

STATION NO.	DISTANCE	ACCUMULATED DISTANCE	GROUND ELEVATION	CANAL BOTTOM ELEVATION	WATER LEVEL	CANAL SLOPE
NO. 0	0.0	0.0	1143.1	1141.60	1142.80	1:1/400
+100	100.0	100.0	1142.1	1141.35	1141.55	
NO. 1	100.0	200.0	1142.1	1141.10	1141.30	
+500	90.0	290.0	1143.1	1140.88	1141.08	
NO. 2	110.0	400.0	1141.3	1140.60	1140.80	
+700	70.0	470.0	1140.43	1140.43	1140.63	
+1000	30.0	500.0	1135.3	1135.03	1140.55	
+1200	20.0	520.0	1139.15	1139.15	1139.35	
NO. 3	70.0	600.0	1141.0	1139.05	1139.05	
+1200	80.0	680.0	1141.2	1138.65	1138.65	
NO. 4	130.0	810.0	1139.0	1138.33	1138.53	
+1300	70.0	880.0	1139.15	1138.15	1138.35	
NO. 5	90.0	970.0	1137.8	1137.78	1137.98	
+1300	40.0	1010.0	1138.2	1137.68	1137.88	
NO. 6	70.0	1080.0	1137.3	1137.50	1137.70	
+1400	200.0	1280.0	1137.8	1136.40	1136.60	
NO. 7	200.0	1480.0	1136.6	1135.90	1136.10	
NO. 8	200.0	1680.0	1135.8	1135.40	1135.60	
NO. 9	200.0	1880.0	1135.3	1134.90	1135.10	
NO. 10	200.0	2080.0	1134.6	1134.60	1134.80	
NO. 11	200.0	2280.0	1134.6	1134.10	1134.30	
NO. 12	200.0	2480.0	1133.5	1133.80	1134.00	
NO. 13	200.0	2680.0	1133.1	1133.30	1133.50	
NO. 14	200.0	2880.0	1132.7	1132.80	1133.00	
NO. 15	200.0	3080.0	1132.4	1132.30	1132.50	
NO. 16	200.0	3280.0	1131.4	1131.80	1132.00	
NO. 17	200.0	3480.0	1130.4	1130.50	1131.70	
NO. 18	200.0	3680.0	1130.3	1131.00	1131.20	
NO. 19	200.0	3880.0	1129.3	1129.90	1130.10	
+10000	100.0	3980.0	1129.3	1129.50	1129.70	
NO. 20	100.0	4080.0	1128.3	1128.90	1129.10	
NO. 21	200.0	4280.0	1127.1	1128.60	1128.80	
+5000	50.0	4330.0	1126.5	1128.35	1128.55	
+10000	50.0	4380.0	1126.0	1128.05	1128.25	
NO. 22	100.0	4480.0	1125.3	1127.80	1128.00	
+12000	200.0	4680.0	1124.5	1127.50	1127.70	
NO. 23	200.0	4880.0	1124.5	1125.30	1125.50	
+12000	120.0	4720.0	1124.2	1124.80	1125.00	

LONGITUDINAL SECTION OF CANAL

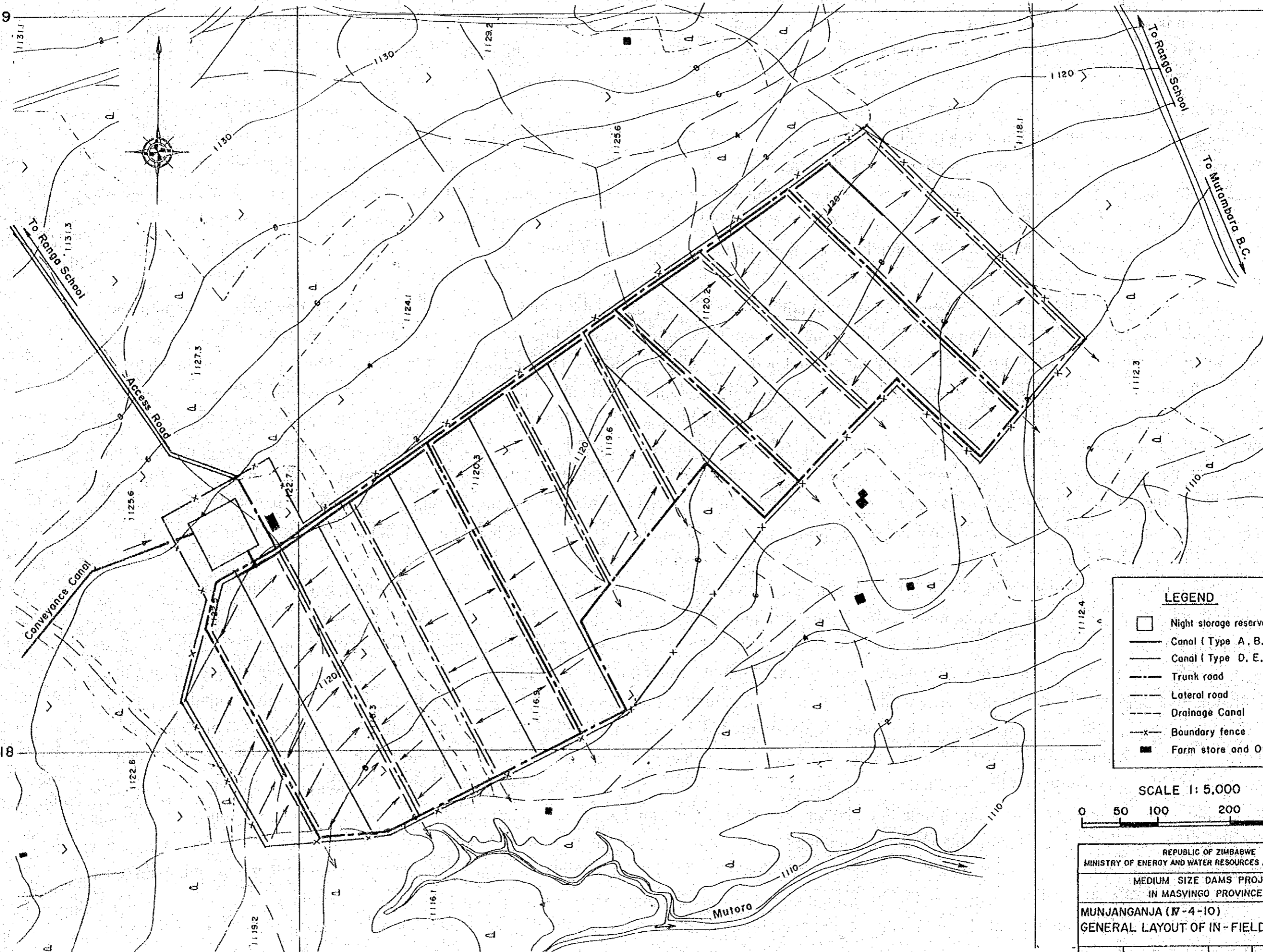
REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE
 MUNJANGANJA (17-4-10)
 CONVEYANCE FACILITIES
 DATE MARCH 1988 DWG. NO. MUN-05
 JAPAN INTERNATIONAL COOPERATION AGENCY

7819

7818

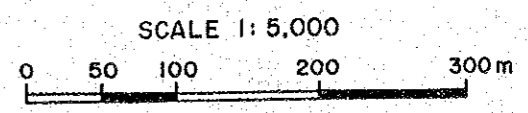
330

331

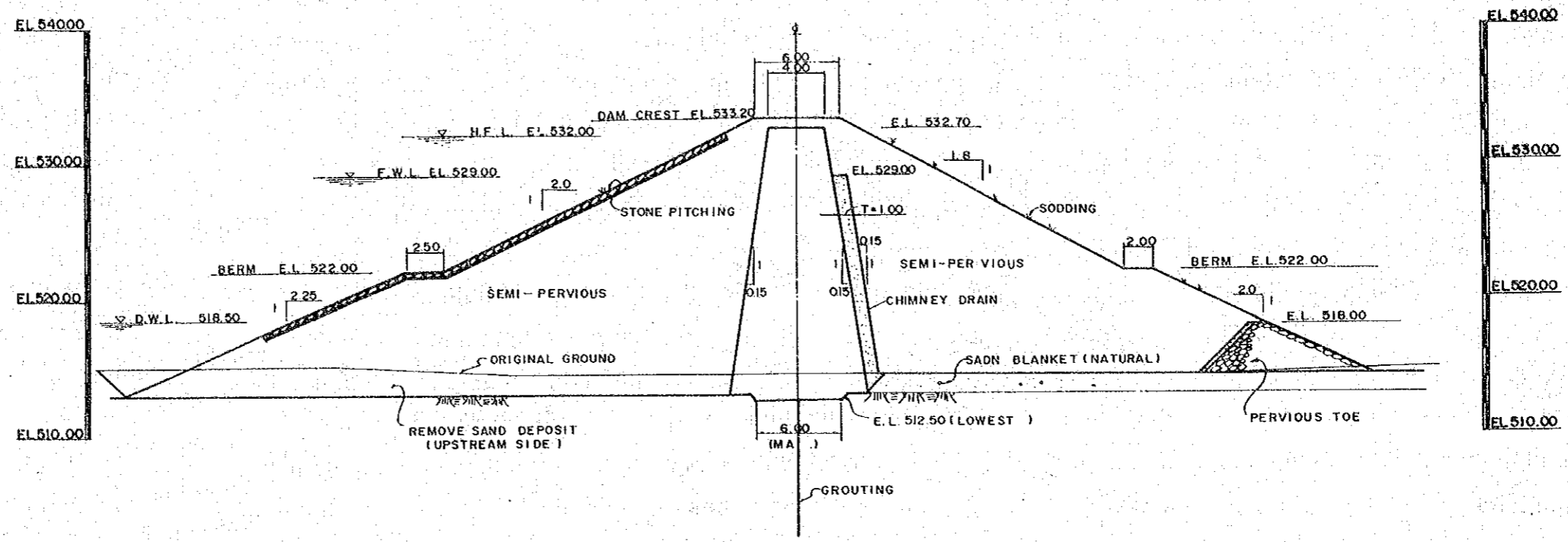


LEGEND

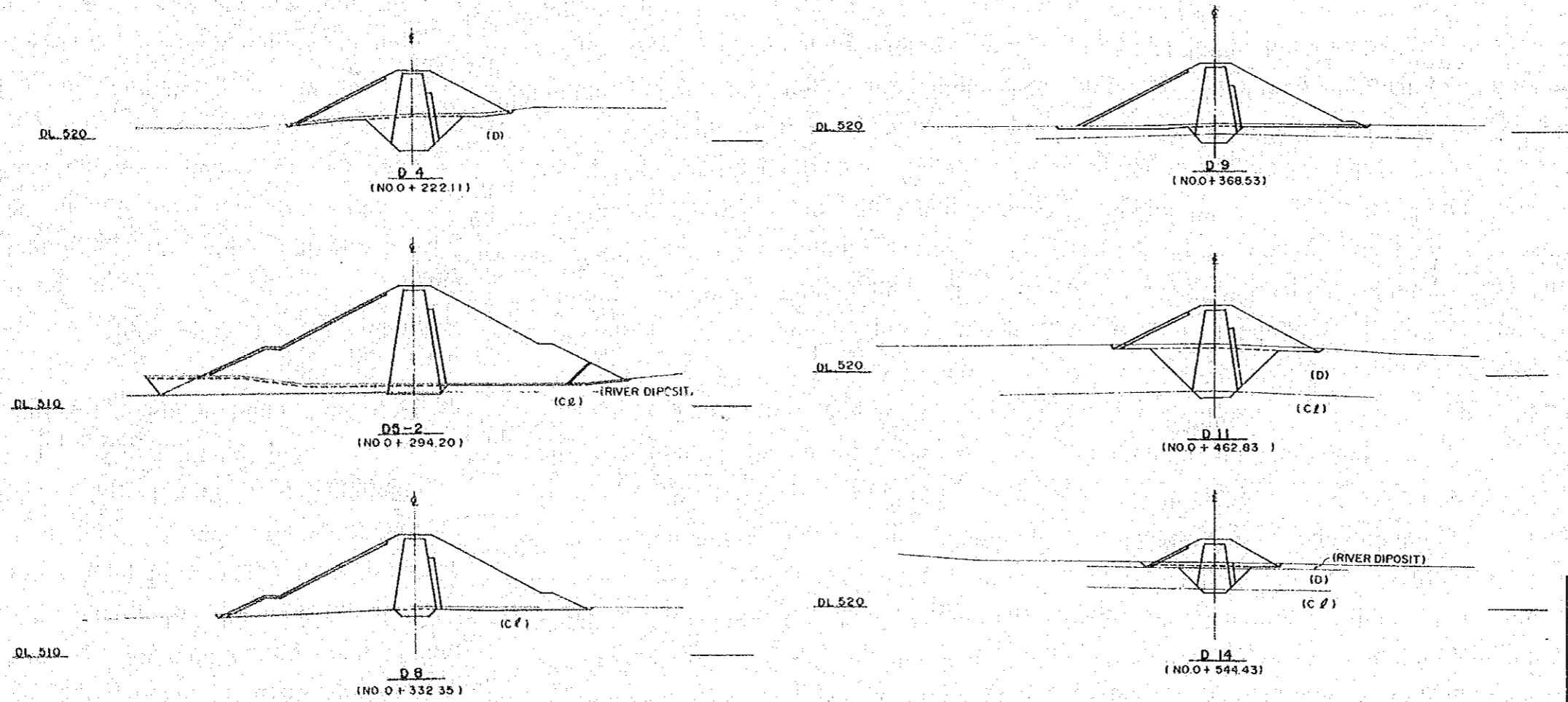
- Night storage reservoir
- Canal (Type A, B, C)
- Canal (Type D, E, F)
- Trunk road
- Lateral road
- Drainage Canal
- x- Boundary fence
- Farm store and Office



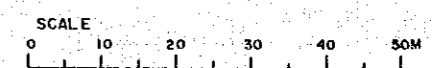
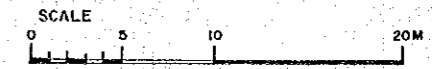
REPUBLIC OF ZIMBABWE			
MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT			
IN MASVINGO PROVINCE			
MUNJANGANJA (M-4-10)			
GENERAL LAYOUT OF IN-FIELD FACILITIES			
DATE	MARCH 1988	DWG. NO.	MUN-06
JAPAN INTERNATIONAL COOPERATION AGENCY			



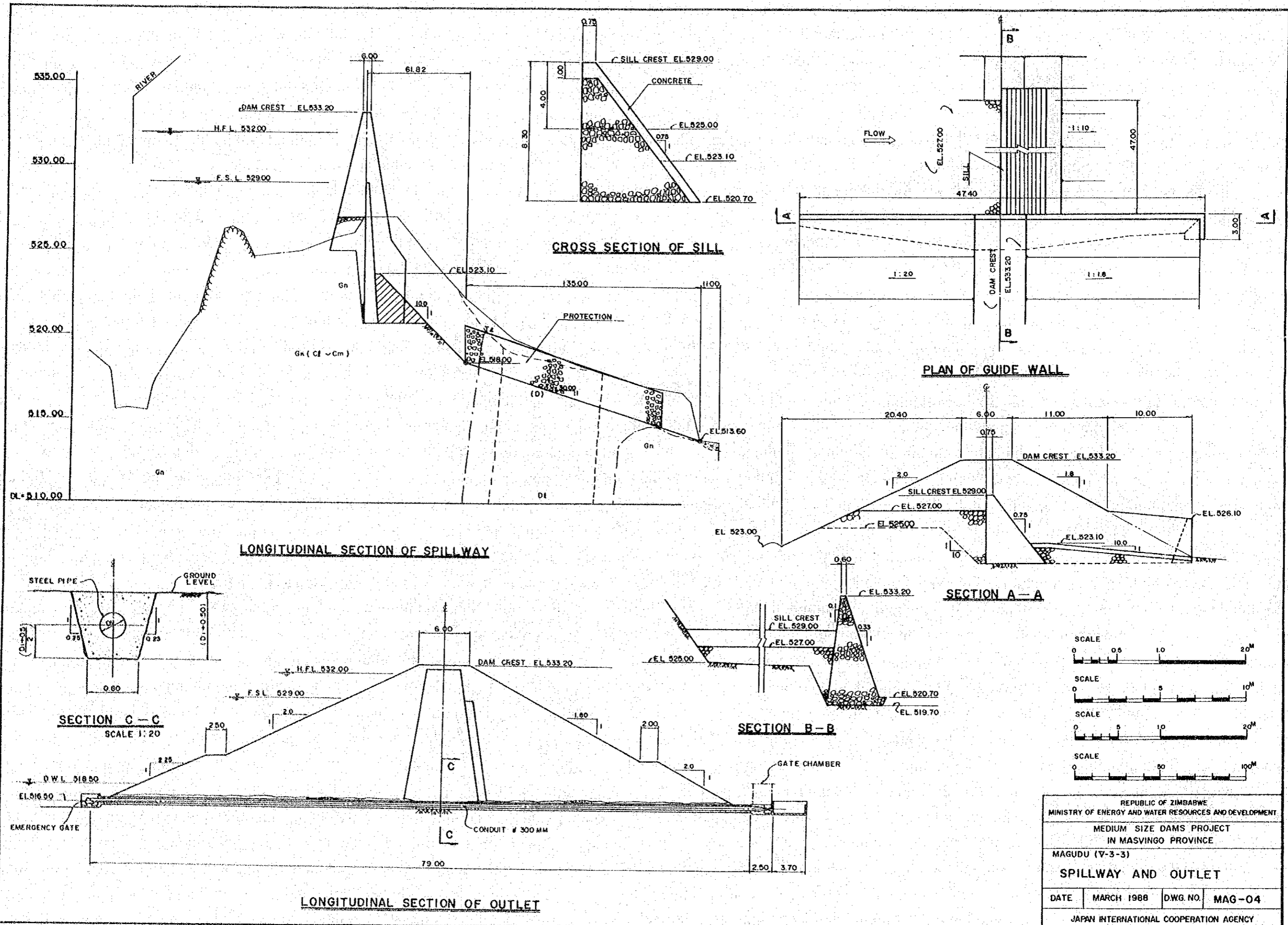
TYPICAL CROSS SECTION OF DAM

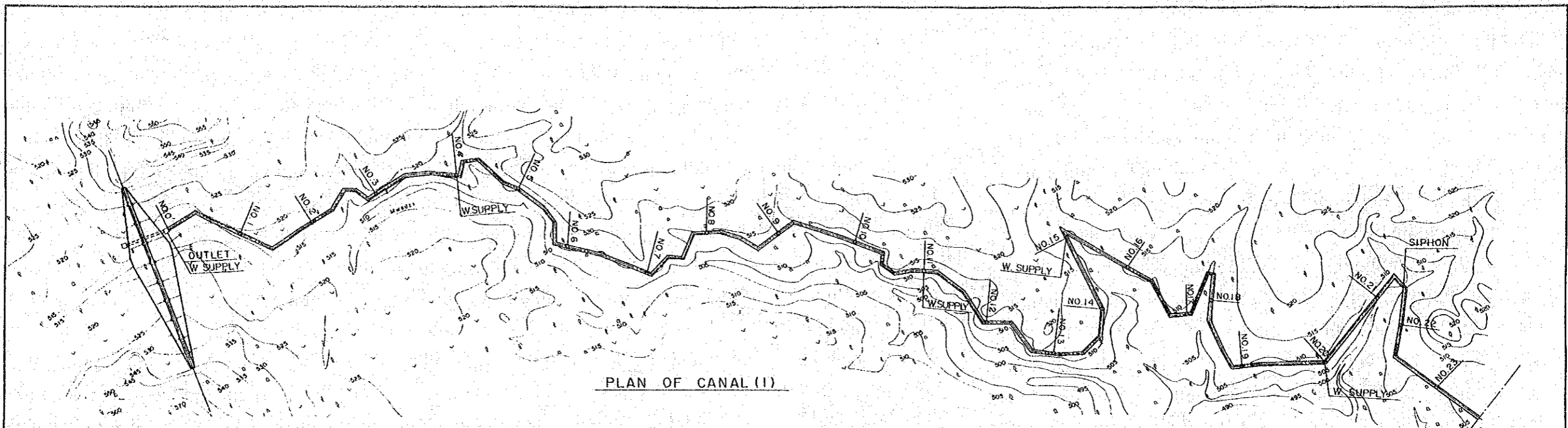


CROSS SECTION

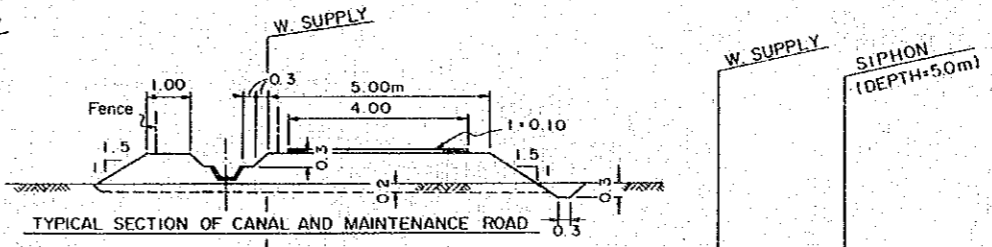
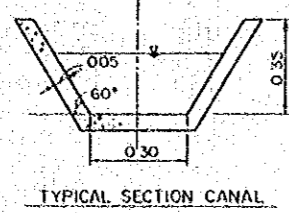
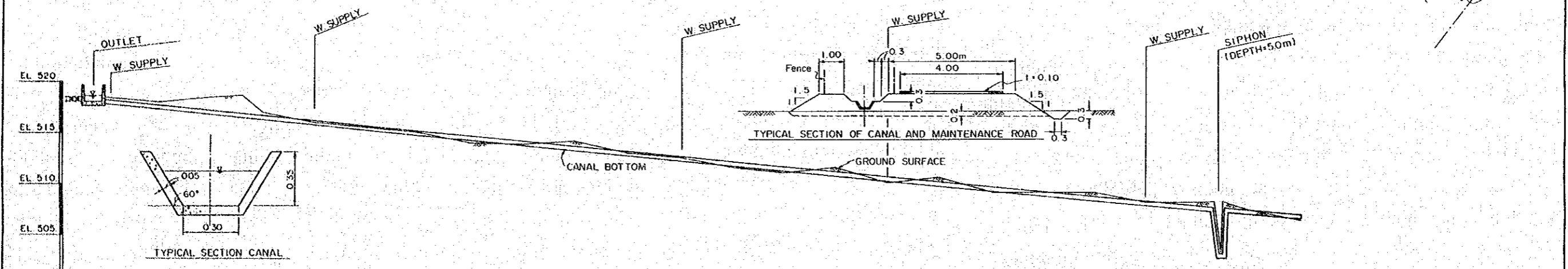


REPUBLIC OF ZIMBABWE			
MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT			
IN MASVINGO PROVINCE			
MAGUDU (V-3-3)			
TYPICAL CROSS SECTION			
DATE	MARCH 1988	DWG. NO.	MAG-03
JAPAN INTERNATIONAL COOPERATION AGENCY			





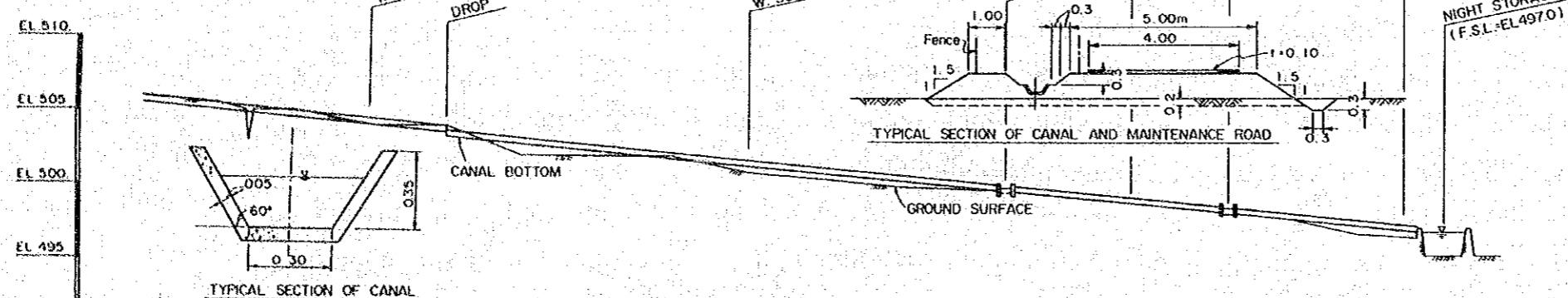
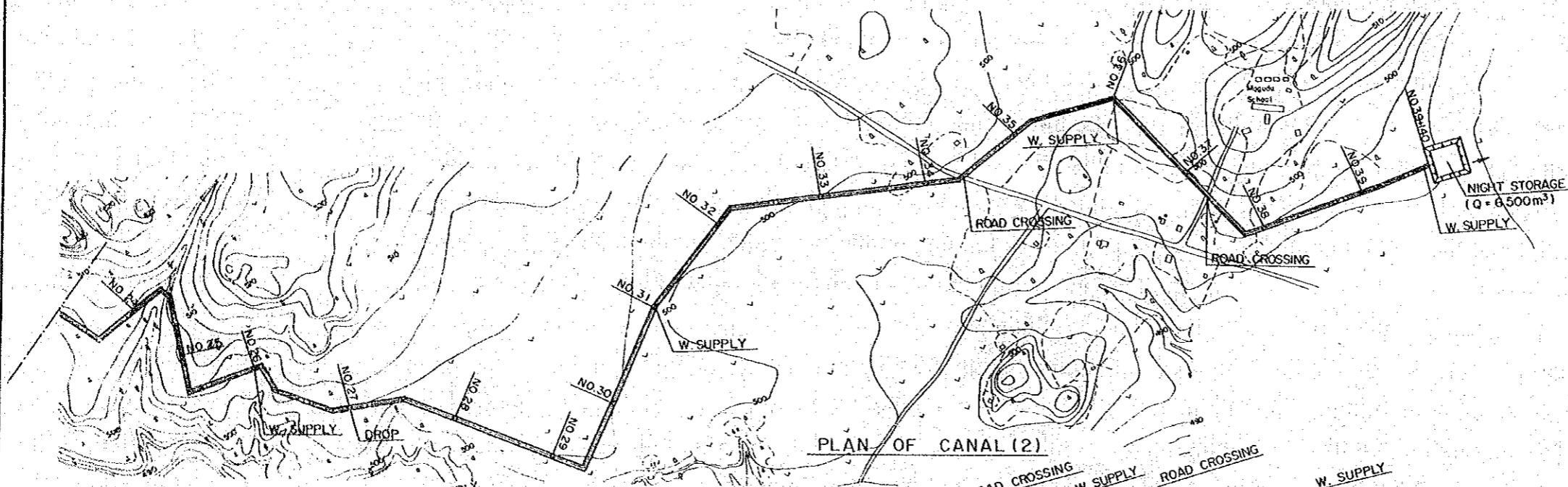
PLAN OF CANAL (I)



STATION NO	DISTANCE	ACCUMULATED DISTANCE	GROUND ELEVATION	CANAL BOTTOM ELEVATION	WATER LEVEL	CANAL SLOPE
NO. 0	0.0	0.0	517.2	517.10	517.33	1:1/400 L=4290m
NO. 1	200.0	200.0	517.1	516.60	516.83	
NO. 2	200.0	400.0	517.1	516.10	516.33	
NO. 3	200.0	600.0	516.1	515.60	515.83	
NO. 4	200.0	800.0	515.0	515.10	515.33	
NO. 5	200.0	1000.0	514.5	514.60	514.83	
NO. 6	200.0	1200.0	514.6	514.10	514.33	
NO. 7	200.0	1400.0	513.6	513.60	513.83	
NO. 8	200.0	1600.0	513.5	513.10	513.33	
NO. 9	200.0	1800.0	513.9	512.60	512.83	
NO. 10	200.0	2000.0	512.7	512.10	512.33	
NO. 11	200.0	2200.0	512.2	511.60	511.83	
NO. 12	200.0	2400.0	511.2	511.10	511.33	
NO. 13	200.0	2600.0	510.7	510.60	510.83	
NO. 14	200.0	2800.0	510.7	510.10	510.33	
NO. 15	200.0	3000.0	509.7	509.60	519.83	
NO. 16	200.0	3200.0	510.2	509.10	509.33	
NO. 17	200.0	3400.0	508.7	508.60	508.83	
NO. 18	200.0	3600.0	508.7	508.10	508.33	
NO. 19	200.0	3800.0	508.7	507.60	507.83	
NO. 20	200.0	4000.0	507.6	507.10	507.33	
NO. 21	200.0	4200.0	507.6	506.60	506.83	
NO. 22	100.0	4400.0	507.3	506.10	506.33	

LONGITUDINAL SECTION OF CANAL (I)

REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE
 MAGUDU (V-3-3)
 CONVEYANCE FACILITIES (1/2)
 DATE MARCH 1988 DWG. NO. MAG-05 (1)
 JAPAN INTERNATIONAL COOPERATION AGENCY



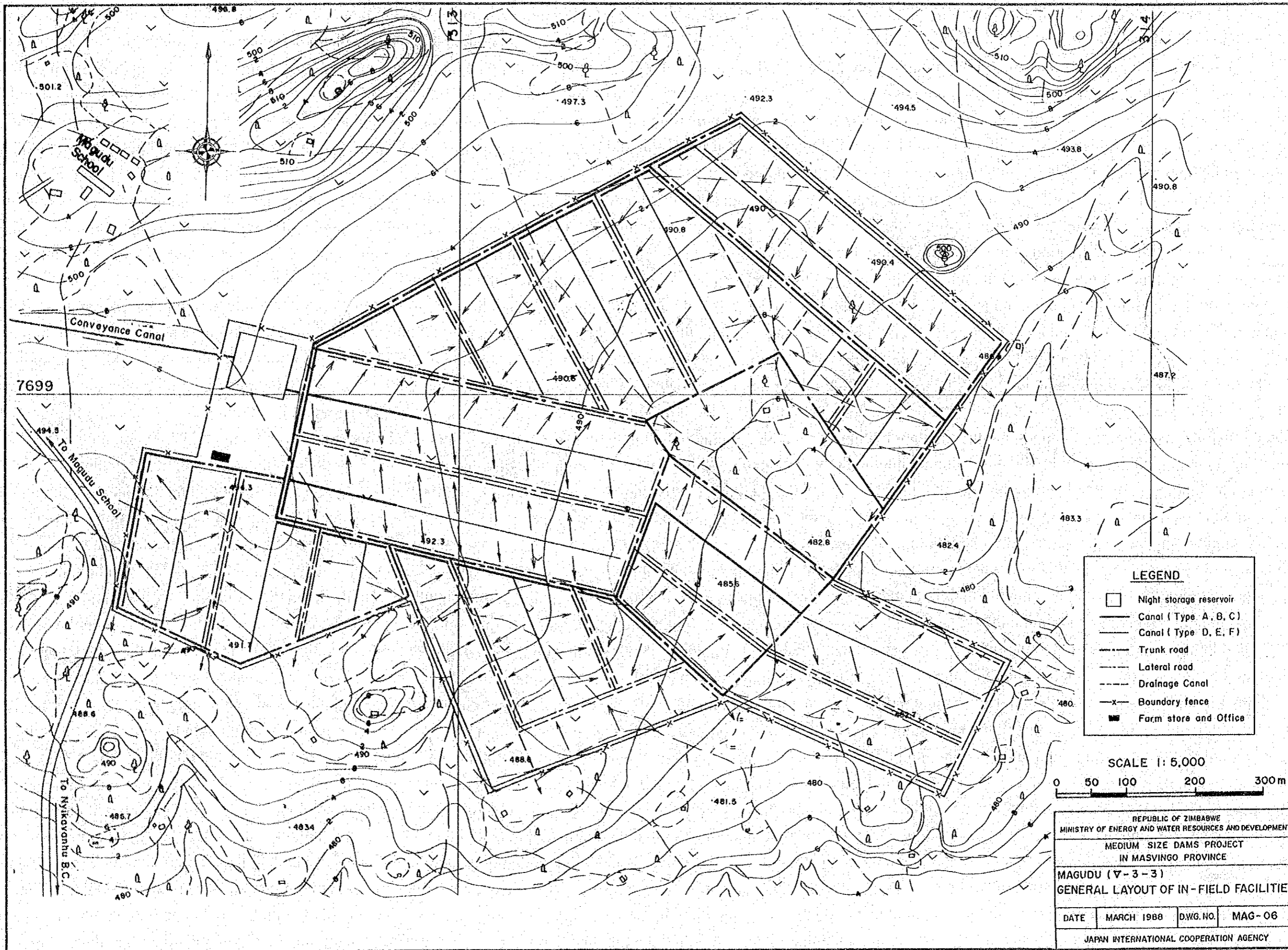
STATION NO	DISTANCE	ACCUMULATED DISTANCE	GROUND ELEVATION	CANAL BOTTOM ELEVATION	WATER LEVEL	CANAL SLOPE
NO 23	200 0	4 600 0	506 3	505 60	505 83	$1:1/400$ $L:3640m$
NO 24	200 0	4 800 0	505 8	505 10	505 33	
NO 24 +70 0	70 0	4 870 0	505 3			
NO 24 +80 0	10 0	4 880 0	505 3			
NO 25	10 0	5 000 0	505 3	504 60	504 83	
NO 26	200 0	5 200 0	504 3	504 10	504 33	
NO 27	200 0	5 400 0	504 3	503 60 503 50	503 83 503 93	
NO 28	200 0	5 600 0	502 3	502 80	503 03	
NO 29	200 0	5 800 0	502 3	502 30	502 53	
NO 30	200 0	6 000 0	502 3	501 80	502 03	
NO 31	200 0	6 200 0	501 3	501 30	501 53	
NO 32	200 0	6 400 0	500 3	500 80	501 03	
NO 33	200 0	6 600 0	500 3	500 30	500 53	
NO 34	200 0	6 800 0	499 3	499 80	500 03	
NO 34 +75 00	75 0	6 875 0	500 5	499 00	499 23	
NO 35	125 0	7 000 0	499 8	499 30	499 53	
NO 36	200 0	7 200 0	498 8	498 80	499 03	
NO 37	200 0	7 400 0	497 8	498 30	498 53	
NO 37 +50 00	50 0	7 460 0	498 0	497 50	497 73	
NO 38	140 0	7 600 0	498 3	497 80	498 03	
NO 39	200 0	7 800 0	497 3	497 30	497 53	
+140 0	140 0	7 940 0	496 8	497 95	497 18	

LONGITUDINAL SECTION OF CANAL (2)

REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE
 MAGUDU (V-3-3)
CONVEYANCE FACILITIES (2/2)

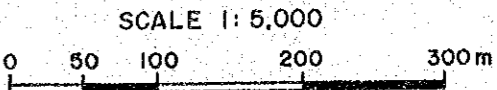
DATE	MARCH 1988	DWG. NO.	MAG-05 (2)
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JAPAN INTERNATIONAL COOPERATION AGENCY

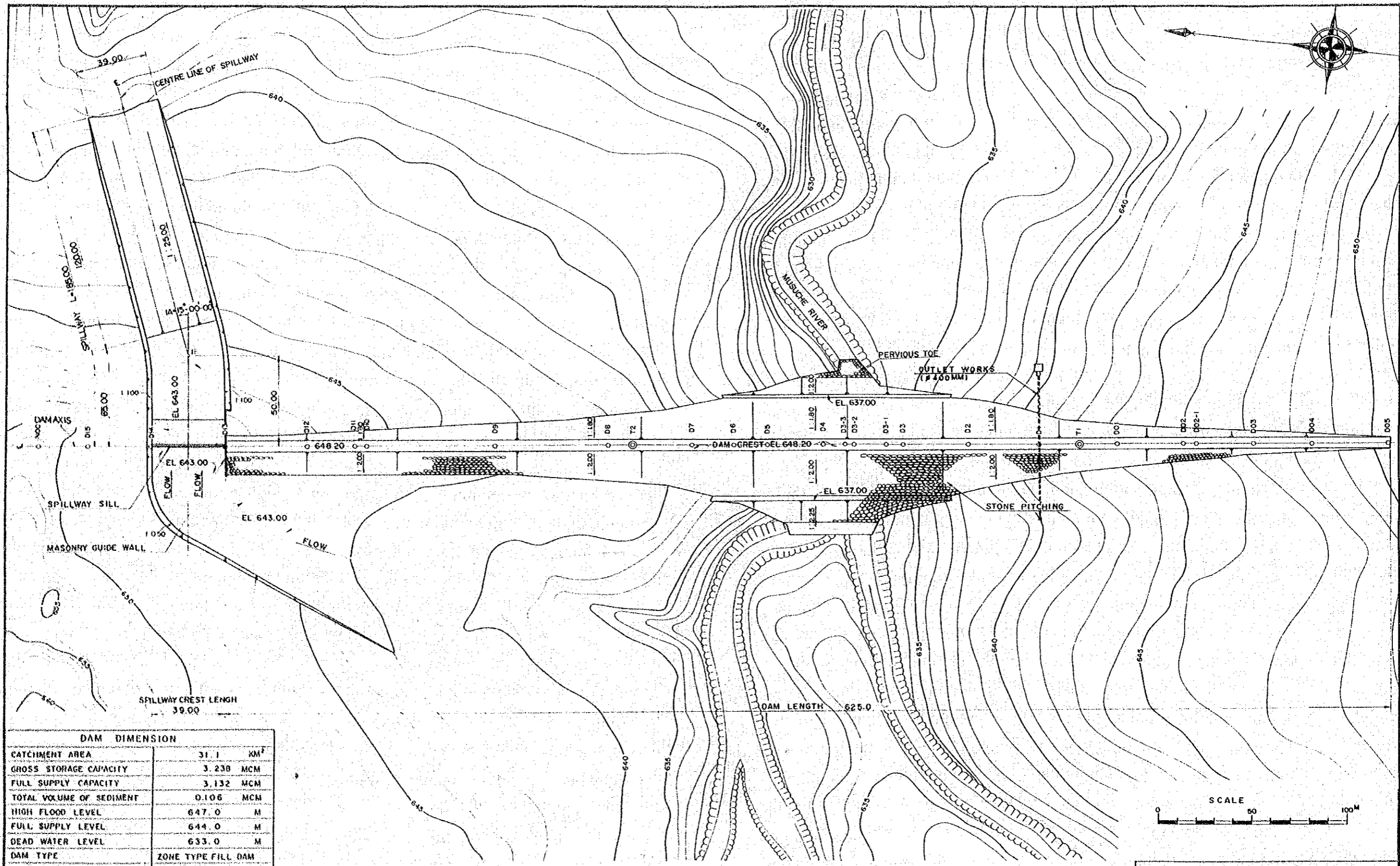


LEGEND

- Night storage reservoir
- Canal (Type A, B, C)
- Canal (Type D, E, F)
- Trunk road
- Lateral road
- Drainage Canal
- x- Boundary fence
- Farm store and Office



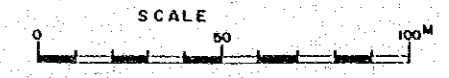
REPUBLIC OF ZIMBABWE			
MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT			
IN MASVINGO PROVINCE			
MAGUDU (V-3-3)			
GENERAL LAYOUT OF IN-FIELD FACILITIES			
DATE	MARCH 1988	DWG. NO.	MAG-06
JAPAN INTERNATIONAL COOPERATION AGENCY			



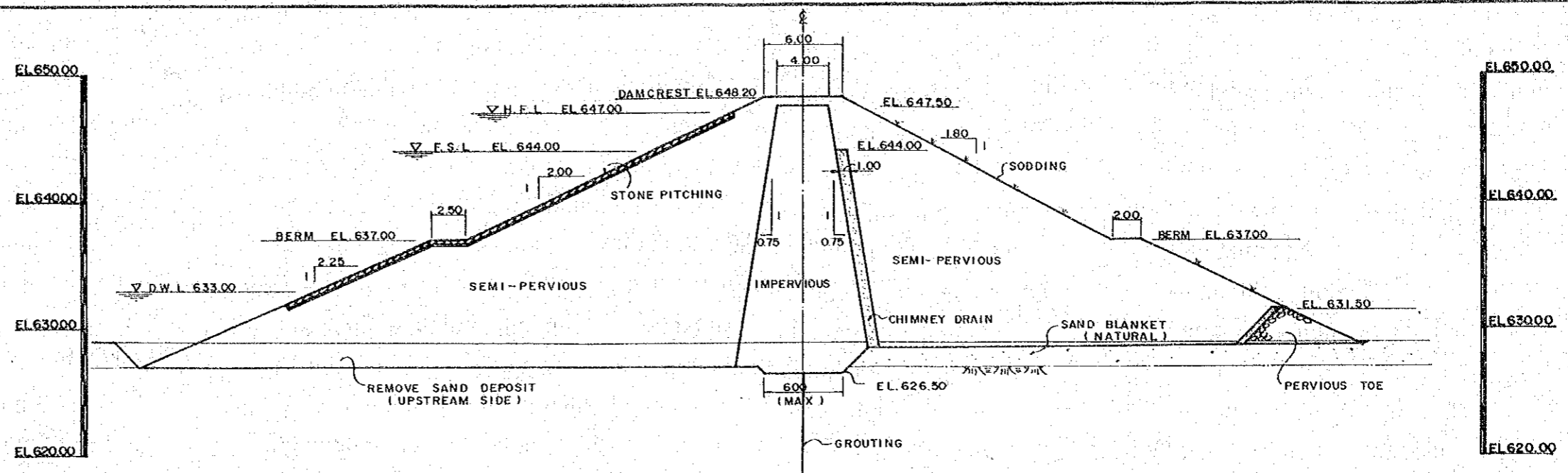
DAM DIMENSION	
CATCHMENT AREA	31.1 KM ²
GROSS STORAGE CAPACITY	3.238 MCM
FULL SUPPLY CAPACITY	3.132 MCM
TOTAL VOLUME OF SEDIMENT	0.108 MCM
HIGH FLOOD LEVEL	647.0 M
FULL SUPPLY LEVEL	644.0 M
DEAD WATER LEVEL	633.0 M
DAM TYPE	ZONE TYPE FILL DAM
DAM HEIGHT	19.3 M
DAM LENGTH	625.0 M
DAM CREST ELEVATION	640.2 M
EMBANKMENT VOLUME	158100.0 M ³
DESIGN FLOOD DISCHARGE	343.0 M ³ /SEC
DESIGN SPILLWAY CAPACITY	343.0 M ³ /SEC
SPILLWAY TYPE	NON-GATED OVER FLOW TYPE
OVERFLOW DEPTH	3.0 M
SPILLWAY CREST LENGTH	39.0 M
INTAKE CAPACITY	151.0 L/SEC

PLAN OF MABVUTE DAM (VII-1-12)

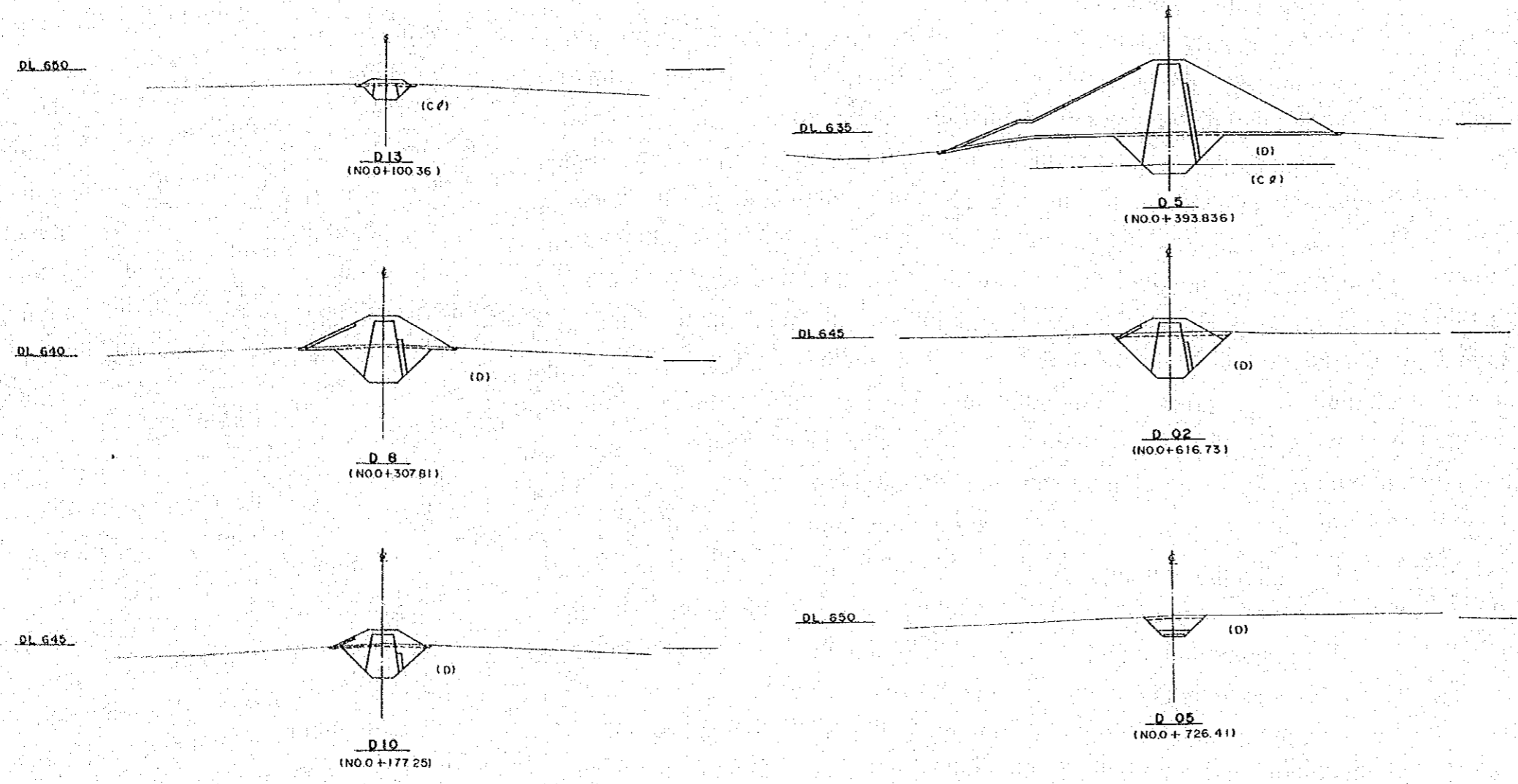
SCALE



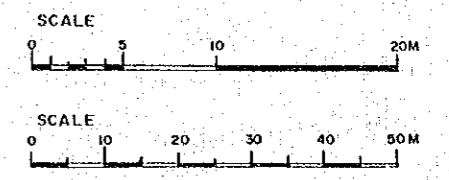
REPUBLIC OF ZIMBABWE			
MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT			
IN MASVINGO PROVINCE			
MABVUTE (VII-1-12)			
PLAN OF DAM			
DATE	MARCH 1988	D.WG. NO.	MAB - 01
JAPAN INTERNATIONAL COOPERATION AGENCY			



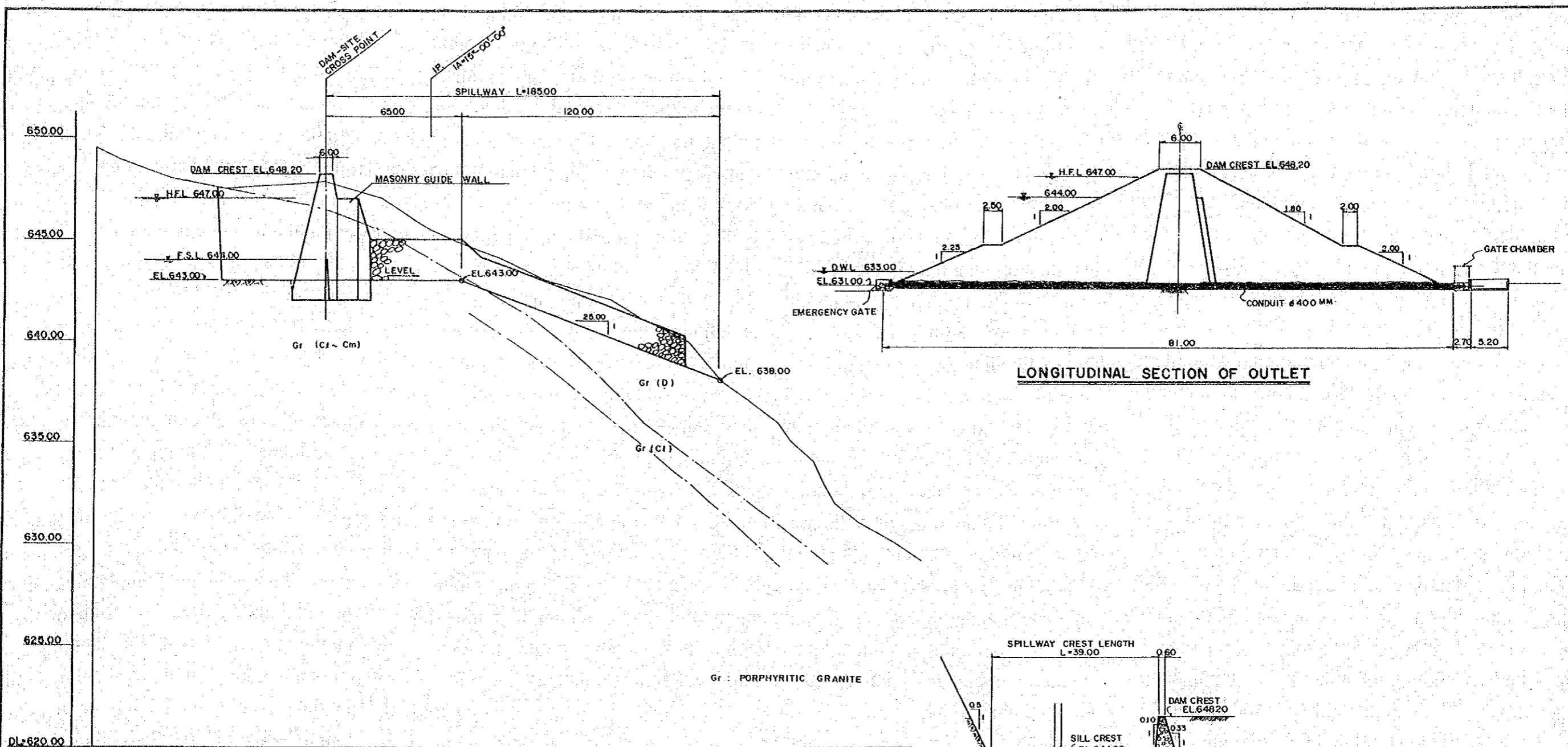
TYPICAL CROSS SECTION OF DAM



CROSS SECTION

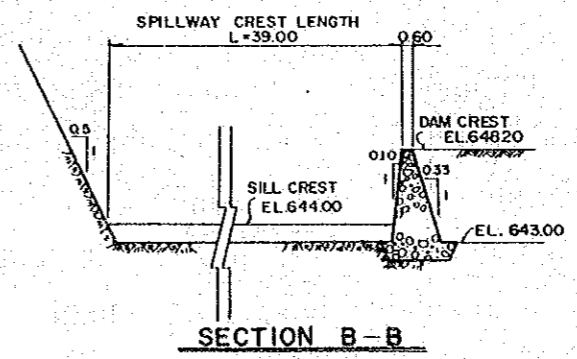


REPUBLIC OF ZIMBABWE			
MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT			
IN MASVINGO PROVINCE			
MABVUTI (VII-1-12)			
TYPICAL CROSS SECTION			
DATE	MARCH 1988	D.W.G. NO.	MAB-03
JAPAN INTERNATIONAL COOPERATION AGENCY			

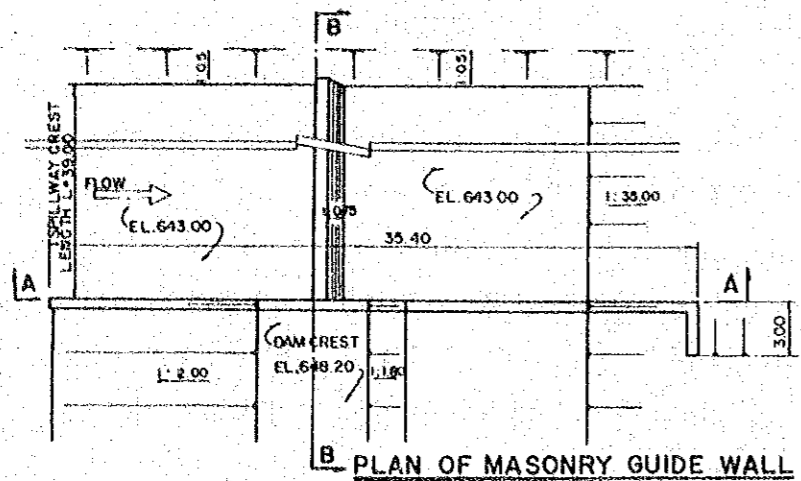


LONGITUDINAL SECTION OF SPILLWAY

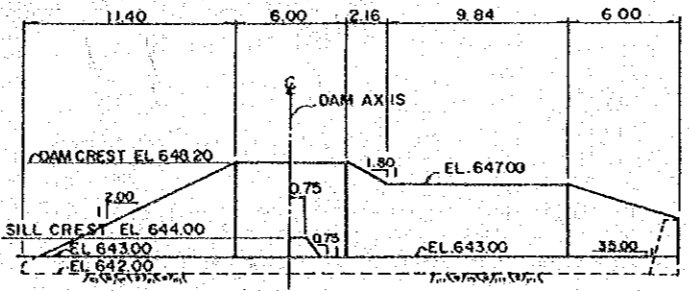
LONGITUDINAL SECTION OF OUTLET



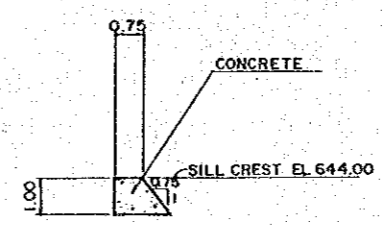
SECTION B-B



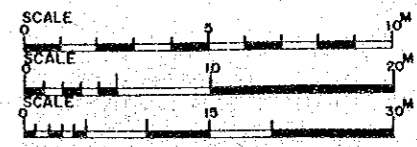
PLAN OF MASONRY GUIDE WALL



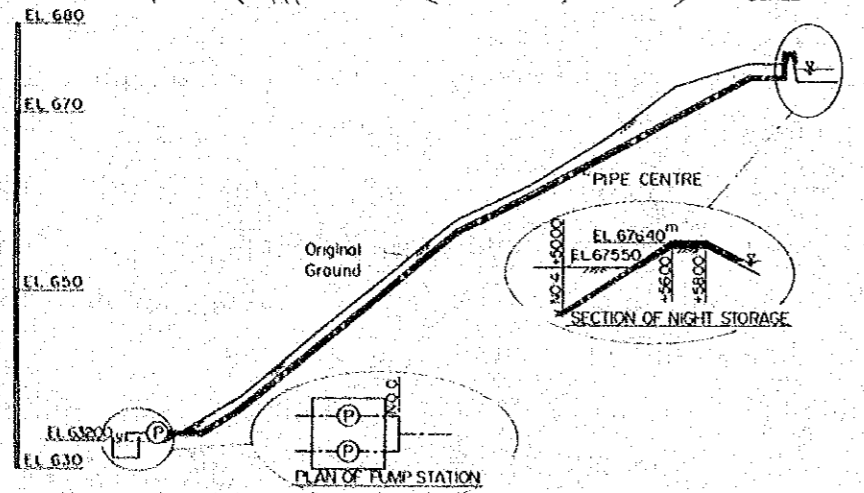
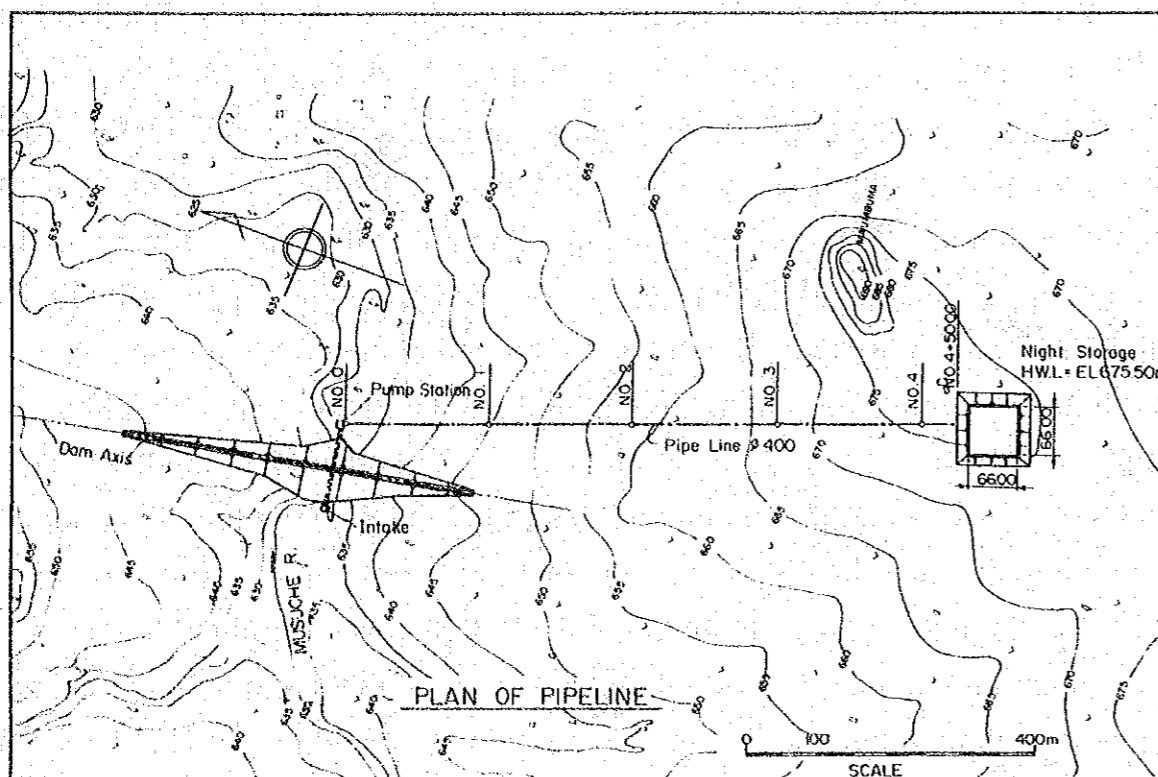
SECTION A-A



CROSS SECTION OF SILL

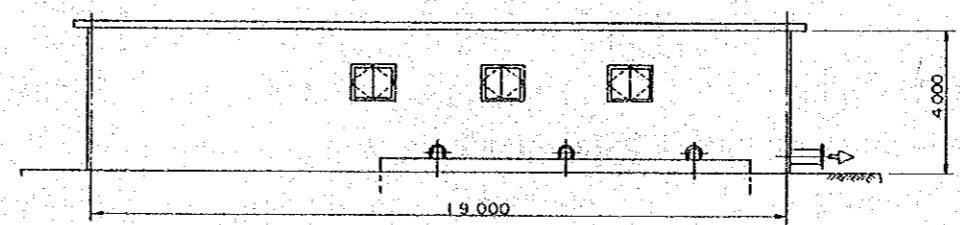
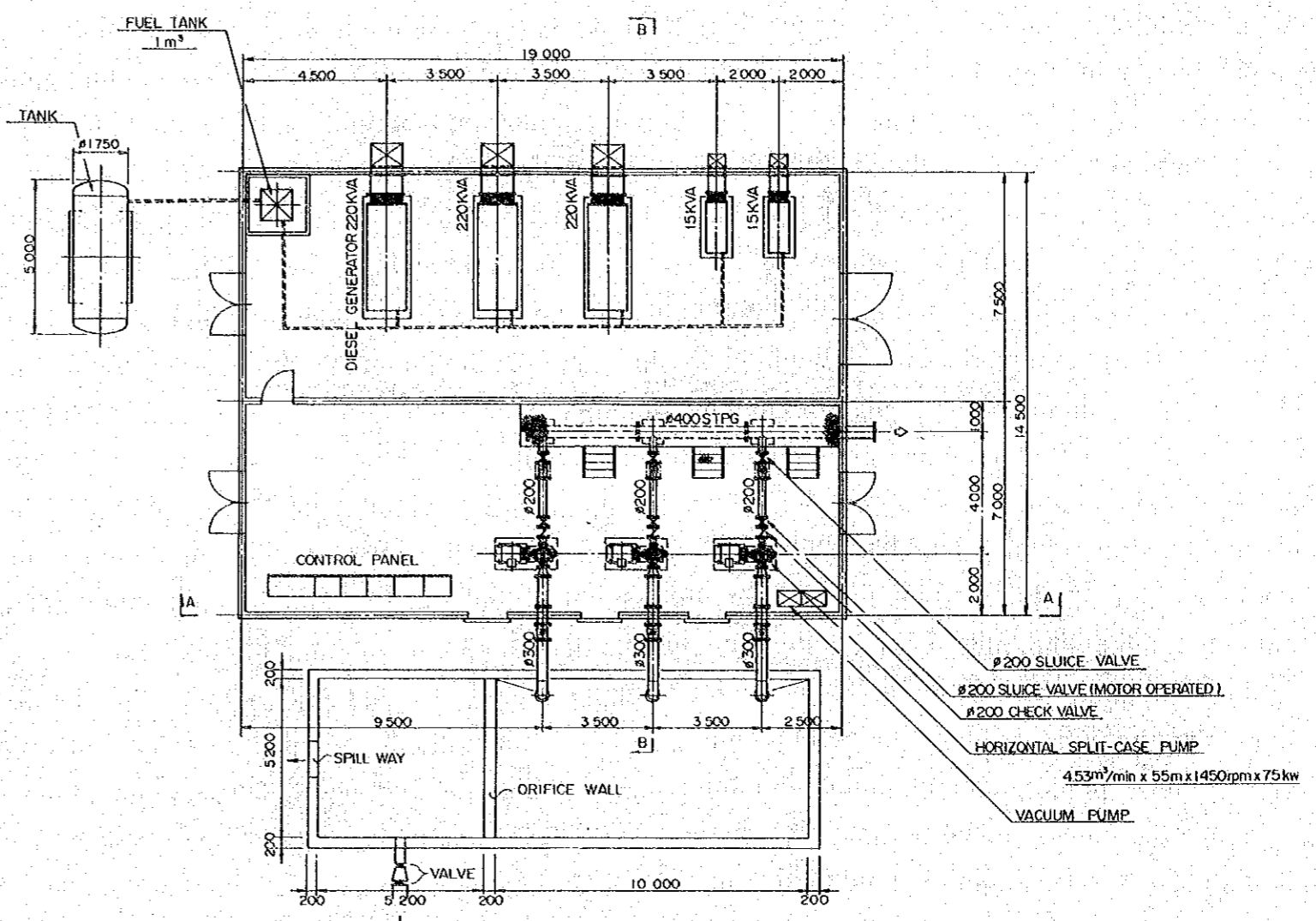


REPUBLIC OF ZIMBABWE			
MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT			
IN MASVINGO PROVINCE			
MABVUTE (VII-1-12)			
SPILLWAY AND OUTLET			
DATE	MARCH 1988	DWG. NO.	MAB-04
JAPAN INTERNATIONAL COOPERATION AGENCY			

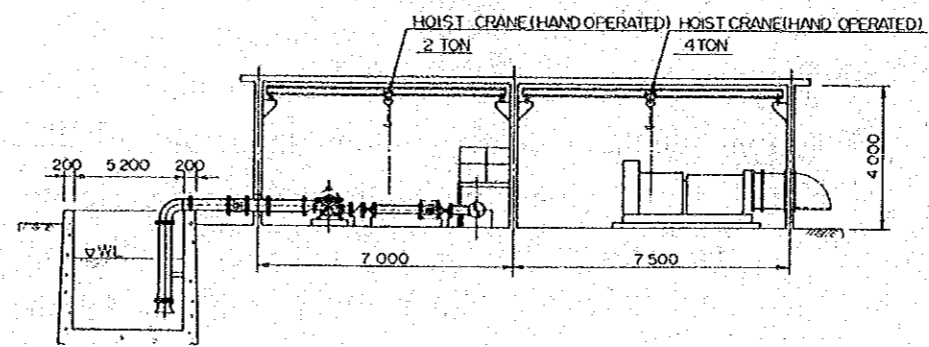


STATION	DISTANCE (m)	ACCUMULATED DISTANCE (m)	GROUND ELEVATION (m)	ELEVATION PIPE CENTRE (E.L.)	ENERGY HEAD (m)
NO. 0	0.00	0.00	633.00	634.00	
+50.00	50.00	50.00	635.00	634.00	
+110.00	60.00	110.00	638.00	636.60	
NO. 1	90.00	200.00	645.00	669.96	
NO. 2	200.00	400.00	658.50	667.10	
+100.00	100.00	500.00	662.00	660.60	
NO. 3	100.00	600.00	657.00	665.07	
+100.00	100.00	700.00	673.00	669.53	
NO. 4	100.00	800.00	675.50	674.00	
+50.00	50.00	850.00	675.00	671.40	
+150.00	2.00	852.00	675.00	676.40	

LONGITUDINAL SECTION OF PIPELINE



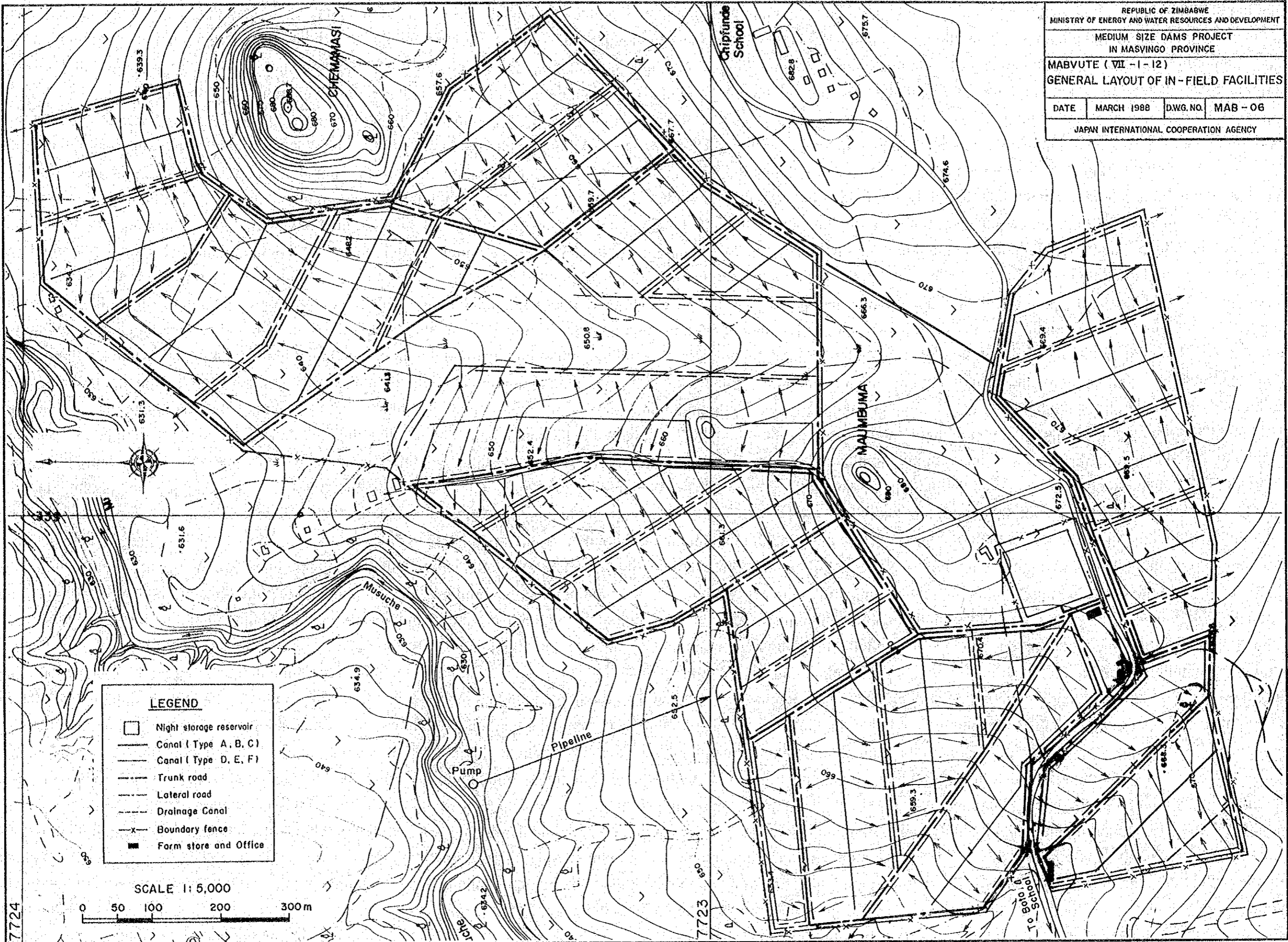
SECTION A-A



SECTION B-B

REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE
 MABVUTE (VII - 1 - 12)
 CONVEYANCE FACILITIES
 DATE MARCH 1988 D.W.G. NO. MAB - 05
 JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE
 MABVUTE (VII -1-12)
 GENERAL LAYOUT OF IN-FIELD FACILITIES
 DATE MARCH 1988 D.W.G. NO. MAB-06
 JAPAN INTERNATIONAL COOPERATION AGENCY



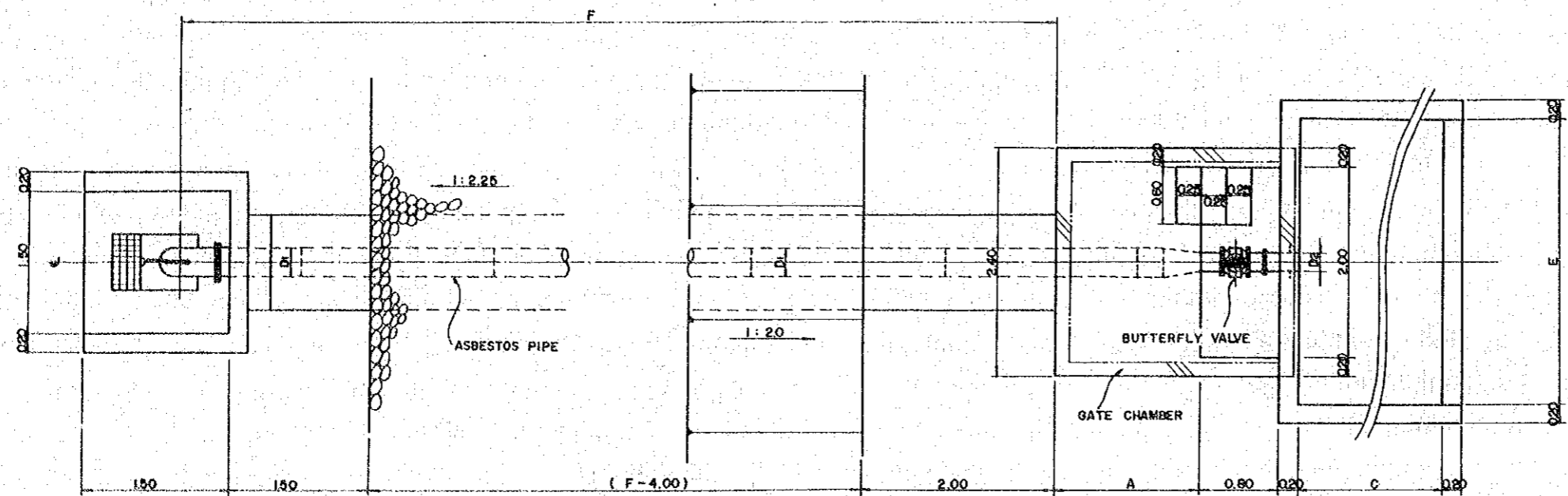
LEGEND
 □ Night storage reservoir
 — Canal (Type A, B, C)
 — Canal (Type D, E, F)
 - - - Trunk road
 - - - Lateral road
 - - - Drainage Canal
 - x - Boundary fence
 ■ Farm store and Office

SCALE 1: 5,000
 0 50 100 200 300 m

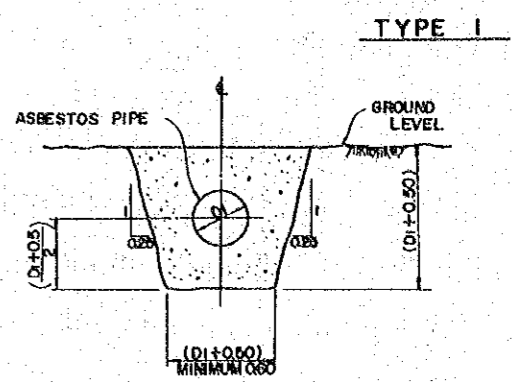
7724

7723

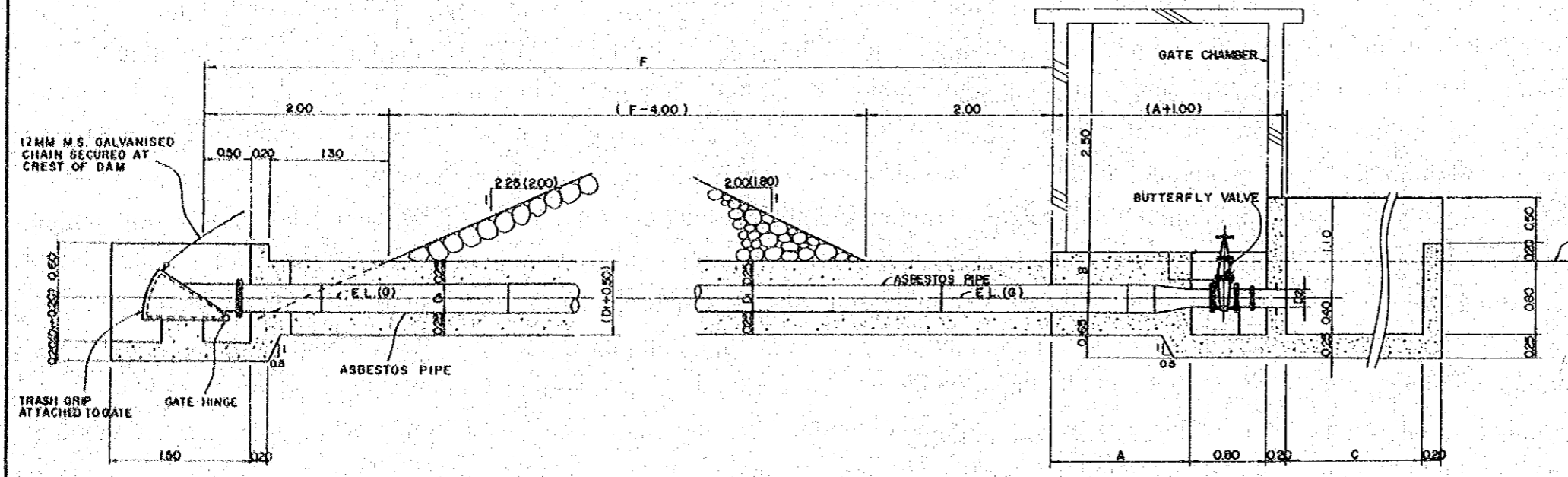
To Boro School



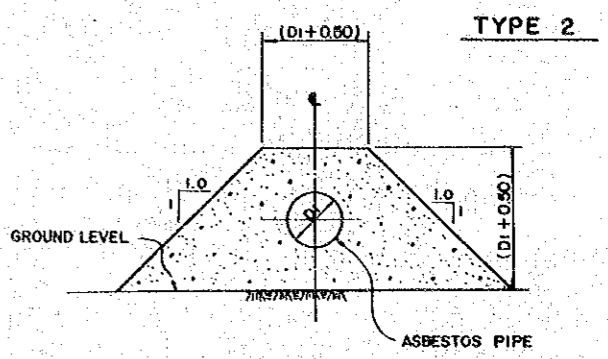
PLAN OF INTAKE AND OUTLET STRUCTURE



CROSS SECTION THROUGH CONDUIT BELOW ROCK LEVEL



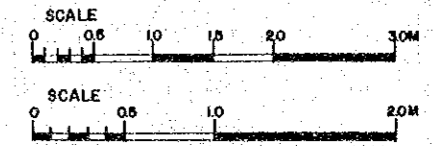
LONGITUDINAL SECTION OF CONDUIT



CROSS SECTION THROUGH CONDUIT ABOVE ROCK LEVEL

DIMENSION (UNIT : M)

NAME OF DAM (NO)	CONDUIT TYPE	D ₁	D ₂	A	B	C	E	F	G	SIZE OF EMERGENCY GATE	DAM SITE CROSS POINT
MUSAVEREMA DAM (I-2-1)	TYPE 1	0.25	0.15	1.50	0.40	3.20	3.20	54.00	673.00	0.50 x 0.90	D 30 + 20.00
CHINYAMATUMWA DAM (I-1-6)	1	0.30						70.50	739.00	0.50 x 0.90	D 10 + 0.00
MASHOKO DAM (I-2-1)	1	0.20	0.10	1.50	0.35	2.00	2.00	64.50	653.50	0.50 x 0.90	D 10 + 0.00
MUNJANGANJA DAM (II-4-10)	2	0.25	0.15	1.50	0.40	3.00	3.00	48.50	1141.00	0.50 x 0.90	A 11 + 35.00
MAGUDU DAM (V-3-3)	1	0.30	0.20	1.50	0.50	3.70	3.70	79.00	516.50	0.50 x 0.90	D 4 + 18.00
MABVUTE DAM (VI-1-12)	1	0.40						81.00	631.00	0.60 x 1.00	D 7 + 20.00

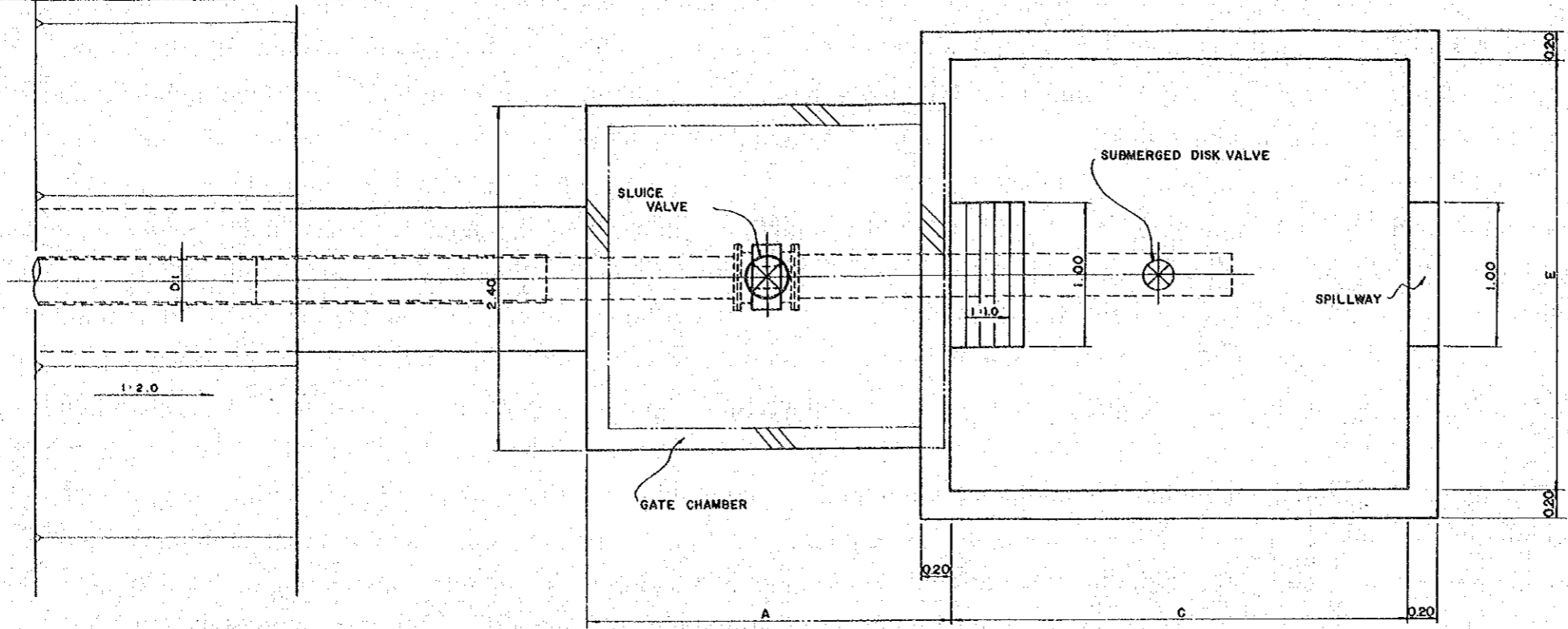


REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE

INTAKE AND OUTLET STRUCTURE

DATE: MARCH 1988 DWG. NO: GEN-01

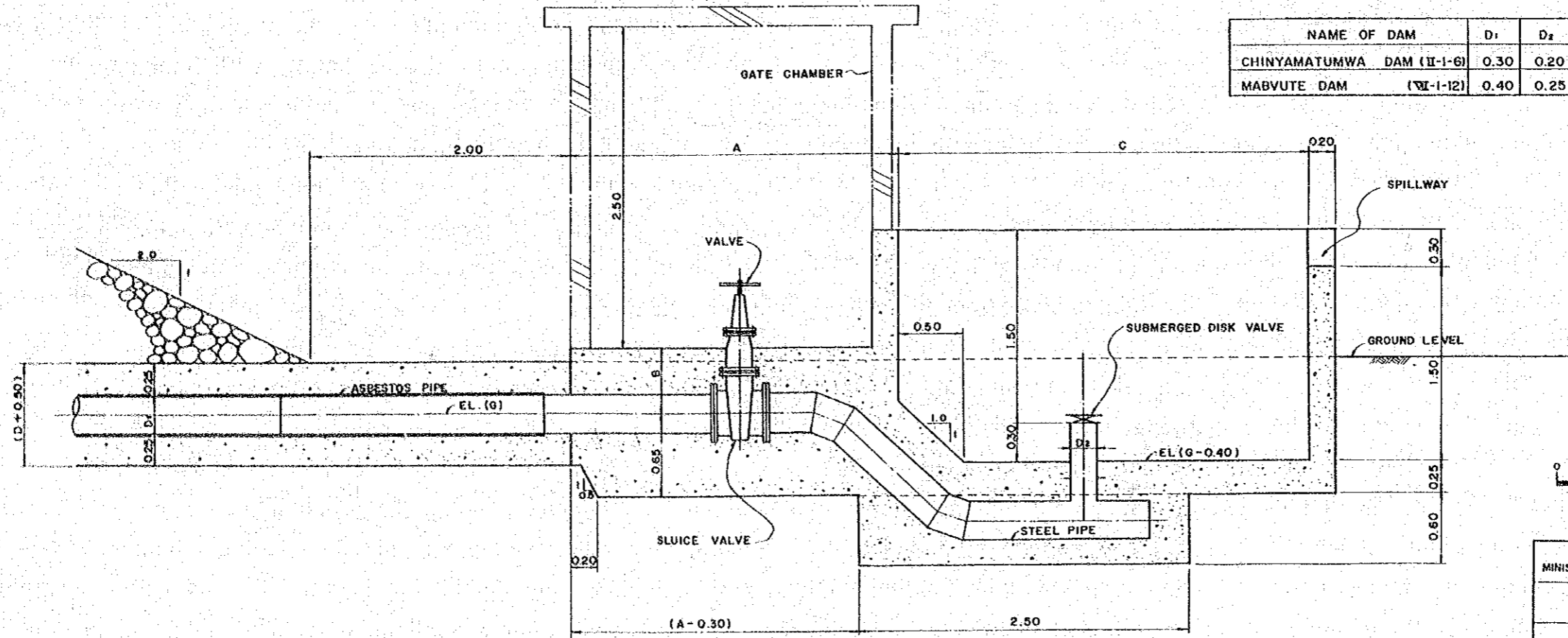
JAPAN INTERNATIONAL COOPERATION AGENCY



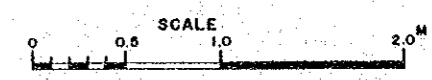
PLAN OF OUTLET STRUCTURE

DIMENSION

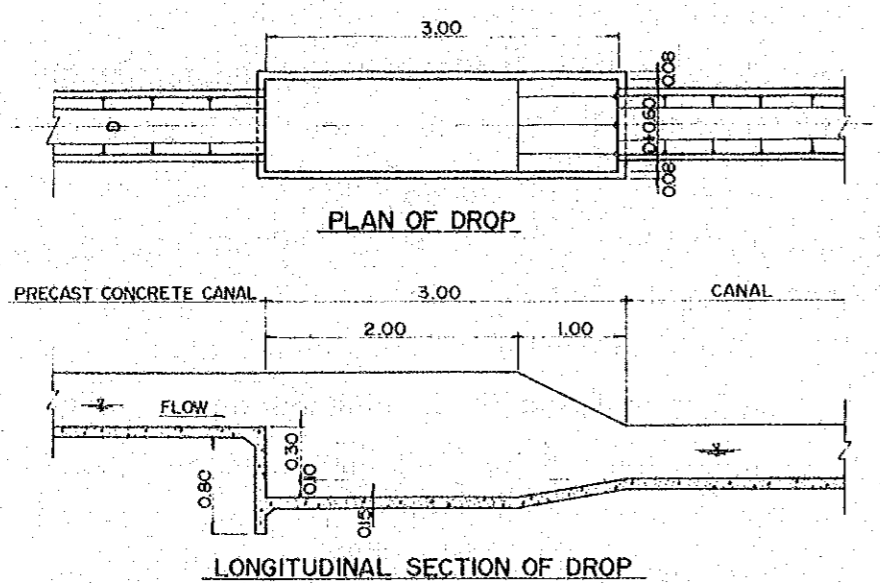
		(UNIT - M)						
NAME OF DAM		D ₁	D ₂	A	B	C	E	G
CHINYAMATUMWA DAM (II-1-6)		0.30	0.20	2.50	0.50	3.60	3.60	739.00
MABVUTE DAM (VII-1-12)		0.40	0.25	2.50	0.60	5.20	5.20	631.00



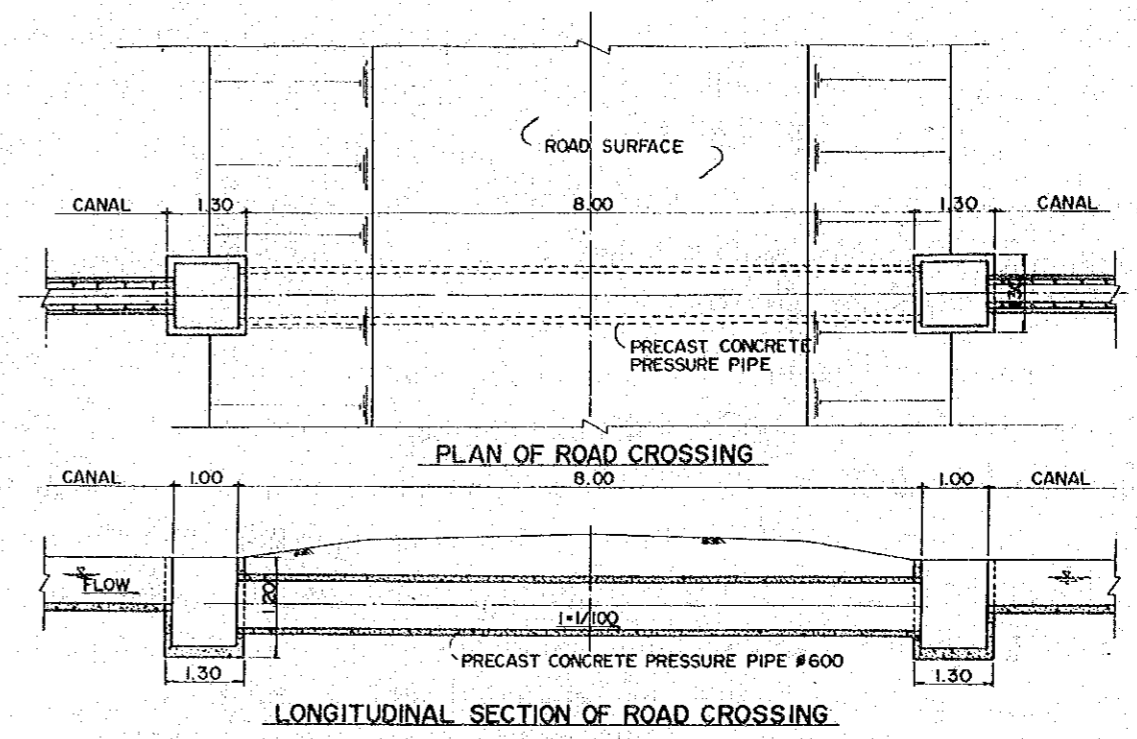
LONGITUDINAL SECTION OF OUTLET



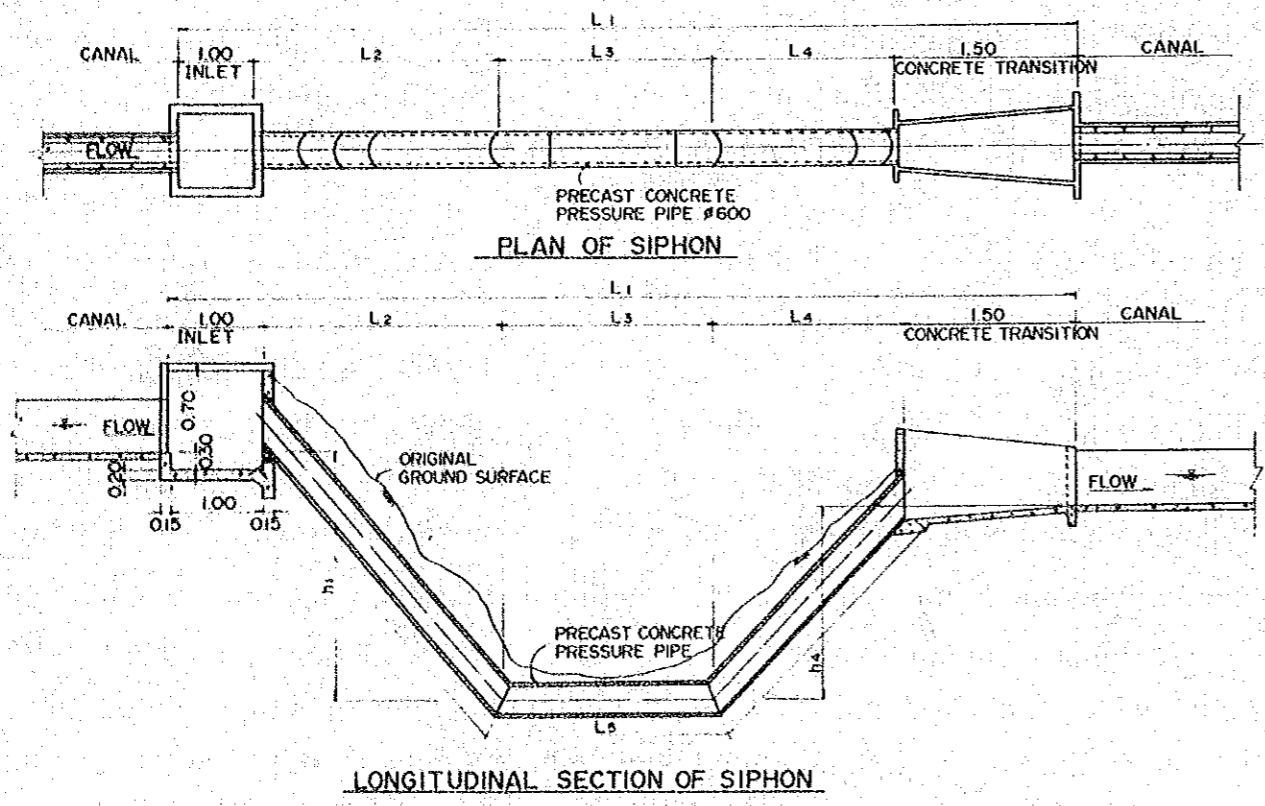
REPUBLIC OF ZIMBABWE MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT IN MASVINGO PROVINCE			
DETAILS OF OUTLET			
DATE	MARCH 1988	DWG. NO.	GEN-02
JAPAN INTERNATIONAL COOPERATION AGENCY			



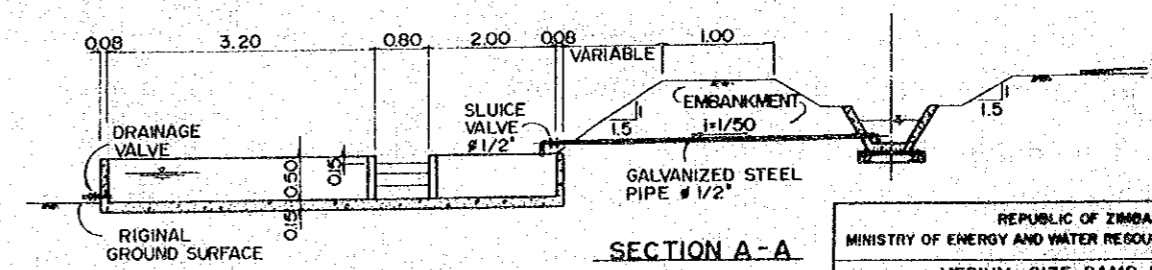
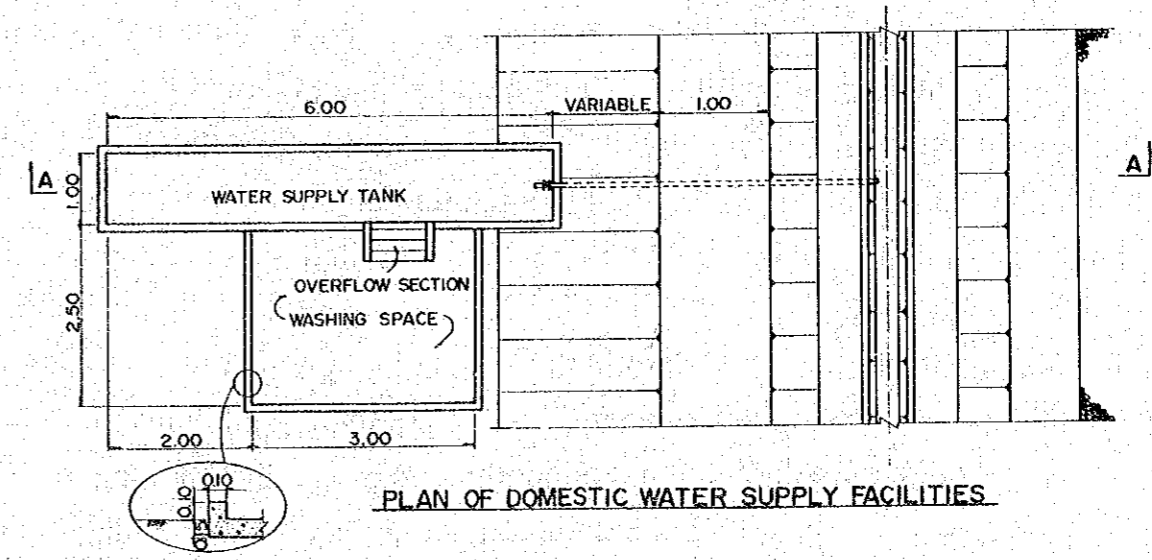
NO. OF PROJECT	CANAL LENGTH	CANAL WIDTH (D)	NO. OF DROPS
II - 2 - 1	810 m	0.25 m	9
IV - 4 - 10	4 720	0.25	15
V - 3 - 3	7 940	0.30	1



NO. OF PROJECT	STATION	NOTE
I - 2 - 1	NO. 3+70.00	
V - 3 - 3	NO. 34+75.00	
V - 3 - 3	NO. 37+60.00	



NO. OF STATION	STATION	L ₁	L ₂	L ₃	L ₄	L ₅	h ₁	h ₂
I - 2 - 1	NO. 2135-1000	65.00	20.00	10.0	35.00	65.39	3.17	3.09
IV - 4 - 10	NO. 2170-1200	50.00	25.00	10.0	15.00	51.95	6.63	5.80
V - 3 - 3	NO. 21160-1000	40.00	25.00	10.0	5.00	42.54	5.05	4.95



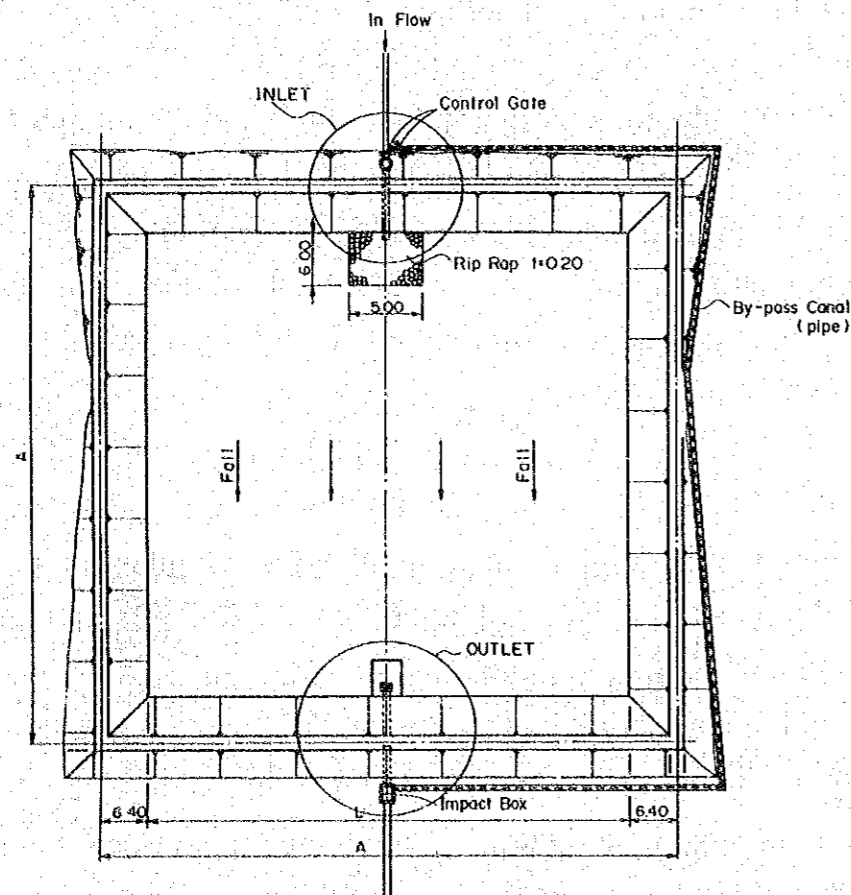
NO. OF PROJECT	NUMBER OF FACILITIES
I - 2 - 1	7
IV - 4 - 10	6
V - 3 - 3	9

REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE

RELATED STRUCTURES OF CONVEYANCE FACILITIES

DATE: MARCH 1988 DWG. NO. GEN - 03

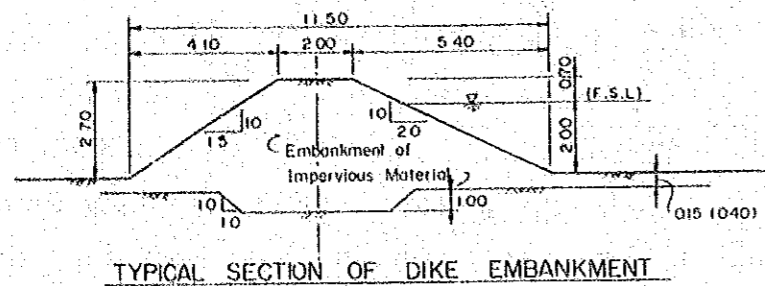
JAPAN INTERNATIONAL COOPERATION AGENCY



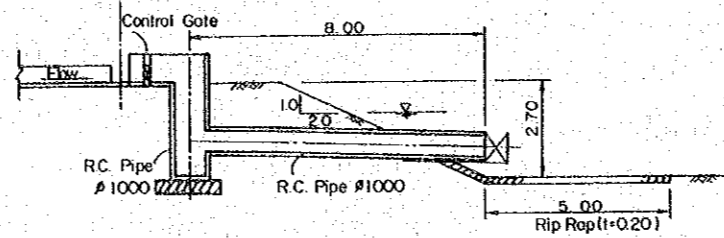
PLAN OF NIGHT STORAGE RESERVOIR

DIMENSION OF NIGHT STORAGE RESERVOIRS

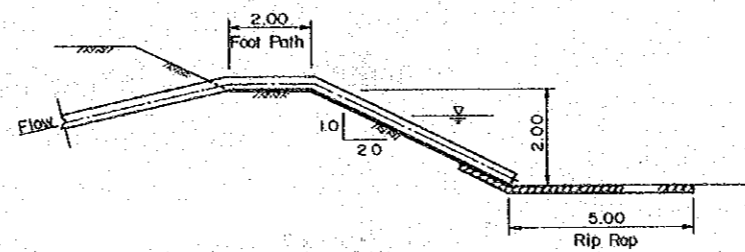
NAME OF AREA (NO)	A (m)	L (m)	CAPACITY (m ³)	INFLOW (l/s)	INLET TYPE
MUSAVEREMA (I-2-1)	57.0	44.2	4 600	54	CANAL
CHANYAMATUMWAI (I-6)	55.0	42.2	4 300	74	PIPE
MASHOKO (II-2-1)	40.0	27.2	1 900	23	CANAL
MUNJANGANJA (IV-4-10)	55.0	42.2	4 300	49	CANAL
MAGUDU (V-3-3)	66.0	63.2	6 500	76	CANAL
MABVUTE (VIII-1-12)	75.0	62.2	8 700	151	PIPE



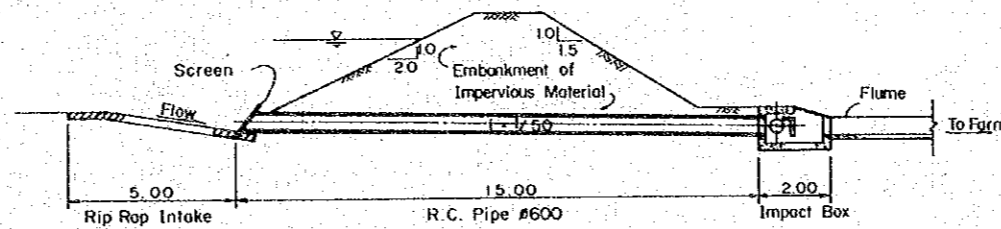
TYPICAL SECTION OF DIKE EMBANKMENT



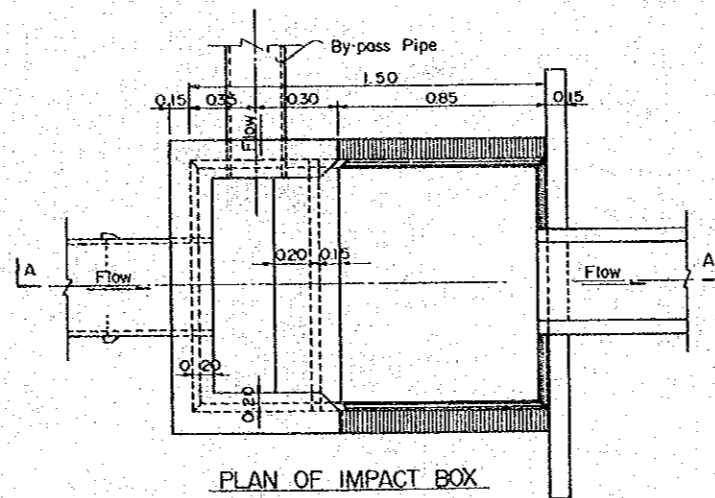
INLET STRUCTURE (CANAL TYPE)



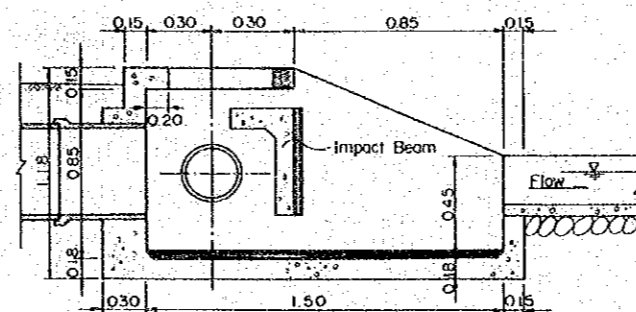
INLET STRUCTURE (PIPE TYPE)



OUTLET STRUCTURE

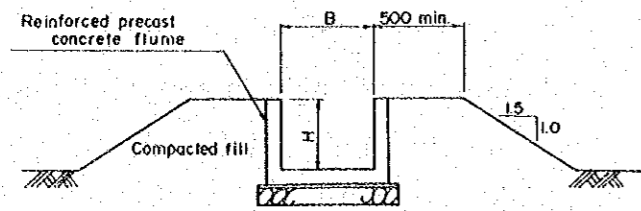


PLAN OF IMPACT BOX



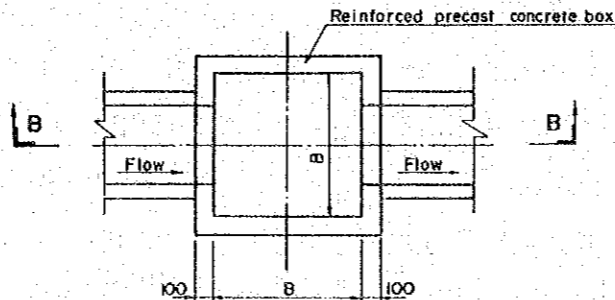
SECTION A-A

REPUBLIC OF ZIMBABWE MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT			
MEDIUM SIZE DAMS PROJECT IN MASVINGO PROVINCE			
NIGHT STORAGE RESERVOIR			
DATE	MARCH 1988	D.WG NO.	GEN - 04
JAPAN INTERNATIONAL COOPERATION AGENCY			



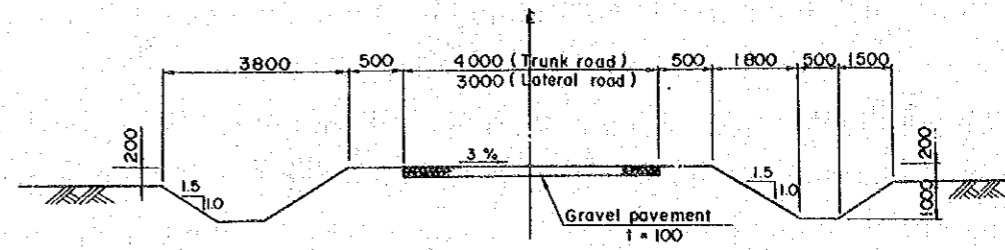
TYPICAL DISTRIBUTION CANAL SECTION

N.T.S



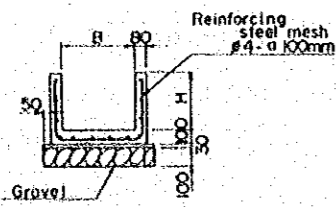
PLAN OF DROP STRUCTURE

N.T.S



FARM ROAD AND DRAINAGE CANAL SECTION

N.T.S

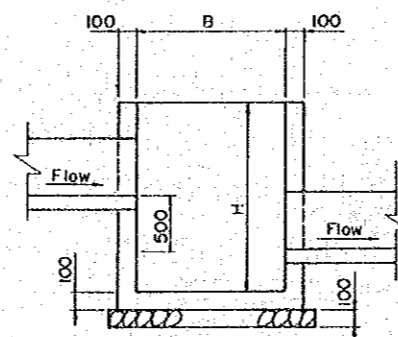


FLUME DETAILS

N.T.S

TABLE OF CANAL DIMENSIONS

CANAL TYPE	Q m ³ /sec	B	H
A	0.15 ~ 0.2	700	500
B	0.1 ~ 0.15	600	450
C	0.08 ~ 0.1	500	400
D	0.06 ~ 0.08	500	350
E	0.04 ~ 0.06	400	350
F	0.02 ~ 0.04	350	300

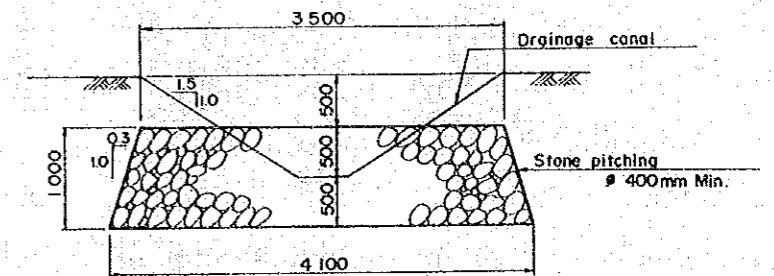


SECTION B - B

N.T.S

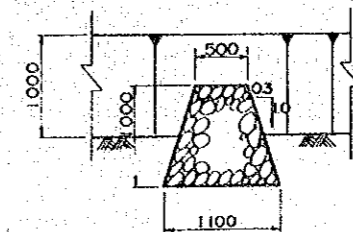
TABLE OF DROP DIMENSIS

DROP TYPE	B	H
A	1000	1300
B	900	1250
C	800	1200
D	800	1150
E	700	1150
F	650	1100



EROSION CONTROL WEIR

N.T.S

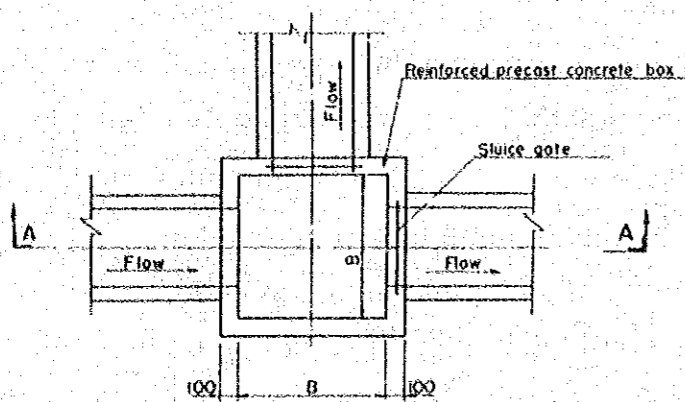


WEIR SECTION

N.T.S

Note

1. All dimensions are given in millimetres unless otherwise stated.

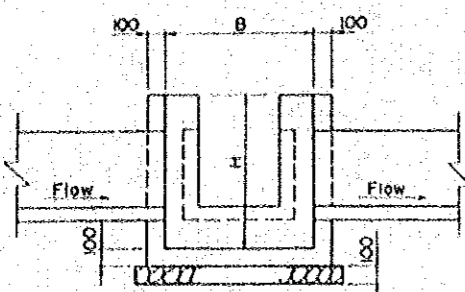


PLAN OF BOX (OFF-TAKE)

N.T.S

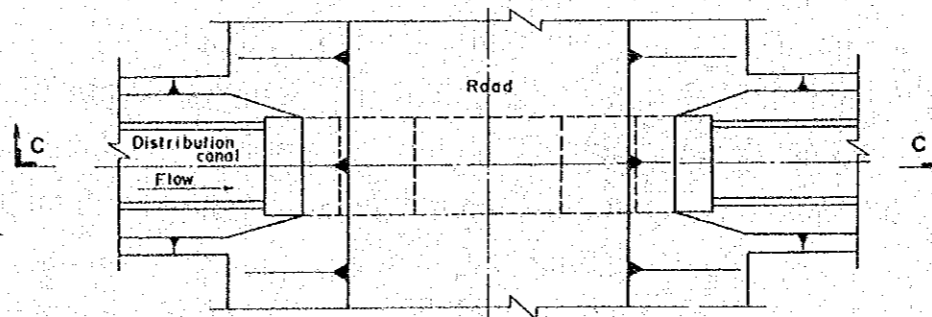
TABLE OF BOX DIMENSIONS

BOX TYPE	B	H
A	1000	800
B	900	750
C	800	700
D	800	650
E	700	650
F	650	600



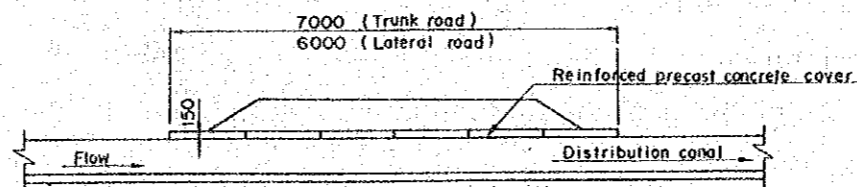
SECTION A - A

N.T.S



PLAN OF ROAD CROSSING

N.T.S



SECTION C - C

N.T.S

REPUBLIC OF ZIMBABWE
 MINISTRY OF ENERGY AND WATER RESOURCES AND DEVELOPMENT
 MEDIUM SIZE DAMS PROJECT
 IN MASVINGO PROVINCE

TYPICAL IN-FIELD FACILITIES

DATE	MARCH 1988	DWG. NO.	GEN - 05
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JAPAN INTERNATIONAL COOPERATION AGENCY

