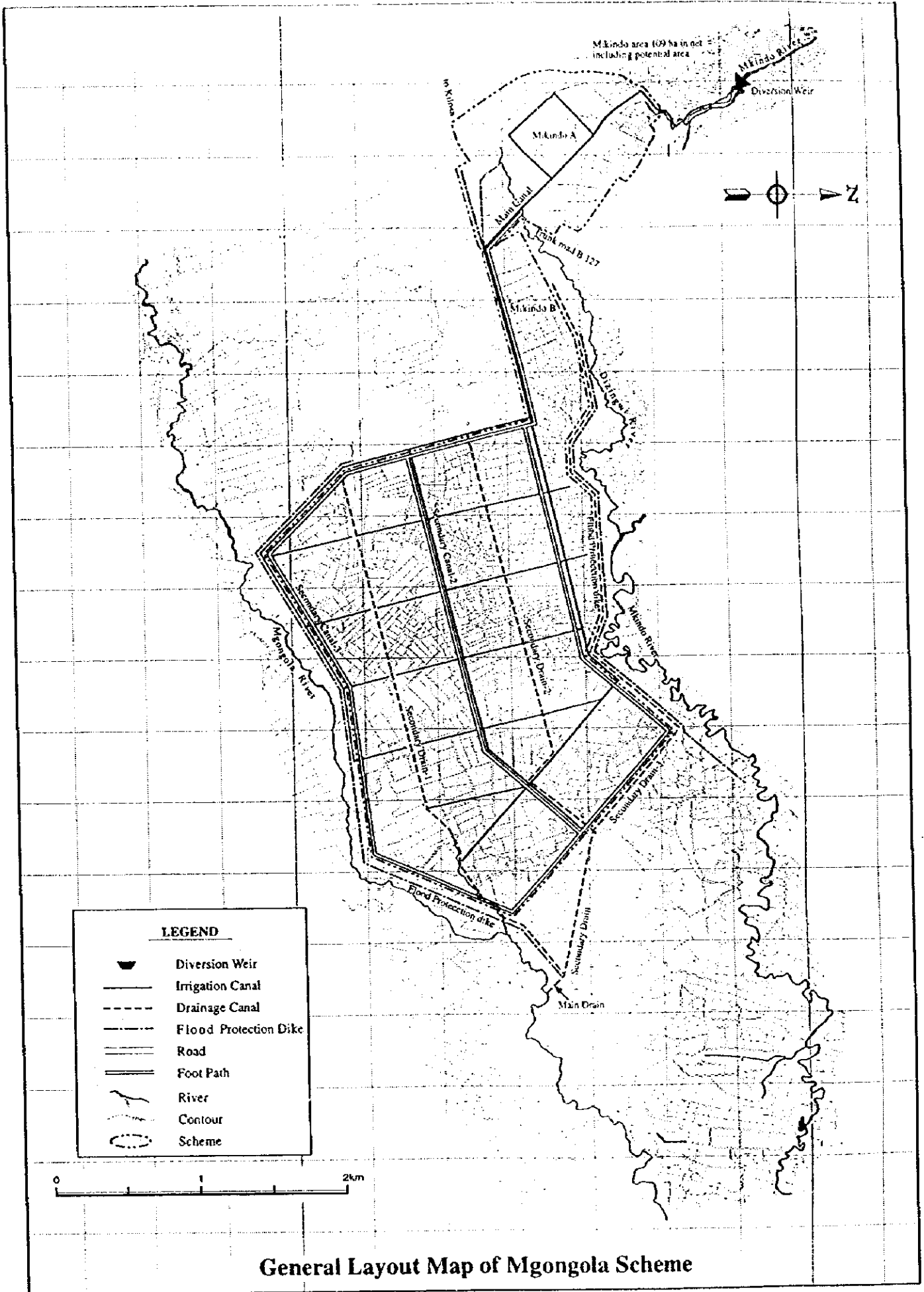


DIVISION-3

**THE STUDY
ON
THE SMALLHOLDER IRRIGATION PROJECTS
IN
CENTRAL WAMI RIVER BASIN**

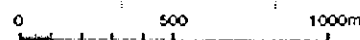
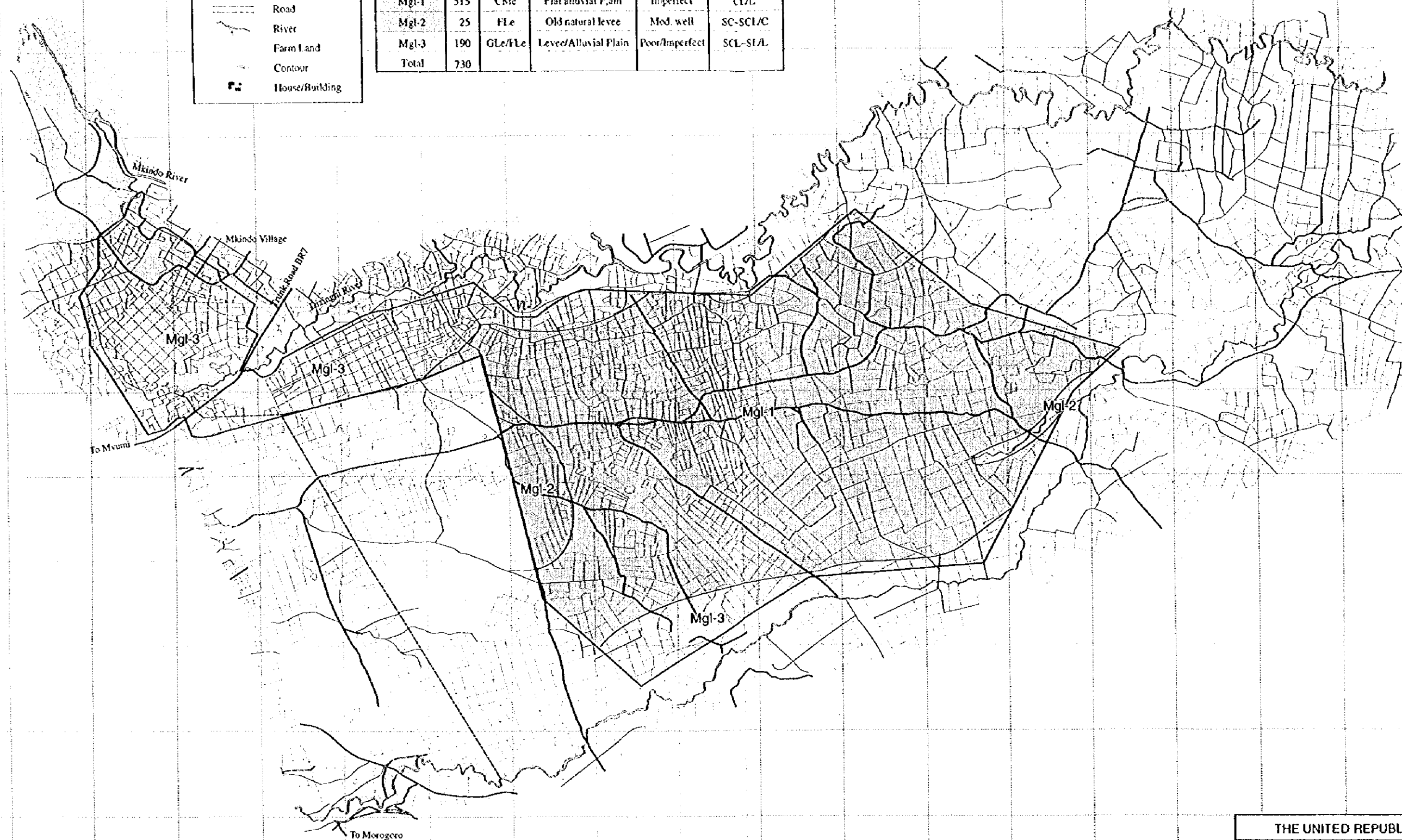
**FEASIBILITY STUDY
ON
MGONGOLA SCHEME**



LEGEND

	Road
	River
	Farm Land
	Contour
	House/Building

Mapping Unit	Area (ha)	Soil unit	Land Form	Drainability	Soil Texture
Mgl-1	515	CMe	Flat alluvial Plain	Imperfect	CL/L
Mgl-2	25	FLe	Old natural levee	Med. well	SC-SC1/C
Mgl-3	190	GLe/FLe	Levee/Alluvial Plain	Poor/Imperfect	SCL-SLA
Total	730				

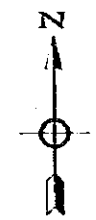
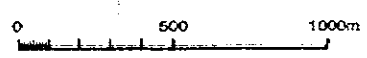
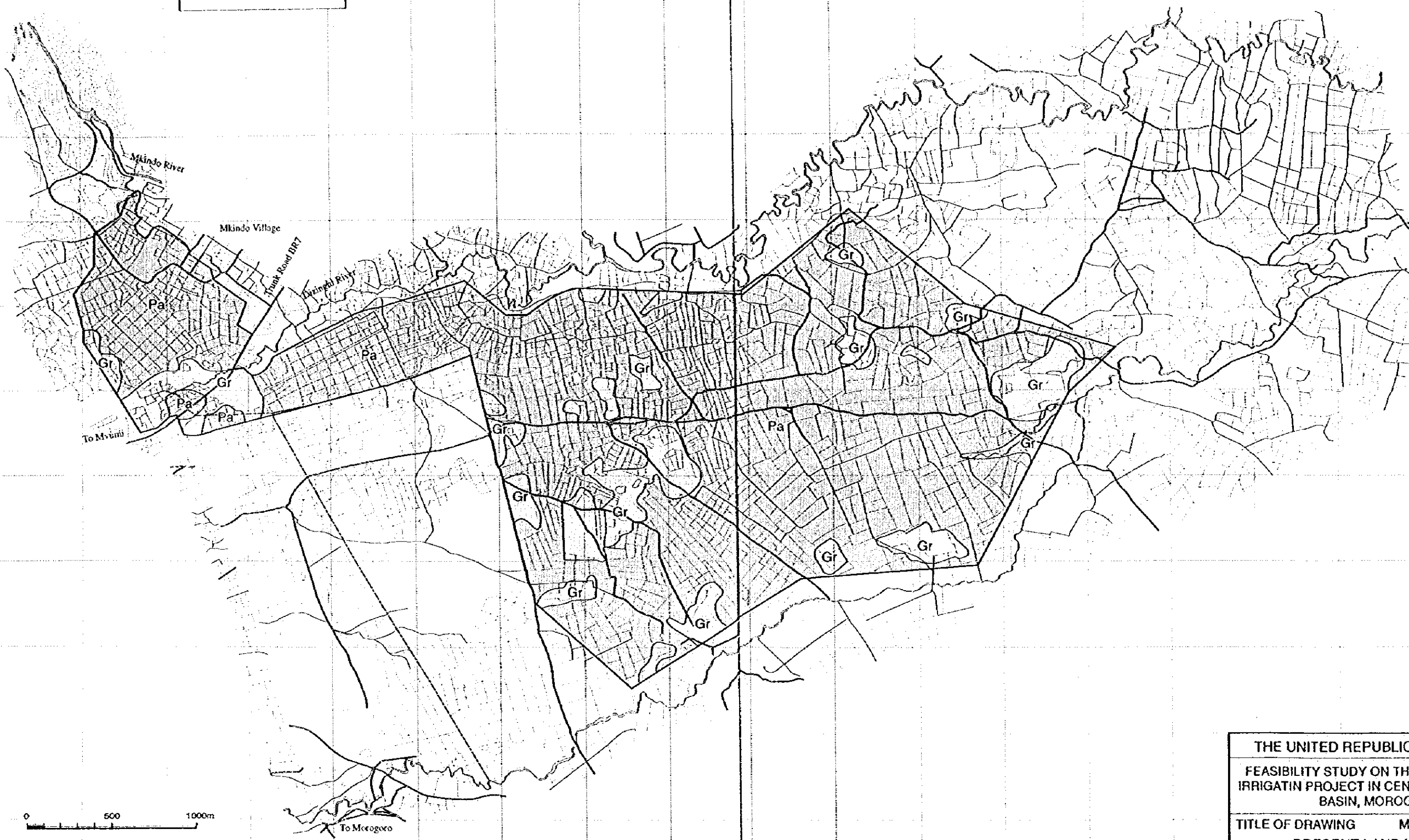


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
		SOIL MAP	
Date		Drawing No.	301
JAPAN INTERNATIONAL COOPERATION AGENCY			

LEGEND

	Road
	River
	Farm Land
	Contour
	House/Building

Symbol	Land Use	Area (ha)
Pr	Paddy Inad	580
Gr	Grassland and Bush Land	130
	Settlement/Right of Ways	20
	(Total)	730



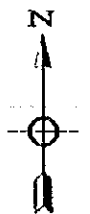
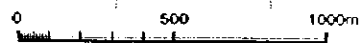
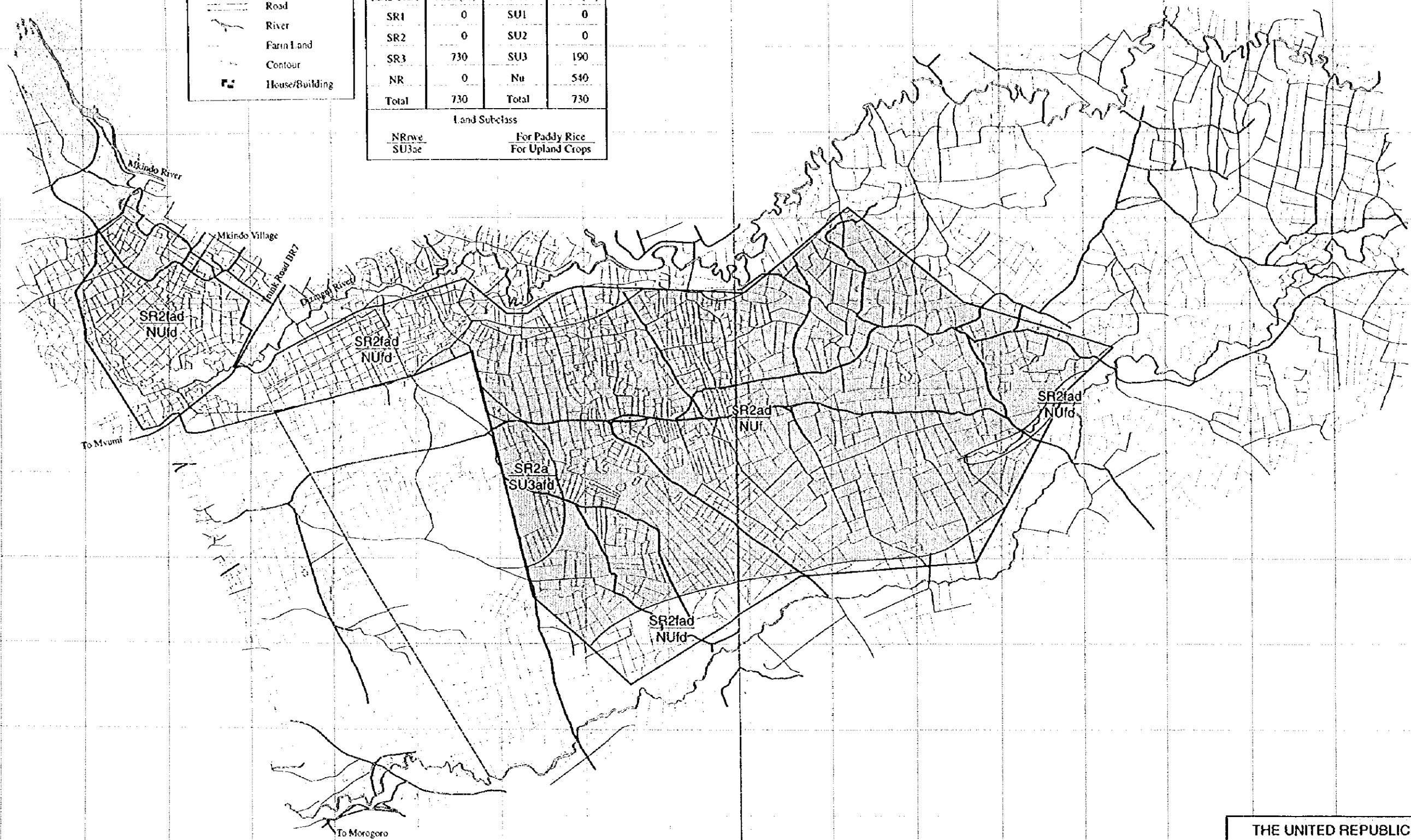
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
		PRESENT LAND USE MAP	
Date		Drawing No.	302
JAPAN INTERNATIONAL COOPERATION AGENCY			

LEGEND

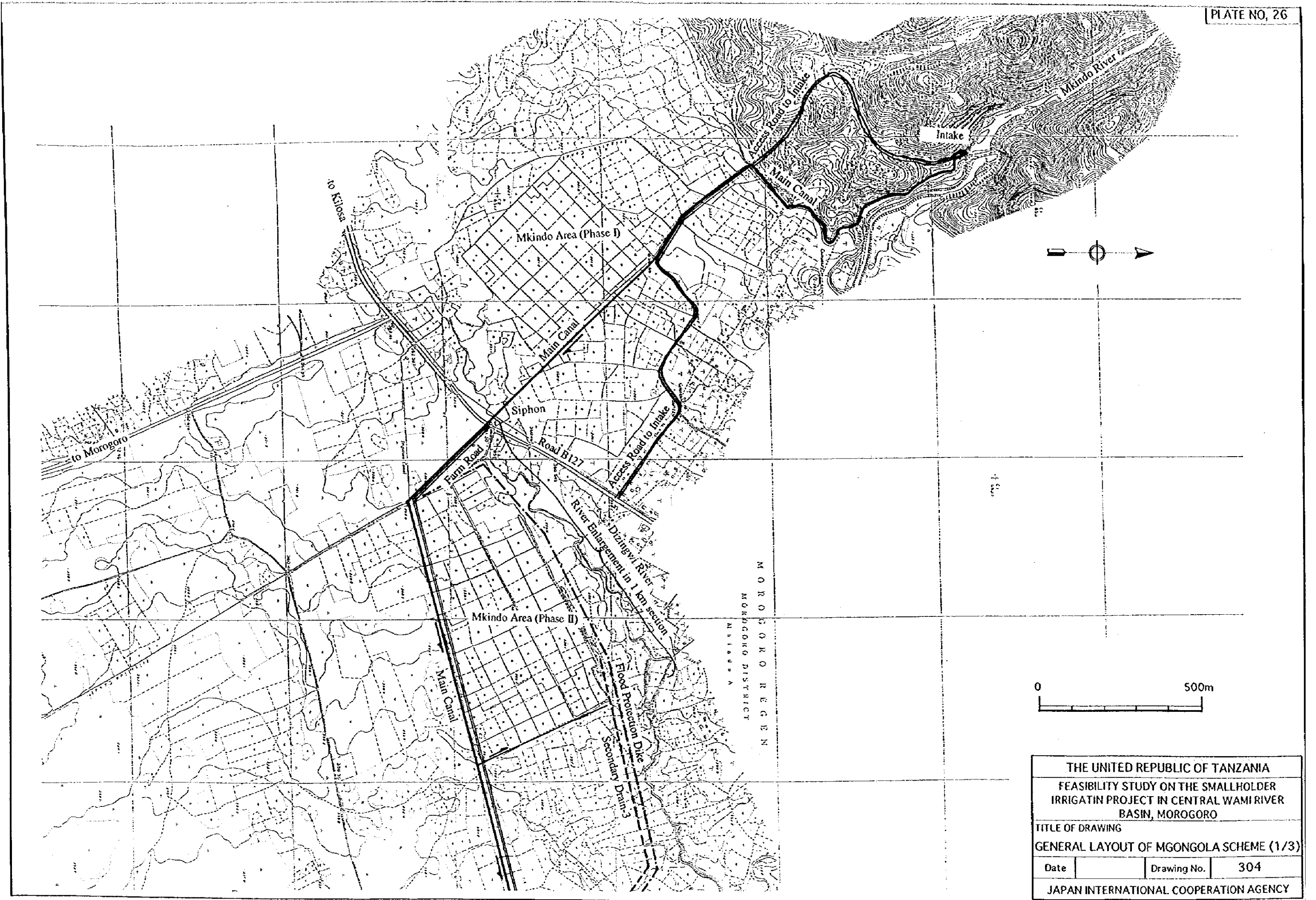
	Road
	River
	Farm Land
	Contour
	House/Building

Land Suitability			
For Paddy Rice		For Upland Crops	
Land Class	Area (ha)	Land Class	Area (ha)
SR1	0	SU1	0
SR2	0	SU2	0
SR3	730	SU3	190
NR	0	Nu	540
Total	730	Total	730

Land Subclass	
NRrwe	For Paddy Rice
SU3ae	For Upland Crops



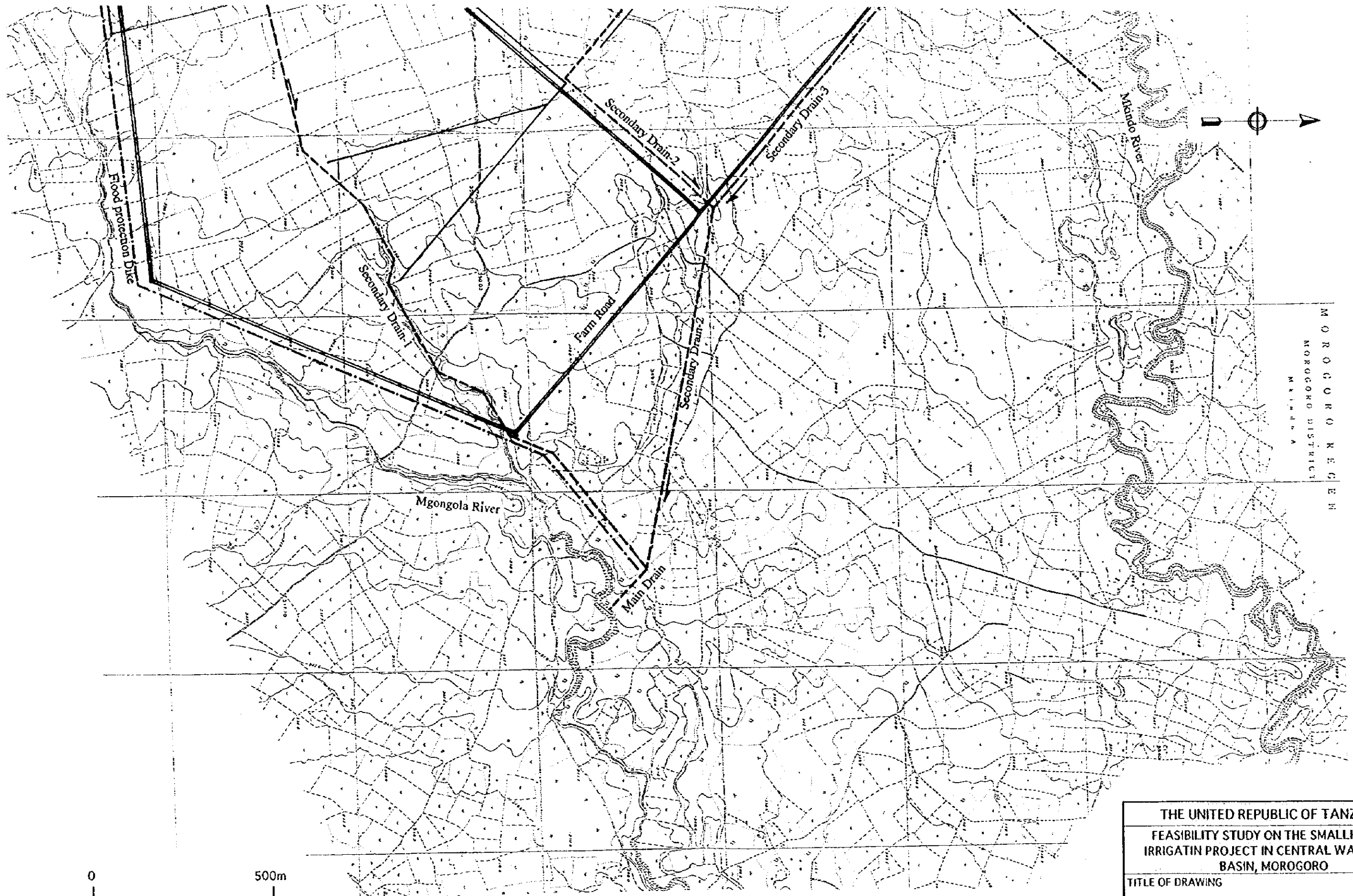
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME IRRIGATION SUITABILITY MAP	
Date		Drawing No.	303
JAPAN INTERNATIONAL COOPERATION AGENCY			



THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER			
IRRIGATION PROJECT IN CENTRAL WAMI RIVER			
BASIN, MOROGORO			
TITLE OF DRAWING			
GENERAL LAYOUT OF MGONGOLA SCHEME (1/3)			
Date		Drawing No.	304
JAPAN INTERNATIONAL COOPERATION AGENCY			



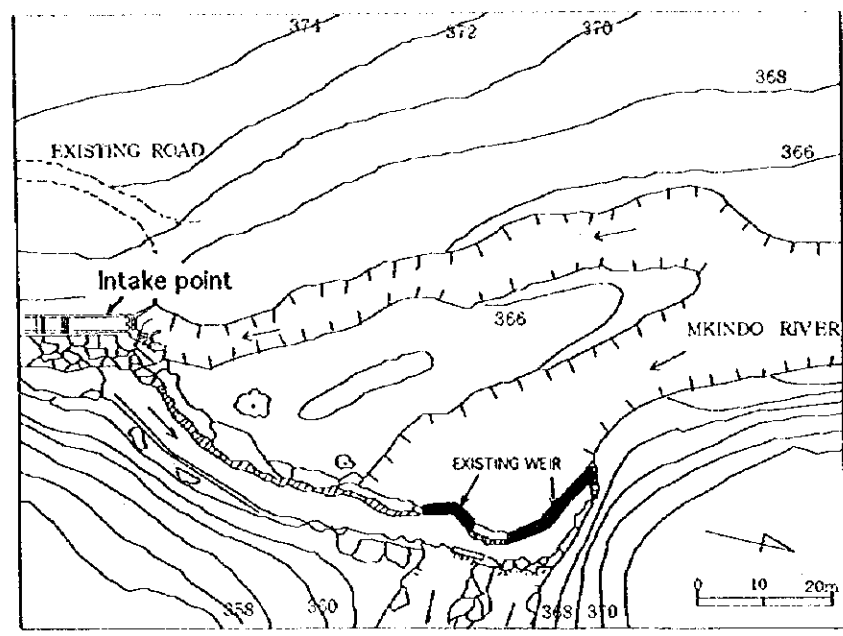
THE UNITED REPUBLIC OF TANZANIA		TITLE OF DRAWING	
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO		GENERAL LAYOUT OF MGONGOLA SCHEME (2/3)	
Date	Drawing No.	305	
JAPAN INTERNATIONAL COOPERATION AGENCY			



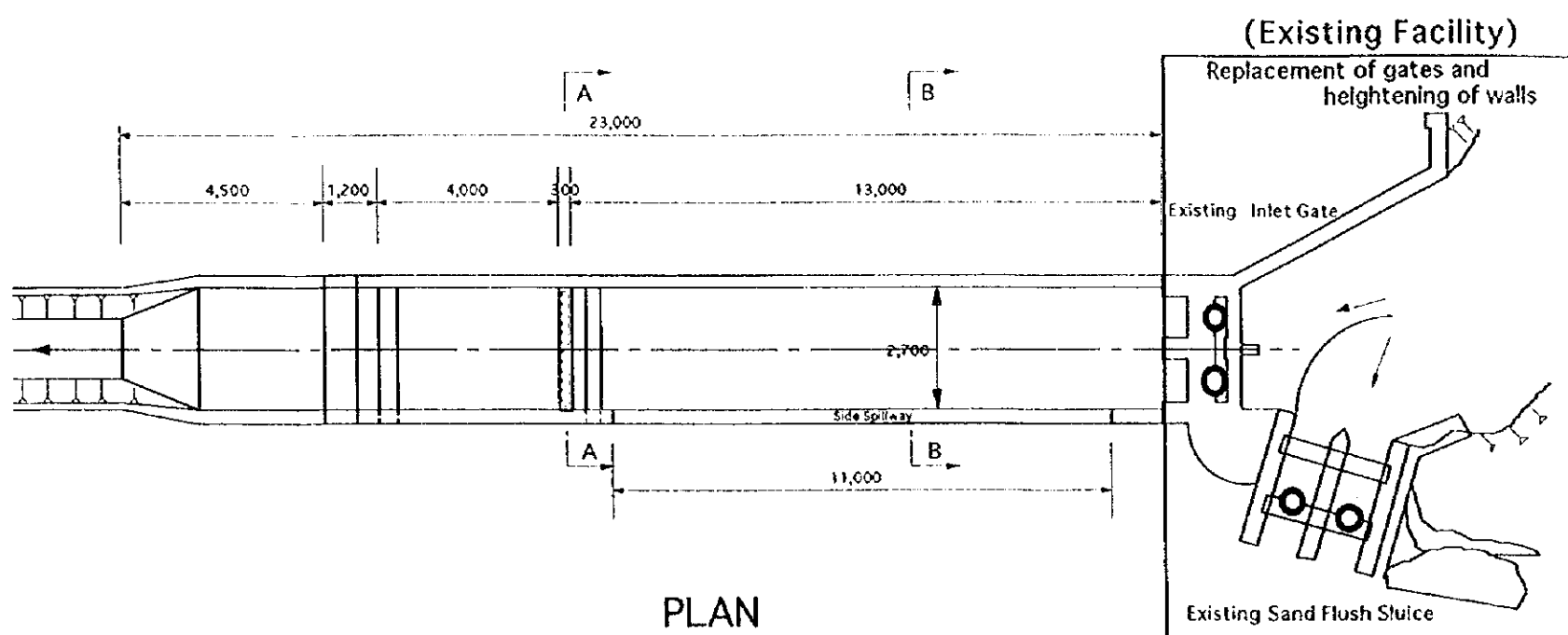
MOROGORO REGION
 MOROGORO DISTRICT
 M. I. I. A. A.



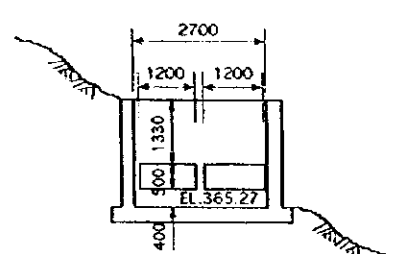
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING			
GENERAL LAYOUT OF MGONGOLA SCHEME (3/3)			
Date		Drawing No.	306
JAPAN INTERNATIONAL COOPERATION AGENCY			



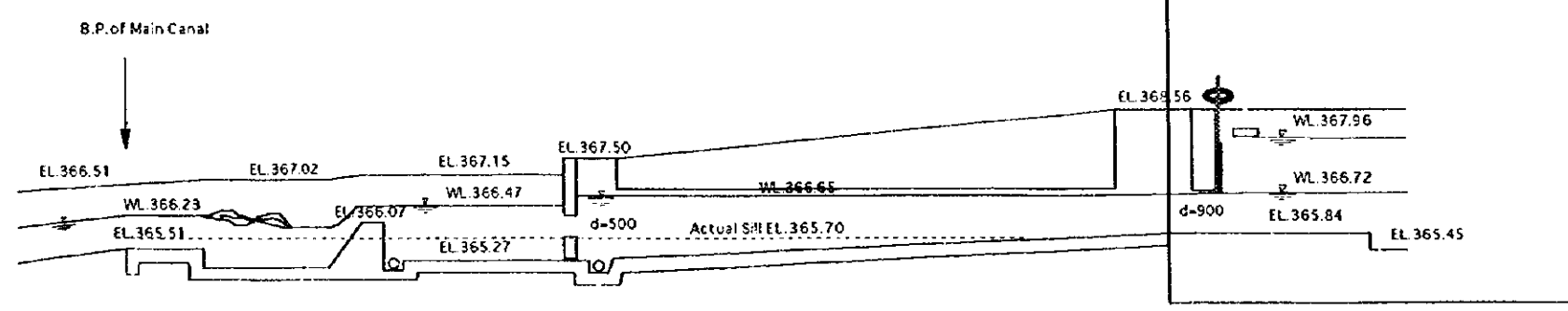
KEY MAP



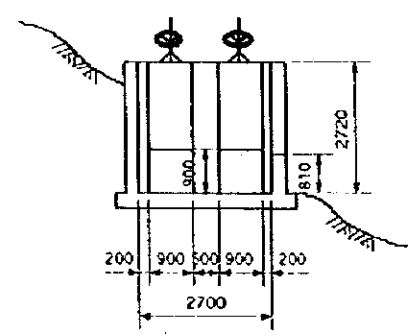
PLAN



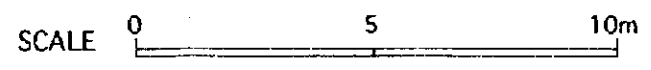
SECTION A-A



PROFILE



SECTION B-B

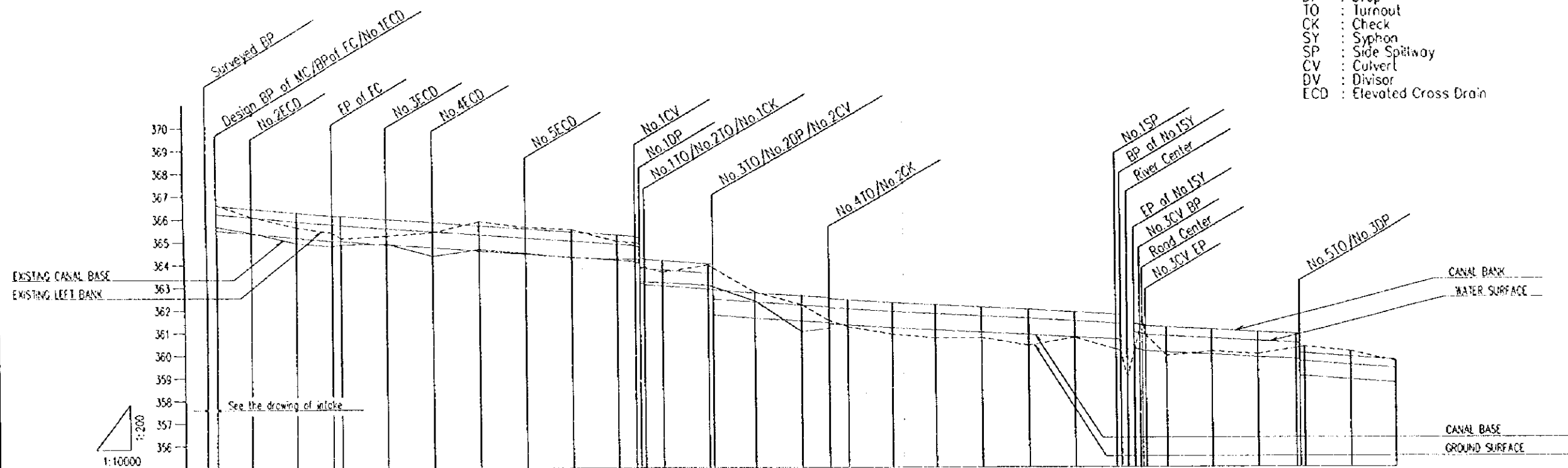


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME INTAKE	
Date		Drawing No.	307
JAPAN INTERNATIONAL COOPERATION AGENCY			

Main canal (1/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Siphon
- SP : Side Splitway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain



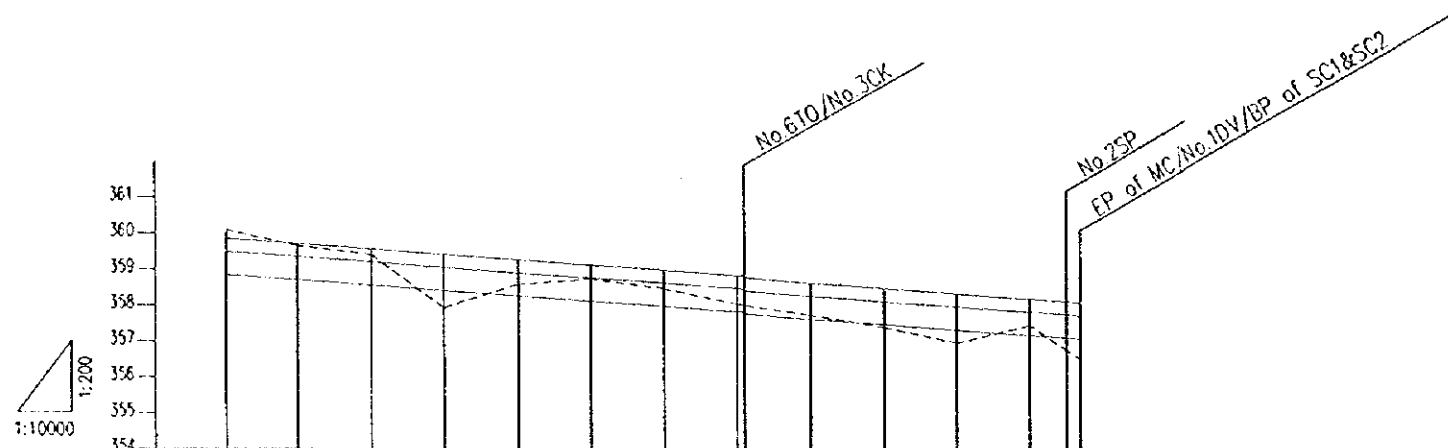
CANAL TYPE	Q=1.36 B=1.31 i=1/500 h=0.72 H=1.1 V=1.45					Q=1.36 B=0.8 i=1/700 h=0.70 H=1.1 V=1.32										Q=1.36 B=0.9 i=1/900 h=0.71 H=1.1 V=1.19					Q=1.12 B=0.8 i=1/700 h=0.63 H=1.0 V=1.25									
CANAL BANK ELEVATION	365.76	365.81	365.86	365.91	365.96	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04
WATER SURFACE ELEVATION	366.65	366.73	366.81	366.89	366.97	366.65	366.73	366.81	366.89	366.97	366.65	366.73	366.81	366.89	366.97	366.65	366.73	366.81	366.89	366.97	366.65	366.73	366.81	366.89	366.97	366.65	366.73	366.81	366.89	366.97
CANAL BASE ELEVATION	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04	365.84	365.89	365.94	365.99	366.04
GROUND SURFACE ELEVATION						365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90
EXISTING LEFT BANK ELEVATION	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90
EXISTING CANAL BASE ELEVATION	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90	365.70	365.75	365.80	365.85	365.90
REDUCED DISTANCE	0.00	23.00	100.00	200.00	280.00	0.00	23.00	100.00	200.00	280.00	0.00	23.00	100.00	200.00	280.00	0.00	23.00	100.00	200.00	280.00	0.00	23.00	100.00	200.00	280.00	0.00	23.00	100.00	200.00	280.00
DISTANCE	0.00	23.00	77.00	100.00	80.00	0.00	23.00	77.00	100.00	80.00	0.00	23.00	77.00	100.00	80.00	0.00	23.00	77.00	100.00	80.00	0.00	23.00	77.00	100.00	80.00	0.00	23.00	77.00	100.00	80.00
STATION NO.	BP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
PROFILE OF MAIN CANAL (1)			
Date		Drawing No.	308
JAPAN INTERNATIONAL COOPERATION AGENCY			

Main canal (2/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Siphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain



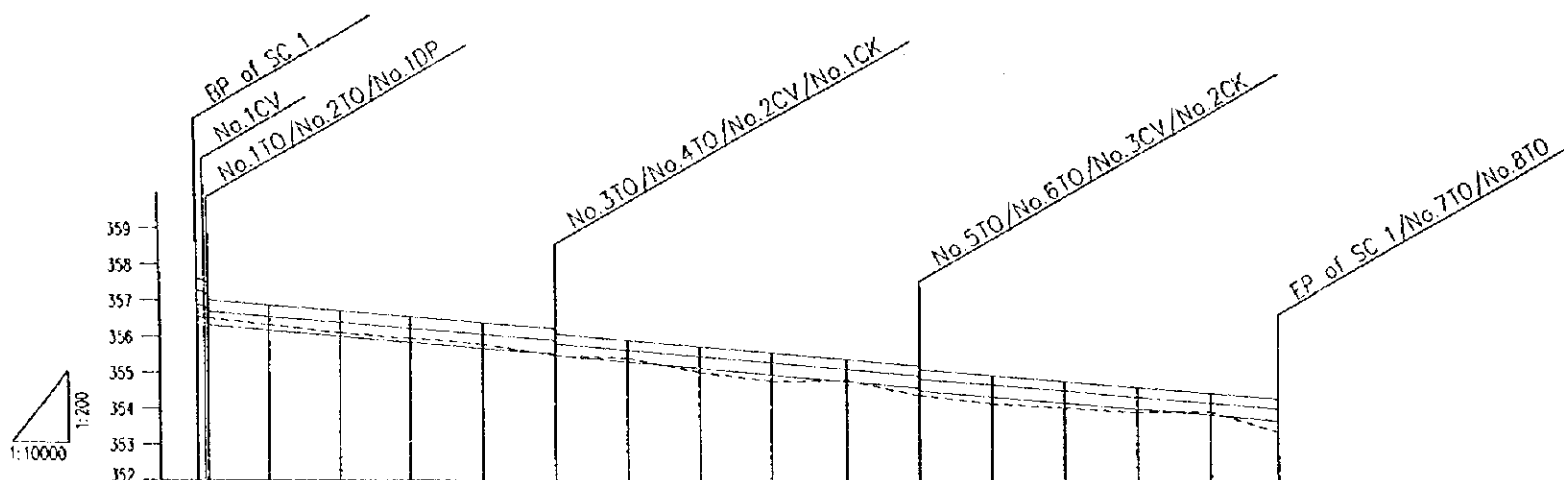
CANAL TYPE	O=1.12 B=0.6 H=1/700 h=0.63 H=1.0 V=1.25												
CANAL BANK ELEVATION	359.83	359.69	359.55	359.40	359.26	359.12	358.98	358.84	358.70	358.56	358.42	358.28	358.14
WATER SURFACE ELEVATION	359.47	359.33	359.19	359.04	358.90	358.76	358.62	358.47	358.33	358.19	358.04	357.90	357.76
CANAL BASE ELEVATION	358.83	358.69	358.55	358.40	358.26	358.12	357.98	357.84	357.70	357.56	357.42	357.28	357.14
GROUND SURFACE ELEVATION	360.07	359.63	359.40	359.13	358.89	358.73	358.59	358.41	358.28	358.12	357.98	357.80	357.65
EXISTING LEFT BANK ELEVATION													
EXISTING CANAL BASE ELEVATION													
REDUCED DISTANCE	2500.00	2600.00	2700.00	2800.00	2900.00	3000.00	3100.00	3200.00	3300.00	3400.00	3500.00	3600.00	3669.00
DISTANCE	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	19.00
STATION NO	26	26	27	28	29	30	31	32	33	34	35	36	EP

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MONGOLA SCHEME	
PROFILE OF MAIN CANAL (2)			
Date		Drawing No.	309
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary canal 1

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Siphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain



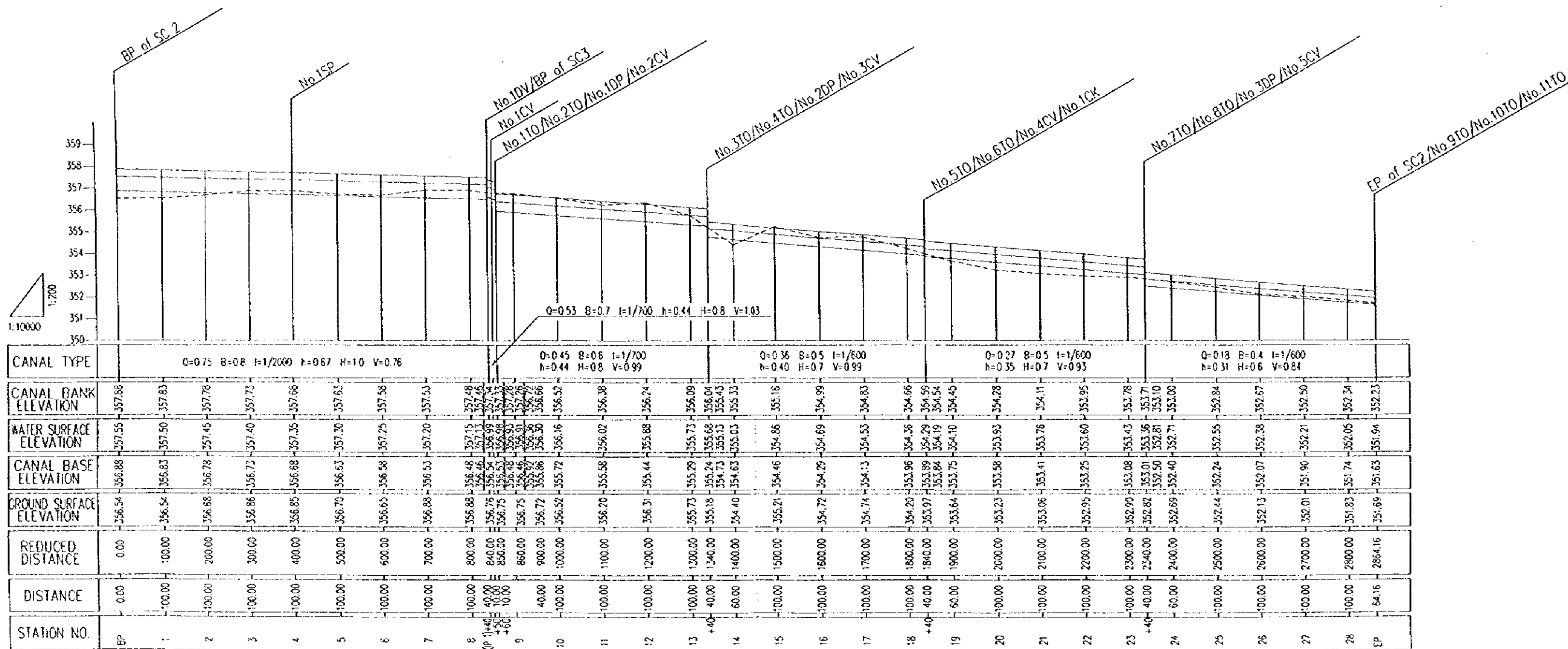
CANAL TYPE	0=0.33 B=0.5 I=1/600 h=0.38 H=0.7 V=0.97				G=0.21 B=0.4 I=1/600 h=0.33 H=0.6 V=0.87																
CANAL BANK ELEVATION	357.58	357.58	357.51	356.86	356.70	356.53	356.36	356.20	356.05	355.88	355.71	355.55	355.38	355.21	355.11	354.95	354.78	354.61	354.45	354.29	
WATER SURFACE ELEVATION	357.26	357.26	357.19	356.69	356.54	356.38	356.21	356.04	355.88	355.78	355.61	355.44	355.28	355.11	354.94	354.84	354.68	354.51	354.34	354.18	354.02
CANAL BASE ELEVATION	356.88	356.88	356.81	356.31	356.16	356.00	355.83	355.66	355.50	355.45	355.28	355.11	354.95	354.78	354.61	354.51	354.35	354.18	354.01	353.85	353.69
GROUND SURFACE ELEVATION	356.54	356.54	356.51	356.31	356.09	355.94	355.78	355.61	355.45	355.38	355.20	355.00	354.76	354.80	354.40	354.16	354.05	353.92	353.69	353.38	353.08
REDUCED DISTANCE	0.00	10.00	15.00	100.00	200.00	300.00	400.00	500.00	600.00	700.00	800.00	900.00	1000.00	1100.00	1200.00	1300.00	1400.00	1494.00			
DISTANCE	0.00	10.00	5.00	85.00	100.00	106.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	94.00		
STATION NO.	BP			1	2	3	4	5	6	7	8	9	10	11	12	13	14	EP			

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING MGONGOLA SCHEME			
PROFILE OF SECONDARY CANAL 1			
Date		Drawing No.	310
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary canal 2

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Syphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain



THE UNITED REPUBLIC OF TANZANIA

FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING: MGONGOLA SCHEME
PROFILE OF SECONDARY CANAL 2

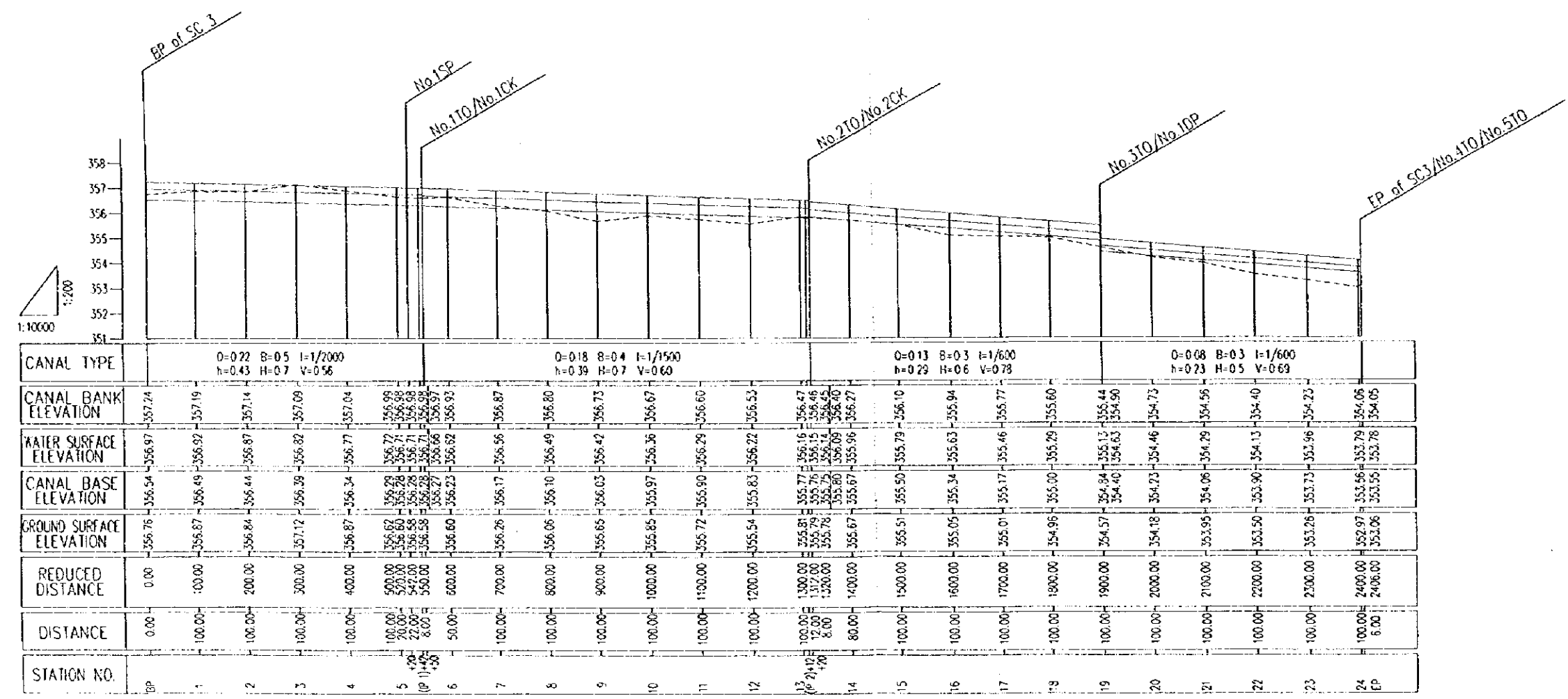
Date	Drawing No.	311
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JAPAN INTERNATIONAL COOPERATION AGENCY

Secondary canal 3

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Syphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain



THE UNITED REPUBLIC OF TANZANIA

FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING: MONGOLA SCHEME
PROFILE OF SECONDARY CANAL 3

Date	Drawing No.	312
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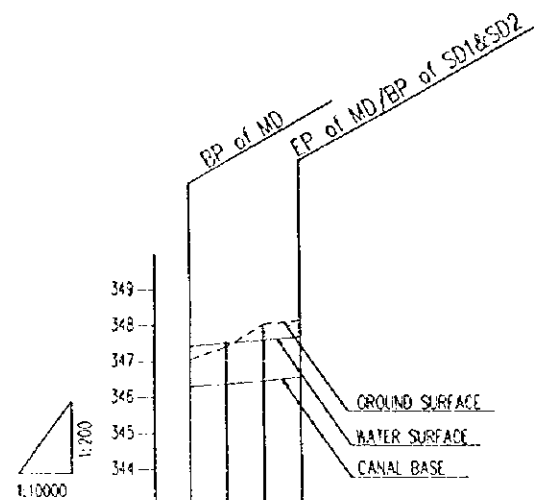
JAPAN INTERNATIONAL COOPERATION AGENCY

Main drain

Secondary drain 1 (1/2)

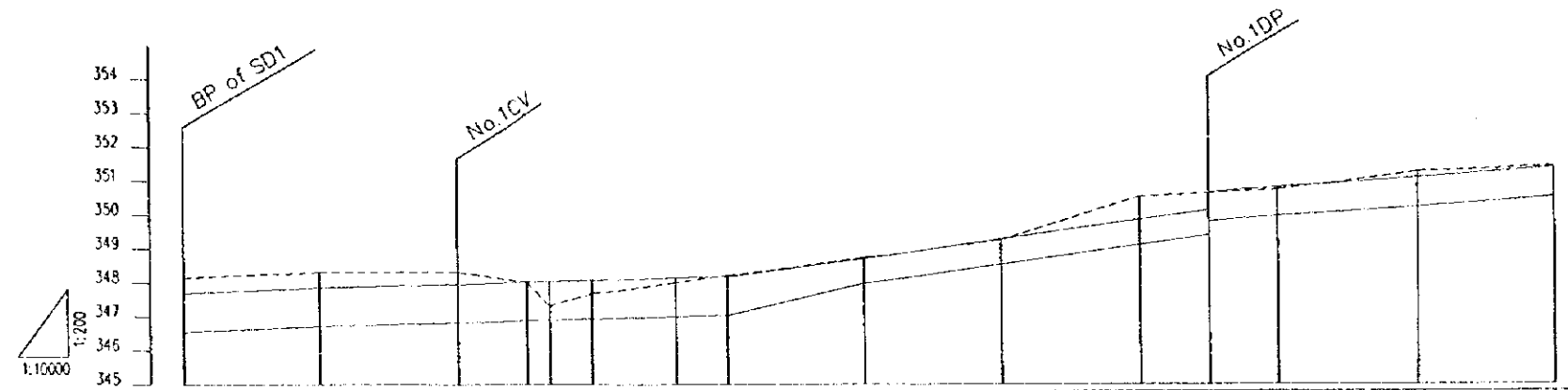
ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Syphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain



CANAL TYPE			
WATER SURFACE ELEVATION	347.43	347.51	347.59
CANAL BASE ELEVATION	346.30	346.38	346.46
GROUND SURFACE ELEVATION	347.05	347.40	348.03
ACCUMULATED DISTANCE	0.00	50.00	100.00
DISTANCE	0.00	50.00	50.00
STATION NO.	BP	+50	+100

O=8.3 B=4.5 I=1/600
h=1.13 H=1.1 V=1.19



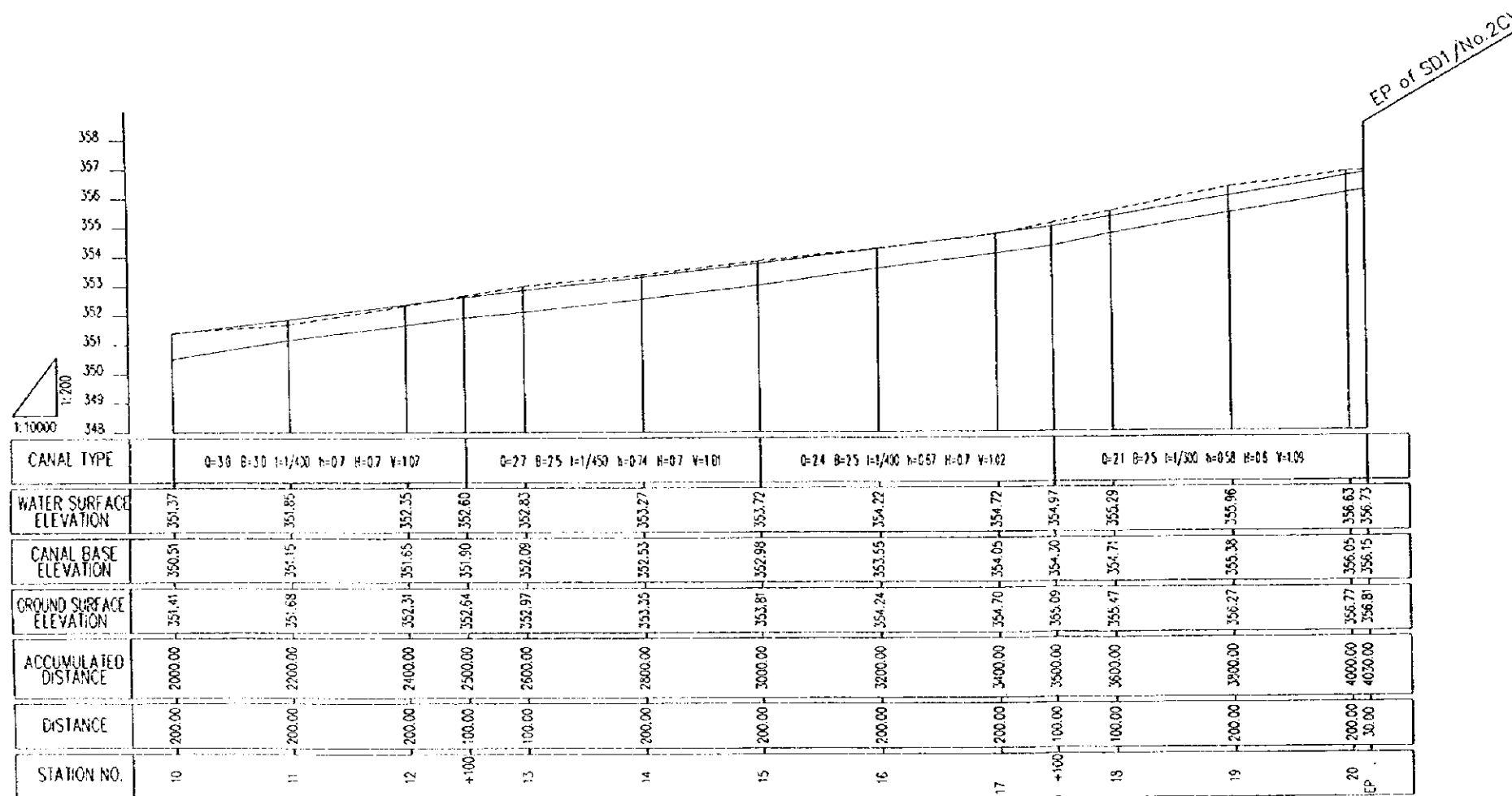
CANAL TYPE	O=4.1 B=3.5 I=1/1800 h=1.13 H=1.1 V=0.68				O=3.6 B=3.0 I=1/350 h=0.74 H=0.7 V=1.18				O=3.3 B=3.0 I=1/700 h=0.86 H=0.9 V=0.90			
WATER SURFACE ELEVATION	347.68	347.94	347.95	348.01	348.03	348.06	348.13	348.17	348.70	348.84	350.12	350.65
CANAL BASE ELEVATION	346.55	346.71	346.82	346.88	346.90	346.93	347.00	347.04	347.95	348.10	348.38	349.79
GROUND SURFACE ELEVATION	348.14	348.30	348.30	348.00	347.31	347.67	348.00	348.20	348.72	349.52	349.62	349.79
ACCUMULATED DISTANCE	0.00	200.00	400.00	505.00	540.00	600.00	725.00	800.00	1000.00	1200.00	1400.00	1500.00
DISTANCE	0.00	200.00	200.00	105.00	35.00	60.00	125.00	75.00	200.00	200.00	200.00	100.00
STATION NO.	BP	1	2	+105	+140	3	+125	4	5	6	7	+100

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING: MGONGOLA SCHEME			
PROFILE OF MAIN & SECONDARY DRAIN 1(1)			
Date		Drawing No.	313
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary drain 1 (2/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- SY : Siphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain

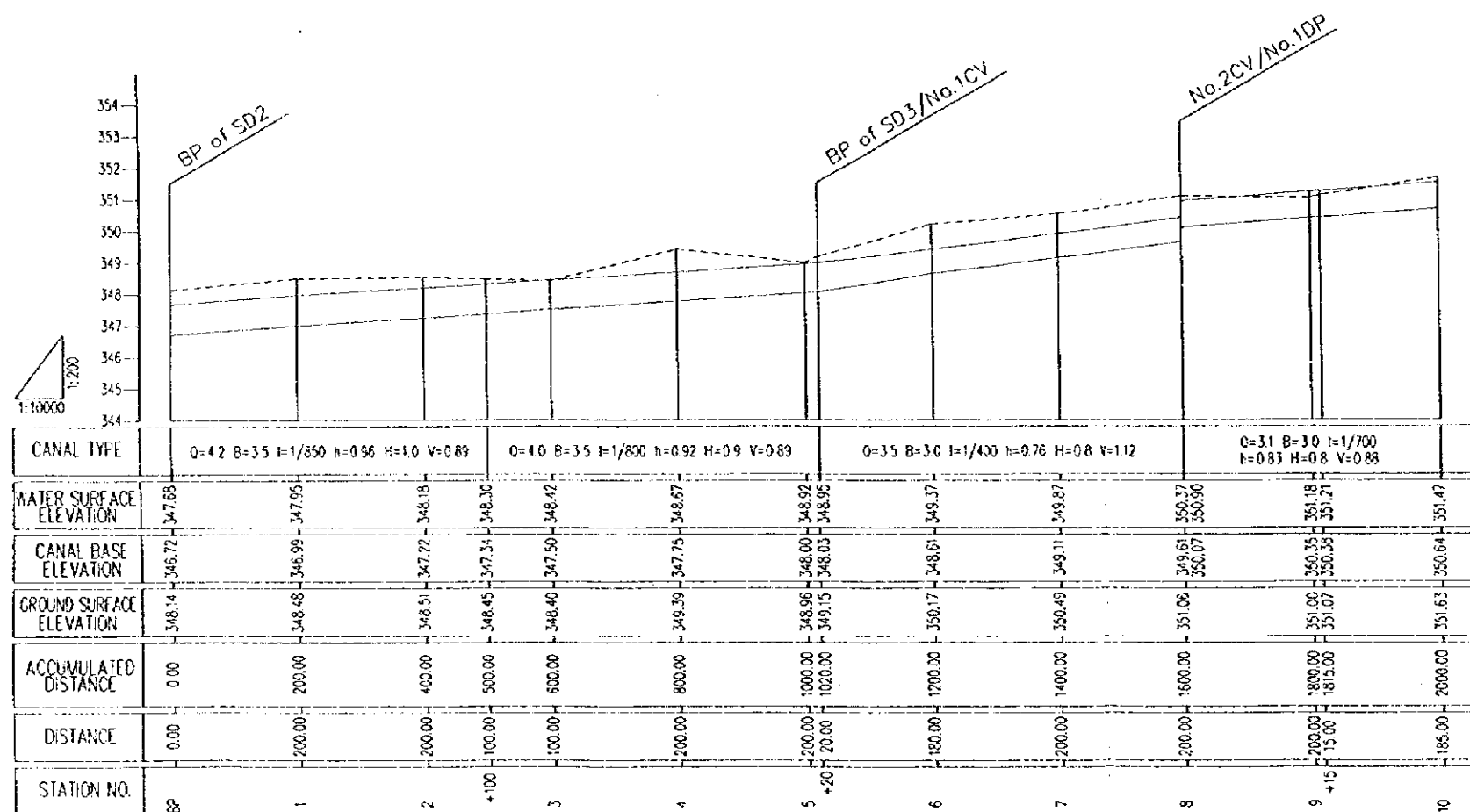


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MONGOLA SCHEME	
PROFILE OF SECONDARY DRAIN 1(2)			
Date		Drawing No.	314
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary drain 2 (1/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Siphon
- SP : Side Spillway
- CV : Cuivert
- DV : Divisor
- ECD : Elevated Cross Drain

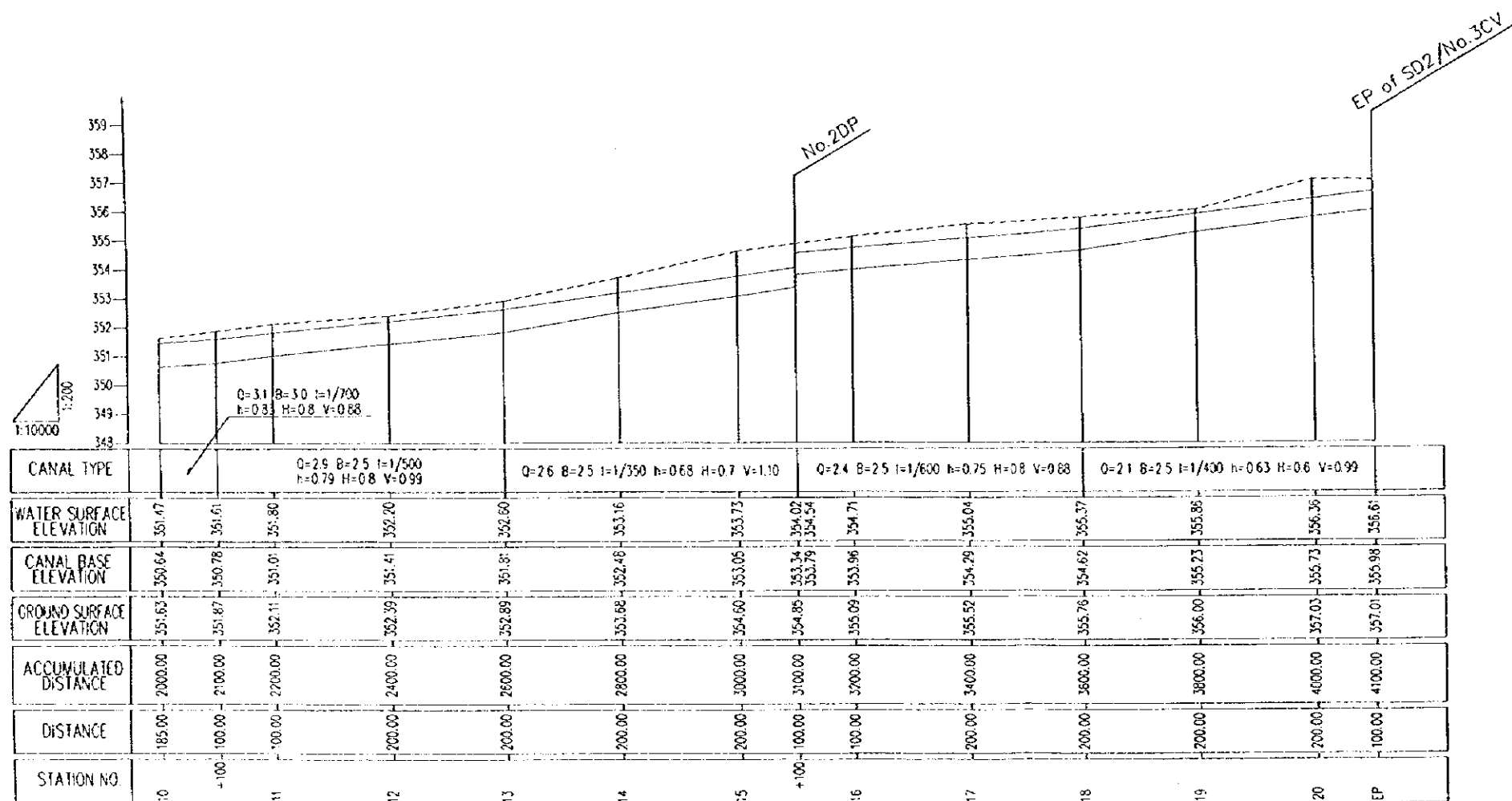


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
PROFILE OF SECONDARY DRAIN 2 (1)			
Date		Drawing No.	315
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary drain 2 (2/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CK : Check
- SY : Syphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECO : Elevated Cross Drain

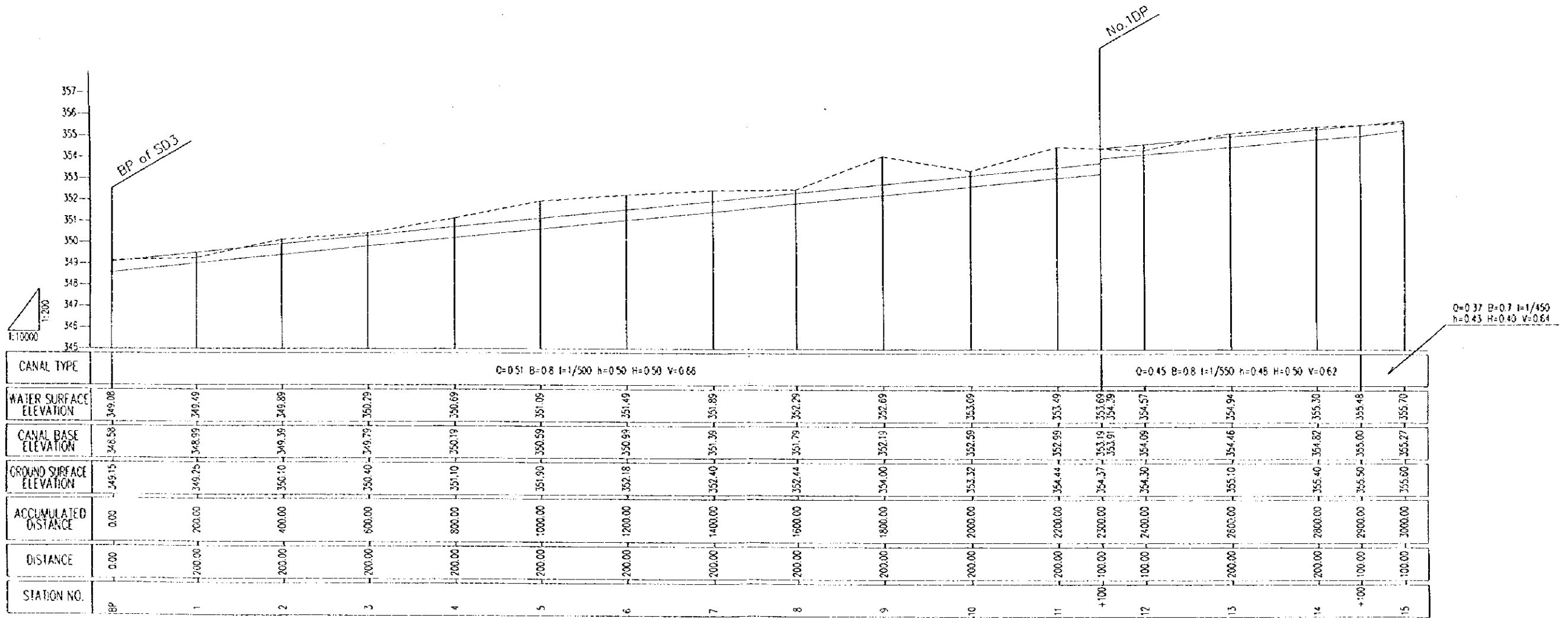


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
PROFILE OF SECONDARY DRAIN 2 (2)			
Date		Drawing No.	316
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary drain 3 (1/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
- CX : Check
- SY : Syphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain

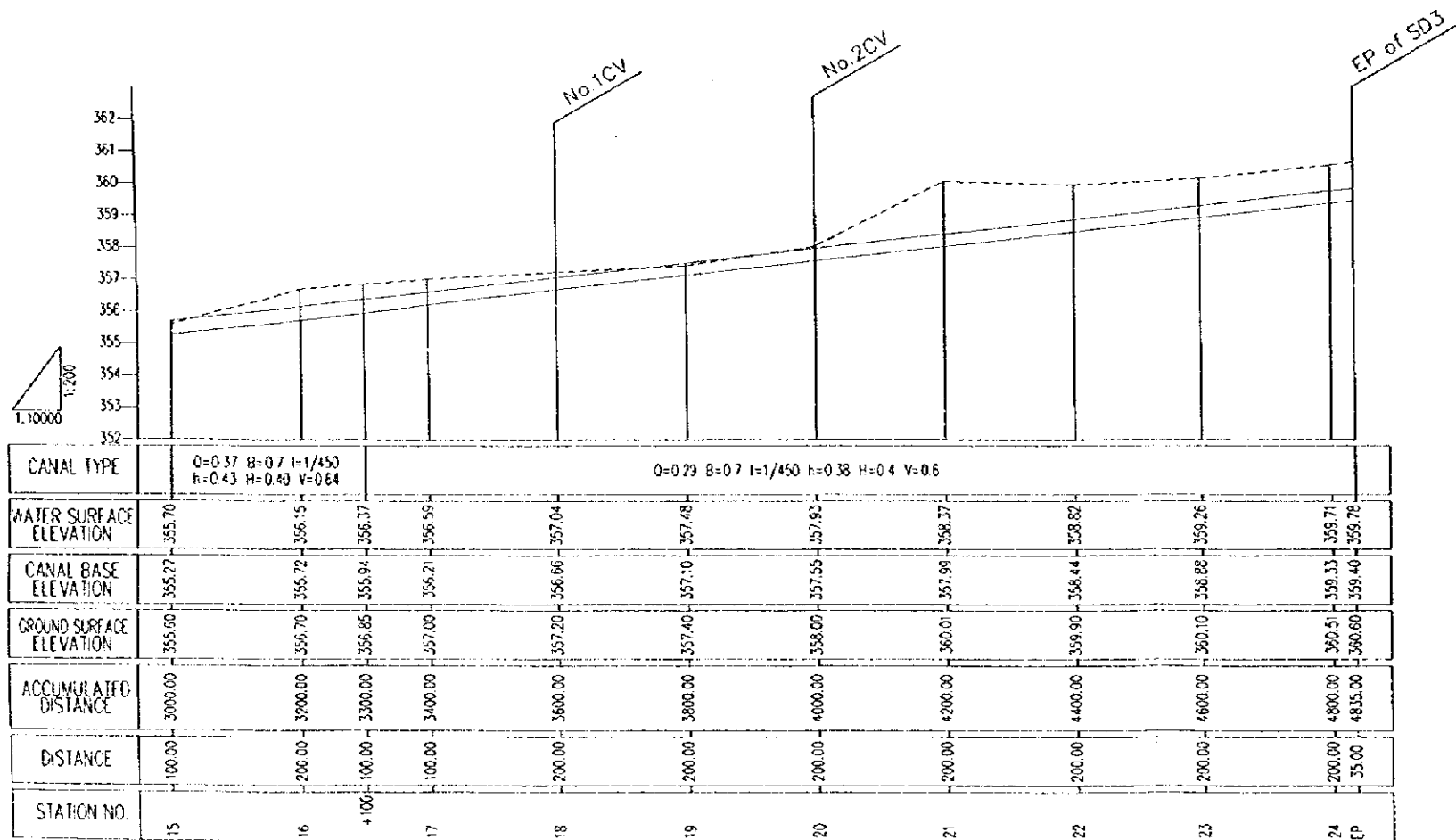


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
PROFILE OF SECONDARY DRAIN 3 (1)			
Date		Drawing No.	317
JAPAN INTERNATIONAL COOPERATION AGENCY			

Secondary drain 3 (2/2)

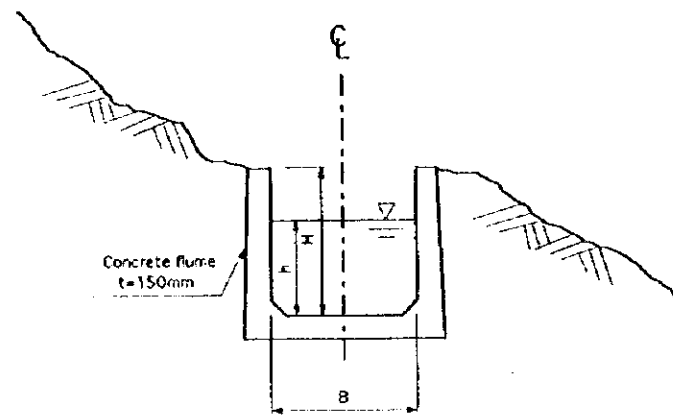
ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- FC : Flume Canal
- DP : Drop
- TO : Turnout
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- SY : Syphon
- SP : Side Spillway
- CV : Culvert
- DV : Divisor
- ECD : Elevated Cross Drain

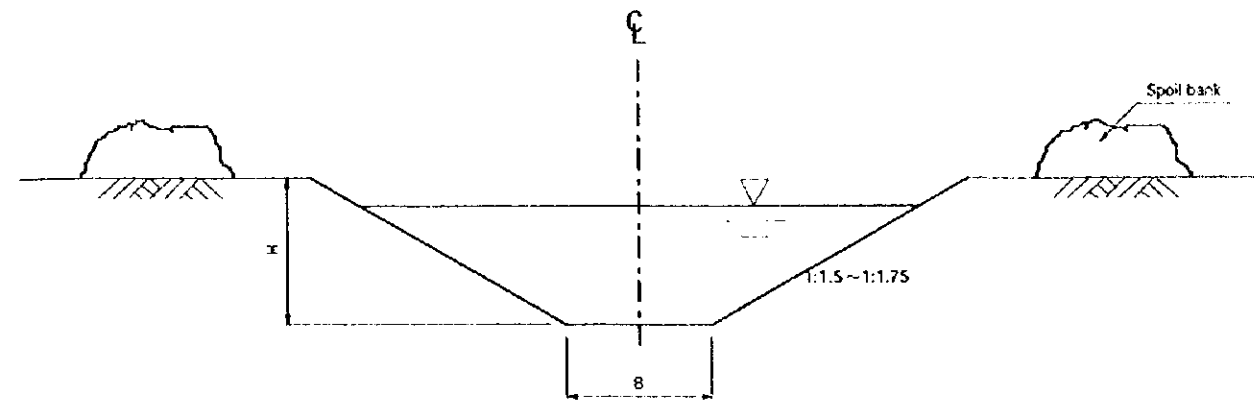


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
PROFILE OF SECONDARY DRAIN 3 (2)			
Date		Drawing No.	318
JAPAN INTERNATIONAL COOPERATION AGENCY			

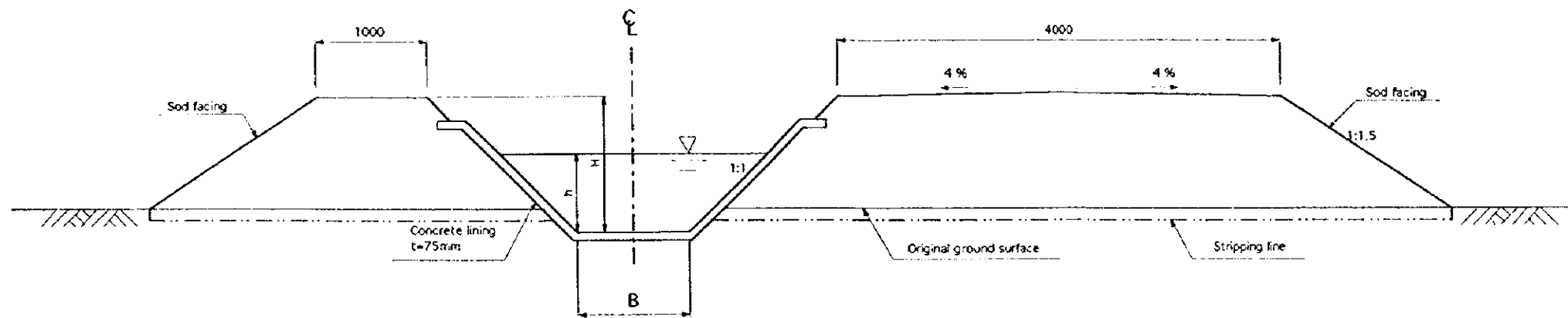
FLUME CANAL



DRAINAGE CANAL (EARTHEN CANAL)



CONCRETE LINING CANAL & FARM ROAD

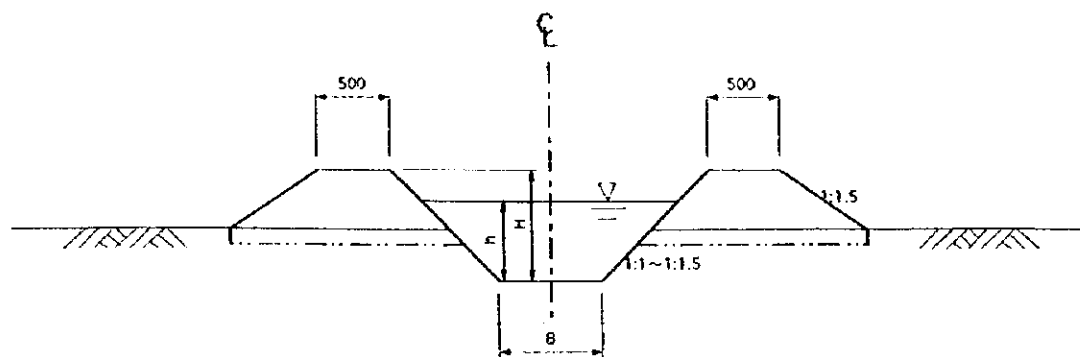


Drainage Canals

Name of Canal	Name of Reaches	L (m)	Q (m ³ /sec)	B	H	i (1%)	V (m/sec)	Remark
MD		8.15	0.30	0.50	1.10	600	1.19	Earthen type
SD-1	Reach 1	0.50	4.10	1.50	1.10	1,800	0.66	Earthen type
	Reach 2	0.70	1.60	1.00	0.70	350	1.12	Earthen type
	Reach 3	0.50	1.30	1.00	0.90	700	0.90	Earthen type
	Reach 4	0.50	1.00	1.00	0.70	400	1.07	Earthen type
	Reach 5	0.50	1.70	1.50	0.70	450	1.01	Earthen type
	Reach 6	0.50	2.40	2.50	0.70	400	1.02	Earthen type
	Reach 7	0.50	2.10	2.50	0.60	300	1.09	Earthen type
SD-2	Reach 1	0.50	4.70	1.50	1.00	850	0.89	Earthen type
	Reach 2	0.50	4.00	1.50	0.90	800	0.89	Earthen type
	Reach 3	0.50	3.20	1.00	0.80	400	1.12	Earthen type
	Reach 4	0.50	3.10	1.00	0.80	700	0.81	Earthen type
	Reach 5	0.50	2.50	1.50	0.80	500	0.99	Earthen type
	Reach 6	0.50	1.60	2.50	0.70	350	1.10	Earthen type
	Reach 7	0.50	2.10	2.50	0.80	600	0.81	Earthen type
SD-3	Reach 1	0.50	2.10	1.50	0.50	400	0.79	Earthen type
	Reach 2	0.50	0.51	0.80	0.50	500	0.66	Earthen type
	Reach 3	0.50	0.15	0.80	0.50	550	0.62	Earthen type
	Reach 4	0.40	0.37	0.70	0.40	450	0.54	Earthen type
	Reach 4	1.54	0.29	0.70	0.40	450	0.60	Earthen type

L: length, Q: design discharge, B: bottom width, H: canal height, i: canal gradient, V: flow velocity in roughness coefficient of 0.015

TERTIARY CANAL (EARTHEN CANAL)



Irrigation Canals

Name of Canal	Name of Reaches	L (m)	Q (m ³ /sec)	B	H	b	i (1%)	V (m/sec)	Remark
Main canal	Reach 1	0.28	1.56	1.30	1.10	0.70	500	1.46	Flume type
	Reach 2	1.10	1.56	0.80	1.10	0.70	700	1.32	Concrete lining type
	Reach 3	1.80	1.56	0.80	1.10	0.70	900	1.19	Concrete lining type
	Reach 4	1.30	1.12	0.80	1.00	0.64	700	1.25	Concrete lining type
SC-1	Reach 1	0.50	0.31	0.50	0.70	0.38	600	0.97	Concrete lining type
	Reach 2	1.80	0.21	0.40	0.60	0.31	600	0.87	Concrete lining type
SC-2	Reach 1	0.14	0.75	0.80	1.00	0.67	2090	0.76	Concrete lining type
	Reach 2	0.02	0.53	0.70	0.80	0.45	700	1.03	Concrete lining type
	Reach 3	0.14	0.45	0.60	0.80	0.44	700	0.99	Concrete lining type
	Reach 4	0.50	0.36	0.50	0.70	0.40	600	0.96	Concrete lining type
	Reach 5	0.50	0.27	0.50	0.70	0.35	500	0.95	Concrete lining type
	Reach 6	0.50	0.18	0.40	0.60	0.31	600	0.81	Concrete lining type
SC-3	Reach 1	0.15	0.32	0.50	0.70	0.43	2090	0.56	Concrete lining type
	Reach 2	0.17	0.18	0.40	0.60	0.39	1590	0.50	Concrete lining type
	Reach 3	0.12	0.13	0.50	0.50	0.29	600	0.78	Concrete lining type
	Reach 4	0.50	0.38	0.30	0.50	0.23	600	0.69	Concrete lining type
Tertiary Canal	Whole Reaches	0.3	0.05-0.11	0.30-0.60	0.40-0.70	0.16-0.57	1000-10000	0.13-0.10	Earthen type

L: length, Q: design discharge, B: bottom width, H: canal height, b: water depth, i: canal gradient, V: flow velocity in roughness coefficient of 0.015 for concrete lining canal and 0.03 for earthen canal

THE UNITED REPUBLIC OF TANZANIA

FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

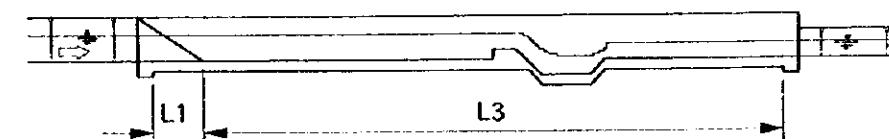
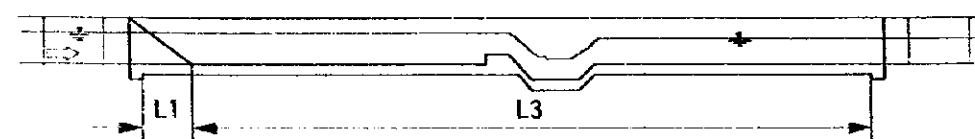
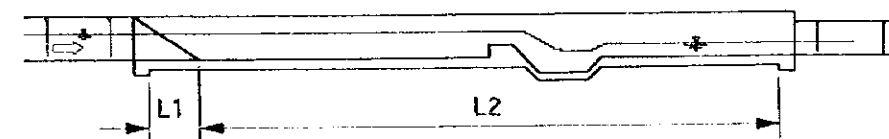
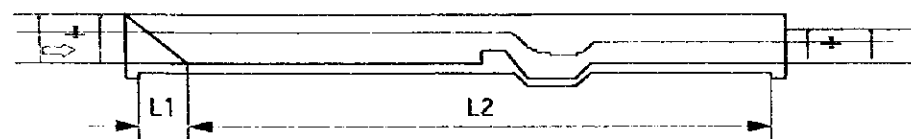
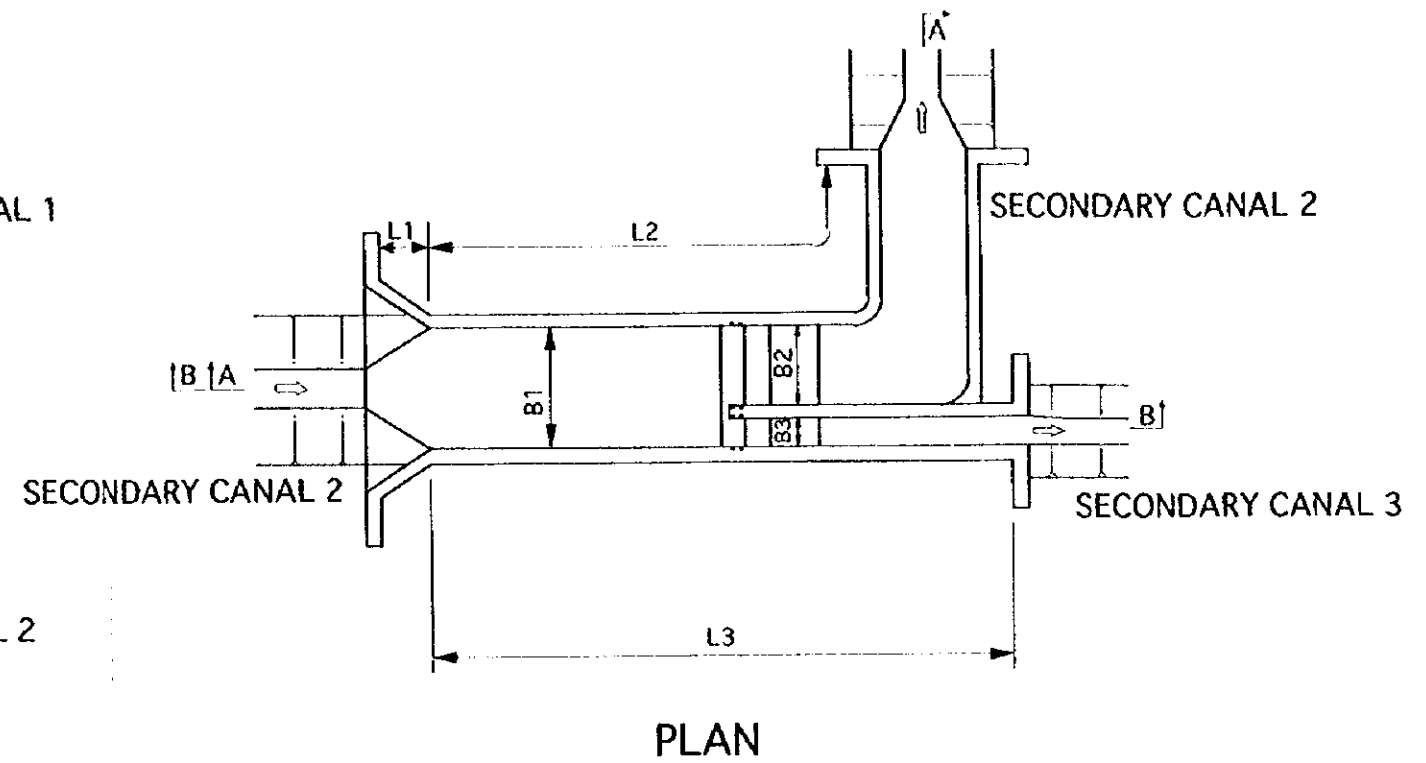
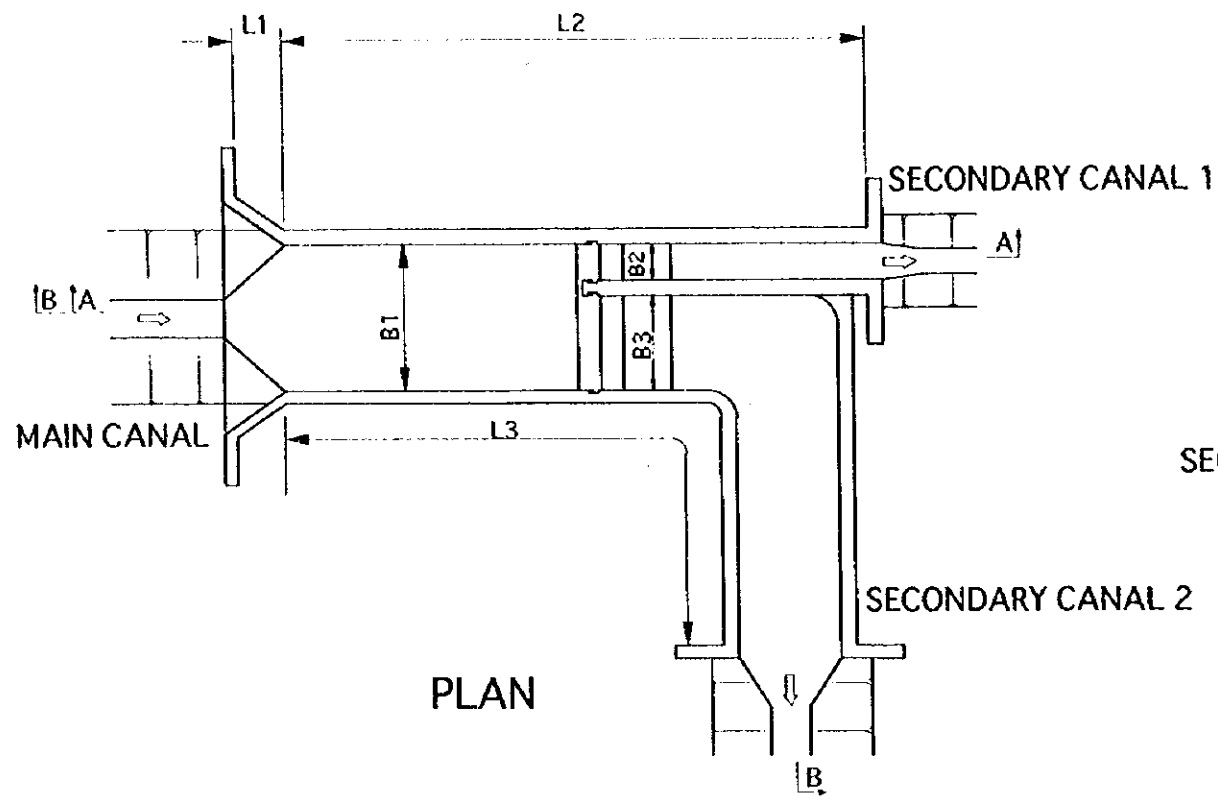
TITLE OF DRAWING **MGONGOLA SCHEME**
TYPICAL CROSS SECTION OF CANAL & FARM ROAD

Date	Drawing No.	319
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JAPAN INTERNATIONAL COOPERATION AGENCY

DIVISOR MAIN CANAL TO SECONDARY CANAL 1&2

DIVISOR SECONDARY CANAL TO SECONDARY CANAL 3



SECTION A-A

SECTION A-A

SECTION B-B

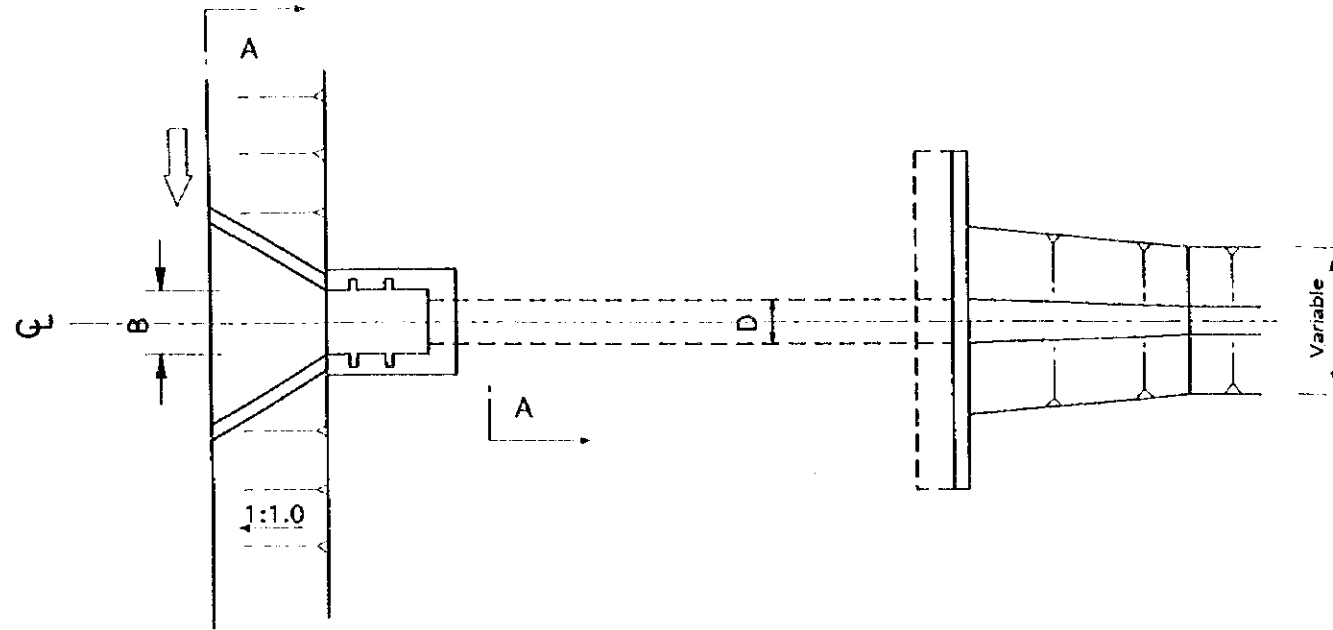
SECTION B-B

(Unit:m)

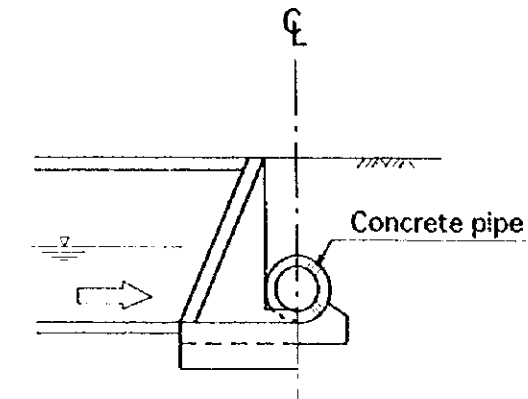
Name of Canal	Name of Structure	Sta. No.	L1	L2	L3	B1	B2	B3
Main Canal	No.1 Divisor	No.36+69	1.00	12.00	14.00	3.00	0.92	2.08
SC-2	No.1 Divisor	No.36+69	1.00	12.00	12.00	2.50	1.76	0.74

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME DIVISOR	
Date		Drawing No.	320
JAPAN INTERNATIONAL COOPERATION AGENCY			

TURNOUT



PLAN

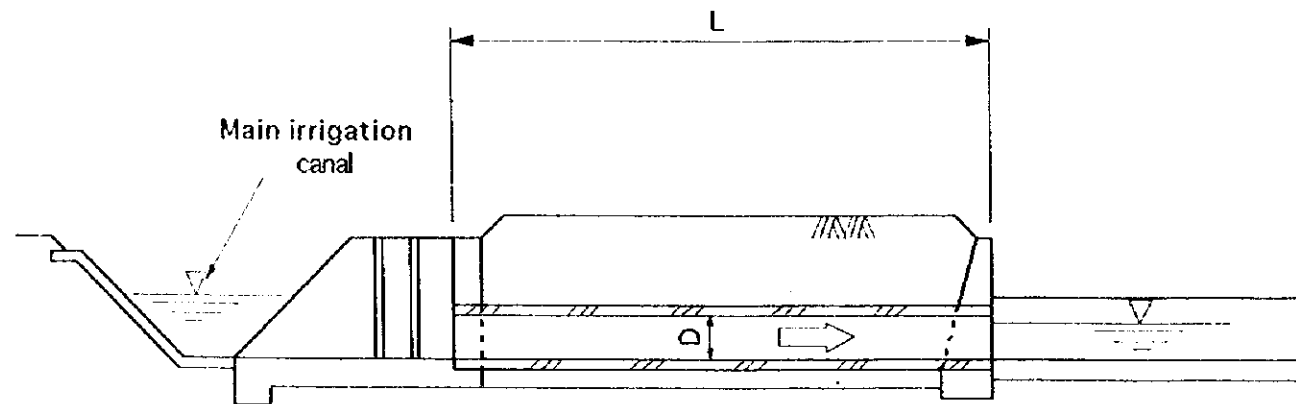


SECTION A-A

DIMENSION OF TURNOUT

Name of Canal	Name of Structure	Sta. No.	Q _d (m ³ /sec)	L	D	B	Remarks
Main Canal	No 1 Turnout	No 9-60	0.05	7.00	0.4	0.70	to MK00
	No 2 Turnout	No 9-60	0.05	15	0.4	0.70	to MK01
	No 3 Turnout	No 11-10	0.11	15	0.5	0.80	to MK02
	No 4 Turnout	No 13-59	0.05	7.00	0.4	0.70	to MK03
	No 5 Turnout	No 23-90	0.06	7.00	0.4	0.70	to MK04
	No 6 Turnout	No 32-10	0.05	7.00	0.4	0.70	to MG01
SC-1	No 1 Turnout	No 0-15	0.1	7.00	0.5	0.80	to S1-TL1
	No 2 Turnout	No 0-15	0.05	7.00	0.4	0.70	to S1-TR1
	No 3 Turnout	No 5	0.05	15	0.4	0.70	to S1-TL2
	No 4 Turnout	No 5	0.05	7.00	0.4	0.70	to S1-TR2
	No 5 Turnout	No 10	0.05	15	0.4	0.70	to S1-TL3
	No 6 Turnout	No 10	0.05	7.00	0.4	0.70	to S1-TR3
	No 7 Turnout	No 14-94	0.05	7.00	0.4	0.70	to S1-TR4
	No 8 Turnout	No 14-94	0.1	7.00	0.5	0.80	to S1-TR5
SC-2	No 1 Turnout	No 8-60	0.05	7.00	0.4	0.70	to S2-TL1
	No 2 Turnout	No 8-60	0.05	15	0.4	0.70	to S2-TR1
	No 3 Turnout	No 13-40	0.05	7.00	0.4	0.70	to S2-TL2
	No 4 Turnout	No 13-40	0.05	15	0.4	0.70	to S2-TR2
	No 5 Turnout	No 18-40	0.05	7.00	0.4	0.70	to S2-TL3
	No 6 Turnout	No 18-40	0.05	15	0.4	0.70	to S2-TR3
	No 7 Turnout	No 23-40	0.05	7.00	0.4	0.70	to S2-TL4
	No 8 Turnout	No 23-40	0.05	15	0.4	0.70	to S2-TR4
	No 9 Turnout	No 28-64	0.05	7.00	0.4	0.70	to S2-TL5
	No 10 Turnout	No 28-64	0.06	7.00	0.4	0.70	to S2-TR5
SC-3	No 11 Turnout	No 28-64	0.1	7.00	0.5	0.80	to S2-TR6
	No 1 Turnout	No 5-55	0.05	7.00	0.4	0.70	to S3-T1
	No 2 Turnout	No 13-20	0.05	7.00	0.4	0.70	to S3-T2
	No 3 Turnout	No 19	0.05	7.00	0.4	0.70	to S3-T3
	No 4 Turnout	No 24-6	0.05	7.00	0.4	0.70	to S3-T4
No 5 Turnout	No 24-6	0.05	7.00	0.4	0.70	to S3-T5	

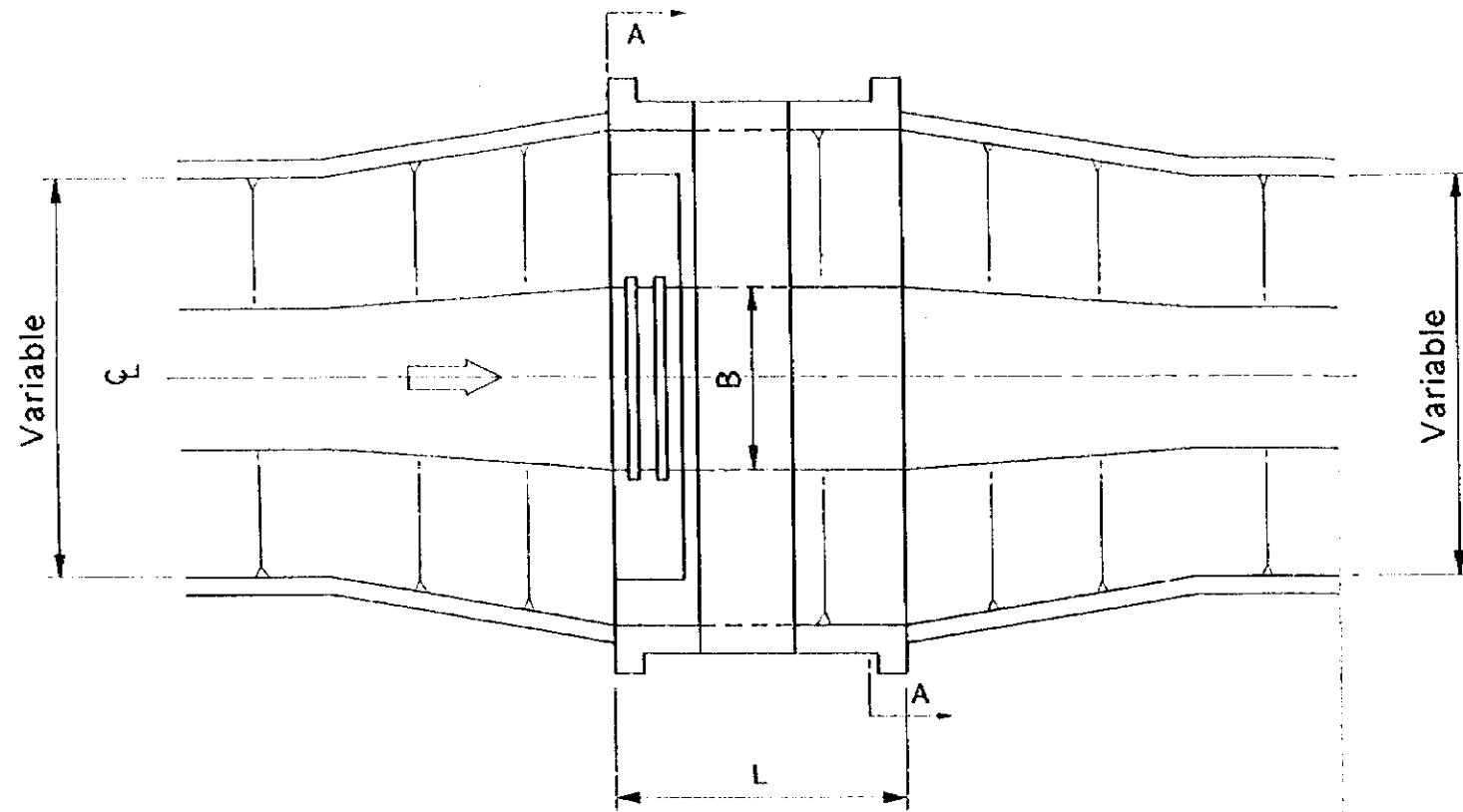
Q_d: design of lake discharge



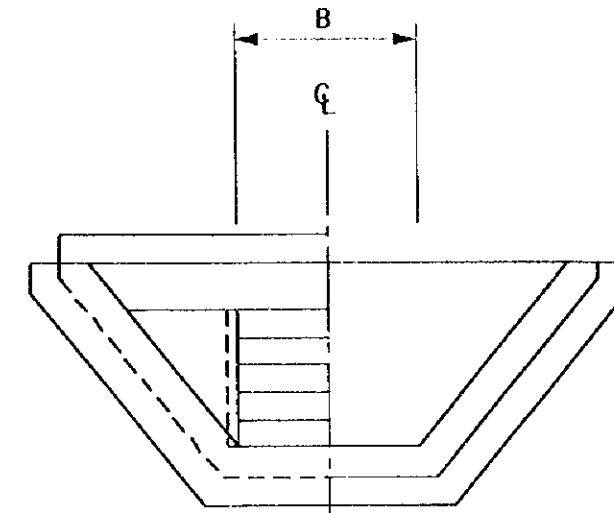
PROFILE

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
TURNOUT			
Date		Drawing No.	321
JAPAN INTERNATIONAL COOPERATION AGENCY			

CHECK



PLAN

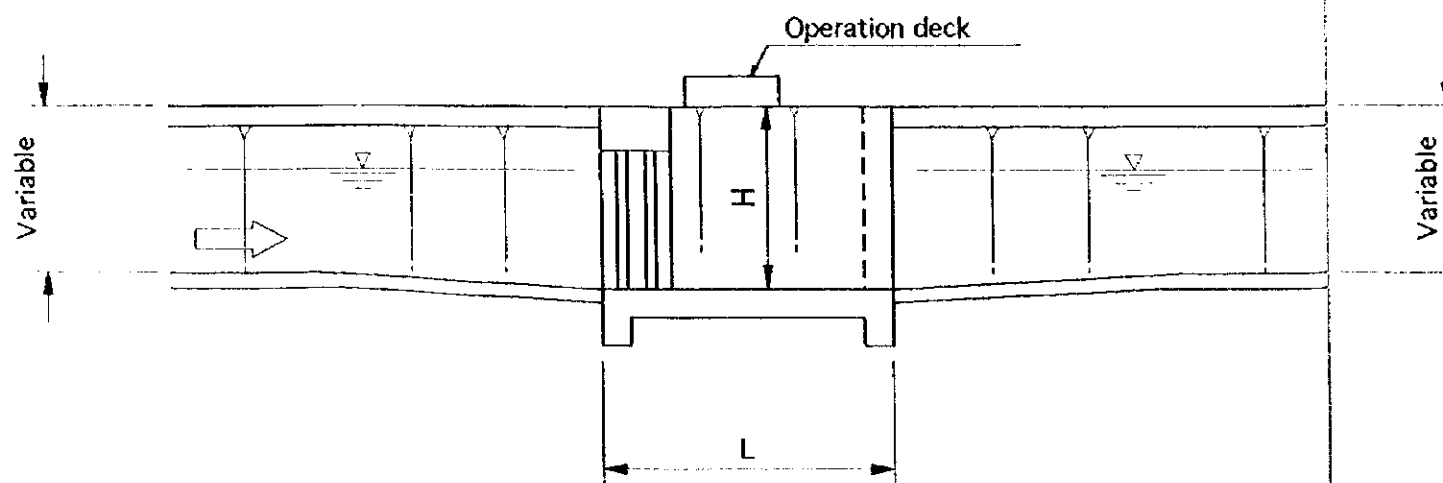


SECTION A-A

DIMENSION OF CHECK

(Unit:m)						
Name of Canal	Name of Structure	Sta. No.	Qi (m ³ /sec)	H	B	L
Main Canal	No.1 Check	No.9+60	1.36	1.00	1.00	1.50
	No.2 Check	No.13+59	1.36	1.00	1.00	1.50
	No.3 Check	No.32+10	0.63	0.90	1.00	1.35
SC-1	No.1 Check	No.5	0.33	0.60	0.70	0.90
	No.2 Check	No.10	0.21	0.50	0.60	0.75
SC-2	No.1 Check	No.18+40	0.36	0.60	0.70	0.90
SC-3	No.1 Check	No.5+55	0.22	0.60	0.70	0.90
	No.2 Check	No.13+20	0.18	0.60	0.60	0.90

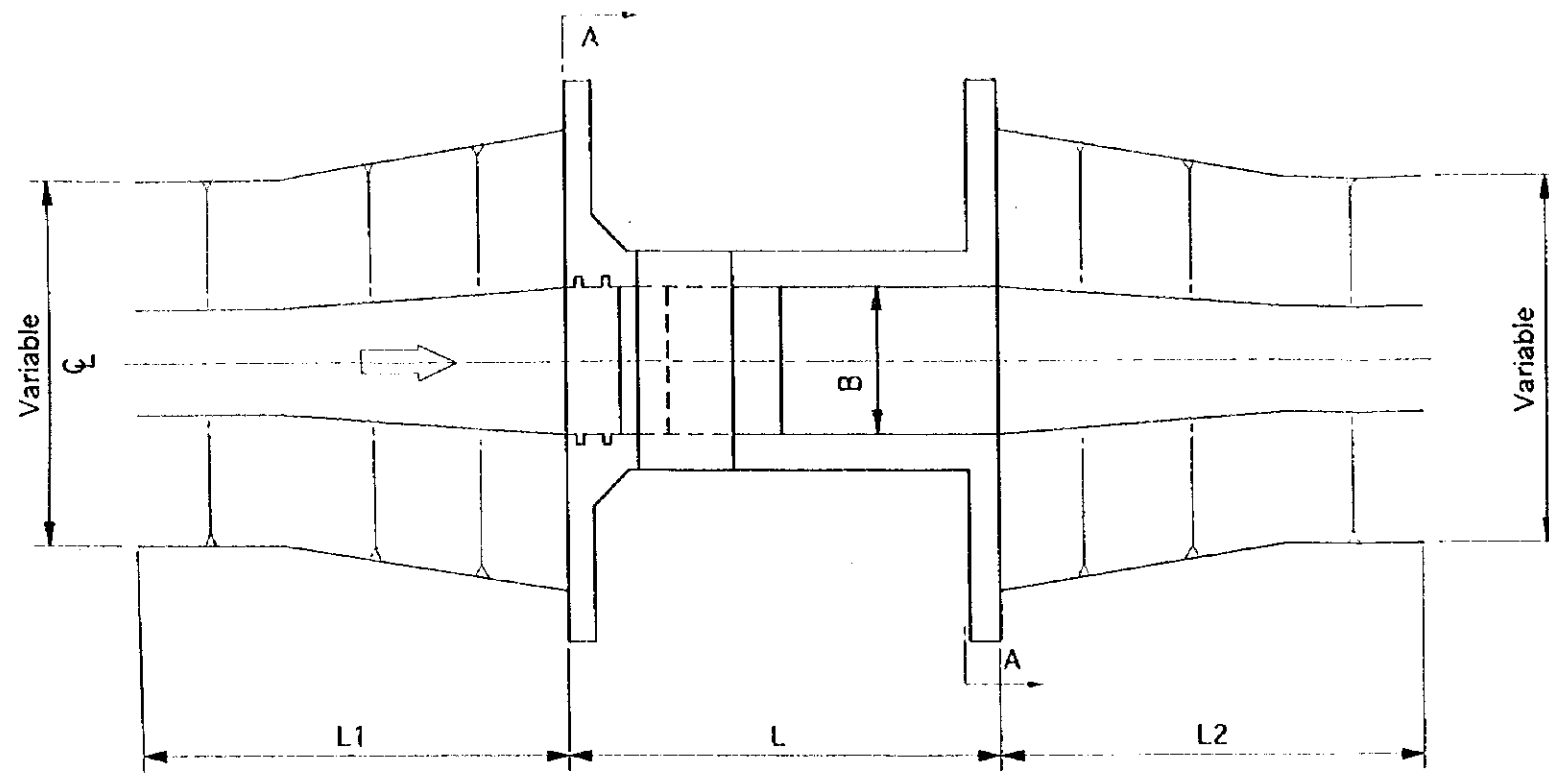
Qi : design discharge



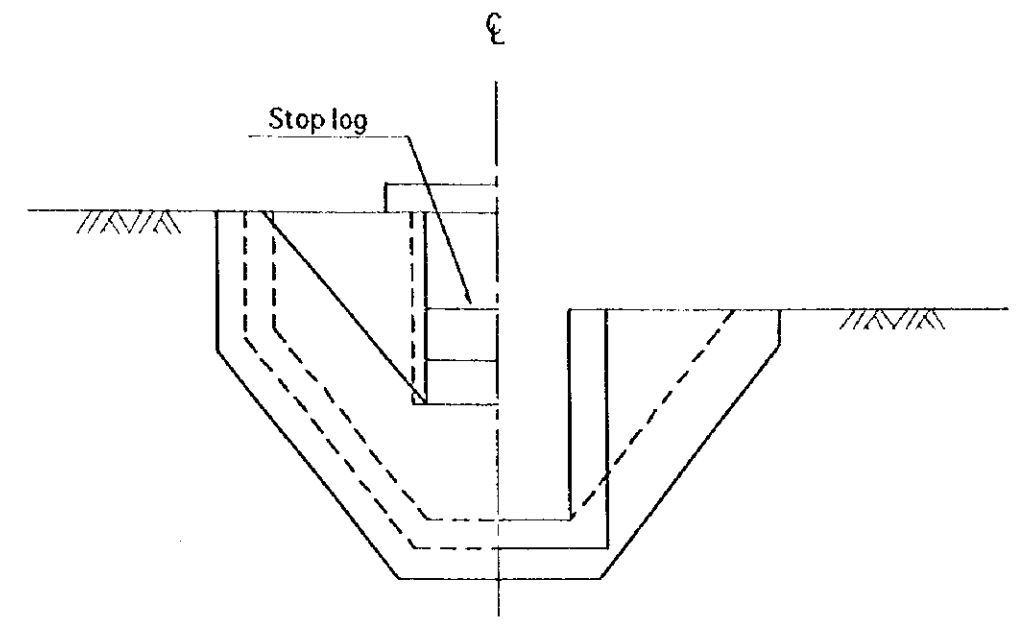
PROFILE

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
CHECK			
Date		Drawing No.	322
JAPAN INTERNATIONAL COOPERATION AGENCY			

DROP



PLAN



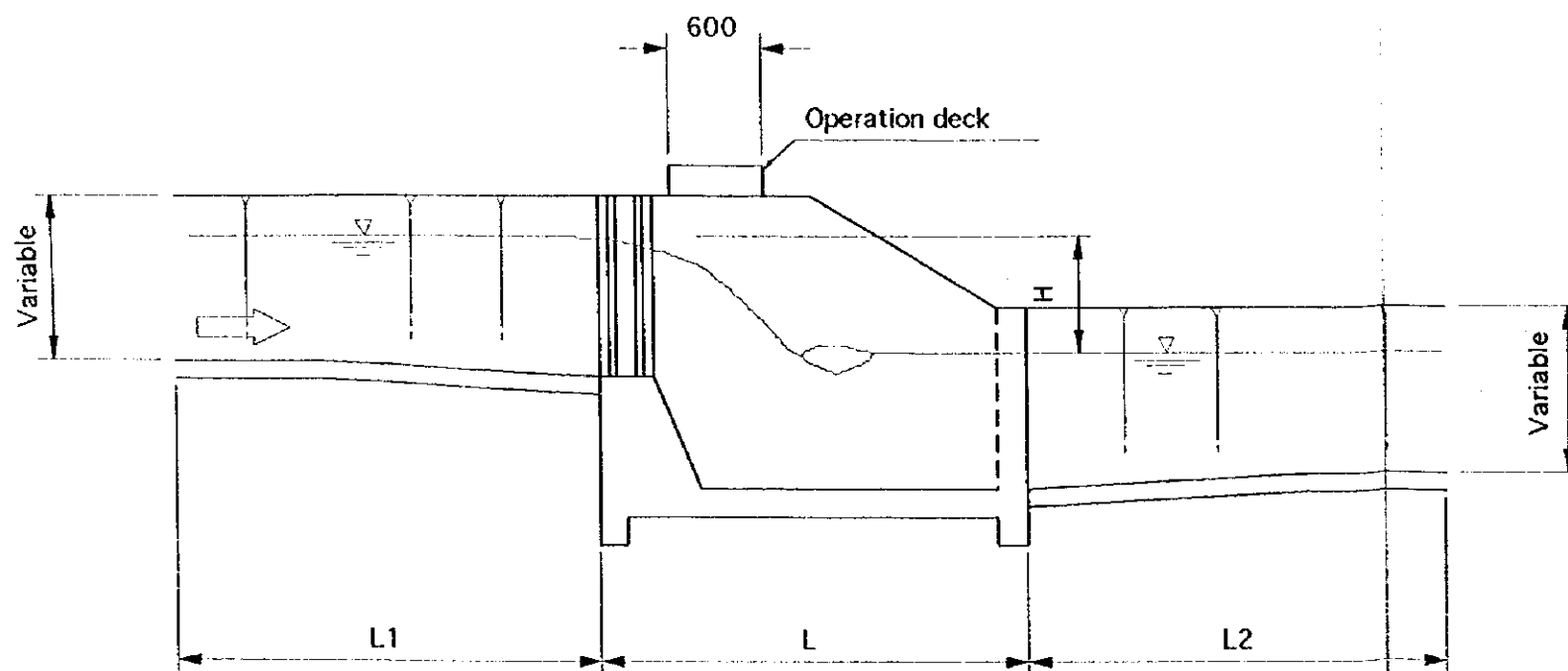
SECTION A-A

DIMENSION OF DROP

(Unit:m)

Name of Canal	Name of Structure	Sta. No.	Q_i (m ³ /sec)	H	L	B	L1	L2
Main Canal	No.1 Drop	No.6+50	1.36	0.9	2.70	0.20	-	-
	No.2 Drop	No.11+10	1.36	1.0	3.00	0.20	-	-
	No.3 Drop	No.23+90	1.12	0.80	2.40	0.20	-	-
SC-1	No.1 Drop	No.0+15	0.33	0.50	1.50	0.20	-	-
	No.2 Drop	No.8+60	0.45	0.50	1.50	0.20	-	-
	No.3 Drop	No.13+40	0.36	0.50	1.50	0.20	-	-
SC-2	No.1 Drop	No.19	0.08	0.50	1.50	0.20	-	-
	No.2 Drop	No.7+100(1,500 m)	3.3	0.50	1.50	3.40	5.00	3.00
	No.3 Drop	No.23+40	0.18	0.50	1.50	0.20	-	-
SD-1	No.1 Drop	No.8(1,600 m)	3.1	0.50	1.50	3.40	5.00	3.00
	No.2 Drop	No.15+100(3,100 m)	2.4	0.50	1.50	2.90	4.50	3.00
	No.3 Drop	No.11+100(2,300 m)	0.45	0.70	2.10	1.00	3.50	1.50

Q_i : design discharge

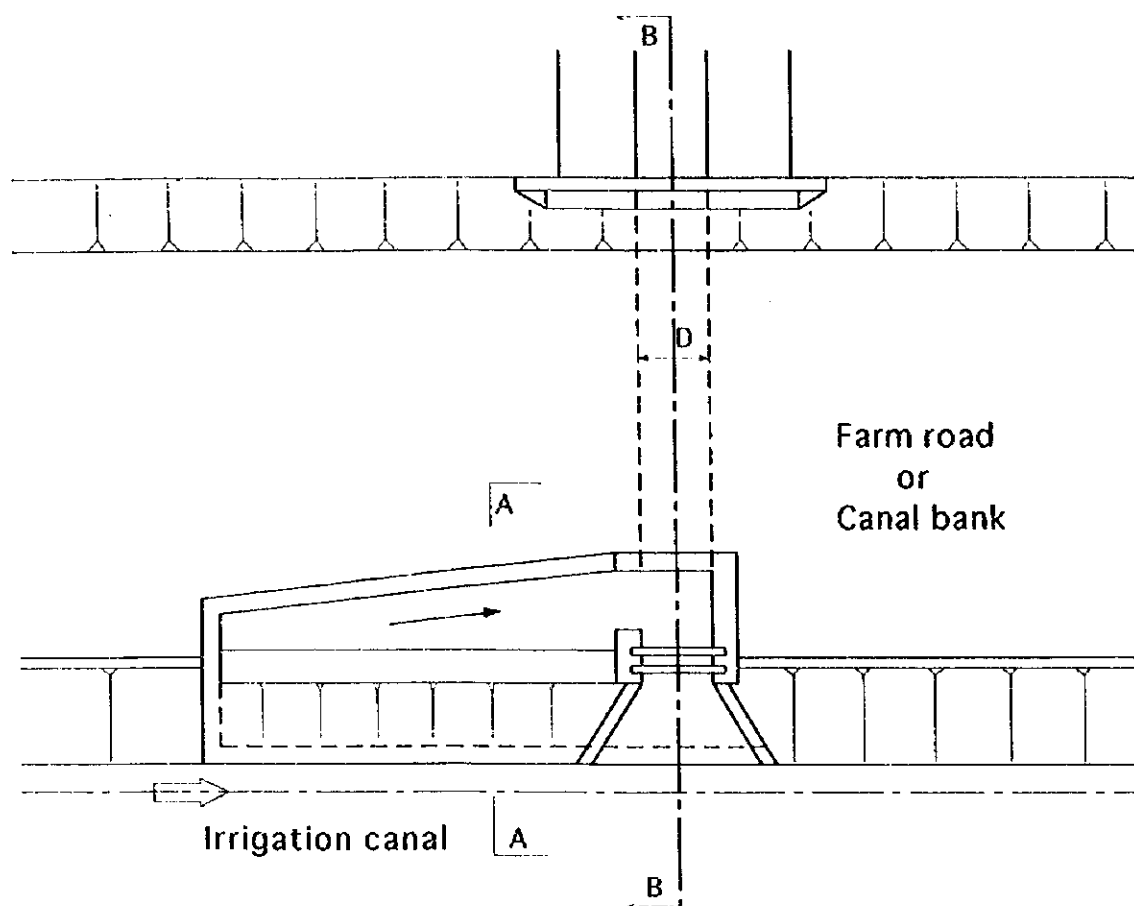


PROFILE

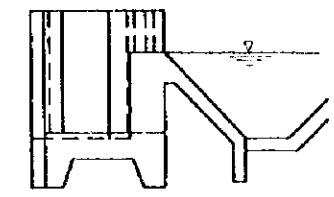
Note : In case of drainage canal,
L1 and L2 are covered by riprap.

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
		DROP	
Date		Drawing No.	323
JAPAN INTERNATIONAL COOPERATION AGENCY			

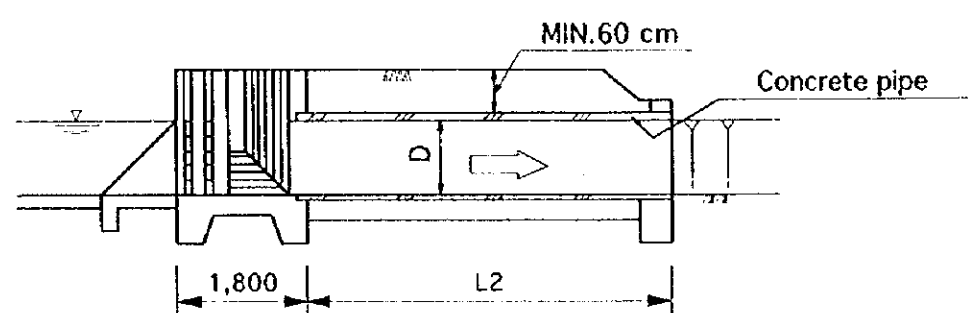
SPILLWAY



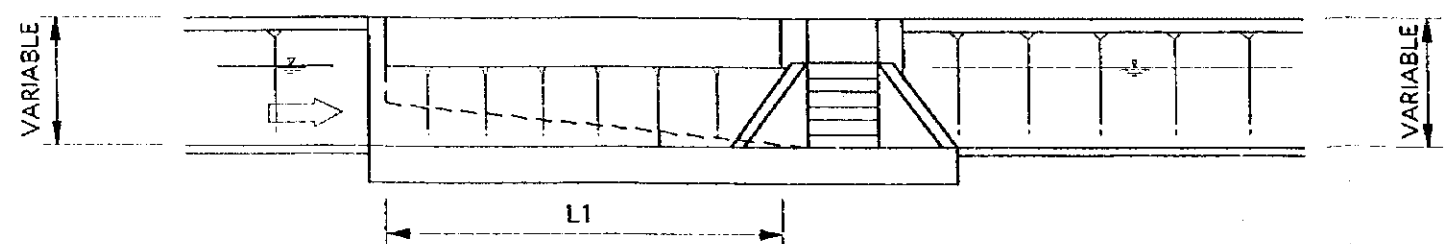
PLAN



SECTION A-A



SECTION B-B



PROFILE

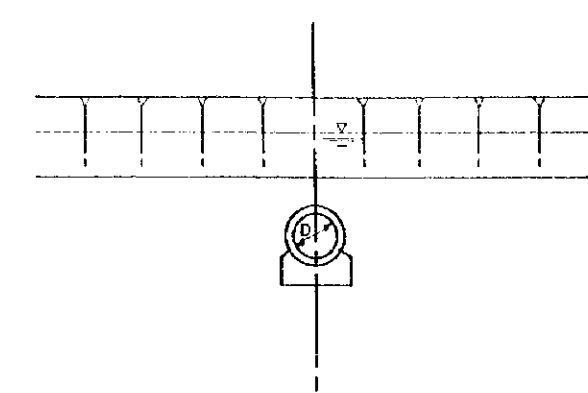
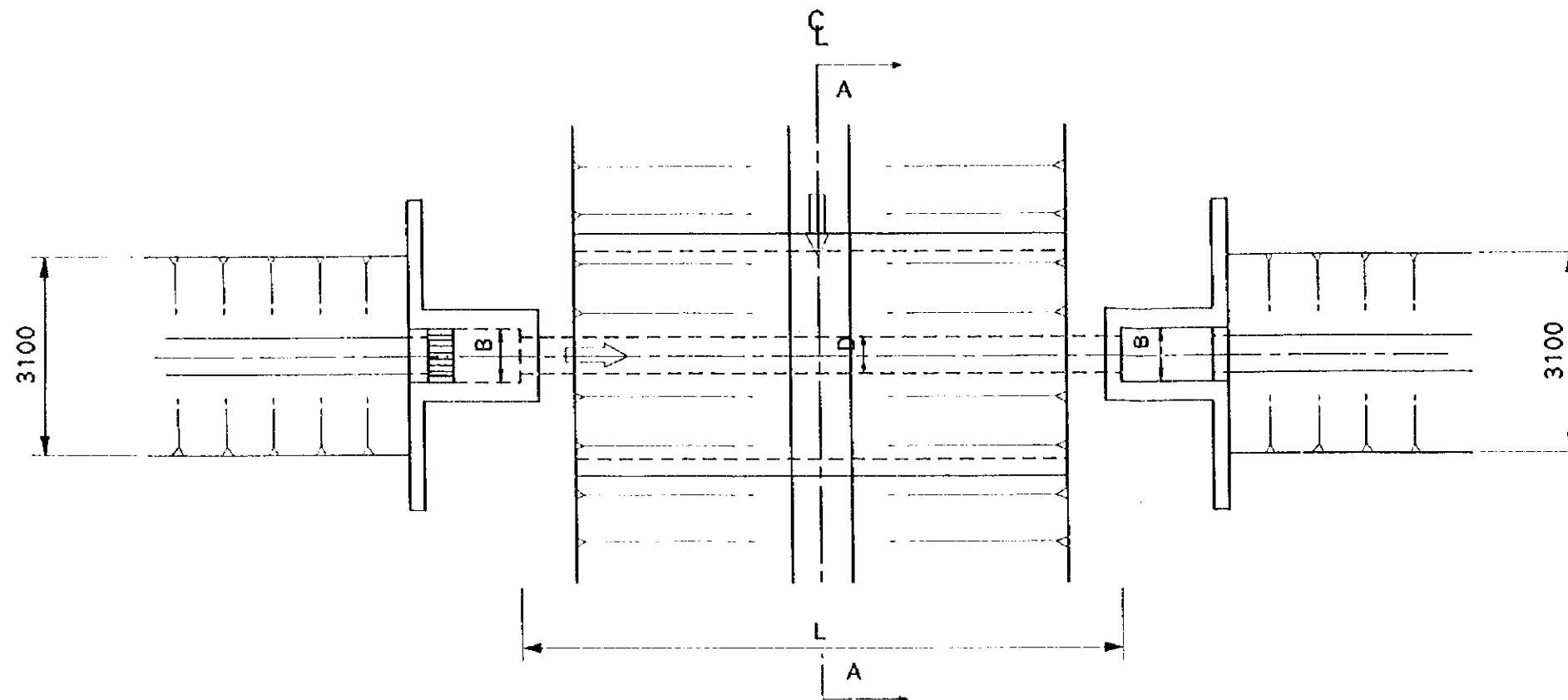
DIMENSION OF SPILLWAY

DIMENSION OF SPILLWAY						
(Unit: m)						
Name of Canal	Name of Structure	Sta. No.	Qi (m ³ /sec)	L1	L2	D
Main Canal	No.1 Side Spillway	No.19+90	0.27	5.00	4.50	0.70
	No.2 Side Spillway	No.36+50	0.22	4.00	4.50	0.60
SC-2	No.1 Side Spillway	No.4	0.15	3.00	9.00	0.50
SC-3	No.1 Side Spillway	No.5	0.04	3.00	9.00	0.50

Qi : overflow discharge

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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
SPILLWAY			
Date		Drawing No.	324
JAPAN INTERNATIONAL COOPERATION AGENCY			

SYPHON



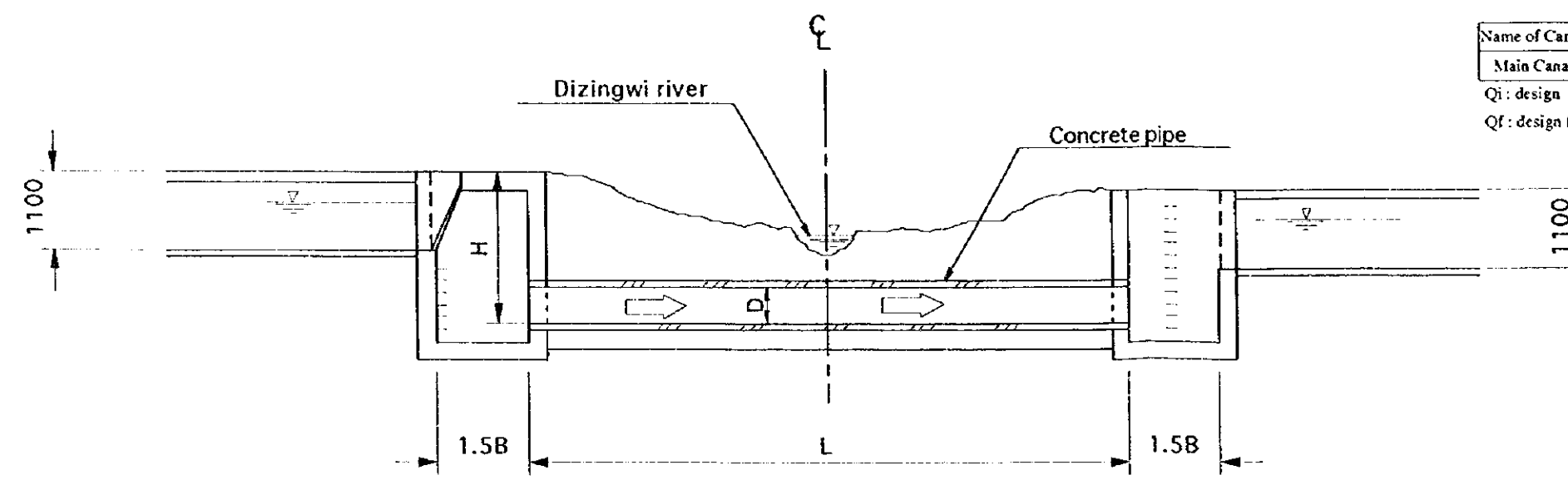
SECTION A-A

PLAN

DIMENSION OF SYPHON

					(Unit:m)			
Name of Canal	Name of Structure	Sta. No.	Qi (m ³ /sec)	Qf (m ³ /sec)	L	D	B	H
Main Canal	No.1 Syphon	No 20+15	1.36	72.00	30.00	1.20	1.50	5.00

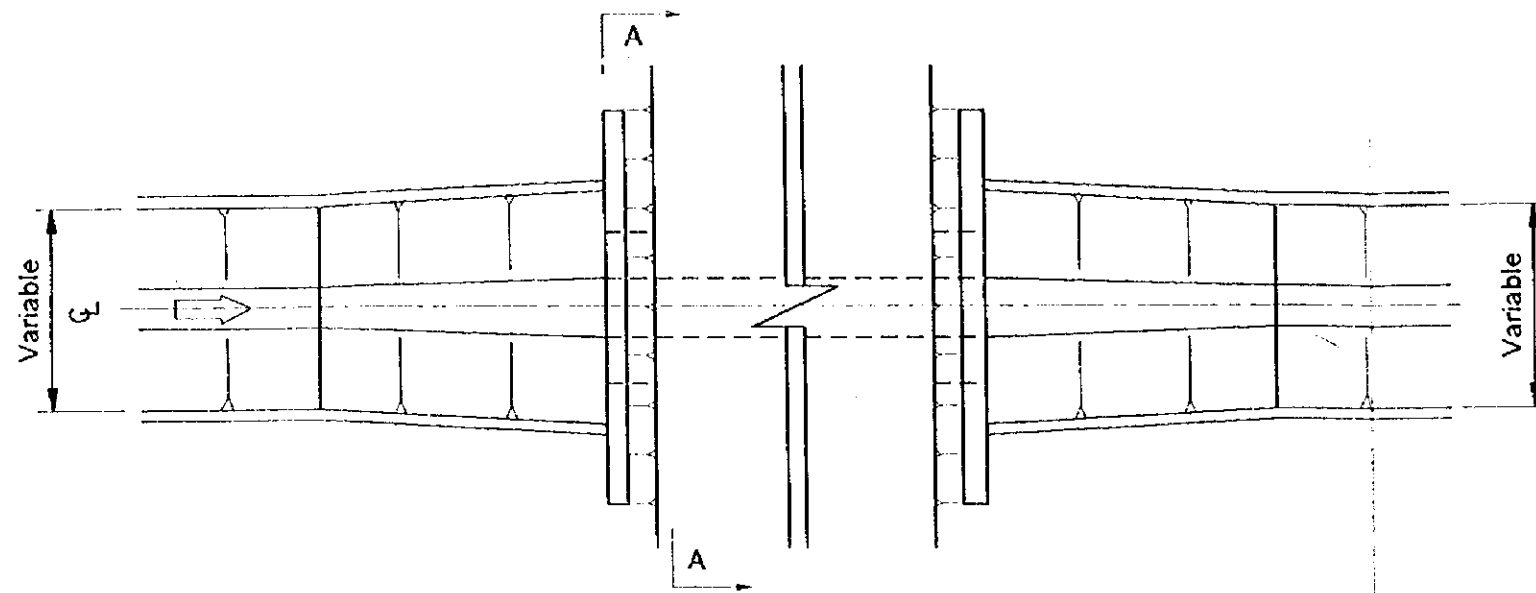
Qi: design discharge
Qf: design flood discharge



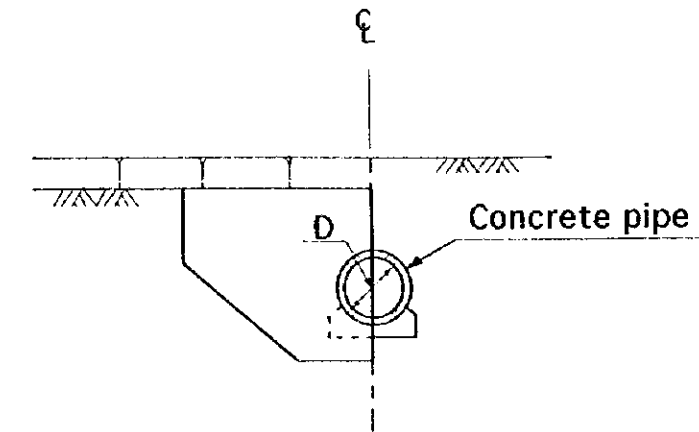
PROFILE

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME SYPHON	
Date		Drawing No.	325
JAPAN INTERNATIONAL COOPERATION AGENCY			

CULVERT



PLAN



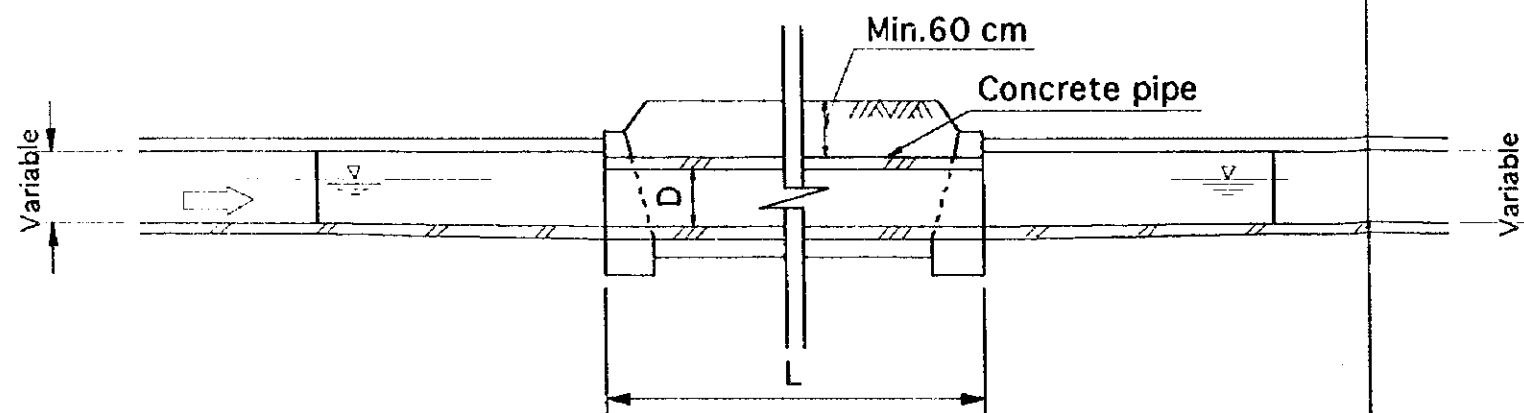
SECTION A-A

DIMENSION OF CULVERT

(Unit : m)

Name of Canal	Name of Structure	Sta. No.	Qi (m ³ /sec)	L	D
Main Canal	No.1 Culvert	No.9+40	1.36	4.00	1.20
	No.2 Culvert	No.11+10	1.36	4.00	1.20
	No.3 Culvert	No.20+48	1.36	12.00	1.20
SC-1	No.1 Culvert	No.0+10	0.33	7.00	0.70
	No.2 Culvert	No.5	0.33	4.00	0.70
	No.3 Culvert	No.10	0.21	4.00	0.60
SC-2	No.1 Culvert	No.8+50	0.53	7.00	0.90
	No.2 Culvert	No.8+60	0.53	4.00	0.90
	No.3 Culvert	No.13+40	0.45	4.00	0.90
	No.4 Culvert	No.18+40	0.36	4.00	0.70
	No.5 Culvert	No.23+40	0.27	4.00	0.70
SD-1	No.1 Culvert	No.2(400 m)	4.10	6.00	1.20 x 3
	No.2 Culvert	No.20+30(4,030 m)	2.10	18.00	1.00 x 2
SD-2	No.1 Culvert	No.5+20(1,020 m)	4.00	6.00	1.20 x 3
	No.2 Culvert	No.8(1,600 m)	3.50	5.00	1.20 x 2
	No.3 Culvert	No.20+10(4,100 m)	2.10	18.00	1.00 x 2
SD-3	No.1 Culvert	No.18(3,600 m)	0.29	3.00	0.70
	No.2 Culvert	No.20(4,000 m)	0.29	3.00	0.70

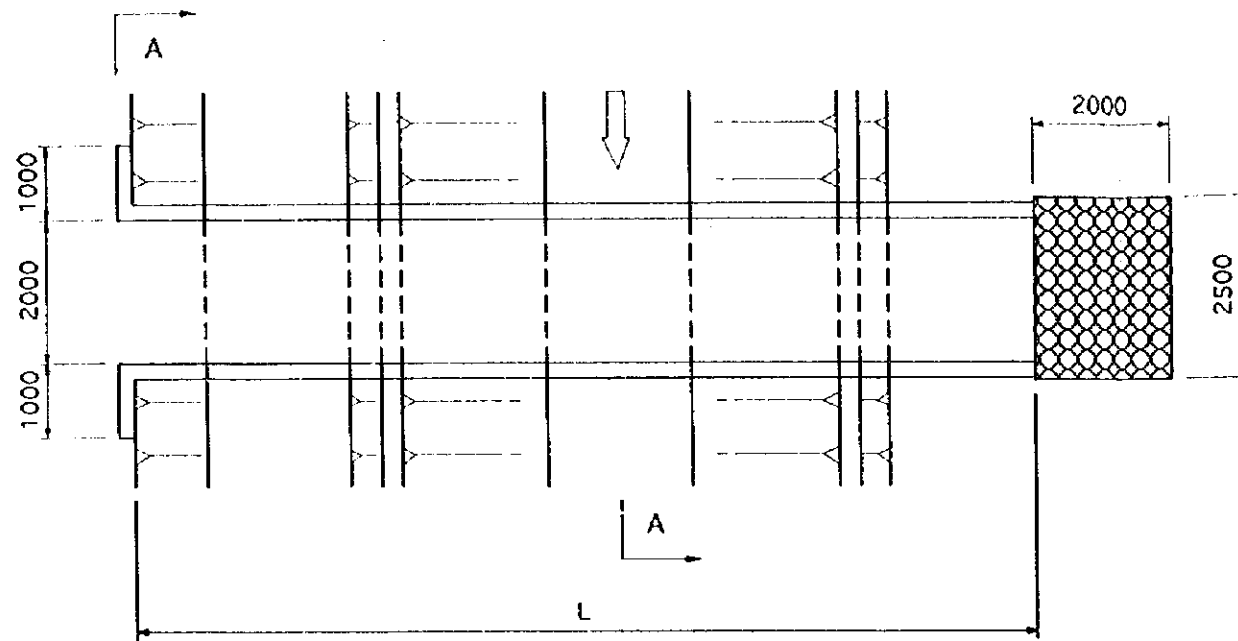
Qi : design canal discharge



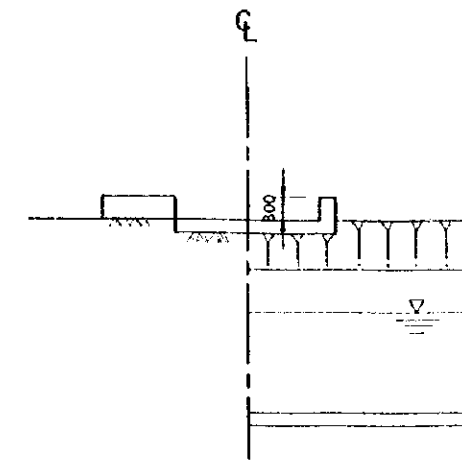
PROFILE

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
		CULVERT	
Date		Drawing No.	326
JAPAN INTERNATIONAL COOPERATION AGENCY			

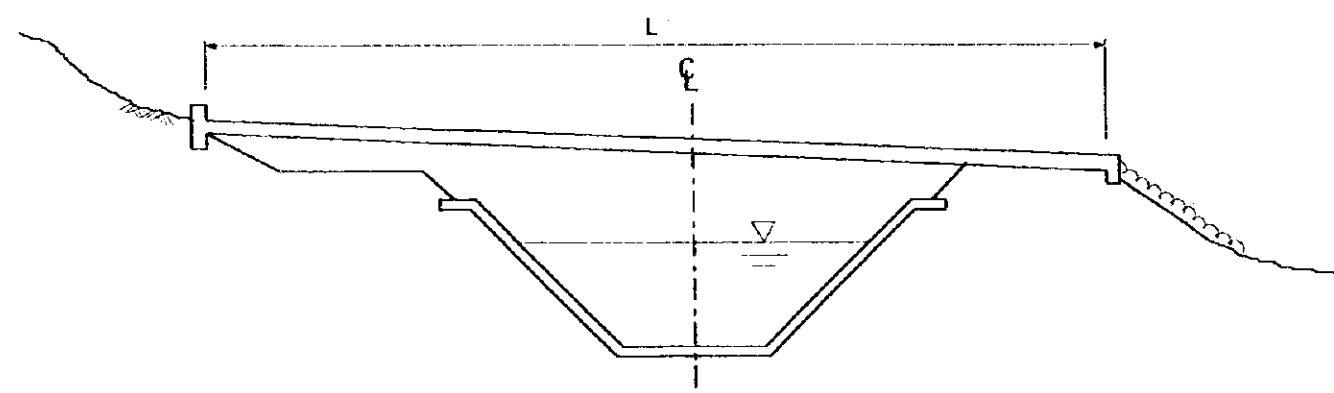
ELEVATED CROSS DRAIN



PLAN



SECTION A-A



PROFILE

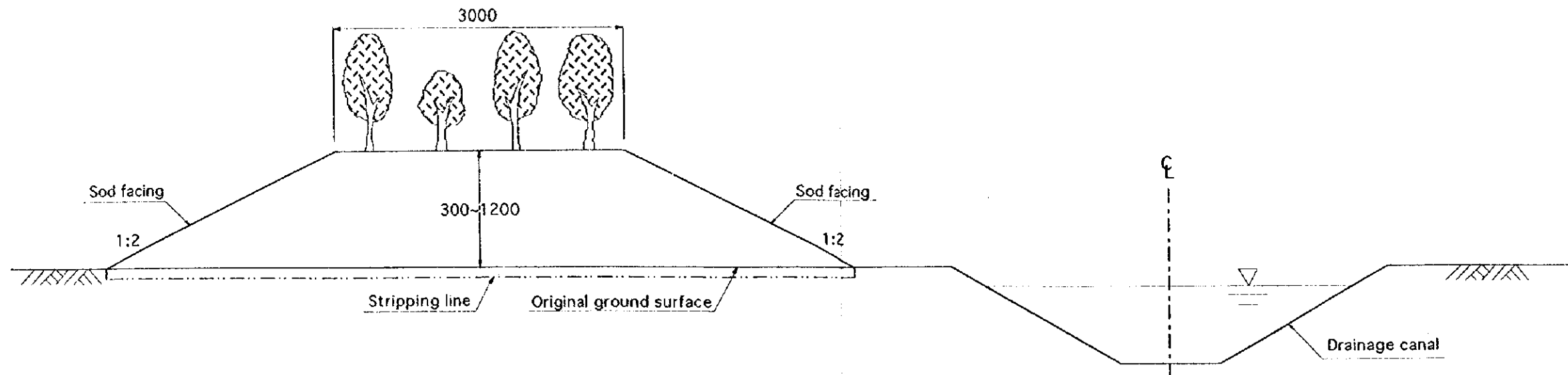
DIMENSION OF ELEVATED CROSS DRAIN

(Unit : m)

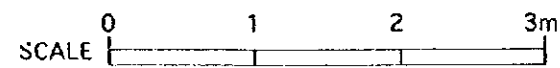
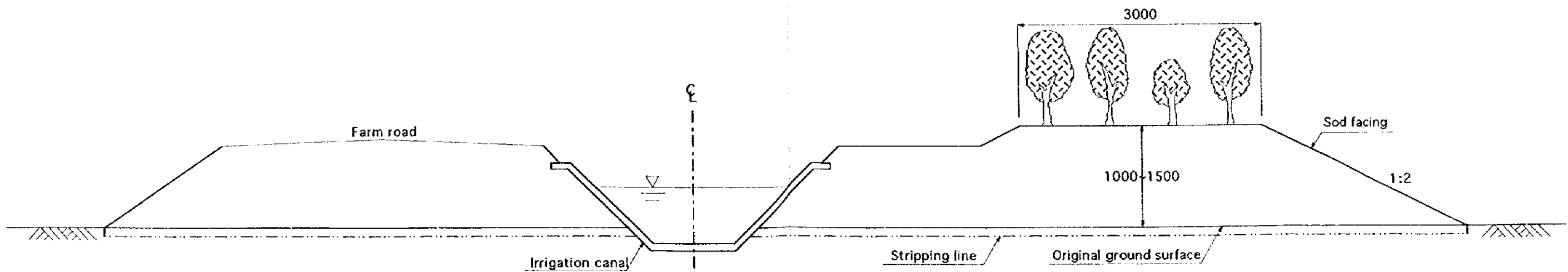
Name of Canal	Name of Structure	Sta. No.	L.
Main Canal	No.1 Elevated Cross Drain	No.0+23	3.30
	No.2 Elevated Cross Drain	No.1	3.30
	No.3 Elevated Cross Drain	No.4	5.00
	No.4 Elevated Cross Drain	No.5	5.00
	No.5 Elevated Cross Drain	No.7	5.00

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
ELEVATED CROSS DRAIN			
Date		Drawing No.	327
JAPAN INTERNATIONAL COOPERATION AGENCY			

TYPICAL CROSS SECTION OF FLOOD PROTECTION DIKE
ALONG DIZINGWI - MKINDO RIVER

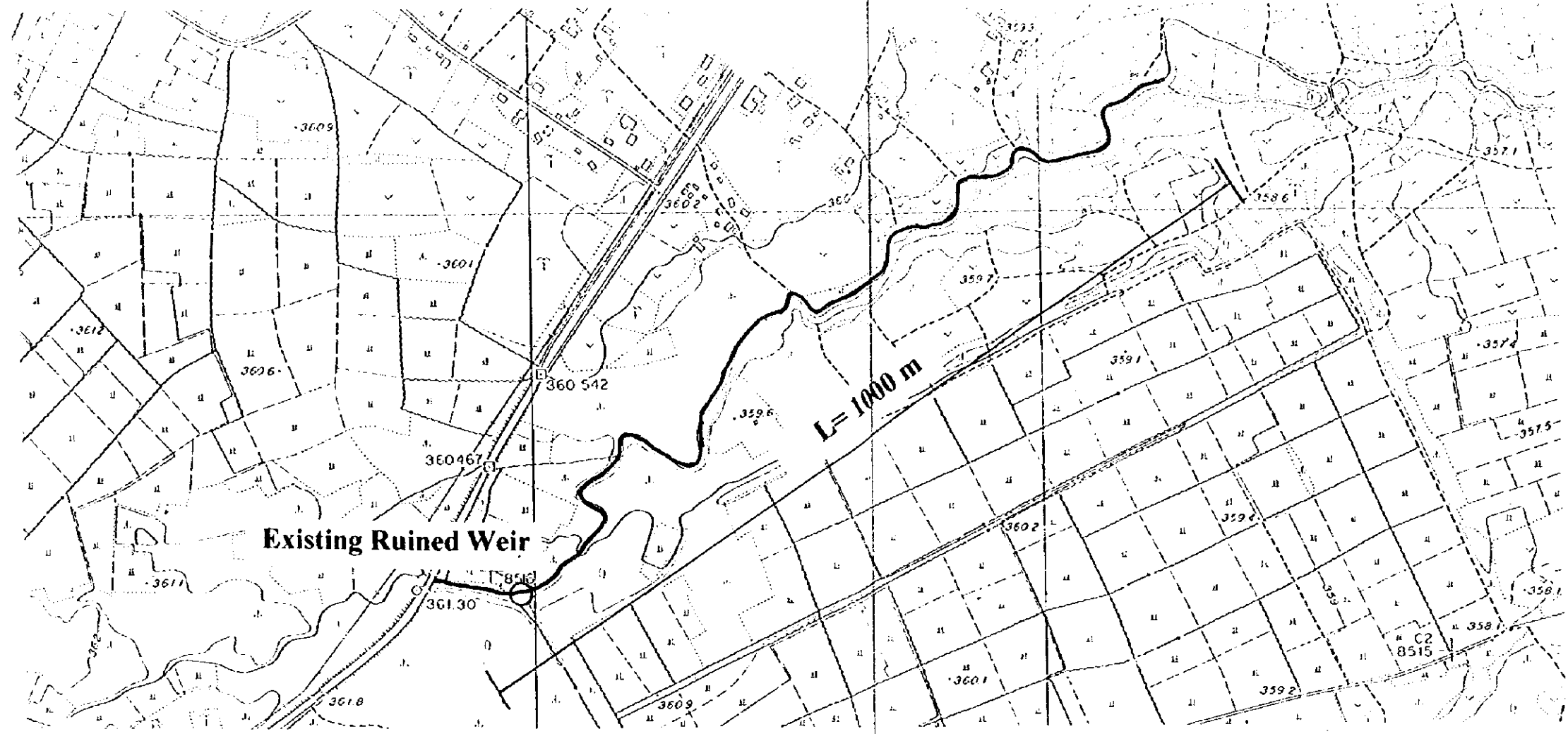


TYPICAL CROSS SECTION OF FLOOD PROTECTION DIKE
ALONG MGONGOLA RIVER

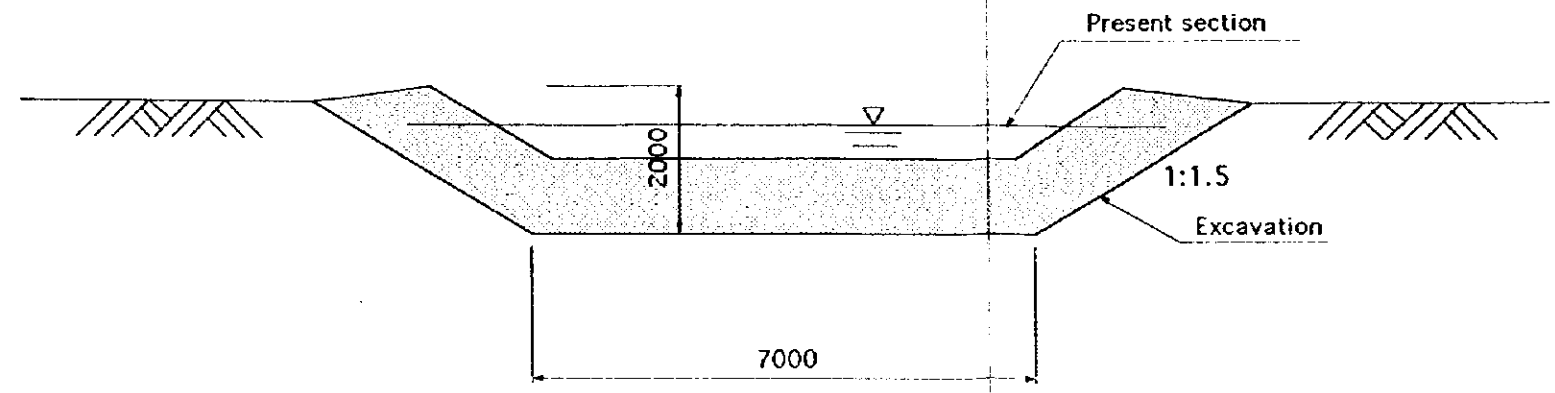


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
FLOOD PROTECTION DIKE			
Date		Drawing No.	328
JAPAN INTERNATIONAL COOPERATION AGENCY			

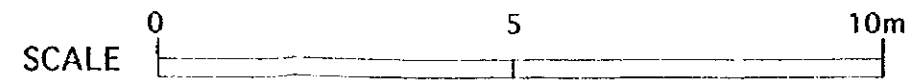
RIVER IMPROVEMENT



PLAN



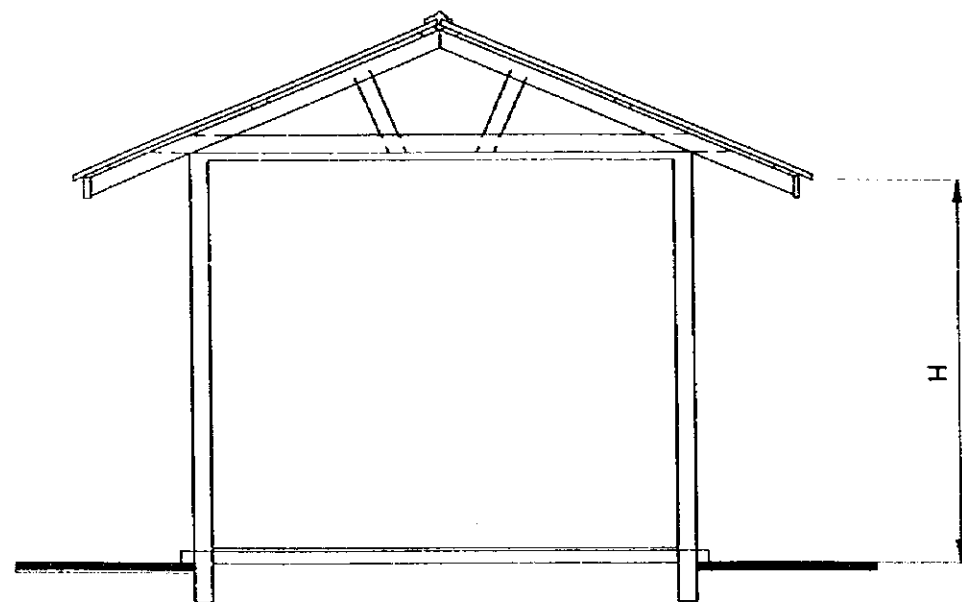
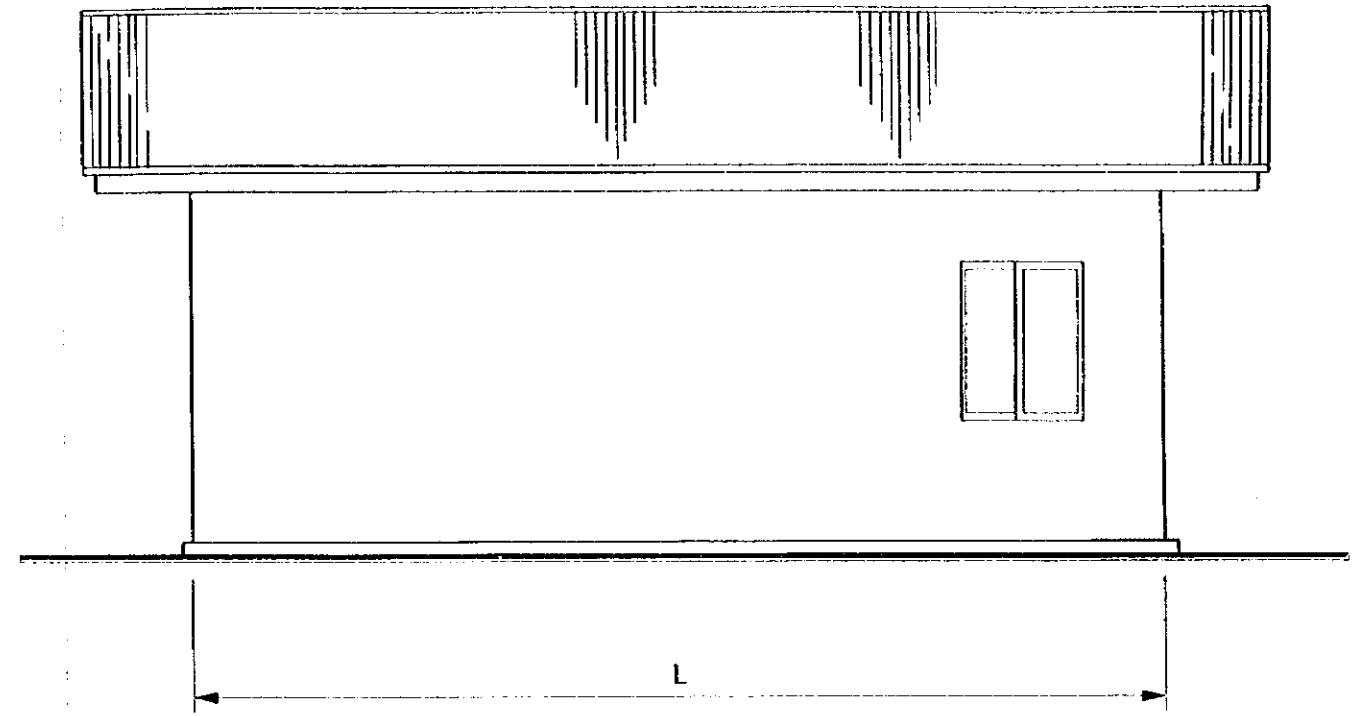
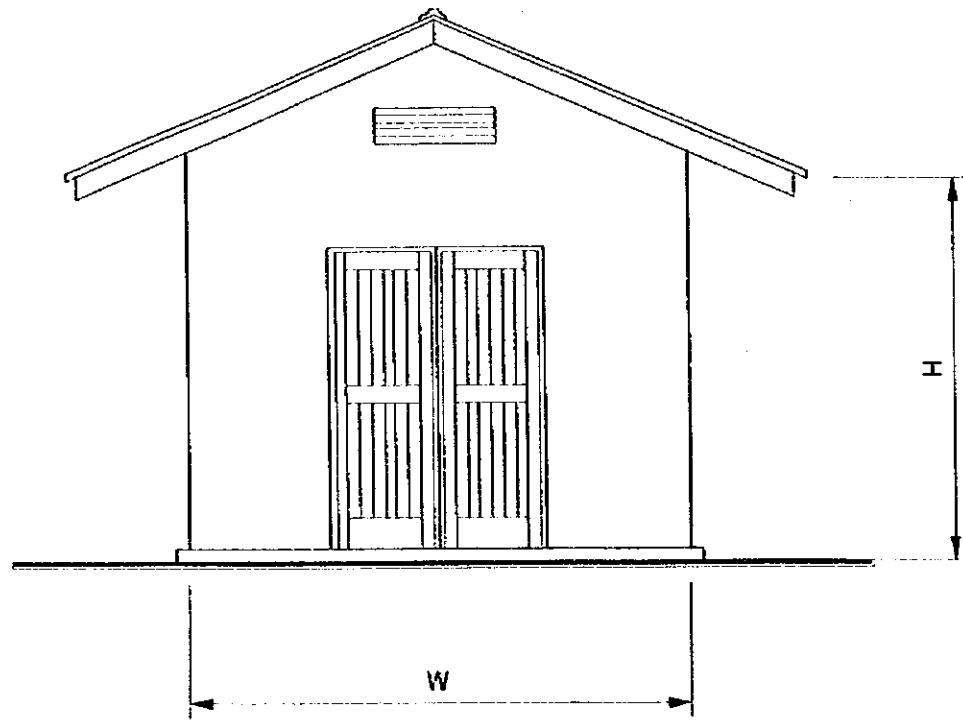
TYPICAL CROSS SECTION



Note : Existing ruined weir should be removed.

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
RIVER IMPROVEMENT			
Date		Drawing No.	329
JAPAN INTERNATIONAL COOPERATION AGENCY			

STORAGE & WUG OFFICE



(Unit : m)

ITEM	L	W	H
STORAGE	25.00	10.00	3.00
WUG OFFICE	20.00	10.00	3.00

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGONGOLA SCHEME	
STORAGE & WUG OFFICE			
Date		Drawing No.	330
JAPAN INTERNATIONAL COOPERATION AGENCY			