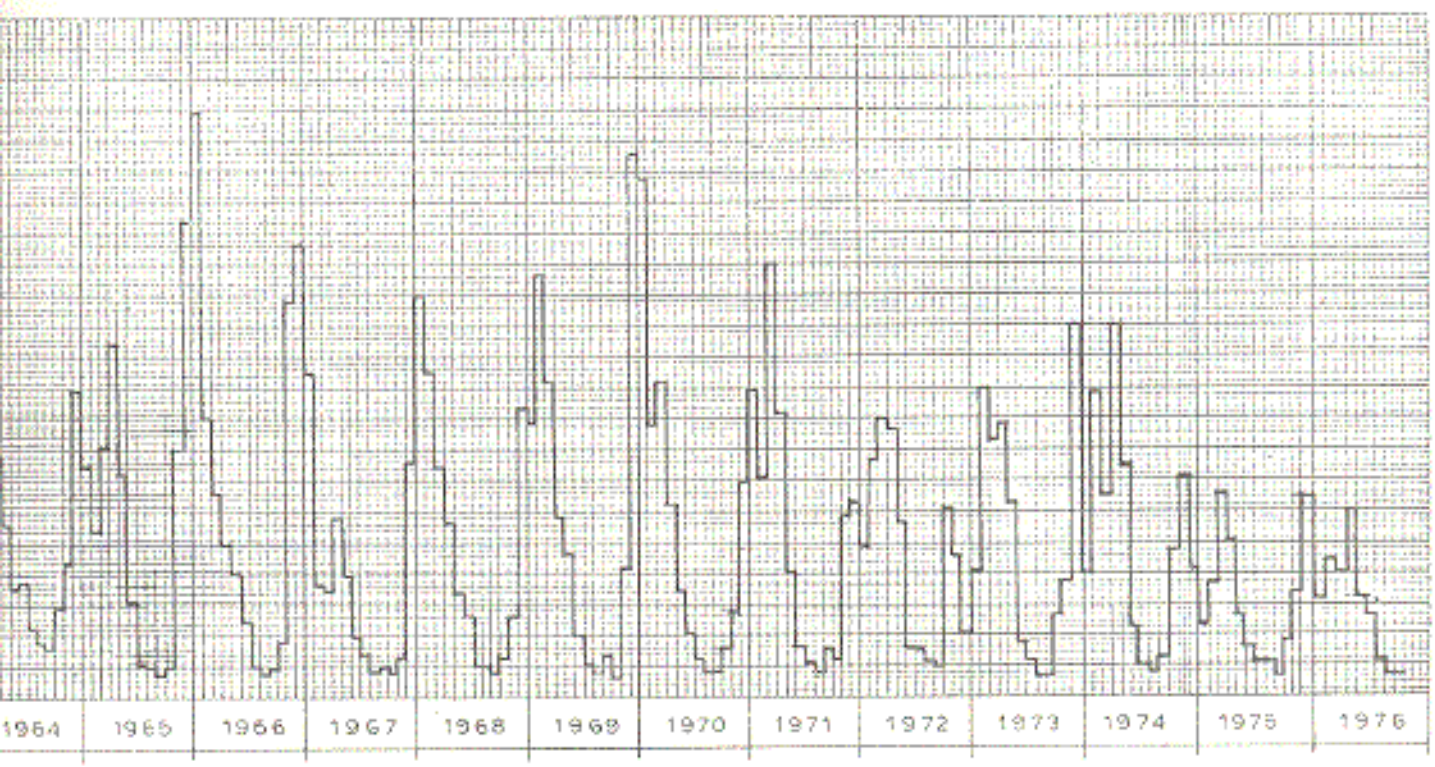
Generators, Transformers, switchyard, remaining electrical and auxiliary electromechanical equipment, Manufacturing and Installation:
Hitachi Ltd. Japan.

HYDROLOGICAL DATA

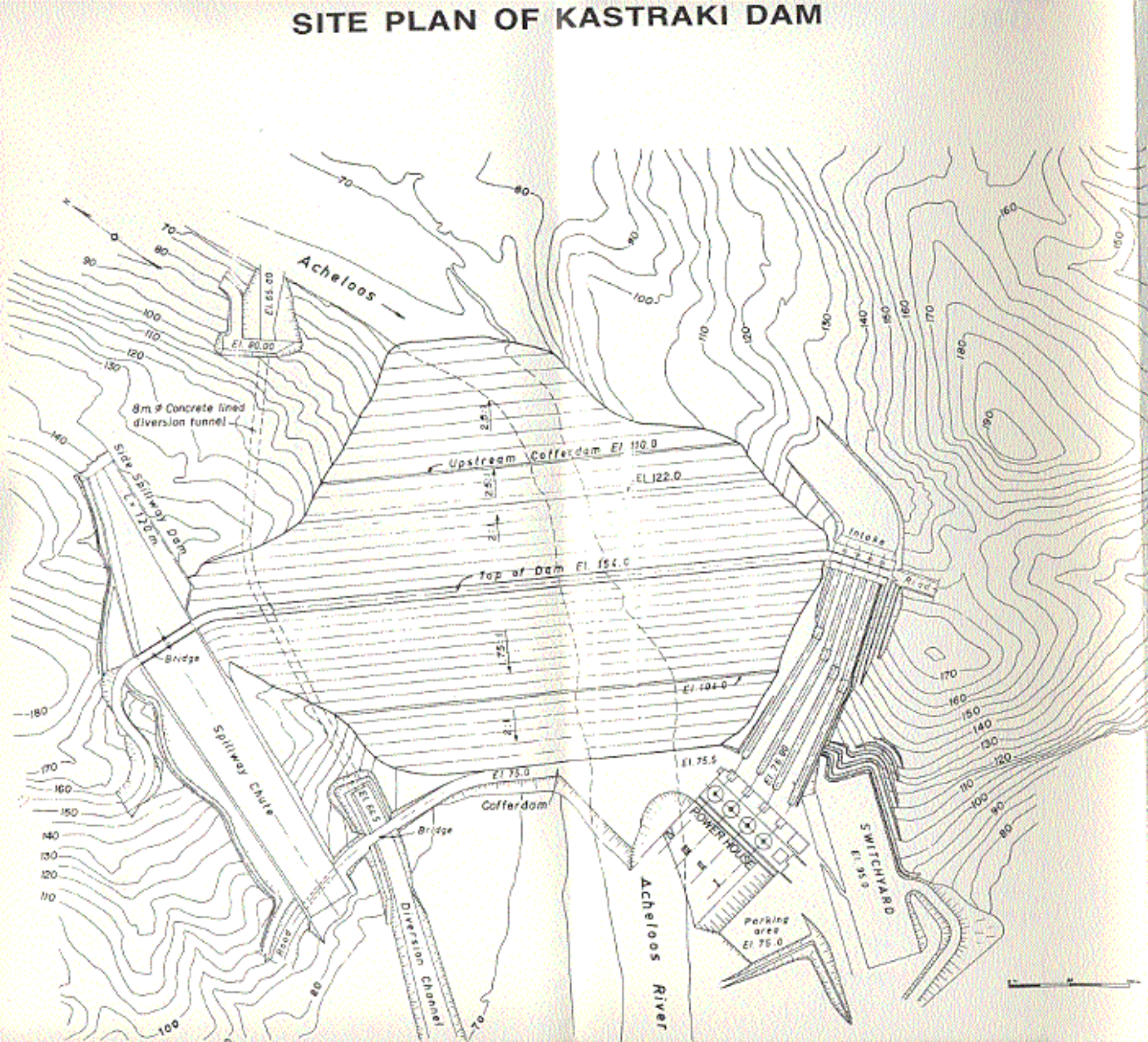


ROLOGICAL DATA

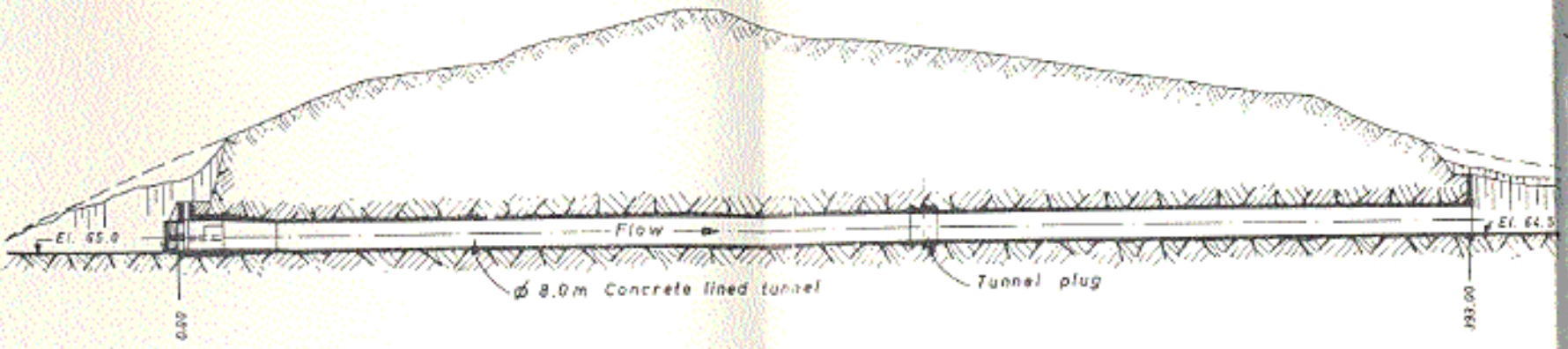




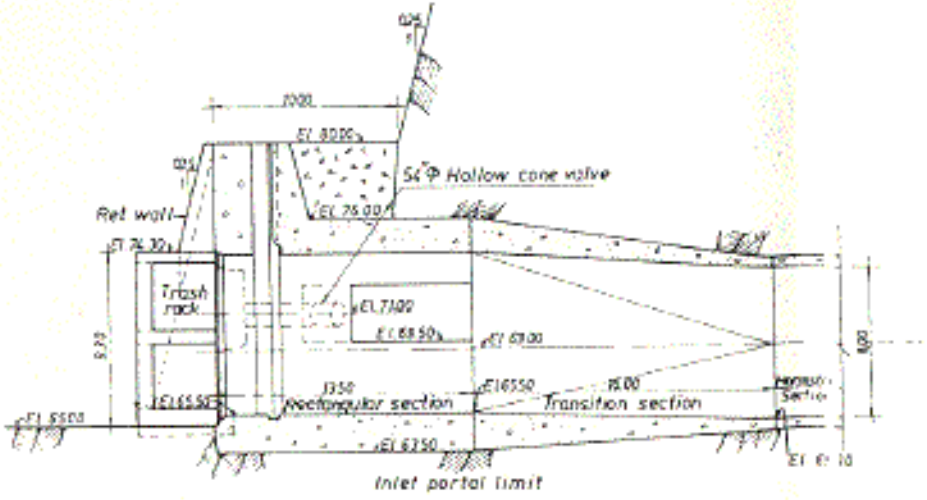
SITE PLAN OF KASTRAKI DAM

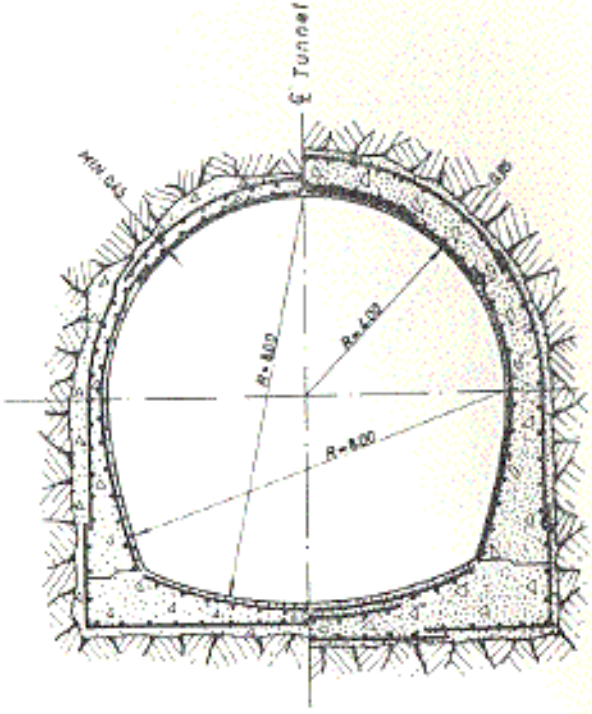


DIVERSION TUNNEL



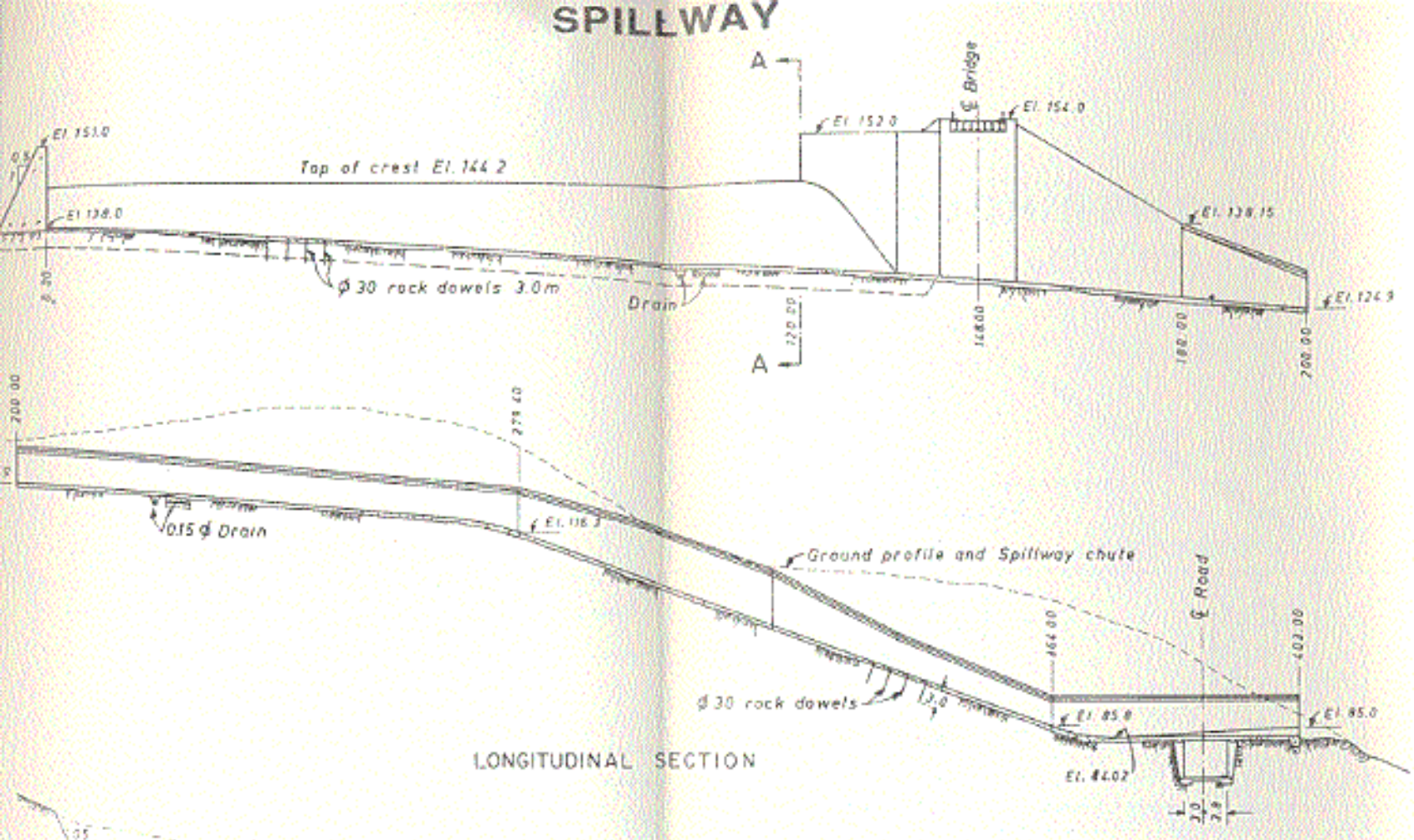
LONGITUDINAL PROFILE



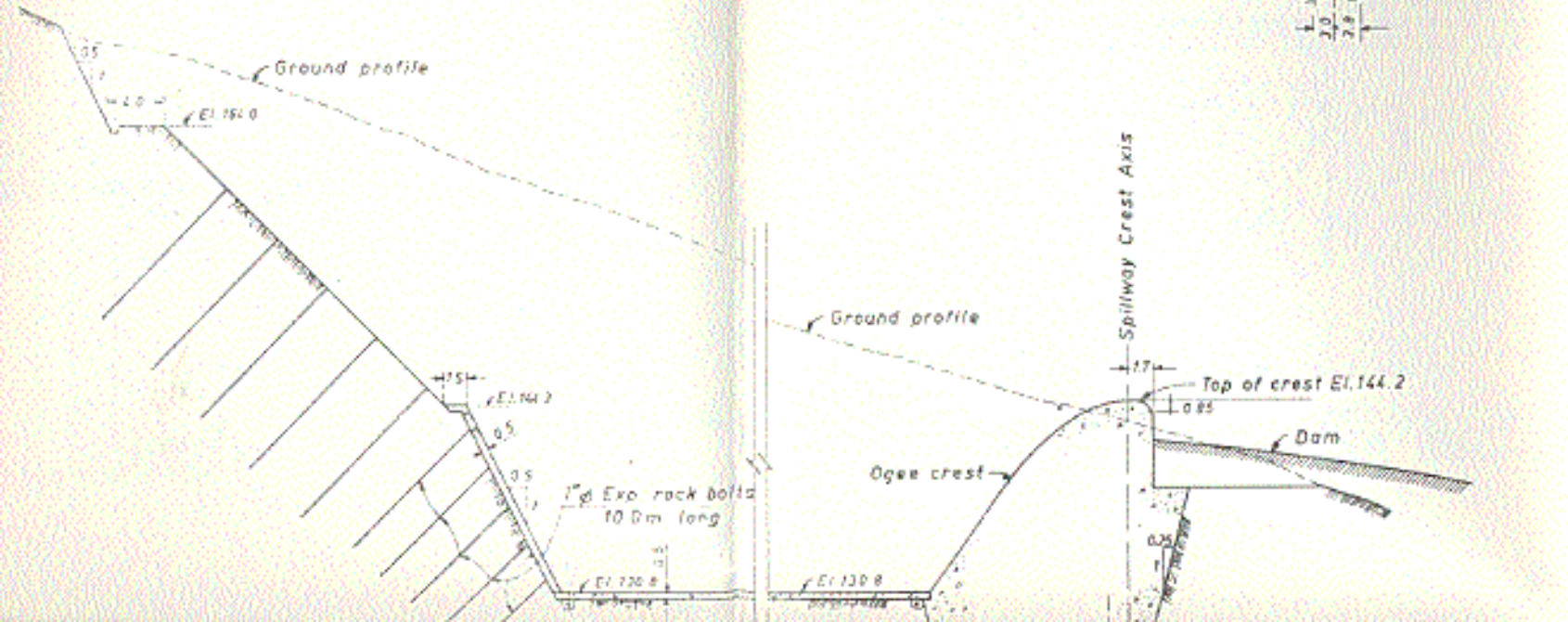


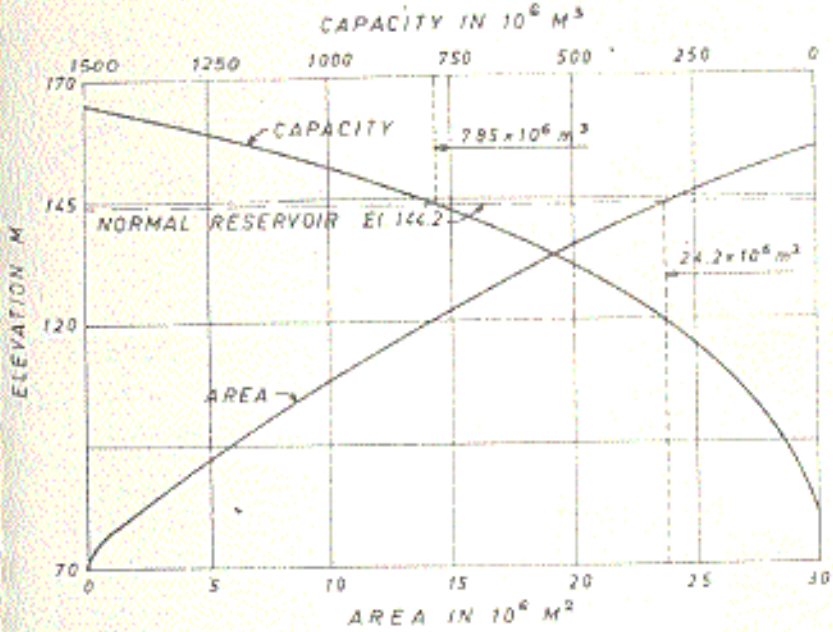
CROSS SECTIONS

SPILLWAY

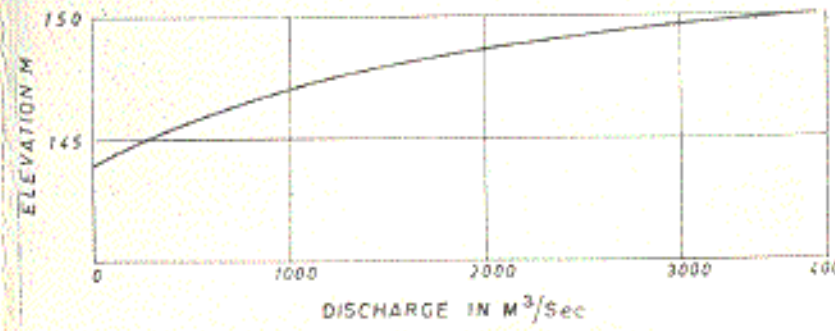


LONGITUDINAL SECTION



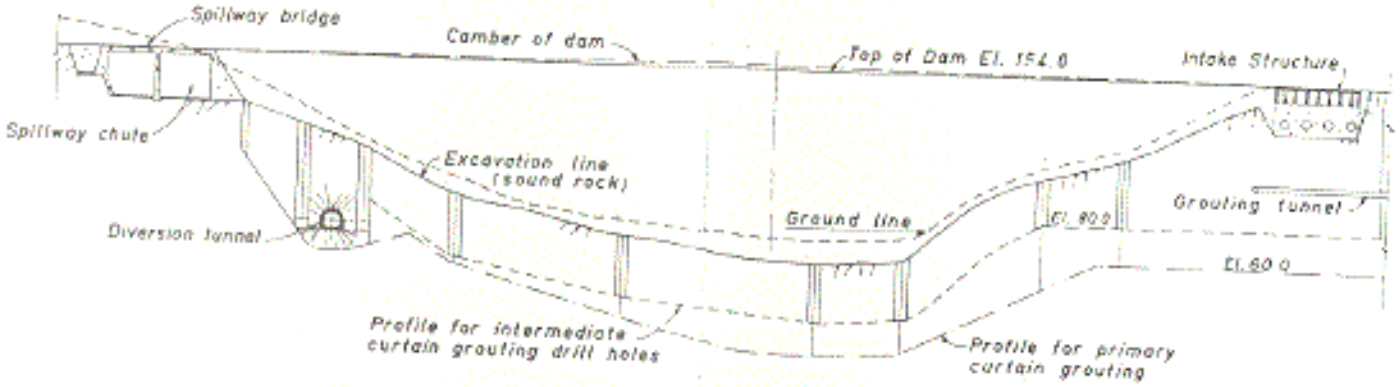


RESERVOIR - AREA CAPACITY CURVES

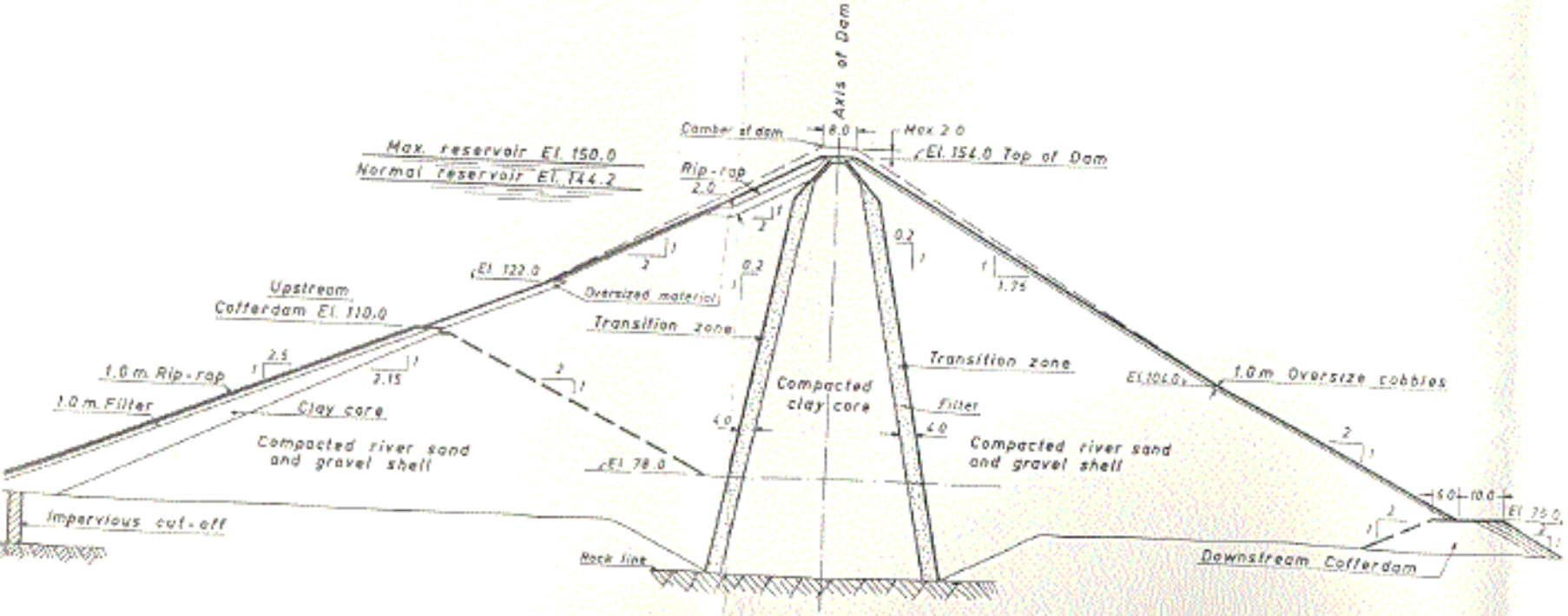


SPILLWAY DISCHARGE CURVE

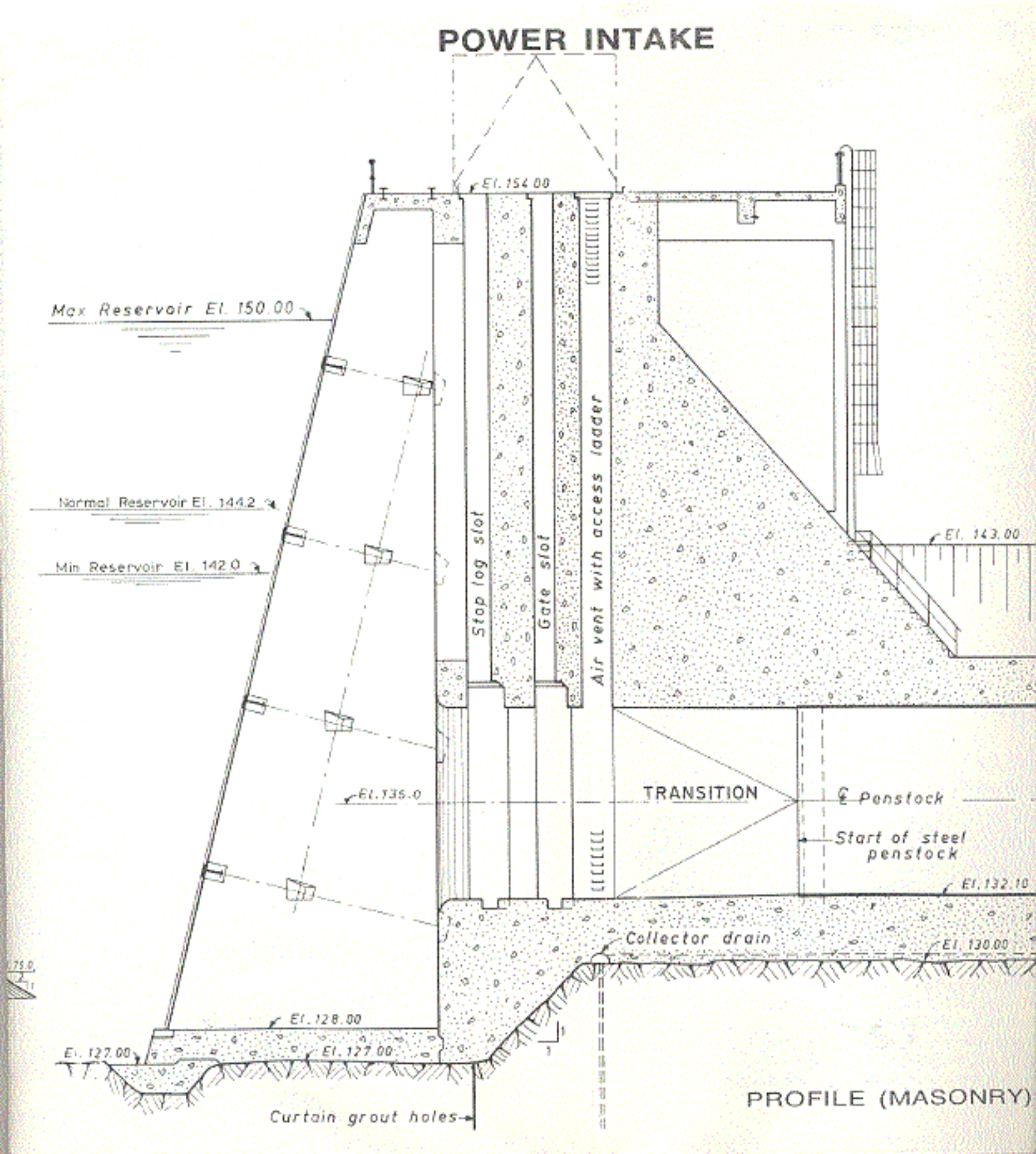
DAM



PROFILE OF DAM AXIS

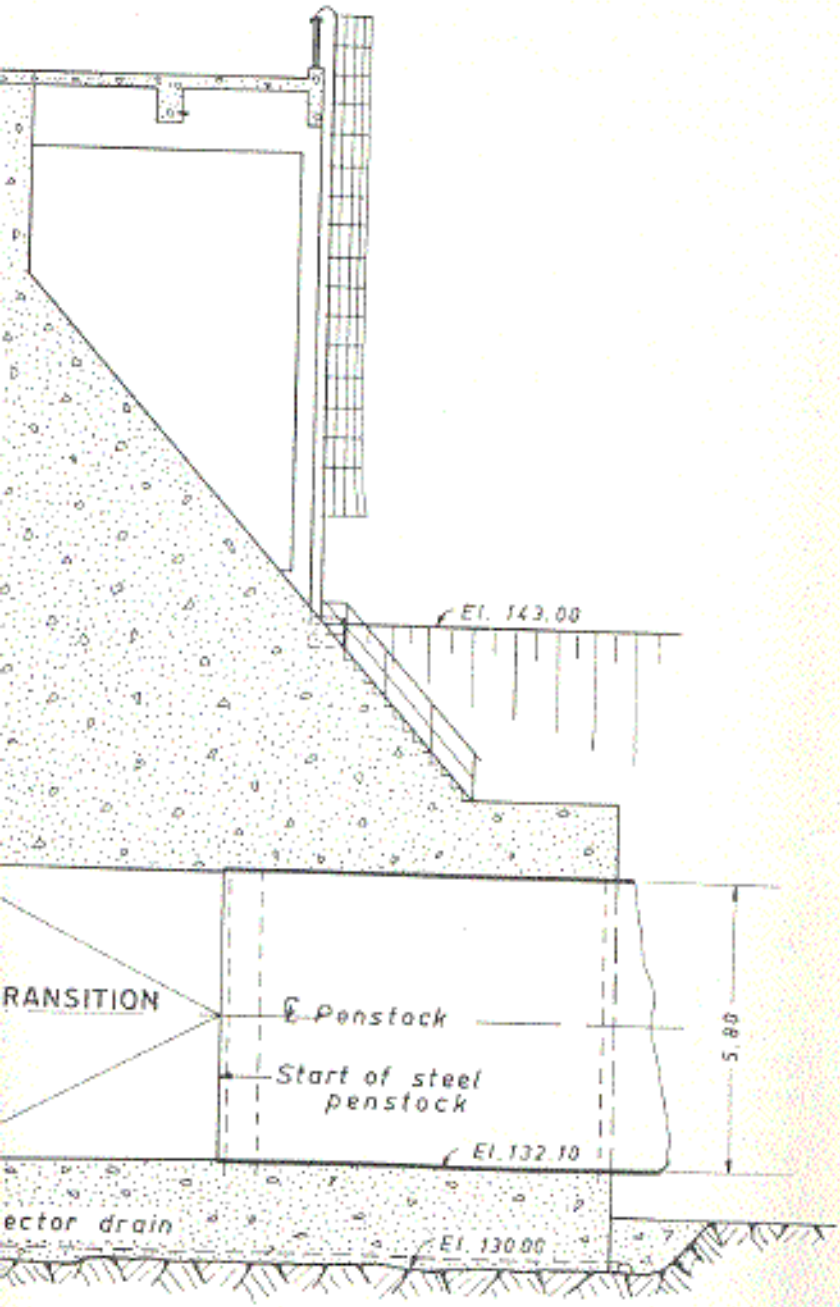


POWER INTAKE

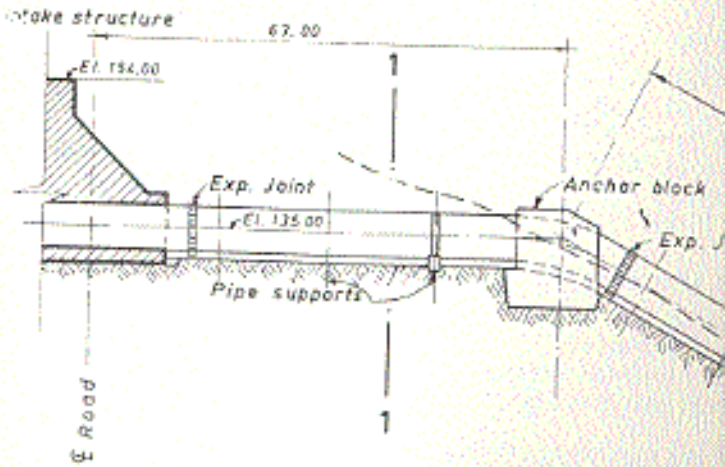


TAKE

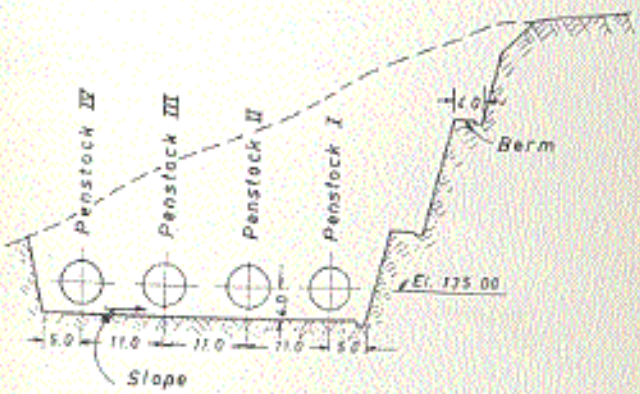
P



PROFILE (MASONRY)

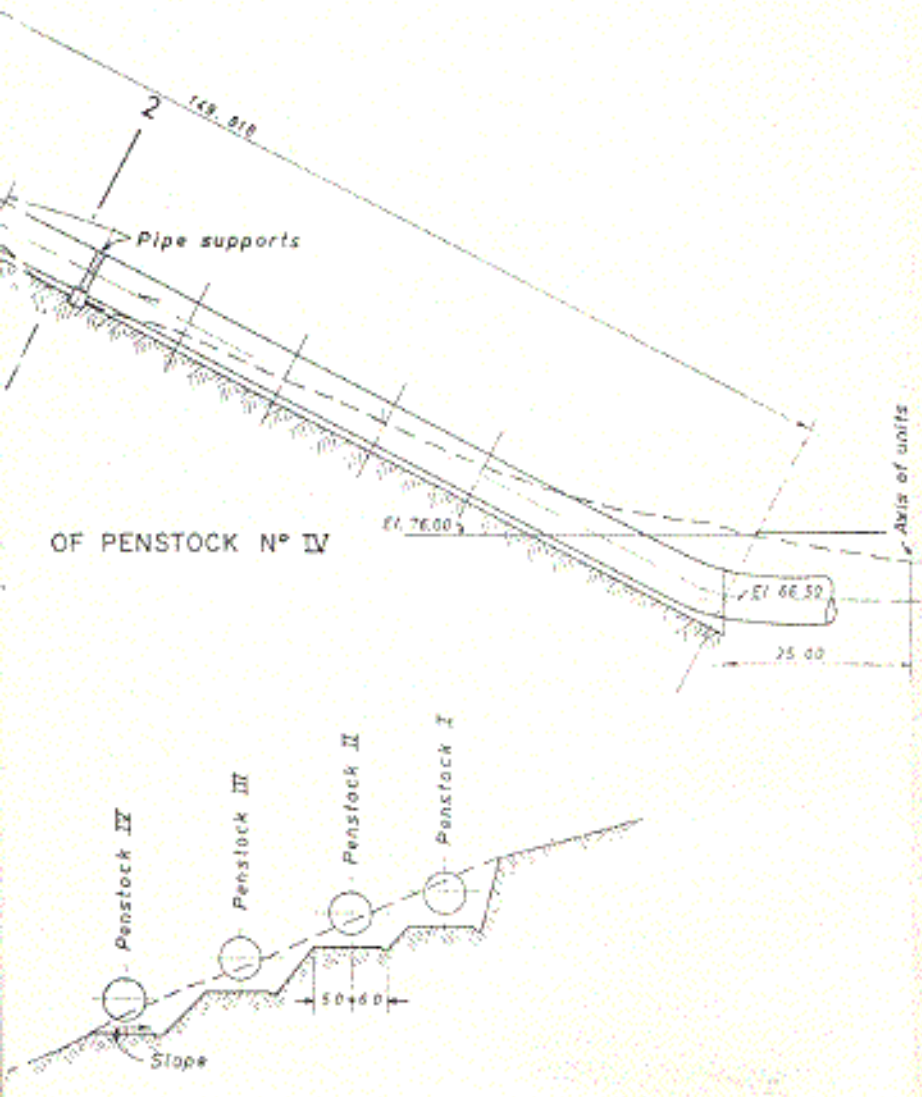


LONGITUDINAL PROFILE
I. D.



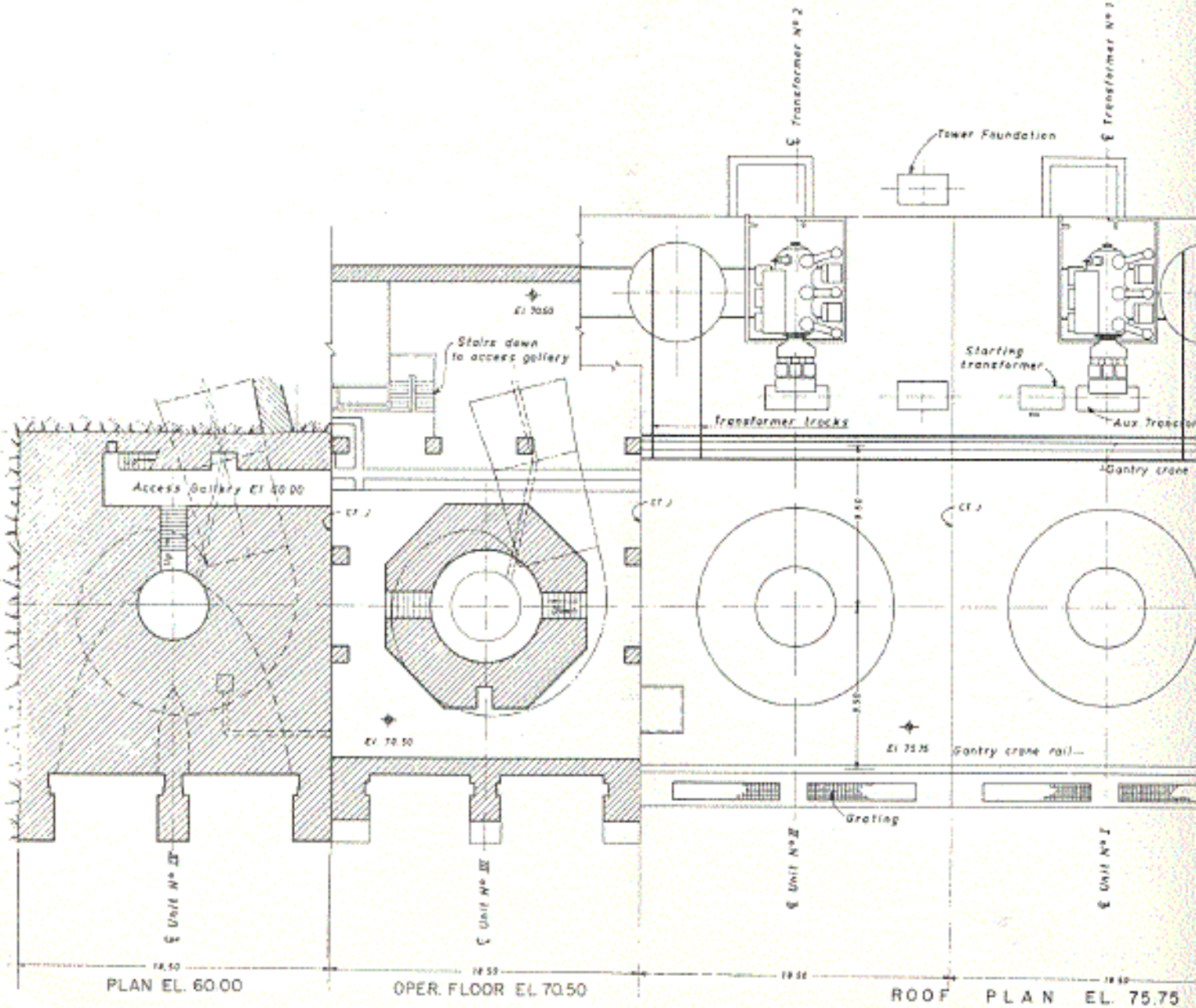
SECTION 1-1

TOCKS

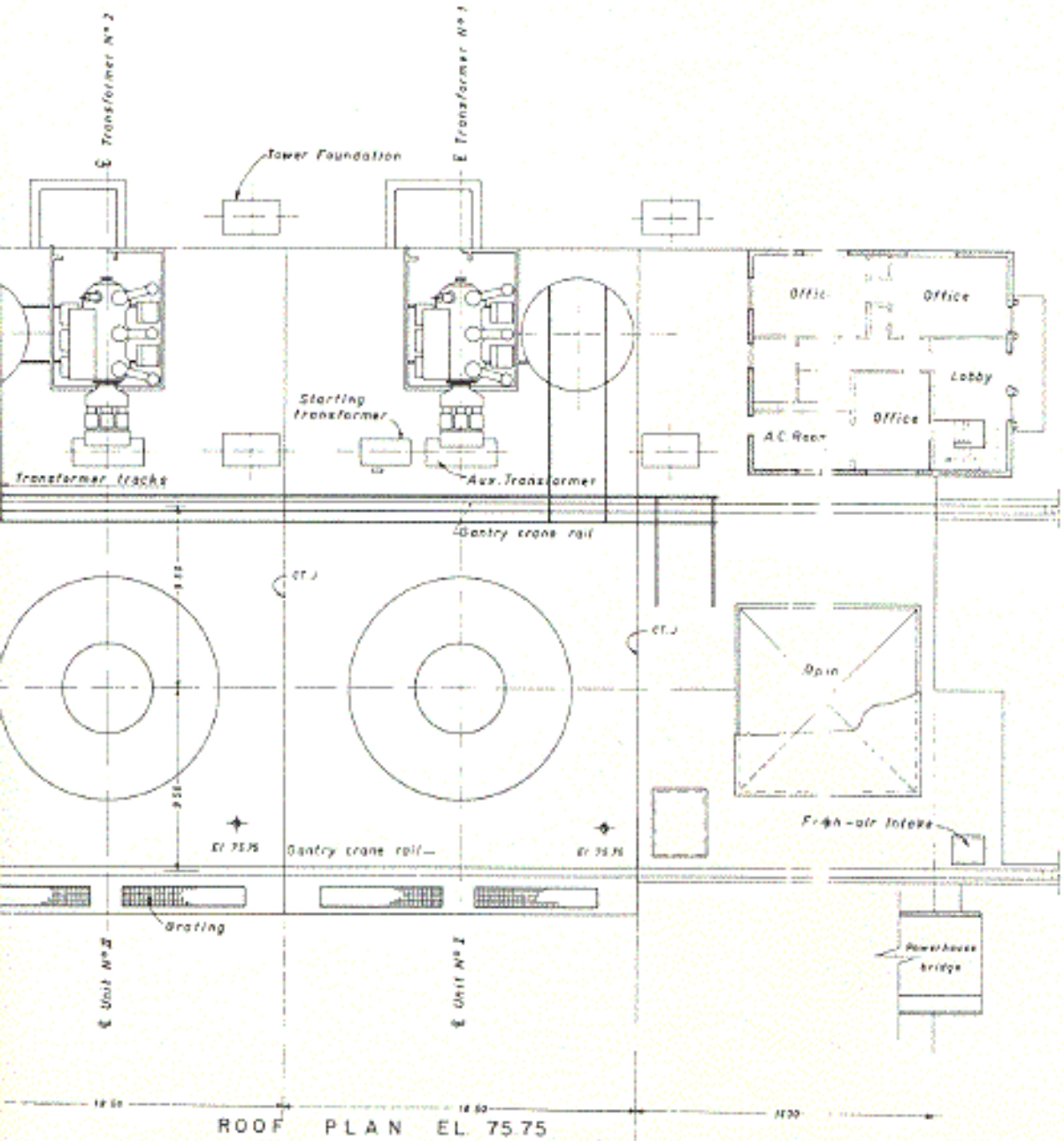


SECTION 2-2

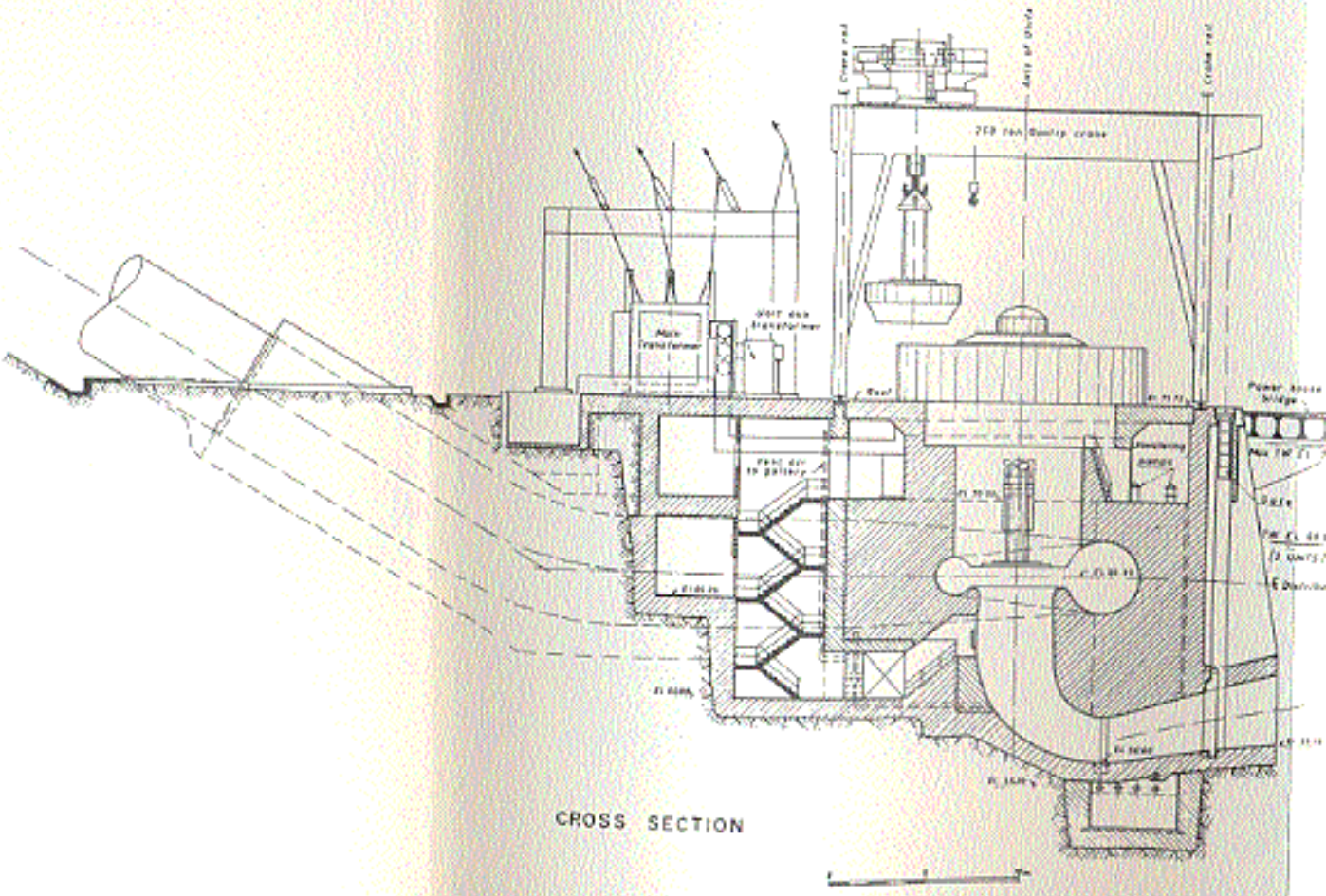
POWER HOUSE


℄ transformer N° 2
℄ transformer N° 1
Tower Foundation
El 70.50
Stairs down to access gallery
Starting transformer
transformer tracks
Aux. Transf.
Gantry crane
Access Gallery El 60.00
CT J
El 70.50
El 75.75
Gantry crane rail
Grating
℄ Unit N° III
℄ Unit N° II
℄ Unit N° I
PLAN EL. 60.00
OPER. FLOOR EL 70.50
ROOF PLAN EL. 75.75

POWER HOUSE

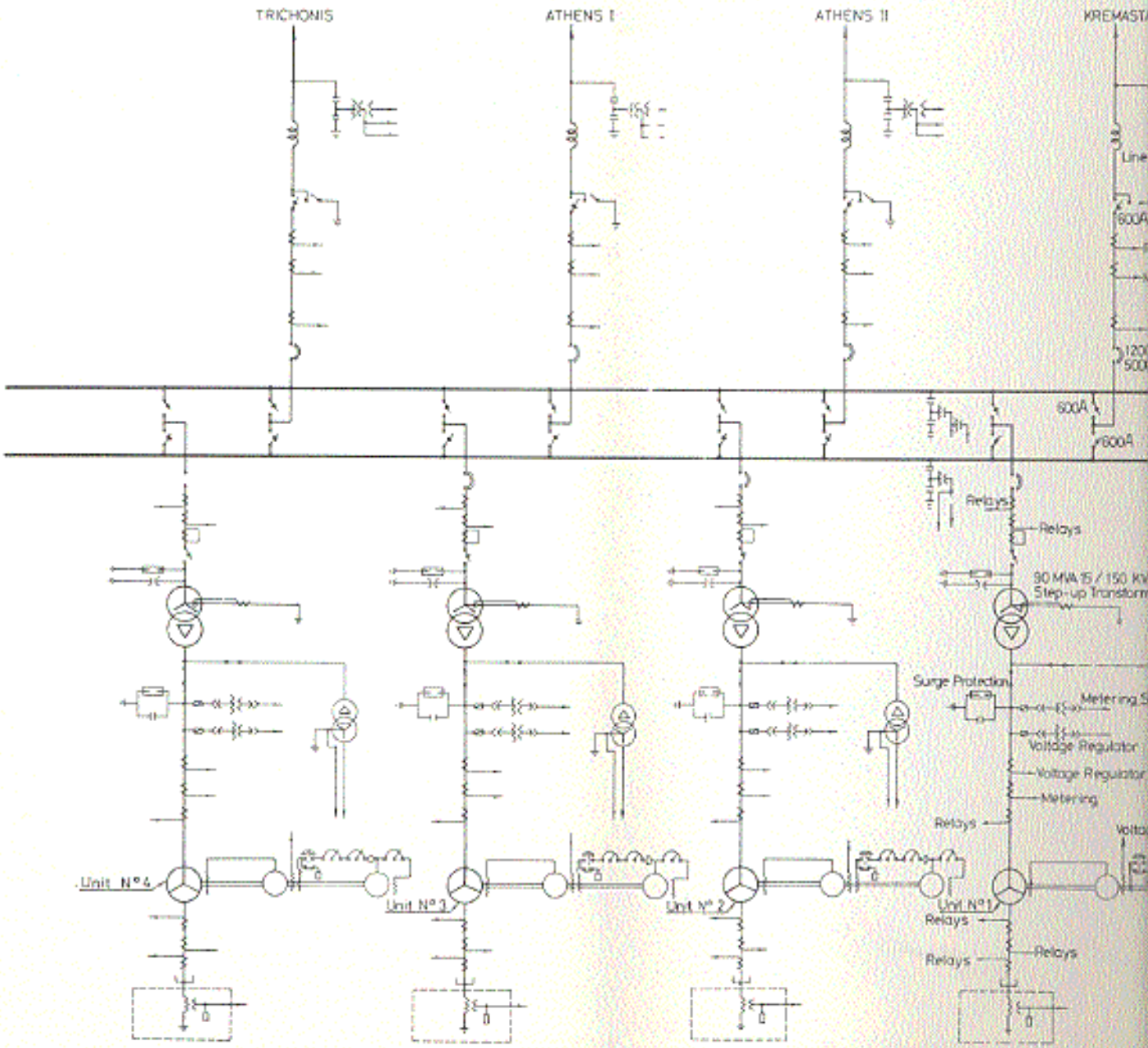


ROOF PLAN EL. 75.75



CROSS SECTION

ONE LINE DIAGR



NE LINE DIAGRAM