S.No.	Plant Group	Type of Plant	No. in use
34.	200	Caterpillar No. 14 Grader	16
35.	210	Caterpillar 651 Scraper	12
36.	220	Caterpillar 660 Tractor	55
37.	220	Caterpillar 110 Bottom Dumper	73
38.	221	Caterpillar 60B Tractor	18
39.	230	Euclid R-70, 70 Ton Rear Dumper	40
40.	231	Caterpillar 769, 35 Ton Rear Dumper	15
41.	232	L.T.W. Haulpak 32 Ton Rear Dump	20
42.	235	Aveling Barford S1300 Rear Dump	30
43.	236	Astra BM 19 18-Ton Rear Dumper	16
44.	237	Astra BM 2SA Concrete Dump Truck	11
45.	240	Fiat 644/E Buses	63
46.	241	Fiat 650/E1 Buses	26
47.	242	Fiat 650/E1 Foodstuff Transport	1
48.	247	OM Tigrotto W/Fassi Crane	20
49.	248	Fiat 682/N3 fixed bodies	18
50.	249	Fiat 682/N3 W/Foco Crane	7
51.	24*a*	Fiat 643E W/Tecalmit greasing plant	2
52.	249	Fiat 643E with fixed bodies	6
53.	249	Fiat 643E with fixed bodies and Foco Crane 303	13
54.	250	Fiat 682/T3 Rear Dump	9
55.	251	Fiat 619N W/Fixed body and Foco Crane 33	3
56.	252	Fiat 682/N3 3-side Dumper	7
57.	270	Auto Car Truck	3
58.	271	Fiat 639/N 3 Greasing Truck	2
59.	271	Fiat 639 N3 Lubricating tank	7
60.	271	Fiat 639 N3 W/Foco/Crane 303	2
61.	272	Fiat 650/E1 Water Tank	2
62.	273	Fiat 693 TI Tractor for semi-trailer	6
63.	274	682T3 tractor for semi-trailer	16
64.	275	Fiat 683/N3 with fixed bodies and foco crane 6,000 for tyre service	2
65.	274	682/N3 and cab.	5
66.	276	Fiat 682/N3 Asphalt spraying tank	2
67.	277	Fiat 643/NI Garbage Truck	4
68.	278	Fiat 682/N3 W/Fire Fighting equipment	2
69.	279	Fiat 682/N3 W/Refrigeraton Van	1
70.	280	International Harvester Truck	2

S.No.	Plant Group	Type of Plant	No. in use
71.	281	Fiat 682/N3 W/10,000 LTS Water Tank	4
72.	290	Faun Tractor 100 ton Low Loader	1
73.	292	Oshkosh R. 1665, 60 ton Tractor/Lowbed trailer	4
74.	293	Low Loader Trailers	5
75.	294	Cobra MT. 13 articulated lowbed trailer	10
76.	310	Astra BM 2SA Chassis W/rex RH44 truck mixer	8
77.	310	Astra BM 2SA Chassis (for rex RH 35)	7
78.	310	Astra BM 2SA W/Anfo Mix Body	1
79.	314	Locatelli 3C M. Concrete Tipping Units	25
80.	316	Fiat 693 T1 Tractor for Silobus	5
81.	316A	Trailer with Silo for transport of Cement	5
82.	324	Marini Dryer unit for aggregate	1
83.	330	Caterpillar 660 Transport W/Southwest 14,000 Gallons fuel bowser	2
84.	330	Caterpillar 660 Transport W/Southewst Sprinkler Tank	3
85.	331	Fiat 693/TI Water Tank	4
86.	332	Auto Car Water Tank	6
87.	333	CATl 631B Tractor, W/Sourthwest Sprinkler Tank 10,000 Gallons	4
88.	350	Hatra TRW 60 Vibrating Roller	1
89.	351	Ursus 10/14 Ton Road Roller	3
90.	352	Hyster C250B Vibrating Roller	1
91.	352	Hyster C250B Vibrating Roller	1
92.	354	Dingler Vibrating Roller	22
93.	355	Southwest C. 100 XL. Pneumatic Roller	6
94.	357	A.B.G. Saw 180 Vibrating Roller	1
95.	358	Tampo Pneumatic Road Roller	2
96.	359	Mitsubishi IS-2 Pneumatic Roller	1
97.	367	Giant Disc Tiller	3
98.	371	Bucyrus-Eire 110 Ton Crane	2
99.	372	Bucyrus-Eire 40 Ton Crane	5
100.	373	CAFL "PINGUELY" 30-Ton Crane	4
101.	374	P & H 325 Crane	1
102.	375	Austin Western 410 Crane	5
103.	376	Austin Western 210 Crane	6
104.	377	O.M. Fork Lift.	7
105.	378	O.M. Truck mounted Crane	1
106.	378	Fiat 682 N3 W/Pagliero Lifting Platform	2

S.No.	Plant Group	Type of Plant	No. in use
107.	379	Hyster 125A Fork Lift	2
108.	383	Pettibone P. 30 Multi-crane	1
109.	384	Locatelli Grill 15 Hyraulic Crane	6
110.	385	Richier Tower Crane	15
111.	386	Atmo Gantry Crane	2
112.	387	Keinburg Gantry Crane	1
113.	387	Butters Derrick Crane (Second Hand)	1
114.	387	Loro and Parisini Derrick Crane DKV 60 (Second Hand)	1
115.	390	Joy Sullivan WN-102 1100 CFM Compressor	1
116.	391	Atlas ET6 CFM Compressor	2
117.	392	I.R. SLEI 1000 Compressor	32
118.	393	C.P. 600. Portable Compressor	4
119.	394	I.R. DLB 600 Portable Compressor	13
120.	396	I.R. DR. 250 Portable Compressor	17
121.	397	I.R. DB 125 Compressor	10
122.	398	Gardner Denver Compressor	1
123.	399	I.R. Type 30 Mod. 10-T Compressor	4
124.	400	I.R. ESH-1 Compressor	1
125.	402	Cifa Mod. VS8CS Compressor	1
126.	411	I.R. CM 150A/URD 474 Grawlair	24
127.	412	I.R. HCM/DHD Crawlmaster	6
128.	413	I.R. HHBE Hydrobooms	18
129.	415	I.R. Jumbo Frame	4
130.	416	Turmac Drilling Machine	1
131.	440	Landrover 88'' S.W. & Hard Top	68
132.	441	Landrover 88'' Pick Up	12
133.	442	Landrover 109'' S.W.	97
134.	443	Landrovr 109'' Pickup	69
135.	444	Toyota Corolla Sedan	25
136.	445	Toyota Corona Sedan	6
137.	446	Fiat 125 Sedan	60
138.	448	Renault R4 Sedan	30
139.	449	Citroen Ambulance	3
140.	450	Chevrolet Impala Sedan	2
141.	451	Chevrolet Biscyne Sedan	12
142.	452	Chevrolet Chassis and Cab	6

S.No.	Plant Group	Type of Plant	No. in use
143.	453	Chevrolet Pick Up	41
144.	454	Chevrolet Carryall	10
145.	455	Fiat 1100 Ambulance	1
146.	456/457	Citroen 2 CV Saloon	116
147.	458	Fiat 124 Sedan	90
148.	459	Volks Wagon Combi and Pick-up	8
149.	460	Citroen ID20 Air-conditioned Sedan	1
150.	462	Volks Wagon Saloon	1
151.	470	Cessna 1969-310P Aircraft	1
152.	580	Icoma Guniting Machine	19
153.	581	Torkret 208 Concrete Transporter	8
154.	581	Torkret PT 15 Concrete Transporter	4
155.	582	Midec LT. 1500 Concrete Transporter	4
156.	582	Midec LT. 500 Concrete Transporter	6
157.	584	Concrete Guniting Machine	3
158.	585	Concrete Double Drum Mixer	3
159.	586	G.D. Grouting Pump	2
160.	587	Rex 200 Concrete Transporter	1
161.	601	Concrete Mixer	8
162.	610	Mek Locomotive	1
163.	610	G.M. Locomotive	1
164.	612	Simplex Diesel Locomotive	8
165.	613	Badoni ABL Locomotive	3
166.	660	P.T.C. 20AI Pile Sinker	2
		(b) Static Plant	
1.	690	Caterpillar D 398A KVA Generator	1
2.	691	Pellizzari 300 KVA Generator	3
3.	692	Pellizzari 250 KVA Generator	2
4.	692	Rolls Royce 225 KVA Generator	1
5.	594	Struver 150 KVA Generator	2
6.	695	Caterpillar D 33A 75 KVA Generator	2
7.	696	Struver 60 KVA Generator	6
8.	697	Struver 30 KVA Generator	7
9.	807	Catania Shield for Tunnel	3
10.	884	Serem 1000 KVA Transformer	7

(c) Fixed Installations

(*i*) Material Processing Plants Right—Bank Borrow Areas Installation

Plant P 1 (*A, B & C*).—This plant is installed in the Baisak borrow area. It receives the alluvial material hauled by the bottom dumpers and crushes it to minus 12" size and then transfers the material on the conveyor belt which leads to Plant P-3.

Plant 2.—This plant is installed in the Topi borrow area which supplies the silt required for the impervious zone of the Dam Cros Section.

Plant P 3.—This plant processes the material coming from Plant P-1 through gradation control, reclassification and blending and transfers it on to the conveyor for transportation to the Dam. The combination of Plants P-1, P-2 and P-3 is capable of producing material suitable for all parts of the main dam with the exception of Zones A1, F and D. At Plant P-3 a central control is set up consisting of a computer and automatic and manual controls.

(*ii*) Right Bank Installations for Earth and Rock Processing

Plant P-4.—This plant is intended to receive the material coming from the required excavation on right bank and will produce 36" size Rip-Rap for Zone A1 and below 1" size rock for use in zones A2, A3, C1 and C3 of the Main Dam.

Plant P-5—This plant is intended to process the material from the required excavation on right bank. This plant will screen the material to separate it into sizes below and above 3". Material above 3" size will be used in zone C2 and below 3" size will be used in the Blanket and Weight Berm of the Main Dam.

Plant P-6—This plant is intended to process materials coming from right bank excavation primarily to produce material for zones F and D of the Main Dam.

Plant P-7—This plant is a stock-piling plant. It is used to stock-pile material in excess of the requirements during Stage I for refuse during Stage II.

(*iii*) Installations in Spillway Channel Area

Plant P-8—This plant is intended to process the material coming from the Spillway Channel excavation for use in Main Embankment. It will separate the rock into three different sizes namely 0-8", 8"-24" and above 24".

(*iv*) Left Bank Installation

Plant P-10—This plant is intended to process the rock coming from left bank excavation by separating it into three sizes *i.e.*, 0-12", 12"-48" and above 48".

Plant P-11—This plant is intended to process the rock and silt coming from left bank excavation, in particular from the Spillway Channel. It is a combined screening plant which will process the rock into four components *i.e.*, 0-3", 3"-24", 24"-48" and above 48".

(*v*) **Conveyor Belt System**

The receiving stations, processing plants and Main Embankment will be connected by a group of conveyors, which will bring materials to the loading stations from where they are discharged into dumpers for spreading on the embankment. A brief description of the conveyor system is given below :—

(*a*) **Baisak Gandaf Borrow Arrea**—Baisak Gandaf Borrow Area will be connected to the main processing, blending and control Plant P-3 by conveyor MC 1 having a length of 7,450 ft., belt width of 1600 m. m., and a speed of 18 ft./sec., with a capacity of 12,000 tons per hour.

(*b*) **Topi Gandaf Borrow Area**—Topi Gandaf Borrow Area will be linked to plant P-3 by Conveyor MC 2 having a length of 9,340 ft., belt width 1000 mm. and a speed of 12.5 ft./sec., with a capacity of 2,000 tons per hour.

(*c*) **Main Processing Blending and Control Plant P-3**—Main Processing Blending and Control Plant P-3 is linked to point H (located at the foot of the embankment) by a double line of conveyors, each having a length of 1,307 ft. One line (R conveyors : capacity 12000 t/h, width 1600 mm. and speed of 19 ft./sec.) will carry gravels 4" and upto 12" and the other line (S conveyors : capacity 2400 t/h, width 1000 mm. and speed 5 ft./sec. will carry B1 and B2 materials.

(*d*) **Plants P-4, P-5, P-6 and P-7**—Plants P-4, P-5, P-6 and P-7 are connected to the main conveyor line by MC-5. Material carried on MC-5 can either be sent to the main conveyor line and the dam for utilization, or to a loading hopper which will be used for impervious blanket, coffer dams or other fills. MC-5 has a length of 2,450 ft. belt width 1400 mm., speed 13.5 ft./sec. and a capacity of 4860 t/h.

(*e*) **The Steel Surge Silo at Point H**—The Steel Surge Silo at Point H is connected with the loading stations on the dam by a double line of MC-6 advanceable conveyors (each having capacity at the foot of dam 12000 t/h; capacity at the top of dam 6000 t/h; belt width mm. and belt speed 18 ft./sec.) A special system will be used to advance these as the dam rises.

(*vi*) **Concrete Aggregate Plant**

Plant P-13—The Contractor has installed an Aggregate Plant on the Right Bank downstream. It has a capacity of 450 tons per hour.

Round river boulder gravel is excavated from the river bed and given preliminary treatment in a mobile screening plant before delivery to Plant P-13. Aggregates are excavated at various points in the large Borrow Area at the river bed depending on the seasonal river levels. A 9 cu. yds. shovel fitted with drag-line bucket is used for the excavation. Shovel discharge materials straight into the loading hopper of the mobile screening plant. The hopper unloads the material through the grizzly width 12'' open. After passing through the 12'' grizzly the material is conveyed by a feeder with capacity of 670 tons per hour to a three-deck vibrating screen.

Plant P-13 is made up of three main sections :—

1. Primary screening and crushing plant.
2. Secondary screening and crushing plant.
3. Sand Plant.

Material from the mobile plant is unloaded into a 125 cu. yd. Concrete hopper and then sent to a surge pile. From there it is sent by conveyor to the primary screening tower and will classify material as plus 6'' for crushing, 3 to 6'' either to a surge pile to meet the requirements, or to crushers with plus 6''. The minus 3'' goes directly to the secondary screening and crushing tower.

Crushed aggregates are sent from the secondary plant to the rod mills for production of sand. The produced sand is pumped to the top of the sand tower. The sand so obtained is conveyed to the draining silos.

Plant P-13 has four aggregate surge piles. One for each class 3 to 6'', $1\frac{1}{2}$ to 3'', $\frac{1}{4}$ to $1\frac{1}{2}$'' 3/16 to $\frac{3}{4}$'' Each surge pile has a live volume of 12,000 tons. Sand is stocked in 8 silos of 500 cu. m. each. The initial raw material surge pile has a capacity of 15,000 tons.

Reclaiming is done through air-operated openings loading into 35 ton semi trailers which will then transport the aggregates to the concrete production plant.

(*vii*) **Concrete Batching Plant P-14 & P-16**

Tarbela Contractors have installed 3 Concrete Plants, two of which (P-14 & 15) are on the Right Bank and one P-16 is on the Left Bank.

The capacity of each Plant is 210 cu. yds. per hour.

Thirty-five tons semi-trailers unload aggregate from Aggregate Plant P-13 into a concrete hopper with a capacity of 90 cu. yds. From there material is conveyed to batching tower bins.

Sand from P-13 is conveyed into a storage silo and from there to a batching tower bin.

Each plant has 4 cement silos with a capacity of 2,000 tons each. 30 ton semi-trailers unloaded by air operated equipment at a 30 PSI pressure. Cement from these cement silos is sent to a batching tower bin by a screw system electrically controlled by a centralized panel board.

The batching and mixing tower (5600 CIFA) has four batchers for aggregate, one batcher for cement, one batcher for sand, one batcher for water and ice, two batchers for admixtures. Four concrete mixers (Winget Koering) with a capacity of 2.6 cu. yds. each vibrating concrete are installed. All operations are controller manually, semi-automatically or automatically.

The batching tower is insulated and is air-conditioned.

(*d*) **Drilling and Grouting Sub-Contractors Equipment (Cementation)**

Plant Working	Plant as Stand by
2 — Becker 440 Percussion drills	1 — Puller unit
2 — XC-90 Rotary drills	3 — CP—653
2 — Track drills	2 — Hausherrs
6 — Wagon drills	1 — Backer—-180
6 — CP - 65 Rotary drills	
12 — Grout Plants	
1 — Track Hausher	
1 — Winter Weiss rotary drill	

(*e*) Electrical and Mechanical Equipment (Sub-Contractor Hidromontaza)

Mobile Plant	Static Plant
1. Fork Lift Truck V-5-C 5 ton	1. Electric Hosits 10 ton 2 Pcs.
2. Truck TAM 5000 5 ton	2. Electric Hoists 5 ton 2 Pcs.
3. One Axle Trailor AP-5-10 5 ton	3. Electric Hoists 3 ton 3 Pcs.
4. Compressor set 10M′ 5 ATM	4. Electric welding 300 A 6 Pcs.
5. Compressor set 10M′ 3 6 ATM	5. High Frequency Converter 3 Pcs.
6. Truck Crane 70 ton	6. High Frequency Grinder 10 Pcs.
7. Truck Crane 15 ton	7. Drill upto 32 m.m. 10 Pcs.
8. Trukcs 14 Nos.	8. Frame type Grinder 1 Pc.
9. High Frequency converters 5 Nos.	9. Column type Drill upto 32 mm. 1 Pc.
	10. Hydraulic Jacks 200, 100 & 50 ton 1 each.
	11. Electric welding sets 4 Pcs.
	12. Blacksmith hearth 1 Pc.
	13. Diesel Welding Sets 2 Pcs
	14. Theodlite 1 No.

(*f*) **Steel liner Equipment (nominated Sub-contractor Chicago Bridge)**

SP-No.	Description	SP No.	Description
SP-559	Hoists	SP-552	20 Welder Units
SP-531	Crane	SP-558	6 Welder Units
SP-532	Crane	SP-550	Oxygen Plant
SP-533	2 Cranes	SP-553	10 Welder Units
SP-535	Hoists	SP-554	3 A.G.W.S.
SP-536	Acct. Generator	SP-560	Oxygen Trailer
SP-541	Trailor	SP-530	Maintowoc Crane
SP-547	Murphy Generators	SP-548	3 Air Compressors
SP-551	Air Compressors	SP-538	834 Tractors
SP-552	7 Welder Units	SP-572	Gantry Burner
SP-557	D-8 Tractors	SP-539	Truck
SP-590	2 Trailors	SP-540	Truck
SP-339	2 Trucks	SP-540	Truck Parts
SP-534	Plate Roll	SP-556	Wire Rope

Annexure 2

Zone A2—Free Draining Fill

Material Size	Per cent Finer than, by Weight
24 inch	100
12 inch	50-100
6 inch	0-70
3 inch	0-40
No. 4	0-10

Zone A3—Granular Fill

Material Size	Per cent Finer than, by Weight
24 inch	100
12 inch	70-100
6 inch	50-100
3 inch	30-100
No. 4	0-45
No. 200	0-12

Zone B1 Impervious Core

Material Size	Per cent Finer than, by Weight
6 inch	100
3 inch	85-100
1½ Inch	70-95
¾ inch	65-90
No. 4	45-80
No. 40	30-55
No. 200	20-40

Zone B2—Impervious Blanket

Material Size	Per cent Finer than, by Weight		
	Material (1)	Material (2)	Material (3)
12 inch	100	100	
6 inch	90-100	100	
3 inch	80-100	100	
1½ inch	70-95	75-100	
¾ inch	65-90	65-90	
No. 4	50-80	50-80	95-100
No. 40	30-60	25-60	70-100
No. 200	20-50	15-50	50-100

Zone C1 Central Zone

Material Size	Well Graded Block	Per cent Finer than, by Weight Boulder-Gravel-Sand
12 inch	100	100
6 inch	75-100	70-100
3 inch	55-100	30-100
1½ inch	40-100	0-100
No. 4	15-70	0-70
No. 40	0-30	0-30
No. 200	0-12	0-12

Zone C2—Downstream Shell

Material Size	Per cent Finer than, by Weight
24 inch	100
12 inch	70-100
6 inch	40-100
3 inch	15-100
1½ inch	0-90
No. 4	0-65
No. 200	0-12

Zone C3—Free Draining Slope Protection

Material Size	Per cent Finer than, by Weight
24 inch	100
12 inch	60-100
6 inch	40-70
3 inch	15-50
No. 4	0-5

Zone D—Drainage Zone

Material Size	Per cent Finer than, by Weight
12 inch	100
6 inch	65-100
3 inch	35-100
1½ inch	0-60
¾ inch	0-30
No. 4	0-5

Zone F—Foundation Fill

Material Size	Per cent Finer than, by Weight
6 inch	100
3 inch	100
1½ inch	85-100
¾ inch	70-100
No. 4	40-50
No. 10	25-50
No. 40	0-15
No. 200	0-5

Zone T—Transition

Material Size	Per cent Finer than, by Weight
12 inch	100
6 inch	60-100
3 inch	45-100
1½ inch	35-80
No. 4	15-50
No. 40	0-30
No. 200	0-15

TARBELA DAM PROJECT
CONCRETE MIX PROPORTIONS

Annexure 3

S. No.	Mix. Reference	Batch Vol. Cu. Meter	Slump in	Water Cement, Ratio	Water	Cement	Sand	3/4"	1½"	3"	6"	Plasti-ment	Reqd. Air%	Remarks
1.	M/535	2	Upto 6"	0.55	590	1070	2780	...	...	...	...		5	
2.	B. 1½/335	2	Upto 3"	0.42	280	670	1310	1190	1500	...	...		5	
3.	B 3/280	2	,,	0.42	235	560	1100	800	1100	1330	...		5*	
4.	C1½/290	2	,,	0.49	282	580	1390	1180	1510	...	...		5	
5.	C3/245	2	,,	0.49	238	490	1175	770	1070	1315	...		5*	
6.	C6/210	2	,,	0.49	202	420	970	650	800	1030	1160		5*	
7.	D¾/285	2	,,	0.56	320	570	1560	2410	...	...	...	Use diluted solution at 1% by weight of cement	5	
8.	D1½/255	2	,,	0.55	280	510	1455	1210	1500	...	...		5	
9.	D3/205	2	,,	0.55	226	410	1245	800	1060	1340	...		5*	
10.	D6/180	2	,,	0.55	198	360	1025	655	795	1020	1165		5*	
11.	E1½/220	2	,,	0.63	278	440	1490	1225	1525	...	...		5	
12.	E3/185	2	,,	0.63	230	370	1275	800	1070	1355	...		5*	
13.	E6/160	2	,,	0.64	198	320	1045	650	795	1025	1165		5*	
14.	F1½/213	2	,,	0.69	295	426	1480	1265	1465	...	...		5	
15.	F3/170	2	,,	0.70	235	340	1316	820	1090	1325	...		5*	
16.	F6/140	2	,,	0.70	195	280	1070	660	805	1035	1160		5*	

*Slump and Air content are of concrete after screening through 1½" sieve.

Notes :
1. Aggregates taken as saturated surface dry condition.
2. Adjust for free water in the aggregates.
3. Concentrated solution dosage of plastiment liquid is 2 oz. for 94 lbs. of cement and for BV-100 powder dosage is 0.2% by weight of cement.
4. A.E.A. to be adjusted to give desired air content ∓1%.

Class B indicates 5000 P.S.I. Concrete
Class C indicates 4000 P.S.I. Concrete.
Class D indicates 3000 P.S.I. Concrete.
Class E indicates 2500 P.S.I. Concrete.
Class F indicates 2000 P.S.I. Concrete.

Annexure 3—(*Contd.*)

TARBELA DAM PROJECT
CONCRETE MIX PROPORTIONS

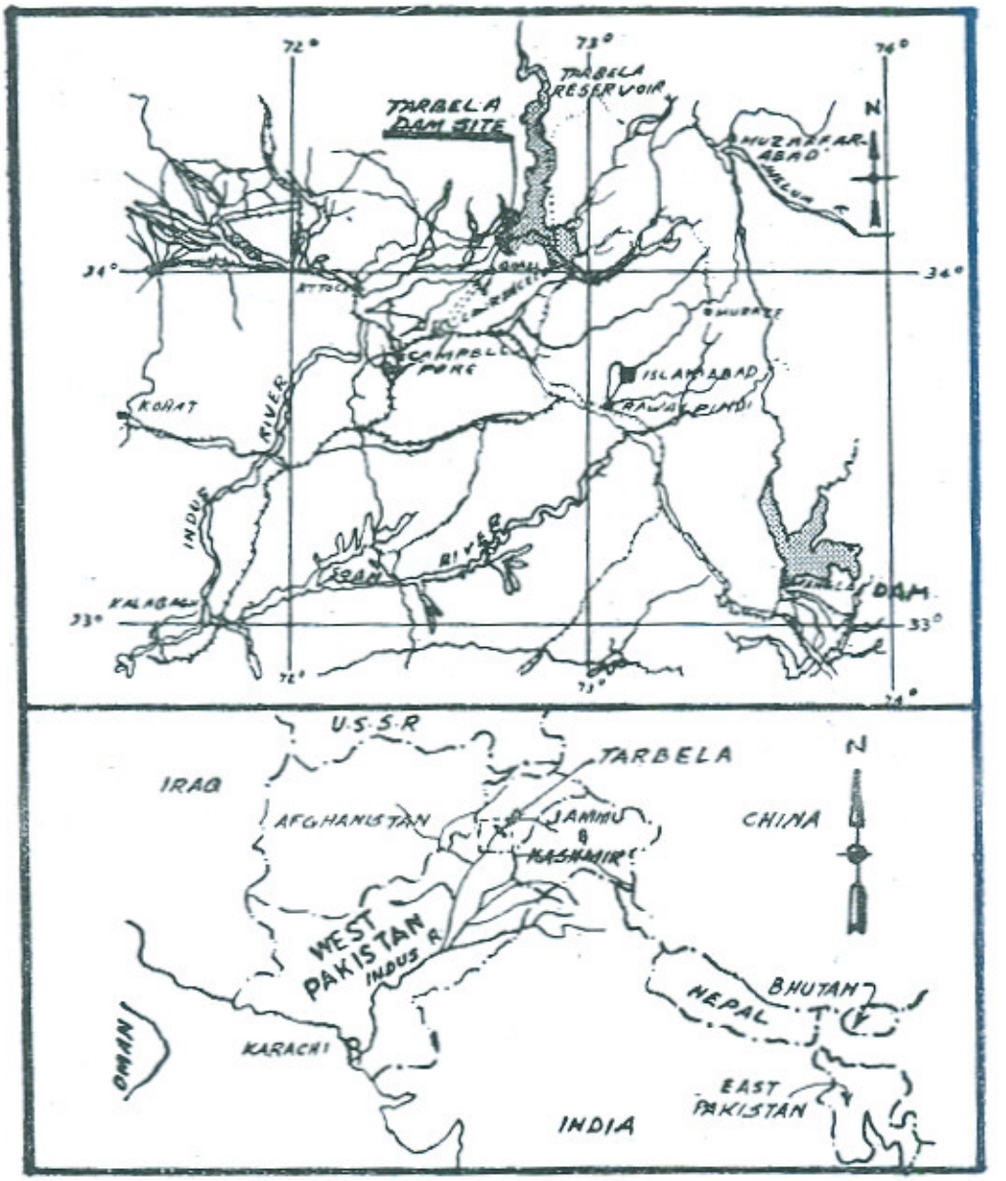
S. No.	Mix. Reference	Batch Vol. Cu. Meter	Slump in	Water Cement, Ratio	Water	Cement	Sand	3/4"	11/2"	3"	6'	Plasti-ment	Reqd. Air%	Remarks
1.	M/400	1	...	0.50	Added at site	400	1800	...	...	...	...	...	...	Gunite for contact surfaces
2.	M/440	1	...	0.50	,,	440	1760	...	...	...	...	...	...	Gunite for slope protection
3.	B1½/360	2	upto 5'	0.44	316	720	1420	1150	1375	...	...		3	Pumpcrete Mix.
4.	C3/4/425	2	,,	0.47	400	850	1620	2145	...	...	...	Use diluted solution at 1% by weight of cement	5	Blockout concrete
5.	C3/4/315	2	up o 2"	050	315	730	1590	2380	...	..	..		4	Present Stoplogs.
6.	C1½/300	2	upto 3½ '	0.49	295	600	1480	1140	1480	...	...		5	Pumpcrete Mix.
7.	C1½/325	2	upto 4 '	0.48	310	650	1500	1120	1370	...	...		4	Pumpcrete Mix.
8.	C3/300	2	upto 4"	0.48	290	600	1410	760	1015	1060	...		3*	Pumpcrete Mix.
9.	D1½/310	2	upto 5"	0.50	310	620	1465	1130	1450	...	...		4	Pumpcrete Mix.

*Slump and Air content are of concrete after screening through 1½" seive.

Notes : 1. Meximum allowable W/C ratio when using Sulphate Resting Cement is 0.50
2. Aggregates taken as saturated surface dry condition.
3. Adjust for free water in the aggregates.
4. Concentrated solution dosage of plastiment liquid is 2 oz. for 94 lbs. of cement and for BV-100 powder dosage is 0.2% by weight of cement.
5. A.E.A. to be adjusted to give desired air content ∓ 1%.

Class B indicates 5000 P.S.I. Concrete.
Class C indicates 4000 P.S.I. Concrete.
Class D indicates 3000 P.S.I. Concrete.
Class E indicates 2500 P.S.I. Concrete.
Class F indicates 2000 P.S.I. Concrete.

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TARBELA LOCATION MAP

Fig. 1—Tarbela Location Map.

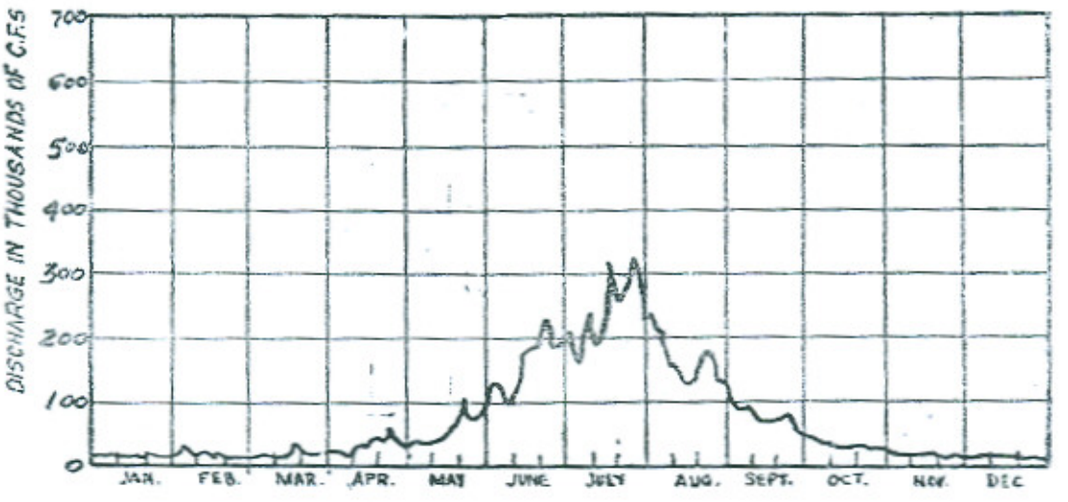


Fig. 2.—Typical Hydrograph of River Indus at Darband.

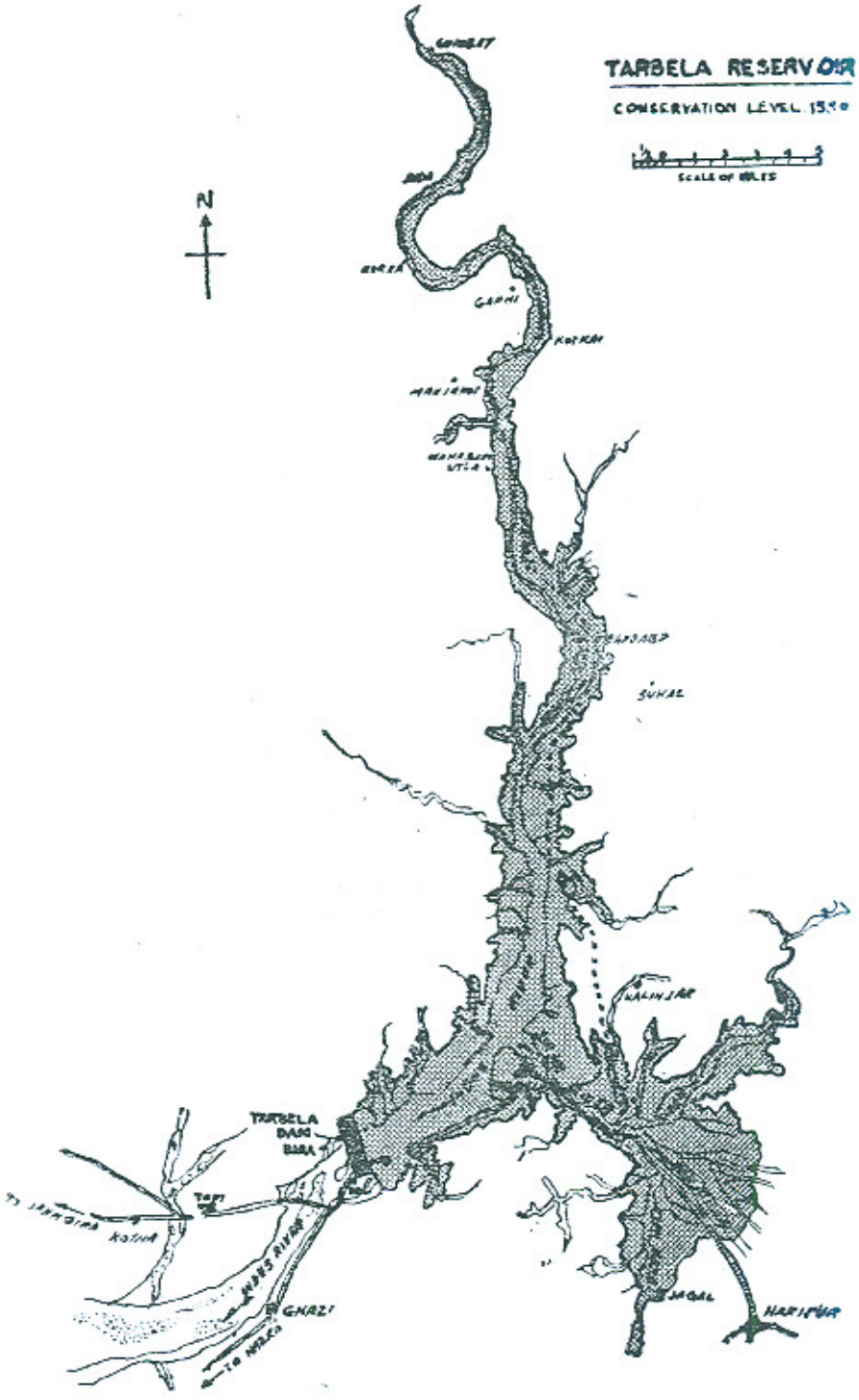


Fig. 3.—Tarbela Reservoir.

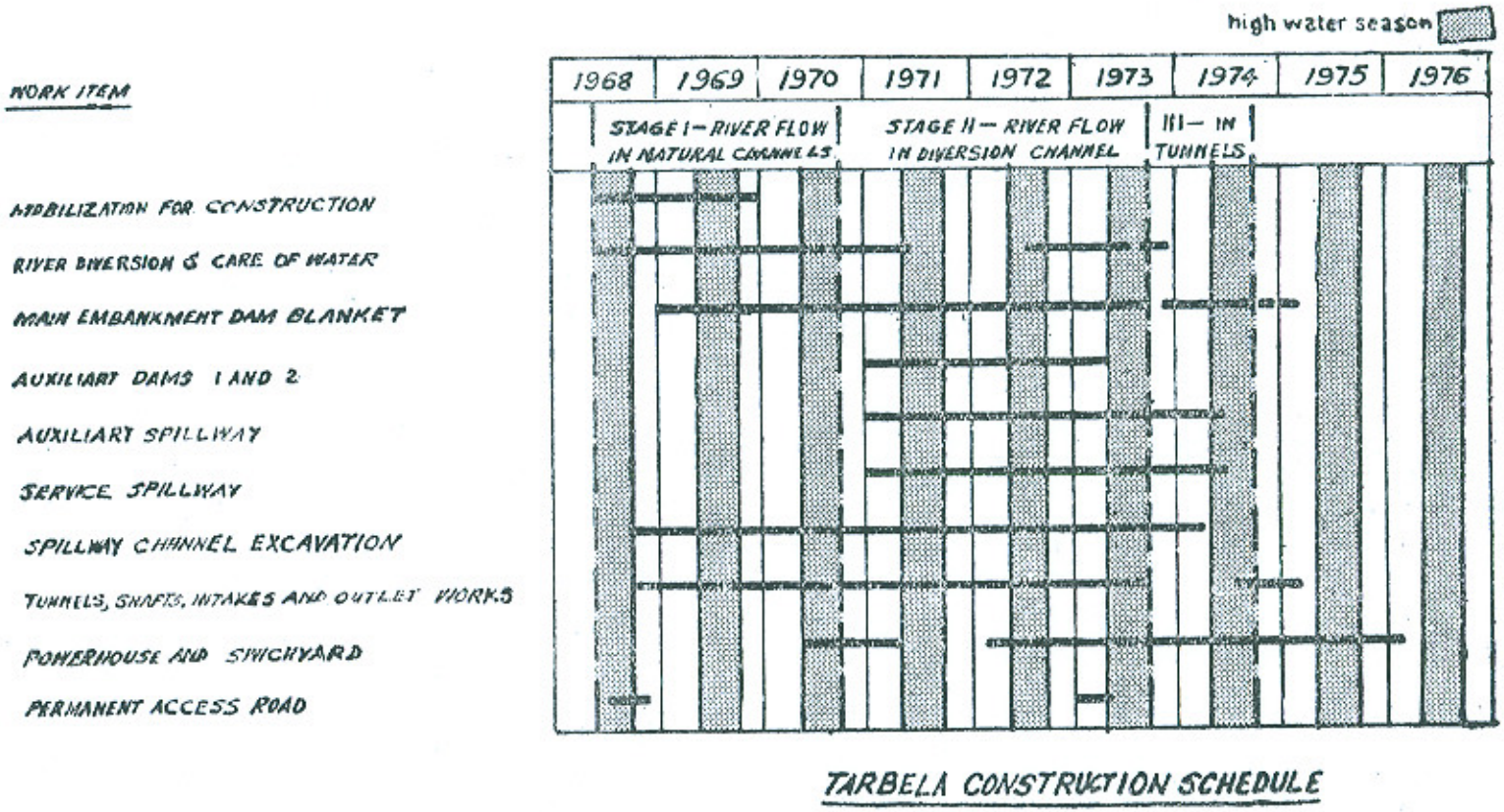


Fig. 4.—Tarbela Construction Schedule.

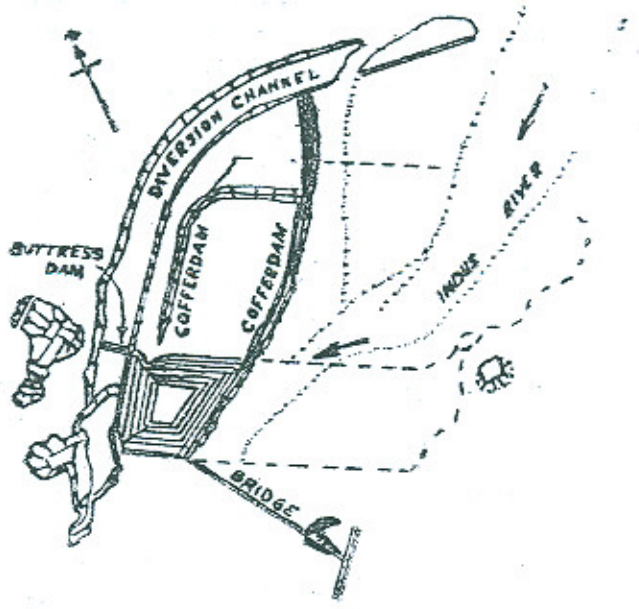


Fig. 5.—Stage 1 Construction.

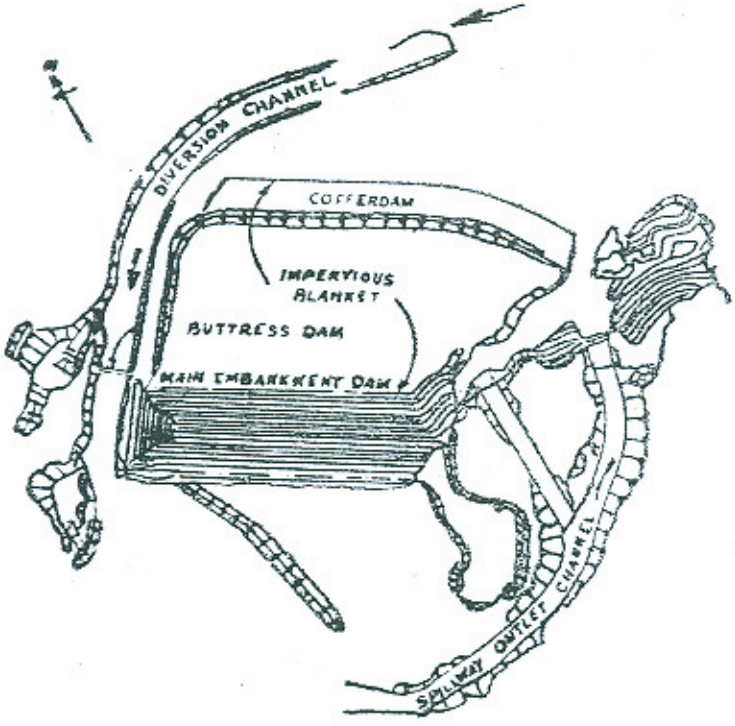


Fig. 6.—Stage II Construction.

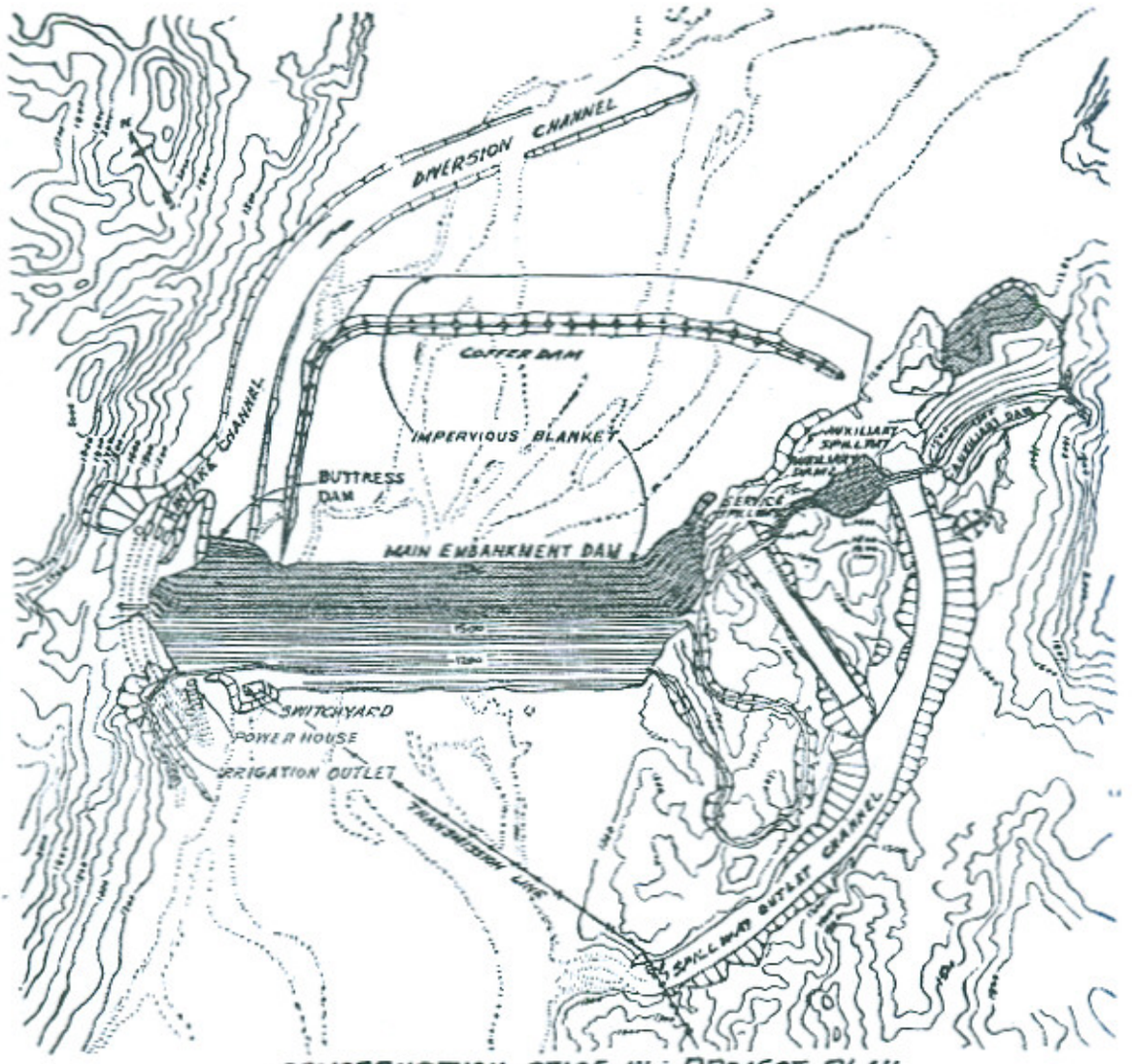


Fig. 7.—Stage III Construction—Project Plan.

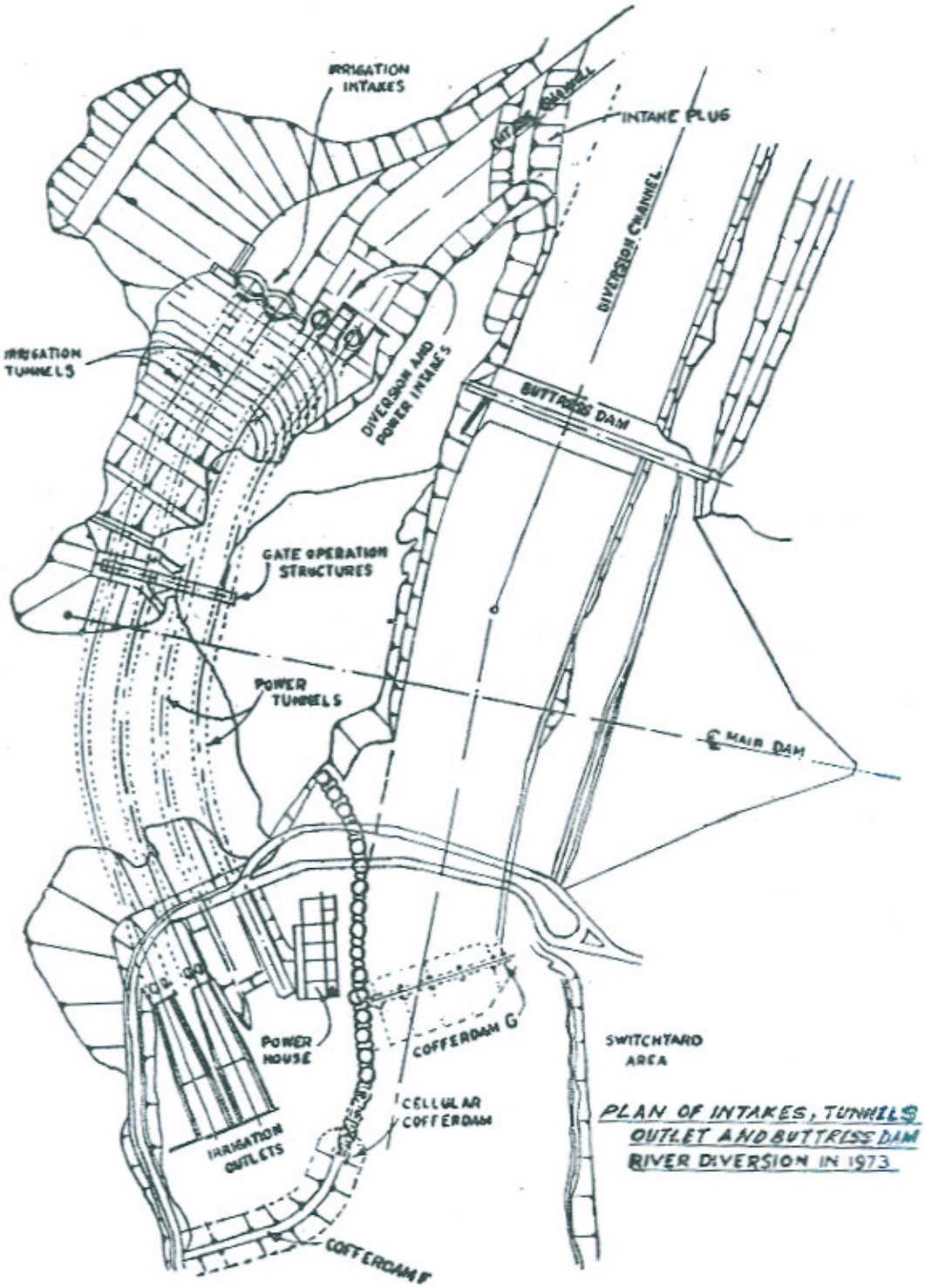


Fig. 8.—Plan of Intake Tunnels, Outlet and Buttress Dam.

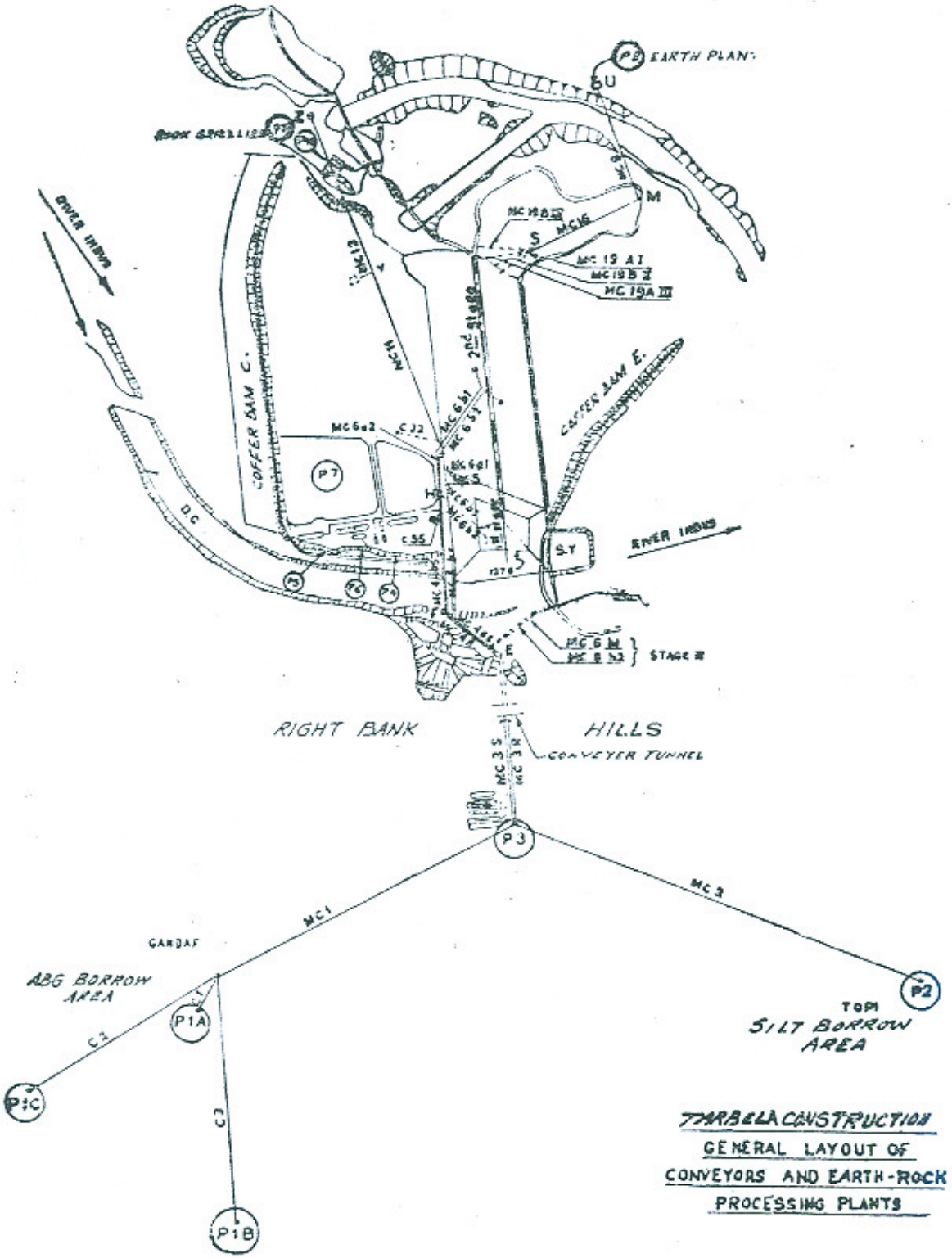


Fig. 9.—Tarbela Construction General Layout of Conveyor and Earth-Rock Processing Plants.

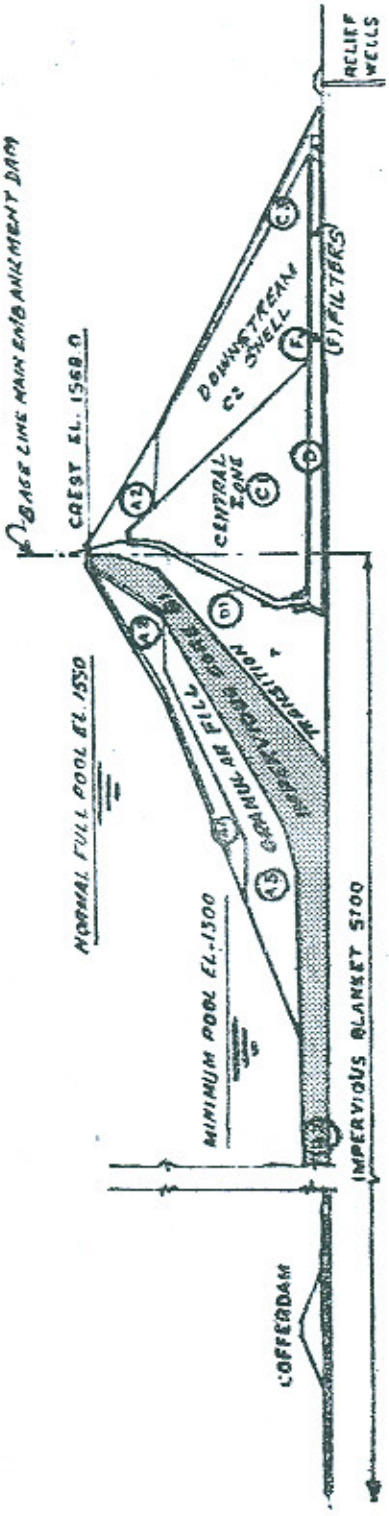


Fig. 10.—Main Embankment Dam—Typical Section.

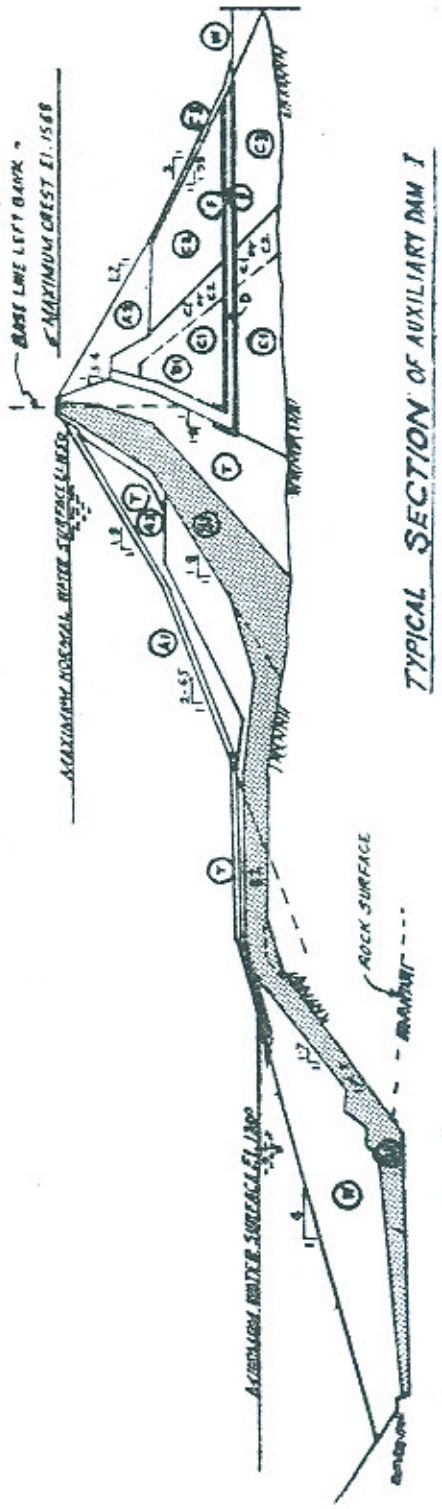
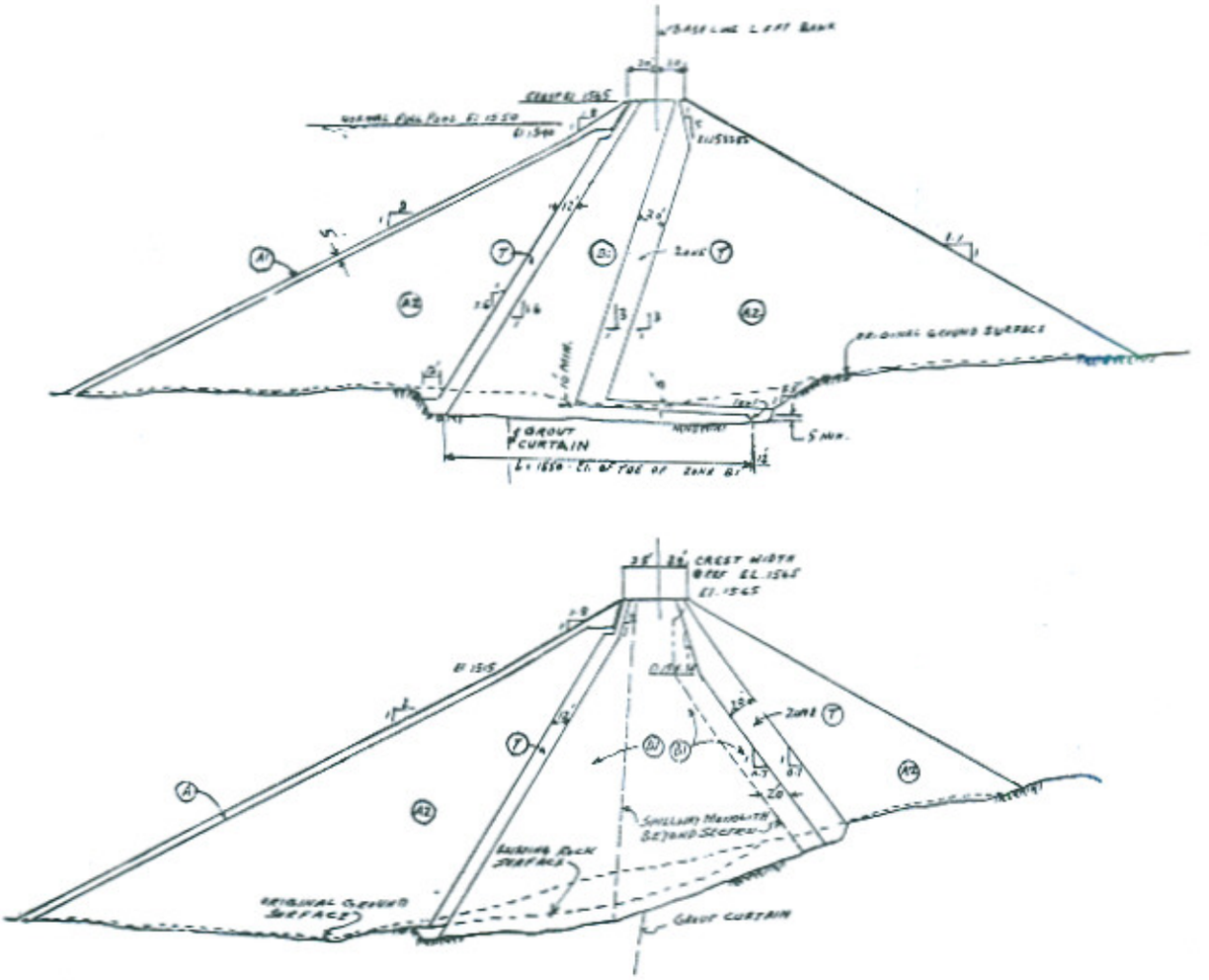
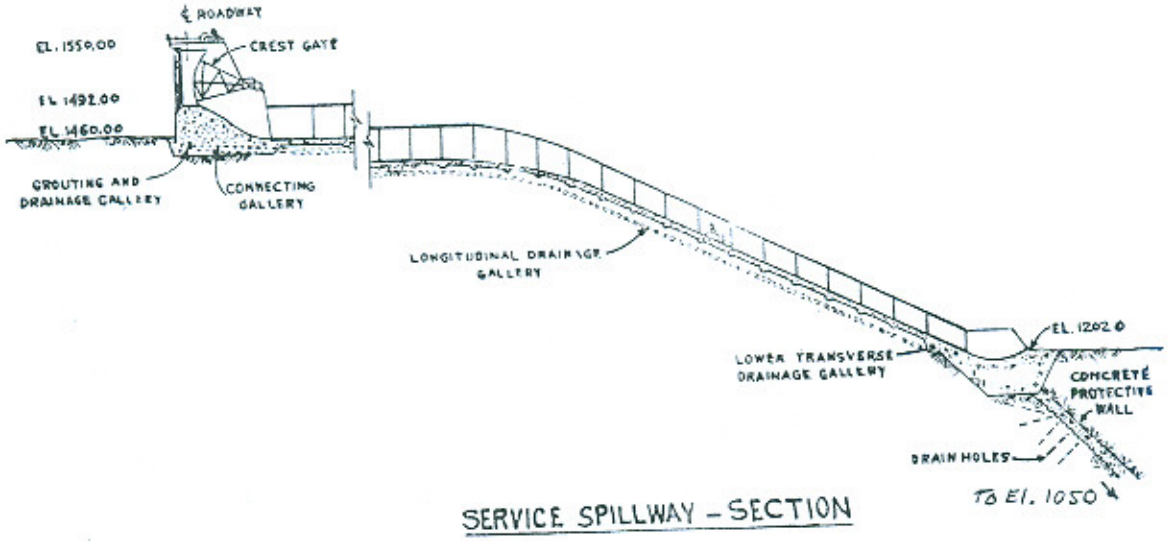


Fig. 11.—Typical Section of Anxiliary Dam 1.

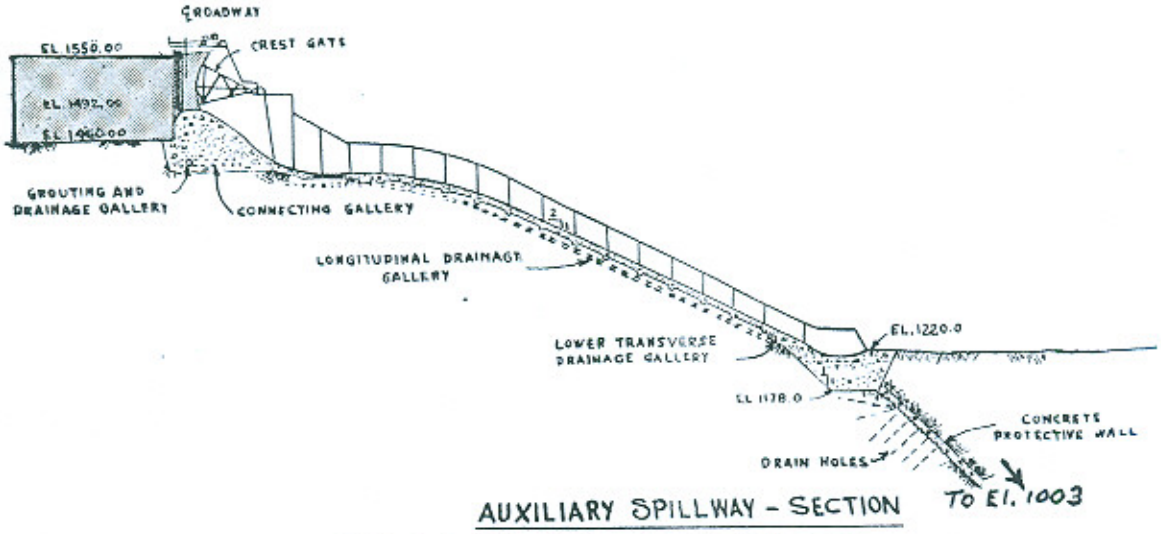


TIPICAL SECTIONS OF AUXILIARY DAM 2

Fig. 12.—Typical Section of Anxiliary Dam II.

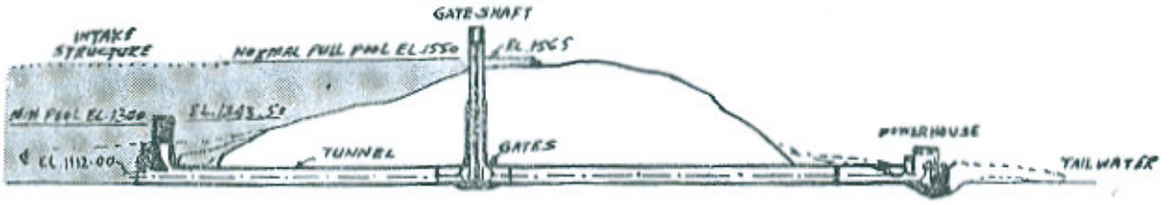


SERVICE SPILLWAY – SECTION

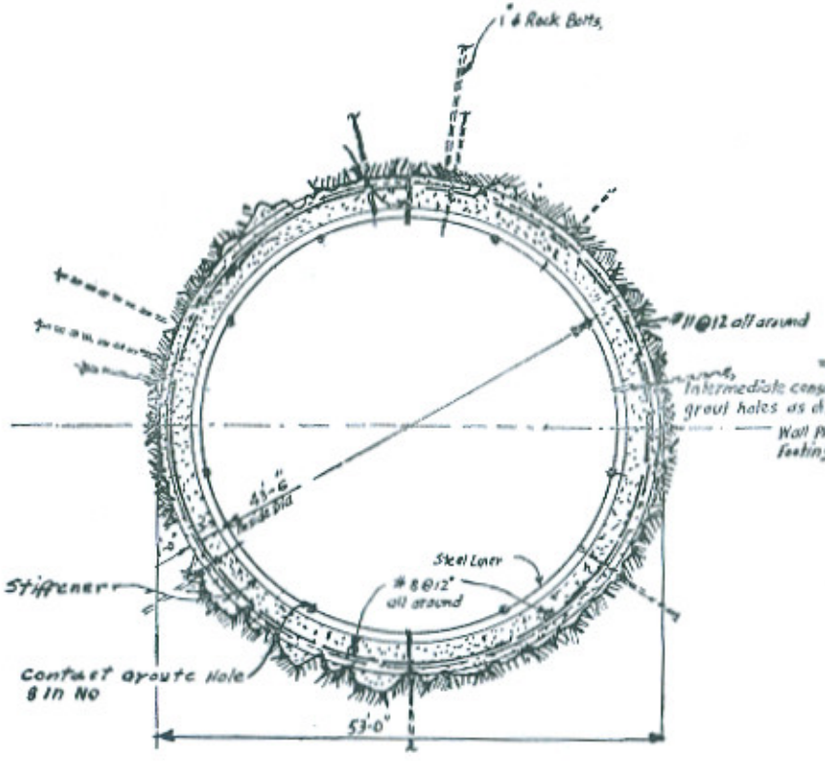


AUXILIARY SPILLWAY – SECTION

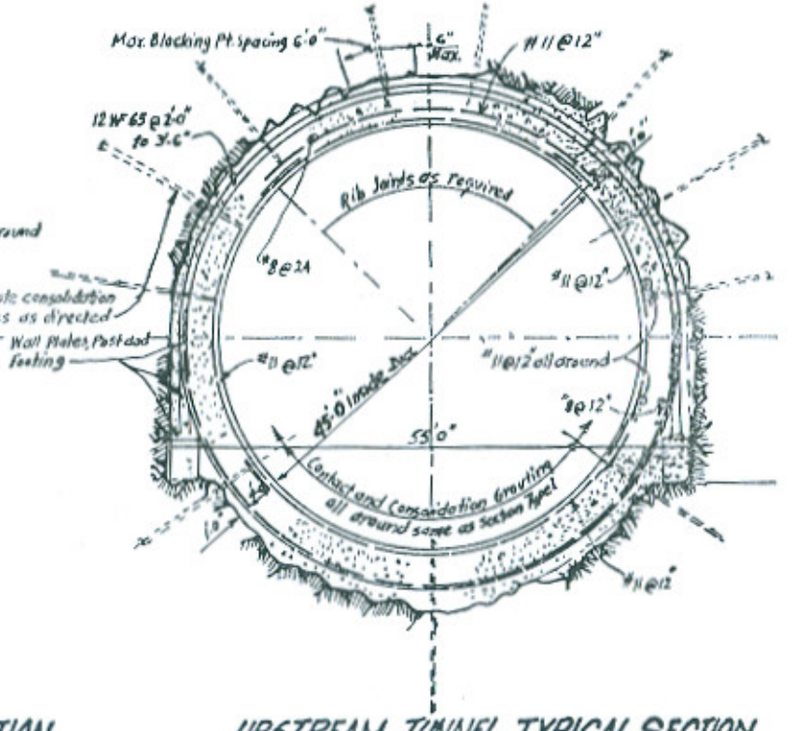
Fig. 13.—Service Spillway Section and Auxiliary Spillway Section.



TUNNEL – TYPICAL PROFILE



DOWNSTREAM TUNNEL TYPICAL SECTION



UPSTREAM TUNNEL TYPICAL SECTION

Fig. 14.—Tunnel Typical Profile and Typical Sections.

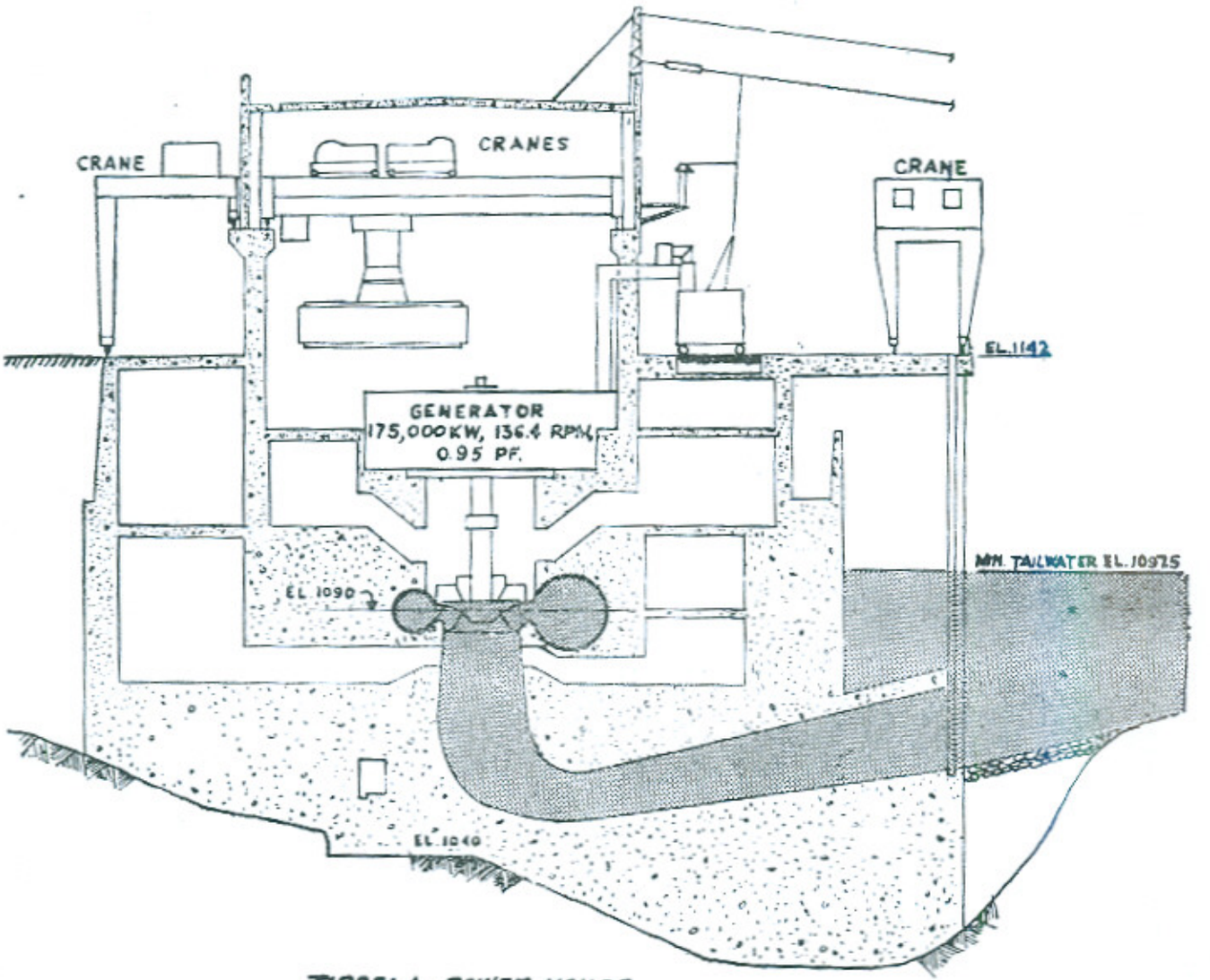


Fig. 15.—Tarbela Power House Generating Unit Sections.

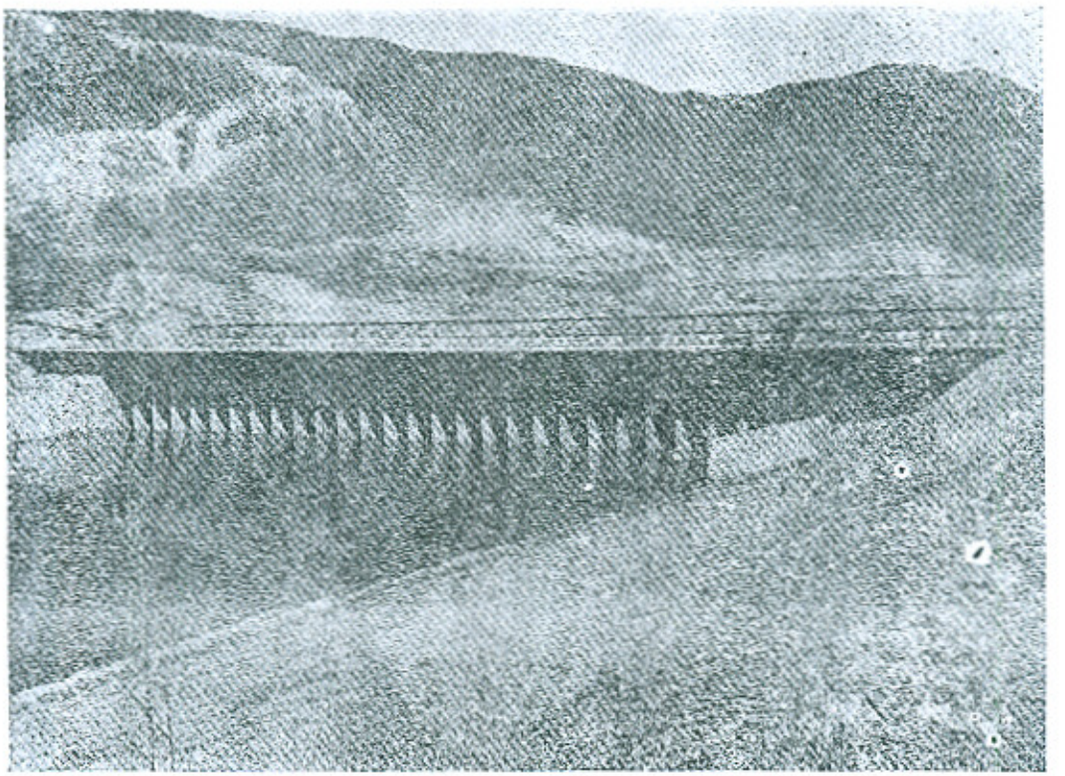


Photo No. 1.—A view of Buttress Dam and Diversion Channel.

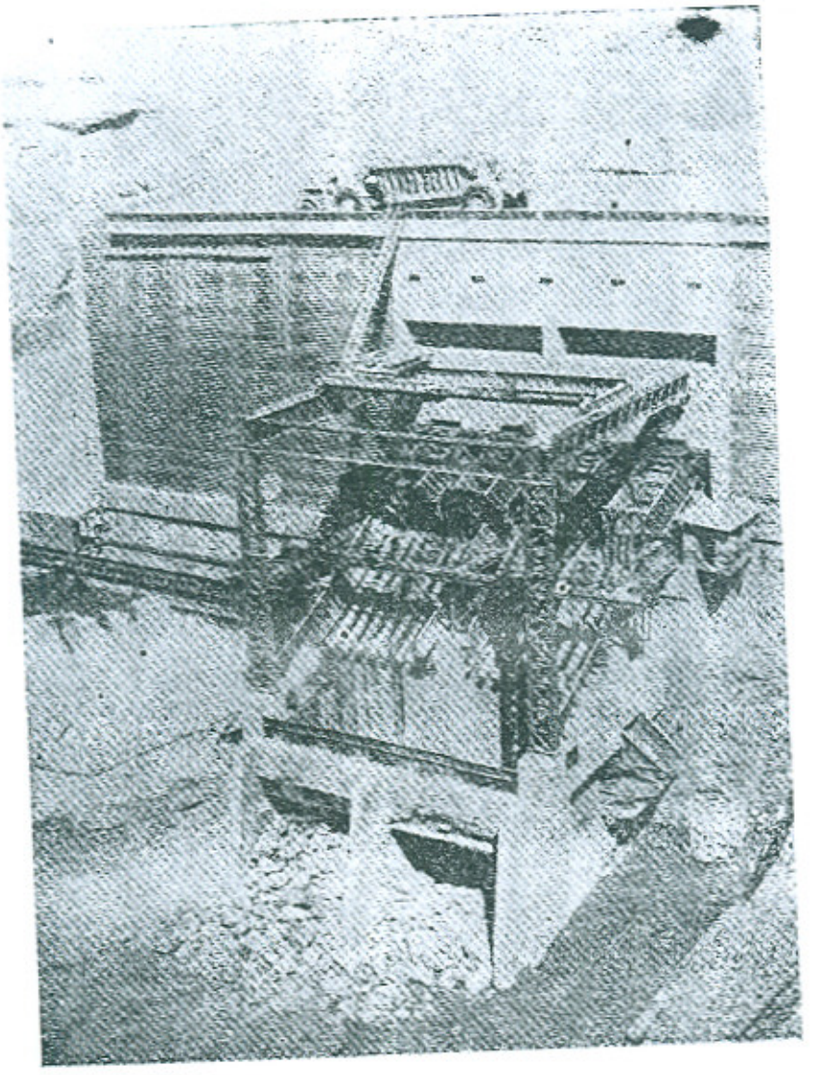


Photo No. 2.—P-8 Earth Processing Plant on Left Bank.

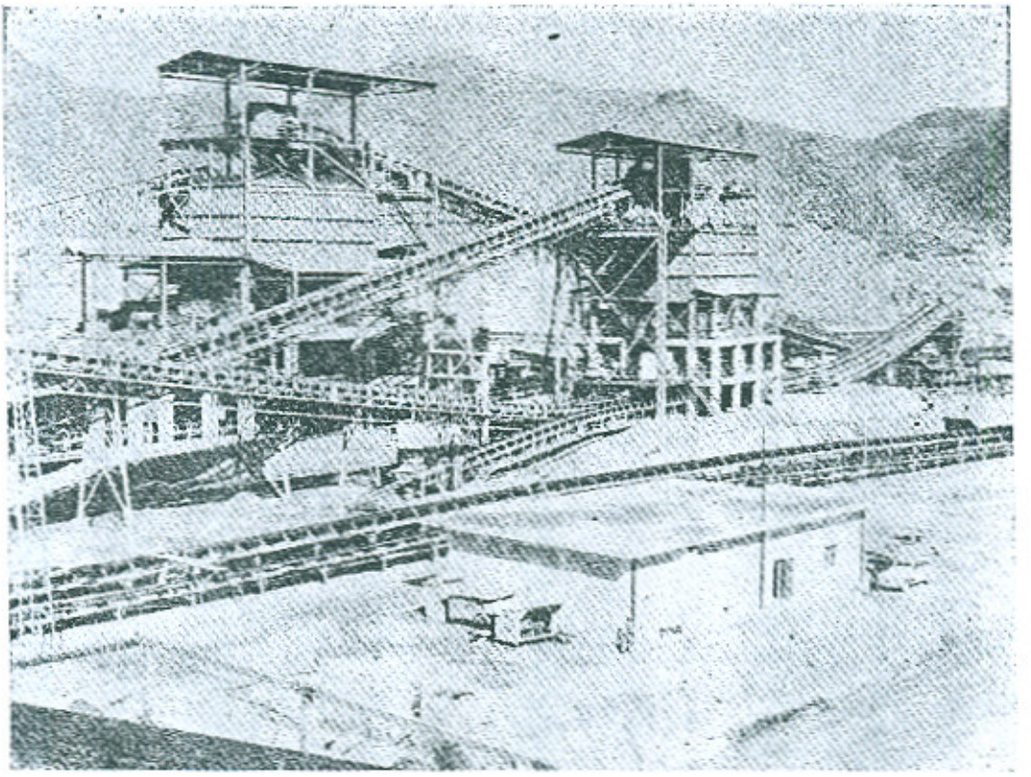


Photo No. 3.—P-3 Central Processing Plant at Gandaf.

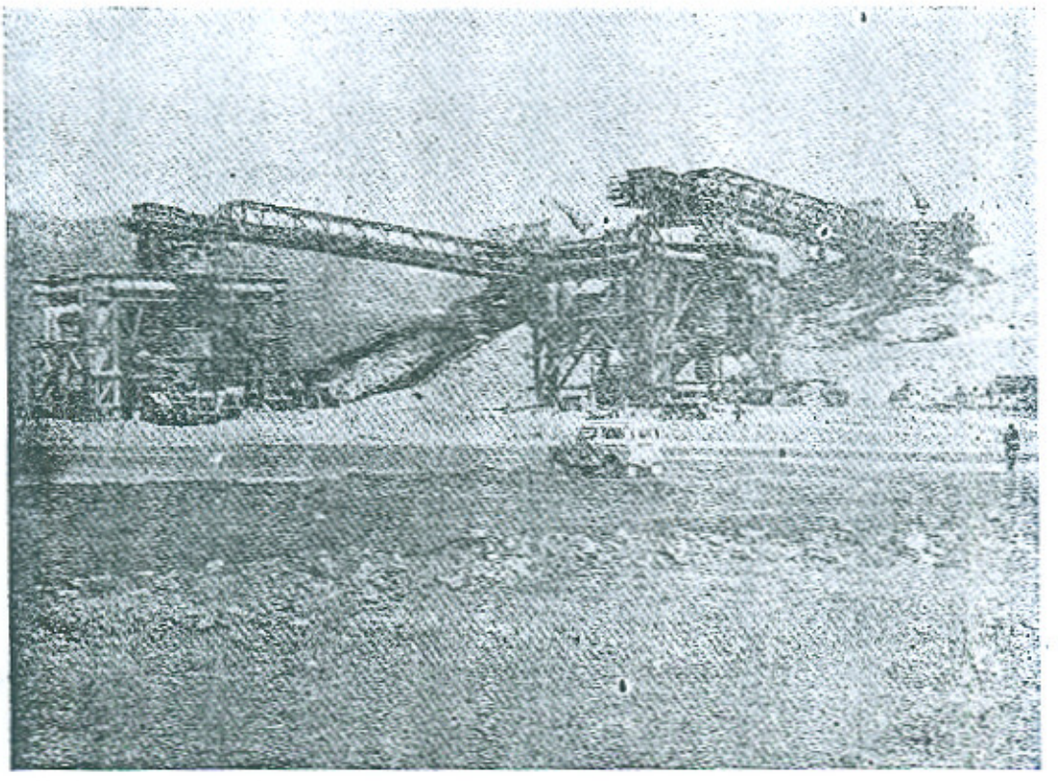


Photo No. 4.—Two Hoppers on Main Dam. Trucks being loaded from Hoppers.

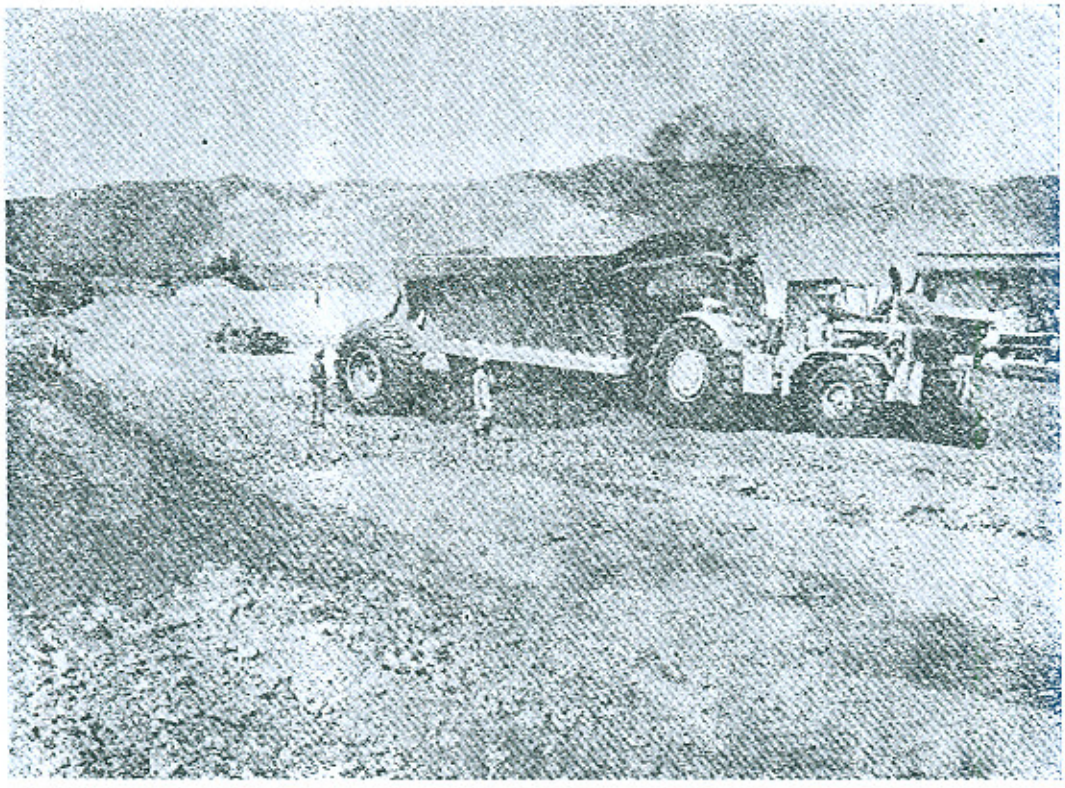


Photo No. 5.—A view of Main Dam Construction. 110 Ton Belly Dumper unloading. Compactors are also seen.

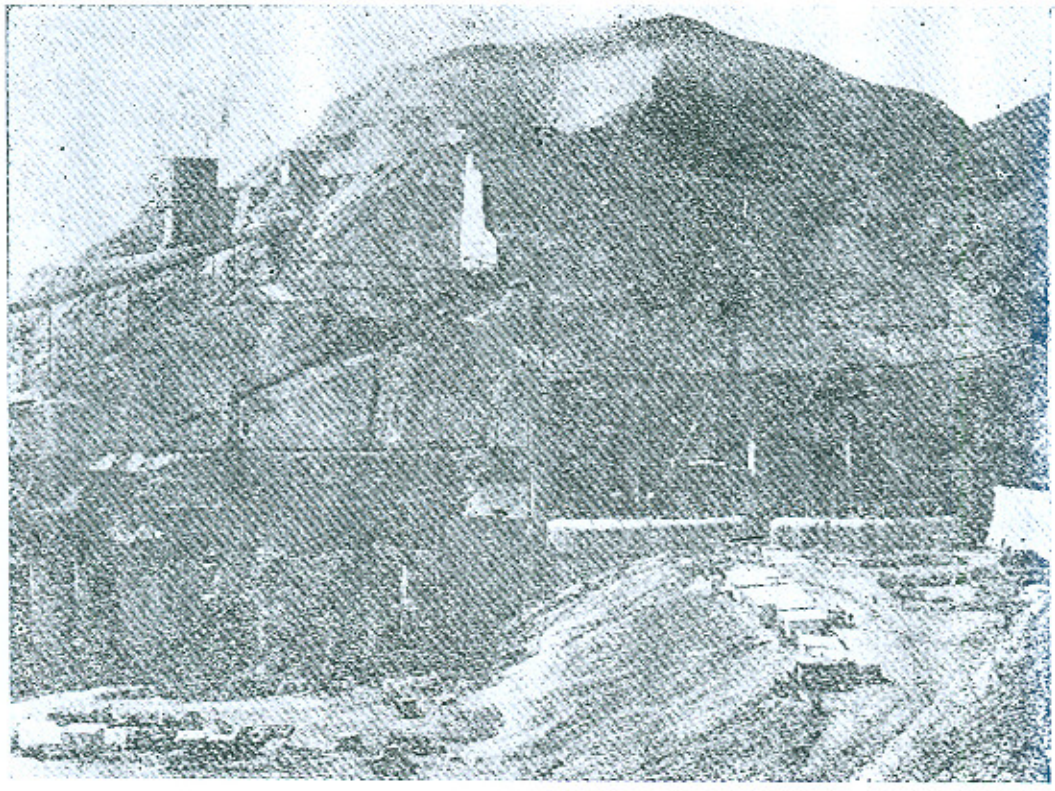


Photo No. 6.—Inlet area works. Gate Shafts are also seen.

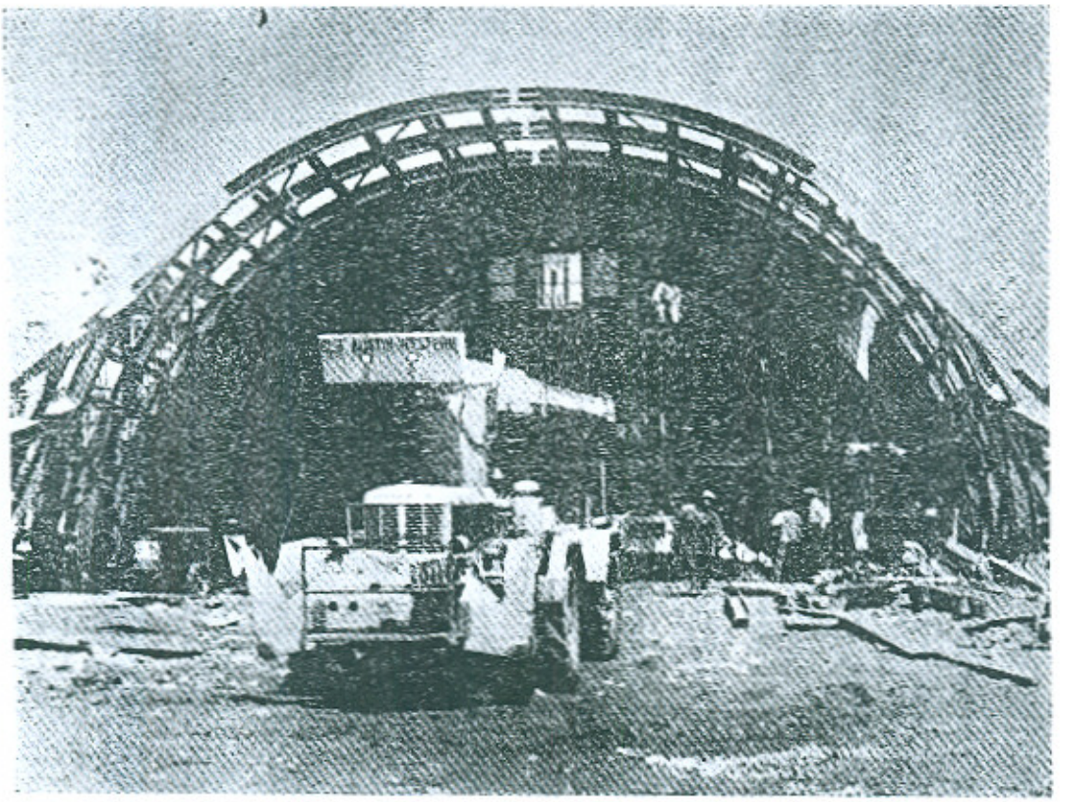


Photo No. 7.—Upper heading of Tunnel Excavation with shield.

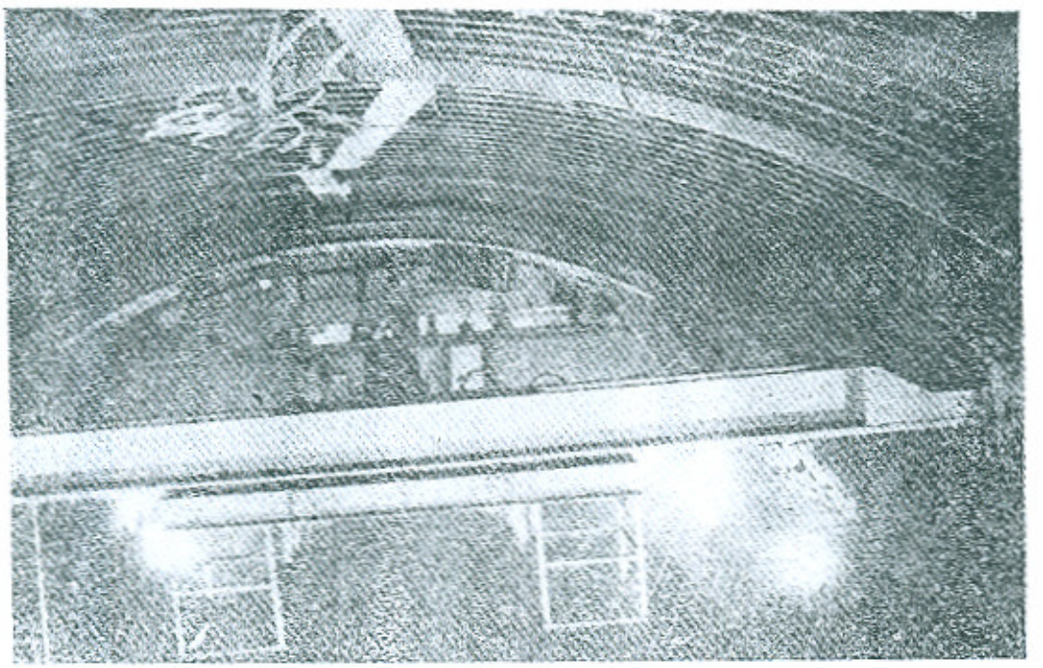


Photo No. 8.—Upstream Tunnel Lining invrt work in progress.

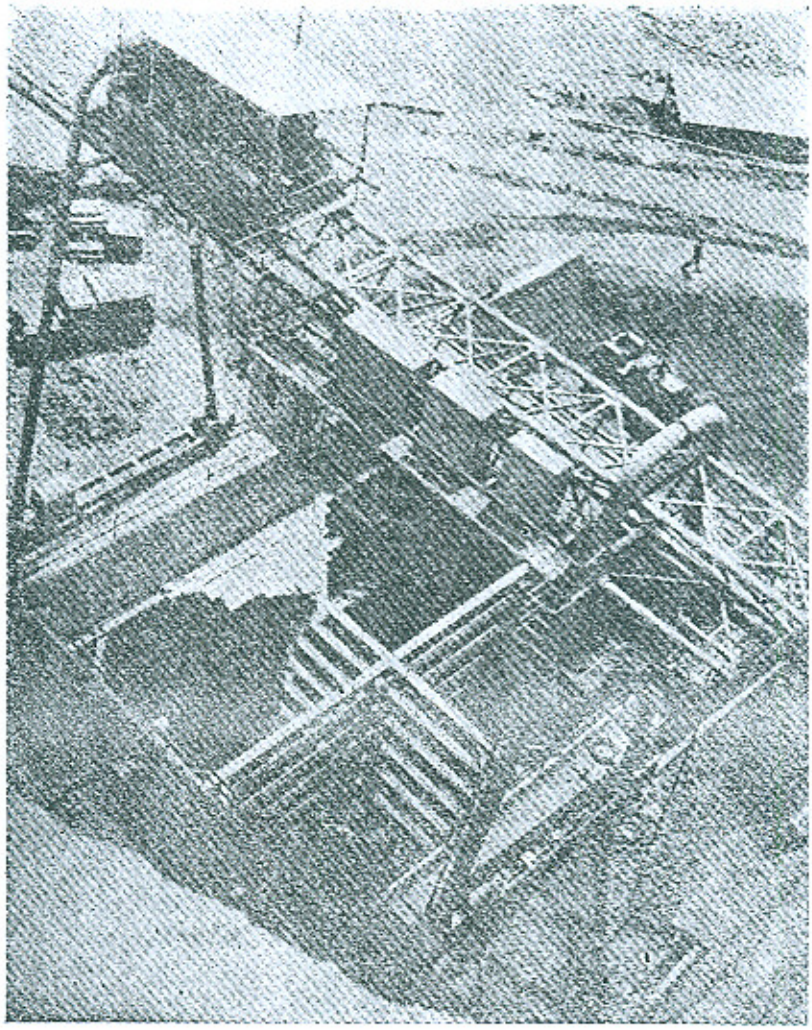


Photo No. 9.—Gate Shaft No. 1 in Construction.

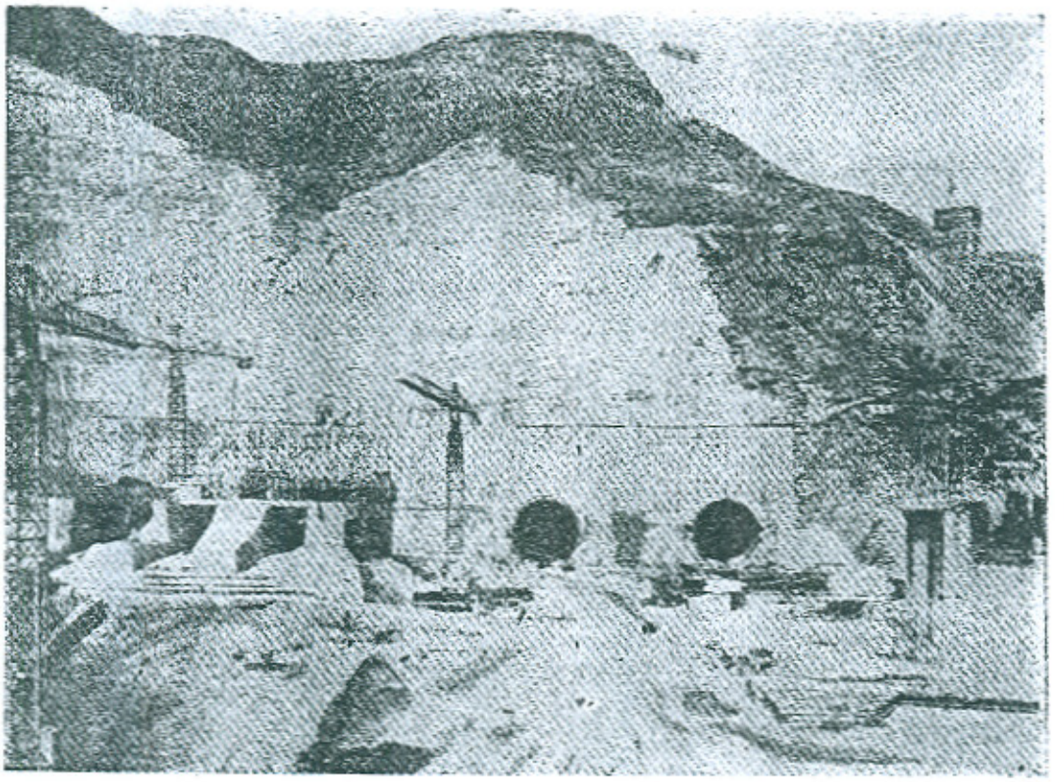


Photo No. 10.—Construction of Outlet Structures.

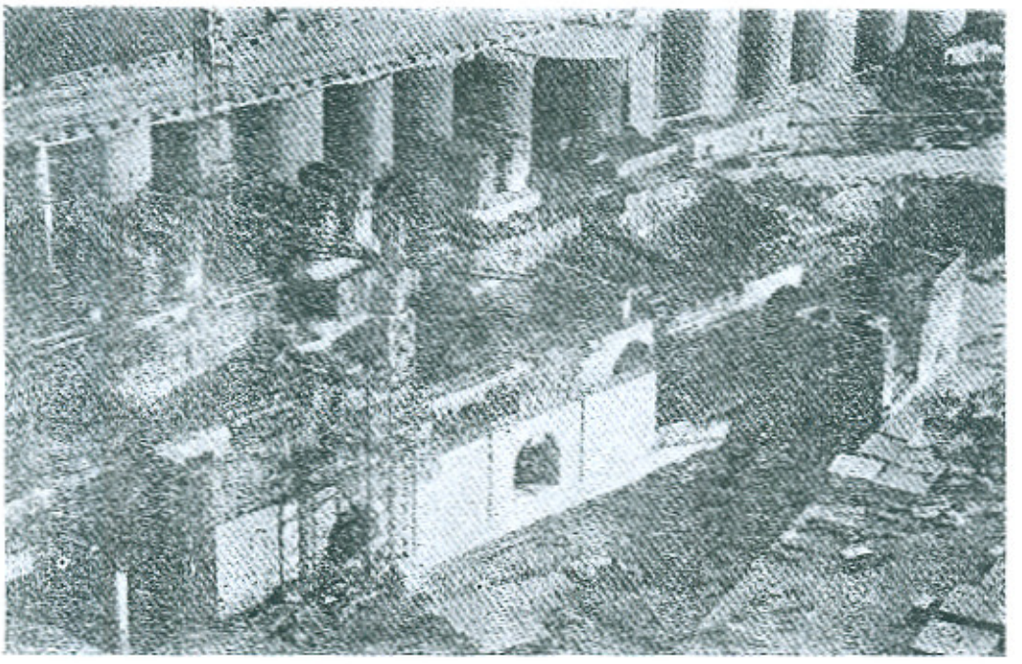


Photo No. 11.—Power House Construction Units 1 to 4.

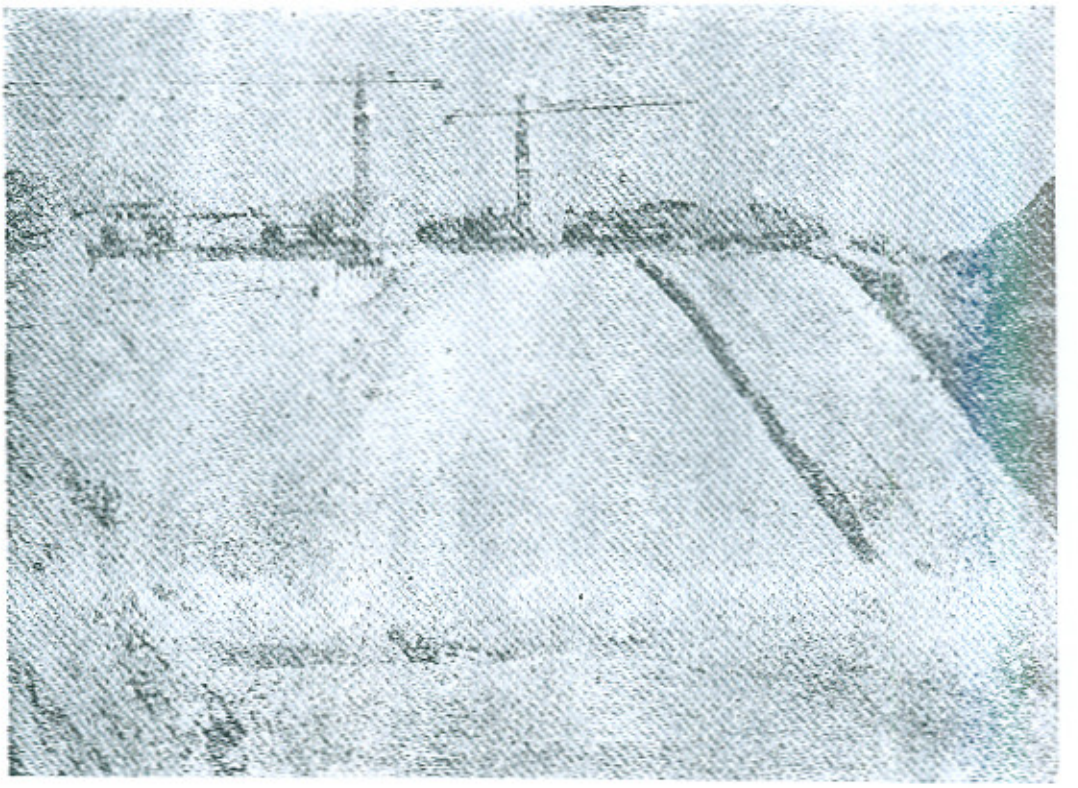


Photo No. 12.—Concreting Work in Progress for Auxiliary Spillway.