

**Ministry of Works, Transport and Communications
Reli Assets Holding Company
United Republic of Tanzania**

**Preparatory Survey on
Flood Protection Measures for
Central Railway Line
in the United Republic of Tanzania**

**Final Report
Volume 3: Appendices Related to Drawings**

July 2016

JAPAN INTERNATIONAL COOPERATION AGENCY

PADECO Co., Ltd.

Nippon Koei Co., Ltd.

Japan International Consultants for Transportation Co., Ltd.

Fukken Engineering Co., Ltd.

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Contents

Volume 3: Appendices Related to Drawings

Appendix S List of Drawings

Appendix T Hazard Maps along Kinyasungwe/Mkondoa River

Appendix V Alignment Drawing of Rerouting Line

<This Appendix has been removed because of confidential information.>

Appendix W Alignment Statement of Existing Line

<This Appendix has been removed because of confidential information.>

Appendix Y Preliminary Design Drawings (Railway)

<This Appendix has been removed because of confidential information.>

APPENDIX S

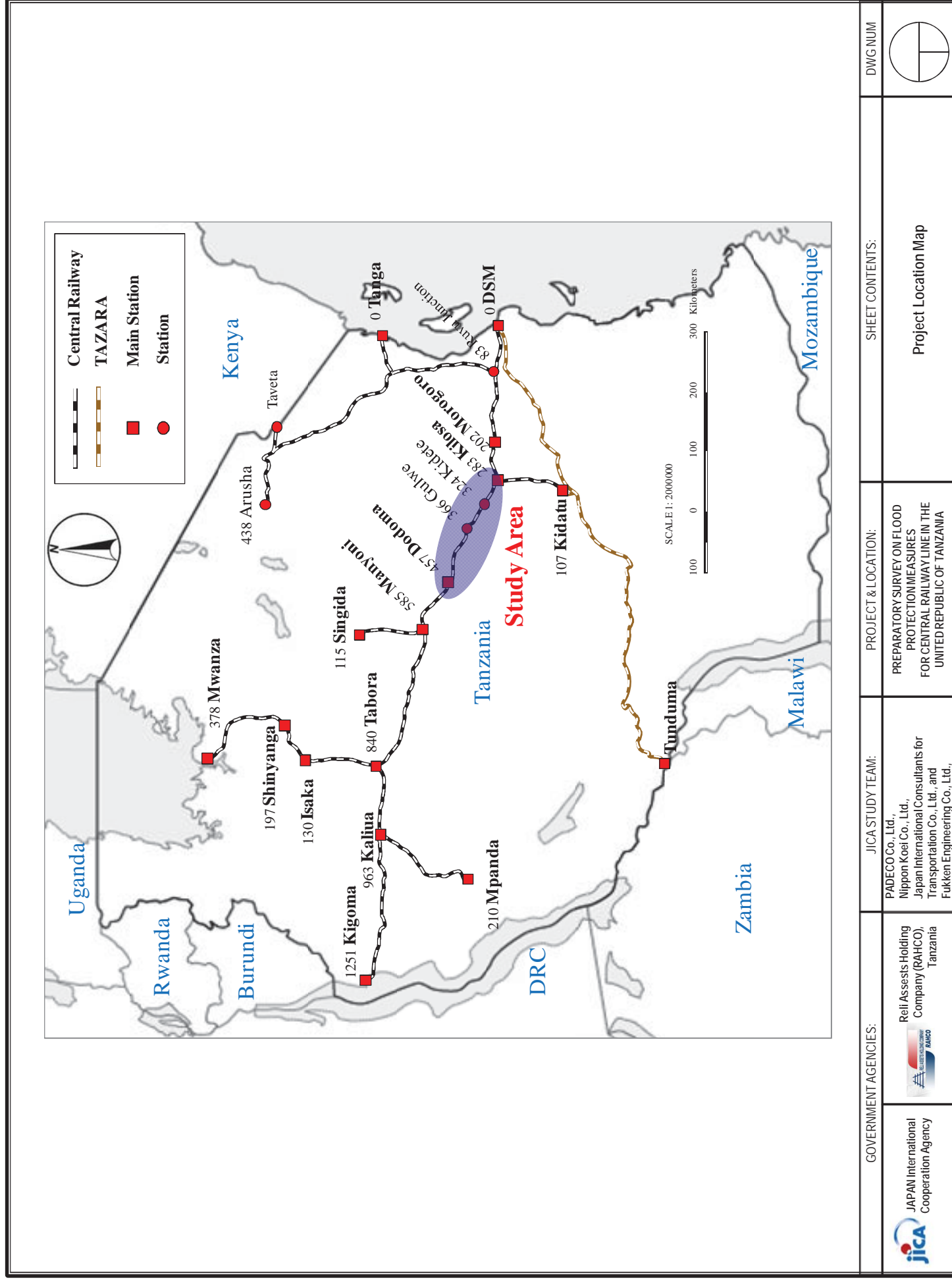
LIST OF DRAWINGS

List of Drawing

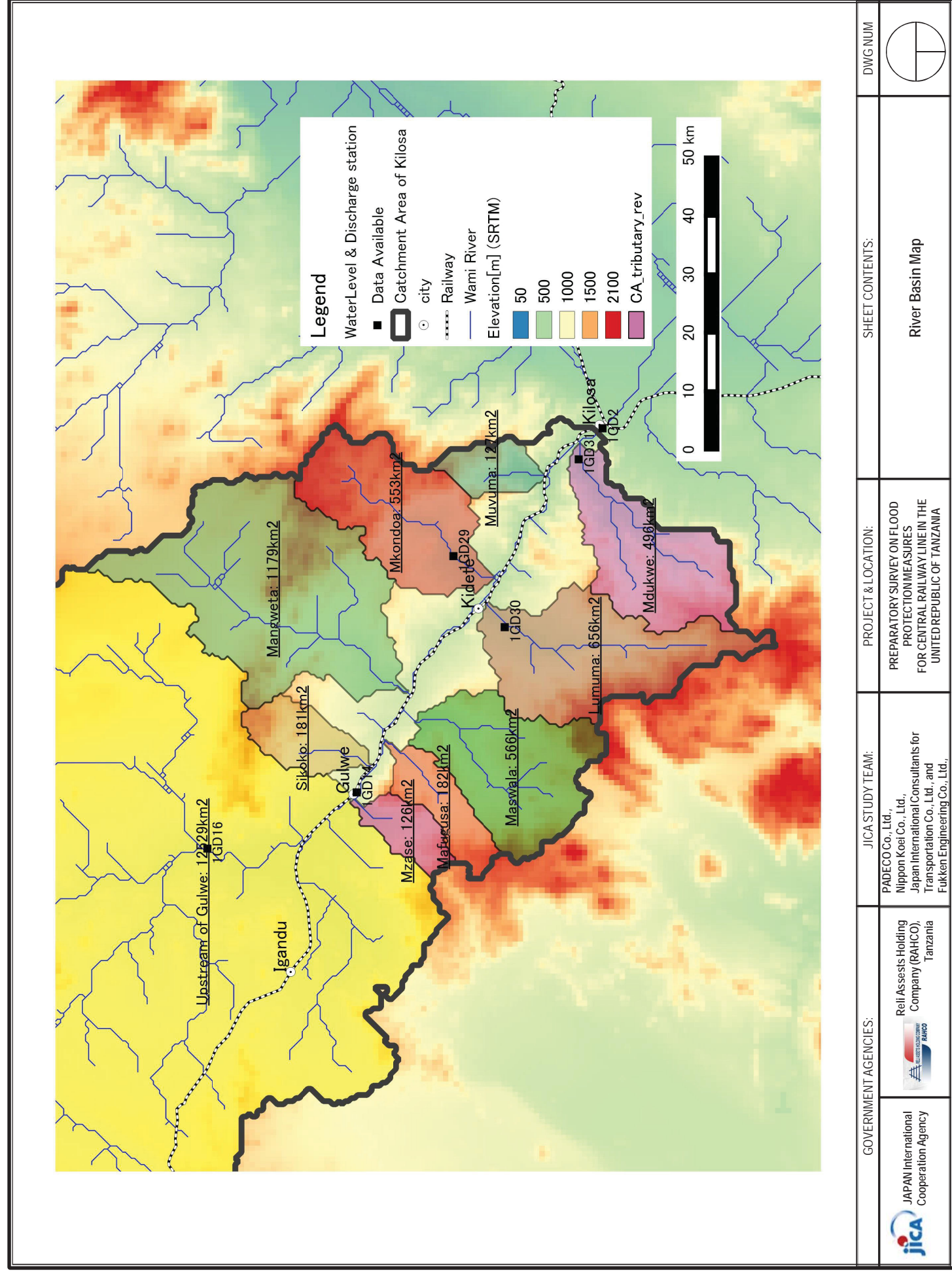
No.	Sheet Contents	Scale
A.	General	
A-1	Project Location Map	-
A-2	River Basin Map	-
No.	Sheet Contents	Scale
B.	Maswala River Training Works	
B-1	General Plan of Maswala River Training Works	1/10,000
B-2	Longitudinal Profile of Maswala River	H:1/10,000 V:1/500
B-3	Typical Sections of River Channel and Groundsill, and Plan of Groundsill in Maswala River Training Works	1/500
B-4	Typical Section of Dike and Bank Protection Works in Maswala River Training Works	1/150
B-5	Longitudinal Section of Groundsill in Maswala River Training Works	1/500
B-6	Plan and Cross Section of Check Dam	1/500
B-7	Longitudinal Section of Check Dam	1/200
B-8	Main Structures of Check Dam and Groundsill	1/100
B-9	Cross Sections (1/3)	H:1/100 V:1/500
B-10	Cross Sections (2/3)	H:1/100 V:1/500
B-11	Cross Sections (3/3)	H:1/100 V:1/500
No.	Sheet Contents	Scale
C.	Mzase River	
C-1	General Plan of Mzase River Training Work	1/10,000
C-2	Longitudinal Profile of Mzase River	H:1/5,000 V:1/250
C-3	Typical Sections of River Channel and Groundsill, and Plan of Groundsill in Mzase River	1/500
C-4	Typical Section of Dike and Bank Protection Works in Mzase River	1/150
C-5	Longitudinal Section of Groundsill in Mzase River	1/500
C-6	Cross Sections of Mzase River (1/3)	H:1/100 V:1/500
C-7	Cross Sections of Mzase River (2/3)	H:1/100 V:1/500
C-8	Cross Sections of Mzase River (3/3)	H:1/100 V:1/500

No.	Sheet Contents	Scale
D.	Main River	
D-1	General Plan of Flood Protection Works	1/250,000
D-2	Longitudinal Profile of Kinyasingwe River	H:1/250,000 V:1/2500
D-3	Plan of Flood Protection Measures (1/14)	1/20,000
D-4	Plan of Flood Protection Measures (2/14)	1/20,000
D-5	Plan of Flood Protection Measures (3/14)	1/20,000
D-6	Plan of Flood Protection Measures (4/14)	1/20,000
D-7	Plan of Flood Protection Measures (5/14)	1/20,000
D-8	Plan of Flood Protection Measures (6/14)	1/20,000
D-9	Plan of Flood Protection Measures (7/14)	1/20,000
D-10	Plan of Flood Protection Measures (8/14)	1/20,000
D-11	Plan of Flood Protection Measures (9/14)	1/20,000
D-12	Plan of Flood Protection Measures (10/14)	1/20,000
D-13	Plan of Flood Protection Measures (11/14)	1/20,000
D-14	Plan of Flood Protection Measures (12/14)	1/20,000
D-15	Plan of Flood Protection Measures (13/14)	1/20,000
D-16	Plan of Flood Protection Measures (14/14)	1/20,000
D-17	Typical Cross Section of Bank Protection	1/200
D-18	Plan, Cross Section and Detail of Bank Protection Section 1-2 (IP297)	each
D-19	Plan, Cross Section and Detail of Bank Protection Section 2 (IP298)	each
D-20	Plan, Cross Section and Detail of Bank Protection Section 3 (IP300)	each
D-21	Plan, Cross Section and Detail of Bank Protection Section 4 (IP301)	each
D-22	Plan, Cross Section and Detail of Bank Protection Section 5 (IP303)	each
D-23	Plan, Cross Section and Detail of Bank Protection Section 6 (IP304)	each
D-24	Plan, Cross Section and Detail of Bank Protection Section 7 (IP306)	each
D-25	Plan, Cross Section and Detail of Bank Protection Section 8 (IP309)	each
D-26	Plan, Cross Section and Detail of Bank Protection Section 9-1 (IP311)	each
D-27	Plan, Cross Section and Detail of Bank Protection Section 9-2 (IP313)	each
D-28	Plan, Cross Section and Detail of Bank Protection Section 10 (IP315)	each
D-29	Plan, Cross Section and Detail of Bank Protection Section 11-1 (IP328)	each
D-30	Plan, Cross Section and Detail of Bank Protection Section 11-2 (IP330)	each
D-31	Plan, Cross Section and Detail of Bank Protection Section 11-3 (IP331)	each
D-32	Plan, Cross Section and Detail of Bank Protection Section 12 (IP340)	each
D-33	Plan, Cross Section and Detail of Bank Protection Section 13 (IP342)	each
D-34	Plan, Cross Section and Detail of Bank Protection Section 14 (IP343)	each
D-35	Plan, Cross Section and Detail of Bank Protection Section 15 (IP345)	each

<i>No.</i>	<i>Sheet Contents</i>	<i>Scale</i>
E.	Advanced Technology	
E-1	Comparison of River Bank Protection Wokrs for TRD (Trench Cutting Re-mixing Deep Wall) Method and Sheet Piling	each
E-2	Typical Section of River Bank Protection Works Branch Block (H=2m, 3m, 4m, 5m)	each
E-3	Comparison of Bank Protection Works for River Training Works in Maswala River	each
E-4	Comparison of Bank Protection Works for River Training Works in Mzase River	each
E-5	Check Dam (INSEM) in Maswala River	each
E-6	Case for Adaptaion of INSEM (Sabo Soil Cement) in Maswala River	each
E-7	Case for Adaptaion of INSEM (Sabo Soil Cement) in Mzase River	each

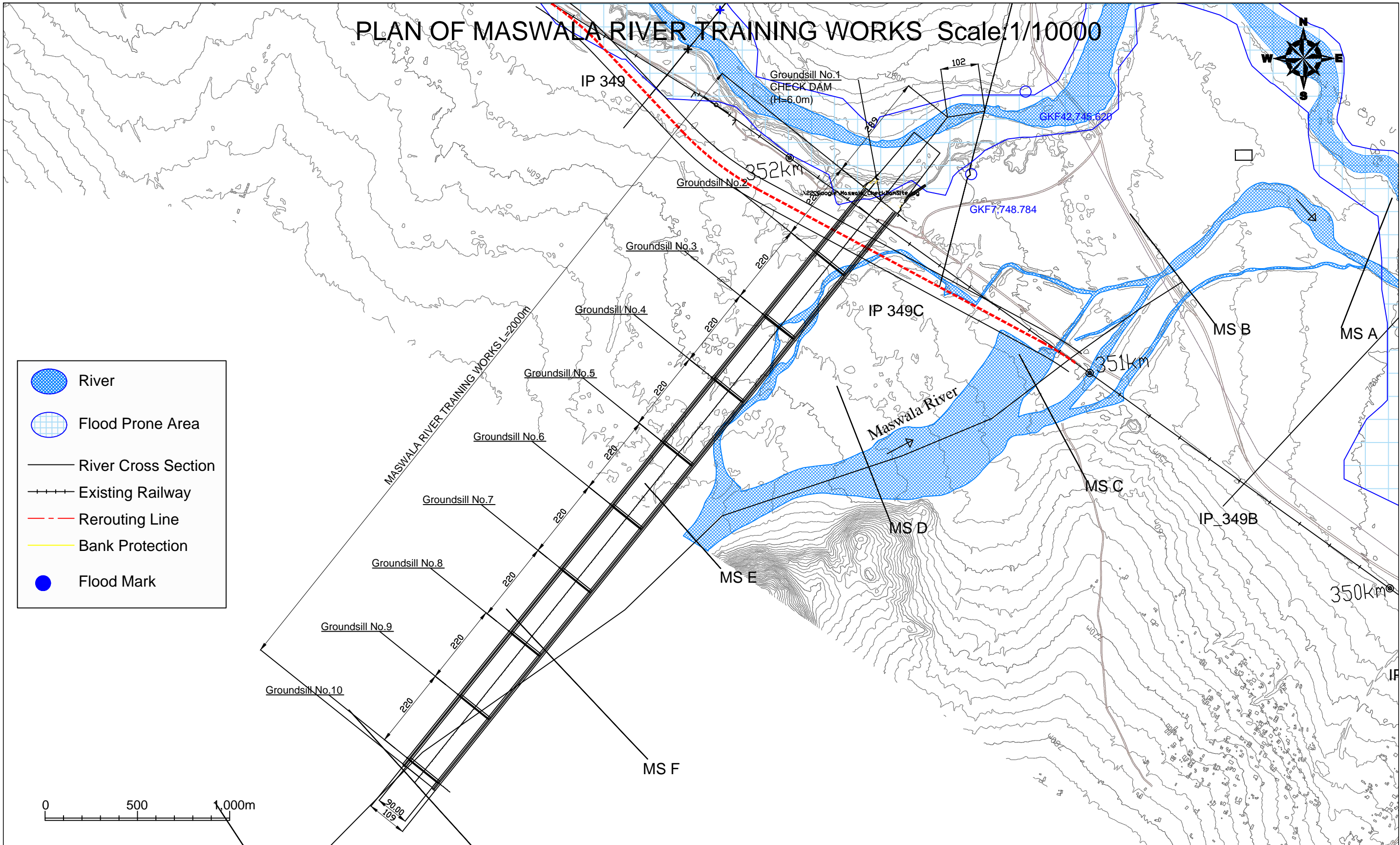









	<p>GOVERNMENT AGENCIES:</p>	<p>JICA STUDY TEAM:</p> <p>PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.</p>	<p>PROJECT & LOCATION:</p> <p>PREPARATORY SURVEY ON FLOOD PROTECTION MEASURES FOR CENTRAL RAILWAY LINE IN THE UNITED REPUBLIC OF TANZANIA</p>	<p>SHEET CONTENTS:</p> <p>Project Location Map</p>	<p>DWG NUM</p>
	<p>JAPAN International Cooperation Agency</p>	<p>RAIL ASSESSMENT COMPANY (RAHCO) Tanzania</p>	<p>RAIL ASSESSMENT COMPANY (RAHCO) Tanzania</p>	<p>PREPARATORY SURVEY ON FLOOD PROTECTION MEASURES FOR CENTRAL RAILWAY LINE IN THE UNITED REPUBLIC OF TANZANIA</p>	<p>Project Location Map</p>

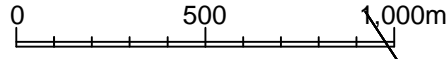




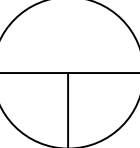
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	<p>JAPAN International Cooperation Agency</p>	<p>RAIL ASSESSMENT COMPANY (RAHCO) Tanzania</p>	<p>RAIL ASSESSMENT COMPANY (RAHCO) Tanzania</p>	<p>PREPARATORY SURVEY ON FLOOD PROTECTION MEASURES FOR CENTRAL RAILWAY LINE IN THE UNITED REPUBLIC OF TANZANIA</p>	<p>River Basin Map</p>

PLAN OF MASWALA RIVER TRAINING WORKS Scale:1/10000



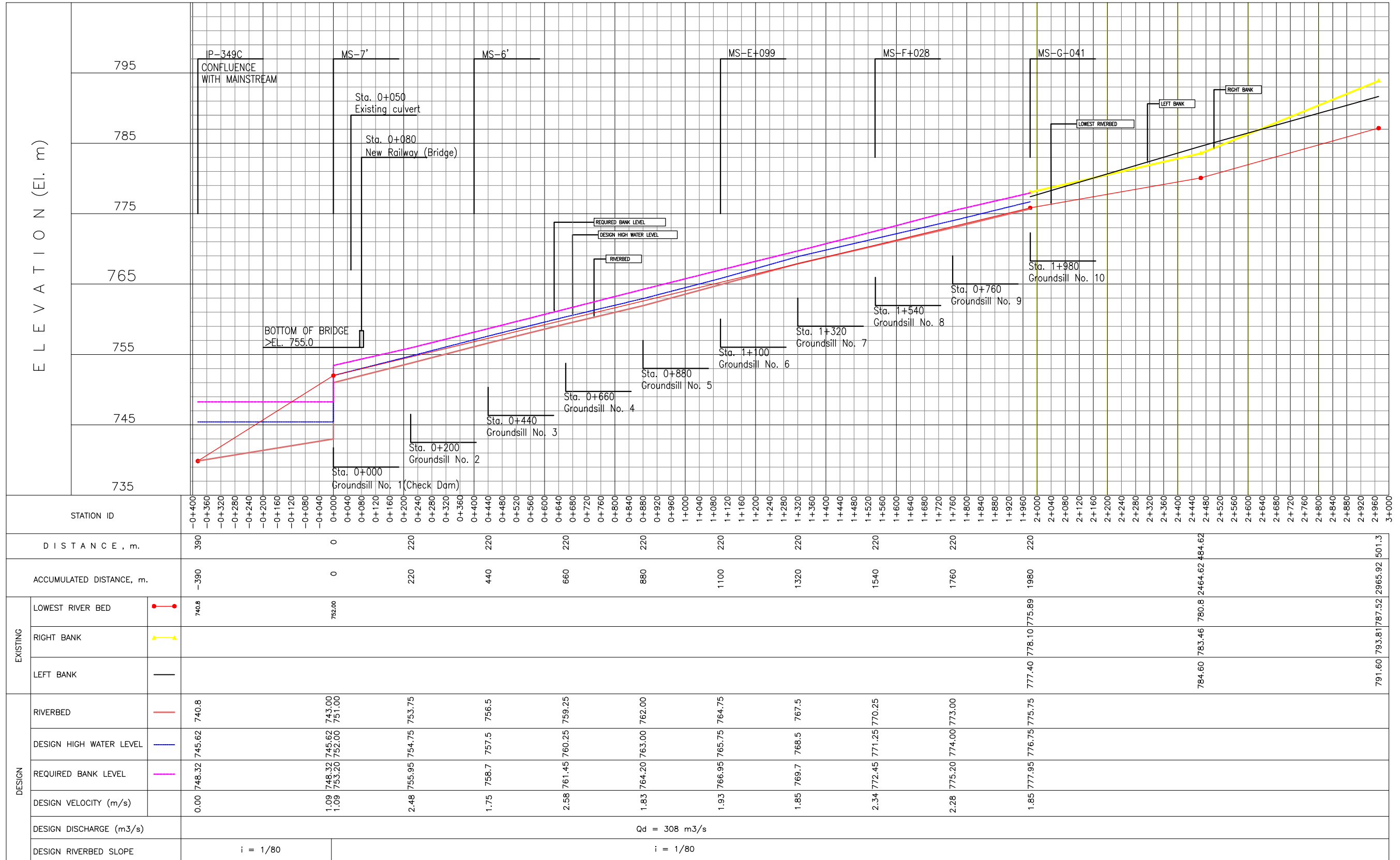
-  River
-  Flood Prone Area
-  River Cross Section
-  Existing Railway
-  Rerouting Line
-  Bank Protection
-  Flood Mark



GOVERNMENT AGENCIES:		JICA STUDY TEAM:		PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.		Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	PLAN OF MASWALA RIVER TRAINING WORKS Scale:1/10000	

LONGITUDINAL PROFILE OF MASWALA RIVER

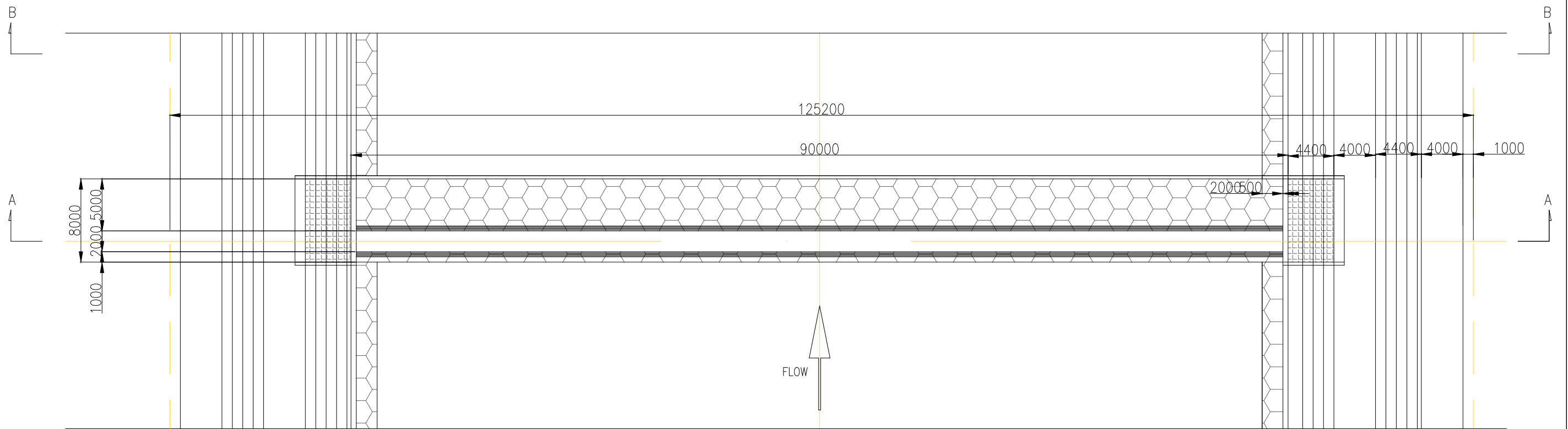
Scale H: 1/10000
V: 1/500



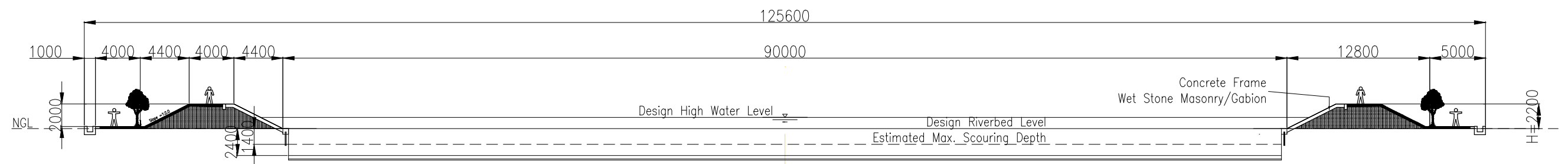
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TYPICAL SECTION OF RIVER CHANNEL AND GROUND SILL, AND PLAN OF GROUND SILL IN MASWALA RIVER

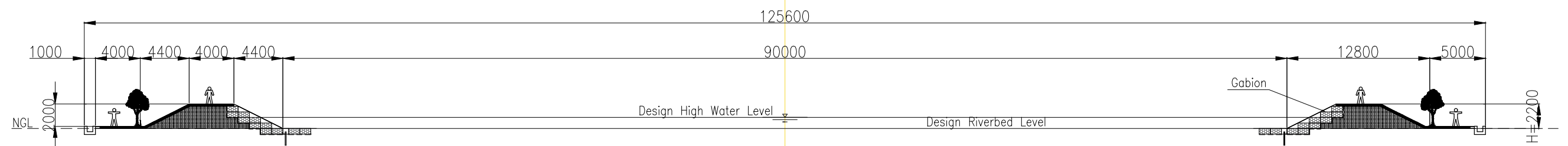
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SECTION A-A

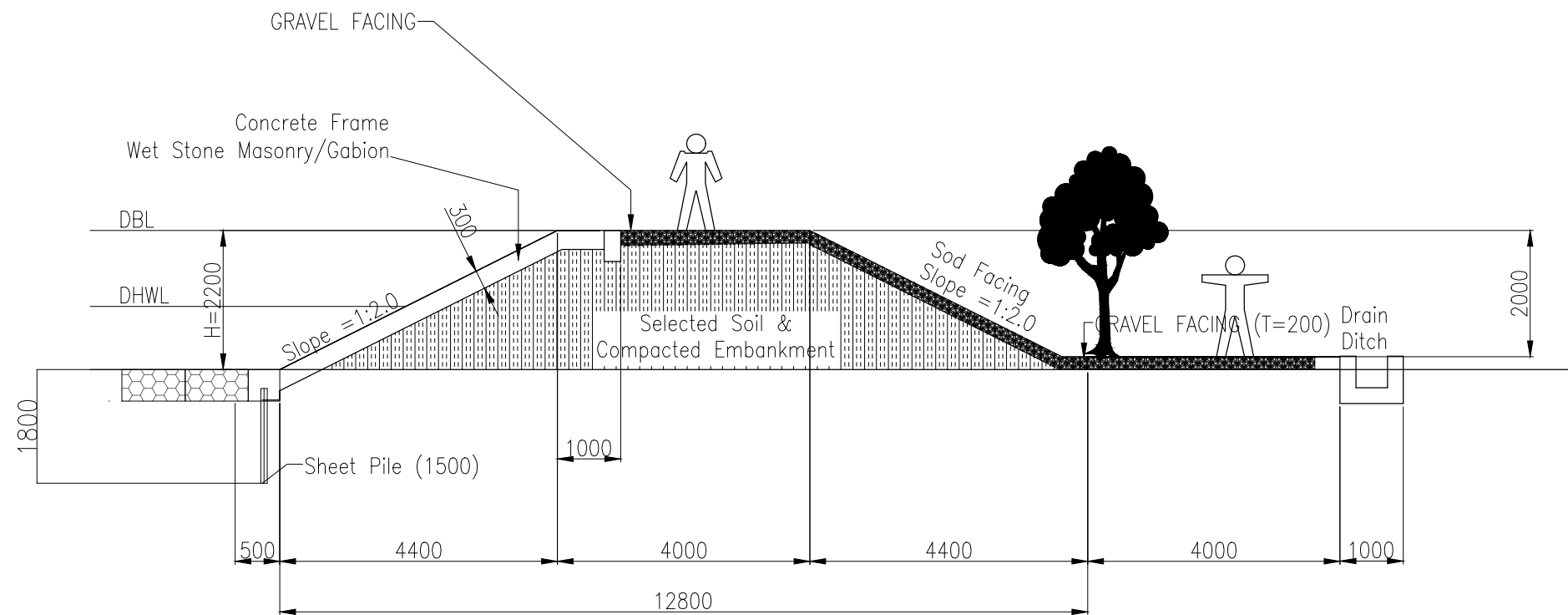
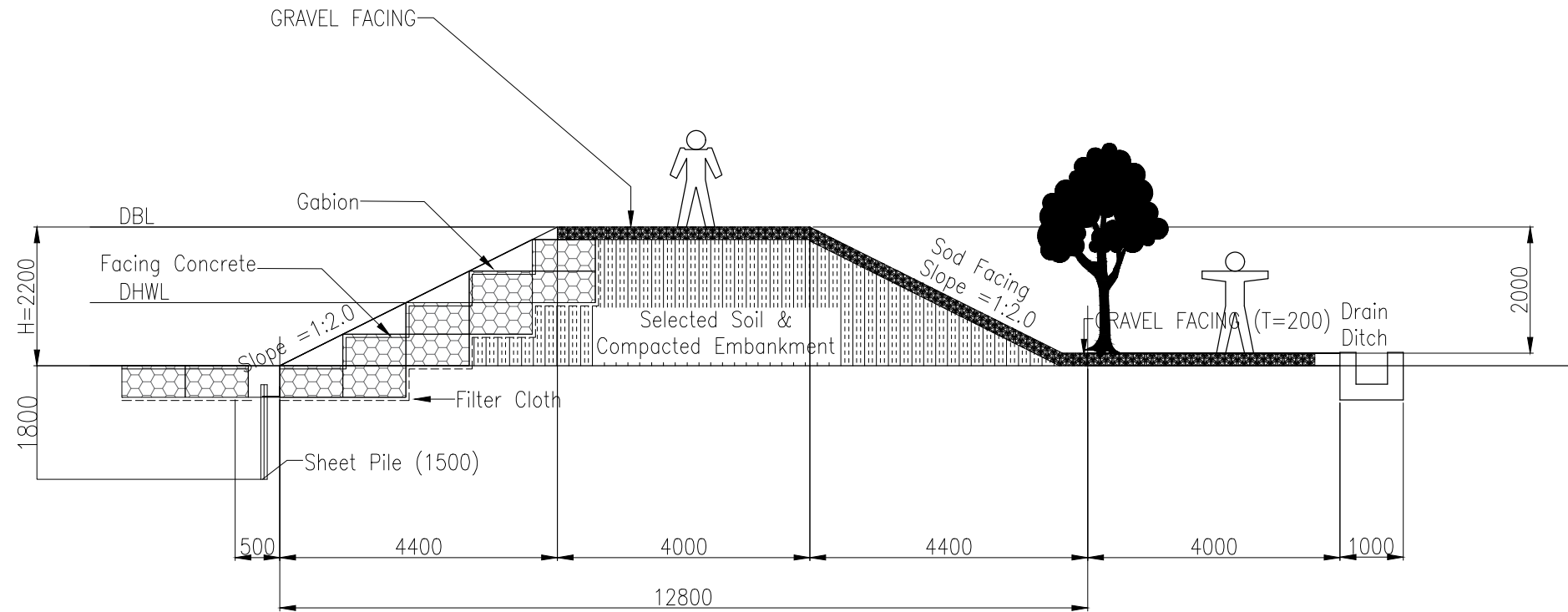




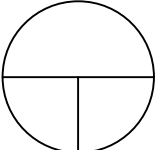
SECTION B-B



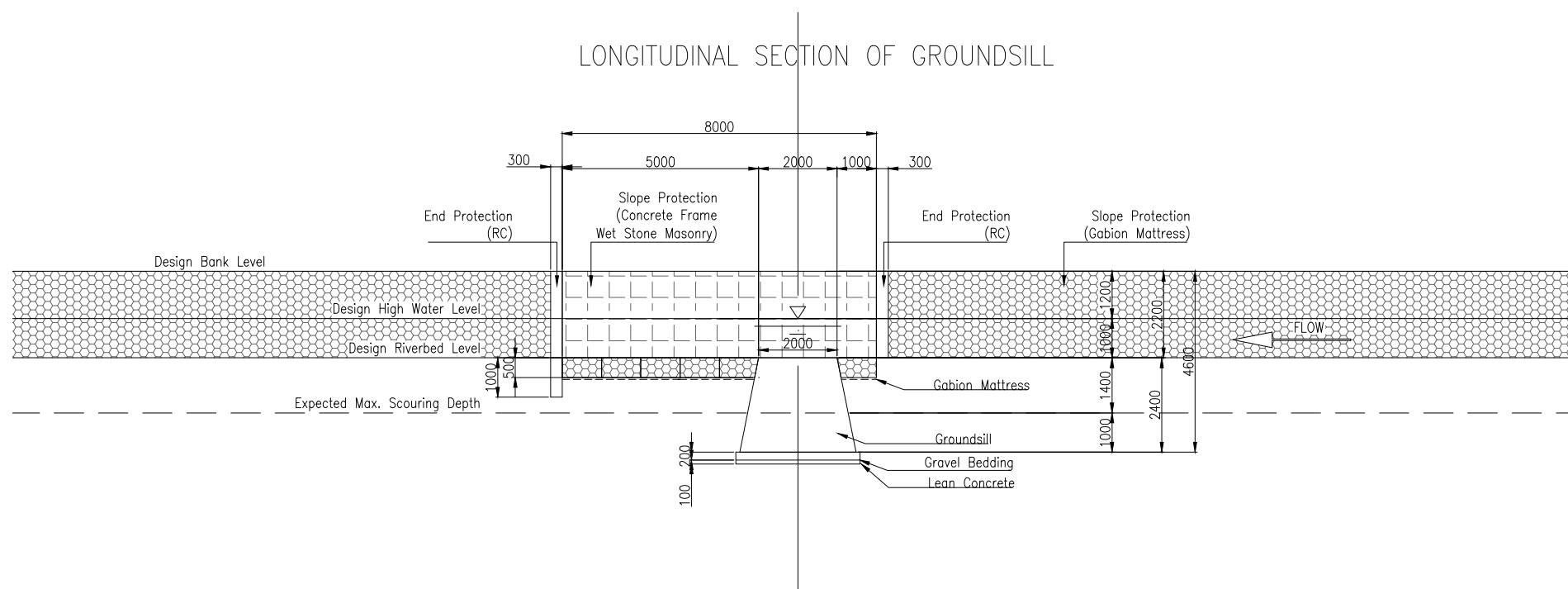
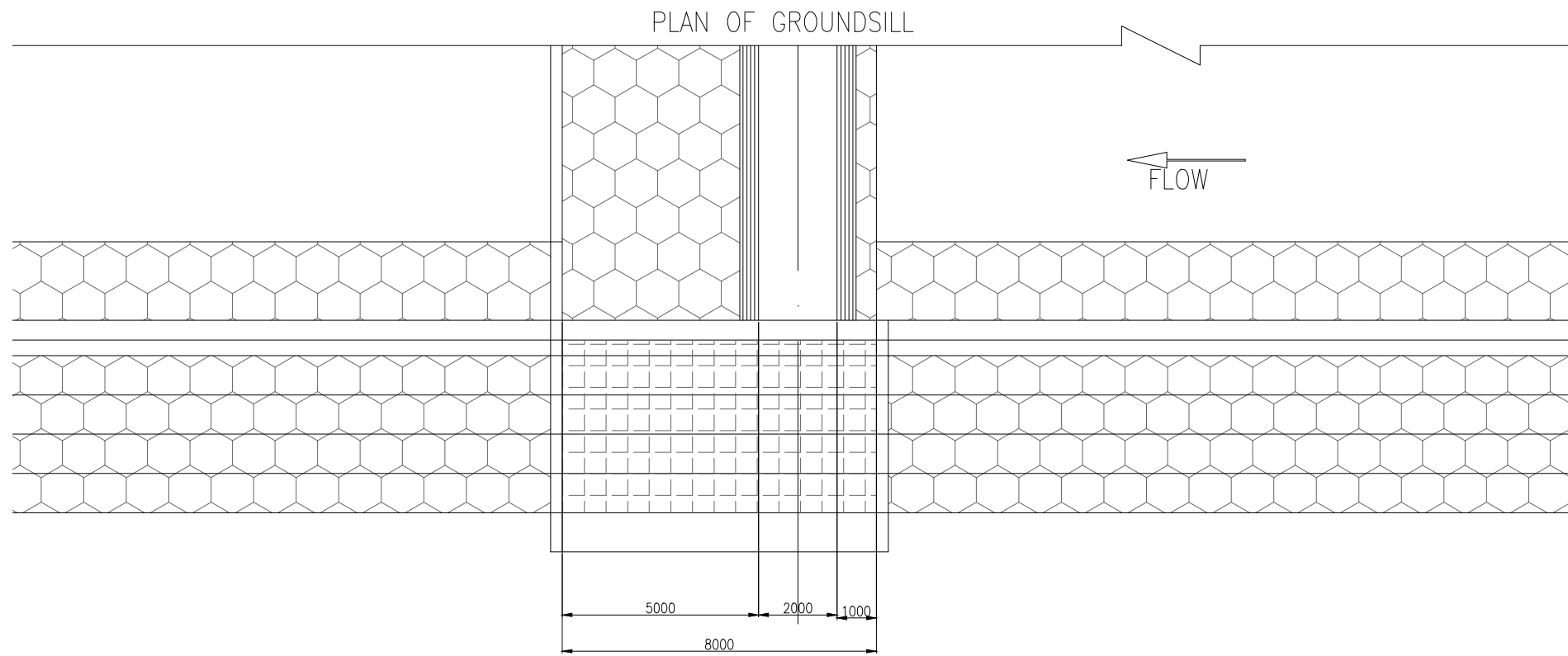
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JAPAN International Cooperation Agency	Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	SHEET CONTENTS:		



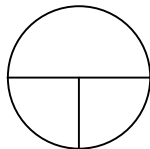
TYPICAL SECTION OF DIKE AND BANK PROTECTION WORKS IN MASWALA RIVER TRAINING WORKS



GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	TYPICAL SECTION OF DIKE AND BANK PROTECTION WORKS IN MASWALA RIVER TRAINING WORKS	

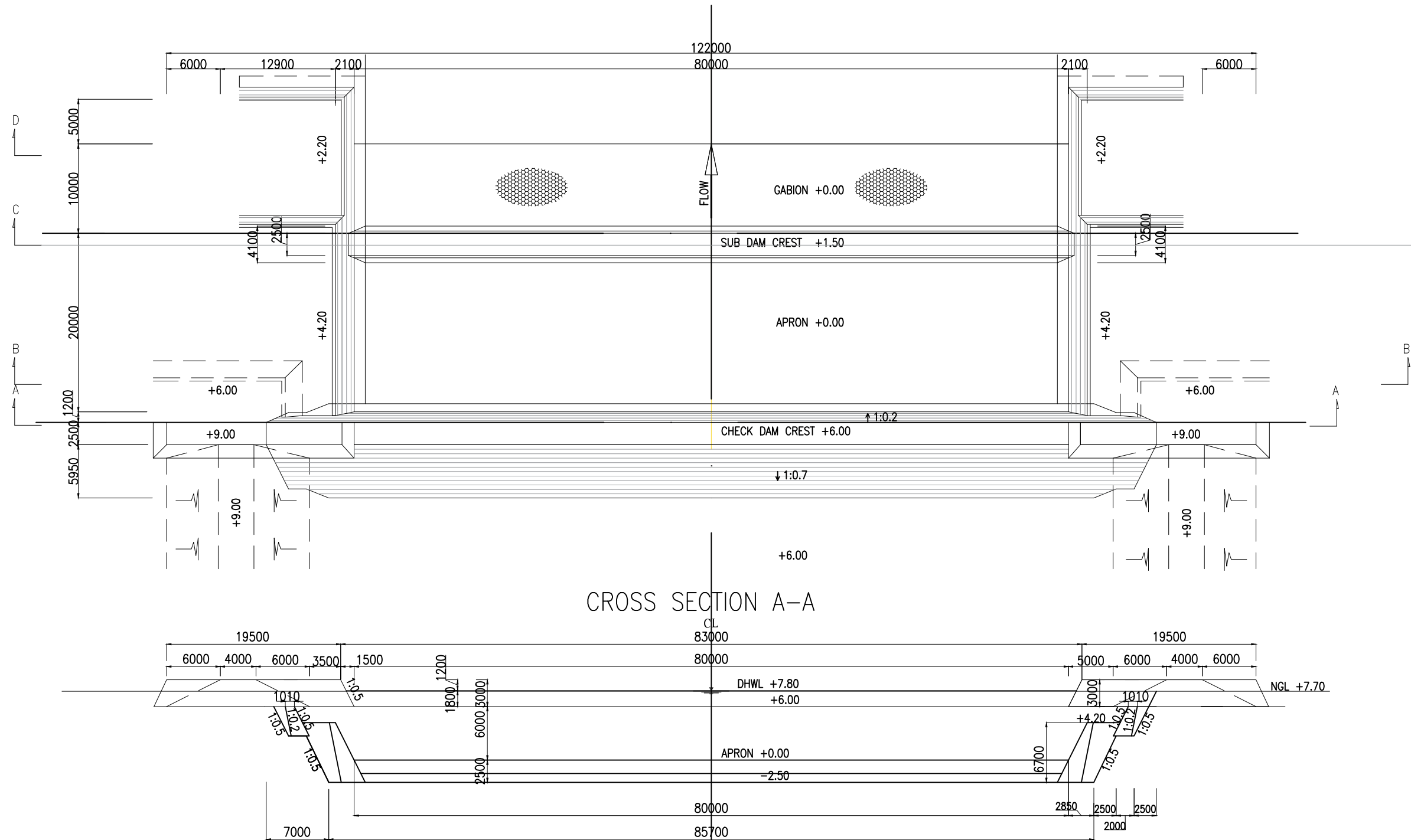
LONGITUDINAL SECTION OF GROUNDSILL IN MASWALA RIVER TRAINING WORKS





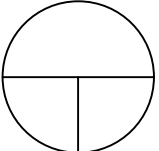
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 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania		

PLAN AND CROSS SECTION OF CHECK DAM IN MASWALA RIVER

Scale 1/500

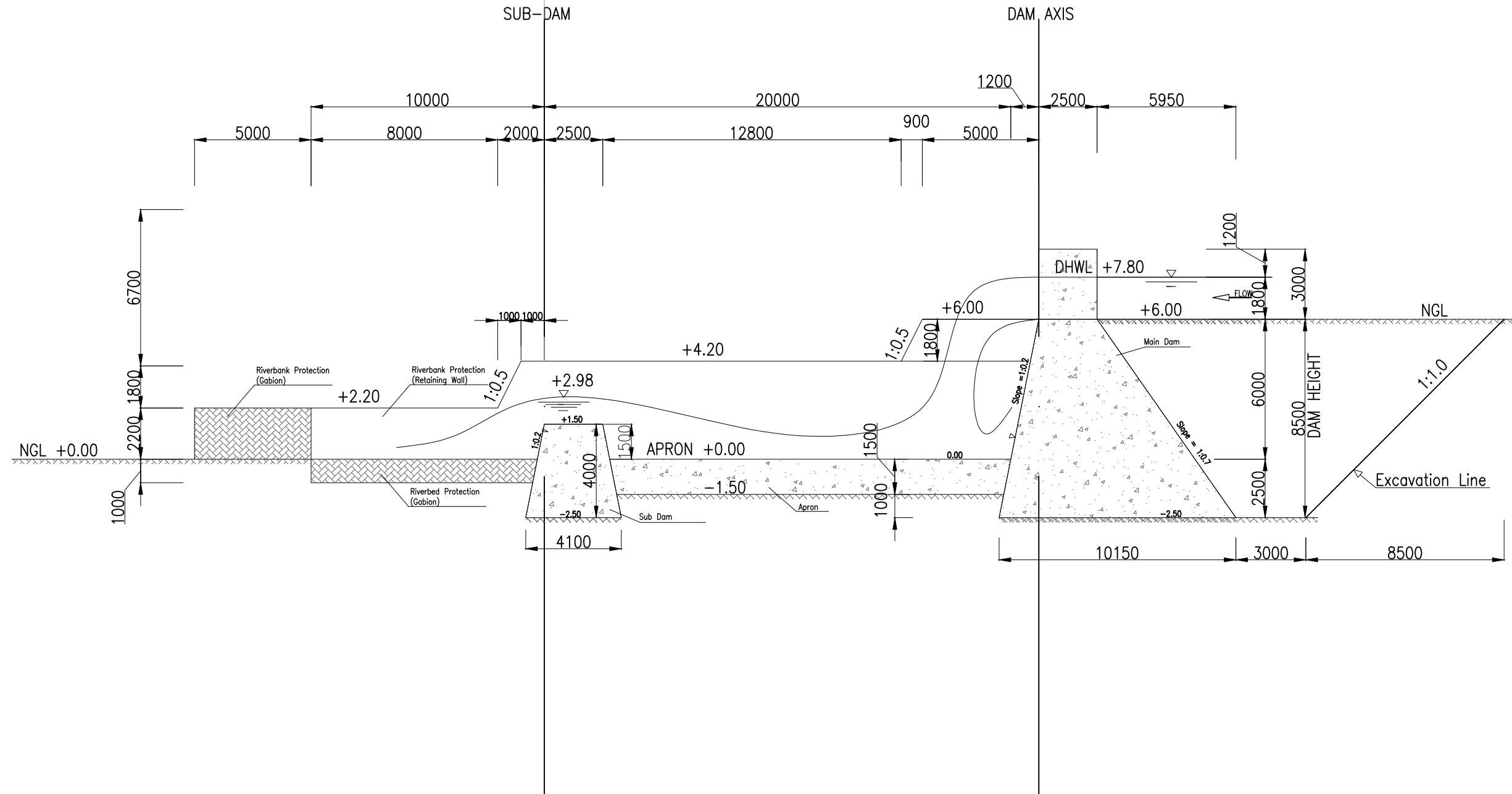




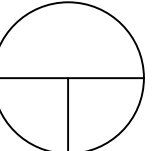
CROSS SECTION A-A

GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
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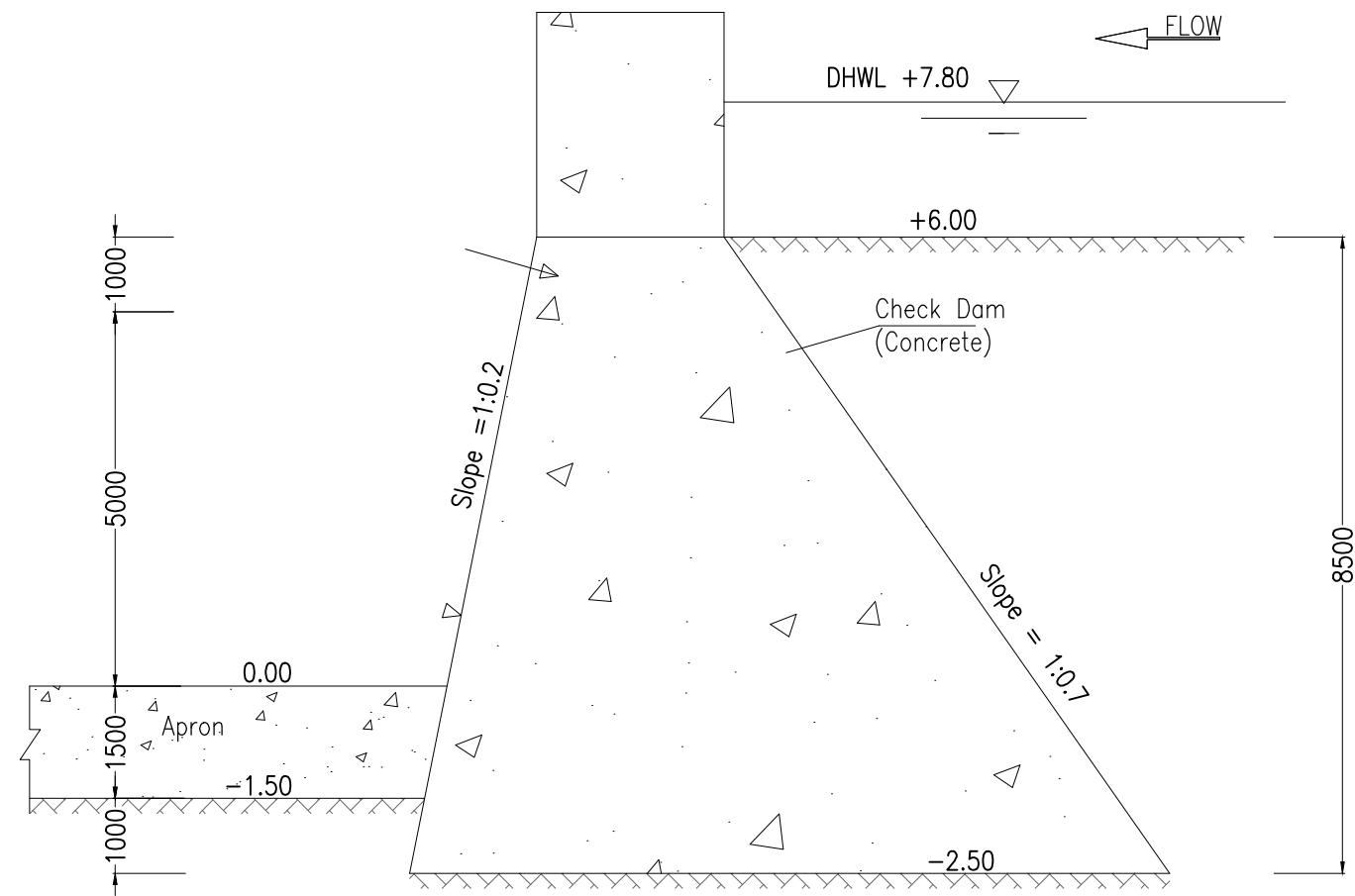
LONGITUDINAL SECTION OF CHECK DAM IN MASWALA RIVER

Scale 1/200

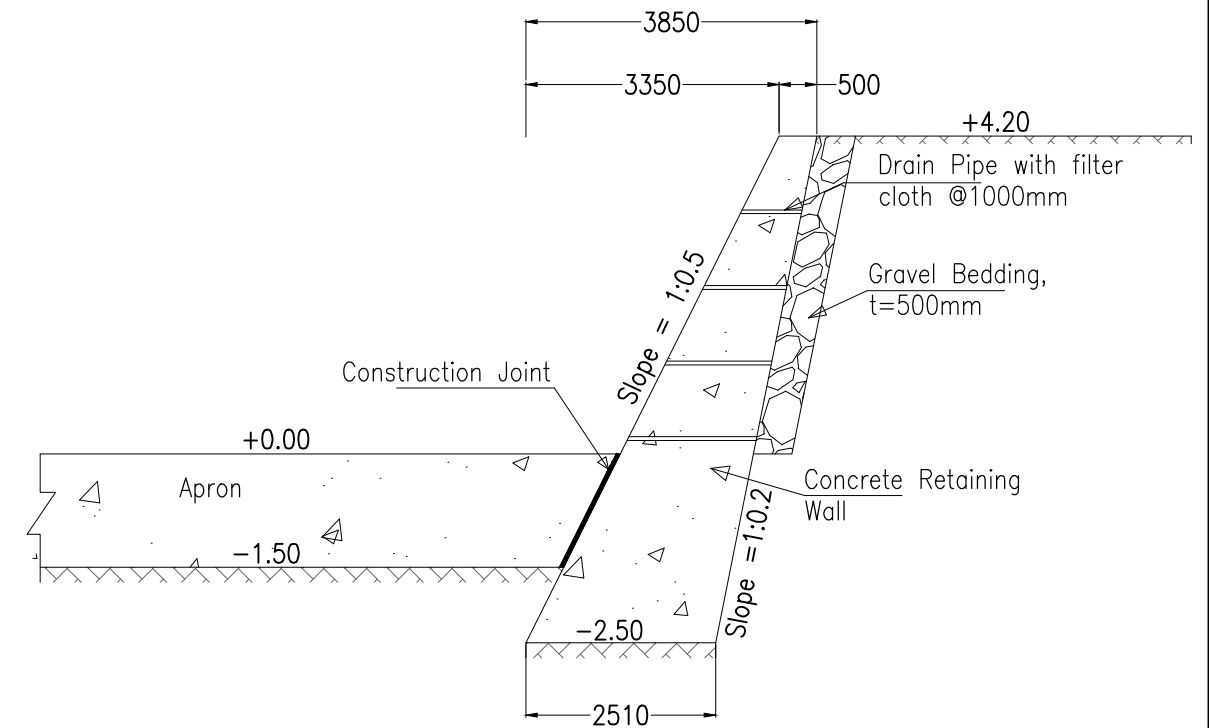


GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
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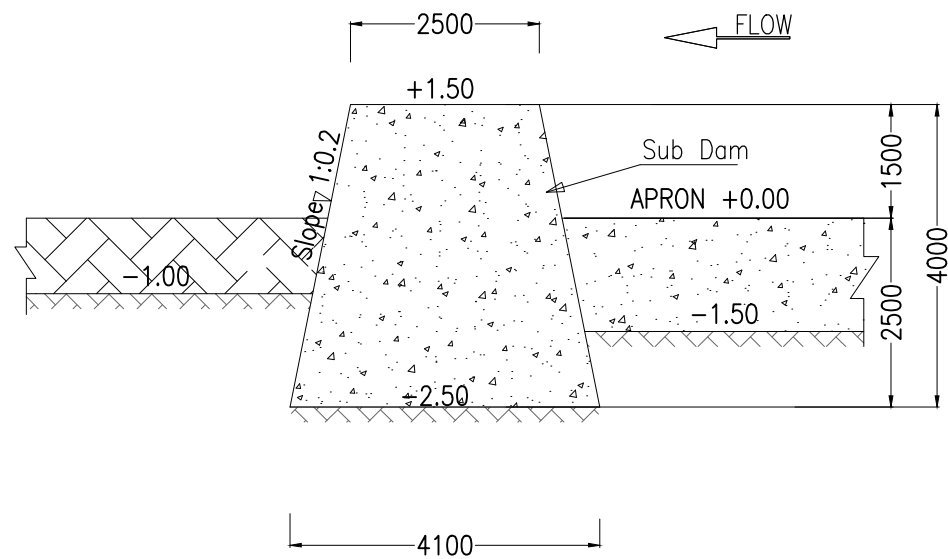
MAIN DAM PROTECTION DETAILS
SCALE; 1:1



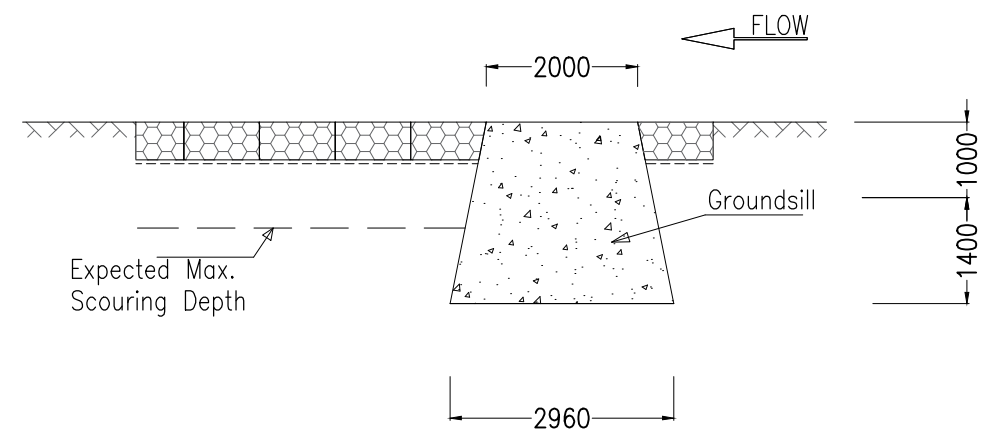
RETAINING WALL



SUB DAM PROTECTION DETAILS



GROUNDSILL PROTECTION DETAILS



GOVERNMENT AGENCIES:



JAPAN International
Cooperation Agency



Reli Assets Holding
Company (RAHCO),
Tanzania

JICA STUDY TEAM:

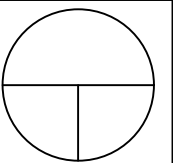
PADECO Co., Ltd.,
Nippon Koei Co., Ltd.,
Japan International Consultants
for Transportation Co., Ltd., and
Fukken Engineering Co., Ltd.

PROJECT & LOCATION:

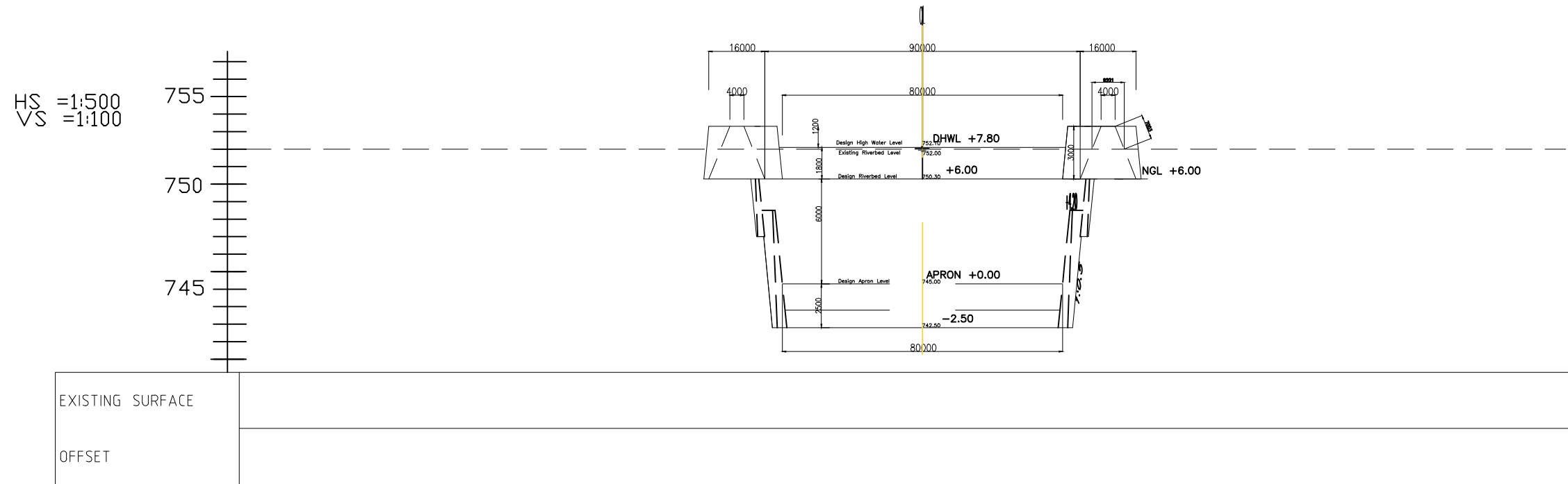
Preparatory Survey on
Flood Protection
Measures for Central
Railway Line in the United
Republic of Tanzania

SHEET CONTENTS:

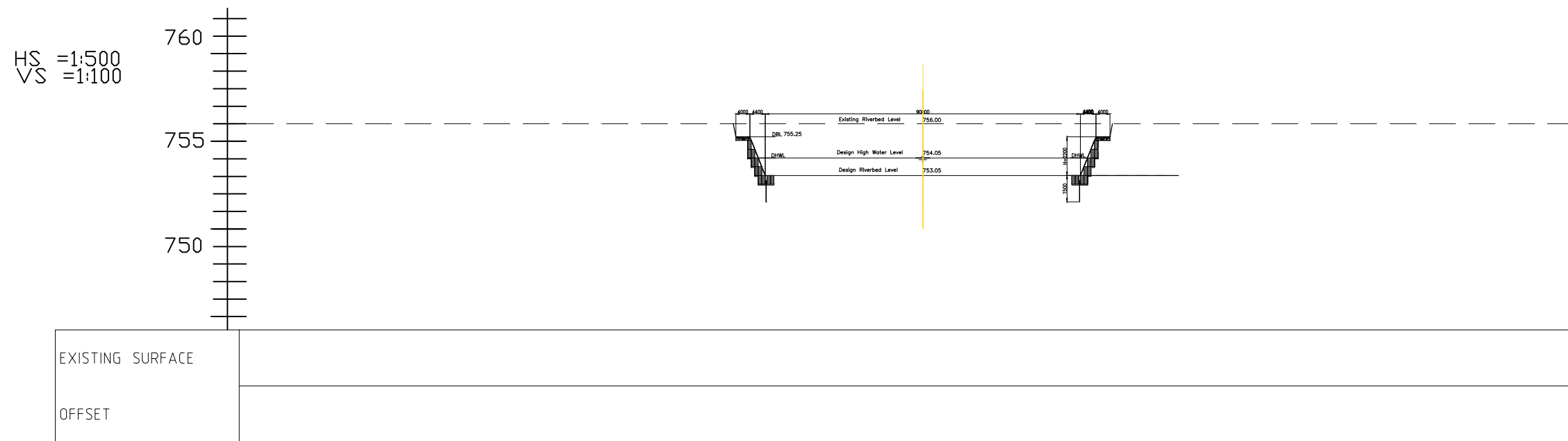
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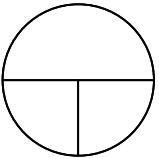
CROSS SECTION OF RIVER CHANNEL IN MASWALA RIVER (1/3)



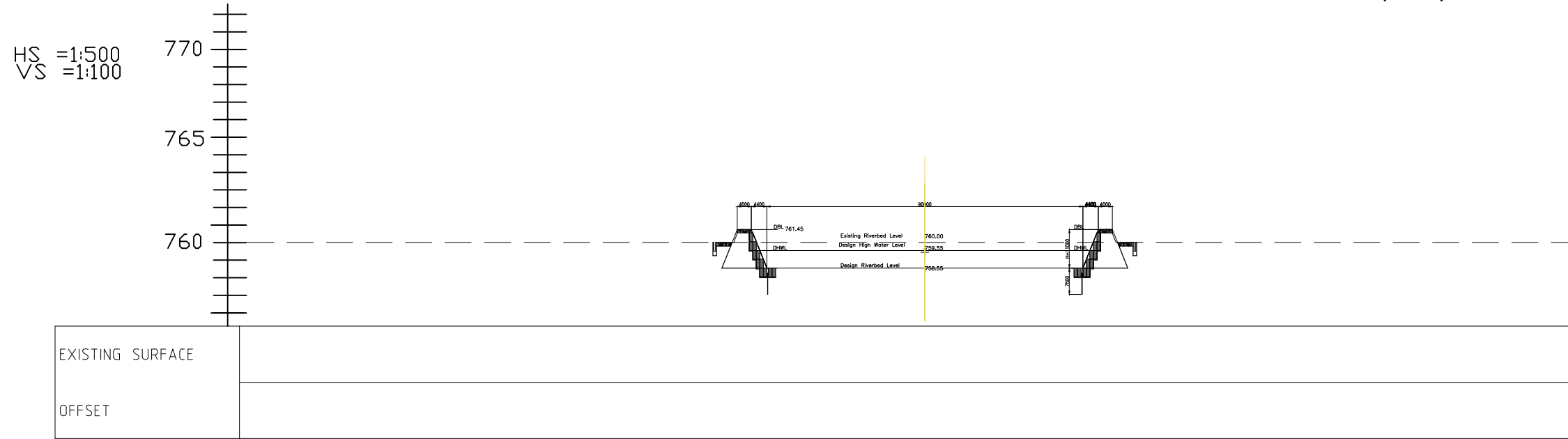
Sta.0+000 (MS-Groundsill No.1: CHECK DAM))



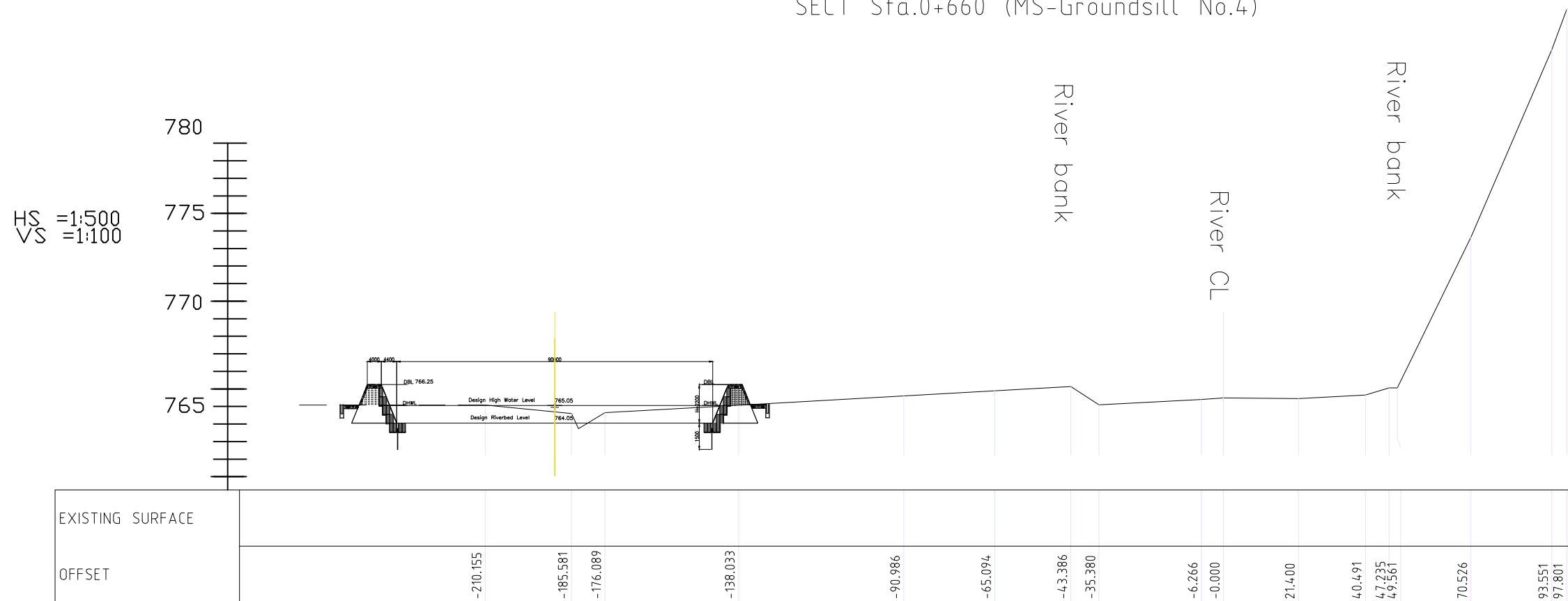
Sta.0+220 (MS-Groundsill No.2)

GOVERNMENT AGENCIES:		JICA STUDY TEAM:		PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.		Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania		



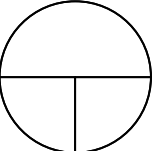
CROSS SECTION OF RIVER CHANNEL IN MASWALA RIVER (2/3)



SECT Sta.0+660 (MS-Groundsill No.4)

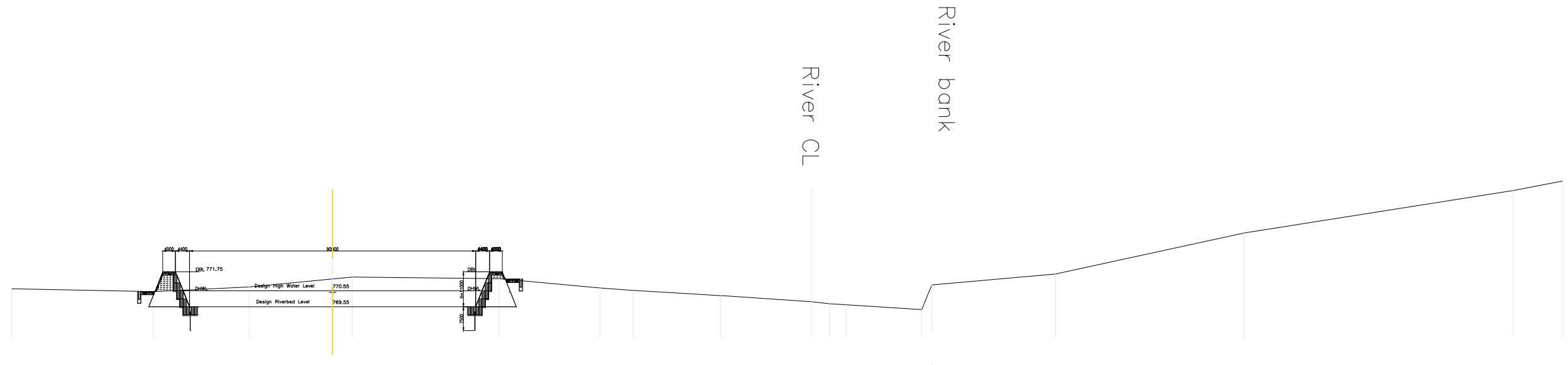


SECT MS E+099: Sta.1+100 (MS-Groundsill No.6)

GOVERNMENT AGENCIES:		JICA STUDY TEAM:		PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.		Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania		

CROSS SECTION OF RIVER CHANNEL IN MASWALA RIVER (3/3)

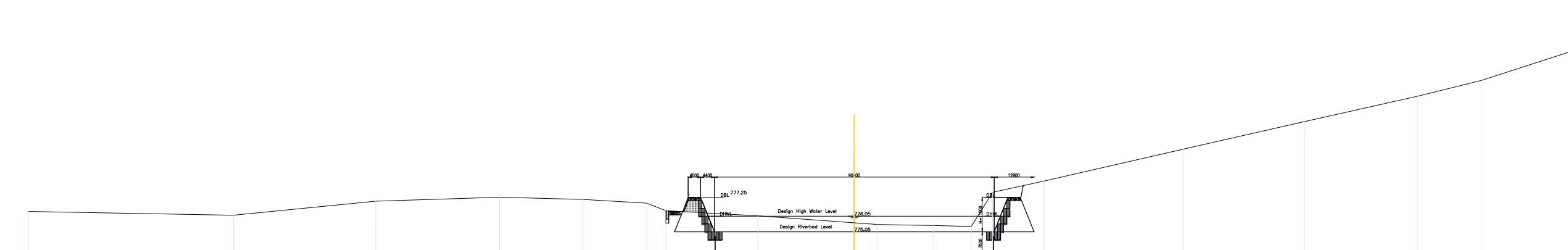
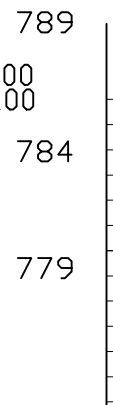
HS =1:500
VS =1:100



EXISTING SURFACE	771.030	770.856	771.141	771.771	771.662	771.081	770.928	770.604	770.226	770.093	770.026	769.719	771.276	771.956	774.543	777.205	777.800
OFFSET	-251.582	-207.005	-176.865	-144.417	-98.194	-66.494	-56.092	-28.487	0.000	5.658	10.877	34.674	37.879	76.703	136.111	220.652	236.214



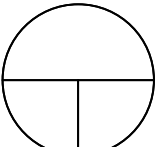
SECT MS F+028.Sta1+540 (MS-Groundsill No.8)

HS =1:500
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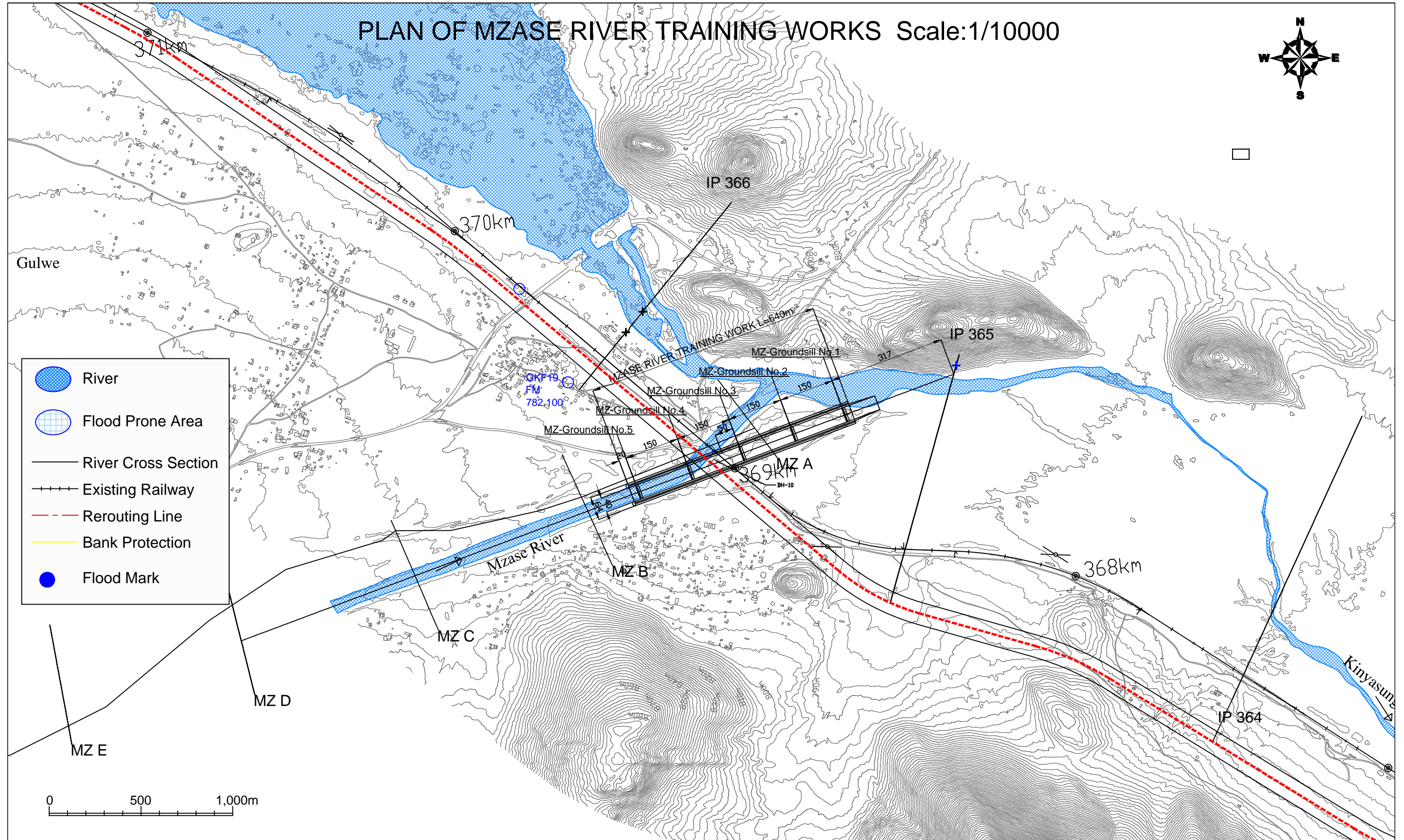
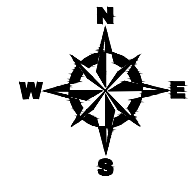


EXISTING SURFACE	776.869	776.621	777.529	777.774	777.643	777.402	776.911	776.585	776.027	775.960	775.895	778.095	778.813	780.858	782.646	784.269	785.300	787.150
OFFSET	-273.022	-207.116	-161.363	-121.534	-94.737	-74.180	-68.041	-38.434	-0.000	17.945	30.167	37.022	53.601	98.232	137.348	173.640	194.415	223.024

SECT MS G-041: Sta.1+980(MS-Groundsill No.10)

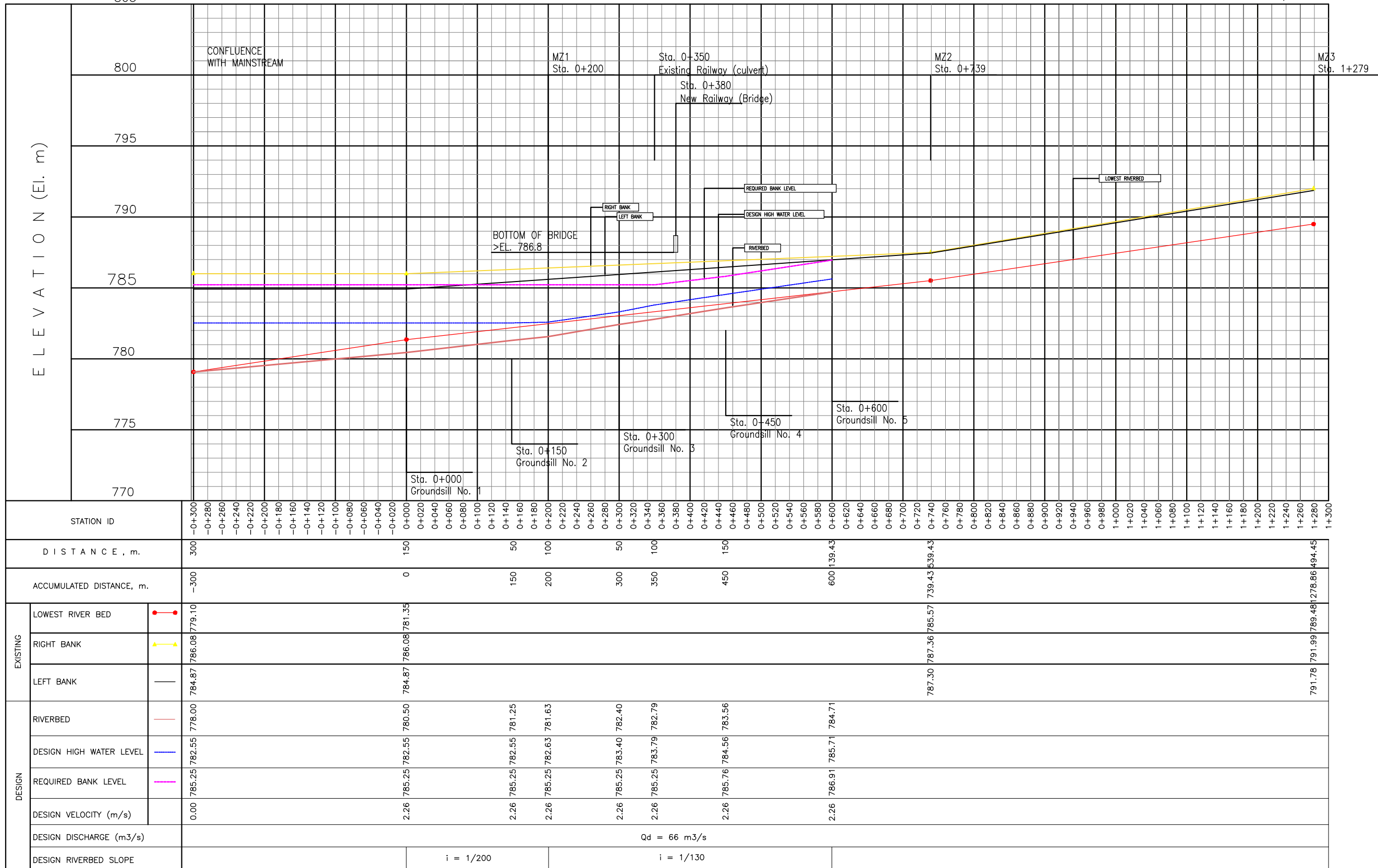
GOVERNMENT AGENCIES:		JICA STUDY TEAM:		PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
	JAPAN International Cooperation Agency		Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	

PLAN OF MZASE RIVER TRAINING WORKS Scale:1/10000



LONGITUDINAL PROFILE OF MZASE RIVER

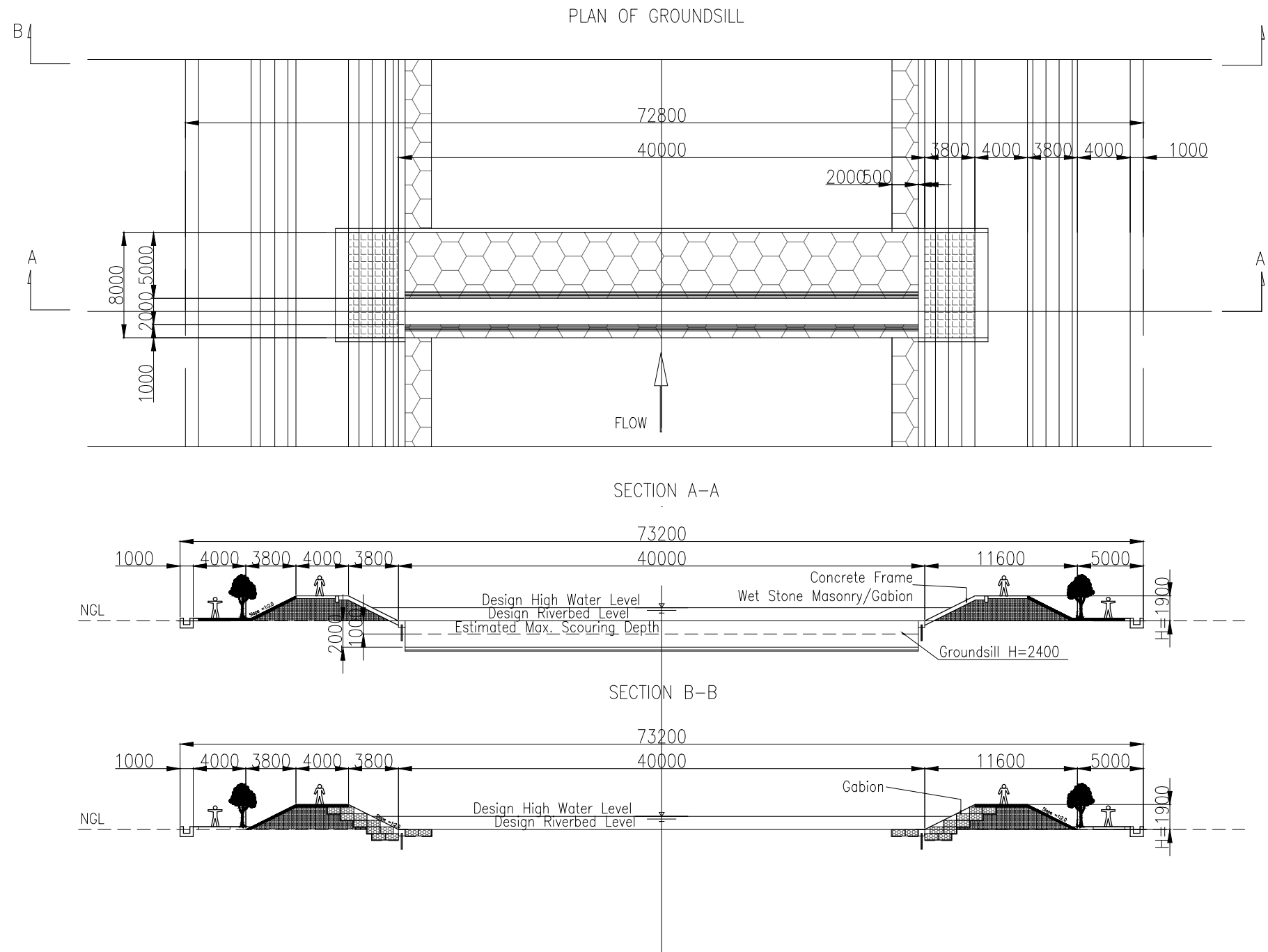
Scale H: 1/5000
V: 1/250



GOVERNMENT AGENCIES:	JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
JAPAN International Cooperation Agency	Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	LONGITUDINAL PROFILE OF MZASE RIVER Scale: H:1/5000, V:1/250 <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <div style="width: 10px; height: 10px; border: 1px solid black; border-radius: 50%;"></div> </div>

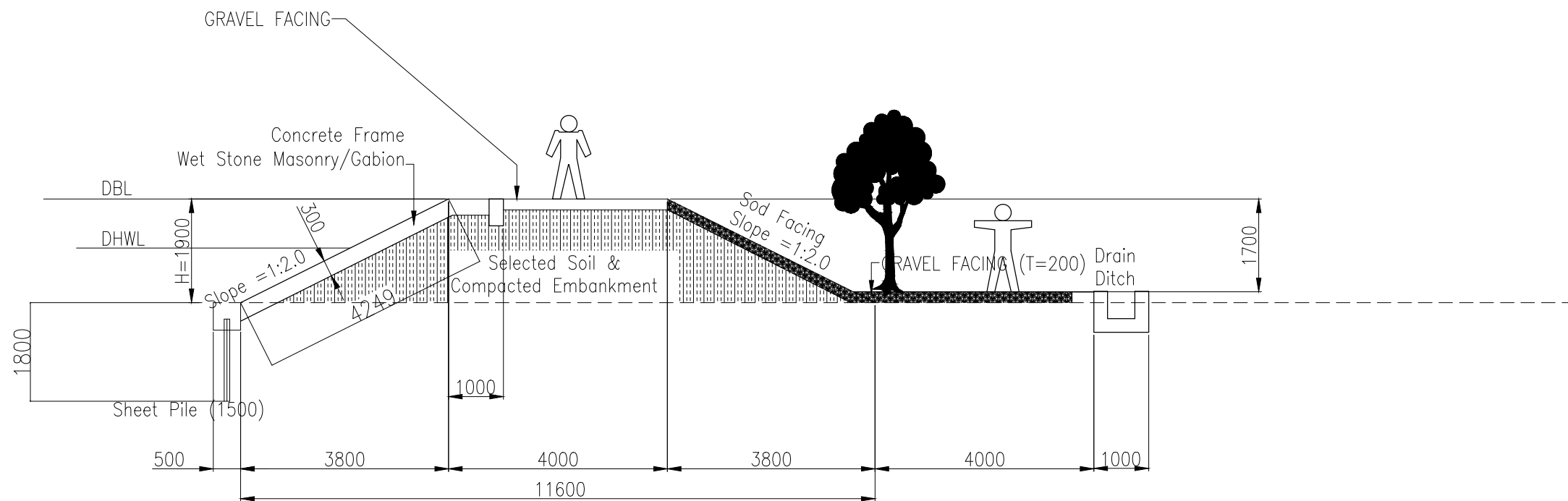
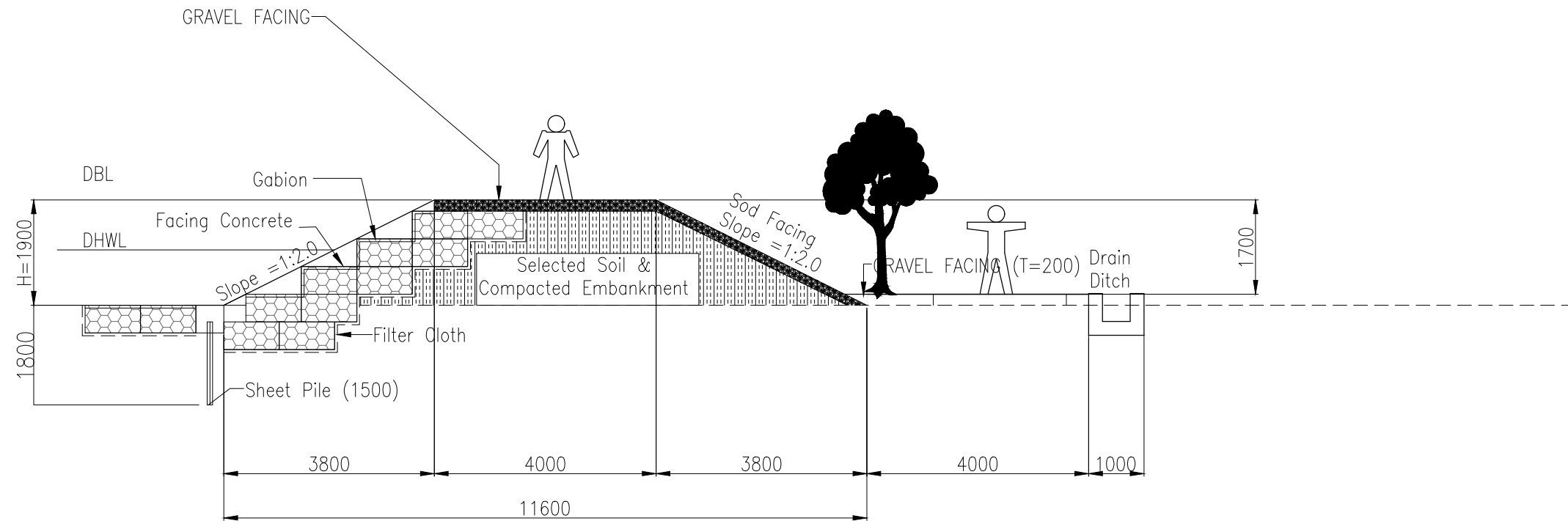
PLAN AND TYPICAL SECTION OF RIVER CHANNEL, AND GROUNDSILL IN MZASE RIVER



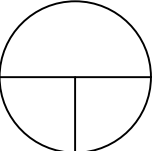
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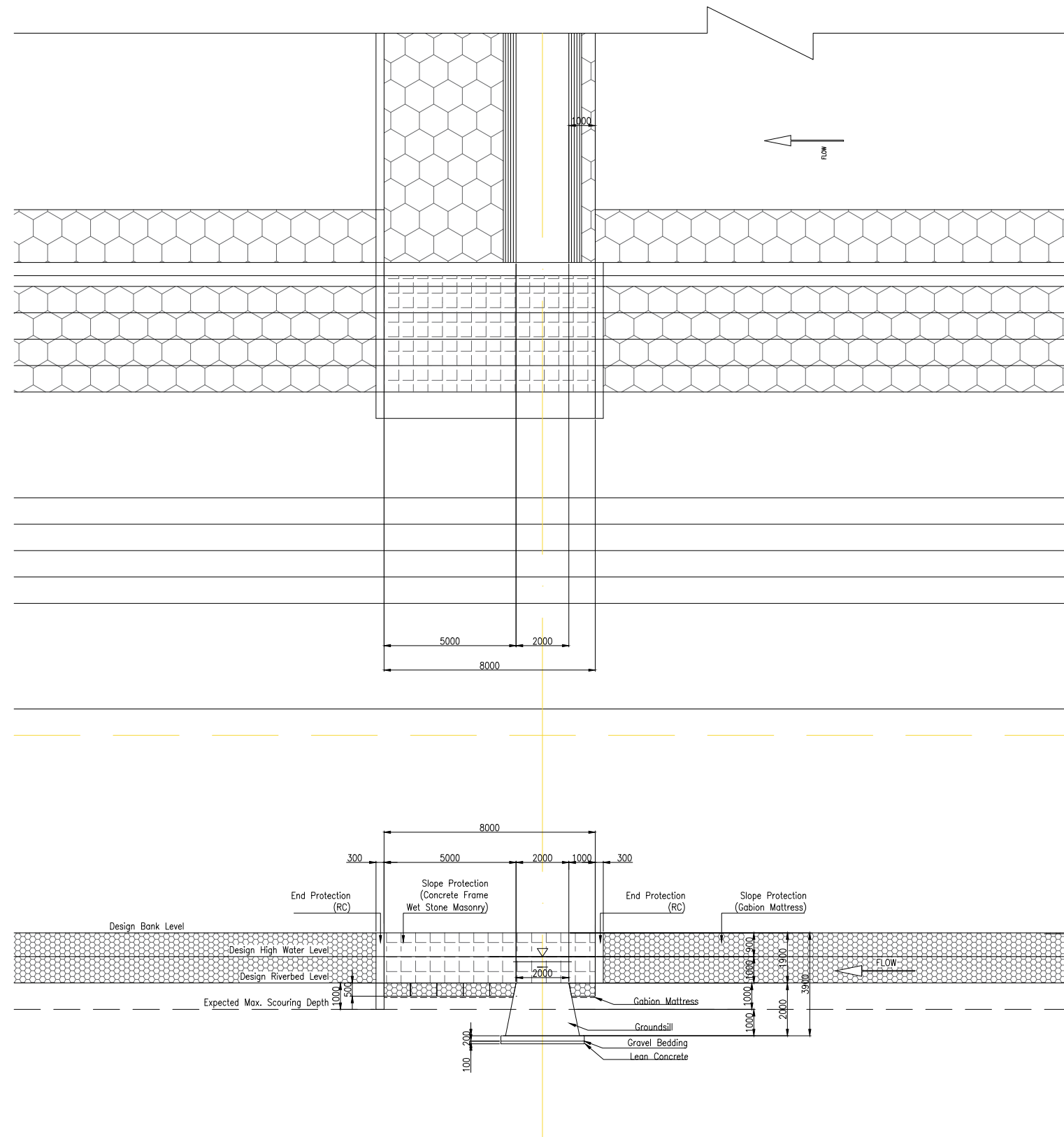
GOVERNMENT AGENCIES:	JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
JAPAN International Cooperation Agency	Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	



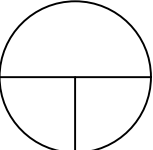
TYPICAL SECTION OF DIKE AND BANK PROTECTION WORKS IM MZASE RIVER



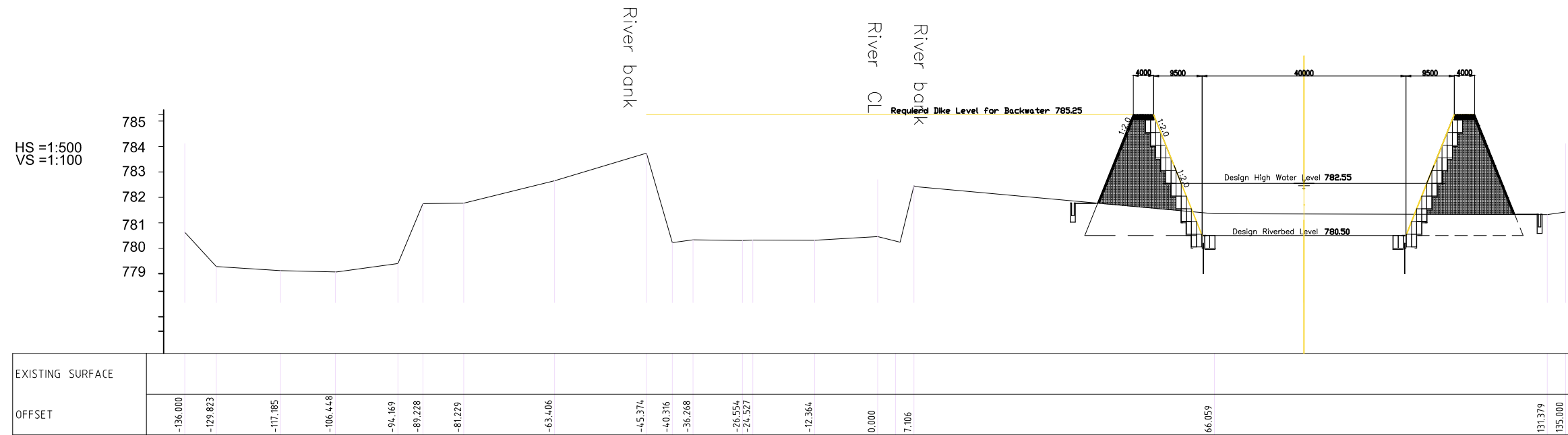
GOVERNMENT AGENCIES:		JICA STUDY TEAM:		PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.		Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania		

LONGITUDINAL SECTION OF GROUNDSILL IN MZASE RIVER TRAINING WORKS

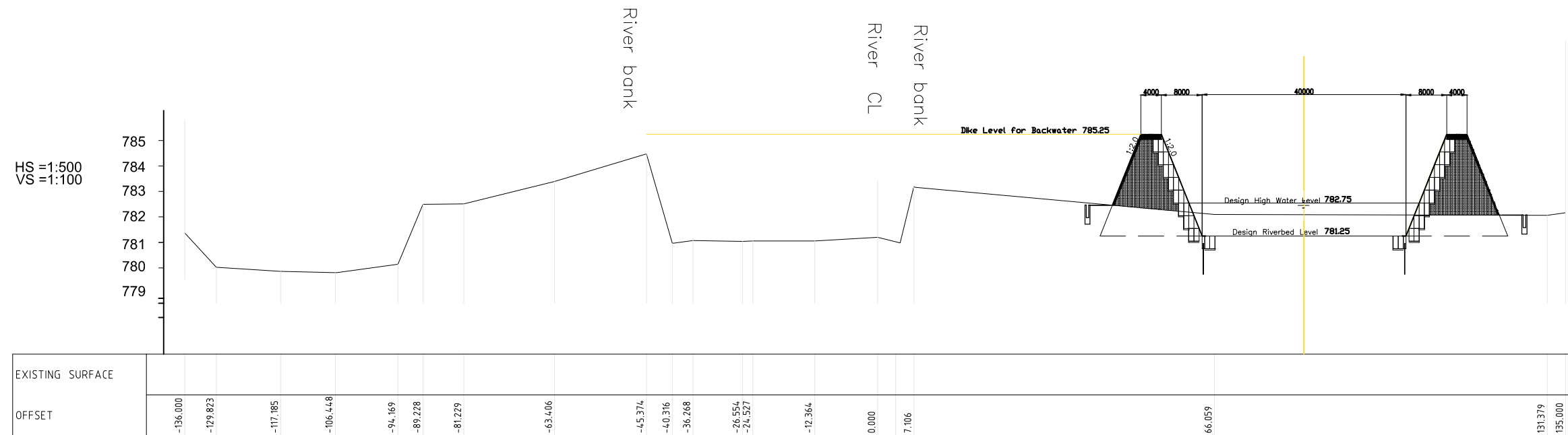


GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania		

CROSS SECTION OF RIVER CHANNEL IN MZASE RIVER (1/3)



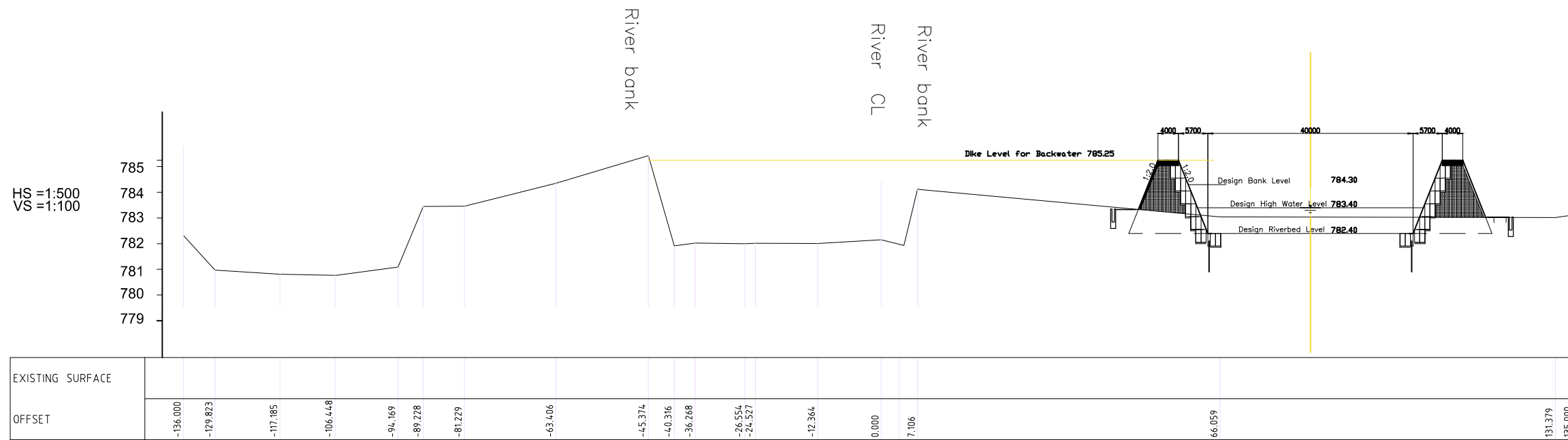
SECT MZ 01-227 (Sta.0+000: MZ-Groundsill No.1)



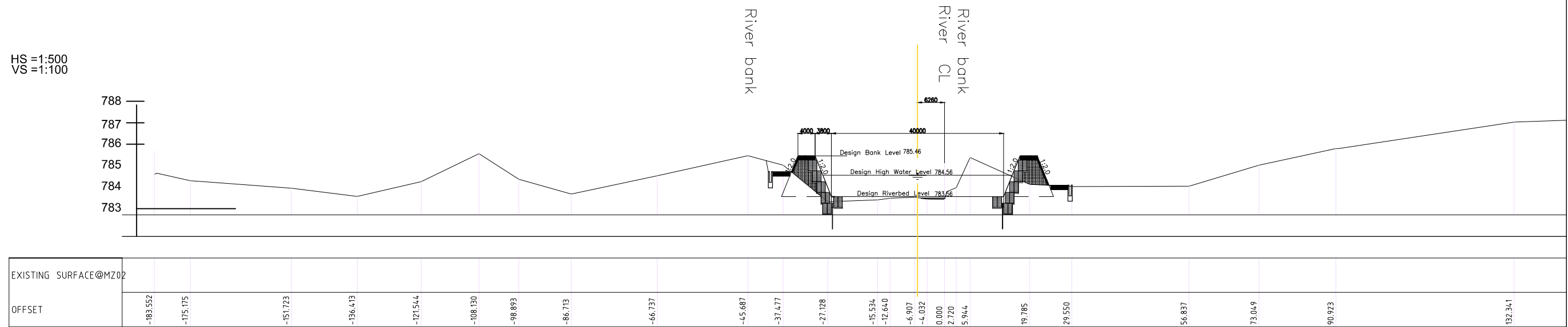
SECT MZ 01-077 (Sta.0+150: MZ-Groundsill No.2)

GOVERNMENT AGENCIES:	JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
JAPAN International Cooperation Agency	Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	

CROSS SECTION OF RIVER CHANNEL IN MZASE RIVER (2/3)



SECT MZ 01+073 (Sta.0+300: MZ-Groundsill No.3)



SECT MZ 02-298 (Sta.0+450: MZ-Groundsill No.4)

GOVERNMENT AGENCIES:



JAPAN International Cooperation Agency



Reli Assets Holding Company (RAHCO), Tanzania

JICA STUDY TEAM:

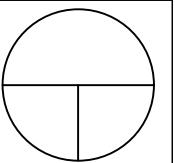
PADECO Co., Ltd.,
Nippon Koei Co., Ltd.,
Japan International Consultants for Transportation Co., Ltd., and
Fukken Engineering Co., Ltd.

PROJECT & LOCATION:

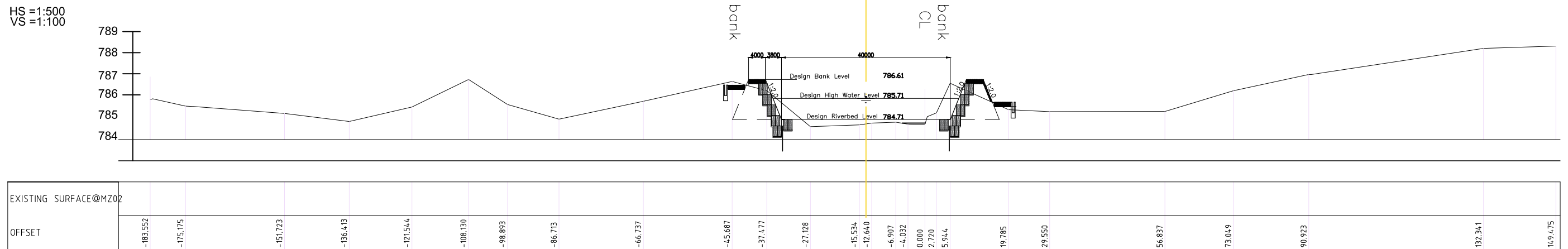
Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania

SHEET CONTENTS:

DWG NUM



CROSS SECTION OF RIVER CHANNEL IN MZASE RIVER (3/3)

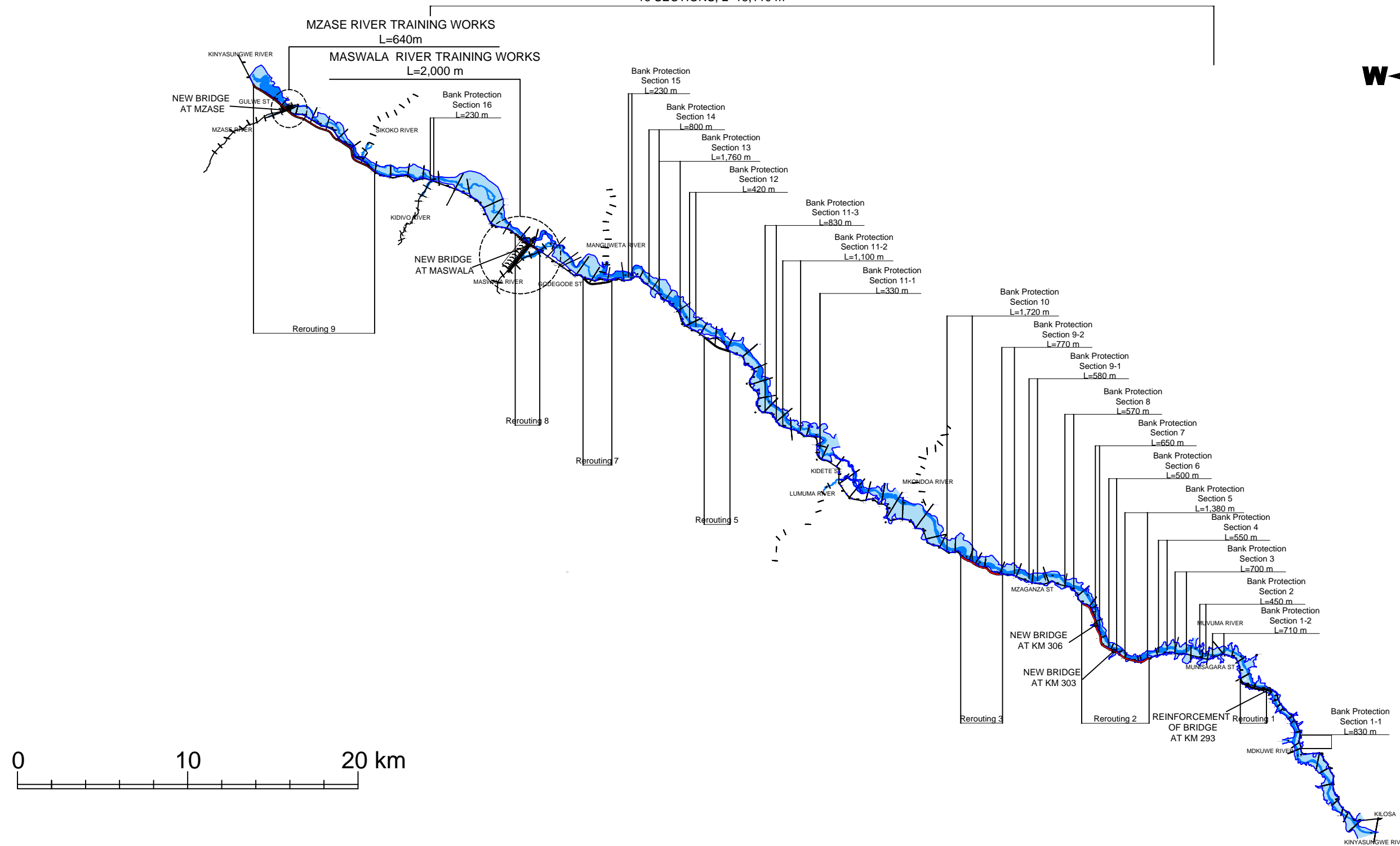
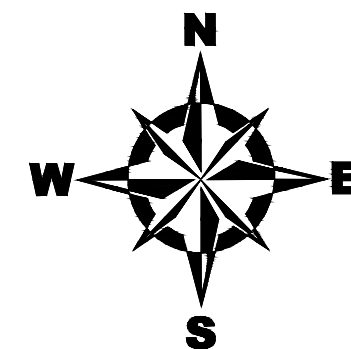




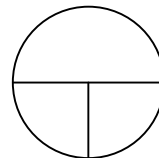
SECT MZ 02-148 (Sta.0+600: MZ-Groundsill No.5)

GOVERNMENT AGENCIES:	JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
JAPAN International Cooperation Agency	Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	

GENERAL PLAN OF FLOOD PROTECTION WORKS
Scale:1/250,000

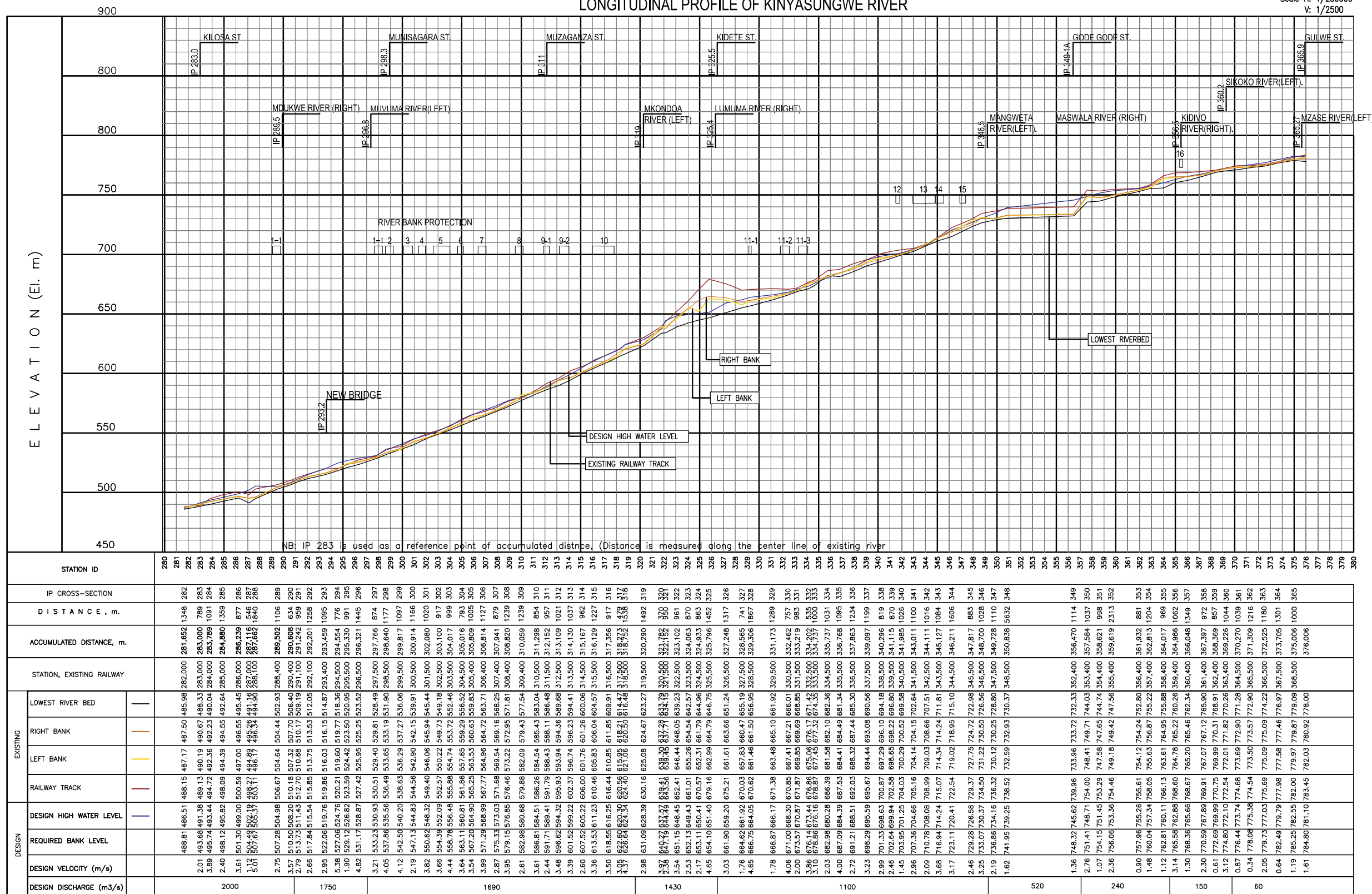
RIVER BANK PROTECTION WORKS ALONG MAINSTREAM
16 SECTIONS, L=15,110 m



GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	GENERAL PLAN OF FLOOD PROTECTION WORKS Scale:1/250,000	

LONGITUDINAL PROFILE OF KINYASUNGWE RIVER

Scale H: 1/25000
V: 1/2500



NB: IP 283.0 is used as a reference point of accumulated distance. (Distance is measured along the center line of existing river)

STATION ID	IP CROSS-SECTION	DISTANCE, m.	ACCUMULATED DISTANCE, m.	STATION, EXISTING RAILWAY	EXISTING	DESIGN
280					LOWEST RIVER BED	DESIGN HIGH WATER LEVEL
281					RIGHT BANK	REQUIRED BANK LEVEL
282					LEFT BANK	DESIGN VELOCITY (m/s)
283					RAILWAY TRACK	DESIGN DISCHARGE (m ³ /s)
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GOVERNMENT AGENCIES:



JAPAN International Cooperation Agency



Reli Assets Holding Company (RAHCO), Tanzania

JICA STUDY TEAM:

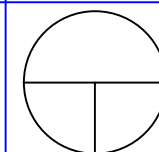
PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.

PROJECT & LOCATION:

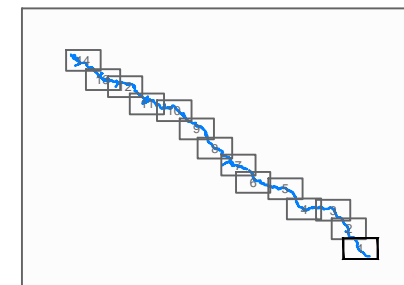
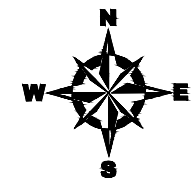
Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania








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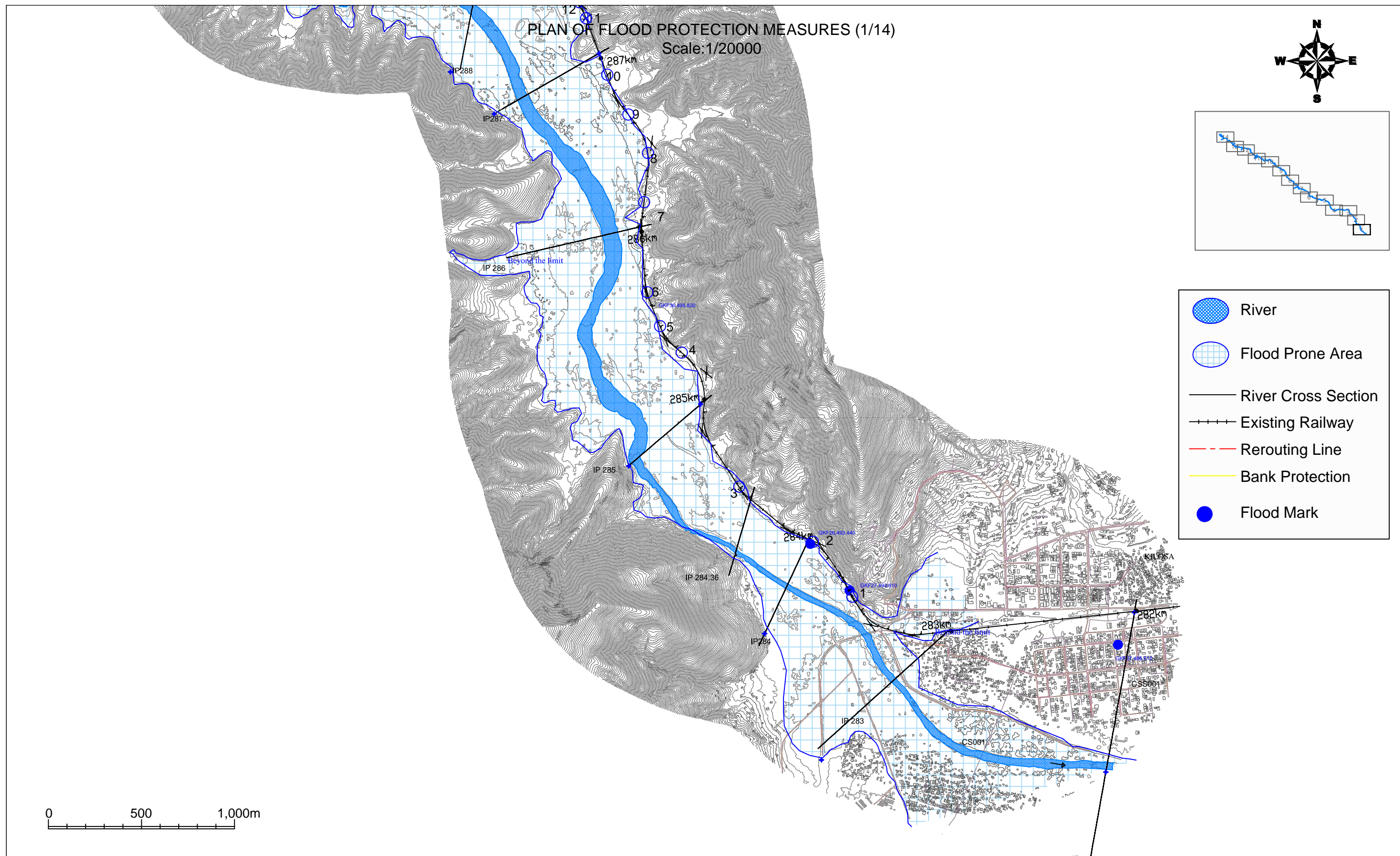
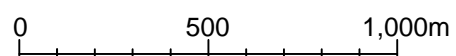
DWG NUM



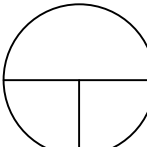


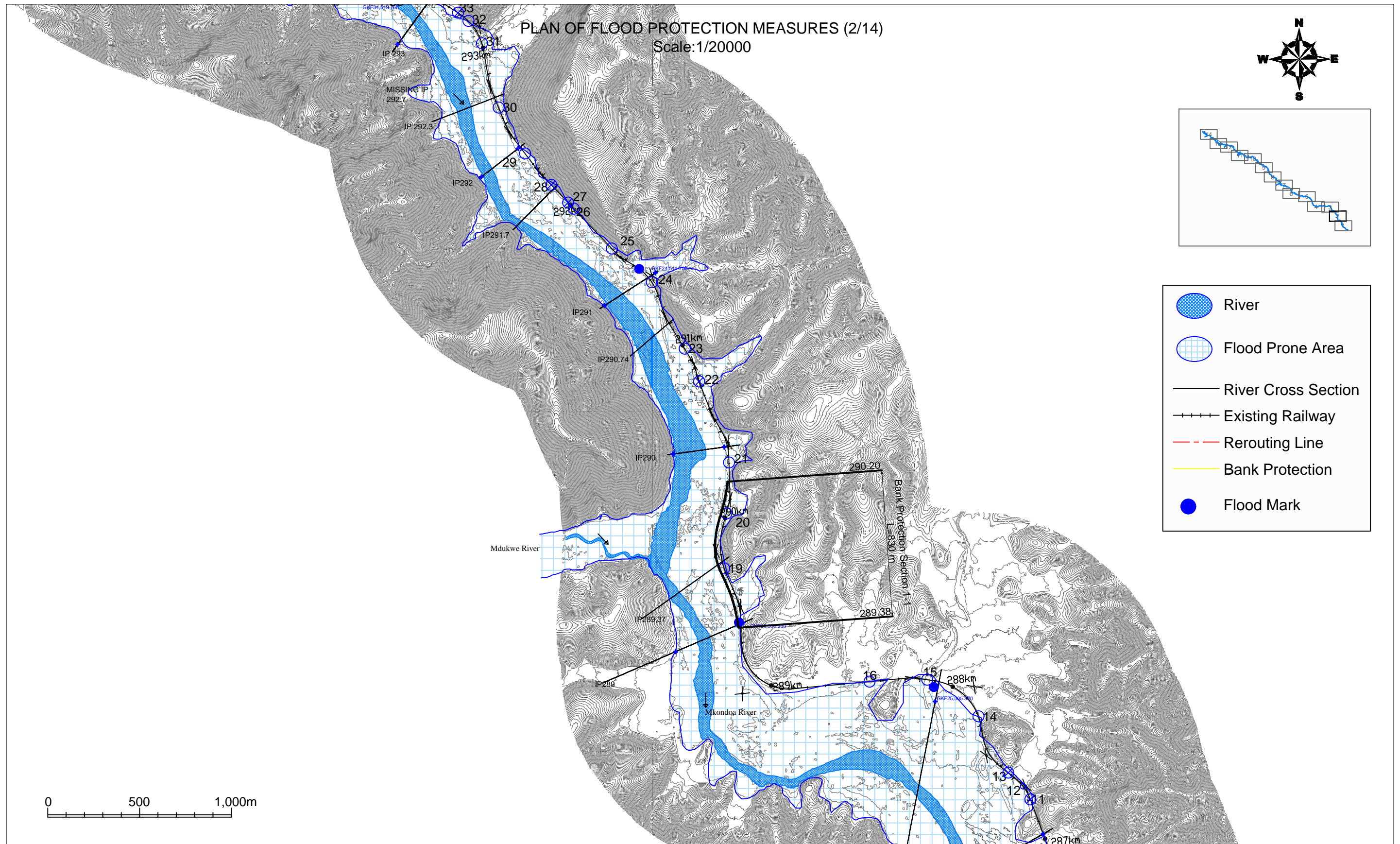
PLAN OF FLOOD PROTECTION MEASURES (1/14)
Scale: 1/20000



-  River
-  Flood Prone Area
-  River Cross Section
-  Existing Railway
-  Rerouting Line
-  Bank Protection
-  Flood Mark

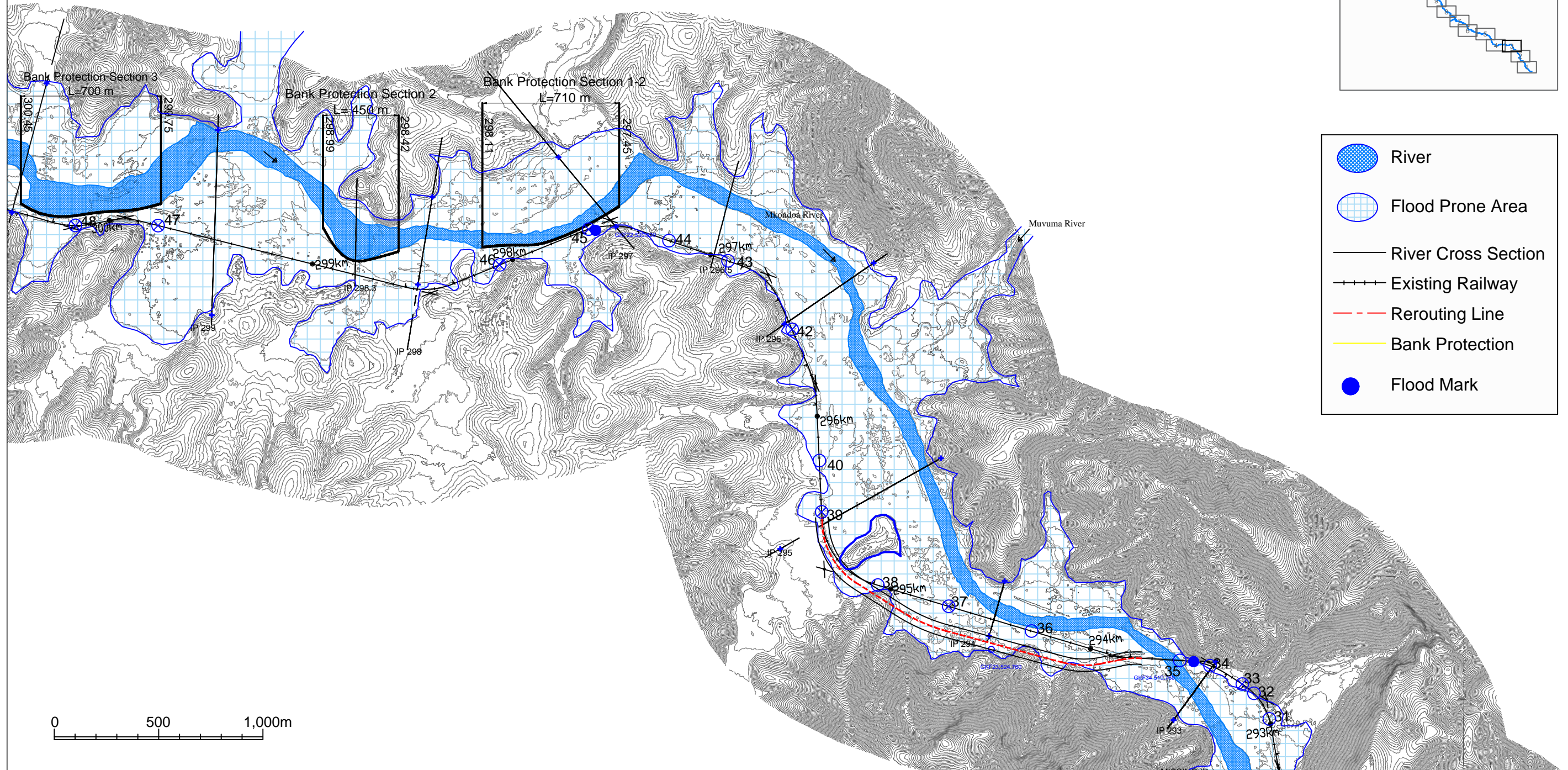
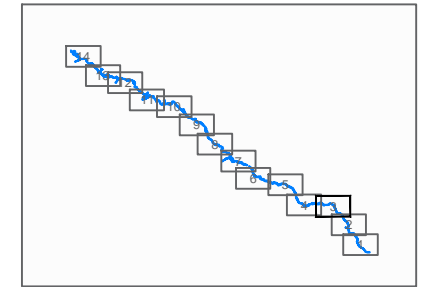
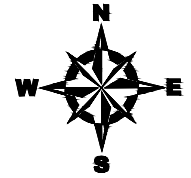


GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
 JAPAN International Cooperation Agency	 Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	PLAN OF FLOOD PROTECTION MEASURES (1/14) Scale: 1/20000	

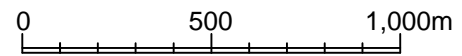


GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
<p>JAPAN International Cooperation Agency</p>	<p>Reli Assets Holding Company (RAHCO), Tanzania</p>	<p>PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.</p>	<p>Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania</p>	<p>PLAN OF FLOOD PROTECTION MEASURES (2/14) Scale: 1/20000</p>	

PLAN OF FLOOD PROTECTION MEASURES (3/14)
Scale: 1/20000



- River
- Flood Prone Area
- River Cross Section
- Existing Railway
- Rerouting Line
- Bank Protection
- Flood Mark



GOVERNMENT AGENCIES:		JICA STUDY TEAM:	PROJECT & LOCATION:	SHEET CONTENTS:	DWG NUM
JAPAN International Cooperation Agency	Reli Assets Holding Company (RAHCO), Tanzania	PADECO Co., Ltd., Nippon Koei Co., Ltd., Japan International Consultants for Transportation Co., Ltd., and Fukken Engineering Co., Ltd.	Preparatory Survey on Flood Protection Measures for Central Railway Line in the United Republic of Tanzania	PLAN OF FLOOD PROTECTION MEASURES (3/14) Scale: 1/20000	