GOVERNMENT OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

DEC. 2016.

SHIRE VALLEY IRRIGATION PROJECT

DESIGN DRAWINGS

Korea Rural Community Corporation

Dasan Consultants Co., Ltd.

GK Works Civil and Structural Engineer

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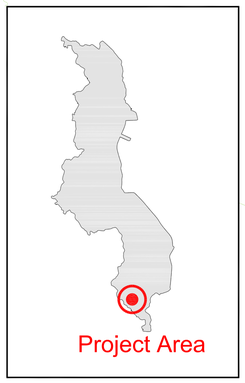
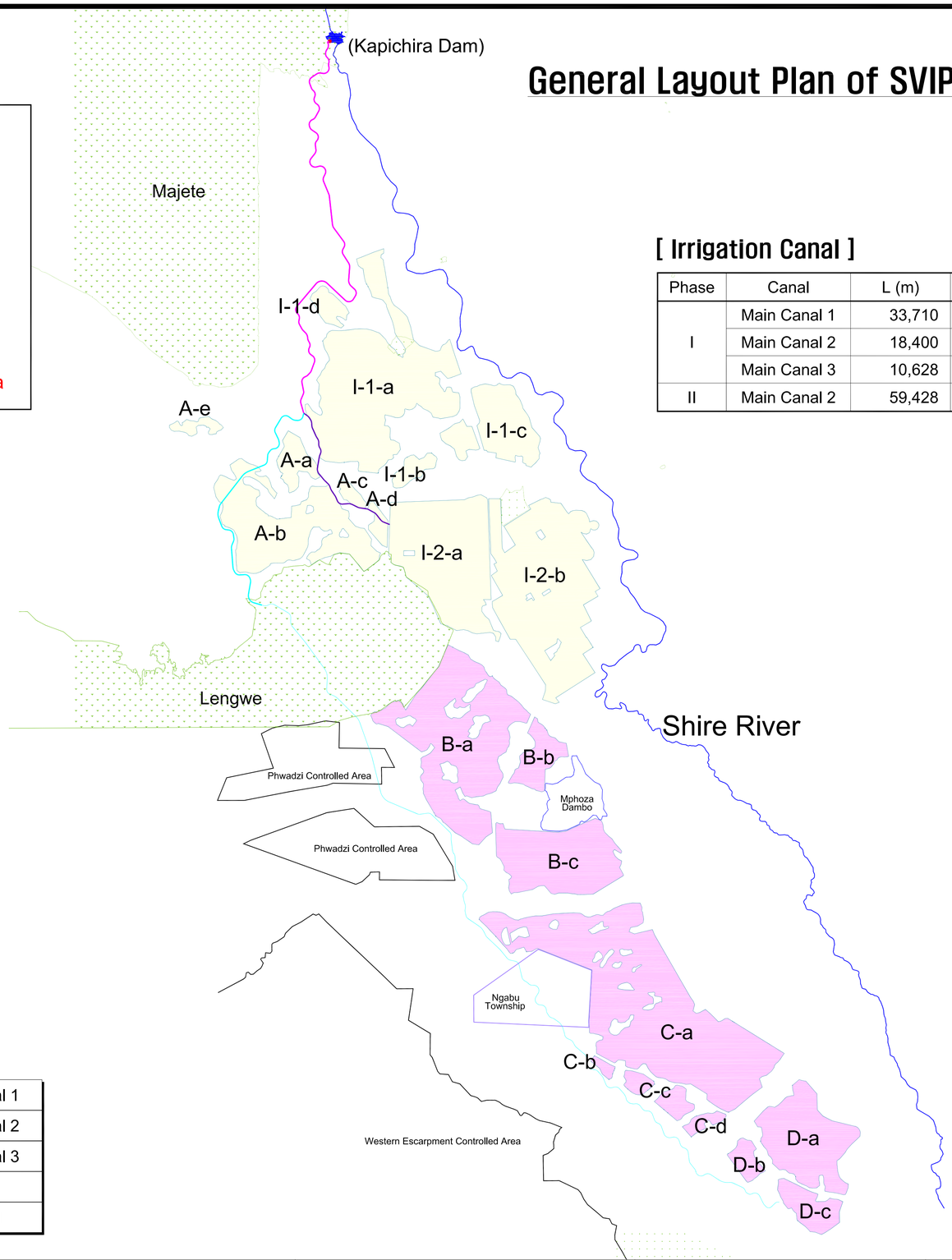
NO.	DRG NO.	DRAWING TITLE

A. General Drawings

General Layout Plan of SVIP





LEGEND

	Main Canal 1
	Main Canal 2
	Main Canal 3
	Phase I
	Phase II

[Irrigation Canal]

Phase	Canal	L (m)	B.P (EL.m)	E.P (EL.m)
I	Main Canal 1	33,710	143.50	132.80
	Main Canal 2	18,400	132.80	121.78
	Main Canal 3	10,628	132.80	92.00
II	Main Canal 2	59,428	121.78	104.70

[Zone Area]

Zone	Total Area	Net Area
Zone I-1	9,631 ha	7,866 ha
I-1-a	7,183 ha	6,107 ha
I-1-b	382 ha	325 ha
I-1-c	1,680 ha	1,106 ha
I-1-d	386 ha	328 ha
Zone I-2	11,250 ha	9,995 ha
I-2-a	4,684 ha	4,179 ha
I-2-b	6,566 ha	5,816 ha
Zone A	5,199 ha	4,419 ha
A-a	614 ha	508 ha
A-b	3,919 ha	3,352 ha
A-c	179 ha	157 ha
A-d	246 ha	198 ha
A-e	241 ha	204 ha
Phase I	26,079 ha	22,280 ha
Zone B	9,925 ha	8,490 ha
B-a	5,879 ha	4,997 ha
B-b	858 ha	729 ha
B-c	3,188 ha	2,764 ha
Zone C	10,749 ha	9,136 ha
C-a	9,849 ha	8,371 ha
C-b	113 ha	96 ha
C-c	571 ha	486 ha
C-d	216 ha	183 ha
Zone D	4,076 ha	3,464 ha
D-a	2,844ha	2,417 ha
D-b	388 ha	329 ha
D-c	845 ha	718 ha
Phase II	24,750 ha	21,090 ha
Total	50,830 ha	43,370 ha

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Layout Plan of SVIP	DATE DECEMBER 2016	DRG No A-001

General Layout Plan of Phase I

Zone	Total Area	Net Area
Zone I-1	9,631 ha	7,866 ha
I-1-a	7,183 ha	6,107 ha
I-1-b	382 ha	325 ha
I-1-c	1,680 ha	1,106 ha
I-1-d	386 ha	328 ha
Zone I-2	11,250 ha	9,995 ha
I-2-a	4,684 ha	4,179 ha
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A-a	614 ha	508 ha
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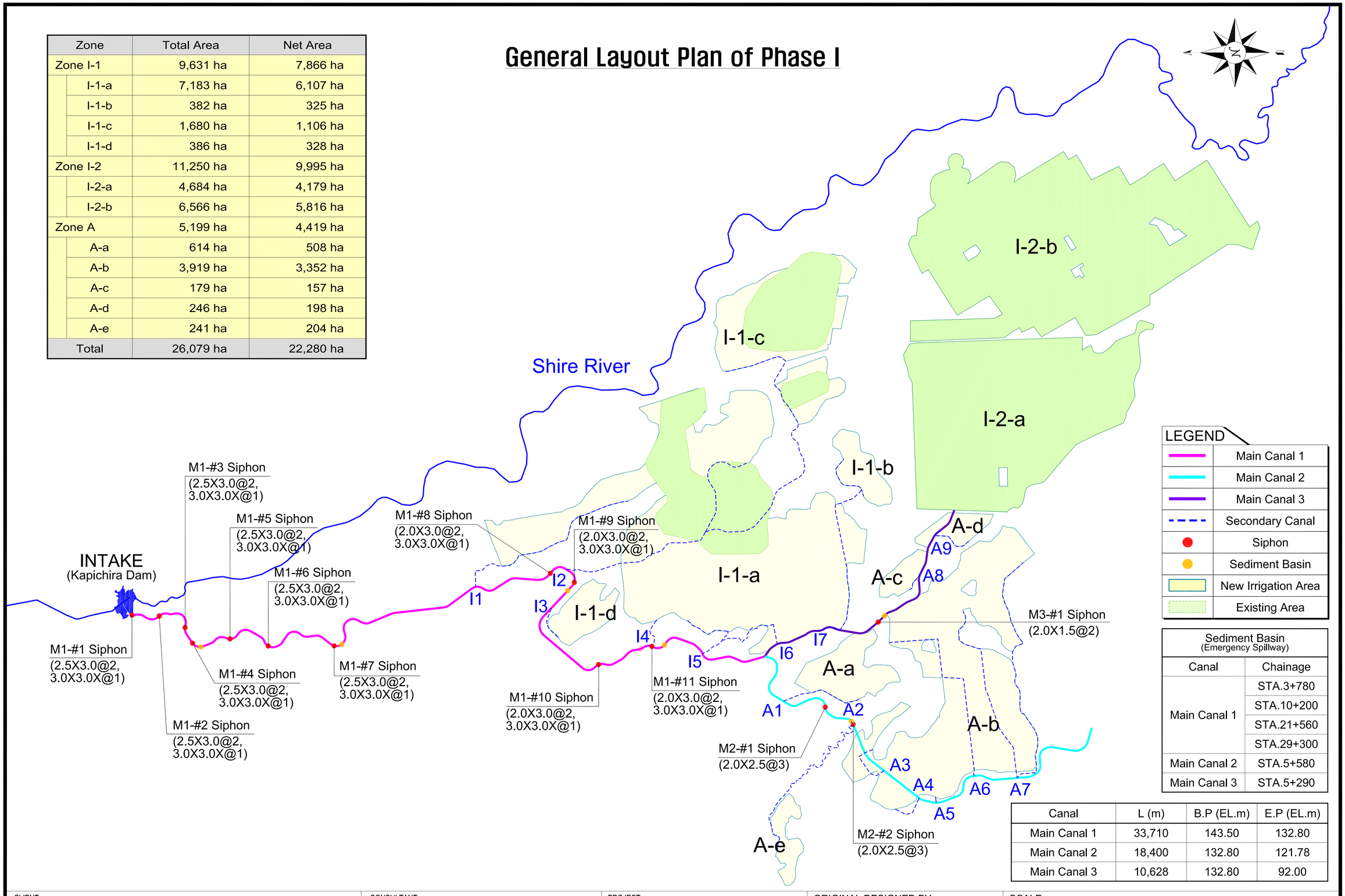
A-c	179 ha	157 ha
A-d	246 ha	198 ha
A-e	241 ha	204 ha
Total	26,079 ha	22,280 ha



Sediment Basin (Emergency Spillway)	
Canal	Chainage
Main Canal 1	STA.3+780
	STA.10+200
	STA.21+560
	STA.29+300
Main Canal 2	STA.5+580
Main Canal 3	STA.5+290

Canal	L (m)	B.P (EL.m)	E.P (EL.m)
Main Canal 1	33,710	143.50	132.80
Main Canal 2	18,400	132.80	121.78
Main Canal 3	10,628	132.80	92.00

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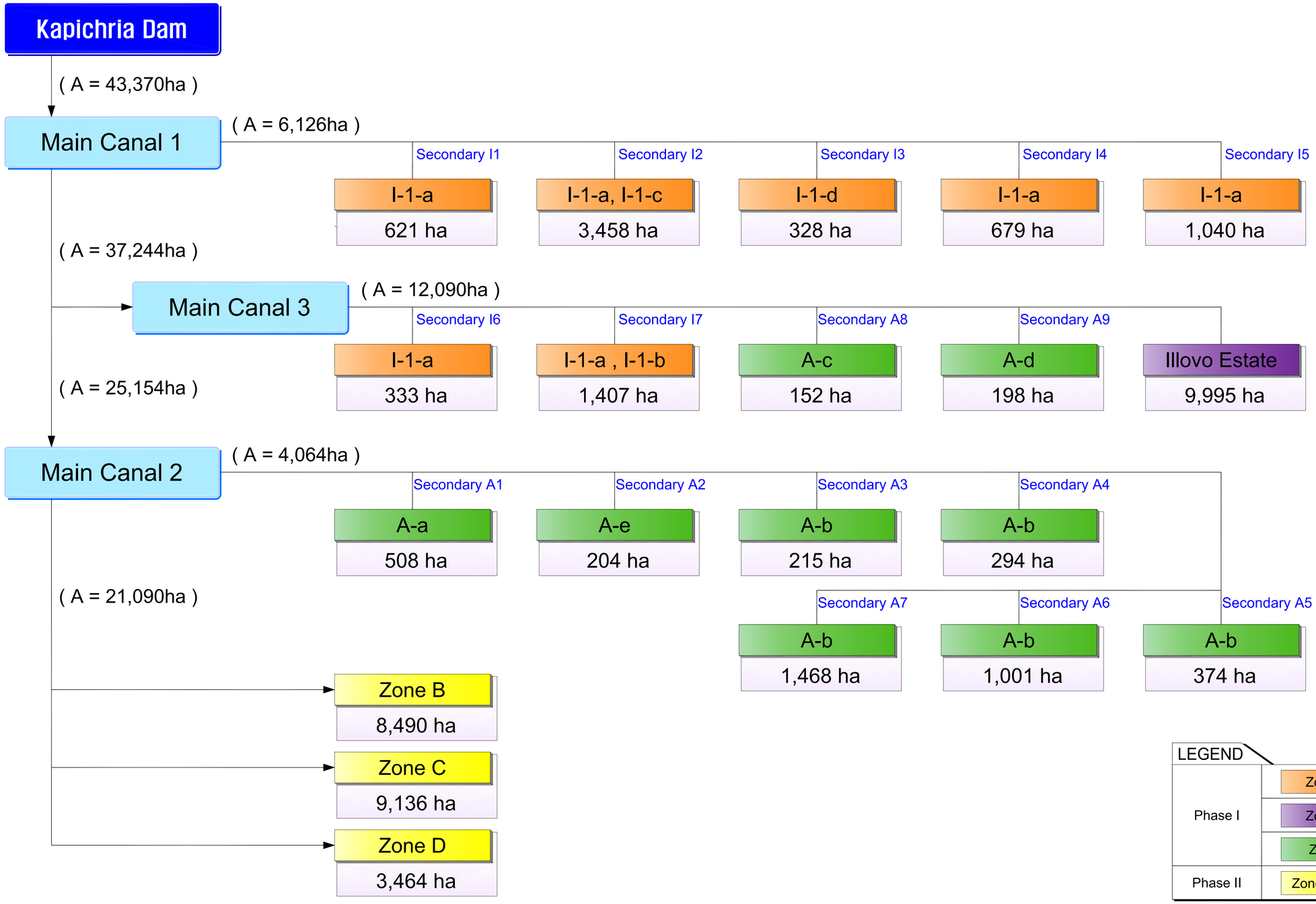
		TITLE General Layout Plan of Phase I	DATE DECEMBER 2016	DRG No A-002

Canal Network System of SVIP



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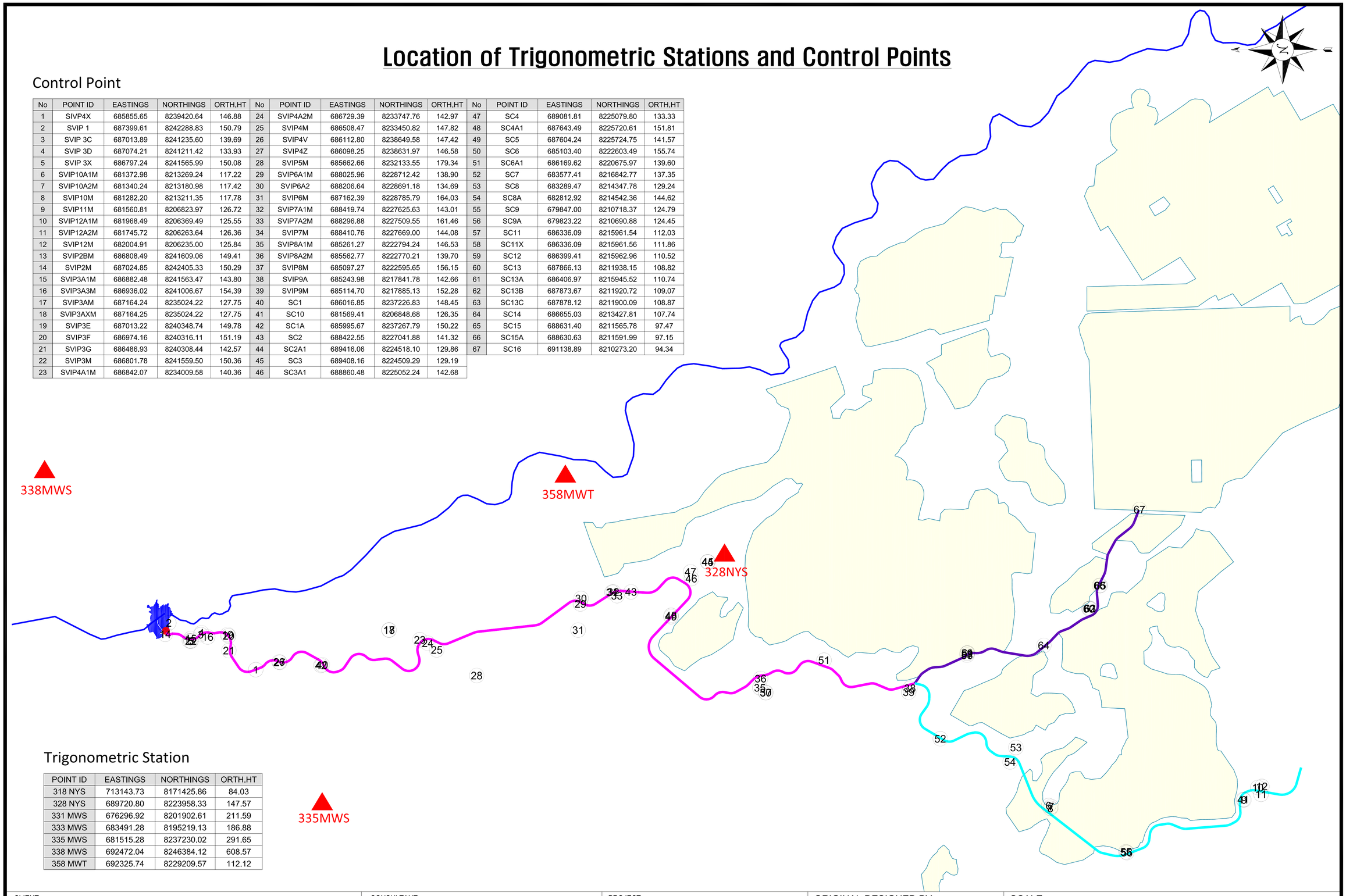
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Canal Network System of SVIP	DATE DECEMBER 2016	DRG No A-003

Location of Trigonometric Stations and Control Points

Control Point

No	POINT ID	EASTINGS	NORTHINGS	ORTH.HT	No	POINT ID	EASTINGS	NORTHINGS	ORTH.HT	No	POINT ID	EASTINGS	NORTHINGS	ORTH.HT
1	SIVP4X	685855.65	8239420.64	146.88	24	SVIP4A2M	686729.39	8233747.76	142.97	47	SC4	689081.81	8225079.80	133.33
2	SVIP 1	687399.61	8242288.83	150.79	25	SVIP4M	686508.47	8233450.82	147.82	48	SC4A1	687643.49	8225720.61	151.81
3	SVIP 3C	687013.89	8241235.60	139.69	26	SVIP4V	686112.80	8238649.58	147.42	49	SC5	687604.24	8225724.75	141.57
4	SVIP 3D	687074.21	8241211.42	133.93	27	SVIP4Z	686098.25	8238631.97	146.58	50	SC6	685103.40	8222603.49	155.74
5	SVIP 3X	686797.24	8241565.99	150.08	28	SVIP5M	685662.66	8232133.55	179.34	51	SC6A1	686169.62	8220675.97	139.60
6	SVIP10A1M	681372.98	8213269.24	117.22	29	SVIP6A1M	688025.96	8228712.42	138.90	52	SC7	683577.41	8216842.77	137.35
7	SVIP10A2M	681340.24	8213180.98	117.42	30	SVIP6A2	688206.64	8228691.18	134.69	53	SC8	683289.47	8214347.78	129.24
8	SVIP10M	681282.20	8213211.35	117.78	31	SVIP6M	687162.39	8228785.79	164.03	54	SC8A	682812.92	8214542.36	144.62
9	SVIP11M	681560.81	8206823.97	126.72	32	SVIP7A1M	688419.74	8227625.63	143.01	55	SC9	679847.00	8210718.37	124.79
10	SVIP12A1M	681968.49	8206369.49	125.55	33	SVIP7A2M	688296.88	8227509.55	161.46	56	SC9A	679823.22	8210690.88	124.45
11	SVIP12A2M	681745.72	8206263.64	126.36	34	SVIP7M	688410.76	8227669.00	144.08	57	SC11	686336.09	8215961.54	112.03
12	SVIP12M	682004.91	8206235.00	125.84	35	SVIP8A1M	685261.27	8222794.24	146.53	58	SC11X	686336.09	8215961.56	111.86
13	SVIP2BM	686808.49	8241609.06	149.41	36	SVIP8A2M	685562.77	8222770.21	139.70	59	SC12	686399.41	8215962.96	110.52
14	SVIP2M	687024.85	8242405.33	150.29	37	SVIP8M	685097.27	8222595.65	156.15	60	SC13	687866.13	8211938.15	108.82
15	SVIP3A1M	686882.48	8241563.47	143.80	38	SVIP9A	685243.98	8217841.78	142.66	61	SC13A	686406.97	8215945.52	110.74
16	SVIP3A3M	686936.02	8241006.67	154.39	39	SVIP9M	685114.70	8217885.13	152.28	62	SC13B	687873.67	8211920.72	109.07
17	SVIP3AM	687164.24	8235024.22	127.75	40	SC1	686016.85	8237226.83	148.45	63	SC13C	687878.12	8211900.09	108.87
18	SVIP3AXM	687164.25	8235024.22	127.75	41	SC10	681569.41	8206848.68	126.35	64	SC14	686655.03	8213427.81	107.74
19	SVIP3E	687013.22	8240348.74	149.78	42	SC1A	685995.67	8237267.79	150.22	65	SC15	688631.40	8211565.78	97.47
20	SVIP3F	686974.16	8240316.11	151.19	43	SC2	688422.55	8227041.88	141.32	66	SC15A	688630.63	8211591.99	97.15
21	SVIP3G	686486.93	8240308.44	142.57	44	SC2A1	689416.06	8224518.10	129.86	67	SC16	691138.89	8210273.20	94.34
22	SVIP3M	686801.78	8241559.50	150.36	45	SC3	689408.16	8224509.29	129.19					
23	SVIP4A1M	686842.07	8234009.58	140.36	46	SC3A1	688860.48	8225052.24	142.68					



Trigonometric Station

POINT ID	EASTINGS	NORTHINGS	ORTH.HT
318 NYS	713143.73	8171425.86	84.03
328 NYS	689720.80	8223958.33	147.57
331 MWS	676296.92	8201902.61	211.59
333 MWS	683491.28	8195219.13	186.88
335 MWS	681515.28	8237230.02	291.65
338 MWS	692472.04	8246384.12	608.57
358 MWT	692325.74	8229209.57	112.12

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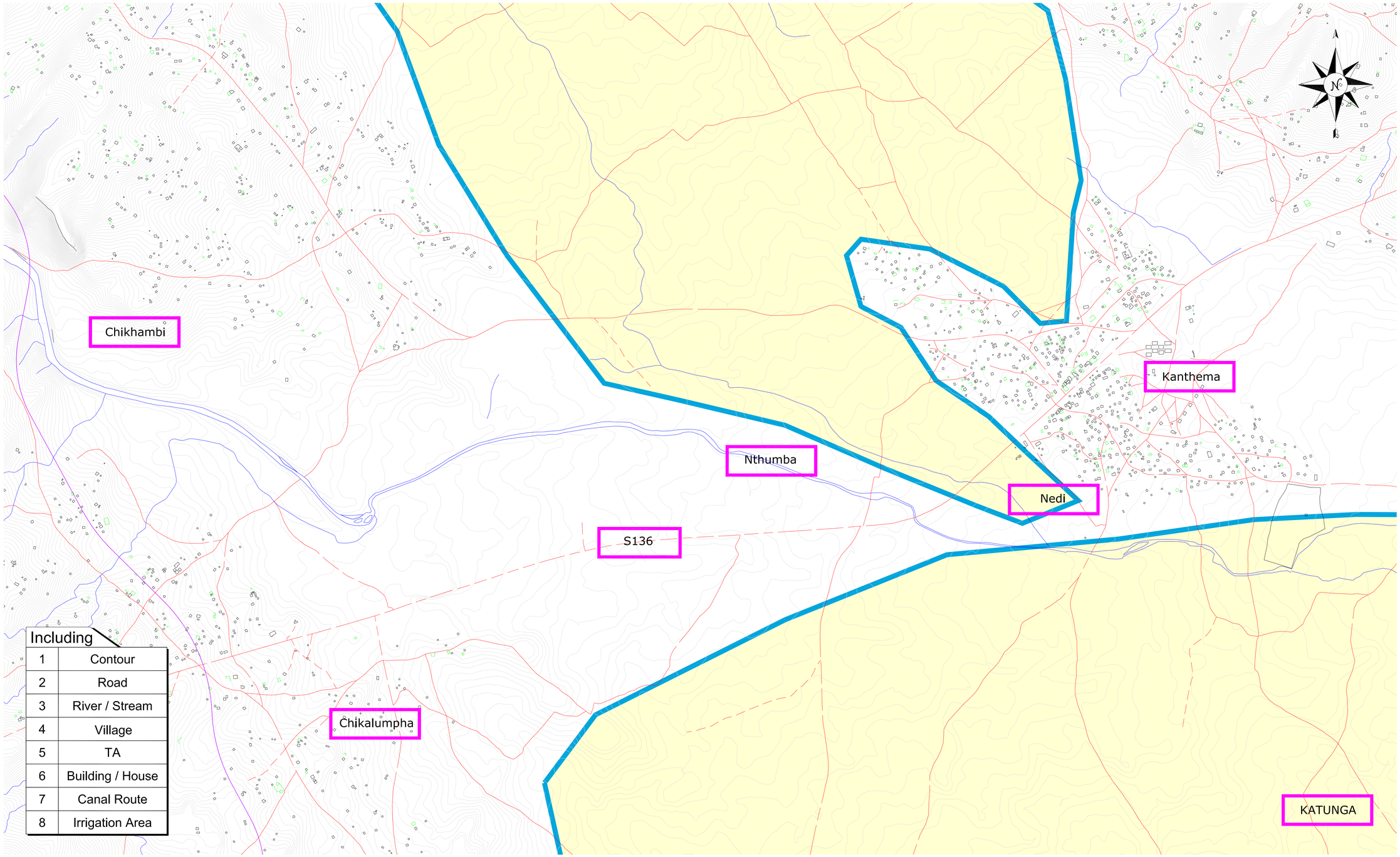
		TITLE Location of Trigonometric Stations and Control Points	DATE DECEMBER 2016	DRG No A-004

Digital Map for GIS Development



Including	
1	Contour
2	Road
3	River / Stream
4	Village
5	TA
6	Building / House
7	Canal Route
8	Irrigation Area

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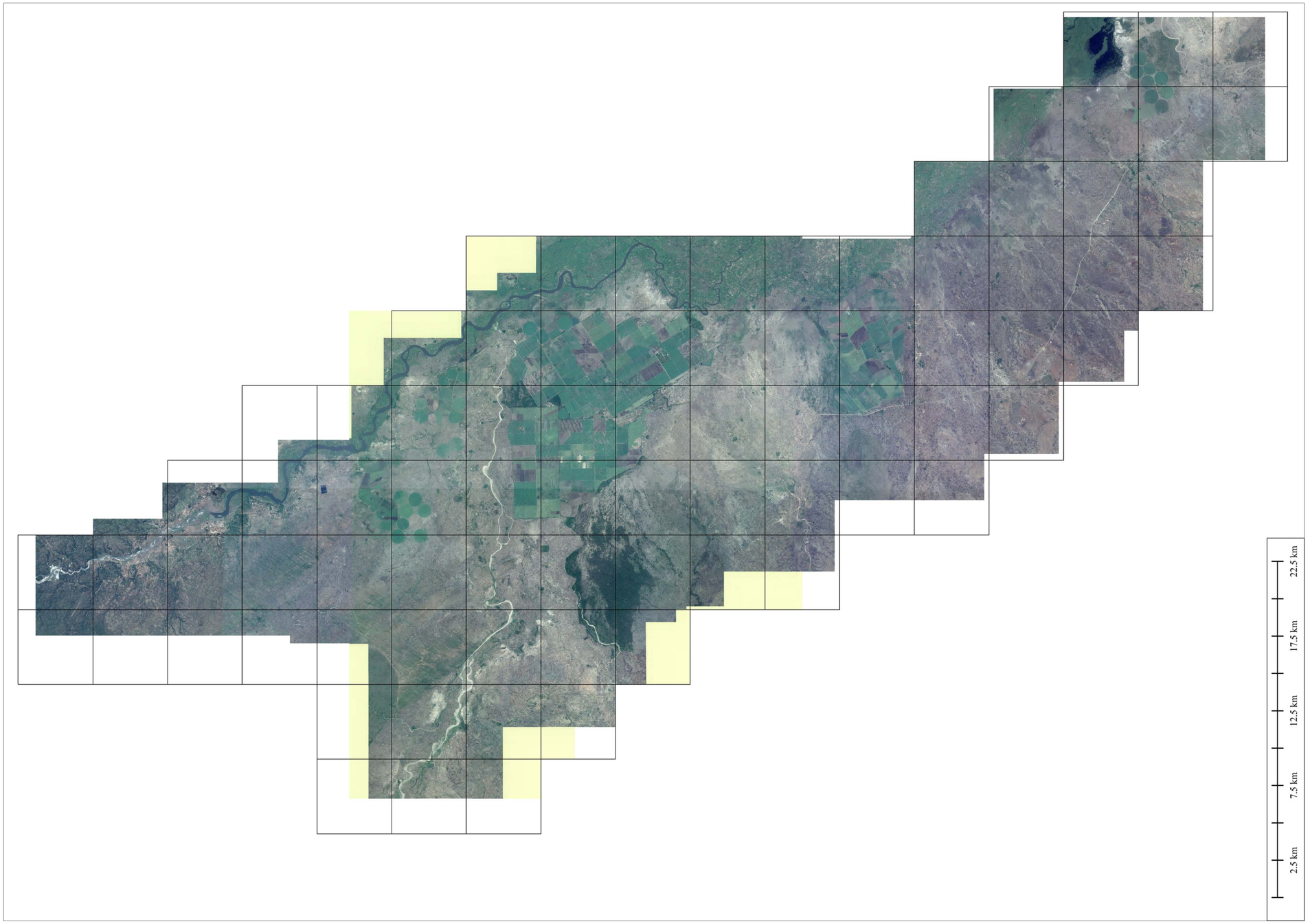
		TITLE Digital Map for GIS Development	DATE DECEMBER 2016	DRG No A-005

Image Map



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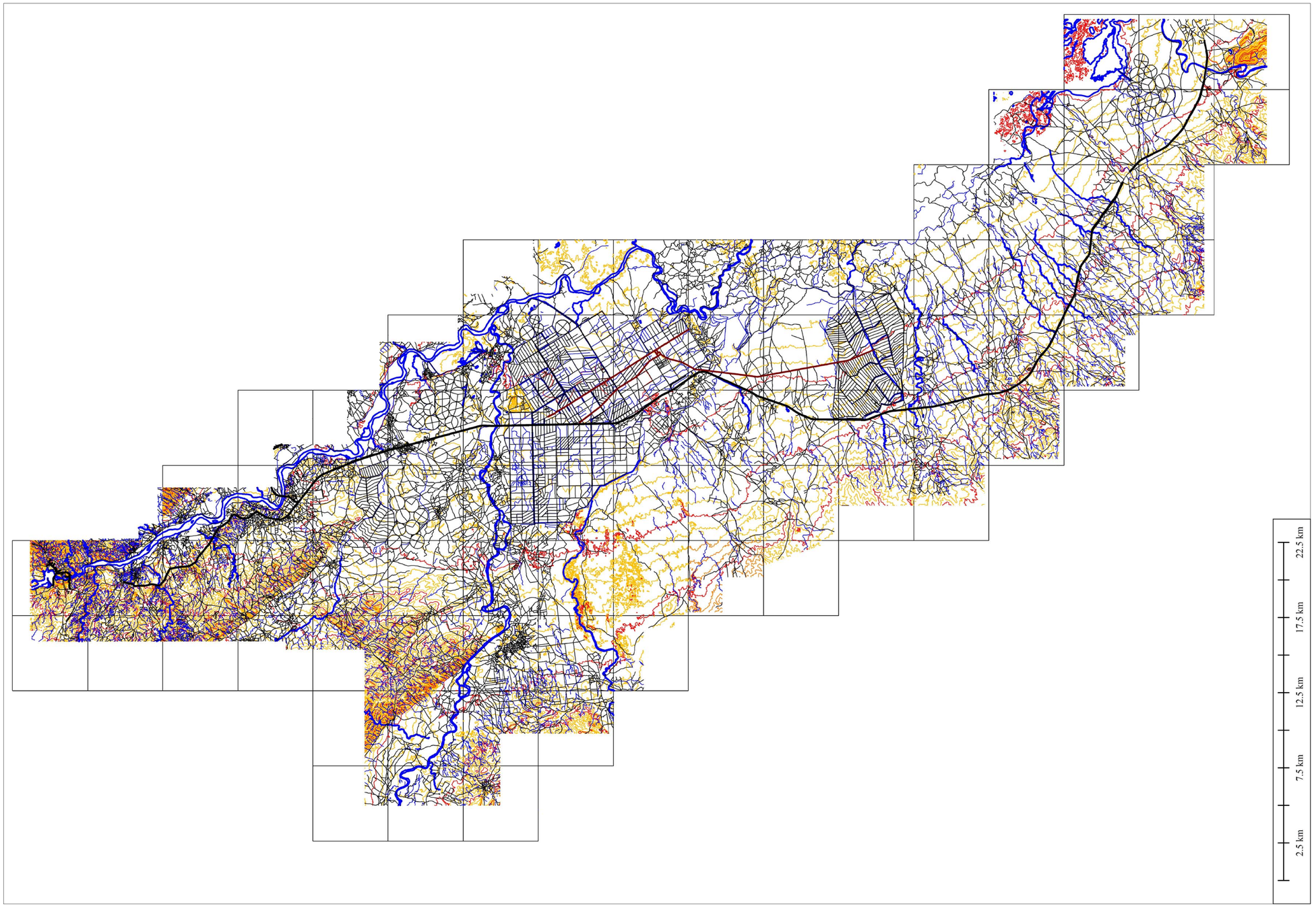
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Image Map for Total Area	DATE DECEMBER 2016	DRG No A-006

Digital Map



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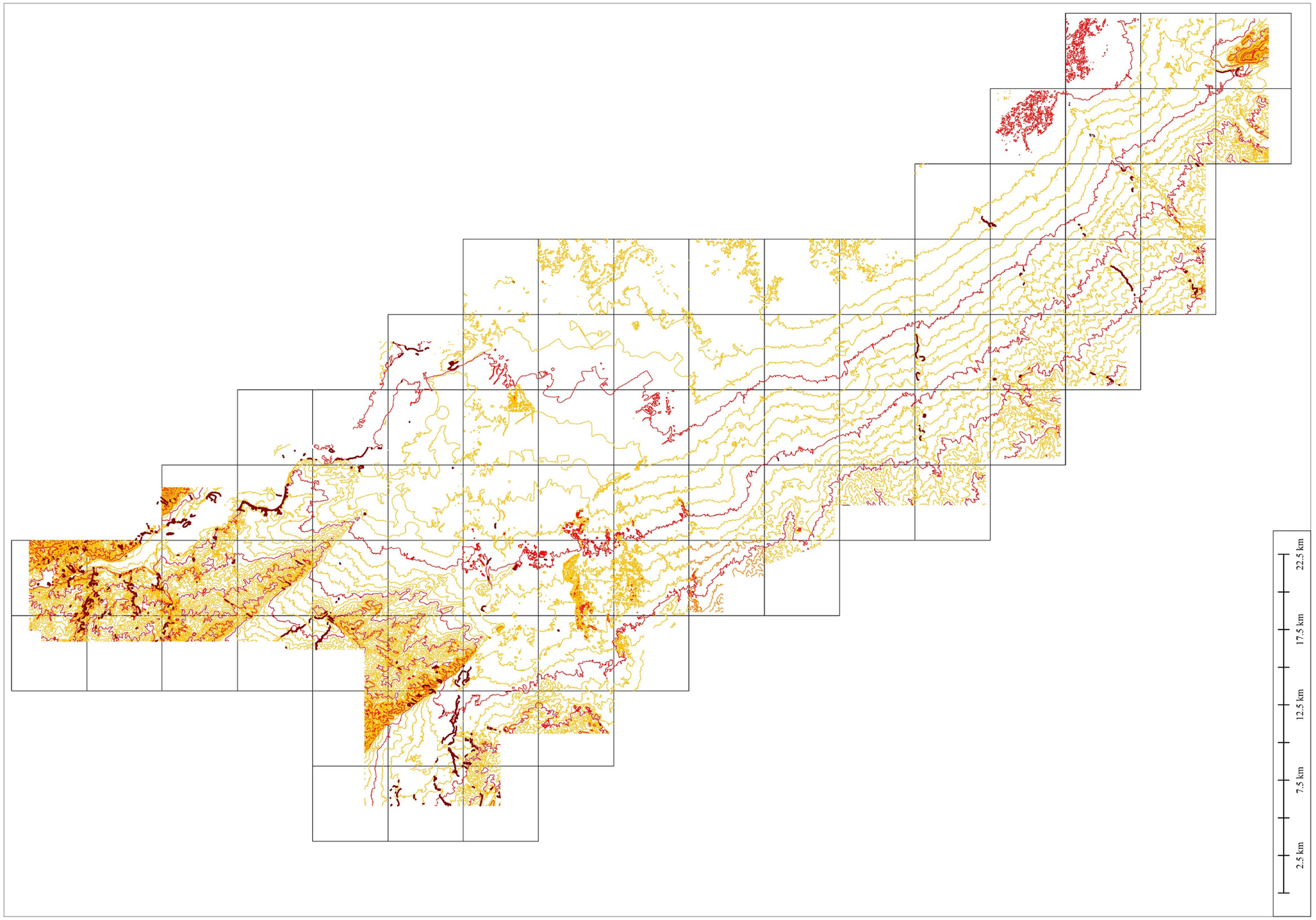
		TITLE Digital Map for Total Area	DATE DECEMBER 2016	DRG No A-007

Contour Map



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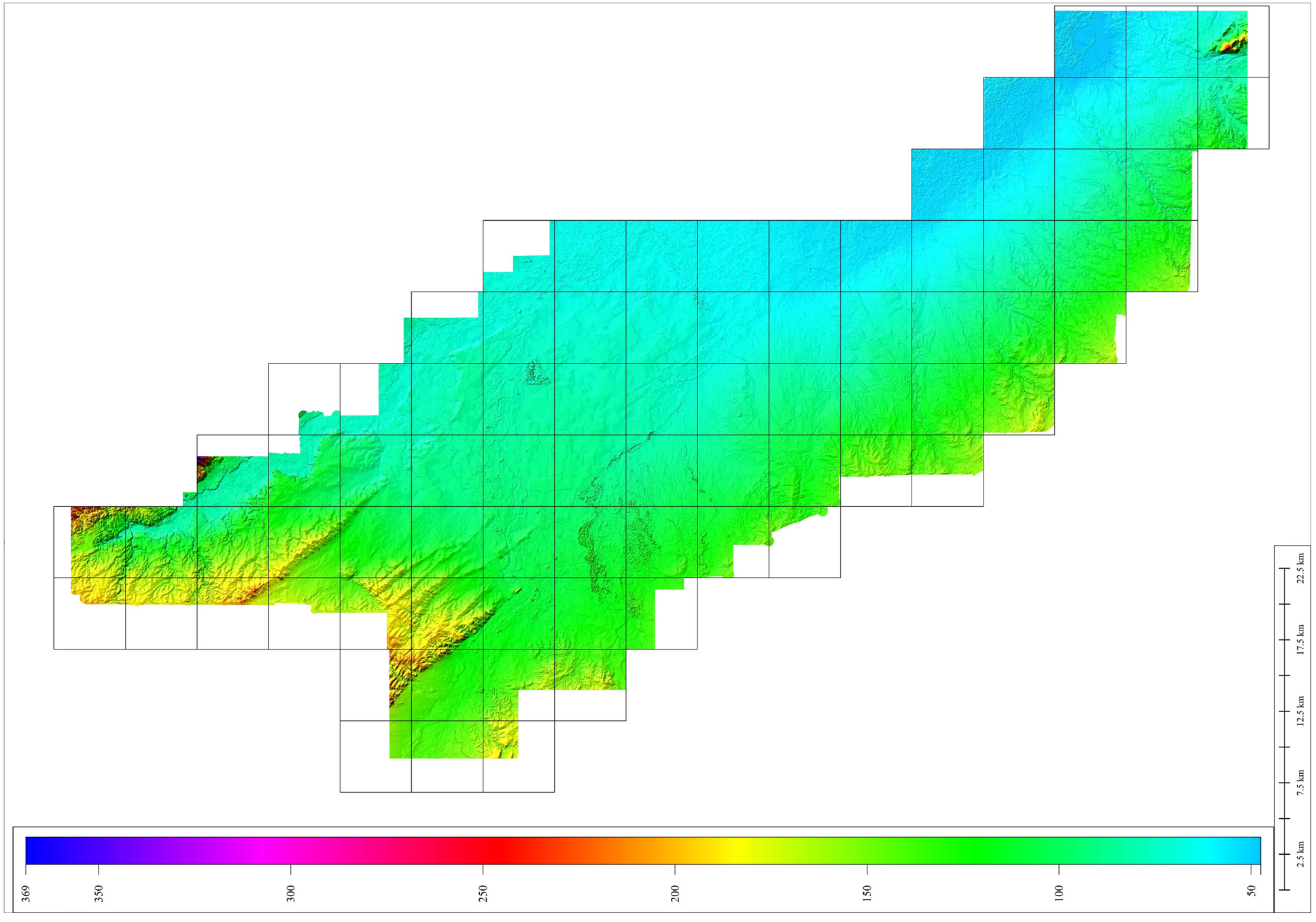
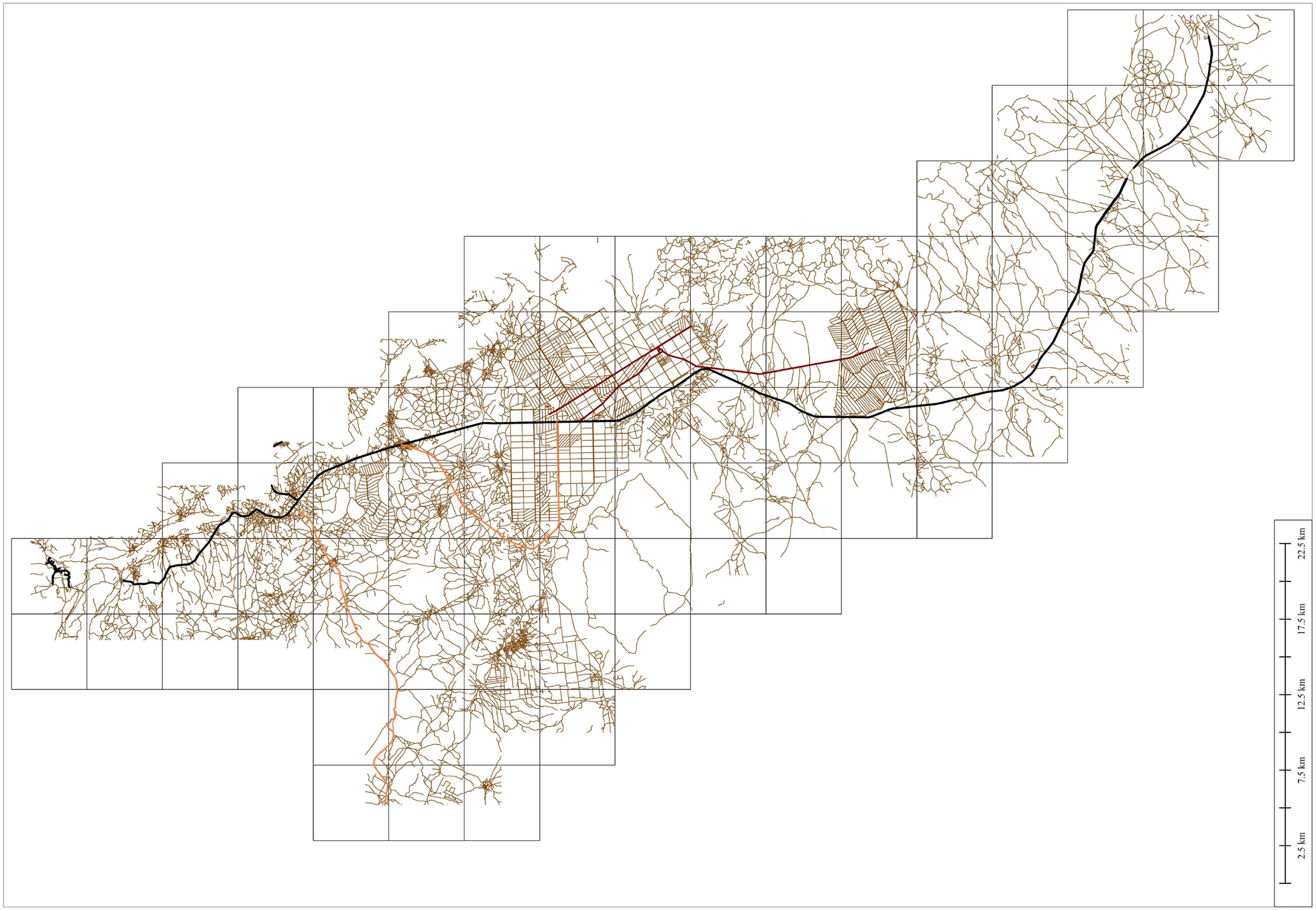
		TITLE Contour Map for Total Area	DATE DECEMBER 2016	DRG No A-008

Digital Elevation Model



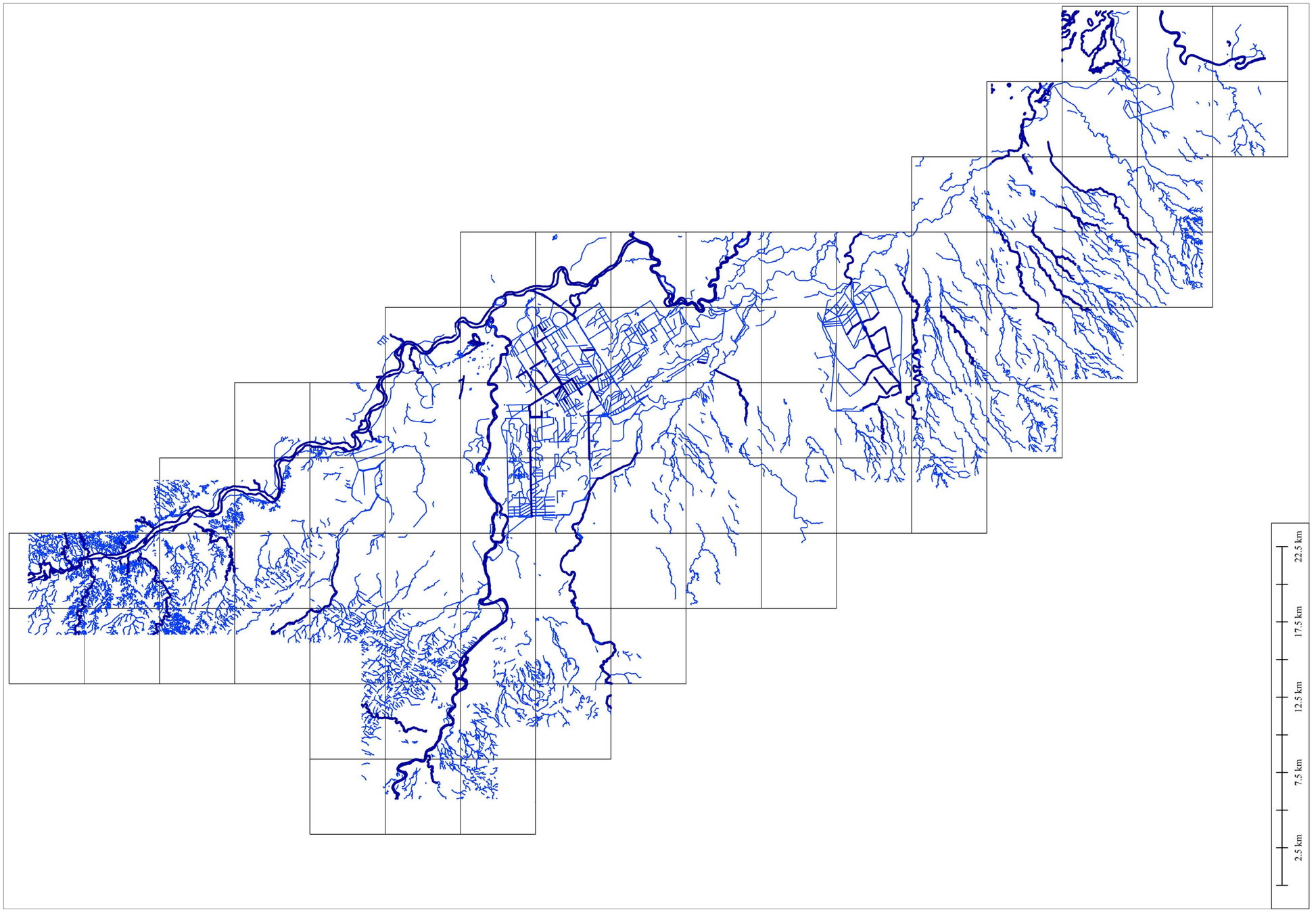
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Digital Elevation Model	DATE DECEMBER 2016	DRG No A-009

Road, Path & Street Map



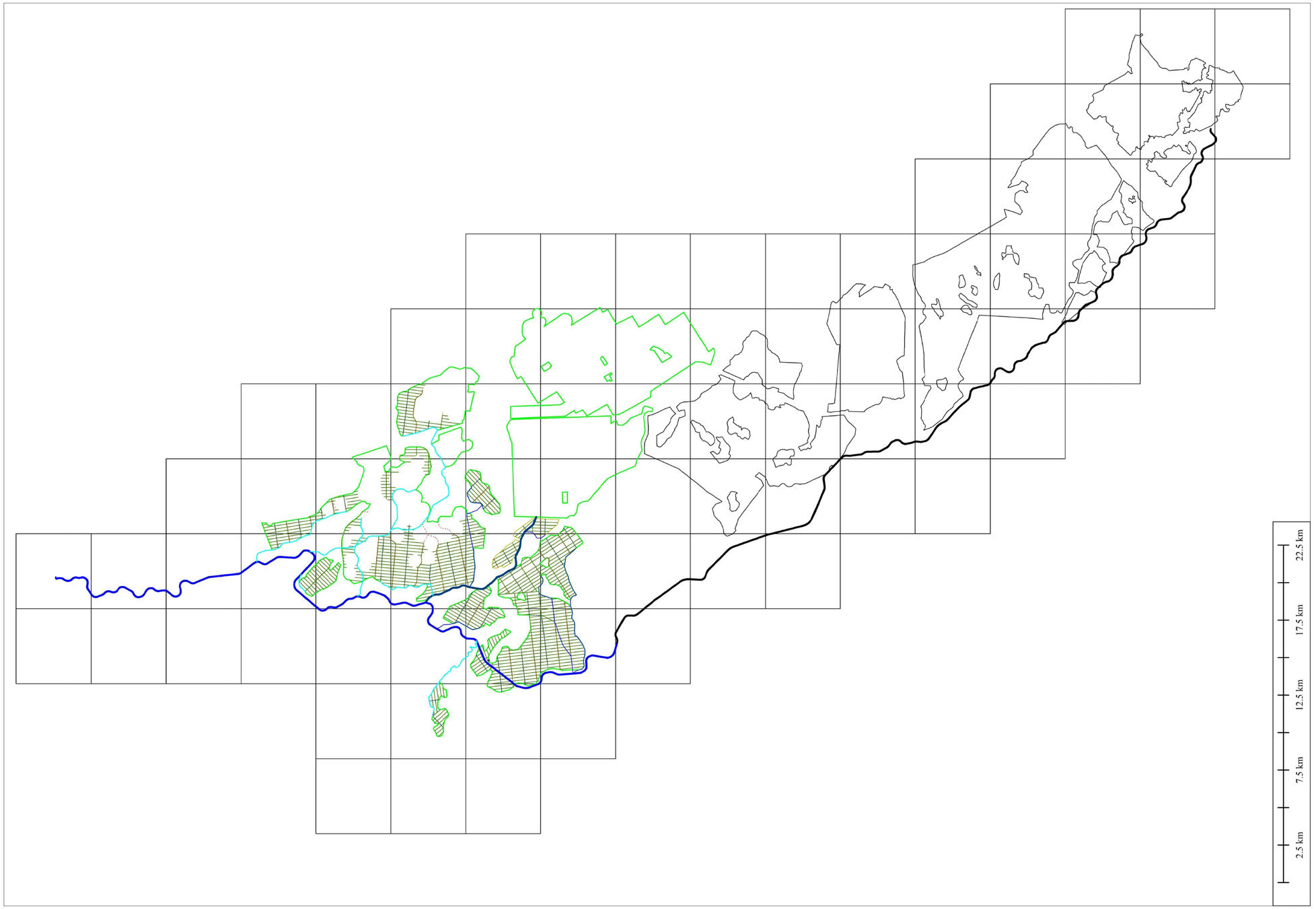
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Road, Path & Street Map for Total Area	DATE DECEMBER 2016	DRG No A-010

River & Stream Map



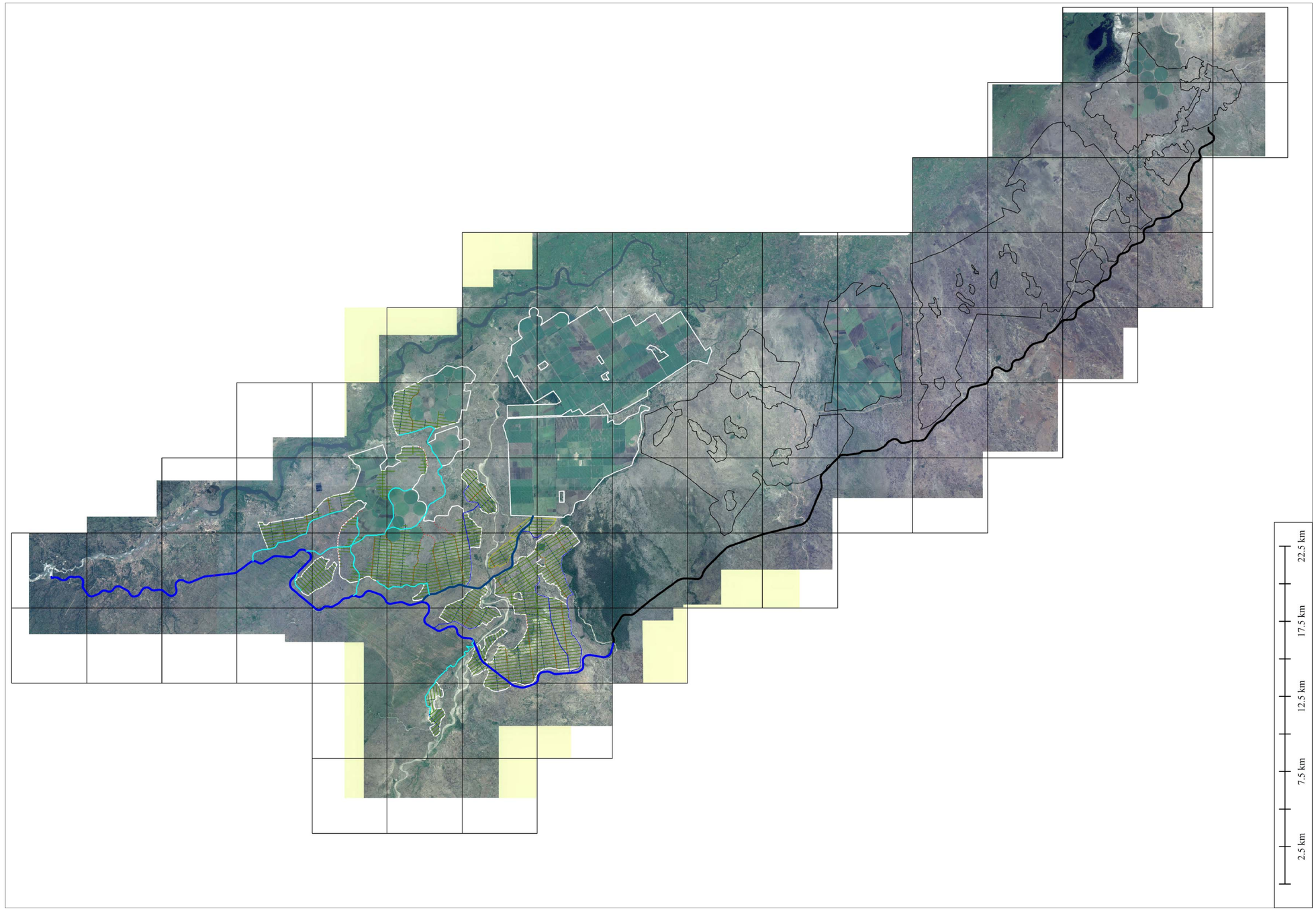
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE River & Stream Map for Total Area	DATE DECEMBER 2016	DRG No A-011

Design Lay Out Map



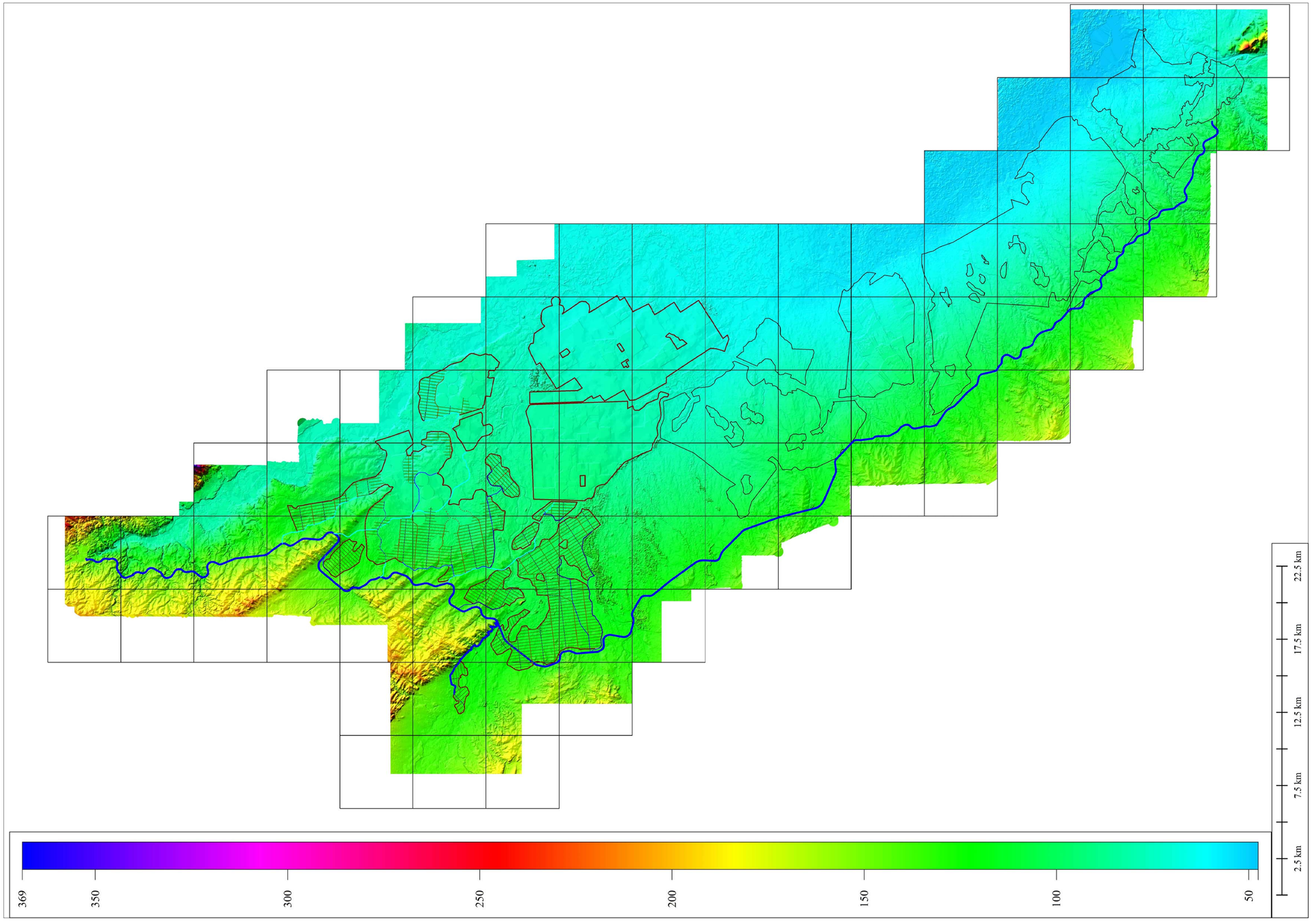
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Design Lay Out Map for Total Area	DATE DECEMBER 2016	DRG No A-012

Design Lay Out on Image Map



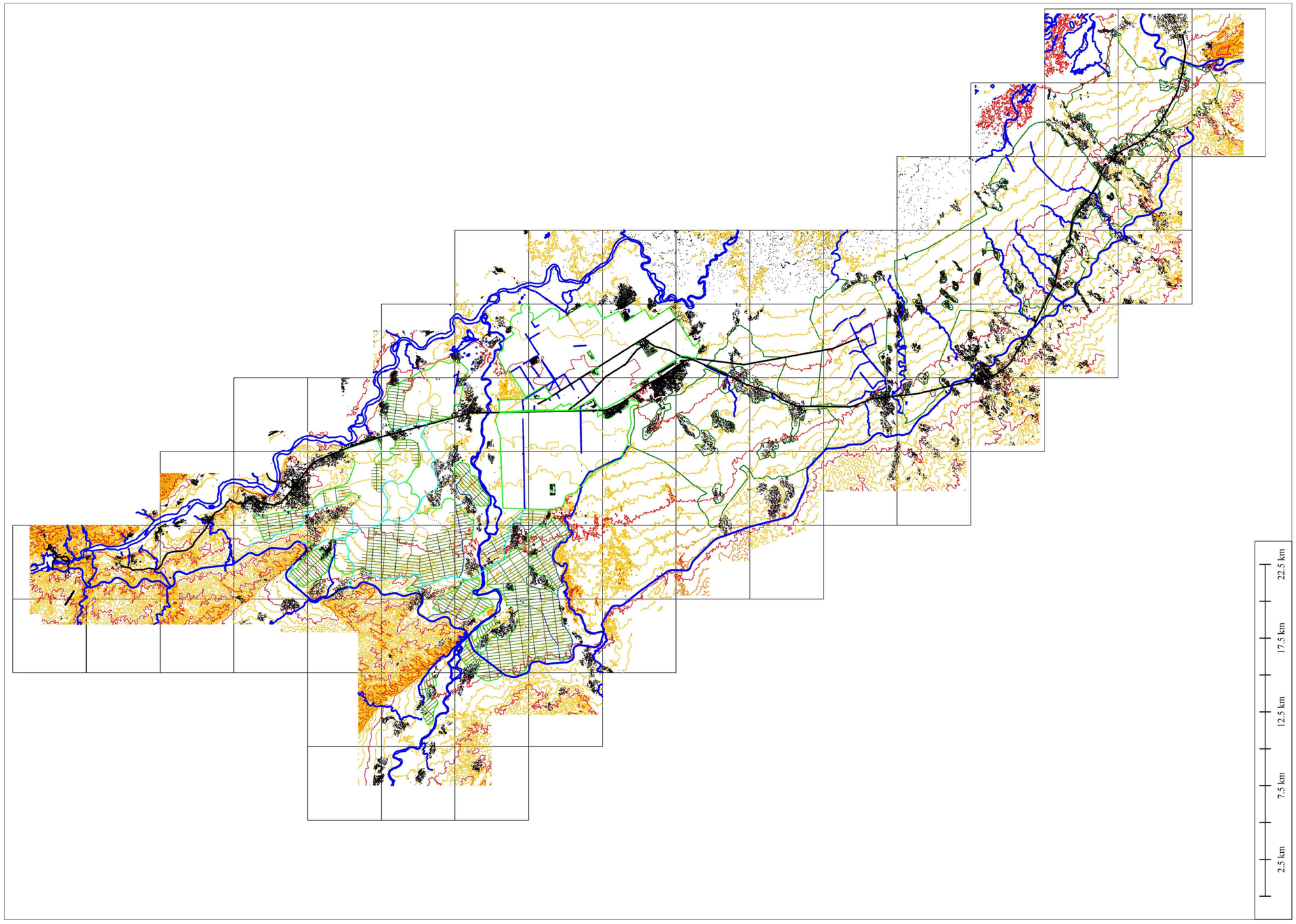
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay Out on Image for Total Area	DATE DECEMBER 2016	DRG No A-013

Design Lay Out on DEM



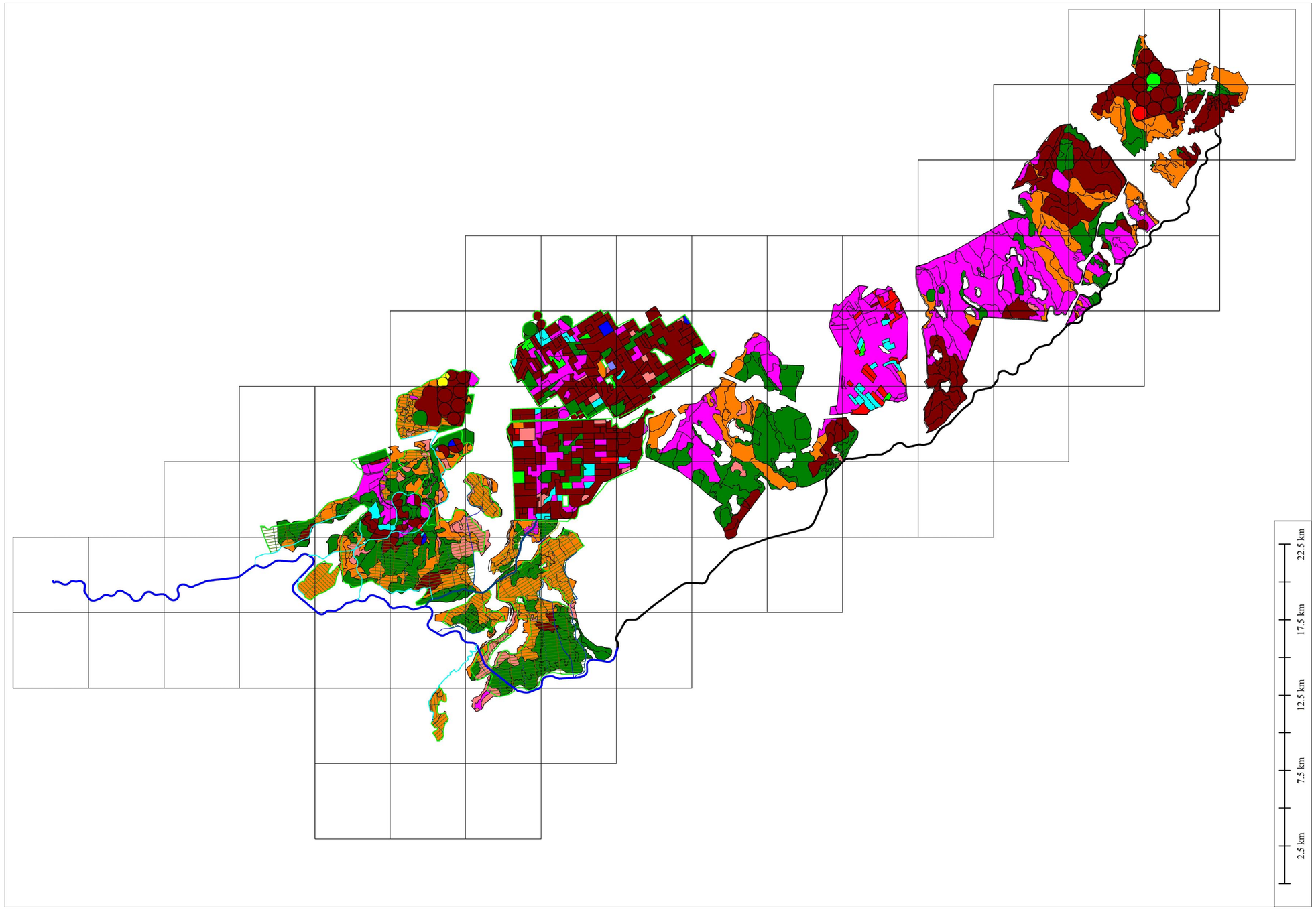
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay Out on DEM for Total Area	DATE DECEMBER 2016	DRG No A-014

Design Lay Out on Digital Map



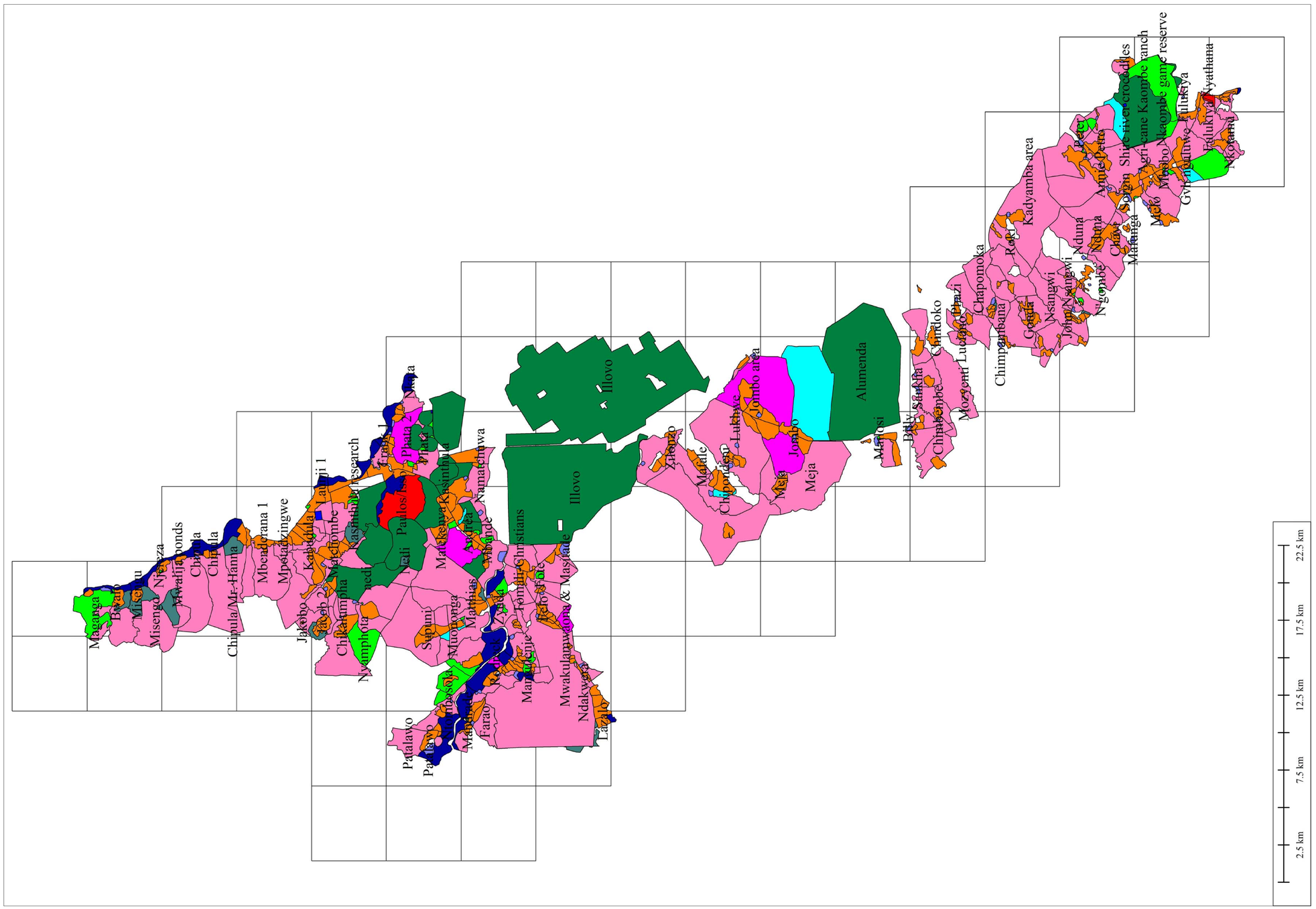
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay Out on Digital Map for Total Area	DATE DECEMBER 2016	DRG No A-015

Soil Type Map



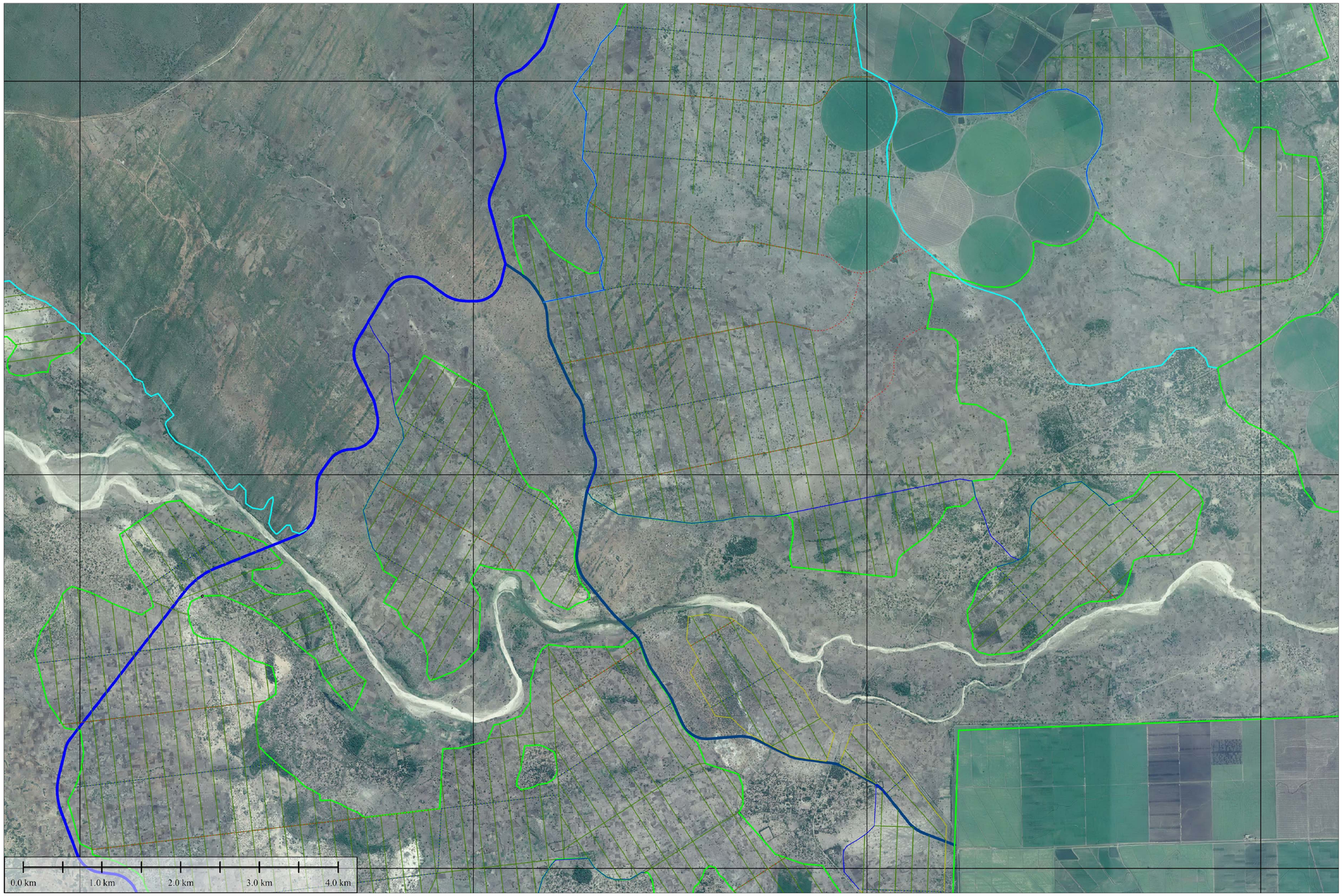
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Soil Type Map for Total Area	DATE DECEMBER 2016	DRG No A-016

Land Use Map



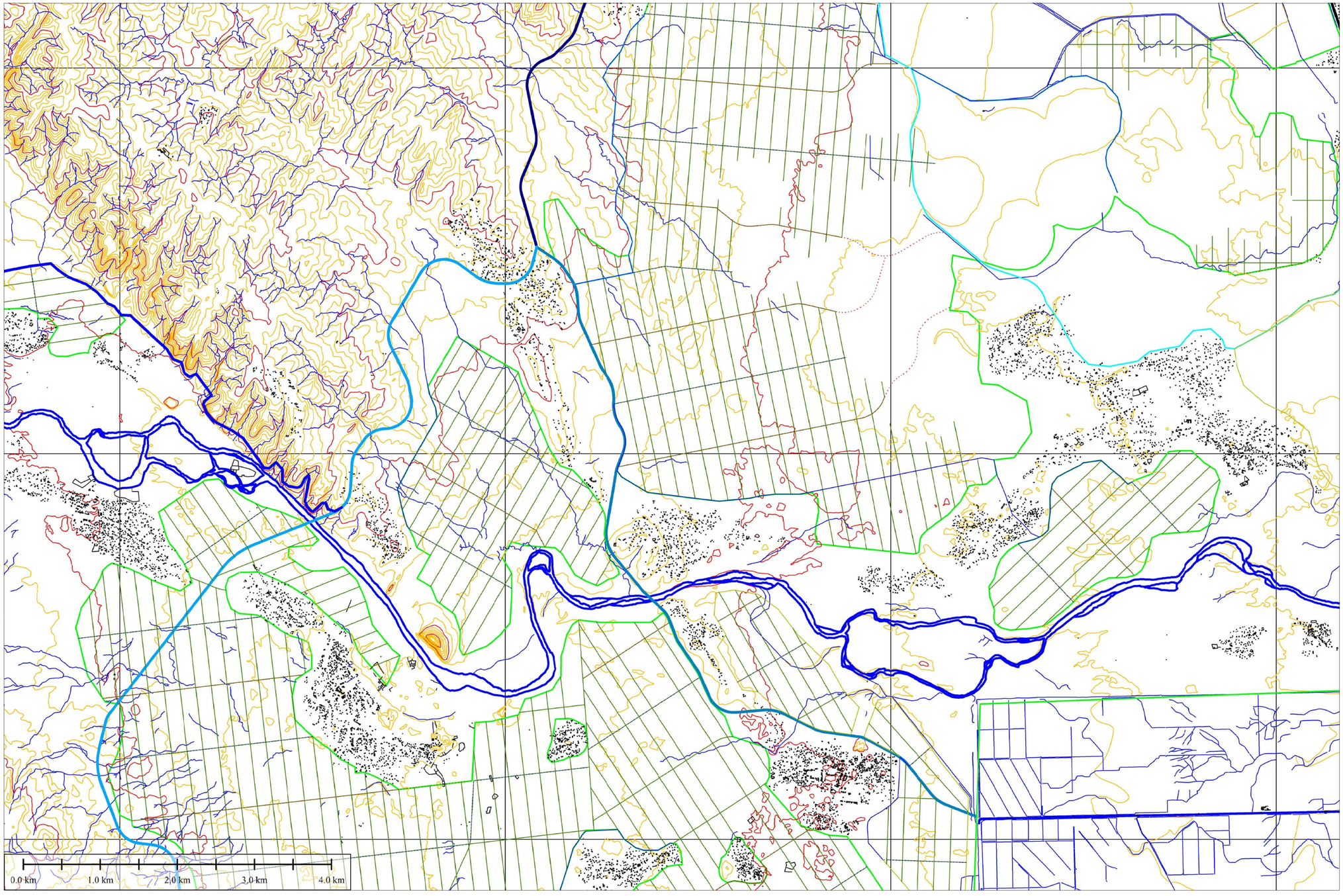
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Land Use Map for Total Area	DATE DECEMBER 2016	DRG No A-017

Lay Out on Image Map



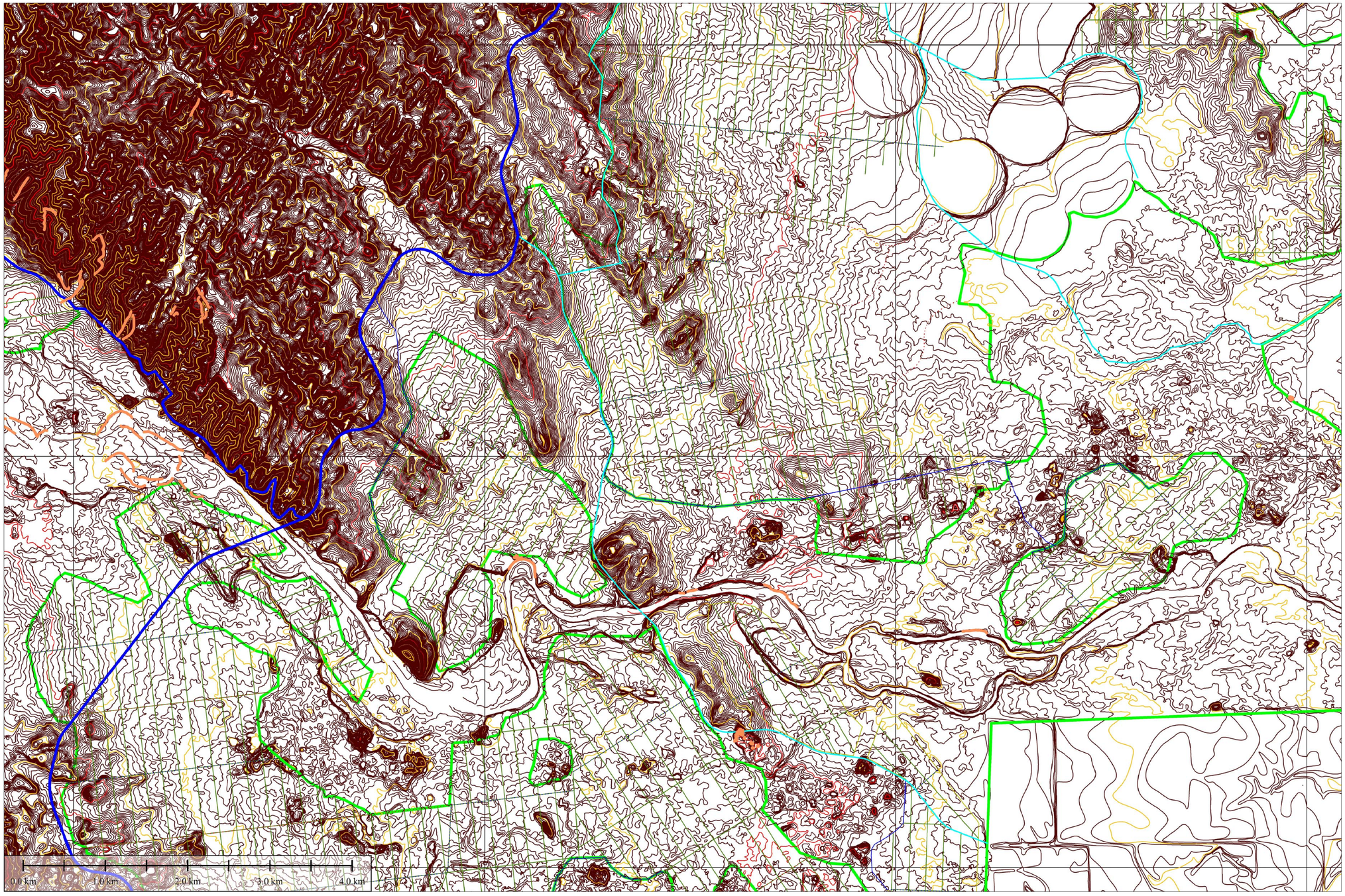
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay ou on Image Map	DATE DECEMBER 2016	DRG No A-018

Lay Out on Digital Map



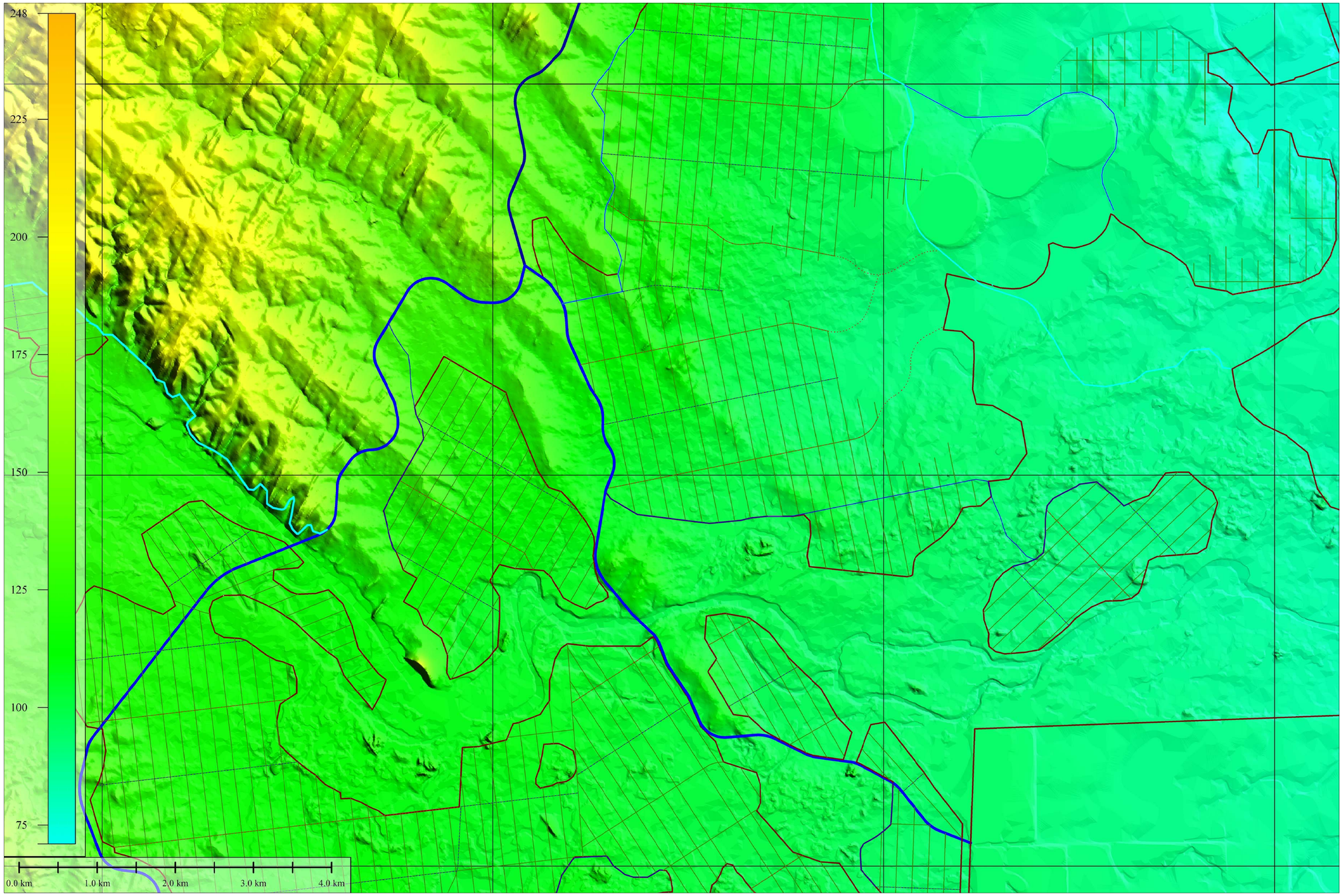
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay ou on Digital Map	DATE DECEMBER 2016	DRG No A-019

Lay Out on Contour Map



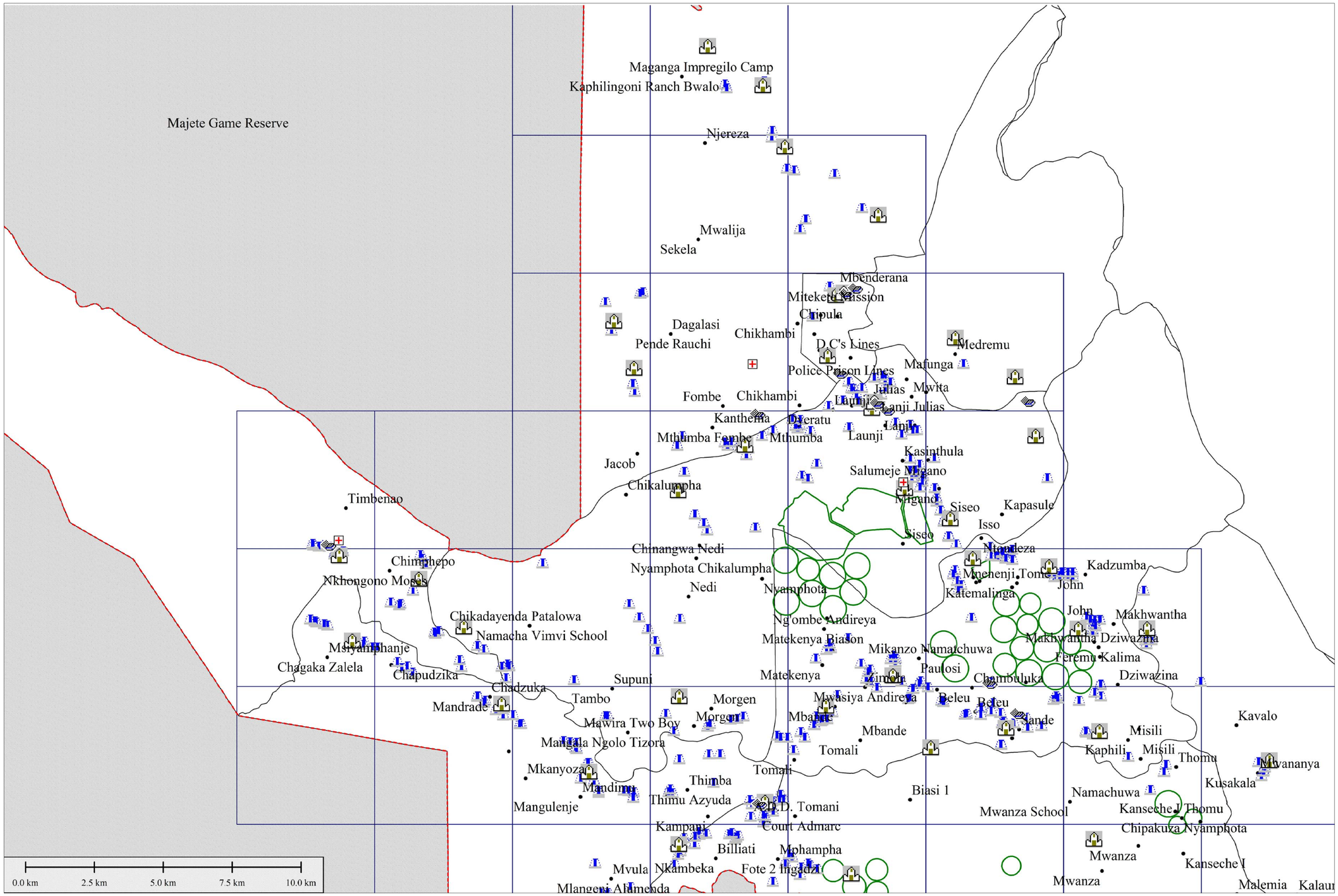
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay ou on Contour Map	DATE DECEMBER 2016	DRG No A-020

Lay Out on Digital Elevation Model



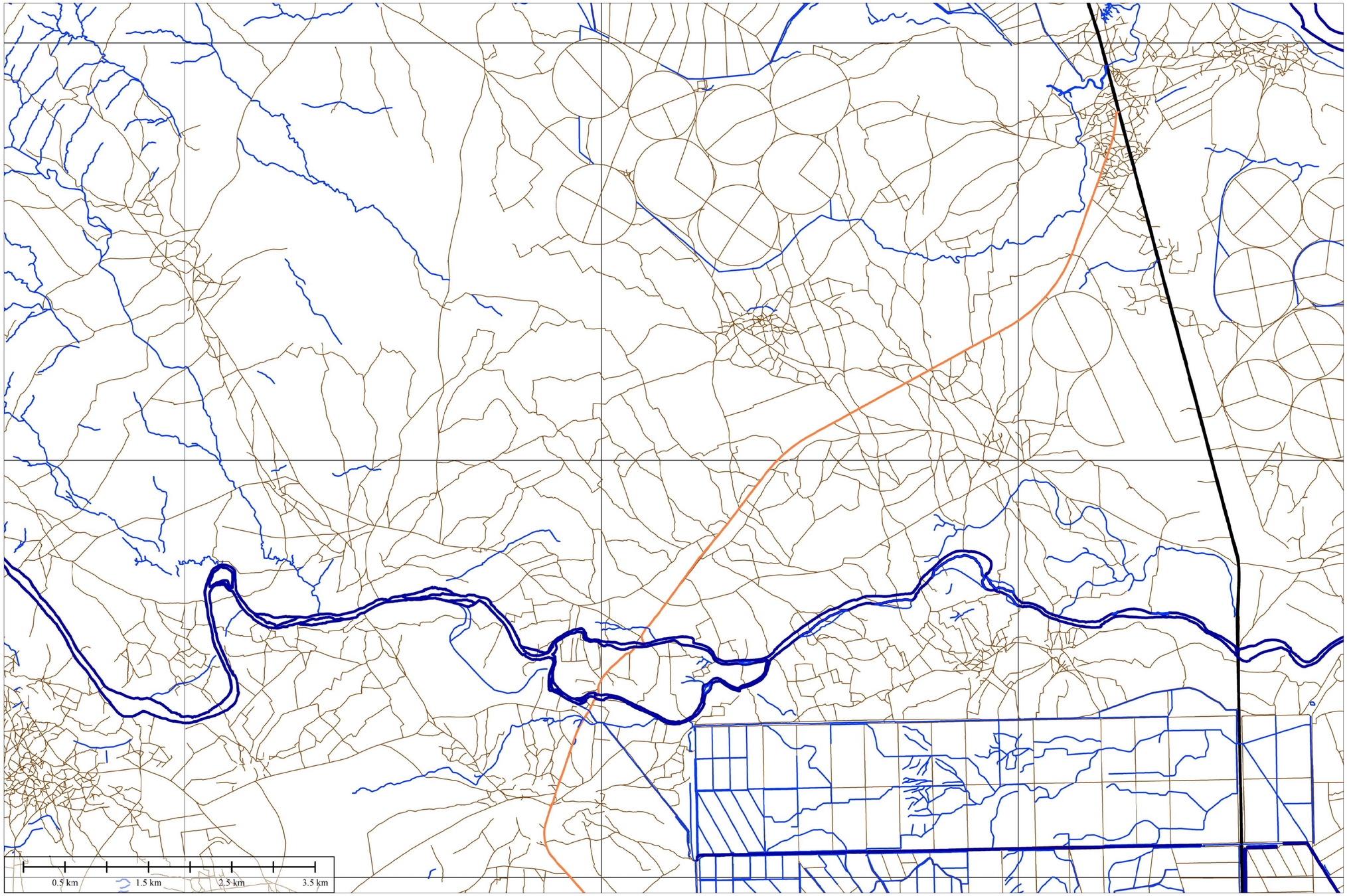
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Lay ou on Digital Elevation Model	DATE DECEMBER 2016	DRG No A-021

Facility Symbolization



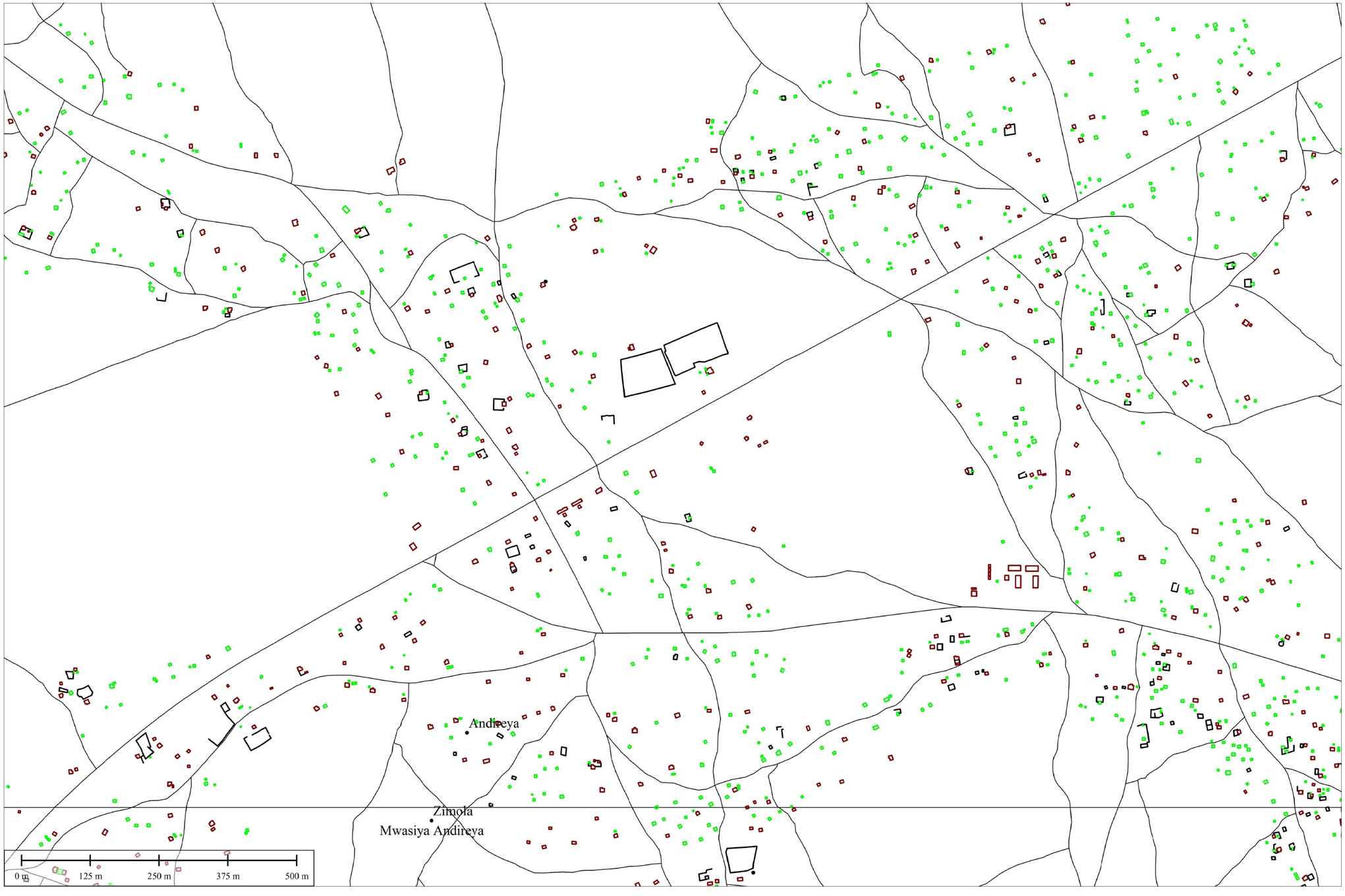
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE
		TITLE Facility Symbolization	DATE DECEMBER 2016	DRG No A-022

Road & Stream



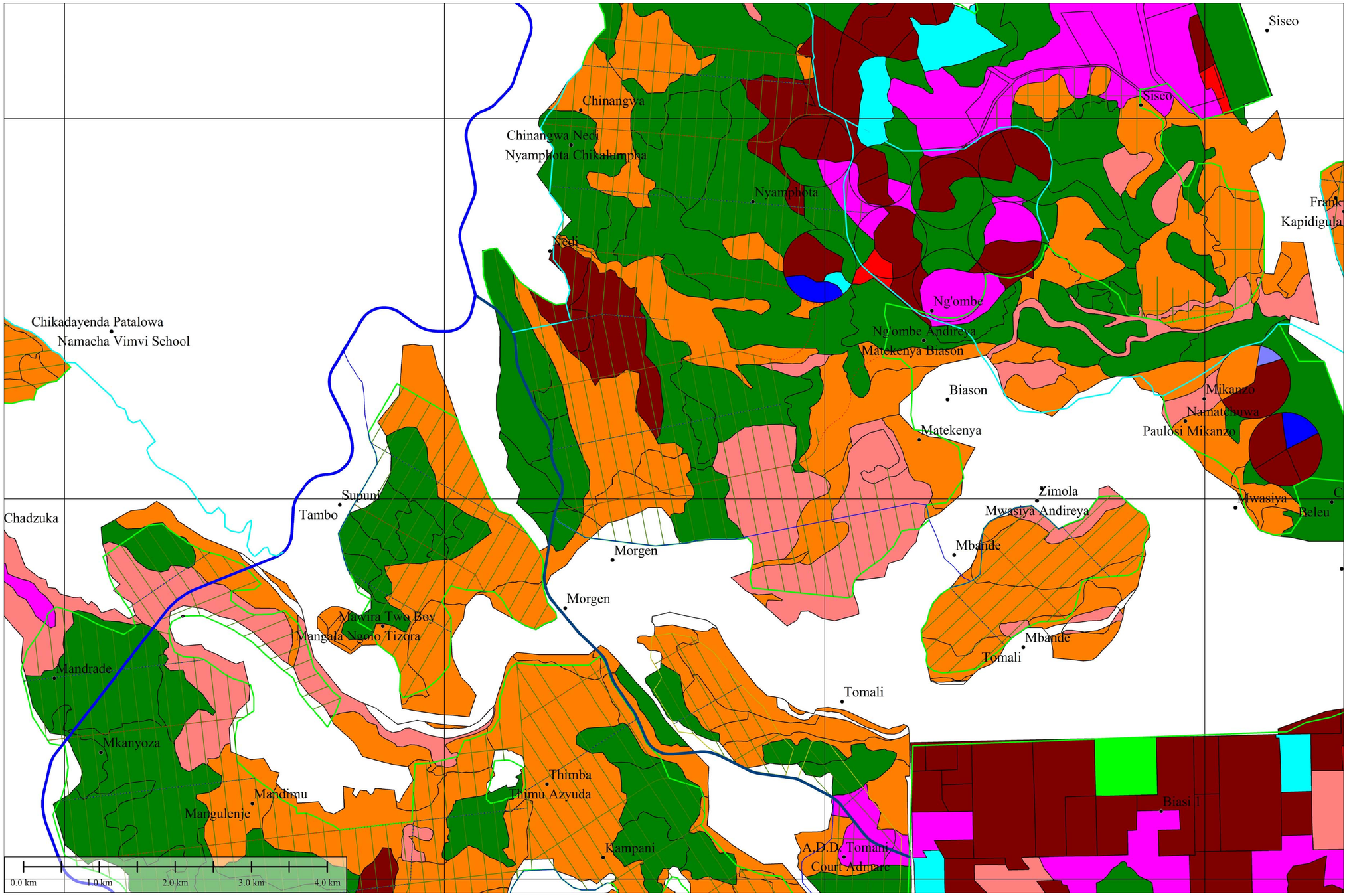
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Road & Stream	DATE DECEMBER 2016	DRG No A-023

Village Building



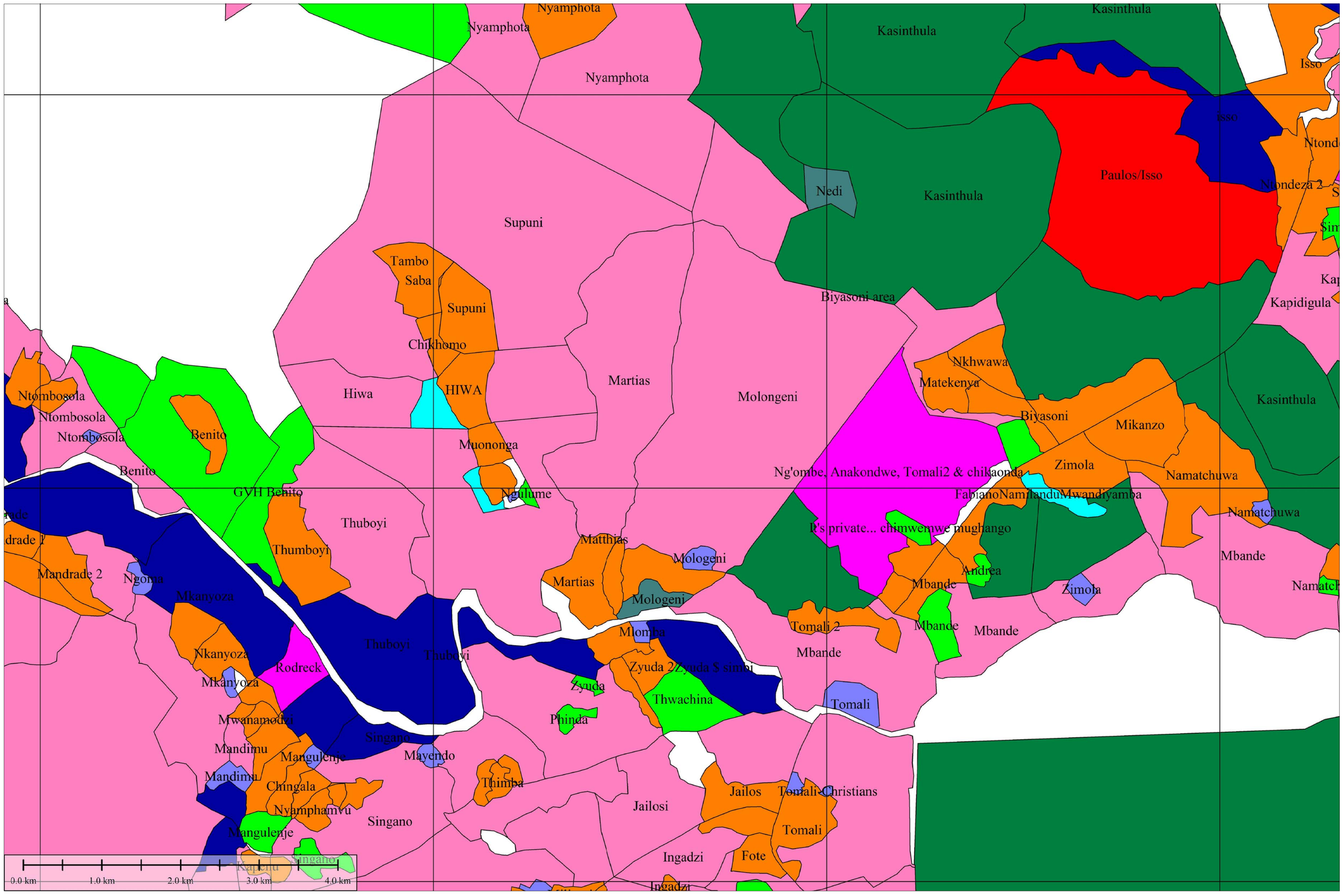
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Village Building	DATE DECEMBER 2016	DRG No A-024

Soil Type Map



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE
		TITLE Soil Type Map	DATE DECEMBER 2016	DRG No A-025

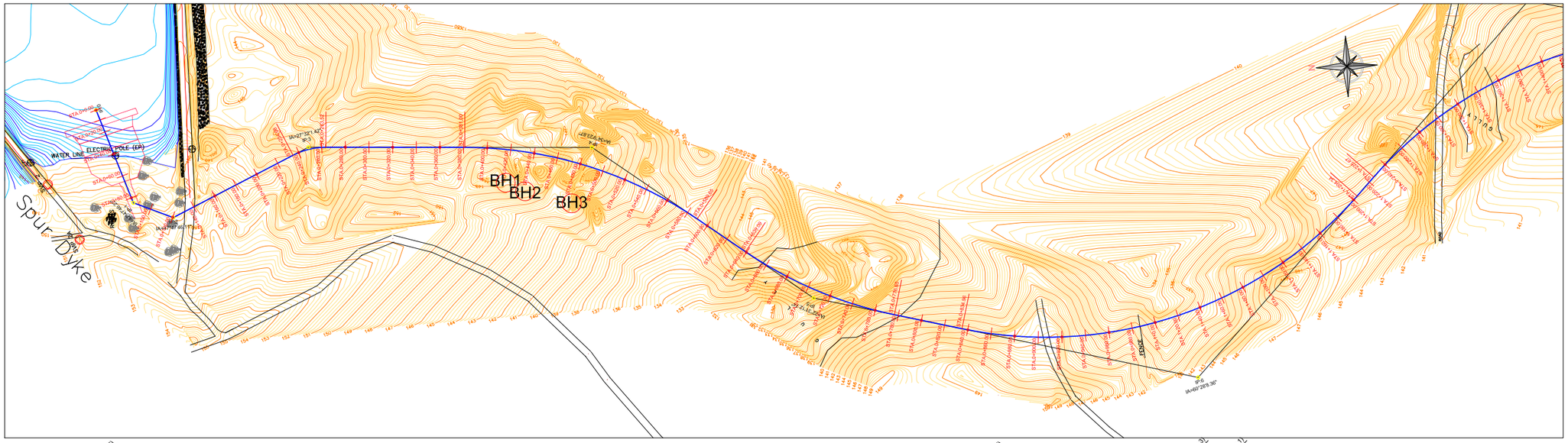
Land Use Map



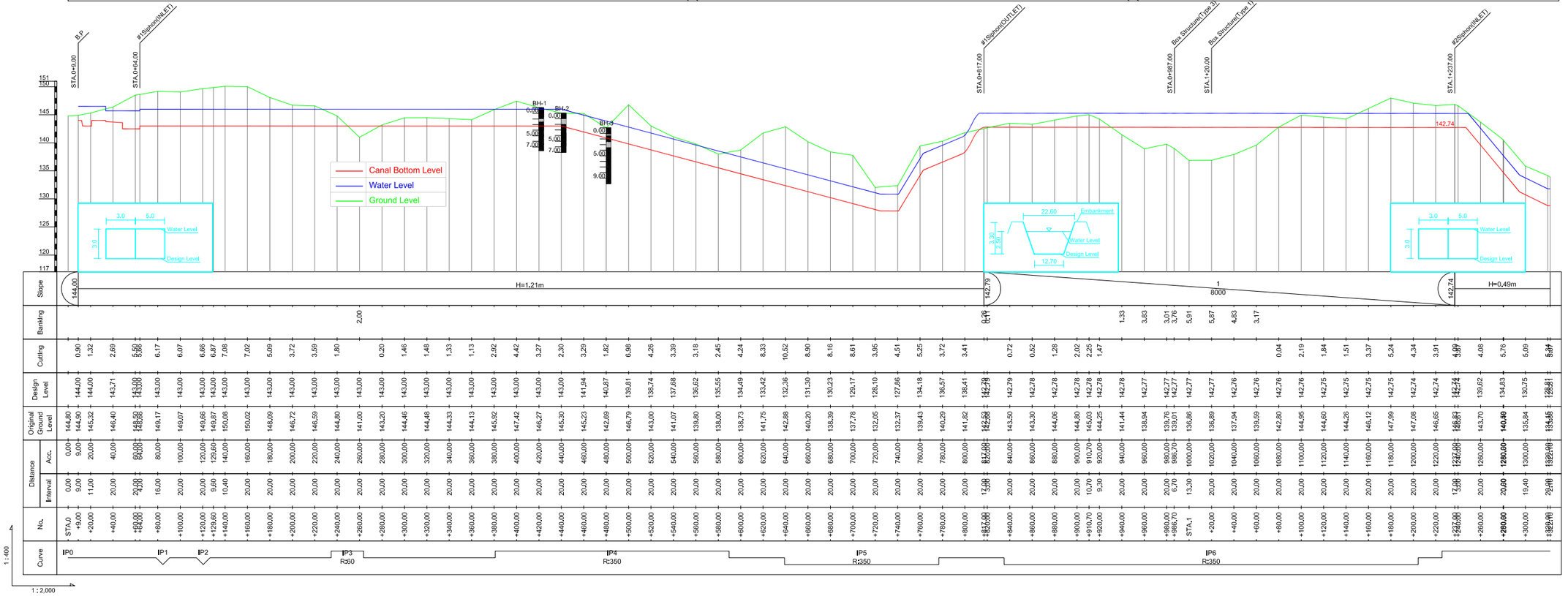
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Land Use Map	DATE DECEMBER 2016	DRG No A-026

B. Canal Drawings

General and Profile Plan of Main Canal 1 (1/26)



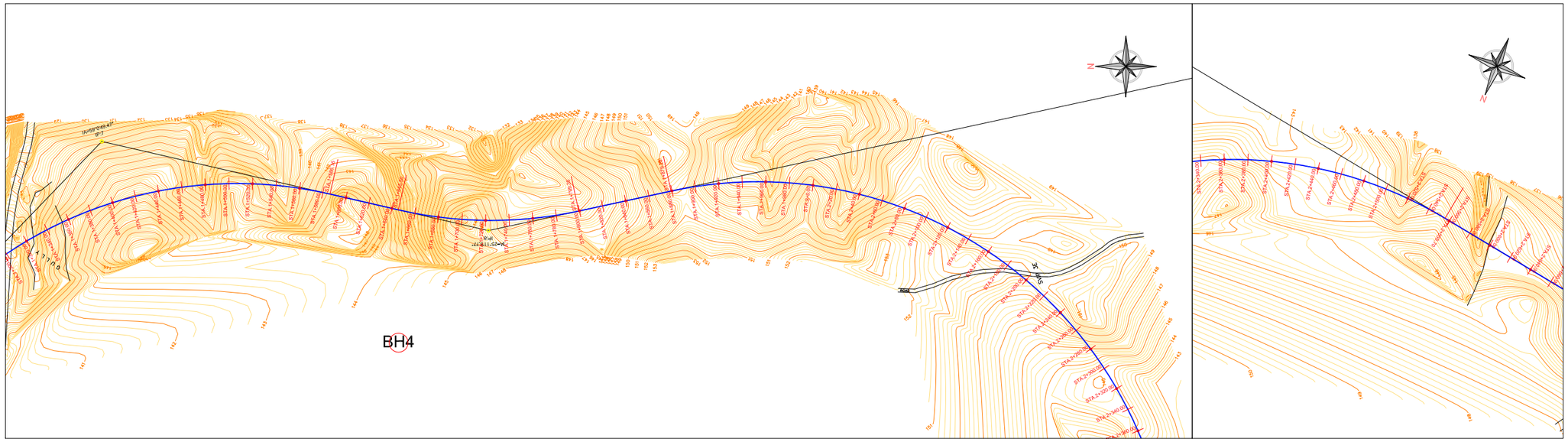
Main Canal 1(1/26)

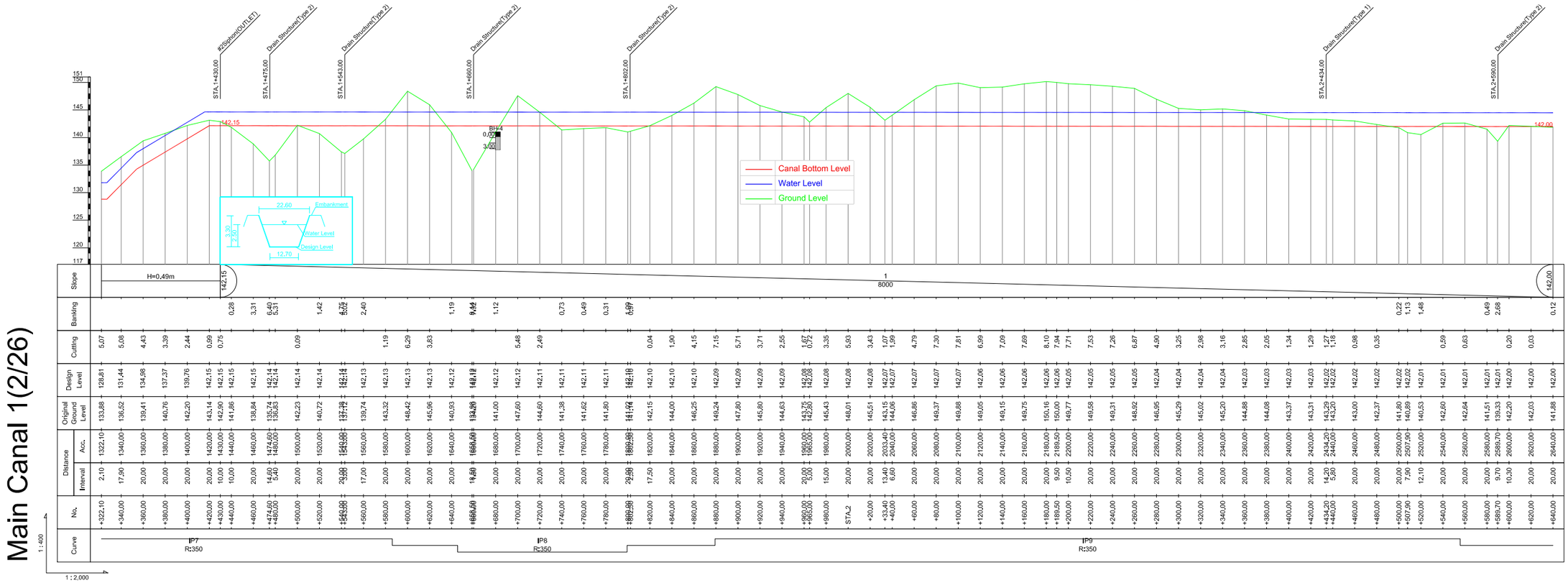


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (1/26)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-001	

General and Profile Plan of Main 1 Canal (2/26)

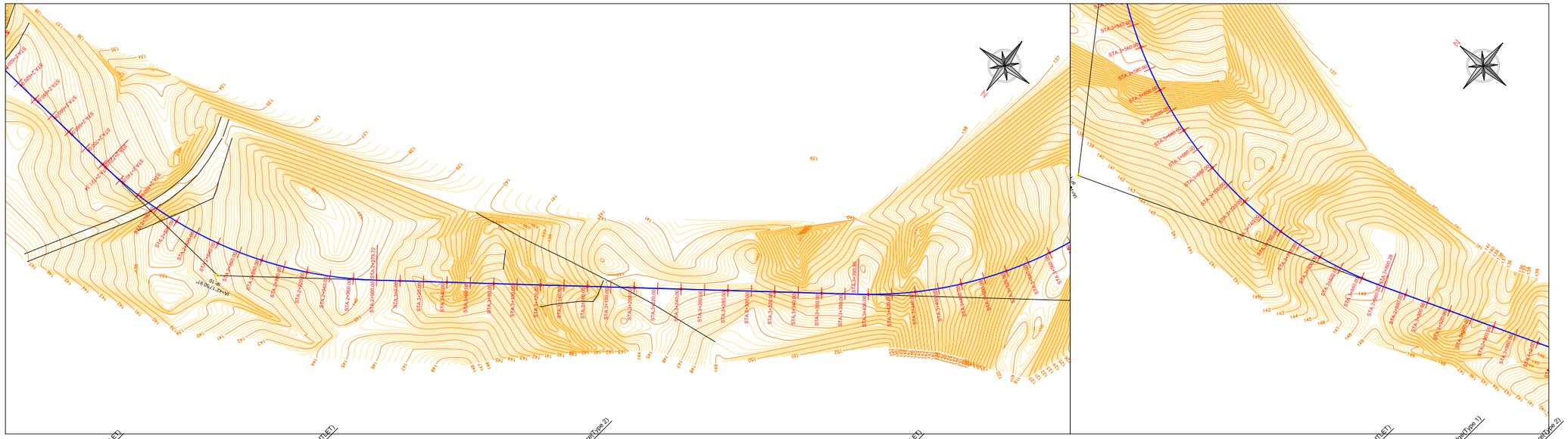


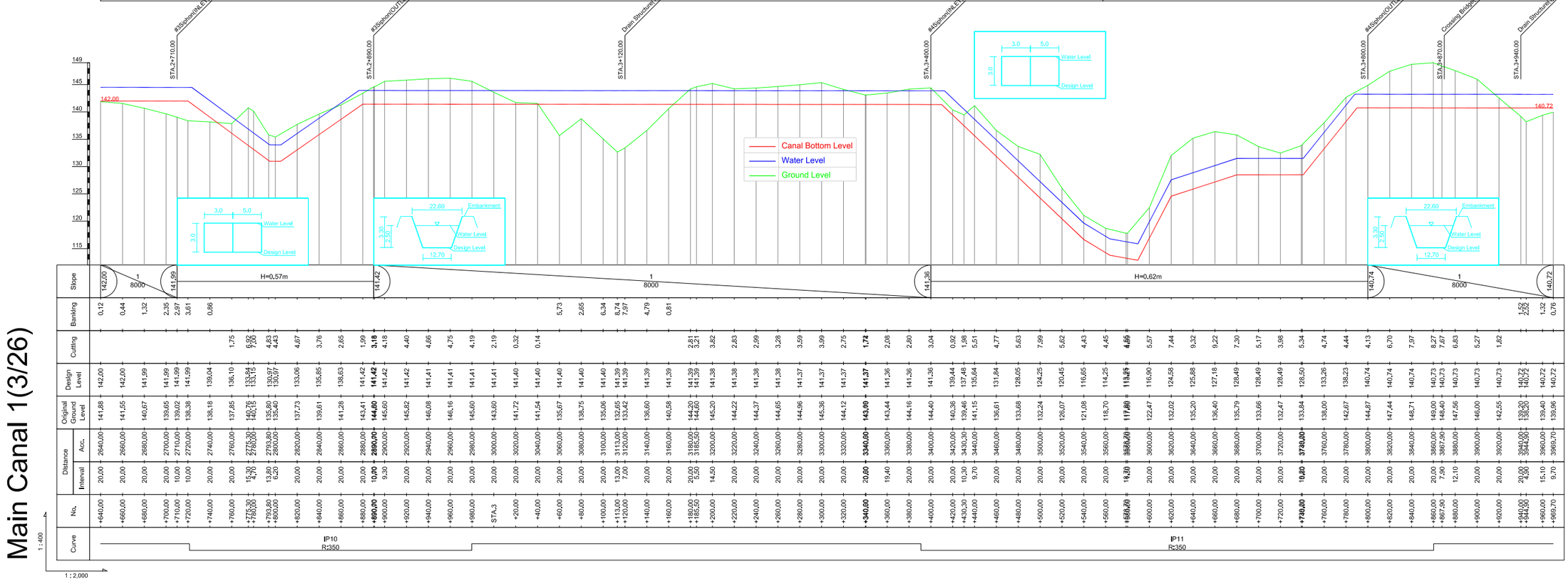


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (2/26)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-002	

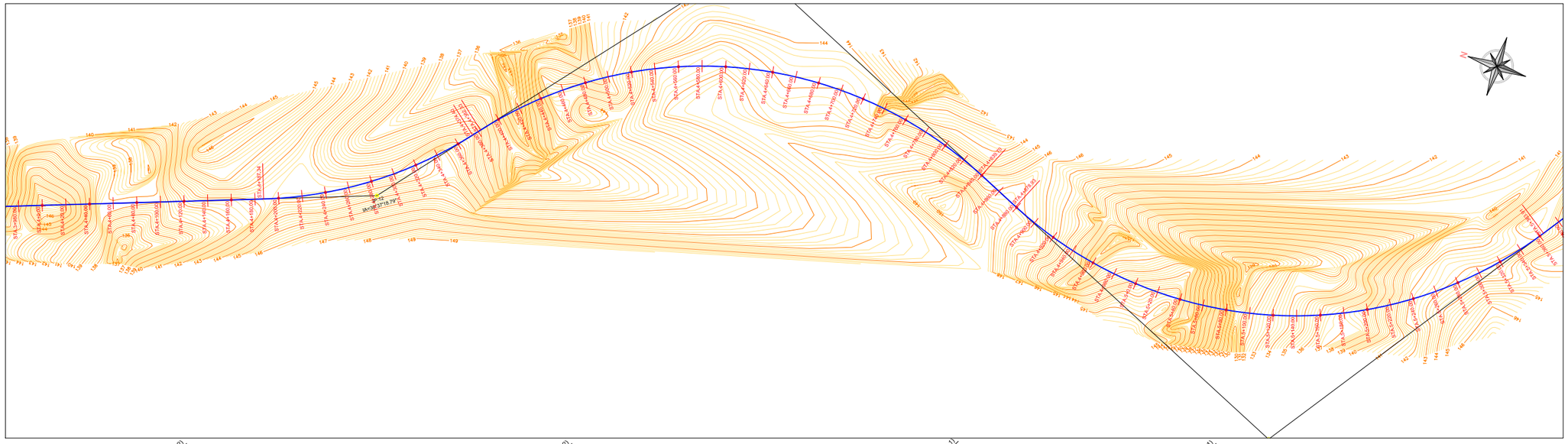
General and Profile Plan of Main Canal 1 (3/26)

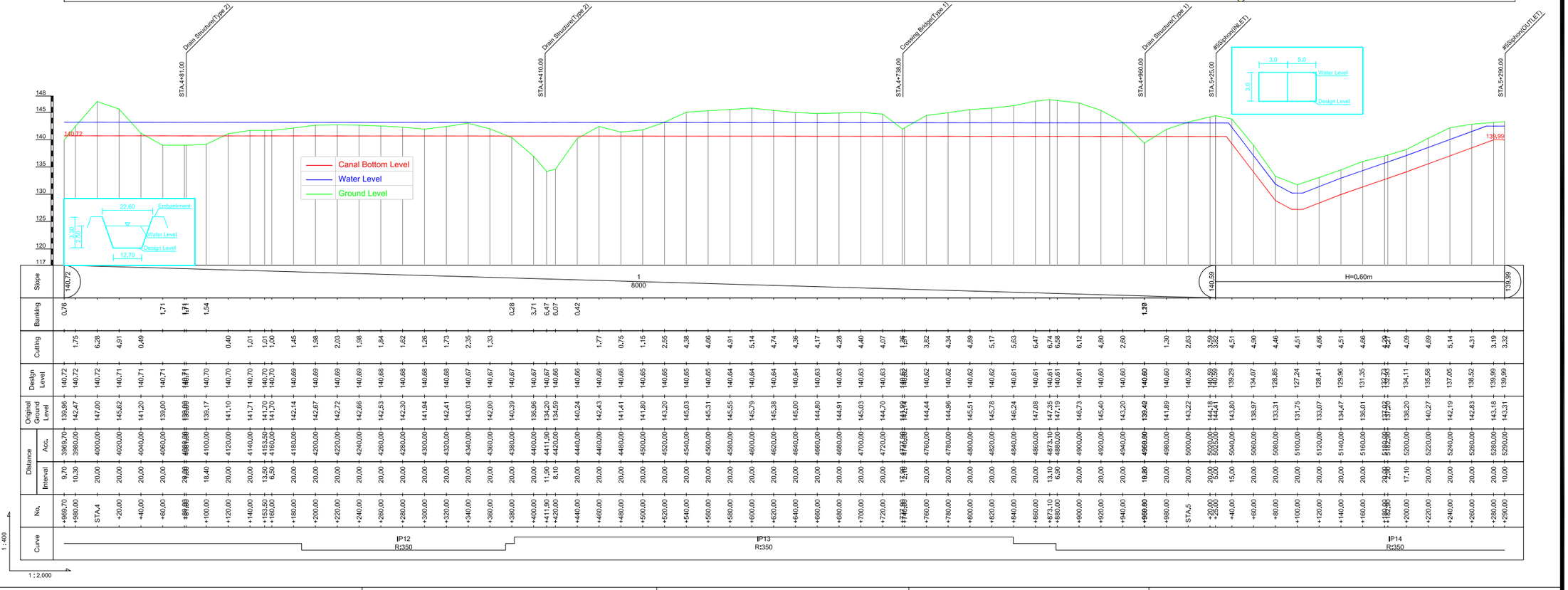




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (3/26)	DATE DECEMBER 2016	DRG No B-003

General and Profile Plan of Main Canal 1 (4/26)

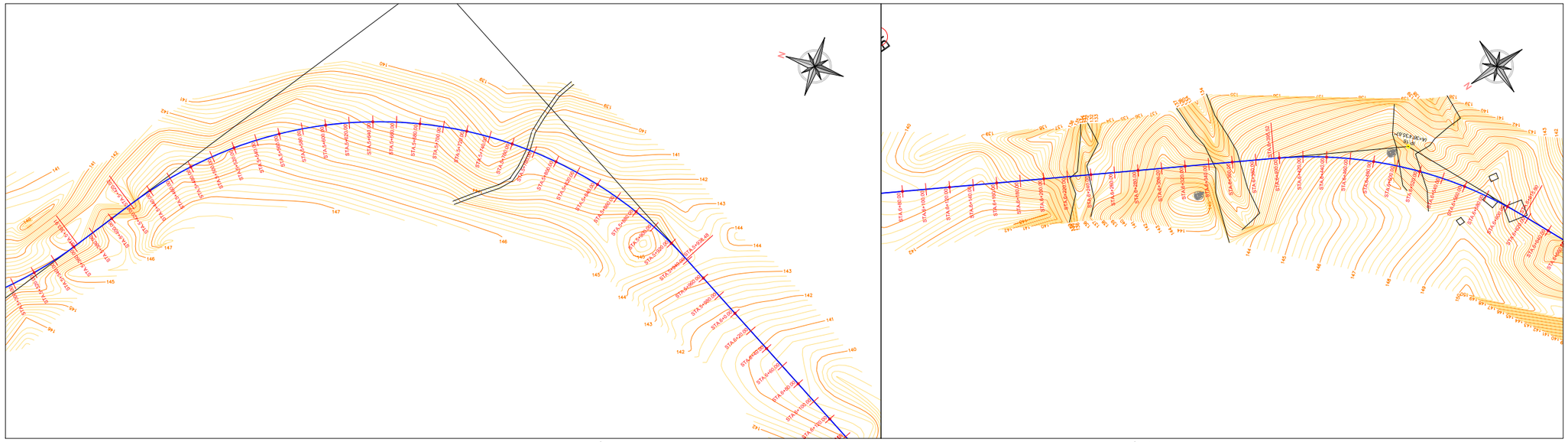


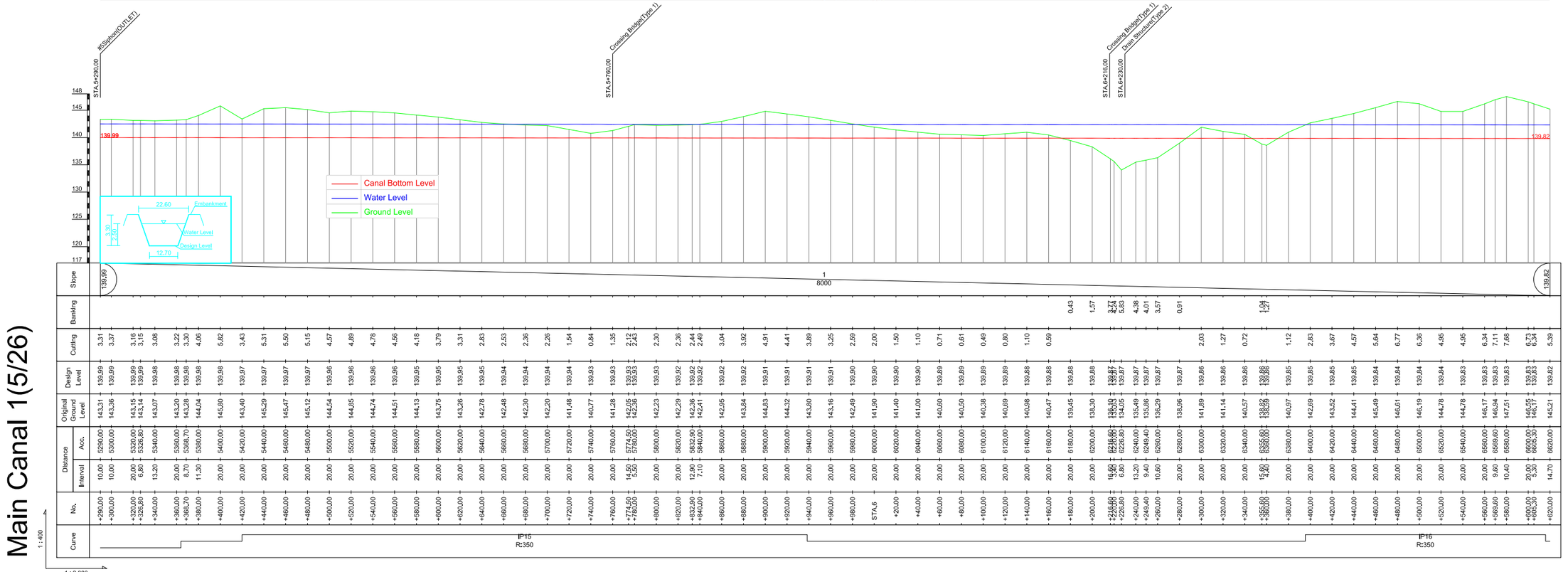


Main Canal 1(4/26)

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (4/26)	DATE DECEMBER 2016	DRG No B-004

General and Profile Plan of Main Canal 1 (5/26)





Main Canal 1(5/26)

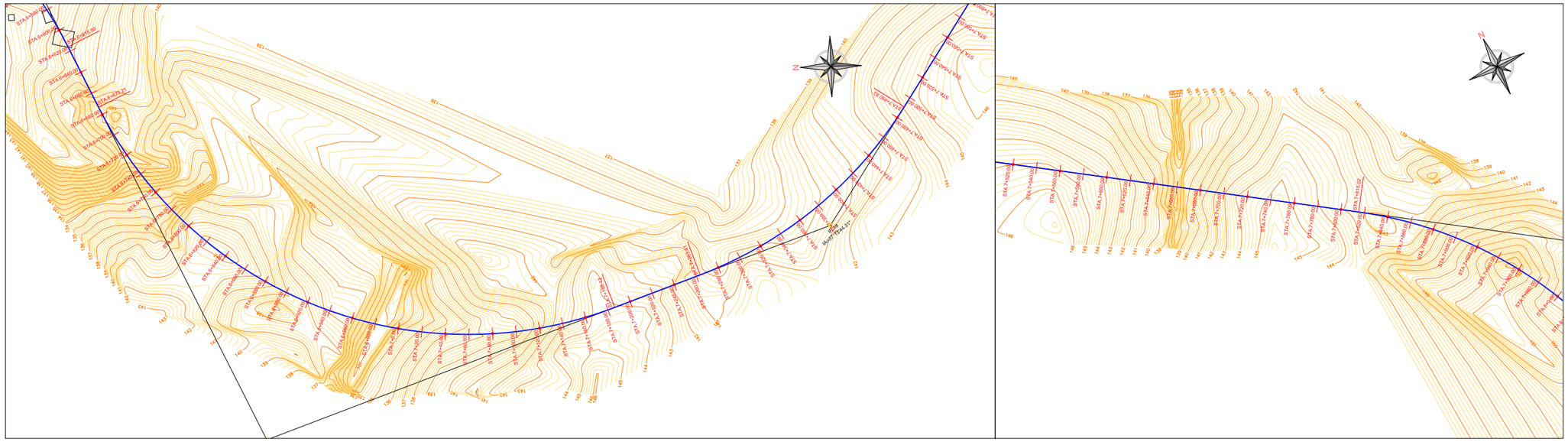
1 : 400

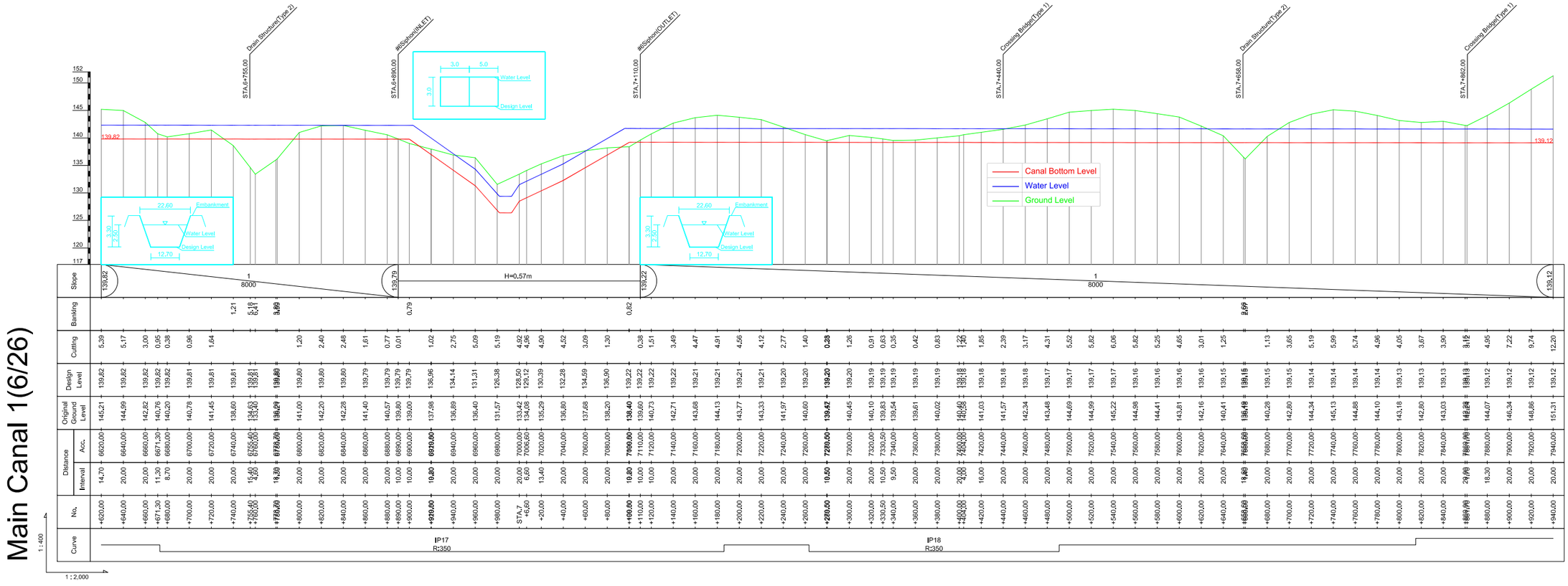
1 : 2,000

CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (5/26)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-005	

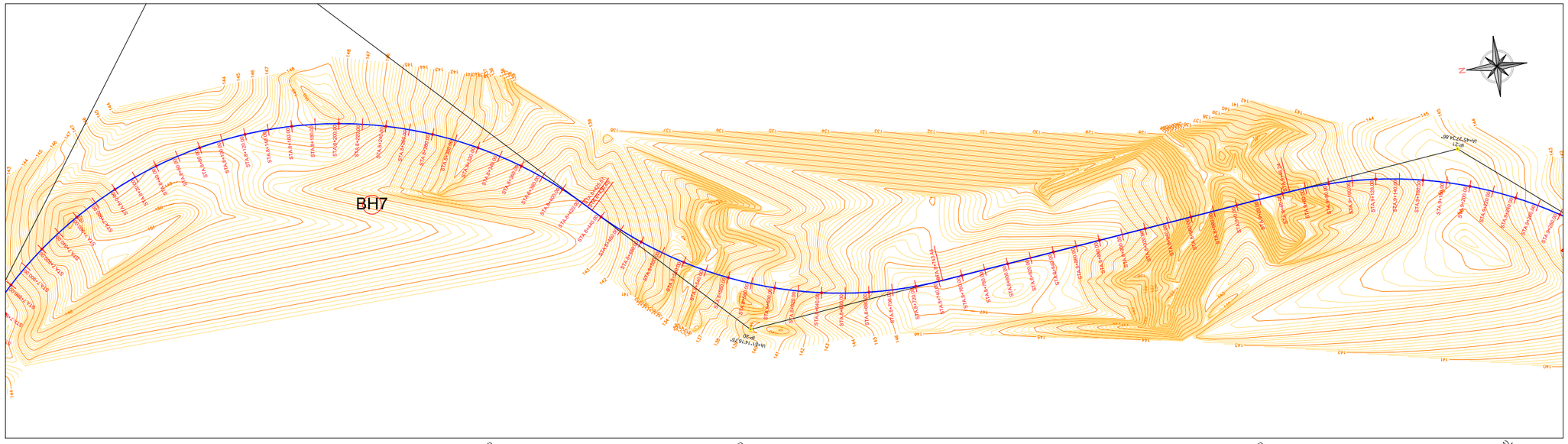
General and Profile Plan of Main Canal 1 (6/26)

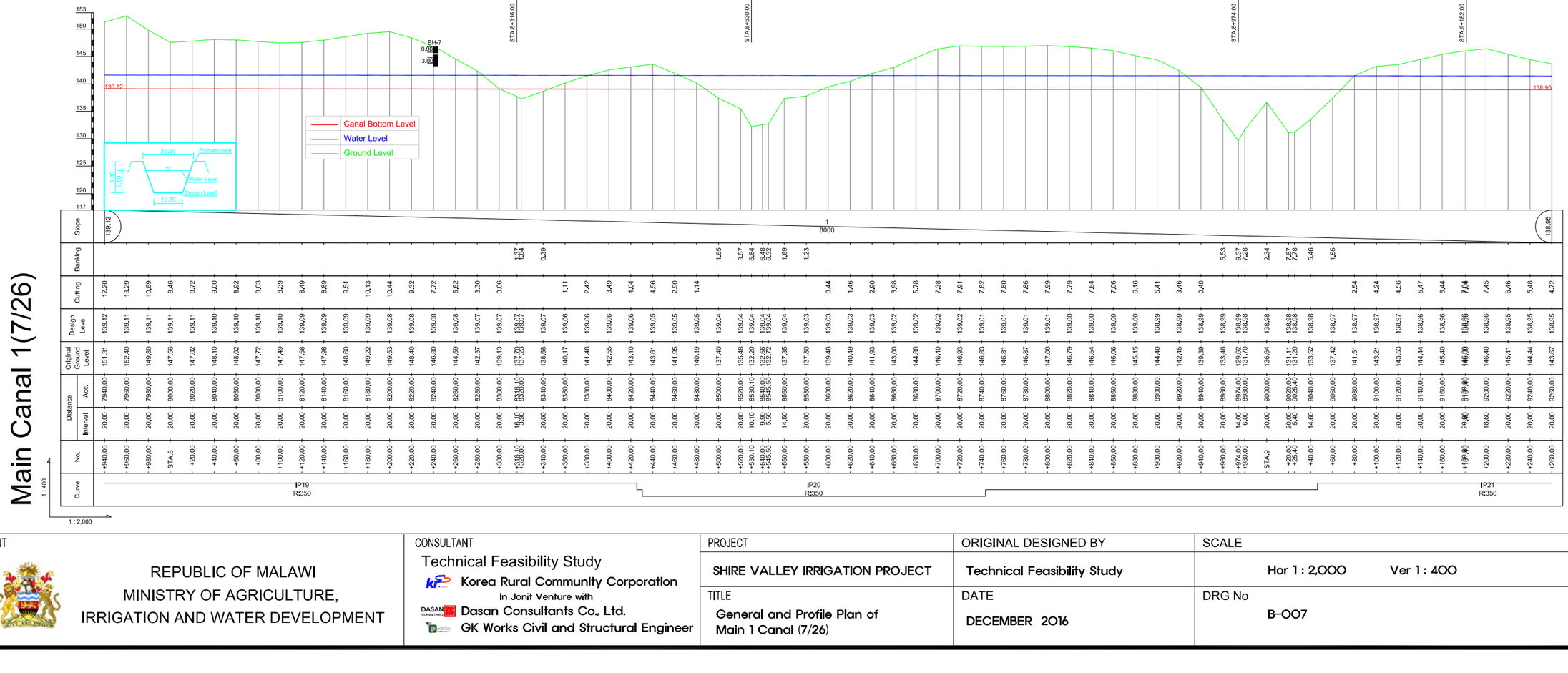




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (6/26)	DATE DECEMBER 2016	DRG No B-006

General and Profile Plan of Main Canal 1 (7/26)



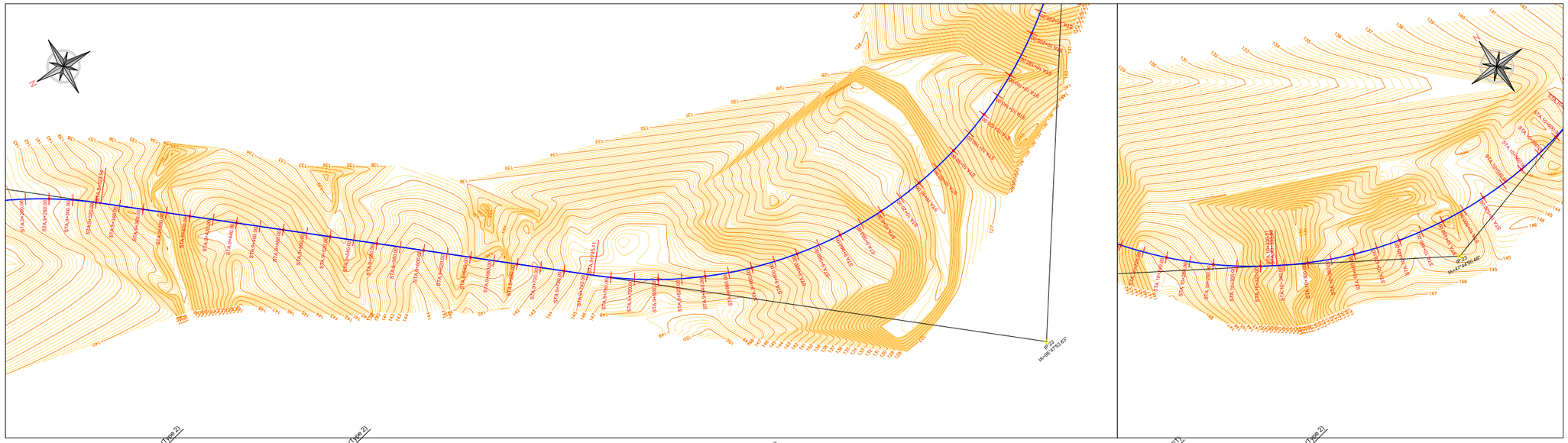


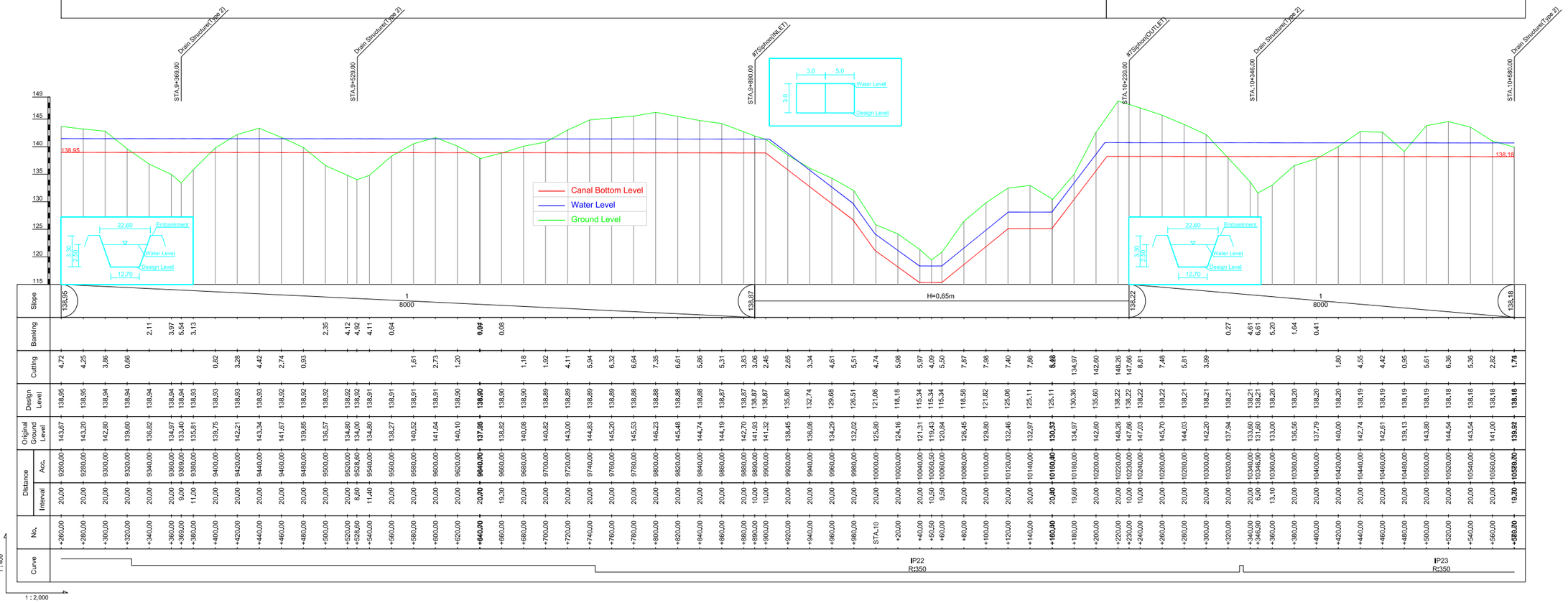
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (7/26)	DATE DECEMBER 2016

SCALE: Hor 1 : 2,000 Ver 1 : 400

DRG No: B-007

General and Profile Plan of Main Canal 1 (8/26)

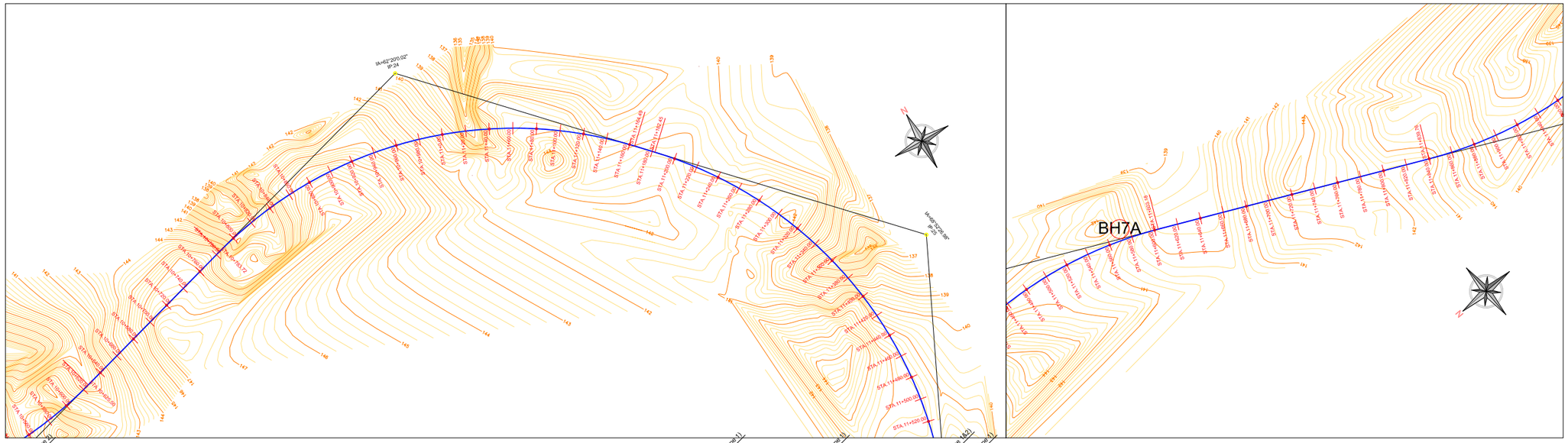


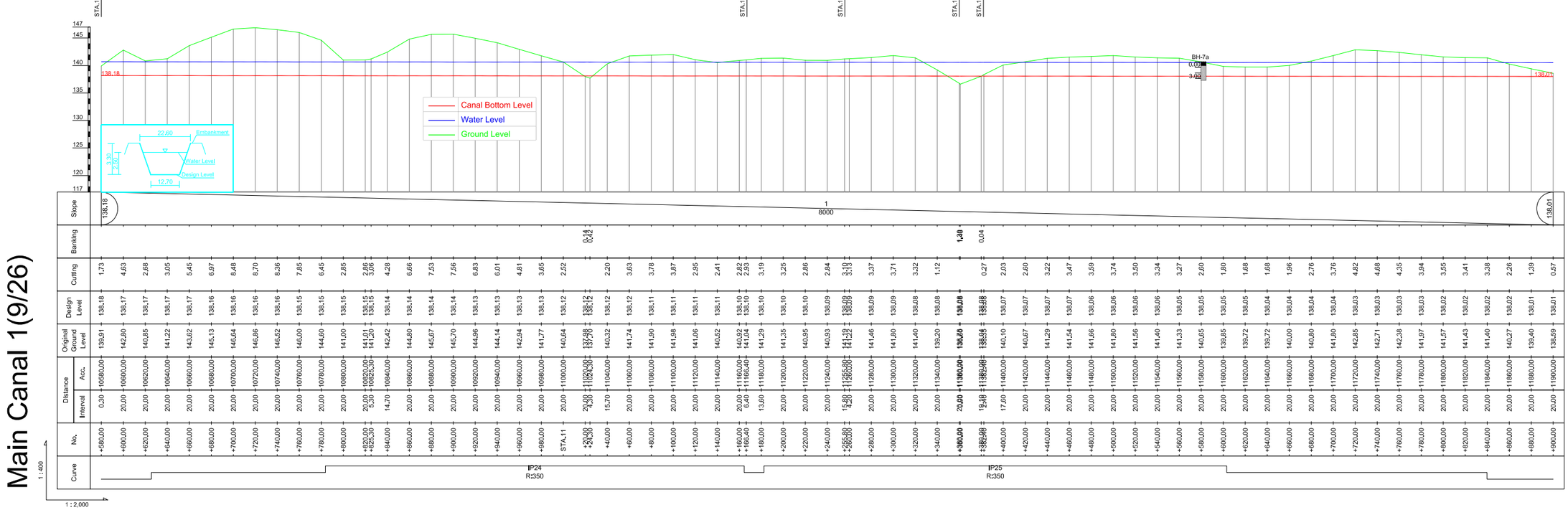


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (8/26)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-008	

General and Profile Plan of Main Canal 1 (9/26)





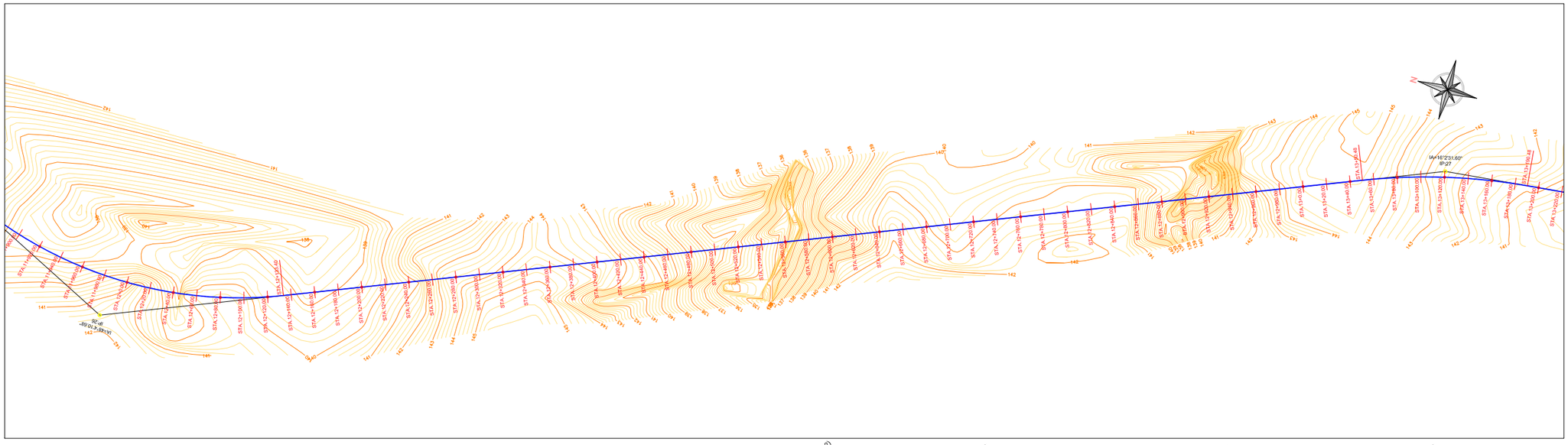
Main Canal 1(9/26)

1 : 400

1 : 2,000

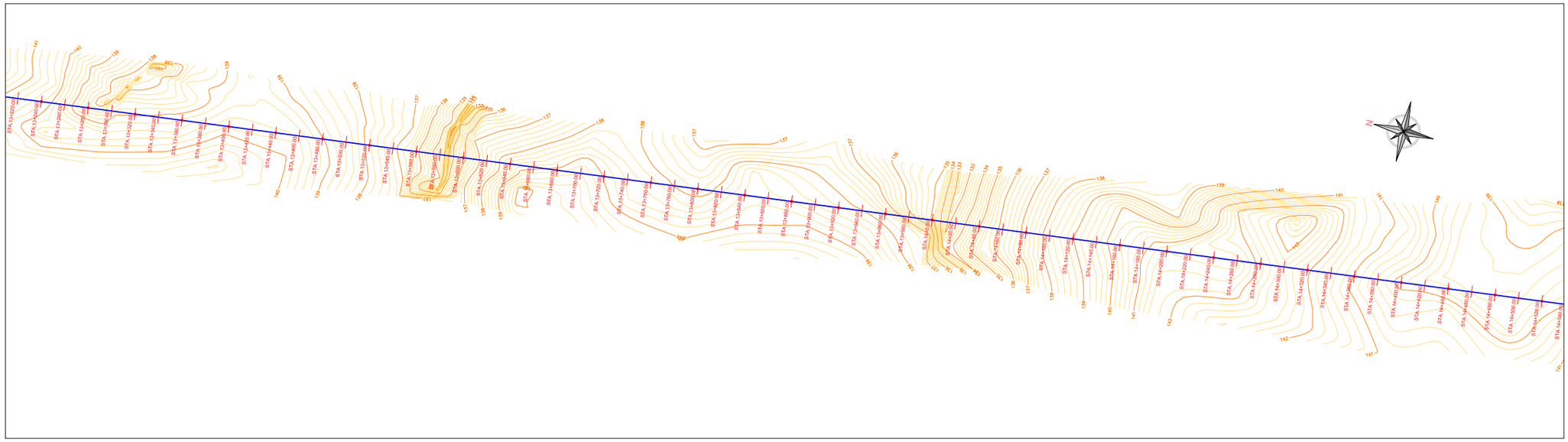
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (9/26)	DATE DECEMBER 2016	DRG No B-009

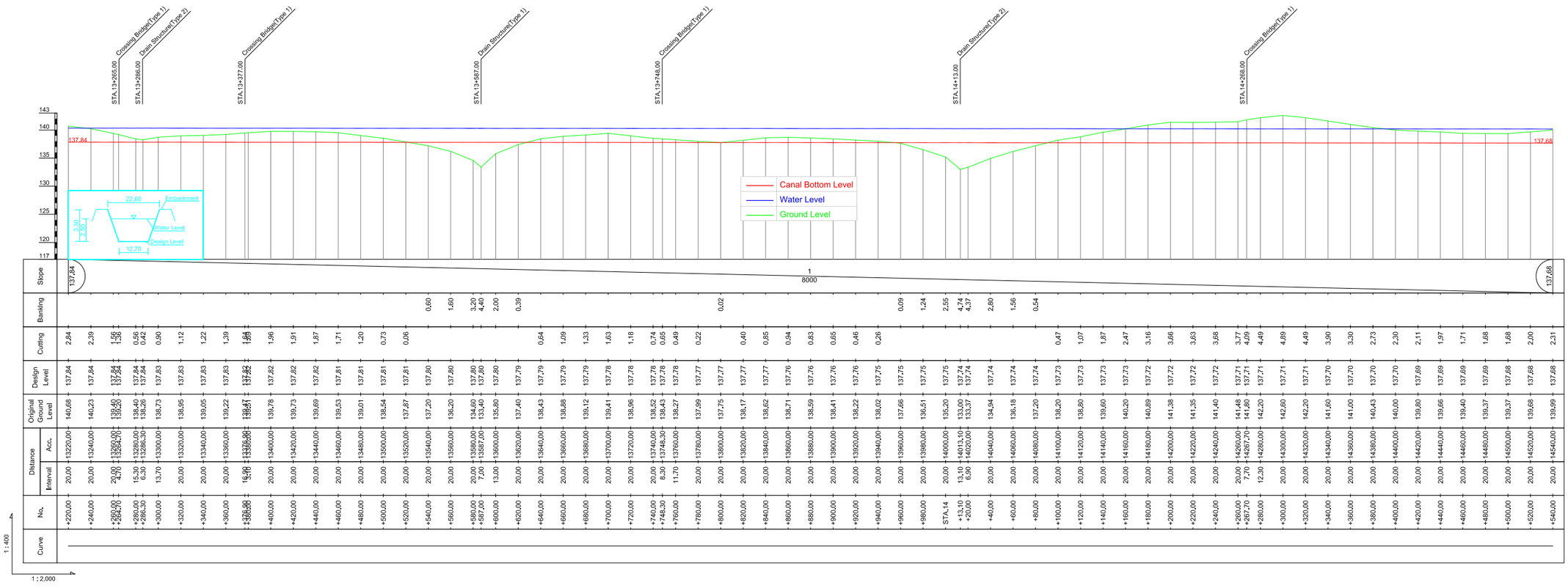
General and Profile Plan of Main Canal 1 (10/26)



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (10/26)	DATE DECEMBER 2016	DRG No B-010

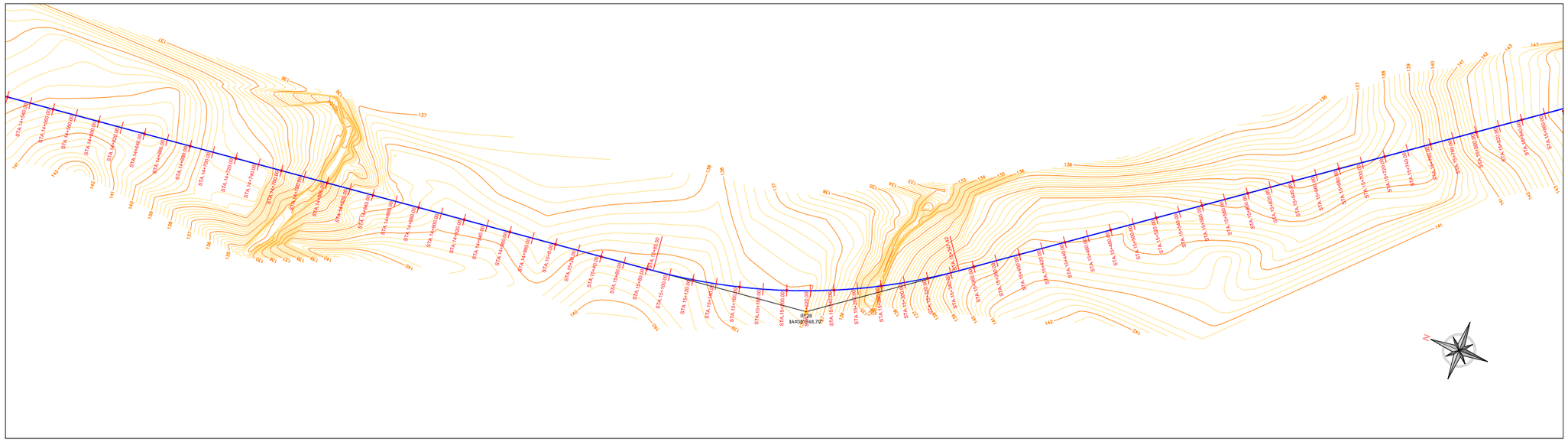
General and Profile Plan of Main Canal 1 (11/26)



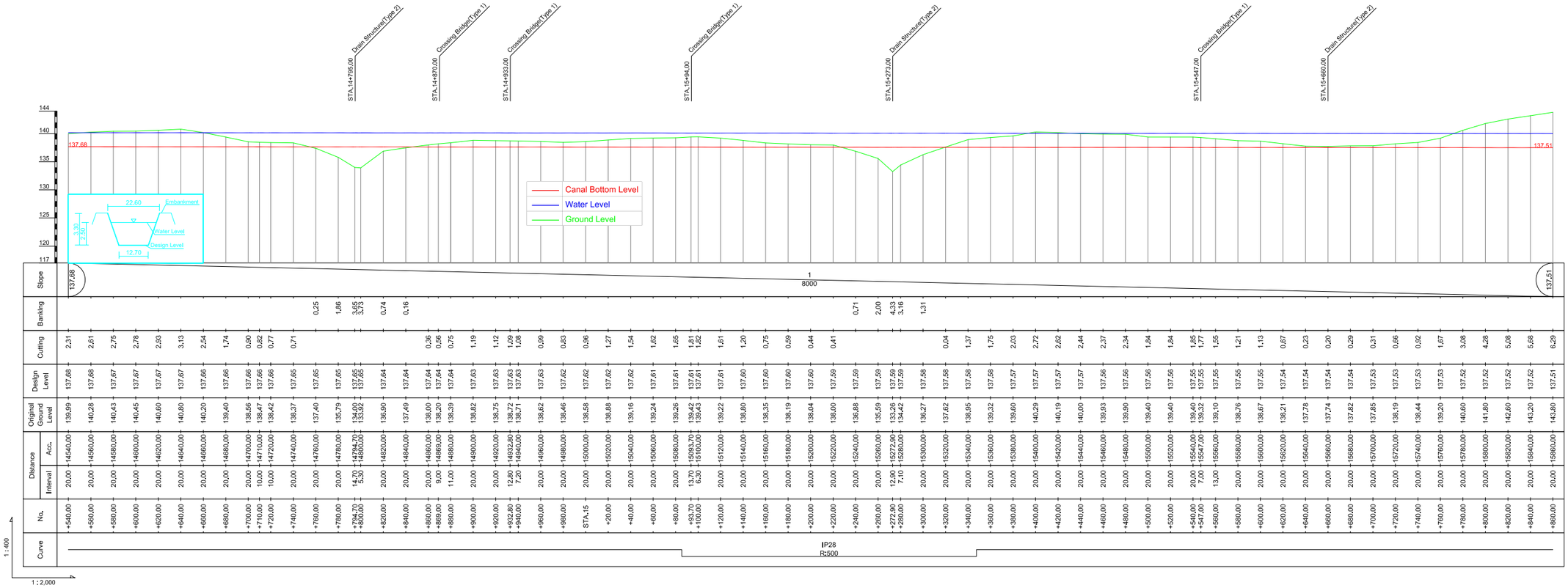


CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main 1 Canal (11/26)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-011

General and Profile Plan of Main Canal 1 (12/26)

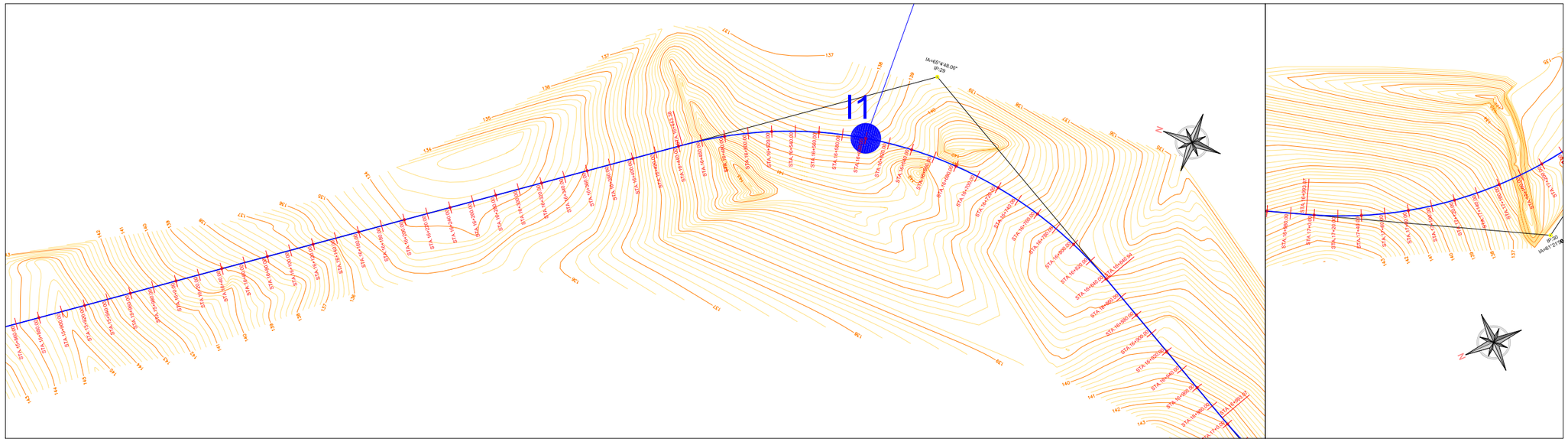


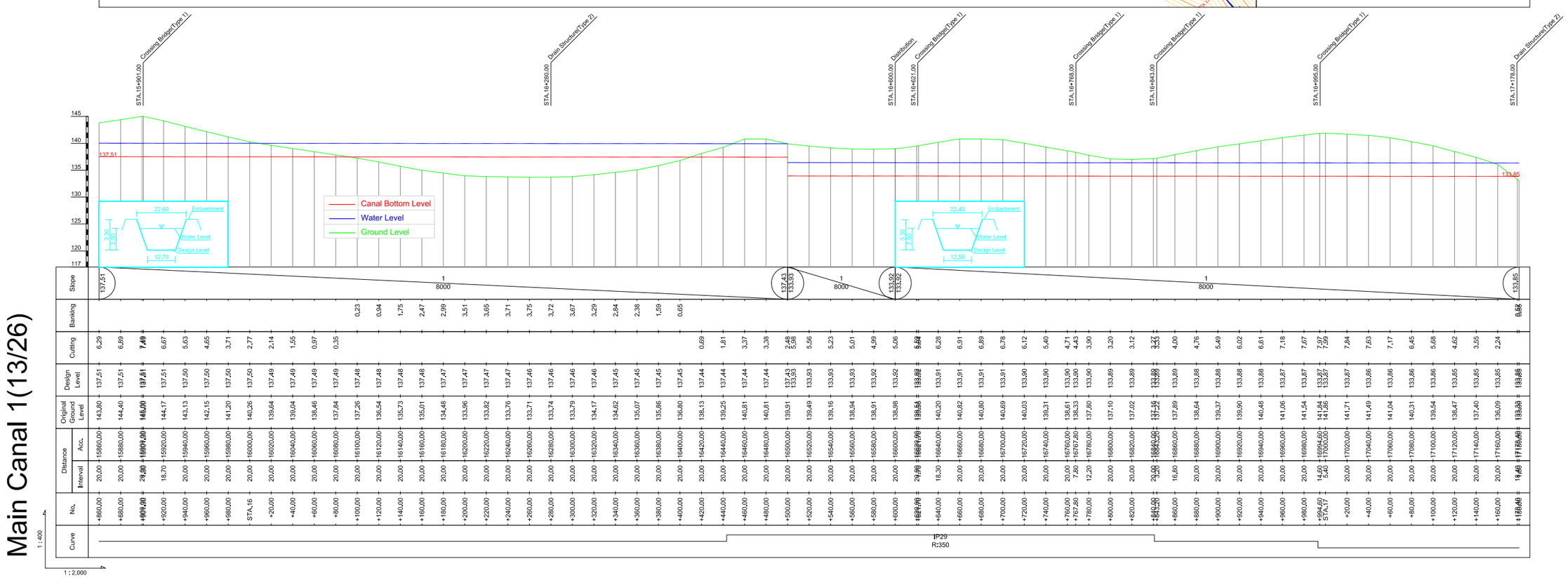
Main Canal 1(12/26)



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (12/26)	DATE DECEMBER 2016	DRG No B-012

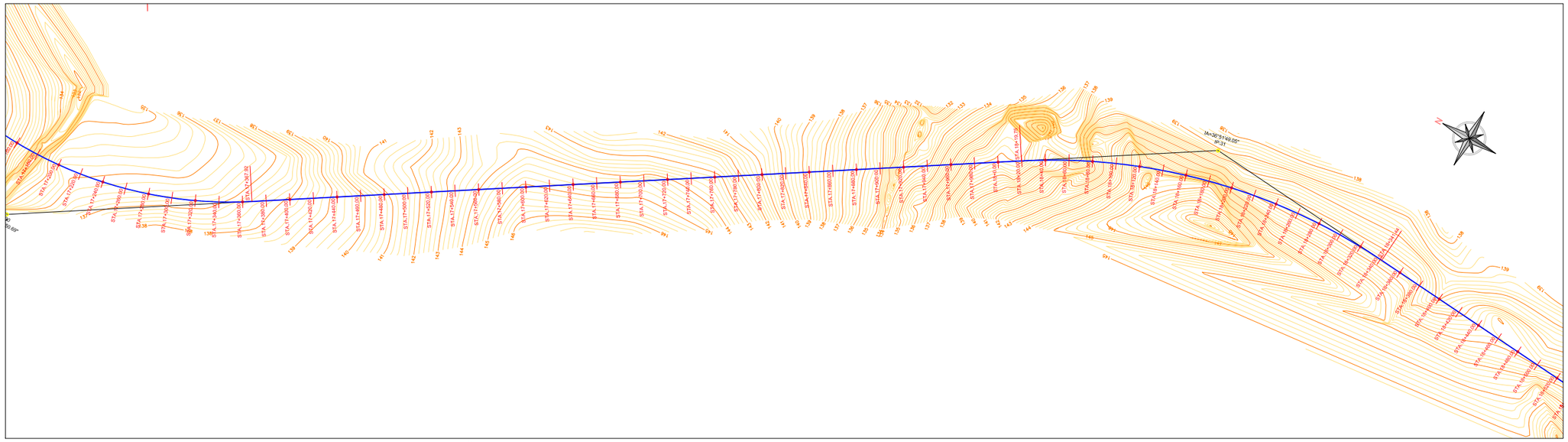
General and Profile Plan of Main Canal 1 (13/26)

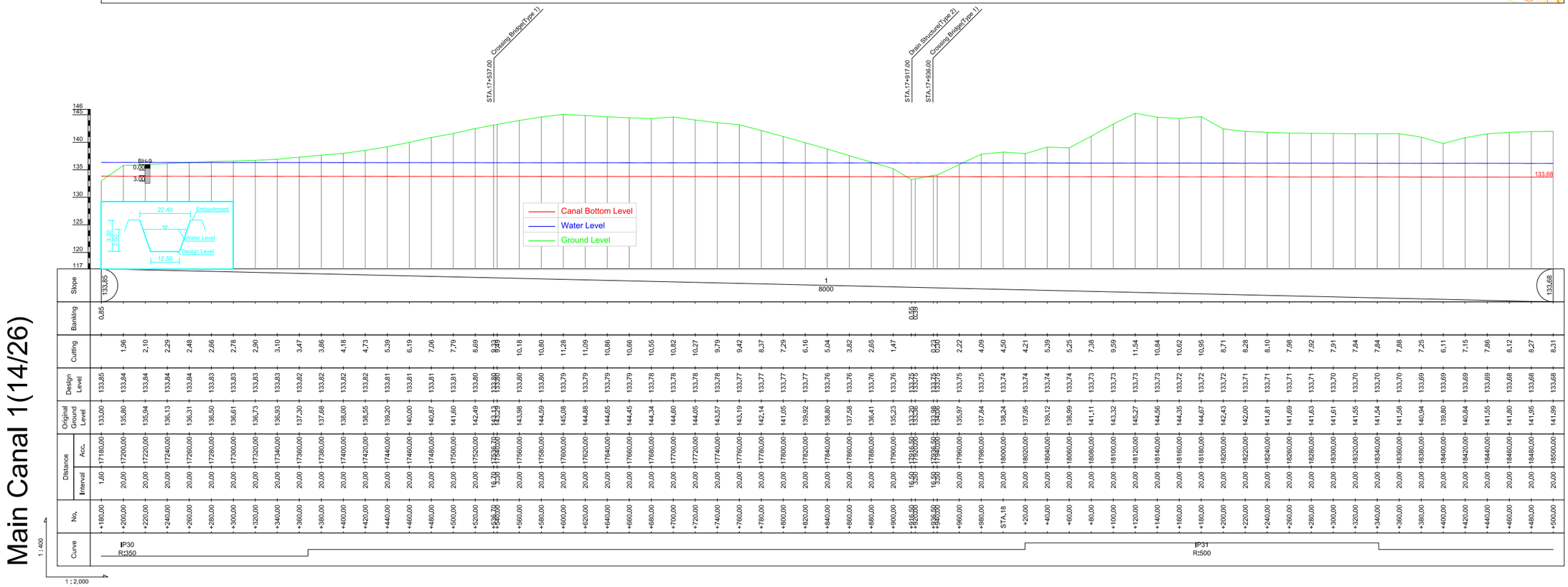




CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (13/26)	DATE DECEMBER 2016	DRG No B-013

General and Profile Plan of Main Canal 1 (14/26)





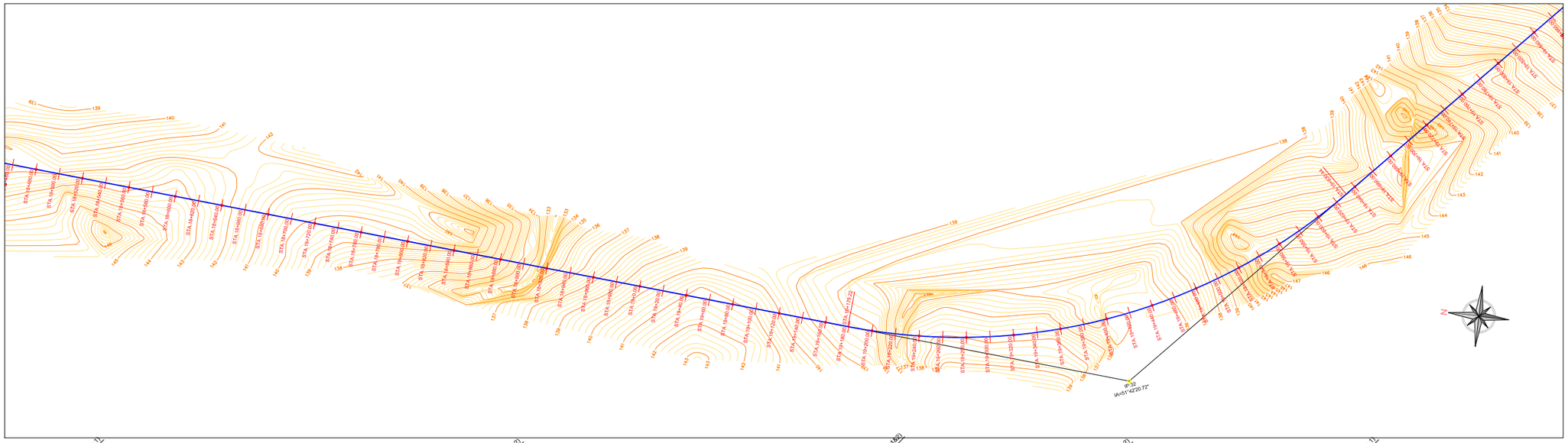
Main Canal 1(14/26)

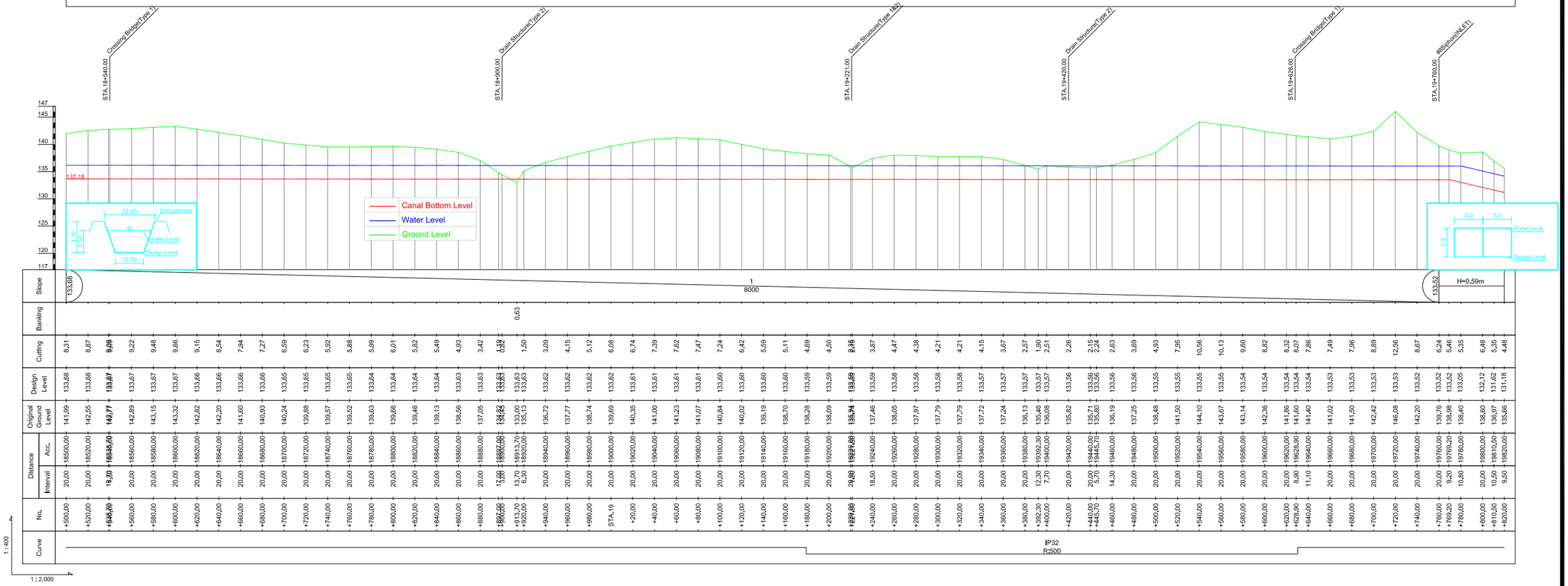
1 : 400

1 : 2,000

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (14/26)	DATE DECEMBER 2016	DRG No B-014

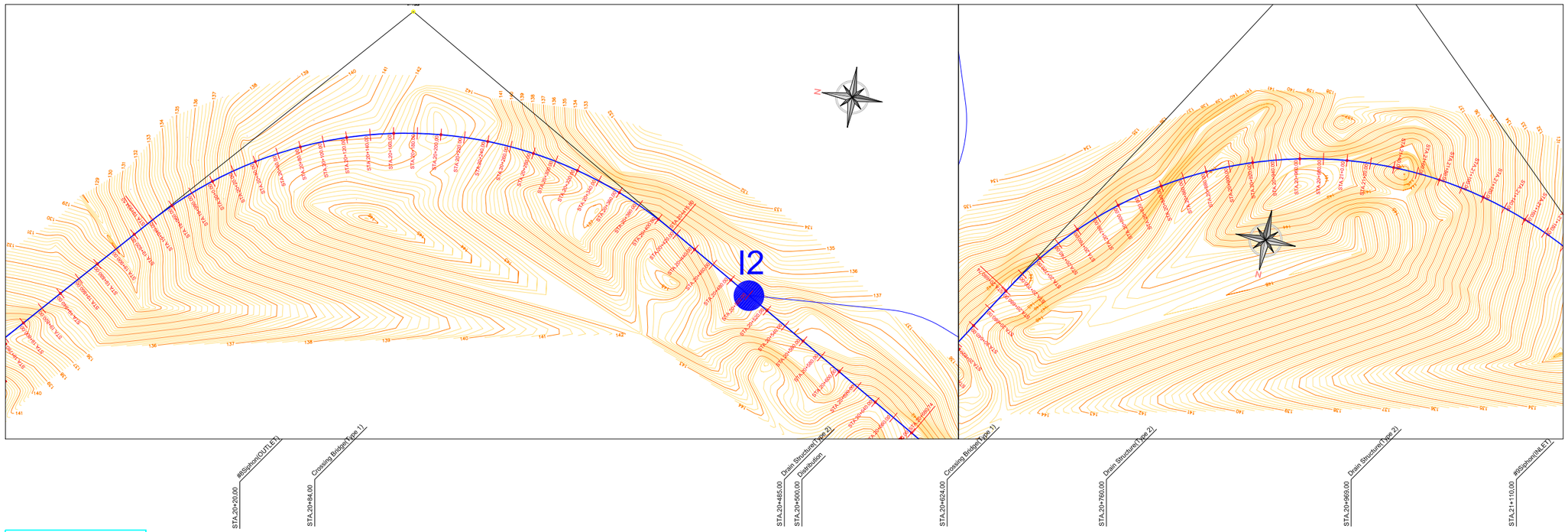
General and Profile Plan of Main Canal 1 (15/26)





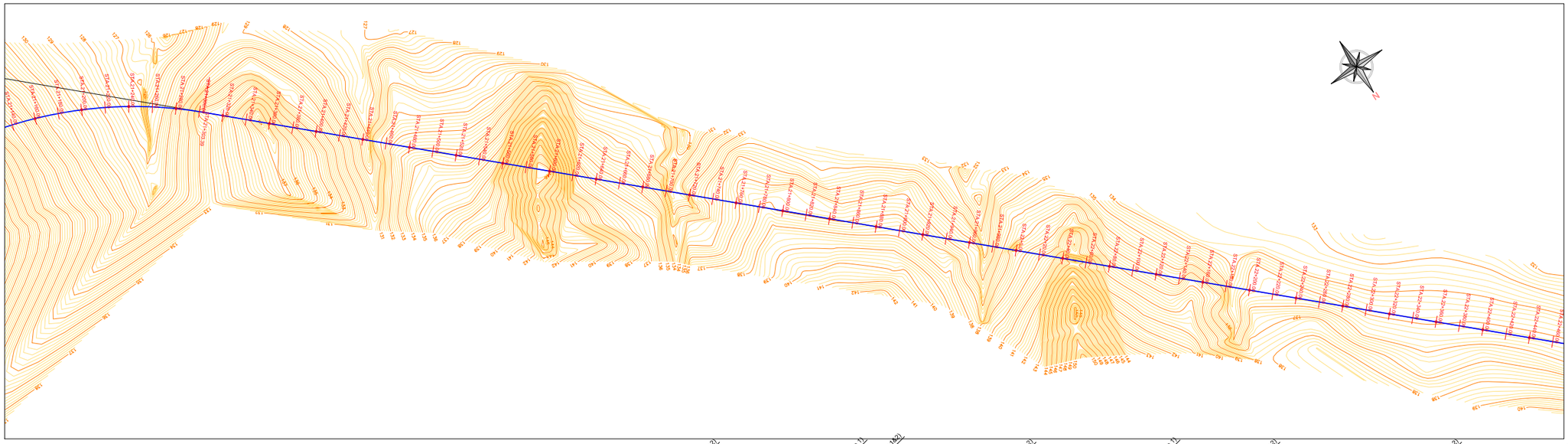
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (15/26)	DATE DECEMBER 2016	DRG No B-015

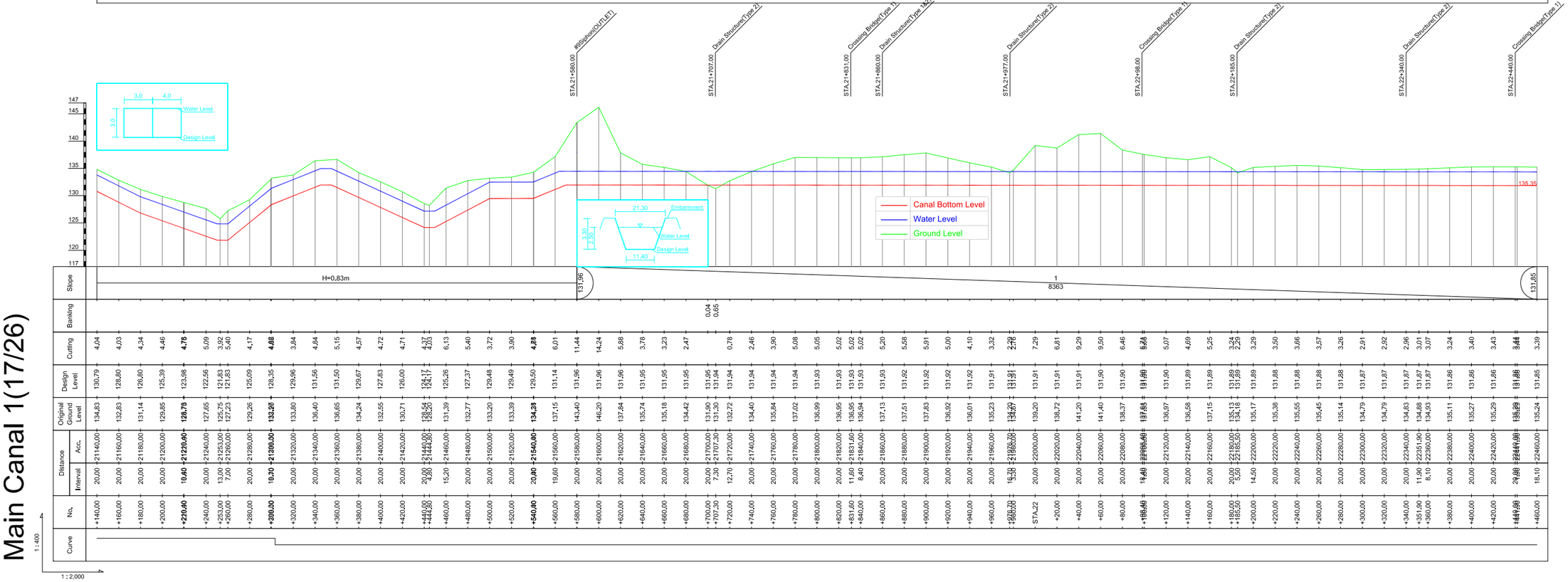
General and Profile Plan of Main Canal 1 (16/26)



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main 1 Canal (16/26)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-016

General and Profile Plan of Main Canal 1 (17/26)

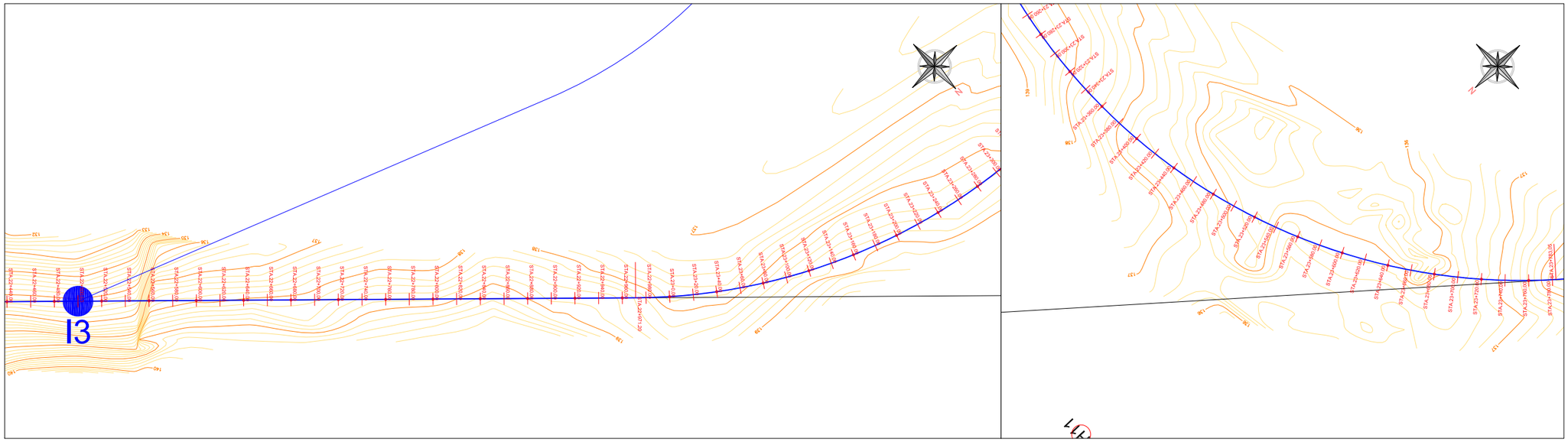


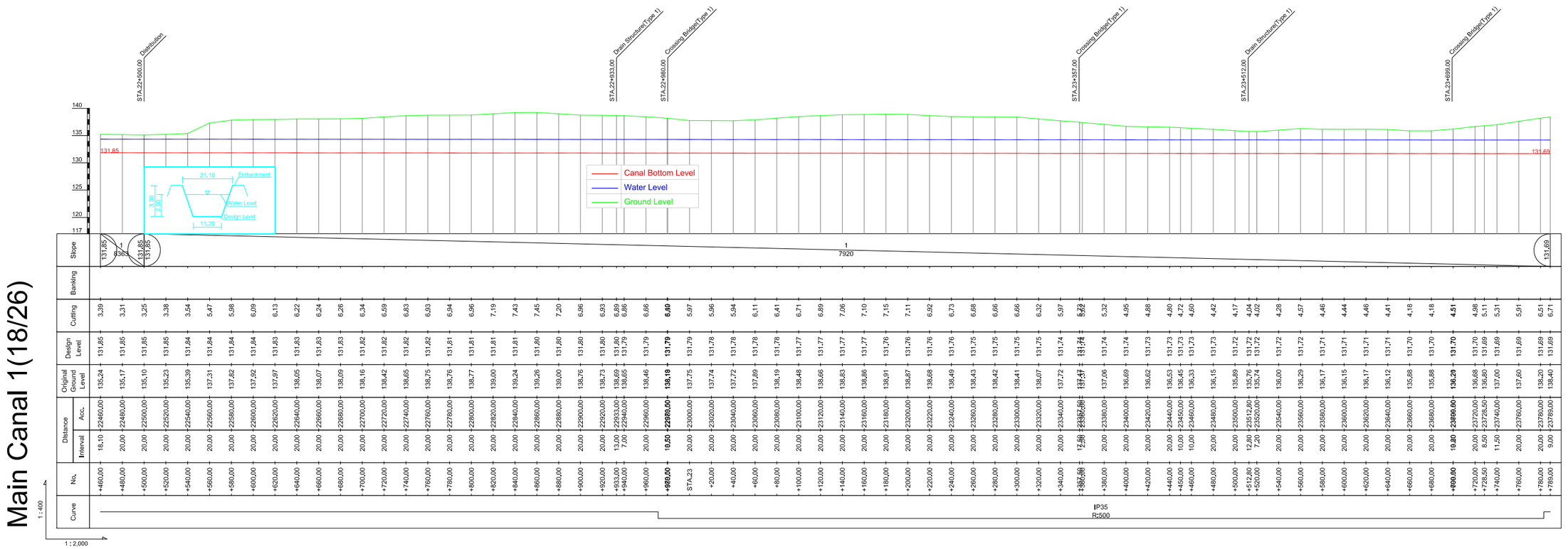


Main Canal 1(17/26)

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (17/26)	DATE DECEMBER 2016	DRG No B-017

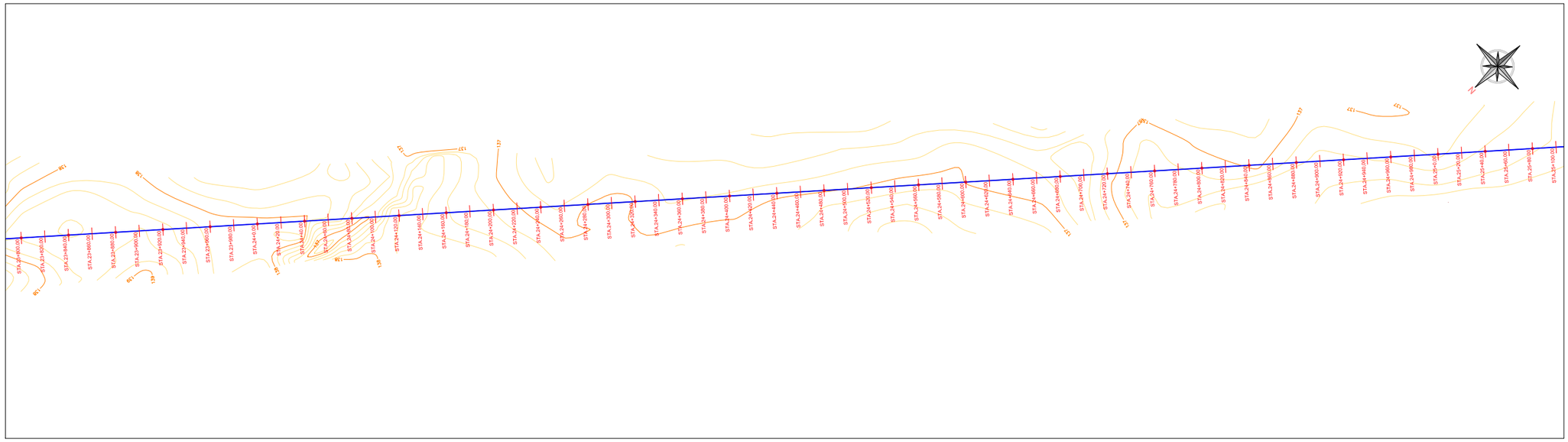
General and Profile Plan of Main Canal 1 (18/26)

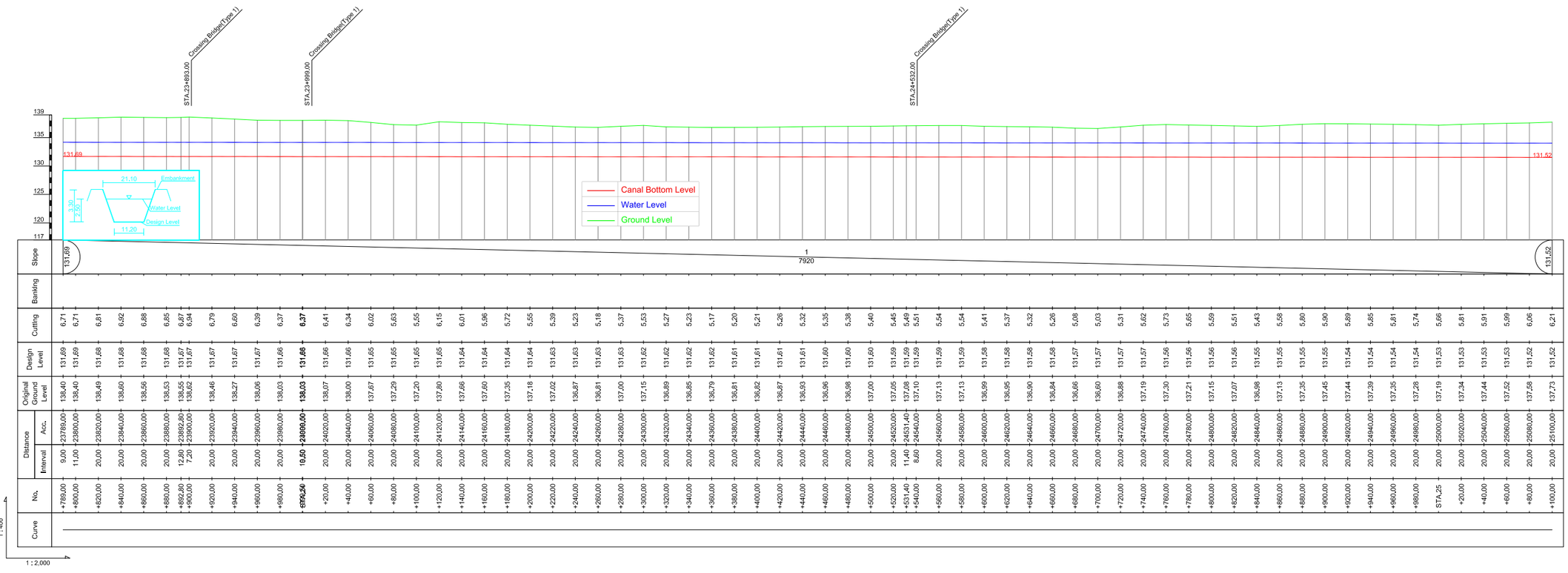




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (18/26)	DATE DECEMBER 2016	DRG No B-018

General and Profile Plan of Main Canal 1 (19/26)

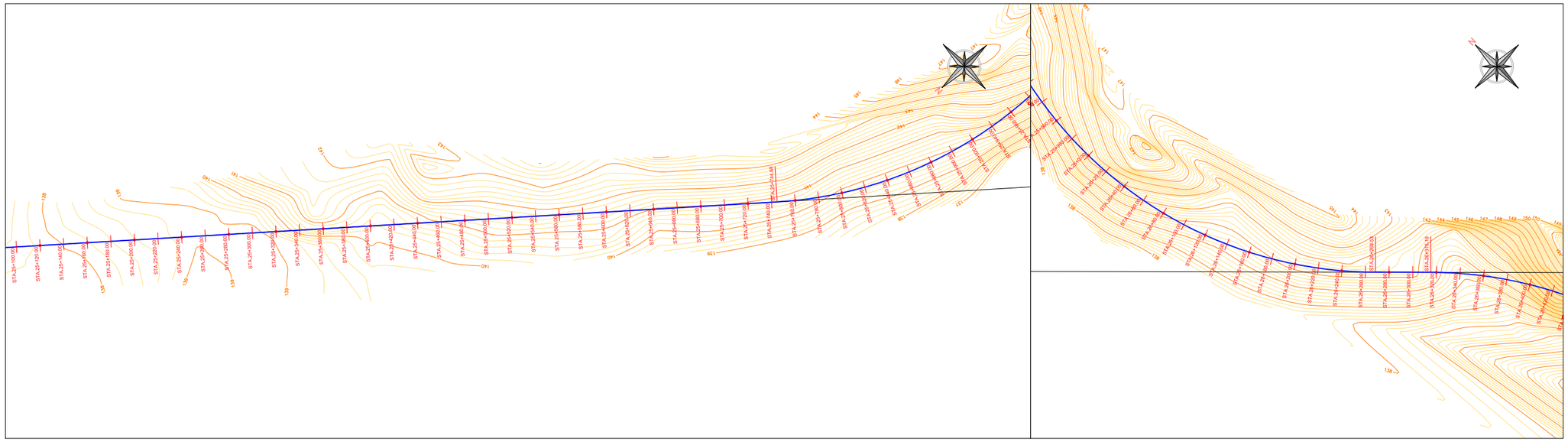


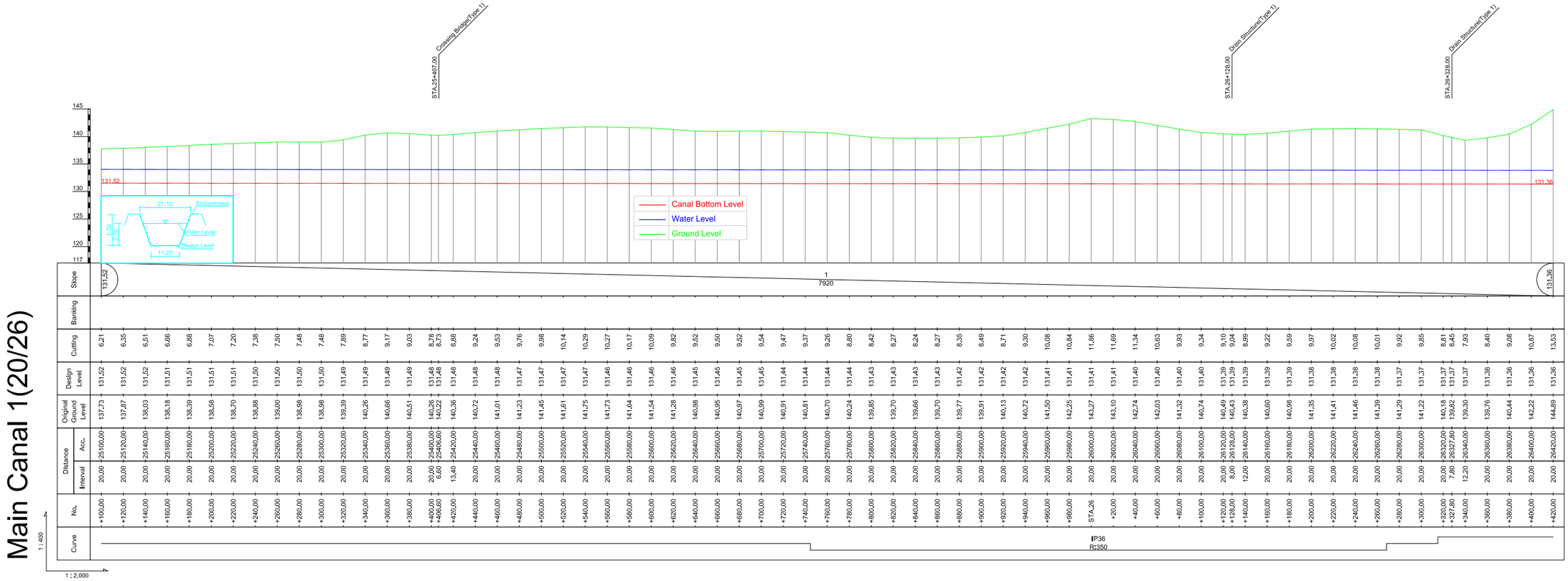


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (19/26)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-019	

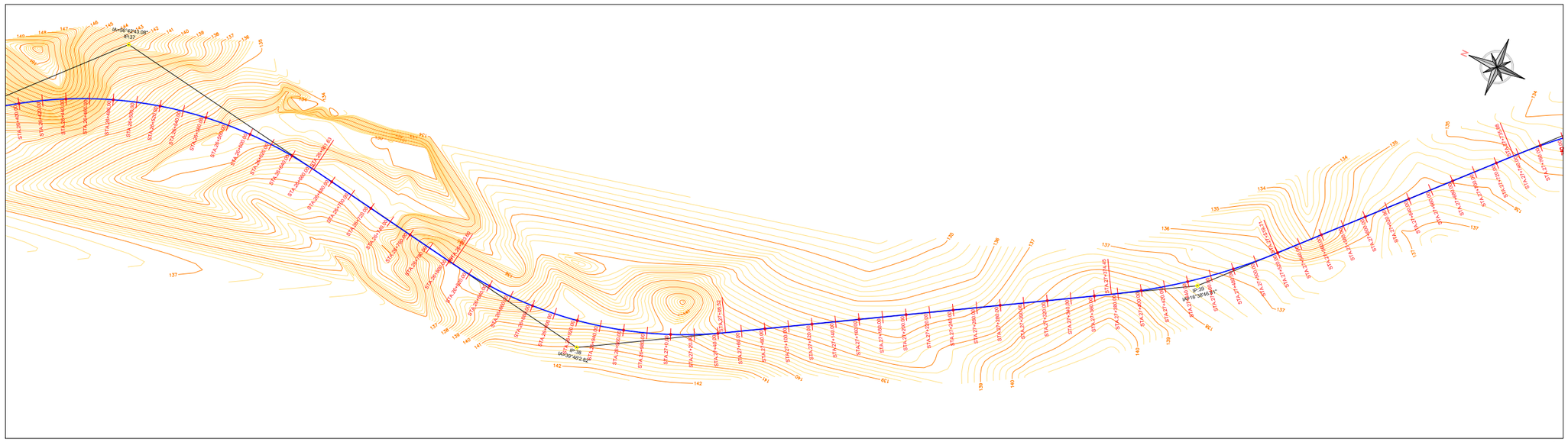
General and Profile Plan of Main Canal 1 (20/26)

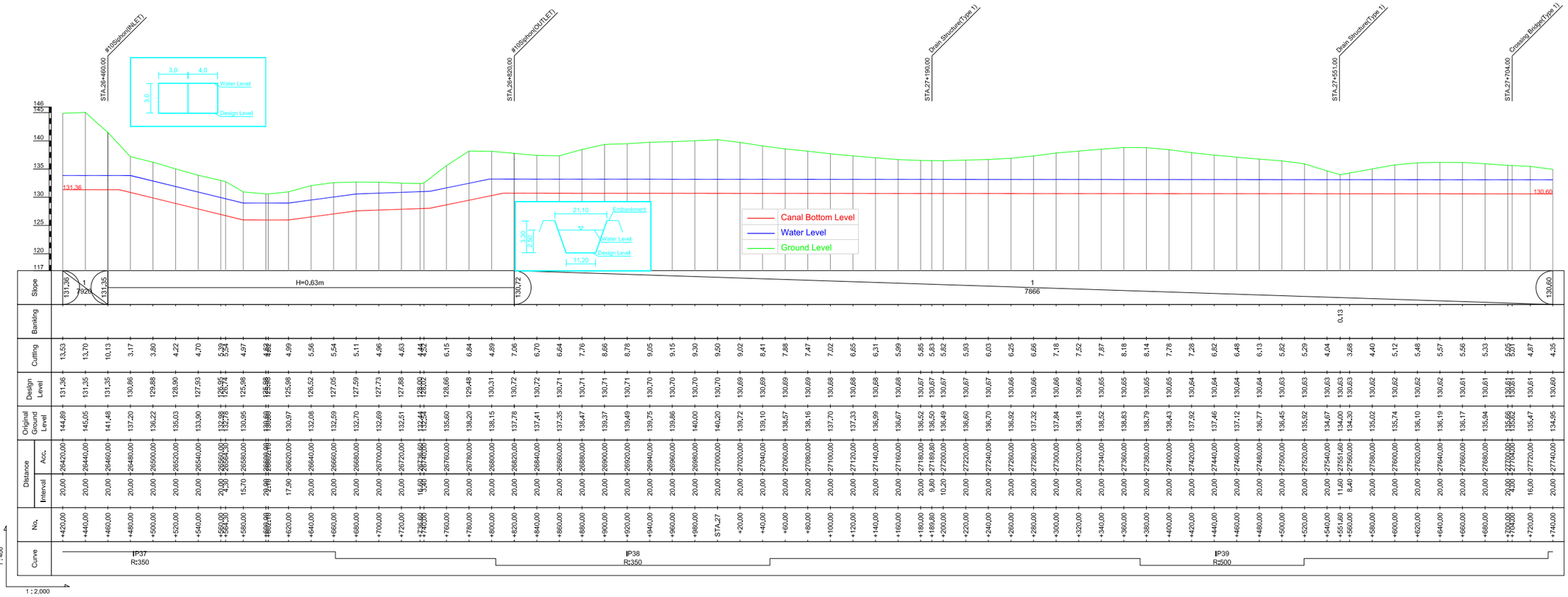




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (20/26)	DATE DECEMBER 2016	DRG No B-020

General and Profile Plan of Main Canal 1 (21/26)

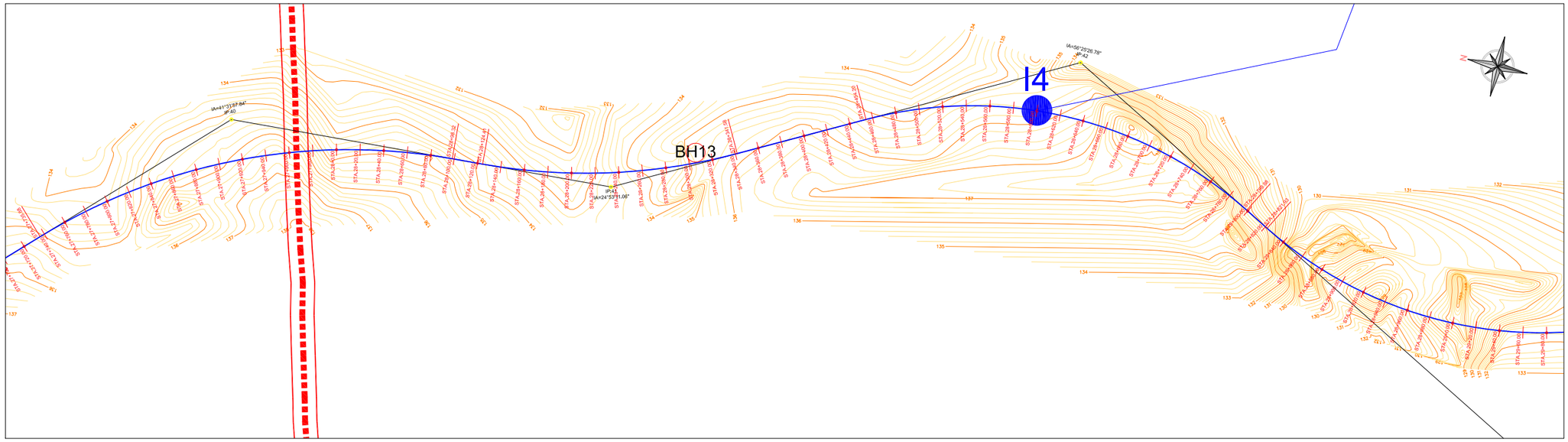




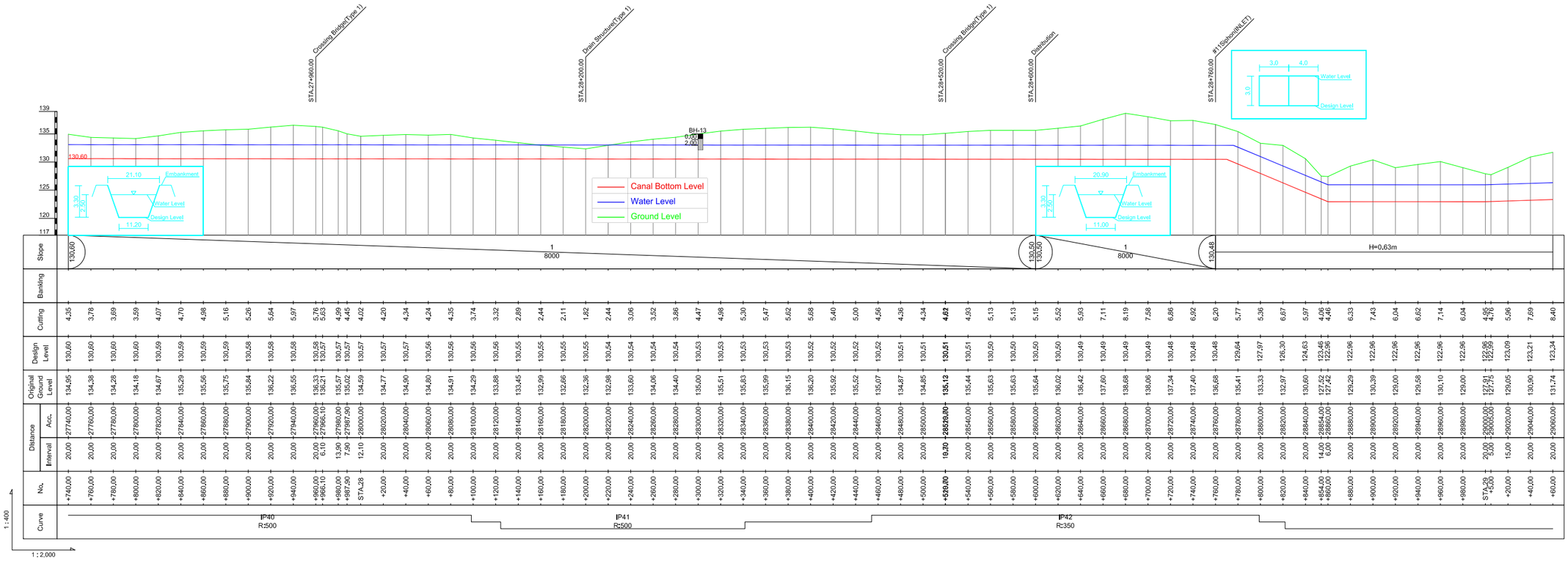
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main 1 Canal (21/26)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-021	

General and Profile Plan of Main Canal 1 (22/26)

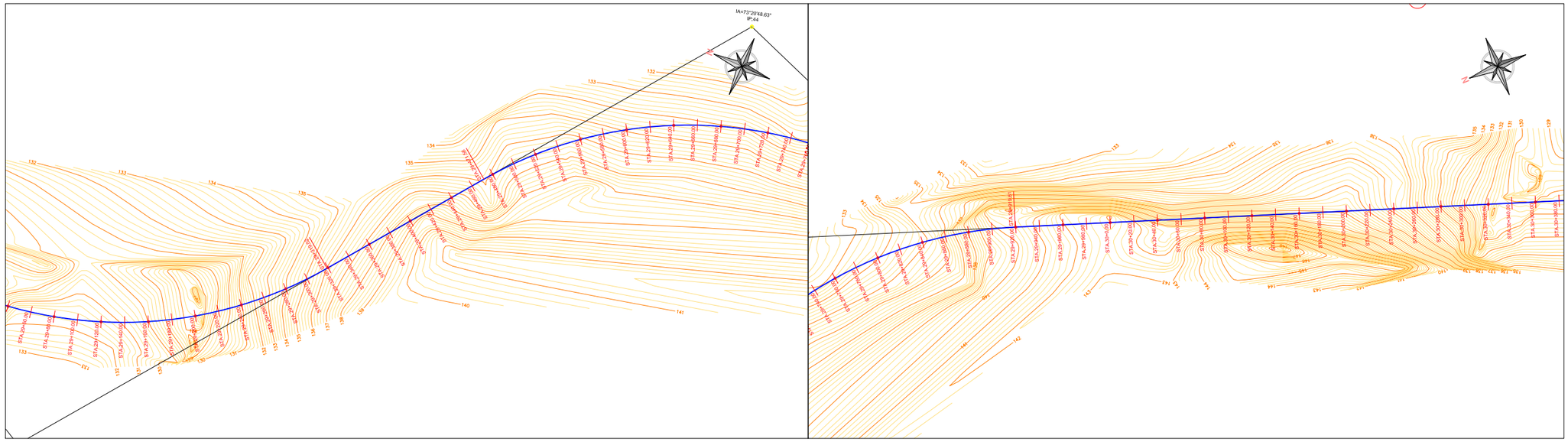


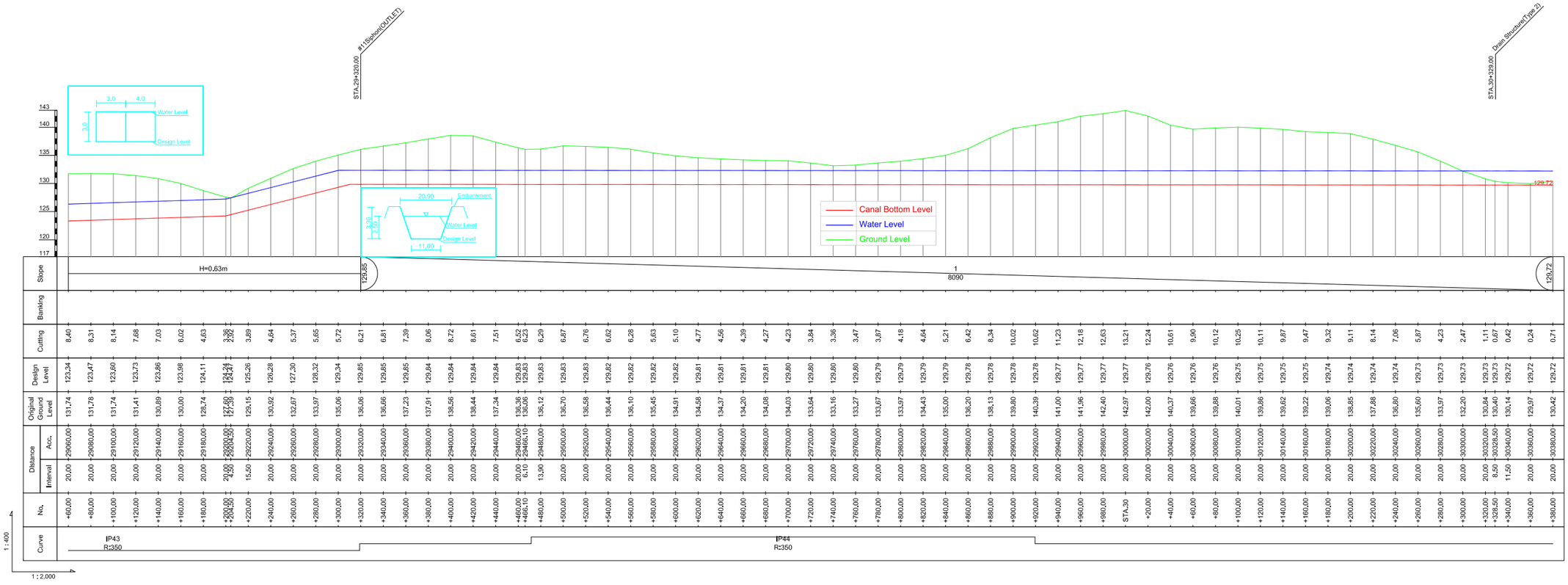
Main Canal 1(22/26)



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main 1 Canal (22/26)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-022

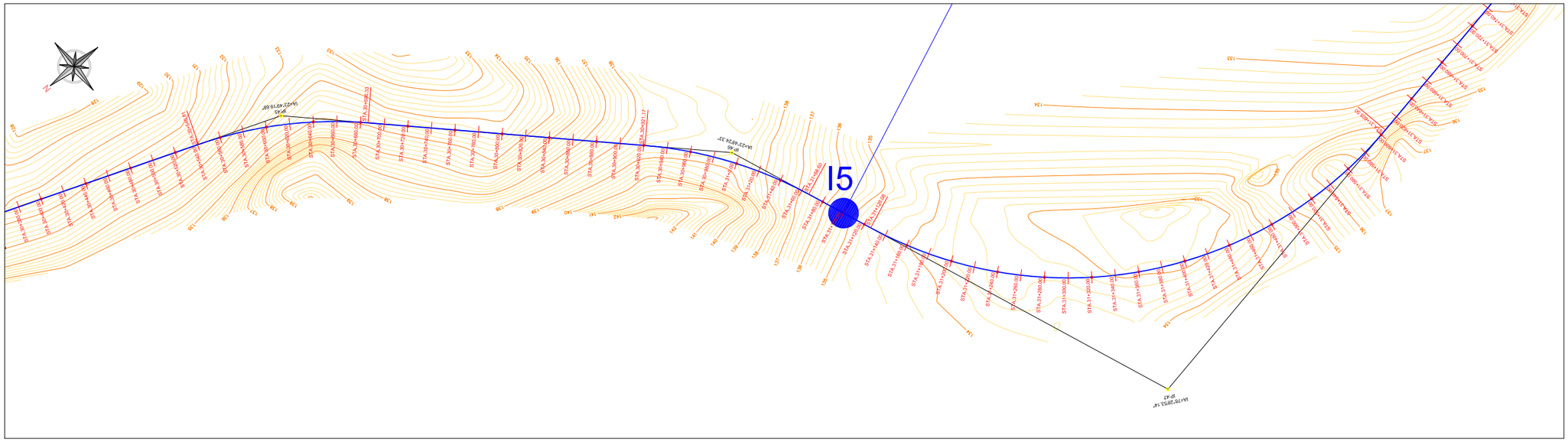
General and Profile Plan of Main Canal 1 (23/26)

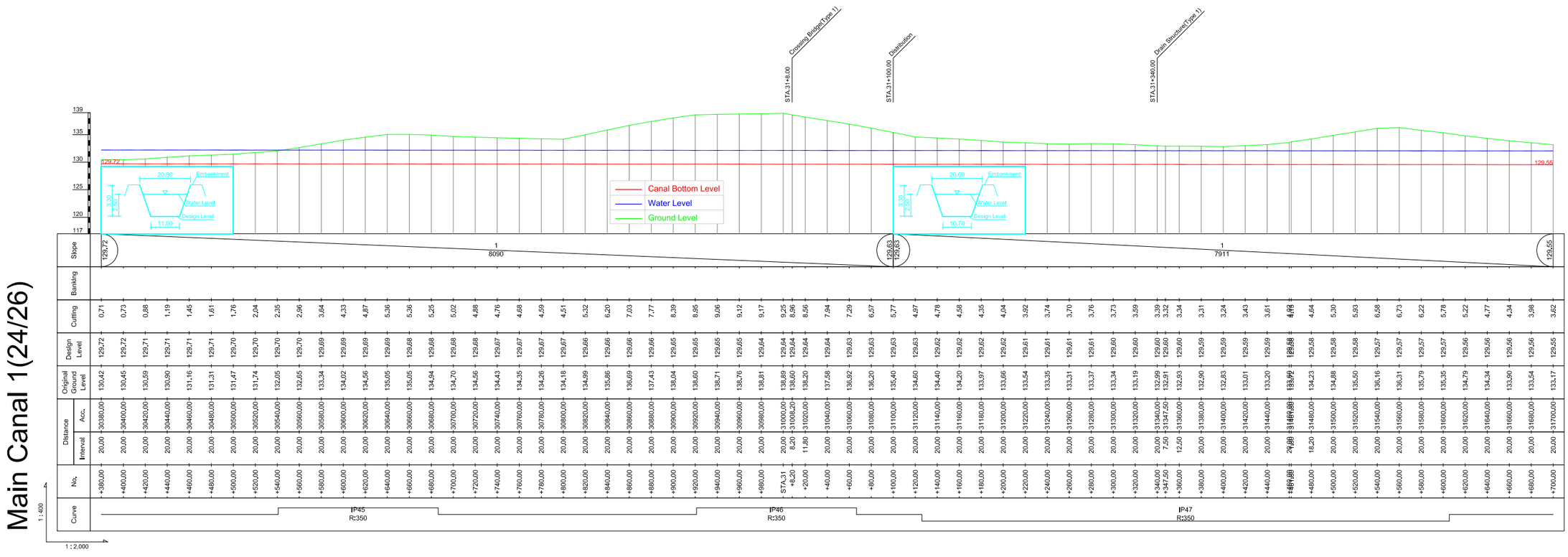




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (23/26)	DATE DECEMBER 2016	DRG No B-023

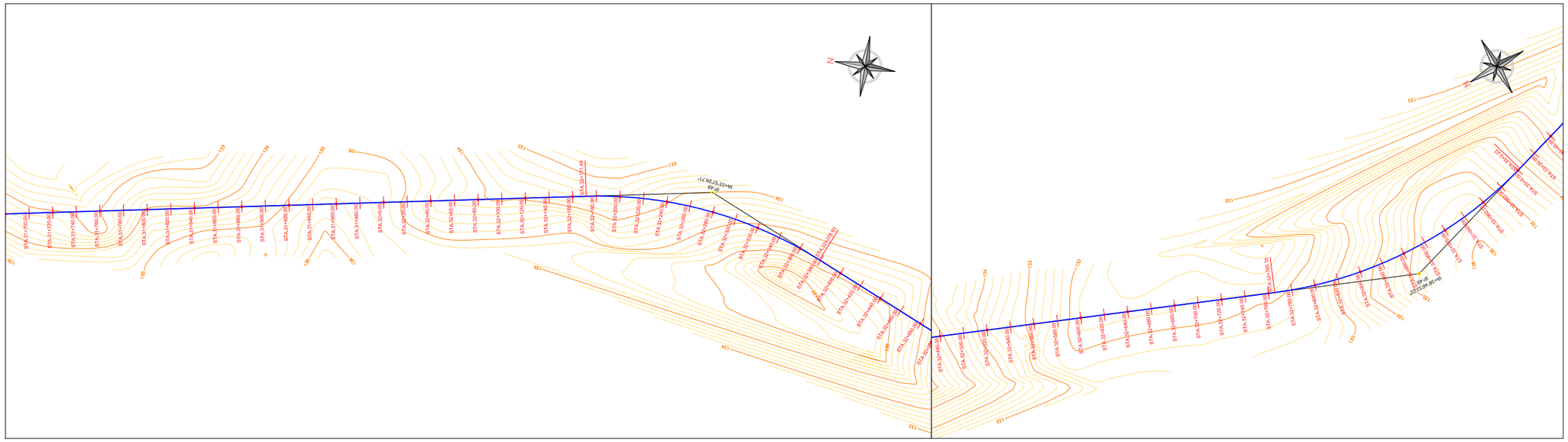
General and Profile Plan of Main Canal 1 (24/26)

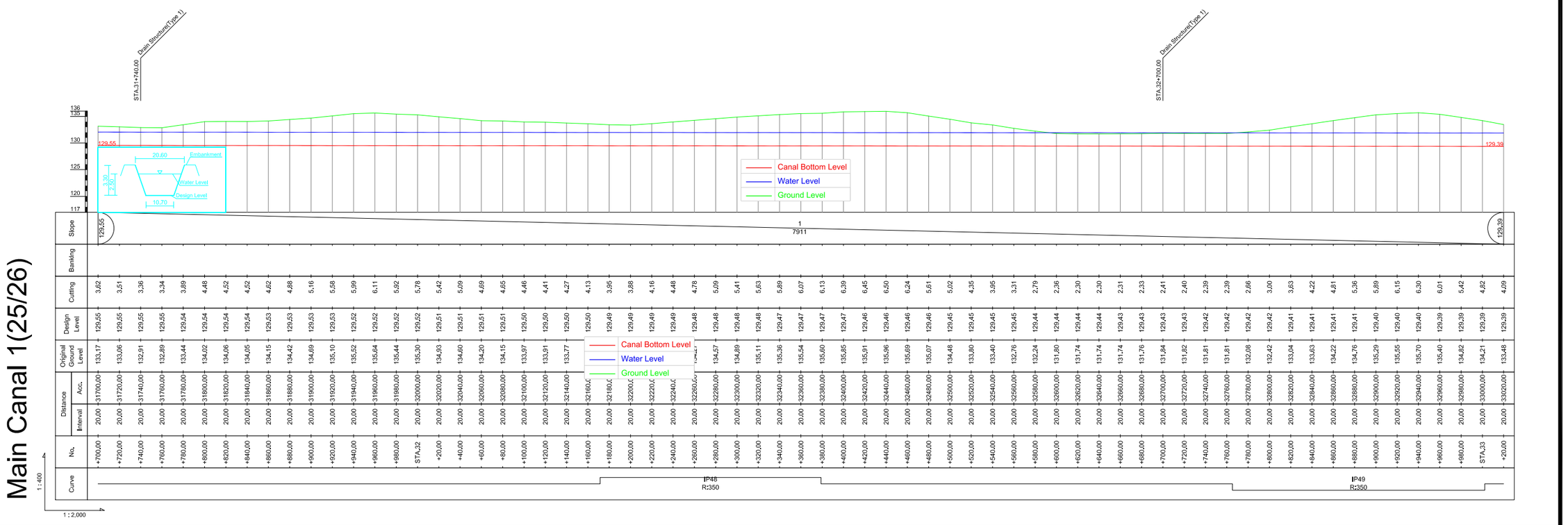




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (24/26)	DATE DECEMBER 2016	DRG No B-024

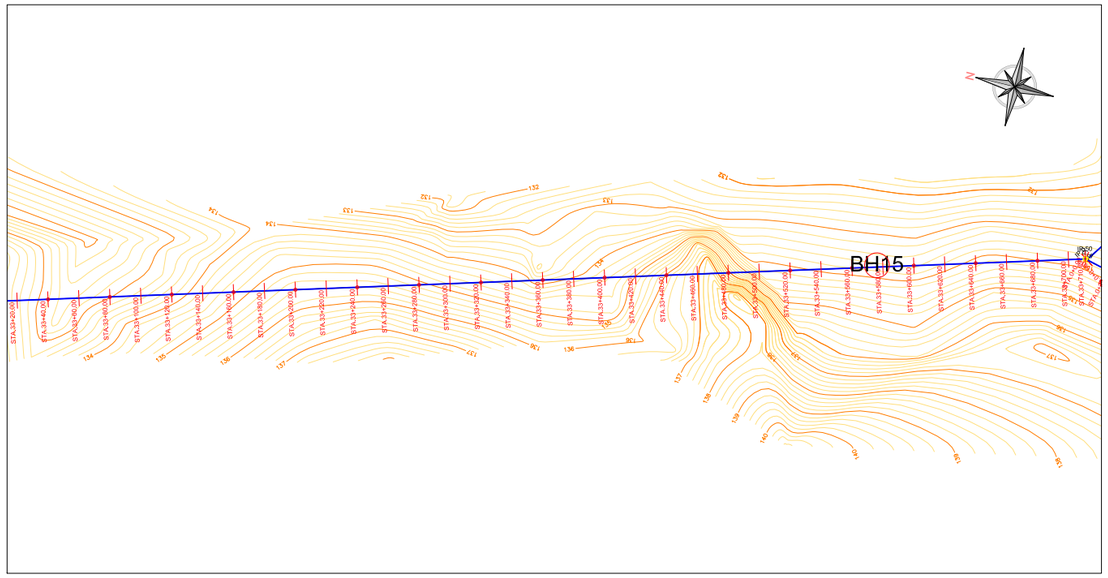
General and Profile Plan of Main Canal 1 (25/26)



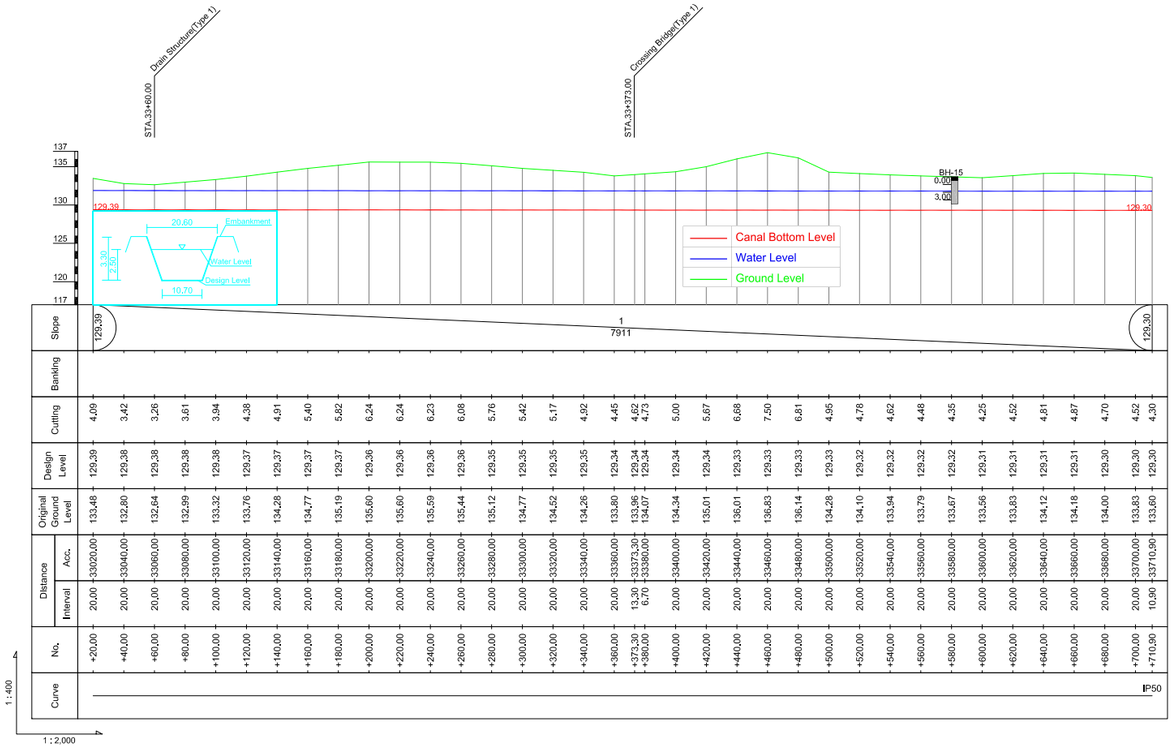


CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main 1 Canal (25/26)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-025

General and Profile Plan of Main Canal 1 (26/26)

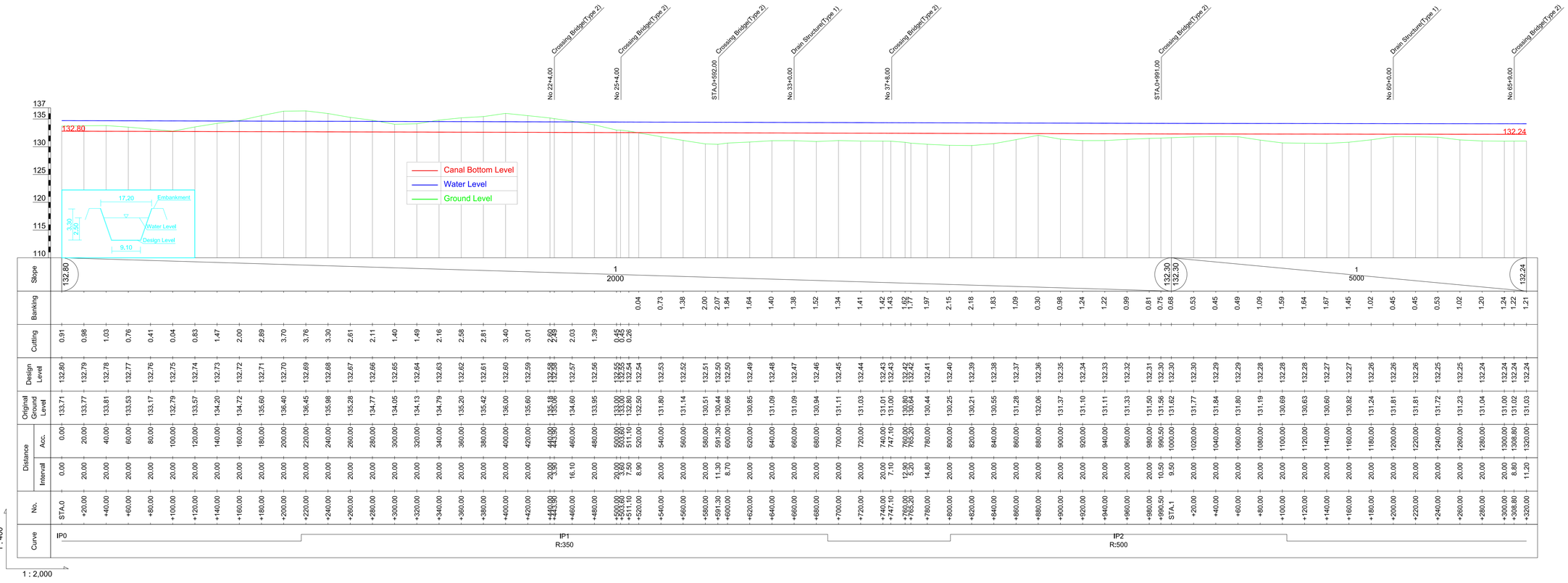


Main Canal 1 (26/26)



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main 1 Canal (26/26)	DATE DECEMBER 2016	DRG No B-026

General and Profile Plan of Main Canal 2 (1/14)



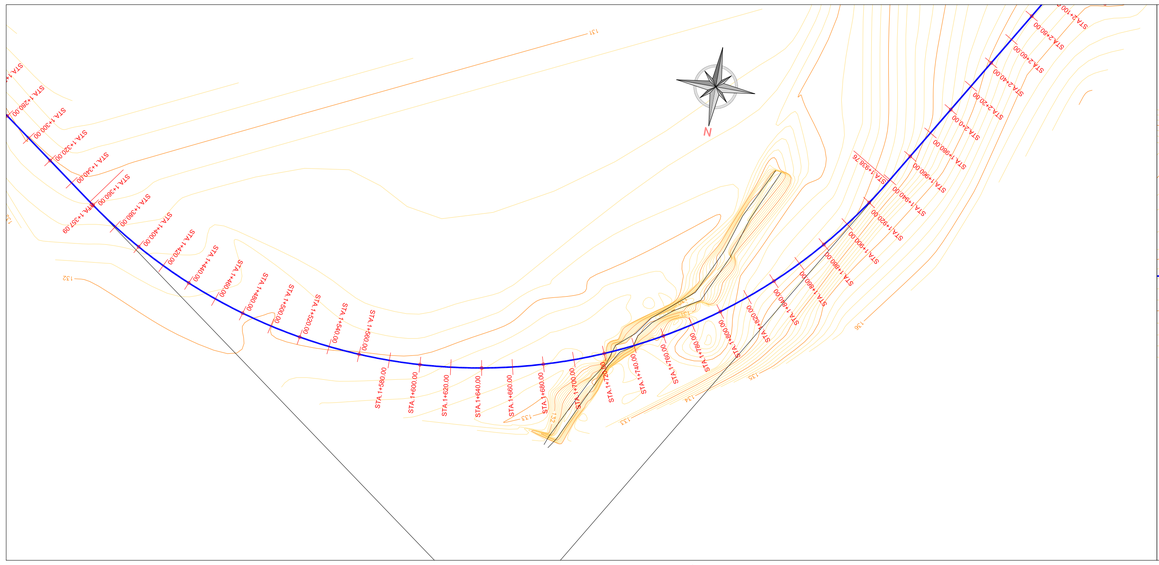
Main Canal 2(1/14)

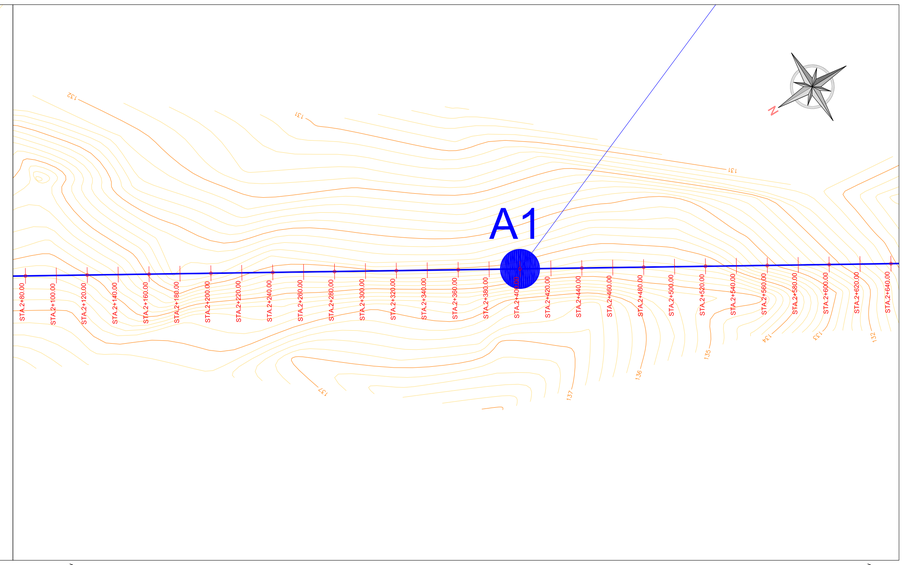
1 : 400

1 : 2,000

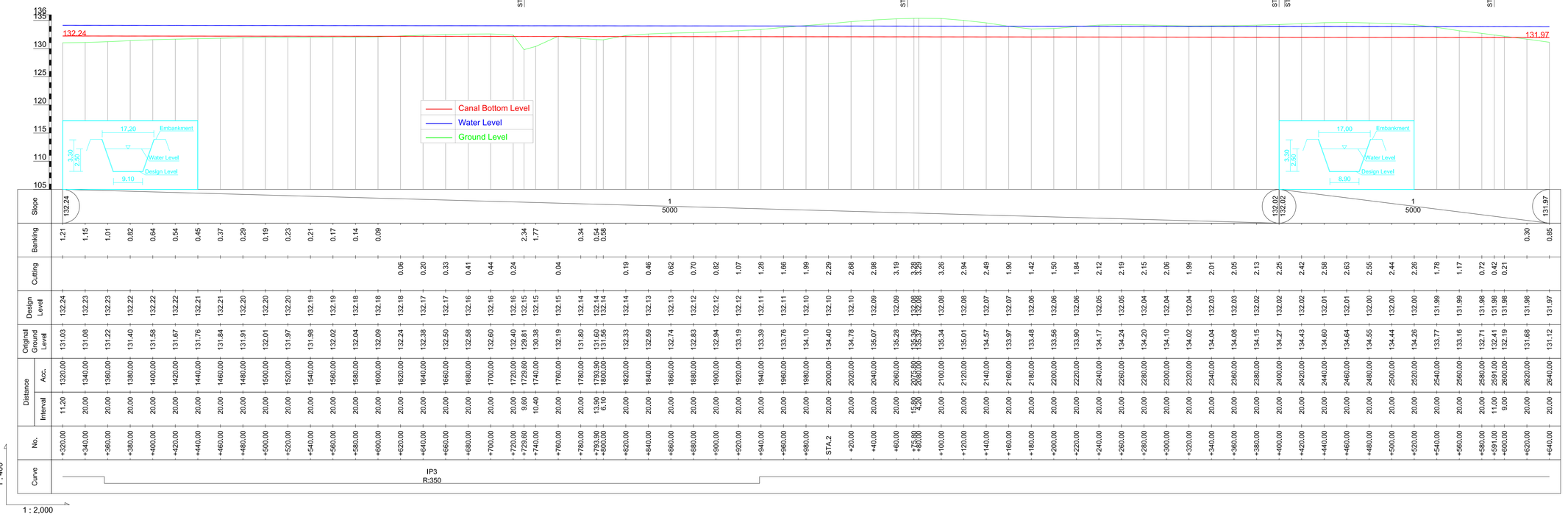
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main Canal 2 (1/14)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-027

General and Profile Plan of Main Canal 2 (2/14)



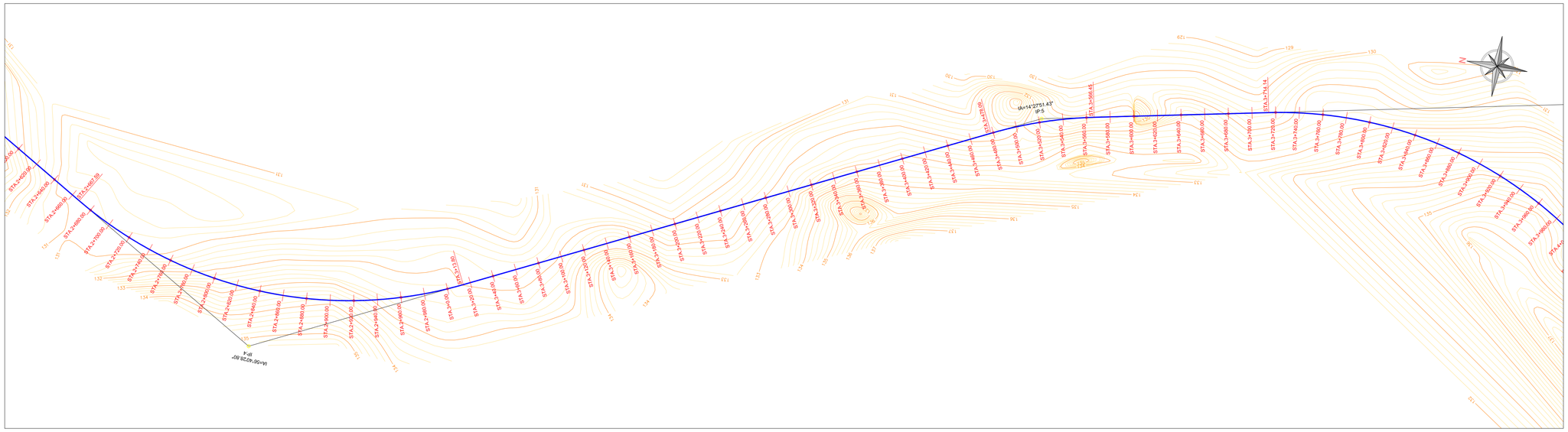


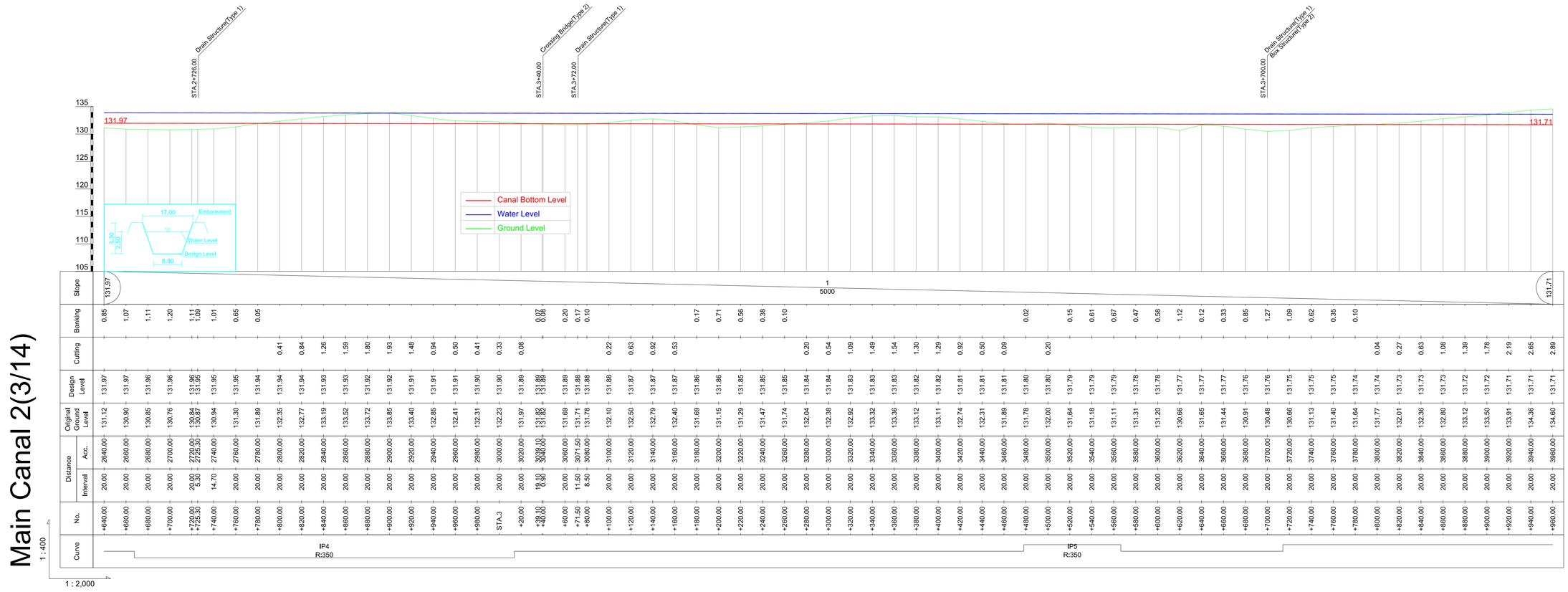
Main Canal 2(2/14)



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main Canal 2 (2/14)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-028

General and Profile Plan of Main Canal 2 (3/14)

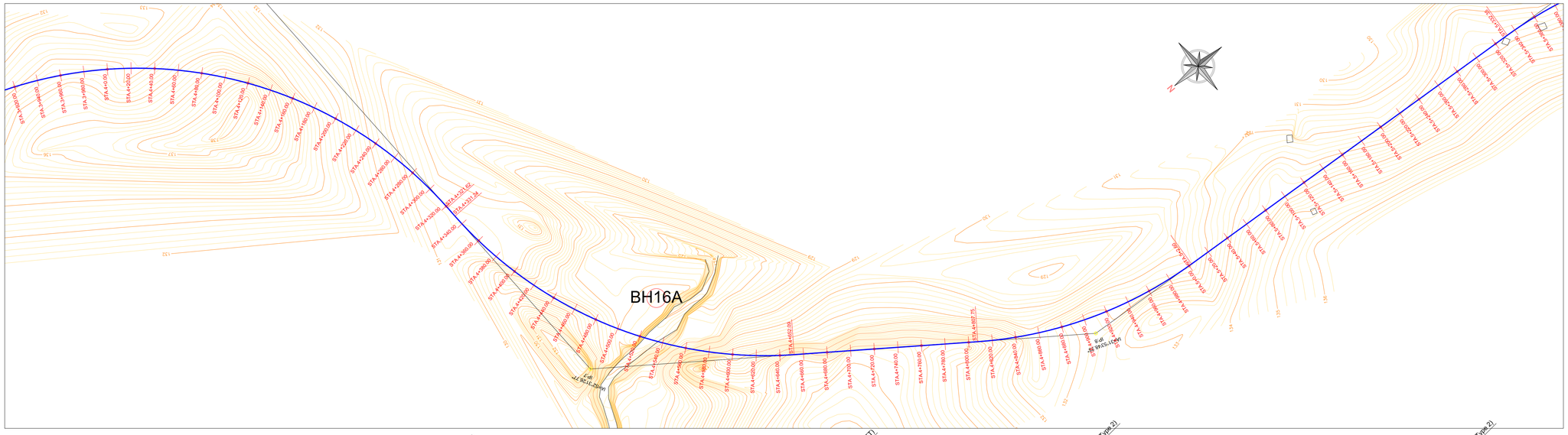


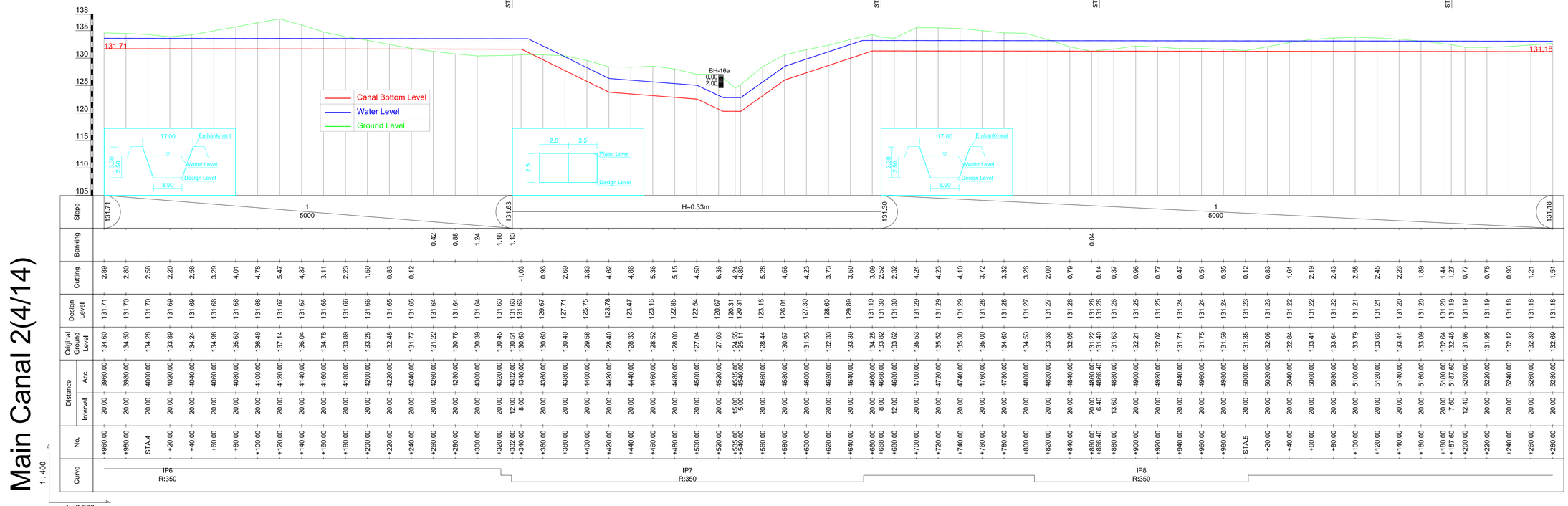


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (3/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-029	

General and Profile Plan of Main Canal 2 (4/14)





Main Canal 2(4/14)

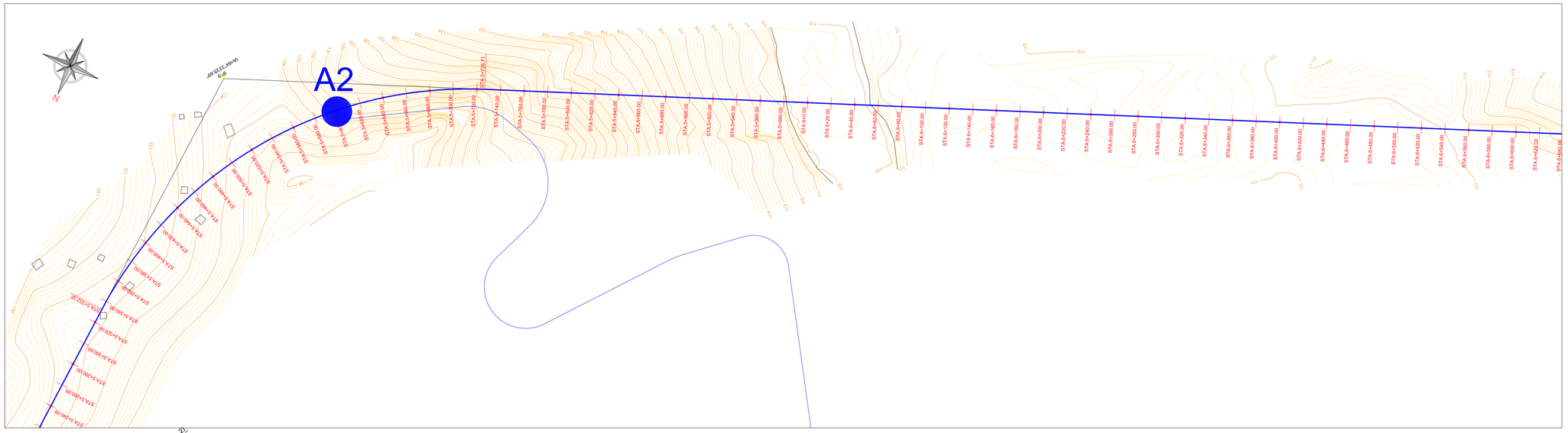
1 : 400

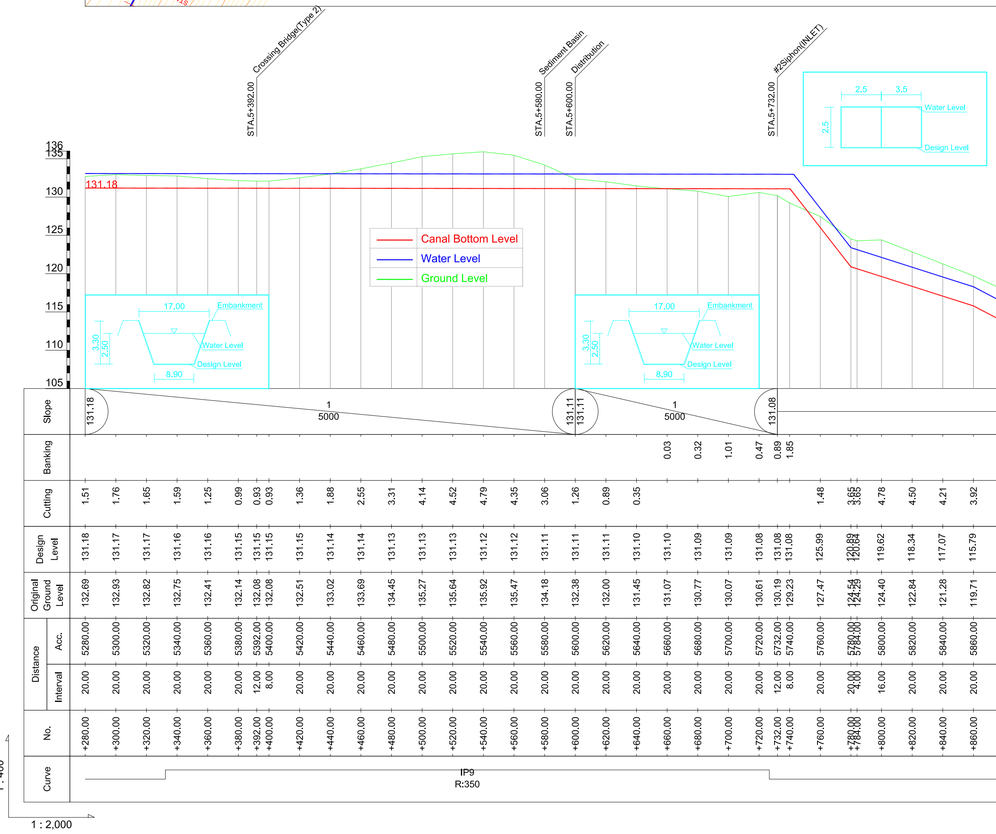
1 : 2,000

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (4/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-030	

General and Profile Plan of Main Canal 2 (5/14)





Main Canal 2(5/14)

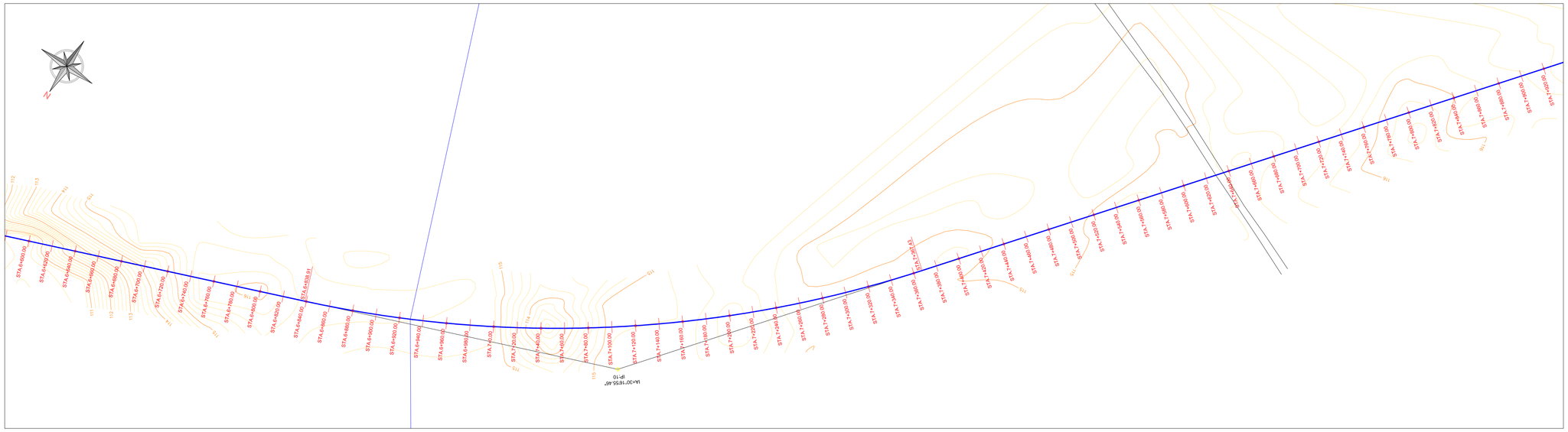
1 : 400

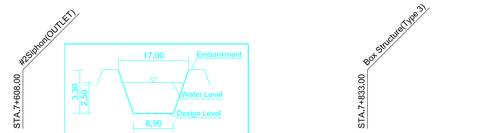
1 : 2,000

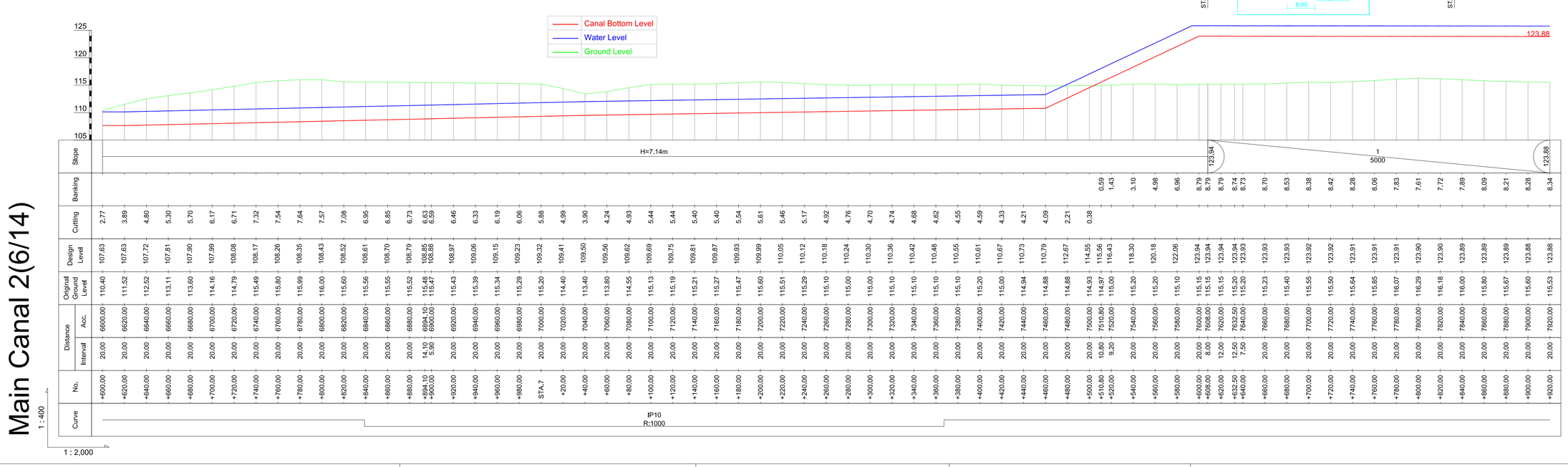
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (5/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-031	

General and Profile Plan of Main Canal 2 (6/14)

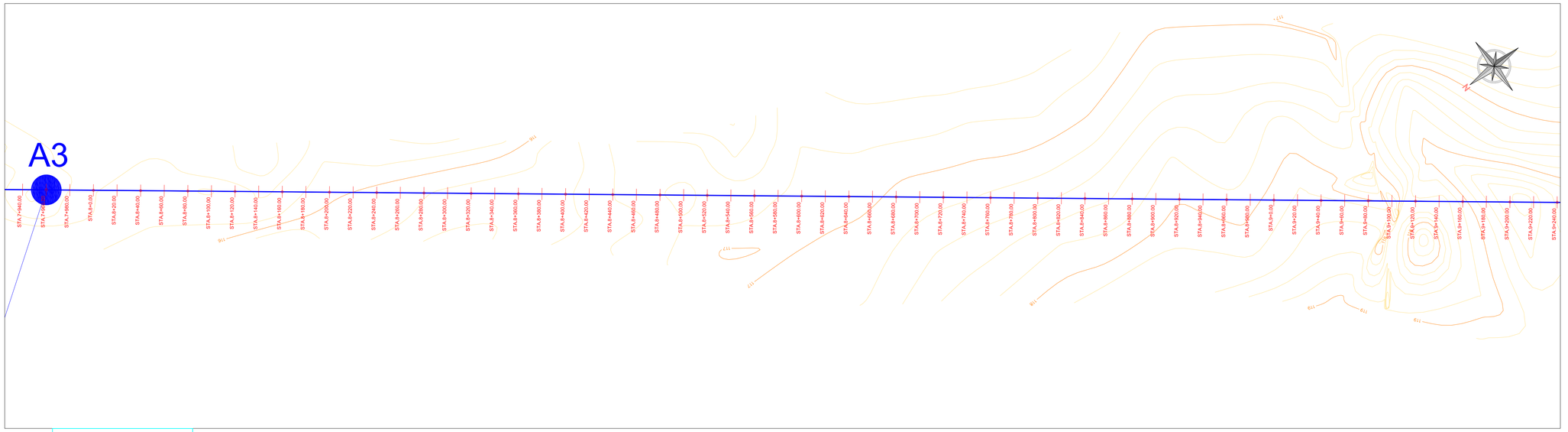


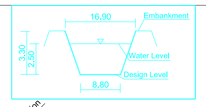




CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General and Profile Plan of Main Canal 2 (6/14)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 2,000 Ver 1 : 400 DRG No B-032

General and Profile Plan of Main Canal 2 (7/14)

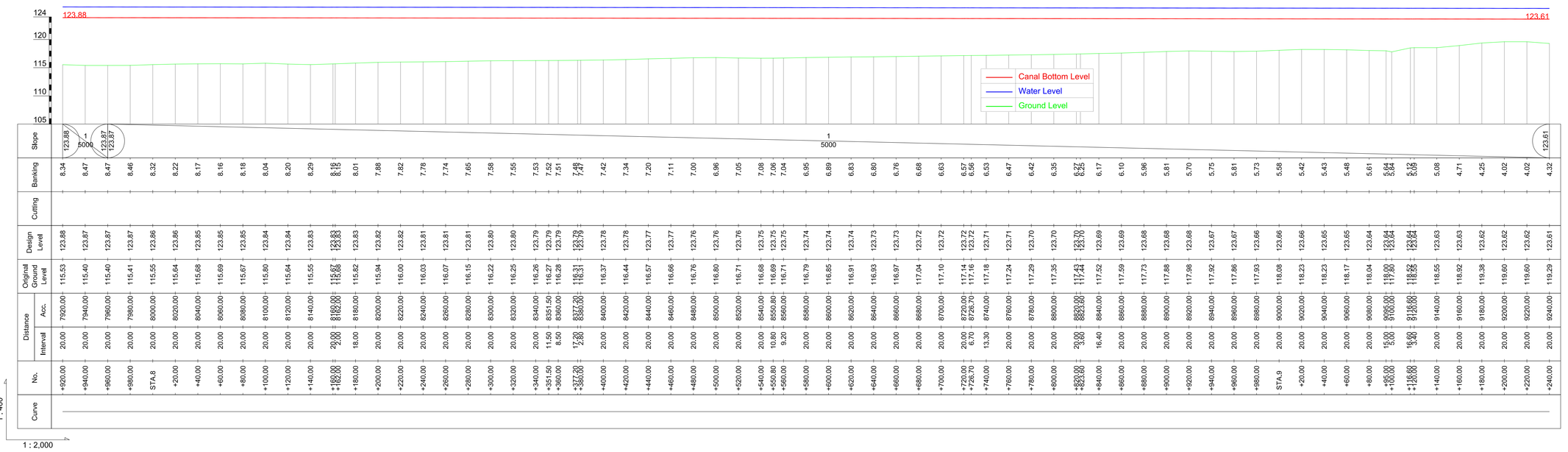




Distribution Weir
Box Structure(Type 2)
Box Structure(Type 3)
Box Structure(Type 2)
Box Structure(Type 2)
Box Structure(Type 3)
Box Structure(Type 2)

STA.7+960.00
STA.7+965.00
STA.8+162.00
STA.8+352.00
STA.8+377.00
STA.8+550.00
STA.8+727.00
STA.9+95.00

Main Canal 2(7/14)

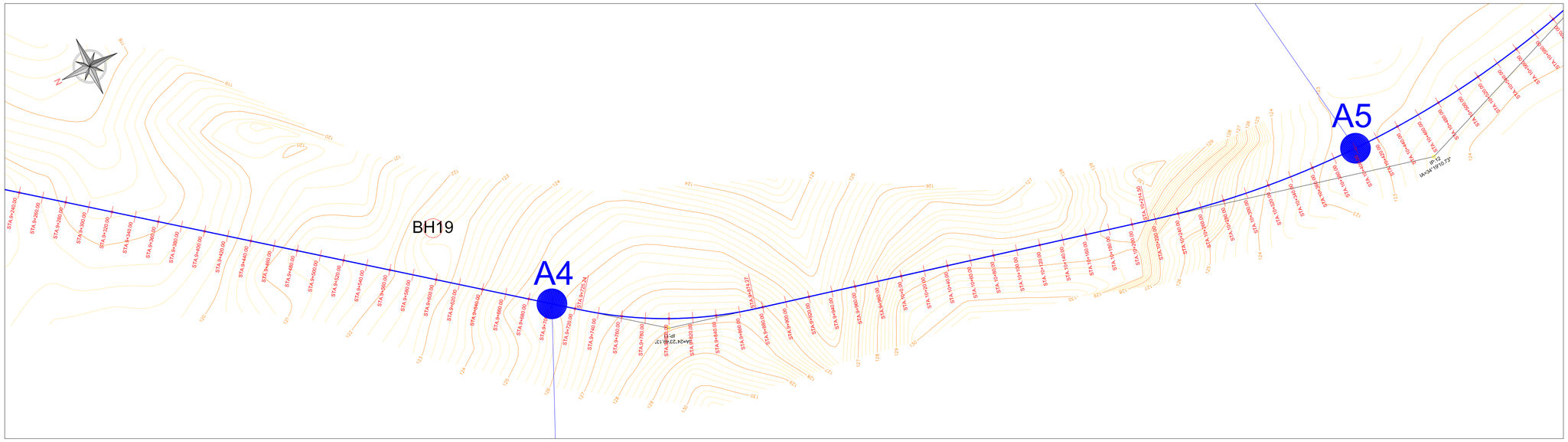


1 : 400
1 : 2,000

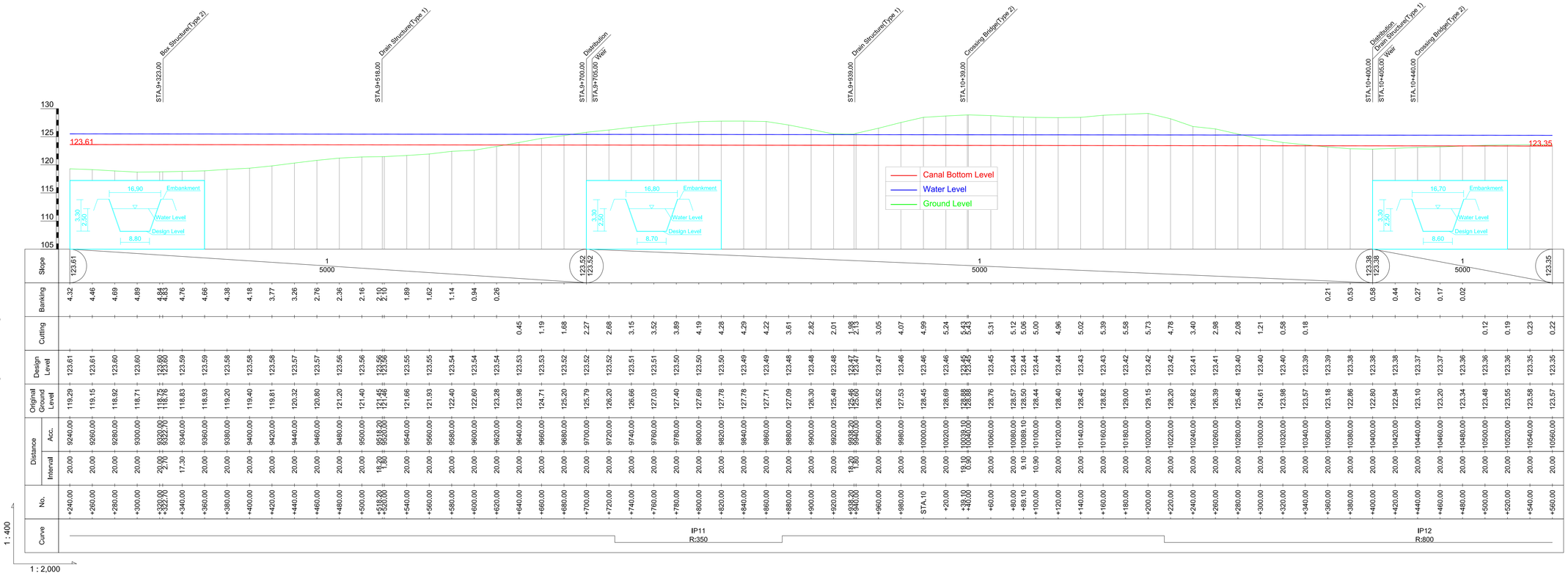
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (7/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-033	

General and Profile Plan of Main Canal 2 (8/14)



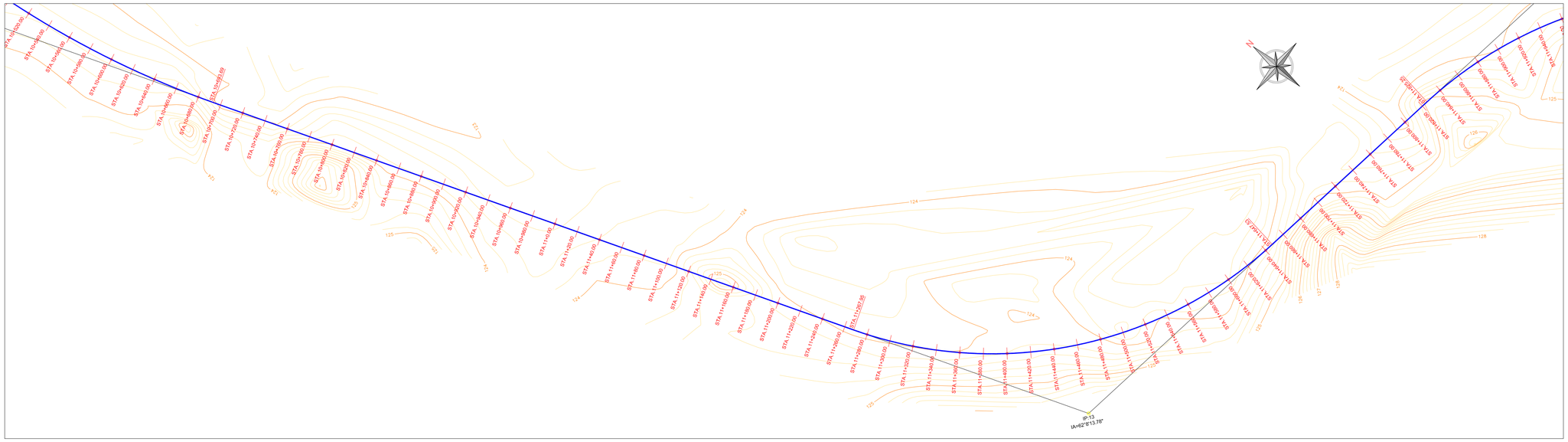
Main Canal 2(8/14)



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (8/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-034	

General and Profile Plan of Main Canal 2 (9/14)



STA.10+574.00 Drain Structure(Type 1)
STA.10+612.00 Crossing Bridge(Type 2)
STA.10+838.00 Crossing Bridge(Type 2)
STA.10+983.00 Drain Structure(Type 1)
STA.11+224.00 Crossing Bridge(Type 2)
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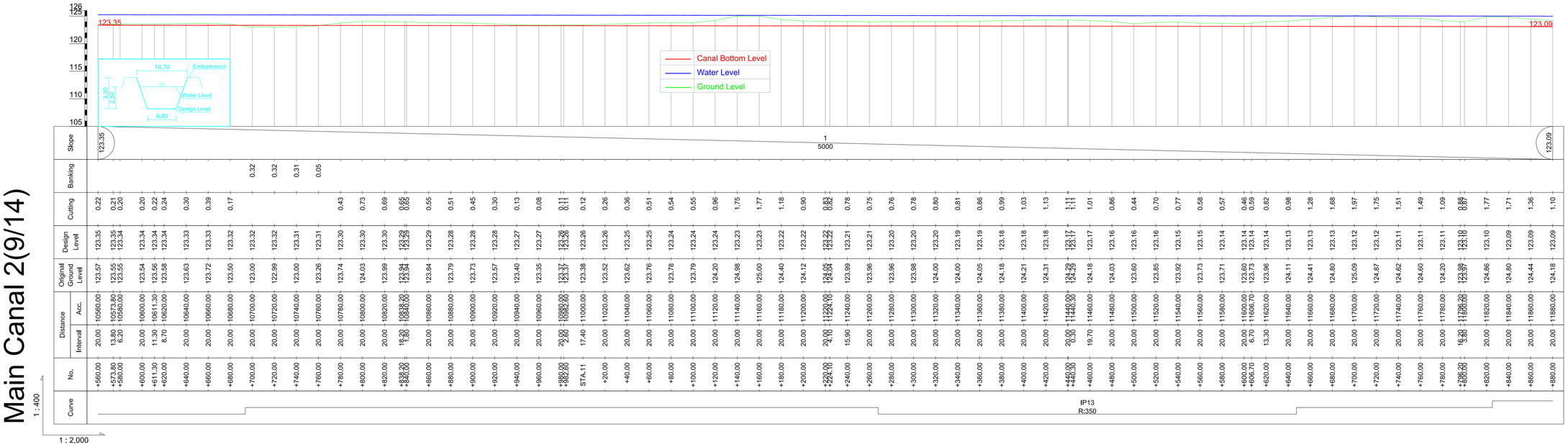
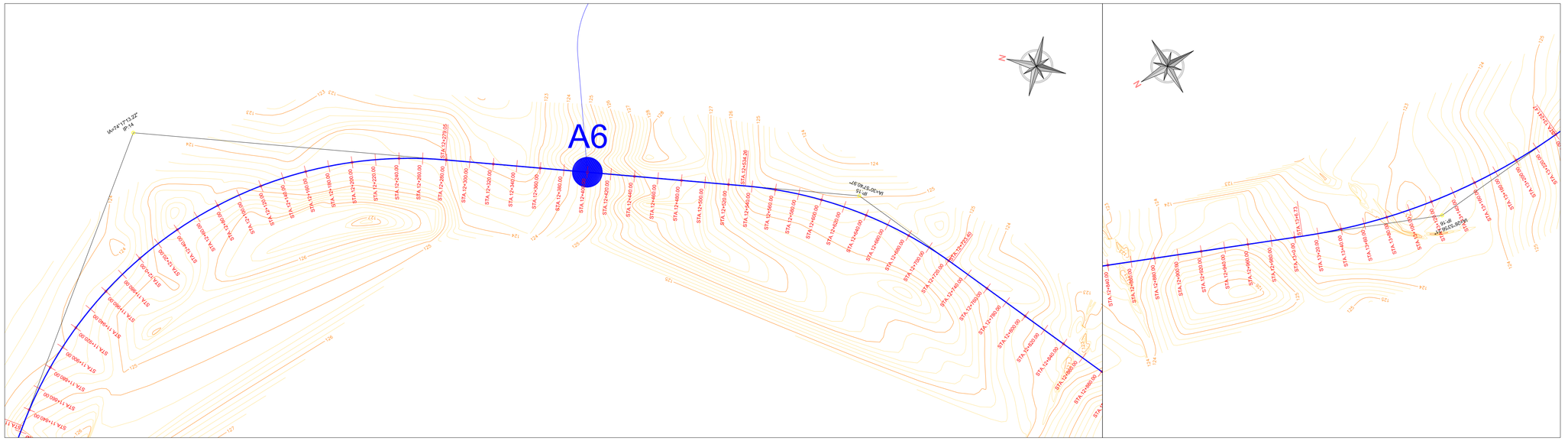
Main Canal 2(9/14)

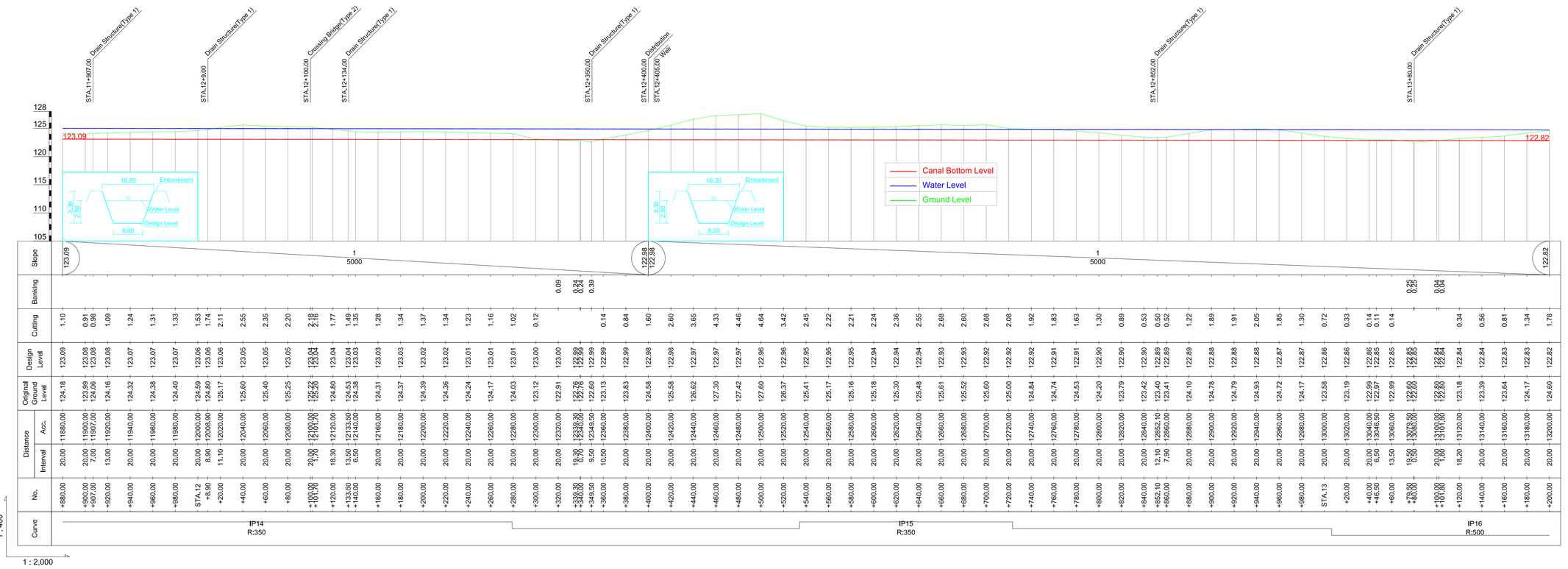


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (9/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-035	

General and Profile Plan of Main Canal 2 (10/14)





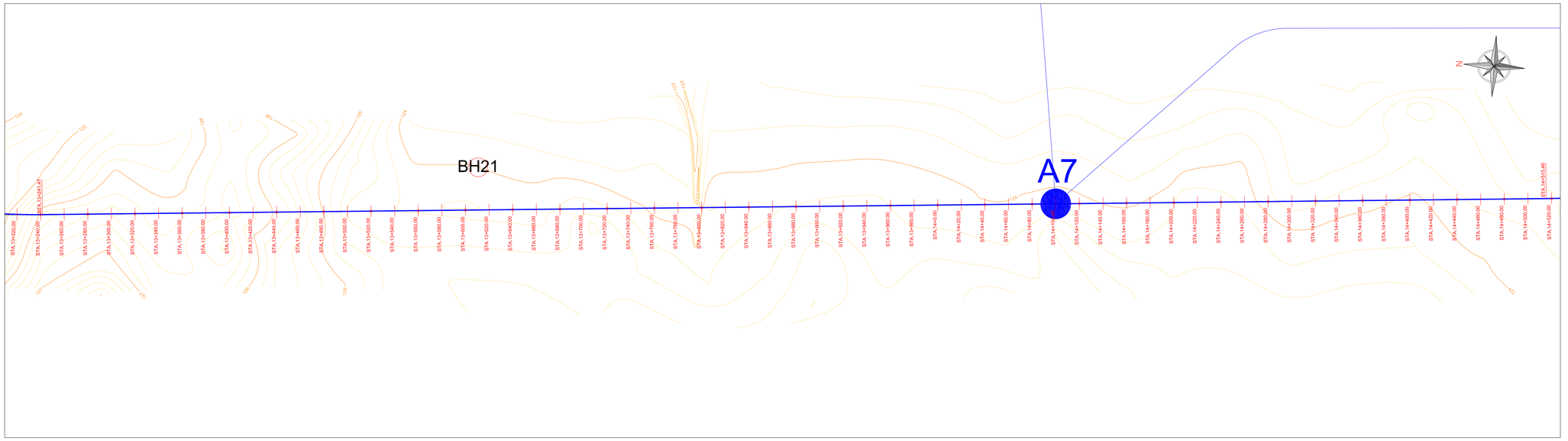
Main Canal 2(10/14)

1 : 400

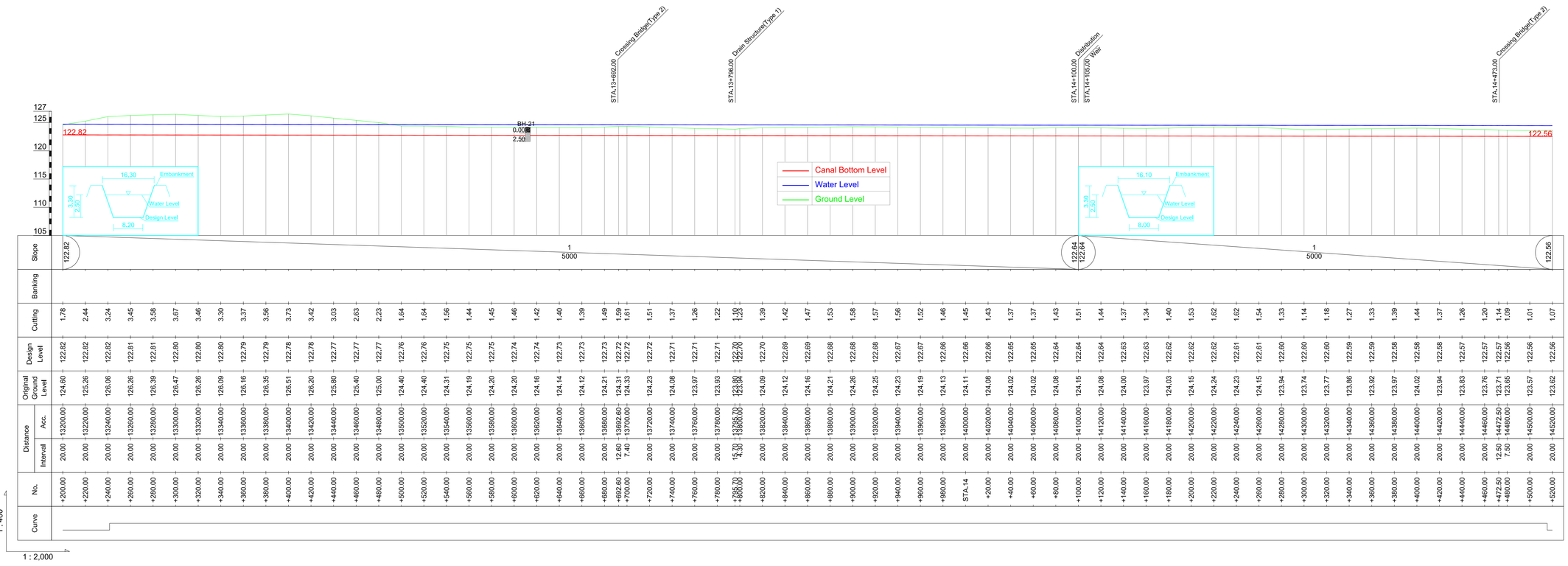
1 : 2,000

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main Canal 2 (10/14)	DATE DECEMBER 2016	DRG No B-036

General and Profile Plan of Main Canal 2 (11/14)



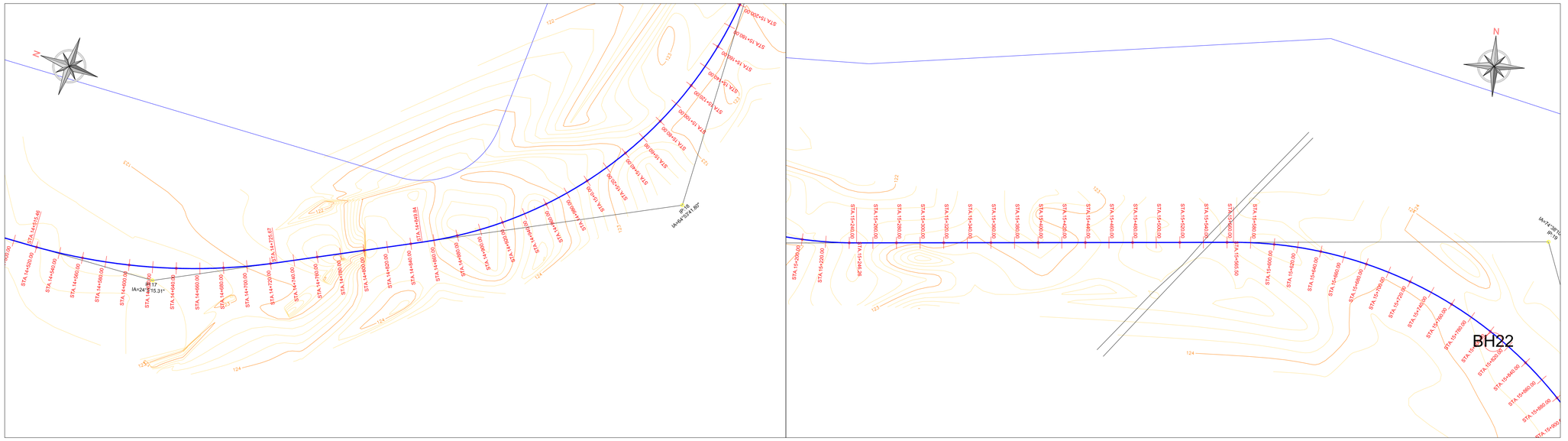
Main Canal 2(11/14)



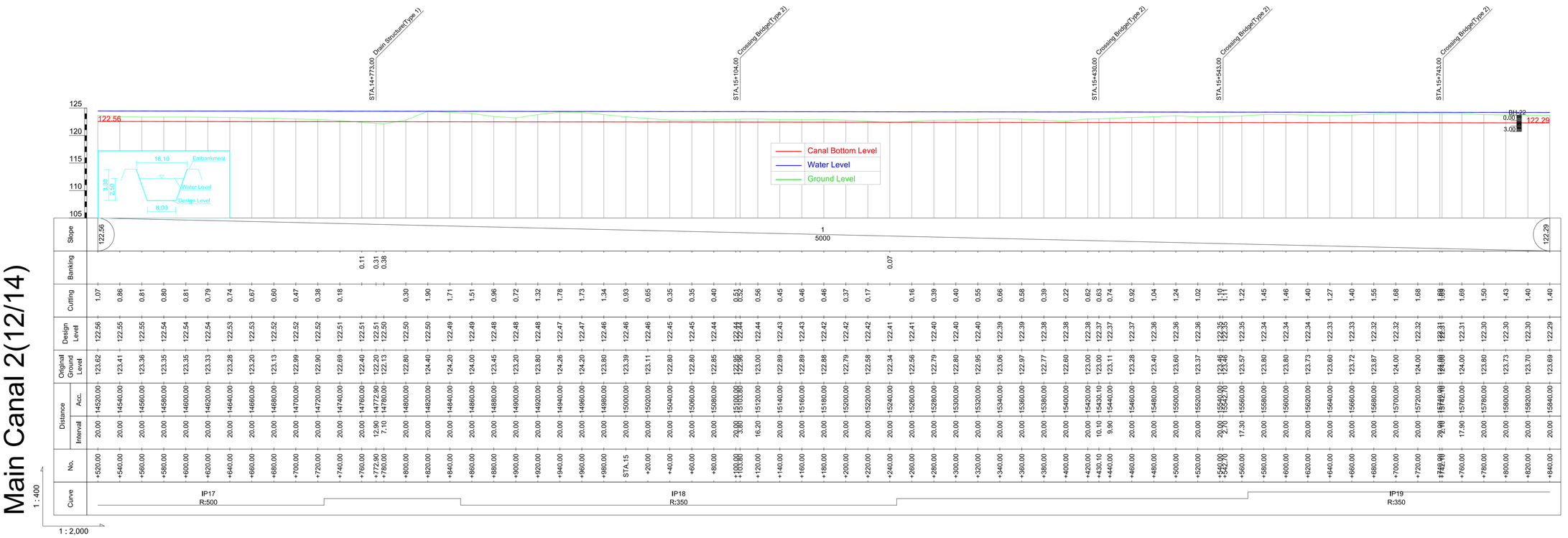
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (11/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-037	

General and Profile Plan of Main Canal 2 (12/14)



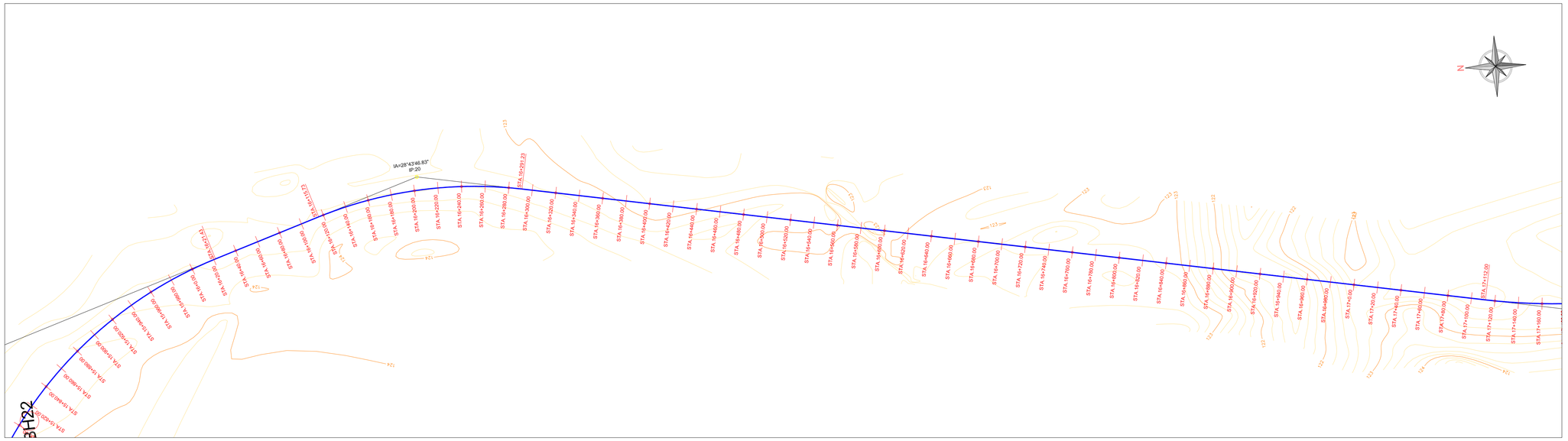
Main Canal 2(12/14)

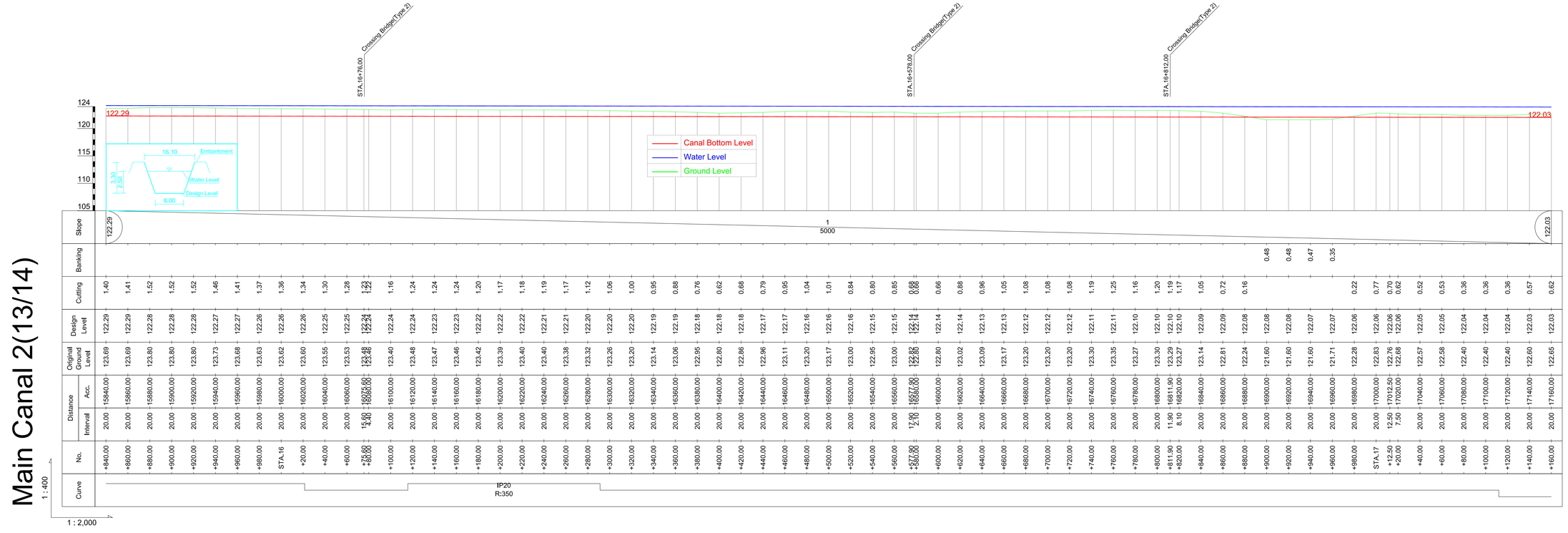


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (12/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-038	

General and Profile Plan of Main Canal 2 (13/14)

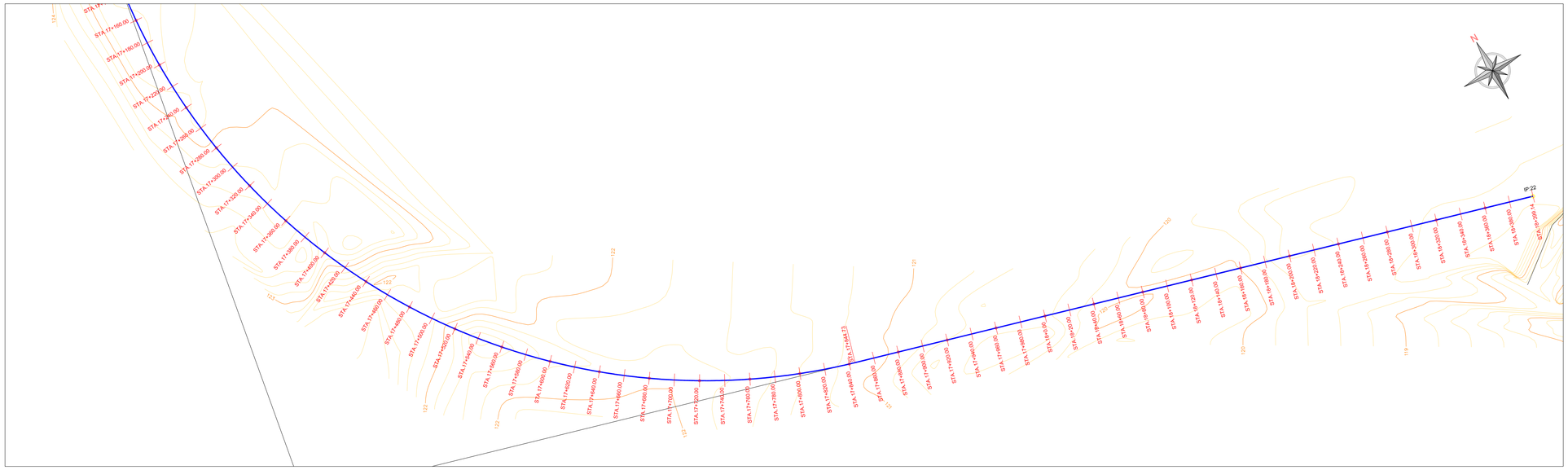




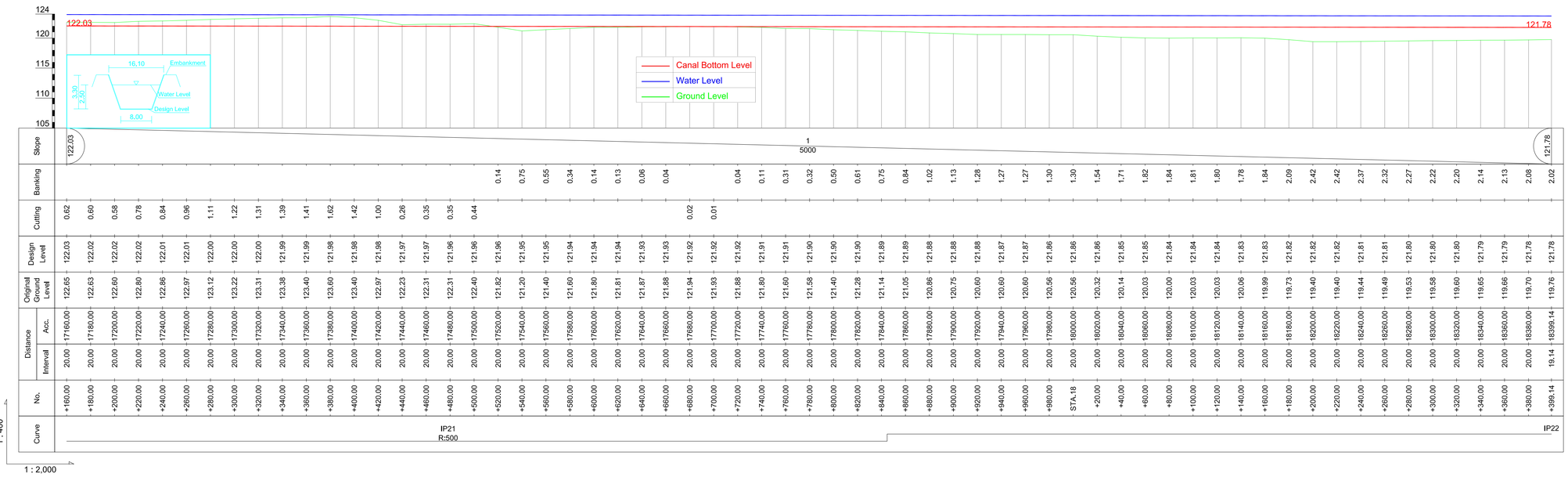
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (13/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-039	

General and Profile Plan of Main Canal 2 (14/14)



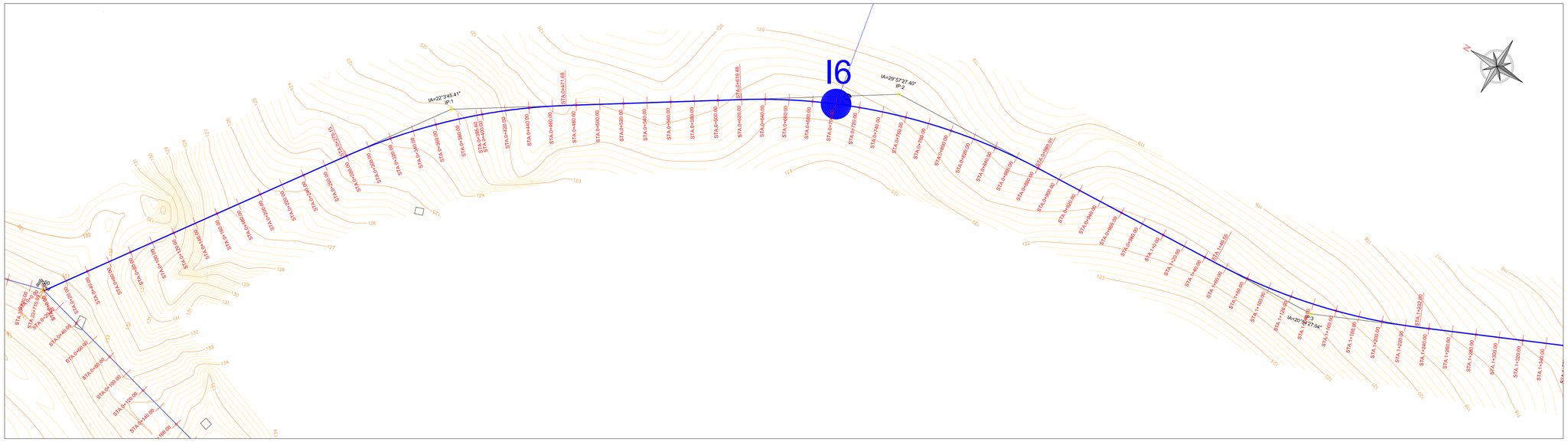
Main Canal 2(14/14)



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 2 (14/14)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-040	

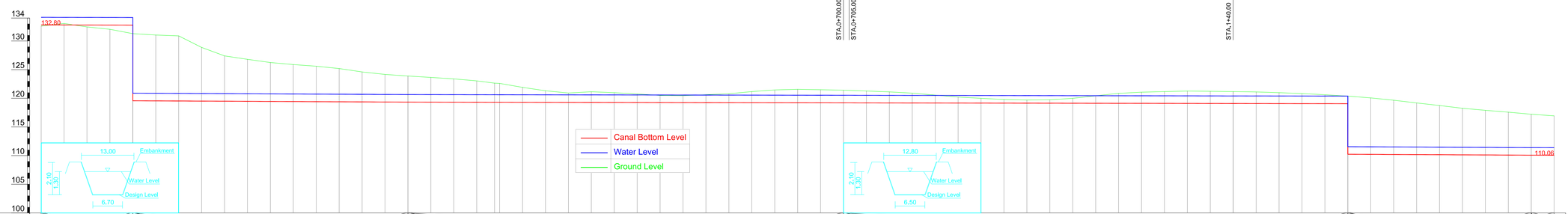
General and Profile Plan of Main Canal 3 (1/9)



Main Canal 3(1/9)

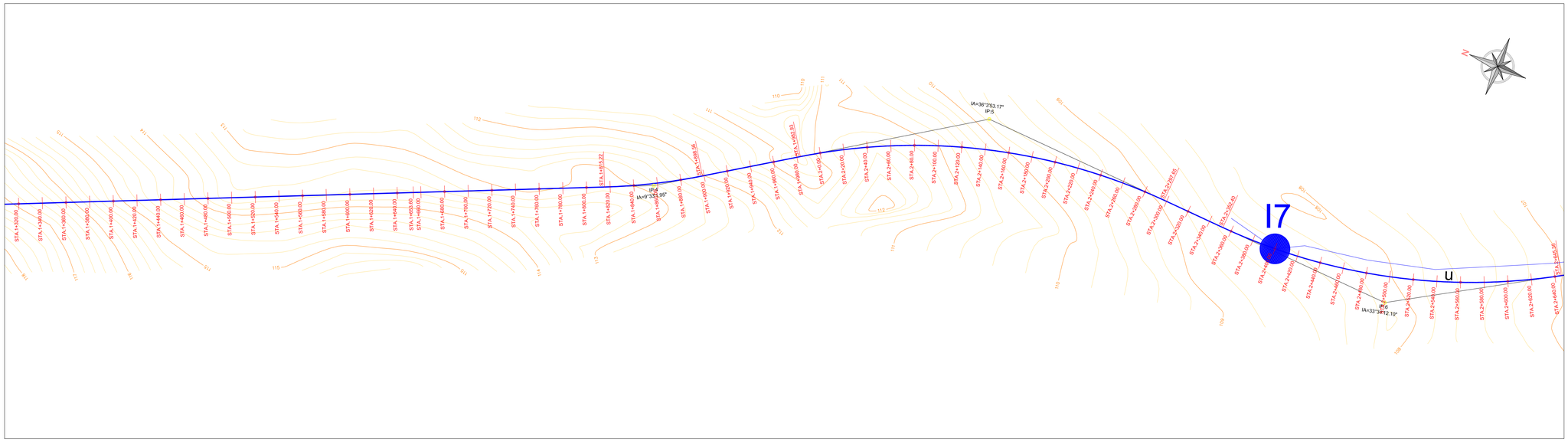
1 : 400

1 : 2,000



| | | |

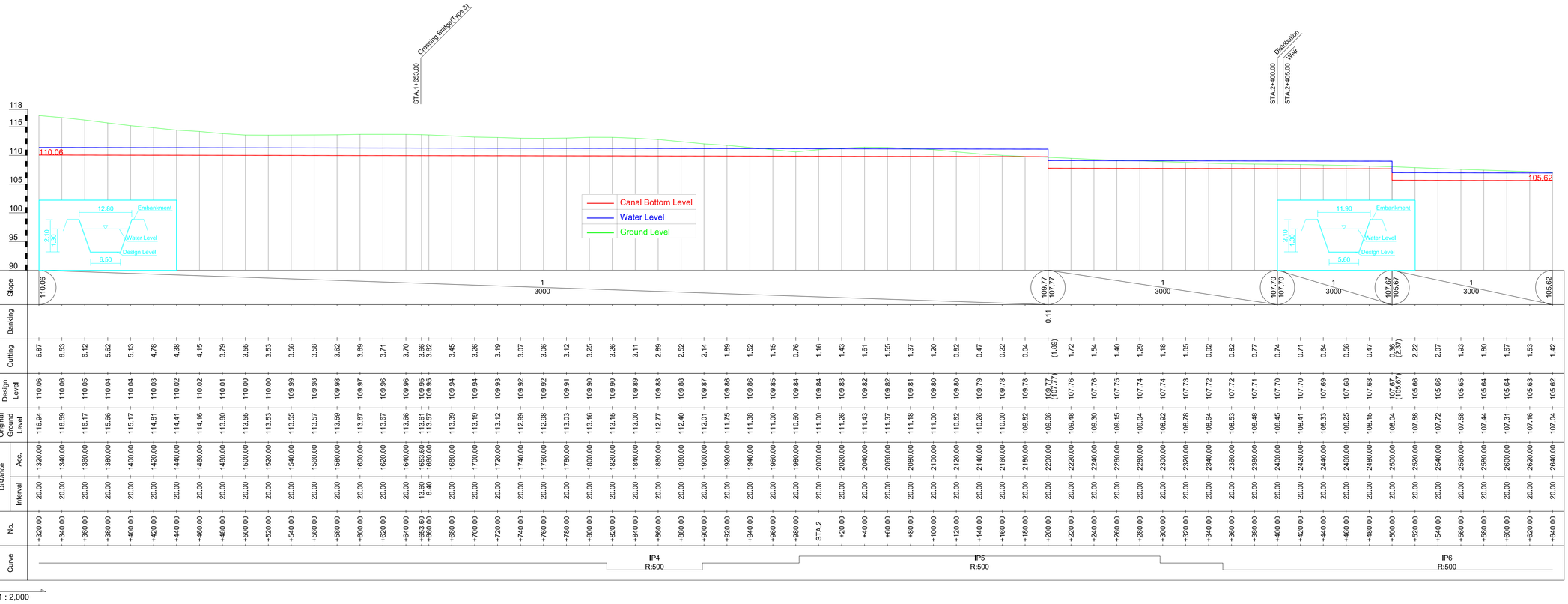
General and Profile Plan of Main Canal 3 (2/9)



Main Canal 3(2/9)

1 : 400

1 : 2,000



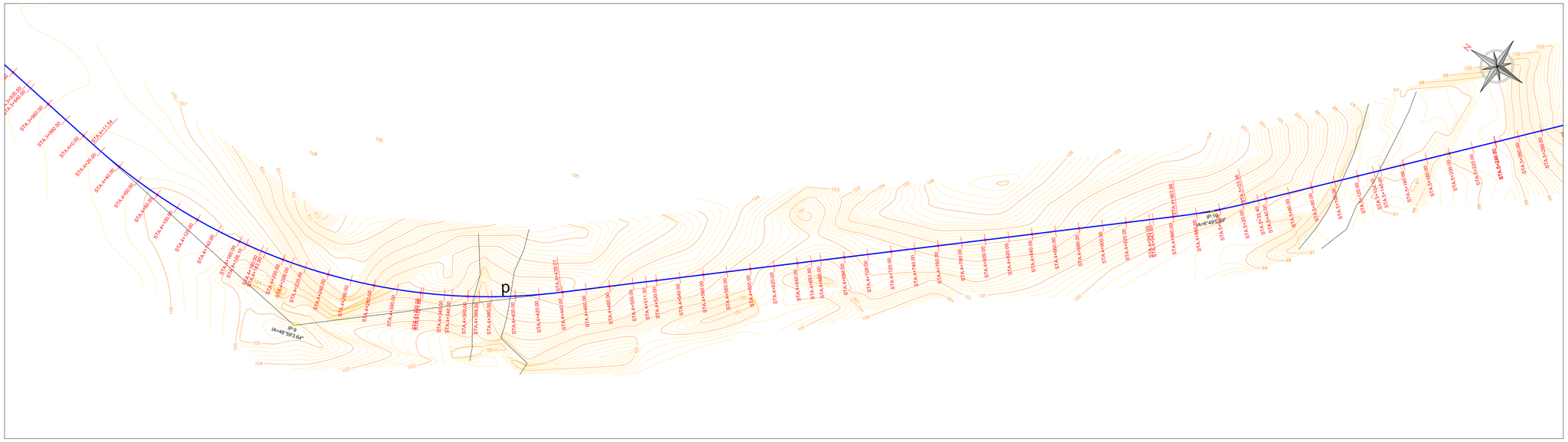
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 3 (2/9)	DATE DECEMBER 2016

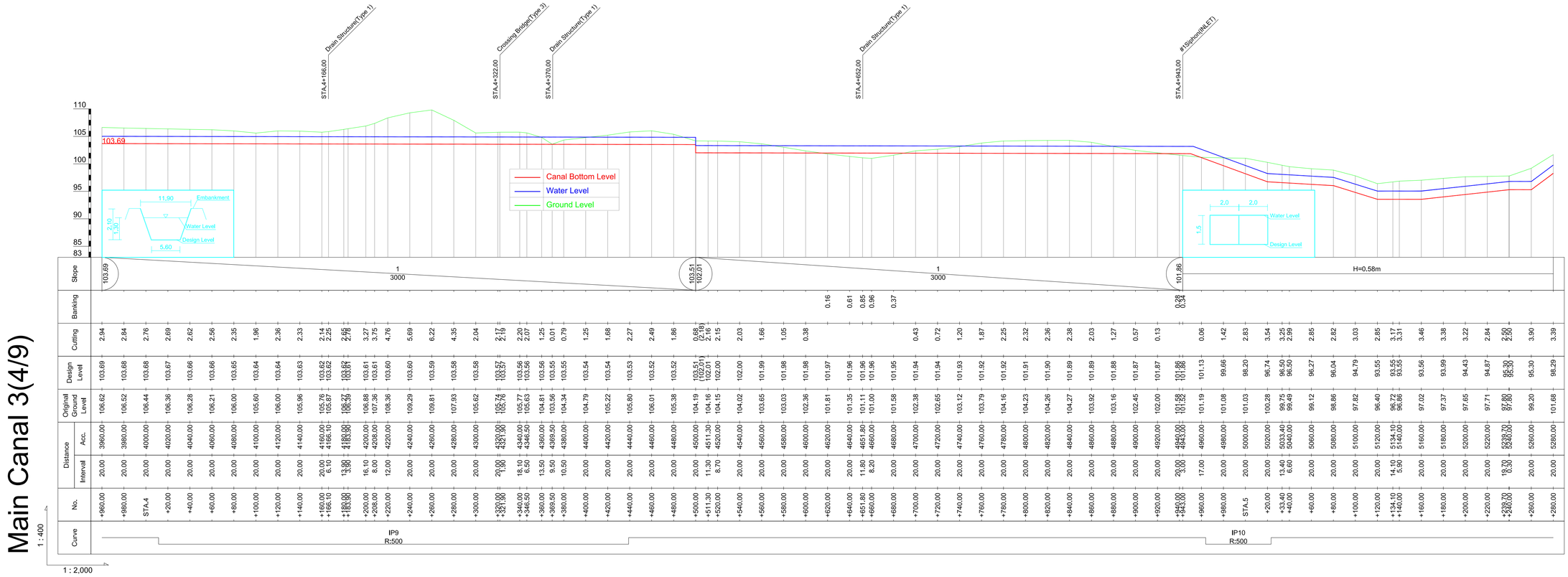
SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-042	

General and Profile Plan of Main Canal 3 (3/9)

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main Canal 3 (3/9)	DATE DECEMBER 2016	DRG No B-043

General and Profile Plan of Main Canal 3 (4/9)





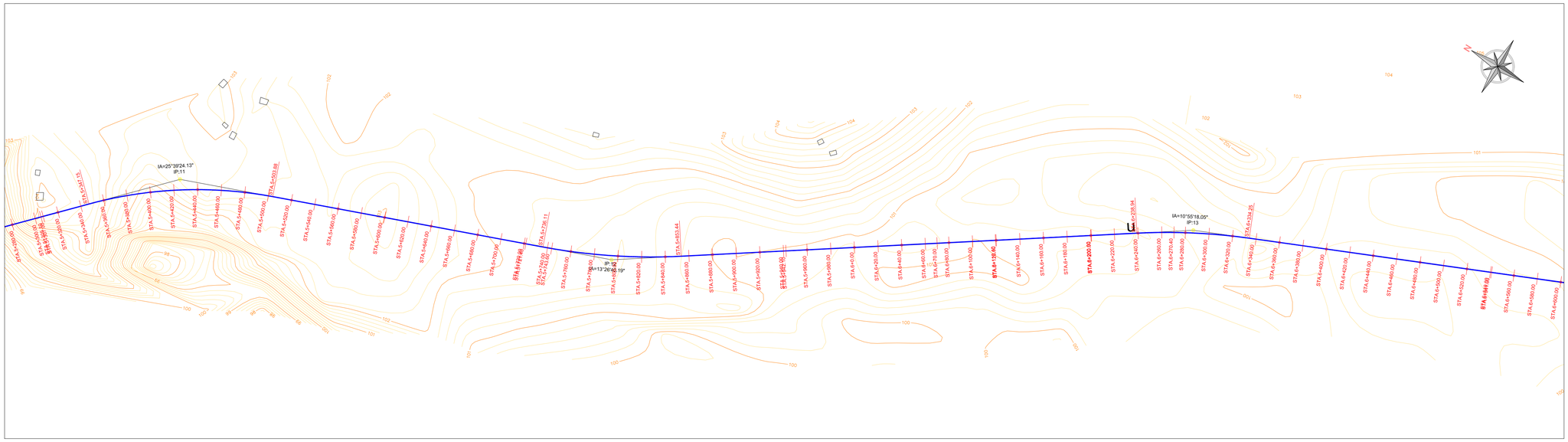
Main Canal 3(4/9)

1 : 400

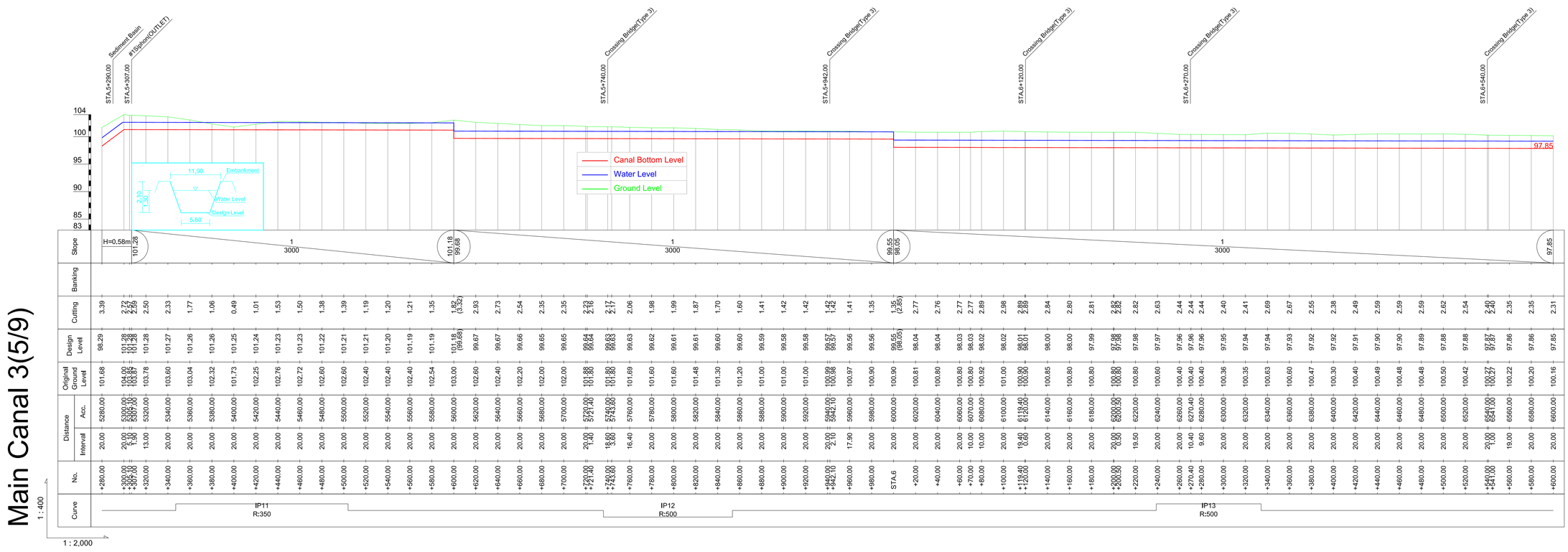
1 : 2,000

CLIENT	REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT
CONSULTANT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer
PROJECT	SHIRE VALLEY IRRIGATION PROJECT
ORIGINAL DESIGNED BY	Technical Feasibility Study
SCALE	Hor 1 : 2,000 Ver 1 : 400
TITLE	General and Profile Plan of Main Canal 3 (4/9)
DATE	DECEMBER 2016
DRG No	B-044

General and Profile Plan of Main Canal 3 (5/9)



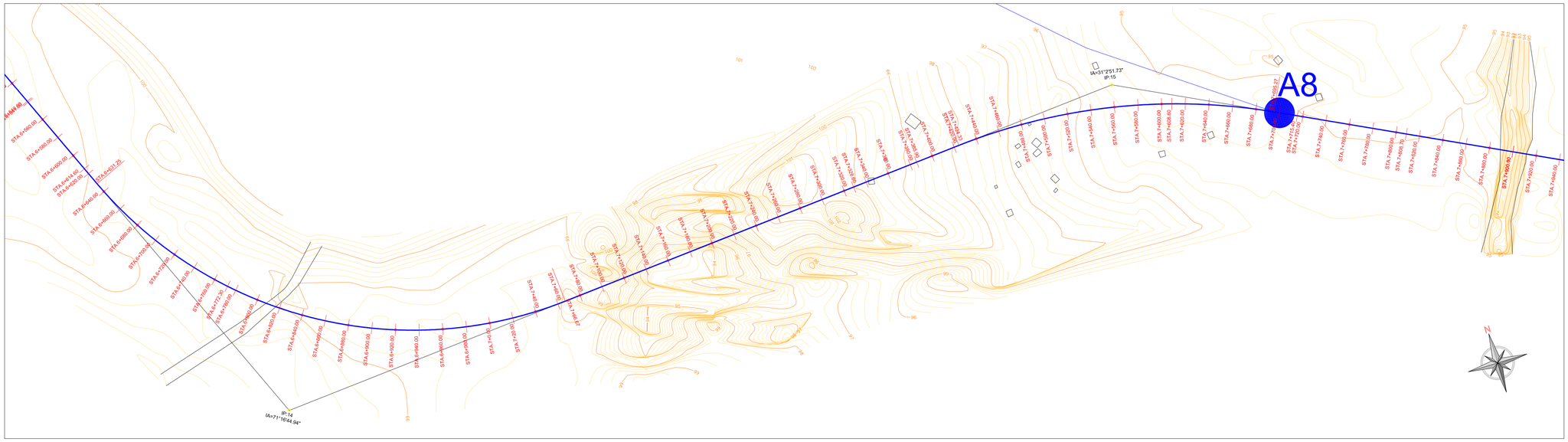
Main Canal 3(5/9)

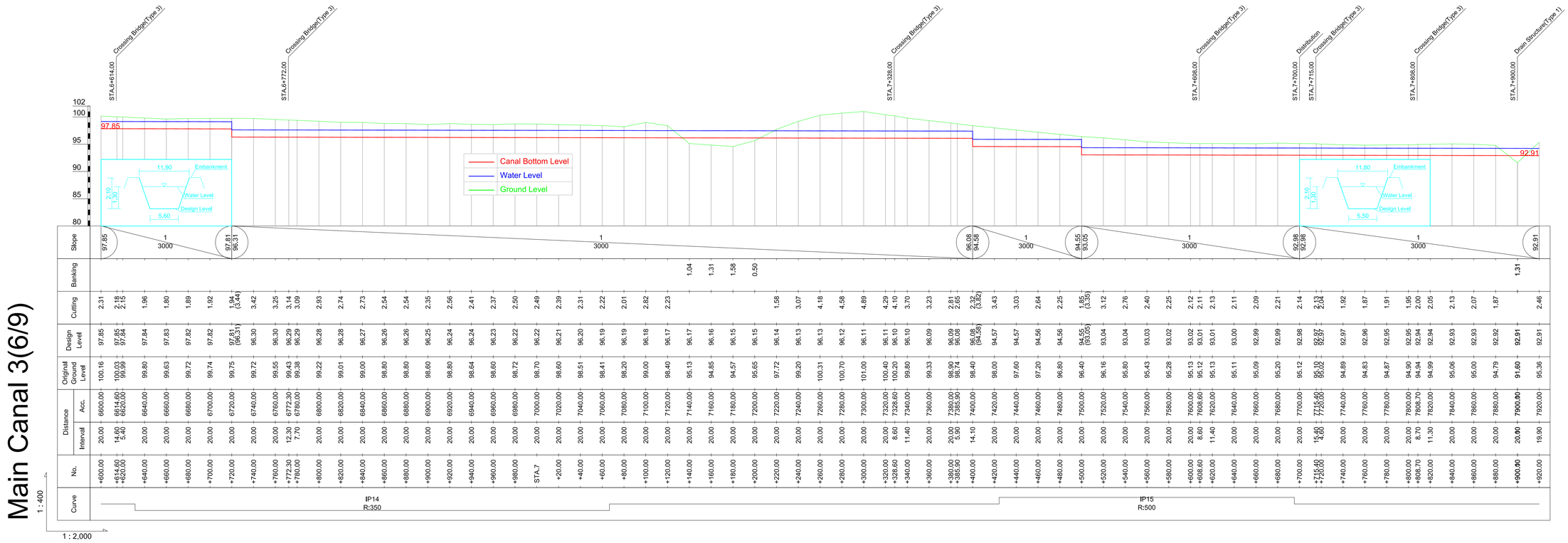


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 3 (5/9)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-045	

General and Profile Plan of Main Canal 3 (6/9)

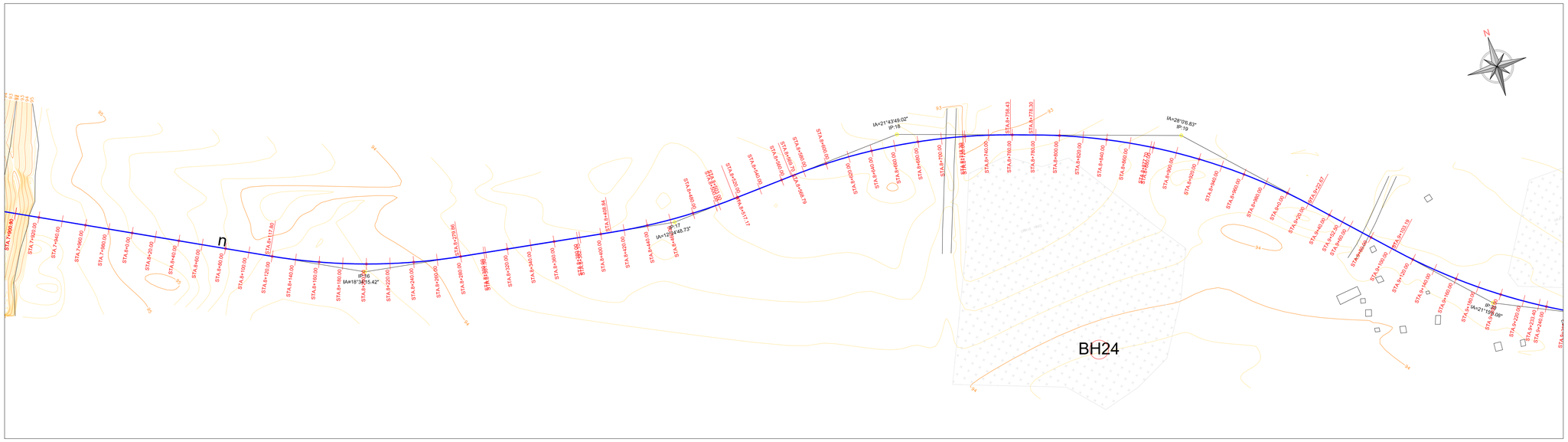


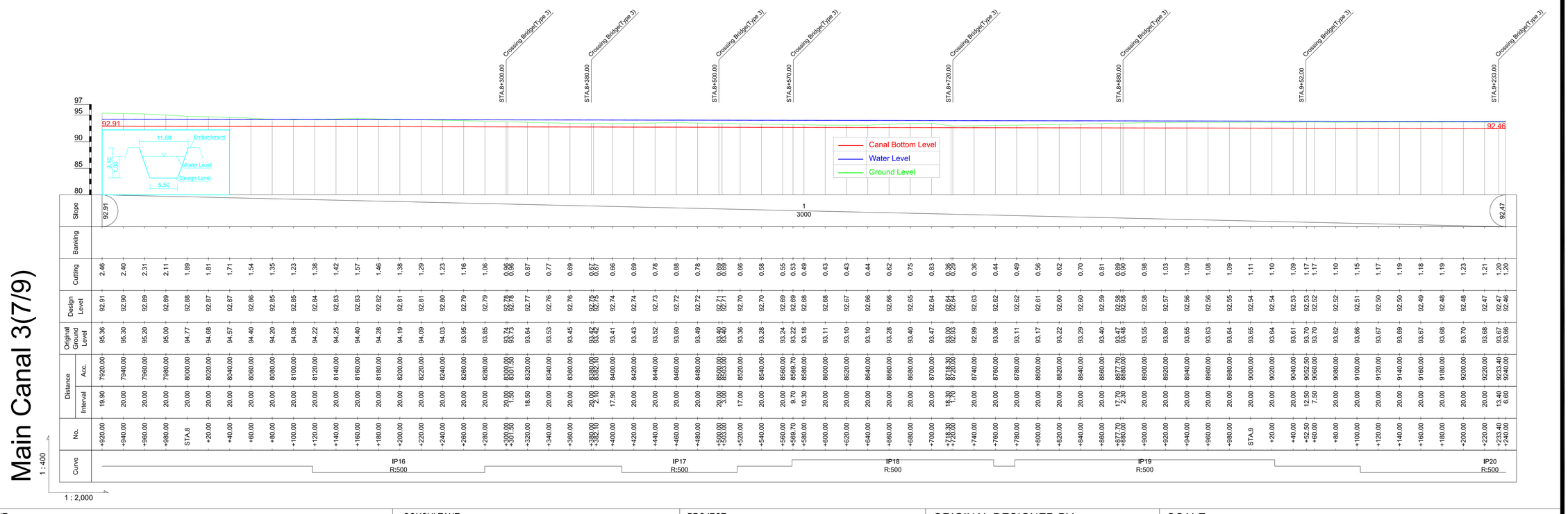


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 3 (6/9)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-046	

General and Profile Plan of Main Canal 3 (7/9)





CLIENT

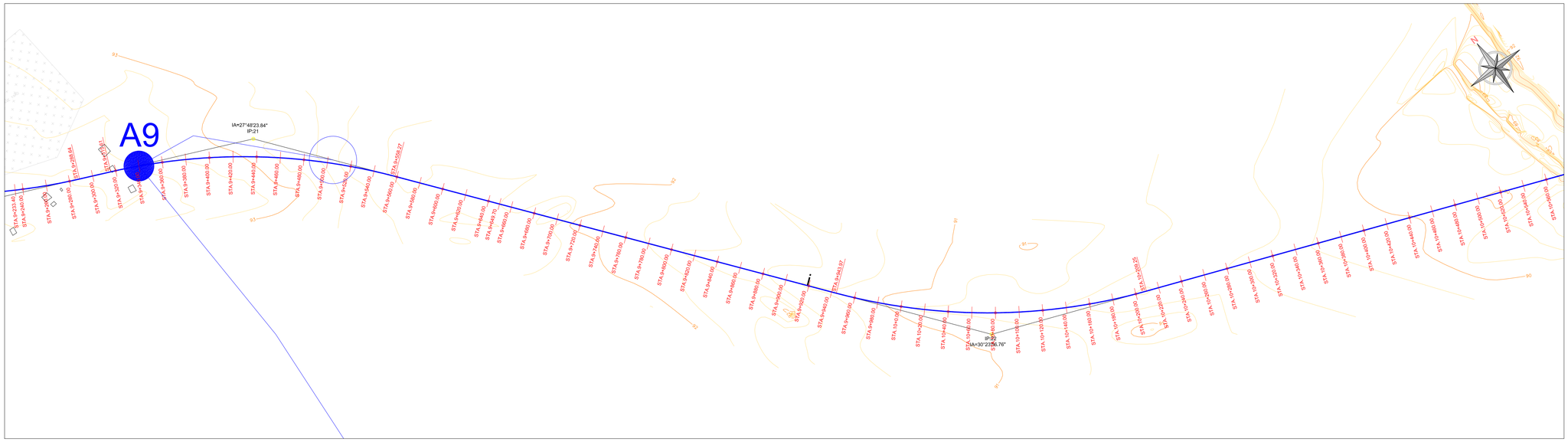
REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

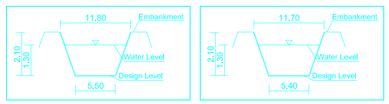
CONSULTANT

Technical Feasibility Study
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
GK Works Civil and Structural Engineer

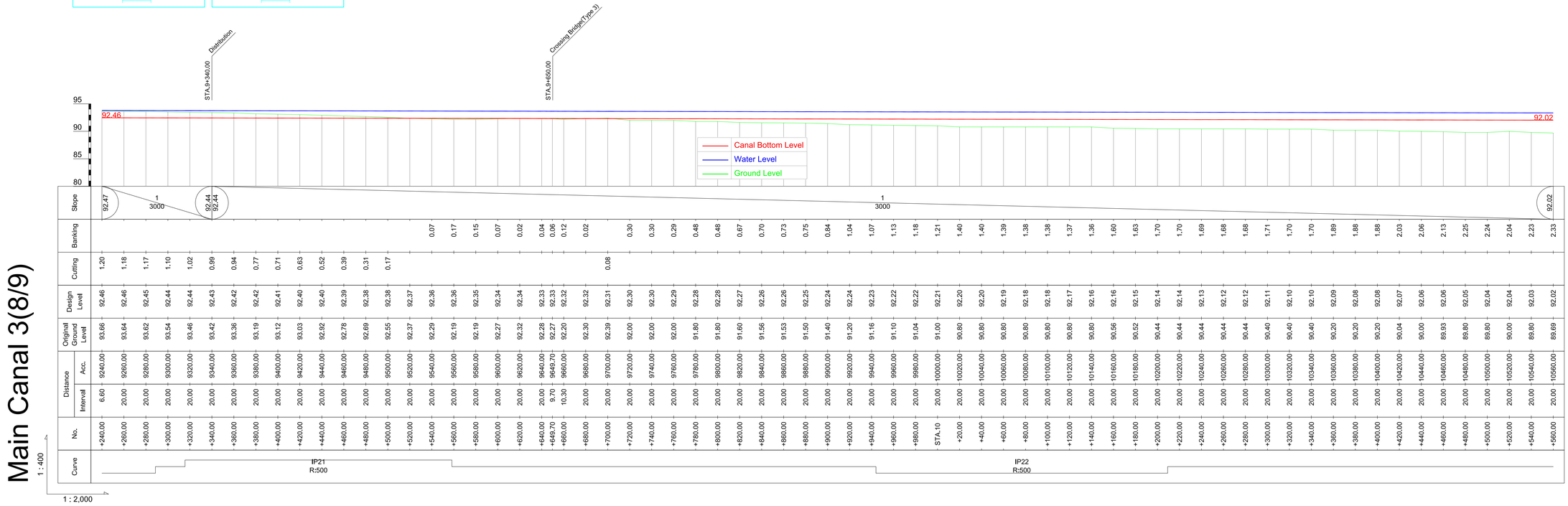
PROJECT	ORIGINAL DESIGNED BY	SCALE
SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
TITLE	DATE	DRG No
General and Profile Plan of Main Canal 3 (7/9)	DECEMBER 2016	B-047

General and Profile Plan of Main Canal 3 (8/9)





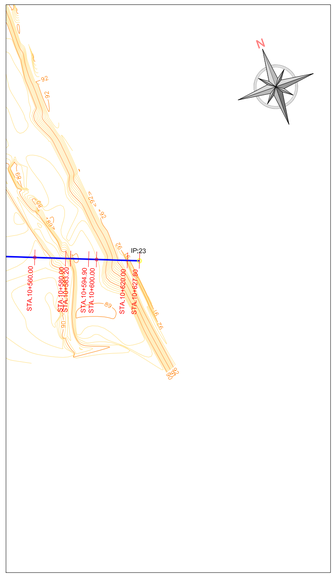
Main Canal 3(8/9)

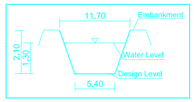


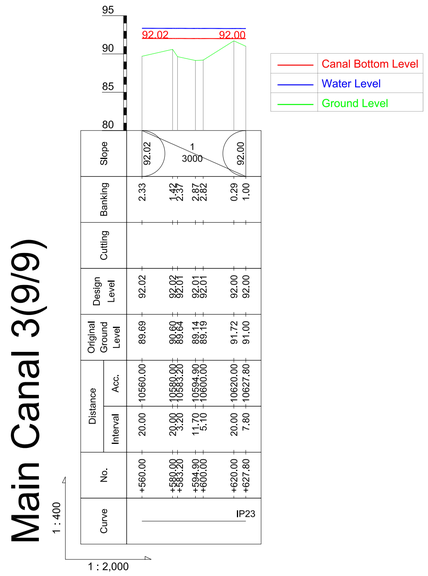
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE General and Profile Plan of Main Canal 3 (8/9)	DATE DECEMBER 2016

SCALE	
Hor 1 : 2,000	Ver 1 : 400
DRG No	
B-048	

General and Profile Plan of Main Canal 3 (9/9)





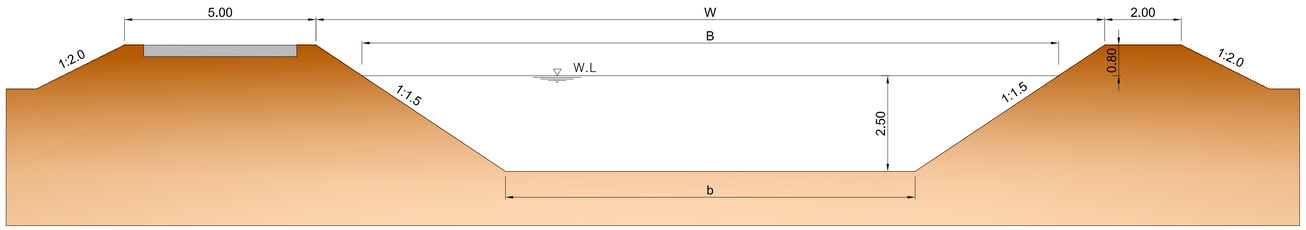


Main Canal 3(9/9)

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 2,000 Ver 1 : 400
		TITLE General and Profile Plan of Main Canal 3 (9/9)	DATE DECEMBER 2016	DRG No B-049

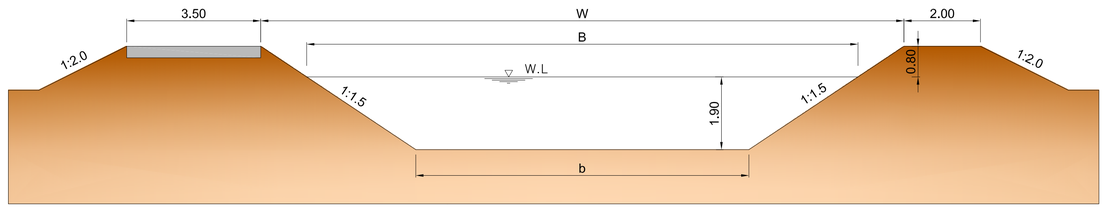
Standard Cross Section of Canals(1/2)

(A1) S=1/80
(A3) S=1/160



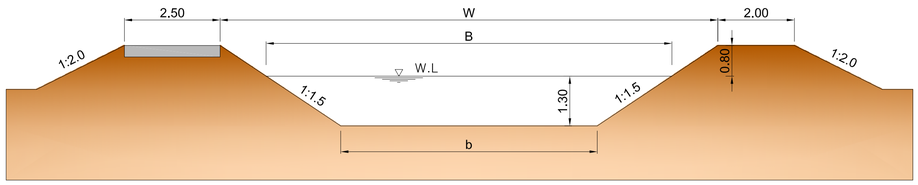
From	To	b	B	W
STA.0+000	STA.16+600	12.70	20.20	22.60
STA.16+600	STA.20+500	12.50	20.00	22.40
STA.20+500	STA.22+500	11.40	18.90	21.30
STA.22+500	STA.28+600	11.20	18.70	21.10
STA.28+600	STA.31+100	11.00	18.50	20.90
STA.31+100	STA.33+800(EP)	10.70	18.20	20.60

Main Canal 1
Scale : 1:80



From	To	b	B	W
STA.0+000	STA.02+400	9.10	14.80	17.20
STA.02+400	STA.05+600	8.90	14.60	17.00
STA.05+600	STA.07+960	8.90	14.60	17.00
STA.07+960	STA.09+700	8.80	14.50	16.90
STA.09+700	STA.10+400	8.70	14.40	16.80
STA.10+400	STA.12+400	8.60	14.30	16.70
STA.12+400	STA.14+100	8.20	13.90	16.30
STA.14+100	STA.18+400(EP)	8.00	13.70	16.10

Main Canal 2
Scale : 1:80



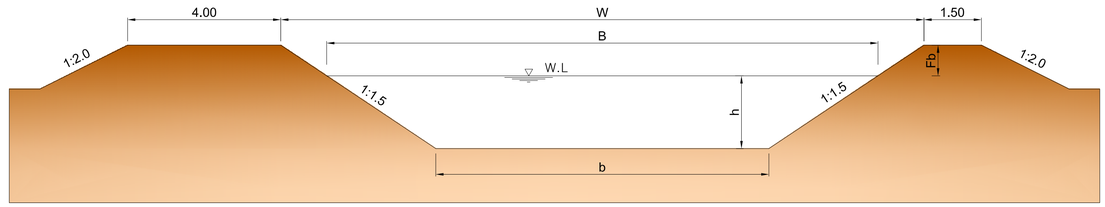
From	To	b	B	W
STA.0+000	STA.00+700	6.70	10.60	13.00
STA.00+700	STA.02+400	6.50	10.40	12.80
STA.02+400	STA.07+700	5.60	9.50	11.90
STA.07+700	STA.09+320	5.50	9.40	11.80
STA.09+320	STA.10+628(EP)	5.40	9.30	11.70

Main Canal 3
Scale : 1:80

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 80 Ver 1 : 80
		TITLE Standard Cross Section of Canals (1/2)	DATE DECEMBER 2016	DRG No B-050

Standard Cross Section of Canals(2/2)

(A1) S=1/80
(A3) S=1/160



Branch Canal

Scale : 1:80

Branch Canal I 1

From	To	h	b	B	W	Fb
STA.00+000	STA.02+200	0.70	1.70	3.80	5.60	0.60
STA.02+200	STA.03+987	0.60	1.70	3.50	5.30	0.60
STA.03+987	STA.06+100	0.50	1.20	2.70	4.50	0.60
STA.06+100	STA.07+742(EP)	0.50	1.00	2.50	4.30	0.60

Branch Canal I 2

From	To	h	b	B	W	Fb
STA.00+000	STA.04+100	1.10	5.10	8.40	10.80	0.80
STA.04+100	STA.05+928	1.10	4.40	7.70	10.10	0.80
STA.05+928	STA.08+822	1.00	4.30	7.30	9.70	0.80
STA.08+822	STA.13+000	1.00	4.00	7.00	9.40	0.80
STA.13+000	STA.16+570	0.90	3.80	6.50	8.90	0.80
STA.16+570	STA.18+330(EP)	0.90	3.60	6.30	8.70	0.80
STA.00+000	STA.04+270(EP)	0.50	1.50	3.00	4.80	0.60

Branch Canal I 3

From	To	h	b	B	W	Fb
STA.00+000	STA.01+351(EP)	0.50	1.70	3.20	5.00	0.60

Branch Canal I 4

From	To	h	b	B	W	Fb
STA.00+000	STA.01+336(EP)	0.70	1.90	4.00	6.40	0.80

Branch Canal I 5

From	To	h	b	B	W	Fb
STA.00+000	STA.00+939	0.80	2.30	4.70	7.10	0.80
STA.00+939	STA.03+208(EP)	0.50	1.50	3.00	4.80	0.60
STA.00+000	STA.02+501(EP)	0.40	0.90	2.10	3.90	0.60

Branch Canal I 6

From	To	h	b	B	W	Fb
STA.00+000	STA.00+795(EP)	0.50	1.70	3.20	5.00	0.60

Branch Canal I 7

From	To	h	b	B	W	Fb
STA.00+000	STA.00+045(EP)	0.70	1.50	3.60	5.40	0.60
STA.00+000	STA.01+061	0.80	1.80	4.20	6.60	0.80
STA.01+061	STA.03+243	0.80	1.50	3.90	6.30	0.80
STA.03+243	STA.07+130	0.50	1.40	2.90	4.70	0.60
STA.07+130	STA.09+132(EP)	0.40	0.90	2.10	3.90	0.60
STA.00+000	STA.00+286(EP)	0.40	0.90	2.10	3.90	0.60

Branch Canal A1

From	To	h	b	B	W	Fb
STA.00+000	STA.01+150	0.60	1.90	3.70	5.50	0.60
STA.01+150	STA.03+155(EP)	0.40	1.50	2.70	4.50	0.60

Branch Canal A2

From	To	h	b	B	W	Fb
STA.00+000	STA.07+300	0.40	1.50	2.70	4.50	0.60
STA.07+300	STA.08+489(EP)	0.40	0.80	2.00	3.80	0.60

Branch Canal A3

From	To	h	b	B	W	Fb
STA.00+000	STA.00+600	0.50	1.00	2.50	4.30	0.60
STA.00+600	STA.02+017(EP)	0.40	0.80	2.00	3.80	0.60

Branch Canal A4

From	To	h	b	B	W	Fb
STA.00+000	STA.01+366(EP)	0.50	1.50	3.00	4.80	0.60

Branch Canal A5

From	To	h	b	B	W	Fb
STA.00+000	STA.00+225(EP)	0.60	1.40	3.20	5.00	0.60

Branch Canal A6

From	To	h	b	B	W	Fb
STA.00+000	STA.00+216	0.80	2.20	4.60	7.00	0.80
STA.00+216	STA.02+166	0.80	1.70	4.10	6.50	0.80
STA.02+166	STA.03+825	0.70	1.40	3.50	5.30	0.60
STA.03+825	STA.06+388	0.50	1.40	2.90	4.70	0.60
STA.06+388	STA.08+071(EP)	0.30	0.60	1.50	3.30	0.60

Branch Canal A7

From	To	h	b	B	W	Fb
STA.00+000	STA.00+250	0.80	1.60	4.00	6.40	0.80
STA.00+250	STA.01+187	0.80	1.40	3.80	6.20	0.80
STA.01+187	STA.03+605	0.70	1.10	3.20	5.00	0.60
STA.03+605	STA.07+518(EP)	0.50	1.10	2.60	4.40	0.60
STA.00+000	STA.01+071	0.80	1.60	4.00	6.40	0.80
STA.01+071	STA.02+992	0.80	1.30	3.70	6.10	0.80
STA.02+992	STA.05+842	0.70	1.30	3.40	5.20	0.60
STA.05+842	STA.08+483	0.50	1.10	2.60	4.40	0.60
STA.08+483	STA.10+071(EP)	0.40	0.70	1.90	3.70	0.60

Branch Canal A8

From	To	h	b	B	W	Fb
STA.00+000	STA.00+766	0.50	1.00	2.50	4.30	0.60

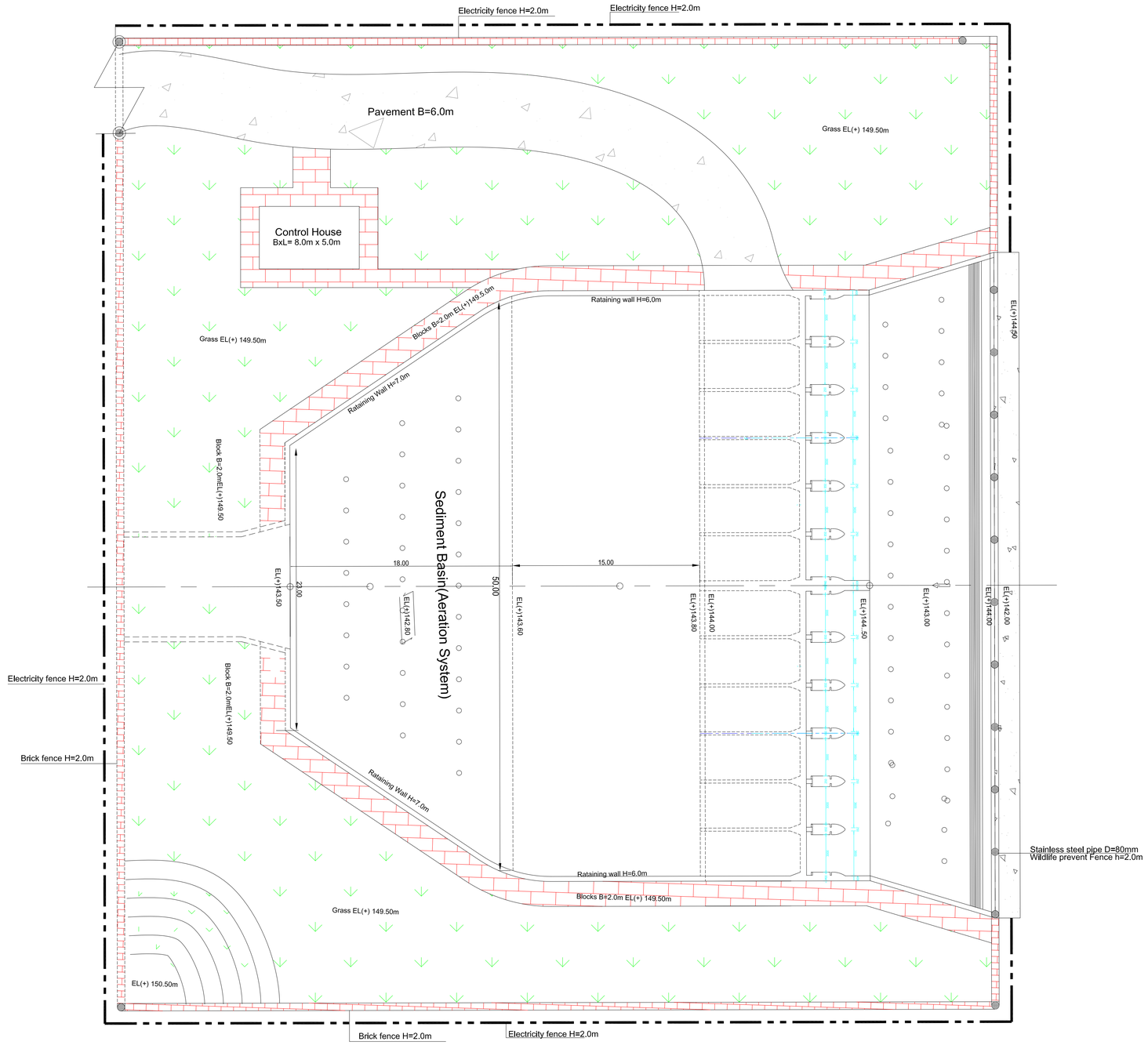
Branch Canal A9

From	To	h	b	B	W	Fb
STA.00+000	STA.00+170	0.50	1.10	2.60	4.40	0.60
STA.00+000	STA.01+589	0.30	1.00	1.90	3.70	0.60

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 80 Ver 1 : 80
		TITLE Standard Cross Section of Canals (2/2)	DATE DECEMBER 2016	DRG No B-051

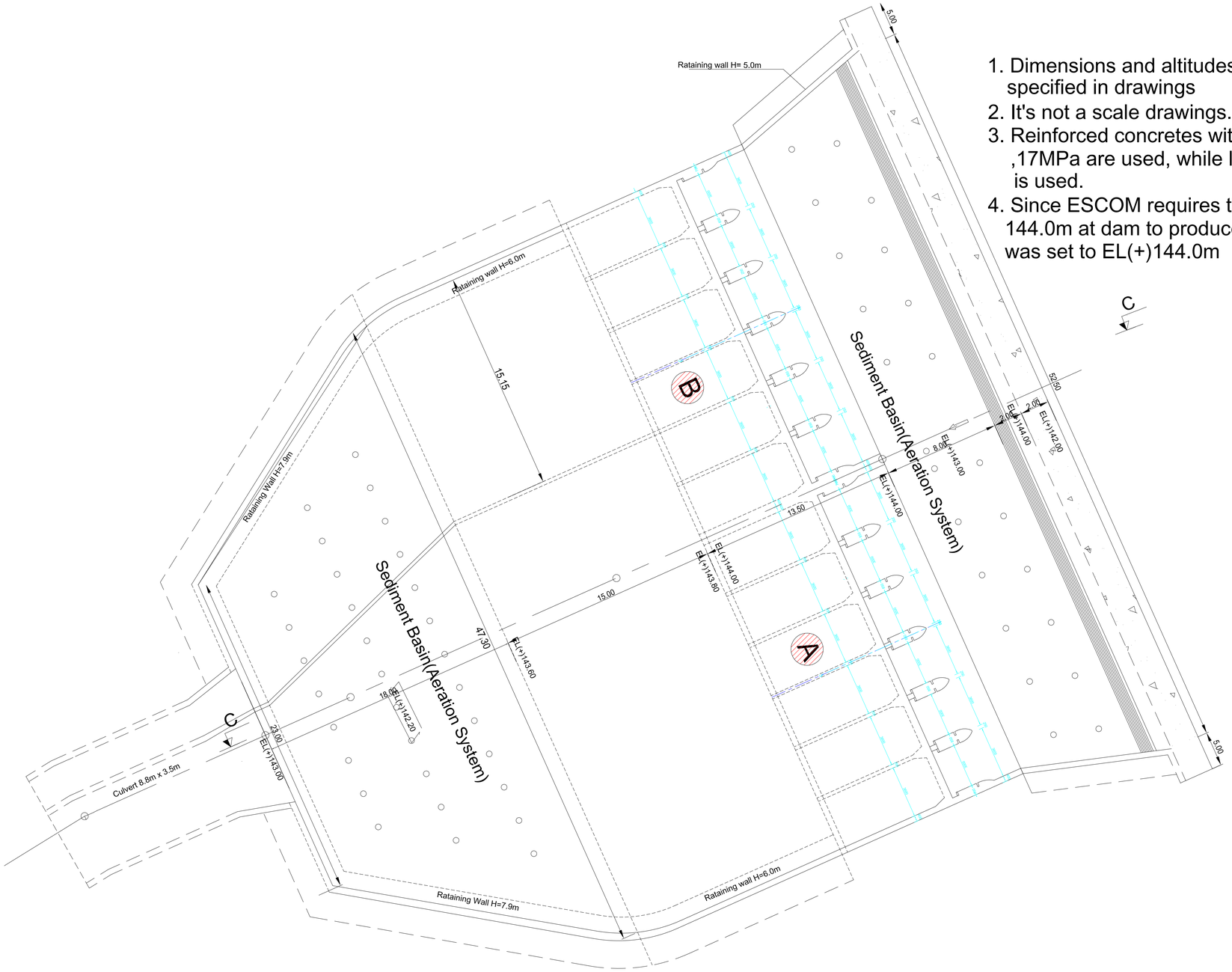
C. Structures

Intake Plane(1)



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Plane(1)	DATE DECEMBER 2016	DRG No C-001

Intake Plan(2)

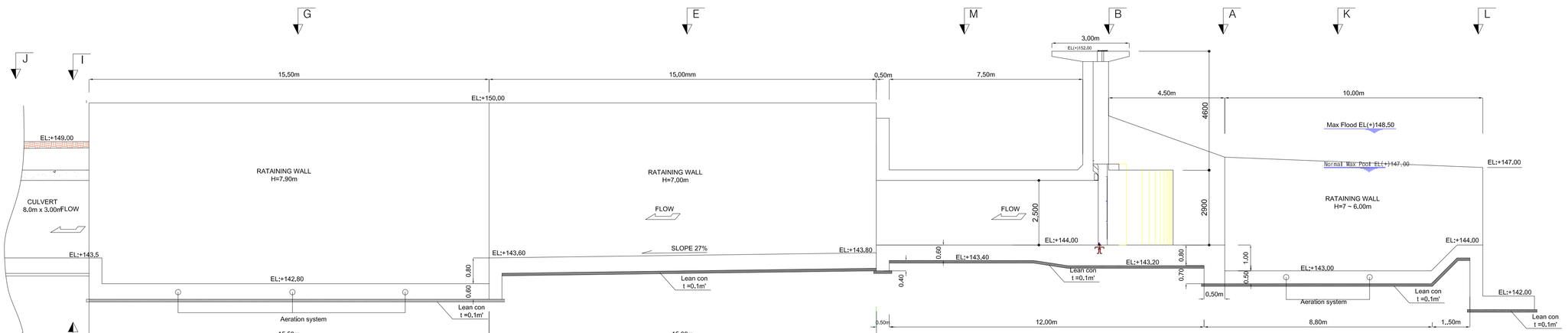


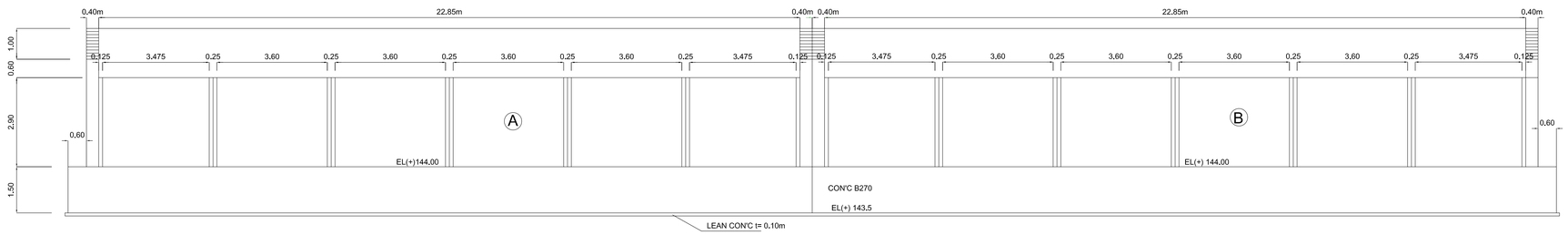
1. Dimensions and altitudes are in m(meters) unless otherwise specified in drawings
2. It's not a scale drawings. use figured dimensions only.
3. Reinforced concretes with design standard strength of 24MPa, ,17MPa are used, while lean concrete with strength of 17MPa is used.
4. Since ESCOM requires the minimum mangement water level of EL(+) 144.0m at dam to produce electricity, the sill at intake structure was set to EL(+)144.0m

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
		TITLE Intake Plan(2)	DATE DECEMBER 2016	DRG No C-002

Intake Longitudinal section

1. Dimensions and altitudes are in m(meters) unless otherwise specified in drawings
2. It's not a scale drawings. use figured dimensions only.
3. Reinforced concredes with design standard strength of 24MPa, and 17MPa are used, while lean concrete with strength of 17MPa is used.
4. Since ESCOM requires the minimum mangement water level of EL(+) 144.0m at dam to produce electricity, the sill at intake structure was set to EL(+)144.0m



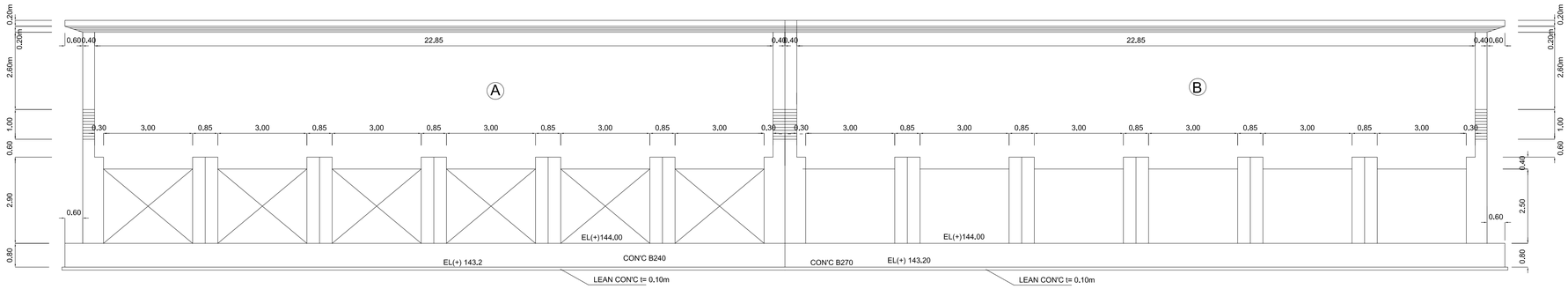


SECTION A-A

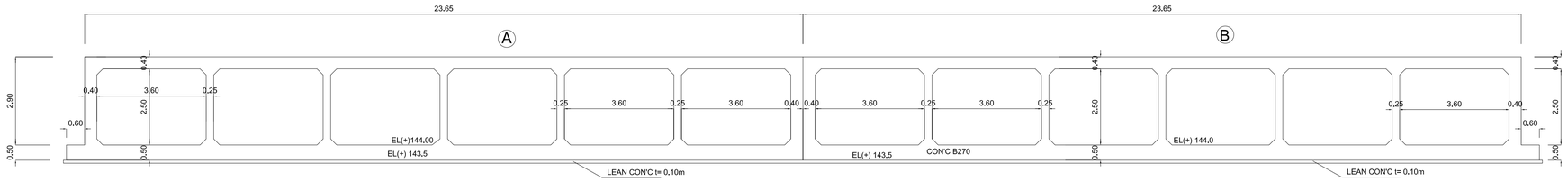
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake longitudinal Section	DATE DECEMBER 2016	DRG No C-003

section B,M

1. Dimensions and altitudes are in m(meters) unless otherwise specified in drawings
2. It's not a scale drawings. use figured dimensions only.
3. Reinforced concredes with design standard strength of 24MPa, and 17MPa are used, while lean concrete with strength of 17MPa is used.



SECTION B-B

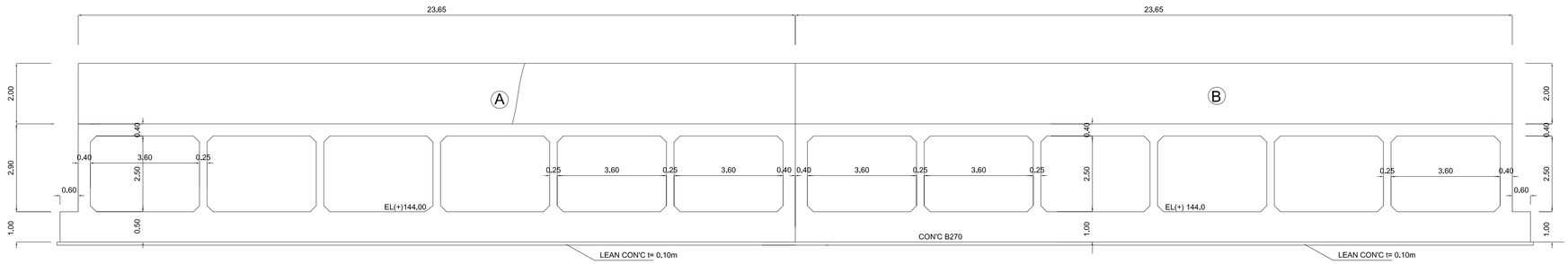


SECTION M-M

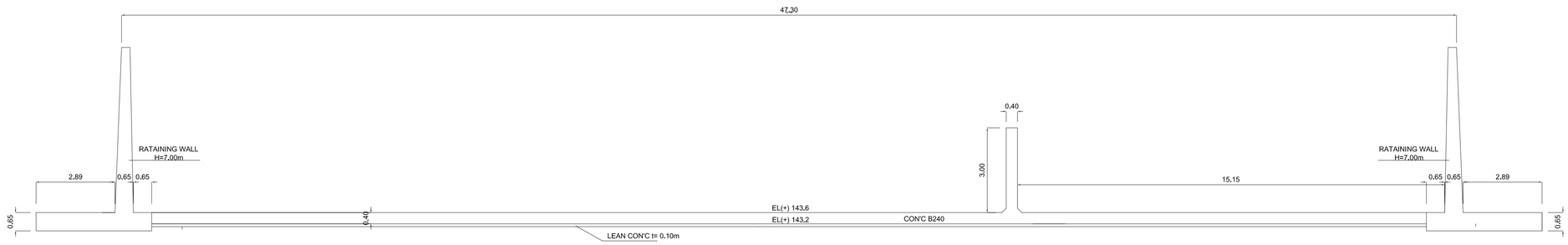
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Section B , M	DATE DECEMBER 2016	DRG No C-004

Section D, E

1. Dimensions and altitudes are in m(meters) unless otherwise specified in drawings
2. It's not a scale drawings. use figured dimensions only.
3. Reinforced concredes with design standard strength of 24MPa, and 17MPa are used, while lean concrete with strength of 17MPa is used.



SECTION D-D

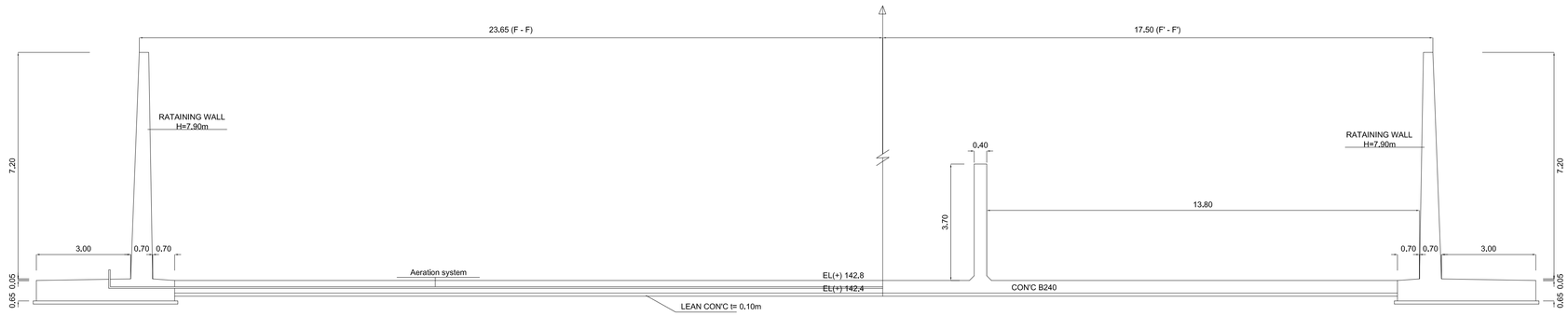


SECTION E-E

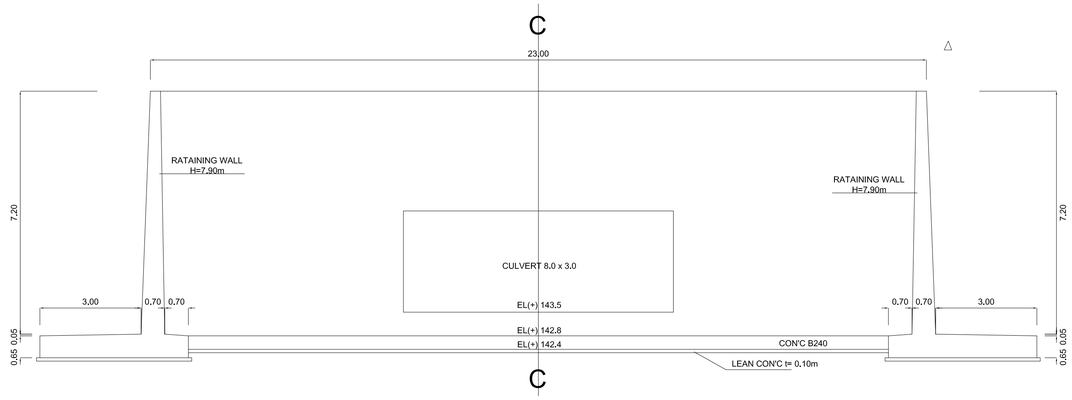
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Section D , E	DATE DECEMBER 2016	DRG No C-005

Section F , G

1. Dimensions and altitudes are in m(meters) unless otherwise specified in drawings
2. It's not a scale drawings. use figured dimensions only.
3. Reinforced concredes with design standard strength of 24MPa, and 17MPa are used, while lean concrete with strength of 17MPa is used.



SECTION F-F'

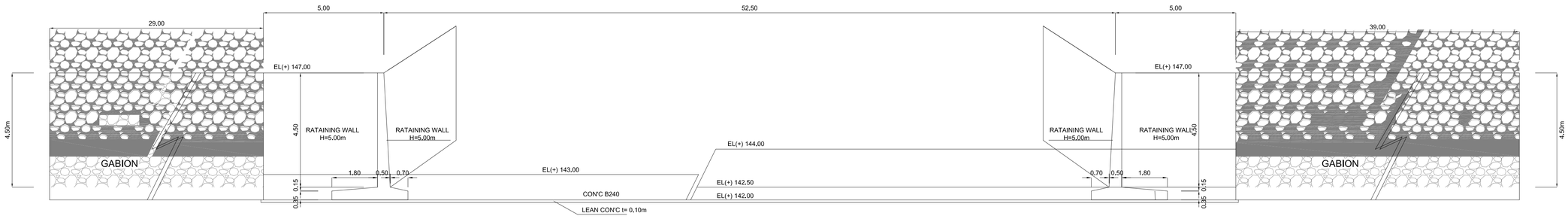


SECTION G-G'

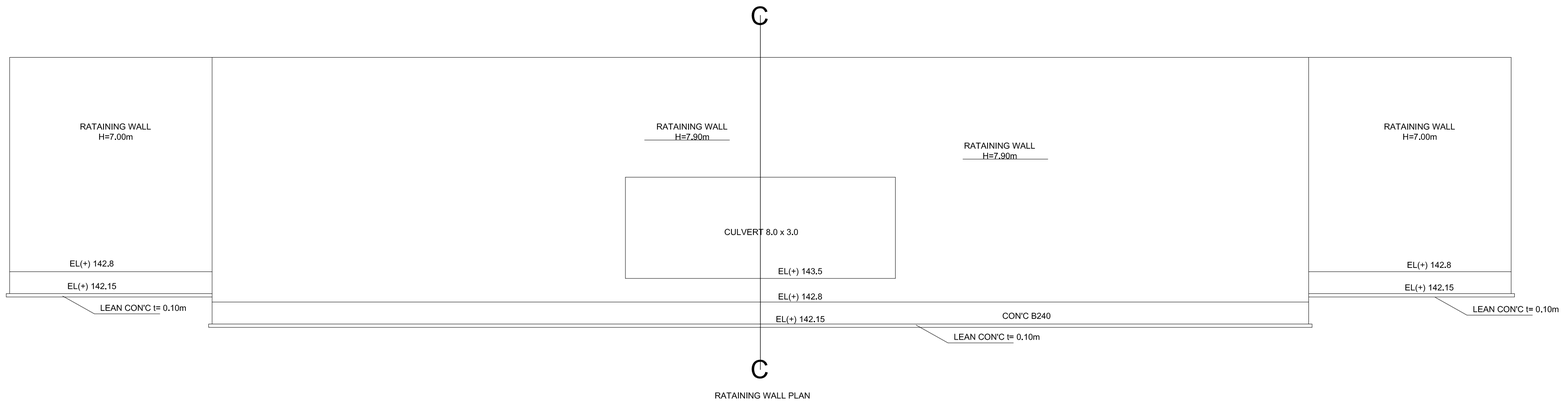
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Section F, G	DATE DECEMBER 2016	DRG No C-006

Section L, Rataining Wall Plan

1. Dimensions and altitudes are in m(meters) unless otherwise specified in drawings
2. It's not a scale drawings. use figured dimensions only.
3. Reinforced concredes with design standard strength of 24MPa, and 17MPa are used, while lean concrete with strength of 17MPa is used.



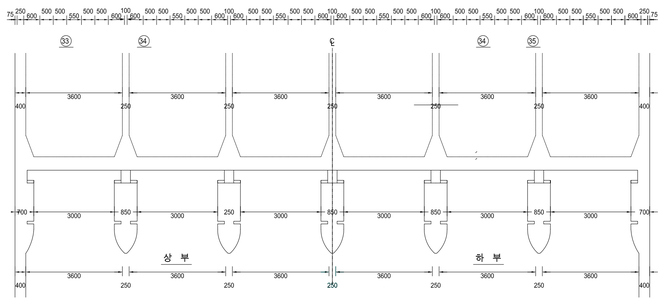
SECTION L-L



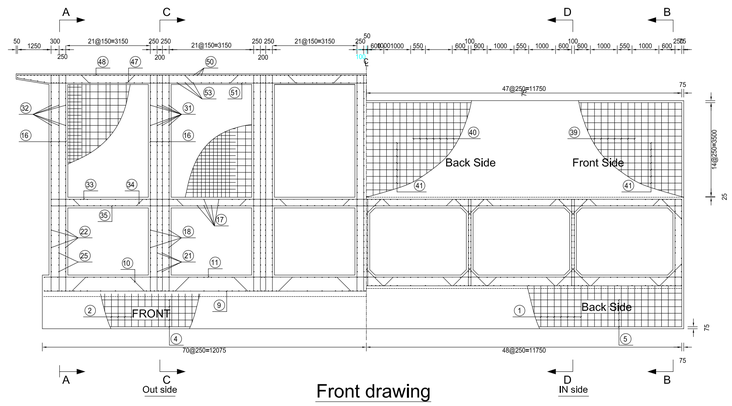
RATAINING WALL PLAN

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Section L, Rataining Wall Plan	DATE DECEMBER 2016	DRG No C-007

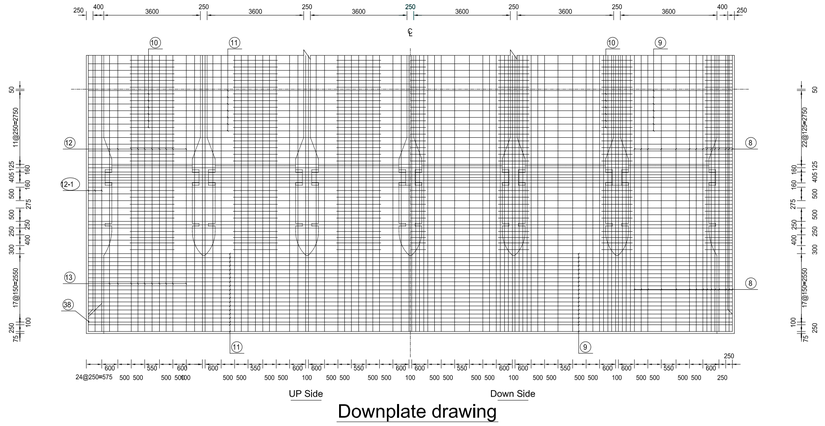
Intake Structure Drawing A(1)



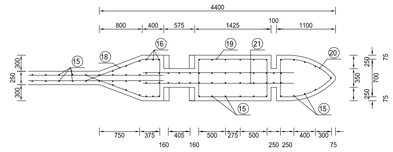
UPplate drawing



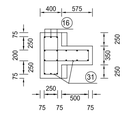
Front drawing



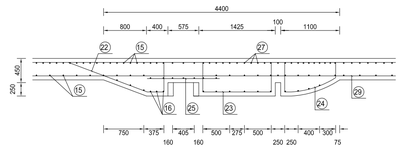
Downplate drawing



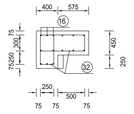
Inside Gatepost Detail Drawing
Scale=1:50



Inside Gatepost Detail
Scale=1:50



Outside Gatepost Detail Drawing
Scale=1:50



Outside Gatepost Detail
Scale=1:50

NOTICE

Refer drawing

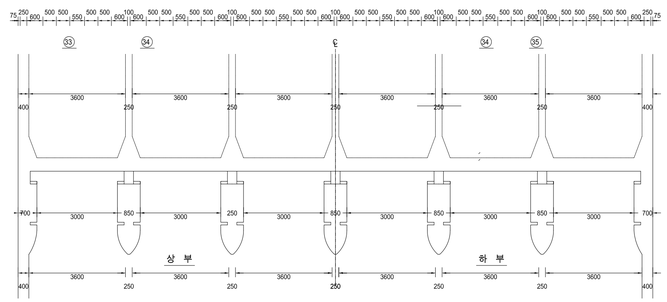
Drawing number	Detail drawing
1-00-1	

SCALE BAR

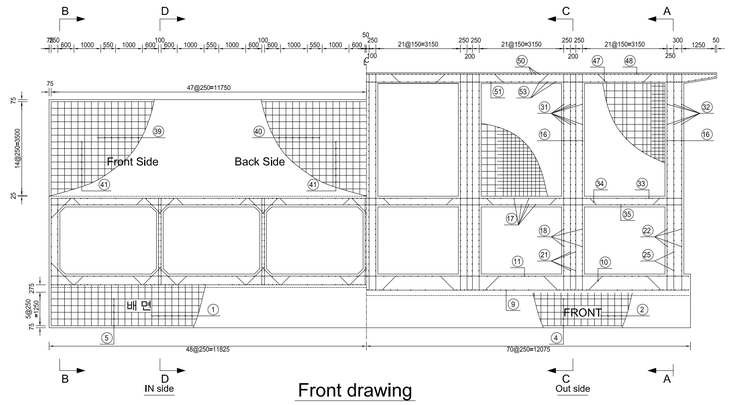
1:100 0 2 4 6 8 10

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Structure Drawing A(1)	DATE DECEMBER 2016	DRG No C-008

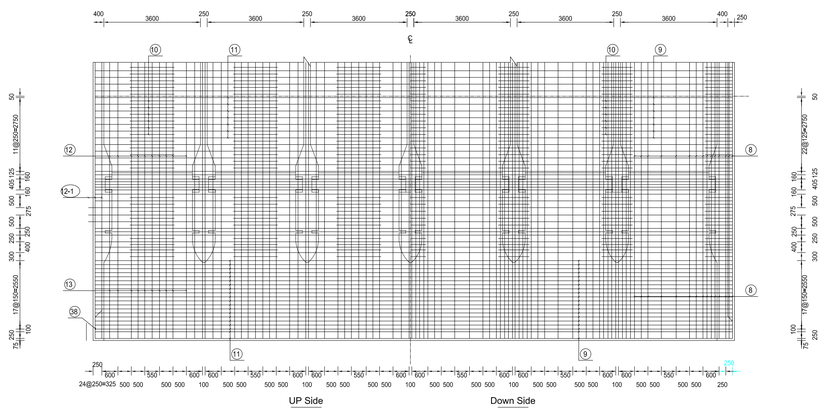
Intake Structure Drawing B(1)



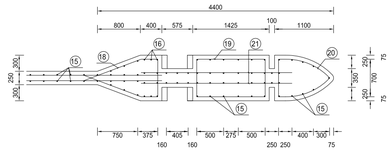
UPplate drawing



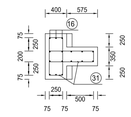
Front drawing



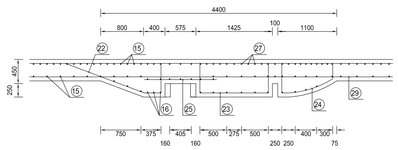
Downplate drawing



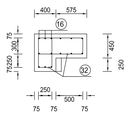
Inside Gatepost Detail Drawing
Scale=1:50



Inside Gatepost Detail
Scale=1:50



Outside Gatepost Detail Drawing
Scale=1:50



Outside Gatepost Detail
Scale=1:50

NOTICE

Refer drawing

Drawing number	Detail drawing
1-00-1	

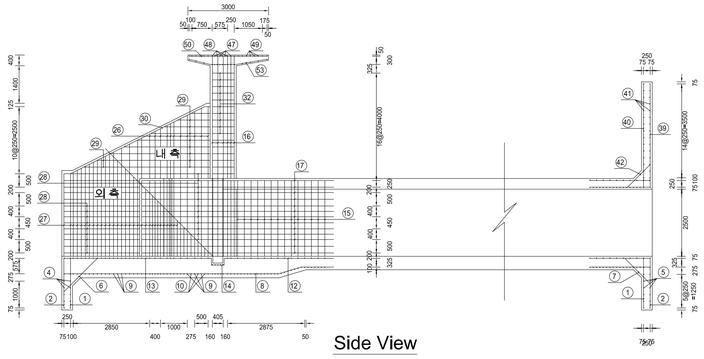
SCALE BAR

1:100 0 2 4 6 8 10

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Structure Drawing B(1)	DATE DECEMBER 2016	DRG No C-009

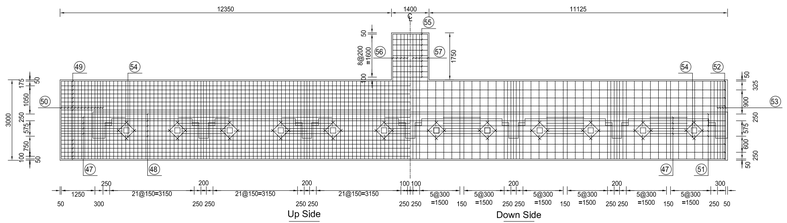
Intake Structure Drawing A(2)

A-A Section



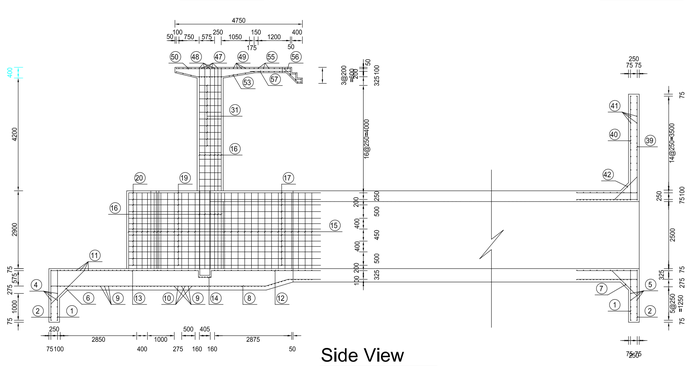
B-B Section

Side View



Slab of Gate Hoist

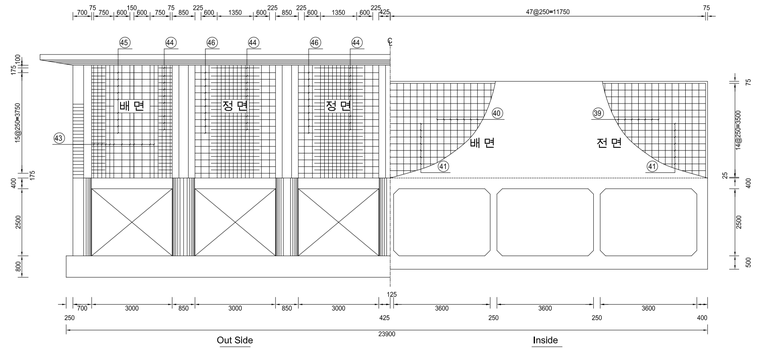
C-C Section



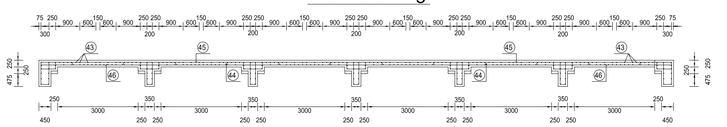
D-D Section

Side View

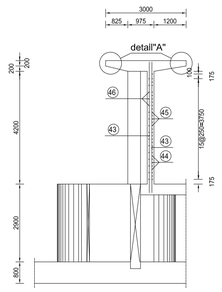
Earth Retaining Wall Strucure



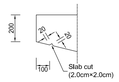
Front Drawing



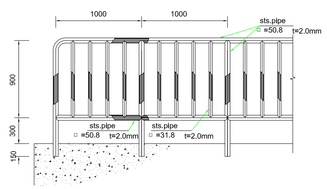
Section Drawing



Detail"A"



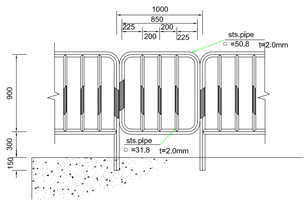
Detail a Guardrail



Material List (1m/unit)

NO	Size	Quality	Length	Remark
1	∅50.8,t=2m/m	STS316L	3,36m	
2	∅31.8,t=2m/m	STS316L	3,60m	

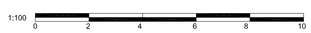
Detail a Entrance Guardrail



Material List (1EA)

NO	Size	Quality	Length	Remark
1	∅50.8,t=2m/m	STS316L	3.90m	
2	∅31.8,t=2m/m	STS316L	2.70m	
3	Hinged (150mm)	STS316L	2개	

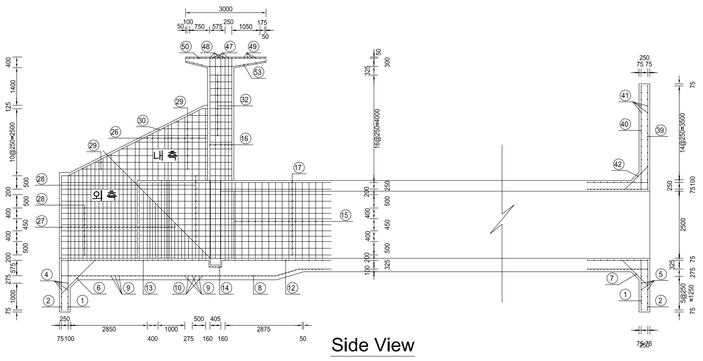
SCALE BAR



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Structure Drawing A(2)	DATE DECEMBER 2016	DRG No C-010

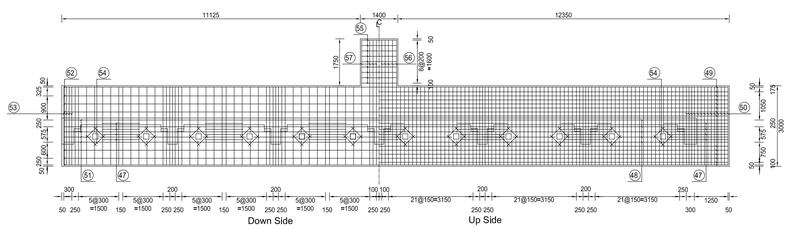
Intake Structure Drawing B(2)

A-A Section



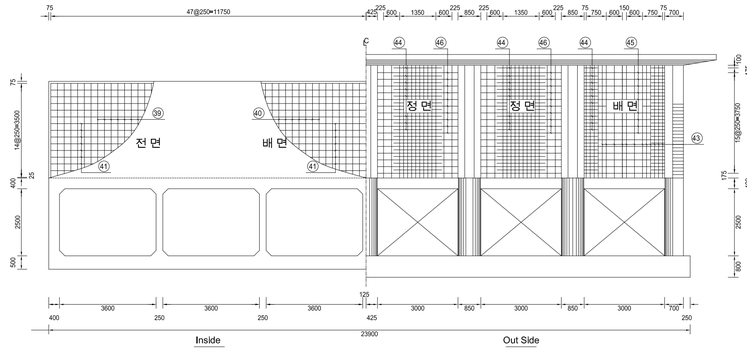
B-B Section

Side View

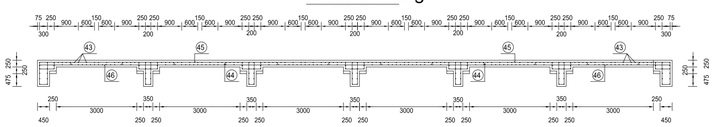


Slab of Gate Hoist

Earth Retaining Wall Strucure

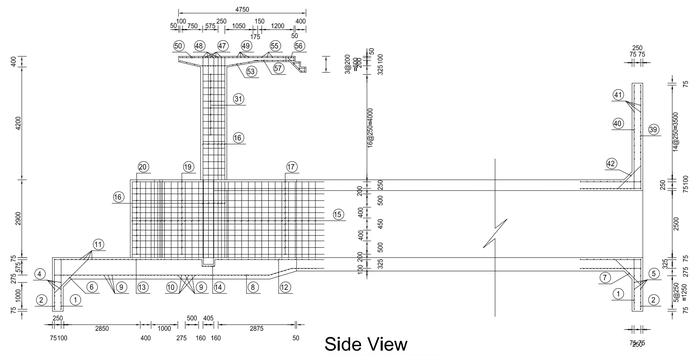


Front Drawing



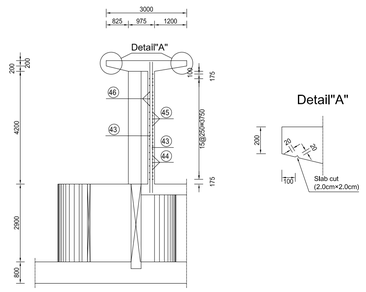
Section Drawing

C-C Section

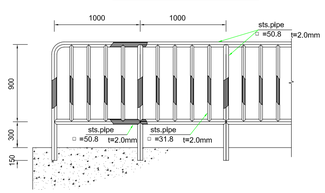


Side View

D-D Section



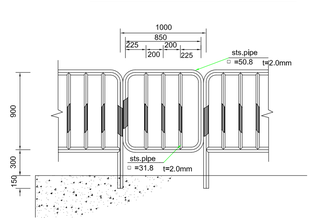
Detail a Guardrail



Material List (1m/unit)

NO	Size	Quality	Length	Remark
1	∅50.8,t=2m/m	STS316L	3.36m	
2	∅31.8,t=2m/m	STS316L	3.60m	

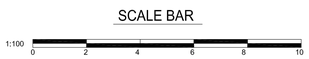
Detail a Entrance Guardrail



Material List (1EA)

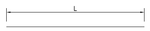
NO	Size	Quality	Length	Remark
1	∅50.8,t=2m/m	STS316L	3.90m	
2	∅31.8,t=2m/m	STS316L	2.70m	
3	Hinged (150mm)	STS316L	2개	

SCALE BAR



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Structure Drawing B(2)	DATE DECEMBER 2016	DRG No C-011

Intake Structure Material List

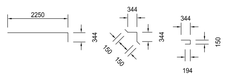


1	H16	L = 1850	N = 200		28	H19	L = 6350	N = 56	
3	H16	L = 5050	N = 96		29	H19	L = 4200	N = 36	
4	H16	L = 36600	N = 10	(J=3*300)	35	H25	L = 24620	N = 13	(J=2*560)
5	H16	L = 24600	N = 12	(J=2*300)	37	H19	L = 6350	N = 30	
9	H25	L = 37380	N = 49	(J=3*560)	40	H19	L = 3850	N = 97	
11	H25	L = 37380	N = 49	(J=3*560)	41	H16	L = 24100	N = 30	(J=2*300)
12	H19	L = 4079	N = 66		43	H19	L = 4865	N = 180	
12-1	H19	L = 10365	N = 12	(J=1*340)	45	H16	L = 24100	N = 16	(J=2*300)
13	H19	L = 5500	N = 66		46	H16	L = 24100	N = 16	(J=2*300)
15	H19	L = 3475	N = 419		48	H19	L = 26680	N = 5	(J=2*340)
16	H22	L = 7450	N = 108		49	H16	L = 26680	N = 14	(J=2*300)
17	H19	L = 2925	N = 332		50	H16	L = 2900	N = 187	
21	H16	L = 2811	N = 130		52	H16	L = 26680	N = 7	(J=2*300)
25	H16	L = 1348	N = 26		54	H16	L = 566	N = 96	
26	H22	L = 5150	N = 46		55	H16	L = 1300	N = 20	

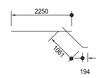
2	H16	L= 2150	A= 1850	B= 300	N = 200
27	H22	L= 5650	A= 5150	B= 500	N = 92
36	H19	L= 6850	A= 6350	B= 500	N = 30
39	H19	L= 4350	A= 3850	B= 500	N = 97

6	H13	L= 1959	A= 1759	N = 50
7	H13	L= 1535	A= 1335	N = 50
38	H16	L= 1676	A= 1476	N = 16
42	H13	L= 1394	A= 1194	N = 12

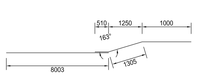
56 H16 L = 2845 N = 11



57 H16 L = 2336 N = 9

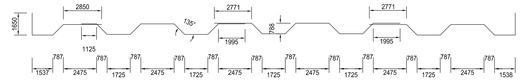


8 H19 L = 10213 N = 102 (J=1*340)

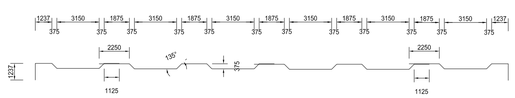


33 H25 L= 24620 A= 25620 N = 13 (J=2*560)

10 D29 L = 31768 N = 25

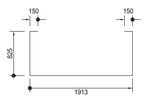


34 H25 L = 28165 N = 11

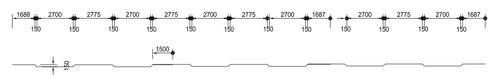


14 H19 L = 1655 N = 66

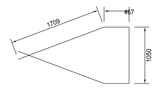
23 H16 L = 2575 N = 26



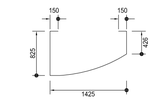
44 H16 L = 26140 N = 16



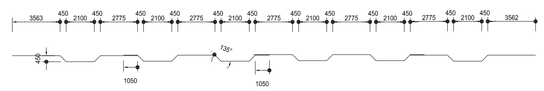
18 H16 L = 3601 N = 65



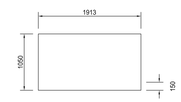
24 H16 L = 2035 N = 26



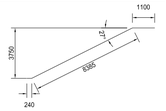
47 H19 L = 29695 N = 4



19 H16 L = 4050 N = 65

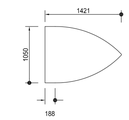


30 H16 L = 6840 N = 4

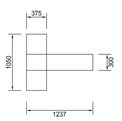


51 H19 L = 27260 N = 4 (J=2*340)

20 H16 L = 5720 N = 65

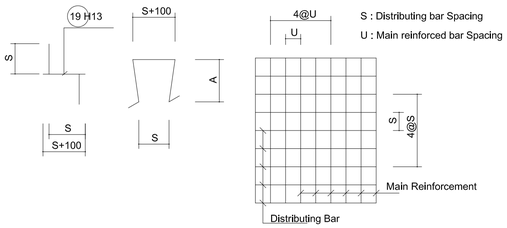


31 H16 L = 4250 N = 80



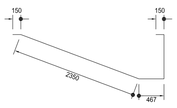
53 H16 L = 2939 N = 100

Reinforced bar arrangement drawing

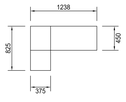


58	H13	A = 0.433	L = 1.716	N = 230
59	H13	A = 0.161	L = 1.172	N = 120

22 H16 L = 2628 N = 26



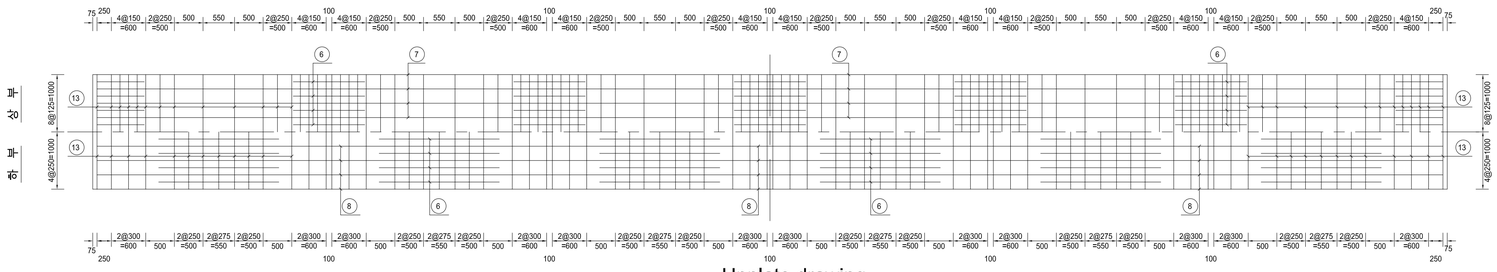
32 H16 L = 4050 N = 32



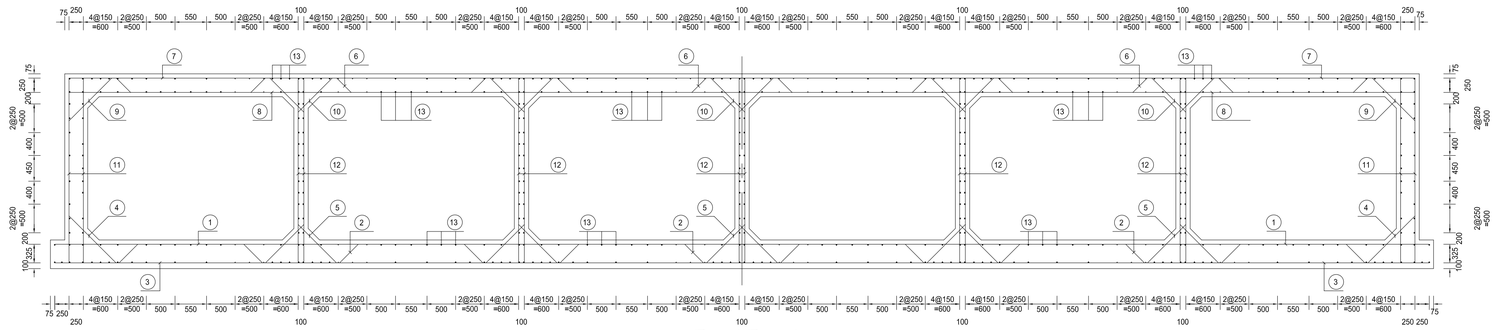
SCALE BAR

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Joint Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Structure Material List	DATE DECEMBER 2016	DRG No C-012

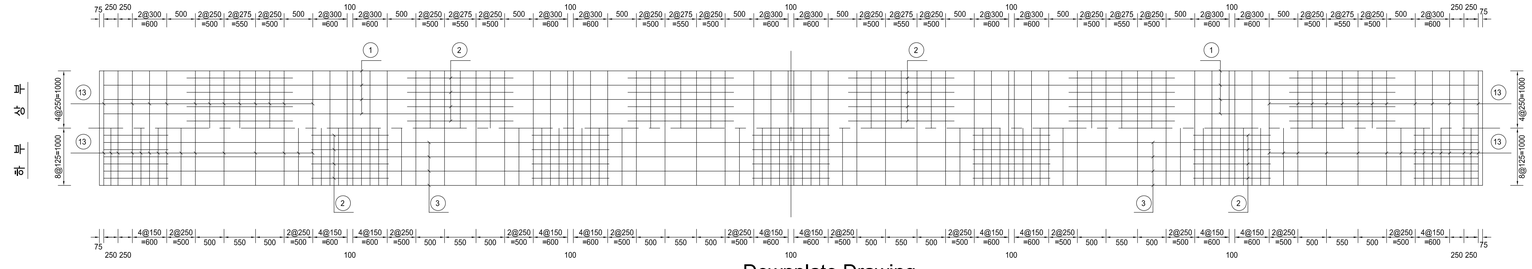
Intake Box Structure Drqwing (1)



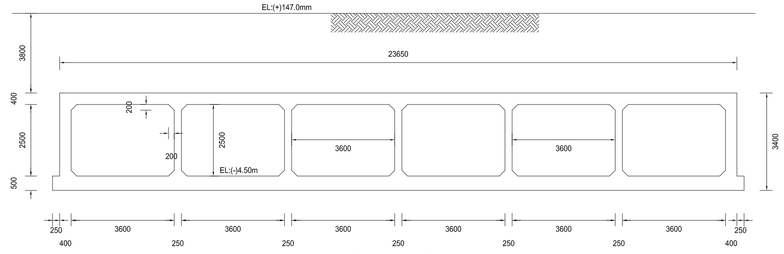
Upplate drawing



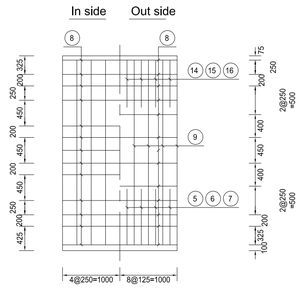
Pront Drawing



Downplate Drawing



General Drawing



Side wall

NOTICE

Refer drawing

Drawing number	Detail drawing
	Intake plate drawing
	Intake structure drawing

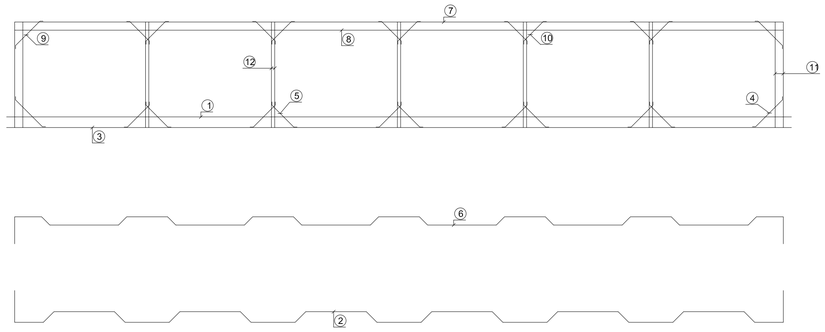
SCALE BAR

1:100 0 2 4 6 8 10

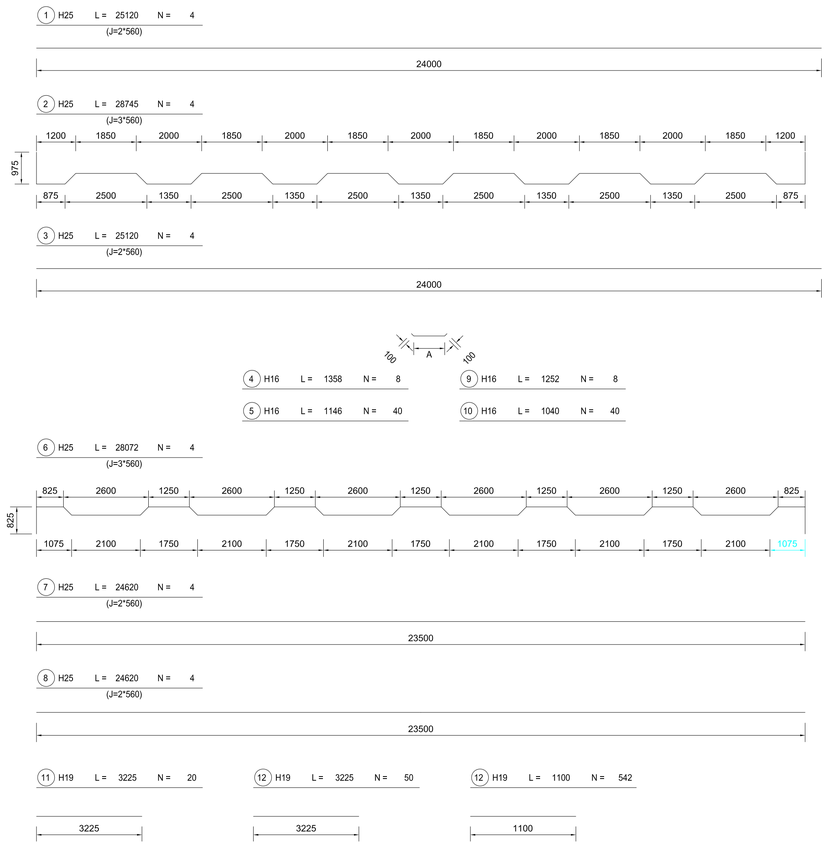
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Box Structure Drawing (1)	DATE DECEMBER 2016	DRG No C-013

Intake Box Structure Drawing (2)

Reinforced bar arrangement drawing



Re-bar detail



Material List

(1m)

Division	Standard	Unit	Quantity	Re
Concrete	Fck=270kg/㎠	㎥	27.140	
Concrete	lean	㎥	1.213	
Concrete form	4 (four times)	㎡	49.490	
Euroform		㎡	6.800	

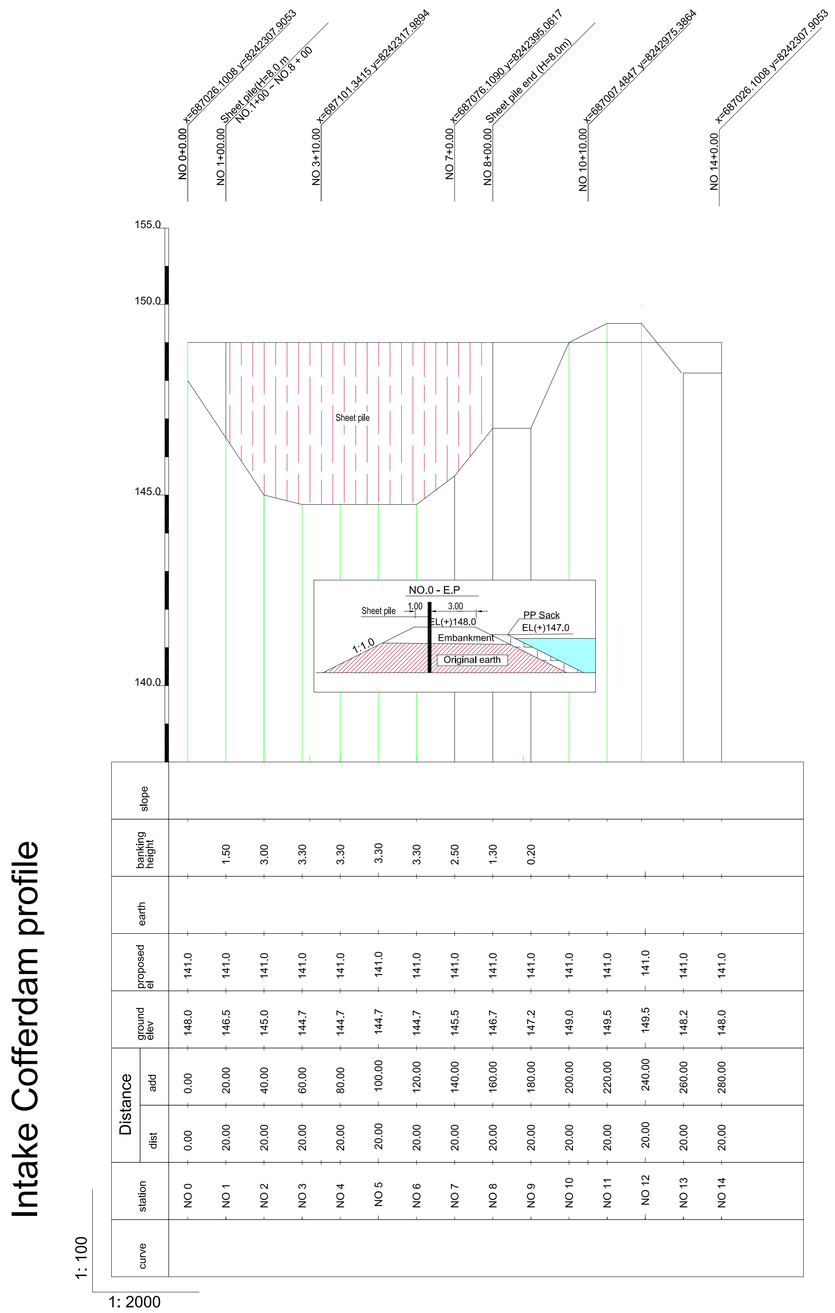
SCALE BAR

1:100

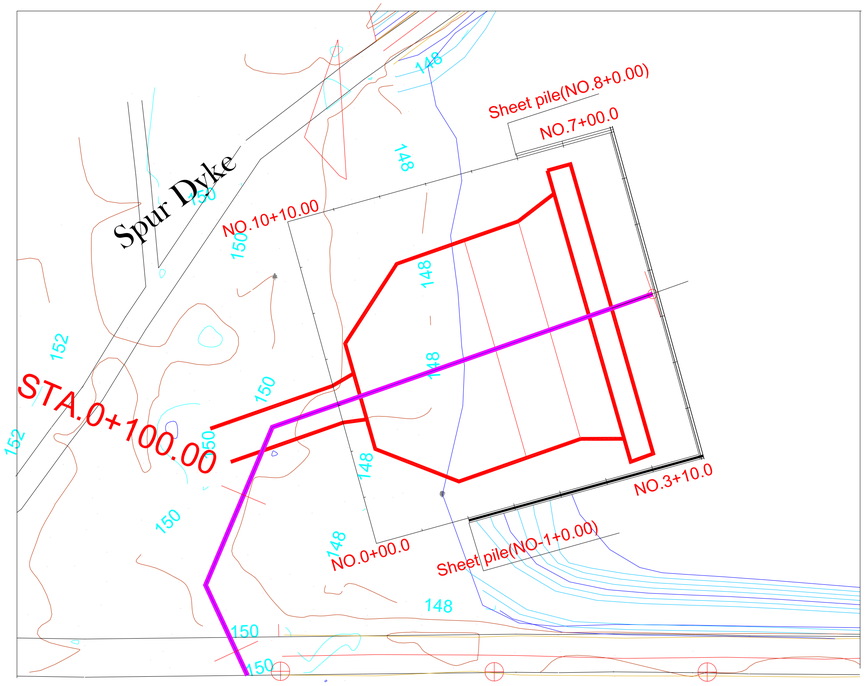
0 2 4 6 8 10

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Box Structure Drqwing (2)	DATE DECEMBER 2016	DRG No C-014

Intake Coffer Dam Profile Plan



Intake Cofferdam profile



Intake Cofferdam sectional plane

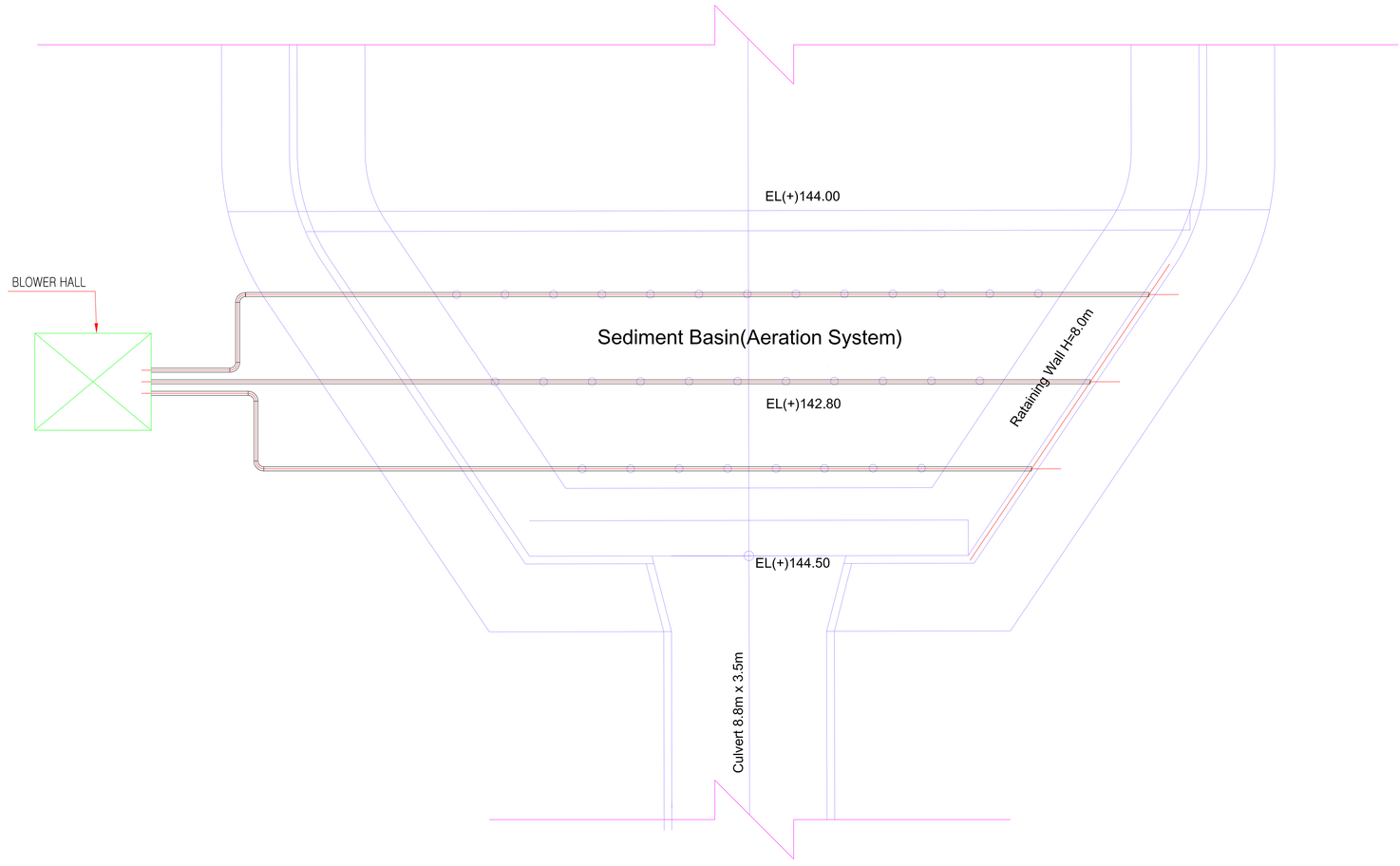
NOTICE

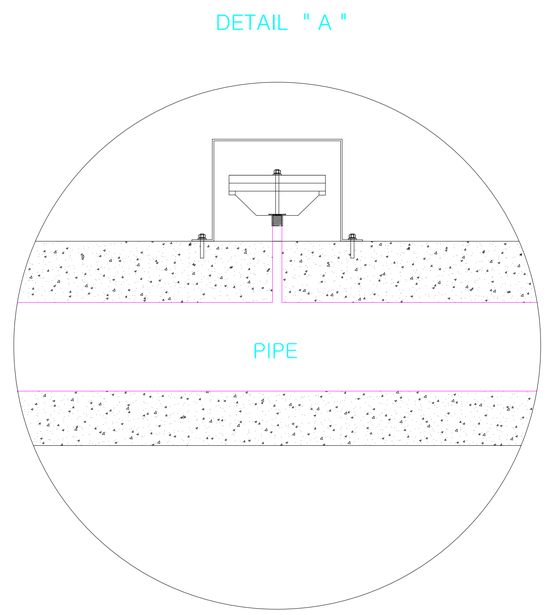
Refer drawing

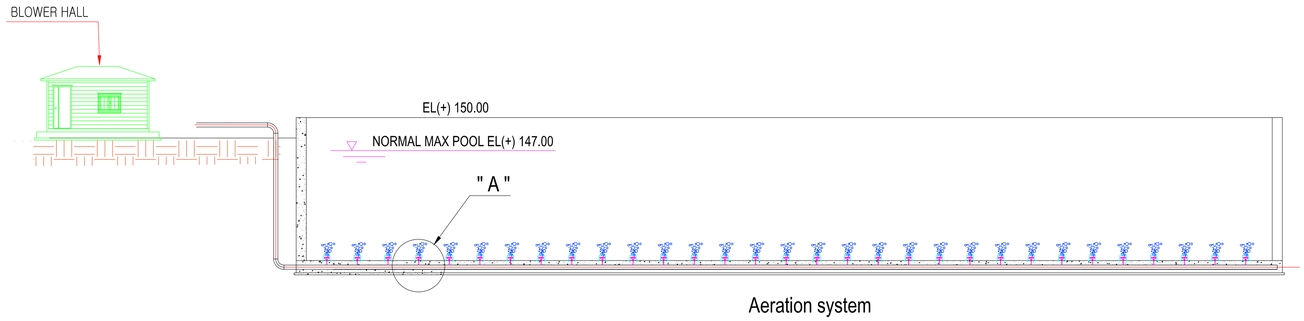
Drawinr number	Datail drawing
1-23-1	Intake plate drawing

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Coffer Dam Profile Plan	DATE DECEMBER 2016	DRG No C-015

Aeration system Layout Drawing







Aeration system

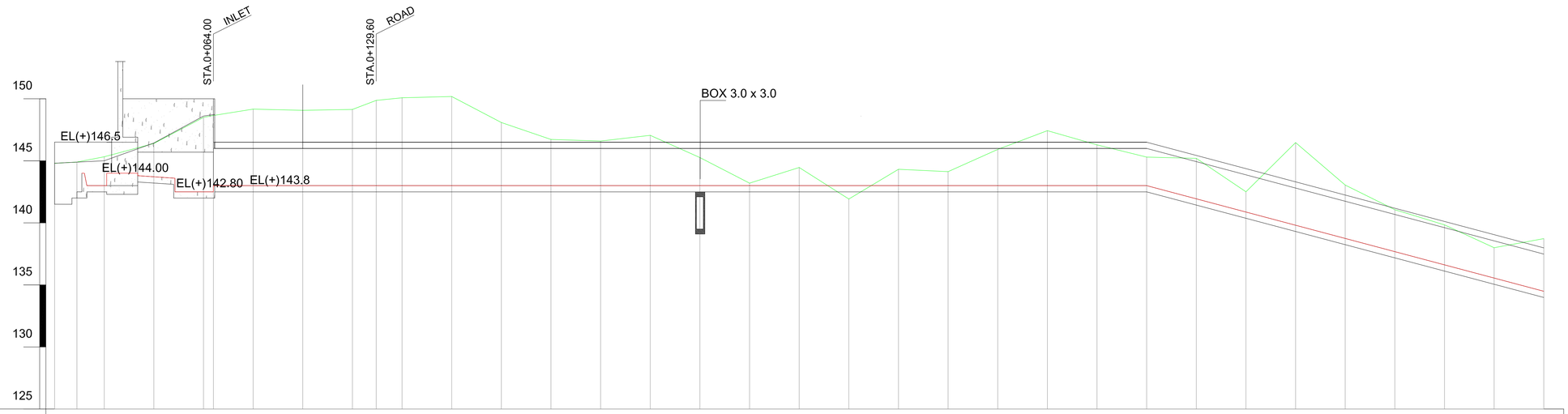
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study
		TITLE Aeration system Layout Drawing	DATE DECEMBER 2016

SCALE
Scale = None

DRG No
C-016

#1 Siphon of Main Canal 1 (L=753m)(1)

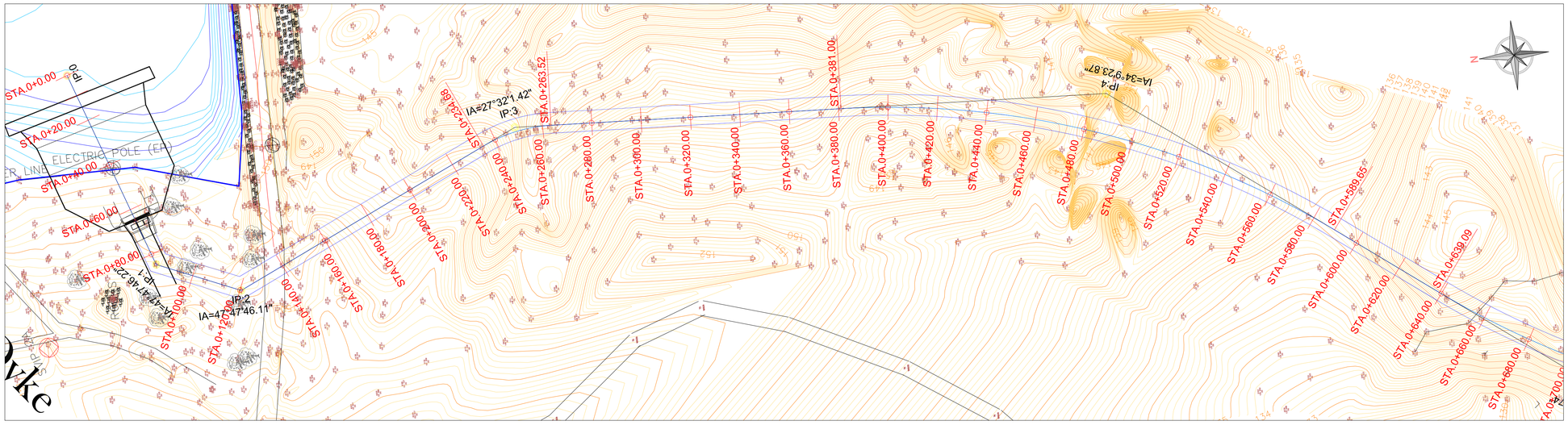
STA.0+064~STA.0+840



Chainage	Distance	Original Ground Level	Design Level
STA.0	0.00	144.80	143.50
+9.00	9.00	144.90	144.00
+20.00	11.00	145.32	143.71
+40.00	20.00	146.40	143.00
+60.00	20.00	148.50	143.00
+64.00	4.00	148.86	143.00
+80.00	16.00	149.16	143.00
+100.00	20.00	149.07	143.00
+120.00	20.00	149.14	143.00
+129.60	9.60	149.87	143.00
+140.00	10.40	150.08	143.00
+160.00	20.00	150.18	143.00
+180.00	20.00	148.09	143.00
+200.00	20.00	146.72	143.00
+220.00	20.00	146.59	143.00
+240.00	20.00	147.05	143.00
+260.00	20.00	145.26	143.00
+280.00	20.00	143.20	143.00
+300.00	20.00	144.46	143.00
+320.00	20.00	141.92	143.00
+340.00	20.00	144.32	143.00
+360.00	20.00	144.13	143.00
+380.00	20.00	145.92	143.00
+400.00	20.00	147.43	143.00
+420.00	20.00	146.29	143.00
+440.00	20.00	145.30	143.00
+460.00	20.00	145.20	141.94
+480.00	20.00	142.51	140.87
+500.00	20.00	146.47	139.81
+520.00	20.00	143.05	138.74
+540.00	20.00	141.06	137.68
+560.00	20.00	139.84	136.62
+580.00	20.00	138.00	135.55
+600.00	20.00	138.73	134.49

1 : 200

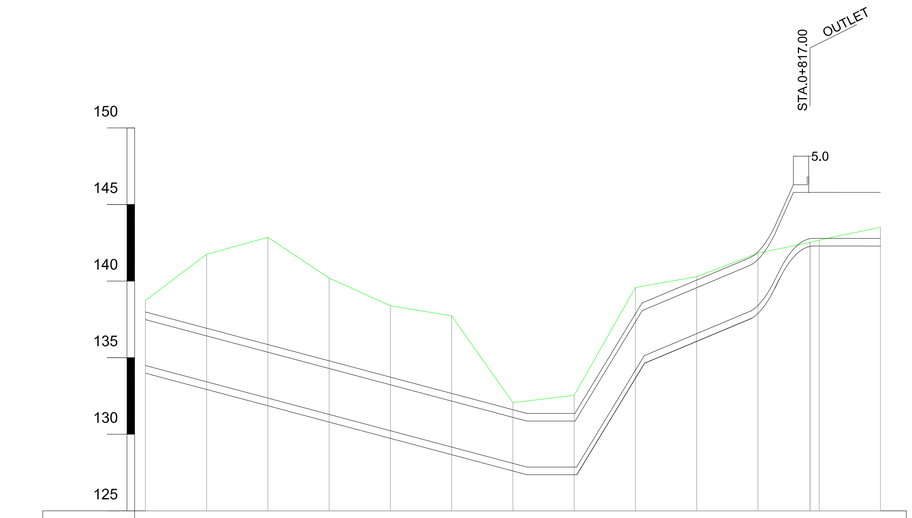
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #1 Siphon of Main Canal 1 (L=753m) -1	DATE DECEMBER 2016	DRG No C-017

#1 Siphon of Main Canal 1 (L=753m)(2)

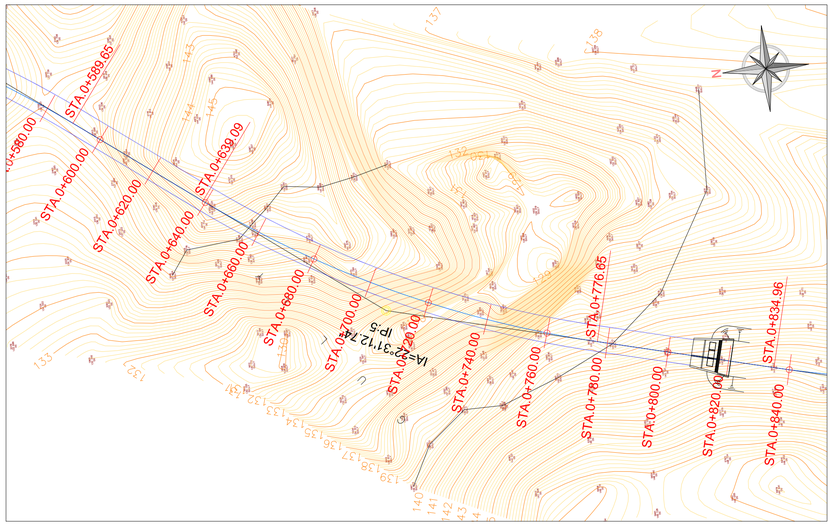
STA.0+064~STA.0+840



Chainage	+600.00	+620.00	+640.00	+660.00	+680.00	+700.00	+720.00	+740.00	+760.00	+780.00	+800.00	+817.00 +820.00	+840.00
Distance	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	17.00 3.00	20.00
Original Ground Level	138.73	141.75	142.86	140.20	138.39	137.73	132.06	132.54	139.59	140.29	141.82	142.53 142.68	143.51
Design Level	134.49	133.42	132.36	131.30	130.23	129.17	128.10	127.86	134.18	136.57	138.41	142.79	142.79

1 : 200

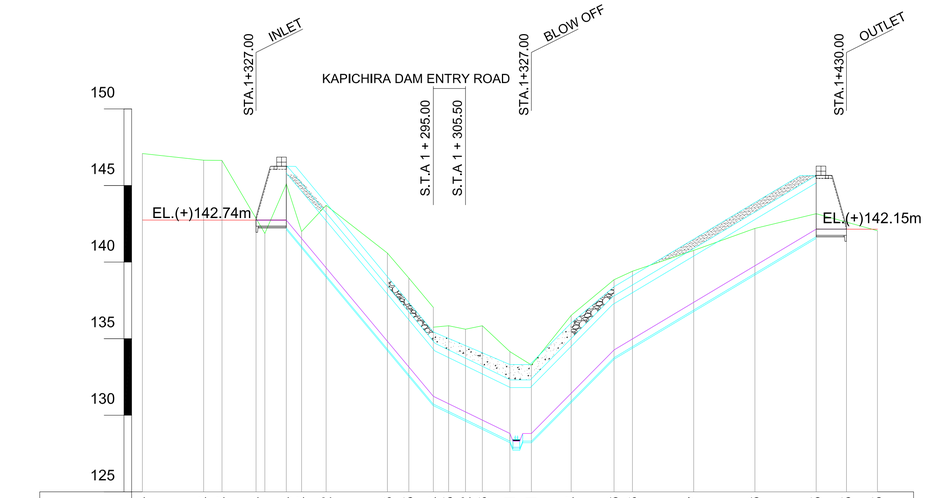
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #1 Siphon of Main Canal 1 (L=753m) -2	DATE DECEMBER 2016	DRG No C-018

#2 Siphon of Main Canal 1 (L=193m)

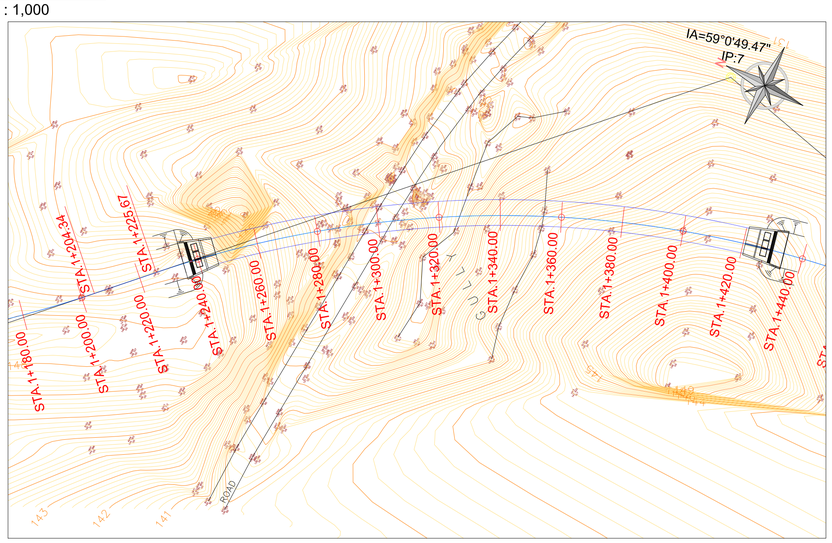
STA.1+237~STA.1+430



Chainage	Distance	Original Ground Level	Design Level
STA.1 +200.00	0.00	147.09	142.74
+220.00	20.00	146.65	142.74
+226.00	6.00	146.64	142.74
+237.00	11.00	142.20	142.74
+240.00	3.00	141.89	142.74
+247.00	7.00	145.11	142.74
+252.00	5.00	142.00	141.54
+260.00	8.00	143.70	139.62
+280.00	20.00	140.59	134.83
+287.00	7.00	138.96	133.15
+295.00	8.00	137.94	131.24
+300.00	5.00	135.84	130.75
+305.50	5.00	135.62	130.22
+311.00	6.00	135.93	129.68
+320.00	9.00	134.15	128.81
+327.00	7.00	133.28	128.81
+340.00	13.00	136.52	131.44
+354.00	14.00	138.85	134.26
+360.00	6.00	139.41	134.98
+380.00	20.00	140.76	137.37
+400.00	20.00	142.20	139.76
+420.00	20.00	143.16	142.15
+430.00	10.00	142.60	142.15
+440.00	10.00	145.60	142.15

1 : 200

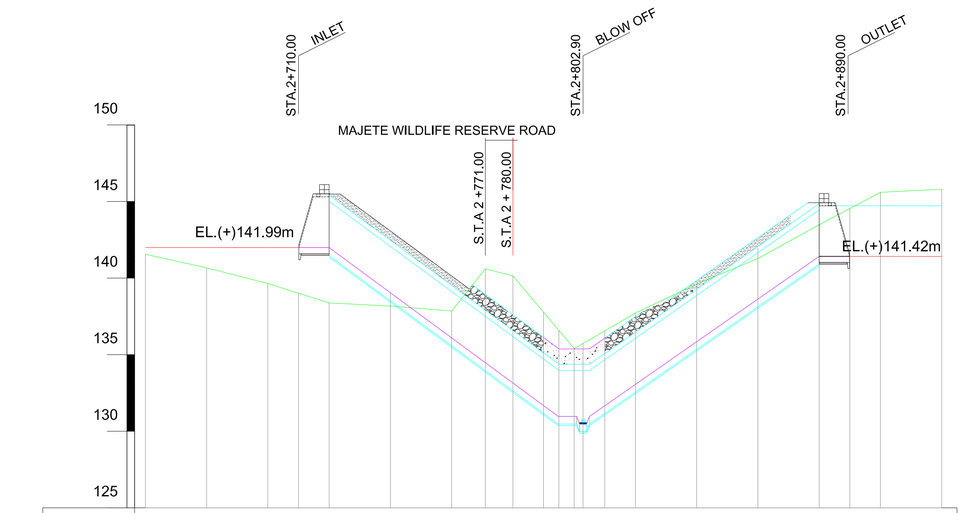
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #2 Siphon of Main Canal 1 (L=193m)	DATE DECEMBER 2016	DRG No C-019

#3 Siphon of Main Canal 1 (L=180m)

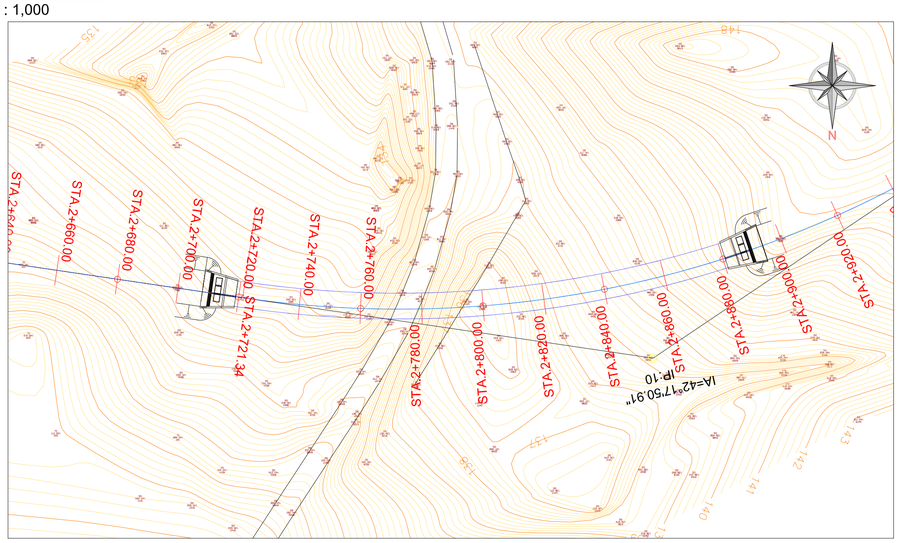
STA.2+710~STA.2+890



Chainage	Distance	Original Ground Level	Design Level
STA.2+660.00	0.00	141.55	141.99
+680.00	20.00	140.67	141.99
+700.00	20.00	139.65	141.99
+710.00	10.00	139.01	141.99
+720.00	10.00	138.38	141.99
+740.00	20.00	138.18	139.04
+760.00	20.00	137.85	136.10
+771.00	20.00	140.60	134.48
+780.00	20.00	140.15	133.15
+800.90	29.90	135.40	130.97
+802.90	2.00	135.74	130.97
+820.00	17.10	137.72	133.06
+840.00	20.00	139.61	135.85
+860.00	16.00	141.28	138.63
+880.00	10.50	143.48	141.42
+890.00	10.00	144.54	141.42
+900.00	10.00	145.60	141.42
+920.00	20.00	145.80	141.42

1 : 200

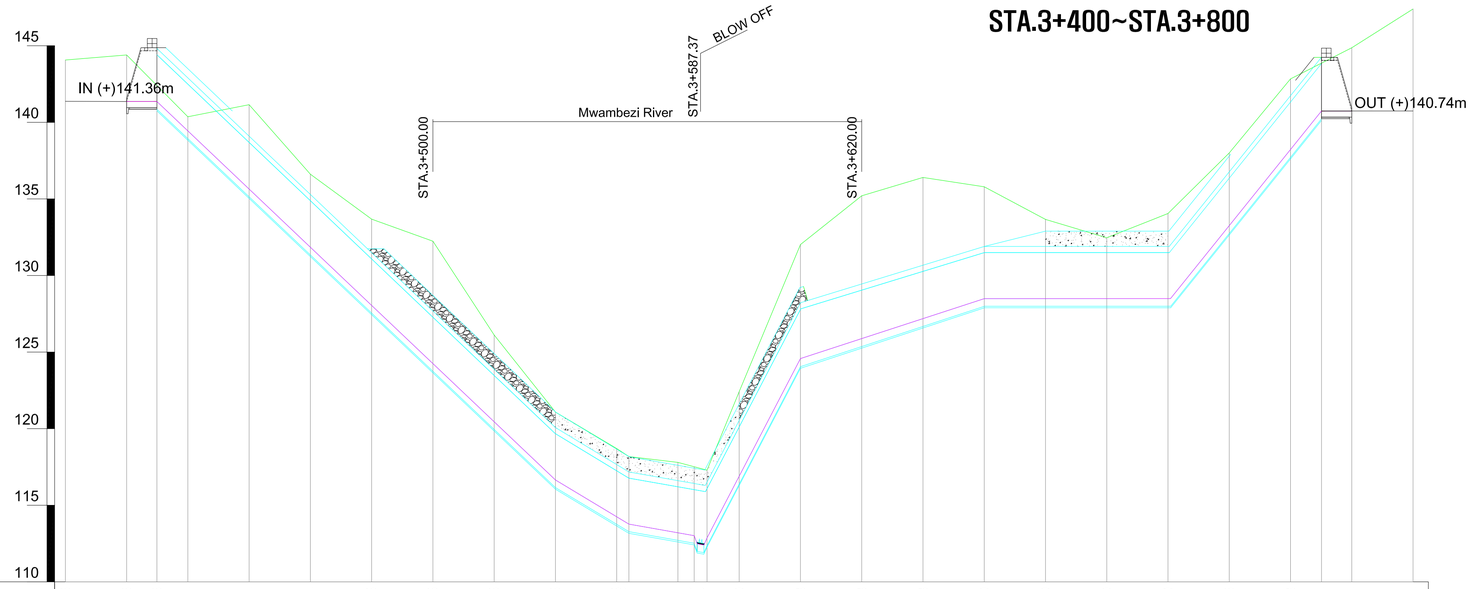
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #3 Siphon of Main Canal 1 (L=180m)	DATE DECEMBER 2016	DRG No C-020

#4 Siphon of Main Canal 1 (L=400m)

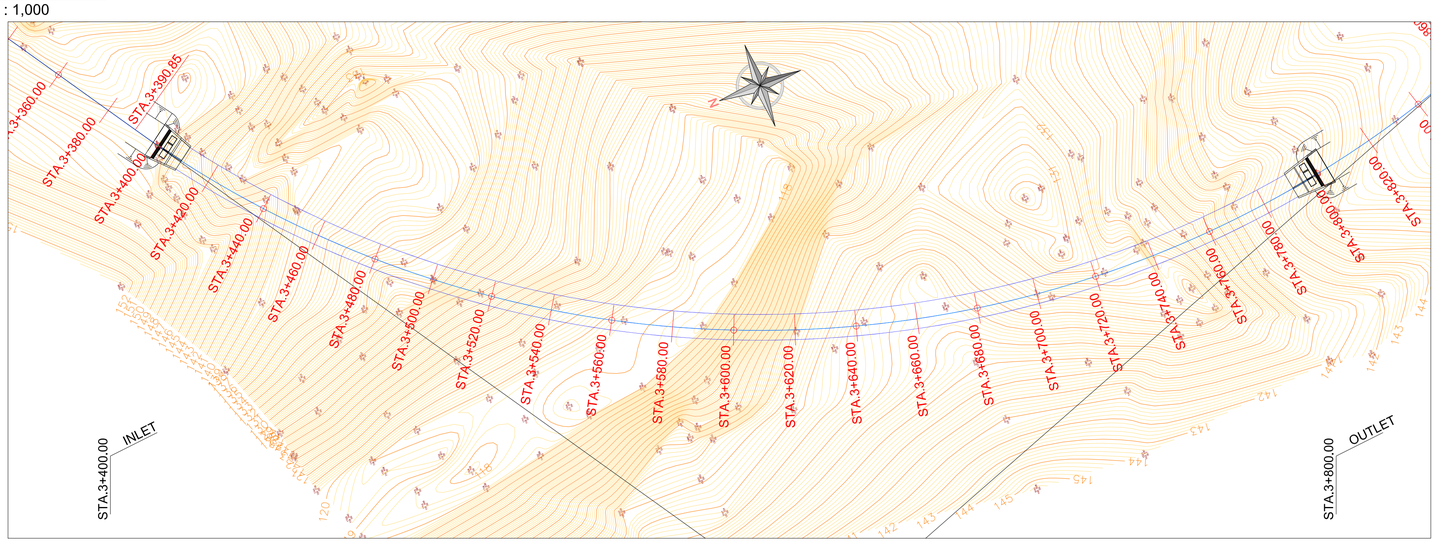
STA.3+400~STA.3+800



Chainage	Distance	Original Ground Level	Design Level
STA.3 +380.00	0.00	144.07	141.36
+400.00	20.00	144.40	141.36
+410.00	10.00	142.40	141.36
+420.00	10.00	140.36	139.44
+440.00	20.00	141.15	135.64
+460.00	20.00	136.61	131.84
+480.00	20.00	133.68	128.05
+500.00	20.00	132.24	124.25
+520.00	20.00	126.11	120.45
+540.00	20.00	121.08	116.65
+560.00	20.00	118.70	114.25
+564.00	4.00	118.18	113.77
+580.00	16.00	117.80	113.21
+585.30	5.30	117.52	112.87
+589.50	4.20	117.40	112.87
+600.00	10.50	122.42	116.90
+620.00	20.00	132.02	124.58
+640.00	20.00	135.20	125.88
+660.00	20.00	136.40	127.18
+680.00	20.00	135.79	128.49
+700.00	20.00	133.66	128.49
+720.00	20.00	132.47	128.49
+740.00	20.00	134.05	128.50
+760.00	20.00	138.00	133.26
+780.00	20.00	142.84	138.23
+790.00	10.00	143.86	140.74
+800.00	10.00	144.87	140.74
+820.00	20.00	147.40	140.74

1 : 200

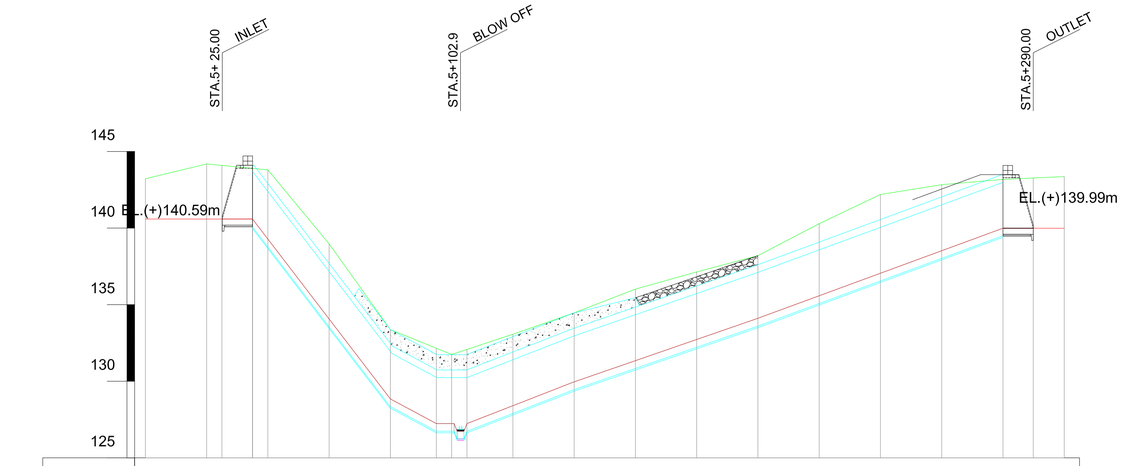
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #4 Siphon of Main Canal 1 (L=400m)	DATE DECEMBER 2016	DRG No C-021

#5 Siphon of Main Canal 1 (L=265m)

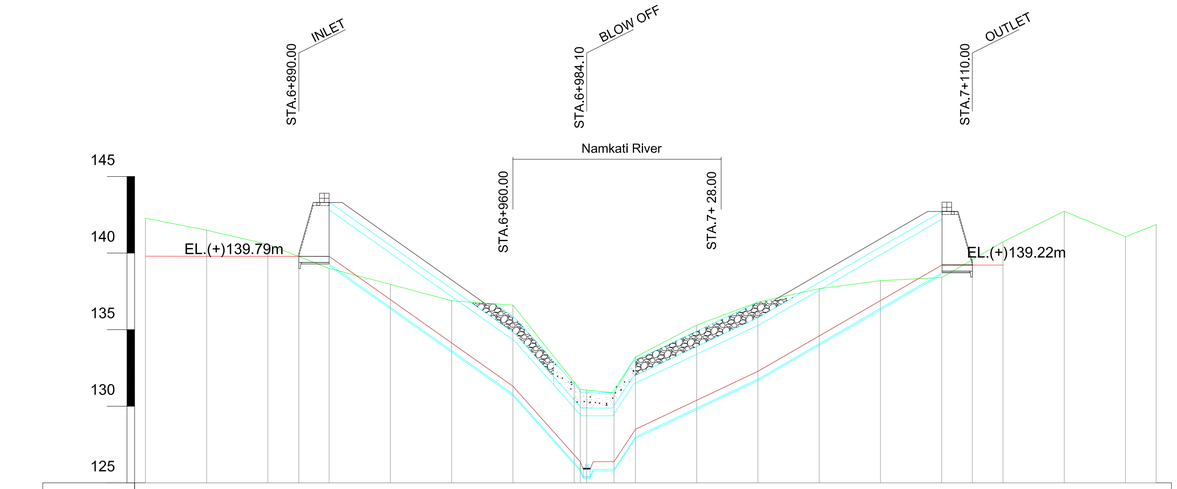
STA.5+025~STA.5+290



| | | |

#6 Siphon of Main Canal 1 (L=220m)

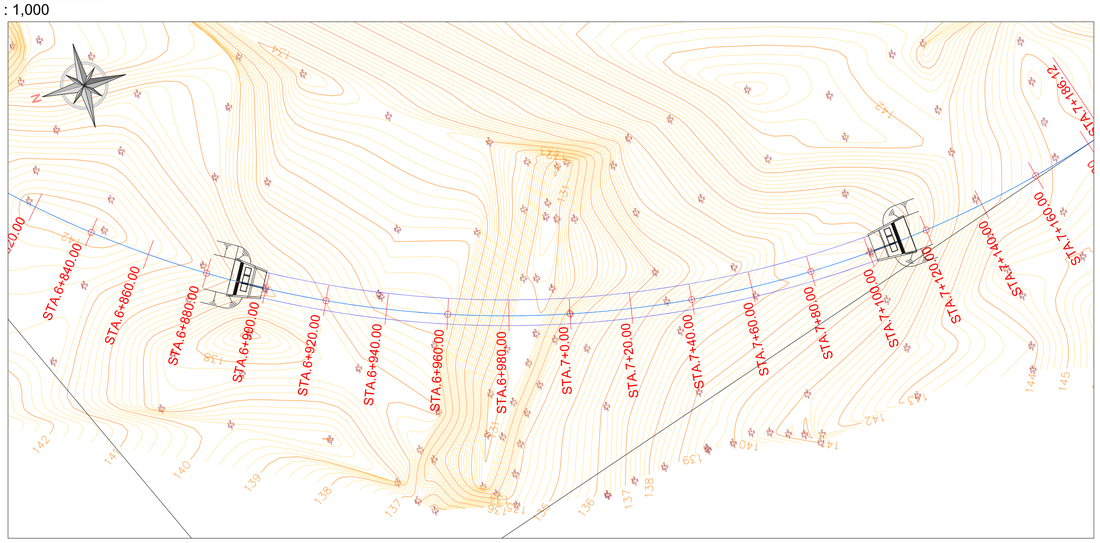
STA.6+890~STA.7+110



Design Level	139.79	139.79	139.79	139.79	139.79	136.96	134.14	131.31	126.38	126.38	126.38	128.50	130.39	132.28	134.59	136.90	139.22	139.22	139.22	139.22	139.22		
Original Ground Level	142.28	141.49	140.57	139.78	139.00	137.96	136.89	136.60	131.58	131.10	130.88	133.22	135.30	136.80	137.68	138.20	138.40	139.57	140.73	142.73	141.07		
Distance	0.00	20.00	20.00	10.00	10.00	20.00	20.00	20.00	20.00	2.10	8.90	7.00	20.00	20.00	20.00	20.00	20.00	10.00	10.00	20.00	20.00		
Chainage	STA.6 +840.00	+860.00	+880.00	+890.00	+900.00	+920.00	+940.00	+960.00	+980.00	+984.10	+993.00	STA.7	+20.00	+40.00	+60.00	+80.00	+100.00	+100.00	+120.00	+140.00	+160.00		

1 : 200

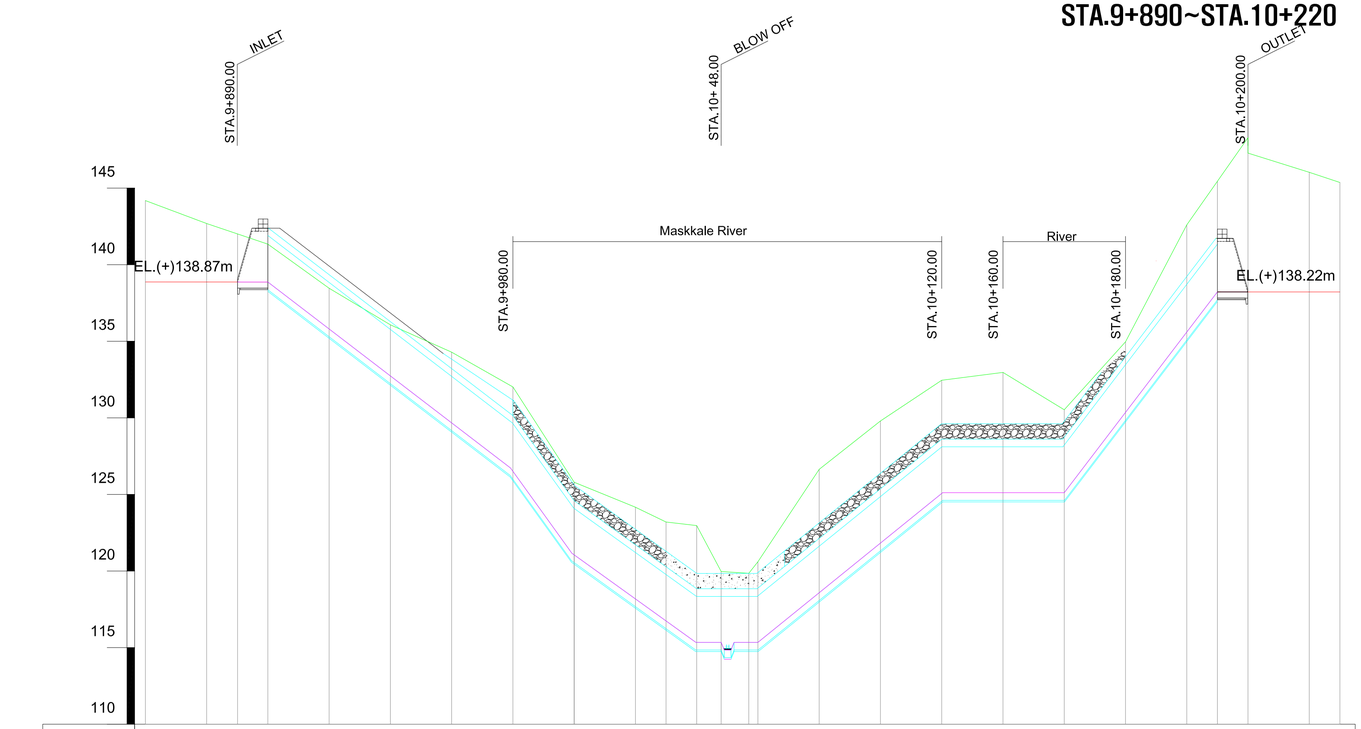
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #6 Siphon of Main Canal 1 (L=220m)	DATE DECEMBER 2016	DRG No C-023

#7 Siphon of Main Canal 1 (L=330m)

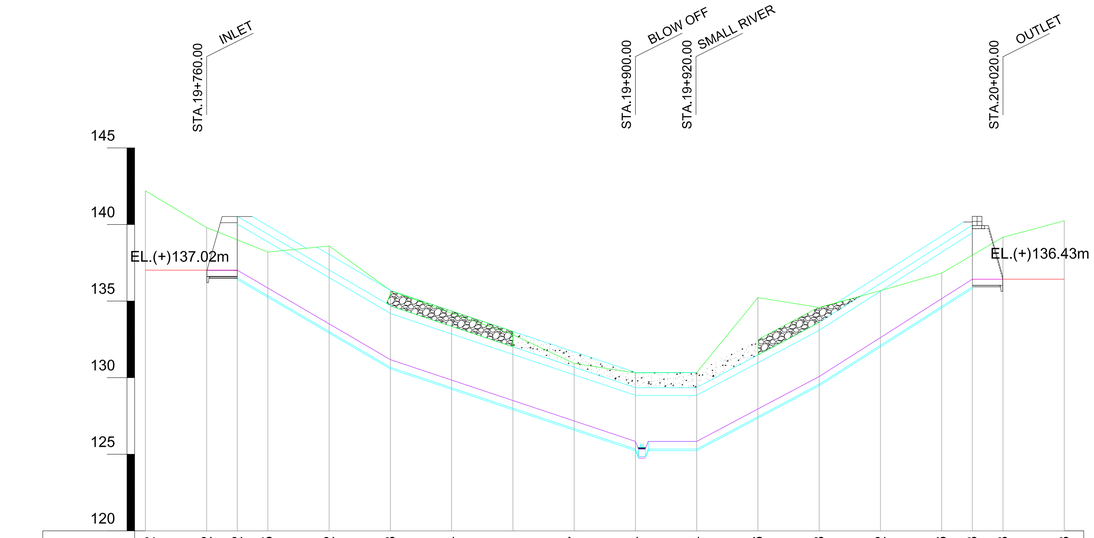
STA.9+890~STA.10+220



| | | |

#8 Siphon of Main Canal 1 (L=260m)

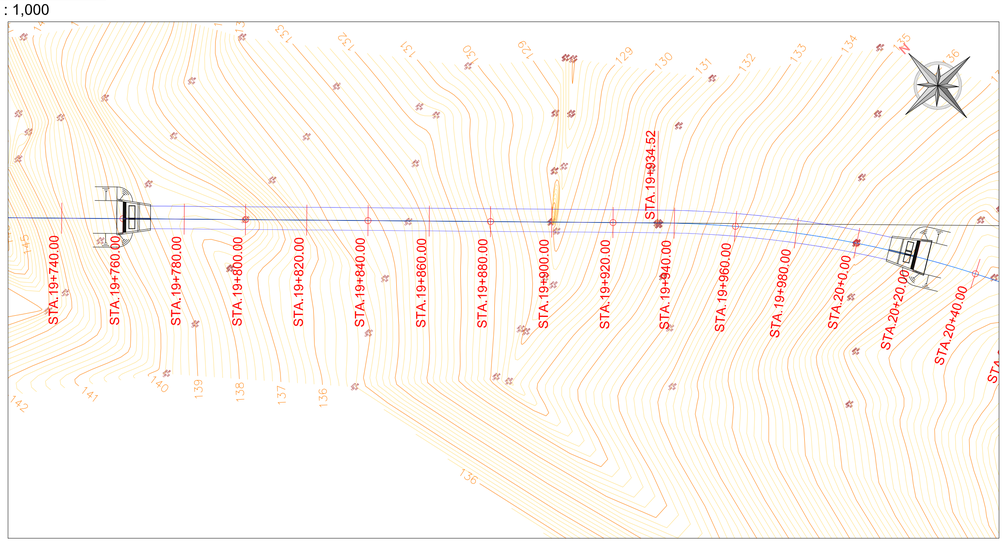
STA.19+760~STA.20+020



Chainage	Distance	Original Ground Level	Design Level
STA.19 +740.00	0.0	142.20	137.02
+760.00	20.0	139.80	137.02
+770.00	10.0	139.00	137.02
+780.00	10.0	138.20	135.85
+800.00	20.0	138.60	133.52
+820.00	20.0	135.69	131.18
+840.00	20.0	134.20	129.84
+860.00	20.0	132.81	128.51
+880.00	20.0	130.93	127.17
+900.00	20.0	130.31	125.84
+920.00	20.0	130.34	125.84
+940.00	20.0	135.23	127.96
+960.00	20.0	134.58	130.08
+980.00	20.0	135.68	132.62
STA.20	20.0	136.83	135.16
+ 10.00	10.0	138.00	136.43
+ 20.00	10.0	139.17	136.43
+ 40.00	20.0	140.24	136.43

1 : 200

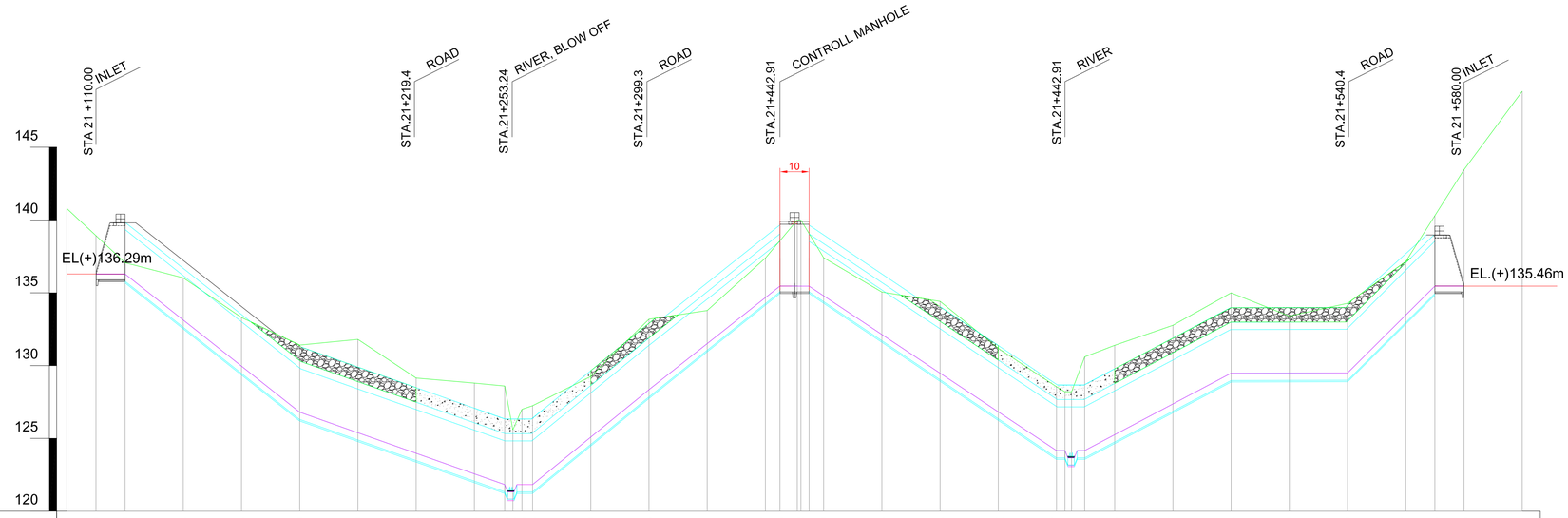
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #8 Siphon of Main Canal 1 (L=260m)	DATE DECEMBER 2016	DRG No C-025

#9 Siphon of Main Canal 1 (L=470m)

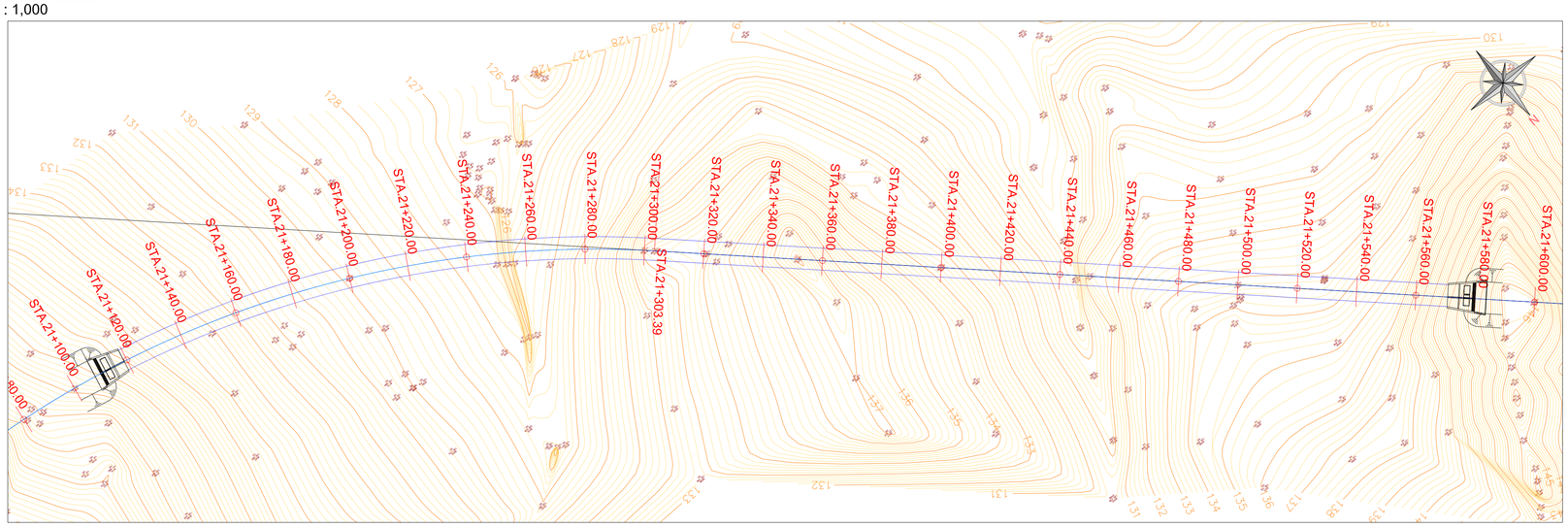
STA.21+110~STA.21+580



Chainage	Distance	Original Ground Level	Design Level
STA.21	0.00	140.79	
+100.00	20.00	137.07	136.29
+110.00	20.00	136.03	136.29
+120.00	20.00	133.30	133.13
+140.00	20.00	131.41	129.96
+160.00	20.00	131.80	126.80
+180.00	20.00	129.15	125.39
+200.00	20.00	128.80	123.98
+220.00	20.00	129.26	122.56
+240.00	20.00	133.19	121.83
+253.24	13.24	133.78	121.83
+260.00	6.76	137.39	121.83
+280.00	20.00	138.60	125.09
+300.00	20.00	140.00	128.35
+320.00	20.00	137.41	131.51
+340.00	20.00	135.06	134.67
+345.00	5.00	134.41	135.46
+350.95	5.95	131.19	135.46
+360.00	7.80	128.55	134.79
+380.00	20.00	130.00	132.14
+400.00	20.00	131.39	129.48
+420.00	20.00	132.77	126.82
+440.00	20.00	135.00	124.17
+442.27	2.27	138.75	124.17
+460.00	14.82	134.28	125.26
+480.00	20.00	137.15	127.37
+500.00	20.00	137.15	129.48
+520.00	20.00	143.46	129.49
+540.00	20.00	148.85	129.50
+560.00	20.00		133.47
+570.00	20.00		135.46
+580.00	20.00		135.46
+600.00	20.00		

1 : 200

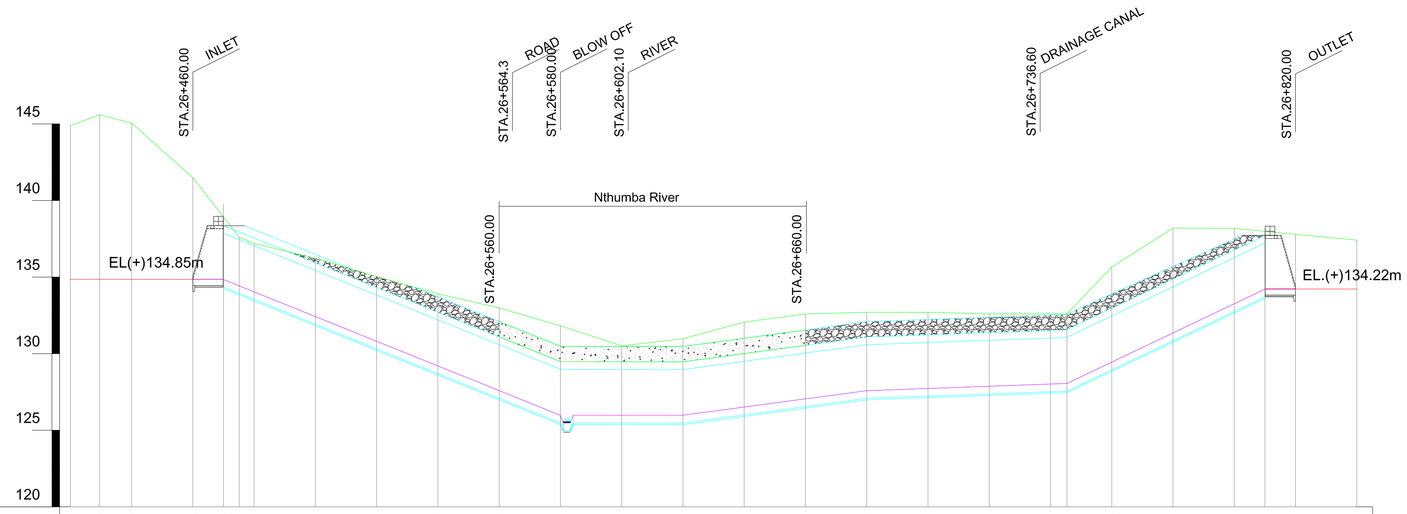
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #9 Siphon of Main Canal 1 (L=470m)	DATE DECEMBER 2016	DRG No C-026

#10 Siphon of Main Canal 1 (L=360m)

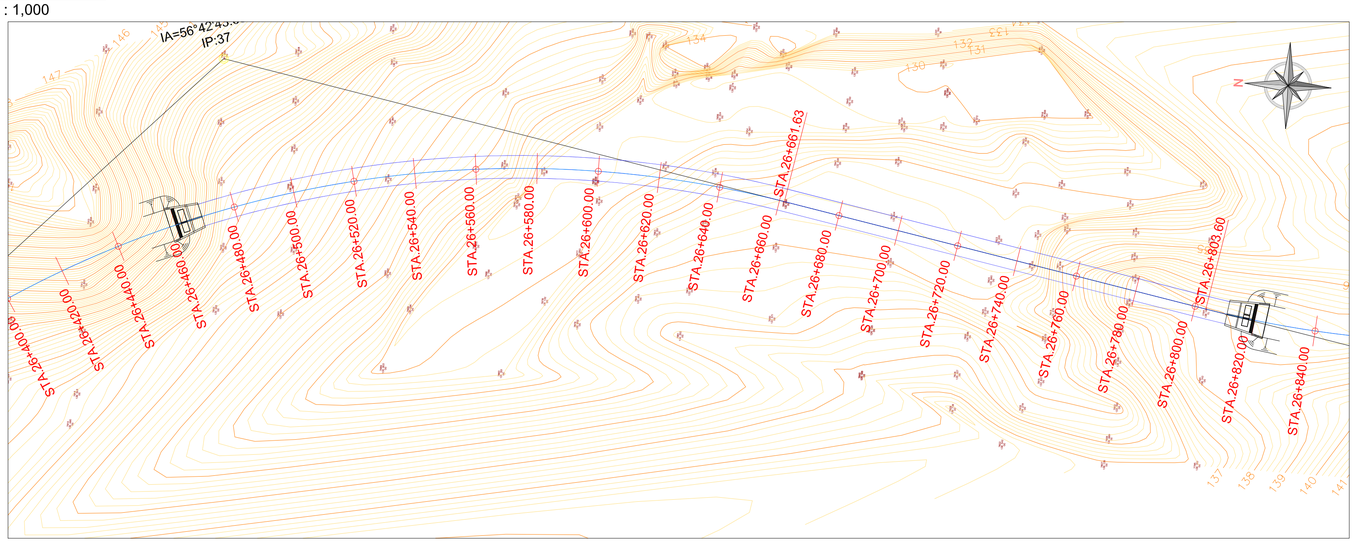
STA.26+460~STA.26+820



Chainage	Distance	Original Ground Level	Design Level
STA.26 +420.00	20.00	144.89	134.85
+429.58	9.58	145.60	134.85
+440.00	10.42	145.05	134.85
+460.00	20.00	141.48	134.85
+475.13	15.13	137.60	134.85
+480.00	4.87	137.20	134.43
+500.00	20.00	136.23	134.03
+520.00	20.00	135.03	132.42
+540.00	20.00	133.91	130.81
+560.00	20.00	132.98	129.20
+580.00	20.00	131.82	127.59
+600.00	20.00	130.60	125.98
+620.00	20.00	130.97	125.98
+640.00	20.00	132.06	125.98
+660.00	20.00	132.59	126.52
+680.00	20.00	132.70	127.05
+700.00	20.00	132.70	127.59
+720.00	20.00	132.60	127.73
+740.00	20.00	132.60	127.88
+745.35	5.35	132.60	128.02
+760.00	14.65	135.66	128.06
+780.00	20.00	138.20	129.45
+800.00	20.00	138.18	131.36
+820.00	20.00	137.79	133.26
+840.00	20.00	137.41	134.22

1 : 200

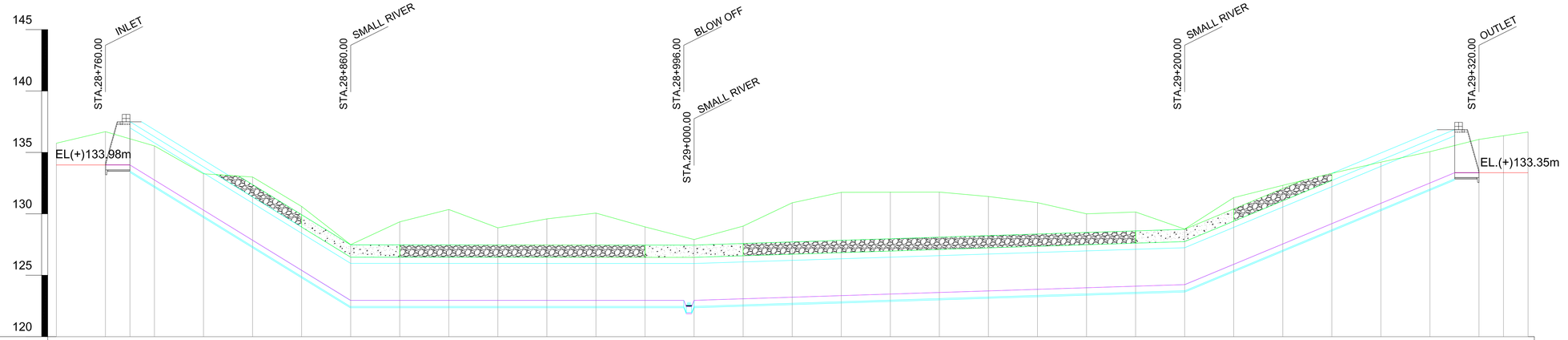
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #10 Siphon of Main Canal 1 (L=360m)	DATE DECEMBER 2016	DRG No C-027

#11 Siphon of Main Canal 1 (L=560m)

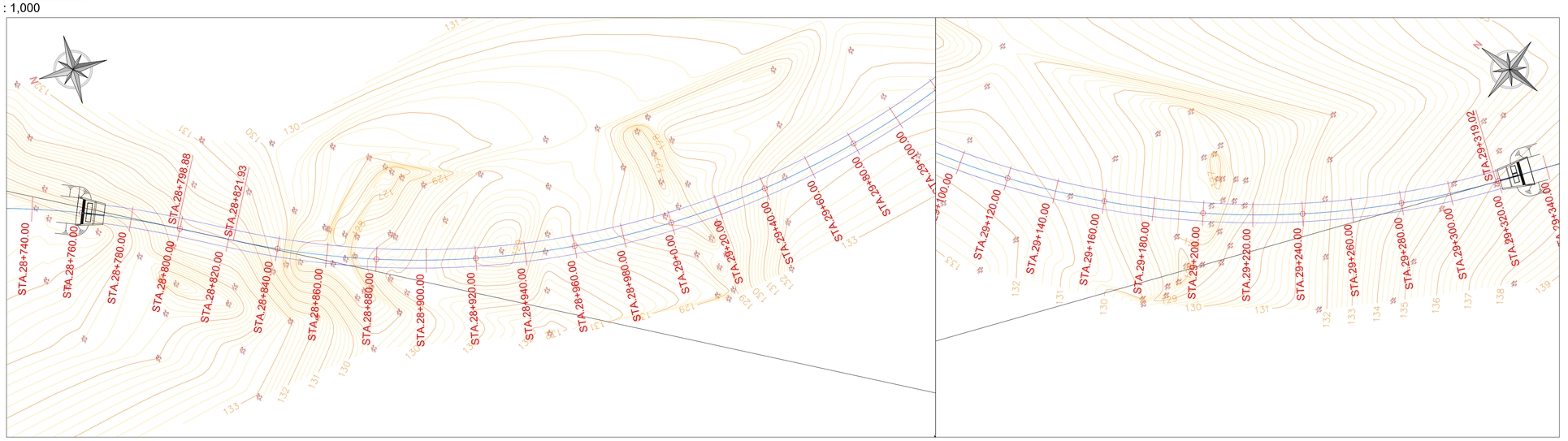
STA.28+760~STA.28+320



Chainage	Distance	Original Ground Level	Design Level
STA.28 +740.00	0.0	135.75	133.98
+760.00	20.0	136.69	133.98
+780.00	20.0	135.53	132.76
+800.00	20.0	133.26	130.30
+820.00	20.0	133.00	127.85
+840.00	20.0	130.60	125.41
+860.00	20.0	127.49	122.96
+880.00	20.0	129.35	122.96
+900.00	20.0	130.35	122.96
+920.00	20.0	128.86	122.96
+940.00	20.0	129.59	122.96
+960.00	20.0	130.06	122.96
+980.00	20.0	128.94	122.96
STA.29	20.0	127.91	122.96
+ 20.00	20.0	129.00	123.09
+ 40.00	20.0	130.90	123.21
+ 60.00	20.0	131.75	123.34
+ 80.00	20.0	131.78	123.47
+100.00	20.0	131.77	123.60
+120.00	20.0	131.41	123.73
+140.00	20.0	130.91	123.86
+160.00	20.0	130.00	123.98
+180.00	20.0	130.15	124.11
+200.00	20.0	128.76	124.24
+220.00	20.0	131.32	125.89
+240.00	20.0	132.32	127.54
+260.00	20.0	133.30	129.20
+280.00	20.0	134.21	130.86
+300.00	20.0	135.06	132.51
+320.00	20.0	136.06	133.35
+330.00	10.0	136.36	133.35
+340.00	10.0	136.66	133.35

1 : 200

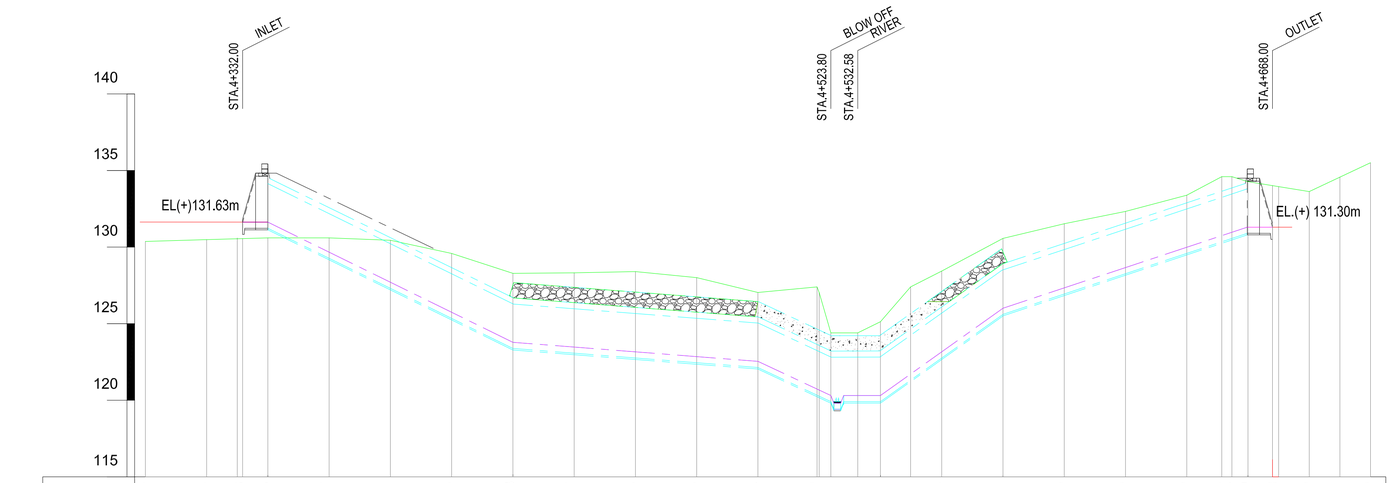
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #11 Siphon of Main Canal 1 (L=570m)	DATE DECEMBER 2016	DRG No C-028

#1 Siphon of Main Canal 2 (L=336m)

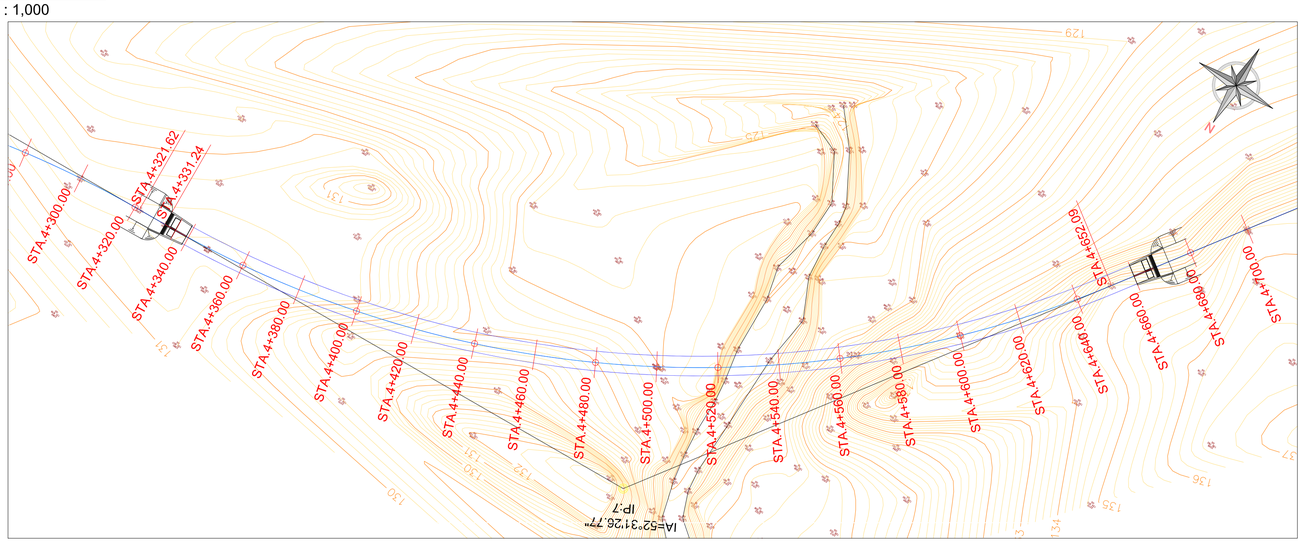
STA.4+332~STA.4+668



Chainage	Distance	Original Ground Level	Design Level
STA.4 +300.00	0.00	130.37	131.63
+320.00	20.00	130.49	131.63
+332.00	12.00	130.55	131.63
+340.00	8.00	130.60	131.63
+360.00	20.00	130.60	129.67
+380.00	20.00	130.45	127.71
+400.00	20.00	129.58	125.75
+420.00	20.00	128.28	123.78
+440.00	20.00	128.32	123.47
+460.00	20.00	128.40	123.16
+480.00	20.00	128.00	122.85
+500.00	20.00	127.04	122.54
+518.30	18.30	127.40	120.63
+523.80	5.50	127.40	120.31
+532.58	8.78	124.40	120.31
+540.00	7.42	125.13	120.31
+549.83	9.83	127.40	121.71
+560.00	10.17	128.43	123.16
+580.00	20.00	130.57	126.01
+600.00	20.00	131.52	127.30
+620.00	20.00	132.33	128.60
+640.00	20.00	133.39	129.89
+651.44	11.44	134.60	130.63
+654.75	3.31	134.60	130.85
+660.00	5.25	134.27	131.19
+668.00	8.00	134.05	131.30
+680.00	20.00	133.62	131.30
+700.00	20.00	135.51	131.30

1 : 200

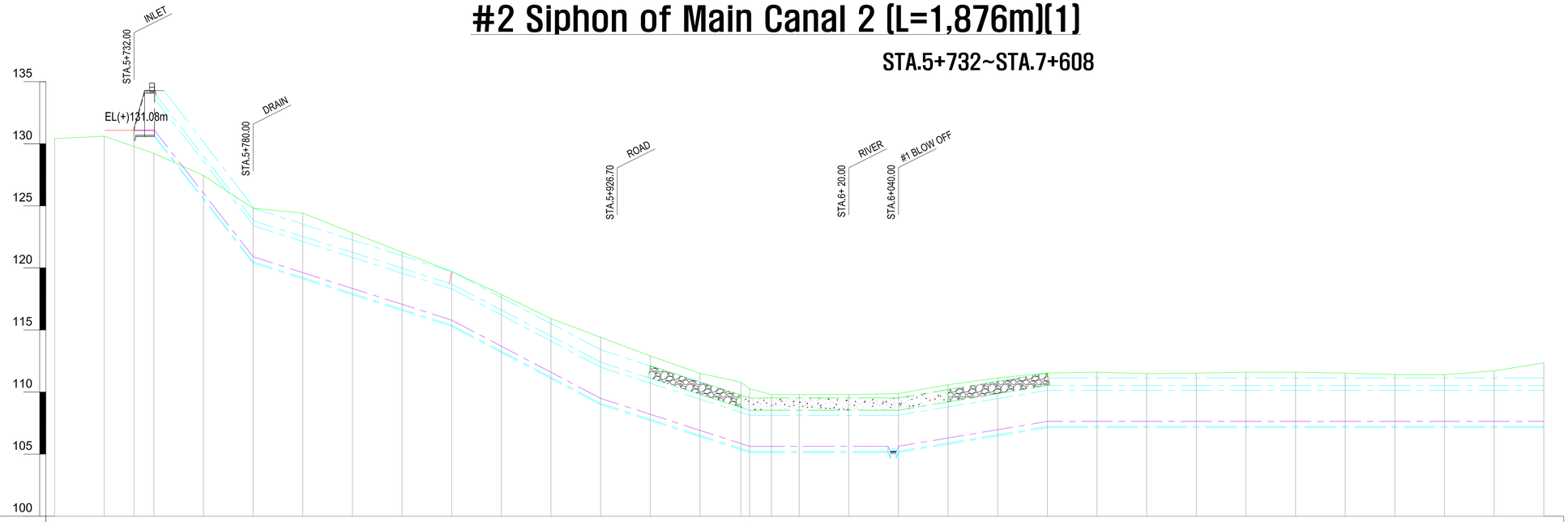
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #1 Siphon of Main Canal 2 (L=336m)	DATE DECEMBER 2016	DRG No C-029

#2 Siphon of Main Canal 2 (L=1,876m)(1)

STA.5+732~STA.7+608



Chainage	Distance	Original Ground Level	Design Level
STA.5 +700.00	0.00	130.40	
+720.00	20.00	130.61	131.08
+732.00	12.00	130.52	131.08
+740.00	8.00	129.22	131.08
+760.00	20.00	127.44	126.02
+780.00	20.00	124.80	120.89
+800.00	20.00	124.41	119.62
+820.00	20.00	122.83	118.34
+840.00	20.00	121.27	117.07
+860.00	20.00	119.71	115.79
+880.00	20.00	117.86	113.69
+900.00	20.00	115.92	111.59
+920.00	20.00	114.41	109.49
+940.00	20.00	112.91	108.20
+960.00	20.00	111.51	106.92
+976.51	16.51	110.80	105.85
+980.00	3.49	110.26	105.63
+988.81	8.81	109.80	105.63
STA.6	11.19	109.80	105.63
+20.00	20.00	109.80	105.63
+40.00	20.00	109.88	105.63
+60.00	20.00	110.59	106.30
+80.00	20.00	111.14	106.97
+100.00	20.00	111.53	107.63
+120.00	20.00	111.60	107.63
+140.00	20.00	111.49	107.63
+160.00	20.00	111.53	107.63
+180.00	20.00	111.60	107.63
+200.00	20.00	111.60	107.63
+220.00	20.00	111.52	107.63
+240.00	20.00	111.40	107.63
+260.00	20.00	111.40	107.63
+280.00	20.00	111.71	107.63
+300.00	20.00	112.35	107.63

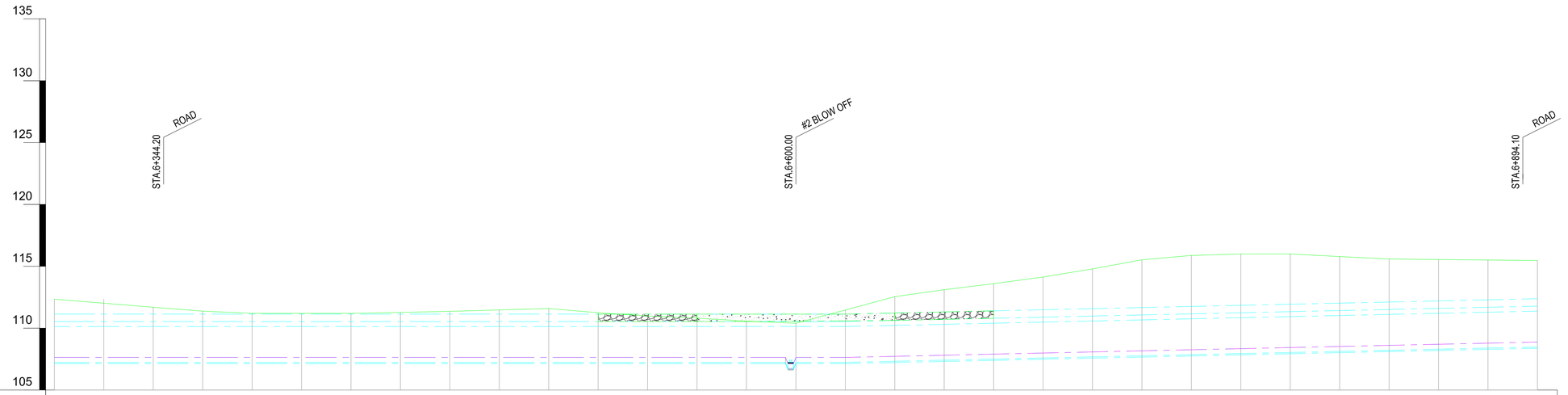
1 : 200

1 : 1,000

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #2 Siphon of Main Canal 2 (L=1,876m)(1)	DATE DECEMBER 2016	DRG No C-030

#2 Siphon of Main Canal 2 (L=1,876m)(2)

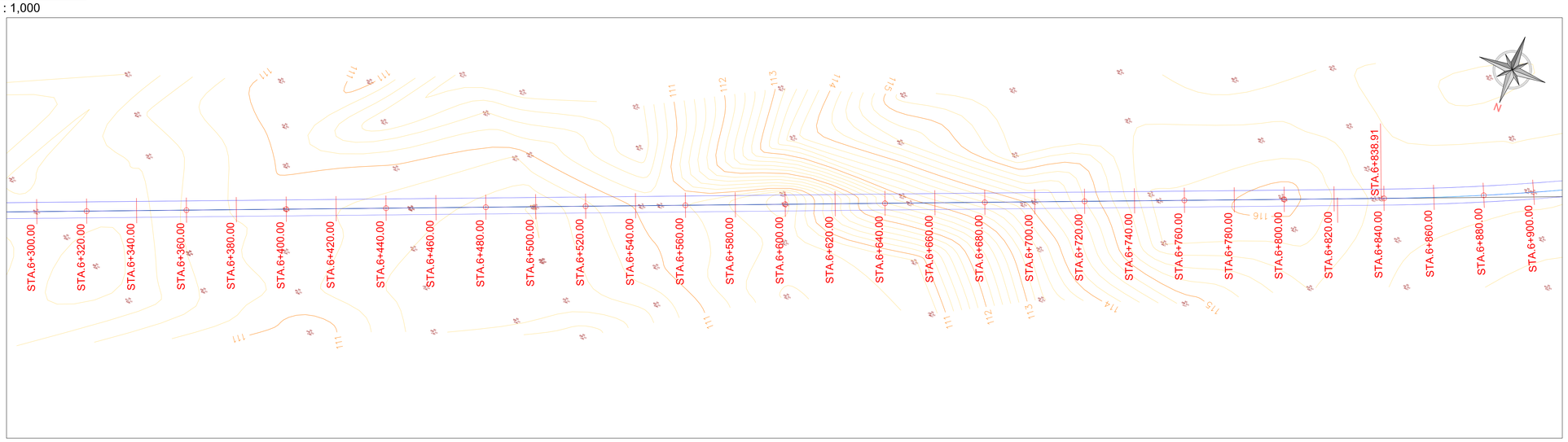
STA.5+732~STA.7+608



Chainage	Distance	Original Ground Level	Design Level
+300.00	20.00	112.35	107.63
+320.00	20.00	112.35	107.63
+340.00	20.00	111.69	107.63
+360.00	20.00	111.38	107.63
+380.00	20.00	111.20	107.63
+400.00	20.00	111.20	107.63
+420.00	20.00	111.20	107.63
+440.00	20.00	111.27	107.63
+460.00	20.00	111.36	107.63
+480.00	20.00	111.48	107.63
+500.00	20.00	111.59	107.63
+520.00	20.00	111.25	107.63
+540.00	20.00	110.98	107.63
+560.00	20.00	110.81	107.63
+580.00	20.00	110.57	107.63
+600.00	20.00	110.40	107.63
+620.00	20.00	111.47	107.63
+640.00	20.00	112.55	107.72
+660.00	20.00	113.11	107.81
+680.00	20.00	113.60	107.90
+700.00	20.00	114.13	107.99
+720.00	20.00	114.79	108.08
+740.00	20.00	115.52	108.17
+760.00	20.00	115.88	108.26
+780.00	20.00	116.00	108.35
+800.00	20.00	116.00	108.43
+820.00	20.00	115.79	108.52
+840.00	20.00	115.59	108.61
+860.00	20.00	115.55	108.70
+880.00	20.00	115.51	108.79
+900.00	20.00	115.47	108.88

1 : 200

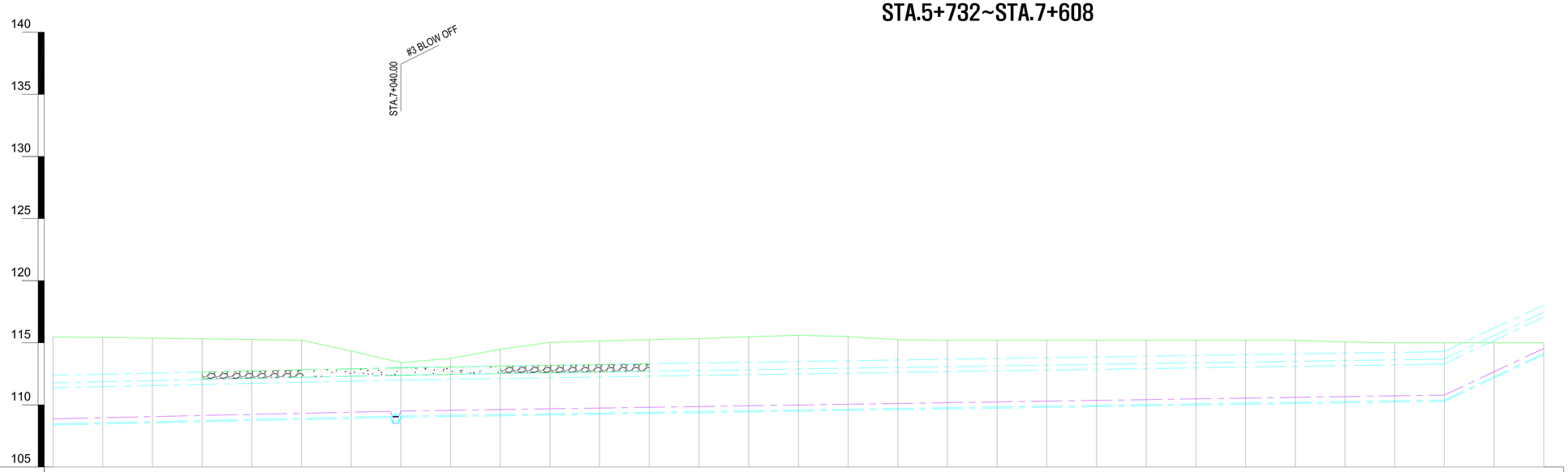
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #2 Siphon of Main Canal 2 (L=1,876m)(2)	DATE DECEMBER 2016	DRG No C-031

#2 Siphon of Main Canal 2 (L=1,876m)(3)

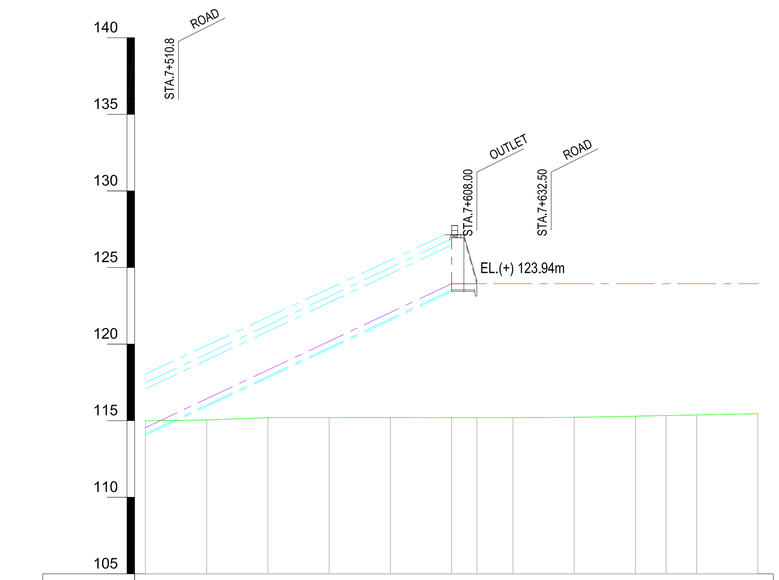
STA.5+732~STA.7+608



| | | |

#2 Siphon of Main Canal 2 (L=1,876m)(4)

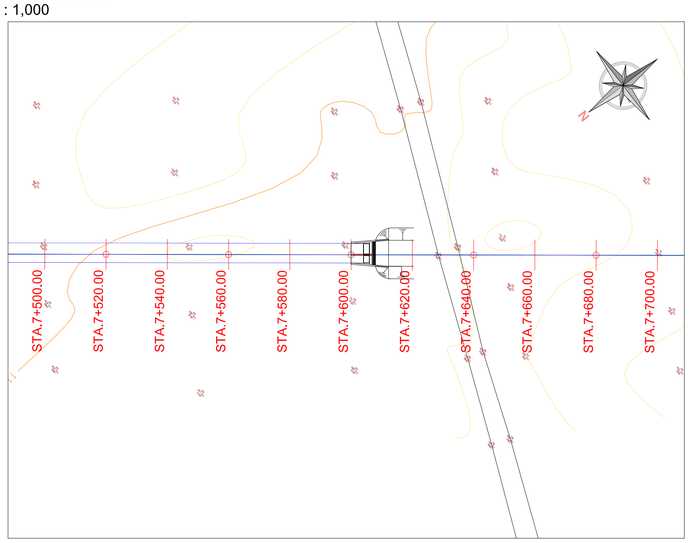
STA.5+732~STA.7+608



Chainage	Distance	Original Ground Level	Design Level
+500.00	20.00	115.00	114.54
+520.00	20.00	115.04	116.43
+540.00	20.00	115.20	118.30
+560.00	20.00	115.20	120.18
+580.00	20.00	115.20	122.06
+600.00	20.00	115.20	123.94
+608.00	8.00	115.20	123.94
+620.00	20.00	115.20	123.94
+640.00	20.00	115.22	123.93
+660.00	20.00	115.30	123.93
+670.00	10.00	115.34	
+680.00	10.00	115.38	123.93
+700.00	20.00	115.45	123.92

1 : 200

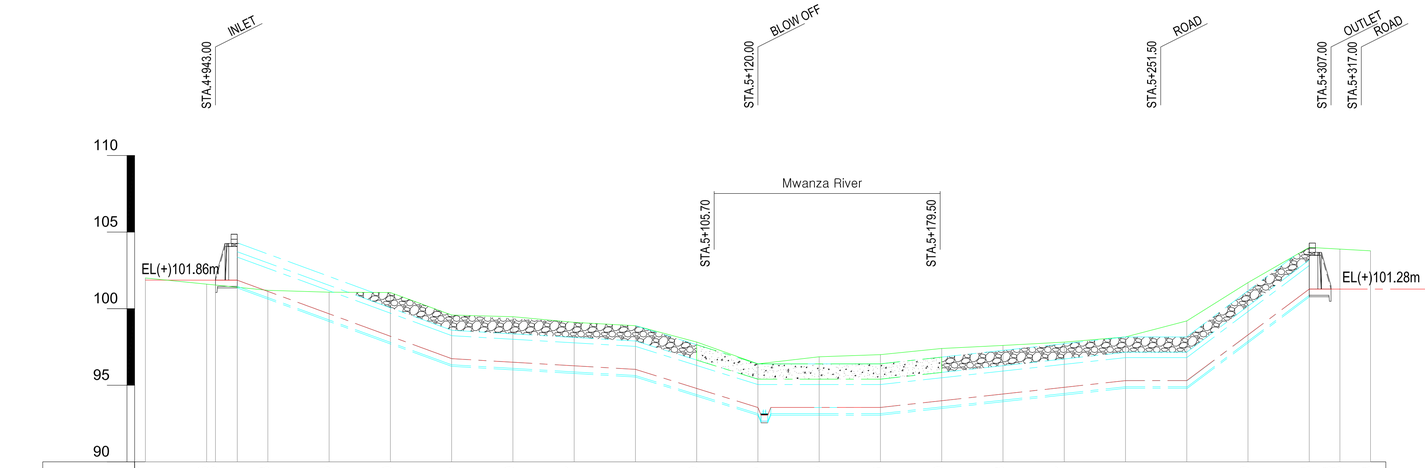
1 : 1,000



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #2 Siphon of Main Canal 2 (L=1,876m)(4)	DATE DECEMBER 2016	DRG No C-033

#1 Siphon of Main Canal 3 (L=364m)

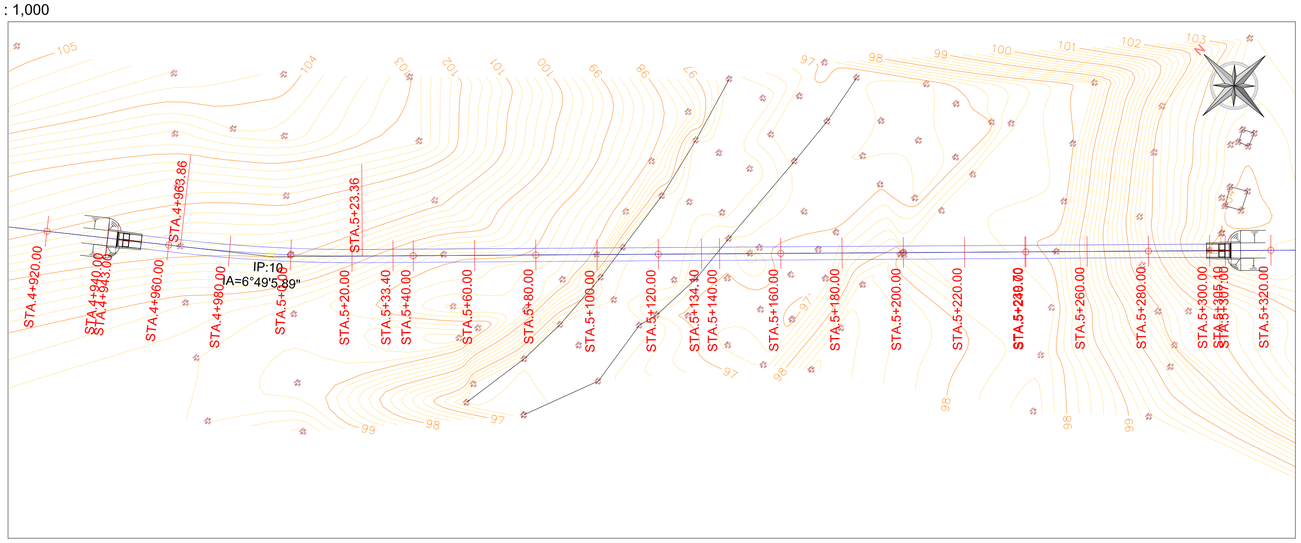
STA.4+943~STA.5+307



Chainage	Distance	Original Ground Level	Design Level
STA.4 +920.00	0.00	102.00	101.87
+943.00	23.00	101.94	101.86
+943.00	3.00	101.94	101.86
+960.00	20.00	101.20	101.13
+980.00	20.00	101.08	99.66
STA.5	20.00	101.06	98.20
+20.00	20.00	99.59	96.74
+40.00	20.00	99.47	96.50
+60.00	20.00	99.11	96.27
+80.00	20.00	98.89	96.04
+100.00	20.00	97.82	94.79
+120.00	20.00	96.40	93.55
+140.00	0.70	96.86	93.55
+160.00	7.42	97.00	93.56
+180.00	10.17	97.40	93.99
+200.00	20.00	97.60	94.43
+220.00	20.00	97.82	94.87
+240.00	20.00	98.15	101.54
+260.00	20.00	99.20	95.30
+280.00	5.25	101.70	98.29
+300.00	20.00	104.00	101.28
+307.00	7.00	103.81	101.28
+310.00	3.00	103.88	101.28
+320.00	10.00	103.78	101.28

1 : 200

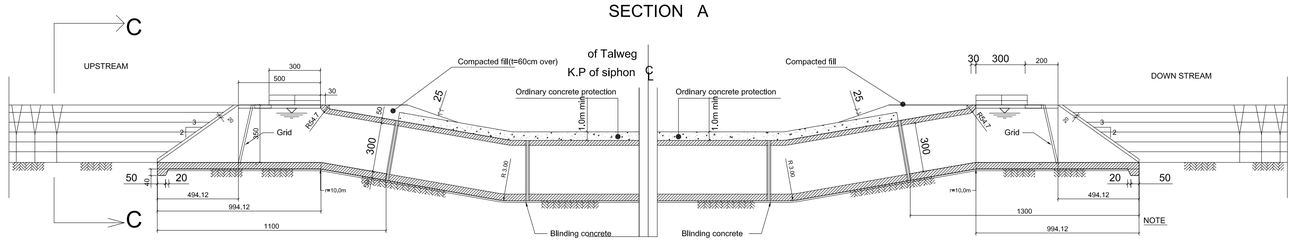
1 : 1,000



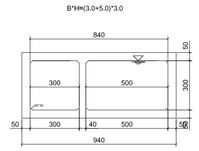
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 200
		TITLE #1 Siphon of Main Canal 3 (L=364m)	DATE DECEMBER 2016	DRG No C-034

General Plan of Siphon (Type 1)

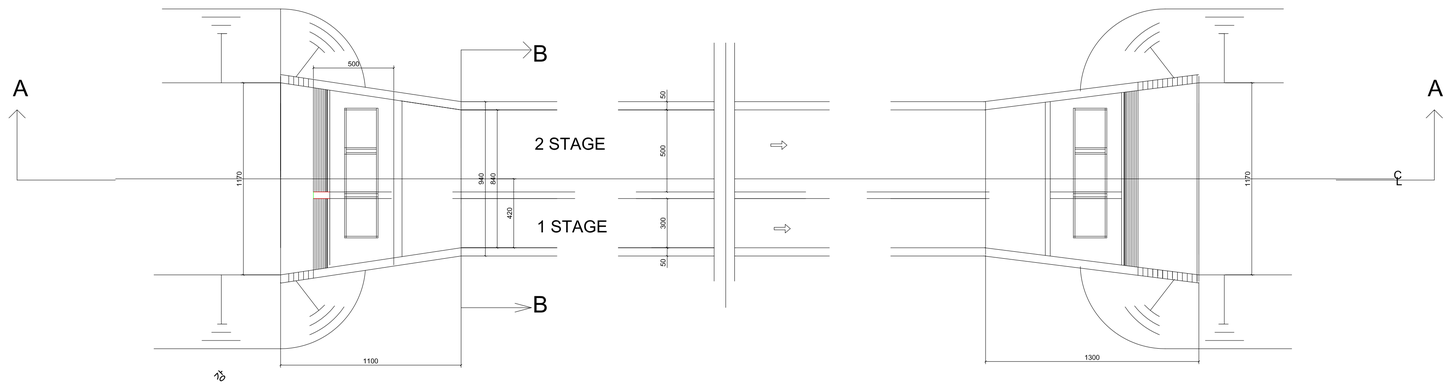
SECTION A



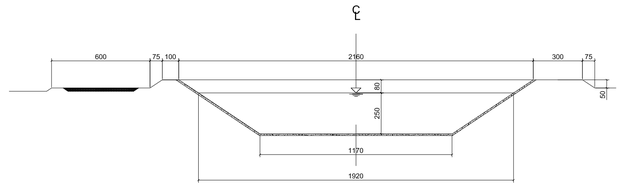
SECTION B



PLAN



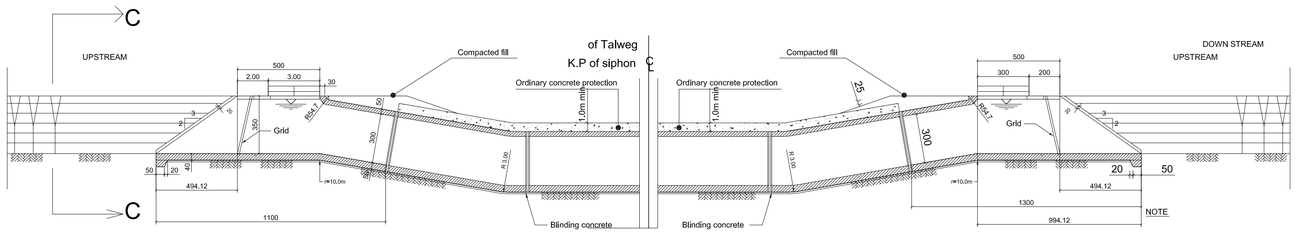
SECTION C LINNING



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Plan of Siphon (Type 1)	DATE DECEMBER 2016	DRG No C-035

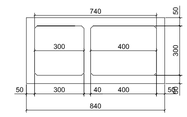
General Plan of Siphon (Type 2)

SECTION A

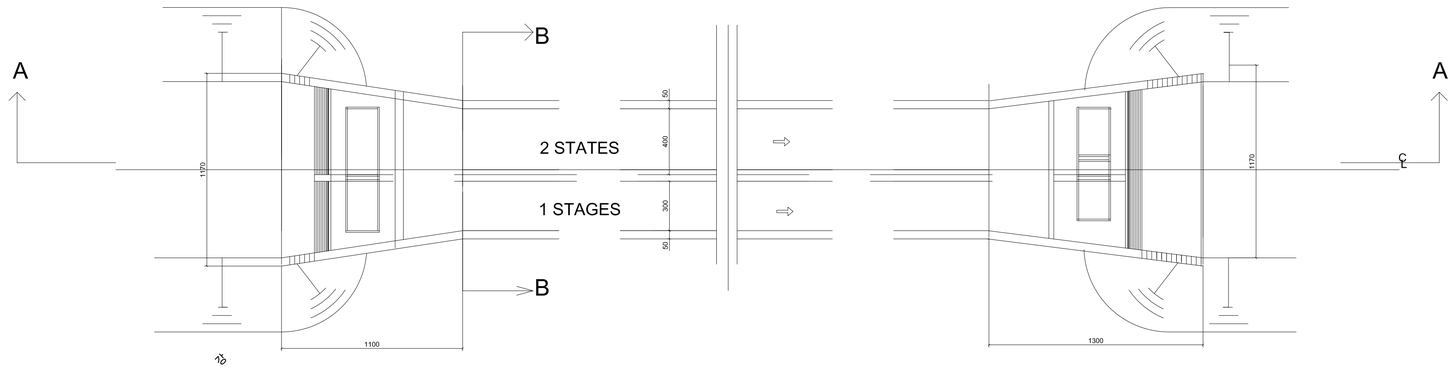


SECTION B

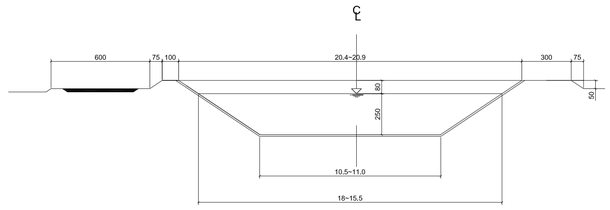
B*H=(3.0+5.0)*3.0



PLAN



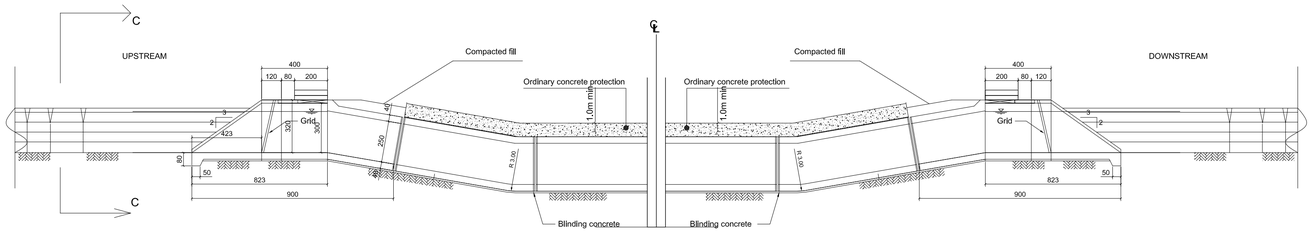
SECTION C LINNING



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Plan of Siphon (Type 2)	DATE DECEMBER 2016	DRG No C-036

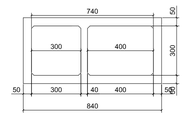
General Plan of Siphon (Type 3)

SECTION A

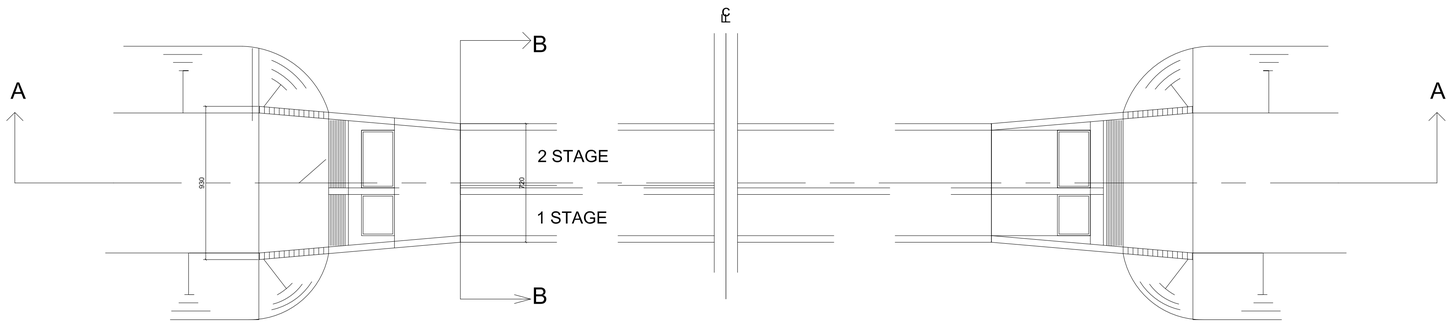


SECTION B

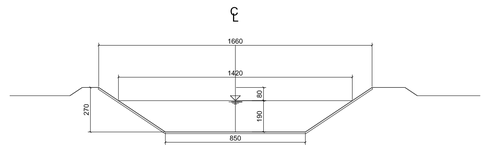
B*H=(3.0+5.0)*3.0



PLAN



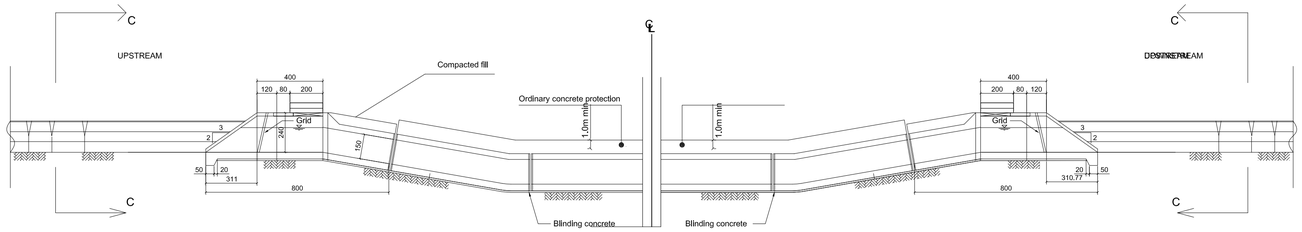
SECTION C LINNING



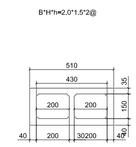
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Plan of Siphon (Type 3)	DATE DECEMBER 2016	DRG No C-037

General Plan of Siphon (Type 4)

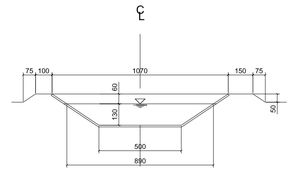
SECTION A



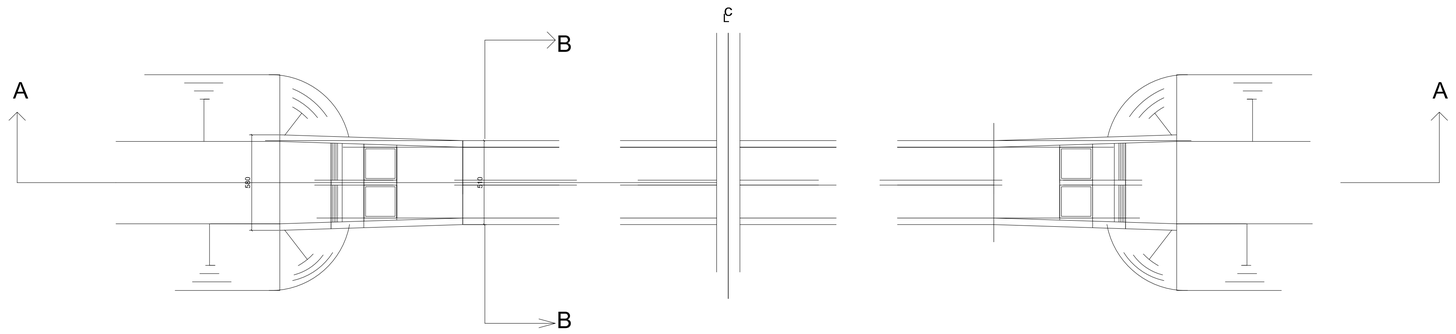
SECTION B



SECTION C LINNING



PLAN

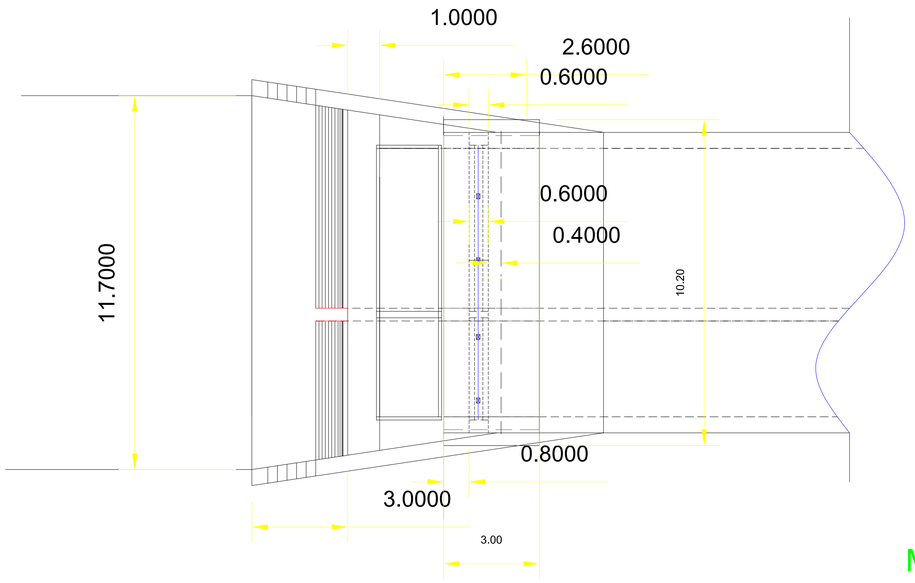


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Plan of Siphon (Type 4)	DATE DECEMBER 2016	DRG No C-038

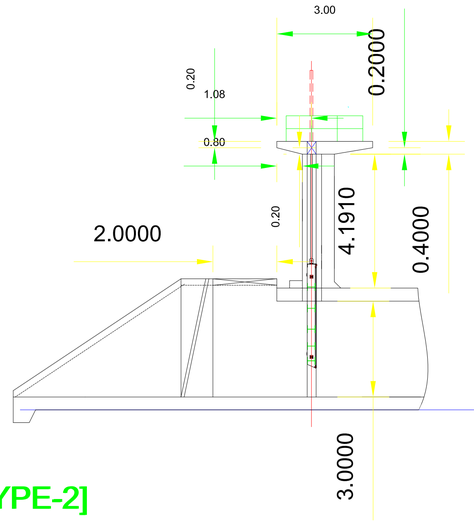
Check Gate General Drawing(1)

[TYPE-1]
Main Canal 1 CANAL
B*H=3.0*3.0+5.0*3.0

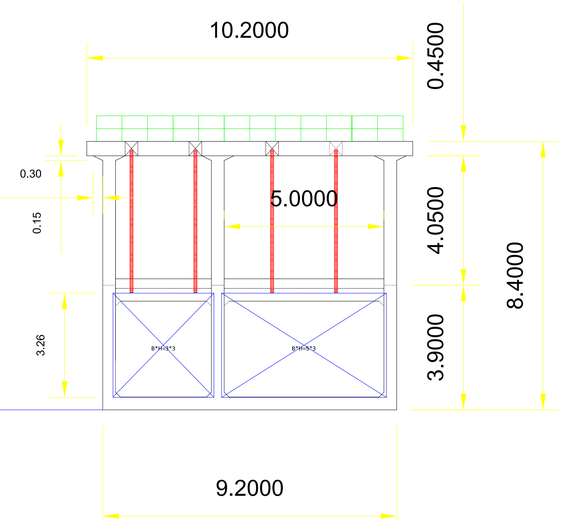
PLAN



SECTION

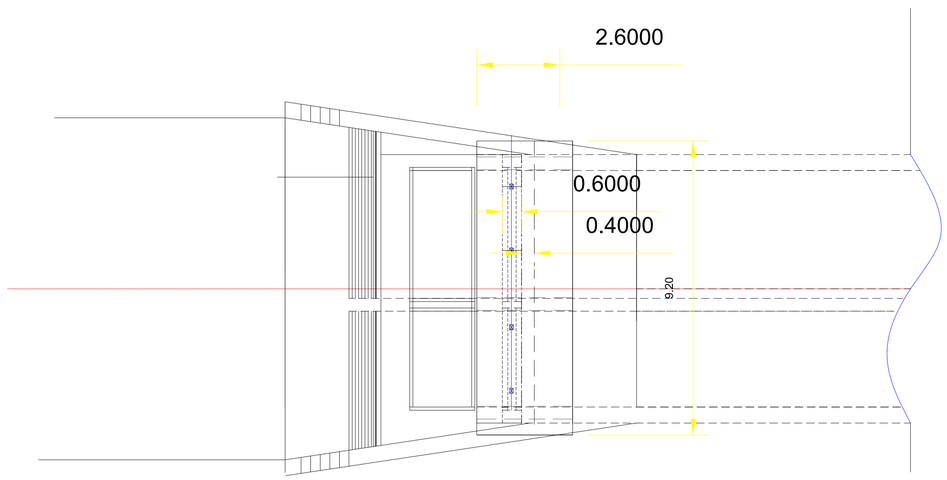


FRONT

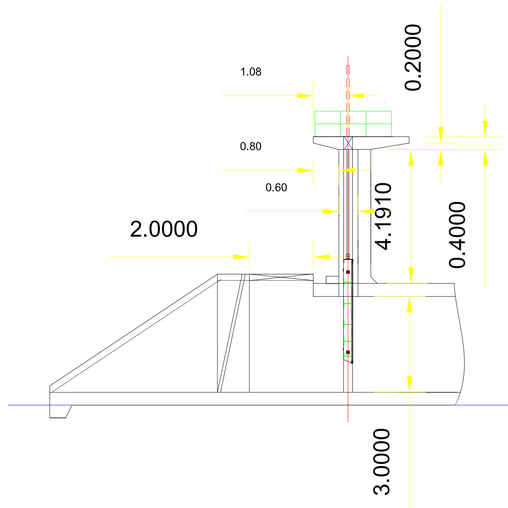


[TYPE-2]
Main Canal 1 CANAL
B*H=3.0*3.0+4.0*3.0

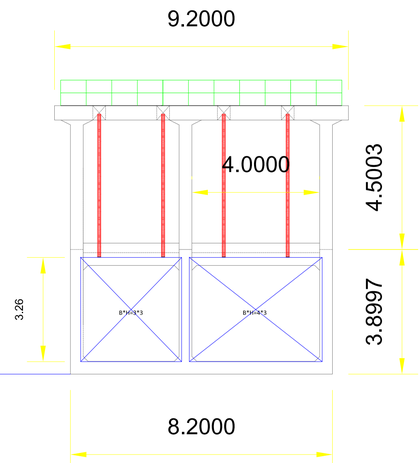
PLAN



SECTION



FRONT

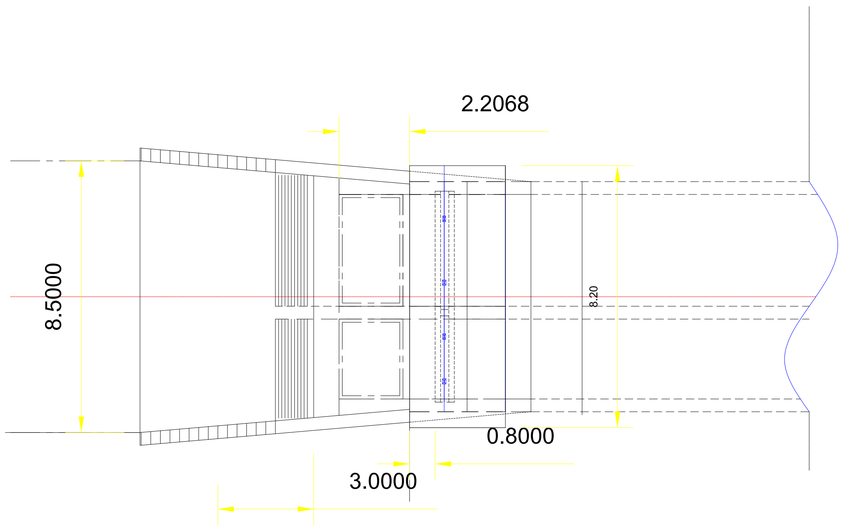


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Check Gate General Drawing(1)	DATE DECEMBER 2016	DRG No C-039

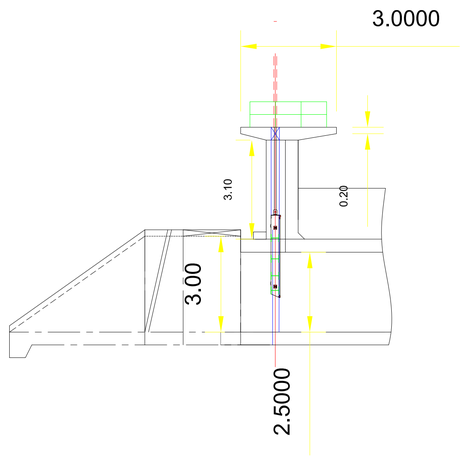
Check Gate General Drawing(2)

[TYPE-3]
Main Canal 2 CANAL
B*H=2.5*2.5+3.5*2.5

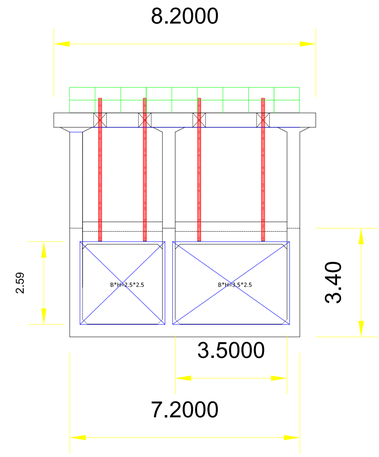
PLAN



SECTION

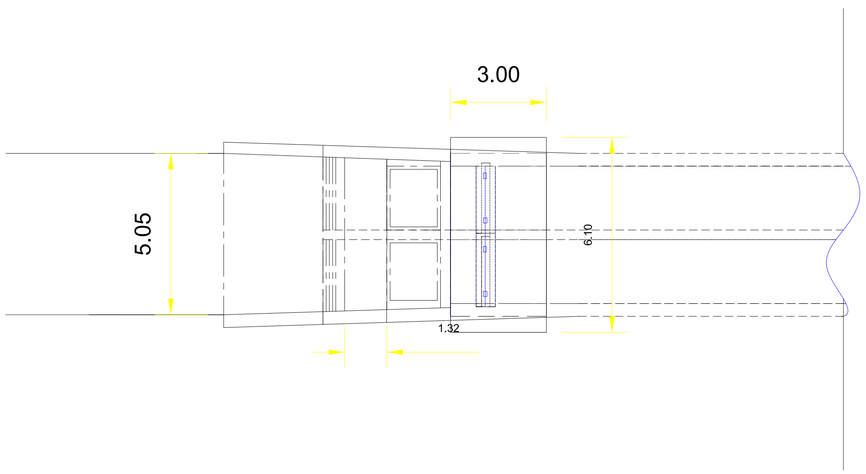


FRONT



[TYPE-4]
Main Canal 3 CANAL
B*H=2.0*1.5*2@

PLAN



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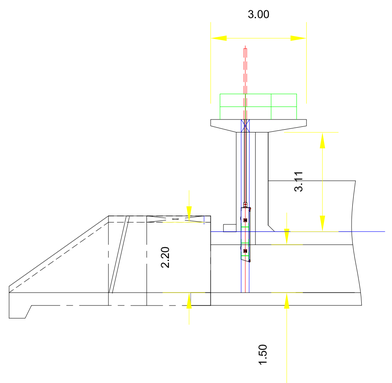
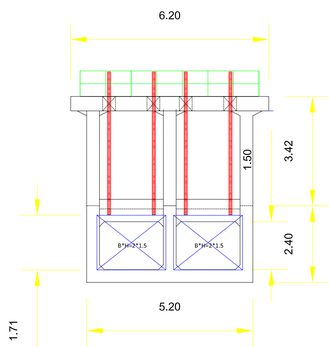


FRONT



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Check Gate General Drawing(2)	DATE DECEMBER 2016	DRG No C-040

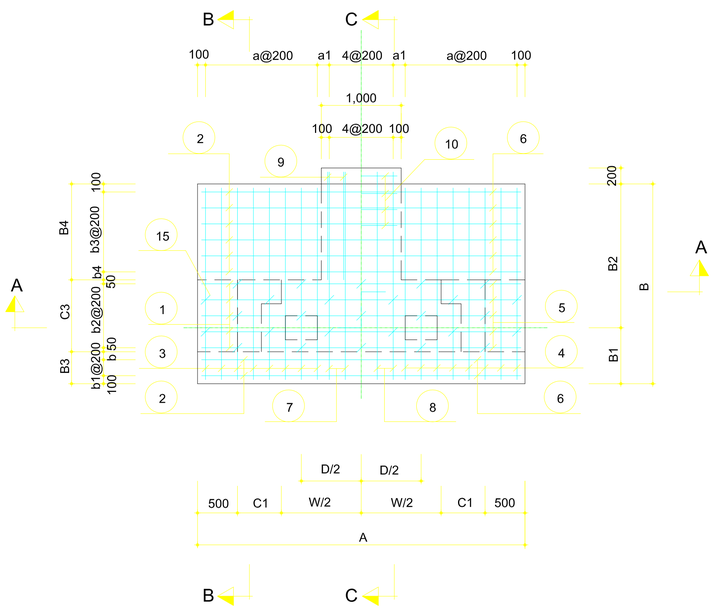
Operator and Gate Column(1)

DIMENTION TABLE

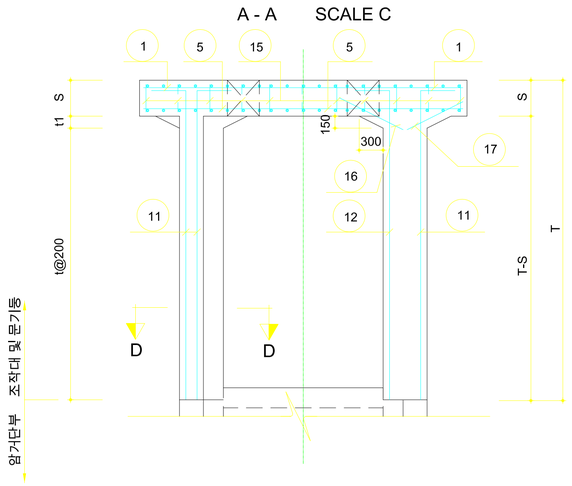
Division	3.0*3.0 =>T = 9CM, 5.0*3.0=>T = 9CM																						Quantity of Bars									a1	b	b4	t1
LIFT ABILITY	W(M)	H(M)	A	B	B1	B2	B3	B4	C1	C11	C12	C2	C21	C22	C3	C31	C32	D	O1	O2	S	S1	S2	a	b1	b2	b3	c	d	e	f	t				
7.50 TON	3.0 5.0	3.0 3.0	10200	3000	1080	1920	800	1,200	700	400	300	-	-	-	1000 (1,300)	400 (400)	300 (500)	1,500	400	300	400	200	200	7	1	5	5	3	0.25	-	-	17	50	100	100	150
7.50 TON	3.0 4.0	3.0 3.0	9200	3000	1080	1920	800	1,200	550	400	250	-	-	-	1000 (1,300)	400 (400)	300 (500)	1,900	400	300	400	200	200	13	1	5	5	3	0.25	-	-	17	50	100	100	150

OPERATING PLATFORM SCALE C

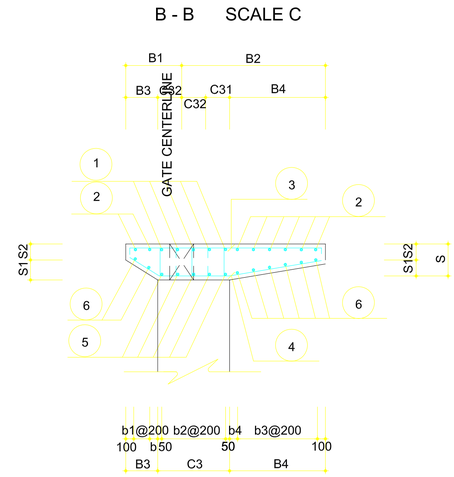
UPPER DOWN



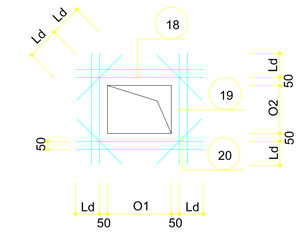
A - A SCALE C



B - B SCALE C

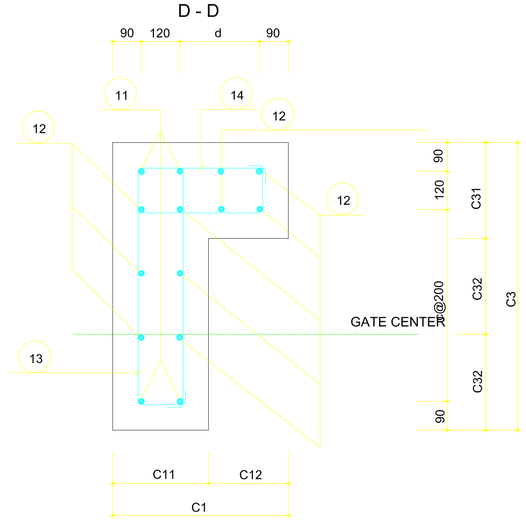


BOX-OUT DETAIL SCALE B

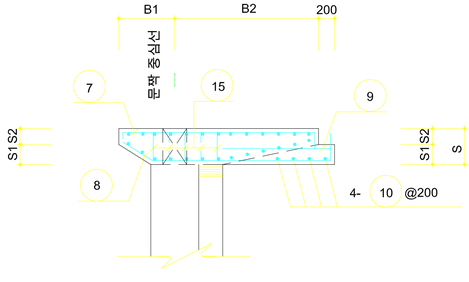


GATE COLUMN DETAIL SCALE A

D - D



C - C SCALE C



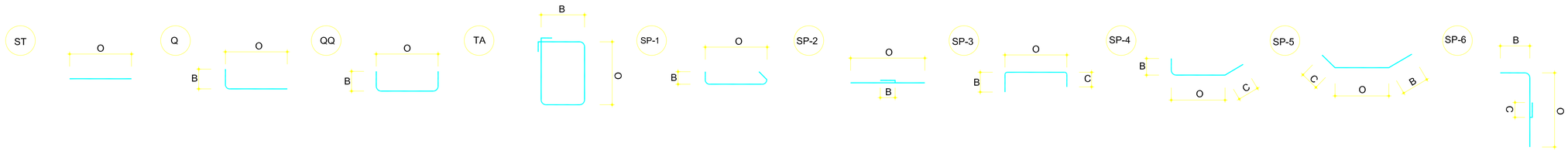
SCALE A
0 2 4 6 8 10

SCALE B
0 5 10 15 20

SCALE C
0 10 20 30 40

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Operator and Gate Column(1)	DATE DECEMBER 2016	DRG No C-041

Operator and Gate Column(2)



SYMBOL	DIA	TYPE	O	B	C	D	QTY	LENTH (M)	TOTAL LENTH (M)	REMARKS
2@=B*H=(3.0M*3.0M+5.0M*3.0M)				4 Hole			BACKFILL=4.0M			(1 EA)
01	D16	ST	10,000				6	10,000	60,000	
02	D16	ST	10,000				9	10,000	90,000	
03	D16	QQ	2,800	100			52	2,800	145,600	
04	D16	SP-5	1,000	1,220	820		52	3,040	158,080	
05	D19	ST	10,000				5	10,000	50,000	
06	D16	ST	10,000				9	10,000	90,000	
07	D16	SP-3	3,060	350	100		15	3,510	52,650	
08	D16	SP-4	2,330	350	780		15	3,460	51,900	
09	D16	ST	1,330				5	1.330	6.650	
10	D16	ST	900				4	0.900	3.600	
11	D19	Q	4,390	310			8	4,700	37,600	4EA
12	D19	Q	4,390	310			48	4,700	225,600	4EA
13	D13	TA	820	220			24	2,200	52,800	2 SIDE
14	D13	TA	520	220			24	1,480	35,520	2 SIDE
15	D16	SP-1	350	100			15	0.535	8,025	
16	D16	ST	935				6	0.935	5.612	
17	D16	ST	803				6	0.803	4.820	
18	D16	ST	1,100				16	1.100	17.600	
19	D16	ST	1,000				16	1.000	16.000	
20	D16	ST	600				16	0.600	9.600	

MATERIAL				(1 EACH)
DIA	UNIT WEIGHT (KG/M)	TOTAL LENGH (M)	TOTAL WEIGHT(KG)	REMATKS
D13	O.995	54.28	54.00	
D16	1.560	720.15	1,123.44	
D19	2.250	313.20	704.70	
			1,882.14	할증전
TOTAL WEIGHT (TON)			1,939	할 증 3%

MATERIAL LIST			(1 EACH)
ITEM	UNIT	QTY	REMATKS
CON'C(σck=24MKN)	M3	14.62	
FORM(3 TIMES)	M2	80.63	
STEEL SUPPORT(0~10M)	공/M3	109.35	

SYMBOL	DIA	TYPE	O	B	C	D	QTY	LENTH (M)	TOTAL LENTH (M)	REMARKS
2@=B*H=(3.0M*3.0M+4.0M*3.0M)				4 Hole			BACKFILL=2.0M			(1 EA)
01	D16	ST	9,000				6	9,000	54,000	
02	D16	ST	9,000				9	9,000	81,000	
03	D16	QQ	2,800	100			47	2,800	131,600	
04	D16	SP-5	1,000	1,220	820		47	3,040	142,880	
05	D19	ST	9,000				5	9,000	45,000	
06	D16	ST	9,000				9	9,000	81,000	
07	D16	SP-3	3,060	350	100		15	3,510	52,650	
08	D16	SP-4	2,330	350	780		15	3,460	51,900	
09	D16	ST	1,330				5	1.330	6.650	
10	D16	ST	900				4	0.900	3.600	
11	D19	Q	4,390	310			8	4,700	37,600	4EA
12	D19	Q	4,390	310			48	4,700	225,600	4EA
13	D13	TA	820	220			24	2,200	52,800	2 SIDE
14	D13	TA	520	220			24	1,480	35,520	2 SIDE
15	D16	SP-1	350	100			15	0.535	8,025	
16	D16	ST	935				6	0.935	5.612	
17	D16	ST	803				6	0.803	4.820	
18	D16	ST	1,100				16	1.100	17.600	
19	D16	ST	1,000				16	1.000	16.000	
20	D16	ST	600				16	0.600	9.600	

MATERIAL				(1 EACH)
DIA	UNIT WEIGHT (KG/M)	TOTAL LENGH (M)	TOTAL WEIGHT(KG)	REMATKS
D13	O.995	54.28	54.00	
D16	1.560	711.95	1,106.42	
D19	2.250	308.20	693.45	
			1,853.87	할증전
TOTAL WEIGHT (TON)			1.910	할 증 3%

MATERIAL LIST			(1 EACH)
ITEM	UNIT	QTY	REMATKS
CON'C(σck=24MKN)	M3	13.84	
FORM(3 TIMES)	M2	68.49	
STEEL SUPPORT(0~10M)	공/M3	97.20	

CLIENT

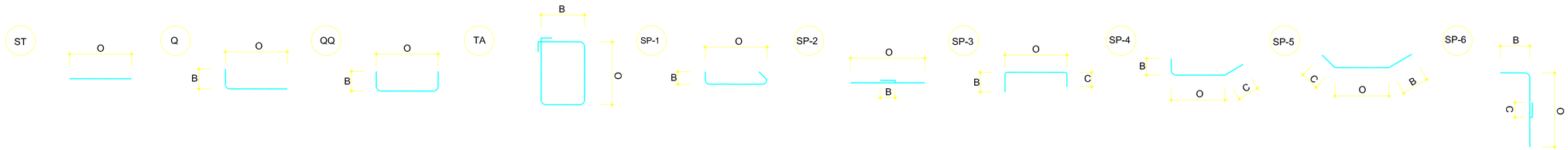
REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Technical Feasibility Study
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
GK Works Civil and Structural Engineer

PROJECT	ORIGINAL DESIGNED BY	SCALE
SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
TITLE	DATE	DRG No
Operator and Gate Column(2)	DECEMBER 2016	C-042

Operator and Gate Column(3)



SYMBOL	DIA	TYPE	O	B	C	D	QTY	LENTH (M)	TOTAL LENTH (M)	REMARKS
2@=B*H=(2.5*2.5+3.5*2.5M)				4 Hole			BACKFILL=4.0M			(1 EA)
01	D16	ST	8,000				6	8,000	48,000	
02	D16	ST	8,000				9	8,000	72,000	
03	D16	QQ	2,800	100			41	2,800	112,000	
04	D16	SP-5	1,000	1,220	820		41	3,040	124,640	
05	D19	ST	8,000				5	8,000	40,000	
06	D16	ST	8,000				9	8,000	72,000	
07	D16	SP-3	3,060	350	100		15	3,510	52,650	
08	D16	SP-4	2,330	350	780		15	3,460	51,900	
09	D16	ST	1,330				5	1.330	6.650	
10	D16	ST	900				4	0.900	3.600	
11	D19	Q	3.300	310			8	3,610	28,880	4EA
12	D19	Q	3.390	310			48	3.690	177,120	4EA
13	D13	TA	820	220			17	2,200	37,400	2 SIDE
14	D13	TA	520	220			17	1,480	25,160	2 SIDE
15	D16	SP-1	350	100			15	0.535	8,025	
16	D16	ST	935				6	0.935	5.612	
17	D16	ST	803				6	0.803	4.820	
18	D16	ST	1,100				16	1.100	17.600	
19	D16	ST	1,000				16	1.000	16.000	
20	D16	ST	600				16	0.600	9.600	

MATERIAL				(1 EACH)
DIA	UNIT WEIGHT (KG/M)	TOTAL LENGH (M)	TOTAL WEIGHT(KG)	REMATKS
D13	O.995	62.56	62.25	
D16	1.560	720.15	1,123.44	
D19	2.250	246.00	553.50	
			1,739.19	할증전
TOTAL WEIGHT (TON)			1.791	할 증 3%

MATERIAL LIST			(1 EACH)
ITEM	UNIT	QTY	REMATKS
CON'C(σck=24MKN)	M3	11.48	
FORM(3 TIMES)	M2	66.43	
STEEL SUPPORT(0~10M)	공/M3	65.10	

SYMBOL	DIA	TYPE	O	B	C	D	QTY	LENTH (M)	TOTAL LENTH (M)	REMARKS
2@=B*H=(2.0*1.5*32@)				4 Hole			BACKFILL=2.0M			(1 EA)
01	D16	ST	6,000				6	6,000	36,000	
02	D16	ST	6,000				9	6,000	54,000	
03	D16	QQ	2,800	100			31	2,800	86,800	
04	D16	SP-5	1,000	1,220	820		31	3,040	94,240	
05	D19	ST	6,000				5	6,000	30,000	
06	D16	ST	6,000				9	6,000	54,000	
07	D16	SP-3	3,060	350	100		15	3,510	52,650	
08	D16	SP-4	2,330	350	780		15	3,460	51,900	
09	D16	ST	1,330				5	1.330	6.650	
10	D16	ST	900				4	0.900	3.600	
11	D19	Q	4,390	310			8	4,700	37,600	4EA
12	D19	Q	4,390	310			48	4,700	75,200	4EA
13	D13	TA	820	220			17	2,200	37,400	2 SIDE
14	D13	TA	520	220			17	1,480	25,160	2 SIDE
15	D16	SP-1	350	100			15	0.535	8,025	
16	D16	ST	935				6	0.935	5.612	
17	D16	ST	803				6	0.803	4.820	
18	D16	ST	1,100				16	1.100	17.600	
19	D16	ST	1,000				16	1.000	16.000	
20	D16	ST	600				16	0.600	9.600	

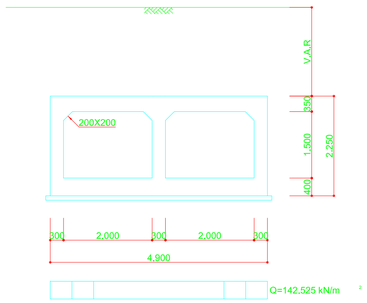
MATERIAL				(1 EACH)
DIA	UNIT WEIGHT (KG/M)	TOTAL LENGH (M)	TOTAL WEIGHT(KG)	REMATKS
D13	O.995	62.56	62.25	
D16	1.560	501.51	782.36	
D19	2.250	142.80	321.30	
			1,165.91	할증전
TOTAL WEIGHT (TON)			1,201	할 증 3%

MATERIAL LIST			(1 EACH)
ITEM	UNIT	QTY	REMATKS
CON'C(σck=24MKN)	M3	9.92	
FORM(3 TIMES)	M2	61.95	
STEEL SUPPORT(0~10M)	공/M3	46.65	

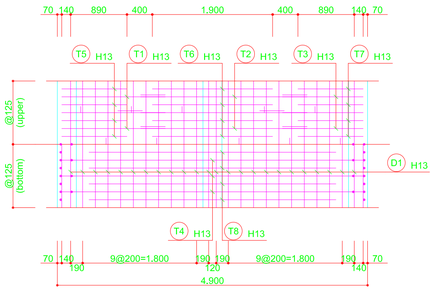
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Operator and Gate Column(3)	DATE DECEMBER 2016	DRG No C-043

Box (Type 1)

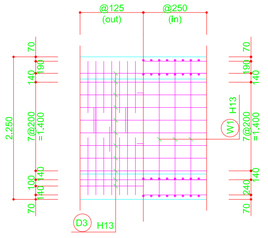
General



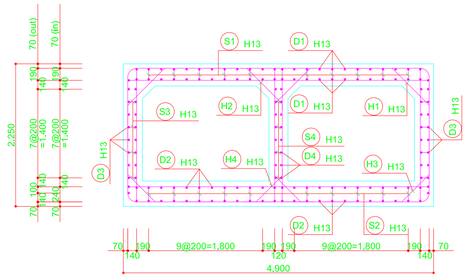
Upper Slab



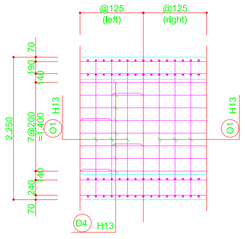
Side Wall



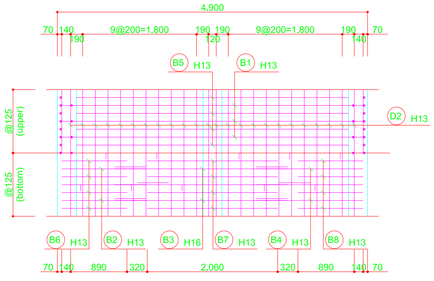
Typical Section



Inner Wall

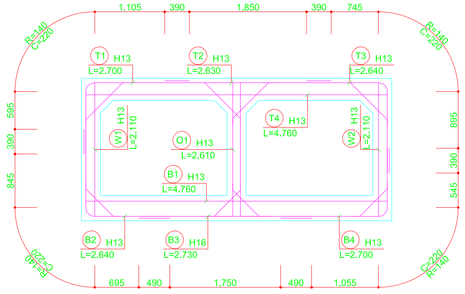


Bottom Slab

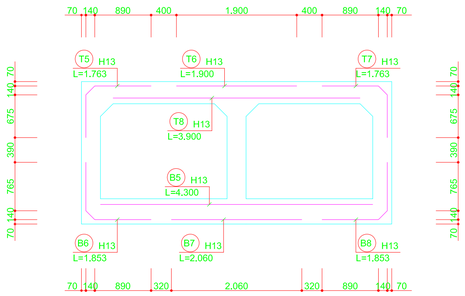


Main Reinforcement Assembly

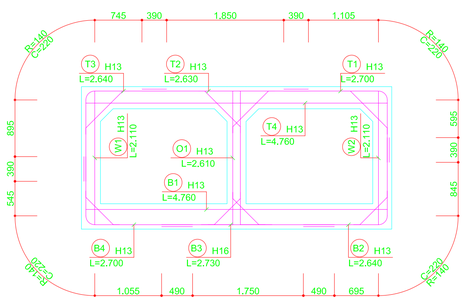
CYCLE-1(@500)



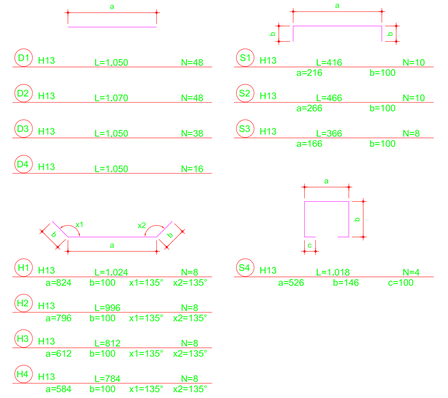
CYCLE-2,4(@500)



CYCLE-3(@500)



Details of Reinforcement



Reinforcement Table (/1m)

(SD400)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	ADD (%,TON)
B3	H16	2.730	4	10.920			
Sub Total				10.920	1.560	0.017	0.018(3%)
B1	H13	4.760	4	19.040			
B2	"	2.640	4	10.560			
B4	"	2.700	4	10.800			
B5	"	4.300	4	17.200			
B6	"	1.853	4	7.412			
B7	"	2.060	4	8.240			
B8	"	1.853	4	7.412			
D1	"	1.050	48	50.400			
D2	"	1.070	48	51.360			
D3	"	1.050	38	39.900			
D4	"	1.050	16	16.800			
H1	"	1.024	8	8.192			
H2	"	996	8	7.968			
H3	"	812	8	6.496			
H4	"	784	8	6.272			
O1	"	2.610	8	20.880			
S1	"	416	10	4.160			
S2	"	466	10	4.660			
S3	"	366	8	2.928			
S4	"	1.018	4	4.072			
T1	"	2.700	4	10.800			
T2	"	2.630	4	10.520			
T3	"	2.640	4	10.560			
T4	"	4.760	4	19.040			
T5	"	1.763	4	7.052			
T6	"	1.900	4	7.600			
T7	"	1.763	4	7.052			
T8	"	3.900	4	15.600			
W1	"	2.110	4	8.440			
W2	"	2.110	4	8.440			
Sub Total				409.856	0.995	0.408	0.420(3%)
Total				420.776		0.425	0.438

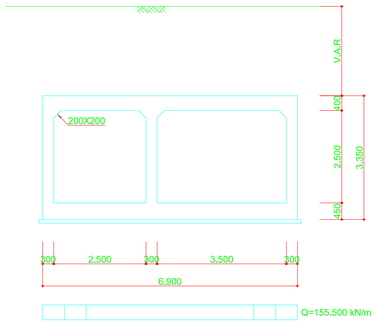
Covering Depth

Out	70 mm	from the center of reinforcement to the surface of concrete
In	90 mm	

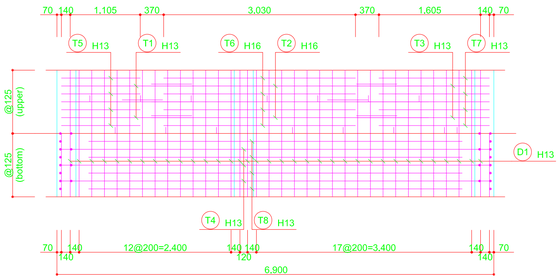
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Box (Type 1)	DATE DECEMBER 2016	DRG No C-044

Box (Type 2)

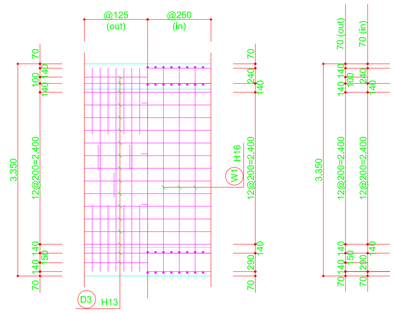
General



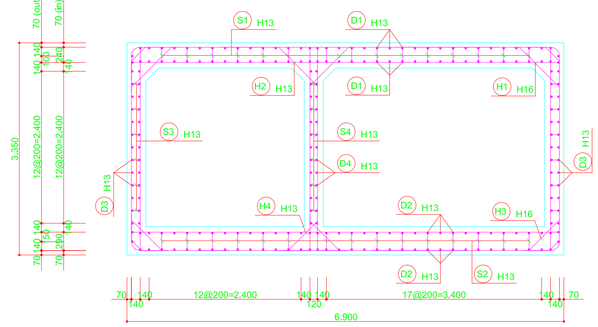
Upper Slab



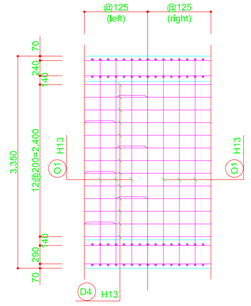
Side Wall



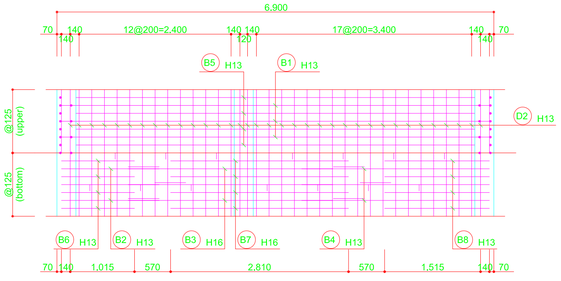
Typical Section



Inner Wall

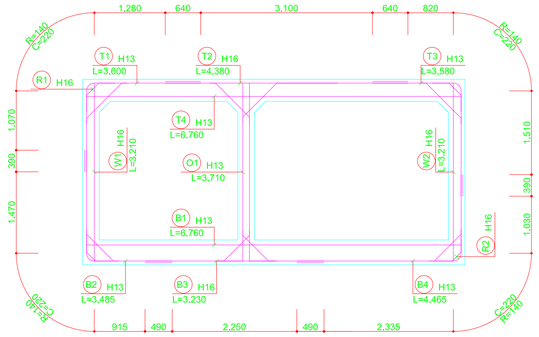


Bottom Slab

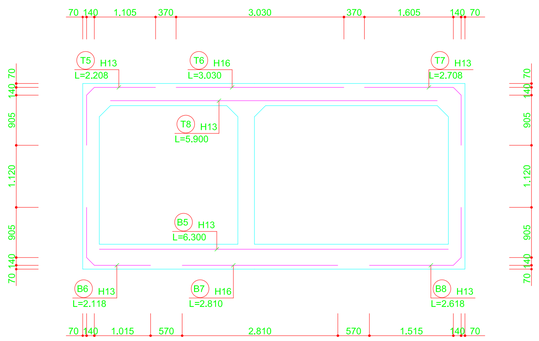


Main Reinforcement Assembly

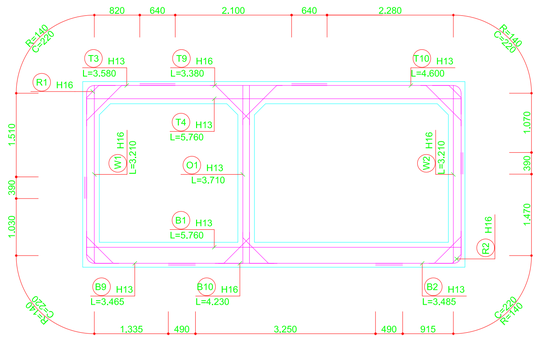
CYCLE-1(@500)



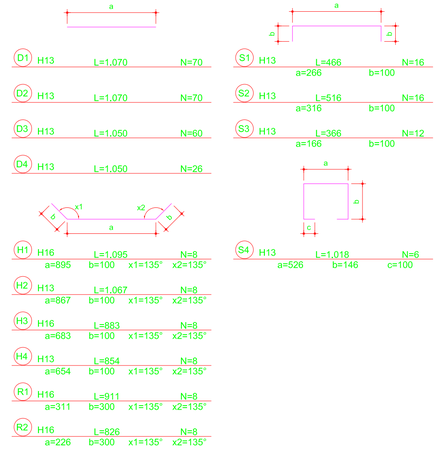
CYCLE-2,4(@500)



CYCLE-3(@500)



Details of Reinforcement



Reinforcement Table (/1m)

(SD400)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	ADD (%,TON)
B3	H16	3.230	2	6.460			
B7	"	2.810	4	11.240			
B10	"	4.230	2	8.460			
H1	"	1.095	8	8.760			
H3	"	883	8	7.064			
R1	"	911	8	7.288			
R2	"	826	8	6.608			
T2	"	4.380	2	8.760			
T6	"	3.030	4	12.120			
T9	"	3.380	2	6.760			
W1	"	3.210	4	12.840			
W2	"	3.210	4	12.840			
Sub Total				109.200	1.560	0.170	0.175(3%)
B1	H13	6.760	4	27.040			
B2	"	3.485	4	13.940			
B4	"	4.465	2	8.930			
B5	"	6.300	4	25.200			
B6	"	2.118	4	8.472			
B8	"	2.618	4	10.472			
B9	"	2.118	2	6.930			
D1	"	1.070	70	74.900			
D2	"	1.070	70	74.900			
D3	"	1.050	60	63.000			
D4	"	1.050	26	27.300			
H2	"	1.067	8	8.536			
H4	"	854	8	6.832			
O1	"	3.710	8	29.680			
S1	"	466	16	7.456			
S2	"	516	16	8.256			
S3	"	366	12	4.392			
S4	"	1.018	6	6.108			
T1	"	3.600	2	7.200			
T3	"	3.580	4	14.320			
T4	"	6.760	4	27.040			
T5	"	2.208	4	8.832			
T7	"	2.708	4	10.832			
T8	"	5.900	4	23.600			
T10	"	4.600	2	9.200			
Sub Total				513.368	0.995	0.511	0.526(3%)
Total				622.568		0.681	0.701

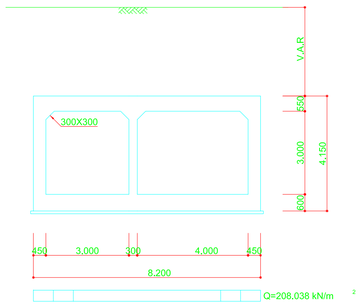
Covering Depth

Out	70 mm	from the center of reinforcement to the surface of concrete
In	90 mm	

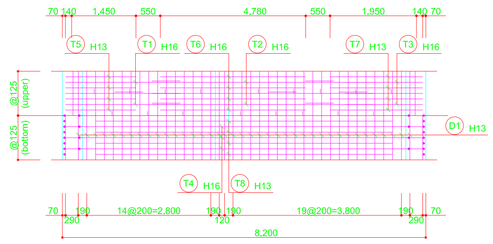
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Box (Type 2)	DATE DECEMBER 2016	DRG No C-045

Box (Type 3)

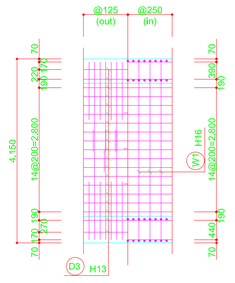
General



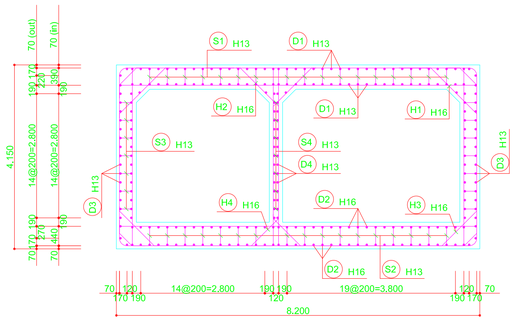
Upper Slab



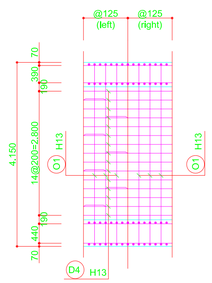
Side Wall



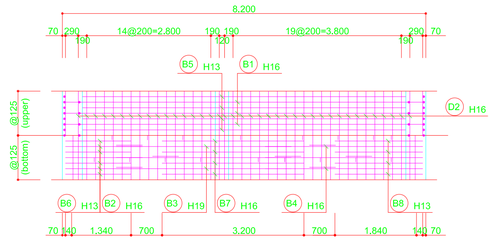
Typical Section



Inner Wall

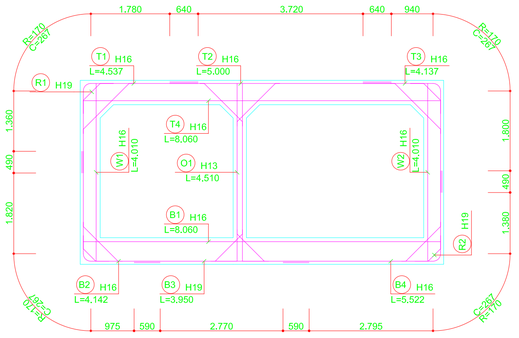


Bottom Slab

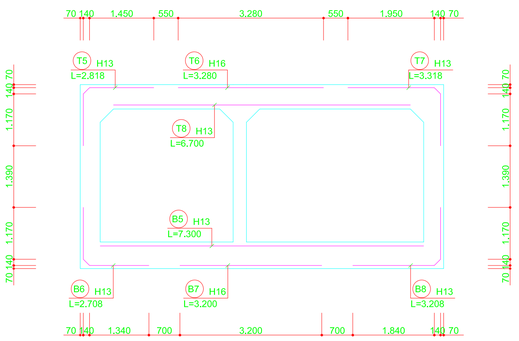


Main Reinforcement Assembly

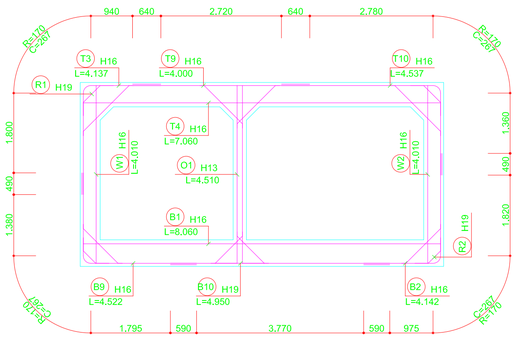
CYCLE-1(@500)



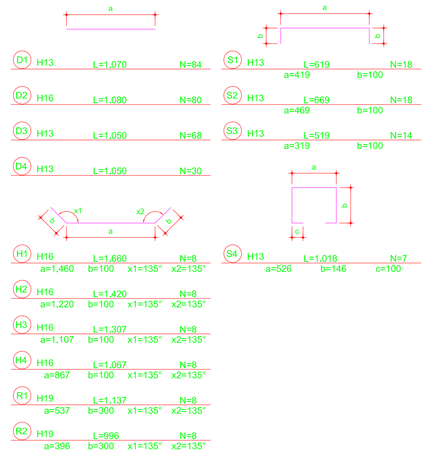
CYCLE-2,4(@500)



CYCLE-3(@500)



Details of Reinforcement



Reinforcement Table (/1m)

(SD400)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	ADD (%,TON)
B3	H19	3,950	2	7.900			
B10	"	4,950	2	9.900			
R1	"	1,137	8	9.096			
R2	"	996	8	7.968			
Sub Total				34.864	2.250	0.078	0.080(3%)
B1	H16	8,060	4	32.240			
B2	"	4,142	4	16.568			
B4	"	5,522	2	11.044			
B7	"	3,200	4	12.800			
B9	"	4,522	2	9.044			
D2	"	1,080	80	86.400			
H1	"	1,660	8	13.280			
H2	"	1,420	8	11.360			
H3	"	1,307	8	10.456			
H4	"	1,067	8	8.536			
T1	"	4,537	2	9.074			
T2	"	5,000	2	10.000			
T3	"	4,137	4	16.548			
T4	"	8,060	4	32.240			
T6	"	3,280	4	13.120			
T9	"	4,000	2	8.000			
T10	"	5.537	2	11.074			
W1	"	4,010	4	16.040			
W2	"	4,010	4	16.040			
Sub Total				343.864	1.560	0.536	0.552(3%)
B5	H13	7,300	4	29.200			
B6	"	2,708	4	10.832			
B8	"	3,208	4	12.832			
D1	"	1,070	84	89.880			
D3	"	1,050	68	71.400			
D4	"	1,050	30	31.500			
O1	"	4,510	8	36.080			
S1	"	619	18	11.142			
S2	"	669	18	12.042			
S3	"	519	14	7.266			
S4	"	1.018	7	7.126			
T5	"	2,818	4	11.272			
T7	"	3,318	4	13.272			
T8	"	6,700	4	26.800			
Sub Total				370.644	0.995	0.369	0.380(3%)
Total				749.372		0.983	1.012

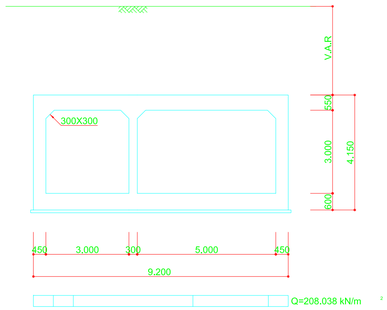
Covering Depth

Out	70 mm	from the center of reinforcement to the surface of concrete
In	90 mm	

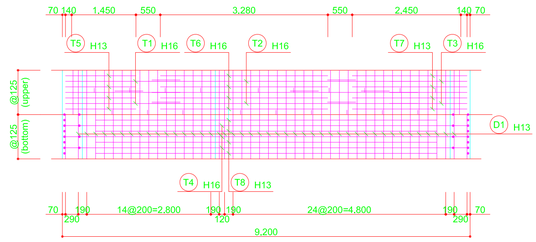
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Box (Type 3)	DATE DECEMBER 2016	DRG No C-046

Box (Type 4)

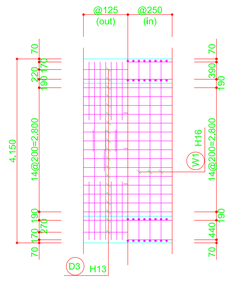
General



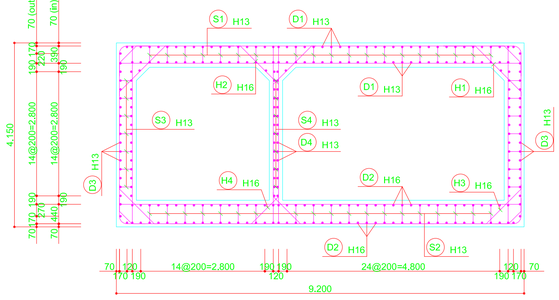
Upper Slab



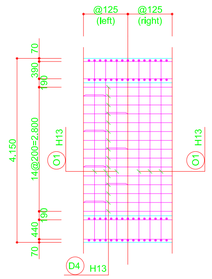
Side Wall



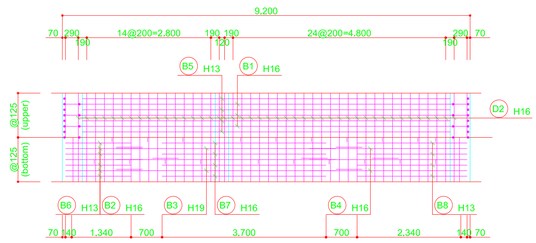
Typical Section



Inner Wall

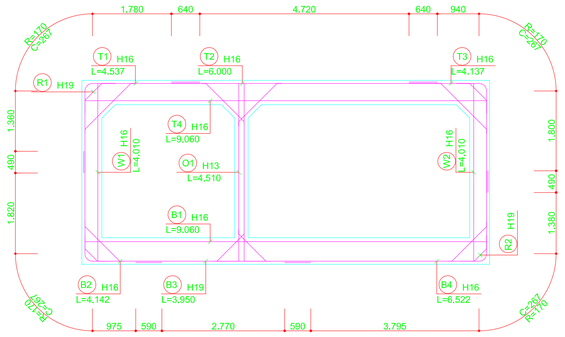


Bottom Slab

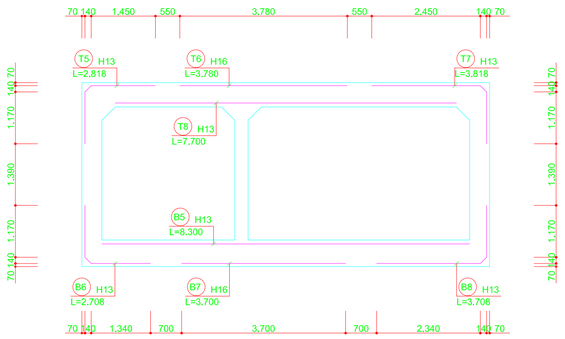


Main Reinforcement Assembly

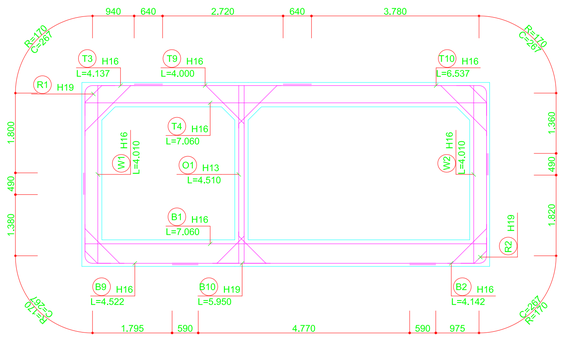
CYCLE-1(@500)



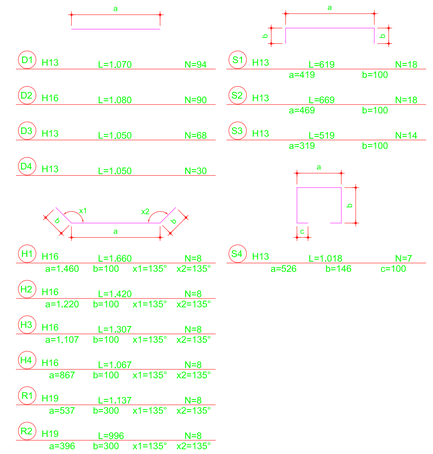
CYCLE-2,4(@500)



CYCLE-3(@500)



Details of Reinforcement



Reinforcement Table (/1m)

(SD400)

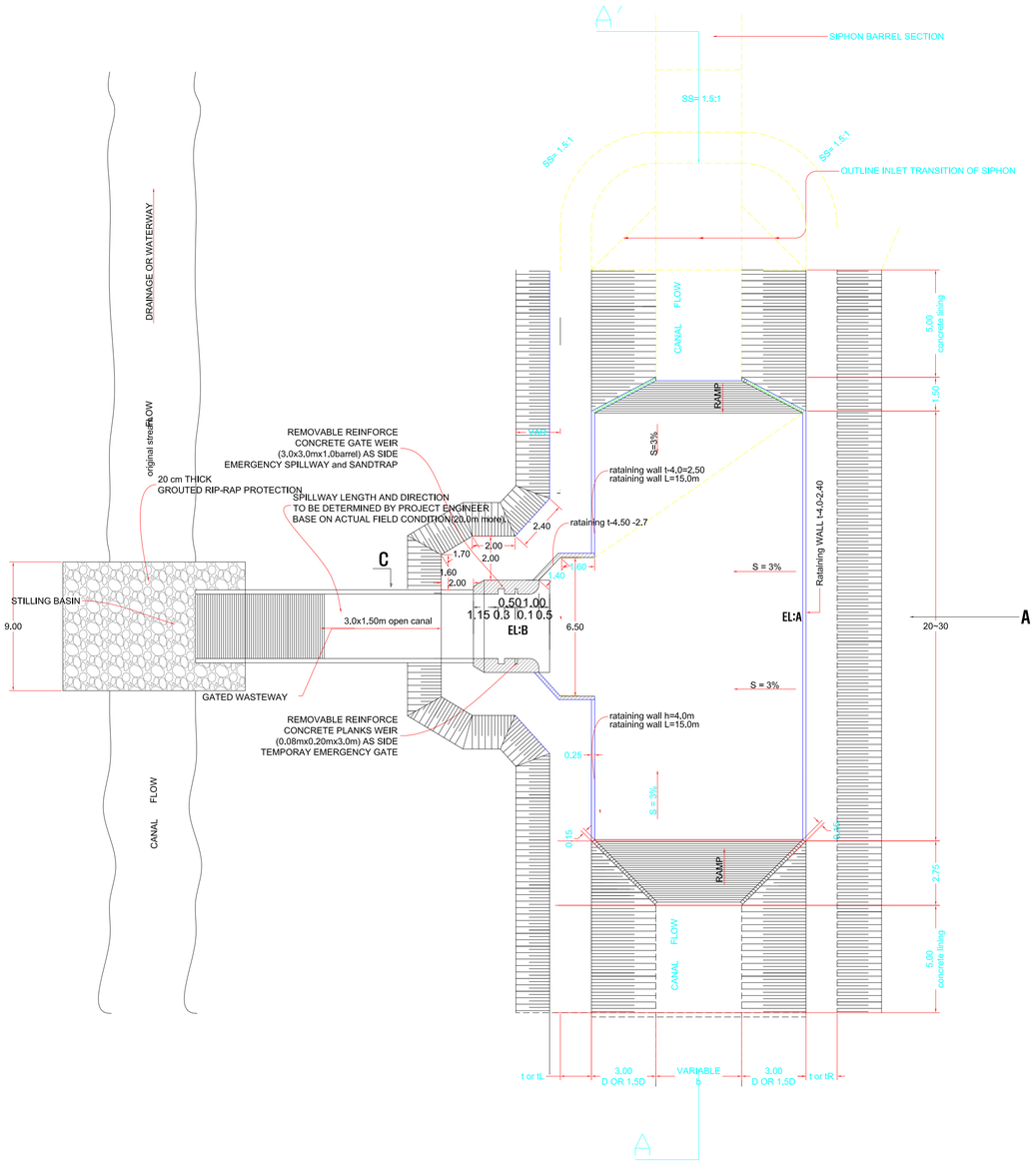
Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	ADD (%,TON)
B3	H19	3,950	2	7.900			
B10	"	5,950	2	11.900			
R1	"	1,137	8	9.096			
R2	"	996	8	7.968			
Sub Total				36.864	2.250	0.083	0.085(3%)
B1	H16	9.060	4	36.240			
B2	"	4.142	4	16.568			
B4	"	6.522	2	13.044			
B7	"	3.700	4	14.800			
B9	"	4.522	2	9.044			
D2	"	1.080	90	97.200			
H1	"	1.660	8	13.280			
H2	"	1.420	8	11.360			
H3	"	1.307	8	10.456			
H4	"	1.067	8	8.536			
T1	"	4.537	2	9.074			
T2	"	6.000	2	12.000			
T3	"	4.137	4	16.548			
T4	"	9.060	4	36.240			
T6	"	3.780	4	15.120			
T9	"	4.000	2	8.000			
T10	"	6.537	2	13.074			
W1	"	4.010	4	16.040			
W2	"	4.010	4	16.040			
Sub Total				372.664	1.560	0.581	0.598(3%)
B5	H13	8.300	4	33.200			
B6	"	2.708	4	10.832			
B8	"	3.708	4	14.832			
D1	"	1.070	94	100.580			
D3	"	1.050	68	71.400			
D4	"	1.050	30	31.500			
O1	"	4.510	8	36.080			
S1	"	619	18	11.142			
S2	"	669	18	12.042			
S3	"	519	14	7.266			
S4	"	1.018	7	7.126			
T5	"	2.818	4	11.272			
T7	"	3.818	4	15.272			
T8	"	7.700	4	30.800			
Sub Total				393.344	0.995	0.391	0.403(3%)
Total				802.872		1.055	1.086

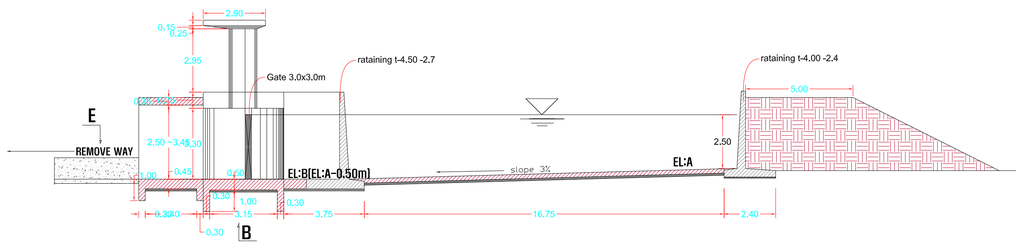
Covering Depth

Out	70 mm	from the center of reinforcement to the surface of concrete
In	90 mm	

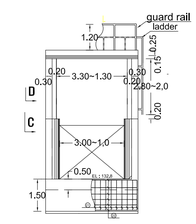
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Box (Type 4)	DATE DECEMBER 2016	DRG No C-047

General Layout of Sand Trap

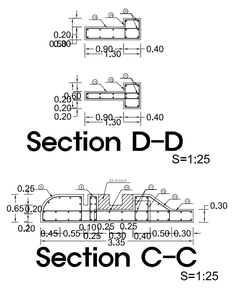




Section A-A



Section B-B

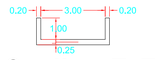


Section D-D

S=1:25

Section C-C

S=1:25



Section E-E

Sand Trap list

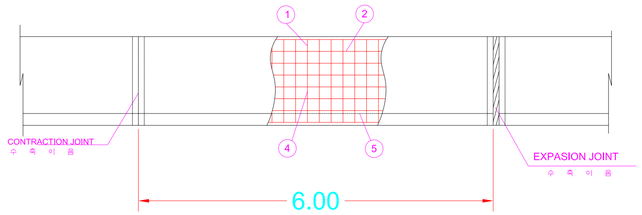
Canal	Number	Chainage	Canal Width	Length	Width	Total Width	Gate Size	EL:A	Remarks
Main Canal 1	1	STA.3+780	11.7	34.25	6.0	17.7	3.0x3.0x1	140.24	
Main Canal 1	2	STA.10+200	11.7	34.25	6.0	17.7	3.0x3.0x1	137.72	
Main Canal 1	3	STA.21+560	11.0	34.25	6.0	17.0	3.0x3.0x1	135.00	
Main Canal 1	4	STA.29+300	10.5	34.25	6.0	16.5	3.0x3.0x1	132.85	
Main Canal 2	5	STA.5+580	8.5	29.25	4.0	12.5	3.0x2.40x1	130.61	
Main Canal 3	6	STA.5+290	5.0	24.25	3.0	8.0	3.0x1.80x1	100.79	

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Layout of Sand Trap	DATE DECEMBER 2016	DRG No C-048

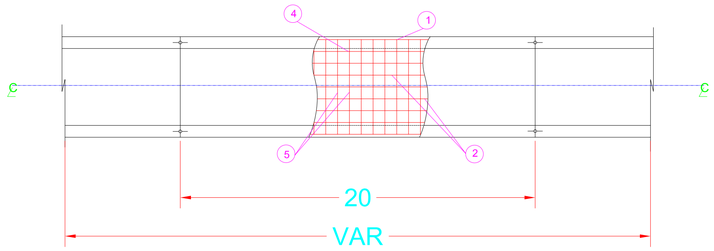
Sand Trap Structure and List

LONGI SECTION

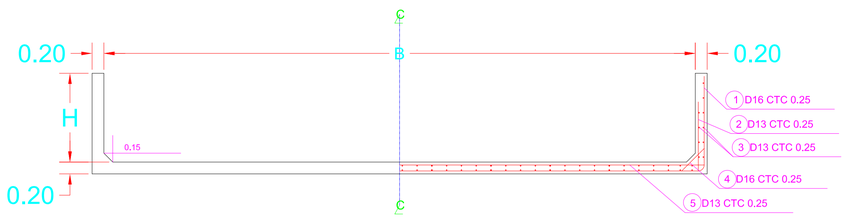
S=1:50



PLAN



SECTION



MATERIALS TABLE

ITEM		UNIT	AMOUNT	REMARKS
CONC	WALL	m3	2H*0.2*L	fck=24MPa
	BAISEN	m3	(B+0.2*2)*0.2*L	
	SUM	m3	0.000	
LEAN CON'C		m3	((B+0.2*2+0.1*2)*0.1)*L	fck=18Mpa
Euro Form	4times	m2	(2H+(H+0.2)*2)*L	
	6times	m2	0.1*2*L	

REBAR TABLE

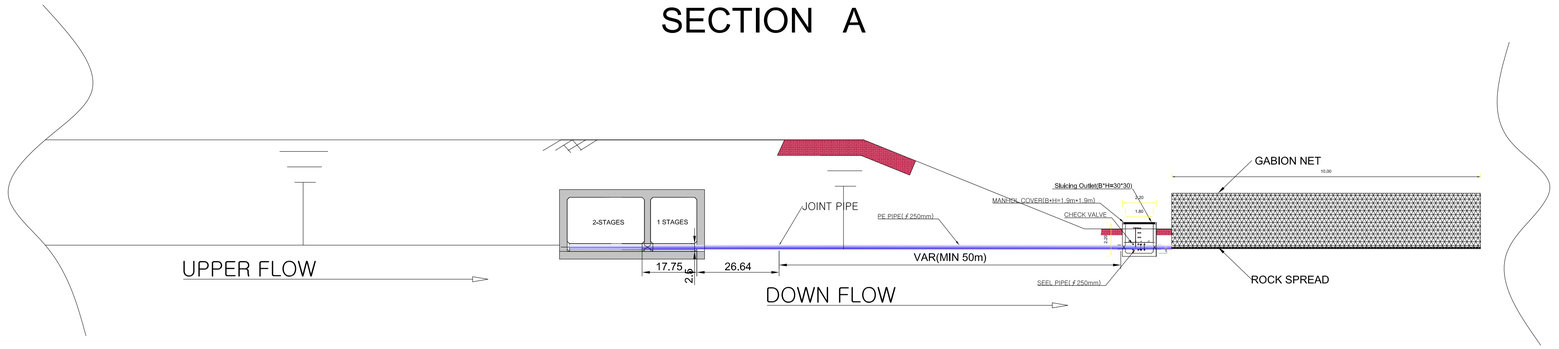
PER 1M

ITEM	NO.	DIA	LENGH	NUM	TOTAL L	REMARKS
BODY	1	16	B+2H*2	L/0.25		
	4	16	0.54	L/0.25*2		
	SUN					
	2	13	B+2/3H*2	L/0.25		
	3	13	H/0.25*2	H/0.25*2		
	5	13	B+0.14*2	L/0.25		
	SUM					
SUM	D13 : 000X0.995X1.03=000kg					
	D16 : 000X1.56X1.03=000kg					
	TOTAL SUM					

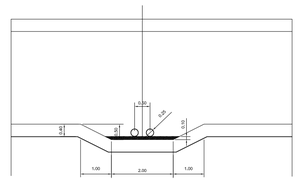
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Sand Trap Structure and List	DATE DECEMBER 2016	DRG No C-049

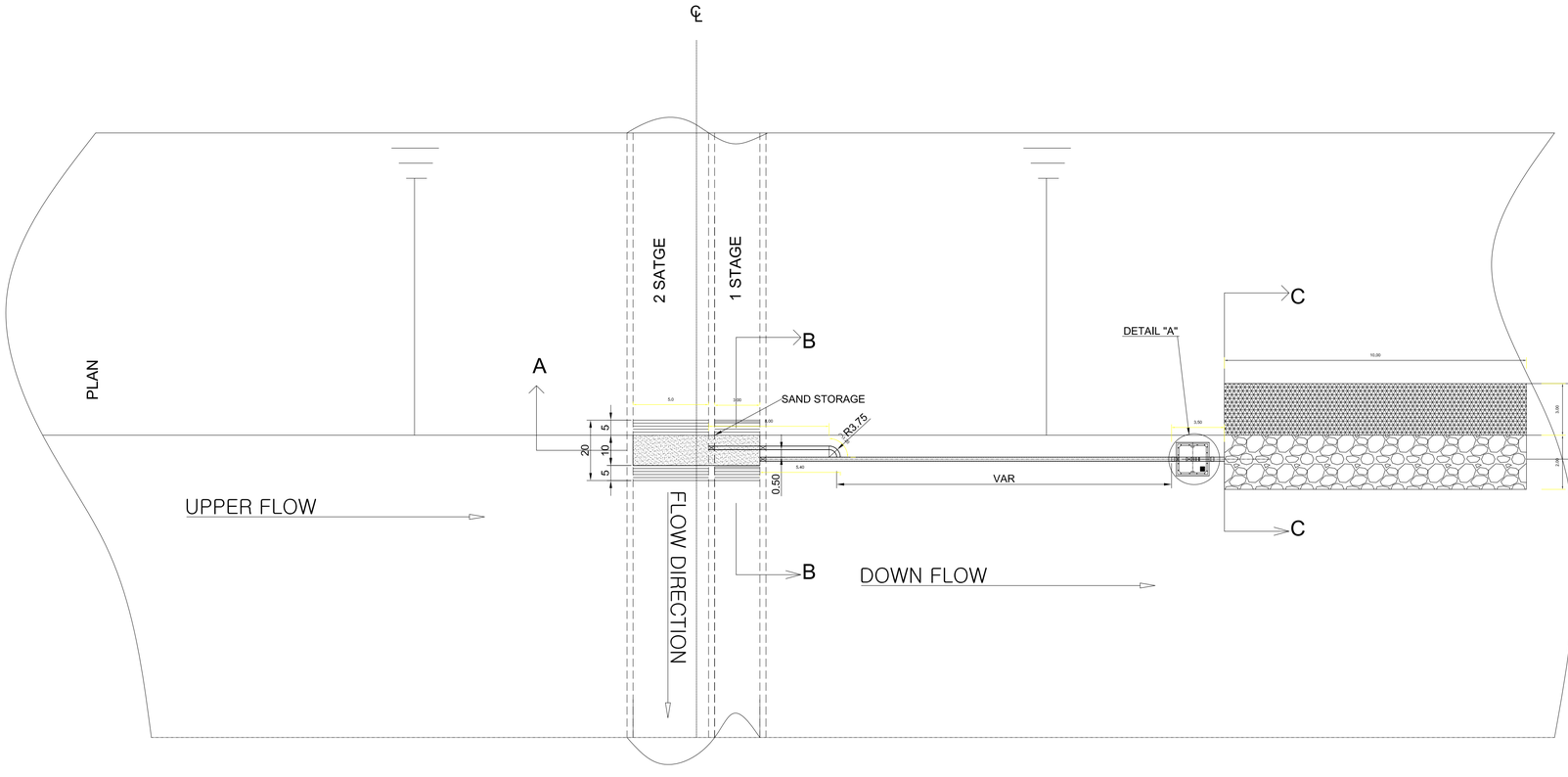
Blow Out Drawing of Siphon(1)

SECTION A

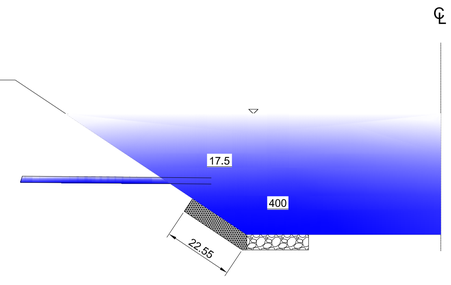


SECTION B





SECTION C-C

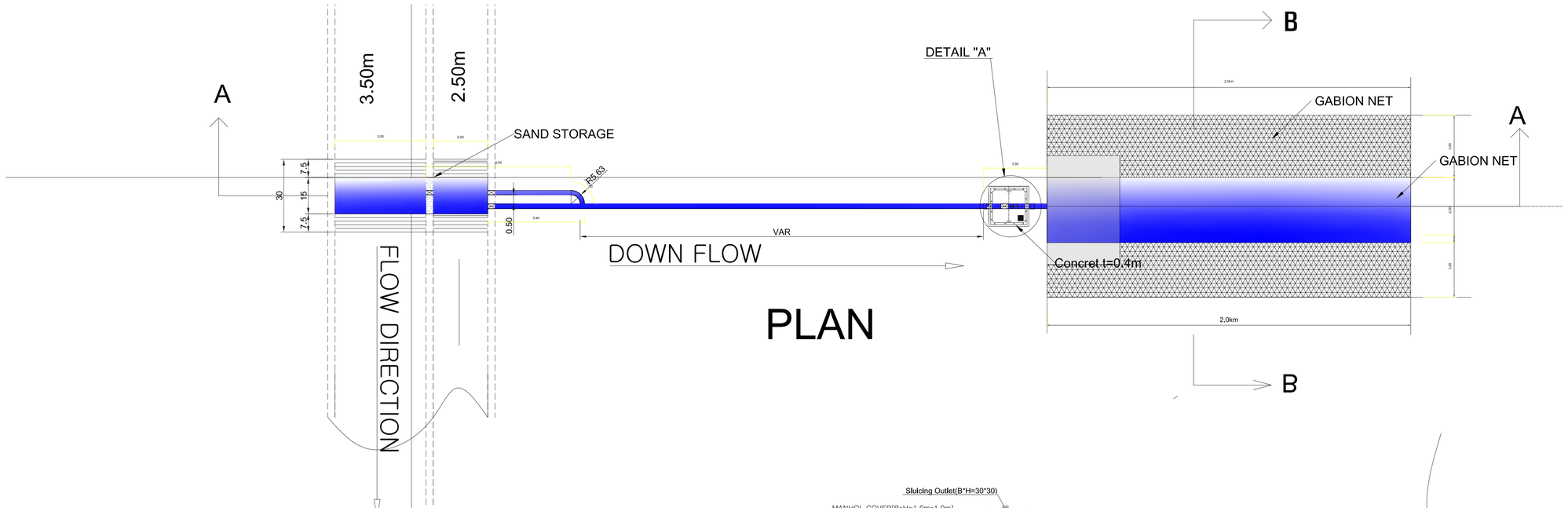


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Blow Out drawing of Siphon(1)	DATE DECEMBER 2016	DRG No C-050

Blow Out Drawing of Siphon(2)

(STA 5+732.0 ~ STA 7 + 608.0)

SCALE : NONE

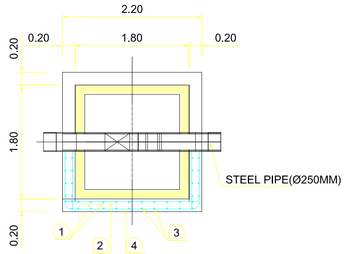


SECTION A

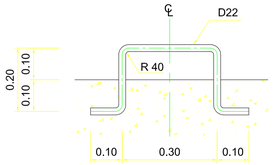
SECTION B

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Blow Out drawing of Siphon(2)	DATE DECEMBER 2016	DRG No C-051

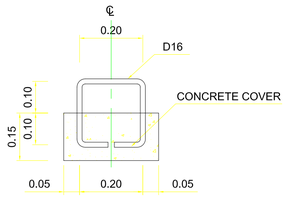
Control Gate Valve of Siphon



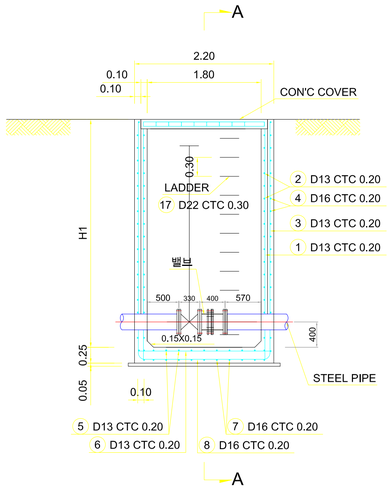
PLAN



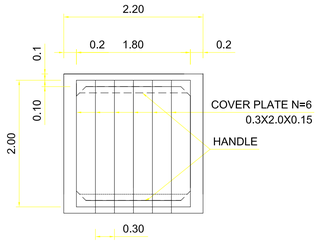
Ladder Details



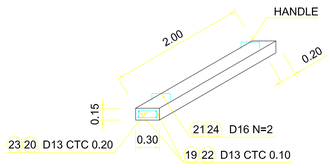
handle Details



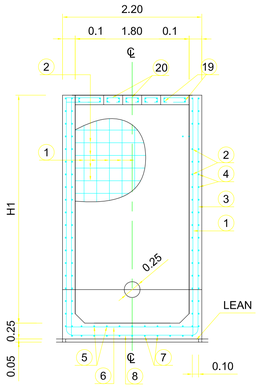
SIDE SECTOIN



CAP ARRAY



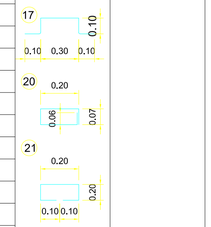
CAP DETAIL DRAWING



SECTION A-A

BARE LIST

NO.	DIA	C.T.C	R.L	N	T.L	DETAIL OF BAR	REMARKS
1	13	0.20	H1+0.15	42	42H1+6.30		
2	13	0.20	2.06	20H1	41.2H1		
3	13	0.20	H1+0.15	42	42H1+6.30		
4	16	0.20	2.06	20H1	42.2H1		
5	13	0.20	2.06	12	24.7		
6	13	0.20	2.06	12	24.7		
7	16	0.20	2.06	12	24.7		
8	16	0.20	2.06	12	24.7		
17	22	0.30	0.70	3.0H1	2.1H1		
19	13	0.10	2.0	20	40.0		
20	13	0.20	0.60	60	36.0		
21	16	-	0.80	12	9.6		
TOTAL	D13	(125.2H1+138)X0.995X1.03=128.3H1+141.4 Kg					
	D16	(42.2H1+ 59)X1.560X1.03=67.8H1+94.8 Kg					
	D22	2.1H1X3.03X1.03=6.55H1 Kg					

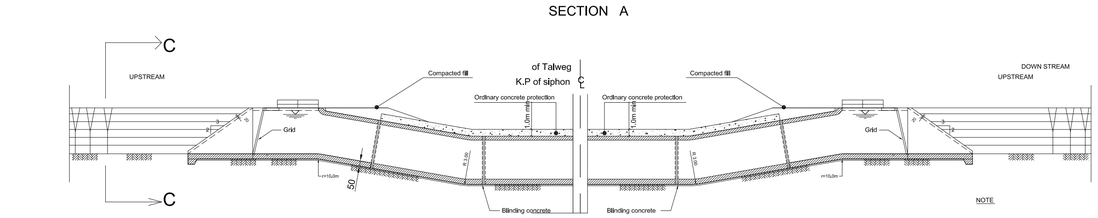


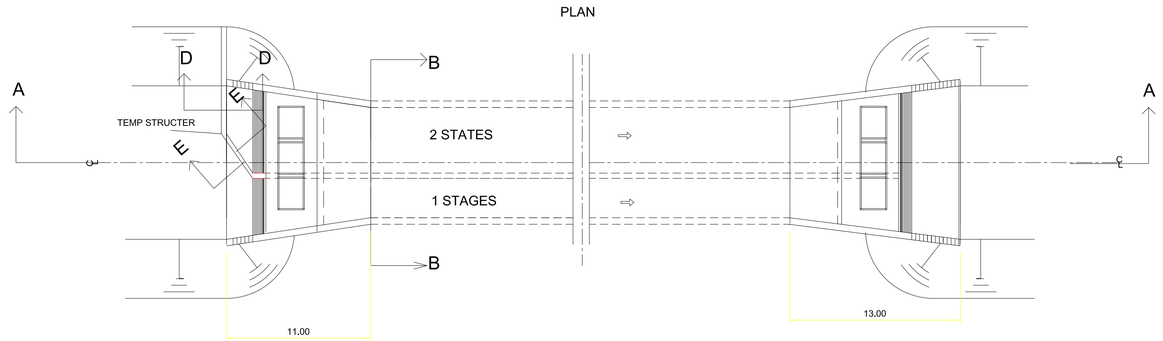
MARTARIAL LIST

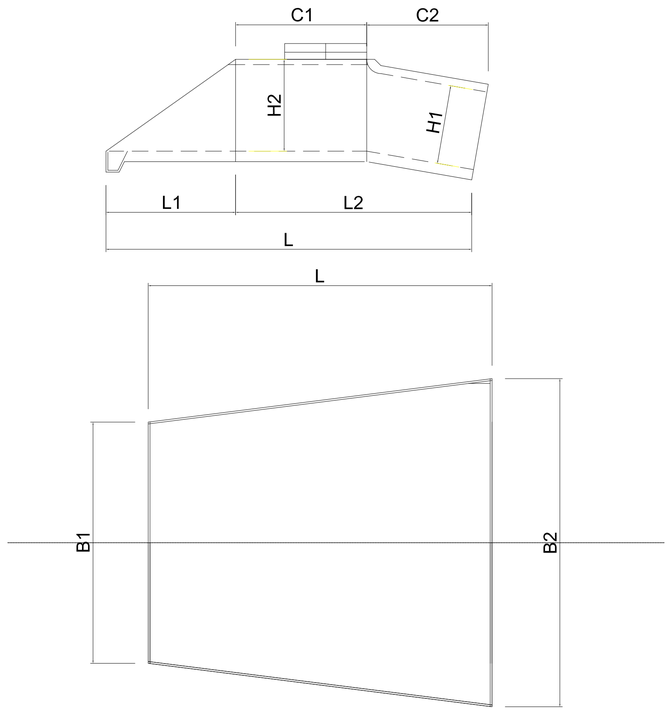
TYPE	CONCRETE		(FORM-TIMBER)		Remark
	B-24	LEAN(18)	4 times	6 times	
1.8 X 1.8	1.6H1+1.27	0.57	16.0H1+5.02	0.96	

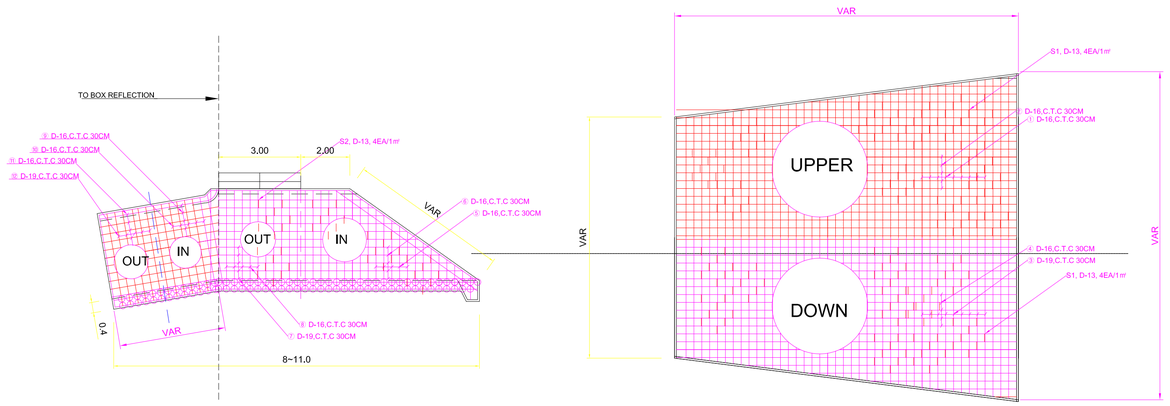
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Control Gate Valve of Siphon	DATE DECEMBER 2016	DRG No C-052

Inlet & Outlet Details of Siphon









SHIPHON INLET, OUTLET SCALE TABLE

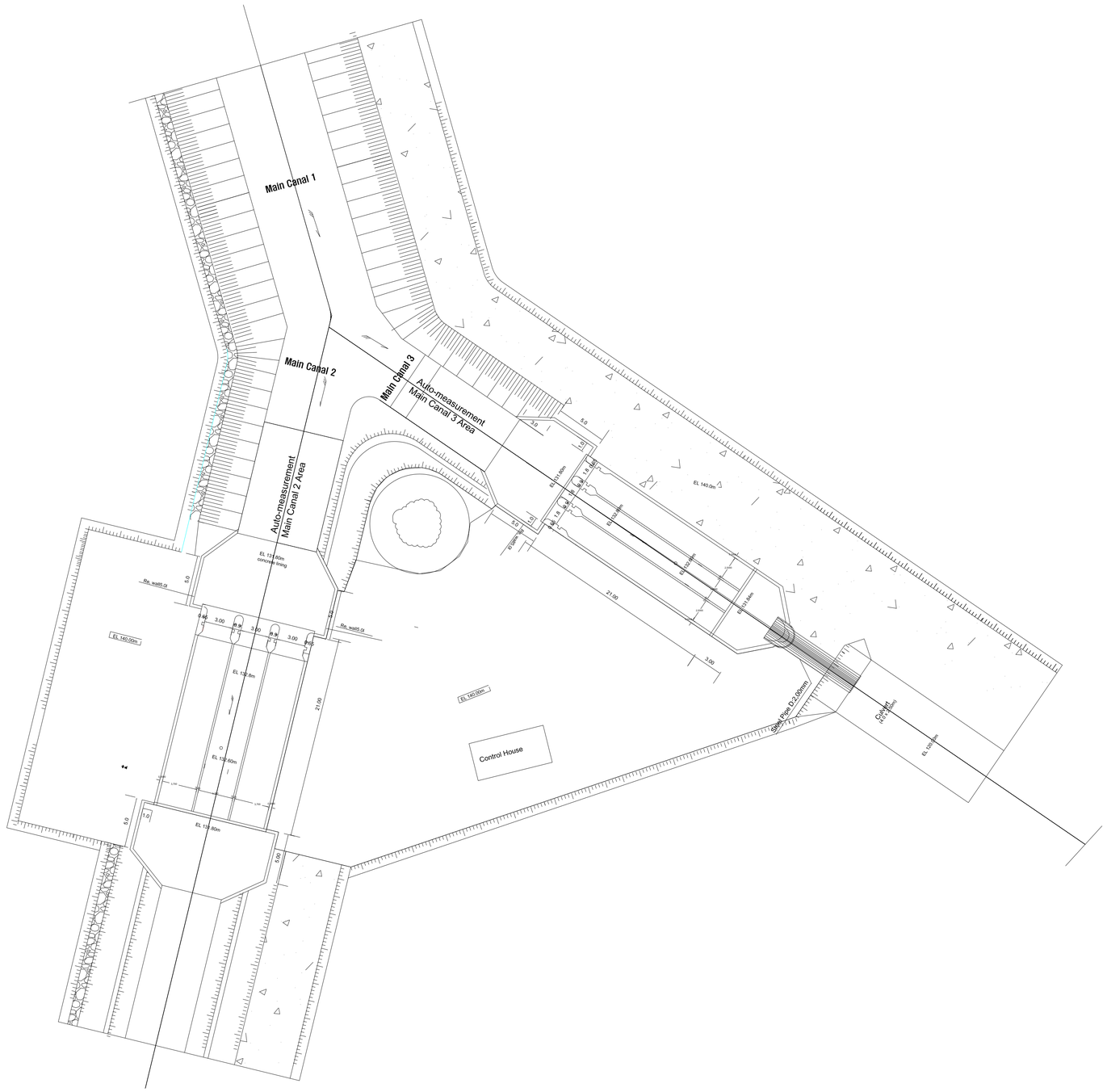
ITEM	SCALE									REMARKS
	B1	B2	H1	H2	C1	C2	L	L1	L2	
TYPE-1-1	9.40	12.70	3.00	3.50	5.00	1.06	11.00	4.94	6.06	INLET
TYPE-1-2	9.40	12.70	3.00	3.50	5.00	3.06	13.00	4.94	8.06	OUTLET
TYPE-2-1	8.40	11.70	3.00	3.50	5.00	1.06	11.00	4.94	6.06	INLET
TYPE-2-2	8.40	11.70	3.00	3.50	5.00	3.06	13.00	4.94	8.06	OUTLET
TYPE-3	7.20	9.30	2.50	3.20	4.00	0.77	9.00	4.23	4.77	2SIDE
TYPE-4	5.10	5.89	1.50	2.40	4.00	0.89	8.00	3.11	4.89	2SIDE

COMMON

SYMBOL	SYMBOLTITLE	LENGTH (m)NUMBER	NUMBER	NUMBERTOTAL LWEIGHT UNIT (m)	WEIGHT UNIT (kg/m)	WEIGHT UNITTOTAL SUM (ton)	REMARKS
3	D19	(B1+B2)/2	4				3% ADD
7		H2+H2/2	4				
12							Main calulate
SUM				**0.000**	**2.250**	**0.000**	
1	D16	(B1+B2)/2	4				3% ADD
2		L-C2	4				
4		L-C2	4				
5		H2+H2/2	8				2SIDE
6		C1+(L1+C2)/2	8				2SIDE
8		H2+H2/2	8				2SIDE
SUM				**0.000**	**1.560**	**0.000**	
S1	D13	1.200	AREA*3EA				(B1+B2)/2*L-C2
S2	D13	1.200	AREA*3EA				(C1+(C1+L1)/2*H2*2
SUM				**0.000**	**0.995**	**0.000**	
TOTAL SUM						**0.000**	**3% ADD**

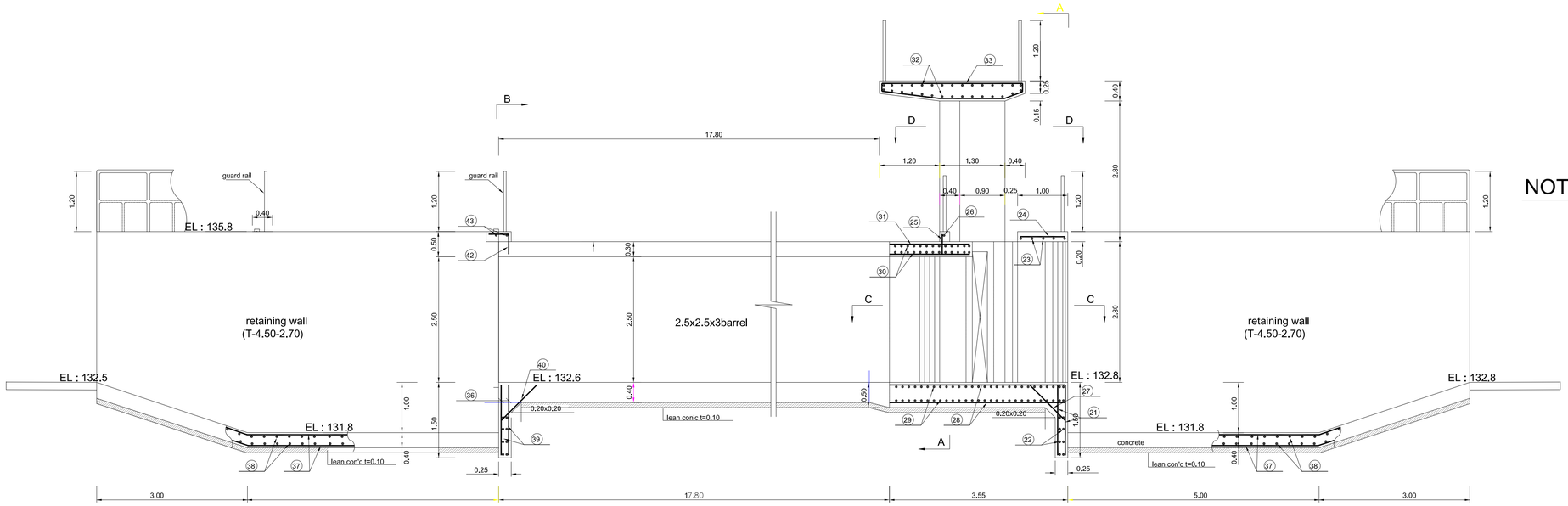
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Inlet & Outlet Details of Siphon	DATE DECEMBER 2016	DRG No C-053

General Plan of Diversion Structure

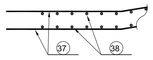


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Plan of Diversion Structure	DATE DECEMBER 2016	DRG No C-054

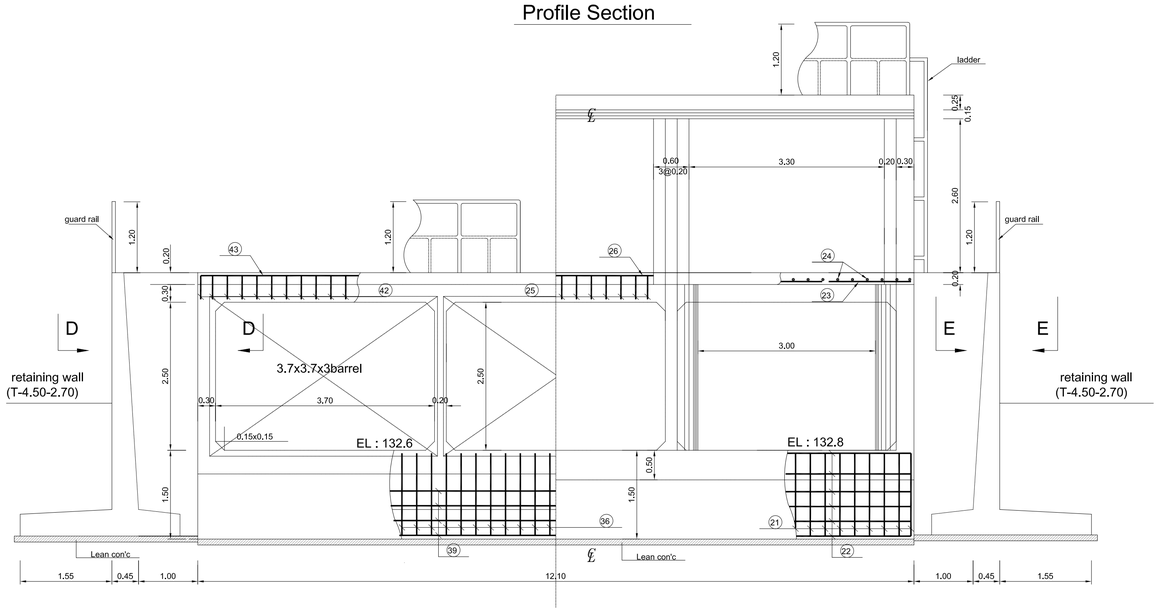
Main Canal 2 Intake (1)



NOTICE



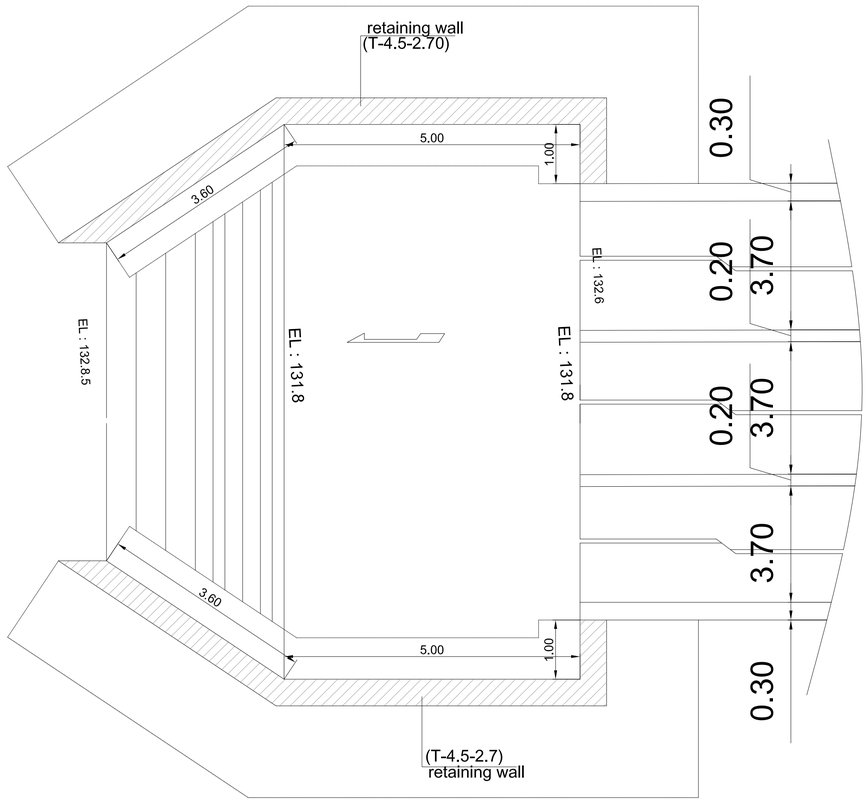
Profile Section



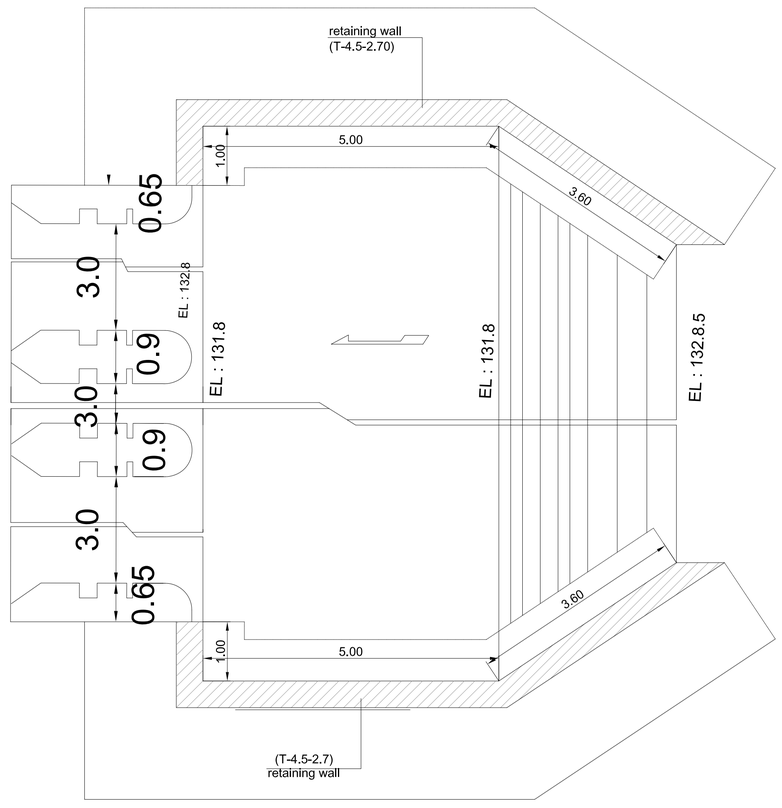
SECTION A-A, B-B

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 2 Intake[1]	DATE DECEMBER 2016	DRG No C-055

Main Canal 2 Intake (2)



Section D - D

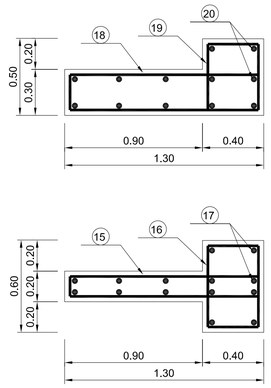


Section E - E

NOTICE

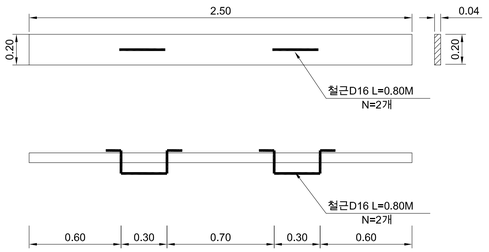
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 2 Intake[2]	DATE DECEMBER 2016	DRG No C-056

Main Canal 2 Intake (3)



Section D-D

S=1:25



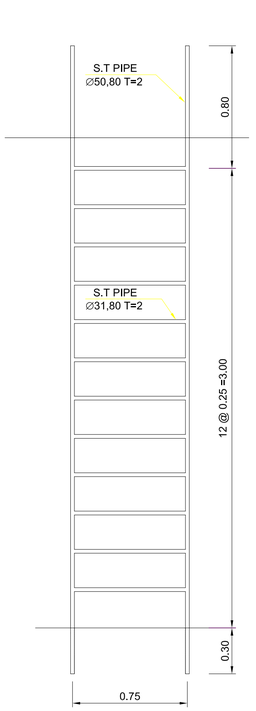
Temporary Stop Gate

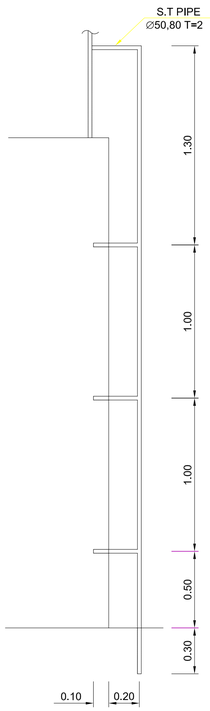
S=1:25

Material List

(EA)

Item	Unit	Quantity	R E
Plat (wood)	m^3	O.02	
Steel bar D16	kg	2.57	



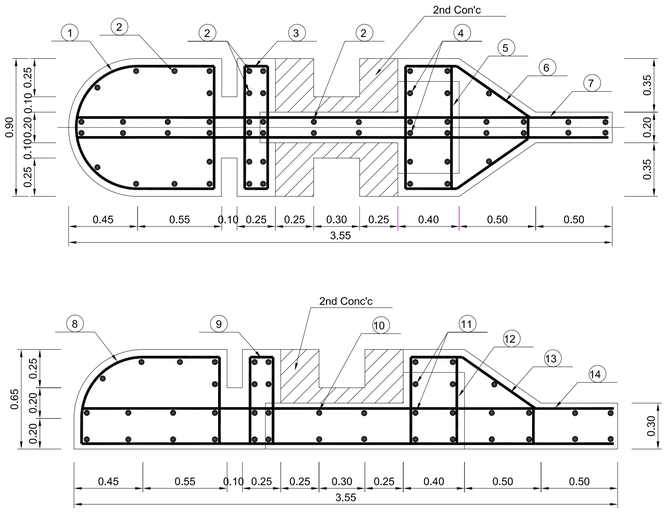


detail of ladder draw

S=1:25

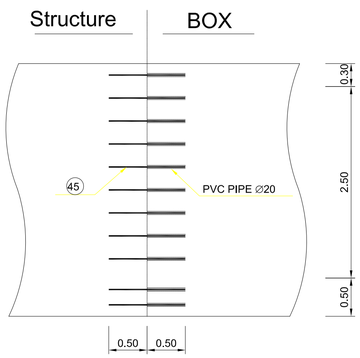
Material List

Item		Unit	Quantity	R E
S.T PIPE	∅50,80 T=2	m	10.60	
	∅31,80 T=2	m	9.00	
Welding joint	∅50,80	E A	10	
	∅31,80	E A	24	



Section C-C

S=1:25



Deatail of expansion joint

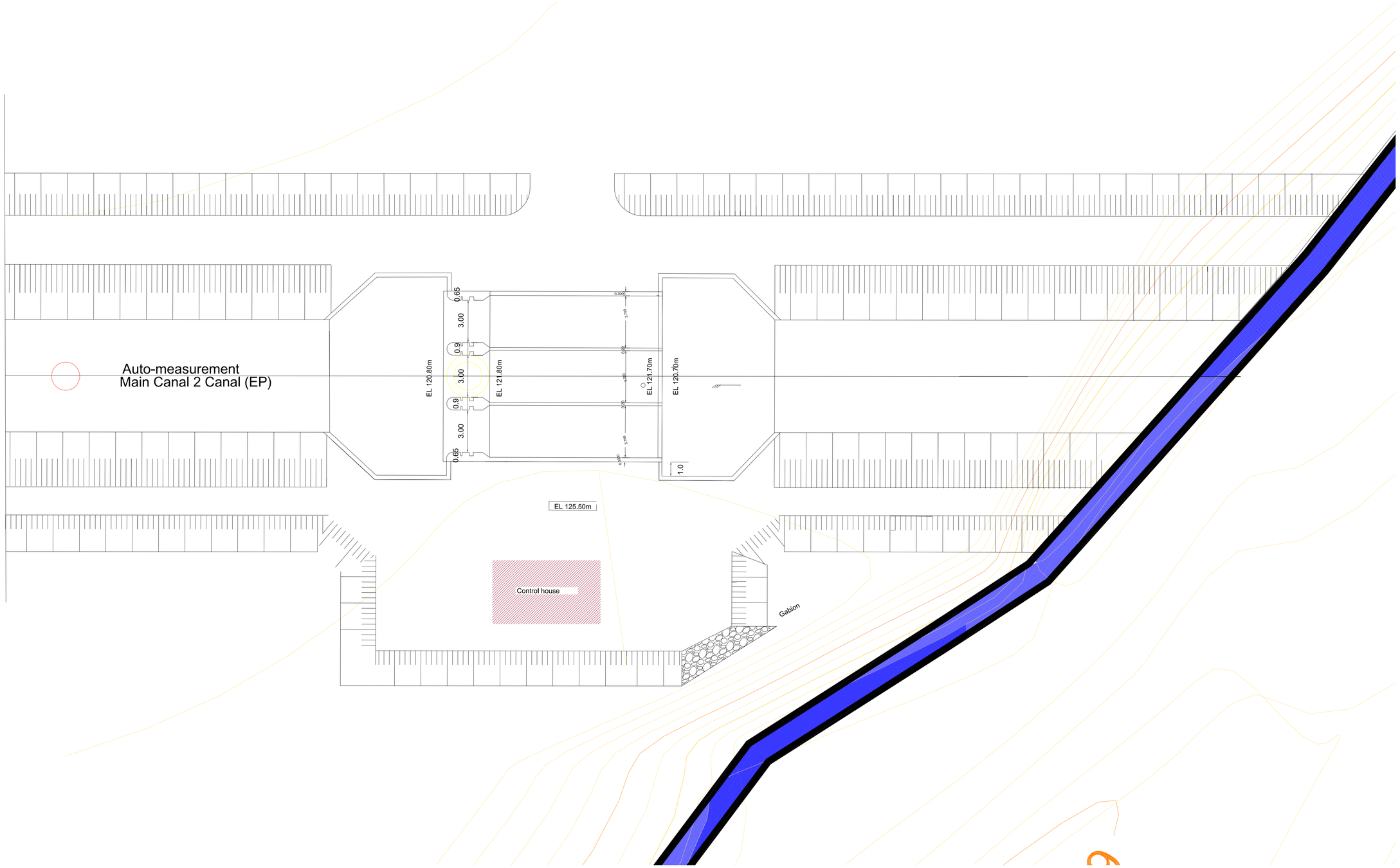
S=1:50

Material List

Item	E A	R E
Wall	40	10x4
Slab	30	10x3
Down Plat	60	20x3
Total	130	

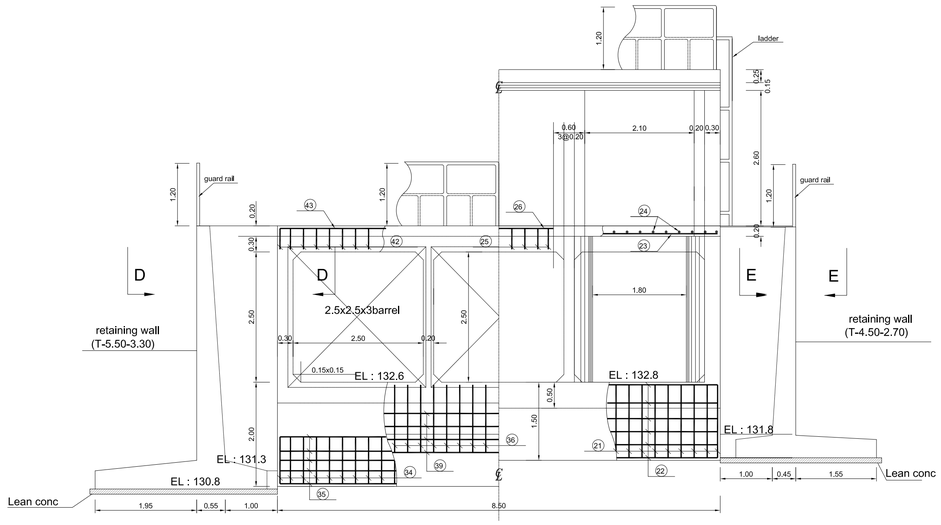
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 2 Intake[3]	DATE DECEMBER 2016	DRG No C-057

Main Canal 2 Control Gate (STA.18+380)



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 2 Control Gate (STA.18+300)	DATE DECEMBER 2016	DRG No C-058

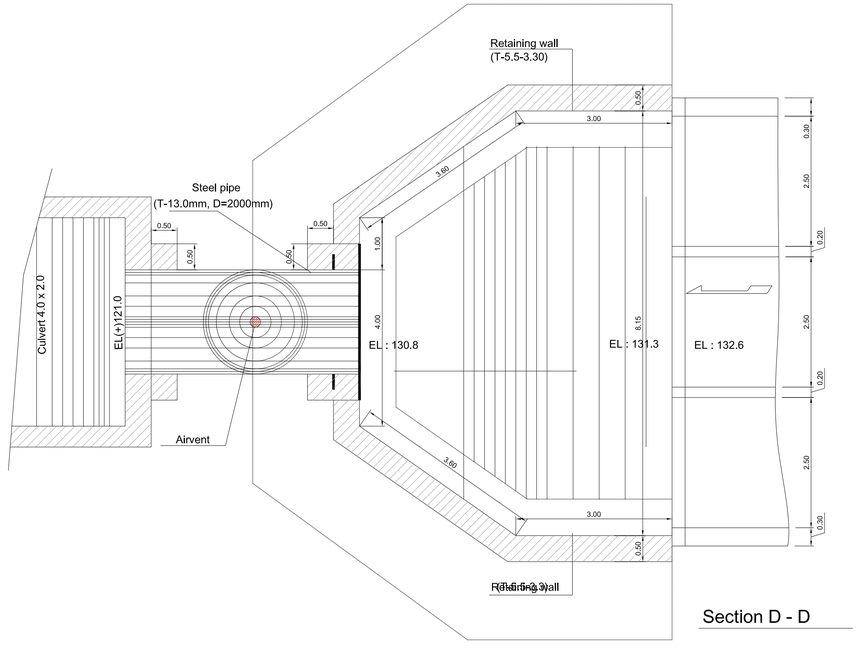
Main Canal 3 Intake (1)



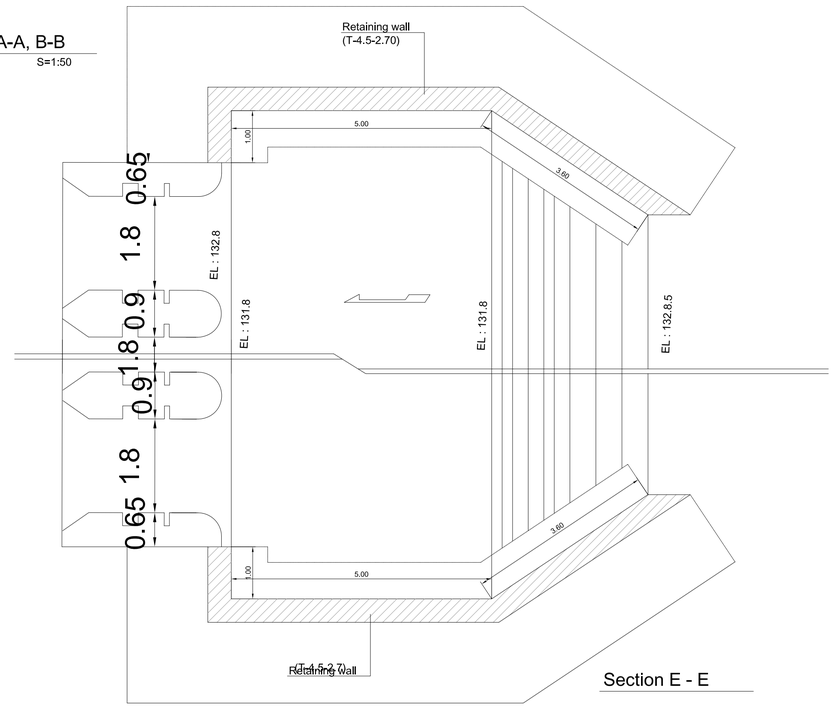
SECTION A-A, B-B

S=1:50

NOTICE



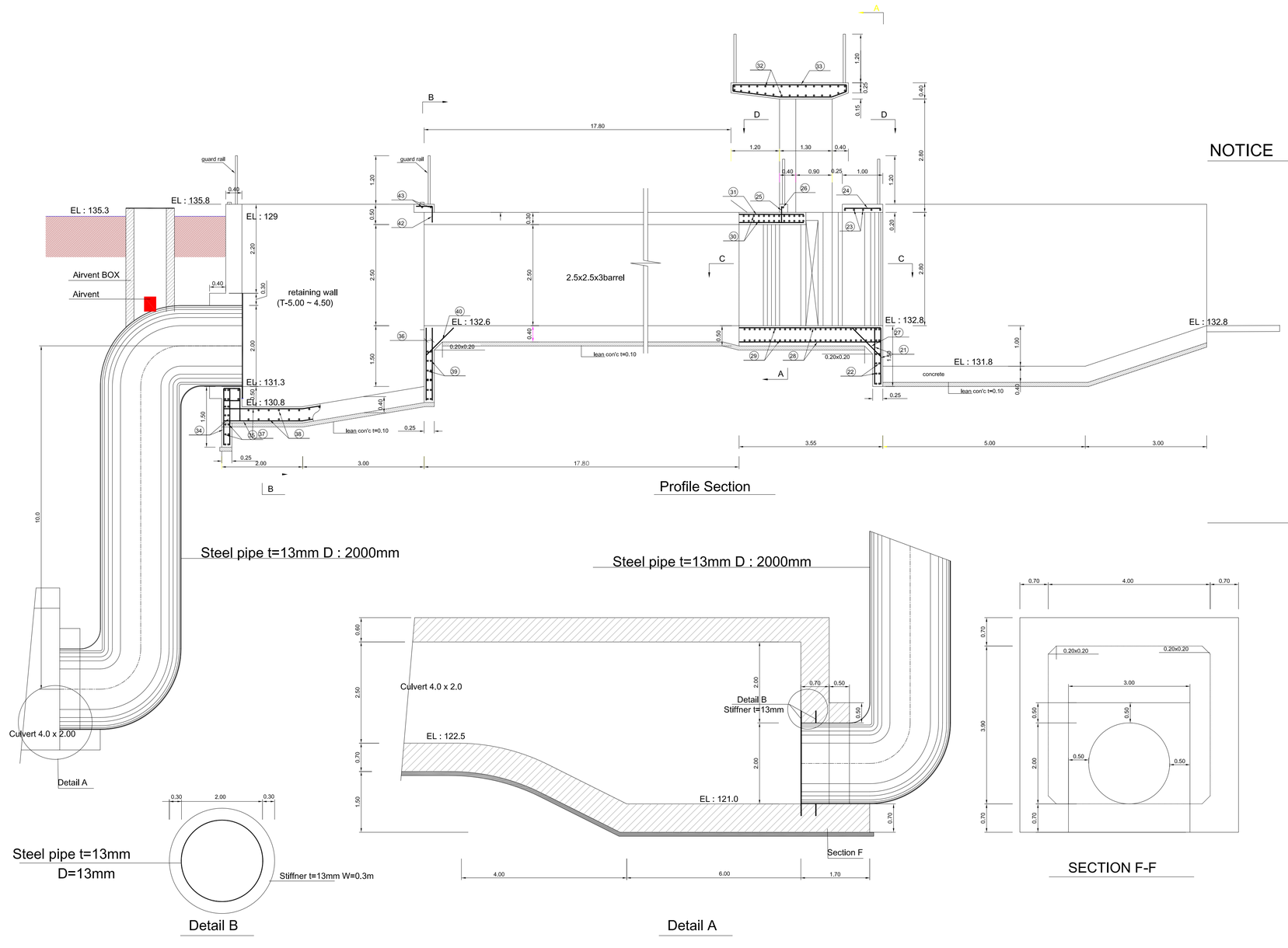
Section D - D



Section E - E

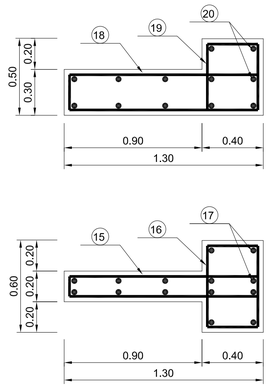
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 3 intake (1)	DATE DECEMBER 2016	DRG No C-059

Main Canal 3 Intake (2)



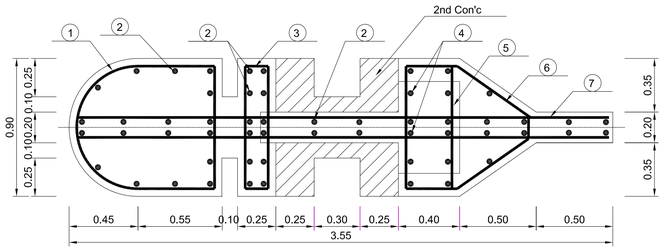
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 3 intake (2)	DATE DECEMBER 2016	DRG No C-060

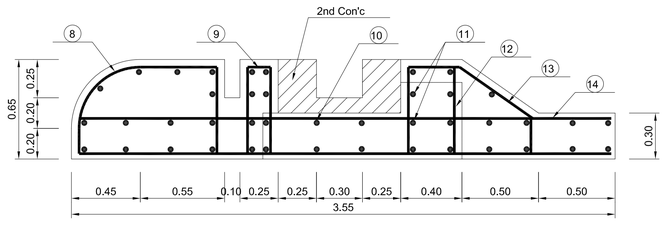
Main Canal 3 Intake (3)



Section D-D

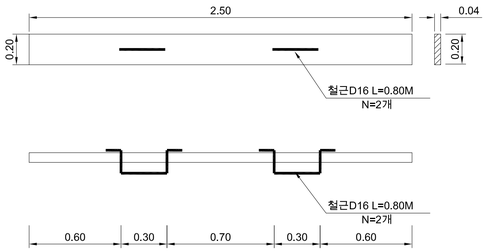
S=1:25





Section C-C

S=1:25



Temporary Stop Gate

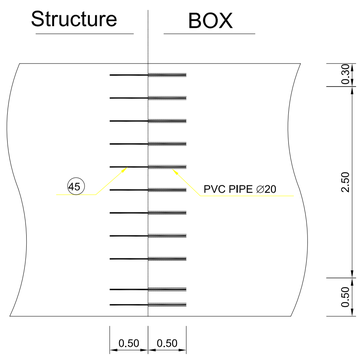
S=1:25

Material List

(EA)

Item	Unit	Quantity	R E
Plat (wood)	m^3	O.02	
Steel bar D16	kg	2.57	

Structure BOX

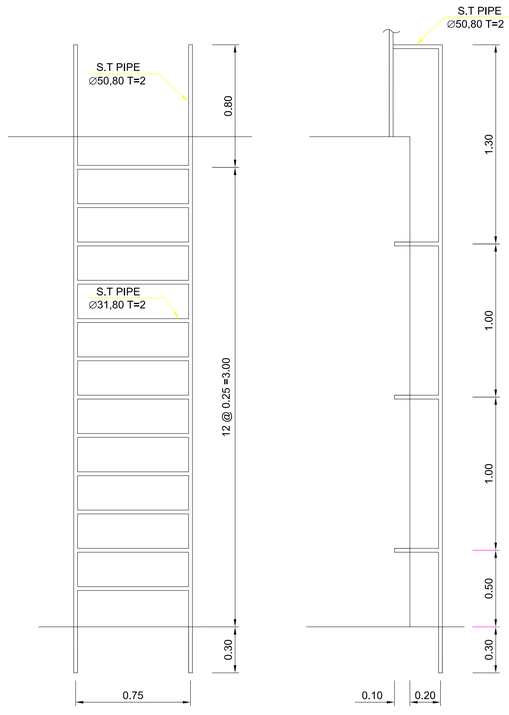


Deatail of Expansion Joint

S=1:50

Material List

Item	E A	R E
Wall	40	10x4
Slab	30	10x3
Dowm Plat	60	20x3
Total	130	



Detail of Ladder Draw

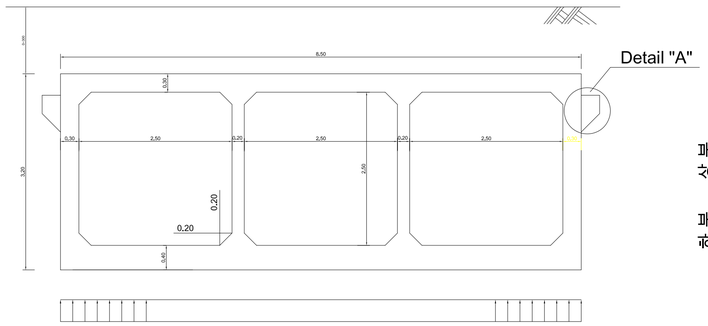
S=1:25

Material List

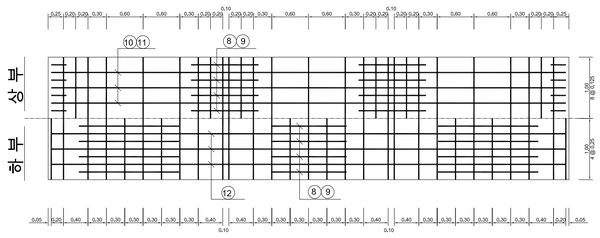
Item		unit	Quantity	R E
S.T PIPE	∅50,80 T=2	m	10.60	
	∅31,80 T=2	m	9.00	
Welding joint	∅50,80	E A	10	
	∅31,80	E A	24	

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Main Canal 3 intake (3)	DATE DECEMBER 2016	DRG No C-061

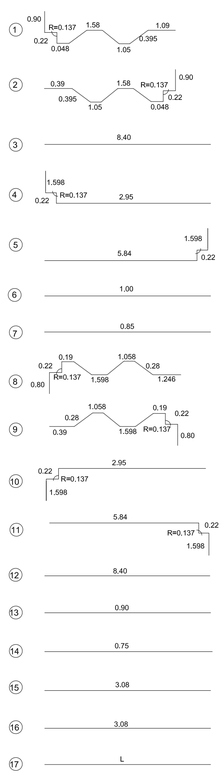
Intake Box of Main Canal 3 (2.5 x 2.5 @ 3)



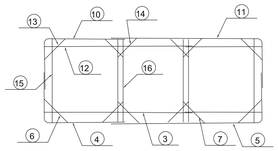
General Drawing



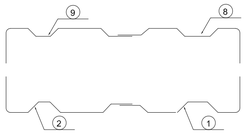
UPplate Drawing



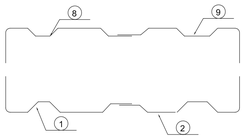
Steel Shape detail drawing



Arrangement of Bar 1

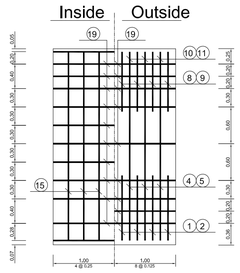


Arrangement of Bar 2

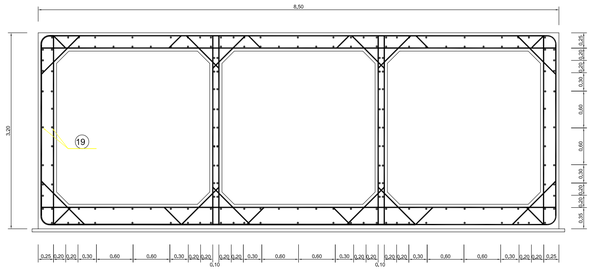


Arrangement of Bar 3

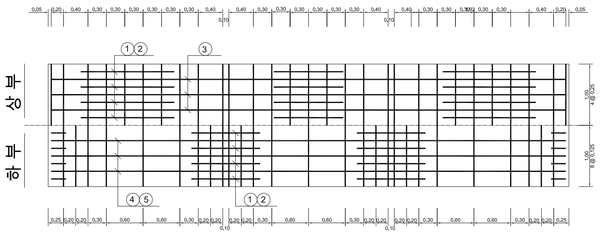
NOTICE



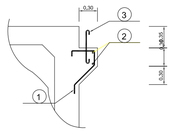
Side Wall Drawing



Section Drawing



Down Plate



Detail "A"

Detail a Steel List

(1M/unit)

NO.	DIA	L	JOINT	L/EA	NO.	T.L	SHAPE	REMARKS
1	D13	6.073		6.073	4	24.29		
2	D13	5.373		5.373	4	21.49		
3	D13	8.40		8.40	4	33.60		
4	D13	4.768		4.768	4	19.07		
5	D13	7.658		7.658	4	30.63		
6	D16	1.00		1.00	8	8.00		
7	D16	0.85		0.85	16	13.60		
8	D13	5.952		5.952	4	23.81		
9	D13	5.096		5.096	4	20.38		
10	D13	4.768		4.768	4	19.07		
11	D13	7.658		7.658	4	30.63		
12	D13	8.40		8.40	4	33.60		
13	D16	0.90		0.90	8	7.20		
14	D16	0.75		0.75	16	12.00		
15	D13	3.08		3.08	8	24.64		
16	D13	3.08		3.08	16	49.28		
17	D13	1.00		1.00	176	176.00		

D16 = 46.80x1.560x1.03=75kg
D13 = 527.29x0.995x1.03=540kg
Total = 615kg

Material List

(1M/unit)

Item		Unit	Quantity	REmark
CONCRETE	B-210	m^3	8.690	
	LEAN	m^3	0.435	
Form	4number	m^2	28.68	

Detail Bar

1EA

NO.	DIA	L	Space	L/EA	NO.	T.L	SHAPE	REMARKS
1	D16	1.37	0.30	1.37	22	30.14		
2	D13	6.40	0.20	6.40	2	12.80		
3	D19	0.70	0.30	0.70	22	15.40		

D19 = 15.40x2.25x1.03=35kg
D16 = 30.14x1.560x1.03=48kg
D13 = 12.80x0.995x1.03=13kg
Total = 96kg

Material List

1EA

Item		Unit	Quantity	Remark
CONCRETE	B-210	m^3	0.878	
Form	4number	m^2	4.970	

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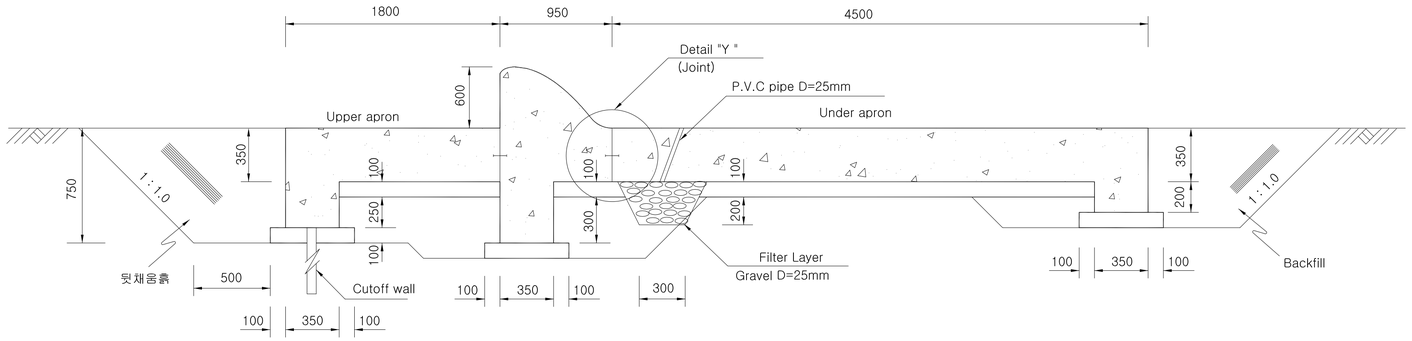
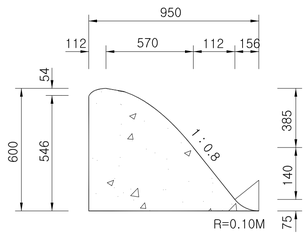
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Intake Box of Main Canal 3 (2.5 x 2.5 @ 3)	DATE DECEMBER 2016	DRG No C-062

Weir

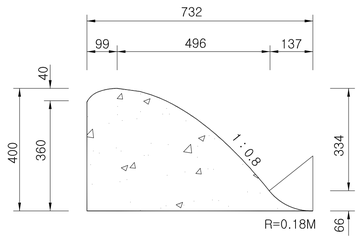
Scale = None



Cross Section (Hd=0.35M) SCALE A



Over flow of Head = 0.40M



Over flow of Head = 0.52M

Sectional Shape of Over Flow SCALE B

Measurement of Section Shape

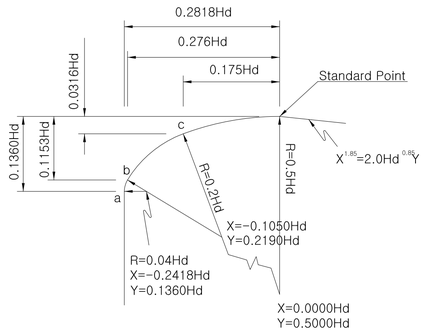
Unit : m

Weir Hight	Over flow of Head	Bottom	Length of apron		Length of Bed pitching	Wall			Wall Thickness	Thickness of Upper apron	Thickness of Down apron	Seepage Length	Safe end Seepage Length	Bearing capacity (ton/㎡)
			Upper	Under		Upper	Weir	Under						
0.600	0.200	0.555	1.400	3.500	-	0.300	0.300	0.200	0.350	0.350	0.350	7.755	3.505	3.000
	0.350	0.732	1.400	3.500	-	0.300	0.400	0.200	0.350	0.350	0.350	8.132	3.882	3.000

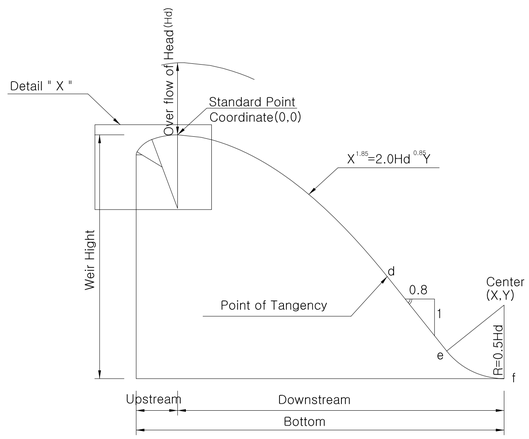
Coordinate(Base of Standard Point)

Unit : m

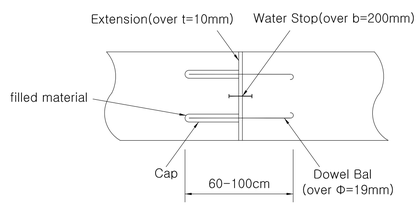
Weir Hight	Over flow of Head	a		b		c		d		e		f	
		-X	-Y	-X	-Y	-X	-Y	-X	-Y	-X	-Y	-X	-Y
0.600	0.200	0.056	0.027	0.055	0.023	0.035	0.006	0.285	0.193	0.420	0.362	0.498	0.400
	0.350	0.099	0.048	0.097	0.040	0.061	0.011	0.496	0.334	0.496	0.334	0.633	0.400



Detail "X"



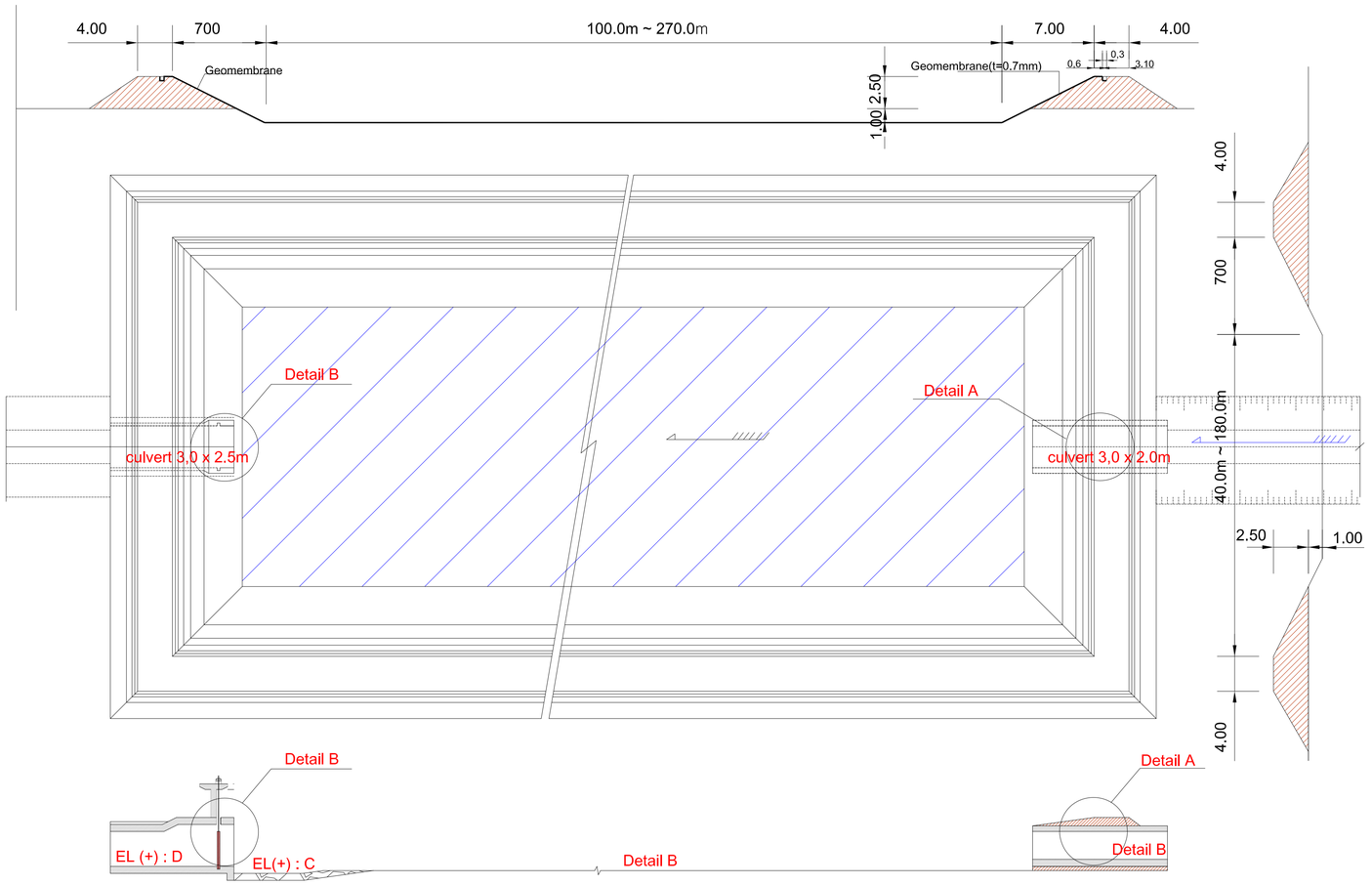
Calculation method of Standard Cross Section

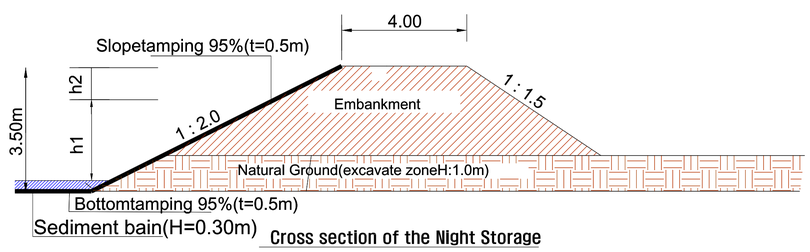


Detail "Y"

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE Weir	DATE DECEMBER 2016	DRG No C-063

Night Storage Plan





Cross section of the Night Storage

Zone I-1

Storage Name	Station	Volume(m3)	Type	Remark
Night Storage I1	Main Canal 1 STA.16 +600	21,000~27,000	Type 3	Branch Canals I1
Night Storage I3	Main Canal 1 STA.22 +500	12,000~14,000	Type 4	Branch Canals I3
Night Storage I4	Main Canal 1 STA.28 +600	26,000~33,000	Type 3	Branch Canals I4
Night Storage I5	Main Canal 1 STA.31 +100	45,000~58,000	Type 1	Branch Canals I5
Night Storage I7	Main Canal 3 STA.02 +400	44,000~56,000	Type 1	Branch Canals I7

Zone A

Storage Name	Station	Volume(m3)	Type	Remark
Night Storage A1	Main Canal 2 STA.02 +400	18,000~22,000	Type 4	Branch Canals A1
Night Storage A2	Main Canal 2 STA.05 +600	7,000~9,000	Type 5	Branch Canals A2
Night Storage A3	Main Canal 2 STA.07 +960	22,000~28,000	Type 3	Branch Canals A3
Night Storage A4	Main Canal 2 STA.09 +700	33,000~41,000	Type 2	Branch Canals A4
Night Storage A6	Main Canal 2 STA.12 +400	29,000~36,000	Type 2	Branch Canals A6
Night Storage A7	Main Canal 2 STA.14 +100	31,000~40,000	Type 2	Branch Canals A7
Night Storage A9	Main Canal 3 STA.09 +340	7,000~9,000	Type 5	Branch Canals A9

<Table> Night Storages Type

UNIT : m

TYPE	W	L	H(h1+h2)	RE
Type 1	220.0	100.0	3.50	h2=0.70
Type 2	160.0	100.0	3.50	
Type 3	140.0	80.0	3.50	
Type 4	100.0	80.0	3.50	
Type 5	90.0	40.0	3.50	

CLIENT

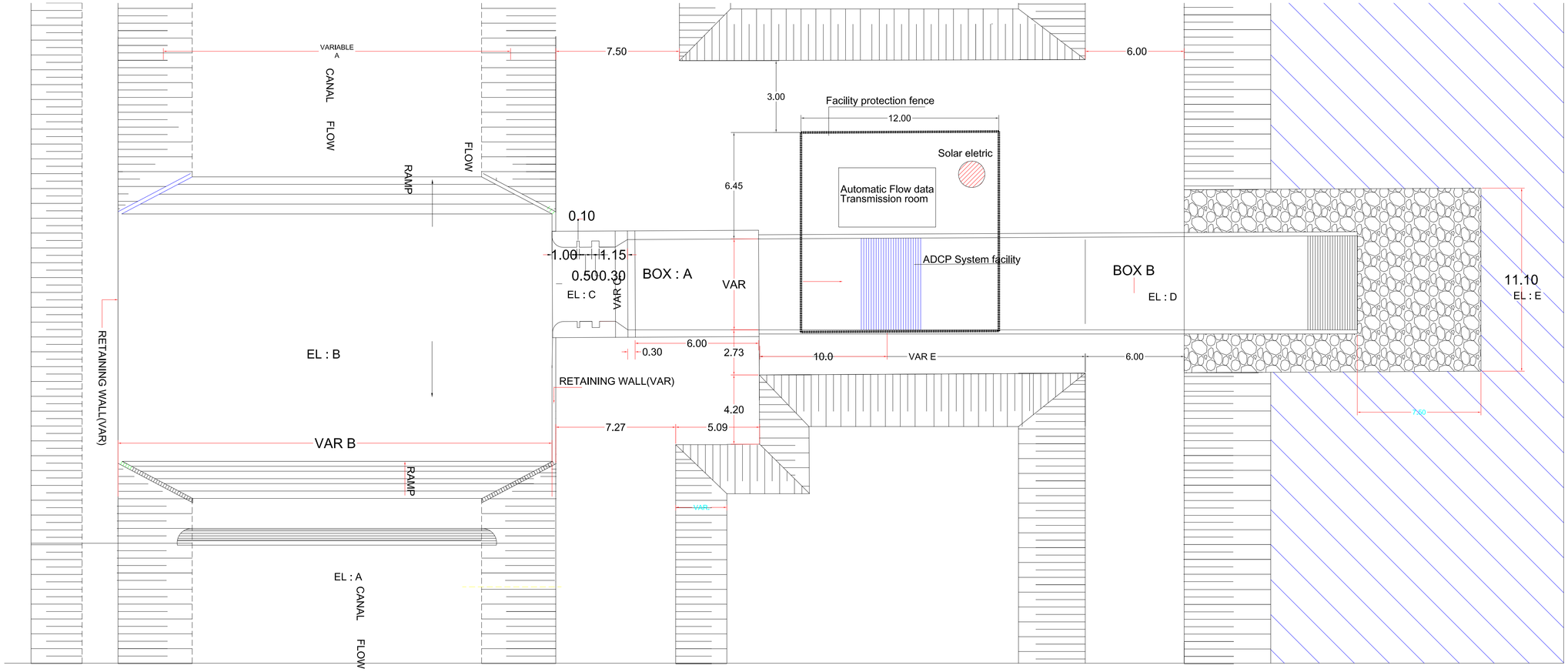
REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

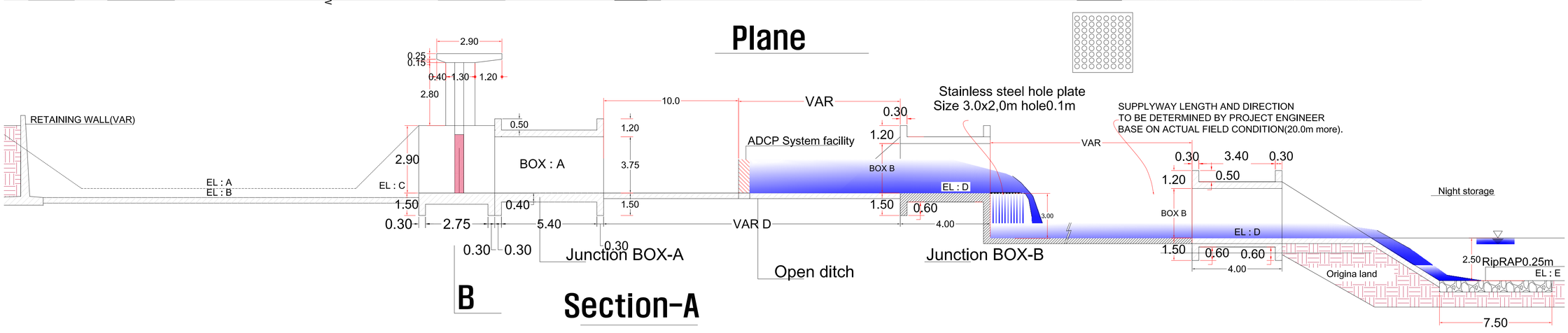
Technical Feasibility Study
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
GK Works Civil and Structural Engineer

PROJECT	ORIGINAL DESIGNED BY	SCALE
SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
TITLE	DATE	DRG No
Night Storage Plan	DECEMBER 2016	C-064

General Layout of Secondary canals Gate (1)



Plane

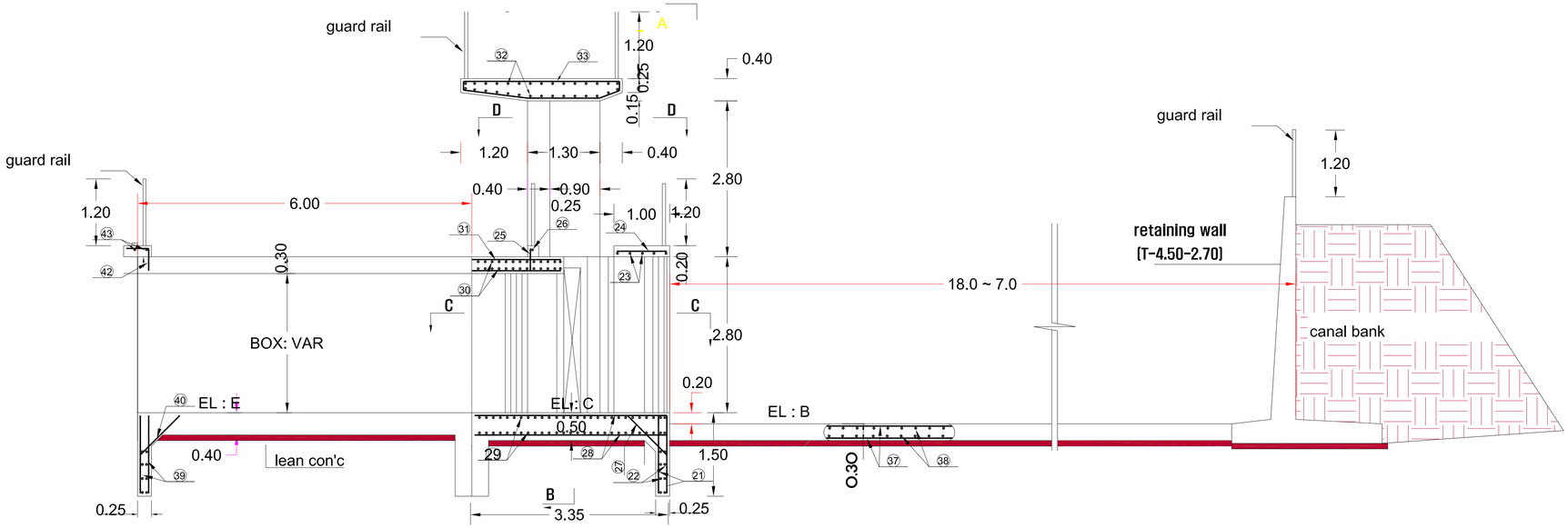


B

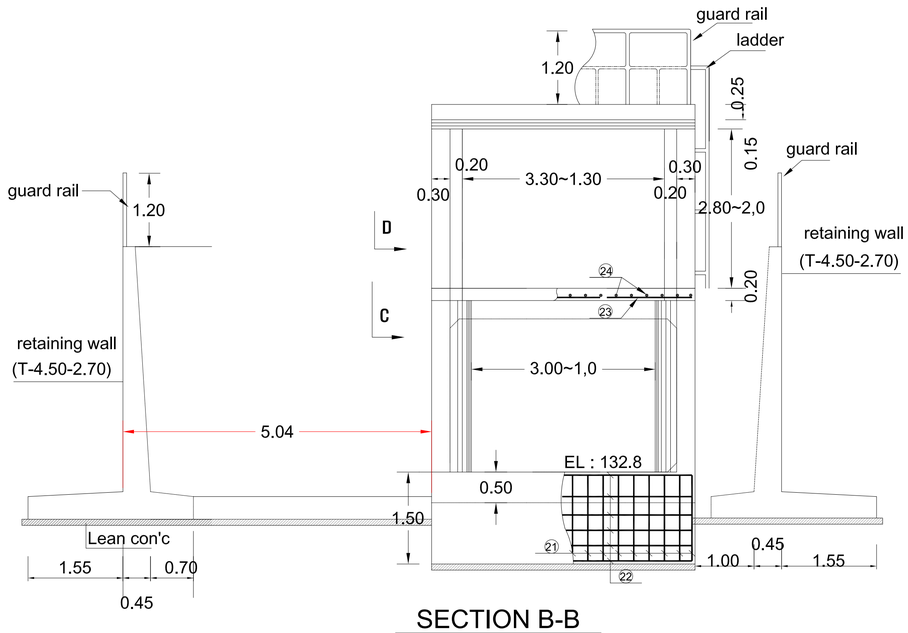
Section-A

CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE General layout of Secondary canal gate	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Hor 1 : 1,000 Ver 1 : 100 DRG No C-065

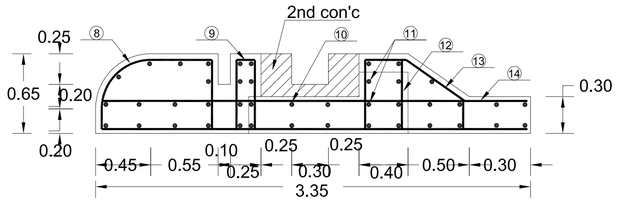
Secondary Canal Intake Structure (2)



Profile Section



SECTION B-B



Section C-C
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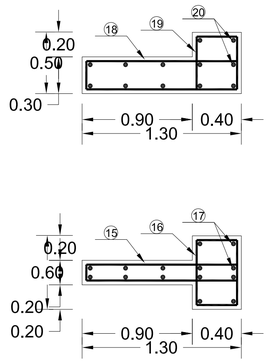

Section D-D
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CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE Hor 1 : 1,000 Ver 1 : 100
		TITLE Sand Trap Structure and List	DATE DECEMBER 2016	DRG No C-066

Secondary gate Structure and List (3)

Open Ditch LONGI SECTION

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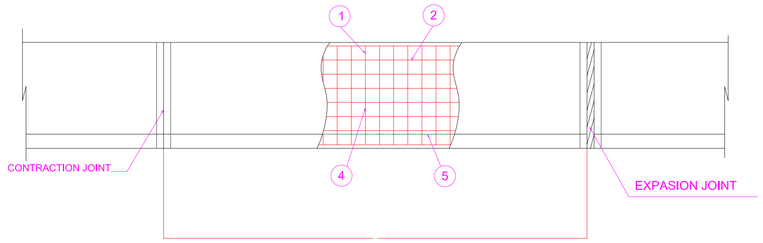
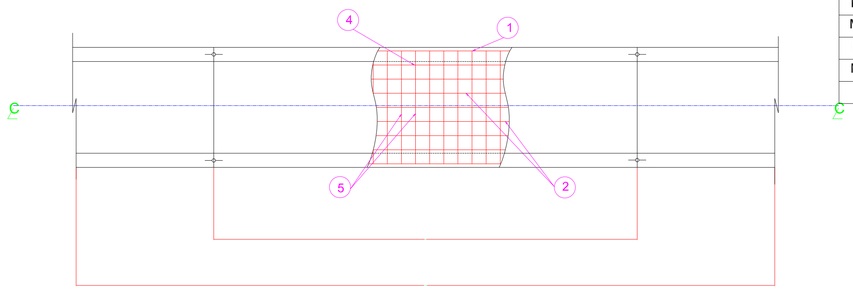


PLAN



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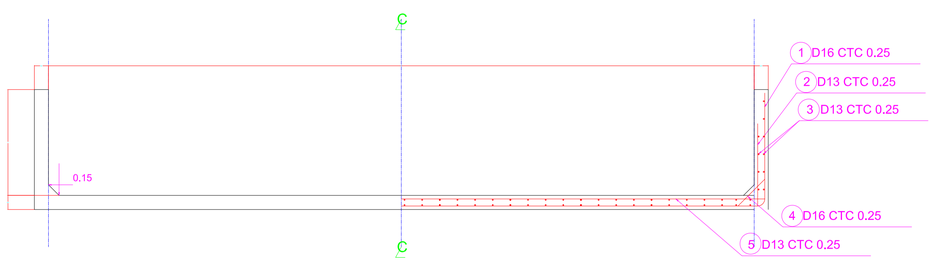


List of Secodary structure

Station	intake gate Size(BxH)	Open Canal(m)		Gate Size	Bottom Level					Elements Junction		Open ditch	
		VAR A	VAR B		A	B	C	D	E	BOX-A	BOX-B	BxH	length
Main Canal 1 STA.16+600	1.2x1.2x1ba	12.70	18.00	1.5x1.5x1	137.42	137.02	137.22	137.17	134.87	1.8x1.8x1ba	1.8x1.2x1ba	1.8x1.2	40.0
Main Canal 1 STA.20+500	3.0x2.0x1ba	12.50	18.00	3.0x2.0x1	136.37	135.97	136.17	136.12	13.82	3.6x2.0x1ba	3.6x2.0x1ba	3.6x2.0	50.0
Main Canal 1 STA.22+500	1.2x1.2x1ba	11.40	17.00	1.2x1.2x1	135.35	134.95	135.15	135.10	132.80	1.8x18x1ba	1.8x1.2x1ba	1.8x1.2	40.0
Main Canal 1 STA.28+000	1.4x1.4x1ba	11.20	16.00	1.5x1.5x1	134.07	133.67	133.87	133.82	131.52	2,0x2.0x1ba	2.0x1.5x1ba	2.0x1.5	40.0
Main Canal 1 STA.31+100	2.0x2.0x1ba	11.00	15.00	2.0x2.0x1	133.13	132.73	132.93	132.88	130.58	2.6x2.0x1ba	2.6x2.0x1ba	2.6x2.0	40.0
Main Canal 3 STA.01+040	1.2x1.2x1ba	6.70	8.5	1.2x1.2x1	121.10	120.70	120.90	120.85	118.55	1.8x1.8x1ba	1.8x1.2x1ba	1.8x1.2	40.0
Main Canal 3 STA.02+900	2.0x2.0x1ba	6.50	8.0	2.0x2.0x1	106.41	106.01	106.21	106.16	103.86	2.6x2.0x1ba	2.6x2.0x1ba	2.6x2.0	40.0
Main Canal 2 STA.02+400	1.4x1.4x1ba	9.10	12.00	1.2x1.2x1	132.02	131.62	131.82	131.77	129.47	2.0x2.0x1ba	2.0x1.5x1ba	2.0x1.5	40.0
Main Canal 2 STA.05+600	1.2x1.2x1ba	8.90	12.00	1.2x1.2x1	131.11	130.71	130.91	130.86	128.56	1.8x1.8x1ba	1.8x1.2x1ba	1.8x1.2	40.0
Main Canal 2 STA.09+700	1.2x1.2x1ba	8.80	12.00	1.2x1.2x1	123.52	123.12	123.32	123.27	120.97	1.8x1.8x1ba	1.8x1.2x1ba	1.8x1.2	40.0
Main Canal 2 STA.11+200	1.2x1.2x1ba	8.70	12.00	1.2x1.2x1	123.22	122.82	123.02	122.97	120.67	1.8x1.8x1ba	1.8x1.2x1ba	1.8x1.2	40.0
Main Canal 2 STA.13+120	2.0x2.0x1ba	8.60	11.00	2.0x2.0x1	122.84	122.44	122.64	122.59	120.29	2.6x2.0x1ba	2.6x2.0x1ba	2.6x2.0	40.0
Main Canal 2 STA.14+100	2.0x2.0x1ba	8.20	11.00	2.0x2.0x1	122.64	122.44	122.64	122.39	120.09	2.6x2.0x1ba	2.6x2.0x1ba	2.6x2.0	40.0
Main Canal 3 STA.07+700	1.0x1.0x1ba	5.60	8.0	1.0x1.0x1	95.55	95.15	95.35	95.30	93.00	1.6x1.6x1ba	1.6x1.0x1ba	1.6x1.0	40.0
Main Canal 3 STA.08+900	1.2x1.2x1ba	5.40	7.0	1.2x1..2x1	93.65	93.25	93.45	93.40	91.10	1.8x1.8x1ba	1.8x1.2x1ba	1.8x1.2	40.0

MATERIALS TABLE

ITEM		UNIT	AMOUNT	REMARKS
CONC	WALL	m3	2H*0.2*L	fck=24MPa
	BAISEN	m3	(B+0.2*2)*0.2*L	
	SUM	m3	0.000	
LEAN CON'C		m3	((B+0.2*2+0.1*2)*0.1)*L	fck=18Mpa
Euro Form	4times	m2	(2H+(H+0.2)*2)*L	
	6times	m2	0.1*2*L	

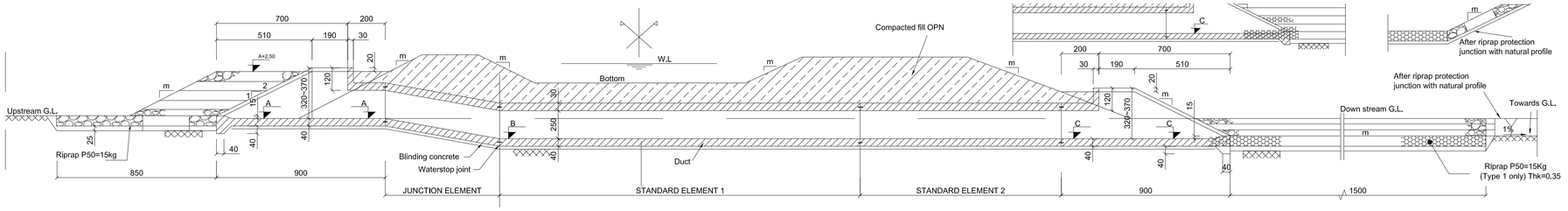
REBAR TABLE

PER 1M

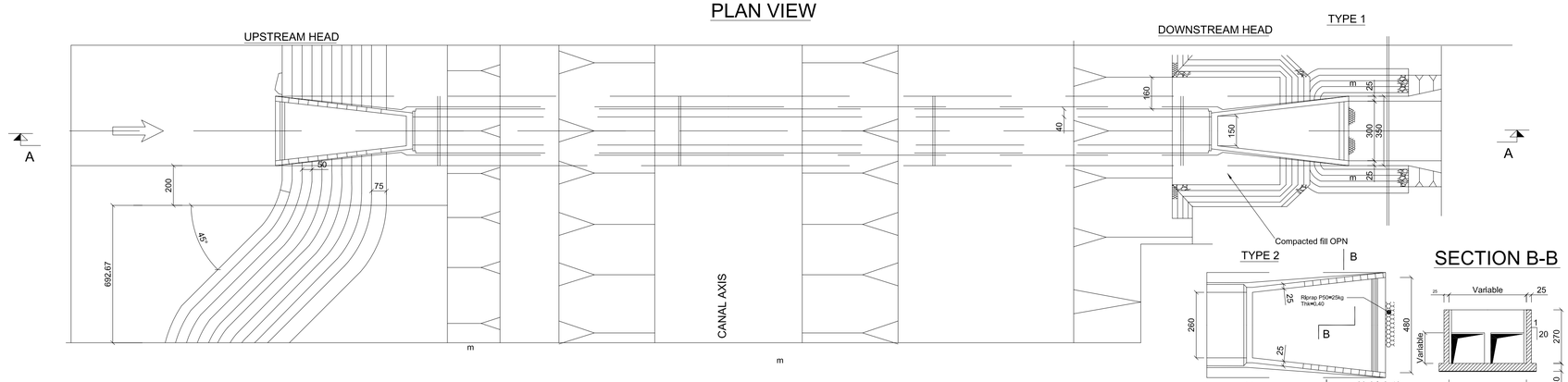
ITEM	NO.	DIA	LENGH	NUM	TOTAL L	REMARKS
BODY	1	16	B+2H*2	L/0.25		
	4	16	0.54	L/0.25*2		
		SUN				
	2	13	B+2/3H*2	L/0.25		
	3	13	H/0.25*2	H/0.25*2		
	5	13	B+0.14*2	L/0.25		
		SUM				
SUM	D13 : 000X0.995X1.03=000kg					
	D16 : 000X1.56X1.03=000kg					
	TOTAL SUM					

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
		TITLE Sand Trap Structure and List	DATE DECEMBER 2016	DRG No C-067

Crossing Drainage Structure



PLAN VIEW



Canal Name	Chainage	G.L. Level	Bottom Level	Bank Level	G.L. Upstream	G.L. Down stream	A	B	C	Ducts 1	Ducts 2
Main Canal 1	1+475	135.74	142.14	145.44	135.74	135.74	135.74	135.74	135.74		2.0x2.5x2
	1+543	137.14	142.14	145.44	137.14	137.14	137.14	137.14	137.14		2.0x2.5x2
	1+660	142.56	142.12	145.42	140.71	138.80	140.71	138.82	138.80		2.0x2.5x2
	1+802	141.14	142.10	145.40	140.70	138.75	140.70	138.80	138.75		2.0x2.5x2
	2+434	143.20	142.02	145.32	140.62	138.67	140.62	138.72	138.67	2.0x2.0x1	
	2+590	142.01	142.01	145.31	140.61	138.66	140.61	138.71	138.66		2.0x2.5x2
	3+120	132.68	141.39	144.69	132.68	132.68	132.68	132.68	132.68		2.0x2.5x2
	3+940	139.01	140.72	144.02	139.32	137.40	139.32	137.42	137.40		2.0x2.5x2
	4+81	139.00	140.71	144.01	139.31	139.00	139.31	137.41	137.40		2.0x2.5x2
	4+410	136.7	140.67	143.97	136.7	136.7	136.7	136.7	136.7		2.0x2.5x2
	4+960	139.40	140.60	143.90	139.20	137.25	139.20	137.30	137.25	2.0x2.0x1	
	6+230	134.05	139.87	143.17	134.05	134.05	134.05	134.05	134.05		2.0x2.5x2
	6+755	134.63	139.81	143.11	138.41	136.45	148.41	136.51	136.45		2.0x2.5x2
	7+658	136.18	139.15	142.45	137.75	135.80	137.75	135.85	135.80		2.0x2.5x2
	8+316	137.20	139.07	142.37	137.67	35.70	137.67	135.77	135.70		2.0x2.5x2
	8+530	132.20	139.04	142.34	137.64	35.70	137.64	135.74	135.70		2.0x2.5x2
	8+974	129.5	138.99	142.29	137.59	129.5	137.59	135.69	135.64		2.0x2.5x2
	9+369	133.21	138.94	142.24	133.21	133.21	133.21	133.21	133.21		2.0x2.5x2
	9+529	134.00	138.92	142.22	134.00	134.00	134.00	134.00	134.00		2.0x2.5x2
	10+346	131.60	138.21	141.51	131.60	131.60	131.60	131.60	131.60		2.0x2.5x2
	10+580	139.80	138.18	141.48	136.78	134.83	136.78	134.88	134.83		2.0x2.5x2
	11+360	137.69	138.12	142.42	138.22	135.30	138.22	135.32	135.30	2.0x2.0x1	2.0x2.5x2
	12+560	134.27	137.93	141.23	134.27	134.27	134.27	134.27	134.27	2.0x2.0x1	2.0x2.5x2
	12+906	136.43	137.88	141.18	136.48	134.53	136.48	134.58	134.53		2.0x2.5x2
	13+286	138.24	137.84	141.14	136.94	135.00	136.94	135.04	135.00		2.0x2.5x2
	13+587	133.60	137.80	141.10	133.60	133.60	133.60	133.60	133.60	2.0x2.0x1	
	14+13	133.00	137.74	141.04	133.00	133.00	133.00	133.00	133.00		
	14+795	134.00	137.65	140.95	134.00	134.00	134.00	134.00	134.00		2.0x2.5x2
	15+273	133.23	137.59	140.89	133.23	133.23	133.23	133.23	133.23		
	15+660	137.76	137.54	140.84	136.14	134.20	136.14	134.24	134.20		2.0x2.5x2
	16+280	133.71	137.46	140.76	133.71	133.71	133.71	133.71	133.71		2.0x2.5x2
	17+178	132.94	137.35	140.65	132.94	132.94	132.94	132.94	132.94		2.0x2.5x2
	17+917	133.20	137.25	140.55	133.20	133.20	133.20	133.20	133.20		2.0x2.5x2
	18+900	134.80	137.13	140.43	134.80	134.80	134.80	134.80	134.80		2.0x2.5x2
	19+221	139.74	137.09	140.39	136.19	134.24	136.19	134.29	134.24	2.0x2.0x1	2.0x2.5x2
	19+420	135.91	137.06	140.36	135.66	135.91	135.66	133.76	133.71		2.0x2.5x2
	20+485	138.24	136.37	139.67	134.97	133.02	134.97	133.07	133.02		
	20+760	138.91	136.34	139.64	134.94	133.00	134.94	133.04	133.00		2.0x2.5x2
	20+969	141.29	136.31	139.61	134.91	132.96	134.91	133.01	132.96		2.0x2.5x2
	21+707	131.35	135.54	138.84	134.14	132.20	134.14	132.24	132.20		
	21+860	134.60	135.43	138.73	134.53	132.60	134.53	132.63	132.60	2.0x2.0x1	2.0x2.5x2
	21+977	134.20	135.41	138.71	134.01	132.60	134.01	132.11	132.06		
	22+185	134.18	135.39	138.38	134.53	132.54	134.53	132.59	132.54		
	22+340	135.10	135.37	138.67	134.47	132.52	134.47	132.57	132.52		2.0x2.5x2
Main Canal 1	22+933	138.70	135.30	138.60	134.40	132.45	134.40	132.50	132.45		2.0x2.0x1
	23+512	135.76	135.22	138.52	134.32	132.37	134.32	132.42	132.37		2.0x2.0x1
	26+128	140.43	134.89	138.19	133.49	131.54	133.49	131.59	131.54		2.0x2.0x1
	26+328	139.82	134.87	138.17	133.47	131.52	133.47	131.57	131.52		2.0x2.0x1
	27+190	137.51	134.17	137.47	133.27	131.32	133.27	131.37	131.32		2.0x2.0x1
	27+551	134.02	134.13	137.43	133.23	131.28	133.23	131.33	131.28		2.0x2.0x1
	28+200	132.33	134.05	137.35	133.15	131.20	133.15	131.25	131.20		2.0x2.0x1
	30+329	131.13	133.23	136.53	131.83	129.90	131.83	129.93	129.90		2.0x2.5x2
	31+340	133.12	133.10	136.40	131.70	130.25	131.70	130.30	130.25	2.0x2.0x1	
	31+740	132.99	133.05	136.35	131.65	137.14	131.65	130.25	130.20	2.0x2.0x1	
	32+700	131.84	132.93	136.23	132.03	130.10	132.03	130.13	130.10	2.0x2.0x1	
	33+060	132.64	132.88	136.18	131.48	130.03	131.48	130.08	130.03	2.0x2.0x1	
Main Canal 2	0+660	130.55	132.37	135.07	130.87	129.52	130.87	129.57	129.52	2.0x2.0x1	
	1+200	130.41	132.25	134.95	130.75	129.40	130.75	129.455	129.40	2.0x2.0x1	
	1+730	129.8	132.15	134.85	130.65	129.30	130.65	129.35	129.30	2.0x2.0x1	
	2+726	130.96	131.95	134.65	130.45	129.10	130.45	129.15	129.10	2.0x2.0x1	
	3+072	131.7	131.88	134.58	130.38	130.03	130.38	130.08	130.03	2.0x2.0x1	
	3+700	130.48	131.76	134.46	130.26	128.91	130.26	128.96	128.91	2.0x2.0x1	
	9+518	121.59	123.56	126.26	122.06	120.71	122.06	120.76	120.71	2.0x2.0x1	
	9+939	123.38	123.47	126.17	121.97	120.62	121.97	120.67	120.62	2.0x2.0x1	
	10+400	125.45	123.38	126.18	121.98	120.58	121.98	120.58	120.53	2.0x2.0x1	
	10+574	122.8	123.35	126.05	121.85	120.50	121.85	120.55	120.50	2.0x2.0x1	
	10+983	123.4	123.29	125.99	121.79	119.44	121.79	119.49	119.44	2.0x2.0x1	
	11+607	123.73	123.14	125.84	121.64	132.94	121.64	120.34	120.29	2.0x2.0x1	
	11+796	123.98	123.1	125.80	121.60	133.20	121.60	120.30	120.25	2.0x2.0x1	
	11+907	124.05	123.08	125.78	121.58	120.23	121.58	120.28	128.23	2.0x2.0x1	
	12+9	14.8	123.06	125.76	121.56	120.21	121.56	120.26	120.21	2.0x2.0x1	
	12+134	124.29	123.04	125.74	121.54	120.19	121.54	120.24	120.19	2.0x2.0x1	
	12+350	122.6	122.99	125.69	121.49	119.45	121.49	119.49	119.45	2.0x2.0x1	
	12+852	123.4	122.89	125.59	121.39	134.60	121.39	120.09	120.04	2.0x2.0x1	
	13+80	122.62	122.85	125.55	121.35	120.05	121.35	120.05	120.00	2.0x2.0x1	
	13+796	123.8	122.7	125.40	121.20	119.85	121.20	119.90	119.85	2.0x2.0x1	
	14+773	122.02	122.51	125.21	132.33	125.21	119.66	119.71	119.66	2.0x2.0x1	
Main Canal 3	4+166	105.87	103.62	105.72	101.52	134.60	101.52	100.82	100.77	2.0x2.0x1	
	4+370	103.58	103.55	105.65	101.45	100.75	101.45	100.75	100.70	2.0x2.0x1	
	4+652	101.1	101.96	104.06	99.86	99.11	99.86	99.16	99.11	2.0x2.0x1	
	7+900	91.8	92.91	95.01	90.81	90.06	90.81	90.11	90.06	2.0x2.0x1	

CLIENT

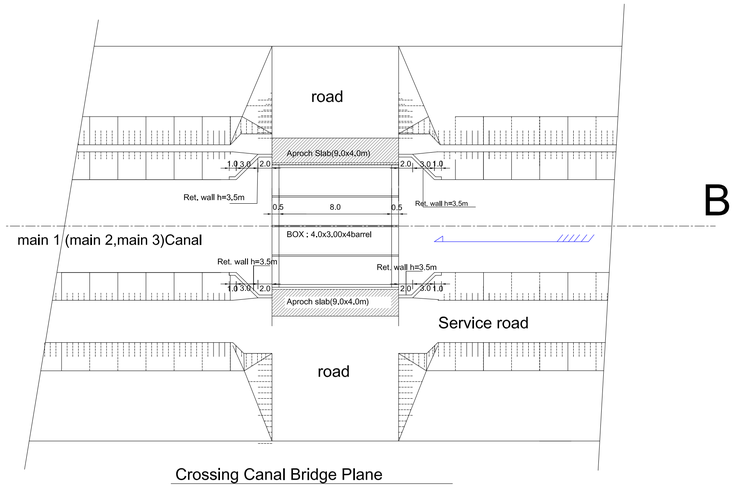
REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

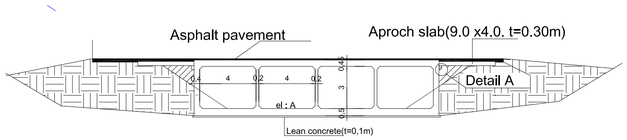
Technical Feasibility Study
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
GK Works Civil and Structural Engineer

PROJECT	ORIGINAL DESIGNED BY	SCALE
SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
TITLE	DATE	DRG No
Crossing drainage Structure	DECEMBER 2016	C-068

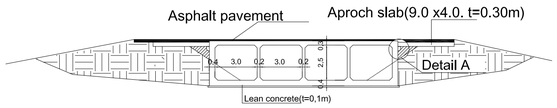
Crossing Structure(1)



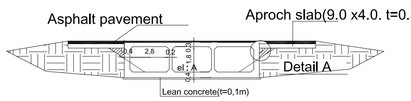
Crossing Canal Bridge Plane



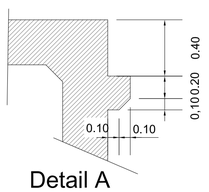
Section Type1



Section Type2

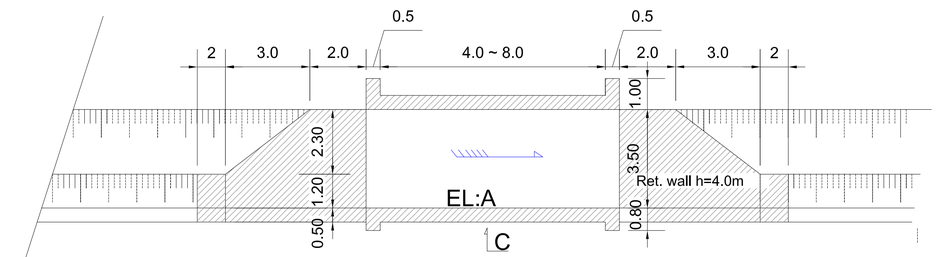


Section Type3



Detail A

Crossing Bridge



Section B

Crossing Canal Bridge Size

unit : m

Item	Breadth	height	Barrel
Main Canal 1(Type1)	4.0	3.00	4.0
Main Canal 2(Type2)	3.0	2.50	4.0
Main Canal 3(Type3)	2.8	1.80	3.0

Canal Name	Chainage	Wide	Orinal land Elevation	Canal Elevation	Bridge Elevation	Ducts Type	Canal Name	Chainage	Wide	Orinal land Elevation	Canal Elevation	Bridge Elevation	Ducts Type	Canal Name	Chainage	Wide	Orinal land Elevation	Canal Elevation	Bridge Elevation	Ducts Type
	3+870	4.0 m	148.40	140.73	140.73	Type 1		0+444	4.0 m	135.18	132.41	132.41	Type 2		1+40	4.0 m	120.55	119.09	119.09	Type 3
	4+738	4.0 m	142.92	140.6	140.6	Type 1		0+504	4.0 m	133	132.4	132.4	Type 2		1+653	4.0 m	113.6	109.95	109.95	Type 3
	5+760	4.0 m	141.29	139.93	139.93	Type 1		0+592	4.0 m	131.56	132.38	132.38	Type 2		2+900	4.0 m	105.24	104.04	104.04	Type 3
Main Canal 1	6+216	4.0 m	138.84	134	134	Type 1	Main Canal 2	0+748	4.0 m	131.27	132.35	132.35	Type 2	Main Canal 3	3+313	4.0 m	105.68	103.9	103.9	Type 3
	7+440	4.0 m	141.57	139.18	139.18	Type 1		0+991	4.0 m	131.56	132.3	132.3	Type 2		3+512	4.0 m	106.36	103.84	103.84	Type 3
	7+862	4.0 m	142.31	139.13	139.13	Type 1		1+309	4.0 m	131.01	132.24	132.24	Type 2		3+605	4.0 m	106.6	103.81	103.81	Type 3
	9+182	4.0 m	146.00	138.96	138.96	Type 1		2+70	4.0 m	134.95	132.08	132.08	Type 2		3+935	4.0 m	106.69	103.7	103.7	Type 3
	11+167	4.0 m	141.03	138.1	138.1	Type 1		2+591	4.0 m	132.4	131.98	131.98	Type 2		4+322	4.0 m	105.72	103.56	103.56	Type 3
	11+256	4.0 m	141.20	138.09	138.09	Type 1		3+40	4.0 m	131.8	131.89	131.89	Type 2		5+740	4.0 m	101.8	99.63	99.63	Type 3
	11+382	4.0 m	138.83	138.08	138.08	Type 1		4+867	4.0 m	131.4	131.26	131.26	Type 2		5+942	4.0 m	101	99.57	99.57	Type 3
	12+698	4.0 m	140.54	137.91		Type 1		5+188	4.0 m	132.29	131.19	131.19	Type 2		6+120	4.0 m	100.9	98.07	98.01	Type 3
	13+80	4.0 m	144.00	137.86	137.86	Type 1		5+392	4.0 m	133.39	131.15	131.15	Type 2		6+270	4.0 m	100.4	97.96	97.96	Type 3
	13+265	4.0 m	139.10	137.84	137.84	Type 1		10+39	4.0 m	127.24	123.45	123.45	Type 2		6+540	4.0 m	100.27	97.87	97.87	Type 3
	13+377	4.0 m	139.78	137.82	137.82	Type 1		10+440	4.0 m	123.11	123.37	123.37	Type 2		6+614	4.0 m	100.03	97.85	97.85	Type 3
	13+748	4.0 m	138.43	137.78	137.78	Type 1		10+612	4.0 m	123.6	123.34	123.34	Type 2		6+772	4.0 m	99.43	96.29	96.29	Type 3
	14+268	4.0 m	141.68	137.71	137.71	Type 1		10+838	4.0 m	123.97	123.29	123.29	Type 2		7+328	4.0 m	100.2	96.1	96.1	Type 3
	14+870	4.0 m	138.06	137.64	137.64	Type 1		11+224	4.0 m	124.04	123.22	123.22	Type 2		7+608	4.0 m	95.27	93.91	93.01	Type 3
	14+933	4.0 m	137.76	137.63	137.63	Type 1		11+440	4.0 m	124.29	123.17	123.17	Type 2		7+715	4.0 m	95	92.97	92.97	Type 3
	15+94	4.0 m	139.42	137.61	137.61	Type 1		12+100	4.0 m	125.27	123.04	123.04	Type 2		7+808	4.0 m	94.94	92.94	92.94	Type 3
	15+547	4.0 m	140.72	137.55	137.55	Type 1		13+692	4.0 m	124.32	122.72	122.72	Type 2		8+300	4.0 m	93.72	92.77	92.77	Type 3
	15+901	4.0 m	145.00	137.5	137.5	Type 1		14+473	4.0 m	123.6	122.57	122.57	Type 2		8+380	4.0 m	93.42	92.75	92.75	Type 3
	16+621	4.0 m	139.90	137.42	137.42	Type 1		15+104	4.0 m	122.95	122.44	122.44	Type 2		8+500	4.0 m	93.4	92.71	92.71	Type 3
	16+768	4.0 m	138.83	137.4	137.4	Type 1		15+430	4.0 m	123	122.37	122.37	Type 2		8+570	4.0 m	93.23	92.69	92.69	Type 3
	16+843	4.0 m	137.20	137.39	137.39	Type 1		15+543	4.0 m	123.49	122.35	122.35	Type 2		8+720	9.0 m	93.2	92.64	92.64	Type 3
	16+995	4.0 m	139.15	137.37	137.37	Type 1		15+743	4.0 m	124	122.31	122.31	Type 2		8+880	4.0 m	93.59	92.58	92.58	Type 3
	17+537	4.0 m	142.91	137.3	137.3	Type 1		16+76	4.0 m	123.48	122.24	122.24	Type 2		9+52	4.0 m	93.6	92.53	92.53	Type 3
	17+936	4.0 m	133.98	132	132	Type 1		16+578	9.0 m	122.07	122.14	122.14	Type 2		9+233	4.0 m	93.65	92.47	92.47	Type 3
	18+540	4.0 m	142.71	137.17	137.17	Type 1		16+812	4.0 m	132.29	122.1	122.1	Type 2		9+650	4.0 m	92.2	92.33	92.33	Type 3
	19+628	4.0 m	141.60	137.07	137.07	Type 1		17+13	4.0 m	122.8	122.06	122.06	Type 2							
	20+84	4.0 m	141.77	136.42	136.42	Type 1														
	20+624	4.0 m	142.10	13.635	136.35	Type 1														
	21+831	4.0 m	136.95	135.43	135.43	Type 1														
	22+98	4.0 m	137.61	135.4	135.4	Type 1														
	22+440	4.0 m	135.29	135.36	135.36	Type 1														
	22+980	4.0 m	138.18	135.29	135.29	Type 1														
	23+357	4.0 m	137.40	135.24	135.24	Type 1														
	23+699	4.0 m	136.20	135.2	135.2	Type 1														
	23+893	4.0 m	138.54	135.17	135.17	Type 1														
	23+999	4.0 m	137.95	135.16	135.16	Type 1														
	24+532	4.0 m	136.89	135.09	135.09	Type 1														
	25+407	4.0 m	140.26	134.98	134.98	Type 1														
	27+704	4.0 m	135.62	134.11	134.11	Type 1														
	27+960	4.0 m	136.33	134.07	134.07	Type 1														
	28+520	9.0 m	145.33	134.11	134.11	Type 1														
	31+8	4.0 m	138.21	133.14	133.14	Type 1														
	33+373	4.0 m	133.96	132.84	132.84	Type 1														

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

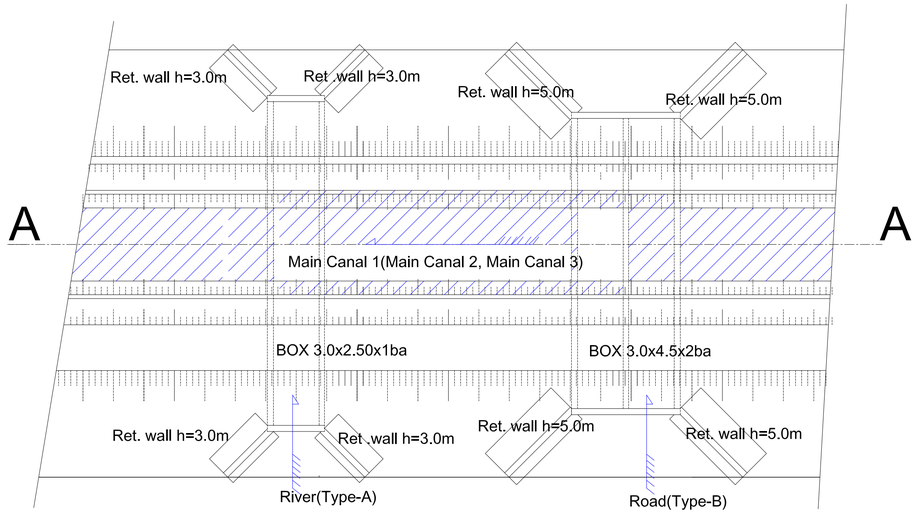
CONSULTANT

Technical Feasibility Study
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
GK Works Civil and Structural Engineer

PROJECT	ORIGINAL DESIGNED BY	SCALE
SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
TITLE: Crossing Structure(1)	DATE: DECEMBER 2016	DRG No: C-069

Crossing Structure(2)

Drainage culvert, Road Box, Crossing Bridge



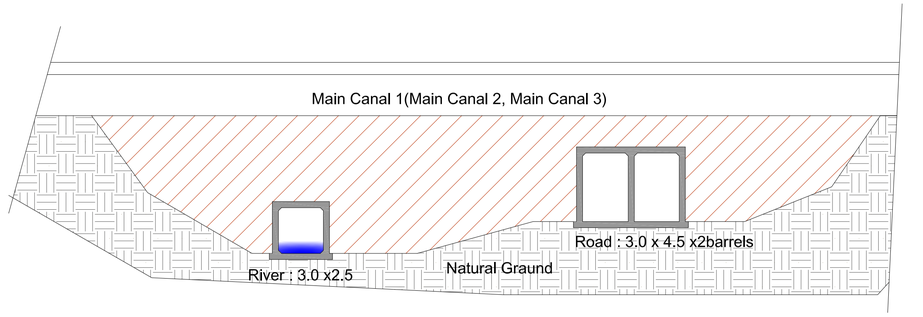
Crossing Structure Plane(Type-1,Type-2)

Crossing Canal Bridge Size

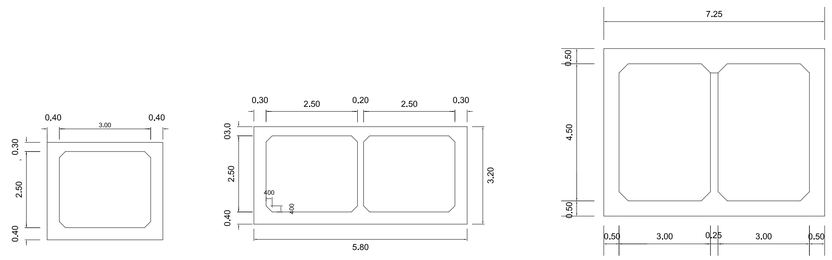
unit : m

Item	Breadth	height	Barrel
BOX TYPE-3	3.0	4.50	2.0
BOX TYPE-1	2.0	2.50	2.0

Canal Name	Chainage	Wide	Orinal land Elevation	Canal Elevation	Bridge Elevation	Ducts
						Type
Main Canal 1	0+987	44 m	139.01	142.77	136.27	Type 3
	1+020	44 m	136.80	142.77	136.3	Type 1
Main Canal 2	3+700	44	130.48	131.7	130.48	Type 2
	7+833	44	115.2	123.94	115.2	Type 3
	8+162	44	115.72	123.83	115.72	Type 2
	8+352	44	116.27	123.79	116.27	Type 3
	8+377	44	116.31	123.79	116.31	Type 2
	8+550	44	116.69	123.75	116.69	Type 2
	8+727	44	117.16	123.72	117.16	Type 3
	9+95	44	117.97	123.64	117.97	Type 2
	9+323	44	118.75	123.6	118.75	Type 2



Section A

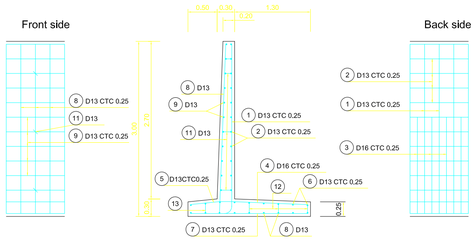


Dutch type

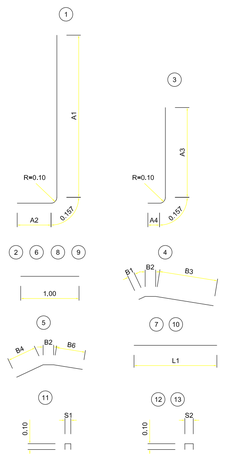
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Crossing Structure(2)	DATE DECEMBER 2016	DRG No C-070

Retaining wall(1)

TYPE T-3.0-2.10
S=1:50



BAR DETAIL



General draw

TYPE T-3.5-2.10
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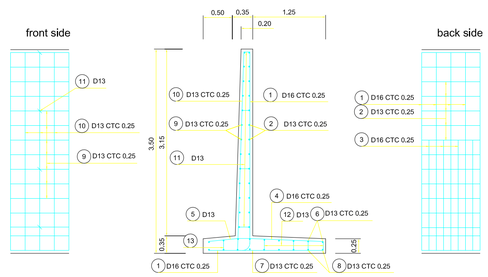
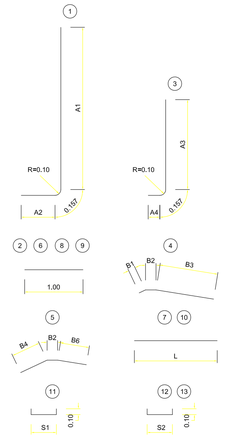
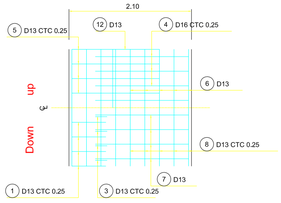


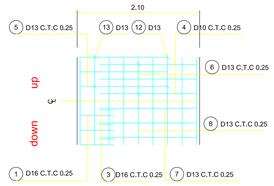
BAR DETAIL

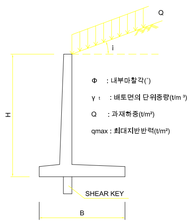


Notice

Reference draw







Φ : 내부마찰각(°)
γ t : 배토면의 단위중량(t/m ³)
Q : 과재하중(t/m²)
qmax : 최대지반반력(t/m²)

General draw

BAR MEASURE

NO.	FORM	T-3-1,80	REMARKS
1	A1	2,78	
	A2	0,58	
3	A3	1,54	
	A4	0,20	
4	B1	0,12	
	B2	0,18	
	B3	1,001	
5	B4	0,502	
	B2	0,18	
	B6	0,50	
7	L	1,42	
10	L	2,88	
11	S1	0,10-0,126	평균
12	S2	0,145-0,17	"
13	S2	0,16	"

TABLE OF MATERIALS

TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-3-2,10	1,260	2,701	3,200	(1,260)

APPLICATION SCOPE

TYPE	Φ	Yt	i = 0,00			i = 11,31			i = 21,80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-3,0-2,10	30	1,90	1,50	SK=0.3	8,99	0,75	SK=0.3	9,72			
		1,80	"	"	8,81	0,50	SK=0.3	8,74			
		1,70	"	"	8,63	"	"	8,48			
	25	1,90	1,00	"	9,26	0,00	"	8,98			
		1,80	"	"	9,03	"	"	8,64			
		1,70	"	"	8,81	"	"	8,30			
		1,60	0,75	"	7,97	"	"	7,96			
	20										

BAR MEASURE

NO.	FORM	TYPE T-3,5-2,10	REMARKS
1	A1	3,28	
	A2	0,63	
3	A3	1,78	
	A4	0,20	
4	B1	0,071	
	B2	0,23	
	B3	1,253	
5	B4	0,509	
	B2	0,23	
	B6	0,692	
7	L	1,670	
10	L	3,381	
11	S1	0,08-0,175	평균
12	S2	0,130-0,215	"
13	S2	0,19	"

TABLE OF MATERIALS

TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-3,5-2,10	1,513	3,153	3,650	(1,513)

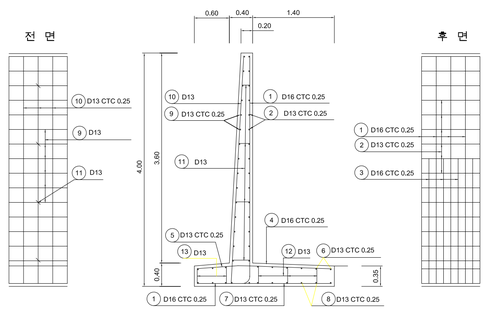
APPLICATION SCOPE

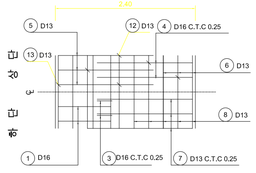
TYPE	Φ	Yt	i = 0,00			i = 11,31			i = 21,80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-3,5-2,10	30	1,90	0,75	SK=0.3	10,54	0,00	SK=0.3	10,89			
		1,80	"	"	10,25	"	"	10,47			
		1,70	"	"	9,95	"	"	10,04			
	25	1,90	0,25	SK=0.3	10,64						
		1,80	"	"	10,28						
		1,70	"	"	9,91						
		1,60	"	"	9,55						
	20	1,80									
		1,70									

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
		TITLE Retaining wall(1)	DATE DECEMBER 2016	DRG No C-071

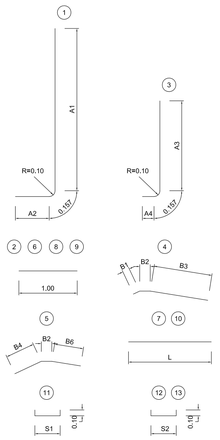
Retaning Wall(2)

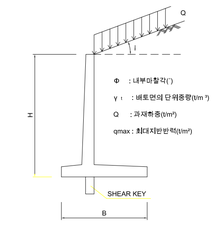
TYPE T-4.0-2.4
S=1:50





BAR DETAIL





general draw

BAR MEASURE

NO.	FORM	TYPE T-4.0-2.4	REMARKS
1	A1	3,780	
	A2	0,780	
3	A3	2,030	
	A4	0,200	
4	B1	0,020	
	B2	0,280	
	B3	1,400	
5	B4	0,602	
	B2	0,280	
	B6	0,700	
7	L	1,820	
10	L	3,880	
11	S1	0,087-0,277	평균
12	S2	0,238-0,268	"
13	S2	0,230-0,270	"

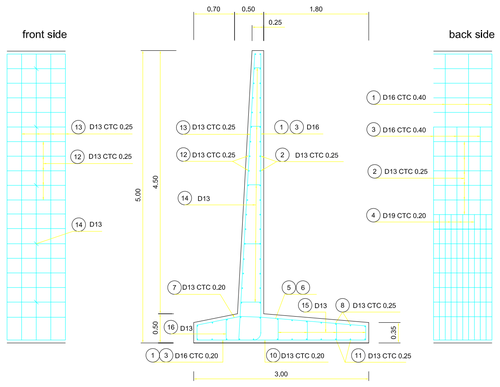
TABLE OF MATERIALS

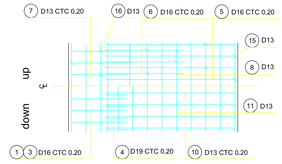
TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-4,0-2,4	1,990	3,605	4,300	(1,990)

APPLICATION SCOPE

TYPE	Φ	Yt	i = 0,00			i = 11,31			i = 21,80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-4,0-2,4	30	1,90	1,00	SKC3 -2.1	11,96	0,00	SKC3 -2.1	11,86			
		1,80	"	"	11,65	"	"	11,41			
		1,70	"	"	11,34	"	SKC3 -2.1	10,95			
	25	1,90	0,25	SKC3B -2.0	11,57						
		1,80	"	SKC3 -2.1	11,17						
		1,70	"	SKC3 -2.1	10,77						
		1,60	"	"	11,38						
	20	1,80									
		1,70									

TYPE T-5,0-3.0
S=1:50





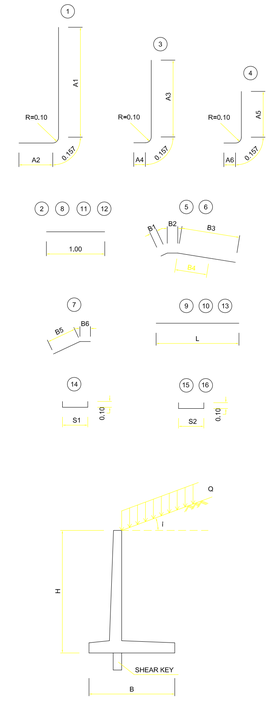
BAR MEASURE

NO.	FORM	TYPE T-5,0-3,0	REMARKS
1	A1	4,78	
	A2	0,98	
3	A3	3,53	
	A4	0,98	
4	A5	2,03	
	A6	0,30	
5	B1	0,02	
	B2	0,38	
	B3	1,806	
6	B1	0,02	
	B2	0,38	
	B4	0,903	
7	B5	0,715	
	B6	0,380	
9	L	-	
10	L	2,32	
13	L	4,882	
14	S1	0,147-0,367	평균
15	S2	0,23-0,359	"
16	S2	0,23-0,350	"

APPLICATION SCOPE

TYPE	Φ	Yt	i = 0,00			i = 11,31			i = 21,80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-5,0-3,0	30	1,90	1,25	SKC3 -2.1	15,00	0,00	SKC3 -2.1	14,93			
		1,80	"	"	14,59	"	"	14,34			
		1,70	1,00	SKC3 -2.1	13,49	"	"	13,76			
	25	1,90	0,50	SKC3 -2.1	15,13						
		1,80	"	"	14,62						
		1,70	"	SKC3 -2.1	14,12						
		1,60	0,25	SKC3 -2.1	12,77						
	20	1,80									
		1,70									

BAR DETAIL



general draw

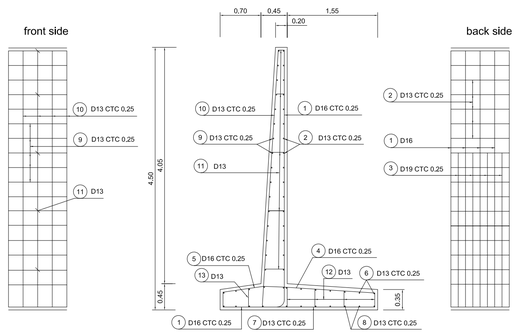
TABLE OF MATERIALS

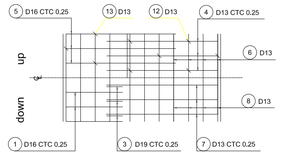
TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-5,0-3,0	3,00	4,506	5,200	(3,00)

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE Retaining Wall(2)	DATE DECEMBER 2016
		SCALE Hor 1 : 1,000 Ver 1 : 100	DRG No C-072

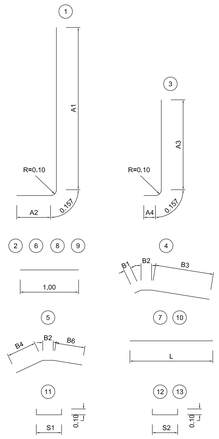
Retaining wall(3)

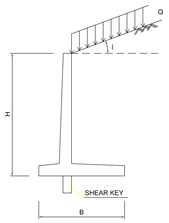
TYPE T-4.5-2.7
S=1:50





BAR DETAIL





geneal

BAR MEASURE

NO.	FORM	TYPE T-4.5-2.7	REMARKS
1	A1	4.28	
	A2	0.93	
3	A3	2.34	
	A4	0.30	
4	B1	0.070	
	B2	0.330	
5	B3	1.553	
	B4	0.707	
	B2	0.330	
	B6	0.801	
7	L	2.07	
10	L	4.381	
11	S1	0.08~0.312	평균
12	S2	0.23~0.330	"
13	S2	0.23~0.309	"

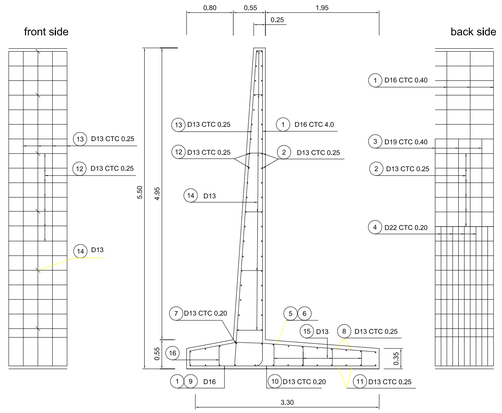
TABLE OF MATERIALS

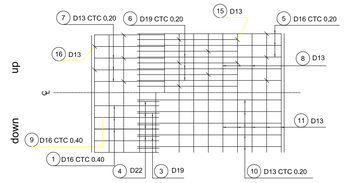
TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-4.5-2.7	2.418	4.057	4.75	(2.418)

APPLICATION SCOPE

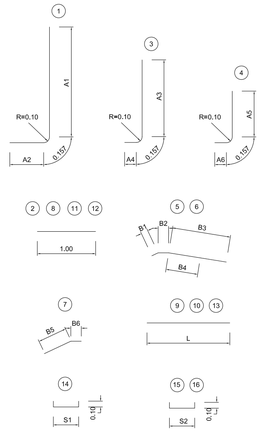
TYPE	Φ	Yt	i = 0.00			i = 11.31			i = 21.80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-4.5-2.7	30	1.90	1.00	SKG30 -2c1	12.77	0.00	SKG30 -2c1	12.97			
		1.80	"	"	12.42	"	"	12.46			
		1.70	"	"	12.07	"	"	11.96			
	25	1.90	0.50	SKG30 -2c1	13.41						
		1.80	0.25	SKG30 -2c1	12.12						
		1.70	"	"	11.68						
		1.60	"	"	11.24						
	20	1.80									
		1.70									

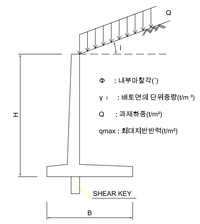
TYPE T-5.5-3.3
S=1:50





BAR DETAIL





Φ : 내부마찰각(°)
γ t : 배토면의 단위중량(t/m³)
Q : 과재하중(t/m²)
qmax : 최대지반반력(t/m²)

gGeneral draw

BAR MEASURE

NO.	FORM	TYPE T-5.5-3.3	REMARKS
1	A1	5.28	
	A2	1,13	
3	A3	3.78	
	A4	0.30	
4	A5	2.28	
	A6	0.30	
5	B1	"	
	B2	0.43	
	B3	1.96	
6	B1	"	
	B2	0.43	
	B4	1,005	
7	B5	0.824	
	B6	0.43	
9	L	1,13	
10	L	2.470	
13	L	5,384	
14	S1	0.13~0.419	평균
15	S2	0.261~0.415	"
16	S2	0.23~0.370	"

TABLE OF MATERIALS

TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-5.5-3.3	3.520	4.959	5.650	(3.520)

APPLICATION SCOPE

TYPE	Φ	Yt	i = 0.00			i = 11.31			i = 21.80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-5.5-3.3	30	1.90	1.25	SKG30 -2c1	15.80	0.00	SKG30 -2c1	16.03			
		1.80	"	SKG30 -2c1	15.36	"	SKG30 -2c1	15.40			
		1.70	"	"	14.92	"	"	14.76			
	25	1.90	0.50	SKG30 -2c1	16.12						
		1.80	"	"	15.57						
		1.70	"	"	15.02						
		1.60	"	SKG30 -2c1	14.47						
	20	1.80									
		1.70									

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

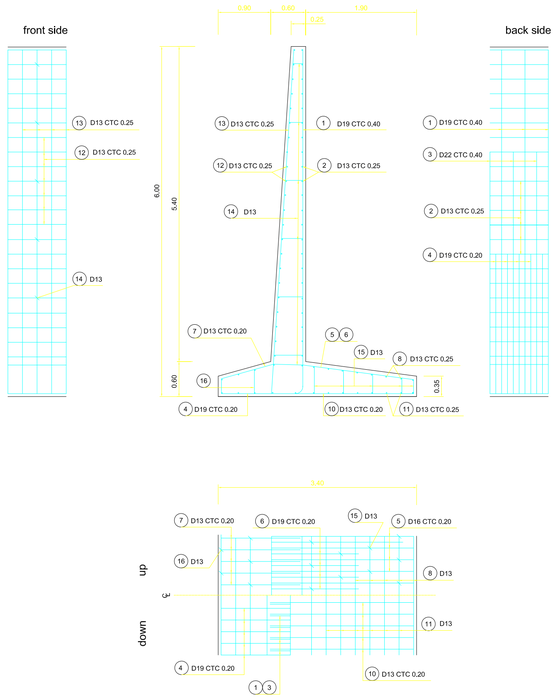
CONSULTANT

Technical Feasibility Study
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
GK Works Civil and Structural Engineer

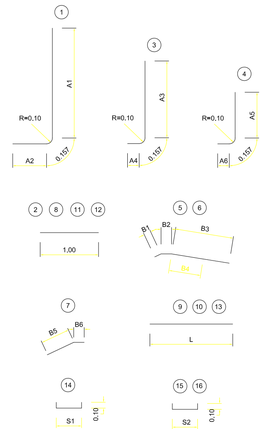
PROJECT	ORIGINAL DESIGNED BY	SCALE
SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
TITLE	DATE	DRG No
Retaining Wall(3)	DECEMBER 2016	C-073

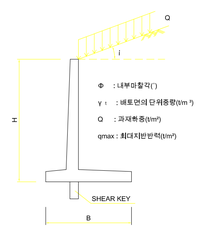
Retaining Wall(4)

TYPE T-6.0-3.4
S=1:50



BAR DETAIL





general

BAR MEASURE

NO.	FORM	TYPE T-6.0-3.4	REMARKS
1	A1	5.78	
	A2	0.30	
3	A3	4.03	
	A4	0.30	
4	A5	2.280	
	A6	1.380	
5	B1	-	
	B2	0.480	
	B3	1.916	
6	B1	-	
	B2	0.480	
	B4	0.958	
7	B5	0.934	
	B6	0.480	
9	L	-	
10	L	2.42	
13	L	5.885	
14	S1	0.149~0.469	평균
15	S2	0.263~0.425	"
16	S2	0.23~0.385	"

TABLE OF MATERIALS

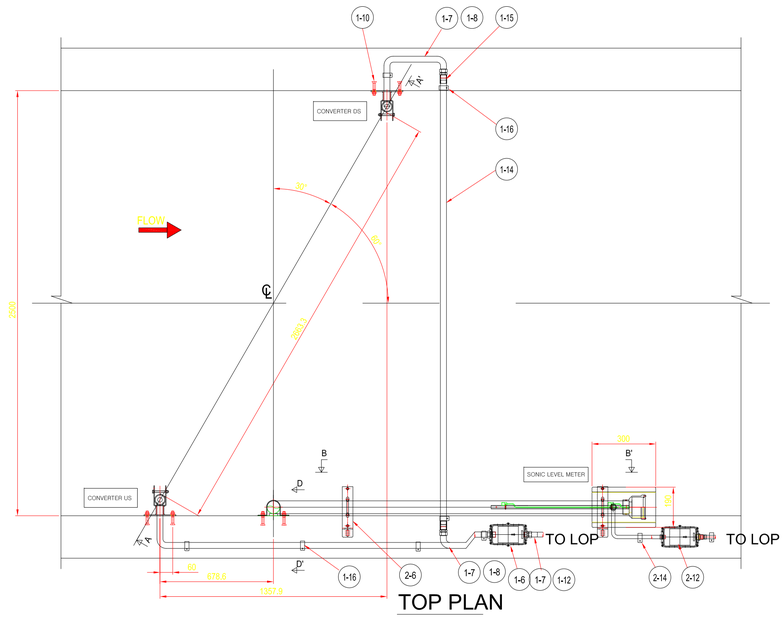
TYPE	CONCRETE	FORM		
		FINE	ROUGH	SECTION
T-6.0-3.4	3.985	5.411	6.100	(3.985)

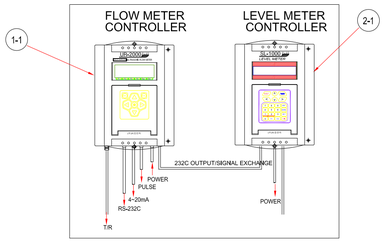
APPLICATION SCOPE

TYPE	Φ	Yt	i = 0.00			i = 11.31			i = 21.80		
			Q	S.K	qmax	Q	S.K	qmax	Q	S.K	qmax
T-6.0-3.4	30	1.90	1.00	SK-0.30 -0.1	17.12						
		1.80	"	-	16.60						
		1.70	"	-	16.08						
	25	1.90	0.00	SK-0.30 -0.1	16.58						
		1.80	"	SK-0.40 -0.1	15.93						
		1.70	"	-	15.27						
		1.60	"	-	14.62						
	20	1.80									
		1.70									

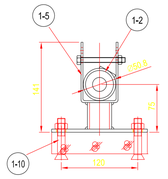
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Hor 1 : 1,000 Ver 1 : 100
		TITLE Retaining Wall(4)	DATE DECEMBER 2016	DRG No C-074

ADCP System

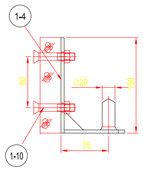




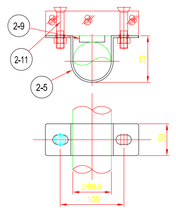
- POWER : AC220V 60Hz
- OUTPUT: 4~20mA ,Pulse,RS-232C
- SLUDGE SEDIMENT REGULARLY CLEANING



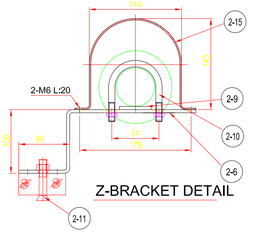
MID-BRACKET DETAIL



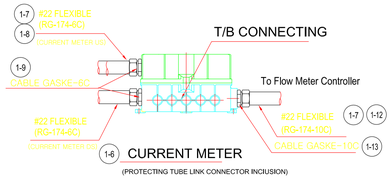
BOTTOM-BRACKET DETAIL

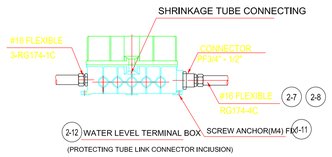


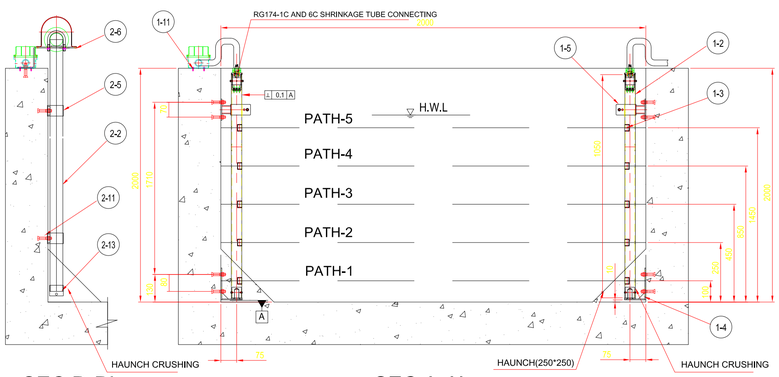
U-BRACKET DETAIL



Z-BRACKET DETAIL

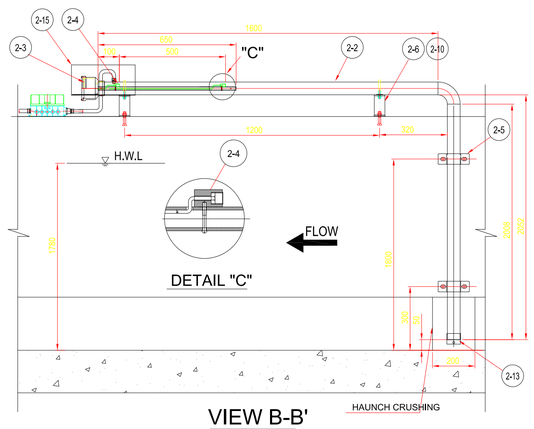






SEC:D-D'

SEC:A-A'



VIEW B-B'

INSTALLATION PRECAUTIONS

1. Cable protection of the general flexible, and if necessary, based on using high strength there should also be used when crossing waterways zinc steel pipes by default
2. Cable protection tube is fixed c-channel can be used, if necessary, depending on the field and a saddle + screw anchor block with proper spacing
3. The terminal box is where less traffic, less concerned about damage installed at halgeot

NO.	PART No.	PART NAME	MATL	Q'TY	WT.(Kg) UNIT	WT.(Kg) TOTAL	REMARK
1-1	C30-26000	CONTRLLER Ass'y(UR-2000)		1	SET		
1-2	0404-DGF-110	SHAFT (STS PIPE 40A)	STS304	1.05*2	m		
1-3	C30-41420	TR ASS'Y(¢ 20-850kHz)	MBsBD	10	EA		
1-4	C30-408	SHAFT BOTTOM BRACKET	STS304	2	EA		
1-5	C30-407	SHAFT MID BRACKET	STS304	2	EA		
1-6	C30-330	CURRENT METER J/B	ABS+GF	1	EA		
1-7	C05-19822	FLEXIBLE #22		16	m		
1-8	C05-20606	CABLE(RG174-6C)		6	m		
1-9	C30-34800	CABLE GASKET-6C	NBR	4	EA		
1-10	C00-16012	ANCHOR BOLT M12,L90	STS304	16	EA		
1-11	C00-18504	J/BOX SCREW ANCHOR M4	STS304	50	EA		
1-12	C05-20610	CABLE(RG174-10C)		10	m		
1-13	C30-34900	CABLE GASKET-10C	NBR	2	EA		
1-14	C05-21622	GALVANIZED STEEL PIPE(PT 3/4)		2.1	m		
1-15	C31-27422	SOCKET(PT 3/4)		2	EA		
1-16	C10-21322	SADDLE #22	STEEL	20	EA		
2-1	C10-180	CONTRLLER Ass'y(SL-1000P)		1	SET		
2-2	C10-913	WAVEGUIDE 50A(OD60.5)	STS304		m		1.6+1.1
2-3	C10-10150	TRANSMITTER 2"	M.C NYLON	1	EA		
2-4	C10-11000	RECEIVER	STS304	2	EA		
2-5	C10-16105	U-BRACKET	STS304	2	EA		
2-6	C10-16200	Z-BRACKET	STS304	2	EA		
2-7	C05-20604	CABLE(RG174-4C)		15	m		
2-8	C05-19816	FLEXIBLE #16		15	m		
2-9	C10-22000	VIBRATION PROOF RUBBER	NBR70	3	EA		
2-10	C00-20050	U-BOLT #50	STS304	2	EA		
2-11	C00-16012	ANCHOR BOLT M12,L90	STS304	6	EA		
2-12	C10-260	LEVEL METER J/B	ABS+GF	1	EA		
2-13	C10-160	BOTTOM COVER	NBR	1	EA		
2-14	C10-21316	SADDLE #16	STEEL	15	EA		
2-15	C10-19000	PROTECTIVE COVER	STS304	1	EA		

CABLE WIRING DIAGRAM

T/R	Color RG174-10C		Color RG174-6C
US 5	Black	U S	Black
US 4	Brown		Red
US 3	Red		Yellow
US 2	Orange		Green
US 1	Yellow		Blue
DS 1	Green	D S	Blue
DS 2	Blue		Green
DS 3	Violet		Yellow
DS 4	Gray		Red
DS 5	White		Black

RG174-4C		
No.	Color	Sensor
1	Black	TRANSMITTER
2	White	Spare
3	Red	1
4	Green	2

+ CORE WIRE, - SHIELD WIRE

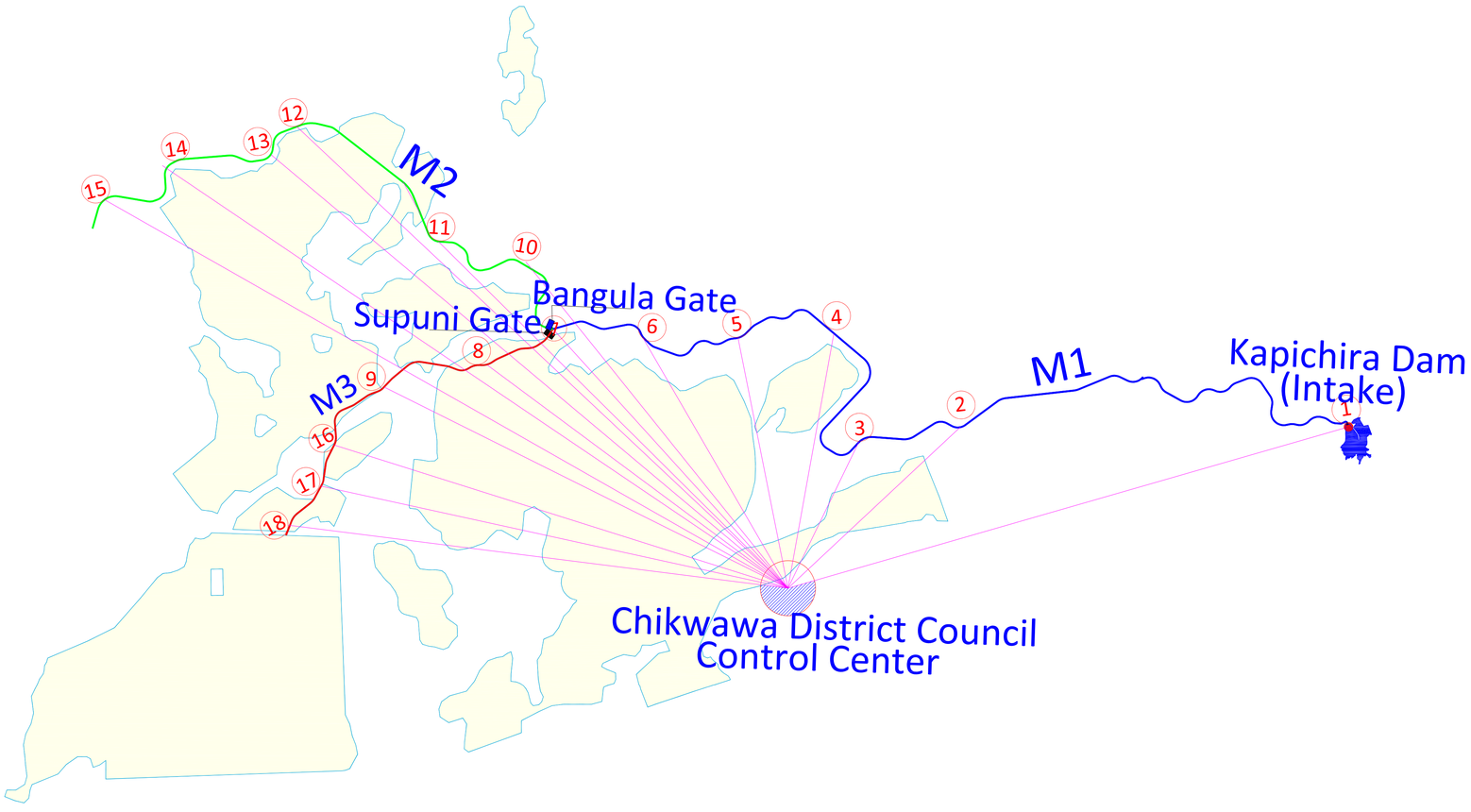
NOTE

1.At least part intuition front 5D,back 3D more than.
2.Angle adjustment in mounting the current meter will pipe using the Ø19.
(Type measure of angle using a spherometer)
3.Design based on the level of 80% of the transducer switch on the "H"

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE ADCP System	DATE DECEMBER 2016	DRG No C-075

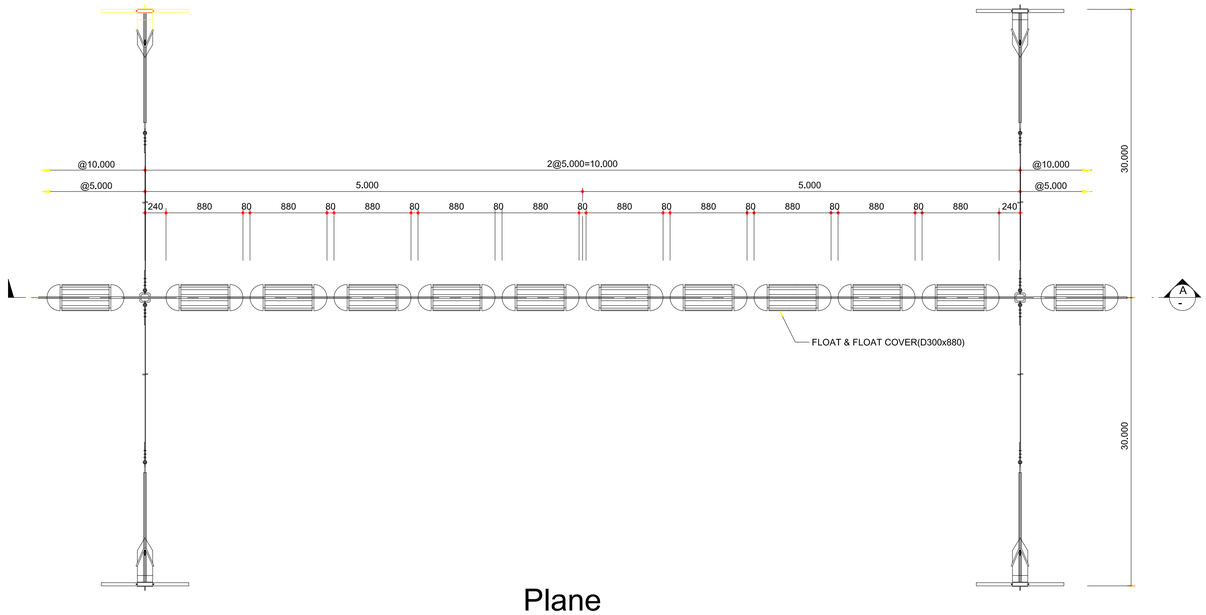
SCADA System

Scale = None

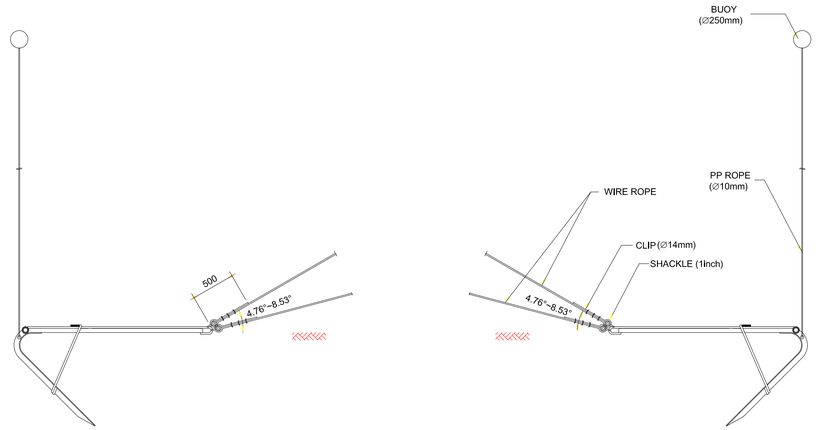


CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE None
		TITLE SCADA System	DATE DECEMBER 2016	DRG No C-076

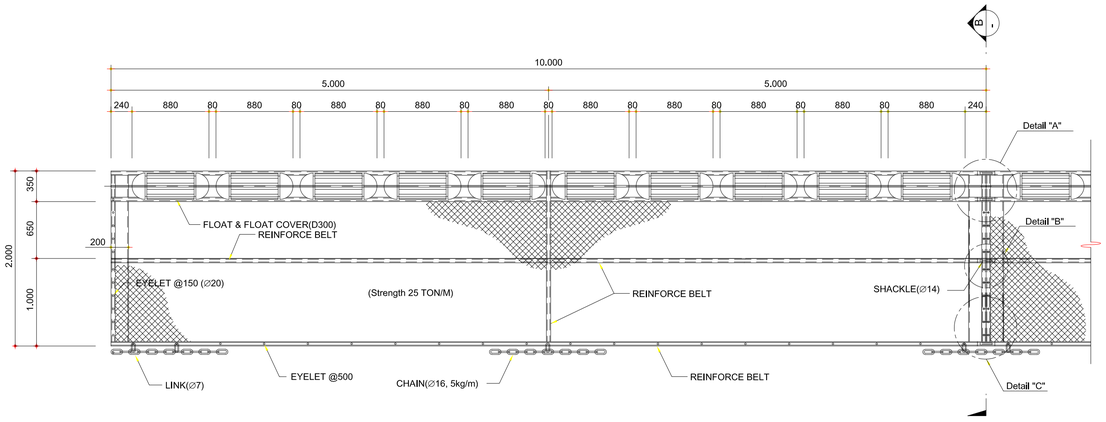
Detail of Protector(1)



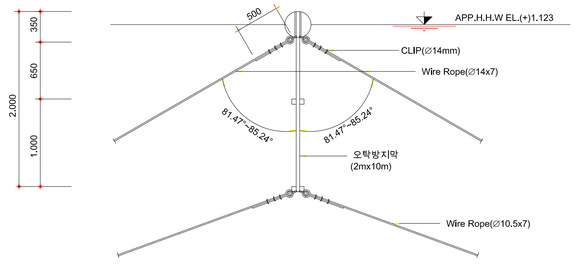
Plane



Section B



Section A

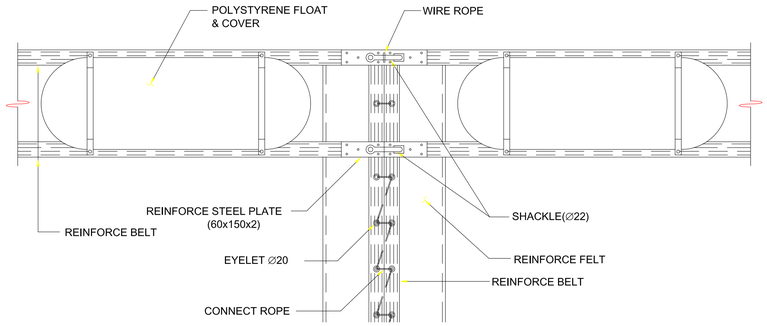


Section B

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE Detail of Protector(1)	DATE DECEMBER 2016	DRG No C-077

Detail of Protector(2)

Scale = As shown



Detail "A"

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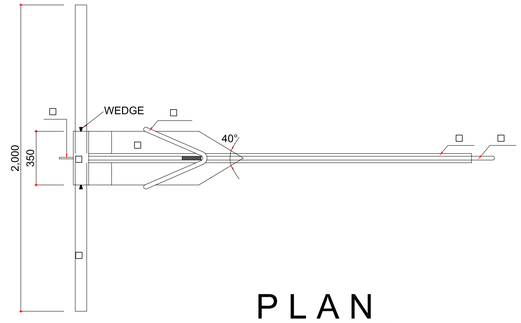
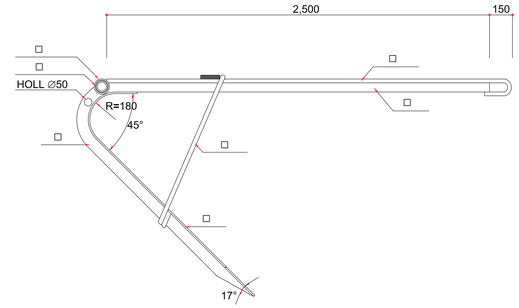


PLAN

S=1:20



SECTION

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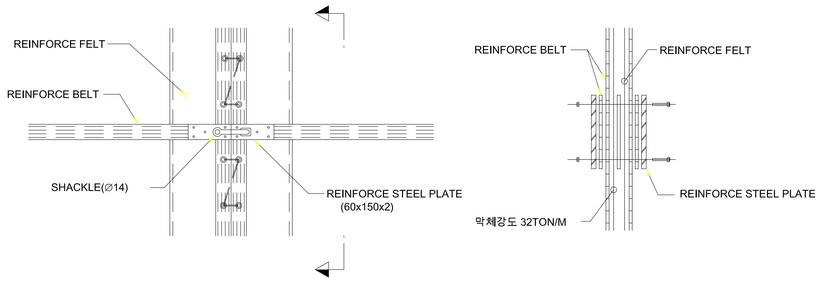

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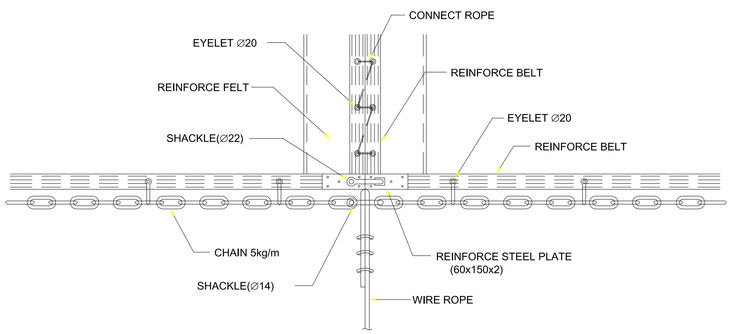

Detail "C"

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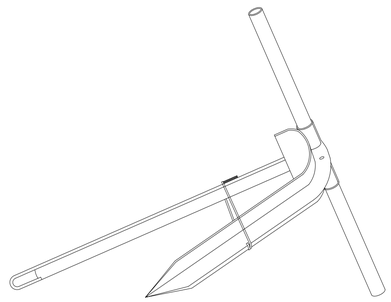


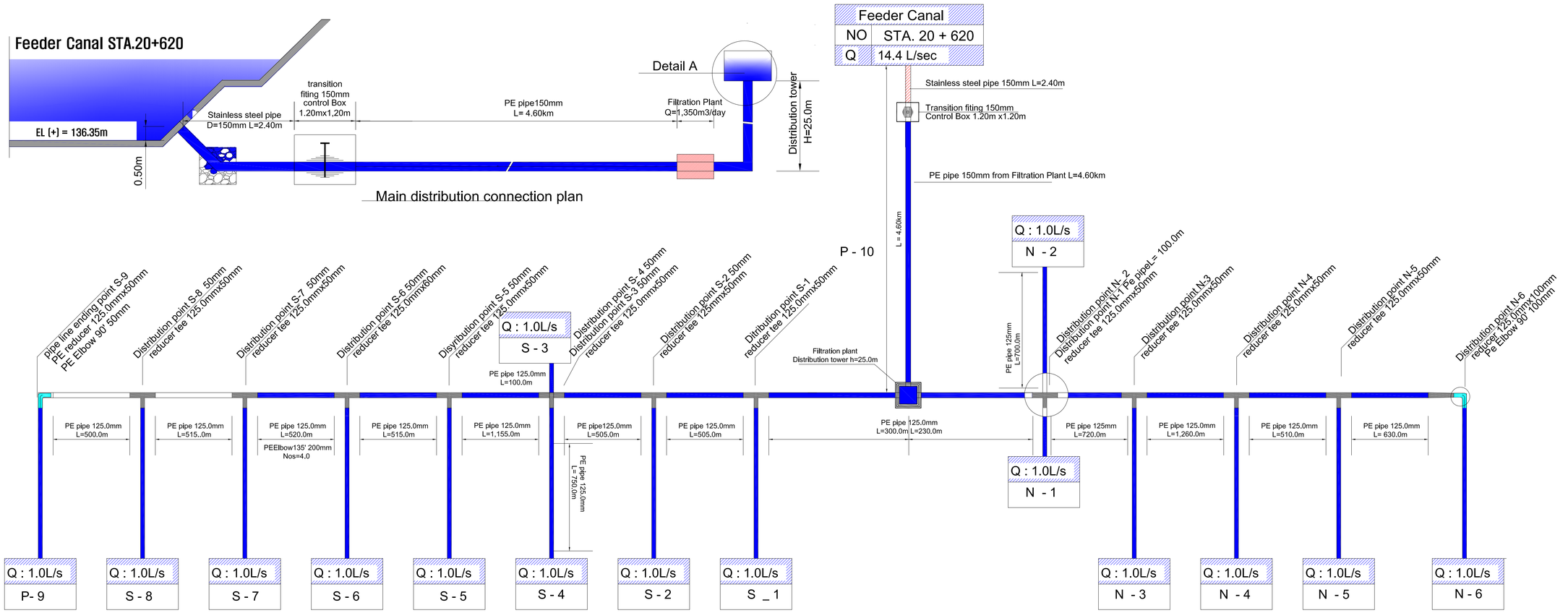
LIST OF MATERIAL

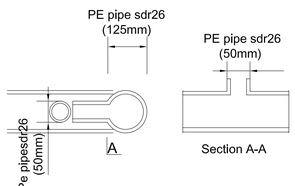
Size	lenth (m)	Weight (kg/m³)	Weight (kg)
STEEL PLATE(9~12t)	1.15	7,850	45.83
STEEL PLATE(9~12t)	1.00	7,850	17.52
ROUND BAR(Φ50~60mm)	2.50	7,850	46.63
ROUND BAR(Φ25mm)	2.80	7,850	10.79
ROUND BAR(Φ22mm)	2.50	7,850	7.46
STEEL PLATE(Φ100mm)	0.35	12.20	4.27
STEEL PLATE(Φ75mm)	2.00	8.49	16.98
SUB TOTAL			149.48

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = As shown
		TITLE Detail of Protector(2)	DATE DECEMBER 2016	DRG No C-078

Water Supplying Distribution system(1)

Main distribution connection plan



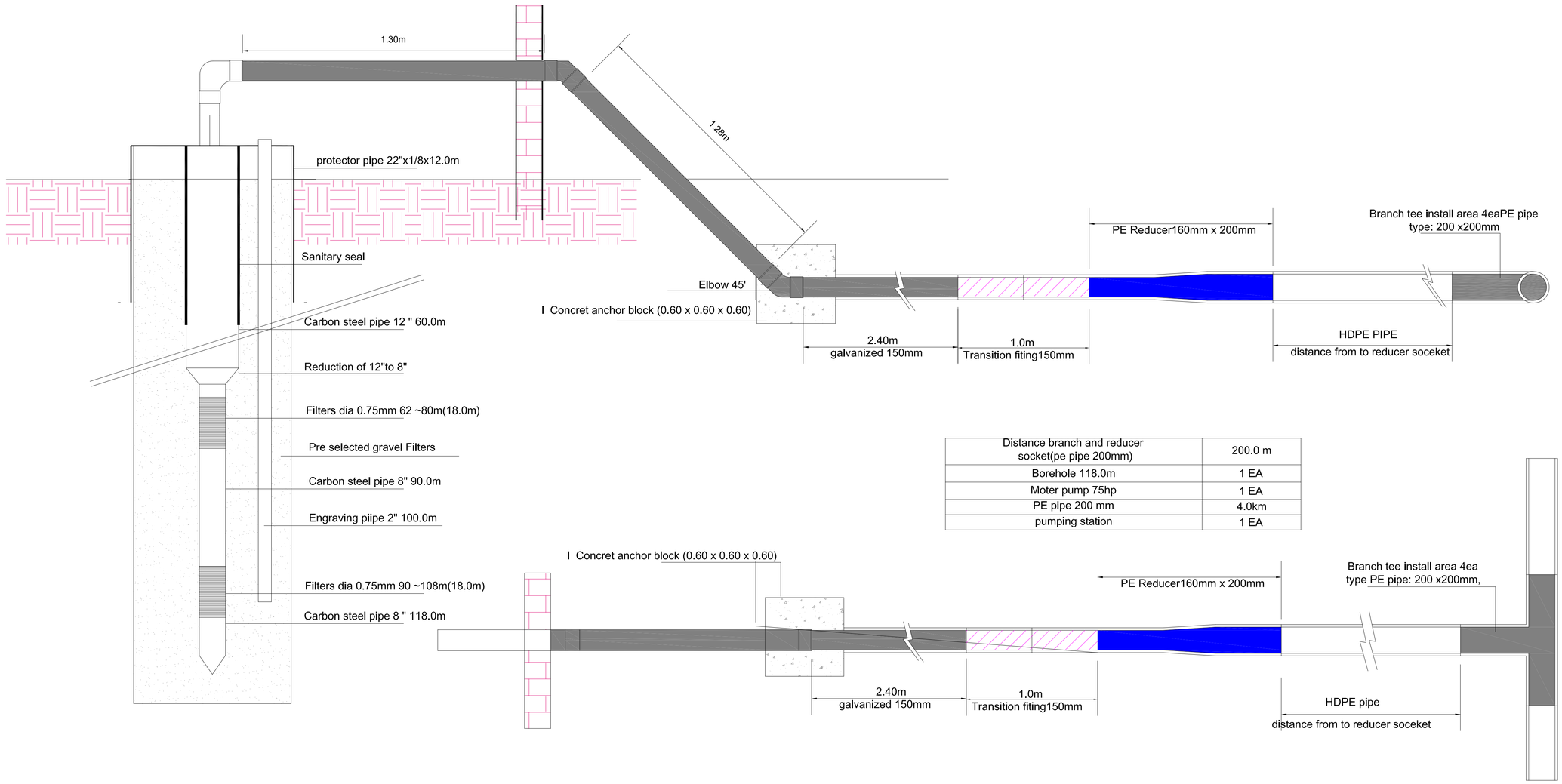


Detail reducer 125mmm

ITEAM		UNIT	QUANTITY
Stainless steel pipe	150 mm	m	2.40m
PE pipe sdr26	150 mm	m	4,600m
PE pipe sdr26	125 mm	m	9,500m
transition fiting	150 mm	Nos	1
PE Flange	150 mm	Nos	2
PE Reducer	125x50	Nos	15
PE Flange	125 mm	Nos	15

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Water Supplying Distribution System(1)	DATE DECEMBER 2016	DRG No C-079

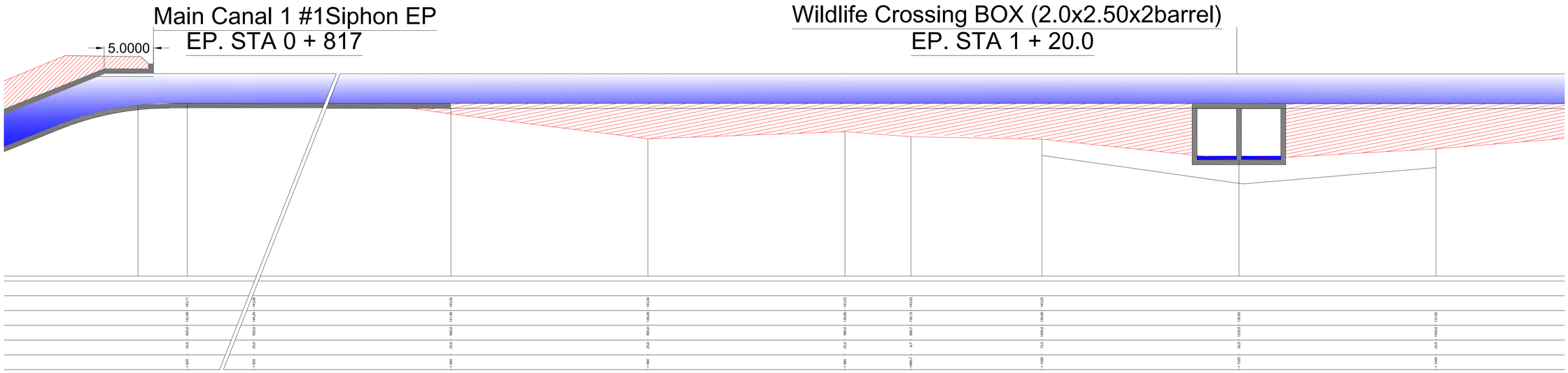
Borehole Water Supplying Distribution system(2)



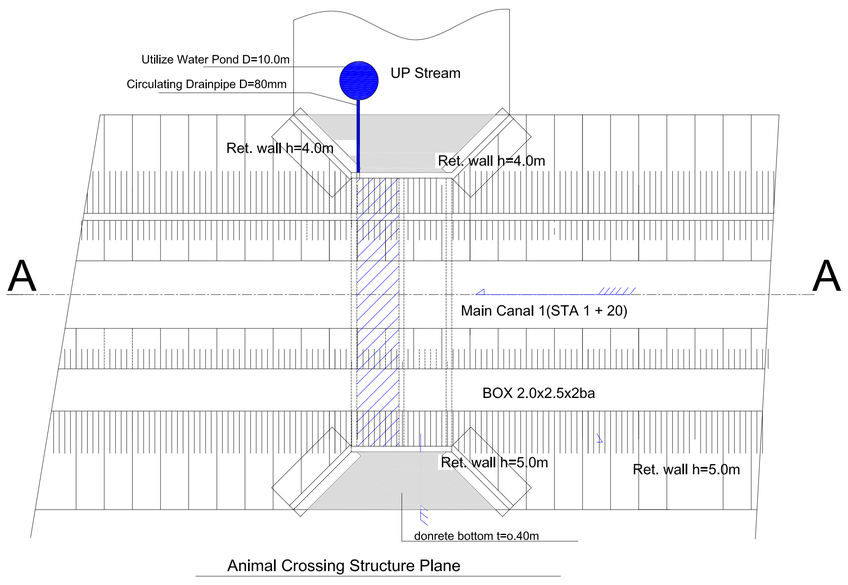
Distance branch and reducer socket(pe pipe 200mm)	200.0 m
Borehole 118.0m	1 EA
Moter pump 75hp	1 EA
PE pipe 200 mm	4.0km
pumping station	1 EA

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Water Supplying Distribution System(2)	DATE DECEMBER 2016	DRG No C-080

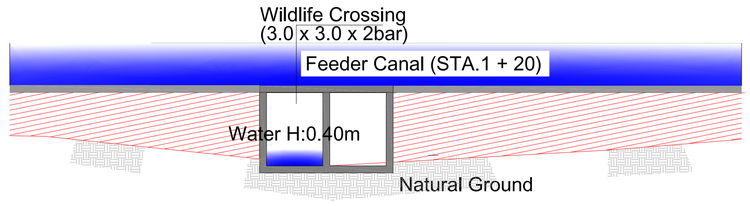
Ainmal Supply Water Structure



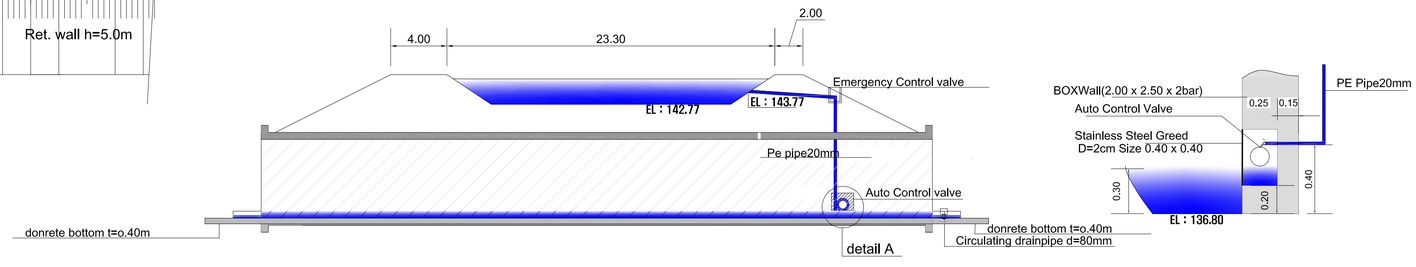
Crossing Structure



Animal Crossing Structure Plane

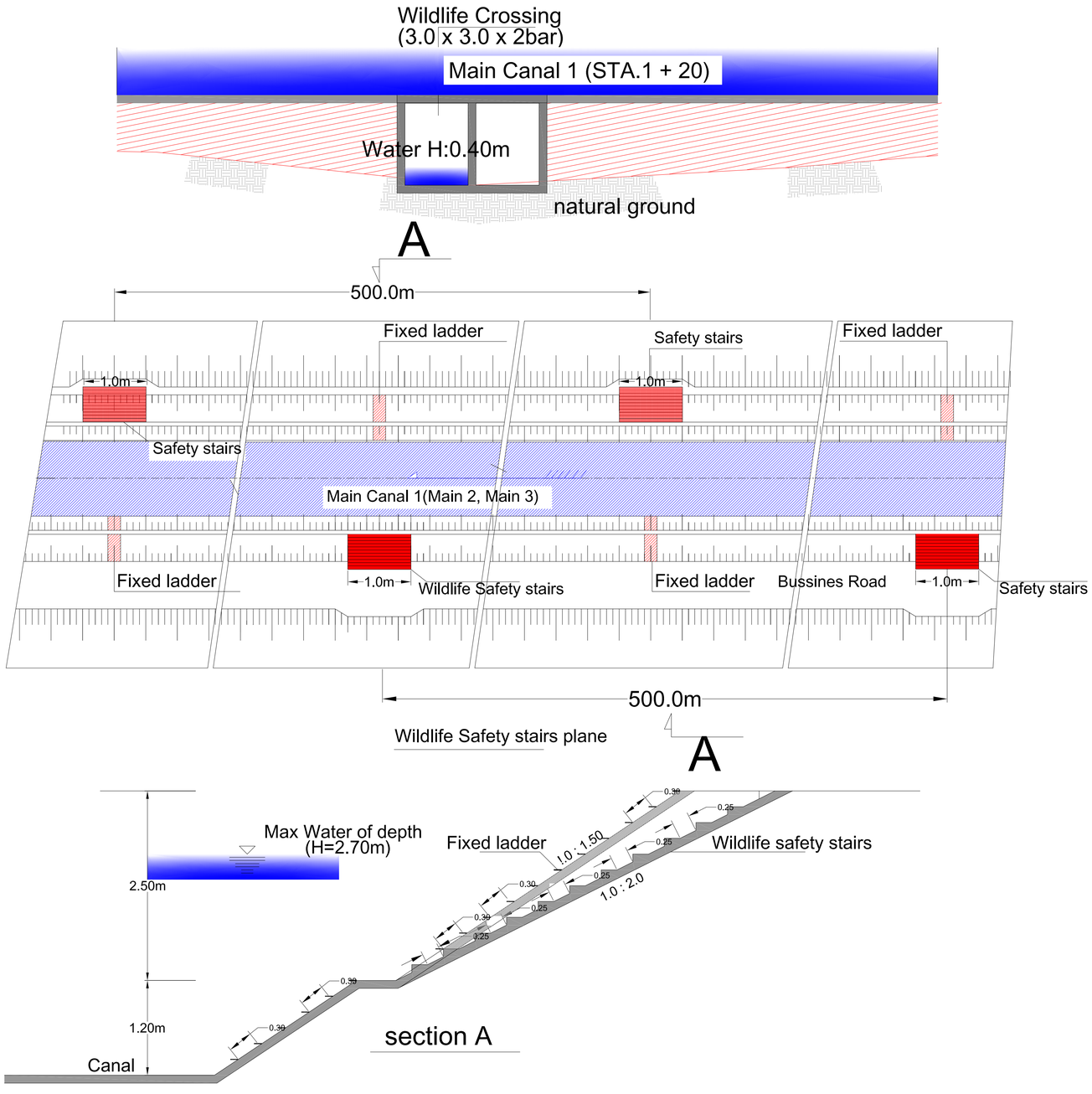


SECTION A-A)



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Animal Supply Water Structure	DATE DECEMBER 2016	DRG No C-081

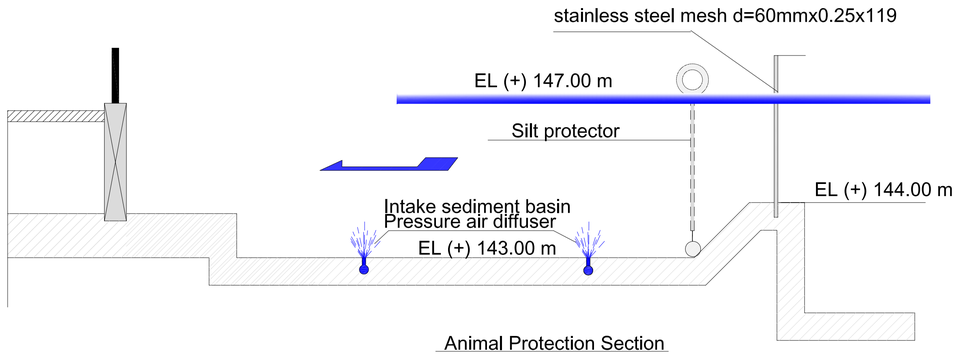
Wildlife Protection Facility



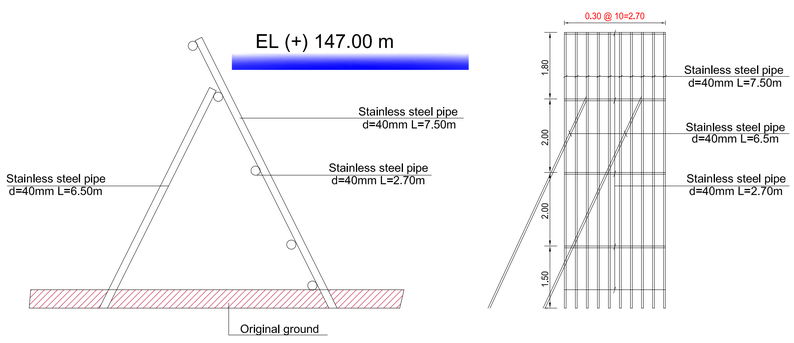
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Wildlife Protection Facility	DATE DECEMBER 2016	DRG No C-082

Protection Facility

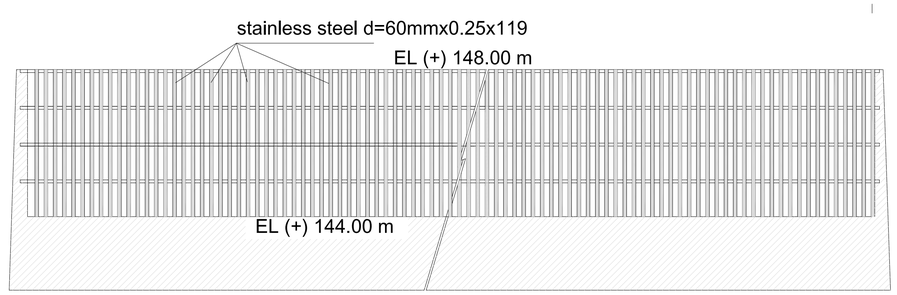
Floating material protector Plane



Animal Protection Section



Floating material protector Section



Animal Protector Front Drawing

Material List (1m)

NO	Size	Quality	Length	Remark
1	∅50.8,t=2m/m	STS316L	3.36m	
2	∅31.8,t=2m/m	STS316L	3.60m	

Material List (1m)

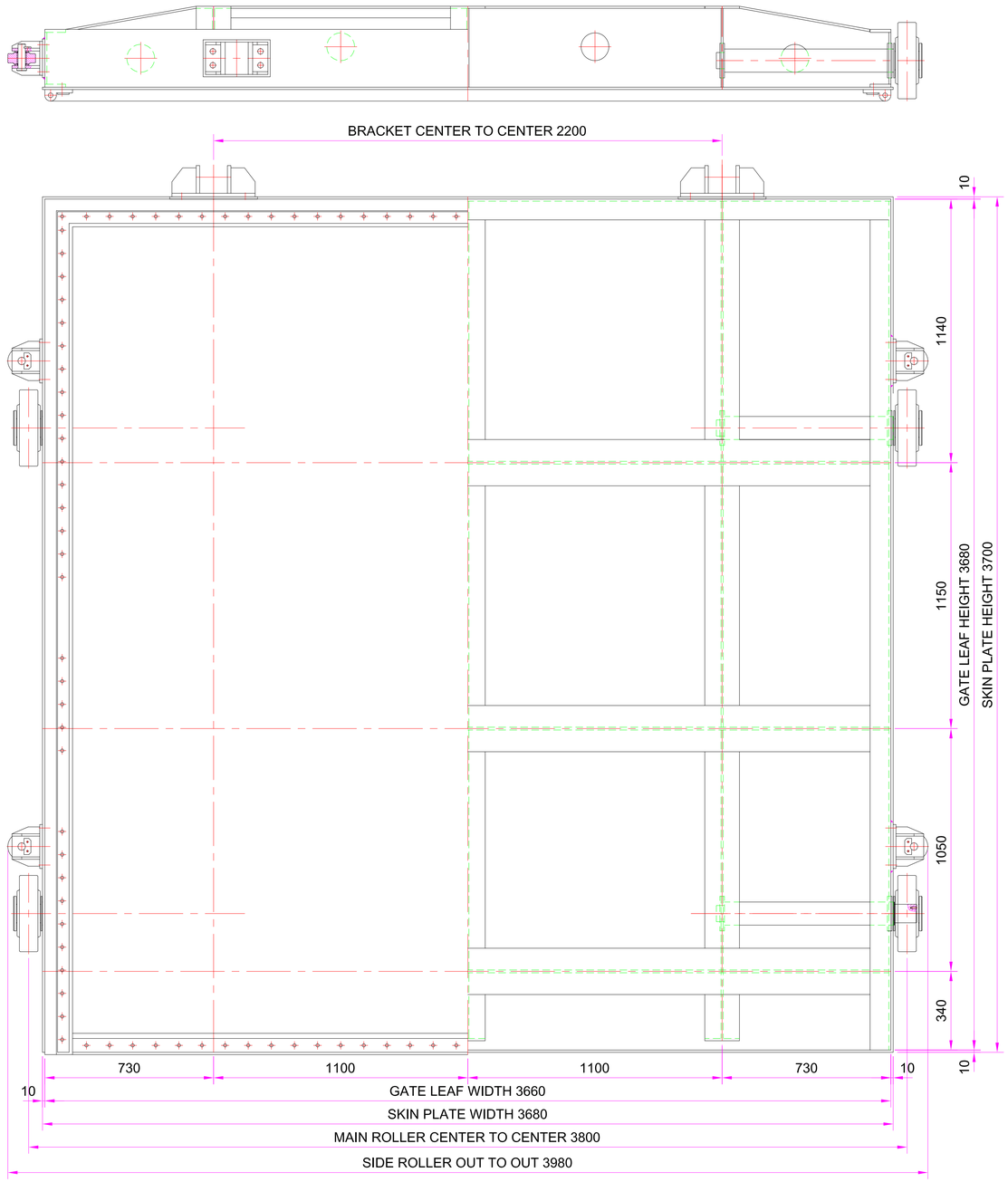
NO	Size	Quality	Length	Remark
1	∅50.8,t=2m/m	STS316L	3.36m	
2	∅31.8,t=2m/m	STS316L	3.60m	

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Protection Facility	DATE DECEMBER 2016	DRG No C-083

BOX 3.5M x 3.5M(1/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GATE LEAF	1	STS304	3.16Mx3.18M	

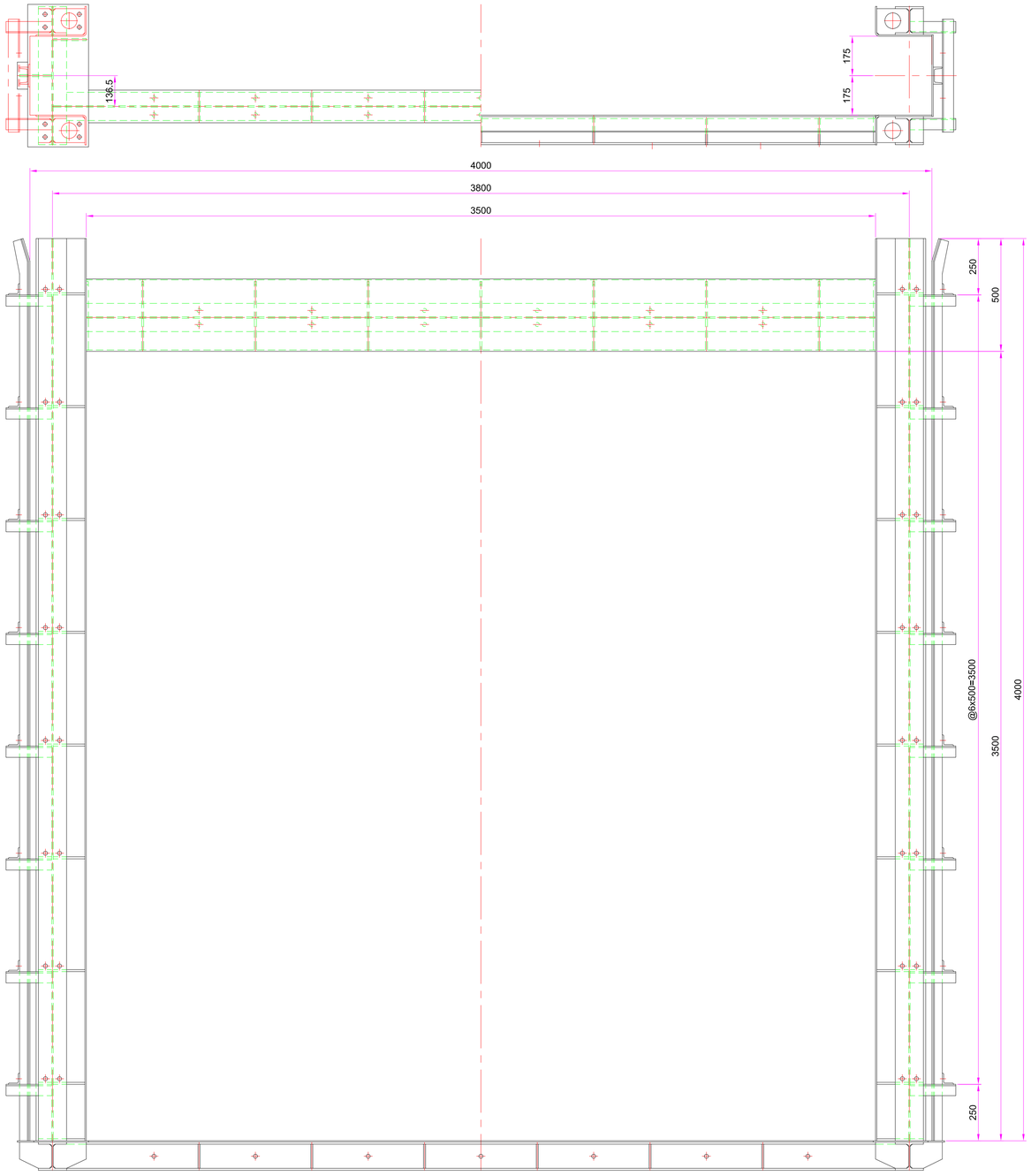


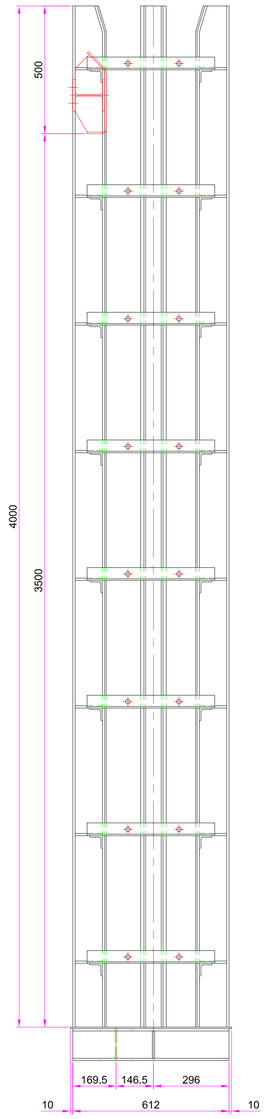
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT TITLE BOX 3.5M x 3.5M(1/3)	Technical Feasibility Study DATE DECEMBER 2016	Scale = None DRG No C-084

BOX 3.5M x 3.5M(2/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GUIDE FRAME	1	STS304,6T	BOX 3.5M x 3.5M	



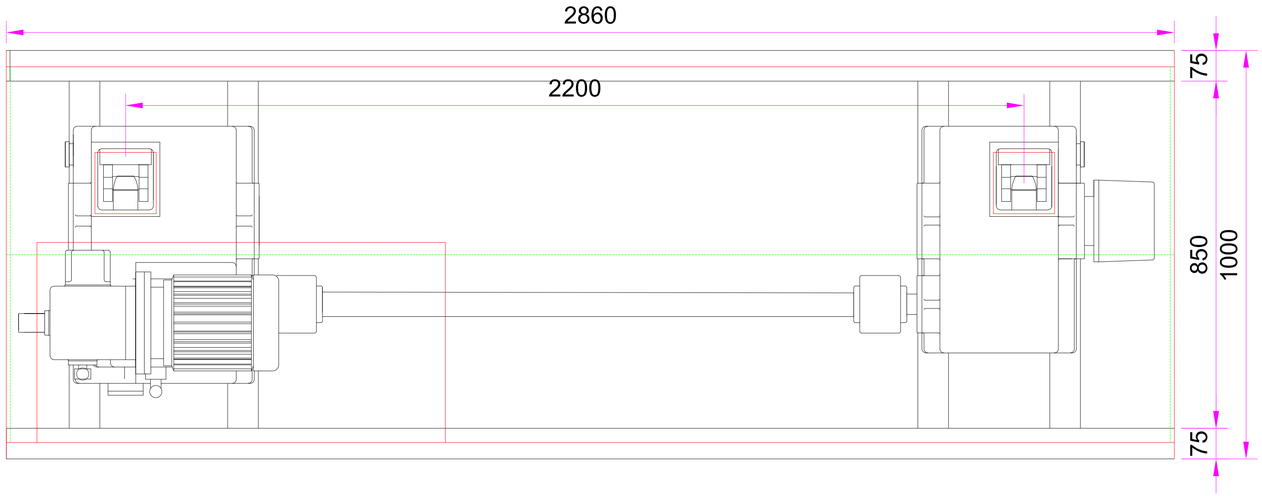


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.5M x 3.5M(2/3)	DATE DECEMBER 2016	DRG No C-085

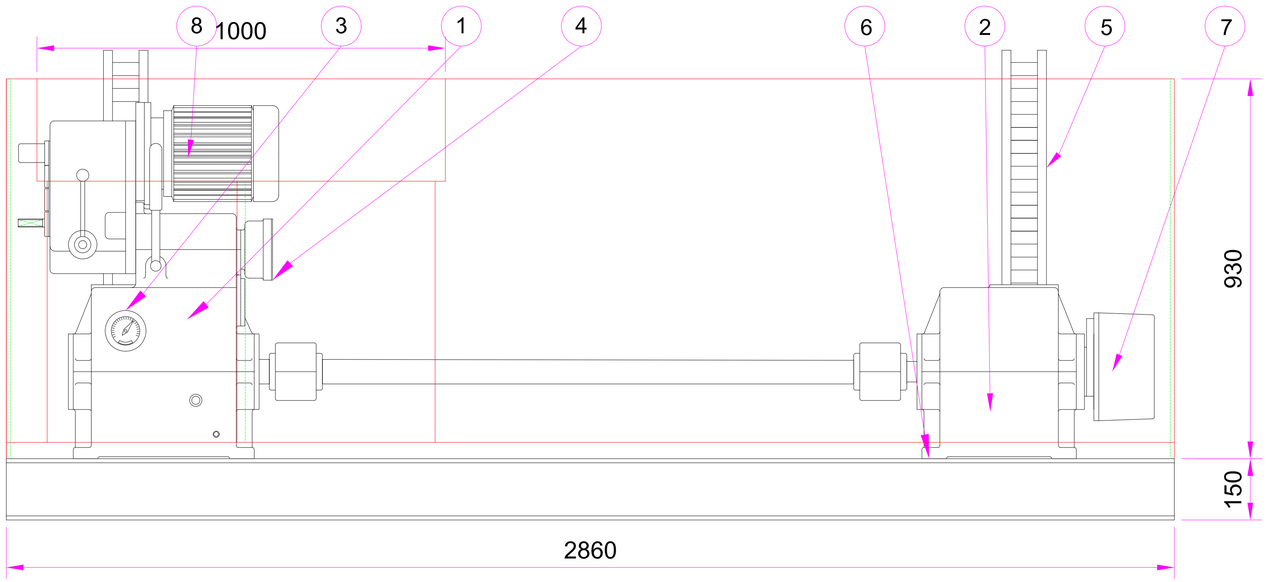
BOX 3.5M x 3.5M(3/3)

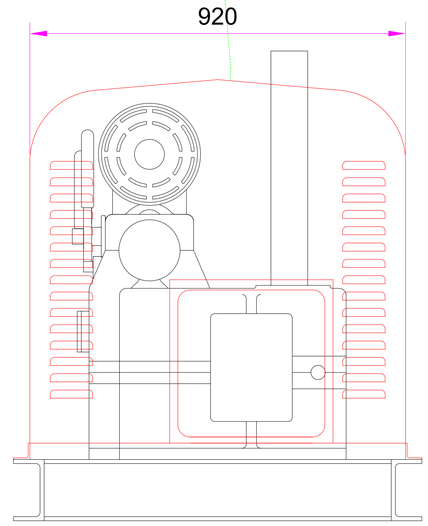
Scale = None

Detail of Gate Lift(8.0TON)



NO	DESCRIPTION	MAT'L	Q'TY	W.T	REMARKS
1	GEAR BOX	GC200	1		443x629.55x628H
2	SIDE BOX	GC200	1		378x555x426H
3	INDICATOR	Bc	1		∅100x29L
4	CENTRIFUGAL BRAKE	GC200	1		∅150x65L
5	RACK BAR	SS400	1		90x22T
6	BASE FRAME	SS400	1		CHANEL 150x75
7	LIMITS BOX	Al	1		
8	MOTOR		1		4P-2.2Kw



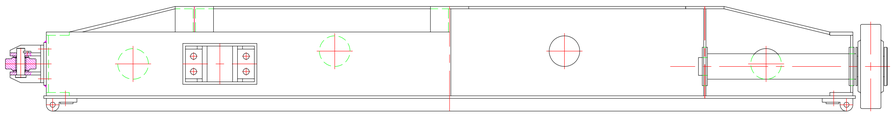


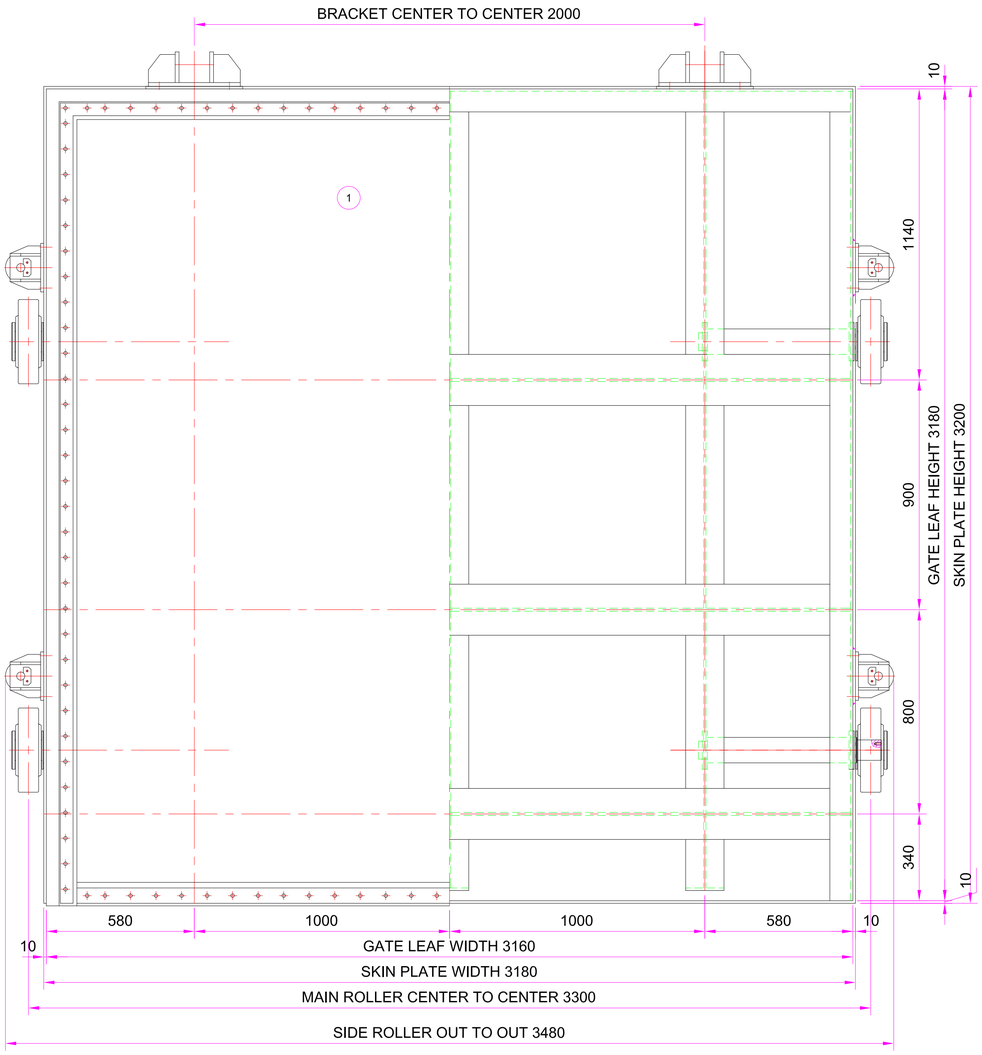
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.5M x 3.5M(3/3)	DATE DECEMBER 2016	DRG No C-086

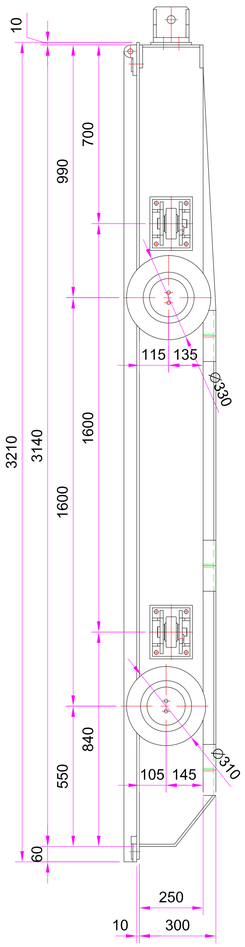
BOX 3.0M x 3.0M(1/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GATE LEAF	1	STS304	3.16Mx3.18M	





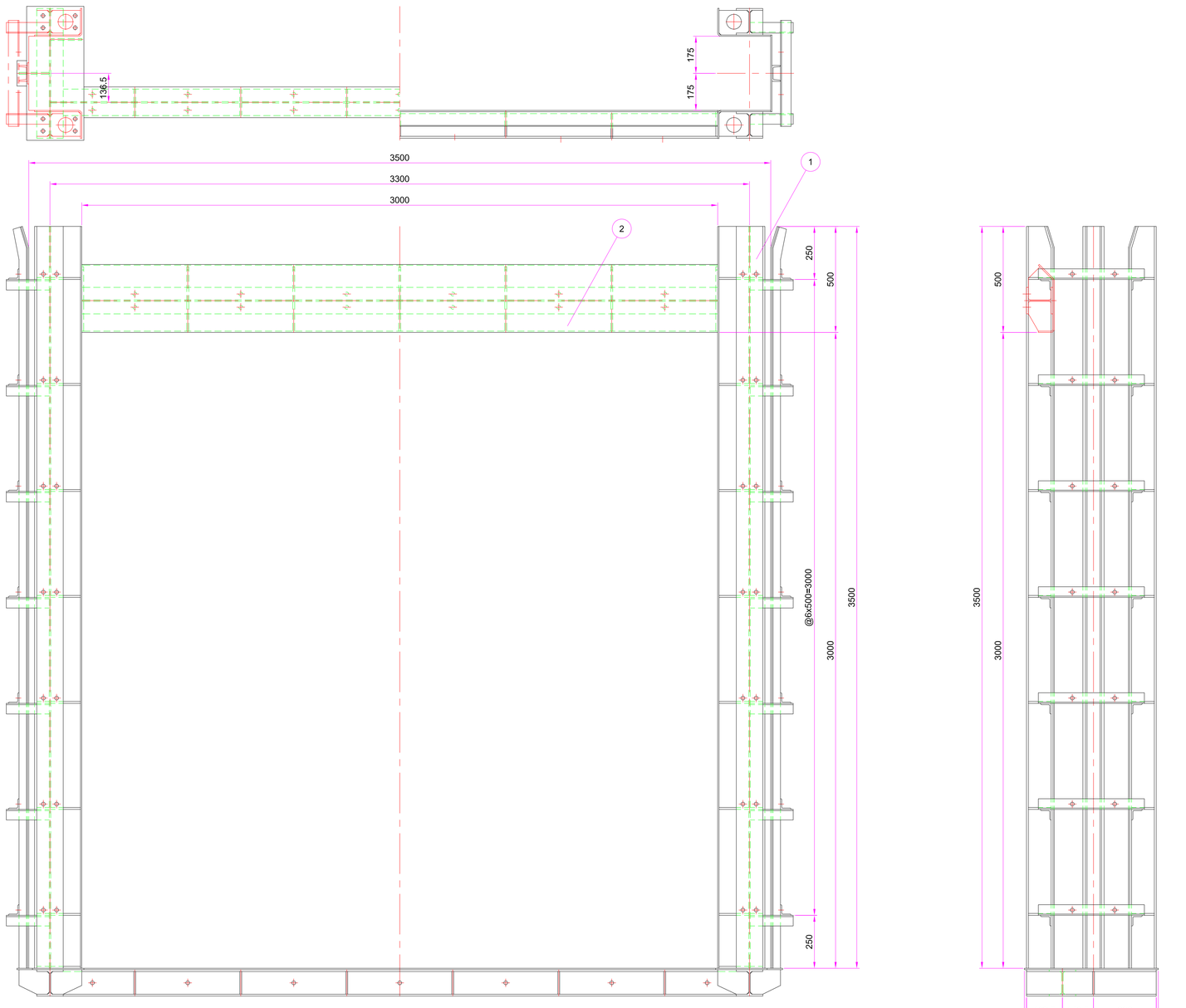


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.0M x 3.0M(1/3)	DATE DECEMBER 2016	DRG No C-087

BOX 3.0M x 3.0M(2/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GUIDE FRAME	1	STS304,6T	BOX 3.0M x 3.0M	

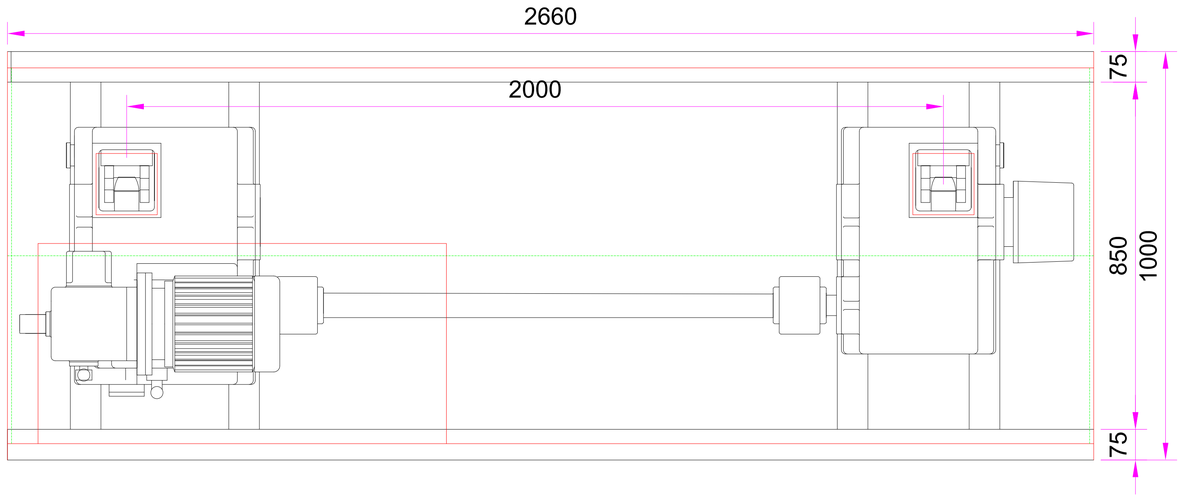


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.0M x 3.0M(2/3)	DATE DECEMBER 2016	DRG No C-088

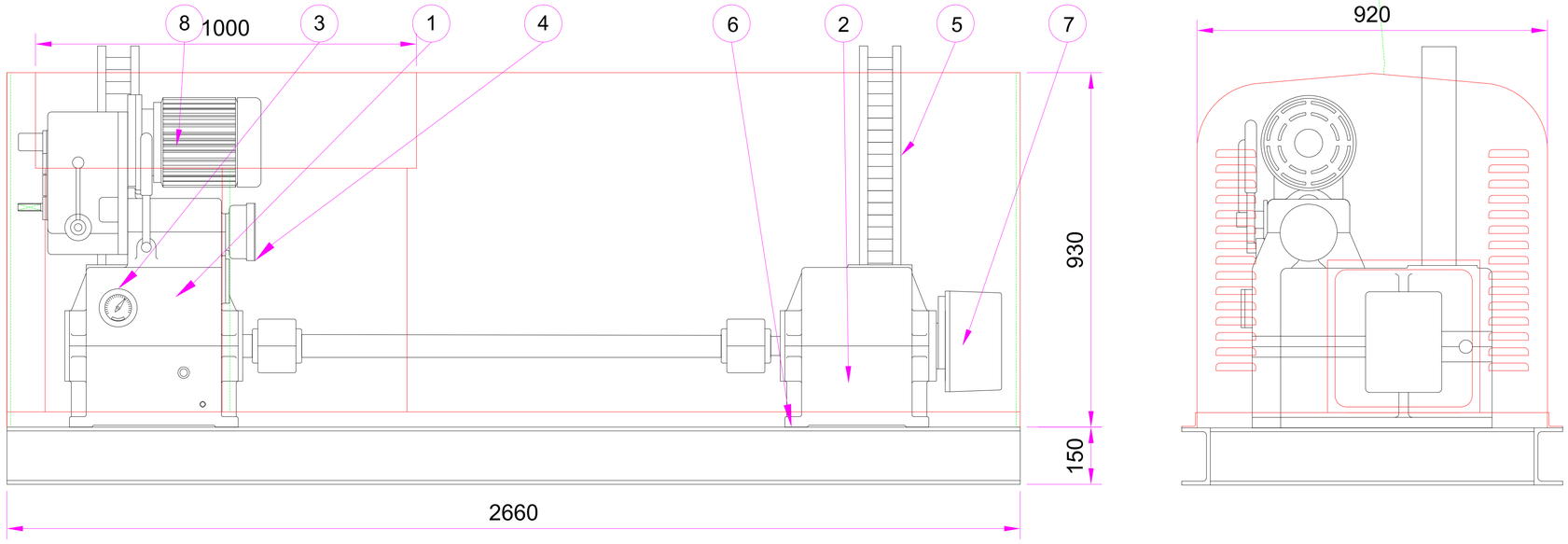
BOX 3.0M x 3.0M(3/3)

Scale = None

Detail of Gate Lift(8.0TON)



NO	DESCRIPTION	MAT'L	Q'TY	W.T	REMARKS
1	GEAR BOX	GC200	1		443x629.55x628H
2	SIDE BOX	GC200	1		378x555x426H
3	INDICATOR	Bc	1		∅100x29L
4	CENTRIFUGAL BRAKE	GC200	1		∅150x65L
5	RACK BAR	SS400	1		90x22T
6	BASE FRAME	SS400	1		CHANEL 150x75
7	LIMITS BOX	Al	1		
8	MOTOR		1		4P-2.2Kw

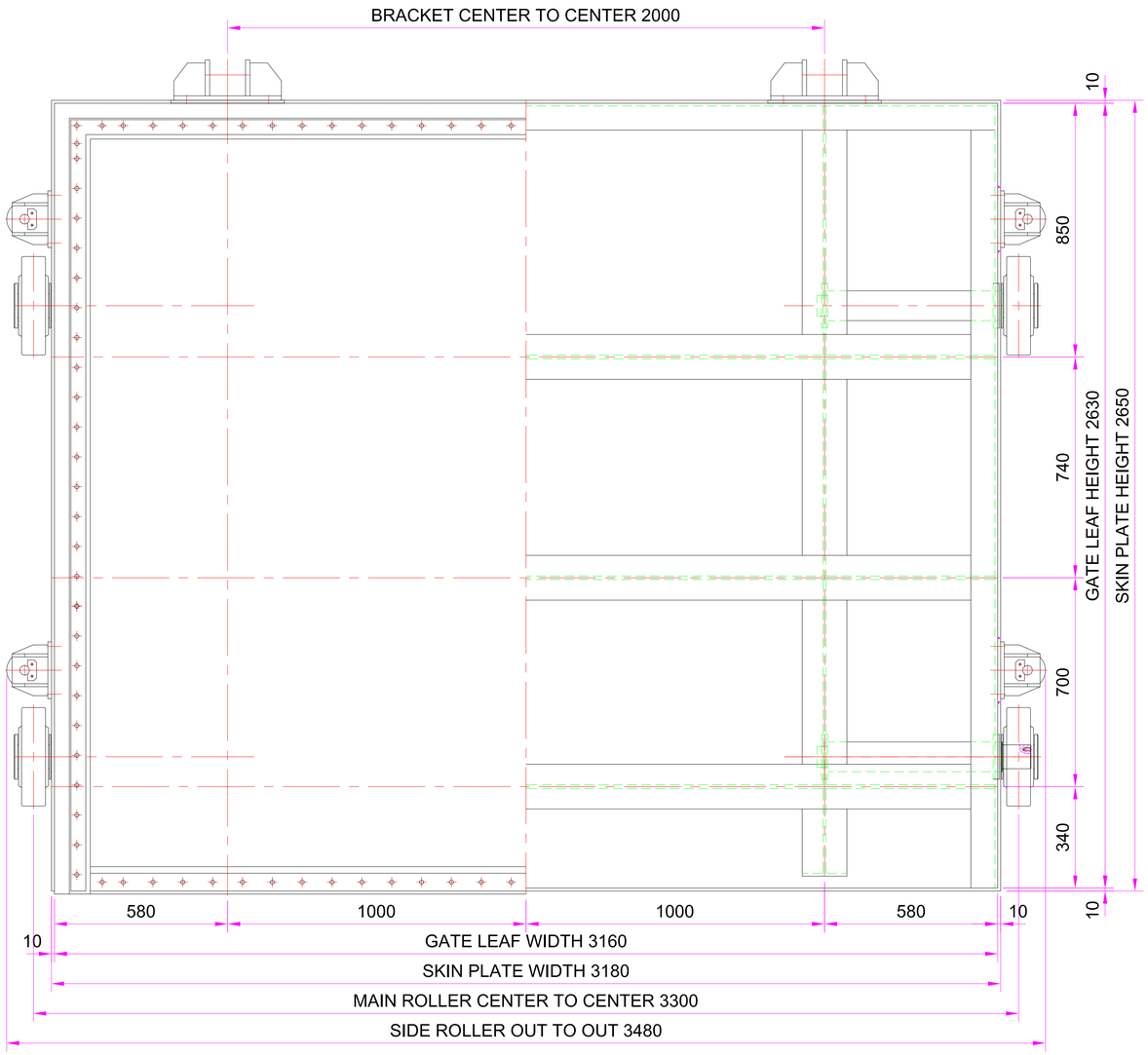


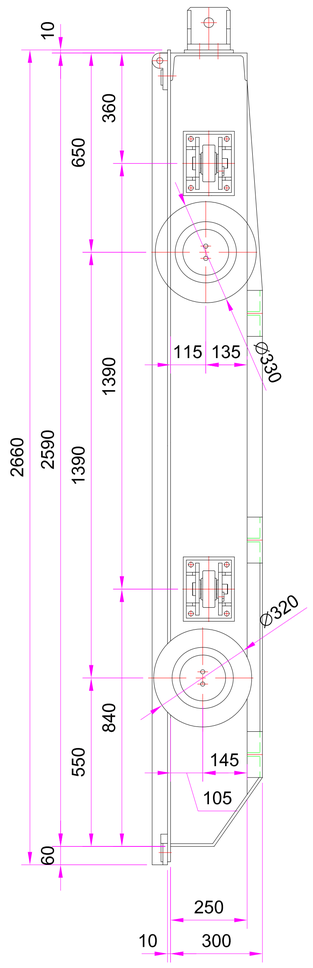
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.0M x 3.0M(3/3)	DATE DECEMBER 2016	DRG No C-089

BOX 3.0M x 2.5M(1/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GATE LEAF	1	SS400	BOX 3.0M x 2.5M	





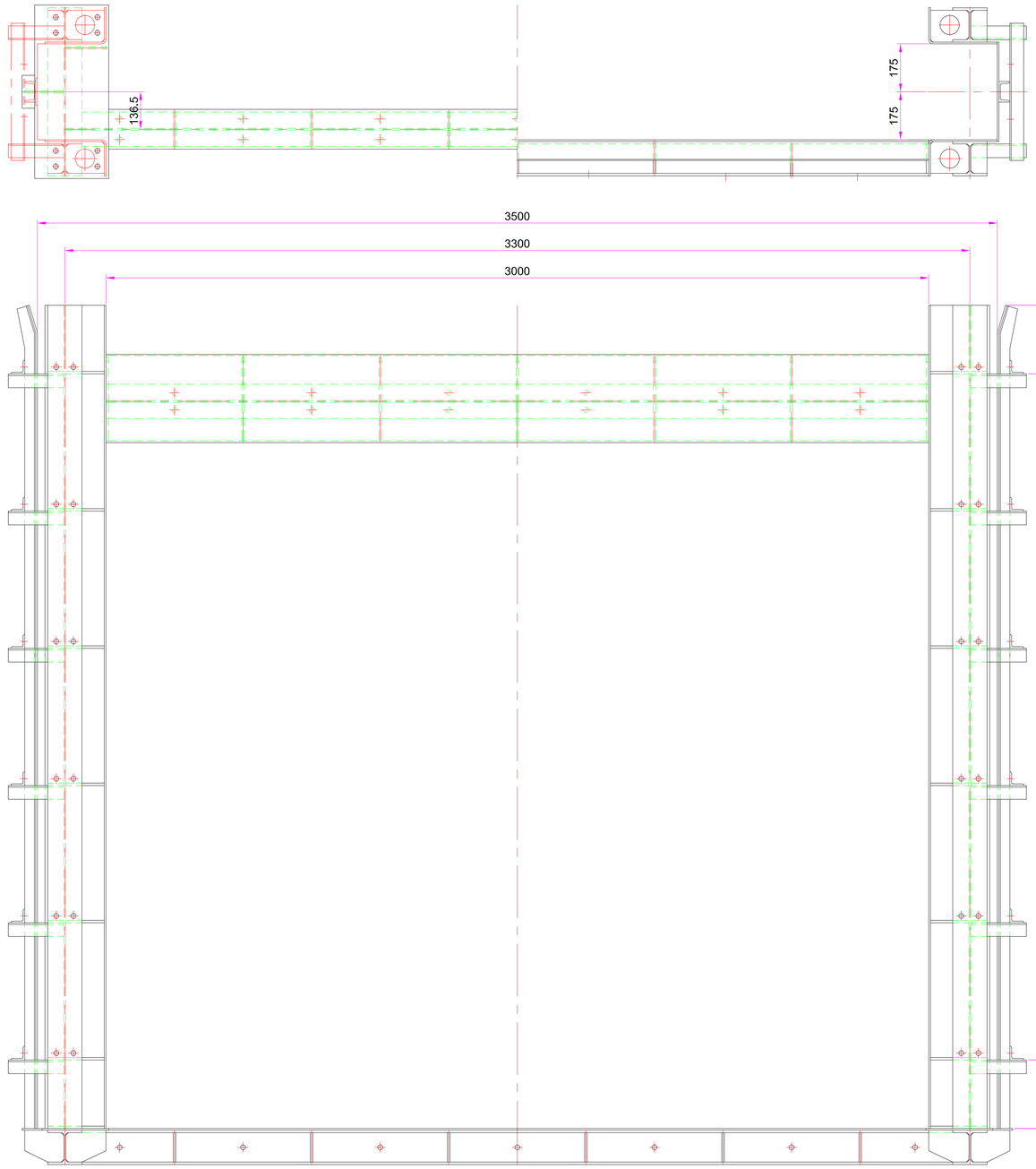
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study
		TITLE BOX 3.0M x 2.5M(1/3)	DATE DECEMBER 2016

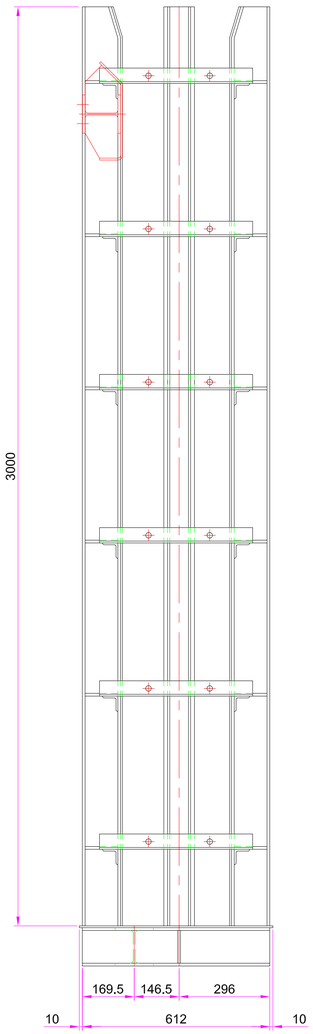
SCALE	DRG No
Scale = None	C-090

BOX 3.0M x 2.5M(2/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GUIDE FRAME	1	STS304,6T	BOX 3.0M x 2.5M	



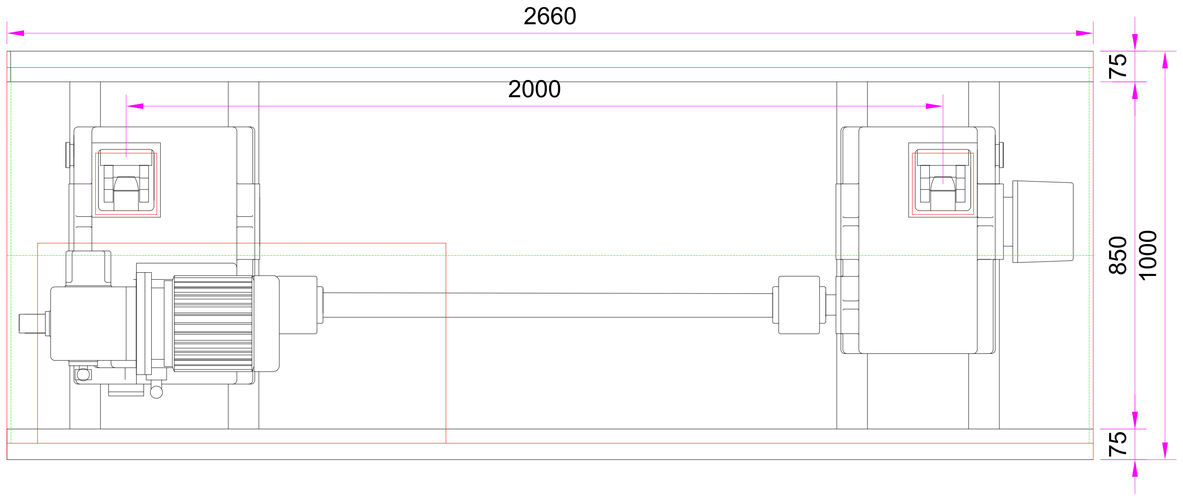


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.0M x 2.5M(2/3)	DATE DECEMBER 2016	DRG No C-091

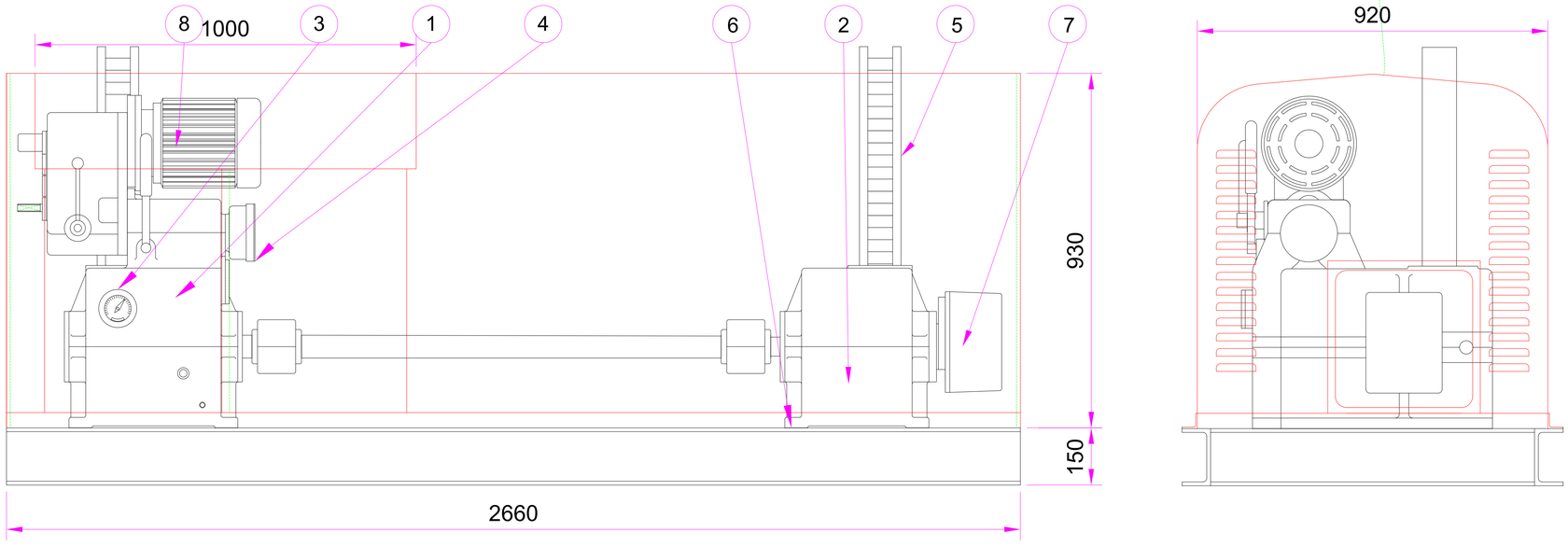
BOX 3.0M x 2.5M(3/3)

Scale = None

Detail of Gate Lift(8.0TON)



NO	DESCRIPTION	MAT'L	Q'TY	W.T	REMARKS
1	GEAR BOX	GC200	1		443x629.55x628H
2	SIDE BOX	GC200	1		378x555x426H
3	INDICATOR	Bc	1		∅100x29L
4	CENTRIFUGAL BRAKE	GC200	1		∅150x65L
5	RACK BAR	SS400	1		90x22T
6	BASE FRAME	SS400	1		CHANEL 150x75
7	LIMITS BOX	Al	1		
8	MOTOR		1		4P-2.2Kw

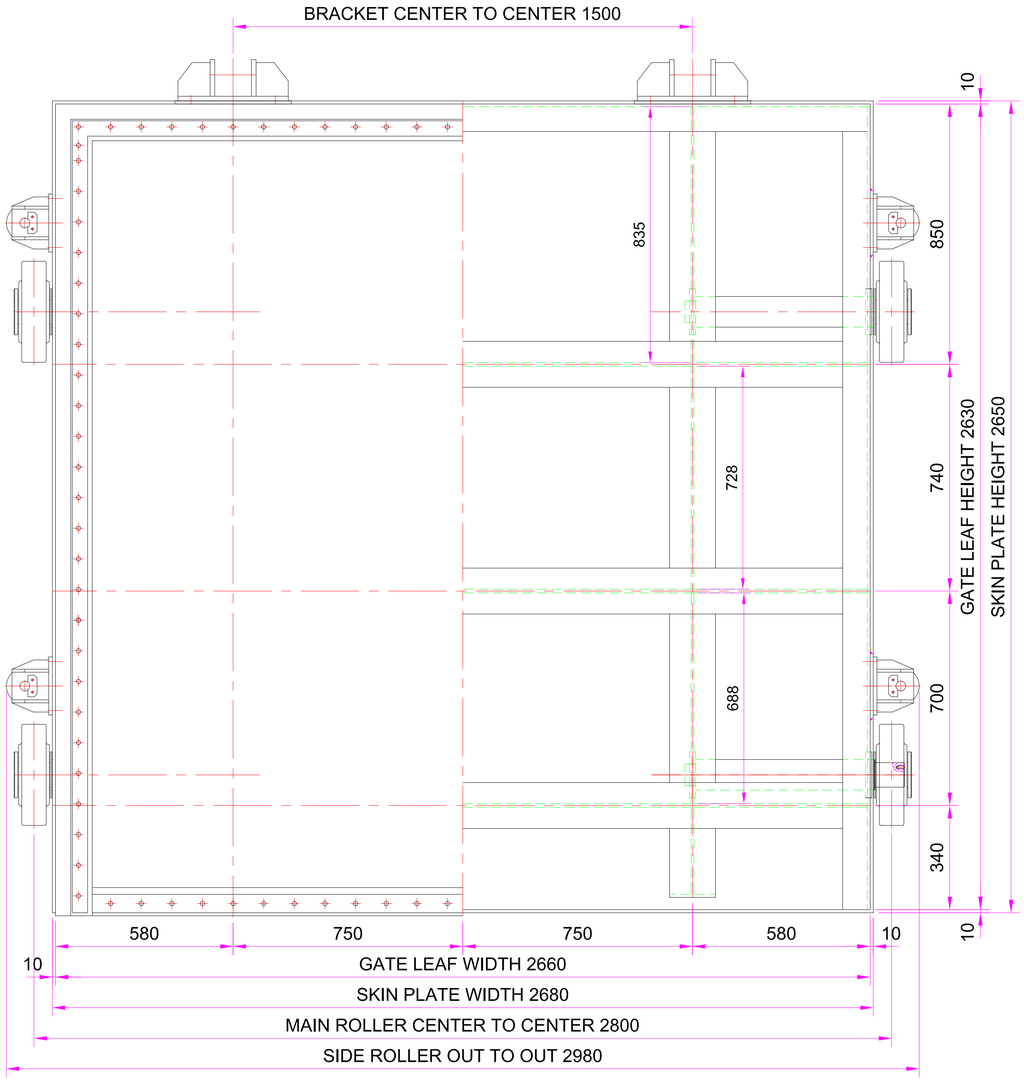


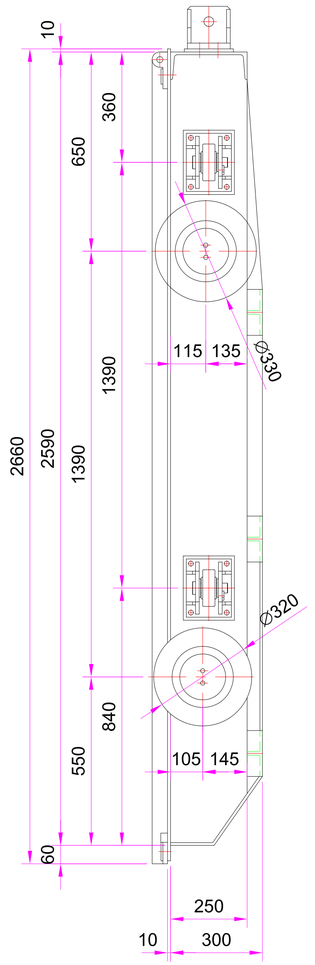
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 3.0M x 2.5M(3/3)	DATE DECEMBER 2016	DRG No C-092

BOX 2.5M x 2.5M(1/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GATE LEAF	1	SS400	BOX 2.5M x 2.5M	



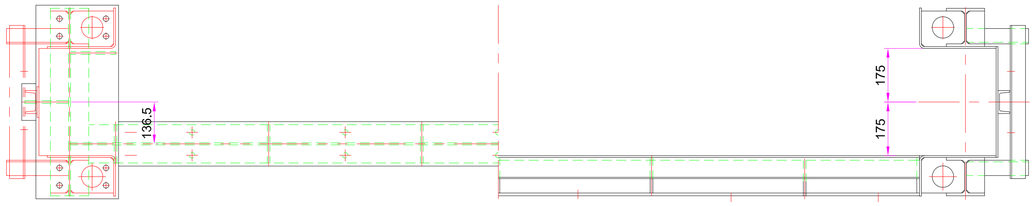


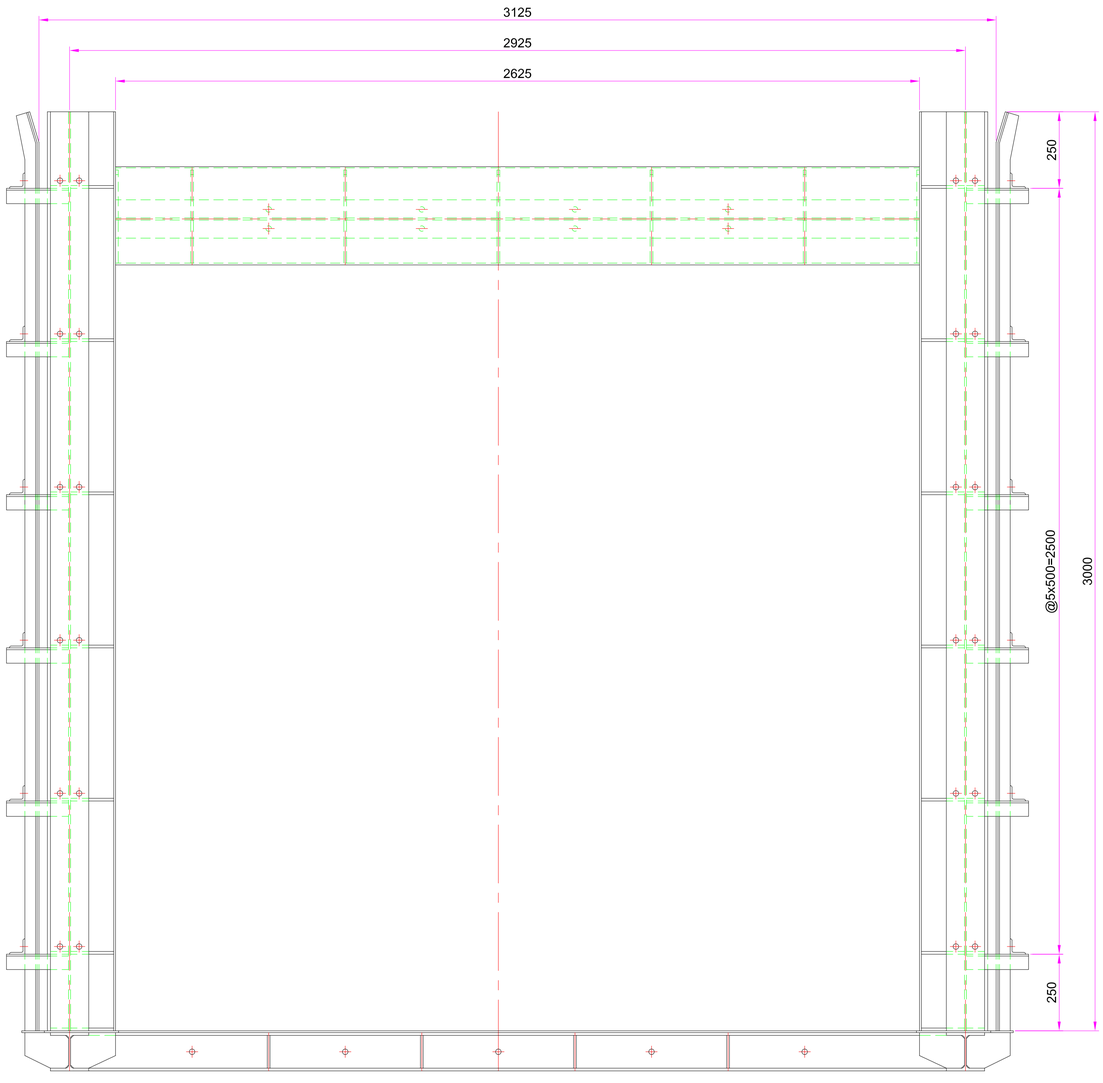
CLIENT: REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT: Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT: SHIRE VALLEY IRRIGATION PROJECT TITLE: BOX 2.5M x 2.5M(1/3)	ORIGINAL DESIGNED BY: Technical Feasibility Study DATE: DECEMBER 2016	SCALE: Scale = None DRG No: C-093

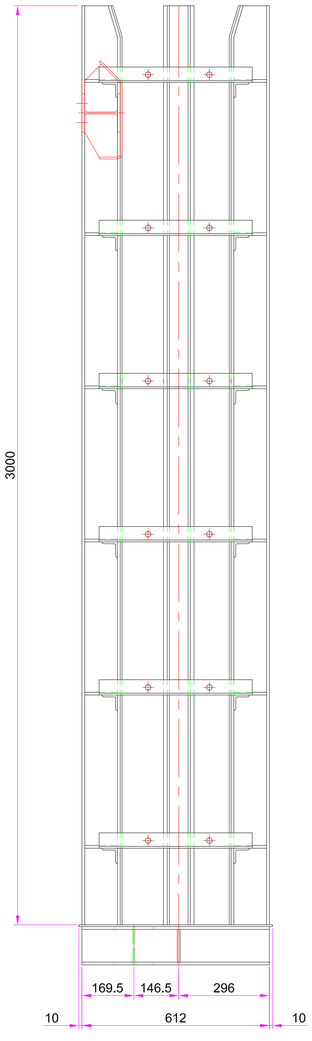
BOX 2.5M x 2.5M(2/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GUIDE FRAME	1	STS304,6T	BOX 2.5M x 2.5M	







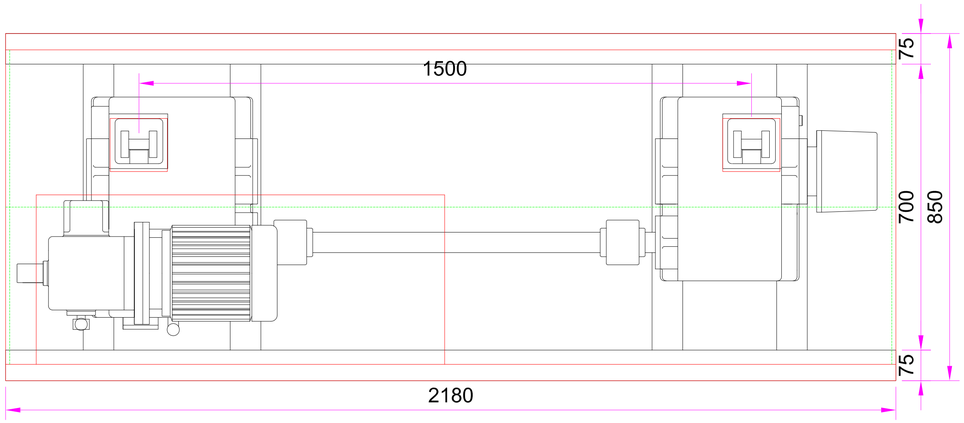
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT TITLE BOX 2.5M x 2.5M(2/3)	ORIGINAL DESIGNED BY Technical Feasibility Study DATE DECEMBER 2016	SCALE Scale = None DRG No C-094

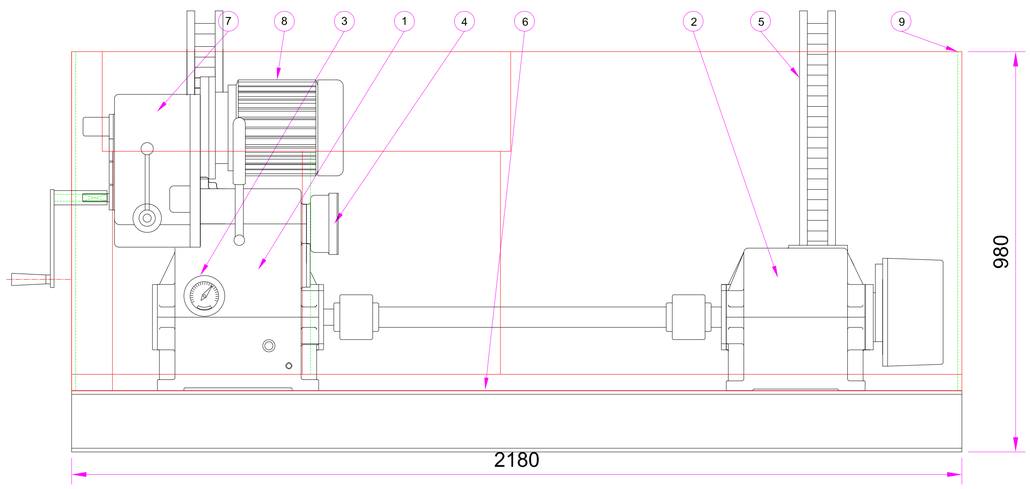
BOX 2.5M x 2.5M(3/3)

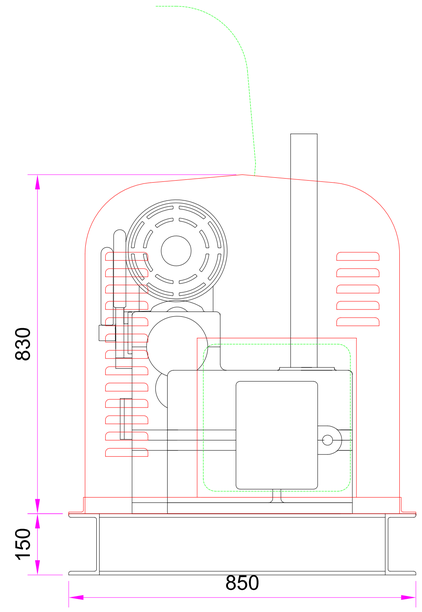
Scale = None

NO	DESCRIPTION	MAT'L	Q'TY	W.T	REMARKS
1	GEAR BOX	GC200	1		395x539.5x520.45H
2	SIDE BOX	GC200	1		340x450x356H
3	INDICATOR	Bc	1		∅100x29L
4	CENTRIFUGAL BRAKE	GC200	1		∅150x65L
5	RACK BAR	STS304	1		65x19T
6	BASE FRAME	SS400	1		CHANEL 150x75
7	REDUCER BOX	GC200	1		210x180x374H
8	MOTOR		1		4P-1.5Kw
9	COVER	STS304	1		1.5T

Detail of Gate Lift(6.0TON)





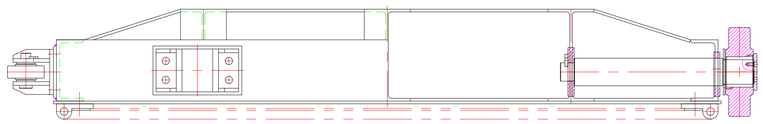


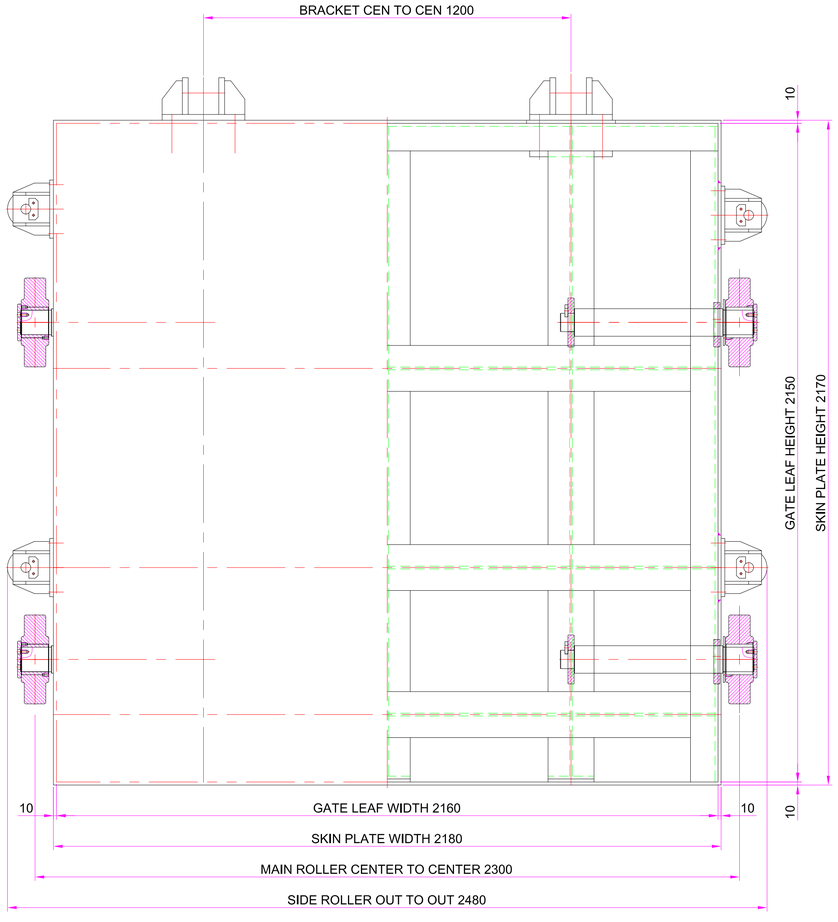
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE Scale = None
		TITLE BOX 2.5M x 2.5M(3/3)	DATE DECEMBER 2016	DRG No C-095

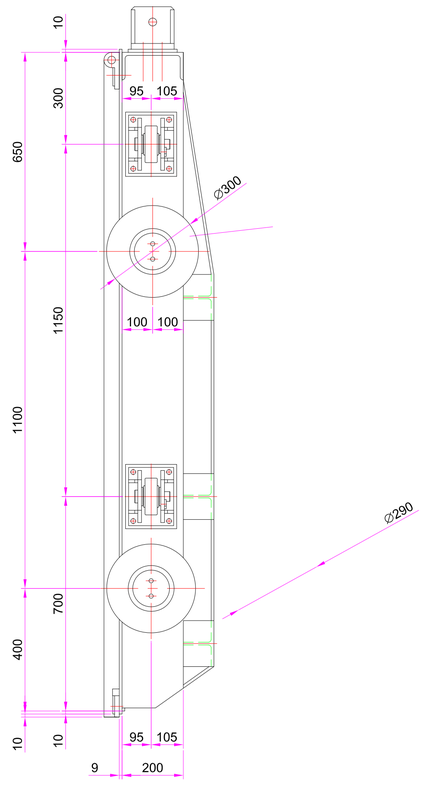
BOX 2.0M x 2.0M(1/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GATE LEAF	1	SS400	BOX 2.0M x 2.0M	





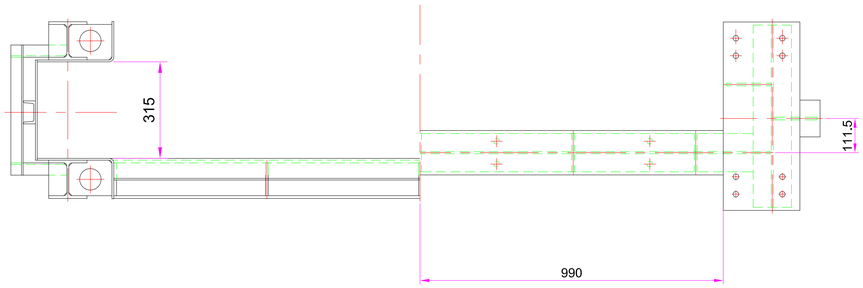


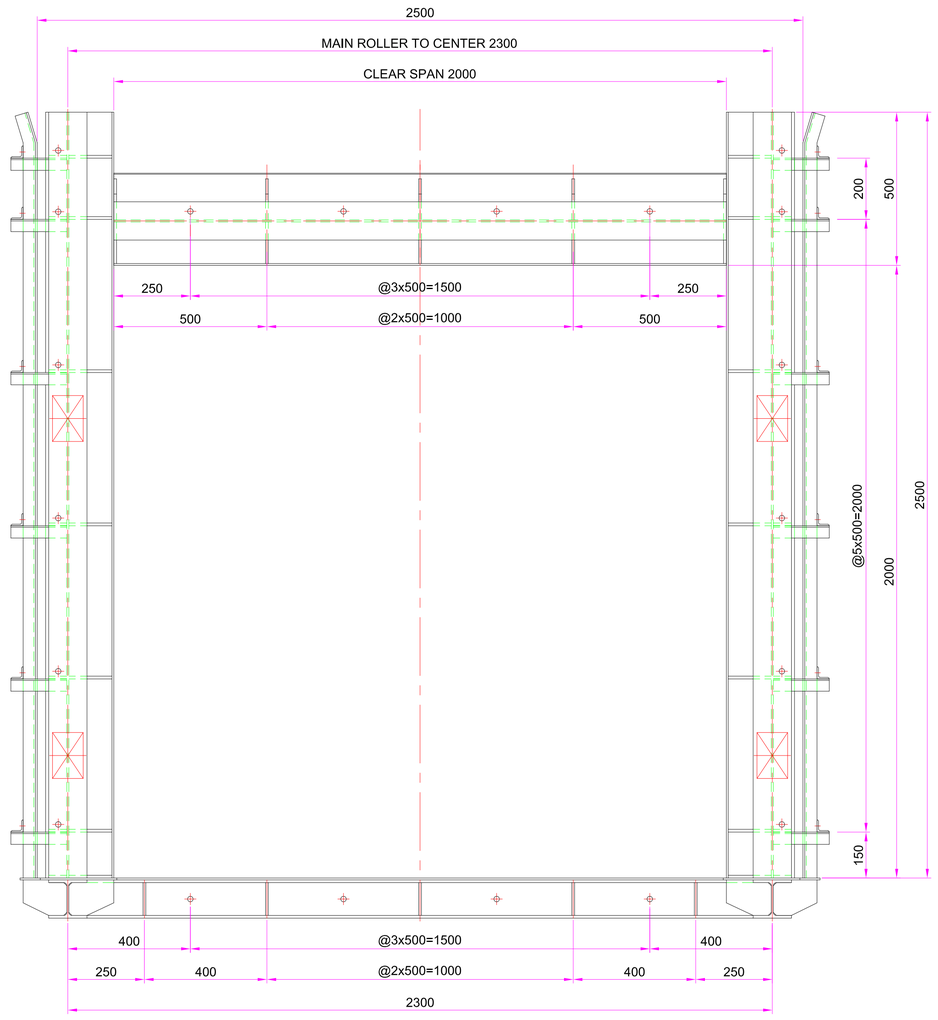
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 2.0M x 2.0M(1/3)	DATE DECEMBER 2016	DRG No C-096

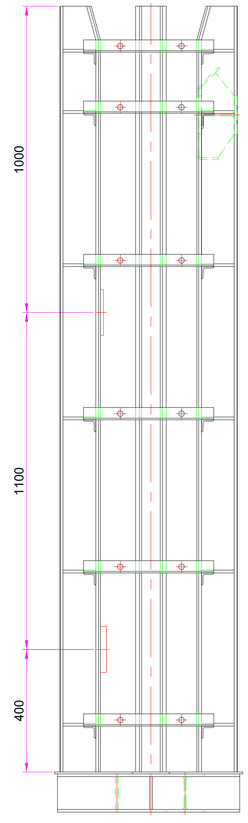
BOX 2.0M x 2.0M(2/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS
1	GUIDE FRAME	1	STS304,6T	BOX 2.0M x 2.0M	







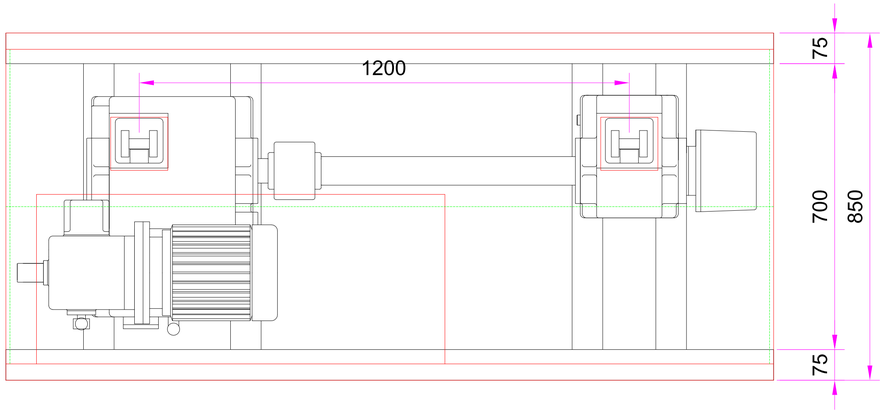
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 2.0M x 2.0M(2/3)	DATE DECEMBER 2016	DRG No C-097

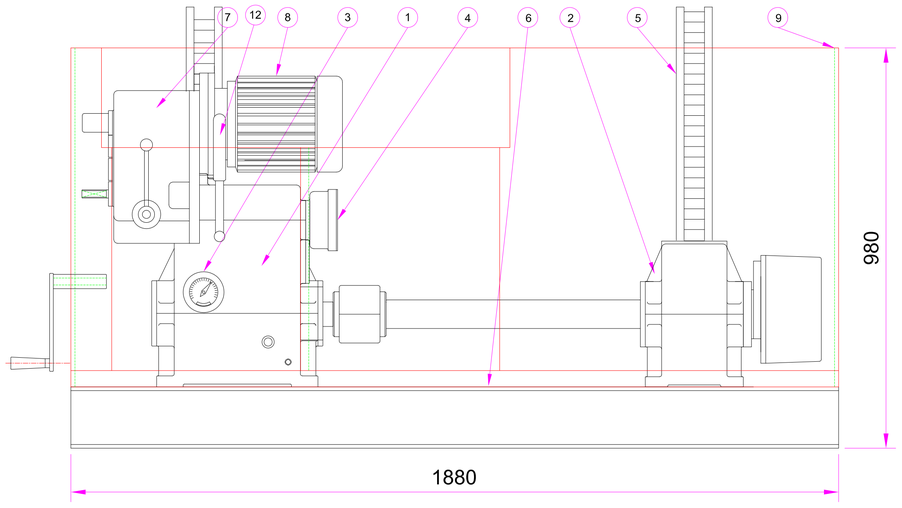
BOX 2.0M x 2.0M(3/3)

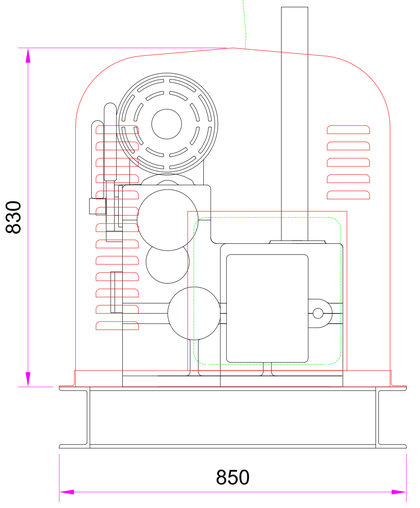
Scale = None

NO	DESCRIPTION	MAT'L	Q'TY	W.T	REMARKS
1	GEAR BOX	GC200	1		395x539.5x520.45H
2	SIDE BOX	GC200	1		240x300x356H
3	INDICATOR	Bc	1		∅100x29L
4	CENTRIFUGAL BRAKE	GC200	1		∅150x65L
5	RACK BAR	STS304	2		65x19T
6	BASE FRAME	SS400	1		CHANEL 150x75
7	REDUCER BOX	GC200	1		210x180x374H
8	MOTOR		1		4P 1.5Kw
9	COVER	STS304	1		1.5T

Detail of Gate Lift(4.0TON)





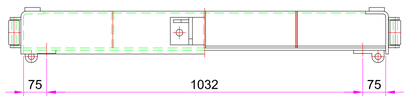


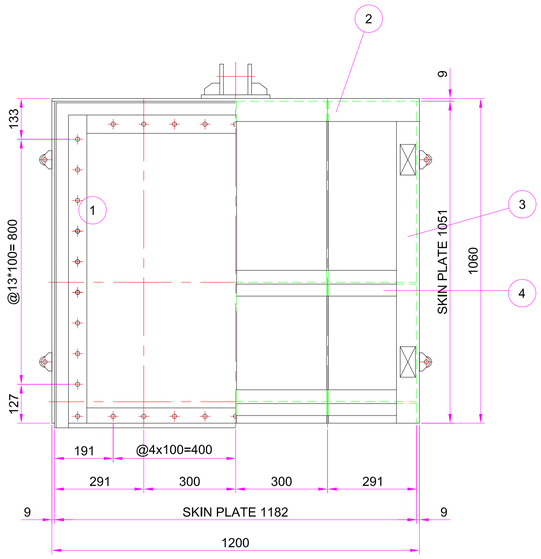
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 2.0M x 2.0M(3/3)	DATE DECEMBER 2016	DRG No C-098

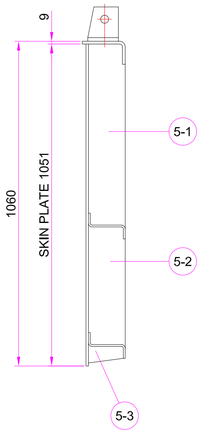
BOX 1.0M x 1.0M(1/3)

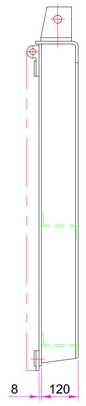
Scale = None

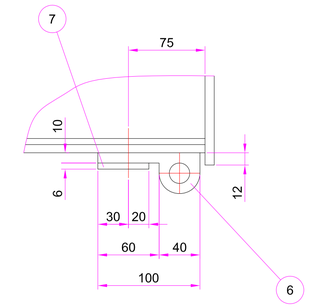
No.	Discription	EA	Material	Part Size	REMARKS
1	SKIN PLATE		STS304	8T	
2	UPPER BEAM		STS304	9T	
3	SIDE BEAM		STS304	9T	
4	HOR'S BEAM		STS304	6T	
5	VER'S BEAM		STS304	6T	
5-1			STS304	6Tx120	
5-2			STS304	6Tx120	
5-3			STS304	6T	
6	SIDE RUBBER		NEOPRENE	P-TYPE ∅40	
7	CLAMP		STS304	6Tx50	
8	LOWER RUBBER		NEOPRENE	10Tx60	
9	CLAMP		STS304	6Tx50	

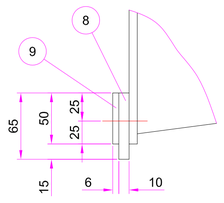










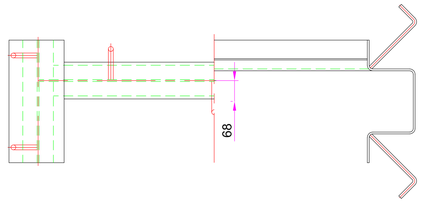


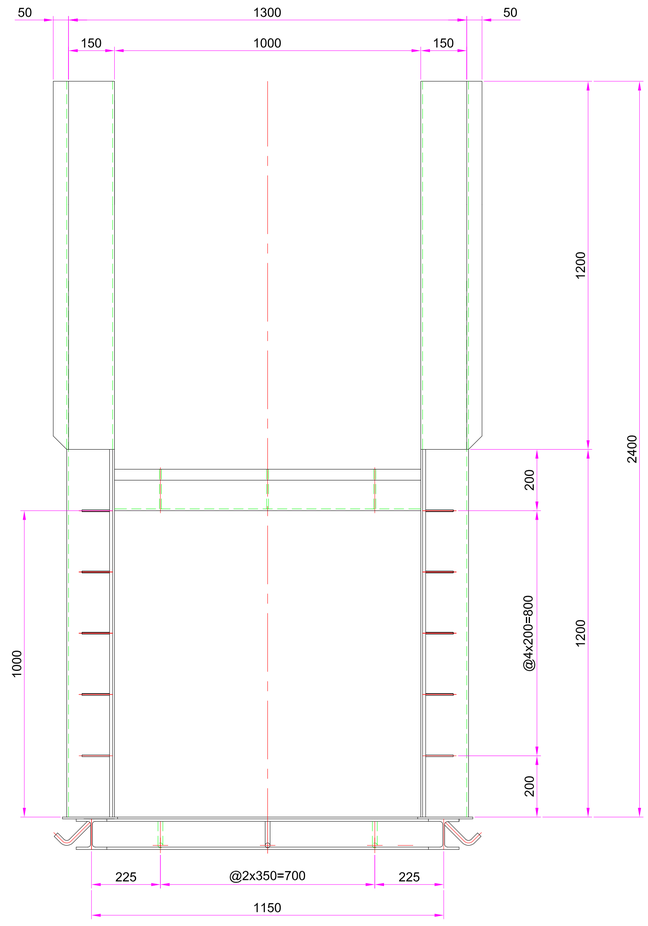
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 1.0M x 1.0M(1/3)	DATE DECEMBER 2016	DRG No C-099

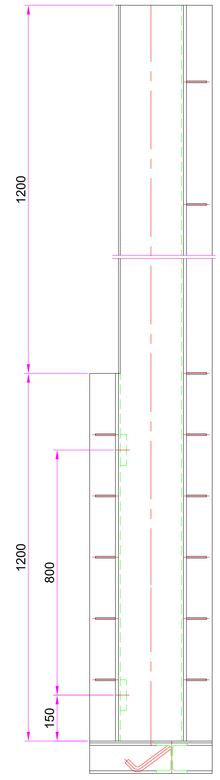
BOX 1.0M x 1.0M(2/3)

Scale = None

No.	Discription	EA	Material	Part Size	REMARKS







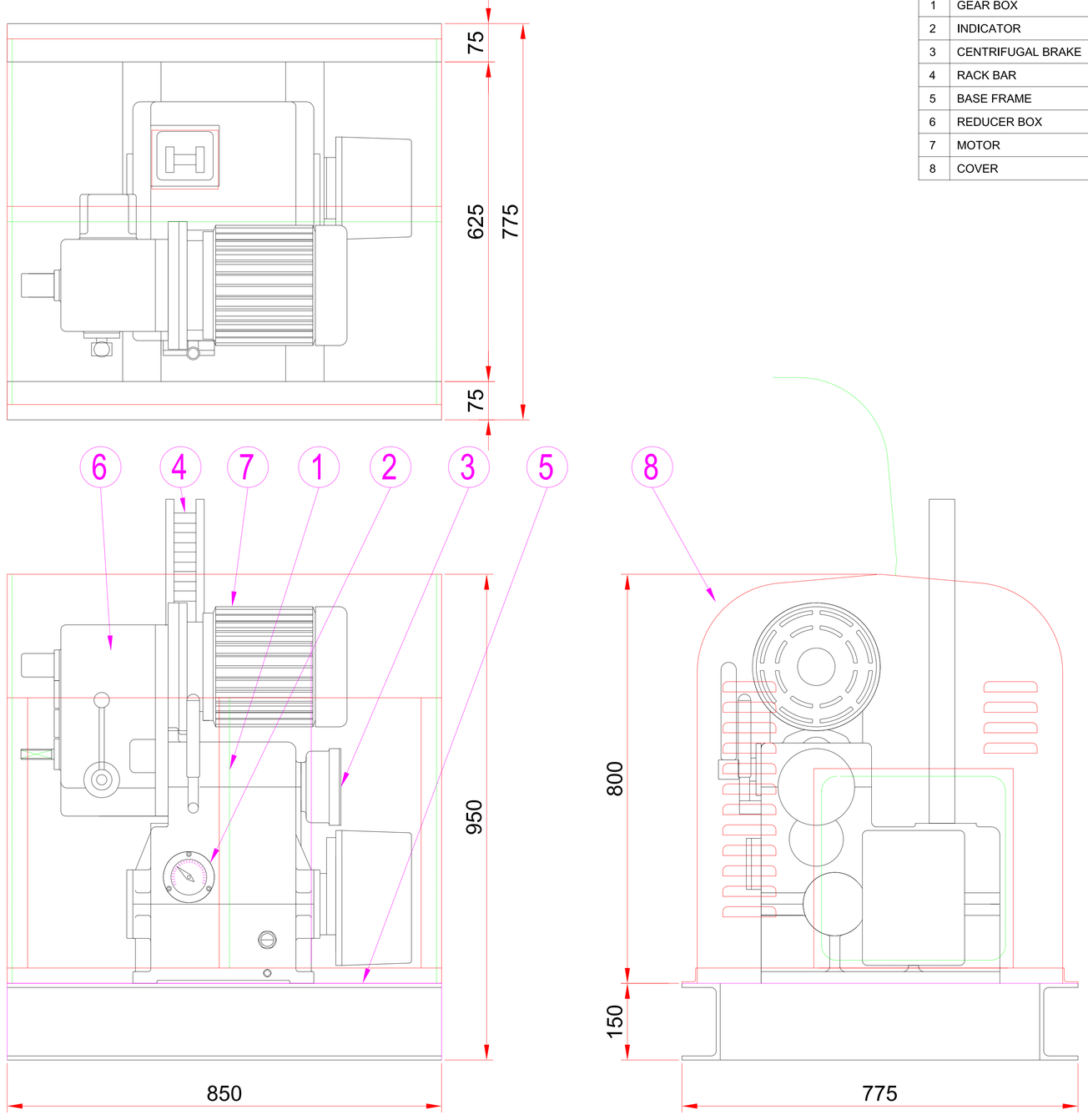
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 1.0M x 1.0M(2/3)	DATE DECEMBER 2016	DRG No C-100

BOX 1.0M x 1.0M(3/3)

Scale = None

Detail of Gate Lift(1.0TON)

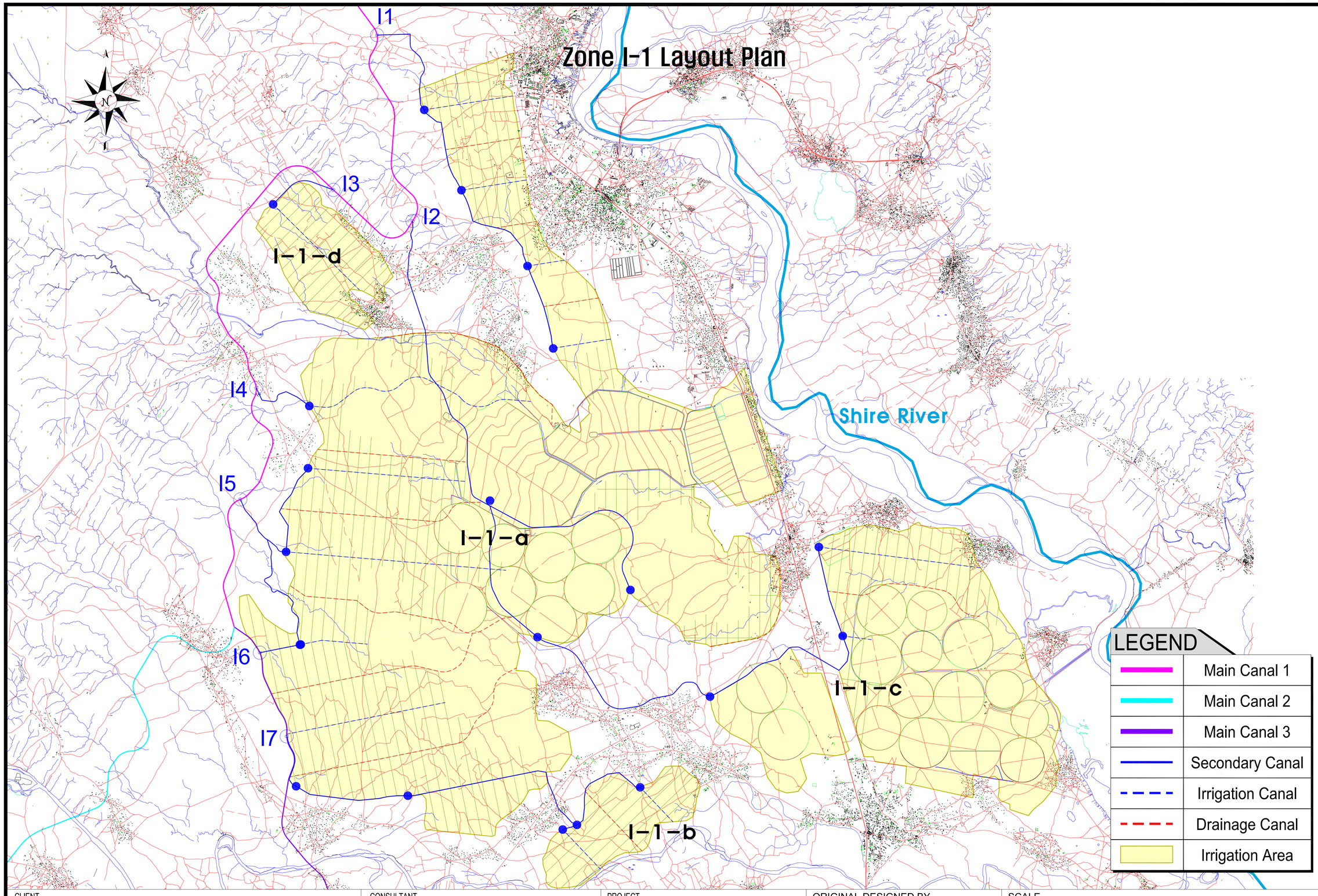
NO	DESCRIPTION	MAT'L	Q'TY	W.T	REMARKS
1	GEAR BOX	FC200	1		354x467.15x500 H
2	INDICATOR	Bc	1		∅100x29L
3	CENTRIFUGAL BRAKE	FC200	1		∅150x65L
4	RACK BAR	SS41	1		50x16T
5	BASE FRAME	SS41	1		CHANEL 150x75
6	REDUCER BOX	FC200	1		210x180x374H
7	MOTOR		1		4P 1.5Kw
8	COVER	STS304	1		1.5T



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	Scale = None
		TITLE BOX 1.0M x 1.0M(3/3)	DATE DECEMBER 2016	DRG No C-101

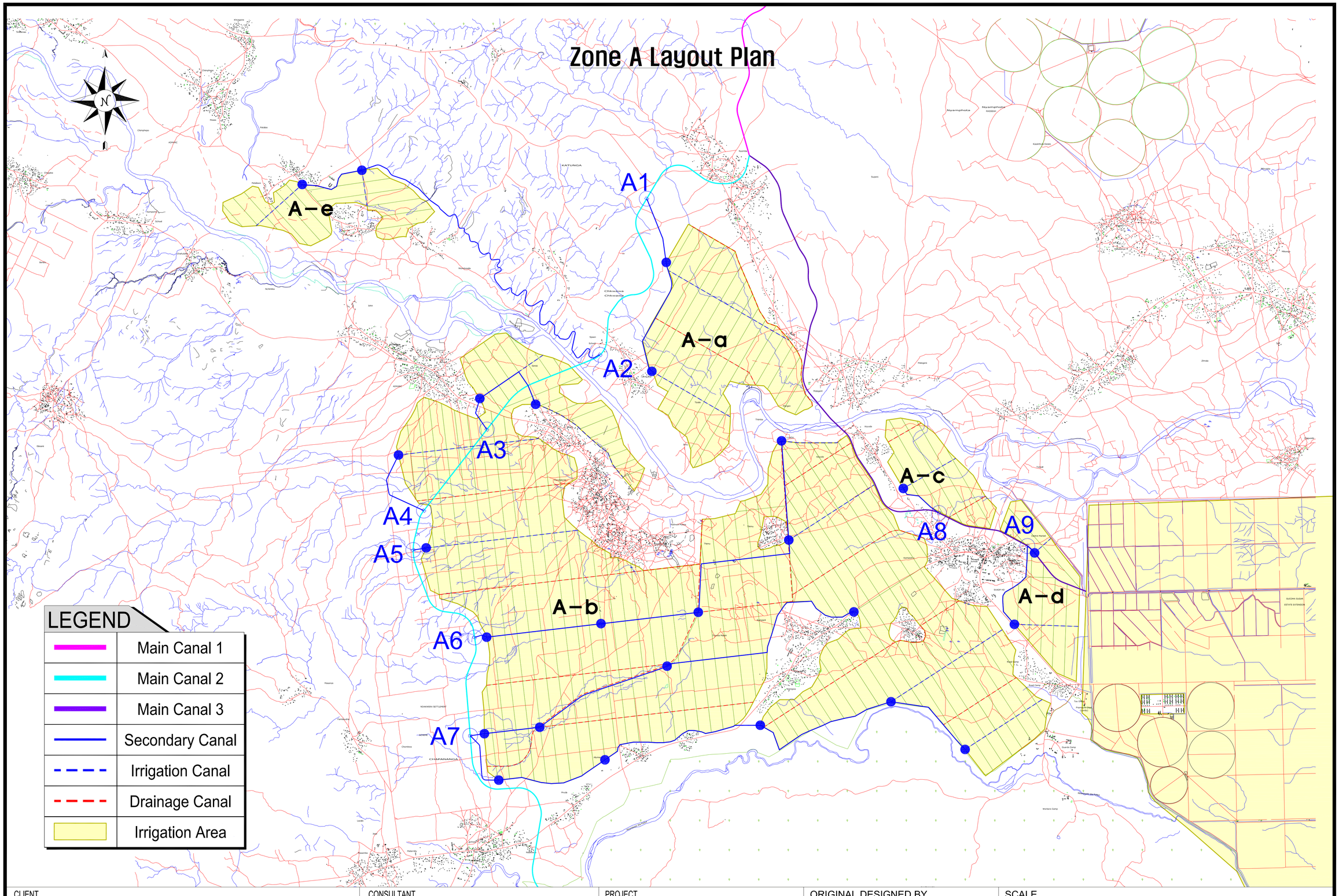
D. On Farm Works

Zone I-1 Layout Plan



CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE
		TITLE Zone I-1 Layout Plan	DATE DECEMBER 2016	DRG No D-001

Zone A Layout Plan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A1
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A3
A4
A5
A6
A7
A8
A9
A–a
A–b
A–c
A–d
A–e
KATUNGA
CHIPANANGA
Nyamphoka
Nyamphoka Addition
Chikwawa
Chikwawa
Kasinthula Estate
SUCOMA SUGAR ESTATE EXTENSION
Road Camp
Guards Camp
Workers Camp
Tax Office
Police Station
Police Road Block
Sugar Factory
Sugar Factory Workers Camp
Nchalo Sugar Mills
Nchalo Hydro
Nchalo Bridge
Nchalo Ferry
Nchalo Ferry Workers Camp
Nchalo Ferry Police
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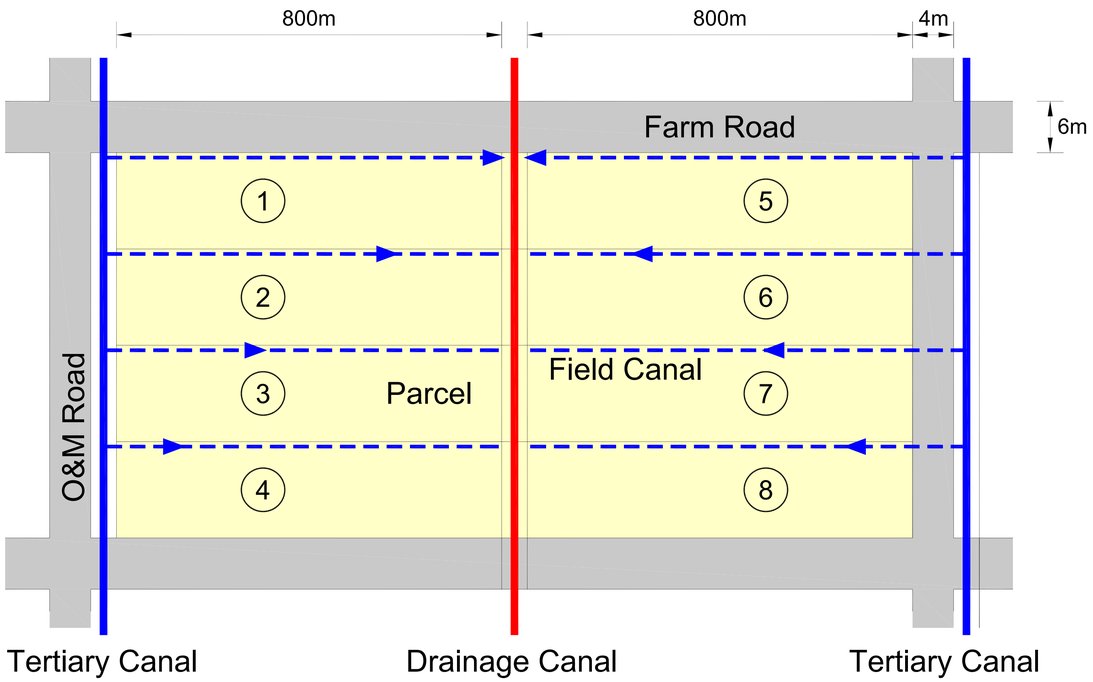
General Plan of Farm Lot

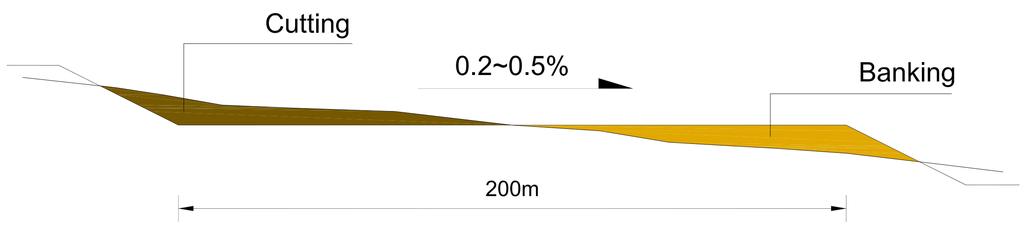
General Plan of Farm Lot



Unit Quantity Table of Farm Lot (128ha)

Item	Unit	Length	per ha
Farm Road (B=6.0m)	m	1,600.0	12.5
O&M Road (B=4.0m)	m	960.0	7.5
Tertiary Irrigation Canal	m	960.0	7.5
Field Irrigation Canal	m	6,400.0	50.0
Drainage Canal	m	960.0	7.5
Culvert (D800) (for Tertiary Canal)	no	4	-
Diversion Gate (Q=0.1m^3/s) (for Tertiary Canal)	no	8	-
Culvert (1.5 x 1.0) (for Farm Road)	no	1	-
Culvert (2.0 x 1.5) (for Farm Road)	no	1	-

Typical Section of Parcel

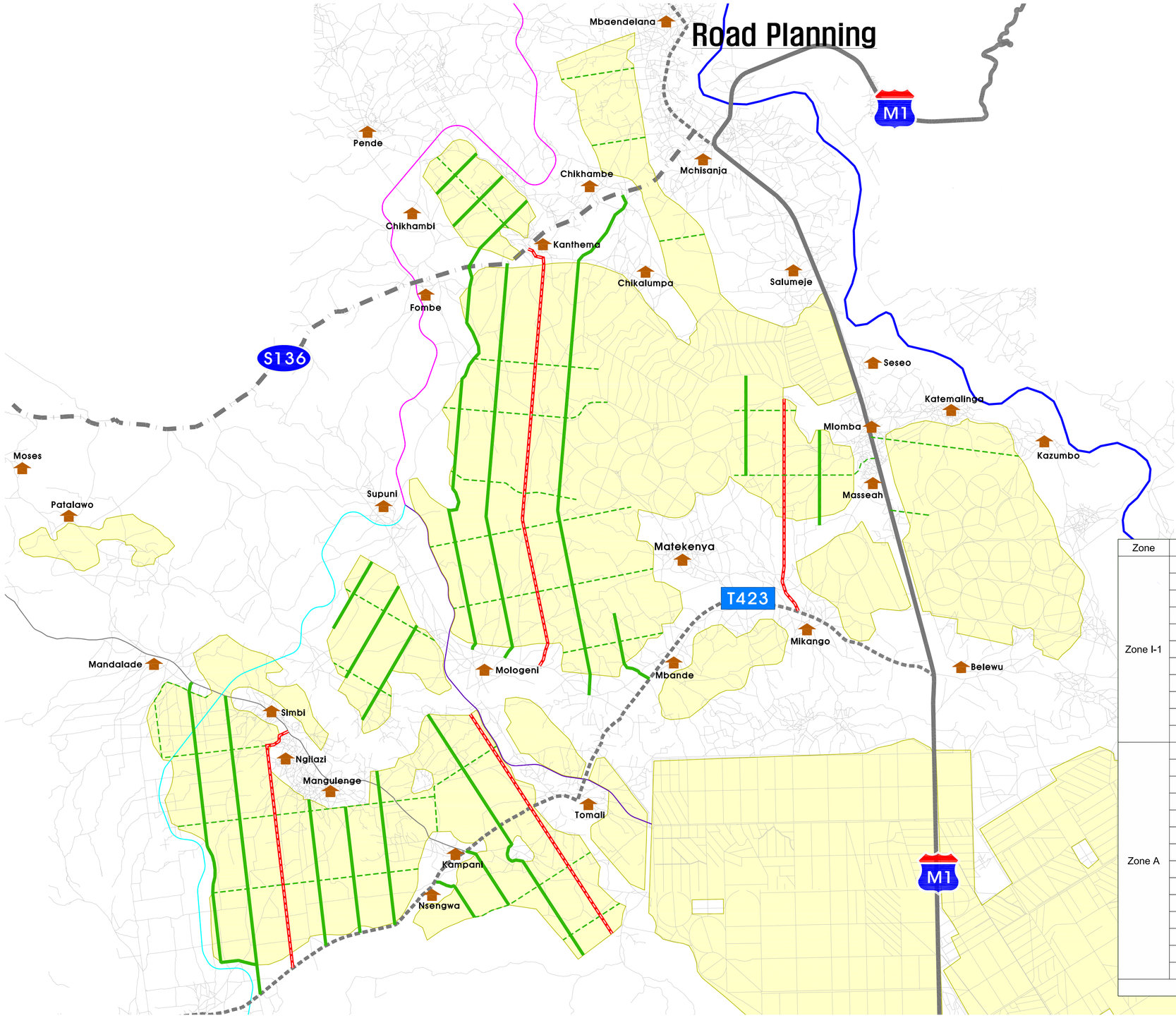


Earth Work Table of Parcel (16ha)

Item	Unit	Quantity	per ha
Fill	m3	12,928.0	808.0
Cut	m3	13,164.0	822.75

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE General Plan of Farm Lot	DATE DECEMBER 2016	DRG No D-003

Road Planning



LEGEND

	Main Canal 1
	Main Canal 2
	Main Canal 3
	Farm Road
	Farm Road (Pavement)
	O&M Road
	Village

Zone	No.	Location	Length(m)	Width(m)	Remark
Zone I-1	1	Chikhambe ~ Chikambi	1,321	6	
	2	Chikhambe ~ Chikambi	1,630	6	
	3	Chikhambe ~ S136 ~ Mologeni	11,426	6	
	4	S136 ~ Mologeni	9,270	6	
	5	S136 ~ Mologeni	9,989	6	Murram
	6	Chikhambe ~ S136 ~ Mologeni	12,117	6	
	7	Matekenya ~ T423	1,900	6	
	8	Kasinthula ~ Inside farm	2,318	6	
	9	Kasinthula ~ T423	5,014	6	Murram
	10	Inside farm ~ Mikango	2,205	6	
		Sub-Total	57,190		
Zone A	1	Mandalade ~ T234	7,400	6	
	2	Mandalade ~ T234	6,950	6	
	3	Ngilazi ~ T423	5,848	6	Murram
	4	Mangulenge ~ T423	3,046	6	
	5	Mangulenge ~ T423	2,937	6	
	6	Mangulenge ~ T423	3,585	6	
	7	T423 ~ Nsengwa	1,299	6	
	8	T423 ~ Kampani	1,647	6	
	9	Mologeni ~ T423	6,887	6	
	10	Mologeni ~ Tomali	6,042	6	Murram
	11	Supuni ~ Simbi	1,783	6	
	12	Supuni ~ Ngilazi	2,541	6	
	13	Supuni ~ Mangulenge	2,528	6	
		Sub-Total	52,493		
TOTAL			109,683		

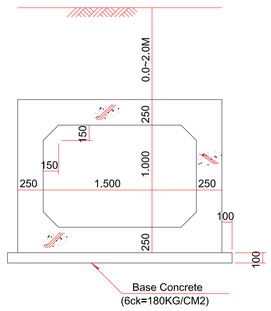
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Road Planning	DATE DECEMBER 2016	DRG No D-004

Box Culvert (1.5 x 1.0) (1)

[Box Culvert]

General View

S=1:30



Standard Section

S=1:30

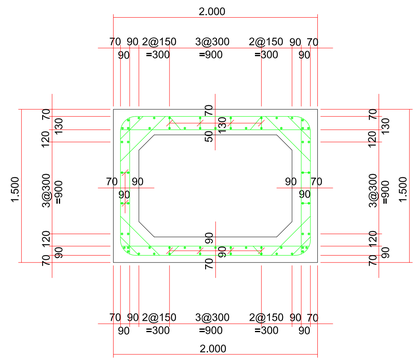


Table of Material (Box Culvert)

(1.0M)

Items	Spec.	Unit	Quanty	Remark
Concrete	6ck=240KG/CM2	M3	1.55	
Lean Concrete	6ck=180KG/CM2	M3	0.22	
Form	Plate 3 times	M2	6.45	
Reinforcing	SD30	TON	0.163	

Table of Material (Back Wall)

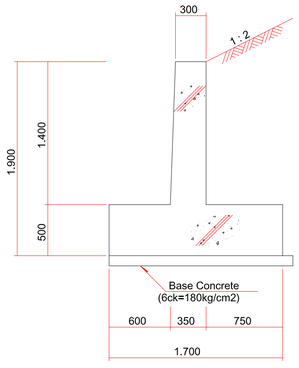
(Total)

Items	Spec.	Unit	Quanty	Remark
Concrete	6ck=240KG/CM2	M3	2.610	
Lean Concrete	6ck=180KG/CM2	M3	0.396	
Form	Plate 3 times	M2	10.210	
Reinforcing	SD30	TON	0.318	

[Back Wall of Outflow]

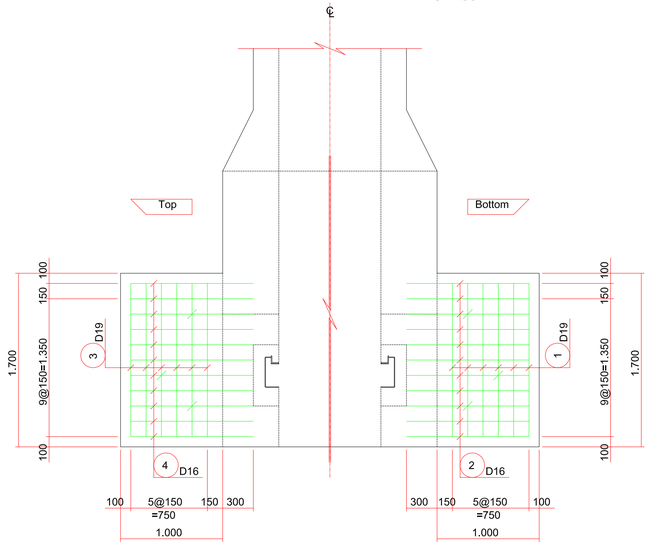
General view

S=1:30



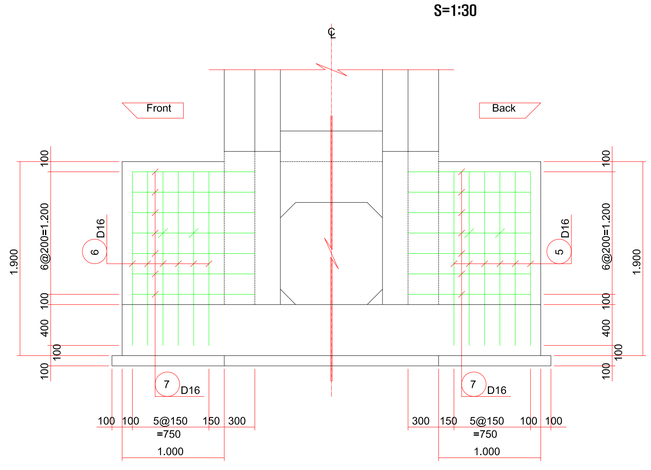
Plan View

S=1:30



Front View

S=1:30



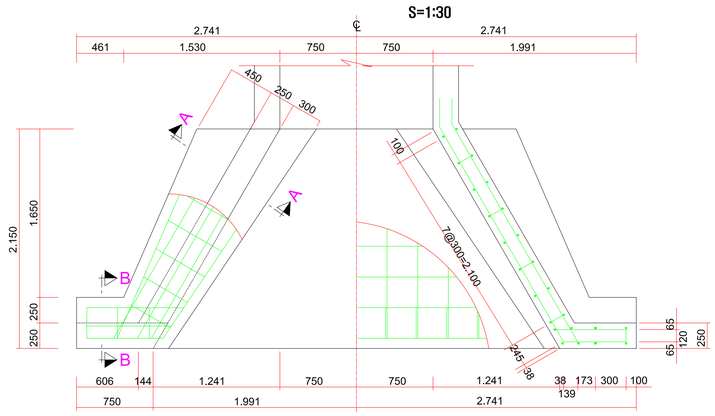
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Box Culvert (1.5x1.0) (1)	DATE DECEMBER 2016	DRG No D-005

Box Culvert ((1.5 x 1.0) (2)

[Inflow Wing Wall]

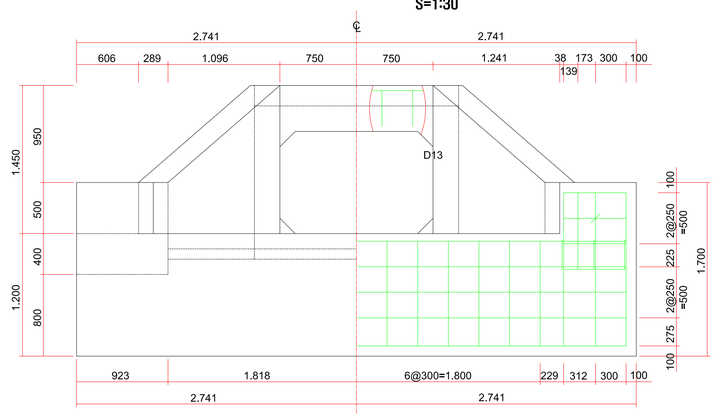
Plan View

S=1:30



Front View

S=1:30



Section A-A

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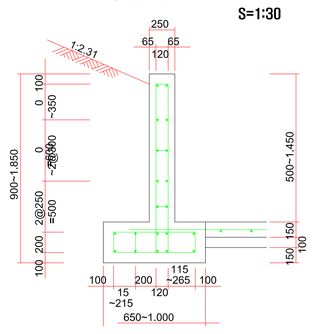

Section B-B

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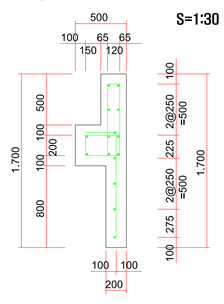
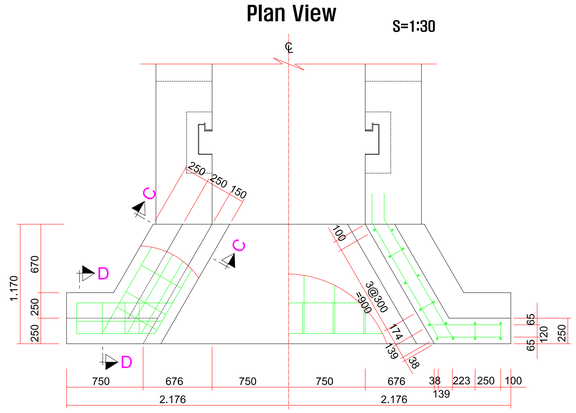


[Outflow Wing Wall]

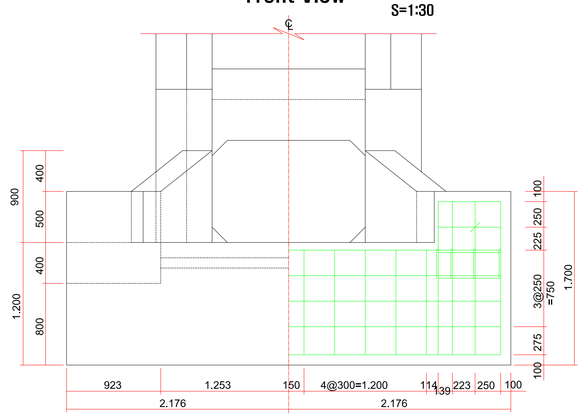
Plan View

S=1:30



Front View

S=1:30



Section C-C

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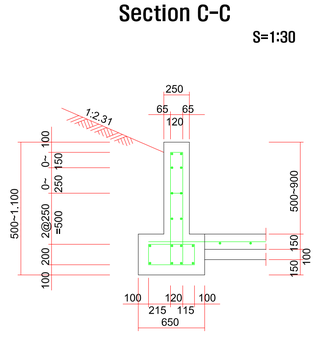

Section D-D

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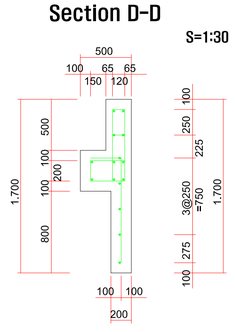

Table of Material (Inflow Wing Wall)

(Total)

Items	Spec.	Unit	Quanty	Remark
Concrete	6ck=240KG/CM2	M3	5.217	
Lean Concrete	6ck=180KG/CM2	M3	0.488	
Form	Plate 3 times	M2	31.712	
Reinforcing	SD30	TON	0.312	

Table of Material (Outflow Wing Wall)

(Total)

Items	Spec.	Unit	Quanty	Remark
Concrete	6ck=240KG/CM2	M3	2.810	
Lean Concrete	6ck=180KG/CM2	M3	0.217	
Form	Plate 3 times	M2	20.408	
Reinforcing	SD30	TON	0.163	

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT TITLE Box Culvert (1.5x1.0) (2)	Technical Feasibility Study DATE DECEMBER 2016	DRG No D-006

Box Culvert (2.0 x 1.5) (1)

[Box Culvert]

General

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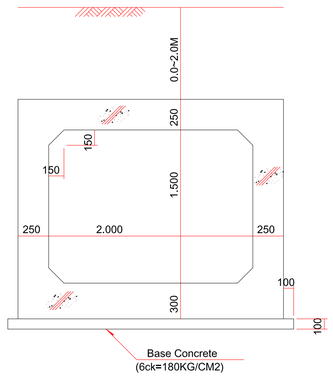

Standard Section

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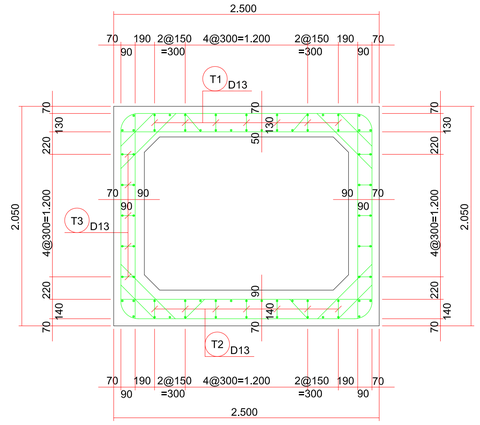

Table of Material (Box Culvert)

(1.0M)

Items	Spec.	Unit	Quanty	Remark
Concrete	6ck=240KG/CM2	M3	2.17	
Lean Concrete	6ck=180KG/CM2	M3	0.27	
Form	Plate 3 times	M2	9.05	
Reinforce Bar	SD30	TON	0.220	

Table of Material (Back Wall)

(Total)

Items	Spec.	Unit	Quantity	Remark
Concrete	6ck=240KG/CM2	M3	4.122	
Lean Concrete	6ck=180KG/CM2	M3	0.598	
Form	Plate 3 times	M2	14.955	
Reinforce Bar	SD30	TON	0.530	

[Back Wall of Outflow]

General View

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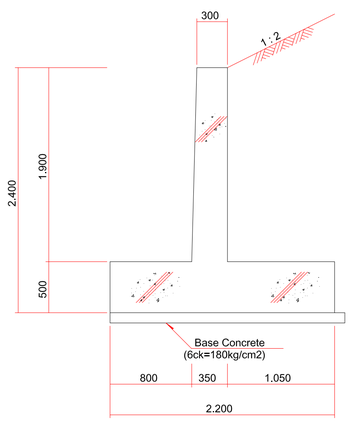
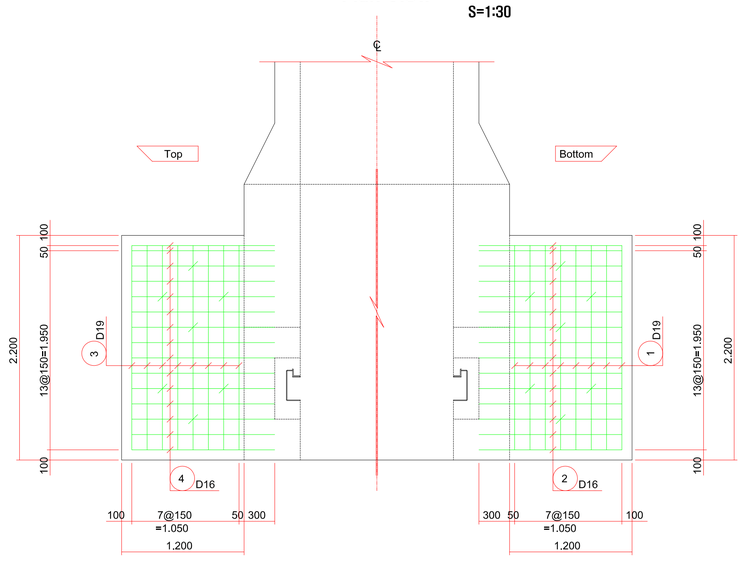


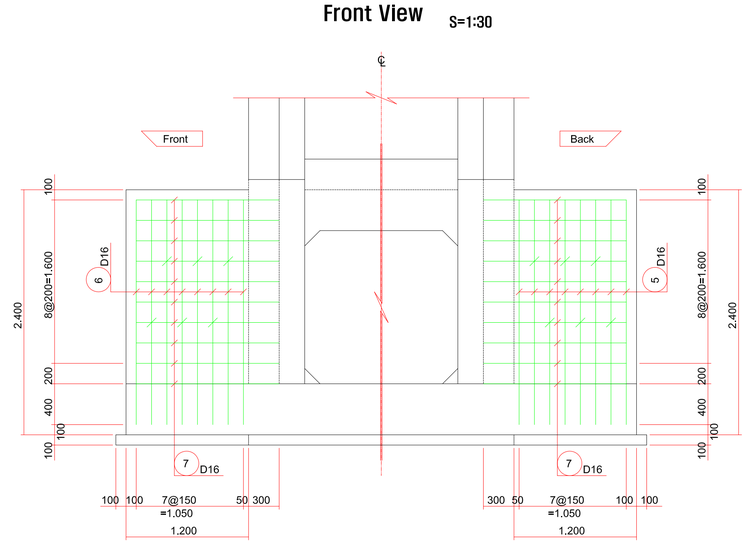
Plan View

S=1:30



Front View

S=1:30



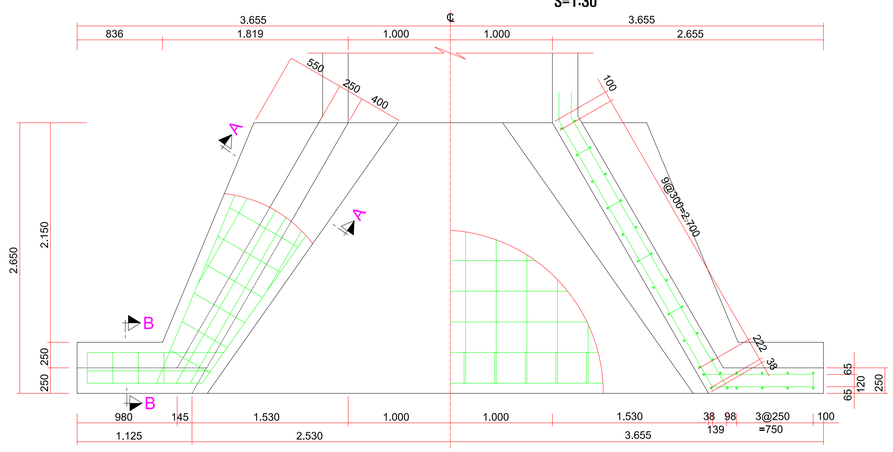
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Box Culvert (2.0x1.5) (1)	DATE DECEMBER 2016	DRG No D-007

Box Culvert (2.0 x 1.5) (2)

[Inflow Wing Wall]

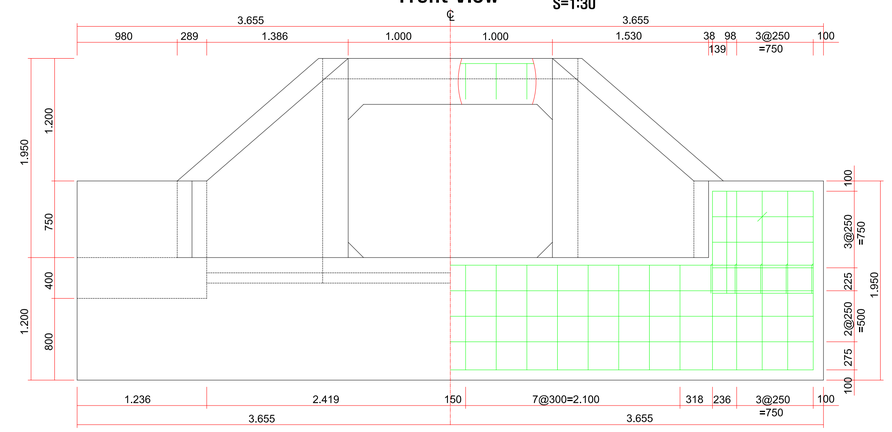
Plan View

S=1:30



Front View

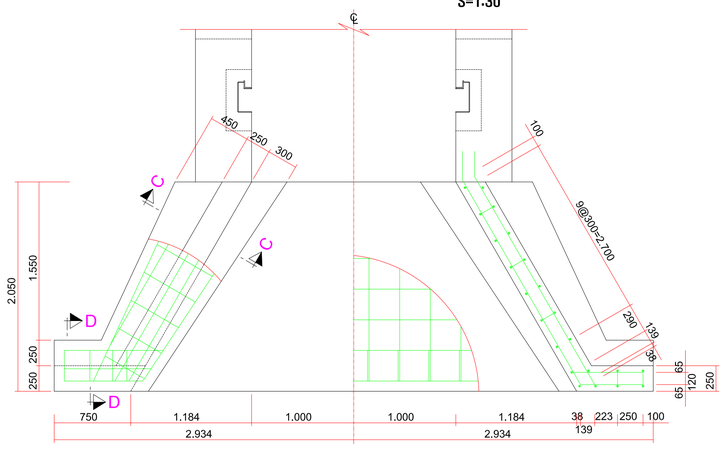
S=1:30



[Outflow Wing Wall]

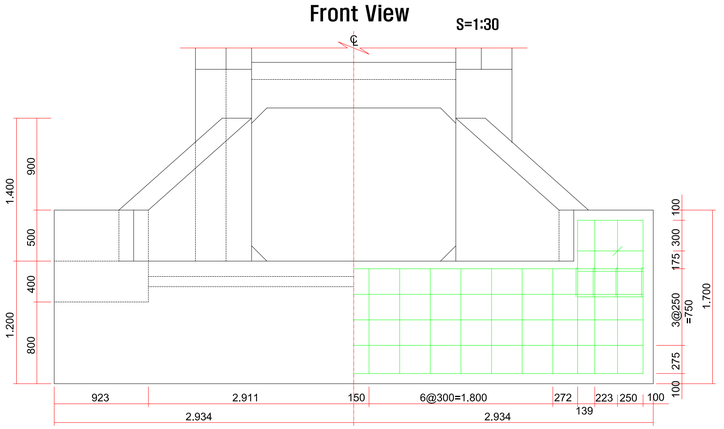
Plan View

S=1:30



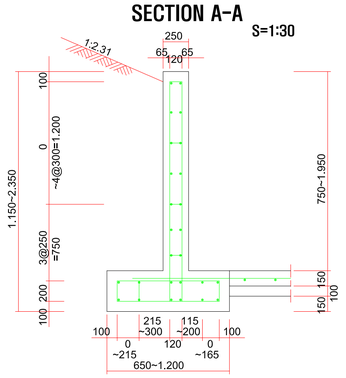
Front View

S=1:30



SECTION A-A

S=1:30



SECTION B-B

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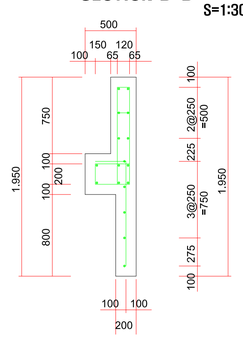
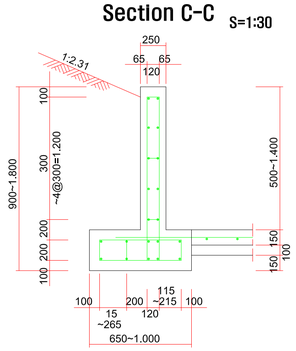


Section C-C

S=1:30



Section D-D

S=1:30

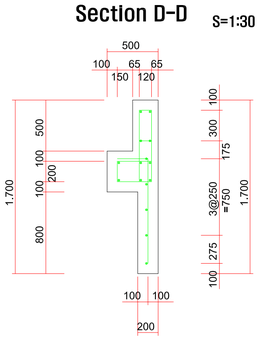


Table of Material (Inflow Wing Wall)

(Total)

Items	Spec.	Unit	Quantity	Remark
Concrete	6ck=240KG/CM2	M3	7.931	
Lean Concrete	6ck=180KG/CM2	M3	0.800	
Form	Plate 3 times	M2	46.101	
Reinforce Bar	SD30	TON	0.492	

Table of Material (Outflow Wing Wall)

(Total)

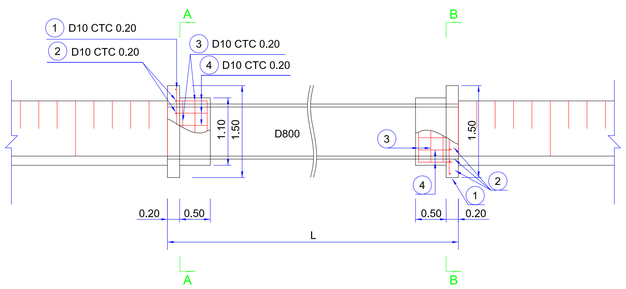
Items	Spec.	Unit	Quantity	Remark
Concrete	6ck=240KG/CM2	M3	5.148	
Lean Concrete	6ck=180KG/CM2	M3	0.556	
Form	Plate 3 times	M2	30.815	
Reinforce Bar	SD30	TON	0.300	

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT TITLE Box Culvert (2.0x1.5) (2)	Technical Feasibility Study DATE DECEMBER 2016	DRG No D-008

Culvert (D800)

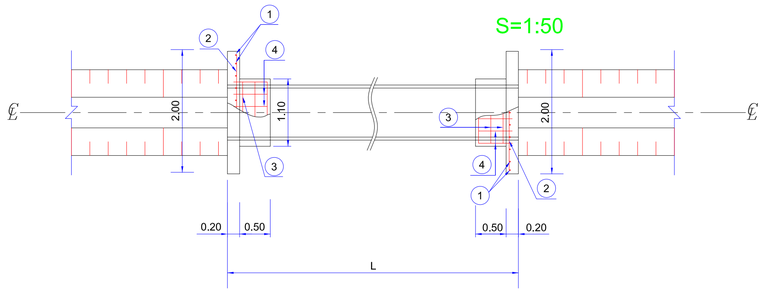
Longitudinal Section

S=1:50



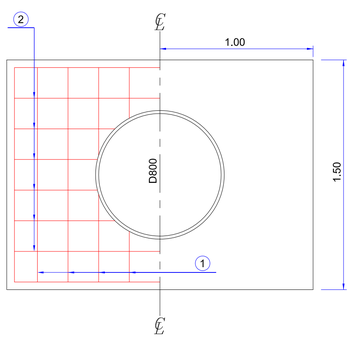
Plan View

S=1:50



Section A-A

S=1:20



Section B-B

S=1:20

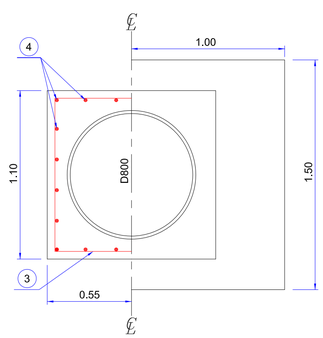


Table of Material

BREADTH (m)	HEIGHT (m)	C O N C R E T E 25-21-8(㎥)	FORM(㎡) FINE/ROUGH	REMARKS
0.40~0.60	0.60~0.70	1.52	12.86	

Table of Reinforcing

(SD30)

MARK	SIZE (mm)	CTC	LENGTH (m)	QTY.	TOTAL LENGTH (m)	REMARKS
1	13	0.20	1.15	22	25.30	
SUBTOTAL					25.30	
2	10	0.20	1.55	16	24.80	
3	10	0.20	2.30	12	27.60	
4	10	0.20	0.55	40	22.00	
SUBTOTAL					74.40	

D10 : 74.40 X 0.560 = 42kg

D13 : 25.30 X 0.995 = 25kg

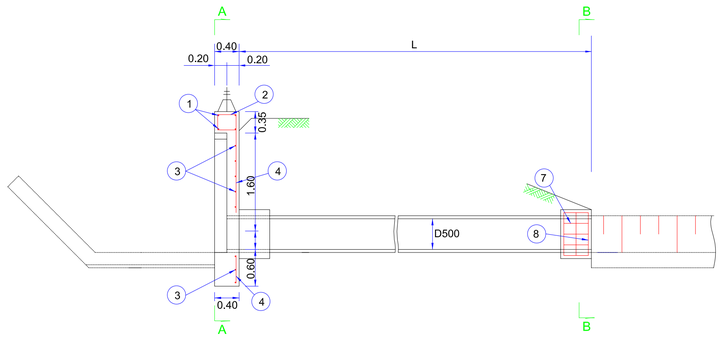
TOTAL = 67 kg

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Culvert (D800)	DATE DECEMBER 2016	DRG No D-009

Diversion Structure

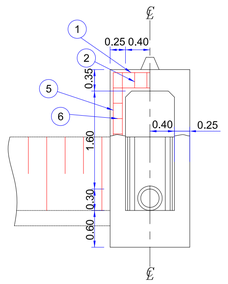
Longitudinal Section

S=1:50



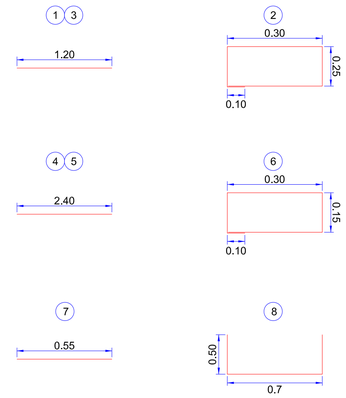
Section A–A

S=1:50



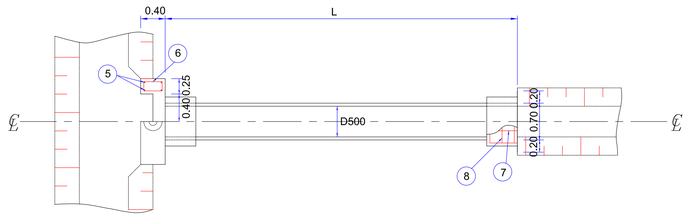
Reinforcing Bar

S=1:1



Plan View

S=1:50



Section B–B

S=1:20

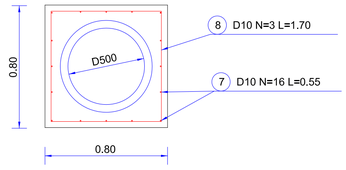


Table of Reinforcing

(None Outlet Type)

NO	D	CTC	R . L	N	T . L	REMARKS
1	13		1.20	4	4.80	
2	10	0.25	1.20	6	7.20	
3	10	0.25	1.20	9	10.80	
4	13	0.20	2.40	4	9.60	
5	16		2.40	8	19.20	
6	10	0.25	1.00	22	22.00	
7	10	0.20	0.55	16	8.80	
8	10	0.20	1.70	6	10.20	

D10 : 59.00 X 0.560 = 33 kg

D13 : 14.40 X 0.995 = 14kg

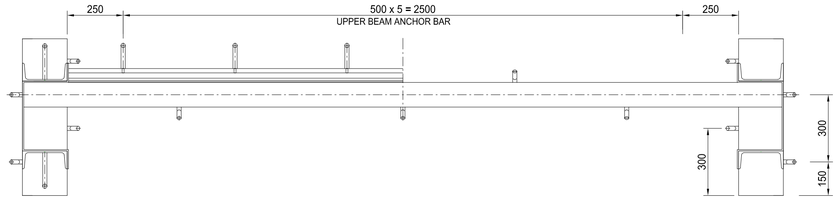
D16 : 19.20 X 1.560 = 30kg

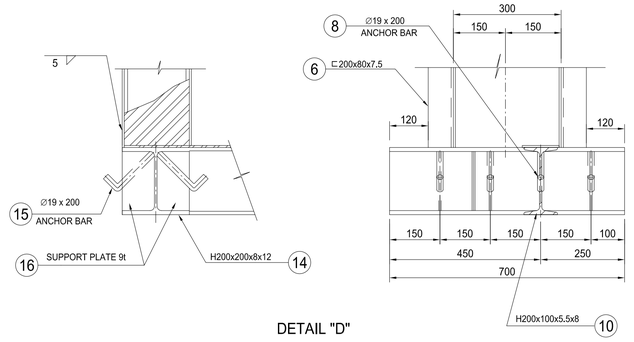
TOTAL = 77kg

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Diversion Structure	DATE DECEMBER 2016	DRG No D-010

E. Machinery and Electricity

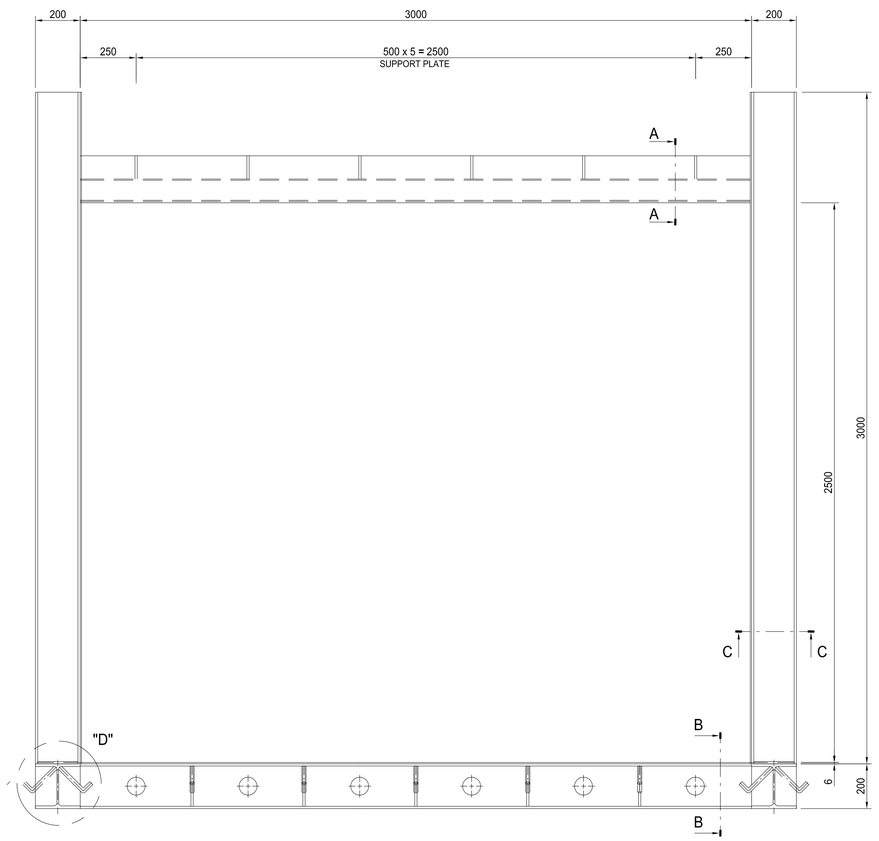
Roller Gate Frame (Box Size 3.0B x 2.5H)

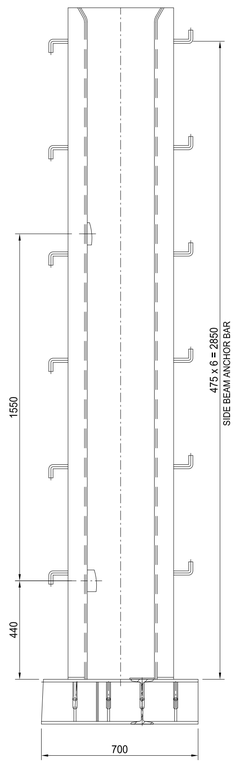


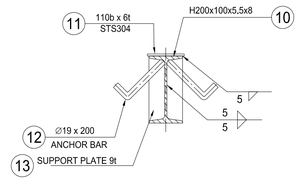


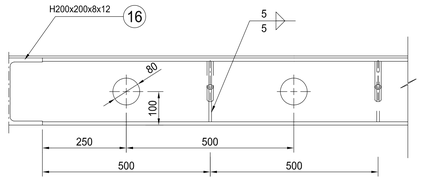
DETAIL "D"

NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	UPPER PLATE	⊏100x50x5	SS400			
2	SEAL PLATE	6t	STS304			
3	ANCHOR BAR	Ø19 x 200	SS400			
4	SUPPORT PLATE	9t	SS400			
5	BOLT.NUT	M16 x 50	SM20C			
6	SIDE BEAM	⊏200x80x7.5	SS400			
7	WEDGE		STS304			
8	ANCHOR BAR	Ø19 x 200	SS400			
9	STS PLATE	877Bx3000Hx6t	STS304			
10	BOTTOM BEAM	H200x100x5.5x8	SS400			
11	SEAL PLATE	110b x 6t	STS304			
12	ANCHOR BAR	Ø19 x 200	SS400			
13	SUPPORT PLATE	9t	SS400			
14	SUPPORT BEAM	H200x200x8x12	SS400			
15	ANCHOR BAR	Ø19 x 200	SS400			
16	SUPPORT PLATE	9t	SS400			
17	BOLT.NUT	M16 x 50	SM20C			

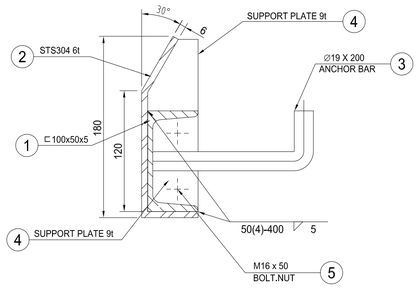




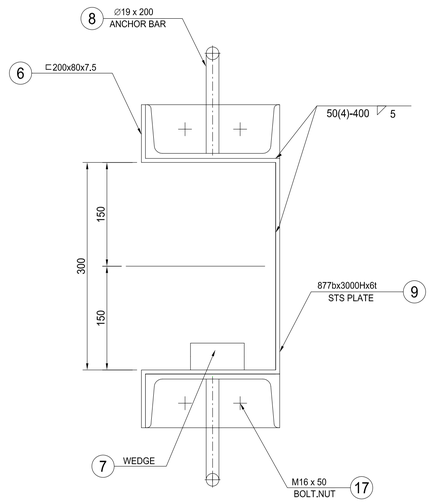




SECTION B-B'



SECTION A-A'

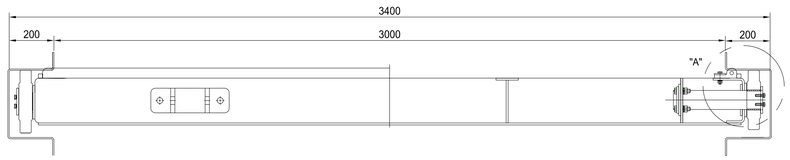


SECTION C-C'

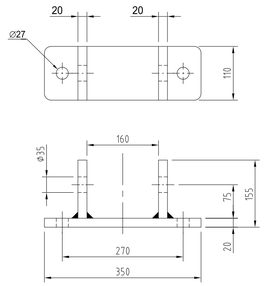
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Roller Gate Frame (Box Size 3.0B x 2.5H)	DATE DECEMBER 2016	DRG No E-001

Stainless Roller Gate (Box Size W3.0 x H2.5)

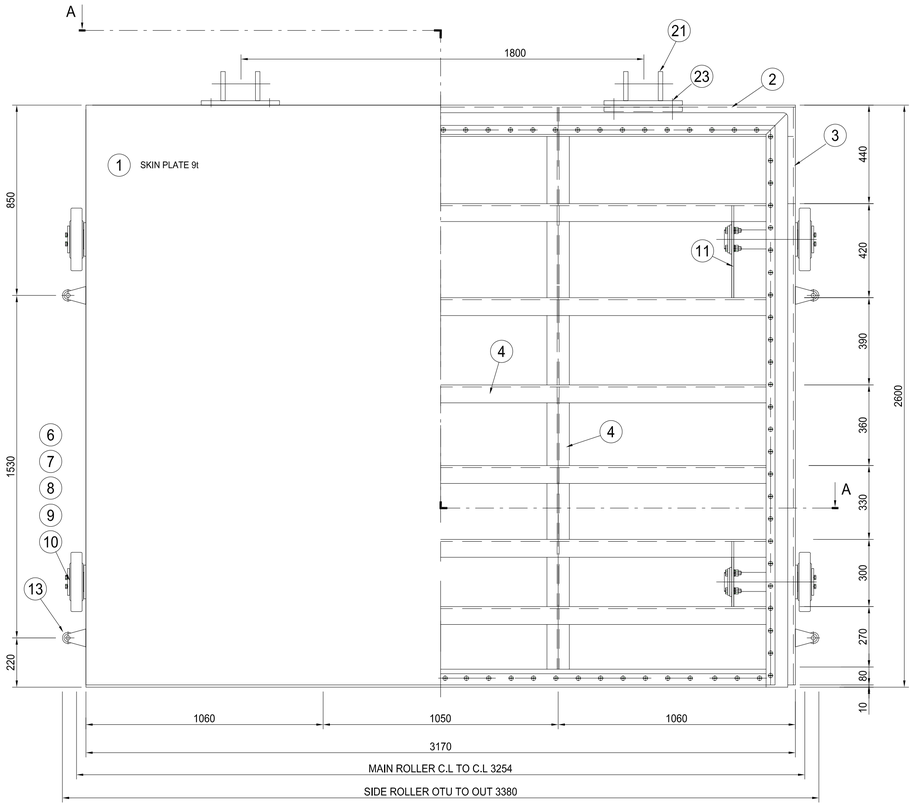
NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	SKIN PLATE	9t	STS304			
2	UPPER BEAM	9t	STS304			
3	SIDE BEAM	9t	STS304			
4	HORIZONTAL BEAM	9t	STS304			
5	VERTICAL BEAM	9t	STS304			
6	MAIN ROLLER	UPPER□280, DOWN□265	STS304			
7	SHAFT	∅85	STS304			
8	BUSH		YBSC3			
9	MAIN ROLLER COVER	9t	STS304			
10	KEY PLATE	9t	STS304			
11	MAIN ROLLER BRACKET	9t	STS304			
12	SUPPORT PLATE	9t	STS304			
13	SIDE ROLLER		STS304			
14	STOP BAR	□20	STS304			
15	SEAL RUBBER	I-TYPE	NEOPRENE			
16	CLAMP PLATE	40b x 4t	STS304			
17	BOLT NUT	M10 x 50	STS304			
18	SEAL RUBBER	"P"-TYPE	NEOPRENE			
19	CLAMP PLATE	50b x 6t	STS304			
20	BOLT NUT	M10 x 40	STS304			
21	BRACKET	20t	STS304			
22	BRACKET PLATE	20t	STS304			
23	BOLT NUT	1"∅ x 7"	STS304			

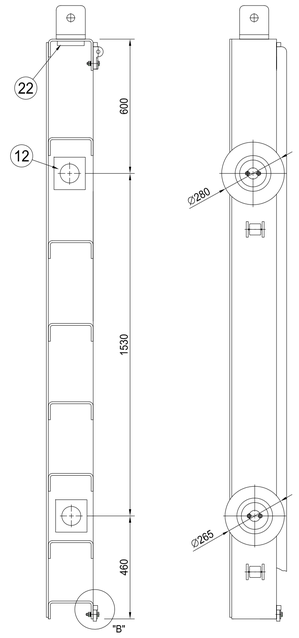


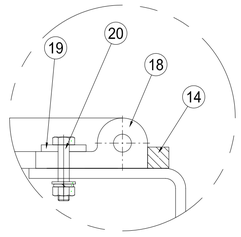
SECTION A-A



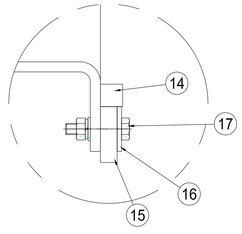
DETAIL "BRACKET"







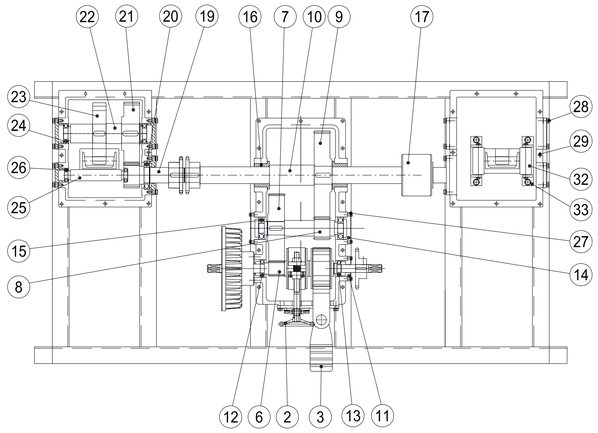
DETAIL "A"



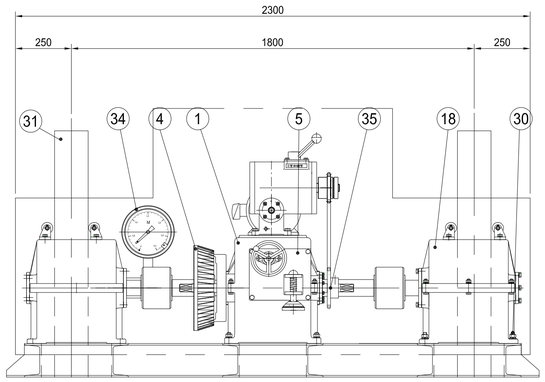
DETAIL "B"

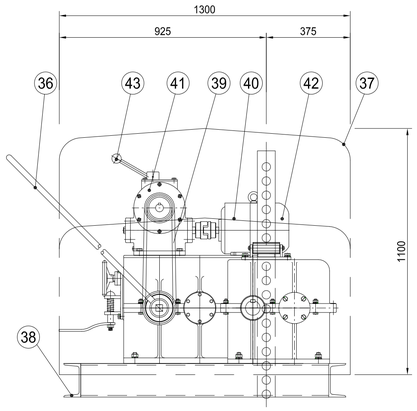
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Stainless Roller Gate (Box Size W3.0 x H2.5)	DATE DECEMBER 2016	DRG No E-002

Pin Jack Hoist (7.5ton Motor)



NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	GEAR CASE		GC200	1		
2	BAND BRAKE	Reverse prevention device		1		
3	FOOT BRAKE			1		
4	CENTRIFUGAL BRAKE	Speed Control		1		
5	COVER	t9 x 275 x 230	SS400	1		
6	1st PINION GEAR	∅68 x 779	SM45C	1		
7	1st GEAR	∅308x 75	SM45C	1		
8	2nd PINION GEAR	∅102 x 467	SM45C	1		
9	2nd GEAR	∅400 x 80	SM45C	1		
10	COUNTER SHAFT	∅88 x 1041	SM45C	1		
11	1st B.COVER		GC200	2		
12	BALL BEARING	#6207zz		1		
13	BALL BEARING	#6208zz		1		
14	2nd B.COVER		GC200	2		
15	BALL BEARING	#6309ZZ		2		
16	BUSH	∅75x∅105x68	YBsC 3	2		
17	CHAIN COUPLING	8018		2		
18	SPROCKET BOX		GC200	2		
19	3rd PINION SHAFT	∅114 x 270	SM45C	2		
20	BALL BEARING	#6214ZZ		2		
21	3rd GEAR	∅360 x 85	SM45C	2		
22	SPROCKET SHAFT	∅90 x 371	S45C	2		
23	SPROCKET GEAR	RS200-12x60b	SM45C	2		TYPE"U"
24	BALL BEARING	#6210ZZ		4		
25	SUB SHAFT	∅47 x 280	S45C	2		
26	BALL BEARING	#6206ZZ		4		
27	HEXA BOLT,SW	M8 x 30	SS400	24		
28	HEXA BOLT,SW	M12 x 30	SS400	48		
29	HEXA BOLT,SW	M12 x 60	SS400	29		
30	HEXA BOLT,N.SW	M16 x 60	SS400	12		
31	RACK BAR	65bx20t, ∅35	STS304	2		
32	GUIDE ROLLER			4		
33	GUIDE FRAME		SS400	4		
34	INDICATOR			1		
35	CHAIN SPROCKET	RS80x15/21		1/1		
36	HAND LEVER			1		
37	COVER	1.5t	STS304	1		
38	BED	⊏150x75x6,5	SS400	1		
39	CHAIN			1		
40	MOTOR	3HPx6Px380V		1		
41	WORM REDUCER		Overload limiter	1		
42	DISC BRAKE			1		
43	CLUTCH LEVER			1		

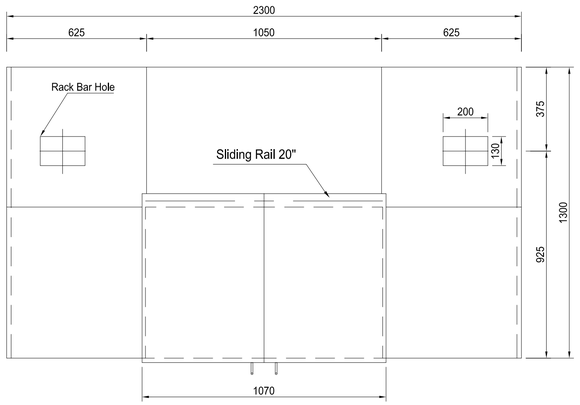


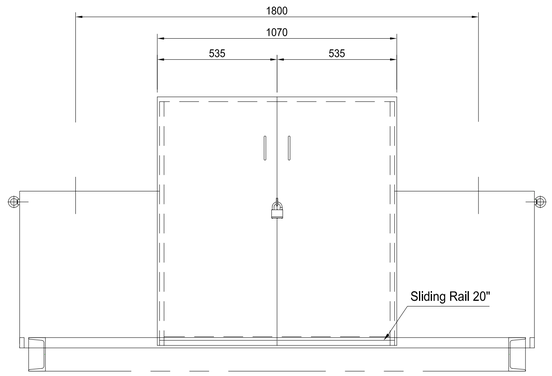


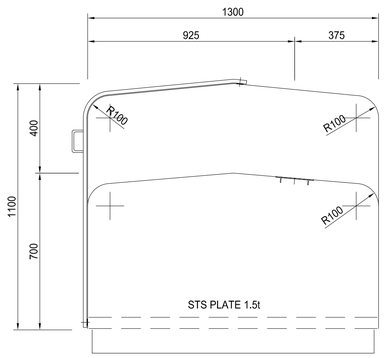
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Pin Jack Hoist (7.5ton Motor)	DATE DECEMBER 2016	DRG No E-003

Hoist Stainless Cover (7.5ton Rail Type)

NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	COVER	1.5t	STS304	1		



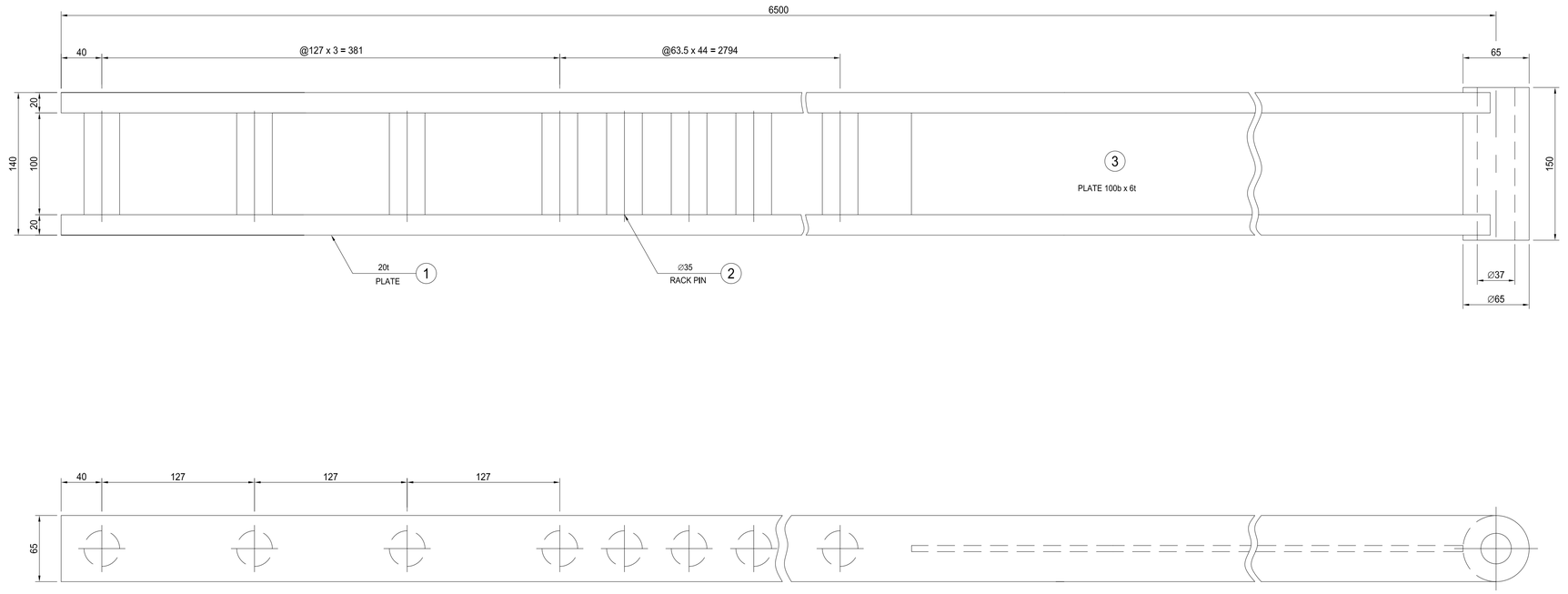




CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Hoist Stainless Cover (7.5ton Rail Type)	DATE DECEMBER 2016	DRG No E-004

Rack Bar 7.5ton (Stainless)

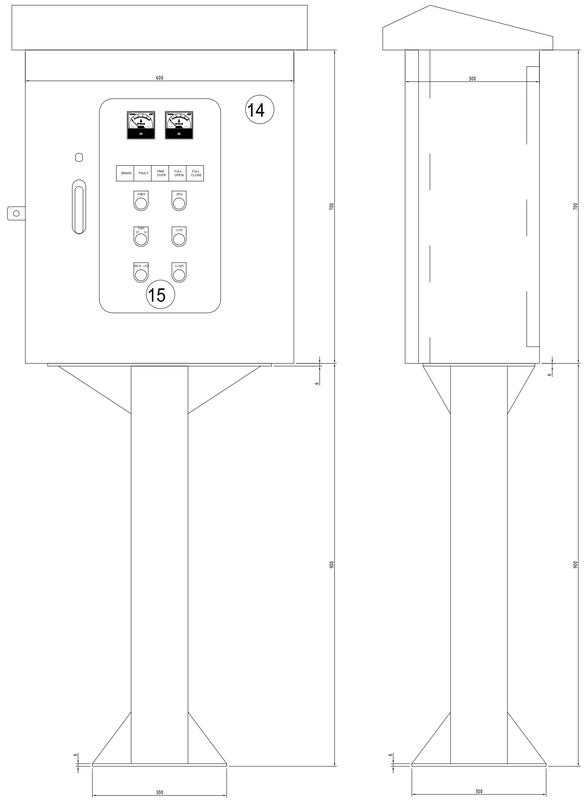
NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	PLATE	20t	STS304	4		
2	RACK PIN	∅35	STS304	96		
3	PLATE	100b x 6t	STS304	2		

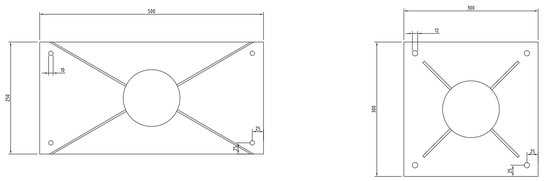


CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Rack Bar 7.5ton (Stainless)	DATE DECEMBER 2016	DRG No E-005

Control Panel (Outside View) Field One Circuit

NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	MAIN CIRCUIT BREAKER	EBS34c/15A		1		
2	WIRING CIRCUIT BREAKER	BKM-b 6A		1		
3	RELAY	HR705-4PL		9		
4	POWER SUPPLY	FLS15-24		1		
5	CT	SY-TA		1		
6	ELECTROMAGNETIC CONTACTOR	MC-18b		3		
7	EOCR	EOCR SS30		1		
8	COUNTER	FS4E		1		
9	TIMER	KTM-3M		5		
10	CONDENSER	380V 15 uF		1		
11	TERMINAL BLOCK	25A / 15A		1		
12	EARTHING TERMINAL BLOCK	A		1		
13	NEGATIVE PHASE DETECTOR	PMR-44		1		
14	ELECTRICAL BOX	1.5t	STS304	1		
15	DOUBLE DOOR	POLY GLASS 3t	LIGHT GREEN	1		
16	LAMP	KH-5002-1		5		
17	HUSE			1		
18	PANEL BASE	4.5t / 6t	SS400	1		





BASE UPPER

BASE LOWER

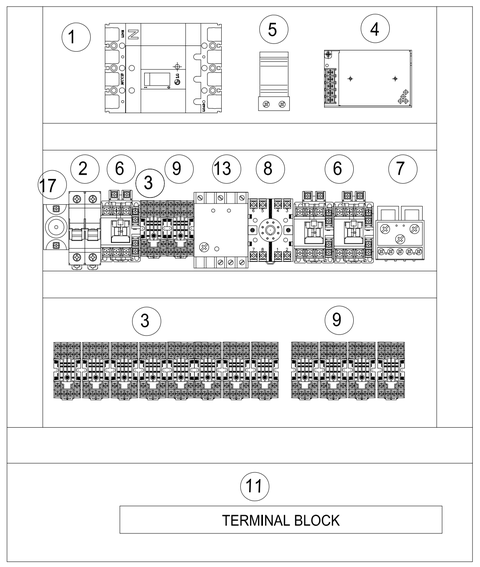
#1

BRAKE				

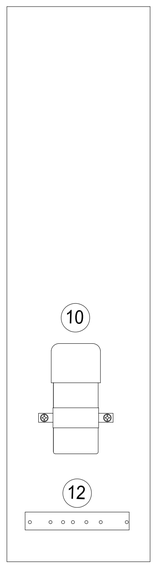
16 LAMP DETAIL

SIDE PLATE

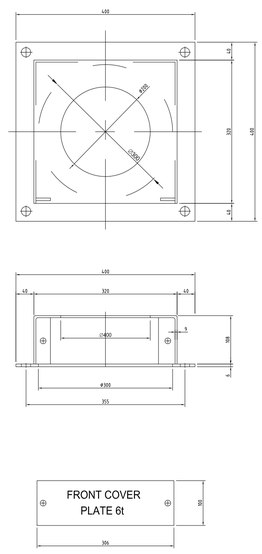
INSIDE PLATE



SIDE PLATE

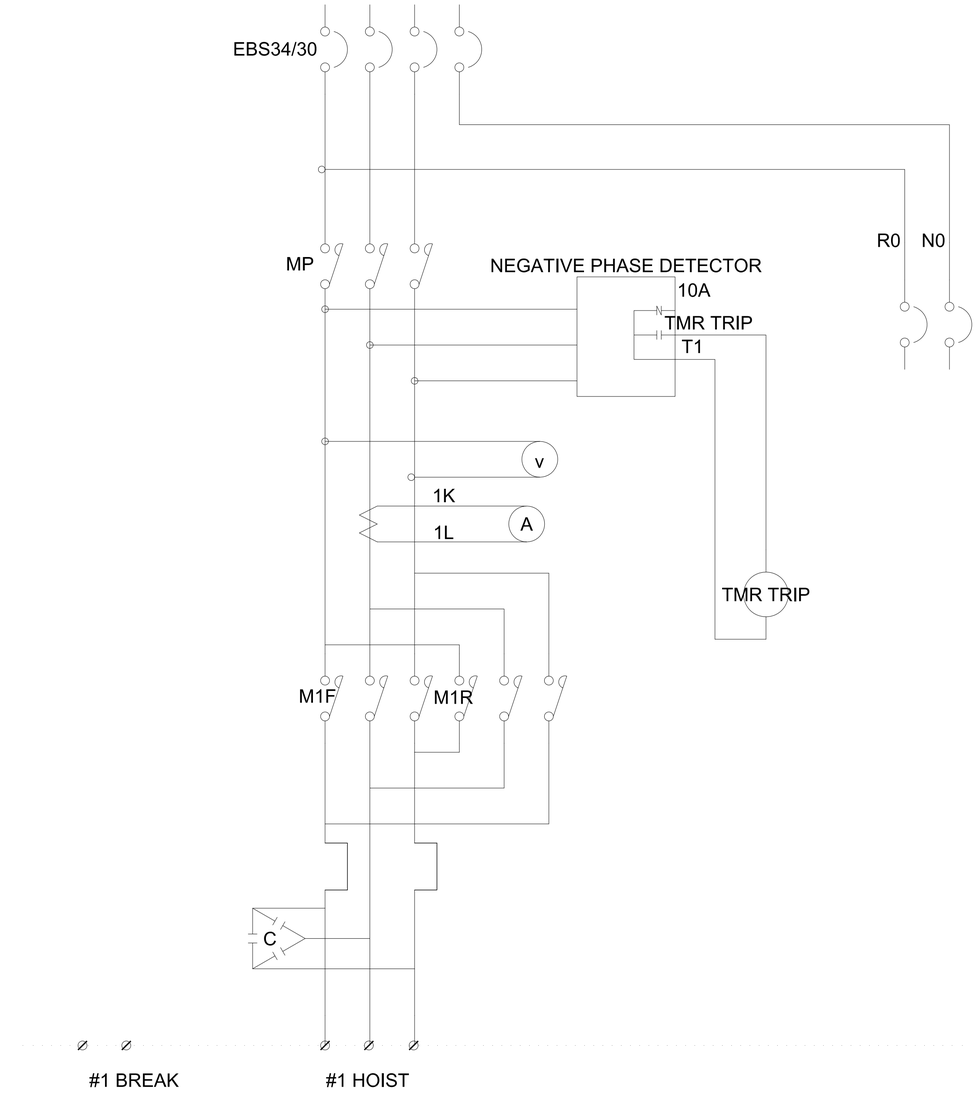


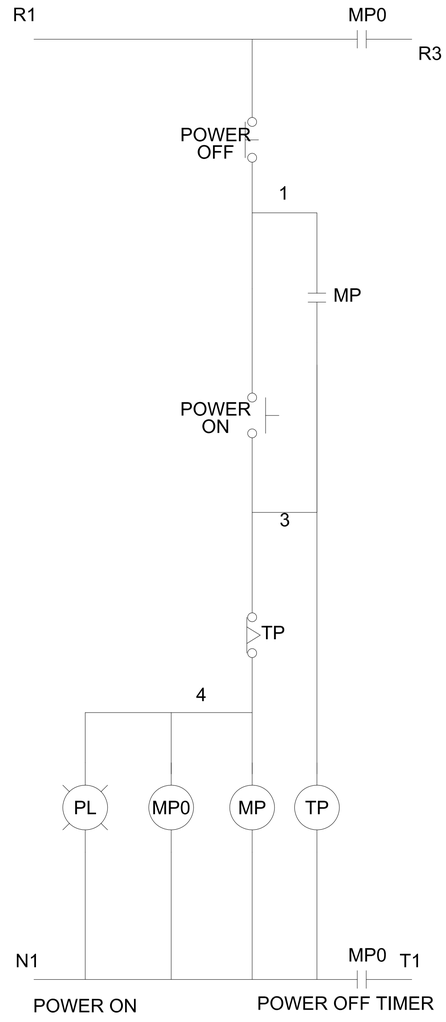
18 PANEL BASE DETAIL



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Control Panel (Outside View) Field One Circuit	DATE DECEMBER 2016	DRG No E-006

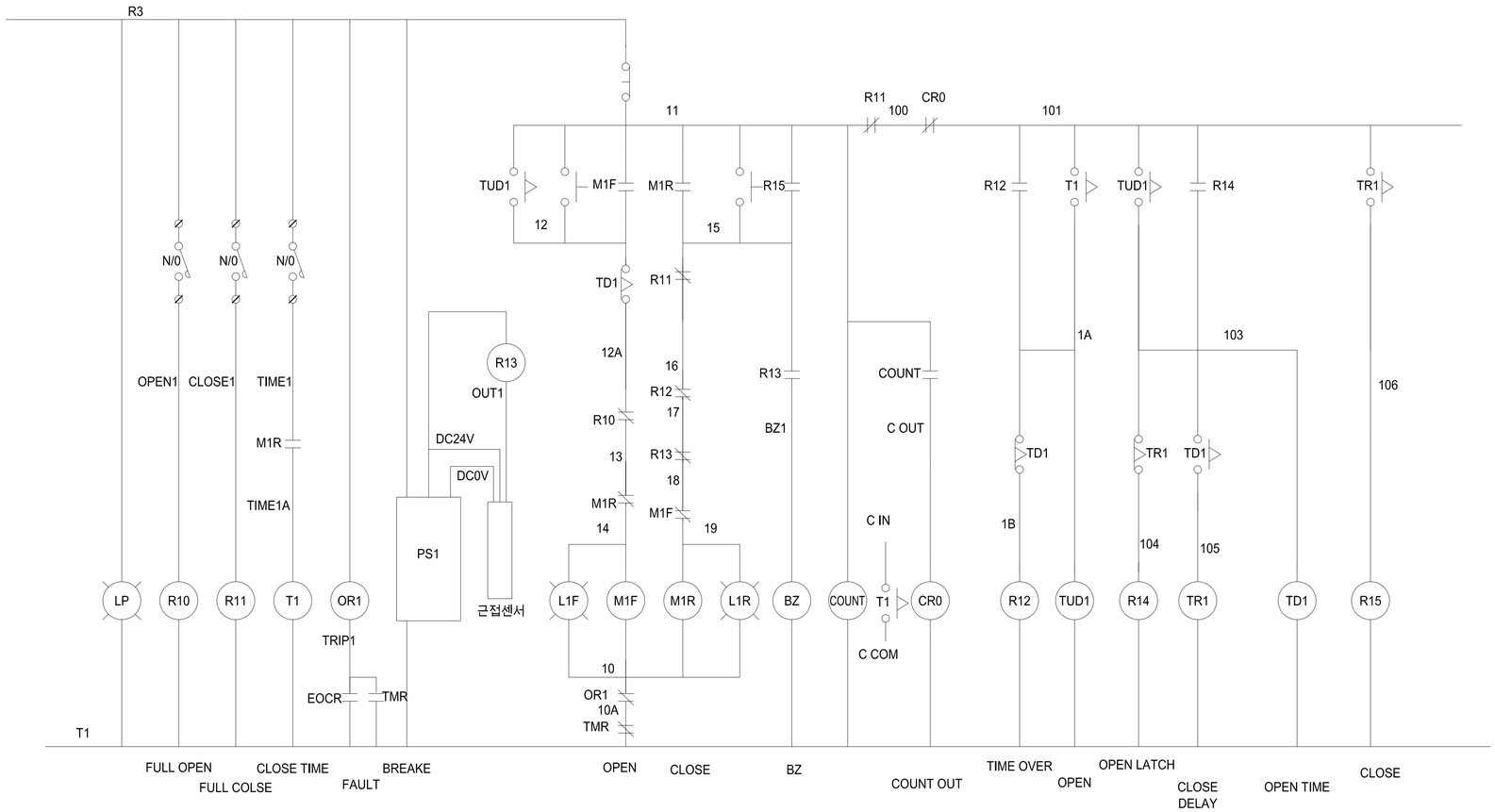
Control Panel (Circuit Diagram) -1





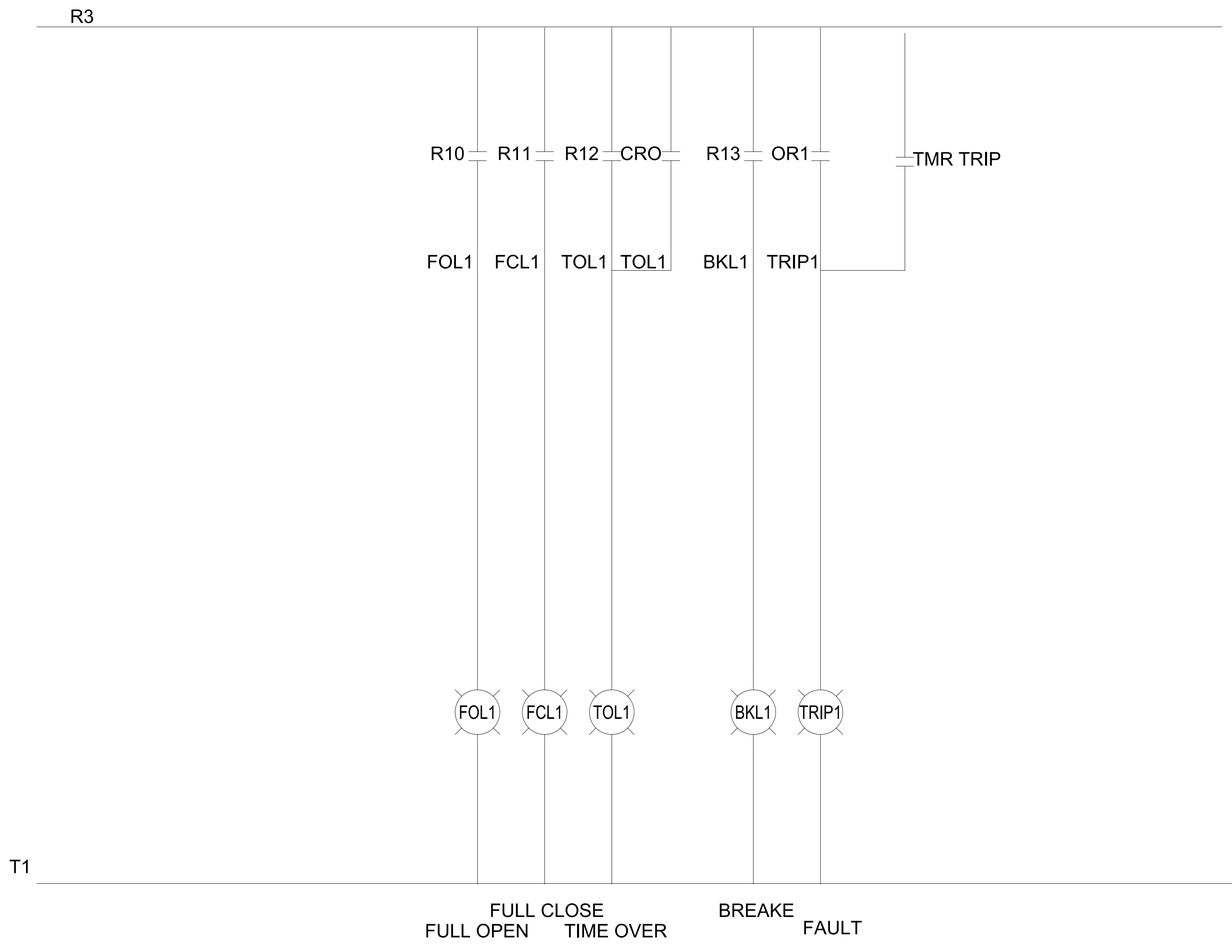
CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Control Panel (Circuit Diagram) -1	DATE DECEMBER 2016	DRG No E-007

Control Panel (Circuit Diagram) -2



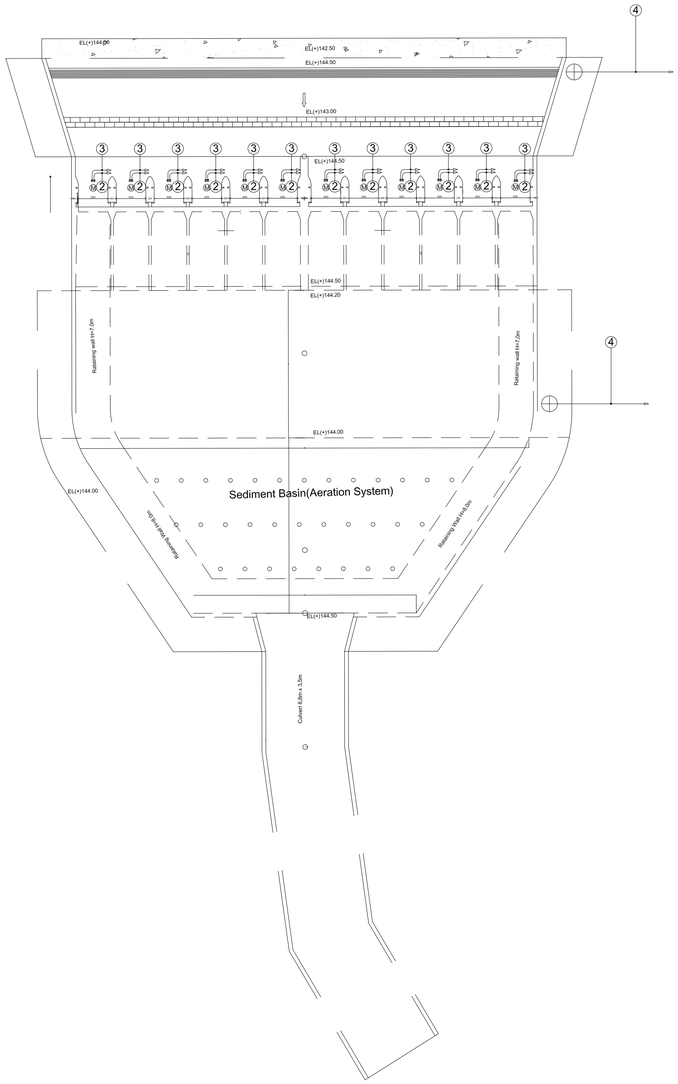
CLIENT REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	PROJECT SHIRE VALLEY IRRIGATION PROJECT	ORIGINAL DESIGNED BY Technical Feasibility Study	SCALE
		TITLE Control Panel (Circuit Diagram) -2	DATE DECEMBER 2016	DRG No E-008

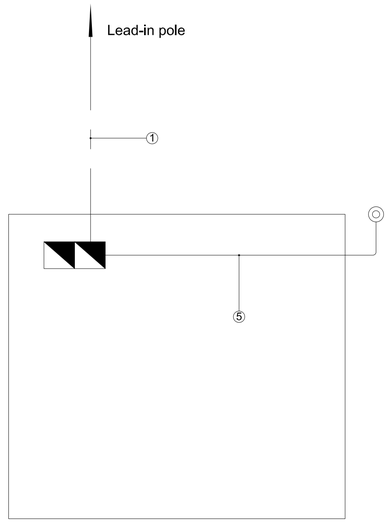
Control Panel (Circuit Diagram) -3



CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Control Panel (Circuit Diagram) -3	DATE DECEMBER 2016	DRG No E-009

Water Gate Power Arrangement





GENERATOR ROOM

Standard Table of Cable and Conduit

NO	Name		Cable	Ground line	Conduit	1 classify flexible conduit
①	R.T.U panel ~ Lead-in pole		0.6/1.0KV F-CV 70㎟ X 4C		Undulation 80 mm	
②	R.T.U panel	Water gate panel board	0.6/1.0KV F-CV 4㎟ X 4C	F-GV 2.5㎟	Undulation 30 mm	28 mm
③	R.T.U panel	Water gate panel board	0.6/1.0KV F-CVV-sb 1.5㎟ X 2C		Undulation 50 mm	36 mm
		Water gate panel board	0.6/1.0KV F-CVV-sb 1.5㎟ X 12C			
		Water gate panel board				
④	R.T.U panel ~ ultrasonic level gauge		22AWG x 2P		Undulation 30 mm	22 mm
⑤	R.T.U panel ~ antena		ECX 5C-2V		galvanized ST 22 mm	22 mm

Introductory remarks and Explanatory note

Symbol	NAME	Standard	Remarks
	R.T.U Panel	Reference detailed drawing	
M	ACTUATOR		
	Antena		
	Ultrasonic level gauge		
	PULL BOX	300 x 300 x 200 mm	
	Conduit open piping		
	Embedded conduit piping		Apply Underground piping

* NOTE

1. The grounding of the R.T.U. panel electrical box is connected to low ground group.
   But, a ground wire is F-GV 25㎟.
2. The cable from the water level indicator to the sensor is installed after consultation with the manufacturer.
3. Lightning rod is grounded separately 1 classify.
4. When you install Ultrasonic level gauges, you should consult with work supervisor.
5. KEPCO's new line and Fees are subject to change depending on the power supply plans.
6. Weak current equipment grounding and low voltage must be installed separately.
7. The Controller of ultrasonic water level gauge is installed in R.T.U. panel.
8. Theft detector is installed in the door R.T.U
9. Conduit open piping uses the ST galvanized conduit.
10. R.T.U. panel position is subject to change depending on site conditions
    so you shall be installed after construction supervisor agreed.
11. R.T.U. Protective fence concrete foundation will see the drawings.
12. Install the ground terminal box 2CCT.

Standard of Ground Connection Installation

Symbol	Item		Standard	Low Voltage	weak current
	Ground group		Ground copper pole 3ea connected	2 site	2 site
	Ground copper pole		16Φx1,800mm	6 bon	6 bon
	Ground line	Ground	F-GV	25㎟	25㎟
		Under ground	WO	25㎟	25㎟
	Ground pole interval		m	3m	3m
	Ground group interval		m	10m	10m
	Ground classify			3 classify	3 classify
	Ground pipe		Hi-PVC(mm)	22mm	22mm

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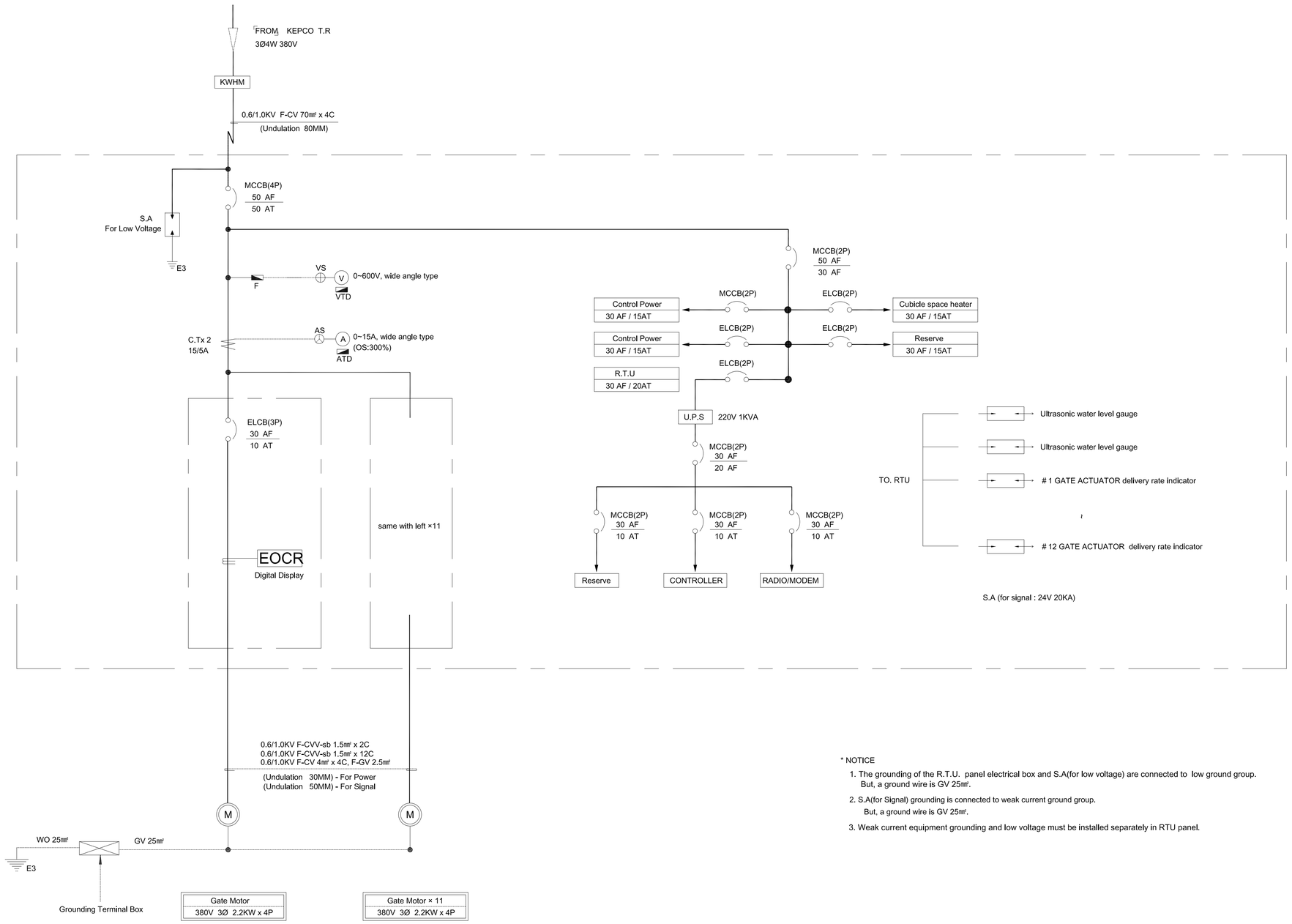
		TITLE Water Gate Power Arrangement	DATE DECEMBER 2016	DRG No E-010

Water Gate One Line Diagram



* NOTICE

1. The grounding of the R.T.U. panel electrical box and S.A(for low voltage) are connected to low ground group. But, a ground wire is GV 25㎟.
2. S.A(for Signal) grounding is connected to weak current ground group. But, a ground wire is GV 25㎟.
3. Weak current equipment grounding and low voltage must be installed separately in RTU panel.

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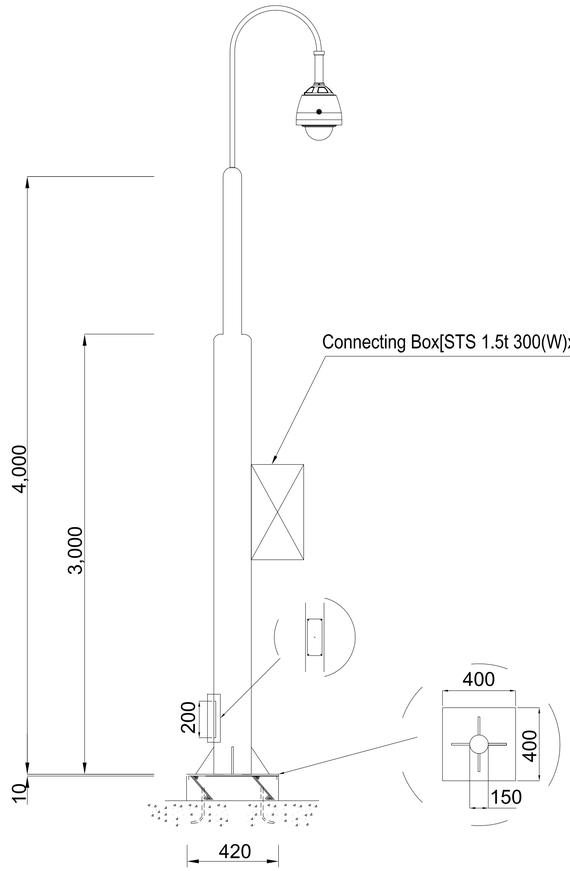
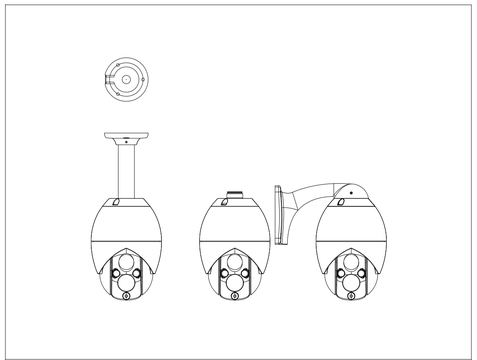
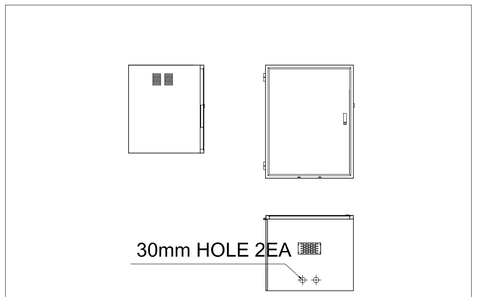
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Water Gate One Line Diagram	DATE DECEMBER 2016	DRG No E-011

Outside CCTV and Ultrasonic Water Level Gage

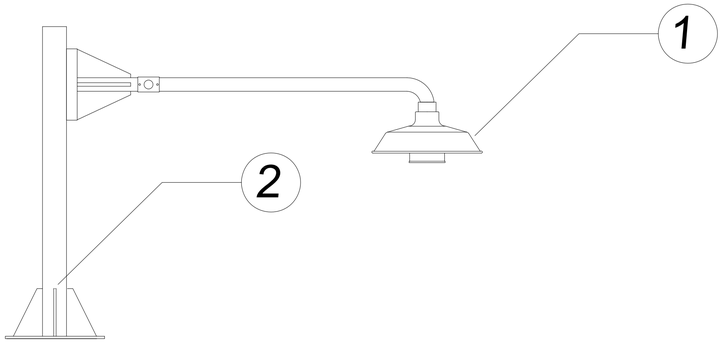




MEGAPIXEL IR SPEED DOME CAMERA



Enclosure



DESCRIPTION

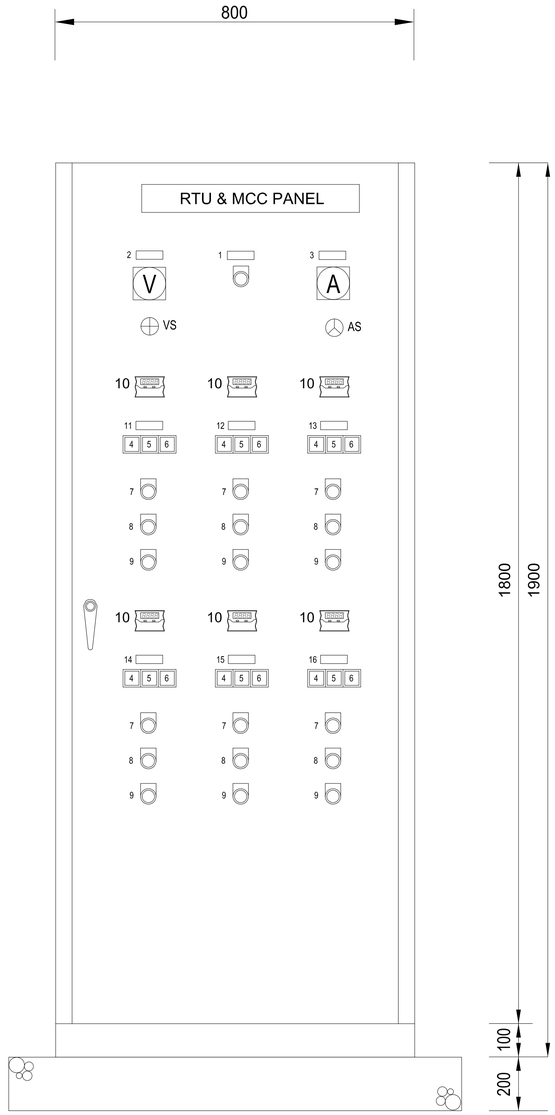
1. Ultrasonic sensor
2. Stand

Details of Outside CCTV

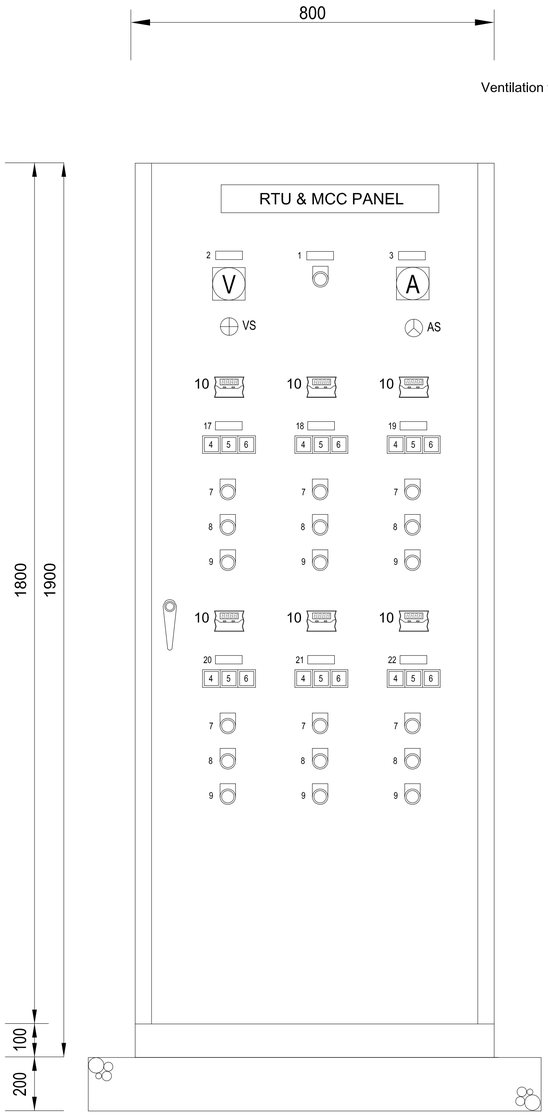
Details of Ultrasonic water level gauge

CLIENT	CONSULTANT	PROJECT	ORIGINAL DESIGNED BY	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Technical Feasibility Study Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. GK Works Civil and Structural Engineer	SHIRE VALLEY IRRIGATION PROJECT	Technical Feasibility Study	
		TITLE Outside CCTV and Ultrasonic Water Level Gage	DATE DECEMBER 2016	DRG No E-012

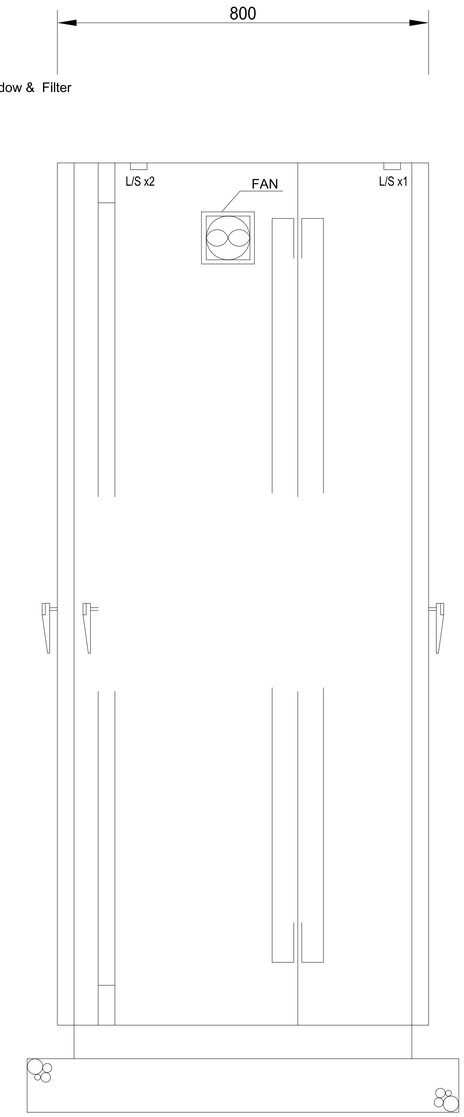
Details of RTU & MCCB



1 Front



2 Front



Side

NAME PLATE LIST(Front)

NO	DESCRIPTION	SIZE	Q.TY	REMARK
1	Power	60x15	1	
2	Main Voltage	60x15	1	
3	Main Current	60x15	1	
4	Upper Limit	40x40	2	SQUARE LAMP
5	Lower Limit	40x40	2	SQUARE LAMP
6	OVER TORQUE	40x40	2	SQUARE LAMP
7	Open	25Φ	2	P.B (Red)
8	Stop	25Φ	2	P.B (Blue)
9	Close	25Φ	2	P.B (Green)
10	EOCR	30Φ	2	
11	# 1 Water Gate	60x15	1	
12	# 2 Water Gate	60x15	1	
13	# 3 Water Gate	60x15	1	
14	# 4 Water Gate	60x15	1	
15	# 5 Water Gate	60x15	1	
16	# 6 Water Gate	60x15	1	
17	# 7 Water Gate	60x15	1	
18	# 8 Water Gate	60x15	1	
19	# 9 Water Gate	60x15	1	
20	# 10 Water Gate	60x15	1	
21	# 11 Water Gate	60x15	1	
22	# 12 Water Gate	60x15	1	

CONTROLLER NAME (Rear)

NO	NAME	사 양
①	POWER SUPPLY	Reference specifications
②	C.P.U	Reference specifications
③	Communication MODULE	Reference SYSTEM SPECIFICATION Drawing
④	D/I Point	16 Channel x 3EA(I/O LIST Ref. Drawing)
⑤	A/I Point	8 Channel x 3EA(I/O LIST Ref. Drawing)
⑥	D/O Point	16 Channel x 5EA(I/O LIST Ref. Drawing)

* NOTE

1. TYPE : Outside Closed self-supporting (double insulation type)
2. Material : more than SUS 2.0t
3. INDOOR SWITCH
4. SIDE
5. CHANNEL
6. RTU Should be installed on the base CON'C upper half in order to prevent rainwater intrusion.

* I/O MODULE can be changed depending on on-site conditions.
* Temperature Sensor, Heater, Fan Installation.

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		TITLE Details of RTU & MCCB	DATE DECEMBER 2016	DRG No E-013

Water Gate I/Output Point List

I/O section	DIGITAL OUTPUT						DIGITAL INPUT															ANALOG INPUT									Remarks
	CONTROL						STATUS						ALARM									4~20mA									
Name of Equipment	Open/Stop/Close	RESET					ON/OFF	FULL OPEN	FULL CLOSE	LOCAL/REMOTE			EOCR	OVER TROGUE	DOOR OPEN		UPS Problem					ampere transfer	Voltage transfer	Gate delivery rate	Water Level	Flow rate	Pressure				
MCCB PANEL		1								1					1		1					1	1								
# 1 Water Gate	3						2	1	1				1	1										1							
# 2 Water Gate	3						2	1	1				1	1										1							
# 3 Water Gate	3						2	1	1				1	1										1							
# 4 Water Gate	3						2	1	1				1	1										1							
# 5 Water Gate	3						2	1	1				1	1										1							
# 6 Water Gate	3						2	1	1				1	1										1							
# 7 Water Gate	3						2	1	1				1	1										1							
# 8 Water Gate	3						2	1	1				1	1										1							
# 9 Water Gate	3						2	1	1				1	1										1							
# 10 Water Gate	3						2	1	1				1	1										1							
# 11 Water Gate	3						2	1	1				1	1										1							
# 12 Water Gate	3						2	1	1				1	1										1							
Ultrasonic water level gauge																									1						
Ultrasonic water level gauge																									1						
Sub-Sum	37						75															16									
SPARE	11						5															8									
Sum	48						80															24									

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		TITLE Water Gate I/Output Point List	DATE DECEMBER 2016	DRG No E-014