
ANNEX

AN.1

LOCATION MAP OF STRUCTURAL MEASURES IN 24 VILLAGES

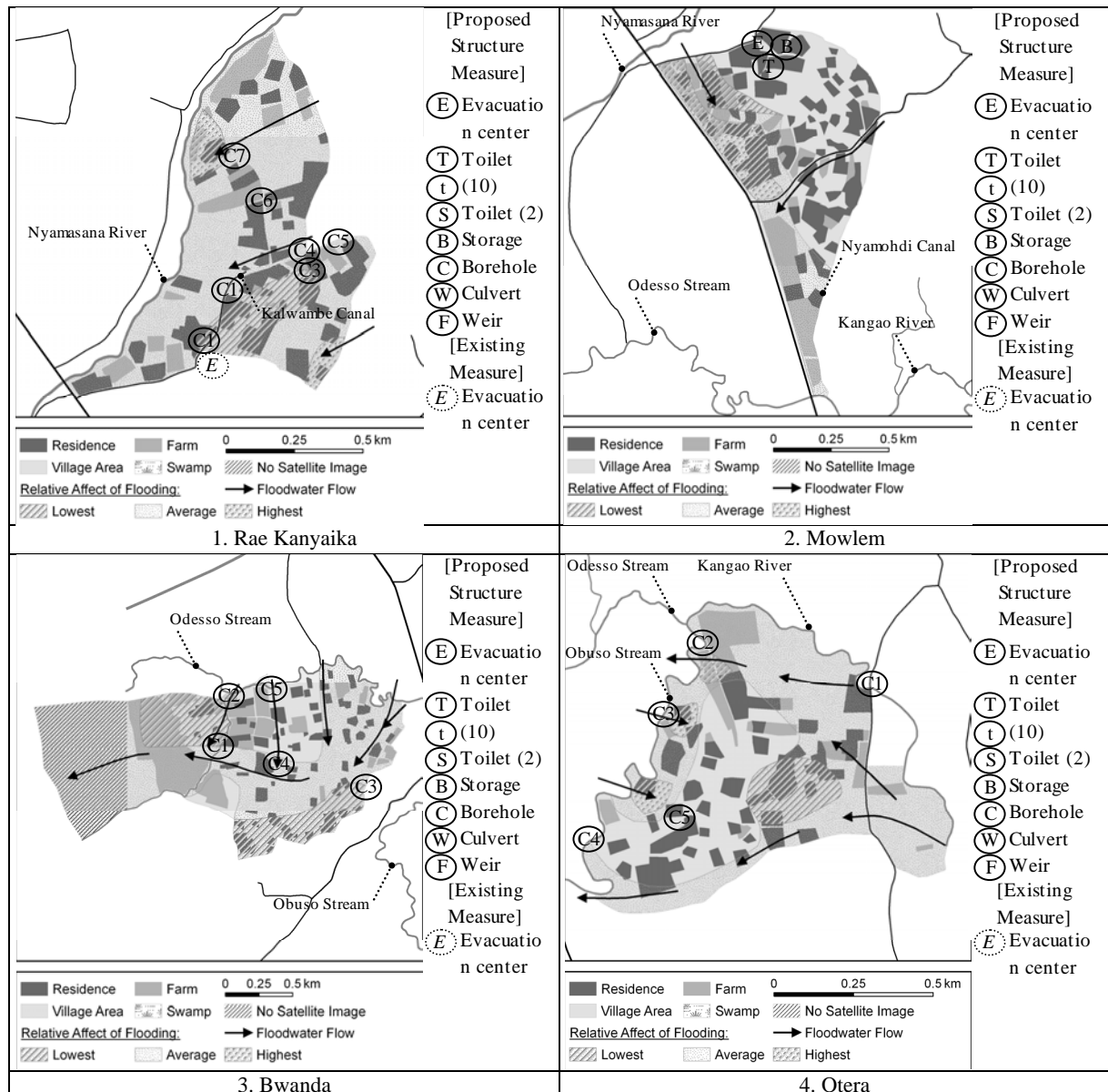


Figure 1.1 Location Map of Structural Measures (1/5)

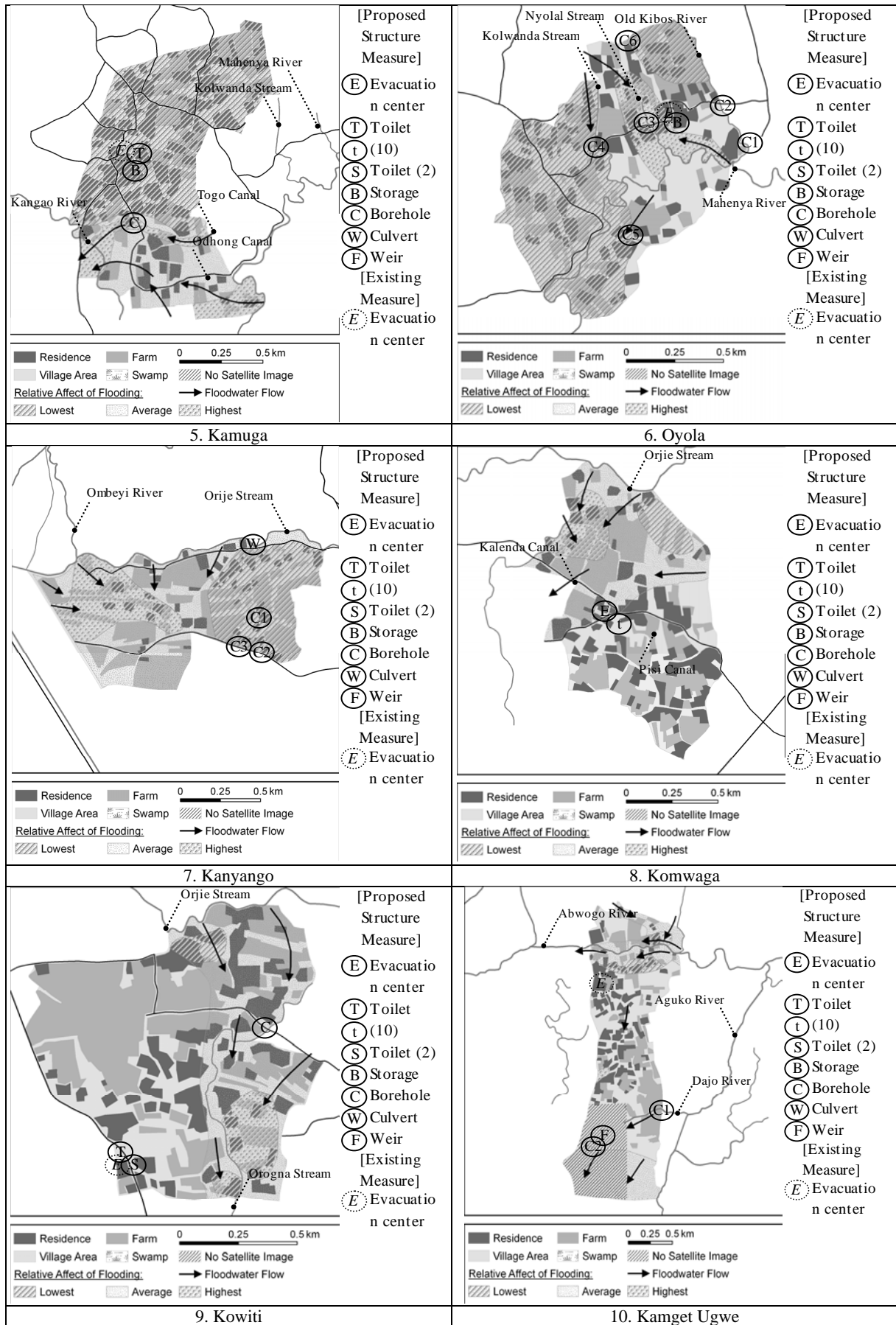


Figure 1.2 Location Map of Structural Measures (2/5)

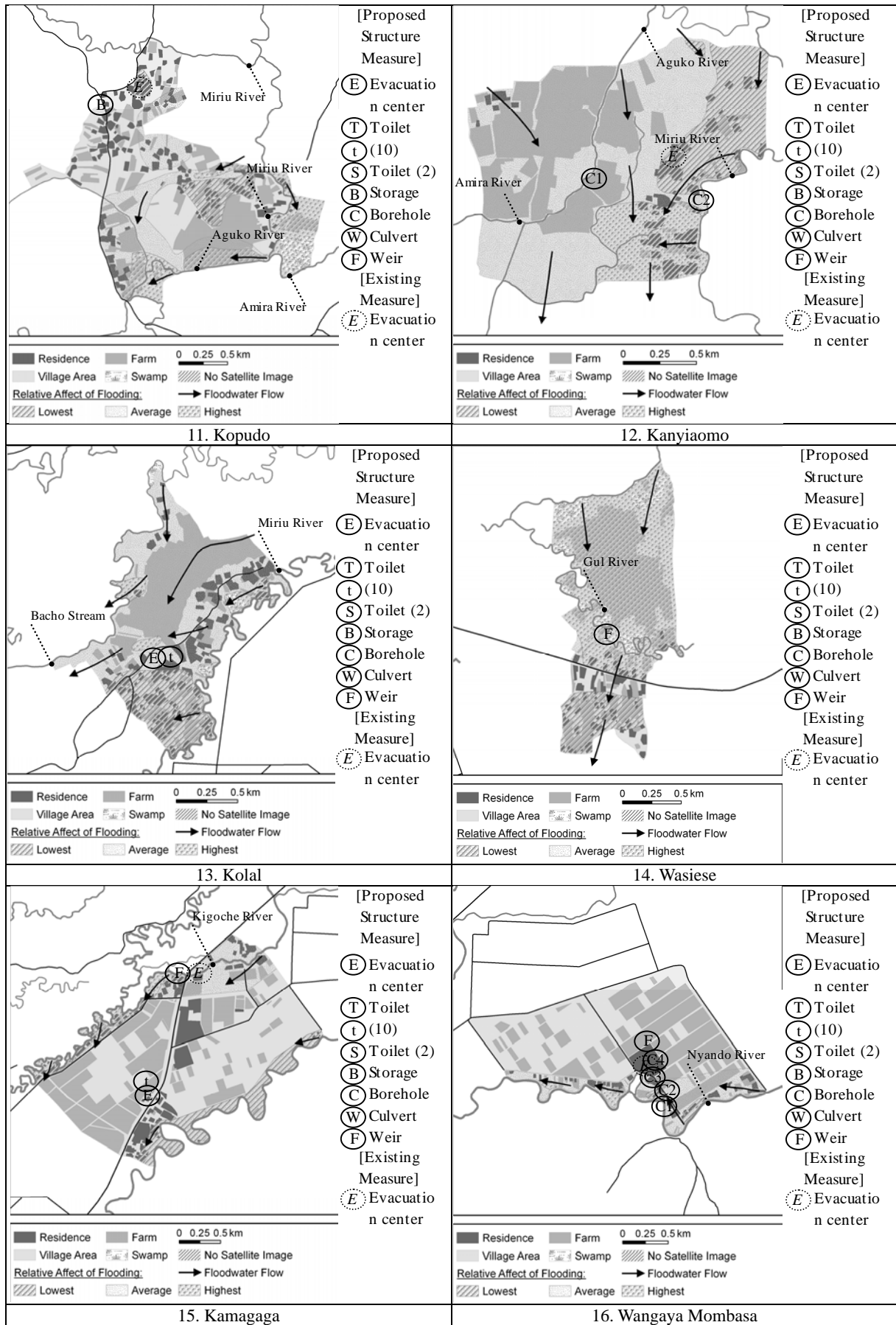


Figure 1.3 Location Map of Structural Measures (3/5)

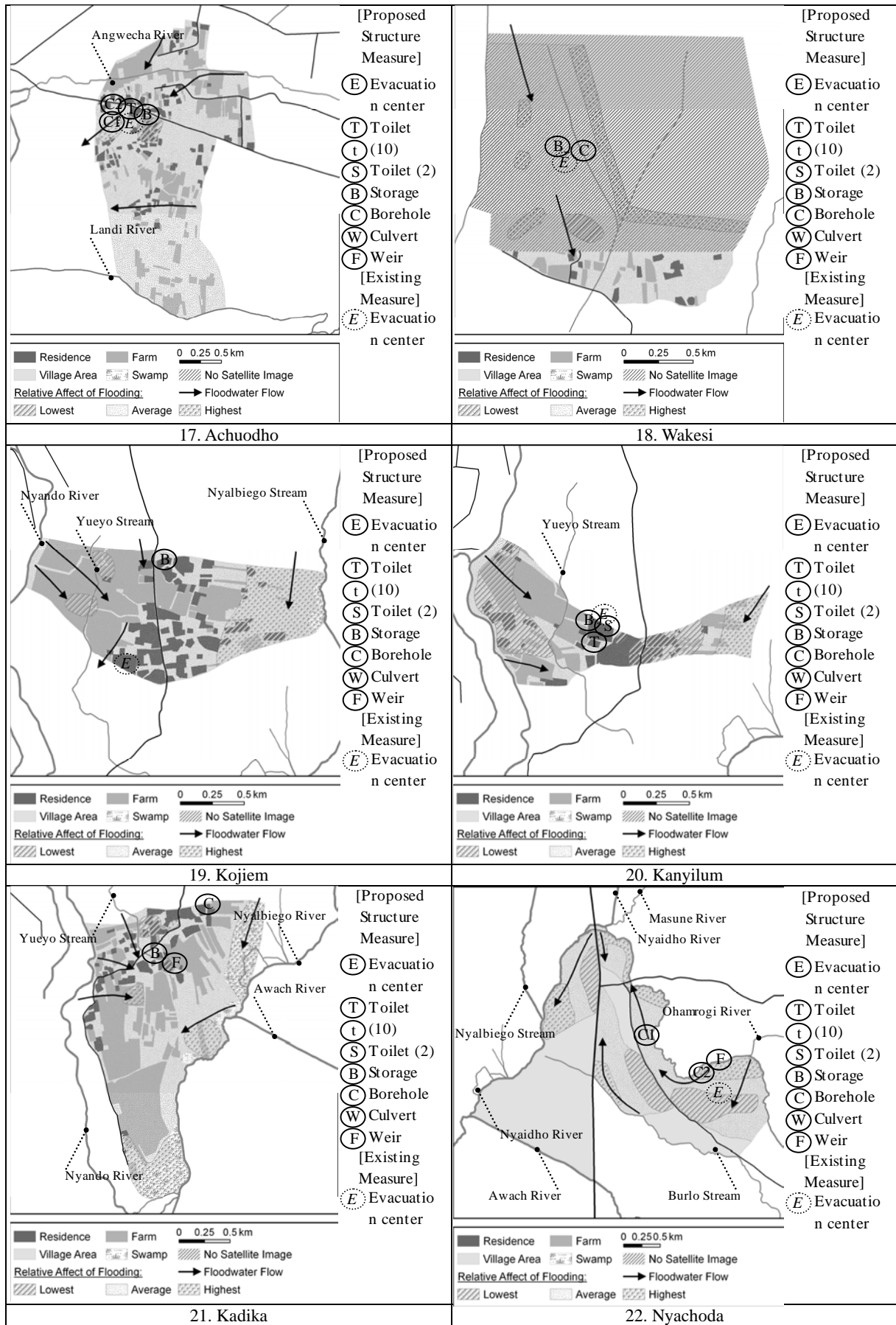


Figure 1.4 Location Map of Structural Measures (4/5)

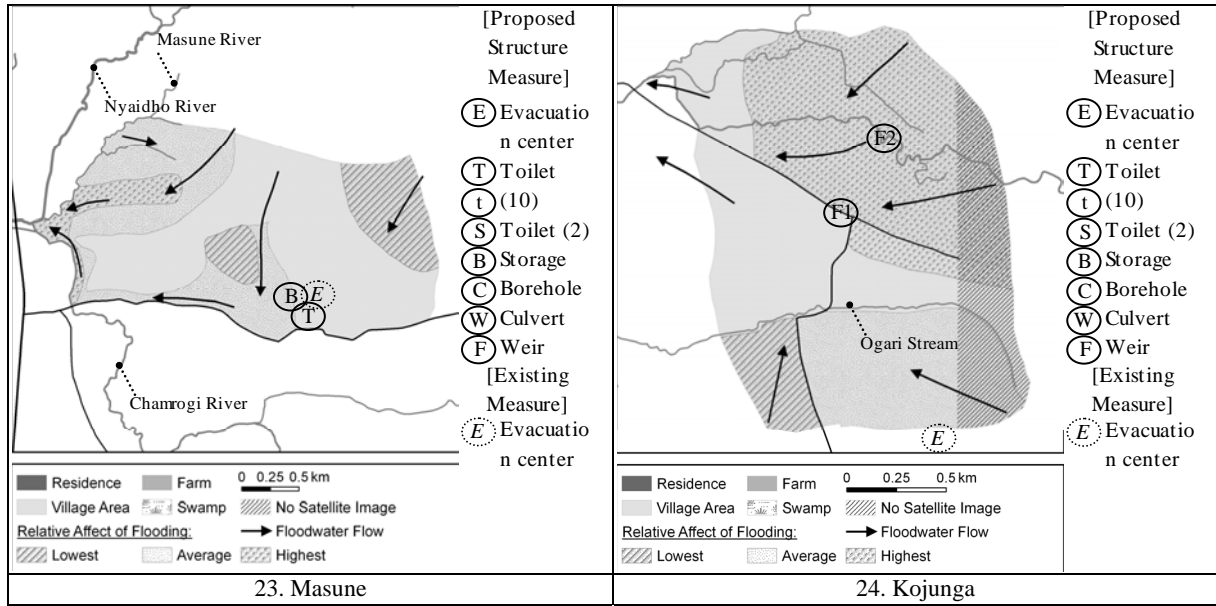
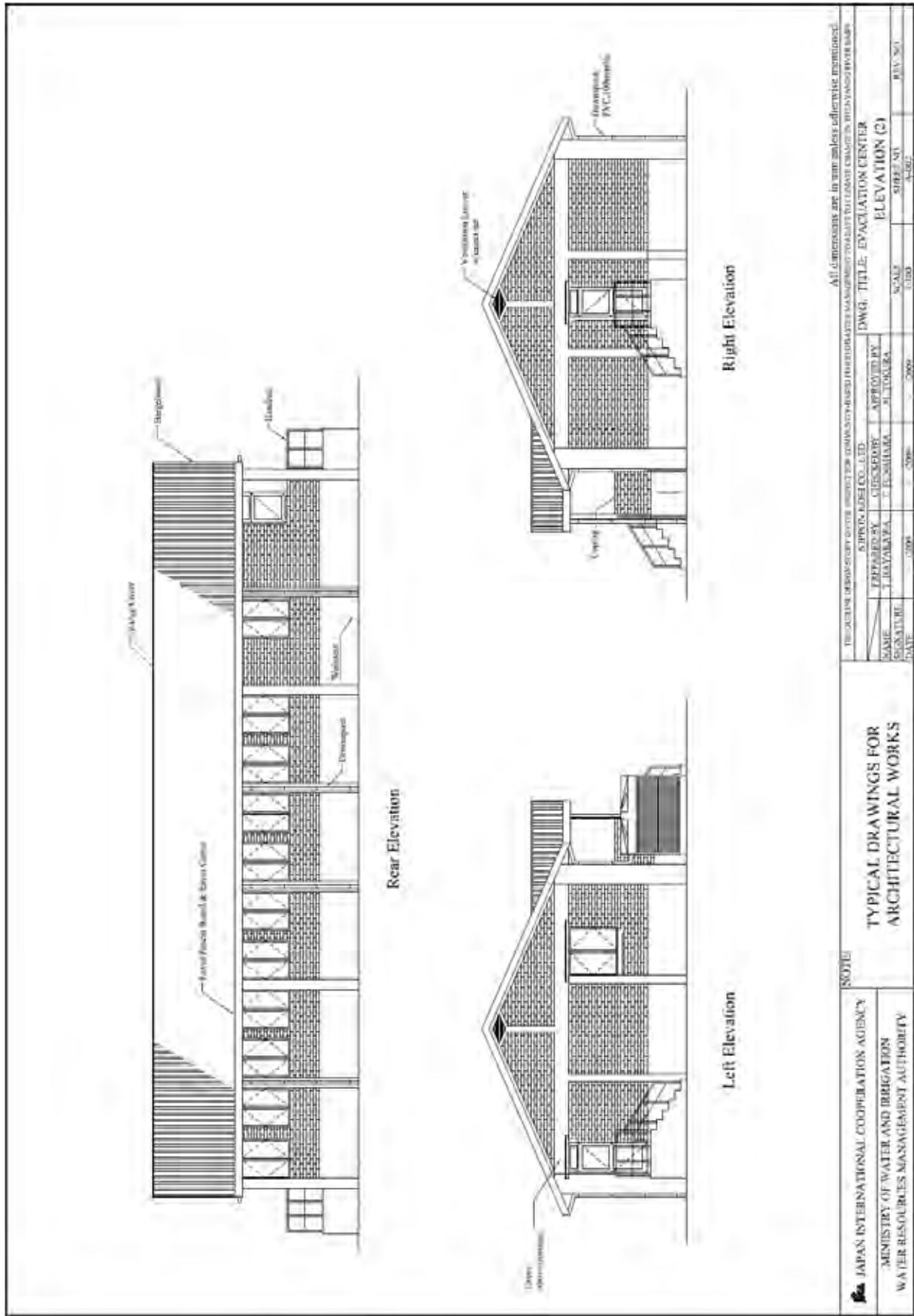


Figure 1.5 Location Map of Structural Measures (5/5)

AN.2 OUTLINE DESIGN DRAWINGS OF ARCHITECTURAL WORKS

Figure 2.1 Evacuation Center: Plan and Elevation AN-7
Figure 2.2 Evacuation Center: Elevation..... AN -8
Figure 2.3 Toilet (10 compartments): Plan and Elevation AN -9
Figure 2.4 Toilet (2 compartments): Plan and Elevation AN -10
Figure 2.5 Storage Facility: Plan and Elevation AN -11
Figure 2.6 Borehole: Plan and Section of Hand Pump Apron AN -12
Figure 2.7 Borehole: Location Map and Typical Section AN -13



All dimensions are in mm unless otherwise mentioned.

JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		SCOTEI TYPICAL DRAWINGS FOR ARCHITECTURAL WORKS		PROJECT: DESIGN-SECTOR STUDY FOR COMMUNITY-BASED PARTICIPATIVE MANAGEMENT FOR RIVER CHANNELS TO LEAVE CHANGE IN RIVER CHANNELS DWG. TITLE: EVACUATION CENTER ELEVATION (2)	
PREPARED BY T. HAYAKAWA	CHECKED BY T. FUSHIYAMA	APPROVED BY H. TOKURA	SCALE 1:100	SHEET NO. 4-002	REV. NO. -
SIGNATURE DATE	DATE	DATE	DATE	DATE	DATE

Figure 2.2 Evacuation Center: Elevation

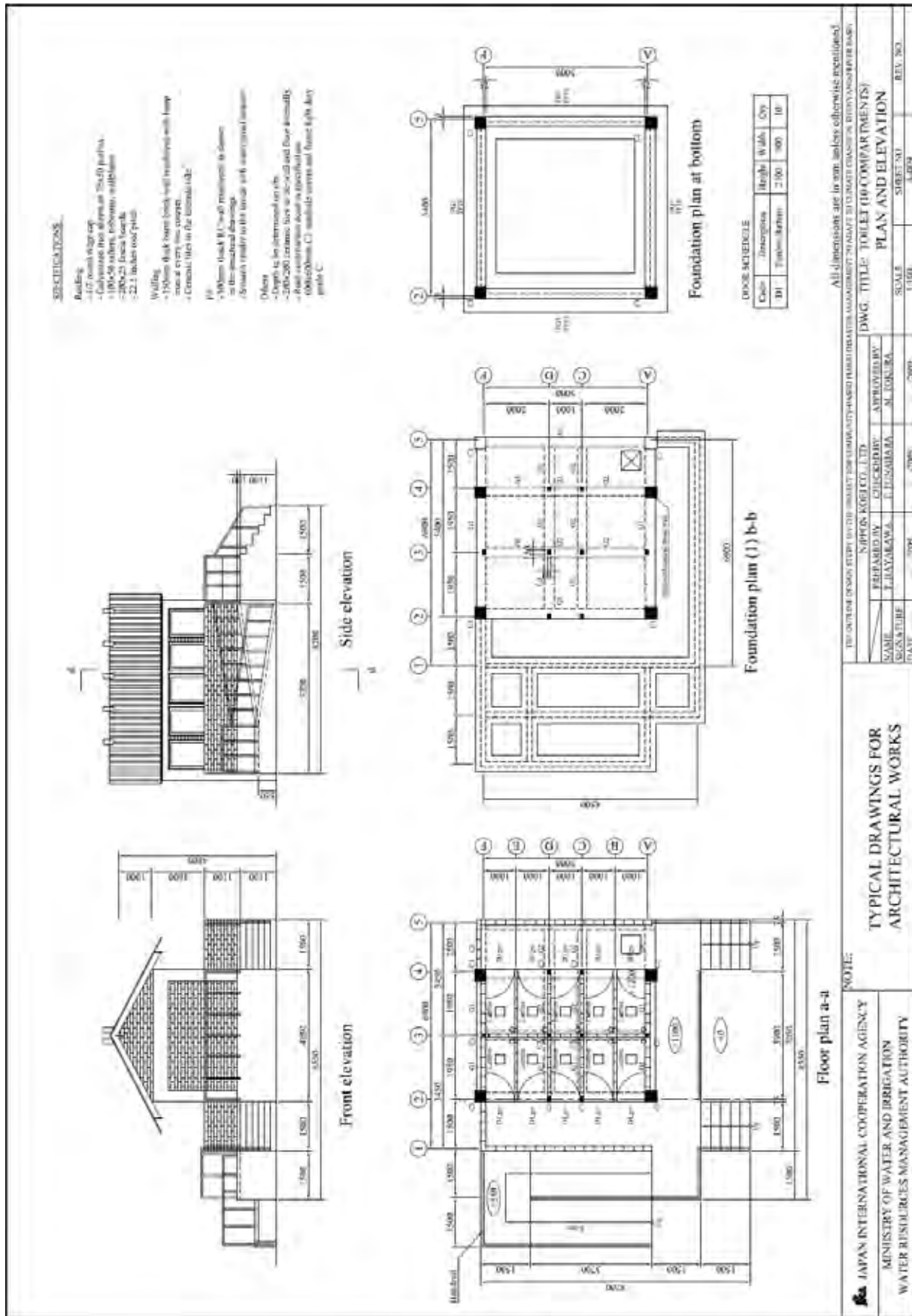


Figure 2.3 Toilet (10 compartments): Plan and Elevation

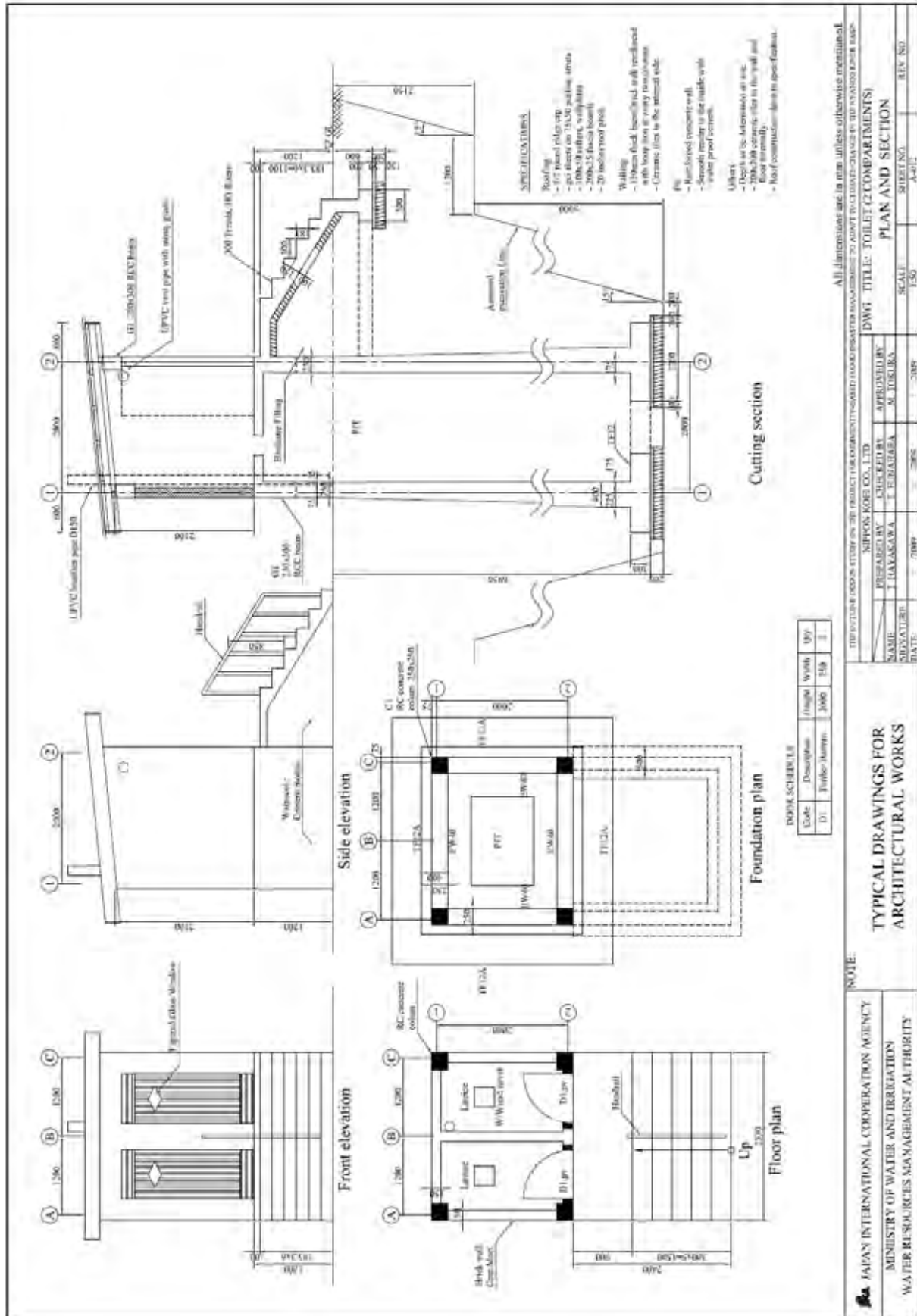


Figure 2.4 Toilet (2 compartments): Plan and Elevation

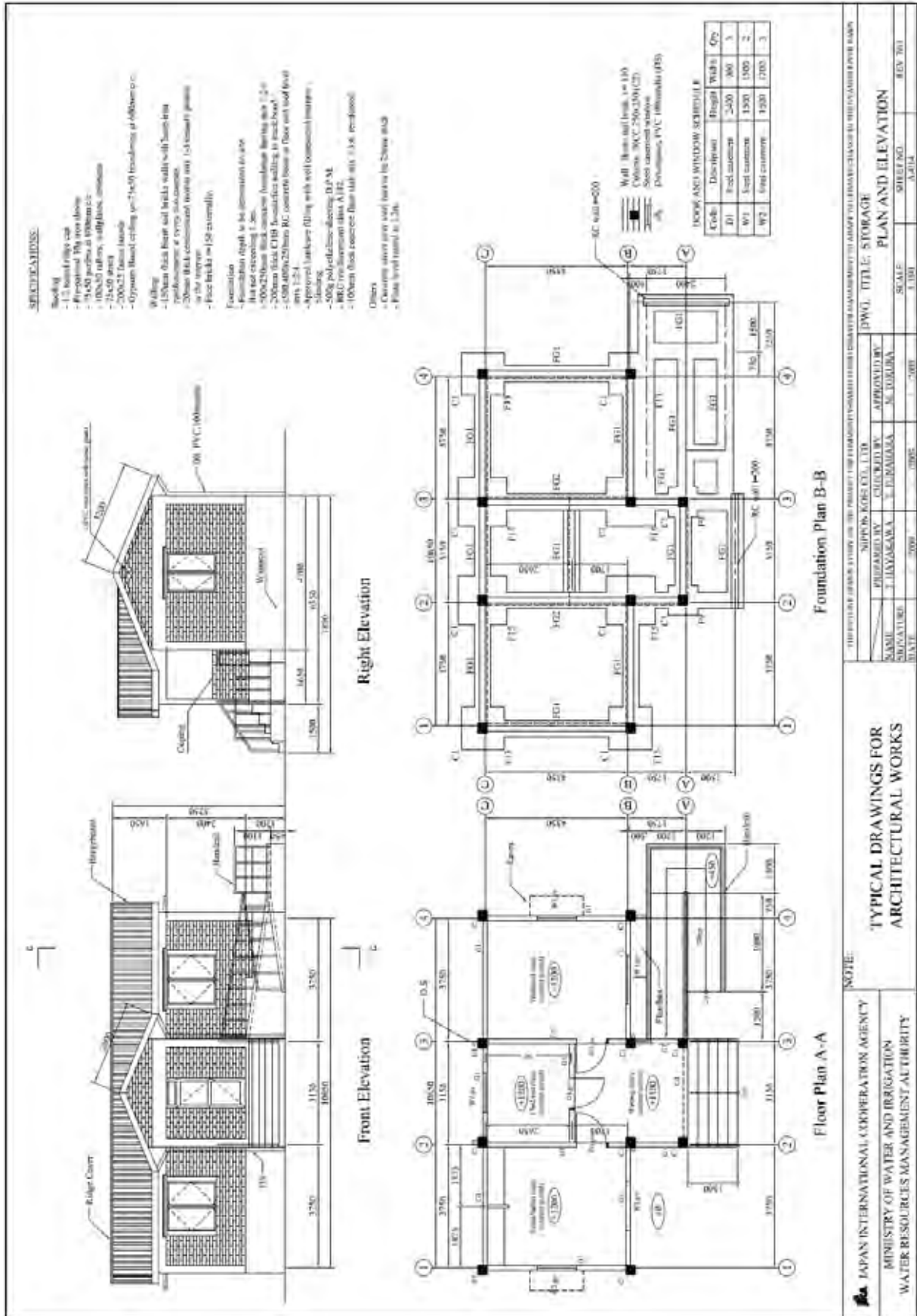


Figure 2.5 Storage Facility: Plan and Elevation

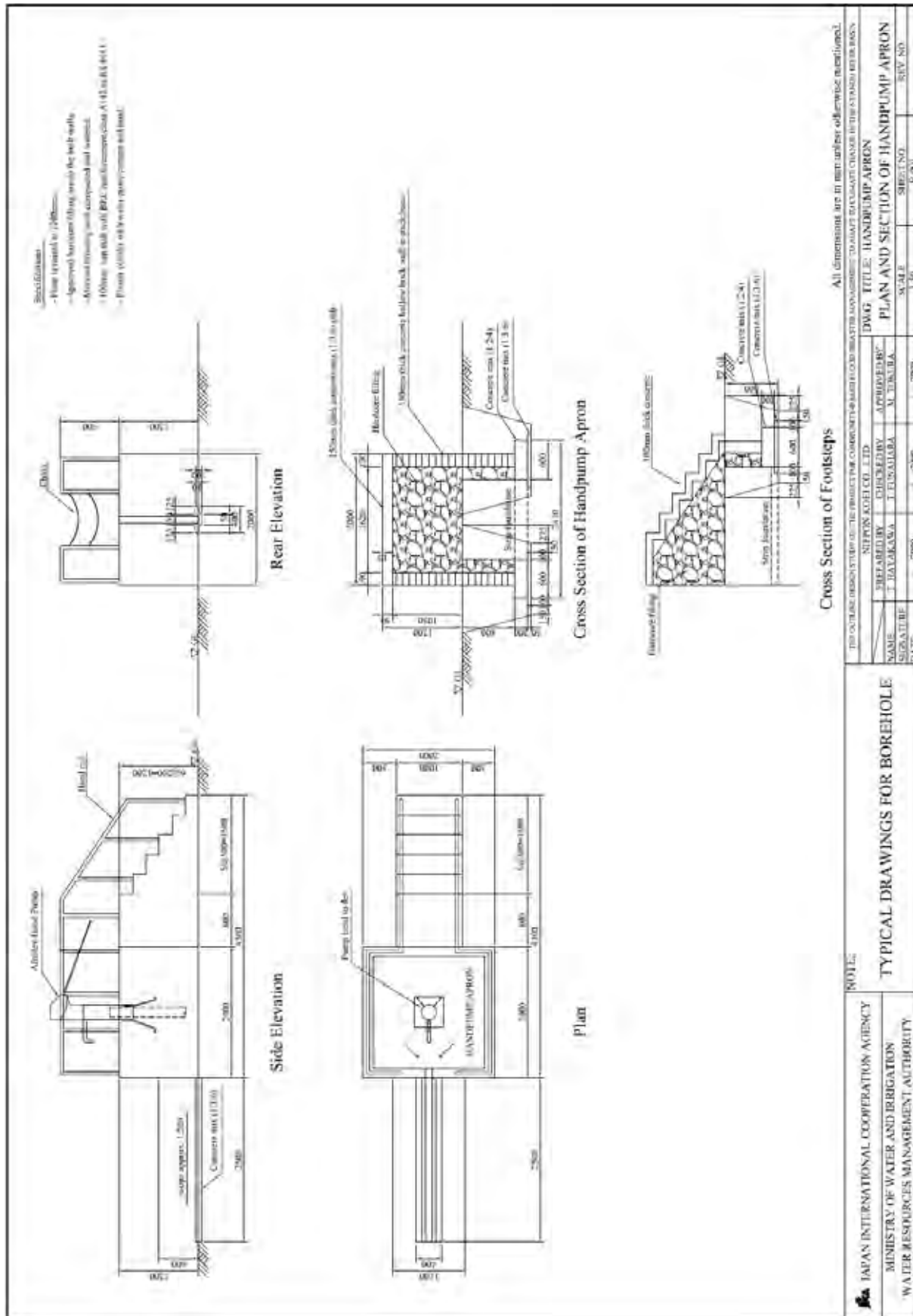
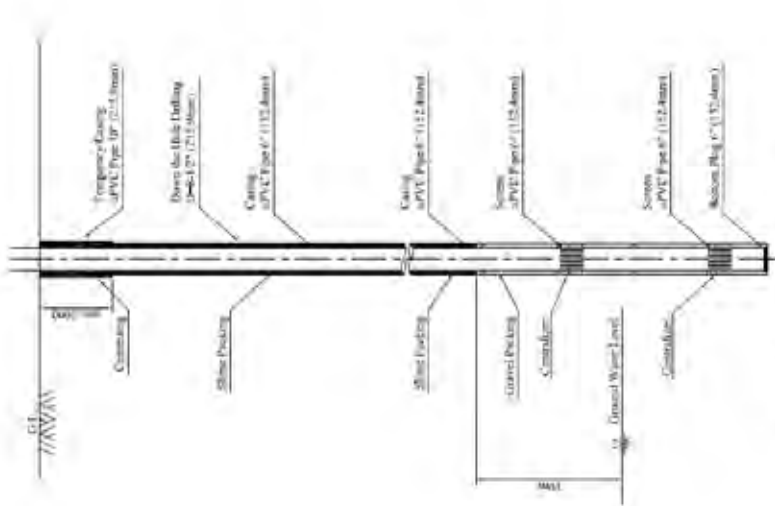


Figure 2.6 Borehole: Plan and Section of Hand Pump Apron



Standard Concept of Borehole Structure S-4.10

No.	District	Community	Proposed Site	Longitude	Latitude	Borehole Depth (M - FT)
1	Kisumu	Mwai Jiri	Mwai Kariakia Primary School	0°12'10" S	34°46'54" E	70
2	Karungu	Karungu	Olonyo Primary School	0°07'04" S	34°46'53" E	80
3	Oyala	Oyala	Oyala Primary School	0°07'04" S	34°46'24" E	100
4	Myamba	Wangari Maathai	Chimbor Primary School	0°12'17" S	34°52'20" E	80
5	Achambua	Achambua	Achambua Primary School	0°06'34" S	34°53'45" E	60
6	Wakari	Wakari	Ogwallo Legua Urban Church	0°02'00" S	34°55'02" E	60
7	Kariakia	Kariakia	Agwale Primary School	0°12'09" S	34°56'11" E	80
8	Karibia	Karibia	Wirothi Land	0°12'07" S	34°56'21" E	70
9	Muarira	Muarira	Aranyu Primary School	0°12'10" S	34°58'20" E	70

Note: Borehole depths are estimated results.

Table of Description



Locations of Proposed Site

All dimensions are in mm unless otherwise mentioned.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		NOTE: TYPICAL DRAWINGS FOR BOREHOLE		THE OUTLINE DESIGN STUDY OF THE PROJECT FOR CLIMATE-ADAPTIVE WATER MANAGEMENT TO ADAPT TO CLIMATE CHANGE IS FINANCED BY JICA.	
PREPARED BY: T. UEMURA CHECKED BY: T. UEMURA DATE: 2009		APPROVED BY: M. UEMURA SCALE: 1:1000		DWG. TITLE: BOREHOLE LOCATION MAP AND TYPICAL SECTION SHEET NO. 11 REV. NO.	

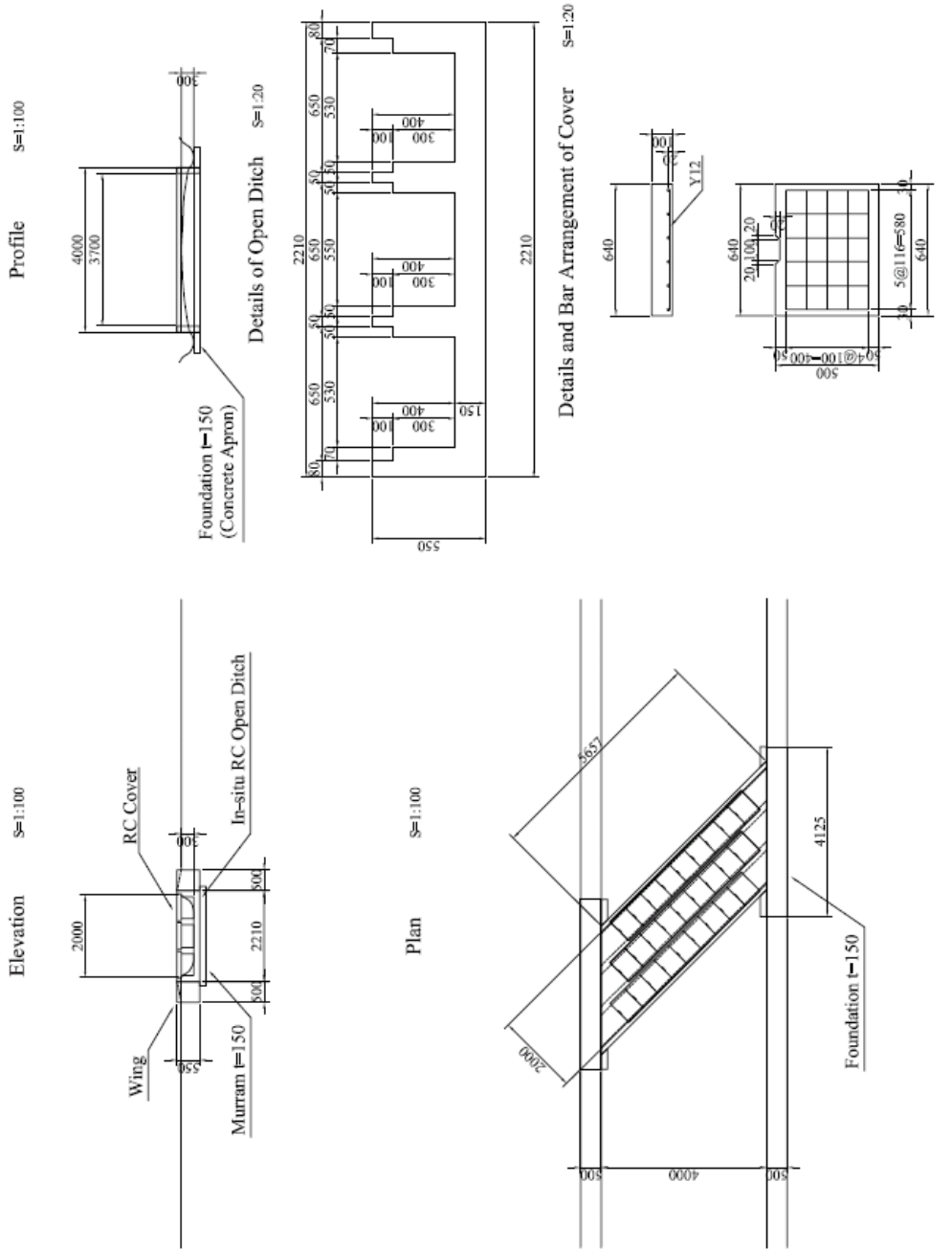
Figure 2.7 Borehole: Location Map and Typical Section

AN.3 **OUTLINE DESIGN DRAWINGS OF CIVIL WORKS**

Figure 3.1	Rae Kanyaika: Culvert (1)	AN-16
Figure 3.2	Rae Kanyaika: Culvert (2)	AN-17
Figure 3.3	Rae Kanyaika: Culvert (3)	AN-18
Figure 3.4	Rae Kanyaika: Culvert (4)	AN-19
Figure 3.5	Rae Kanyaika: Culvert (5)	AN-20
Figure 3.6	Rae Kanyaika: Culvert (6)	AN-21
Figure 3.7	Rae Kanyaika: Culvert (7)	AN-22
Figure 3.8	Bwanda: Culvert (1).....	AN-23
Figure 3.9	Bwanda: Culvert (2).....	AN-24
Figure 3.10	Bwanda: Culvert (3)	AN-25
Figure 3.11	Bwanda: Culvert (4).....	AN-26
Figure 3.12	Bwanda: Culvert (5)	AN-27
Figure 3.13	Otera: Culvert (1)	AN-28
Figure 3.14	Otera: Culvert (2)	AN-29
Figure 3.15	Otera: Culvert (3)	AN-30
Figure 3.16	Otera: Culvert (4)	AN-31
Figure 3.17	Otera: Culvert (5)	AN-32
Figure 3.18	Kamuga: Culvert.....	AN-33
Figure 3.19	Oyola: Culvert (1).....	AN-34
Figure 3.20	Oyola: Culvert (2).....	AN-35
Figure 3.21	Oyola: Culvert (3).....	AN-36
Figure 3.22	Oyola: Culvert (4).....	AN-37
Figure 3.23	Oyola: Culvert (5).....	AN-38
Figure 3.24	Oyola: Culvert (6).....	AN-39
Figure 3.25	Kanyango: Culvert (1)	AN-40
Figure 3.26	Kanyango: Culvert (2)	AN-41
Figure 3.27	Kanyango: Culvert (3)	AN-42
Figure 3.28	Kanyango: Weir	AN-43
Figure 3.29	Kowiti: Culvert	AN-44
Figure 3.30	Kamget Ugwe: Culvert (1).....	AN-45
Figure 3.31	Kamget Ugwe: Culvert (2).....	AN-46
Figure 3.32	Kamget Ugwe: Culvert (3).....	AN-47
Figure 3.33	Kanyiaomo: Culvert (1)	AN-48
Figure 3.34	Kanyiaomo: Culvert (2)	AN-49
Figure 3.35	Wasiese: Culvert.....	AN-50
Figure 3.36	Kamagaga: Footbridge.....	AN-51
Figure 3.37	Wangaya Mombasa: Culvert (1)	AN-52
Figure 3.38	Wangaya Mombasa: Culvert (2)	AN-53
Figure 3.39	Wangaya Mombasa: Culvert (3)	AN-54
Figure 3.40	Wangaya Mombasa: Culvert (4)	AN-55

Figure 3.41 Achuodho: Culvert (1)	AN-56
Figure 3.42 Achuodho: Culvert (2)	AN-57
Figure 3.43 Wakesi: Culvert	AN-58
Figure 3.44 Kadika: Culvert	AN-59
Figure 3.45 Kadika: Footbridge	AN-60
Figure 3.46 Nyachoda: Culvert (1)	AN-61
Figure 3.47 Nyachoda: Culvert (2)	AN-62
Figure 3.48 Nyachoda: Footbridge	AN-63
Figure 3.49 Kojunga: Footbridge (1)	AN-64
Figure 3.50 Kojunga: Footbridge (2)	AN-65

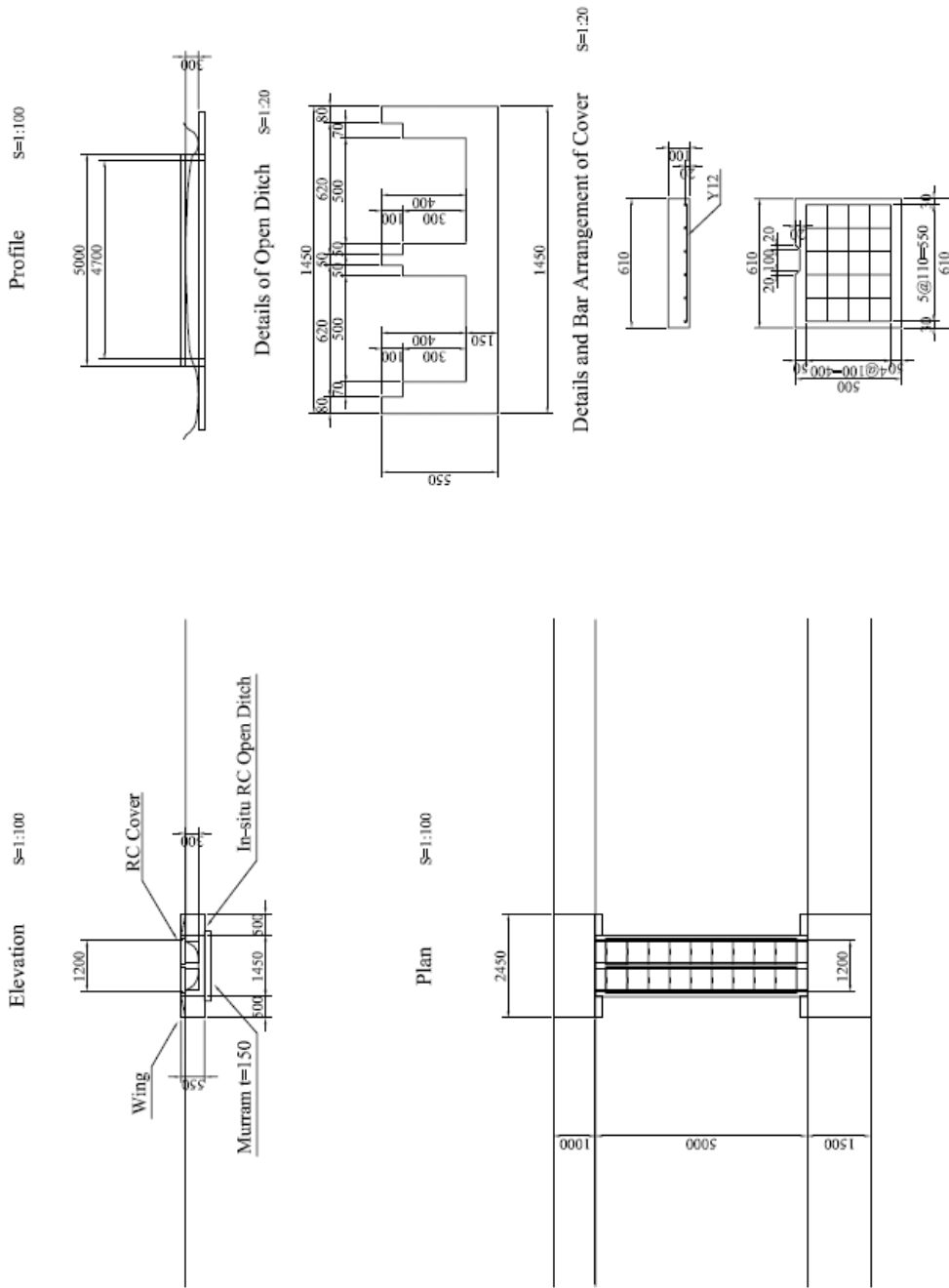
CULVERT (1)



JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY	NOTE: KISUMU DISTRICT KASULE SUB-LOCATION RAE KANYAIKA VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN DWG. TITLE: CULVERT (1)	
	PREPARED BY A. MORIOKA	CHECKED BY T. HAYAKAWA	APPROVED BY M. TOKURA	GENERAL SHEET NO. 01/01
SIGNATURE DATE	/ / 2009	/ / 2009	SCALE 1:100	SHEET NO. 01/01

Figure 3.1 Rae Kanyaika: Culvert (1)

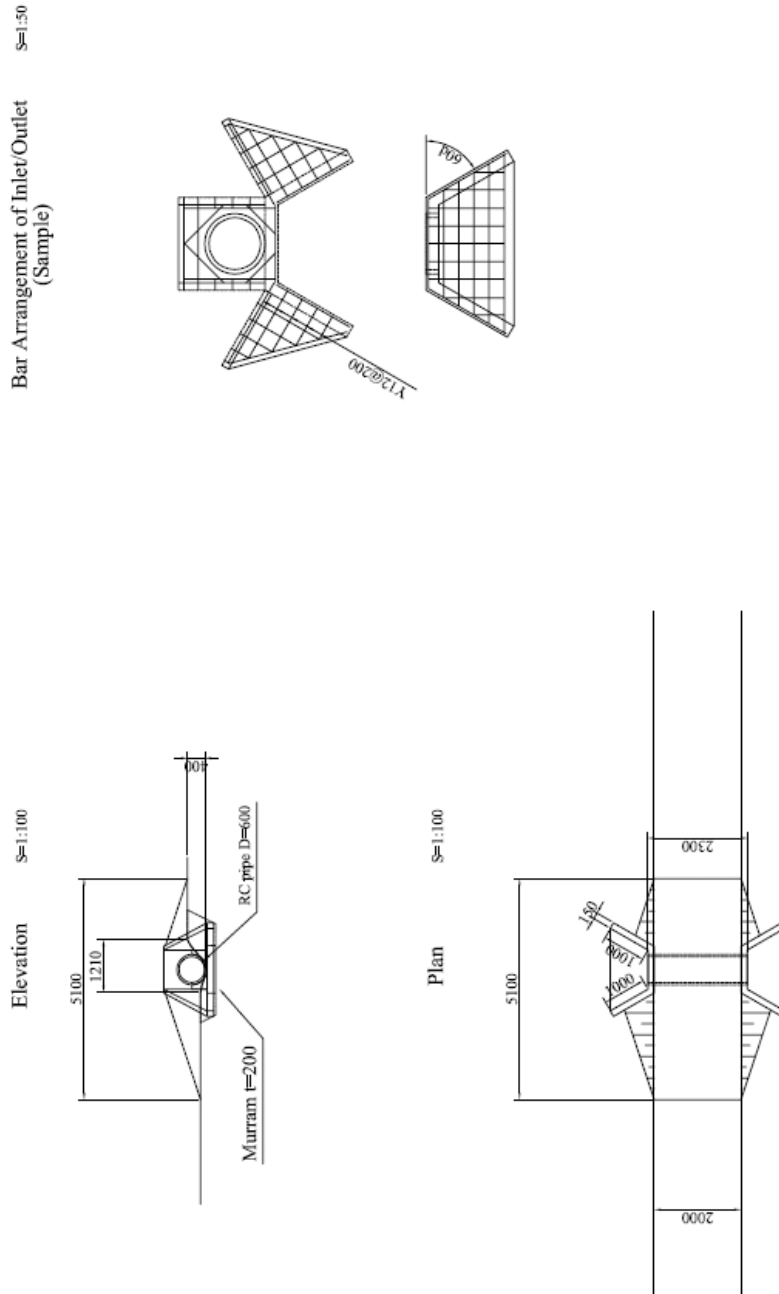
CULVERT (2)



JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY	NOTE: KISUMU DISTRICT KASULE SUB-LOCATION RAE KANYAIKA VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN DWG. TITLE: CULVERT (2)	
	PREPARED BY A. MORIOKA	CHECKED BY T. HAYAKAWA	APPROVED BY M. TOKURA	GENERAL
SIGNATURE DATE	/ / 2009	/ / 2009	SCALE 1:100	SHEET NO. 01/02
			REV. NO.	REV. NO.

Figure 3.2 Rae Kanyaika: Culvert (2)

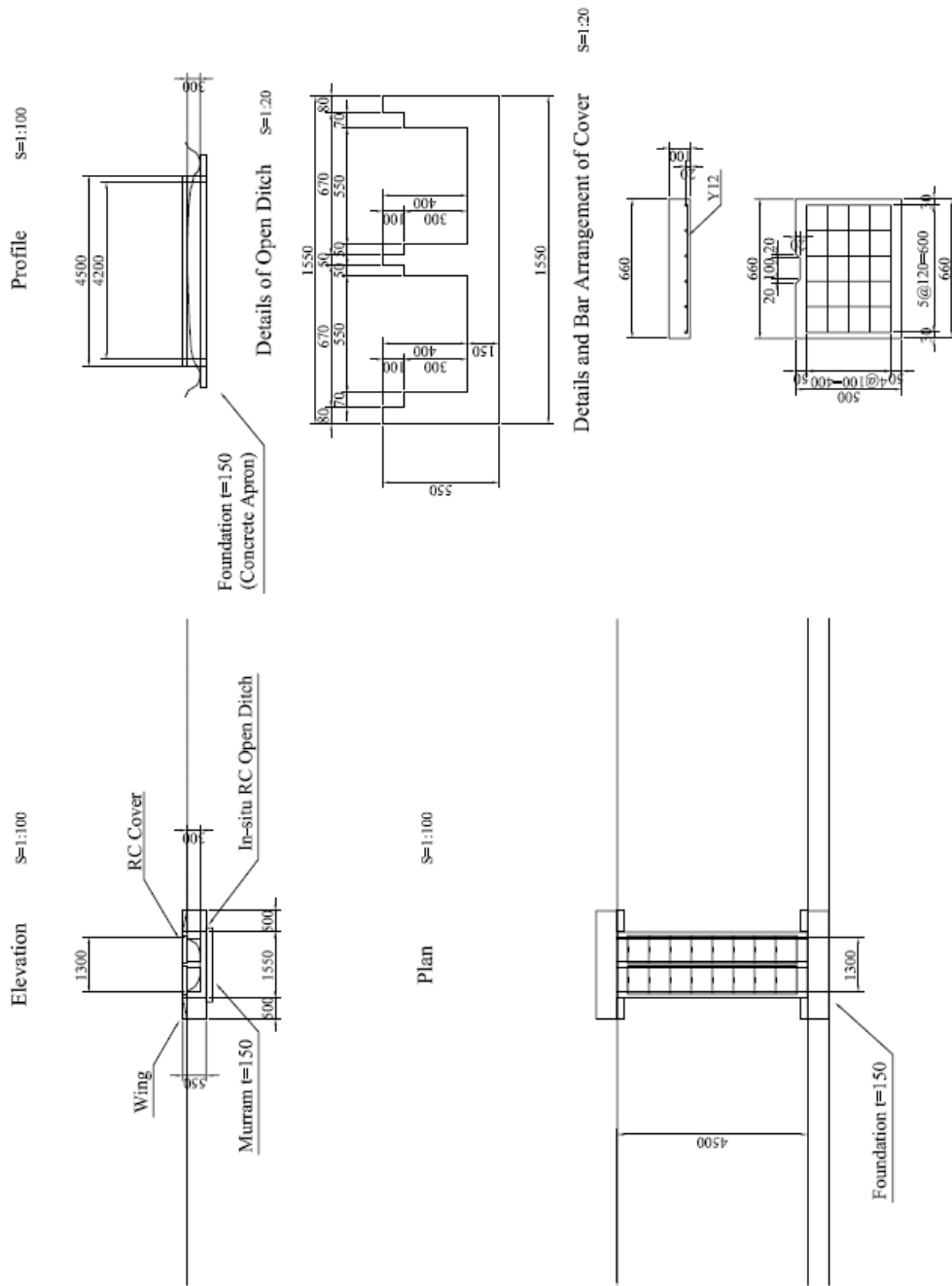
CULVERT (3)



 JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY	NOTE:			
	KISUMU DISTRICT KASULE SUB-LOCATION RAE KANYAIKA VILLAGE			
THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN DWG. TITLE: CULVERT (3)		GENERAL		
PREPARED BY	CHECKED BY	APPROVED BY		
A. MOROKA	T. HAYAKAWA	M. TOKURA		
DATE	/	/	REV. NO.	
/ 2009	/ 2009	/ 2009	01/03	
		SCALE	SHEET NO.	
		1:50	01/03	

Figure 3.3 Rae Kanyaika: Culvert (3)

CULVERT (4)



JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		NOTE: KISUMU DISTRICT KASULE SUB-LOCATION RAE KANYAIKA VILLAGE		TIME OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOEI CO., LTD DWG. TITLE: CULVERT (4)	
NAME	A. MORIOKA	CHECKED BY	T. HAYAKAWA	APPROVED BY	M. TOKURA
SIGNATURE		DATE	/ / 2009	SCALE	1:100
				SHEET NO.	01/04
				REV. NO.	

Figure 3.4 Rae Kanyaika: Culvert (4)

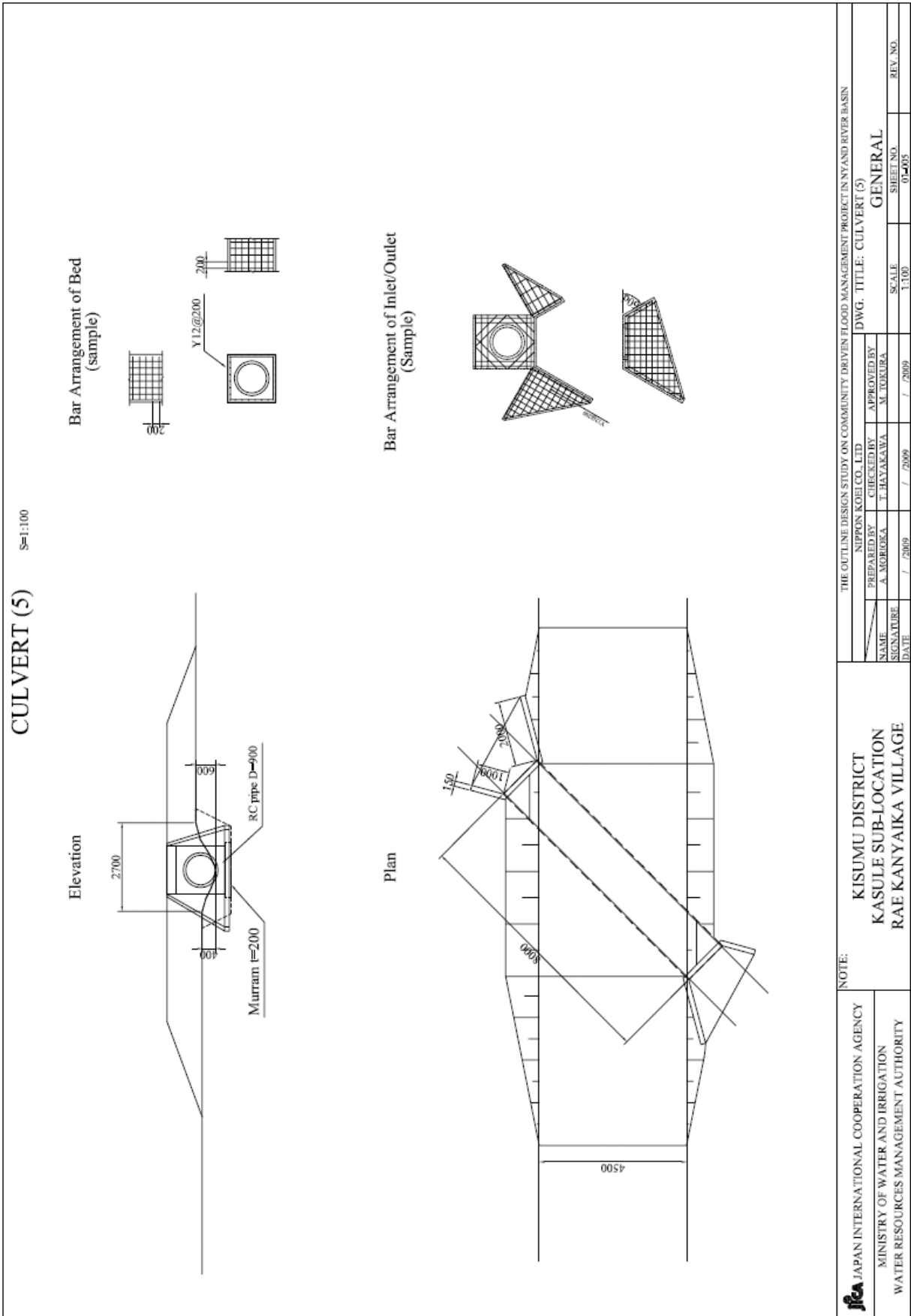
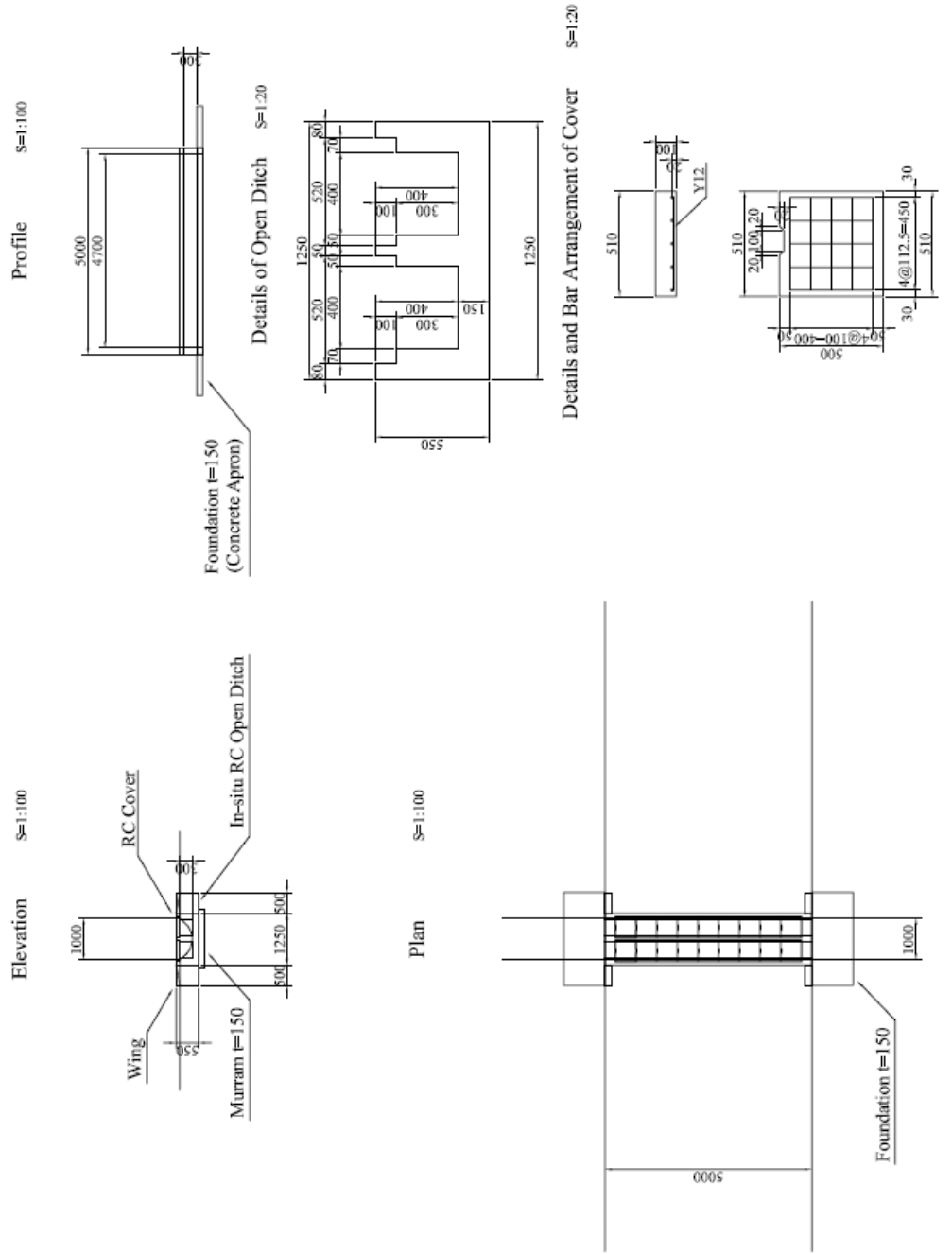


Figure 3.5 Rae Kanyaika: Culvert (5)

CULVERT (6)



<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOEI CO., LTD. DWG. TITLE: CULVERT (6)</p>			
<p>PREPARED BY A. MORIOKA</p>	<p>CHECKED BY T. HAYAKAWA</p>	<p>APPROVED BY M. TOKURA</p>	<p>GENERAL</p>
<p>SIGNATURE</p>	<p>DATE</p>	<p>SCALE</p>	<p>SHEET NO.</p>
<p>DATE</p>	<p>DATE</p>	<p>SCALE</p>	<p>REV. NO.</p>
<p>1/2009</p>	<p>1/2009</p>	<p>1:100</p>	<p>01-006</p>

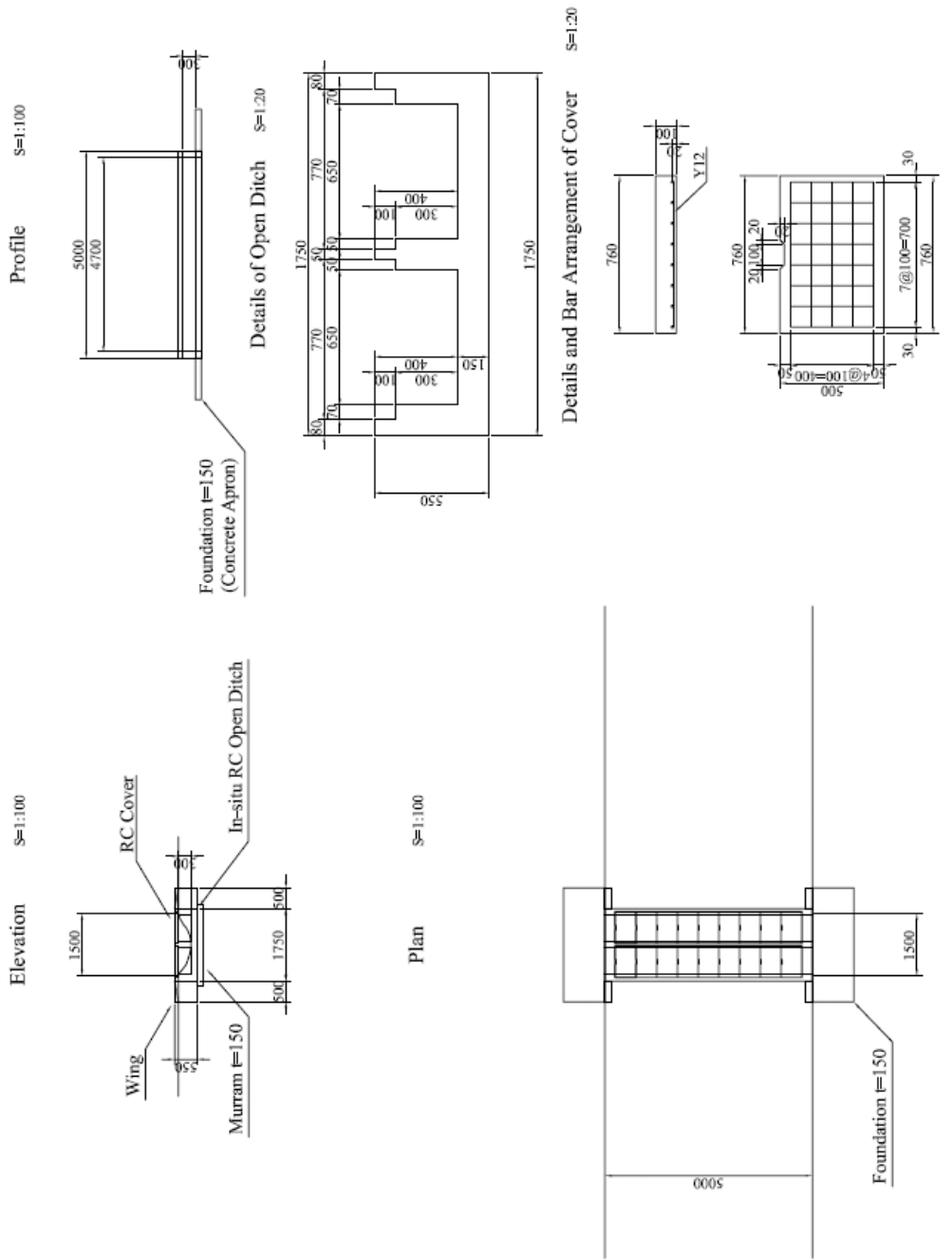
NOTE:

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

KISUMU DISTRICT
KASULE SUB-LOCATION
RAE KANYAIKA VILLAGE

Figure 3.6 Rae Kanyaika: Culvert (6)

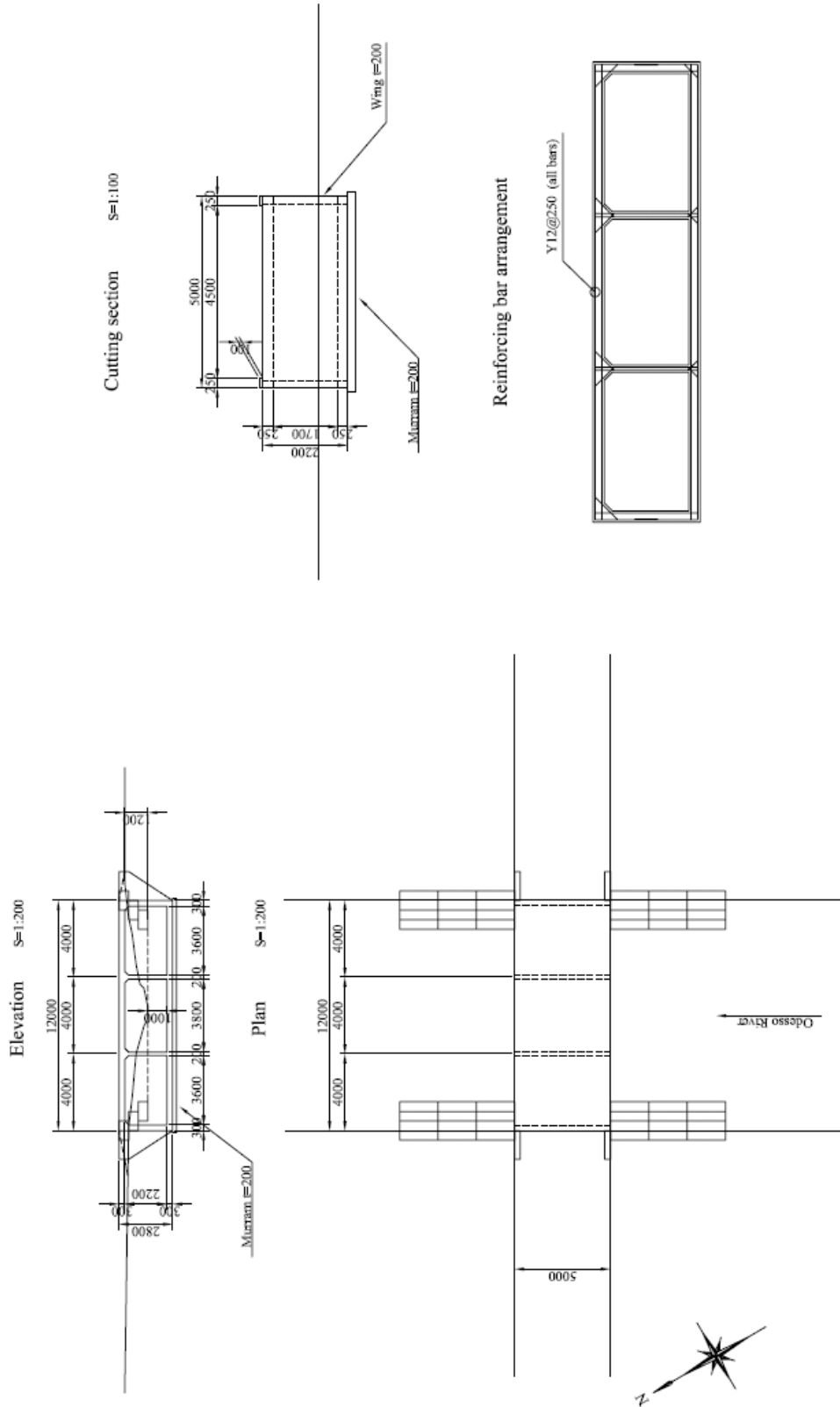
CULVERT (7)



<p>NOTE:</p> <p>KISUMU DISTRICT KASULE SUB-LOCATION RAE KANYAIKA VILLAGE</p>		<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN</p> <p>NIPPON KOEI CO., LTD DWG. TITLE: CULVERT (7)</p>	
<p>PREPARED BY A. MORIOKA</p>	<p>CHECKED BY T. HAYAKAWA</p>	<p>APPROVED BY M. TOKURA</p>	<p>GENERAL</p>
<p>SIGNATURE DATE</p>	<p>SCALE 1:100</p>	<p>SHEET NO. 01/007</p>	<p>REV. NO.</p>

Figure 3.7 Rae Kanyaika: Culvert (7)

CULVERT (1)



<p>NOTE:</p> <p>ifca JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY</p>		<p>KISUMU DISTRICT KASULE SUB-LOCATION BWANDA VILLAGE</p>		<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOGI CO. LTD DWG. TITLE: CULVERT (1)</p>	
NAME	A. MURIKWA	CHECKED BY	T. HAYAKAWA	APPROVED BY	M. USUKA
SIGNATURE		DATE	/ / 2009		/ / 2009
		SCALE	1:200	SHEET NO.	05/001
				REV. NO.	

Figure 3.8 Bwanda: Culvert (1)

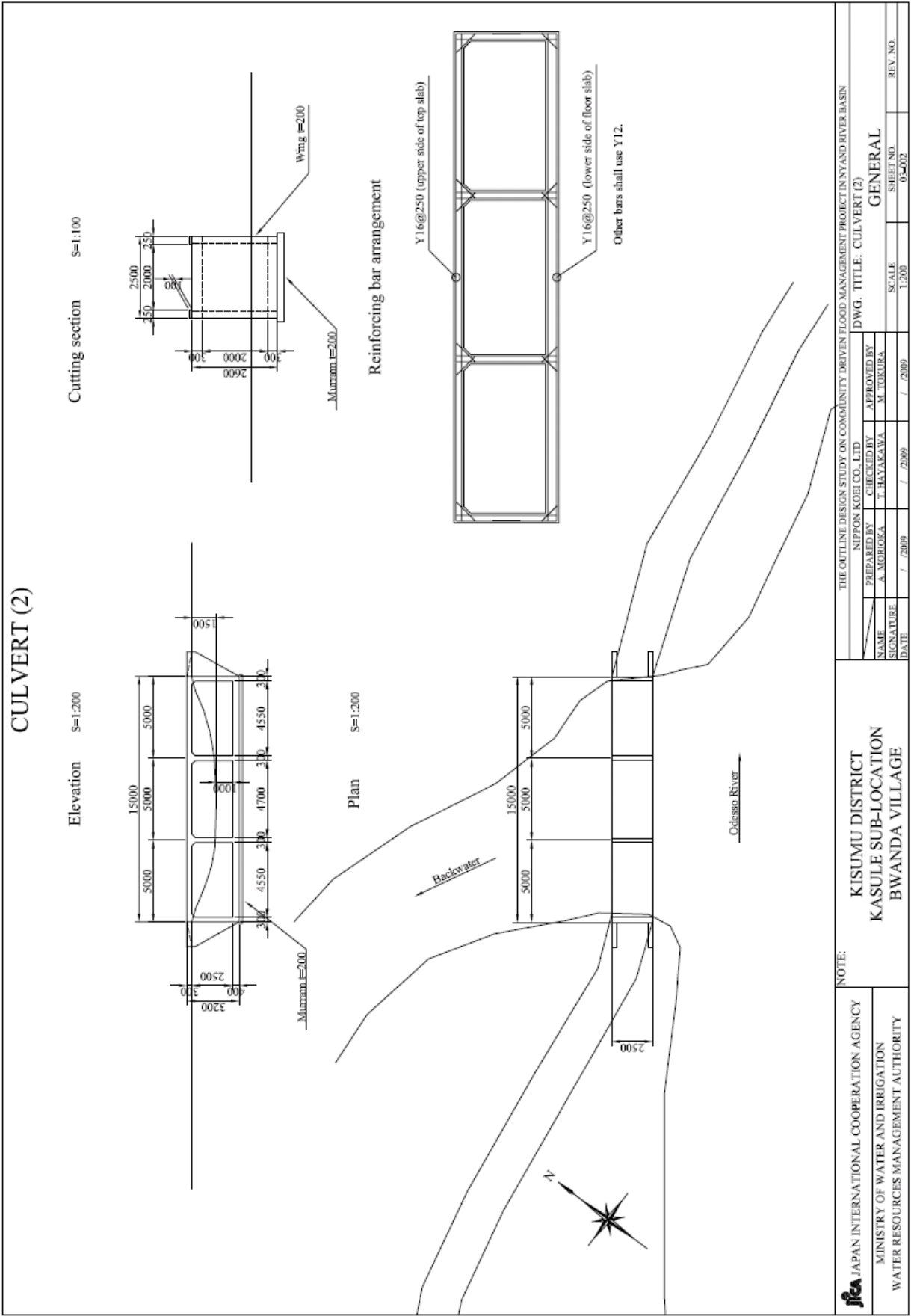
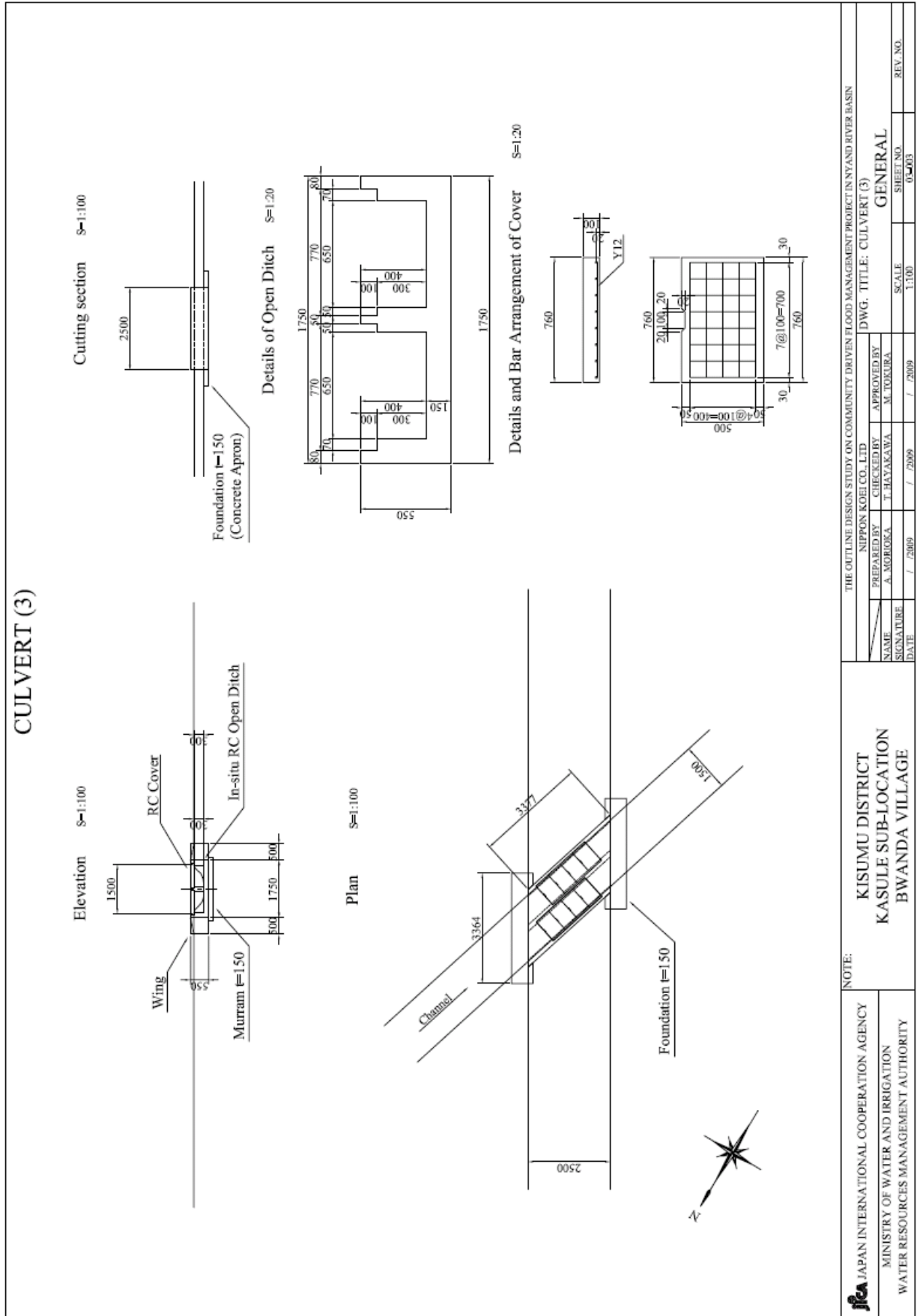


Figure 3.9 Bwanda: Culvert (2)

CULVERT (3)



<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN AYD RIVER BASIN</p>		<p>NIPPON KOEI CO., LTD.</p>		<p>DWG. TITLE: CULVERT (3)</p>	
<p>PREPARED BY</p>	<p>A. MOROGA</p>	<p>CHECKED BY</p>	<p>T. HAYAKAWA</p>	<p>APPROVED BY</p>	<p>M. TOKURA</p>
<p>SIGNATURE</p>	<p>DATE</p>	<p>DATE</p>	<p>DATE</p>	<p>SCALE</p>	<p>SHEET NO.</p>
	<p>/ 2009</p>	<p>/ 2009</p>	<p>/ 2009</p>	<p>1:100</p>	<p>05/03</p>
<p>NOTE:</p>			<p>KISUMU DISTRICT</p> <p>KASULE SUB-LOCATION</p> <p>BWANDA VILLAGE</p>		
<p>JICA JAPAN INTERNATIONAL COOPERATION AGENCY</p> <p>MINISTRY OF WATER AND IRRIGATION</p> <p>WATER RESOURCES MANAGEMENT AUTHORITY</p>			<p>GENERAL</p>		
			<p>REV. NO.</p>		

Figure 3.10 Bwanda: Culvert (3)

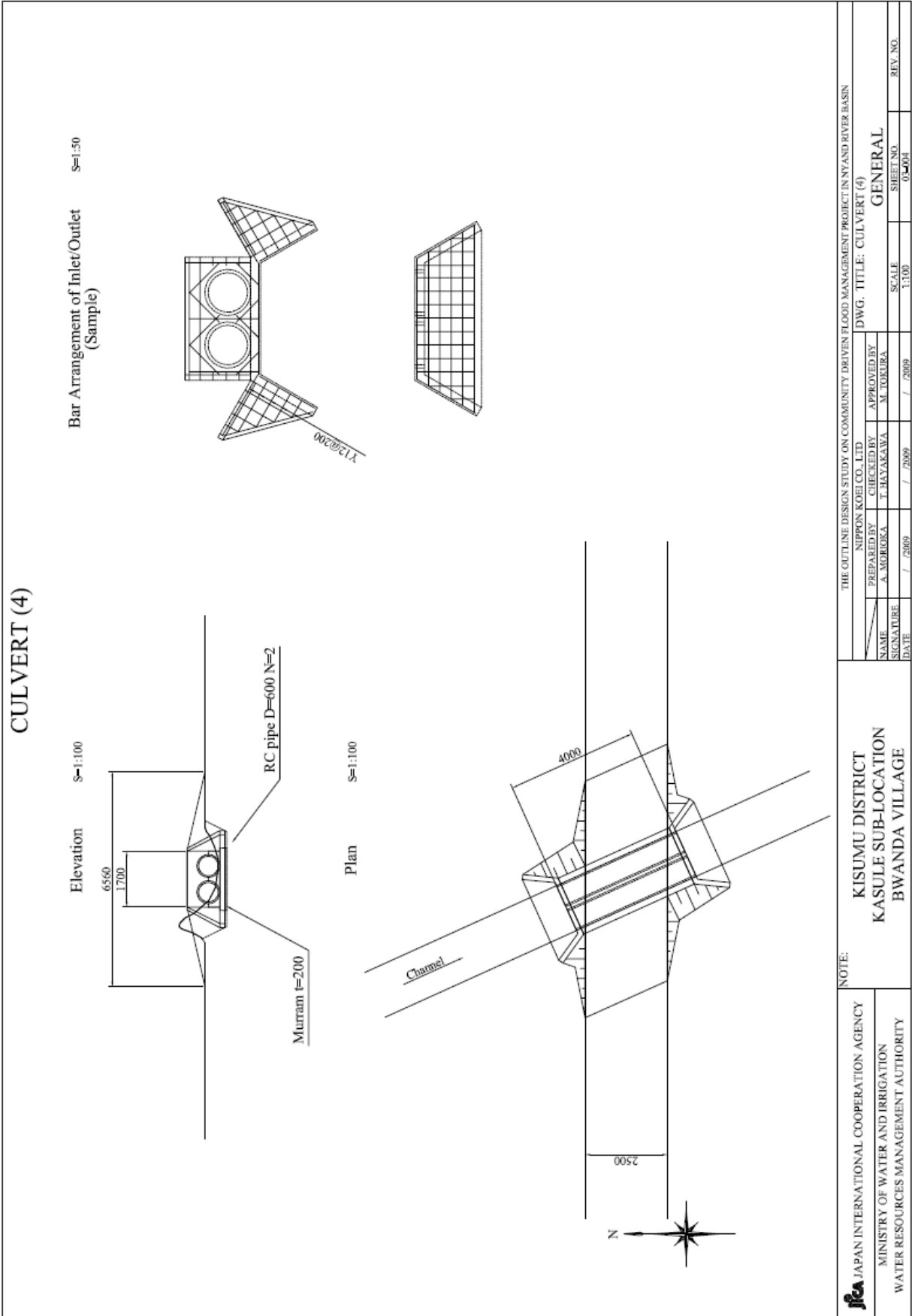
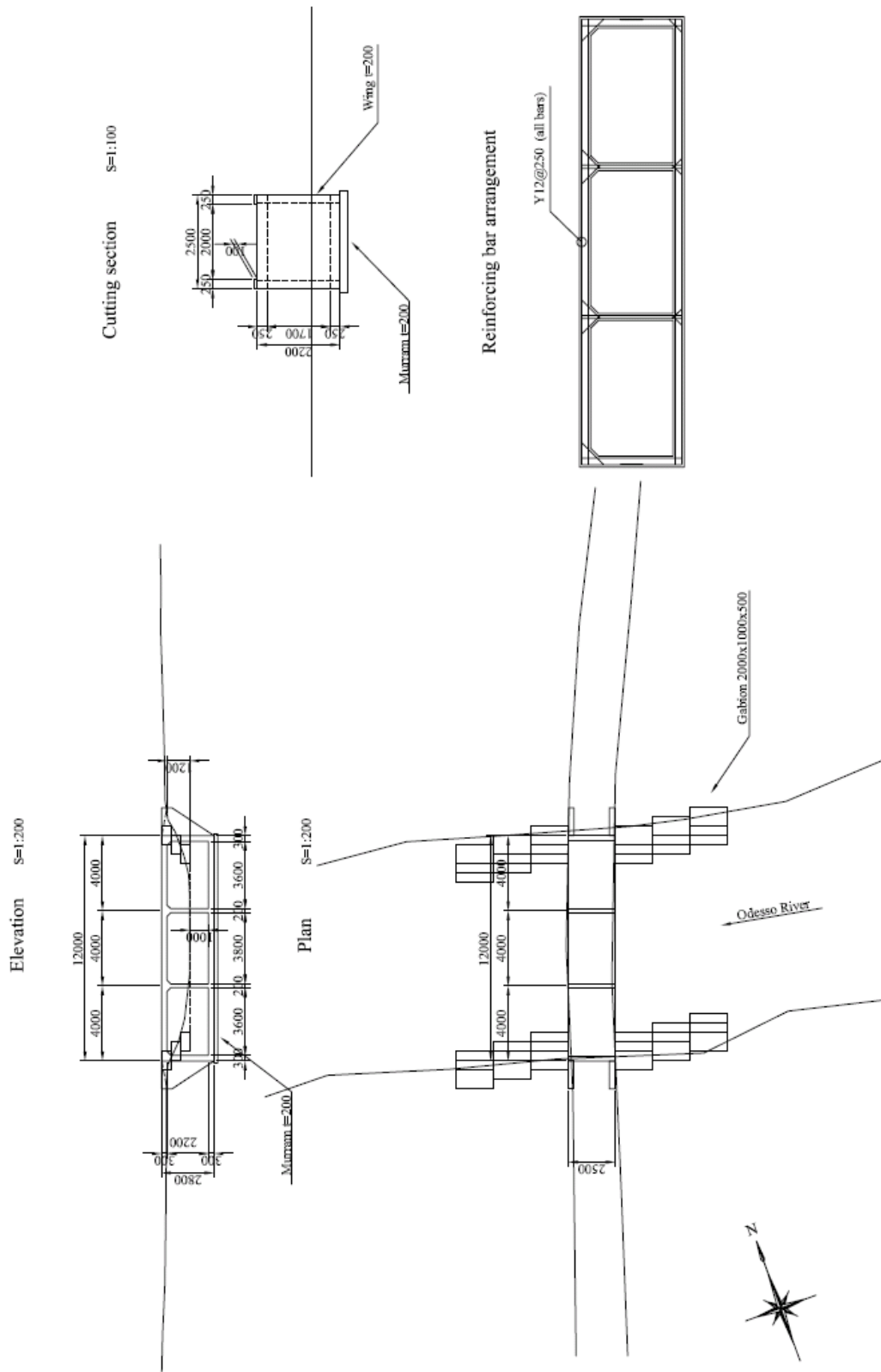


Figure 3.11 Bwanda: Culvert (4)

CULVERT (5)

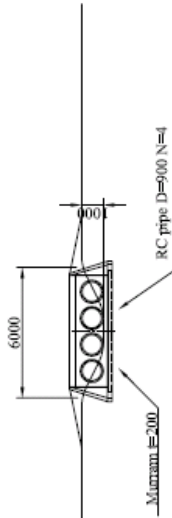


JICA JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYANDI RIVER BASIN NIPPON KOEI CO., LTD. PREPARED BY: A. MORIOKA CHECKED BY: T. HAYAKAWA APPROVED BY: M. TOKURA NAME: M. TOKURA SIGNATURE: _____ DATE: / / 2009		DWG. TITLE: CULVERT (5) GENERAL SCALE: 1:200 SHEET NO: 0-405 REV. NO.
--	--	---	--	--

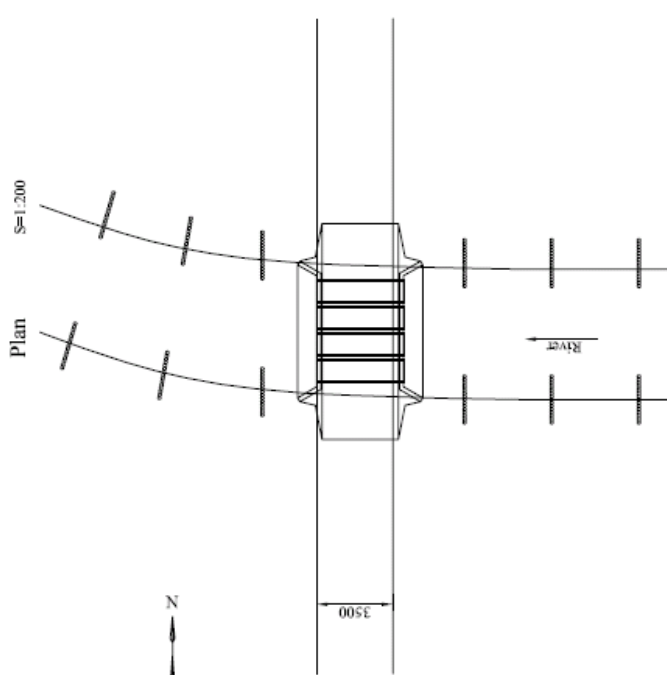
Figure 3.12 Bwanda: Culvert (5)

CULVERT (1)

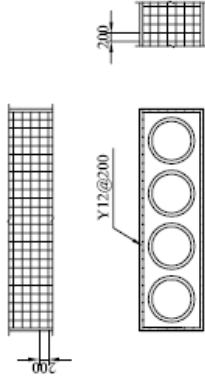
Elevation S=1:200



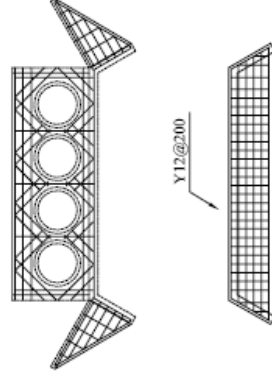
Plan S=1:200



Bar Arrangement of Bed (sample)



Bar Arrangement of Wing (sample)



NOTE:

ifa JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

KISUMU DISTRICT
 NYALUNYA SUB-LOCATION
 OTERA VILLAGE

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

PREPARED BY		CHECKED BY		APPROVED BY	
A. MORIOKA		T. HAYAKAWA		M. TOKURA	
SIGNATURE	DATE	DATE	DATE	SCALE	REV. NO.
	/ / 2009	/ / 2009	/ / 2009	1:200	04/01
DWG. TITLE: CULVERT (1)					GENERAL

Figure 3.13 Otera: Culvert (1)

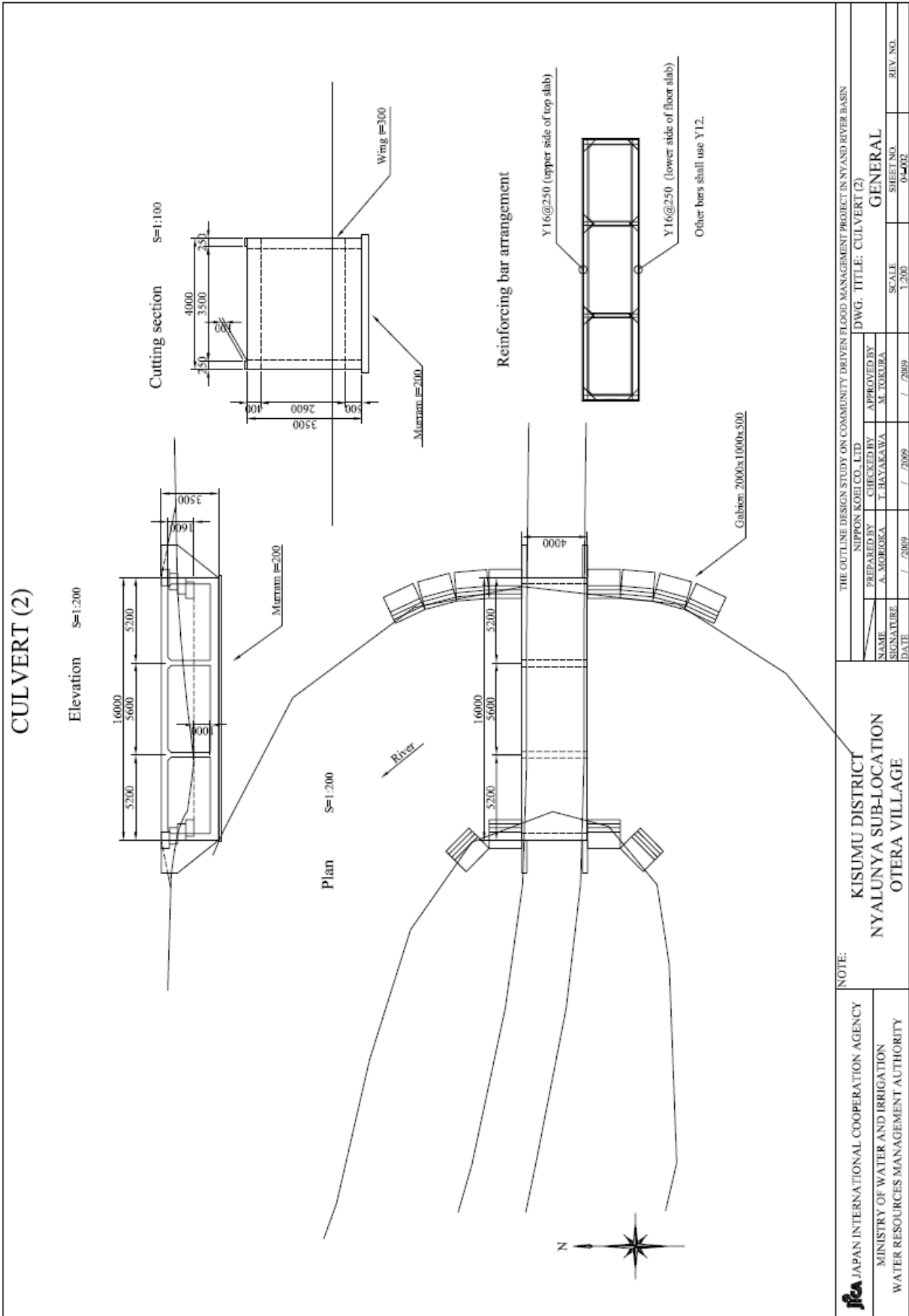


Figure 3.14 Otera: Culvert (2)

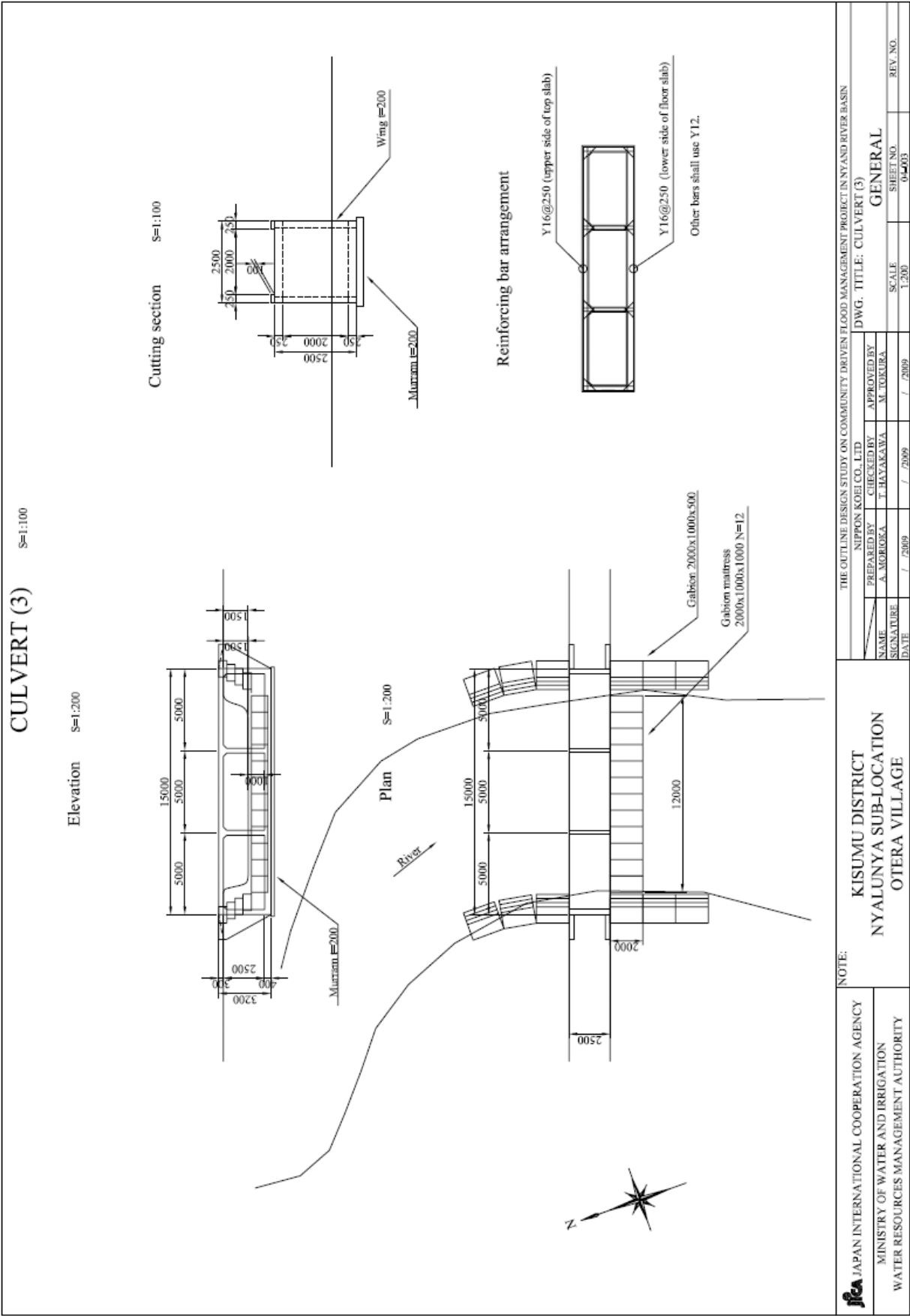
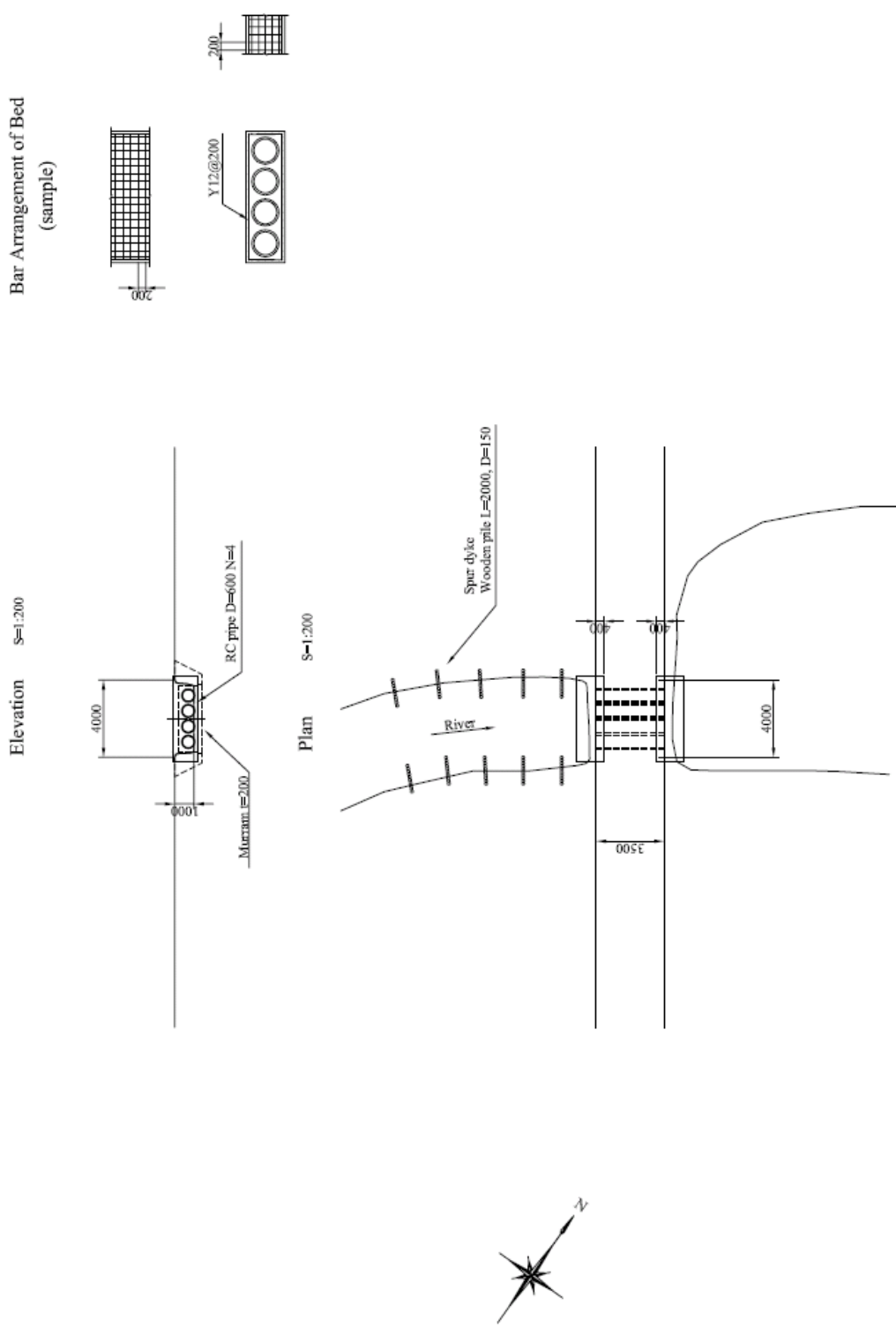


Figure 3.15 Otera: Culvert (3)

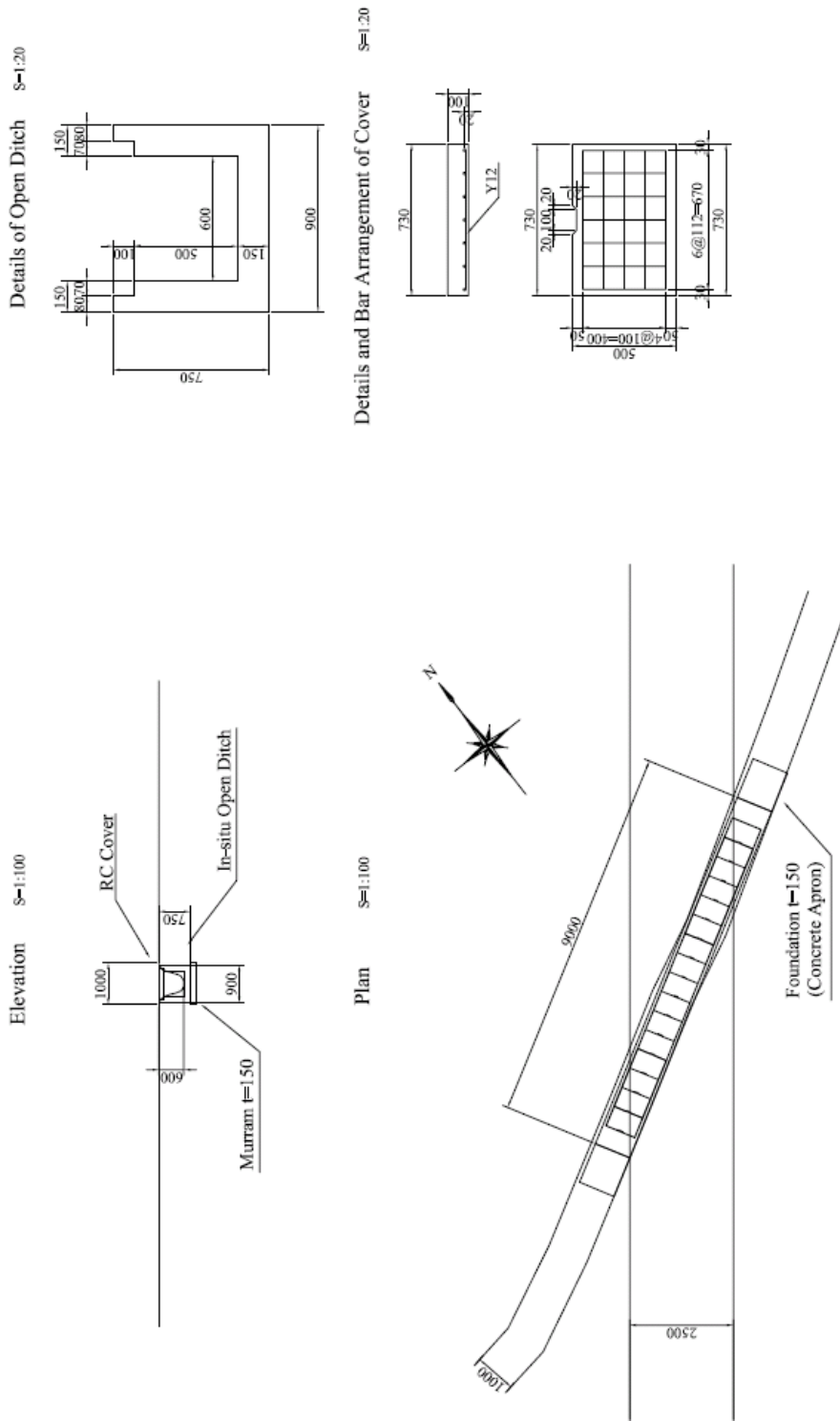
CULVERT (4)



ifc JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		NOTE: KISUMU DISTRICT NYALUNYA SUB-LOCATION OTERA VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOEI CO. LTD. PREPARED BY: A. MORIOKA CHECKED BY: T. HAYAKAWA APPROVED BY: M. TOKURA DWG. TITLE: CULVERT (4) GENERAL SCALE: 1:200 SHEET NO: 04-004 REV. NO.	
NAME	DATE	DATE	DATE	DATE	DATE
SIGNATURE	DATE	DATE	DATE	DATE	DATE
DATE	DATE	DATE	DATE	DATE	DATE

Figure 3.16 Otera: Culvert (4)

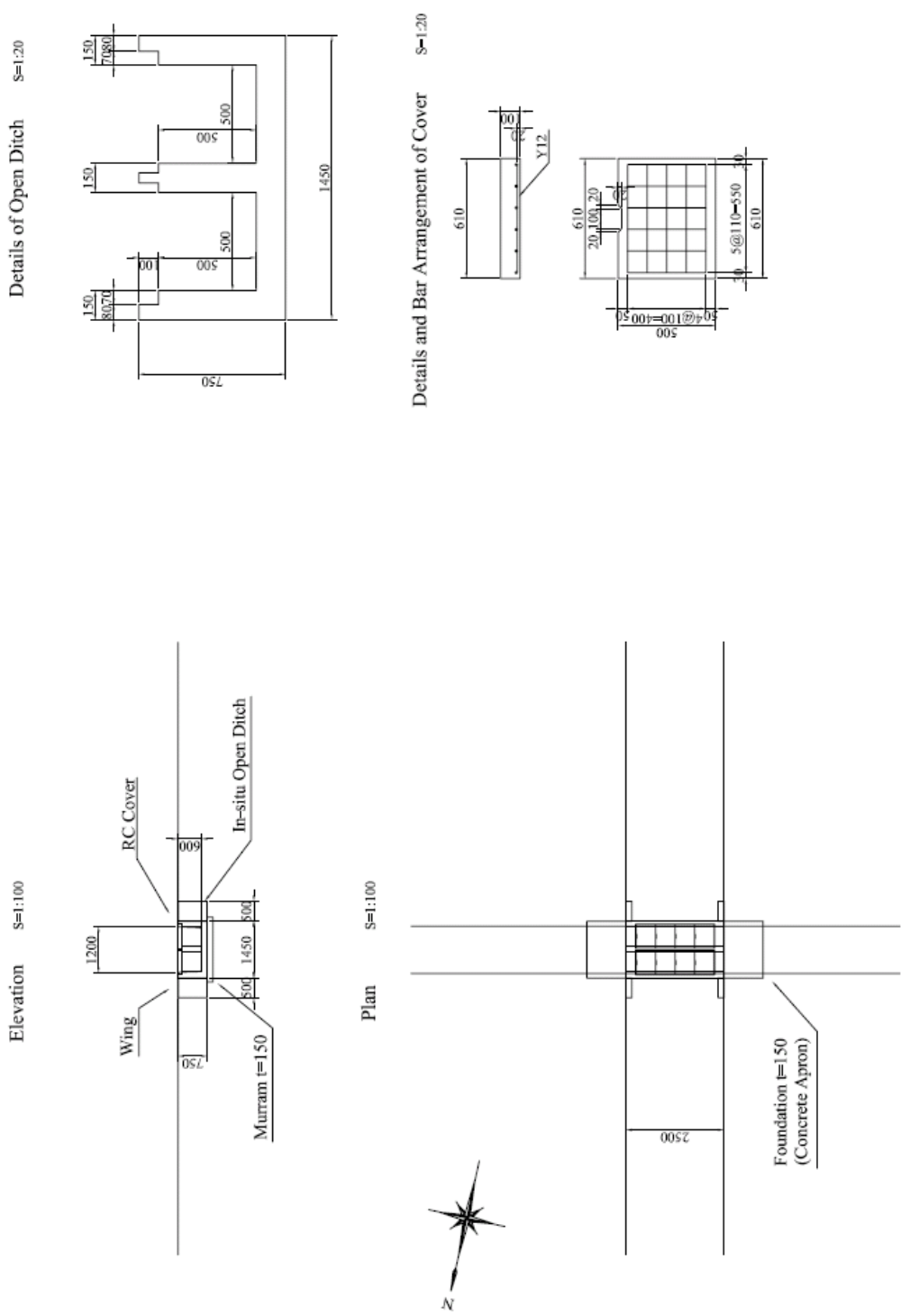
CULVERT (5)



ifc JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		NOTE: KISUMU DISTRICT NYALUNYA SUB-LOCATION OTERA VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN DWG. TITLE: CULVERT (5)	
PREPARED BY A. MOROKA	CHECKED BY T. HAYAKAWA	APPROVED BY M. TOKURA	SHEET NO. 05005	SCALE 1:100	REV. NO.
SIGNATURE DATE	/ / 2009	/ / 2009	/ / 2009	/ / 2009	/ / 2009

Figure 3.17 Otera: Culvert (5)

CULVERT



NOTE:		KISUMU DISTRICT NYALUNYA SUB-LOCATION KAMUGA VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN	
JICA JAPAN INTERNATIONAL COOPERATION AGENCY		NIPPON KOEI CO., LTD		DWG. TITLE: CULVERT	
MINISTRY OF WATER AND IRRIGATION		PREPARED BY A. MORIOKA		APPROVED BY M. TOKURA	
WATER RESOURCES MANAGEMENT AUTHORITY		SIGNATURE		SCALE 1:100	
		DATE / / 2009		SHEET NO. 05/02	
				REV. NO.	

Figure 3.18 Kamuga: Culvert

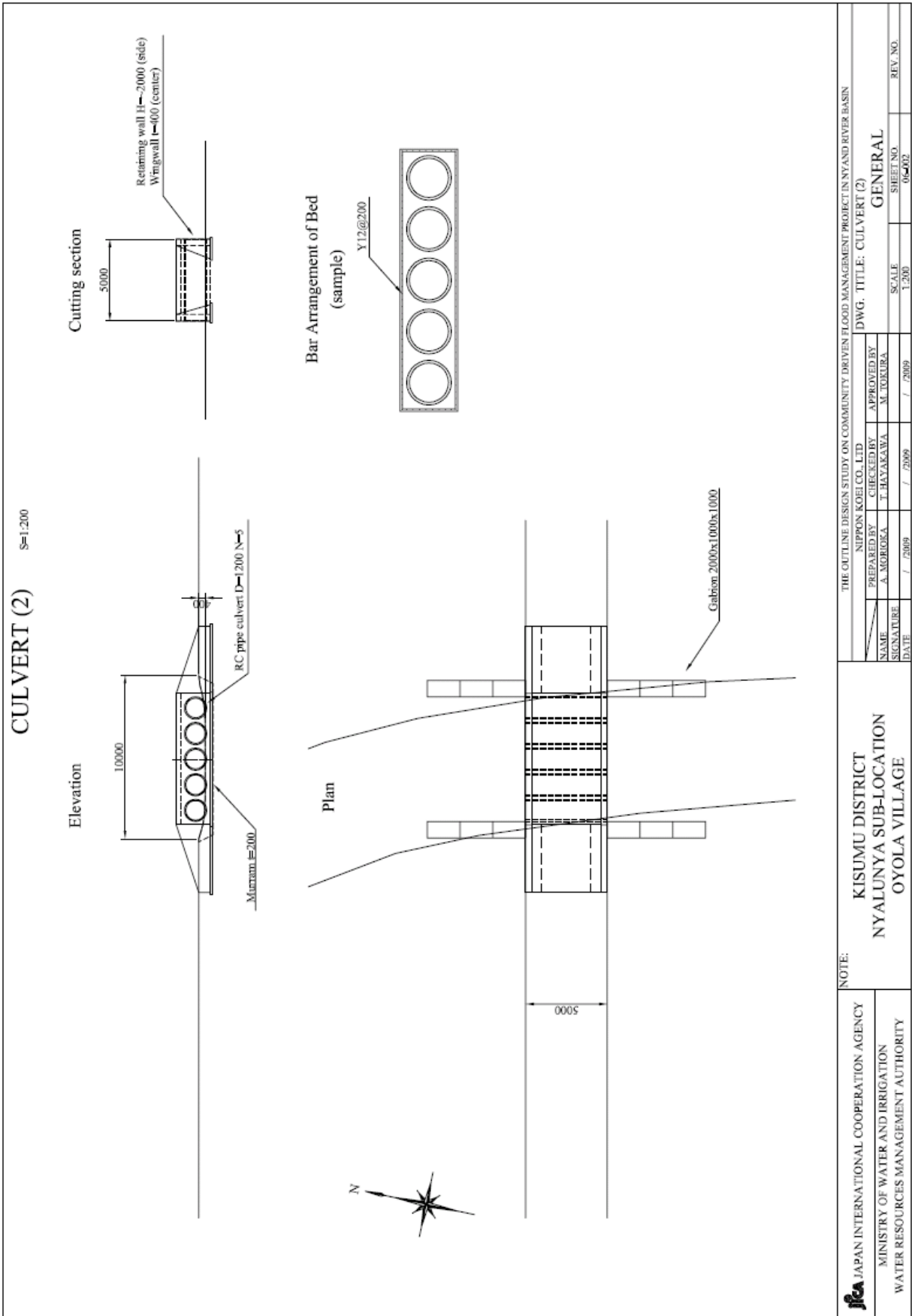
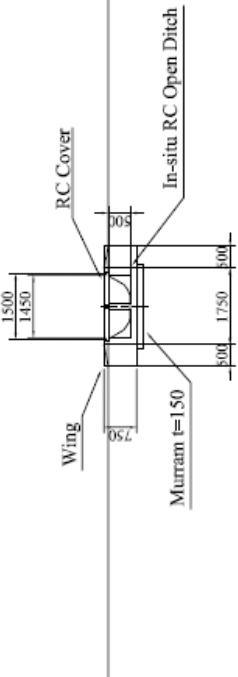


Figure 3.20 Oyola: Culvert (2)

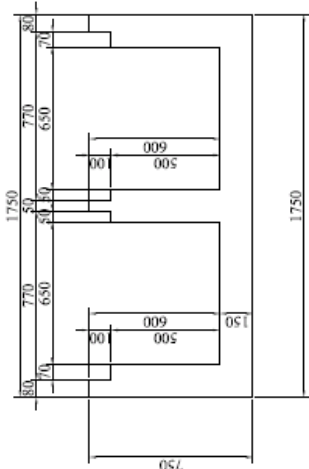
CULVERT (3)

S=1:100

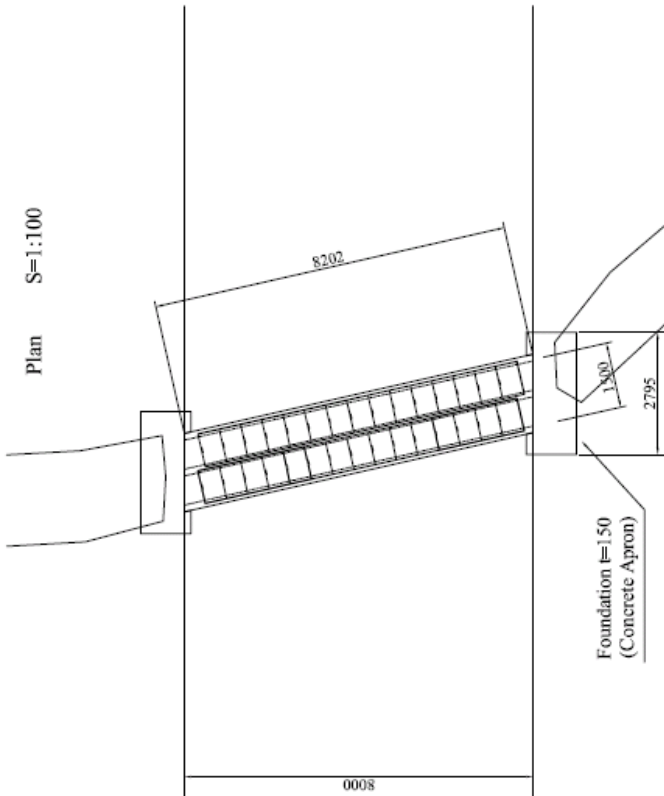
Elevation S=1:100



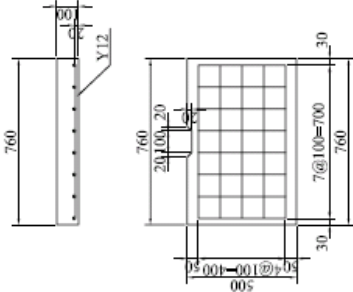
Details of Open Ditch S=1:20



Plan S=1:100



Details and Bar Arrangement of Cover S=1:20



NOTE: THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

NIPPON KOBEL CO. LTD		DWG. TITLE: CULVERT (3)	
PREPARED BY	CHECKED BY	APPROVED BY	
A. MORIYAMA	T. HAYAKAWA	M. YOKURA	
SIGNATURE	DATE	SCALE	REV. NO.
	/ 2009 /	1:100	06403

KISUMU DISTRICT
 NYALUNYA SUB-LOCATION
 OYOLA VILLAGE

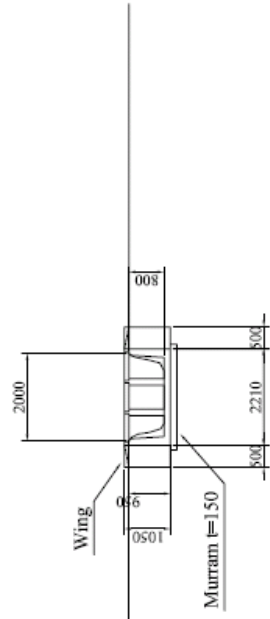
JICA JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

Figure 3.21 Oyola: Culvert (3)

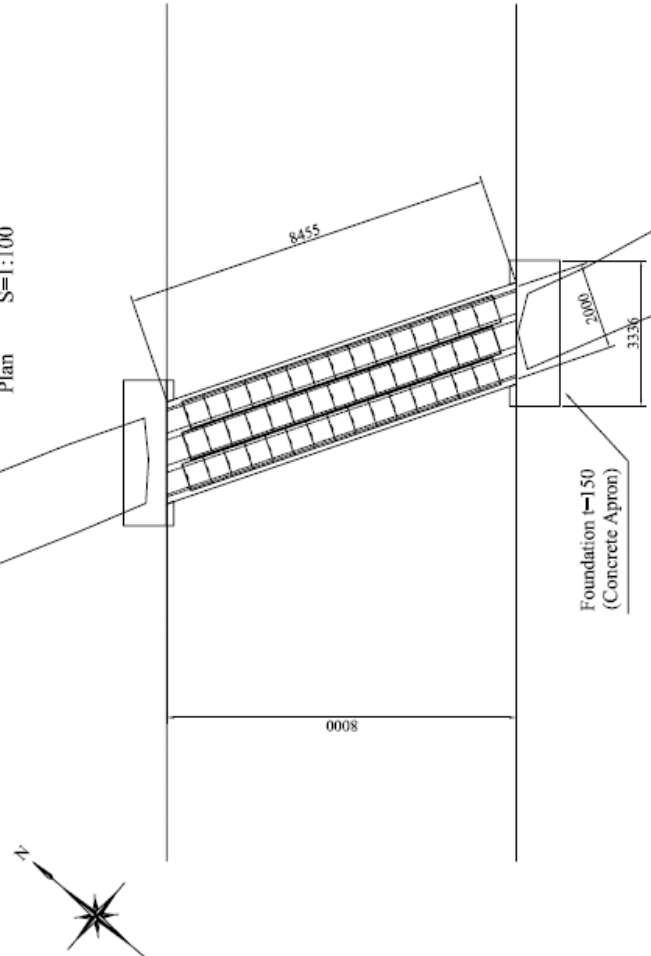
CULVERT (4)

S=1:100

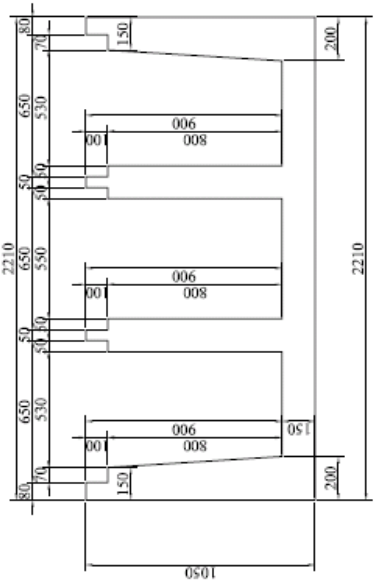
Elevation S=1:100



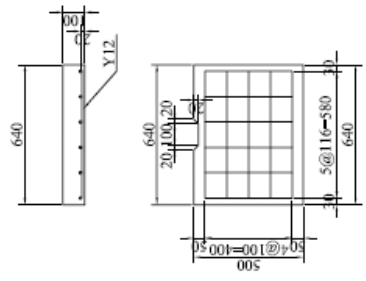
Plan S=1:100



Details of Open Ditch S=1:20



Details and Bar Arrangement of Cover S=1:20



<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN</p>		<p>NIPPON KOBEL CO. LTD</p>		<p>DWG. TITLE: CULVERT (4)</p>	
<p>PREPARED BY A. MORIOKA</p>	<p>CHECKED BY T. HAYAKAWA</p>	<p>APPROVED BY M. TOKURA</p>	<p>GENERAL</p>		
<p>SIGNATURE</p>	<p>DATE</p>	<p>SCALE</p>	<p>SHEET NO.</p>	<p>REV. NO.</p>	<p>REV. NO.</p>
<p>1 / 2009</p>	<p>1 / 2009</p>	<p>1:100</p>	<p>06-004</p>	<p>06-004</p>	<p>06-004</p>

NOTE:

KISUMU DISTRICT
NYALUNYA SUB-LOCATION
OYOLA VILLAGE

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF WATER AND IRRIGATION
WATER RESOURCES MANAGEMENT AUTHORITY

Figure 3.22 Oyola: Culvert (4)

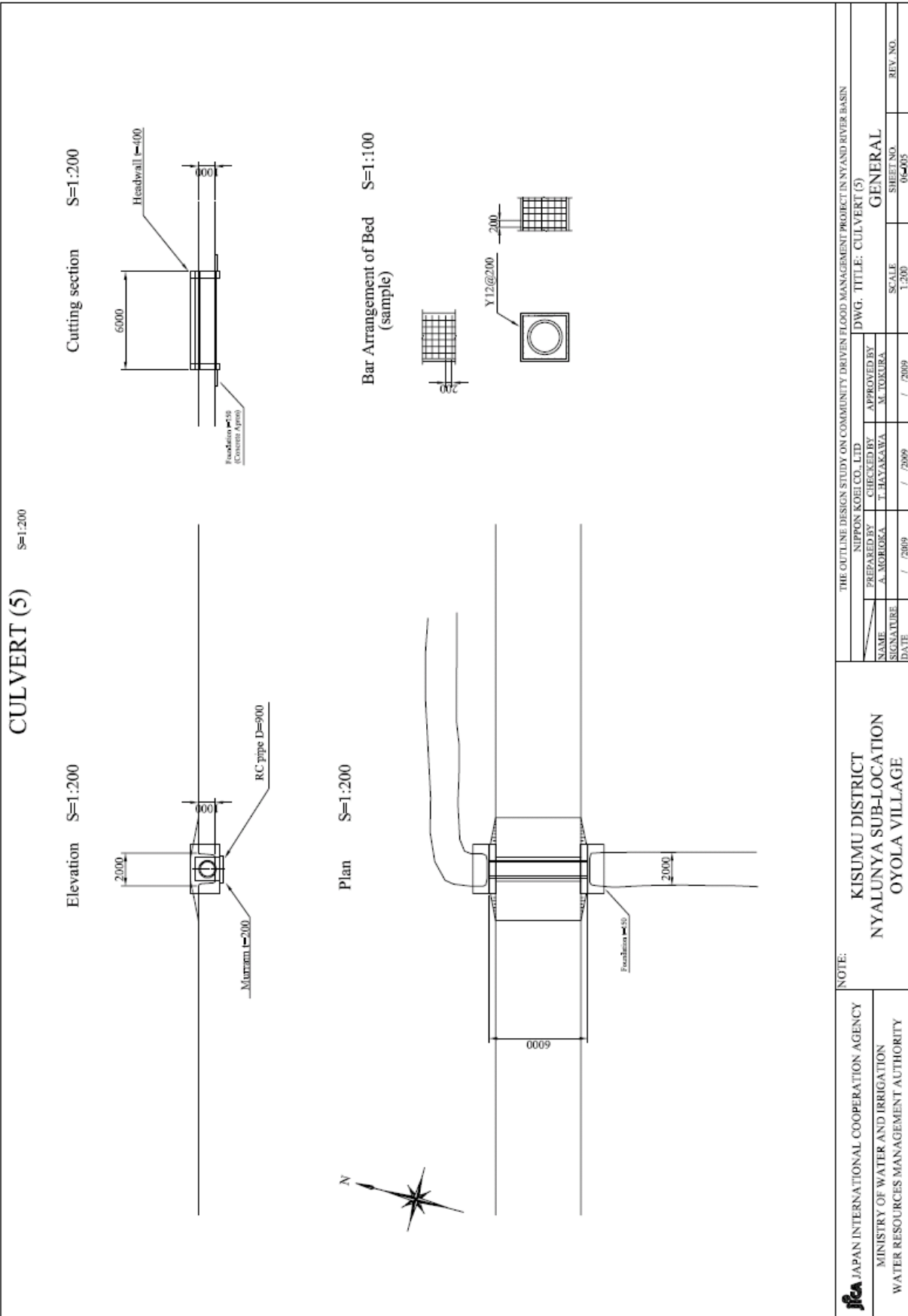


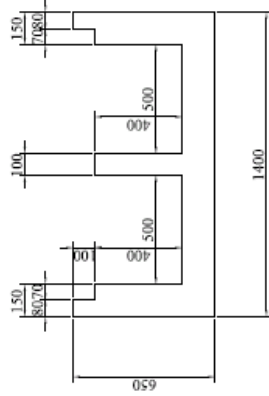
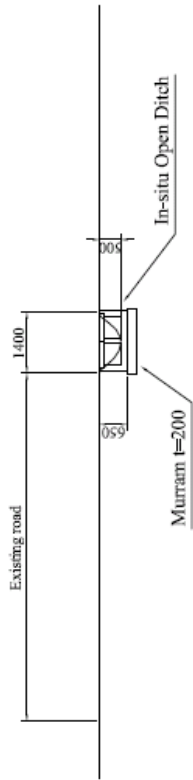
Figure 3.23 Oyola: Culvert (5)

CULVERT (6)

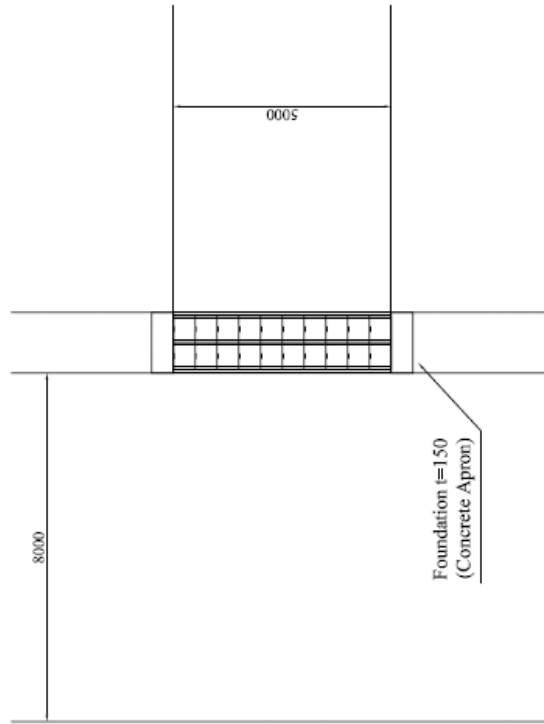
S=1:100

Elevation S=1:100

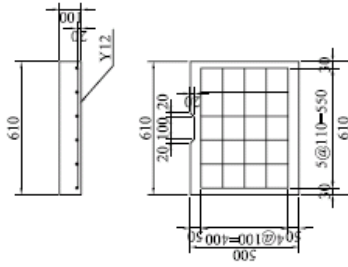
Details of Open Ditch S=1:20



Plan S=1:100



Details and Bar Arrangement of Cover S=1:20



NOTE: JICA JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF WATER AND IRRIGATION
WATER RESOURCES MANAGEMENT AUTHORITY

KISUMU DISTRICT
NYALUNYA SUB-LOCATION
OYOLA VILLAGE

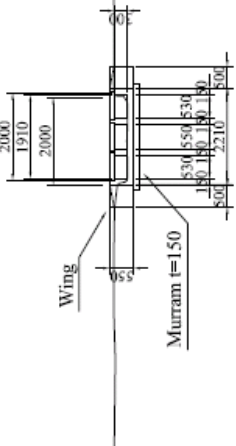
TIME OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN	
NIPPON KOEI CO., LTD.	
PREPARED BY	APPROVED BY
A. MURIOKA	M. TOKURA
CHECKED BY	T. HAYAKAWA
DATE	/ 2009 / 2009
SIGNATURE	SCALE
	1:100
	SHEET NO.
	05/06
	REV. NO.

Figure 3.24 Oyola: Culvert (6)

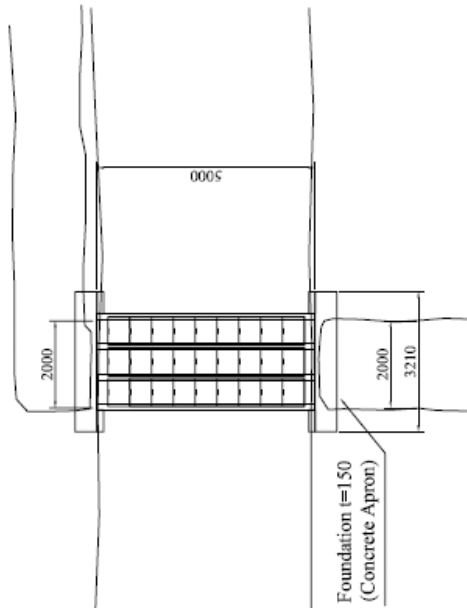
CULVERT (1)

S=1:100

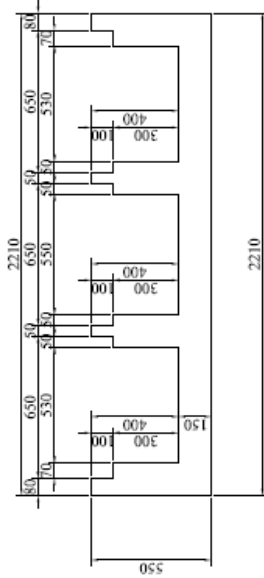
Elevation S=1:100



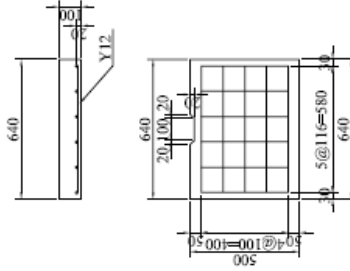
Plan S=1:100



Details of Open Ditch S=1:20



Details and Bar Arrangement of Cover S=1:20



NOTE:

KISUMU DISTRICT
UPPER BWANDA SUB-LOCATION
KANYANGO VILLAGE

ifca JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF WATER AND IRRIGATION
WATER RESOURCES MANAGEMENT AUTHORITY

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

NIPPON KOEI CO., LTD.

DWG. TITLE: CULVERT (1)

PREPARED BY: A. MORIYAMA

CHECKED BY: T. HAYAKAWA

APPROVED BY: M. TORIURA

GENERAL

SCALE: 1:100

SHEET NO: 05/401

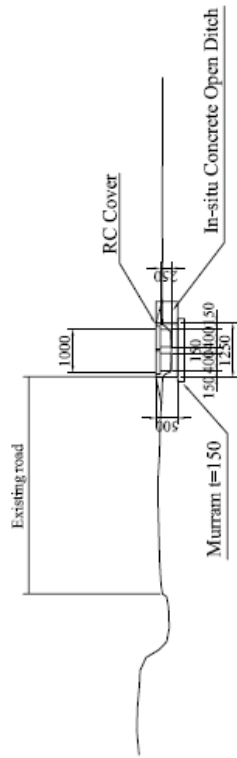
REV. NO.

Figure 3.25 Kanyango: Culvert (1)

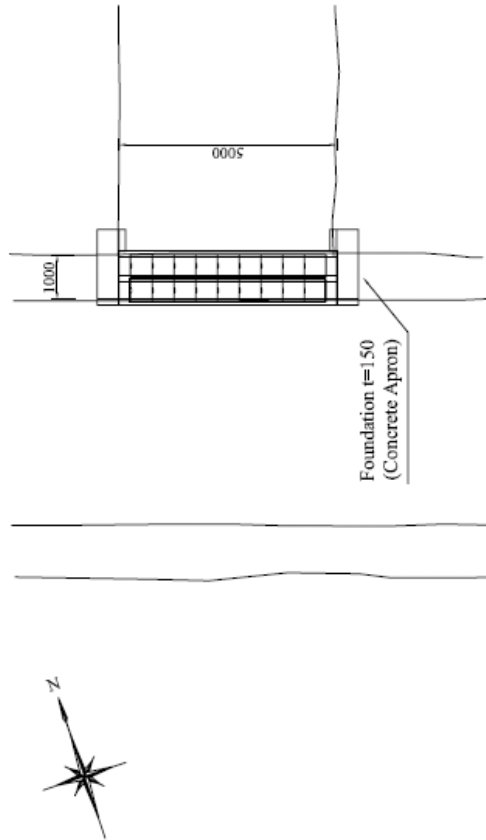
CULVERT (2)

S=1:100

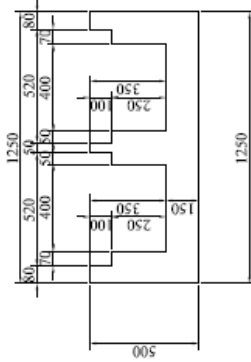
Elevation S=1:100



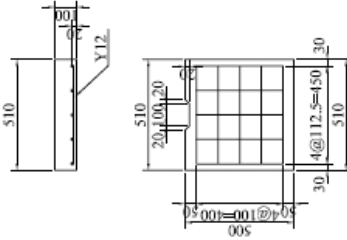
Plan S=1:100



Details of Open Ditch S=1:20



Details and Bar Arrangement of Cover S=1:20



ifa JAPAN INTERNATIONAL COOPERATION AGENCY

MINISTRY OF WATER AND IRRIGATION
WATER RESOURCES MANAGEMENT AUTHORITY

NOTE:

KISUMU DISTRICT
UPPER BWANDA SUB-LOCATION
KANYANGO VILLAGE

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

NIPPON KOEI CO., LTD

DWG. TITLE: CULVERT (2)

PREPARED BY
A. MORIOKA

CHECKED BY
T. HAYAKAWA

APPROVED BY
M. TOKURA

SCALE
1:100

SHEET NO.
01/02

DATE
/ / 2009

REV. NO.
/ / 2009

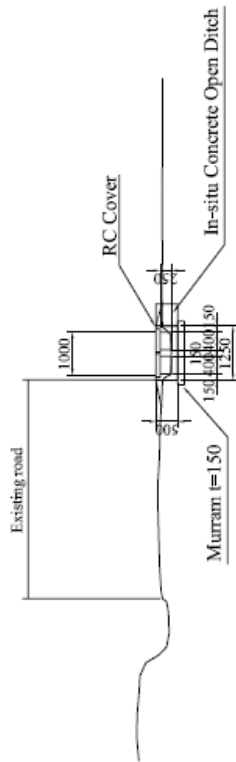
GENERAL

Figure 3.26 Kanyango: Culvert (2)

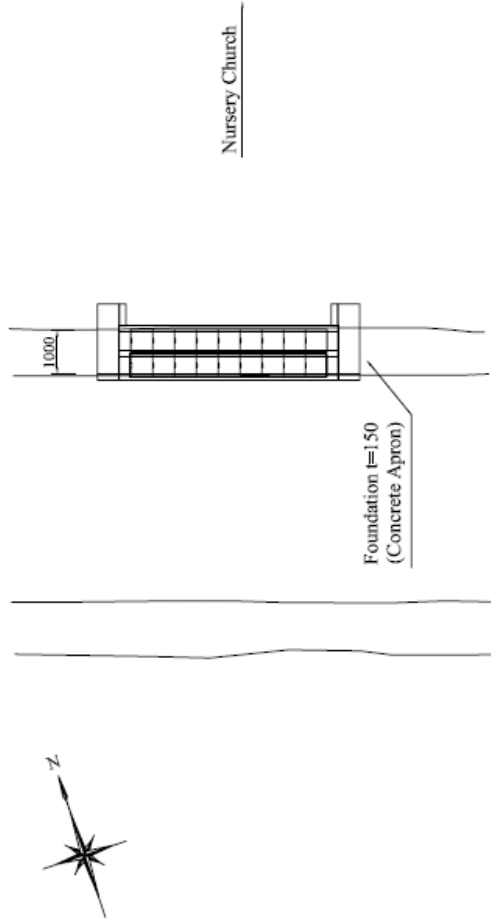
CULVERT (3)

S=1:100

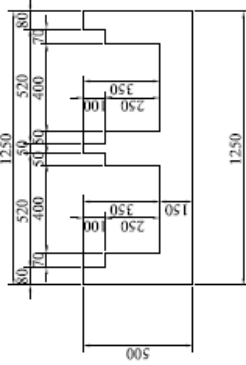
Elevation S=1:100



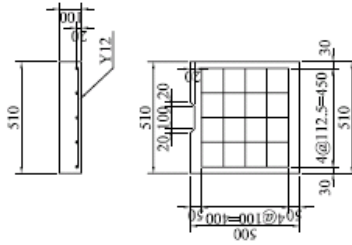
Plan S=1:100



Details of Open Ditch S=1:20



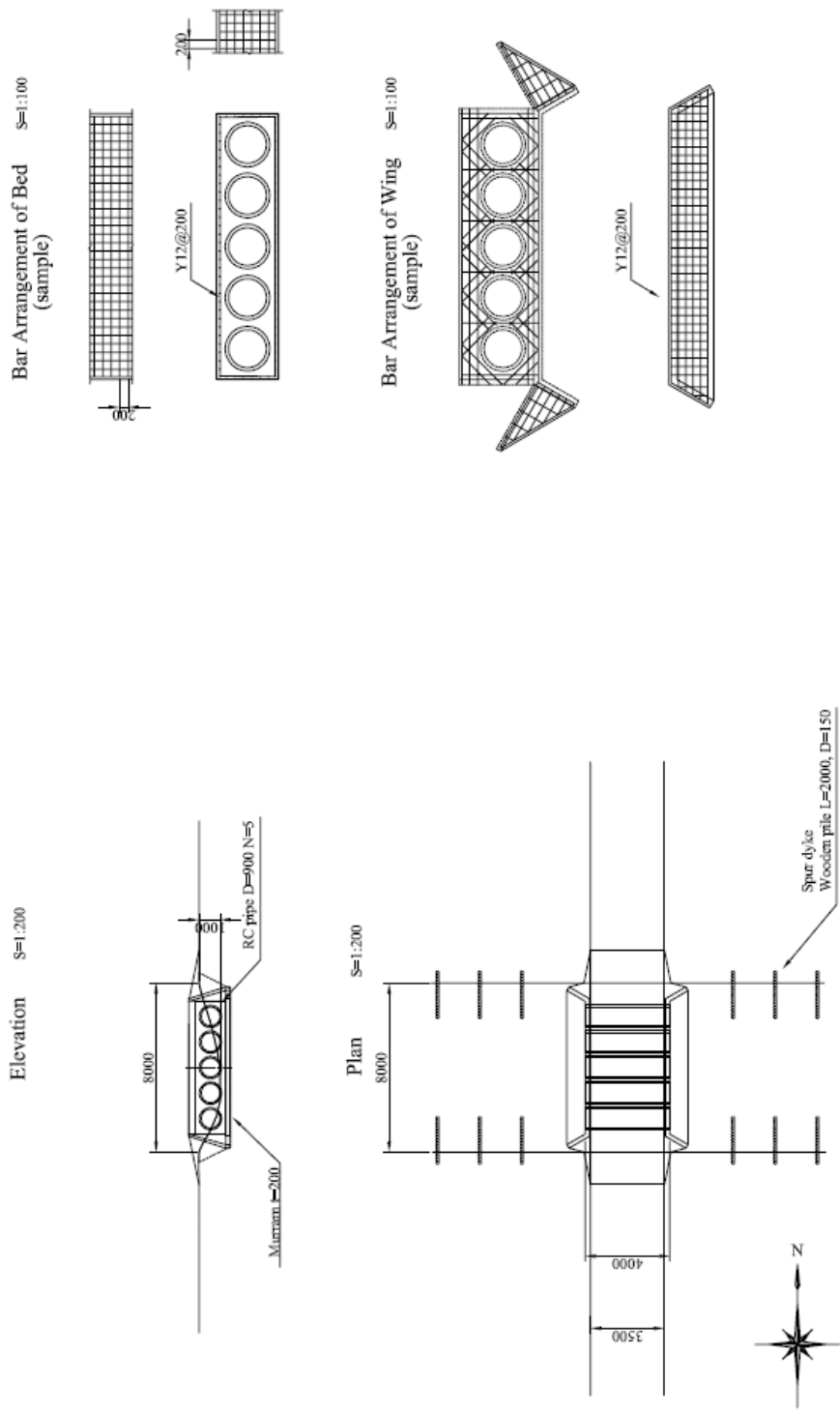
Details and Bar Arrangement of Cover S=1:20



JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		NOTE: KISUMU DISTRICT UPPER BWANDA SUB-LOCATION KANYANGO VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOGI CO. LTD. PREPARED BY: A. MORIOKA / 2009 / 2009 / 2009 CHECKED BY: T. HAYAKAWA APPROVED BY: M. TOKURA DWG. TITLE: CULVERT (3)	
SCALE: 1:100 SHEET NO. 07-403		GENERAL		REV. NO.	

Figure 3.27 Kanyango: Culvert (3)

CULVERT



JICA JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY		NOTE: KISUMU DISTRICT CENTRAL BWANDA SUB-LOCATION KOWITI VILLAGE		THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOBEL CO. LTD.	
NAME	A. MURIOKA	CHECKED BY	T. HAYAKAWA	APPROVED BY	M. TOKURA
SIGNATURE					
DATE	/ 2009		/ 2009		/ 2009
				DWG. TITLE: CULVERT	GENERAL
				SCALE	1:200
				SHEET NO.	04-002
				REV. NO.	

Figure 3.29 Kowiti: Culvert

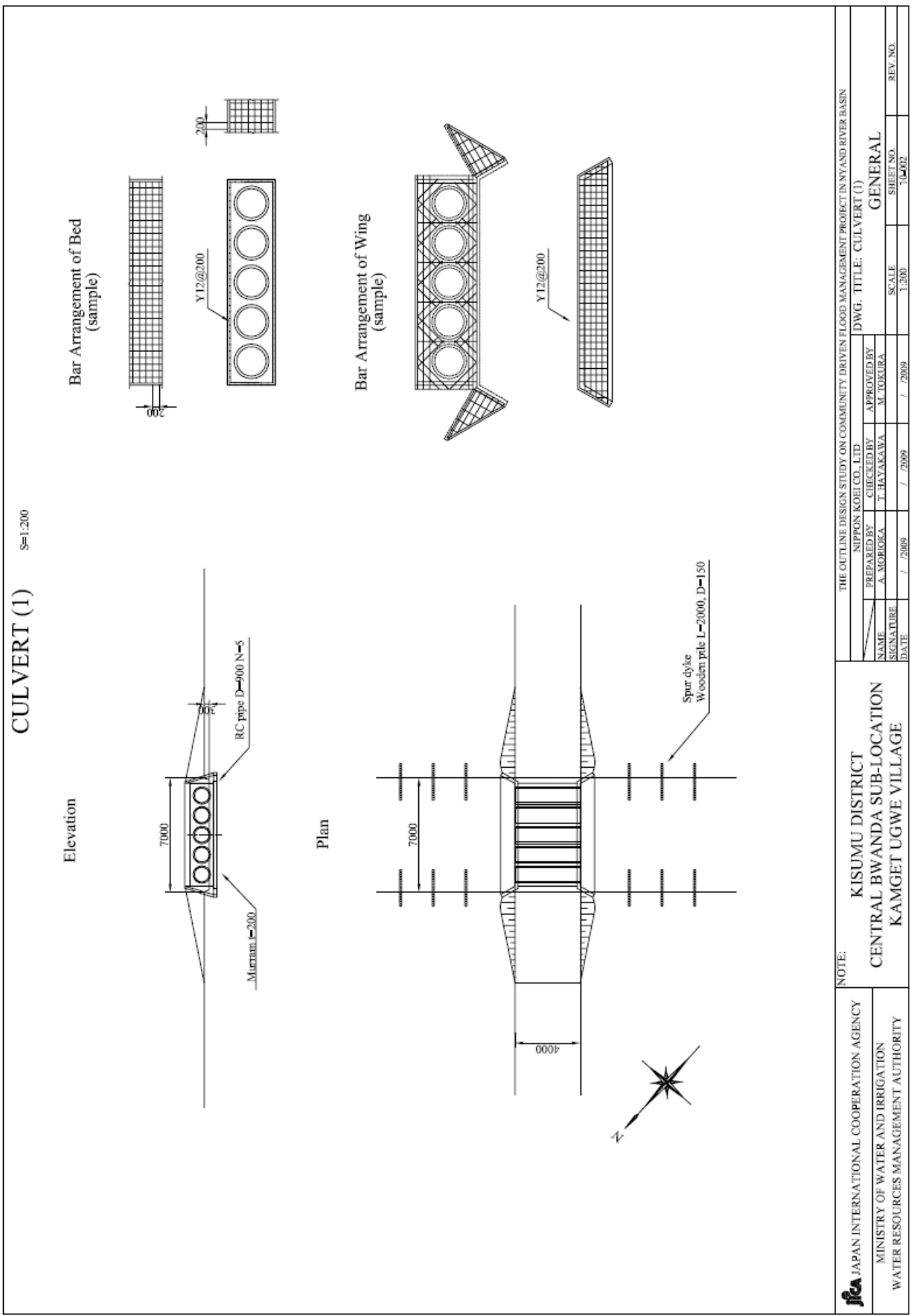
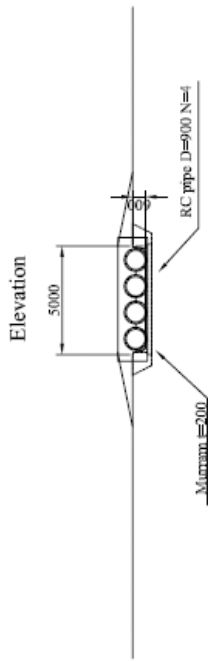


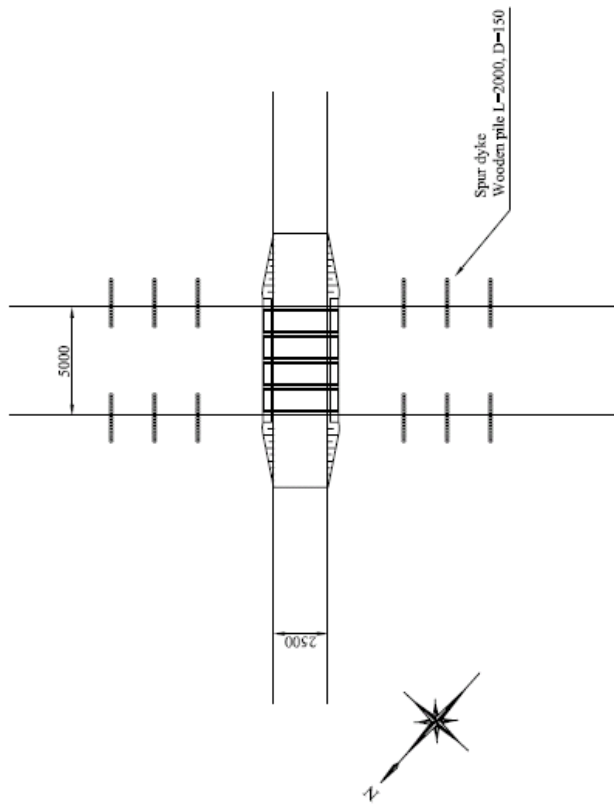
Figure 3.30 Kamget Ugwe: Culvert (1)

CULVERT (2)

S=1:200



Plan



NOTE:

ifa JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

KISUMU DISTRICT
 CENTRAL BWANDA SUB-LOCATION
 KAMGET UGWE VILLAGE

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

PREPARED BY		CHECKED BY		APPROVED BY	
NAME	A. MORIOKA	T. HAYAKAWA	M. TOKURA	GENERAL	
SIGNATURE				SCALE	1:200
DATE	/ / 2009	/ / 2009	/ / 2009	SHEET NO.	1/003
				REV. NO.	

Figure 3.31 Kamget Ugwe: Culvert (2)

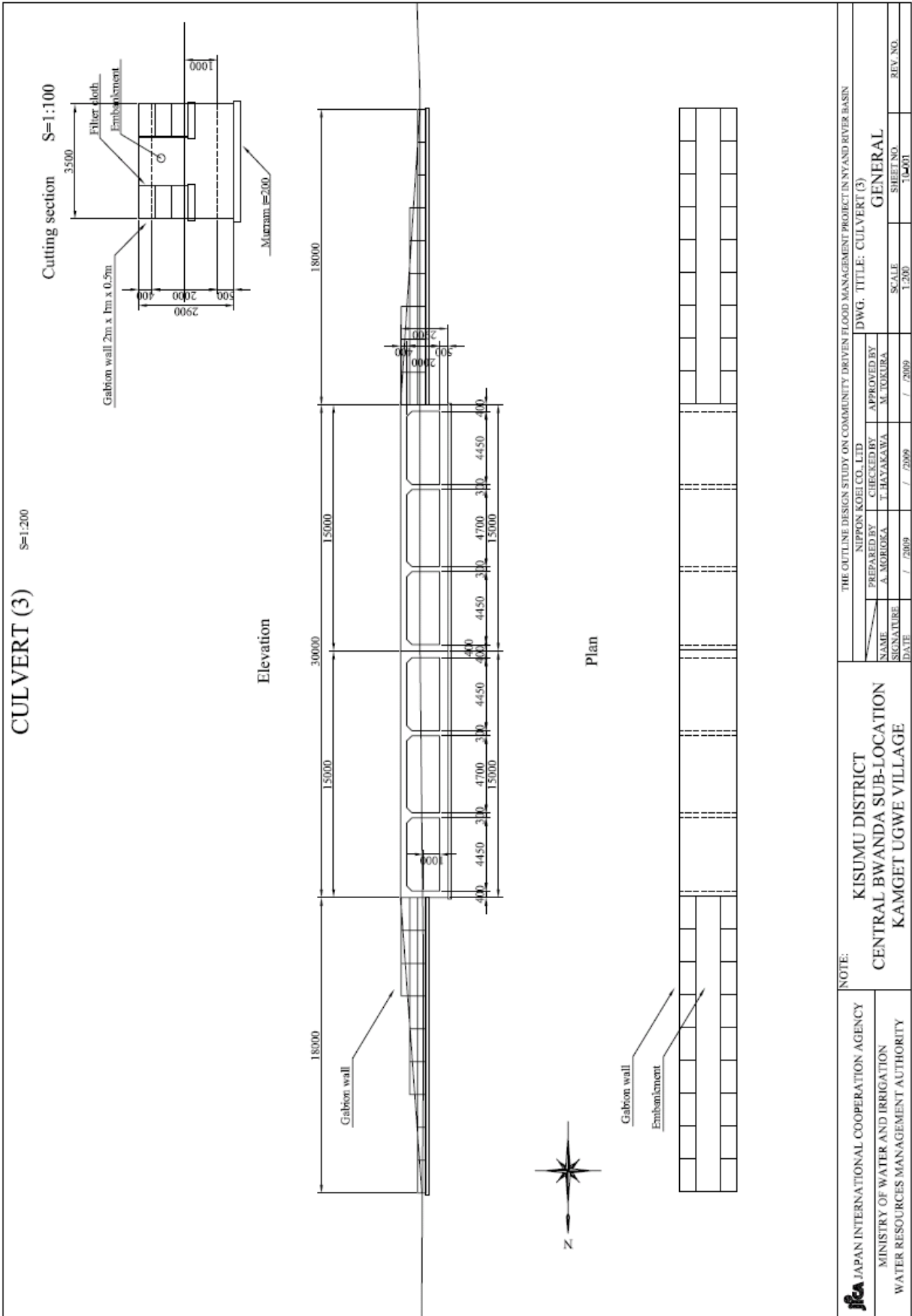


Figure 3.32 Kamget Ugwe: Culvert (3)

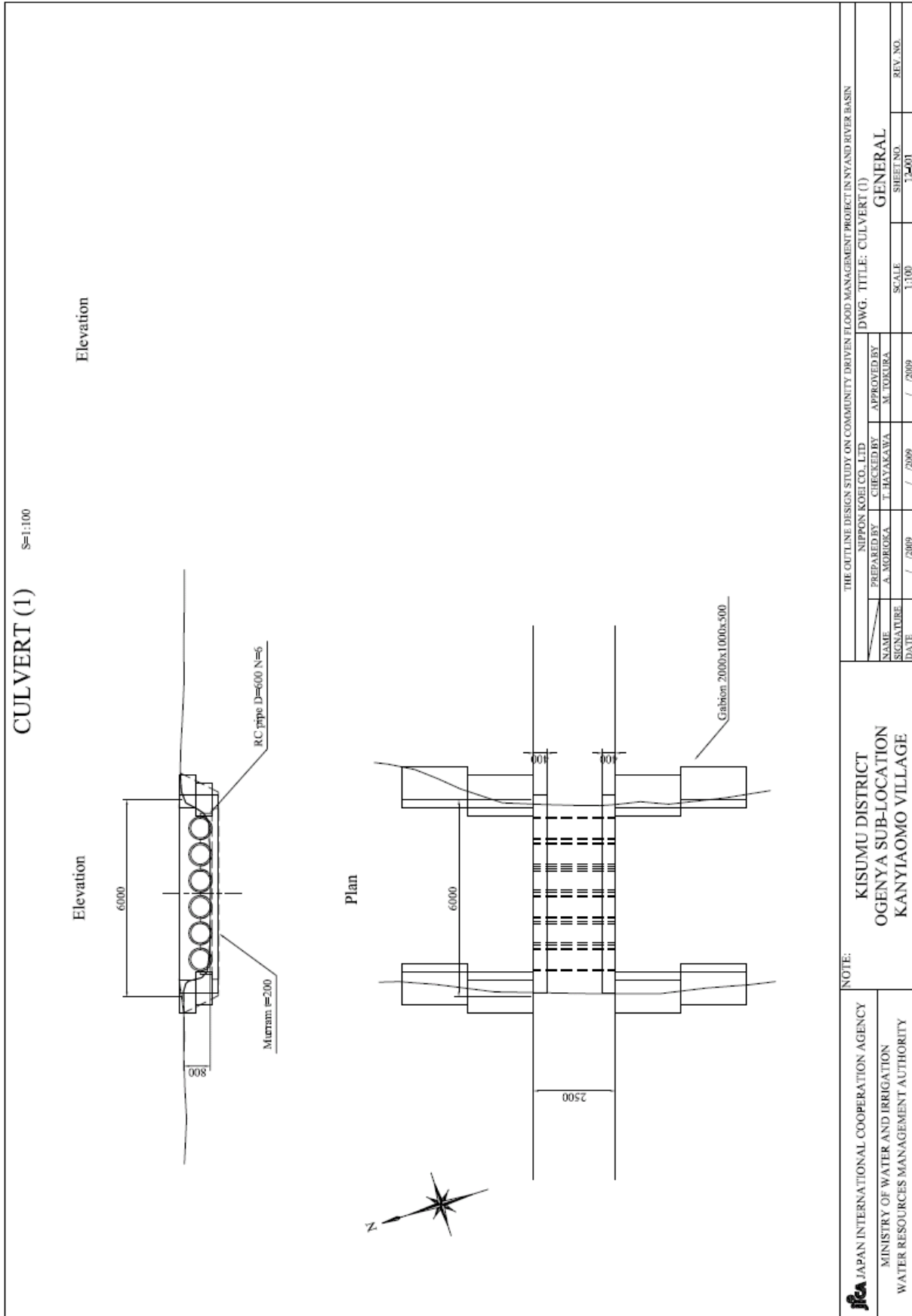


Figure 3.33 Kanyiaomo: Culvert (1)

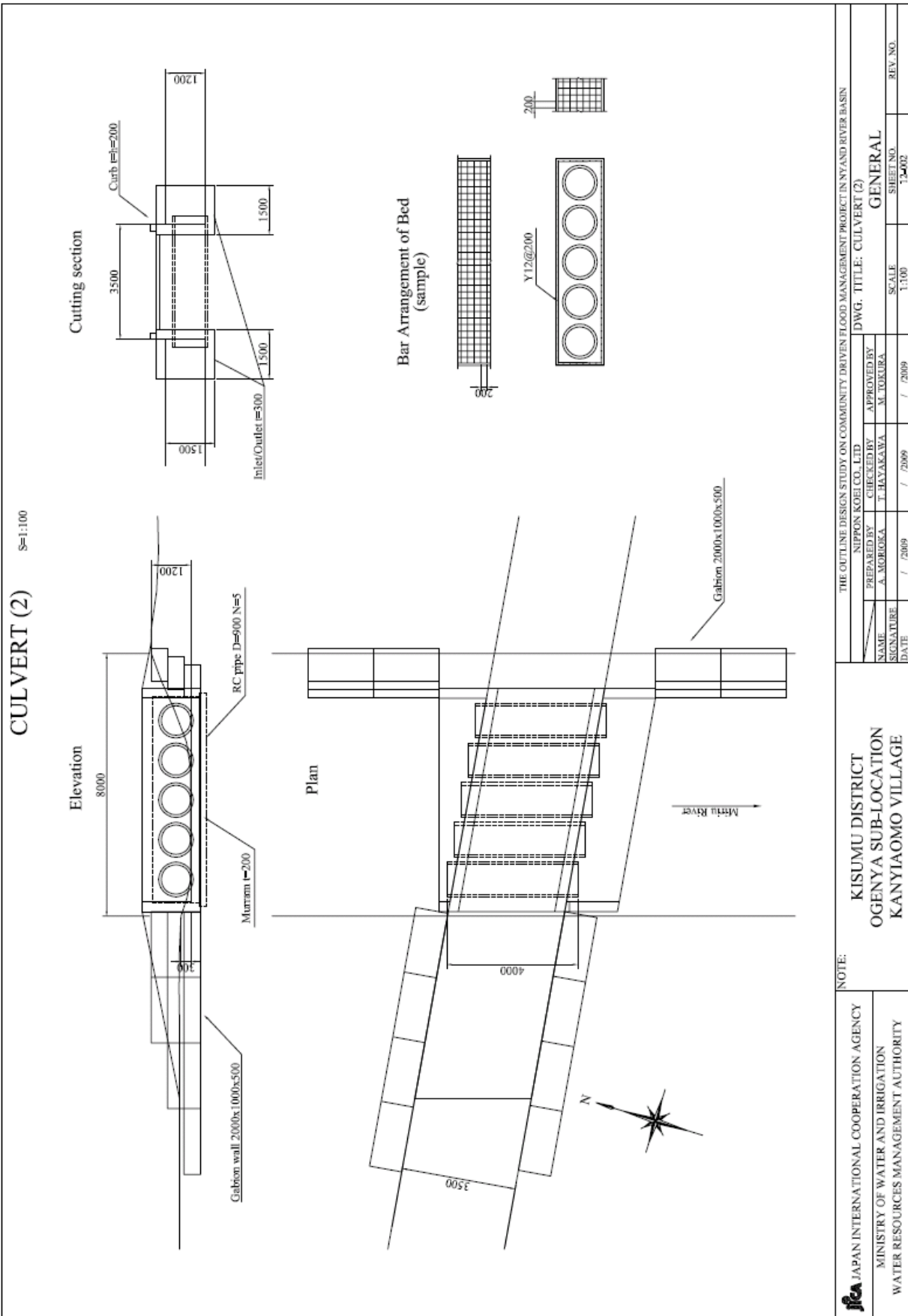


Figure 3.34 Kanyiaomo: Culvert (2)

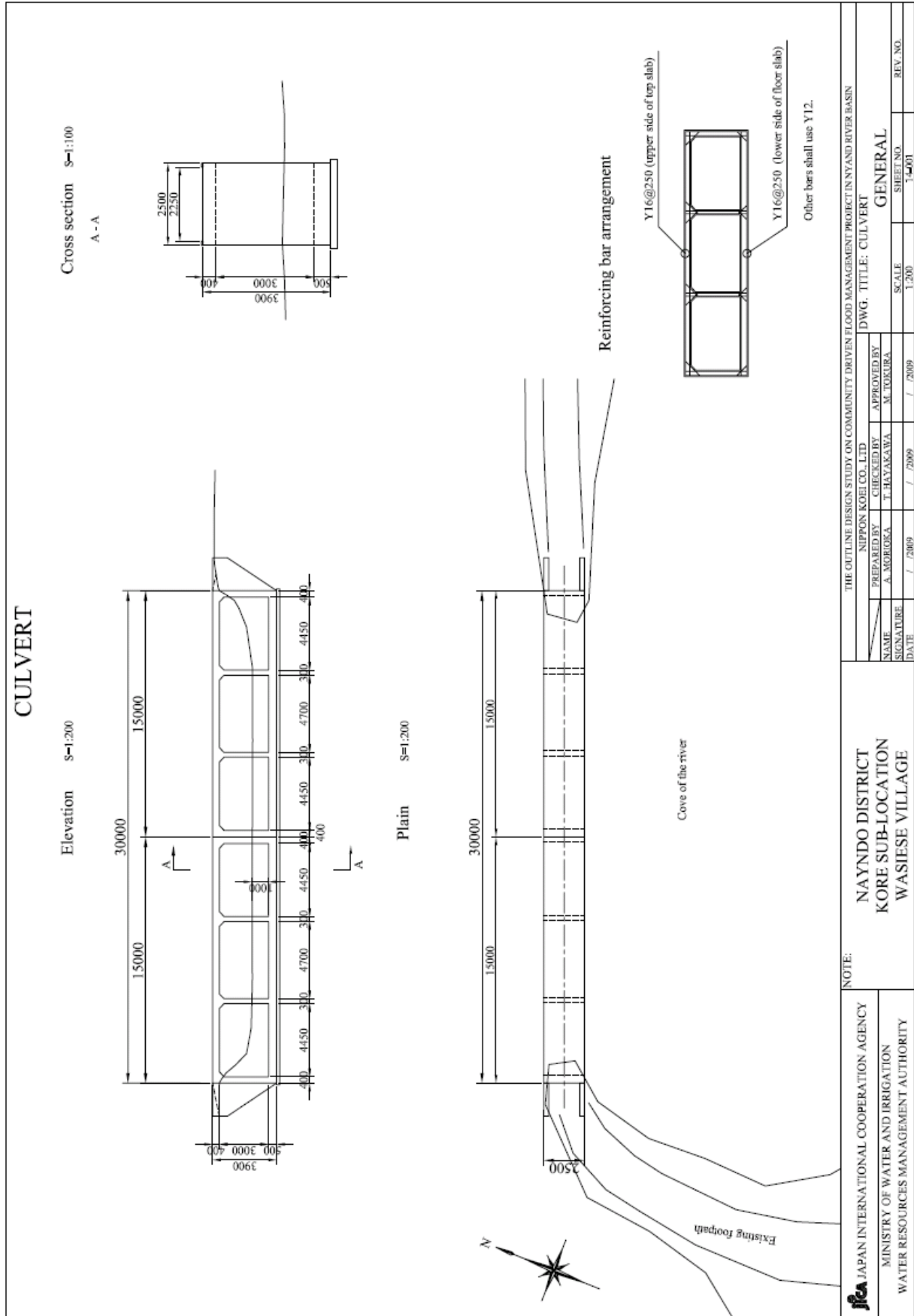
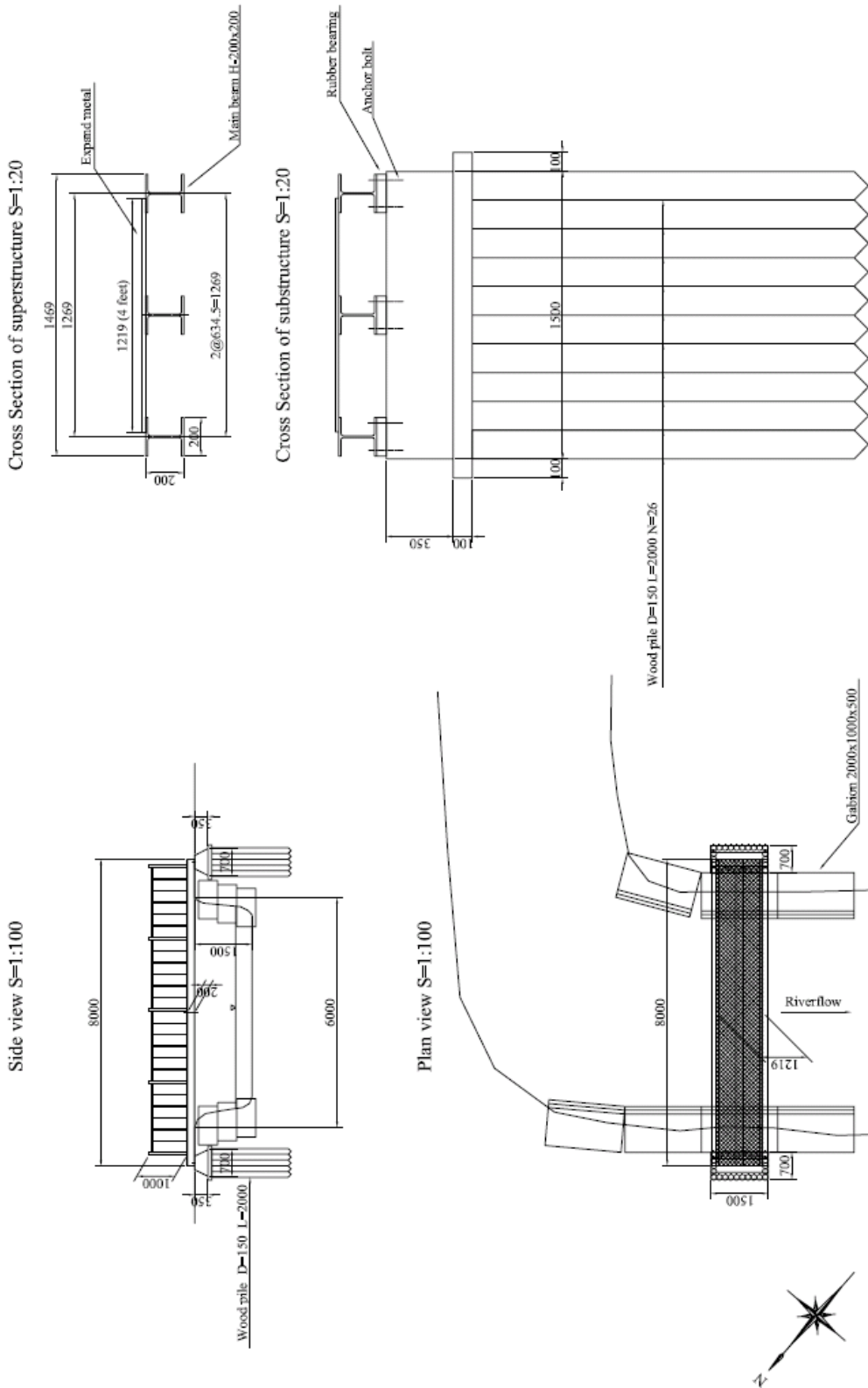


Figure 3.35 Wasiese: Culvert

FOOTBRIDGE



<p>JICA JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY</p>		<p>NOTE: NAYNDO DISTRICT AHERO IRRIGATION SCHEME SUB-LOCATION KAMAGAGA VILLAGE</p>		<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOEI CO. LTD. PREPARED BY: A. MURIGUSA / CHECKED BY: T. HAYAKAWA / APPROVED BY: M. TOKURA SIGNATURE: / DATE: / 2009 / 2009 / 2009</p>		<p>DWG. TITLE: FOOTBRIDGE GENERAL SCALE: 1:100 SHEET NO: 1-50/01 REV. NO.</p>	
---	--	--	--	---	--	--	--

Figure 3.36 Kamagaga: Footbridge

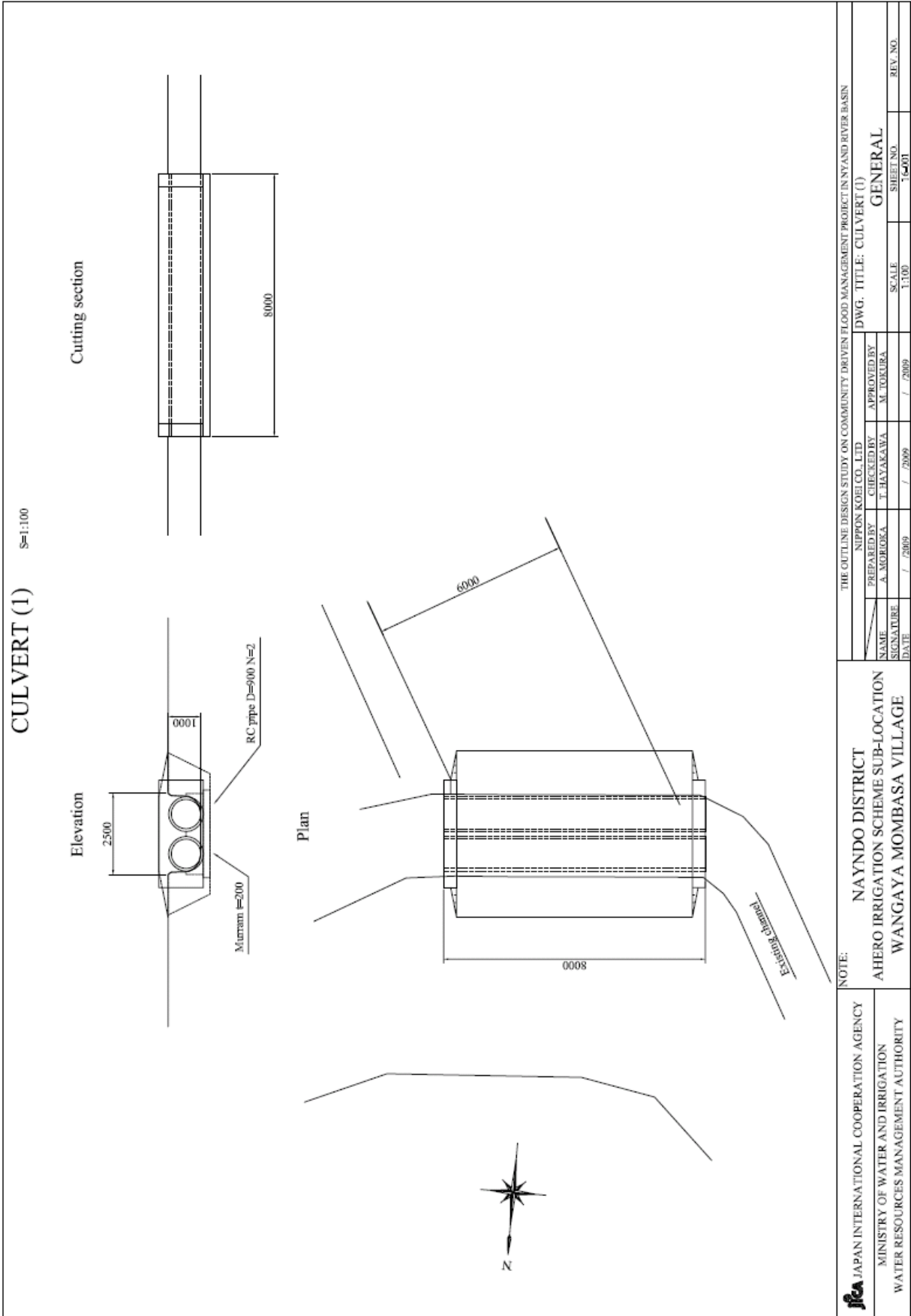


Figure 3.37 Wangaya Mombasa: Culvert (1)

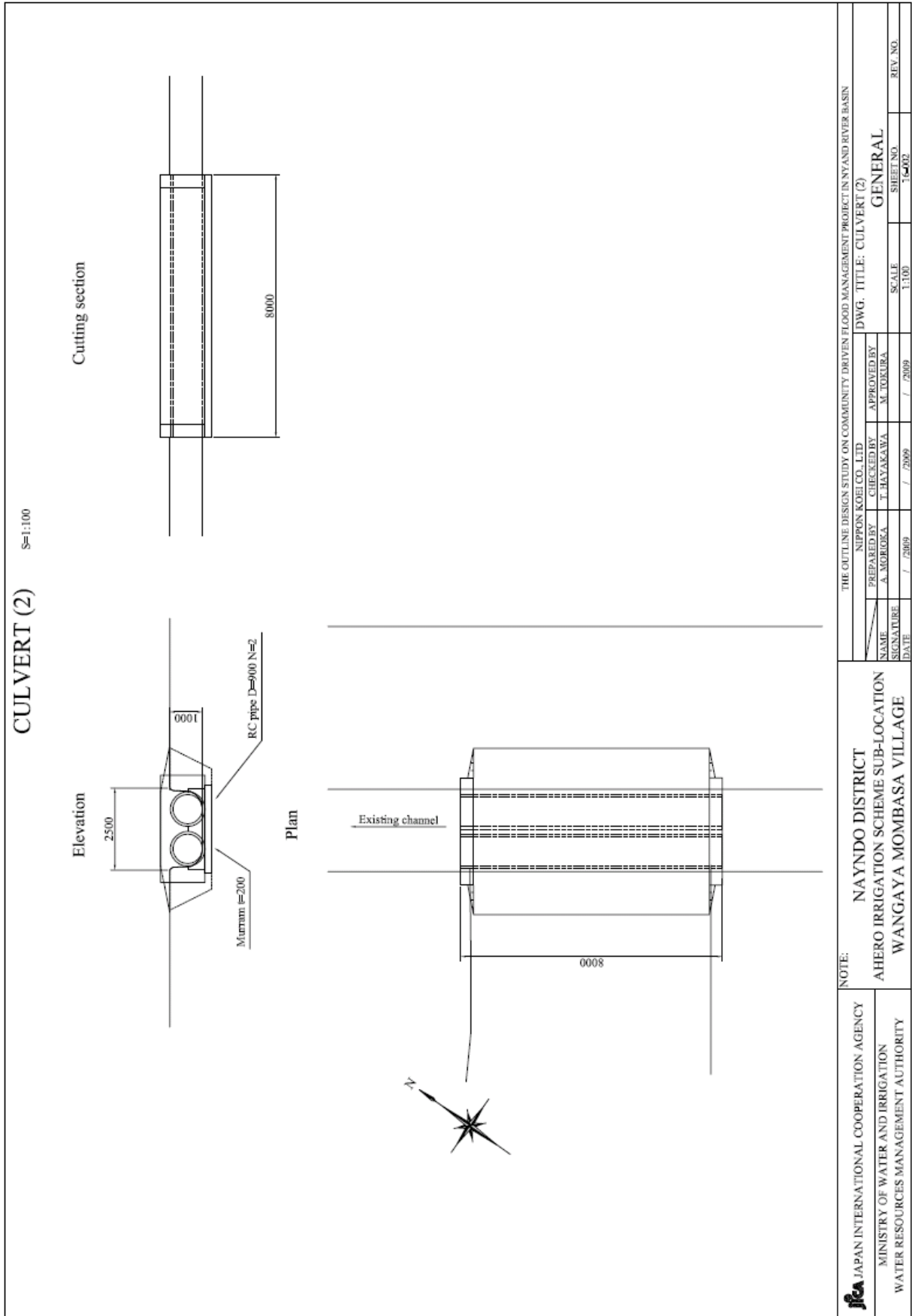


Figure 3.38 Wangaya Mombasa: Culvert (2)

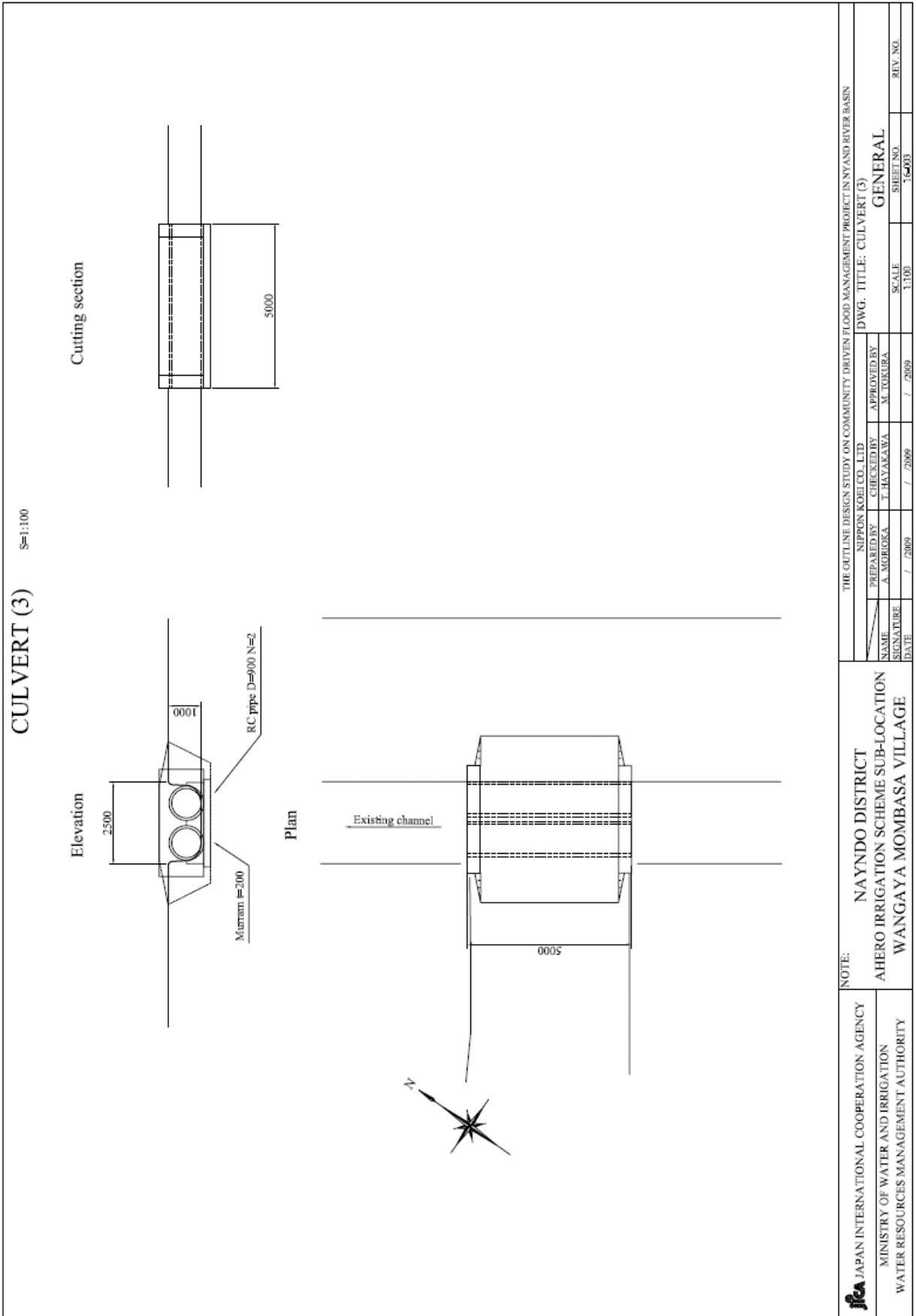


Figure 3.39 Wangaya Mombasa: Culvert (3)

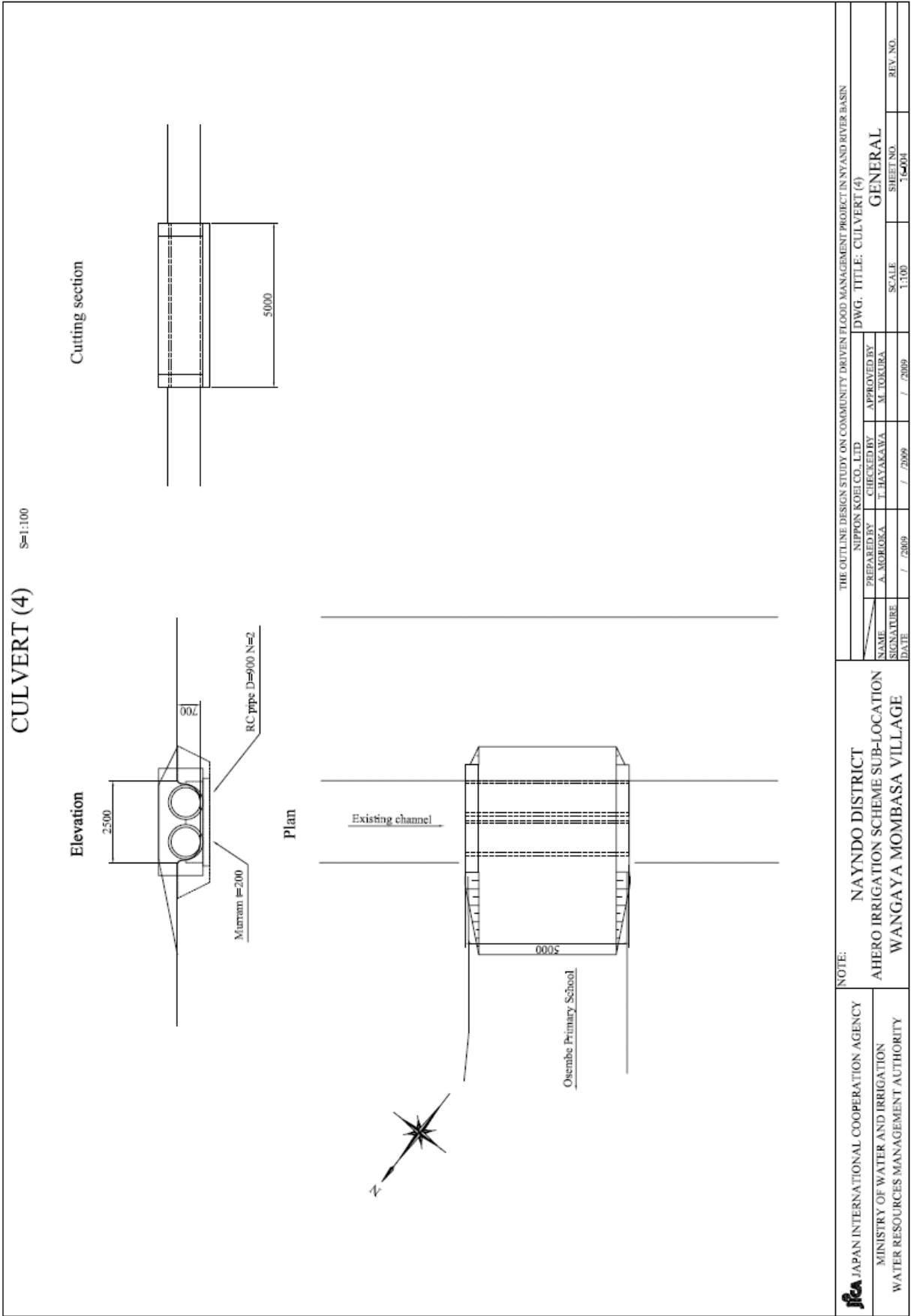
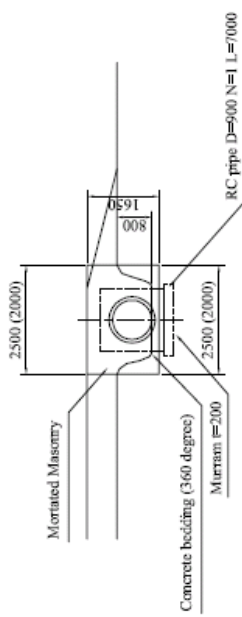


Figure 3.40 Wangaya Mombasa: Culvert (4)

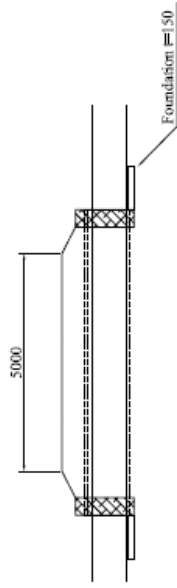
CULVERT

S=1:100

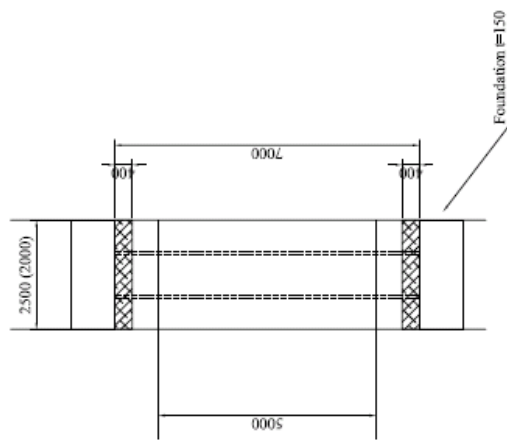
Elevation



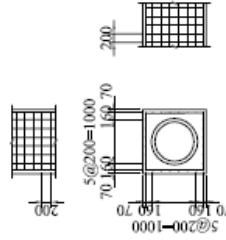
Cutting section



Plan



Bar Arrangement of Bed (sample)



NOTE:

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

NAYNDO DISTRICT
 OBUMBA SUB-LOCATION
 ACHUODHO VILLAGE

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

NAME	PREPARED BY	CHECKED BY	APPROVED BY	DWG. TITLE: CULVERT
SIGNATURE	A. MURUGA	T. HAYAKAWA	M. USUKIWA	GENERAL
DATE	/ / 2009	/ / 2009	/ / 2009	SCALE 1:100
				SHEET NO. 1-002
				REV. NO.

Figure 3.41 Achuodho: Culvert (1)

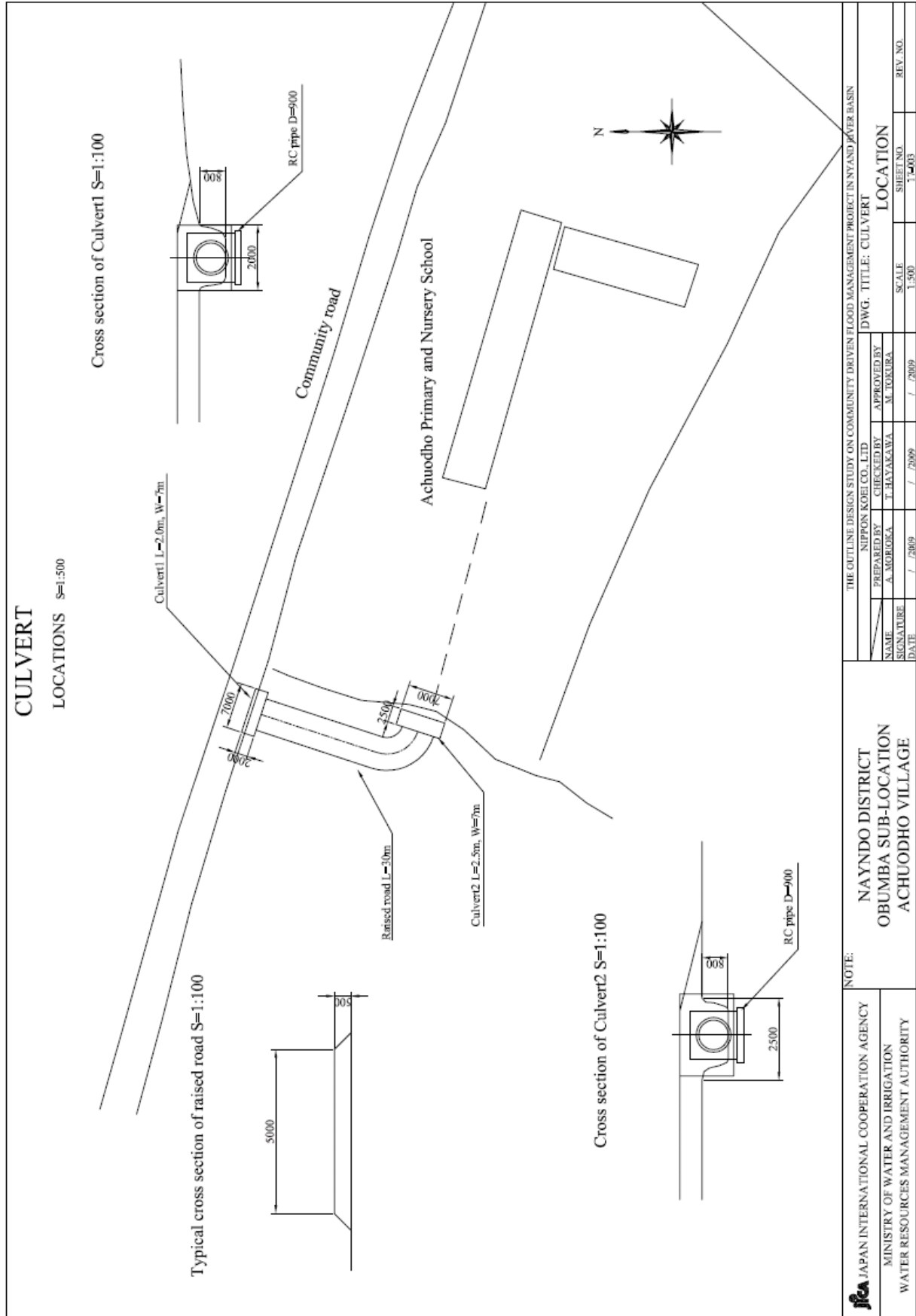
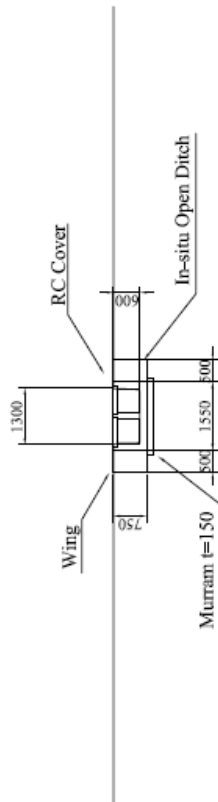


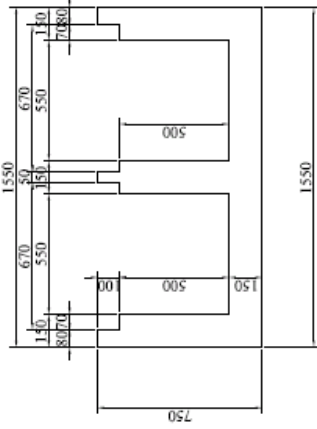
Figure 3.42 Achuodho: Culvert (2)

CULVERT

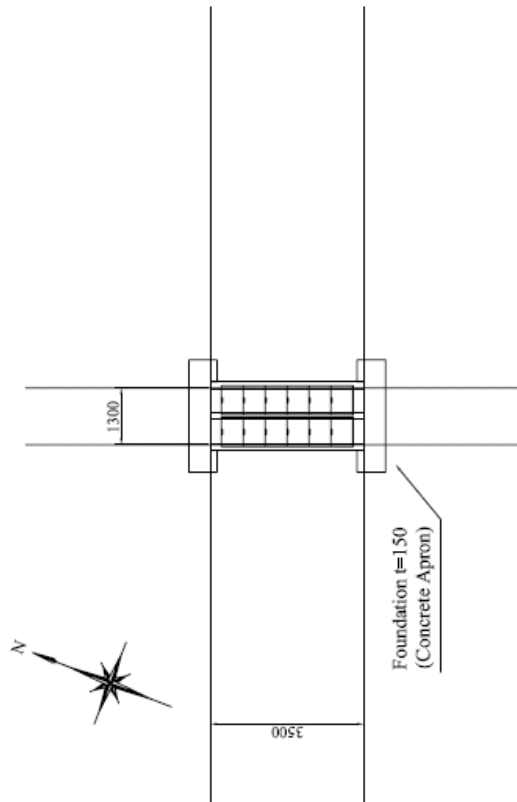
Elevation S=1:100



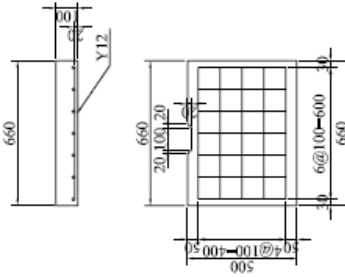
Details of Open Ditch S=1:20



Plan S=1:100



Details and Bar Arrangement of Cover S=1:20



NOTE:

ifca JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

NAYNDO DISTRICT
 KANGO SUB-LOCATION
 WAKESI VILLAGE

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN

PREPARED BY		CHECKED BY		APPROVED BY	
A. MORIOKA		T. HAYAKAWA		M. TOKURA	
SIGNATURE		SCALE		SHEET NO.	
DATE		1:100		14/01	
				REV. NO.	
				1	

DWG. TITLE: CULVERT
 GENERAL

Figure 3.43 Wakesi: Culvert

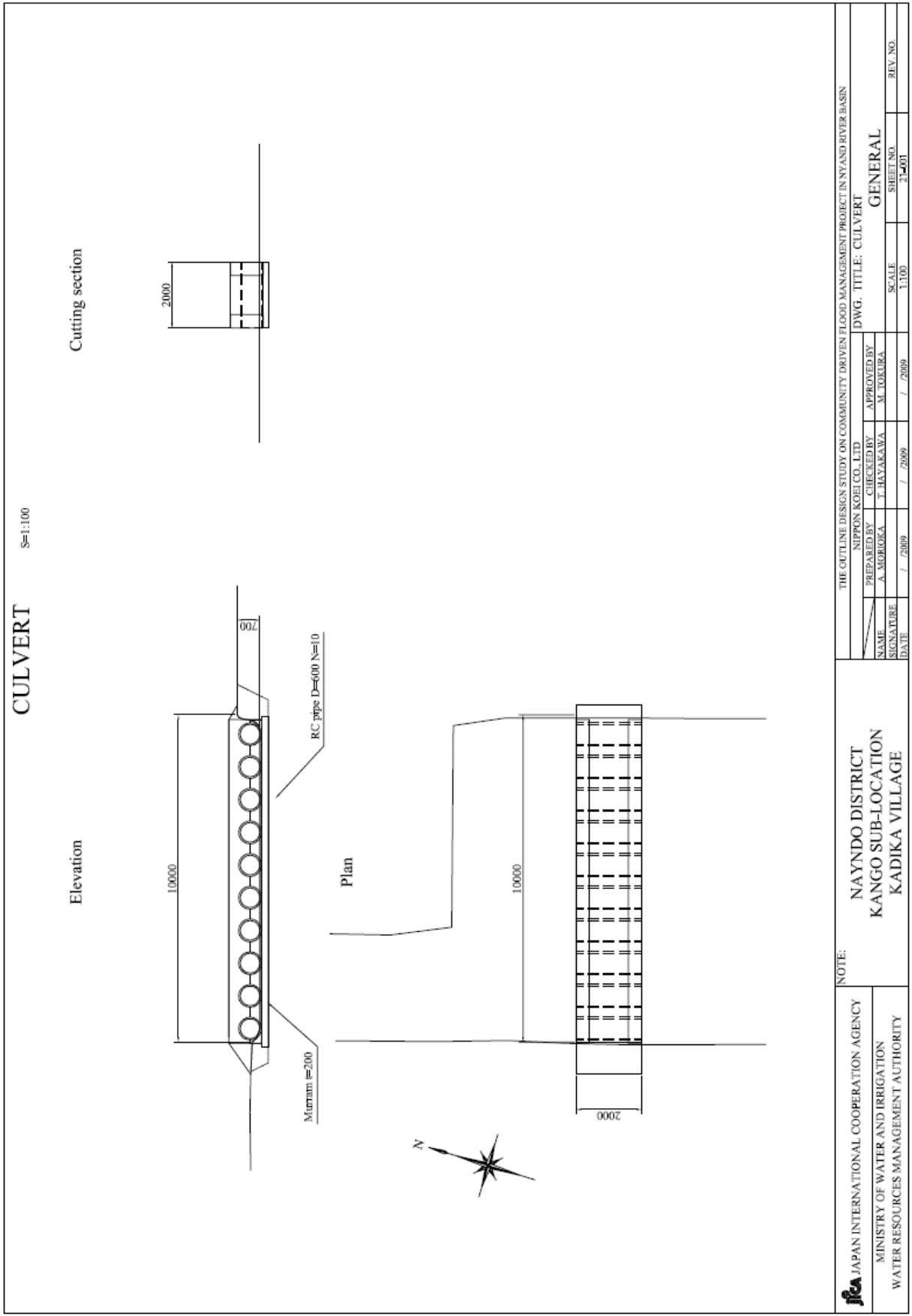
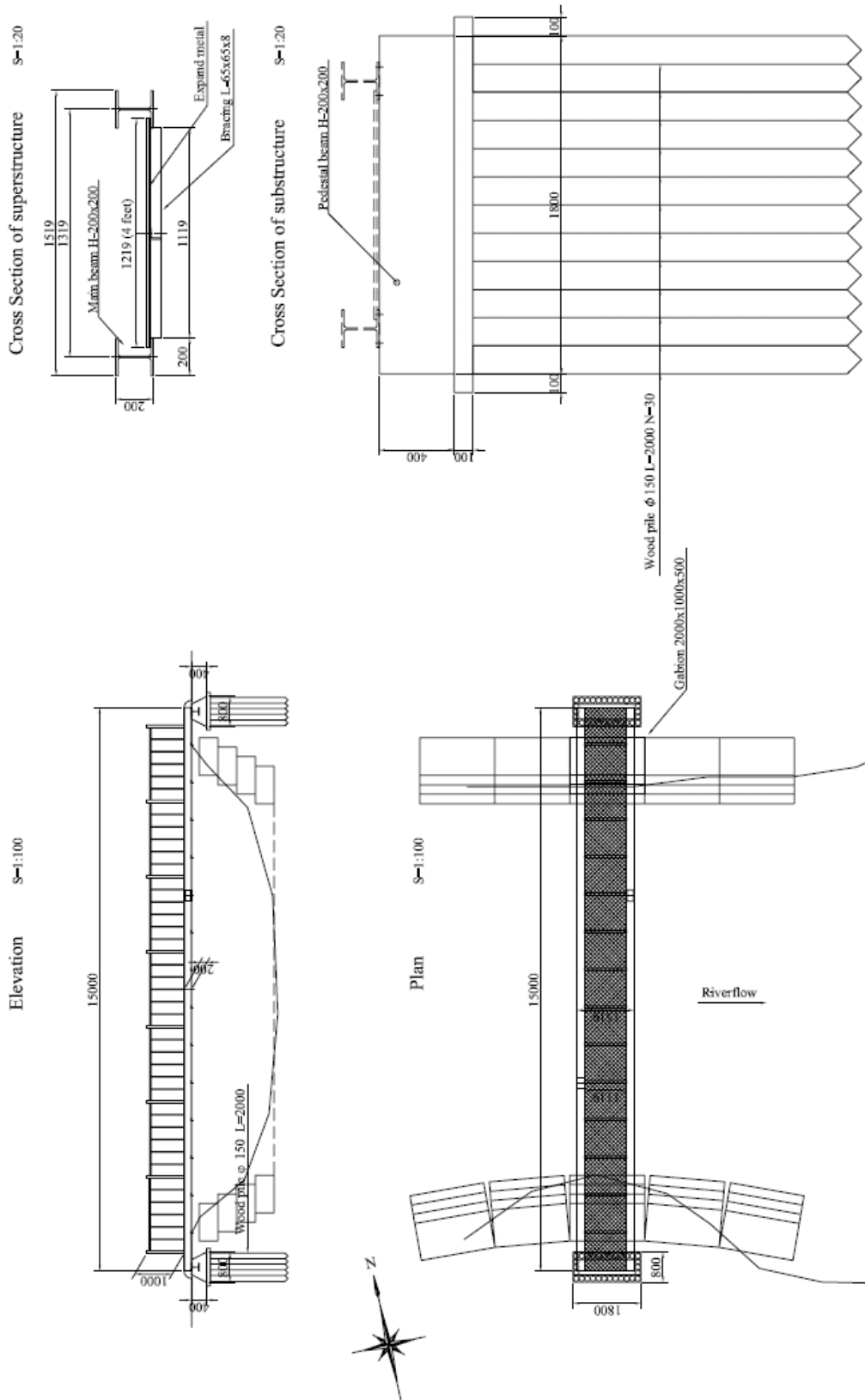


Figure 3.44 Kadika: Culvert

FOOTBRIDGE

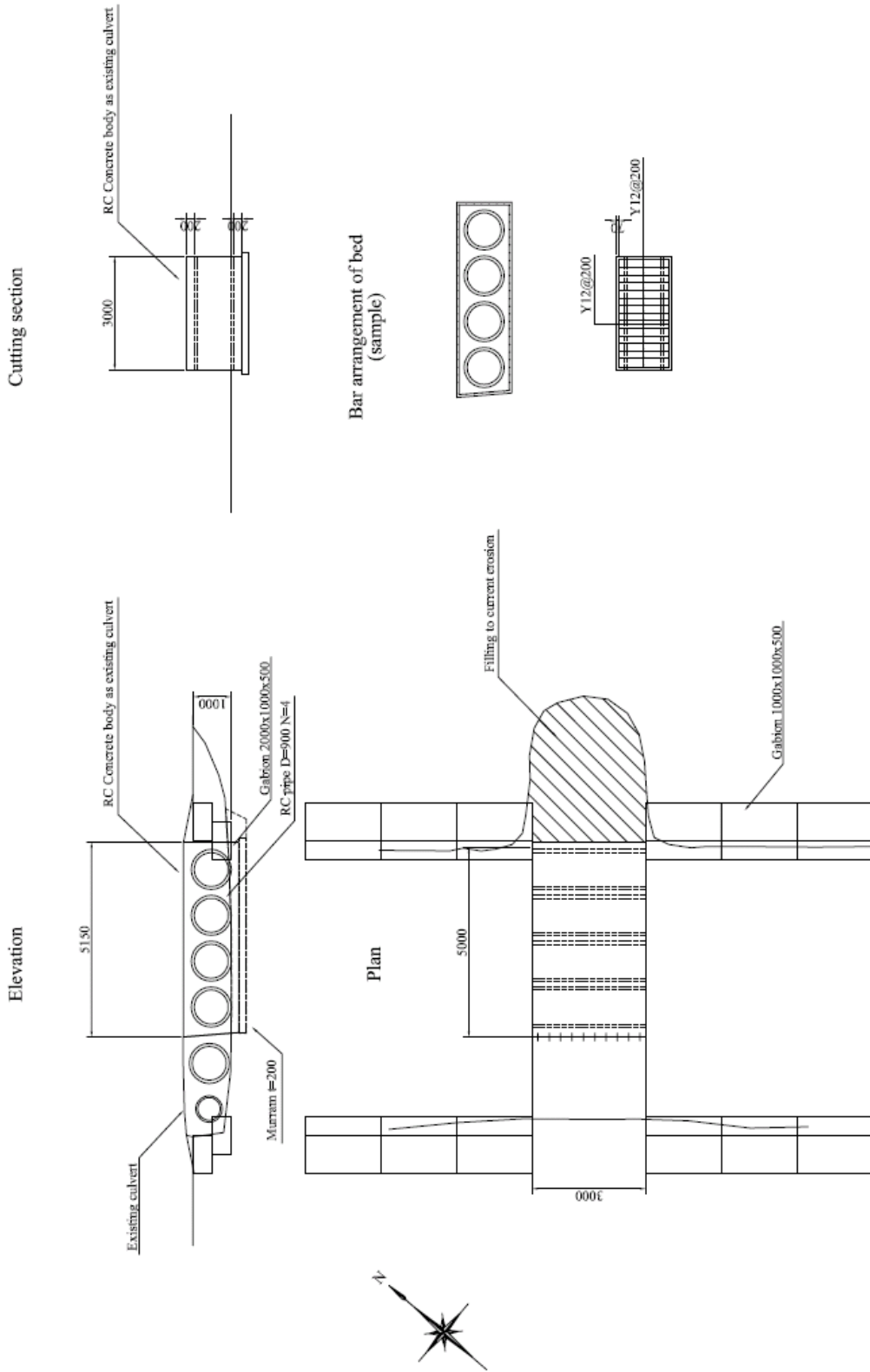


<p>JICA JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY</p>		<p>NOTE: NAYNDO DISTRICT KANGO SUB-LOCATION KADIKA VILLAGE</p>		<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN NIPPON KOGI CO. LTD. PREPARED BY: A. MORIGAKI / 2009 / 2009 / 2009 CHECKED BY: T. HAYAKAWA / 2009 / 2009 / 2009 APPROVED BY: M. TOKURA / 2009 / 2009 / 2009</p>	
<p>DWG. TITLE: FOOTBRIDGE GENERAL</p>		<p>SCALE: 1:100</p>		<p>SHEET NO. 2-402 REV. NO.</p>	

Figure 3.45 Kadika: Footbridge

CULVERT (1)

S=1:100



NOTE:

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
 MINISTRY OF WATER AND IRRIGATION
 WATER RESOURCES MANAGEMENT AUTHORITY

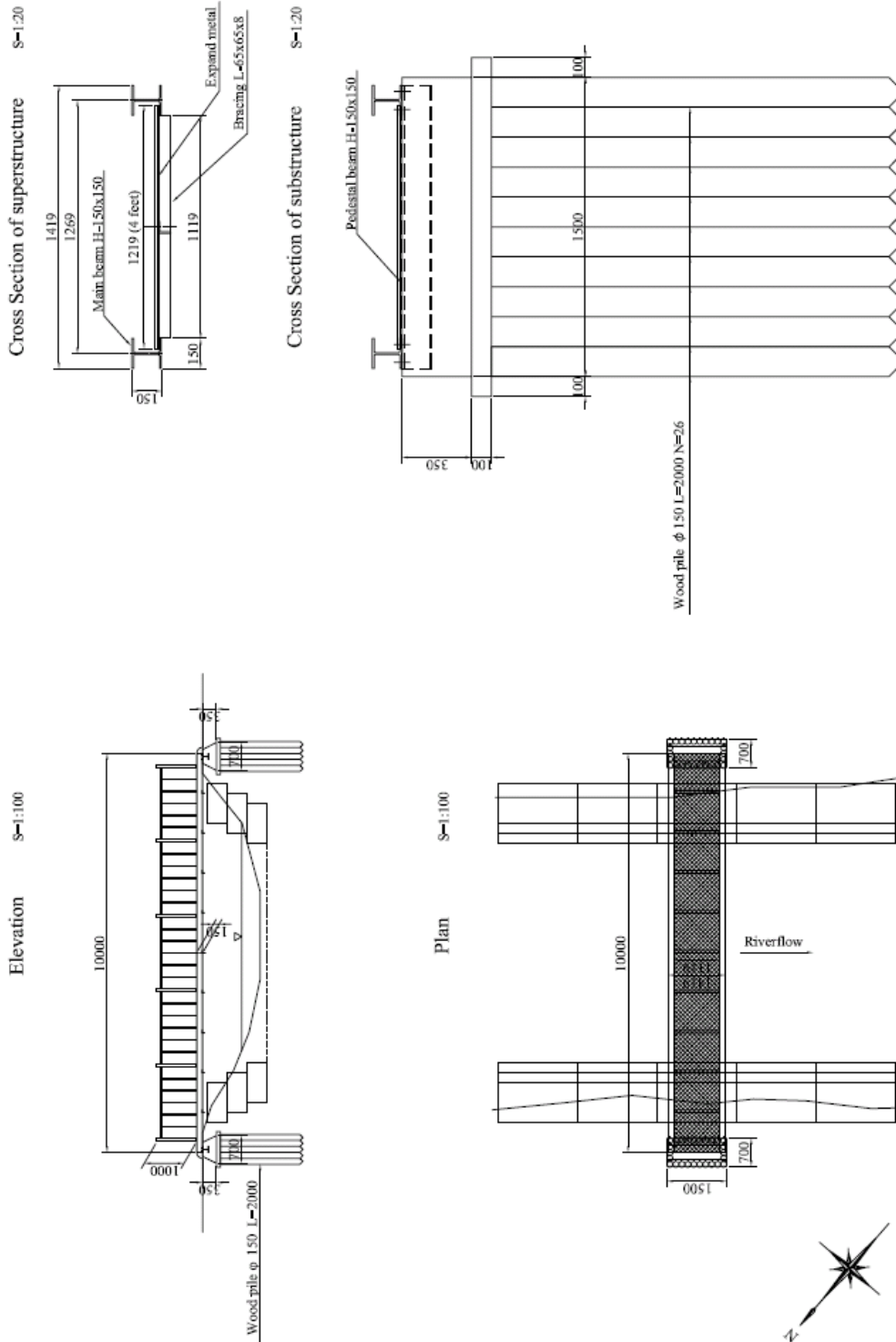
NAYNDO DISTRICT
 AYWEYO SUB-LOCATION
 NYACHODA VILLAGE

THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN
 NIPPON KOEI CO. LTD

NAME	PREPARED BY	CHECKED BY	APPROVED BY	DWG. TITLE: CULVERT (1)
SIGNATURE	A. MORIOKA	T. HAYAKAWA	M. TOKURA	GENERAL
DATE	/ / 2009	/ / 2009	/ / 2009	SHEET NO. 24/01
				REV. NO.
			SCALE 1:100	

Figure 3.46 Nyachoda: Culvert (1)

FOOTBRIDGE



<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAYO RIVER BASIN</p> <p style="text-align: center;">NIPPON KOGI CO. LTD.</p>		<p>DWG. TITLE: FOOTBRIDGE</p>	
<p>PREPARED BY</p> <p>A. MORIOKA</p>	<p>CHECKED BY</p> <p>T. HAYAKAWA</p>	<p>APPROVED BY</p> <p>M. TOKURA</p>	<p>GENERAL</p>
<p>SIGNATURE</p>	<p>DATE</p>	<p>SCALE</p> <p>1:100</p>	<p>SHEET NO.</p> <p>23/03</p>
<p>NOTE:</p>		<p>REVISION</p>	
<p>JICA JAPAN INTERNATIONAL COOPERATION AGENCY</p> <p>MINISTRY OF WATER AND IRRIGATION</p> <p>WATER RESOURCES MANAGEMENT AUTHORITY</p>		<p>NAYNDO DISTRICT</p> <p>AYWEYO SUB-LOCATION</p> <p>NYACHODA VILLAGE</p>	

Figure 3.47 Nyachoda: Culvert (2)

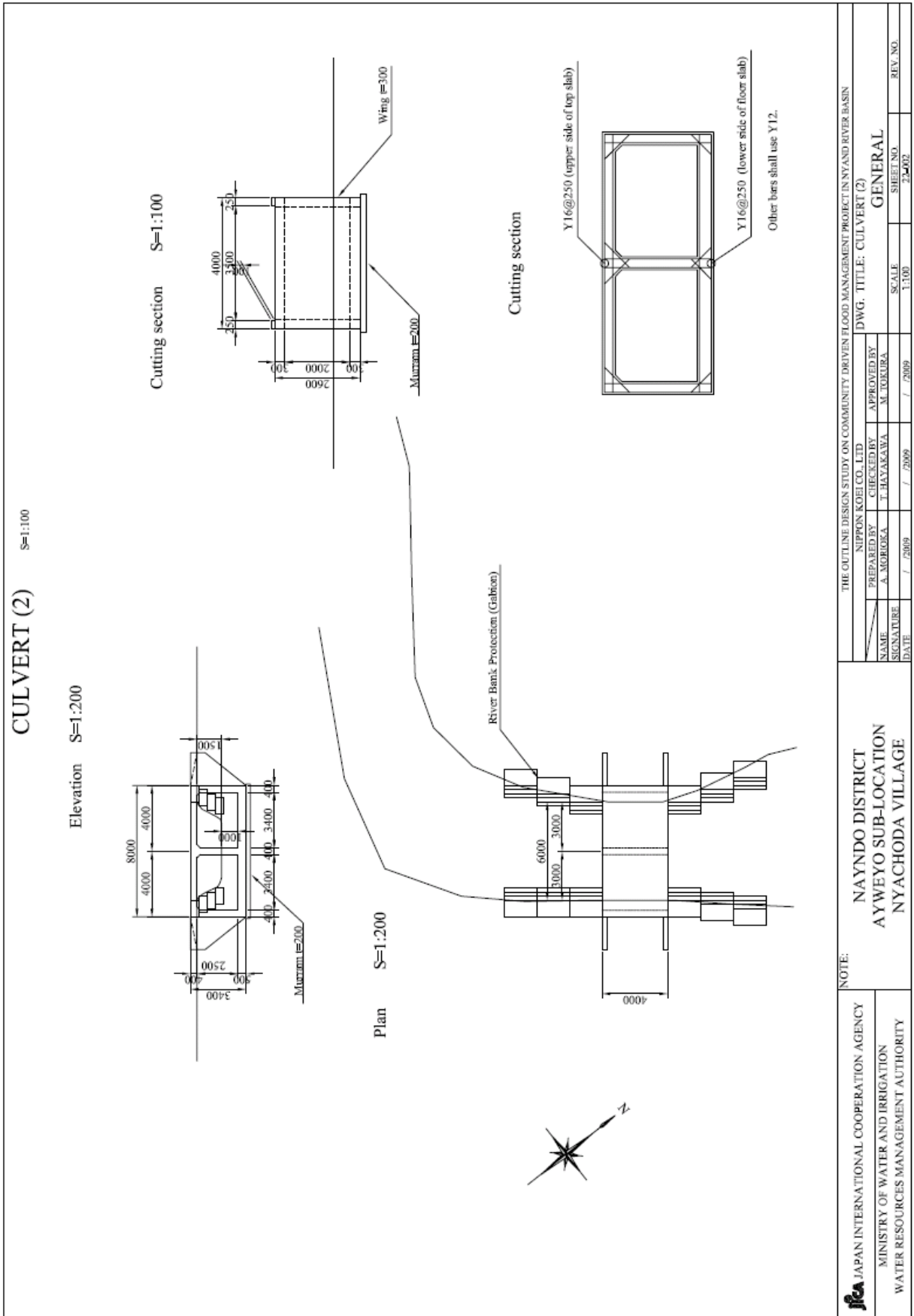
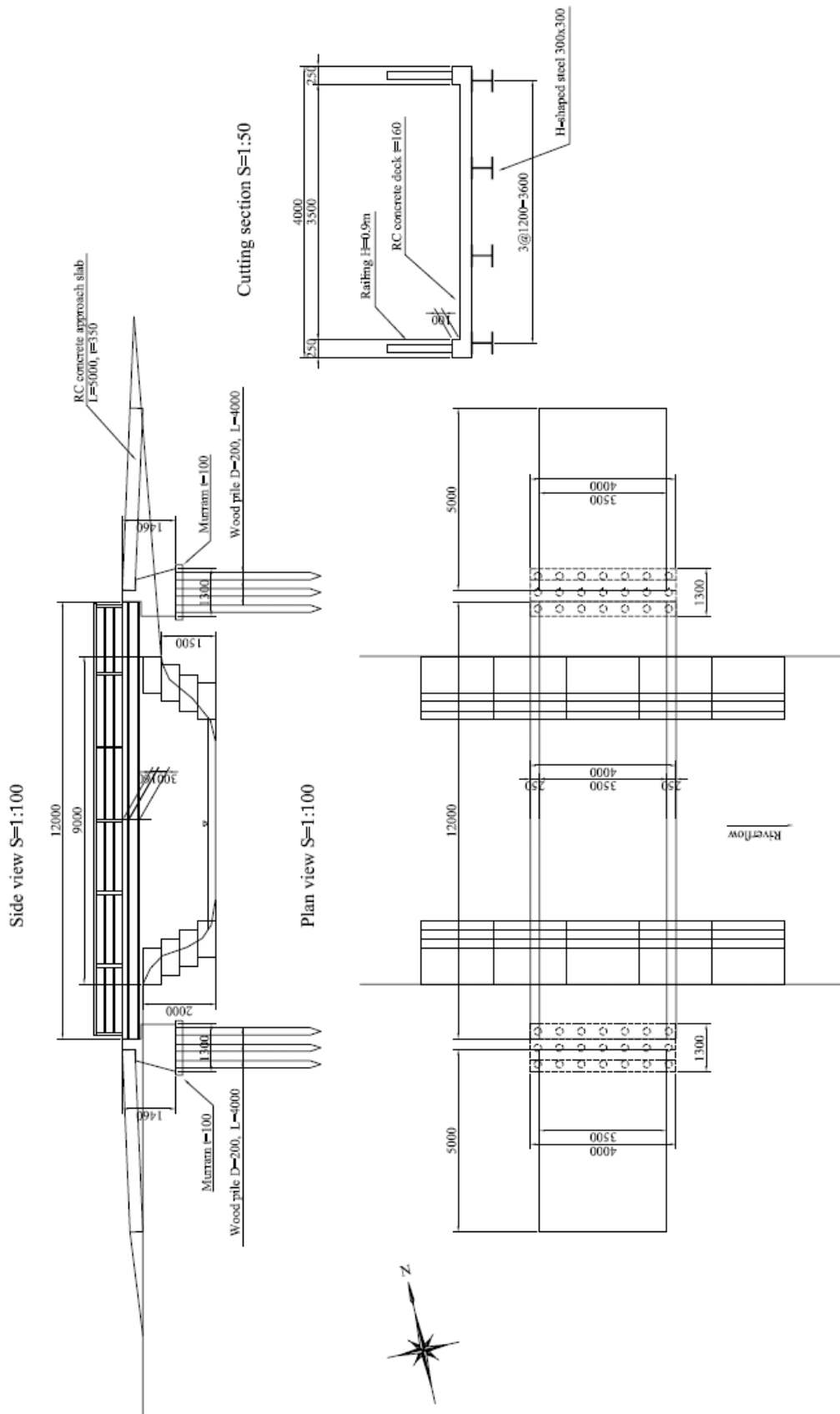


Figure 3.48 Nyachoda:: Footbridge

FOOTBRIDGE (1) S=1:100



<p>NOTE:</p> <p>JICA JAPAN INTERNATIONAL COOPERATION AGENCY MINISTRY OF WATER AND IRRIGATION WATER RESOURCES MANAGEMENT AUTHORITY</p>		<p>NAYNDO DISTRICT NYAKONGO SUB-LOCATION KOJUNGA VILLAGE</p>		<p>THE OUTLINE DESIGN STUDY ON COMMUNITY DRIVEN FLOOD MANAGEMENT PROJECT IN NYAND RIVER BASIN</p>	
<p>NAME</p>	<p>PREPARED BY</p>	<p>CHECKED BY</p>	<p>APPROVED BY</p>	<p>DWG. TITLE: FOOTBRIDGE (1)</p>	<p>GENERAL</p>
<p>SIGNATURE</p>	<p>A. MORIOKA</p>	<p>T. HAYAKAWA</p>	<p>M. TOKURA</p>	<p>SCALE</p>	<p>SHEET NO.</p>
<p>DATE</p>	<p>/ 2009</p>	<p>/ 2009</p>	<p>/ 2009</p>	<p>1:100</p>	<p>2/401</p>
					<p>REV. NO.</p>

Figure 3.49 Kojunga: Footbridge (1)

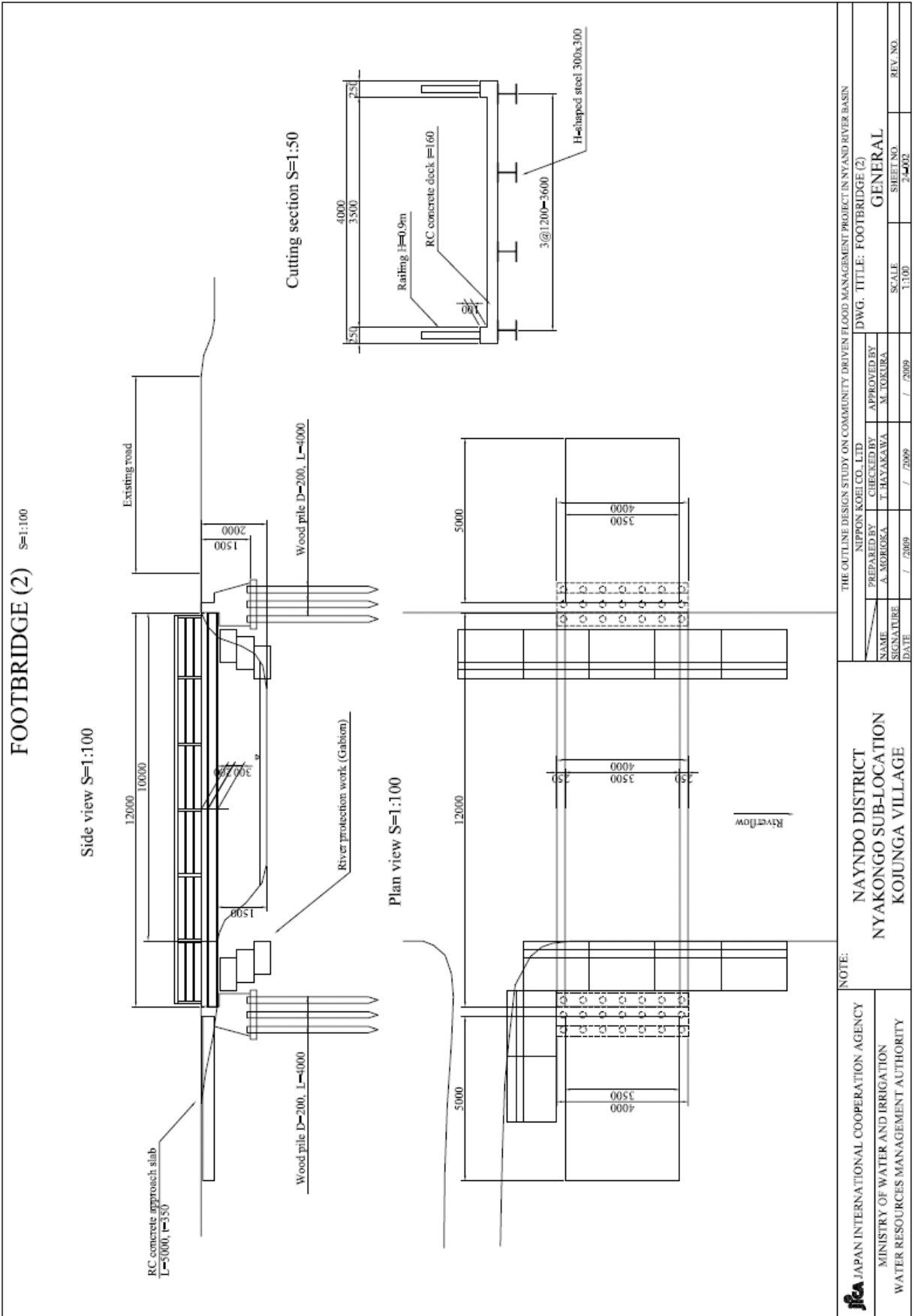


Figure 3.50 Kojunga: Footbridge (2)

AN.4 PROJECT DESIGN MATRIX FOR NON-STRUCTURAL MEASURES

The Project Design Matrix for Non-structural measures is formulated as shown in the next page.

Project Design Matrix for Non-Structural Measures

Project Name : The Programme for Community-Based Flood Disaster Management to Adapt to Climate Change in the Nyando River Basin in the Republic of Kenya

Target Area : 24 Villages in Kisumu District and Nyando District of Nyanza Province in Kenya
(12 Villages in Kisumu District: Rae Kanyaika, Mowlem, Bwanda, Otera, Kamuga, Oyola, Kanyango, Komwaga, Kowiti, Kamget Ugwe, Kopudo, and Kanyiaomo)
(12 Villages in Nyando District: Kolal, Wasiese, Kamagaga, Wangaya Mombasa, Achuodho, Wakesi, Kojiem, Kanyilum, Kadika, Nyachoda, Masune, and Kojunga)

Duration : 23 months after the signing of Exchange of Notes

Target Group : Community Based Flood Management Organizations of 24 villages

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
OVERALL GOAL Capacity for the flood management to adapt to the climate change is strengthened in the Nyando River Basin.	1 Number of affected people from flood disasters is reduced. 2 Flood management is replicated throughout the Nyando River Basin.	1 Record of flood damage 2 Questionnaire survey	1 GOK will replicate the experiences of the Project to other villages.
PROJECT PURPOSE Capacity for the flood management is strengthened in 24 villages.	Capacity for the flood management is strengthened by the CFMOs.	1 Questionnaire survey in Lessons Learned Meeting 2 Number of residents registered in CFMOs	
OUTPUTS 1 Community Based Flood Management Organizations are established and strengthened in the Project Area.	1.1 By-laws is formulated for each CFMO. 1.2 Financial plan is formulated for each CFMO.	1.1.1 By-laws of each CFMO 1.1.2 Number of meetings and participants 1.2.1 Financial plan of each CFMO 1.2.2 Manual for writing proposals for fundraising of each CFMO 1.2.3 Number of meetings and participants	1 Unexpected heavy rainfall will not occur, due to the climate change. 2 Security conditions are maintained.
2 CFMO becomes capable to conduct O&M for constructed structural measures.	2 O&M manual is formulated for each CFMO.	2.1 O&M manuals of each CFMO 2.2 Number of lectures, on-site trainings, and participants 2.3 Questionnaire survey	
3 CFMO becomes capable to implement flood disaster management activities.	3.1 Community flood management manual is formulated for each CFMO. 3.2 Evacuation plan is formulated for each CFMO.	3.1 Community flood management manual of each CFMO 3.2 Number of participants in the evacuation drills	
4 Public awareness is widely promoted in the Project Area.	4.1 Education programs for disaster prevention is formulated and carried out in the targeted 16 schools. 4.2 Radio programs about flood management are broadcasted continuously. 4.3 Posters about flood management are prepared and used for the public relation activities.	4.1.1 Number of teaching manuals 4.1.2 Number of textbooks for pupils 4.1.3 Result of assessment for teaching practice 4.1.4 Questionnaire survey of the pupils having received the education programs 4.1.5 Number of pupils 4.2.1 Record of broadcasted long and short radio programs 4.2.2 Questionnaire survey of listeners 4.3 Number of distributed posters	
ACTIVITIES	INPUTS		PRE-CONDITIONS
1.1 Organizing trainings for CFMOs 1.2 Financial trainings for CFMOs 1.3 O&M trainings for CFMOs 2.1 Community Flood management Manual for CFMOs 2.2 Evacuation drills for CFMOs 3.1 Education programs for disaster prevention 3.2 Radio programs about flood management 3.3 Posters about flood management	Japanese Side 1 Procure the experts for supervising the non-structural measures 1.1 Japanese expert (12MM) 1.2 Local expert (2 persons and 42MM in total) 2 Procure the local NGOs to implement the non-structural measures 3 Provide equipment 3.1 O&M equipment 3.2 3 kinds of signboards to show hazard map, evacuation route, and evacuation place 3.3 Equipment for evacuation drill	Kenyan Side Assign a full-time counterpart of the Project	1 GOK policy on disaster management will continue to be highlighted. 2 GOK will support the CFMOs through WRUAs.