

AF 53-20

THE DEMOCRATIC REPUBLIC OF THE SUDAN
MINISTRY OF AGRICULTURE, FOOD
AND NATURAL RESOURCES

FEASIBILITY REPORT
ON
RICE DEVELOPMENT PROJECT
IN ABU GASABA BASIN

ANNEX, VOLUME II

JUNE, 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

~~SECRET~~

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THE DEMOCRATIC REPUBLIC OF THE SUDAN
MINISTRY OF AGRICULTURE, FOOD
AND NATUAAL RESOURCES

FEASIBILITY REPORT
ON
RICE DEVELOPMENT PROJECT
IN ABU GASABA BASIN

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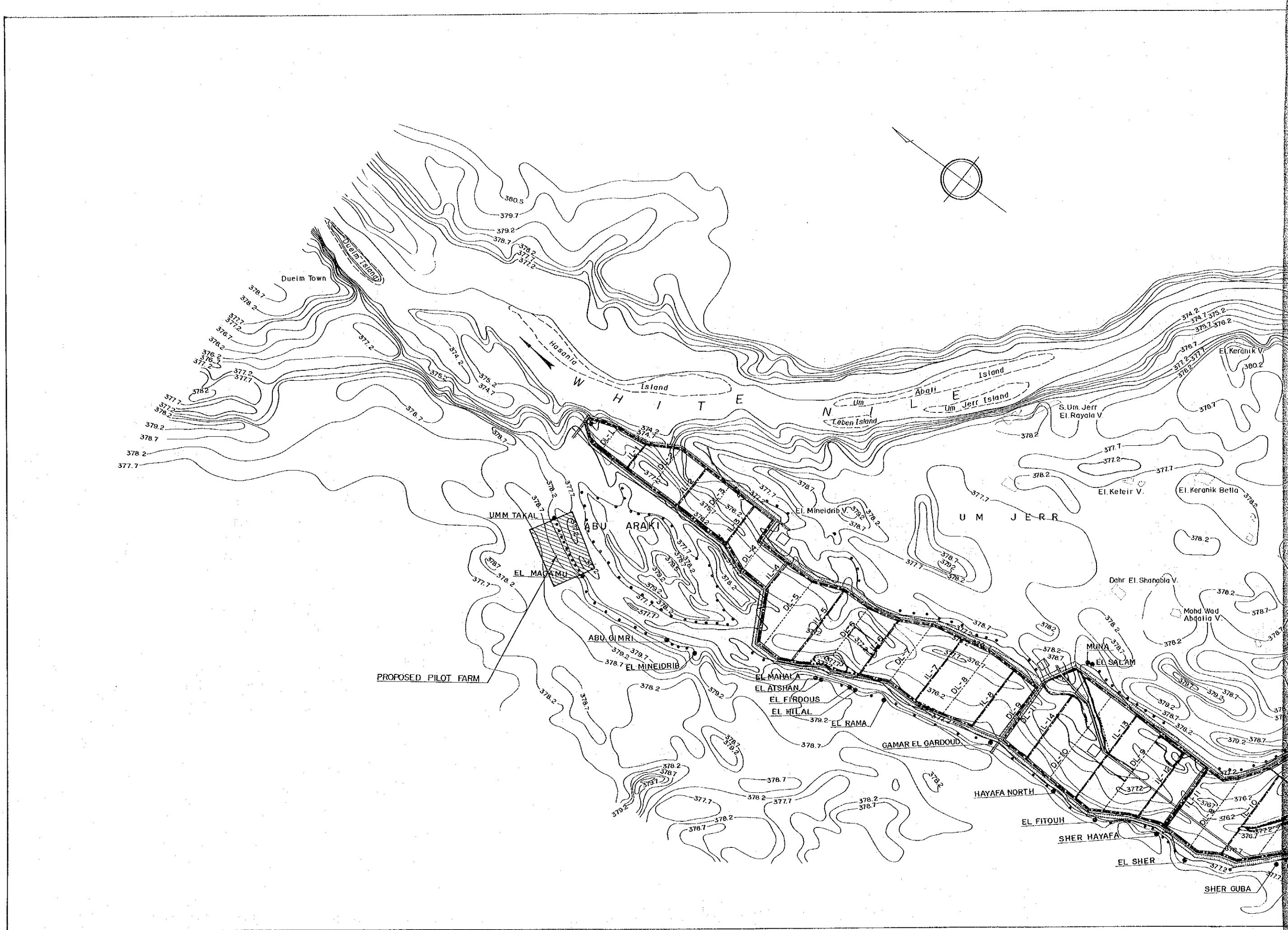
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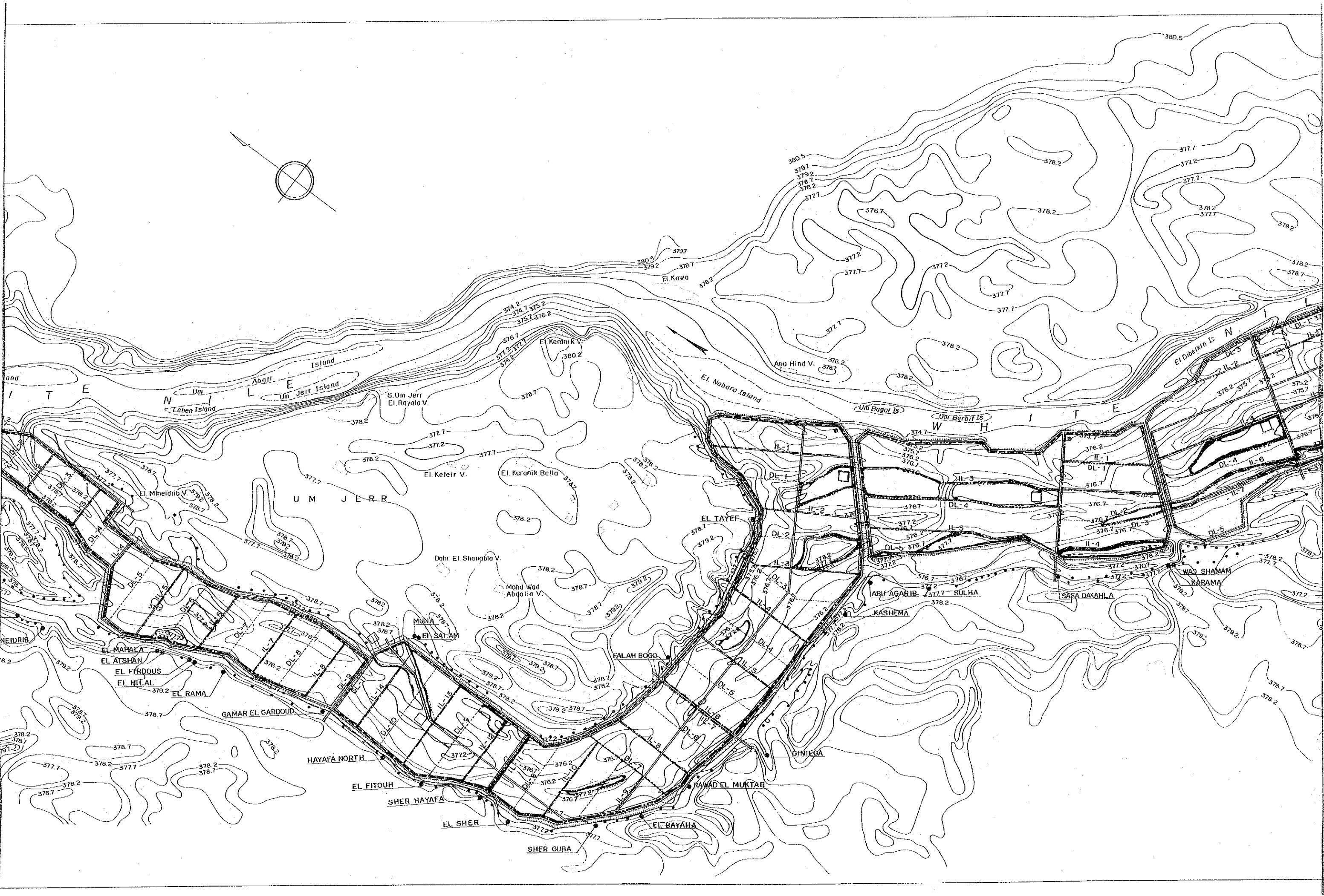
ANNEX, VOLUME II

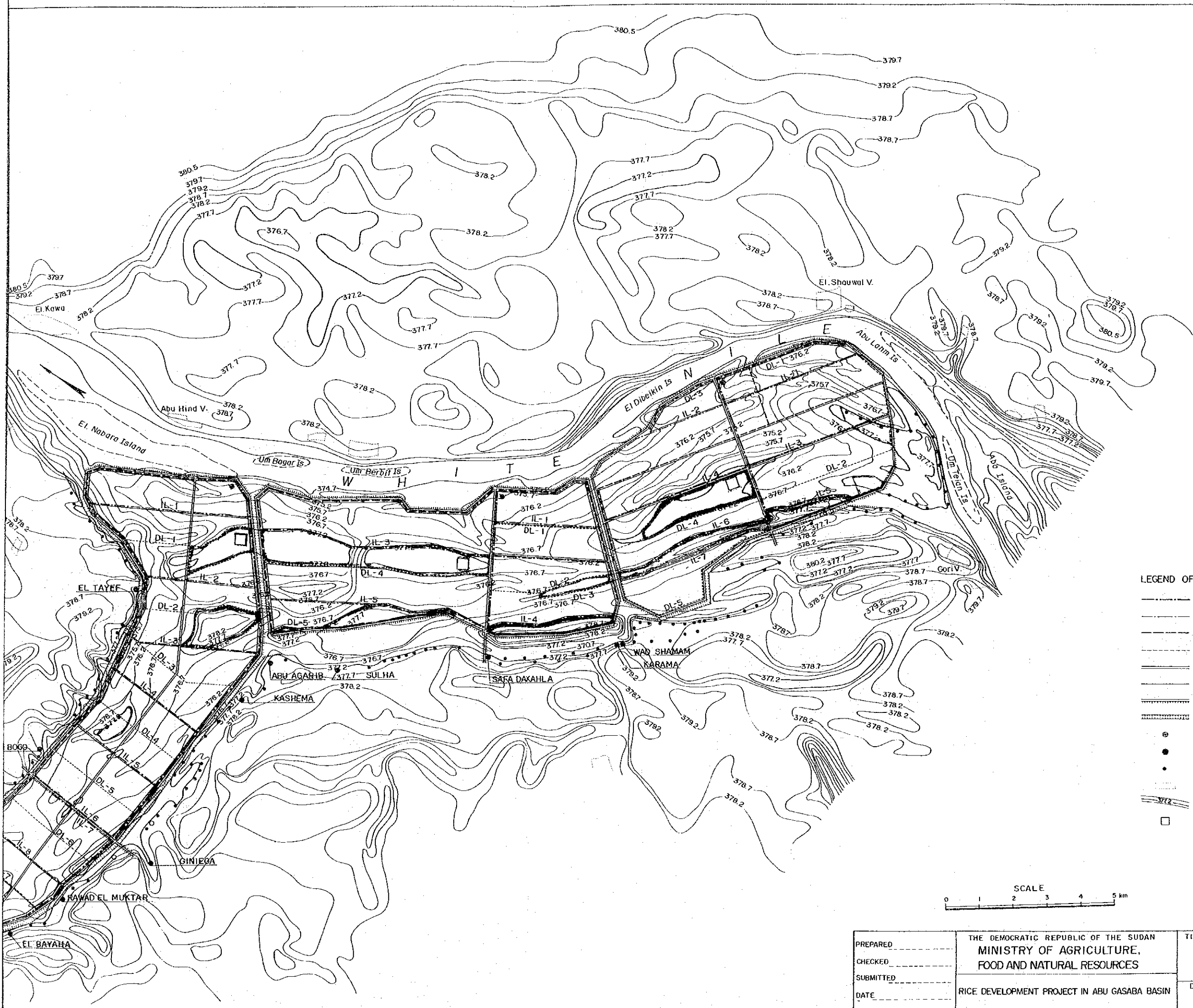
国際協力事業団	
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登録No. 09098	84.1
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JUNE, 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

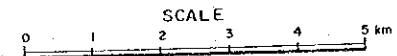




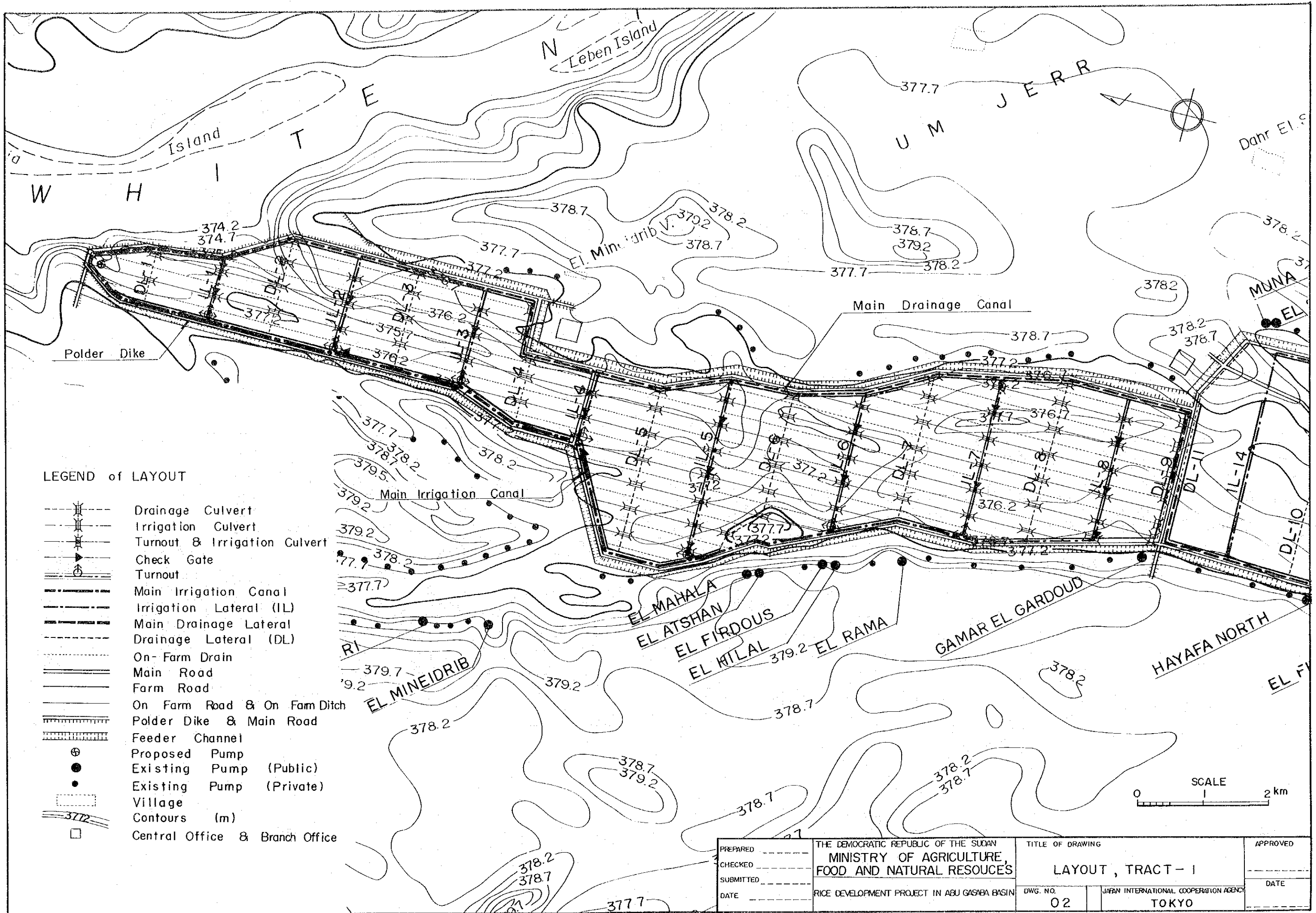


LEGEND OF LAYOUT

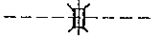
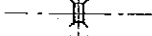

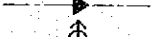
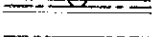


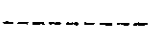
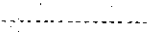
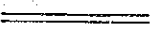
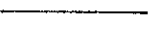
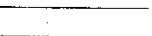
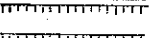
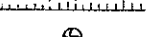


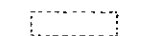
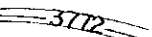



- Main Irrigation Canal
- Irrigation Lateral (IL)
- Main Drainage Lateral
- Drainage Lateral (DL)
- Main Road
- Farm Road
- Polder Dike & Main Road
- Feeder Channel
- ⊙ Proposed Pump
- Existing Pump (Public)
- Existing Pump (Private)
- Village
- Contours (m)
- Central Office & Branch Office



PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING		APPROVED
CHECKED		GENERAL LAYOUT		
SUBMITTED		DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	DATE
DATE		01	TOKYO	

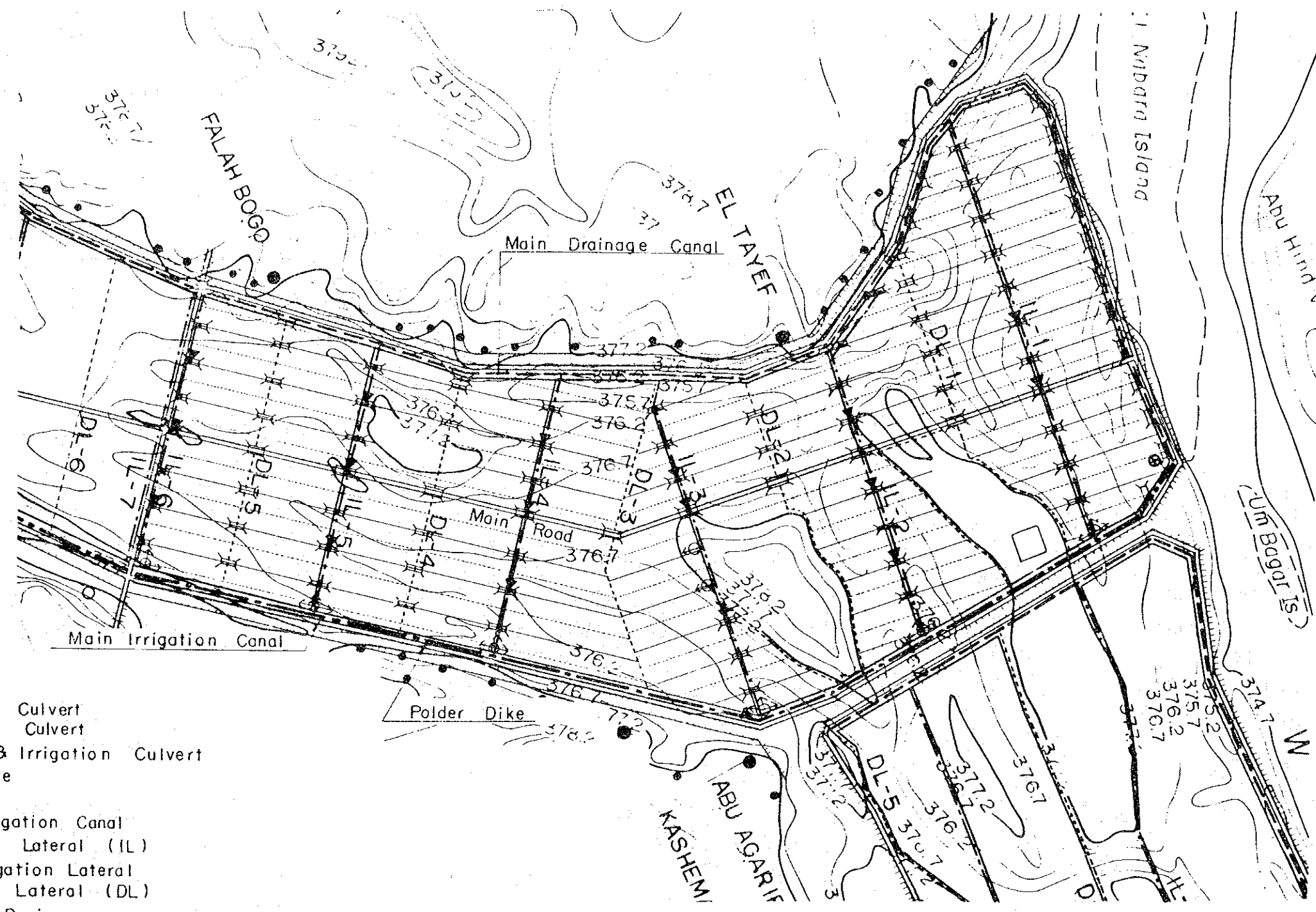


LEGEND of LAYOUT

-  Drainage Culvert
-  Irrigation Culvert
-  Turnout & Irrigation Culvert
-  Check Gate
-  Turnout
-  Main Irrigation Canal
-  Irrigation Lateral (IL)
-  Main Drainage Lateral
-  Drainage Lateral (DL)
-  On-Farm Drain
-  Main Road
-  Farm Road
-  On Farm Road & On Farm Ditch
-  Polder Dike & Main Road
-  Feeder Channel
-  Proposed Pump
-  Existing Pump (Public)
-  Existing Pump (Private)
-  Village
-  Contours (m)
-  Central Office & Branch Office

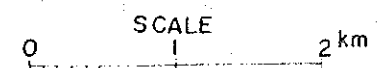
SCALE
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PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	LAYOUT, TRACT - I	DATE
SUBMITTED	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG. NO. 02	JAPAN INTERNATIONAL COOPERATION AGENCY
DATE		TOKYO	

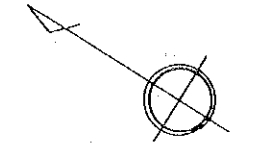
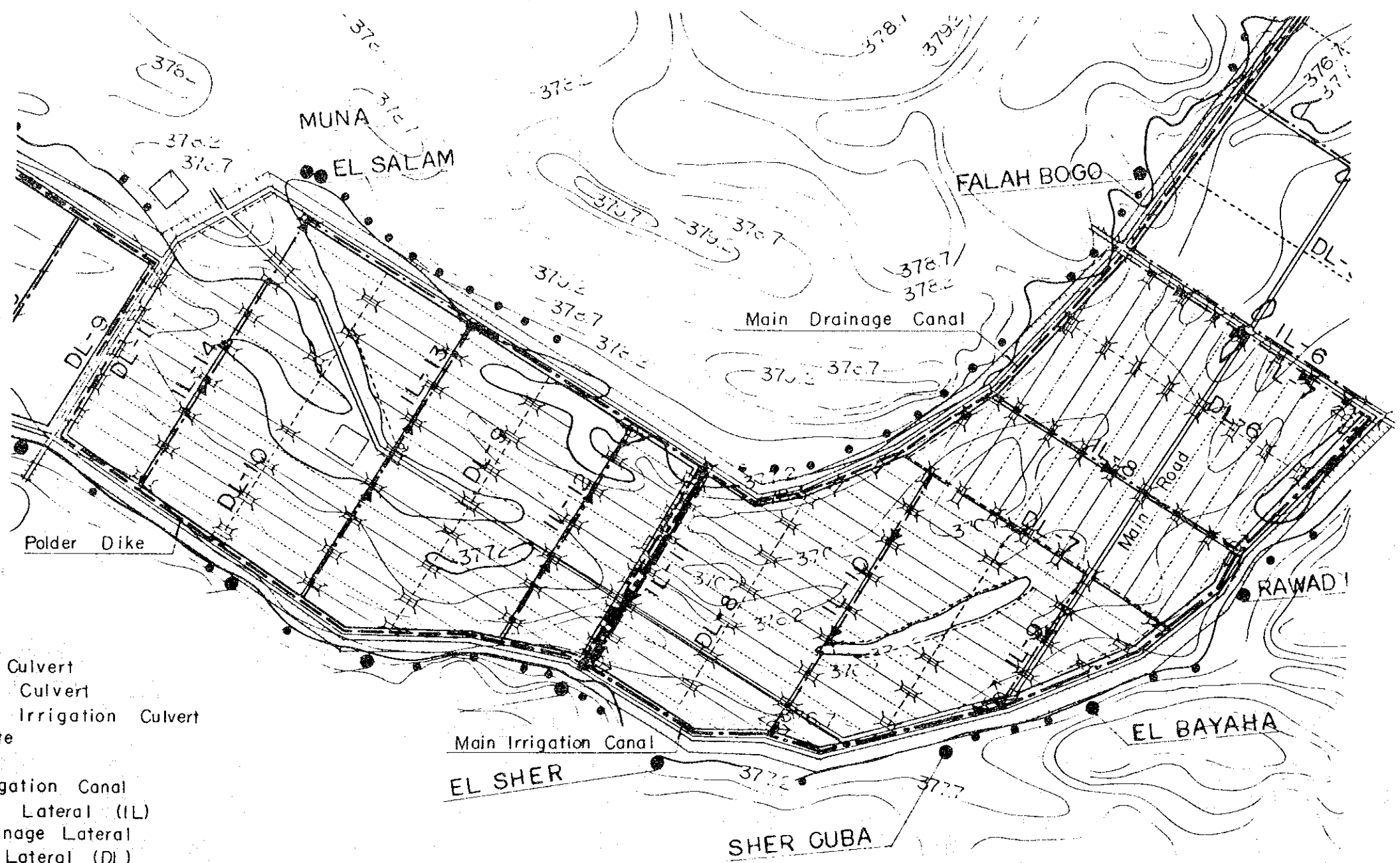


LEGEND of LAYOUT

- Drainage Culvert
- Irrigation Culvert
- Turnout & Irrigation Culvert
- Check Gate
- Turnout
- Main Irrigation Canal
- Irrigation Lateral (IL)
- Main Irrigation Lateral
- Drainage Lateral (DL)
- On Farm Drain
- Main Road
- Farm Road
- On Farm Road & On Farm Ditch
- Polder Dike & Main Road
- Feeder Channel
- Proposed Pump
- Existing Pump (Public)
- Existing Pump (Private)
- Village
- Contours (m)
- Central Office & Branch Office



PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	LAYOUT, TRACT-2 (I)	DATE
SUBMITTED	DATE	DWG. NO. 03	JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO

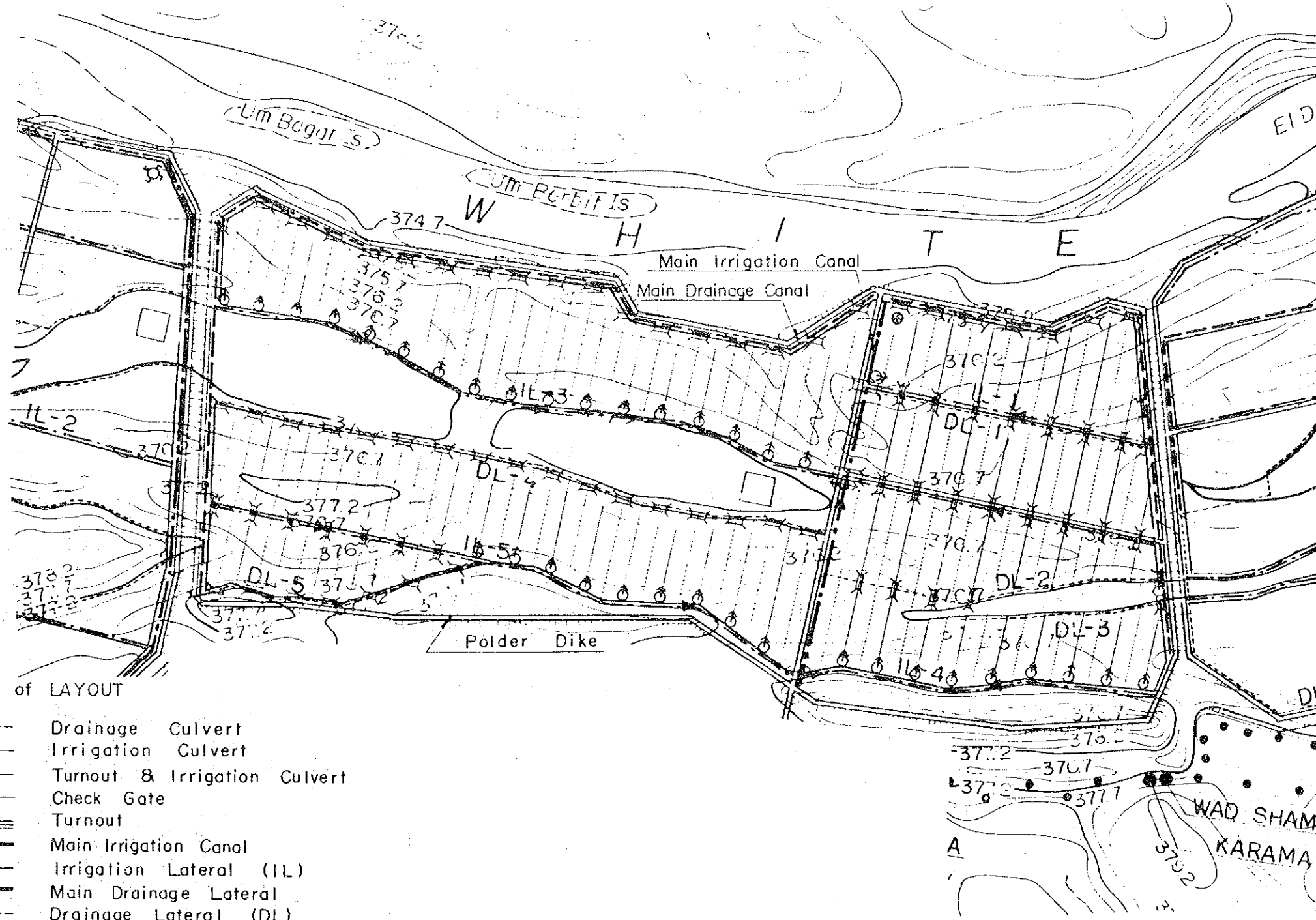


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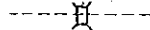
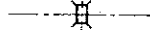
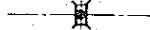

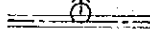



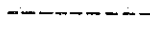

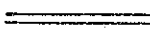

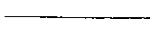
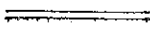
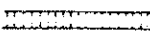



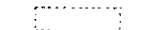


- Drainage Culvert
- Irrigation Culvert
- Turnout & Irrigation Culvert
- Check Gate
- Turnout
- Main Irrigation Canal
- Irrigation Lateral (IL)
- Main Drainage Lateral
- Drainage Lateral (DL)
- On-Farm Drain
- Main Road
- Farm Road
- On-Farm Road & On-Farm Ditch
- Polder Dike & Main Road
- Feeder Channel
- Proposed Pump
- Existing Pump (Public)
- Existing Pump (Private)
- Village
- Contours (m)
- Central Office & Branch Office

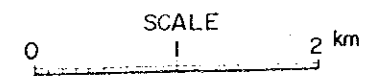


PREPARED _____ CHECKED _____ SUBMITTED _____ DATE _____	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING LAYOUT, TRACT - 2 (2) DWG. NO. 04 JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	APPROVED _____ DATE _____
RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN			

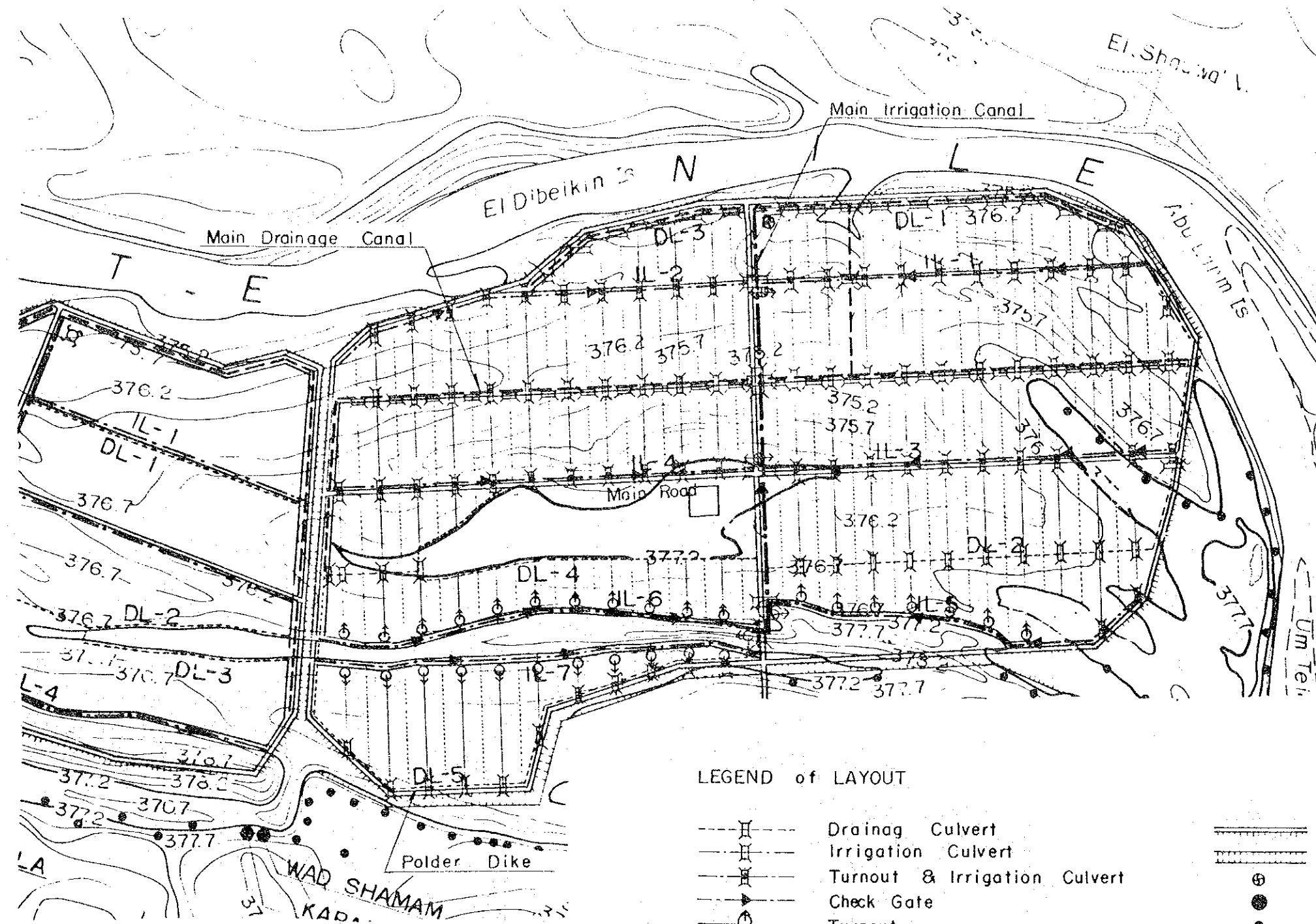


LEGEND of LAYOUT

-  Drainage Culvert
-  Irrigation Culvert
-  Turnout & Irrigation Culvert
-  Check Gate
-  Turnout
-  Main Irrigation Canal
-  Irrigation Lateral (IL)
-  Main Drainage Lateral
-  Drainage Lateral (DL)
-  On-Farm Drain
-  Main Road
-  Farm Road
-  On Farm Road & On Farm Ditch
-  Polder Dike & Main Road
-  Feeder Channel
-  Proposed Pump
-  Existing Pump (Public)
-  Existing Pump (Private)
-  Village
-  Contours (m)
-  Central Office & Branch Office

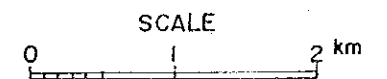


PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	LAYOUT, TRACT-3	
SUBMITTED			DATE
DATE	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG. NO. 05	JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO

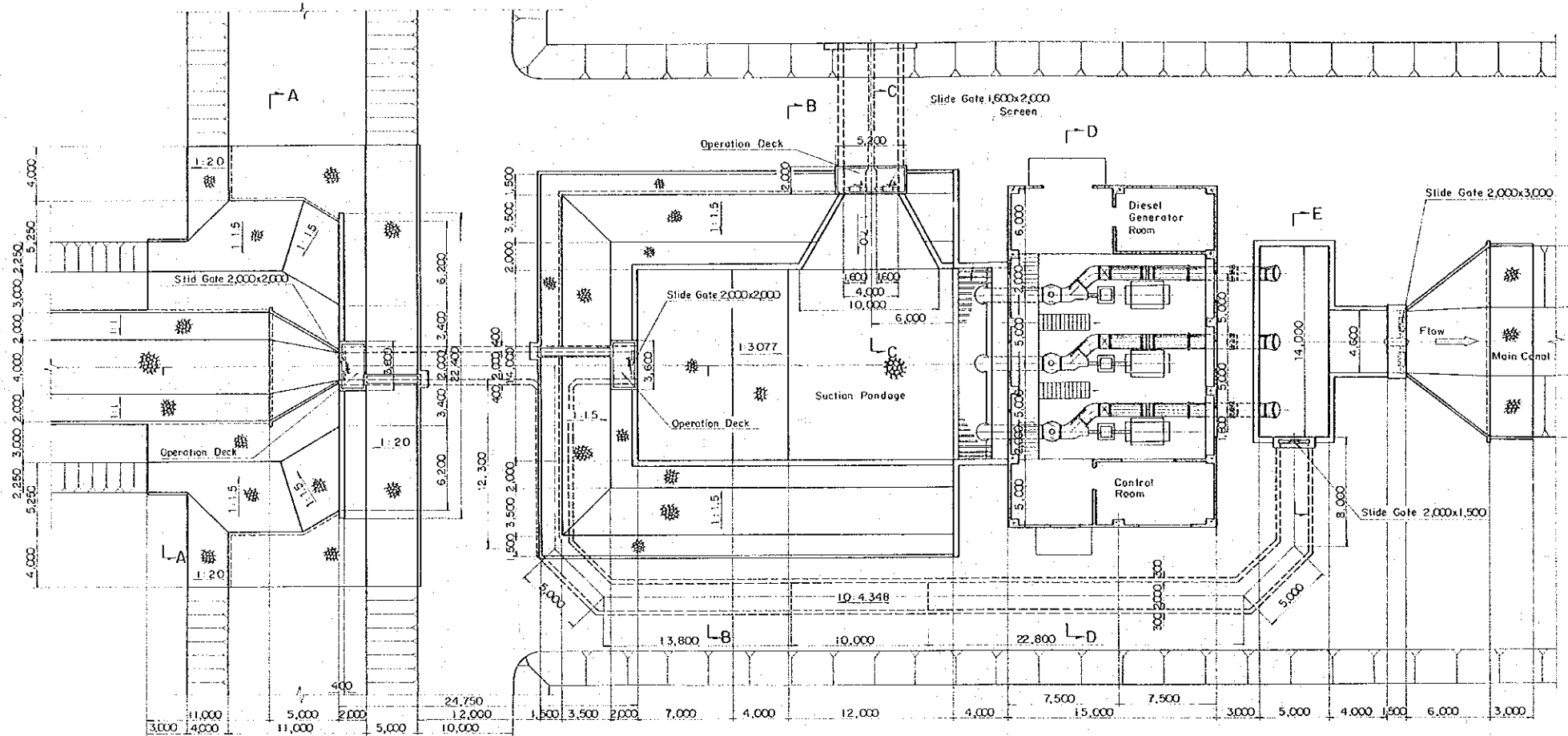


LEGEND of LAYOUT

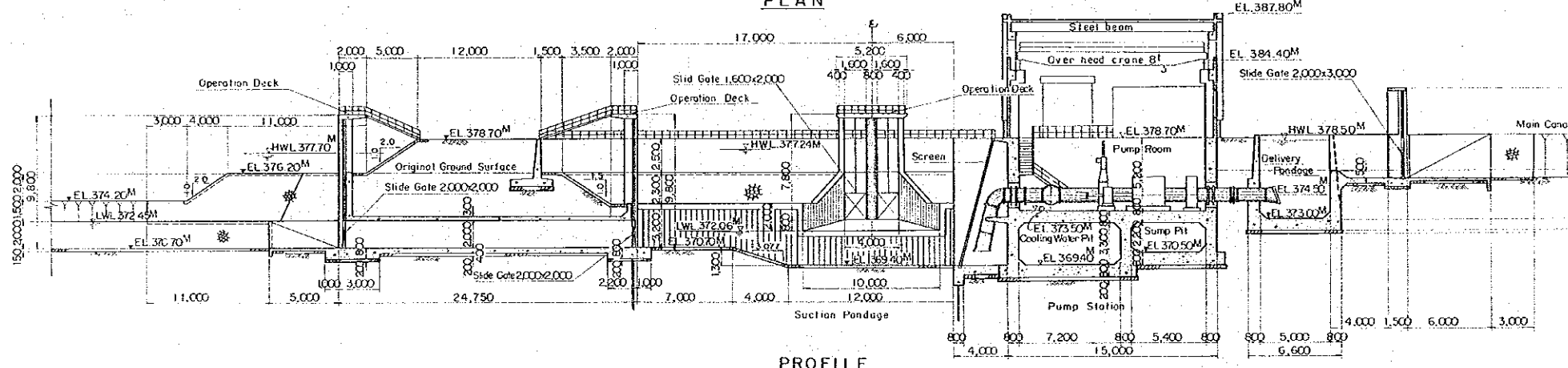
- | | | | |
|--|------------------------------|--|--------------------------------|
| | Drainage Culvert | | Polder Dike & Main Road |
| | Irrigation Culvert | | Feeder Channal |
| | Turnout & Irrigation Culvert | | Proposed Pump |
| | Check Gate | | Existing Pump (Public) |
| | Turnout | | Existing Pump (Private) |
| | Main Irrigation Canal | | Village |
| | Irrigation Lateral (IL) | | Contours (m) |
| | Main Drainage Lateral | | Central Office & Branch Office |
| | Drainage Lateral (DL) | | |
| | On Farm Drain | | |
| | Main Road | | |
| | Farm Road | | |
| | On Farm Road & On Farm Ditch | | |



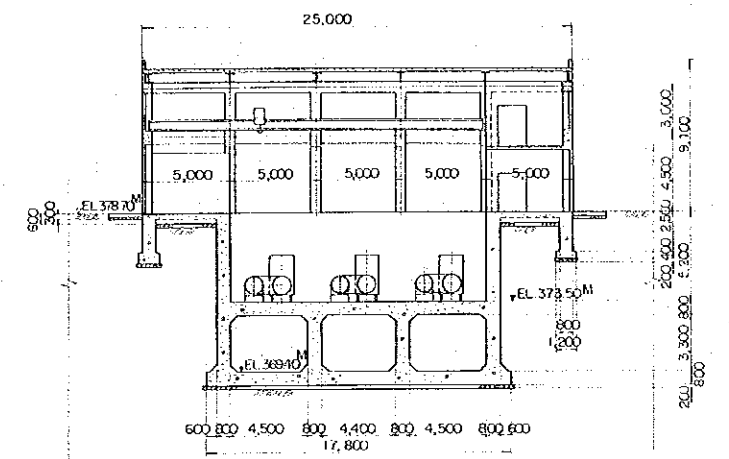
PREPARED _____	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED _____
CHECKED _____	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	LAYOUT, TRACT-4	DATE _____
SUBMITTED _____	ROCE DEVELOPMENT PROJECT IN ABU GASAB BASIN	DWG. NO. 06	JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO
DATE _____			



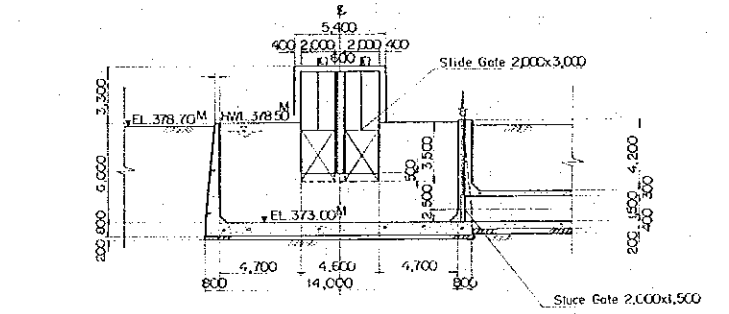
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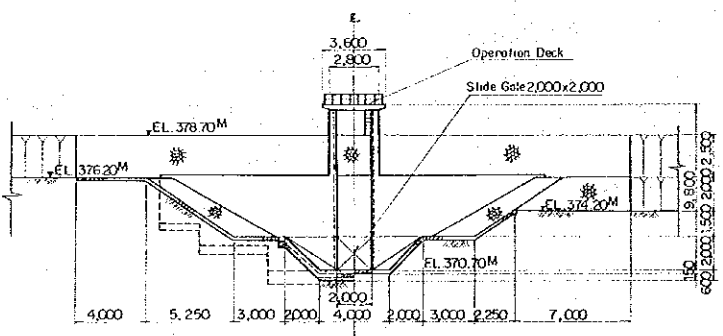
PROFILE



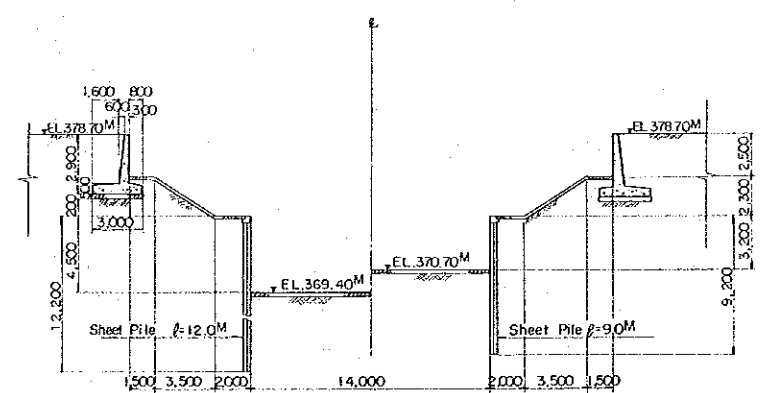
SECTION D-D



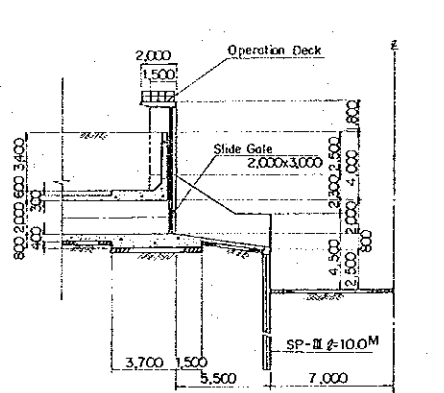
SECTION E-E



SECTION A-A

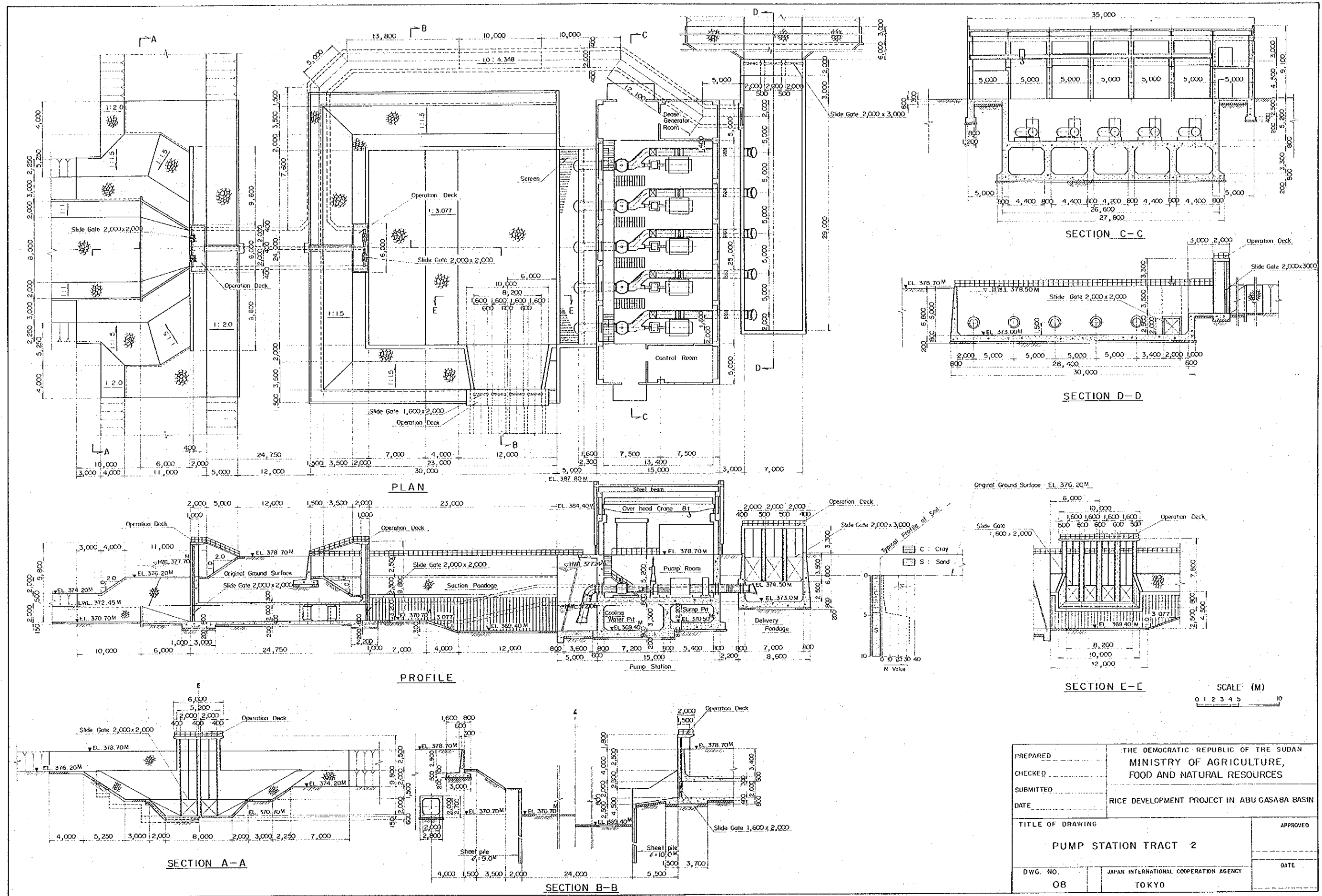


SECTION B-B



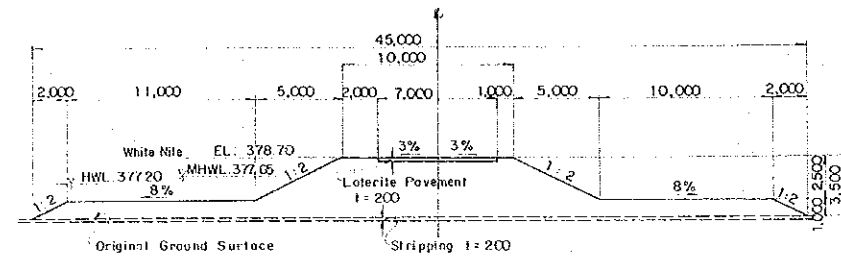
SECTION C-C

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	
SUBMITTED	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	
DATE		
TITLE OF DRAWING		APPROVED
PUMP STATION TRACT 1, 3, 4		
DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	DATE
07	TOKYO	



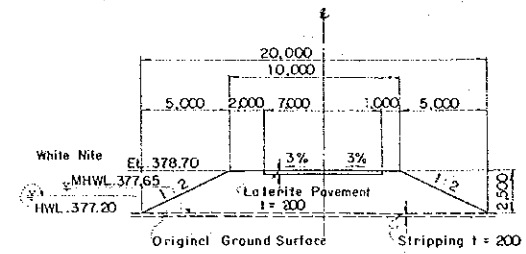
PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	
SUBMITTED	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	
DATE	APPROVED	
TITLE OF DRAWING		DATE
PUMP STATION TRACT 2		
DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	
08	TOKYO	

POLDER DIKE TYPE-B

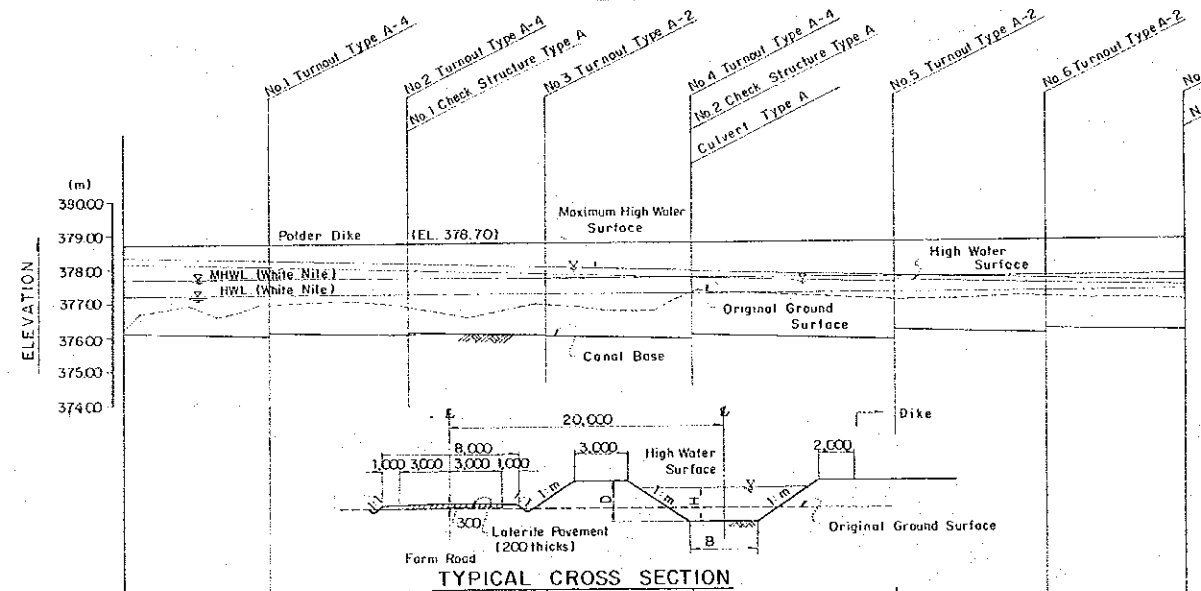


TYPICAL CROSS SECTION

POLDER DIKE TYPE-C

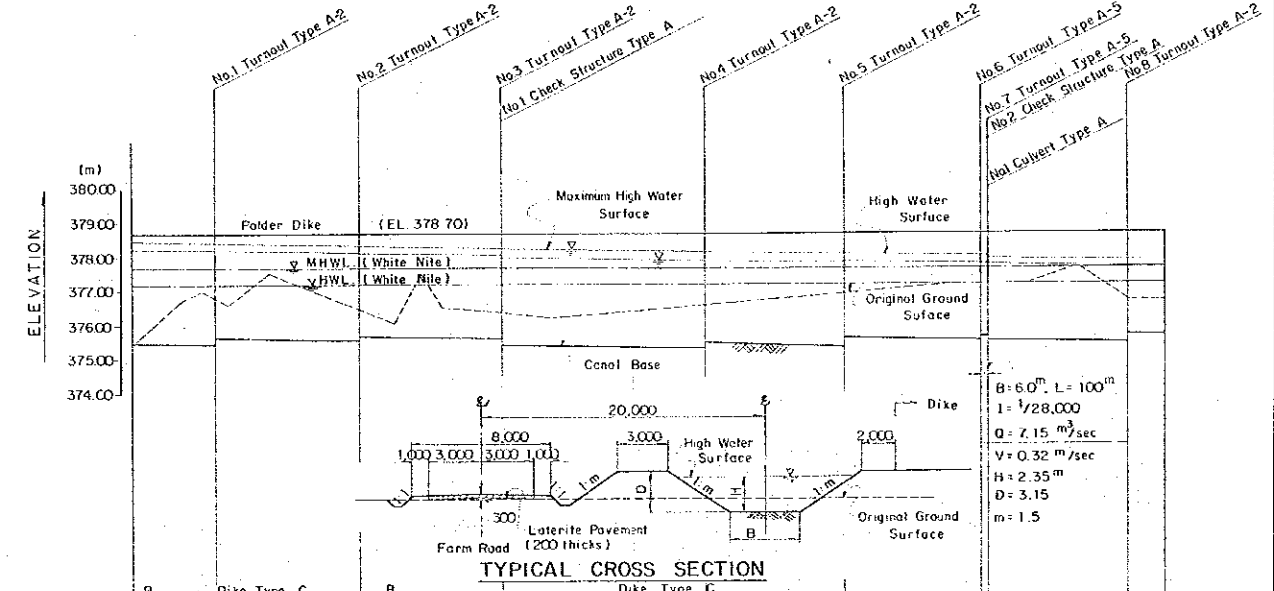


TYPICAL CROSS SECTION



TYPICAL CROSS SECTION

Dike Type C	
B = 5.0m, L = 2,150m	B = 5.0m, L = 2,000m
I = 1/20,000	I = 1/20,000
Q = 6.66 m ³ /sec	Q = 6.01 m ³ /sec
V = 0.36 m/sec	V = 0.35 m/sec
H = 2.23m	H = 2.11m
D = 3.00m	D = 2.90m
m = 1.5	m = 1.5

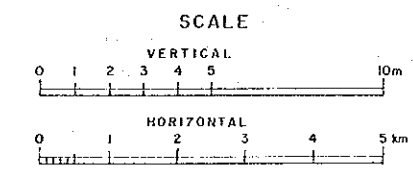


TYPICAL CROSS SECTION

Dike Type C	
B = 7.0m, L = 1,200m	B = 7.0m, L = 2,100m
I = 1/28,000	I = 1/28,000
Q = 14.18 m ³ /sec	Q = 12.47 m ³ /sec
V = 0.37 m/sec	V = 0.35 m/sec
H = 2.98m	H = 2.79m
D = 3.80m	D = 3.65m
m = 2.0	m = 2.0

STATION	MAIN IRRIGATION CANAL - TRACT 1					
	Canal Top Elevation	Water Surface Elevation	Canal Base Elevation	Original Ground Surface Elevation	Reduced Distance	Distance
No. 0	378.34	378.14	376.11	376.20	0.0	0.0
No. 1	378.29	378.09	376.06	376.90	1,000.0	1,000.0
No. 2	378.24	378.04	376.01	376.80	2,000.0	2,000.0
No. 3	378.19	377.99	375.96	376.70	3,000.0	3,000.0
No. 4	378.14	377.94	375.91	376.60	4,000.0	4,000.0
No. 5	378.09	377.89	375.86	376.50	5,000.0	5,000.0
No. 6	378.04	377.84	375.81	376.40	6,000.0	6,000.0
No. 7	377.99	377.79	375.76	376.30	7,000.0	7,000.0
No. 8	377.94	377.74	375.71	376.20	8,000.0	8,000.0
No. 9	377.89	377.69	375.66	376.10	9,000.0	9,000.0
No. 10	377.84	377.64	375.61	376.00	10,000.0	10,000.0
No. 11	377.79	377.59	375.56	375.90	11,000.0	11,000.0
No. 12	377.74	377.54	375.51	375.80	12,000.0	12,000.0
No. 13	377.69	377.49	375.46	375.70	13,000.0	13,000.0
No. 14	377.64	377.44	375.41	375.60	14,000.0	14,000.0
No. 15	377.59	377.39	375.36	375.50	15,000.0	15,000.0

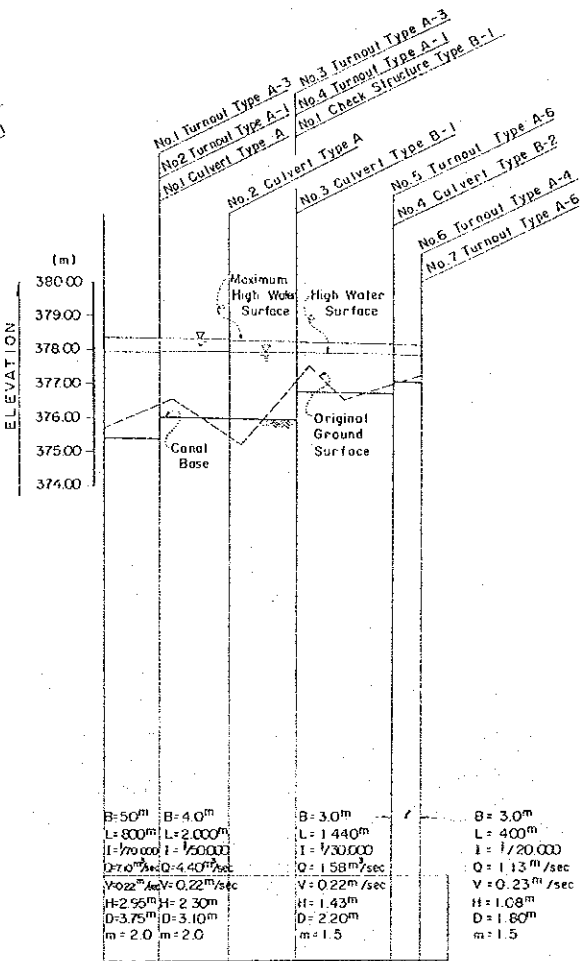
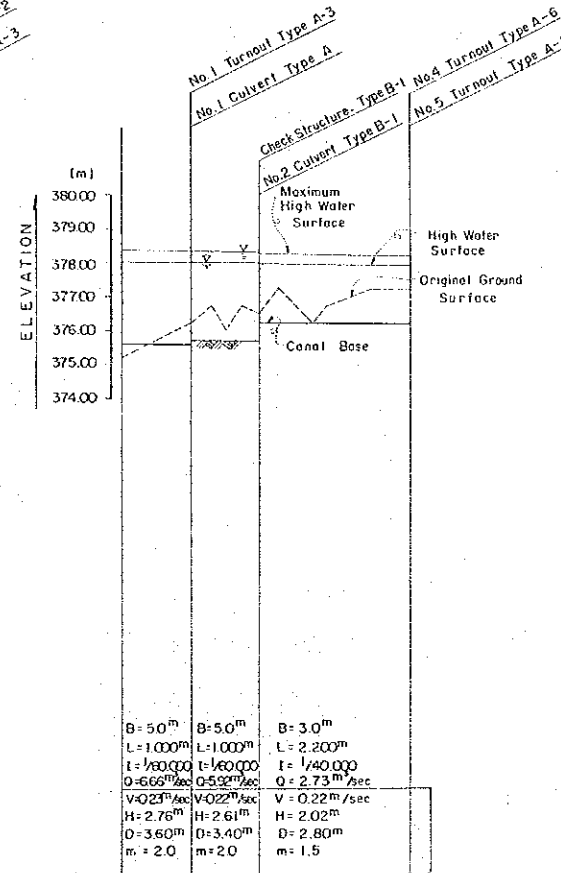
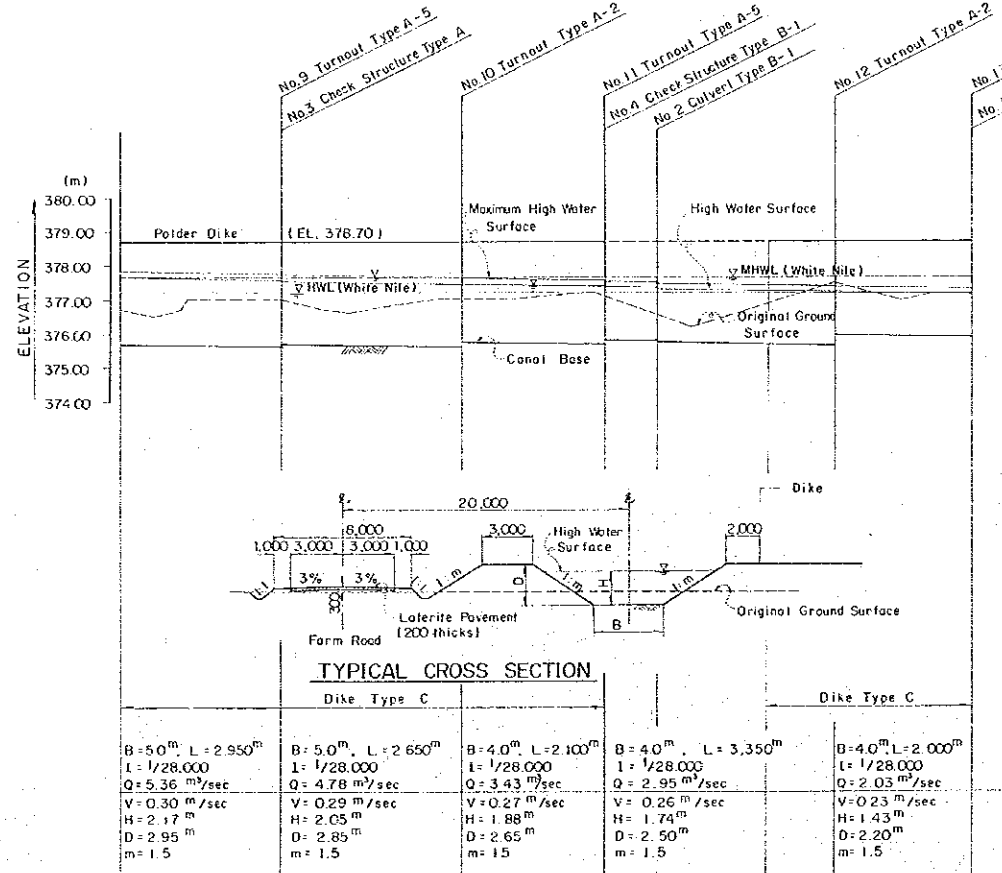
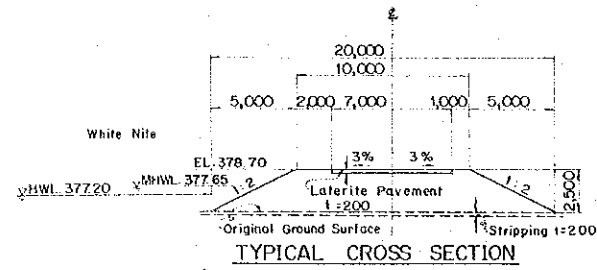
STATION	MAIN IRRIGATION CANAL - TRACT 2					
	Canal Top Elevation	Water Surface Elevation	Canal Base Elevation	Original Ground Surface Elevation	Reduced Distance	Distance
No. 0	378.47	378.28	376.49	376.54	0.0	0.0
No. 1	378.42	378.22	376.44	376.44	1,000.0	1,000.0
No. 2	378.37	378.17	376.39	376.34	2,000.0	2,000.0
No. 3	378.32	378.12	376.34	376.24	3,000.0	3,000.0
No. 4	378.27	378.07	376.29	376.14	4,000.0	4,000.0
No. 5	378.22	378.02	376.24	376.04	5,000.0	5,000.0
No. 6	378.17	377.97	376.19	375.94	6,000.0	6,000.0
No. 7	378.12	377.92	376.14	375.84	7,000.0	7,000.0
No. 8	378.07	377.87	376.09	375.79	8,000.0	8,000.0
No. 9	378.02	377.82	376.04	375.69	9,000.0	9,000.0
No. 10	377.97	377.77	375.99	375.59	10,000.0	10,000.0
No. 11	377.92	377.72	375.94	375.49	11,000.0	11,000.0
No. 12	377.87	377.67	375.89	375.39	12,000.0	12,000.0
No. 13	377.82	377.62	375.84	375.29	13,000.0	13,000.0
No. 14	377.77	377.57	375.79	375.19	14,000.0	14,000.0
No. 15	377.72	377.52	375.74	375.14	15,000.0	15,000.0



NOTE
 B : Canal Base Width
 L : Canal Length
 I : Hydraulic Gradient
 H : Water Depth
 D : Canal Depth
 Q : Discharge (Max)
 V : Velocity
 m : Side Slope

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	MAIN IRRIGATION CANAL AND POLDER DIKE PROFILE TRACT 1,	
SUBMITTED		DWG. NO. 09	DATE
DATE	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	JAPAN INTERNATIONAL COOPERATION AGENCY	TOKYO

POLDER DIKE TYPE-C

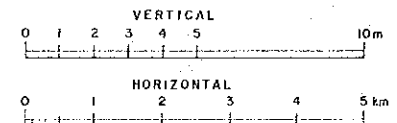


STATION	MAXIMUM HIGH WATER SURFACE ELEVATION	HIGH WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE	DISTANCE
No. 15	377.85	377.85	375.68	376.70	0.0	0.0
+500.0	377.83	377.63	375.66	376.50	15,000.0	1,000.0
No. 16	377.79	377.11	375.64	377.00	15,500.0	500.0
+400.0	377.77	377.57	375.60	377.00	17,000.0	1,000.0
No. 17	377.75	377.45	375.58	377.00	17,400.0	400.0
+300.0	377.71	377.51	375.60	376.70	18,000.0	600.0
No. 18	377.70	377.50	375.65	376.90	18,400.0	400.0
+200.0	377.09	375.48	375.63	376.90	19,000.0	600.0
No. 19	377.64	377.44	375.69	377.00	20,000.0	1,000.0
+50.0	377.64	377.47	375.78	377.00	20,500.0	500.0
No. 20	377.60	377.43	375.72	377.10	21,000.0	900.0
No. 21	377.57	377.40	375.68	377.20	22,000.0	1,000.0
+150.0	377.53	377.37	375.79	377.00	22,150.0	1,500.0
+50.0	377.53	377.37	375.79	376.80	23,800.0	1,800.0
+400.0	377.48	377.32	375.74	376.50	25,000.0	2,000.0
No. 22	377.46	377.30	375.72	376.20	25,400.0	2,400.0
No. 23	377.44	377.28	375.70	376.80	26,000.0	3,000.0
+50.0	377.42	377.26	375.68	376.90	26,850.0	3,850.0
No. 24	377.40	377.24	375.66	377.20	27,000.0	4,500.0
+500.0	377.38	377.22	375.64	377.30	28,500.0	6,000.0
No. 25	377.36	377.20	375.62	377.20	28,000.0	5,000.0
+500.0	377.34	377.18	375.61	377.00	28,500.0	5,500.0
No. 26	377.33	377.17	375.60	377.20	29,000.0	6,000.0
+500.0	377.31	377.15	375.58	377.20	29,500.0	6,500.0

STATION	MAXIMUM HIGH WATER SURFACE ELEVATION	HIGH WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE	DISTANCE
No. 1	378.38	378.02	375.52	375.20	0.0	0.0
+300.0	378.36	378.00	375.50	375.20	1,000.0	1,000.0
+500.0	378.33	377.98	375.48	375.20	1,500.0	3,000.0
+750.0	378.33	377.98	375.48	375.00	1,500.0	3,000.0
No. 2	378.33	377.98	375.48	375.00	1,500.0	3,000.0
+300.0	378.25	377.90	375.40	375.20	2,000.0	3,000.0
+600.0	378.24	377.89	375.39	375.20	2,800.0	5,000.0
No. 3	378.23	377.88	375.38	376.70	3,000.0	2,000.0
+200.0	378.21	377.86	375.36	377.20	4,000.0	3,000.0

STATION	MAXIMUM HIGH WATER SURFACE ELEVATION	HIGH WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE	DISTANCE
No. 0	378.32	377.91	375.37	375.70	0.0	0.0
+800.0	378.26	377.82	375.36	376.40	800.0	800.0
No. 1	378.28	377.84	375.38	376.50	1,000.0	2,000.0
+800.0	378.26	377.80	375.36	375.40	1,800.0	3,000.0
No. 2	378.23	377.81	375.33	375.20	2,000.0	3,000.0
+800.0	378.21	377.79	375.31	377.10	2,000.0	3,000.0
No. 3	378.15	377.78	375.29	377.50	3,000.0	3,000.0
+200.0	378.08	377.78	375.28	376.70	4,000.0	4,000.0
+600.0	378.07	377.77	375.27	376.90	4,200.0	4,600.0

SCALE

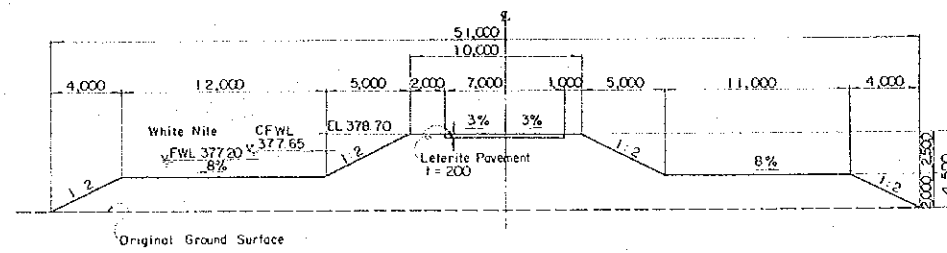


NOTE

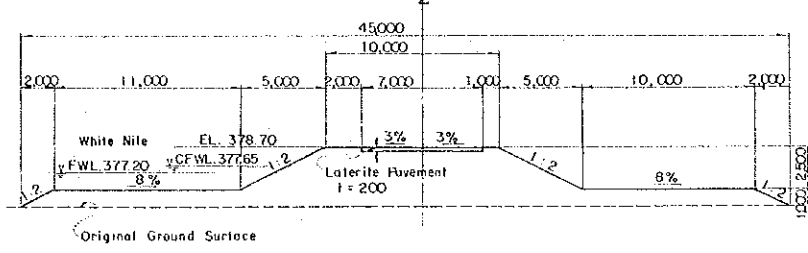
- B : Canal Base Width
- L : Canal Length
- I : Hydraulic Gradient
- H : Water Depth
- D : Canal Depth
- Q : Discharge (Max.)
- V : Velocity
- M : Side Slope

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING		APPROVED
CHECKED		MAIN IRRIGATION CANAL AND POLDER DIKE PROFILE		
SUBMITTED		TRACT 2, 3, 4		DATE
DATE		RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG NO. 10	JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO

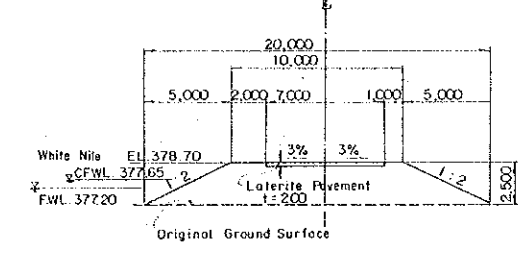
POLDER DIKE TYPE-A



POLDER DIKE TYPE-B



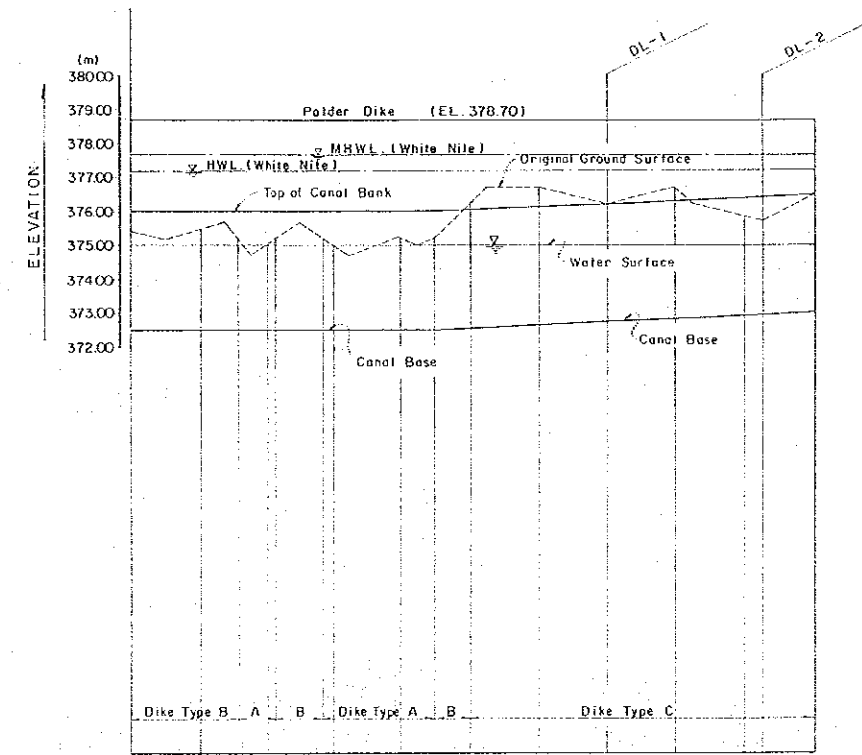
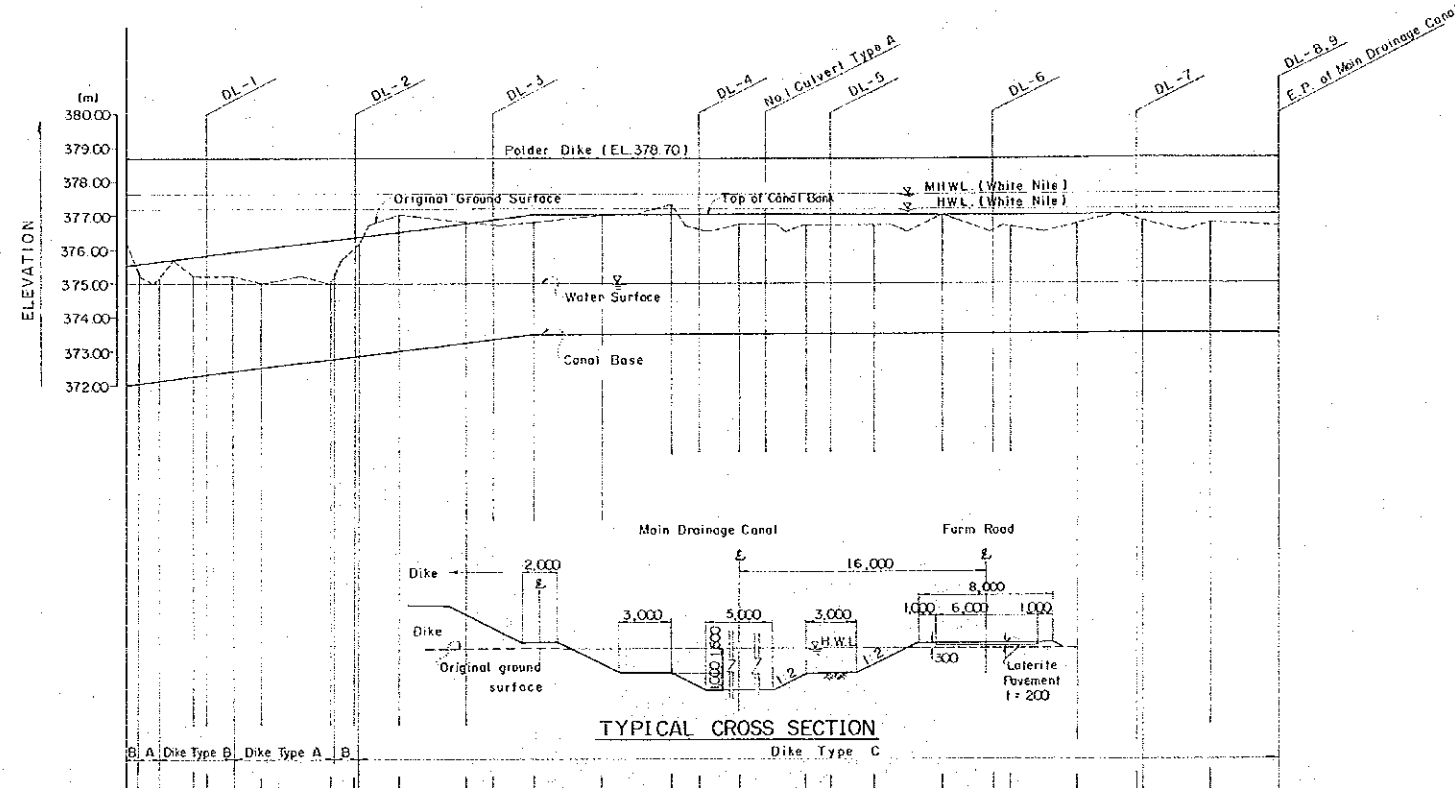
POLDER DIKE TYPE-C



TYPICAL CROSS SECTION

TYPICAL CROSS SECTION

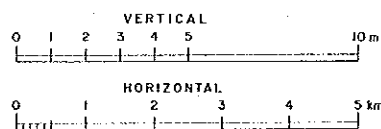
TYPICAL CROSS SECTION



STATION	MAIN DRAINAGE CANAL - TRACT 1				
	CANAL TOP ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE
No. 0	375.50	375.00	372.00	376.20	0.0
+500.0	376.55	375.00	372.05	375.20	200.0
+700.0	375.50	375.00	372.10	375.00	300.0
No. 1	375.68	375.00	372.18	375.70	400.0
+580.0	375.00	375.00	372.25	375.20	3000.0
No. 2	375.90	375.00	372.40	375.20	580.0
+600.0	376.00	375.00	372.50	375.00	420.0
+560.0	376.14	375.00	372.64	375.20	560.0
No. 3	376.25	375.00	372.75	375.00	430.0
+600.0	376.25	375.00	372.75	375.00	280.0
+540.0	376.39	375.00	372.89	375.20	120.0
No. 4	376.50	375.00	373.00	375.00	460.0
+600.0	376.75	375.00	373.25	376.80	1000.0
+100.0	376.78	375.00	373.28	376.80	100.0
+500.0	376.88	375.00	373.38	376.70	400.0
No. 6	377.00	375.00	373.50	376.80	500.0
No. 7	377.00	375.00	373.50	377.00	1000.0
+20.0	377.00	375.00	373.50	377.00	120.0
+440.0	377.00	375.00	373.50	377.00	320.0
No. 8	377.00	375.00	373.50	377.20	580.0
+800.0	377.00	375.00	373.50	376.70	200.0
No. 9	377.00	375.00	373.50	376.70	800.0
+680.0	377.00	375.00	373.50	376.70	560.0
+100.0	377.00	375.00	373.50	376.50	1300.0
No. 10	377.00	375.00	373.50	376.70	3000.0
No. 11	377.00	375.00	373.50	376.70	10000.0
+600.0	377.00	375.00	373.50	376.70	2600.0
+500.0	377.00	375.00	373.50	376.50	11260.0
+600.0	377.00	375.00	373.50	376.50	2400.0
+500.0	377.00	375.00	373.50	376.80	3000.0
No. 12	377.00	375.00	373.50	377.00	2000.0
+700.0	377.00	375.00	373.50	376.50	700.0
+800.0	377.00	375.00	373.50	376.70	1800.0
+500.0	377.00	375.00	373.50	376.60	1200.0
No. 14	377.00	375.00	373.50	376.50	500.0
No. 15	377.00	375.00	373.50	376.70	5000.0
+600.0	377.00	375.00	373.50	377.00	600.0
No. 16	377.00	375.00	373.50	376.90	4000.0
+500.0	377.00	375.00	373.50	376.70	600.0
No. 17	377.00	375.00	373.50	376.70	4000.0
+1000.0	377.00	375.00	373.50	376.70	10000.0

STATION	MAIN DRAINAGE CANAL - TRACT 2				
	CANAL TOP ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE
No. 0	376.00	375.00	372.50	375.40	0.0
+500.0	376.00	375.00	372.50	375.20	500.0
No. 1	376.00	375.00	372.50	375.30	500.0
+350.0	376.00	375.00	372.50	375.70	1000.0
+750.0	376.00	375.00	372.50	374.70	350.0
No. 2	376.00	375.00	372.50	374.70	400.0
+500.0	376.00	375.00	372.50	375.00	2500.0
No. 3	376.00	375.00	372.50	375.70	500.0
+250.0	376.00	375.00	372.50	374.70	3000.0
No. 4	376.00	375.00	372.50	375.20	4000.0
+250.0	376.00	375.00	372.50	375.20	4250.0
+300.0	376.00	375.00	372.50	375.20	2300.0
No. 5	376.00	375.00	372.50	375.20	5000.0
+250.0	376.00	375.00	372.50	376.20	2500.0
+600.0	376.00	375.00	372.50	376.70	5250.0
No. 6	376.00	375.00	372.50	376.70	6000.0
+1500.0	376.00	375.00	372.50	376.70	5850.0
No. 7	376.00	375.00	372.50	376.30	1500.0
+1000.0	376.00	375.00	372.50	376.30	7000.0
No. 8	376.00	375.00	372.50	376.70	1000.0
+250.0	376.00	375.00	372.50	376.30	8000.0
+250.0	376.00	375.00	372.50	376.30	8250.0
No. 9	376.00	375.00	372.50	375.80	7500.0
+250.0	376.00	375.00	372.50	375.70	2500.0
No. 10	376.00	375.00	372.50	376.50	7500.0

SCALE

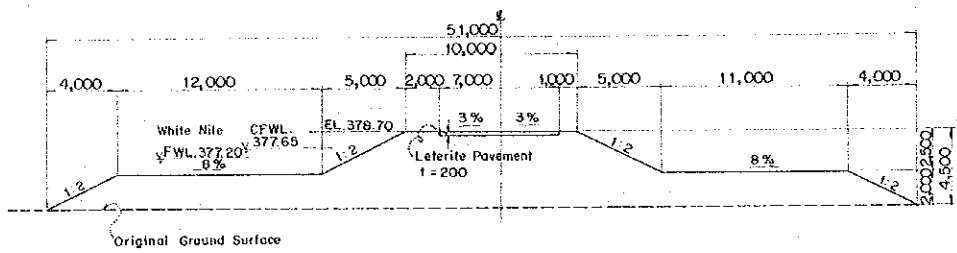


NOTE

- EL : Elevation
- CFWL : Catastrophic Flood Water Level
- FWL : Flood Water Level

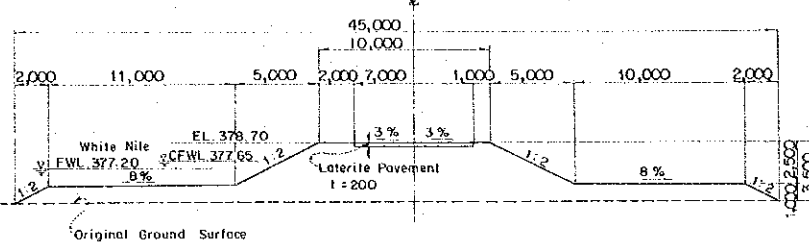
PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	MAIN DRAINAGE CANAL AND POLDER DIKE PROFILE	
SUBMITTED		TRACT 1, 2	DATE
DATE	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG. NO. 11	JAPAN INTERNATIONAL COOPERATION AGENCY
			TOKYO

POLDER DIKE TYPE-A



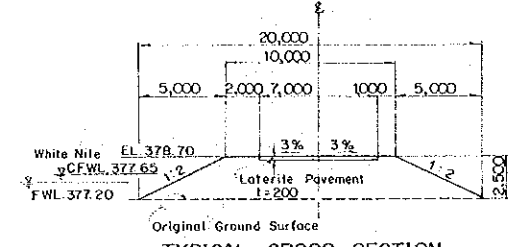
TYPICAL CROSS SECTION

POLDER DIKE TYPE-B

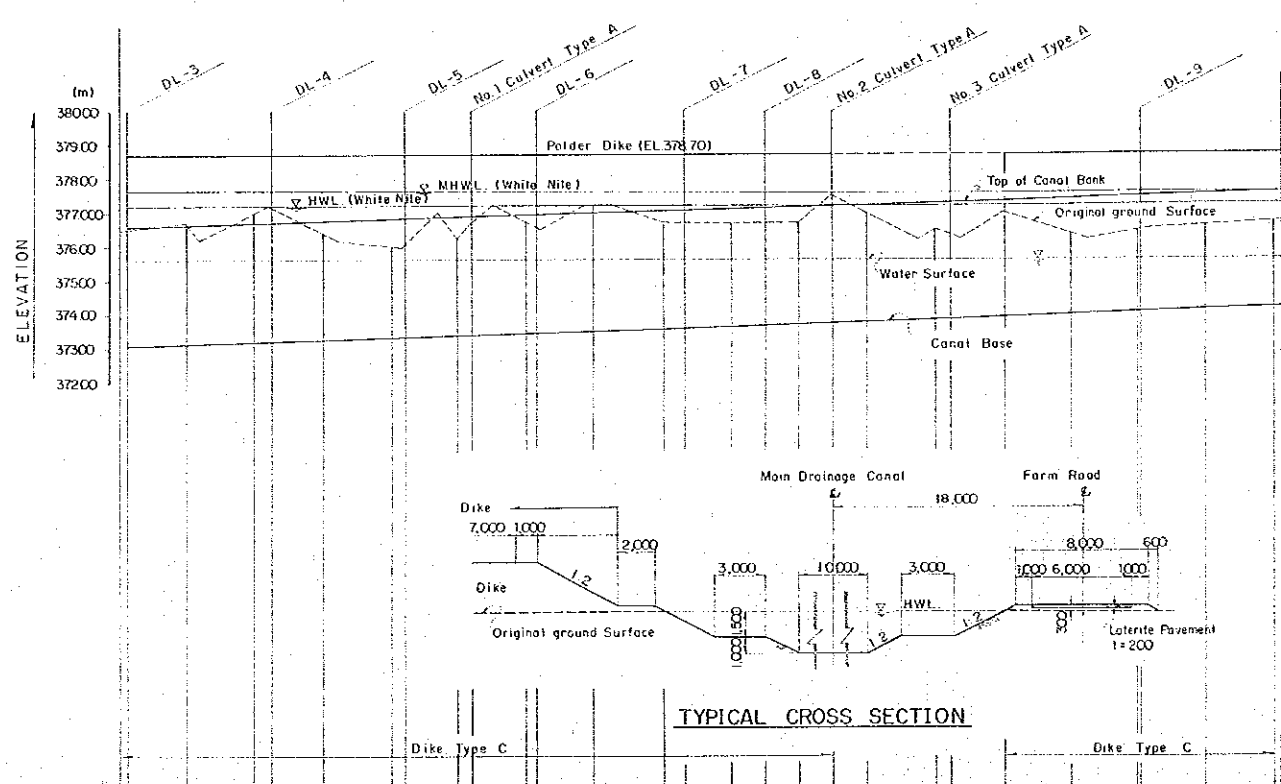


TYPICAL CROSS SECTION

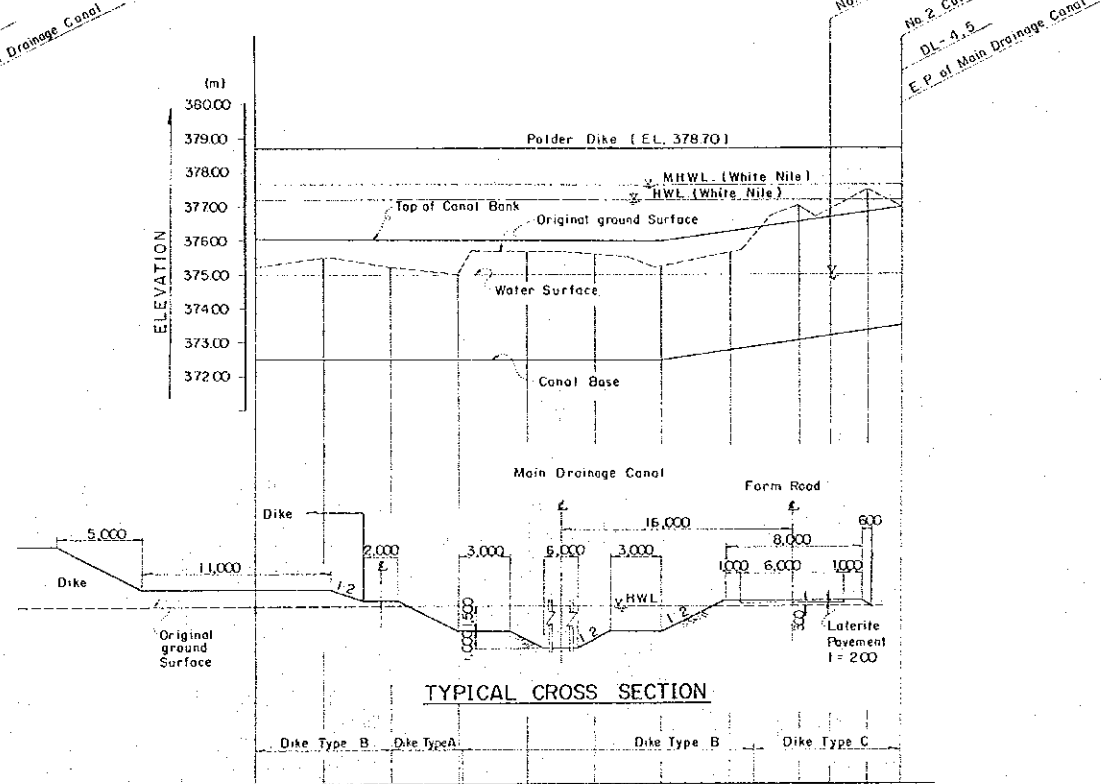
POLDER DIKE TYPE-C



TYPICAL CROSS SECTION



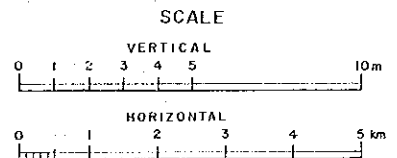
TYPICAL CROSS SECTION



TYPICAL CROSS SECTION

STATION	MAIN DRAINAGE CANAL, TRACT 2						
	CANAL TOP ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE	DISTANCE	
No. 10	376.85	375.50	373.95	376.50	0.0000	7500	
No. 11	376.52	375.50	373.11	376.70	1.0000	10000	
No. 12	376.63	375.50	373.13	376.20	1.2000	2000	
No. 13	375.68	375.50	373.18	377.20	2.0000	8000	
No. 14	376.70	375.50	373.20	376.40	3.0000	8000	
No. 15	376.82	375.50	373.21	376.20	3.2000	2000	
No. 16	376.88	375.50	373.30	376.00	4.1500	8000	
No. 17	375.88	375.50	373.36	377.00	4.7000	5000	
No. 18	375.88	375.50	373.38	375.20	5.0000	3000	
No. 19	375.88	375.50	373.39	376.70	5.2000	2000	
No. 20	376.82	375.50	373.40	377.20	5.5000	3000	
No. 21	376.96	375.50	373.45	376.70	6.0000	5000	
No. 22	377.01	375.50	373.46	376.50	6.2000	2000	
No. 23	377.05	375.50	373.51	377.20	6.5000	7000	
No. 24	377.05	375.50	373.53	377.20	7.5000	1500	
No. 25	377.05	375.50	373.53	376.50	7.5000	1500	
No. 26	377.05	375.50	373.58	376.20	18.0000	7500	
No. 27	377.08	375.50	373.68	376.70	19.0000	10000	
No. 28	377.10	375.50	373.66	376.70	20.0000	10000	
No. 29	377.22	375.50	373.72	376.70	20.5000	5000	
No. 30	377.26	375.50	373.75	377.50	21.0000	5000	
No. 31	377.28	375.50	373.78	377.00	21.5000	7500	
No. 32	377.33	375.50	373.83	376.20	21.7500	2500	
No. 33	377.35	375.50	373.85	376.50	22.0000	2500	
No. 34	377.35	375.50	373.87	376.20	22.3500	3500	
No. 35	377.37	375.50	373.87	377.00	23.0000	6500	
No. 36	377.42	375.50	373.92	376.40	24.0000	10000	
No. 37	377.48	375.50	373.96	376.20	24.2500	2500	
No. 38	377.50	375.50	373.96	376.50	25.0000	5000	
No. 39	377.55	375.50	374.05	376.50	25.0000	5000	
No. 40	377.58	375.50	374.08	376.50	25.5000	5000	
No. 41	377.62	375.50	374.11	376.60	26.0000	5000	
No. 42	377.68	375.50	374.18	376.70	27.0000	10000	
No. 43	377.68	375.50	374.19	376.70	27.1000	1000	
No. 44	377.63	375.50	374.19	376.70	27.3000	1000	

STATION	MAIN DRAINAGE CANAL, TRACT 3-I						
	CANAL TOP ELEVATION	WATER SURFACE ELEVATION	CANAL BASE ELEVATION	ORIGINAL GROUND SURFACE ELEVATION	REDUCED DISTANCE	DISTANCE	
No. 0	376.00	375.00	372.50	375.20	0.0	000	
No. 1	376.00	375.00	372.50	375.50	1.0000	1000	
No. 2	376.00	375.00	372.50	375.50	1.1000	1000	
No. 3	376.00	375.00	372.50	375.70	2.0000	9000	
No. 4	376.00	375.00	372.50	375.70	3.0000	10000	
No. 5	376.00	375.00	372.50	375.70	4.0000	8000	
No. 6	376.00	375.00	372.50	375.70	4.5000	5000	
No. 7	376.00	375.00	372.50	375.90	5.0000	5000	
No. 8	376.00	375.00	372.50	375.00	5.5000	5000	
No. 9	376.00	375.00	372.50	375.20	5.9000	4000	
No. 10	376.00	375.00	372.50	375.20	6.0000	1000	
No. 11	376.29	375.00	372.50	375.80	7.0000	10000	
No. 12	376.29	375.00	372.50	375.70	7.1500	1500	
No. 13	376.46	375.00	372.56	376.70	7.6000	4500	
No. 14	376.57	375.00	372.57	377.00	8.0000	4000	
No. 15	376.54	375.00	372.57	376.70	8.2500	2500	
No. 16	376.55	375.00	372.58	377.50	9.0000	7500	
No. 17	376.85	375.00	372.58	377.00	9.5000	5000	

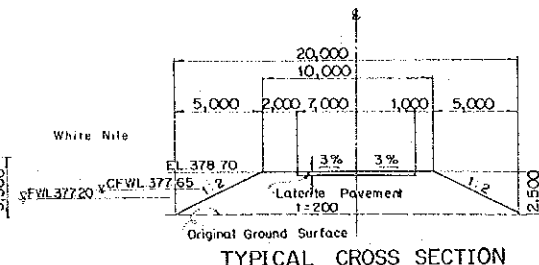
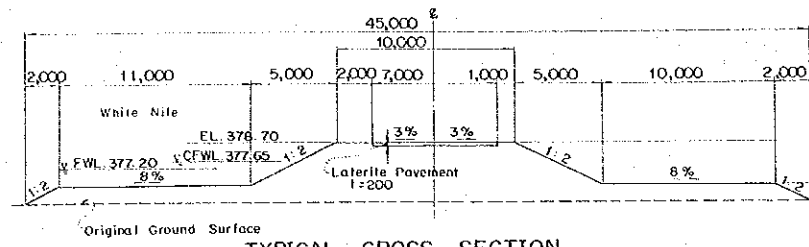


NOTE
 EL : Elevation Maximum
 CFWL : Catastrophic Flood Water Level
 FWL : Flood Water Level

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	MAIN DRAINAGE CANAL AND POLDER DIKE PROFILE	
SUBMITTED		TRACT 2, 3 - I	DATE
DATE	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG. NO. 12	JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO

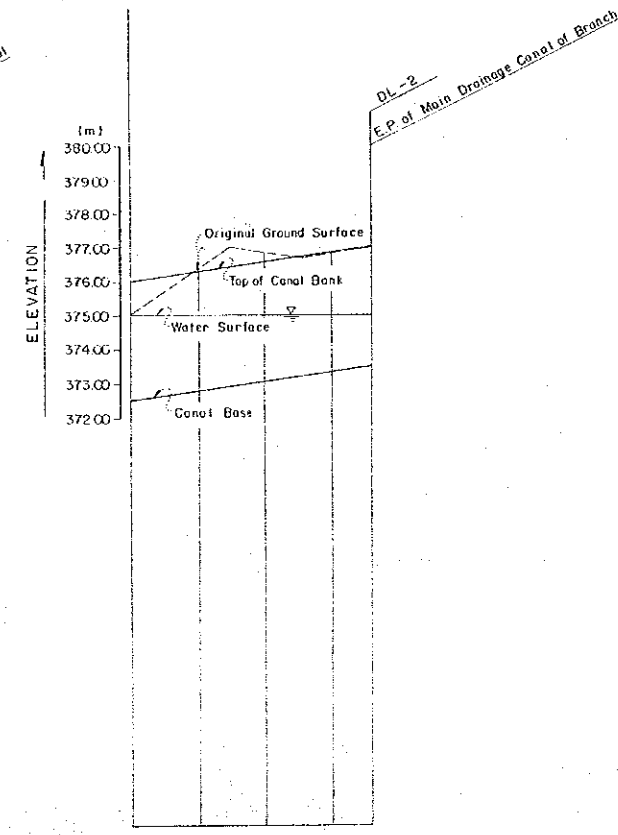
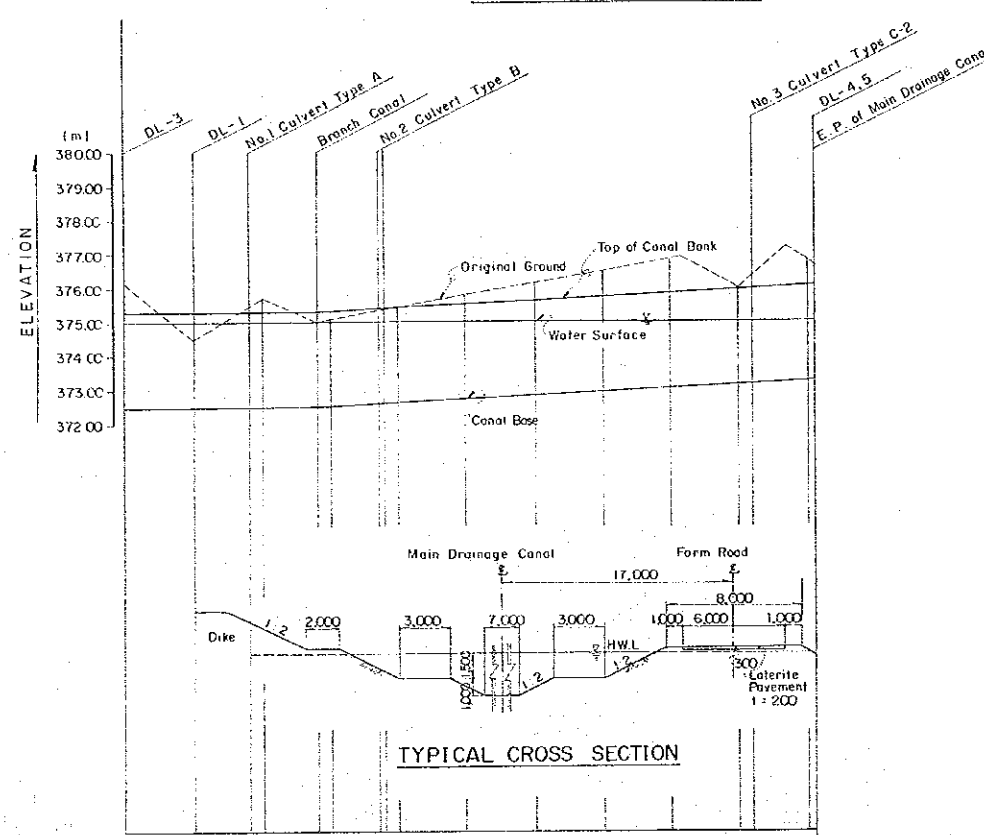
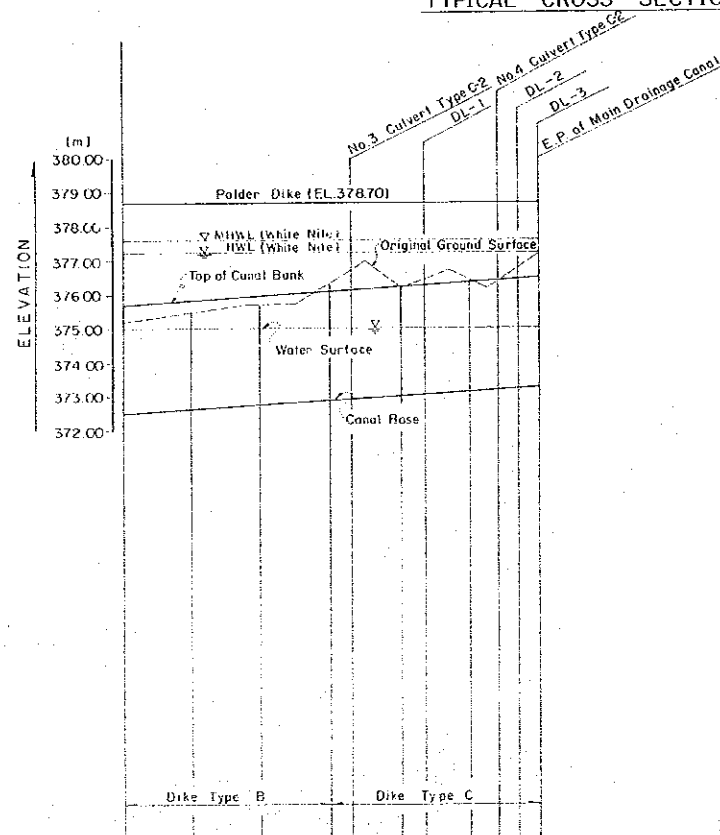
POLDER DIKE TYPE-B

POLDER DIKE TYPE-C



TYPICAL CROSS SECTION

TYPICAL CROSS SECTION



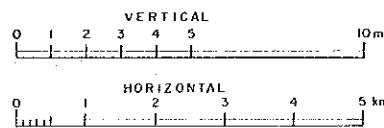
TYPICAL CROSS SECTION

STATION	No. 0	No. 1	+800.0 No. 2	+800.0 No. 3	+500.0 No. 4	+700.0 No. 5	+800.0 No. 6	No. 7
CANAL TOP ELEVATION	375.70	375.83	375.94	375.96	375.93	375.93	375.94	375.90
WATER SURFACE ELEVATION	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00
CANAL BASE ELEVATION	372.50	372.63	372.74	372.76	372.83	372.85	372.85	372.85
ORIGINAL GROUND SURFACE ELEVATION	375.20	375.50	375.70	375.70	375.70	375.70	375.70	375.70
REDUCED DISTANCE	0.0	1,000.0	1,600.0	2,000.0	2,500.0	3,000.0	3,500.0	4,000.0
DISTANCE	0.0	1,000.0	2,600.0	4,600.0	7,100.0	10,100.0	13,600.0	17,600.0

STATION	No. 0	No. 1	+800.0 No. 2	+800.0 No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	+150.0 No. 9	+700.0 No. 10	+100.0
CANAL TOP ELEVATION	375.30	375.30	375.30	375.30	375.40	375.50	375.50	375.50	375.50	375.50	375.97	376.01
WATER SURFACE ELEVATION	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00	375.00
CANAL BASE ELEVATION	372.50	372.50	372.50	372.50	372.60	372.70	372.80	372.90	373.00	373.10	373.17	373.21
ORIGINAL GROUND SURFACE ELEVATION	376.20	374.50	375.00	375.10	375.50	375.70	376.10	376.50	376.80	376.50	377.20	376.70
REDUCED DISTANCE	0.0	1,000.0	2,000.0	2,800.0	3,000.0	4,000.0	5,000.0	6,000.0	7,000.0	8,000.0	9,000.0	10,000.0
DISTANCE	0.0	1,000.0	3,800.0	6,600.0	9,600.0	13,600.0	18,600.0	24,600.0	31,600.0	39,600.0	49,600.0	59,600.0

STATION	No. 0	No. 2	+500.0 No. 3	+600.0 No. 4	+600.0
CANAL TOP ELEVATION	376.00	376.28	376.42	376.56	376.72
WATER SURFACE ELEVATION	375.00	375.00	375.00	375.00	375.00
CANAL BASE ELEVATION	372.50	372.78	372.42	373.06	373.22
ORIGINAL GROUND SURFACE ELEVATION	375.00	376.40	377.00	376.80	375.70
REDUCED DISTANCE	0.0	1,000.0	1,500.0	2,000.0	2,600.0
DISTANCE	0.0	1,000.0	2,500.0	4,500.0	7,100.0

SCALE

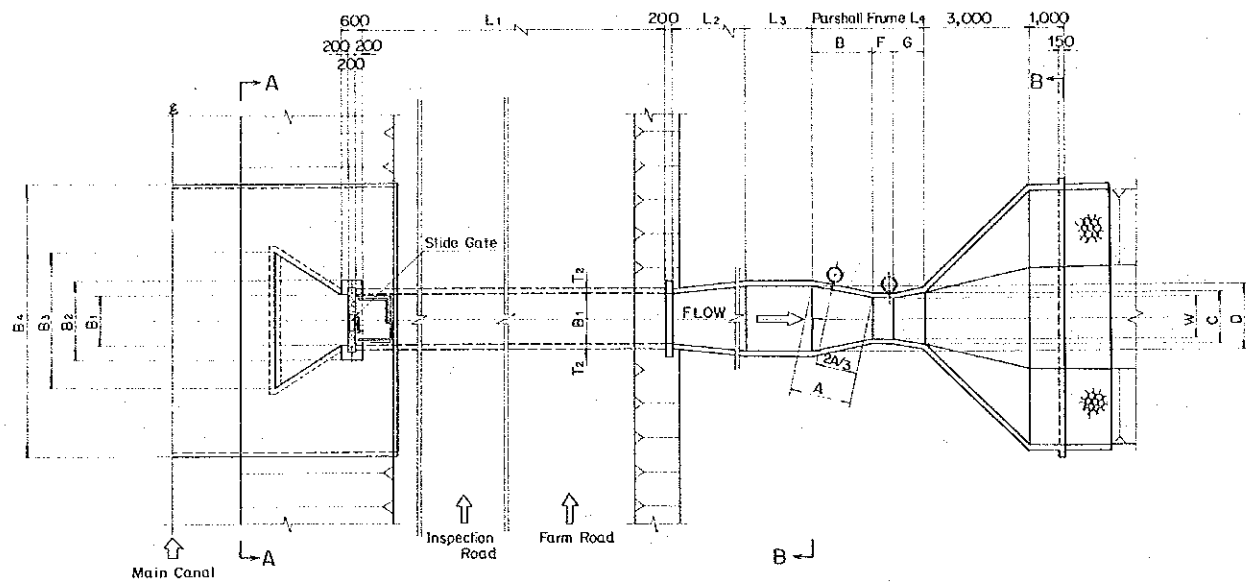


NOTE

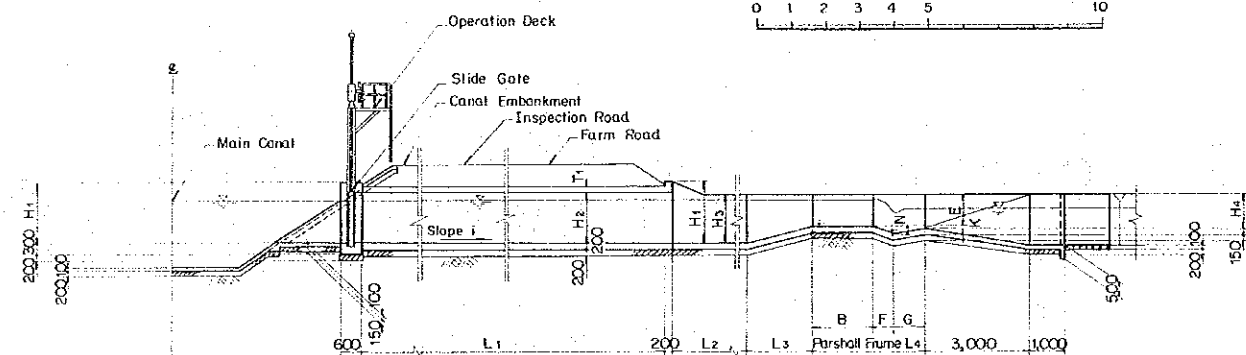
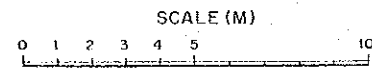
- EL. : Elevation
- CF WL : Catastrophic Flood Water Level
- FWL : Flood Water Level

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING		APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	MAIN DRAINAGE CANAL AND POLDER DIKE PROFILE		
SUBMITTED		TRACT 3-II, 4-I, 4-II		DATE
DATE	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG. NO. 13	JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	

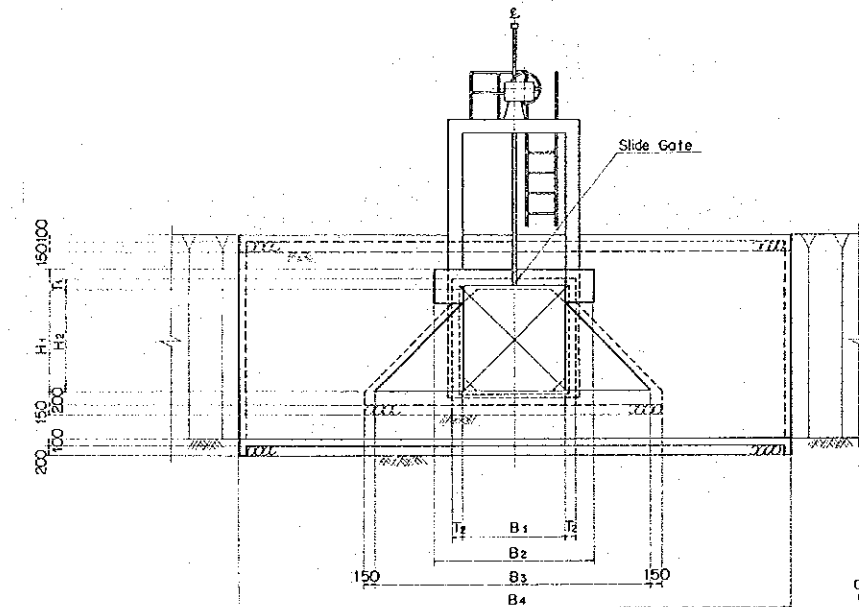
TURNOUT STRUCTURE TYPE-A



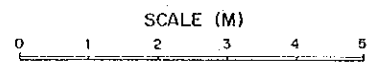
PLAN



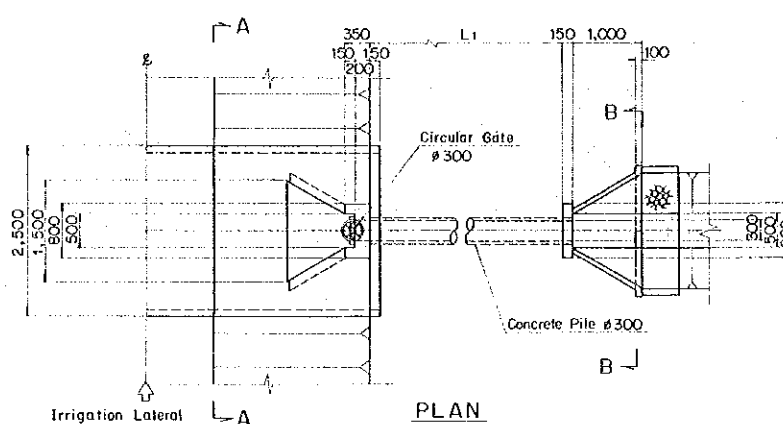
PROFILE



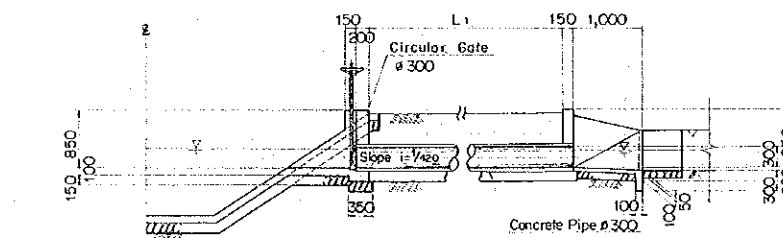
SECTION A-A



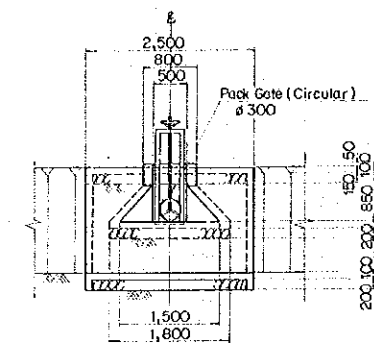
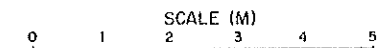
TURNOUT STRUCTURE TYPE-B



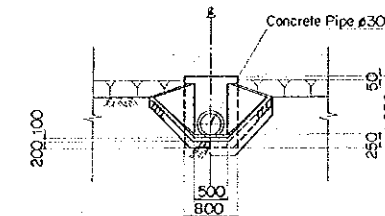
PLAN



PROFILE



SECTION A-A



SECTION B-B

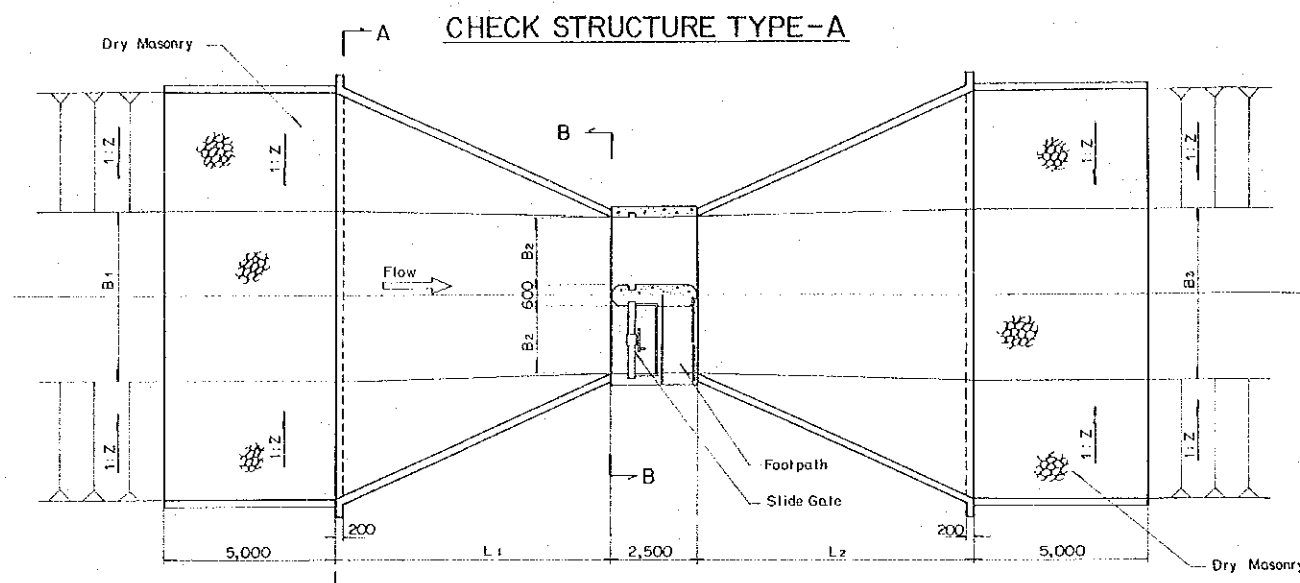
DIMENSIONS OF TURNOUTS

TYPE	TYPE - A					
	A-1	A-2	A-3	A-4	A-5	A-6
L1	20,000	18,000	7,000	20,000	18,000	7,000
L2	3,000	3,000	3,000	2,000	2,000	2,000
L3	2,400	2,400	2,400	1,200	1,240	1,240
L4	3,310	3,310	3,310	2,940	2,940	2,940
W	1,220	1,220	1,220	460	460	460
C	1,520	1,520	1,520	760	760	760
D	1,940	1,940	1,940	1,030	1,030	1,030
B	1,790	1,790	1,790	1,420	1,420	1,420
F	610	610	610	610	610	610
G	910	910	910	910	910	910
K	80	80	80	80	80	80
E	910	910	910	910	910	910
N	230	230	230	230	230	230
A	1,830	1,830	1,830	1,450	1,450	1,450
H1	1,800	1,800	1,800	1,300	1,300	1,300
H2	1,500	1,500	1,500	1,000	1,000	1,000
H3	1,500	1,500	1,500	1,000	1,000	1,000
H4	990	990	990	990	990	990
B1	1,500	1,500	1,500	1,000	1,000	1,000
B2	2,300	2,300	2,300	1,800	1,800	1,800
B3	4,000	4,000	4,000	3,500	3,500	3,500
B4	8,000	8,000	8,000	6,500	6,500	6,500
T1	150	150	150	150	150	150
T2	150	150	150	150	150	150
Gate	500	500	500	500	500	500
Slope i	1/2520	1/2520	1/2520	1/1390	1/1390	1/1390

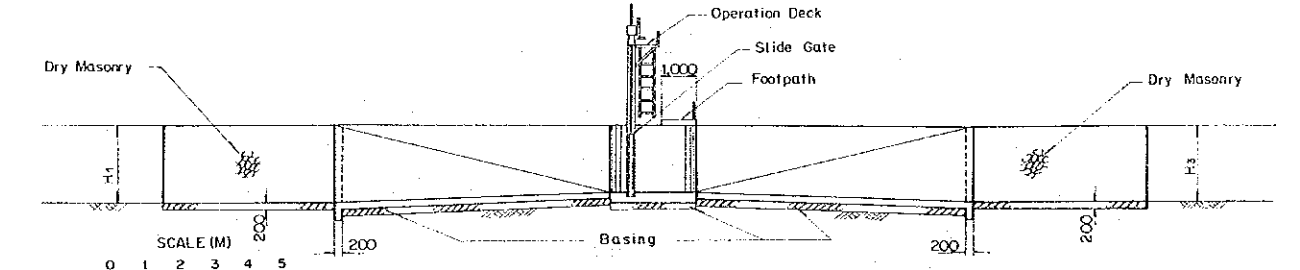
TYPE	TYPE - B		
	B-1	B-2	B-3
L1	19,000	17,000	6,000
Gate	φ 300	φ 300	φ 300
Slope i	1/420	1/420	1/420

SECTION B-B

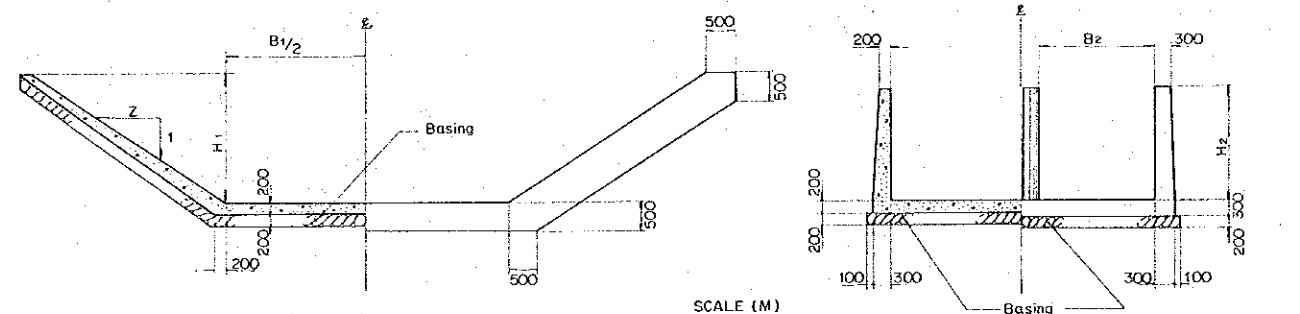
PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING		APPROVED	
CHECKED		TURNOUT STRUCTURE			
SUBMITTED		DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY		DATE
DATE		14	TOKYO		



PLAN



PROFILE

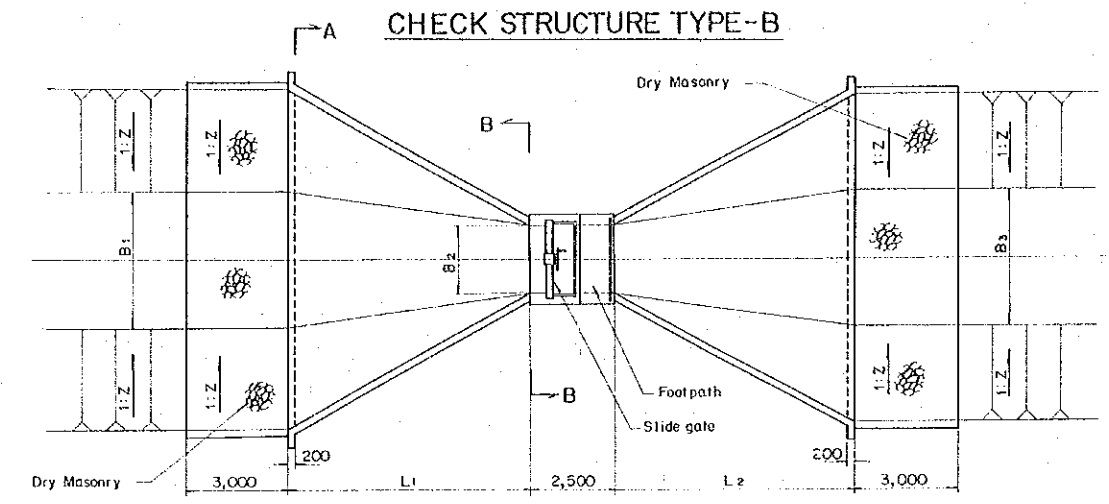


SECTION A-A

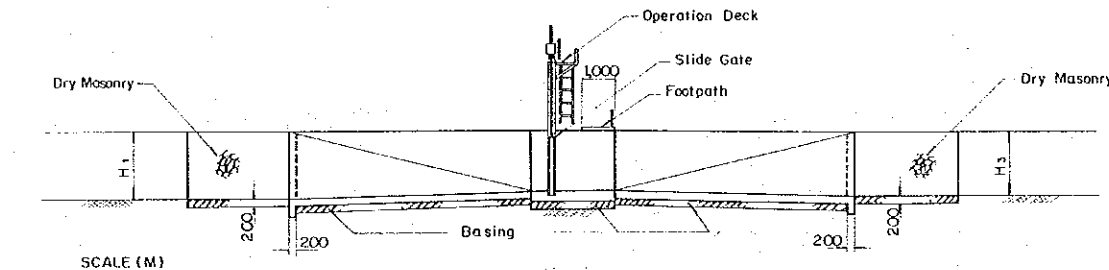
SECTION B-B

DIMENSIONS OF CHECK STRUCTURE TYPE-A

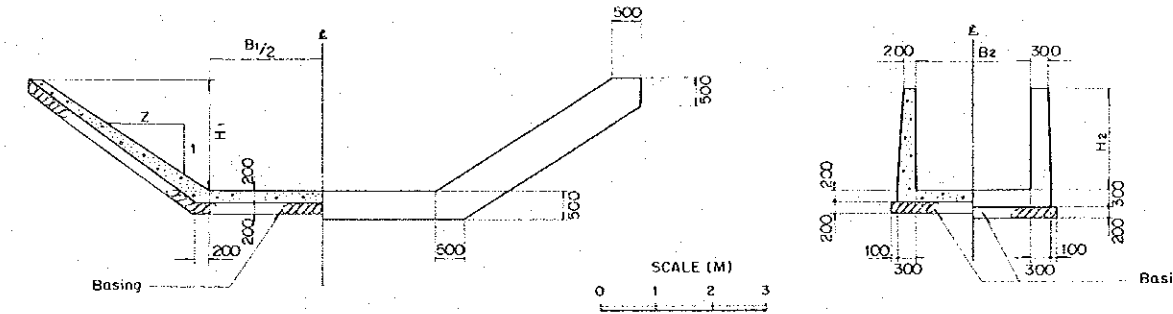
(M.M)											
		TYPE	B ₁	B ₂	B ₃	L ₁	L ₂	H ₁	H ₂	H ₃	Z
Tract 1	No. 1	A	5,000	2,000	5,000	6,000	6,000	2,300	2,200	2,200	1.5
	No. 2	A	4,000	1,800	4,000	5,000	5,000	2,200	2,000	2,100	1.5
Tract 2	No. 1	A	7,000	2,500	6,000	10,000	8,000	2,900	2,800	3,000	2.0
	No. 2	A	6,000	2,000	5,000	8,000	7,000	2,500	2,300	2,600	1.5
	No. 3	A	5,000	1,800	4,000	6,000	5,000	2,400	2,100	2,200	1.5



PLAN



PROFILE



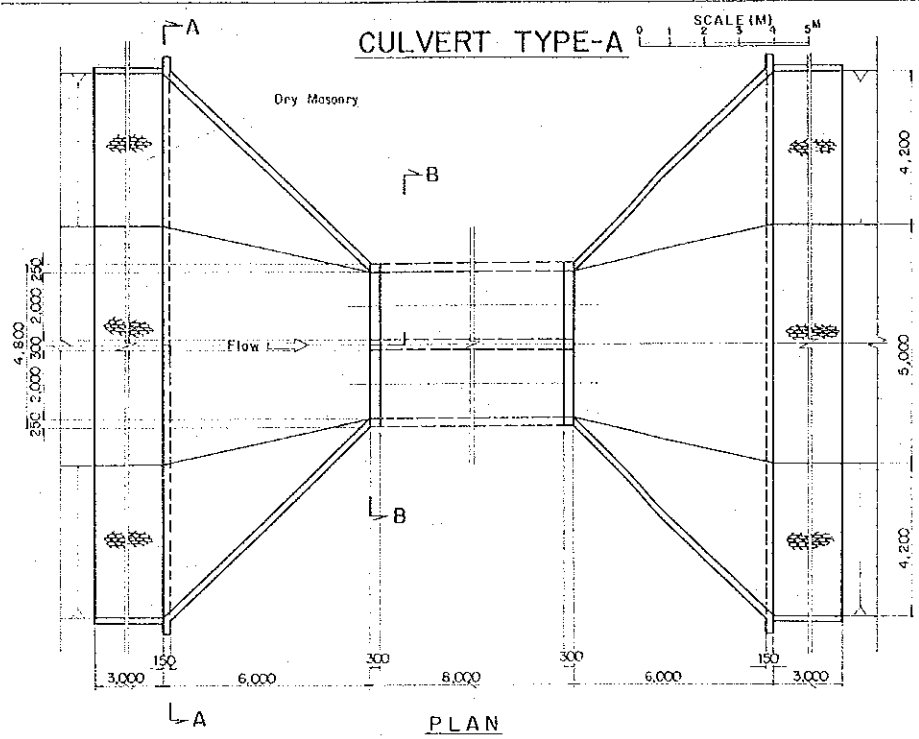
SECTION A-A

SECTION B-B

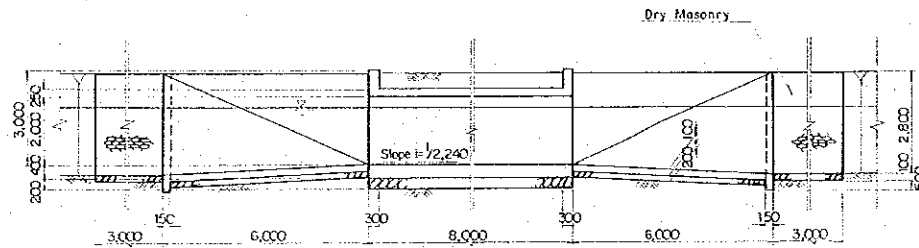
DIMENSIONS OF CHECK STRUCTURE TYPE-B

(M.M)											
		TYPE	B ₁	B ₂	B ₃	L ₁	L ₂	H ₁	H ₂	H ₃	Z
Tract 2	No. 4	B-1	4,000	2,000	4,000	7,000	7,000	2,100	2,100	1,900	1.5
Tract 3	-	B-1	5,000	2,000	3,000	10,000	6,000	2,900	2,300	2,300	2.0
Tract 4	-	B-1	4,000	1,800	3,000	10,000	6,000	2,600	2,100	1,700	2.0
For Secondary Canal		B-2	2,500	1,500	2,000	3,000	2,000	1,500	1,800	1,200	1.0
		B-3	2,000	1,200	2,000 or 1,500	2,000	2,000	1,200	1,500	1,000	1.0
		B-4	1,500 or 1,000	1,600	1,500 or 1,000	2,000	2,000	1,000	1,300	1,000	1.0

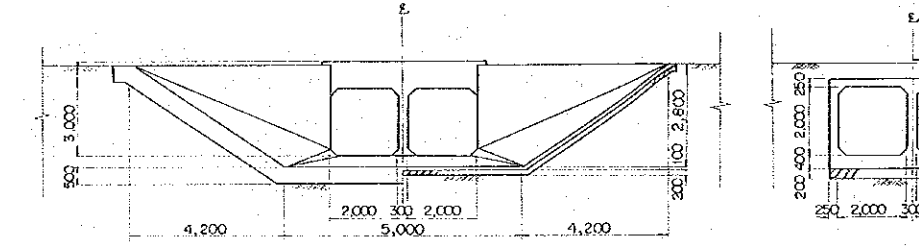
PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING		APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	CHECK STRUCTURE		
SUBMITTED		DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	DATE
DATE	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	15	TOKYO	



PLAN



PROFILE

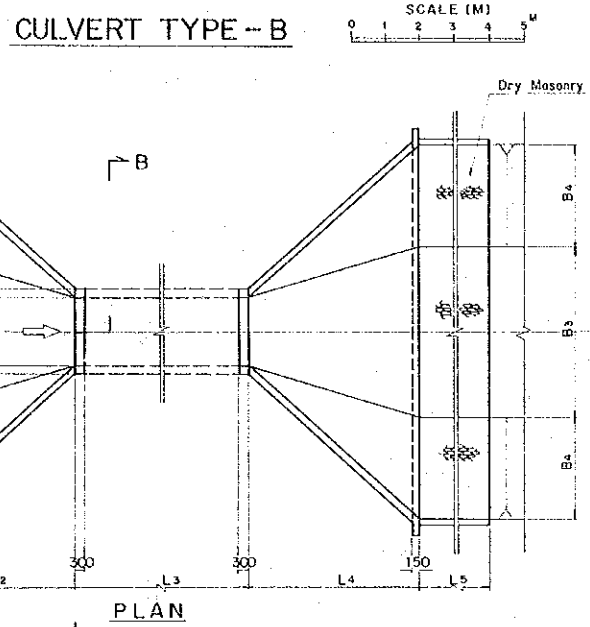


SECTION A-A

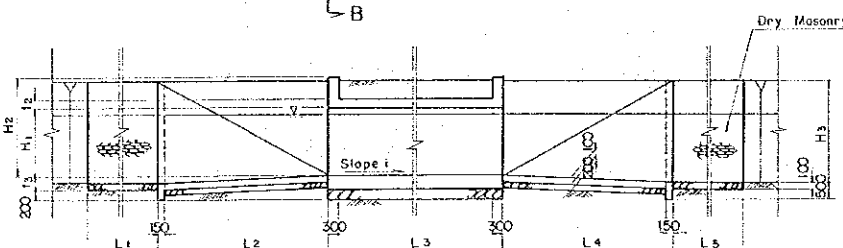
SECTION B-B

DIMENSIONS OF CULVERTS TYPE-B

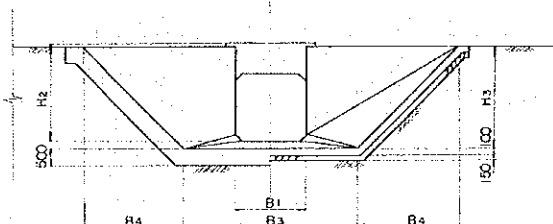
	B-1	B-2	B-3	B-4	B-5	B-6
L1	3,000	3,000	3,000	3,000	2,000	2,000
L2	5,000	5,000	5,000	5,000	4,000	4,000
L3	10,000	8,000	10,000	7,000	10,000	7,000
L4	5,000	5,000	5,000	5,000	4,000	4,000
L5	4,000	4,000	3,000	3,000	3,000	3,000
B1	2,000	2,000	2,000	2,000	1,500	1,500
B2	2,500	2,500	2,400	2,400	1,300	1,800
B3	4,000	4,000	2,500	2,500	2,000	2,000
B4	2,700	2,700	1,500	1,500	1,200	1,200
B5	250	250	200	200	150	150
B6	250	250	200	200	150	150
H1	400	400	300	300	250	250
H2	2,000	2,000	1,500	1,500	1,000	1,000
H3	2,500	2,500	2,000	2,000	1,500	1,500
H4	1,800	1,800	1,500	1,500	1,200	1,200
Slope i	1/5,020	1/5,020	1/3,760	1/3,760	1/2,470	1/2,470



PLAN



PROFILE

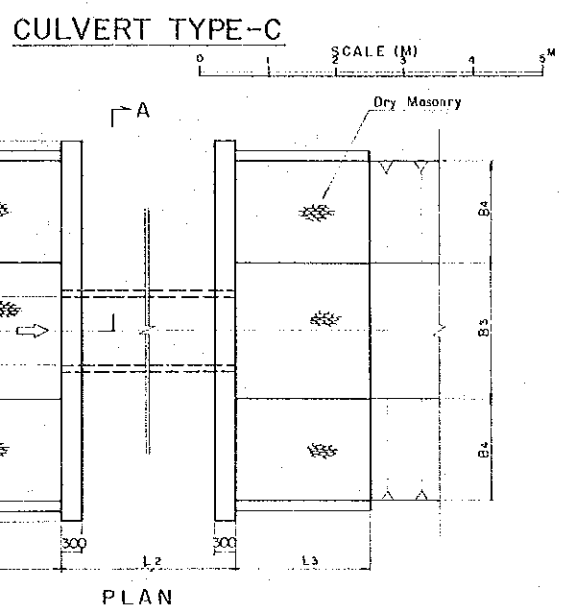


SECTION A-A

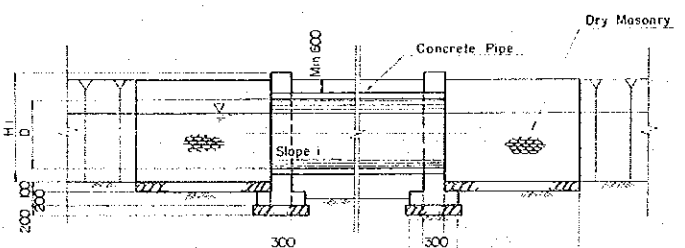
SECTION B-B

DIMENSIONS OF CULVERTS TYPE-C

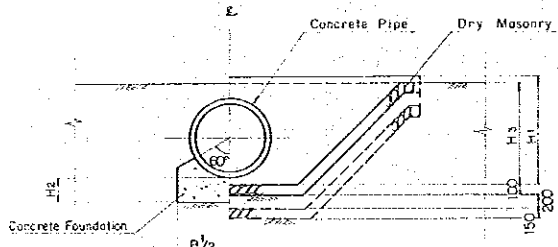
	C-1	C-2	C-3
L1	2,000	2,000	1,500
L2	10,000	7,000	7,000
L3	3,000	3,000	2,000
D	1,000	1,000	700
H1	1,200	1,200	900
H2	400	400	300
H3	1,000	1,000	700
B1	1,400	1,400	1,100
B2	3,500	3,500	2,400
B3	1,500	1,500	1,000
B4	1,000	1,000	700
Concrete Pipe	φ 1,000	φ 1,000	φ 700
Slope i	1/1,650	1/1,650	1/980



PLAN



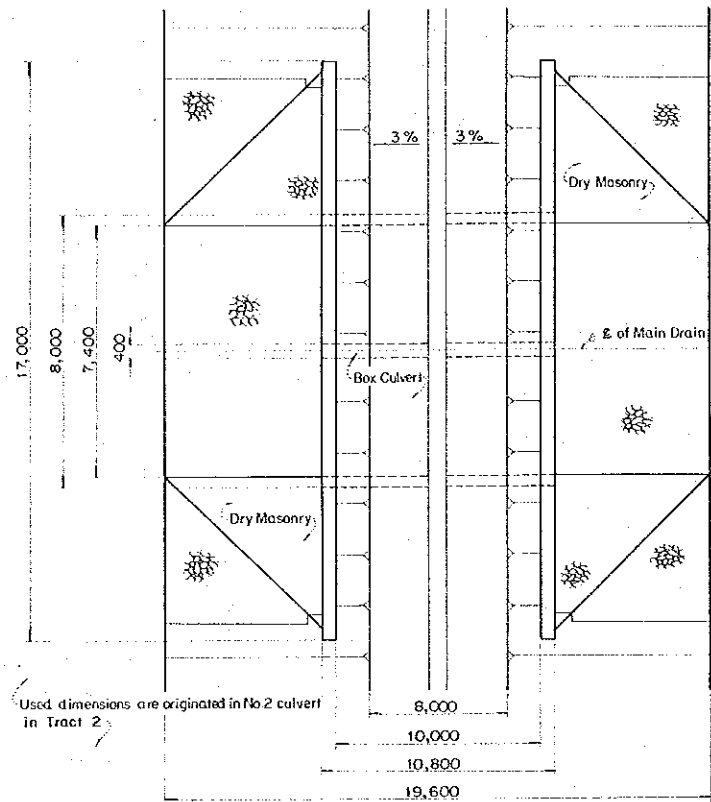
PROFILE



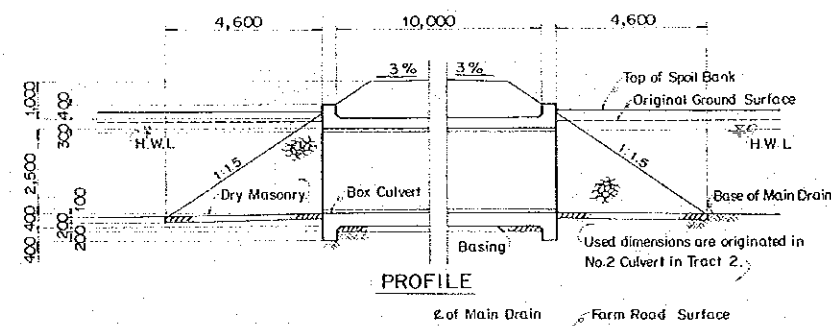
SECTION A-A

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING		APPROVED	
CHECKED		IRRIGATION CULVERT			
SUBMITTED		DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY		DATE
DATE		16	TOKYO		

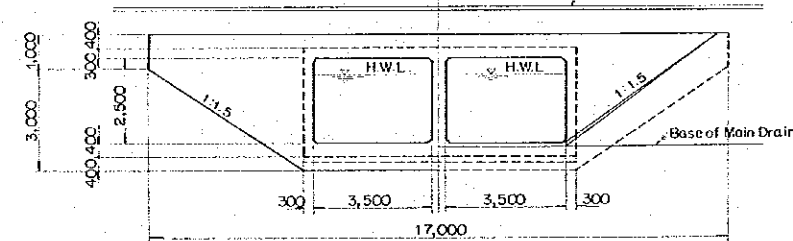
DRAINAGE CULVERT TYPE-A



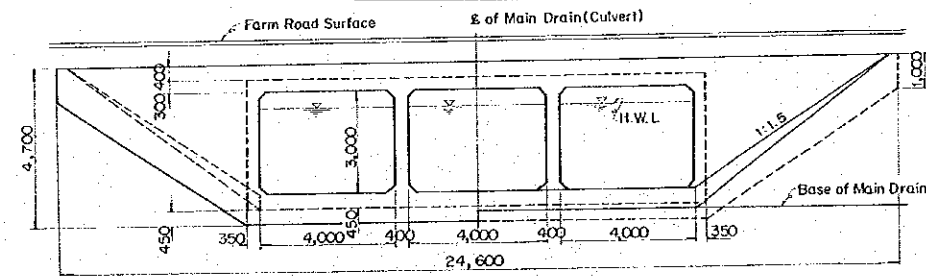
PLAN



PROFILE

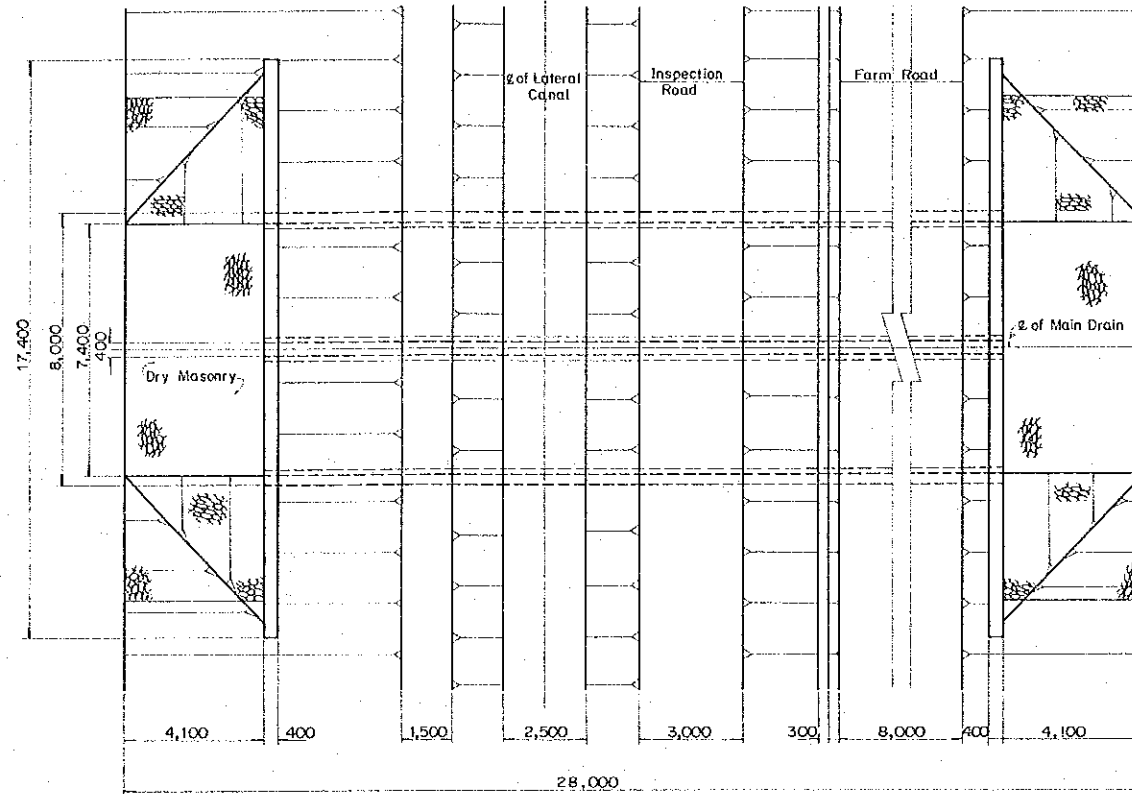


SECTION A-A

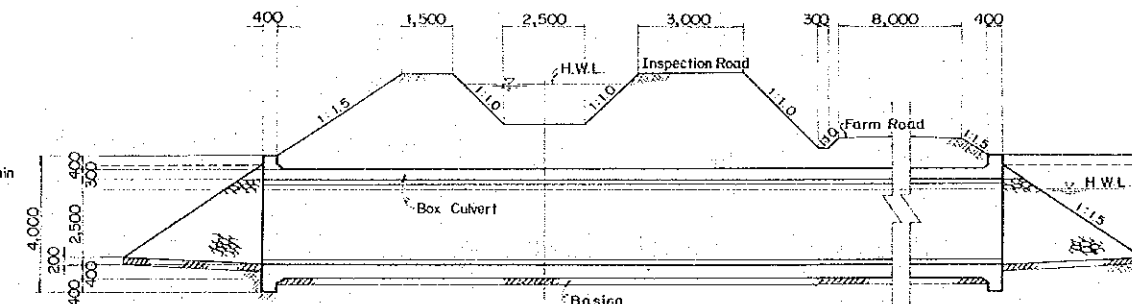


SECTION OF NO.1 CULVERT IN TRACT 2

DRAIN CULVERT TYPE-B



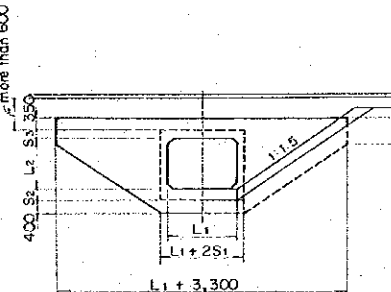
PLAN



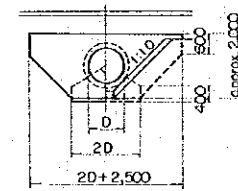
PROFILE

DIMENSIONS IN TYPE A,C AND D

TYPE	A	C	D	
Subtype	1	2	3	2
Q m ³ /s	40-30	30-20	20-10	10-06
L ₁ mm	2,000	2,500	2,000	1,500
L ₂ mm	1,500	2,000	1,500	1,000
D mm	-	-	-	1,000
S ₁ mm	200	250	200	200
S ₂ mm	300	350	300	300
S ₃ mm	250	250	250	200
T ₁ mm	400	350	350	300
T ₂ mm	-	-	-	250
NOS	1	4	14	7

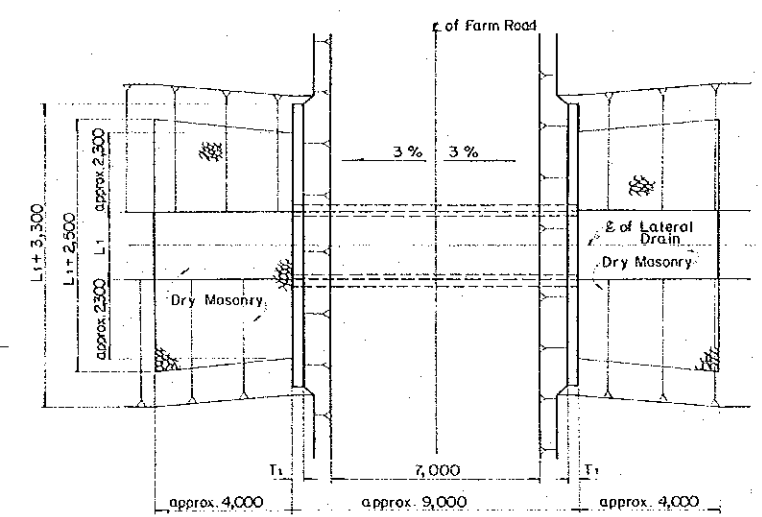


SECTION A-A

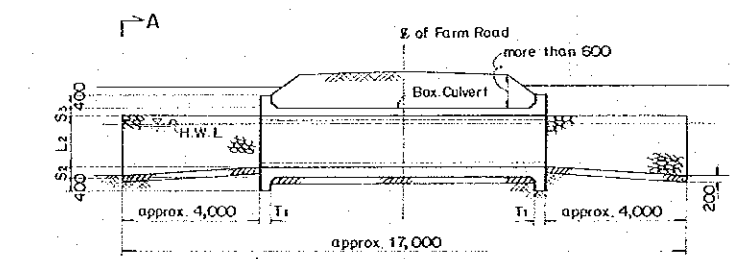


SECTION B-B

DRAIN CULVERT TYPE-C

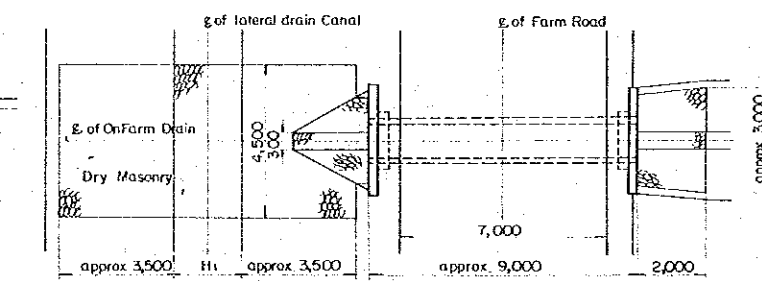


PLAN

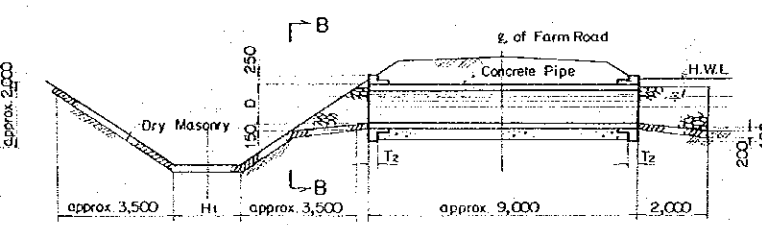


PROFILE

DRAINAGE CULVERT TYPE-D



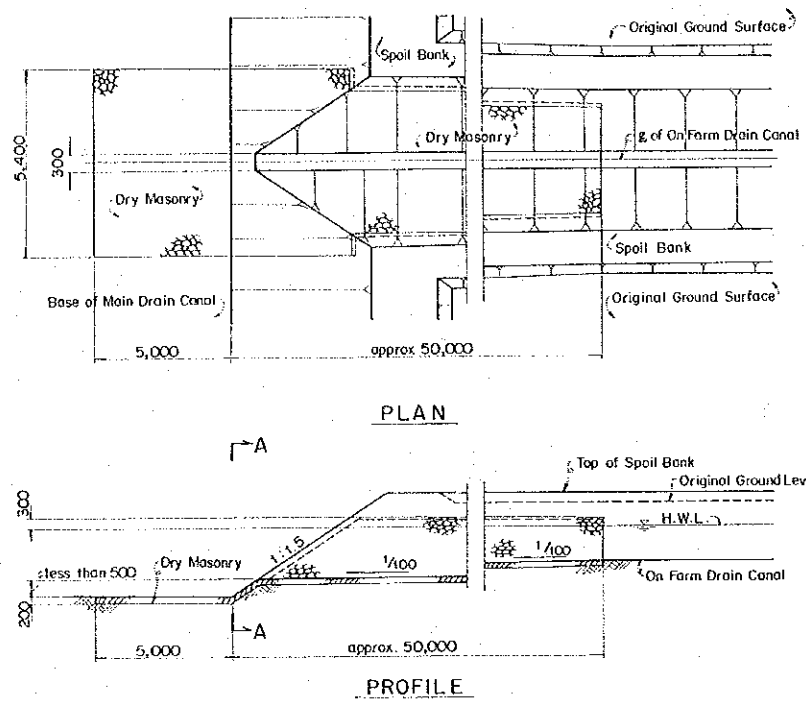
PLAN



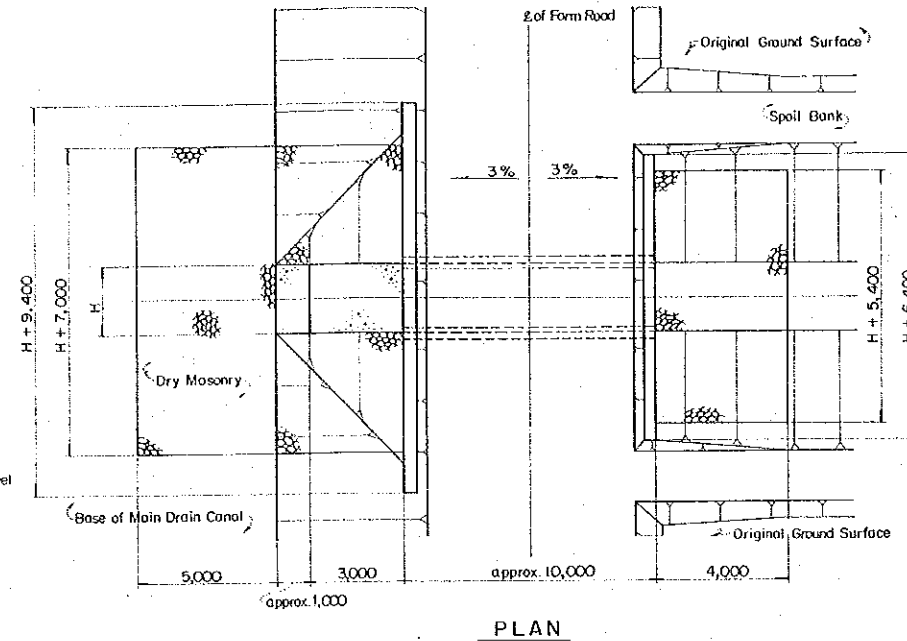
PROFILE

PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING		APPROVED
CHECKED		DRAIN CULVERT		
SUBMITTED		DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	
DATE		17	TOKYO	
RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN				DATE

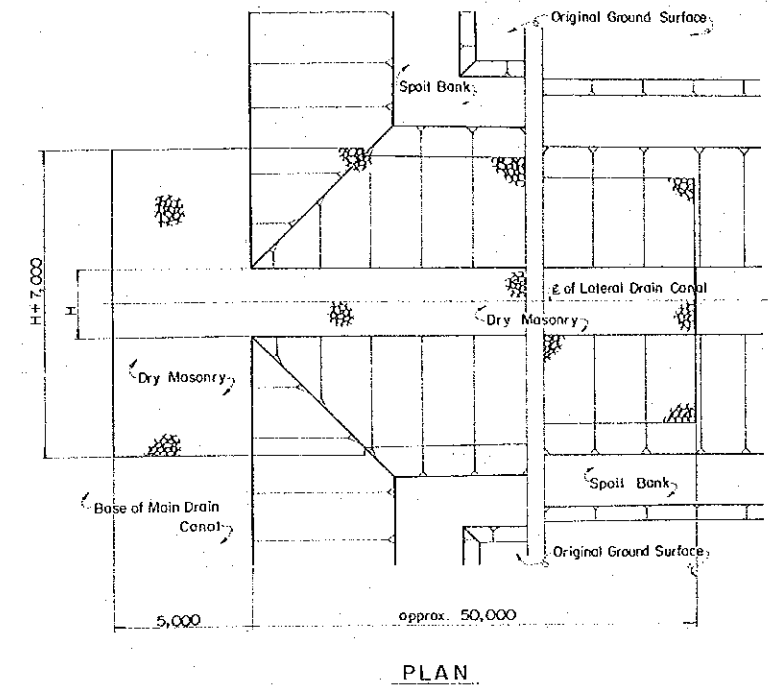
JUNCTION, TYPE-A-1



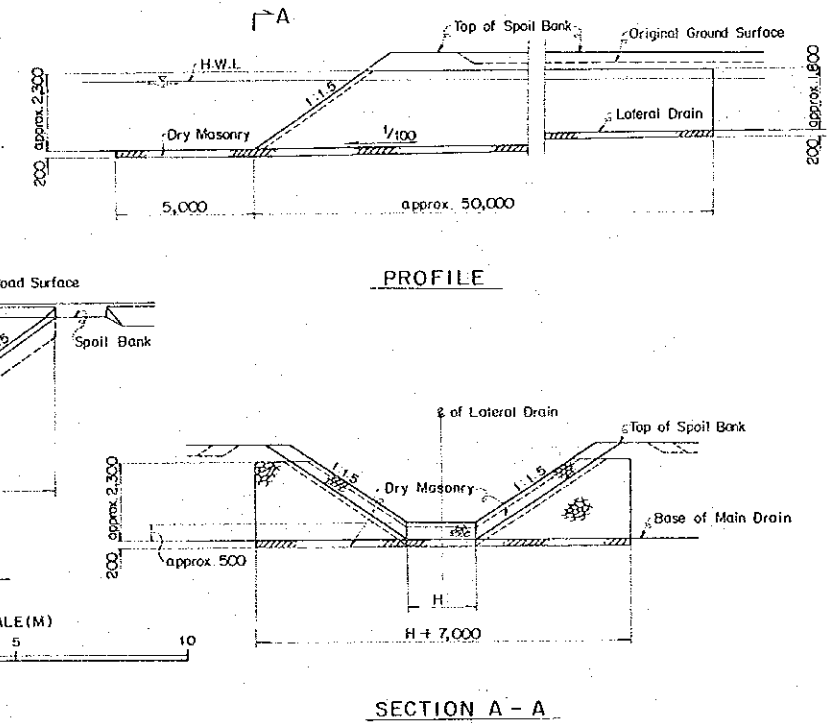
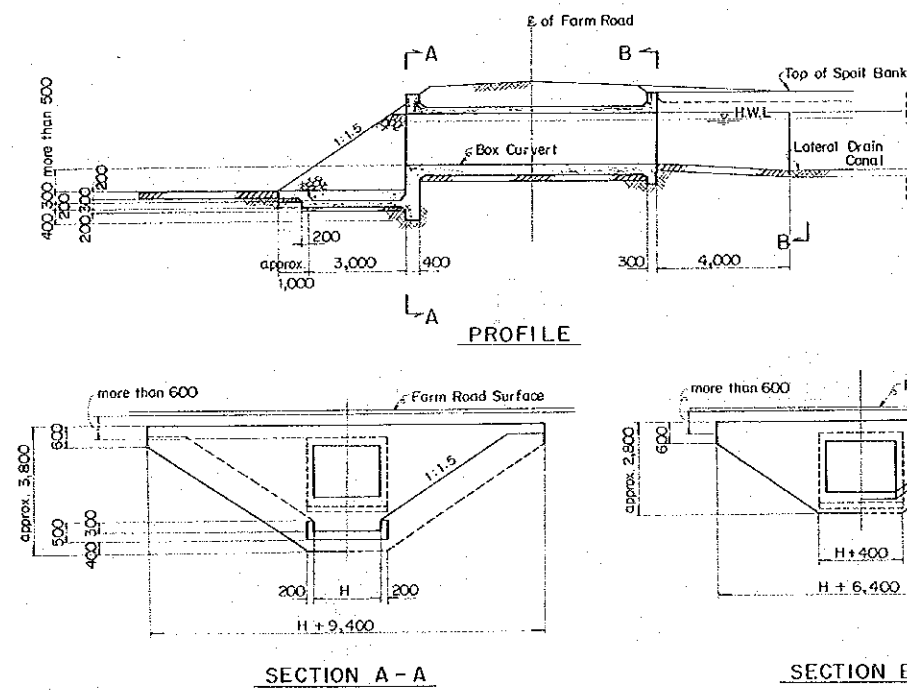
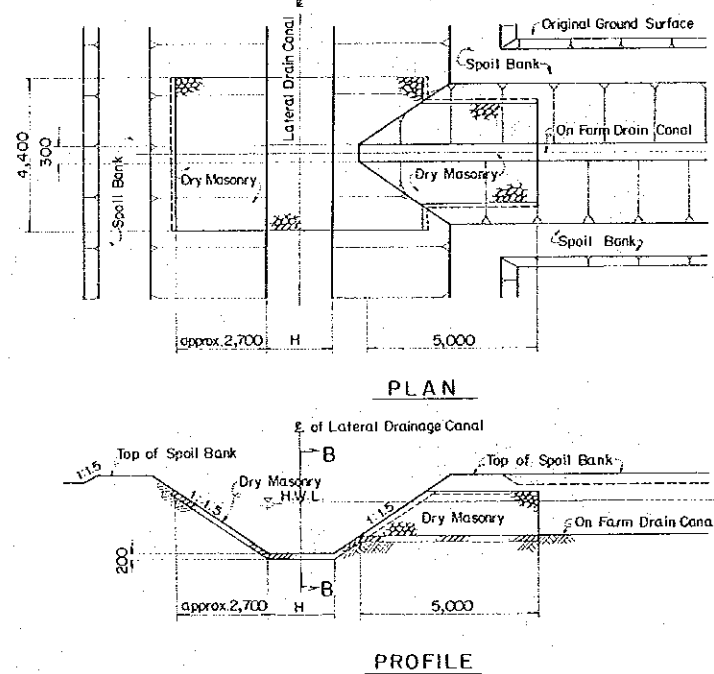
JUNCTION, TYPE-C



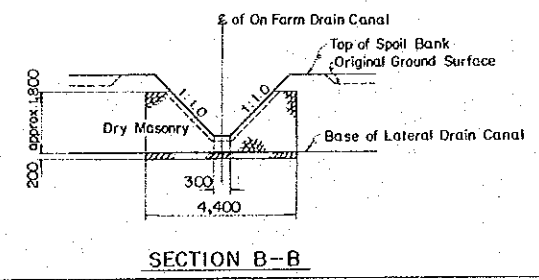
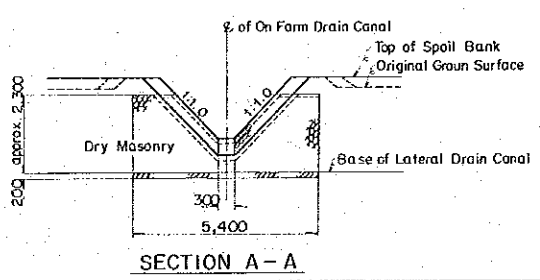
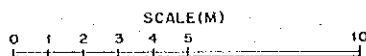
JUNCTION, TYPE-A-2



JUNCTION, TYPE-B

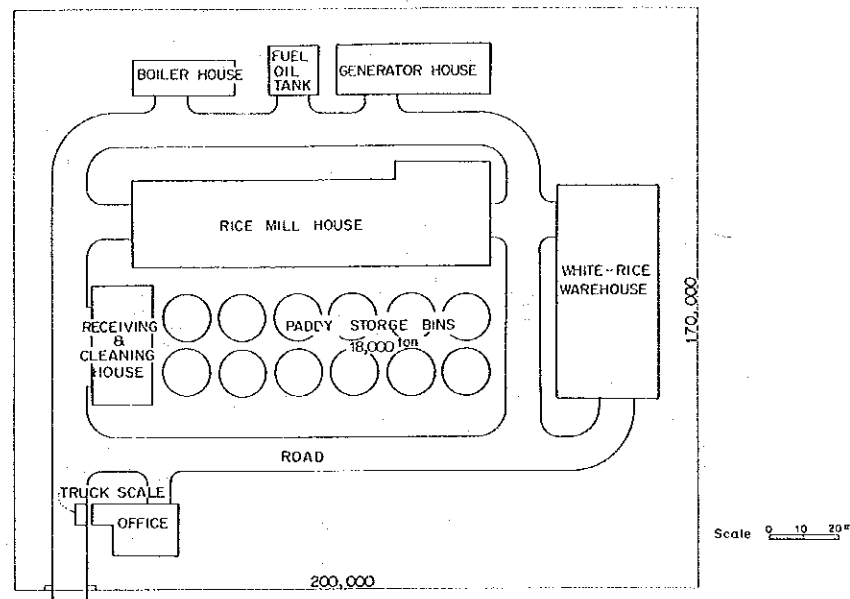


* H : Base width of the lateral drainage canal, which is in the ranges from 500m to 100m

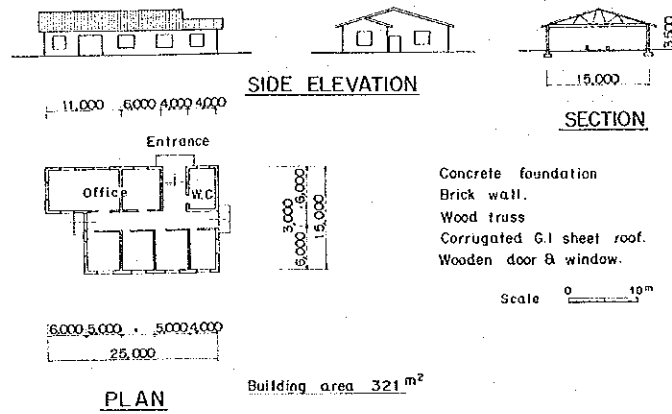


PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING		APPROVED	
CHECKED		JUNCTION			
SUBMITTED		DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY		DATE
DATE		18	TOKYO		

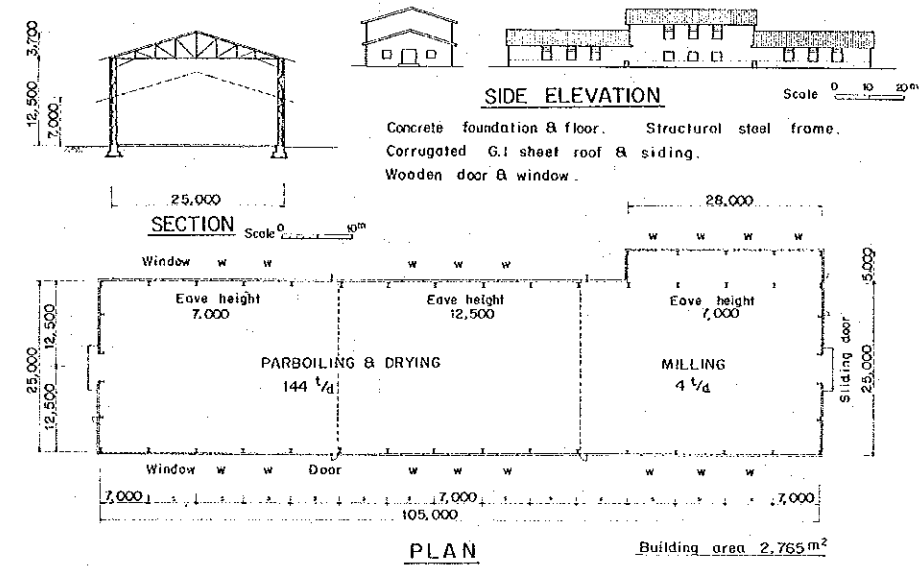
PLOT PLAN



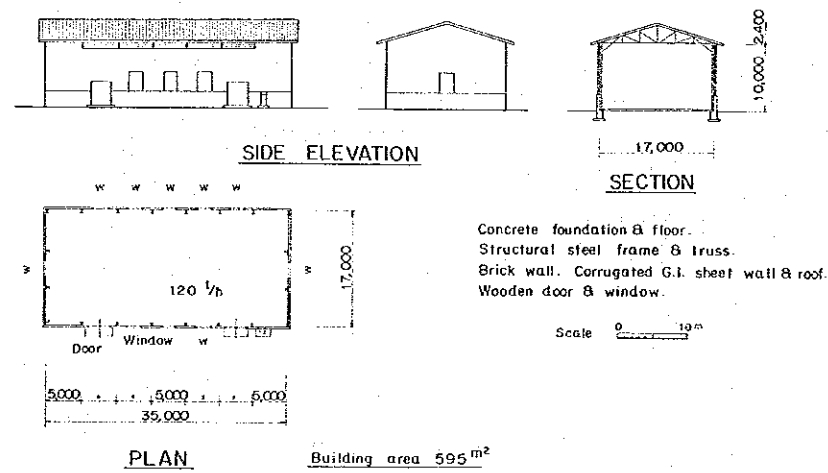
OFFICE



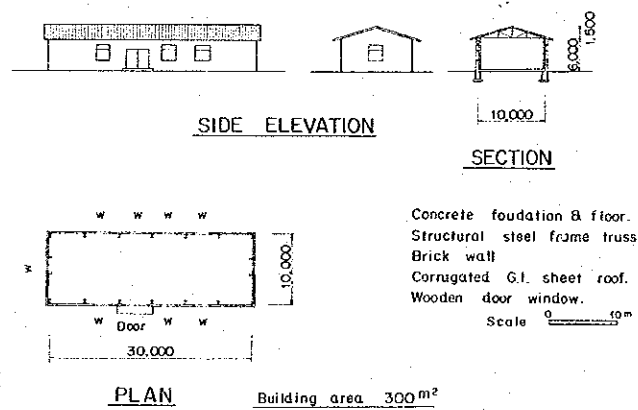
RICE MILL HOUSE



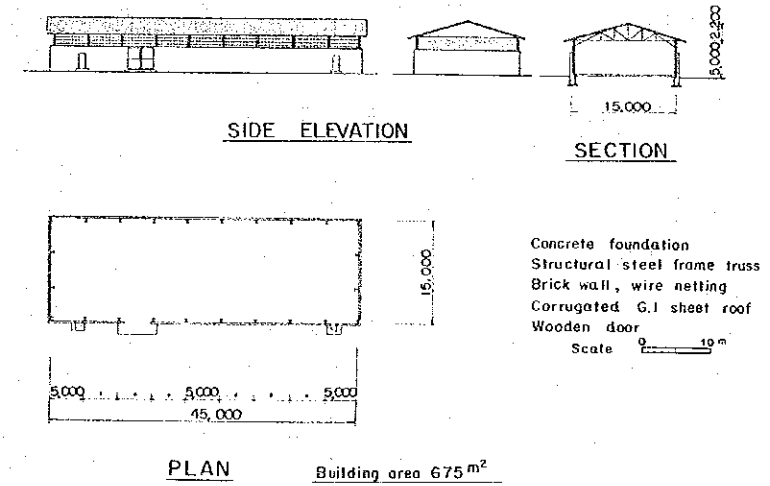
RECEIVING AND CLEANING HOUSE



BOILER HOUSE

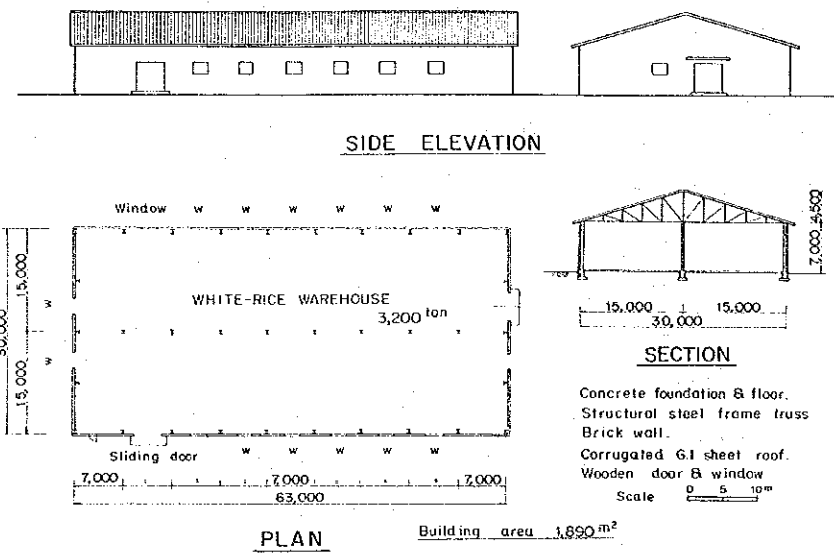


GENERATOR HOUSE

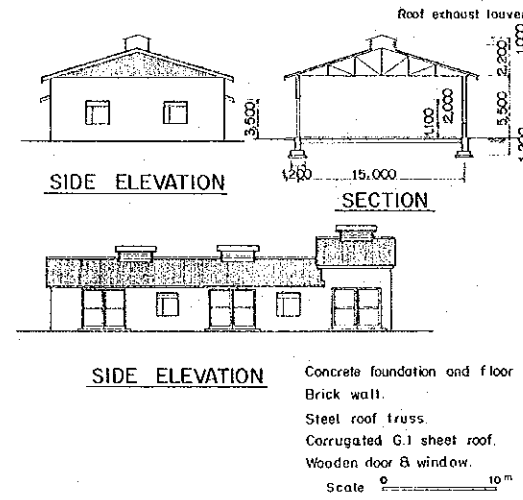


PREPARED _____	THE DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	TITLE OF DRAWING RICE PROCESSING CENTER AND WORKSHOPS (1)	APPROVED _____
CHECKED _____	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	OWG. NO. 19	DATE _____
SUBMITTED _____		JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	
DATE _____			

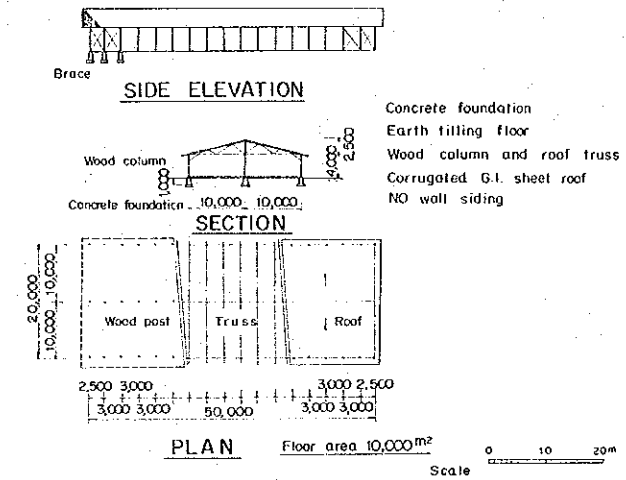
WAREHOUSE



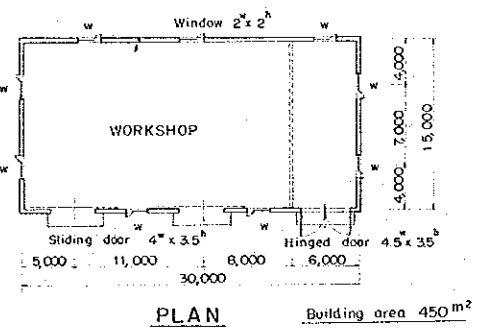
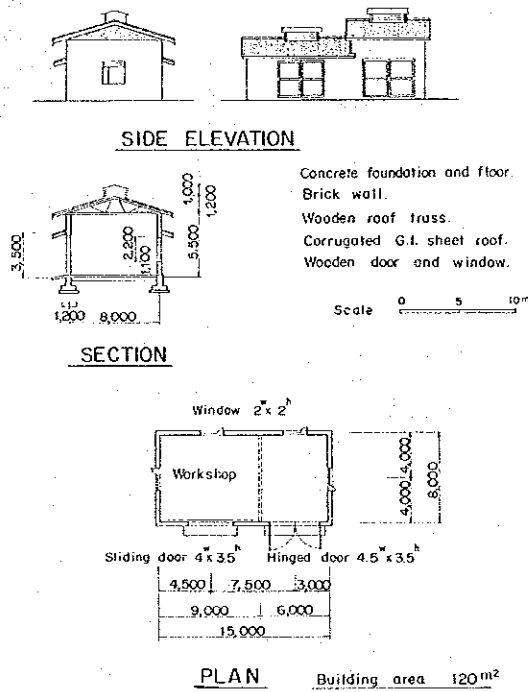
CENTRAL WORKSHOP BUILDING



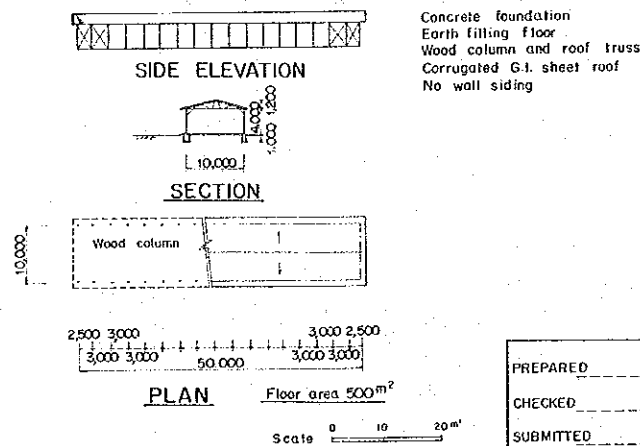
CENTRAL WORKSHOP SHADE



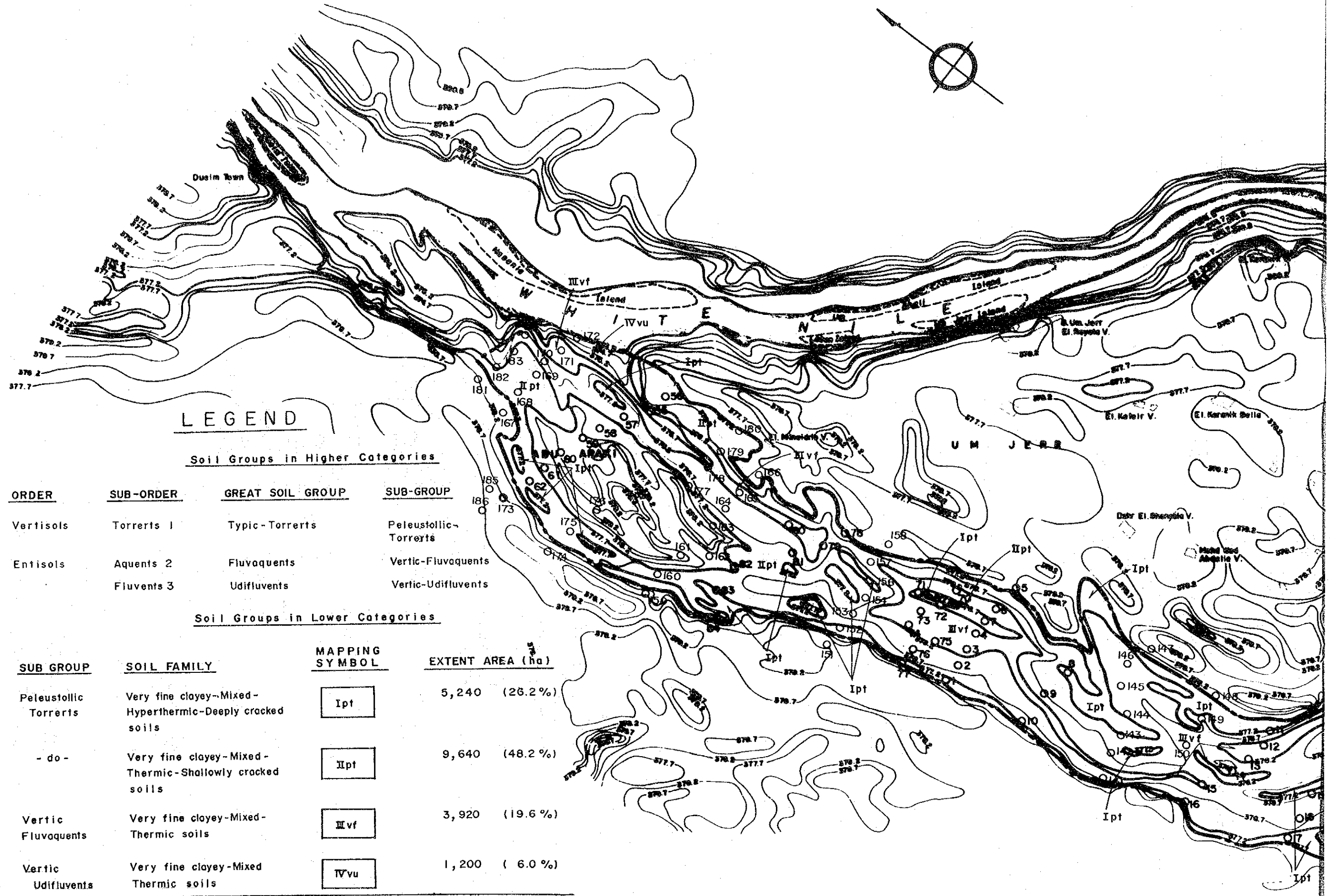
BRANCH WORKSHOP BUILDING



BRANCH WORKSHOP SHADE



PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING		APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	RICE PROCESSING CENTER AND WORKSHOPS(2)		
SUBMITTED	RICE DEVELOPMENT PROJECT IN ABU GASABA BASIN	DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	DATE
DATE		20	TOKYO	



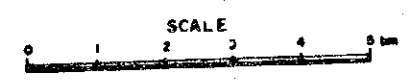
LEGEND

Soil Groups in Higher Categories

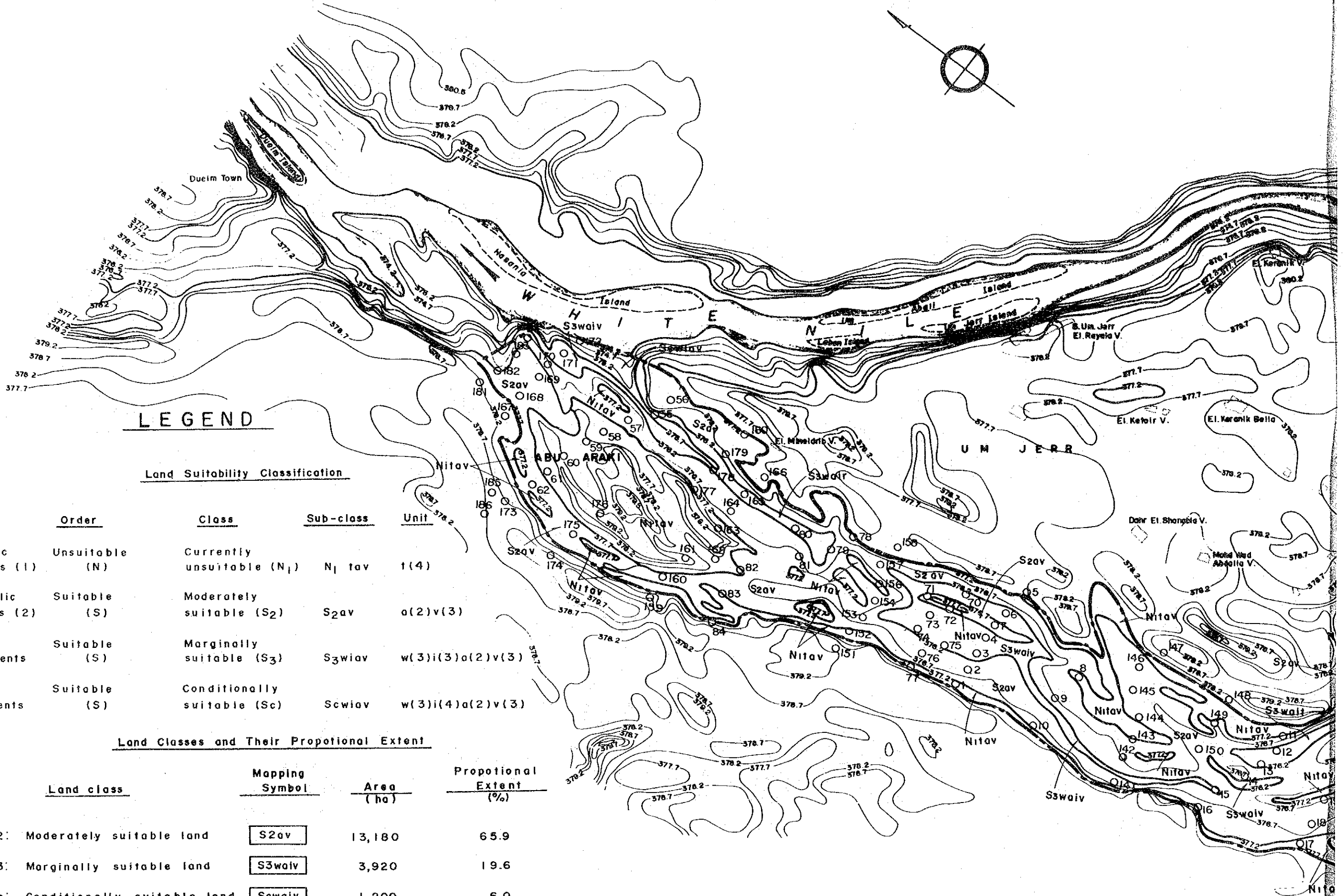
ORDER	SUB-ORDER	GREAT SOIL GROUP	SUB-GROUP
Vertisols	Torrerts 1	Typic-Torrerts	Peleustollic-Torrerts
Entisols	Aquents 2	Fluvaquents	Vertic-Fluvaquents
	Fluents 3	Udifuvents	Vertic-Udifuvents

Soil Groups in Lower Categories

SUB GROUP	SOIL FAMILY	MAPPING SYMBOL	EXTENT AREA (ha)
Peleustollic Torrerts	Very fine clayey-Mixed-Hyperthermic-Deeply cracked soils	Ipt	5,240 (26.2%)
- do -	Very fine clayey-Mixed-Thermic-Shallowly cracked soils	IIpt	9,640 (48.2%)
Vertic Fluvaquents	Very fine clayey-Mixed-Thermic soils	IIIvf	3,920 (19.6%)
Vertic Udifuvents	Very fine clayey-Mixed-Thermic soils	IVvu	1,200 (6.0%)
TOTAL			20,000 (100%)



PREPARED	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING	APPROVED
CHECKED	MINISTRY OF AGRICULTURE, FOOD AND NATURAL RESOURCES	SOIL MAP	DATE
SUBMITTED	RICE DEVELOPMENT PROJECT IN ABU GASAB BASIN	DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY
DATE		21	TOKYO



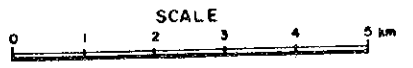
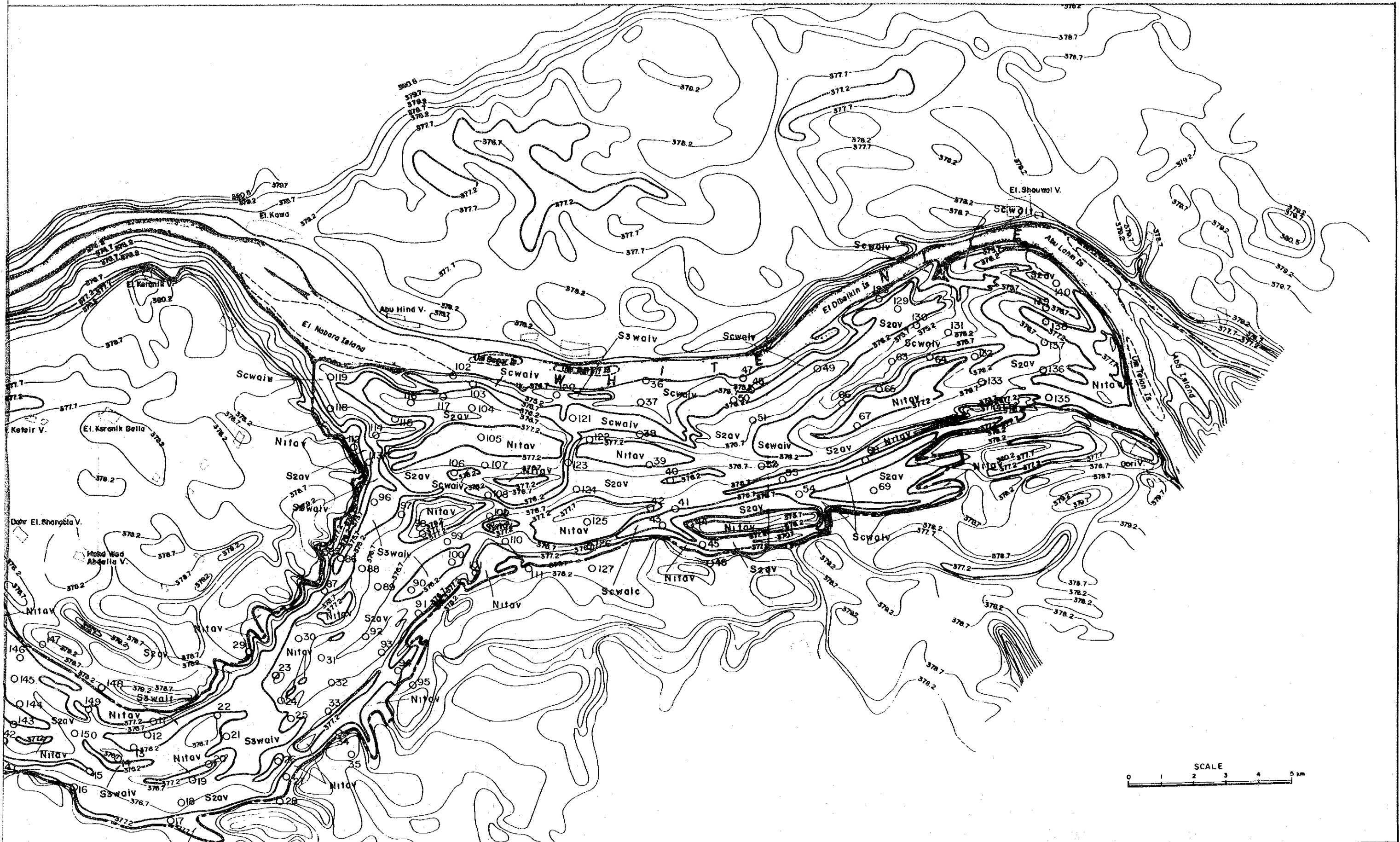
LEGEND

Land Suitability Classification

Soils	Order	Class	Sub-class	Unit
Pelustollic Torrerts (1)	Unsuitable (N)	Currently unsuitable (N ₁)	N ₁ tav	t(4)
Peleustollic Torrerts (2)	Suitable (S)	Moderately suitable (S ₂)	S ₂ av	a(2)v(3)
Vertic Fluvaquents	Suitable (S)	Marginally suitable (S ₃)	S ₃ waiv	w(3)i(3)a(2)v(3)
Vertic Udifluvents	Suitable (S)	Conditionally suitable (S _c)	Scwaiv	w(3)i(4)a(2)v(3)

Land Classes and Their Proportional Extent

Land class	Mapping Symbol	Area (ha)	Proportional Extent (%)
Class S ₂ : Moderately suitable land	S ₂ av	13,180	65.9
Class S ₃ : Marginally suitable land	S ₃ waiv	3,920	19.6
Class S _c : Conditionally suitable land	Scwaiv	1,200	6.0
Class N ₁ : Currently unsuitable land	N ₁ tav	1,700	8.5
Total		20,000	100.0



PREPARED -----	THE DEMOCRATIC REPUBLIC OF THE SUDAN	TITLE OF DRAWING		APPROVED -----
CHECKED -----	MINISTRY OF AGRICULTURE,	LAND CLASSIFICATION		DATE -----
SUBMITTED -----	FOOD AND NATURAL RESOURCES			
DATE -----	RICE DEVELOPMENT PROJECT IN ABUGASABA BASIN	DWG. NO.	JAPAN INTERNATIONAL COOPERATION AGENCY	
		22	TOKYO	