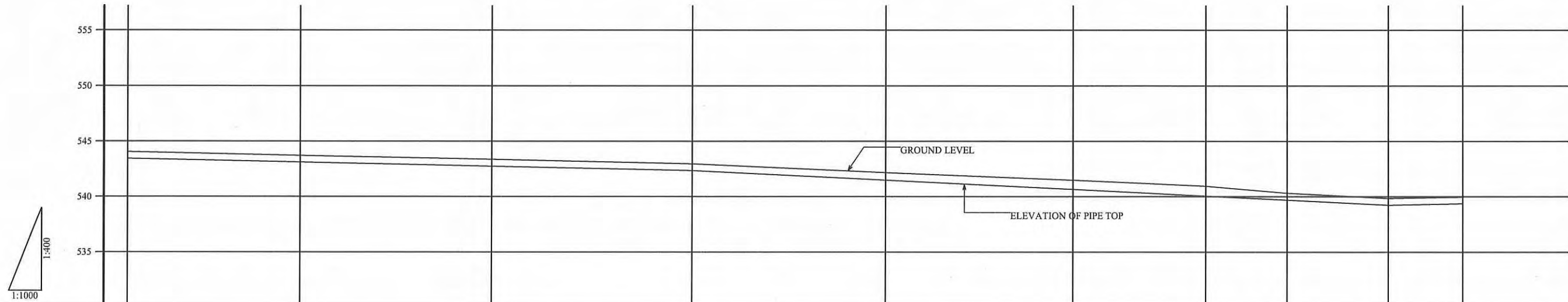


Ground Level (m)	548.25	547.86	547.65	546.40	545.16	544.20	543.70	544.05
Earth Covering Depth (m)	0.59	0.60	0.67	0.61	0.60	0.60	0.60	0.79
Elevation of Pipe Bottom (m)	547.66	547.20	546.92	545.72	544.50	543.54	543.04	543.29
Cumulative Distance (m)	10684.54	10613.81	10623.88	10663.48	10708.48	10751.64	10795.88	10853.74



Ground Level (m)	544.05	543.71	543.37	542.95	542.71	541.50	540.95	540.32	539.95	539.96
Earth Covering Depth (m)	0.80	0.59	0.62	0.60	0.67	0.84	0.89	0.62	0.60	0.60
Elevation of Pipe Bottom (m)	543.29	543.06	542.69	542.30	541.44	540.60	540.00	539.64	539.19	539.32
Cumulative Distance (m)	10853.74	10925.01	10988.75	11014.28	11058.27	11100.97	11137.28	11149.75	11172.71	11189.67

OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

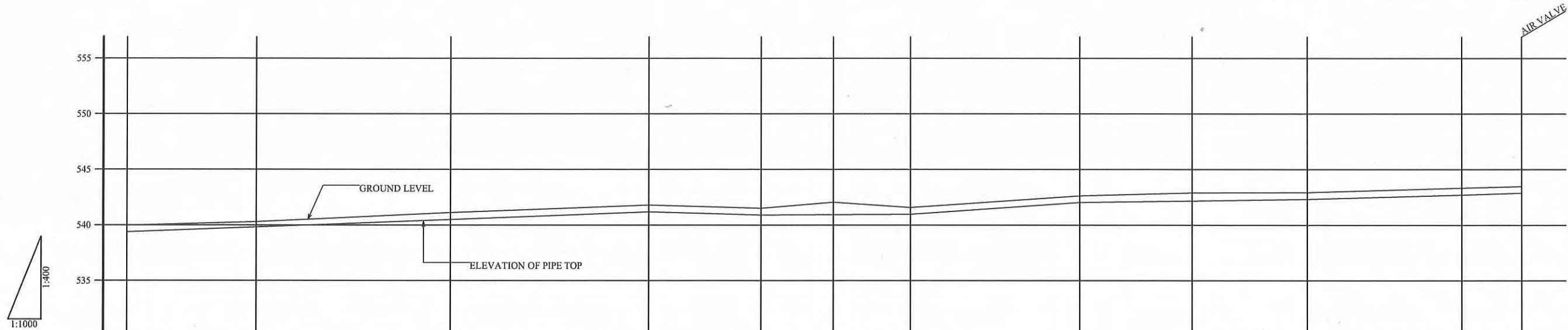
PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

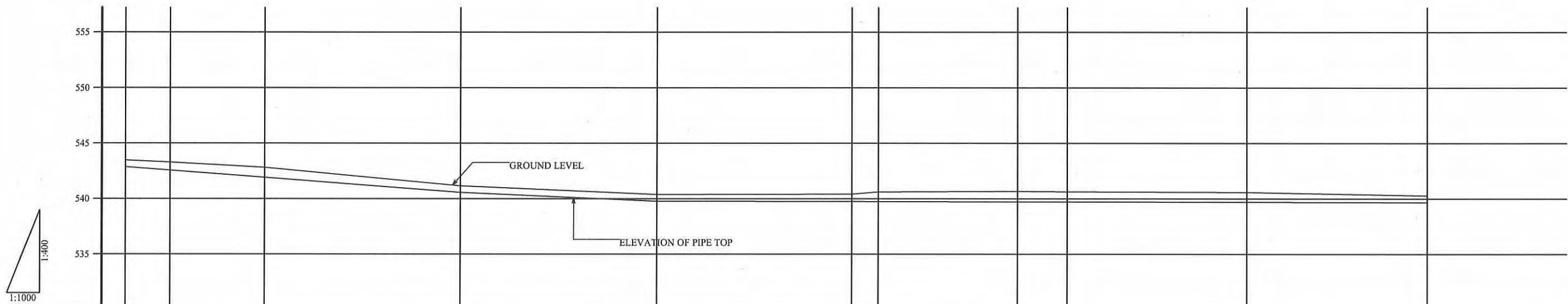
TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
PROFILE OF TRANSMISSION AND DISTRIBUTION PIPELINE(36/40)

SCALE H = 1:1000 V = 1:400	DATE FEB.2006	DRAWING NO. WSF-049
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STORAGE TANK - KATHANZE (19/20)



Ground Level (m)	539.98	540.29	541.13	541.80	541.51	542.05	541.58	542.64	542.90	542.93	543.34	543.48
Earth Covering Depth (m)	-0.60	-0.66	-0.62	-0.60	-0.60	-1.11	-0.60	-0.60	-0.72	-0.60	-0.62	-0.60
Elevation of Pipe Bottom (m)	539.32	539.77	540.44	541.14	540.85	540.88	540.92	541.98	542.12	542.27	542.66	542.82
Cumulative Distance (m)	11189.87	11219.30	11263.61	11306.83	11334.21	11350.71	11383.39	11406.91	11432.56	11458.91	11494.11	11507.85



Ground Level (m)	543.48	543.30	542.83	541.16	540.38	540.42	540.62	540.66	540.64	540.38	540.28
Earth Covering Depth (m)	-0.60	-0.73	-0.91	-0.80	-0.80	-0.67	-0.87	-0.93	-0.92	-0.88	-0.60
Elevation of Pipe Bottom (m)	542.82	542.51	541.86	540.30	539.71	539.69	539.69	539.67	539.66	539.44	539.62
Cumulative Distance (m)	11507.85	11516.06	11539.48	11594.14	11629.98	11673.18	11679.21	11708.31	11721.11	11763.07	11804.08

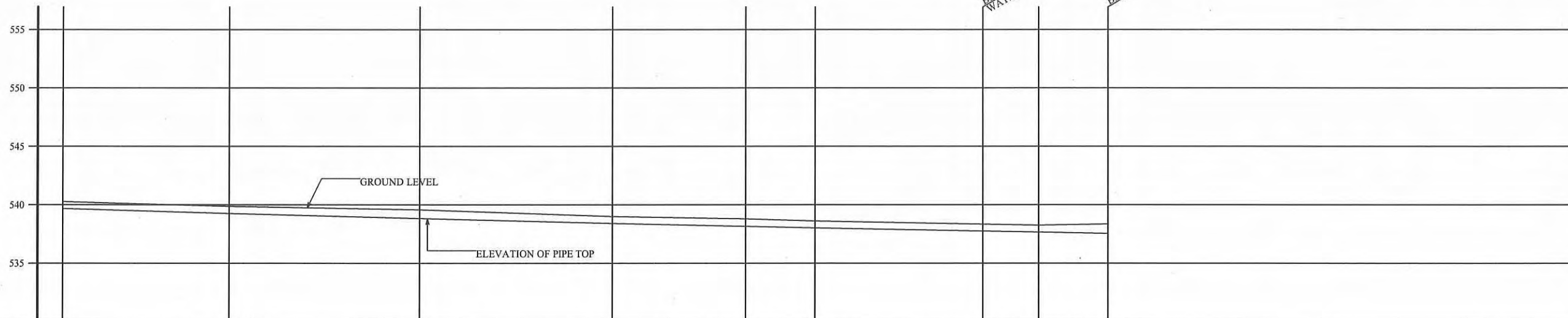
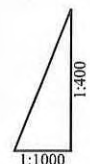
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
PROFILE OF TRANSMISSION AND DISTRIBUTION PIPELINE(37/40)

SCALE H = 1:1000 V = 1:400	DATE FEB.2006	DRAWING NO. WSF-050
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Ground Level (m)	540.28	539.86	539.59	539.02	538.80	538.62	538.35	538.26	538.37
Earth Covering Depth (m)	0.60	0.60	0.75	0.60	0.65	0.60	0.60	0.60	0.61
Elevation of Pipe Bottom (m)	539.62	539.20	538.78	538.35	538.09	537.96	537.69	537.60	537.49
Cumulative Distance (m)	11801.08	11840.25	11881.54	11922.23	11962.10	11967.05	12003.52	12015.54	12030.52

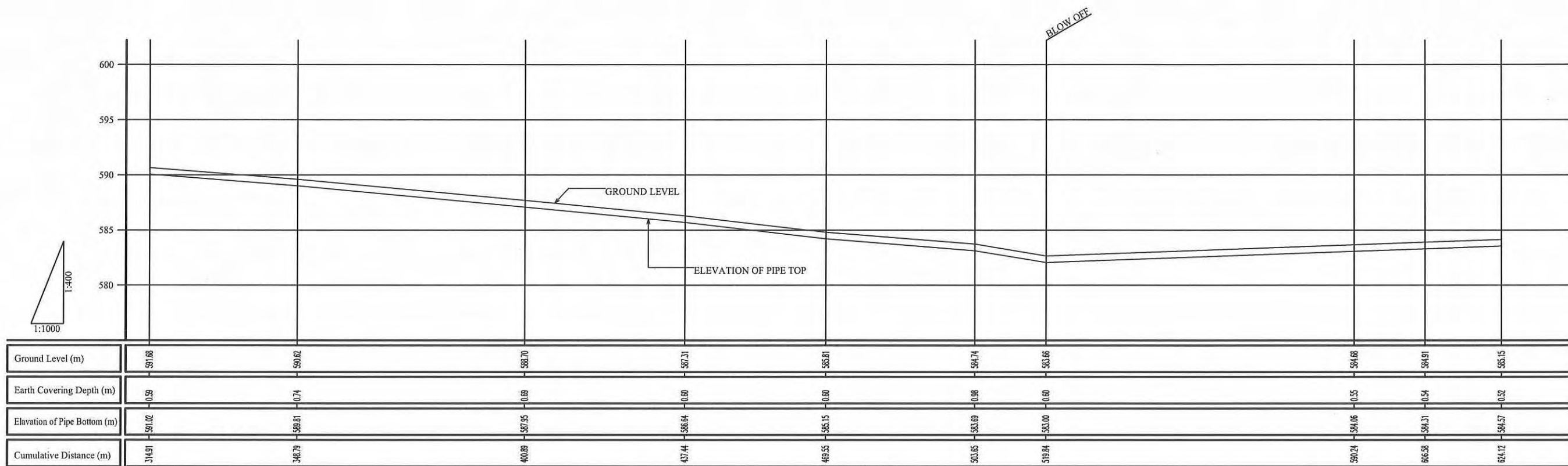
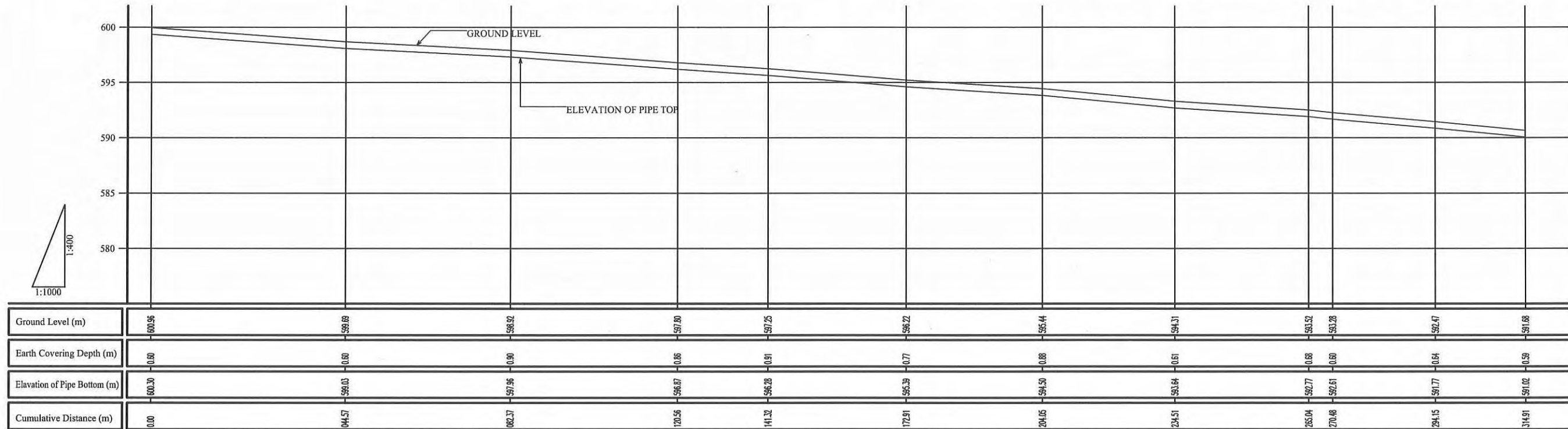
OWNER:
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THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
PROFILE OF TRANSMISSION AND DISTRIBUTION PIPELINE(38/40)

SCALE H = 1:1000 V = 1:400	DATE FEB.2006	DRAWING NO. WSF-051
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OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

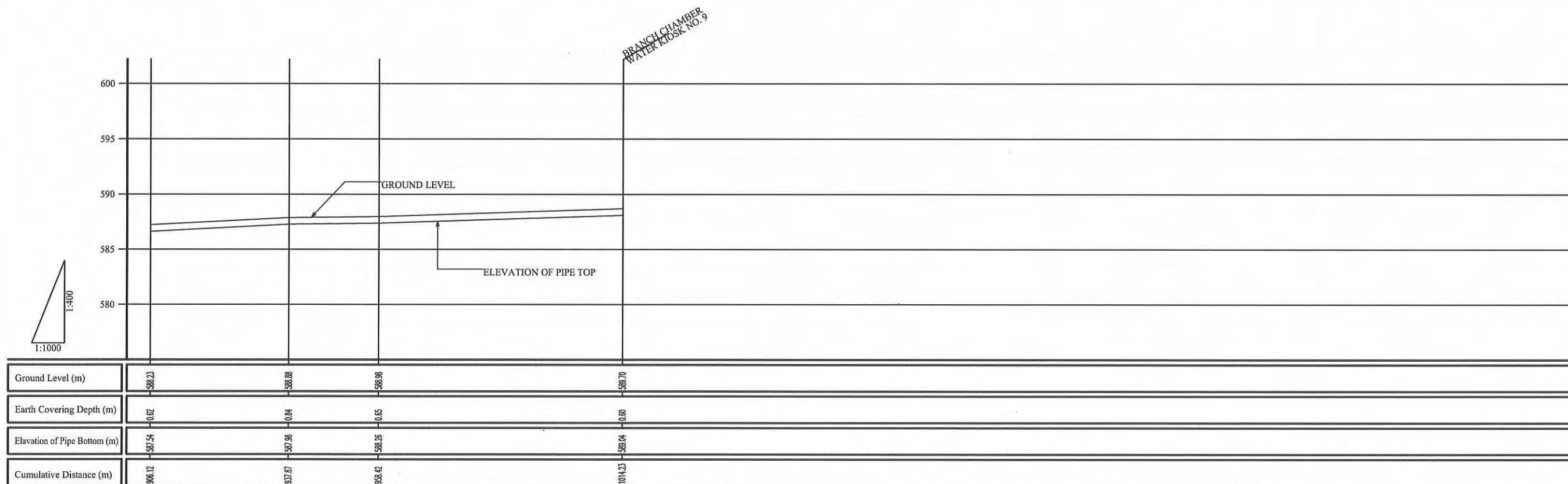
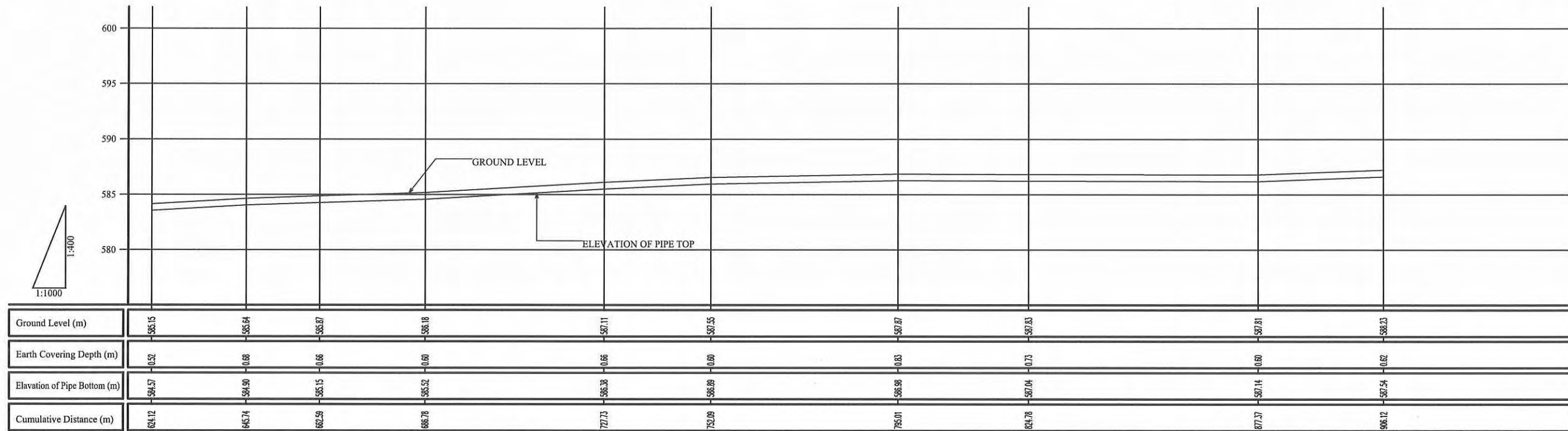
CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
PROFILE OF TRANSMISSION AND DISTRIBUTION PIPELINE(39/40)

SCALE
H = 1:1000
V = 1:400

DATE
FEB.2006

DRAWING NO.
WSF-052



OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

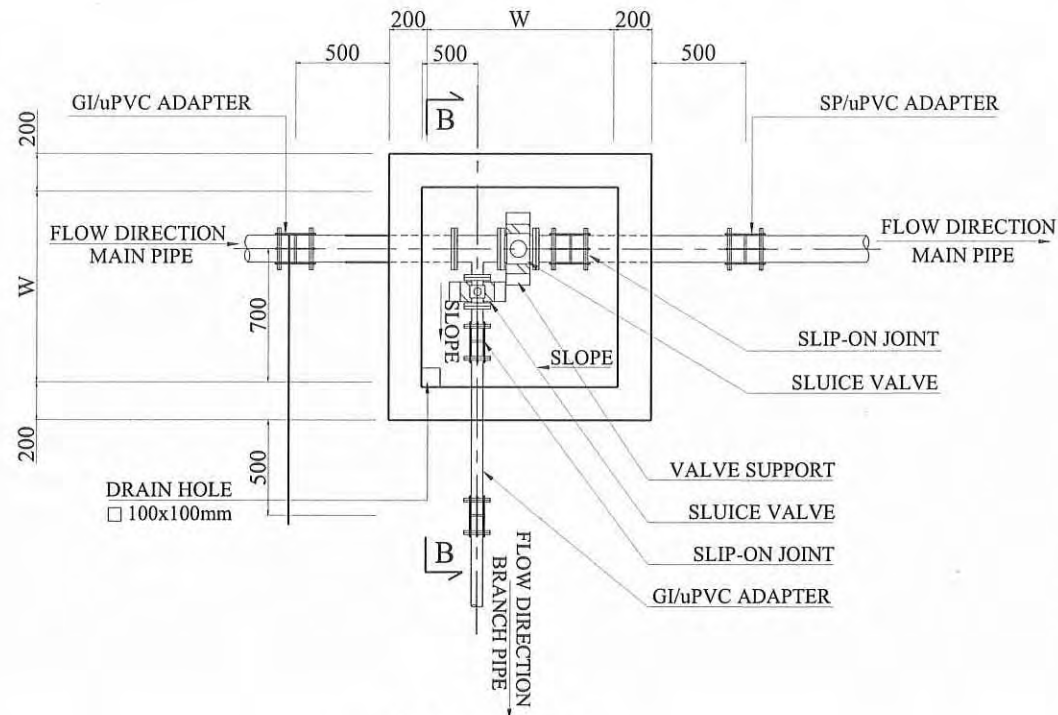
CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
PROFILE OF TRANSMISSION AND DISTRIBUTION PIPELINE(40/40)

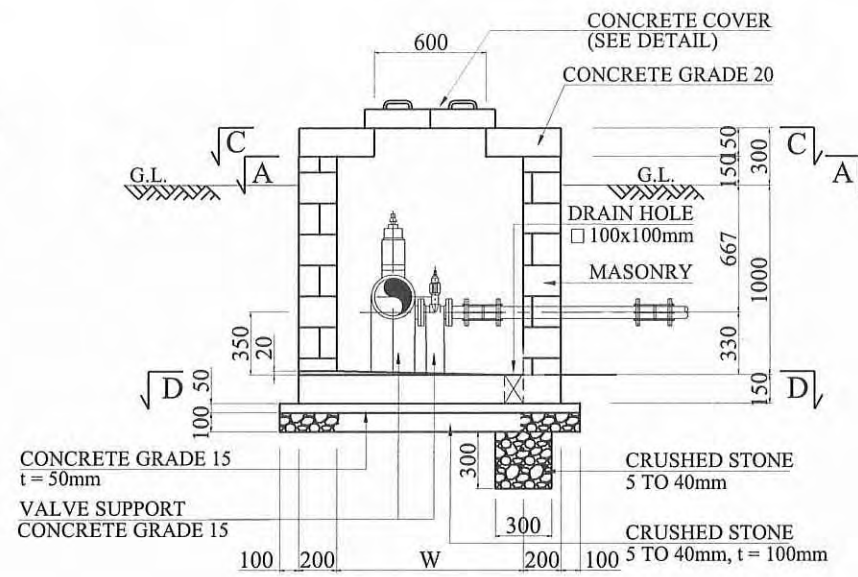
SCALE
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V = 1:400

DATE
FEB.2006

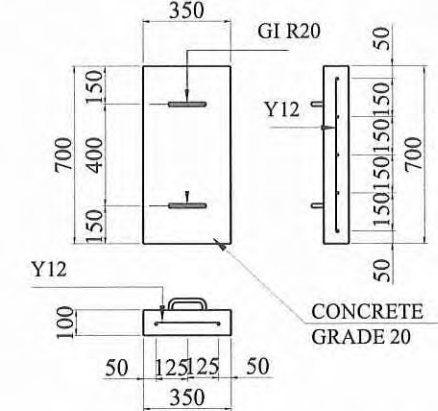
DRAWING NO.
WSF-053



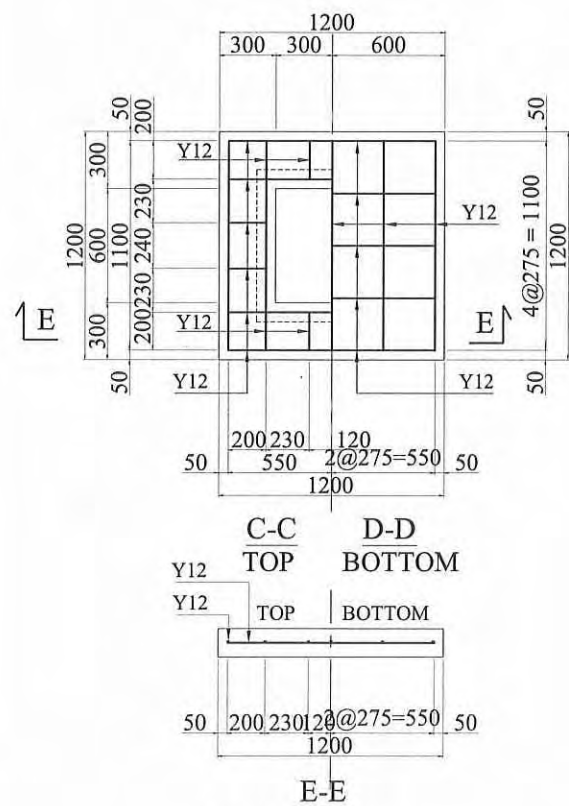
SECTION A-A
SCALE 1:40



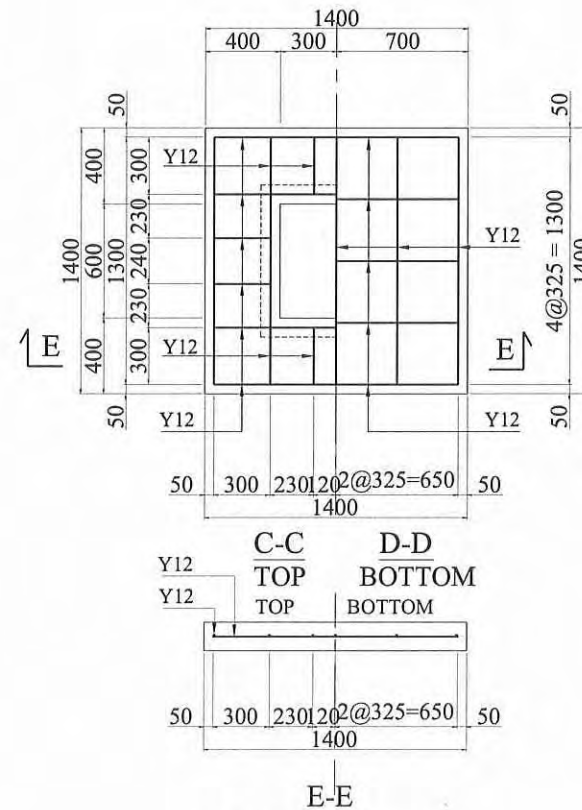
SECTION B-B
SCALE 1:40



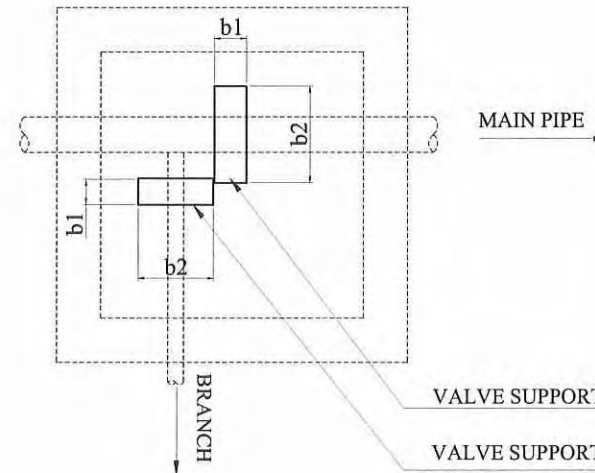
CONCRETE COVER DETAIL
SCALE 1:30



TYPE A SCALE 1:40
(W = 800)



TYPE B SCALE 1:40
(W = 1000)



Pipe Diameter (mm)	b1 (mm)	b2 (mm)	Height (mm)
32	100	400	200
50	140	400	350
80	160	500	350
100	180	500	350

VALVE SUPPORT
SCALE 1:30

	Pipe Diameter (mm)				W (mm)	No. (Nos.)	
	Main Pipe	Main Pipe in Chamber	Branch Pipe	Branch Pipe in Chamber		Blow off	Branch
Type A	uPVC 63	GI 50	uPVC 50	GI 50	800	-	8
	uPVC 63	GI 50	uPVC 63	GI 50		13	1
Type B	uPVC 90	GI 80	uPVC 50	GI 50	1000	-	3
	uPVC 90	GI 80	uPVC 63	GI 50		2	1
	GI 100	GI 100	GI 80	GI 80		-	1

Note : Surface of stone block shall be plastered with 25mm thickness.
: Dimension at valve support shall change based on the valve length

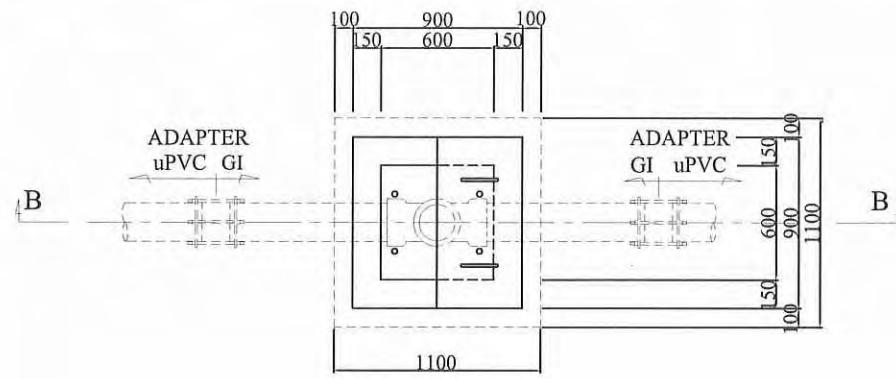
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

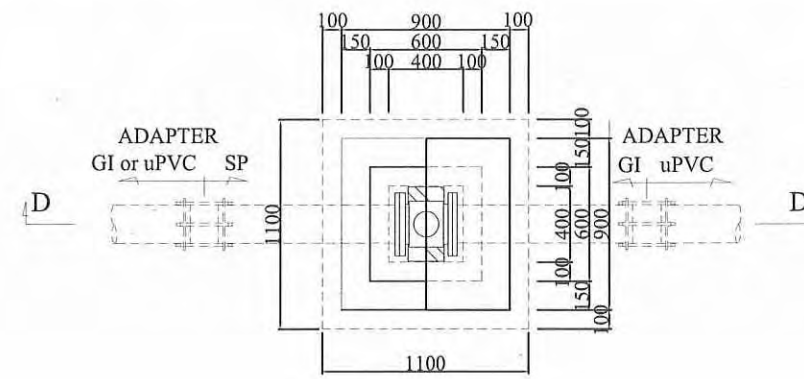
CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITIES
BRANCH VALVE CHAMBER

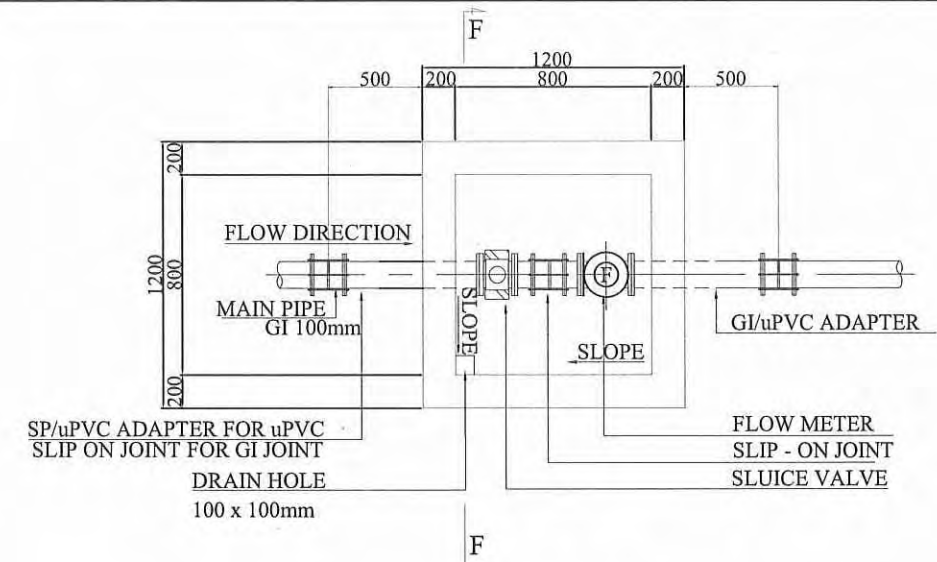
SCALE	DATE	DRAWING NO.
1:40 1:30	FEB.2006	WSF-054



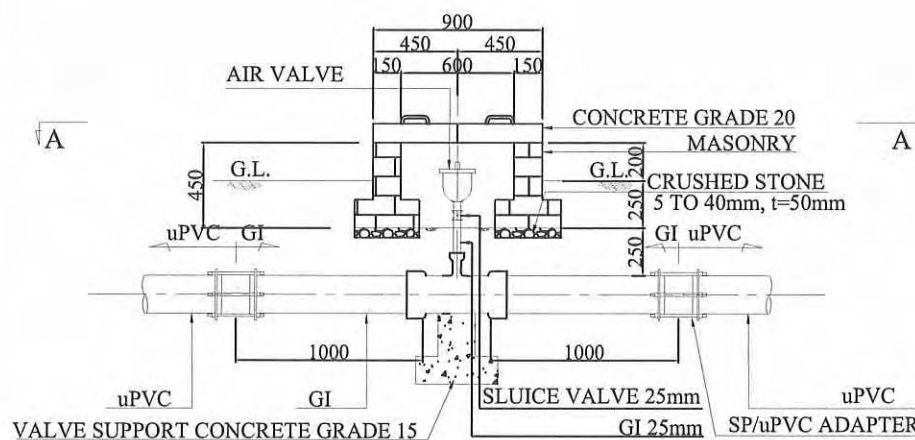
SECTION A-A
Scale 1:40



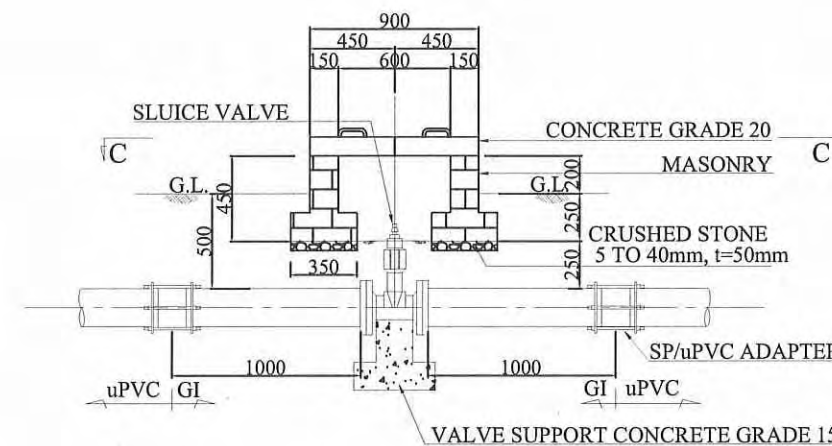
SECTION C-C
Scale 1:40



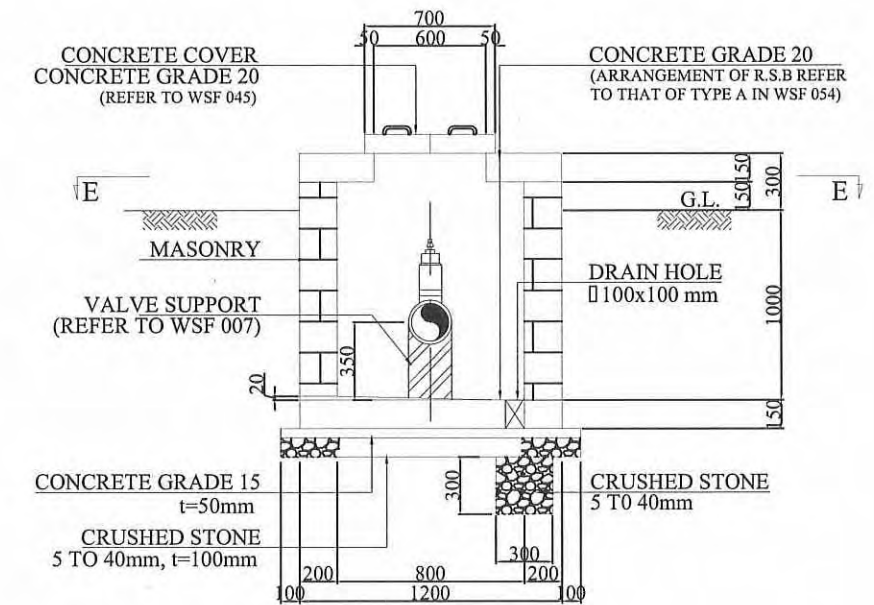
SECTION E - E
Scale 1:40



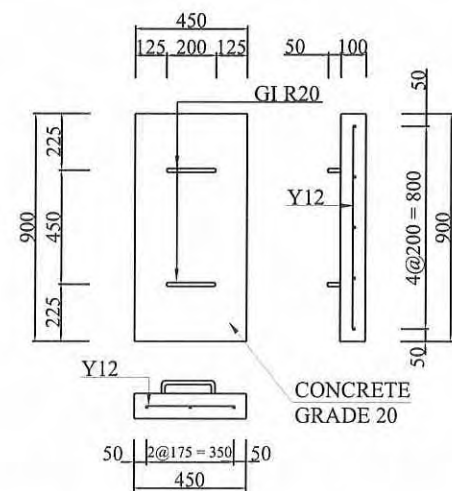
SECTION B-B
AIR VALVE CHAMBER
Scale 1:40



SECTION D-D
SLUICE VALVE CHAMBER
Scale 1:40



SECTION F-F
FLOW METER CHAMBER
Scale 1:40



CONCRETE COVER
(AIR & SLUICE VALVE CHAMBER)
Scale 1:30

ITEM	TYPE	No.(Nos.)
AIR VALVE CHAMBER	GI TEE 50x25	11
SLUICE VALVE CHAMBER	GI 80	1
SLUICE VALVE CHAMBER	GI 100	1
FLOW METER CHAMBER	GI 100	3

Note : Surface of stone block shall be plastered with 25mm thickness.
: Dimension of valve support shall be varied based on the valve length.

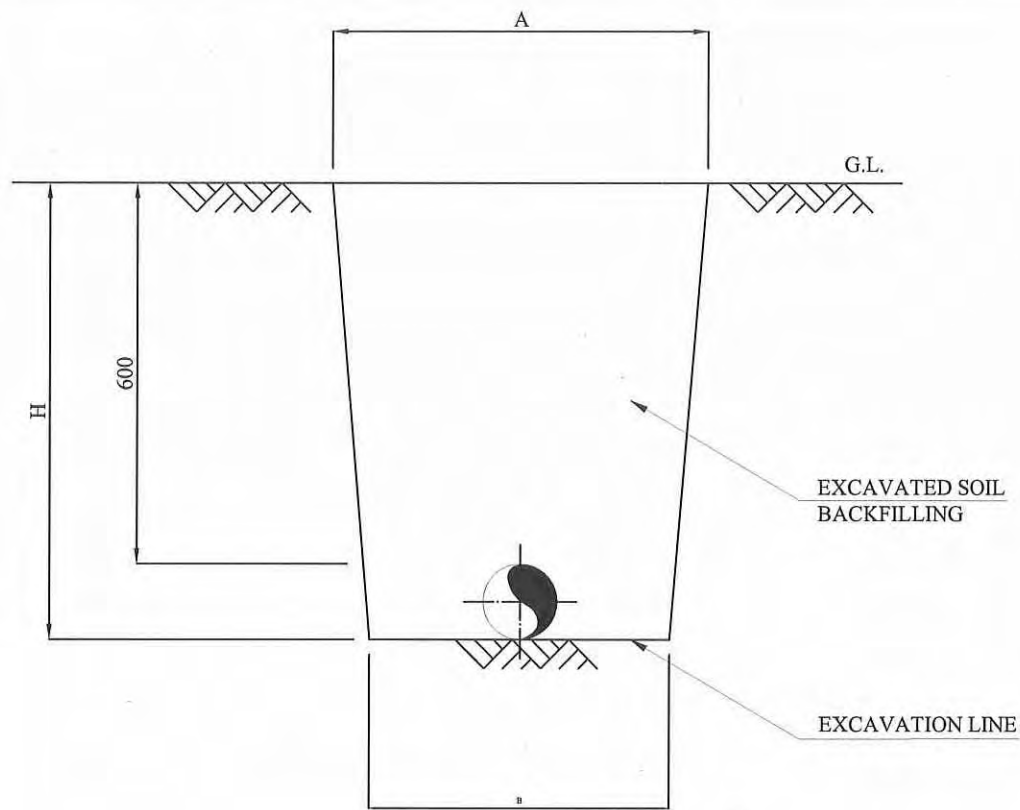
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
AIR VALVE, SLUICE VALVE & FLOW METER CHAMBERS

SCALE 1:30 1:40	DATE FEB.2006	DRAWING NO. WSF-055
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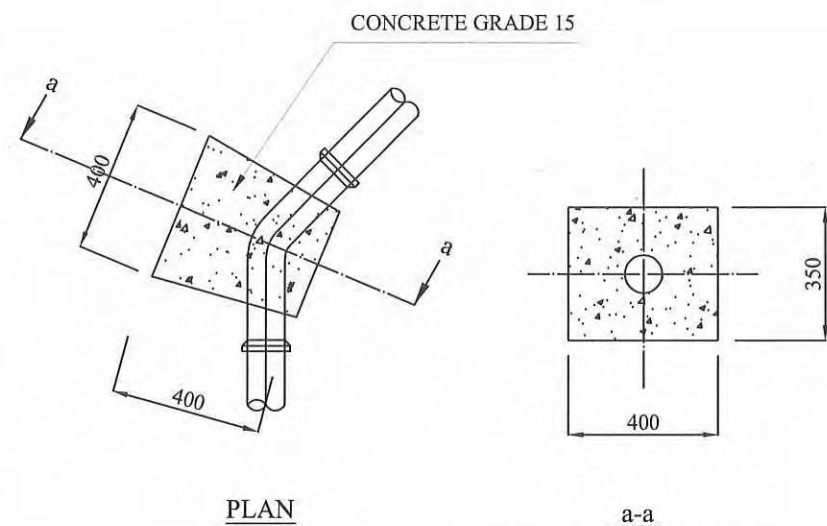


EXCAVATION

Dimension of Manual Excavation

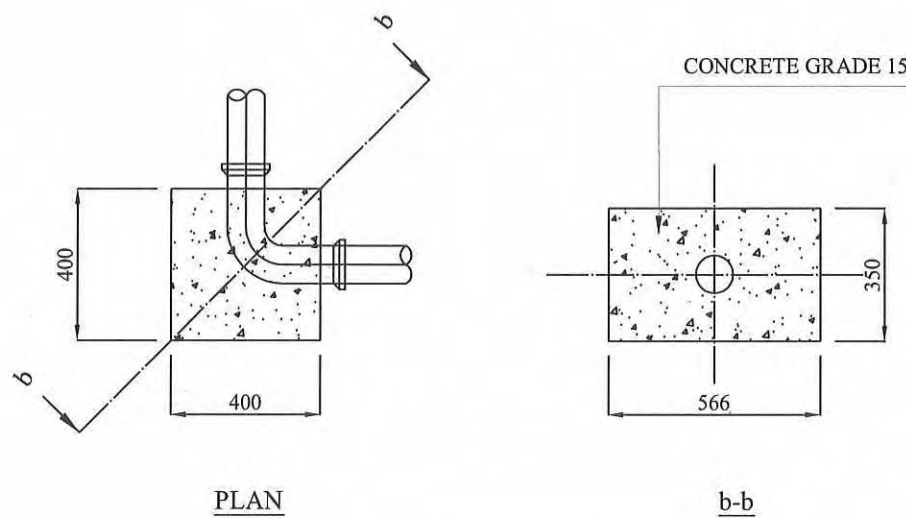
Pipe Diameter (mm)	Excavation	Width (m)		Excavation Depth: H (m)
		A	B	
50 or Less	Manual	0.60	0.50	0.65
	Machine	0.50	0.50	
63	Manual	0.60	0.50	0.70
	Machine	0.60	0.60	
90	Manual	0.60	0.50	0.70
	Machine	0.65	0.65	
100	Manual	0.60	0.50	0.70
	Machine	0.70	0.70	

Note: Excavated soil shall be used for backfilling
 : Surplus soil shall be spoiled.
 : Sand with 100mm in thickness shall be bedded below the pipe incase of hard ground formation such as rock, stone and etc.
 : Line marker shall be installed at valve chambers and at all changes of horizontal alignment and of transmission and distribution pipeline at 200m intervals
 : Thrust block shall be installed at all changes of horizontal alignment of transmission and distribution pipeline



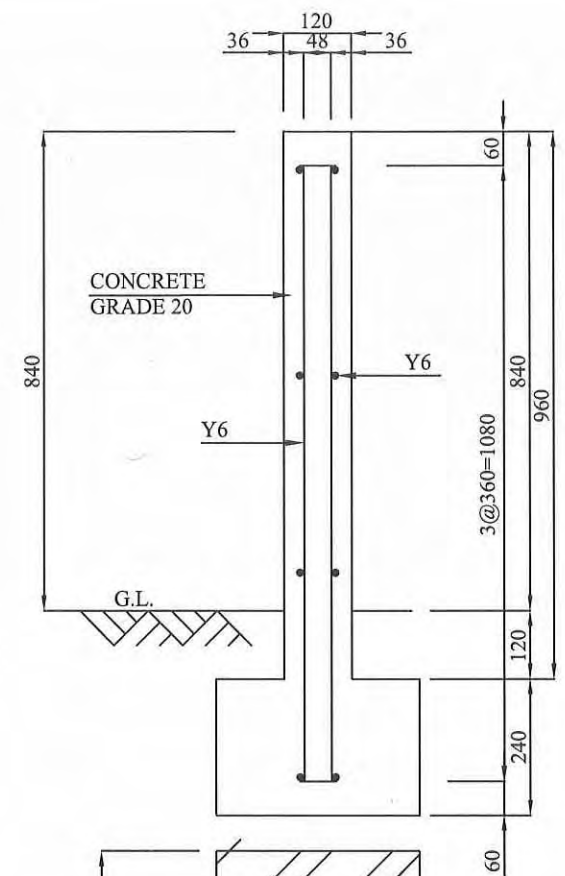
THRUST BLOCK FOR DEGREE OF BEND (LESS 45°)

SCALE 1:20



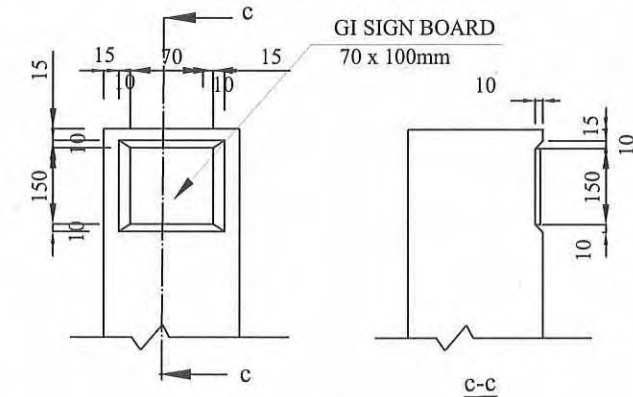
THRUST BLOCK FOR DEGREE OF BEND (45° - 90°)

SCALE 1:20



LINE MARKER

SCALE 1:20



SIGN BOARD

SCALE 1:15

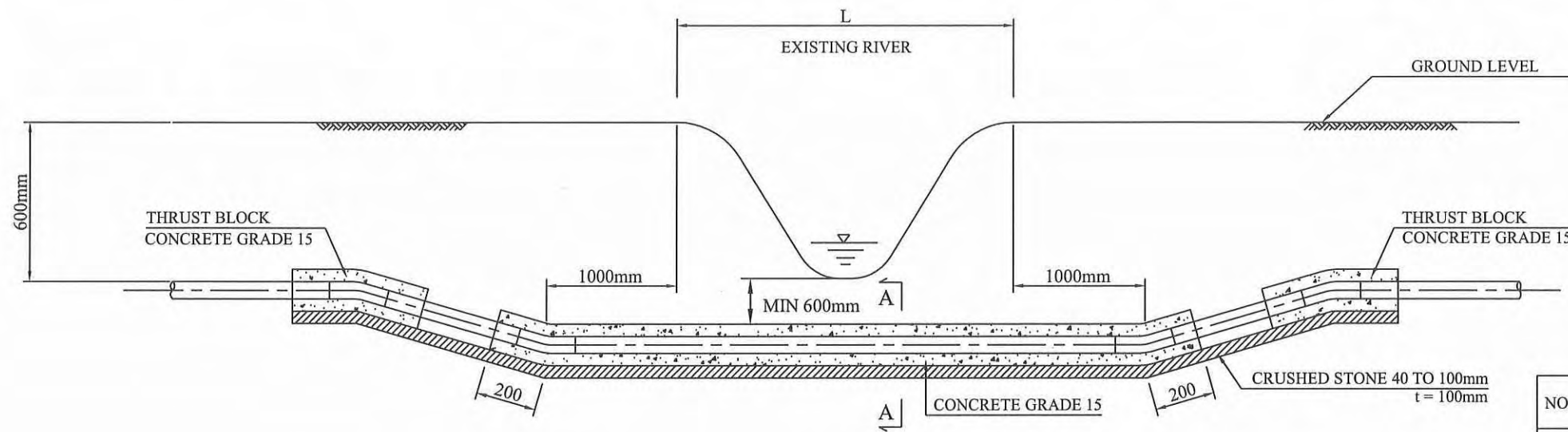
OWNER:
 THE MINISTRY OF WATER AND IRRIGATION
 THE REPUBLIC OF KENYA

PROJECT NAME:
 THE PROJECT FOR
 RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 **NIPPON KOEI CO.,LTD.**

TITLE:
 REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
 PIPE INSTALLATION, LINE MARKER AND THRUST BLOCK

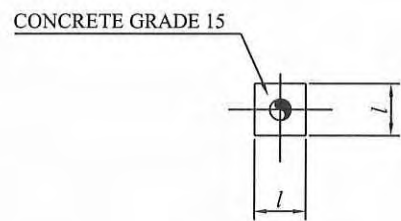
SCALE 1:15 1:20 NONE	DATE FEB.2006	DRAWING NO. WSF-056
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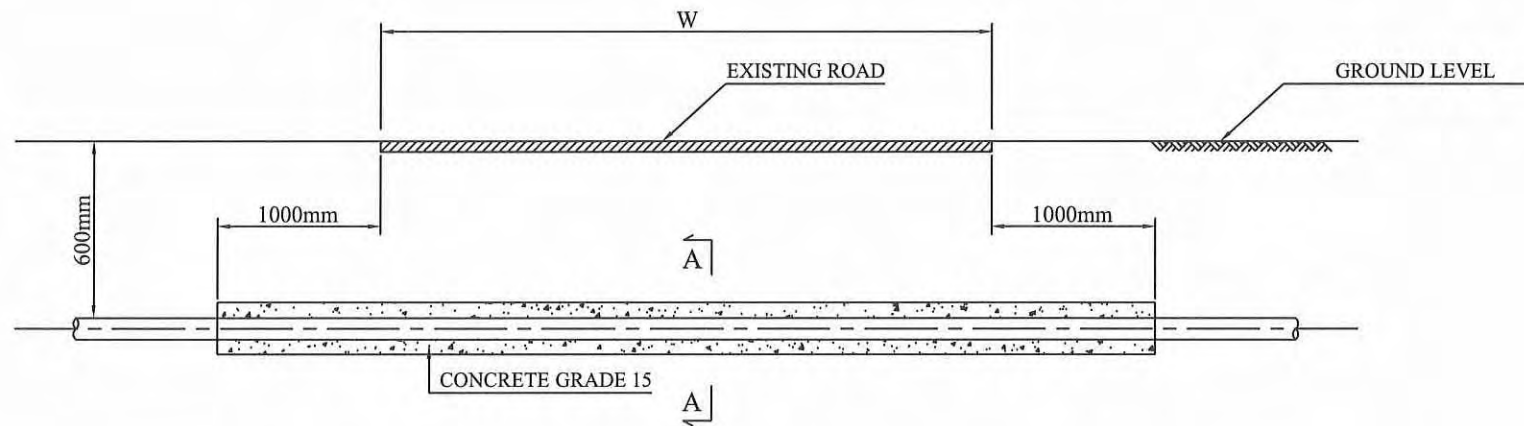
RIVER CROSSING

NO.	LOCATION	L (m)	PIPE (mm)
1	KAAI - MUTYANGOMBE 0425.71m	55.8	63
2	KAAI - MUTYANGOMBE 0666.75m	30.0	63
3	KAAI - MUTYANGOMBE 1079.65m	5.8	63
4	KAAI - MUTYANGOMBE 1192.32m	7.0	63
5	KAAI - MUTYANGOMBE 2867.17m	11.3	63

PIPE DIAMETER (mm)	l (mm)
63	270



A-A



ROAD CROSSING

NO.	LOCATION	W (m)	PIPE (mm)
1	KAAI - STORAGE TANK 0.00m	10.0	63

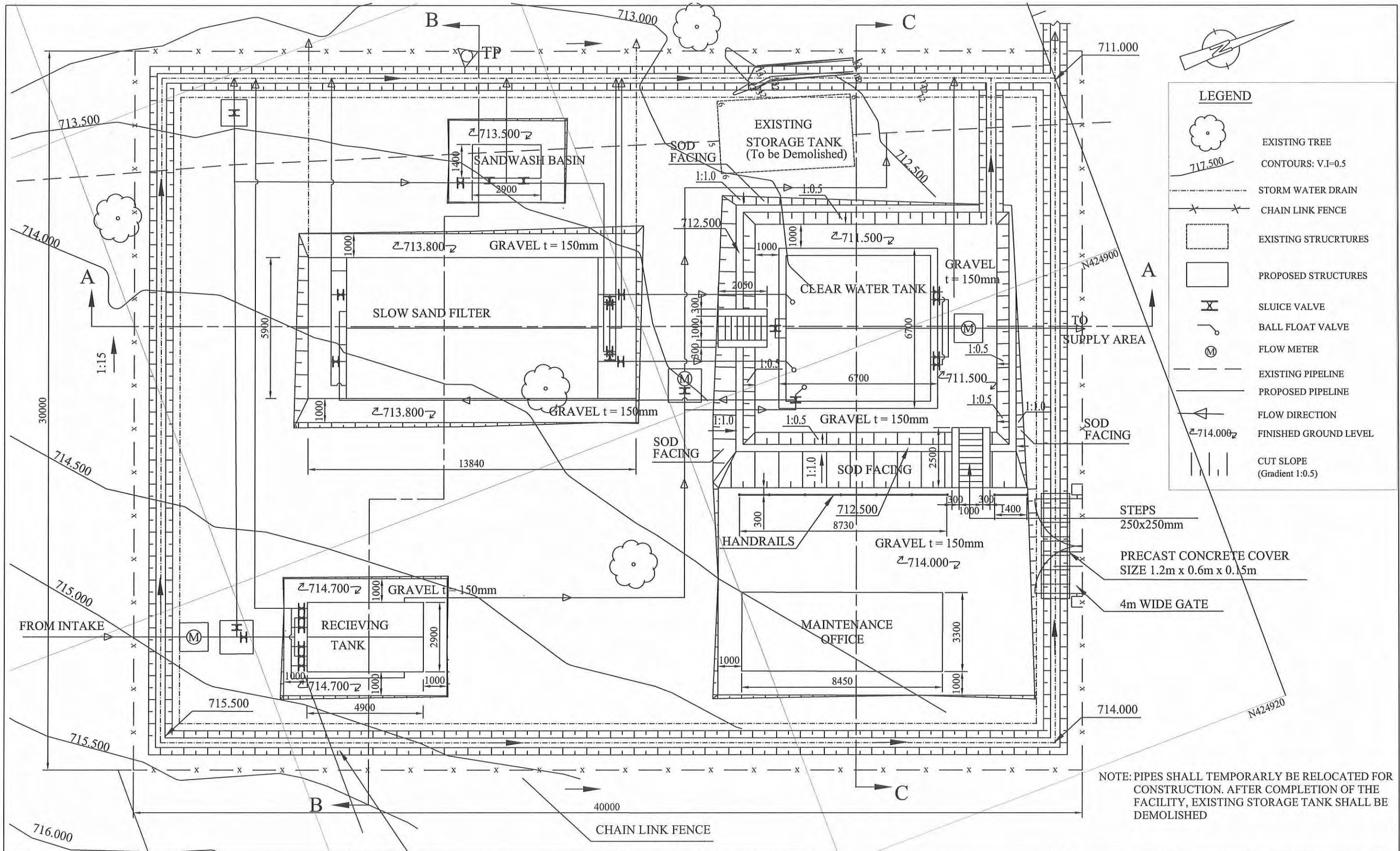
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
RIVER AND ROAD CROSSING OF PIPE

SCALE	DATE	DRAWING NO.
NONE	FEB.2006	WSF-057



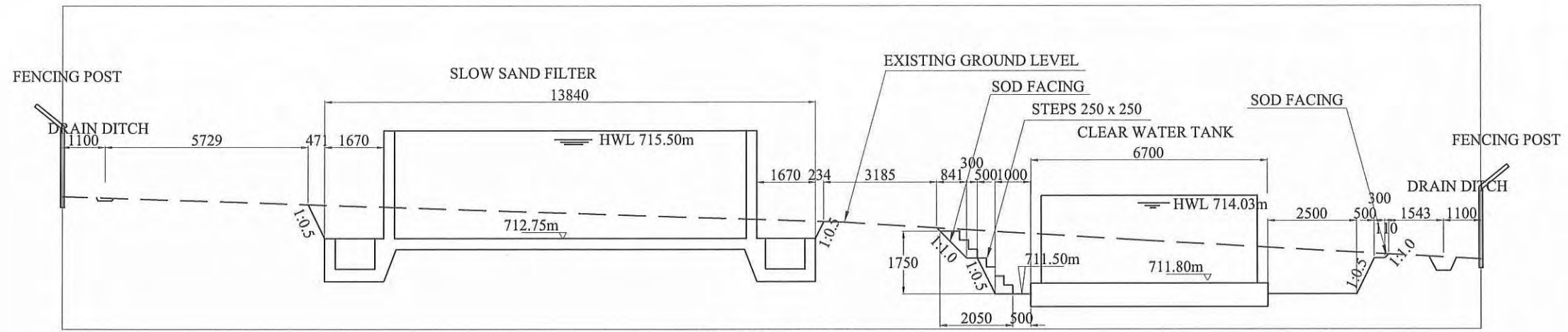
OWNER:
 THE MINISTRY OF WATER AND IRRIGATION
 THE REPUBLIC OF KENYA

PROJECT NAME:
 THE PROJECT FOR
 RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 **NIPPON KOEI CO.,LTD.**

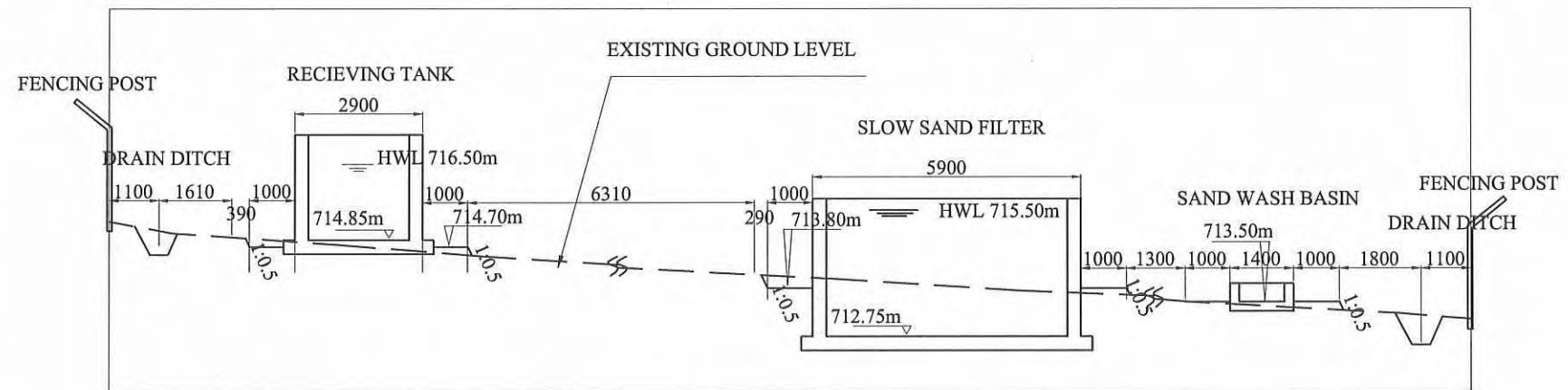
TITLE:
 REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
 LAYOUT PLAN OF WATER TREATMENT PLANT

SCALE	DATE	DRAWING NO.
1:150	FEB.2006	WSF-058



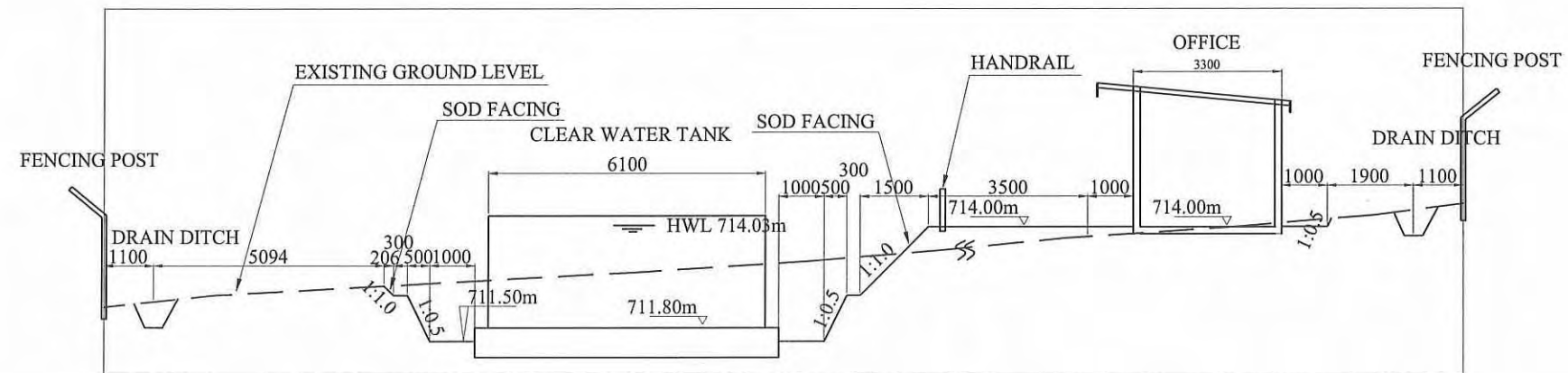
SECTION A-A

(See DRAWING No.WSF - 058)



SECTION B-B

(See DRAWING No.WSF - 058)



SECTION C-C

(See DRAWING No.WSF - 058)

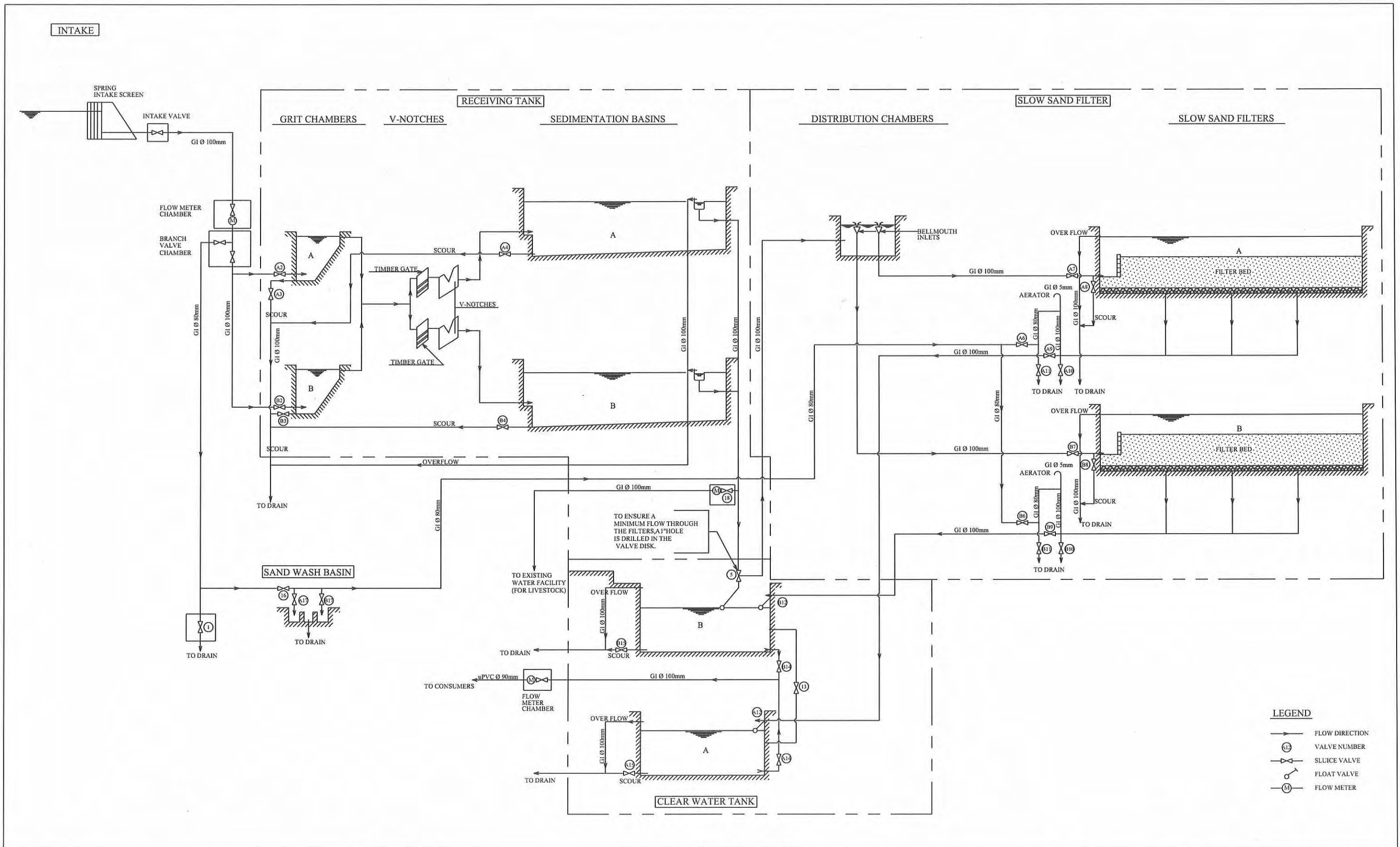
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 **NIPPON KOEI CO.,LTD.**

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
CROSS SECTIONAL VIEW OF WATER TREATMENT PLANT

SCALE 1:150	DATE FEB.2006	DRAWING NO. WSF-059
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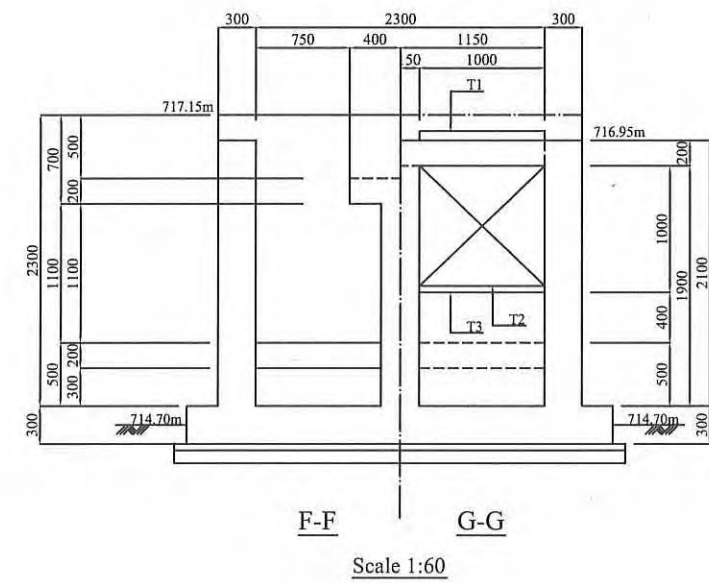
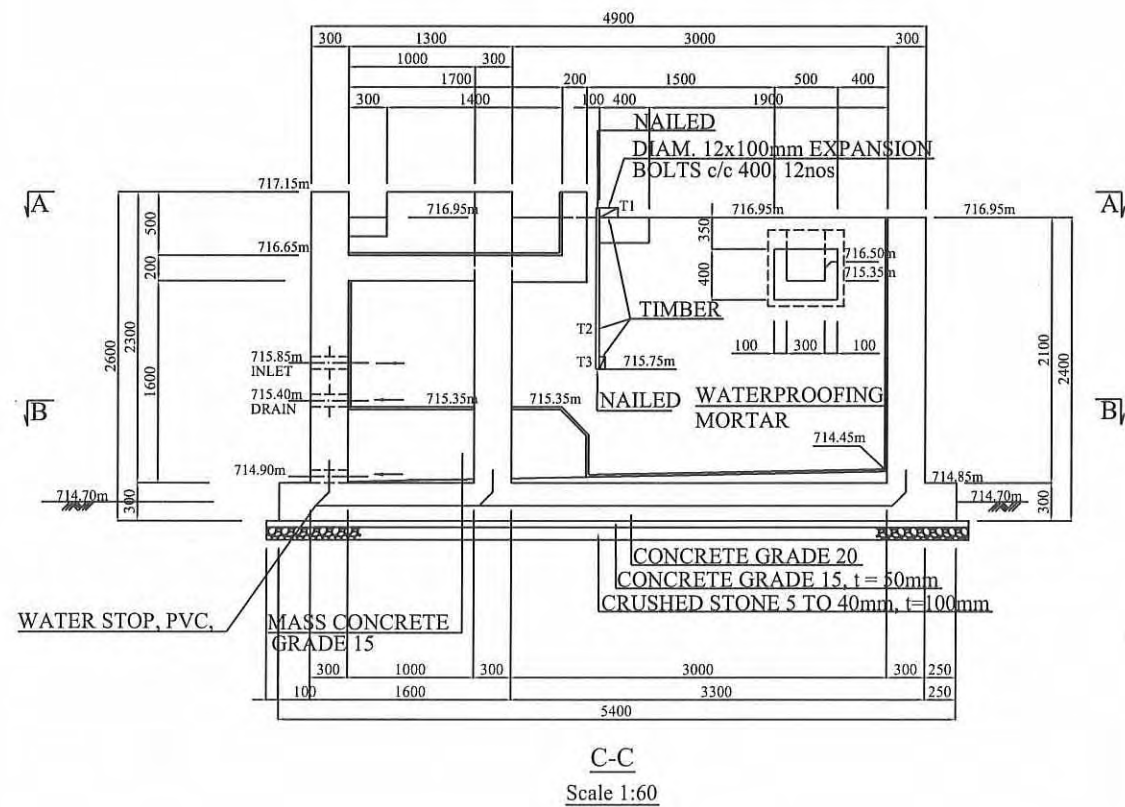
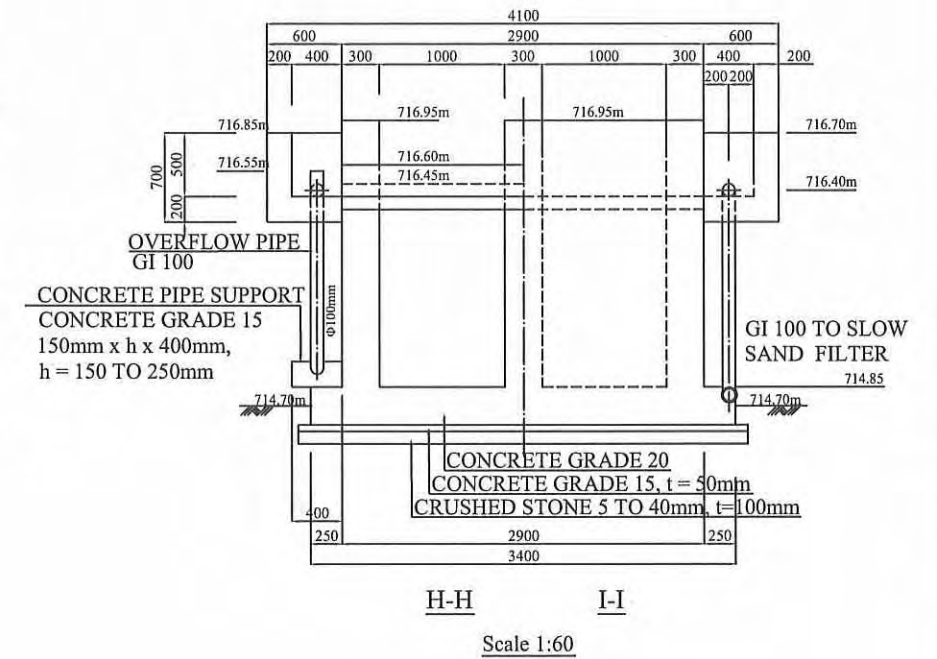
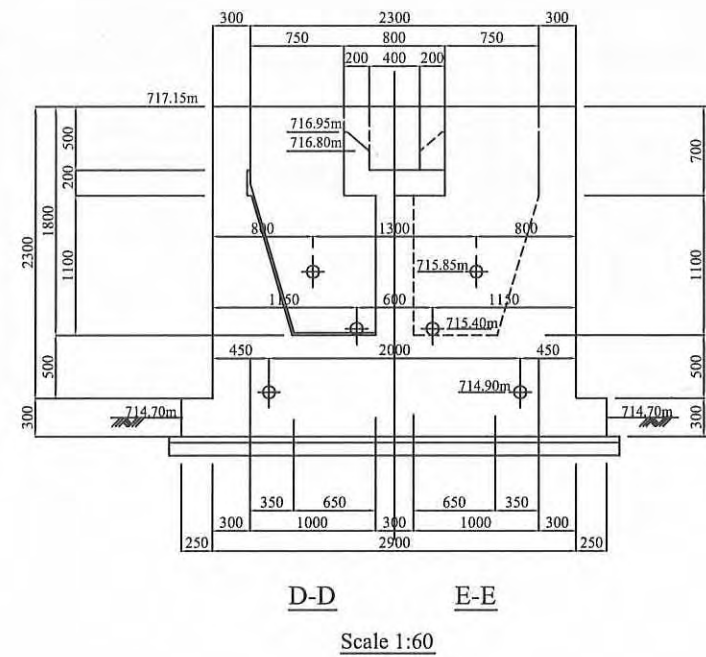
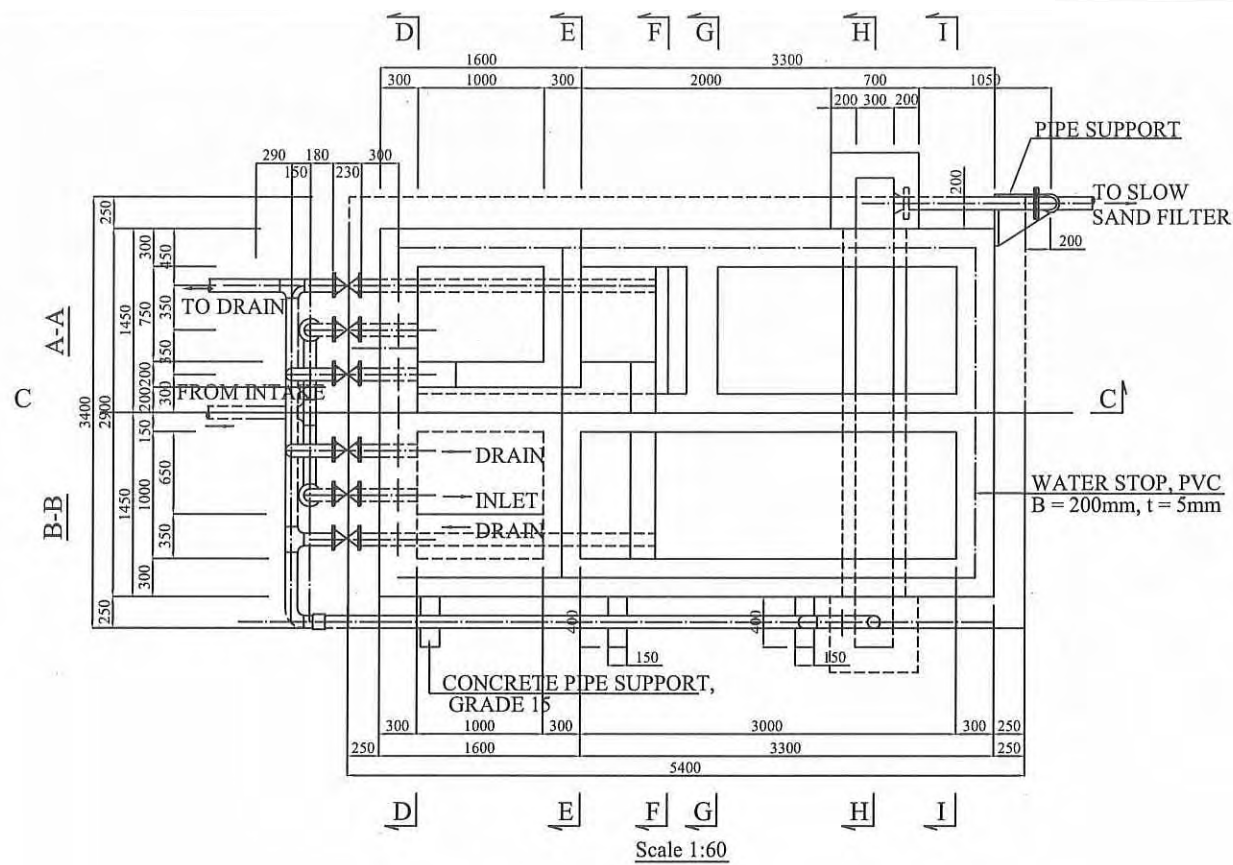
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 **NIPPON KOEI CO.,LTD.**

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
FLOW CHART OF WATER TREATMENT PLANT

SCALE	DATE	DRAWING NO.
NONE	FEB.2006	WSF-060



NOTES: : ALL INTERNAL SURFACES OF THE STRUCTURE
IN CONTACT WITH WATER SHALL BE LINED WITH
30mm THICK WATER PROOFING MORTAR

TIMBER
T1: 150x75 - 2300mm
T2: 200x25 - 1275mm
T3: 100x50 - 1000mm

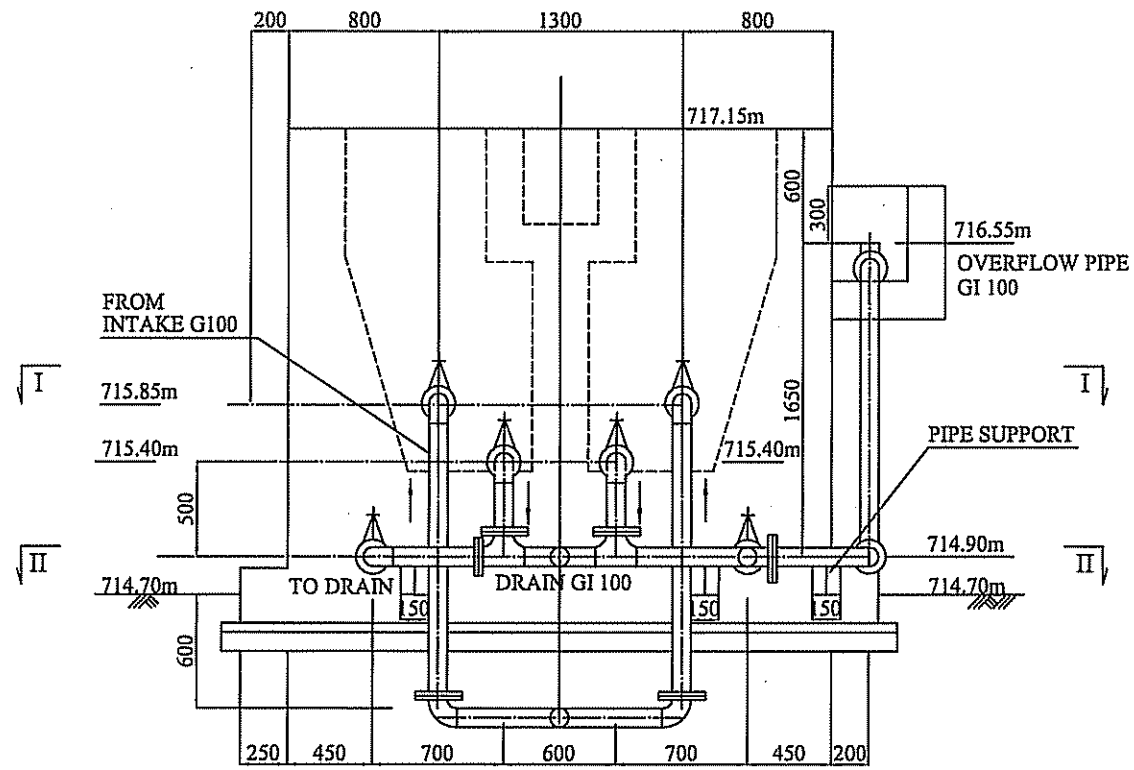
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

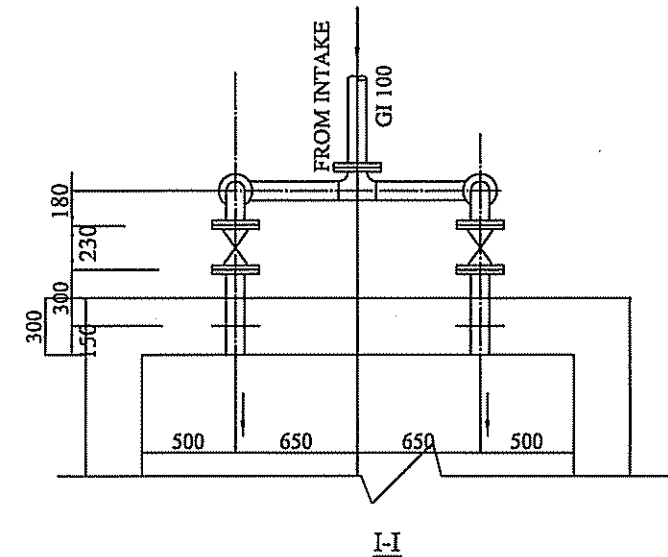
CONSULTING ENGINEERS:
 NIPPON KOEI CO., LTD.

TITLE:
REHABILITATION OF MORA WATER SUPPLY FACILITY
RECEIVING TANK DETAILS (1/3)

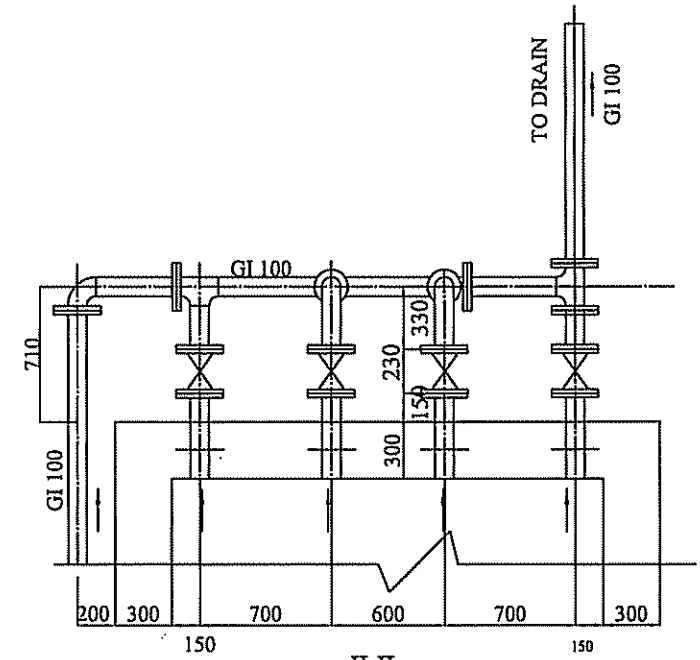
SCALE	DATE	DRAWING NO.
1:60	FEB.2006	WSF-061



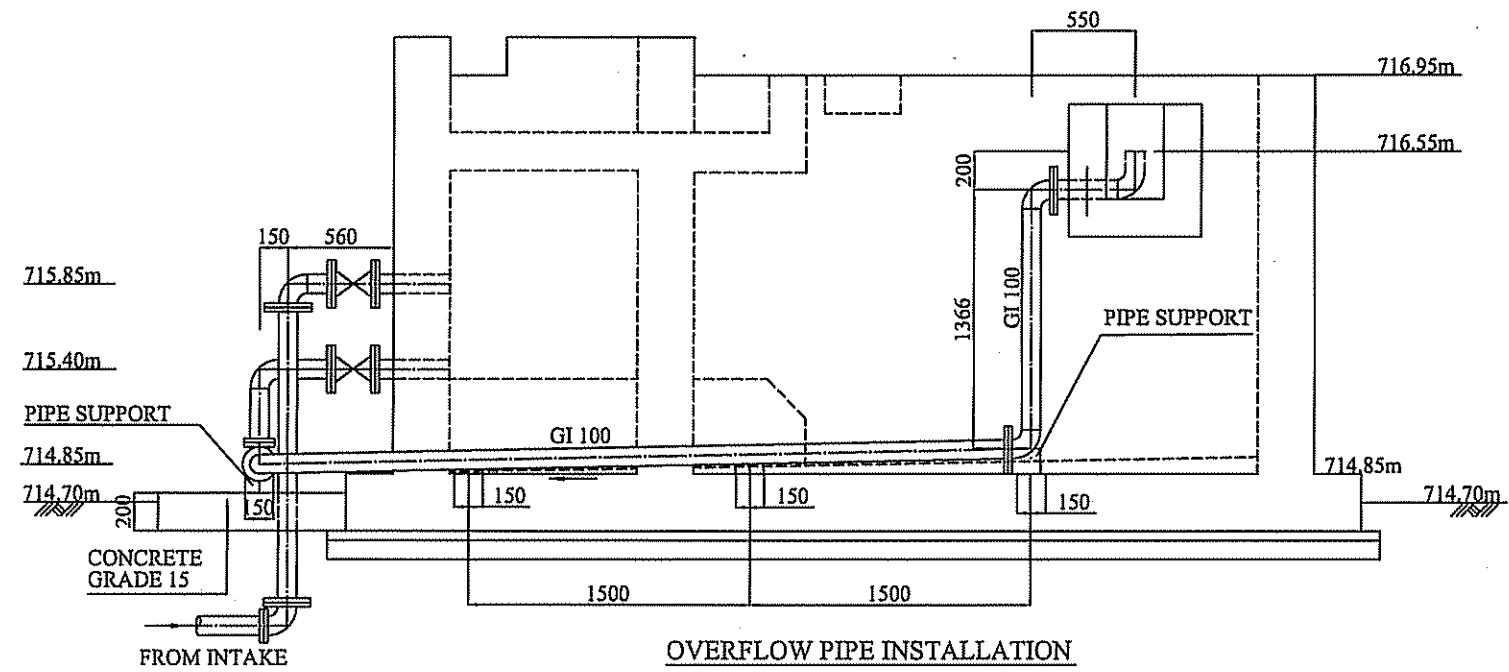
Scale 1:40



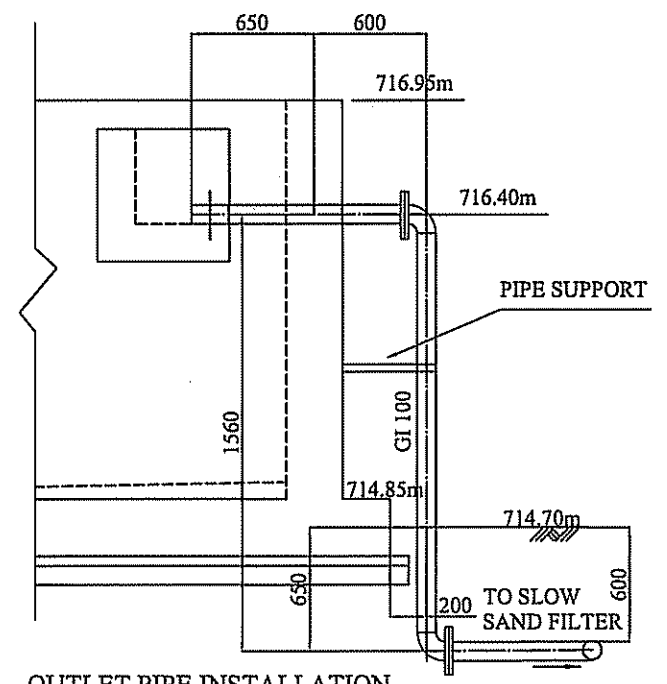
I-I
Scale 1:40



II-II
Scale 1:40



Scale 1:40



Scale 1:40

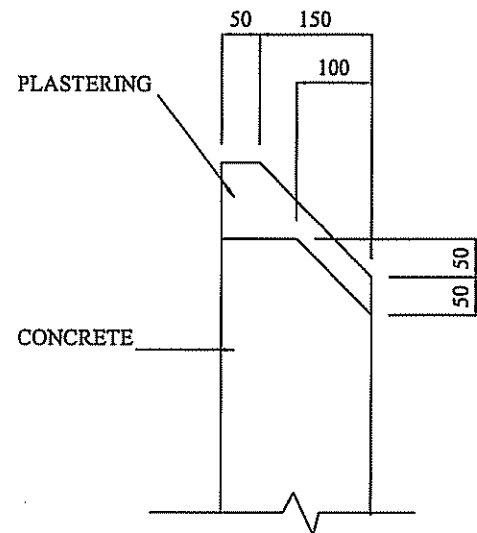
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

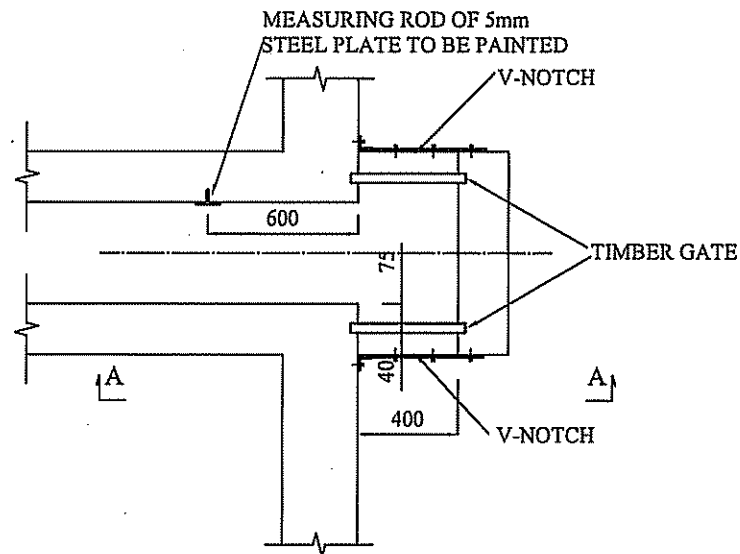
CONSULTING ENGINEERS:
 NIPPON KOEI CO., LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
RECIEVING TANK DETAILS (2/3)

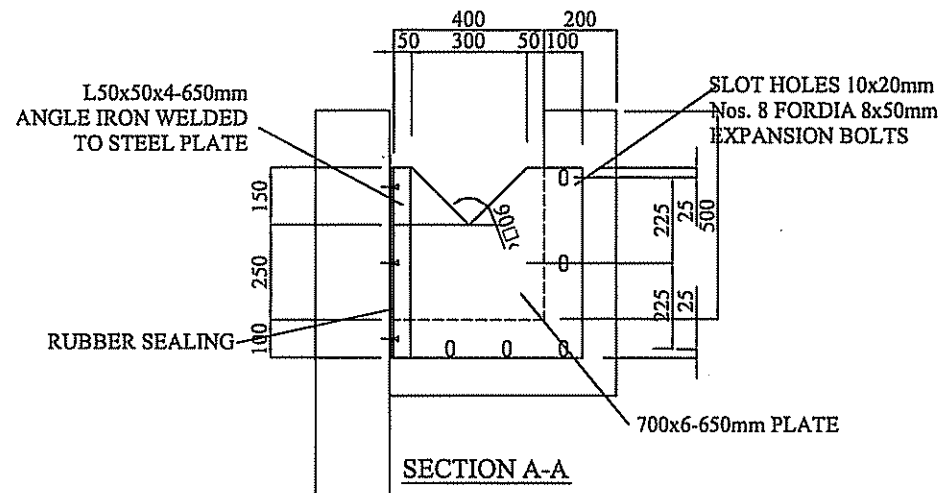
SCALE 1:40	DATE FEB.2006	DRAWING NO. WSF-062
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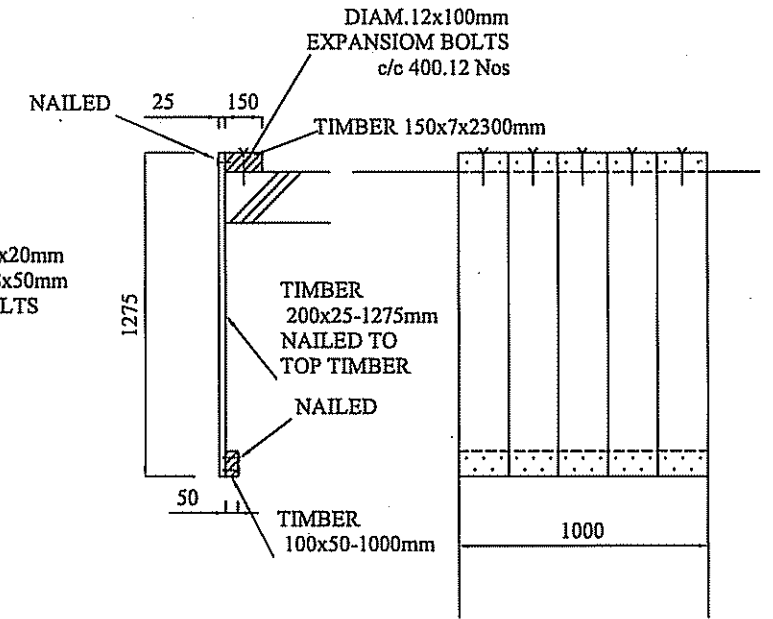
OVERFLOW WEIR
SCALE 1:10



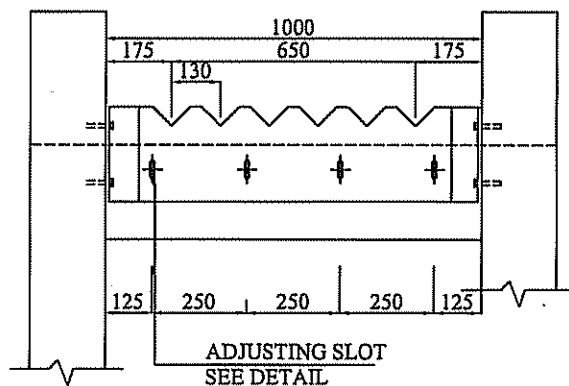
V-NOTCHES AND TIMBER GATE
SCALE 1:30



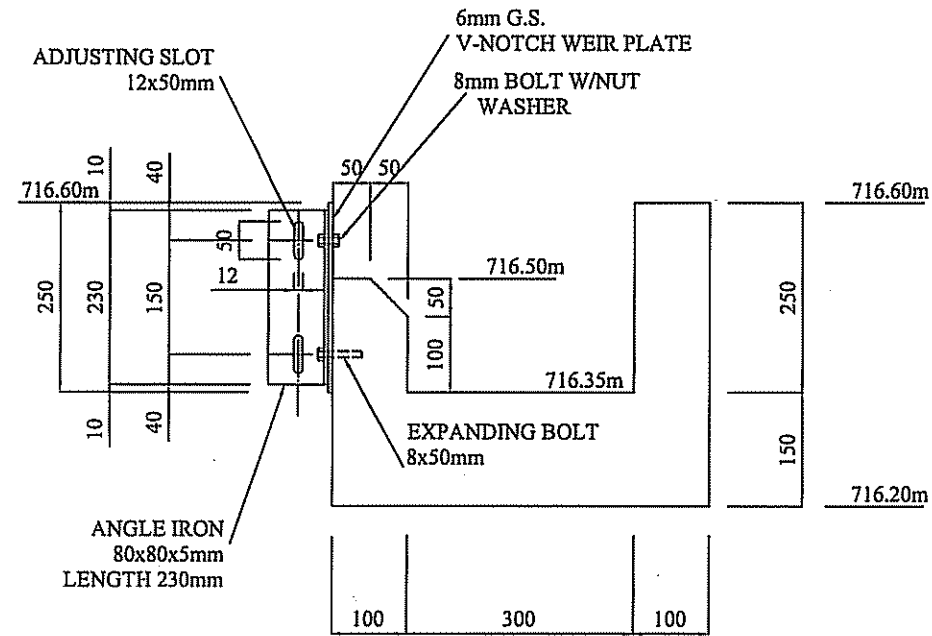
SECTION A-A
SCALE 1:20



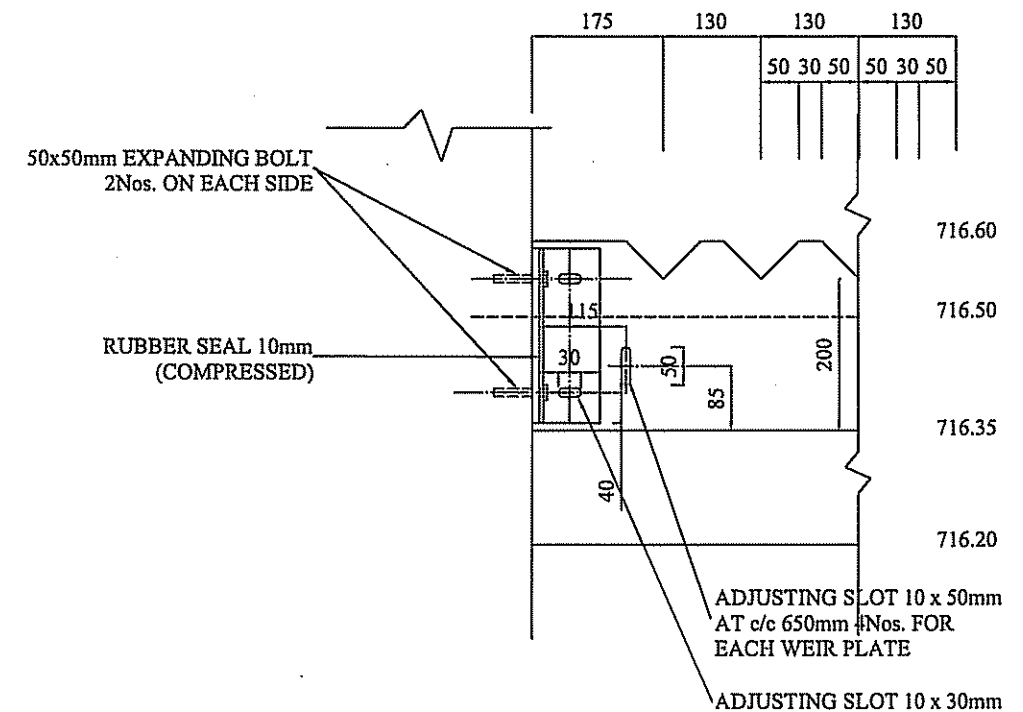
DETAIL 1
SCALE 1:30



V-NOTCH WEIR PLATE
SCALE 1:20



SECTION B-B
SCALE 1:10



DETAIL OF WEIR PLATE AND V-NOTCHES
SCALE 1:10

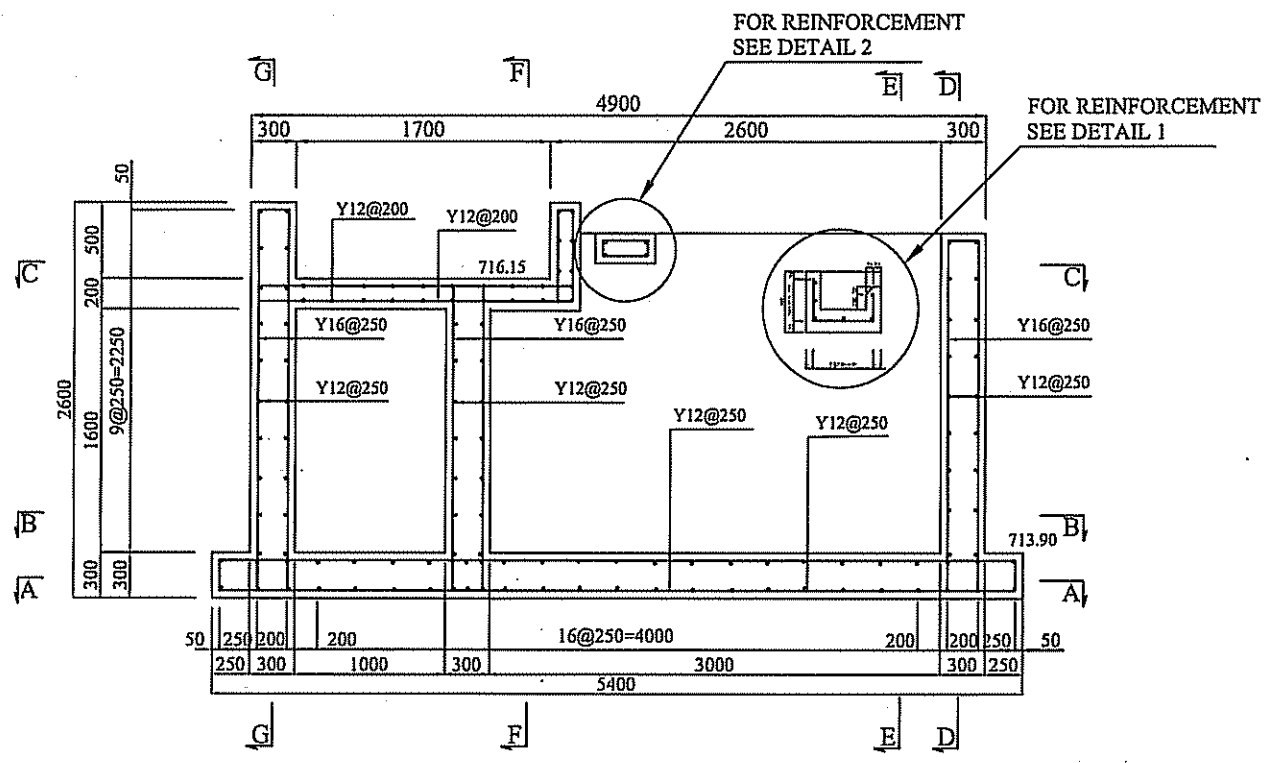
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

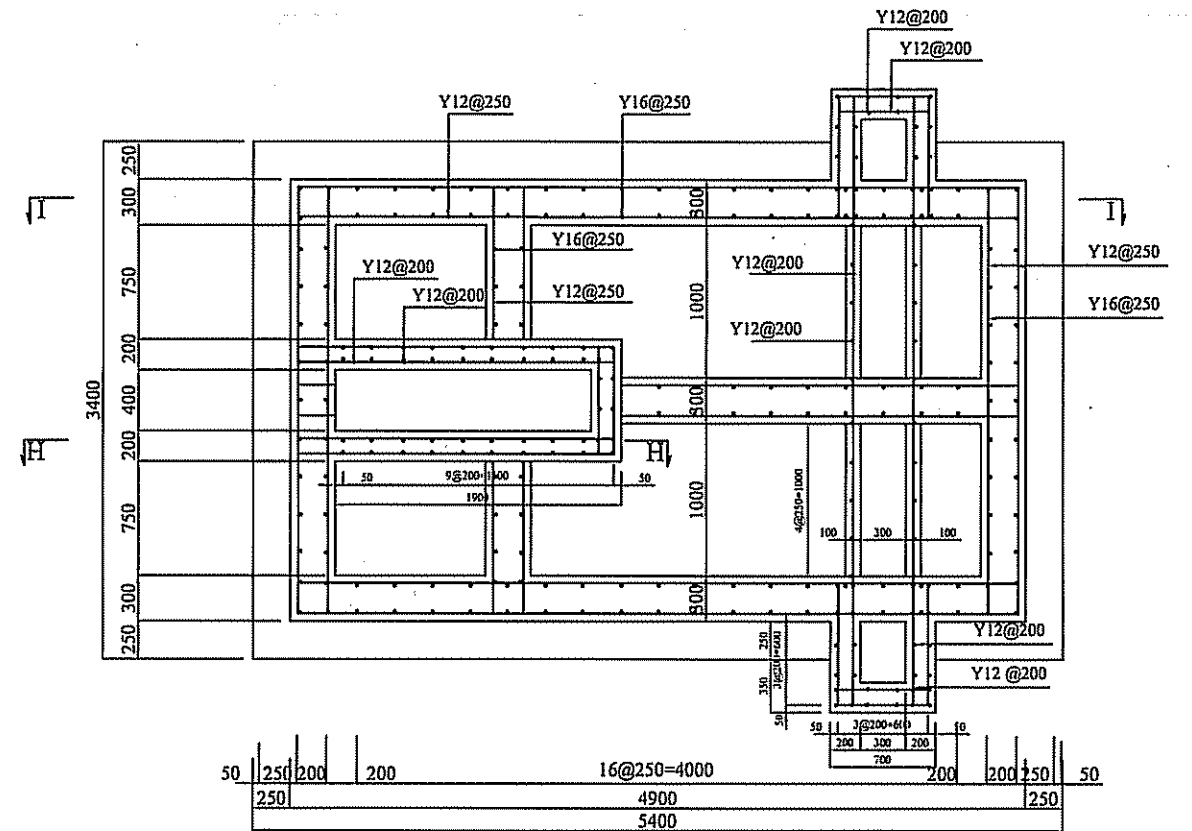
CONSULTING ENGINEERS:
 **NIPPON KOEI CO., LTD.**

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
RECIEVING TANK DETAILS (3/3)

SCALE	DATE	DRAWING NO.
1:30 1:20 1:10	FEB.2006	WSF-063

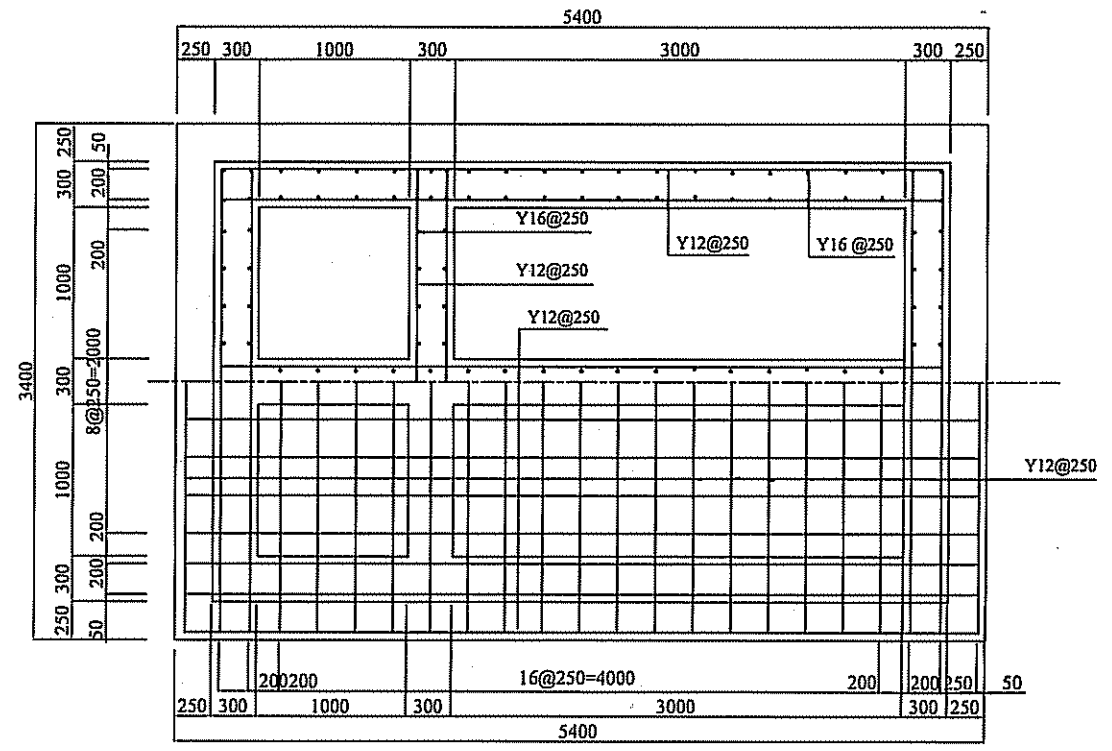


Scale 1:50



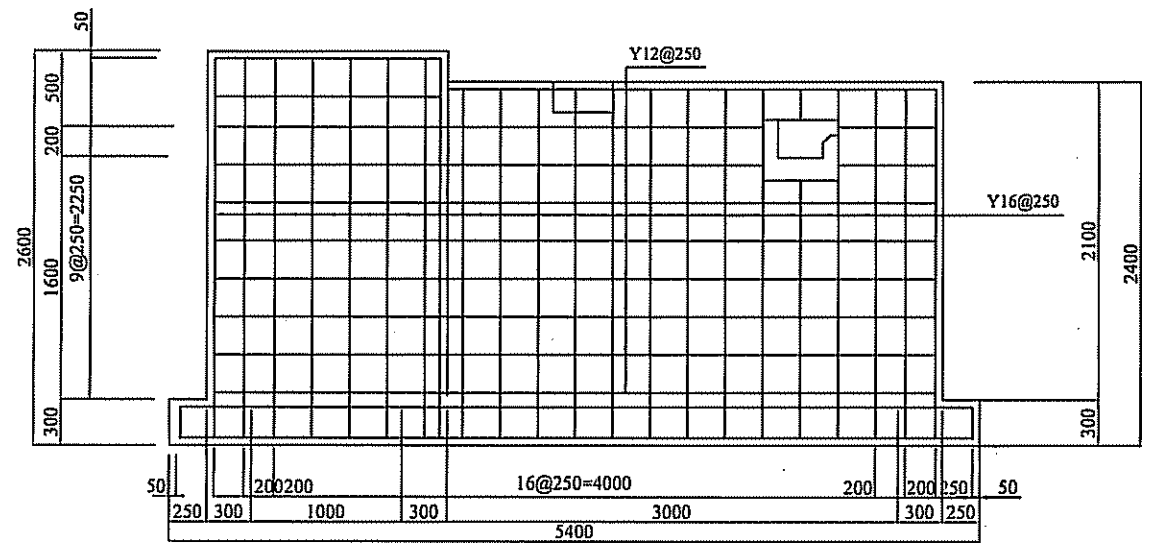
SECTION C-C

Scale 1:50



SECTION A-A & B-B

Scale 1:50



SECTION I-I

Scale 1:50

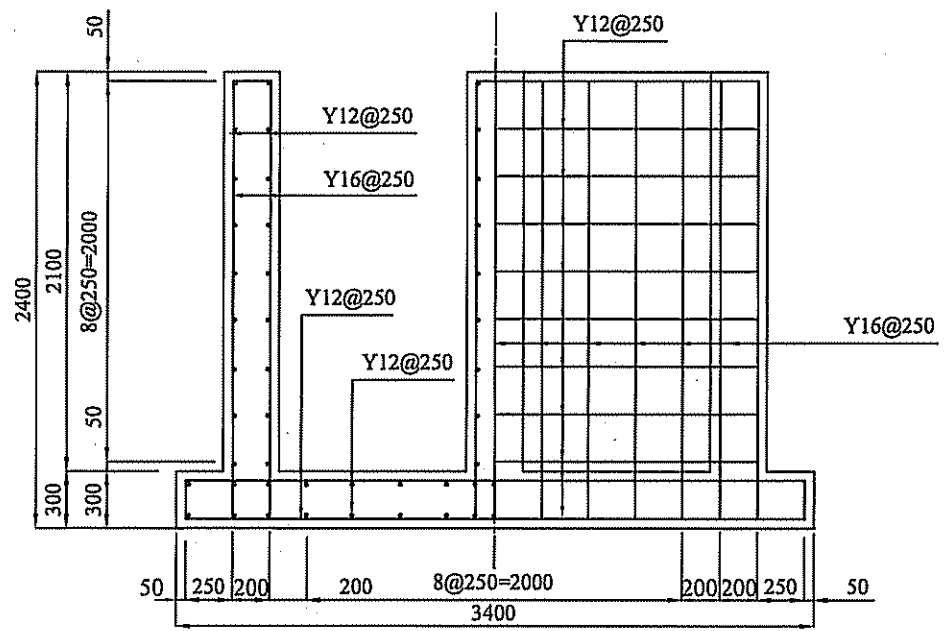
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

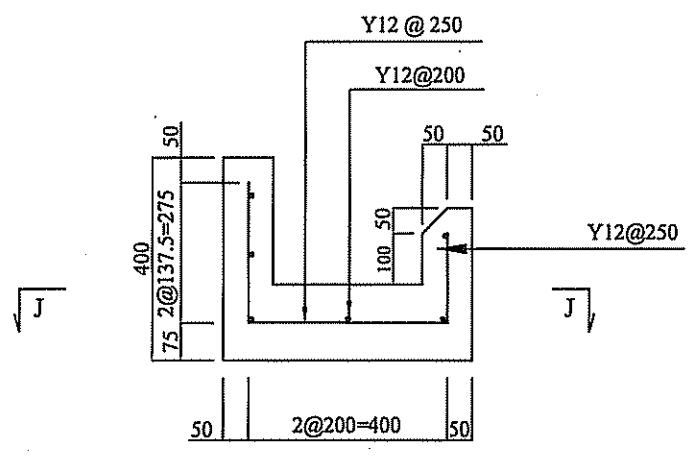
CONSULTING ENGINEERS:
 NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
REINFORCEMENT BAR ARRANGEMENT OF RECIEVING TANK (1/2)

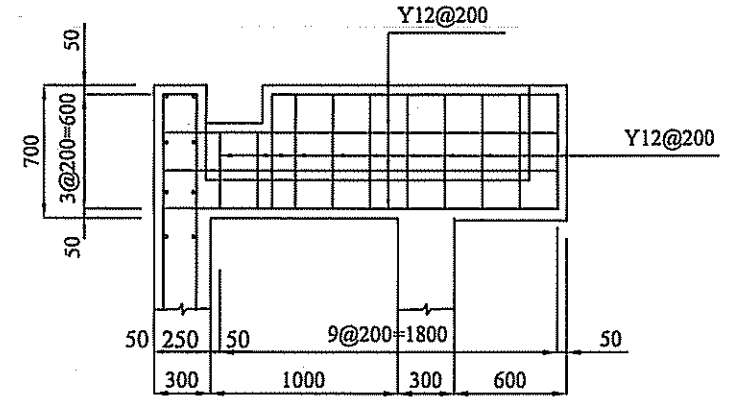
SCALE 1:50	DATE FEB.2006	DRAWING NO. WSF-064
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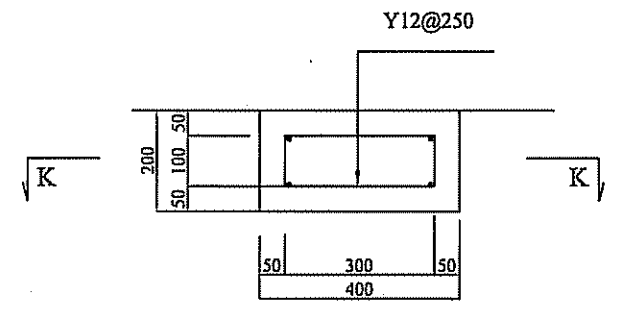
SECTION D-D & E-E
Scale 1:40



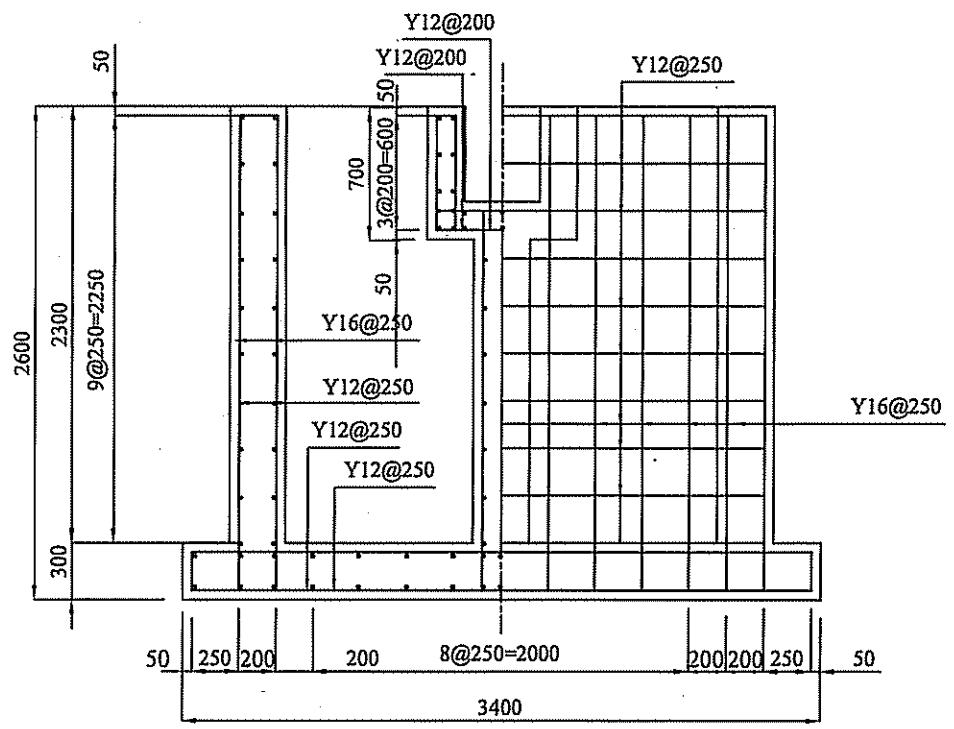
DETAIL 1
Scale 1:15



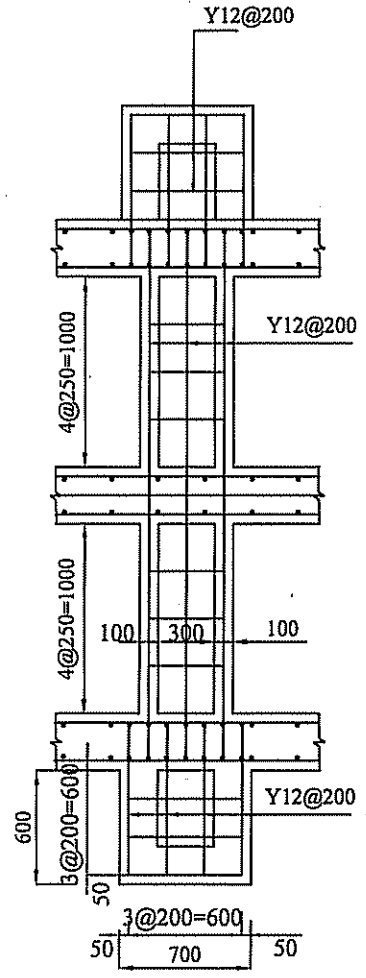
SECTION H-H
Scale 1:40



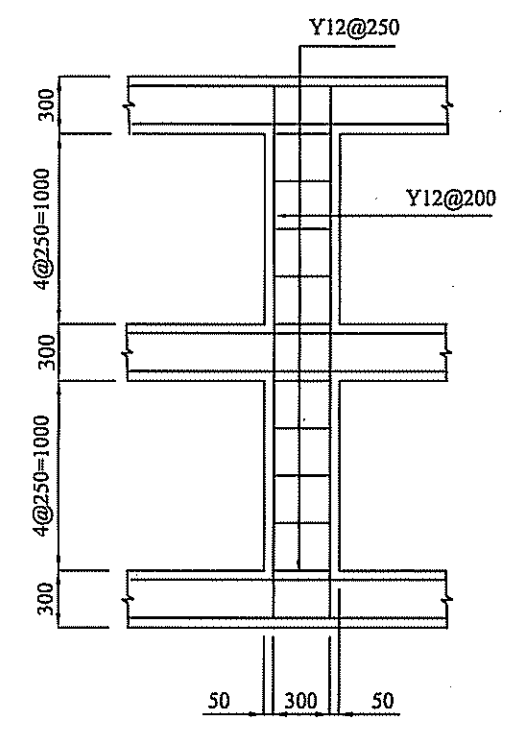
DETAIL 2
Scale 1:20



SECTION F-F & G-G
Scale 1:40



SECTION J-J
Scale 1:40



SECTION K-K
Scale 1:40

OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

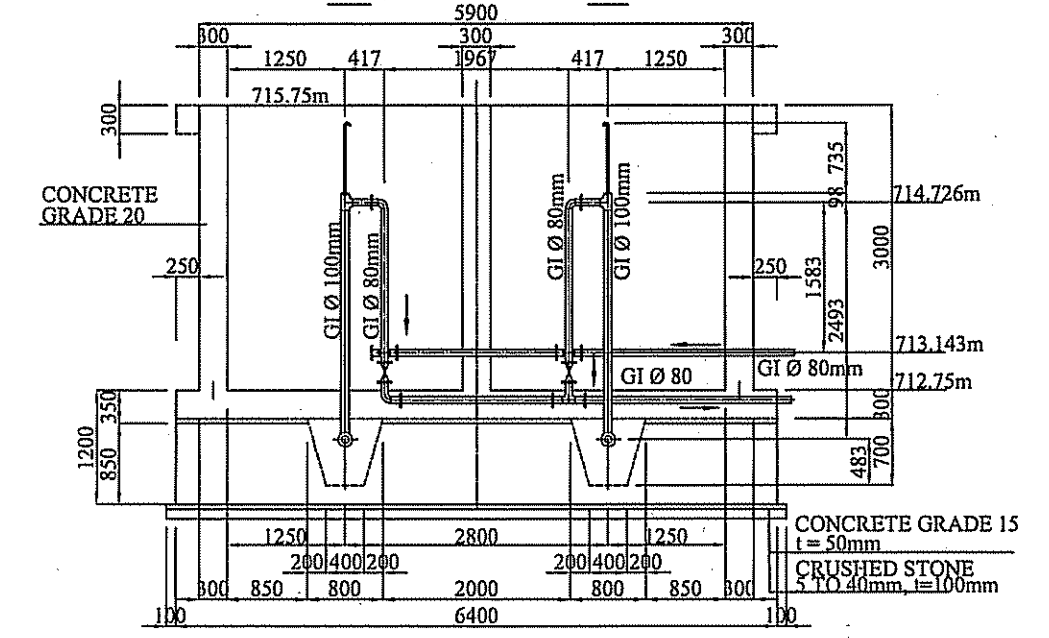
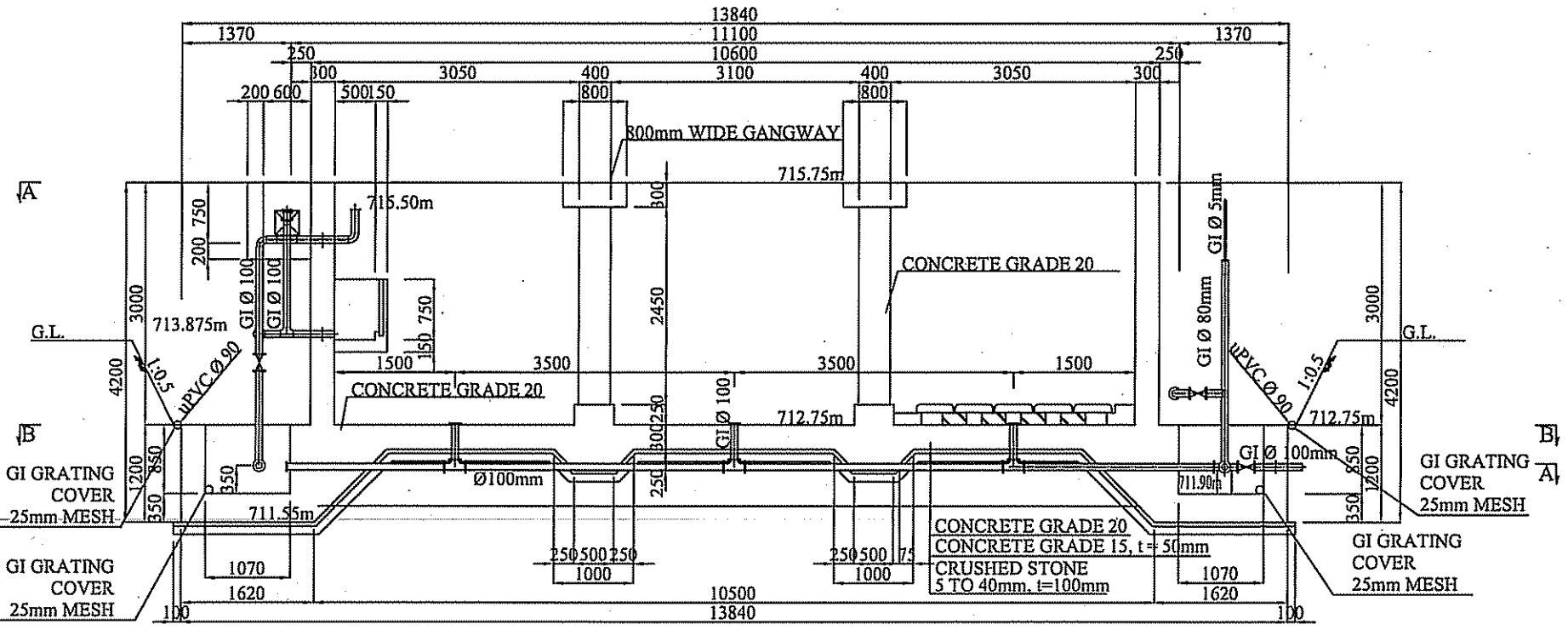
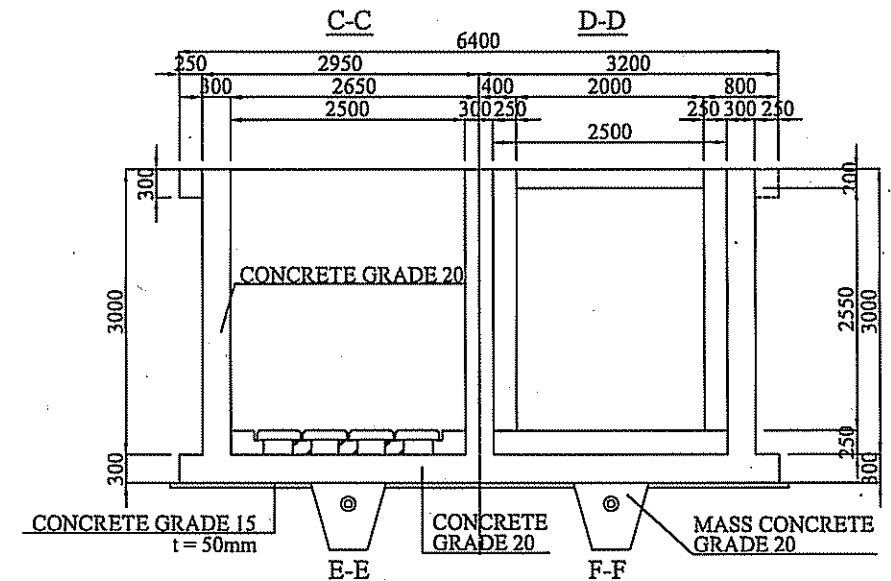
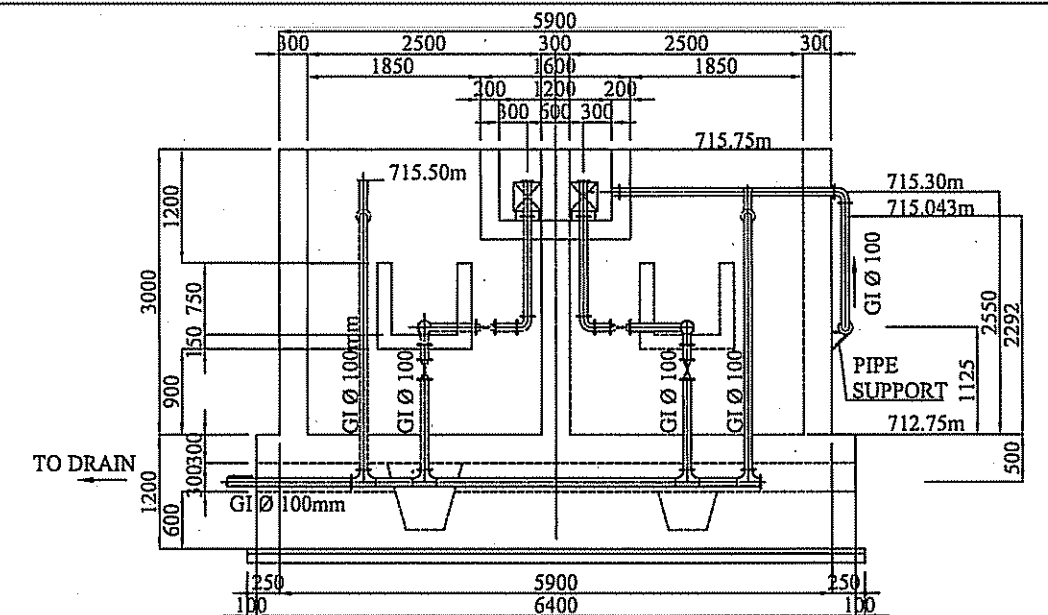
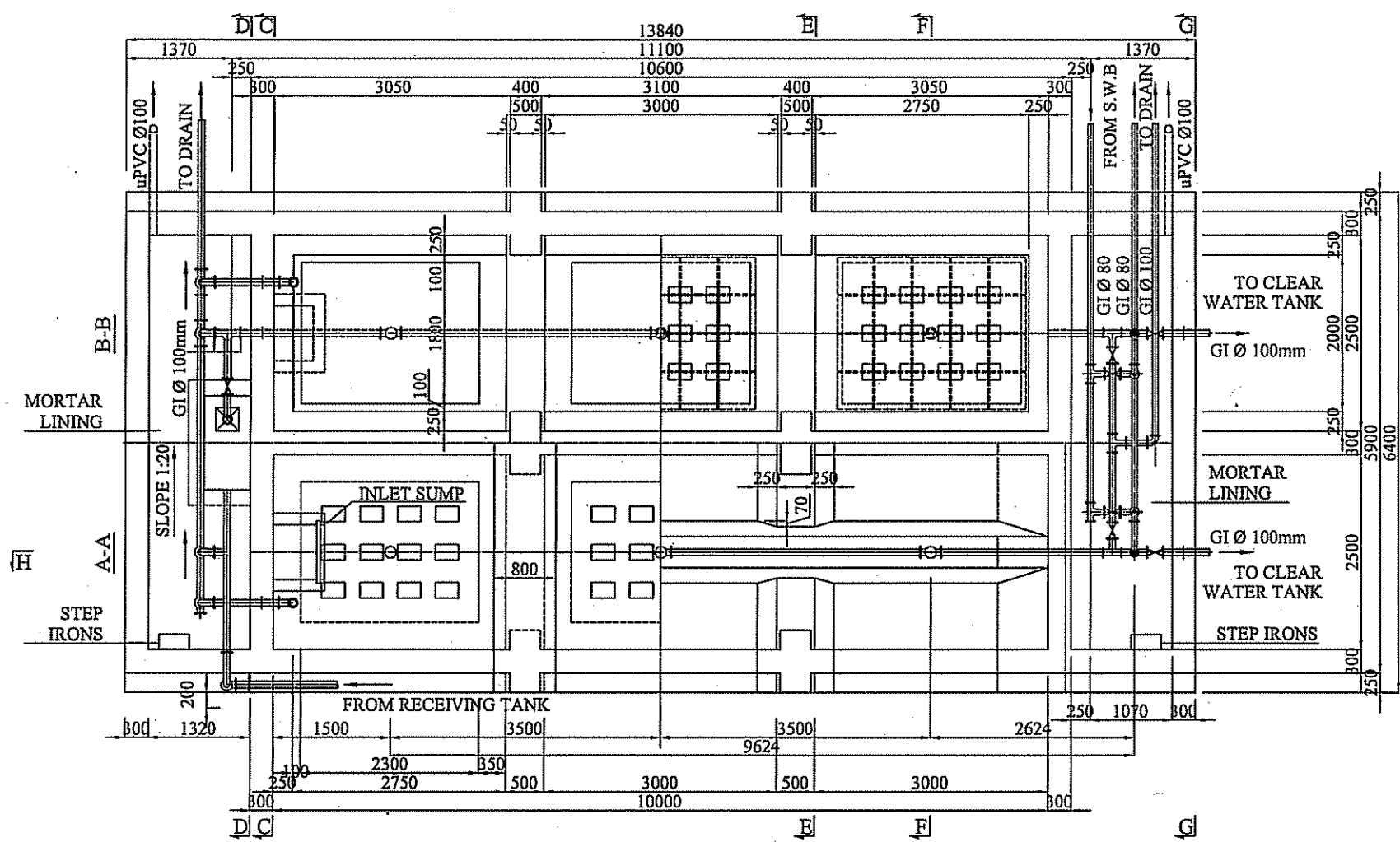
PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

CONSULTING ENGINEERS:

NIPPON KOEI CO.,LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
REINFORCEMENT BAR ARRANGEMENT OF RECIEVING TANK (2/2)

SCALE	DATE	DRAWING NO.
1:15	FEB.2006	WSF-065
1:20		
1:40		



SECTION H-H

SECTION G-G

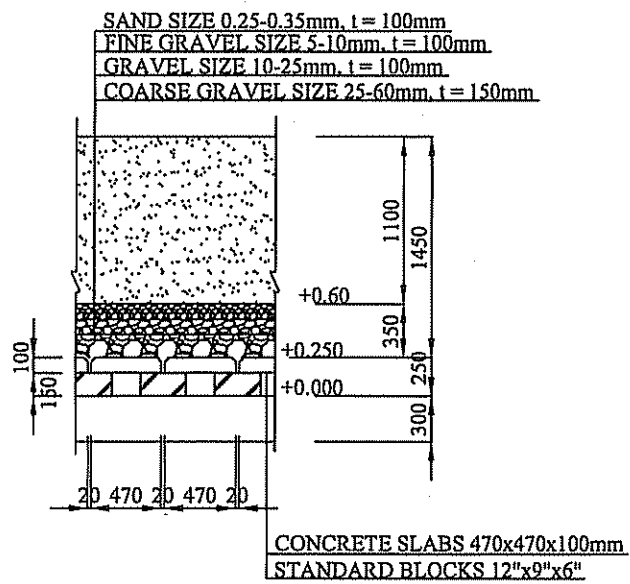
OWNER:
THE MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

PROJECT NAME:
THE PROJECT FOR
RURAL WATER SUPPLY

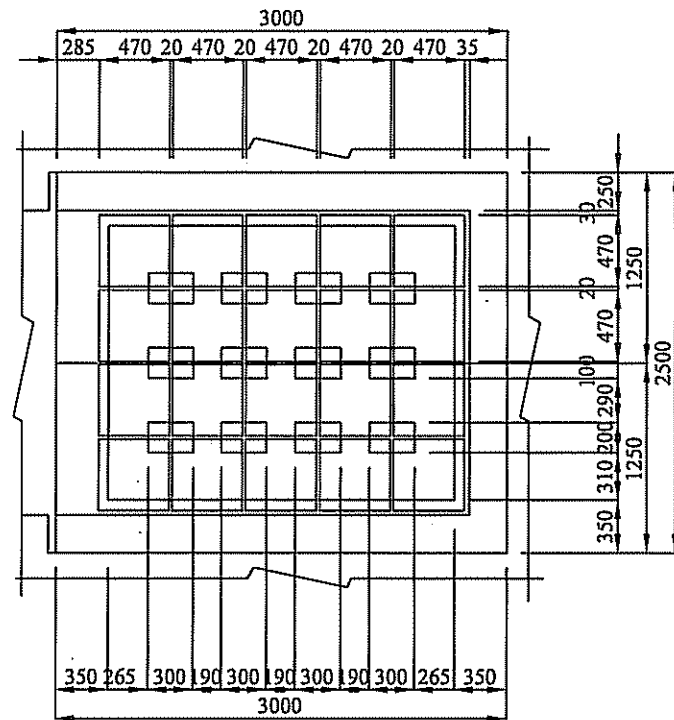
CONSULTING ENGINEERS:
 NIPPON KOEI CO., LTD.

TITLE:
REHABILITATION OF MORA SPRING WATER SUPPLY FACILITY
SLOW SAND FILTER DETAILS (1/3)

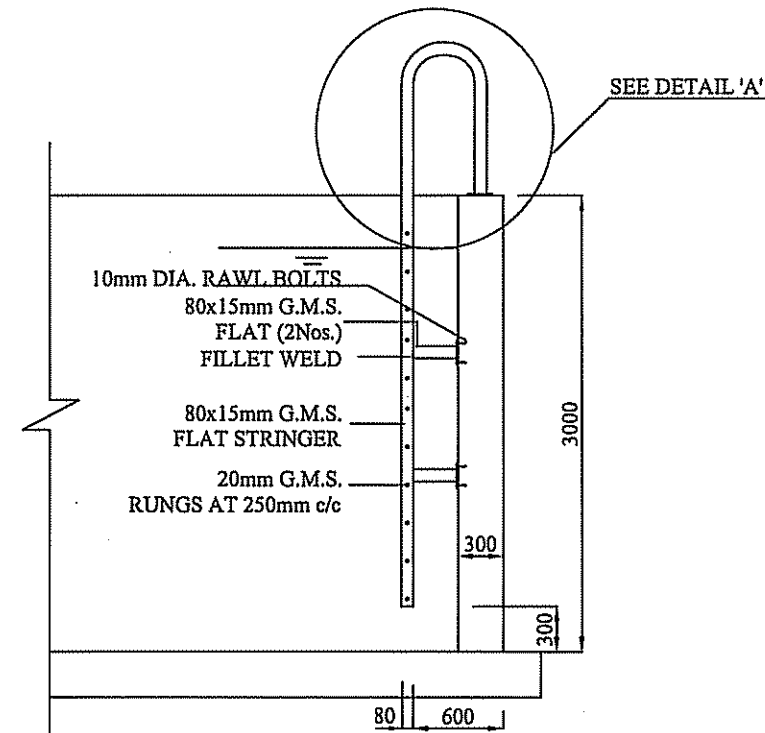
SCALE	DATE	DRAWING NO.
1:80	FEB.2006	WSF-066



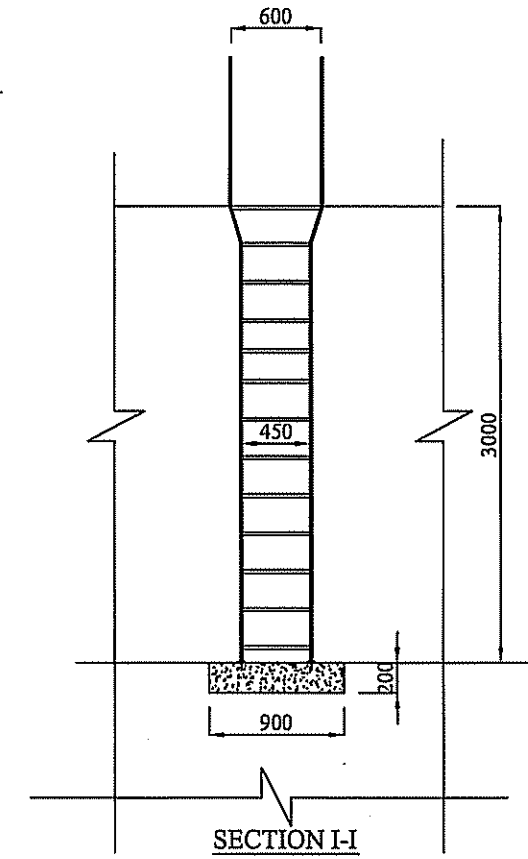
FILTER BED
 SCALE: 1:50



CONCRETE SLABS ARRANGEMENT
 SCALE: 1:50

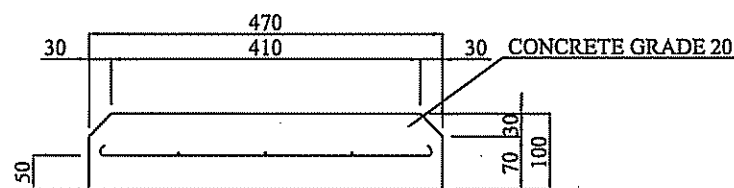


INSTALLATION INSIDE THE TANK
 SCALE: 1:50

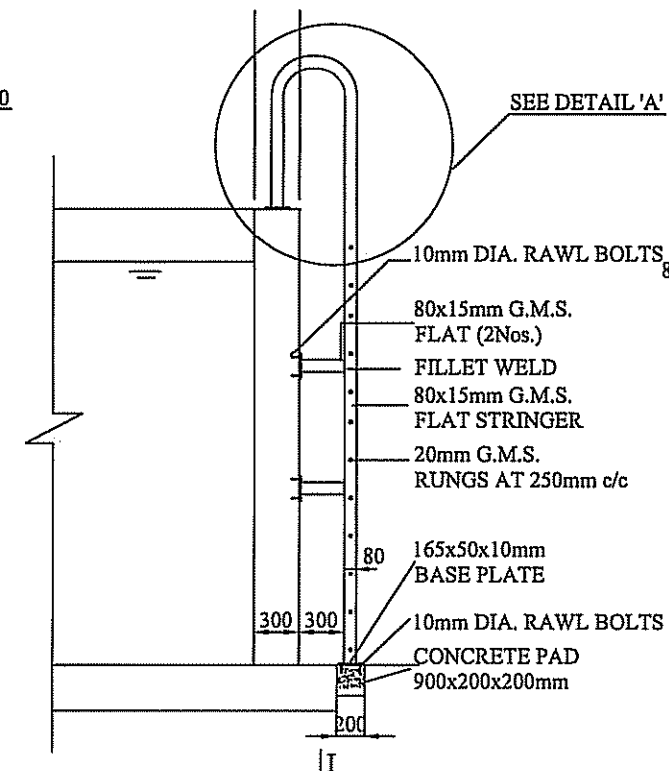
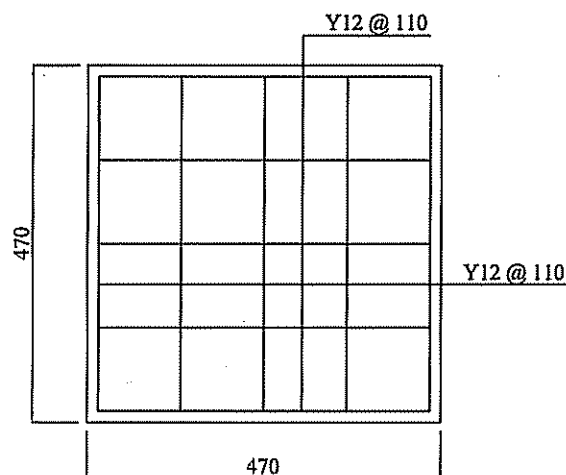


SECTION I-I
 SCALE: 1:50

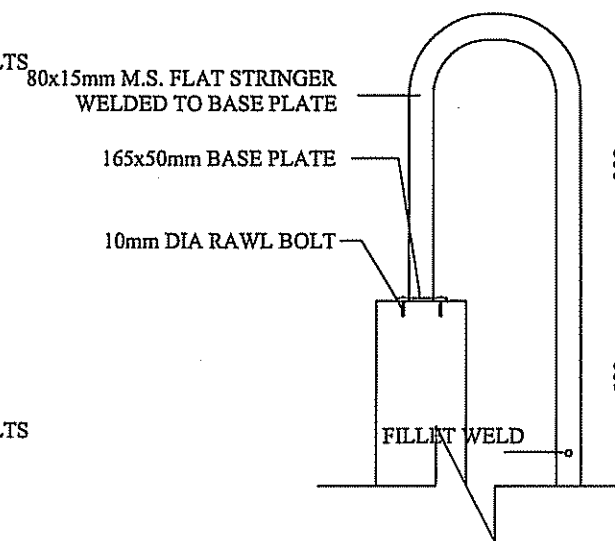
NOTE:
 UNGRADED MATERIAL EXCAVATED FROM NATURAL DEPOSITS SHOULD BE USED. SOME DEGREE OF UNIFORMITY IS DESIRABLE. ACCORDINGLY SAND HAVING A COEFFICIENT OF UNIFORMITY OF LESS THAN 3 SHOULD ALWAYS BE CHOSEN. UNIFORMITY IS DEFINED AS FOLLOWS:
 EFFECTIVE DIAMETER d10 IS THE SIZE OF THE SIEVE OPENING THROUGH WHICH 10% OF THE MATERIAL WILL JUST PASS. IN A SIMILAR WAY THE SIEVE OPENING THROUGH WHICH 60% OF THE MATERIAL WILL PASS IS SHOWN AS d60. THE COEFFICIENT OF UNIFORMITY IS THE RATIO d60/d10.



CONCRETE SLAB REINFORCEMENT
 SCALE: 1:10



INSTALLATION OUTSIDE THE TANK
 SCALE: 1:50



DETAIL 'A'
 SCALE: 1:25

OWNER:
 THE MINISTRY OF WATER AND IRRIGATION
 THE REPUBLIC OF KENYA

PROJECT NAME:
 THE PROJECT FOR
 RURAL WATER SUPPLY

CONSULTING ENGINEERS:
 **NIPPON KOEI CO., LTD.**

TITLE:
**SPRING WATER SUPPLY FACILITIES
 SLOW SAND FILTER DETAILS (3/3)**

SCALE	DATE	DRAWING NO.
1:50 1:25 1:10	FEB.2006	WSF-068