GOVERNMENT OF MALAWI
MINISTRY OF AGRICULTURE,

JUNE. 2022.

SHIRE VALLEY TRANSFORMATION PROGRAM
SECONDARY PIPELINES(SCs)
DESIGN DRAWINGS

VOL. IV

Korea Rural Community Corporation
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

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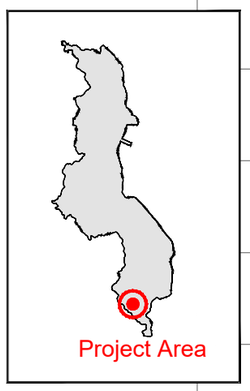
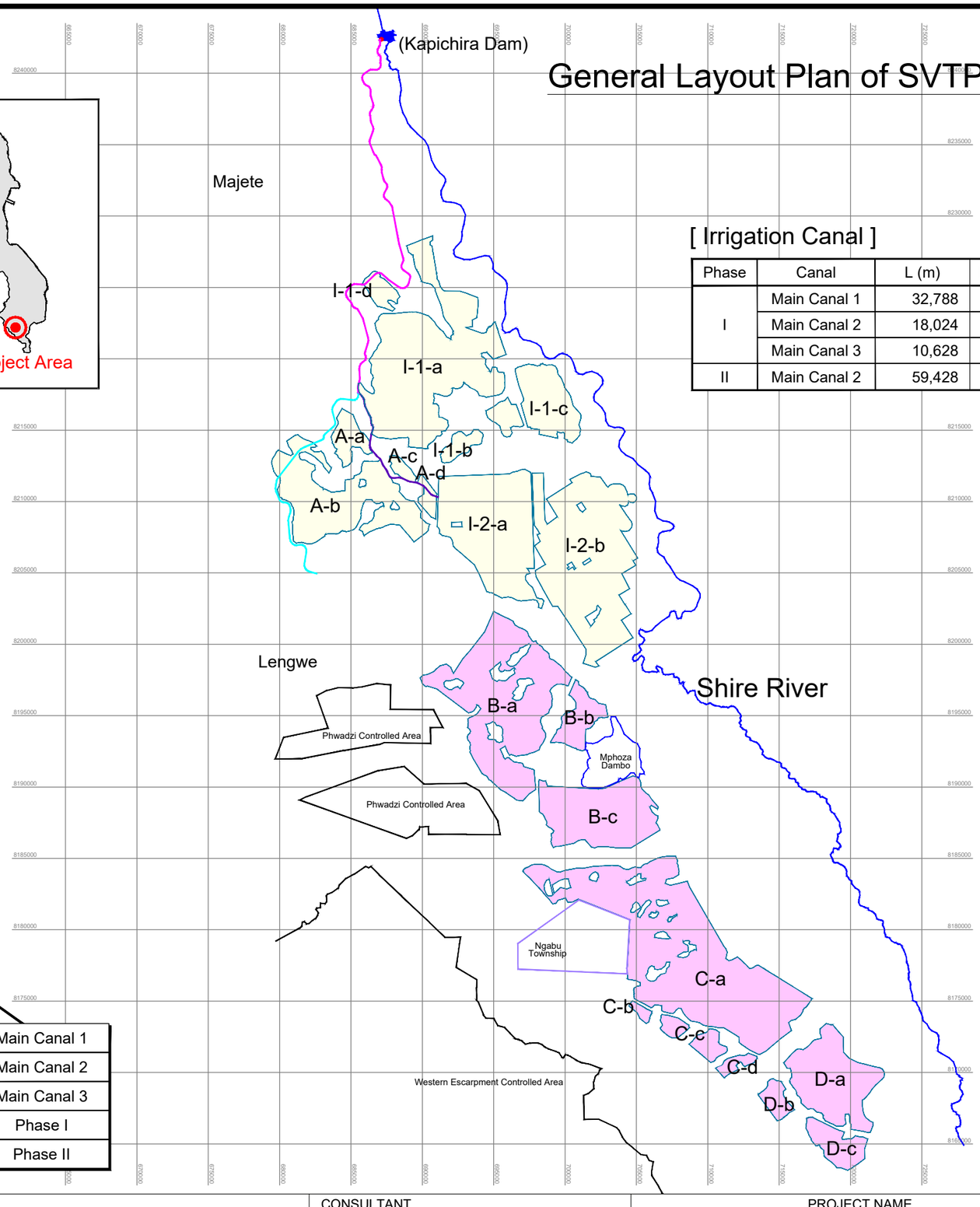
A. General Drawings

General Layout Plan of SVTP





[Irrigation Canal]

Phase	Canal	L (m)	B.P (EL.m)	E.P (EL.m)
I	Main Canal 1	32,788	143.50	128.22
	Main Canal 2	18,024	128.22	121.59
	Main Canal 3	10,628	128.22	92.00
II	Main Canal 2	59,428	121.59	104.70

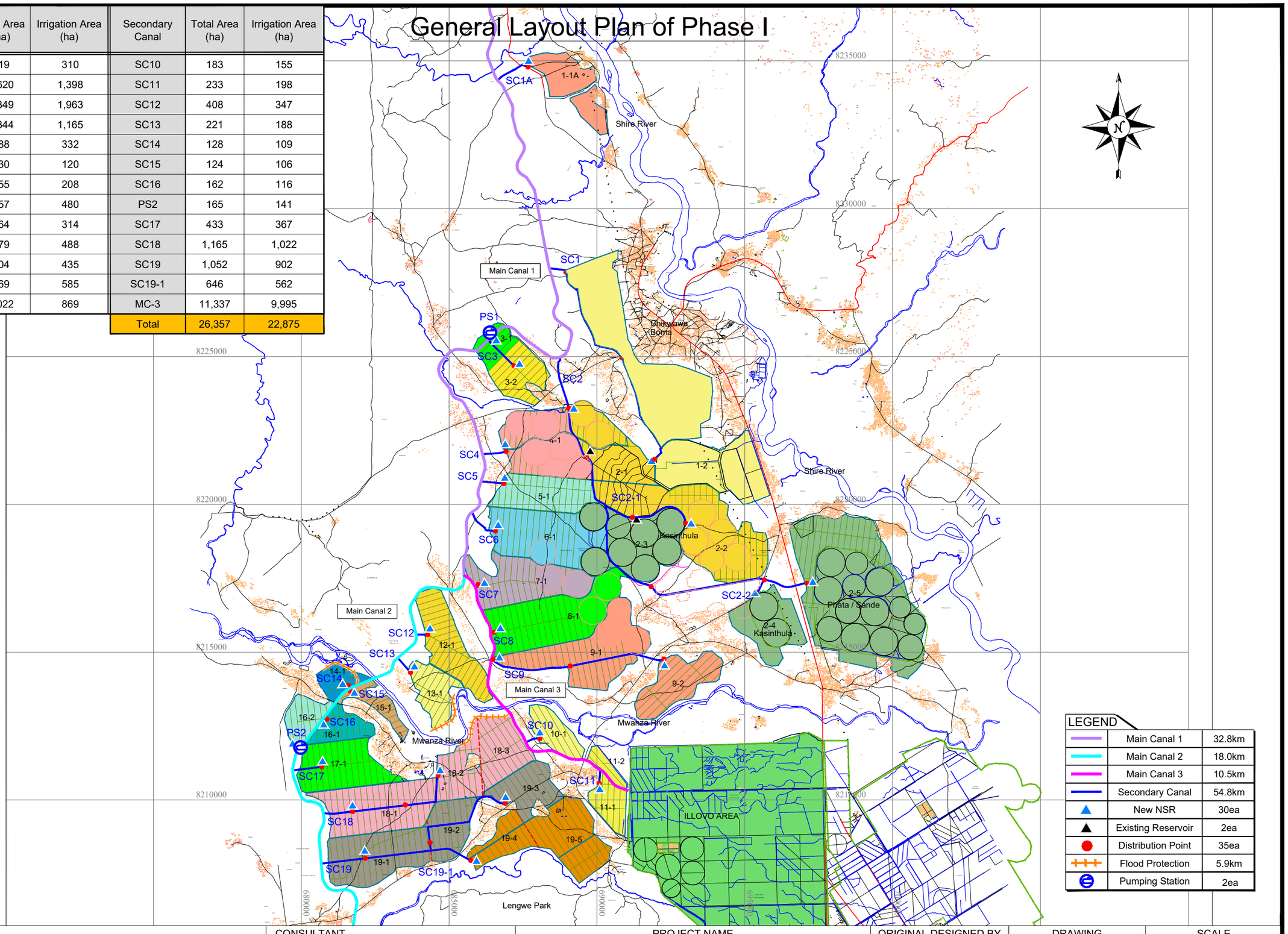
[Zone Area]

Zone	Total Area	Net Area
Zone I-1	10,005 ha	8,667 ha
I-1-a	7,328 ha	6,347 ha
I-1-b	353 ha	300 ha
I-1-c	1,939 ha	1,692 ha
I-1-d	385 ha	328 ha
Zone I-2	11,337 ha	9,995 ha
I-2-a	4,680 ha	4,179 ha
I-2-b	6,657 ha	5,816 ha
Zone A	4,959 ha	4,213 ha
A-a	598 ha	535 ha
A-b	3,944 ha	3,325 ha
A-c	184 ha	155 ha
A-d	233 ha	198 ha
Phase I	26,301 ha	22,875 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	50,590 ha	43,370 ha

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		General Layout Plan of SVTP	JUNE, 2022		A-01-01

General Layout Plan of Phase I

Secondary Canal	Total Area (ha)	Irrigation Area (ha)	Secondary Canal	Total Area (ha)	Irrigation Area (ha)
SC1A	319	310	SC10	183	155
SC1	1,620	1,398	SC11	233	198
SC2	2,349	1,963	SC12	408	347
SC2-1	1,344	1,165	SC13	221	188
SC2-2	388	332	SC14	128	109
PS1	130	120	SC15	124	106
SC3	255	208	SC16	162	116
SC4	557	480	PS2	165	141
SC5	364	314	SC17	433	367
SC6	579	488	SC18	1,165	1,022
SC7	504	435	SC19	1,052	902
SC8	669	585	SC19-1	646	562
SC9	1,022	869	MC-3	11,337	9,995
			Total	26,357	22,875



LEGEND		
	Main Canal 1	32.8km
	Main Canal 2	18.0km
	Main Canal 3	10.5km
	Secondary Canal	54.8km
▲	New NSR	30ea
▲	Existing Reservoir	2ea
●	Distribution Point	35ea
+++	Flood Protection	5.9km
e	Pumping Station	2ea

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		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Layout Plan of Phase I	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	A-01-02

General Plan of Phase I (1/2)

Secondary Canal	Total Area (ha)	Irrigation Area (ha)	Secondary Canal	Total Area (ha)	Irrigation Area (ha)
SC1A	319	310	SC10	183	155
SC1	1,620	1,398	SC11	233	198
SC2	2,349	1,963	SC12	408	347
SC2-1	1,344	1,165	SC13	221	188
SC2-2	388	332	SC14	128	109
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SC3	255	208	SC16	162	116
SC4	557	480	PS2	165	141
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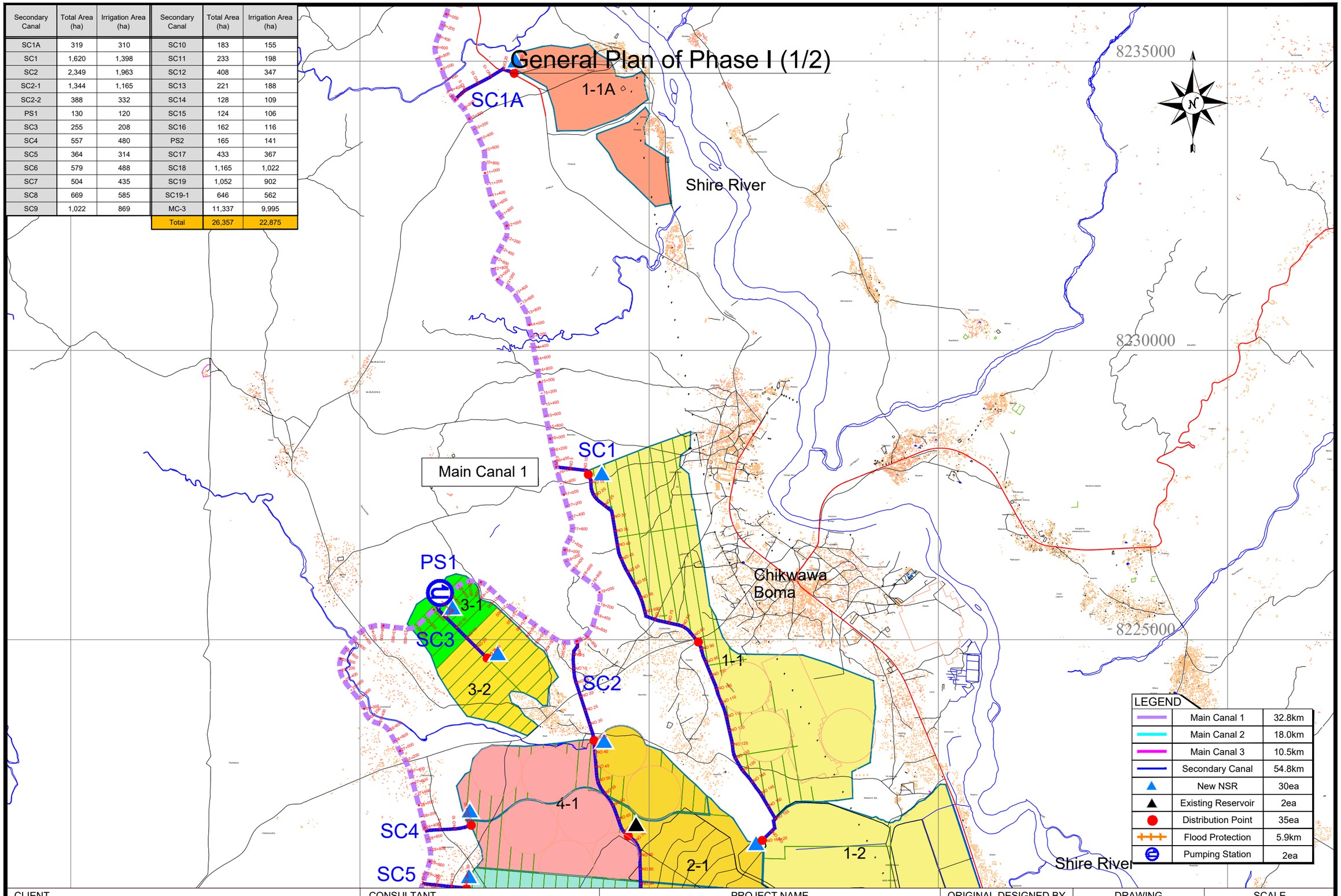
SC6	579	488	SC18	1,165	1,022
SC7	504	435	SC19	1,052	902
SC8	669	585	SC19-1	646	562
SC9	1,022	869	MC-3	11,337	9,995
			Total	26,357	22,875



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		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of Phase I (1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	A-01-03

General Plan of Phase I (2/2)

Secondary Canal	Total Area (ha)	Irrigation Area (ha)	Secondary Canal	Total Area (ha)	Irrigation Area (ha)
SC1A	319	310	SC10	183	155
SC1	1,620	1,398	SC11	233	198
SC2	2,349	1,963	SC12	408	347
SC2-1	1,344	1,165	SC13	221	188
SC2-2	388	332	SC14	128	109
PS1	130	120	SC15	124	106
SC3	255	208	SC16	162	116
SC4	557	480	PS2	165	141
SC5	364	314	SC17	433	367
SC6	579	488	SC18	1,165	1,022
SC7	504	435	SC19	1,052	902
SC8	669	585	SC19-1	646	562
SC9	1,022	869	MC-3	11,337	9,995
			Total	26,357	22,875

Main Canal 2

Main Canal 3

Mwanza River

Mwanza River

Kasinthula

Kasinthula

Phata / Sande

ILLOVO AREA

Lengwe Park

8230000

8215000

8210000

680000

685000

690000

695000

LEGEND

	Main Canal 1	32.8km
	Main Canal 2	18.0km
	Main Canal 3	10.5km
	Secondary Canal	54.8km
	New NSR	30ea
	Existing Reservoir	2ea
	Distribution Point	35ea
	Flood Protection	5.9km
	Pumping Station	2ea

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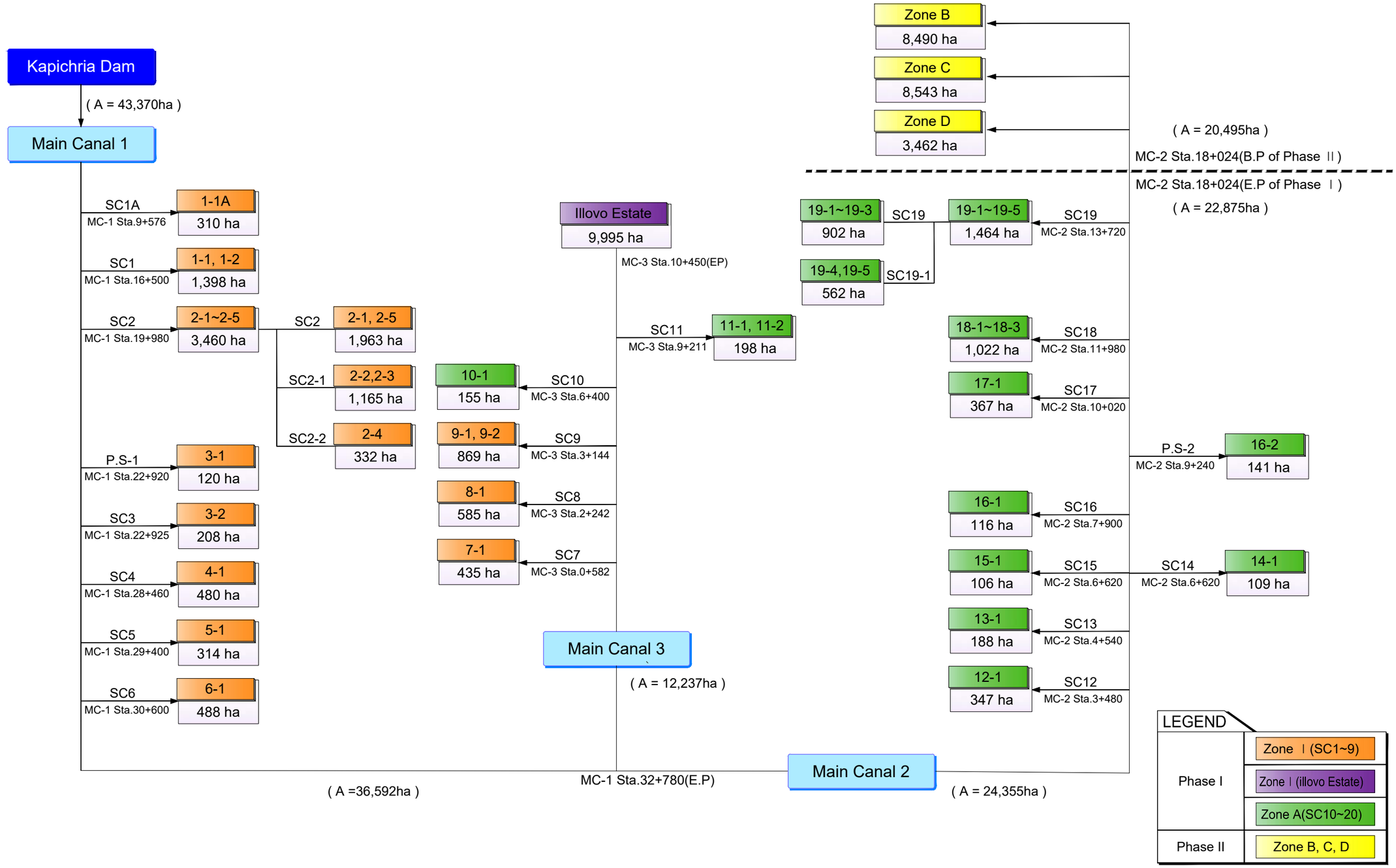
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of Phase I (2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	A-01-04

Canal Network System of SVTP



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		TITLE	DATE		DRAWING No
		Canal Network System of SVTP	JUNE, 2022		A-01-05

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					

338MWS

358MWT

328NYS

335MWS

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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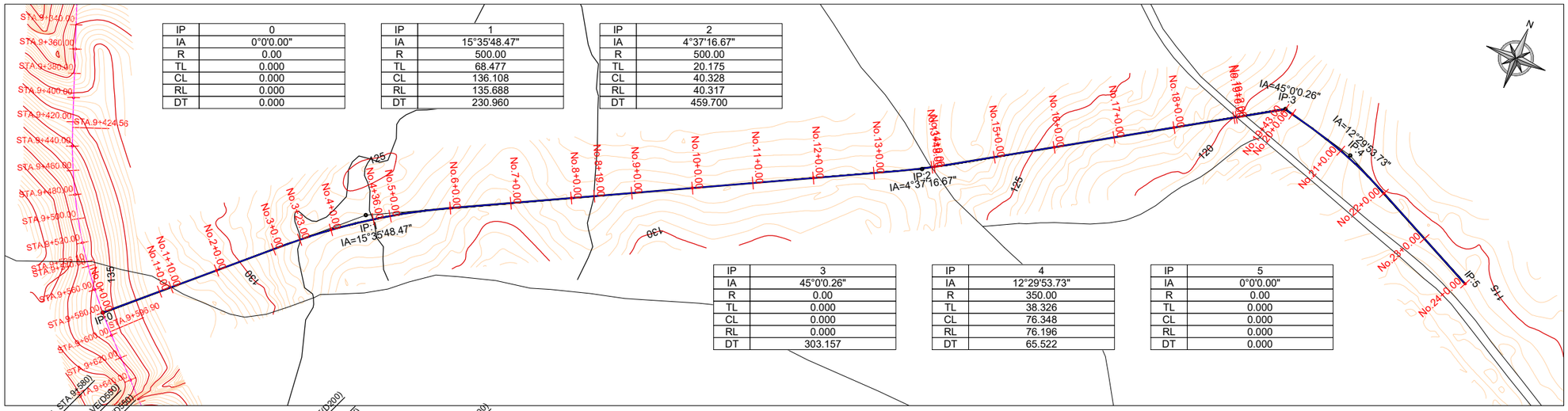
		TITLE	DATE		DRAWING No
		Location of Trigonometric Stations and Control Points	JUNE, 2022		A-01-06

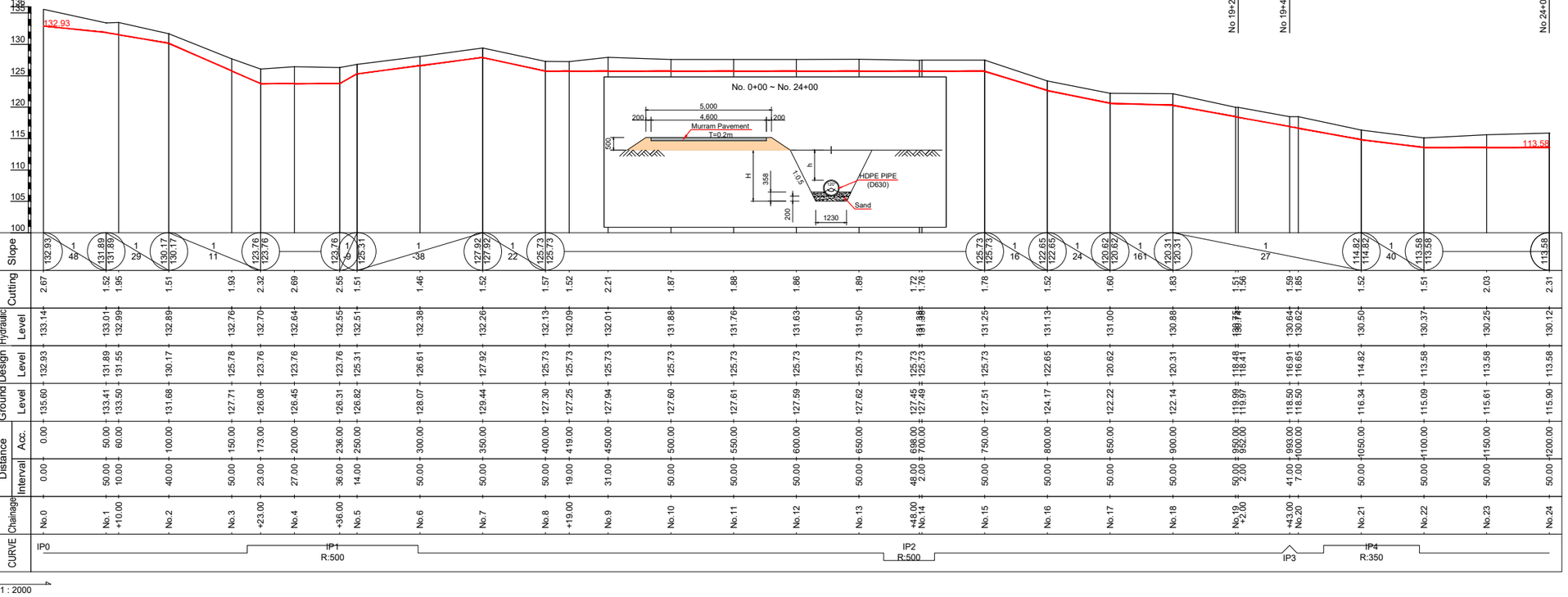
B. Canal Drawings

General and Profile Plan of SC1A

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).





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		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC1A	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-01-01

General and Profile Plan of SC1(1/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

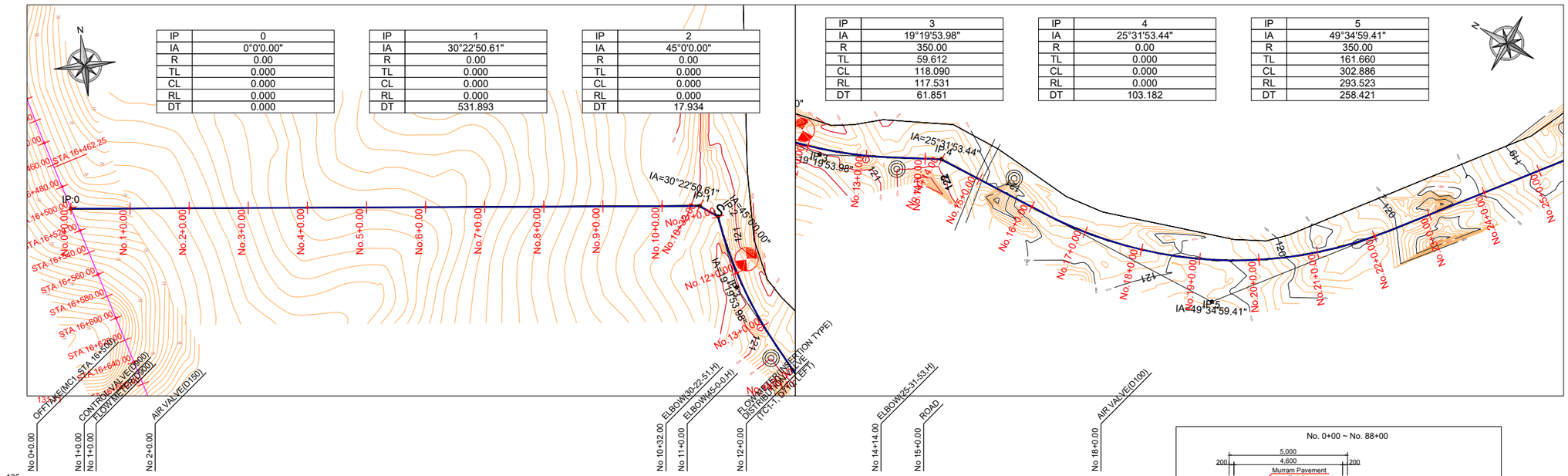
IP	1
IA	30°22'50.61"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	531.893

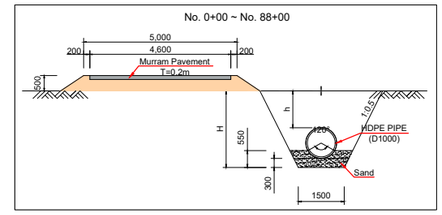
IP	2
IA	45°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	17.934

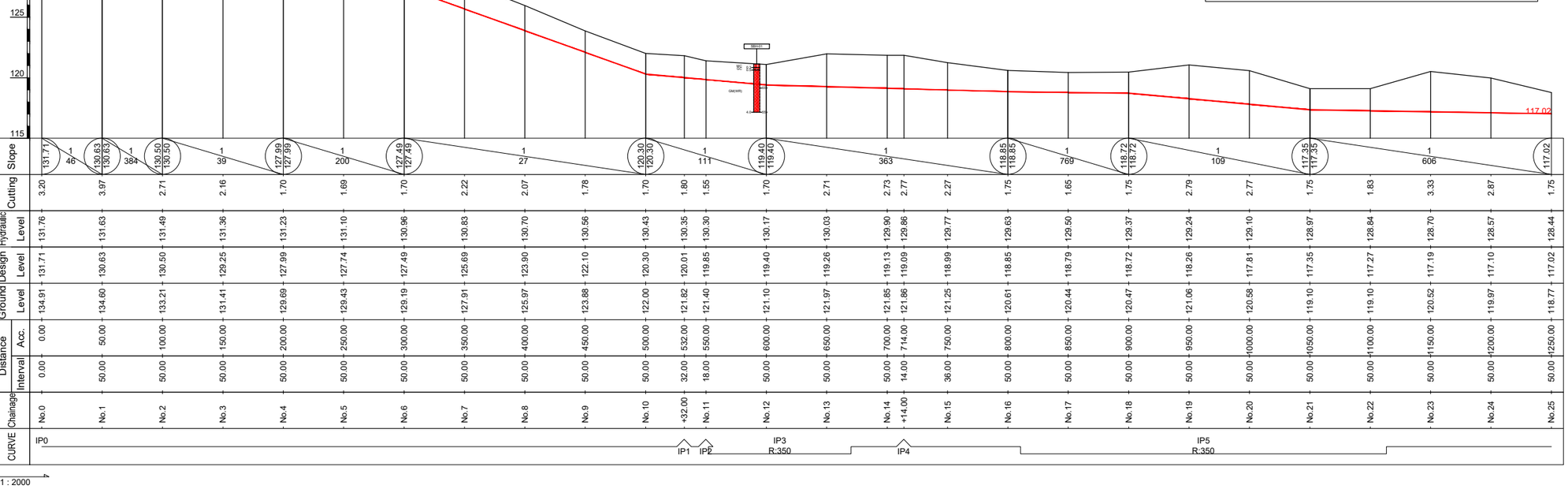
IP	3
IA	19°19'53.98"
R	350.00
TL	59.612
CL	118.090
RL	117.531
DT	61.851

IP	4
IA	25°31'53.44"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	103.182

IP	5
IA	49°34'59.41"
R	350.00
TL	161.660
CL	302.886
RL	293.523
DT	258.421







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		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC1(1/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-02-01

General and Profile Plan of SC1(2/7)

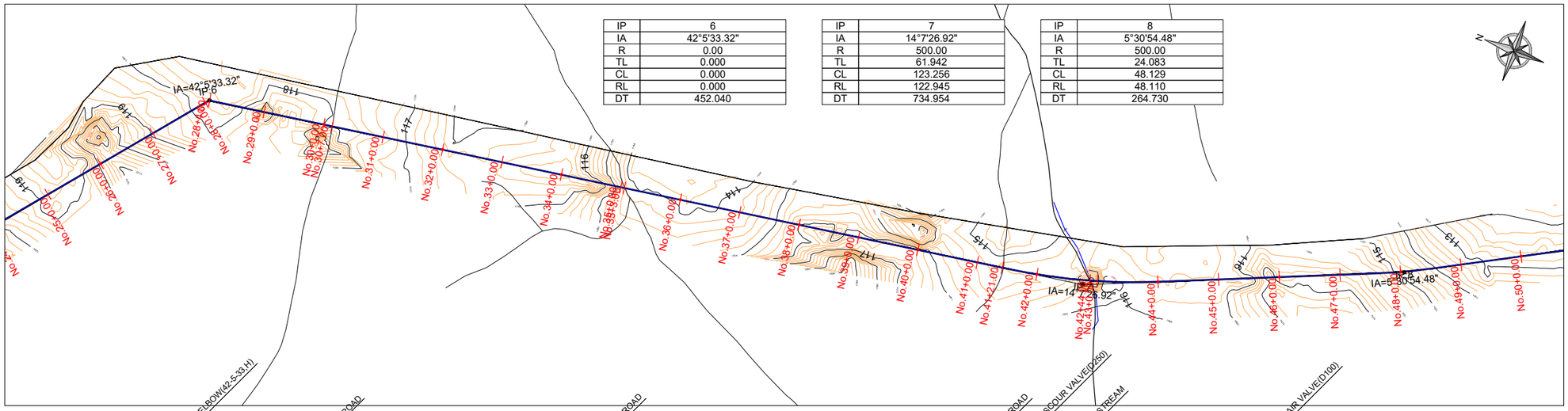
H=1:2,000, V=1:200

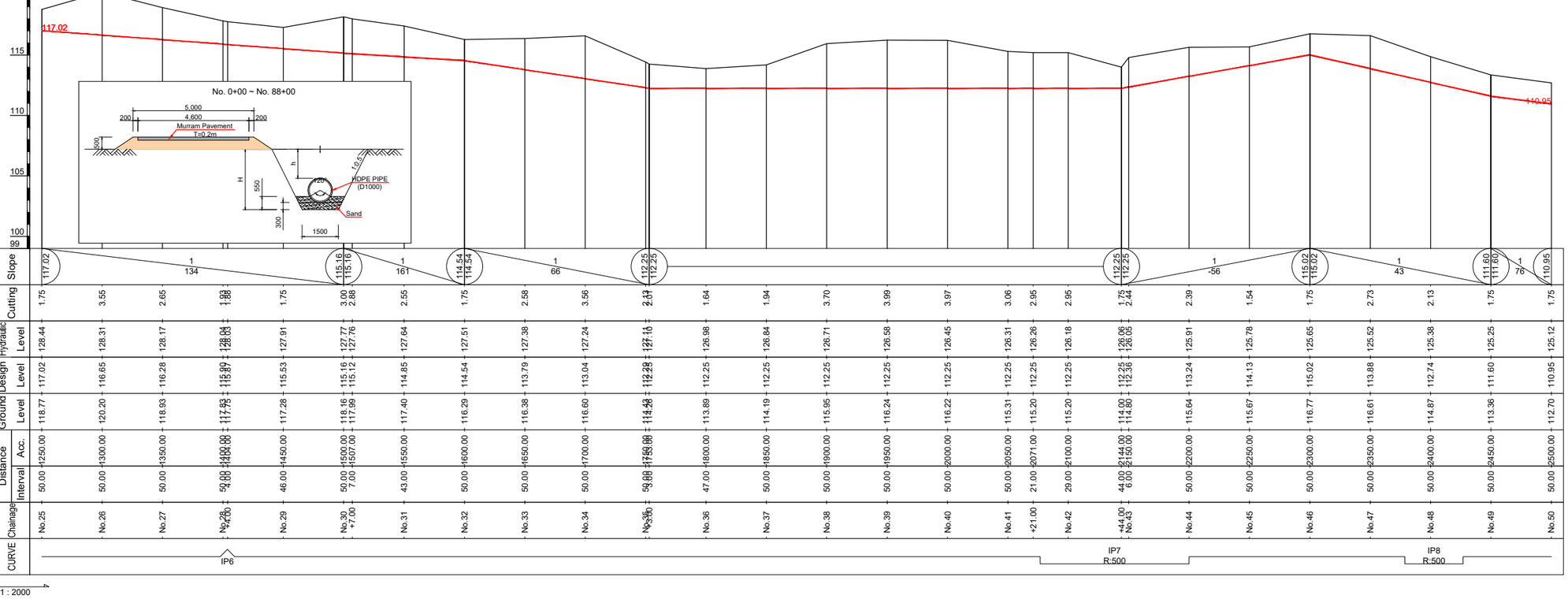
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	6
IA	42°5'33.32"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	452.040

IP	7
IA	14°7'26.92"
R	500.00
TL	61.942
CL	123.256
RL	122.945
DT	734.954

IP	8
IA	5°30'54.48"
R	500.00
TL	24.083
CL	48.129
RL	48.110
DT	264.730





SC1(2/7)

1 : 200

1 : 2000

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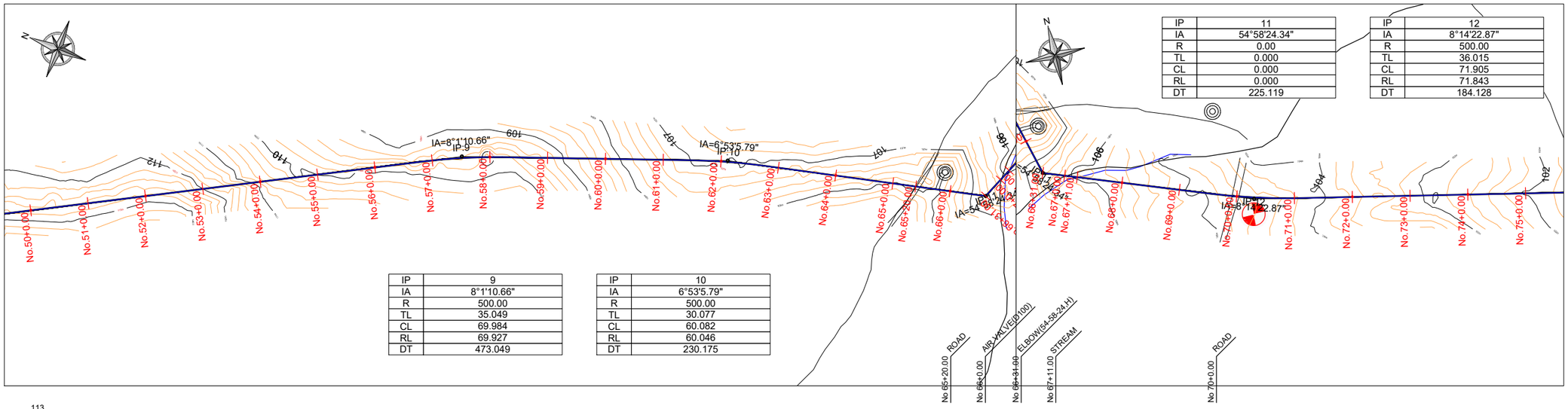
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC1(2/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-02-02

General and Profile Plan of SC1(3/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

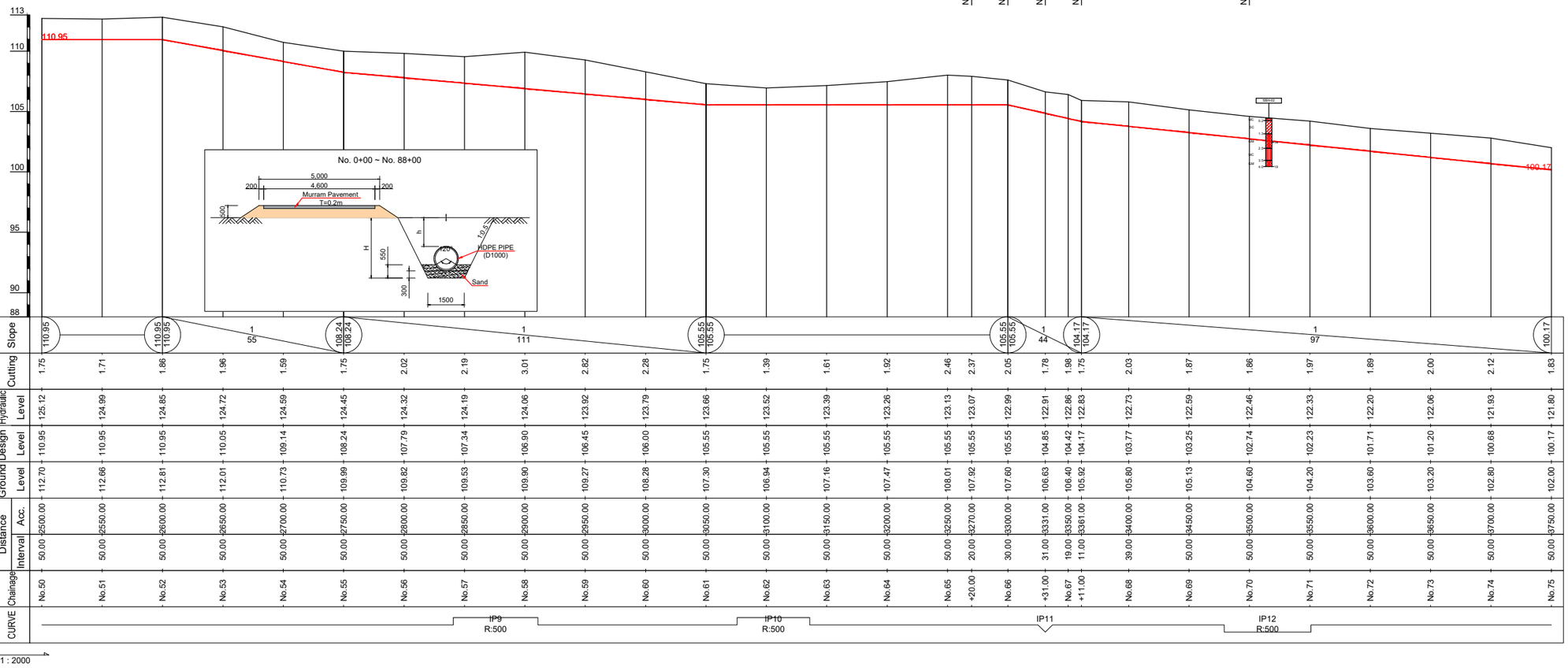


IP	9
IA	8°1'10.66"
R	500.00
TL	35.049
CL	69.984
RL	69.927
DT	473.049

IP	10
IA	6°53'5.79"
R	500.00
TL	30.077
CL	60.082
RL	60.046
DT	230.175

IP	11
IA	54°58'24.34"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	225.119

IP	12
IA	8°14'22.87"
R	500.00
TL	36.015
CL	71.905
RL	71.843
DT	184.128

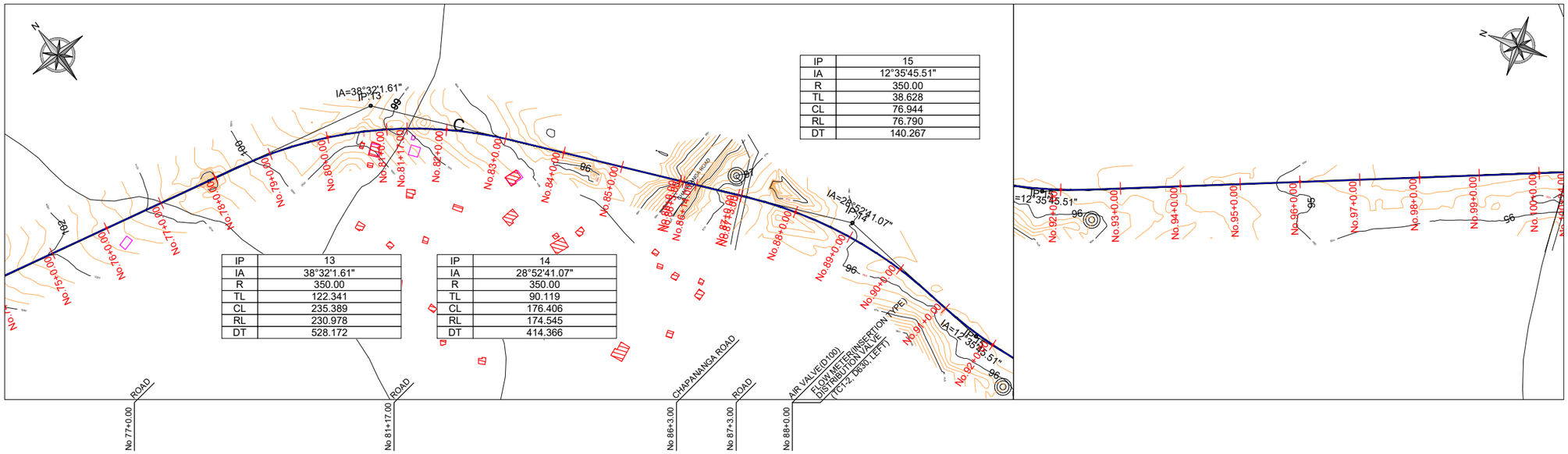


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC1(3/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-02-03

General and Profile Plan of SC1(4/7)

H=1:2,000, V=1:200

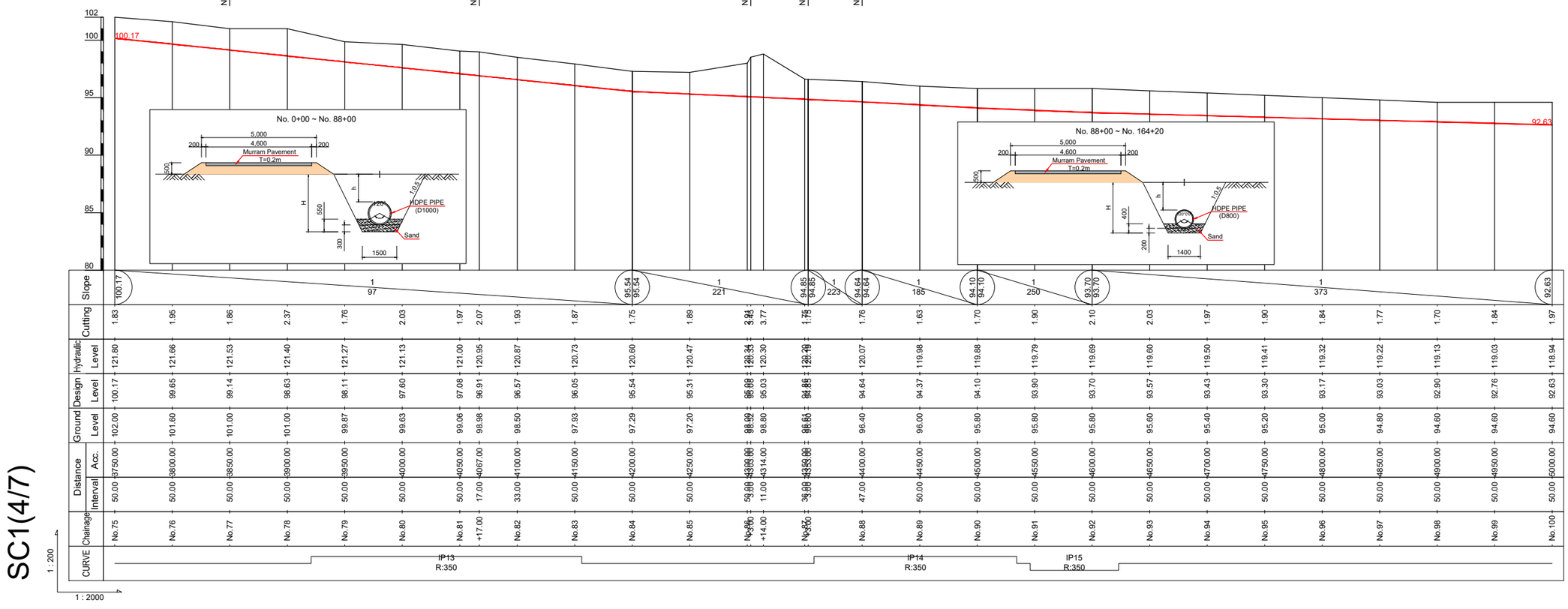
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	13
IA	38°32'1.61"
R	350.00
TL	122.341
CL	235.389
RL	230.978
DT	528.172

IP	14
IA	28°52'41.07"
R	350.00
TL	90.119
CL	176.406
RL	174.545
DT	414.366

IP	15
IA	12°35'45.51"
R	350.00
TL	38.628
CL	76.944
RL	76.790
DT	140.267



SC1(4/7)

1 : 200

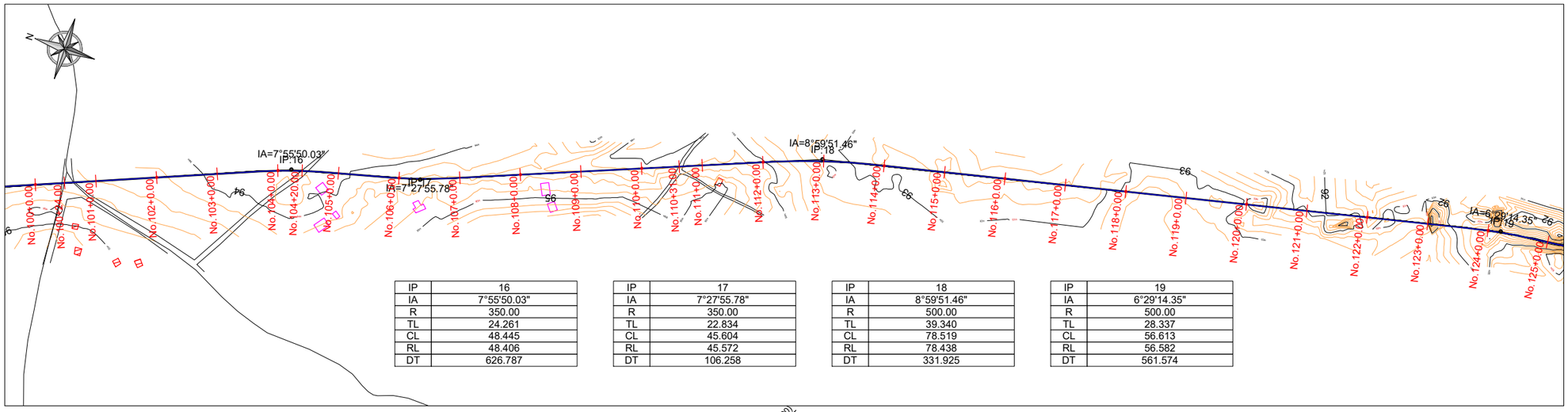
1 : 2000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC1(4/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-02-04

General and Profile Plan of SC1(5/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

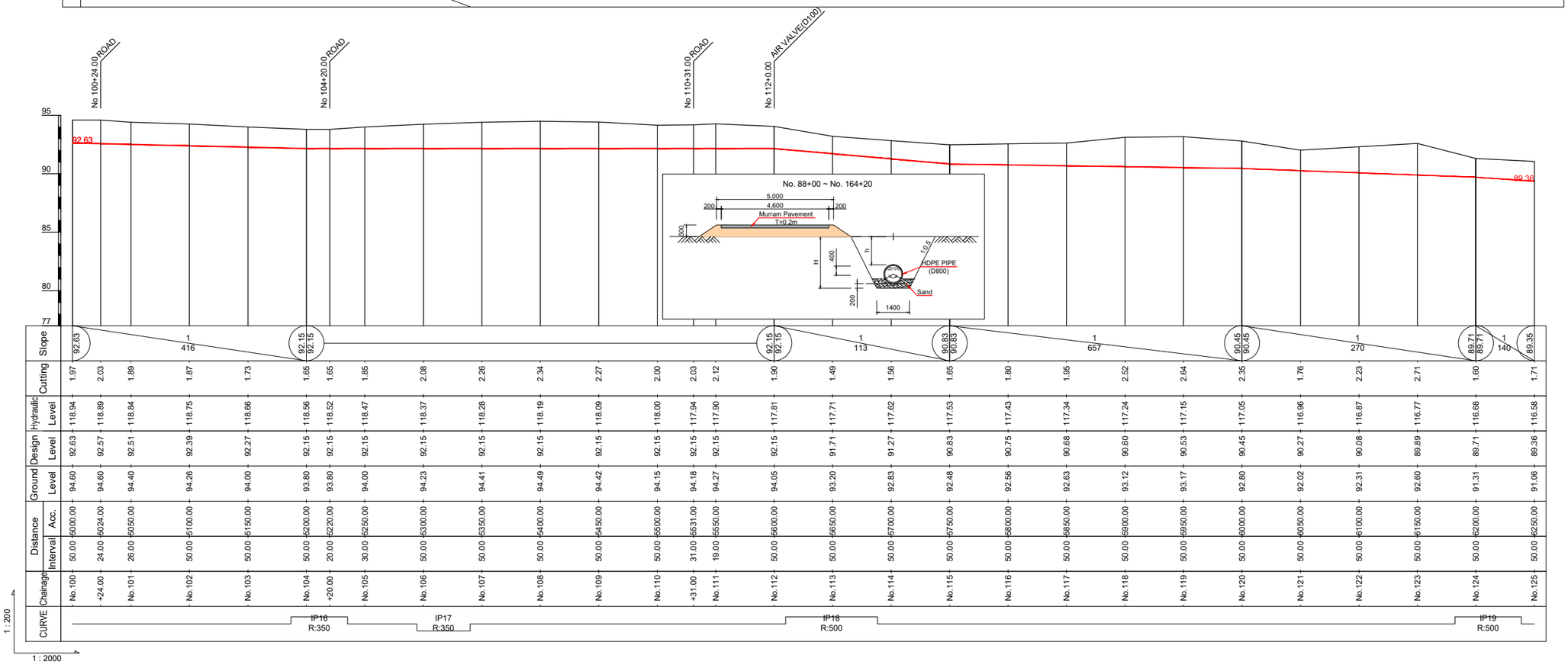


IP	16
IA	7°55'50.03"
R	350.00
TL	24.261
CL	48.445
RL	48.406
DT	626.787

IP	17
IA	7°27'55.78"
R	350.00
TL	22.834
CL	45.604
RL	45.572
DT	106.258

IP	18
IA	8°59'51.46"
R	500.00
TL	39.340
CL	78.519
RL	78.438
DT	331.925

IP	19
IA	6°29'14.35"
R	500.00
TL	28.337
CL	56.613
RL	56.582
DT	561.574

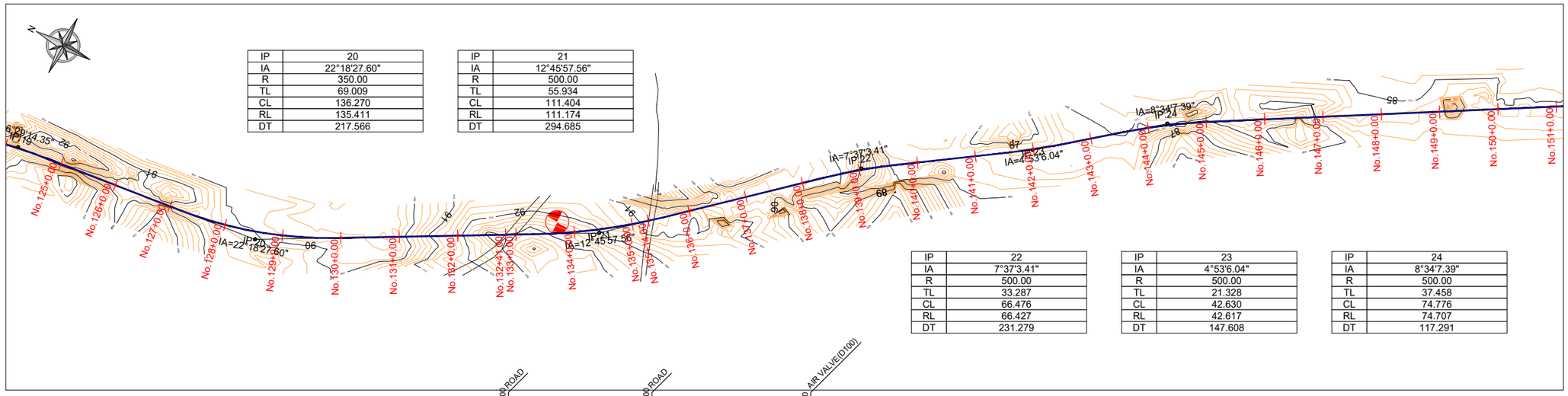


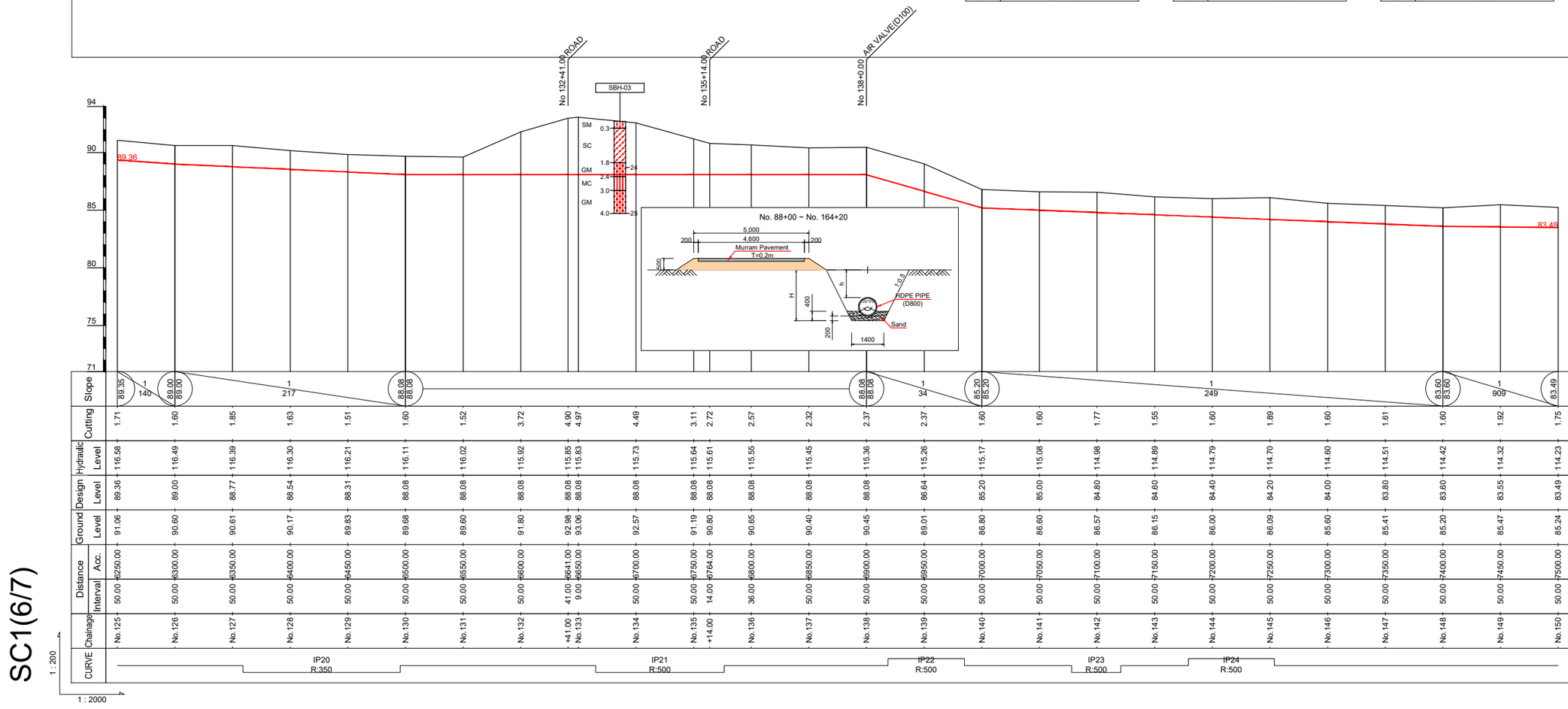
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC1(5/7)	JUNE, 2022		B-02-05

General and Profile Plan of SC1(6/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



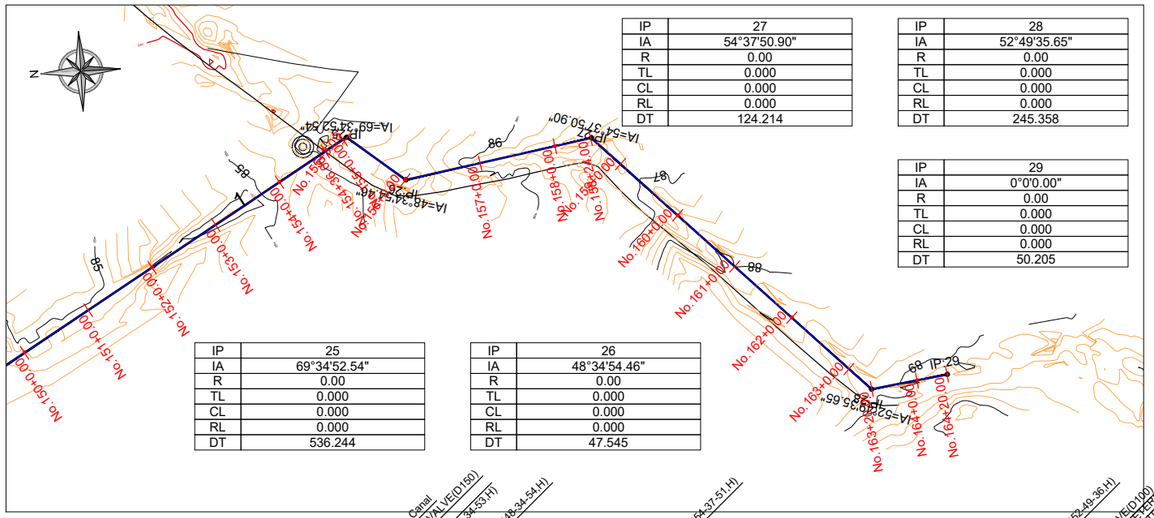


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC1(6/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-02-06

General and Profile Plan of SC1(7/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	25
IA	69°34'52.54"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	536.244

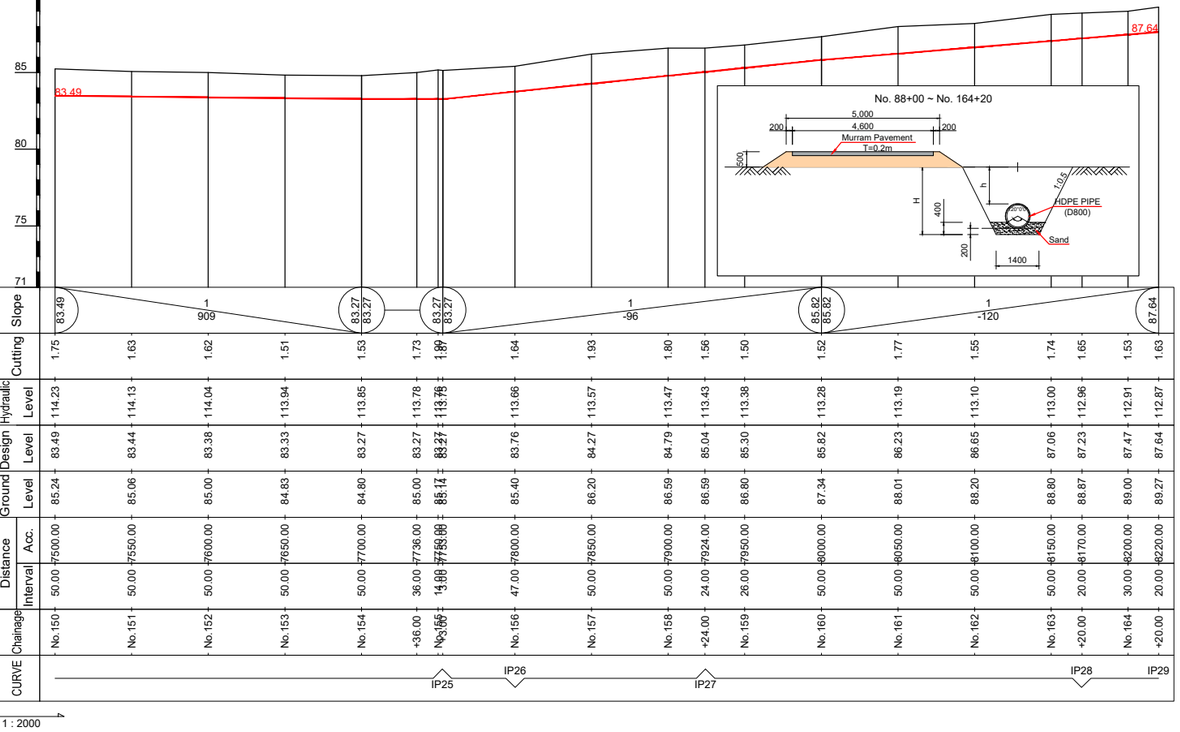
IP	26
IA	48°34'54.46"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	47.545

IP	27
IA	54°37'50.90"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	124.214

IP	28
IA	52°49'35.65"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	245.358

IP	29
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	50.205

No. 154+36.00 Drainage Canal
No 155+0.00 SCOUR VALVE(D150)
No 155+3.00 ELBOW(69-34-55-H)
No 156+0.00 ELBOW(48-34-54-H)
No 158+24.00 ELBOW(54-37-51-H)
No 163+20.00 ELBOW(52-49-36-H)
No 164+0.00 AIR VALVE(D100)
No 164+10.00 FLOW METER(INSERTION TYPE)
No 164+20.00 DISTRIBUTION VALVE (TC1-3, D600, EPT)



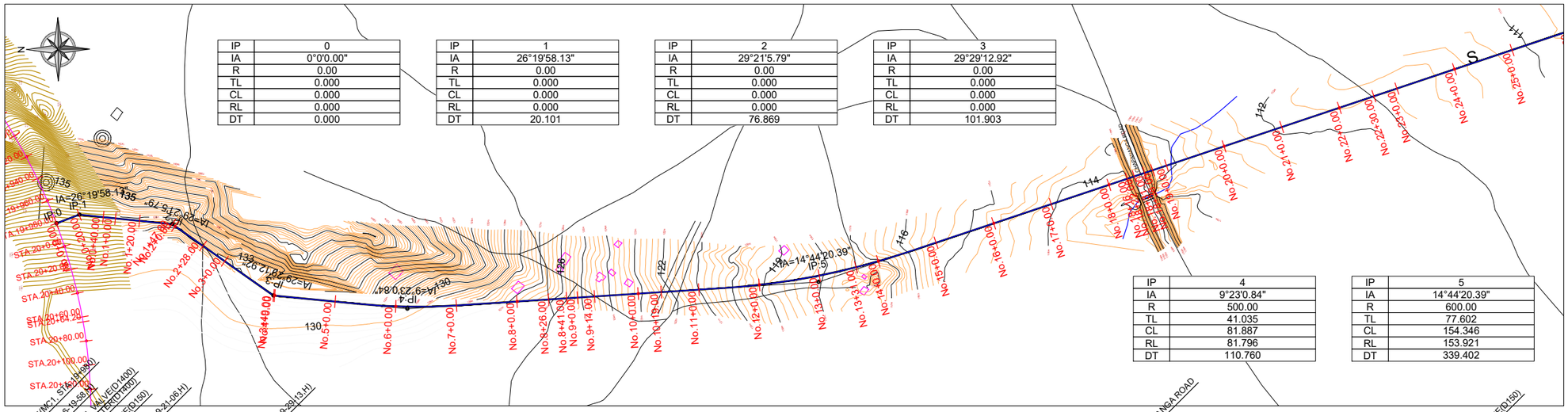
SC1(7/7)

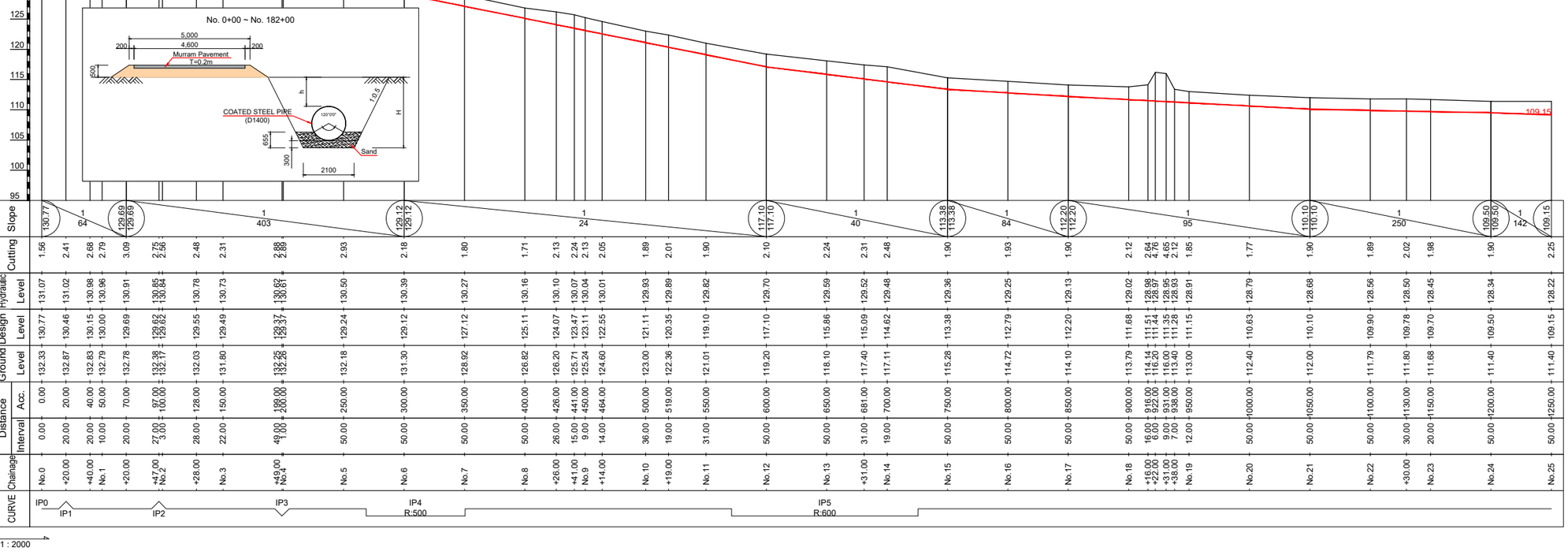
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC1(7/7)	JUNE, 2022		B-02-07

General and Profile Plan of SC2(1/12)

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



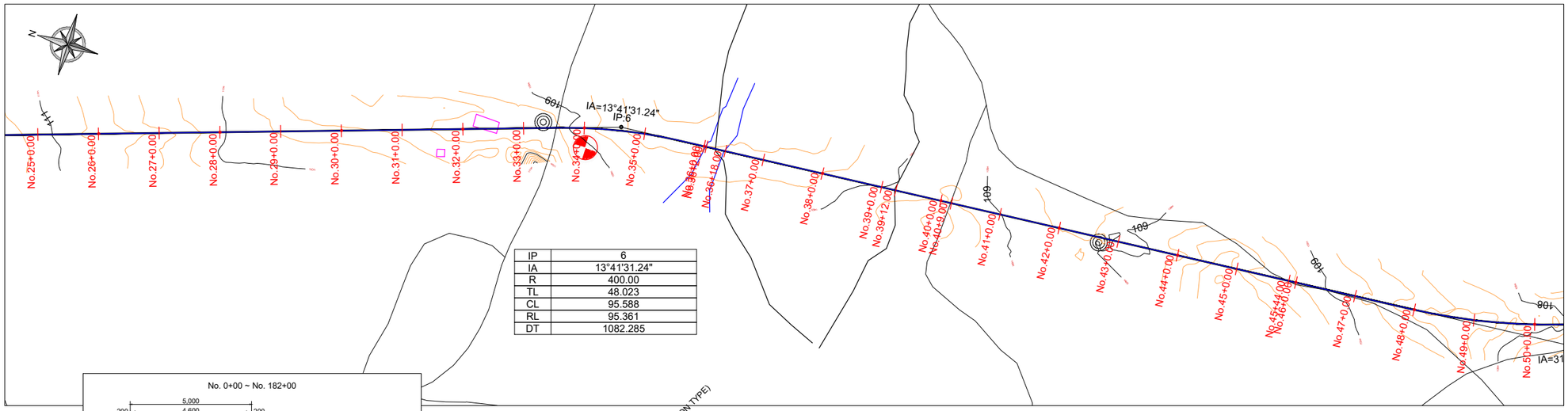


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(1/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-01

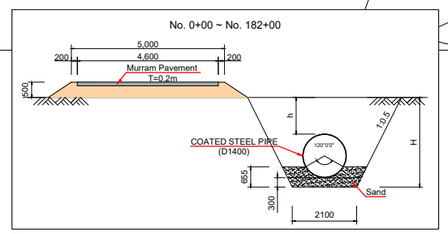
General and Profile Plan of SC2(2/12)

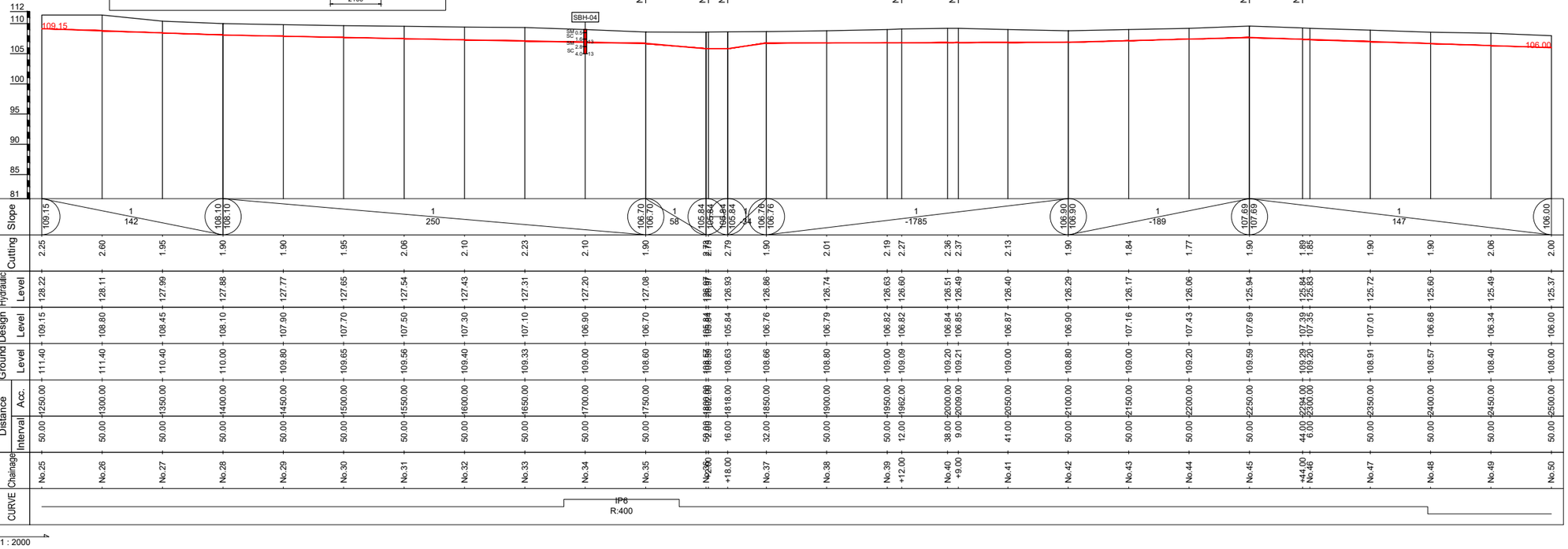
H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	6
IA	13°41'31.24"
R	400.00
TL	48.023
CL	95.588
RL	95.361
DT	1082.285





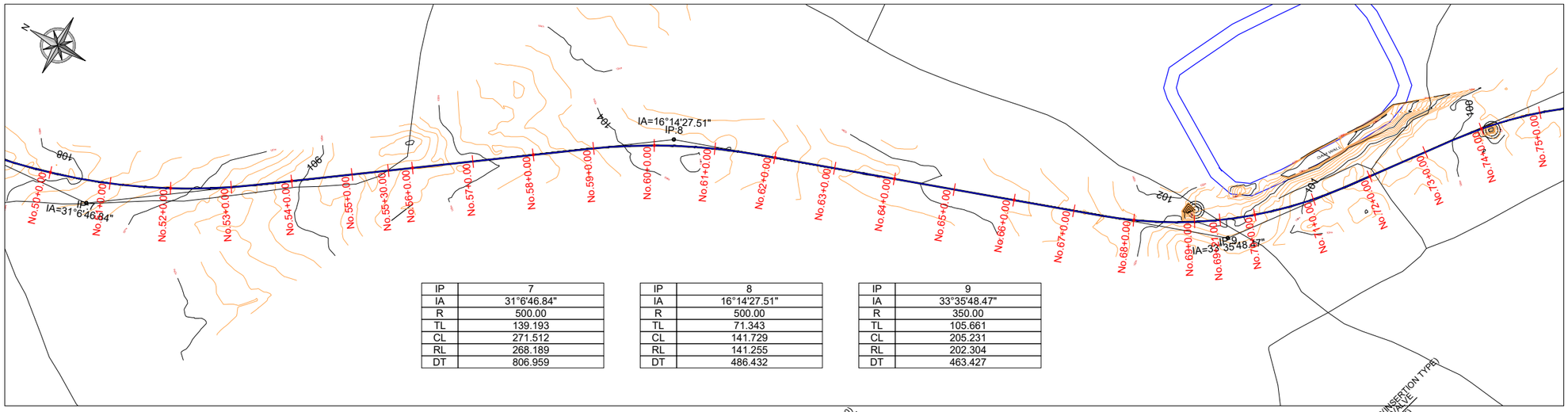
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design
		TITLE	DATE
		General and Profile Plan of SC2(2/12)	JUNE, 2022

DRAWING	SCALE
DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
DRAWING BY: Gim, Ho Jun	DRAWING No
CHECKED BY: Jo, Jin Hoon	B-03-02

General and Profile Plan of SC2(3/12)

H=1:2,000, V=1:400

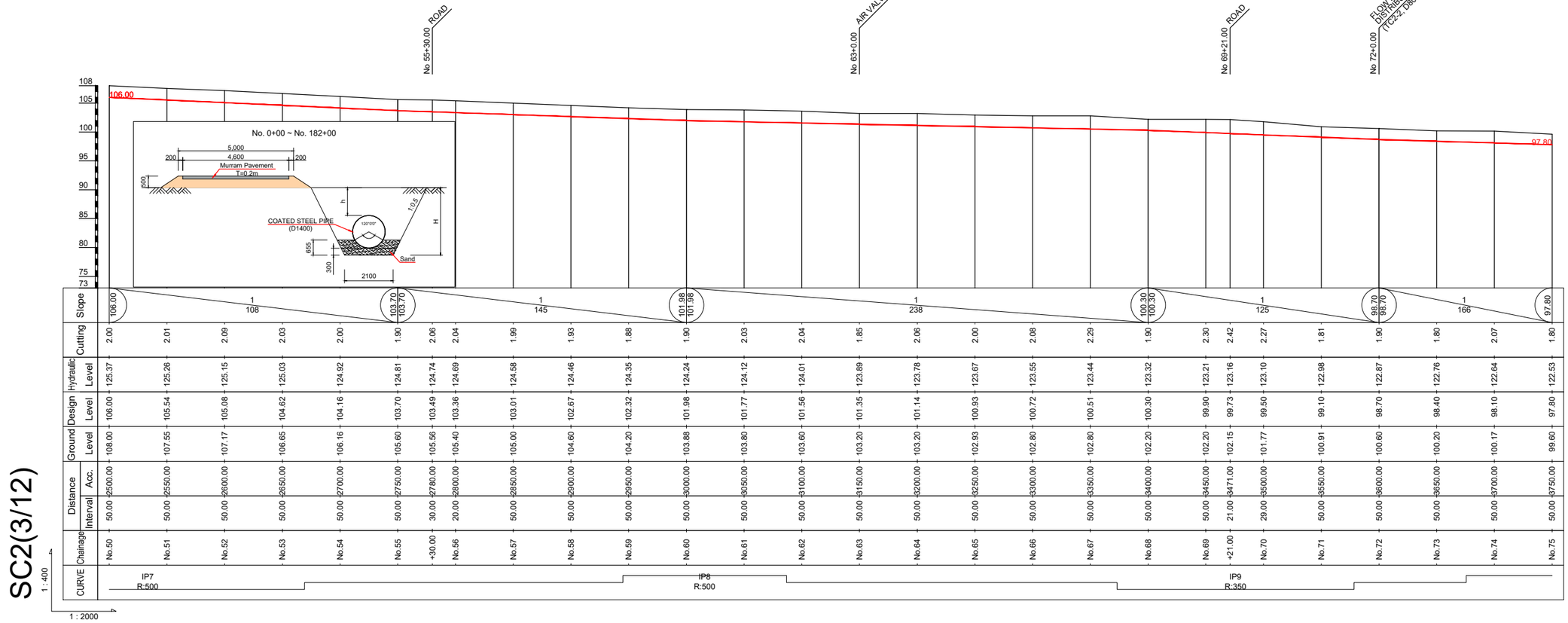
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	7
IA	31°6'46.84"
R	500.00
TL	139.193
CL	271.512
RL	268.189
DT	806.959

IP	8
IA	16°14'27.51"
R	500.00
TL	71.343
CL	141.729
RL	141.255
DT	486.432

IP	9
IA	33°35'48.47"
R	350.00
TL	105.661
CL	205.231
RL	202.304
DT	463.427

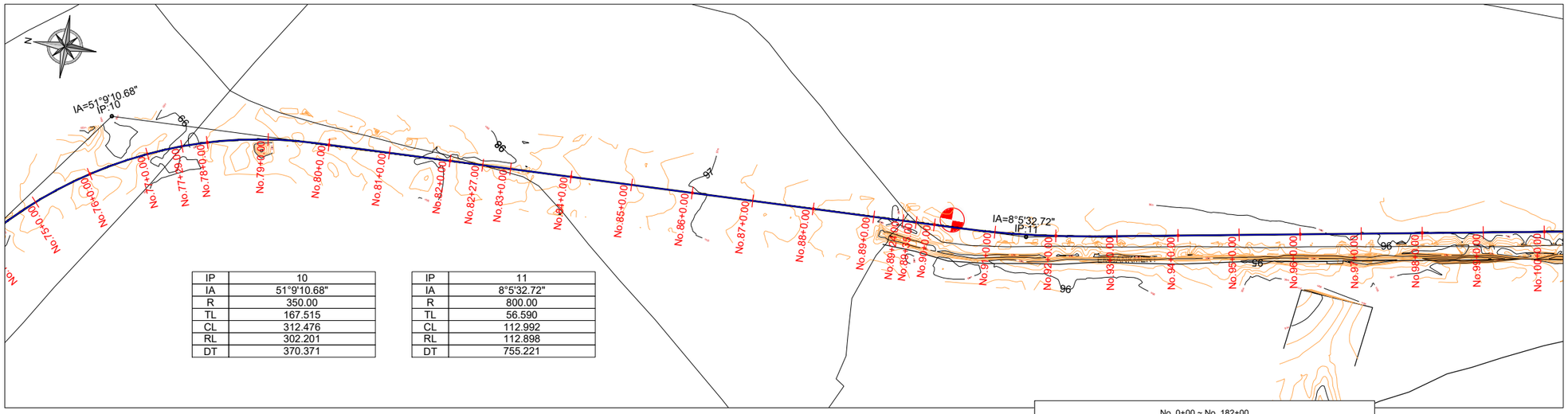


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(3/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-03

General and Profile Plan of SC2(4/12)

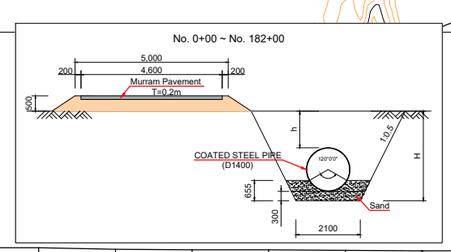
H=1:2,000, V=1:400

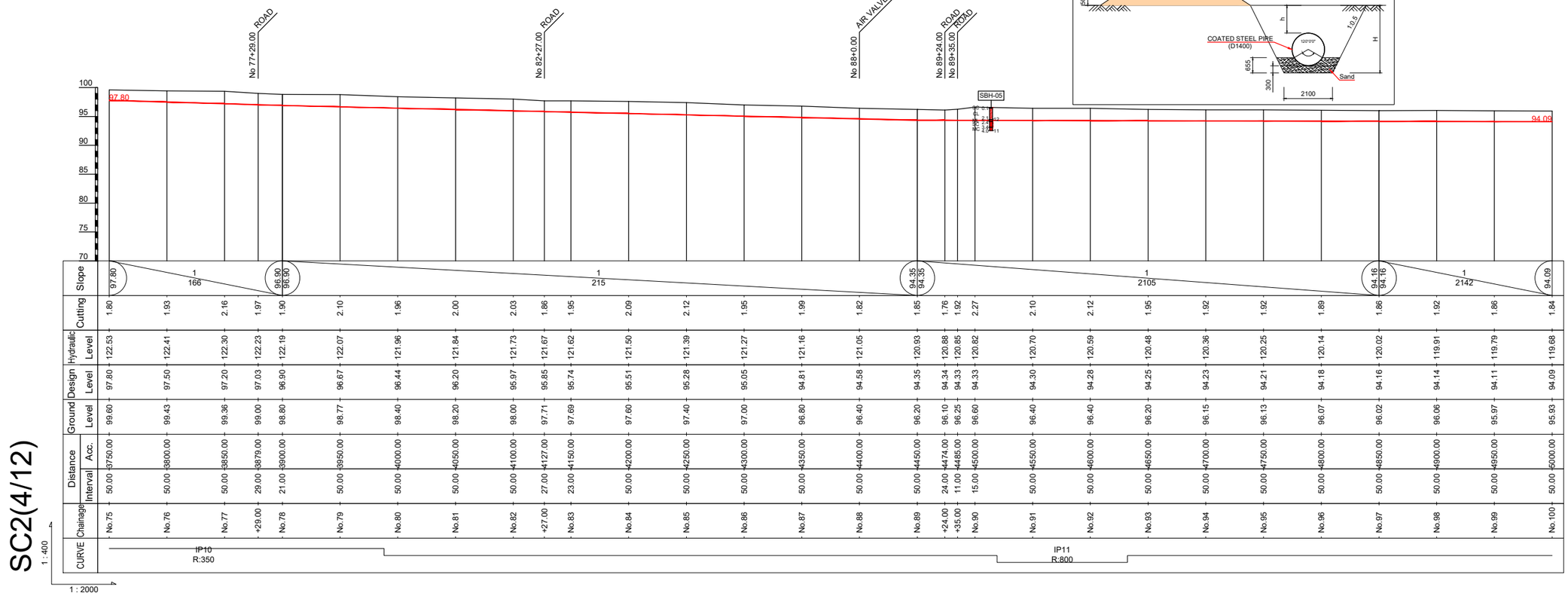
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	10
IA	51°9'10.68"
R	350.00
TL	167.515
CL	312.476
RL	302.201
DT	370.371

IP	11
IA	8°5'32.72"
R	800.00
TL	56.590
CL	112.992
RL	112.898
DT	755.221



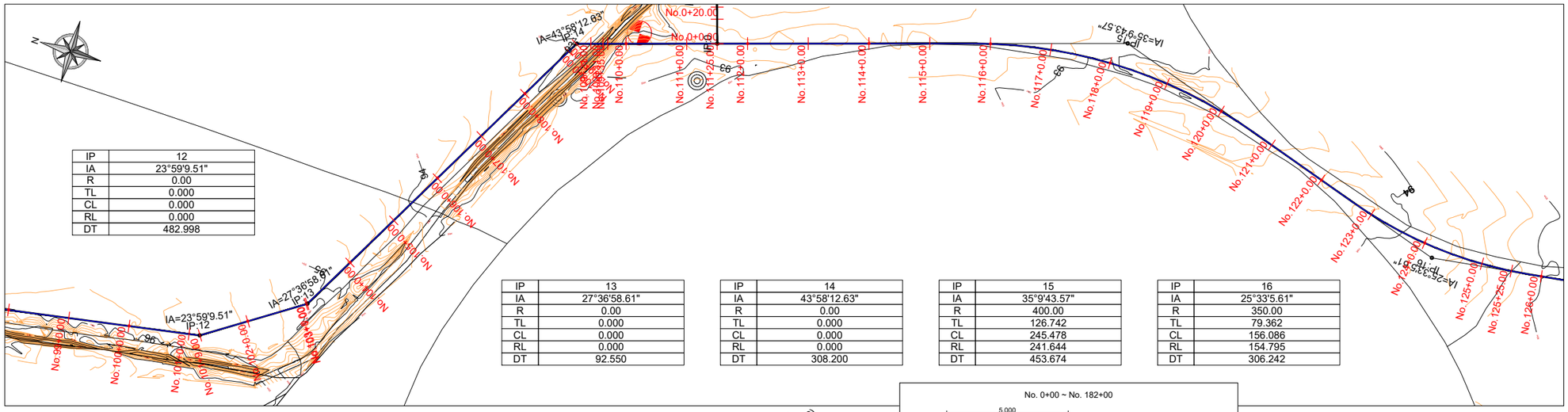


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(4/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-04

General and Profile Plan of SC2(5/12)

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



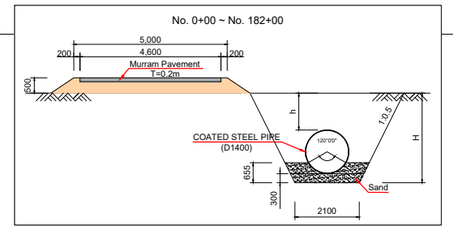
IP	12
IA	23°59'9.51"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	482.998

IP	13
IA	27°36'58.61"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	92.550

IP	14
IA	43°58'12.63"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	308.200

IP	15
IA	35°9'43.57"
R	400.00
TL	126.742
CL	245.478
RL	241.644
DT	453.674

IP	16
IA	25°33'5.61"
R	350.00
TL	79.362
CL	156.086
RL	154.795
DT	306.242



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(5/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-05

General and Profile Plan of SC2(6/12)

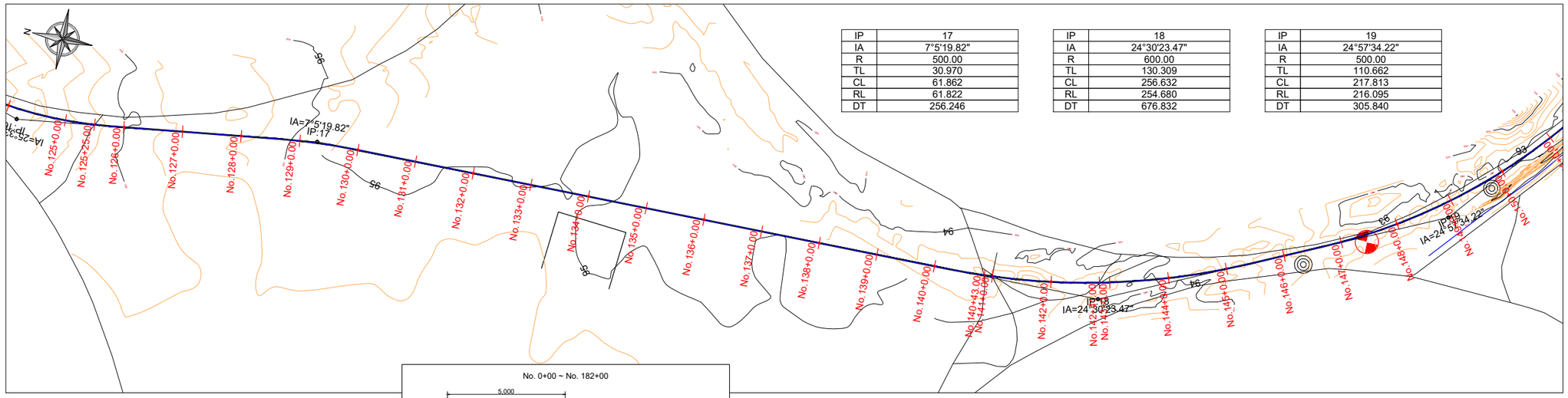
H=1:2,000, V=1:400

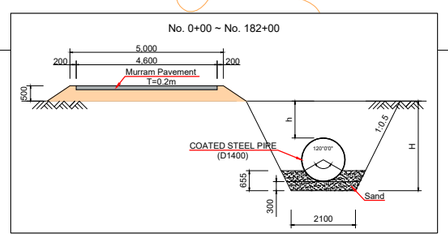
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	17
IA	7°5'19.82"
R	500.00
TL	30.970
CL	61.862
RL	61.822
DT	256.246

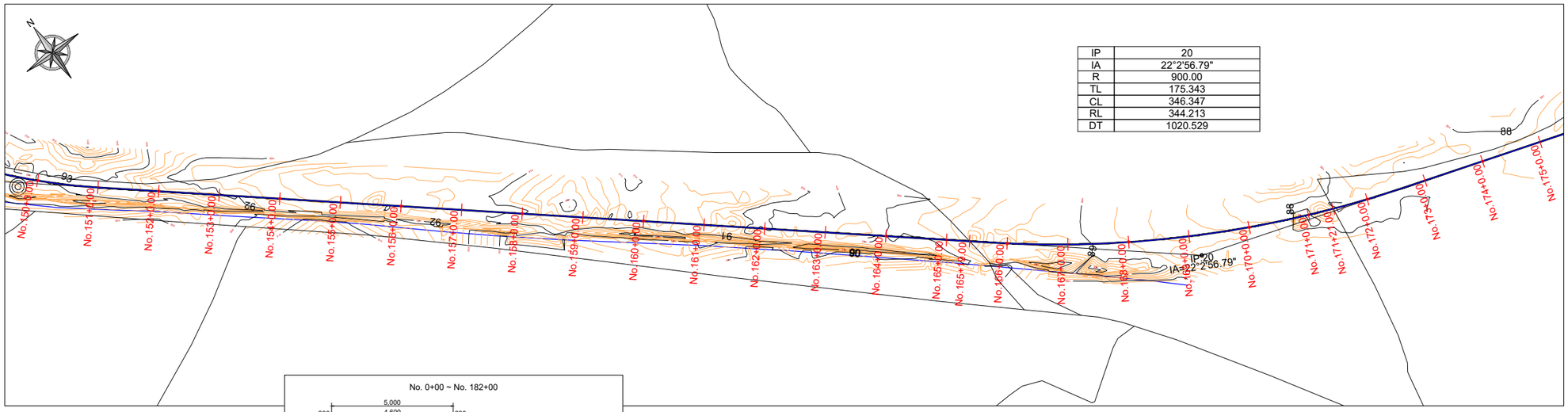
IP	18
IA	24°30'23.47"
R	600.00
TL	130.309
CL	256.632
RL	254.680
DT	676.832

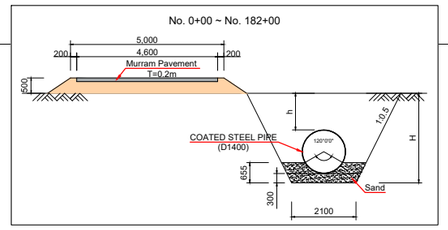
IP	19
IA	24°57'34.22"
R	500.00
TL	110.662
CL	217.813
RL	216.095
DT	305.840





CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:400
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC2(6/12)	JUNE, 2022		B-03-06





General and Profile Plan of SC2(7/12)

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	20
IA	22°2'56.79"
R	900.00
TL	175.343
CL	346.347
RL	344.213
DT	1020.529

SC2(7/12)

1 : 400

1 : 2000

		No.150	No.151	No.152	No.153	No.154	No.155	No.156	No.157	No.158	No.159	No.160	No.161	No.162
Slope		90.67				1 205					88.48 88.48	1 535		88.20 88.20
Cutting		2.34	2.57	2.28	2.16	1.87	1.95	1.99	2.23	2.28	1.81	2.41	2.31	1.80
Hydraulic	Level	113.98	113.87	113.76	113.64	113.53	113.42	113.30	113.19	113.07	112.96	112.85	112.73	112.62
Design	Level	90.67	90.43	90.18	89.94	89.70	89.45	89.21	88.97	88.72	88.48	88.39	88.29	88.20
Ground	Level	93.01	93.00	92.46	92.10	91.57	91.40	91.20	91.20	91.00	90.29	90.80	90.60	90.00
Distance	Acc.	7500.00	7550.00	7600.00	7650.00	7700.00	7750.00	7800.00	7850.00	7900.00	7950.00	8000.00	8050.00	8100.00
	Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Chainage		No.150	No.151	No.152	No.153	No.154	No.155	No.156	No.157	No.158	No.159	No.160	No.161	No.162
CURVE														

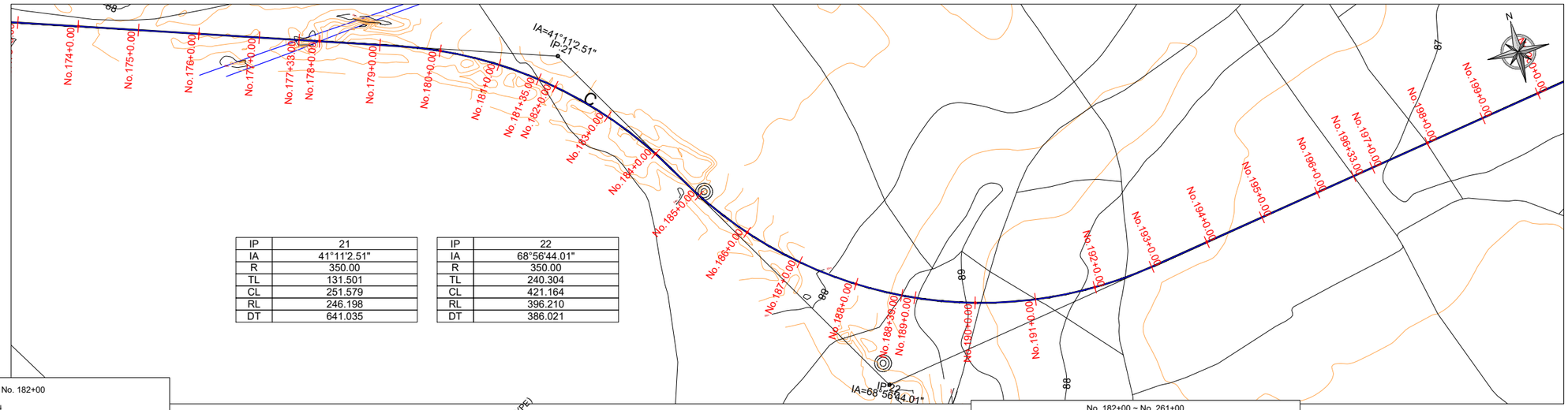
		No.163	No.164	No.165	+19.00	No.166	No.167	No.168	No.169	No.170	No.171	+21.00	No.172	No.173	No.174	No.175
Slope							1 233						86.06 86.06	1 1041		85.92
Cutting		2.15	2.28	2.24	2.12	2.06	2.07	1.89	1.90	1.83	1.73	1.67	1.80	1.79	2.04	1.88
Hydraulic	Level	112.50	112.39	112.28	112.23	112.16	112.05	111.93	111.82	111.71	111.59	111.55	111.48	111.37	111.25	111.14
Design	Level	87.99	87.77	87.56	87.48	87.34	87.13	86.92	86.70	86.49	86.27	86.18	86.06	86.01	85.96	85.92
Ground	Level	90.14	90.05	89.80	89.60	89.40	89.20	88.81	88.60	88.32	88.00	87.85	87.86	87.80	88.00	87.80
Distance	Acc.	8150.00	8200.00	8250.00	8269.00	8300.00	8350.00	8400.00	8450.00	8500.00	8550.00	8571.00	8600.00	8650.00	8700.00	8750.00
	Interval	50.00	50.00	50.00	19.00	31.00	50.00	50.00	50.00	50.00	50.00	21.00	29.00	50.00	50.00	50.00
Chainage		No.163	No.164	No.165	+19.00	No.166	No.167	No.168	No.169	No.170	No.171	+21.00	No.172	No.173	No.174	No.175
CURVE									IP20 R:900							

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(7/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-07

General and Profile Plan of SC2(8/12)

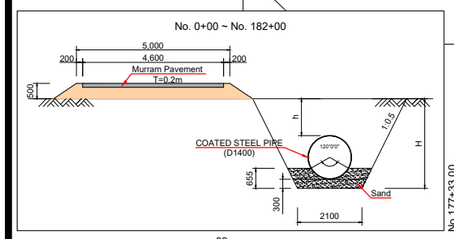
H=1:2,000, V=1:400

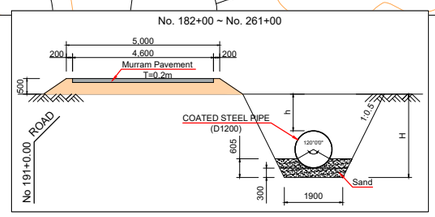
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

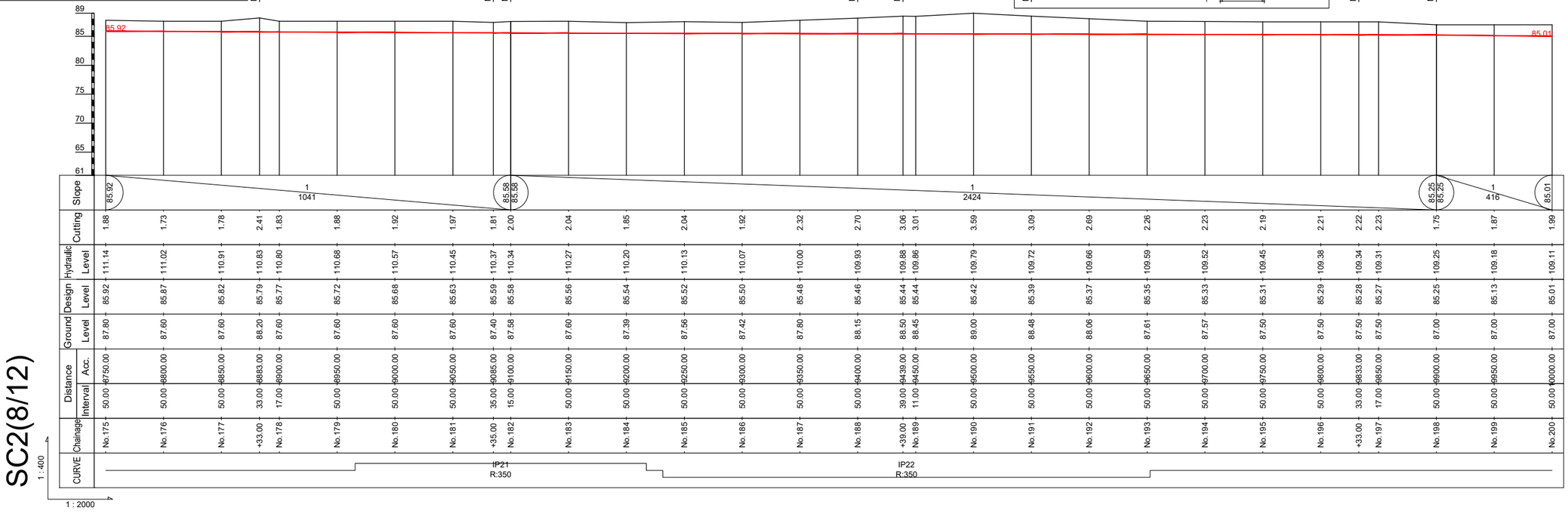


IP	21
IA	41°11'2.51"
R	350.00
TL	131.501
CL	251.579
RL	246.198
DT	641.035

IP	22
IA	68°56'44.01"
R	350.00
TL	240.304
CL	421.164
RL	396.210
DT	386.021





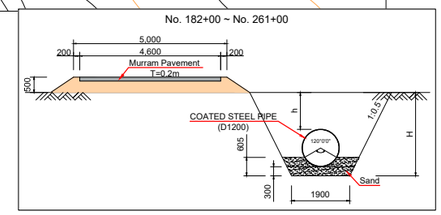


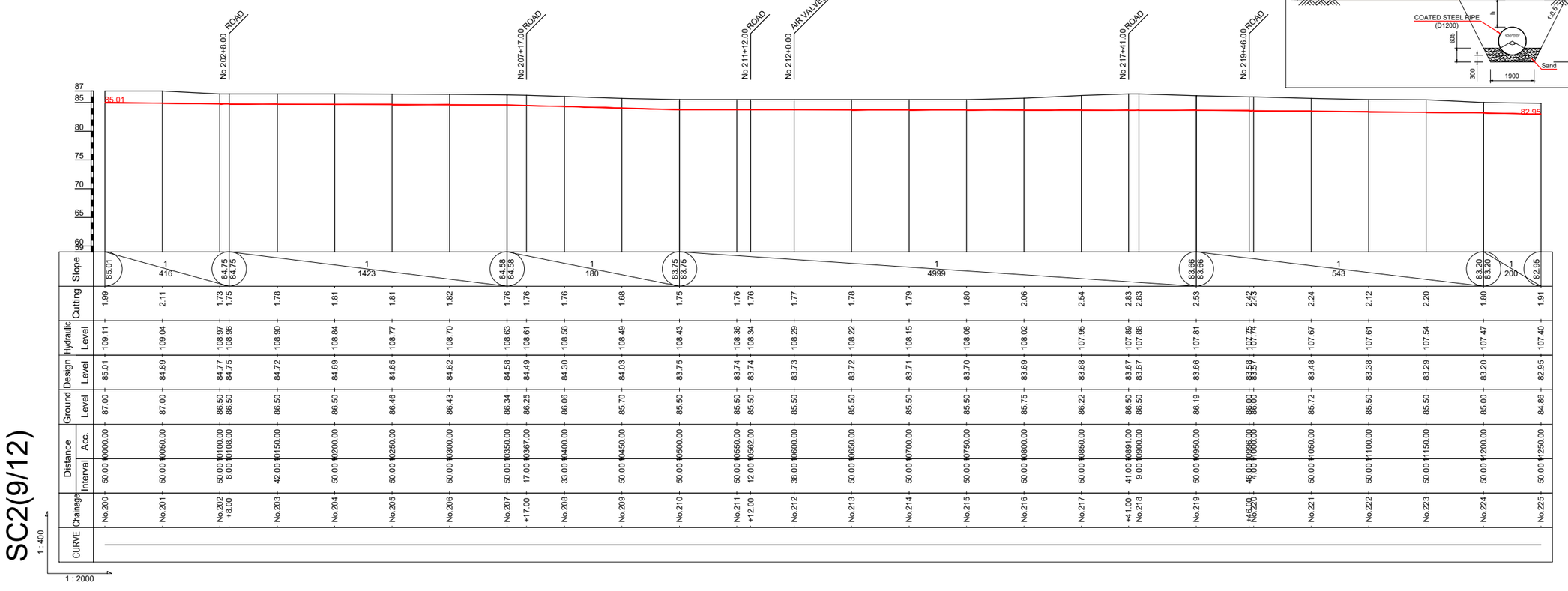
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:400
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC2(8/12)	JUNE, 2022		B-03-08

General and Profile Plan of SC2(9/12)

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).





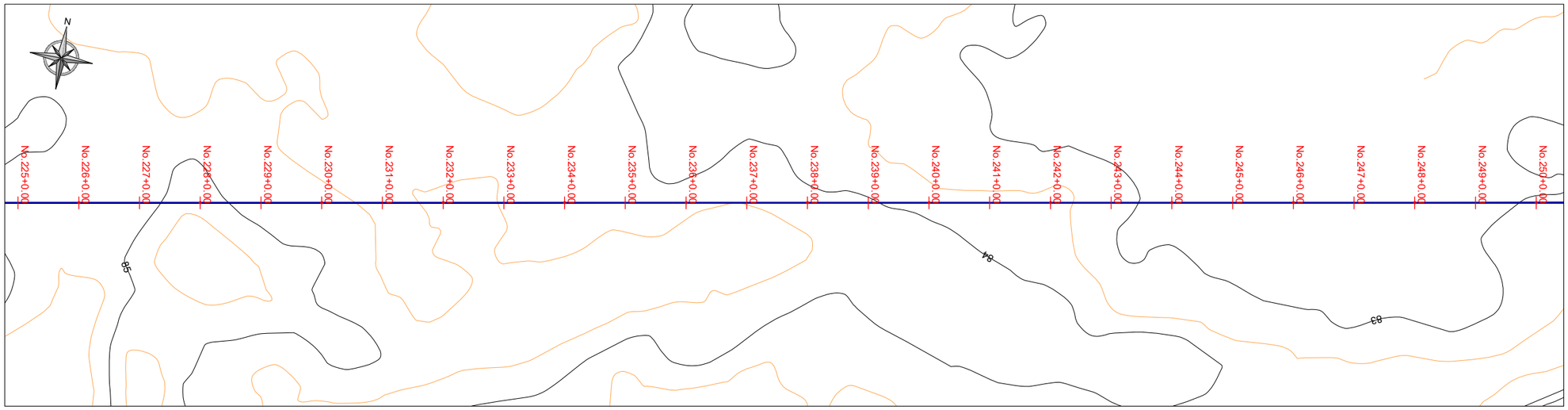
SC2(9/12)

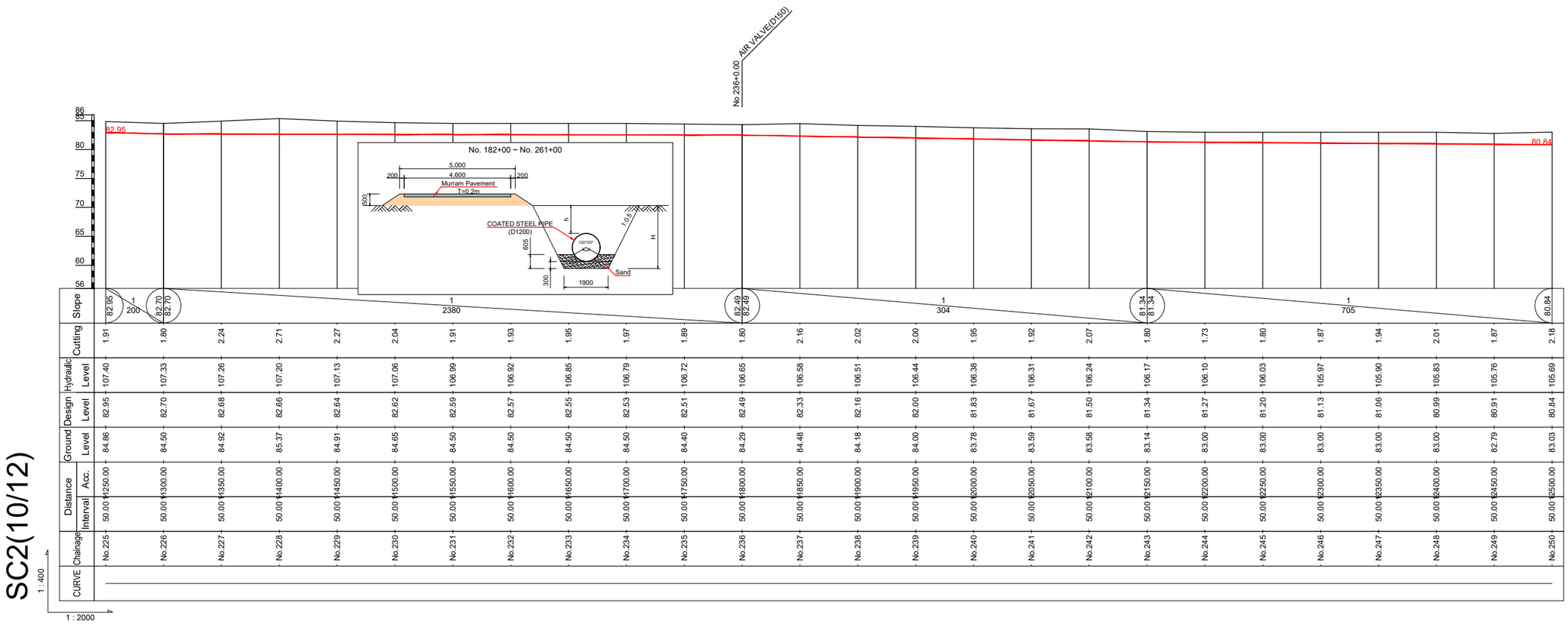
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(9/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-09

General and Profile Plan of SC2(10/12)

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



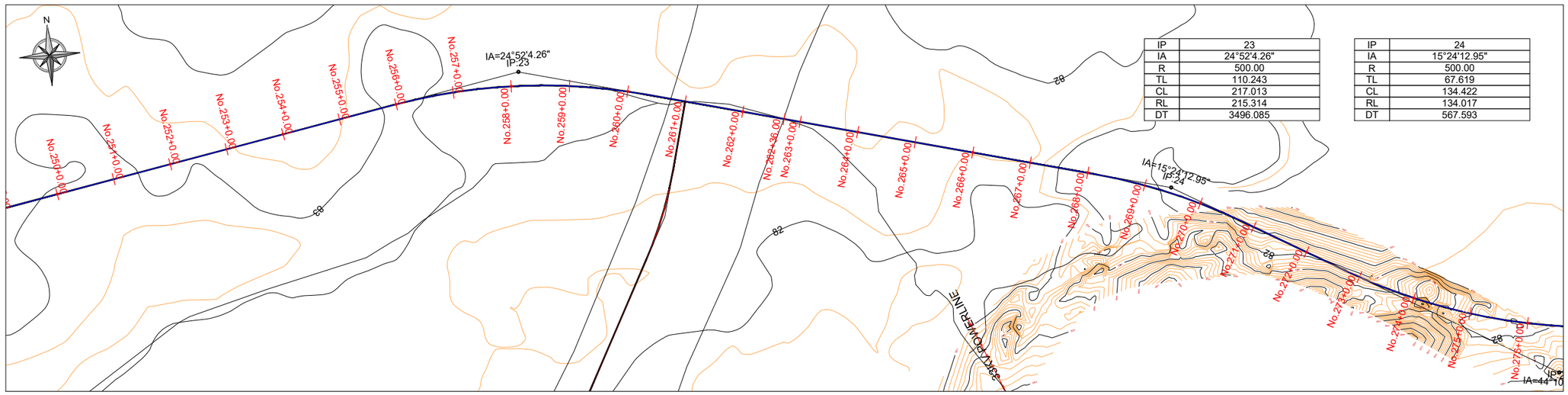


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(10/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-10

General and Profile Plan of SC2(11/12)

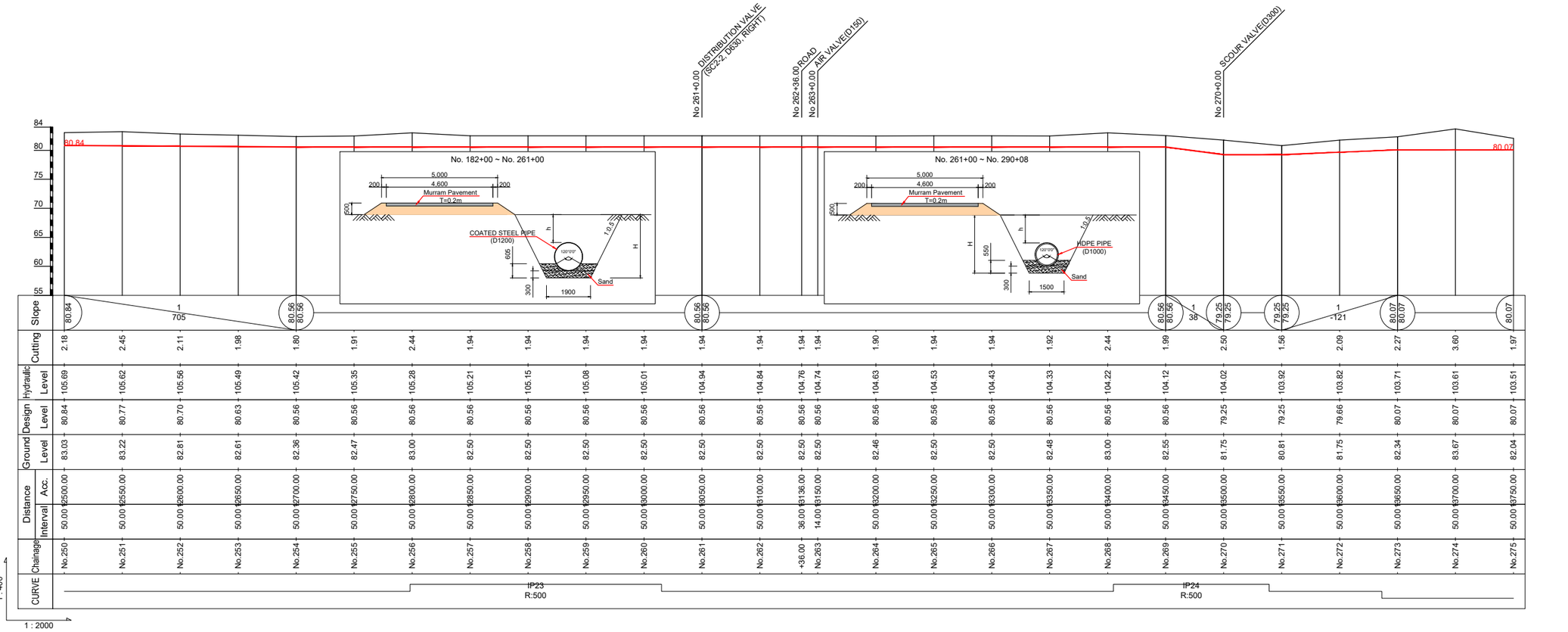
H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	23
IA	24°52'4.26"
R	500.00
TL	110.243
CL	217.013
RL	215.314
DT	3496.085

IP	24
IA	15°24'12.95"
R	500.00
TL	67.619
CL	134.422
RL	134.017
DT	567.593

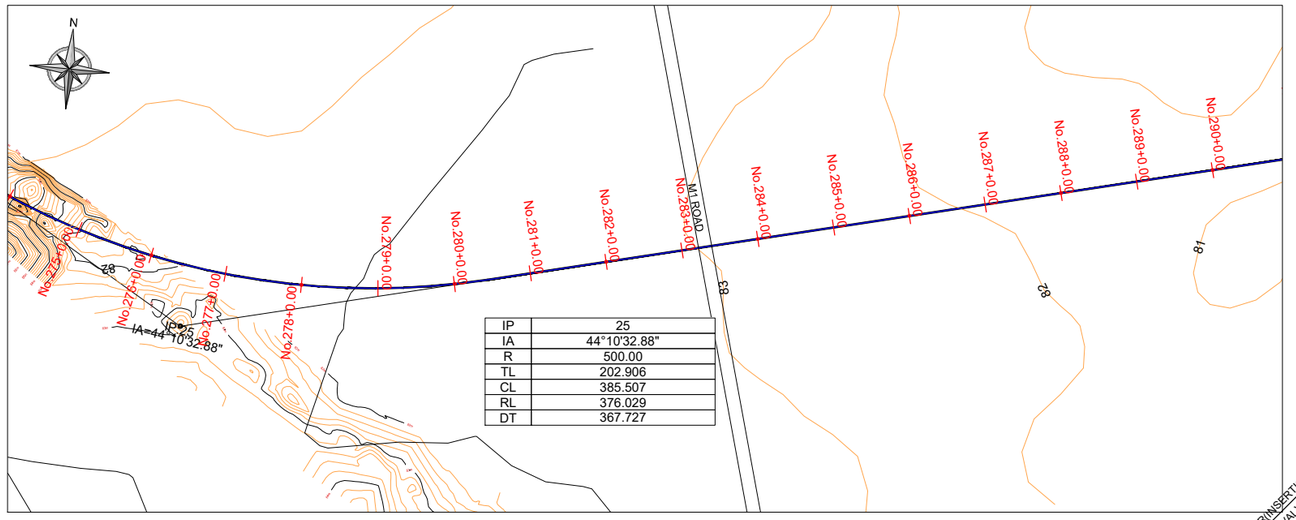


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2(11/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-03-11

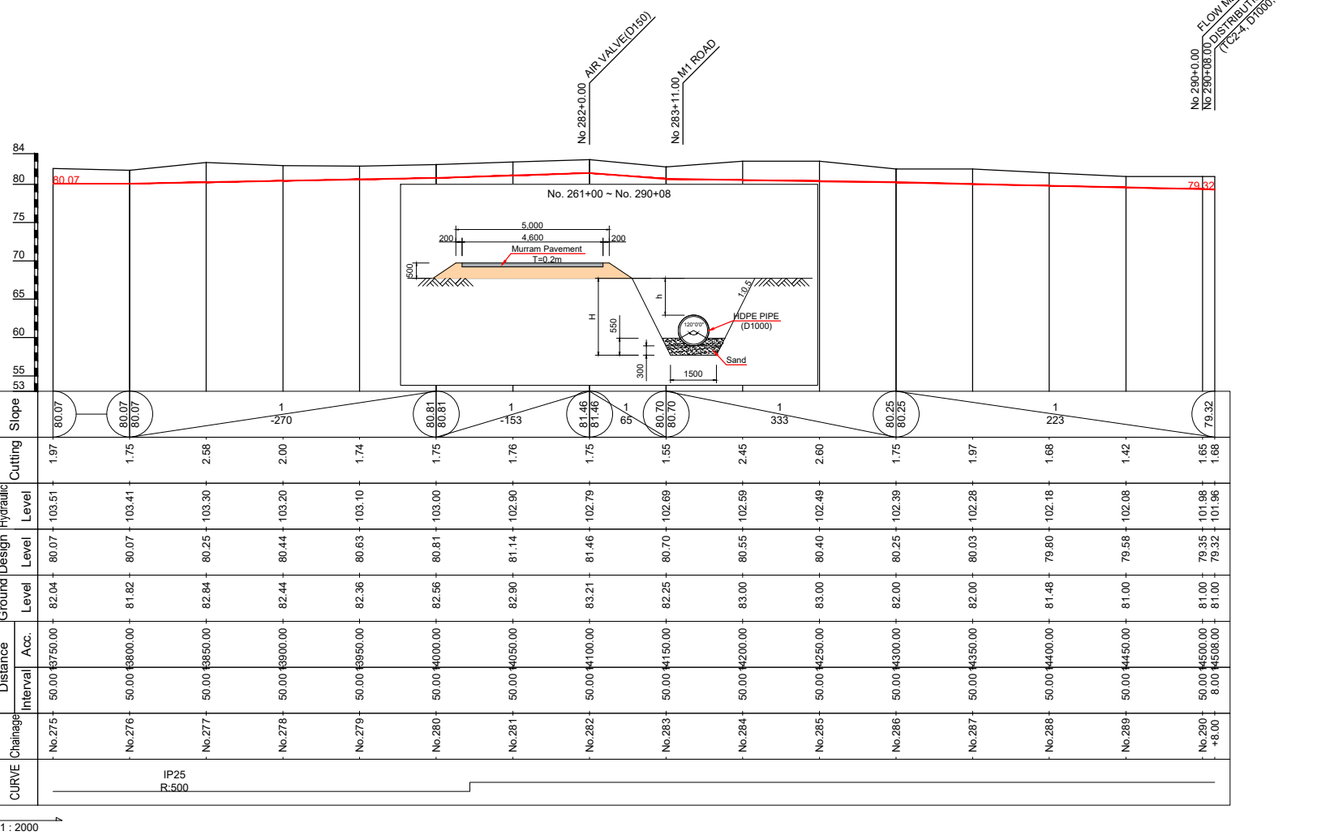
General and Profile Plan of SC2(12/12)

H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	25
IA	44°10'32.88"
R	500.00
TL	202.906
CL	385.507
RL	376.029
DT	367.727



SC2(12/12)

Chainage	Distance Interval	Distance Acc.	Ground Level	Design Level	Hydraulic Level	Cutting	Slope
No.275	50.00	3750.00	82.04	80.07	103.51	1.97	80.07
No.276	50.00	3800.00	81.82	80.07	103.41	1.75	80.07
No.277	50.00	3850.00	82.84	80.25	103.30	2.58	1 -270
No.278	50.00	3900.00	82.44	80.44	103.20	2.00	
No.279	50.00	3950.00	82.36	80.63	103.10	1.74	
No.280	50.00	4000.00	82.56	80.81	103.00	1.75	80.81
No.281	50.00	4050.00	82.90	81.14	102.90	1.76	80.81 1 -153
No.282	50.00	4100.00	83.21	81.46	102.79	1.75	81.46
No.283	50.00	4150.00	82.25	80.70	102.69	1.55	81.46 1 65 80.70
No.284	50.00	4200.00	83.00	80.55	102.59	2.45	80.70
No.285	50.00	4250.00	83.00	80.40	102.49	2.60	1 333
No.286	50.00	4300.00	82.00	80.25	102.39	1.75	80.25
No.287	50.00	4350.00	82.00	80.03	102.28	1.97	80.25
No.288	50.00	4400.00	81.48	79.80	102.18	1.68	1 223
No.289	50.00	4450.00	81.00	79.58	102.08	1.42	
No.290	50.00	4500.00	81.00	79.35	101.98	1.65	79.32
+8.00	8.00	4508.00	81.00	79.32	101.96	1.68	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:400
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC2(12/12)	JUNE, 2022		B-03-12

General and Profile Plan of SC2-1 (1/3)

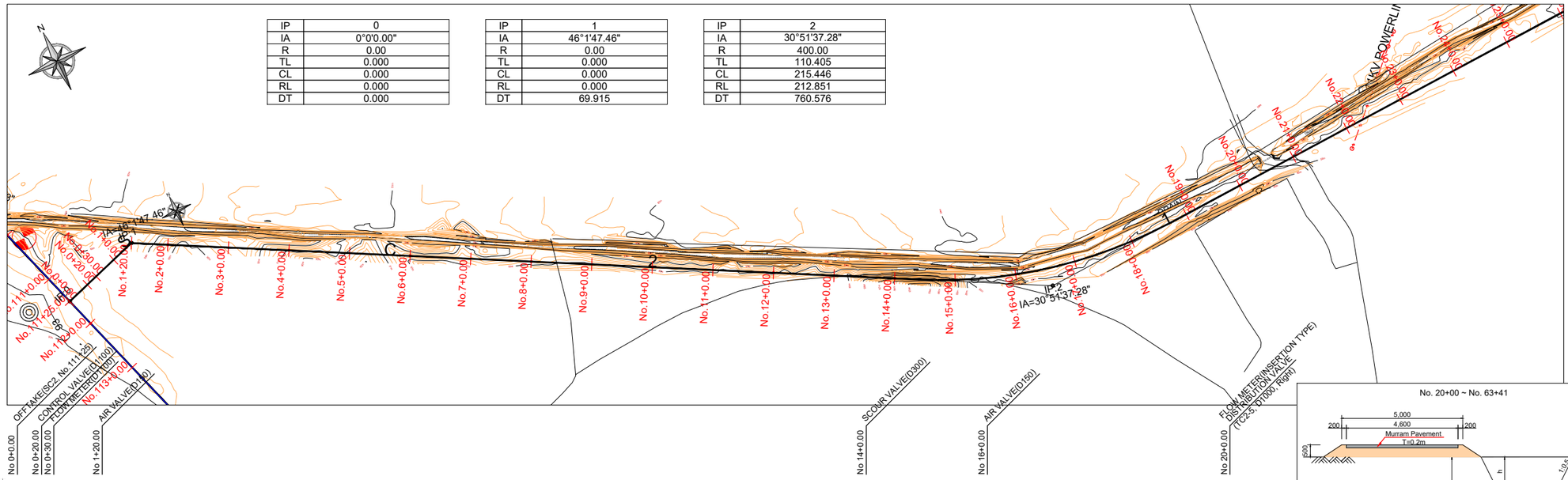
H=1:2,000, V=1:200

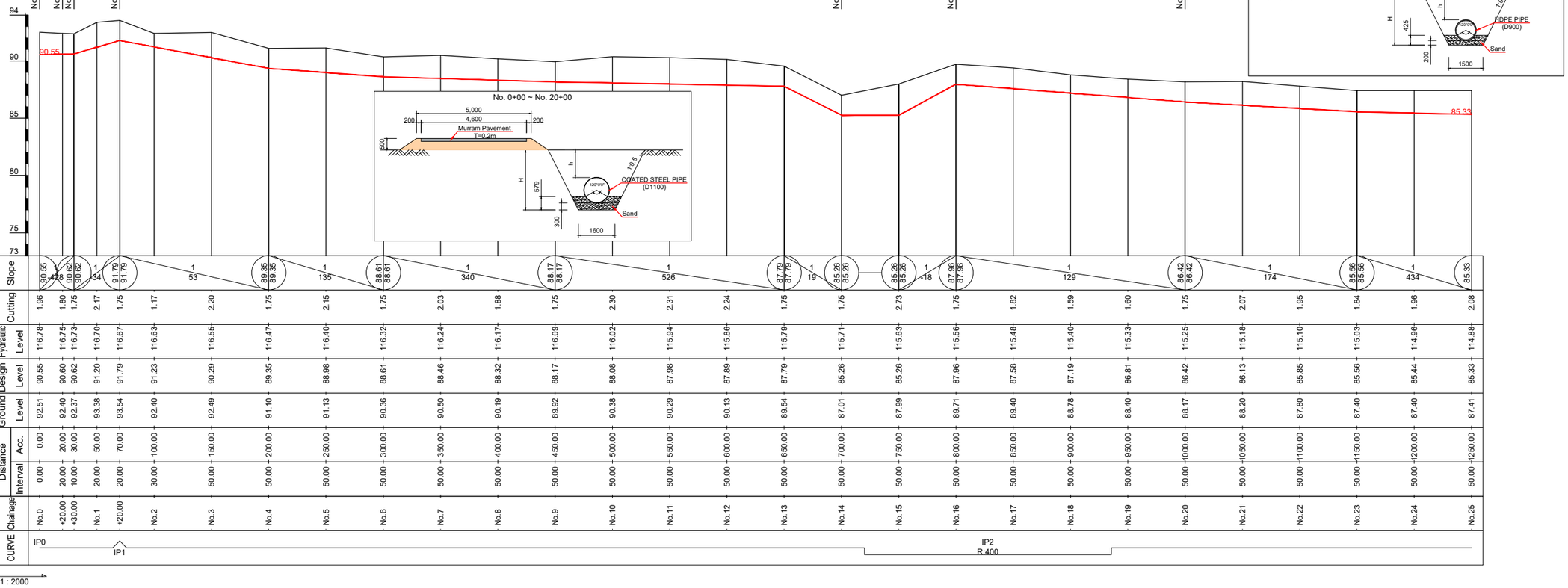
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	46°1'47.46"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	69.915

IP	2
IA	30°51'37.28"
R	400.00
TL	110.405
CL	215.446
RL	212.851
DT	760.576





CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2-1 (1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-04-01

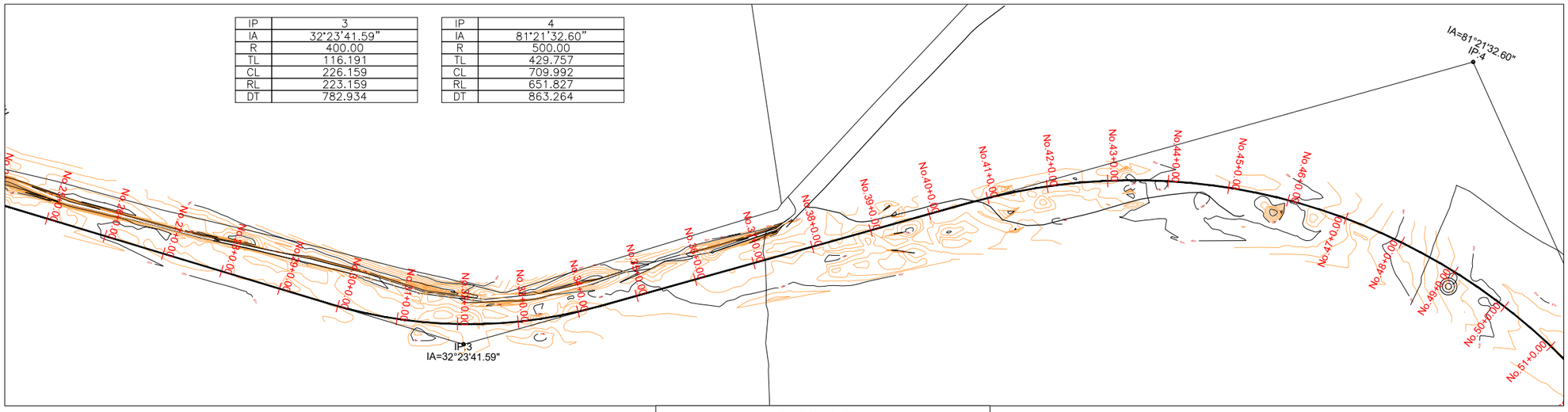
General and Profile Plan of SC2-1 (2/3)

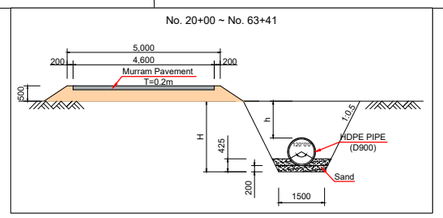
H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	3
IA	32°23'41.59"
R	400.00
TL	116.191
CL	226.159
RL	223.159
DT	782.934

IP	4
IA	81°21'32.60"
R	500.00
TL	429.757
CL	709.992
RL	651.827
DT	863.264





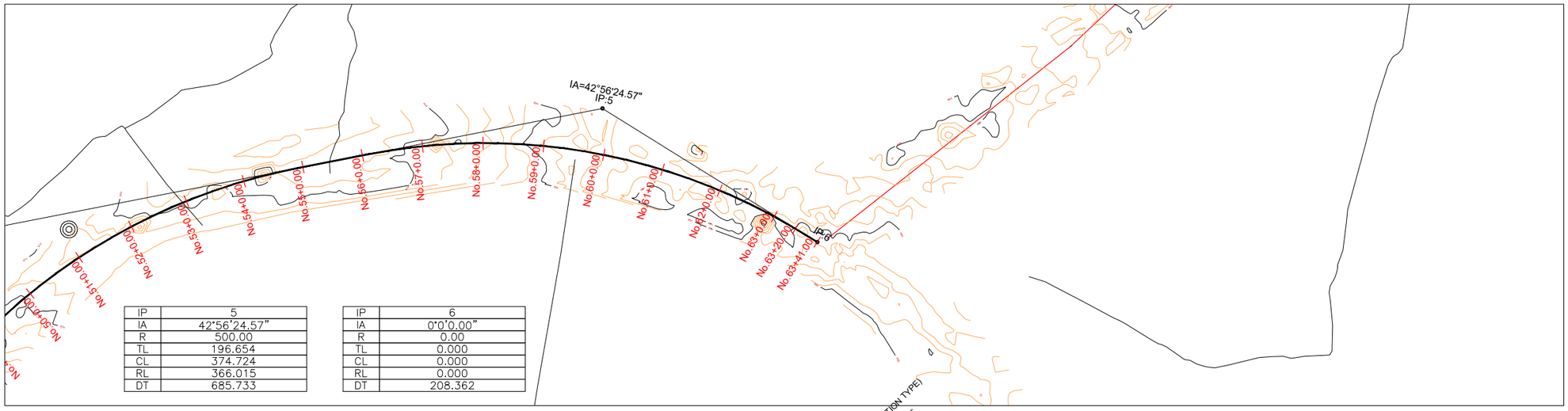
SC2-1(2/3)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC2-1 (2/3)	JUNE, 2022		B-04-02

General and Profile Plan of SC2-1 (3/3)

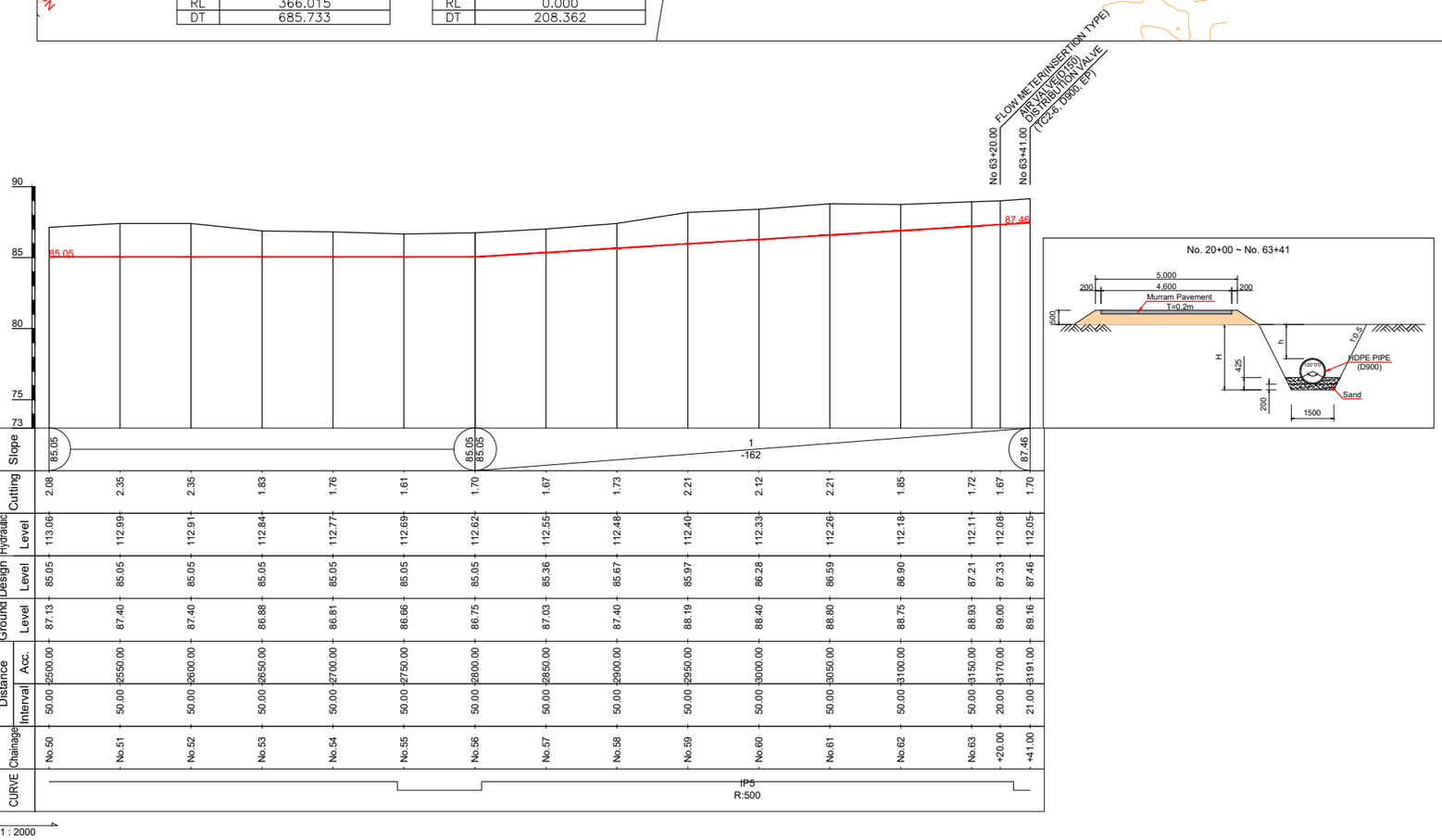
H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	5
IA	42°56'24.57"
R	500.00
TL	196.654
CL	374.724
RL	366.015
DT	685.733

IP	6
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	208.362



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2-1 (3/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-04-03

General and Profile Plan of SC2-2

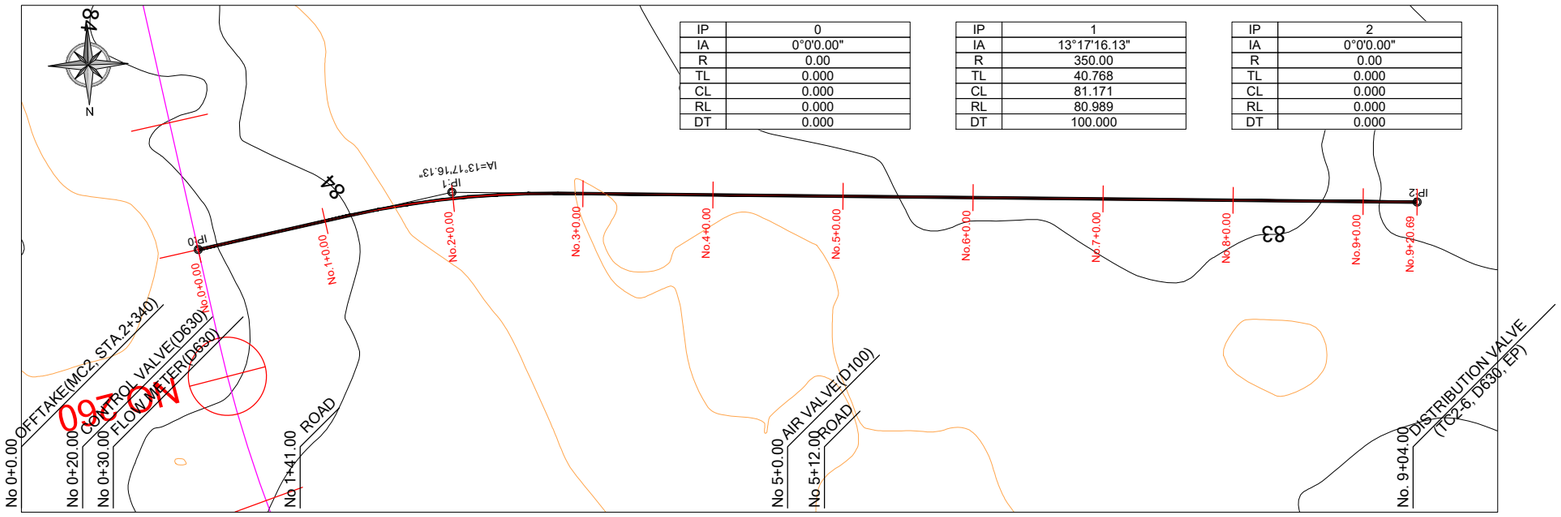
H=1:1,000, V=1:100

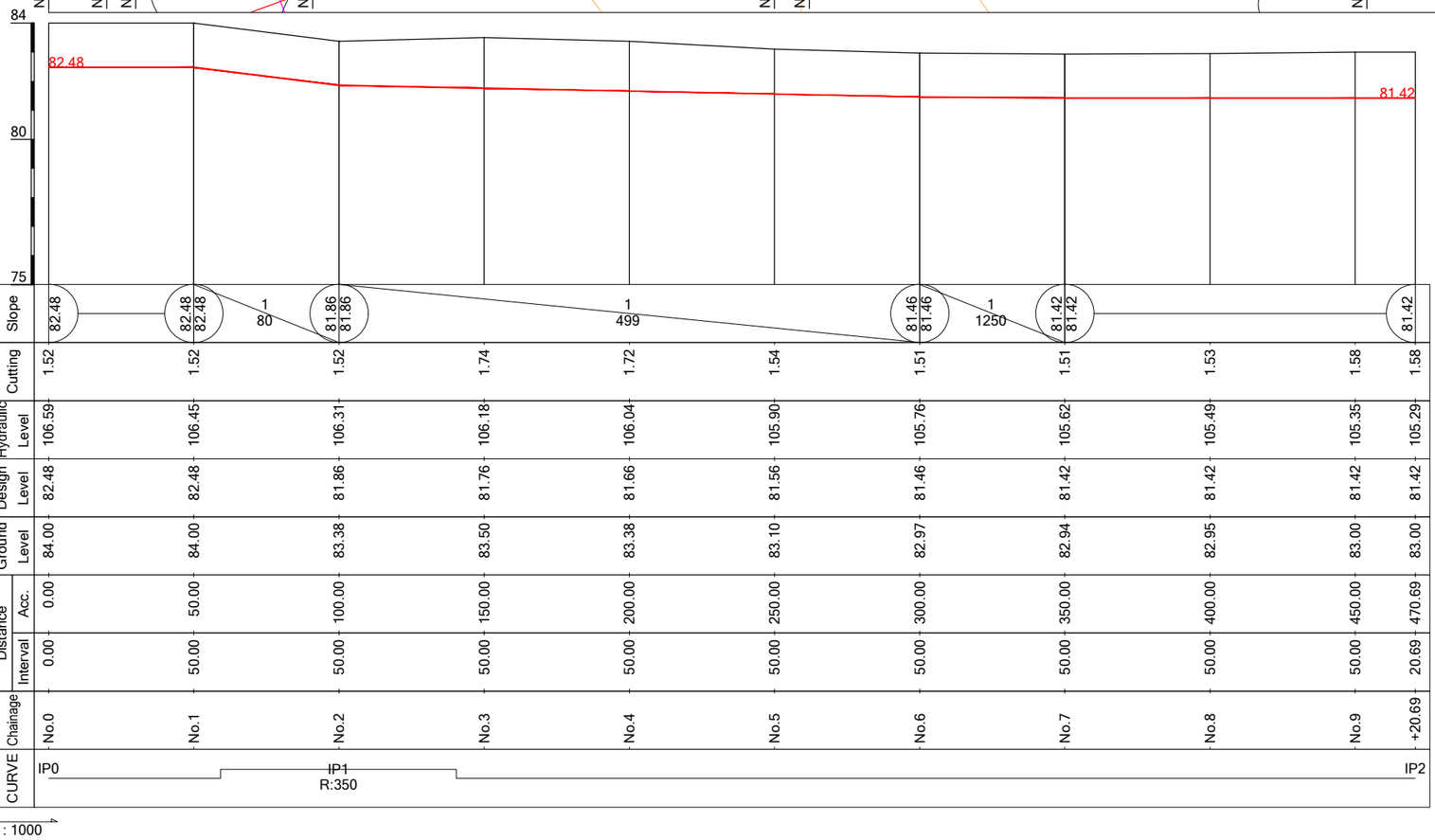
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

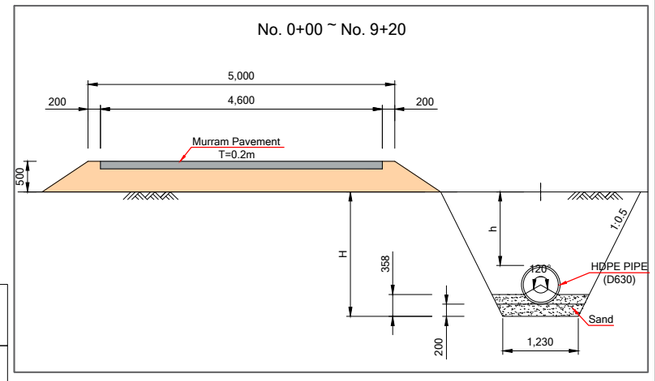
IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	13°17'16.13"
R	350.00
TL	40.768
CL	81.171
RL	80.989
DT	100.000

IP	2
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000







CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC2-2	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-05-01

General and Profile Plan of SC3(1/2)

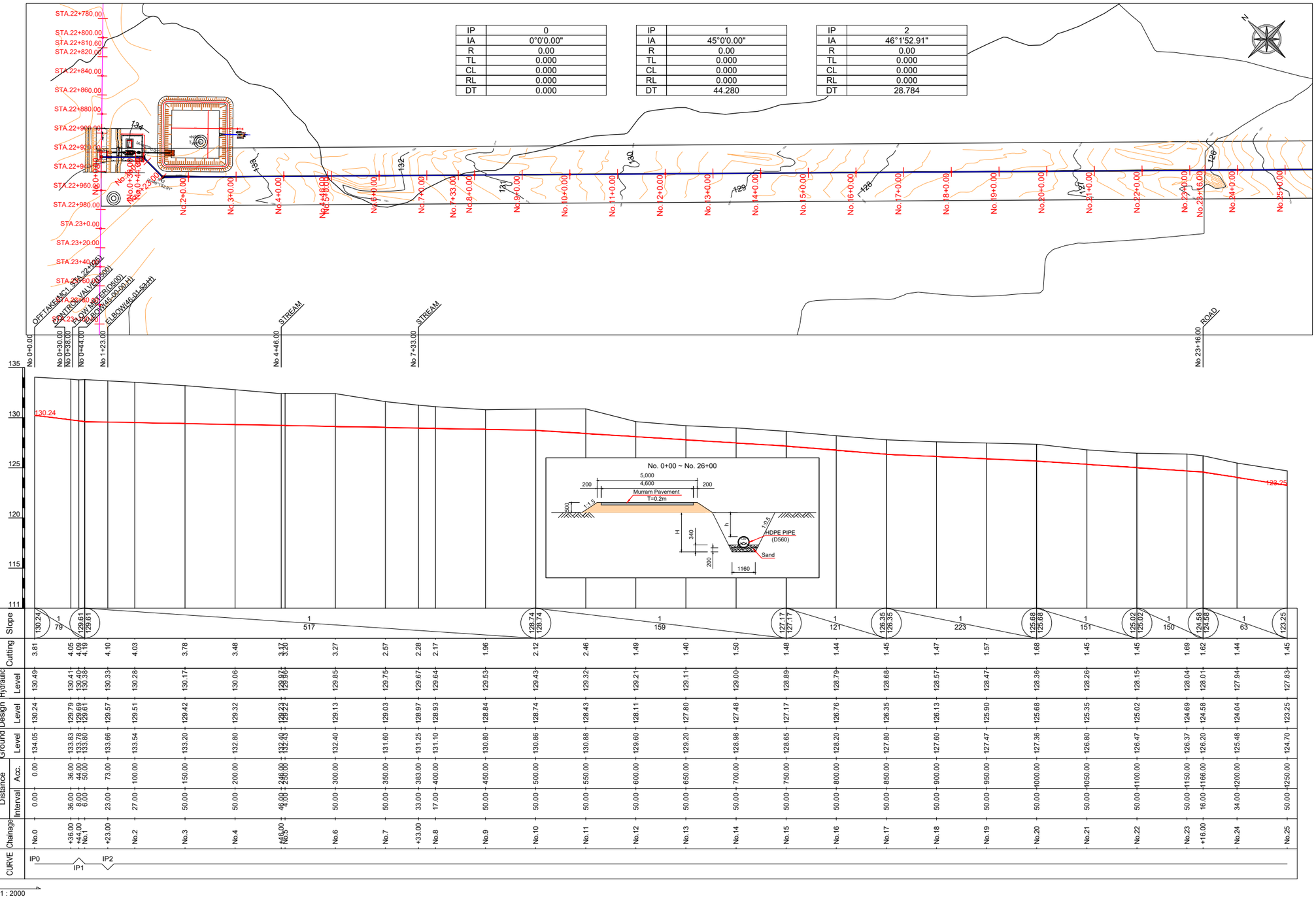
H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	45°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	44.280

IP	2
IA	46°1'52.91"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	28.784



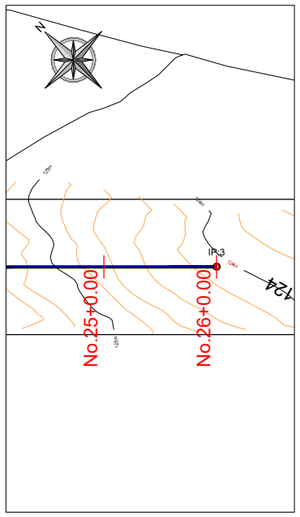
SC3(1/2)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC3(1/2)	JUNE, 2022		B-06-01

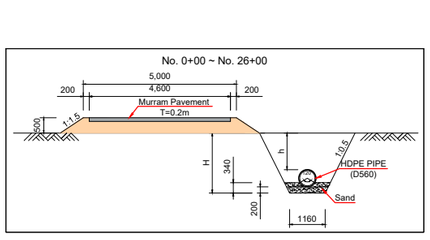
General and Profile Plan of SC3(2/2)

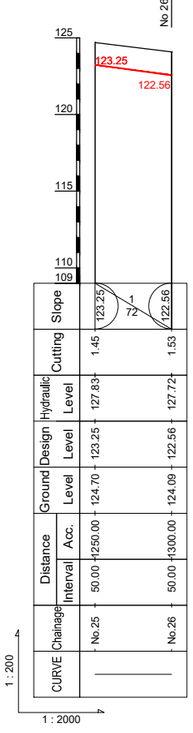
H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	3
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000





CURVE	Chainage	Distance Interval	Distance Acc.	Ground Level	Design Level	Hydraulic Level	Cutting	Slope
	No.25	50.00	1250.00	124.70	123.25	127.83	1.45	123.25 1 / 72
	No.26	50.00	1300.00	124.09	122.56	127.72	1.53	122.56

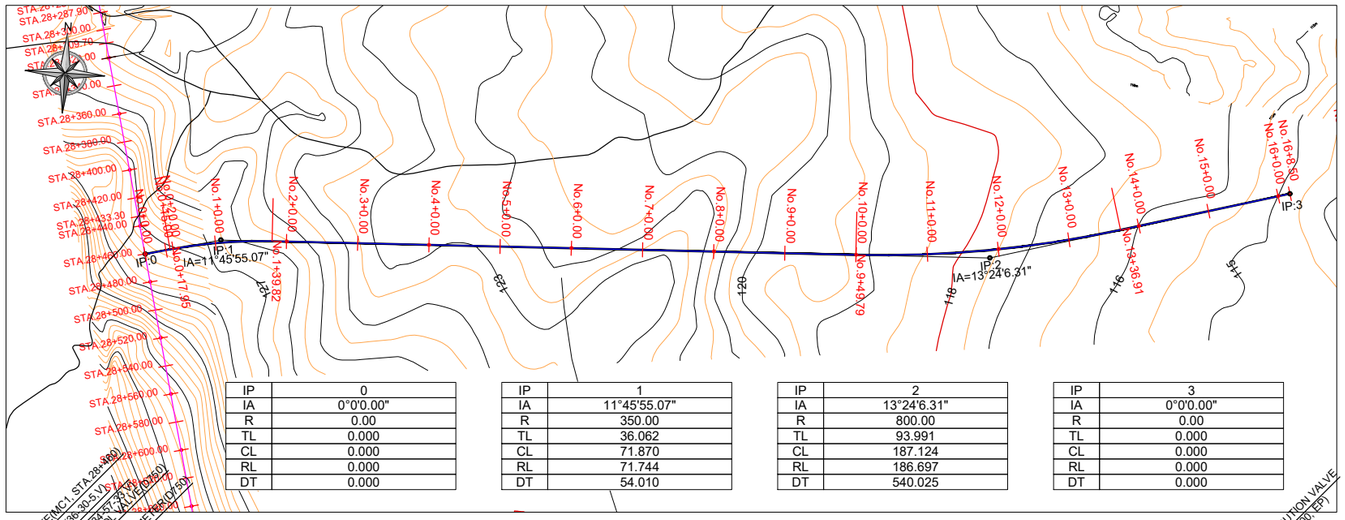
SC3(2/2)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC3(2/2)	JUNE, 2022		B-06-02

General and Profile Plan of SC4

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

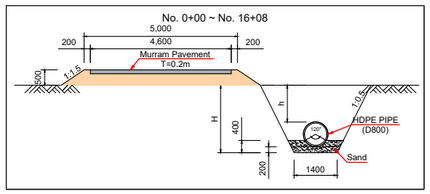


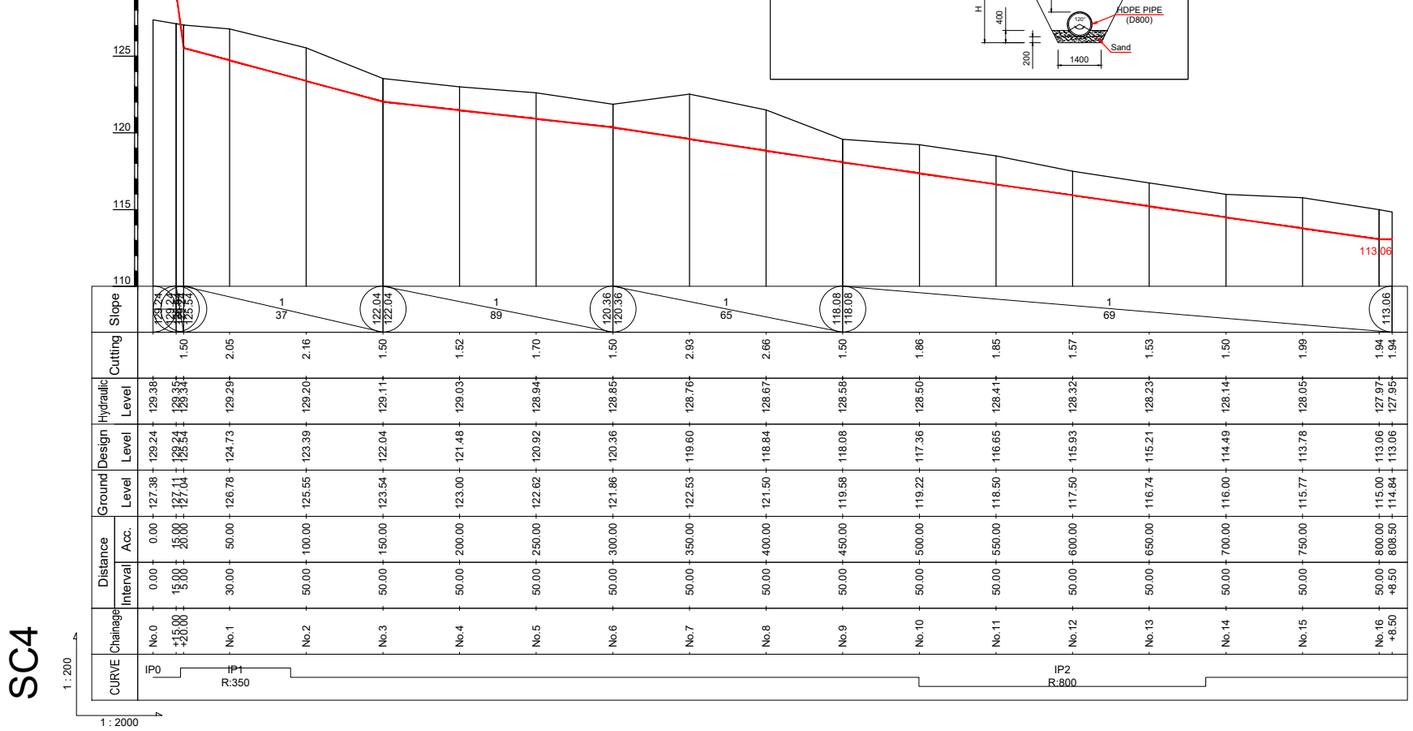
IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	11°45'55.07"
R	350.00
TL	36.062
CL	71.870
RL	71.744
DT	54.010

IP	2
IA	13°24'6.31"
R	800.00
TL	93.991
CL	187.124
RL	186.697
DT	540.025

IP	3
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000





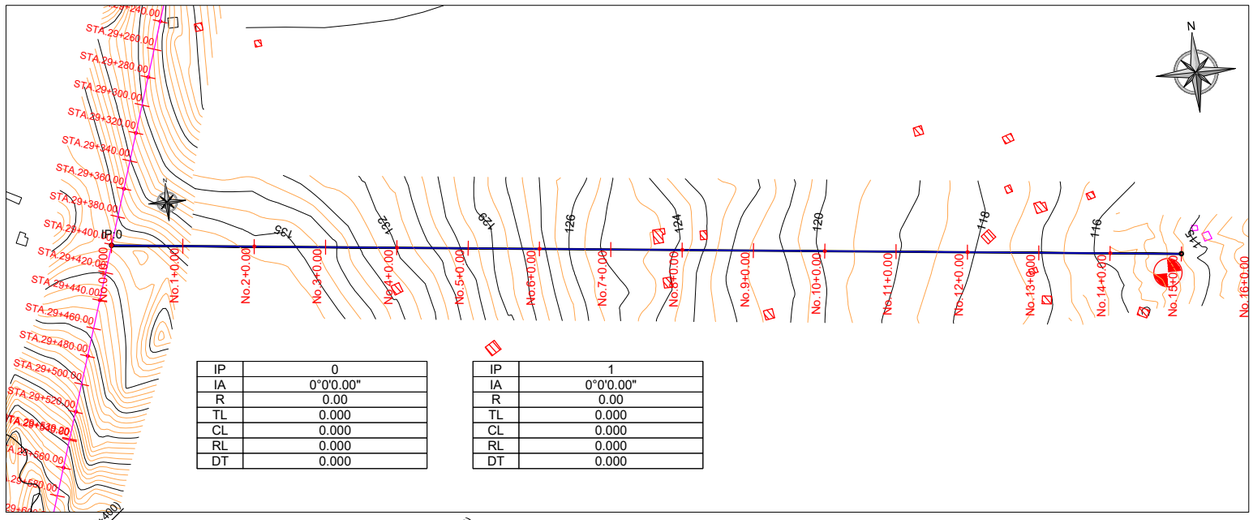
SC4

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC4	JUNE, 2022		B-07-01

General and Profile Plan of SC5

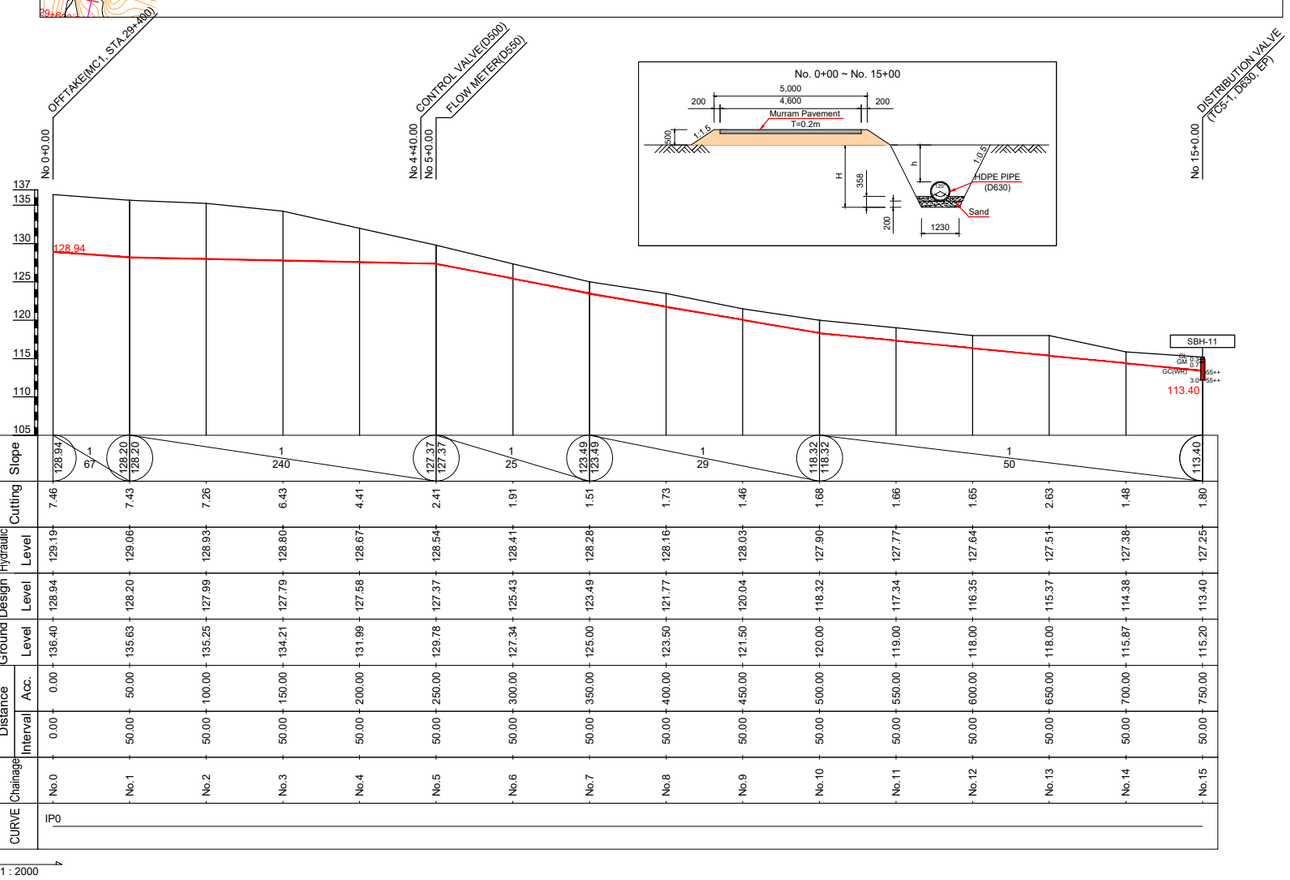
H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

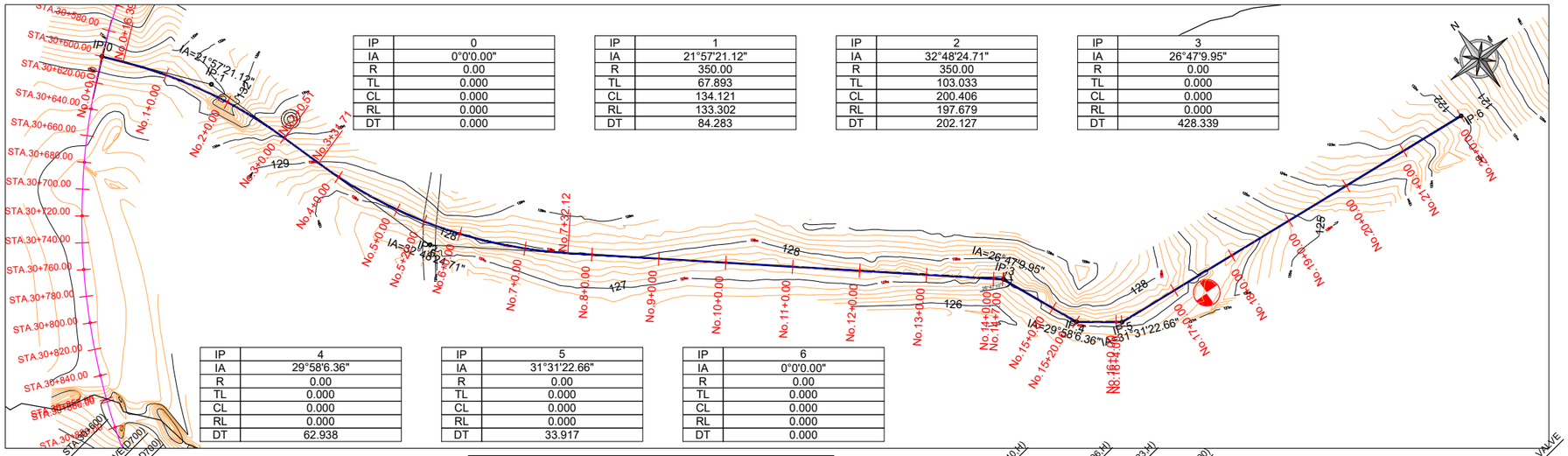


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:400
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC5	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-08-01

General and Profile Plan of SC6

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	21°57'21.12"
R	350.00
TL	67.893
CL	134.121
RL	133.302
DT	84.283

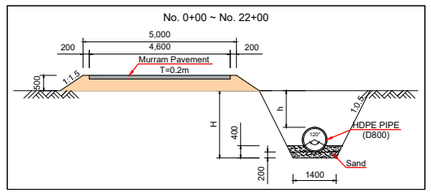
IP	2
IA	32°48'24.71"
R	350.00
TL	103.033
CL	200.406
RL	197.679
DT	202.127

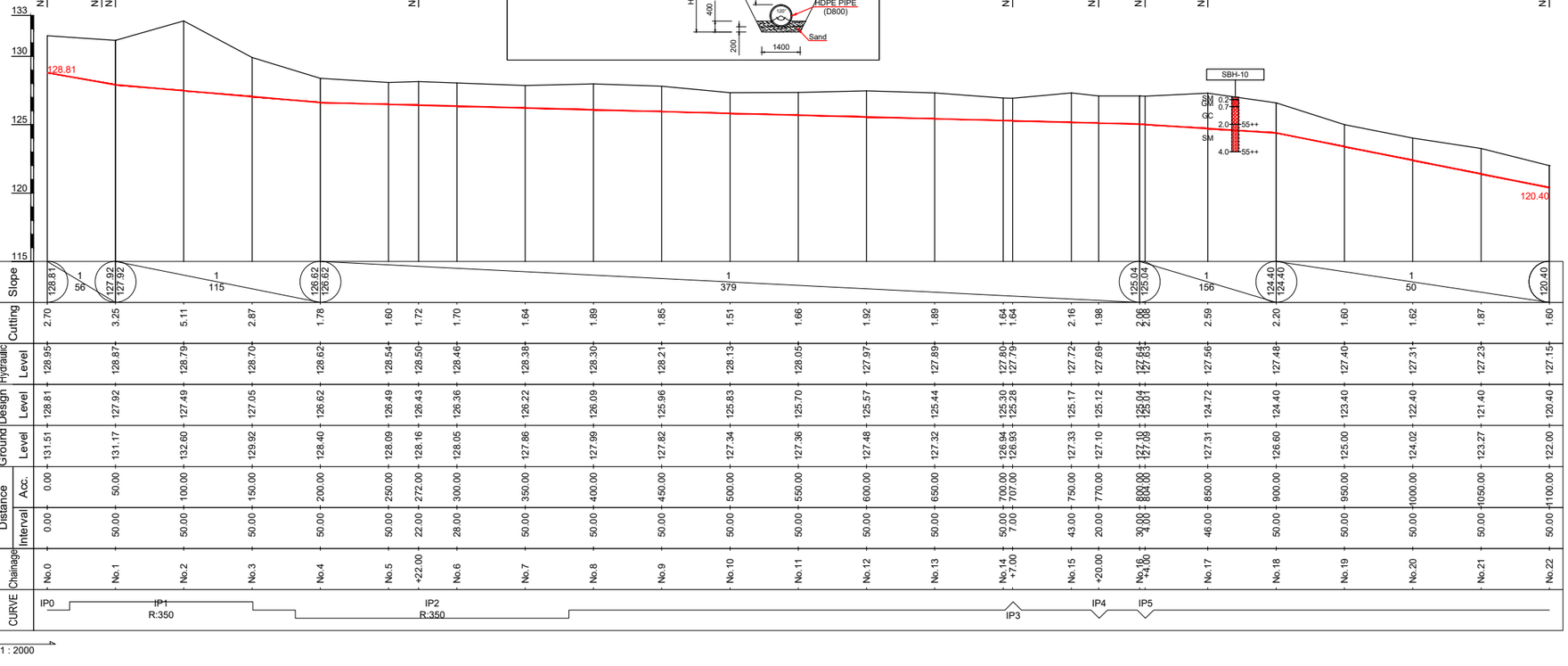
IP	3
IA	26°47'9.95"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	428.339

IP	4
IA	29°58'6.36"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	62.938

IP	5
IA	31°31'22.66"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	33.917

IP	6
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000





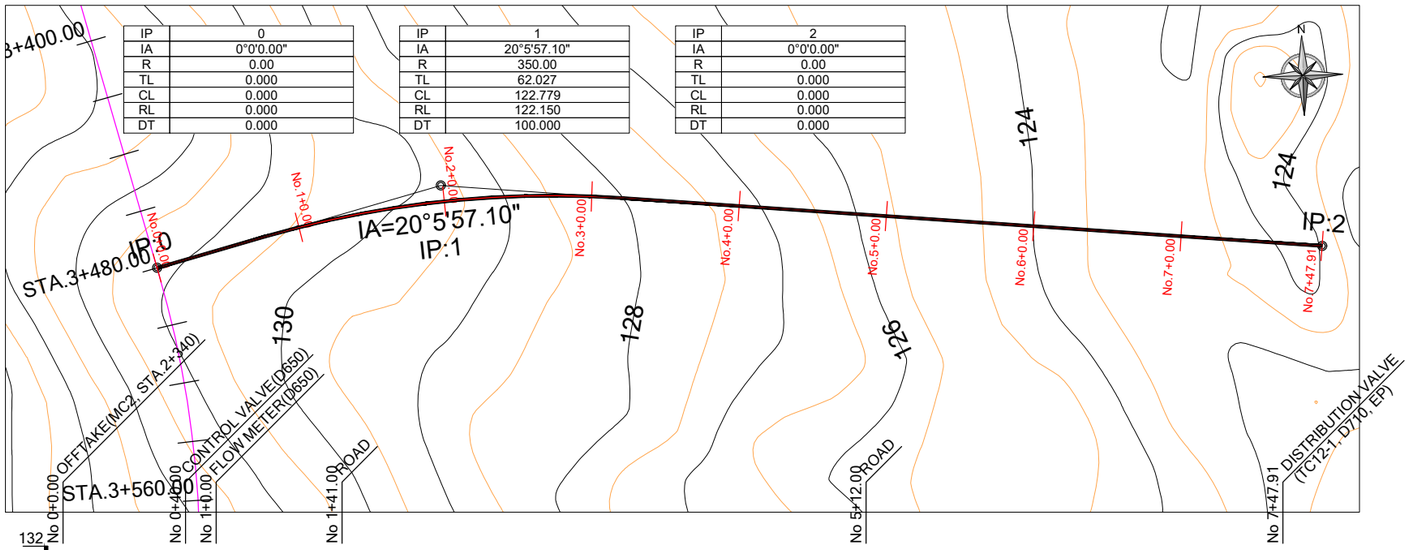
Chainage	CURVE	Distance Interval	Distance Acc.	Ground Level	Design Level	Hydraulic Level	Cutting	Slope
No.0	IP0	0.00	0.00	131.51	128.81	128.95	2.70	128.81
No.1	IP1 R:350	50.00	50.00	131.17	127.92	128.87	3.25	1/56 127.92
No.2		50.00	100.00	132.60	127.49	128.79	5.11	
No.3		50.00	150.00	129.92	127.05	128.70	2.87	1/115
No.4		50.00	200.00	128.40	126.62	128.62	1.78	126.62 126.62
No.5		50.00	250.00	128.09	126.49	128.54	1.60	
+22.00		22.00	272.00	128.16	126.43	128.50	1.72	
No.6		28.00	300.00	128.05	126.36	128.46	1.70	
No.7		50.00	350.00	127.86	126.22	128.38	1.64	
No.8		50.00	400.00	127.99	126.09	128.30	1.89	
No.9		50.00	450.00	127.82	125.96	128.21	1.85	
No.10		50.00	500.00	127.34	125.83	128.13	1.51	1/379
No.11		50.00	550.00	127.36	125.70	128.05	1.66	
No.12		50.00	600.00	127.48	125.57	127.97	1.92	
No.13		50.00	650.00	127.32	125.44	127.89	1.89	
No.14		50.00	700.00	126.94	125.30	127.80	1.64	
+7.00	IP3	7.00	707.00	126.93	125.28	127.79	1.64	
No.15		43.00	750.00	127.33	125.17	127.72	2.16	
+20.00	IP4	20.00	770.00	127.10	125.12	127.69	1.98	
No.16	IP5	30.00	800.00	127.10	125.04	127.64	2.08	125.04 125.04
+4.00		4.00	804.00	127.08	125.01	127.63	2.08	
No.17		46.00	850.00	127.31	124.72	127.56	2.59	1/156
No.18		50.00	900.00	126.60	124.40	127.48	2.20	124.40 124.40
No.19		50.00	950.00	125.00	123.40	127.40	1.60	
No.20		50.00	1000.00	124.02	122.40	127.31	1.62	1/50
No.21		50.00	1050.00	123.27	121.40	127.23	1.87	
No.22		50.00	1100.00	122.00	120.40	127.15	1.60	120.40

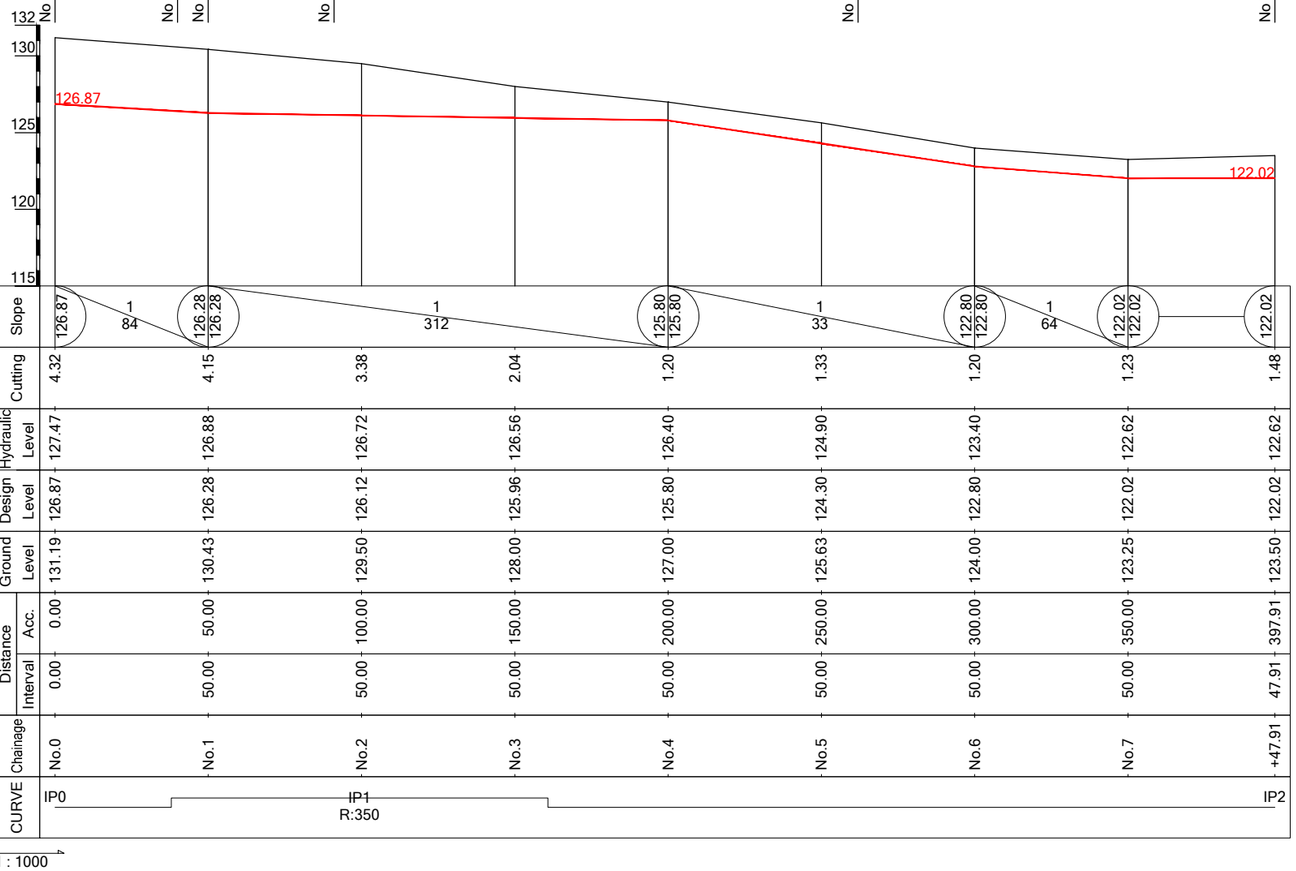
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC6	JUNE, 2022		B-09-01

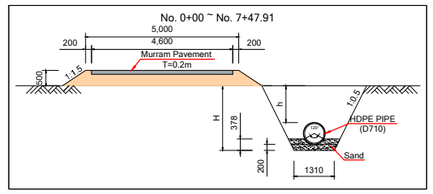
General and Profile Plan of SC12

H=1:1,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).





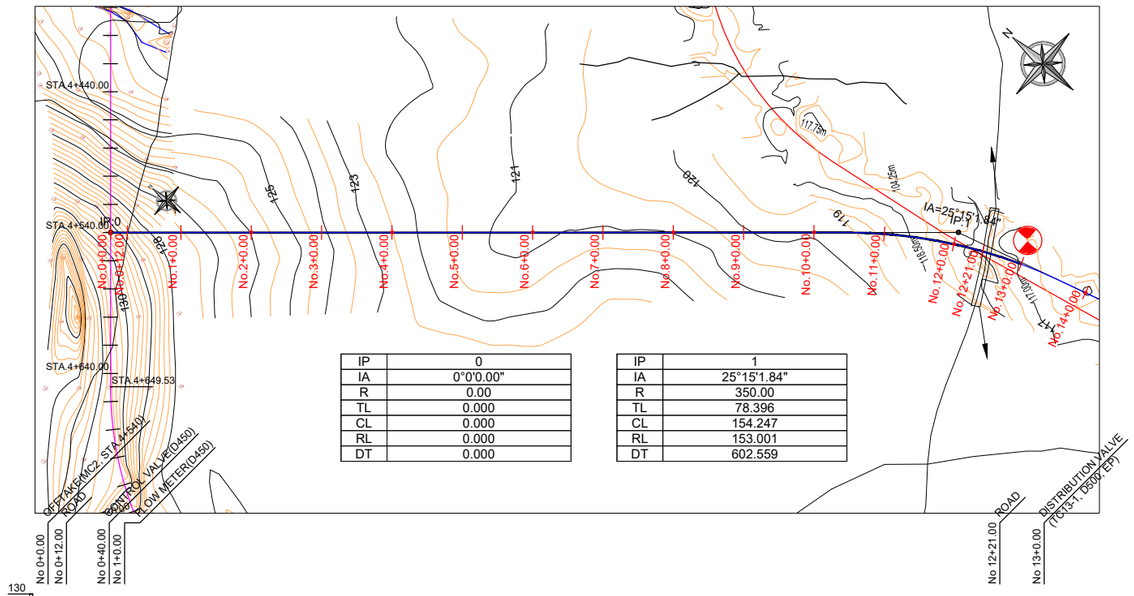


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC12	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-15-01

General and Profile Plan of SC13

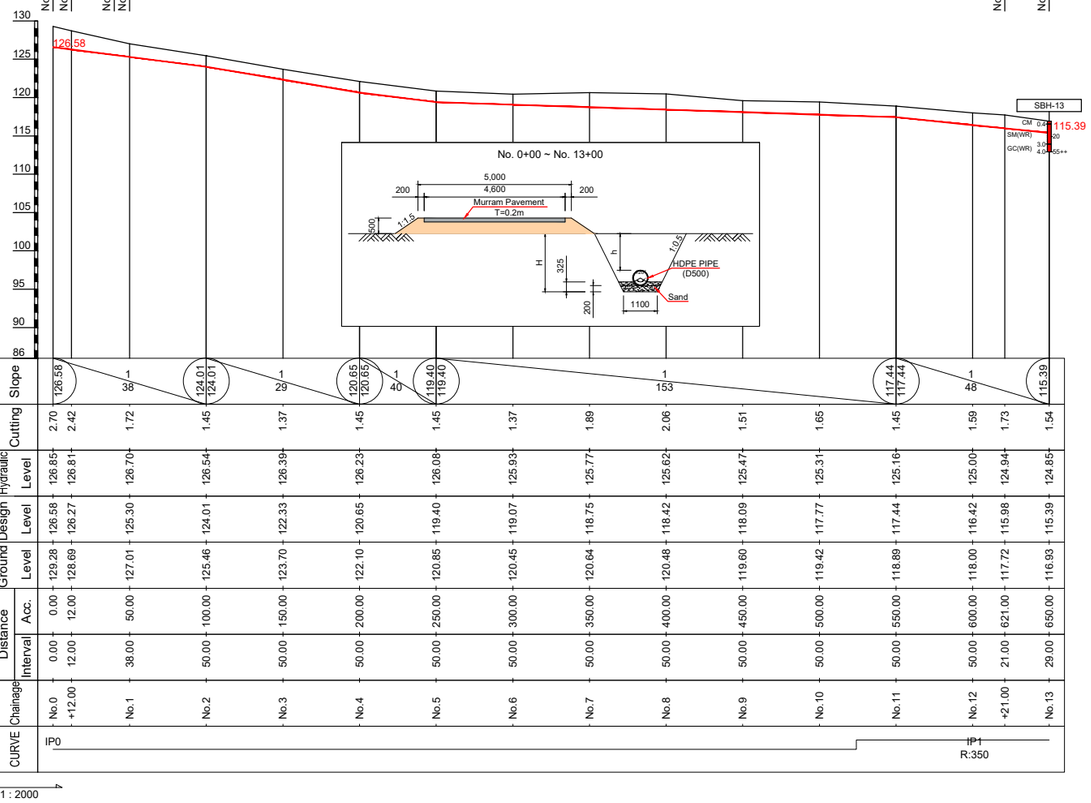
H=1:2,000, V=1:400

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	25°15'1.84"
R	350.00
TL	78.396
CL	154.247
RL	153.001
DT	602.559



SC13

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:400
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC13	JUNE, 2022		B-16-01

General and Profile Plan of SC14

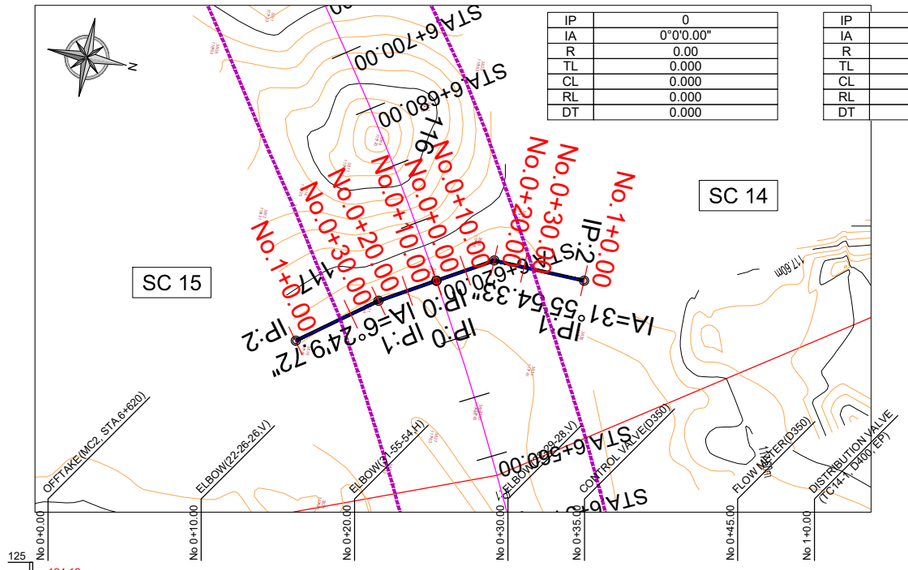
H=1:200, V=1:200

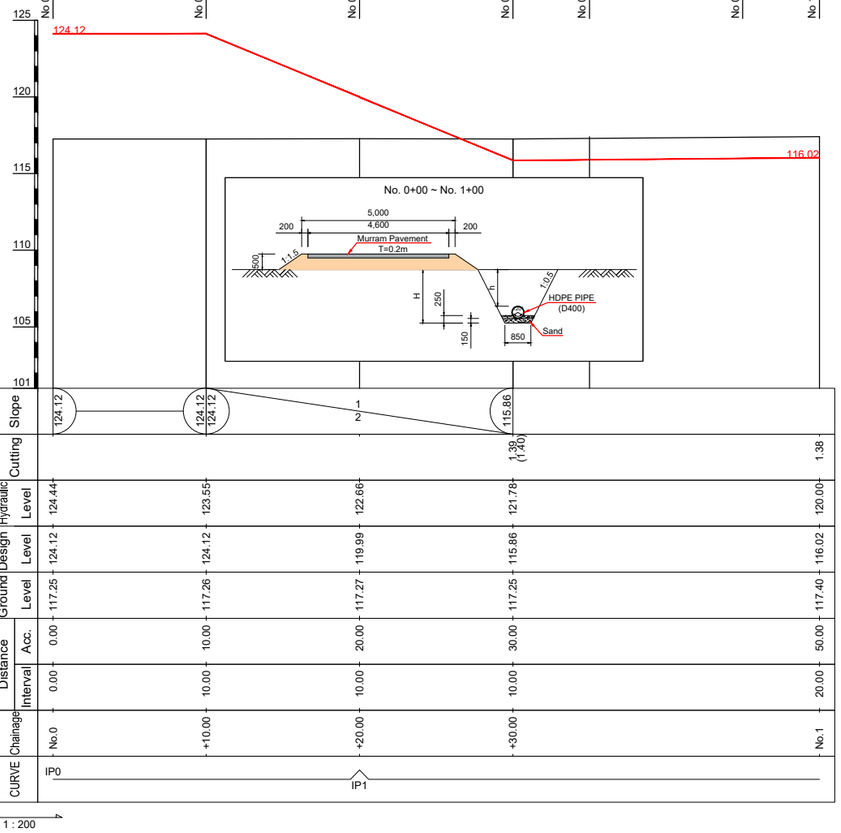
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	31°55'54.33"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	20.000

IP	2
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000





SC14

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:200, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC14	JUNE, 2022		B-17-01

General and Profile Plan of SC15

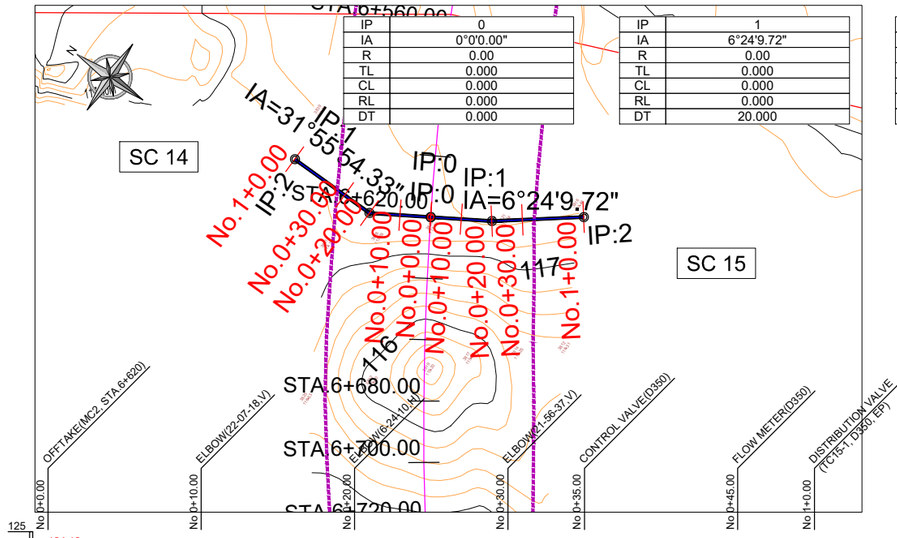
H=1:200, V=1:200

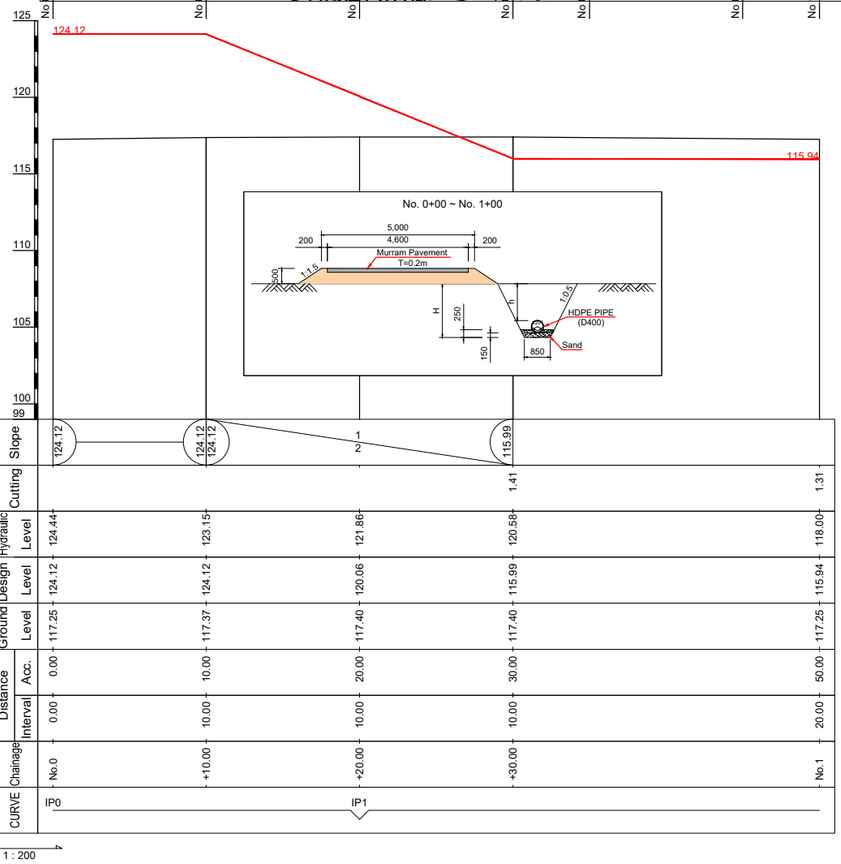
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	6°24'9.72"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	20.000

IP	2
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000





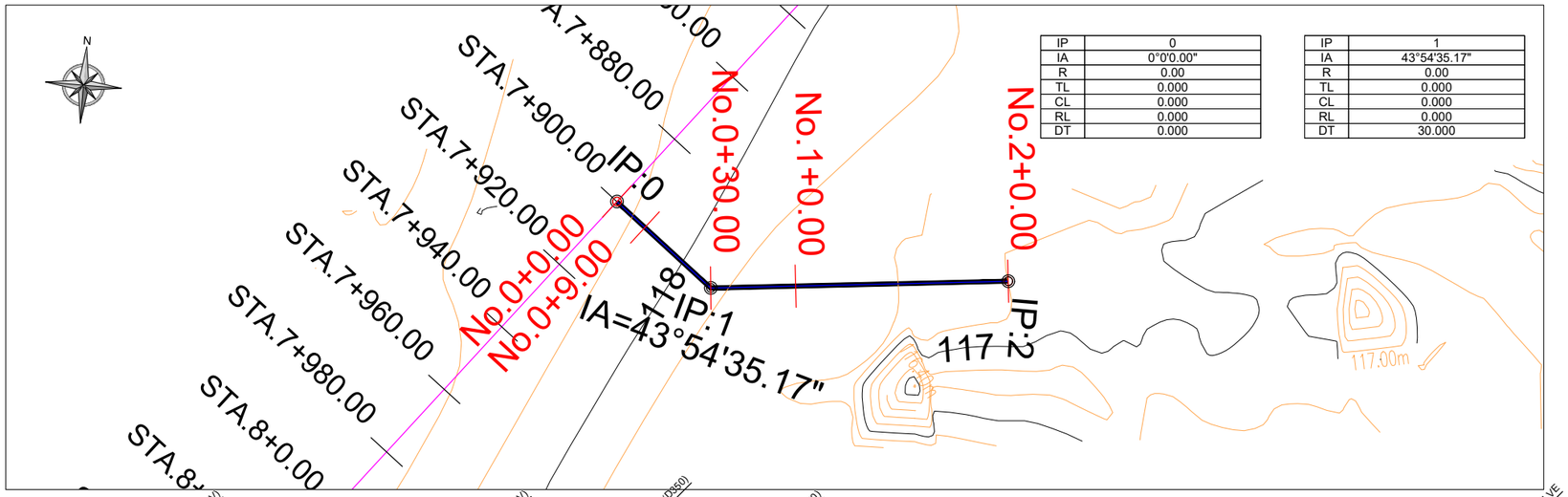
SC15

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:200, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC15	JUNE, 2022		B-18-01

General and Profile Plan of SC16

H=1:200, V=1:200

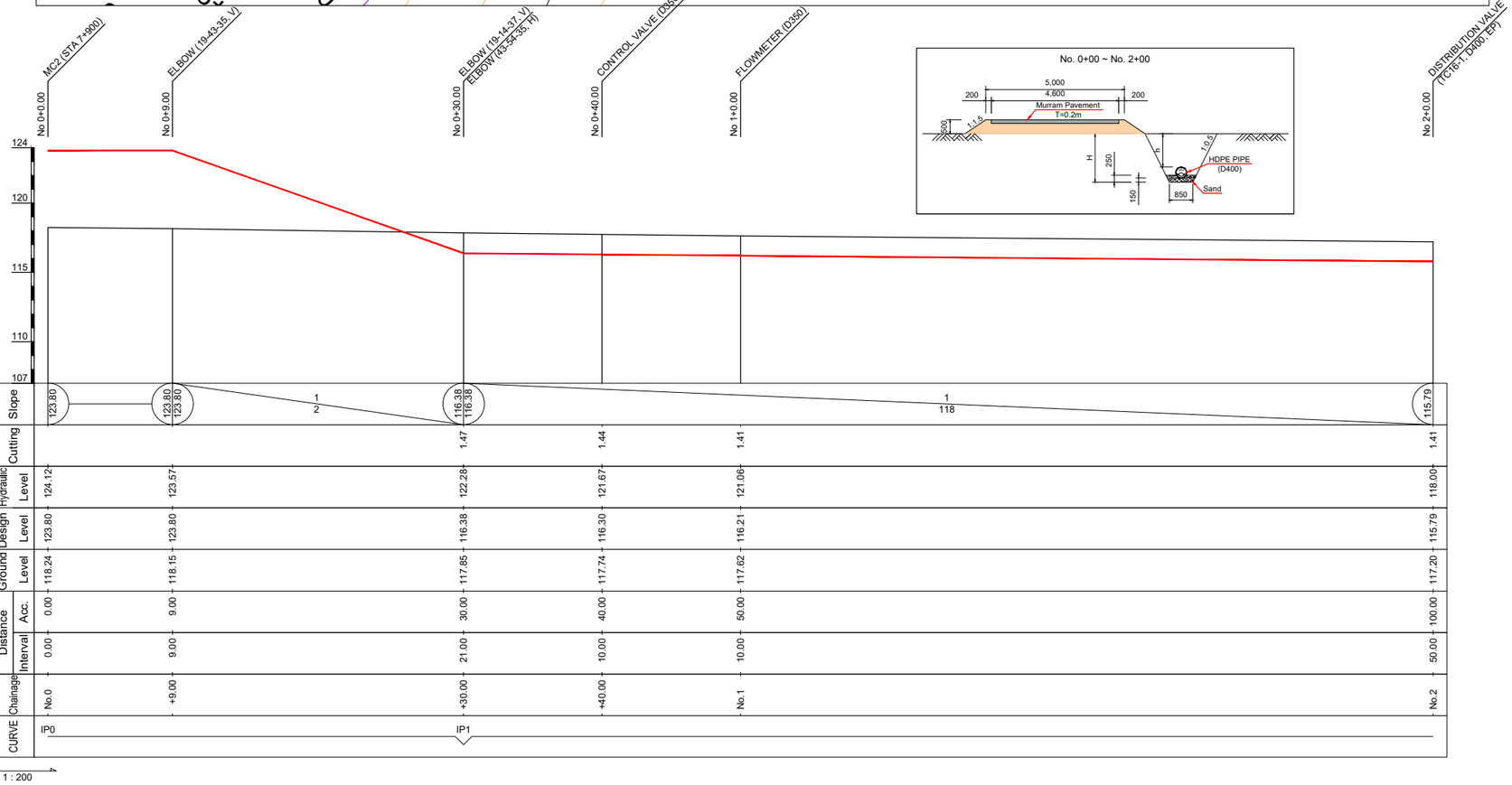
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	43°54'35.17"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	30.000

IP	2
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000



SC-16

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:200, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC16	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-19-01

General and Profile Plan of SC17

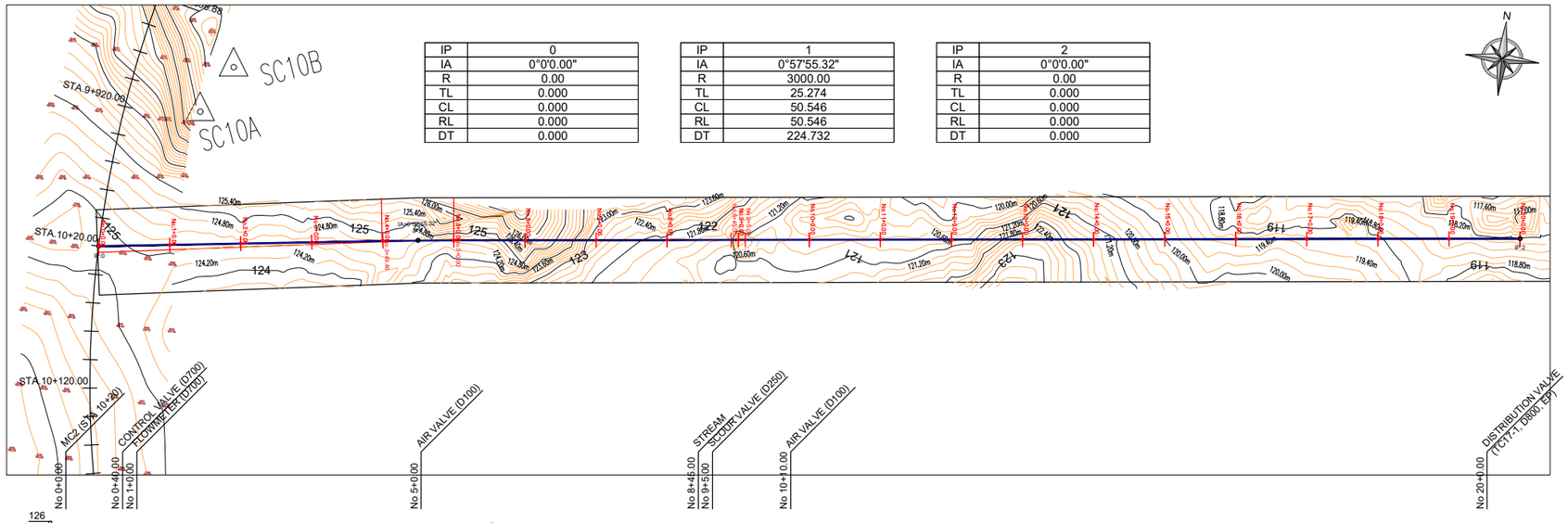
H=1:2,000, V=1:200

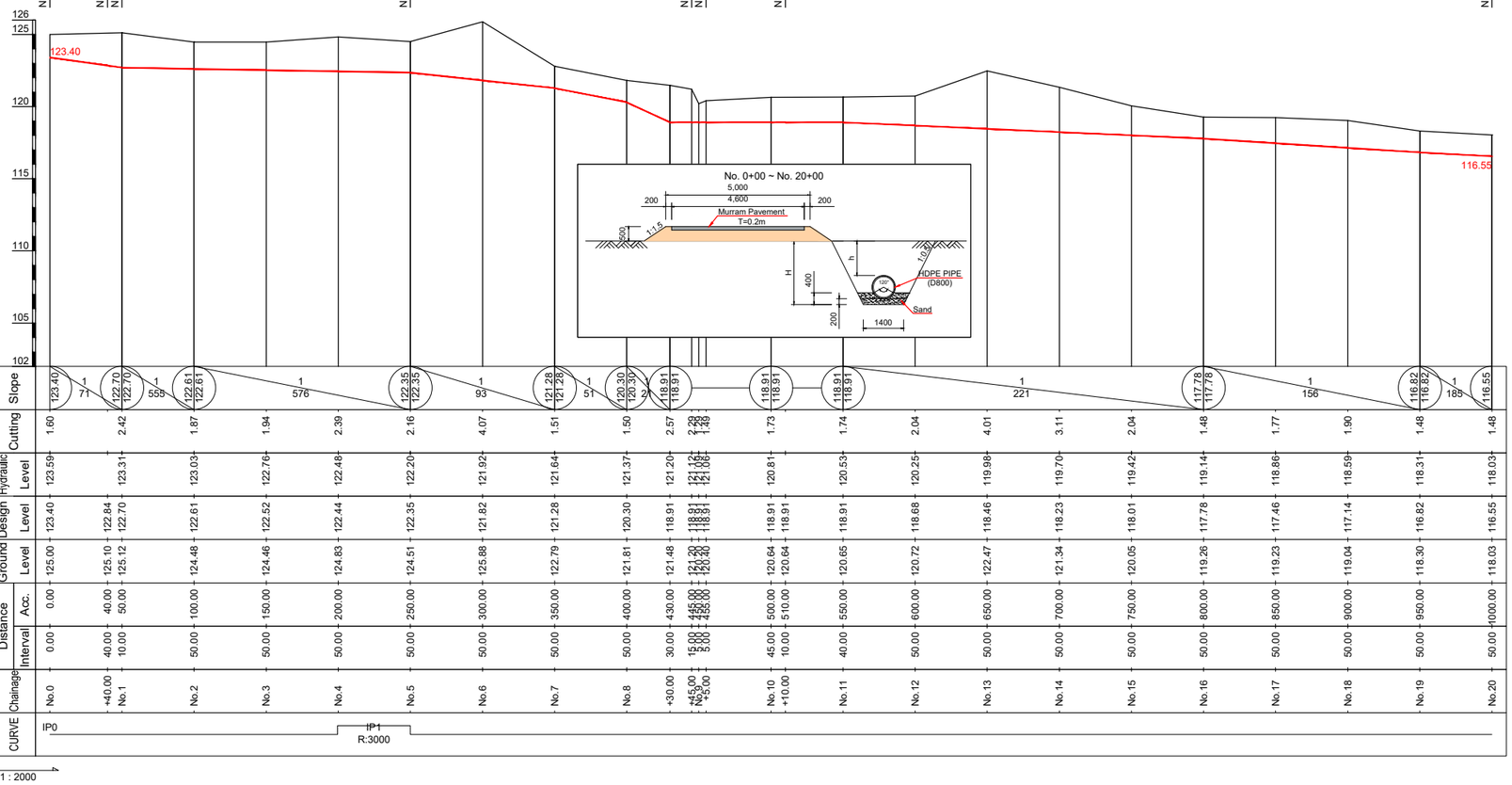
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	0°57'55.32"
R	3000.00
TL	25.274
CL	50.546
RL	50.546
DT	224.732

IP	2
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000





SC-17

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC17	JUNE, 2022		B-20-01

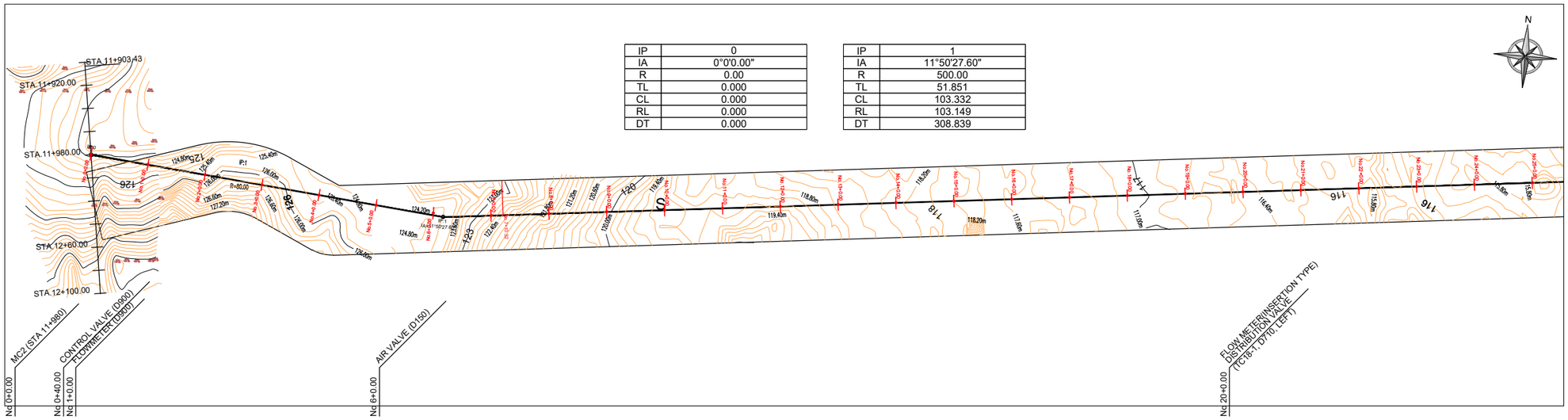
General and Profile Plan of SC18(1/4)

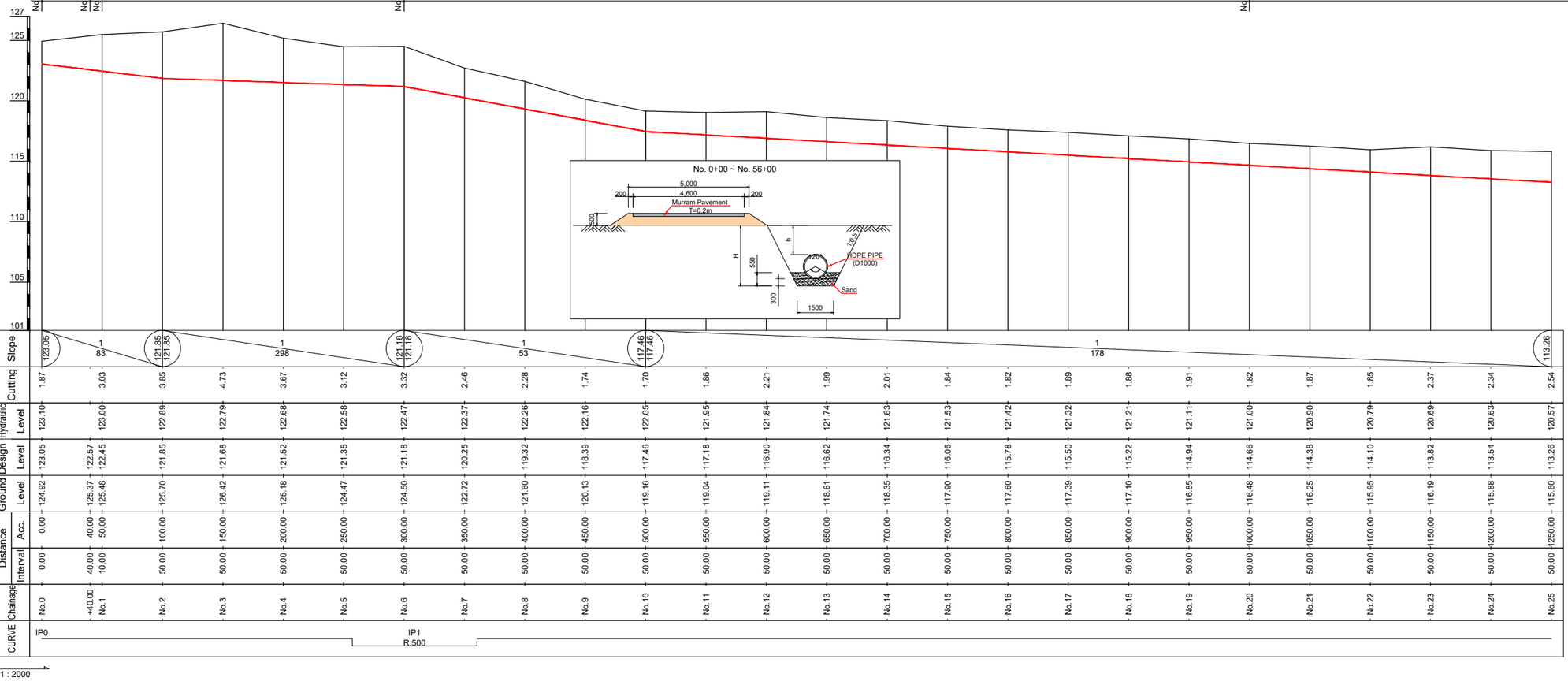
H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	11°50'27.60"
R	500.00
TL	51.851
CL	103.332
RL	103.149
DT	308.839



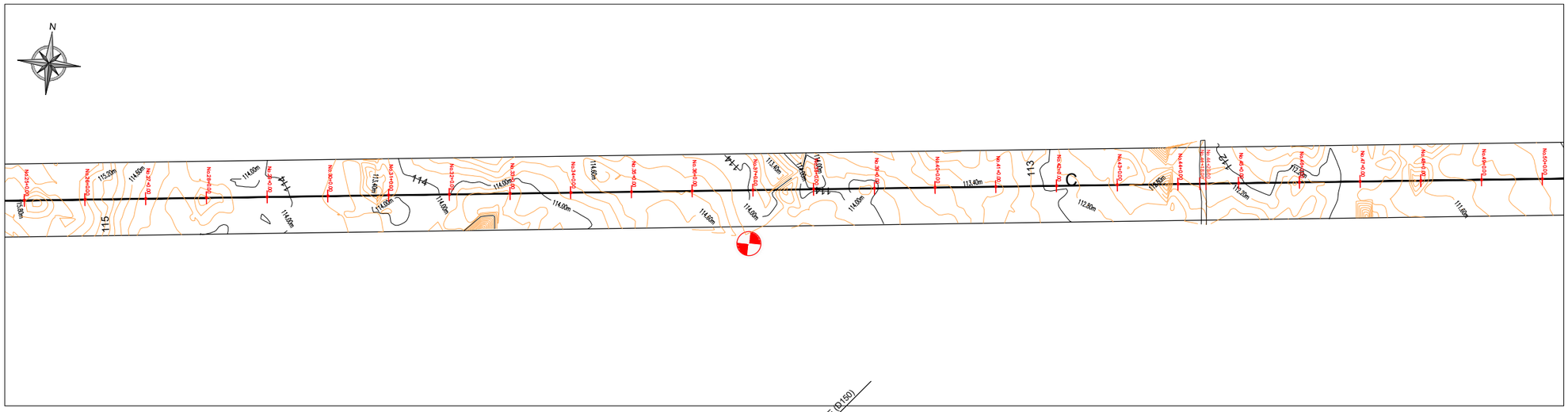


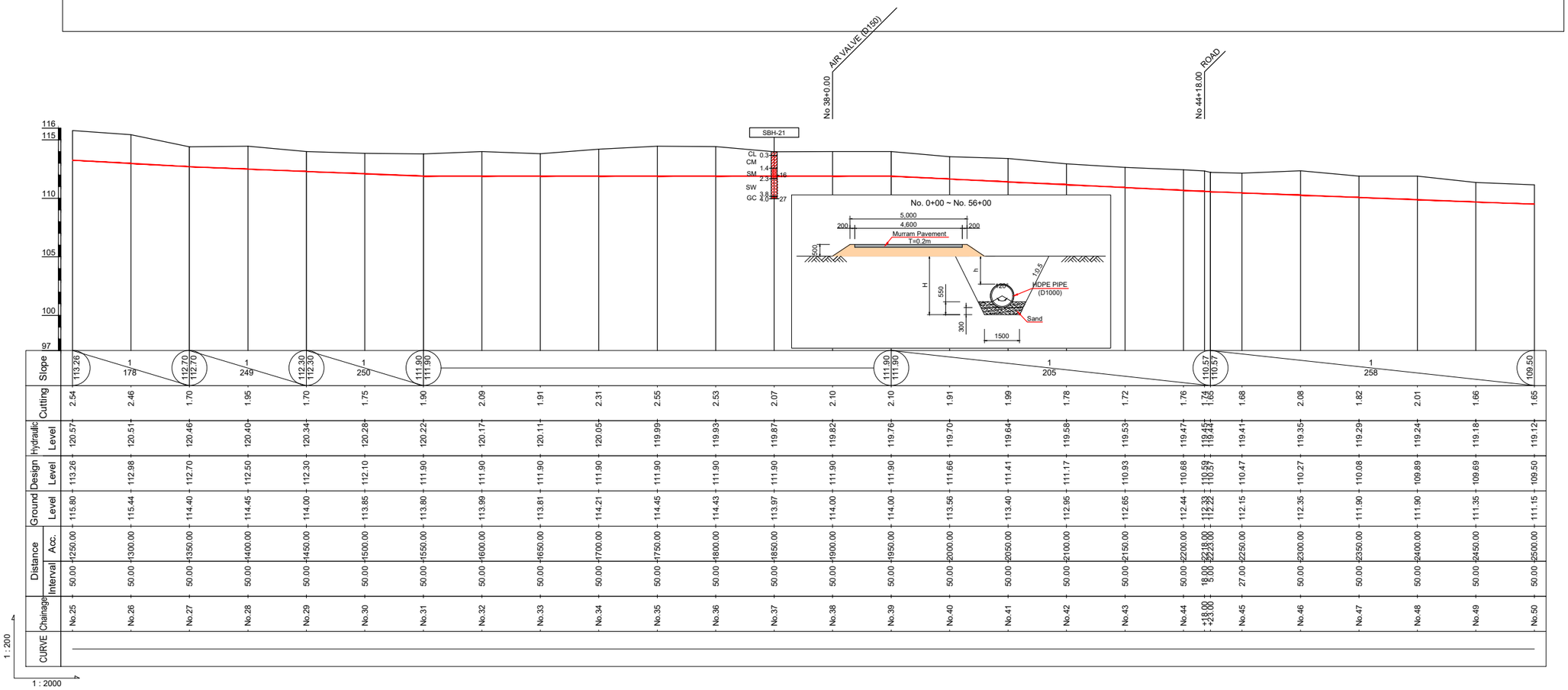
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC18(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-21-01

General and Profile Plan of SC18(2/4)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).





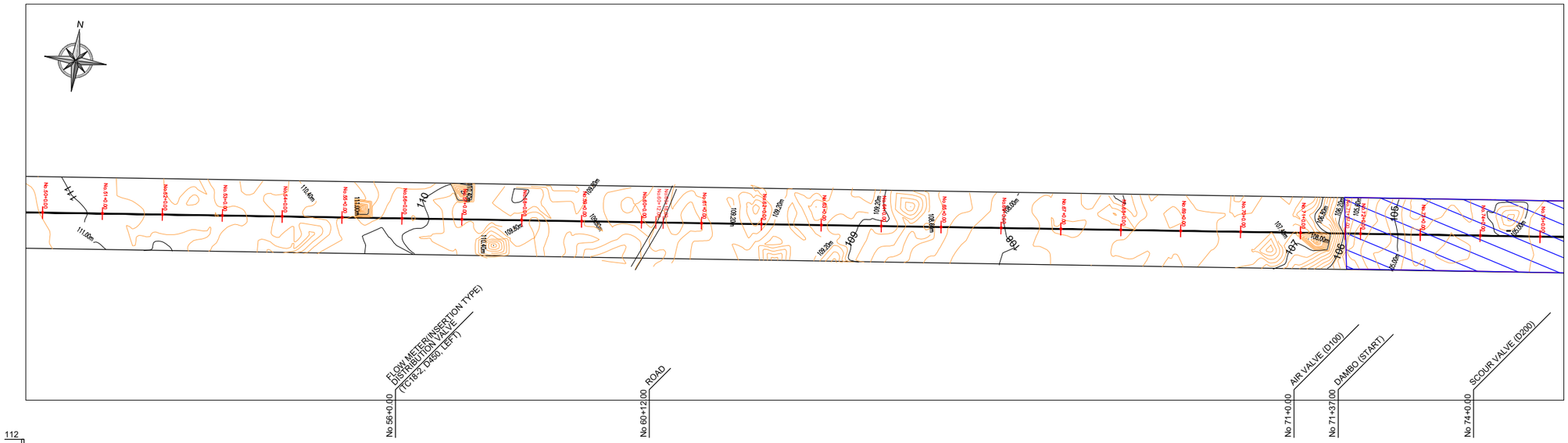
SC-18(2/4)

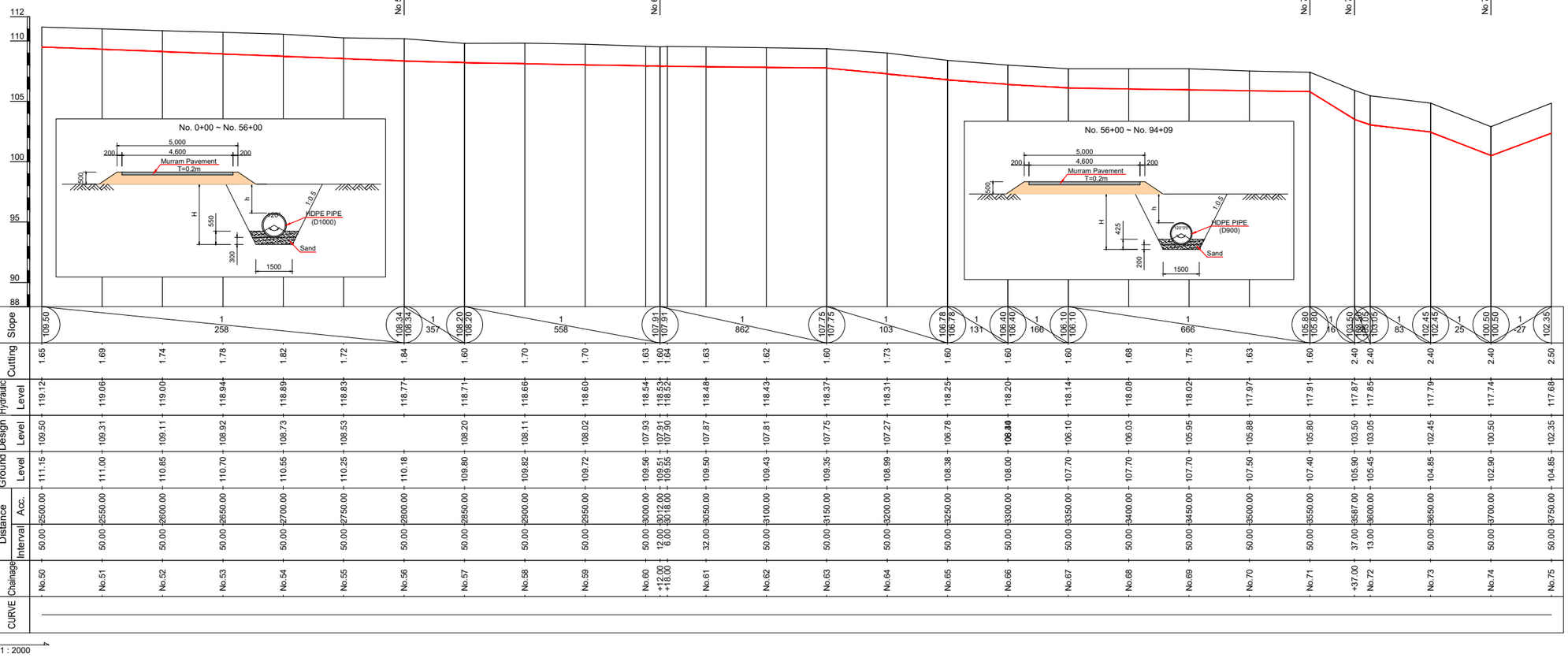
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC18(2/4)	JUNE, 2022		B-21-02

General and Profile Plan of SC18(3/4)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).





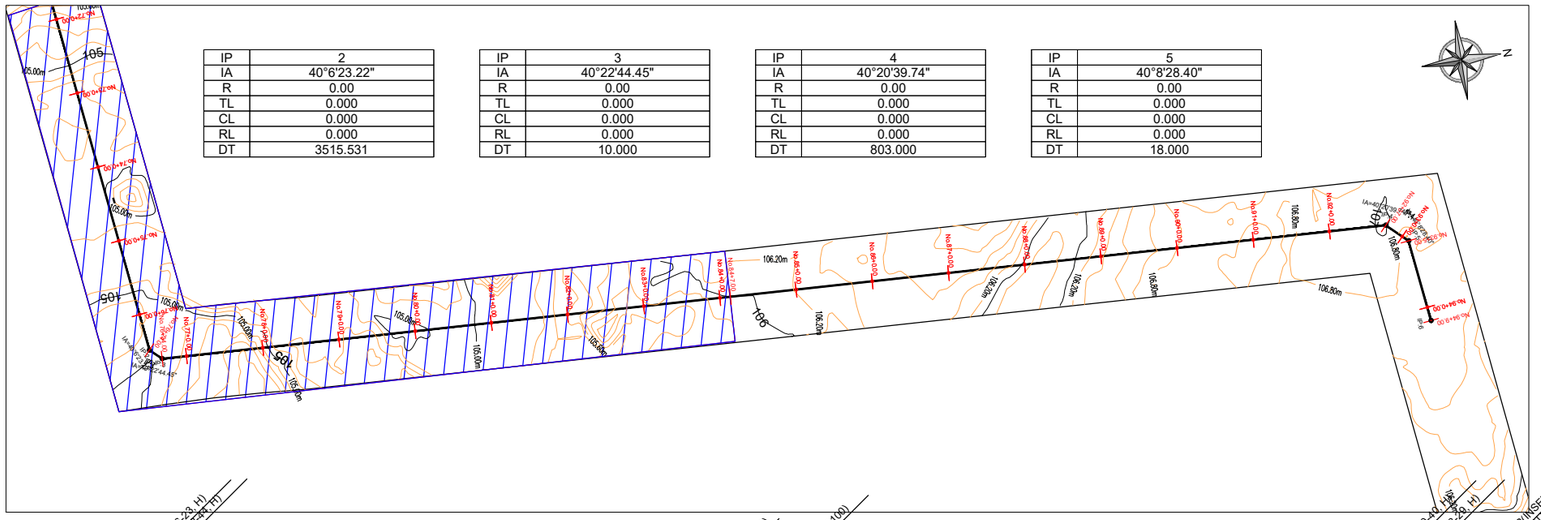
Chainage	Distance Interval	Distance Acc.	Ground Level	Design Level	Hydraulic Level	Cutting	Slope	CURVE
No.50	50.00	2500.00	111.15	109.50	119.12	1.65	109.50	
No.51	50.00	2550.00	111.00	109.31	119.06	1.69	1/258	
No.52	50.00	2600.00	110.85	109.11	119.00	1.74		
No.53	50.00	2650.00	110.70	108.92	118.94	1.78		
No.54	50.00	2700.00	110.55	108.73	118.89	1.82		
No.55	50.00	2750.00	110.25	108.53	118.83	1.72		
No.56	50.00	2800.00	110.18	108.34	118.77	1.84	108.34	
No.57	50.00	2850.00	109.80	108.20	118.71	1.60	1/357	
No.58	50.00	2900.00	109.82	108.11	118.66	1.70	108.20	
No.59	50.00	2950.00	109.72	108.02	118.60	1.70	1/558	
No.60	50.00	3000.00	109.56	107.93	118.54	1.63	107.91	
+13.00	12.00	3012.00	109.51	107.91	118.53	1.61	107.91	
+18.00	6.00	3018.00	109.35	107.90	118.52	1.54		
No.61	32.00	3050.00	109.50	107.87	118.48	1.63	1/862	
No.62	50.00	3100.00	109.43	107.81	118.43	1.62		
No.63	50.00	3150.00	109.35	107.75	118.37	1.60	107.75	
No.64	50.00	3200.00	108.99	107.27	118.31	1.73	1/103	
No.65	50.00	3250.00	108.38	106.78	118.25	1.60	106.78	
No.66	50.00	3300.00	108.00	106.40	118.20	1.60	1/131	
No.67	50.00	3350.00	107.70	106.10	118.14	1.60	106.40	
No.68	50.00	3400.00	107.70	106.03	118.08	1.68	1/166	
No.69	50.00	3450.00	107.70	105.95	118.02	1.75	106.10	
No.70	50.00	3500.00	107.50	105.88	117.97	1.63	1/666	
No.71	50.00	3550.00	107.40	105.80	117.91	1.60	105.80	
+37.00	37.00	3587.00	105.90	103.50	117.87	2.40	105.80	
No.72	13.00	3600.00	105.45	103.05	117.85	2.40	1/16	
No.73	50.00	3650.00	104.85	102.45	117.79	2.40	103.50	
No.74	50.00	3700.00	102.90	100.50	117.74	2.40	1/83	
No.75	50.00	3750.00	104.85	102.35	117.68	2.50	102.45	
							1/25	
							100.50	
							1/27	
							102.35	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC18(3/4)	JUNE, 2022		B-21-03

General and Profile Plan of SC18(4/4)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	2
IA	40°6'23.22"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	3515.531

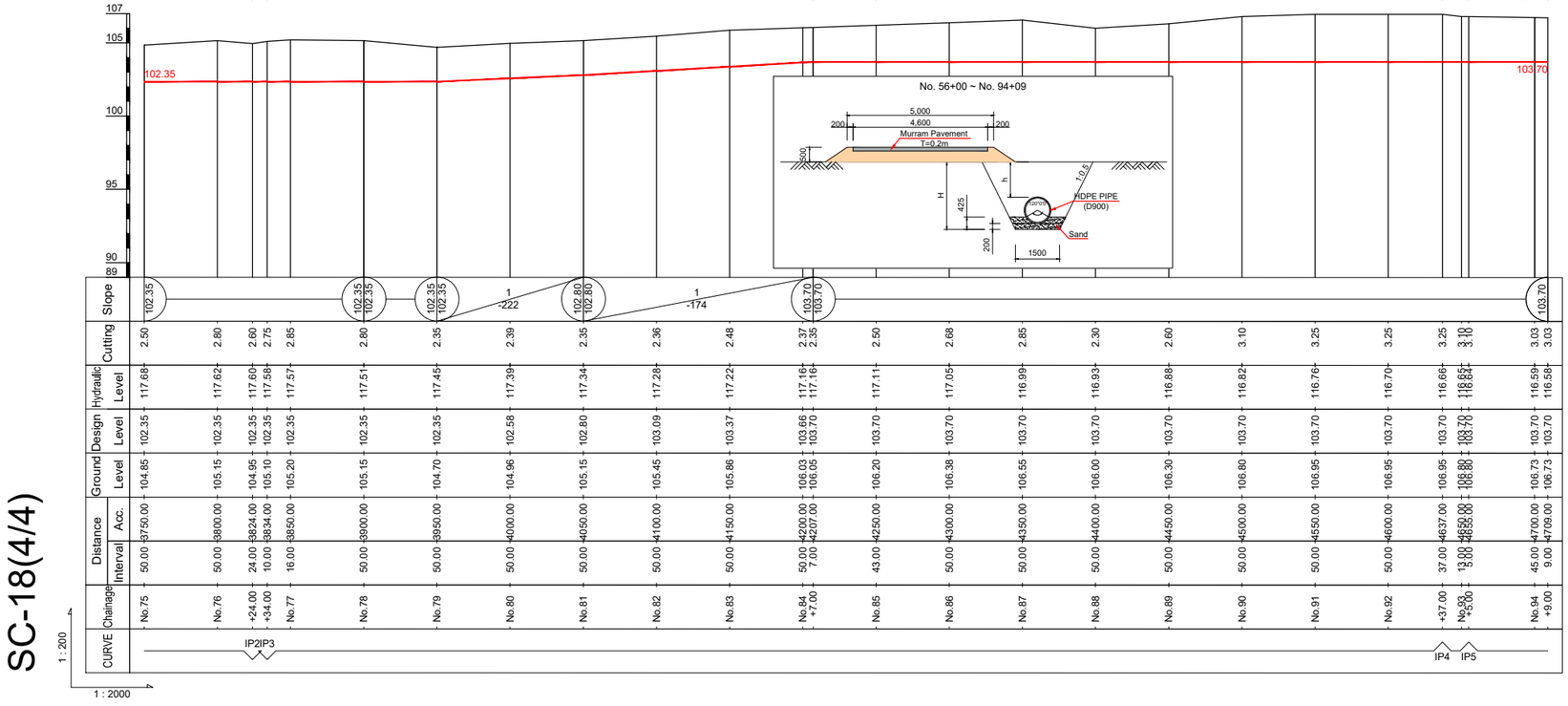
IP	3
IA	40°22'44.45"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	10.000

IP	4
IA	40°20'39.74"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	803.000

IP	5
IA	40°8'28.40"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	18.000

IP	6
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

ELBOW (40-06-23, H)
ELBOW (40-22-44, HT)
No 76+24.00
No 76+34.00
DAMBO (END)
No 84+7.00
AIR VALVE (D100)
No 85+0.00
ELBOW (40-20-40, HT)
No 92+37.00
ELBOW (40-08-39, H)
No 93+5.00
FLOW METER(INSERTION TYPE)
DISTRIBUTION VALVE
(1CTB-3, D900, EP)
No 94+0.00
No 94+9.00



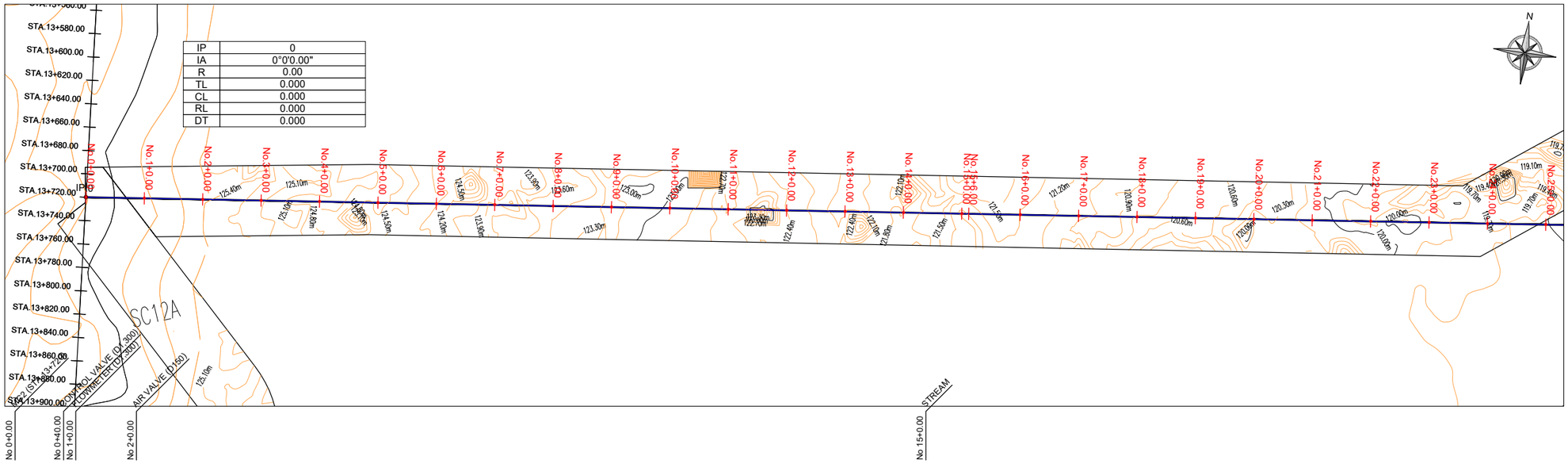
SC-18(4/4)

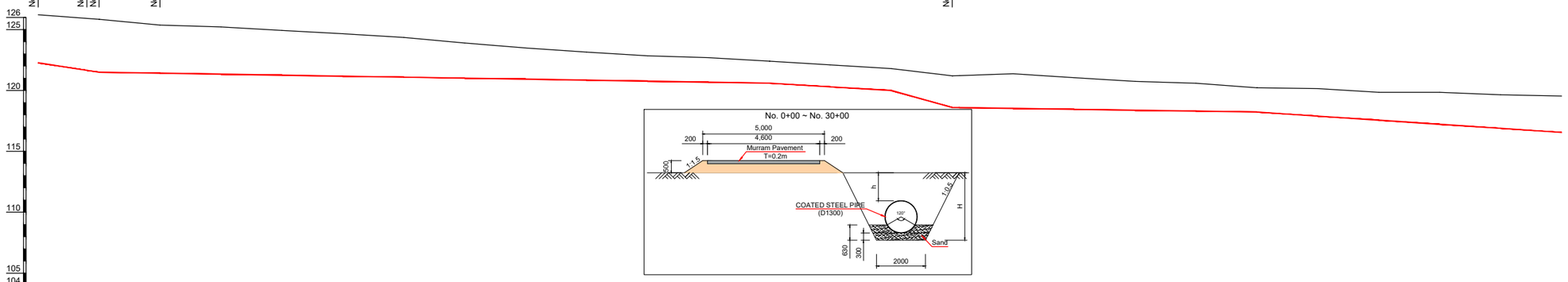
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC18(4/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-21-04

General and Profile Plan of SC19(1/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).





SC-19(1/7)

1 : 200

1 : 2000

		No.0	+40.00	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13	No.14	No.15	+6.00	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24	No.25
CURVE		IP0																											
Chainage		No.0	+40.00	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13	No.14	No.15	+6.00	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24	No.25
Distance	Interval	0.00	40.00	10.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	6.00	44.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	Acc.	0.00	40.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	756.00	800.00	850.00	900.00	950.00	1000.00	1050.00	1100.00	1150.00	1200.00	1250.00
Ground Level		126.21	125.91	125.84	125.37	125.21	124.92	124.65	124.35	123.89	123.49	123.16	122.85	122.70	122.40	122.10	121.80	121.20	121.22	121.37	121.05	120.74	120.60	120.23	120.15	119.85	119.85	119.64	119.54
Design Level		122.27	121.65	121.50	121.42	121.34	121.25	121.17	121.09	121.01	120.93	120.85	120.76	120.68	120.60	120.30	120.00	118.60	118.59	118.53	118.45	118.38	118.30	118.23	117.89	117.56	117.22	116.89	116.55
Hydraulic Level		122.87	122.85		122.82	122.79	122.77	122.74	122.72	122.69	122.67	122.64	122.62	122.59	122.57	122.54	122.52	122.49	122.49	122.47	122.44	122.41	122.39	122.36	122.34	122.31	122.29	122.26	122.24
Cutting		3.94	4.34		3.95	3.88	3.67	3.48	3.26	2.88	2.57	2.31	2.09	2.02	1.80	1.80	1.80	2.60	2.63	2.84	2.60	2.36	2.30	2.00	2.26	2.29	2.63	2.75	2.98
Slope		122.27	1/64	121.50 121.50	1/611										120.60 120.60	1/166	120.00 120.00	1/35	118.60 118.60	1/675				118.23 118.23	1/149				116.55	

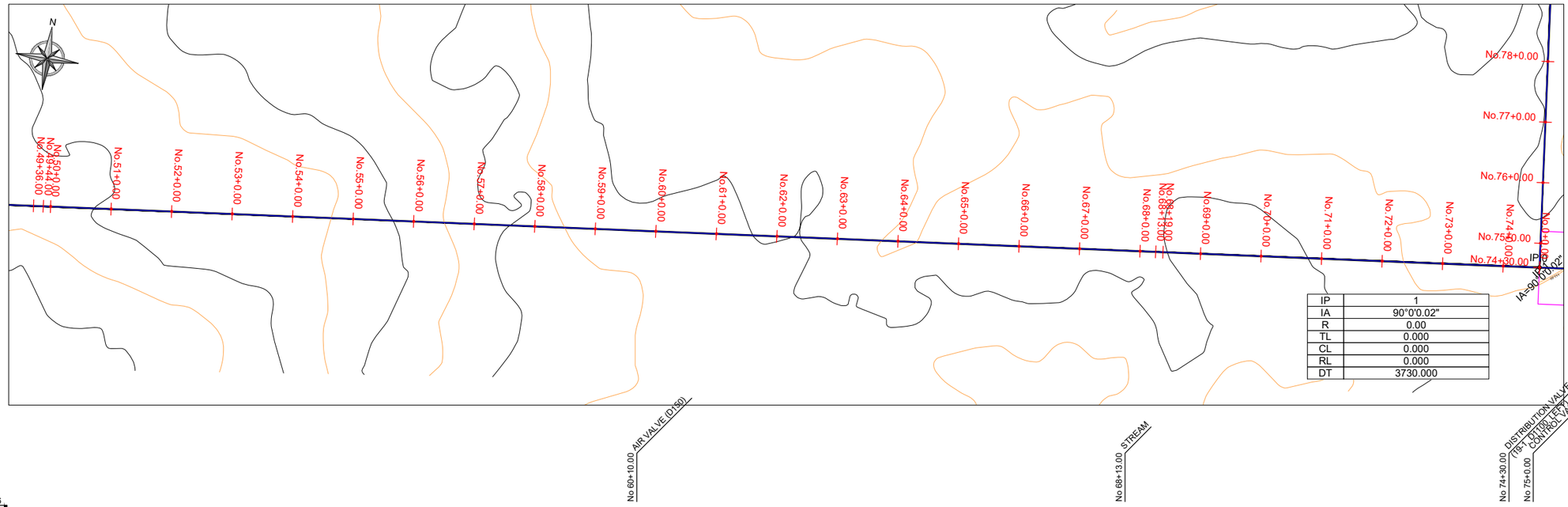
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC19(1/7)	JUNE, 2022		B-22-01

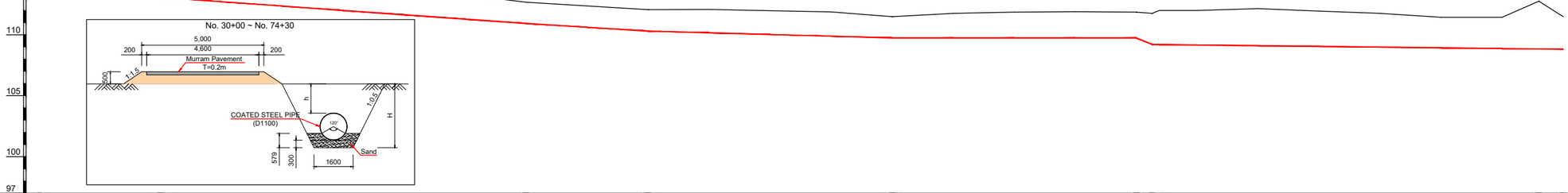
General and Profile Plan of SC19(2/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC19(2/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-22-02





General and Profile Plan of SC19(3/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	1
IA	90°0'0.02"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	3730.000

Chainage	Distance Interval	Distance Acc.	Ground Level	Design Level	Hydraulic Level	Cutting	Slope
No.50	6.00	2500.00	115.30	113.34	120.45	1.95	113.34
No.51	50.00	2550.00	115.00	113.21	120.36	1.79	1/379
No.52	50.00	2600.00	114.83	113.08	120.28	1.75	113.08 113.08
No.53	50.00	2650.00	114.77	112.72	120.20	2.05	
No.54	50.00	2700.00	114.45	112.36	120.11	2.09	
No.55	50.00	2750.00	114.06	112.01	120.03	2.06	1/139
No.56	50.00	2800.00	113.66	111.65	119.95	2.01	
No.57	50.00	2850.00	113.28	111.29	119.86	1.99	
No.58	50.00	2900.00	112.68	110.93	119.78	1.75	110.93 110.93
No.59	50.00	2950.00	112.38	110.62	119.70	1.75	1/161
No.60	50.00	3000.00	112.07	110.31	119.61	1.75	110.31 110.31
+10.00	10.00	3010.00	112.07	110.28			
No.61	40.00	3050.00	112.09	110.17	119.53	1.92	
No.62	50.00	3100.00	111.99	110.03	119.45	1.96	1/357
No.63	50.00	3150.00	111.88	109.89	119.36	1.99	
No.64	50.00	3200.00	111.50	109.75	119.28	1.75	109.75 109.75
No.65	50.00	3250.00	111.77	109.75	119.20	2.02	
No.66	50.00	3300.00	111.86	109.75	119.12	2.11	
No.67	50.00	3350.00	111.90	109.75	119.03	2.15	
No.68	50.00	3400.00	111.87	109.75	118.95	2.12	109.75 109.75
+13.00	13.00	3413.00	111.76	109.21	118.93	2.55	109.21 109.21
+19.00	6.00	3419.00	112.00	109.20	118.92	2.80	
No.69	31.00	3450.00	112.00	109.17	118.87	2.83	
No.70	50.00	3500.00	112.15	109.11	118.78	3.04	
No.71	50.00	3550.00	111.94	109.05	118.70	2.89	1/856
No.72	50.00	3600.00	111.76	108.99	118.62	2.76	
No.73	50.00	3650.00	111.44	108.93	118.53	2.51	
No.74	50.00	3700.00	111.44	108.88	118.45	2.57	
+30.00	30.00	3730.00	112.77	108.84	118.40	3.93	108.84 108.84 1/840
No.75	20.00	3750.00	111.50	108.82	118.37	2.68	108.82

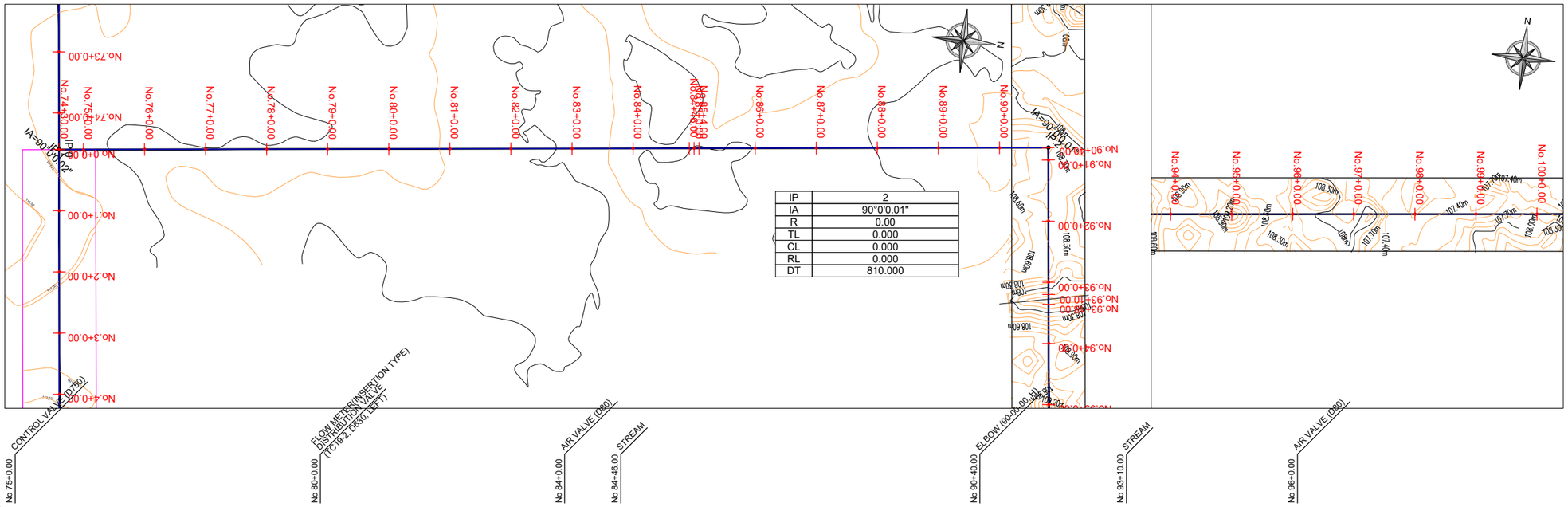
CURVE: IP1

1 : 200

1 : 2000

SC-19(3/7)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC19(3/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-22-03



General and Profile Plan of SC19(4/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	2
IA	90°0'0.01"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	810.000

SC-19(4/7)

1 : 200

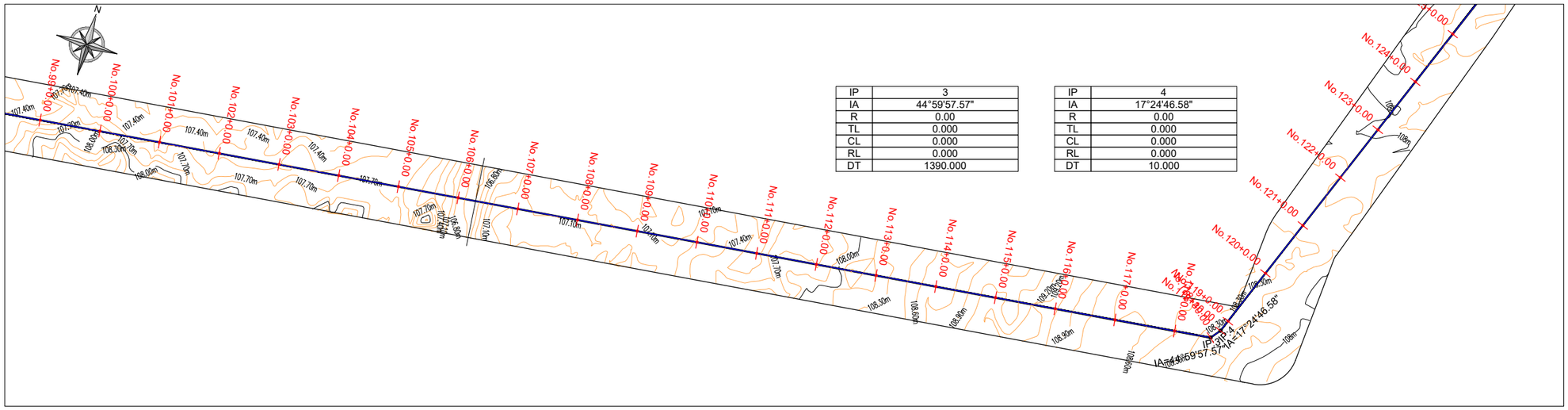
1 : 2000

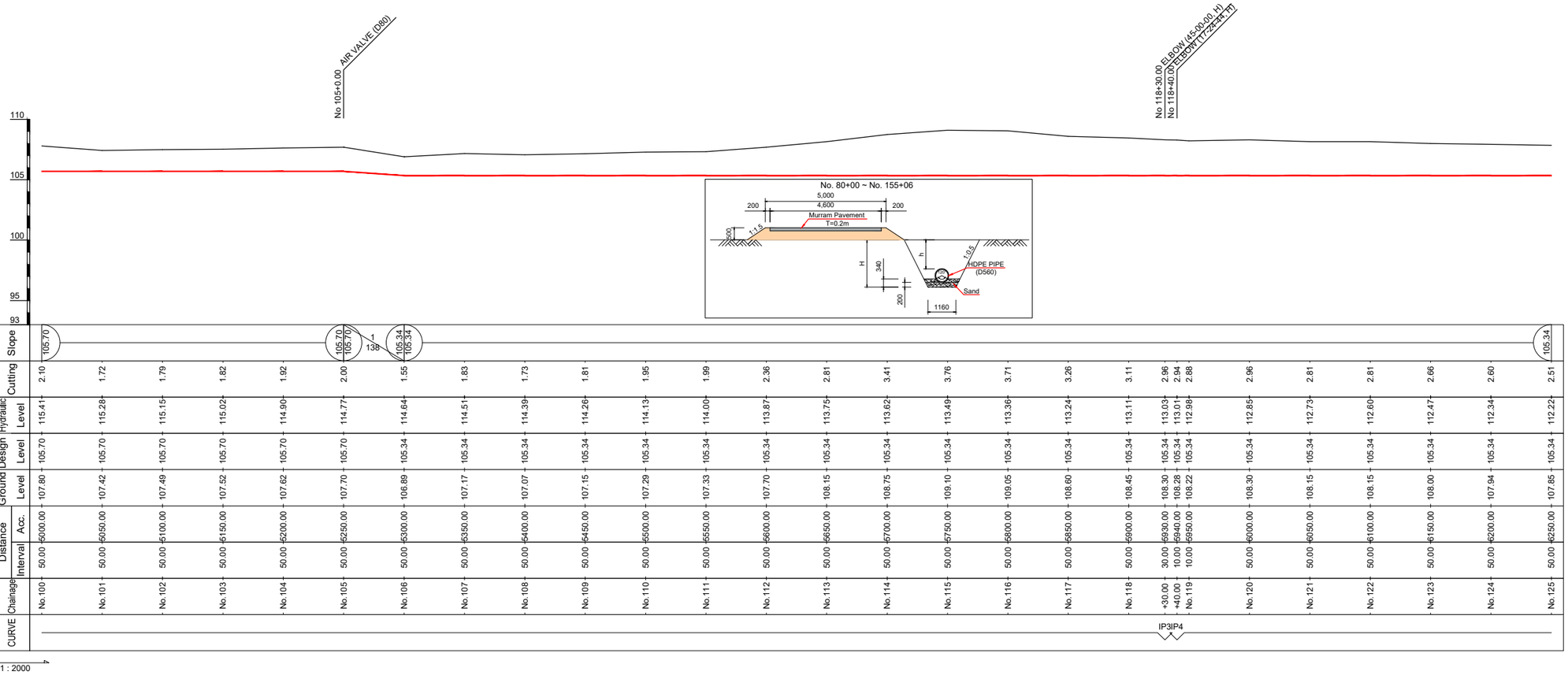
Chainage	Distance Interval	Distance Acc.	Ground Level	Design Level	Hydraulic Level	Cutting
No.75	20.00	3750.00	111.50	108.82	118.37	2.68
No.76	50.00	3800.00	111.00	108.76	118.29	2.24
No.77	50.00	3850.00	110.97	108.70	118.20	2.27
No.78	50.00	3900.00	110.96	108.64	118.12	2.32
No.79	50.00	3950.00	110.82	108.58	118.04	2.24
No.80	50.00	4000.00	110.60	108.52	117.96	2.08
No.81	50.00	4050.00	110.39	108.46	117.83	1.93
No.82	50.00	4100.00	110.00	108.40	117.70	1.60
No.83	50.00	4150.00	109.93	108.04	117.58	1.89
No.84	50.00	4200.00	109.28	107.68	117.45	1.60
+46.00	46.00	4246.00	109.00	106.60	117.33	2.40
No.85	4.00	4250.00	109.00	106.59	117.32	2.41
+4.00	4.00	4254.00	109.00	106.58	117.31	2.42
No.86	46.00	4300.00	109.40	106.46	117.19	2.94
No.87	50.00	4350.00	109.29	106.33	117.07	2.96
No.88	50.00	4400.00	109.00	106.19	116.94	2.81
No.89	50.00	4450.00	108.80	106.06	116.81	2.74
No.90	50.00	4500.00	108.50	105.93	116.68	2.57
+40.00	40.00	4540.00	108.47	105.82	116.58	2.65
No.91	10.00	4550.00	108.46	105.79	116.56	2.66
No.92	50.00	4600.00	108.43	105.66	116.43	2.77
No.93	50.00	4650.00	108.16	105.53	116.30	2.63
+10.00	10.00	4660.00	107.85	105.50	116.27	2.35
+18.00	8.00	4668.00	107.85	105.50	116.25	2.35
No.94	32.00	4700.00	108.85	106.88	116.17	1.97
No.95	50.00	4750.00	109.35	106.82	116.05	2.54
No.96	50.00	4800.00	108.30	106.75	115.92	1.55
No.97	50.00	4850.00	107.82	106.22	115.79	1.60
No.98	50.00	4900.00	107.25	105.70	115.66	1.55
No.99	50.00	4950.00	107.48	105.70	115.53	1.78
No.100	50.00	5000.00	107.80	105.70	115.41	2.10

Slope	
108.82	1/840
108.40 108.40	1/138
107.68 107.68	1/42
106.60 106.60	1/385
106.46 106.46	1/375
105.50 105.50 105.50	1/-23
106.88 106.88	1/769
106.75 106.75	1/95
105.70 105.70	
105.70	

CURVE: IP2

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC19(4/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-22-04





General and Profile Plan of SC19(5/7)

H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	3
IA	44°59'57.57"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	1390.000

IP	4
IA	17°24'46.58"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	10.000

SC-19(5/7)

1 : 200

1 : 2000

Slope	105.70					105.70 105.70 1 138	105.34 105.34							
Cutting	2.10	1.72	1.79	1.82	1.92	2.00	1.55	1.83	1.73	1.81	1.95	1.99	2.36	2.81
Hydraulic Level	115.41	115.28	115.15	115.02	114.90	114.77	114.64	114.51	114.39	114.26	114.13	114.00	113.87	113.75
Design Level	105.70	105.70	105.70	105.70	105.70	105.70	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34
Ground Level	107.80	107.42	107.49	107.52	107.62	107.70	106.89	107.17	107.07	107.15	107.29	107.33	107.70	108.15
Distance Acc.	5000.00	5050.00	5100.00	5150.00	5200.00	5250.00	5300.00	5350.00	5400.00	5450.00	5500.00	5550.00	5600.00	5650.00
Distance Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Chainage	No.100	No.101	No.102	No.103	No.104	No.105	No.106	No.107	No.108	No.109	No.110	No.111	No.112	No.113
CURVE														

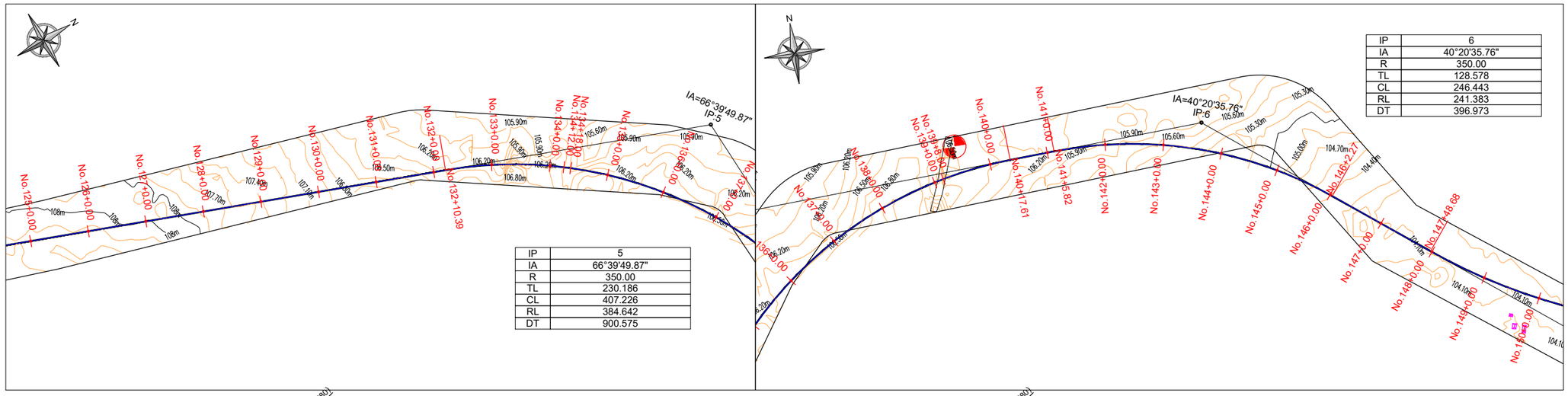
Slope														105.34
Cutting	3.41	3.76	3.71	3.26	3.11	2.96	2.94	2.88	2.96	2.81	2.81	2.66	2.60	2.51
Hydraulic Level	113.62	113.49	113.36	113.24	113.11	113.03	113.01	112.98	112.85	112.73	112.60	112.47	112.34	112.22
Design Level	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34	105.34
Ground Level	108.75	109.10	109.05	108.60	108.45	108.30	108.28	108.22	108.30	108.15	108.15	108.00	107.94	107.85
Distance Acc.	5700.00	5750.00	5800.00	5850.00	5900.00	5930.00	5940.00	5950.00	6000.00	6050.00	6100.00	6150.00	6200.00	6250.00
Distance Interval	50.00	50.00	50.00	50.00	50.00	30.00	10.00	10.00	50.00	50.00	50.00	50.00	50.00	50.00
Chainage	No.114	No.115	No.116	No.117	No.118	+30.00	+40.00	No.119	No.120	No.121	No.122	No.123	No.124	No.125
CURVE						IP3	IP4							

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC19(5/7)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-22-05

General and Profile Plan of SC19(6/7)

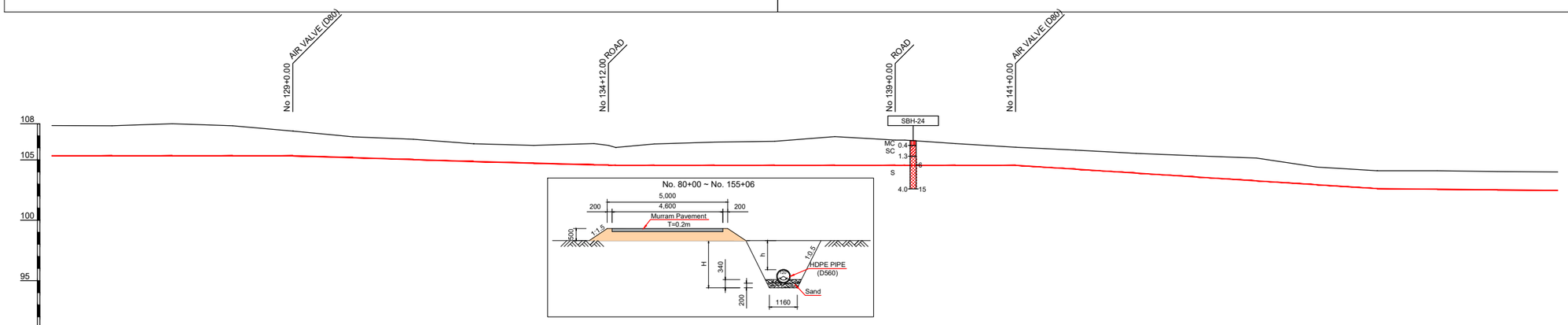
H=1:2,000, V=1:200

Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	5
IA	66°39'49.87"
R	350.00
TL	230.186
CL	407.226
RL	384.642
DT	900.575

IP	6
IA	40°20'35.76"
R	350.00
TL	128.578
CL	246.443
RL	241.383
DT	396.973



SC-19(6/7)

1 : 200

1 : 2000

		No.125	No.126	No.127	No.128	No.129	No.130	No.131	No.132	No.133	No.134	+12.00 +18.00	No.135	No.136	No.137	No.138	No.139 +8.00	No.140	No.141	No.142	No.143	No.144	No.145	No.146	No.147	No.148	No.149	No.150
Chainage																												
Distance	Acc.	6250.00	6300.00	6350.00	6400.00	6450.00	6500.00	6550.00	6600.00	6650.00	6700.00	6712.00 6718.00	6750.00	6800.00	6850.00	6900.00	6950.00 6958.00	7000.00	7050.00	7100.00	7150.00	7200.00	7250.00	7300.00	7350.00	7400.00	7450.00	7500.00
	Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	12.00 6.00	32.00	50.00	50.00	50.00	50.00 8.00	42.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Ground Level		107.85	107.82	108.00	107.82	107.40	106.91	106.72	106.35	106.21	106.35	106.20 106.03	106.33	106.47	106.54	106.93	106.65 106.65	106.35	106.05	105.82	105.54	105.33	105.15	104.41	104.10	104.10	104.03	104.01
Design Level		105.34	105.34	105.34	105.34	105.34	105.18	105.03	104.87	104.73	104.60	104.57 104.55	104.55	104.55	104.55	104.55	104.55 104.55	104.55	104.55	104.23	103.91	103.58	103.26	102.94	102.62	102.57	102.52	102.47
Hydraulic Level		112.22	112.09	111.96	111.83	111.70	111.58	111.45	111.32	111.19	111.07	111.04 111.02	110.94	110.81	110.68	110.56	110.43 110.41	110.30	110.17	110.04	109.92	109.79	109.66	109.53	109.41	109.28	109.15	109.02
Cutting		2.51	2.48	2.66	2.48	2.06	1.73	1.69	1.48	1.47	1.75	1.63 1.48	1.78	1.93	1.99	2.38	2.10 2.10	1.80	1.50	1.59	1.64	1.75	1.89	1.47	1.48	1.53	1.51	1.54
Slope		105.34				105.34 105.34	1 319		104.87 104.87	1 368		104.55 104.55							104.55 104.55	1 155						102.62 102.62	1 999		102.47
CURVE														IP5 R:350									IP6 R:350					

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC19(6/7)	JUNE, 2022		B-22-06

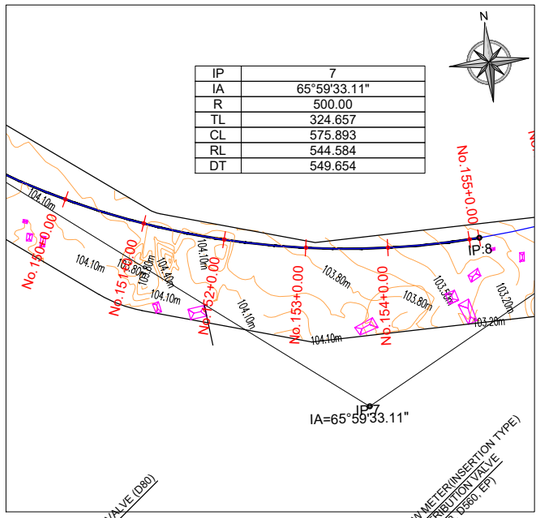
General and Profile Plan of SC19(7/7)

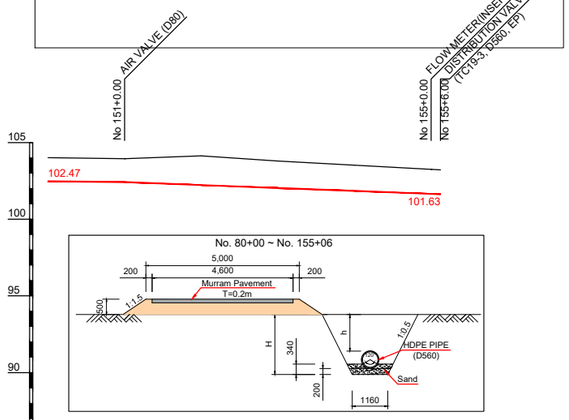
H=1:2,000, V=1:200

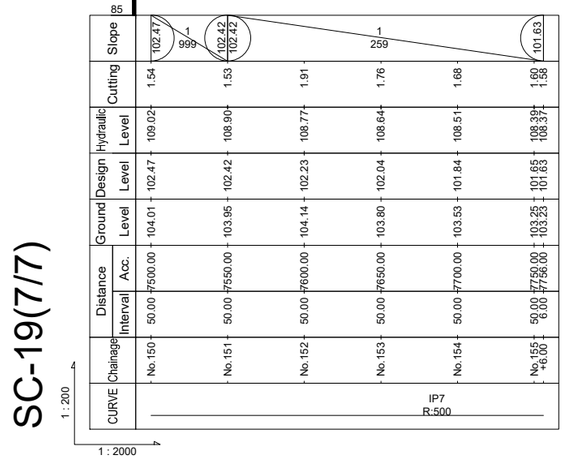
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).

IP	7
IA	65°59'33.11"
R	500.00
TL	324.657
CL	575.893
RL	544.584
DT	549.654

IP	8
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000







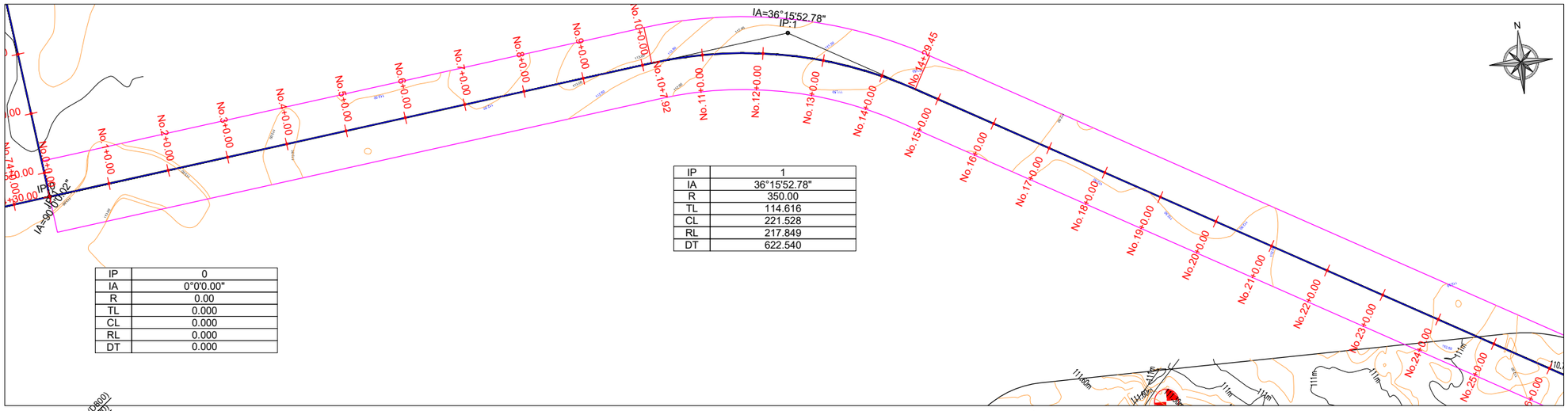
SC-19(7/7)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC19(7/7)	JUNE, 2022		B-22-07

General and Profile Plan of SC19-1(1/2)

H=1:2,000, V=1:200

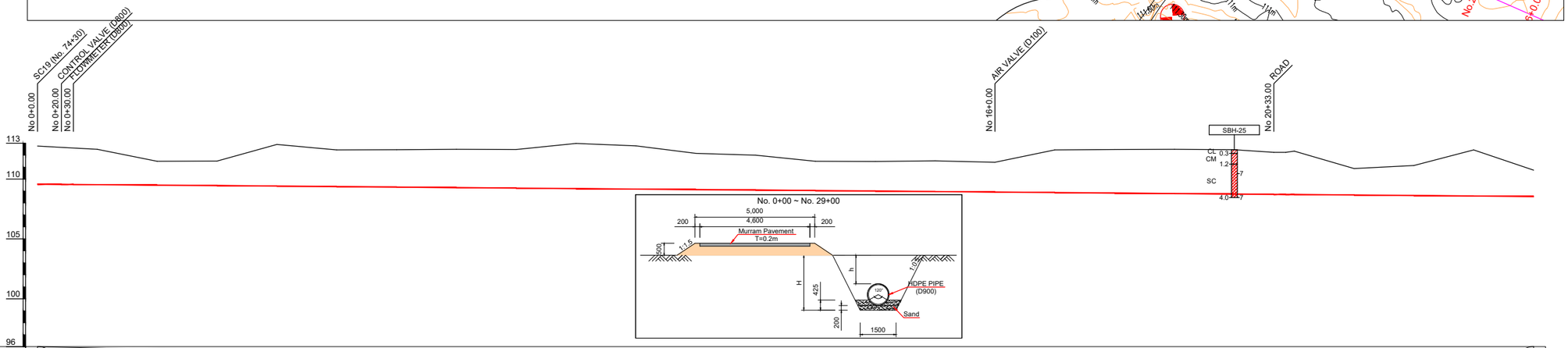
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	0
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

IP	1
IA	36°15'52.78"
R	350.00
TL	114.616
CL	221.528
RL	217.849
DT	622.540

SC-19-1(1/2)



	No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Slope	109.58												1 1208	
Cutting	3.19	2.95	2.00	2.05	3.49	3.06	3.13	3.20	3.22	3.77	3.62	3.03	2.91	2.46
Hydraulic Level	117.96	117.94	117.92	117.90	117.88	117.86	117.84	117.81	117.79	117.77	117.75	117.73	117.71	117.69
Design Level	109.58	109.54	109.50	109.46	109.41	109.37	109.33	109.29	109.25	109.21	109.17	109.12	109.08	109.04
Ground Level	112.77	112.49	111.50	111.51	112.91	112.43	112.46	112.49	112.47	112.98	112.79	112.16	112.00	111.50
Distance Acc.	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00
Distance Interval	0.00	20.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Chainage	No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
CURVE	IP0												IP1 R:350	

	No.14	No.15	No.16	No.17	No.18	No.19	No.20	+33.00	+43.00	No.21	No.22	No.23	No.24	No.25
Slope														108.55
Cutting	2.48	2.57	2.50	3.56	3.64	3.69	3.70	3.50	3.53	3.63	2.22	2.51	3.85	2.21
Hydraulic Level	117.67	117.65	117.63	117.61	117.59	117.56	117.54	117.53	117.53	117.52	117.50	117.48	117.46	117.44
Design Level	109.00	108.96	108.92	108.88	108.84	108.79	108.75	108.73	108.72	108.71	108.67	108.63	108.59	108.55
Ground Level	111.48	111.53	111.41	112.44	112.47	112.49	112.45	112.23	112.24	112.34	110.89	111.14	112.44	110.75
Distance Acc.	700.00	750.00	800.00	850.00	900.00	950.00	1000.00	1033.00	1043.00	1050.00	1100.00	1150.00	1200.00	1250.00
Distance Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	33.00	10.00	7.00	50.00	50.00	50.00	50.00
Chainage	No.14	No.15	No.16	No.17	No.18	No.19	No.20	+33.00	+43.00	No.21	No.22	No.23	No.24	No.25
CURVE														

1 : 200

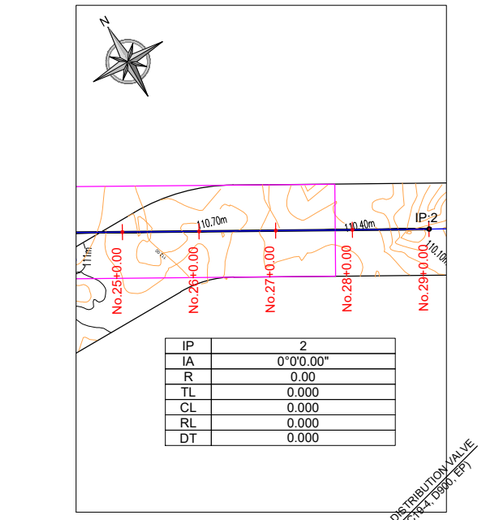
1 : 2000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	H=1:2,000, V=1:200
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General and Profile Plan of SC19-1(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-23-01

General and Profile Plan of SC19-1(2/2)

H=1:2,000, V=1:200

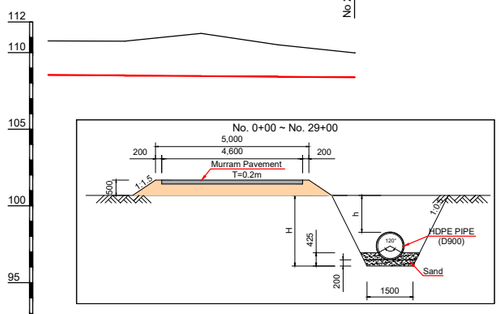
Unit is a meter(m) of The International System of Units(SI).
The conveyance plan level is center of a pipe(water conveyance).



IP	2
IA	0°0'0.00"
R	0.00
TL	0.000
CL	0.000
RL	0.000
DT	0.000

DISTRIBUTION VALVE (TCR14 D900, EP)

No 29+0.00



		No.25	No.26	No.27	No.28	No.29
Chainage		No.25	No.26	No.27	No.28	No.29
Distance	Interval	50.00	50.00	50.00	50.00	50.00
	Acc.	1250.00	1300.00	1350.00	1400.00	1450.00
Ground Level		110.75	110.74	111.25	110.51	109.98
Design Level		108.55	108.50	108.46	108.42	108.38
Hydraulic Level		117.44	117.08	116.73	116.38	116.02
Cutting		2.21	2.24	2.79	2.09	1.60
Slope		108.55	1/1208			108.38
CURVE						

1 : 200

1 : 2000

SC-19-1(2/2)

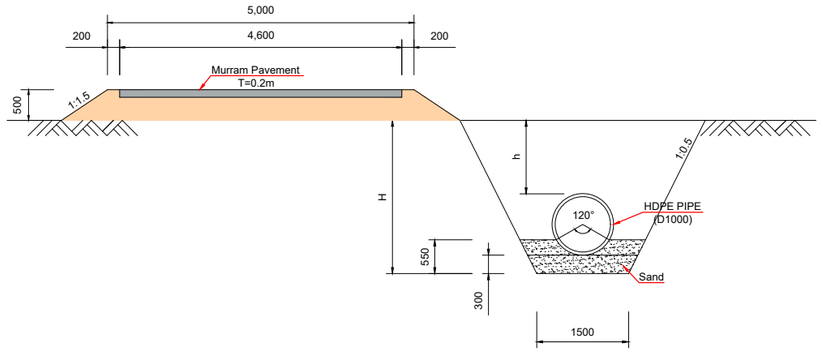
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:2,000, V=1:200
		TITLE	DATE		DRAWING No
		General and Profile Plan of SC19-1(2/2)	JUNE, 2022		B-23-02

Standard Cross Section of Secondary(1/9)

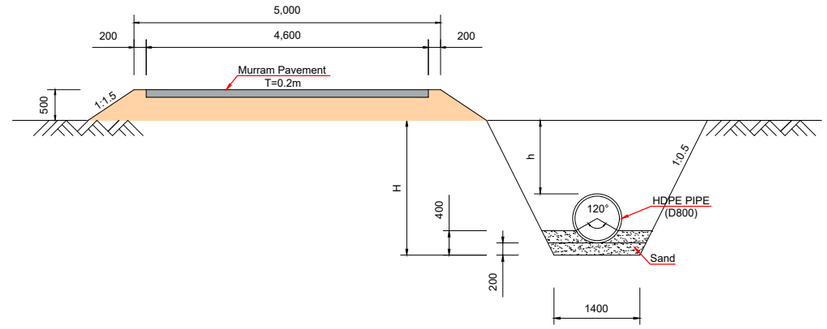
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

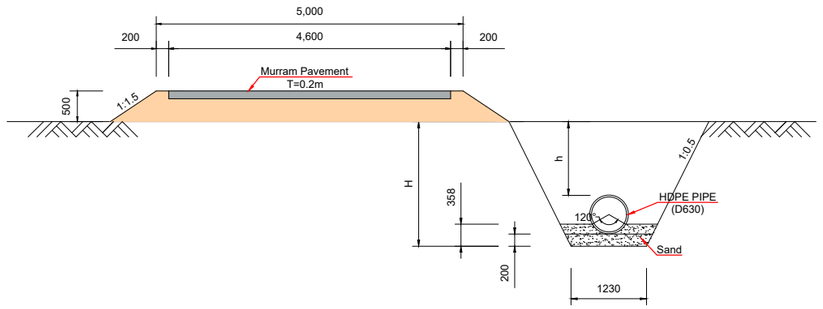
SC1 (D = 1,000)
No. 0+00 ~ 12+00



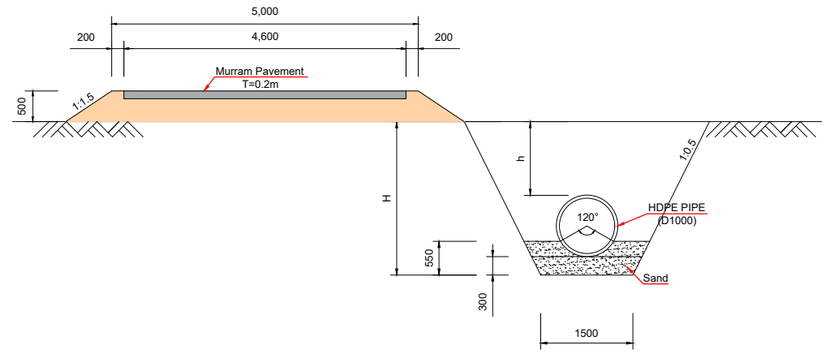
SC1 (D = 800)
No. 88+00 ~ 164+20



SC1A (D = 630mm)
No. 0+00 ~ 24+00



SC1 (D = 1,000)
No. 12+00 ~ 88+00



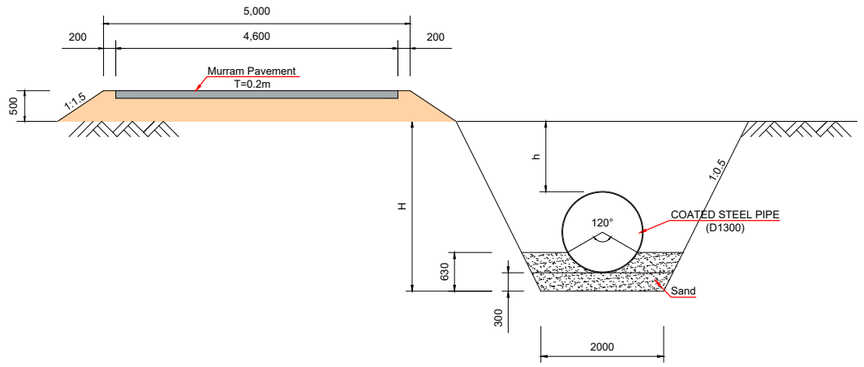
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(1/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-01

Standard Cross Section of Secondary(2/9)

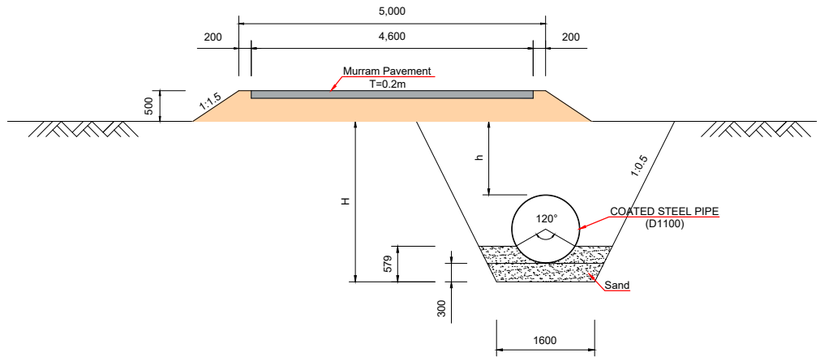
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

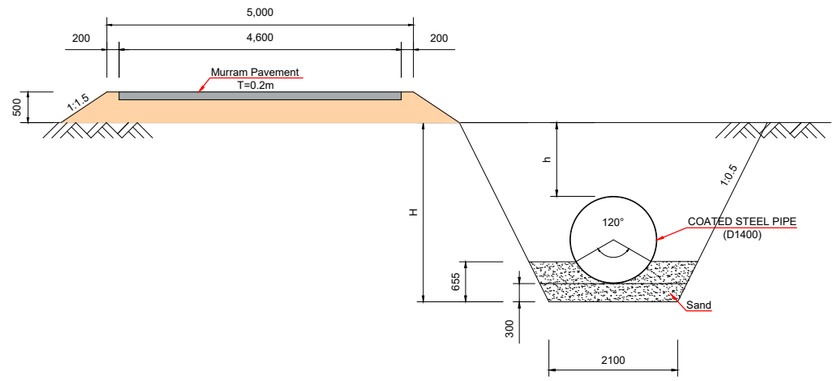
SC19 (D = 1,300mm)
No. 182+00 ~ 261+00



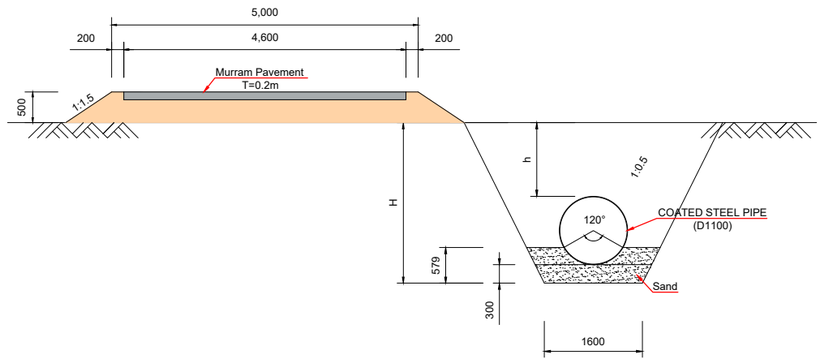
SC2-1 (D = 1,100mm)
No. 0+00 ~ 20+00



SC2 (D = 1,400mm)
No. 0+00 ~ 182+00



SC2 (D = 1,100mm)
No. 261+00 ~ 290+08



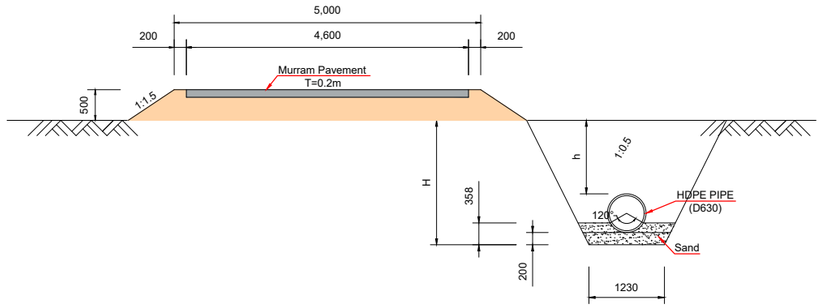
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(2/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-02

Standard Cross Section of Secondary(3/9)

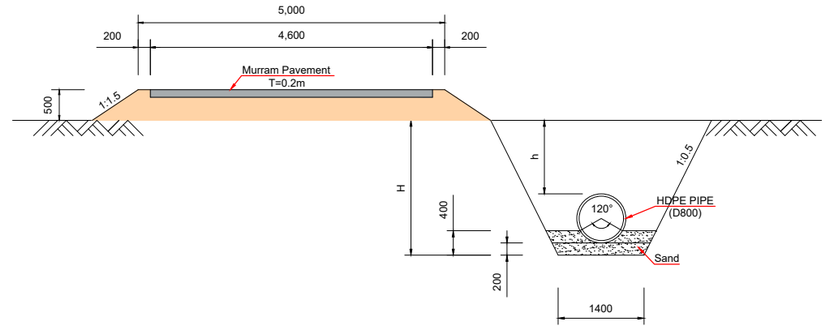
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

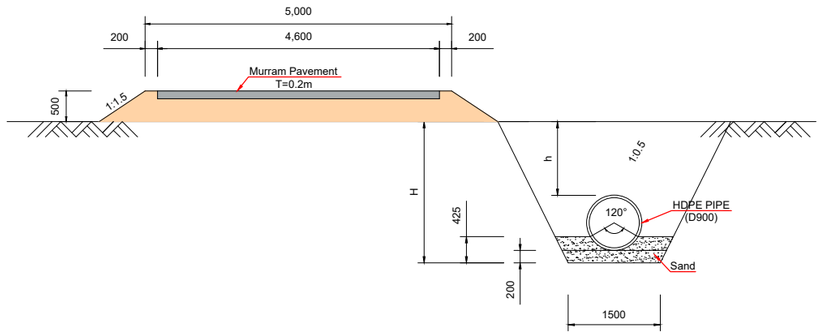
SC2-2 (D = 630mm)
No. 0+00 ~ 9+04



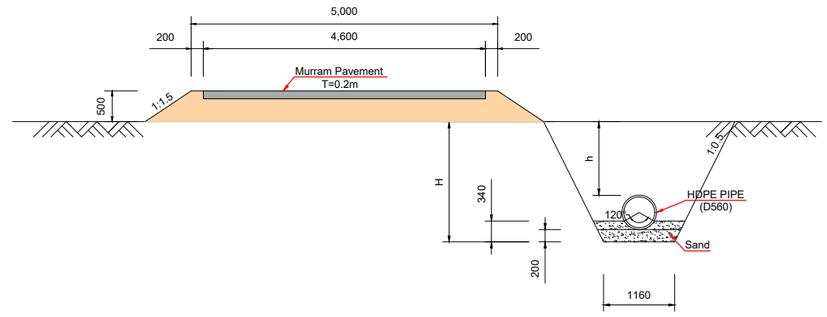
SC4 (D = 800mm)
No. 00+00 ~ 16+08



SC2-1 (D = 900mm)
No. 20+00 ~ 63+41



SC3 (D = 560mm)
No. 0+00 ~ 26+00



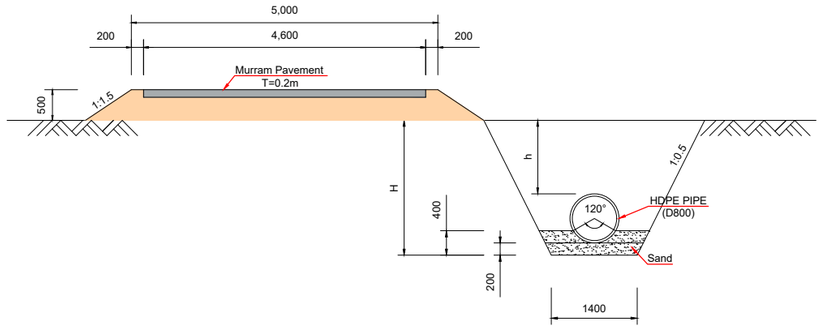
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(3/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-03

Standard Cross Section of Secondary(4/9)

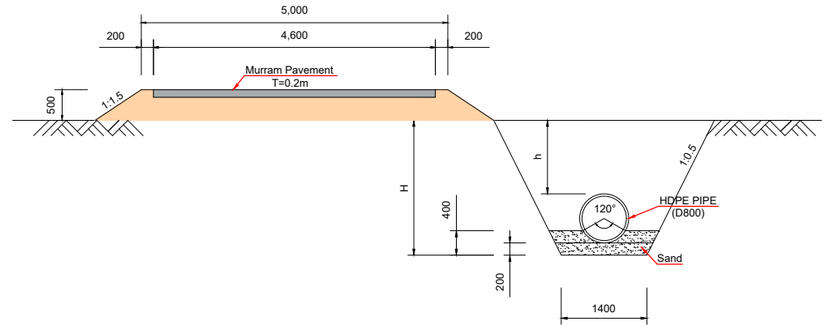
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

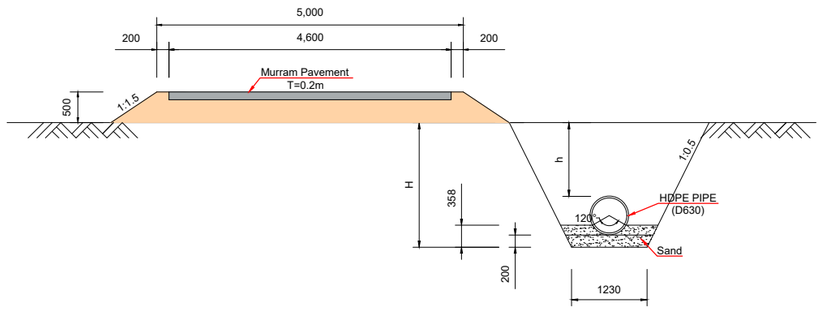
SC6 (D = 800mm)
No. 0+00 ~ 22+00



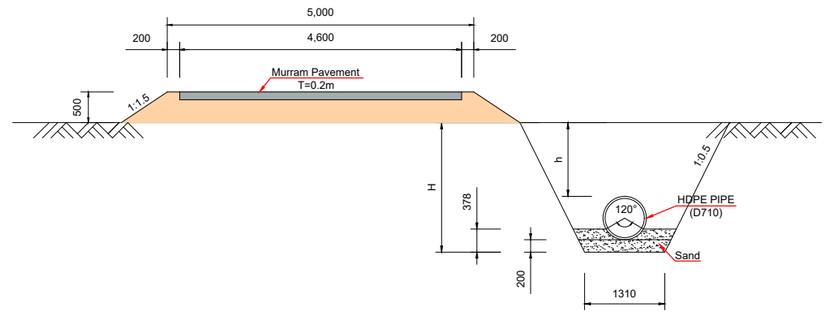
SC8 (D = 800mm)
No. 00+00 ~ 1+00



SC5 (D = 630mm)
No. 0+00 ~ 15+00



SC7 (D = 710mm)
No. 0+00 ~ 1+00



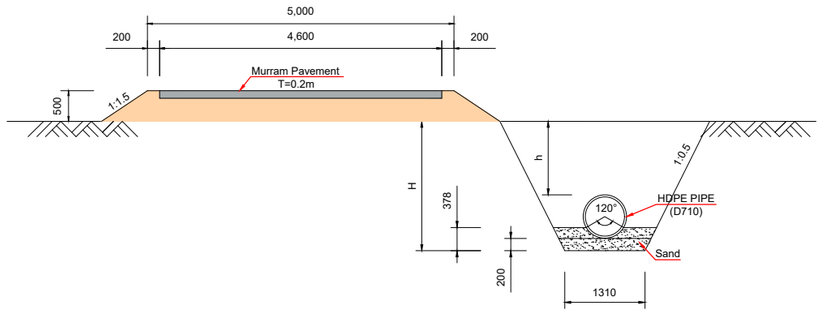
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(4/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-04

Standard Cross Section of Secondary(5/9)

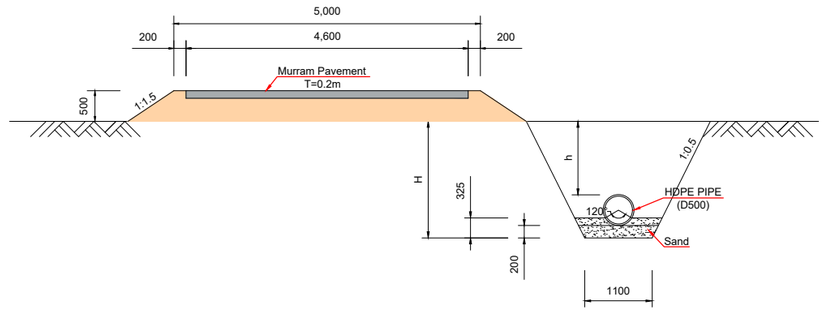
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

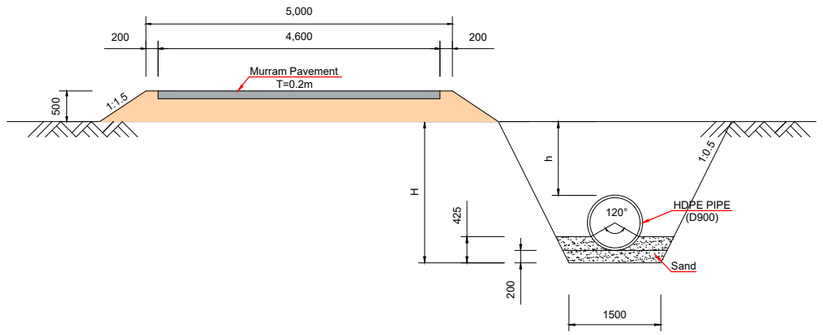
SC9 (D = 710mm)
No. 55+00 ~ 120+00



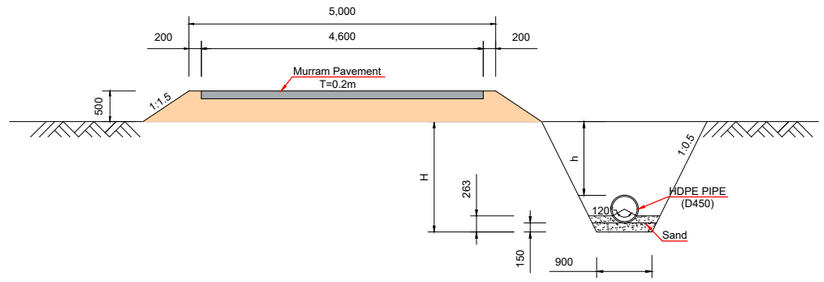
SC11 (D = 500mm)
No. 00+00 ~ 10+00



SC9 (D = 900mm)
No. 0+00 ~ 55+00



SC10 (D = 450mm)
No. 0+00 ~ 10+00



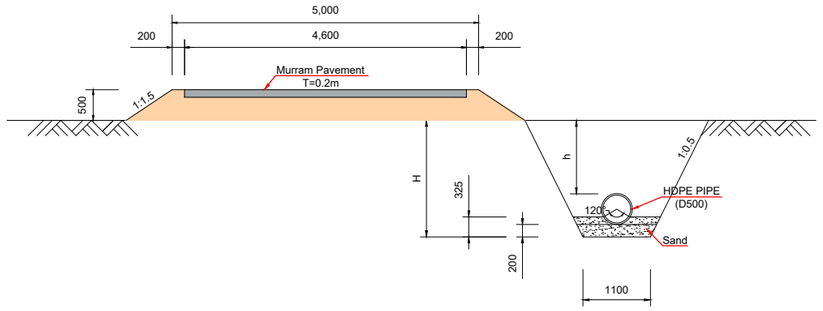
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:50
		TITLE	DATE		DRAWING No
		Standard Cross Section of Secondary(5/9)	JUNE, 2022		B-24-05

Standard Cross Section of Secondary(6/9)

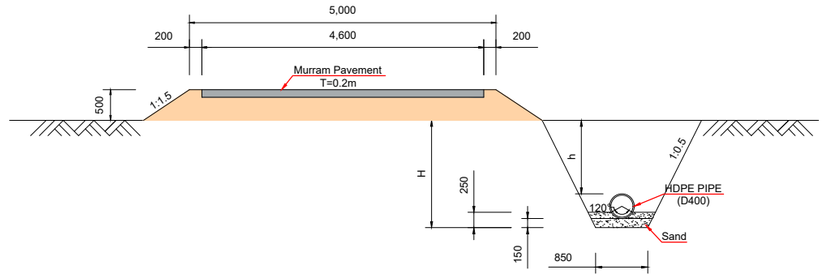
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

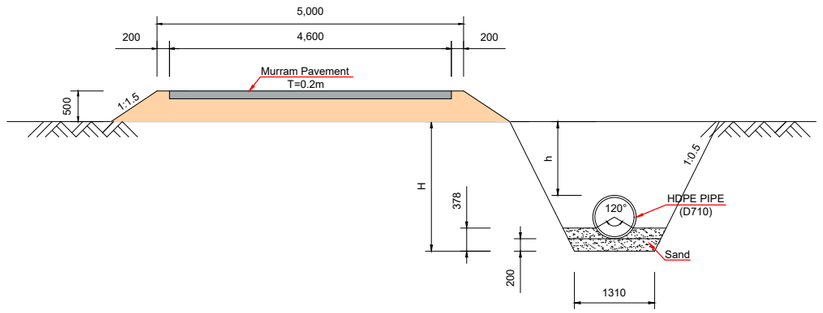
SC13 (D = 500mm)
No. 00+00 ~ 13+00



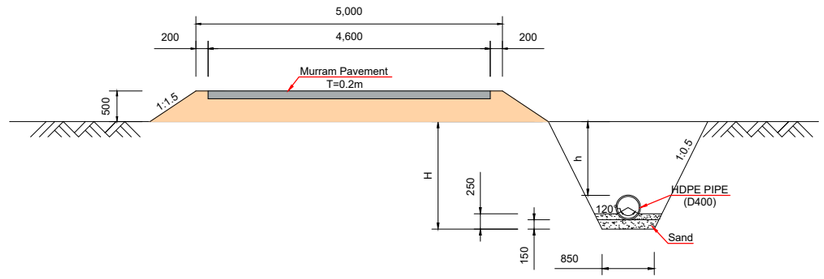
SC15 (D = 400mm)
No. 00+00 ~ 1+00



SC12 (D = 710mm)
No. 0+00 ~ 7+46



SC14 (D = 400mm)
No. 0+00 ~ 1+00



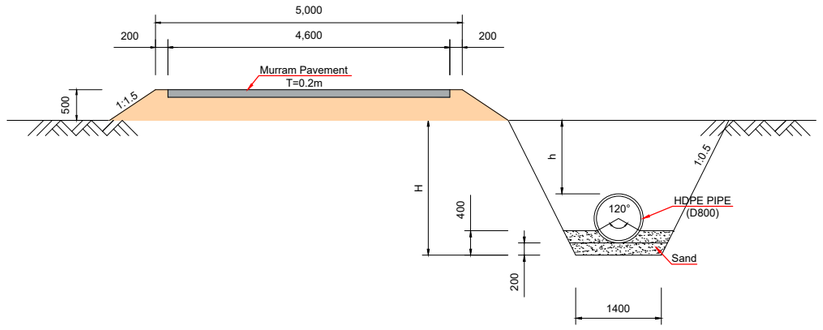
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(6/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-06

Standard Cross Section of Secondary(7/9)

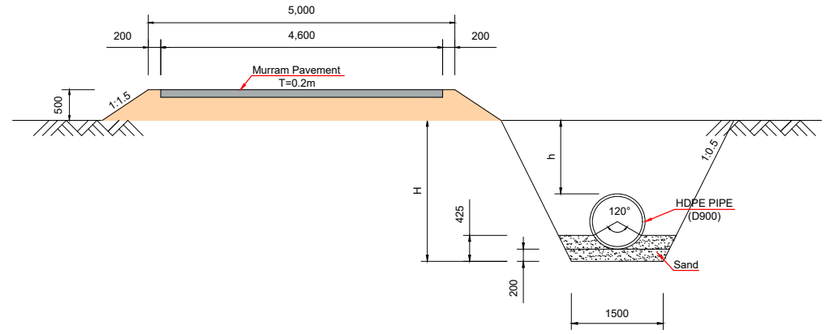
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

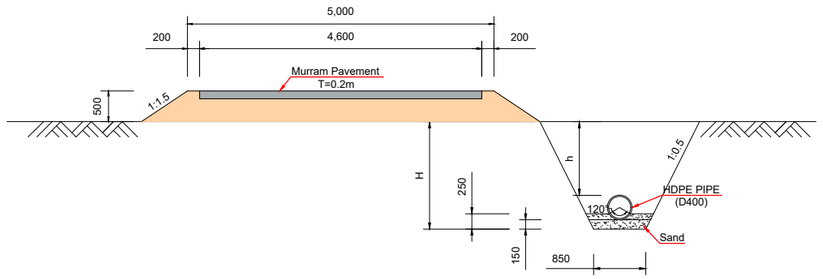
SC17 (D = 800mm)
No. 00+00 ~ 20+00



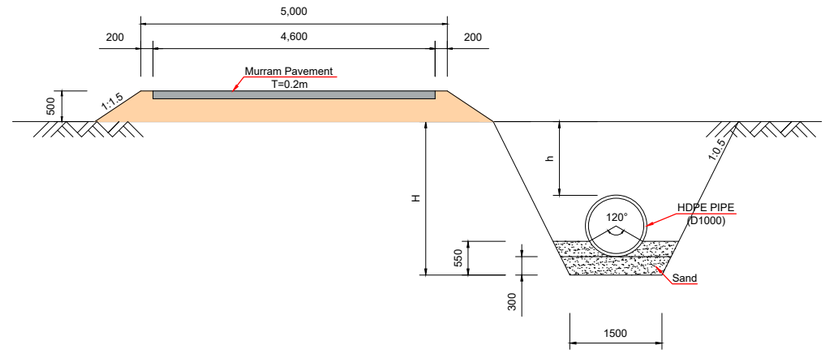
SC18 (D = 900mm)
No. 56+00 ~ 94+09



SC16 (D = 400mm)
No. 0+00 ~ 2+00



SC18 (D = 1,000mm)
No. 0+00 ~ 56+00



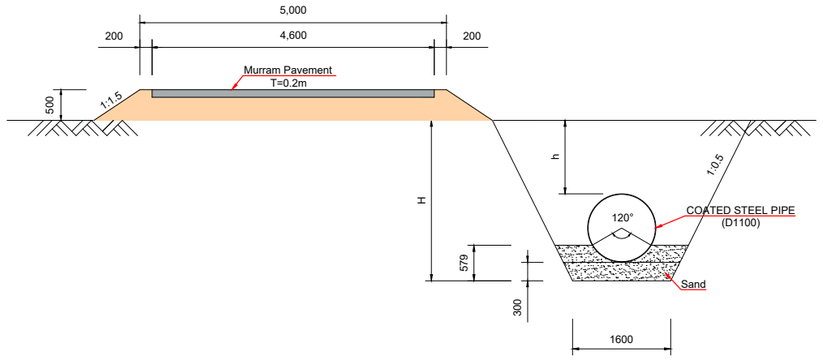
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(7/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-07

Standard Cross Section of Secondary(8/9)

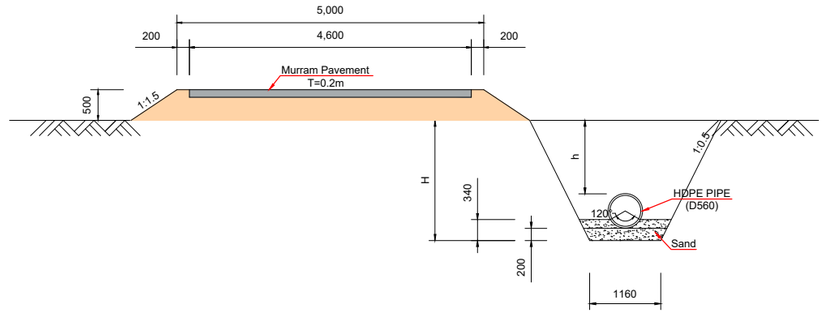
S=1:50

Unit is millimeter(mm) of The International System Units(SI).

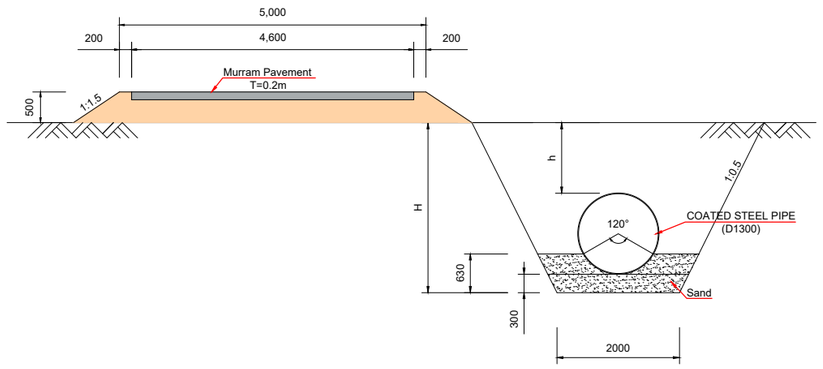
SC19 (D = 1,100mm)
No. 30+00 ~ 74+30



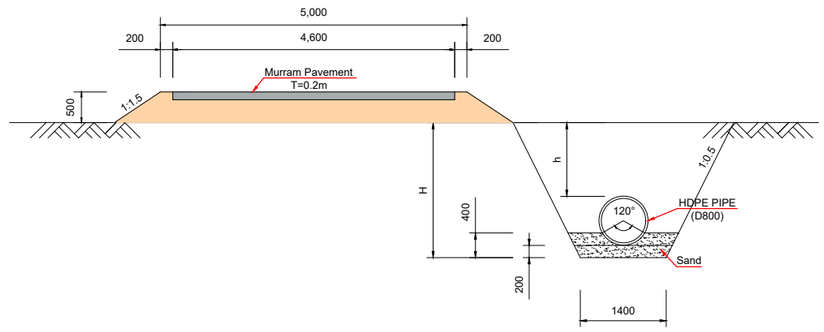
SC19 (D = 560mm)
No. 80+00 ~ 155+06



SC19 (D = 1,300mm)
No. 0+00 ~ 30+00



SC19 (D = 800mm)
No. 74+30 ~ 80+00



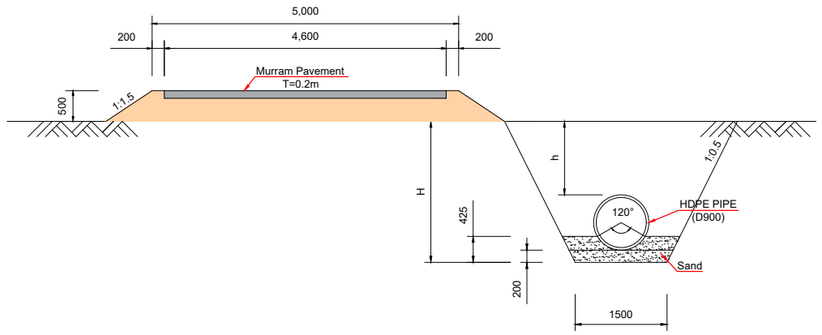
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(8/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-08

Standard Cross Section of Secondary(9/9)

S=1:50

Unit is millimeter(mm) of The International System Units(SI).

SC19-1 (D = 900mm)
No. 0+00 ~ 29+00

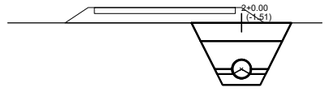


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Standard Cross Section of Secondary(9/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-24-09

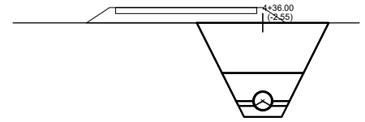
Cross Section of SC1A (1/3)

S=1:100

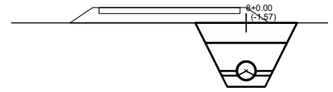
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



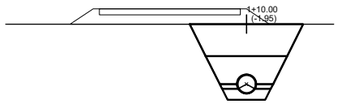
NO.		2+0.00
Design Level (El.m)		130.17
Original Ground Level (El.m)		131.68
Embankment (m2)		1.96
Excavation (m2)		4.55
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.77
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



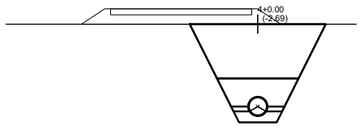
NO.		4+36.00
Design Level (El.m)		123.76
Original Ground Level (El.m)		126.31
Embankment (m2)		1.96
Excavation (m2)		8.48
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	5.70
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.90



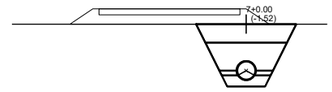
NO.		8+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.30
Embankment (m2)		1.96
Excavation (m2)		4.73
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.95
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.41



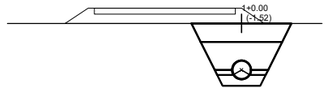
NO.		1+10.00
Design Level (El.m)		131.55
Original Ground Level (El.m)		133.50
Embankment (m2)		1.96
Excavation (m2)		6.08
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.30
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.60



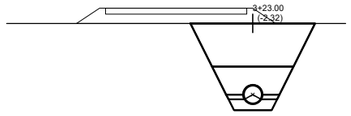
NO.		4+0.00
Design Level (El.m)		123.76
Original Ground Level (El.m)		126.45
Embankment (m2)		1.96
Excavation (m2)		9.07
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	6.29
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.97



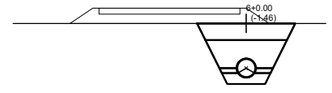
NO.		7+0.00
Design Level (El.m)		127.92
Original Ground Level (El.m)		129.44
Embankment (m2)		1.96
Excavation (m2)		4.56
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.78
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



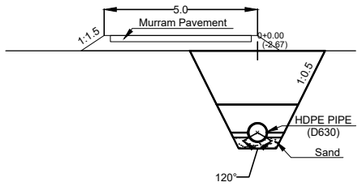
NO.		1+0.00
Design Level (El.m)		131.89
Original Ground Level (El.m)		133.41
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



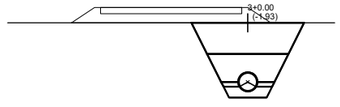
NO.		3+23.00
Design Level (El.m)		123.76
Original Ground Level (El.m)		126.08
Embankment (m2)		1.96
Excavation (m2)		7.50
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	4.72
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.78



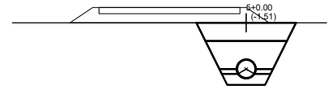
NO.		6+0.00
Design Level (El.m)		126.61
Original Ground Level (El.m)		128.07
Embankment (m2)		1.96
Excavation (m2)		4.38
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.60
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.35



NO.		0+0.00
Design Level (El.m)		132.93
Original Ground Level (El.m)		135.60
Embankment (m2)		1.96
Excavation (m2)		8.99
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	6.21
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.96



NO.		3+0.00
Design Level (El.m)		125.78
Original Ground Level (El.m)		127.71
Embankment (m2)		1.96
Excavation (m2)		5.99
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.21
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.59



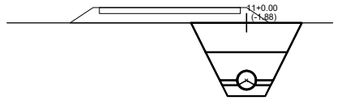
NO.		5+0.00
Design Level (El.m)		125.31
Original Ground Level (El.m)		126.82
Embankment (m2)		1.96
Excavation (m2)		4.54
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.76
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1A (1/3)	JUNE, 2022		B-25-01

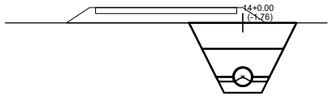
Cross Section of SC1A (2/3)

S=1:100

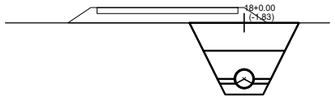
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



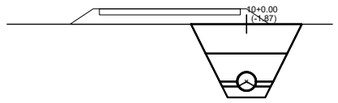
NO.		11+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.61
Embankment (m2)		1.96
Excavation (m2)		5.80
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.02
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.56



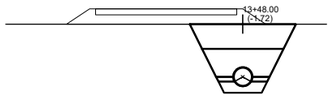
NO.		14+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.49
Embankment (m2)		1.96
Excavation (m2)		5.39
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.61
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.50



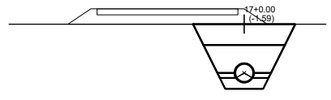
NO.		18+0.00
Design Level (El.m)		120.31
Original Ground Level (El.m)		122.14
Embankment (m2)		1.96
Excavation (m2)		5.62
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.84
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.54



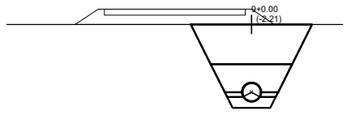
NO.		10+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.60
Embankment (m2)		1.96
Excavation (m2)		5.79
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.01
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.56



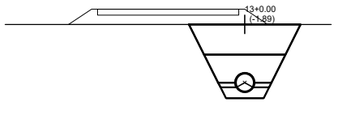
NO.		13+48.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.45
Embankment (m2)		1.96
Excavation (m2)		5.24
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.48



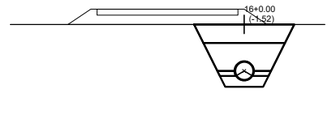
NO.		17+0.00
Design Level (El.m)		120.62
Original Ground Level (El.m)		122.22
Embankment (m2)		1.96
Excavation (m2)		4.82
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.04
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.42



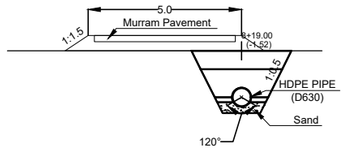
NO.		9+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.94
Embankment (m2)		1.96
Excavation (m2)		7.06
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	4.28
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.73



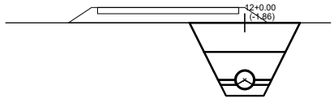
NO.		13+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.62
Embankment (m2)		1.96
Excavation (m2)		5.86
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.08
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.57



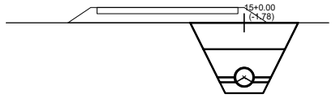
NO.		16+0.00
Design Level (El.m)		122.65
Original Ground Level (El.m)		124.17
Embankment (m2)		1.96
Excavation (m2)		4.56
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.78
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



NO.		8+19.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.25
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



NO.		12+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.59
Embankment (m2)		1.96
Excavation (m2)		5.75
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.97
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.55



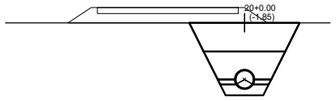
NO.		15+0.00
Design Level (El.m)		125.73
Original Ground Level (El.m)		127.51
Embankment (m2)		1.96
Excavation (m2)		5.46
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.67
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.51

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC1A (2/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-25-02

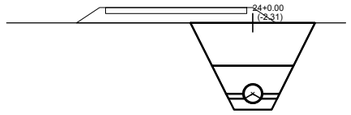
Cross Section of SC1A (3/3)

S=1:100

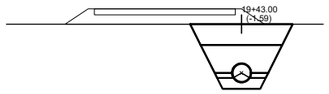
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



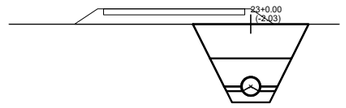
NO.		20+0.00
Design Level (El.m)		116.65
Original Ground Level (El.m)		118.50
Embankment (m2)		1.96
Excavation (m2)		5.71
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.92
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.55



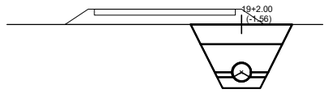
NO.		24+0.00
Design Level (El.m)		113.58
Original Ground Level (El.m)		115.90
Embankment (m2)		1.96
Excavation (m2)		7.49
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	4.70
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.78



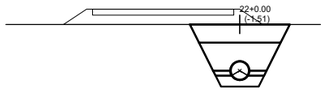
NO.		19+43.00
Design Level (El.m)		116.91
Original Ground Level (El.m)		118.50
Embankment (m2)		1.96
Excavation (m2)		4.82
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.04
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.42



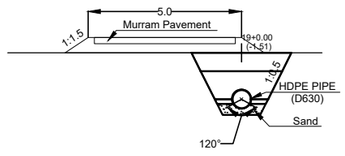
NO.		23+0.00
Design Level (El.m)		113.58
Original Ground Level (El.m)		115.61
Embankment (m2)		1.96
Excavation (m2)		6.38
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.60
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.64



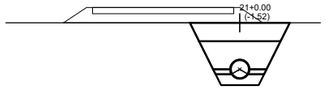
NO.		19+2.00
Design Level (El.m)		118.41
Original Ground Level (El.m)		119.97
Embankment (m2)		1.96
Excavation (m2)		4.70
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.92
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.40



NO.		22+0.00
Design Level (El.m)		113.58
Original Ground Level (El.m)		115.09
Embankment (m2)		1.96
Excavation (m2)		4.54
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.76
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



NO.		19+0.00
Design Level (El.m)		118.48
Original Ground Level (El.m)		119.99
Embankment (m2)		1.96
Excavation (m2)		4.55
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.77
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



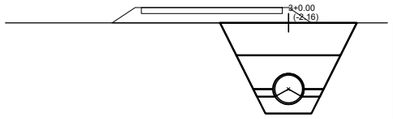
NO.		21+0.00
Design Level (El.m)		114.82
Original Ground Level (El.m)		116.34
Embankment (m2)		1.96
Excavation (m2)		4.56
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.78
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1A (3/3)	JUNE, 2022		B-25-03

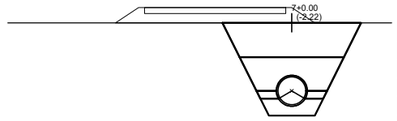
Cross Section of SC1 (1/16)

S=1:100

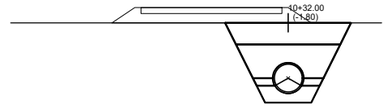
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



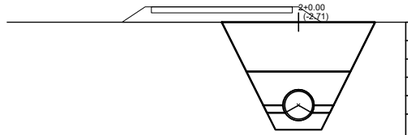
NO.		3+0.00
Design Level (El.m)		129.25
Original Ground Level (El.m)		131.41
Embankment (m2)		1.96
Excavation (m2)		8.83
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.17
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.98



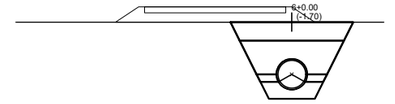
NO.		7+0.00
Design Level (El.m)		125.69
Original Ground Level (El.m)		127.91
Embankment (m2)		1.96
Excavation (m2)		9.10
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.44
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.01



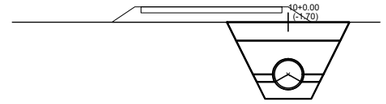
NO.		10+32.00
Design Level (El.m)		120.01
Original Ground Level (El.m)		121.82
Embankment (m2)		1.96
Excavation (m2)		7.30
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.64
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.80



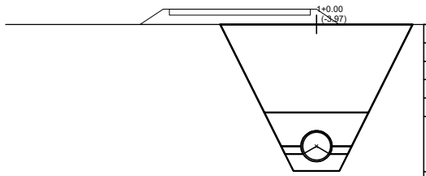
NO.		2+0.00
Design Level (El.m)		130.50
Original Ground Level (El.m)		133.21
Embankment (m2)		1.96
Excavation (m2)		11.42
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	6.76
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.25



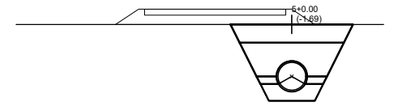
NO.		6+0.00
Design Level (El.m)		127.49
Original Ground Level (El.m)		129.19
Embankment (m2)		1.96
Excavation (m2)		6.88
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



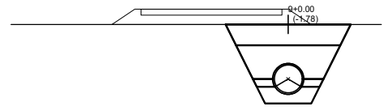
NO.		10+0.00
Design Level (El.m)		120.30
Original Ground Level (El.m)		122.00
Embankment (m2)		1.96
Excavation (m2)		6.88
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



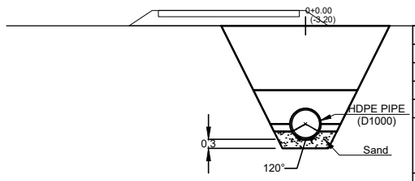
NO.		1+0.00
Design Level (El.m)		130.63
Original Ground Level (El.m)		134.60
Embankment (m2)		1.96
Excavation (m2)		18.55
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	13.89
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.89



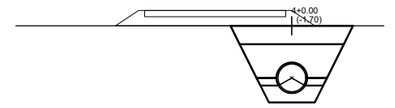
NO.		5+0.00
Design Level (El.m)		127.74
Original Ground Level (El.m)		129.43
Embankment (m2)		1.96
Excavation (m2)		6.85
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



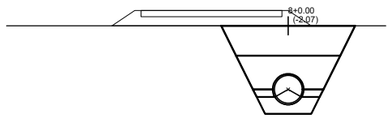
NO.		9+0.00
Design Level (El.m)		122.10
Original Ground Level (El.m)		123.88
Embankment (m2)		1.96
Excavation (m2)		7.20
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.54
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.79



NO.		0+0.00
Design Level (El.m)		131.71
Original Ground Level (El.m)		134.91
Embankment (m2)		1.96
Excavation (m2)		14.00
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	9.34
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.50



NO.		4+0.00
Design Level (El.m)		127.99
Original Ground Level (El.m)		129.69
Embankment (m2)		1.96
Excavation (m2)		6.87
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.21
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



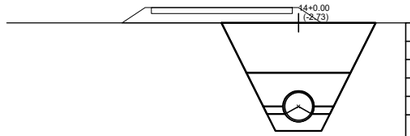
NO.		8+0.00
Design Level (El.m)		123.90
Original Ground Level (El.m)		125.97
Embankment (m2)		1.96
Excavation (m2)		8.44
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.78
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.94

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (1/16)	JUNE, 2022		B-26-01

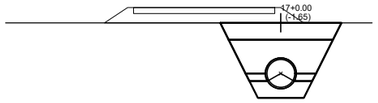
Cross Section of SC1 (2/16)

S=1:100

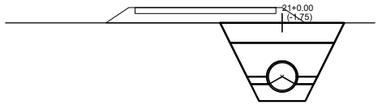
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



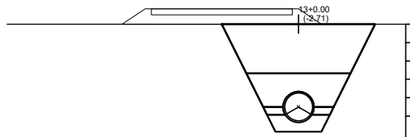
NO.		14+0.00
Design Level (El.m)		119.13
Original Ground Level (El.m)		121.85
Embankment (m2)		1.96
Excavation (m2)		11.52
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	6.86
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.26



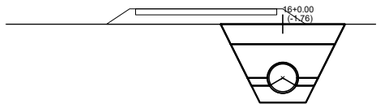
NO.		17+0.00
Design Level (El.m)		118.79
Original Ground Level (El.m)		120.44
Embankment (m2)		1.96
Excavation (m2)		6.68
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.02
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.73



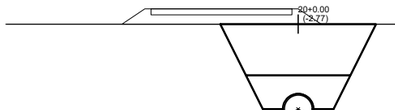
NO.		21+0.00
Design Level (El.m)		117.35
Original Ground Level (El.m)		119.10
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



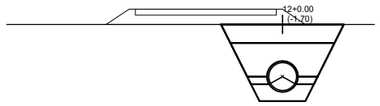
NO.		13+0.00
Design Level (El.m)		119.26
Original Ground Level (El.m)		121.97
Embankment (m2)		1.96
Excavation (m2)		11.41
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	6.75
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.25



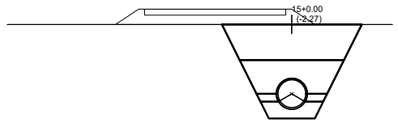
NO.		16+0.00
Design Level (El.m)		118.85
Original Ground Level (El.m)		120.61
Embankment (m2)		1.96
Excavation (m2)		7.10
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.44
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



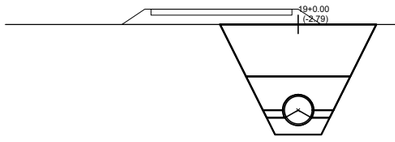
NO.		20+0.00
Design Level (El.m)		117.81
Original Ground Level (El.m)		120.58
Embankment (m2)		1.96
Excavation (m2)		11.75
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.08
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.29



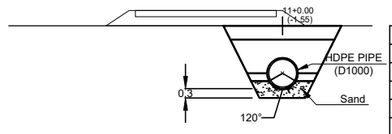
NO.		12+0.00
Design Level (El.m)		119.40
Original Ground Level (El.m)		121.10
Embankment (m2)		1.96
Excavation (m2)		6.88
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



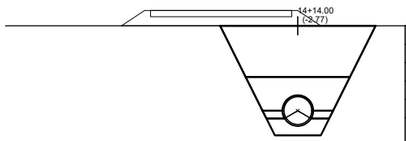
NO.		15+0.00
Design Level (El.m)		118.99
Original Ground Level (El.m)		121.25
Embankment (m2)		1.96
Excavation (m2)		9.30
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.64
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.03



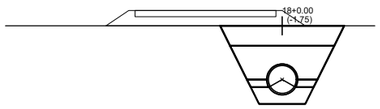
NO.		19+0.00
Design Level (El.m)		118.26
Original Ground Level (El.m)		121.06
Embankment (m2)		1.96
Excavation (m2)		11.84
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.18
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.30



NO.		11+0.00
Design Level (El.m)		119.85
Original Ground Level (El.m)		121.40
Embankment (m2)		1.96
Excavation (m2)		6.29
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	1.63
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.68



NO.		14+14.00
Design Level (El.m)		119.09
Original Ground Level (El.m)		121.86
Embankment (m2)		1.96
Excavation (m2)		11.73
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.07
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.29



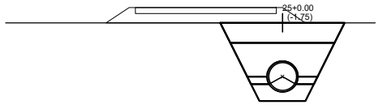
NO.		18+0.00
Design Level (El.m)		118.72
Original Ground Level (El.m)		120.47
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100 DRAWING No
		TITLE	DATE		
		Cross Section of SC1 (2/16)	JUNE, 2022		B-26-02

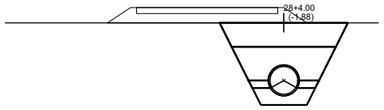
Cross Section of SC1 (3/16)

S=1:100

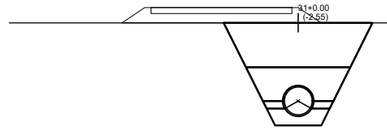
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



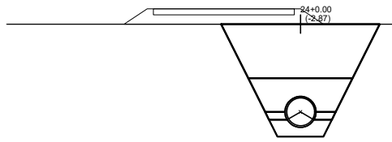
NO.		25+0.00
Design Level (El.m)		117.02
Original Ground Level (El.m)		118.77
Embankment (m2)		1.96
Excavation (m2)		7.09
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.43
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



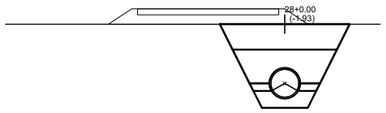
NO.		28+4.00
Design Level (El.m)		115.87
Original Ground Level (El.m)		117.75
Embankment (m2)		1.96
Excavation (m2)		7.62
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.95
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



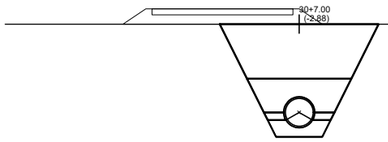
NO.		31+0.00
Design Level (El.m)		114.85
Original Ground Level (El.m)		117.40
Embankment (m2)		1.96
Excavation (m2)		10.64
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.98
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.18



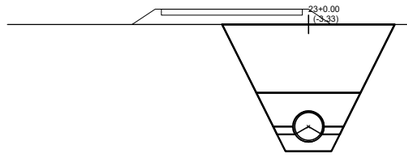
NO.		24+0.00
Design Level (El.m)		117.10
Original Ground Level (El.m)		119.97
Embankment (m2)		1.96
Excavation (m2)		12.23
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.57
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.33



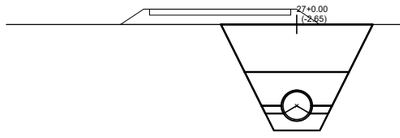
NO.		28+0.00
Design Level (El.m)		115.90
Original Ground Level (El.m)		117.83
Embankment (m2)		1.96
Excavation (m2)		7.82
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.16
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.87



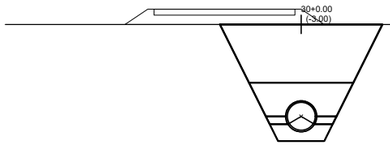
NO.		30+7.00
Design Level (El.m)		115.12
Original Ground Level (El.m)		117.99
Embankment (m2)		1.96
Excavation (m2)		12.28
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.62
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.34



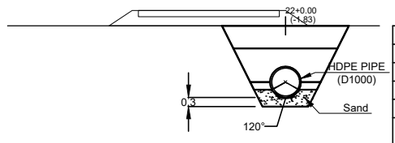
NO.		23+0.00
Design Level (El.m)		117.19
Original Ground Level (El.m)		120.52
Embankment (m2)		1.96
Excavation (m2)		14.74
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	10.08
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.57



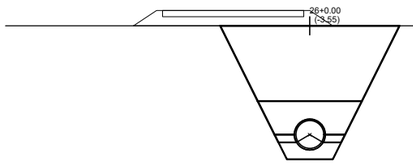
NO.		27+0.00
Design Level (El.m)		116.28
Original Ground Level (El.m)		118.93
Embankment (m2)		1.96
Excavation (m2)		11.14
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	6.48
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.23



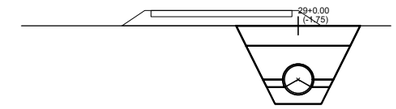
NO.		30+0.00
Design Level (El.m)		115.16
Original Ground Level (El.m)		118.16
Embankment (m2)		1.96
Excavation (m2)		12.92
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.26
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.40



NO.		22+0.00
Design Level (El.m)		117.27
Original Ground Level (El.m)		119.10
Embankment (m2)		1.96
Excavation (m2)		7.42
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.76
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.82



NO.		26+0.00
Design Level (El.m)		116.65
Original Ground Level (El.m)		120.20
Embankment (m2)		1.96
Excavation (m2)		16.01
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	11.34
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.68



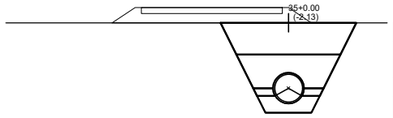
NO.		29+0.00
Design Level (El.m)		115.53
Original Ground Level (El.m)		117.28
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (3/16)	JUNE, 2022		B-26-03

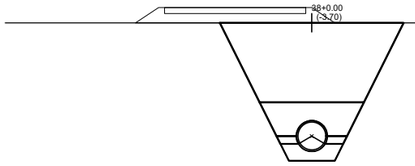
Cross Section of SC1 (4/16)

S=1:100

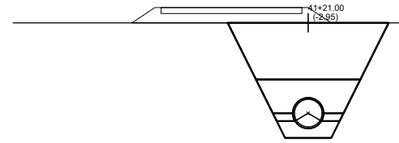
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



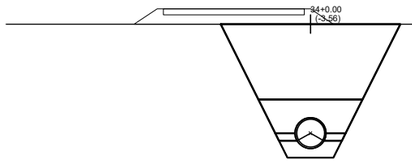
NO.		35+0.00
Design Level (El.m)		112.29
Original Ground Level (El.m)		114.43
Embankment (m2)		1.96
Excavation (m2)		8.70
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.04
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.97



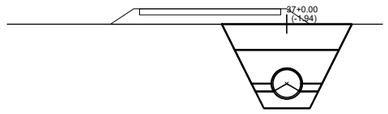
NO.		38+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		115.95
Embankment (m2)		1.96
Excavation (m2)		16.86
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	12.20
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.75



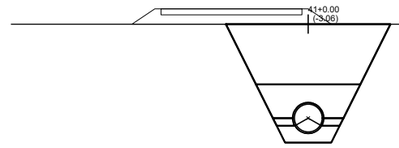
NO.		41+21.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		115.20
Embankment (m2)		1.96
Excavation (m2)		12.66
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.00
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.38



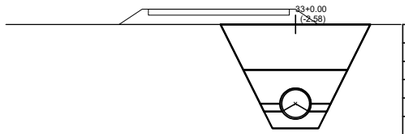
NO.		34+0.00
Design Level (El.m)		113.04
Original Ground Level (El.m)		116.60
Embankment (m2)		1.96
Excavation (m2)		16.03
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	11.37
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.68



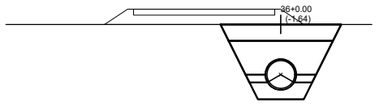
NO.		37+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		114.19
Embankment (m2)		1.96
Excavation (m2)		7.88
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.22
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.87



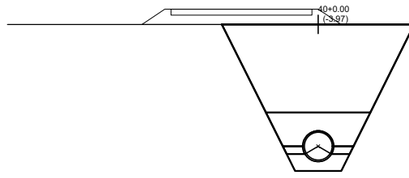
NO.		41+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		115.31
Embankment (m2)		1.96
Excavation (m2)		13.26
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.60
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.43



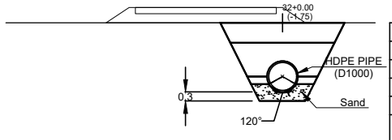
NO.		33+0.00
Design Level (El.m)		113.79
Original Ground Level (El.m)		116.38
Embankment (m2)		1.96
Excavation (m2)		10.80
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	6.14
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.19



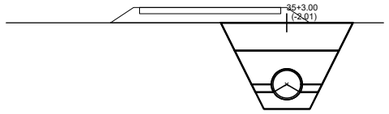
NO.		36+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		113.89
Embankment (m2)		1.96
Excavation (m2)		6.63
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	1.97
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.72



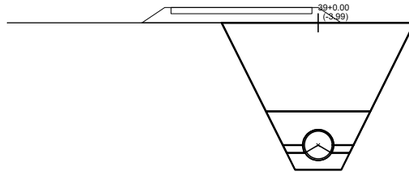
NO.		40+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		116.22
Embankment (m2)		1.96
Excavation (m2)		18.56
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	13.90
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.89



NO.		32+0.00
Design Level (El.m)		114.54
Original Ground Level (El.m)		116.29
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



NO.		35+3.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		114.26
Embankment (m2)		1.96
Excavation (m2)		8.16
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.50
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.91



NO.		39+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		116.24
Embankment (m2)		1.96
Excavation (m2)		18.66
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	14.00
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.90

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

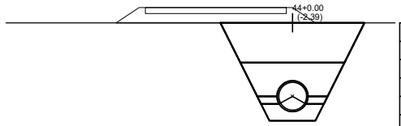
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of SC1 (4/16)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-26-04

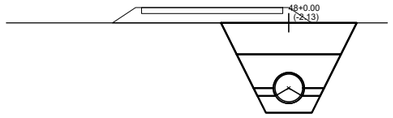
Cross Section of SC1 (5/16)

S=1:100

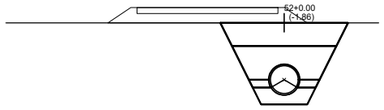
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



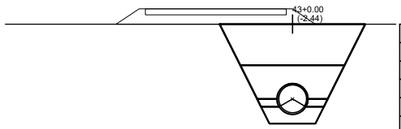
NO.		44+0.00
Design Level (El.m)		113.24
Original Ground Level (El.m)		115.64
Embankment (m2)		1.96
Excavation (m2)		9.90
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.24
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.10



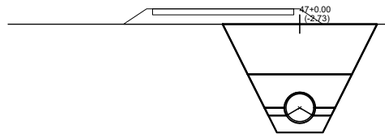
NO.		48+0.00
Design Level (El.m)		112.74
Original Ground Level (El.m)		114.87
Embankment (m2)		1.96
Excavation (m2)		8.69
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.03
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.97



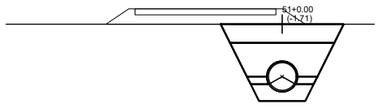
NO.		52+0.00
Design Level (El.m)		110.95
Original Ground Level (El.m)		112.81
Embankment (m2)		1.96
Excavation (m2)		7.52
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.86
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.83



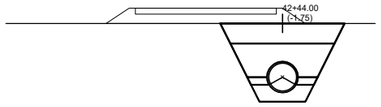
NO.		43+0.00
Design Level (El.m)		112.36
Original Ground Level (El.m)		114.80
Embankment (m2)		1.96
Excavation (m2)		10.13
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.47
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.12



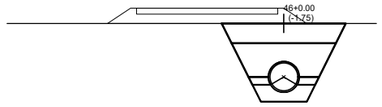
NO.		47+0.00
Design Level (El.m)		113.88
Original Ground Level (El.m)		116.61
Embankment (m2)		1.96
Excavation (m2)		11.54
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	6.88
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.27



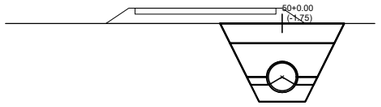
NO.		51+0.00
Design Level (El.m)		110.95
Original Ground Level (El.m)		112.66
Embankment (m2)		1.96
Excavation (m2)		6.92
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.26
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.76



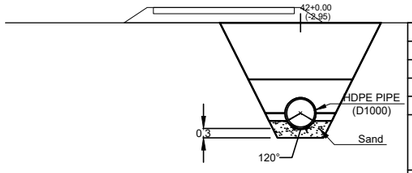
NO.		42+44.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		114.00
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



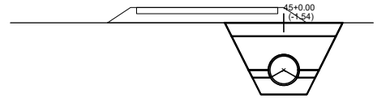
NO.		46+0.00
Design Level (El.m)		115.02
Original Ground Level (El.m)		116.77
Embankment (m2)		1.96
Excavation (m2)		7.07
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.41
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.77



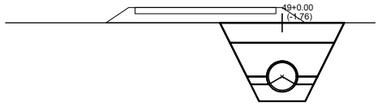
NO.		50+0.00
Design Level (El.m)		110.95
Original Ground Level (El.m)		112.70
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



NO.		42+0.00
Design Level (El.m)		112.25
Original Ground Level (El.m)		115.20
Embankment (m2)		1.96
Excavation (m2)		12.66
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.00
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.38



NO.		45+0.00
Design Level (El.m)		114.13
Original Ground Level (El.m)		115.67
Embankment (m2)		1.96
Excavation (m2)		6.25
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	1.59
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.67



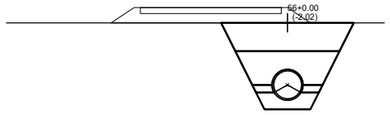
NO.		49+0.00
Design Level (El.m)		111.60
Original Ground Level (El.m)		113.36
Embankment (m2)		1.96
Excavation (m2)		7.10
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.44
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (5/16)	JUNE, 2022		B-26-05

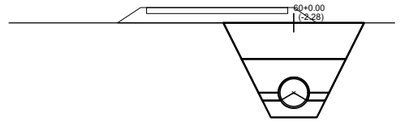
Cross Section of SC1 (6/16)

S=1:100

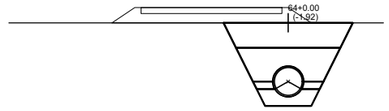
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



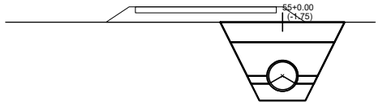
NO.		56+0.00
Design Level (El.m)		107.79
Original Ground Level (El.m)		109.82
Embankment (m2)		1.96
Excavation (m2)		8.23
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.57
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.91



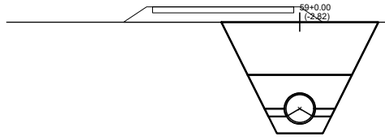
NO.		60+0.00
Design Level (El.m)		106.00
Original Ground Level (El.m)		108.28
Embankment (m2)		1.96
Excavation (m2)		9.39
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.73
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.04



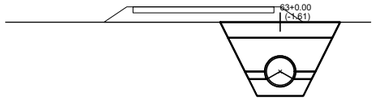
NO.		64+0.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		107.47
Embankment (m2)		1.96
Excavation (m2)		7.76
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.86



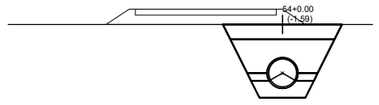
NO.		55+0.00
Design Level (El.m)		108.24
Original Ground Level (El.m)		109.99
Embankment (m2)		1.96
Excavation (m2)		7.10
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.44
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



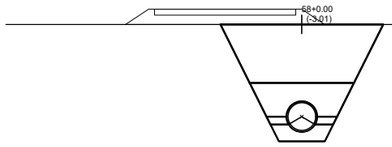
NO.		59+0.00
Design Level (El.m)		106.45
Original Ground Level (El.m)		109.27
Embankment (m2)		1.96
Excavation (m2)		12.01
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.34
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.31



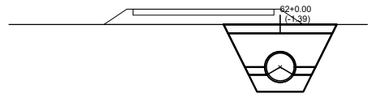
NO.		63+0.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		107.16
Embankment (m2)		1.96
Excavation (m2)		6.51
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	1.85
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.70



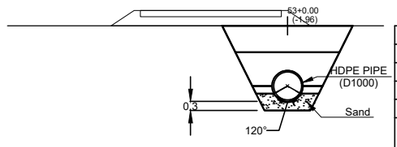
NO.		54+0.00
Design Level (El.m)		109.14
Original Ground Level (El.m)		110.73
Embankment (m2)		1.96
Excavation (m2)		6.44
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	1.78
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.69



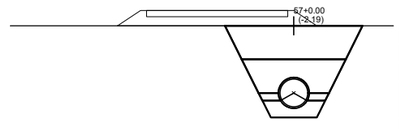
NO.		58+0.00
Design Level (El.m)		106.90
Original Ground Level (El.m)		109.90
Embankment (m2)		1.96
Excavation (m2)		12.97
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.31
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.40



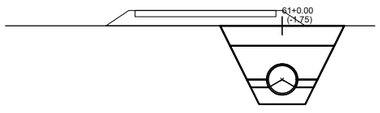
NO.		62+0.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		106.94
Embankment (m2)		1.96
Excavation (m2)		5.69
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	1.03
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.60



NO.		53+0.00
Design Level (El.m)		110.05
Original Ground Level (El.m)		112.01
Embankment (m2)		1.96
Excavation (m2)		7.97
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.31
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.88



NO.		57+0.00
Design Level (El.m)		107.34
Original Ground Level (El.m)		109.53
Embankment (m2)		1.96
Excavation (m2)		8.96
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.30
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.00



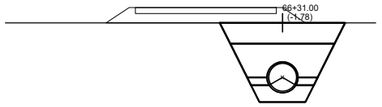
NO.		61+0.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		107.30
Embankment (m2)		1.96
Excavation (m2)		7.09
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.43
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC1 (6/16)	JUNE, 2022		B-26-06

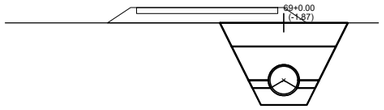
Cross Section of SC1 (7/16)

S=1:100

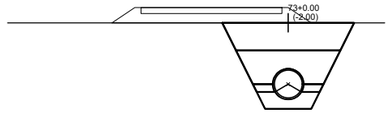
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



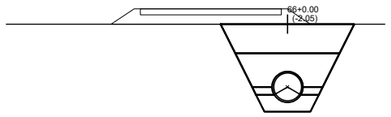
NO.		66+31.00
Design Level (El.m)		104.85
Original Ground Level (El.m)		106.63
Embankment (m2)		1.96
Excavation (m2)		7.21
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.55
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.79



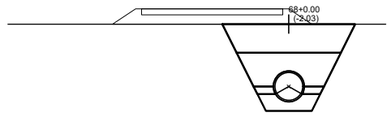
NO.		69+0.00
Design Level (El.m)		103.25
Original Ground Level (El.m)		105.13
Embankment (m2)		1.96
Excavation (m2)		7.59
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



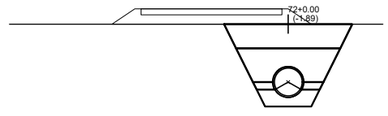
NO.		73+0.00
Design Level (El.m)		101.20
Original Ground Level (El.m)		103.20
Embankment (m2)		1.96
Excavation (m2)		8.14
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.48
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.90



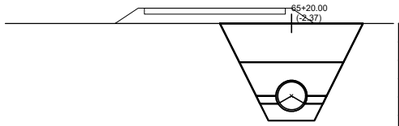
NO.		66+0.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		107.60
Embankment (m2)		1.96
Excavation (m2)		8.35
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.69
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.93



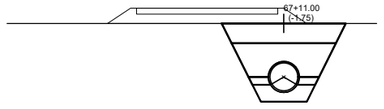
NO.		68+0.00
Design Level (El.m)		103.77
Original Ground Level (El.m)		105.80
Embankment (m2)		1.96
Excavation (m2)		8.26
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.60
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.92



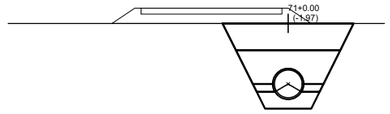
NO.		72+0.00
Design Level (El.m)		101.71
Original Ground Level (El.m)		103.60
Embankment (m2)		1.96
Excavation (m2)		7.65
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.99
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



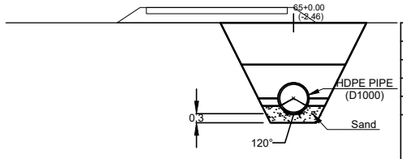
NO.		65+20.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		107.92
Embankment (m2)		1.96
Excavation (m2)		9.77
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.11
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.08



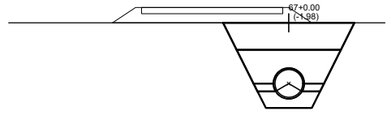
NO.		67+11.00
Design Level (El.m)		104.17
Original Ground Level (El.m)		105.92
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



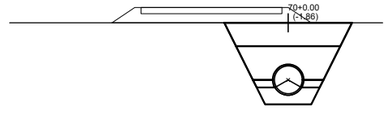
NO.		71+0.00
Design Level (El.m)		102.23
Original Ground Level (El.m)		104.20
Embankment (m2)		1.96
Excavation (m2)		8.01
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.35
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.89



NO.		65+0.00
Design Level (El.m)		105.55
Original Ground Level (El.m)		108.01
Embankment (m2)		1.96
Excavation (m2)		10.22
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.56
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.13



NO.		67+0.00
Design Level (El.m)		104.42
Original Ground Level (El.m)		106.40
Embankment (m2)		1.96
Excavation (m2)		8.04
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.38
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.89



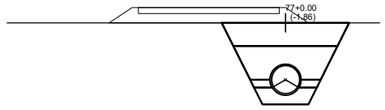
NO.		70+0.00
Design Level (El.m)		102.74
Original Ground Level (El.m)		104.60
Embankment (m2)		1.96
Excavation (m2)		7.53
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.87
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.83

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC1 (7/16)	JUNE, 2022		B-26-07

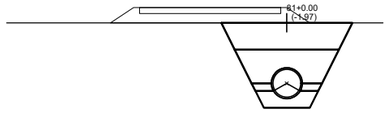
Cross Section of SC1 (8/16)

S=1:100

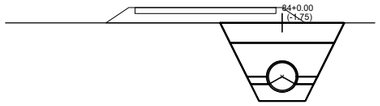
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



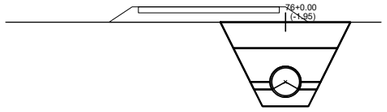
NO.		77+0.00
Design Level (El.m)		99.14
Original Ground Level (El.m)		101.00
Embankment (m2)		1.96
Excavation (m2)		7.53
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.87
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.83



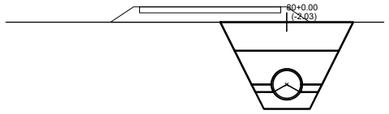
NO.		81+0.00
Design Level (El.m)		97.08
Original Ground Level (El.m)		99.06
Embankment (m2)		1.96
Excavation (m2)		8.01
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.35
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.89



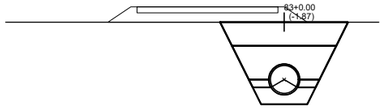
NO.		84+0.00
Design Level (El.m)		95.54
Original Ground Level (El.m)		97.29
Embankment (m2)		1.96
Excavation (m2)		7.09
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.43
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



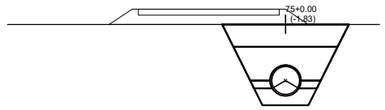
NO.		76+0.00
Design Level (El.m)		99.65
Original Ground Level (El.m)		101.60
Embankment (m2)		1.96
Excavation (m2)		7.89
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.23
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.87



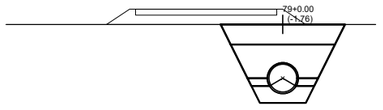
NO.		80+0.00
Design Level (El.m)		97.60
Original Ground Level (El.m)		99.63
Embankment (m2)		1.96
Excavation (m2)		8.26
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.60
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.92



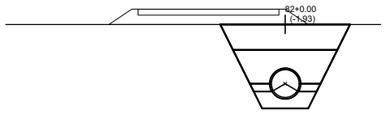
NO.		83+0.00
Design Level (El.m)		96.05
Original Ground Level (El.m)		97.93
Embankment (m2)		1.96
Excavation (m2)		7.59
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



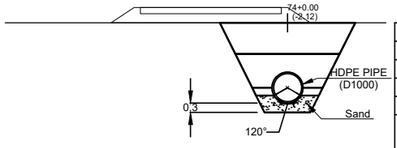
NO.		75+0.00
Design Level (El.m)		100.17
Original Ground Level (El.m)		102.00
Embankment (m2)		1.96
Excavation (m2)		7.41
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.75
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.82



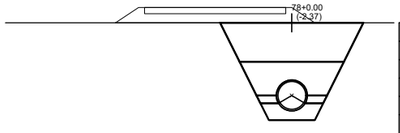
NO.		79+0.00
Design Level (El.m)		98.11
Original Ground Level (El.m)		99.87
Embankment (m2)		1.96
Excavation (m2)		7.11
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.45
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



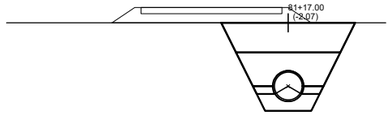
NO.		82+0.00
Design Level (El.m)		96.57
Original Ground Level (El.m)		98.50
Embankment (m2)		1.96
Excavation (m2)		7.84
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.18
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.87



NO.		74+0.00
Design Level (El.m)		100.68
Original Ground Level (El.m)		102.80
Embankment (m2)		1.96
Excavation (m2)		8.64
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.97
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.96



NO.		78+0.00
Design Level (El.m)		98.63
Original Ground Level (El.m)		101.00
Embankment (m2)		1.96
Excavation (m2)		9.80
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.14
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.09



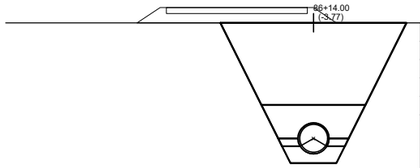
NO.		81+17.00
Design Level (El.m)		96.91
Original Ground Level (El.m)		98.98
Embankment (m2)		1.96
Excavation (m2)		8.42
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.76
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.93

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (8/16)	JUNE, 2022		B-26-08

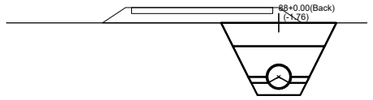
Cross Section of SC1 (9/16)

S=1:100

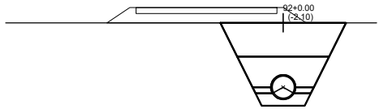
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



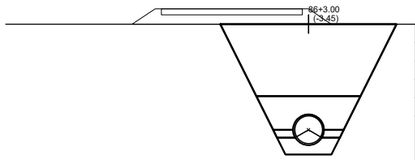
NO.		86+14.00
Design Level (El.m)		95.03
Original Ground Level (El.m)		98.80
Embankment (m2)		1.96
Excavation (m2)		17.33
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	12.67
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.79



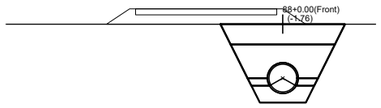
NO.		88+0.00(Back)
Design Level (El.m)		94.64
Original Ground Level (El.m)		96.40
Embankment (m2)		1.96
Excavation (m2)		6.09
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.57
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.63



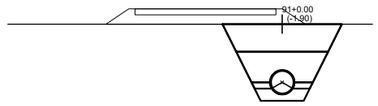
NO.		92+0.00
Design Level (El.m)		93.70
Original Ground Level (El.m)		95.80
Embankment (m2)		1.96
Excavation (m2)		7.42
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.90
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.80



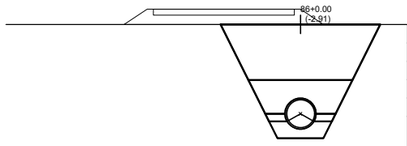
NO.		86+3.00
Design Level (El.m)		95.08
Original Ground Level (El.m)		98.52
Embankment (m2)		1.96
Excavation (m2)		15.40
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	10.74
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.63



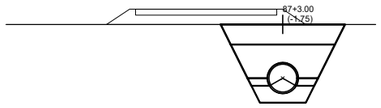
NO.		88+0.00(Front)
Design Level (El.m)		94.64
Original Ground Level (El.m)		96.40
Embankment (m2)		1.96
Excavation (m2)		7.12
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



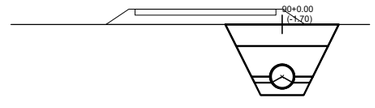
NO.		91+0.00
Design Level (El.m)		93.90
Original Ground Level (El.m)		95.80
Embankment (m2)		1.96
Excavation (m2)		6.63
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.11
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



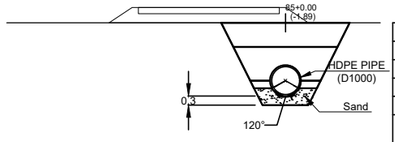
NO.		86+0.00
Design Level (El.m)		95.09
Original Ground Level (El.m)		98.00
Embankment (m2)		1.96
Excavation (m2)		12.46
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.80
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.36



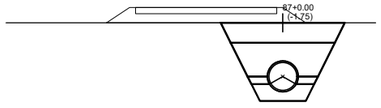
NO.		87+3.00
Design Level (El.m)		94.85
Original Ground Level (El.m)		96.60
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



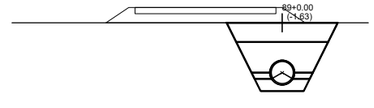
NO.		90+0.00
Design Level (El.m)		94.10
Original Ground Level (El.m)		95.80
Embankment (m2)		1.96
Excavation (m2)		5.87
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.35
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.60



NO.		85+0.00
Design Level (El.m)		95.31
Original Ground Level (El.m)		97.20
Embankment (m2)		1.96
Excavation (m2)		7.64
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.98
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



NO.		87+0.00
Design Level (El.m)		94.86
Original Ground Level (El.m)		96.61
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



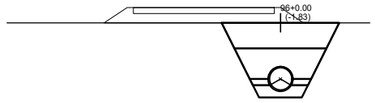
NO.		89+0.00
Design Level (El.m)		94.37
Original Ground Level (El.m)		96.00
Embankment (m2)		1.96
Excavation (m2)		5.61
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.09
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC1 (9/16)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-26-09

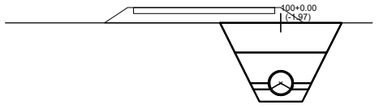
Cross Section of SC1 (10/16)

S=1:100

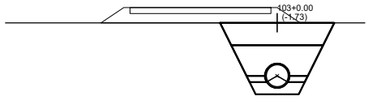
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



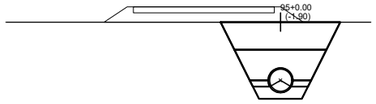
NO.		96+0.00
Design Level (El.m)		93.17
Original Ground Level (El.m)		95.00
Embankment (m2)		1.96
Excavation (m2)		6.37
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.85
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.67



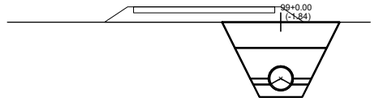
NO.		100+0.00
Design Level (El.m)		92.63
Original Ground Level (El.m)		94.60
Embankment (m2)		1.96
Excavation (m2)		6.90
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.38
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.74



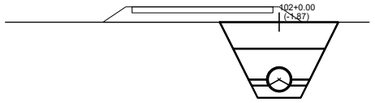
NO.		103+0.00
Design Level (El.m)		92.27
Original Ground Level (El.m)		94.00
Embankment (m2)		1.96
Excavation (m2)		5.98
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.61



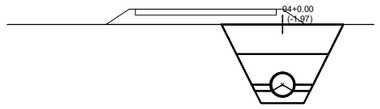
NO.		95+0.00
Design Level (El.m)		93.30
Original Ground Level (El.m)		95.20
Embankment (m2)		1.96
Excavation (m2)		6.63
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.11
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



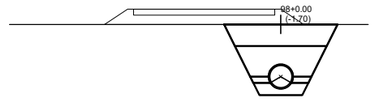
NO.		99+0.00
Design Level (El.m)		92.76
Original Ground Level (El.m)		94.60
Embankment (m2)		1.96
Excavation (m2)		6.38
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.86
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.67



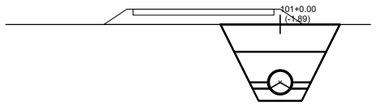
NO.		102+0.00
Design Level (El.m)		92.39
Original Ground Level (El.m)		94.26
Embankment (m2)		1.96
Excavation (m2)		6.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



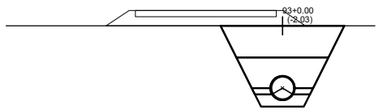
NO.		94+0.00
Design Level (El.m)		93.43
Original Ground Level (El.m)		95.40
Embankment (m2)		1.96
Excavation (m2)		6.89
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.37
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.73



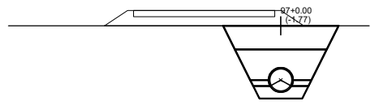
NO.		98+0.00
Design Level (El.m)		92.90
Original Ground Level (El.m)		94.60
Embankment (m2)		1.96
Excavation (m2)		5.87
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.35
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.60



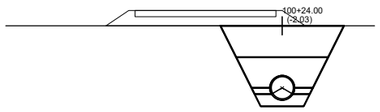
NO.		101+0.00
Design Level (El.m)		92.51
Original Ground Level (El.m)		94.40
Embankment (m2)		1.96
Excavation (m2)		6.59
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.07
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



NO.		93+0.00
Design Level (El.m)		93.57
Original Ground Level (El.m)		95.60
Embankment (m2)		1.96
Excavation (m2)		7.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.77



NO.		97+0.00
Design Level (El.m)		93.03
Original Ground Level (El.m)		94.80
Embankment (m2)		1.96
Excavation (m2)		6.12
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.60
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.63



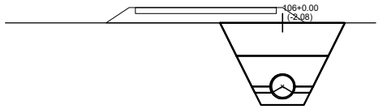
NO.		100+24.00
Design Level (El.m)		92.57
Original Ground Level (El.m)		94.60
Embankment (m2)		1.96
Excavation (m2)		7.13
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.61
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.76

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (10/16)	JUNE, 2022		B-26-10

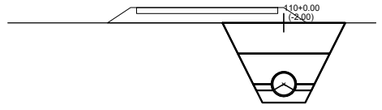
Cross Section of SC1 (11/16)

S=1:100

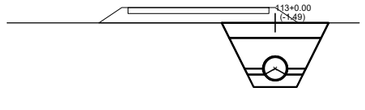
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



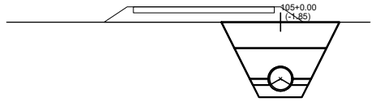
NO.		106+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.23
Embankment (m2)		1.96
Excavation (m2)		7.34
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.81
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.79



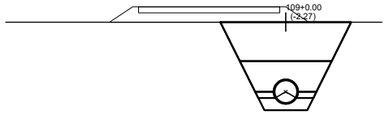
NO.		110+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.15
Embankment (m2)		1.96
Excavation (m2)		7.04
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.52
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.75



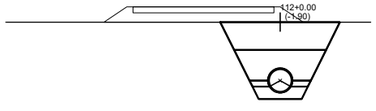
NO.		113+0.00
Design Level (El.m)		91.71
Original Ground Level (El.m)		93.20
Embankment (m2)		1.96
Excavation (m2)		5.11
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.59
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



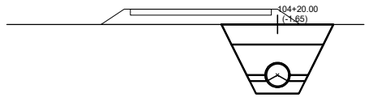
NO.		105+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.00
Embankment (m2)		1.96
Excavation (m2)		6.43
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.91
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



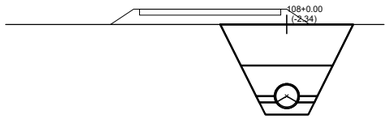
NO.		109+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.42
Embankment (m2)		1.96
Excavation (m2)		8.14
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.62
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.89



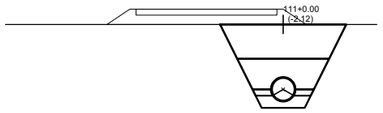
NO.		112+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.05
Embankment (m2)		1.96
Excavation (m2)		6.64
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.12
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



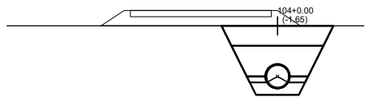
NO.		104+20.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		93.80
Embankment (m2)		1.96
Excavation (m2)		5.68
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.16
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.58



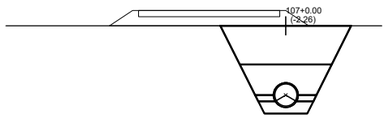
NO.		108+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.49
Embankment (m2)		1.96
Excavation (m2)		8.43
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.91
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.92



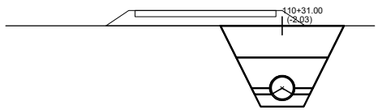
NO.		111+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.27
Embankment (m2)		1.96
Excavation (m2)		7.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.81



NO.		104+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		93.80
Embankment (m2)		1.96
Excavation (m2)		5.68
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.16
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.58



NO.		107+0.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.41
Embankment (m2)		1.96
Excavation (m2)		8.11
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.59
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.88



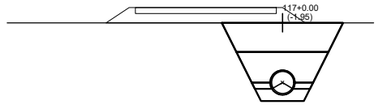
NO.		110+31.00
Design Level (El.m)		92.15
Original Ground Level (El.m)		94.18
Embankment (m2)		1.96
Excavation (m2)		7.15
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.63
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.77

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (11/16)	JUNE, 2022		B-26-11

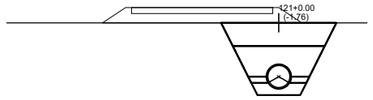
Cross Section of SC1 (12/16)

S=1:100

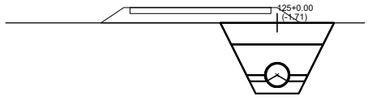
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



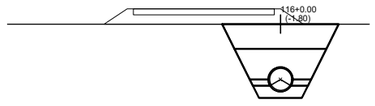
NO.		117+0.00
Design Level (El.m)		90.68
Original Ground Level (El.m)		92.63
Embankment (m2)		1.96
Excavation (m2)		6.83
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.31
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.73



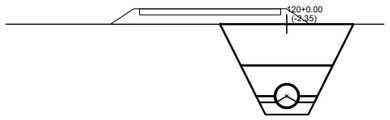
NO.		121+0.00
Design Level (El.m)		90.27
Original Ground Level (El.m)		92.02
Embankment (m2)		1.96
Excavation (m2)		6.09
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.56
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.63



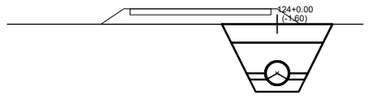
NO.		125+0.00
Design Level (El.m)		89.36
Original Ground Level (El.m)		91.06
Embankment (m2)		1.96
Excavation (m2)		5.89
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.37
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.60



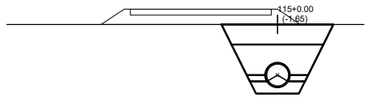
NO.		116+0.00
Design Level (El.m)		90.75
Original Ground Level (El.m)		92.56
Embankment (m2)		1.96
Excavation (m2)		6.26
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.74
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.65



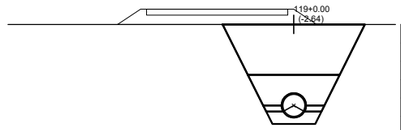
NO.		120+0.00
Design Level (El.m)		90.45
Original Ground Level (El.m)		92.80
Embankment (m2)		1.96
Excavation (m2)		8.48
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.96
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.93



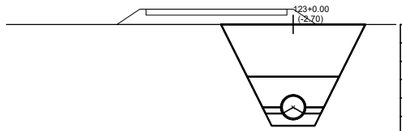
NO.		124+0.00
Design Level (El.m)		89.71
Original Ground Level (El.m)		91.31
Embankment (m2)		1.96
Excavation (m2)		5.51
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.99
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



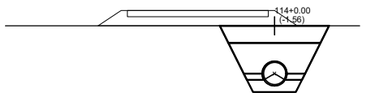
NO.		115+0.00
Design Level (El.m)		90.83
Original Ground Level (El.m)		92.48
Embankment (m2)		1.96
Excavation (m2)		5.69
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.17
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.58



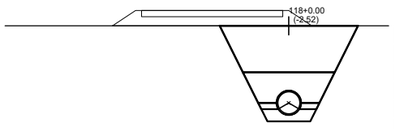
NO.		119+0.00
Design Level (El.m)		90.53
Original Ground Level (El.m)		93.17
Embankment (m2)		1.96
Excavation (m2)		9.79
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.27
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.07



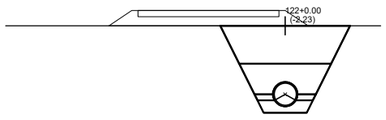
NO.		123+0.00
Design Level (El.m)		89.89
Original Ground Level (El.m)		92.60
Embankment (m2)		1.96
Excavation (m2)		10.09
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.57
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.10



NO.		114+0.00
Design Level (El.m)		91.27
Original Ground Level (El.m)		92.83
Embankment (m2)		1.96
Excavation (m2)		5.36
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.84
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.53



NO.		118+0.00
Design Level (El.m)		90.60
Original Ground Level (El.m)		93.12
Embankment (m2)		1.96
Excavation (m2)		9.21
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.69
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.01



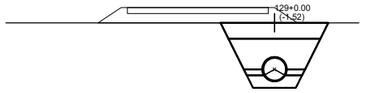
NO.		122+0.00
Design Level (El.m)		90.08
Original Ground Level (El.m)		92.31
Embankment (m2)		1.96
Excavation (m2)		7.98
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.46
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.87

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (12/16)	JUNE, 2022		B-26-12

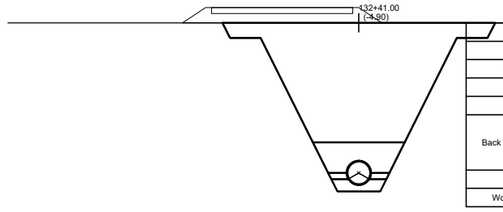
Cross Section of SC1 (13/16)

S=1:100

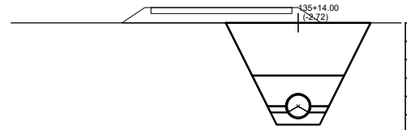
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



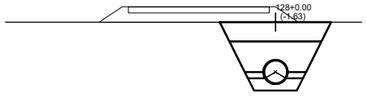
NO.		129+0.00
Design Level (El.m)		88.31
Original Ground Level (El.m)		89.83
Embankment (m2)		1.96
Excavation (m2)		5.20
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.68
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51



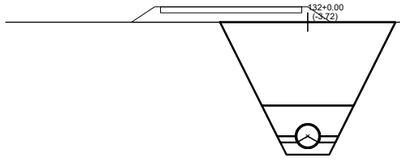
NO.		132+41.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		92.98
Embankment (m2)		1.96
Excavation (m2)		23.80
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	20.28
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		10.20



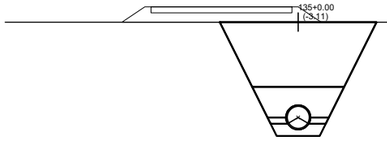
NO.		135+14.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		90.80
Embankment (m2)		1.96
Excavation (m2)		10.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.11



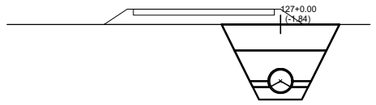
NO.		128+0.00
Design Level (El.m)		88.54
Original Ground Level (El.m)		90.17
Embankment (m2)		1.96
Excavation (m2)		5.60
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.08
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56



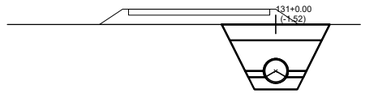
NO.		132+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		91.80
Embankment (m2)		1.96
Excavation (m2)		15.38
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	11.86
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.61



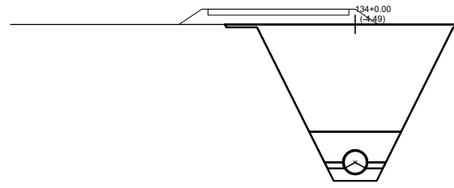
NO.		135+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		91.19
Embankment (m2)		1.96
Excavation (m2)		12.07
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	8.55
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.30



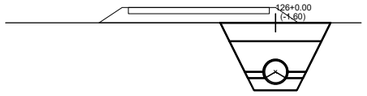
NO.		127+0.00
Design Level (El.m)		88.77
Original Ground Level (El.m)		90.61
Embankment (m2)		1.96
Excavation (m2)		6.41
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.89
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.67



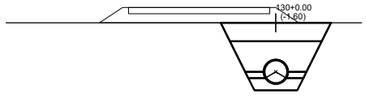
NO.		131+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		89.60
Embankment (m2)		1.96
Excavation (m2)		5.22
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.70
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51



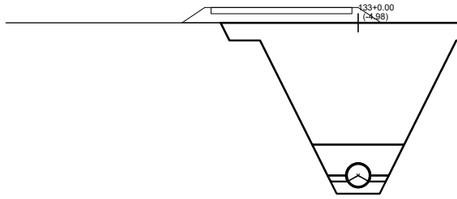
NO.		134+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		92.57
Embankment (m2)		1.96
Excavation (m2)		20.29
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	16.77
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		10.00



NO.		126+0.00
Design Level (El.m)		89.00
Original Ground Level (El.m)		90.60
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



NO.		130+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		89.68
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



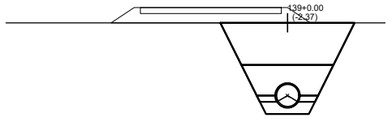
NO.		133+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		93.06
Embankment (m2)		1.96
Excavation (m2)		24.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	20.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		10.24

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC1 (13/16)	JUNE, 2022		B-26-13

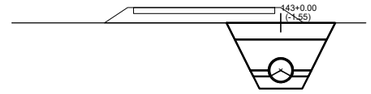
Cross Section of SC1 (14/16)

S=1:100

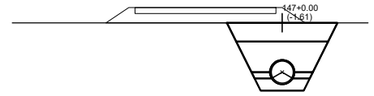
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



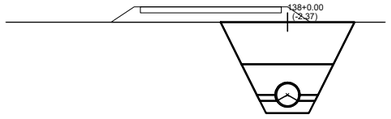
NO.		139+0.00
Design Level (El.m)		86.64
Original Ground Level (El.m)		89.01
Embankment (m2)		1.96
Excavation (m2)		8.58
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.06
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.94



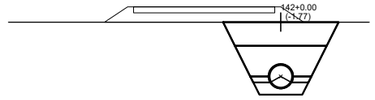
NO.		143+0.00
Design Level (El.m)		84.60
Original Ground Level (El.m)		86.15
Embankment (m2)		1.96
Excavation (m2)		5.31
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.52



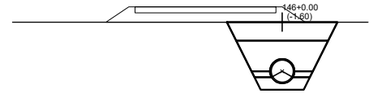
NO.		147+0.00
Design Level (El.m)		83.80
Original Ground Level (El.m)		85.41
Embankment (m2)		1.96
Excavation (m2)		5.54
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.02
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56



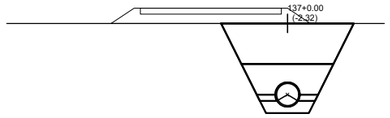
NO.		138+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		90.45
Embankment (m2)		1.96
Excavation (m2)		8.56
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.04
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.93



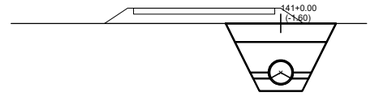
NO.		142+0.00
Design Level (El.m)		84.80
Original Ground Level (El.m)		86.57
Embankment (m2)		1.96
Excavation (m2)		6.12
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.60
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.63



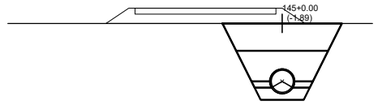
NO.		146+0.00
Design Level (El.m)		84.00
Original Ground Level (El.m)		85.60
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



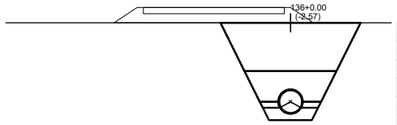
NO.		137+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		90.40
Embankment (m2)		1.96
Excavation (m2)		8.35
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.83
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.91



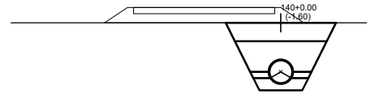
NO.		141+0.00
Design Level (El.m)		85.00
Original Ground Level (El.m)		86.60
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



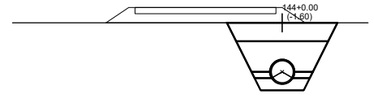
NO.		145+0.00
Design Level (El.m)		84.20
Original Ground Level (El.m)		86.09
Embankment (m2)		1.96
Excavation (m2)		6.59
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.07
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



NO.		136+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		90.65
Embankment (m2)		1.96
Excavation (m2)		9.48
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.96
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.04



NO.		140+0.00
Design Level (El.m)		85.20
Original Ground Level (El.m)		86.80
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



NO.		144+0.00
Design Level (El.m)		84.40
Original Ground Level (El.m)		86.00
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

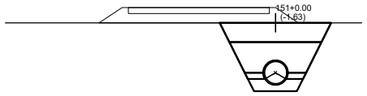
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of SC1 (14/16)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-26-14

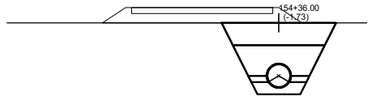
Cross Section of SC1 (15/16)

S=1:100

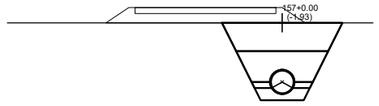
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



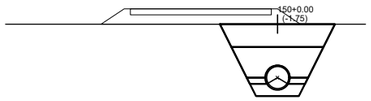
NO.		151+0.00
Design Level (El.m)		83.44
Original Ground Level (El.m)		85.06
Embankment (m2)		1.96
Excavation (m2)		5.60
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.08
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56



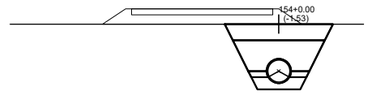
NO.		154+36.00
Design Level (El.m)		83.27
Original Ground Level (El.m)		85.00
Embankment (m2)		1.96
Excavation (m2)		5.98
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.61



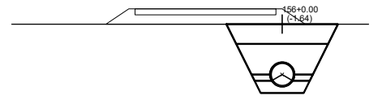
NO.		157+0.00
Design Level (El.m)		84.27
Original Ground Level (El.m)		86.20
Embankment (m2)		1.96
Excavation (m2)		6.74
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.22
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.71



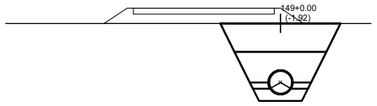
NO.		150+0.00
Design Level (El.m)		83.49
Original Ground Level (El.m)		85.24
Embankment (m2)		1.96
Excavation (m2)		6.04
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.52
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.62



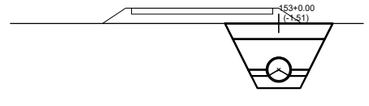
NO.		154+0.00
Design Level (El.m)		83.27
Original Ground Level (El.m)		84.80
Embankment (m2)		1.96
Excavation (m2)		5.25
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.73
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51



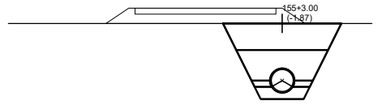
NO.		156+0.00
Design Level (El.m)		83.76
Original Ground Level (El.m)		85.40
Embankment (m2)		1.96
Excavation (m2)		5.66
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.14
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.57



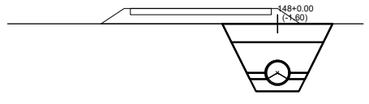
NO.		149+0.00
Design Level (El.m)		83.55
Original Ground Level (El.m)		85.47
Embankment (m2)		1.96
Excavation (m2)		6.71
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.19
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.71



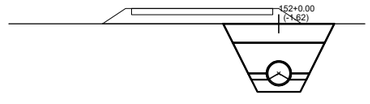
NO.		153+0.00
Design Level (El.m)		83.33
Original Ground Level (El.m)		84.83
Embankment (m2)		1.96
Excavation (m2)		5.18
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.66
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



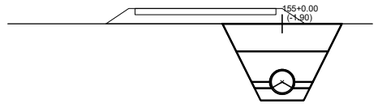
NO.		155+3.00
Design Level (El.m)		83.27
Original Ground Level (El.m)		85.14
Embankment (m2)		1.96
Excavation (m2)		6.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



NO.		148+0.00
Design Level (El.m)		83.60
Original Ground Level (El.m)		85.20
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



NO.		152+0.00
Design Level (El.m)		83.38
Original Ground Level (El.m)		85.00
Embankment (m2)		1.96
Excavation (m2)		5.57
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.05
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56



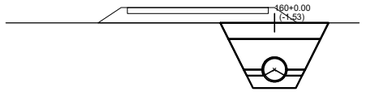
NO.		155+0.00
Design Level (El.m)		83.27
Original Ground Level (El.m)		85.17
Embankment (m2)		1.96
Excavation (m2)		6.63
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.11
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC1 (15/16)	JUNE, 2022		B-26-15

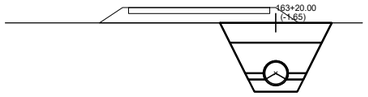
Cross Section of SC1 (16/16)

S=1:100

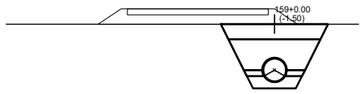
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



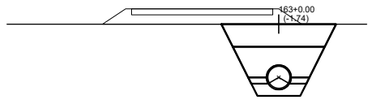
NO.		160+0.00
Design Level (El.m)		85.82
Original Ground Level (El.m)		87.34
Embankment (m2)		1.96
Excavation (m2)		5.23
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.71
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51



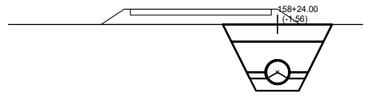
NO.		163+20.00
Design Level (El.m)		87.23
Original Ground Level (El.m)		88.87
Embankment (m2)		1.96
Excavation (m2)		5.67
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.15
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.57



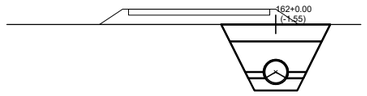
NO.		159+0.00
Design Level (El.m)		85.30
Original Ground Level (El.m)		86.80
Embankment (m2)		1.96
Excavation (m2)		5.13
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.61
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



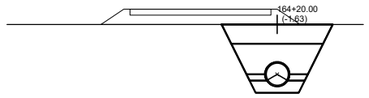
NO.		163+0.00
Design Level (El.m)		87.06
Original Ground Level (El.m)		88.80
Embankment (m2)		1.96
Excavation (m2)		6.01
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.49
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.62



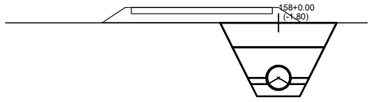
NO.		158+24.00
Design Level (El.m)		85.04
Original Ground Level (El.m)		86.59
Embankment (m2)		1.96
Excavation (m2)		5.35
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.83
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.53



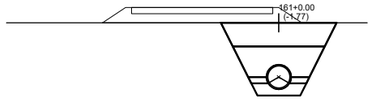
NO.		162+0.00
Design Level (El.m)		86.65
Original Ground Level (El.m)		88.20
Embankment (m2)		1.96
Excavation (m2)		5.33
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.81
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.53



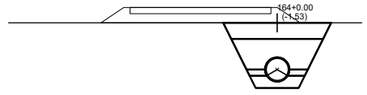
NO.		164+20.00
Design Level (El.m)		87.64
Original Ground Level (El.m)		89.27
Embankment (m2)		1.96
Excavation (m2)		5.59
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.07
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56



NO.		158+0.00
Design Level (El.m)		84.79
Original Ground Level (El.m)		86.59
Embankment (m2)		1.96
Excavation (m2)		6.24
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.72
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.65



NO.		161+0.00
Design Level (El.m)		86.23
Original Ground Level (El.m)		88.01
Embankment (m2)		1.96
Excavation (m2)		6.14
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.62
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.64



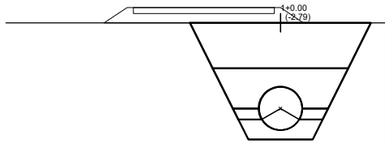
NO.		164+0.00
Design Level (El.m)		87.47
Original Ground Level (El.m)		89.00
Embankment (m2)		1.96
Excavation (m2)		5.23
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.71
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC1 (16/16)	JUNE, 2022		B-26-16

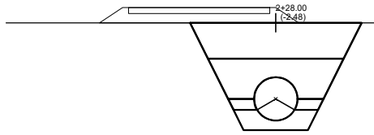
Cross Section of SC2 (1/29)

S=1:100

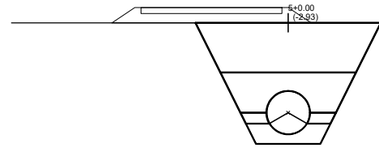
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



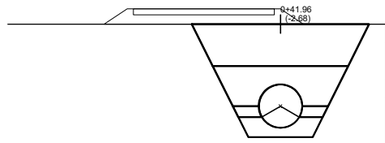
NO.		1+0.00
Design Level (El.m)		131.96
Original Ground Level (El.m)		132.79
Embankment (m2)		1.96
Excavation (m2)		15.23
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	7.66
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.70



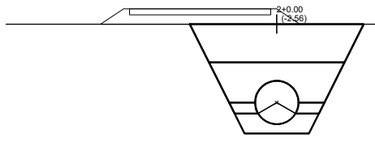
NO.		2+28.00
Design Level (El.m)		129.55
Original Ground Level (El.m)		132.03
Embankment (m2)		1.96
Excavation (m2)		13.45
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.88
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.55



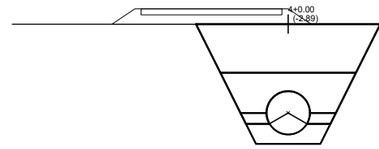
NO.		5+0.00
Design Level (El.m)		129.24
Original Ground Level (El.m)		132.18
Embankment (m2)		1.96
Excavation (m2)		16.06
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	8.49
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.77



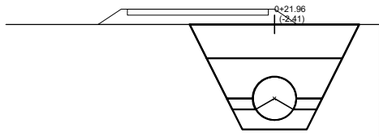
NO.		0+41.96
Design Level (El.m)		130.15
Original Ground Level (El.m)		132.83
Embankment (m2)		1.96
Excavation (m2)		14.53
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.96
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.64



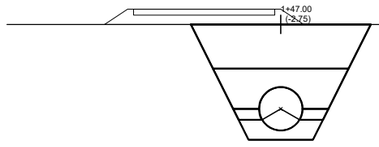
NO.		2+0.00
Design Level (El.m)		129.62
Original Ground Level (El.m)		132.17
Embankment (m2)		1.96
Excavation (m2)		13.87
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.29
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.58



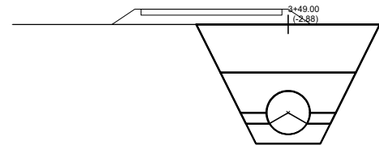
NO.		4+0.00
Design Level (El.m)		129.37
Original Ground Level (El.m)		132.26
Embankment (m2)		1.96
Excavation (m2)		15.82
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	8.25
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.75



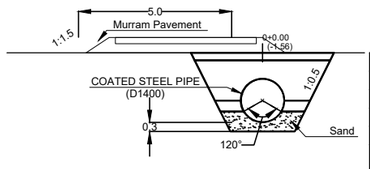
NO.		0+21.96
Design Level (El.m)		130.46
Original Ground Level (El.m)		132.87
Embankment (m2)		1.96
Excavation (m2)		13.05
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.48
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.51



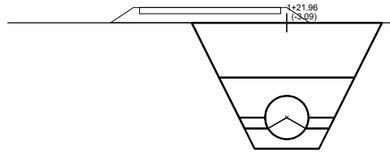
NO.		1+47.00
Design Level (El.m)		129.62
Original Ground Level (El.m)		132.38
Embankment (m2)		1.96
Excavation (m2)		14.99
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	7.42
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.68



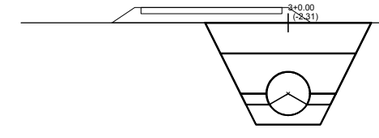
NO.		3+49.00
Design Level (El.m)		129.37
Original Ground Level (El.m)		132.25
Embankment (m2)		1.96
Excavation (m2)		15.72
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	8.14
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.74



NO.		0+0.00
Design Level (El.m)		130.77
Original Ground Level (El.m)		132.33
Embankment (m2)		1.96
Excavation (m2)		8.69
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.12
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.08



NO.		1+21.96
Design Level (El.m)		129.69
Original Ground Level (El.m)		132.78
Embankment (m2)		1.96
Excavation (m2)		17.05
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	9.47
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.85



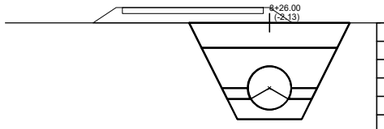
NO.		3+0.00
Design Level (El.m)		129.49
Original Ground Level (El.m)		131.80
Embankment (m2)		1.96
Excavation (m2)		12.48
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.91
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.46

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2 (1/29)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-27-01

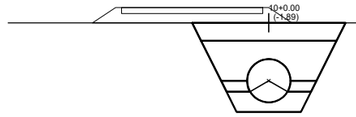
Cross Section of SC2 (2/29)

S=1:100

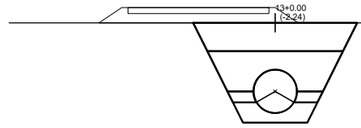
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



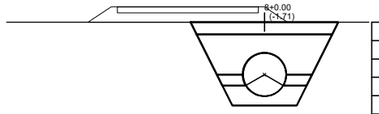
NO.		8+26.00
Design Level (El.m)		124.07
Original Ground Level (El.m)		126.20
Embankment (m2)		1.96
Excavation (m2)		11.52
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.95
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



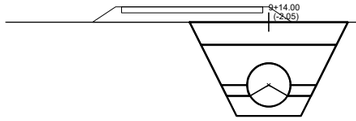
NO.		10+0.00
Design Level (El.m)		121.11
Original Ground Level (El.m)		123.00
Embankment (m2)		1.96
Excavation (m2)		10.32
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.74
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



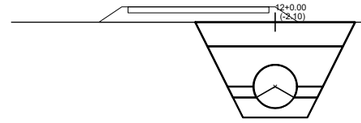
NO.		13+0.00
Design Level (El.m)		115.86
Original Ground Level (El.m)		118.10
Embankment (m2)		1.96
Excavation (m2)		12.11
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.53
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.43



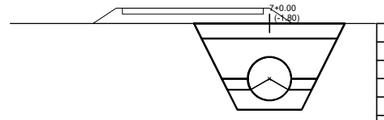
NO.		8+0.00
Design Level (El.m)		125.11
Original Ground Level (El.m)		126.82
Embankment (m2)		1.96
Excavation (m2)		9.41
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.84
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.16



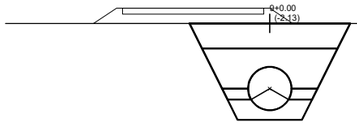
NO.		9+14.00
Design Level (El.m)		122.55
Original Ground Level (El.m)		124.60
Embankment (m2)		1.96
Excavation (m2)		11.12
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.55
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



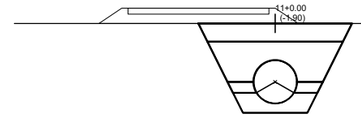
NO.		12+0.00
Design Level (El.m)		117.10
Original Ground Level (El.m)		119.20
Embankment (m2)		1.96
Excavation (m2)		11.37
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.80
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.36



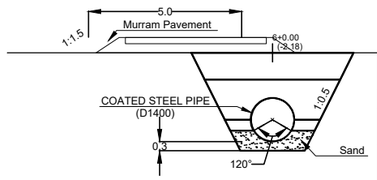
NO.		7+0.00
Design Level (El.m)		127.12
Original Ground Level (El.m)		128.92
Embankment (m2)		1.96
Excavation (m2)		9.88
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.30
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



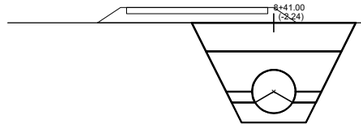
NO.		9+0.00
Design Level (El.m)		123.11
Original Ground Level (El.m)		125.24
Embankment (m2)		1.96
Excavation (m2)		11.51
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.94
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



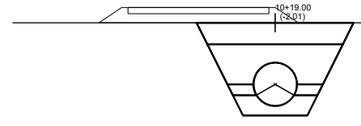
NO.		11+0.00
Design Level (El.m)		119.10
Original Ground Level (El.m)		121.01
Embankment (m2)		1.96
Excavation (m2)		10.36
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.79
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



NO.		6+0.00
Design Level (El.m)		129.12
Original Ground Level (El.m)		131.30
Embankment (m2)		1.96
Excavation (m2)		11.81
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.24
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.40



NO.		8+41.00
Design Level (El.m)		123.47
Original Ground Level (El.m)		125.71
Embankment (m2)		1.96
Excavation (m2)		12.12
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.55
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.43



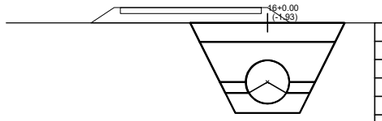
NO.		10+19.00
Design Level (El.m)		120.35
Original Ground Level (El.m)		122.36
Embankment (m2)		1.96
Excavation (m2)		10.91
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.34
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.31

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (2/29)	JUNE, 2022		B-27-02

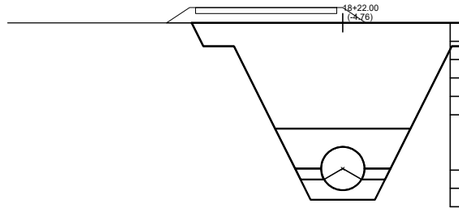
Cross Section of SC2 (3/29)

S=1:100

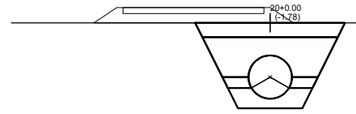
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



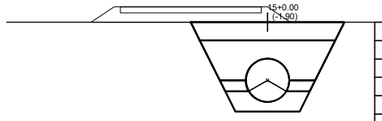
NO.		16+0.00
Design Level (El.m)		112.79
Original Ground Level (El.m)		114.72
Embankment (m2)		1.96
Excavation (m2)		10.51
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27



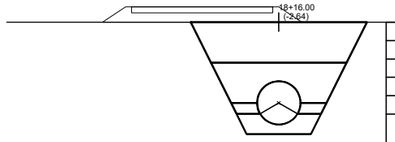
NO.		18+22.00
Design Level (El.m)		111.44
Original Ground Level (El.m)		116.20
Embankment (m2)		1.96
Excavation (m2)		30.27
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	22.70
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		10.68



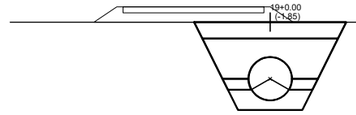
NO.		20+0.00
Design Level (El.m)		110.63
Original Ground Level (El.m)		112.40
Embankment (m2)		1.96
Excavation (m2)		9.73
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.16
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.19



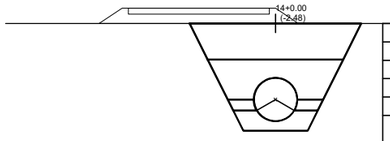
NO.		15+0.00
Design Level (El.m)		113.38
Original Ground Level (El.m)		115.28
Embankment (m2)		1.96
Excavation (m2)		10.36
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



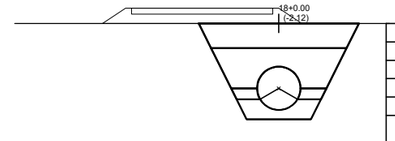
NO.		18+16.00
Design Level (El.m)		111.51
Original Ground Level (El.m)		114.14
Embankment (m2)		1.96
Excavation (m2)		14.31
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.74
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.62



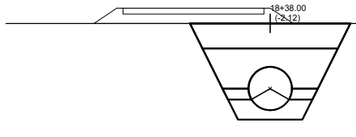
NO.		19+0.00
Design Level (El.m)		111.15
Original Ground Level (El.m)		113.00
Embankment (m2)		1.96
Excavation (m2)		10.10
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.53
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



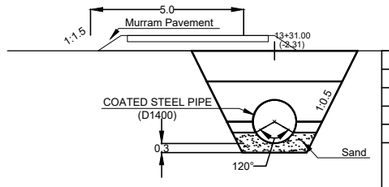
NO.		14+0.00
Design Level (El.m)		114.62
Original Ground Level (El.m)		117.11
Embankment (m2)		1.96
Excavation (m2)		13.45
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.88
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.55



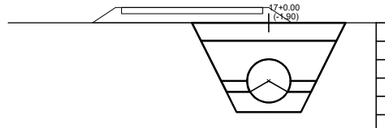
NO.		18+0.00
Design Level (El.m)		111.68
Original Ground Level (El.m)		113.79
Embankment (m2)		1.96
Excavation (m2)		11.45
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.88
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.36



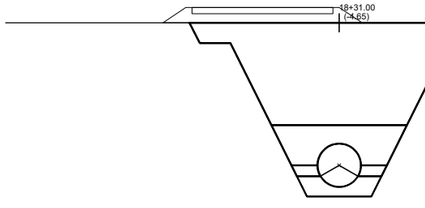
NO.		18+38.00
Design Level (El.m)		111.28
Original Ground Level (El.m)		113.40
Embankment (m2)		1.96
Excavation (m2)		11.50
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.93
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



NO.		13+31.00
Design Level (El.m)		115.09
Original Ground Level (El.m)		117.40
Embankment (m2)		1.96
Excavation (m2)		12.48
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.91
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.46



NO.		17+0.00
Design Level (El.m)		112.20
Original Ground Level (El.m)		114.10
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.77
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



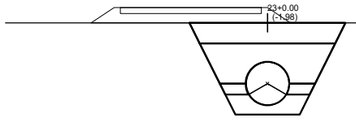
NO.		18+31.00
Design Level (El.m)		111.35
Original Ground Level (El.m)		116.00
Embankment (m2)		1.96
Excavation (m2)		29.24
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	21.67
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		10.63

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (3/29)	JUNE, 2022		B-27-03

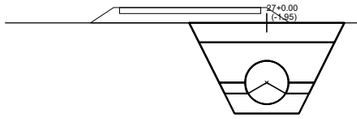
Cross Section of SC2 (4/29)

S=1:100

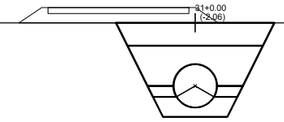
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



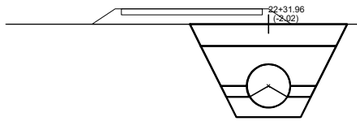
NO.		23+0.00
Design Level (El.m)		109.70
Original Ground Level (El.m)		111.68
Embankment (m2)		1.96
Excavation (m2)		10.77
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.20
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



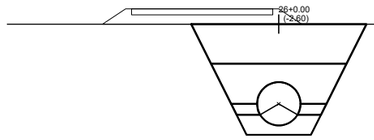
NO.		27+0.00
Design Level (El.m)		108.45
Original Ground Level (El.m)		110.40
Embankment (m2)		1.96
Excavation (m2)		10.60
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.03
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



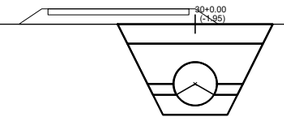
NO.		31+0.00
Design Level (El.m)		107.50
Original Ground Level (El.m)		109.56
Embankment (m2)		1.96
Excavation (m2)		11.15
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.58
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



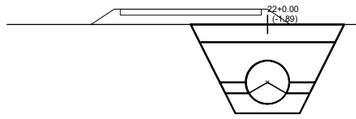
NO.		22+31.96
Design Level (El.m)		109.78
Original Ground Level (El.m)		111.80
Embankment (m2)		1.96
Excavation (m2)		10.96
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.39
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



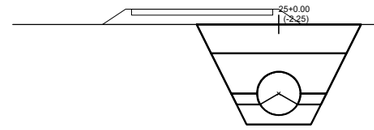
NO.		26+0.00
Design Level (El.m)		108.80
Original Ground Level (El.m)		111.40
Embankment (m2)		1.96
Excavation (m2)		14.10
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.53
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.61



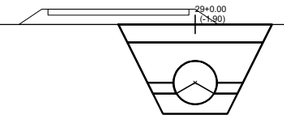
NO.		30+0.00
Design Level (El.m)		107.70
Original Ground Level (El.m)		109.65
Embankment (m2)		1.96
Excavation (m2)		10.59
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.02
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



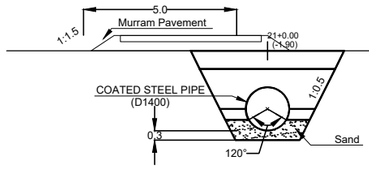
NO.		22+0.00
Design Level (El.m)		109.90
Original Ground Level (El.m)		111.79
Embankment (m2)		1.96
Excavation (m2)		10.29
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.71
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



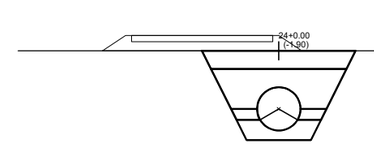
NO.		25+0.00
Design Level (El.m)		109.15
Original Ground Level (El.m)		111.40
Embankment (m2)		1.96
Excavation (m2)		12.17
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.59
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.43



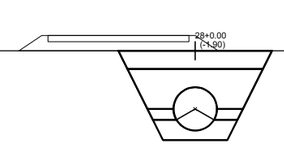
NO.		29+0.00
Design Level (El.m)		107.90
Original Ground Level (El.m)		109.80
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



NO.		21+0.00
Design Level (El.m)		110.10
Original Ground Level (El.m)		112.00
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



NO.		24+0.00
Design Level (El.m)		109.50
Original Ground Level (El.m)		111.40
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



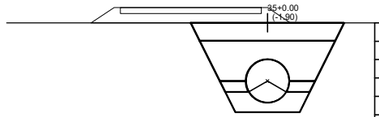
NO.		28+0.00
Design Level (El.m)		108.10
Original Ground Level (El.m)		111.96
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2 (4/29)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-27-04

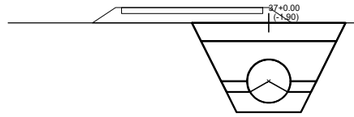
Cross Section of SC2 (5/29)

S=1:100

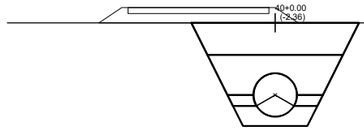
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



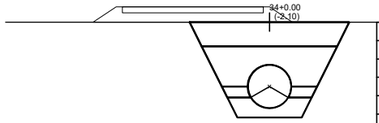
NO.		35+0.00
Design Level (El.m)		106.70
Original Ground Level (El.m)		108.60
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



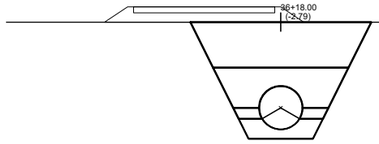
NO.		37+0.00
Design Level (El.m)		106.76
Original Ground Level (El.m)		108.66
Embankment (m2)		1.96
Excavation (m2)		10.37
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.79
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



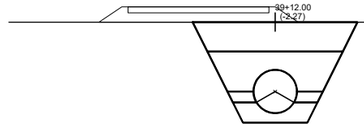
NO.		40+0.00
Design Level (El.m)		106.84
Original Ground Level (El.m)		109.20
Embankment (m2)		1.96
Excavation (m2)		12.74
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.17
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.48



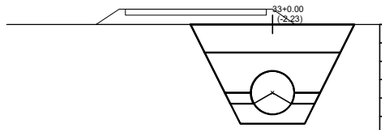
NO.		34+0.00
Design Level (El.m)		106.90
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		11.37
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.80
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.36



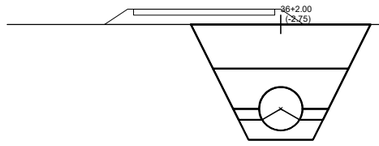
NO.		36+18.00
Design Level (El.m)		105.84
Original Ground Level (El.m)		108.63
Embankment (m2)		1.96
Excavation (m2)		15.22
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	7.65
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.70



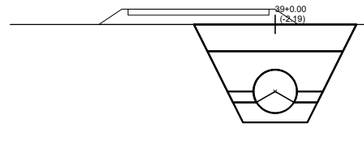
NO.		39+12.00
Design Level (El.m)		106.82
Original Ground Level (El.m)		109.09
Embankment (m2)		1.96
Excavation (m2)		12.25
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.68
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.44



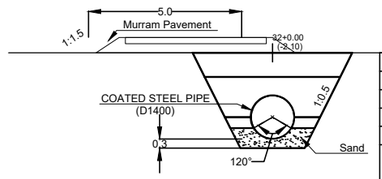
NO.		33+0.00
Design Level (El.m)		107.10
Original Ground Level (El.m)		109.33
Embankment (m2)		1.96
Excavation (m2)		12.05
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.48
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.42



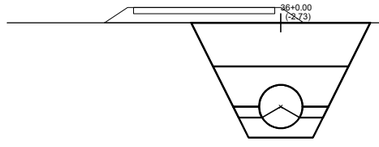
NO.		36+2.00
Design Level (El.m)		105.84
Original Ground Level (El.m)		108.59
Embankment (m2)		1.96
Excavation (m2)		14.96
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	7.39
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.68



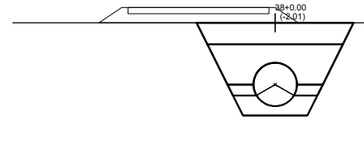
NO.		39+0.00
Design Level (El.m)		106.82
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		11.82
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.25
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.40



NO.		32+0.00
Design Level (El.m)		107.30
Original Ground Level (El.m)		109.40
Embankment (m2)		1.96
Excavation (m2)		11.37
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.80
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.36



NO.		36+0.00
Design Level (El.m)		105.84
Original Ground Level (El.m)		108.57
Embankment (m2)		1.96
Excavation (m2)		14.88
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	7.30
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.67



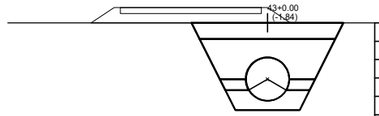
NO.		38+0.00
Design Level (El.m)		106.79
Original Ground Level (El.m)		108.80
Embankment (m2)		1.96
Excavation (m2)		10.92
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.35
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.31

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (5/29)	JUNE, 2022		B-27-05

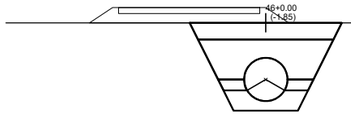
Cross Section of SC2 (6/29)

S=1:100

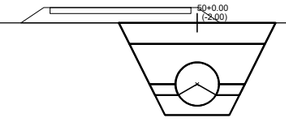
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



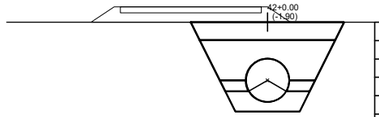
NO.		43+0.00
Design Level (El.m)		107.16
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		10.03
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.22



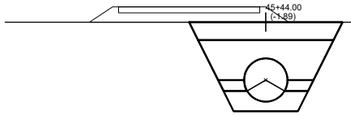
NO.		46+0.00
Design Level (El.m)		107.35
Original Ground Level (El.m)		109.20
Embankment (m2)		1.96
Excavation (m2)		10.11
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.54
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



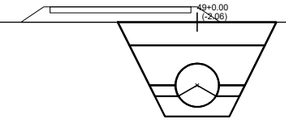
NO.		50+0.00
Design Level (El.m)		106.00
Original Ground Level (El.m)		108.00
Embankment (m2)		1.96
Excavation (m2)		10.86
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.31



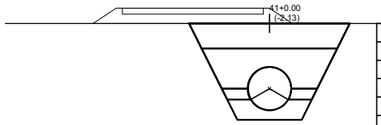
NO.		42+0.00
Design Level (El.m)		106.90
Original Ground Level (El.m)		108.80
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



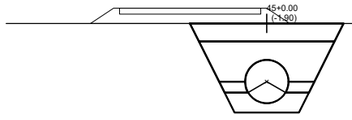
NO.		45+44.00
Design Level (El.m)		107.39
Original Ground Level (El.m)		109.29
Embankment (m2)		1.96
Excavation (m2)		10.31
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.74
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



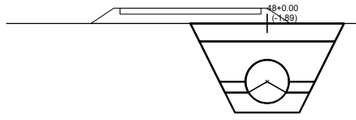
NO.		49+0.00
Design Level (El.m)		106.34
Original Ground Level (El.m)		108.40
Embankment (m2)		1.96
Excavation (m2)		11.18
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.60
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



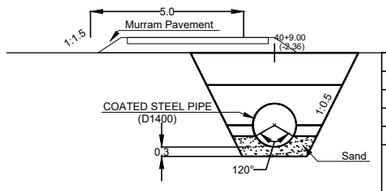
NO.		41+0.00
Design Level (El.m)		106.87
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		11.52
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.95
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



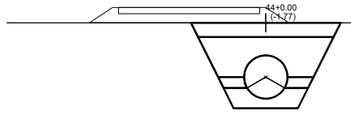
NO.		45+0.00
Design Level (El.m)		107.69
Original Ground Level (El.m)		109.59
Embankment (m2)		1.96
Excavation (m2)		10.34
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.77
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



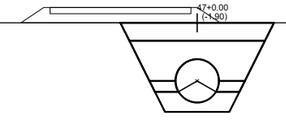
NO.		48+0.00
Design Level (El.m)		106.68
Original Ground Level (El.m)		108.57
Embankment (m2)		1.96
Excavation (m2)		10.32
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.75
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



NO.		40+9.00
Design Level (El.m)		106.85
Original Ground Level (El.m)		109.21
Embankment (m2)		1.96
Excavation (m2)		12.79
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.22
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.49



NO.		44+0.00
Design Level (El.m)		107.43
Original Ground Level (El.m)		109.20
Embankment (m2)		1.96
Excavation (m2)		9.72
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.15
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.19



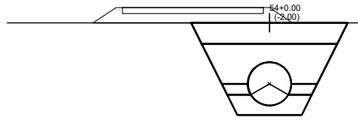
NO.		47+0.00
Design Level (El.m)		107.01
Original Ground Level (El.m)		108.91
Embankment (m2)		1.96
Excavation (m2)		10.33
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.76
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC2 (6/29)	JUNE, 2022		B-27-06

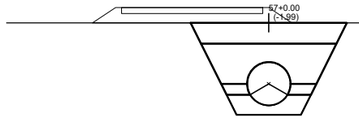
Cross Section of SC2 (7/29)

S=1:100

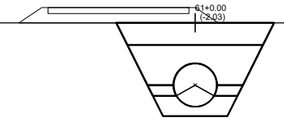
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



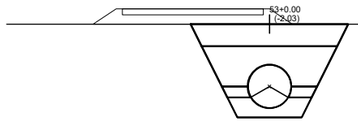
NO.		54+0.00
Design Level (El.m)		104.16
Original Ground Level (El.m)		106.16
Embankment (m2)		1.96
Excavation (m2)		10.83
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.26
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



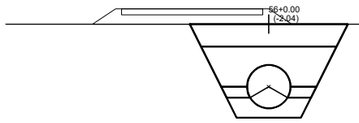
NO.		57+0.00
Design Level (El.m)		103.01
Original Ground Level (El.m)		105.00
Embankment (m2)		1.96
Excavation (m2)		10.79
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.22
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



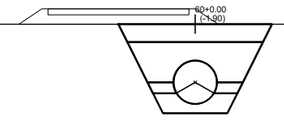
NO.		61+0.00
Design Level (El.m)		101.77
Original Ground Level (El.m)		103.80
Embankment (m2)		1.96
Excavation (m2)		11.01
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.44
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



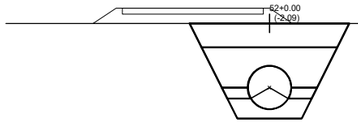
NO.		53+0.00
Design Level (El.m)		104.62
Original Ground Level (El.m)		106.65
Embankment (m2)		1.96
Excavation (m2)		11.03
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.45
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



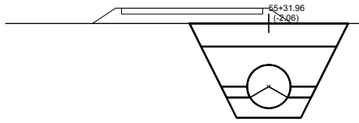
NO.		56+0.00
Design Level (El.m)		103.36
Original Ground Level (El.m)		105.40
Embankment (m2)		1.96
Excavation (m2)		11.07
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.50
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



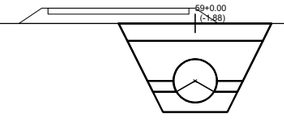
NO.		60+0.00
Design Level (El.m)		101.98
Original Ground Level (El.m)		103.88
Embankment (m2)		1.96
Excavation (m2)		10.34
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.77
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



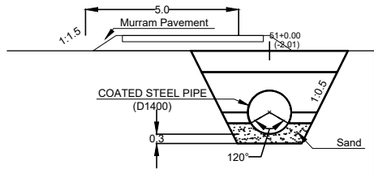
NO.		52+0.00
Design Level (El.m)		105.08
Original Ground Level (El.m)		107.17
Embankment (m2)		1.96
Excavation (m2)		11.33
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.75
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.35



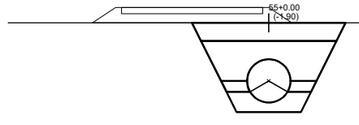
NO.		55+31.96
Design Level (El.m)		103.49
Original Ground Level (El.m)		105.56
Embankment (m2)		1.96
Excavation (m2)		11.17
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.60
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



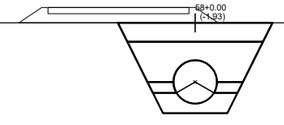
NO.		59+0.00
Design Level (El.m)		102.32
Original Ground Level (El.m)		104.20
Embankment (m2)		1.96
Excavation (m2)		10.23
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.66
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.24



NO.		51+0.00
Design Level (El.m)		105.54
Original Ground Level (El.m)		107.55
Embankment (m2)		1.96
Excavation (m2)		10.90
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.33
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.31



NO.		55+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		105.60
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



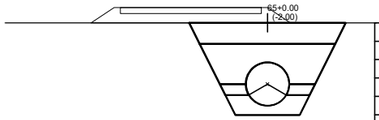
NO.		58+0.00
Design Level (El.m)		102.67
Original Ground Level (El.m)		104.60
Embankment (m2)		1.96
Excavation (m2)		10.51
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.94
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC2 (7/29)	JUNE, 2022		B-27-07

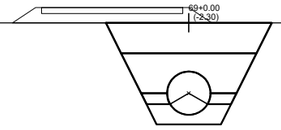
Cross Section of SC2 (8/29)

S=1:100

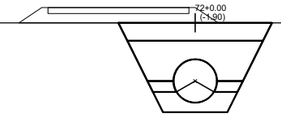
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



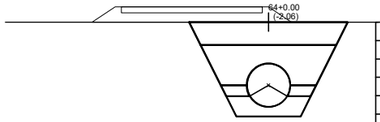
NO.		65+0.00
Design Level (El.m)		100.93
Original Ground Level (El.m)		102.93
Embankment (m2)		1.96
Excavation (m2)		10.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.27
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



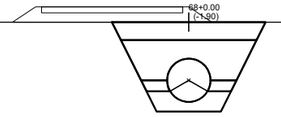
NO.		69+0.00
Design Level (El.m)		99.90
Original Ground Level (El.m)		102.20
Embankment (m2)		1.96
Excavation (m2)		12.43
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.86
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.46



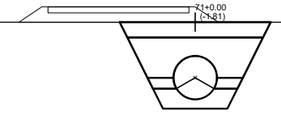
NO.		72+0.00
Design Level (El.m)		98.70
Original Ground Level (El.m)		100.60
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



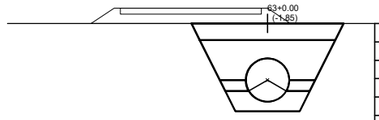
NO.		64+0.00
Design Level (El.m)		101.14
Original Ground Level (El.m)		103.20
Embankment (m2)		1.96
Excavation (m2)		11.16
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.59
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



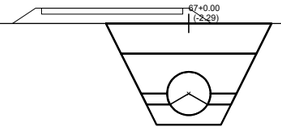
NO.		68+0.00
Design Level (El.m)		100.30
Original Ground Level (El.m)		102.20
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



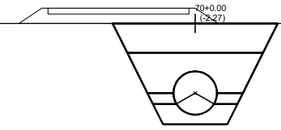
NO.		71+0.00
Design Level (El.m)		99.10
Original Ground Level (El.m)		100.91
Embankment (m2)		1.96
Excavation (m2)		9.92
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.35
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



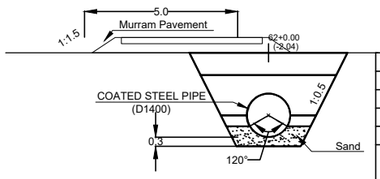
NO.		63+0.00
Design Level (El.m)		101.35
Original Ground Level (El.m)		103.20
Embankment (m2)		1.96
Excavation (m2)		10.10
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.53
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



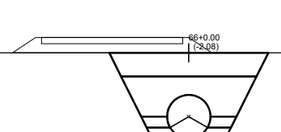
NO.		67+0.00
Design Level (El.m)		100.51
Original Ground Level (El.m)		102.80
Embankment (m2)		1.96
Excavation (m2)		12.38
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.81
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.45



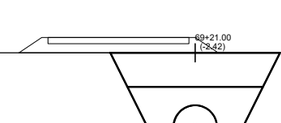
NO.		70+0.00
Design Level (El.m)		99.50
Original Ground Level (El.m)		101.77
Embankment (m2)		1.96
Excavation (m2)		12.28
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.71
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.44



NO.		62+0.00
Design Level (El.m)		101.56
Original Ground Level (El.m)		103.60
Embankment (m2)		1.96
Excavation (m2)		11.06
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.49
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



NO.		66+0.00
Design Level (El.m)		100.72
Original Ground Level (El.m)		102.80
Embankment (m2)		1.96
Excavation (m2)		11.27
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.70
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.35



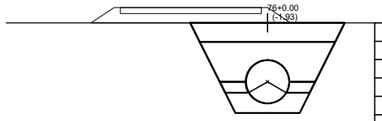
NO.		69+21.00
Design Level (El.m)		99.73
Original Ground Level (El.m)		102.15
Embankment (m2)		1.96
Excavation (m2)		13.09
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.51
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.52

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2 (8/29)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-27-08

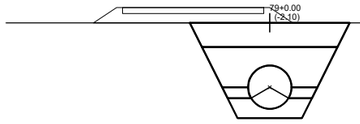
Cross Section of SC2 (9/29)

S=1:100

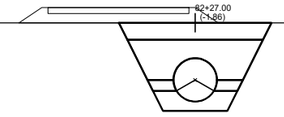
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



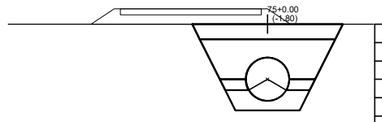
NO.		76+0.00
Design Level (El.m)		97.50
Original Ground Level (El.m)		99.43
Embankment (m2)		1.96
Excavation (m2)		10.49
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.91
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27



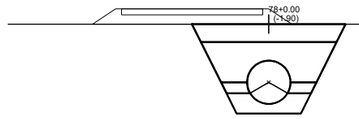
NO.		79+0.00
Design Level (El.m)		96.67
Original Ground Level (El.m)		98.77
Embankment (m2)		1.96
Excavation (m2)		11.38
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.81
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.36



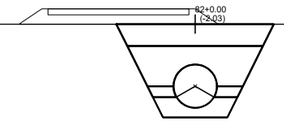
NO.		82+27.00
Design Level (El.m)		95.85
Original Ground Level (El.m)		97.71
Embankment (m2)		1.96
Excavation (m2)		10.16
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.59
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.24



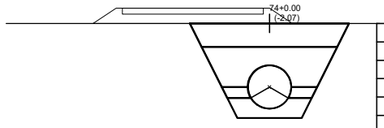
NO.		75+0.00
Design Level (El.m)		97.80
Original Ground Level (El.m)		99.60
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



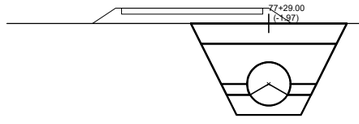
NO.		78+0.00
Design Level (El.m)		96.90
Original Ground Level (El.m)		98.80
Embankment (m2)		1.96
Excavation (m2)		10.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



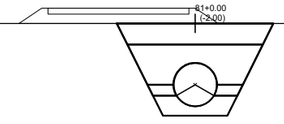
NO.		82+0.00
Design Level (El.m)		95.97
Original Ground Level (El.m)		98.00
Embankment (m2)		1.96
Excavation (m2)		11.00
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.42
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



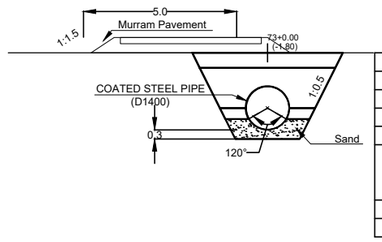
NO.		74+0.00
Design Level (El.m)		98.10
Original Ground Level (El.m)		100.17
Embankment (m2)		1.96
Excavation (m2)		11.23
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.66
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



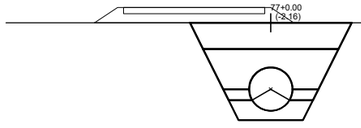
NO.		77+29.00
Design Level (El.m)		97.03
Original Ground Level (El.m)		99.00
Embankment (m2)		1.96
Excavation (m2)		10.72
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.15
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.29



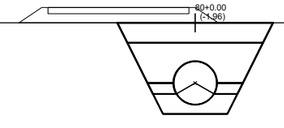
NO.		81+0.00
Design Level (El.m)		96.20
Original Ground Level (El.m)		98.20
Embankment (m2)		1.96
Excavation (m2)		10.83
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.26
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



NO.		73+0.00
Design Level (El.m)		98.40
Original Ground Level (El.m)		100.20
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



NO.		77+0.00
Design Level (El.m)		97.20
Original Ground Level (El.m)		99.36
Embankment (m2)		1.96
Excavation (m2)		11.71
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.14
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.39



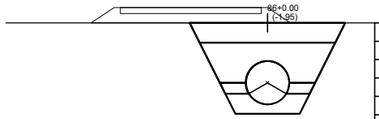
NO.		80+0.00
Design Level (El.m)		96.44
Original Ground Level (El.m)		98.40
Embankment (m2)		1.96
Excavation (m2)		10.67
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.29

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (9/29)	JUNE, 2022		B-27-09

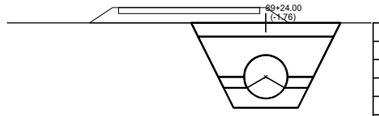
Cross Section of SC2 (10/29)

S=1:100

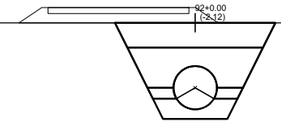
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



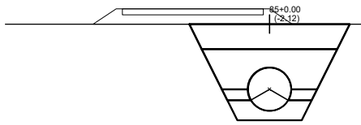
NO.		86+0.00
Design Level (El.m)		95.05
Original Ground Level (El.m)		97.00
Embankment (m2)		1.96
Excavation (m2)		10.62
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.05
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



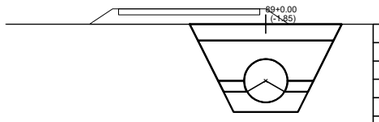
NO.		89+24.00
Design Level (El.m)		94.34
Original Ground Level (El.m)		96.10
Embankment (m2)		1.96
Excavation (m2)		9.66
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.09
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.19



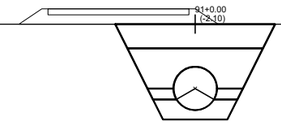
NO.		92+0.00
Design Level (El.m)		94.28
Original Ground Level (El.m)		96.40
Embankment (m2)		1.96
Excavation (m2)		11.48
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.91
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



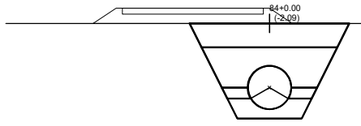
NO.		85+0.00
Design Level (El.m)		95.28
Original Ground Level (El.m)		97.40
Embankment (m2)		1.96
Excavation (m2)		11.49
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.92
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



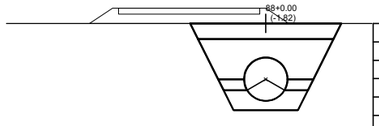
NO.		89+0.00
Design Level (El.m)		94.35
Original Ground Level (El.m)		96.20
Embankment (m2)		1.96
Excavation (m2)		10.10
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.53
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



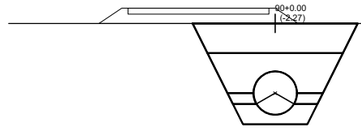
NO.		91+0.00
Design Level (El.m)		94.30
Original Ground Level (El.m)		96.40
Embankment (m2)		1.96
Excavation (m2)		11.36
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.79
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.35



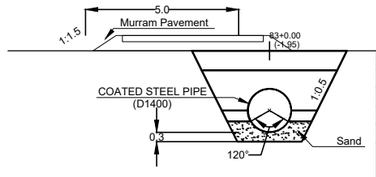
NO.		84+0.00
Design Level (El.m)		95.51
Original Ground Level (El.m)		97.60
Embankment (m2)		1.96
Excavation (m2)		11.32
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.75
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.35



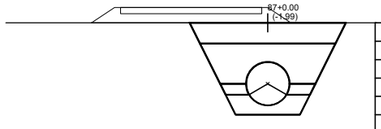
NO.		88+0.00
Design Level (El.m)		94.58
Original Ground Level (El.m)		96.40
Embankment (m2)		1.96
Excavation (m2)		9.94
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.37
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



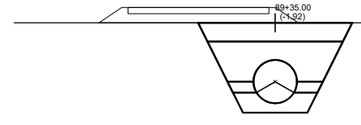
NO.		90+0.00
Design Level (El.m)		94.33
Original Ground Level (El.m)		96.60
Embankment (m2)		1.96
Excavation (m2)		12.29
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.72
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.44



NO.		83+0.00
Design Level (El.m)		95.74
Original Ground Level (El.m)		97.69
Embankment (m2)		1.96
Excavation (m2)		10.60
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.03
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



NO.		87+0.00
Design Level (El.m)		94.81
Original Ground Level (El.m)		96.80
Embankment (m2)		1.96
Excavation (m2)		10.79
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.21
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



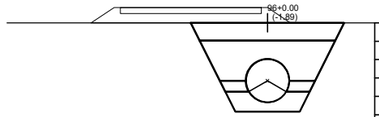
NO.		89+35.00
Design Level (El.m)		94.33
Original Ground Level (El.m)		96.25
Embankment (m2)		1.96
Excavation (m2)		10.45
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.88
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (10/29)	JUNE, 2022		B-27-10

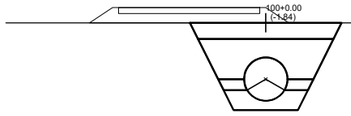
Cross Section of SC2 (11/29)

S=1:100

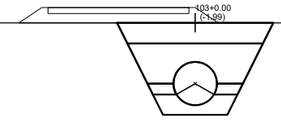
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



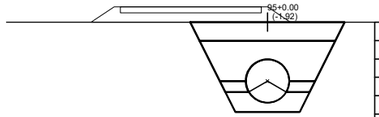
NO.		96+0.00
Design Level (El.m)		94.18
Original Ground Level (El.m)		96.07
Embankment (m2)		1.96
Excavation (m2)		10.29
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.72
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



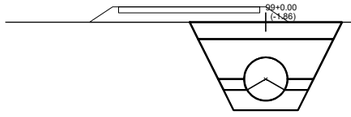
NO.		100+0.00
Design Level (El.m)		94.09
Original Ground Level (El.m)		95.93
Embankment (m2)		1.96
Excavation (m2)		10.04
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.22



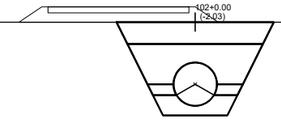
NO.		103+0.00
Design Level (El.m)		93.01
Original Ground Level (El.m)		95.00
Embankment (m2)		1.96
Excavation (m2)		10.78
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.21
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



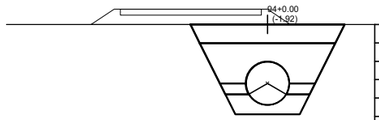
NO.		95+0.00
Design Level (El.m)		94.21
Original Ground Level (El.m)		96.13
Embankment (m2)		1.96
Excavation (m2)		10.46
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.89
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27



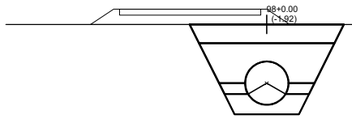
NO.		99+0.00
Design Level (El.m)		94.11
Original Ground Level (El.m)		95.97
Embankment (m2)		1.96
Excavation (m2)		10.15
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.58
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.24



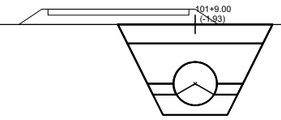
NO.		102+0.00
Design Level (El.m)		93.37
Original Ground Level (El.m)		95.40
Embankment (m2)		1.96
Excavation (m2)		10.99
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.42
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



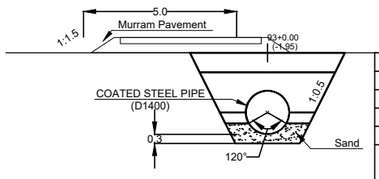
NO.		94+0.00
Design Level (El.m)		94.23
Original Ground Level (El.m)		96.15
Embankment (m2)		1.96
Excavation (m2)		10.44
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.87
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



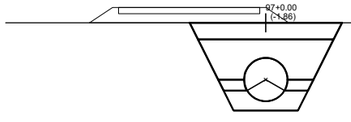
NO.		98+0.00
Design Level (El.m)		94.14
Original Ground Level (El.m)		96.06
Embankment (m2)		1.96
Excavation (m2)		10.44
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.87
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



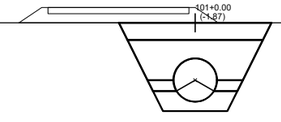
NO.		101+9.00
Design Level (El.m)		93.67
Original Ground Level (El.m)		95.60
Embankment (m2)		1.96
Excavation (m2)		10.52
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.94
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27



NO.		93+0.00
Design Level (El.m)		94.25
Original Ground Level (El.m)		96.20
Embankment (m2)		1.96
Excavation (m2)		10.58
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.00
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



NO.		97+0.00
Design Level (El.m)		94.16
Original Ground Level (El.m)		96.02
Embankment (m2)		1.96
Excavation (m2)		10.13
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.55
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



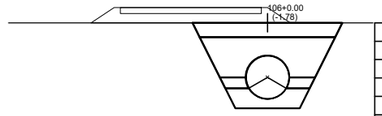
NO.		101+0.00
Design Level (El.m)		93.73
Original Ground Level (El.m)		95.60
Embankment (m2)		1.96
Excavation (m2)		10.19
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.62
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.24

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (11/29)	JUNE, 2022		B-27-11

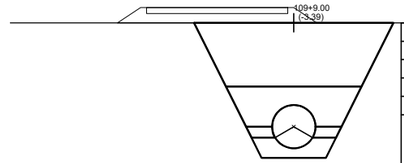
Cross Section of SC2 (12/29)

S=1:100

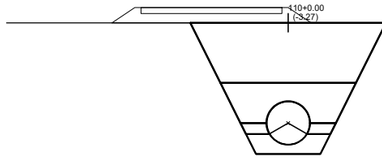
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



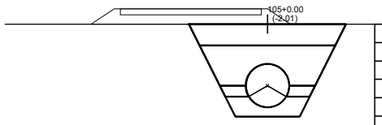
NO.		106+0.00
Design Level (El.m)		91.94
Original Ground Level (El.m)		93.72
Embankment (m2)		1.96
Excavation (m2)		9.74
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.17
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.19



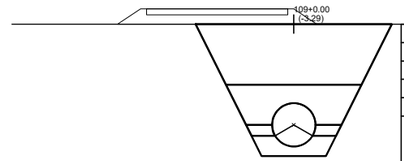
NO.		109+9.00
Design Level (El.m)		89.47
Original Ground Level (El.m)		92.86
Embankment (m2)		1.96
Excavation (m2)		18.93
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	11.36
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		9.00



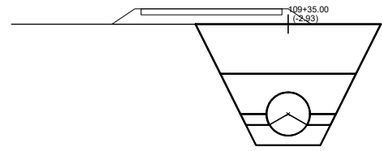
NO.		110+0.00
Design Level (El.m)		89.47
Original Ground Level (El.m)		92.74
Embankment (m2)		1.96
Excavation (m2)		18.14
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	10.57
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.94



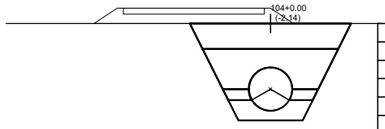
NO.		105+0.00
Design Level (El.m)		92.30
Original Ground Level (El.m)		94.31
Embankment (m2)		1.96
Excavation (m2)		10.90
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.32
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.31



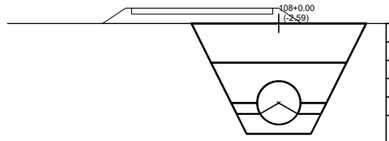
NO.		109+0.00
Design Level (El.m)		89.64
Original Ground Level (El.m)		92.93
Embankment (m2)		1.96
Excavation (m2)		18.27
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	10.70
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.95



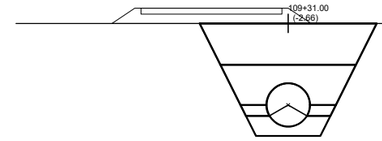
NO.		109+35.00
Design Level (El.m)		89.47
Original Ground Level (El.m)		92.40
Embankment (m2)		1.96
Excavation (m2)		16.06
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	8.49
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.77



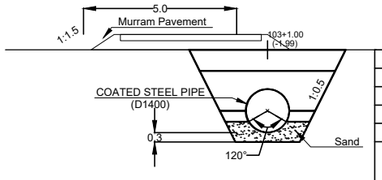
NO.		104+0.00
Design Level (El.m)		92.66
Original Ground Level (El.m)		94.80
Embankment (m2)		1.96
Excavation (m2)		11.60
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.03
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.38



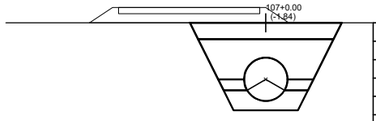
NO.		108+0.00
Design Level (El.m)		90.61
Original Ground Level (El.m)		93.20
Embankment (m2)		1.96
Excavation (m2)		14.03
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.46
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.60



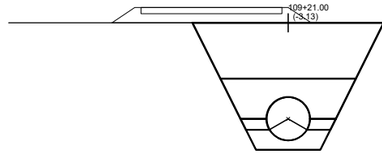
NO.		109+31.00
Design Level (El.m)		89.47
Original Ground Level (El.m)		92.13
Embankment (m2)		1.96
Excavation (m2)		14.44
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.87
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.64



NO.		103+1.00
Design Level (El.m)		93.01
Original Ground Level (El.m)		95.00
Embankment (m2)		1.96
Excavation (m2)		10.82
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.25
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



NO.		107+0.00
Design Level (El.m)		91.58
Original Ground Level (El.m)		93.42
Embankment (m2)		1.96
Excavation (m2)		10.08
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.50
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



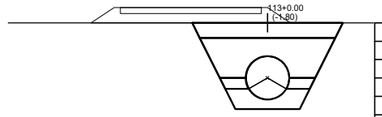
NO.		109+21.00
Design Level (El.m)		89.47
Original Ground Level (El.m)		92.60
Embankment (m2)		1.96
Excavation (m2)		17.27
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	9.70
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.87

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (12/29)	JUNE, 2022		B-27-12

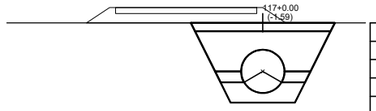
Cross Section of SC2 (13/29)

S=1:100

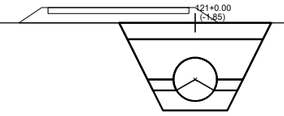
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



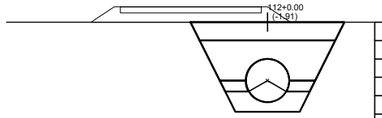
NO.		113+0.00
Design Level (El.m)		90.60
Original Ground Level (El.m)		92.40
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



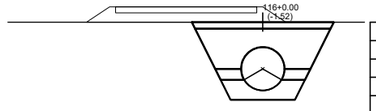
NO.		117+0.00
Design Level (El.m)		91.16
Original Ground Level (El.m)		92.75
Embankment (m2)		1.96
Excavation (m2)		8.84
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.26
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.10



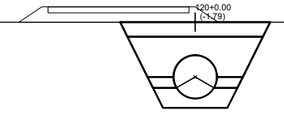
NO.		121+0.00
Design Level (El.m)		91.72
Original Ground Level (El.m)		93.57
Embankment (m2)		1.96
Excavation (m2)		10.08
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.51
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.23



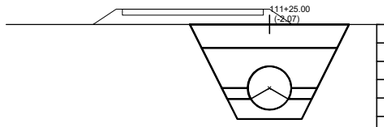
NO.		112+0.00
Design Level (El.m)		90.57
Original Ground Level (El.m)		92.48
Embankment (m2)		1.96
Excavation (m2)		10.40
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.82
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



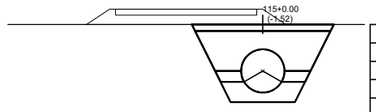
NO.		116+0.00
Design Level (El.m)		91.02
Original Ground Level (El.m)		92.54
Embankment (m2)		1.96
Excavation (m2)		8.53
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	0.96
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.07



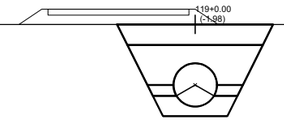
NO.		120+0.00
Design Level (El.m)		91.58
Original Ground Level (El.m)		93.37
Embankment (m2)		1.96
Excavation (m2)		9.79
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.21
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



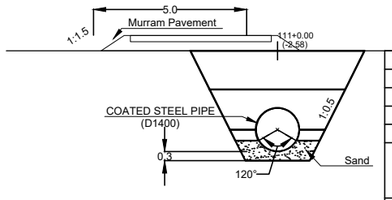
NO.		111+25.00
Design Level (El.m)		90.55
Original Ground Level (El.m)		92.62
Embankment (m2)		1.96
Excavation (m2)		11.24
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.67
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



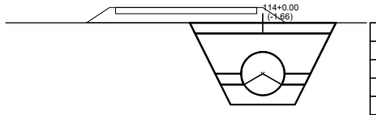
NO.		115+0.00
Design Level (El.m)		90.88
Original Ground Level (El.m)		92.40
Embankment (m2)		1.96
Excavation (m2)		8.52
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	0.95
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.07



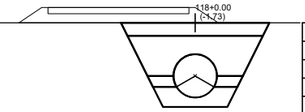
NO.		119+0.00
Design Level (El.m)		91.44
Original Ground Level (El.m)		93.42
Embankment (m2)		1.96
Excavation (m2)		10.74
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.17
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.29



NO.		111+0.00
Design Level (El.m)		90.19
Original Ground Level (El.m)		92.77
Embankment (m2)		1.96
Excavation (m2)		13.96
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.39
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.59



NO.		114+0.00
Design Level (El.m)		90.74
Original Ground Level (El.m)		92.40
Embankment (m2)		1.96
Excavation (m2)		9.18
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.60
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.14



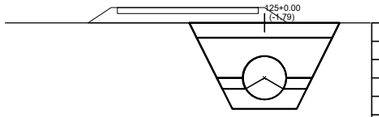
NO.		118+0.00
Design Level (El.m)		91.30
Original Ground Level (El.m)		93.03
Embankment (m2)		1.96
Excavation (m2)		9.52
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.95
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.17

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (13/29)	JUNE, 2022		B-27-13

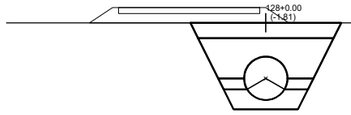
Cross Section of SC2 (14/29)

S=1:100

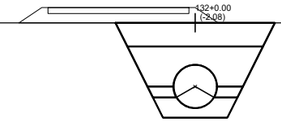
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



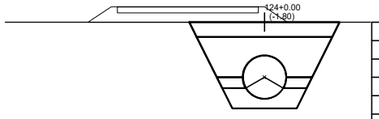
NO.		125+0.00
Design Level (El.m)		92.81
Original Ground Level (El.m)		94.60
Embankment (m2)		1.96
Excavation (m2)		9.83
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.26
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



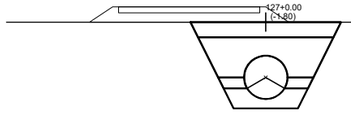
NO.		128+0.00
Design Level (El.m)		93.44
Original Ground Level (El.m)		95.25
Embankment (m2)		1.96
Excavation (m2)		9.91
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



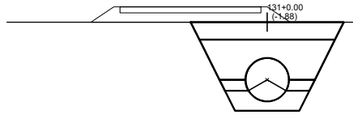
NO.		132+0.00
Design Level (El.m)		92.96
Original Ground Level (El.m)		95.04
Embankment (m2)		1.96
Excavation (m2)		11.27
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.70
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.35



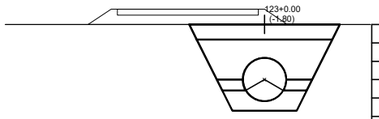
NO.		124+0.00
Design Level (El.m)		92.40
Original Ground Level (El.m)		94.20
Embankment (m2)		1.96
Excavation (m2)		9.84
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.27
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



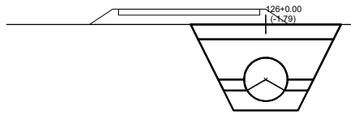
NO.		127+0.00
Design Level (El.m)		93.61
Original Ground Level (El.m)		95.41
Embankment (m2)		1.96
Excavation (m2)		9.86
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.29
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



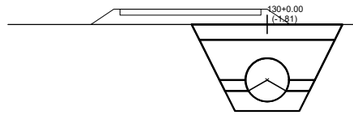
NO.		131+0.00
Design Level (El.m)		93.04
Original Ground Level (El.m)		94.92
Embankment (m2)		1.96
Excavation (m2)		10.25
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.68
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



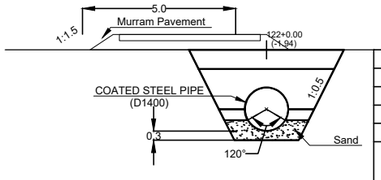
NO.		123+0.00
Design Level (El.m)		92.00
Original Ground Level (El.m)		93.80
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



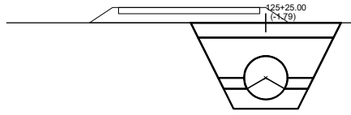
NO.		126+0.00
Design Level (El.m)		93.21
Original Ground Level (El.m)		95.00
Embankment (m2)		1.96
Excavation (m2)		9.82
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.25
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



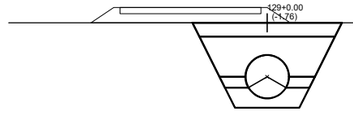
NO.		130+0.00
Design Level (El.m)		93.11
Original Ground Level (El.m)		94.92
Embankment (m2)		1.96
Excavation (m2)		9.90
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



NO.		122+0.00
Design Level (El.m)		91.86
Original Ground Level (El.m)		93.80
Embankment (m2)		1.96
Excavation (m2)		10.55
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.98
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



NO.		125+25.00
Design Level (El.m)		93.01
Original Ground Level (El.m)		94.80
Embankment (m2)		1.96
Excavation (m2)		9.82
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.25
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



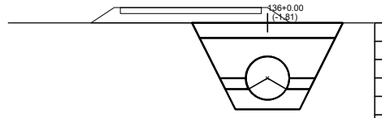
NO.		129+0.00
Design Level (El.m)		93.28
Original Ground Level (El.m)		95.04
Embankment (m2)		1.96
Excavation (m2)		9.66
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.09
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.19

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (14/29)	JUNE, 2022		B-27-14

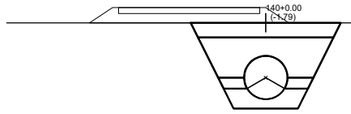
Cross Section of SC2 (15/29)

S=1:100

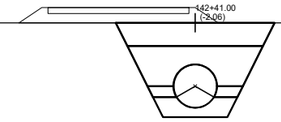
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



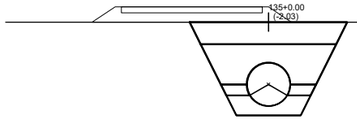
NO.		136+0.00
Design Level (El.m)		92.67
Original Ground Level (El.m)		94.48
Embankment (m2)		1.96
Excavation (m2)		9.89
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



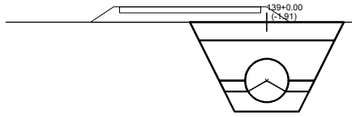
NO.		140+0.00
Design Level (El.m)		92.51
Original Ground Level (El.m)		94.30
Embankment (m2)		1.96
Excavation (m2)		9.79
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



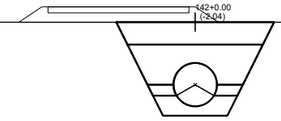
NO.		142+41.00
Design Level (El.m)		92.14
Original Ground Level (El.m)		94.20
Embankment (m2)		1.96
Excavation (m2)		11.19
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.62
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



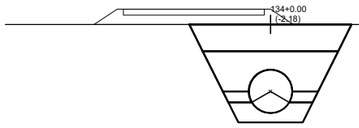
NO.		135+0.00
Design Level (El.m)		92.74
Original Ground Level (El.m)		94.77
Embankment (m2)		1.96
Excavation (m2)		11.01
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.44
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



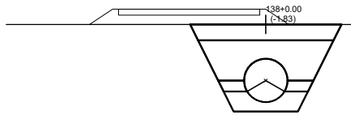
NO.		139+0.00
Design Level (El.m)		92.55
Original Ground Level (El.m)		94.46
Embankment (m2)		1.96
Excavation (m2)		10.39
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.81
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.26



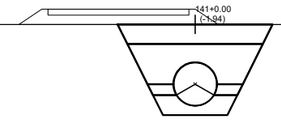
NO.		142+0.00
Design Level (El.m)		92.28
Original Ground Level (El.m)		94.32
Embankment (m2)		1.96
Excavation (m2)		11.07
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.50
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



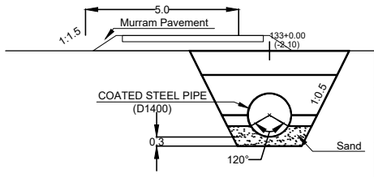
NO.		134+0.00
Design Level (El.m)		92.82
Original Ground Level (El.m)		95.00
Embankment (m2)		1.96
Excavation (m2)		11.81
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.24
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.40



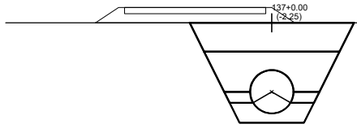
NO.		138+0.00
Design Level (El.m)		92.59
Original Ground Level (El.m)		94.42
Embankment (m2)		1.96
Excavation (m2)		9.98
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.41
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.22



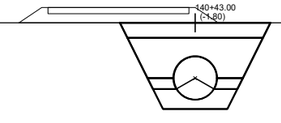
NO.		141+0.00
Design Level (El.m)		92.46
Original Ground Level (El.m)		94.40
Embankment (m2)		1.96
Excavation (m2)		10.57
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.00
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



NO.		133+0.00
Design Level (El.m)		92.89
Original Ground Level (El.m)		94.99
Embankment (m2)		1.96
Excavation (m2)		11.37
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.79
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.36



NO.		137+0.00
Design Level (El.m)		92.63
Original Ground Level (El.m)		94.88
Embankment (m2)		1.96
Excavation (m2)		12.17
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.59
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.43



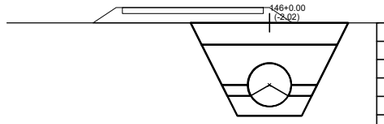
NO.		140+43.00
Design Level (El.m)		92.48
Original Ground Level (El.m)		94.28
Embankment (m2)		1.96
Excavation (m2)		9.86
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.29
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (15/29)	JUNE, 2022		B-27-15

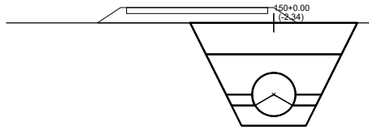
Cross Section of SC2 (16/29)

S=1:100

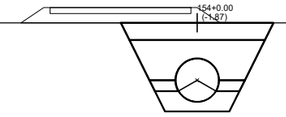
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



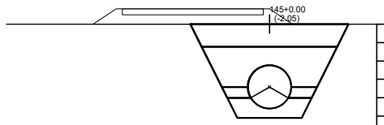
NO.		146+0.00
Design Level (El.m)		91.58
Original Ground Level (El.m)		93.60
Embankment (m2)		1.96
Excavation (m2)		10.98
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.41
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



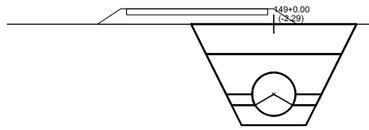
NO.		150+0.00
Design Level (El.m)		90.67
Original Ground Level (El.m)		93.01
Embankment (m2)		1.96
Excavation (m2)		12.66
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.09
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.48



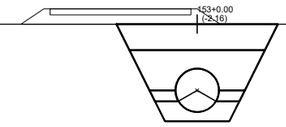
NO.		154+0.00
Design Level (El.m)		89.70
Original Ground Level (El.m)		91.57
Embankment (m2)		1.96
Excavation (m2)		10.22
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.65
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.24



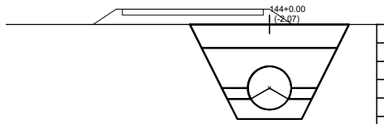
NO.		145+0.00
Design Level (El.m)		91.75
Original Ground Level (El.m)		93.80
Embankment (m2)		1.96
Excavation (m2)		11.10
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.53
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



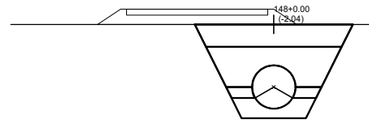
NO.		149+0.00
Design Level (El.m)		90.91
Original Ground Level (El.m)		93.20
Embankment (m2)		1.96
Excavation (m2)		12.36
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.79
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.45



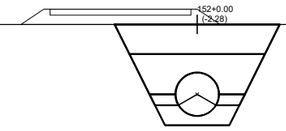
NO.		153+0.00
Design Level (El.m)		89.94
Original Ground Level (El.m)		92.10
Embankment (m2)		1.96
Excavation (m2)		11.69
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.12
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.39



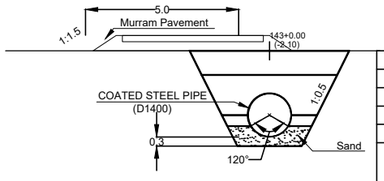
NO.		144+0.00
Design Level (El.m)		91.93
Original Ground Level (El.m)		94.00
Embankment (m2)		1.96
Excavation (m2)		11.23
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.66
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



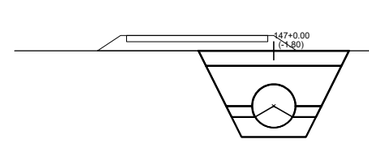
NO.		148+0.00
Design Level (El.m)		91.16
Original Ground Level (El.m)		93.20
Embankment (m2)		1.96
Excavation (m2)		11.08
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.51
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



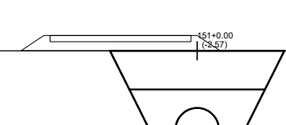
NO.		152+0.00
Design Level (El.m)		90.18
Original Ground Level (El.m)		92.46
Embankment (m2)		1.96
Excavation (m2)		12.31
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.74
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.44



NO.		143+0.00
Design Level (El.m)		92.10
Original Ground Level (El.m)		94.20
Embankment (m2)		1.96
Excavation (m2)		11.35
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.78
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.35



NO.		147+0.00
Design Level (El.m)		91.40
Original Ground Level (El.m)		93.20
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



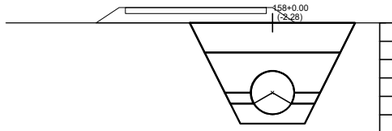
NO.		151+0.00
Design Level (El.m)		90.43
Original Ground Level (El.m)		93.00
Embankment (m2)		1.96
Excavation (m2)		13.95
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	6.38
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.59

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (16/29)	JUNE, 2022		B-27-16

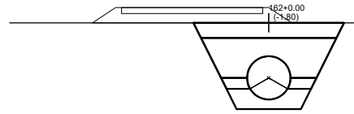
Cross Section of SC2 (17/29)

S=1:100

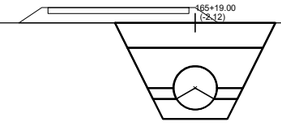
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



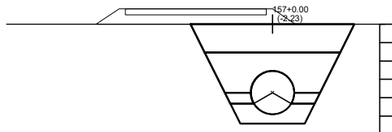
NO.		158+0.00
Design Level (El.m)		88.72
Original Ground Level (El.m)		91.00
Embankment (m2)		1.96
Excavation (m2)		12.31
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.74
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.44



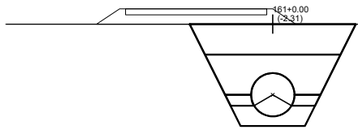
NO.		162+0.00
Design Level (El.m)		88.20
Original Ground Level (El.m)		91.96
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



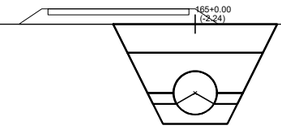
NO.		165+19.00
Design Level (El.m)		87.48
Original Ground Level (El.m)		89.60
Embankment (m2)		1.96
Excavation (m2)		11.49
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.92
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.37



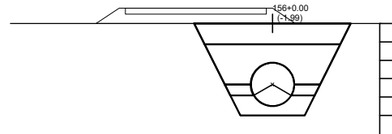
NO.		157+0.00
Design Level (El.m)		88.97
Original Ground Level (El.m)		91.20
Embankment (m2)		1.96
Excavation (m2)		12.08
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.50
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.42



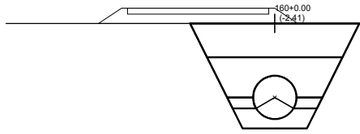
NO.		161+0.00
Design Level (El.m)		88.29
Original Ground Level (El.m)		90.60
Embankment (m2)		1.96
Excavation (m2)		12.47
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.90
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.46



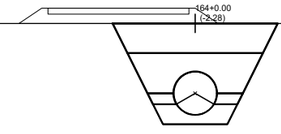
NO.		165+0.00
Design Level (El.m)		87.56
Original Ground Level (El.m)		89.80
Embankment (m2)		1.96
Excavation (m2)		12.12
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.55
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.43



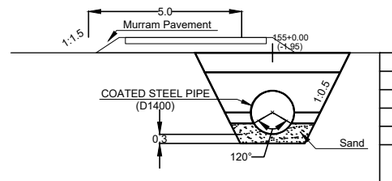
NO.		156+0.00
Design Level (El.m)		89.21
Original Ground Level (El.m)		91.20
Embankment (m2)		1.96
Excavation (m2)		10.81
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.23
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.30



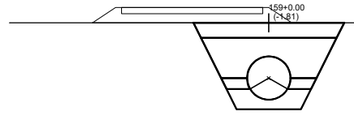
NO.		160+0.00
Design Level (El.m)		88.39
Original Ground Level (El.m)		90.80
Embankment (m2)		1.96
Excavation (m2)		13.05
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.48
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.51



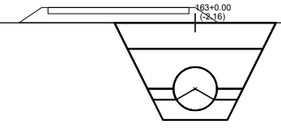
NO.		164+0.00
Design Level (El.m)		87.77
Original Ground Level (El.m)		90.05
Embankment (m2)		1.96
Excavation (m2)		12.30
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.73
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.44



NO.		155+0.00
Design Level (El.m)		89.45
Original Ground Level (El.m)		91.40
Embankment (m2)		1.96
Excavation (m2)		10.59
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.01
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.28



NO.		159+0.00
Design Level (El.m)		88.48
Original Ground Level (El.m)		90.29
Embankment (m2)		1.96
Excavation (m2)		9.88
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



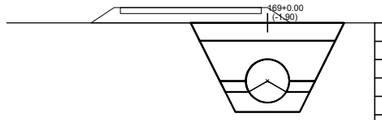
NO.		163+0.00
Design Level (El.m)		87.99
Original Ground Level (El.m)		90.14
Embankment (m2)		1.96
Excavation (m2)		11.66
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	4.09
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.38

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (17/29)	JUNE, 2022		B-27-17

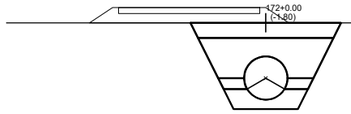
Cross Section of SC2 (18/29)

S=1:100

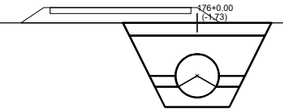
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



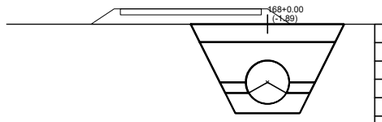
NO.		169+0.00
Design Level (El.m)		86.70
Original Ground Level (El.m)		88.60
Embankment (m2)		1.96
Excavation (m2)		10.33
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.76
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



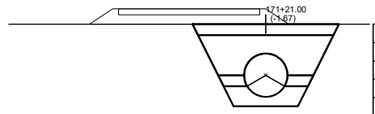
NO.		172+0.00
Design Level (El.m)		86.06
Original Ground Level (El.m)		87.86
Embankment (m2)		1.96
Excavation (m2)		9.87
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.30
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



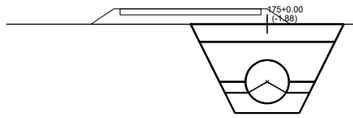
NO.		176+0.00
Design Level (El.m)		85.87
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		9.52
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.95
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.17



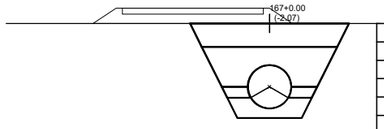
NO.		168+0.00
Design Level (El.m)		86.92
Original Ground Level (El.m)		88.81
Embankment (m2)		1.96
Excavation (m2)		10.32
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.75
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



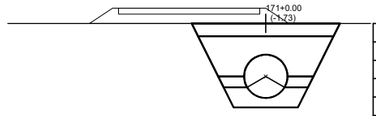
NO.		171+21.00
Design Level (El.m)		86.18
Original Ground Level (El.m)		87.85
Embankment (m2)		1.96
Excavation (m2)		9.20
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.63
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.14



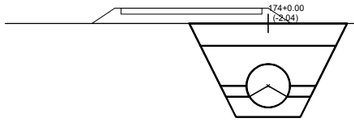
NO.		175+0.00
Design Level (El.m)		85.92
Original Ground Level (El.m)		87.80
Embankment (m2)		1.96
Excavation (m2)		10.27
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.70
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.25



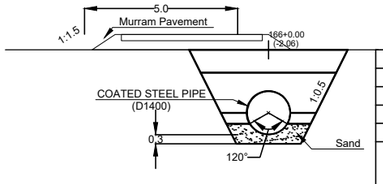
NO.		167+0.00
Design Level (El.m)		87.13
Original Ground Level (El.m)		89.20
Embankment (m2)		1.96
Excavation (m2)		11.22
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.64
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.34



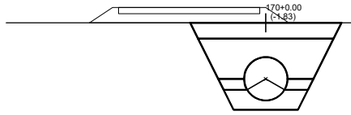
NO.		171+0.00
Design Level (El.m)		86.27
Original Ground Level (El.m)		88.00
Embankment (m2)		1.96
Excavation (m2)		9.49
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	1.92
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.17



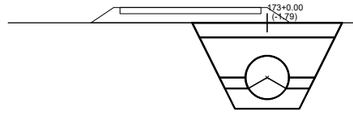
NO.		174+0.00
Design Level (El.m)		85.96
Original Ground Level (El.m)		88.00
Embankment (m2)		1.96
Excavation (m2)		11.04
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.47
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.32



NO.		166+0.00
Design Level (El.m)		87.34
Original Ground Level (El.m)		89.40
Embankment (m2)		1.96
Excavation (m2)		11.14
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.57
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.33



NO.		170+0.00
Design Level (El.m)		86.49
Original Ground Level (El.m)		88.32
Embankment (m2)		1.96
Excavation (m2)		9.99
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.22



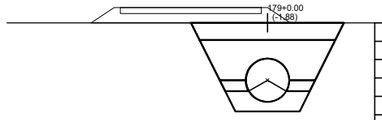
NO.		173+0.00
Design Level (El.m)		86.01
Original Ground Level (El.m)		87.80
Embankment (m2)		1.96
Excavation (m2)		9.80
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (18/29)	JUNE, 2022		B-27-18

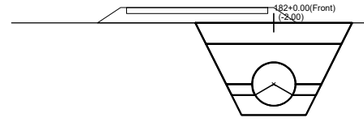
Cross Section of SC2 (19/29)

S=1:100

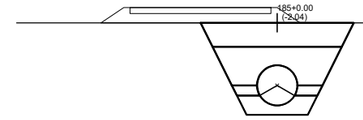
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



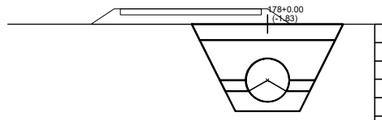
NO.		179+0.00
Design Level (El.m)		85.72
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		10.23
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.66
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.24



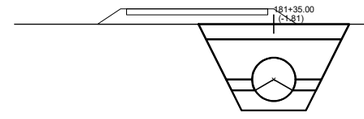
NO.		182+0.00(Front)
Design Level (El.m)		85.58
Original Ground Level (El.m)		87.58
Embankment (m2)		1.96
Excavation (m2)		10.85
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.28
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.31



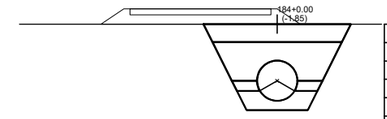
NO.		185+0.00
Design Level (El.m)		85.52
Original Ground Level (El.m)		87.56
Embankment (m2)		1.96
Excavation (m2)		10.51
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.61
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.25



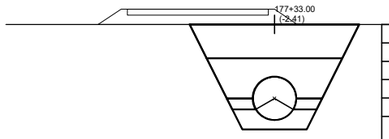
NO.		178+0.00
Design Level (El.m)		85.77
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		9.99
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.22



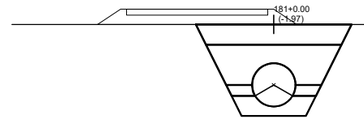
NO.		181+35.00
Design Level (El.m)		85.59
Original Ground Level (El.m)		87.40
Embankment (m2)		1.96
Excavation (m2)		9.88
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.21



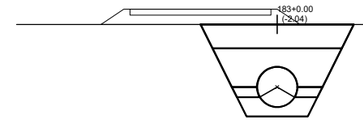
NO.		184+0.00
Design Level (El.m)		85.54
Original Ground Level (El.m)		87.39
Embankment (m2)		1.96
Excavation (m2)		9.56
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.66
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.15



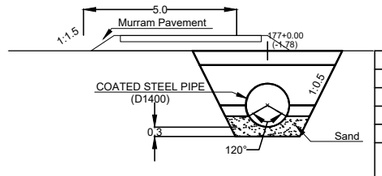
NO.		177+33.00
Design Level (El.m)		85.79
Original Ground Level (El.m)		88.20
Embankment (m2)		1.96
Excavation (m2)		13.05
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	5.47
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.51



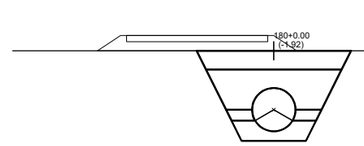
NO.		181+0.00
Design Level (El.m)		85.63
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		10.71
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	3.14
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.29



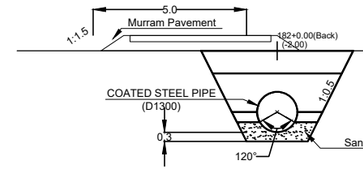
NO.		183+0.00
Design Level (El.m)		85.56
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		10.50
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.60
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.25



NO.		177+0.00
Design Level (El.m)		85.82
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		9.76
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.18
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.20



NO.		180+0.00
Design Level (El.m)		85.68
Original Ground Level (El.m)		87.60
Embankment (m2)		1.96
Excavation (m2)		10.47
Back fill	Manpower+Compactor(m2)	0.56
	Backhoe+Compactor(m2)	4.14
	Backhoe+Roller(m2)	2.90
Base Sand (m2)		1.28
Woodcutting & Roots Removal (m)		8.27



NO.		182+0.00(Back)
Design Level (El.m)		85.58
Original Ground Level (El.m)		87.58
Embankment (m2)		1.96
Excavation (m2)		10.30
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.39
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.23

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

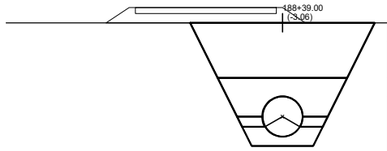
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of SC2 (19/29)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-27-19

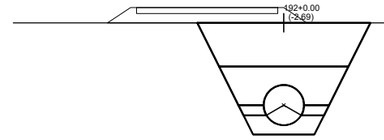
Cross Section of SC2 (20/29)

S=1:100

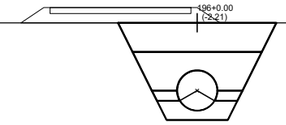
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



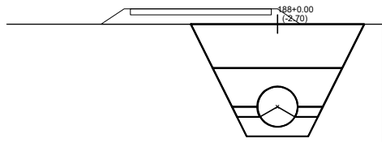
NO.		188+39.00
Design Level (El.m)		85.44
Original Ground Level (El.m)		88.50
Embankment (m2)		1.96
Excavation (m2)		16.12
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	9.21
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.76



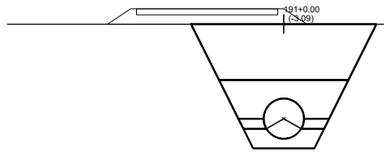
NO.		192+0.00
Design Level (El.m)		85.37
Original Ground Level (El.m)		88.06
Embankment (m2)		1.96
Excavation (m2)		13.95
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.04
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.57



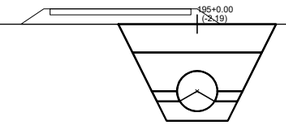
NO.		196+0.00
Design Level (El.m)		85.29
Original Ground Level (El.m)		87.50
Embankment (m2)		1.96
Excavation (m2)		11.36
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.45
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.33



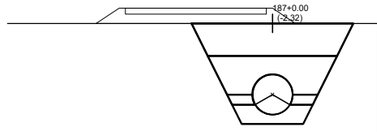
NO.		188+0.00
Design Level (El.m)		85.46
Original Ground Level (El.m)		88.15
Embankment (m2)		1.96
Excavation (m2)		13.99
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.09
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.58



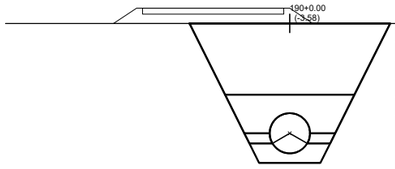
NO.		191+0.00
Design Level (El.m)		85.39
Original Ground Level (El.m)		88.48
Embankment (m2)		1.96
Excavation (m2)		16.27
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	9.37
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.77



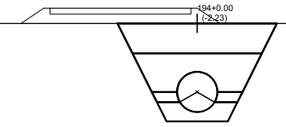
NO.		195+0.00
Design Level (El.m)		85.31
Original Ground Level (El.m)		87.50
Embankment (m2)		1.96
Excavation (m2)		11.25
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.35
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.32



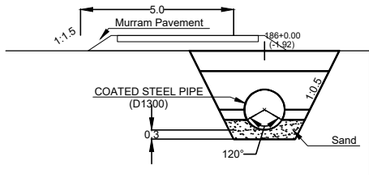
NO.		187+0.00
Design Level (El.m)		85.48
Original Ground Level (El.m)		87.80
Embankment (m2)		1.96
Excavation (m2)		11.93
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	5.03
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.39



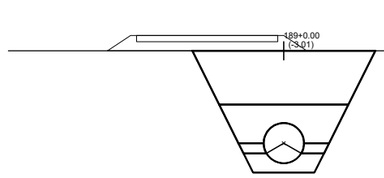
NO.		190+0.00
Design Level (El.m)		85.42
Original Ground Level (El.m)		89.00
Embankment (m2)		1.96
Excavation (m2)		19.42
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	12.51
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		9.02



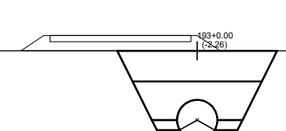
NO.		194+0.00
Design Level (El.m)		85.33
Original Ground Level (El.m)		87.57
Embankment (m2)		1.96
Excavation (m2)		11.49
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.59
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.35



NO.		186+0.00
Design Level (El.m)		85.50
Original Ground Level (El.m)		87.42
Embankment (m2)		1.96
Excavation (m2)		9.92
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.02
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.19



NO.		189+0.00
Design Level (El.m)		85.44
Original Ground Level (El.m)		88.45
Embankment (m2)		1.96
Excavation (m2)		15.84
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	8.94
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.74



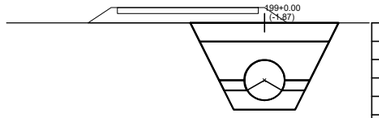
NO.		193+0.00
Design Level (El.m)		85.35
Original Ground Level (El.m)		87.61
Embankment (m2)		1.96
Excavation (m2)		11.61
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.70
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.36

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC2 (20/29)	JUNE, 2022		B-27-20

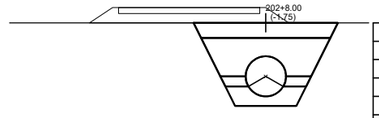
Cross Section of SC2 (21/29)

S=1:100

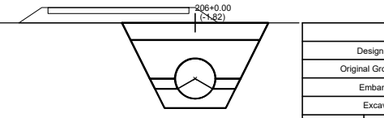
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



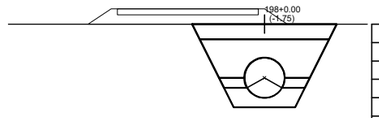
NO.		199+0.00
Design Level (El.m)		85.13
Original Ground Level (El.m)		87.00
Embankment (m2)		1.96
Excavation (m2)		9.67
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.76
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.17



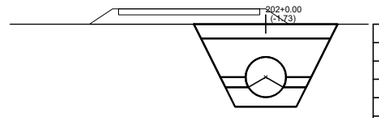
NO.		202+8.00
Design Level (El.m)		84.75
Original Ground Level (El.m)		86.50
Embankment (m2)		1.96
Excavation (m2)		9.09
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.10



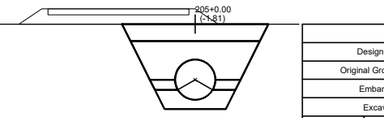
NO.		206+0.00
Design Level (El.m)		84.62
Original Ground Level (El.m)		86.43
Embankment (m2)		1.96
Excavation (m2)		9.42
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.51
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.14



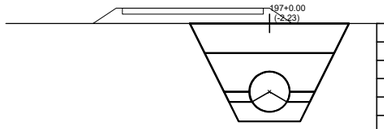
NO.		198+0.00
Design Level (El.m)		85.25
Original Ground Level (El.m)		87.00
Embankment (m2)		1.96
Excavation (m2)		9.09
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.10



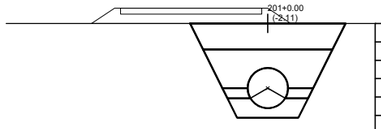
NO.		202+0.00
Design Level (El.m)		84.77
Original Ground Level (El.m)		86.50
Embankment (m2)		1.96
Excavation (m2)		9.00
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.10



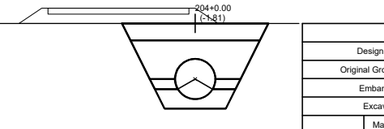
NO.		205+0.00
Design Level (El.m)		84.65
Original Ground Level (El.m)		86.46
Embankment (m2)		1.96
Excavation (m2)		9.39
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.49
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.14



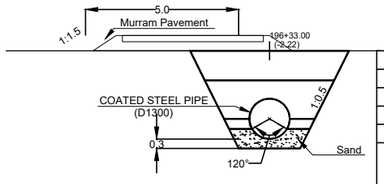
NO.		197+0.00
Design Level (El.m)		85.27
Original Ground Level (El.m)		87.50
Embankment (m2)		1.96
Excavation (m2)		11.46
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.56
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.34



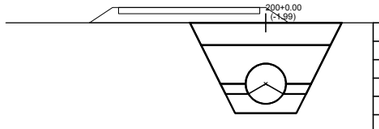
NO.		201+0.00
Design Level (El.m)		84.89
Original Ground Level (El.m)		87.00
Embankment (m2)		1.96
Excavation (m2)		10.86
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.95
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.29



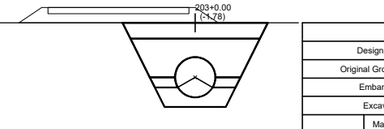
NO.		204+0.00
Design Level (El.m)		84.69
Original Ground Level (El.m)		86.50
Embankment (m2)		1.96
Excavation (m2)		9.40
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.49
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.14



NO.		196+33.00
Design Level (El.m)		85.28
Original Ground Level (El.m)		87.50
Embankment (m2)		1.96
Excavation (m2)		11.43
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.52
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.34



NO.		200+0.00
Design Level (El.m)		85.01
Original Ground Level (El.m)		87.00
Embankment (m2)		1.96
Excavation (m2)		10.25
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.35
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.23



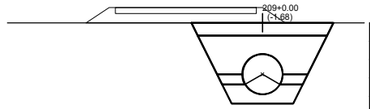
NO.		203+0.00
Design Level (El.m)		84.72
Original Ground Level (El.m)		86.50
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.12

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (21/29)	JUNE, 2022		B-27-21

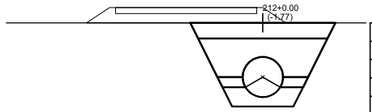
Cross Section of SC2 (22/29)

S=1:100

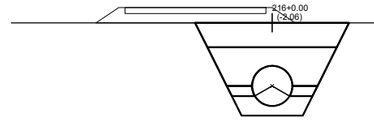
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



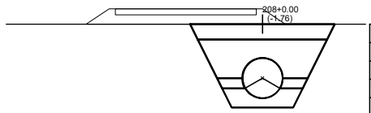
NO.		209+0.00
Design Level (El.m)		84.03
Original Ground Level (El.m)		85.70
Embankment (m2)		1.96
Excavation (m2)		8.76
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	1.85
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.07



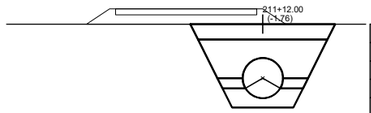
NO.		212+0.00
Design Level (El.m)		83.73
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.19
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.28
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.11



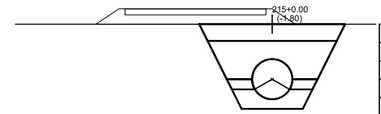
NO.		216+0.00
Design Level (El.m)		83.69
Original Ground Level (El.m)		85.75
Embankment (m2)		1.96
Excavation (m2)		10.61
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.70
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.26



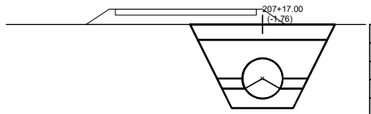
NO.		208+0.00
Design Level (El.m)		84.30
Original Ground Level (El.m)		86.06
Embankment (m2)		1.96
Excavation (m2)		9.15
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.24
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.11



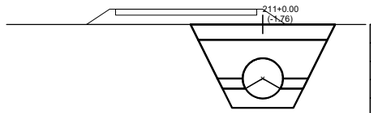
NO.		211+12.00
Design Level (El.m)		83.74
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.15
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.25
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.11



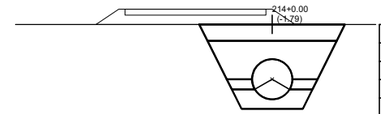
NO.		215+0.00
Design Level (El.m)		83.70
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



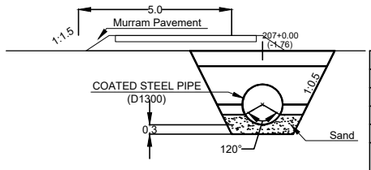
NO.		207+17.00
Design Level (El.m)		84.49
Original Ground Level (El.m)		86.25
Embankment (m2)		1.96
Excavation (m2)		9.16
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.25
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.11



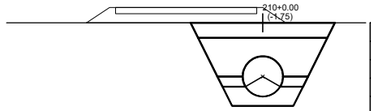
NO.		211+0.00
Design Level (El.m)		83.74
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.14
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.23
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.11



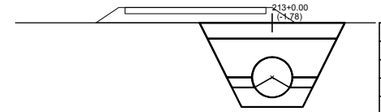
NO.		214+0.00
Design Level (El.m)		83.71
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.28
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.38
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



NO.		207+0.00
Design Level (El.m)		84.58
Original Ground Level (El.m)		86.34
Embankment (m2)		1.96
Excavation (m2)		9.12
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.11



NO.		210+0.00
Design Level (El.m)		83.75
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.09
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.10



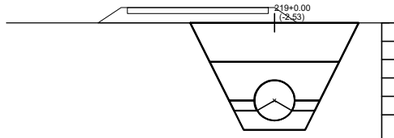
NO.		213+0.00
Design Level (El.m)		83.72
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.12

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (22/29)	JUNE, 2022		B-27-22

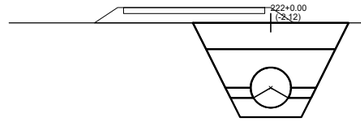
Cross Section of SC2 (23/29)

S=1:100

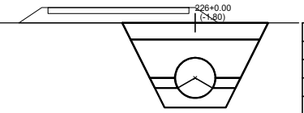
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



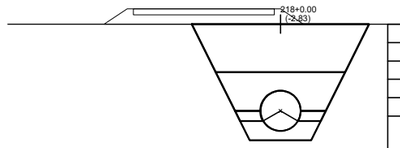
NO.		219+0.00
Design Level (El.m)		83.66
Original Ground Level (El.m)		86.19
Embankment (m2)		1.96
Excavation (m2)		13.08
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.17
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.50



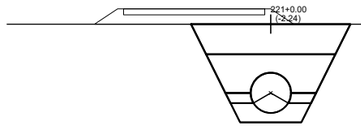
NO.		222+0.00
Design Level (El.m)		83.38
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		10.88
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.98
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.29



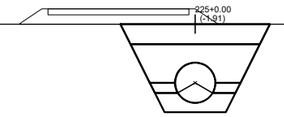
NO.		226+0.00
Design Level (El.m)		82.70
Original Ground Level (El.m)		84.50
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



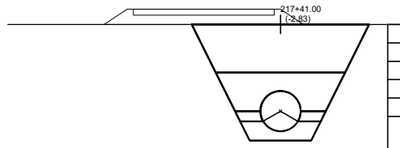
NO.		218+0.00
Design Level (El.m)		83.67
Original Ground Level (El.m)		86.50
Embankment (m2)		1.96
Excavation (m2)		14.76
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.86
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.64



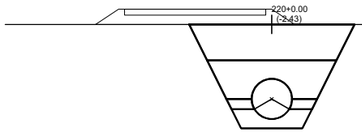
NO.		221+0.00
Design Level (El.m)		83.48
Original Ground Level (El.m)		85.72
Embankment (m2)		1.96
Excavation (m2)		11.53
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.63
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.35



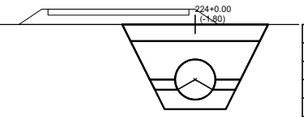
NO.		225+0.00
Design Level (El.m)		82.95
Original Ground Level (El.m)		84.86
Embankment (m2)		1.96
Excavation (m2)		9.88
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.97
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.19



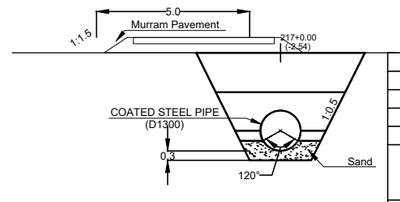
NO.		217+41.00
Design Level (El.m)		83.67
Original Ground Level (El.m)		86.50
Embankment (m2)		1.96
Excavation (m2)		14.75
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.85
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.64



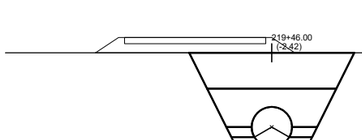
NO.		220+0.00
Design Level (El.m)		83.57
Original Ground Level (El.m)		86.00
Embankment (m2)		1.96
Excavation (m2)		12.54
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	5.63
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.45



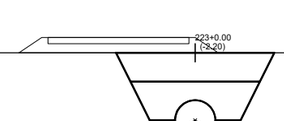
NO.		224+0.00
Design Level (El.m)		83.20
Original Ground Level (El.m)		85.00
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



NO.		217+0.00
Design Level (El.m)		83.68
Original Ground Level (El.m)		86.22
Embankment (m2)		1.96
Excavation (m2)		13.15
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.24
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.50



NO.		219+46.00
Design Level (El.m)		83.58
Original Ground Level (El.m)		86.00
Embankment (m2)		1.96
Excavation (m2)		12.50
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	5.59
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.44



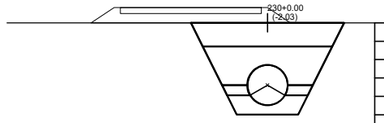
NO.		223+0.00
Design Level (El.m)		83.29
Original Ground Level (El.m)		85.50
Embankment (m2)		1.96
Excavation (m2)		11.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.43
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.33

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (23/29)	JUNE, 2022		B-27-23

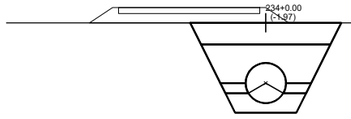
Cross Section of SC2 (24/29)

S=1:100

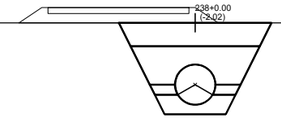
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



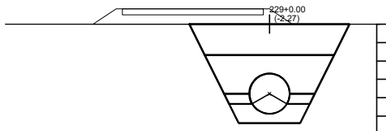
NO.		230+0.00
Design Level (El.m)		82.62
Original Ground Level (El.m)		84.65
Embankment (m2)		1.96
Excavation (m2)		10.48
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.57
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.25



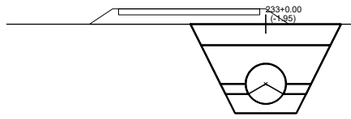
NO.		234+0.00
Design Level (El.m)		82.53
Original Ground Level (El.m)		84.50
Embankment (m2)		1.96
Excavation (m2)		10.14
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.24
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.21



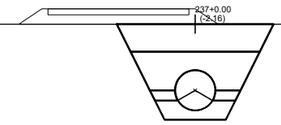
NO.		238+0.00
Design Level (El.m)		82.16
Original Ground Level (El.m)		84.18
Embankment (m2)		1.96
Excavation (m2)		10.40
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.50
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.24



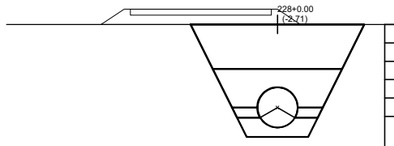
NO.		229+0.00
Design Level (El.m)		82.64
Original Ground Level (El.m)		84.91
Embankment (m2)		1.96
Excavation (m2)		11.67
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.77
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.36



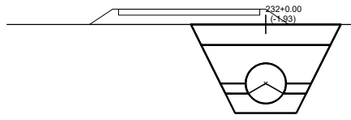
NO.		233+0.00
Design Level (El.m)		82.55
Original Ground Level (El.m)		84.50
Embankment (m2)		1.96
Excavation (m2)		10.04
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.14
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20



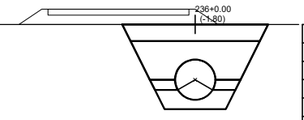
NO.		237+0.00
Design Level (El.m)		82.33
Original Ground Level (El.m)		84.48
Embankment (m2)		1.96
Excavation (m2)		11.10
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.20
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.31



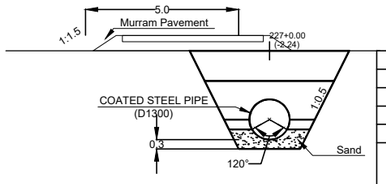
NO.		228+0.00
Design Level (El.m)		82.66
Original Ground Level (El.m)		85.37
Embankment (m2)		1.96
Excavation (m2)		14.06
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.16
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.58



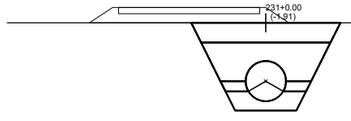
NO.		232+0.00
Design Level (El.m)		82.57
Original Ground Level (El.m)		84.50
Embankment (m2)		1.96
Excavation (m2)		9.94
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.03
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.19



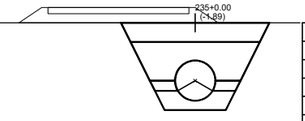
NO.		236+0.00
Design Level (El.m)		82.49
Original Ground Level (El.m)		84.29
Embankment (m2)		1.96
Excavation (m2)		9.35
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.44
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



NO.		227+0.00
Design Level (El.m)		82.68
Original Ground Level (El.m)		84.92
Embankment (m2)		1.96
Excavation (m2)		11.52
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.62
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.35



NO.		231+0.00
Design Level (El.m)		82.59
Original Ground Level (El.m)		84.50
Embankment (m2)		1.96
Excavation (m2)		9.83
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.18



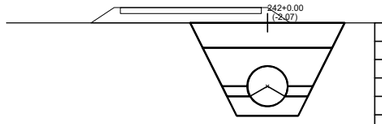
NO.		235+0.00
Design Level (El.m)		82.51
Original Ground Level (El.m)		84.40
Embankment (m2)		1.96
Excavation (m2)		9.76
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.85
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.17

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC2 (24/29)	JUNE, 2022		B-27-24

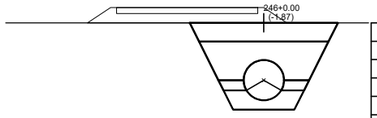
Cross Section of SC2 (25/29)

S=1:100

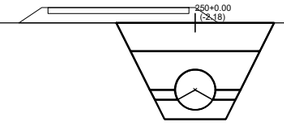
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



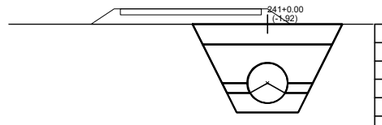
NO.		242+0.00
Design Level (El.m)		81.50
Original Ground Level (El.m)		83.58
Embankment (m2)		1.96
Excavation (m2)		10.66
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.75
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.27



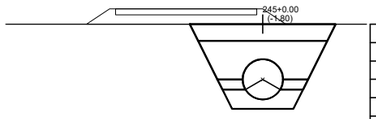
NO.		246+0.00
Design Level (El.m)		81.13
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		9.68
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.77
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.17



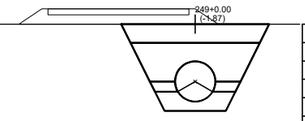
NO.		250+0.00
Design Level (El.m)		80.84
Original Ground Level (El.m)		83.03
Embankment (m2)		1.96
Excavation (m2)		11.22
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.32
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.32



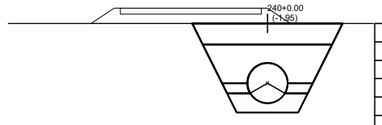
NO.		241+0.00
Design Level (El.m)		81.67
Original Ground Level (El.m)		83.59
Embankment (m2)		1.96
Excavation (m2)		9.90
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.00
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.19



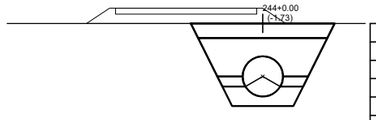
NO.		245+0.00
Design Level (El.m)		81.20
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		9.34
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.43
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



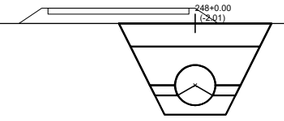
NO.		249+0.00
Design Level (El.m)		80.91
Original Ground Level (El.m)		82.79
Embankment (m2)		1.96
Excavation (m2)		9.67
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.77
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.17



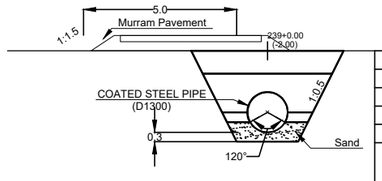
NO.		240+0.00
Design Level (El.m)		81.83
Original Ground Level (El.m)		83.78
Embankment (m2)		1.96
Excavation (m2)		10.03
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20



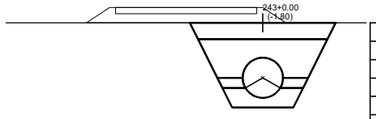
NO.		244+0.00
Design Level (El.m)		81.27
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		9.00
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.10



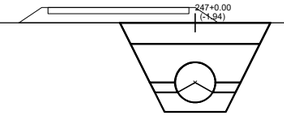
NO.		248+0.00
Design Level (El.m)		80.99
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		10.37
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.47
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.24



NO.		239+0.00
Design Level (El.m)		82.00
Original Ground Level (El.m)		84.00
Embankment (m2)		1.96
Excavation (m2)		10.32
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.41
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.23



NO.		243+0.00
Design Level (El.m)		81.34
Original Ground Level (El.m)		83.14
Embankment (m2)		1.96
Excavation (m2)		9.31
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.41
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



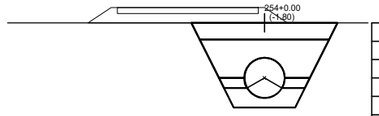
NO.		247+0.00
Design Level (El.m)		81.06
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		10.02
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.12
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (25/29)	JUNE, 2022		B-27-25

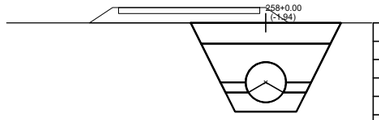
Cross Section of SC2 (26/29)

S=1:100

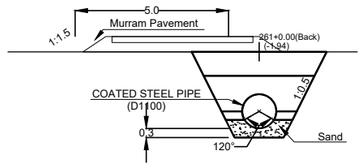
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



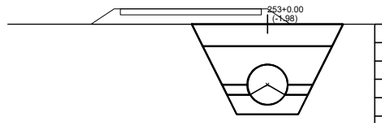
NO.		254+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.36
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



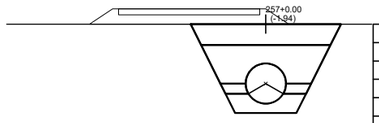
NO.		258+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		10.01
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20



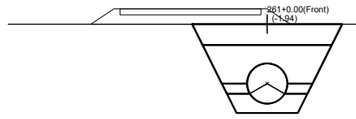
NO.		261+0.00(Back)
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		8.39
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.95



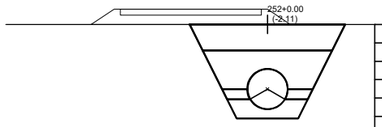
NO.		253+0.00
Design Level (El.m)		80.63
Original Ground Level (El.m)		82.61
Embankment (m2)		1.96
Excavation (m2)		10.19
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.28
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.22



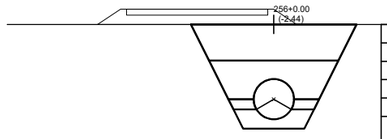
NO.		257+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		10.01
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20



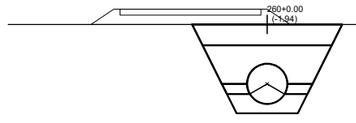
NO.		261+0.00(Front)
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		10.01
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20



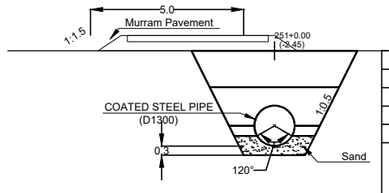
NO.		252+0.00
Design Level (El.m)		80.70
Original Ground Level (El.m)		82.81
Embankment (m2)		1.96
Excavation (m2)		10.85
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.95
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.29



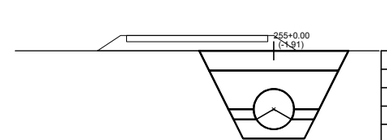
NO.		256+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		12.58
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	5.68
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.45



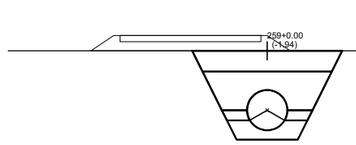
NO.		260+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		10.01
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20



NO.		251+0.00
Design Level (El.m)		80.77
Original Ground Level (El.m)		83.22
Embankment (m2)		1.96
Excavation (m2)		12.61
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	5.71
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.45



NO.		255+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.47
Embankment (m2)		1.96
Excavation (m2)		9.83
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.18



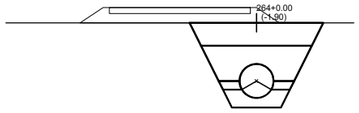
NO.		259+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		10.01
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.20

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (26/29)	JUNE, 2022		B-27-26

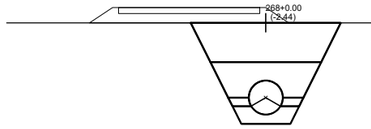
Cross Section of SC2 (27/29)

S=1:100

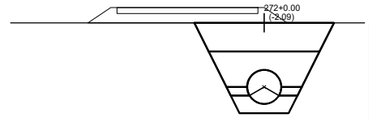
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



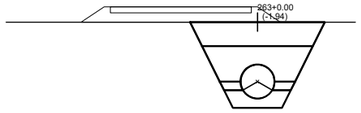
NO.		264+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.46
Embankment (m2)		1.96
Excavation (m2)		8.22
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.96
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.93



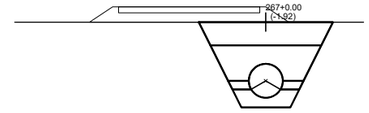
NO.		268+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		10.72
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	5.46
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.20



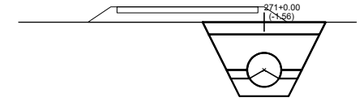
NO.		272+0.00
Design Level (El.m)		79.66
Original Ground Level (El.m)		81.75
Embankment (m2)		1.96
Excavation (m2)		9.08
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.82
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.03



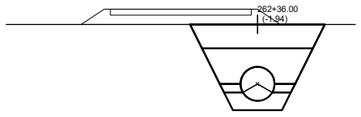
NO.		263+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		8.39
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.95



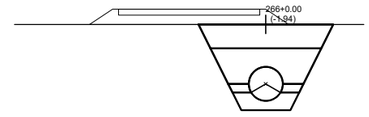
NO.		267+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.48
Embankment (m2)		1.96
Excavation (m2)		8.29
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.03
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.94



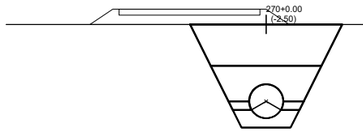
NO.		271+0.00
Design Level (El.m)		79.25
Original Ground Level (El.m)		80.81
Embankment (m2)		1.96
Excavation (m2)		6.79
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	1.53
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.76



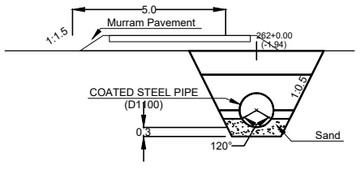
NO.		262+36.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		8.39
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.95



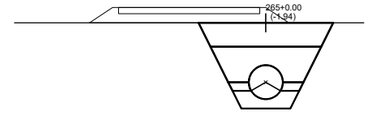
NO.		266+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		8.39
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.95



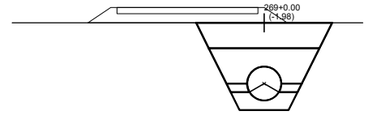
NO.		270+0.00
Design Level (El.m)		79.25
Original Ground Level (El.m)		81.75
Embankment (m2)		1.96
Excavation (m2)		11.04
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	5.78
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.23



NO.		262+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		8.39
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.95



NO.		265+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.50
Embankment (m2)		1.96
Excavation (m2)		8.39
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.95



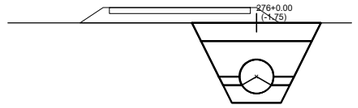
NO.		269+0.00
Design Level (El.m)		80.56
Original Ground Level (El.m)		82.55
Embankment (m2)		1.96
Excavation (m2)		8.59
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.97

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2 (27/29)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-27-27

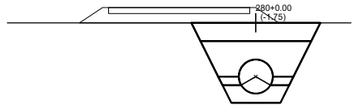
Cross Section of SC2 (28/29)

S=1:100

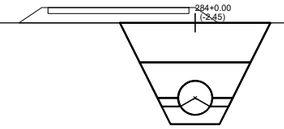
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



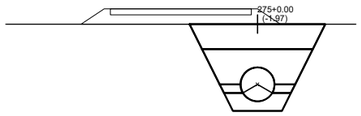
NO.		276+0.00
Design Level (El.m)		80.07
Original Ground Level (El.m)		81.82
Embankment (m2)		1.96
Excavation (m2)		7.58
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



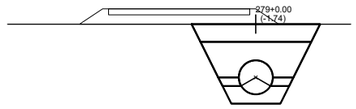
NO.		280+0.00
Design Level (El.m)		80.81
Original Ground Level (El.m)		82.56
Embankment (m2)		1.96
Excavation (m2)		7.59
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



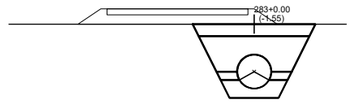
NO.		284+0.00
Design Level (El.m)		80.55
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		10.76
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	5.51
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.20



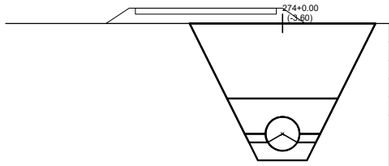
NO.		275+0.00
Design Level (El.m)		80.07
Original Ground Level (El.m)		82.04
Embankment (m2)		1.96
Excavation (m2)		8.52
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.26
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



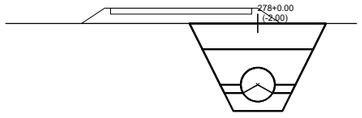
NO.		279+0.00
Design Level (El.m)		80.63
Original Ground Level (El.m)		82.36
Embankment (m2)		1.96
Excavation (m2)		7.52
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.26
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



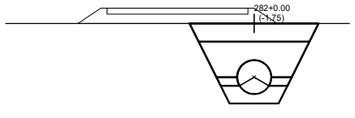
NO.		283+0.00
Design Level (El.m)		80.70
Original Ground Level (El.m)		82.25
Embankment (m2)		1.96
Excavation (m2)		6.74
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	1.48
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.75



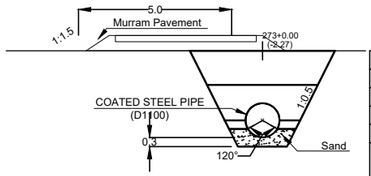
NO.		274+0.00
Design Level (El.m)		80.07
Original Ground Level (El.m)		83.67
Embankment (m2)		1.96
Excavation (m2)		17.09
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	11.83
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.78



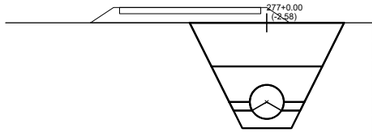
NO.		278+0.00
Design Level (El.m)		80.44
Original Ground Level (El.m)		82.44
Embankment (m2)		1.96
Excavation (m2)		8.63
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.38
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.98



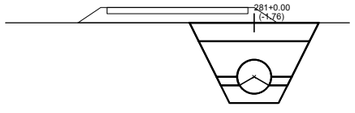
NO.		282+0.00
Design Level (El.m)		81.46
Original Ground Level (El.m)		83.21
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



NO.		273+0.00
Design Level (El.m)		80.07
Original Ground Level (El.m)		82.34
Embankment (m2)		1.96
Excavation (m2)		9.89
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	4.63
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.11



NO.		277+0.00
Design Level (El.m)		80.25
Original Ground Level (El.m)		82.84
Embankment (m2)		1.96
Excavation (m2)		11.43
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	6.17
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.27



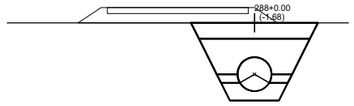
NO.		281+0.00
Design Level (El.m)		81.14
Original Ground Level (El.m)		82.90
Embankment (m2)		1.96
Excavation (m2)		7.62
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.36
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (28/29)	JUNE, 2022		B-27-28

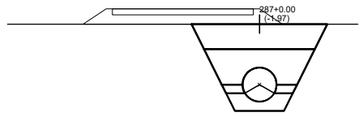
Cross Section of SC2 (29/29)

S=1:100

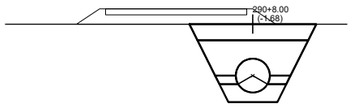
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



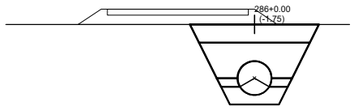
NO.		288+0.00
Design Level (El.m)		79.80
Original Ground Level (El.m)		81.48
Embankment (m2)		1.96
Excavation (m2)		7.27
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.01
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.82



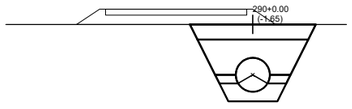
NO.		287+0.00
Design Level (El.m)		80.03
Original Ground Level (El.m)		82.00
Embankment (m2)		1.96
Excavation (m2)		8.54
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	3.28
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.97



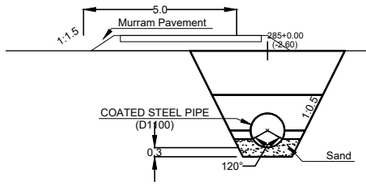
NO.		290+8.00
Design Level (El.m)		79.32
Original Ground Level (El.m)		81.00
Embankment (m2)		1.96
Excavation (m2)		7.29
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.03
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.82



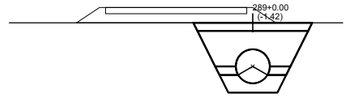
NO.		286+0.00
Design Level (El.m)		80.25
Original Ground Level (El.m)		82.00
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



NO.		290+0.00
Design Level (El.m)		79.35
Original Ground Level (El.m)		81.00
Embankment (m2)		1.96
Excavation (m2)		7.14
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	1.88
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.80



NO.		285+0.00
Design Level (El.m)		80.40
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		11.51
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	6.25
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.28



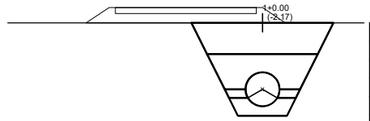
NO.		289+0.00
Design Level (El.m)		79.58
Original Ground Level (El.m)		81.00
Embankment (m2)		1.96
Excavation (m2)		6.25
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.03
	Backhoe+Roller(m2)	0.99
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.69

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2 (29/29)	JUNE, 2022		B-27-29

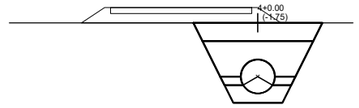
Cross Section of SC2-1 (1/6)

S=1:100

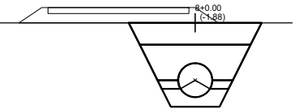
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



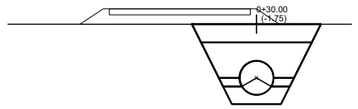
NO.		1+0.00
Design Level (El.m)		91.20
Original Ground Level (El.m)		93.38
Embankment (m2)		1.96
Excavation (m2)		9.43
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	4.18
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.06



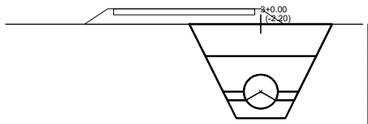
NO.		4+0.00
Design Level (El.m)		89.35
Original Ground Level (El.m)		91.10
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



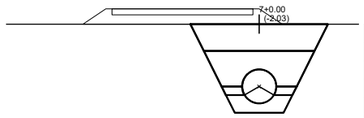
NO.		8+0.00
Design Level (El.m)		88.32
Original Ground Level (El.m)		90.19
Embankment (m2)		1.96
Excavation (m2)		8.10
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.85
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.91



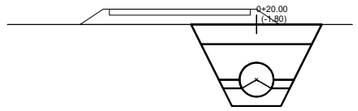
NO.		0+30.00
Design Level (El.m)		90.62
Original Ground Level (El.m)		92.37
Embankment (m2)		1.96
Excavation (m2)		7.58
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



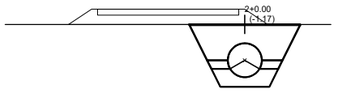
NO.		3+0.00
Design Level (El.m)		90.29
Original Ground Level (El.m)		92.49
Embankment (m2)		1.96
Excavation (m2)		9.58
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	4.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.08



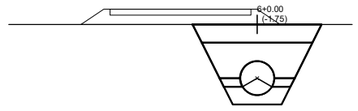
NO.		7+0.00
Design Level (El.m)		88.46
Original Ground Level (El.m)		90.50
Embankment (m2)		1.96
Excavation (m2)		8.80
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	3.55
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.99



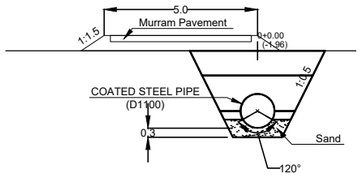
NO.		0+20.00
Design Level (El.m)		90.60
Original Ground Level (El.m)		92.40
Embankment (m2)		1.96
Excavation (m2)		7.79
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.54
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.88



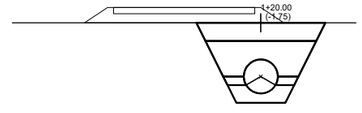
NO.		2+0.00
Design Level (El.m)		91.23
Original Ground Level (El.m)		92.40
Embankment (m2)		1.96
Excavation (m2)		5.30
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	0.05
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.56



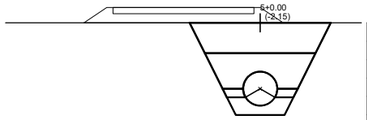
NO.		6+0.00
Design Level (El.m)		88.61
Original Ground Level (El.m)		90.36
Embankment (m2)		1.96
Excavation (m2)		7.58
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



NO.		0+0.00
Design Level (El.m)		90.55
Original Ground Level (El.m)		92.51
Embankment (m2)		1.96
Excavation (m2)		8.48
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	3.23
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



NO.		1+20.00
Design Level (El.m)		91.79
Original Ground Level (El.m)		93.54
Embankment (m2)		1.96
Excavation (m2)		7.58
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



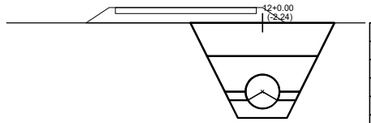
NO.		5+0.00
Design Level (El.m)		88.98
Original Ground Level (El.m)		91.13
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	4.08
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.05

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2-1 (1/6)	JUNE, 2022		B-28-01

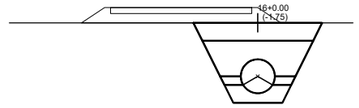
Cross Section of SC2-1 (2/6)

S=1:100

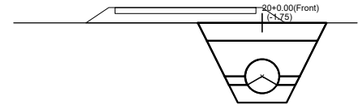
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



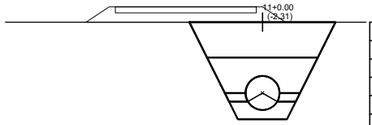
NO.		12+0.00
Design Level (El.m)		87.89
Original Ground Level (El.m)		90.13
Embankment (m2)		1.96
Excavation (m2)		9.76
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	4.51
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.10



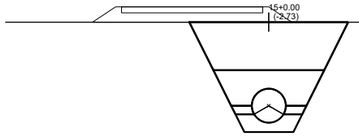
NO.		16+0.00
Design Level (El.m)		87.96
Original Ground Level (El.m)		89.71
Embankment (m2)		1.96
Excavation (m2)		7.55
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



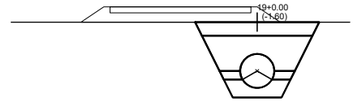
NO.		20+0.00(Front)
Design Level (El.m)		86.42
Original Ground Level (El.m)		88.17
Embankment (m2)		1.96
Excavation (m2)		7.55
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.30
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



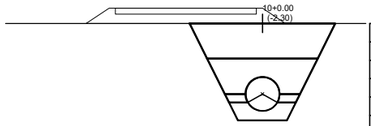
NO.		11+0.00
Design Level (El.m)		87.98
Original Ground Level (El.m)		90.29
Embankment (m2)		1.96
Excavation (m2)		10.09
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	4.84
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.13



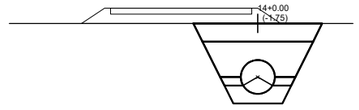
NO.		15+0.00
Design Level (El.m)		85.26
Original Ground Level (El.m)		87.99
Embankment (m2)		1.96
Excavation (m2)		12.15
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	6.90
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.34



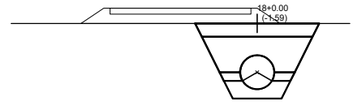
NO.		19+0.00
Design Level (El.m)		86.81
Original Ground Level (El.m)		88.40
Embankment (m2)		1.96
Excavation (m2)		6.93
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	1.68
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.78



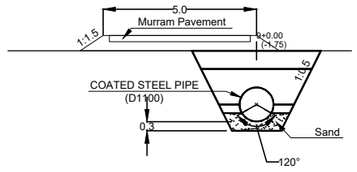
NO.		10+0.00
Design Level (El.m)		88.08
Original Ground Level (El.m)		90.38
Embankment (m2)		1.96
Excavation (m2)		10.03
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	4.78
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.13



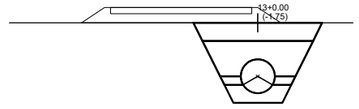
NO.		14+0.00
Design Level (El.m)		85.26
Original Ground Level (El.m)		87.01
Embankment (m2)		1.96
Excavation (m2)		7.56
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



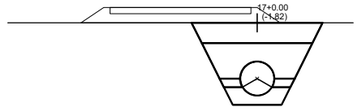
NO.		18+0.00
Design Level (El.m)		87.19
Original Ground Level (El.m)		88.78
Embankment (m2)		1.96
Excavation (m2)		6.92
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	1.67
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.77



NO.		9+0.00
Design Level (El.m)		88.17
Original Ground Level (El.m)		89.92
Embankment (m2)		1.96
Excavation (m2)		7.58
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



NO.		13+0.00
Design Level (El.m)		87.79
Original Ground Level (El.m)		89.54
Embankment (m2)		1.96
Excavation (m2)		7.55
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



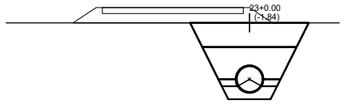
NO.		17+0.00
Design Level (El.m)		87.58
Original Ground Level (El.m)		89.40
Embankment (m2)		1.96
Excavation (m2)		7.86
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.02
	Backhoe+Roller(m2)	2.61
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.89

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2-1 (2/6)	JUNE, 2022		B-28-02

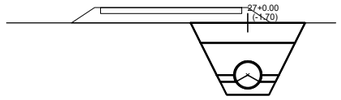
Cross Section of SC2-1 (3/6)

S=1:100

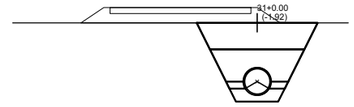
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



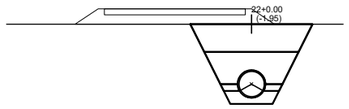
NO.		23+0.00
Design Level (El.m)		85.56
Original Ground Level (El.m)		87.40
Embankment (m2)		1.96
Excavation (m2)		6.54
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.75
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.69



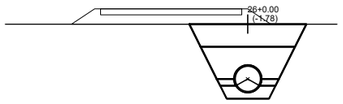
NO.		27+0.00
Design Level (El.m)		85.10
Original Ground Level (El.m)		86.80
Embankment (m2)		1.96
Excavation (m2)		6.00
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.21
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.62



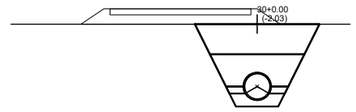
NO.		31+0.00
Design Level (El.m)		84.64
Original Ground Level (El.m)		86.56
Embankment (m2)		1.96
Excavation (m2)		6.83
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.04
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.72



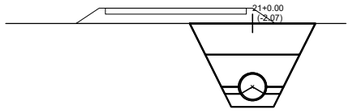
NO.		22+0.00
Design Level (El.m)		85.85
Original Ground Level (El.m)		87.80
Embankment (m2)		1.96
Excavation (m2)		6.98
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.19
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.74



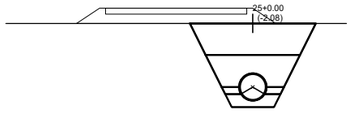
NO.		26+0.00
Design Level (El.m)		85.22
Original Ground Level (El.m)		87.00
Embankment (m2)		1.96
Excavation (m2)		6.32
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.53
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.66



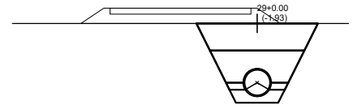
NO.		30+0.00
Design Level (El.m)		84.75
Original Ground Level (El.m)		86.79
Embankment (m2)		1.96
Excavation (m2)		7.30
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.51
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.78



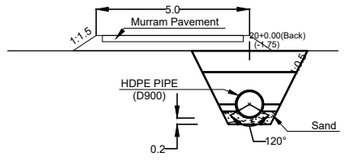
NO.		21+0.00
Design Level (El.m)		86.13
Original Ground Level (El.m)		88.20
Embankment (m2)		1.96
Excavation (m2)		7.44
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.65
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.80



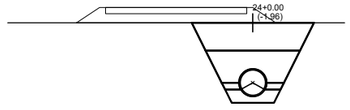
NO.		25+0.00
Design Level (El.m)		85.33
Original Ground Level (El.m)		87.41
Embankment (m2)		1.96
Excavation (m2)		7.47
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.68
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.80



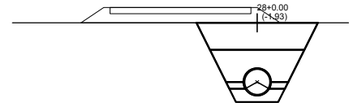
NO.		29+0.00
Design Level (El.m)		84.87
Original Ground Level (El.m)		86.80
Embankment (m2)		1.96
Excavation (m2)		6.89
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.73



NO.		20+0.00(Back)
Design Level (El.m)		86.42
Original Ground Level (El.m)		88.17
Embankment (m2)		1.96
Excavation (m2)		6.18
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.39
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.64



NO.		24+0.00
Design Level (El.m)		85.44
Original Ground Level (El.m)		87.40
Embankment (m2)		1.96
Excavation (m2)		6.99
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.20
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.74



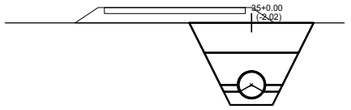
NO.		28+0.00
Design Level (El.m)		84.98
Original Ground Level (El.m)		86.92
Embankment (m2)		1.96
Excavation (m2)		6.89
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.10
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.73

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2-1 (3/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-28-03

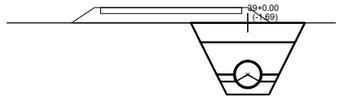
Cross Section of SC2-1 (4/6)

S=1:100

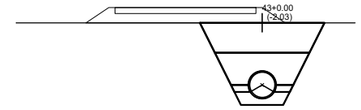
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



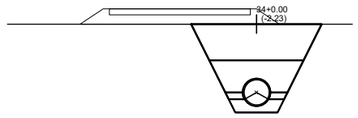
NO.		35+0.00
Design Level (El.m)		84.18
Original Ground Level (El.m)		86.20
Embankment (m2)		1.96
Excavation (m2)		7.27
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.48
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.78



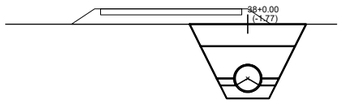
NO.		39+0.00
Design Level (El.m)		83.71
Original Ground Level (El.m)		85.40
Embankment (m2)		1.96
Excavation (m2)		5.96
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.17
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.61



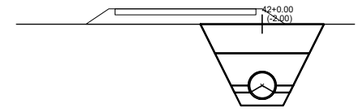
NO.		43+0.00
Design Level (El.m)		83.25
Original Ground Level (El.m)		85.27
Embankment (m2)		1.96
Excavation (m2)		7.28
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.49
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.78



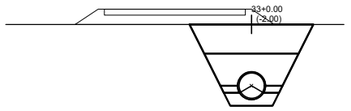
NO.		34+0.00
Design Level (El.m)		84.29
Original Ground Level (El.m)		86.52
Embankment (m2)		1.96
Excavation (m2)		8.11
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	4.32
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.88



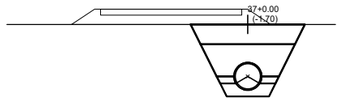
NO.		38+0.00
Design Level (El.m)		83.83
Original Ground Level (El.m)		85.60
Embankment (m2)		1.96
Excavation (m2)		6.28
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.49
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.65



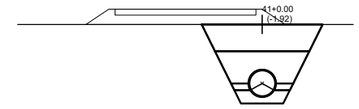
NO.		42+0.00
Design Level (El.m)		83.36
Original Ground Level (El.m)		85.36
Embankment (m2)		1.96
Excavation (m2)		7.18
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.38
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.77



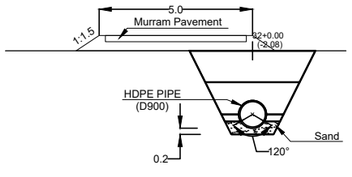
NO.		33+0.00
Design Level (El.m)		84.41
Original Ground Level (El.m)		86.41
Embankment (m2)		1.96
Excavation (m2)		7.18
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.39
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.77



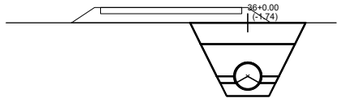
NO.		37+0.00
Design Level (El.m)		83.94
Original Ground Level (El.m)		85.64
Embankment (m2)		1.96
Excavation (m2)		5.99
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.20
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.61



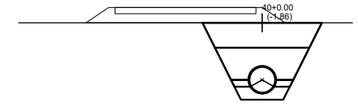
NO.		41+0.00
Design Level (El.m)		83.48
Original Ground Level (El.m)		85.40
Embankment (m2)		1.96
Excavation (m2)		6.86
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.06
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.73



NO.		32+0.00
Design Level (El.m)		84.52
Original Ground Level (El.m)		86.60
Embankment (m2)		1.96
Excavation (m2)		7.48
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.69
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.80



NO.		36+0.00
Design Level (El.m)		84.06
Original Ground Level (El.m)		85.80
Embankment (m2)		1.96
Excavation (m2)		6.16
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.37
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.64



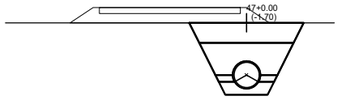
NO.		40+0.00
Design Level (El.m)		83.59
Original Ground Level (El.m)		85.45
Embankment (m2)		1.96
Excavation (m2)		6.62
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.82
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.70

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2-1 (4/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-28-04

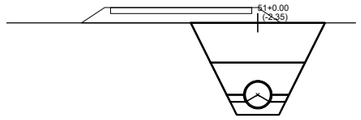
Cross Section of SC2-1 (5/6)

S=1:100

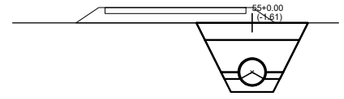
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



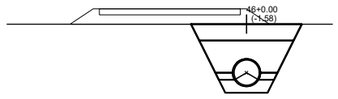
NO.		47+0.00
Design Level (El.m)		83.70
Original Ground Level (El.m)		85.40
Embankment (m2)		1.96
Excavation (m2)		6.00
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.21
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.62



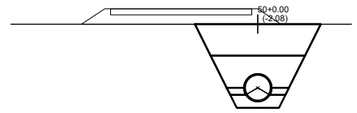
NO.		51+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		87.40
Embankment (m2)		1.96
Excavation (m2)		8.64
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	4.85
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.94



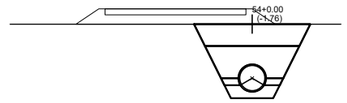
NO.		55+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		86.66
Embankment (m2)		1.96
Excavation (m2)		5.66
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	1.87
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.57



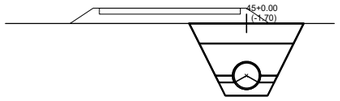
NO.		46+0.00
Design Level (El.m)		83.42
Original Ground Level (El.m)		85.00
Embankment (m2)		1.96
Excavation (m2)		5.58
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.56



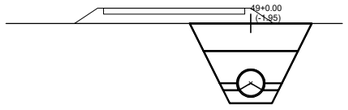
NO.		50+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		87.13
Embankment (m2)		1.96
Excavation (m2)		7.49
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.70
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.80



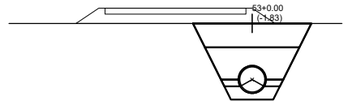
NO.		54+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		86.81
Embankment (m2)		1.96
Excavation (m2)		6.24
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.45
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.65



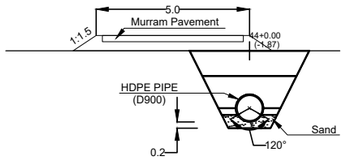
NO.		45+0.00
Design Level (El.m)		83.13
Original Ground Level (El.m)		84.83
Embankment (m2)		1.96
Excavation (m2)		6.01
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.62



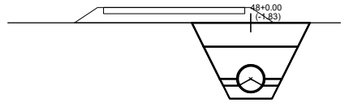
NO.		49+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		87.00
Embankment (m2)		1.96
Excavation (m2)		6.97
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.18
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.74



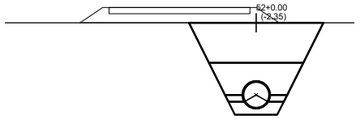
NO.		53+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		86.88
Embankment (m2)		1.96
Excavation (m2)		6.49
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.70
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.68



NO.		44+0.00
Design Level (El.m)		83.13
Original Ground Level (El.m)		85.00
Embankment (m2)		1.96
Excavation (m2)		6.65
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.86
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.70



NO.		48+0.00
Design Level (El.m)		84.38
Original Ground Level (El.m)		86.20
Embankment (m2)		1.96
Excavation (m2)		6.48
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.69
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.68



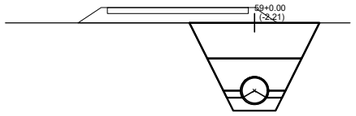
NO.		52+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		87.40
Embankment (m2)		1.96
Excavation (m2)		8.64
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	4.85
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.94

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC2-1 (5/6)	JUNE, 2022		B-28-05

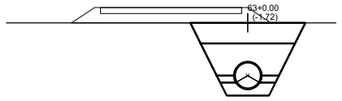
Cross Section of SC2-1 (6/6)

S=1:100

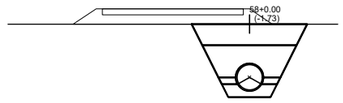
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



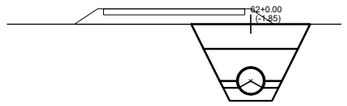
NO.		59+0.00
Design Level (El.m)		85.97
Original Ground Level (El.m)		88.19
Embankment (m2)		1.96
Excavation (m2)		8.05
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	4.26
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.87



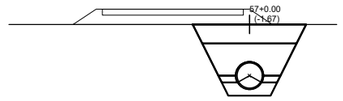
NO.		63+0.00
Design Level (El.m)		87.21
Original Ground Level (El.m)		88.93
Embankment (m2)		1.96
Excavation (m2)		6.09
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.30
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.63



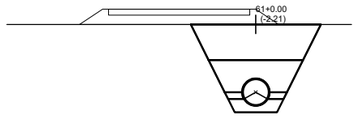
NO.		58+0.00
Design Level (El.m)		85.67
Original Ground Level (El.m)		87.40
Embankment (m2)		1.96
Excavation (m2)		6.13
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.34
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.63



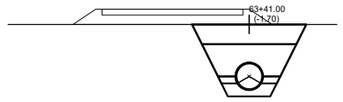
NO.		62+0.00
Design Level (El.m)		86.90
Original Ground Level (El.m)		88.75
Embankment (m2)		1.96
Excavation (m2)		6.58
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.79
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.69



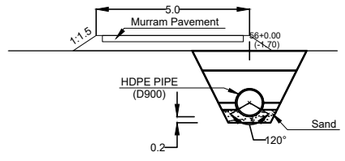
NO.		57+0.00
Design Level (El.m)		85.36
Original Ground Level (El.m)		87.03
Embankment (m2)		1.96
Excavation (m2)		5.88
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.09
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.60



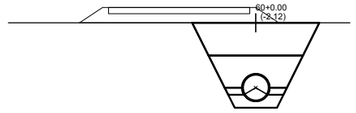
NO.		61+0.00
Design Level (El.m)		86.59
Original Ground Level (El.m)		88.80
Embankment (m2)		1.96
Excavation (m2)		8.03
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	4.24
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.87



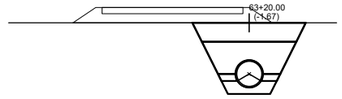
NO.		63+41.00
Design Level (El.m)		87.46
Original Ground Level (El.m)		89.16
Embankment (m2)		1.96
Excavation (m2)		5.99
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.20
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.61



NO.		56+0.00
Design Level (El.m)		85.05
Original Ground Level (El.m)		86.75
Embankment (m2)		1.96
Excavation (m2)		5.99
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.20
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.61



NO.		60+0.00
Design Level (El.m)		86.28
Original Ground Level (El.m)		88.40
Embankment (m2)		1.96
Excavation (m2)		7.65
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	3.86
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.82



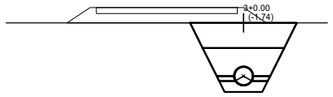
NO.		63+20.00
Design Level (El.m)		87.33
Original Ground Level (El.m)		89.00
Embankment (m2)		1.96
Excavation (m2)		5.89
Back fill	Manpower+Compactor(m2)	0.24
	Backhoe+Compactor(m2)	2.37
	Backhoe+Roller(m2)	2.10
Base Sand (m2)		0.55
Woodcutting & Roots Removal (m)		7.60

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC2-1 (6/6)	JUNE, 2022		B-28-06

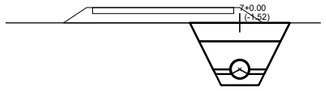
Cross Section of SC2-2 (1/1)

S=1:100

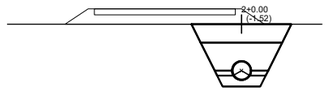
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



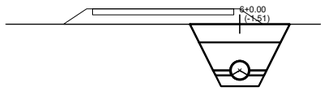
NO.		3+0.00
Design Level (El.m)		81.76
Original Ground Level (El.m)		83.50
Embankment (m2)		1.96
Excavation (m2)		5.32
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.53
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.49



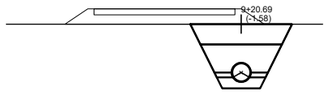
NO.		7+0.00
Design Level (El.m)		81.42
Original Ground Level (El.m)		82.94
Embankment (m2)		1.96
Excavation (m2)		4.56
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.78
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



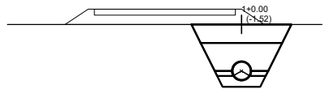
NO.		2+0.00
Design Level (El.m)		81.86
Original Ground Level (El.m)		83.38
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



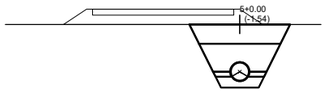
NO.		6+0.00
Design Level (El.m)		81.46
Original Ground Level (El.m)		82.97
Embankment (m2)		1.96
Excavation (m2)		4.54
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.76
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



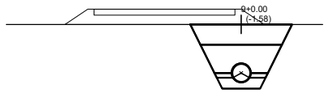
NO.		9+20.69
Design Level (El.m)		81.42
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		4.77
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.99
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.41



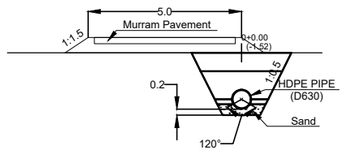
NO.		1+0.00
Design Level (El.m)		82.48
Original Ground Level (El.m)		84.00
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



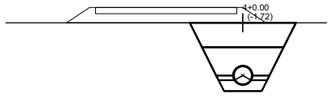
NO.		5+0.00
Design Level (El.m)		81.56
Original Ground Level (El.m)		83.10
Embankment (m2)		1.96
Excavation (m2)		4.65
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.87
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.39



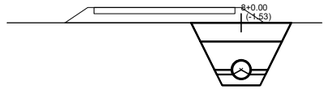
NO.		9+0.00
Design Level (El.m)		81.42
Original Ground Level (El.m)		83.00
Embankment (m2)		1.96
Excavation (m2)		4.77
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.99
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.41



NO.		0+0.00
Design Level (El.m)		82.48
Original Ground Level (El.m)		84.00
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



NO.		4+0.00
Design Level (El.m)		81.66
Original Ground Level (El.m)		83.38
Embankment (m2)		1.96
Excavation (m2)		5.23
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.45
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.48



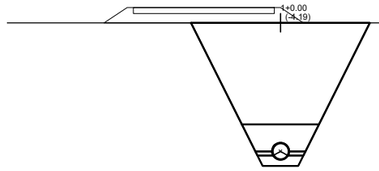
NO.		8+0.00
Design Level (El.m)		81.42
Original Ground Level (El.m)		82.95
Embankment (m2)		1.96
Excavation (m2)		4.60
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.82
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.39

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC2-2 (1/1)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-29-01

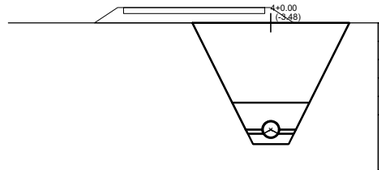
Cross Section of SC3 (1/3)

S=1:100

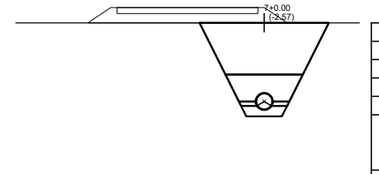
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



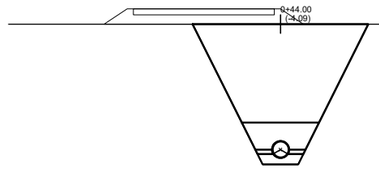
NO.		1+0.00
Design Level (El.m)		129.61
Original Ground Level (El.m)		133.80
Embankment (m2)		1.96
Excavation (m2)		16.32
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	13.82
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.67



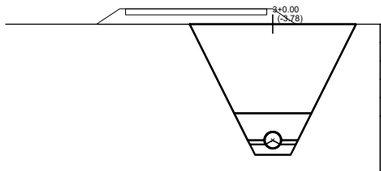
NO.		4+0.00
Design Level (El.m)		129.32
Original Ground Level (El.m)		132.80
Embankment (m2)		1.96
Excavation (m2)		12.43
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	9.93
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.31



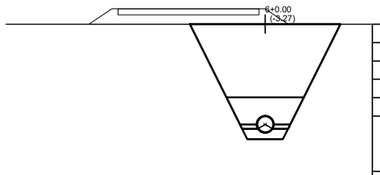
NO.		7+0.00
Design Level (El.m)		129.03
Original Ground Level (El.m)		131.60
Embankment (m2)		1.96
Excavation (m2)		8.19
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.69
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.86



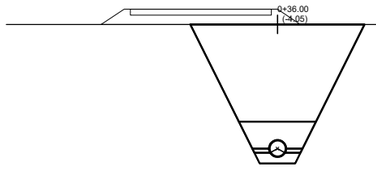
NO.		0+44.00
Design Level (El.m)		129.69
Original Ground Level (El.m)		133.78
Embankment (m2)		1.96
Excavation (m2)		15.76
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	13.26
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.62



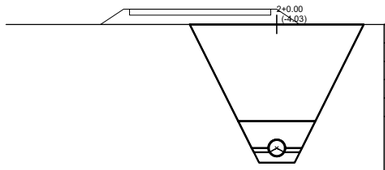
NO.		3+0.00
Design Level (El.m)		129.42
Original Ground Level (El.m)		133.20
Embankment (m2)		1.96
Excavation (m2)		14.03
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	11.53
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.46



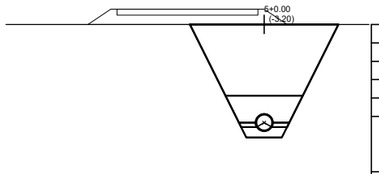
NO.		6+0.00
Design Level (El.m)		129.13
Original Ground Level (El.m)		132.40
Embankment (m2)		1.96
Excavation (m2)		11.40
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	8.90
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.21



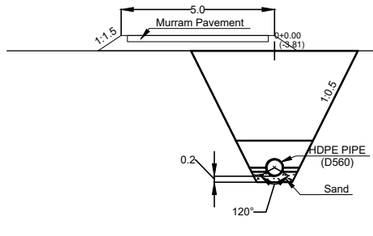
NO.		0+36.00
Design Level (El.m)		129.79
Original Ground Level (El.m)		133.83
Embankment (m2)		1.96
Excavation (m2)		15.50
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	13.00
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.59



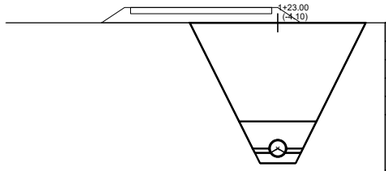
NO.		2+0.00
Design Level (El.m)		129.51
Original Ground Level (El.m)		133.54
Embankment (m2)		1.96
Excavation (m2)		15.40
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	12.90
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.58



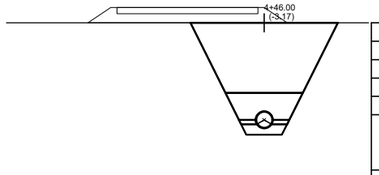
NO.		5+0.00
Design Level (El.m)		129.22
Original Ground Level (El.m)		132.43
Embankment (m2)		1.96
Excavation (m2)		11.06
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	8.56
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.17



NO.		0+0.00
Design Level (El.m)		130.24
Original Ground Level (El.m)		134.05
Embankment (m2)		1.96
Excavation (m2)		14.16
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	11.66
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.47



NO.		1+23.00
Design Level (El.m)		129.57
Original Ground Level (El.m)		133.66
Embankment (m2)		1.96
Excavation (m2)		15.80
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	13.30
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.62



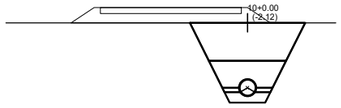
NO.		4+46.00
Design Level (El.m)		129.23
Original Ground Level (El.m)		132.40
Embankment (m2)		1.96
Excavation (m2)		10.89
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	8.39
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.15

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC3 (1/3)	JUNE, 2022		B-30-01

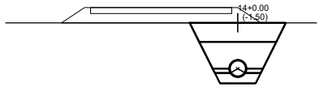
Cross Section of SC3 (2/3)

S=1:100

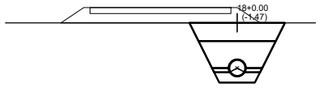
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



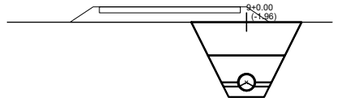
NO.		10+0.00
Design Level (El.m)		128.74
Original Ground Level (El.m)		130.86
Embankment (m2)		1.96
Excavation (m2)		6.40
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.89
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.63



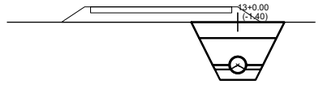
NO.		14+0.00
Design Level (El.m)		127.48
Original Ground Level (El.m)		128.98
Embankment (m2)		1.96
Excavation (m2)		4.24
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.74
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.32



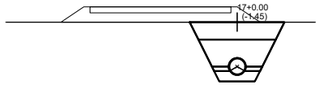
NO.		18+0.00
Design Level (El.m)		126.13
Original Ground Level (El.m)		127.60
Embankment (m2)		1.96
Excavation (m2)		4.17
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.67
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



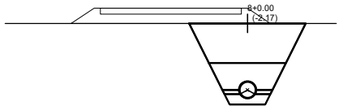
NO.		9+0.00
Design Level (El.m)		128.84
Original Ground Level (El.m)		130.80
Embankment (m2)		1.96
Excavation (m2)		5.82
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.32
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.55



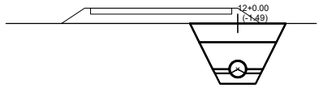
NO.		13+0.00
Design Level (El.m)		127.80
Original Ground Level (El.m)		129.20
Embankment (m2)		1.96
Excavation (m2)		3.95
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.45
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.27



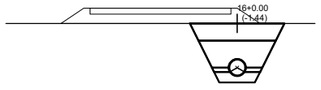
NO.		17+0.00
Design Level (El.m)		126.35
Original Ground Level (El.m)		127.80
Embankment (m2)		1.96
Excavation (m2)		4.10
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.60
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.29



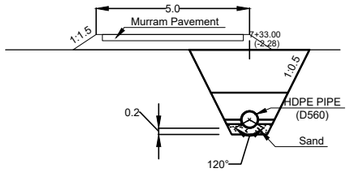
NO.		8+0.00
Design Level (El.m)		128.93
Original Ground Level (El.m)		131.10
Embankment (m2)		1.96
Excavation (m2)		6.57
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.07
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.65



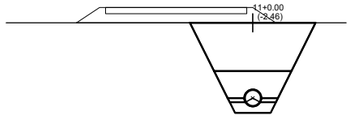
NO.		12+0.00
Design Level (El.m)		128.11
Original Ground Level (El.m)		129.60
Embankment (m2)		1.96
Excavation (m2)		4.22
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.72
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



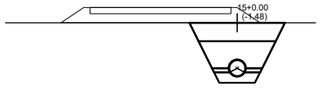
NO.		16+0.00
Design Level (El.m)		126.76
Original Ground Level (El.m)		128.20
Embankment (m2)		1.96
Excavation (m2)		4.07
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.57
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.29



NO.		7+33.00
Design Level (El.m)		128.97
Original Ground Level (El.m)		131.25
Embankment (m2)		1.96
Excavation (m2)		7.01
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.50
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.71



NO.		11+0.00
Design Level (El.m)		128.43
Original Ground Level (El.m)		130.88
Embankment (m2)		1.96
Excavation (m2)		7.71
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.21
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.80



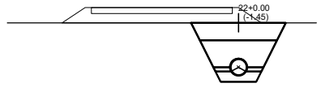
NO.		15+0.00
Design Level (El.m)		127.17
Original Ground Level (El.m)		128.65
Embankment (m2)		1.96
Excavation (m2)		4.19
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.69
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC3 (2/3)	JUNE, 2022		B-30-02

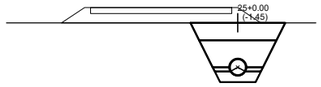
Cross Section of SC3 (3/3)

S=1:100

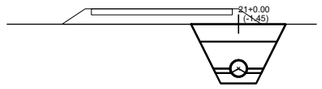
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



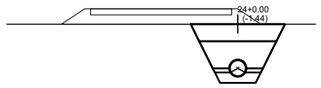
NO.		22+0.00
Design Level (El.m)		125.02
Original Ground Level (El.m)		126.47
Embankment (m2)		1.96
Excavation (m2)		4.09
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.59
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.29



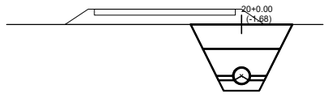
NO.		25+0.00
Design Level (El.m)		123.25
Original Ground Level (El.m)		124.70
Embankment (m2)		1.96
Excavation (m2)		4.10
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.60
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.29



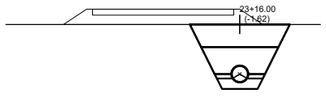
NO.		21+0.00
Design Level (El.m)		125.35
Original Ground Level (El.m)		126.80
Embankment (m2)		1.96
Excavation (m2)		4.10
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.60
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.29



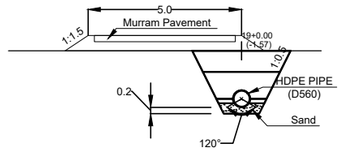
NO.		24+0.00
Design Level (El.m)		124.04
Original Ground Level (El.m)		125.48
Embankment (m2)		1.96
Excavation (m2)		4.06
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.56
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.29



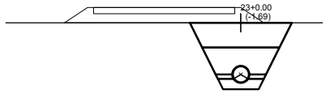
NO.		20+0.00
Design Level (El.m)		125.68
Original Ground Level (El.m)		127.36
Embankment (m2)		1.96
Excavation (m2)		4.84
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.41



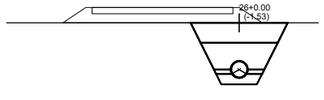
NO.		23+16.00
Design Level (El.m)		124.58
Original Ground Level (El.m)		126.20
Embankment (m2)		1.96
Excavation (m2)		4.64
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.14
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.38



NO.		19+0.00
Design Level (El.m)		125.90
Original Ground Level (El.m)		127.47
Embankment (m2)		1.96
Excavation (m2)		4.47
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.97
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.35



NO.		23+0.00
Design Level (El.m)		124.69
Original Ground Level (El.m)		126.37
Embankment (m2)		1.96
Excavation (m2)		4.86
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.36
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.41



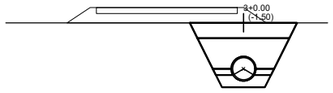
NO.		26+0.00
Design Level (El.m)		122.56
Original Ground Level (El.m)		124.09
Embankment (m2)		1.96
Excavation (m2)		4.35
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.84
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.33

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC3 (3/3)	JUNE, 2022		B-30-03

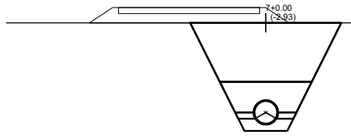
Cross Section of SC4 (1/2)

S=1:100

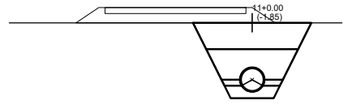
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



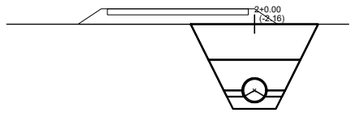
NO.		3+0.00
Design Level (El.m)		122.04
Original Ground Level (El.m)		123.54
Embankment (m2)		1.96
Excavation (m2)		5.14
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.63
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



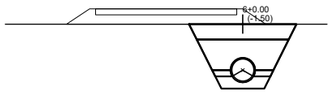
NO.		7+0.00
Design Level (El.m)		119.60
Original Ground Level (El.m)		122.53
Embankment (m2)		1.96
Excavation (m2)		11.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	7.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.21



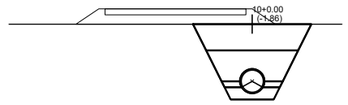
NO.		11+0.00
Design Level (El.m)		116.65
Original Ground Level (El.m)		118.50
Embankment (m2)		1.96
Excavation (m2)		6.45
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



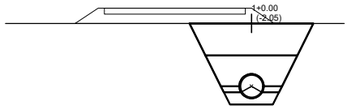
NO.		2+0.00
Design Level (El.m)		123.39
Original Ground Level (El.m)		125.55
Embankment (m2)		1.96
Excavation (m2)		7.68
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.16
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.83



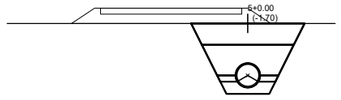
NO.		6+0.00
Design Level (El.m)		120.36
Original Ground Level (El.m)		121.86
Embankment (m2)		1.96
Excavation (m2)		5.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



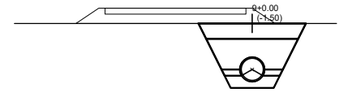
NO.		10+0.00
Design Level (El.m)		117.36
Original Ground Level (El.m)		119.22
Embankment (m2)		1.96
Excavation (m2)		6.47
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.95
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



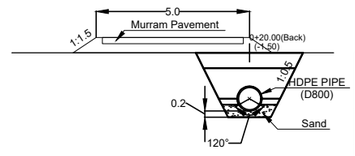
NO.		1+0.00
Design Level (El.m)		124.73
Original Ground Level (El.m)		126.78
Embankment (m2)		1.96
Excavation (m2)		7.20
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.68
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.77



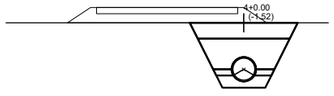
NO.		5+0.00
Design Level (El.m)		120.92
Original Ground Level (El.m)		122.62
Embankment (m2)		1.96
Excavation (m2)		5.85
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.60



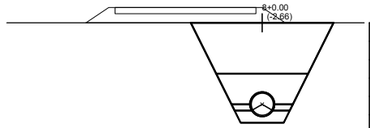
NO.		9+0.00
Design Level (El.m)		118.08
Original Ground Level (El.m)		119.58
Embankment (m2)		1.96
Excavation (m2)		5.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



NO.		0+20.00(Back)
Design Level (El.m)		125.54
Original Ground Level (El.m)		127.04
Embankment (m2)		1.96
Excavation (m2)		5.13
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.61
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



NO.		4+0.00
Design Level (El.m)		121.48
Original Ground Level (El.m)		123.00
Embankment (m2)		1.96
Excavation (m2)		5.22
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.70
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51



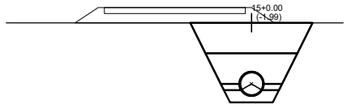
NO.		8+0.00
Design Level (El.m)		118.84
Original Ground Level (El.m)		121.50
Embankment (m2)		1.96
Excavation (m2)		9.88
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.36
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.08

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC4 (1/2)	JUNE, 2022		B-31-01

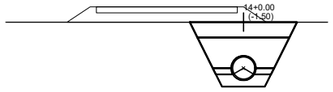
Cross Section of SC4 (2/2)

S=1:100

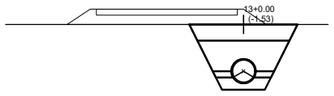
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



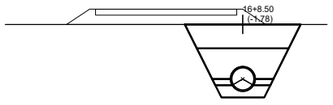
NO.		15+0.00
Design Level (El.m)		113.78
Original Ground Level (El.m)		115.77
Embankment (m2)		1.96
Excavation (m2)		6.99
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.47
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.75



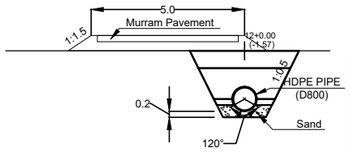
NO.		14+0.00
Design Level (El.m)		114.49
Original Ground Level (El.m)		116.00
Embankment (m2)		1.96
Excavation (m2)		5.15
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.63
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



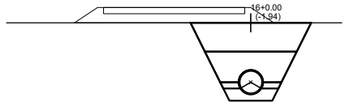
NO.		13+0.00
Design Level (El.m)		115.21
Original Ground Level (El.m)		116.74
Embankment (m2)		1.96
Excavation (m2)		5.24
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.72
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.51



NO.		16+8.50
Design Level (El.m)		113.06
Original Ground Level (El.m)		114.84
Embankment (m2)		1.96
Excavation (m2)		5.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.64



NO.		12+0.00
Design Level (El.m)		115.93
Original Ground Level (El.m)		117.50
Embankment (m2)		1.96
Excavation (m2)		5.40
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.88
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.54



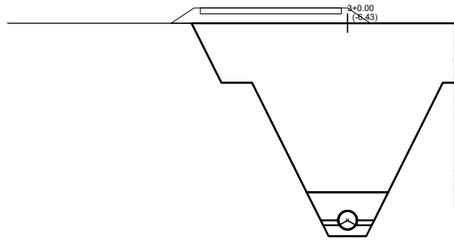
NO.		16+0.00
Design Level (El.m)		113.06
Original Ground Level (El.m)		115.00
Embankment (m2)		1.96
Excavation (m2)		6.78
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.26
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.72

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC4 (2/2)	JUNE, 2022		B-31-02

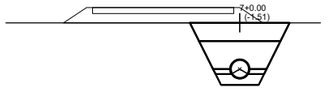
Cross Section of SC5 (1/2)

S=1:100

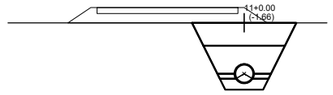
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



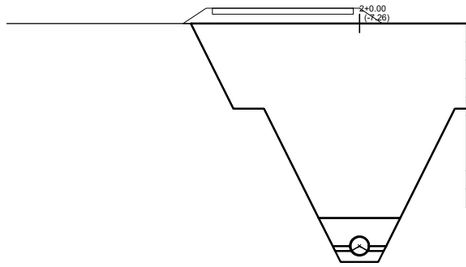
NO.		3+0.00
Design Level (El.m)		127.79
Original Ground Level (El.m)		134.21
Embankment (m2)		1.96
Excavation (m2)		36.54
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	33.76
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		10.84



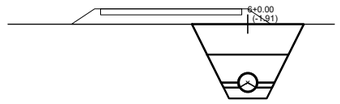
NO.		7+0.00
Design Level (El.m)		123.49
Original Ground Level (El.m)		125.00
Embankment (m2)		1.96
Excavation (m2)		4.54
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.76
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.38



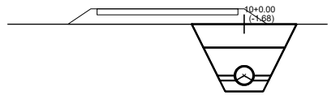
NO.		11+0.00
Design Level (El.m)		117.34
Original Ground Level (El.m)		119.00
Embankment (m2)		1.96
Excavation (m2)		5.05
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.27
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.45



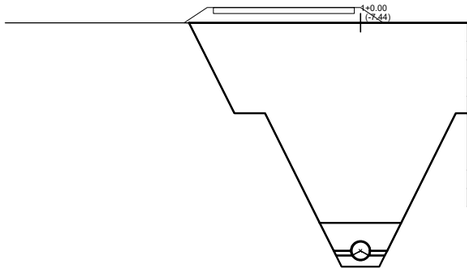
NO.		2+0.00
Design Level (El.m)		127.99
Original Ground Level (El.m)		135.25
Embankment (m2)		1.96
Excavation (m2)		45.36
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	42.57
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		11.25



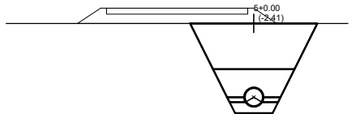
NO.		6+0.00
Design Level (El.m)		125.43
Original Ground Level (El.m)		127.34
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.58



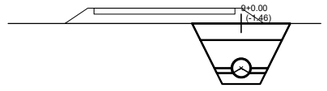
NO.		10+0.00
Design Level (El.m)		118.32
Original Ground Level (El.m)		120.00
Embankment (m2)		1.96
Excavation (m2)		5.11
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.46



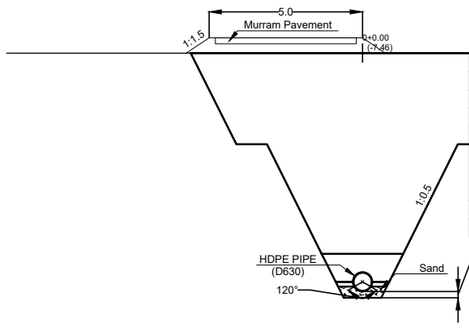
NO.		1+0.00
Design Level (El.m)		128.20
Original Ground Level (El.m)		135.63
Embankment (m2)		1.96
Excavation (m2)		47.28
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	44.50
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		11.34



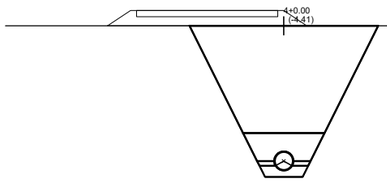
NO.		5+0.00
Design Level (El.m)		127.37
Original Ground Level (El.m)		129.78
Embankment (m2)		1.96
Excavation (m2)		7.86
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	5.08
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.83



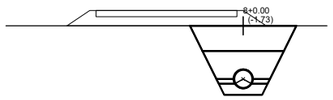
NO.		9+0.00
Design Level (El.m)		120.04
Original Ground Level (El.m)		121.50
Embankment (m2)		1.96
Excavation (m2)		4.37
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.59
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.35



NO.		0+0.00
Design Level (El.m)		128.94
Original Ground Level (El.m)		136.40
Embankment (m2)		1.96
Excavation (m2)		47.56
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	44.78
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		11.35



NO.		4+0.00
Design Level (El.m)		127.58
Original Ground Level (El.m)		131.99
Embankment (m2)		1.96
Excavation (m2)		18.19
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	15.41
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		8.83



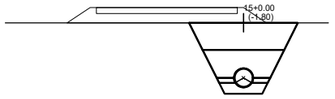
NO.		8+0.00
Design Level (El.m)		121.77
Original Ground Level (El.m)		123.50
Embankment (m2)		1.96
Excavation (m2)		5.29
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.51
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.49

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC5 (1/2)	JUNE, 2022		B-32-01

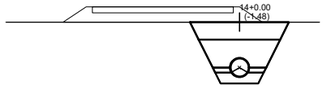
Cross Section of SC5 (2/2)

S=1:100

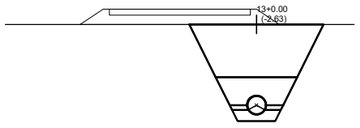
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



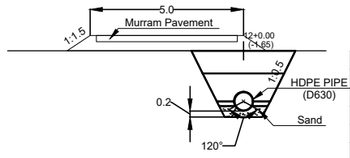
NO.		15+0.00
Design Level (El.m)		113.40
Original Ground Level (El.m)		115.20
Embankment (m2)		1.96
Excavation (m2)		5.53
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.75
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.68



NO.		14+0.00
Design Level (El.m)		114.38
Original Ground Level (El.m)		115.87
Embankment (m2)		1.96
Excavation (m2)		4.46
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	1.68
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.36



NO.		13+0.00
Design Level (El.m)		115.37
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		8.82
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	6.04
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.94



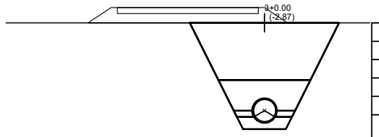
NO.		12+0.00
Design Level (El.m)		116.35
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		5.00
Back fill	Manpower+Compactor(m2)	0.17
	Backhoe+Compactor(m2)	1.86
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		0.44
Woodcutting & Roots Removal (m)		7.45

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		Cross Section of SC5 (2/2)	JUNE, 2022		B-32-02

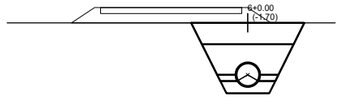
Cross Section of SC6 (1/3)

S=1:100

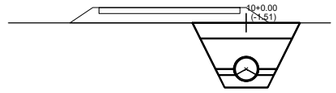
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



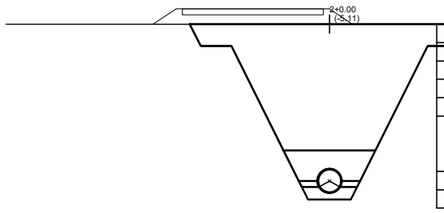
NO.		3+0.00
Design Level (El.m)		127.05
Original Ground Level (El.m)		129.92
Embankment (m2)		1.96
Excavation (m2)		10.86
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	7.34
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.18



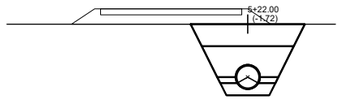
NO.		6+0.00
Design Level (El.m)		126.36
Original Ground Level (El.m)		128.05
Embankment (m2)		1.96
Excavation (m2)		5.85
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.60



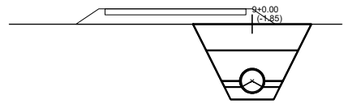
NO.		10+0.00
Design Level (El.m)		125.83
Original Ground Level (El.m)		127.34
Embankment (m2)		1.96
Excavation (m2)		5.17
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.65
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



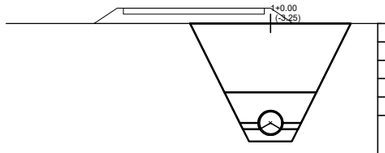
NO.		2+0.00
Design Level (El.m)		127.49
Original Ground Level (El.m)		132.60
Embankment (m2)		1.96
Excavation (m2)		25.75
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	22.23
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		10.31



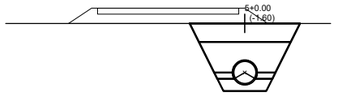
NO.		5+22.00
Design Level (El.m)		126.43
Original Ground Level (El.m)		128.16
Embankment (m2)		1.96
Excavation (m2)		5.96
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.44
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.61



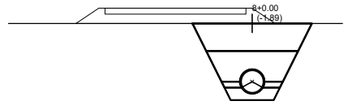
NO.		9+0.00
Design Level (El.m)		125.96
Original Ground Level (El.m)		127.82
Embankment (m2)		1.96
Excavation (m2)		6.45
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



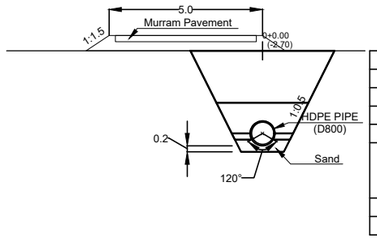
NO.		1+0.00
Design Level (El.m)		127.92
Original Ground Level (El.m)		131.17
Embankment (m2)		1.96
Excavation (m2)		12.78
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	9.26
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.37



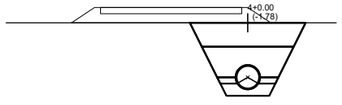
NO.		5+0.00
Design Level (El.m)		126.49
Original Ground Level (El.m)		128.09
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



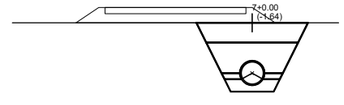
NO.		8+0.00
Design Level (El.m)		126.09
Original Ground Level (El.m)		127.99
Embankment (m2)		1.96
Excavation (m2)		6.60
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.08
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



NO.		0+0.00
Design Level (El.m)		128.81
Original Ground Level (El.m)		131.51
Embankment (m2)		1.96
Excavation (m2)		10.05
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.53
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.10



NO.		4+0.00
Design Level (El.m)		126.62
Original Ground Level (El.m)		128.40
Embankment (m2)		1.96
Excavation (m2)		6.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.64



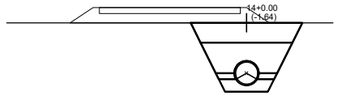
NO.		7+0.00
Design Level (El.m)		126.22
Original Ground Level (El.m)		127.86
Embankment (m2)		1.96
Excavation (m2)		5.64
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.12
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.57

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100 DRAWING No
		TITLE	DATE		
		Cross Section of SC6 (1/3)	JUNE, 2022		B-33-01

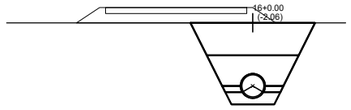
Cross Section of SC6 (2/3)

S=1:100

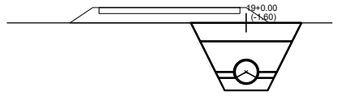
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



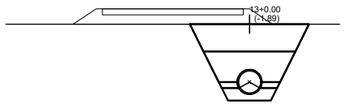
NO.		14+0.00
Design Level (El.m)		125.30
Original Ground Level (El.m)		126.94
Embankment (m2)		1.96
Excavation (m2)		5.65
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.13
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.57



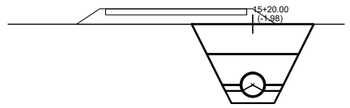
NO.		16+0.00
Design Level (El.m)		125.04
Original Ground Level (El.m)		127.10
Embankment (m2)		1.96
Excavation (m2)		7.27
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.75
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.78



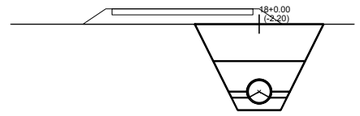
NO.		19+0.00
Design Level (El.m)		123.40
Original Ground Level (El.m)		125.00
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



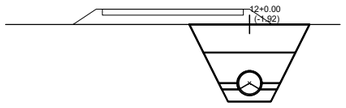
NO.		13+0.00
Design Level (El.m)		125.44
Original Ground Level (El.m)		127.32
Embankment (m2)		1.96
Excavation (m2)		6.58
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.06
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.69



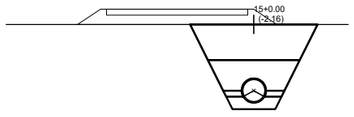
NO.		15+20.00
Design Level (El.m)		125.12
Original Ground Level (El.m)		127.10
Embankment (m2)		1.96
Excavation (m2)		6.94
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.42
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.74



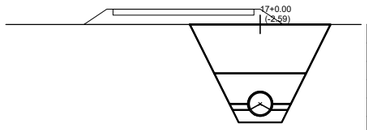
NO.		18+0.00
Design Level (El.m)		124.40
Original Ground Level (El.m)		126.60
Embankment (m2)		1.96
Excavation (m2)		7.84
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.32
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.85



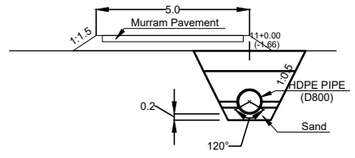
NO.		12+0.00
Design Level (El.m)		125.57
Original Ground Level (El.m)		127.48
Embankment (m2)		1.96
Excavation (m2)		6.69
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.17
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.71



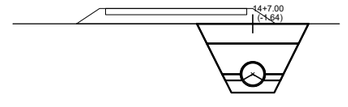
NO.		15+0.00
Design Level (El.m)		125.17
Original Ground Level (El.m)		127.33
Embankment (m2)		1.96
Excavation (m2)		7.67
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.15
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.83



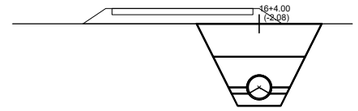
NO.		17+0.00
Design Level (El.m)		124.72
Original Ground Level (El.m)		127.31
Embankment (m2)		1.96
Excavation (m2)		9.55
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.03
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.05



NO.		11+0.00
Design Level (El.m)		125.70
Original Ground Level (El.m)		127.36
Embankment (m2)		1.96
Excavation (m2)		5.71
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.58



NO.		14+7.00
Design Level (El.m)		125.28
Original Ground Level (El.m)		126.93
Embankment (m2)		1.96
Excavation (m2)		5.66
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.14
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.57



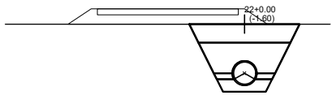
NO.		16+4.00
Design Level (El.m)		125.01
Original Ground Level (El.m)		127.09
Embankment (m2)		1.96
Excavation (m2)		7.33
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.81
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.79

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC6 (2/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-33-02

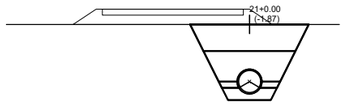
Cross Section of SC6 (3/3)

S=1:100

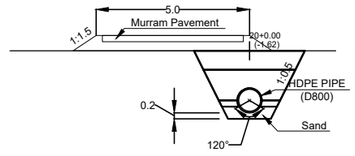
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



NO.		22+0.00
Design Level (El.m)		120.40
Original Ground Level (El.m)		122.00
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



NO.		21+0.00
Design Level (El.m)		121.40
Original Ground Level (El.m)		123.27
Embankment (m2)		1.96
Excavation (m2)		6.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



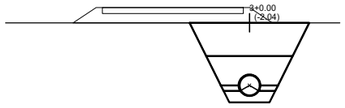
NO.		20+0.00
Design Level (El.m)		122.40
Original Ground Level (El.m)		124.02
Embankment (m2)		1.96
Excavation (m2)		5.58
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.06
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.56

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC6 (3/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-33-03

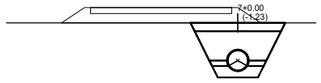
Cross Section of SC12 (1/1)

S=1:100

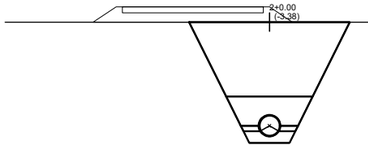
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



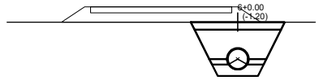
NO.		3+0.00
Design Level (El.m)		125.96
Original Ground Level (El.m)		128.00
Embankment (m2)		1.96
Excavation (m2)		6.77
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	3.65
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		7.70



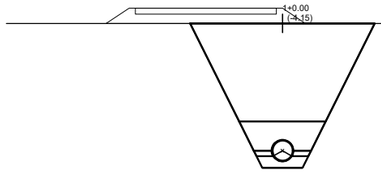
NO.		7+0.00
Design Level (El.m)		122.02
Original Ground Level (El.m)		123.25
Embankment (m2)		1.96
Excavation (m2)		3.93
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	0.81
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		7.30



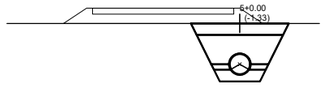
NO.		2+0.00
Design Level (El.m)		126.12
Original Ground Level (El.m)		129.50
Embankment (m2)		1.96
Excavation (m2)		12.90
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	9.78
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		8.37



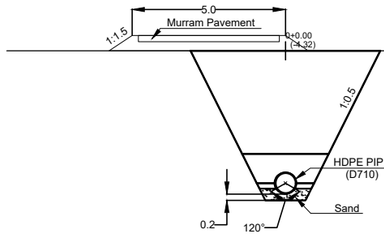
NO.		6+0.00
Design Level (El.m)		122.80
Original Ground Level (El.m)		124.00
Embankment (m2)		1.96
Excavation (m2)		3.84
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	0.72
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		7.28



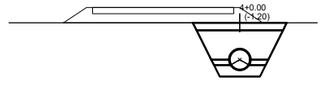
NO.		1+0.00
Design Level (El.m)		126.28
Original Ground Level (El.m)		130.43
Embankment (m2)		1.96
Excavation (m2)		17.24
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	14.12
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		8.76



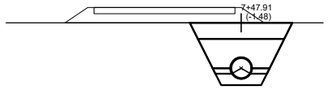
NO.		5+0.00
Design Level (El.m)		124.30
Original Ground Level (El.m)		125.63
Embankment (m2)		1.96
Excavation (m2)		4.25
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	1.13
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		7.35



NO.		0+0.00
Design Level (El.m)		126.87
Original Ground Level (El.m)		131.19
Embankment (m2)		1.96
Excavation (m2)		18.26
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	15.14
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		8.84



NO.		4+0.00
Design Level (El.m)		125.80
Original Ground Level (El.m)		127.00
Embankment (m2)		1.96
Excavation (m2)		3.84
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	0.72
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		7.28



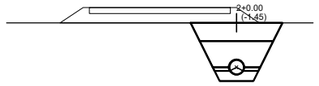
NO.		7+47.91
Design Level (El.m)		122.02
Original Ground Level (El.m)		123.50
Embankment (m2)		1.96
Excavation (m2)		4.74
Back fill	Manpower+Compactor(m2)	0.19
	Backhoe+Compactor(m2)	2.04
	Backhoe+Roller(m2)	1.62
Base Sand (m2)		0.49
Woodcutting & Roots Removal (m)		7.42

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC12 (1/1)	JUNE, 2022		B-39-01

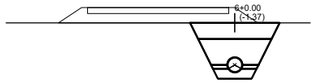
Cross Section of SC13 (1/2)

S=1:100

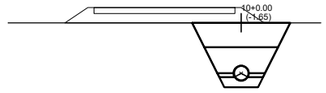
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



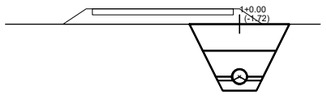
NO.		2+0.00
Design Level (El.m)		124.01
Original Ground Level (El.m)		125.46
Embankment (m2)		1.96
Excavation (m2)		3.89
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.61
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.25



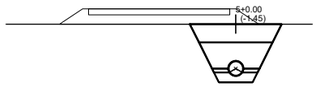
NO.		6+0.00
Design Level (El.m)		119.07
Original Ground Level (El.m)		120.45
Embankment (m2)		1.96
Excavation (m2)		3.67
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.40
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.21



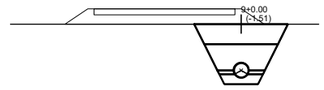
NO.		10+0.00
Design Level (El.m)		117.77
Original Ground Level (El.m)		119.42
Embankment (m2)		1.96
Excavation (m2)		4.51
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	2.23
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.35



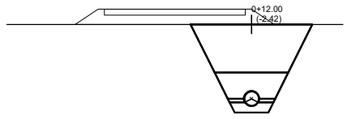
NO.		1+0.00
Design Level (El.m)		125.30
Original Ground Level (El.m)		127.01
Embankment (m2)		1.96
Excavation (m2)		4.73
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	2.45
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.38



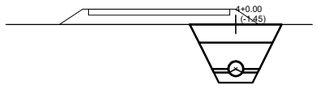
NO.		5+0.00
Design Level (El.m)		119.40
Original Ground Level (El.m)		120.85
Embankment (m2)		1.96
Excavation (m2)		3.89
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.61
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.25



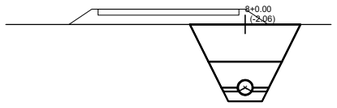
NO.		9+0.00
Design Level (El.m)		118.09
Original Ground Level (El.m)		119.60
Embankment (m2)		1.96
Excavation (m2)		4.07
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.79
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.28



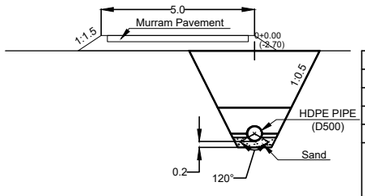
NO.		0+12.00
Design Level (El.m)		126.27
Original Ground Level (El.m)		128.69
Embankment (m2)		1.96
Excavation (m2)		7.27
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	4.99
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.73



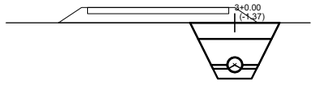
NO.		4+0.00
Design Level (El.m)		120.65
Original Ground Level (El.m)		122.10
Embankment (m2)		1.96
Excavation (m2)		3.88
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.61
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.25



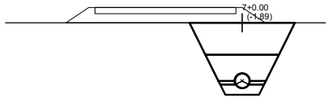
NO.		8+0.00
Design Level (El.m)		118.42
Original Ground Level (El.m)		120.48
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	3.64
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.55



NO.		0+0.00
Design Level (El.m)		126.58
Original Ground Level (El.m)		129.28
Embankment (m2)		1.96
Excavation (m2)		8.44
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	6.17
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.88



NO.		3+0.00
Design Level (El.m)		122.33
Original Ground Level (El.m)		123.70
Embankment (m2)		1.96
Excavation (m2)		3.67
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.39
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.21



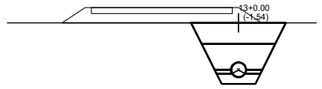
NO.		7+0.00
Design Level (El.m)		118.75
Original Ground Level (El.m)		120.64
Embankment (m2)		1.96
Excavation (m2)		5.32
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	3.05
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.47

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC13 (1/2)	JUNE, 2022		B-40-01

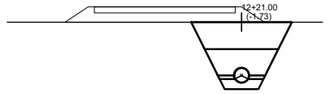
Cross Section of SC13 (2/2)

S=1:100

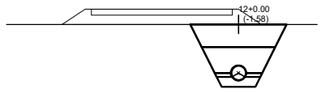
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



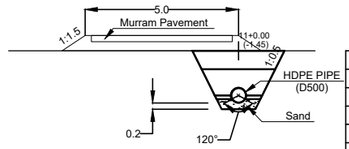
NO.		13+0.00
Design Level (El.m)		115.39
Original Ground Level (El.m)		116.93
Embankment (m2)		1.96
Excavation (m2)		4.16
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.89
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.29



NO.		12+21.00
Design Level (El.m)		115.98
Original Ground Level (El.m)		117.72
Embankment (m2)		1.96
Excavation (m2)		4.79
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	2.51
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.39



NO.		12+0.00
Design Level (El.m)		116.42
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		4.31
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	2.03
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.32



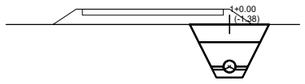
NO.		11+0.00
Design Level (El.m)		117.44
Original Ground Level (El.m)		118.89
Embankment (m2)		1.96
Excavation (m2)		3.91
Back fill	Manpower+Compactor(m2)	0.13
	Backhoe+Compactor(m2)	1.58
	Backhoe+Roller(m2)	1.63
Base Sand (m2)		0.37
Woodcutting & Roots Removal (m)		7.25

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC13 (2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-40-02

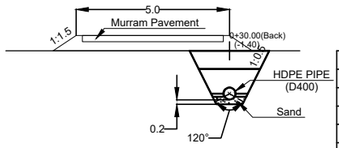
Cross Section of SC14 (1/1)

S=1:100

Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



NO.		1+0.00
Design Level (El.m)		116.02
Original Ground Level (El.m)		117.40
Embankment (m2)		1.96
Excavation (m2)		2.96
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.32
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.04



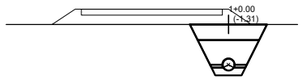
NO.		0+30.00(Back)
Design Level (El.m)		115.85
Original Ground Level (El.m)		117.25
Embankment (m2)		1.96
Excavation (m2)		3.01
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.37
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.05

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		Cross Section of SC14 (1/1)	JUNE, 2022		B-41-01

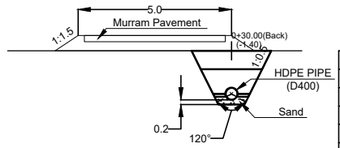
Cross Section of SC15 (1/1)

S=1:100

Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



NO.		1+0.00
Design Level (El.m)		115.94
Original Ground Level (El.m)		117.25
Embankment (m2)		1.96
Excavation (m2)		2.79
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.15
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.00



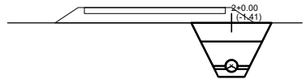
NO.		0+30.00(Back)
Design Level (El.m)		116.00
Original Ground Level (El.m)		117.40
Embankment (m2)		1.96
Excavation (m2)		3.02
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.39
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.05

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC15 (1/1)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-42-01

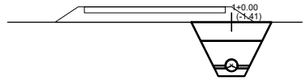
Cross Section of SC16 (1/1)

S=1:100

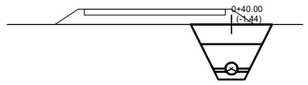
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



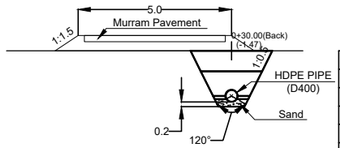
NO.		2+0.00
Design Level (El.m)		115.79
Original Ground Level (El.m)		117.20
Embankment (m2)		1.96
Excavation (m2)		3.04
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.41
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.05



NO.		1+0.00
Design Level (El.m)		116.21
Original Ground Level (El.m)		117.62
Embankment (m2)		1.96
Excavation (m2)		3.05
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.41
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.06



NO.		0+40.00
Design Level (El.m)		116.30
Original Ground Level (El.m)		117.74
Embankment (m2)		1.96
Excavation (m2)		3.13
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.50
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.07



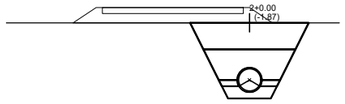
NO.		0+30.00(Back)
Design Level (El.m)		116.38
Original Ground Level (El.m)		117.85
Embankment (m2)		1.96
Excavation (m2)		3.21
Back fill	Manpower+Compactor(m2)	0.08
	Backhoe+Compactor(m2)	1.22
	Backhoe+Roller(m2)	1.57
Base Sand (m2)		0.22
Woodcutting & Roots Removal (m)		7.09

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC16 (1/1)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-43-01

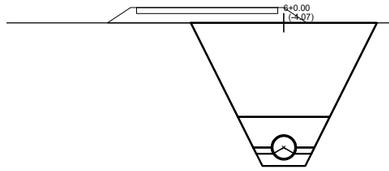
Cross Section of SC17 (1/3)

S=1:100

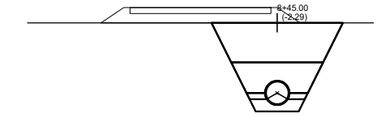
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



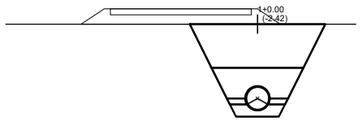
NO.		2+0.00
Design Level (El.m)		122.61
Original Ground Level (El.m)		124.48
Embankment (m2)		1.96
Excavation (m2)		6.49
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.97
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.68



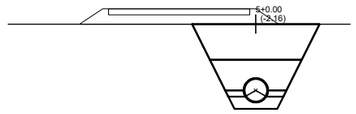
NO.		6+0.00
Design Level (El.m)		121.82
Original Ground Level (El.m)		125.88
Embankment (m2)		1.96
Excavation (m2)		17.42
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	13.90
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.78



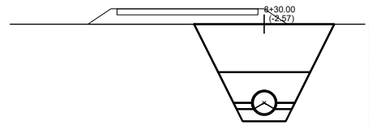
NO.		8+45.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		121.20
Embankment (m2)		1.96
Excavation (m2)		8.22
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.70
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.90



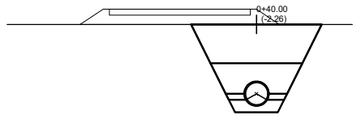
NO.		1+0.00
Design Level (El.m)		122.70
Original Ground Level (El.m)		125.12
Embankment (m2)		1.96
Excavation (m2)		8.79
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.27
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.96



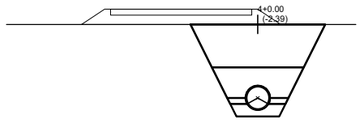
NO.		5+0.00
Design Level (El.m)		122.35
Original Ground Level (El.m)		124.51
Embankment (m2)		1.96
Excavation (m2)		7.68
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.16
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.83



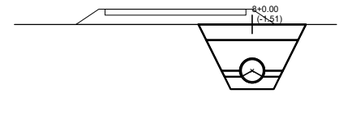
NO.		8+30.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		121.48
Embankment (m2)		1.96
Excavation (m2)		9.46
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.94
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.03



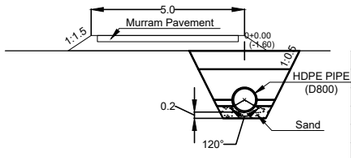
NO.		0+40.00
Design Level (El.m)		122.84
Original Ground Level (El.m)		125.10
Embankment (m2)		1.96
Excavation (m2)		8.09
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.57
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.88



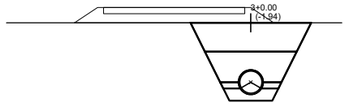
NO.		4+0.00
Design Level (El.m)		122.44
Original Ground Level (El.m)		124.83
Embankment (m2)		1.96
Excavation (m2)		8.67
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	5.15
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.95



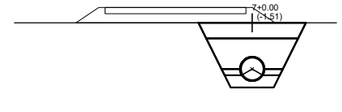
NO.		8+0.00
Design Level (El.m)		120.30
Original Ground Level (El.m)		121.81
Embankment (m2)		1.96
Excavation (m2)		5.16
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.64
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



NO.		0+0.00
Design Level (El.m)		123.40
Original Ground Level (El.m)		125.00
Embankment (m2)		1.96
Excavation (m2)		5.50
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.98
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.55



NO.		3+0.00
Design Level (El.m)		122.52
Original Ground Level (El.m)		124.46
Embankment (m2)		1.96
Excavation (m2)		6.78
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.26
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.72



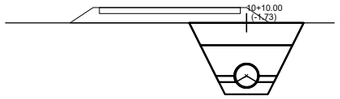
NO.		7+0.00
Design Level (El.m)		121.28
Original Ground Level (El.m)		122.79
Embankment (m2)		1.96
Excavation (m2)		5.17
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.65
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC17 (1/3)	JUNE, 2022		B-44-01

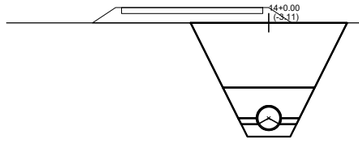
Cross Section of SC17 (2/3)

S=1:100

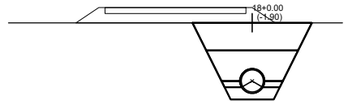
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



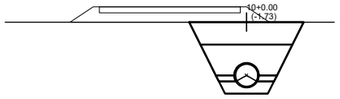
NO.		10+10.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		120.64
Embankment (m2)		1.96
Excavation (m2)		5.98
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.61



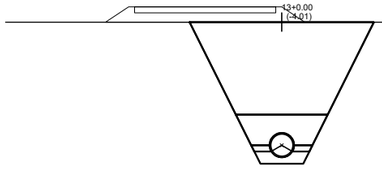
NO.		14+0.00
Design Level (El.m)		118.23
Original Ground Level (El.m)		121.34
Embankment (m2)		1.96
Excavation (m2)		12.07
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	8.55
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.30



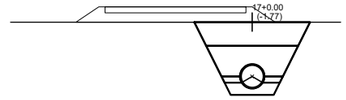
NO.		18+0.00
Design Level (El.m)		117.14
Original Ground Level (El.m)		119.04
Embankment (m2)		1.96
Excavation (m2)		6.63
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.11
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.70



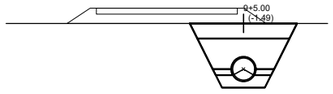
NO.		10+0.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		120.64
Embankment (m2)		1.96
Excavation (m2)		5.99
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.47
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.62



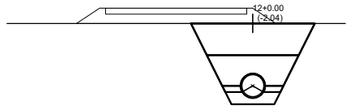
NO.		13+0.00
Design Level (El.m)		118.46
Original Ground Level (El.m)		122.47
Embankment (m2)		1.96
Excavation (m2)		17.10
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	13.58
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.76



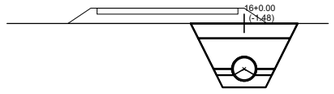
NO.		17+0.00
Design Level (El.m)		117.46
Original Ground Level (El.m)		119.23
Embankment (m2)		1.96
Excavation (m2)		6.13
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.61
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.64



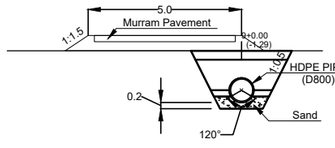
NO.		9+5.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		120.40
Embankment (m2)		1.96
Excavation (m2)		5.11
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.59
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.50



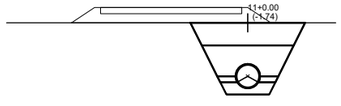
NO.		12+0.00
Design Level (El.m)		118.68
Original Ground Level (El.m)		120.72
Embankment (m2)		1.96
Excavation (m2)		7.17
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.65
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.77



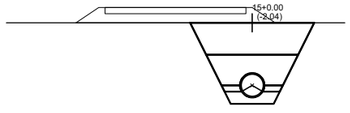
NO.		16+0.00
Design Level (El.m)		117.78
Original Ground Level (El.m)		119.26
Embankment (m2)		1.96
Excavation (m2)		5.08
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.56
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.49



NO.		9+0.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		120.20
Embankment (m2)		1.96
Excavation (m2)		4.43
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	0.91
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.40



NO.		11+0.00
Design Level (El.m)		118.91
Original Ground Level (El.m)		120.65
Embankment (m2)		1.96
Excavation (m2)		6.02
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	2.50
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.62



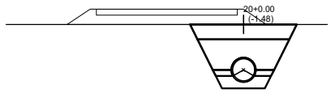
NO.		15+0.00
Design Level (El.m)		118.01
Original Ground Level (El.m)		120.05
Embankment (m2)		1.96
Excavation (m2)		7.18
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.66
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.77

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC17 (2/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-44-02

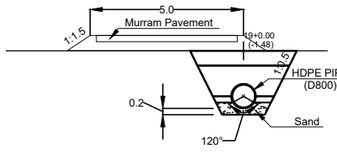
Cross Section of SC17 (3/3)

S=1:100

Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



NO.		20+0.00
Design Level (El.m)		116.55
Original Ground Level (El.m)		118.03
Embankment (m2)		1.96
Excavation (m2)		5.08
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.56
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.49



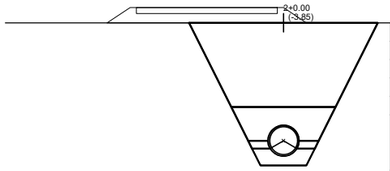
NO.		19+0.00
Design Level (El.m)		116.82
Original Ground Level (El.m)		118.30
Embankment (m2)		1.96
Excavation (m2)		5.09
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	1.57
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.49

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC17 (3/3)	JUNE, 2022		B-44-03

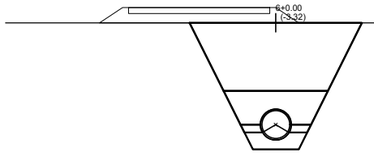
Cross Section of SC18 (1/9)

S=1:100

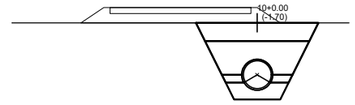
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



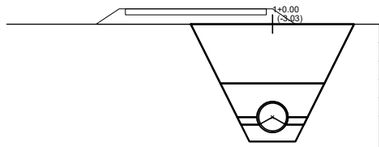
NO.		2+0.00
Design Level (El.m)		121.85
Original Ground Level (El.m)		125.70
Embankment (m2)		1.96
Excavation (m2)		17.78
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	13.12
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.82



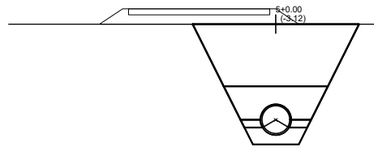
NO.		6+0.00
Design Level (El.m)		121.18
Original Ground Level (El.m)		124.50
Embankment (m2)		1.96
Excavation (m2)		14.70
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	10.04
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.56



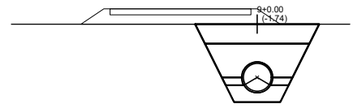
NO.		10+0.00
Design Level (El.m)		117.46
Original Ground Level (El.m)		119.16
Embankment (m2)		1.96
Excavation (m2)		6.87
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.21
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



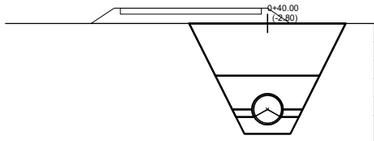
NO.		1+0.00
Design Level (El.m)		122.45
Original Ground Level (El.m)		125.48
Embankment (m2)		1.96
Excavation (m2)		13.09
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.43
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.42



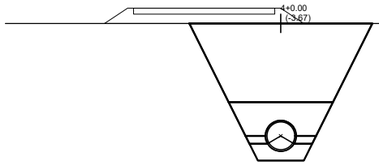
NO.		5+0.00
Design Level (El.m)		121.35
Original Ground Level (El.m)		124.47
Embankment (m2)		1.96
Excavation (m2)		13.58
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	8.92
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.46



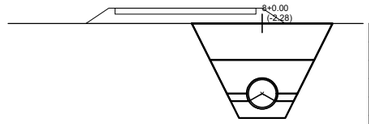
NO.		9+0.00
Design Level (El.m)		118.39
Original Ground Level (El.m)		120.13
Embankment (m2)		1.96
Excavation (m2)		7.04
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.38
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.77



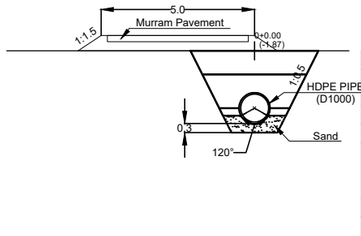
NO.		0+40.00
Design Level (El.m)		122.57
Original Ground Level (El.m)		125.37
Embankment (m2)		1.96
Excavation (m2)		11.89
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	7.23
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.30



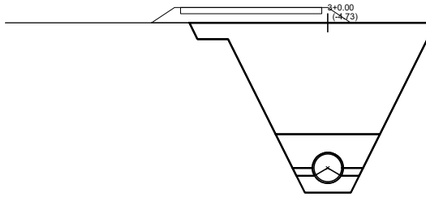
NO.		4+0.00
Design Level (El.m)		121.52
Original Ground Level (El.m)		125.18
Embankment (m2)		1.96
Excavation (m2)		16.70
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	12.04
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.74



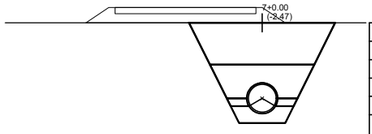
NO.		8+0.00
Design Level (El.m)		119.32
Original Ground Level (El.m)		121.60
Embankment (m2)		1.96
Excavation (m2)		9.39
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.73
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.04



NO.		0+0.00
Design Level (El.m)		123.05
Original Ground Level (El.m)		124.92
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.91
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



NO.		3+0.00
Design Level (El.m)		121.68
Original Ground Level (El.m)		126.42
Embankment (m2)		1.96
Excavation (m2)		24.70
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	20.04
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		10.27



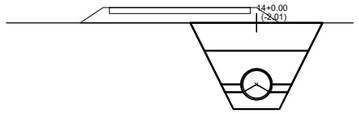
NO.		7+0.00
Design Level (El.m)		120.25
Original Ground Level (El.m)		122.72
Embankment (m2)		1.96
Excavation (m2)		10.23
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.57
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.13

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (1/9)	JUNE, 2022		B-45-01

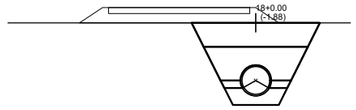
Cross Section of SC18 (2/9)

S=1:100

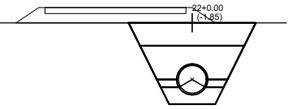
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



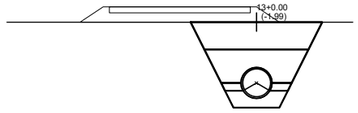
NO.		14+0.00
Design Level (El.m)		116.34
Original Ground Level (El.m)		118.35
Embankment (m2)		1.96
Excavation (m2)		8.17
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.51
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.91



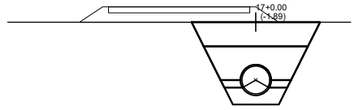
NO.		18+0.00
Design Level (El.m)		115.22
Original Ground Level (El.m)		117.10
Embankment (m2)		1.96
Excavation (m2)		7.62
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.96
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



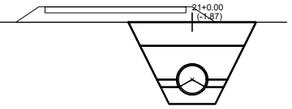
NO.		22+0.00
Design Level (El.m)		114.10
Original Ground Level (El.m)		115.95
Embankment (m2)		1.96
Excavation (m2)		7.49
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.83
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.83



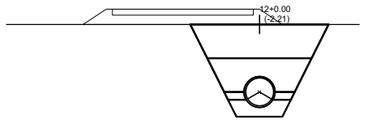
NO.		13+0.00
Design Level (El.m)		116.62
Original Ground Level (El.m)		118.61
Embankment (m2)		1.96
Excavation (m2)		8.07
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.41
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.89



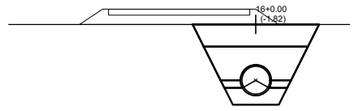
NO.		17+0.00
Design Level (El.m)		115.50
Original Ground Level (El.m)		117.39
Embankment (m2)		1.96
Excavation (m2)		7.65
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.99
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.85



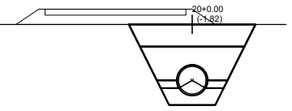
NO.		21+0.00
Design Level (El.m)		114.38
Original Ground Level (El.m)		116.25
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.91
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.84



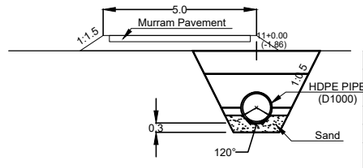
NO.		12+0.00
Design Level (El.m)		116.90
Original Ground Level (El.m)		119.11
Embankment (m2)		1.96
Excavation (m2)		9.03
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.37
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.00



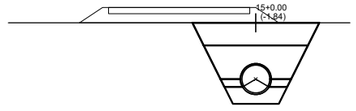
NO.		16+0.00
Design Level (El.m)		115.78
Original Ground Level (El.m)		117.60
Embankment (m2)		1.96
Excavation (m2)		7.37
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.71
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.81



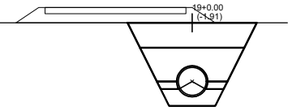
NO.		20+0.00
Design Level (El.m)		114.66
Original Ground Level (El.m)		116.48
Embankment (m2)		1.96
Excavation (m2)		7.38
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.72
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.81



NO.		11+0.00
Design Level (El.m)		117.18
Original Ground Level (El.m)		119.04
Embankment (m2)		1.96
Excavation (m2)		7.52
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.86
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.83



NO.		15+0.00
Design Level (El.m)		116.06
Original Ground Level (El.m)		117.90
Embankment (m2)		1.96
Excavation (m2)		7.45
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.79
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.82



NO.		19+0.00
Design Level (El.m)		114.94
Original Ground Level (El.m)		116.85
Embankment (m2)		1.96
Excavation (m2)		7.74
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.08
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.86

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

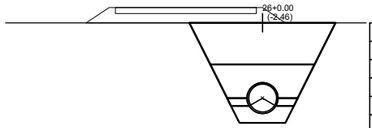
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of SC18 (2/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-45-02

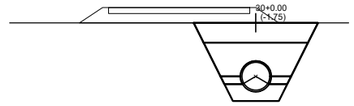
Cross Section of SC18 (3/9)

S=1:100

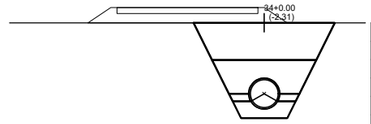
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



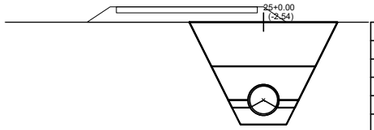
NO.		26+0.00
Design Level (El.m)		112.98
Original Ground Level (El.m)		115.44
Embankment (m2)		1.96
Excavation (m2)		10.20
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.54
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.13



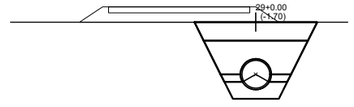
NO.		30+0.00
Design Level (El.m)		112.10
Original Ground Level (El.m)		113.85
Embankment (m2)		1.96
Excavation (m2)		7.08
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



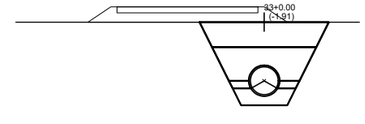
NO.		34+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		114.21
Embankment (m2)		1.96
Excavation (m2)		9.51
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.85
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.06



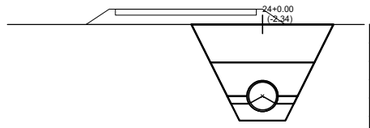
NO.		25+0.00
Design Level (El.m)		113.26
Original Ground Level (El.m)		115.80
Embankment (m2)		1.96
Excavation (m2)		10.59
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.93
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.82



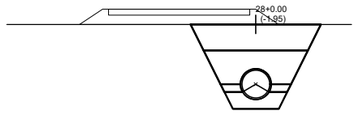
NO.		29+0.00
Design Level (El.m)		112.30
Original Ground Level (El.m)		114.00
Embankment (m2)		1.96
Excavation (m2)		6.88
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.22
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



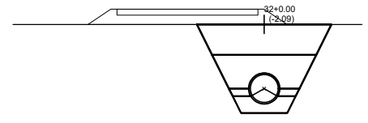
NO.		33+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		113.81
Embankment (m2)		1.96
Excavation (m2)		7.75
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.09
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.86



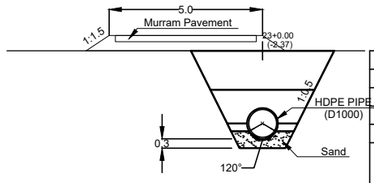
NO.		24+0.00
Design Level (El.m)		113.54
Original Ground Level (El.m)		115.88
Embankment (m2)		1.96
Excavation (m2)		9.63
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	4.97
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.07



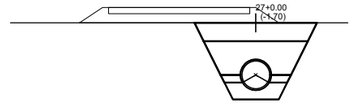
NO.		28+0.00
Design Level (El.m)		112.50
Original Ground Level (El.m)		114.45
Embankment (m2)		1.96
Excavation (m2)		7.91
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.25
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.88



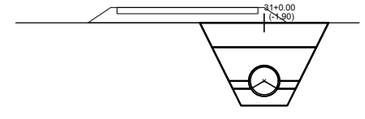
NO.		32+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		113.99
Embankment (m2)		1.96
Excavation (m2)		8.52
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.86
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.95



NO.		23+0.00
Design Level (El.m)		113.82
Original Ground Level (El.m)		116.19
Embankment (m2)		1.96
Excavation (m2)		9.80
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.14
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.09



NO.		27+0.00
Design Level (El.m)		112.70
Original Ground Level (El.m)		114.40
Embankment (m2)		1.96
Excavation (m2)		6.87
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.21
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



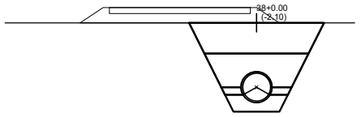
NO.		31+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		113.80
Embankment (m2)		1.96
Excavation (m2)		7.70
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.04
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.85

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (3/9)	JUNE, 2022		B-45-03

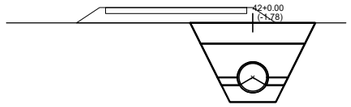
Cross Section of SC18 (4/9)

S=1:100

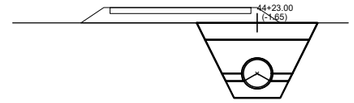
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



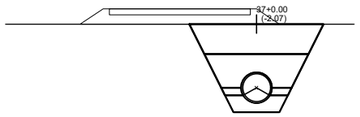
NO.		38+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		114.00
Embankment (m2)		1.96
Excavation (m2)		8.56
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.90
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.12



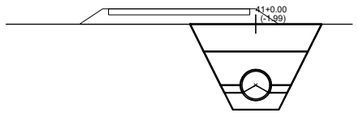
NO.		42+0.00
Design Level (El.m)		111.17
Original Ground Level (El.m)		112.95
Embankment (m2)		1.96
Excavation (m2)		7.21
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.55
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.79



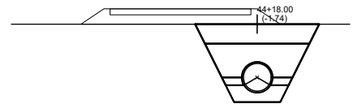
NO.		44+23.00
Design Level (El.m)		110.57
Original Ground Level (El.m)		112.22
Embankment (m2)		1.96
Excavation (m2)		6.68
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.02
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.73



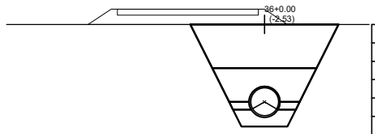
NO.		37+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		113.97
Embankment (m2)		1.96
Excavation (m2)		8.45
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.79
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.94



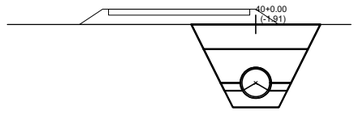
NO.		41+0.00
Design Level (El.m)		111.41
Original Ground Level (El.m)		113.40
Embankment (m2)		1.96
Excavation (m2)		8.07
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.41
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.89



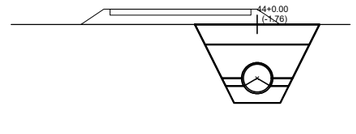
NO.		44+18.00
Design Level (El.m)		110.59
Original Ground Level (El.m)		112.33
Embankment (m2)		1.96
Excavation (m2)		7.03
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.37
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.77



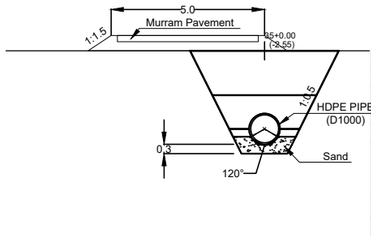
NO.		36+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		114.43
Embankment (m2)		1.96
Excavation (m2)		10.54
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.88
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.16



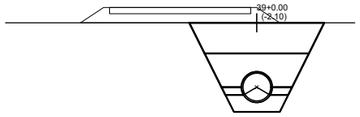
NO.		40+0.00
Design Level (El.m)		111.66
Original Ground Level (El.m)		113.56
Embankment (m2)		1.96
Excavation (m2)		7.72
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.06
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.85



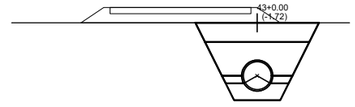
NO.		44+0.00
Design Level (El.m)		110.68
Original Ground Level (El.m)		112.44
Embankment (m2)		1.96
Excavation (m2)		7.10
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.44
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.78



NO.		35+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		114.45
Embankment (m2)		1.96
Excavation (m2)		10.64
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	5.98
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		8.18



NO.		39+0.00
Design Level (El.m)		111.90
Original Ground Level (El.m)		114.00
Embankment (m2)		1.96
Excavation (m2)		8.56
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.90
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.95



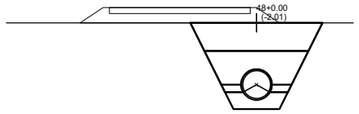
NO.		43+0.00
Design Level (El.m)		110.93
Original Ground Level (El.m)		112.65
Embankment (m2)		1.96
Excavation (m2)		6.98
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.76

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (4/9)	JUNE, 2022		B-45-04

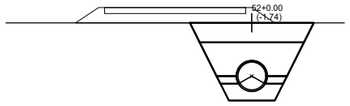
Cross Section of SC18 (5/9)

S=1:100

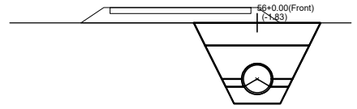
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



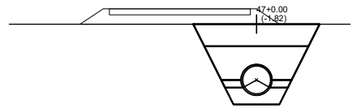
NO.		48+0.00
Design Level (El.m)		109.89
Original Ground Level (El.m)		111.90
Embankment (m2)		1.96
Excavation (m2)		8.19
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.53
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.91



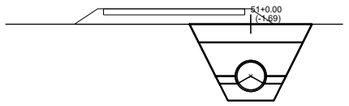
NO.		52+0.00
Design Level (El.m)		109.11
Original Ground Level (El.m)		110.85
Embankment (m2)		1.96
Excavation (m2)		7.03
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.37
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.77



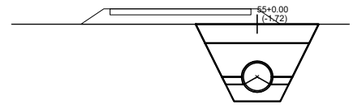
NO.		56+0.00(Front)
Design Level (El.m)		108.34
Original Ground Level (El.m)		110.18
Embankment (m2)		1.96
Excavation (m2)		7.43
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.77
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.82



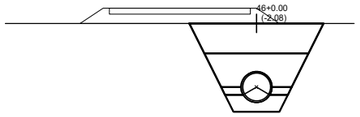
NO.		47+0.00
Design Level (El.m)		110.08
Original Ground Level (El.m)		111.90
Embankment (m2)		1.96
Excavation (m2)		7.37
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.71
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.81



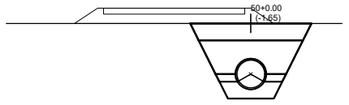
NO.		51+0.00
Design Level (El.m)		109.31
Original Ground Level (El.m)		111.00
Embankment (m2)		1.96
Excavation (m2)		6.85
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.75



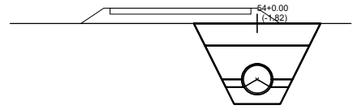
NO.		55+0.00
Design Level (El.m)		108.53
Original Ground Level (El.m)		110.25
Embankment (m2)		1.96
Excavation (m2)		6.95
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.29
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.76



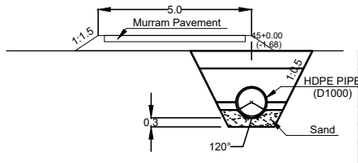
NO.		46+0.00
Design Level (El.m)		110.27
Original Ground Level (El.m)		112.35
Embankment (m2)		1.96
Excavation (m2)		8.46
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	3.80
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.94



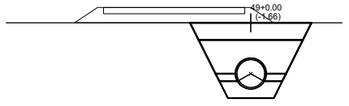
NO.		50+0.00
Design Level (El.m)		109.50
Original Ground Level (El.m)		111.15
Embankment (m2)		1.96
Excavation (m2)		6.68
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.02
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.73



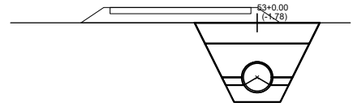
NO.		54+0.00
Design Level (El.m)		108.73
Original Ground Level (El.m)		110.55
Embankment (m2)		1.96
Excavation (m2)		7.38
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.72
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.81



NO.		45+0.00
Design Level (El.m)		110.47
Original Ground Level (El.m)		112.15
Embankment (m2)		1.96
Excavation (m2)		6.80
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.14
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.74



NO.		49+0.00
Design Level (El.m)		109.69
Original Ground Level (El.m)		111.35
Embankment (m2)		1.96
Excavation (m2)		6.71
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.05
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.73



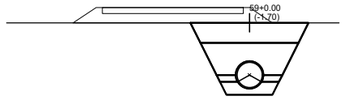
NO.		53+0.00
Design Level (El.m)		108.92
Original Ground Level (El.m)		110.70
Embankment (m2)		1.96
Excavation (m2)		7.20
Back fill	Manpower+Compactor(m2)	0.31
	Backhoe+Compactor(m2)	2.75
	Backhoe+Roller(m2)	2.54
Base Sand (m2)		0.82
Woodcutting & Roots Removal (m)		7.79

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (5/9)	JUNE, 2022		B-45-05

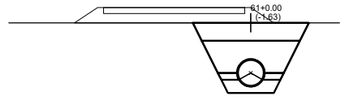
Cross Section of SC18 (6/9)

S=1:100

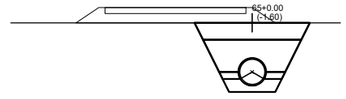
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



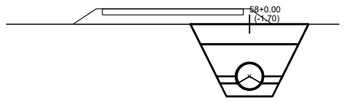
NO.		59+0.00
Design Level (El.m)		108.02
Original Ground Level (El.m)		109.72
Embankment (m2)		1.96
Excavation (m2)		6.29
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.29
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.68



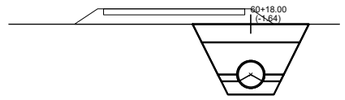
NO.		61+0.00
Design Level (El.m)		107.87
Original Ground Level (El.m)		109.50
Embankment (m2)		1.96
Excavation (m2)		6.03
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.04
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.64



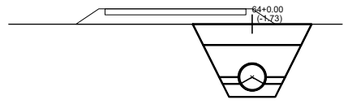
NO.		65+0.00
Design Level (El.m)		106.78
Original Ground Level (El.m)		108.38
Embankment (m2)		1.96
Excavation (m2)		5.92
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.93
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.63



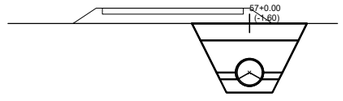
NO.		58+0.00
Design Level (El.m)		108.11
Original Ground Level (El.m)		109.82
Embankment (m2)		1.96
Excavation (m2)		6.30
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.68



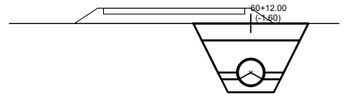
NO.		60+18.00
Design Level (El.m)		107.90
Original Ground Level (El.m)		109.55
Embankment (m2)		1.96
Excavation (m2)		6.07
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.07
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.65



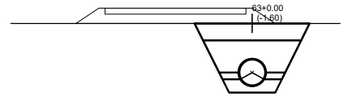
NO.		64+0.00
Design Level (El.m)		107.27
Original Ground Level (El.m)		108.99
Embankment (m2)		1.96
Excavation (m2)		6.39
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.39
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.69



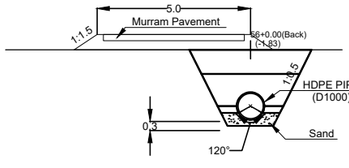
NO.		57+0.00
Design Level (El.m)		108.20
Original Ground Level (El.m)		109.80
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.63



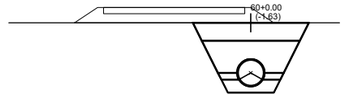
NO.		60+12.00
Design Level (El.m)		107.91
Original Ground Level (El.m)		109.51
Embankment (m2)		1.96
Excavation (m2)		5.90
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.90
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.62



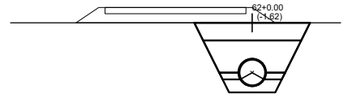
NO.		63+0.00
Design Level (El.m)		107.75
Original Ground Level (El.m)		109.35
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.63



NO.		56+0.00(Back)
Design Level (El.m)		108.34
Original Ground Level (El.m)		110.18
Embankment (m2)		1.96
Excavation (m2)		6.82
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.82
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.74



NO.		60+0.00
Design Level (El.m)		107.93
Original Ground Level (El.m)		109.56
Embankment (m2)		1.96
Excavation (m2)		6.02
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.03
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.64



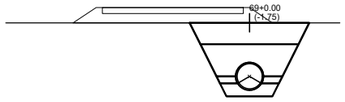
NO.		62+0.00
Design Level (El.m)		107.81
Original Ground Level (El.m)		109.43
Embankment (m2)		1.96
Excavation (m2)		5.99
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.99
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.64

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (6/9)	JUNE, 2022		B-45-06

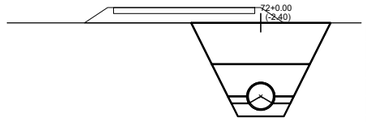
Cross Section of SC18 (7/9)

S=1:100

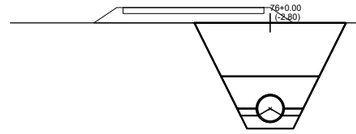
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



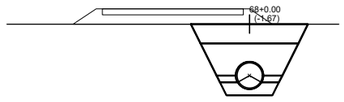
NO.		69+0.00
Design Level (El.m)		105.95
Original Ground Level (El.m)		107.70
Embankment (m2)		1.96
Excavation (m2)		6.48
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.48
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.70



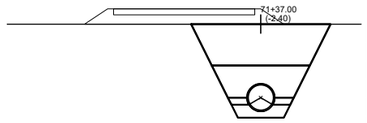
NO.		72+0.00
Design Level (El.m)		103.05
Original Ground Level (El.m)		105.45
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.23
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.03



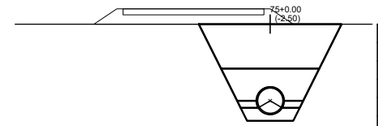
NO.		76+0.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		105.15
Embankment (m2)		1.96
Excavation (m2)		11.13
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.13
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.23



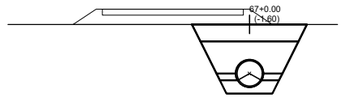
NO.		68+0.00
Design Level (El.m)		106.03
Original Ground Level (El.m)		107.70
Embankment (m2)		1.96
Excavation (m2)		6.19
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.20
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.66



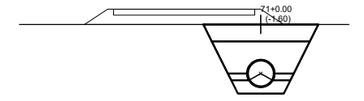
NO.		71+37.00
Design Level (El.m)		103.50
Original Ground Level (El.m)		105.90
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.23
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.03



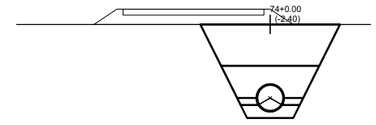
NO.		75+0.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		104.85
Embankment (m2)		1.96
Excavation (m2)		9.69
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.69
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.08



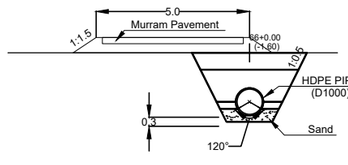
NO.		67+0.00
Design Level (El.m)		106.10
Original Ground Level (El.m)		107.70
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.63



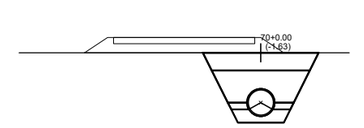
NO.		71+0.00
Design Level (El.m)		105.80
Original Ground Level (El.m)		107.40
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.63



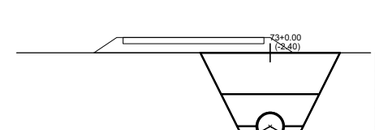
NO.		74+0.00
Design Level (El.m)		100.50
Original Ground Level (El.m)		102.90
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.23
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.03



NO.		66+0.00
Design Level (El.m)		106.40
Original Ground Level (El.m)		108.00
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.63



NO.		70+0.00
Design Level (El.m)		105.88
Original Ground Level (El.m)		107.50
Embankment (m2)		1.96
Excavation (m2)		6.00
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	2.01
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.64



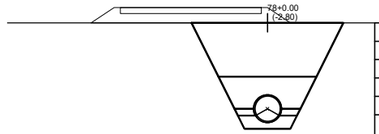
NO.		73+0.00
Design Level (El.m)		102.45
Original Ground Level (El.m)		104.85
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.23
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.03

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (7/9)	JUNE, 2022		B-45-07

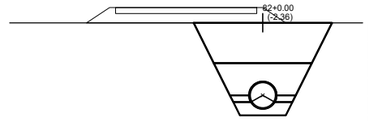
Cross Section of SC18 (8/9)

S=1:100

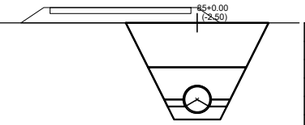
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



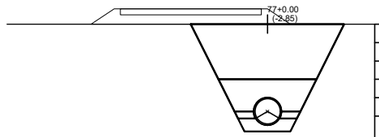
NO.		78+0.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		105.15
Embankment (m2)		1.96
Excavation (m2)		11.15
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.15
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.23



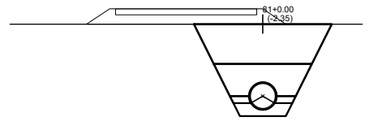
NO.		82+0.00
Design Level (El.m)		103.09
Original Ground Level (El.m)		105.45
Embankment (m2)		1.96
Excavation (m2)		9.06
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.07
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.01



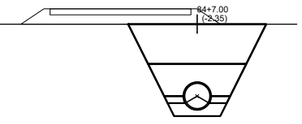
NO.		85+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.20
Embankment (m2)		1.96
Excavation (m2)		9.69
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.69
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.08



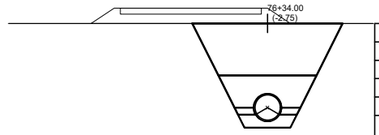
NO.		77+0.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		105.20
Embankment (m2)		1.96
Excavation (m2)		11.38
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.38
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.25



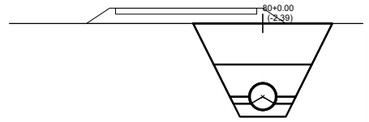
NO.		81+0.00
Design Level (El.m)		102.80
Original Ground Level (El.m)		105.15
Embankment (m2)		1.96
Excavation (m2)		9.00
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.00
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.00



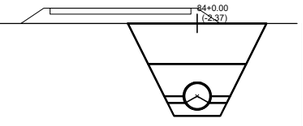
NO.		84+7.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.05
Embankment (m2)		1.96
Excavation (m2)		9.00
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.00
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.00



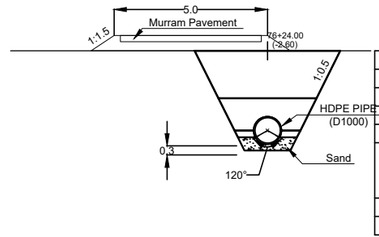
NO.		76+34.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		105.10
Embankment (m2)		1.96
Excavation (m2)		10.86
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	6.87
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.20



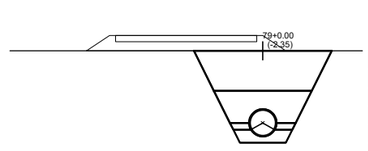
NO.		80+0.00
Design Level (El.m)		102.58
Original Ground Level (El.m)		104.96
Embankment (m2)		1.96
Excavation (m2)		9.18
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.18
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.02



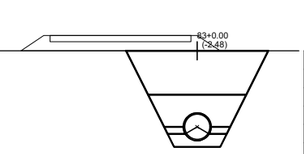
NO.		84+0.00
Design Level (El.m)		103.66
Original Ground Level (El.m)		106.03
Embankment (m2)		1.96
Excavation (m2)		9.09
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.09
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.01



NO.		76+24.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		104.95
Embankment (m2)		1.96
Excavation (m2)		10.15
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	6.16
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.12



NO.		79+0.00
Design Level (El.m)		102.35
Original Ground Level (El.m)		104.70
Embankment (m2)		1.96
Excavation (m2)		9.00
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.00
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.71



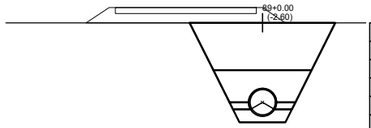
NO.		83+0.00
Design Level (El.m)		103.37
Original Ground Level (El.m)		105.86
Embankment (m2)		1.96
Excavation (m2)		9.61
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.62
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.07

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC18 (8/9)	JUNE, 2022		B-45-08

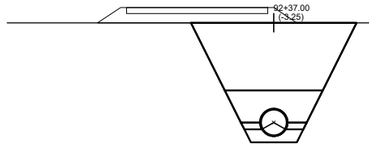
Cross Section of SC18 (9/9)

S=1:100

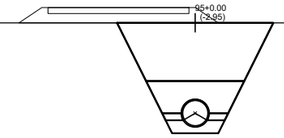
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



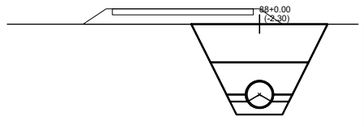
NO.		89+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.30
Embankment (m2)		1.96
Excavation (m2)		10.14
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	6.15
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.12



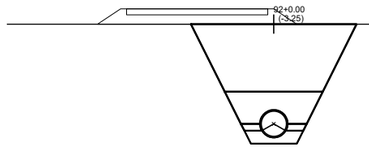
NO.		92+37.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.95
Embankment (m2)		1.96
Excavation (m2)		13.46
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	9.46
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.45



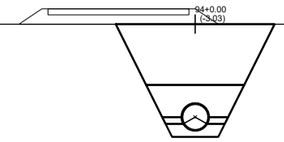
NO.		95+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.65
Embankment (m2)		1.96
Excavation (m2)		11.88
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.88
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.30



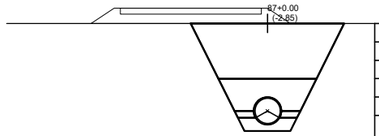
NO.		88+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.00
Embankment (m2)		1.96
Excavation (m2)		8.76
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	4.77
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.97



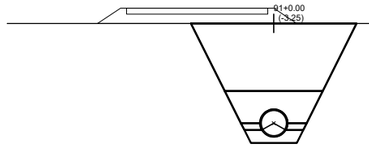
NO.		92+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.95
Embankment (m2)		1.96
Excavation (m2)		13.46
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	9.46
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.45



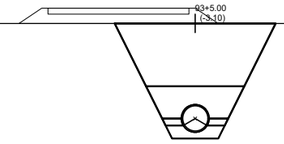
NO.		94+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.73
Embankment (m2)		1.96
Excavation (m2)		12.29
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.29
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.34



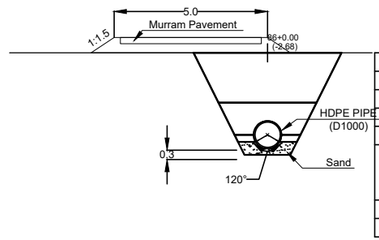
NO.		87+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.55
Embankment (m2)		1.96
Excavation (m2)		11.39
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.39
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.25



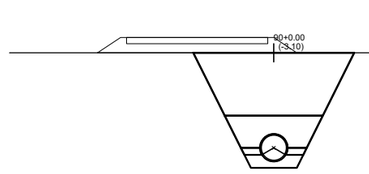
NO.		91+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.95
Embankment (m2)		1.96
Excavation (m2)		13.46
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	9.46
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.45



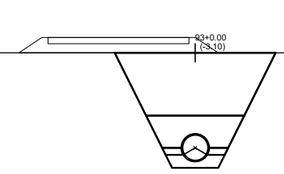
NO.		93+5.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.80
Embankment (m2)		1.96
Excavation (m2)		12.66
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.66
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.38



NO.		86+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.38
Embankment (m2)		1.96
Excavation (m2)		10.52
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	6.53
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.16



NO.		90+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.80
Embankment (m2)		1.96
Excavation (m2)		12.66
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.66
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.38



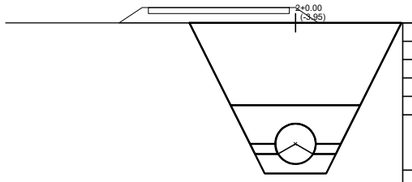
NO.		93+0.00
Design Level (El.m)		103.70
Original Ground Level (El.m)		106.80
Embankment (m2)		1.96
Excavation (m2)		12.66
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.66
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.38

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC18 (9/9)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-45-09

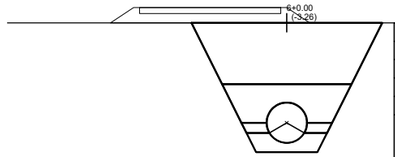
Cross Section of SC19 (1/16)

S=1:100

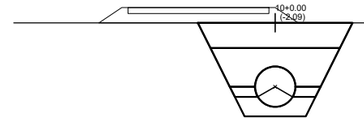
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



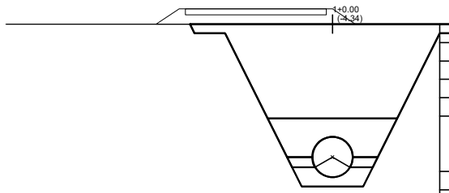
NO.		2+0.00
Design Level (El.m)		121.42
Original Ground Level (El.m)		125.37
Embankment (m2)		1.96
Excavation (m2)		21.88
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	14.97
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		9.21



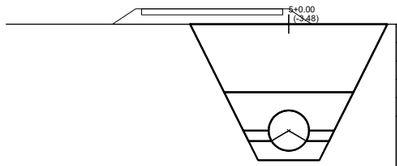
NO.		6+0.00
Design Level (El.m)		121.09
Original Ground Level (El.m)		124.35
Embankment (m2)		1.96
Excavation (m2)		17.35
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	10.44
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.86



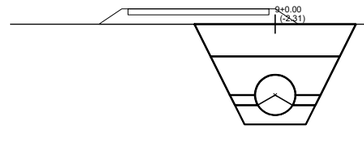
NO.		10+0.00
Design Level (El.m)		120.76
Original Ground Level (El.m)		122.85
Embankment (m2)		1.96
Excavation (m2)		10.74
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.83
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.27



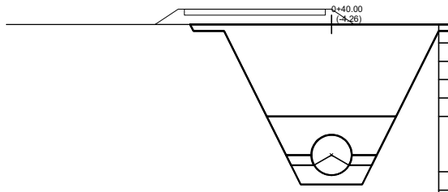
NO.		1+0.00
Design Level (El.m)		121.50
Original Ground Level (El.m)		125.84
Embankment (m2)		1.96
Excavation (m2)		25.22
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	18.31
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		10.40



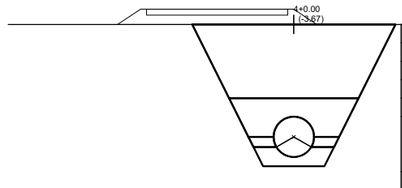
NO.		5+0.00
Design Level (El.m)		121.17
Original Ground Level (El.m)		124.65
Embankment (m2)		1.96
Excavation (m2)		18.73
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	11.82
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.97



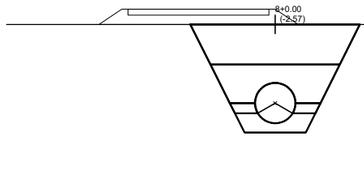
NO.		9+0.00
Design Level (El.m)		120.85
Original Ground Level (El.m)		123.16
Embankment (m2)		1.96
Excavation (m2)		11.89
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.98
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.39



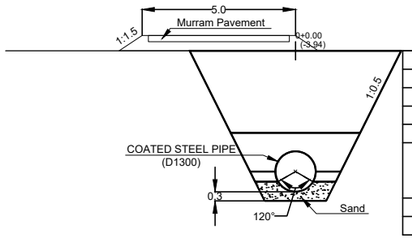
NO.		0+40.00
Design Level (El.m)		121.65
Original Ground Level (El.m)		125.91
Embankment (m2)		1.96
Excavation (m2)		24.48
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	17.57
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		10.36



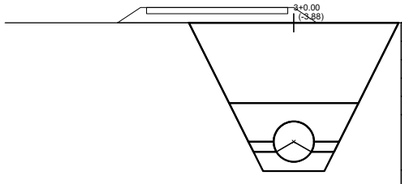
NO.		4+0.00
Design Level (El.m)		121.25
Original Ground Level (El.m)		124.92
Embankment (m2)		1.96
Excavation (m2)		19.97
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	13.06
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		9.06



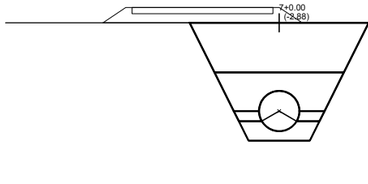
NO.		8+0.00
Design Level (El.m)		120.93
Original Ground Level (El.m)		123.49
Embankment (m2)		1.96
Excavation (m2)		13.28
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.37
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.51



NO.		0+0.00
Design Level (El.m)		122.27
Original Ground Level (El.m)		126.21
Embankment (m2)		1.96
Excavation (m2)		21.80
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	14.89
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		9.20



NO.		3+0.00
Design Level (El.m)		121.34
Original Ground Level (El.m)		125.21
Embankment (m2)		1.96
Excavation (m2)		21.38
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	14.47
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		9.17



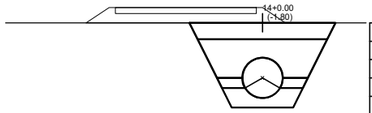
NO.		7+0.00
Design Level (El.m)		121.01
Original Ground Level (El.m)		123.89
Embankment (m2)		1.96
Excavation (m2)		15.07
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	8.16
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.67

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (1/16)	JUNE, 2022		B-46-01

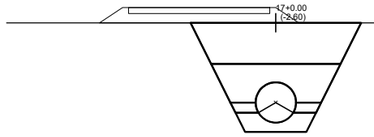
Cross Section of SC19 (2/16)

S=1:100

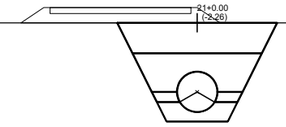
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



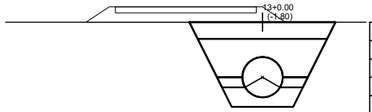
NO.		14+0.00
Design Level (El.m)		120.00
Original Ground Level (El.m)		121.80
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



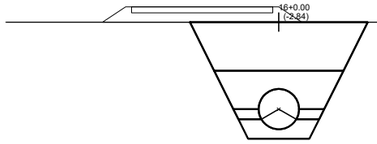
NO.		17+0.00
Design Level (El.m)		118.45
Original Ground Level (El.m)		121.05
Embankment (m2)		1.96
Excavation (m2)		13.45
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.54
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.53



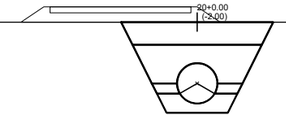
NO.		21+0.00
Design Level (El.m)		117.89
Original Ground Level (El.m)		120.15
Embankment (m2)		1.96
Excavation (m2)		11.60
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.69
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.36



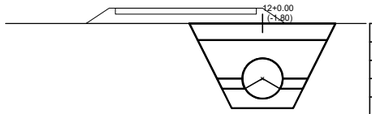
NO.		13+0.00
Design Level (El.m)		120.30
Original Ground Level (El.m)		122.10
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



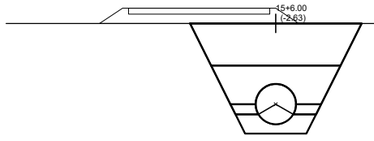
NO.		16+0.00
Design Level (El.m)		118.53
Original Ground Level (El.m)		121.37
Embankment (m2)		1.96
Excavation (m2)		14.84
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.93
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.65



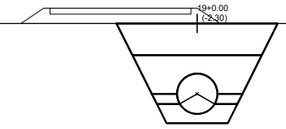
NO.		20+0.00
Design Level (El.m)		118.23
Original Ground Level (El.m)		120.23
Embankment (m2)		1.96
Excavation (m2)		10.29
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.38
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.23



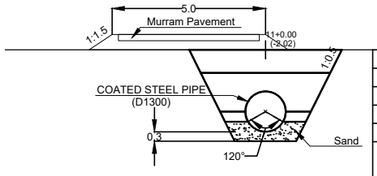
NO.		12+0.00
Design Level (El.m)		120.60
Original Ground Level (El.m)		122.40
Embankment (m2)		1.96
Excavation (m2)		9.33
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.42
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.13



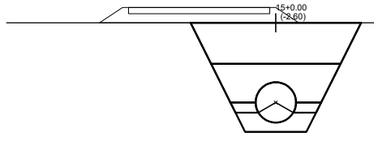
NO.		15+6.00
Design Level (El.m)		118.59
Original Ground Level (El.m)		121.22
Embankment (m2)		1.96
Excavation (m2)		13.64
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.73
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.55



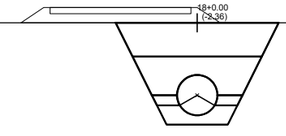
NO.		19+0.00
Design Level (El.m)		118.30
Original Ground Level (El.m)		120.60
Embankment (m2)		1.96
Excavation (m2)		11.82
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.91
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.38



NO.		11+0.00
Design Level (El.m)		120.68
Original Ground Level (El.m)		122.70
Embankment (m2)		1.96
Excavation (m2)		10.40
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	3.49
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.24



NO.		15+0.00
Design Level (El.m)		118.60
Original Ground Level (El.m)		121.20
Embankment (m2)		1.96
Excavation (m2)		13.46
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.55
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.53



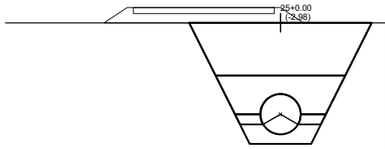
NO.		18+0.00
Design Level (El.m)		118.38
Original Ground Level (El.m)		120.74
Embankment (m2)		1.96
Excavation (m2)		12.17
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	5.26
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.41

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (2/16)	JUNE, 2022		B-46-02

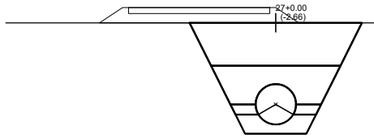
Cross Section of SC19 (3/16)

S=1:100

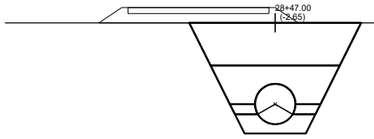
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



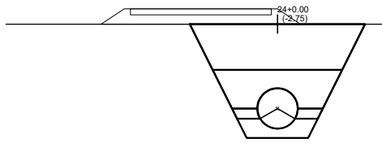
NO.		25+0.00
Design Level (El.m)		116.55
Original Ground Level (El.m)		119.54
Embankment (m2)		1.96
Excavation (m2)		15.67
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	8.76
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.72



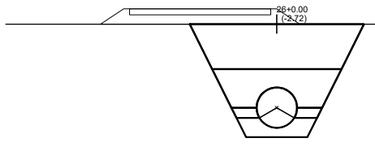
NO.		27+0.00
Design Level (El.m)		116.37
Original Ground Level (El.m)		119.03
Embankment (m2)		1.96
Excavation (m2)		13.79
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.88
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.56



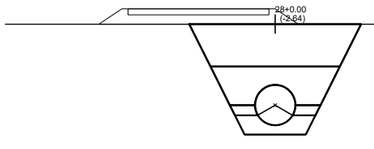
NO.		28+47.00
Design Level (El.m)		116.35
Original Ground Level (El.m)		119.00
Embankment (m2)		1.96
Excavation (m2)		13.74
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.83
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.56



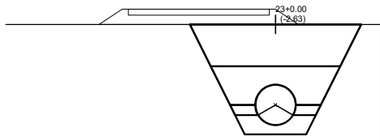
NO.		24+0.00
Design Level (El.m)		116.89
Original Ground Level (El.m)		119.64
Embankment (m2)		1.96
Excavation (m2)		14.31
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.40
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.61



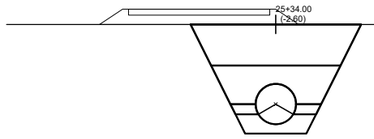
NO.		26+0.00
Design Level (El.m)		116.38
Original Ground Level (El.m)		119.10
Embankment (m2)		1.96
Excavation (m2)		14.16
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	7.25
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.59



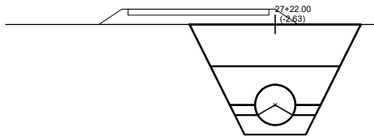
NO.		28+0.00
Design Level (El.m)		116.36
Original Ground Level (El.m)		119.00
Embankment (m2)		1.96
Excavation (m2)		13.69
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.78
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.55



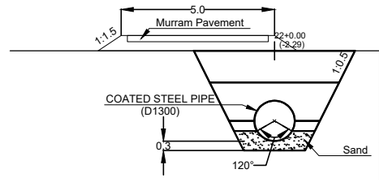
NO.		23+0.00
Design Level (El.m)		117.22
Original Ground Level (El.m)		119.85
Embankment (m2)		1.96
Excavation (m2)		13.60
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.69
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.54



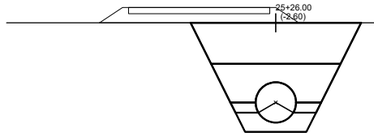
NO.		25+34.00
Design Level (El.m)		116.38
Original Ground Level (El.m)		118.98
Embankment (m2)		1.96
Excavation (m2)		13.45
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.54
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.53



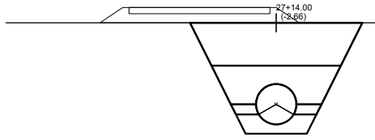
NO.		27+22.00
Design Level (El.m)		116.36
Original Ground Level (El.m)		118.99
Embankment (m2)		1.96
Excavation (m2)		13.62
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.70
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.54



NO.		22+0.00
Design Level (El.m)		117.56
Original Ground Level (El.m)		119.85
Embankment (m2)		1.96
Excavation (m2)		11.79
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	4.88
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.38



NO.		25+26.00
Design Level (El.m)		116.38
Original Ground Level (El.m)		118.98
Embankment (m2)		1.96
Excavation (m2)		13.46
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.55
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.53



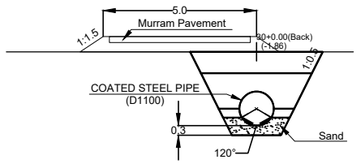
NO.		27+14.00
Design Level (El.m)		116.37
Original Ground Level (El.m)		119.02
Embankment (m2)		1.96
Excavation (m2)		13.79
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.88
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.56

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (3/16)	JUNE, 2022		B-46-03

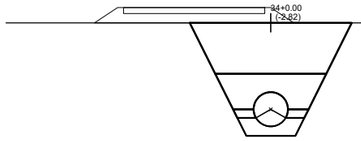
Cross Section of SC19 (4/16)

S=1:100

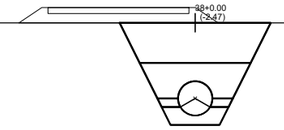
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



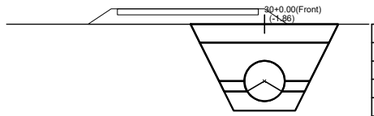
NO.		30+0.00(Back)
Design Level (El.m)		116.14
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		8.06
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.91



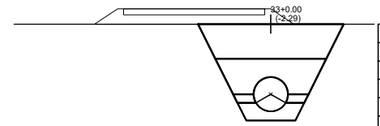
NO.		34+0.00
Design Level (El.m)		115.68
Original Ground Level (El.m)		118.50
Embankment (m2)		1.96
Excavation (m2)		12.68
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	7.40
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.39



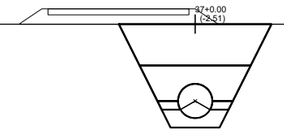
NO.		38+0.00
Design Level (El.m)		115.53
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		10.87
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	5.59
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.21



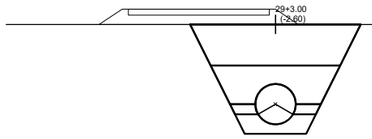
NO.		30+0.00(Front)
Design Level (El.m)		116.14
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		9.62
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	2.71
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.16



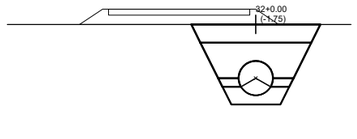
NO.		33+0.00
Design Level (El.m)		115.71
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		9.99
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	4.71
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.12



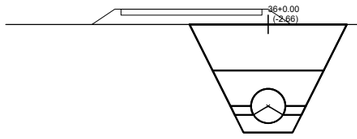
NO.		37+0.00
Design Level (El.m)		115.57
Original Ground Level (El.m)		118.08
Embankment (m2)		1.96
Excavation (m2)		11.08
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	5.80
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.24



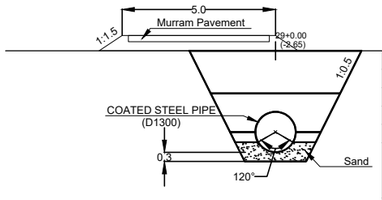
NO.		29+3.00
Design Level (El.m)		116.35
Original Ground Level (El.m)		118.95
Embankment (m2)		1.96
Excavation (m2)		13.48
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.57
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.53



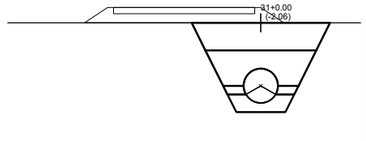
NO.		32+0.00
Design Level (El.m)		115.75
Original Ground Level (El.m)		117.50
Embankment (m2)		1.96
Excavation (m2)		7.59
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



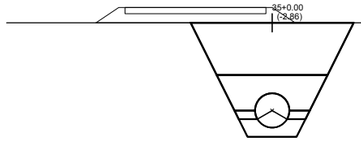
NO.		36+0.00
Design Level (El.m)		115.61
Original Ground Level (El.m)		118.27
Embankment (m2)		1.96
Excavation (m2)		11.85
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	6.57
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.31



NO.		29+0.00
Design Level (El.m)		116.35
Original Ground Level (El.m)		119.00
Embankment (m2)		1.96
Excavation (m2)		13.74
Back fill	Manpower+Compactor(m2)	0.51
	Backhoe+Compactor(m2)	3.84
	Backhoe+Roller(m2)	6.83
Base Sand (m2)		1.19
Woodcutting & Roots Removal (m)		8.56



NO.		31+0.00
Design Level (El.m)		115.94
Original Ground Level (El.m)		118.00
Embankment (m2)		1.96
Excavation (m2)		8.92
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.64
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.01



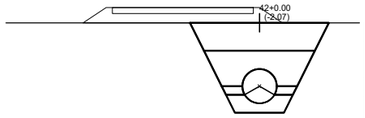
NO.		35+0.00
Design Level (El.m)		115.64
Original Ground Level (El.m)		118.50
Embankment (m2)		1.96
Excavation (m2)		12.87
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	7.59
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.41

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (4/16)	JUNE, 2022		B-46-04

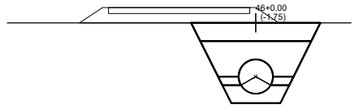
Cross Section of SC19 (5/16)

S=1:100

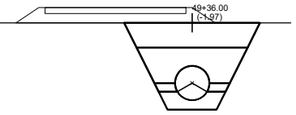
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



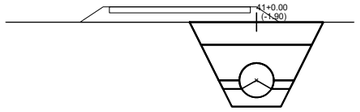
NO.		42+0.00
Design Level (El.m)		114.93
Original Ground Level (El.m)		117.00
Embankment (m2)		1.96
Excavation (m2)		8.99
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.71
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.02



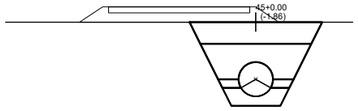
NO.		46+0.00
Design Level (El.m)		113.87
Original Ground Level (El.m)		115.63
Embankment (m2)		1.96
Excavation (m2)		7.61
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



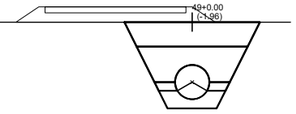
NO.		49+36.00
Design Level (El.m)		113.38
Original Ground Level (El.m)		115.35
Embankment (m2)		1.96
Excavation (m2)		8.52
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.25
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



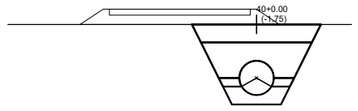
NO.		41+0.00
Design Level (El.m)		115.19
Original Ground Level (El.m)		117.09
Embankment (m2)		1.96
Excavation (m2)		8.21
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.93
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.93



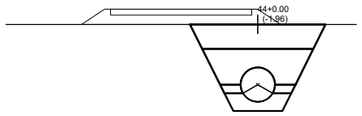
NO.		45+0.00
Design Level (El.m)		114.14
Original Ground Level (El.m)		116.00
Embankment (m2)		1.96
Excavation (m2)		8.08
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.80
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.91



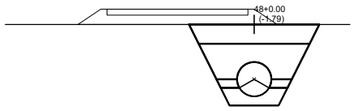
NO.		49+0.00
Design Level (El.m)		113.47
Original Ground Level (El.m)		115.43
Embankment (m2)		1.96
Excavation (m2)		8.48
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.20
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



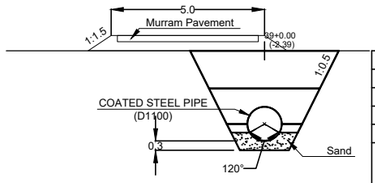
NO.		40+0.00
Design Level (El.m)		115.46
Original Ground Level (El.m)		117.21
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.29
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.85



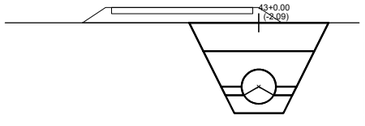
NO.		44+0.00
Design Level (El.m)		114.40
Original Ground Level (El.m)		116.36
Embankment (m2)		1.96
Excavation (m2)		8.50
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.22
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



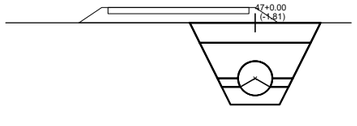
NO.		48+0.00
Design Level (El.m)		113.61
Original Ground Level (El.m)		115.39
Embankment (m2)		1.96
Excavation (m2)		7.74
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.46
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.87



NO.		39+0.00
Design Level (El.m)		115.50
Original Ground Level (El.m)		117.88
Embankment (m2)		1.96
Excavation (m2)		10.47
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	5.19
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.17



NO.		43+0.00
Design Level (El.m)		114.67
Original Ground Level (El.m)		116.75
Embankment (m2)		1.96
Excavation (m2)		9.06
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.78
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.02



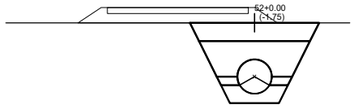
NO.		47+0.00
Design Level (El.m)		113.74
Original Ground Level (El.m)		115.55
Embankment (m2)		1.96
Excavation (m2)		7.84
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.56
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.89

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (5/16)	JUNE, 2022		B-46-05

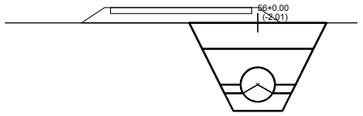
Cross Section of SC19 (6/16)

S=1:100

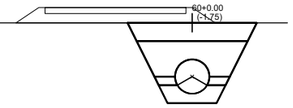
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



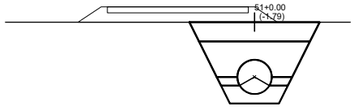
NO.		52+0.00
Design Level (El.m)		113.08
Original Ground Level (El.m)		114.83
Embankment (m2)		1.96
Excavation (m2)		7.60
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



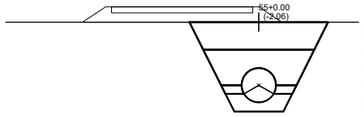
NO.		56+0.00
Design Level (El.m)		111.65
Original Ground Level (El.m)		113.66
Embankment (m2)		1.96
Excavation (m2)		8.73
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.45
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.99



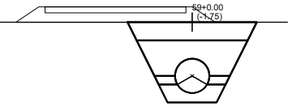
NO.		60+0.00
Design Level (El.m)		110.31
Original Ground Level (El.m)		112.07
Embankment (m2)		1.96
Excavation (m2)		7.61
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



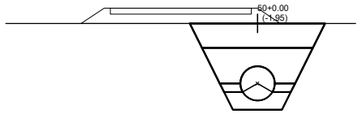
NO.		51+0.00
Design Level (El.m)		113.21
Original Ground Level (El.m)		115.00
Embankment (m2)		1.96
Excavation (m2)		7.75
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.47
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.87



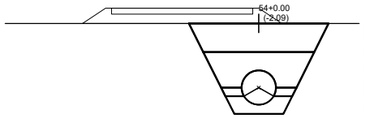
NO.		55+0.00
Design Level (El.m)		112.01
Original Ground Level (El.m)		114.06
Embankment (m2)		1.96
Excavation (m2)		8.93
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.65
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.01



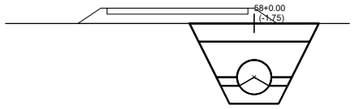
NO.		59+0.00
Design Level (El.m)		110.62
Original Ground Level (El.m)		112.38
Embankment (m2)		1.96
Excavation (m2)		7.61
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



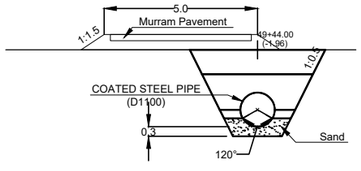
NO.		50+0.00
Design Level (El.m)		113.34
Original Ground Level (El.m)		115.30
Embankment (m2)		1.96
Excavation (m2)		8.47
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.19
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



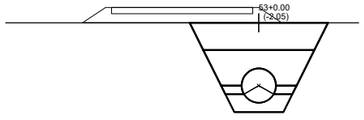
NO.		54+0.00
Design Level (El.m)		112.36
Original Ground Level (El.m)		114.45
Embankment (m2)		1.96
Excavation (m2)		9.08
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.80
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.03



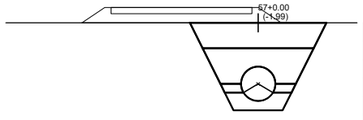
NO.		58+0.00
Design Level (El.m)		110.93
Original Ground Level (El.m)		112.68
Embankment (m2)		1.96
Excavation (m2)		7.60
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.32
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



NO.		49+44.00
Design Level (El.m)		113.36
Original Ground Level (El.m)		115.32
Embankment (m2)		1.96
Excavation (m2)		8.48
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.21
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



NO.		53+0.00
Design Level (El.m)		112.72
Original Ground Level (El.m)		114.77
Embankment (m2)		1.96
Excavation (m2)		8.91
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.63
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.01



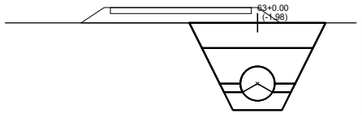
NO.		57+0.00
Design Level (El.m)		111.29
Original Ground Level (El.m)		113.28
Embankment (m2)		1.96
Excavation (m2)		8.64
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.37
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.98

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (6/16)	JUNE, 2022		B-46-06

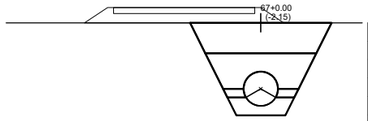
Cross Section of SC19 (7/16)

S=1:100

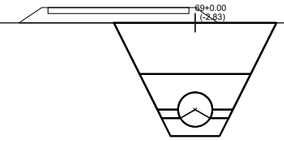
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



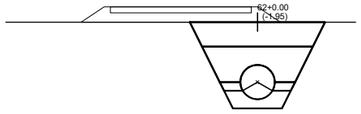
NO.		63+0.00
Design Level (El.m)		109.89
Original Ground Level (El.m)		111.88
Embankment (m2)		1.96
Excavation (m2)		8.60
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.33
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.97



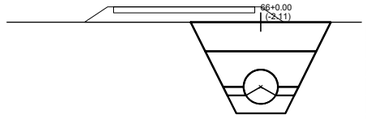
NO.		67+0.00
Design Level (El.m)		109.75
Original Ground Level (El.m)		111.90
Embankment (m2)		1.96
Excavation (m2)		9.37
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	4.09
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.06



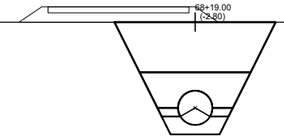
NO.		69+0.00
Design Level (El.m)		109.17
Original Ground Level (El.m)		112.00
Embankment (m2)		1.96
Excavation (m2)		12.74
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	7.46
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.40



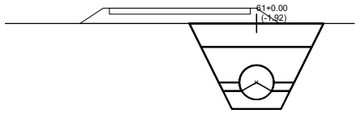
NO.		62+0.00
Design Level (El.m)		110.03
Original Ground Level (El.m)		111.99
Embankment (m2)		1.96
Excavation (m2)		8.47
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.19
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.96



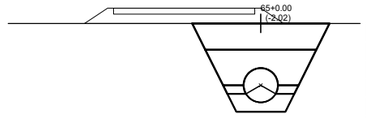
NO.		66+0.00
Design Level (El.m)		109.75
Original Ground Level (El.m)		111.86
Embankment (m2)		1.96
Excavation (m2)		9.18
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.90
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.04



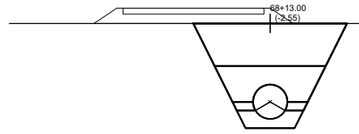
NO.		68+19.00
Design Level (El.m)		109.20
Original Ground Level (El.m)		112.00
Embankment (m2)		1.96
Excavation (m2)		12.54
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	7.27
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.38



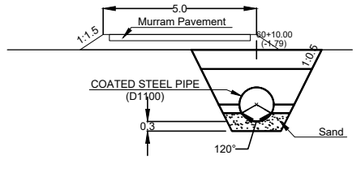
NO.		61+0.00
Design Level (El.m)		110.17
Original Ground Level (El.m)		112.09
Embankment (m2)		1.96
Excavation (m2)		8.33
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.05
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.94



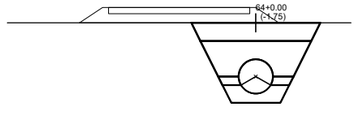
NO.		65+0.00
Design Level (El.m)		109.75
Original Ground Level (El.m)		111.77
Embankment (m2)		1.96
Excavation (m2)		8.74
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.46
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.99



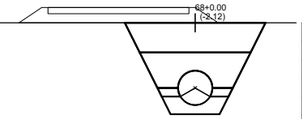
NO.		68+13.00
Design Level (El.m)		109.21
Original Ground Level (El.m)		111.76
Embankment (m2)		1.96
Excavation (m2)		11.30
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	6.02
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.26



NO.		60+10.00
Design Level (El.m)		110.28
Original Ground Level (El.m)		112.07
Embankment (m2)		1.96
Excavation (m2)		7.75
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.47
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.87



NO.		64+0.00
Design Level (El.m)		109.75
Original Ground Level (El.m)		111.50
Embankment (m2)		1.96
Excavation (m2)		7.59
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	2.31
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		7.86



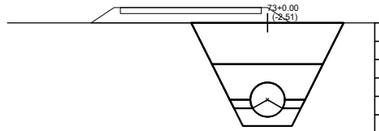
NO.		68+0.00
Design Level (El.m)		109.75
Original Ground Level (El.m)		111.87
Embankment (m2)		1.96
Excavation (m2)		9.22
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	3.94
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.04

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (7/16)	JUNE, 2022		B-46-07

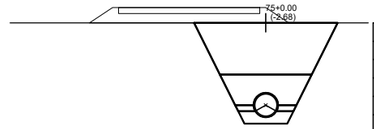
Cross Section of SC19 (8/16)

S=1:100

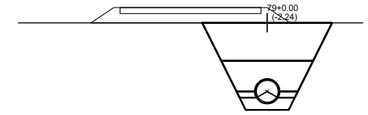
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



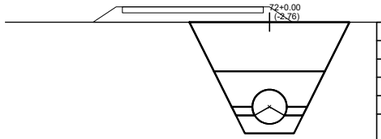
NO.		73+0.00
Design Level (El.m)		108.93
Original Ground Level (El.m)		111.44
Embankment (m2)		1.96
Excavation (m2)		11.06
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	5.78
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.23



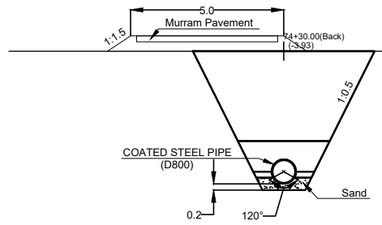
NO.		75+0.00
Design Level (El.m)		108.82
Original Ground Level (El.m)		111.50
Embankment (m2)		1.96
Excavation (m2)		9.99
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	6.47
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.09



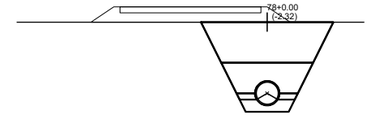
NO.		79+0.00
Design Level (El.m)		108.58
Original Ground Level (El.m)		110.82
Embankment (m2)		1.96
Excavation (m2)		7.99
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.47
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.87



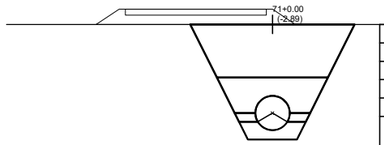
NO.		72+0.00
Design Level (El.m)		108.99
Original Ground Level (El.m)		111.76
Embankment (m2)		1.96
Excavation (m2)		12.37
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	7.10
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.36



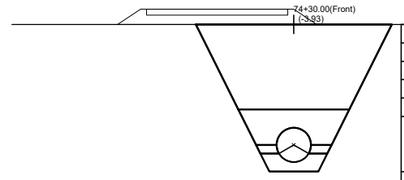
NO.		74+30.00(Back)
Design Level (El.m)		108.84
Original Ground Level (El.m)		112.77
Embankment (m2)		1.96
Excavation (m2)		16.60
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	13.08
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		8.71



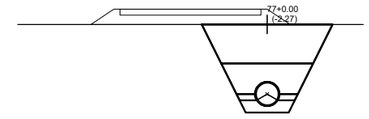
NO.		78+0.00
Design Level (El.m)		108.64
Original Ground Level (El.m)		110.96
Embankment (m2)		1.96
Excavation (m2)		8.36
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.84
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.91



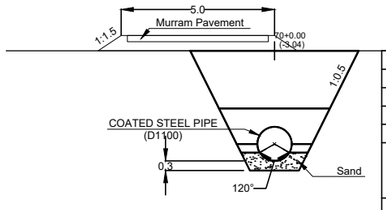
NO.		71+0.00
Design Level (El.m)		109.05
Original Ground Level (El.m)		111.94
Embankment (m2)		1.96
Excavation (m2)		13.05
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	7.77
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.43



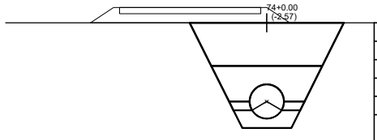
NO.		74+30.00(Front)
Design Level (El.m)		108.84
Original Ground Level (El.m)		112.77
Embankment (m2)		1.96
Excavation (m2)		19.14
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	13.86
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.95



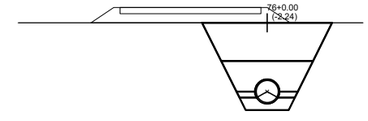
NO.		77+0.00
Design Level (El.m)		108.70
Original Ground Level (El.m)		110.97
Embankment (m2)		1.96
Excavation (m2)		8.14
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.62
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.89



NO.		70+0.00
Design Level (El.m)		109.11
Original Ground Level (El.m)		112.15
Embankment (m2)		1.96
Excavation (m2)		13.85
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	8.57
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.50



NO.		74+0.00
Design Level (El.m)		108.88
Original Ground Level (El.m)		111.44
Embankment (m2)		1.96
Excavation (m2)		11.38
Back fill	Manpower+Compactor(m2)	0.35
	Backhoe+Compactor(m2)	3.04
	Backhoe+Roller(m2)	6.10
Base Sand (m2)		0.90
Woodcutting & Roots Removal (m)		8.27



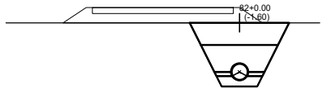
NO.		76+0.00
Design Level (El.m)		108.76
Original Ground Level (El.m)		111.00
Embankment (m2)		1.96
Excavation (m2)		8.02
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	4.50
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.87

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (8/16)	JUNE, 2022		B-46-08

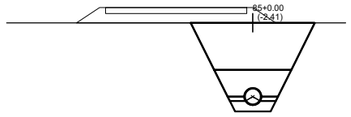
Cross Section of SC19 (9/16)

S=1:100

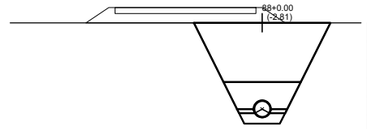
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



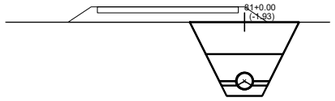
NO.		82+0.00
Design Level (El.m)		108.40
Original Ground Level (El.m)		110.00
Embankment (m2)		1.96
Excavation (m2)		4.58
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.07
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.37



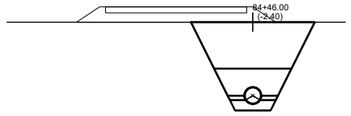
NO.		85+0.00
Design Level (El.m)		106.59
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		7.53
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.03
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.78



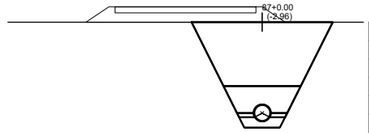
NO.		88+0.00
Design Level (El.m)		106.19
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		9.22
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.72
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.97



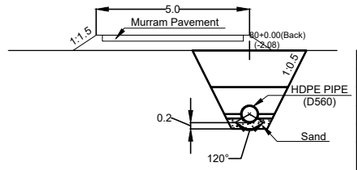
NO.		81+0.00
Design Level (El.m)		108.46
Original Ground Level (El.m)		110.39
Embankment (m2)		1.96
Excavation (m2)		5.69
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.18
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.53



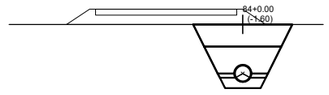
NO.		84+46.00
Design Level (El.m)		106.60
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		7.49
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.99
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.77



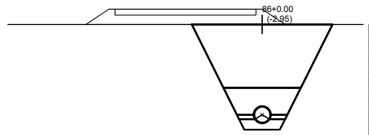
NO.		87+0.00
Design Level (El.m)		106.32
Original Ground Level (El.m)		109.29
Embankment (m2)		1.96
Excavation (m2)		9.92
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	7.42
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.05



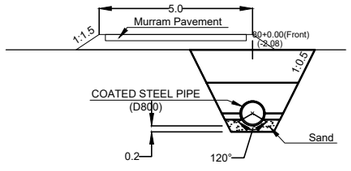
NO.		80+0.00(Back)
Design Level (El.m)		108.52
Original Ground Level (El.m)		110.60
Embankment (m2)		1.96
Excavation (m2)		6.24
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.74
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.61



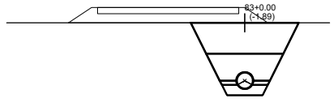
NO.		84+0.00
Design Level (El.m)		107.68
Original Ground Level (El.m)		109.28
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.06
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.37



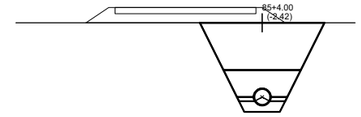
NO.		86+0.00
Design Level (El.m)		106.46
Original Ground Level (El.m)		109.40
Embankment (m2)		1.96
Excavation (m2)		9.85
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	7.35
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.04



NO.		80+0.00(Front)
Design Level (El.m)		108.52
Original Ground Level (El.m)		110.60
Embankment (m2)		1.96
Excavation (m2)		7.34
Back fill	Manpower+Compactor(m2)	0.23
	Backhoe+Compactor(m2)	2.25
	Backhoe+Roller(m2)	3.81
Base Sand (m2)		0.54
Woodcutting & Roots Removal (m)		7.79



NO.		83+0.00
Design Level (El.m)		108.04
Original Ground Level (El.m)		109.93
Embankment (m2)		1.96
Excavation (m2)		5.54
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.04
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.51



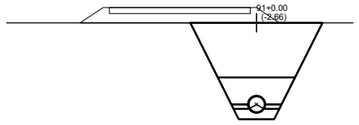
NO.		85+4.00
Design Level (El.m)		106.58
Original Ground Level (El.m)		109.00
Embankment (m2)		1.96
Excavation (m2)		7.57
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.07
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.78

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of SC19 (9/16)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	B-46-09

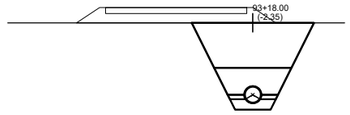
Cross Section of SC19 (10/16)

S=1:100

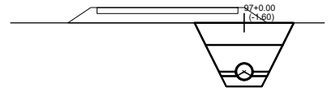
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



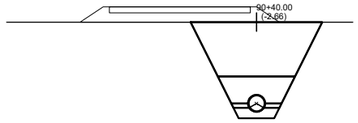
NO.		91+0.00
Design Level (El.m)		105.79
Original Ground Level (El.m)		108.46
Embankment (m2)		1.96
Excavation (m2)		8.59
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.09
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.90



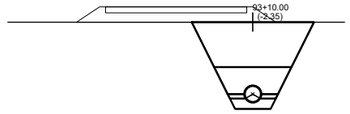
NO.		93+18.00
Design Level (El.m)		105.50
Original Ground Level (El.m)		107.85
Embankment (m2)		1.96
Excavation (m2)		7.29
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.78
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.74



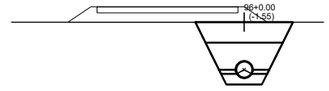
NO.		97+0.00
Design Level (El.m)		106.22
Original Ground Level (El.m)		107.82
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.07
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.37



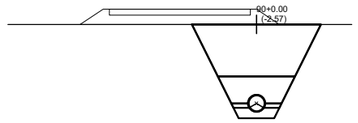
NO.		90+40.00
Design Level (El.m)		105.82
Original Ground Level (El.m)		108.47
Embankment (m2)		1.96
Excavation (m2)		8.55
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.05
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.90



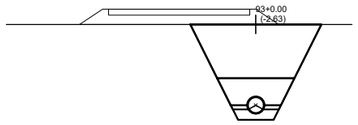
NO.		93+10.00
Design Level (El.m)		105.50
Original Ground Level (El.m)		107.85
Embankment (m2)		1.96
Excavation (m2)		7.29
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.78
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.74



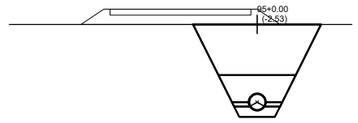
NO.		96+0.00
Design Level (El.m)		106.75
Original Ground Level (El.m)		108.30
Embankment (m2)		1.96
Excavation (m2)		4.42
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.34



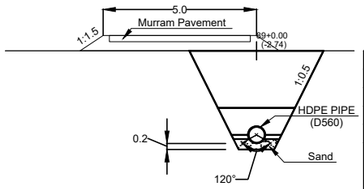
NO.		90+0.00
Design Level (El.m)		105.93
Original Ground Level (El.m)		108.50
Embankment (m2)		1.96
Excavation (m2)		8.21
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.71
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.86



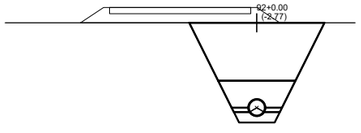
NO.		93+0.00
Design Level (El.m)		105.53
Original Ground Level (El.m)		108.16
Embankment (m2)		1.96
Excavation (m2)		8.45
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.95
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.89



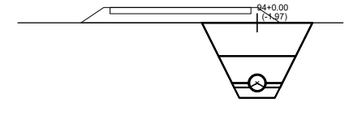
NO.		95+0.00
Design Level (El.m)		106.82
Original Ground Level (El.m)		109.35
Embankment (m2)		1.96
Excavation (m2)		8.04
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.54
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.84



NO.		89+0.00
Design Level (El.m)		106.06
Original Ground Level (El.m)		108.80
Embankment (m2)		1.96
Excavation (m2)		8.92
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.42
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.94



NO.		92+0.00
Design Level (El.m)		105.66
Original Ground Level (El.m)		108.43
Embankment (m2)		1.96
Excavation (m2)		9.05
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.55
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.96



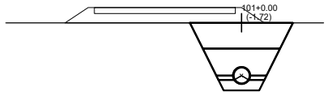
NO.		94+0.00
Design Level (El.m)		106.88
Original Ground Level (El.m)		108.85
Embankment (m2)		1.96
Excavation (m2)		5.83
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.32
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.55

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (10/16)	JUNE, 2022		B-46-10

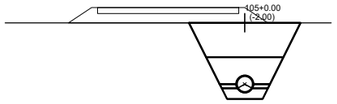
Cross Section of SC19 (11/16)

S=1:100

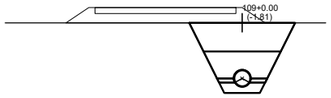
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



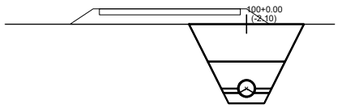
NO.		101+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.42
Embankment (m2)		1.96
Excavation (m2)		4.98
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.48
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.43



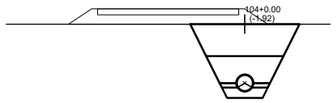
NO.		105+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.70
Embankment (m2)		1.96
Excavation (m2)		5.95
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.45
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.57



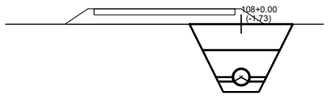
NO.		109+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.15
Embankment (m2)		1.96
Excavation (m2)		5.29
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.78
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.48



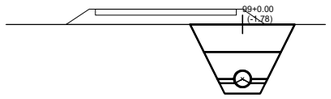
NO.		100+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.80
Embankment (m2)		1.96
Excavation (m2)		6.34
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.83
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.62



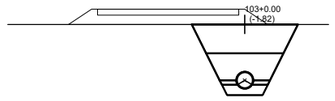
NO.		104+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.62
Embankment (m2)		1.96
Excavation (m2)		5.68
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.18
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.53



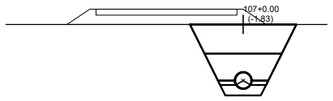
NO.		108+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.07
Embankment (m2)		1.96
Excavation (m2)		5.01
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.51
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.44



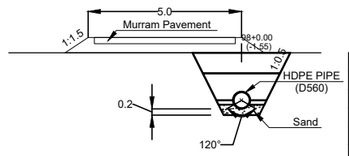
NO.		99+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.48
Embankment (m2)		1.96
Excavation (m2)		5.16
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.66
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.46



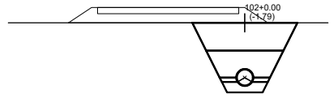
NO.		103+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.52
Embankment (m2)		1.96
Excavation (m2)		5.33
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.82
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.48



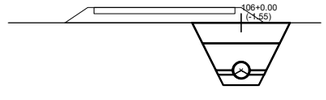
NO.		107+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.17
Embankment (m2)		1.96
Excavation (m2)		5.35
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.85
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.49



NO.		98+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.25
Embankment (m2)		1.96
Excavation (m2)		4.42
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.91
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.34



NO.		102+0.00
Design Level (El.m)		105.70
Original Ground Level (El.m)		107.49
Embankment (m2)		1.96
Excavation (m2)		5.20
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.70
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.46



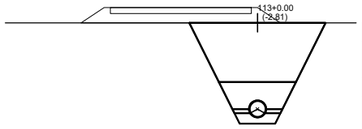
NO.		106+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		106.89
Embankment (m2)		1.96
Excavation (m2)		4.42
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.92
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.35

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (11/16)	JUNE, 2022		B-46-11

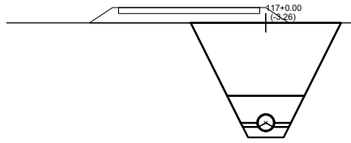
Cross Section of SC19 (12/16)

S=1:100

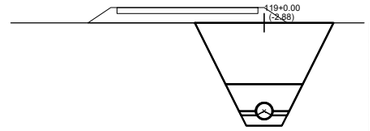
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



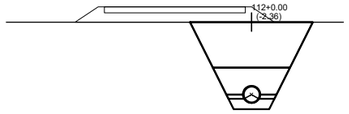
NO.		113+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.15
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.73
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.97



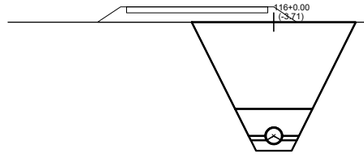
NO.		117+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.60
Embankment (m2)		1.96
Excavation (m2)		11.33
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	8.83
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.20



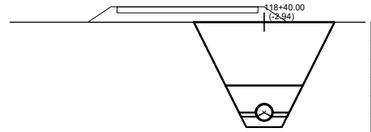
NO.		119+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.22
Embankment (m2)		1.96
Excavation (m2)		9.53
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	7.03
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.01



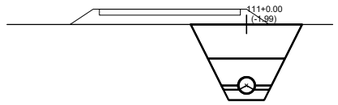
NO.		112+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.70
Embankment (m2)		1.96
Excavation (m2)		7.33
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.82
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.75



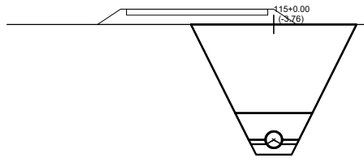
NO.		116+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		109.05
Embankment (m2)		1.96
Excavation (m2)		13.64
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	11.14
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.42



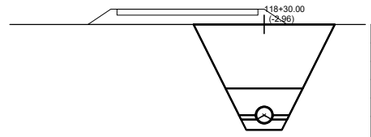
NO.		118+40.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.28
Embankment (m2)		1.96
Excavation (m2)		9.83
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	7.33
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.04



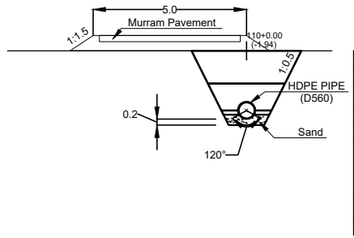
NO.		111+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.33
Embankment (m2)		1.96
Excavation (m2)		5.91
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.41
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.56



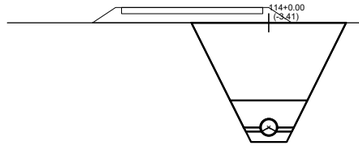
NO.		115+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		109.10
Embankment (m2)		1.96
Excavation (m2)		13.93
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	11.43
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.45



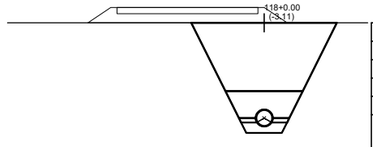
NO.		118+30.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.30
Embankment (m2)		1.96
Excavation (m2)		9.91
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	7.40
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.05



NO.		110+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.29
Embankment (m2)		1.96
Excavation (m2)		5.75
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.25
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.54



NO.		114+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.75
Embankment (m2)		1.96
Excavation (m2)		12.08
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	9.58
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.27



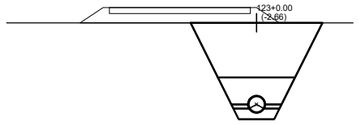
NO.		118+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.45
Embankment (m2)		1.96
Excavation (m2)		10.61
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	8.11
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.12

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (12/16)	JUNE, 2022		B-46-12

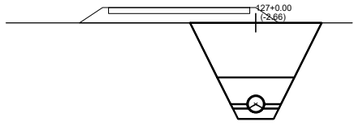
Cross Section of SC19 (13/16)

S=1:100

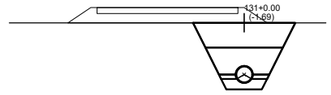
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



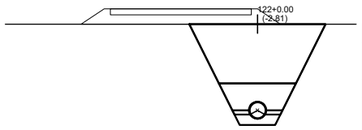
NO.		123+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.00
Embankment (m2)		1.96
Excavation (m2)		8.57
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.07
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.90



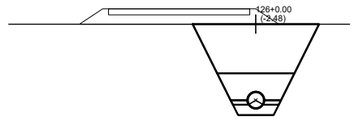
NO.		127+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.00
Embankment (m2)		1.96
Excavation (m2)		8.55
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.05
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.90



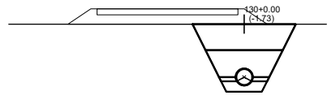
NO.		131+0.00
Design Level (El.m)		105.03
Original Ground Level (El.m)		106.72
Embankment (m2)		1.96
Excavation (m2)		4.87
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.37
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.42



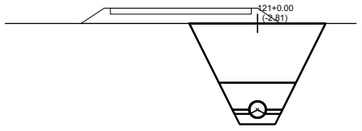
NO.		122+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.15
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.73
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.97



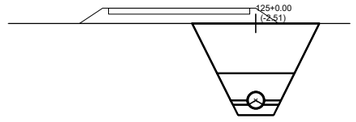
NO.		126+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.82
Embankment (m2)		1.96
Excavation (m2)		7.83
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.32
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.81



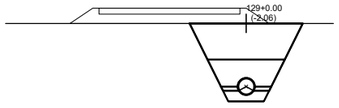
NO.		130+0.00
Design Level (El.m)		105.18
Original Ground Level (El.m)		106.91
Embankment (m2)		1.96
Excavation (m2)		4.99
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.49
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.43



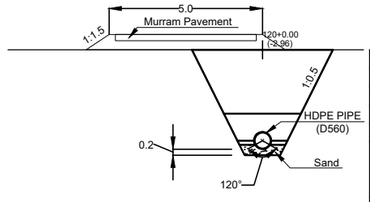
NO.		121+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.15
Embankment (m2)		1.96
Excavation (m2)		9.23
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	6.73
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.97



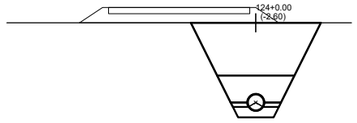
NO.		125+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.85
Embankment (m2)		1.96
Excavation (m2)		7.94
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.44
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.82



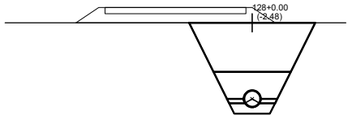
NO.		129+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.40
Embankment (m2)		1.96
Excavation (m2)		6.16
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.66
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.60



NO.		120+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		108.30
Embankment (m2)		1.96
Excavation (m2)		9.91
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	7.40
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		8.05



NO.		124+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.94
Embankment (m2)		1.96
Excavation (m2)		8.32
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.81
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.87



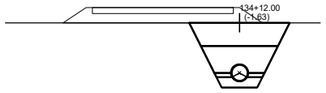
NO.		128+0.00
Design Level (El.m)		105.34
Original Ground Level (El.m)		107.82
Embankment (m2)		1.96
Excavation (m2)		7.82
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	5.32
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.81

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (13/16)	JUNE, 2022		B-46-13

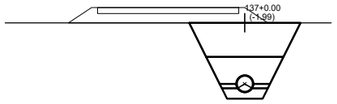
Cross Section of SC19 (14/16)

S=1:100

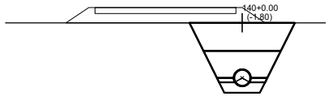
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



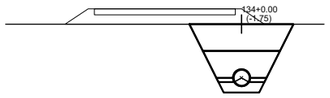
NO.		134+12.00
Design Level (El.m)		104.57
Original Ground Level (El.m)		106.20
Embankment (m2)		1.96
Excavation (m2)		4.69
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.18
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.39



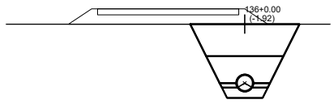
NO.		137+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.54
Embankment (m2)		1.96
Excavation (m2)		5.93
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.43
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.57



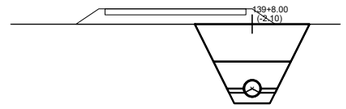
NO.		140+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.35
Embankment (m2)		1.96
Excavation (m2)		5.24
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.74
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.47



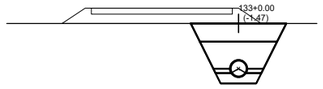
NO.		134+0.00
Design Level (El.m)		104.60
Original Ground Level (El.m)		106.35
Embankment (m2)		1.96
Excavation (m2)		5.07
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.57
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.45



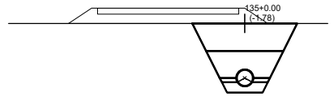
NO.		136+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.47
Embankment (m2)		1.96
Excavation (m2)		5.68
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.18
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.53



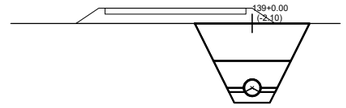
NO.		139+8.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.65
Embankment (m2)		1.96
Excavation (m2)		6.32
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.82
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.62



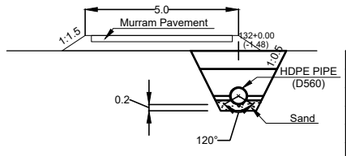
NO.		133+0.00
Design Level (El.m)		104.73
Original Ground Level (El.m)		106.21
Embankment (m2)		1.96
Excavation (m2)		4.18
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.68
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



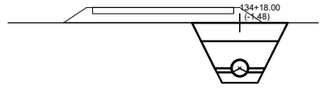
NO.		135+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.33
Embankment (m2)		1.96
Excavation (m2)		5.17
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.66
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.46



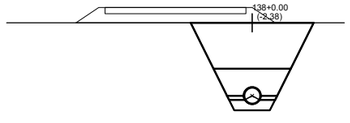
NO.		139+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.65
Embankment (m2)		1.96
Excavation (m2)		6.32
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.82
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.62



NO.		132+0.00
Design Level (El.m)		104.87
Original Ground Level (El.m)		106.35
Embankment (m2)		1.96
Excavation (m2)		4.18
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.68
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



NO.		134+18.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.03
Embankment (m2)		1.96
Excavation (m2)		4.19
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.69
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



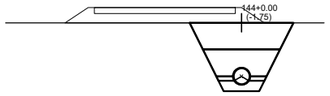
NO.		138+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.93
Embankment (m2)		1.96
Excavation (m2)		7.40
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	4.89
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.76

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (14/16)	JUNE, 2022		B-46-14

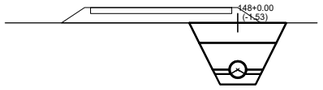
Cross Section of SC19 (15/16)

S=1:100

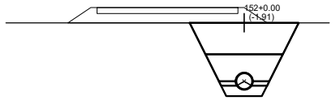
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



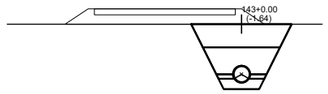
NO.		144+0.00
Design Level (El.m)		103.58
Original Ground Level (El.m)		105.33
Embankment (m2)		1.96
Excavation (m2)		5.07
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.56
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.44



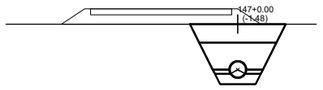
NO.		148+0.00
Design Level (El.m)		102.57
Original Ground Level (El.m)		104.10
Embankment (m2)		1.96
Excavation (m2)		4.35
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.85
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.33



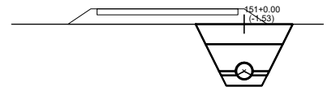
NO.		152+0.00
Design Level (El.m)		102.23
Original Ground Level (El.m)		104.14
Embankment (m2)		1.96
Excavation (m2)		5.63
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.13
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.53



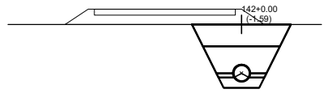
NO.		143+0.00
Design Level (El.m)		103.91
Original Ground Level (El.m)		105.54
Embankment (m2)		1.96
Excavation (m2)		4.69
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.19
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.39



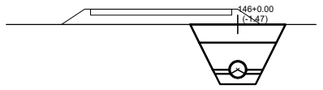
NO.		147+0.00
Design Level (El.m)		102.62
Original Ground Level (El.m)		104.10
Embankment (m2)		1.96
Excavation (m2)		4.19
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.69
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



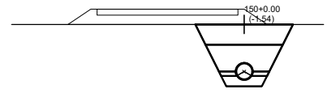
NO.		151+0.00
Design Level (El.m)		102.42
Original Ground Level (El.m)		103.95
Embankment (m2)		1.96
Excavation (m2)		4.35
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.85
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.33



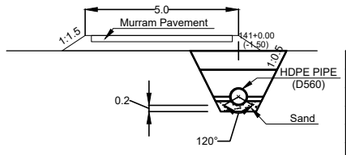
NO.		142+0.00
Design Level (El.m)		104.23
Original Ground Level (El.m)		105.82
Embankment (m2)		1.96
Excavation (m2)		4.54
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.04
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.36



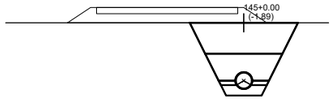
NO.		146+0.00
Design Level (El.m)		102.94
Original Ground Level (El.m)		104.41
Embankment (m2)		1.96
Excavation (m2)		4.16
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.66
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.31



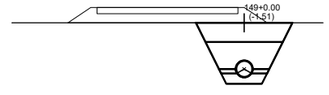
NO.		150+0.00
Design Level (El.m)		102.47
Original Ground Level (El.m)		104.01
Embankment (m2)		1.96
Excavation (m2)		4.37
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.87
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.34



NO.		141+0.00
Design Level (El.m)		104.55
Original Ground Level (El.m)		106.05
Embankment (m2)		1.96
Excavation (m2)		4.26
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.75
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.32



NO.		145+0.00
Design Level (El.m)		103.26
Original Ground Level (El.m)		105.15
Embankment (m2)		1.96
Excavation (m2)		5.56
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	3.05
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.51



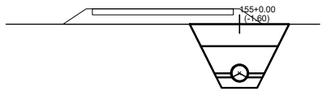
NO.		149+0.00
Design Level (El.m)		102.52
Original Ground Level (El.m)		104.03
Embankment (m2)		1.96
Excavation (m2)		4.28
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	1.78
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.32

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	S=1:100 DRAWING No
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	
		Cross Section of SC19 (15/16)	JUNE, 2022		B-46-15

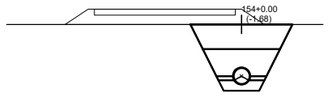
Cross Section of SC19 (16/16)

S=1:100

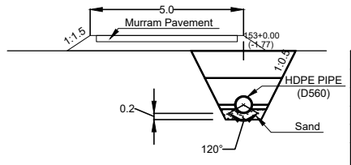
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



NO.		155+0.00
Design Level (El.m)		101.65
Original Ground Level (El.m)		103.25
Embankment (m2)		1.96
Excavation (m2)		4.57
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.07
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.37



NO.		154+0.00
Design Level (El.m)		101.84
Original Ground Level (El.m)		103.53
Embankment (m2)		1.96
Excavation (m2)		4.85
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.34
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.41



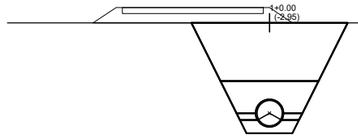
NO.		153+0.00
Design Level (El.m)		102.04
Original Ground Level (El.m)		103.80
Embankment (m2)		1.96
Excavation (m2)		5.12
Back fill	Manpower+Compactor(m2)	0.14
	Backhoe+Compactor(m2)	1.71
	Backhoe+Roller(m2)	2.62
Base Sand (m2)		0.40
Woodcutting & Roots Removal (m)		7.45

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19 (16/16)	JUNE, 2022		B-46-16

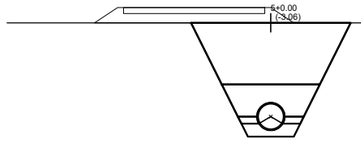
Cross Section of SC19-1 (1/3)

S=1:100

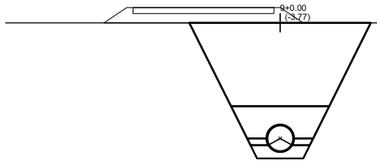
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



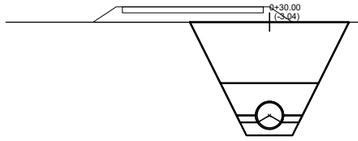
NO.		1+0.00
Design Level (El.m)		109.54
Original Ground Level (El.m)		112.49
Embankment (m2)		1.96
Excavation (m2)		11.87
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.87
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.30



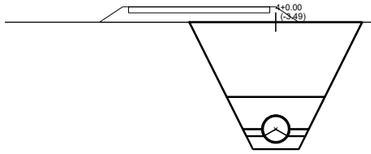
NO.		5+0.00
Design Level (El.m)		109.37
Original Ground Level (El.m)		112.43
Embankment (m2)		1.96
Excavation (m2)		12.45
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.46
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.36



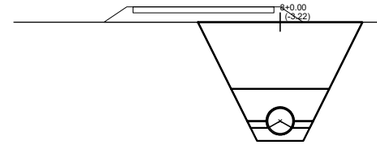
NO.		9+0.00
Design Level (El.m)		109.21
Original Ground Level (El.m)		112.98
Embankment (m2)		1.96
Excavation (m2)		16.39
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	12.40
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.71



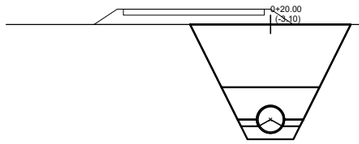
NO.		0+30.00
Design Level (El.m)		109.56
Original Ground Level (El.m)		112.60
Embankment (m2)		1.96
Excavation (m2)		12.37
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.37
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.35



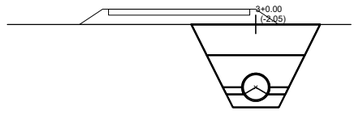
NO.		4+0.00
Design Level (El.m)		109.41
Original Ground Level (El.m)		112.91
Embankment (m2)		1.96
Excavation (m2)		14.79
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	10.79
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.57



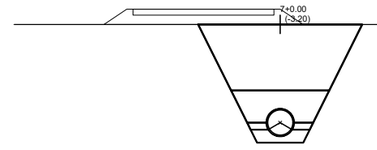
NO.		8+0.00
Design Level (El.m)		109.25
Original Ground Level (El.m)		112.47
Embankment (m2)		1.96
Excavation (m2)		13.31
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	9.32
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.44



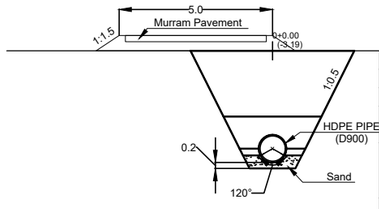
NO.		0+20.00
Design Level (El.m)		109.56
Original Ground Level (El.m)		112.66
Embankment (m2)		1.96
Excavation (m2)		12.64
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.64
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.37



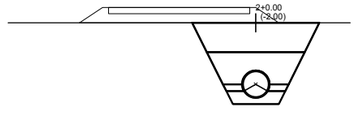
NO.		3+0.00
Design Level (El.m)		109.46
Original Ground Level (El.m)		111.51
Embankment (m2)		1.96
Excavation (m2)		7.70
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	3.71
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.85



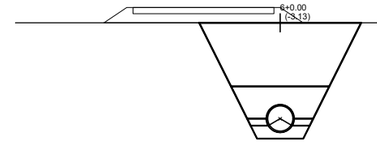
NO.		7+0.00
Design Level (El.m)		109.29
Original Ground Level (El.m)		112.49
Embankment (m2)		1.96
Excavation (m2)		13.21
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	9.21
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.43



NO.		0+0.00
Design Level (El.m)		109.58
Original Ground Level (El.m)		112.77
Embankment (m2)		1.96
Excavation (m2)		13.13
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	9.13
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.42



NO.		2+0.00
Design Level (El.m)		109.50
Original Ground Level (El.m)		111.50
Embankment (m2)		1.96
Excavation (m2)		7.50
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	3.50
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.83



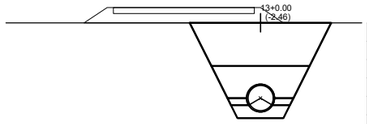
NO.		6+0.00
Design Level (El.m)		109.33
Original Ground Level (El.m)		112.46
Embankment (m2)		1.96
Excavation (m2)		12.81
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.81
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.39

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC20 (1/3)	JUNE, 2022		B-47-01

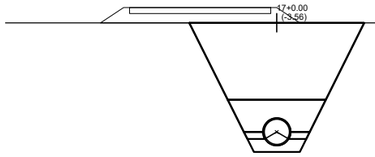
Cross Section of SC19-1 (2/3)

S=1:100

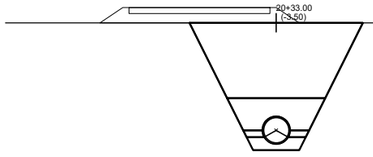
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



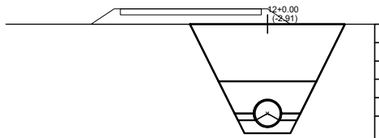
NO.		13+0.00
Design Level (El.m)		109.04
Original Ground Level (El.m)		111.50
Embankment (m2)		1.96
Excavation (m2)		9.49
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.50
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.05



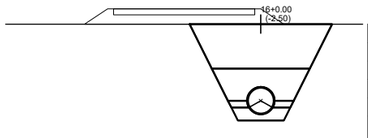
NO.		17+0.00
Design Level (El.m)		108.88
Original Ground Level (El.m)		112.44
Embankment (m2)		1.96
Excavation (m2)		15.17
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.17
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.60



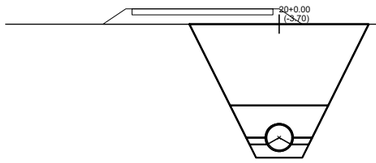
NO.		20+33.00
Design Level (El.m)		108.73
Original Ground Level (El.m)		112.23
Embankment (m2)		1.96
Excavation (m2)		14.86
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	10.86
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.58



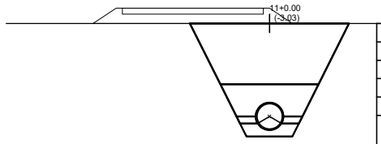
NO.		12+0.00
Design Level (El.m)		109.08
Original Ground Level (El.m)		112.00
Embankment (m2)		1.96
Excavation (m2)		11.68
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.69
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.28



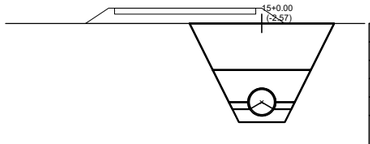
NO.		16+0.00
Design Level (El.m)		108.92
Original Ground Level (El.m)		111.41
Embankment (m2)		1.96
Excavation (m2)		9.67
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.67
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.07



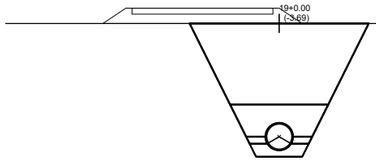
NO.		20+0.00
Design Level (El.m)		108.75
Original Ground Level (El.m)		112.45
Embankment (m2)		1.96
Excavation (m2)		15.99
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.99
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.68



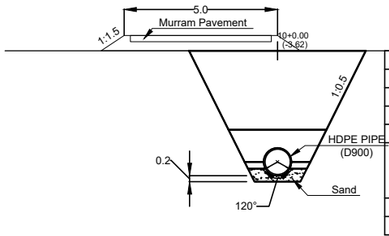
NO.		11+0.00
Design Level (El.m)		109.12
Original Ground Level (El.m)		112.16
Embankment (m2)		1.96
Excavation (m2)		12.31
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	8.31
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.34



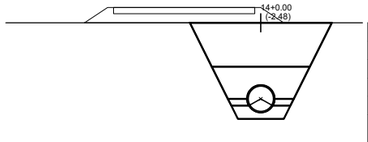
NO.		15+0.00
Design Level (El.m)		108.96
Original Ground Level (El.m)		111.53
Embankment (m2)		1.96
Excavation (m2)		10.00
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	6.01
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.11



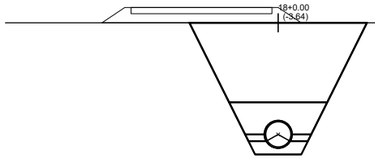
NO.		19+0.00
Design Level (El.m)		108.79
Original Ground Level (El.m)		112.49
Embankment (m2)		1.96
Excavation (m2)		15.95
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.95
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.67



NO.		10+0.00
Design Level (El.m)		109.17
Original Ground Level (El.m)		112.79
Embankment (m2)		1.96
Excavation (m2)		15.53
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.53
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.41



NO.		14+0.00
Design Level (El.m)		109.00
Original Ground Level (El.m)		111.48
Embankment (m2)		1.96
Excavation (m2)		9.59
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.60
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.07



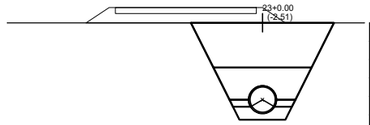
NO.		18+0.00
Design Level (El.m)		108.84
Original Ground Level (El.m)		112.47
Embankment (m2)		1.96
Excavation (m2)		15.64
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.64
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.64

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19-1 (2/3)	JUNE, 2022		B-47-02

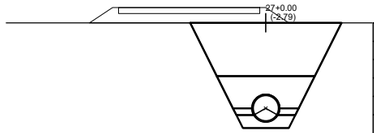
Cross Section of SC19-1 (3/3)

S=1:100

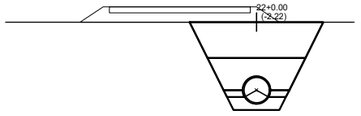
Unit is meter(m) of the international system of units(SI)
The Quantity was calcuated in cross-section and the chain distance is 50m.
The road area presented in this cross-section must be changed to the form presented in the standard cross-section
(The position of the road section is moved to the end of the pipe excavation section, The quantity of site clearing according to the above change will be settleld accroding to the survey results at the time of construction)



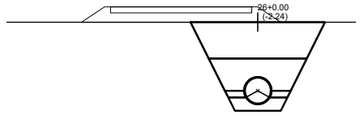
NO.		23+0.00
Design Level (El.m)		108.63
Original Ground Level (El.m)		111.14
Embankment (m2)		1.96
Excavation (m2)		9.74
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	5.74
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.08



NO.		27+0.00
Design Level (El.m)		108.46
Original Ground Level (El.m)		111.25
Embankment (m2)		1.96
Excavation (m2)		11.05
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	7.06
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.22



NO.		22+0.00
Design Level (El.m)		108.67
Original Ground Level (El.m)		110.89
Embankment (m2)		1.96
Excavation (m2)		8.41
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	4.41
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.93



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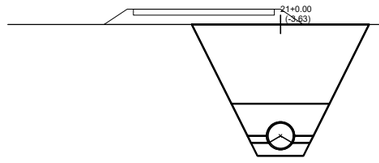
Design Level (El.m)		108.50
Original Ground Level (El.m)		110.74
Embankment (m2)		1.96
Excavation (m2)		8.49
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	4.50
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.94



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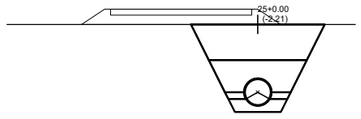
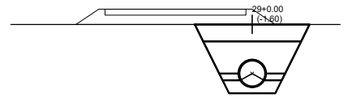
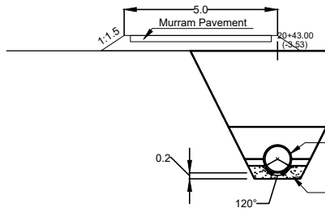
Design Level (El.m)		108.71
Original Ground Level (El.m)		112.34
Embankment (m2)		1.96
Excavation (m2)		15.60
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.60
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.64



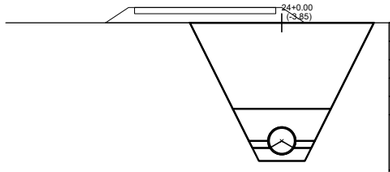
NO.		25+0.00
Design Level (El.m)		108.55
Original Ground Level (El.m)		110.75
Embankment (m2)		1.96
Excavation (m2)		8.37
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	4.37
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.93



NO.		29+0.00
Design Level (El.m)		108.38
Original Ground Level (El.m)		109.98
Embankment (m2)		1.96
Excavation (m2)		5.90
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	1.90
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.62



NO.		20+43.00
Design Level (El.m)		108.72
Original Ground Level (El.m)		112.24
Embankment (m2)		1.96
Excavation (m2)		14.99
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	11.00
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.59



NO.		24+0.00
Design Level (El.m)		108.59
Original Ground Level (El.m)		112.44
Embankment (m2)		1.96
Excavation (m2)		16.89
Back fill	Manpower+Compactor(m2)	0.26
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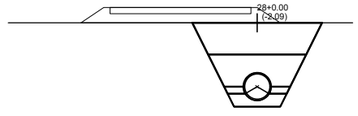
	Backhoe+Roller(m2)	12.90
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		8.75

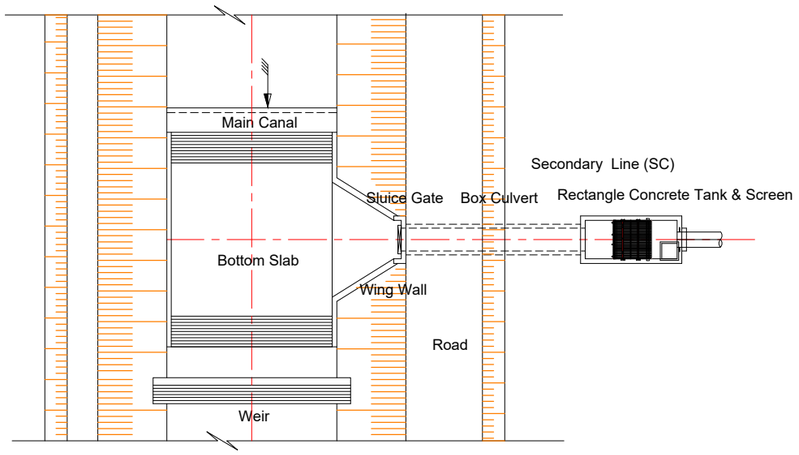


NO.		28+0.00
Design Level (El.m)		108.42
Original Ground Level (El.m)		110.51
Embankment (m2)		1.96
Excavation (m2)		7.85
Back fill	Manpower+Compactor(m2)	0.26
	Backhoe+Compactor(m2)	2.49
	Backhoe+Roller(m2)	3.85
Base Sand (m2)		0.60
Woodcutting & Roots Removal (m)		7.87

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of SC19-1 (3/3)	JUNE, 2022		B-47-03

C. Structures

List of Offtake structure



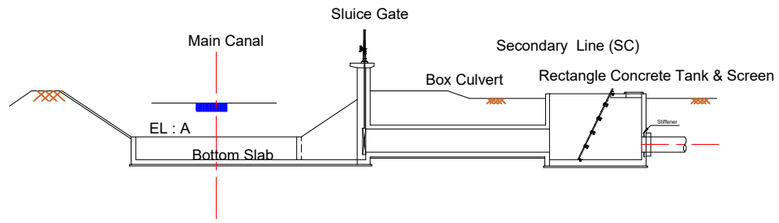


Table of SC Offtake Structure

Main Canal										Offtake Type	Distribution Pipe Line			Sluice Gate B x H	BOX B x H x ba.	Rectangle Concrete Tank	Weir	Screen W x H
No.	Name	Distribution Point	Direction	Type	Main Canal Level			Bottom Width	Water Depth(m)		Name	Diameter(mm)	type of Pipe					
					Ground	Bottom(EL.A)	Embankment											
1	MC-1	STA.09+576	Left	Open Canal	135.49	133.14	136.14	12.5	2.2	Type D	SC1A	D630mm	HDPE	0.6x0.6, Cast Iron			H=0.6m	2.2 x 3.0
2		STA.16+500	Left	Open Canal	134.91	131.76	134.76	12.4	2.2	Type A	SC1	D1000mm	HDPE	1.5x1.5, Cast Iron	1.5 x 1.5 x 1	○	H=0.6m	2.5 x 5.1
3		STA.19+980	Left	Open Canal	135.04	131.08	134.08	12.1	2.2	Type B	SC2	D1400mm	PE Coated Steel Pipe	1.5x1.5, Cast Iron	1.5 x 1.5 x 2	○	H=0.6m	2.2 x 5.1(2ea)
4		STA.22+920	Left	Open Canal	134.06	130.49	133.49	11.1	2.2	Type E	PS1	D400mm	HDPE	1.2x1.2, Cast Iron	1.2 x 1.2 x 1	○	H=0.6m	2.2 x 3.0
5		STA.22+925	Left	Open Canal	134.06	130.49	133.49	11.1	2.2		SC3	D560mm	HDPE	0.6x0.6, Cast Iron				2.2 x 3.0
6		STA.28+460	Left	Open Canal	127.38	129.38	132.38	11.0	2.2	Type D	SC4	D800mm	HDPE	0.8x0.8, Cast Iron			H=0.6m	2.2 x 3.0
7		STA.29+400	Left	Open Canal	136.6	129.19	132.19	10.9	2.2	Type D	SC5	D630mm	HDPE	0.6x0.6, Cast Iron				2.2 x 3.0
8		STA.30+600	Left	Open Canal	131.56	128.95	131.95	10.8	2.2	Type D	SC6	D800mm	HDPE	0.8x0.8, Cast Iron			H=0.6m	2.2 x 3.0
9	MC-2	STA.03+480	Left	Open Canal	130.22	127.51	130.11	8.1	1.8	Type F	SC12	D710mm	HDPE	0.7x0.7, Cast Iron			H=0.5m	2.2 x 2.5
10		STA.04+540	Left	Open Canal	129.29	126.85	129.45	7.9	1.8	Type F	SC13	D500mm	HDPE	0.5x0.5, Cast Iron				2.2 x 2.5
11		STA.06+620	Right	Open Canal	117.35	124.44	127.04	8.8	1.8	Type G	SC14	D400mm	HDPE	0.4x0.4, Cast Iron				2.2 x 2.5
12		STA.06+620	Left	Open Canal	117.35	124.44	127.04	8.8	1.8	Type G	SC15	D400mm	HDPE	0.4x0.4, Cast Iron				2.2 x 2.5
13		STA.07+900	Left	Open Canal	118.22	124.12	126.72	8.7	1.8	Type F	SC16	D400mm	HDPE	0.4x0.4, Cast Iron				2.2 x 2.5
14		STA.09+240	Right	Open Canal	125.19	123.79	126.39	8.6	1.8	Type F	PS2	D400mm	HDPE	1.2x1.2, Cast Iron	1.2 x 1.2 x 1	○	H=0.5m	2.2 x 2.5
15		STA.10+020	Left	Open Canal	124.86	123.59	126.19	8.6	1.8	Type F	SC17	D800mm	HDPE	0.8x0.8, Cast Iron			H=0.5m	2.2 x 2.5
16		STA.11+980	Left	Open Canal	125.00	123.10	125.70	8.4	1.8	Type C	SC18	D1000mm	HDPE	1.5x1.5, Cast Iron	1.5 x 1.5 x 1	○	H=0.5m	2.5 x 4.6
17		STA.13+720	Left	Open Canal	126.22	122.67	125.27	8.0	1.8	Type C	SC19	D1300mm	PE Coated Steel Pipe	1.5x1.5, Cast Iron	1.5 x 1.5 x 1	○	H=0.5m	2.5 x 4.6

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

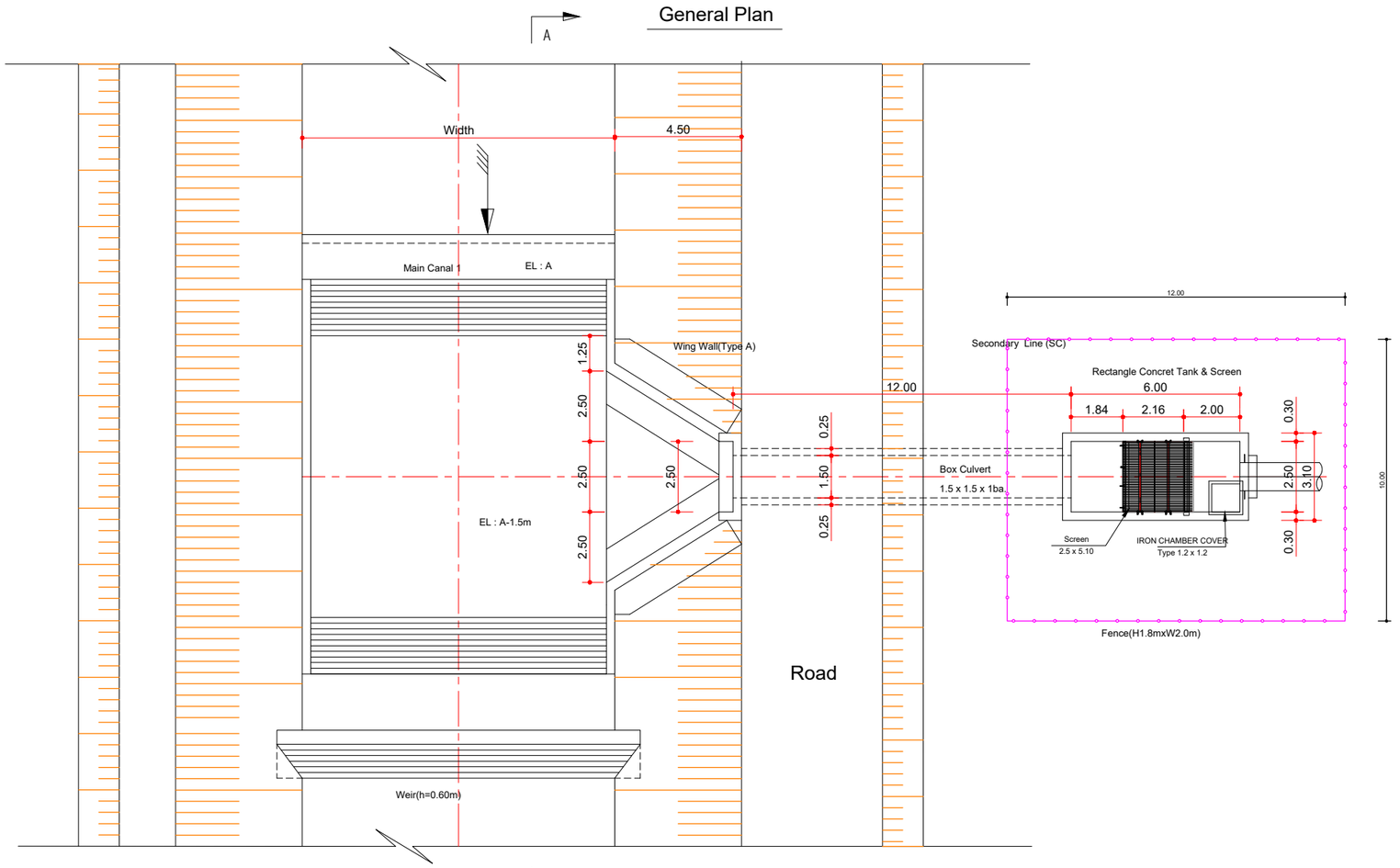
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

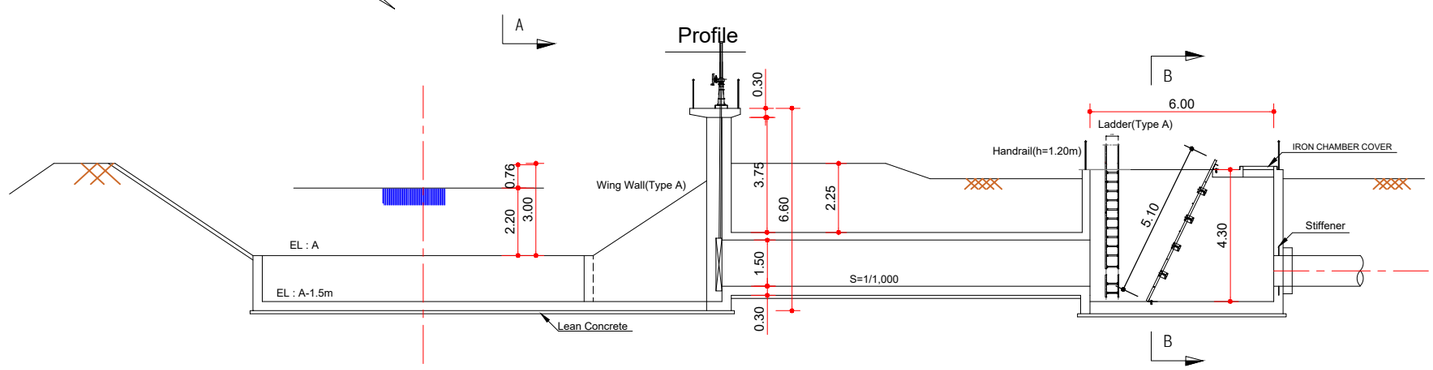
PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
List of Offtake structure	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-01

General Plan of SC Offtake Structure(01/10)

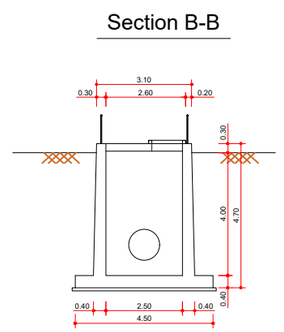
Type A

General Plan





Section B-B

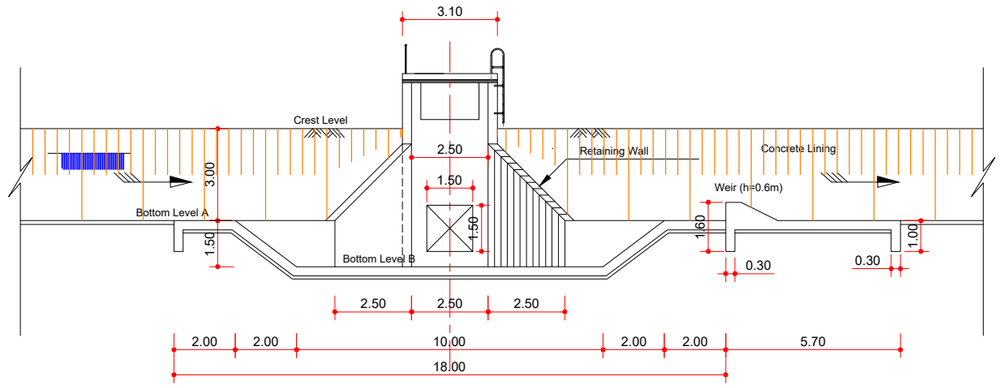


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of SC Offtake Structure(01/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-02

General Plan of SC Offtake Structure(02/10)

Type A

Section A-A



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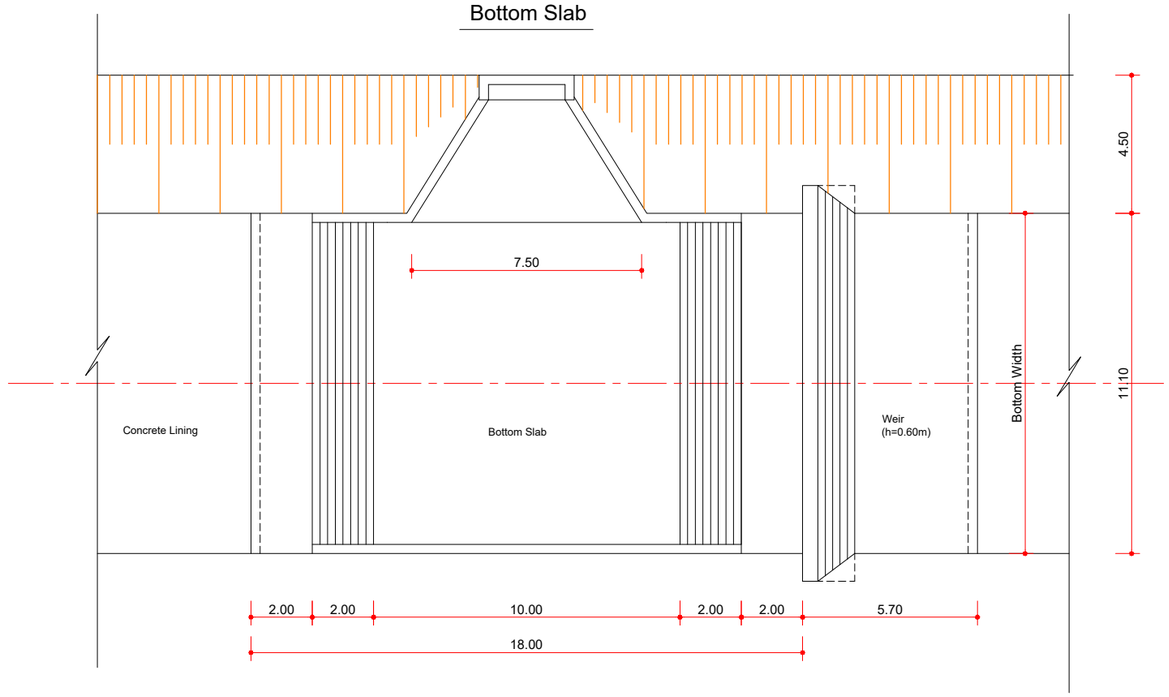
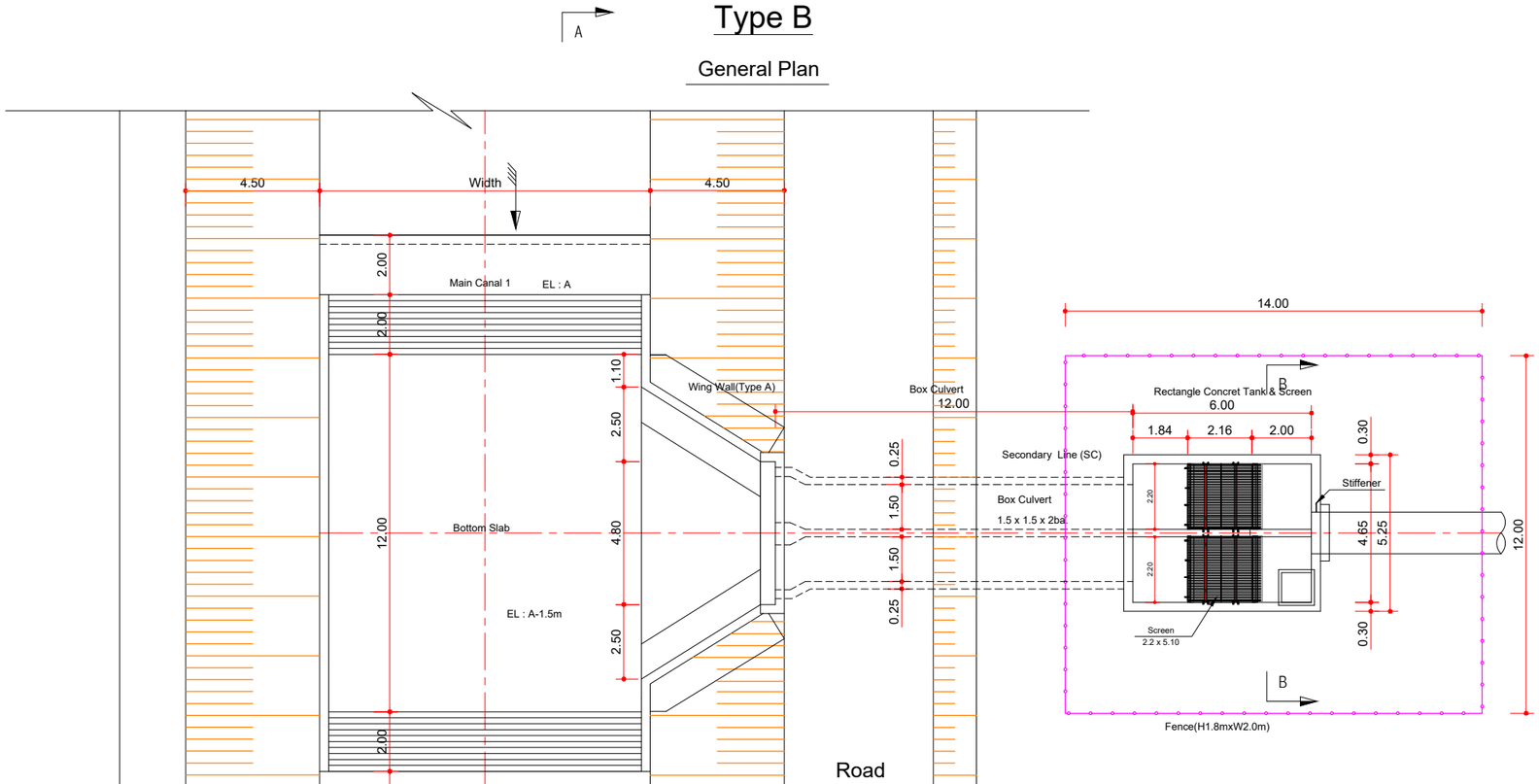


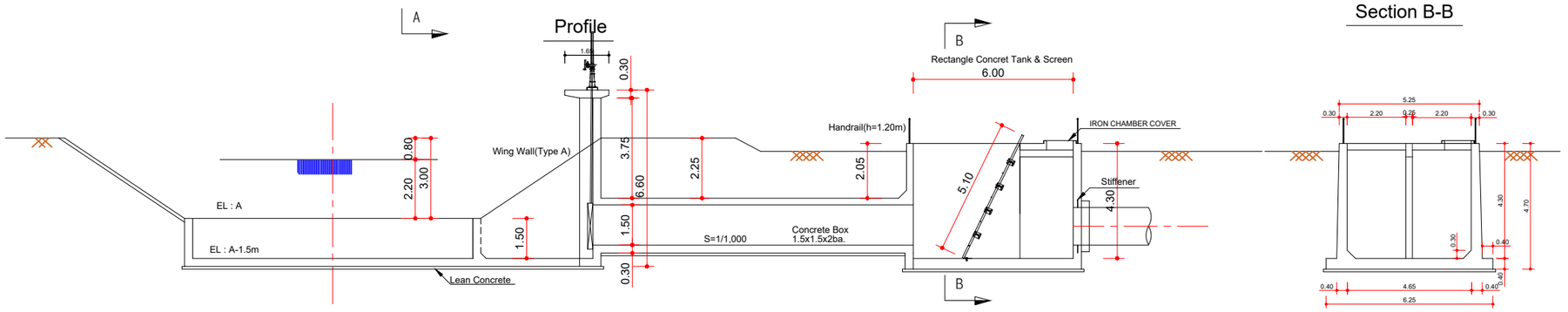
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 100
		TITLE	DATE		DRAWING No
		General Plan of SC Offtake Structure(02/10)	JUNE, 2022		C-01-03

General Plan of SC Offtake Structure(03/10)

Type B

General Plan



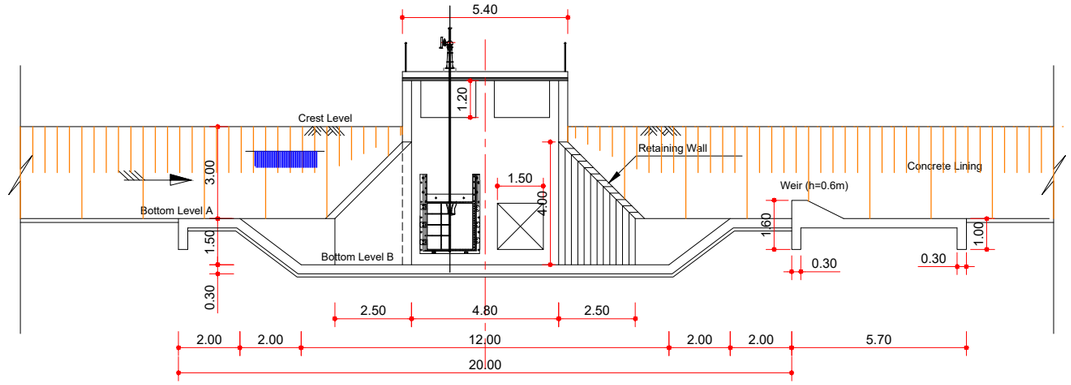


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of SC Offtake Structure(03/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-04

General Plan of SC Offtake Structure(04/10)

Type B

Section A-A



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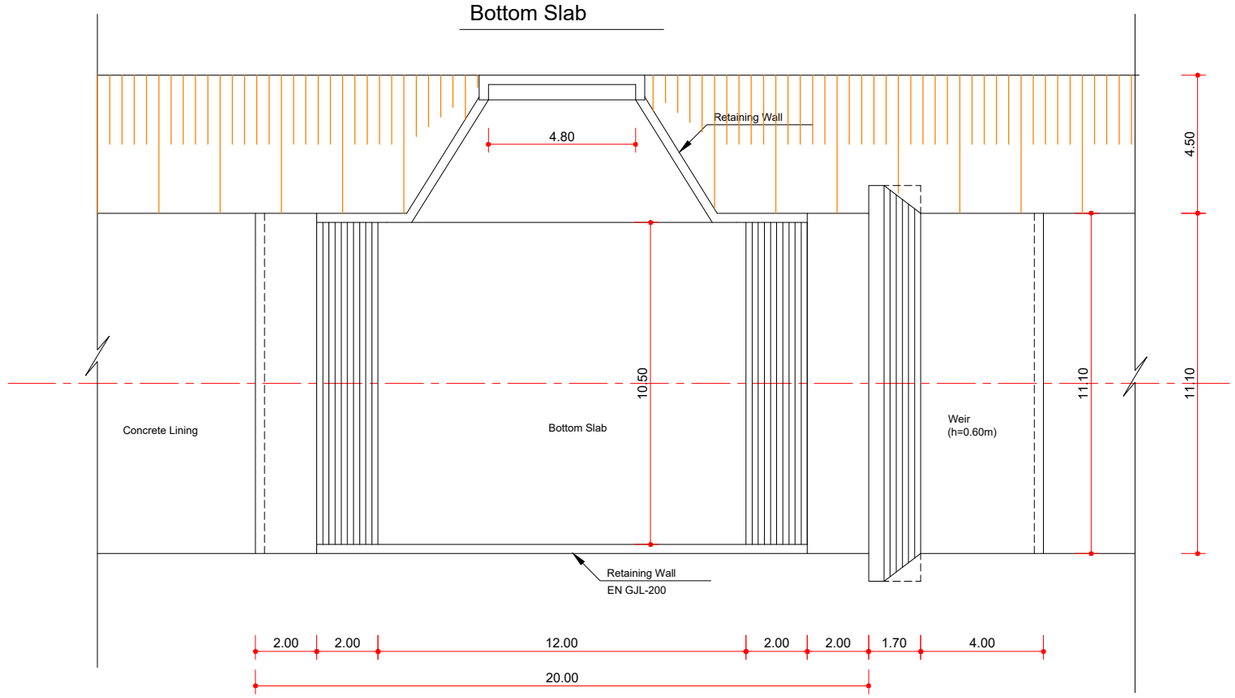
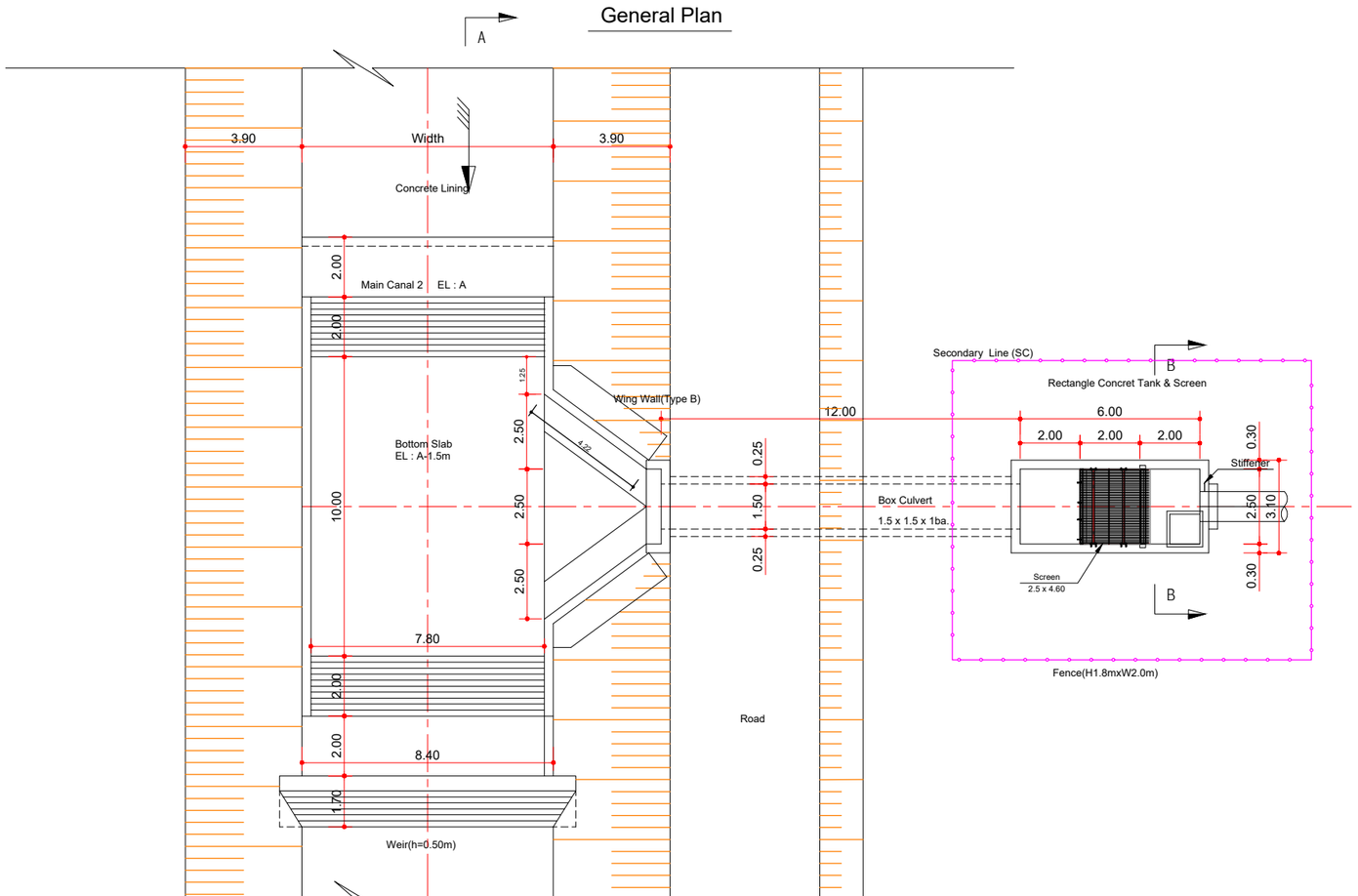


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 100
		TITLE	DATE		DRAWING No
		General Plan of SC Offtake Structure(04/10)	JUNE, 2022		C-01-05

General Plan of SC Offtake Structure(05/10)

Type C

General Plan



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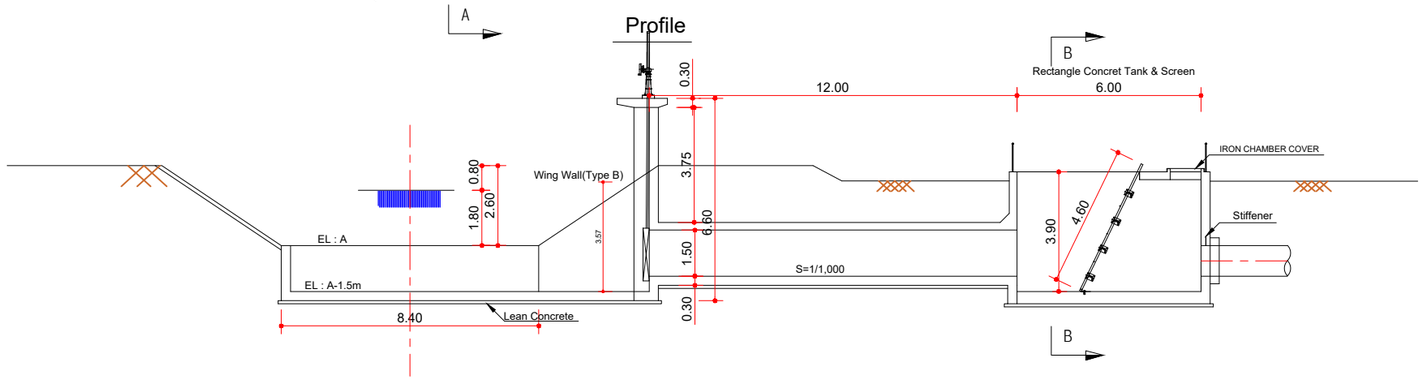
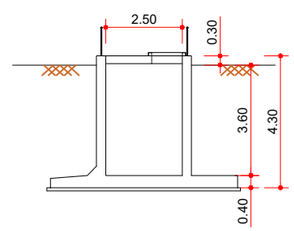


Section B-B

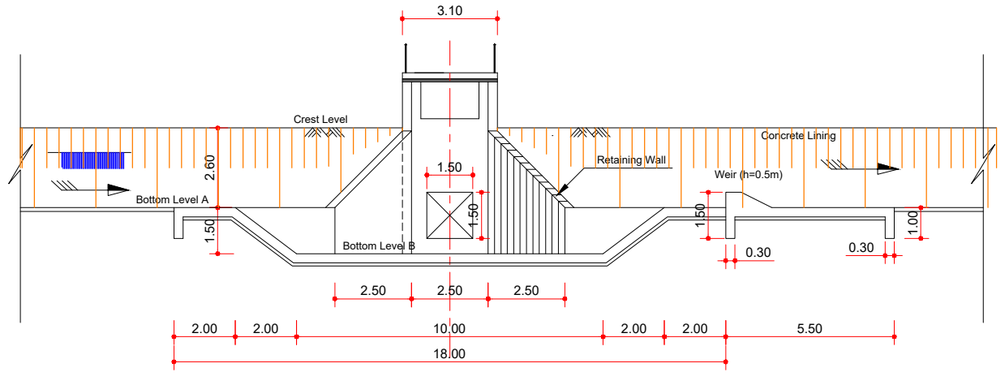


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of SC Offtake Structure(05/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-06

General Plan of SC Offtake Structure(06/10)

Type C

Section A-A



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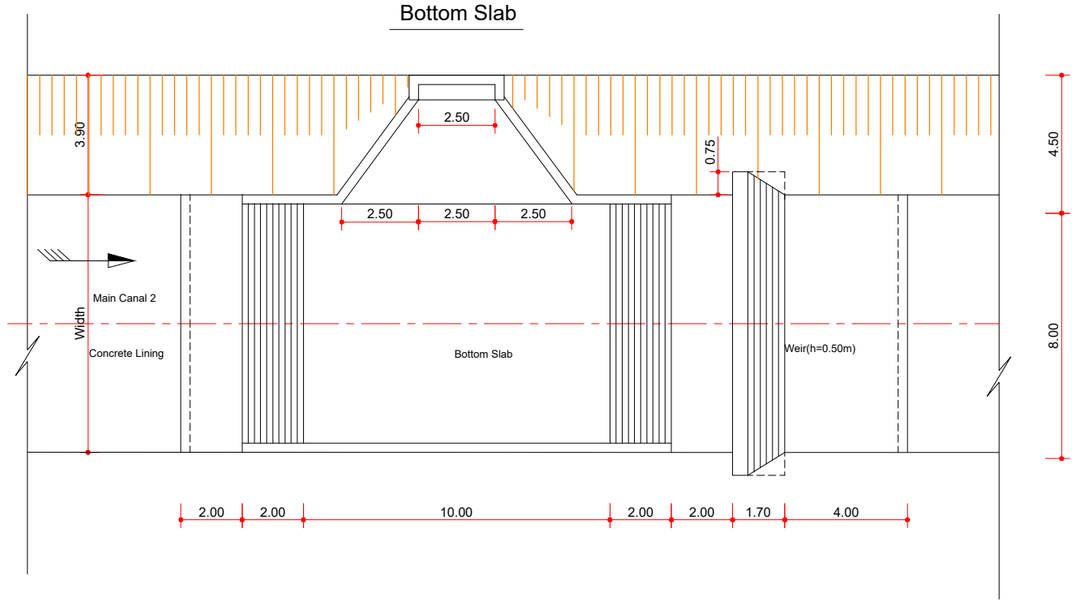
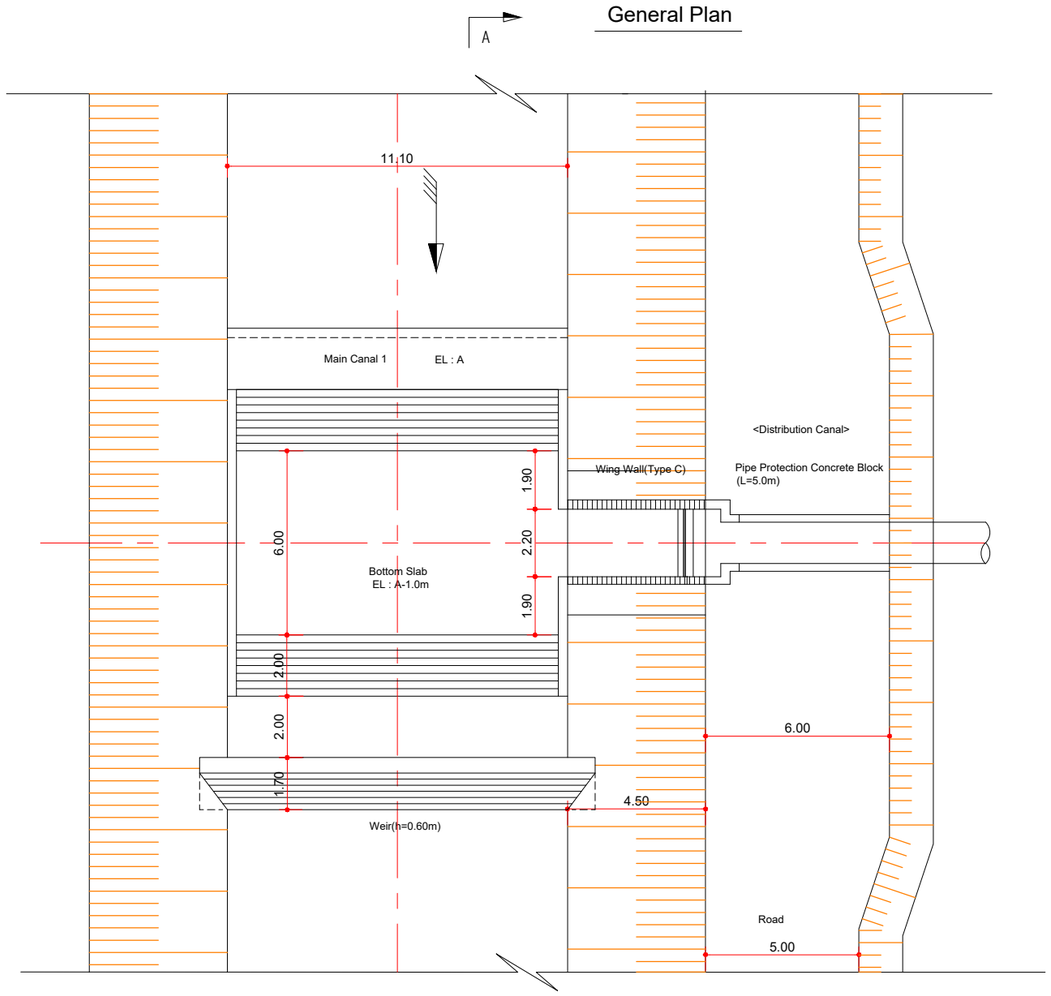


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 100
		TITLE	DATE		DRAWING No
		General Plan of SC Offtake Structure(06/10)	JUNE, 2022		C-01-07

General Plan of SC Offtake Structure(07/10)

Type D

General Plan



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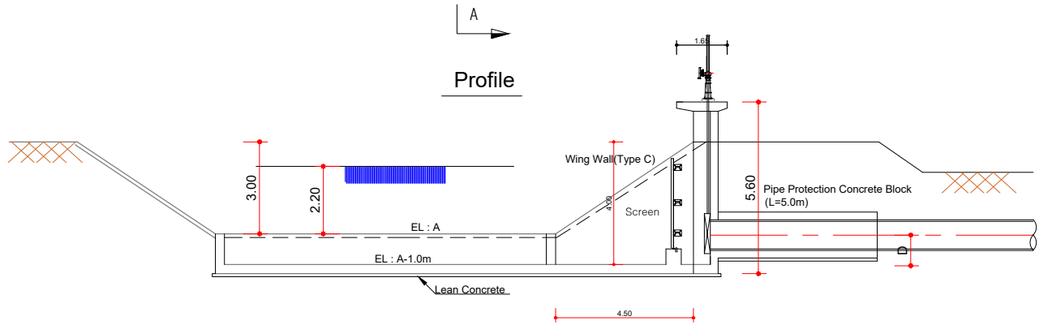
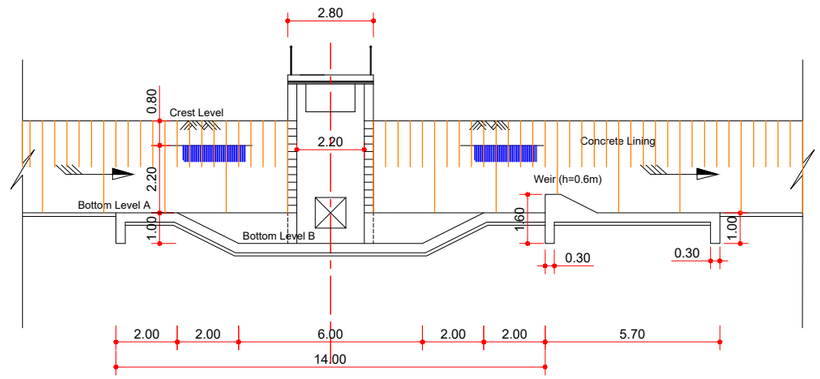


Section A-A

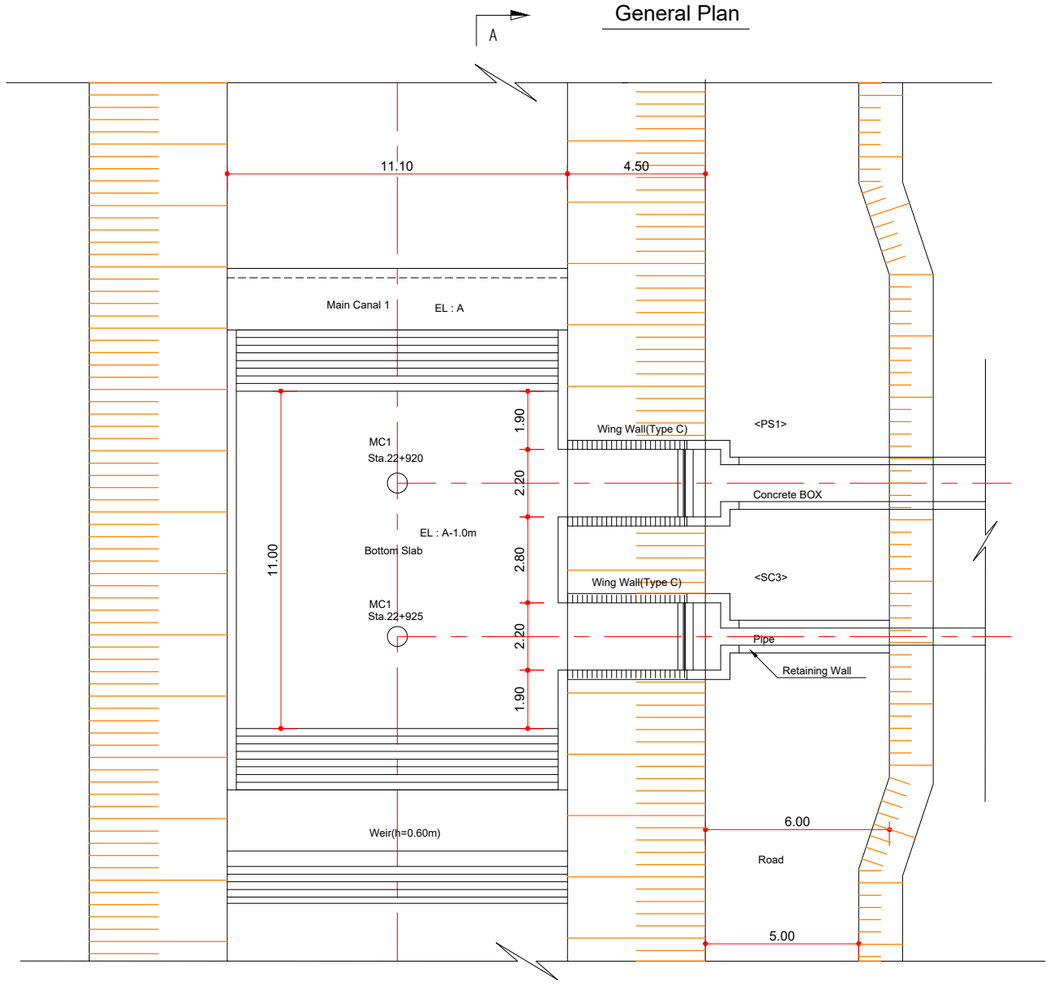


CLIENT: REPUBLIC OF MALAWI, MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT: Korea Rural Community Corporation, In Jonit Venture with Dasan Consultants Co., Ltd., ISAN CORPORATION, EMD Consulting Engineers	PROJECT NAME: SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	ORIGINAL DESIGNED BY: Detail Design
		TITLE: General Plan of SC Offtake Structure(07/10)	DATE: JUNE, 2022
		DRAWING: DESIGNED BY: Choi, Dong Hoon; DRAWING BY: Gim, Ho Jun; CHECKED BY: Jo, Jin Hoon	SCALE: 1 : 100; DRAWING No: C-01-08

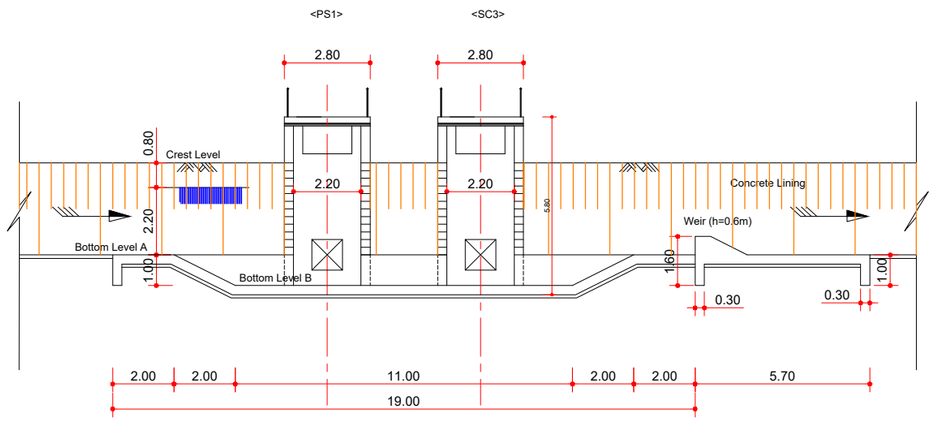
General Plan of SC Offtake Structure(08/10)

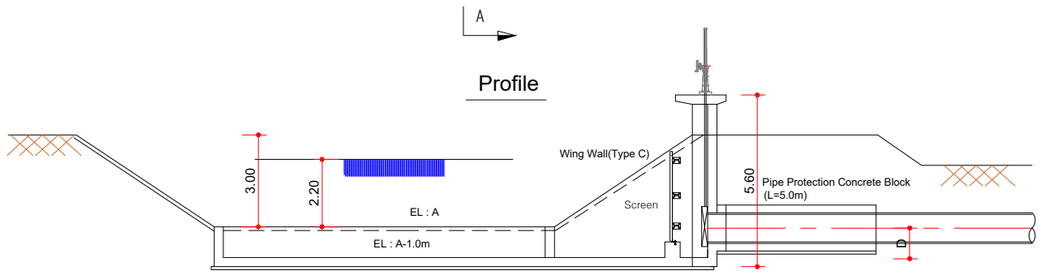
Type E

General Plan



Section A-A



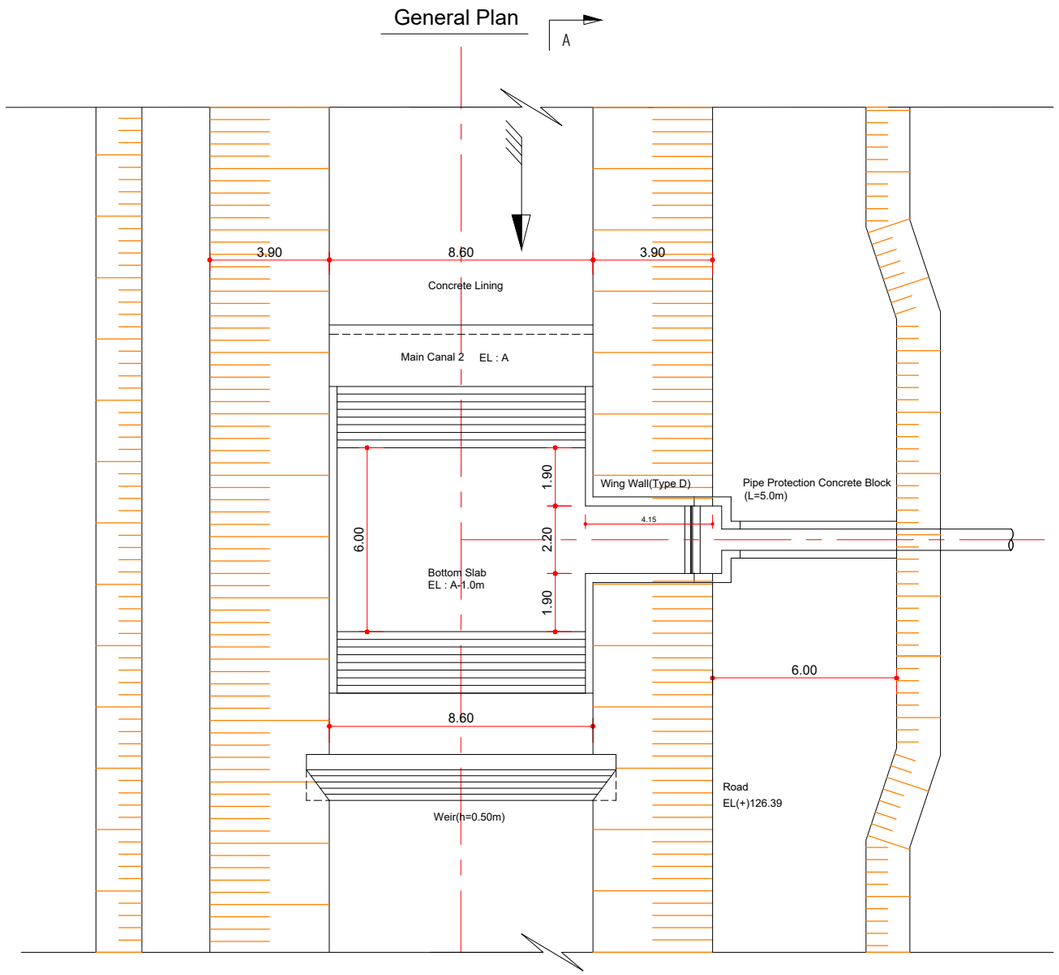


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 100
		TITLE	DATE		DRAWING No
		General Plan of SC Offtake Structure(08/10)	JUNE, 2022		C-01-09

General Plan of SC Offtake Structure(09/10)

Type F

General Plan



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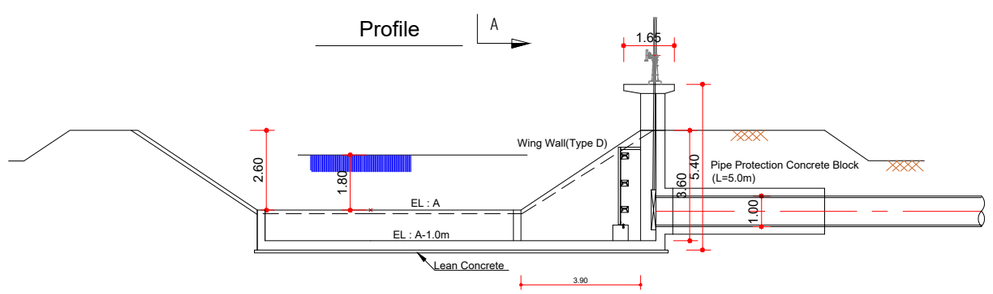
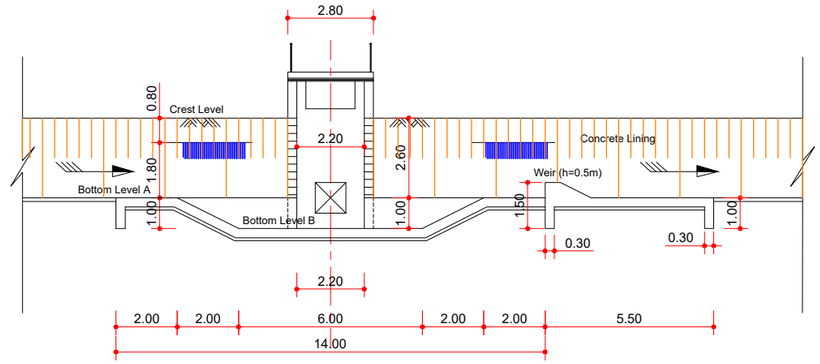


Section A-A

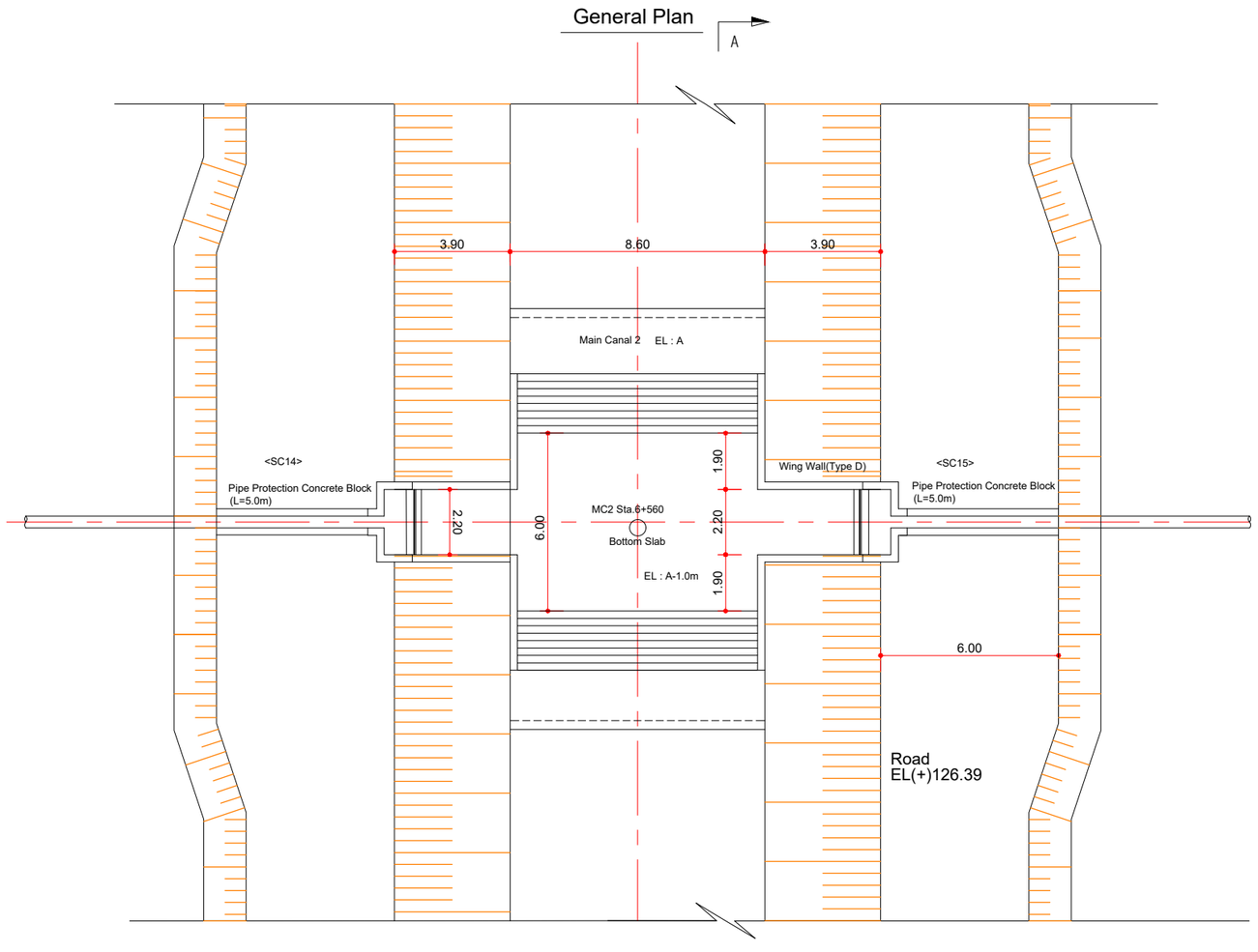


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 100
		TITLE	DATE		DRAWING No
		General Plan of SC Offtake Structure(09/10)	JUNE, 2022		C-01-10

General Plan of SC Offtake Structure(10/10)

Type G

General Plan



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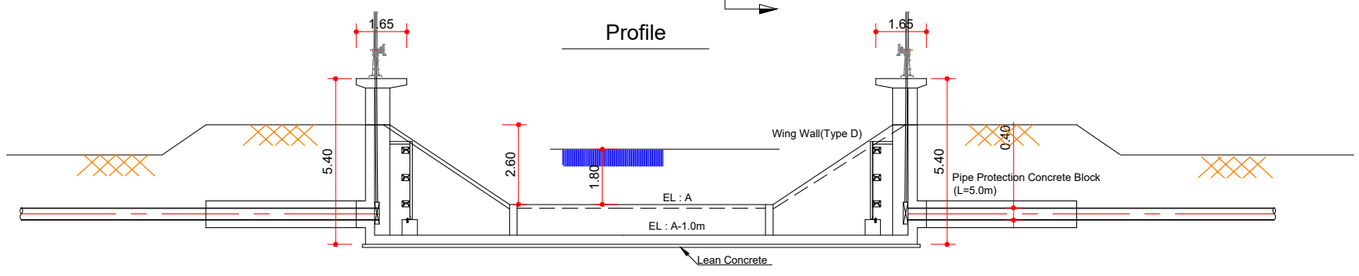
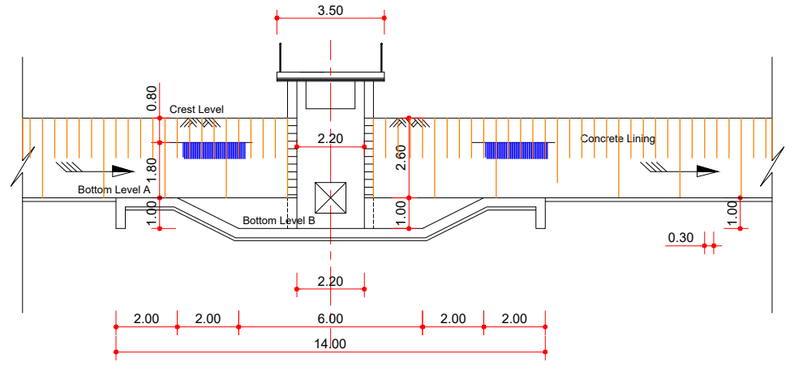
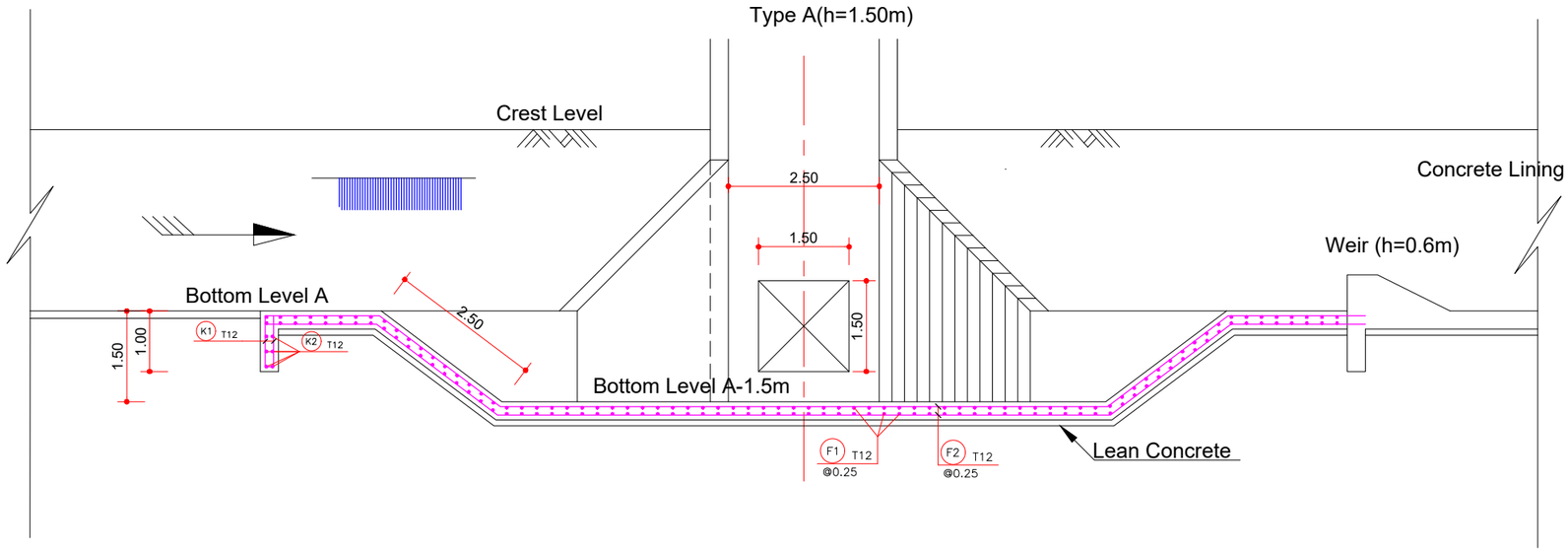


Section A-A

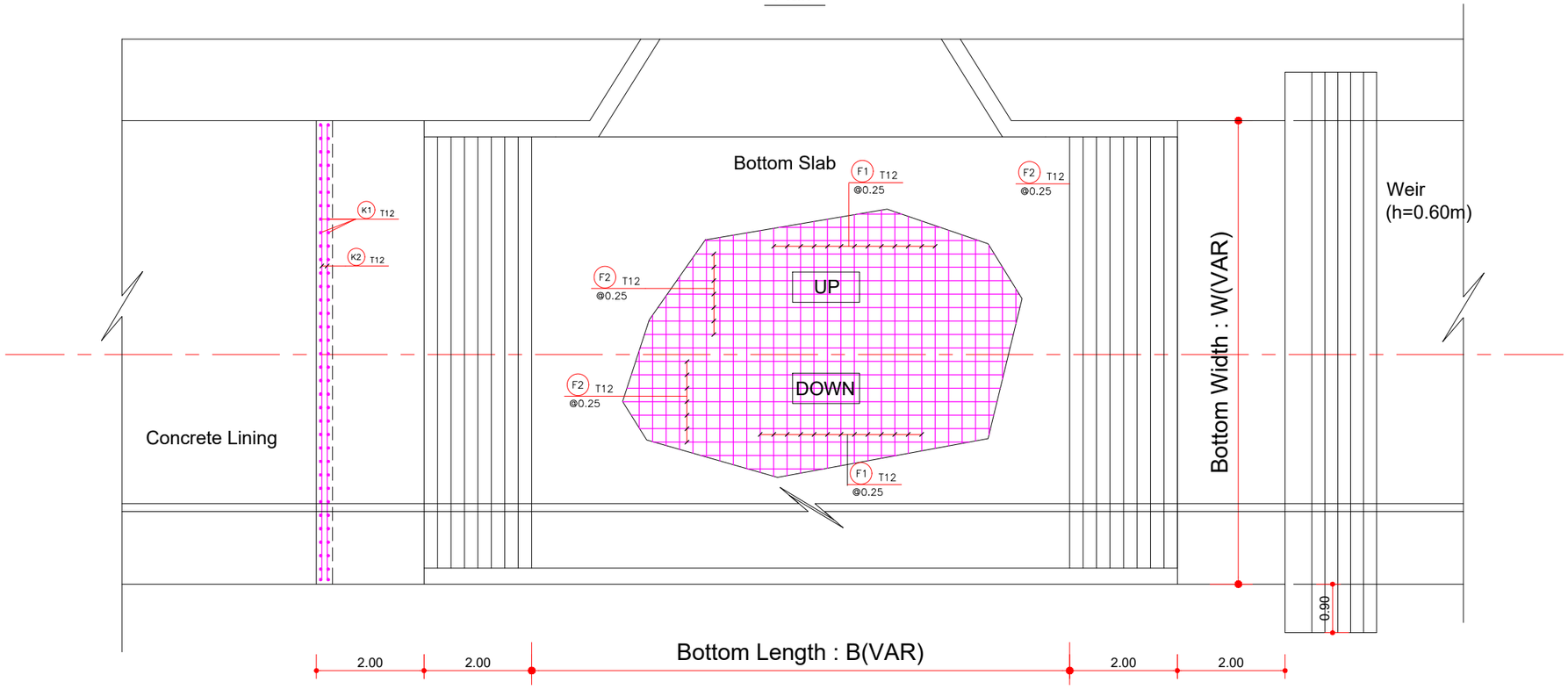


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of SC Offtake Structure(10/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-11

Bottom Slab of SC Offtake Structure(1/3)

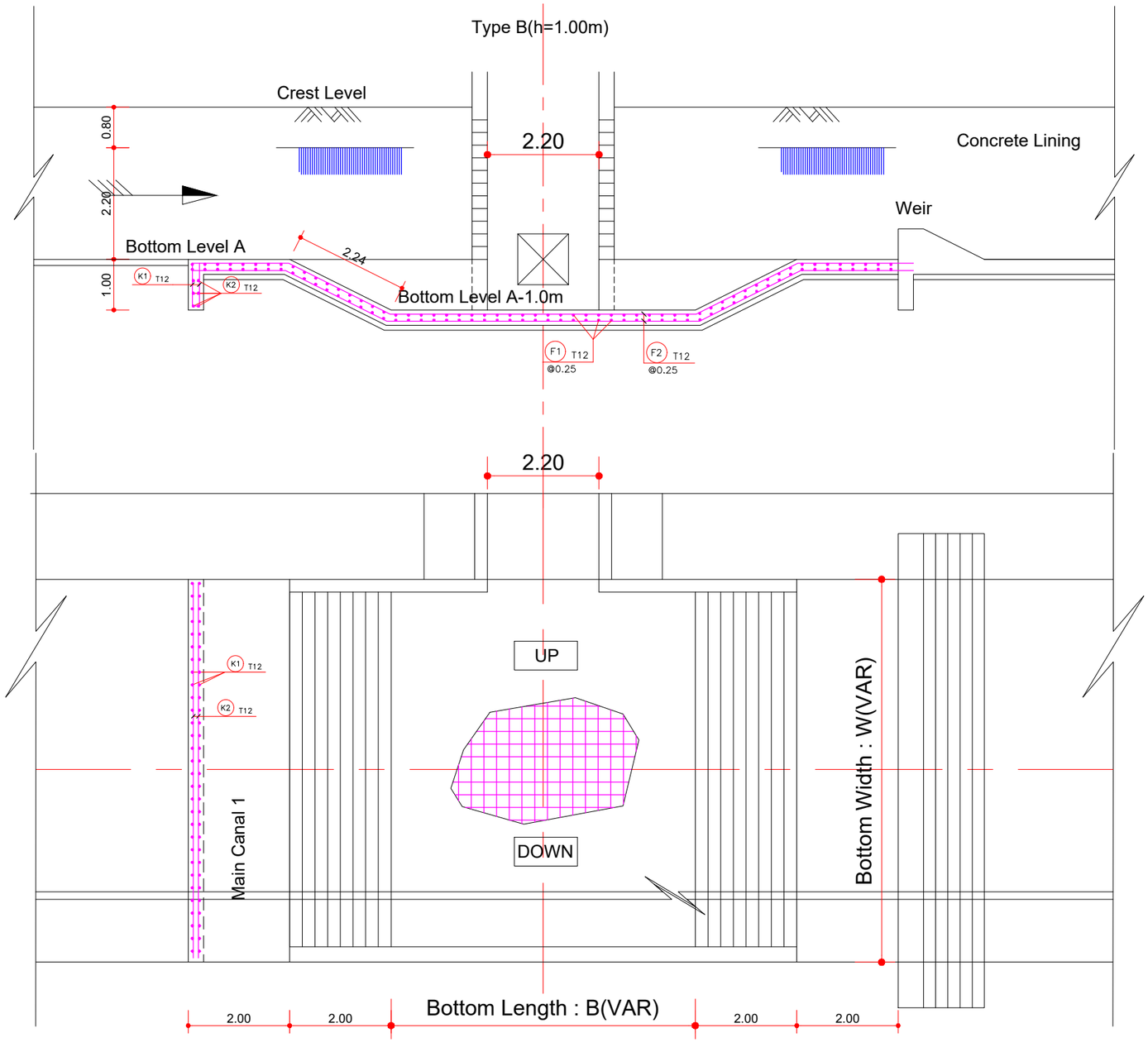


Plan



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Bottom Slab of SC Offtake Structure(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-12

Bottom Slab of SC Offtake Structure(2/3)

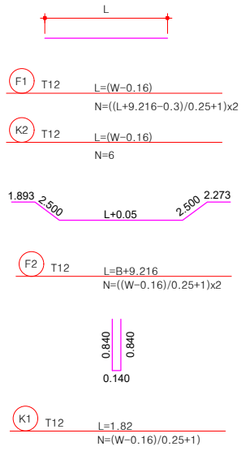


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Bottom Slab of SC Offtake Structure(2/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-13

Bottom Slab of SC Offtake Structure(3/3)

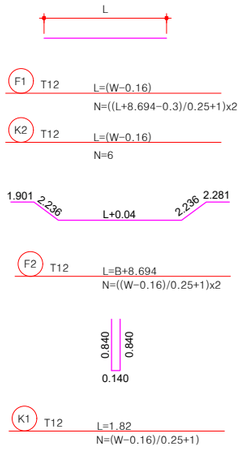
Type A(h=1.50m)

Rebar Detail

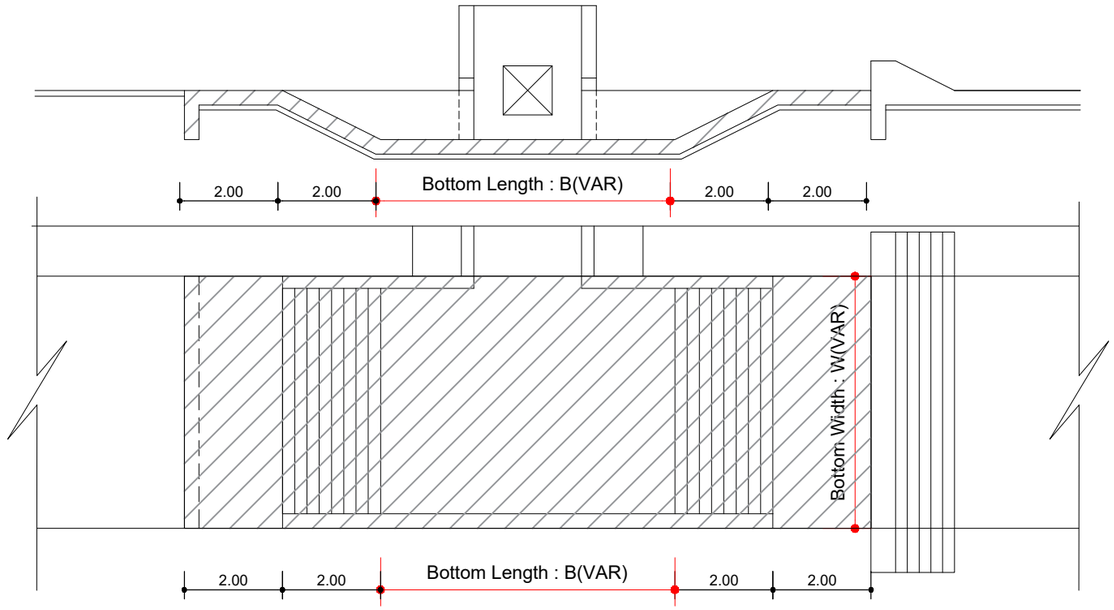


Type B(h=1.00m)

Rebar Detail



Type	Symbol	DIA.	Lenghth(m)	N
Type A H=1.50m	F1	T12	(W-0.16)	{(B+9.216-0.3)/0.25+1}*2
	F2	T12	(B+9.216)	{(W-0.16)/0.25+1}*2
	K1	T12	1.82	(W-0.16)/0.25+1
	K2	T12	(W-0.16)	6
Type B H=1.00m	F1	T12	(W-0.16)	{(B+8.694-0.3)/0.25+1}*2
	F2	T12	(B+8.694)	{(W-0.16)/0.25+1}*2
	K1	T12	1.82	(W-0.16)/0.25+1
	K2	T12	(W-0.16)	6



Rebar Material Table

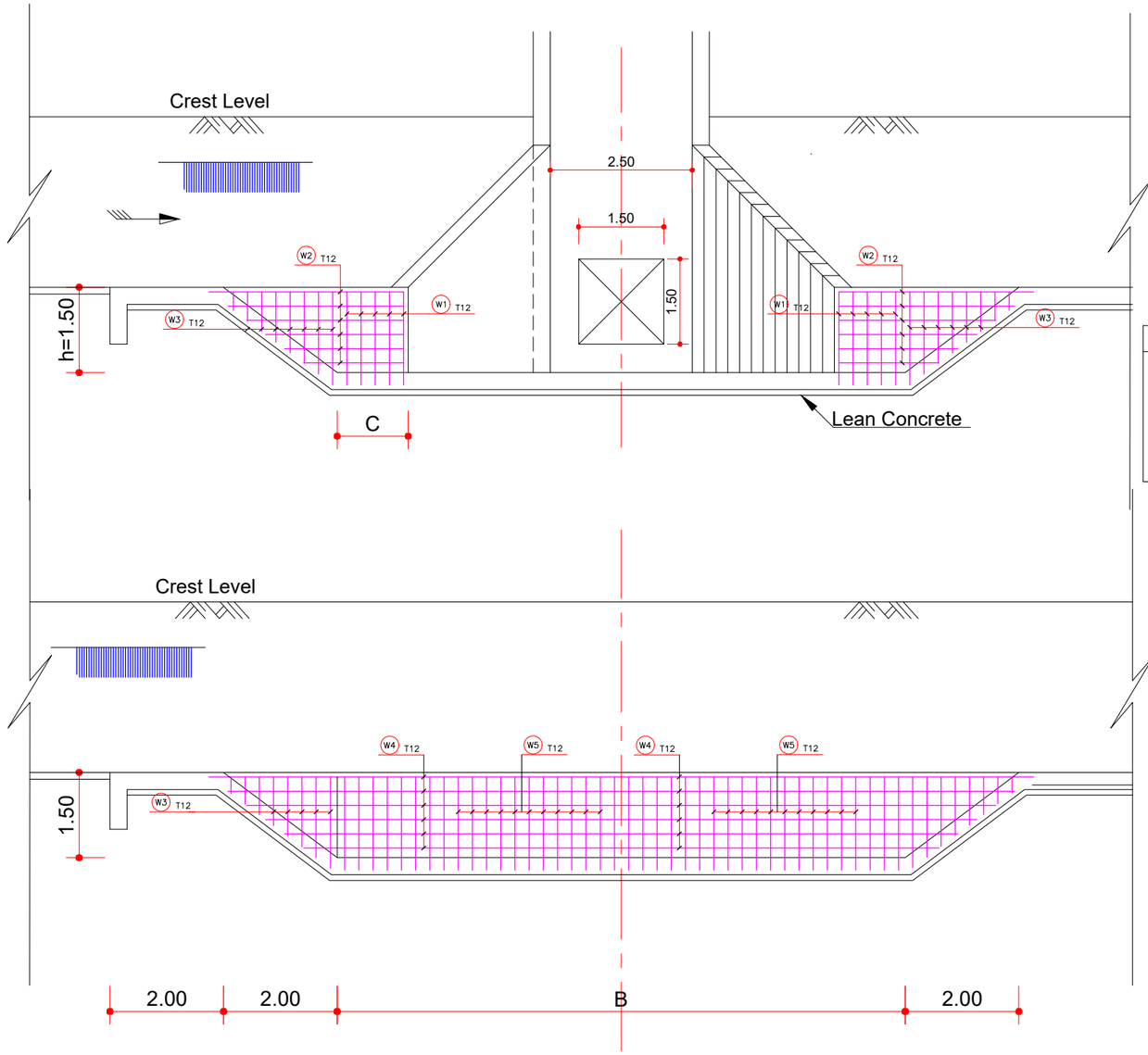
SC	Offtake							Rebar Length (T12,m)					Unit Weight (kg/m)	Total Weight (ton)
Name	Name	Distribution Point	Direction	Type	Height Difference	Bottom Width (W,m)	Bottom Length (B,m)	F1	F2	K1	K2	Total		
SC1A	MC-1	STA.09+576	Left	Type D	1.00	12.50	6.00	1,456	1,499	186	74	3,215	0.888	2.855
SC1		STA.16+500	Left	Type A	1.50	12.40	10.00	1,885	1,922	182	73	4,062	0.888	3.607
SC2		STA.19+980	Left	Type B	1.50	12.10	12.00	2,030	2,079	178	72	4,359	0.888	3.871
PS1		STA.22+920	Left	Type E	1.00	11.10	11.00	1,729	1,772	164	66	3,731	0.888	3.314
SC3		STA.22+925	Left											
SC4		STA.28+460	Left	Type D	1.00	11.00	6.00	1,279	1,322	164	65	2,830	0.888	2.513
SC5		STA.29+400	Left	Type D	1.00	10.90	6.00	1,267	1,293	160	64	2,784	0.888	2.472
SC6		STA.30+600	Left	Type D	1.00	10.80	6.00	1,256	1,293	160	64	2,773	0.888	2.462
SC12	MC-2	STA.03+480	Left	Type F	1.00	8.10	6.00	937	970	120	48	2,075	0.888	1.842
SC13		STA.04+540	Left	Type F	1.00	7.90	6.00	913	940	116	46	2,015	0.888	1.790
SC14		STA.06+620	Right	Type G	1.00	8.80	6.00	1,020	1,058	131	52	2,261	0.888	2.008
SC15		STA.06+620	Left											
SC16		STA.07+900	Left	Type F	1.00	8.70	6.00	1,008	1,058	131	51	2,248	0.888	1.996
PS2		STA.09+240	Right	Type F	1.00	8.60	6.00	996	1,029	127	51	2,203	0.888	1.956
SC17		STA.10+020	Left	Type F	1.00	8.60	6.00	996	1,029	127	51	2,203	0.888	1.956
SC18		STA.11+980	Left	Type C	1.50	8.40	10.00	1,269	1,307	124	49	2,749	0.888	2.441
SC19		STA.13+720	Left	Type C	1.50	8.00	10.00	1,207	1,268	120	47	2,642	0.888	2.346

PS : Pumping Station

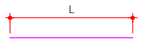
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Bottom Slab of SC Offtake Structure(3/3)	JUNE, 2022		C-01-14

Wall Structure of SC Offtake Structure(1/4)

Type A(h=1.50m)



Rebar Material Table

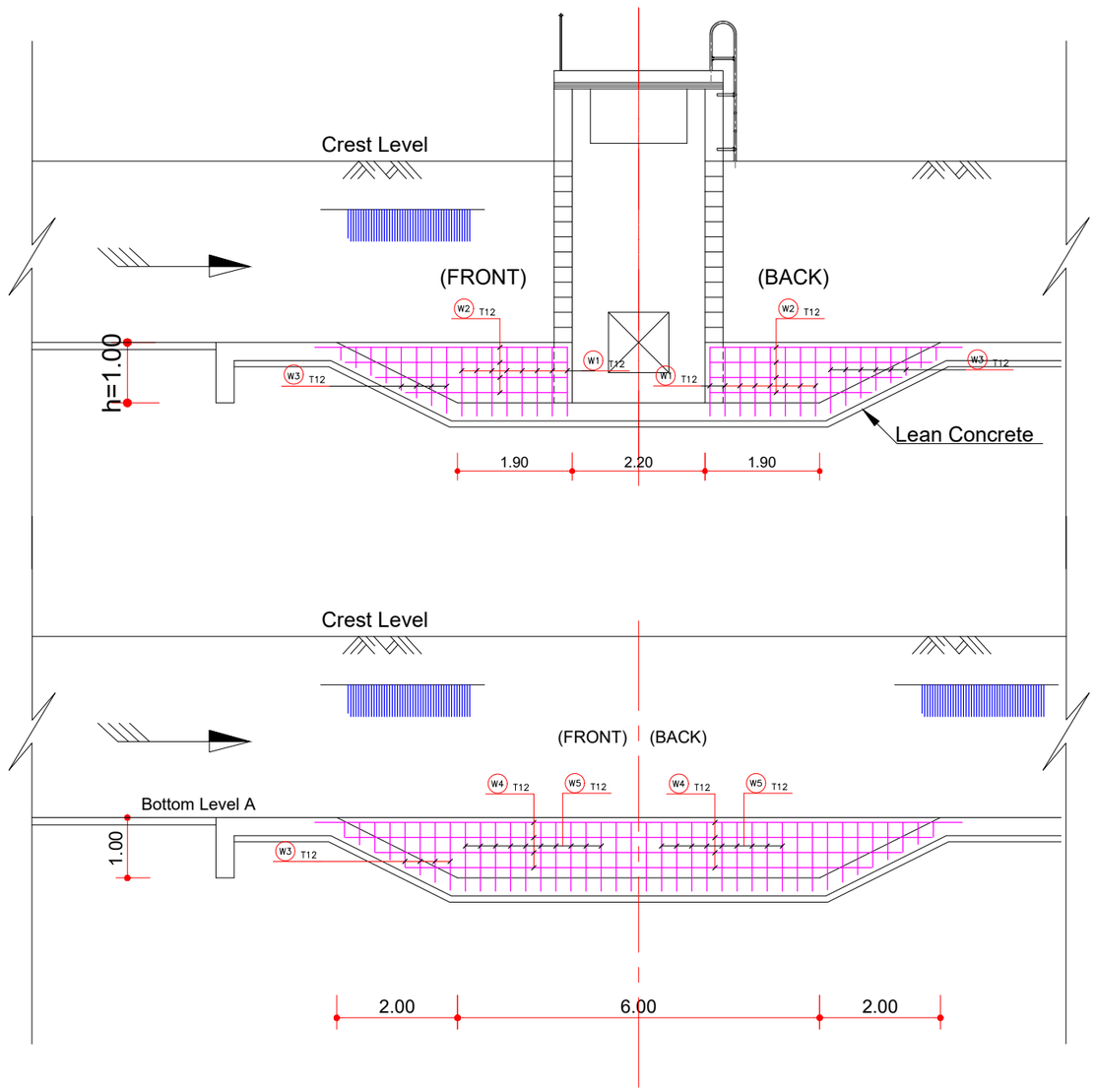


Type	Symbol	DIA.	Lenghth(m)	N
Type A H=1.50m	W1	T12	1.64	((C-0.018)/0.25+1)x4
	W2	T12	C+1.347	6 x 2 x 2
	W3	T12	0.98(AVG)	8 x 4 x 2
	W4	T12	C+2.853	6 x 2
	W5	T12	1.64	(B/0.25+1) x 2

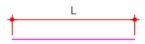
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wall Structure of SC Offtake Structure(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-15

Wall Structure of SC Offtake Structure(2/4)

Type B(h=1.00m)



Rebar Material Table

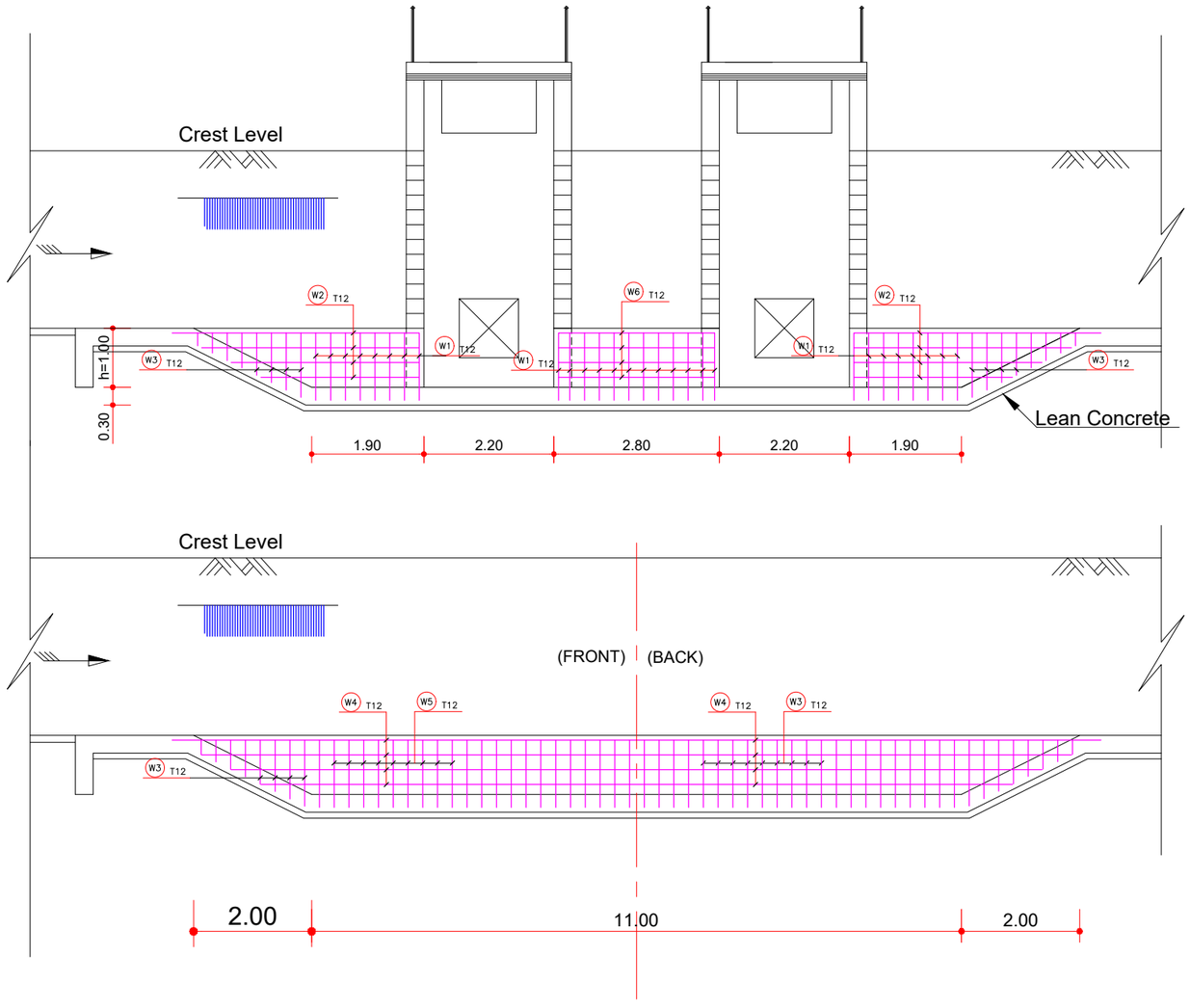


Type	Symbol	DIA.	Lenghth(m)	N
Type B H=1.00m	W1	T12	1.64	8 x 2 x 2
	W2	T12	3.431(AVG)	4 x 2 x 2
	W3	T12	0.654(AVG)	8 x 2 x 4
	W4	T12	9.222(AVG)	4 x 2
	W5	T12	1.64	24 x 2

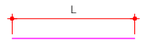
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 50
		TITLE	DATE		DRAWING No
		Wall Structure of SC Offtake Structure(2/4)	JUNE, 2022		C-01-16

Wall Structure of SC Offtake Structure(3/4)

Type C(h=1.00m)



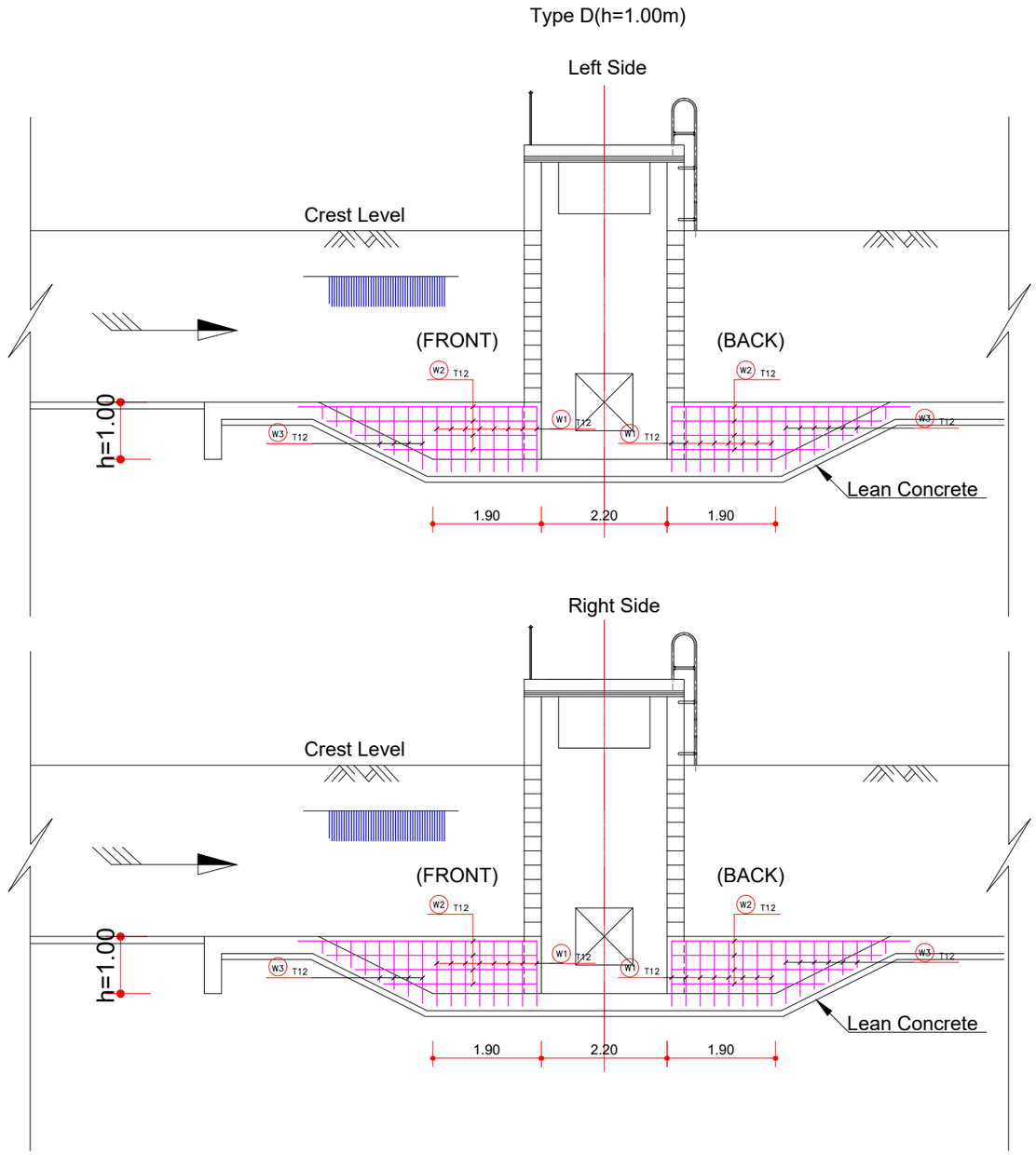
Rebar Material Table



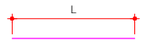
Type	Symbol	DIA.	Lenghth(m)	N
Type C H=1.00m	W1	T12	1.64	28 x 2
	W2	T12	3.431(AVG)	4 x 2 x 2
	W3	T12	0.654(AVG)	8 x 2 x 4
	W4	T12	14.222(AVG)	4 x 2
	W5	T12	1.64	44 x 2
	W6	T12	2.64	4 x 2

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wall Structure of SC Offtake Structure(3/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-17

Wall Structure of SC Offtake Structure(4/4)



Rebar Material Table



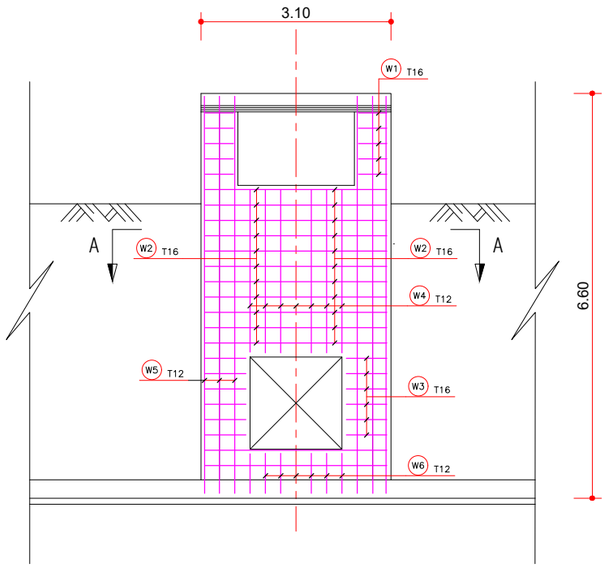
Type	Symbol	DIA.	Lenghth(m)	N
Type D H=1.00m	W1	T12	1.64	8x2x2x2
	W2	T12	3.431(AVG)	4x2x2x2
	W3	T12	0.654(AVG)	8x2x4x2

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 50
		TITLE	DATE		DRAWING No
		Wall Structure of SC Offtake Structure(4/4)	JUNE, 2022		C-01-18

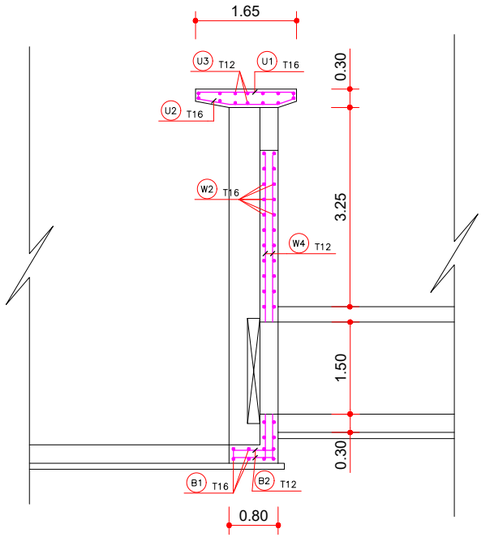
Sluice Gate of SC Offtake Structure(1/4)

Type A (h=6.60m)

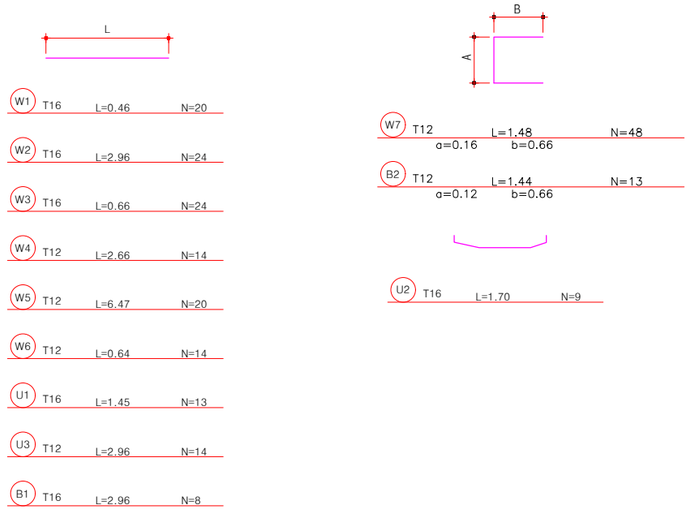
Typical Section



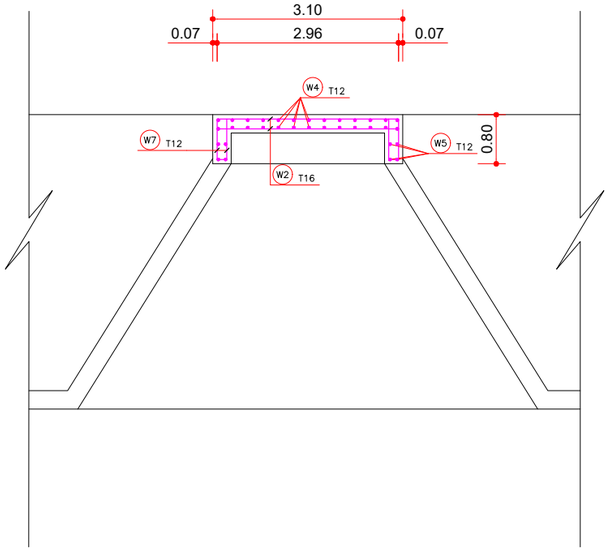
Profile



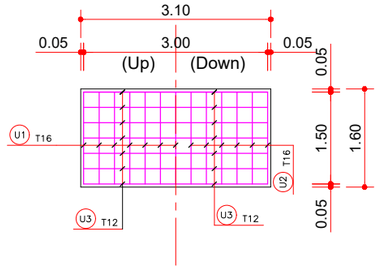
Rebar Detail



Section A-A



Top Slab



Rebar Material Table

(B500)

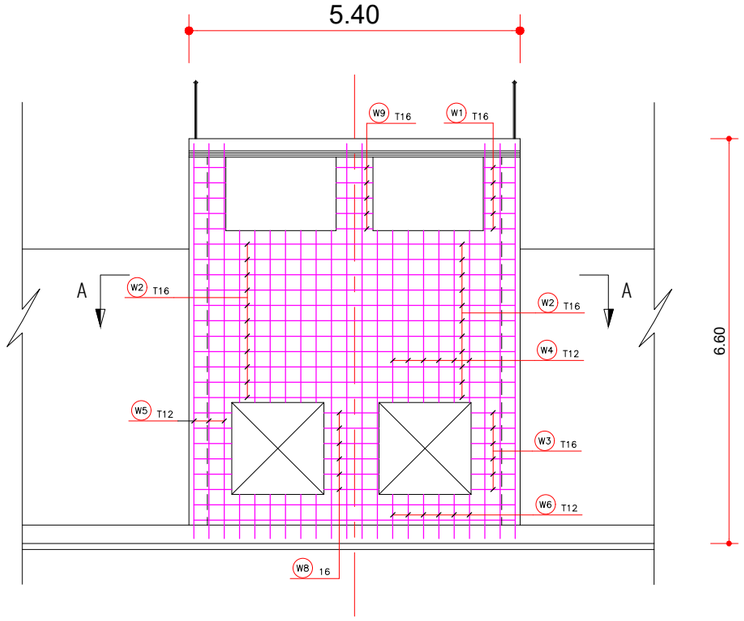
Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	0.46	20	9.20			
W2	T16	2.96	24	71.04			
W3	T16	0.66	24	15.84			
U1	T16	1.45	13	18.85			
U2	T16	1.7	9	15.3			
B1	T16	2.96	8	23.68			
Sub-total				153.91	1.579	0.243	
W4	T12	2.66	14	37.24			
W5	T12	6.47	20	129.4			
W6	T12	0.64	14	8.96			
U3	T12	2.96	14	41.44			
W7	T12	1.48	48	71.04			
B2	T12	1.44	13	18.72			
Sub-total				306.8	0.888	0.272	
Total						0.515	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	1 : 50
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		Sluice Gate of SC Offtake Structure(1/4)	JUNE, 2022		C-01-19

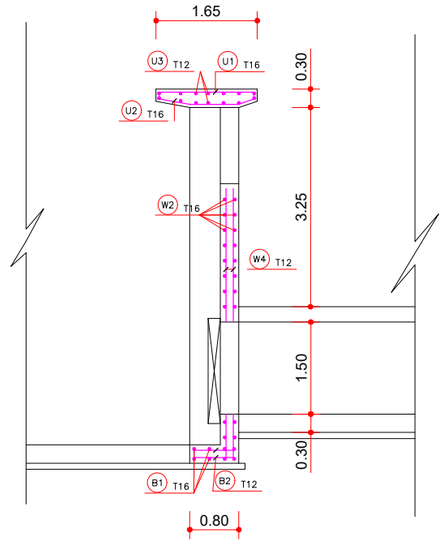
Sluice Gate of SC Offtake Structure(2/4)

Type B (h=6.60m)

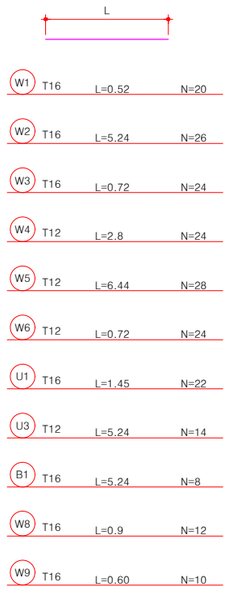
Typical Section

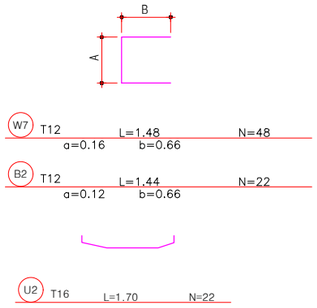


Profile

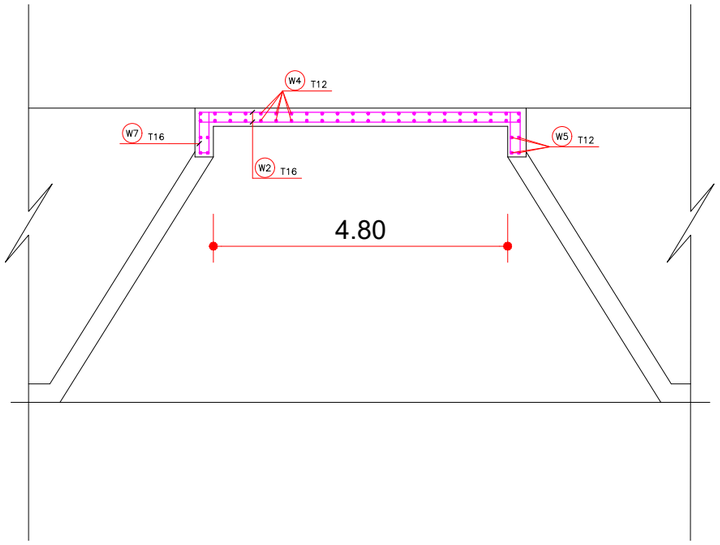


Rebar Detail

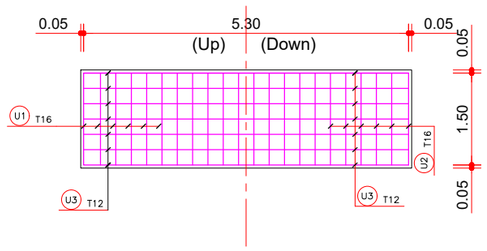




Section A-A



Top Slab



Rebar Material Table

(B500)

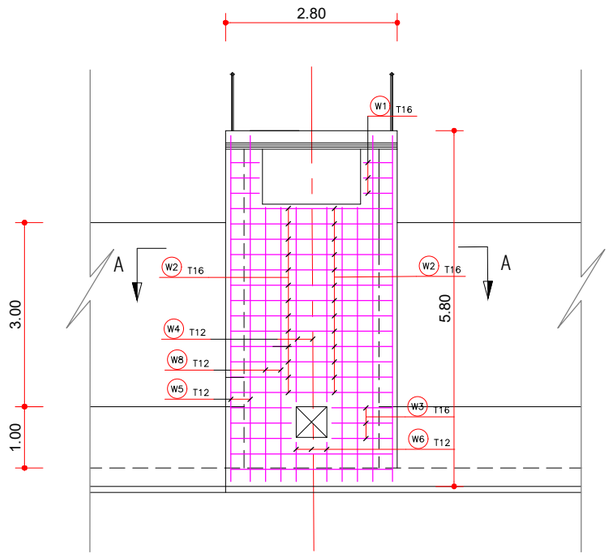
Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	0.52	20	10.40			
W2	T16	5.24	26	136.24			
W3	T16	0.72	24	17.28			
U1	T16	1.45	22	31.9			
B1	T16	5.24	8	41.92			
W8	T16	0.90	12	10.8			
W9	T16	0.60	10	6			
U2	T16	1.5	22	33			
Sub-total				287.54	1.579	0.454	
W4	T12	2.80	24	67.2			
W5	T12	6.44	28	180.32			
W6	T12	0.72	24	17.28			
U3	T12	5.24	14	73.36			
W7	T12	1.48	48	71.04			
B2	T12	1.44	22	31.68			
Sub-total				440.88	0.888	0.392	
Total						0.846	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	1 : 50
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		Sluice Gate of SC Offtake Structure(2/4)	JUNE, 2022		C-01-20

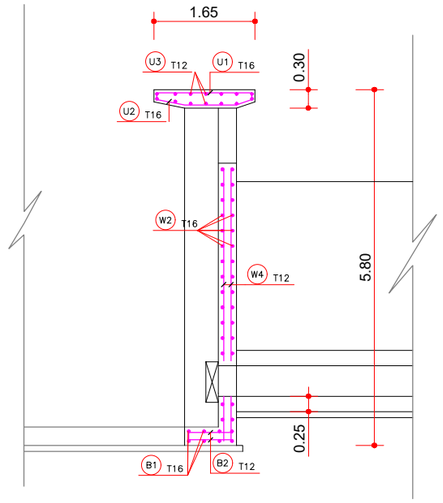
Sluice Gate of SC Offtake Structure(3/4)

Type C (h=5.80m)

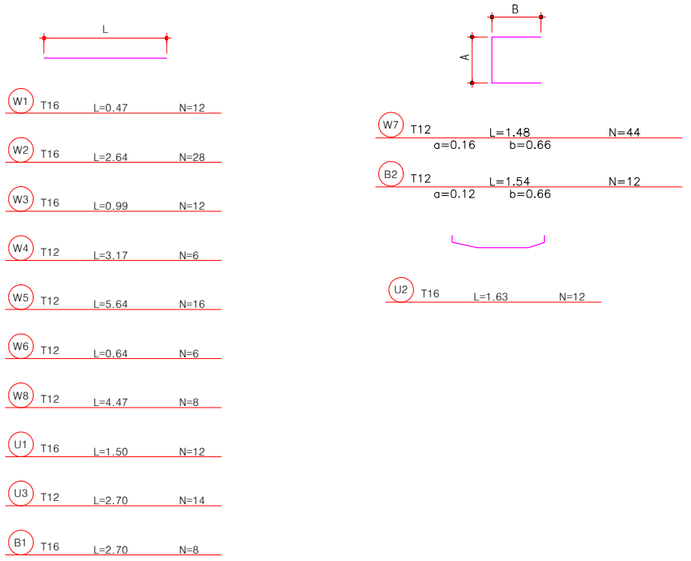
Typical Section



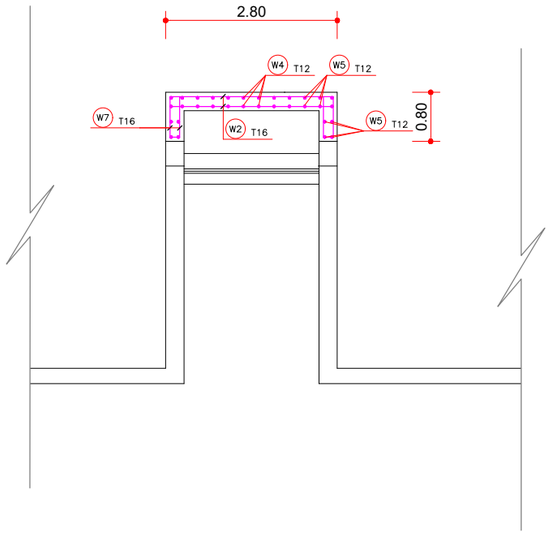
Profile



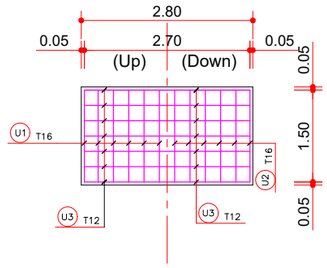
Rebar Detail



Section A-A



Top Slab



Rebar Material Table

(B500)

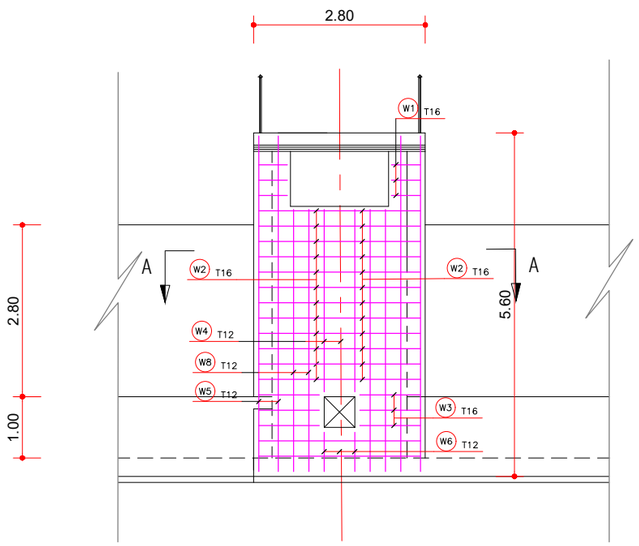
Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	0.47	12	5.64			
W2	T16	2.64	29	76.56			
W3	T16	0.99	12	11.88			
U1	T16	1.50	12	18			
B1	T16	2.70	8	21.6			
U2	T16	1.75	12	21			
Sub-total				154.68	1.579	0.244	
W4	T12	3.17	6	19.02			
W5	T12	5.64	16	90.24			
W6	T12	0.64	6	3.84			
W8	T12	4.47	8	35.76			
U3	T12	2.70	14	37.8			
W7	T12	1.48	44	65.12			
B2	T12	1.54	12	18.48			
Sub-total				270.26	0.888	0.240	
Total						0.484	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 50
		TITLE	DATE		DRAWING No
		Sluice Gate of SC Offtake Structure(3/4)	JUNE, 2022		C-01-21

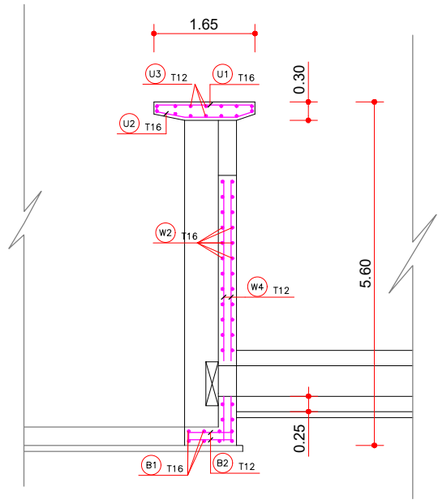
Sluice Gate of SC Offtake Structure(4/4)

Type D (h=5.40m)

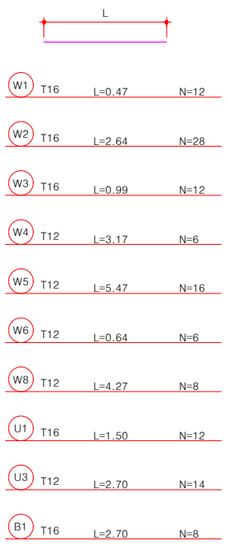
Typical Section

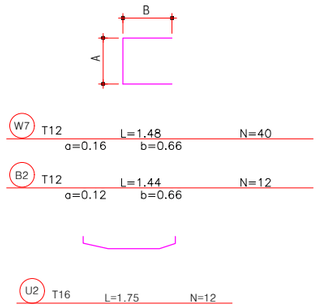


Profile

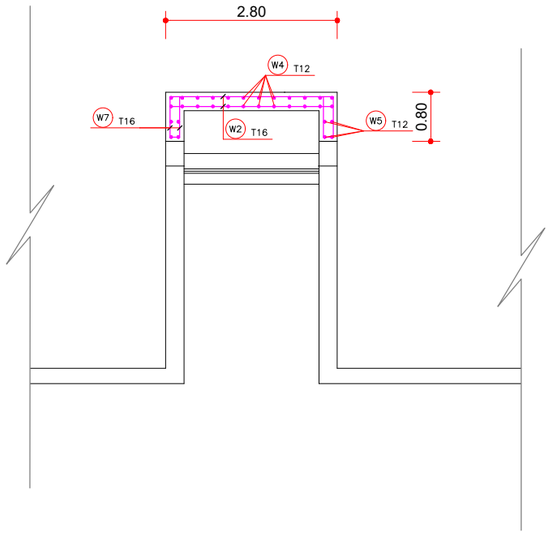


Rebar Detail

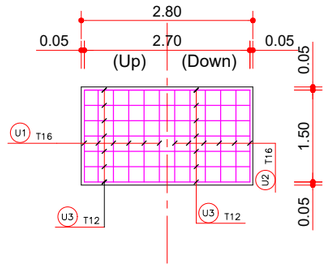




Section A-A



Top Slab



Rebar Material Table

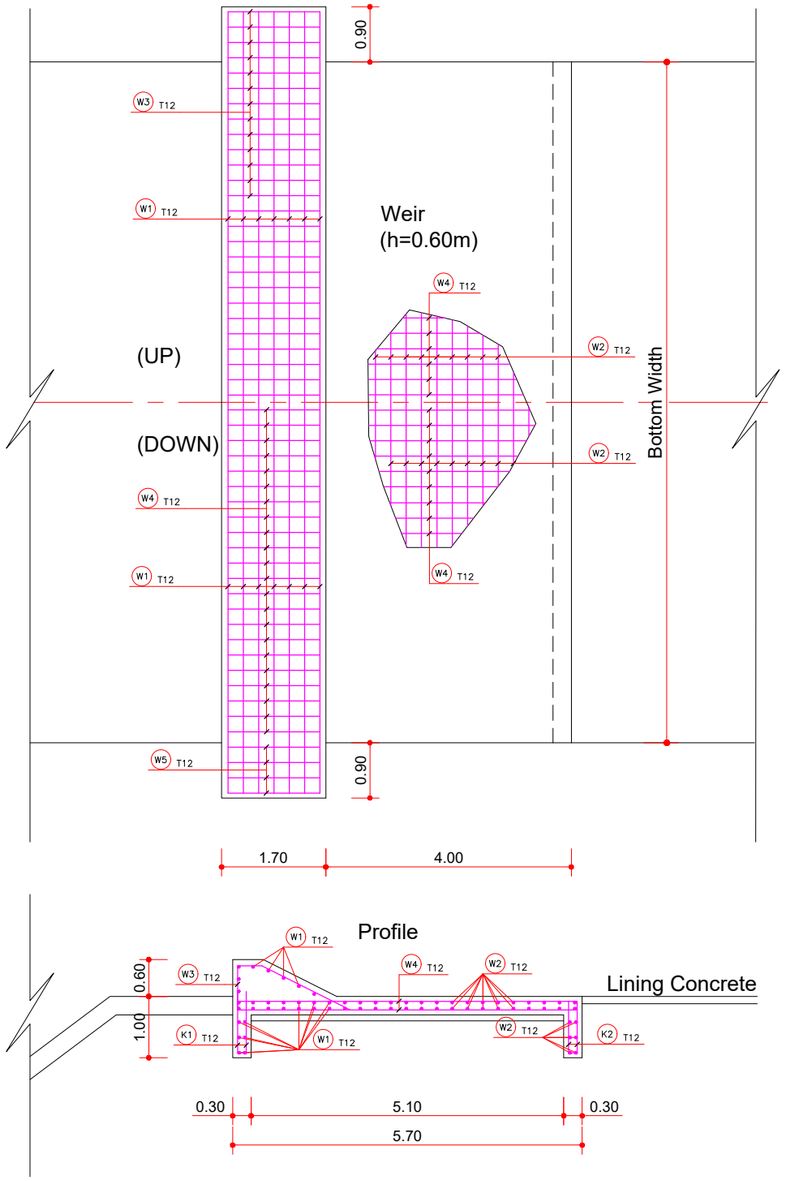
(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	0.47	12	5.64			
W2	T16	2.64	28	73.92			
W3	T16	0.99	12	11.88			
U1	T16	1.50	12	18			
B1	T16	2.70	8	21.6			
U2	T16	1.75	12	21			
Sub-total				152.04	1.579	0.240	
W4	T12	3.17	6	19.02			
W5	T12	5.47	16	87.52			
W6	T12	0.64	6	3.84			
W8	T12	4.27	8	34.16			
U3	T12	2.70	14	37.8			
W7	T12	1.48	40	59.2			
B2	T12	1.44	12	17.28			
Sub-total				258.82	0.888	0.230	
Total						0.470	

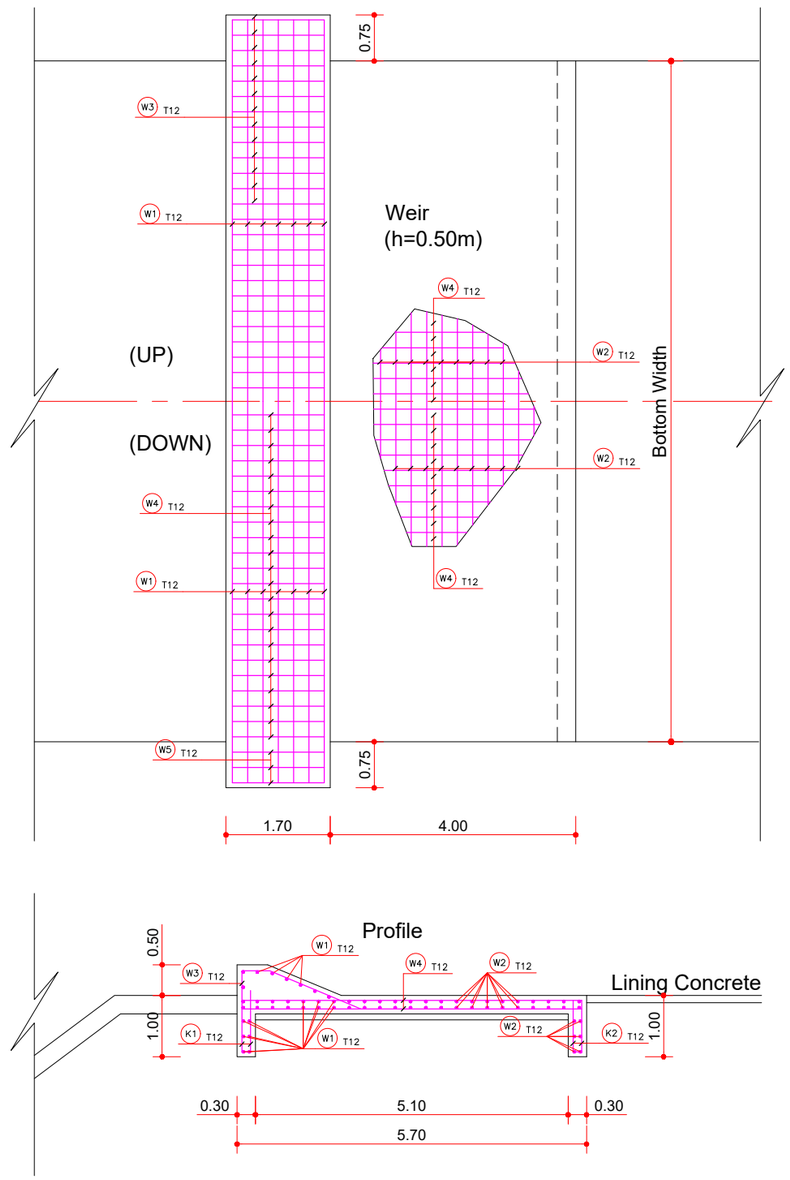
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 50
		TITLE	DATE		DRAWING No
		Sluice Gate of SC Offtake Structure(4/4)	JUNE, 2022		C-01-22

Weir of SC Offtake Structure(1/2)

Weir (h=0.6m)



Weir (h=0.5m)

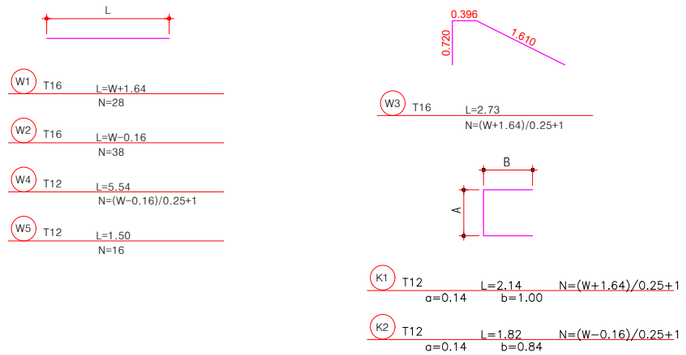


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Weir of SC Offtake Structure(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-01-23

Weir of SC Offtake Structure(2/2)

Rebar Detail

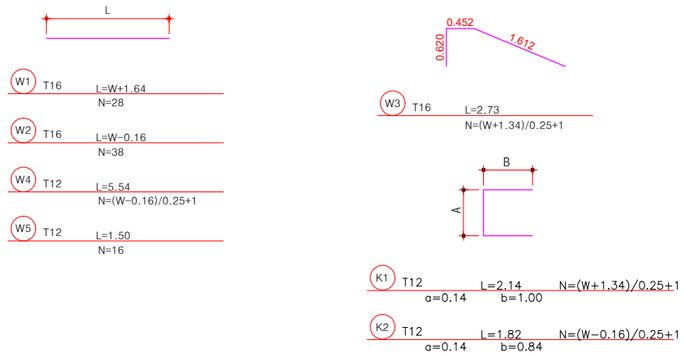
Type A (h=0.60m)



Symbol	DIA.	Lenghth(m)	N
W1	T12	W+1.64	28
W2	T12	W-0.16	38
W3	T12	2.73	(W+1.64)/0.25+1
W4	T12	5.54	(W-0.16)/0.25+1
W5	T12	1.5	16
K1	T12	2.14	(W+1.64)/0.25+1)
K2	T12	1.82	(W-0.16)/0.25+1

Rebar Detail

Type B (h=0.50m)



Symbol	DIA.	Lenghth(m)	N
W1	T12	W+1.64	28
W2	T12	W-0.16	38
W3	T12	2.69	(W+1.34)/0.25+1
W4	T12	5.54	(W-0.16)/0.25+1
W5	T12	1.5	16
K1	T12	2.14	(W+1.34)/0.25+1)
K2	T12	1.82	(W-0.16)/0.25+1

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

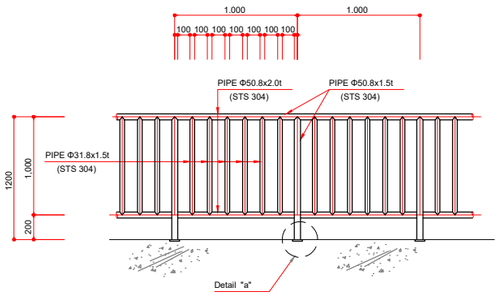
CONSULTANT

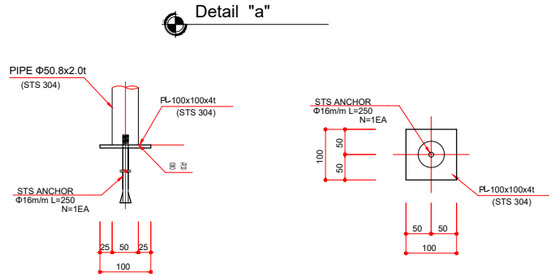
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		DRAWING BY: Gim, Ho Jun	
TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
Weir of SC Offtake Structure(2/2)	JUNE, 2022		C-01-24

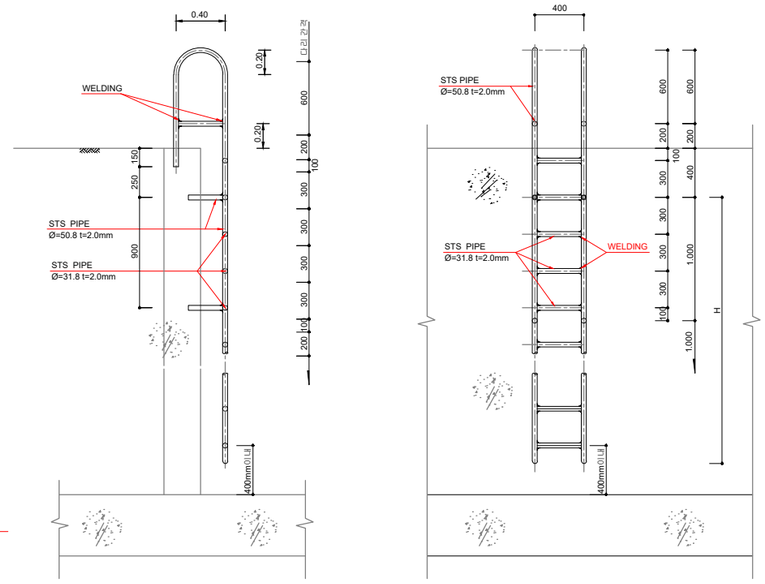
Supplementary Facility of Offtake Structure

Detail of Stainless Handrail

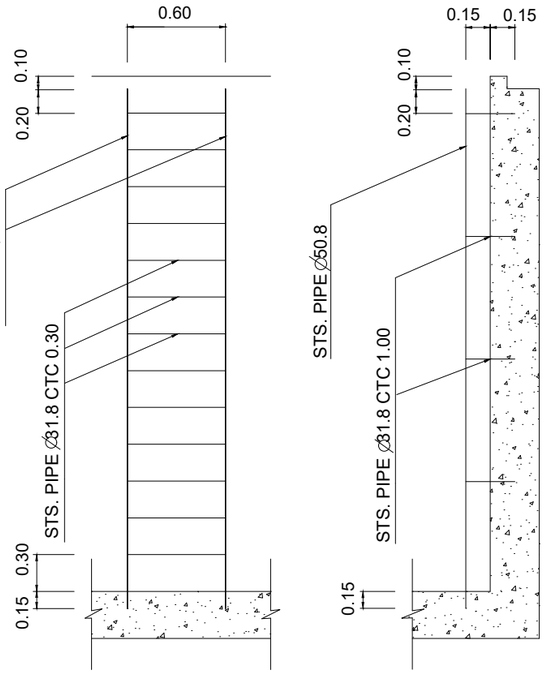




Ladder (Type A)



Ladder (Type B)



MATERIAL OF Stainless Handrail

(Per 1M)

ITEM	SIZE	UNIT	QUANTITY	REMARKS
STAINLESS	Ø50.8,t=2.0m/m	m	3.20m	
STAINLESS	Ø31.8,t=1.5m/m	m	6.00m	

LADDER MATERIAL LIST

(per 1M)

No.	Dimension	Material	QUANTITY	Remark
1	Ø50.8,t=2.0mm	STS304	2.6H+6.16	
2	Ø31.8,t=2.0mm	STS304	1.2H+0.4	
3	60x6t	STS304	H+0.90	STS

LADDER MATERIAL LIST

(1M)

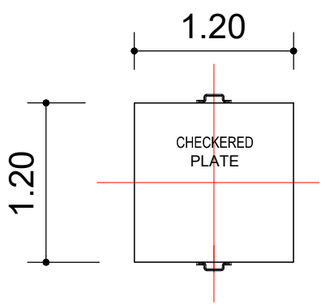
ITEM	SIZE	UNIT	QUANTITY	REMARKS
STAINLESS PIPE	Ø 50.8, T=2.0	m	2.00	
STAINLESS PIPE	Ø 31.8, T=2.0	m	2.40	
WELDING		A PLACE	1.00	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Supplementary Facility of Offtake Structure	JUNE, 2022		C-01-25

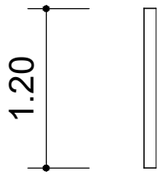
IRON CHAMBER COVER

TYPE : 1.20x1.20

Plan



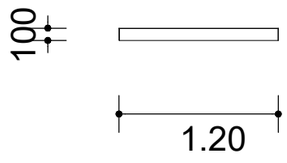
Section A-A



TYPE : 1.20x1.20

Division	Spec	Nos	Unit	Quntity	Remark
CHECKERED PLATE	PL-1,200 x 1,200 x 3.2	1EA	kg	64.38	NET
ST. Round Bar	16mm x 250	1EA	kg	0.558	NET
ST. PIPE	22.3mm x 50 x 2.0T	2EA	kg	0.100	NET
WELDING	3.2mm		m	2.40	NET
PAINT			m^2	2.71	NET

Section B-B



DETAIL OF GRIP(SMALL)

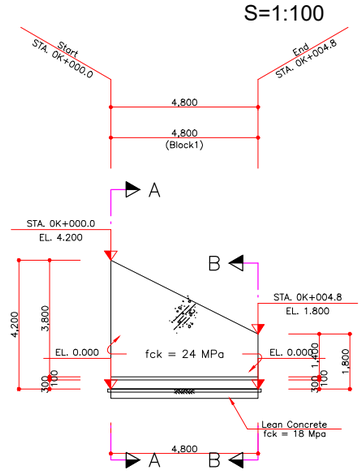
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		MC(2.4m x 4.0m) Screen Detail Drawing	JUNE, 2022		C-01-26

Wing Wall of SC Offtake(1/12)

Type A (4.2m- 1.8m)

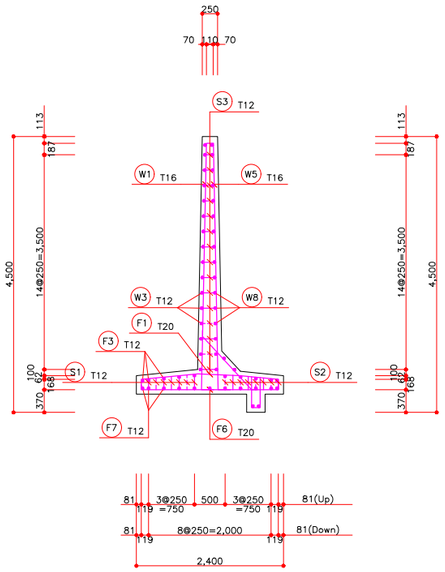
Profile

S=1:100



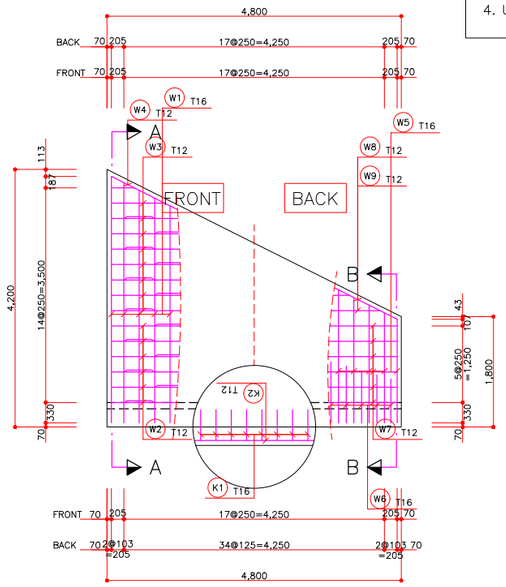
Typical Section(A-A)

S=1:50



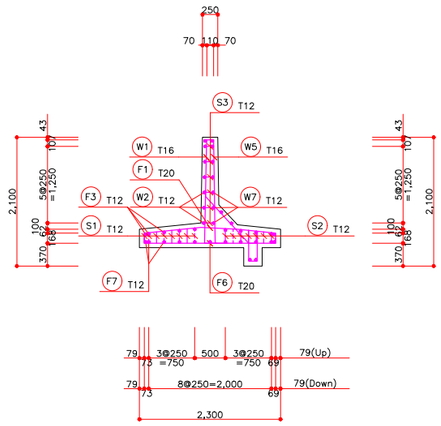
Wall Structure

S=1:50



Typical Section(B-B)

S=1:50

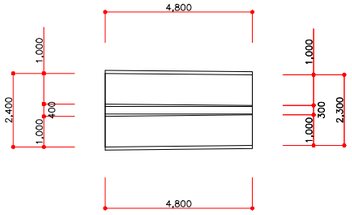


Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

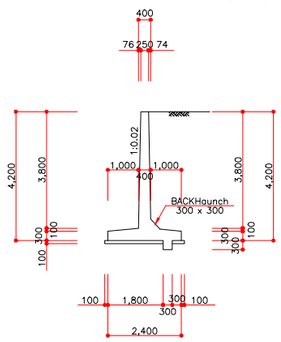
Layout

S=1:100



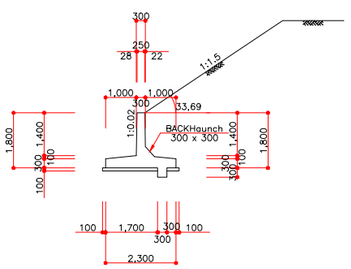
Section A-A

S=1:100



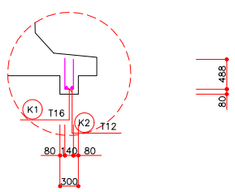
Section B-B

S=1:100



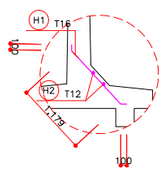
Shear Key Detail(A-A)

S=1:50



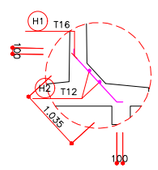
Haunch Detail(A-A)

S=1:50



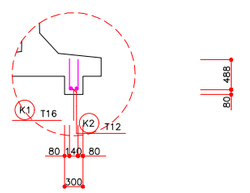
Haunch Detail(B-B)

S=1:50



Shear Key Detail(B-B)

S=1:50



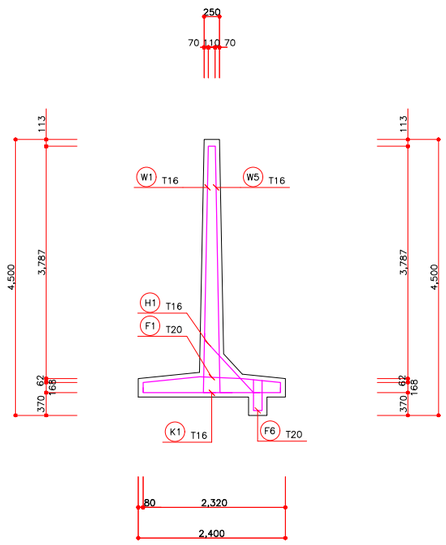
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(1/12)	JUNE, 2022		C-02-01

Wing Wall of SC Offtake(2/12)

Type A (4.2m- 1.8m)

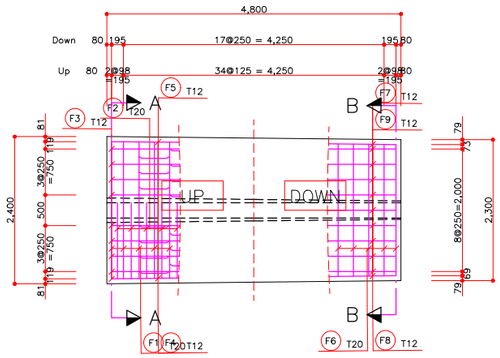
Bending ScheduleA-A (1Cycle)

S=1:50



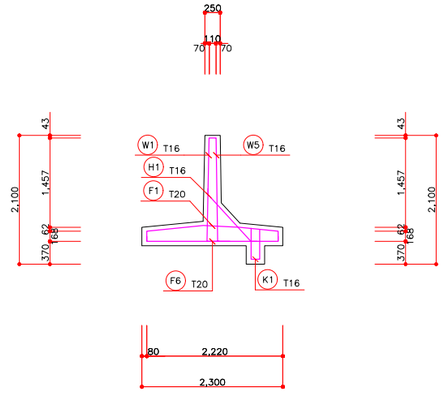
Foundation Slab

S=1:50



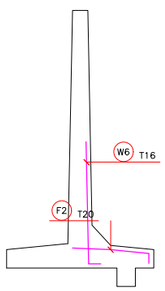
Bending ScheduleB-B (1Cycle)

S=1:50



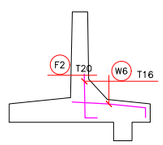
Bending ScheduleA-A (2Cycle)

S=1:50



Bending ScheduleB-B (2Cycle)

S=1:50

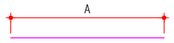


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun	AS SHOWN
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(2/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-02-02

Wing Wall of SC Offtake(3/12)

Type A (4.2m- 1.8m)

Rebar Detail



F3 T12 L=4,640 N=9

F4 T12 L=4,640 N=1

F5 T12 L=4,640 N=1

F7 T12 L=4,640 N=10

F8 T12 L=4,640 N=1

F9 T12 L=4,640 N=1

H2 T12 L=4,660 N=2

K2 T12 L=4,660 N=2

W2 T12 L=4,660 N=6
a=4,660~4,660

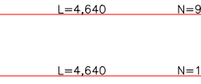
W3 T12 L=2,373 N=9
a=4,373~373

W4 T12 L=5,210 N=1

W7 T12 L=4,660 N=6
a=4,660~4,660

W8 T12 L=2,373 N=9
a=4,373~373

W9 T12 L=5,210 N=1



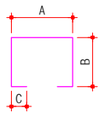
F1 T20 L=2,523 N=20
a=162 b=692~594 c=162
c1=927 c2=630

F2 T20 L=1,383 N=19
a=616 ~567 b=630 ~629 c=162

F6 T20 L=2,352 N=20
a=2,238~2,142 b=81 c=81

W5 T16 L=3,052 N=20
a=200 b=4,017~1,687 x1=91°

W6 T16 L=1,552 N=19
a=200 b=1,988~716 x1=91°

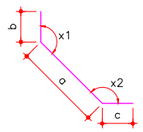


K1 T16 L=1,330 N=20
a=140 ~140 b=502 ~488 c=100

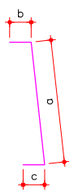
S1 T12 L=1,216 N=28
a=532 b=292~192 c=100

S2 T12 L=1,186 N=28
a=532 b=262~192 c=100

S3 T12 L=1,162 N=40
a=529 b=287~146 c=100



H1 T16 L=1,307 N=20
a=1,177~1,085 100 c=100 x1=224° x2=227°



W1 T16 L=3,166 N=20
a=4,018~1,687 b=113 c=200

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
F1	T20	2,523	20	50,460			
F2	"	1,383	19	26,277			
F6	"	2,352	20	47,040			
Sub-total				123,777	2,466	0,305	
H1	T16	1,307	20	26,140			
K1	"	1,330	20	26,600			
W1	"	3,166	20	63,320			
W5	"	3,052	20	61,040			
W6	"	1,552	19	29,488			
Sub-total				206,588	1,579	0,326	
F3	T12	4,640	9	41,760			
F4	"	4,640	1	4,640			
F5	"	4,640	1	4,640			
F7	"	4,640	10	46,400			
F8	"	4,640	1	4,640			
F9	"	4,640	1	4,640			
H2	"	4,660	2	9,320			
K2	"	4,660	2	9,320			
S1	"	1,216	28	34,048			
S2	"	1,186	28	33,208			
S3	"	1,162	40	46,480			
W2	"	4,660	6	27,960			
W3	"	2,373	9	21,357			
W4	"	5,210	1	5,210			
W7	"	4,660	6	27,960			
W8	"	2,373	9	21,357			
W9	"	5,210	1	5,210			
Sub-total				348,150	0,888	0,309	
Total				678,515		0,940	

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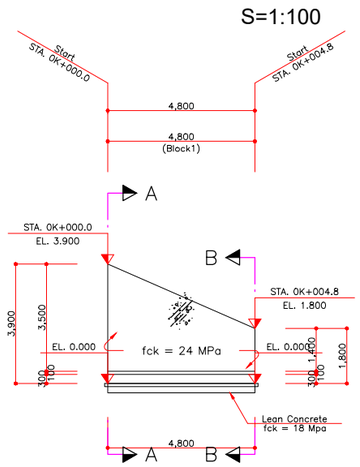
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(3/12)	JUNE, 2022		C-02-03

Wing Wall of SC Offtake(4/12)

Type B (3.9m- 1.8m)

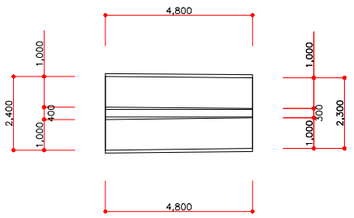
Profile

S=1:100



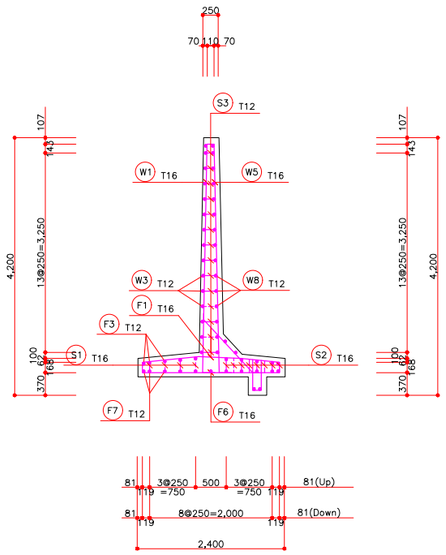
Layout

S=1:100



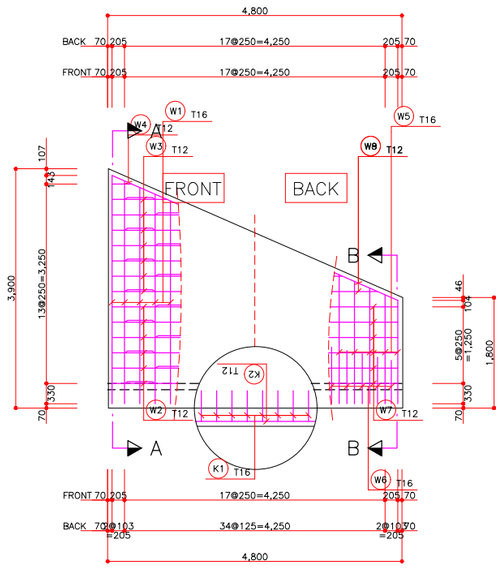
Typical Section(A-A)

S=1:50



Wall Structure

S=1:50



Typical Section(B-B)

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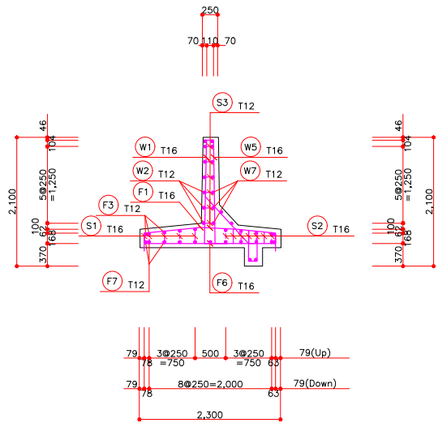
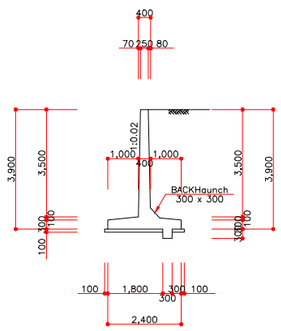


Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

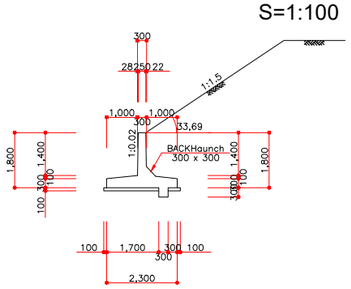
Section A-A

S=1:100



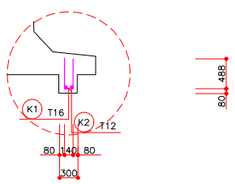
Section B-B

S=1:100



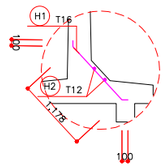
Shear Key Detail(A-A)

S=1:50



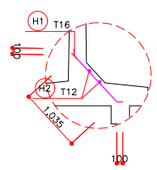
Haunch Detail(A-A)

S=1:50



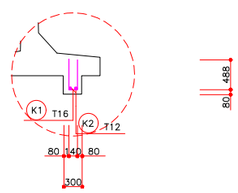
Haunch Detail(B-B)

S=1:50



Shear Key Detail(B-B)

S=1:50



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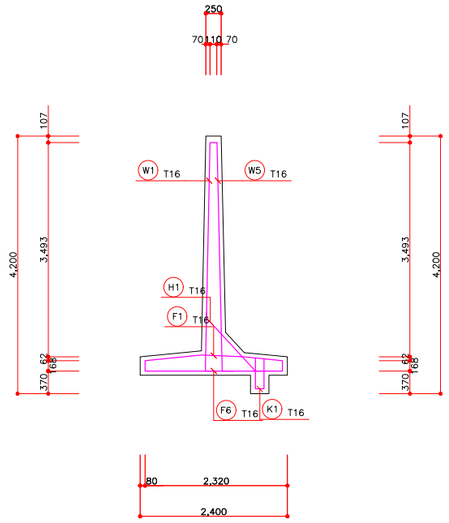
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wing Wall of SC Offtake(4/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-02-04

Wing Wall of SC Offtake(5/12)

Type B (3.9m- 1.8m)

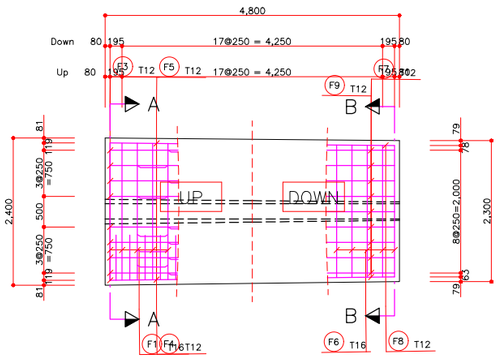
Bending ScheduleA-A (1Cycle)

S=1:50



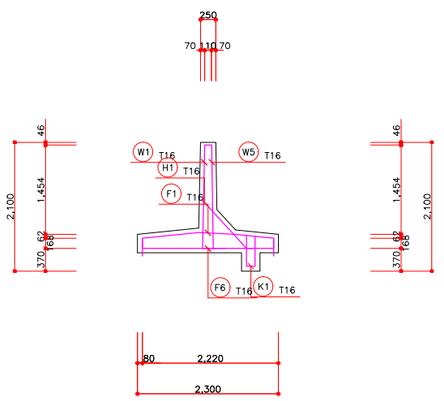
Foundation Slab

S=1:50



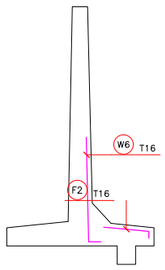
Bending ScheduleB-B (1Cycle)

S=1:50



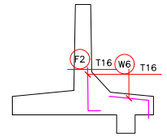
Bending ScheduleA-A (2Cycle)

S=1:50



Bending ScheduleB-B (2Cycle)

S=1:50



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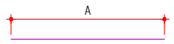
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wing Wall of SC Offtake(5/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-02-05

Wing Wall of SC Offtake(6/12)

Type B (3.9m- 1.8m)

Rebar Detail



F3 T12 L=4,640 N=9

F4 T12 L=4,640 N=1

F5 T12 L=4,640 N=1

F7 T12 L=4,640 N=10

F8 T12 L=4,640 N=1

F9 T12 L=4,640 N=1

H2 T12 L=4,660 N=2

K2 T12 L=4,660 N=2

W2 T12 L=4,660 N=6
a=4,660~4,660

W3 T12 L=2,327 N=8
a=4,327~327

W4 T12 L=5,086 N=1

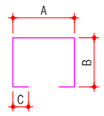
W7 T12 L=4,660 N=6
a=4,660~4,660

W8 T12 L=2,327 N=8
a=4,327~327

W9 T12 L=5,086 N=1

W5 T16 L=2,905 N=20
a=200 b=3,724~1,685 x1=91°

W6 T16 L=1,404 N=19
a=200 b=1,701~707 x1=91°

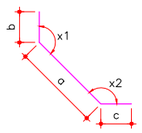


K1 T16 L=1,330 N=20
a=140 ~140 b=502 ~488 c=100

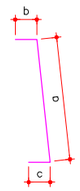
S1 T16 L=1,216 N=16
a=532 b=292~192 c=100

S2 T16 L=1,186 N=28
a=532 b=262~192 c=100

S3 T12 L=1,162 N=40
a=529 b=287~146 c=100



H1 T16 L=1,307 N=20
a=1,176~1,057 100 c=100 x1=224° x2=227°

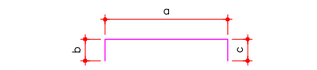


W1 T16 L=3,018 N=20
a=3,724~1,685 b=113 c=200

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
F1	T16	2,599	20	51,980			
F2	"	894	19	16,986			
F6	"	2,390	20	47,800			
H1	"	1,307	20	26,140			
K1	"	1,330	20	26,600			
S1	"	1,216	16	19,456			
S2	"	1,186	28	33,208			
W1	"	3,018	20	60,360			
W5	"	2,905	20	58,100			
W6	"	1,404	19	26,676			
Sub-total				367,306	1,579	0,580	
F3	T12	4,640	9	41,760			
F4	"	4,640	1	4,640			
F5	"	4,640	1	4,640			
F7	"	4,640	10	46,400			
F8	"	4,640	1	4,640			
F9	"	4,640	1	4,640			
H2	"	4,660	2	9,320			
K2	"	4,660	2	9,320			
S3	"	1,162	40	46,480			
W2	"	4,660	6	27,960			
W3	"	2,327	8	18,616			
W4	"	5,086	1	5,086			
W7	"	4,660	6	27,960			
W8	"	2,327	8	18,616			
W9	"	5,086	1	5,086			
Sub-total				275,164	0,888	0,244	
Total				642,470		0,824	



F1 T16 L=2,599 N=20
a=293 ~107 b=692 ~594 c=293 ~107
c1=927 c2=630

F2 T16 L=894 N=19
a=111 ~17 b=630 ~629 c=293 ~107

F6 T16 L=2,390 N=20
a=2,238 ~2,142 b=146 ~54 c=146 ~54

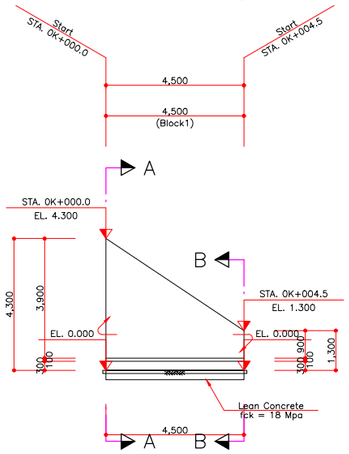
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wing Wall of SC Offtake(6/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-02-06

Wing Wall of SC Offtake(7/12)

Type C (4.2m- 1.5m)

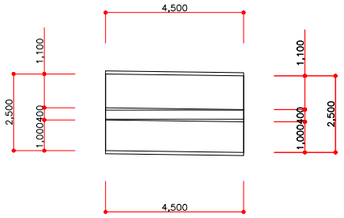
Profile

S=1:100



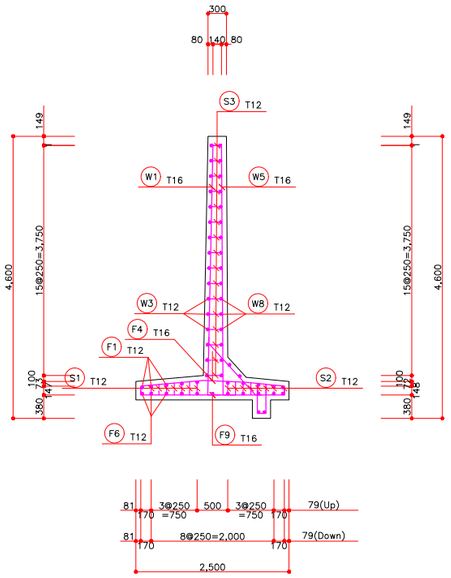
Layout

S=1:100



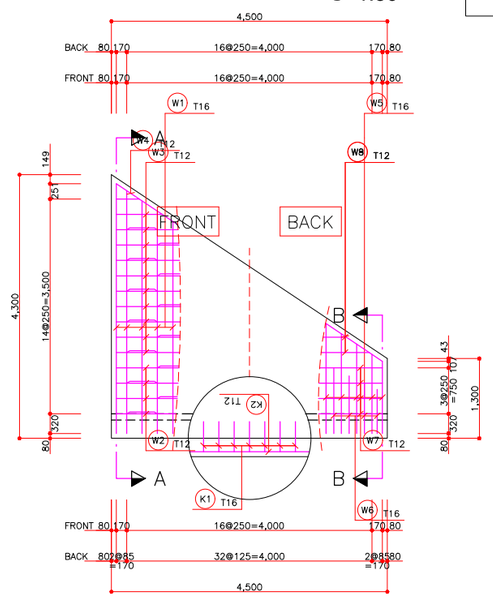
Typical Section(A-A)

S=1:50



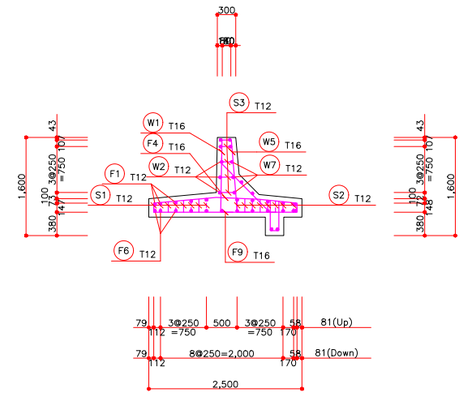
Wall Structure

S=1:50



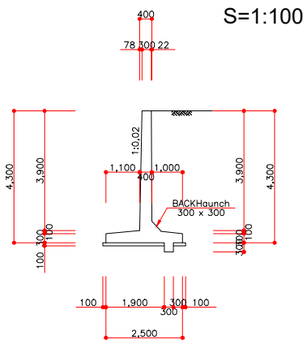
Typical Section(B-B)

S=1:50



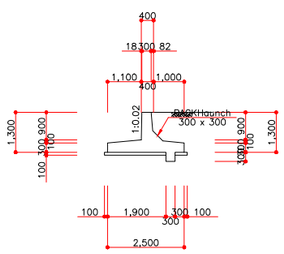
Section A-A

S=1:100



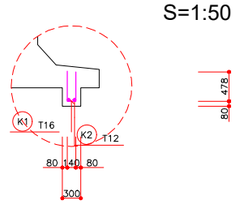
Section B-B

S=1:100



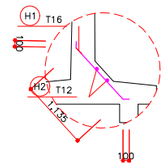
Shear Key Detail(A-A)

S=1:50



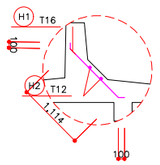
Haunch Detail(A-A)

S=1:50



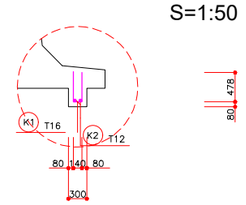
Haunch Detail(B-B)

S=1:50



Shear Key Detail(B-B)

S=1:50



Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

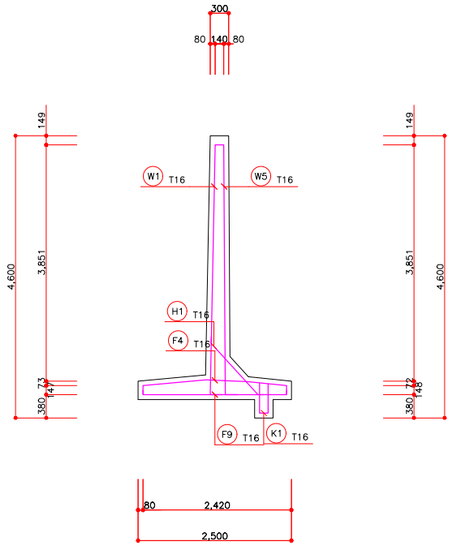
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wing Wall of SC Offtake(7/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-02-07

Wing Wall of SC Offtake(8/12)

Type C (4.2m- 1.5m)

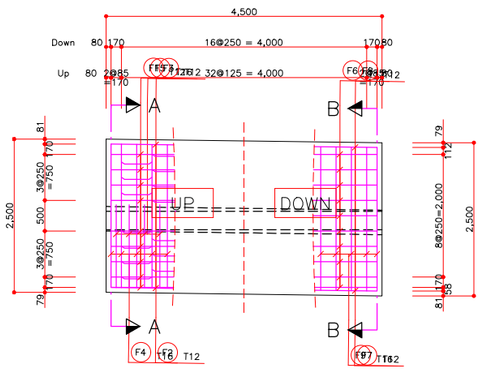
Bending ScheduleA-A (1Cycle)

S=1:50



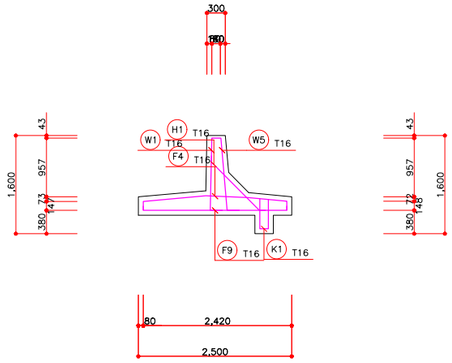
Foundation Slab

S=1:50



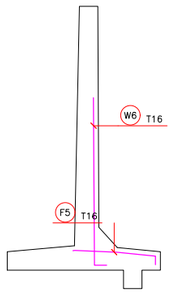
Bending ScheduleB-B (1Cycle)

S=1:50



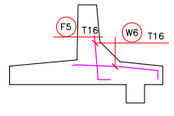
Bending ScheduleA-A (2Cycle)

S=1:50



Bending ScheduleB-B (2Cycle)

S=1:50

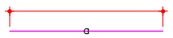


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(8/12)	JUNE, 2022		C-02-08

Wing Wall of SC Offtake(9/12)

Type C (4.2m- 1.5m)

Rebar Detail



F1 T12 L=4,340 N=9

F2 T12 L=4,340 N=1

F3 T12 L=4,340 N=1

F6 T12 L=4,340 N=10

F7 T12 L=4,340 N=1

F8 T12 L=4,340 N=1

H2 T12 L=4,340 N=2
a=4,340~4,340

K2 T12 L=4,340 N=2

W2 T12 L=4,340 N=4

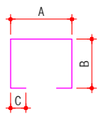
W3 T12 L=2,064 N=12
a=4,126~1

W4 T12 L=5,216 N=1

W7 T12 L=4,340 N=4

W8 T12 L=2,064 N=12
a=4,126~1

W9 T12 L=5,216 N=1

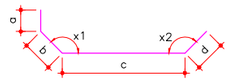


K1 T16 L=1,310 N=19
a=140 ~140 b=492 ~478 c=100

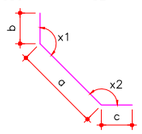
S1 T12 L=1,167 N=28
a=529 b=269~169 c=100

S2 T12 L=1,137 N=28
a=529 b=239~169 c=100

S3 T12 L=1,169 N=36
a=529 b=269~171 c=100

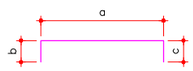


F5 T16 L=1,515 N=18
a=140 b=631 ~630 c=692 d=73 ~32 x1=177°x2=172°



H1 T16 L=1,325 N=19
a=1,135~1,155 b=100 c=100 x1=223° x2=228°

W1 T16 L=2,966 N=19
a=4,071~1,177 b=142 c=200



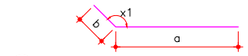
F4 T16 L=2,628 N=19
a=140 b=692 c=140
c1=1,026 c2=630

F9 T16 L=2,480 N=19
a=2,340 b=70 c=70

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
F4	T16	2,628	19	49,932			
F5	"	1,515	18	27,270			
F9	"	2,480	19	47,120			
H1	"	1,325	19	25,175			
K1	"	1,310	19	24,890			
W1	"	2,966	19	56,354			
W5	"	2,824	19	53,656			
W6	"	1,924	18	34,632			
Sub-total				319,029	1,579	0,504	
F1	T12	4,340	9	39,060			
F2	"	4,340	1	4,340			
F3	"	4,340	1	4,340			
F6	"	4,340	10	43,400			
F7	"	4,340	1	4,340			
F8	"	4,340	1	4,340			
H2	"	4,340	2	8,680			
K2	"	4,340	2	8,680			
S1	"	1,167	28	32,676			
S2	"	1,137	28	31,836			
S3	"	1,169	36	42,084			
W2	"	4,340	4	17,360			
W3	"	2,064	12	24,768			
W4	"	5,216	1	5,216			
W7	"	4,340	4	17,360			
W8	"	2,064	12	24,768			
W9	"	5,216	1	5,216			
Sub-total				318,464	0,888	0,283	
Total				637,493		0,787	



W5 T16 L=2,824 N=19
a=200 b=4,071~1,177 x1=90°

W6 T16 L=1,924 N=18
a=200 b=2,730~718 x1=90°

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(9/12)	JUNE, 2022		C-02-09

Wing Wall of SC Offtake(10/12)

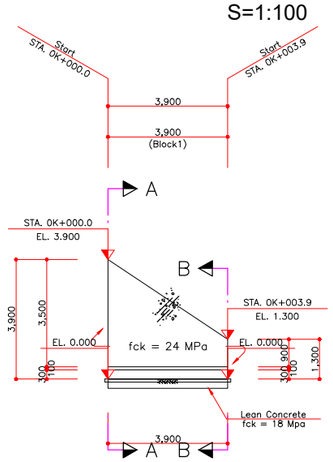
Type D (3.9m- 1.5m)

Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

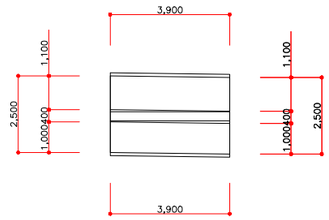
Profile

S=1:100



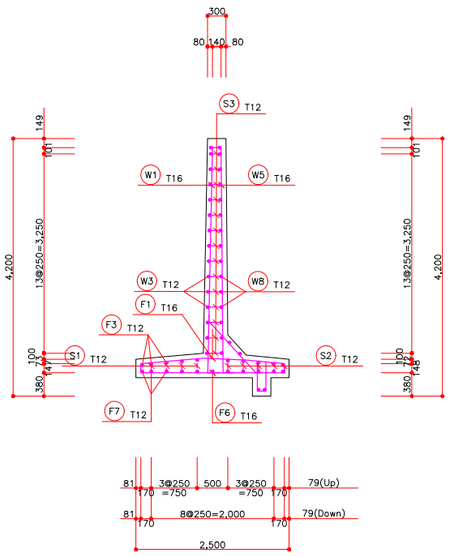
Layout

S=1:100



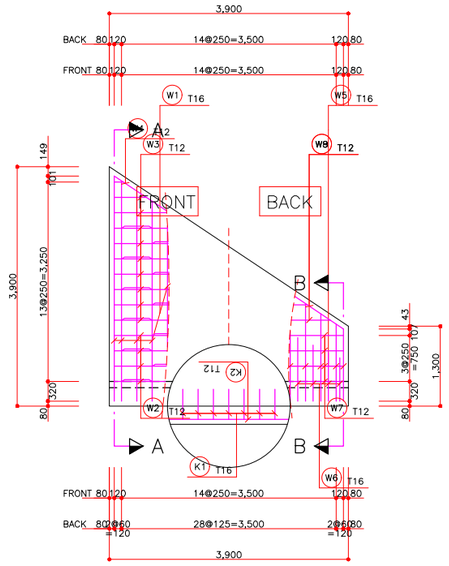
Typical Section(A-A)

S=1:50



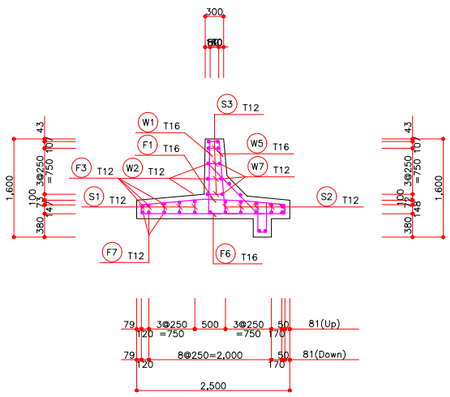
Wall Structure

S=1:50



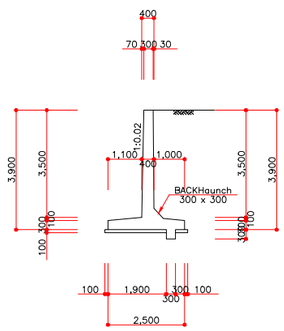
Typical Section(B-B)

S=1:50



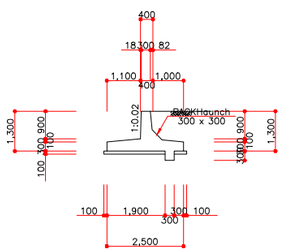
Section A-A

S=1:100



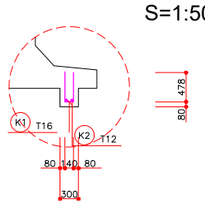
Section B-B

S=1:100



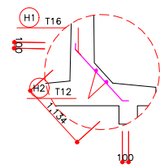
Shear Key Detail(A-A)

S=1:50



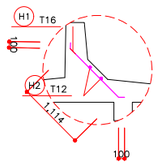
Haunch Detail(A-A)

S=1:50



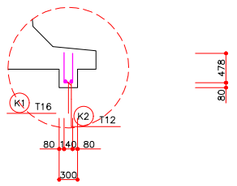
Haunch Detail(B-B)

S=1:50



Shear Key Detail(B-B)

S=1:50



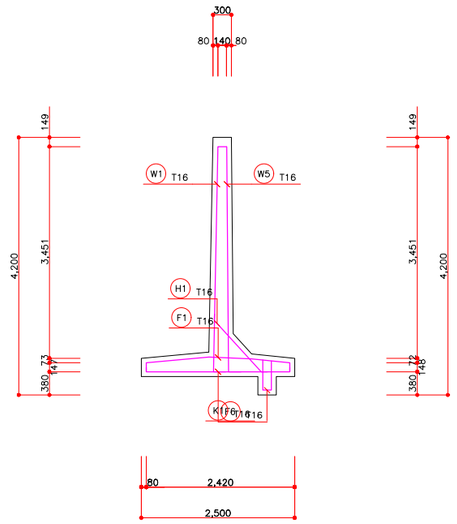
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(10/12)	JUNE, 2022		C-02-10

Wing Wall of SC Offtake(11/12)

Type D (3.9m- 1.5m)

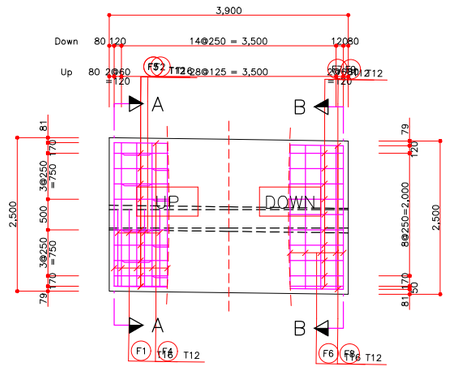
Bending ScheduleA-A (1Cycle)

S=1:50



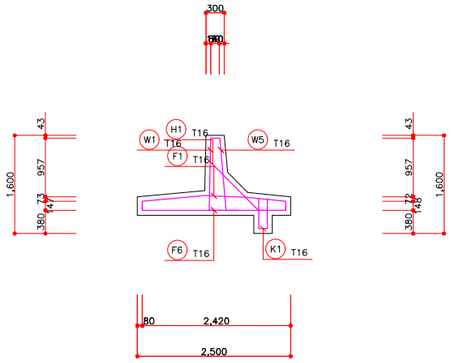
Foundation Slab

S=1:50



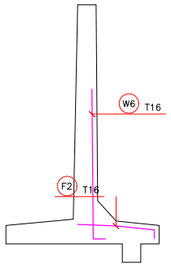
Bending ScheduleB-B (1Cycle)

S=1:50



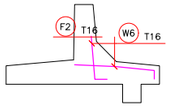
Bending ScheduleA-A (2Cycle)

S=1:50



Bending ScheduleB-B (2Cycle)

S=1:50

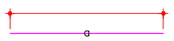


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Wing Wall of SC Offtake(11/12)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-02-11

Wing Wall of SC Offtake(12/12)

Type D (3.9m- 1.5m)

Rebar Detail



F3 T12 L=3,740 N=9

F4 T12 L=3,740 N=1

F5 T12 L=3,740 N=1

F7 T12 L=3,740 N=10

F8 T12 L=3,740 N=1

F9 T12 L=3,740 N=1

H2 T12 L=3,740 N=2
a=3,740~3,740

K2 T12 L=3,740 N=2

W2 T12 L=3,740 N=4
a=3,740~3,740

W3 T12 L=1,839 N=10
a=3,526~151

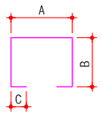
W4 T12 L=4,495 N=1

W7 T12 L=3,740 N=4
a=3,740~3,740

W8 T12 L=1,839 N=10
a=3,526~151

W9 T12 L=4,495 N=1

W6 T16 L=1,774 N=16
a=200 b=2,442~706 x1=91°

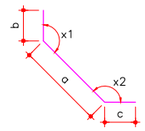


K1 T16 L=1,310 N=17
a=140 ~140 b=492 ~478 c=100

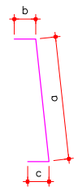
S1 T12 L=1,167 N=14
a=529 b=269~169 c=100

S2 T12 L=1,137 N=14
a=529 b=239~169 c=100

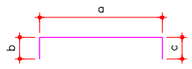
S3 T12 L=1,173 N=29
a=529 b=269~175 c=100



H1 T16 L=1,325 N=17
a=1,134~1,155 b=100 c=100 x1=224° x2=228°



W1 T16 L=2,766 N=17
a=3,671~1,177 b=142 c=200



F1 T16 L=2,628 N=17
a=140 b=692 c=140
c1=1,026 c2=630

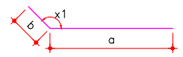
F2 T16 L=1,420 N=16
a=675 ~623 b=631 ~630 c=140

F6 T16 L=2,480 N=17
a=2,340 b=70 c=70

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
F1	T16	2,628	17	44,676			
F2	"	1,420	16	22,720			
F6	"	2,480	17	42,160			
H1	"	1,325	17	22,525			
K1	"	1,310	17	22,270			
W1	"	2,766	17	47,022			
W5	"	2,624	17	44,608			
W6	"	1,774	16	28,384			
Sub-total				274,365	1.579	0.433	
F3	T12	3,740	9	33,660			
F4	"	3,740	1	3.740			
F5	"	3.740	1	3.740			
F7	"	3.740	10	37.400			
F8	"	3.740	1	3.740			
F9	"	3.740	1	3.740			
H2	"	3.740	2	7.480			
K2	"	3.740	2	7.480			
S1	"	1.167	14	16.338			
S2	"	1.137	14	15.918			
S3	"	1.173	29	34.017			
W2	"	3.740	4	14.960			
W3	"	1.839	10	18.390			
W4	"	4.495	1	4.495			
W7	"	3.740	4	14.960			
W8	"	1.839	10	18.390			
W9	"	4.495	1	4.495			
Sub-total				242.943	0.888	0.216	
Total				517.308		0.649	



W5 T16 L=2,624 N=17
a=200 b=3,671~1,177 x1=91°

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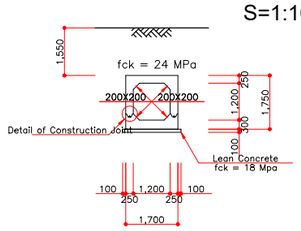
		TITLE	DATE		DRAWING No
		Wing Wall of SC Offtake(12/12)	JUNE, 2022		C-02-12

Box Culvert of SC Offtake(1/6)

(1.2m x 1.2m x 1ba.)

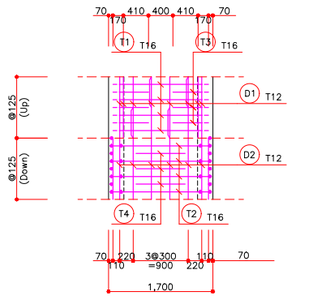
General

S=1:100



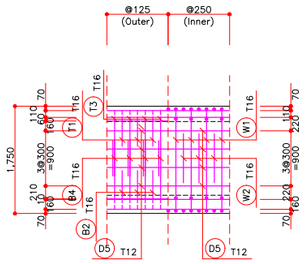
Upper Slab

S=1:50



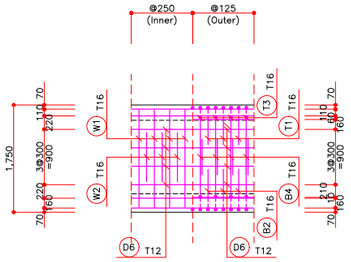
Side Wall (left)

S=1:50



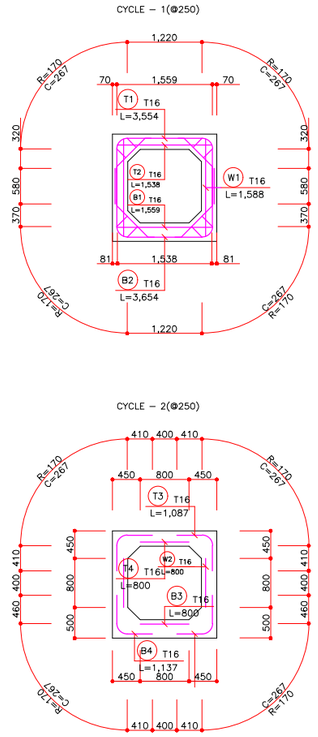
Side Wall (Right)

S=1:50



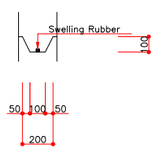
Bending Schedule

S=1:50



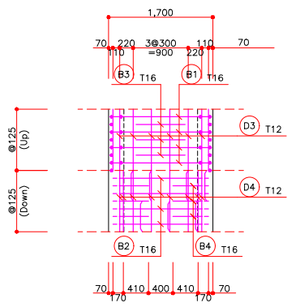
Detail of Construction Joint

S=1:20



Foundation Slab

S=1:50



Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

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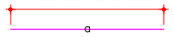
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of Offtake Structure(1/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-03-01

Box Culvert of SC Offtake(2/6)

(1.2m x 1.2m x 1ba.)

Rebar Detail



B1 T16 L=1,559 N=4

B3 T16 L=800 N=4

D1 T12 L=1,060 N=12

D2 T12 L=1,060 N=9

D3 T12 L=1,060 N=9

D4 T12 L=1,060 N=12

D5 T12 L=1,060 N=8

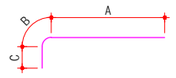
D6 T12 L=1,060 N=8

T2 T16 L=1,538 N=4

T4 T16 L=800 N=4

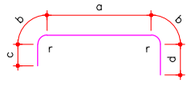
W1 T16 L=1,588 N=8

W2 T16 L=800 N=8



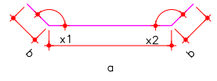
B4 T16 L=1,137 N=8
r=170 a=410 b=267 c=460

T3 T16 L=1,087 N=8
r=170 a=410 b=267 c=410



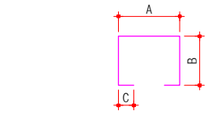
B2 T16 L=3,654 N=4
r=170 a=1,220 b=267 c=950 d=950

T1 T16 L=3,554 N=4
r=170 a=1,220 b=267 c=900 d=900



H1 T16 L=852 N=8
a=652 b=100

H2 T16 L=923 N=8
a=723 b=100



R1 T16 L=1,208 N=4
a=532 b=238 c=100

R2 T20 L=1,287 N=4
a=535 b=276 c=100

S1 T12 L=1,007 N=4
a=529 b=139 c=100

S2 T12 L=1,107 N=7
a=529 b=189 c=100

S3 T12 L=1,007 N=7
a=529 b=139 c=100

S4 T12 L=1,007 N=7
a=529 b=139 c=100

Rebar Material Table

(/1m) (B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
R2	T20	1.287	4	5.148			
Sub-total				5.148	2.466	0.013	
B1	T16	1.559	4	6.236			
B2	"	3.654	4	14.616			
B3	"	800	4	3.200			
B4	"	1.137	8	9.096			
H1	"	852	8	6.816			
H2	"	923	8	7.384			
R1	"	1.208	4	4.832			
T1	"	3.554	4	14.216			
T2	"	1.538	4	6.152			
T3	"	1.087	8	8.696			
T4	"	800	4	3.200			
W1	"	1.588	8	12.704			
W2	"	800	8	6.400			
Sub-total				103.548	1.579	0.164	
D1	T12	1.060	12	12.720			
D2	"	1.060	9	9.540			
D3	"	1.060	9	9.540			
D4	"	1.060	12	12.720			
D5	"	1.060	8	8.480			
D6	"	1.060	8	8.480			
S1	"	1.007	4	4.028			
S2	"	1.107	7	7.749			
S3	"	1.007	7	7.049			
S4	"	1.007	7	7.049			
Sub-total				87.355	0.888	0.078	
Total				196.051		0.255	

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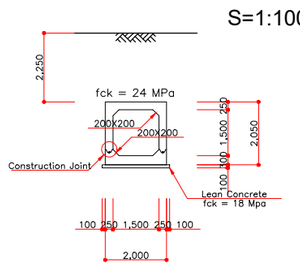
		TITLE	DATE		DRAWING No
		General Plan of Offtake Structure(2/6)	JUNE, 2022		C-03-02

Box Culvert of SC Offtake(3/6)

(1.5m x 1.5m x 1ba.)

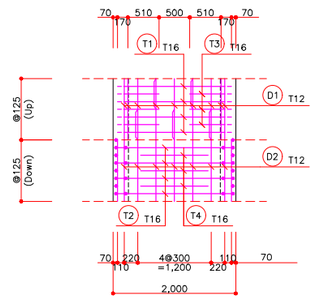
General

S=1:100



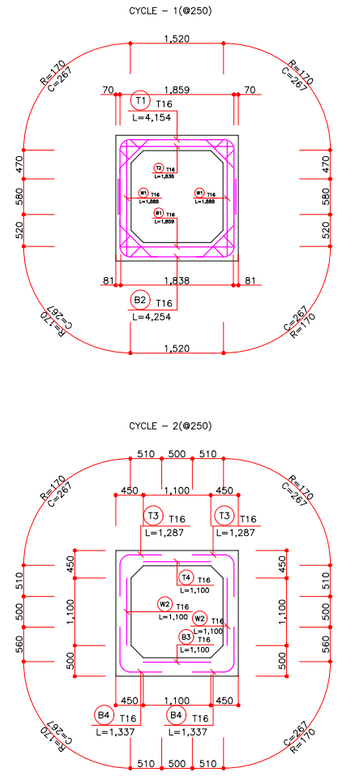
Upper Slab

S=1:50



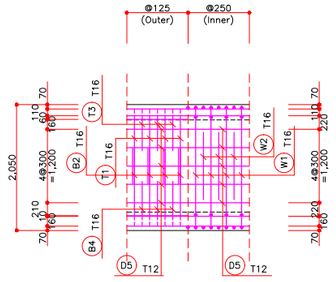
Bending Schedule

S=1:50

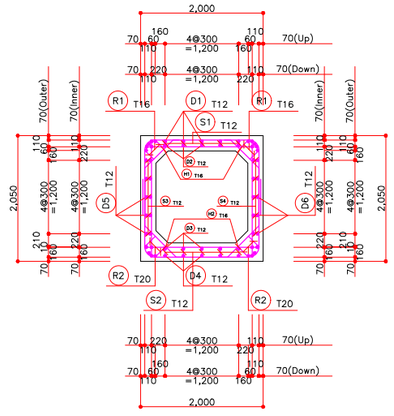


Side Wall (left)

S=1:50

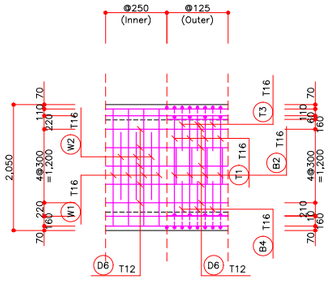


Typical Section



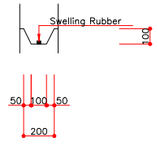
Side Wall (Right)

S=1:50



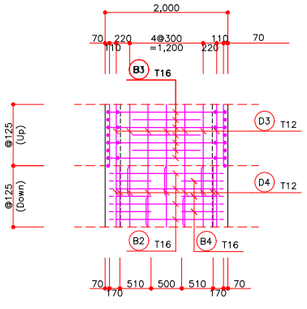
Detail of Construction Joint

S=1:20



Foundation Slab

S=1:50



Note

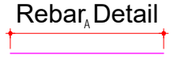
1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of Offtake Structure(3/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-03-03

Box Culvert of SC Offtake(4/6)

(1.5m x 1.5m x 1ba.)

Rebar Detail



B1 T16 L=1,859 N=4

B3 T16 L=1,100 N=4

D1 T12 L=1,060 N=13

D2 T12 L=1,060 N=10

D3 T12 L=1,060 N=10

D4 T12 L=1,060 N=13

D5 T12 L=1,060 N=10

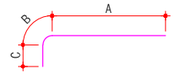
D6 T12 L=1,060 N=10

T2 T16 L=1,838 N=4

T4 T16 L=1,100 N=4

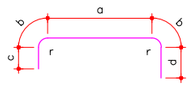
W1 T16 L=1,888 N=8

W2 T16 L=1,100 N=8



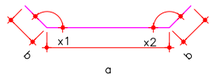
B4 T16 L=1,337 N=8
r=170 a=510 b=267 c=560

T3 T16 L=1,287 N=8
r=170 a=510 b=267 c=510



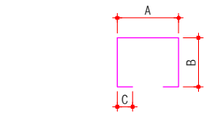
B2 T16 L=4,254 N=4
r=170 a=1,520 b=267 c=1,100 d=1,100

T1 T16 L=4,154 N=4
r=170 a=1,520 b=267 c=1,050 d=1,050



H1 T16 L=852 N=8
a=652 b=100

H2 T16 L=923 N=8
a=723 b=100



R1 T16 L=1,208 N=4
a=532 b=238 c=100

R2 T20 L=1,287 N=4
a=535 b=276 c=100

S1 T12 L=1,007 N=5
a=529 b=139 c=100

S2 T12 L=1,107 N=5
a=529 b=189 c=100

S3 T12 L=1,007 N=5
a=529 b=139 c=100

S4 T12 L=1,007 N=5
a=529 b=139 c=100

Rebar Material Table

(/1m) (B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
R2	T20	1.287	4	5.148			
Sub-total				5.148	2.466	0.013	
B1	T16	1.859	4	7.436			
B2	"	4.254	4	17.016			
B3	"	1.100	4	4.400			
B4	"	1.337	8	10.696			
H1	"	852	8	6.816			
H2	"	923	8	7.384			
R1	"	1.208	4	4.832			
T1	"	4.154	4	16.616			
T2	"	1.838	4	7.352			
T3	"	1.287	8	10.296			
T4	"	1.100	4	4.400			
W1	"	1.888	8	15.104			
W2	"	1.100	8	8.800			
Sub-total				121.148	1.579	0.191	
D1	T12	1.060	13	13.780			
D2	"	1.060	10	10.600			
D3	"	1.060	10	10.600			
D4	"	1.060	13	13.780			
D5	"	1.060	10	10.600			
D6	"	1.060	10	10.600			
S1	"	1.007	5	5.035			
S2	"	1.107	5	5.535			
S3	"	1.007	5	5.035			
S4	"	1.007	5	5.035			
Sub-total				90.600	0.888	0.080	
Total				216.896		0.284	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
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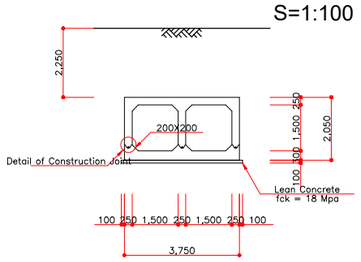
		TITLE	DATE		DRAWING No
		General Plan of Offtake Structure(4/6)	JUNE, 2022		C-03-04

Box Culvert of SC Offtake(5/6)

(1.5m x 1.5m x 2ba.)

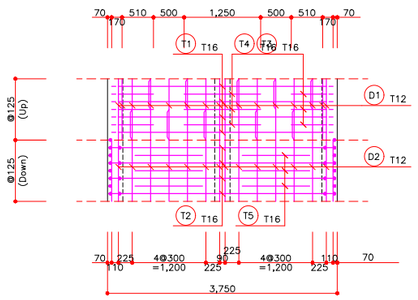
General

S=1:100



Upper Slab

S=1:50

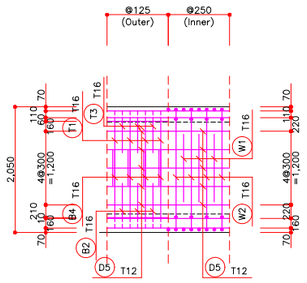


Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

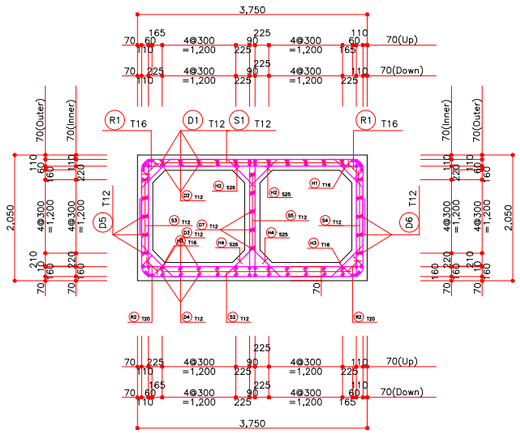
Side Wall (left)

S=1:50



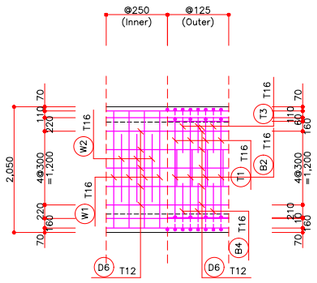
Middle Wall

S=1:50



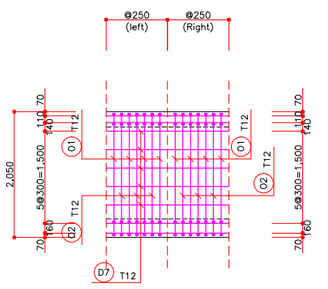
Side Wall (Right)

S=1:50



Middle Wall 1

S=1:50

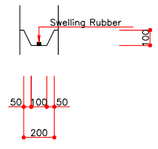


Bending Schedule

S=1:50

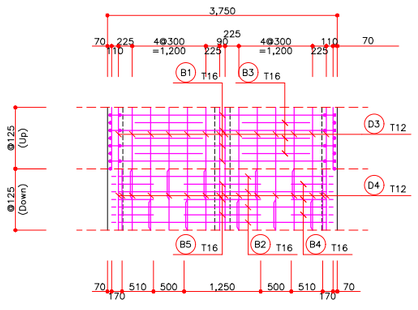
Detail of Construction Joint

S=1:20

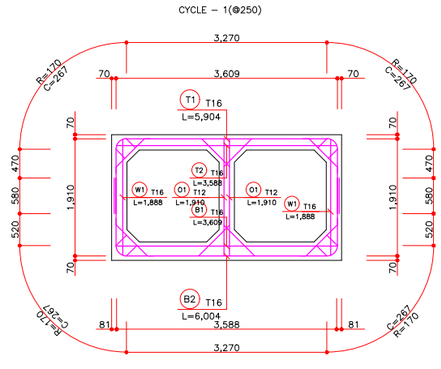


Foundation Slab

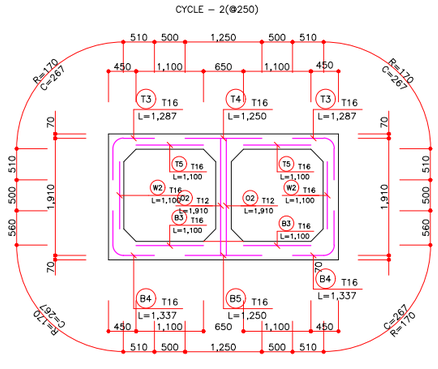
S=1:50



CYCLE – 1(@250)



CYCLE – 2(@250)

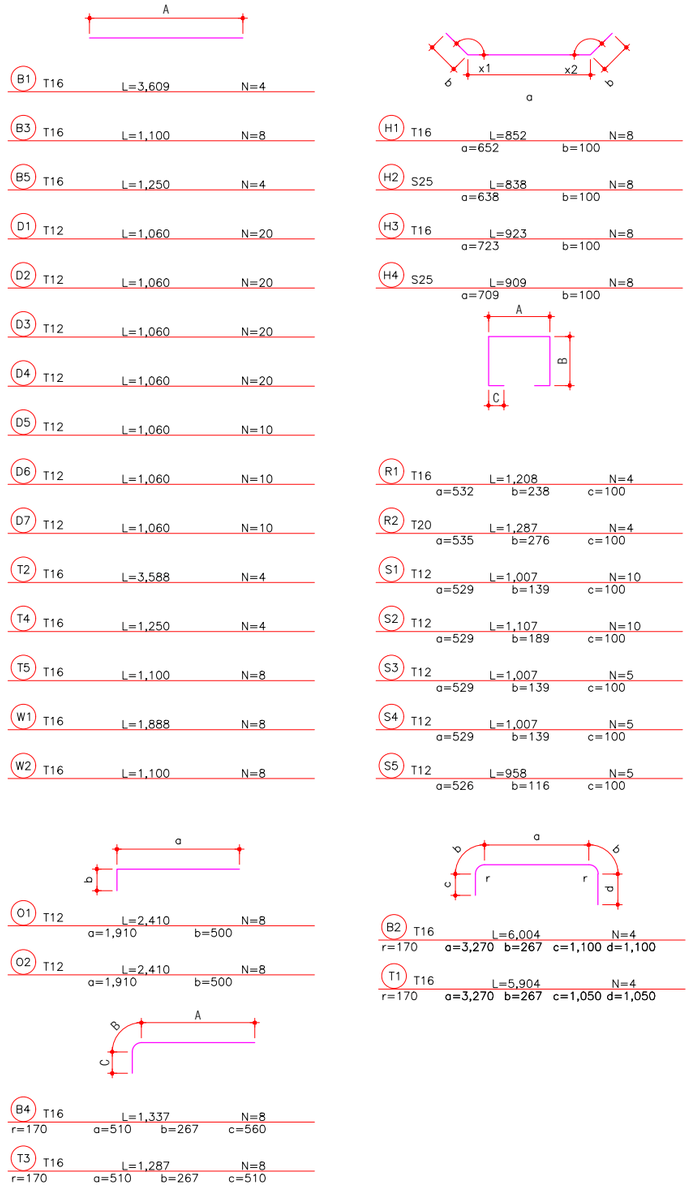


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General Plan of Offtake Structure(5/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-03-05

Box Culvert of SC Offtake(6/6)

(1.5m x 1.5m x 2ba.)

Rebar Detail



Rebar Material Table

(/1m) (B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
H2	S25	838	8	6.704			
H4	"	909	8	7.272			
Sub-total				13.976	3.854	0.054	
R2	T20	1.287	4	5.148			
Sub-total				5.148	2.466	0.013	
B1	T16	3.609	4	14.436			
B2	"	6.004	4	24.016			
B3	"	1.100	8	8.800			
B4	"	1.337	8	10.696			
B5	"	1.250	4	5.000			
H1	"	852	8	6.816			
H3	"	923	8	7.384			
R1	"	1.208	4	4.832			
T1	"	5.904	4	23.616			
T2	"	3.588	4	14.352			
T3	"	1.287	8	10.296			
T4	"	1.250	4	5.000			
T5	"	1.100	8	8.800			
W1	"	1.888	8	15.104			
W2	"	1.100	8	8.800			
Sub-total				167.948	1.579	0.265	
D1	T12	1.060	20	21.200			
D2	"	1.060	20	21.200			
D3	"	1.060	20	21.200			
D4	"	1.060	20	21.200			
D5	"	1.060	10	10.600			
D6	"	1.060	10	10.600			
D7	"	1.060	10	10.600			
O1	"	2.410	8	19.280			
O2	"	2.410	8	19.280			
S1	"	1.007	10	10.070			
S2	"	1.107	10	11.070			
S3	"	1.007	5	5.035			
S4	"	1.007	5	5.035			
S5	"	958	5	4.790			
Sub-total				191.160	0.888	0.170	
Total				378.232		0.502	

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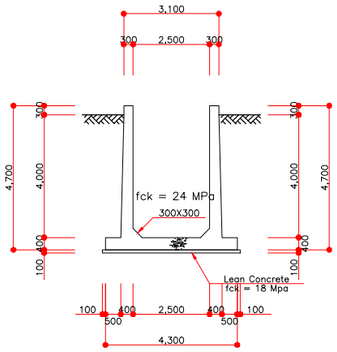
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		General Plan of Offtake Structure(6/6)	JUNE, 2022		C-03-06

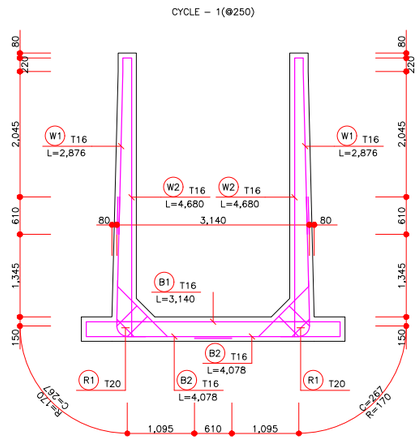
SC Offtake Tank Reinforcement(1/10)

Type A (4.7m x 4.3m)

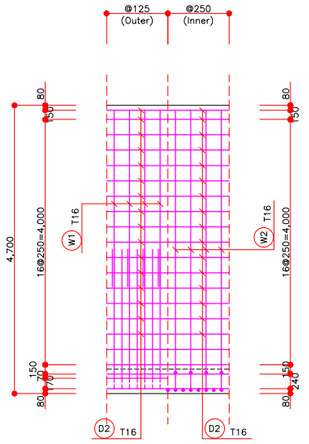
General
S=1:100



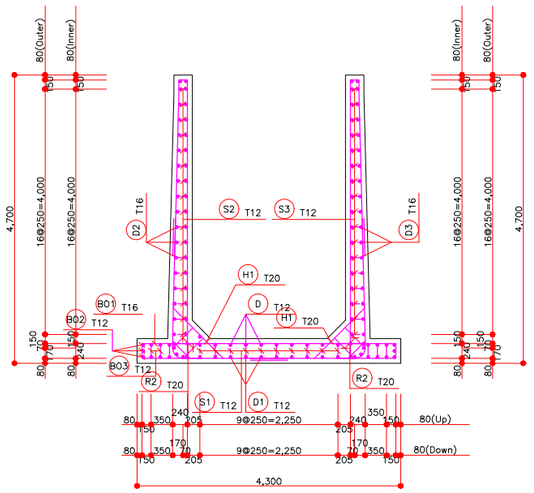
Bending Schedule
S=1:50



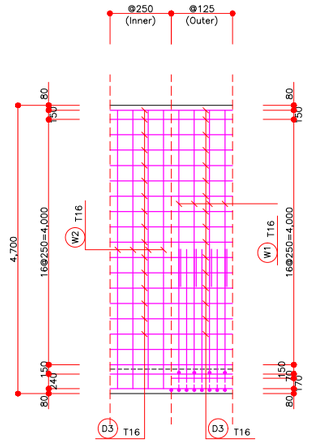
Side Wall (left)
S=1:50



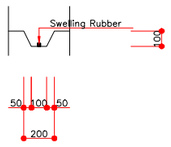
Typical Section
S=1:50



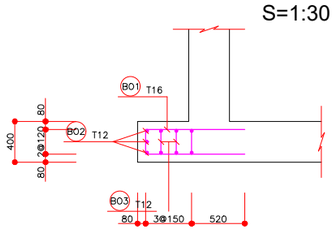
Side Wall (Right)
S=1:50

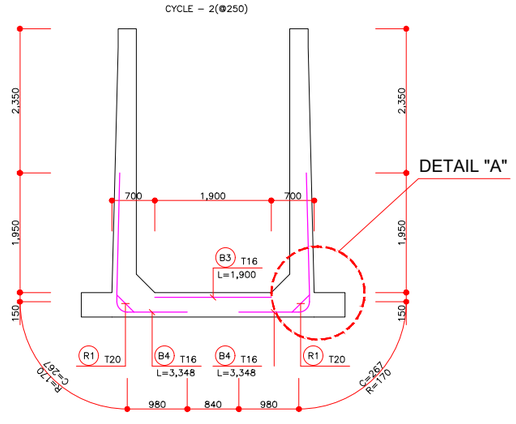


Detail of Construction Joint
S=1:20

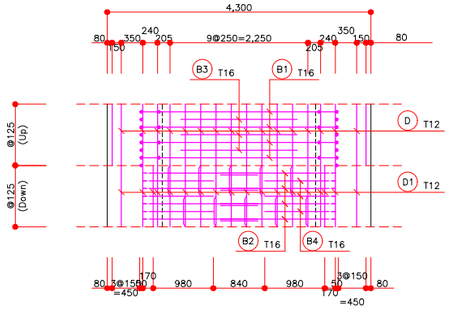


DETAIL "A"
S=1:30





Foundation Slab
S=1:50



Note

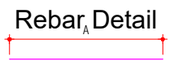
1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(1/10)	JUNE, 2022		C-04-01

SC Offtake Tank Reinforcement(2/10)

Type B (4.7m x 4.3m)

Rebar Detail



D T12 L=1.080 N=15

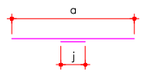
B1 T16 L=3.140 N=4

B4 T16 L=1.900 N=4

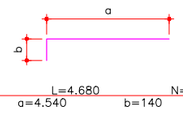
D1 T12 L=1.060 N=18

D2 T16 L=1.080 N=36

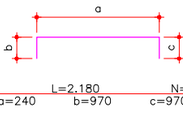
D3 T16 L=1.080 N=36



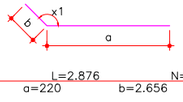
BO2 T12 L=1.920 N=18
a=1.000 j=460X2



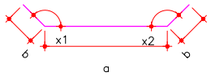
W2 T16 L=4.680 N=8
a=4.540 b=140



BO1 T16 L=2.180 N=8
a=240 b=970 c=970

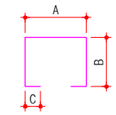


W1 T16 L=2.876 N=8
a=220 b=2.656



H1 T20 L=1.352 N=8
a=1.152 b=100

R1 T20 L=996 N=16
a=396 b=300



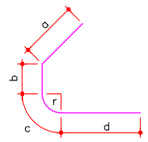
BO3 T12 L=1.267 N=4
a=529 b=269 c=100

R2 T20 L=1.740 N=4
a=538 b=501 c=100

S1 T12 L=1.267 N=10
a=529 b=269 c=100

S2 T12 L=1.165 N=17
a=529 b=267~169 c=100

S3 T12 L=1.165 N=17
a=529 b=267~169 c=100



B2 T16 L=3.878 N=4
r=170 a=1.956 b=150 c=267 d=1.505

B3 T16 L=4.278 N=4
r=170 a=1.956 b=150 c=267 d=1.905

B5 T16 L=3.348 N=8
r=170 a=1.951 b=150 c=267 d=980

Rebar Material Table

(/1m) (B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
H1	T20	1.352	8	10.816			
R1	"	996	16	15.936			
R2	"	1.740	4	6.960			
Sub-total				33.712	2.466	0.083	
B1	T16	3.140	4	12.560			
B2	"	3.878	4	15.512			
B3	"	4.278	4	17.112			
B4	"	1.900	4	7.600			
B5	"	3.348	8	26.784			
BO1	"	2.180	8	17.440			
D2	"	1.080	36	38.880			
D3	"	1.080	36	38.880			
W1	"	2.876	8	23.008			
W2	"	4.680	8	37.440			
Sub-total				235.216	1.579	0.371	
D	T12	1.080	15	16.200			
BO2	"	1.920	18	34.560			
BO3	"	1.267	4	5.068			
D1	"	1.060	18	19.080			
S1	"	1.267	10	12.670			
S2	"	1.165	17	19.805			
S3	"	1.165	17	19.805			
Sub-total				127.188	0.888	0.113	
Total				396.116		0.567	

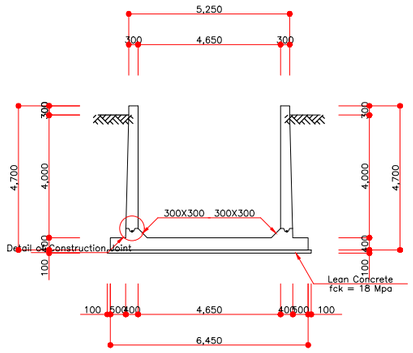
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(2/10)	JUNE, 2022		C-04-02

SC Offtake Tank Reinforcement(3/10)

Type B (4.7m x 6.45m)

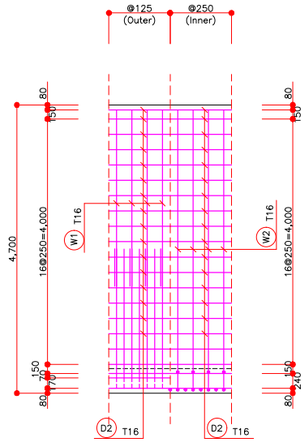
General

S=1:100

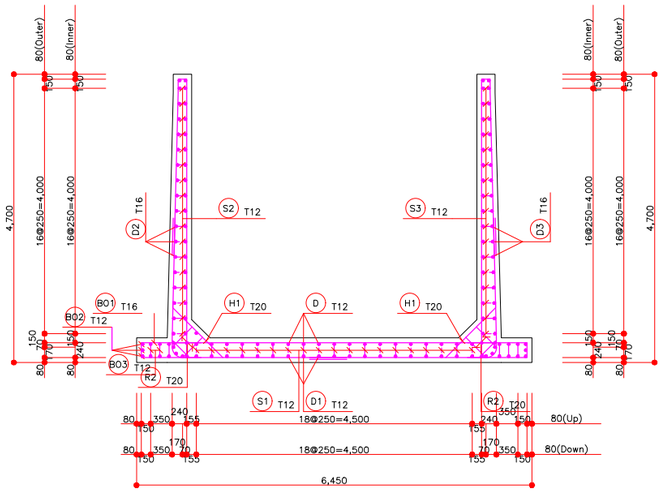


Side Wall (left)

S=1:50

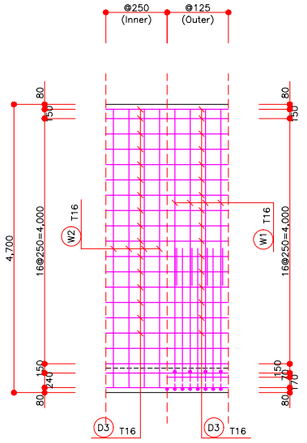


Typical Section



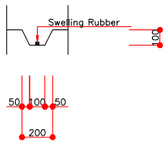
Side Wall (Right)

S=1:50



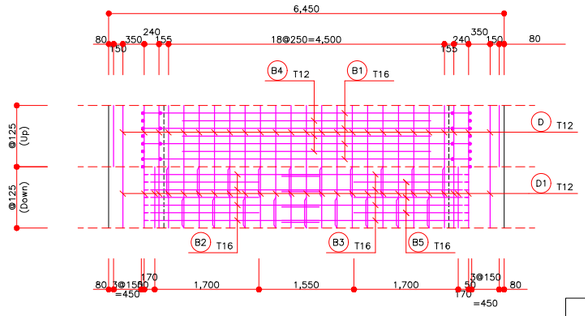
Detail of Construction Joint

S=1:20



Foundation Slab

S=1:50



Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

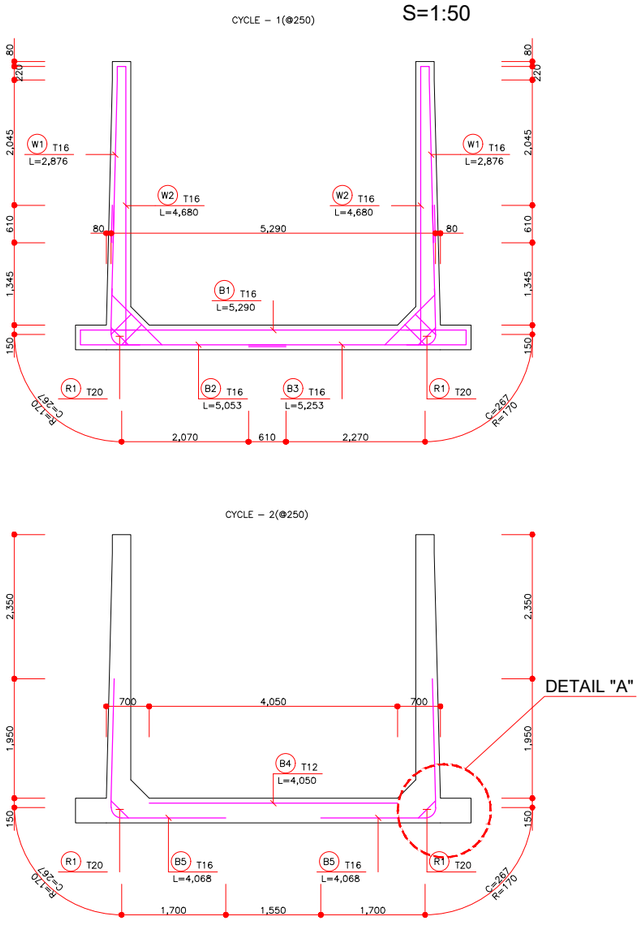
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(3/10)	JUNE, 2022		C-04-03

SC Offtake Tank Reinforcement(4/10)

Type C (4.7m x 6.45m)

Bending Schedule

S=1:50



DETAIL "A"

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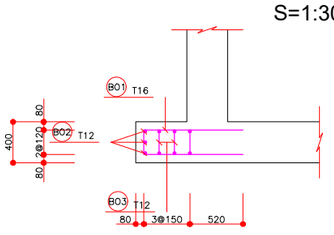
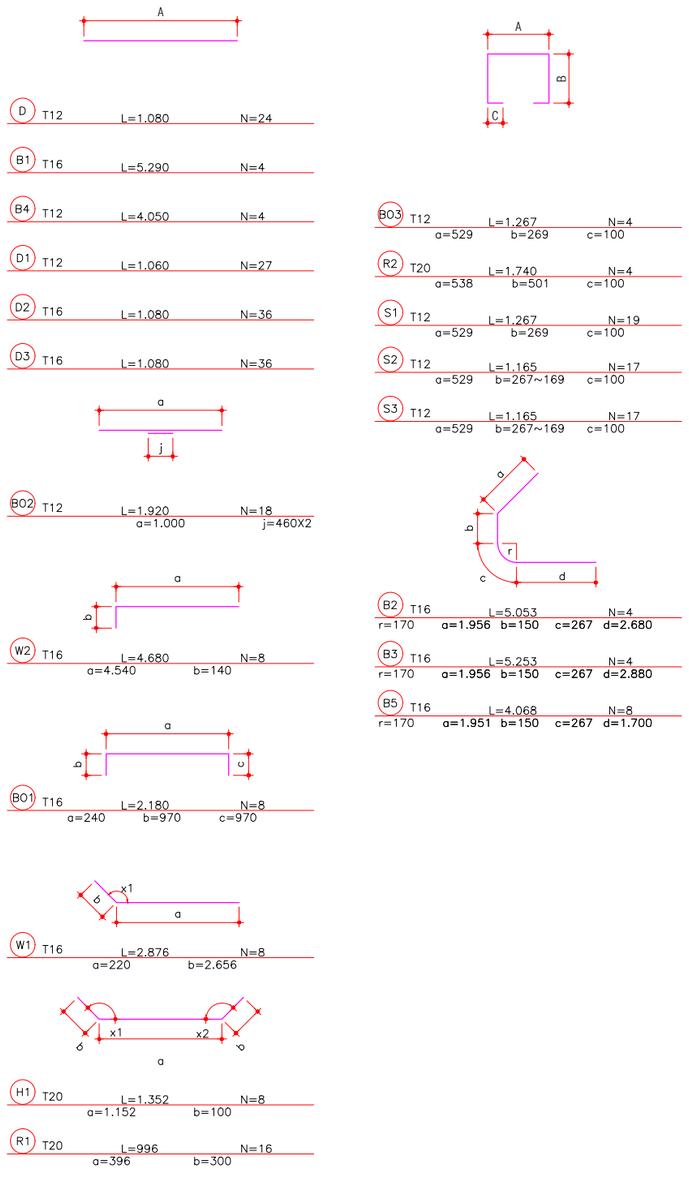


Rebar Detail



Rebar Material Table

(/1m) (B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
H1	T20	1.352	8	10.816			
R1	"	996	16	15.936			
R2	"	1.740	4	6.960			
Sub-total				33.712	2.466	0.083	
B1	T16	5.290	4	21.160			
B2	"	5.053	4	20.212			
B3	"	5.253	4	21.012			
B5	"	4.068	8	32.544			
B01	"	2.180	8	17.440			
D2	"	1.080	36	38.880			
D3	"	1.080	36	38.880			
W1	"	2.876	8	23.008			
W2	"	4.680	8	37.440			
Sub-total				250.576	1.579	0.396	
D	T12	1.080	24	25.920			
B4	"	4.050	4	16.200			
B02	"	1.920	18	34.560			
B03	"	1.267	4	5.068			
D1	"	1.060	27	28.620			
S1	"	1.267	19	24.073			
S2	"	1.165	17	19.805			
S3	"	1.165	17	19.805			
Sub-total				174.051	0.888	0.155	
Total				458.339		0.634	

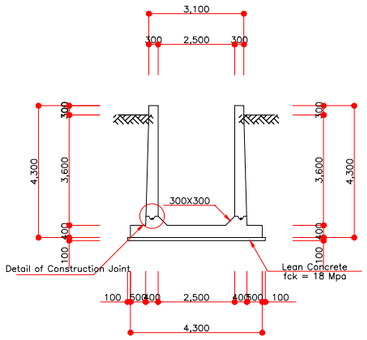
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(4/10)	JUNE, 2022		C-04-04

SC Offtake Tank Reinforcement(5/10)

Type C (4.3m x 4.3m)

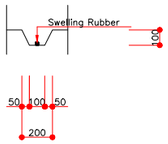
General

S=1:100



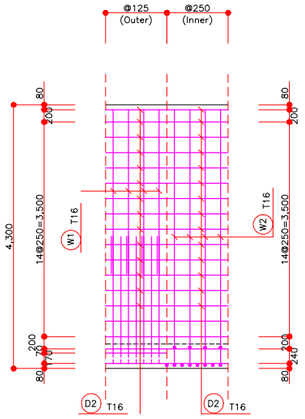
Detail of Construction Joint

S=1:20

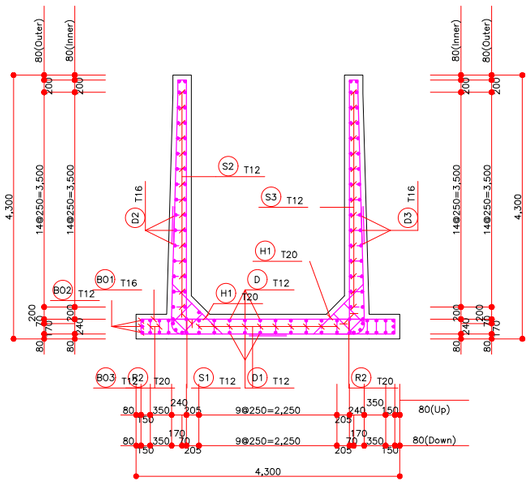


Side Wall (left)

S=1:50



Typical Section



Side Wall (Right)

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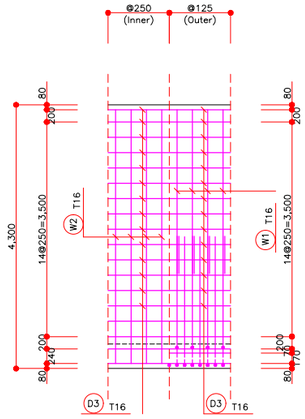
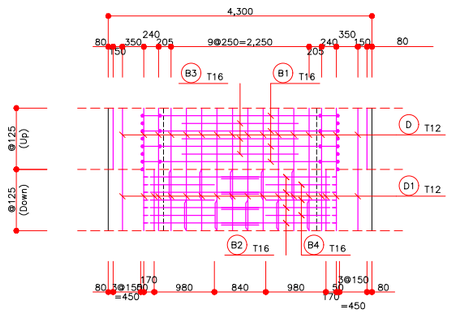


Foundation Slab

S=1:50



Note

1. The backfill material is the same material as the road filling material, using a road bed or a subgrade, and the unit weight should be 19.0 kN/m3 or less and the internal friction angle of 25 degrees or more.
2. Culverts and special foundations installed in areas with soft ground or different ground conditions should be reviewed separately.
3. Perform foundation ground compaction during foundation construction and pour 100mm thick Lean concrete for smooth structure construction.
4. Unit is millimeter(mm) of The International System of Units(SI)

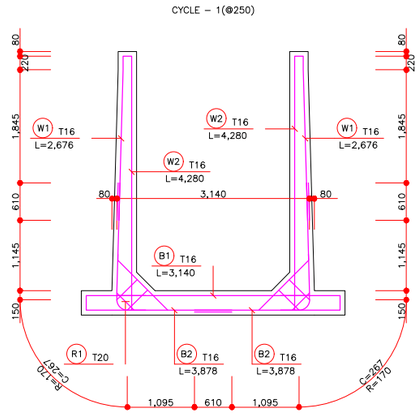
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(5/10)	JUNE, 2022		C-04-05

SC Offtake Tank Reinforcement(6/10)

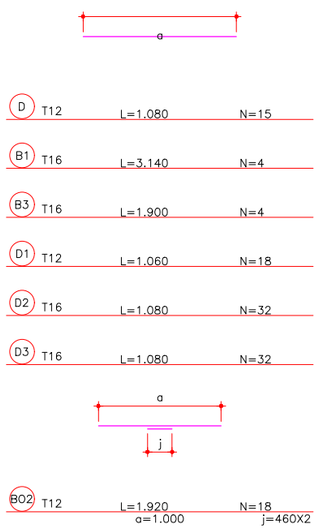
Type D (4.3m x 4.3m)

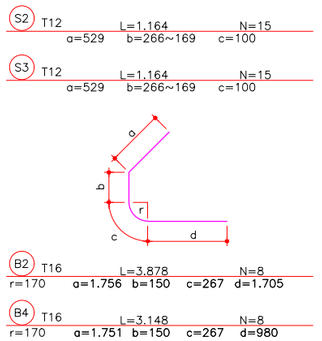
Bending Schedule

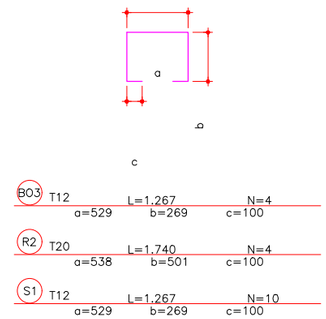
S=1:50



Rebar Detail







Rebar Material Table

(/1m) (B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
R1	"	996	16	15.936			
R2	"	1.740	4	6.960			
Sub-total				33.696	2.466	0.083	
B1	T16	3.140	4	12.560			
B2	"	3.878	8	31.024			
B3	"	1.900	4	7.600			
B4	"	3.148	8	25.184			
BO1	"	2.180	8	17.440			
D2	"	1.080	32	34.560			
D3	"	1.080	32	34.560			
W1	"	2.676	8	21.408			
W2	"	4.280	8	34.240			
Sub-total				218.576	1.579	0.345	
D	T12	1.080	15	16.200			
BO2	"	1.920	18	34.560			
BO3	"	1.267	4	5.068			
D1	"	1.060	18	19.080			
S1	"	1.267	10	12.670			
S2	"	1.164	15	17.460			
S3	"	1.164	15	17.460			
Sub-total				122.498	0.888	0.109	
Total				374.770		0.537	

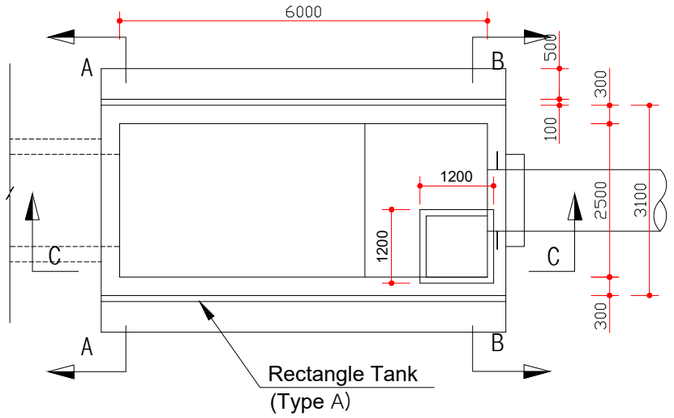
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(6/10)	JUNE, 2022		C-04-06

SC Offtake Tank Reinforcement(7/10)

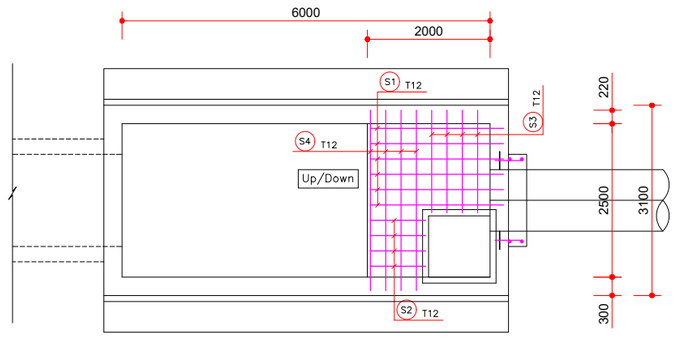
Wall Type A

Unit is millimeter(mm) of The International System of Units(SI)

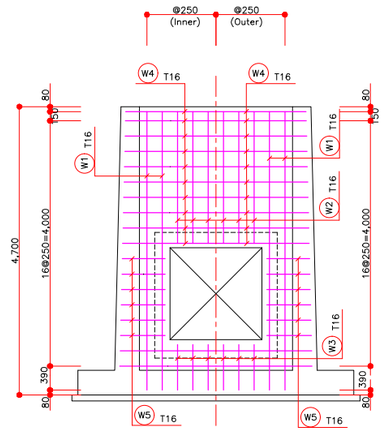
Tank & Screen



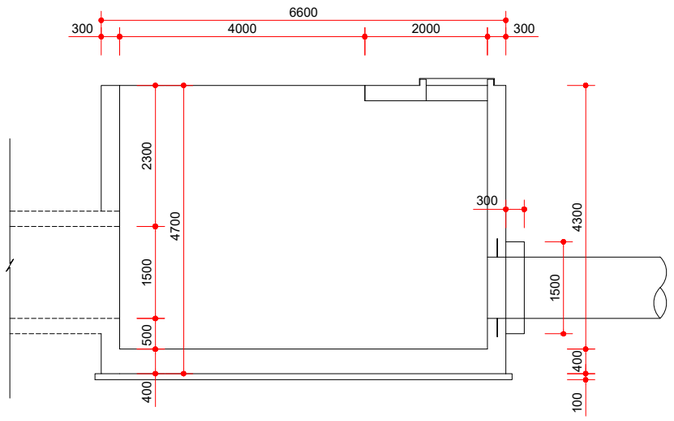
Tob Slab



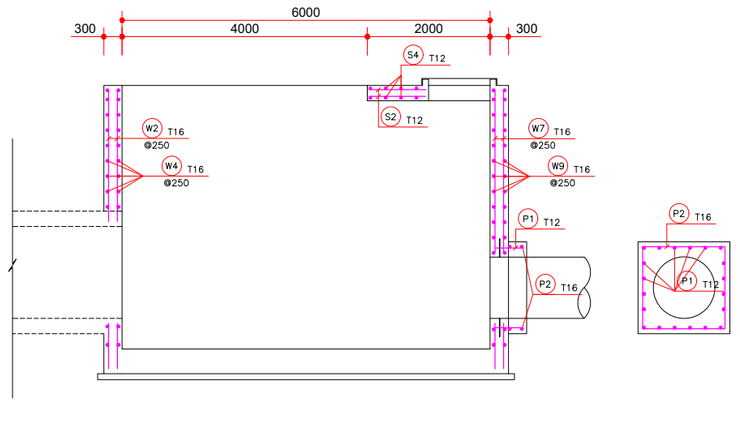
Section A-A



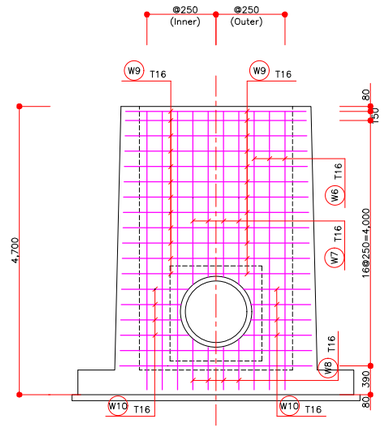
Profile



Section C-C



Section B-B



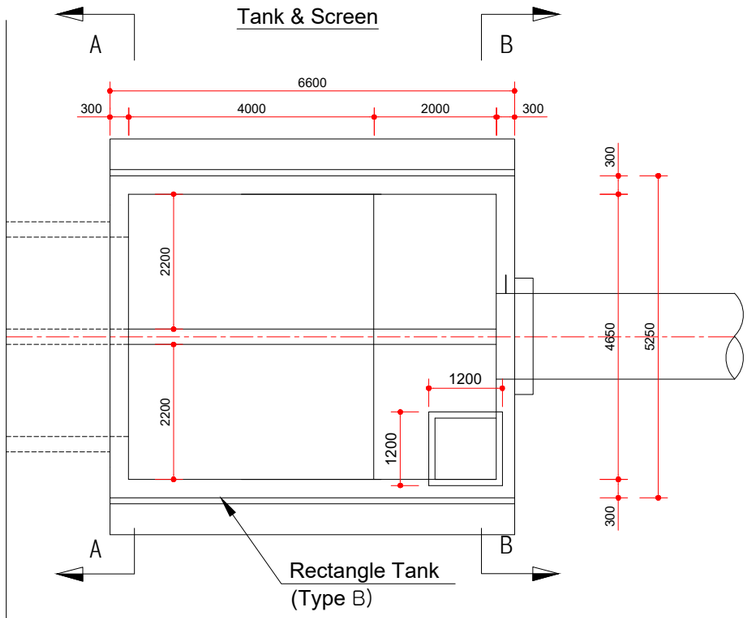
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		SC Offtake Tank Reinforcement(7/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-04-07

SC Offtake Tank Reinforcement(8/10)

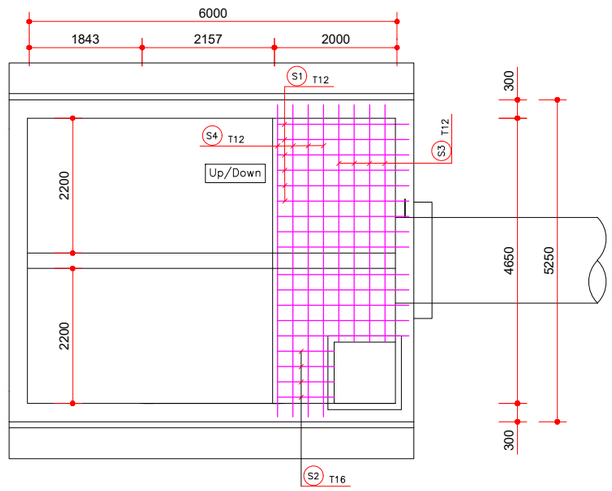
Wall Type B

Unit is millimeter(mm) of The International System of Units(SI)

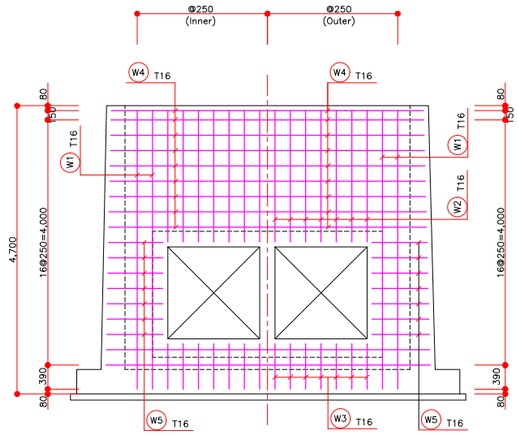
Tank & Screen



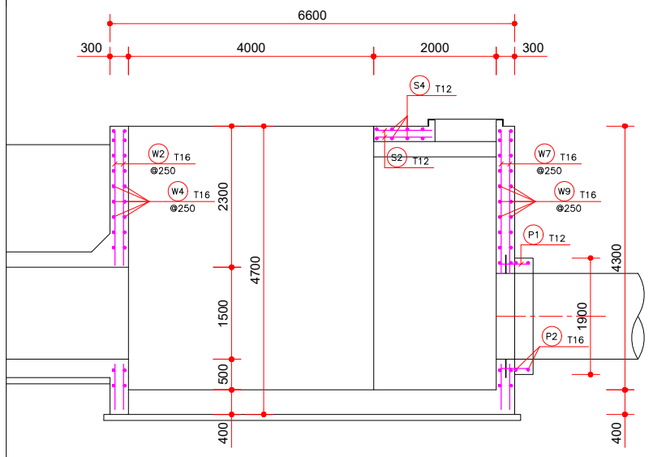
Tob Slab



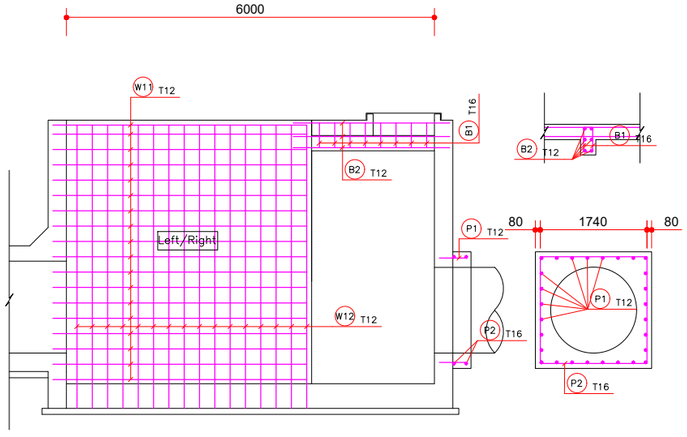
Section A-A



Profile

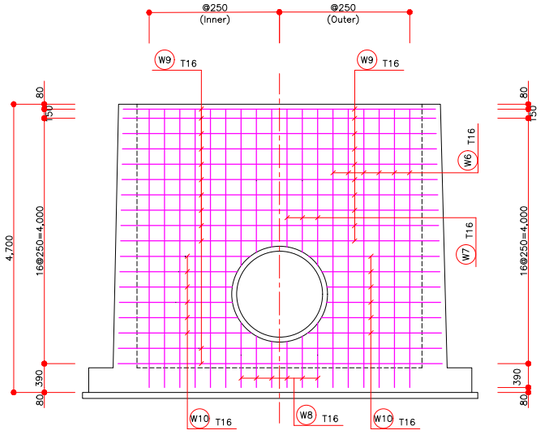


Inner Wall



Beam

Section B-B



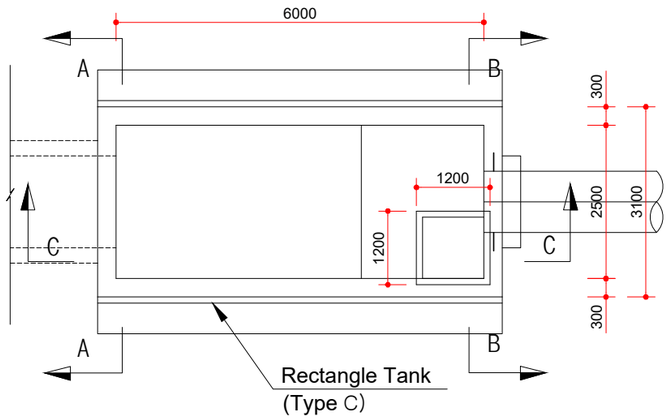
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		SC Offtake Tank Reinforcement(8/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-04-08

SC Offtake Tank Reinforcement(9/10)

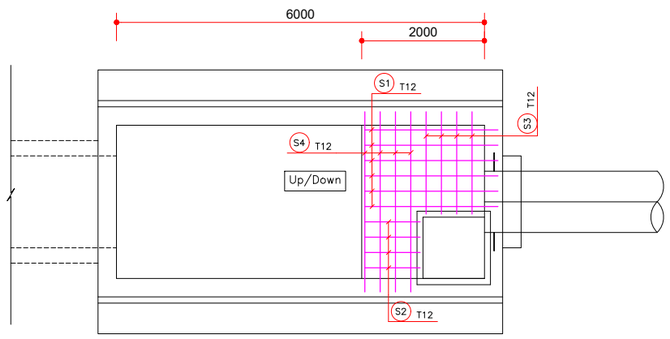
Wall Type C

Unit is millimeter(mm) of The International System of Units(SI)

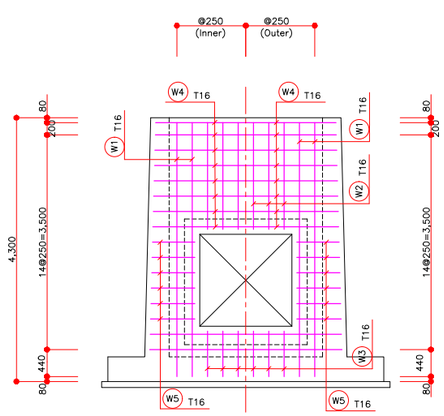
Rectangle Tank



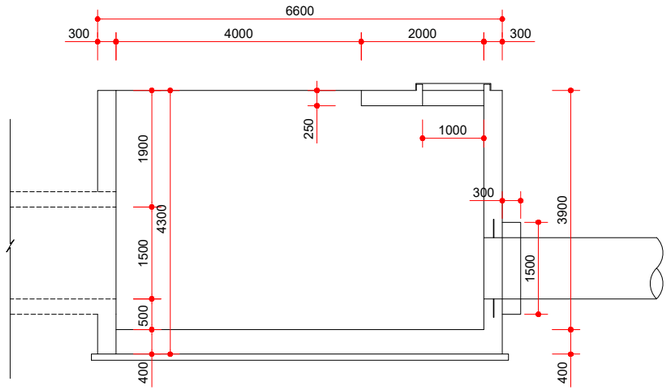
Top Slab



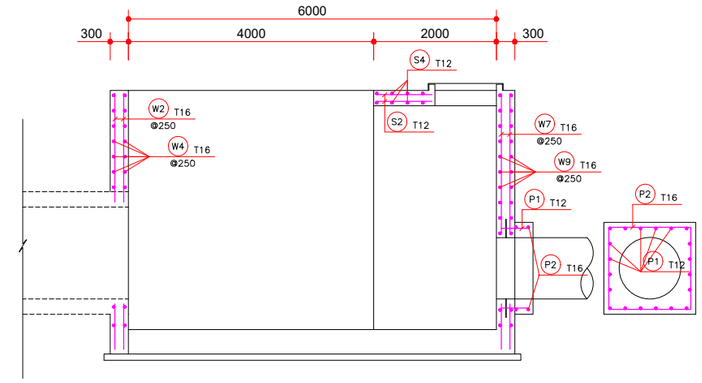
Section A-A



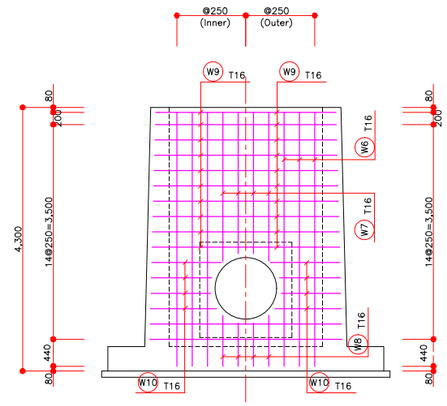
Profile



Section C-C



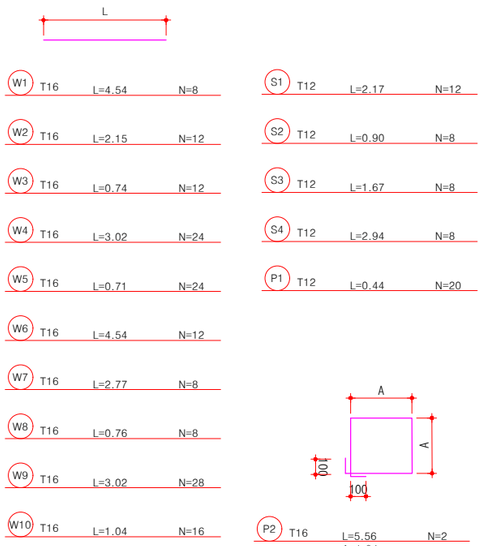
Section B-B



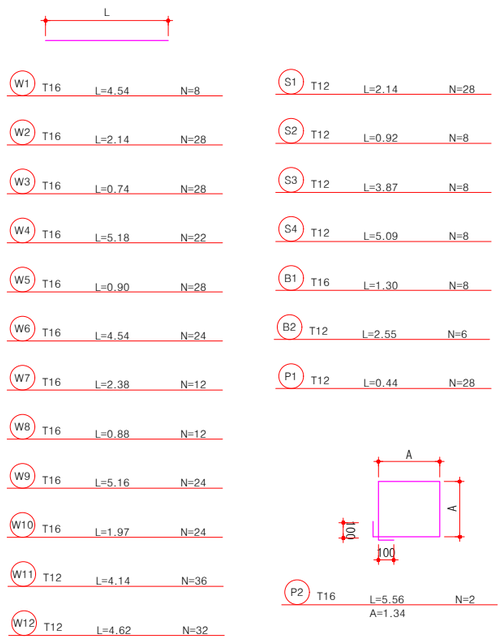
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		SC Offtake Tank Reinforcement(9/10)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-04-09

SC Offtake Tank Reinforcement(10/10)

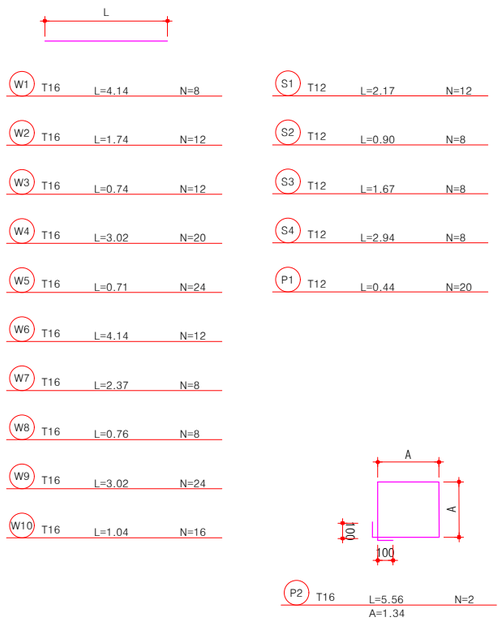
Rebar Detail(Type A)



Rebar Detail(Type B)



Rebar Detail(Type C)



Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	4.54	8	36.32			
W2	T16	2.15	12	25.80			Avg.
W3	T16	0.74	12	8.88			Avg.
W4	T16	3.02	24	72.38			Avg.
W5	T16	0.71	24	17.09			Avg.
W6	T16	4.54	12	54.48			
W7	T16	2.77	8	22.16			Avg.
W8	T16	0.76	8	6.08			Avg.
W9	T16	3.02	28	84.56			Avg.
W10	T16	1.04	16	16.64			Avg.
P2	T16	5.56	2	11.12			
Sub-total				355.51	1.579	0.561	
S1	T12	2.17	12	26.04			
S2	T12	0.9	8	7.20			
S3	T12	1.67	8	13.36			
S4	T12	2.94	8	23.52			
P1	T12	0.44	20	8.80			
Sub-total				78.92	0.888	0.070	
Total						0.631	

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	4.54	8	36.32			
W2	T16	2.14	28	59.92			Avg.
W3	T16	0.74	28	20.72			Avg.
W4	T16	5.18	22	113.96			Avg.
W5	T16	0.90	28	25.20			Avg.
W6	T16	4.54	24	108.96			
W7	T16	2.38	12	28.56			Avg.
W8	T16	0.88	12	10.56			Avg.
W9	T16	5.16	24	123.84			Avg.
W10	T16	1.97	24	47.28			Avg.
B1	T16	1.3	8	10.40			
P2	T16	7.16	2	14.32			
Sub-total				600.04	1.579	0.947	
W11	T12	4.14	36	149.04			
W12	T12	4.62	32	147.84			
S1	T12	2.14	28	59.92			
S2	T12	0.92	8	7.36			
S3	T12	3.87	8	30.96			
S4	T12	5.09	8	40.72			
B2	T12	2.55	6	15.30			
P1	T12	0.44	28	12.32			
Sub-total				463.46	0.888	0.412	
Total						1.359	

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KG/M)	Total Weight (TON)	Remark
W1	T16	4.14	8	33.12			
W2	T16	1.74	12	20.88			Avg.
W3	T16	0.74	12	8.88			Avg.
W4	T16	3.02	20	60.40			Avg.
W5	T16	0.71	24	17.09			Avg.
W6	T16	4.14	12	49.68			
W7	T16	2.37	8	18.96			Avg.
W8	T16	0.76	8	6.08			Avg.
W9	T16	3.02	24	72.48			Avg.
W10	T16	1.04	16	16.64			Avg.
P2	T16	5.56	2	11.12			
Sub-total				315.33	1.579	0.498	
S1	T12	2.17	12	26.04			
S2	T12	0.9	8	7.20			
S3	T12	1.67	8	13.36			
S4	T12	2.94	8	23.52			
P1	T12	0.44	20	8.80			
Sub-total				78.92	0.888	0.07	
Total						0.568	

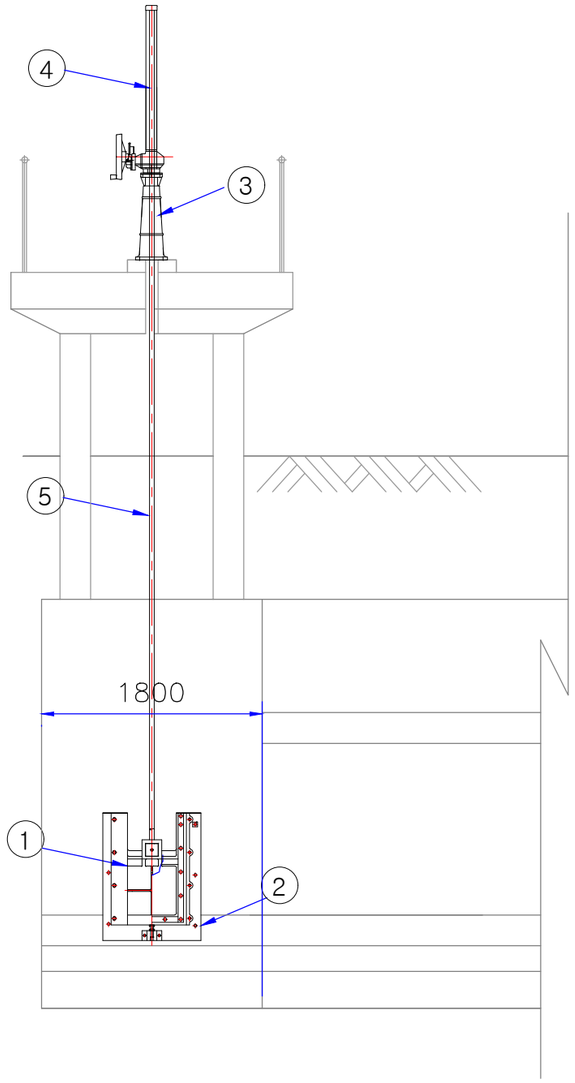
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		SC Offtake Tank Reinforcement(10/10)	JUNE, 2022		C-04-10

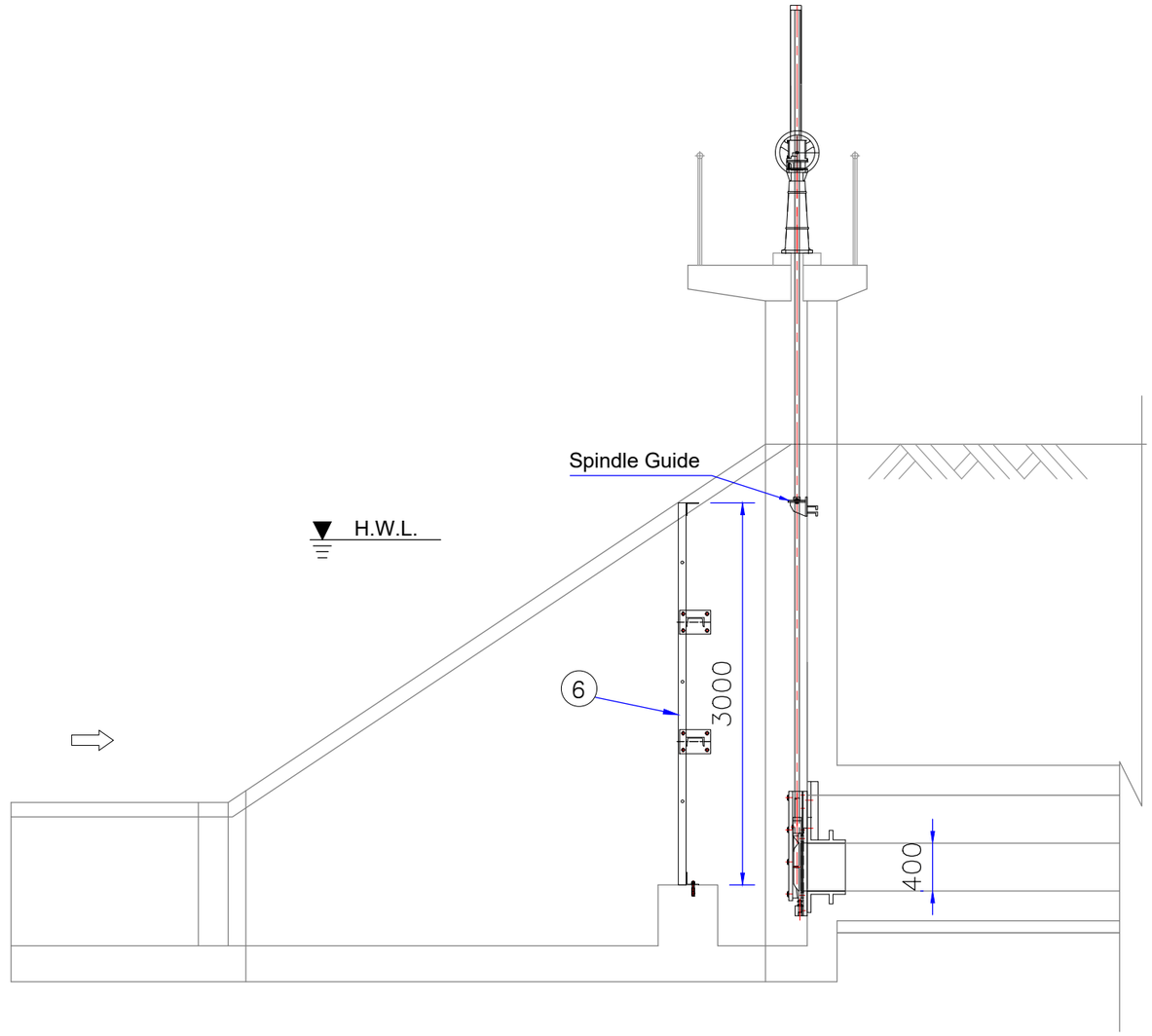
SC Sluice Gate(Φ400,500) Installation Drawing(1/2)

No	Item	Type	Q'ty	Unit	Remarks
1	Sliuce Gate	(B)0.4m x (H)0.4m EN GJL-200	1	EA	3 St.
2	Sluice Gate Frame	(B)0.4m x (H)0.4m EN GJL-200	1	EA	
3	Manual Actuator	EN GJL-200	1	EA	
4	Stem	D40, EN 1.4301	1.0	m	
5	Stainless steel Rod	D40, EN 1.4301	5.0	m	
6	Bar Screen	2.2m x 3.0m	1	EA	

Note

1. Unit is millimeter(mm) of The International System of Units(SI)



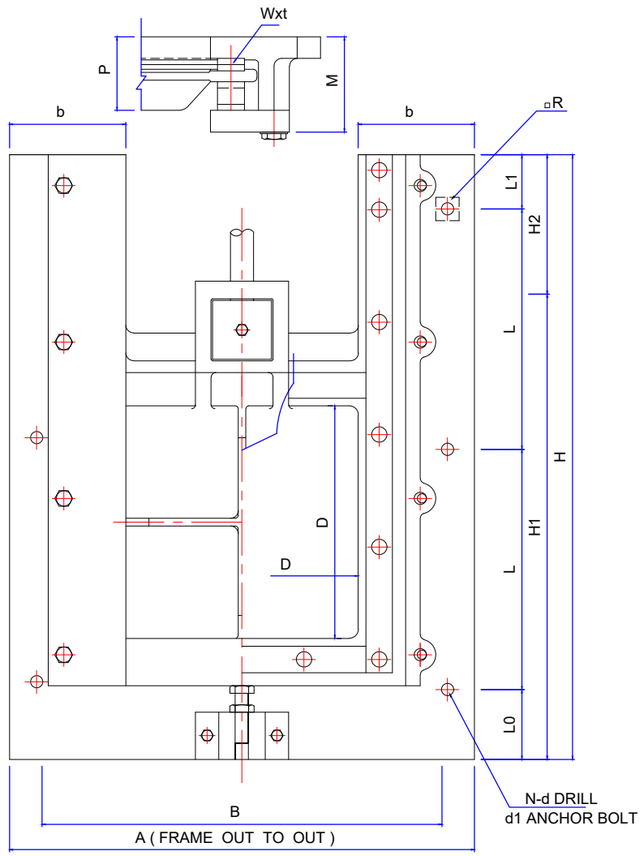


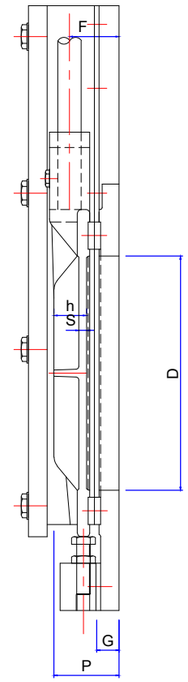
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		SC Sluice Gate(Φ400,500) Installation Drawing(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-01

SC Sluice Gate(Φ400,500) Installation Drawing(2/2)

(Scale : None)

No	Item	Material	Remarks
1	Sluice Gate	EN GJL-200	
2	Sluice Gate Frame	EN GJL-200	
3	Stem	EN 1.4301	
4	Sluice Gate Seat	EN 1.4301	





Note

1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

UNIT : mm

Gate Size (D)	A	B	F	G	H	H1	H2	L0	L	L1	□R	Stem	REMARKS
400 X 400	700	630	89	26	980	650	330	90	410	70	80	ø40	SC14,SC15,SC16
	M	P	b	h	s	w	t	d	d1	N		Lifting Weight	
	123	119	150	80	12	35	9	ø22	M20	6		450kg	
500 X 500	A	B	F	G	H	H1	H2	L0	L	L1	□R	Stem	SC13
	800	730	91	28	1080	860	220	50	470	90	80	ø40	
	M	P	b	h	s	w	t	d	d1	N		Lifting Weight	
	128	127	150	85	14	35	9	ø24	M22	6		650kg	

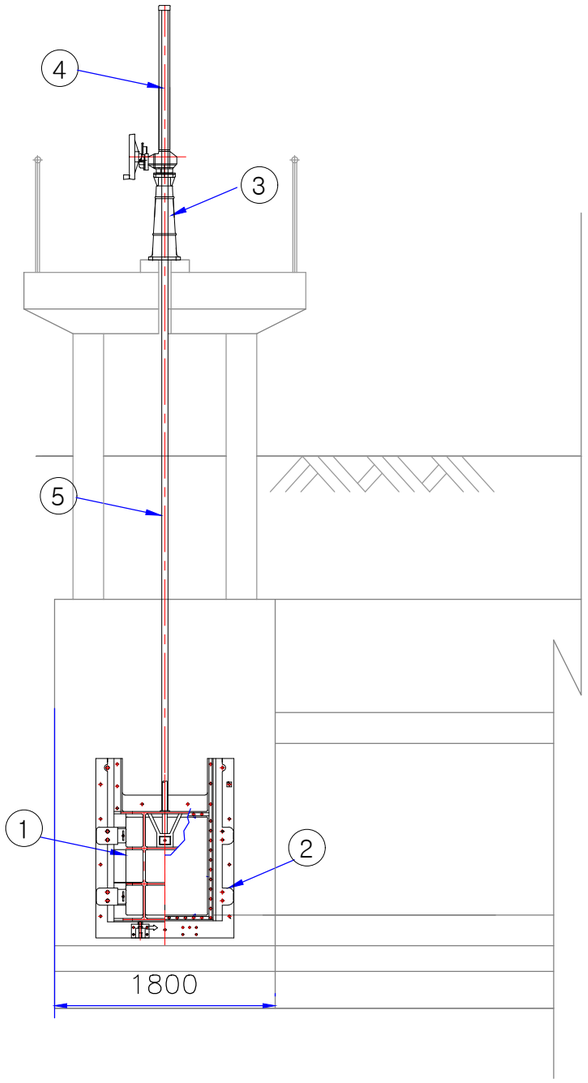
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		SC Sluice Gate(Φ400,500) Installation Drawing(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-02

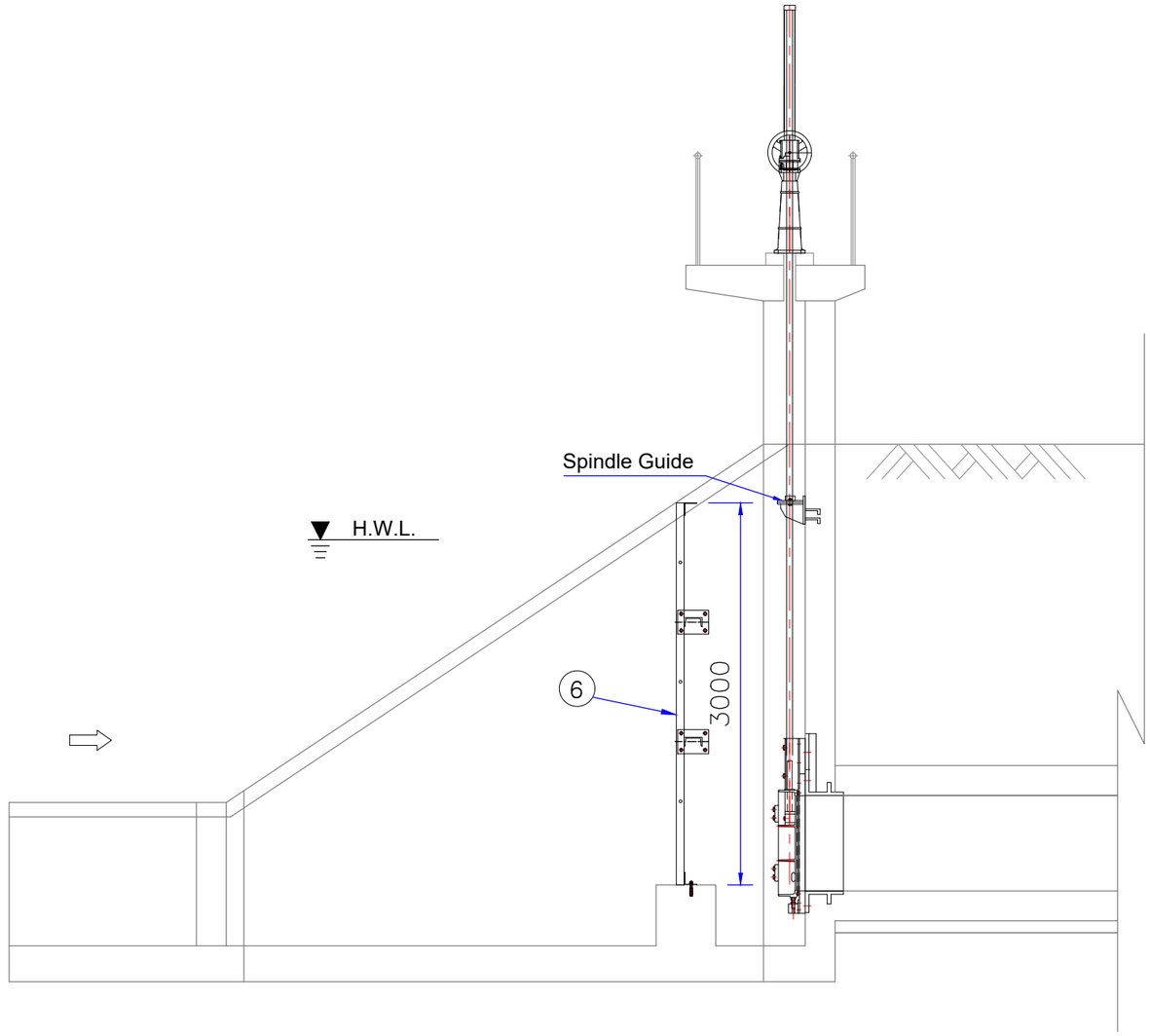
SC Sluice Gate(Φ600,700,800,1000) Installation Drawing(1/2)

No	Item	Type	Q'ty	Unit	Remarks
1	Sliuce Gate	(□) 0.6 ~ 1.0m EN GJL-200	1	EA	12 St.
2	Sluice Gate Frame	(□) 0.6 ~ 1.0m EN GJL-200	1	EA	
3	Manual Actuator	EN GJL-200	1	EA	
4	Stem	D45~55, EN 1.4301	2.0	m	
5	Stainless steel Rod	D45~55, EN 1.4301	4.0	m	
6	Screen	2.2m x 3.0m	1	EA	

Note

1. Unit is millimeter(mm) of The International System of Units(SI)



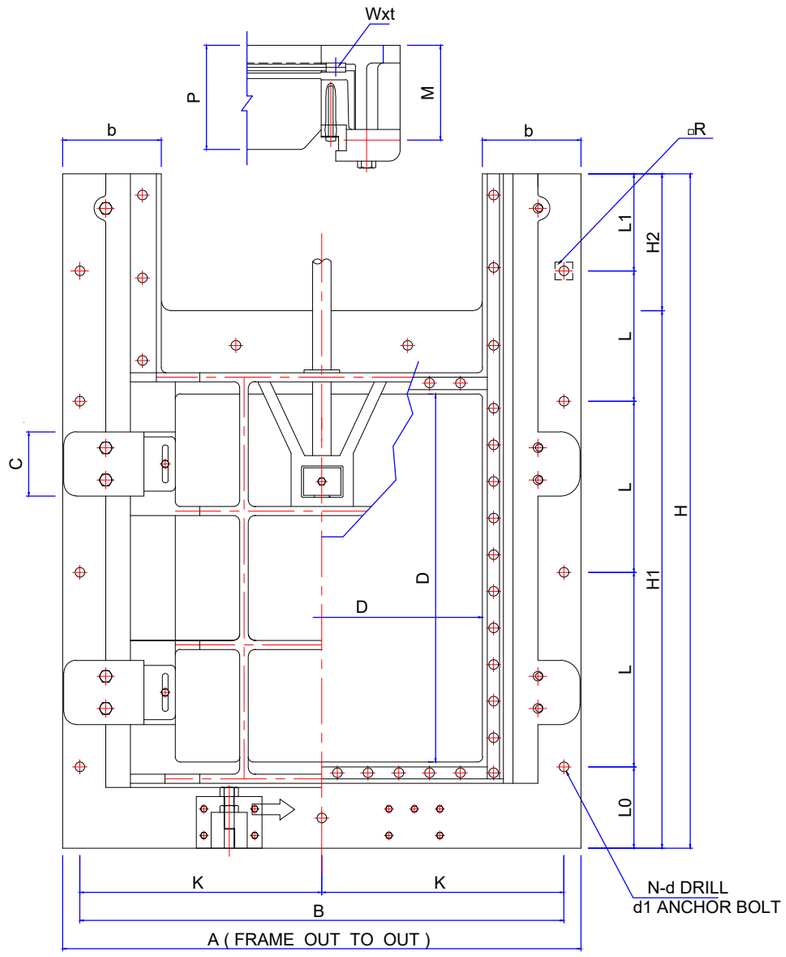


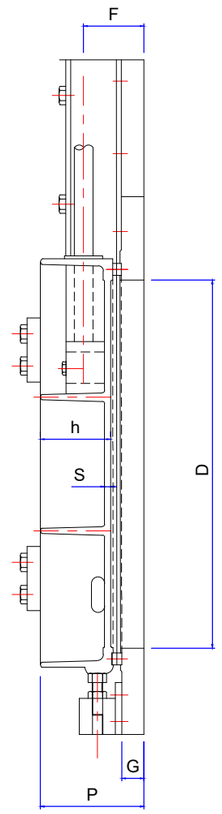
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong	NONE
		TITLE	DATE		DRAWING No
		SC Sluice Gate(Φ600,700,800,1000) Installation Drawing(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-03

SC Sluice Gate(Φ600,700,800,1000) Installation Drawing(2/2)

(Scale : None)

No	Item	Material	Remarks
1	Sluice Gate	EN GJL-200	
2	Sluice Gate Frame	EN GJL-200	
3	Stem	EN 1.4301	
4	Sluice Gate Seat	EN 1.4301	





Note

1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		SC Sluice Gate(Φ600,700,800,1000) Installation Drawing(2/2)	JUNE, 2022		C-05-04

SC Sluice Gate(Φ600,700,800,1000) Dimension Table

UNIT : mm

Gate Size (D)	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	REMARKS
600 X 600	960	890	150	93	28	1120	960	160	100	360	50	445	ø45	SC1A,SC3,SC5
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	183	10	ø24	M22	137	14	40	9	110	180	95		800kg	
	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	
700 X 700	1060	990	150	97	30	1280	1060	220	100	410	50	495	ø50	SC12,SC17
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	185	10	ø24	M22	155	14	40	9	110	180	110		1050kg	
800 X 800	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	SC4,SC6
	1160	1090	150	99	32	1450	1160	290	130	420	60	545	ø50	
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	187	10	ø26	M24	172	14	40	9	110	180	125		1300kg	
1000 X 1000	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	SC1,SC18
	1360	1290	150	108	34	1760	1360	400	90	380	50	645	ø55	
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	189	12	ø26	M24	199	16	40	9	110	180	150		1950kg	

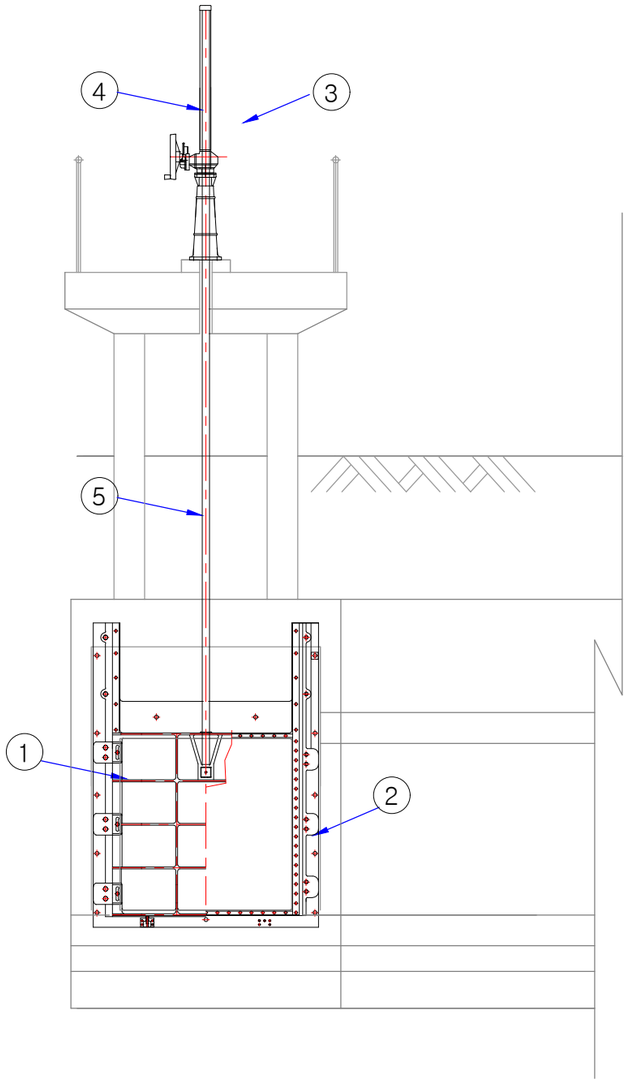
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		SC Sluice Gate(Φ600,700,800,1000) Dimension Table	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-05

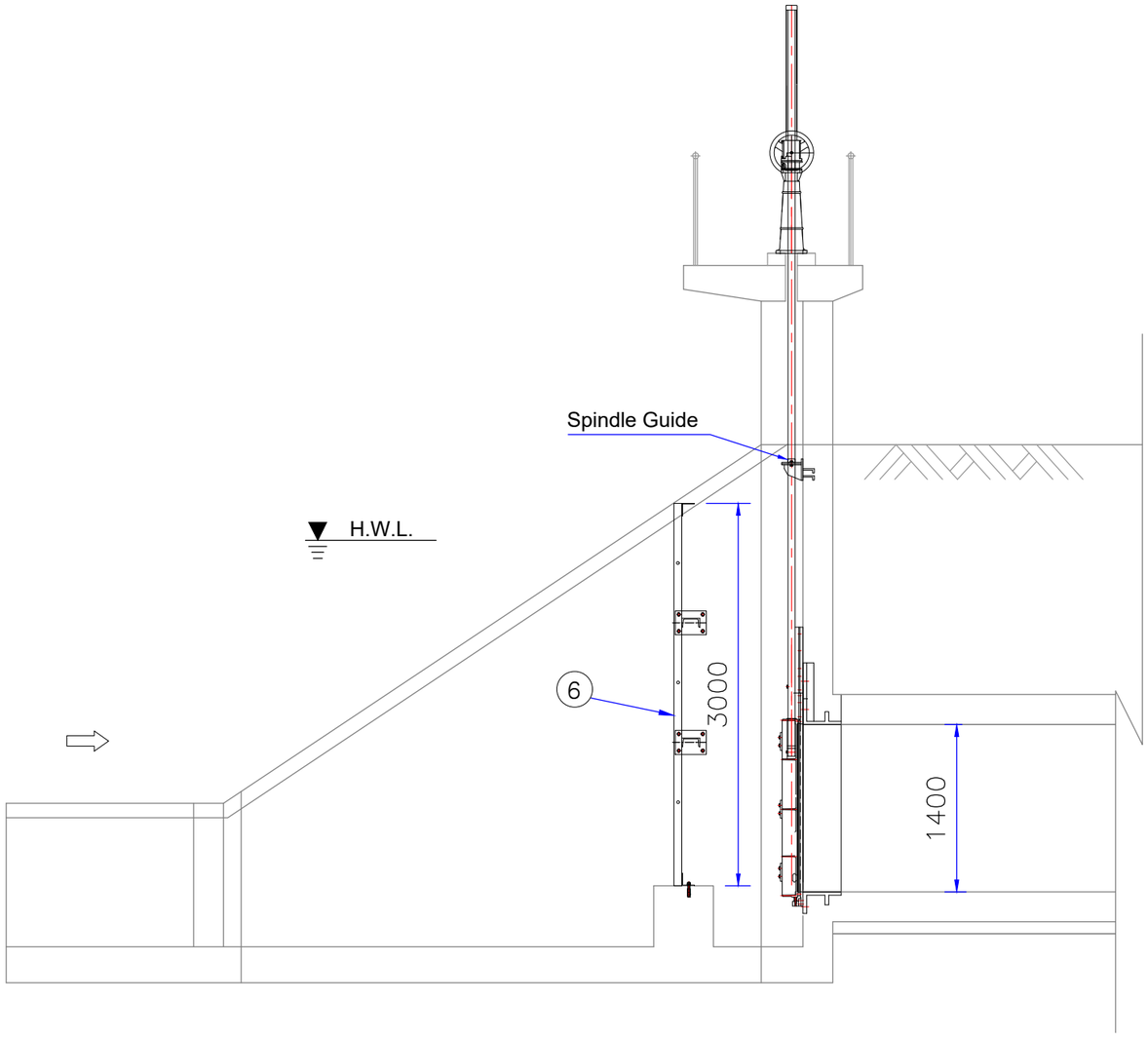
SC Sluice Gate(Φ1200,1400) Installation Drawing(1/2)

No	Item	Type	Q'ty	Unit	Remarks
1	Sliuce Gate	(□) 1.2 ~ 1.4m EN GJL-200	1	EA	1 St.
2	Sluice Gate Frame	(□) 1.2 ~ 1.4m EN GJL-200	1	EA	
3	Manual Actuator	EN GJL-200	1	EA	
4	Stem	D60~65, EN 1.4301	3.0	m	
5	Stainless steel Rod	D60~65, EN 1.4301	3.0	m	
6	Screen	2.2m x 3.0m	1	EA	

Note

1. Unit is millimeter(mm) of The International System of Units(SI)



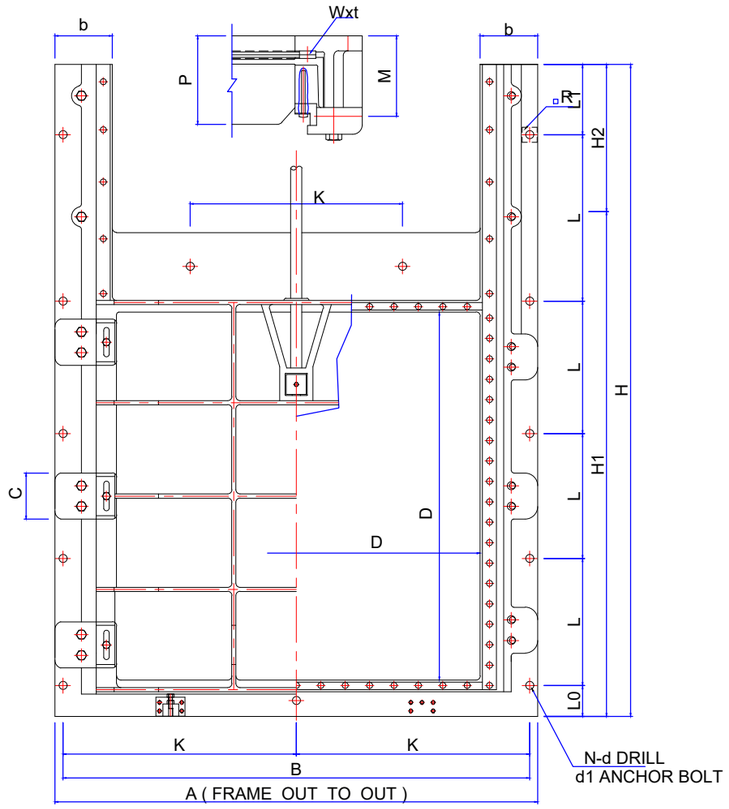


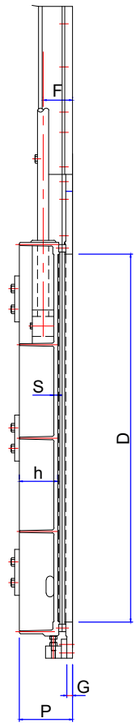
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		SC Sluice Gate(Φ1200,1400) Installation Drawing(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-06

SC Sluice Gate(Φ1200,1400) Installation Drawing(2/2)

(Scale : None)

No	Item	Material	Remarks
1	Sluice Gate	EN GJL-200	
2	Sluice Gate Frame	EN GJL-200	
3	Stem	EN 1.4301	
4	Sluice Gate Seat	EN 1.4301	





Note

1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

UNIT : mm

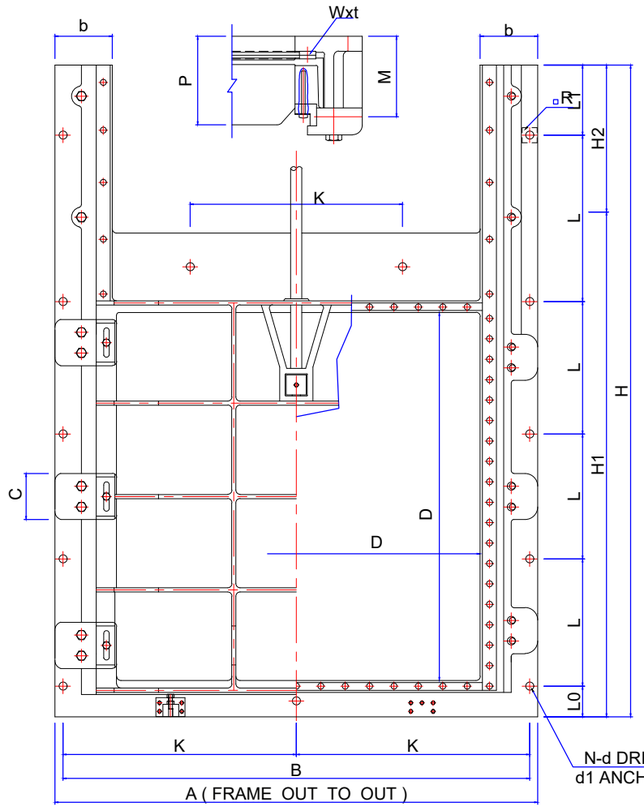
Gate Size (D)	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	REMARKS
1200 X 1200	1580	1500	150	114	38	2100	1580	520	90	460	50	750	ø60	SC19
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	191	12	ø26	M24	229	16	40	9	120	190	175		2700kg	
1400 X 1400	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	SC2
	1780	1700	150	118	38	2420	1850	570	100	520	240	600	ø65	
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	191	12	ø26	M24	264	17	40	9	120	190	210		3650kg	

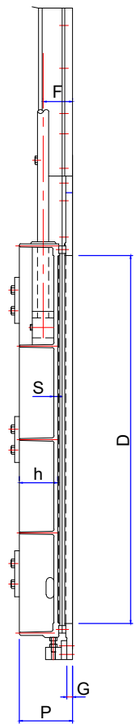
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		SC Sluice Gate(Φ1200,1400) Installation Drawing(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-07

SC Sluice Gate(Φ1300, 1500) Detail Drawing

(Scale : None)

No	Item	Material	Remarks
1	Sluice Gate	EN GJL-200	
2	Sluice Gate Frame	EN GJL-200	
3	Stem	EN 1.4301	
4	Sluice Gate Seat	EN 1.4301	





Note

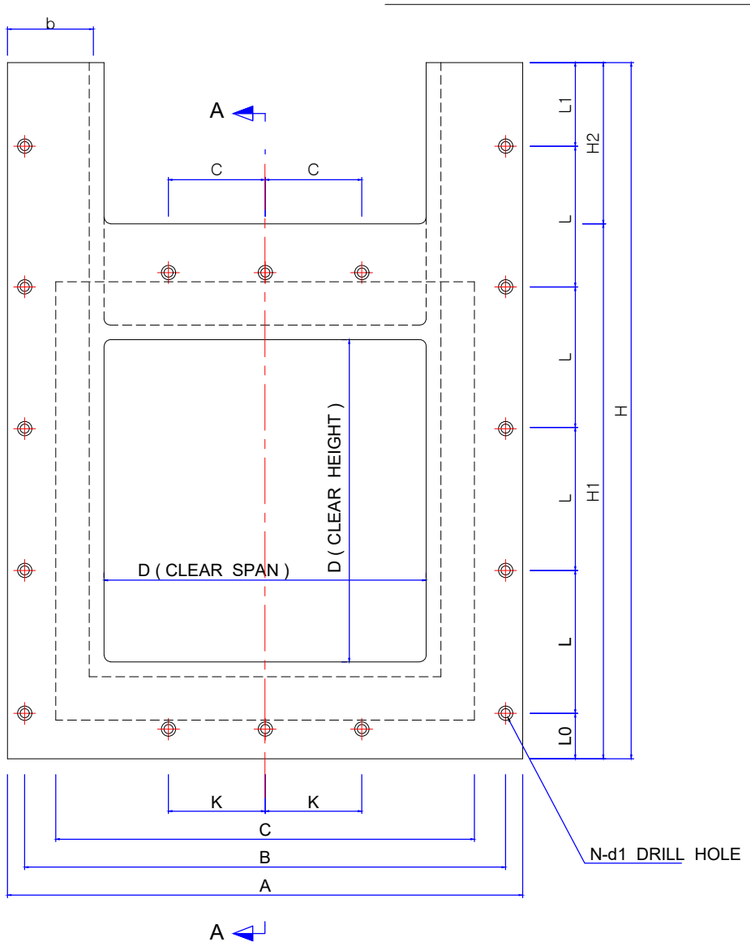
1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

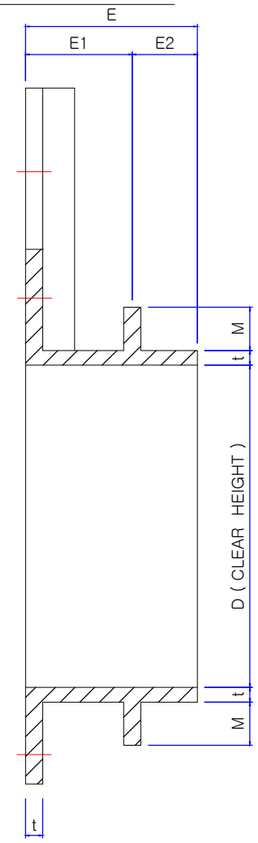
UNIT : mm

Gate Size (D)	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	REMARKS
1300 X 1300	1680	1600	150	117	38	2260	1750	510	80	500	180	800	ø65	
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	191	12	ø26	M24	249	16	40	9	120	190	195		3200kg	
1500 X 1500	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	
	1880	1800	150	121	38	2580	1950	630	90	560	250	700	ø70	
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	193	12	ø26	M24	274	18	40	9	120	190	220		4200kg	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		SC Sluice Gate(Φ1300, 1500) Detail Drawing	JUNE, 2022		C-05-08

MC, SC Sluice Gate Flange Detail Drawing





SECTION A-A

Note

1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

UNIT : mm

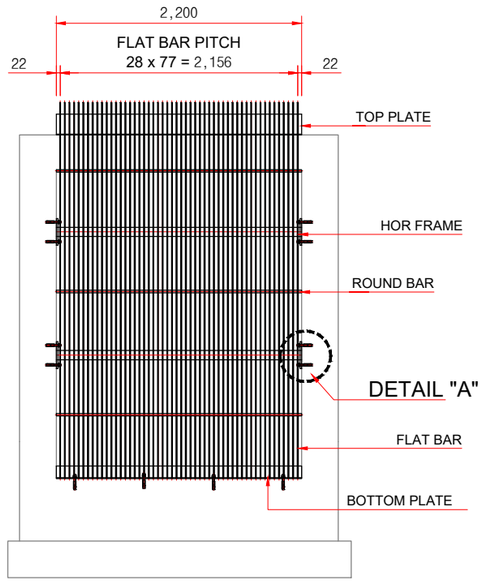
Gate Size (D)	A	B	C	E	E1	E2	K	H	H1	H2	L0	L	L1	M	b	t	d1	N	REMARKS
400 x 400	700	630	612	200	130	70		980	650	330	90	410	70	80	150	26	M20	6	SC14,SC15,SC16
500 x 500	800	730	716	200	130	70		1080	860	220	50	470	90	80	150	28	M22	6	SC13
600 x 600	960	890	820	250	170	80	445	1120	960	160	100	360	50	80	180	30	M22	10	SC1A, SC3,SC5
700 x 700	1060	990	960	250	170	80	495	1280	1060	220	100	410	50	100	180	30	M22	10	SC12,SC17
800 x 800	1160	1090	1064	250	170	80	545	1450	1160	290	130	420	60	100	180	32	M24	10	SC4,SC6
1000 x 1000	1360	1290	1268	300	200	100	645	1760	1360	400	90	380	50	100	180	34	M24	12	SC1,SC18
1200 x 1200	1580	1500	1512	350	230	120	750	2100	1580	520	90	460	50	120	190	36	M24	12	SC19
1300 x 1300	1680	1600	1612	350	230	120	800	2260	1750	510	80	500	180	120	190	36	M24	12	
1400 x 1400	1780	1700	1712	350	230	120	600	2420	1850	570	100	520	240	120	190	36	M24	12	SC2
1500 x 1500	1880	1800	1816	350	230	120	700	2580	1950	630	90	560	250	120	190	38	M24	12	
1800 x 1800	2300	2200	2124	350	230	120	600	3080	2270	810	120	650	360	120	250	42	M28	14	MC3,MC4

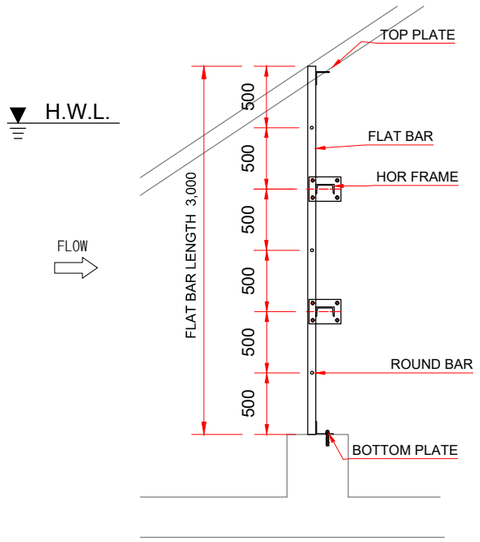
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		MC, SC Sluice Gate Flange Detail Drawing	JUNE, 2022		C-05-09

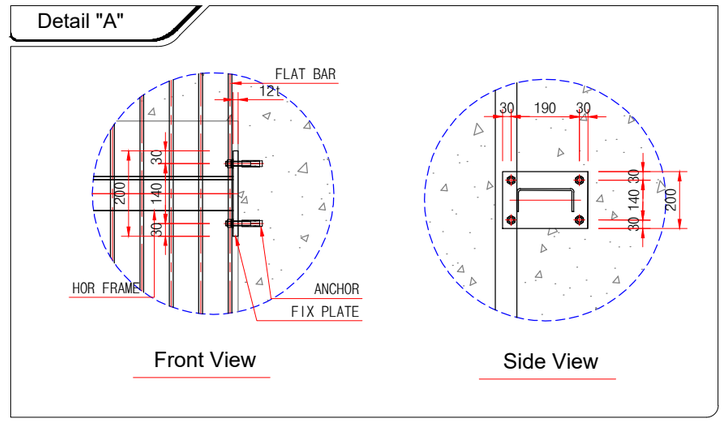
SC(2.2m x 3.0m) Screen Detail Drawing

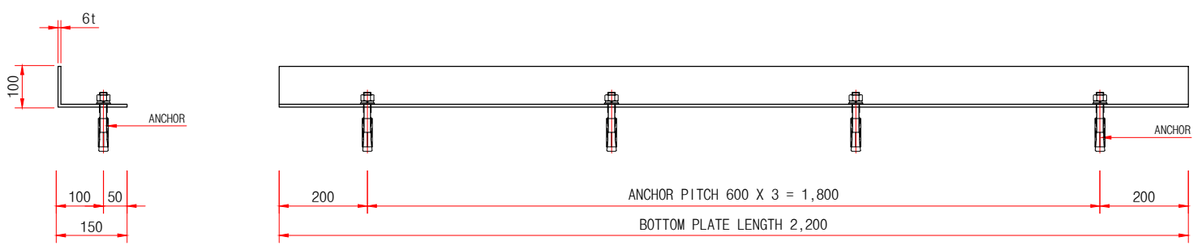
(Scale : None)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 3000L	77	EA	spacing 20
2	Top Plate	100 x 100 x 6t	1	EA	2.2m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.2m
4	Hor. Frame	150 x 75 x 6t	2	EA	2.2m
5	Round Bar	D20x 2200L	3	EA	
6	Fix Plate	250 x 200 x 12t	4	EA	
7	Anchor B/N	M16 x 125L	20	EA	









BOTTOM PLATE DETAIL

Note

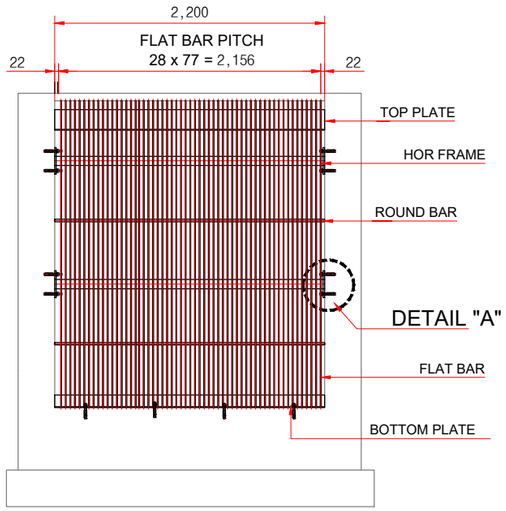
1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)
3. Unit is millimeter(mm) of The International System of Units(SI)

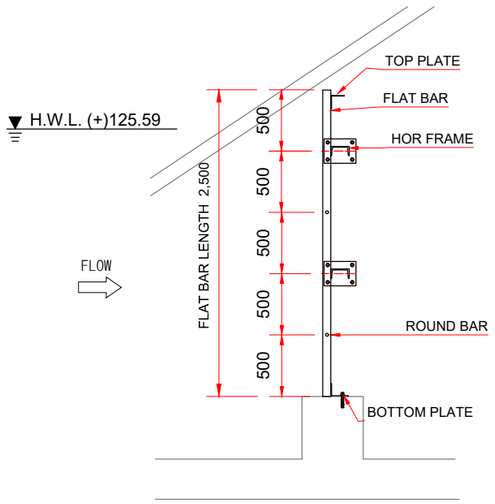
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		SC(2.2m x 3.0m) Screen Detail Drawing	JUNE, 2022		C-05-10

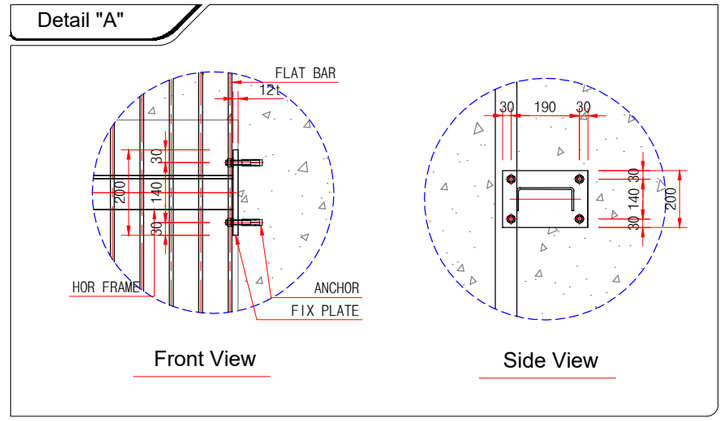
SC(2.2m x 2.5m) Screen Detail Drawing

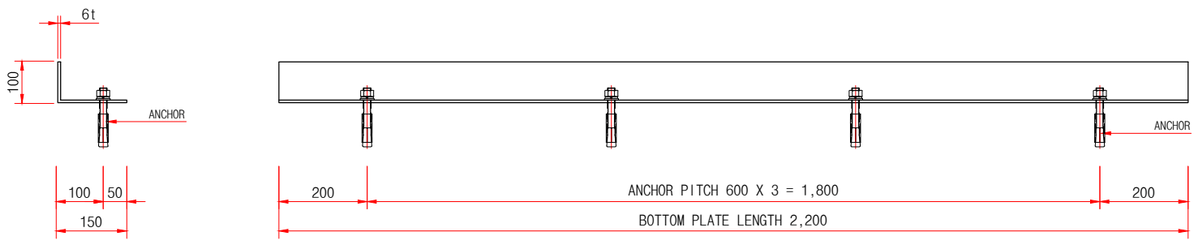
(Scale : None)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 2500L	77	EA	spacing 20
2	Top Plate	100 x 100 x 6t	1	EA	2.2m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.2m
4	Hor. Frame	150 x 75 x 6t	2	EA	2.2m
5	Round Bar	D20x 1800L	2	EA	
6	Fix Plate	250 x 200 x 12t	4	EA	
7	Anchor B/N	M16 x 125L	20	EA	









BOTTOM PLATE DETAIL

Note

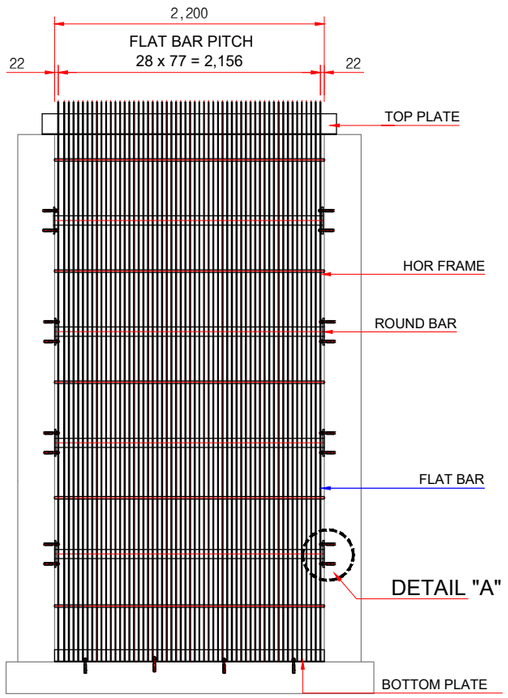
1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)
3. Unit is millimeter(mm) of The International System of Units(SI)

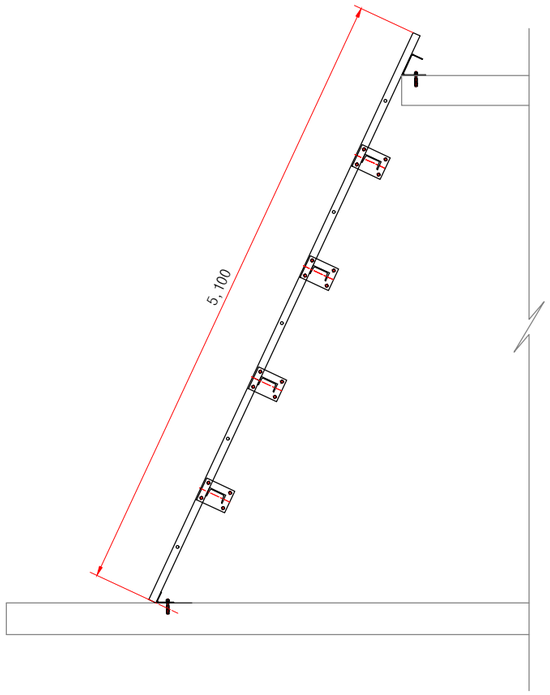
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		PS2 Screen Detail Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-11

SC(2.2m x 5.1m) Screen Detail Drawing

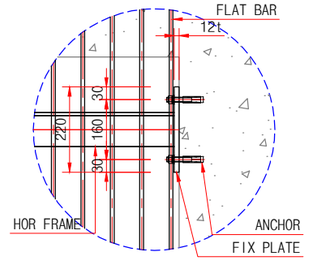
(Scale : None)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 5100L	77	EA	spacing 20
2	Top Plate	200 x 200 x 100 x 6t	1	EA	2.3m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.2m
4	Hor. Frame	150 x 75 x 6t	4	EA	2.2m
5	Round Bar	D 20x 2200L	5	EA	
6	Fix Plate	250 x 200 x 12t	8	EA	
7	Anchor B/N	M16 x 125L	32	EA	

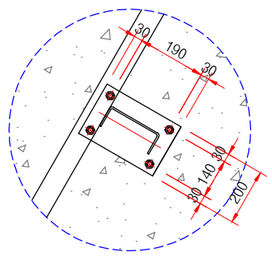




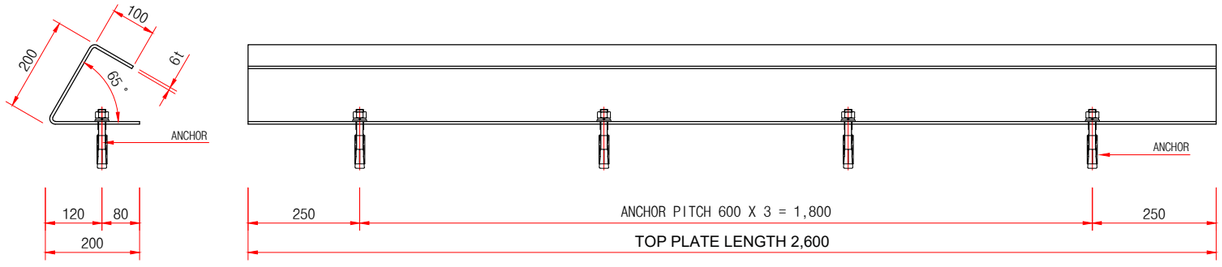
Detail "A"



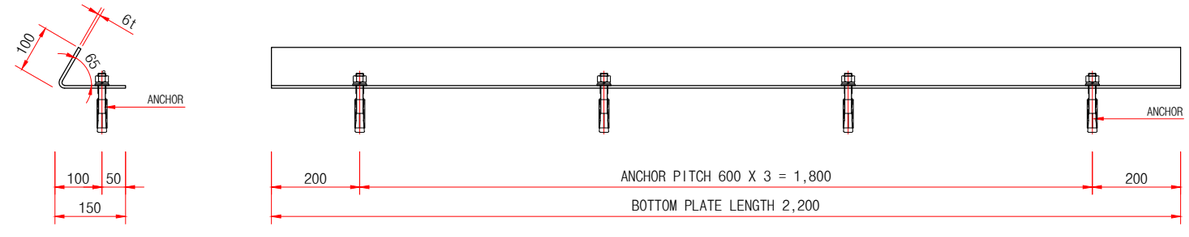
Front View



Side View



TOP PLATE DETAIL



BOTTOM PLATE DETAIL

Note

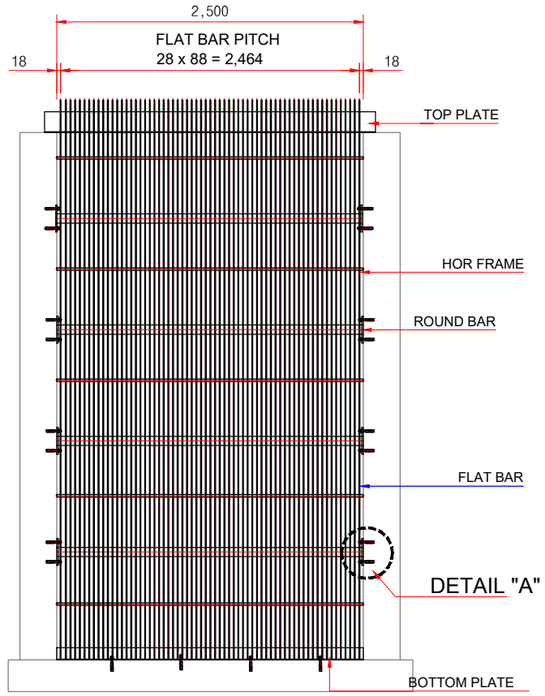
1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)
3. Unit is millimeter(mm) of The International System of Units(SI)

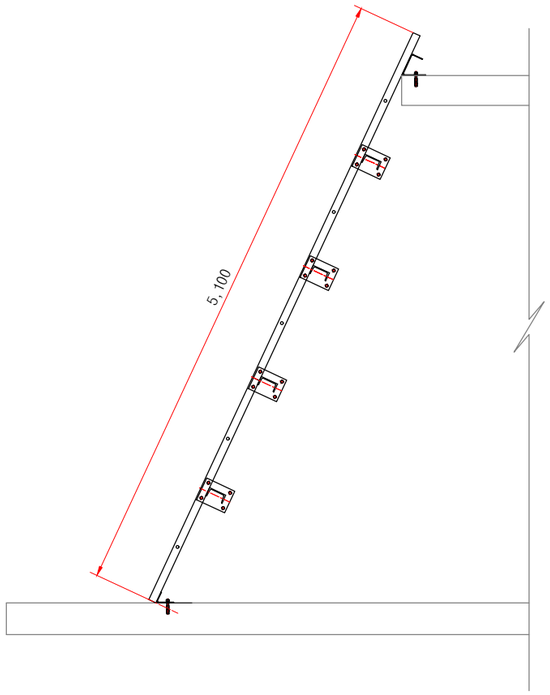
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		MC(2.4m x 4.0m) Screen Detail Drawing	JUNE, 2022		C-05-12

SC(2.5m x 5.1m) Screen Detail Drawing

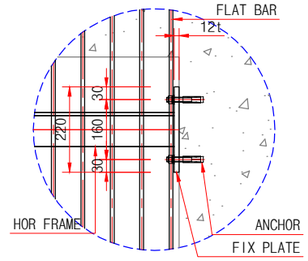
(Scale : None)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 5100L	88	EA	spacing 20
2	Top Plate	200 x 200 x 100 x 6t	1	EA	2.6m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.5m
4	Hor. Frame	150 x 75 x 6t	4	EA	2.5m
5	Round Bar	D 20x 2500L	5	EA	
6	Fix Plate	250 x 200 x 12t	8	EA	
7	Anchor B/N	M16 x 125L	32	EA	

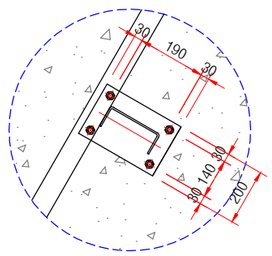




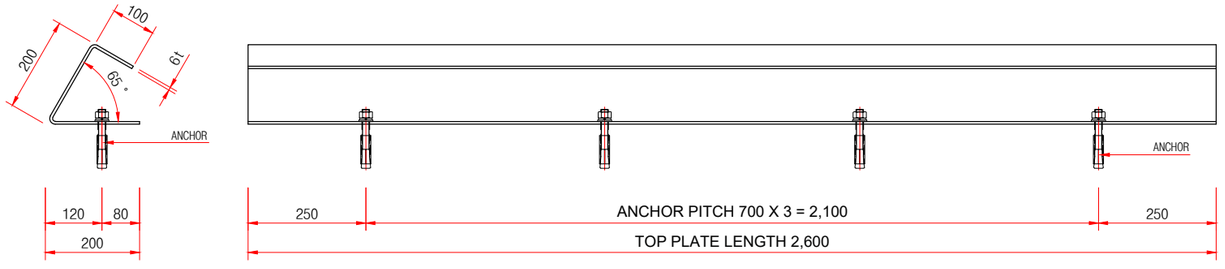
Detail "A"



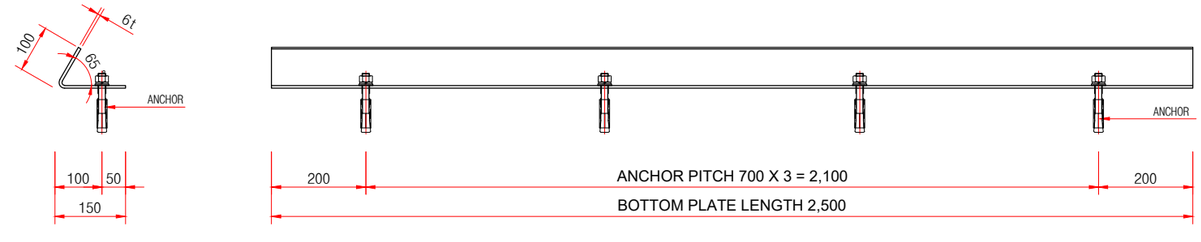
Front View



Side View



TOP PLATE DETAIL



BOTTOM PLATE DETAIL

Note

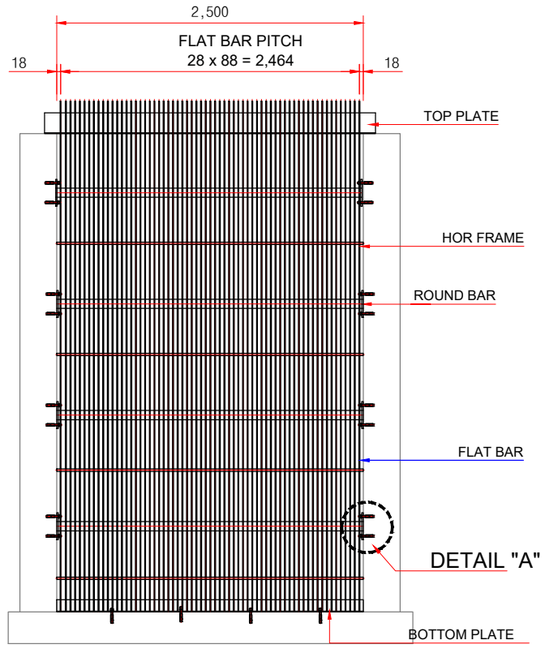
1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)
3. Unit is millimeter(mm) of The International System of Units(SI)

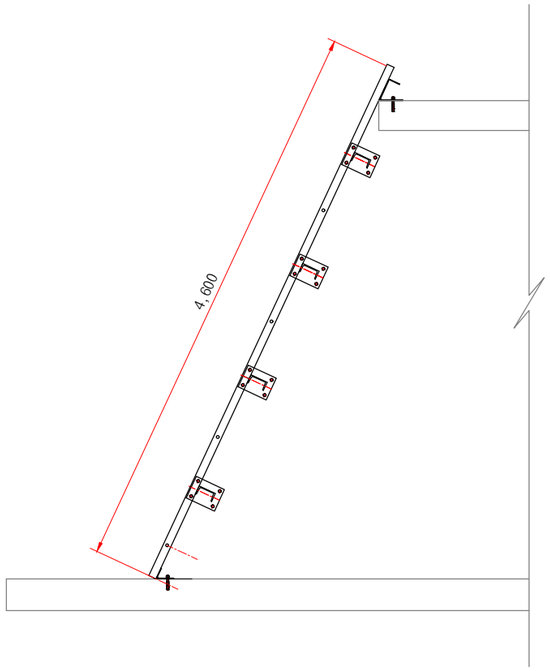
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		MC(2.4m x 4.0m) Screen Detail Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-13

SC(2.5m x 4.6m) Screen Detail Drawing

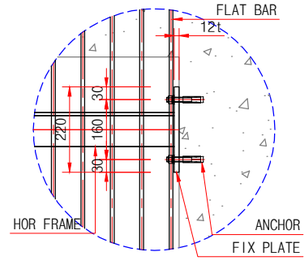
(Scale : None)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 4600L	88	EA	spacing 20
2	Top Plate	200 x 200 x 100 x 6t	1	EA	2.6m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.5m
4	Hor. Frame	150 x 75 x 6t	4	EA	2.5m
5	Round Bar	D 20x 2500L	4	EA	
6	Fix Plate	250 x 200 x 12t	8	EA	
7	Anchor B/N	M16 x 125L	32	EA	

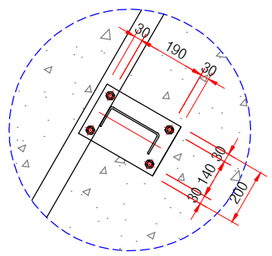




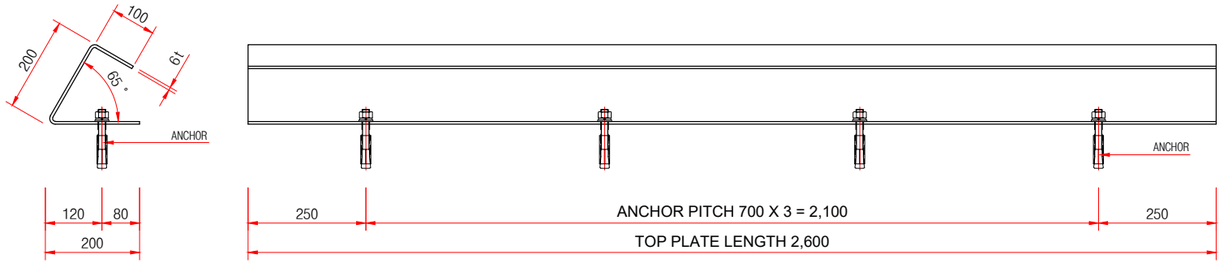
Detail "A"



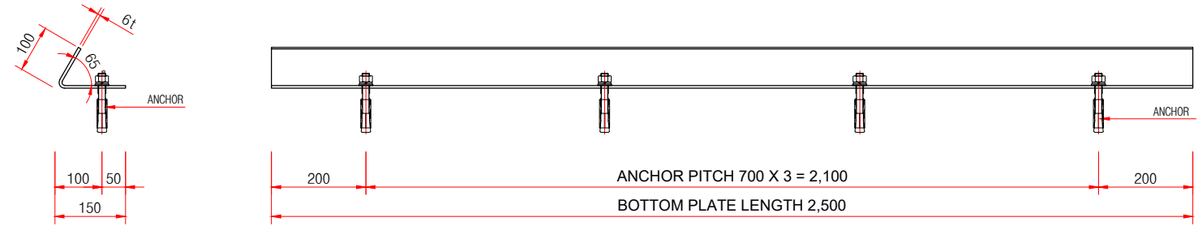
Front View



Side View



TOP PLATE DETAIL



BOTTOM PLATE DETAIL

Note

1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)
3. Unit is millimeter(mm) of The International System of Units(SI)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		MC(2.4m x 4.0m) Screen Detail Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-05-14

LOCATION OF VALVE & FLOWMETER

Control Vale Flowmeter
(Electric) (Ultrasonic)

Control Vale
Distribution Vale
(Electric)
Control Vale
Distribution Vale
(Electric)
Flowmeter
(Paddle)

NSR Vale
NSR Vale
Flowmeter
(Paddle)
Distribution Vale
(Electric)
Distribution Vale
(Electric)

Distribution Vale
(Electric)
Flowmeter
(Paddle)
Existing Reservoir

* Excluding the outlet valve of NSR

QTY		VALVE(A) (Control)	VAVLE(M)		Flowmeter	
			CONTROL & DISTRIBUTION	NSR	Ultrasonic	Insertion Type
		26	34	30	24	18
SYMBOL						
MC3		1	1	-	1	-
MC1	SC1A	1	1	1	1	-
	SC1	1	3	2	1	3
	SC2	2	3	3	1	4
	SC2-1	1	1	2	1	2
	SC2-2	1	1	1	1	-
	SC3	1	1	1	1	-
	SC4	1	1	1	1	-
	SC5	1	1	1	1	-
	SC6	1	1	1	1	-
MC3	SC7	1	1	1	1	-
	SC8	1	1	1	1	-
	SC9	1	3	2	1	3
	SC10	1	1	1	1	-
	SC11	1	1	1	1	-
MC2	SC12	1	1	1	1	-
	SC13	1	1	1	1	-
	SC14	1	1	1	1	-
	SC15	1	1	1	1	-
	SC16	1	1	1	1	-
	SC17	1	1	1	1	-
	SC18	1	3	2	1	3
	SC19	2	3	2	1	3
	SC19-1	1	1	1	1	-

* Valve: Control, Distribution, Inlet Control Valve on the NSRs.
* Air Valves, Scour Valves, P.S Valve and Outlet Control Valves on the NSRs are excluded in this figure.

SC1A
SC1
SC2
SC2-1
SC2-2
SC3
SC4
SC5
SC6
SC7
SC8
SC9
SC10
SC11
SC12
SC13
SC14
SC15
SC16
SC17
SC18
SC19
SC19-1
PS1
PS2
Main Canal 1
Main Canal 2
Main Canal 3
Phata / Sande
ILLOVO AREA

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)
TITLE	LOCATION OF VALVE & FLOWMETER
ORIGINAL DESIGNED BY	DETAIL DESIGN
DATE	JUNE, 2022
DRAWING	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon
SCALE	NONE
DRAWING No	C-06-01

Control Valve Chamber List

TABLE

Canal Station			Level		Type	Pipe Line		Control Valve		Acturator	Dismantling	Puddle flange (L=1m)	Air Valve (single)	Gate Valve	Chamber Size			Steel Cover	
Nos	Sta.	Sta.	COP	Ground		Type	Dia.	Butterfly Valve	Dia.					(maintenace)	B	L	H	B	L
1	SC1A	No.00+40	132.10	133.85	2	HDPE Pipe	D630mm	Electric, PN10	D550mm	1	1	2	D100mm	D100mm	3.0	3.0	3.0	2.7	1.2
2	SC1	No.01+00	130.63	134.60	2	HDPE Pipe	D1000mm	Electric, PN10	D900mm	1	1	2			3.5	3.0	5.4	3.2	1.4
3	SC2	No.00+40	130.15	132.83	3	PE Coated Steel Pipe	D1400mm	Electric, PN10	D1400mm	1	1	2			3.5	3.0	4.4	3.2	1.4
4	SC2	No.112+00	90.57	92.48	3	PE Coated Steel Pipe	D1200mm	Electric, PN10	D1200mm	1	1	2			3.5	3.0	3.4	3.2	1.4
5	SC2-1	No.00+20	90.63	92.40	3	PE Coated Steel Pipe	D1100mm	Electric, PN10	D1100mm	1	1	2			3.5	3.0	3.4	3.2	1.4
6	SC2-2	No.00+20	82.48	84.00	2	HDPE Pipe	D630mm	Electric, PN10	D550mm	1	1	2	D100mm	D100mm	3.0	3.0	2.8	2.7	1.2
7	SC3	No.00+30	129.86	133.87	1	HDPE Pipe	D560mm	Electric, PN10	D500mm	1	1	2	D80mm	D80mm	2.6	2.6	5.4	2.3	1.2
8	SC4	No.00+40	125.00	126.86	2	HDPE Pipe	D800mm	Electric, PN10	D750mm	1	1	2	D100mm	D100mm	3.0	3.0	3.4	2.7	1.2
9	SC5	No.04+40	127.41	130.22	1	HDPE Pipe	D560mm	Electric, PN10	D500mm	1	1	2	D80mm	D80mm	2.6	2.6	4.2	2.3	1.2
10	SC6	No.00+40	128.10	131.23	2	HDPE Pipe	D800mm	Electric, PN10	D700mm	1	1	2	D100mm	D100mm	3.0	3.0	4.6	2.7	1.2
11	SC12	No.00+40	125.70	127.79	2	HDPE Pipe	D710mm	Electric, PN10	D650mm	1	1	2	D100mm	D100mm	3.0	3.0	3.6	2.7	1.2
12	SC13	No.00+40	125.55	127.45	1	HDPE Pipe	D500mm	Electric, PN10	D450mm	1	1	2	D80mm	D80mm	2.6	2.6	3.2	2.3	1.2
13	SC14	No.00+35	115.86	117.25	1	HDPE Pipe	D400mm	Electric, PN10	D350mm	1	1	2	D80mm	D80mm	2.6	2.6	2.6	2.3	1.2
14	SC15	No.00+35	115.98	117.40	1	HDPE Pipe	D400mm	Electric, PN10	D350mm	1	1	2	D80mm	D80mm	2.6	2.6	2.6	2.3	1.2
15	SC16	No.00+40	116.30	117.74	1	HDPE Pipe	D400mm	Electric, PN10	D350mm	1	1	2	D80mm	D80mm	2.6	2.6	2.6	2.3	1.2
16	SC17	No.00+40	122.84	125.10	2	HDPE Pipe	D800mm	Electric, PN10	D750mm	1	1	2	D100mm	D100mm	3.0	3.0	3.8	2.7	1.2
17	SC18	No.00+40	122.57	125.37	2	HDPE Pipe	D1000mm	Electric, PN10	D900mm	1	1	2			3.5	3.0	4.4	3.2	1.4
18	SC19	No.00+40	121.65	125.91	3	PE Coated Steel Pipe	D1300mm	Electric, PN10	D1300mm	1	1	2			3.5	3.0	6.0	3.2	1.4
19	SC19	No.75+00	108.82	111.50	2	HDPE Pipe	D800mm	Electric, PN10	D750mm	1	1	2	D100mm	D100mm	3.0	3.0	4.0	2.7	1.2
20	SC19-1	No.00+20	109.56	112.66	2	HDPE Pipe	D900mm	Electric, PN10	D800mm	1	1	2	D100mm	D100mm	3.0	3.0	4.6	2.7	1.2

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Control Valve Chamber	JUNE, 2022		C-07-01

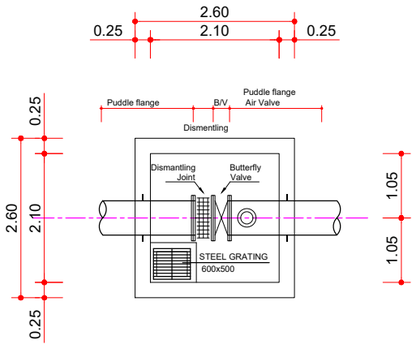
Control Valve Chamber(1/2)

S=1:50

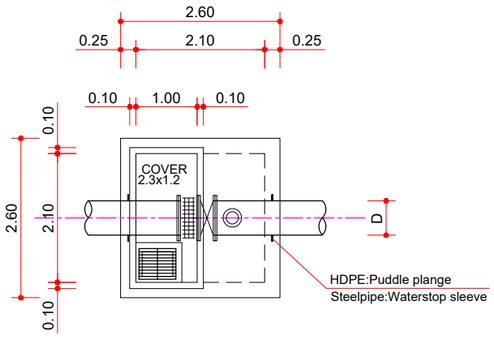
Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE1 : 2.6m x 2.6m x H(D=400mm~560mm)

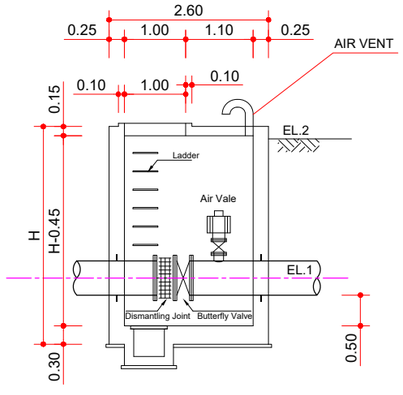
Plan



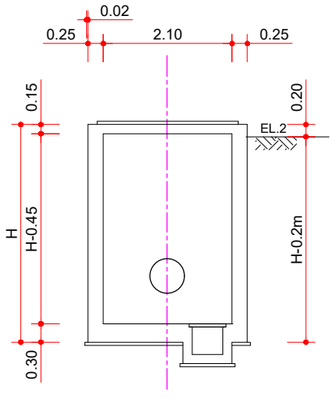
Top View



Profile

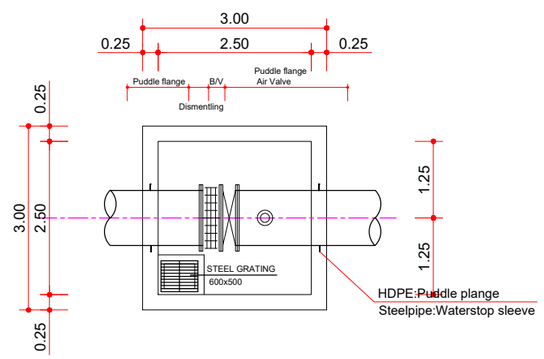


Side View

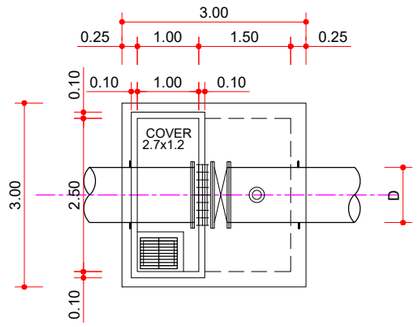


TYPE2 : 3.0m x 3.0m x H(D=630mm~900mm)

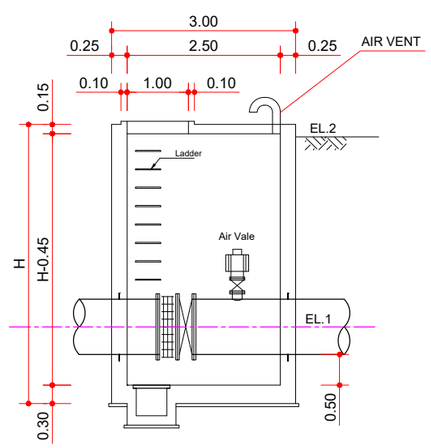
Plan



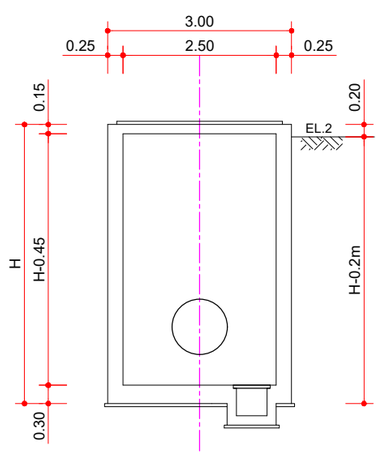
Top View



Profile



Side View



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		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Control Valve Chamber(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-07-02

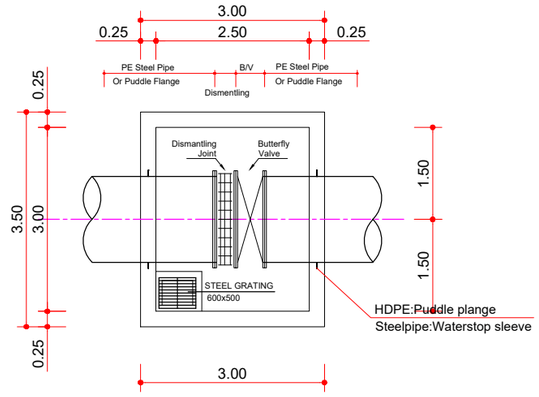
Control Valve Chamber(2/2)

S=1:50

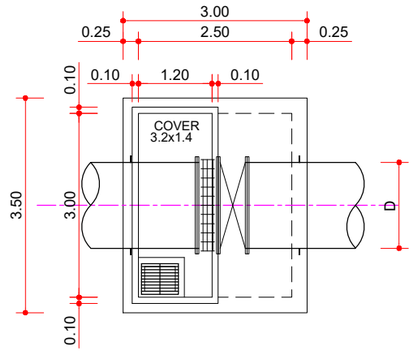
Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE3 : 3.5m x 3.0m x H(D=1000mm~1400mm)

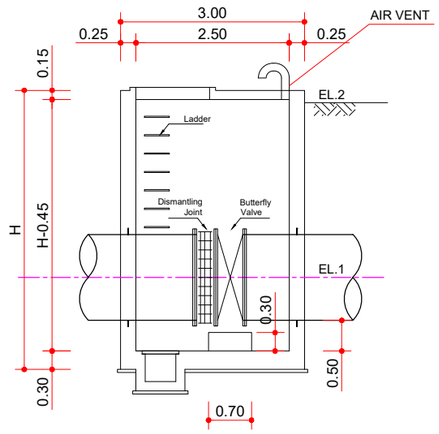
Plan



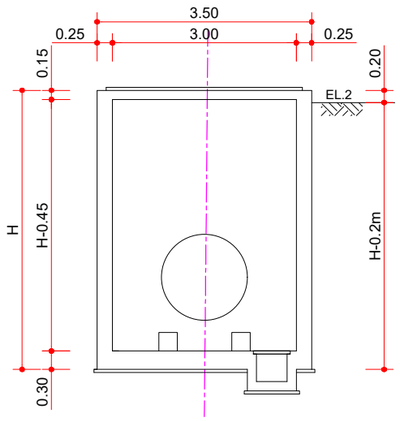
Top View



Profile



Side View



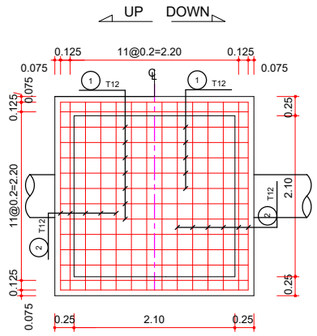
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Control Valve Chamber(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-07-03

Detail of Control Valve Chamber(1/3)
(TYPE 1)

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE1 : 2.6m x 2.6m x H(D=350mm~560mm)
S=1:250

BOTTOM



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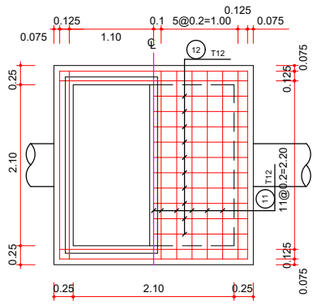
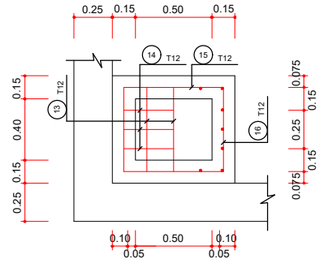
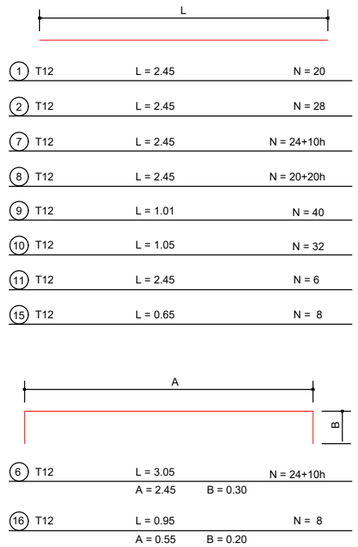


Detail of Ditch
S=1:125

PROFILE

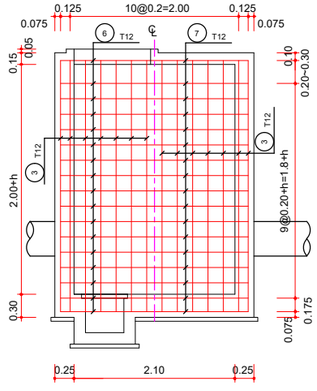


Detail of BAR



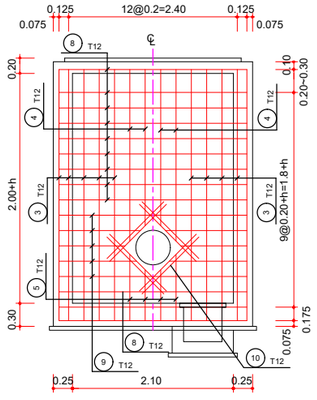
PROFILE

FRONT BACK

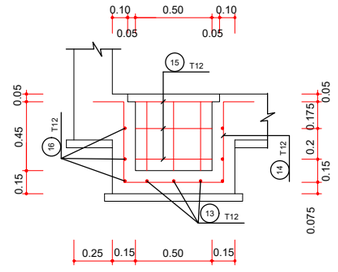


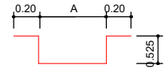
SIDE VIEW

FRONT BACK



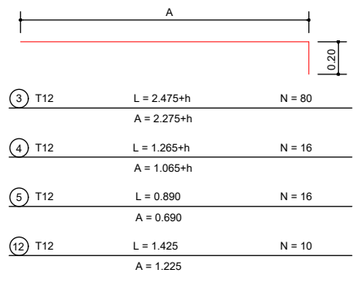
SIDE VIEW





13 T12 L = 2.00 N = 3
A = 0.55

14 T12 L = 2.10 N = 3
A = 0.65



2.6 x 2.6 x H				
NO.	D	L	N	Total
1	T12	2.45	20	49.000
2	T12	2.45	28	68.600
3	T12	2.475+h	80	80h+198.000
4	T12	1.265+h	16	16h+20.240
5	T12	0.89	16	14.240
6	T12	3.05	24+10h	30.5h+73.200
7	T12	2.45	24+10h	24.5h+58.800
8	T12	2.45	20+20h	49h+49.000
9	T12	1.01	40	40.400
10	T12	1.05	32	33.600
11	T12	2.45	6	14.700
12	T12	1.425	10	14.250
13	T12	2.00	3	6.000
14	T12	2.10	3	6.300
15	T12	0.65	8	5.200
16	T12	0.95	8	7.600

T12= (200h+659.1) x 0.888 kg

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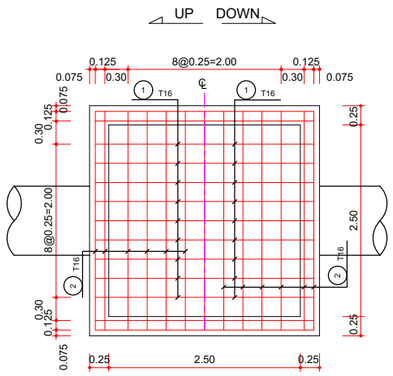
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Detail of Control Valve Chamber(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-07-04

Detail of Control Valve Chamber(2/3)
(TYPE 2)

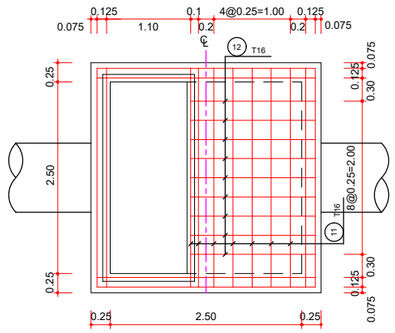
Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE2 : 3.0m x 3.0m x H(D=630mm~900mm)
S=1:250

BOTTOM

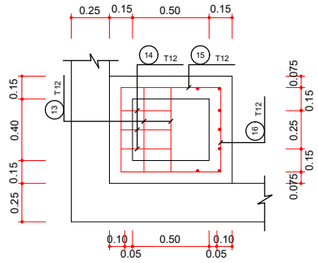


TOP

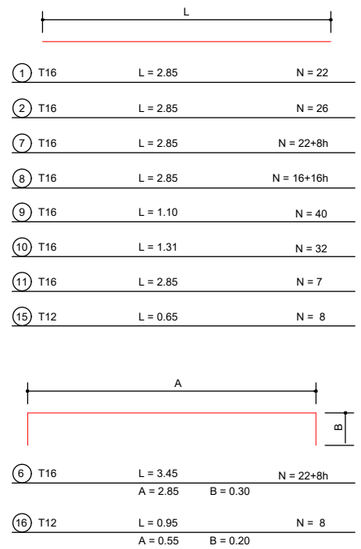


Detail of Ditch
S=1:125

PROFILE

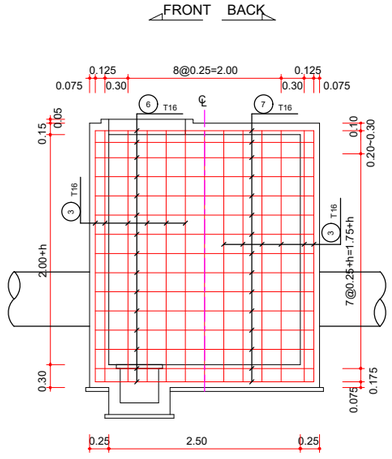


Detail of BAR

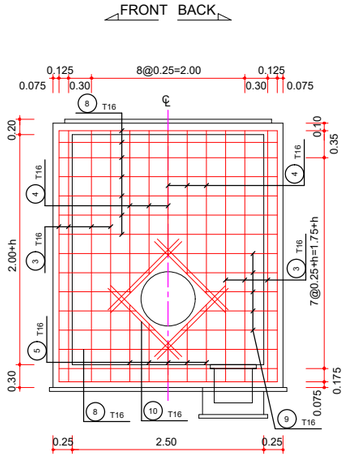


1 T16	L = 2.85		N = 22
2 T16	L = 2.85		N = 26
7 T16	L = 2.85		N = 22+8h
8 T16	L = 2.85		N = 16+16h
9 T16	L = 1.10		N = 40
10 T16	L = 1.31		N = 32
11 T16	L = 2.85		N = 7
15 T12	L = 0.65		N = 8
6 T16	L = 3.45		N = 22+8h
	A = 2.85	B = 0.30	
16 T12	L = 0.95		N = 8
	A = 0.55	B = 0.20	

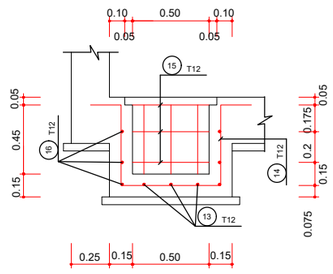
PROFILE



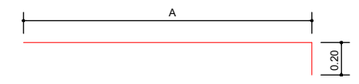
SIDE VIEW



SIDE VIEW



13 T12	L = 2.00		N = 3
	A = 0.55		
14 T12	L = 2.10		N = 3
	A = 0.65		



3 T16	L = 2.475+h		N = 68
	A = 2.275+h		
4 T16	L = 1.052+h		N = 20
	A = 0.852+h		
5 T16	L = 0.937		N = 20
	A = 0.737		
12 T16	L = 1.825		N = 10
	A = 1.625		

3.0 x 3.0 x H

NO.	D	L	N	Total
1	T16	2.85	22	62.700
2	T16	2.85	26	74.100
3	T16	2.475+h	68	68h+168.300
4	T16	1.052+h	20	20h+21.040
5	T16	0.937	20	18.740
6	T16	3.45	22+8h	27.6h+75.900
7	T16	2.85	22+8h	22.8h+62.700
8	T16	2.85	16+16h	45.6h+45.600
9	T16	1.10	40	44.000
10	T16	1.31	32	41.920
11	T16	2.85	7	19.950
12	T16	1.825	9	16.425
13	T12	2.00	3	6.000
14	T12	2.10	3	6.300
15	T12	0.65	8	5.200
16	T12	0.95	8	7.600

T12= 25.1x 0.888 kg

T16= (184h+651.375)x 1.58 kg

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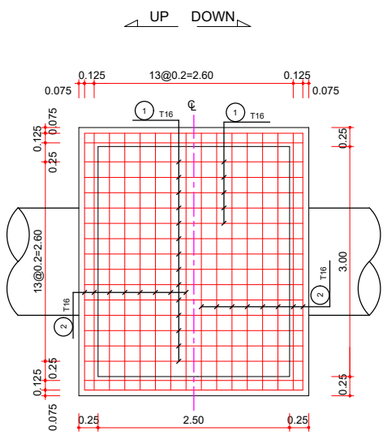
		TITLE	DATE		DRAWING No
		Detail of Control Valve Chamber(2/3)	JUNE, 2022		C-07-05

Detail of Control Valve Chamber(3/3)
(TYPE 3)

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE3 : 3.5m x 3.0m x H(D=1,000mm~1,400mm)
S=1:250

BOTTOM



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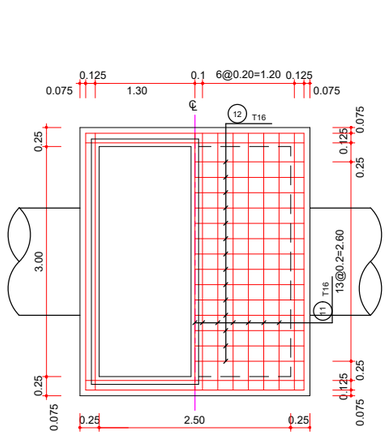
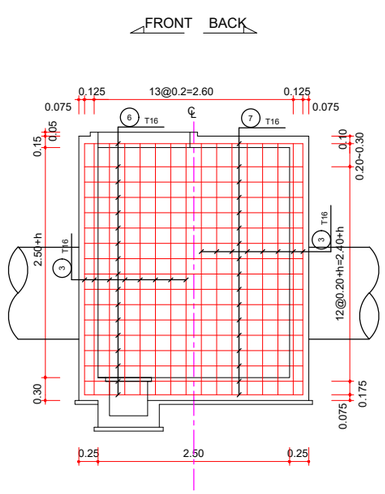
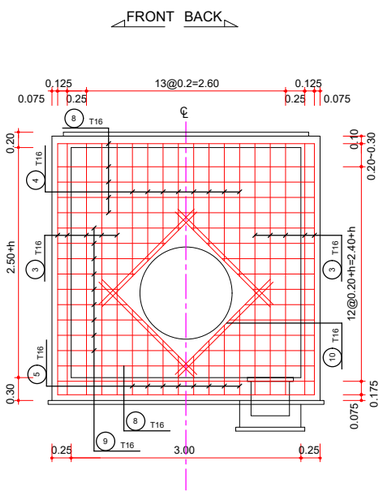


PROFILE

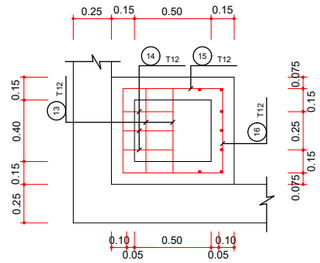


SIDE VIEW

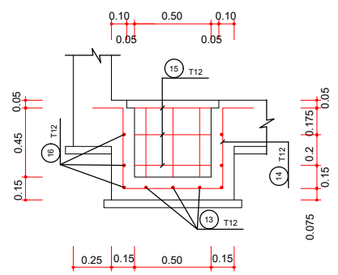


Detail of Ditch
S=1:125

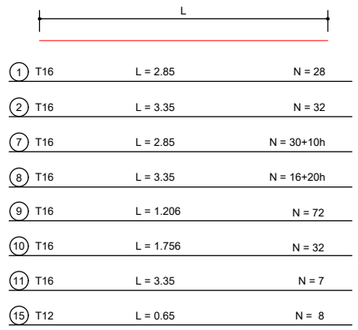
PROFILE



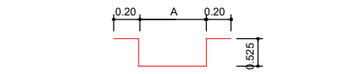
SIDE VIEW



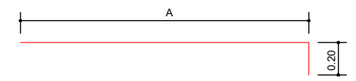
Detail of BAR



1 T16	L = 2.85		N = 28
2 T16	L = 3.35		N = 32
7 T16	L = 2.85		N = 30+10h
8 T16	L = 3.35		N = 16+20h
9 T16	L = 1.206		N = 72
10 T16	L = 1.756		N = 32
11 T16	L = 3.35		N = 7
15 T12	L = 0.65		N = 8
6 T16	L = 3.45		N = 30+10h
	A = 2.85	B = 0.30	
16 T12	L = 0.95		N = 8
	A = 0.55	B = 0.20	



13 T12	L = 2.00		N = 3
	A = 0.55		
14 T12	L = 2.10		N = 3
	A = 0.65		



3 T16	L = 2.975+h		N = 88
	A = 2.775+h		
4 T16	L = 1.131+h		N = 32
	A = 0.931+h		
5 T16	L = 1.006		N = 32
	A = 0.806		
12 T16	L = 1.625		N = 14
	A = 1.425		

3.5 x 3.0 x H				
NO.	D	L	N	Total
1	T16	2.85	28	79.800
2	T16	3.35	32	107.200
3	T16	2.975+h	88	88h+261.800
4	T16	1.131+h	32	32h+36.192
5	T16	1.006	32	32.192
6	T16	3.45	30+10h	34.5h+103.500
7	T16	2.85	30+10h	28.5h+85.500
8	T16	3.35	16+20h	67.0h+53.600
9	T16	1.206	72	86.832
10	T16	1.756	32	56.192
11	T16	3.35	7	23.450
12	T16	1.625	14	22.750
13	T12	2.00	3	6.000
14	T12	2.10	3	6.300
15	T12	0.65	8	5.200
16	T12	0.95	8	7.600

T12= 25.1x 0.888 kg

T16= (250h+949.008)x 1.58 kg

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Detail of Control Valve Chamber(3/3)	JUNE, 2022		C-07-06

Flow Meter Chamber List

TABLE

Canal Station			Elevation		Type	Pipe Line		Flow Meter		Acturator	Dismantling	Puddle flange (L=1m)	Chamber Size			Steel Cover	
Nos	Sta.	Sta.	COP	Ground		Type	Dia.	Ultrasonic	Dia.				B	L	H	B	L
1	SC1A	No.01+00	131.89	133.41	2	HDPE Pipe	D630mm	Multi Path(5path), PN10	D550mm	1	1	2	3.0	3.0	2.9	2.7	1.4
2	SC1	No.01+00	130.63	134.6	2	HDPE Pipe	D1000mm	Multi Path(5path), PN10	D900mm	1	1	2	3.5	3.5	5.5	3.2	1.8
3	SC1	No.12+00	119.4	121.1	2	HDPE Pipe	D710mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.2	2.7	1.4
4	SC1	No.88+00	94.64	96.4	2	HDPE Pipe	D800mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.2	2.7	1.4
5	SC1	No.164+10	87.64	89.27	2	HDPE Pipe	D800mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.2	2.7	1.4
6	SC2	No.01+00	130.00	132.79	3	PE Coated Steel Pipe	D1400mm	Multi Path(5path), PN10	D1400mm	1	1	2	3.5	3.5	4.6	3.2	1.8
7	SC2	No.35+00	106.70	108.60	1	HDPE Pipe	D450mm	Insertion Electronic(Puddle)				2	2.6	3.0	3.2	2.3	1.4
8	SC2	No.72+00	98.70	100.60	2	HDPE Pipe	D800mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.4	2.7	1.4
9	SC2	No.182+00	85.58	87.58	2	HDPE Pipe	D630mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.4	2.7	1.4
10	SC2	No.290+00	79.35	81.00	3	PE Coated Steel Pipe	D1000mm	Insertion Electronic(Puddle)				2	3.5	3.5	3.2	3.2	1.8
11	SC2-1	No.00+20	90.60	92.40	3	PE Coated Steel Pipe	D1100mm	Multi Path(5path), PN10	D1100mm	1	1	2	3.5	3.5	3.6	3.2	1.8
12	SC2-1	No.20+00	86.47	88.17	2	HDPE Pipe	D900mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.4	2.7	1.4
13	SC2-1	No.63+41	87.46	89.16	2	HDPE Pipe	D900mm	Insertion Electronic(Puddle)				2	3.0	3.0	2.8	2.7	1.4
14	SC2-2	No.00+30	82.48	84.00	2	HDPE Pipe	D630mm	Multi Path(5path), PN10	D550mm	1	1	2	3.0	3.0	2.8	2.7	1.4
15	SC3	No.00+38	129.76	133.82	1	HDPE Pipe	D560mm	Multi Path(5path), PN10	D500mm	1	1	2	2.6	3.0	5.4	2.3	1.4
16	SC4	No.01+00	124.73	126.78	2	HDPE Pipe	D800mm	Multi Path(5path), PN10	D750mm	1	1	2	3.0	3.0	3.5	2.7	1.4
17	SC5	No.05+00	127.37	129.78	2	HDPE Pipe	D630mm	Multi Path(5path), PN10	D550mm	1	1	2	3.0	3.0	3.8	2.7	1.4
18	SC6	No.01+00	127.92	131.17	2	HDPE Pipe	D800mm	Multi Path(5path), PN10	D750mm	1	1	2	3.0	3.0	4.7	2.7	1.4
19	SC12	No.01+00	126.28	130.43	2	HDPE Pipe	D710mm	Multi Path(5path), PN10	D650mm	1	1	2	3.0	3.0	5.5	2.7	1.4
20	SC13	No.01+00	125.30	127.01	1	HDPE Pipe	D500mm	Multi Path(5path), PN10	D450mm	1	1	2	2.6	3.0	3.0	2.3	1.4
21	SC14	No.00+45	115.98	117.36	1	HDPE Pipe	D400mm	Multi Path(5path), PN10	D350mm	1	1	2	2.6	3.0	2.6	2.3	1.4
22	SC15	No.00+45	115.95	117.29	1	HDPE Pipe	D400mm	Multi Path(5path), PN10	D350mm	1	1	2	2.6	3.0	2.6	2.3	1.4
23	SC16	No.01+00	116.21	117.62	1	HDPE Pipe	D400mm	Multi Path(5path), PN10	D350mm	1	1	2	2.6	3.0	2.6	2.3	1.4
24	SC17	No.01+00	122.70	125.12	2	HDPE Pipe	D800mm	Multi Path(5path), PN10	D750mm	1	1	2	3.0	3.0	3.8	2.7	1.4
25	SC18	No.01+00	122.45	125.48	2	HDPE Pipe	D1000mm	Multi Path(5path), PN10	D900mm	1	1	2	3.5	3.5	4.6	3.2	1.8
26	SC18	No.20+00	114.66	116.48	2	HDPE Pipe	D710mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.4	2.7	1.4
27	SC18	No.56+00	108.34	110.18	1	HDPE Pipe	D450mm	Insertion Electronic(Puddle)				2	2.6	3.0	3.2	2.3	1.4
28	SC18	No.94+00	103.70	106.73	2	HDPE Pipe	D900mm	Insertion Electronic(Puddle)				2	3.0	3.0	4.6	2.7	1.4
29	SC19	No.01+00	121.50	125.84	3	PE Coated Steel Pipe	D1300mm	Multi Path(5path), PN10	D1300mm	1	1	2	3.5	3.5	5.5	3.2	1.8
30	SC19	No.30+00	116.14	118.00	2	HDPE Pipe	D710mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.4	2.7	1.4
31	SC19	No.80+00	108.52	110.60	2	HDPE Pipe	D630mm	Insertion Electronic(Puddle)				2	3.0	3.0	3.6	2.7	1.4
32	SC19	No.155+00	101.65	103.25	1	HDPE Pipe	D560mm	Insertion Electronic(Puddle)				2	2.6	3.0	3.0	2.3	1.4
33	SC19-1	No.00+30	109.56	112.60	2	HDPE Pipe	D900mm	Multi Path(5path), PN10	D800mm	1	1	2	3.0	3.0	4.5	2.7	1.4

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Flow Meter Chamber	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-08-01

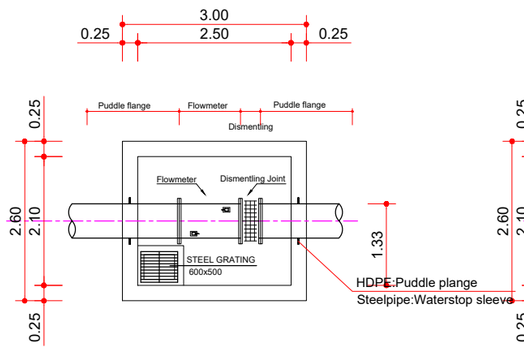
Flow Meter Chamber(1/2)

S=1:50

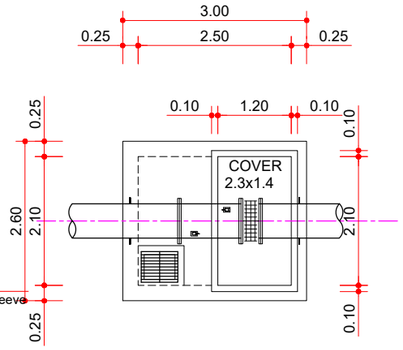
Unit is meter(m) of The International System of Units(SI)
Puddle flow meter of Insertion type is using the concrete chamber of ultrasonic.
The Chamber may change depending on the site and supervisor

TYPE1 : 2.6m x 3.0m x H(D=400mm~560mm)

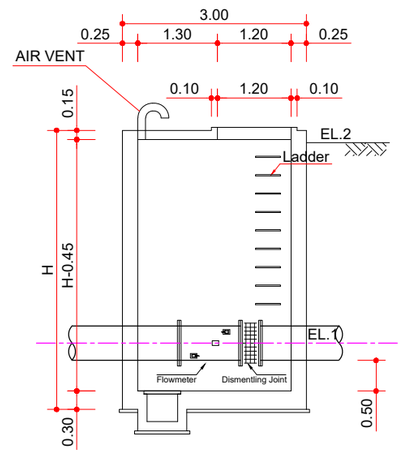
Plan



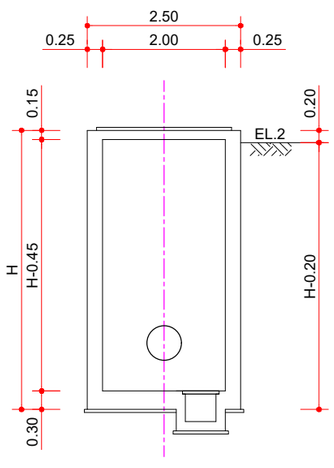
Top View



Profile

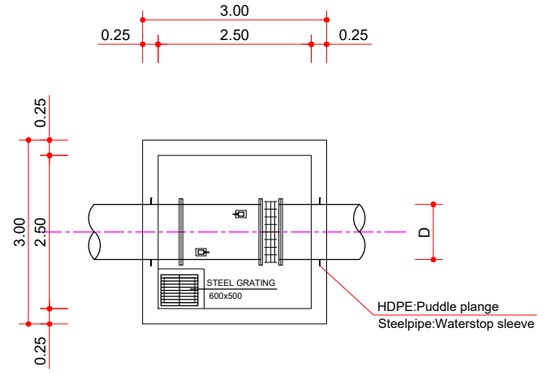


Side View

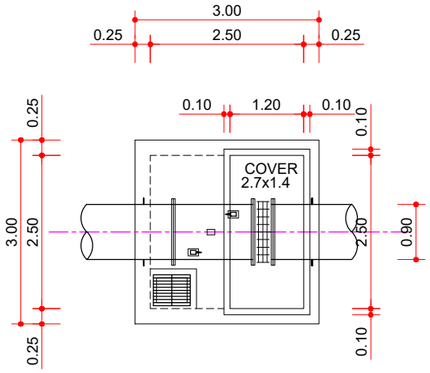


TYPE2 : 3.0m x 3.0m x H(630mm~900mm)

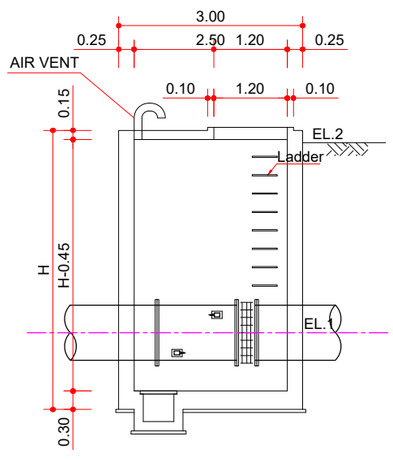
Plan



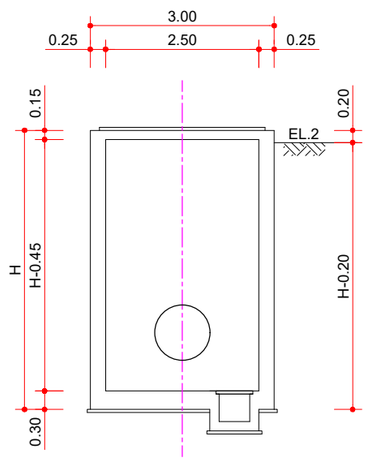
Top View



Profile



Side View



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 50
		TITLE	DATE		DRAWING No
		Flow Meter Chamber(1/2)	JUNE, 2022		C-08-02

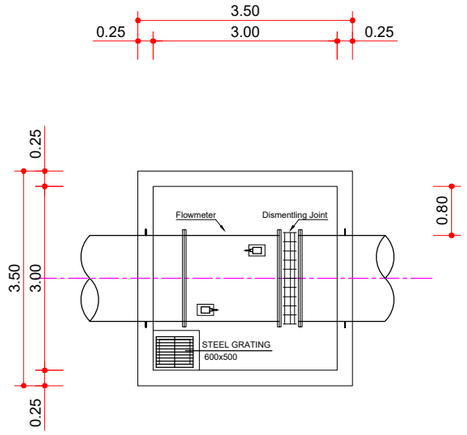
Flow Meter Chamber(2/2)

S=1:50

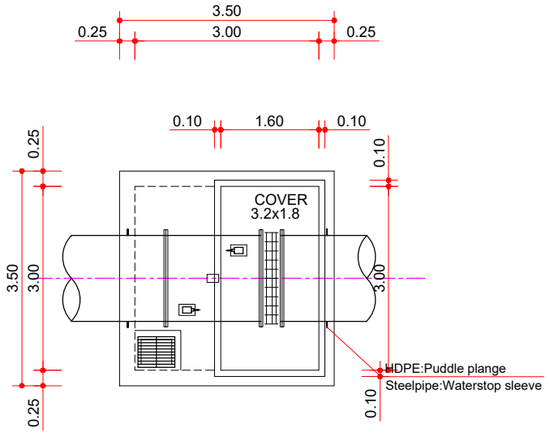
Unit is meter(m) of The International System of Units(SI)
Puddle flow meter of Insertion type is using the concrete chamber of ultrasonic.
The Chamber may change depending on the site and supervisor

TYPE3: 3.5m x 3.5m x H(Under 5.5m, D=1000mm~1400mm)

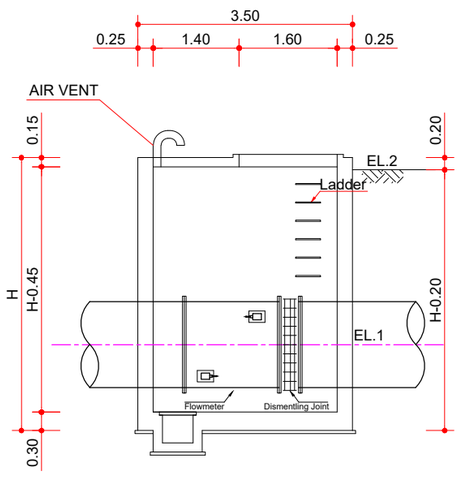
Plan



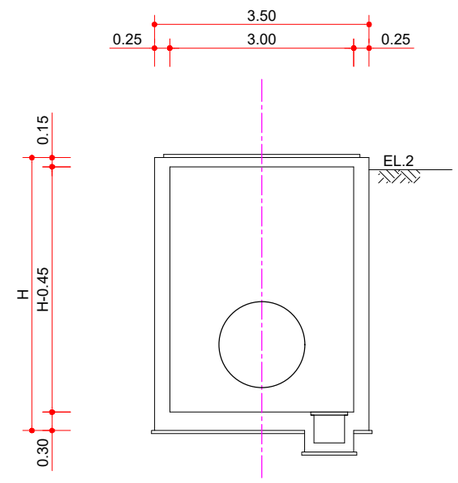
Top View



Profile



Side View



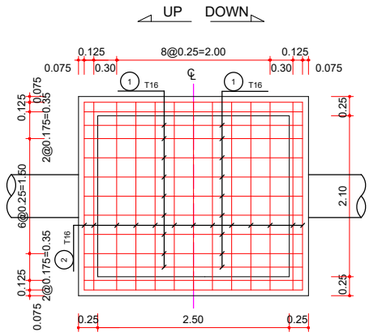
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Flow Meter Chamber(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-08-03

Detail of Flow Meter Chamber(1/3)
(TYPE 1)

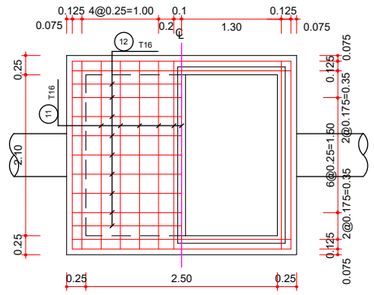
Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE1 : 2.6m x 3.0m x H(D=350mm~560mm)
S = 1 : 40

BOTTOM

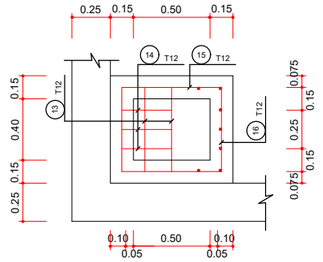


TOP

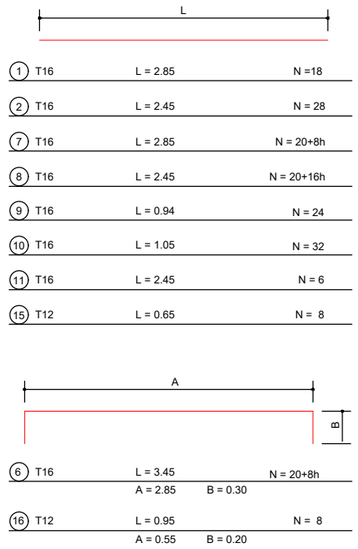


Detail of Ditch
S=1:20

PROFILE



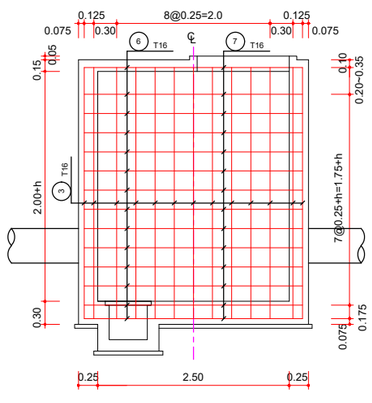
Detail of BAR



1 T16	L = 2.85		N =18
2 T16	L = 2.45		N = 28
7 T16	L = 2.85		N = 20+8h
8 T16	L = 2.45		N = 20+16h
9 T16	L = 0.94		N = 24
10 T16	L = 1.05		N = 32
11 T16	L = 2.45		N = 6
15 T12	L = 0.65		N = 8
6 T16	L = 3.45		N = 20+8h
	A = 2.85	B = 0.30	
16 T12	L = 0.95		N = 8
	A = 0.55	B = 0.20	

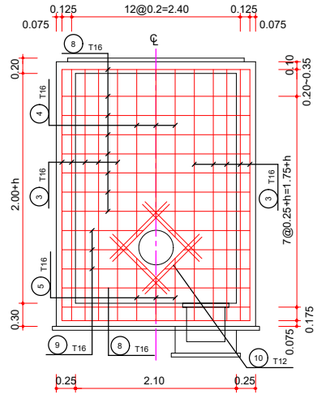
PROFILE

FRONT BACK

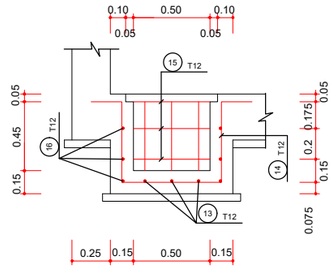


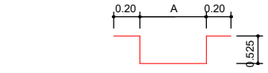
SIDE VIEW

FRONT BACK



SIDE VIEW





13 T12	L = 2.00		N = 3
	A = 0.55		
14 T12	L = 2.10		N = 3
	A = 0.65		
3 T16	L = 2.475+h		N = 76
	A = 2.275+h		
4 T16	L = 1.295+h		N = 12
	A = 1.095+h		
5 T16	L = 0.690		N = 12
	A = 0.490		
12 T16	L = 1.625		N = 9
	A = 1.425		

2.6 x 3.0 x H				
NO.	D	L	N	Total
1	T16	2.85	18	51.300
2	T16	2.45	28	68.600
3	T16	2.475+h	76	76h+188.100
4	T16	1.295+h	12	12h+15.540
5	T16	0.69	12	8.280
6	T16	3.45	20+8h	27.6h+69.000
7	T16	2.85	20+8h	22.8h+57.000
8	T16	2.45	20+16h	39.2h+49.000
9	T16	0.94	24	22.560
10	T16	1.05	32	33.600
11	T16	2.45	6	14.700
12	T16	1.625	9	14.625
13	T12	2.00	3	6.000
14	T12	2.10	3	6.300
15	T12	0.65	8	5.200
16	T12	0.95	8	7.600

T12= 25.1x 0.888 kg

T16= (177.6h+592.305)x 1.58 kg

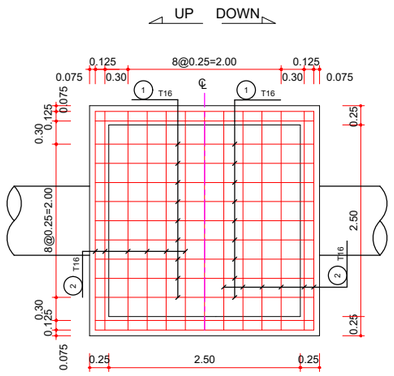
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Detail of Flow Meter Chamber(1/3)	JUNE, 2022		C-08-04

Detail of Flow Meter Chamber(2/3)
(TYPE 2)

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE2 : 3.0m x 3.0m x H(D=630mm~900mm)
S = 1 : 40

BOTTOM



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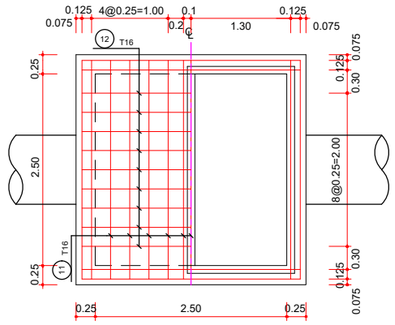

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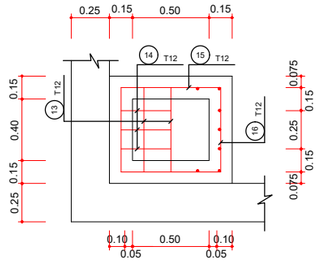
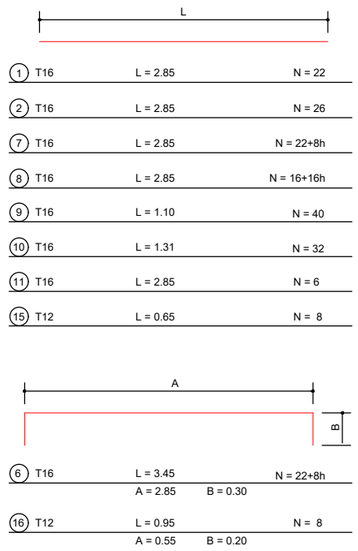


Detail of Ditch

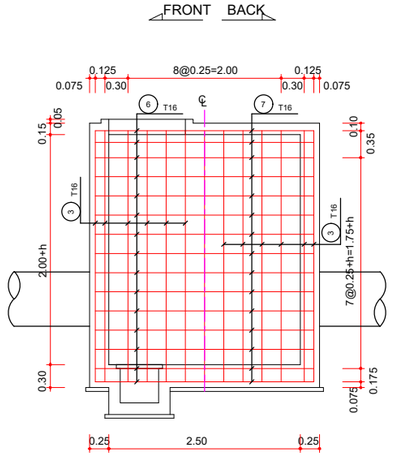
S=1:20

Detail of BAR

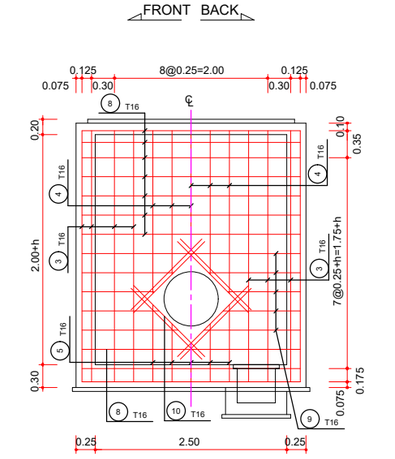


1 T16	L = 2.85		N = 22
2 T16	L = 2.85		N = 26
7 T16	L = 2.85		N = 22+8h
8 T16	L = 2.85		N = 16+16h
9 T16	L = 1.10		N = 40
10 T16	L = 1.31		N = 32
11 T16	L = 2.85		N = 6
15 T12	L = 0.65		N = 8
6 T16	L = 3.45		N = 22+8h
	A = 2.85	B = 0.30	
16 T12	L = 0.95		N = 8
	A = 0.55	B = 0.20	
13 T12	L = 2.00		N = 3
	A = 0.55		
14 T12	L = 2.10		N = 3
	A = 0.65		
3 T16	L = 2.475+h		N = 68
	A = 2.275+h		
4 T16	L = 1.052+h		N = 20
	A = 0.852+h		
5 T16	L = 0.937		N = 20
	A = 0.737		
12 T16	L = 1.625		N = 10
	A = 1.425		

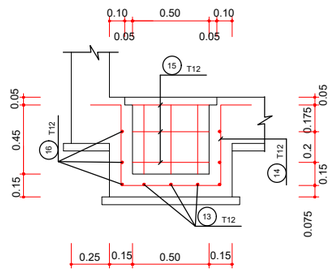
PROFILE



SIDE VIEW



SIDE VIEW



3.0 x 3.0 x H				
NO.	D	L	N	Total
1	T16	2.85	22	62.700
2	T16	2.85	26	74.100
3	T16	2.475+h	68	68h+168.300
4	T16	1.052+h	20	20h+21.040
5	T16	0.937	20	18.740
6	T16	3.45	22+8h	27.6h+75.900
7	T16	2.85	22+8h	22.8h+62.700
8	T16	2.85	16+16h	45.6h+45.600
9	T16	1.10	40	44.000
10	T16	1.31	32	41.920
11	T16	2.85	7	19.950
12	T16	1.825	9	16.425
13	T12	2.00	3	6.000
14	T12	2.10	3	6.300
15	T12	0.65	8	5.200
16	T12	0.95	8	7.600

T12= 25.1x 0.888 kg

T16= (184h+651.375)x 1.58 kg

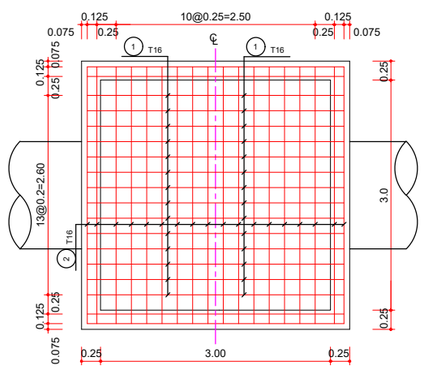
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Detail of Flow Meter Chamber(2/3)	JUNE, 2022		C-08-05

Detail of Flow Meter Chamber(3/3)
(TYPE 3)

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE2 : 3.5m x 3.5m x H(D=630mm~900mm)
S = 1 : 40

BOTTOM



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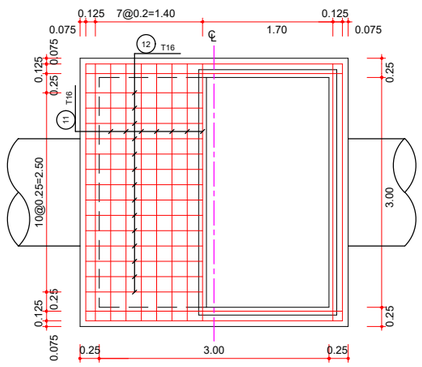
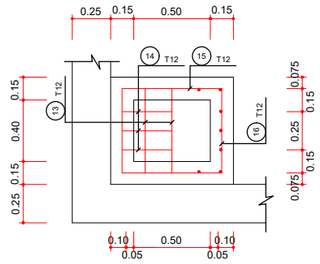
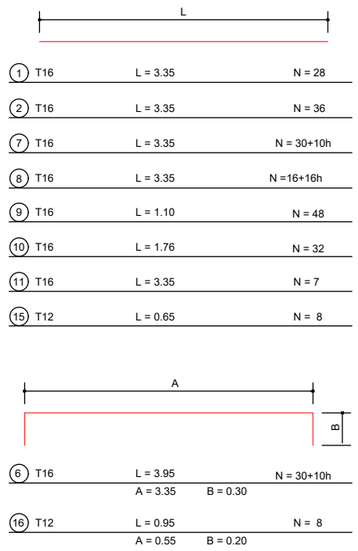


Detail of Ditch
S=1:20

PROFILE



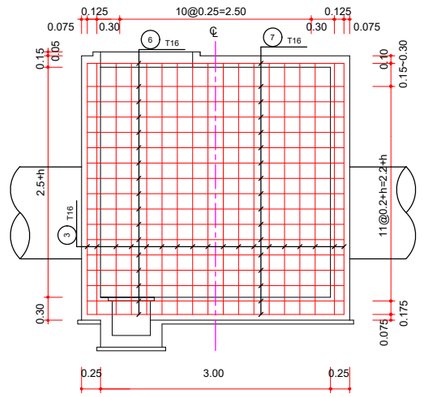
Detail of BAR



1 T16	L = 3.35		N = 28
2 T16	L = 3.35		N = 36
7 T16	L = 3.35		N = 30+10h
8 T16	L = 3.35		N =16+16h
9 T16	L = 1.10		N = 48
10 T16	L = 1.76		N = 32
11 T16	L = 3.35		N = 7
15 T12	L = 0.65		N = 8
6 T16	L = 3.95		N = 30+10h
	A = 3.35	B = 0.30	
16 T12	L = 0.95		N = 8
	A = 0.55	B = 0.20	

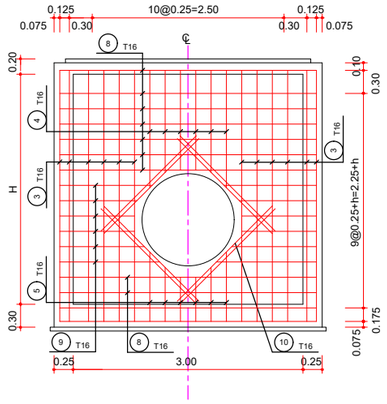
PROFILE

FRONT BACK

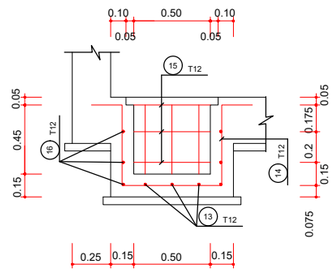


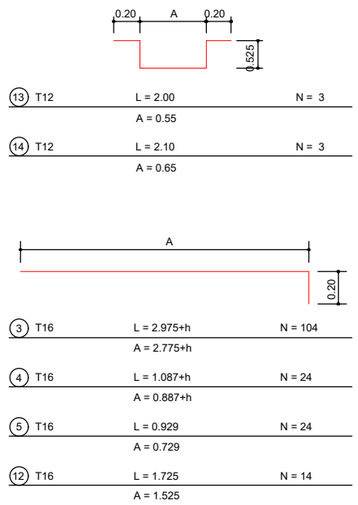
SIDE VIEW

FRONT BACK



SIDE VIEW





13 T12	L = 2.00		N = 3
	A = 0.55		
14 T12	L = 2.10		N = 3
	A = 0.65		
3 T16	L = 2.975+h		N = 104
	A = 2.775+h		
4 T16	L = 1.087+h		N = 24
	A = 0.887+h		
5 T16	L = 0.929		N = 24
	A = 0.729		
12 T16	L = 1.725		N = 14
	A = 1.525		

3.5 x 3.5 x H				
NO.	D	L	N	Total
1	T16	3.35	28	93.800
2	T16	3.35	36	120.600
3	T16	2.975+h	104	104h+309.400
4	T16	1.160+h	24	24h+27.840
5	T16	0.929	24	22.296
6	T16	3.95	30+10h	39.5h+118.500
7	T16	3.35	30+10h	33.5h+100.500
8	T16	3.35	16+16h	53.6h+53.600
9	T16	1.10	48	52.800
10	T16	1.76	32	56.320
11	T16	3.35	7	23.450
12	T16	1.725	14	24.150
13	T12	2.00	3	6.000
14	T12	2.10	3	6.300
15	T12	0.65	8	5.200
16	T12	0.95	8	7.600

T12= 25.1x 0.888 kg

T16= (254.6h+1,003.256)x 1.58 kg

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	AS SHOWN
		TITLE	DATE		DRAWING No
		Detail of Flow Meter Chamber(3/3)	JUNE, 2022		C-08-06

Distribution Valve Chamber List

TABLE

No.	Pipe Line		Direction	Type	Scondary Line		Elevation		Tertiary Pipe, Valve, Flow meter				Acturator	Dismantling	Blank flange	Chamber Size			Steel Cover	
	Name	Station			Type	DN	COP	Ground	Pipe Type	Dia.	Butterfly Valve 2 floor	Butterfly Valve Dia.(mm)				B	L	H	B	L
1	SC1A	No.24+00	Left	2	HDPE	D630mm	113.58 m	115.90 m	HDPE	D630mm	Electric, PN10	D550mm	1	1		3	2	2.5	2.7	0.85
2	SC-1	No.12+00	Left	2	HDPE	D1000mm	119.40 m	121.10 m	HDPE	D710mm	Electric, PN10	D650mm	1	1		3	2	2.5	2.7	0.85
3	SC-1	No.88+00	Left	2	HDPE	D900mm	94.64 m	96.40 m	HDPE	D800mm	Electric, PN10	D750mm	1	1	1	3	2	2.5	2.7	0.85
4	SC-1	No.164+20	EP	2	HDPE	D800mm	87.64 m	89.27 m	HDPE	D800mm	Electric, PN10	D750mm	1	1		3	2	2.5	2.7	0.85
5	SC2	No.35+00	Left	1	Steel Pipe	D1400mm	106.70 m	108.60 m	HDPE	D450mm	Electric, PN10	D400mm	1	1		2	2	2.5	1.7	0.85
6	SC2	No.72+00	Left	2	Steel Pipe	D1400mm	98.70 m	100.60 m	HDPE	D800mm	Electric, PN10	D750mm	1	1		3	2	2.5	2.7	0.85
7	SC2	No.182+00	Left	2	Steel Pipe	D1200mm	85.58 m	87.58 m	HDPE	D630mm	Electric, PN10	D550mm	1	1	1	3	2	2.5	2.7	0.85
8	SC2	No.290+08	EP	2	Steel Pipe	D1000mm	79.32 m	81.00 m	Steel Pipe	D1000mm	Electric, PN10	D1000mm	1	1		3	2	2.5	2.7	0.85
9	SC2-1	No.20+00	Right	2	Steel Pipe	D1100mm	86.47 m	88.17 m	HDPE	D900mm	Electric, PN10	D800mm	1	1		3	2	2.5	2.7	0.85
10	SC2-1	No.63+41	EP	2	HDPE	D900mm	87.46 m	89.16 m	HDPE	D900mm	Electric, PN10	D800mm	1	1		3	2	2.5	2.7	0.85
11	SC2-2	No.09+04	EP	2	HDPE	D630mm	81.42 m	83.00 m	HDPE	D630mm	Electric, PN10	D550mm	1	1		3	2	2.5	2.7	0.85
12	SC3	No.26+00	EP	1	HDPE	D560mm	122.56 m	124.09 m	HDPE	D560mm	Electric, PN10	D500mm	1	1		2	2	2.5	1.7	0.85
13	SC4	No.16+08	EP	2	HDPE	D800mm	113.06 m	114.84 m	HDPE	D800mm	Electric, PN10	D750mm	1	1		3	2	2.5	2.7	0.85
14	SC5	No.15+00	EP	2	HDPE	D630mm	113.40 m	115.20 m	HDPE	D630mm	Electric, PN10	D550mm	1	1		3	2	2.5	2.7	0.85
15	SC6	No.22+00	EP	2	HDPE	D800mm	120.40 m	122.00 m	HDPE	D800mm	Electric, PN10	D750mm	1	1		3	2	2.5	2.7	0.85
16	SC12	No.07+48	EP	2	HDPE	D710mm	122.02 m	123.50 m	HDPE	D710mm	Electric, PN10	D650mm	1	1		3	2	2.5	2.7	0.85
17	SC13	No.13+00	EP	1	HDPE	D500mm	115.39 m	116.93 m	HDPE	D500mm	Electric, PN10	D450mm	1	1		2	2	2.5	1.7	0.85
18	SC14	No.01+00	EP	1	HDPE	D400mm	116.02 m	117.40 m	HDPE	D400mm	Electric, PN10	D350mm	1	1		2	2	2.5	1.7	0.85
19	SC15	No.01+00	EP	1	HDPE	D400mm	115.94 m	117.25 m	HDPE	D400mm	Electric, PN10	D350mm	1	1		2	2	2.5	1.7	0.85
20	SC16	No.02+00	EP	1	HDPE	D400mm	115.79 m	117.20 m	HDPE	D400mm	Electric, PN10	D350mm	1	1		2	2	2.5	1.7	0.85
21	SC17	No.20+00	EP	2	HDPE	D800mm	116.55 m	118.03 m	HDPE	D800mm	Electric, PN10	D750mm	1	1		3	2	2.5	2.7	0.85
22	SC18	No.20+00	Left	2	HDPE	D1000mm	114.66 m	116.48 m	HDPE	D710mm	Electric, PN10	D650mm	1	1		3	2	2.5	2.7	0.85
23	SC18	No.56+00	Left	1	HDPE	D1000mm	108.34 m	110.18 m	HDPE	D450mm	Electric, PN10	D400mm	1	1	1	2	2	2.5	1.7	0.85
24	SC18	No.94+09	EP	2	HDPE	D900mm	103.70 m	106.73 m	HDPE	D900mm	Electric, PN10	D800mm	1	1		3	2	3.2	2.7	0.85
25	SC19	No.30+00	Left	2	Steel Pipe	D1300mm	116.14 m	118.00 m	HDPE	D710mm	Electric, PN10	D650mm	1	1		3	2	2.5	2.7	0.85
26	SC19	No.80+00	Right	2	Steel Pipe	D1100mm	108.52 m	110.60 m	HDPE	D630mm	Electric, PN10	D550mm	1	1	1	3	2	2.5	2.7	0.85
27	SC19	No.155+06	EP	1	HDPE	D560mm	101.63 m	103.23 m	HDPE	D560mm	Electric, PN10	D500mm	1	1		2	2	2.5	1.7	0.85
28	SC19-1	No.29+00	EP	2	HDPE	D900mm	108.38 m	109.98 m	HDPE	D900mm	Electric, PN10	D800mm	1	1		3	2	2.5	2.7	0.85

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Distribution Valve Chamber List	JUNE, 2022		C-09-01

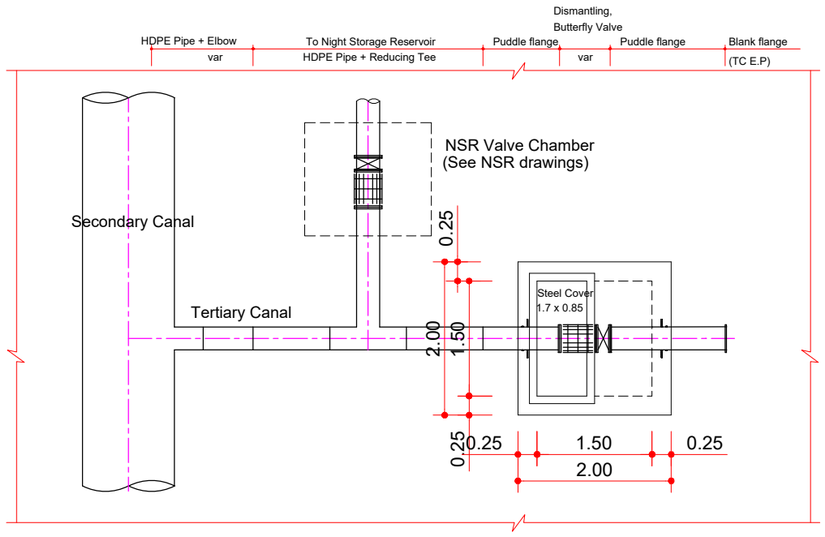
Distribution Valve Chamber

S = 1 : 40

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

Type 1
(2.0x2.0xH)

PLAN



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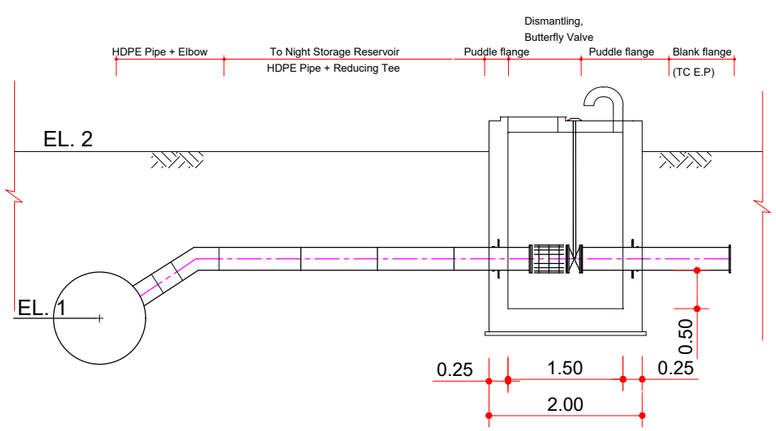
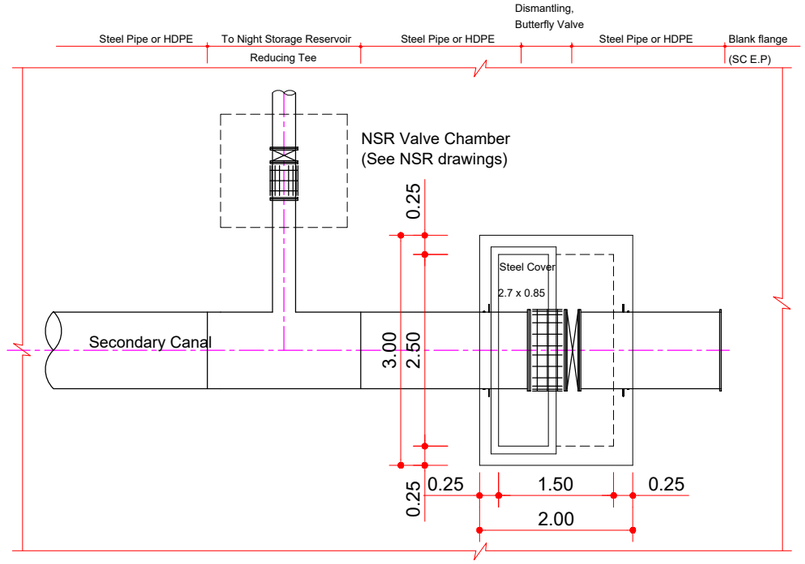


Type 2
(3.0x2.0xH)

PLAN



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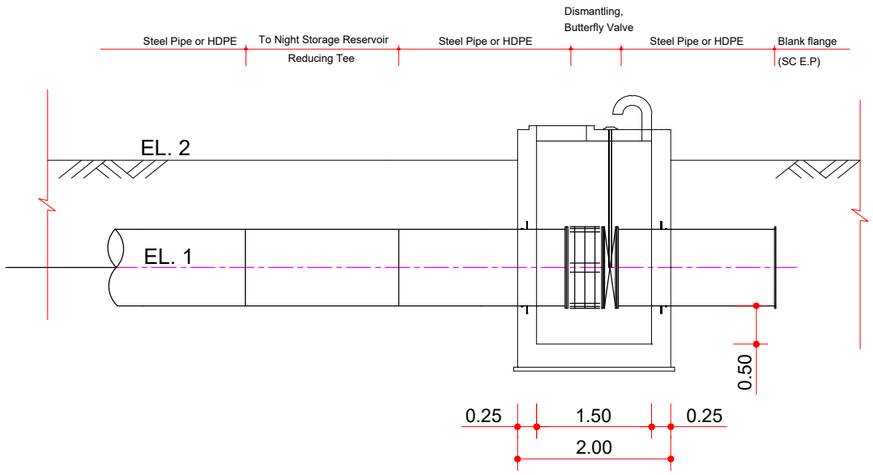


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 40
		TITLE	DATE		DRAWING No
		Distribution Valve Chamber	JUNE, 2022		C-09-02

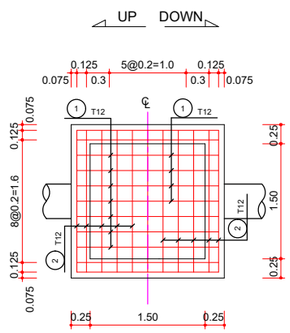
Detail of Distribution Valve Chamber(1/2)

(TYPE 1)

S = 1 : 40

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

BOTTOM



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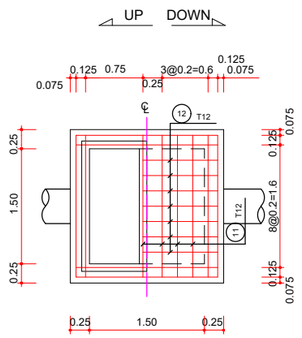
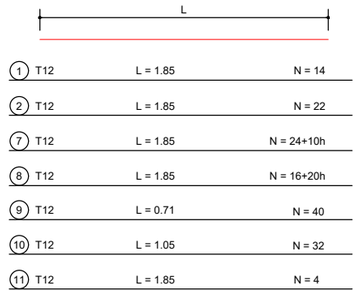
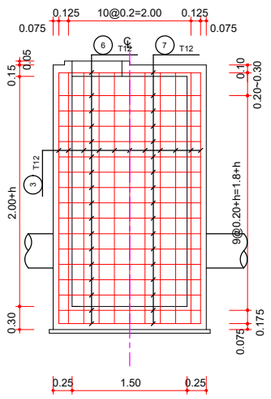


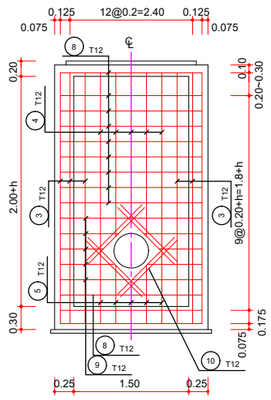
Detail of BAR



PROFILE



SIDE VIEW



2.0 x 2.0 x H				
NO.	D	L	N	Total
1	T12	1.85	14	25.900
2	T12	1.85	22	40.700
3	T12	2.475+h	52	52h+128.700
4	T12	1.305+h	20	20h+26.100
5	T12	0.93	16	14.880
6	T12	2.45	24+10h	24.5h+58.800
7	T12	1.85	24+10h	18.5h+44.400
8	T12	1.85	16+20h	37h+29.600
9	T12	0.71	40	28.400
10	T12	1.05	32	33.600
11	T12	1.85	4	7.400
12	T12	1.175	7	8.225
T12=	(152h+446.705) x 0.888		kg	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 40
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Detail of Distribution Valve Chamber(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-09-03

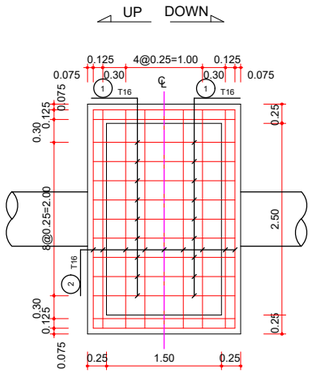
Detail of Distribution Valve Chamber(2/2)

(TYPE 2)

S = 1 : 40

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

BOTTOM



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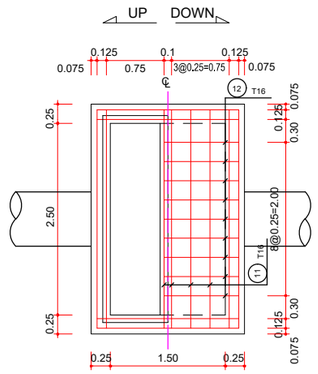
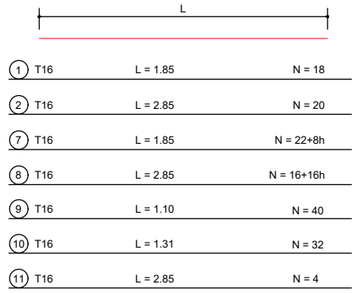
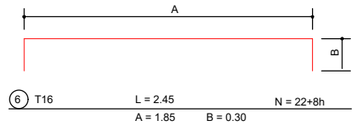
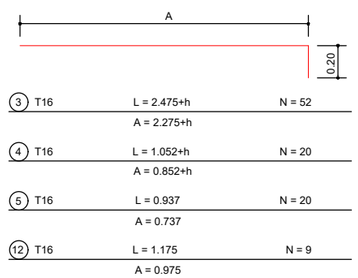


Detail of BAR

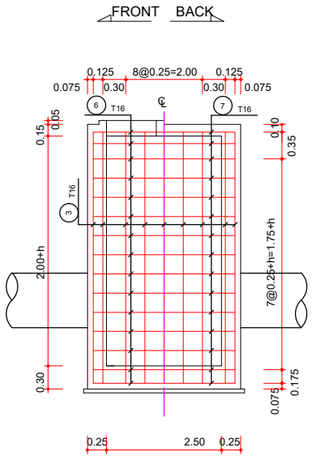




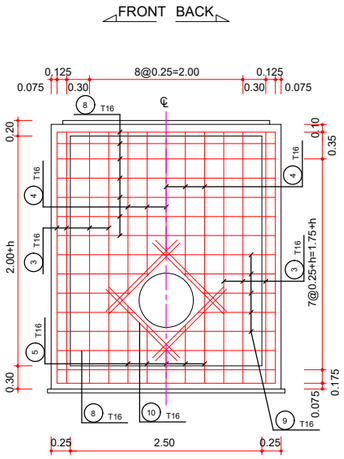


3.0 x 2.0 x H				
NO.	D	L	N	Total
1	T16	1.85	18	33.300
2	T16	2.85	20	57.000
3	T16	2.475+h	52	52h+128.700
4	T16	1.052+h	20	20h+21.040
5	T16	0.937	20	18.740
6	T16	2.45	22+8h	19.6h+53.900
7	T16	1.85	22+8h	14.8h+40.700
8	T16	2.85	16+16h	45.6h+45.600
9	T16	1.10	40	44.000
10	T16	1.31	32	41.920
11	T16	2.85	4	11.400
12	T16	1.175	9	10.575
T16=	(152h+506.875)x 1.58		kg	

PROFILE



SIDE VIEW



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 40
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Detail of Distribution Valve Chamber(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-09-04

Air Valve Chamber List

TABLE

No.	Name	Station	Pipe	DN Of MC, SCs	Elevation		Type	Chamber Size			Steel Cover		Reducing Flange	Air Valve	Gate Valve	R.E
					COP	Ground		B	L	H	B	L				
1	SC1A	No.07+00	HDPE	D630mm	127.92	129.44	1	2.00	2.00	2.40	1.70	1.20		D100mm	D100mm	
2	SC1	No.02+00	HDPE	D1000mm	130.50	133.21	2	2.00	2.00	3.80	1.70	1.20		D150mm	D150mm	
3	SC1	No.18+00	HDPE	D1000mm	118.72	120.47	2	2.00	2.00	2.80	1.70	1.20		D150mm	D150mm	
4	SC1	No.46+00	HDPE	D1000mm	115.02	116.77	2	2.00	2.00	2.80	1.70	1.20		D150mm	D150mm	
5	SC1	No.66+00	HDPE	D1000mm	105.55	107.60	2	2.00	2.00	3.00	1.70	1.20		D150mm	D150mm	
6	SC1	No.88+00	HDPE	D1000mm	94.64	96.40	2	2.00	2.00	2.80	1.70	1.20		D150mm	D150mm	
7	SC1	No.112+00	HDPE	D800mm	92.15	94.05	1	2.00	2.00	2.80	1.70	1.20		D100mm	D100mm	
8	SC1	No.138+00	HDPE	D800mm	88.08	90.45	1	2.00	2.00	3.20	1.70	1.20		D100mm	D100mm	
9	SC1	No.164+00	HDPE	D800mm	87.47	89.00	1	2.00	2.00	2.40	1.70	1.20		D100mm	D100mm	
10	SC2	No.01+20	Steel Pipe	D1400mm	129.69	132.78	2	2.00	2.00	4.40	1.70	1.20	600X150	D150mm	D150mm	
11	SC2	No.24+00	Steel Pipe	D1400mm	109.50	111.40	2	2.00	2.00	3.20	1.70	1.20	600X150	D150mm	D150mm	
12	SC2	No.45+00	Steel Pipe	D1400mm	107.69	109.59	2	2.00	2.00	3.20	1.70	1.20	600X150	D150mm	D150mm	
13	SC2	No.63+00	Steel Pipe	D1400mm	101.35	103.20	2	2.00	2.00	3.20	1.70	1.20	600X150	D150mm	D150mm	
14	SC2	No.88+00	Steel Pipe	D1400mm	94.58	96.40	2	2.00	2.00	3.20	1.70	1.20	600X150	D150mm	D150mm	
15	SC2	No.127+00	Steel Pipe	D1400mm	93.61	95.41	2	2.00	2.00	3.00	1.70	1.20	600X150	D150mm	D150mm	
16	SC2	No.165+00	Steel Pipe	D1400mm	87.56	89.80	2	2.00	2.00	3.40	1.70	1.20	600X150	D150mm	D150mm	
17	SC2	No.188+00	Steel Pipe	D1300mm	85.46	88.15	2	2.00	2.00	3.80	1.70	1.20	600X150	D150mm	D150mm	
18	SC2	No.212+00	Steel Pipe	D1300mm	83.73	85.50	2	2.00	2.00	2.90	1.70	1.20	600X150	D150mm	D150mm	
19	SC2	No.236+00	Steel Pipe	D1300mm	82.49	84.29	2	2.00	2.00	3.00	1.70	1.20	600X150	D150mm	D150mm	
20	SC2	No.263+00	Steel Pipe	D1100mm	80.56	82.50	2	2.00	2.00	3.00	1.70	1.20	600X150	D150mm	D150mm	
21	SC2	No.282+00	Steel Pipe	D1100mm	81.46	83.21	2	2.00	2.00	2.80	1.70	1.20	600X150	D150mm	D150mm	
22	SC2-1	No.01+20	Steel Pipe	D1100mm	91.84	93.54	2	2.00	2.00	2.80	1.70	1.20	600X150	D150mm	D150mm	
23	SC2-1	No.16+00	Steel Pipe	D1100mm	87.96	89.71	2	2.00	2.00	2.80	1.70	1.20	600X150	D150mm	D150mm	
24	SC2-1	No.31+00	HDPE	D900mm	84.64	86.56	1	2.00	2.00	2.80	1.70	1.20	600X150	D100mm	D100mm	
25	SC2-1	No.49+00	HDPE	D900mm	84.64	86.56	1	2.00	2.00	2.80	1.70	1.20	600X150	D100mm	D100mm	
26	SC2-1	No.63+41	HDPE	D900mm	87.46	89.16	1	2.00	2.00	2.60	1.70	1.20	600X150	D100mm	D100mm	
27	SC6	No.17+00	HDPE	D800mm	124.72	127.31	1	2.00	2.00	3.50	1.70	1.20		D100mm	D100mm	
28	SC17	No.05+00	HDPE	D800mm	122.35	124.51	1	2.00	2.00	3.00	1.70	1.20		D100mm	D100mm	
29	SC17	No.10+10	HDPE	D800mm	118.91	120.64	1	2.00	2.00	2.60	1.70	1.20		D100mm	D100mm	
30	SC18	No.06+00	HDPE	D1000mm	121.18	124.50	2	2.00	2.00	4.40	1.70	1.20		D150mm	D150mm	
31	SC18	No.38+00	HDPE	D1000mm	111.90	114.00	2	2.00	2.00	3.20	1.70	1.20		D150mm	D150mm	
32	SC18	No.71+00	HDPE	D900mm	105.80	107.40	1	2.00	2.00	2.50	1.70	1.20		D100mm	D100mm	
33	SC18	No.85+00	HDPE	D900mm	103.70	106.20	1	2.00	2.00	3.40	1.70	1.20		D100mm	D100mm	
34	SC19	No.02+00	Steel Pipe	D1300mm	121.42	125.37	2	2.00	2.00	5.20	1.70	1.20	600X150	D150mm	D150mm	
35	SC19	No.27+22	Steel Pipe	D1300mm	116.36	118.99	2	2.00	2.00	3.80	1.70	1.20	600X150	D150mm	D150mm	
36	SC19	No.60+10	Steel Pipe	D1100mm	110.28	112.07	2	2.00	2.00	3.00	1.70	1.20	600X150	D150mm	D150mm	
37	SC19	No.84+00	HDPE	D560mm	107.68	109.28	1	2.00	2.00	2.40	1.70	1.20		D80mm	D80mm	
38	SC19	No.96+00	HDPE	D560mm	106.75	108.30	1	2.00	2.00	2.40	1.70	1.20		D80mm	D80mm	
39	SC19	No.105+00	HDPE	D560mm	105.70	107.70	1	2.00	2.00	2.80	1.70	1.20		D80mm	D80mm	
40	SC19	No.129+00	HDPE	D560mm	105.34	107.40	1	2.00	2.00	2.80	1.70	1.20		D80mm	D80mm	
41	SC19	No.141+00	HDPE	D560mm	104.55	106.05	1	2.00	2.00	2.20	1.70	1.20		D80mm	D80mm	
42	SC19	No.151+00	HDPE	D560mm	102.42	103.95	1	2.00	2.00	2.30	1.70	1.20		D80mm	D80mm	
43	SC19-1	No.16+00	HDPE	D900mm	108.92	111.41	1	2.00	2.00	3.40	1.70	1.20		D100mm	D100mm	

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		DRAWING BY: Gim, Ho Jun	
TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
Air Valve Chamber List	JUNE, 2022		C-10-01

Air Valve Chamber

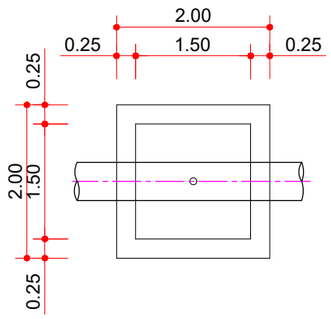
S = 1 : 40

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

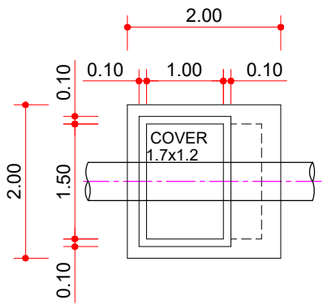
TYPE1 : 2.0m x 2.0m x H(D=400mm~900mm)

TYPE2 : 2.0m x 2.0m x H(D=1000mm~1400mm)

PLAN



TOP VIEW



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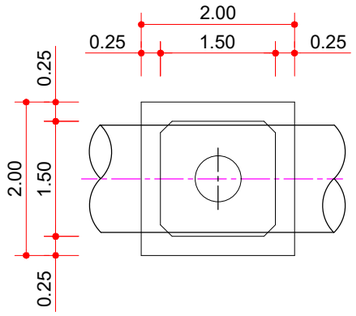
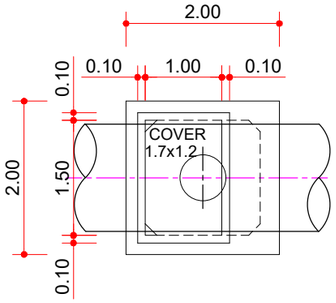


TOP VIEW



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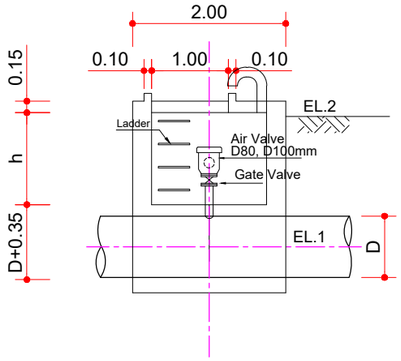
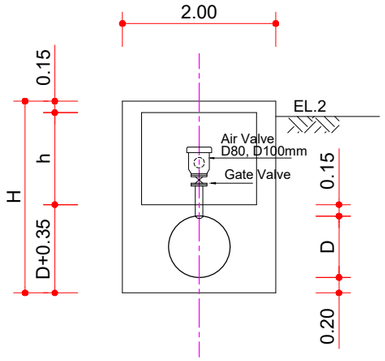


SIDE VIEW



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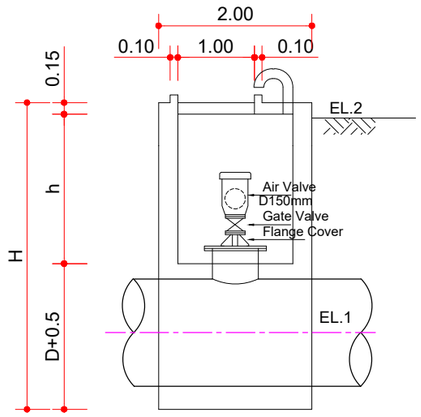
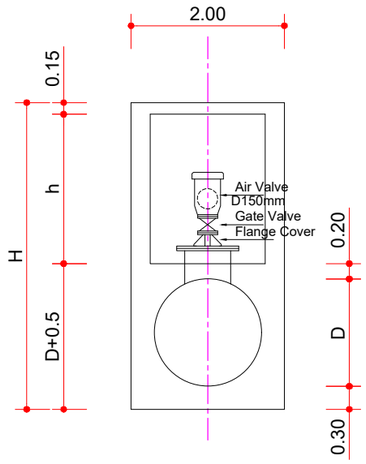


SIDE VIEW



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 40
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Air Valve Chamber	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-10-02

Detail of Air Valve Chamber(1/2)

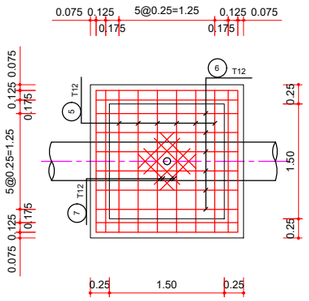
TYPE 1 : 2.0 x 2.0 x H(D=400mm~900mm)

S = 1 : 40

Unit is meter(m) of The International System of Units(SI)

The Chamber may change depending on the site and supervisor

BOTTOM



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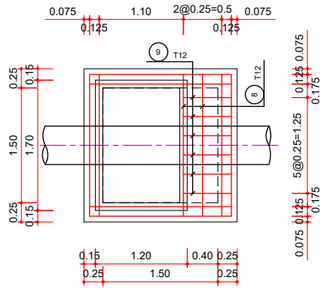
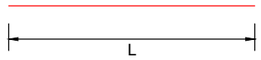
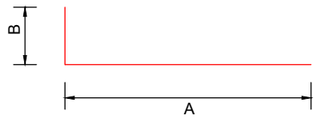


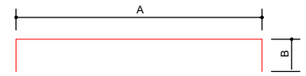
Detail of BAR



②	T12	L = 1.850	N = 20+16h
④	T12	L = 1.05+h	N = 28
⑤	T12	L = 1.850	N = 6
⑥	T12	L = 1.850	N = 6
⑦	T12	L = 0.660	N = 8
⑧	T12	L = 1.850	N = 2

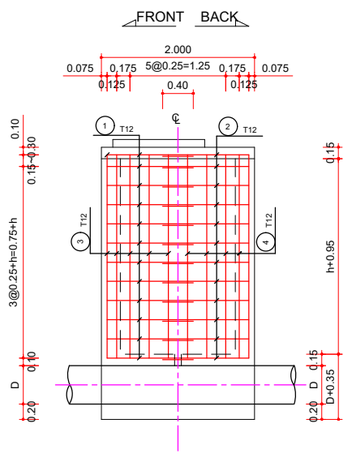


③	T12	L = 1.25+h	N = 36
		A = 1.05+h	B = 0.20m
⑨	T12	L = 0.825	N = 6
		A = 0.625	B = 0.20

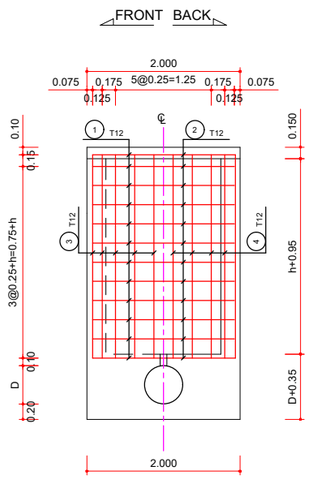


①	T12	L = 4.100	N = 10+8h
		A = 1.850	B = 1.125

PROFILE



SIDE VIEW



2.0 x 2.0 x H				
NO.	D	L	N	Total
1	T12	4.10	10+8h	32.8h+41.000
2	T12	1.85	20+16h	29.6h+37.000
3	T12	1.25+h	36	36h+45.000
4	T12	1.05+h	28	28h+29.400
5	T12	1.85	6	11.100
6	T12	1.85	6	11.100
7	T12	0.66	8	5.280
8	T12	1.85	2	3.700
9	T12	0.825	6	4.950
T12=	(126.4h+188.530)x 0.888		kg	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 40
		TITLE	DATE		DRAWING No
		Detail of Air Valve Chamber(1/2)	JUNE, 2022		C-10-03

Detail of Air Valve Chamber(2/2)

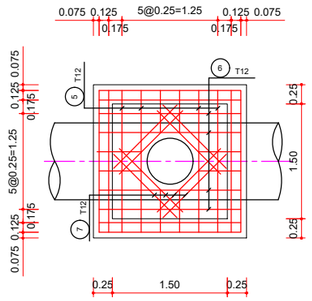
TYPE 2 : 2.0m x 2.0m x H(D=1000mm~1400mm)

S = 1 : 40

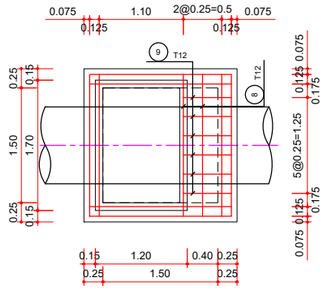
Unit is meter(m) of The International System of Units(SI)

The Chamber may change depending on the site and supervisor

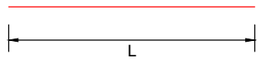
BOTTOM



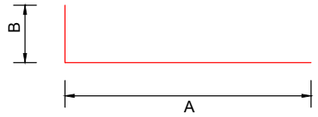
TOP



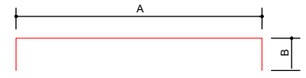
Detail of BAR



②	T12	L = 1.850	N = 20+16h
④	T12	L = 1.05+h	N = 28
⑤	T12	L = 1.850	N = 4
⑥	T12	L = 1.850	N = 4
⑦	T12	L = 1.170	N = 8
⑧	T12	L = 1.850	N = 2
⑩	T12	L = 0.555	N = 8

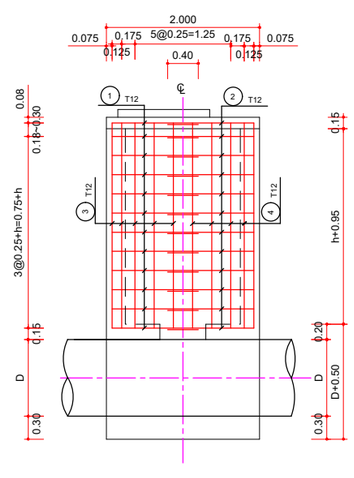


③	T12	L = 1.25+h	N = 36
		A = 1.05+h	B = 0.20m
⑨	T12	L = 0.825	N = 6
		A = 0.625	B = 0.20

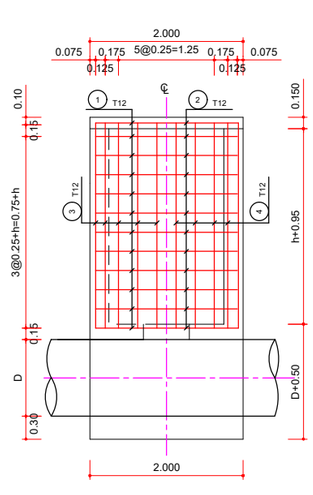


①	T12	L = 4.100	N = 10+8h
		A = 1.850	B = 1.125

PROFILE



SIDE VIEW



2.0 x 2.0 x H				
NO.	D	L	N	Total
1	T12	4.10	10+8h	32.8h+41.000
2	T12	1.85	20+16h	29.6h+37.000
3	T12	1.25+h	36	36h+45.000
4	T12	1.05+h	28	28h+29.400
5	T12	1.85	4	7.400
6	T12	1.85	4	7.400
7	T12	1.17	8	9.360
8	T12	1.85	2	3.700
9	T12	0.825	6	4.950
10	T12	0.555	8	4.440
T12=	(126.4h+189.650)x 0.888		kg	

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 40
		DRAWING BY: Gim, Ho Jun	
TITLE	DATE		DRAWING No
Detail of Air Valve Chamber(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-10-04

Scour Vale Chamber List

TABLE

No.	Name	Station	MC, SCs		Distribution Pipe		Elevation		Type	Butterfly Valve		Dismantling	level Invert Tee	Chamber Size			Steel Cover			R.E
			Type	Dia.	Type	Dia.	COP	Ground		Butterfly Valve	Dia.			B	L	H	B	L	EA	
1	SC1A	No.04+30	HDPE	D630mm	HDPE	D225mm	123.76	126.34	1	Manual, PN10	D200mm	D200mm	D630xD225	2.50	3.75	3.80	2.20	1.20	2.00	
2	SC1	No.42+00	HDPE	D1000mm	HDPE	D315mm	112.25	115.20	1	Manual, PN10	D300mm	D300mm	D1000xD315	2.50	3.75	4.30	2.20	1.20	2.00	
3	SC1	No.155+00	HDPE	D800mm	HDPE	D250mm	83.27	85.17	1	Manual, PN10	D200mm	D200mm	D800xD250	2.50	3.75	3.00	2.20	1.20	2.00	
4	SC2	No.36+18	PE Coated Steel Pipe	D1400mm	HDPE	D450mm	105.84	108.63	1	Manual, PN10	D400mm	D400mm	D1400xD400	2.50	3.75	4.30	2.20	1.20	2.00	
5	SC2	No.110+00	PE Coated Steel Pipe	D1400mm	HDPE	D450mm	89.47	92.74	1	Manual, PN10	D400mm	D400mm	D1400xD400	2.50	3.75	4.80	2.20	1.20	2.00	
6	SC2	No.270+00	PE Coated Steel Pipe	D1100mm	HDPE	D450mm	79.25	81.75	1	Manual, PN10	D400mm	D400mm	D1100xD400	2.50	3.75	3.80	2.20	1.20	2.00	
7	SC2-1	No.14+00	PE Coated Steel Pipe	D1100mm	HDPE	D450mm	85.31	87.01	1	Manual, PN10	D400mm	D400mm	D1100xD400	2.50	3.75	3.10	2.20	1.20	2.00	
8	SC2-1	No.44+00	HDPE	D900mm	HDPE	D250mm	83.13	85.00	1	Manual, PN10	D200mm	D200mm	D900xD250	2.50	3.75	3.10	2.20	1.20	2.00	
9	SC17	No.09+05	HDPE	D800mm	HDPE	D250mm	118.91	120.40	1	Manual, PN10	D200mm	D200mm	D800xD250	2.50	3.75	2.90	2.20	1.20	2.00	
10	SC18	No.74+00	HDPE	D900mm	HDPE	D250mm	100.50	102.90	1	Manual, PN10	D200mm	D200mm	D900xD250	2.50	3.75	3.70	2.20	1.20	2.00	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Scour Vale Chamber List	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-11-01

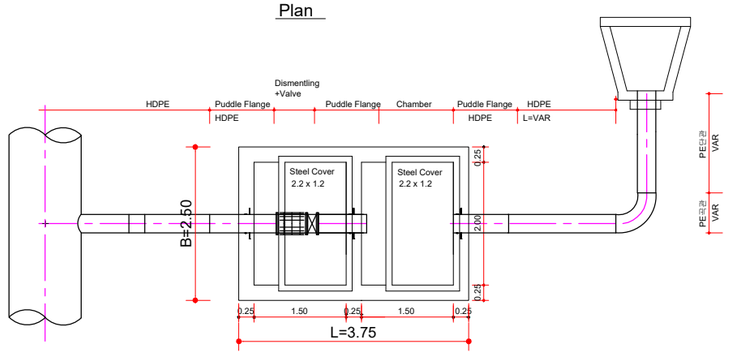
Scour Valve Chamber

S=1:50

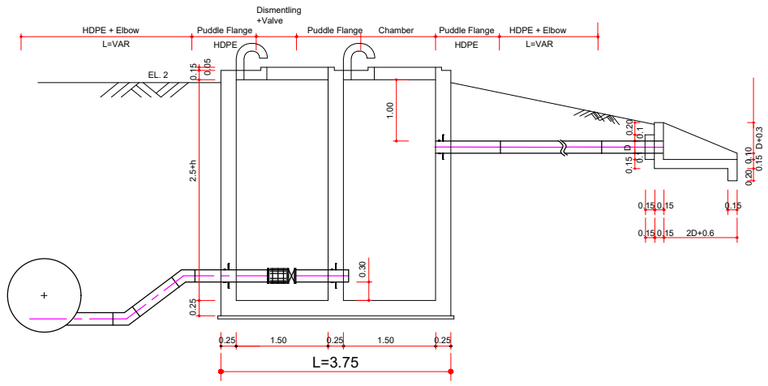
Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

GENERAL VIEW

Plan



Profile



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Scour Valve Chamber	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-11-02

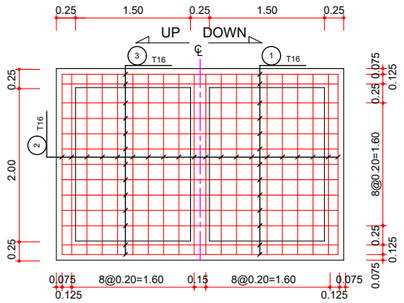
Detail of Scour Valve Chamber(1/2)

S = 1 : 40

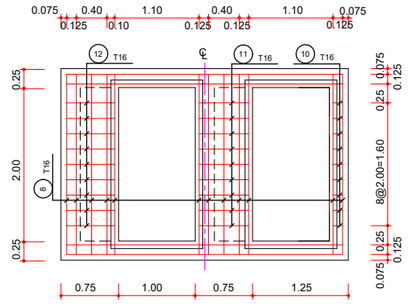
Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

TYPE : 2.5x3.75xH

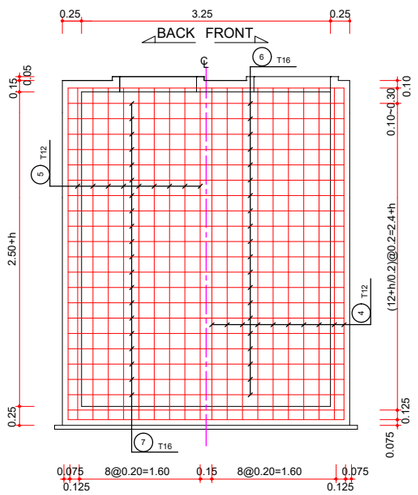
PLAN



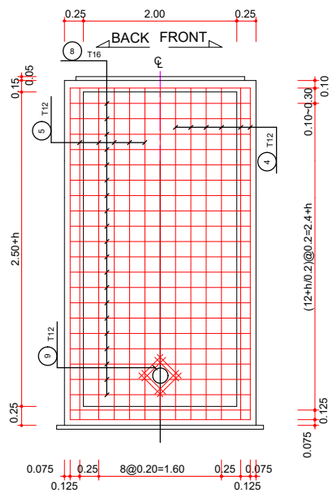
TOP VIEW



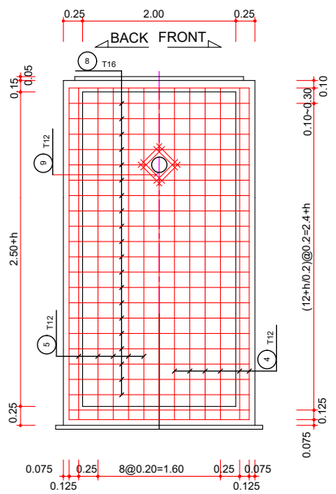
PROFILE



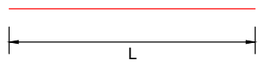
SIDE VIEW



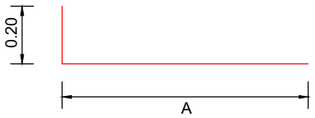
SIDE VIEW



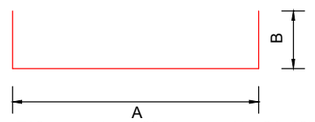
TYPE : 2.5x3.75x3.5



①	T16	L = 3.60	N = 13
②	T16	L = 2.35	N = 40
③	T16	L = 3.60	N = 13
⑤	T12	L = 2.725+h	N = 72
⑦	T16	L = 3.60	N = 24+10h
⑧	T16	L = 2.35	N = 72+30h
⑨	T12	L = 0.44	N = 48



④	T12	L = 2.925+h	N = 62
		A = 2.725+h	
⑩	T16	L = 0.325	N = 9
		A = 0.125	
⑪	T16	L = 0.85	N = 9
		A = 0.65	
⑫	T16	L = 0.825	N = 9
		A = 0.625	



⑥	T16	L = 4.20	N = 24+10h
		A = 3.60	B = 0.30m

TYPE : 2.5x3.75xH				
No.	D	L	N	Total
1	T16	3.60	13	46.800
2	T16	2.35	40	94.000
3	T16	3.60	13	46.800
4	T12	2.925+h	62	62h+181.350
5	T12	2.725+h	72	72h+196.200
6	T16	4.20	24+10h	42h+100.800
7	T16	3.60	24+10h	36h+86.400
8	T16	2.35	72+30h	70.5h+169.200
9	T12	0.44	48	21.120
10	T16	0.325	9	2.925
11	T16	0.85	9	7.650
12	T16	0.825	9	7.425

T12 = (134h+398.67) x 0.888
T16 = (148.5h+562.0) x 1.580

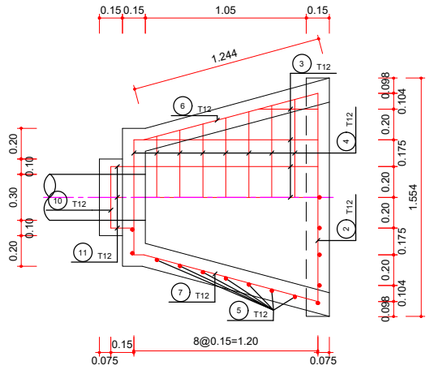
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 40
		TITLE	DATE		DRAWING No
		Detail of Air Valve Chamber(1/2)	JUNE, 2022		C-11-03

Detail of Scour Valve Chamber(2/2)

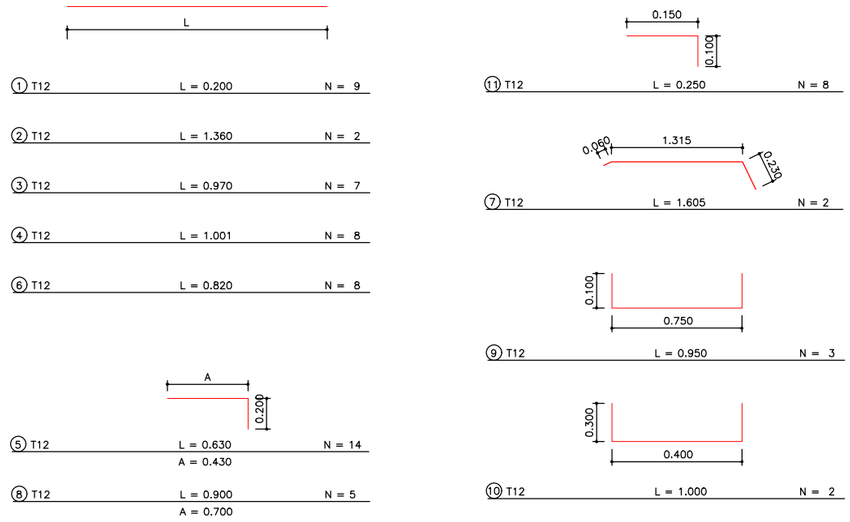
S=1:20

Unit is meter(m) of The International System of Units(SI)
The Chamber may change depending on the site and supervisor

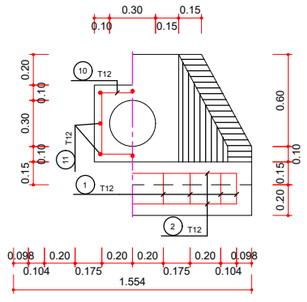
PLAN



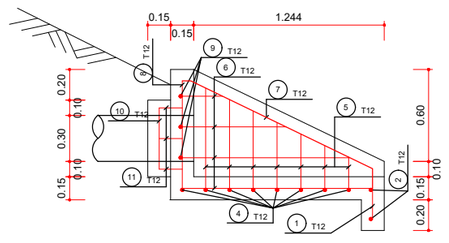
Detail of BAR



FRONT VIEW



SIDE VIEW



D 150 ~ 300				
NO.	D	L	N	Total
1	T12	0.200	9	1.800
2	T12	1.360	2	2.720
3	T12	0.970	7	6.790
4	T12	1.001	8	8.008
5	T12	0.630	14	8.820
6	T12	0.820	8	6.560
7	T12	1.605	2	3.210
8	T12	0.900	5	4.500
9	T12	0.950	3	2.850
10	T12	1.000	2	2.000
11	T12	0.250	8	2.000
T12= 49.258 x 0.888 kg				

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 20
		TITLE	DATE		DRAWING No
		Detail of Air Valve Chamber(2/2)	JUNE, 2022		C-11-04

Pipe Protection Concrete(1/3)

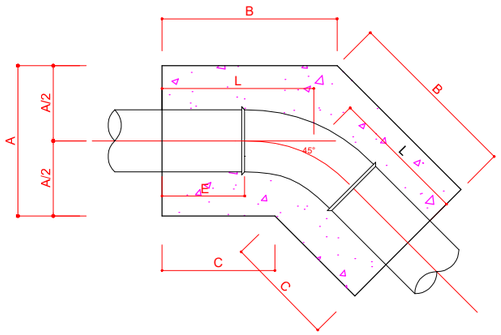
TABLE

No.	Canal	Station		Lenth	Dia.(m)	Type	Elbow	Con'c	Aggregate	Form	Form	Reinforcing Bar	Reinforcing Bar	Remark
		From	To					25-21-12	THK 40mm	(4times)	Euroform	T12, B500	T16, B500	
								cu.m	cu.m	sq.m	sq.m	kg	kg	
	Sum							220.60	32.95	209.31	163.20	1,273.00	2,864.00	
1	SC1	No.86+00	No.86+16	16.0	0.90	Type 3		25.83	7.20	3.23	48.00	366	833	Crossing the existing road
2	SC2	No.18+18	No.18+34	16.0	1.40	Type 3		39.38	9.60	4.92	64.00	512	1,137	Crossing the existing road
3	SC2	No.283+08	No.283+24	16.0	1.00	Type 3		28.40	7.68	3.55	51.20	395	894	Crossing the existing road
4	SC1A	No.19+43			0.63	Type 1	45º	2.85	0.43	4.84				Elbow
5	SC1	No.11+00			1.00	Type 1	45º	9.33	0.54	14.25				Elbow
6	SC1	No.28+04			0.90	Type 1	45º	7.88	0.51	12.35				Elbow
7	SC1	No.66+31			0.90	Type 1	45º	7.88	0.51	12.35				Elbow
8	SC1	No.155+03			0.80	Type 1	45º	6.15	0.48	9.90				Elbow
9	SC1	No.156+00			0.80	Type 1	45º	6.15	0.48	9.90				Elbow
10	SC1	No.158+24			0.80	Type 1	45º	6.15	0.48	9.90				Elbow
11	SC1	No.163+20			0.80	Type 1	45º	6.15	0.48	9.90				Elbow
12	SC2	No.109+09			1.40	Type 1	45º	17.42	0.66	24.36				Elbow
13	SC2-1	No.14+00			1.10	Type 1	45º	11.29	0.57	16.84				Elbow
14	SC16	No.00+40			0.40	Type 1	45º	1.55	0.24	2.89				Elbow
15	SC18	No.76+24			0.90	Type 1	45º	7.88	0.51	12.35				Elbow
16	SC18	No.76+34			0.90	Type 1	45º	7.88	0.51	12.35				Elbow
17	SC18	No.92+37			0.90	Type 1	45º	7.88	0.51	12.35				Elbow
18	SC18	No.93+05			0.90	Type 1	45º	7.88	0.51	12.35				Elbow
19	SC19	No.90+40			0.56	Type 2	90º	2.41	0.27	4.19				Elbow
20	SC19	No.118+30			0.56	Type 1	45º	2.41	0.27	4.19				Elbow

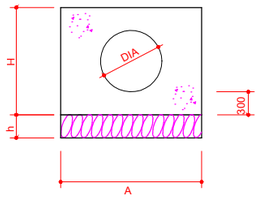
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Pipe Protection Concrete(1/3)	JUNE, 2022		C-12-01

Pipe Protection Concrete(2/3)

Type 1

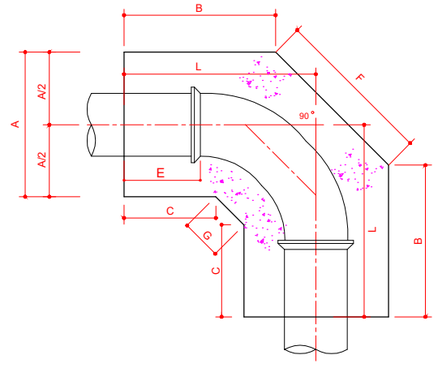


Plan

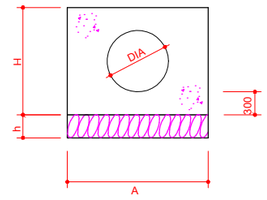


Section

Type 2



Plan



Section

Thrust Block(45°,D400~2000mm)

Dia.	Dimension (mm)						Con'c	Aggregate	Form
							25-21-12	THK 40mm	(4times)
	A	B	C	E	H	h	cu.m	cu.m	sq.m
400	1,200	970	473	270	1000	200	1.55	0.24	2.89
450	1,250	1,030	512	280	1050	200	1.78	0.25	3.24
500	1,300	1,090	552	290	1100	200	2.03	0.26	3.61
560	1,360	1,185	622	130	1160	200	2.41	0.27	4.19
630	1,430	1,280	688	350	1230	300	2.85	0.43	4.84
700	1,500	1,550	929	410	1300	300	3.88	0.45	6.45
800	1,600	2,100	1,437	980	1400	300	6.15	0.48	9.90
900	1,700	2,410	1,706	1,190	1500	300	7.88	0.51	12.35
1,000	1,800	2,600	1,854	1,260	1600	300	9.33	0.54	14.25
1,100	1,900	2,870	2,083	1,420	1700	300	11.29	0.57	16.84
1,200	2,000	3,190	2,362	1,720	1800	300	13.71	0.60	19.99
1,400	2,200	3,500	2,589	2,110	2000	300	17.42	0.66	24.36
1,500	2,300	3,850	2,897	2,310	2100	300	20.67	0.69	28.34
1,650	2,450	4,990	3,975	3,600	2250	300	30.26	0.74	40.34
1,800	2,600	5,470	4,393	4,040	2400	300	36.46	0.78	47.34
2,000	2,800	6,120	4,960	4,640	2600	300	45.87	0.84	57.62

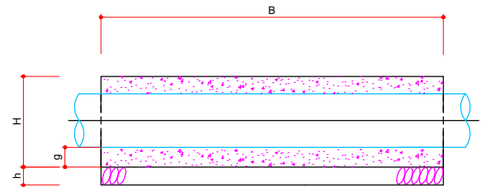
Thrust Block(90°,D400~2200mm)

Dia. (mm)	Dimension (mm)									Con'c	Aggregate	Form
										25-21-12	THK 40mm	(4times)
	A	B	C	E	F	G	H	h	L	cu.m	cu.m	sq.m
400	1,300	1,150	300	490	920	300	900	200	1,150	2.12	0.54	5.76
450	1.35	1,350	480	690	950	310	950	200	1,350	2.72	0.66	6.88
500	1,400	1,560	650	800	990	290	1,000	200	1,560	3.37	0.80	8.06
560	1,500	1,680	725	870	1,060	290	1,050	250	1,680	4.08	1.20	9.12
600	1,600	1,800	800	940	1,130	290	1,100	300	1,800	4.79	1.59	10.18
700	1,700	2,200	1,140	1,240	1,220	320	1,200	300	2,200	6.65	2.1	13.1
800	1,800	3,200	2,100	2,130	1,270	320	1,350	300	3,200	11.47	3.29	20.22
900	1,900	3,500	2,310	2,330	1,340	340	1,450	300	3,500	13.72	3.79	23.42
1,000	2,100	3,700	2,500	2,460	1,410	360	1,550	300	3,650	18.03	4.59	26.77
1,100	2,200	3,970	2,730	2,620	1,480	380	1,650	300	3,900	20.98	5.14	30.38
1,200	2,300	4,290	3,010	2,920	1,550	400	1,750	300	4,200	24.27	5.79	34.57
1,400	2,560	4,730	3,370	3,310	1,640	420	2,010	300	4,600	30.34	6.8	40.14
1,500	2,700	4,950	3,550	3,510	1,690	440	2,150	300	4,800	38.78	7.77	48.94
1,650	2,850	6,090	4,310	4,800	1,780	460	2,400	300	5,750	54.31	9.84	64.8
1,800	3,000	6,570	4,730	5,240	1,830	480	2,550	300	6,200	63.36	11.16	73.74
2,000	3,200	7,220	5,280	5,840	1,900	500	2,750	300	6,800	76.97	13.05	86.67
2,200	3,400	7,770	5,730	6,250	1,970	520	2,950	300	7,330	91.47	14.95	99.45

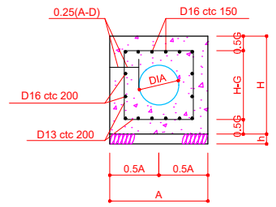
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Pipe Protection Concrete(2/3)	JUNE, 2022		C-12-02

Pipe Protection Concrete(3/3)

Type 3



Plan



Section

Pipe Protection(D900~1400mm)

Dia.(mm)	Dimension (mm)				Con'c	Aggregate	Form	Form	Reinforcing Bar	Reinforcing Bar
					25-21-12	THK 40mm	(4times)	Euroform	T12, B500	T16, B500
	A	H	h	L	cu.m	cu.m	sq.m	sq.m	kg	kg
900	1,500	1,500	300	16,000	25.83	7.20	3.23	48.00	366	833
1,000	1,600	1,600	300	16,000	28.40	7.68	3.55	51.20	395	894
1,100	1,700	1,700	300	16,000	31.04	8.16	3.88	54.40	424	955
1,200	1,800	1,800	300	16,000	33.75	8.64	4.22	57.60	454	1,015
1,400	2,000	2,000	300	16,000	39.38	9.60	4.92	64.00	512	1,137

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Pipe Protection Concrete(3/3)	JUNE, 2022		C-12-03

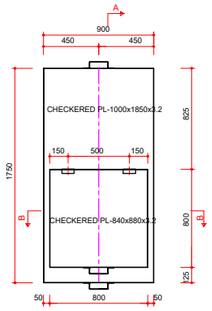
IRON CHAMBER COVER(1/2)

S=1:50

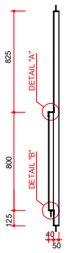
Unit is millimeter(mm) of The International System of Units(SI)

TYPE : 1.7 x 0.85

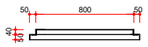
PLAN



A-A SECTION

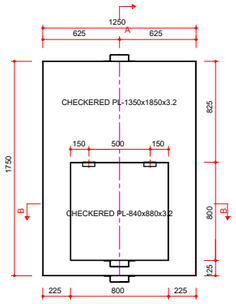


B-B SECTION



TYPE : 1.7 x 1.2

PLAN



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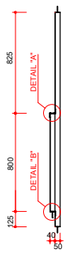
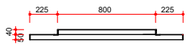
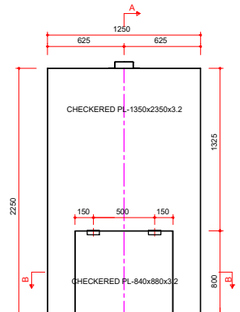


B-B SECTION



TYPE : 2.2 x 1.2

PLAN

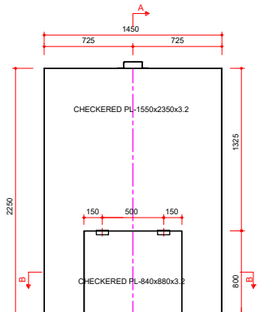


A-A SECTION

B-B SECTION

TYPE : 2.2 x 1.4

PLAN

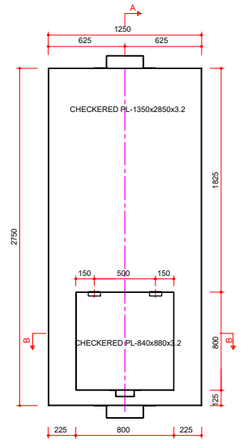


A-A SECTION

B-B SECTION

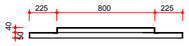
TYPE : 2.7 x 1.2

PLAN



A-A SECTION

B-B SECTION



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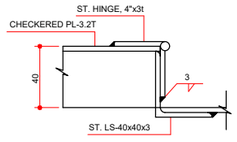
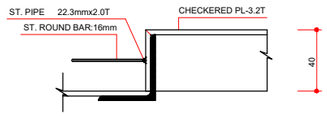
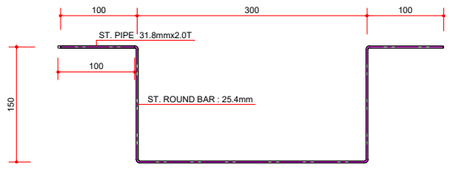


DETAIL "B"



DETAIL OF GRIP(SMALL)

DETAIL OF GRIP(BIG)



MATERIAL TABLE

Type	1.7 x 0.85			1.7 x 1.2			2.2 x 1.2			2.2 x 1.4			2.7 x 1.2		
Division	Spec	Unit	Total	Spec	Unit	Total	Spec	Unit	Total	Spec	Unit	Total	Spec	Unit	Total
CHECKERED PLATE	PL-1000 x 1850 x 3.2	kg	32.42	PL-1350x 1850 x 3.2	kg	49.76	PL-1350 x 2350 x 3.2	kg	67.85	PL-1550 x 2350 x 3.2	kg	80.44	PL-1350 x 2850 x 3.2	kg	85.93
	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80
	SUB TOTAL	kg	52.22	SUB TOTAL	kg	69.56	SUB TOTAL	kg	87.65	SUB TOTAL	kg	100.24	SUB TOTAL	kg	105.73
ST. LS	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 3200	kg	5.86
ST, Round Bar	16 mm x 1050	kg	1.64	16 mm x 1050	kg	1.64	16 mm x 1050	kg	1.64	16 mm x 1050	kg	1.64	16 mm x 350	kg	0.55
ST. PIPE	22.3mm x 2.0T x 300	kg	0.30	22.3mm x 2.0T x 300	kg	0.30	22.3mm x 2.0T x 300	kg	0.30	22.3mm x 2.0T x 300	kg	0.30	22.3mm x 2.0T x 100	kg	0.10
ST, Round Bar													25.4 mm x 1600	kg	6.43
ST. PIPE													31.8mm x 2.0T x 400	kg	0.59
ST.HINGE	4" x 3T	EA	2	4" x 3T	EA	2	4" x 3T	EA	2	4" x 3T	EA	2	4" x 3T	EA	2
CUTTING	3.2 mm	LS	1	3.2 mm	LS	1	3.2 mm	LS	1	3.2 mm	LS	1	3.2 mm	LS	1
WELDING	3mm	LS	1	3mm	LS	1	3mm	LS	1	3mm	LS	1	3mm	LS	1
PAINT		LS	1		LS	1		LS	1		LS	1		LS	1

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 50
		TITLE	DATE		DRAWING No
		IRON CHAMBER COVER(1/2)	JUNE, 2022		C-13-01

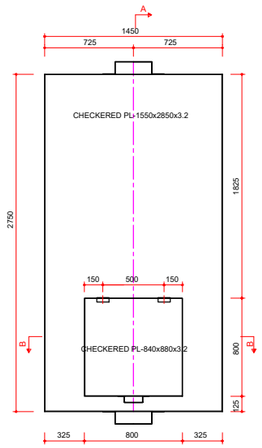
IRON CHAMBER COVER(2/2)

S=1:50

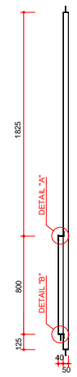
Unit is millimeter(mm) of The International System of Units(SI)

TYPE : 2.7 x 1.4

PLAN



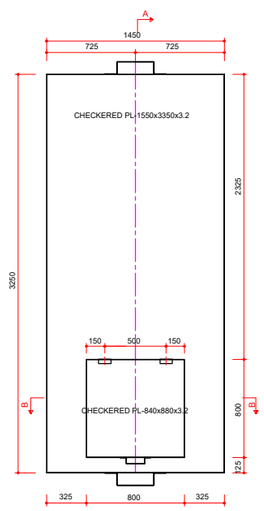
A- A SECTION



B-B SECTION

TYPE : 3.2 x 1.4

PLAN

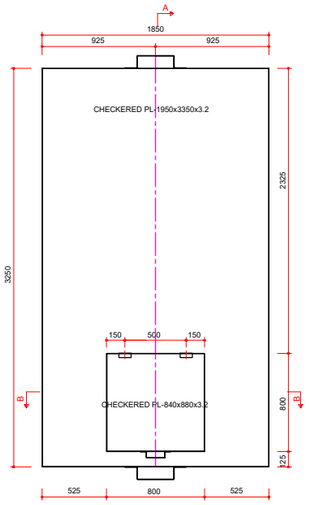


A-A SECTION

B-B SECTION

TYPE : 3.2 x 1.8

PLAN

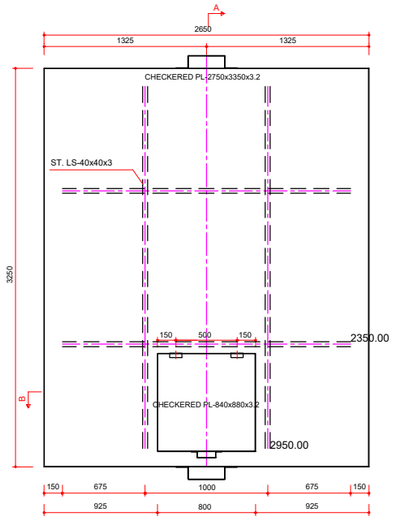


A-A SECTION

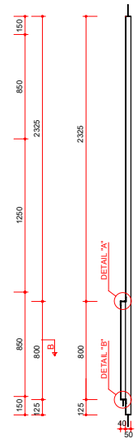
B-B SECTION

TYPE : 3.2 x 2.6

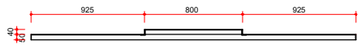
PLAN



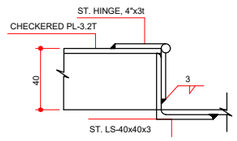
A-A SECTION



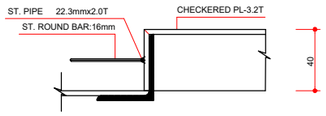
B-B SECTION



DETAIL "A"

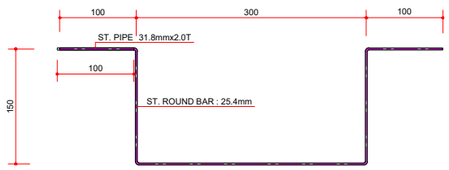


DETAIL "B"



DETAIL OF GRIP(SMALL)

DETAIL OF GRIP(BIG)



MATERIAL TABLE

Type	2.7 x 1.4			3.2 x 1.4			3.2 x 1.8			3.2 x 2.6		
Division	Spec	Unit	Total	Spec	Unit	Total	Spec	Unit	Total	Spec	Unit	Total
CHECKERED PLATE	PL-1550 x 2850 x 3.2	kg	101.20	PL-1550 x 3350 x 3.2	kg	121.96	PL-1950 x 3350 x 3.2	kg	157.86	PL-2750 x 3350 x 3.2	kg	229.66
	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80	PL-840 x 880 x 3.2	kg	19.80
	SUB TOTAL	kg	121.00	SUB TOTAL	kg	141.76	SUB TOTAL	kg	177.66	SUB TOTAL	kg	249.46
ST. LS	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 3200	kg	5.86	LS-40 x 40 x 3.0 x 13800	kg	25.25
ST. Round Bar	16 mm x 350	kg	0.55	16 mm x 350	kg	0.55	16 mm x 350	kg	0.55	16 mm x 350	kg	0.55
ST. PIPE	22.3mm x 2.0T x 100	kg	0.10	22.3mm x 2.0T x 100	kg	0.10	22.3mm x 2.0T x 100	kg	0.10	22.3mm x 2.0T x 100	kg	0.10
ST. Round Bar	25.4 mm x 1600	kg	6.43	25.4 mm x 1600	kg	6.43	25.4 mm x 1600	kg	6.43	25.4 mm x 1600	kg	6.43
ST. PIPE	31.8mm x 2.0T x 400	kg	0.59	31.8mm x 2.0T x 400	kg	0.59	31.8mm x 2.0T x 400	kg	0.59	31.8mm x 2.0T x 400	kg	0.59
ST.HINGE	4" x 3T	EA	2	4" x 3T	EA	2	4" x 3T	EA	2	4" x 3T	EA	2
CUTTING	3.2 mm	LS	1	3.2 mm	LS	1	3.2 mm	LS	1	3.2 mm	LS	1
WELDING	3mm	LS	1	3mm	LS	1	3mm	LS	1	3mm	LS	1
PAINT		LS	1		LS	1		LS	1		LS	1

CLIENT

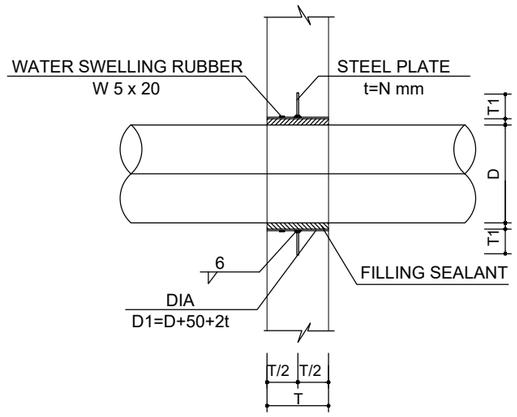
REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 50
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
IRON CHAMBER COVER(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-13-02

Waterstop Sleeve in Chamber



Nominal Diameter	DIA(D)	Thickness (t)	IRON PIPE (D1)	T1	N	T	Water Swelling Rubber	SEALENT	PL	Uncovered Pipe	Sub Total	Fillet Welding	Cutting
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(m)	(m^3)	(kg)	(kg)	(kg)	(m)	(m)
80A	89.10	6.0	6.0	100	6.0	250	0.280	0.002	3.716	5.368	5.368	0.949	0.475
100A	114.30	6.0	6.0	100	6.0	250	0.359	0.003	4.088	6.300	6.300	1.108	0.554
125A	139.80	6.0	6.0	100	6.0	250	0.439	0.003	4.466	7.243	7.243	1.268	0.634
150A	165.00	6.0	6.0	100	6.0	250	0.518	0.004	4.839	8.175	8.175	1.426	0.713
200A	216.00	6.0	6.0	100	6.0	250	0.679	0.005	5.593	10.062	10.062	1.747	0.873
200A	216.00	6.0	6.0	100	6.0	300	0.679	0.006	5.593	12.074	12.074	1.747	0.873
250A	267.00	6.0	6.0	100	6.0	250	0.839	0.006	6.348	11.948	11.948	2.067	1.034
300A	318.00	6.0	6.0	100	6.0	250	0.999	0.007	7.103	13.835	13.835	2.388	1.194
350A	370.00	6.0	6.0	100	6.0	250	1.162	0.008	7.872	15.759	15.759	2.714	1.357
400A	420.00	6.0	6.0	100	6.0	250	1.319	0.009	8.612	17.608	17.608	3.028	1.514
"	420.00	6.0	6.0	100	6.0	300	1.319	0.010	8.612	21.130	21.130	3.028	1.514
"	420.00	6.0	6.0	100	6.0	350	1.319	0.012	8.612	24.652	24.652	3.028	1.514
"	420.00	6.0	6.0	100	6.0	400	1.319	0.014	8.612	28.173	28.173	3.028	1.514
"	420.00	6.0	6.0	100	6.0	450	1.319	0.016	8.612	31.695	31.695	3.028	1.514
"	420.00	6.0	6.0	100	6.0	500	1.319	0.017	8.612	35.217	35.217	3.028	1.514
450A	457.20	6.0	6.0	150	6.0	250	1.436	0.009	14.853	18.984	18.984	3.262	1.631
500A	508.00	6.0	6.0	150	6.0	250	1.596	0.010	15.981	20.864	20.864	3.581	1.791
550A	558.80	6.0	6.0	150	6.0	250	1.756	0.011	17.108	22.743	22.743	3.901	1.950
600A	609.60	6.0	6.0	150	6.0	250	1.915	0.012	18.236	24.622	24.622	4.220	2.110
"	609.60	6.0	6.0	150	6.0	300	1.915	0.015	18.236	29.546	29.546	4.220	2.110
700A	711.20	7.0	7.0	150	7.0	250	2.234	0.014	23.958	33.154	33.154	4.871	2.435
800A	812.80	8.0	8.0	150	8.0	250	2.553	0.016	30.446	42.950	42.950	5.522	2.761
900A	914.40	8.0	8.0	150	8.0	250	2.873	0.018	33.453	47.962	47.962	6.160	3.080
1000A	1016.00	9.0	9.0	200	9.0	250	3.192	0.020	56.998	59.650	59.650	6.811	3.405
1100A	1117.60	10.0	10.0	200	10.0	250	3.511	0.022	68.441	72.603	72.603	7.462	3.731
"	1117.60	10.0	10.0	200	10.0	300	3.511	0.027	68.441	87.124	87.124	7.462	3.731
"	1117.60	10.0	10.0	200	10.0	400	3.511	0.036	68.441	116.166	116.166	7.462	3.731
1200A	1219.20	11.0	11.0	200	11.0	250	3.830	0.024	80.906	86.822	86.822	8.113	4.056
1350A	1371.60	12.0	12.0	200	12.0	250	4.309	0.027	97.399	106.064	106.064	9.083	4.541
1500A	1524.00	14.0	14.0	200	14.0	250	4.788	0.030	124.432	137.069	137.069	10.066	5.033
1600A	1625.60	15.0	15.0	300	15.0	250	5.107	0.032	222.575	156.348	156.348	10.717	5.358
1650A	1676.40	15.0	15.0	300	15.0	250	5.267	0.033	228.213	161.046	161.046	11.036	5.518
1800A	1828.80	16.0	16.0	300	16.0	250	5.745	0.036	261.704	186.914	186.914	12.006	6.003
1900A	1930.40	17.0	17.0	300	17.0	250	6.065	0.038	291.091	209.350	209.350	12.657	6.328
2000A	2032.00	18.0	18.0	300	18.0	250	6.384	0.040	322.010	233.051	233.051	13.308	6.654
"	2032.00	18.0	18.0	300	18.0	400	6.384	0.065	322.010	372.882	372.882	13.308	6.654
2100A	2133.60	19.0	19.0	300	19.0	250	6.703	0.042	354.463	258.017	258.017	13.959	6.979
2200A	2235.20	20.0	20.0	300	20.0	250	7.022	0.044	388.448	284.248	284.248	14.610	7.305
2300A	2336.80	21.0	21.0	300	21.0	250	7.341	0.046	423.967	311.745	311.745	15.261	7.630
2400A	2438.40	22.0	22.0	300	22.0	250	7.660	0.048	461.018	340.506	340.506	15.912	7.956
2500A	2540.00	23.0	23.0	300	23.0	250	7.980	0.050	499.603	370.533	370.533	16.562	8.281
2600A	2641.60	24.0	24.0	300	24.0	250	8.299	0.052	539.720	401.825	401.825	17.213	8.607
2600A	2641.60	24.0	24.0	300	24.0	300	8.299	0.063	539.720	482.190	482.190	17.213	8.607

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

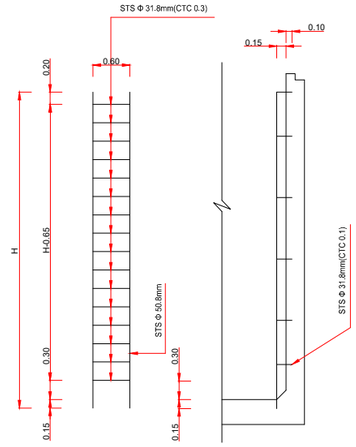
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Waterstop Sleeve in Chamber	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	C-14-01

Appurtenant Facility

Unit is meter(m) of The International System of Units(SI)

LADDER(Type B)



MATERIAL OF LADDER

(Per 1M)

ITEM	SIZE	UNIT	QUANTITY	REMARKS
STAINLESS	BAR Φ50.8mm	m	2.1	S.T.S 304
STAINLESS	BAR Φ31.8mm	m	2.05	S.T.S 304

AIR VENT

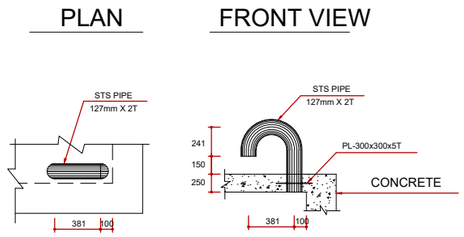


TABLE OF MATERIAL

ITEM	SIZE	UNIT	QUANTITY	REMARKS
STS PIPE	127mm x 2T	m	0.60	
STEEL PLATE	PL-300x300x5T	kg	3.53	
STEEL PLATE CUTTING	5mm	m	1.34	
STEEL PLATE WELDING	FILLET,5mm	m	0.80	
PIPE WELDING	127mm x 2T	A PLACE	2	

PIPE PROTECTION BOARD

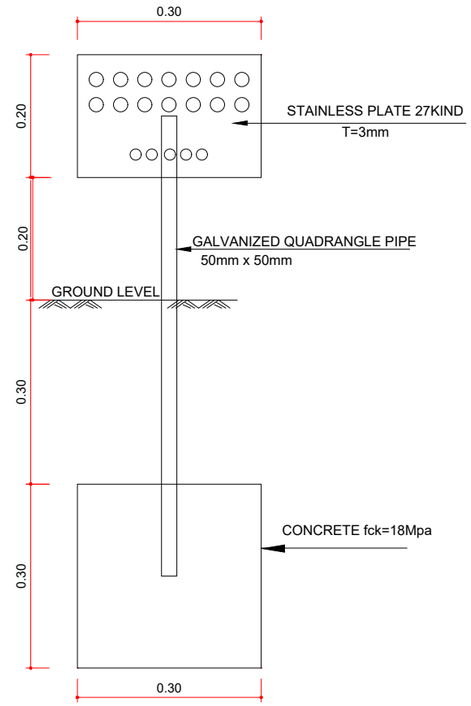


TABLE OF MATERIAL

ITEM	SIZE	UNIT	QUANTITY
STAINLESS PLATE	(STS304)27KIND 200*300*3	kg	1.43
GALVANIZED QUADRANGLE PIPE	50mm x 50mm	m	0.80
PLAIN CON'C K100	fck=18,D=40,Q<10	M^3	0.03
WELDING		M	0.20

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

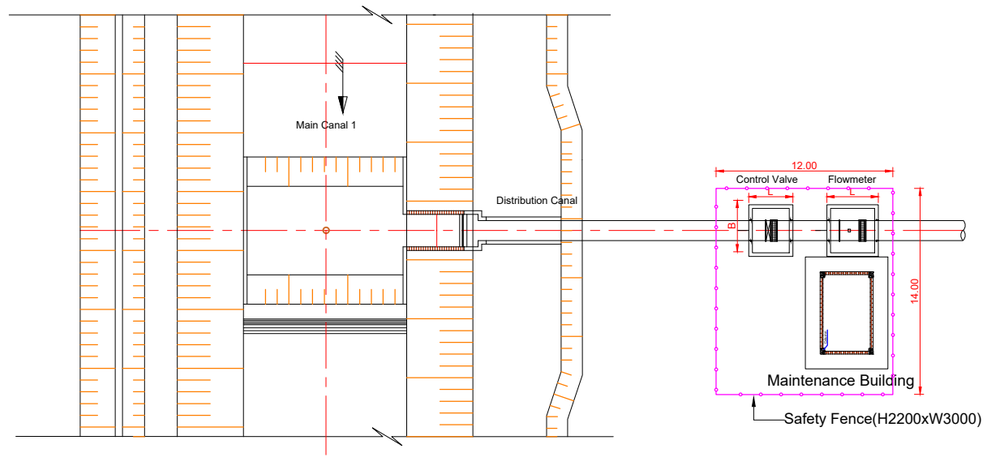
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		DRAWING BY: Gim, Ho Jun	
TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
Appurtenant Facility	JUNE, 2022		C-15-01

Maintenance Building(1/3)

Unit is meter(m) of The International System of Units(SI)

Layout Plan



Table

Canal Station			Maintenance Building	Safety Fence (Span)	Fence Gate (EA)	Canal Station			Maintenance Building	Safety Fence (Span)	Fence Gate (EA)
Nos	Name	Sta.	3600x5600	H2000x W2000	H2200x W3000	Nos	Name	Sta.	3600x5600	H2000x W2000	H2200x W3000
1	MC3	Sta 0+060	1	38	2	14	SC15	No.01+00	1	17	1
2	SC1A	No.00+40	1	17	1	15	SC16	No.00+40	1	17	1
3	SC1	No.00+40	1	17	1	16	SC17	No.00+40	1	17	1
4	SC2	No.00+40	1	17	1	17	SC18	No.00+40	1	17	1
5	SC2-1	No.00+30	1	17	1	18	SC19	No.00+40	1	17	1
6	SC2-2	No.00+40	1	17	1	19	SC19-1	No.00+40	1	17	1
7	SC3	No.00+30	1	17	1	20	PS1		1	-	-
8	SC4	No.00+40	1	17	1	21	PS2		1		-
9	SC5	No.04+40	1	17	1						
10	SC6	No.00+40	1	17	1						
11	SC12	No.00+40	1	17	1						
12	SC13	No.00+40	1	17	1						
13	SC14	No.01+00	1	17	1		Total		21 ea	344 span	20 ea

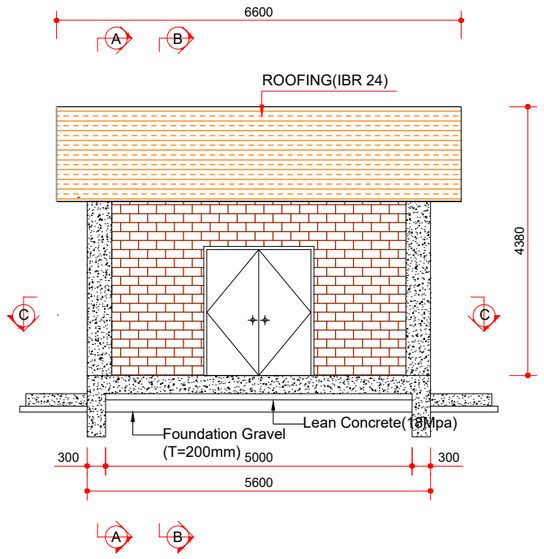
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Maintenance Building(1/3)	JAN, 2022	CHECKED BY: Jo, Jin Hoon	C-16-01

Maintenance Building(2/3)

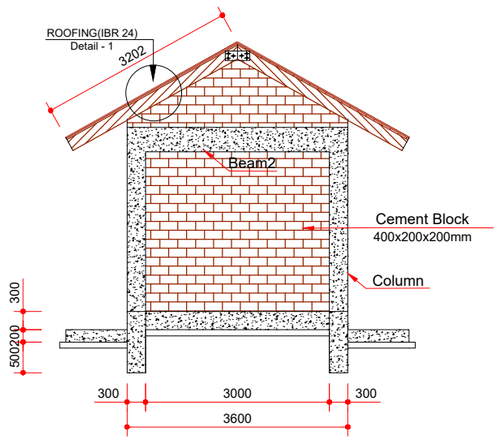
Type A (3600 x 5600)

Unit is millimeter(mm) of The International System of Units(SI)

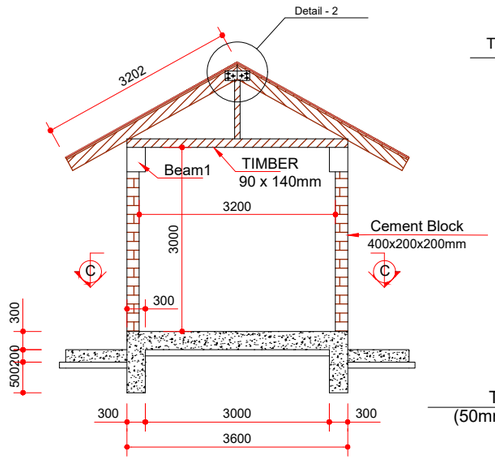
Plan

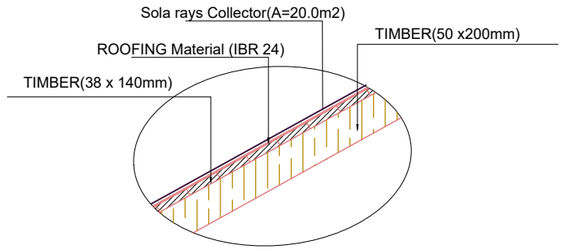


Section A-A

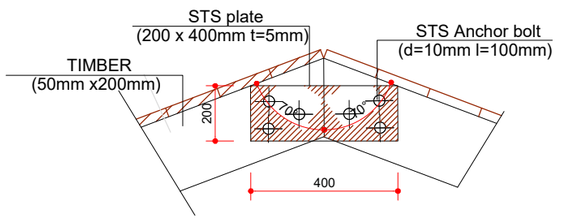


Section B-B



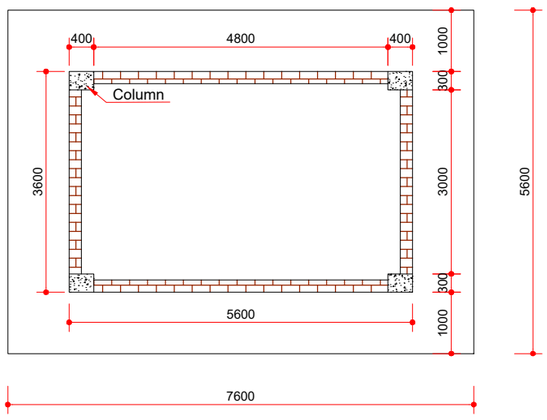


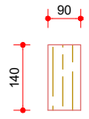
Detail - 1



Detail - 2

Section C-C





TIMBER 90x140mm

Material of Roof

Item	Size(mm)	Unit	Quantity	Remark
Roofing(IBR24)	800 x 200	m2	50m2	NET
TIMBER	50x200x3600	mm	21 EA	NET
TIMBER	38x140x3600	mm	84 EA	NET
TIMBER	90x140x3600	mm	15 EA	NET
STS plate	200x400x5	mm	24 EA	NET
STS Anchor bolt	d=10mm l=100mm	mm	144 EA	NET

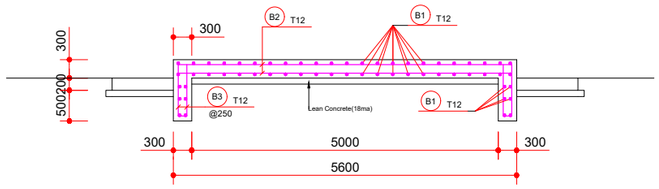
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Maintenance Building(2/3)	JAN, 2022		C-16-02

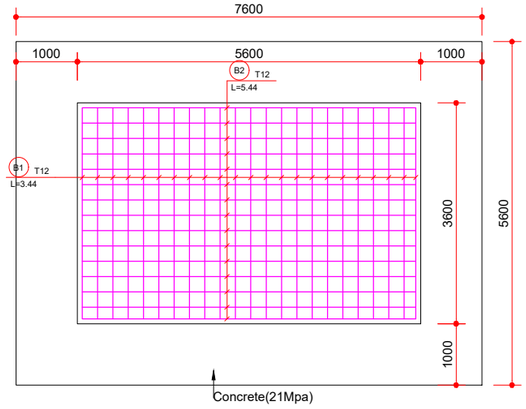
Maintenance Building(3/3)

Type A (3600 x 5600)

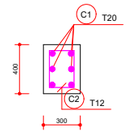
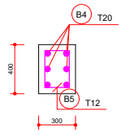
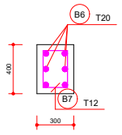
Unit is millimeter(mm) of The International System of Units(SI)

Bottom Slab Concrete





Column & Beam Concrete

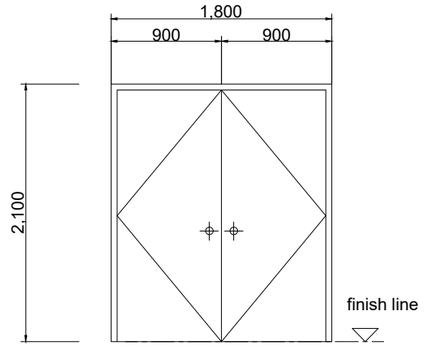
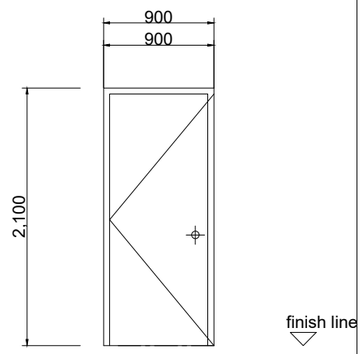
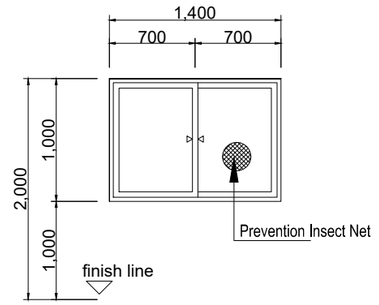
	Column	Beam 1	Beam 2
Section			
Nos	4	2	2
1	6-T20	6-T20	6-T20
2	T10 @ 200	T10 @ 200	T10 @ 200

Rebar Material Table

(B500)

Symbol	Dia.	Length (M)	Nos.	Total Length (M)	Unit Weight (KGΦM)	Total Weight (TON)	Shape
B4	T20	5.90	12	70.80			
B6	T20	3.90	12	46.8			
C1	T20	3.40	24	81.6			
Sub-total				199.20	2.466	0.491	
B1	T12	3.44	58	199.52			
B2	T12	5.44	42	228.48			
B3	T12	1.82	76	138.32			
B5	T12	1.20	48	57.6			
B7	T12	1.20	30	36			
C2	T12	1.20	60	72			
Sub-total				731.92	0.888	0.650	
Total						1.141	

Entrance Gate and Window

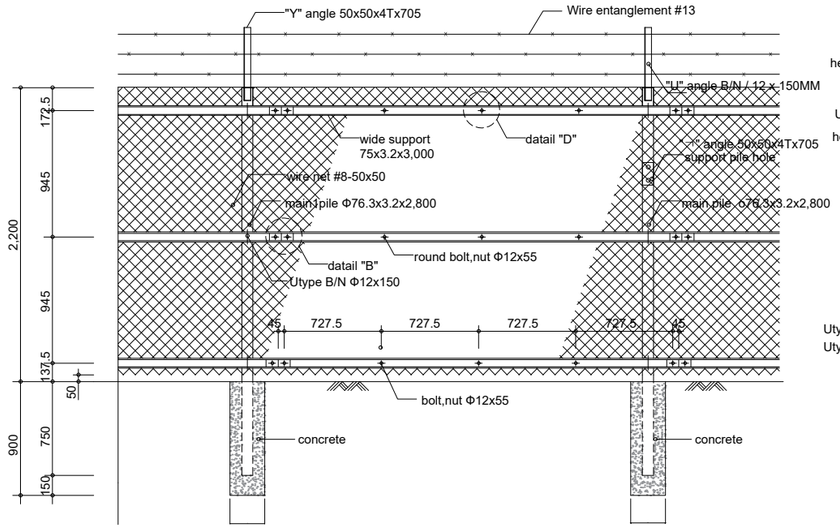
Front						
window frame	1	THK1.6 steel frameΦAnti-rust painting	2	THK1.6 steel frameΦAnti-rust painting	1	45X100 Aluminum barΦ Anti-rust co ating,Ventilative
windowΦsteel accessory	SD	THK1.2 Double-side steelΦAnti-eust painting door check 2ea, hinge2ea, doorlock1ea, handle1ea	SD	THK1.2 Double-side steelΦAnti-eust painting door check 2ea, hinge2ea, doorlock1ea, handle1ea	AW	FIX : THK18 Double glassΦ steel accessory

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Maintenance Building(3/3)	JAN, 2022	CHECKED BY: Jo, Jin Hoon	C-16-03

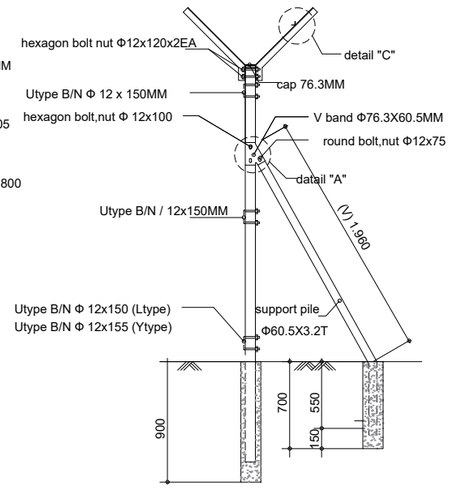
Detail of Safety fence

Unit is millimeter(mm) of The International System of Units(SI)

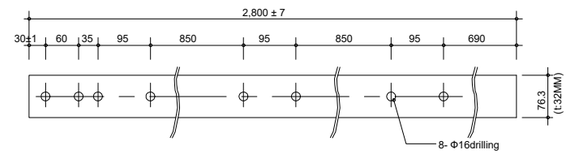
Front



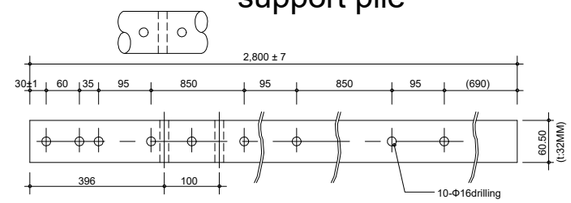
Pile



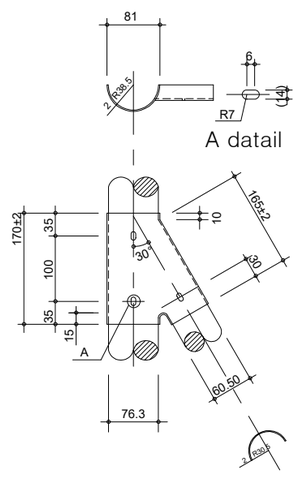
main pile



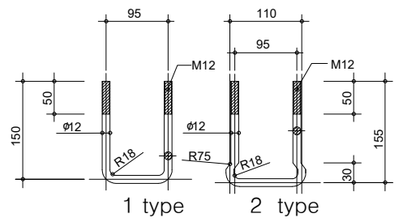
support pile



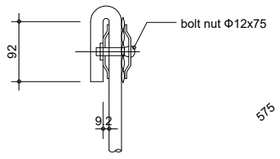
Detail "A"



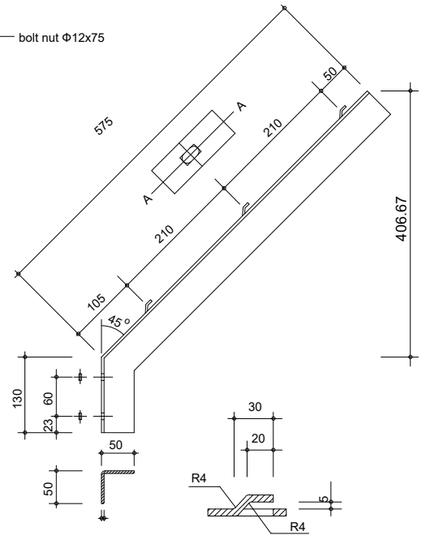
datail "B"



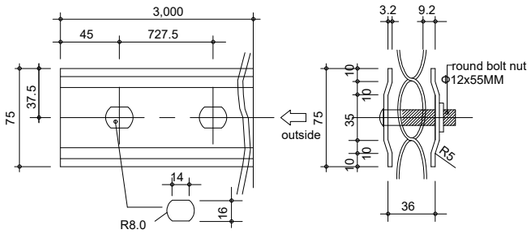
U bolt



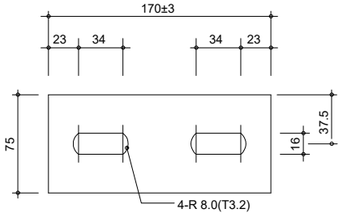
Detail "C"



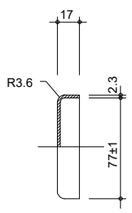
datail "D"



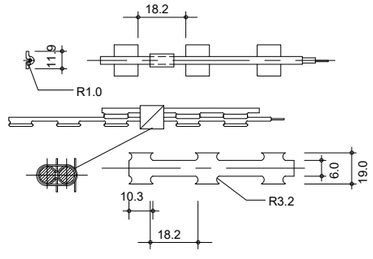
connection



cap



section A-A



material list

(per:3m)

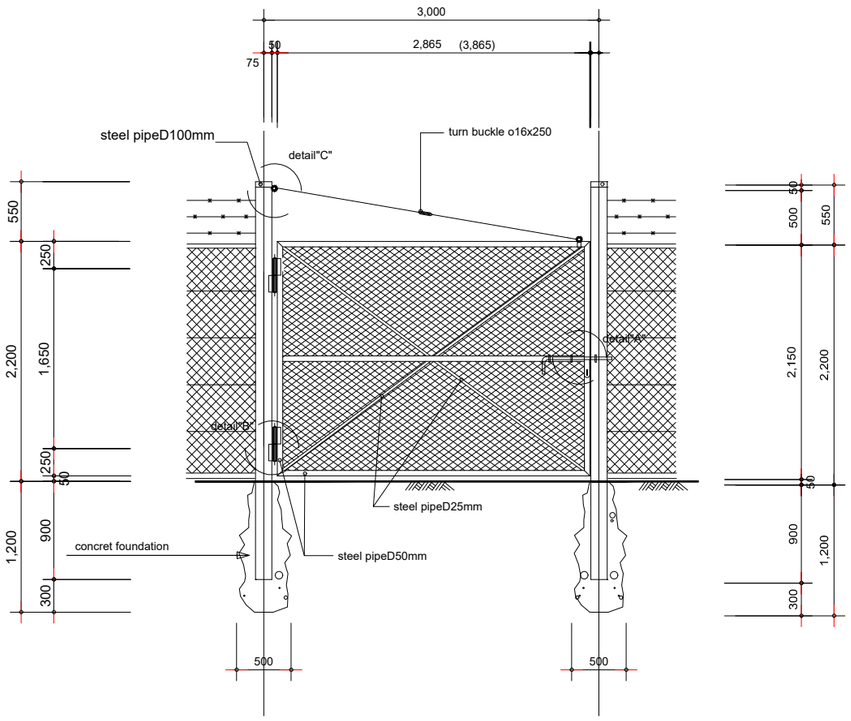
name	quality	unit	quantity
main pile	ø76.3x3.2x2.95M	M	3.038
pile cap	ø76.3M	ea	1.000
support pile	ø60.5x3.2x2510	M	0.517
wide support	75x3.2x3000	ea	6.000
support connect	75x3.2x170MM	"	6.000
angle	4x50x50xL705MM	ea	2.000
wire net	#8x50x50MM	M^2	6.798
"U"type bolt,nut	ø12x150MM	ea	2.060
"	ø12x155MM	"	1.030
hexagon bolt,nut	ø12x120MM	"	2.060
"	ø12x100MM	"	0.412
round bolt,nut	ø12x75MM	"	0.206
"	ø12x55MM	"	10.300
"	ø12x75MM	"	5.150
iron wire	#20	KG	0.073
concrete(fck16)	fck16	m3	0.28
excavation	manpower	m3	0.28
barbed-wire	12 line	M	18.540

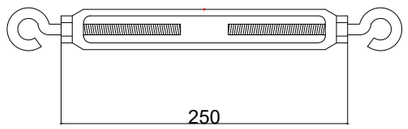
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Detail of Safety fence	JAN, 2022	CHECKED BY: Jo, Jin Hoon	C-17-01

Unit is meter(m) of The International System of Units(SI)

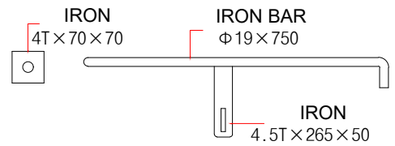
Safety Fence Gate

Front(W=3.00M)

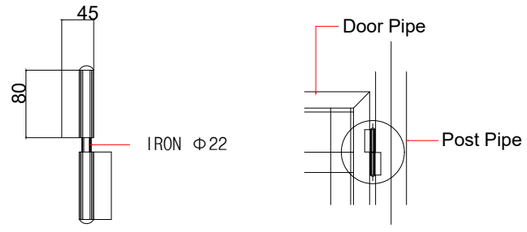




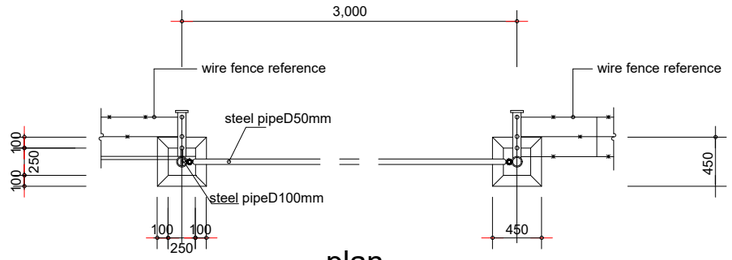
Turn Buckle
SCALE:NONE



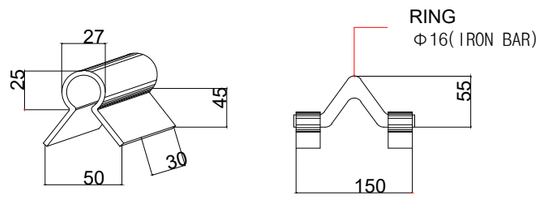
Detail "A"
SCALE:NONE



Detail "B"
SCALE:NONE



plan

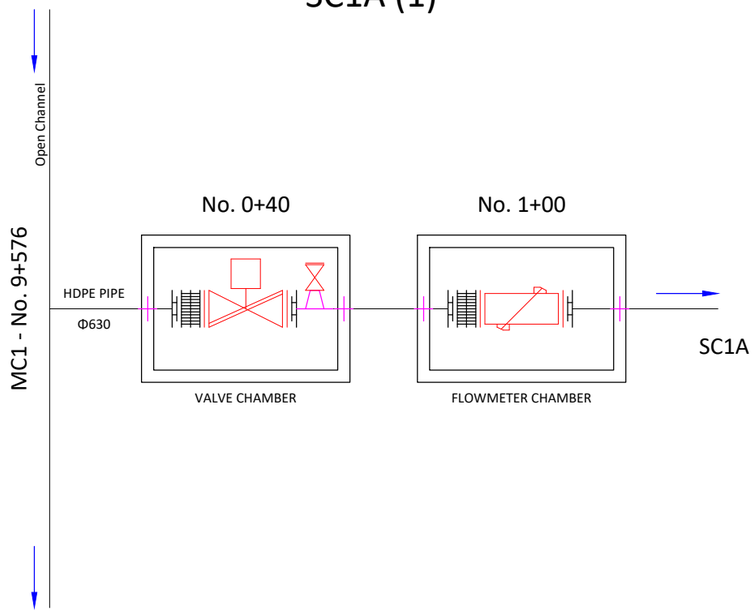


Detail "C"
SCALE:NONE

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Safety Fence Gate	JAN, 2022		C-18-01

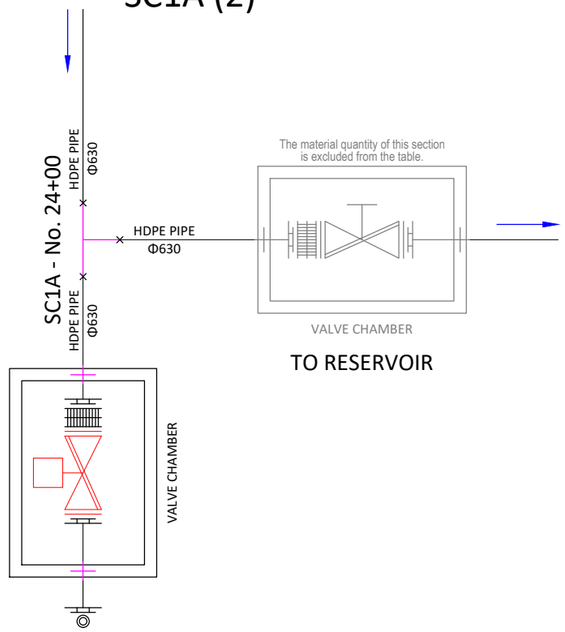
Conceptual Diagram at Each Distribution Point (1/25)

SC1A (1)



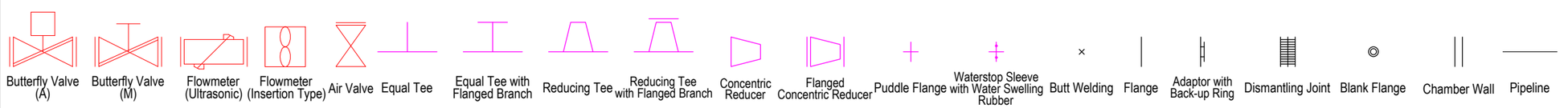
NO	ITEM	SPEC	QTY	REM
1	HDPE Puddle Flange	Φ630	4	
2	HDPE Adaptor with Back-up Ring	Φ630	4	
3	Dismantling Joint	Φ550	2	
4	Butterfly Valve (Electric)	Φ550	1	
5	Flowmeter (Ultrasonic)	Φ550	1	
6	HDPE Reducing Tee	Φ630-125	1	
7	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC1A (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Equal Tee	Φ630	1	
2	HDPE Puddle Flange	Φ630	2	
3	HDPE Adaptor with Back-up Ring	Φ630	3	
4	Dismantling Joint	Φ550	1	
5	Butterfly Valve (Electric)	Φ550	1	
6	Blank Flange	Φ550	1	

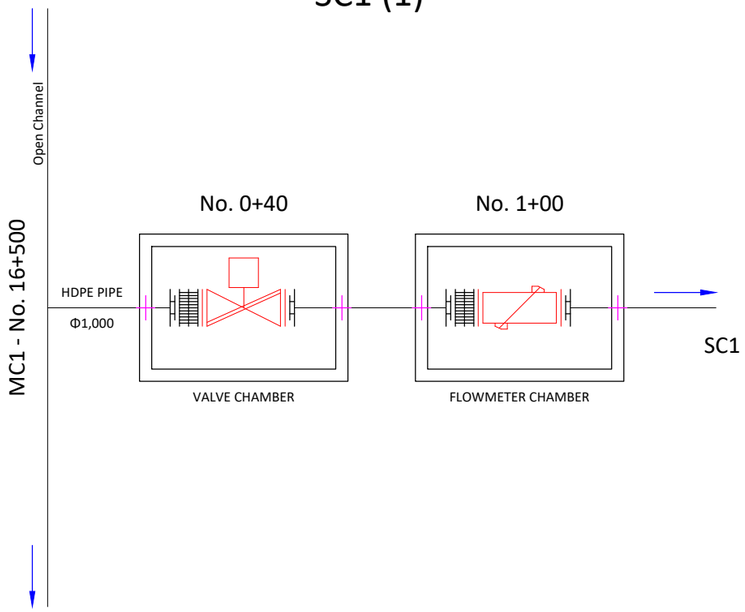
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (1/25)	JUNE, 2022		C-19-01

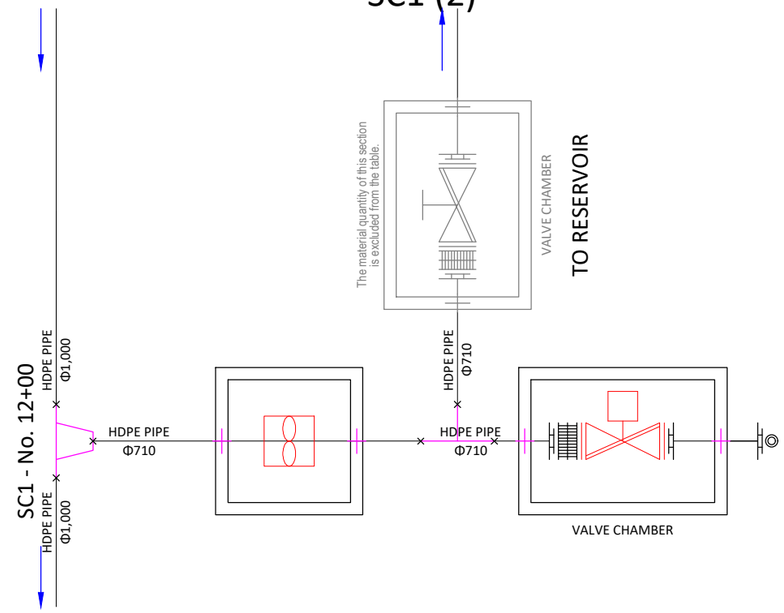
Conceptual Diagram at Each Distribution Point (2/25)

SC1 (1)



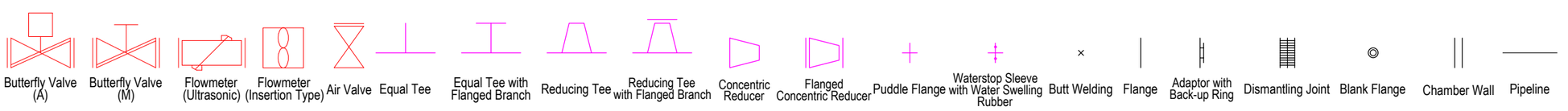
NO	ITEM	SPEC	QTY	REM
1	HDPE Puddle Flange	Φ1,000	4	
2	HDPE Adaptor with Back-up Ring	Φ1,000	4	
3	Dismantling Joint	Φ900	2	
4	Butterfly Valve (Electric)	Φ900	1	
5	Flowmeter (Ultrasonic)	Φ900	1	

SC1 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ1,000-710	1	
2	HDPE Puddle Flange	Φ710	4	
3	HDPE Adaptor with Back-up Ring	Φ710	3	
4	Dismantling Joint	Φ650	1	
5	Butterfly Valve (Electric)	Φ650	1	
6	HDPE Equal Tee	Φ710	1	
7	Blank Flange (Steel)	Φ650	1	
8	Flowmeter(Insertion Type)		1	

LEGEND

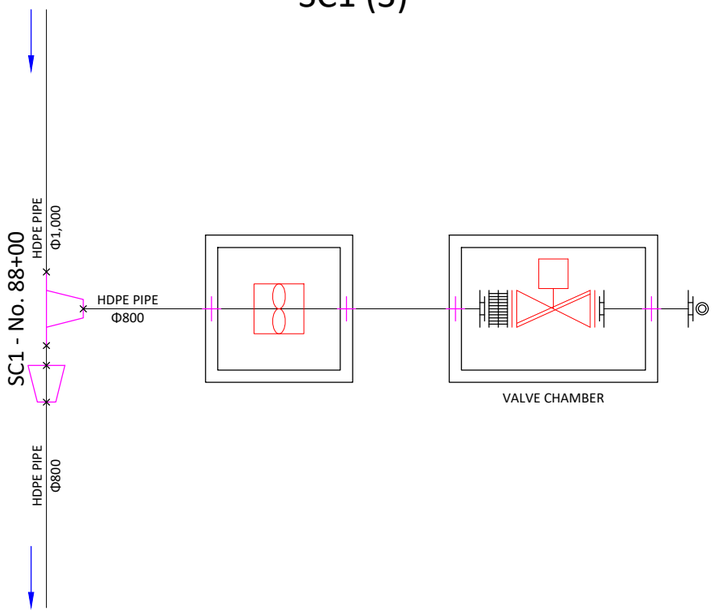


CLIENT: REPUBLIC OF MALAWI, MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	CONSULTANT: Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	PROJECT NAME: SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	ORIGINAL DESIGNED BY: Detailed Design
		TITLE: Conceptual Diagram at Each Distribution Point (2/25)	DATE: JUNE, 2022

DRAWING	SCALE
DESIGNED BY: Choi, Dong Hoon	NONE
DRAWING BY: Gim, Ho Jun	DRAWING No
CHECKED BY: Jo, Jin Hoon	C-19-02

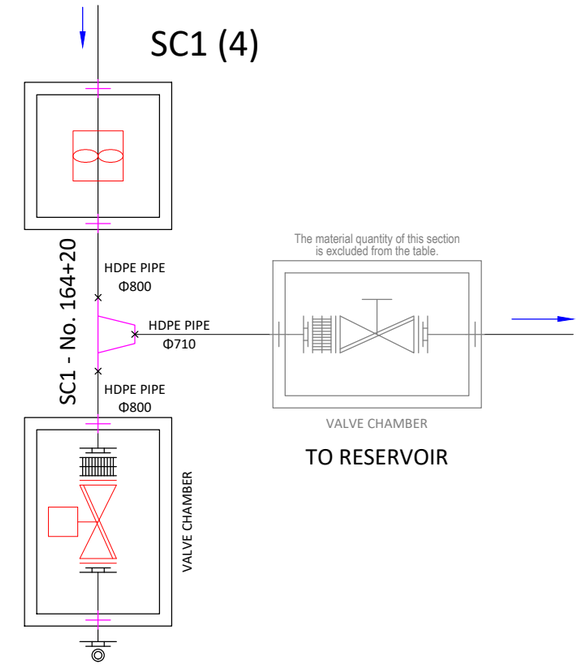
Conceptual Diagram at Each Distribution Point (3/25)

SC1 (3)



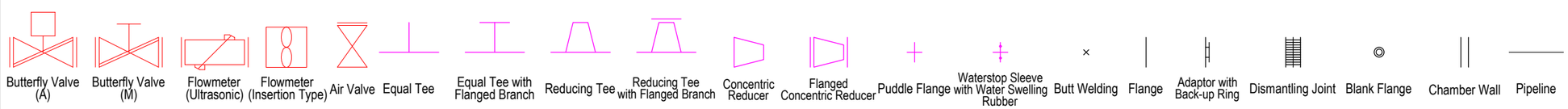
NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ1,000-800	1	
2	HDPE Puddle Flange	Φ800	4	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	Dismantling Joint	Φ750	1	
5	Butterfly Valve (Electric)	Φ750	1	
6	Blank Flange (Steel)	Φ750	1	
7	Flowmeter(Insertion Type)		1	
8	HDPE Reducer	Φ900-800	1	

SC1 (4)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ800-710	1	
2	HDPE Puddle Flange	Φ800	4	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	Dismantling Joint	Φ750	1	
5	Butterfly Valve (Electric)	Φ750	1	
6	Blank Flange	Φ750	1	
7	Flowmeter(Insertion Type)		1	

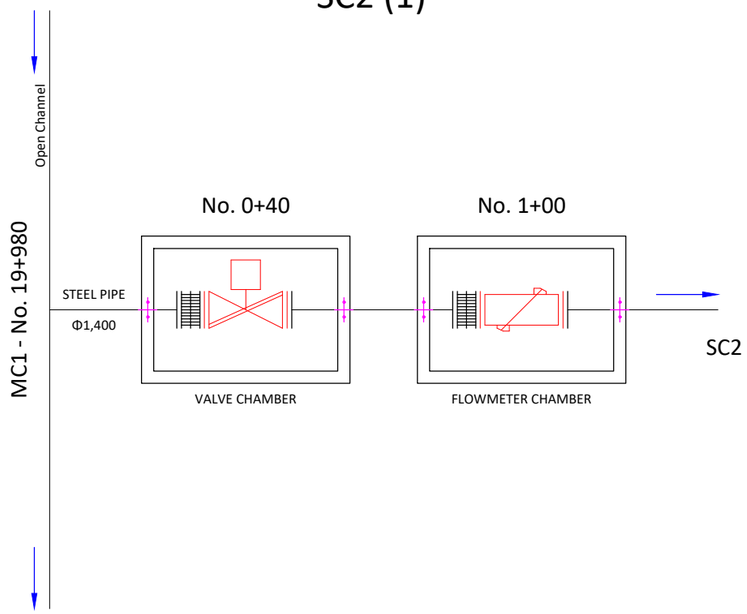
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (3/25)	JUNE, 2022		C-19-03

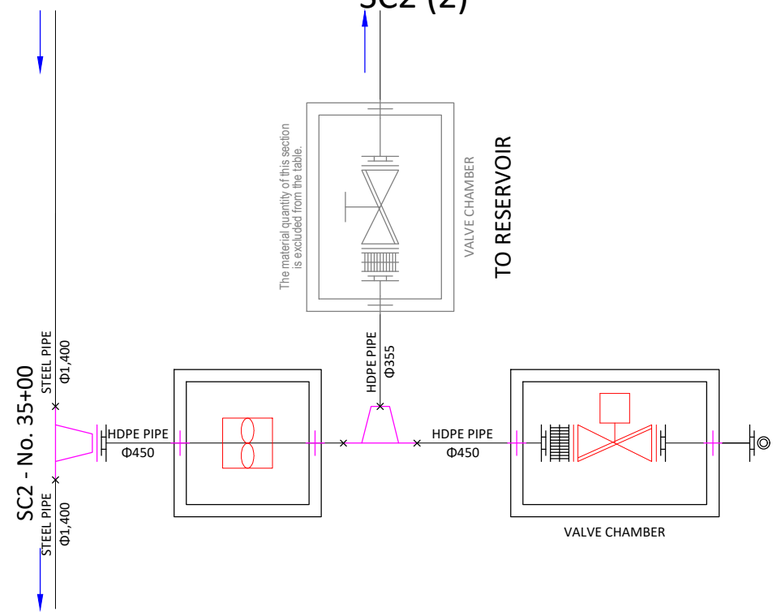
Conceptual Diagram at Each Distribution Point (4/25)

SC2 (1)



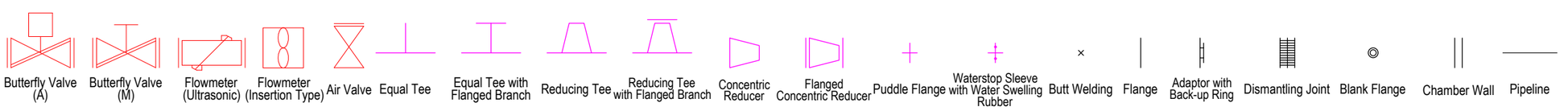
NO	ITEM	SPEC	QTY	REM
1	Waterstop Sleeve with Water Swelling Rubber	Φ1,400	4	
2	Flange (Steel)	Φ1,400	4	
3	Dismantling Joint	Φ1,400	2	
4	Butterfly Valve (Electric)	Φ1,400	1	
5	Flowmeter (Ultrasonic)	Φ1,400	1	

SC2 (2)



NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee with Flanged Branch	Φ1,400-400	1	
2	HDPE Puddle Flange	Φ450	4	
3	HDPE Adaptor with Back-up Ring	Φ450	4	
4	Dismantling Joint	Φ400	1	
5	Butterfly Valve (Electric)	Φ400	1	
6	HDPE Reducing Tee	Φ450-355	1	
7	Blank Flange (Steel)	Φ400	1	
8	Flowmeter(Insertion Type)		1	

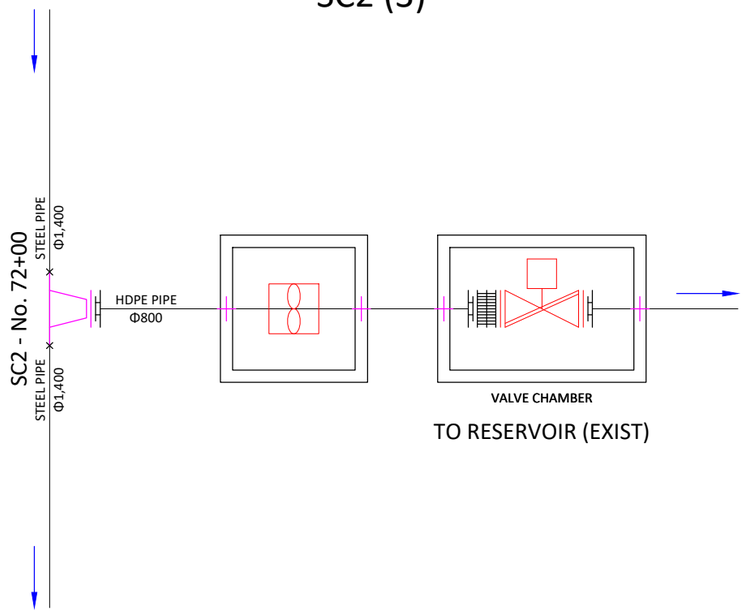
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (4/25)	JUNE, 2022		C-19-04

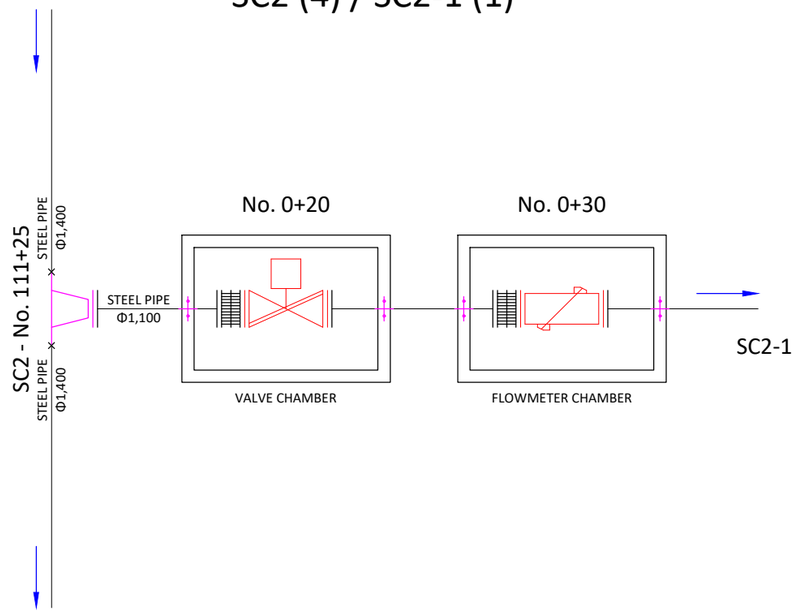
Conceptual Diagram at Each Distribution Point (5/25)

SC2 (3)



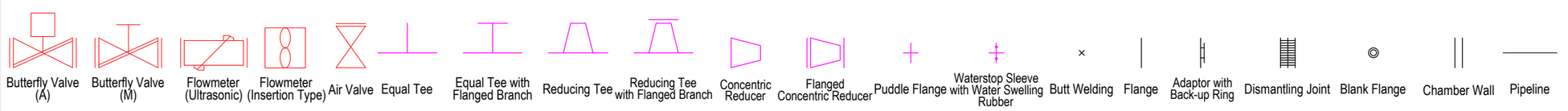
NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee with Flanged Branch	Φ1,400-750	1	
2	HDPE Puddle Flange	Φ800	4	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	Dismantling Joint	Φ750	1	
5	Butterfly Valve (Electric)	Φ750	1	
6	Flowmeter(Insertion Type)		1	

SC2 (4) / SC2-1 (1)



NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee	Φ1,400-1,100	1	SC2
2	Waterstop Sleeve with Water Swelling Rubber	Φ1,100	4	
3	Flange (Steel)	Φ1,100	4	
4	Dismantling Joint	Φ1,100	2	
5	Butterfly Valve (Electric)	Φ1,100	1	
6	Flowmeter (Ultrasonic)	Φ1,100	1	

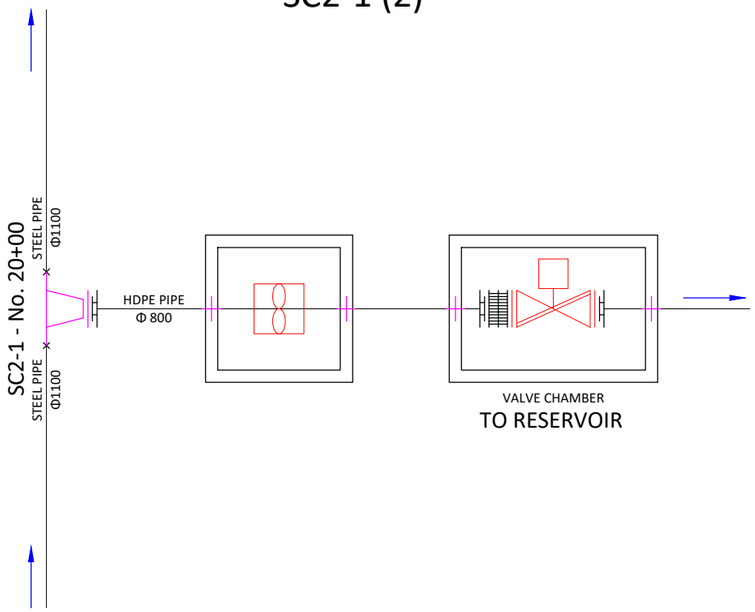
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (5/25)	JUNE, 2022		C-19-05

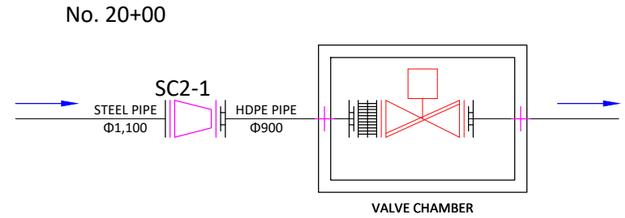
Conceptual Diagram at Each Distribution Point (6/25)

SC2-1 (2)



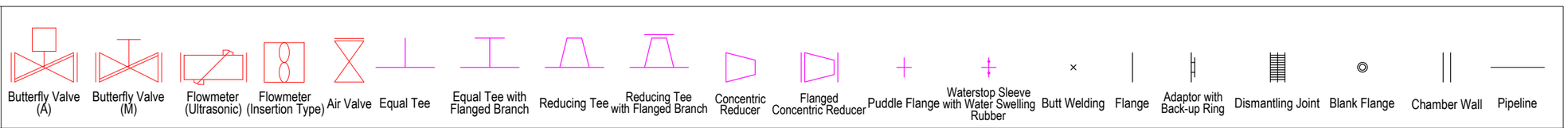
NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee with Flanged Branch	Φ1100-800	1	
2	HDPE Puddle Flange	Φ900	4	
3	HDPE Adaptor with Back-up Ring	Φ900	3	
4	Dismantling Joint	Φ800	1	
5	Butterfly Valve (Electric)	Φ800	1	
6	Flowmeter(Insertion Type)		1	

SC2-1 (3)



NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Flanged Reducer	Φ1,100-800	1	
2	PE Coated Steel Flange	Φ1,100	1	
3	HDPE Adaptor with Back-up Ring	Φ900	3	
4	HDPE Puddle Flange	Φ900	2	
5	Dismantling Joint	Φ800	1	
6	Butterfly Valve (Electric)	Φ800	1	

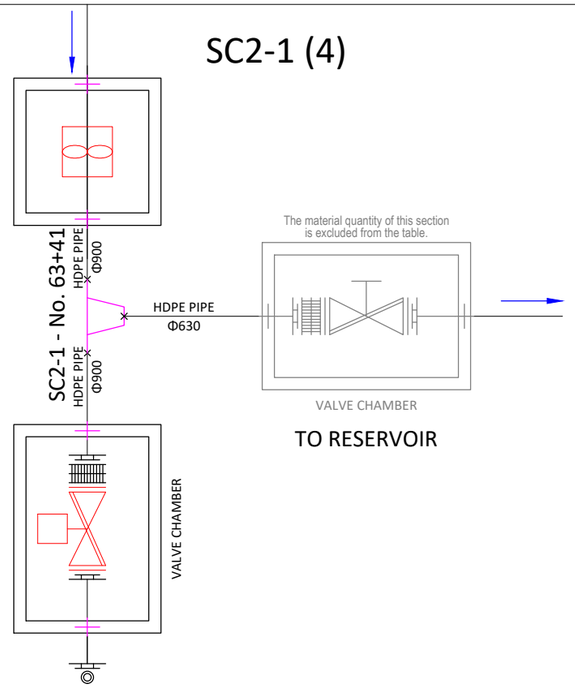
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (6/25)	JUNE, 2022		C-19-06

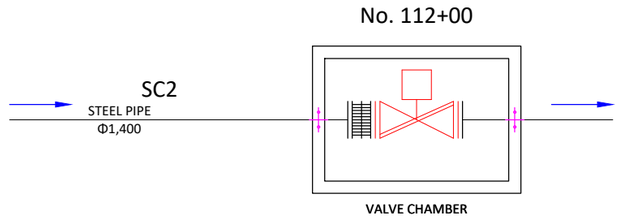
Conceptual Diagram at Each Distribution Point (7/25)

SC2-1 (4)



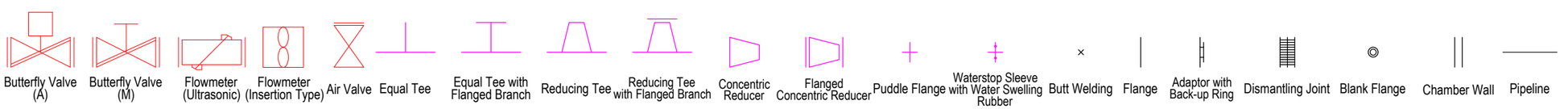
NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ900-630	1	
2	HDPE Puddle Flange	Φ900	4	
3	HDPE Adaptor with Back-up Ring	Φ900	3	
4	Dismantling Joint	Φ800	1	
5	Butterfly Valve (Electric)	Φ800	1	
6	Blank Flange (Steel)	Φ800	1	
7	Flowmeter(Insertion Type)		1	

SC2 (5)



NO	ITEM	SPEC	QTY	REM
1	Waterstop Sleeve with Water Swelling Rubber	Φ1,400	2	
2	Flange (Steel)	Φ1,400	2	
3	Dismantling Joint	Φ1,400	1	
4	Butterfly Valve (Electric)	Φ1,400	1	
5				

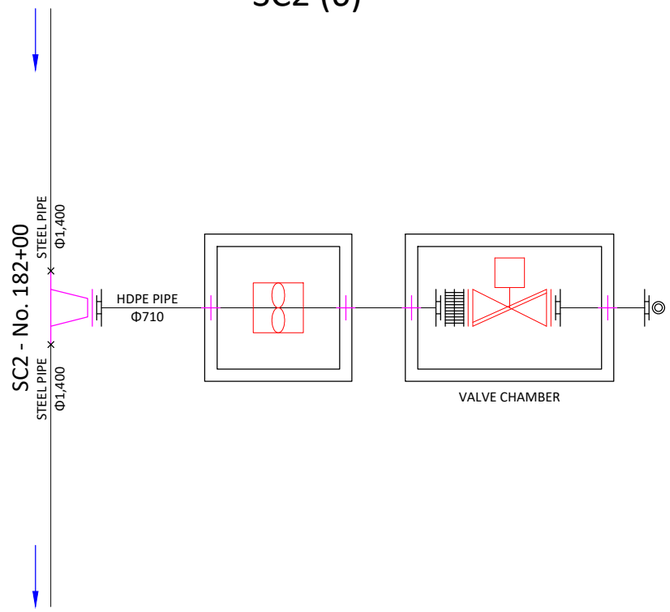
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (7/25)	JUNE, 2022		C-19-07

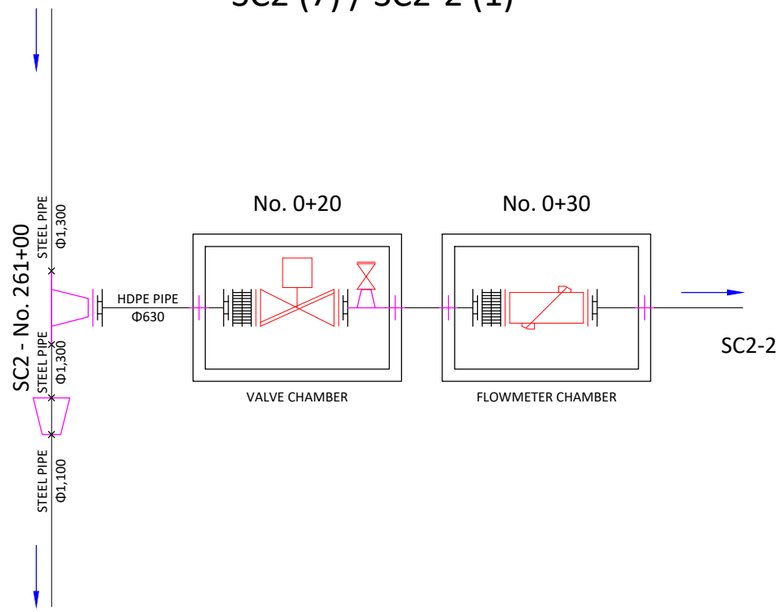
Conceptual Diagram at Each Distribution Point (8/25)

SC2 (6)



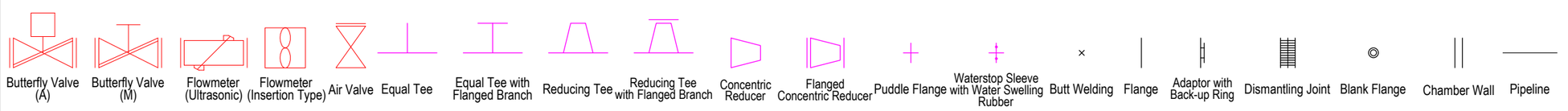
NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee with Flanged Branch	Φ1,400-650	1	
2	HDPE Puddle Flange	Φ710	4	
3	HDPE Adaptor with Back-up Ring	Φ710	4	
4	Dismantling Joint	Φ650	1	
5	Butterfly Valve (Electric)	Φ650	1	
6	Blank Flange (Steel)	Φ650	1	
7	Flowmeter(Insertion Type)		1	

SC2 (7) / SC2-2 (1)



NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee with Flanged Branch	Φ1,300-550	1	SC2
2	HDPE Puddle Flange	Φ630	4	
3	HDPE Adaptor with Back-up Ring	Φ630	5	
4	Dismantling Joint	Φ550	2	
5	Butterfly Valve (Electric)	Φ550	1	
6	Flowmeter (Ultrasonic)	Φ550	1	
7	PE Coated Steel Reducer	Φ1,300-1,100	1	SC2
8	Air Valve(Gate Valve+Air Valve)	Φ100	1	
9	HDPE Pipe Reducing Tee	Φ630-125	1	

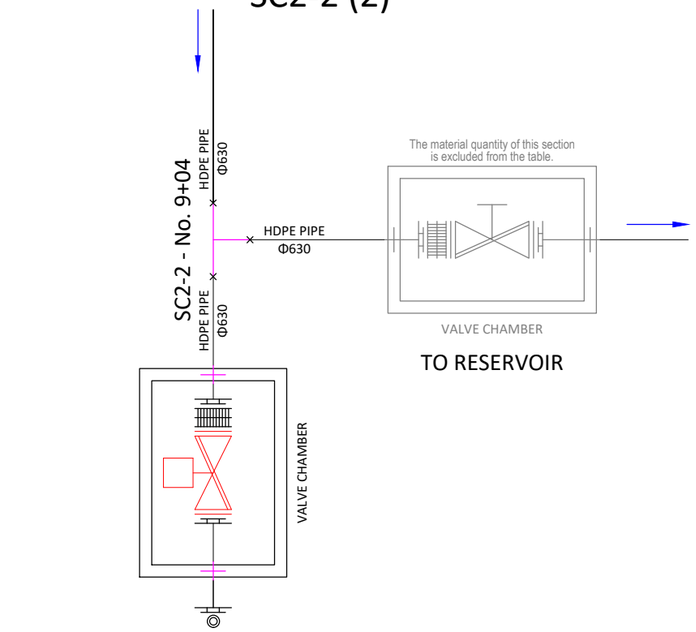
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (8/25)	JUNE, 2022		C-19-08

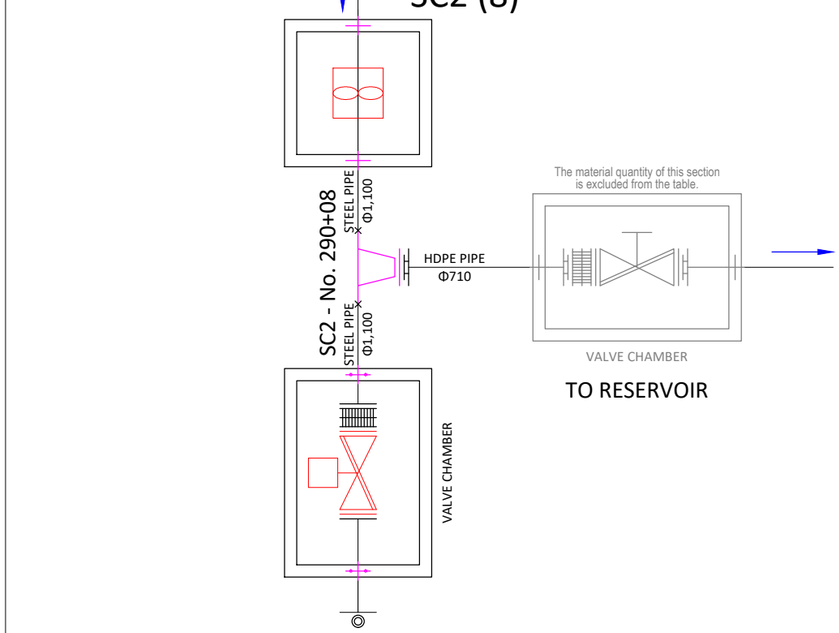
Conceptual Diagram at Each Distribution Point (9/25)

SC2-2 (2)



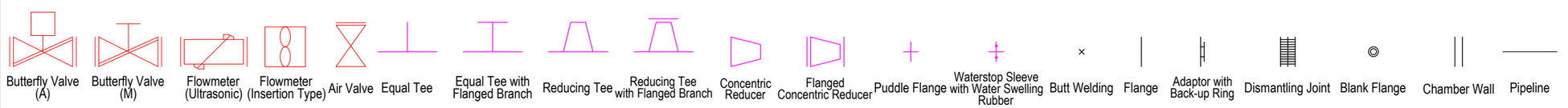
NO	ITEM	SPEC	QTY	REM
1	HDPE Equal Tee	Φ630	1	
2	HDPE Puddle Flange	Φ630	2	
3	HDPE Adaptor with Back-up Ring	Φ630	3	
4	Dismantling Joint	Φ550	1	
5	Butterfly Valve (Electric)	Φ550	1	

SC2 (8)



NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducing Tee with Flanged Branch	Φ1,100-650	1	
2	Waterstop Sleeve with Water Swelling Rubber	Φ1,100	4	
3	Flange (Steel)	Φ1,100	3	
4	Dismantling Joint	Φ1,100	1	
5	Butterfly Valve (Electric)	Φ1,100	1	
6	Blank Flange (Steel)	Φ1,100	1	
7	Flowmeter(Insertion Type)		1	

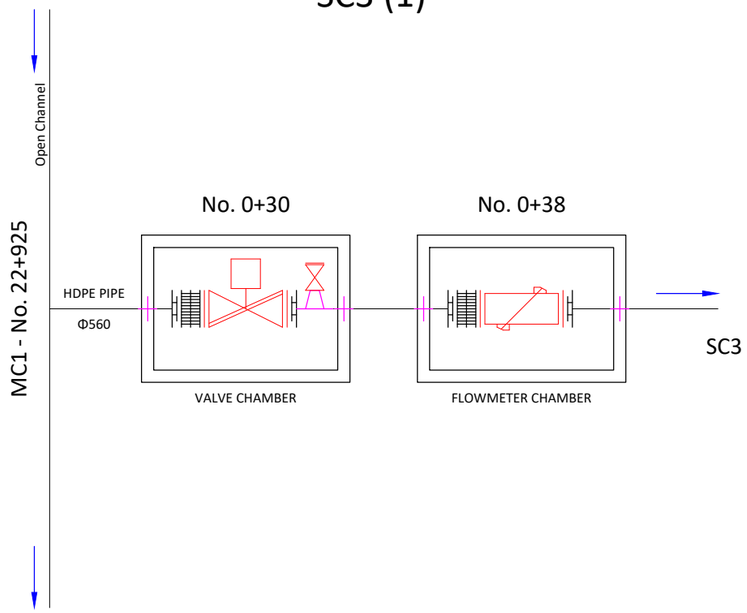
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (9/25)	JUNE, 2022		C-19-09

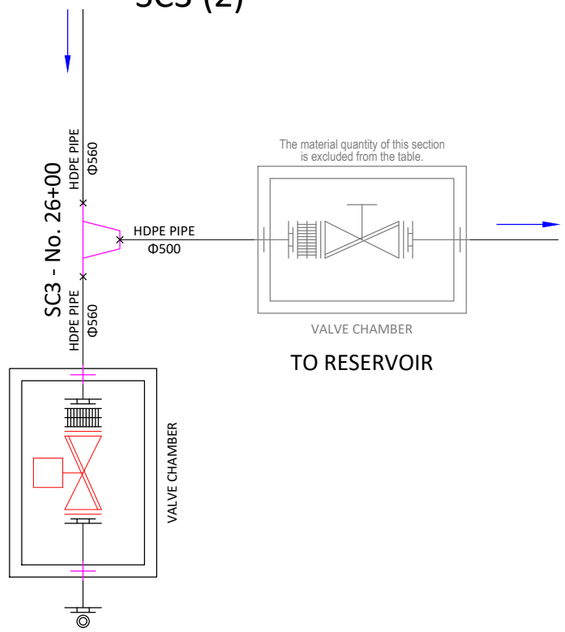
Conceptual Diagram at Each Distribution Point (10/25)

SC3 (1)



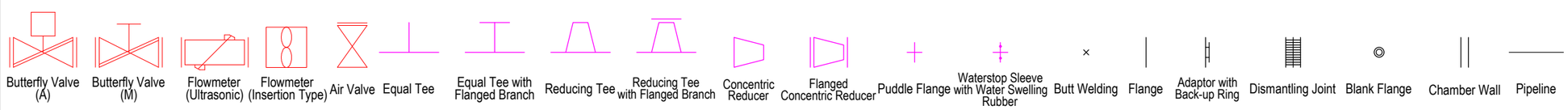
NO	ITEM	SPEC	QTY	REM
1	HDPE Puddle Flange	Φ560	4	
2	HDPE Adaptor with Back-up Ring	Φ560	4	
3	Dismantling Joint	Φ500	2	
4	Butterfly Valve (Electric)	Φ500	1	
5	Flowmeter (Ultrasonic)	Φ500	1	
6	HDPE Reducing Tee	Φ560-90	1	
7	Air Valve(Gate Valve+Air Valve)	Φ80	1	

SC3 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ560-500	1	
2	HDPE Puddle Flange	Φ560	2	
3	HDPE Adaptor with Back-up Ring	Φ560	3	
4	Dismantling Joint	Φ500	1	
5	Butterfly Valve (Electric)	Φ500	1	
6	Blank Flange (Steel)	Φ500	1	

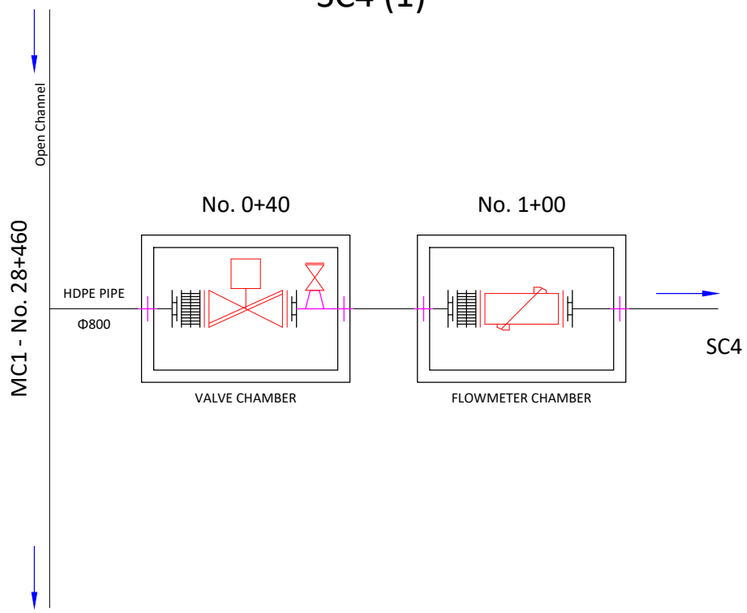
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (10/25)	JUNE, 2022		C-19-10

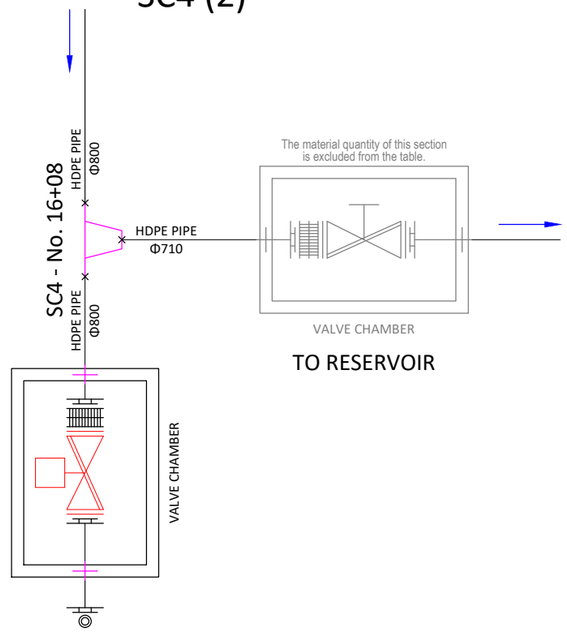
Conceptual Diagram at Each Distribution Point (11/25)

SC4 (1)



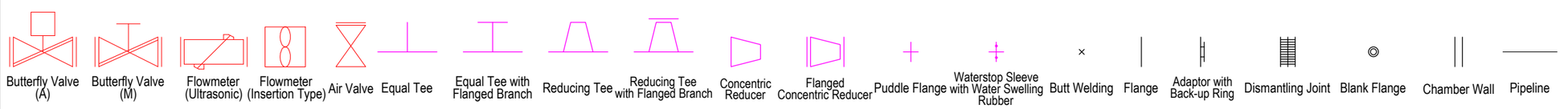
NO	ITEM	SPEC	QTY	REM
1	HDPE Puddle Flange	Φ800	4	
2	HDPE Adaptor with Back-up Ring	Φ800	4	
3	Dismantling Joint	Φ750	2	
4	Butterfly Valve (Electric)	Φ750	1	
5	Flowmeter (Ultrasonic)	Φ750	1	
6	HDPE Reducing Tee	Φ800-125	1	
7	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC4 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ800-710	1	
2	HDPE Puddle Flange	Φ800	2	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	Dismantling Joint	Φ750	1	
5	Butterfly Valve (Electric)	Φ750	1	
6	Blank Flange (Steel)	Φ750	1	

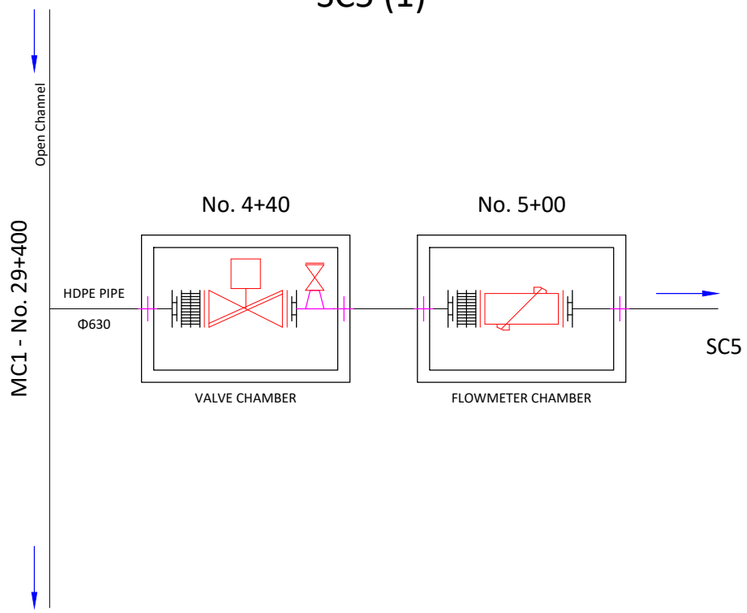
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (11/25)	JUNE, 2022		C-19-11

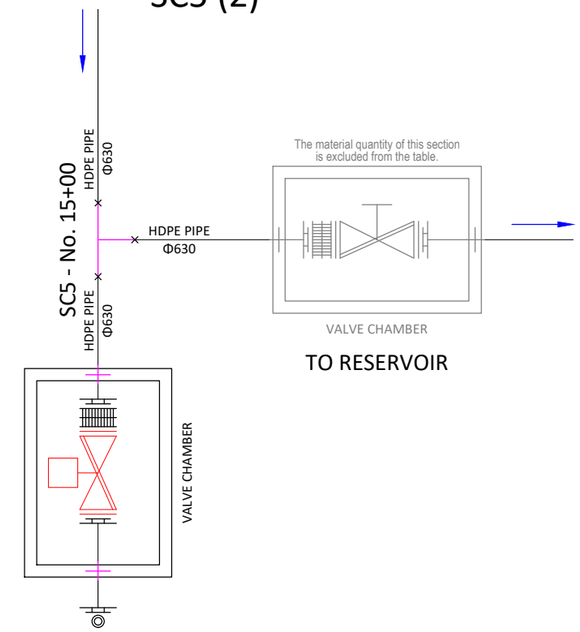
Conceptual Diagram at Each Distribution Point (12/25)

SC5 (1)



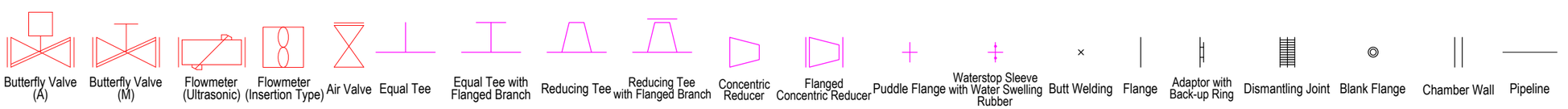
NO	ITEM	SPEC	QTY	REM
1	HDPE Puddle Flange	Φ630	4	
2	HDPE Adaptor with Back-up Ring	Φ630	4	
3	Dismantling Joint	Φ550	2	
4	Butterfly Valve (Electric)	Φ550	1	
5	Flowmeter (Ultrasonic)	Φ550	1	
6	HDPE Reducing Tee	Φ630-125	1	
7	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC5 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Equal Tee	Φ630	1	
2	HDPE Puddle Flange	Φ630	2	
3	HDPE Adaptor with Back-up Ring	Φ630	3	
4	Dismantling Joint	Φ550	1	
5	Butterfly Valve (Electric)	Φ550	1	
6	Blank Flange (Steel)	Φ550	1	

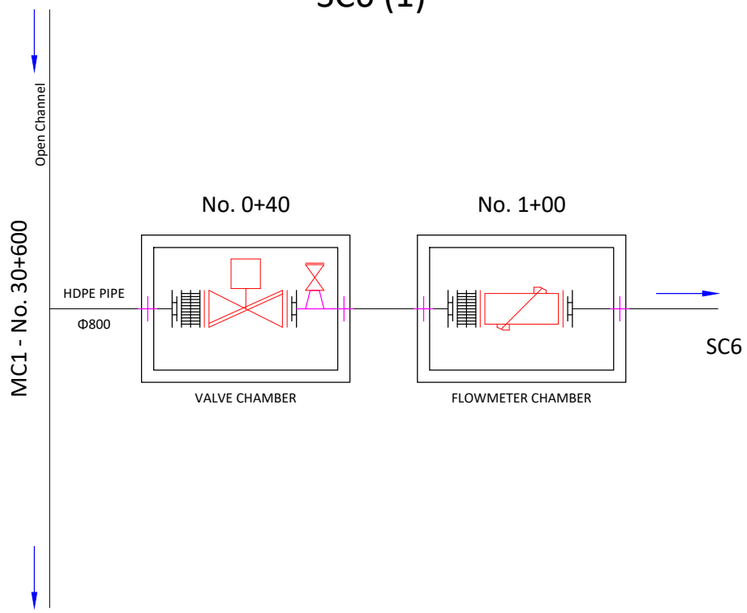
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (12/25)	JUNE, 2022		C-19-12

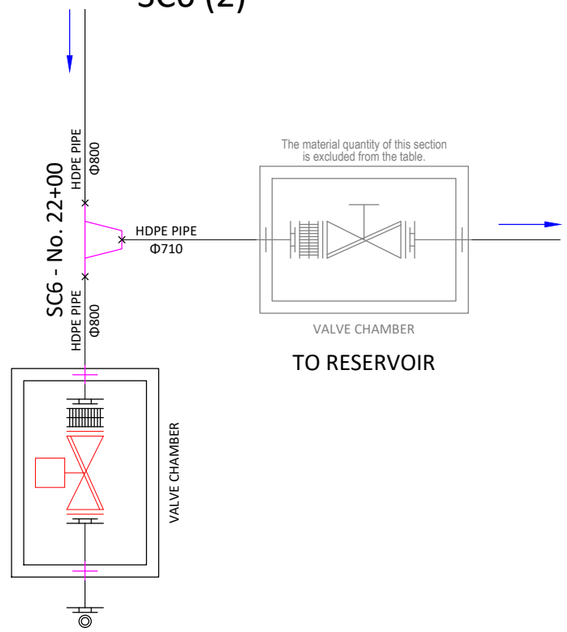
Conceptual Diagram at Each Distribution Point (13/25)

SC6 (1)



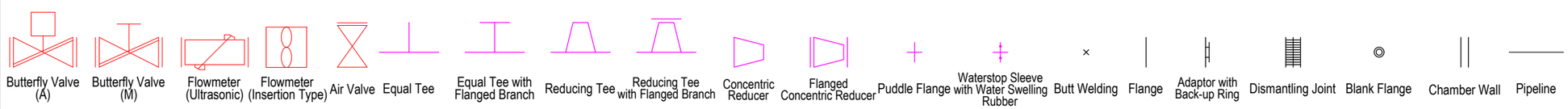
NO	ITEM	SPEC	QTY	REM
1	HDPE Puddle Flange	Φ800	4	
2	HDPE Adaptor with Back-up Ring	Φ800	4	
3	Dismantling Joint	Φ750	2	
4	Butterfly Valve (Electric)	Φ750	1	
5	Flowmeter (Ultrasonic)	Φ750	1	
6	HDPE Reducing Tee	Φ800-125	1	
7	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC6 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ800-710	1	
2	HDPE Puddle Flange	Φ800	2	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	Dismantling Joint	Φ750	1	
5	Butterfly Valve (Electric)	Φ750	1	
6	Blank Flange (Steel)	Φ750	1	

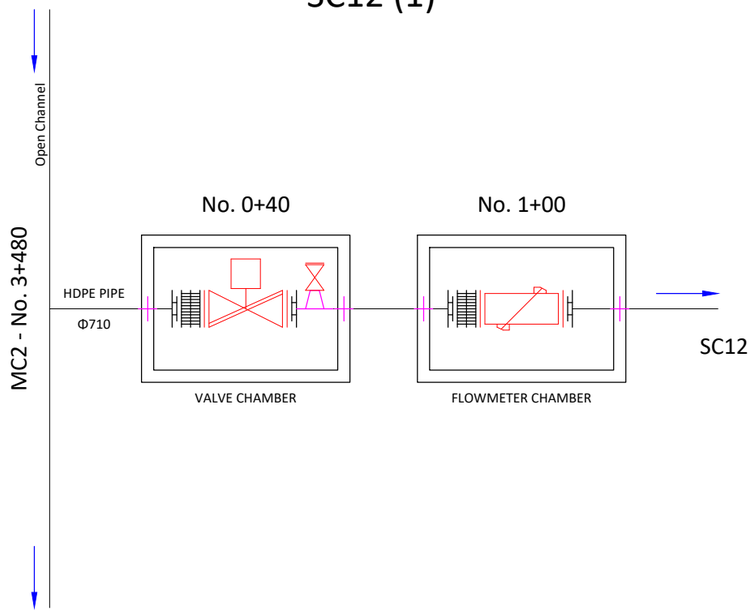
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (13/25)	JUNE, 2022		C-19-13

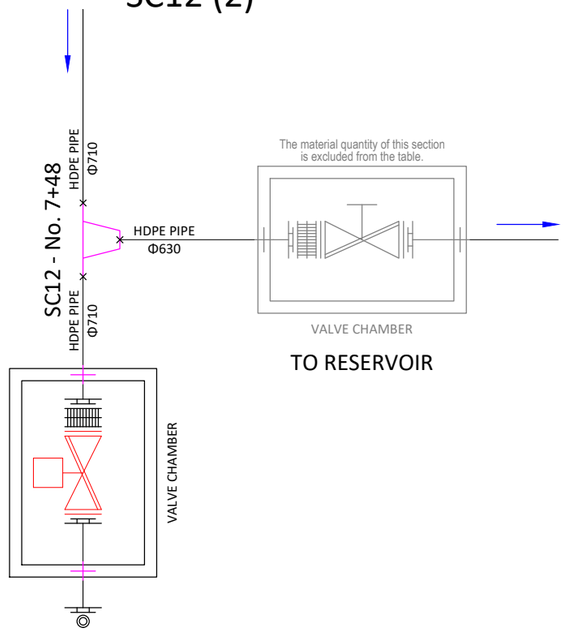
Conceptual Diagram at Each Distribution Point (14/25)

SC12 (1)



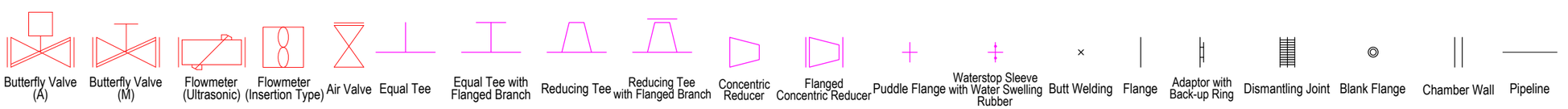
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ710	4	
2	HDPE Puddle Flange	Φ710	4	
3	Dismantling Joint	Φ450	2	
4	Butterfly Valve (Electric)	Φ450	1	
5	Flowmeter (Ultrasonic)	Φ450	1	
6	HDPE Reducing Tee	Φ710-125	1	
7	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC12 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ710-630	1	
2	HDPE Puddle Flange	Φ710	2	
3	HDPE Adaptor with Back-up Ring	Φ710	3	
4	Dismantling Joint	Φ650	1	
5	Butterfly Valve (Electric)	Φ650	1	
6	Blank Flange (Steel)	Φ650	1	

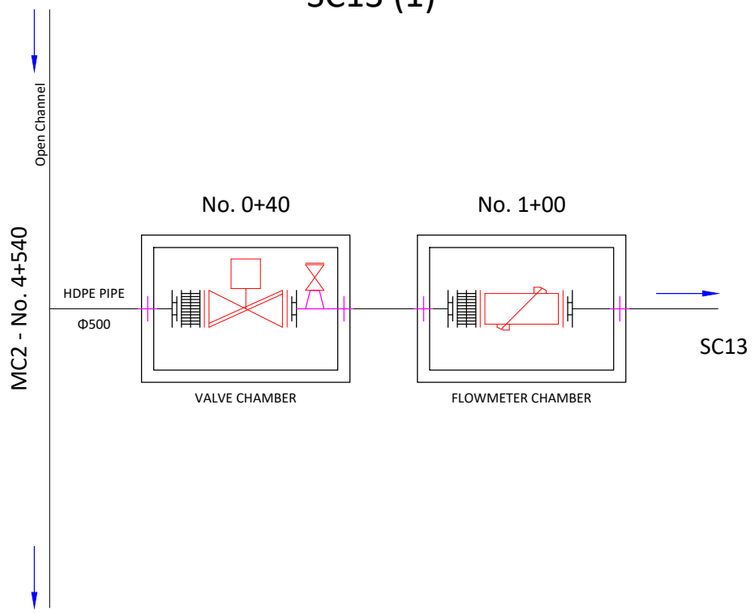
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (14/25)	JUNE, 2022		C-19-14

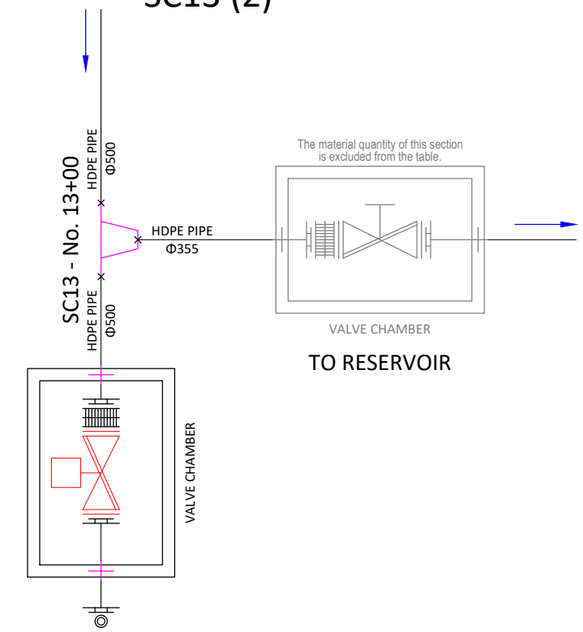
Conceptual Diagram at Each Distribution Point (15/25)

SC13 (1)



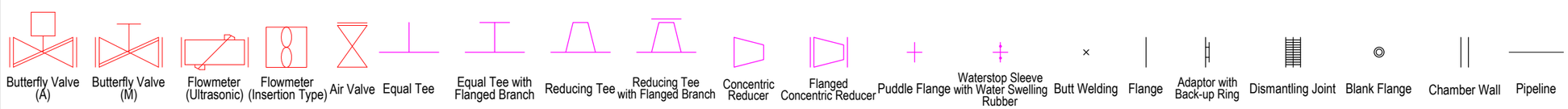
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ500	4	
2	HDPE Puddle Flange	Φ500	4	
3	Dismantling Joint	Φ450	2	
4	Butterfly Valve (Electric)	Φ450	1	
5	Flowmeter (Ultrasonic)	Φ450	1	
6	HDPE Reducing Tee	Φ500-90	1	
7	Air Valve(Gate Valve+Air Valve)	Φ80	1	

SC13 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ500-355	1	
2	HDPE Puddle Flange	Φ500	2	
3	HDPE Adaptor with Back-up Ring	Φ500	3	
4	Dismantling Joint	Φ450	1	
5	Butterfly Valve (Electric)	Φ450	1	
6	Blank Flange (Steel)	Φ450	1	

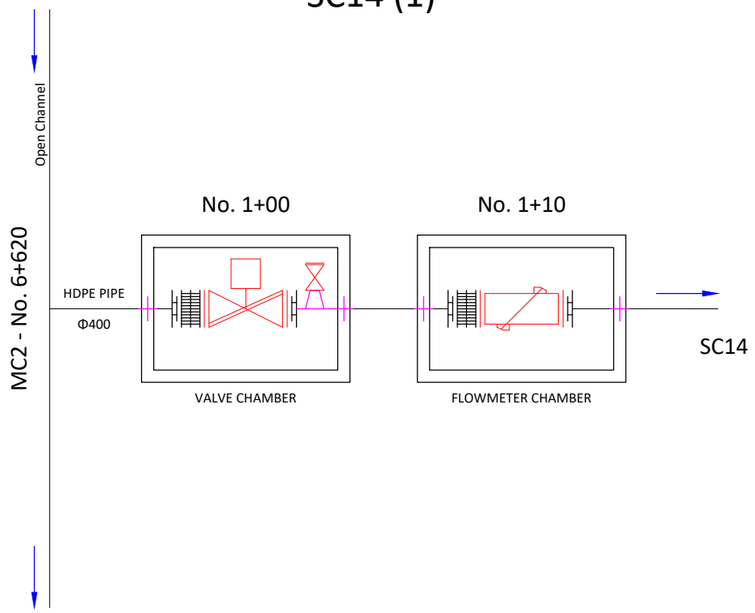
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (15/25)	JUNE, 2022		C-19-15

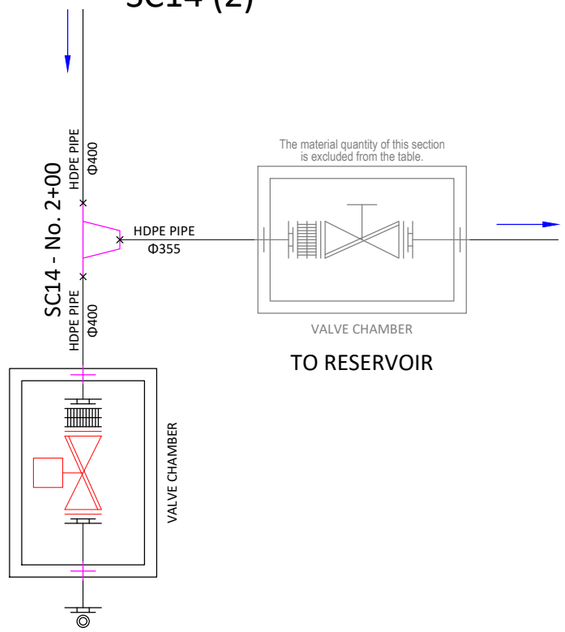
Conceptual Diagram at Each Distribution Point (16/25)

SC14 (1)



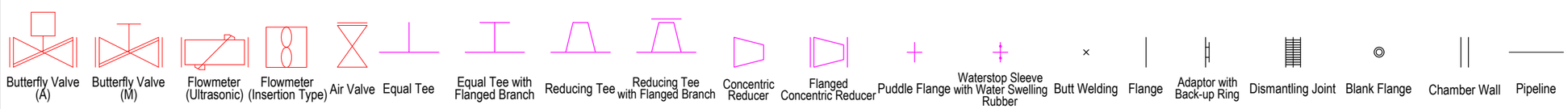
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ400	4	
2	HDPE Puddle Flange	Φ400	4	
3	Dismantling Joint	Φ350	2	
4	Butterfly Valve (Electric)	Φ350	1	
5	Flowmeter (Ultrasonic)	Φ350	1	
6	HDPE Reducing Tee	Φ400-90	1	
7	Air Valve(Gate Valve+Air Valve)	Φ80	1	

SC14 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ400-355	1	
2	HDPE Puddle Flange	Φ400	2	
3	HDPE Adaptor with Back-up Ring	Φ400	3	
4	Dismantling Joint	Φ350	1	
5	Butterfly Valve (Electric)	Φ350	1	
6	Blank Flange (Steel)	Φ350	1	

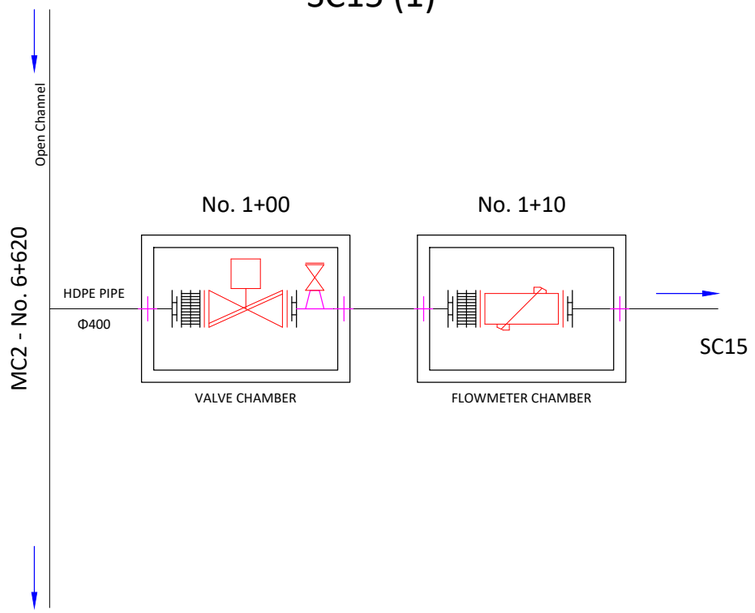
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (16/25)	JUNE, 2022		C-19-16

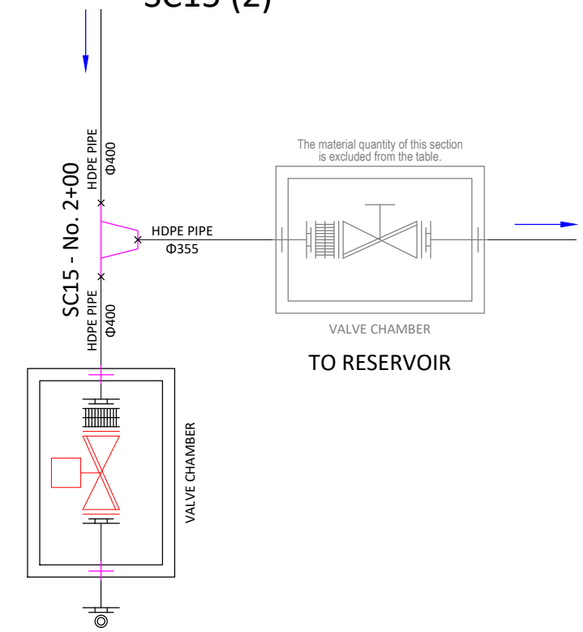
Conceptual Diagram at Each Distribution Point (17/25)

SC15 (1)



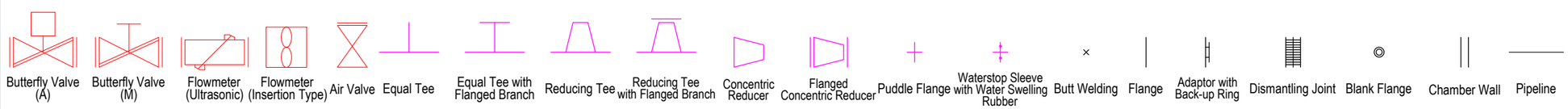
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ400	4	
2	HDPE Puddle Flange	Φ400	4	
3	Dismantling Joint	Φ350	2	
4	Butterfly Valve (Electric)	Φ350	1	
5	Flowmeter (Ultrasonic)	Φ350	1	
6	HDPE Reducing Tee	Φ400-90	1	
7	Air Valve(Gate Valve+Air Valve)	Φ80	1	

SC15 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ400-355	1	
2	HDPE Puddle Flange	Φ400	2	
3	HDPE Adaptor with Back-up Ring	Φ400	3	
4	Dismantling Joint	Φ350	1	
5	Butterfly Valve (Electric)	Φ350	1	
6	Blank Flange (Steel)	Φ350	1	

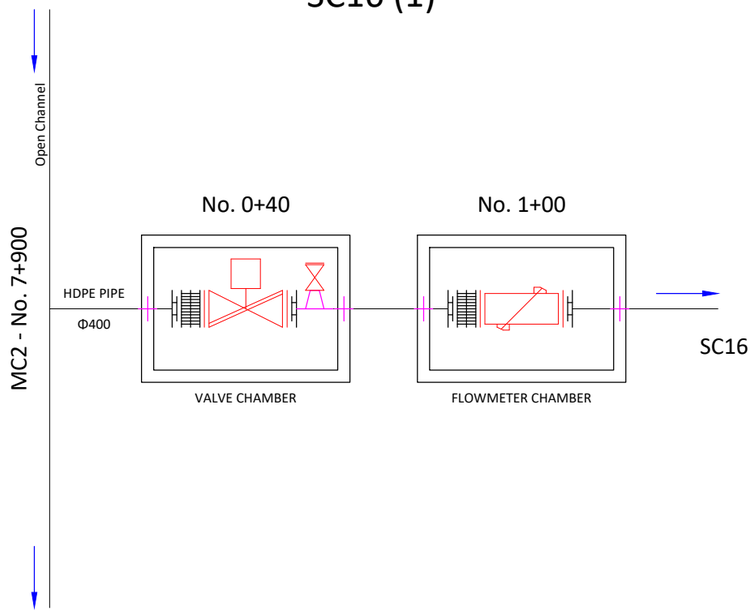
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (17/25)	JUNE, 2022		C-19-17

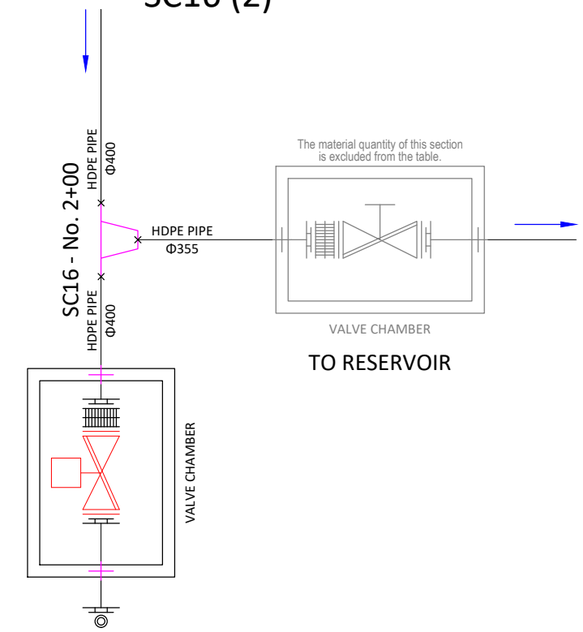
Conceptual Diagram at Each Distribution Point (18/25)

SC16 (1)



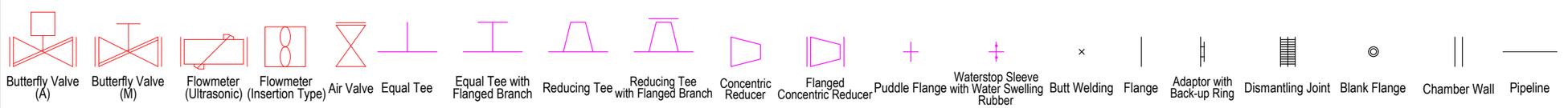
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ400	4	
2	HDPE Puddle Flange	Φ400	4	
3	Dismantling Joint	Φ350	2	
4	Butterfly Valve (Electric)	Φ350	1	
5	Flowmeter (Ultrasonic)	Φ350	1	
6	HDPE Reducing Tee	Φ400-90	1	
7	Air Valve(Gate Valve+Air Valve)	Φ80	1	

SC16 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ400-355	1	
2	HDPE Puddle Flange	Φ400	2	
3	HDPE Adaptor with Back-up Ring	Φ400	3	
4	Dismantling Joint	Φ350	1	
5	Butterfly Valve (Electric)	Φ350	1	
6	Blank Flange (Steel)	Φ350	1	

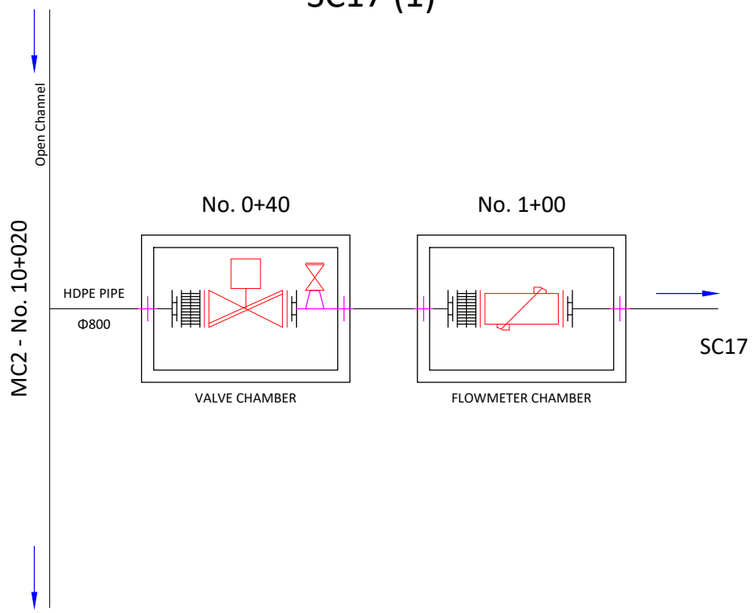
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (18/25)	JUNE, 2022		C-19-18

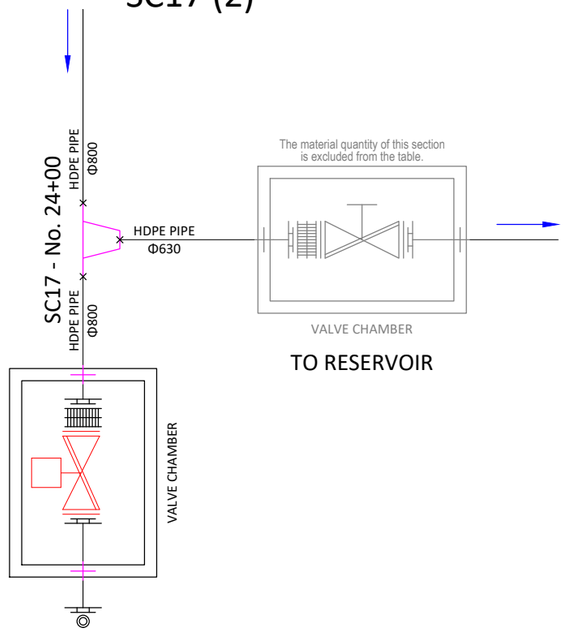
Conceptual Diagram at Each Distribution Point (19/25)

SC17 (1)



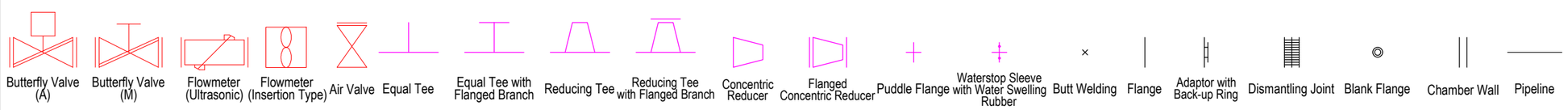
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ800	4	
2	HDPE Puddle Flange	Φ800	4	
3	Dismantling Joint	Φ750	2	
4	Butterfly Valve (Electric)	Φ750	1	
5	Flowmeter (Ultrasonic)	Φ750	1	
6	HDPE Reducing Tee	Φ800-125	1	
7	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC17 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ800-630	1	
2	HDPE Puddle Flange	Φ800	2	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	Dismantling Joint	Φ750	1	
5	Butterfly Valve (Electric)	Φ750	1	
6	Blank Flange (Steel)	Φ750	1	

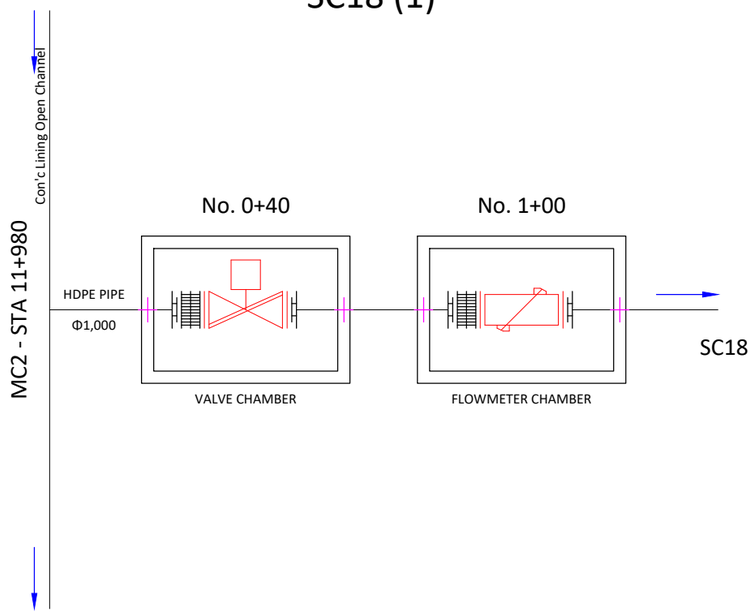
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (19/25)	JUNE, 2022		C-19-19

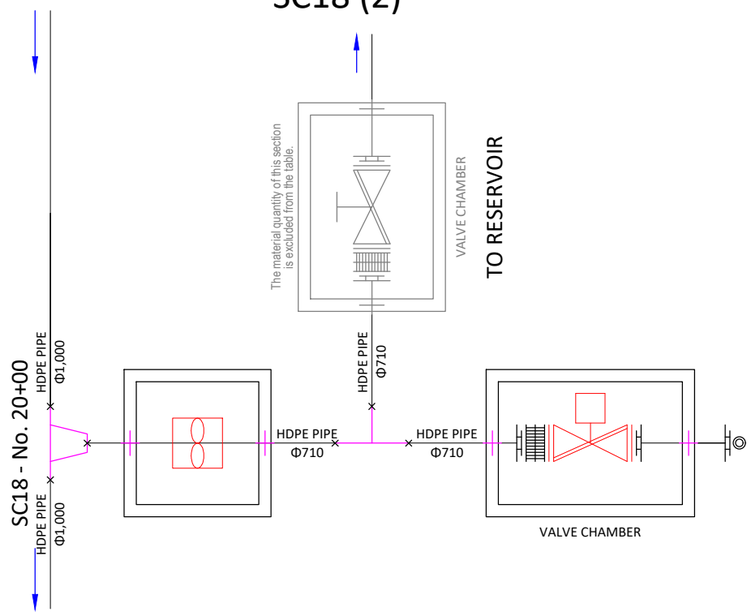
Conceptual Diagram at Each Distribution Point (20/25)

SC18 (1)



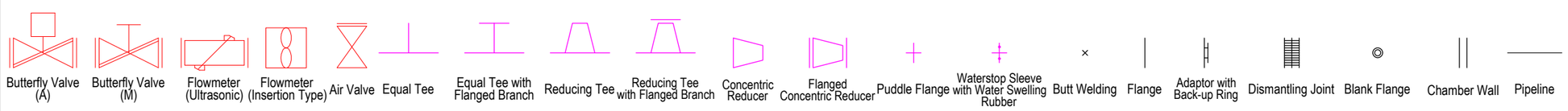
NO	ITEM	SPEC	QTY	REM
1	HDPE Adaptor with Back-up Ring	Φ1,000	4	
2	HDPE Puddle Flange	Φ1,000	4	
3	Dismantling Joint	Φ900	2	
4	Butterfly Valve (Electric)	Φ900	1	
5	Flowmeter (Ultrasonic)	Φ900	1	

SC18 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ1,000-710	1	
2	HDPE Puddle Flange	Φ710	2	
3	HDPE Adaptor with Back-up Ring	Φ710	3	
4	Dismantling Joint	Φ650	1	
5	Butterfly Valve (Electric)	Φ650	1	
6	HDPE Equal Tee	Φ710	1	
7	Blank Flange (Steel)	Φ650	1	
8	Flowmeter(Insertion Type)		1	

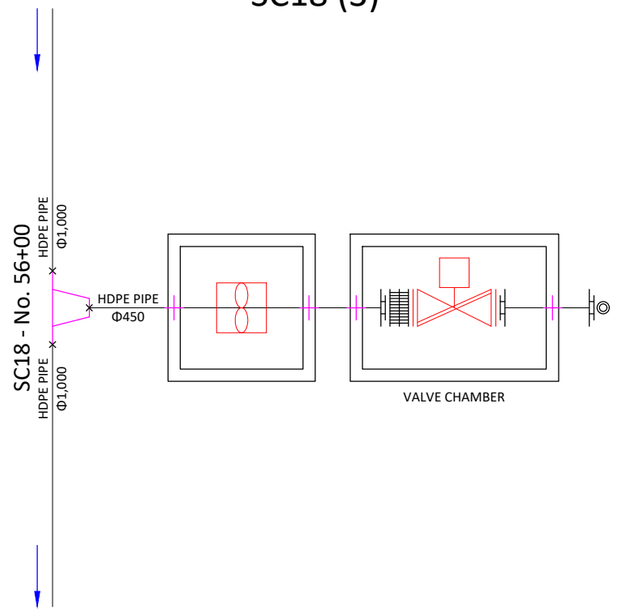
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (20/25)	JUNE, 2022		C-19-20

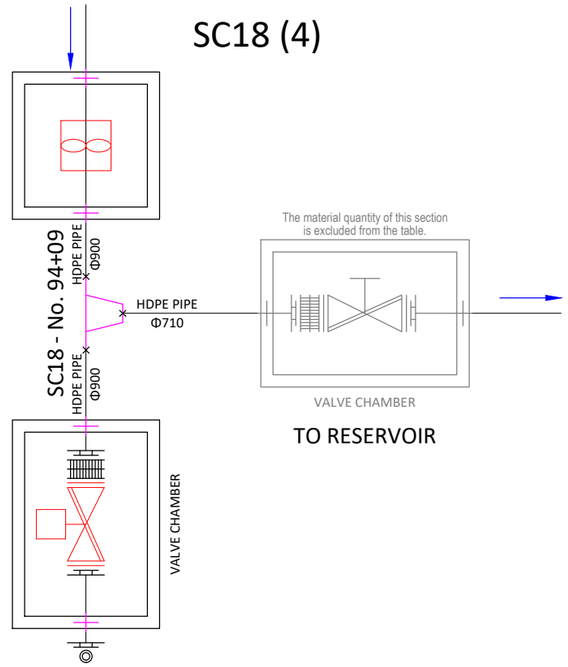
Conceptual Diagram at Each Distribution Point (21/25)

SC18 (3)



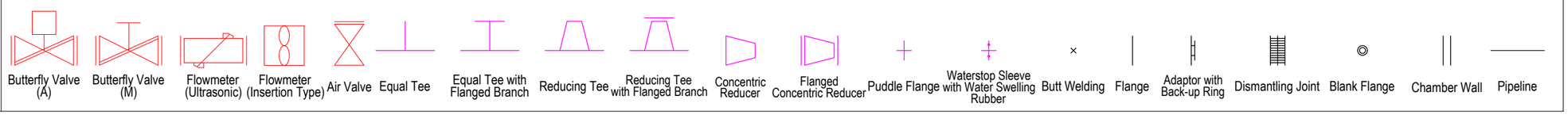
NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ1,000-450	1	
2	HDPE Puddle Flange	Φ450	4	
3	HDPE Adaptor with Back-up Ring	Φ450	3	
4	Dismantling Joint	Φ400	1	
5	Butterfly Valve (Electric)	Φ400	1	
6	Blank Flange (Steel)	Φ400	1	
7	Flowmeter(Insertion Type)		1	

SC18 (4)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ900-710	1	
2	HDPE Puddle Flange	Φ900	4	
3	HDPE Adaptor with Back-up Ring	Φ900	3	
4	Dismantling Joint	Φ800	1	
5	Butterfly Valve (Electric)	Φ800	1	
6	Blank Flange (Steel)	Φ800	1	
7	Flowmeter(Insertion Type)		1	

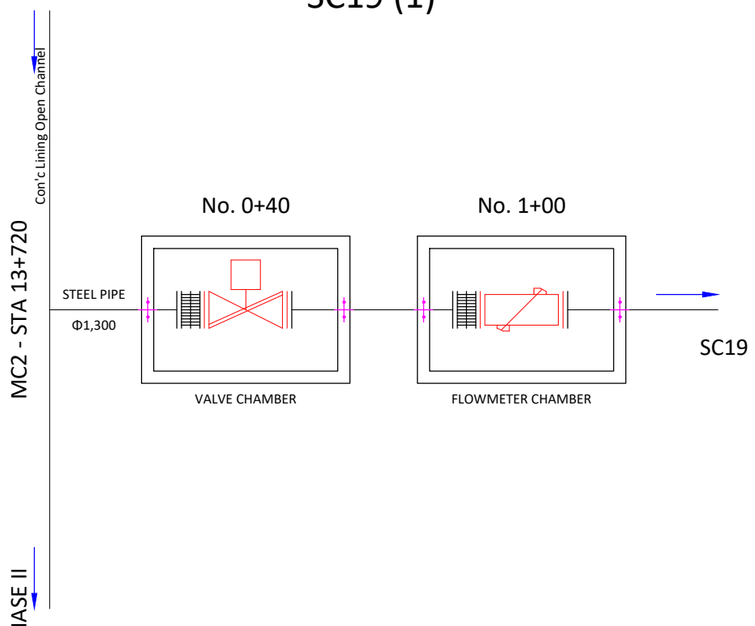
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (21/25)	JUNE, 2022		C-19-21

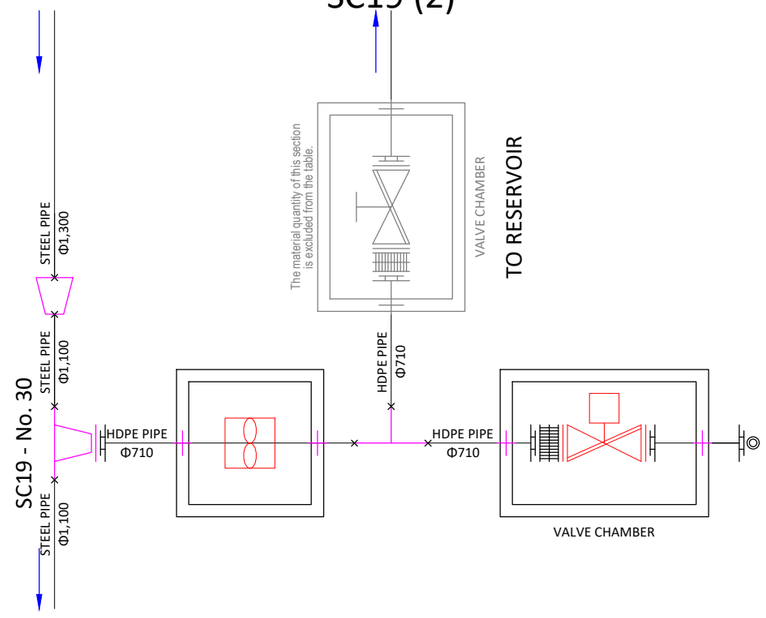
Conceptual Diagram at Each Distribution Point (22/25)

SC19 (1)



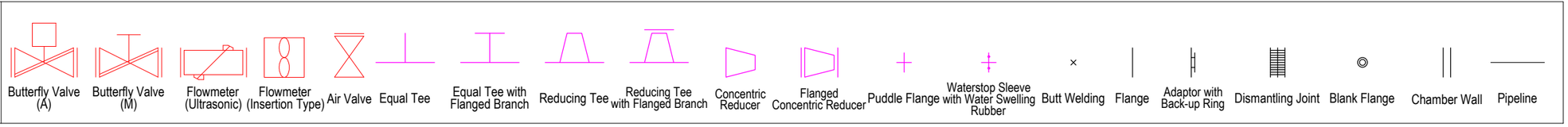
NO	ITEM	SPEC	QTY	REM
1	Waterstop Sleeve with Water Swelling Rubber	Φ1,300	4	
2	Flange (Steel)	Φ1,300	4	
3	Dismantling Joint	Φ1,300	2	
4	Butterfly Valve (Electric)	Φ1,300	1	
5	Flowmeter (Ultrasonic)	Φ1,300	1	

SC19 (2)



NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Reducer	Φ1,300-1,100	1	
2	PE Coated Steel Reducing Tee with Flanged Branch	Φ1,100-650	1	
3	HDPE Puddle Flange	Φ710	4	
4	HDPE Adaptor with Back-up Ring	Φ710	4	
5	Dismantling Joint	Φ650	1	
6	Butterfly Valve (Electric)	Φ650	1	
7	HDPE Equal Tee	Φ710	1	
8	Blank Flange (Steel)	Φ650	1	
9	Flowmeter(Insertion Type)		1	

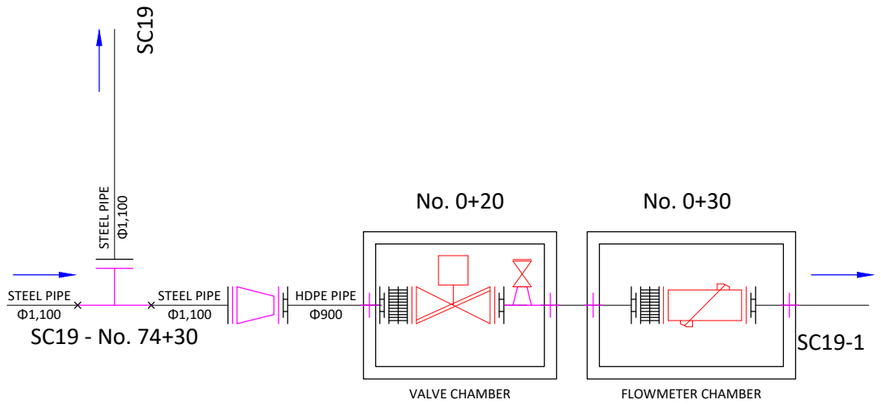
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (22/25)	JUNE, 2022		C-19-22

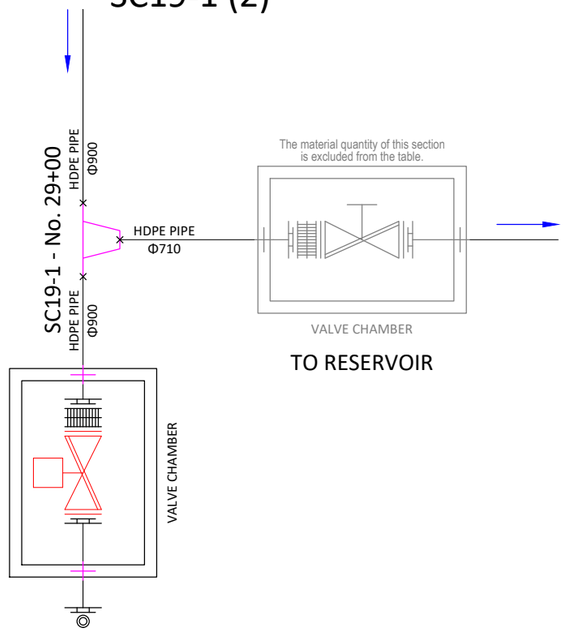
Conceptual Diagram at Each Distribution Point (23/25)

SC19 (3) / SC19-1 (1)



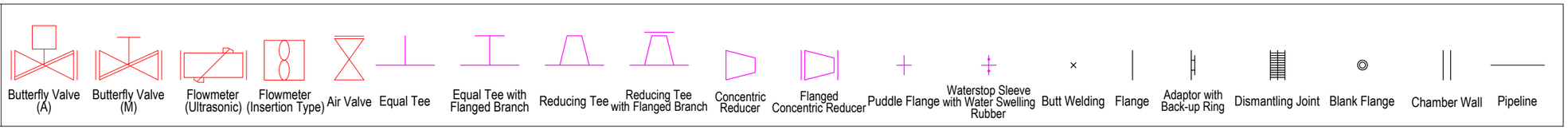
NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Equal Tee with Flanged Branch	Φ1,100	1	SC19
2	PE Coated Steel Flange	Φ1,100	2	
3	PE Coated Steel Flanged Reducer	Φ1,100-800	1	
4	HDPE Adaptor with Back-up Ring	Φ900	5	
5	HDPE Puddle Flange	Φ900	4	
6	Dismantling Joint	Φ800	2	
7	Butterfly Valve (Electric)	Φ800	1	
8	HDPE Reducing Tee	Φ900-125	1	
9	Air Valve(Gate Valve+Air Valve)	Φ100	1	
10	Flowmeter (Ultrasonic)	Φ800	1	

SC19-1 (2)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ900-710	1	
2	HDPE Puddle Flange	Φ900	2	
3	HDPE Adaptor with Back-up Ring	Φ900	3	
4	Dismantling Joint	Φ800	1	
5	Butterfly Valve (Electric)	Φ800	1	
6	Blank Flange (Steel)	Φ800	1	

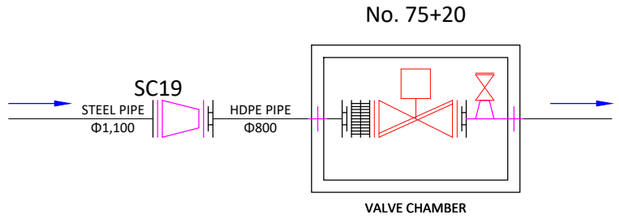
LEGEND



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (23/25)	JUNE, 2022		C-19-23

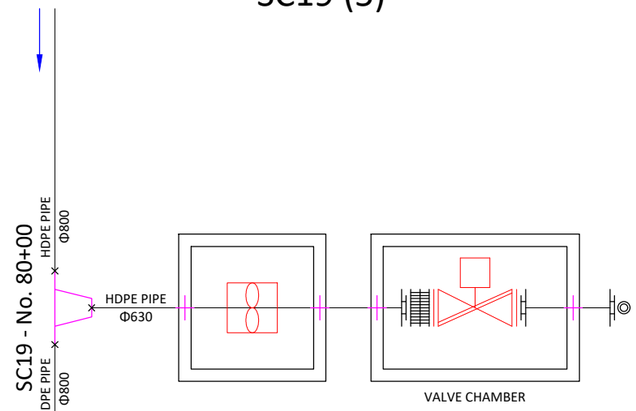
Conceptual Diagram at Each Distribution Point (24/25)

SC19 (4)



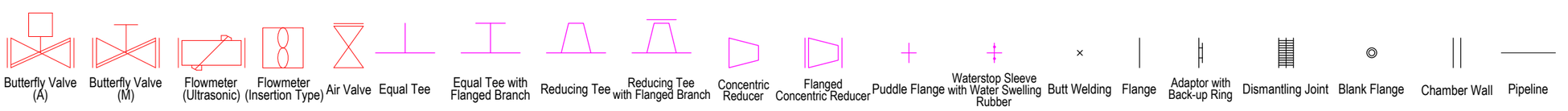
NO	ITEM	SPEC	QTY	REM
1	PE Coated Steel Flange	Φ1,100	1	
2	PE Coated Steel Flanged Reducer	Φ1,100-750	1	
3	HDPE Adaptor with Back-up Ring	Φ800	3	
4	HDPE Puddle Flange	Φ800	2	
5	Dismantling Joint	Φ750	1	
6	Butterfly Valve (Electric)	Φ750	1	
7	HDPE Reducing Tee	Φ800-125	1	
8	Air Valve(Gate Valve+Air Valve)	Φ100	1	

SC19 (5)



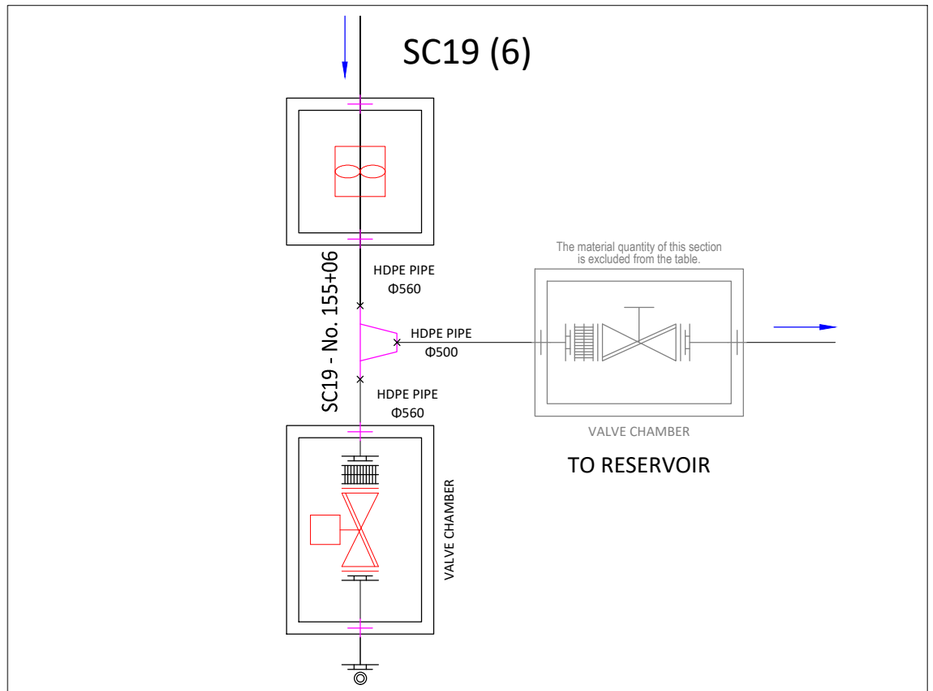
NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ800-630	1	
2	HDPE Puddle Flange	Φ630	4	
3	HDPE Adaptor with Back-up Ring	Φ630	3	
4	Dismantling Joint	Φ500	1	
5	Butterfly Valve (Electric)	Φ500	1	
6	Blank Flange (Steel)	Φ500	1	
7	Flowmeter(Insertion Type)		1	

LEGEND

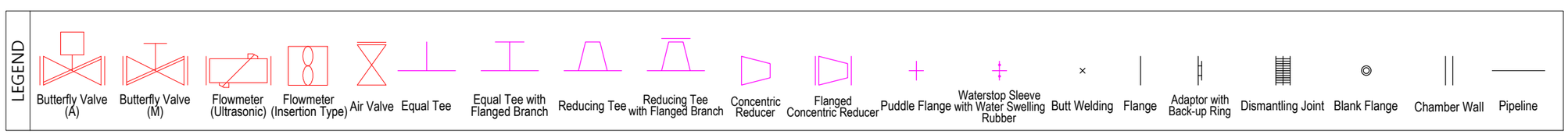


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (24/25)	JUNE, 2022		C-19-24

Conceptual Diagram at Each Distribution Point (25/25)



NO	ITEM	SPEC	QTY	REM
1	HDPE Reducing Tee	Φ560-500	1	
2	HDPE Puddle Flange	Φ560	2	
3	HDPE Adaptor with Back-up Ring	Φ560	3	
4	Dismantling Joint	Φ500	1	
5	Butterfly Valve (Electric)	Φ500	1	
6	Blank Flange (Steel)	Φ500	1	
7	Flowmeter(Insertion Type)		1	



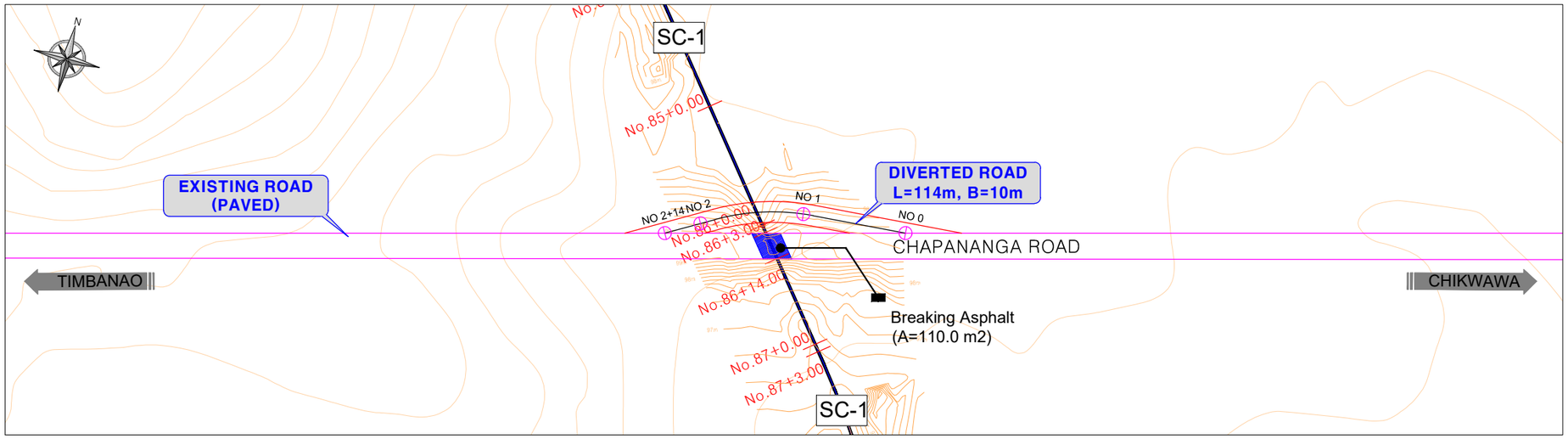
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detailed Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		Conceptual Diagram at Each Distribution Point (25/25)	JUNE, 2022		C-19-25

EXISTING & DIVERTED ROAD OF SC1

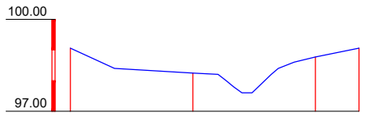
(SC1 NO. 86+3.00)

S = 1:1,000

Unit is meter(m) of The International System of Units(SI)

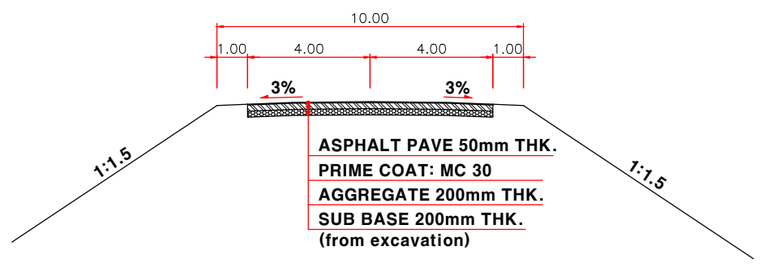


PROFILE OF DIVERTED ROAD

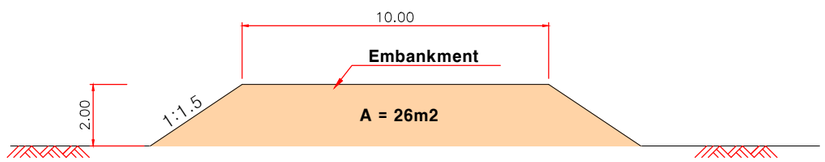


GROUND LEVEL	99.06	98.25	98.77	99.06
STA. NO.	No 0	No 1	No 2	+14.22

TYPICAL CROSS SECTION OF EXISTING ROAD (PAVE)



TYPICAL CROSS SECTION OF DIVERTED ROAD (UNPAVE)



MATERIAL SUMMARY

Descriptions	Uint	Quantity		Total	Remark
		Calculation	Total		
Breaking Asphalt(T=50mm)	m3	110 x 0.05 =	5.50	5.50	
Asphalt Pave(T=50mm)	m3	110 x 0.05 =	5.50	5.50	
Prime Coat(MC 30)	m2	110 =	110.0	110.0	
Aggregate(T=200mm)	m3	110 x 0.2 =	22.0	22.0	
Sub base(T=200mm)	m3	110 x 0.2 =	22.0	22.0	
Embankment fill(Diverted Road)	m3	26 x 114 =	2,964	2,964	
Disposal(Diverted Road)	m3	26 x 114 =	2,964	2,964	

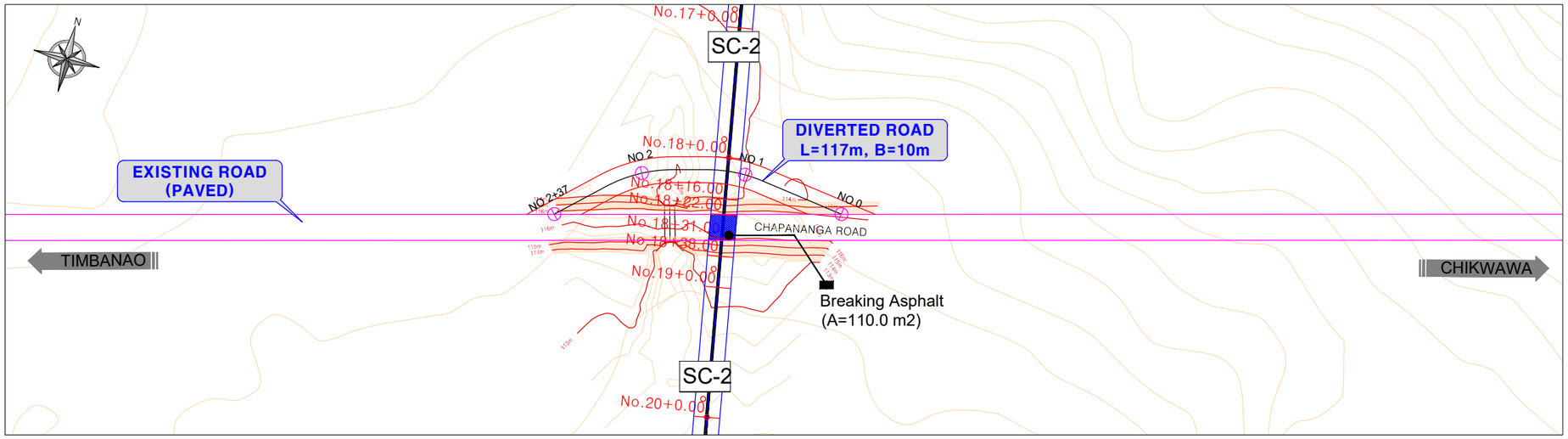
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1:1,000
		TITLE	DATE		DRAWING No
		EXISTING & DIVERTED ROAD OF SC1	JUNE, 2022		C-20-01

EXISTING & DIVERTED ROAD OF SC2(1/2)

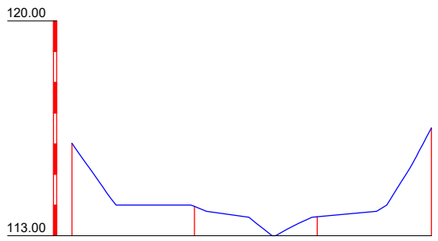
(SC2 NO. 18+22.00)

S = 1:1,000

Unit is meter(m) of The International System of Units(SI)

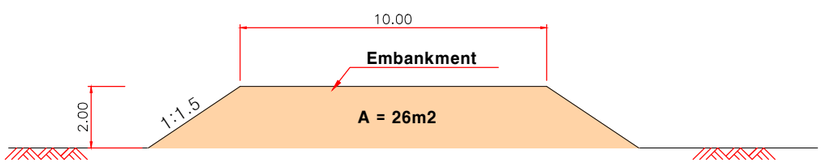


PROFILE OF DIVERTED ROAD

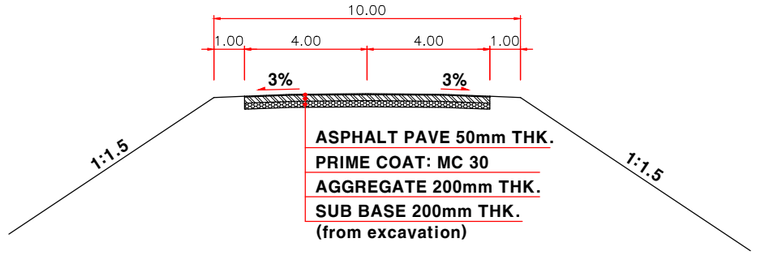


GROUND LEVEL	0+ 116.01	1+113.95	2+113.62	+37.27 116.52
STA. NO.	No	No	No	

TYPICAL CROSS SECTION OF DIVERTED ROAD (UNPAVE)



TYPICAL CROSS SECTION OF EXISTING ROAD (PAVE)



MATERIAL SUMMARY

Descriptions	Uint	Quantity		Total	Remark
		Calculation	Total		
Breaking Asphalt(T=50mm)	m3	110 x 0.05 =	5.50	5.50	
Asphalt Pave(T=50mm)	m3	110 x 0.05 =	5.50	5.50	
Prime Coat(MC 30)	m2	110 =	110.0	110.0	
Aggregate(T=200mm)	m3	110 x 0.2 =	22.0	22.0	
Sub base(T=200mm)	m3	110 x 0.2 =	22.0	22.0	
Embankment fill(Diverted Road)	m3	26 x 117 =	3,042	3,042	
Disposal(Diverted Road)	m3	26 x 117 =	3,042	3,042	

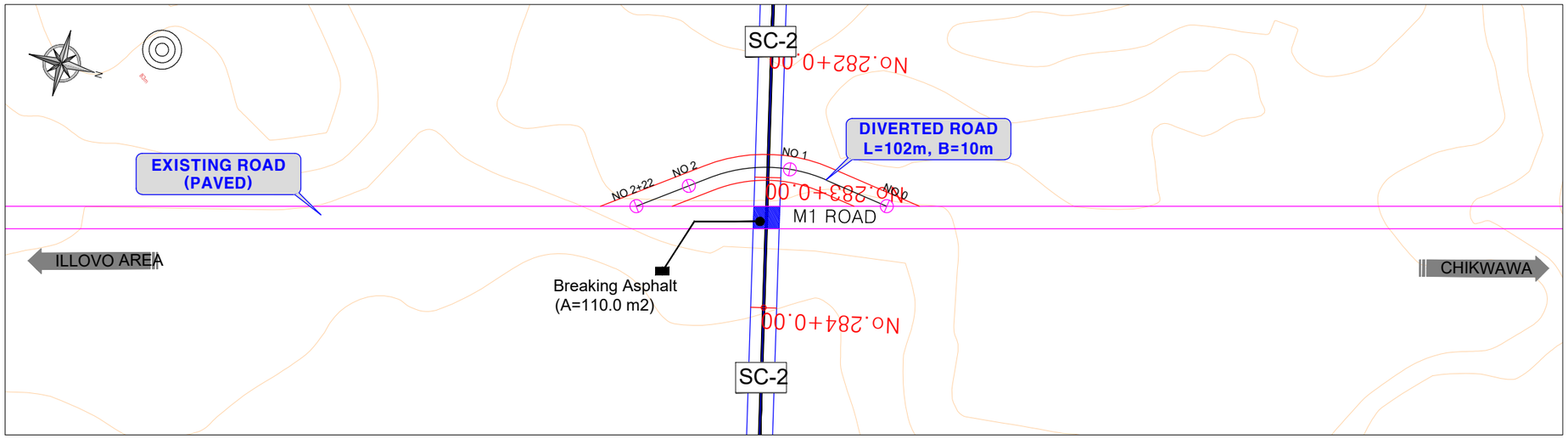
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1:1,000
		TITLE	DATE		DRAWING No
		EXISTING & DIVERTED ROAD OF SC2(1/2)	JUNE, 2022		C-21-01

EXISTING & DIVERTED ROAD OF SC2(2/2)

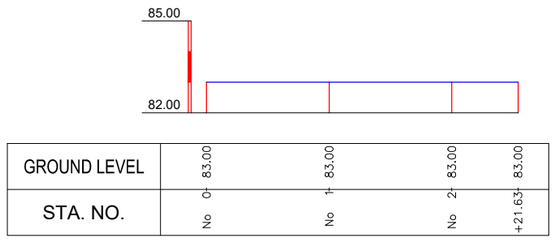
(SC2 NO. 283+11.00)

S = 1:1,000

Unit is meter(m) of The International System of Units(SI)

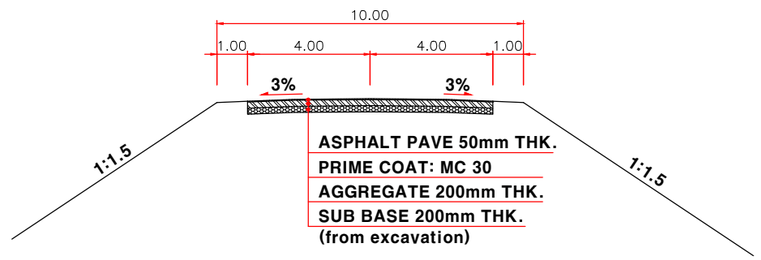


PROFILE OF DIVERTED ROAD

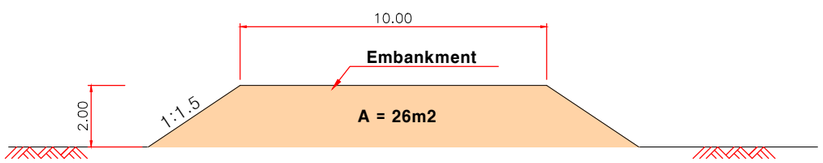


GROUND LEVEL	83.00	83.00	83.00	83.00
STA. NO.	No 0+	No 1+	No 2+	+21.63

TYPICAL CROSS SECTION OF EXISTING ROAD (PAVE)



TYPICAL CROSS SECTION OF DIVERTED ROAD (UNPAVE)



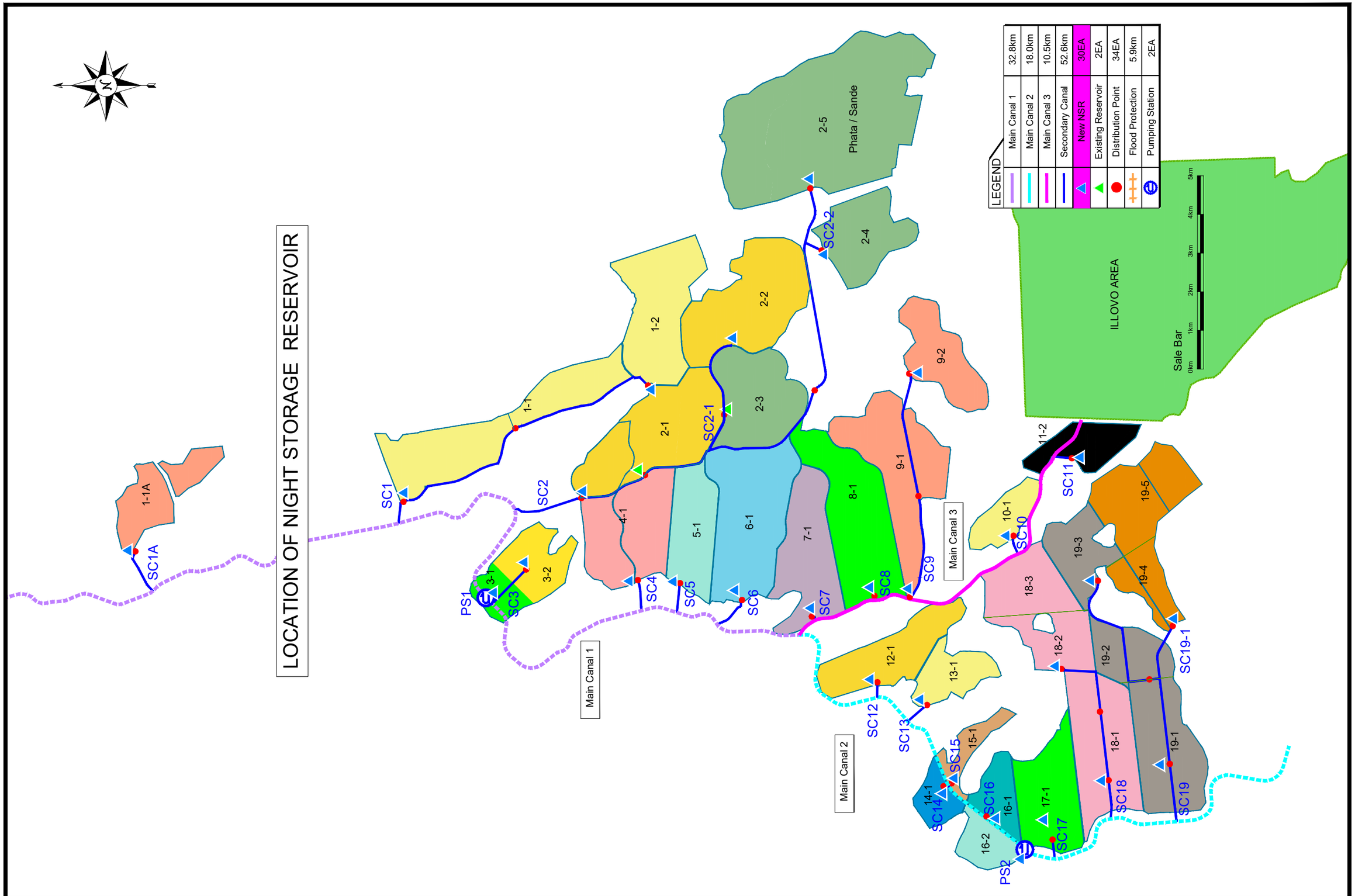
MATERIAL SUMMARY

Descriptions	Uint	Quantity		Total	Remark
		Calculation	Total		
Breaking Asphalt(T=50mm)	m3	110 x 0.05 =	5.50	5.50	
Asphalt Pave(T=50mm)	m3	110 x 0.05 =	5.50	5.50	
Prime Coat(MC 30)	m2	110 =	110.0	110.0	
Aggregate(T=200mm)	m3	110 x 0.2 =	22.0	22.0	
Sub base(T=200mm)	m3	110 x 0.2 =	22.0	22.0	
Embankment fill(Diverted Road)	m3	26 x 102 =	2,652	2,652	
Disposal(Diverted Road)	m3	26 x 102 =	2,652	2,652	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1:1,000 DRAWING No
		TITLE	DATE		
		EXISTING & DIVERTED ROAD OF SC2(2/2)	JUNE, 2022		C-21-02

D. Night Storage Reservoir

LOCATION OF NIGHT STORAGE RESERVOIR



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LOCATION OF NIGHT STORAGE RESERVOIR	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-01-01

NIGHT STORAGE RESERVOIR LIST

TABLE

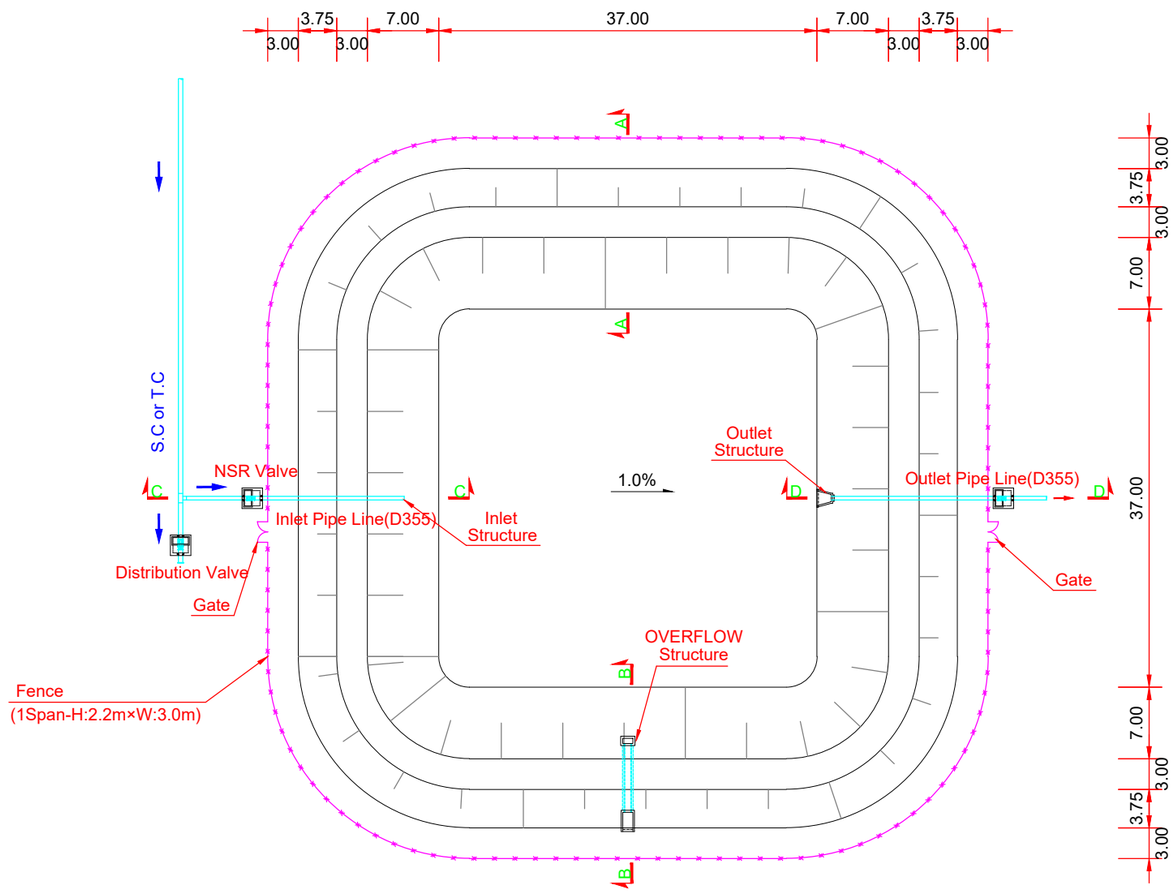
No.	Canal	Station	Area	Diameter (m)		Type	EA	A	B	C	D
				SC or TC	NSR			5,000~10,000 (5,000 Check)	10,000-15,000 (10,000 Check)	15,000-20,000 (15,000 Check)	20,000 over (20,000 Check)
1	S1A	No.24+00	310	0.630	0.630	Type C	1			1	
2	S1	No.12+00	382	0.710	0.710	Type C	1			1	
3	S1	No.164+20	497	0.800	0.710	Type D	1				1
4	S2	No.35+00	158	0.450	0.355	Type A	1	1			
5	S2-1	No.20+00	1,202	1.100	0.710	EXIST					
6	S2-2	No.09+04	332	0.630	0.630	Type C	1			1	
7	S2	No.290+08	1,038	1.000	0.710	Type D	1				1
8	PS1	No.01+00	120	-	0.355	Type A	1	1			
9	S3	No.26+00	208	0.560	0.500	Type B	1		1		
10	S4	No.16+08	480	0.800	0.710	Type D	1				1
11	S5-1	No.15+00	314	0.630	0.630	Type C	1			1	
12	S6-1	No.22+00	628	0.900	0.710	Type D	1				1
13	S12-1	No.07+46	347	0.710	0.630	Type C	1			1	
14	S13-1	No.13+00	188	0.500	0.355	Type A	1	1			
15	S14-1	No.01+00	109	0.400	0.355	Type A	1	1			
16	S15-1	No.01+00	106	0.400	0.355	Type A	1	1			
17	S16-1	No.02+00	116	0.400	0.355	Type A	1	1			
18	S16-2	No.02+00	141	-	0.355	Type A	1	1			
19	S17-1	No.20+00	367	0.800	0.630	Type C	1			1	
20	S18-1	No.20+00	505	0.710	0.710	Type D	1				1
21	S18-2 & S18-3	No.94+09	517	0.900	0.710	Type D	1				1
22	S19-1 & S19-2	No.30+00	673	0.710	0.710	Type D	1				1
23	S19-3	No.155+06	229	0.560	0.500	Type B	1		1		
24	S19-4 & S19-5	No.29+00	562	0.900	0.710	Type D	1				1

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		NIGHT STORAGE RESERVOIR LIST	JUNE, 2022		D-02-01

NIGHT STORAGE RESERVOIR-TYPE A(1/2)

S=1:300

Unit is meter(m) of The International System of Units(SI)

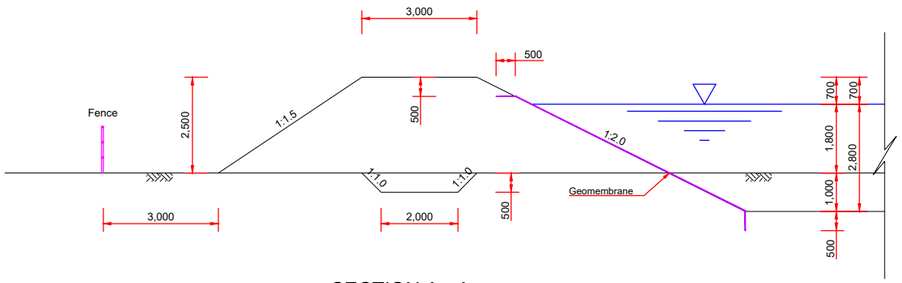


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 300
		TITLE	DATE		DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE A(1/2)	JUNE, 2022		D-02-02

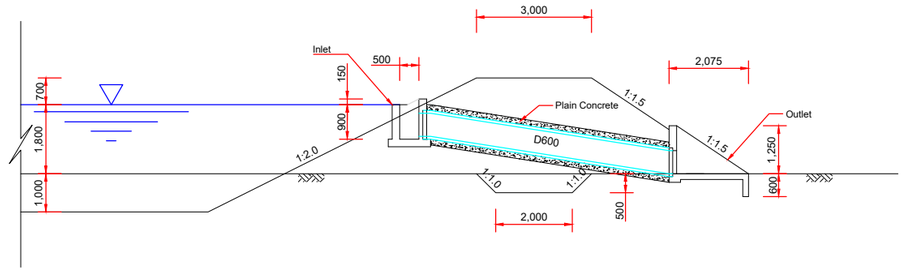
NIGHT STORAGE RESERVOIR-TYPE A(2/2)

S=1:80

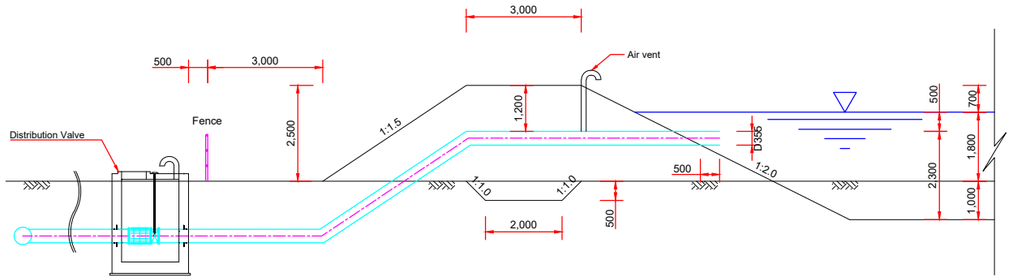
Unit is millimeter(mm) of The International System of Units(SI)



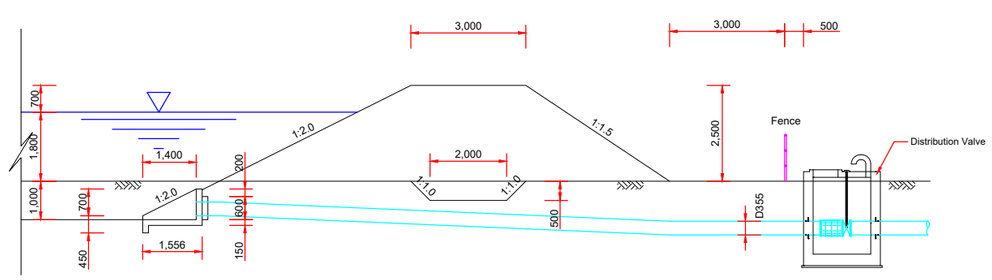
SECTION A - A
STANDARD CROSS SECTION



SECTION B - B
OVERFLOW STRUCTURE



SECTION C - C
INLET STRUCTURE



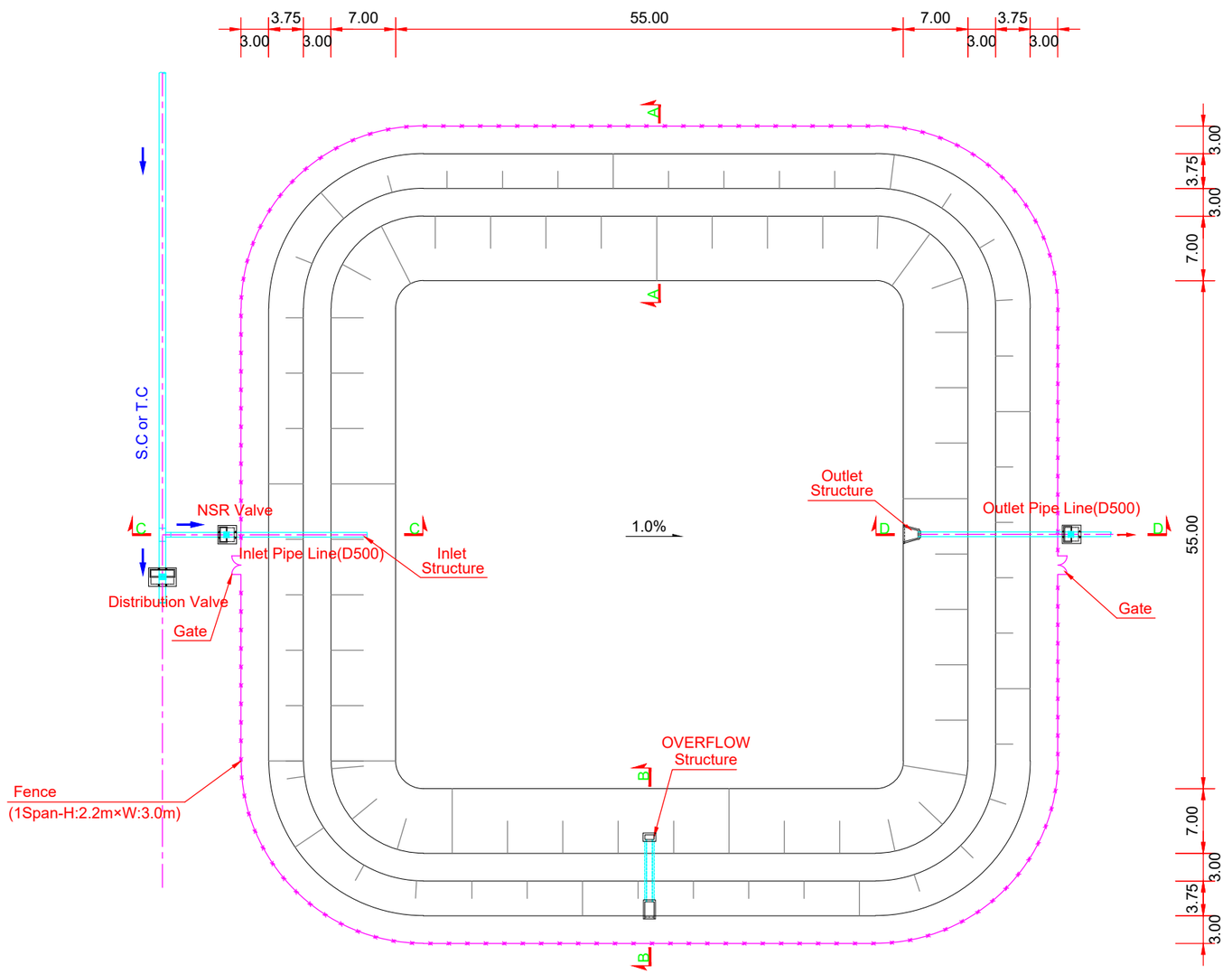
SECTION D - D
OUTLET STRUCTURE

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 80
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE A(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-03

NIGHT STORAGE RESERVOIR-TYPE B(1/2)

S=1:300

Unit is meter(m) of The International System of Units(SI)

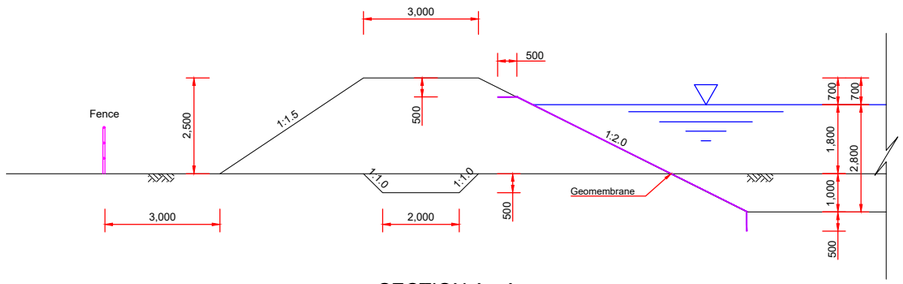


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 300
		TITLE	DATE		DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE B(1/2)	JUNE, 2022		D-02-04

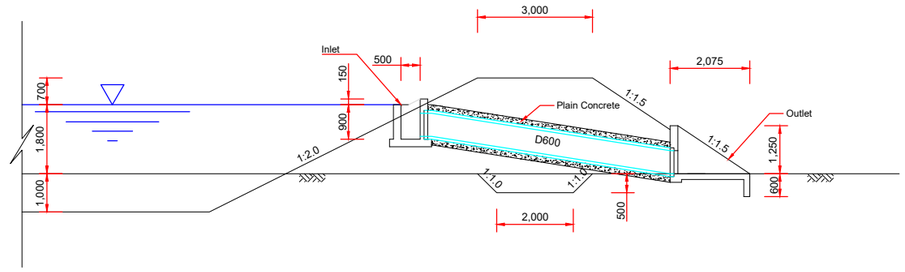
NIGHT STORAGE RESERVOIR-TYPE B(2/2)

S=1:80

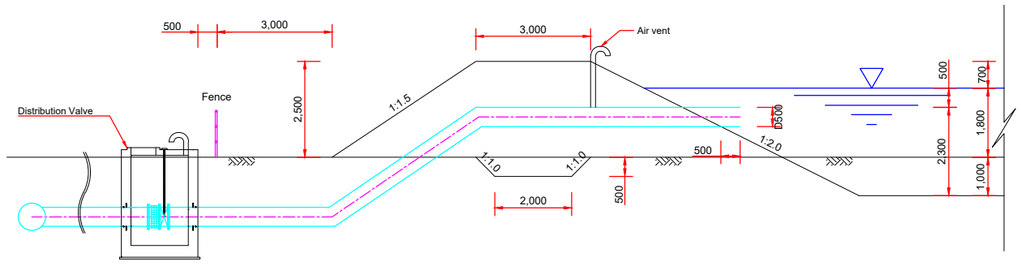
Unit is millimeter(mm) of The International System of Units(SI)



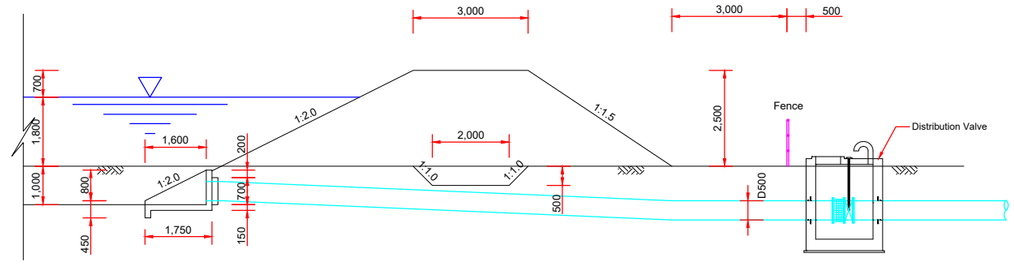
SECTION A - A
STANDARD CROSS SECTION



SECTION B - B
OVERFLOW STRUCTURE



SECTION C - C
INLET STRUCTURE



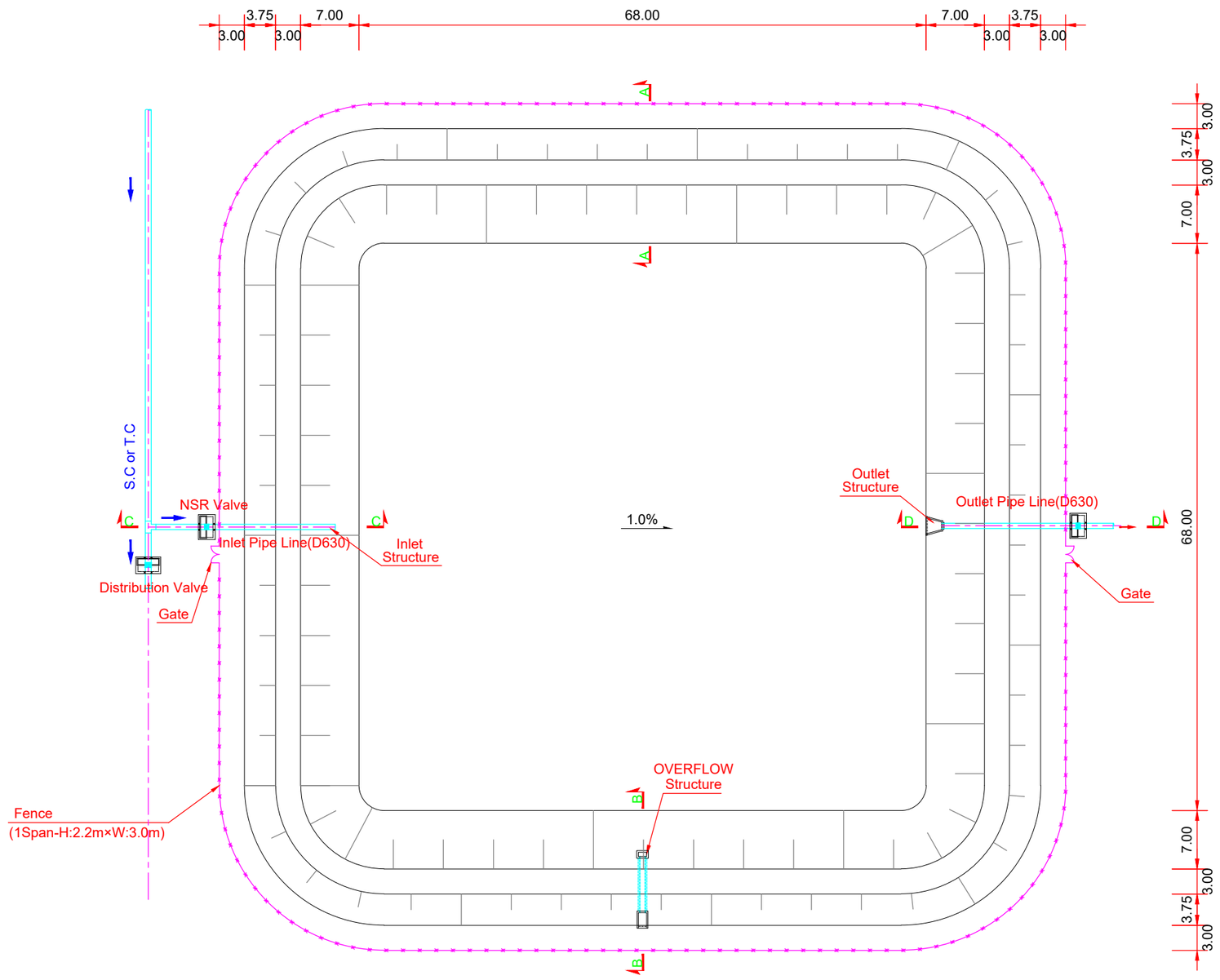
SECTION D - D
OUTLET STRUCTURE

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 80
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE B(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-05

NIGHT STORAGE RESERVOIR-TYPE C(1/2)

S=1:300

Unit is meter(m) of The International System of Units(SI)

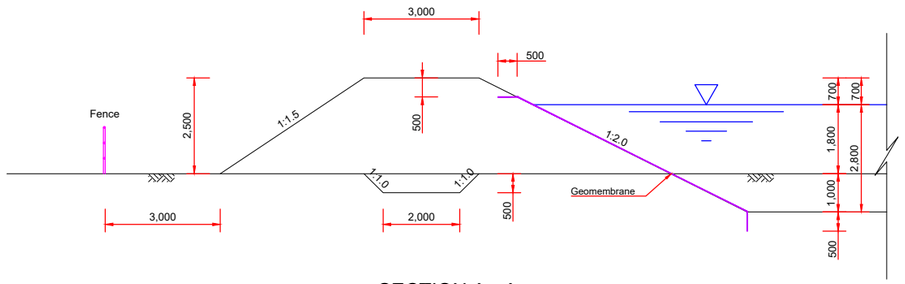


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 300
		TITLE	DATE		DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE C(1/2)	JUNE, 2022		D-02-06

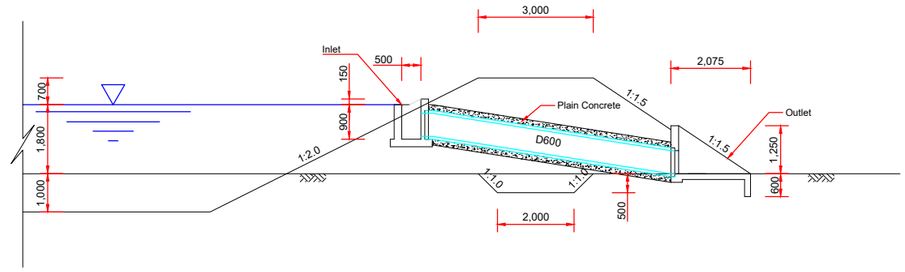
NIGHT STORAGE RESERVOIR-TYPE C(2/2)

S=1:80

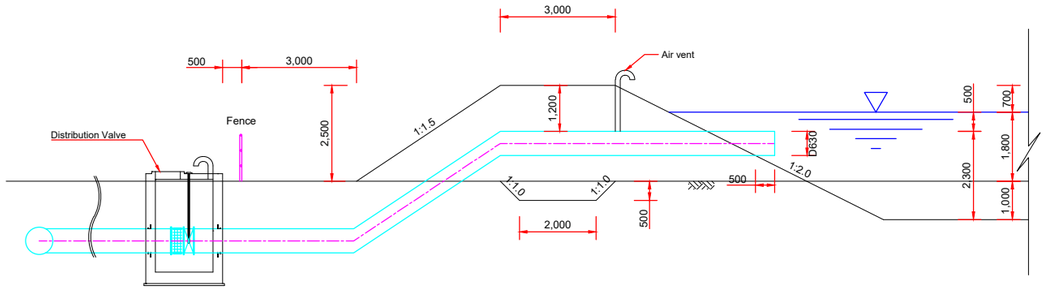
Unit is millimeter(mm) of The International System of Units(SI)



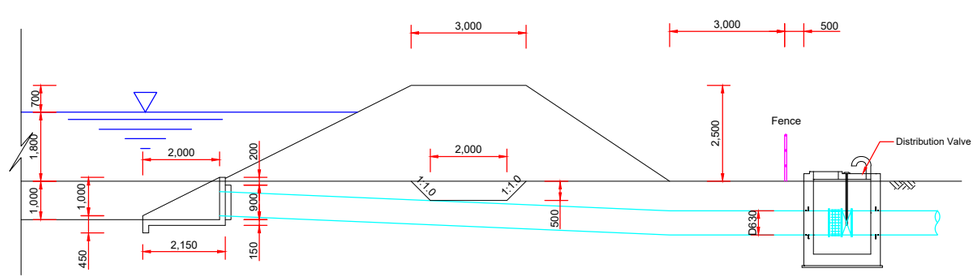
SECTION A - A
STANDARD CROSS SECTION



SECTION B - B
OVERFLOW STRUCTURE



SECTION C - C
INLET STRUCTURE



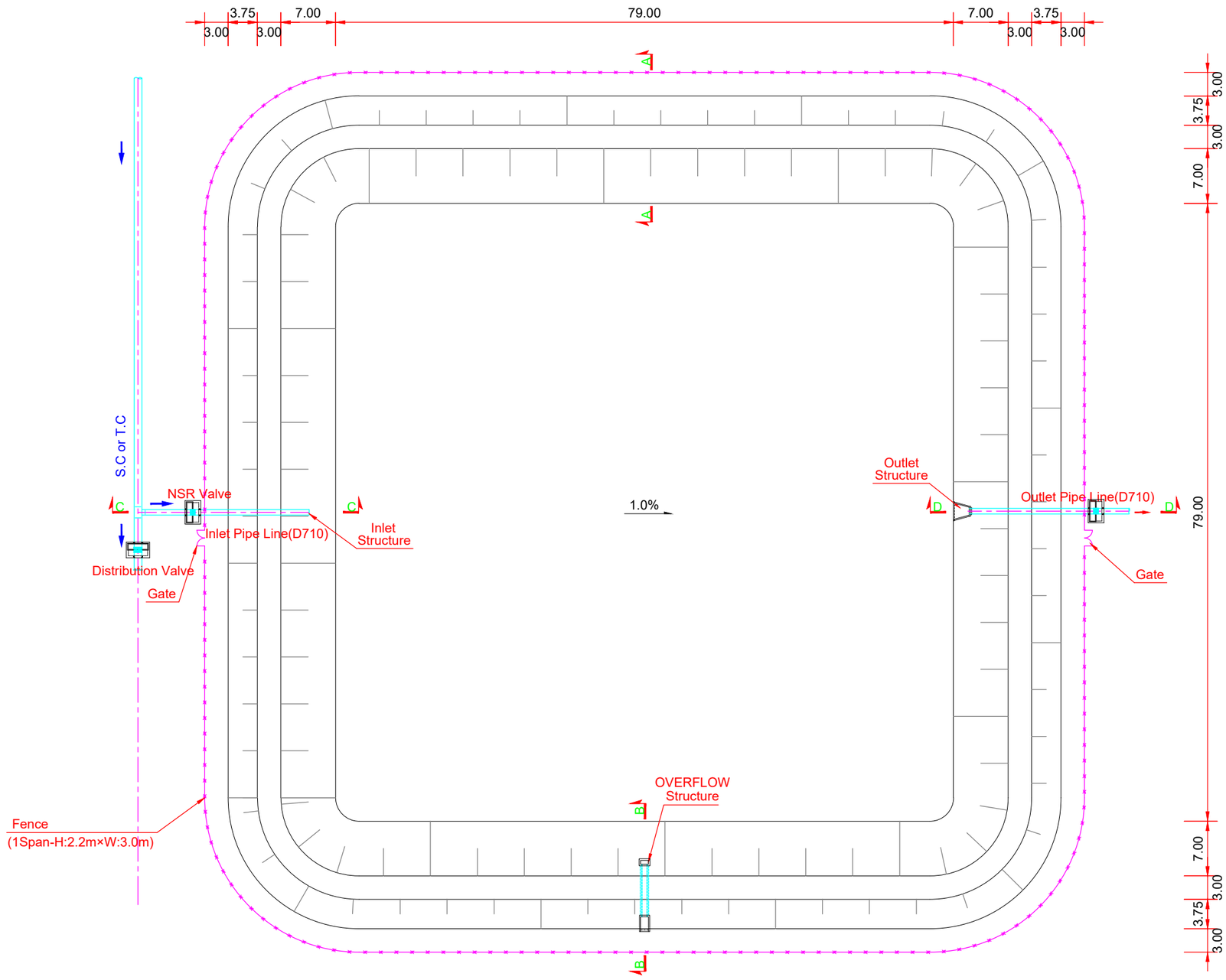
SECTION D - D
OUTLET STRUCTURE

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 80
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE C(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-07

NIGHT STORAGE RESERVOIR-TYPE D(1/2)

S=1:300

Unit is meter(m) of The International System of Units(SI)

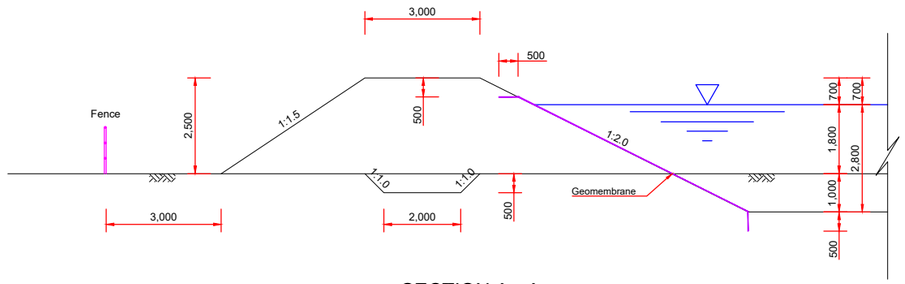


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 300
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE D(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-08

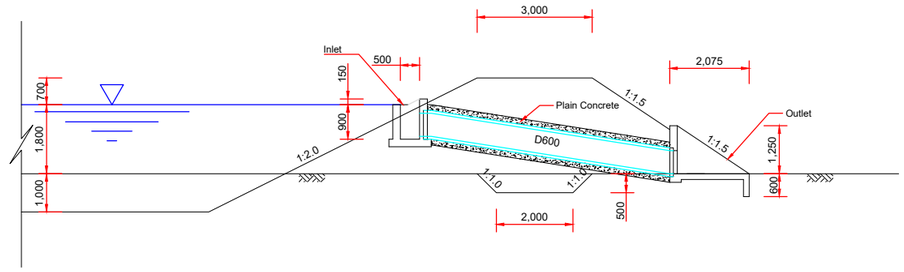
NIGHT STORAGE RESERVOIR-TYPE D(2/2)

S=1:80

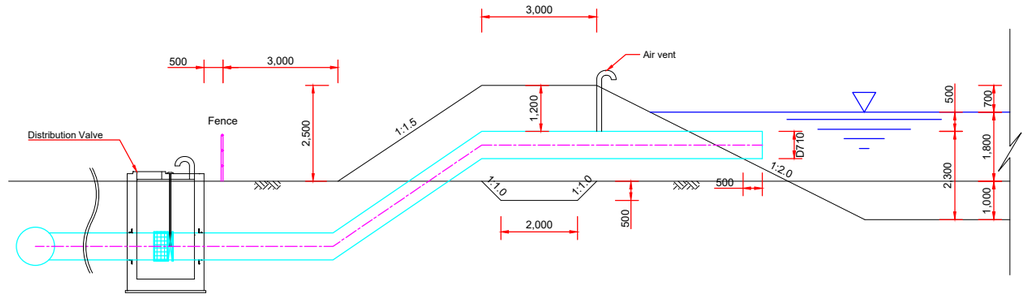
Unit is millimeter(mm) of The International System of Units(SI)



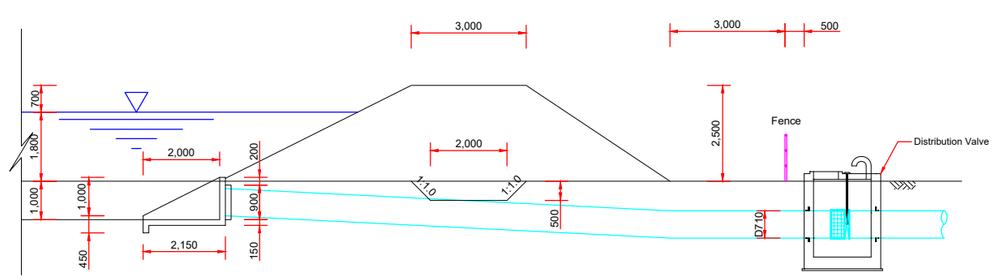
SECTION A - A
STANDARD CROSS SECTION



SECTION B - B
OVERFLOW STRUCTURE



SECTION C - C
INLET STRUCTURE



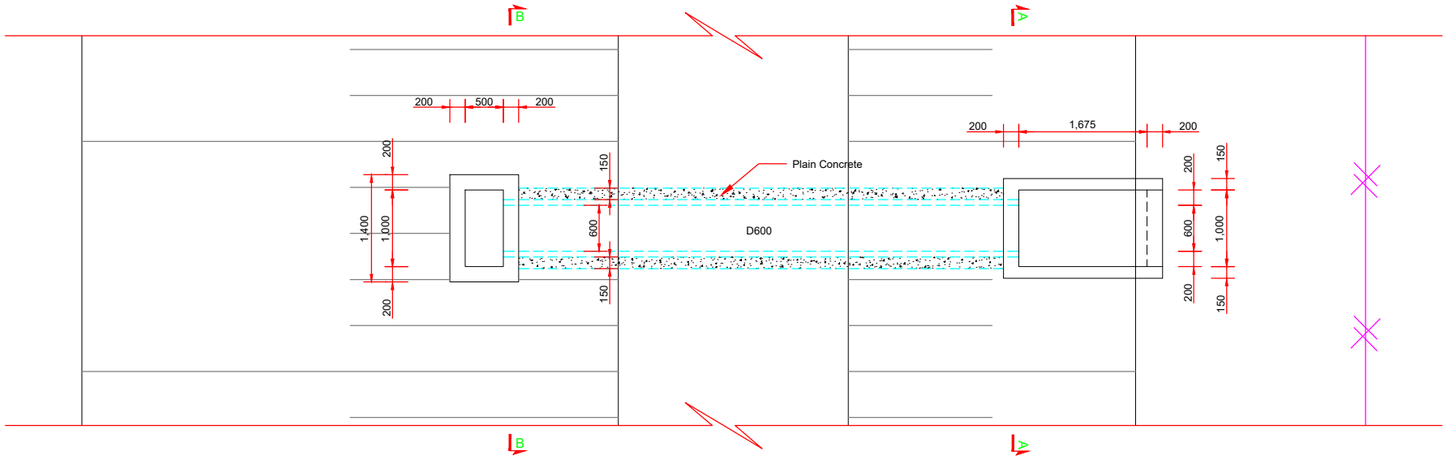
SECTION D - D
OUTLET STRUCTURE

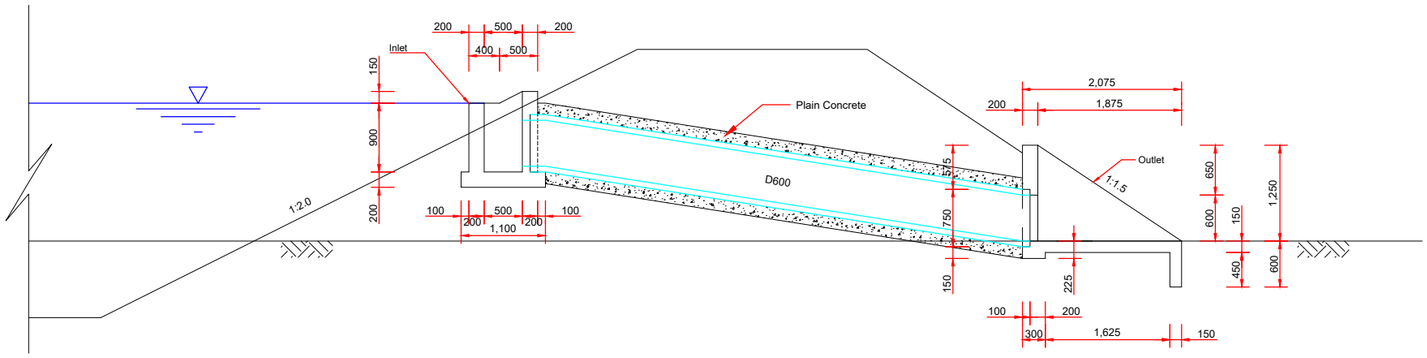
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 80
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		NIGHT STORAGE RESERVOIR-TYPE D(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-09

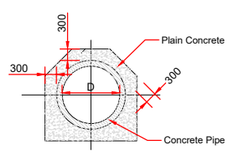
General of OVERFLOW Structure

S = 1 : 40

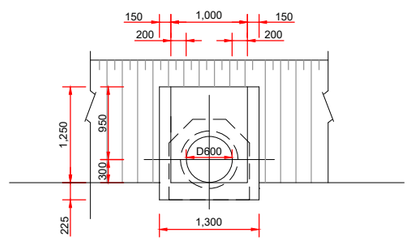
Unit is millimeter(mm) of The International System of Units(SI)



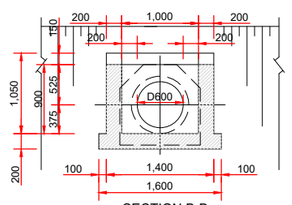




TYPICAL SINGLE CULVERT
BED AND SURROUND DETAIL
Scale 1 : 80



SECTION A-A
Scale 1 : 40



SECTION B-B
Scale 1 : 40

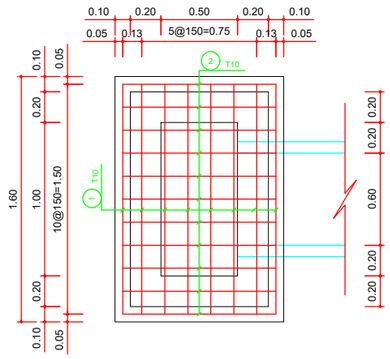
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 40
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General of OVERFLOW Structure	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-10

DETAIL OF OVERFLOW Structure(1/2)
(INLET)

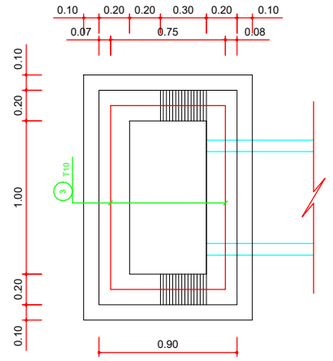
S = 1 : 20

Unit is meter(m) of The International System of Units(SI)

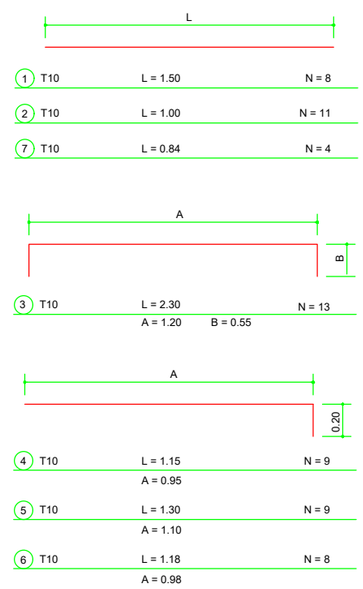
BOTTOM



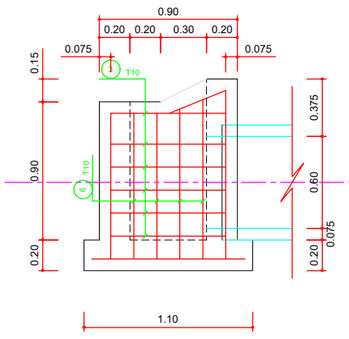
TOP



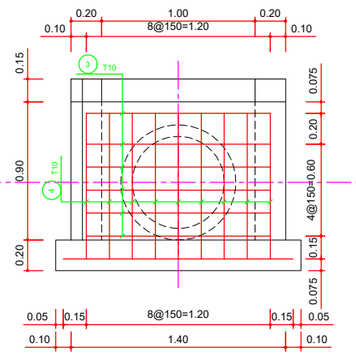
Detail of BAR



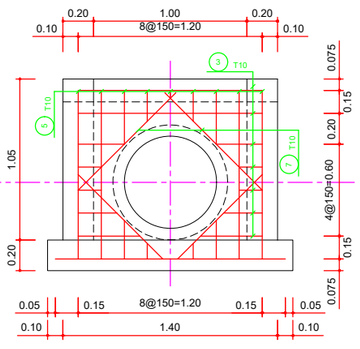
SIDE VIEW



FRONT



BACK



OVERFLOW Structure(INLET)				
NO.	D	L	N	Total
1	T10	1.50	8	12.000
2	T10	1.00	11	11.000
3	T10	2.30	13	29.900
4	T10	1.15	9	10.350
5	T10	1.30	9	11.700
6	T10	1.18	8	9.440
7	T10	0.84	4	3.360
T10=	87.75 x 0.616 = 54.054	kg		

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 20
		TITLE	DATE		DRAWING No
		DETAIL OF OVERFLOW Structure(1/2)	JUNE, 2022		D-02-11

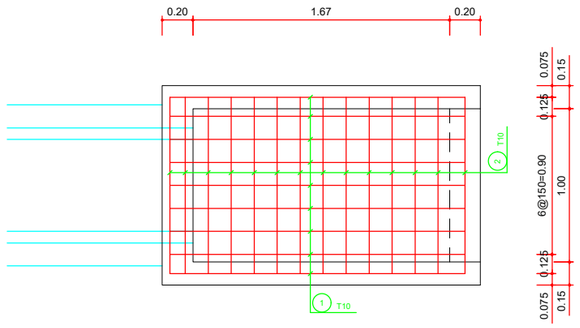
DETAIL OF OVERFLOW Structure(2/2)

(OUTLET)

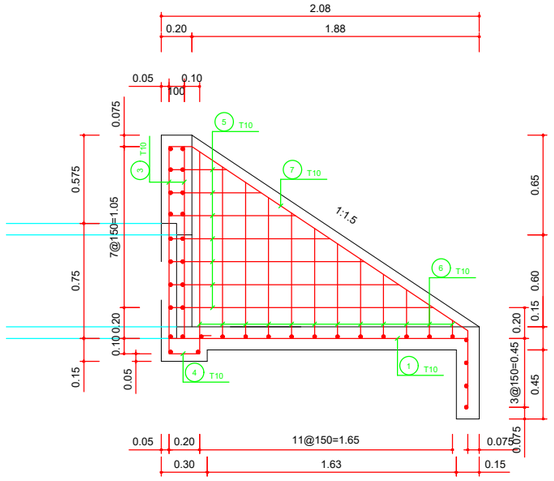
S = 1 : 20

Unit is meter(m) of The International System of Units(SI)

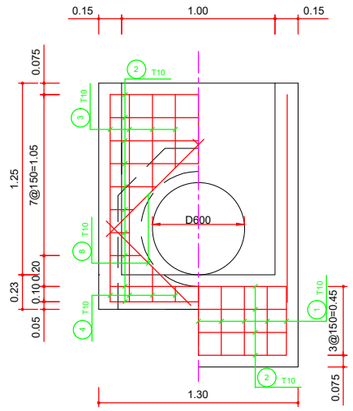
BOTTOM



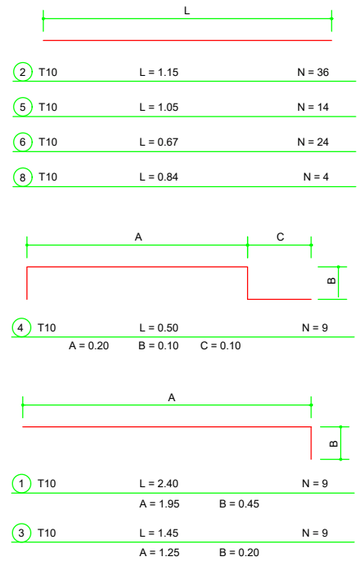
SIDE VIEW



FRONT VIEW



Detail of BAR



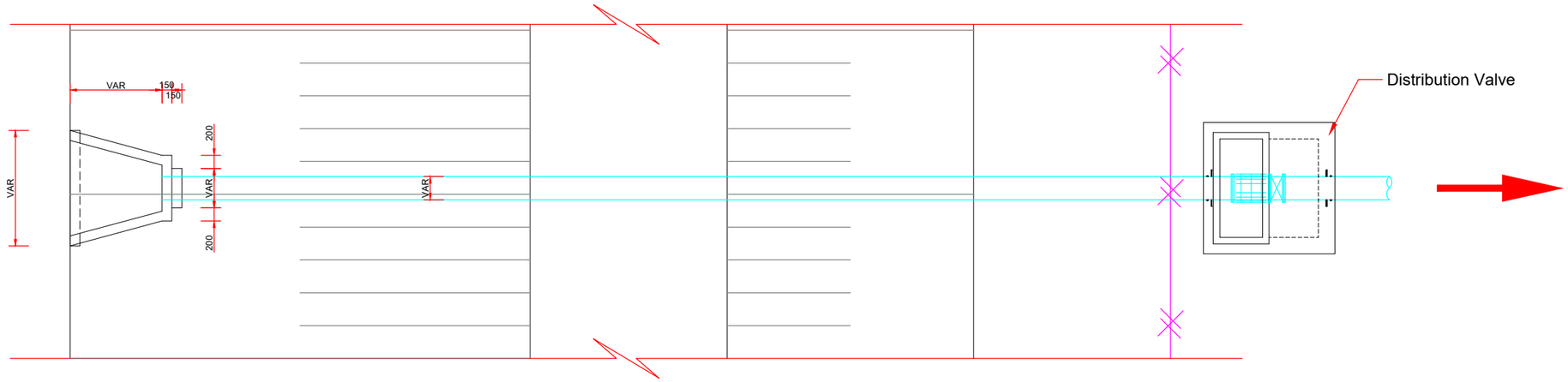
OVERFLOW Structure(OUTLET)				
NO.	D	L	N	Total
1	T10	2.40	9	21.600
2	T10	1.15	36	41.400
3	T10	1.45	9	13.050
4	T10	0.50	9	4.500
5	T10	1.05	14	14.700
6	T10	0.67	24	16.080
7	T10	2.46	2	4.920
8	T10	0.84	4	3.360
T10= 119.610 x 0.616 = 73.680 kg				

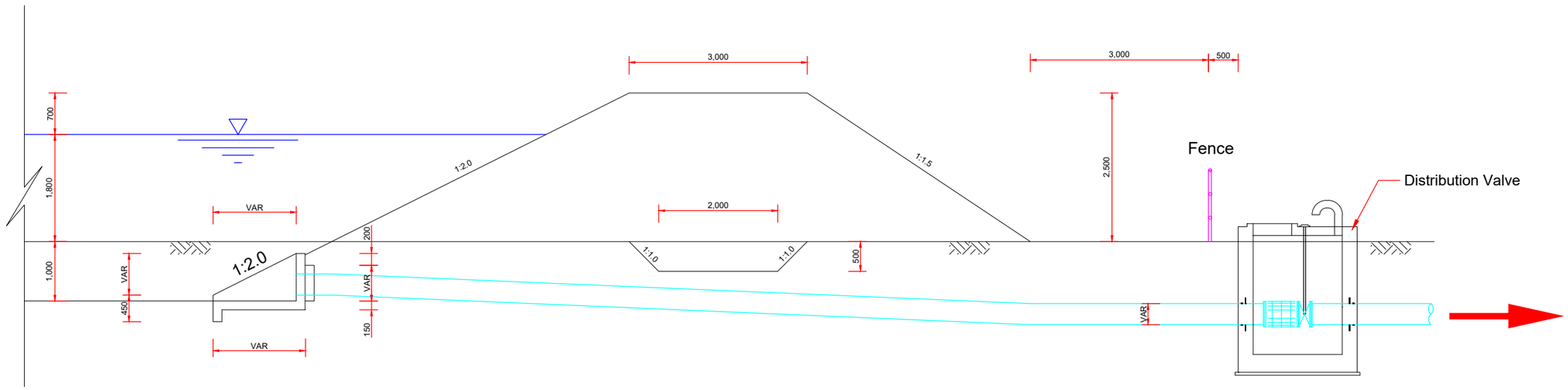
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 20
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		DETAIL OF OVERFLOW Structure(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-12

General of OUTLET Structure

S = 1 : 40

Unit is millimeter(mm) of The International System of Units(SI)





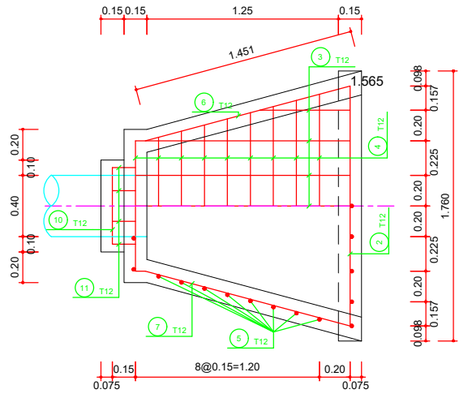
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 40
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		General of OUTLET Structure	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-13

DETAIL OF OUTLET Structure(1/3)

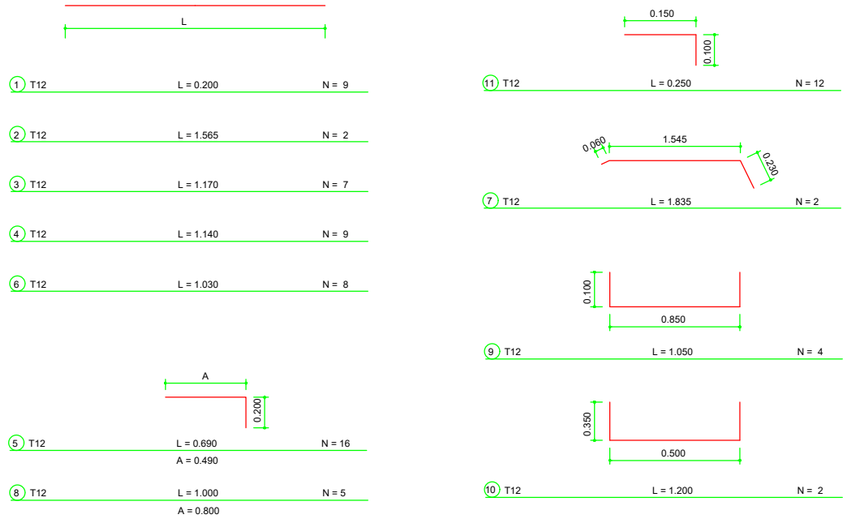
(INLET_Type1) S = 1 : 20

Unit is meter(m) of The International System of Units(SI)

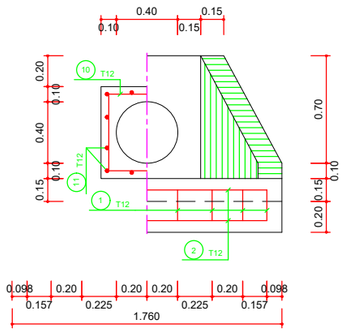
PLAN



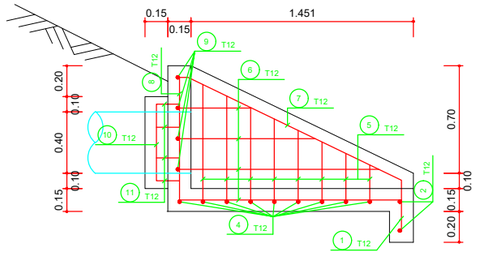
Detail of BAR



FRONT VIEW



SIDE VIEW



D 355				
NO.	D	L	N	Total
1	T12	0.200	9	1.800
2	T12	1.565	2	3.130
3	T12	1.170	7	8.190
4	T12	1.140	9	10.260
5	T12	0.690	16	11.040
6	T12	1.030	8	8.240
7	T12	1.835	2	3.670
8	T12	1.000	5	5.000
9	T12	1.050	4	4.200
10	T12	1.200	2	2.400
11	T12	0.250	12	3.000
T12= 60.930 x 0.888 kg				

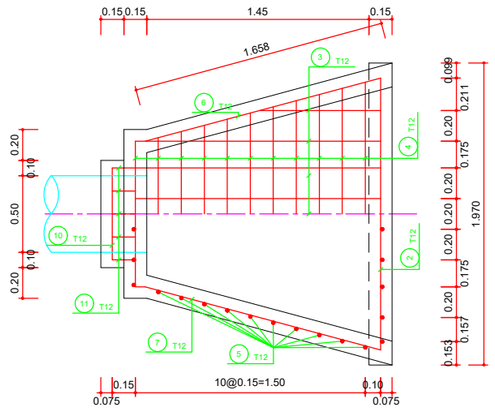
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 20
		TITLE	DATE		DRAWING No
		DETAIL OF OUTLET Structure(1/3)	JUNE, 2022		D-02-14

DETAIL OF OUTLET Structure(2/3)

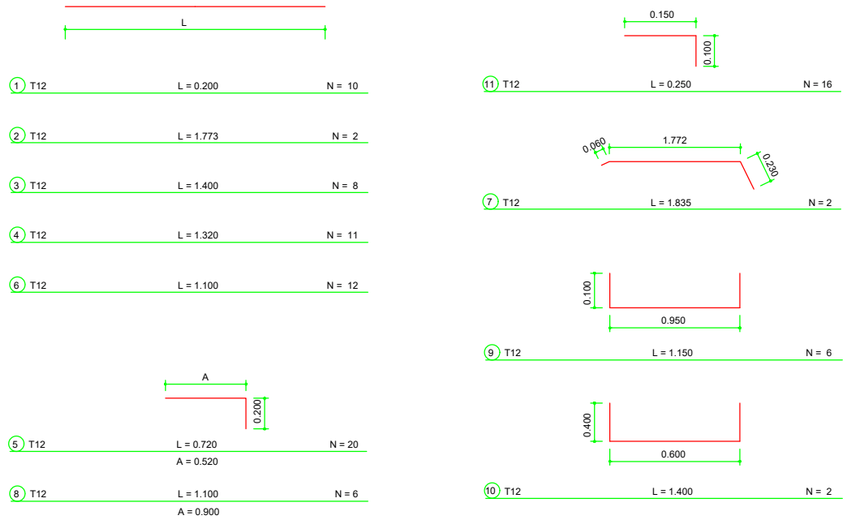
(INLET_Type2) S = 1 : 20

Unit is meter(m) of The International System of Units(SI)

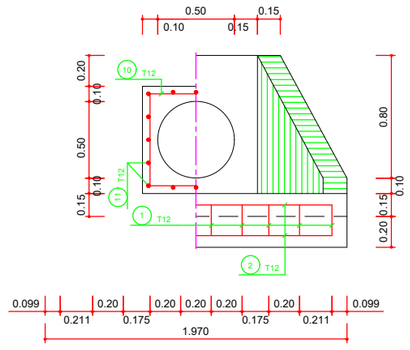
PLAN



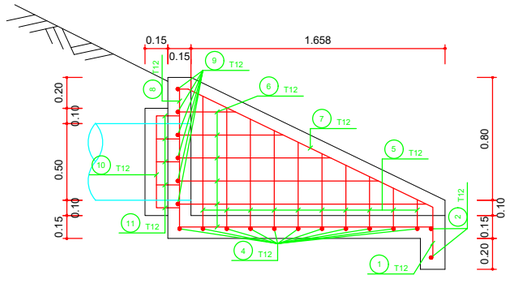
Detail of BAR



FRONT VIEW



SIDE VIEW



D 500				
NO.	D	L	N	Total
1	T12	0.200	10	2.000
2	T12	1.773	2	3.546
3	T12	1.400	8	11.200
4	T12	1.320	11	14.520
5	T12	0.720	20	14.400
6	T12	1.100	12	13.200
7	T12	1.835	2	3.670
8	T12	1.000	5	5.000
9	T12	1.150	6	6.900
10	T12	1.200	2	2.400
11	T12	0.250	16	4.000
T12= 80.836 x 0.888 kg				

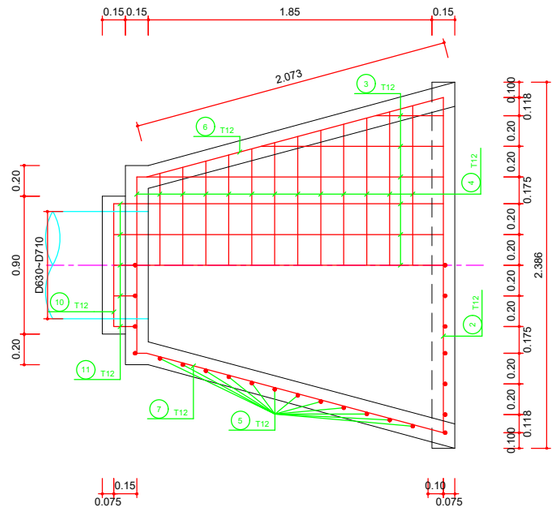
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S = 1 : 20
		TITLE	DATE		DRAWING No
		DETAIL OF OUTLET Structure(2/3)	JUNE, 2022		D-02-15

DETAIL OF OUTLET Structure(3/3)

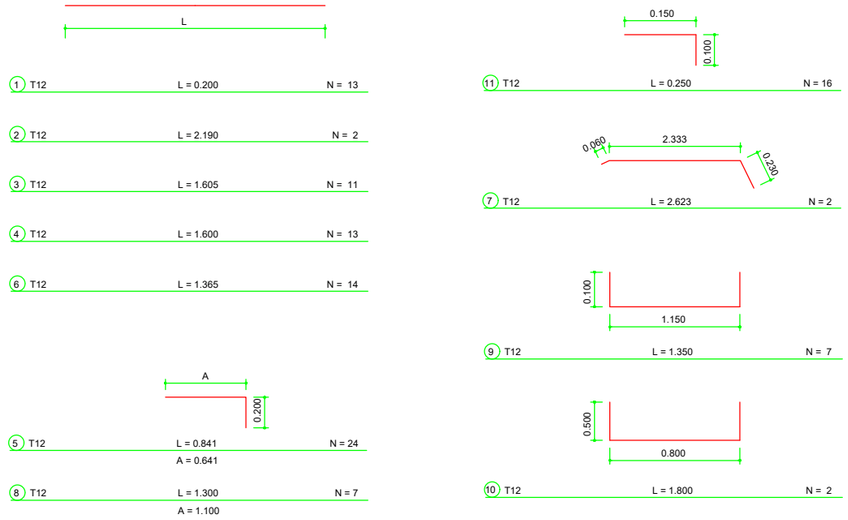
(INLET_Type3) S = 1 : 20

Unit is meter(m) of The International System of Units(SI)

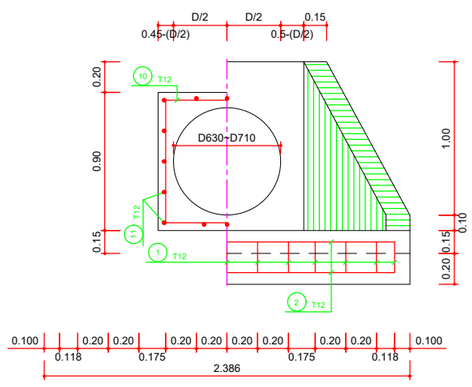
PLAN



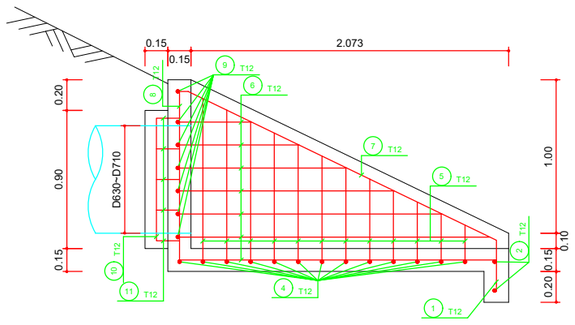
Detail of BAR



FRONT VIEW



SIDE VIEW

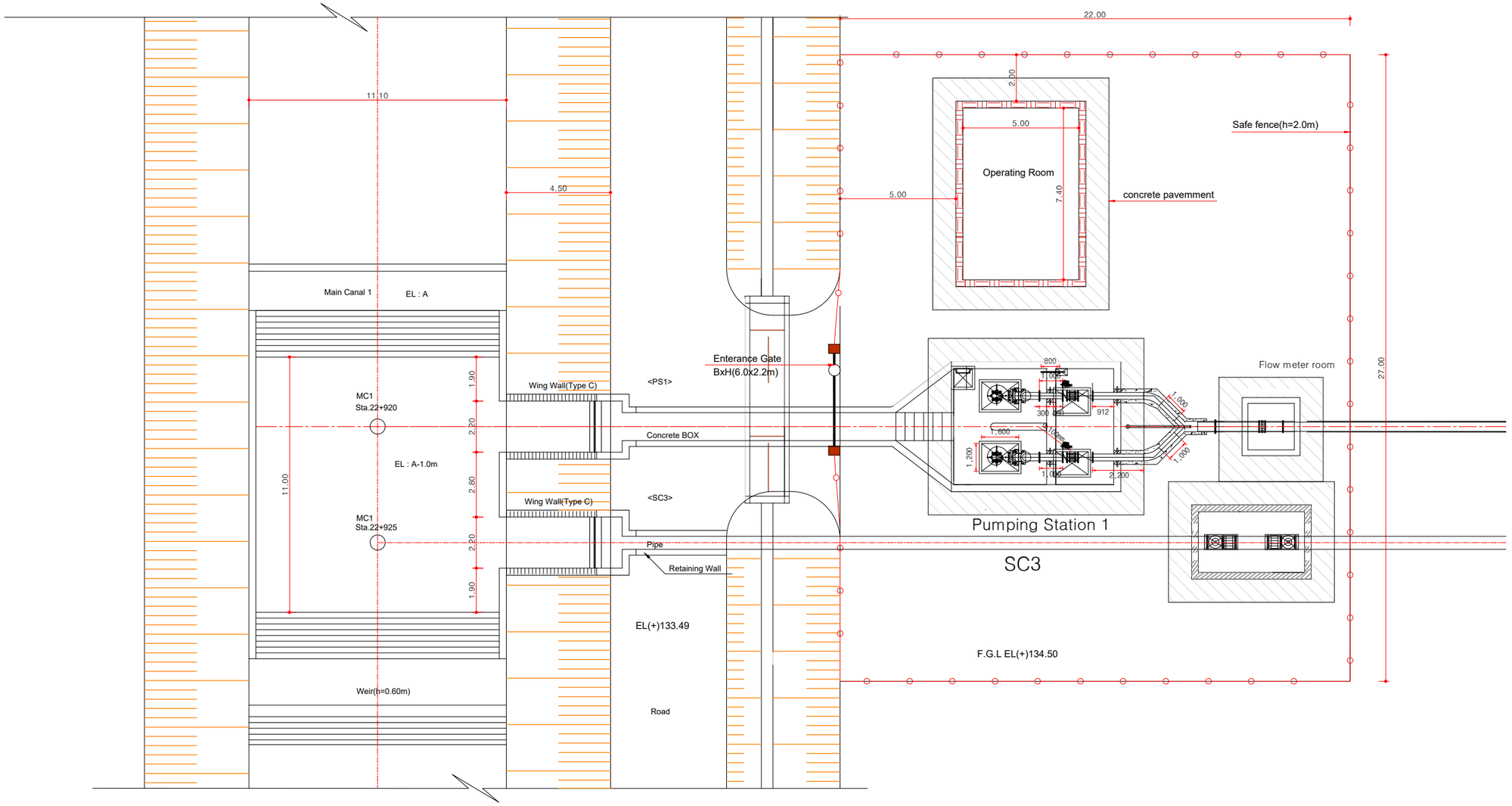


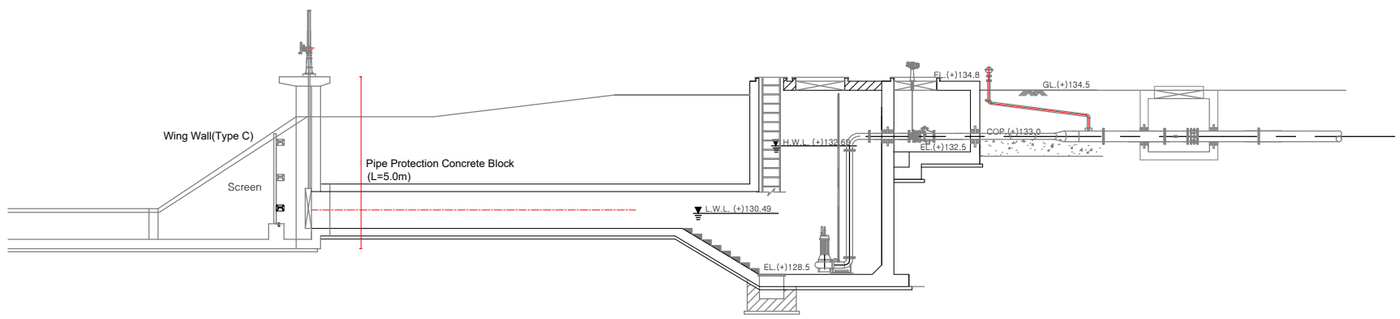
D 630~710				
NO.	D	L	N	Total
1	T12	0.200	13	2.600
2	T12	2.190	2	4.380
3	T12	1.605	11	17.655
4	T12	1.600	13	20.800
5	T12	0.841	24	20.184
6	T12	1.365	14	19.110
7	T12	2.623	2	5.246
8	T12	1.300	7	9.100
9	T12	1.350	7	9.450
10	T12	1.800	2	3.600
11	T12	0.250	16	4.000
T12= 116.125 x 0.888 kg				

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S = 1 : 20
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		DETAIL OF OUTLET Structure(3/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	D-02-16

E. Pumping Station

GENERAL PLAN OF PUMPING STATION-1



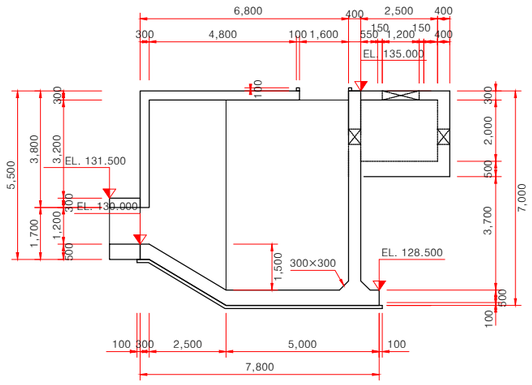


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		GENERAL PLAN OF PUMPING STATION-1	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-01

PUMPING STATION-1 GENERAL PLAN

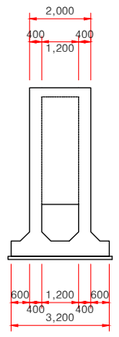
Longitudial Section

S=1:100



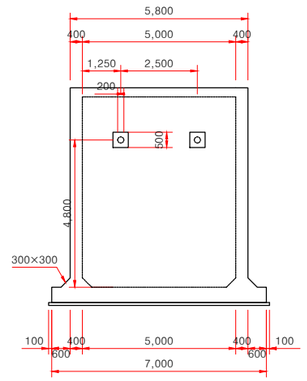
Cross section : Beginning point

S=1:100



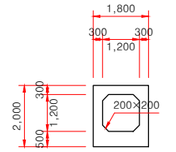
Cross section : End point

S=1:100



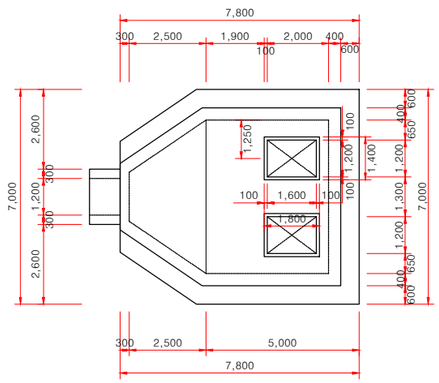
Inlet Culvert

S=1:100



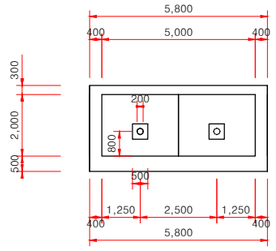
Floor Plan

S=1:100



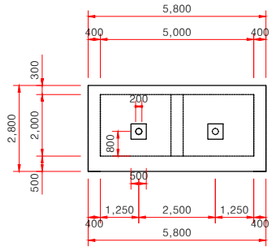
Wall of Machine room : Beginning point

S=1:100



Wall of Machine room : End point

S=1:100

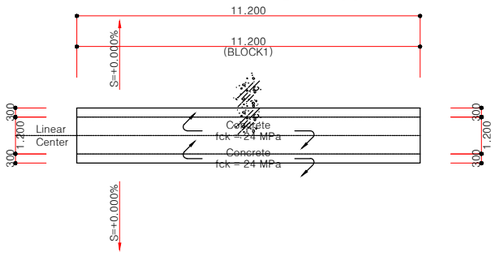


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-1 GENERAL PLAN	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-02

PUMPING STATION-1 STRUCTURAL PLAN(1/6)

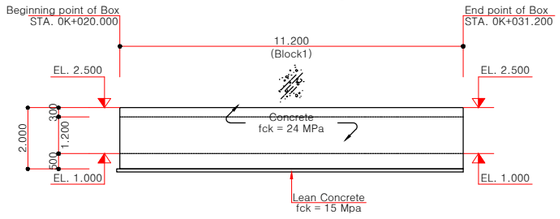
Floor Plan

S=1:200



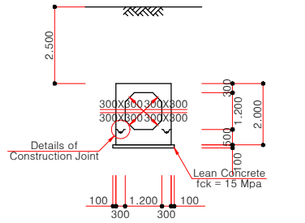
Longitudinal Section

S=1:200



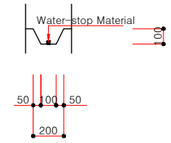
Standard Section

S=1:200



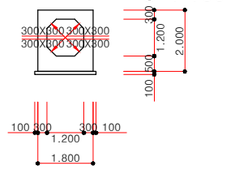
Details of Construction Joint

S=1:40



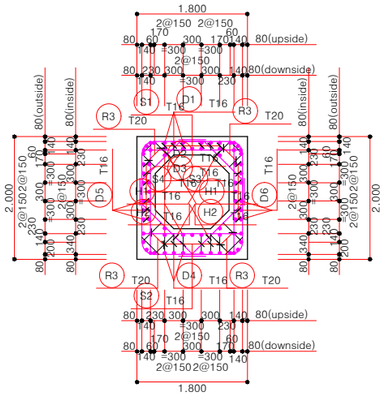
General Plan

S=1:100



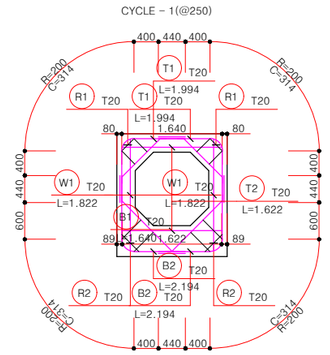
Standard Section

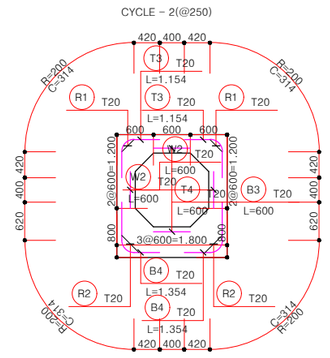
S=1:50



Assembly view of Major Reinforcement

S=1:50



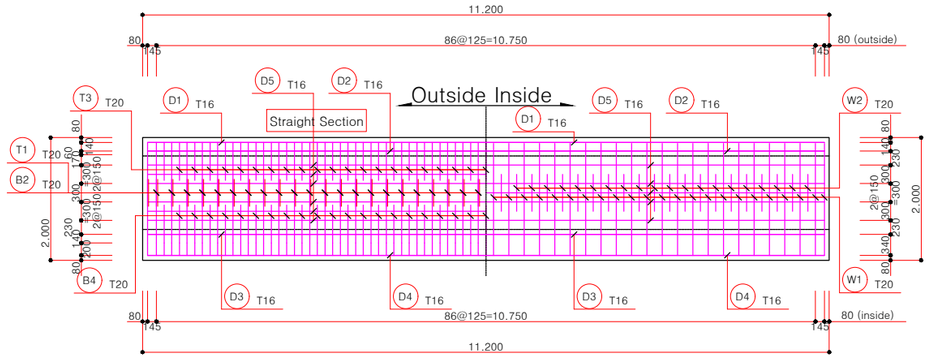


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-1 STRUCTURAL PLAN(1/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-03

PUMPING STATION-1 STRUCTURAL PLAN(2/6)

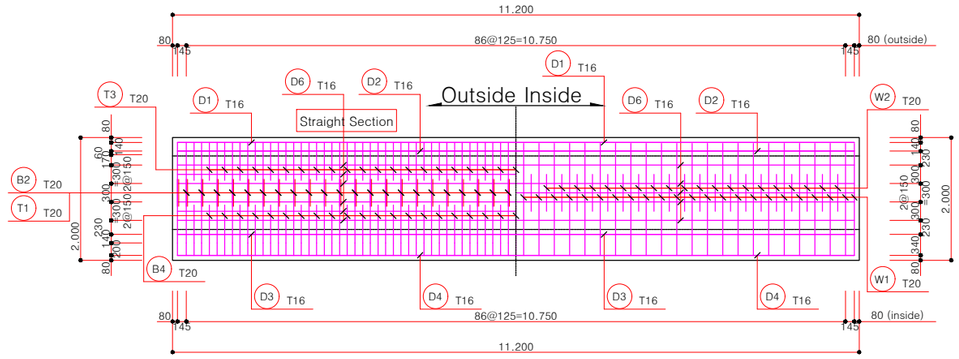
Left wall - Level 1

S=1:50



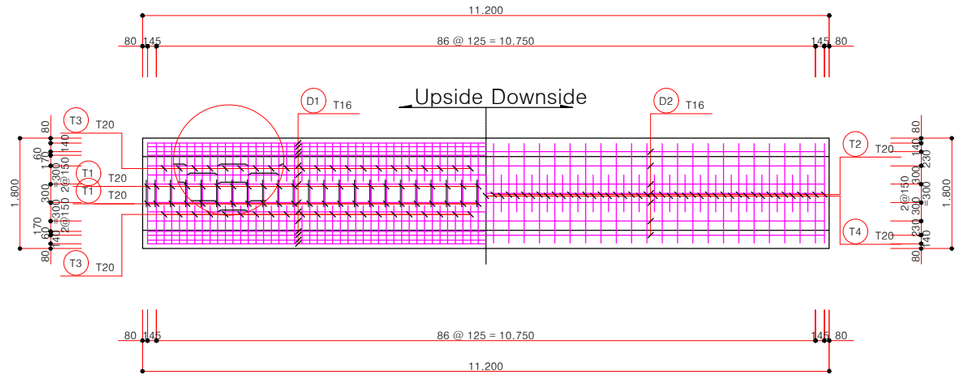
Right Wall - Level 1

S=1:50



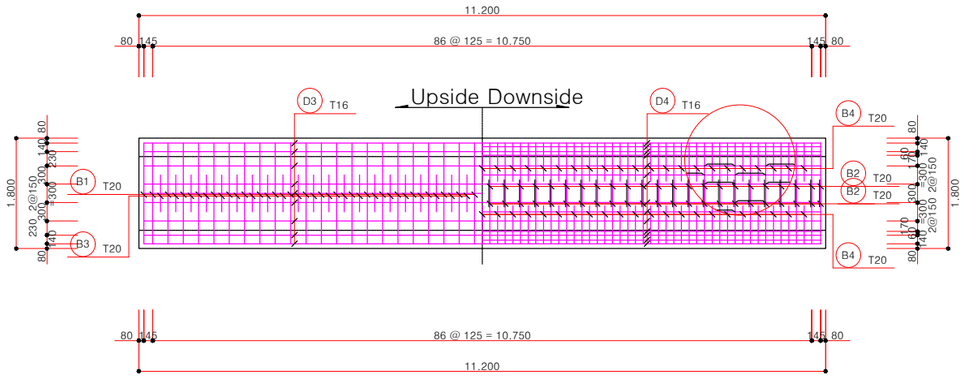
Upside Slab - Level 1

S=1:50



Downside Slab - Level 1

S=1:50



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-1 STRUCTURAL PLAN(2/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-04

PUMPING STATION-1 STRUCTURAL PLAN(3/6)

Details of Material

B1 T20 L=1.640 N=46

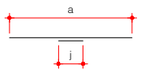
B3 T20 L=600 N=43

T2 T20 L=1.622 N=46

T4 T20 L=600 N=43

W1 T20 L=1.822 N=92

W2 T20 L=600 N=86



D1 T16 L=11.410 N=14
a=11.040 j=370X1

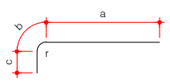
D2 T16 L=11.410 N=11
a=11.040 j=370X1

D3 T16 L=11.410 N=11
a=11.040 j=370X1

D4 T16 L=11.410 N=14
a=11.040 j=370X1

D5 T16 L=11.410 N=11
a=11.040 j=370X1

D6 T16 L=11.410 N=11
a=11.040 j=370X1

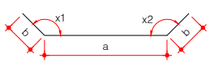


B2 T20 L=2.194 N=92
r=200 a=840 b=314 c=1.040

B4 T20 L=1.354 N=86
r=200 a=420 b=314 c=620

T1 T20 L=1.994 N=92
r=200 a=840 b=314 c=840

T3 T20 L=1.154 N=86
r=200 a=420 b=314 c=420

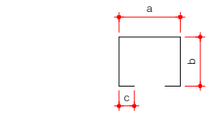


H1 T16 L=1.087 N=92
a=887 b=100 x1=135° x2=135°

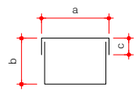
H2 T16 L=1.369 N=92
a=1.169 b=100 x1=135° x2=135°

R1 T20 L=883 N=178
a=283 b=300 x1=135° x2=135°

R2 T20 L=996 N=178
a=396 b=300 x1=135° x2=135°



R3 T20 L=1.556 N=84
a=538 b=480~338 c=100



S1 T16 L=1.620 N=63
a=535 b=175 c=100

S2 T16 L=2.020 N=63
a=535 b=375 c=100

S3 T16 L=1.620 N=63
a=535 b=175 c=100

S4 T16 L=1.620 N=63
a=535 b=175 c=100

List of Material

NO	DIA	Length (M)	Quantity	Total length (M)	Unitweight (KG/M)	Totalweight (TON)
B1	T20	1.640	46	75.440		
B2	"	2.194	92	201.848		
B3	"	600	43	25.800		
B4	"	1.354	86	116.444		
R1	"	883	178	157.174		
R2	"	996	178	177.288		
R3	"	1.556	84	130.704		
T1	"	1.994	92	183.448		
T2	"	1.622	46	74.612		
T3	"	1.154	86	99.244		
T4	"	600	43	25.800		
W1	"	1.822	92	167.624		
W2	"	600	86	51.600		
Sub total				1487.026	2.466	3.667
D1	T16	11.410	14	159.740		
D2	"	11.410	11	125.510		
D3	"	11.410	11	125.510		
D4	"	11.410	14	159.740		
D5	"	11.410	11	125.510		
D6	"	11.410	11	125.510		
H1	"	1.087	92	100.004		
H2	"	1.369	92	125.948		
S1	"	1.620	63	102.060		
S2	"	2.020	63	127.260		
S3	"	1.620	63	102.060		
S4	"	1.620	63	102.060		
Sub total				1480.912	1.579	2.338
Total				2967.938		6.005

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
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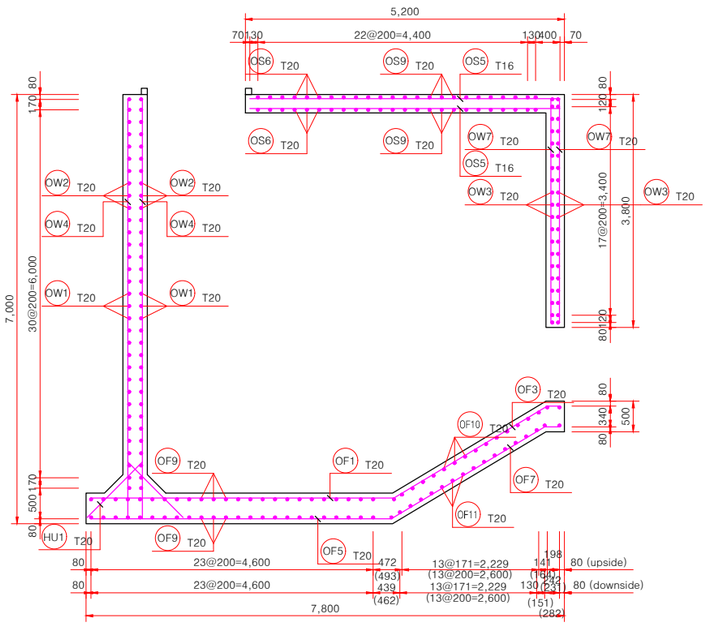
		TITLE	DATE		DRAWING No
		PUMPING STATION-1 STRUCTURAL PLAN(3/6)	JUNE, 2022		E-01-05

PUMPING STATION-1 STRUCTURAL PLAN(4/6)

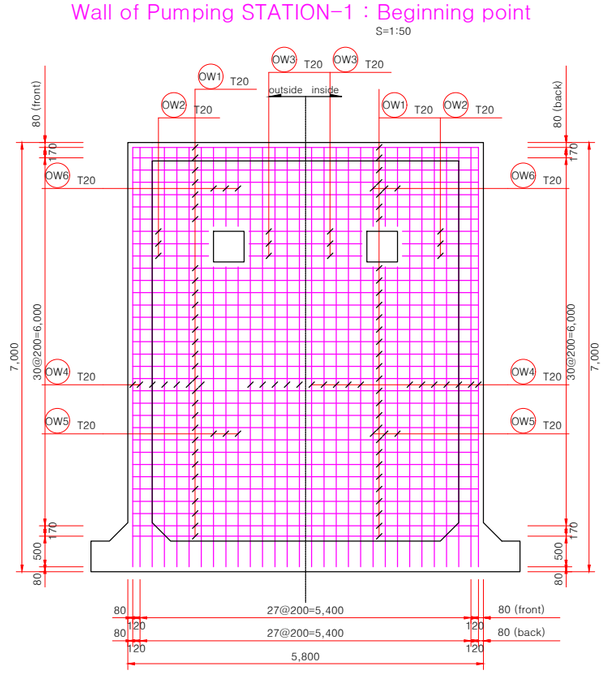
Longitudial Section of Pumping STATION-1

S=1:50



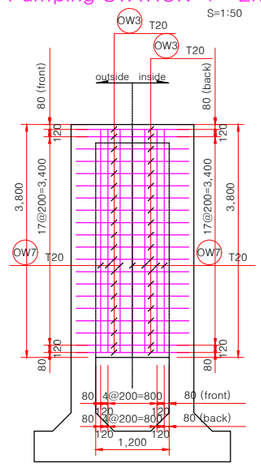
Wall of Pumping STATION-1 : Beginning point

S=1:50



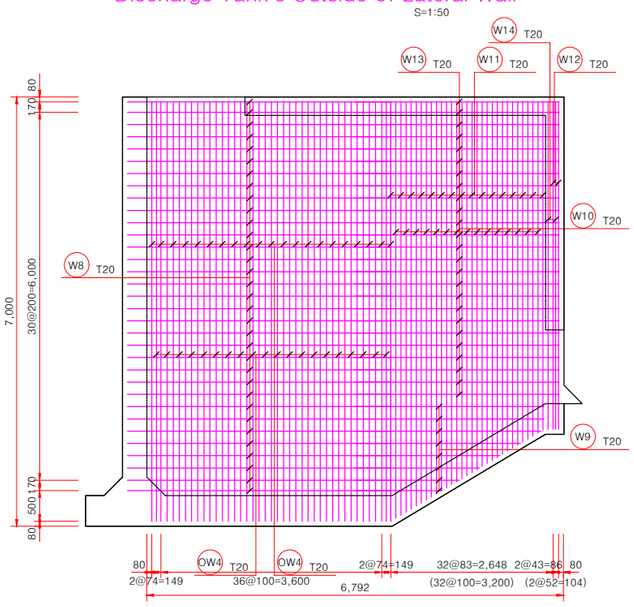
Wall of Pumping STATION-1 : End point

S=1:50



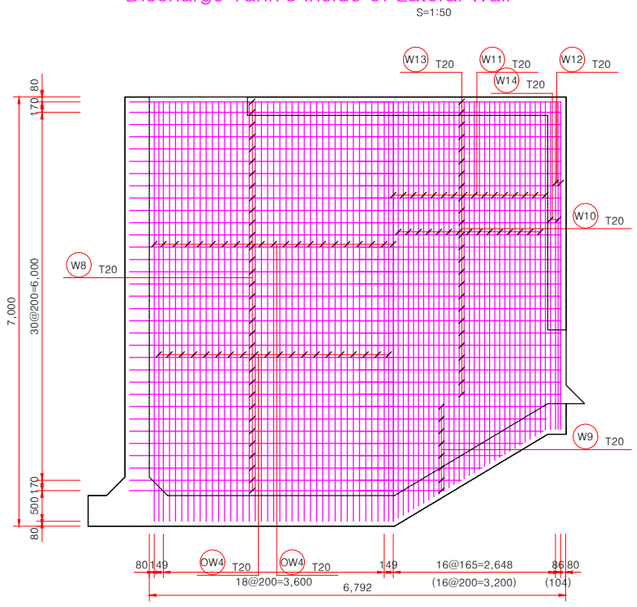
Discharge Tank's Outside of Lateral Wall

S=1:50



Discharge Tank's Inside of Lateral Wall

S=1:50

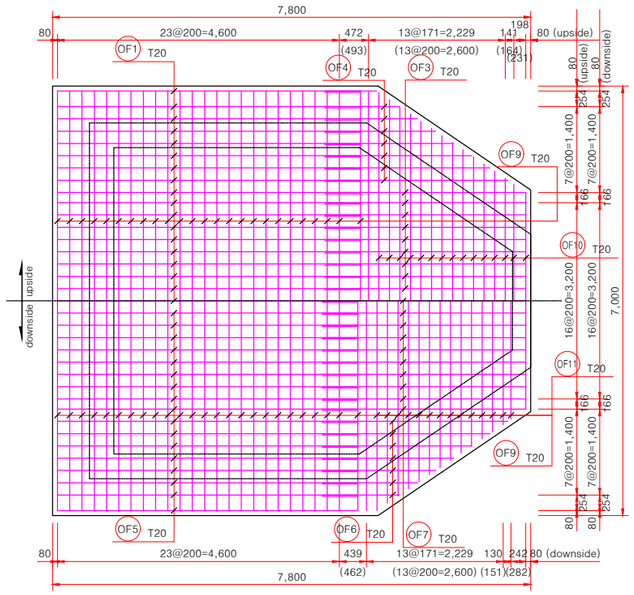


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-1 STRUCTURAL PLAN(4/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-06

PUMPING STATION-1 STRUCTURAL PLAN(5/6)

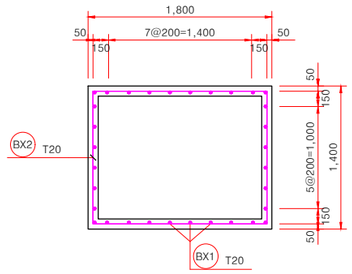
Pumping STATION-1 Basic Floor Plan

S=1:50



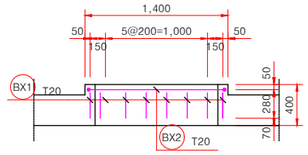
Upside BOX : Floor Plan

S=1:30



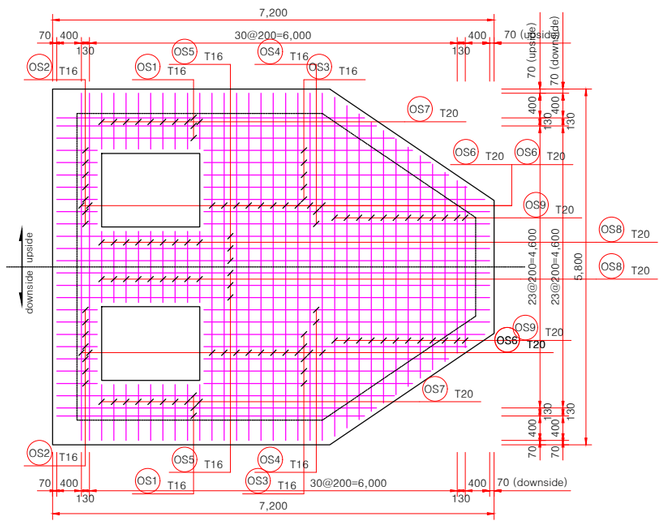
Upside BOX : Front view

S=1:30



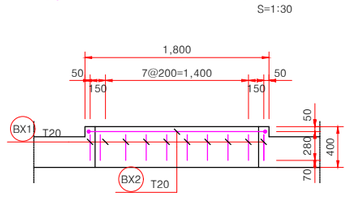
Discharge Tank's Upside Slab

S=1:50



Upside BOX :Cross Section

S=1:30



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-1 STRUCTURAL PLAN(5/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-07

PUMPING STATION-1 STRUCTURAL PLAN(6/6)

Details of Material

BX1 T20 L=350 N=32

OF1 T20 L=4,942 N=35

OF5 T20 L=4,898 N=35

OF9 T20 L=6,840 N=52

OF10 T20 L=5,160 N=15
a=6,785~3,534

OF11 T20 L=5,182 N=15
a=6,830~3,534

OS8 T20 L=1,160 N=18

OW1 T20 L=5,640 N=60

OW2 T20 L=1,240 N=12

OW3 T20 L=1,840 N=46

OW6 T20 L=1,290 N=12

W8 T20 L=4,298 N=132

W12 T20 L=5,840 N=8
a=5,340 b=500

OS2 T16 L=1,160 N=28
a=660 b=500

OS3 T16 L=4,492 N=20
a=4,581~3,402 b=500

OS4 T16 L=5,160 N=8
a=4,660 b=500

OS7 T20 L=1,410 N=36
a=910 b=500

OW4 T20 L=7,340 N=212
a=6,840 b=500

OW5 T20 L=5,390 N=12
a=4,890 b=500

OW7 T20 L=4,140 N=14
a=3,640 b=500

W11 T20 L=6,596 N=64
a=6,840~5,351 b=500

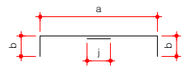
W13 T20 L=6,595 N=60
a=6,790~5,400 b=500

W14 T20 L=5,840 N=8
a=5,340 b=500

OS1 T16 L=6,264 N=12
a=5,507~5,021 b=500

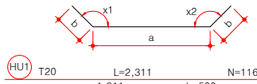
OS6 T20 L=6,660 N=24
a=5,660 b=500

OS9 T20 L=5,081 N=24
a=5,526~2,635 b=500

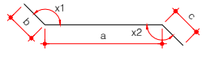


OS5 T16 L=8,550 N=12
a=7,060 b=500 j=490X1

W9 T20 L=2,827 N=32
a=3,080~1,413 b=580



HU1 T20 L=2,311 N=116
a=1,311 b=500



OF2 T20 L=3,260 N=7
a=2,984~1,215 b=580 c=580

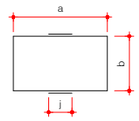
OF3 T20 L=4,438 N=19
a=3,278 b=580 c=580

OF4 T20 L=3,073 N=8
a=2,984~841 b=580 c=580

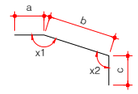
OF6 T20 L=3,304 N=7
a=3,029~1,259 b=580 c=580

OF7 T20 L=4,482 N=19
a=3,322 b=580 c=580

OF8 T20 L=3,117 N=8
a=3,029~885 b=580 c=580



BX2 T20 L=7,160 N=1
a=1,700 b=1,300 j=580X2



W10 T20 L=4,482 N=100
a=580 b=3,322 c=580

List of Material

NO	DIA	Length (M)	Quantity	Total length (M)	Unitweight (KG/M)	Totalweight (TON)
BX1	T20	350	32	11.200		
BX2	"	7.160	1	7.160		
HU1	"	2.311	116	268.076		
OF1	"	4.942	35	172.970		
OF2	"	3.260	7	22.820		
OF3	"	4.438	19	84.322		
OF4	"	3.073	8	24.584		
OF5	"	4.898	35	171.430		
OF6	"	3.304	7	23.128		
OF7	"	4.482	19	85.158		
OF8	"	3.117	8	24.936		
OF9	"	6.840	52	355.680		
OF10	"	5.160	15	77.400		
OF11	"	5.182	15	77.730		
OS6	"	6.660	24	159.840		
OS7	"	1.410	36	50.760		
OS8	"	1.160	18	20.880		
OS9	"	5.081	24	121.944		
OW1	"	5.640	60	338.400		
OW2	"	1.240	12	14.880		
OW3	"	1.840	46	84.640		
OW4	"	7.340	212	1556.080		
OW5	"	5.390	12	64.680		
OW6	"	1.290	12	15.480		
OW7	"	4.140	14	57.960		
W8	"	4.298	132	567.336		
W9	"	2.827	32	90.464		
W10	"	4.482	100	448.200		
W11	"	6.596	64	422.144		
W12	"	5.840	8	46.720		
W13	"	6.595	60	395.700		
W14	"	5.840	8	46.720		
Sub Total				5909.422	2.466	14.573
OS1	T16	6.264	12	75.168		
OS2	"	1.160	28	32.480		
OS3	"	4.492	20	89.840		
OS4	"	5.160	8	41.280		
OS5	"	8.550	12	102.600		
Sub Total				341.368	1.579	0.539
Total				6250.790		15.112

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

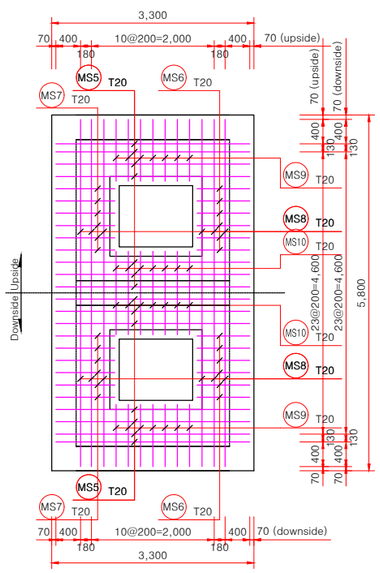
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
PUMPING STATION-1 STRUCTURAL PLAN(6/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-08

PUMPING STATION-1 MACHINE ROOM STRUCTURAL PLAN(1/2)

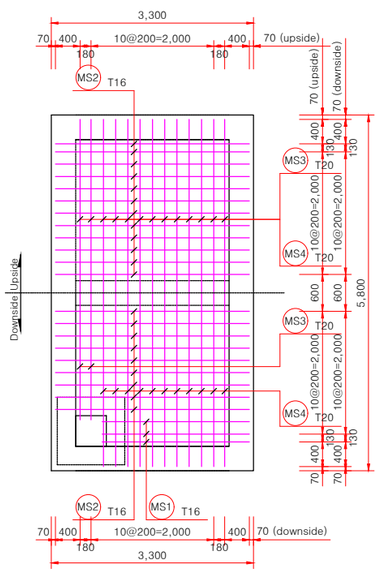
Machine Room Upside Slab

S=1:50



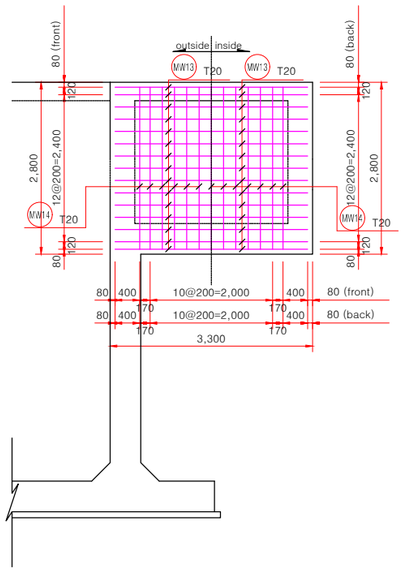
Machine Room Downside Slab

S=1:50



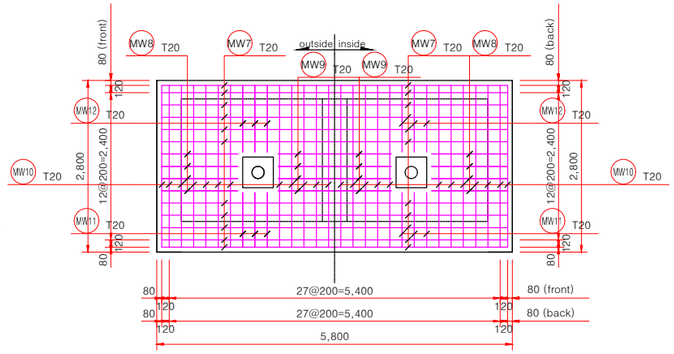
Machine Room's Lateral Wall

S=1:50



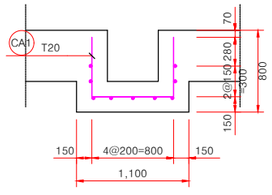
Machine Room's Wall of End Point

S=1:50



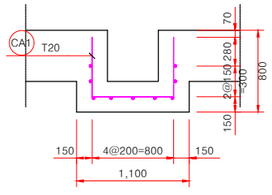
Cross Section : Ponding Area

S=1:30



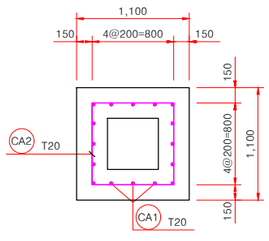
Front View : Ponding Area

S=1:30



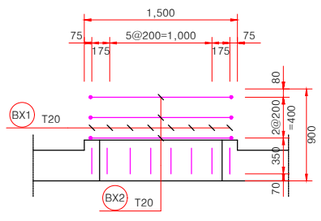
Floor Plan : Ponding Area

S=1:30



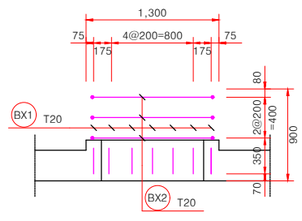
Upside BOX : Cross Section

S=1:30



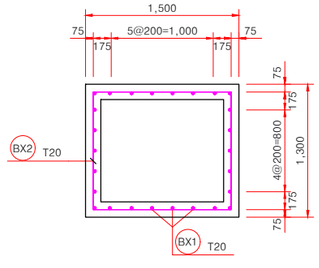
Upside BOX : Front View

S=1:30



Upside BOX : Floor Plan

S=1:30



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=AS SHOWN
		TITLE	DATE		DRAWING No
		PUMPING STATION-1 MACHINE ROOM STRUCTURAL PLAN(1/2)	JUNE, 2022		E-01-09

PUMPING STATION-1 MACHINE ROOM STRUCTURAL PLAN(2/2)

Details of Material

BX1 T20 L=750 N=52

MS10 T20 L=1,360 N=14

MW7 T20 L=5,640 N=22

MW8 T20 L=1,240 N=32

MW9 T20 L=1,840 N=16

MW10 T20 L=2,640 N=48

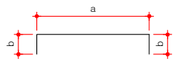
MW11 T20 L=890 N=18

MW12 T20 L=1,090 N=18

MW13 T20 L=3,140 N=60

MW14 T20 L=2,640 N=52

MW5 T20 L=1,890 N=18
a=1,390 b=500



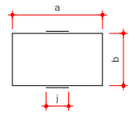
CA1 T20 L=1,960 N=8
a=800 b=580

MS2 T16 L=4,160 N=42
a=3,160 b=500

MS4 T20 L=6,660 N=22
a=5,660 b=500

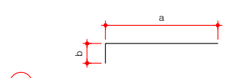
MS5 T20 L=4,160 N=28
a=3,160 b=500

MS8 T20 L=6,660 N=12
a=5,660 b=500



BX2 T20 L=6,160 N=6
a=1,350 b=1,150 j=580X2

CA2 T20 L=4,360 N=2
a=800 b=800 j=580X2



MS1 T16 L=2,900 N=6
a=2,400 b=500

MS3 T20 L=5,400 N=4
a=4,900 b=500

MS6 T20 L=1,360 N=24
a=860 b=500

MS7 T20 L=1,460 N=24
a=960 b=500

MS9 T20 L=1,510 N=28
a=1,010 b=500

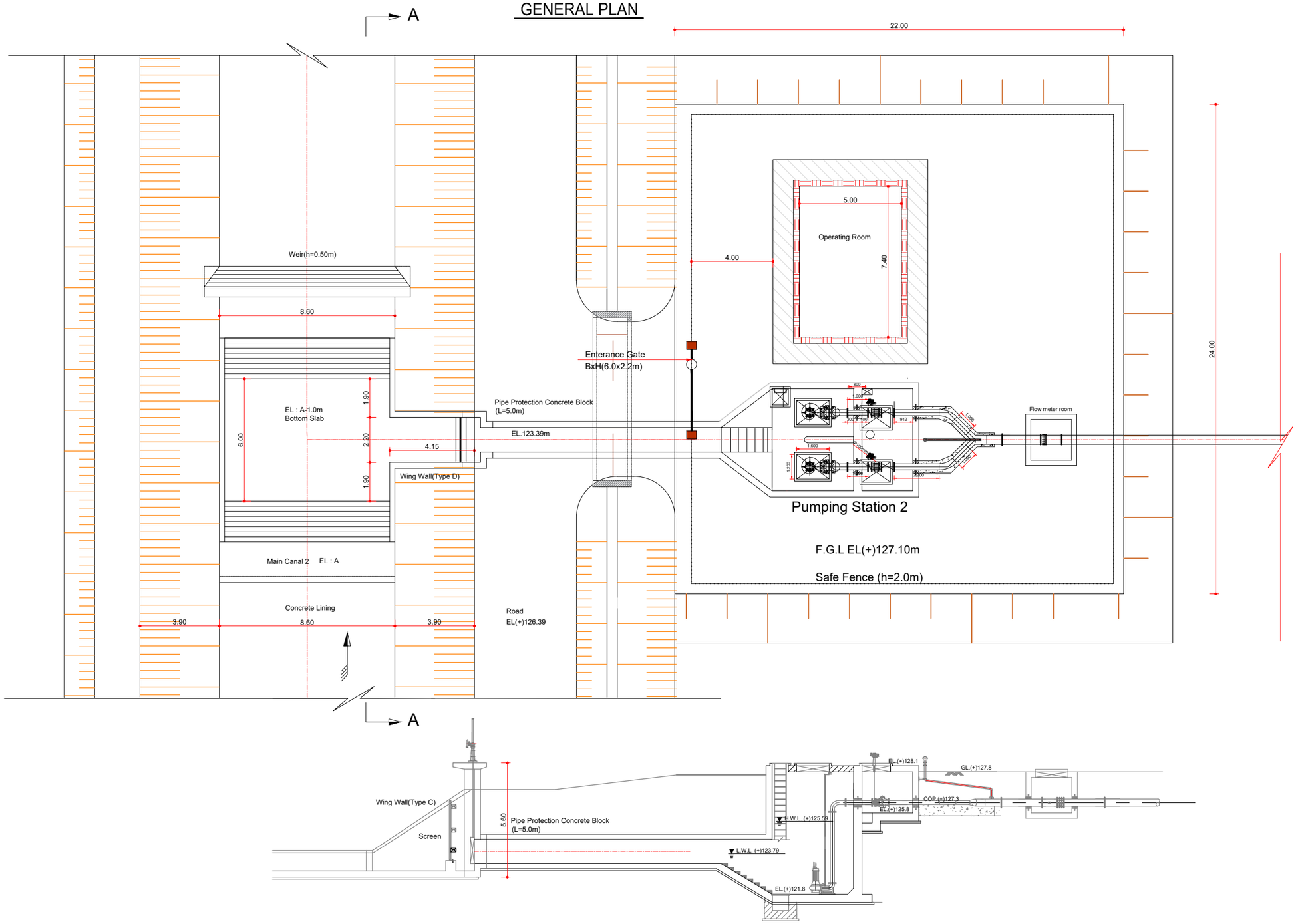
List of Material

NO	DIA	Length (M)	Quantity	Total length (M)	Unitweight (KG/M)	Totalweight (TON)
BX1	T20	750	52	39.000		
BX2	"	6,160	6	36.960		
CA1	"	1,960	8	15.680		
CA2	"	4,360	2	8.720		
MS3	"	5,400	4	21.600		
MS4	"	6,660	22	146.520		
MS5	"	4,160	28	116.480		
MS6	"	1,360	24	32.640		
MS7	"	1,460	24	35.040		
MS8	"	6,660	12	79.920		
MS9	"	1,510	28	42.280		
MS10	"	1,360	14	19.040		
MW7	"	5,640	22	124.080		
MW8	"	1,240	32	39.680		
MW9	"	1,840	16	29.440		
MW10	"	2,640	48	126.720		
MW11	"	890	18	16.020		
MW12	"	1,090	18	19.620		
MW13	"	3,140	60	188.400		
MW14	"	2,640	52	137.280		
Sub Total				1,275.120	2.466	3.144
MS1	T16	2,900	6	17.400		
MS2	"	4,160	42	174.720		
Sub Total				192.120	1.579	0.303
Total				1,467.240		3.447

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-1 MACHINE ROOM STRUCTURAL PLAN(2/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-01-10

GENERAL PLAN OF PUMPING STATION-2

GENERAL PLAN

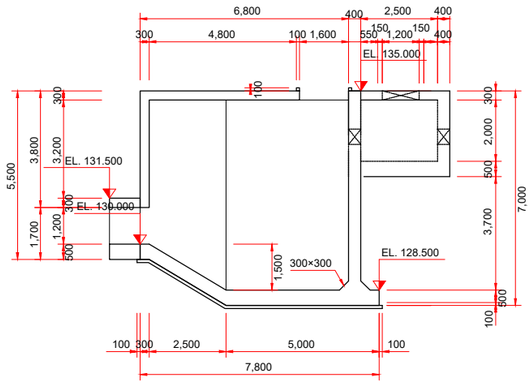


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 100
		TITLE	DATE		DRAWING No
		GENERAL PLAN OF PUMPING STATION-2	JUNE, 2022		E-02-01

PUMPING STATION-2 GENERAL PLAN

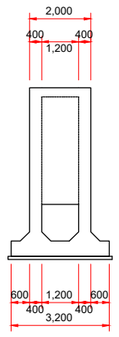
Longitudial Section

S=1:100



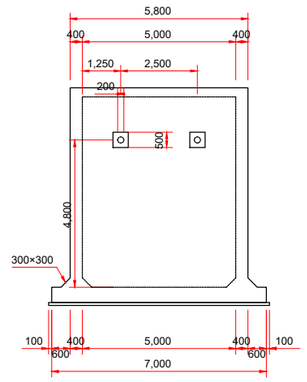
Cross section : Beginning point

S=1:100



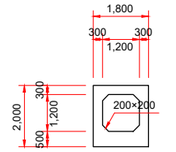
Cross section : End point

S=1:100



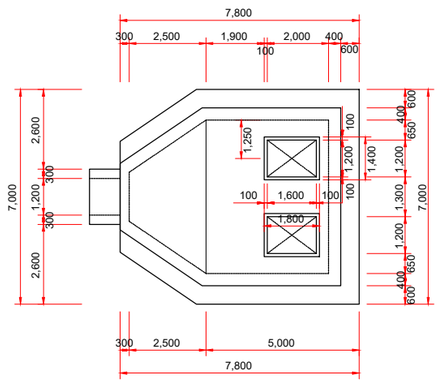
Inlet Culvert

S=1:100



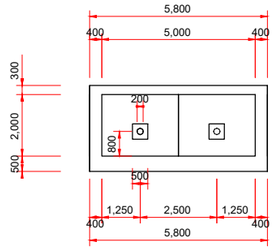
Floor Plan

S=1:100



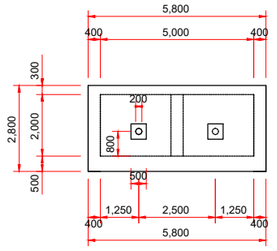
Wall of Machine room : Beginning point

S=1:100



Wall of Machine room : End point

S=1:100

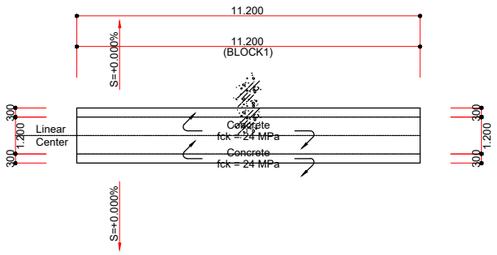


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	1 : 100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-2 GENERAL PLAN	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-02-02

PUMPING STATION-2 STRUCTURAL PLAN(1/6)

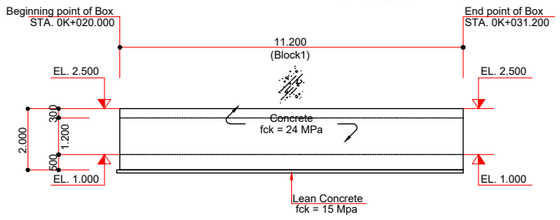
Floor Plan

S=1:200



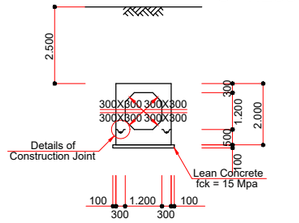
Longitudinal Section

S=1:200



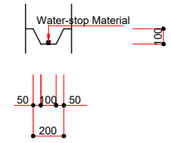
Standard Section

S=1:200



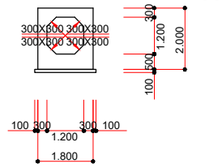
Details of Construction Joint

S=1:40



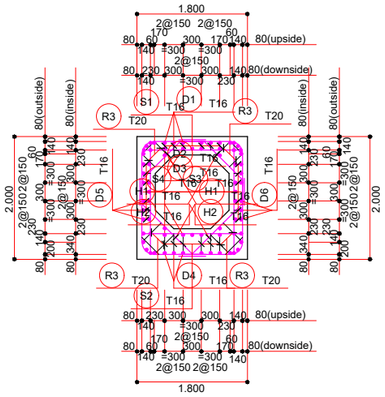
General Plan

S=1:100



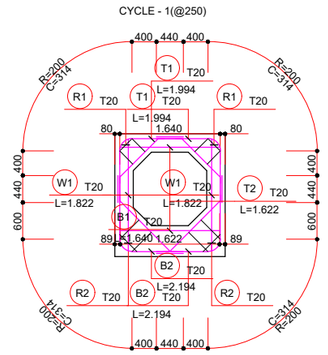
Standard Section

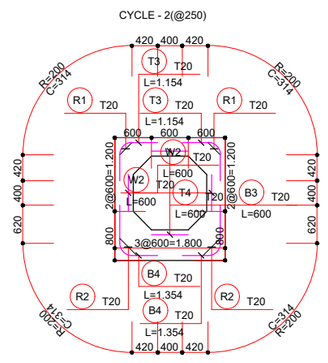
S=1:50



Assembly view of Major Reinforcement

S=1:50



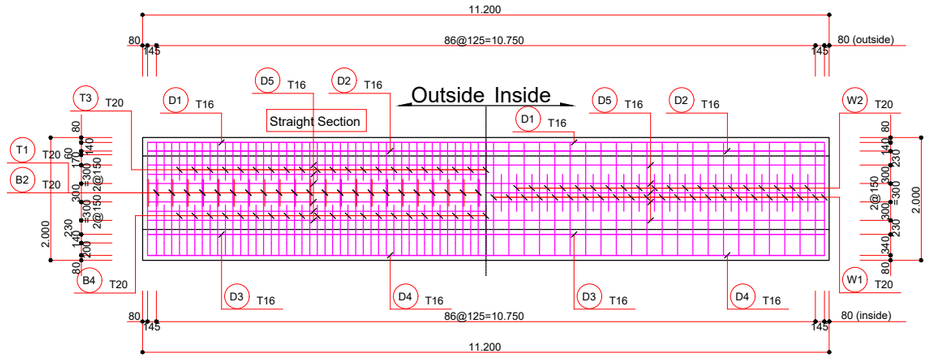


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-2 STRUCTURAL PLAN(1/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-02-03

PUMPING STATION-2 STRUCTURAL PLAN(2/6)

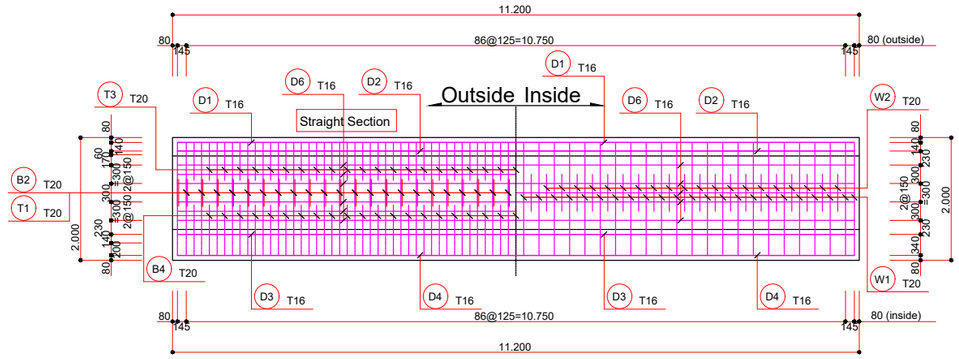
Left wall - Level 1

S=1:50



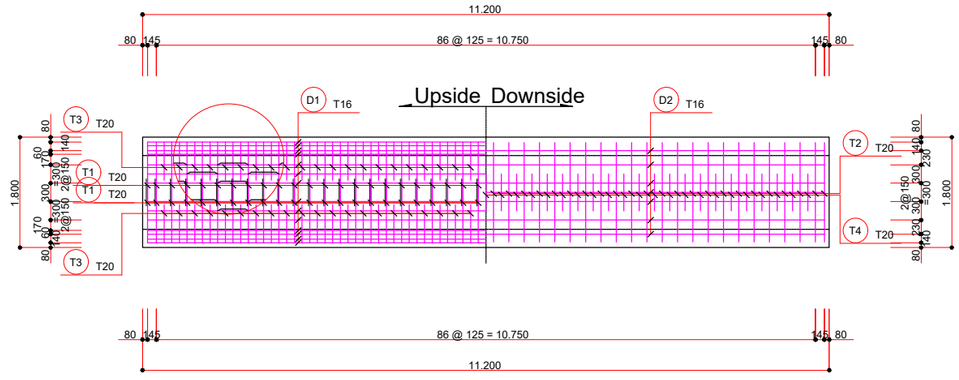
Right Wall - Level 1

S=1:50



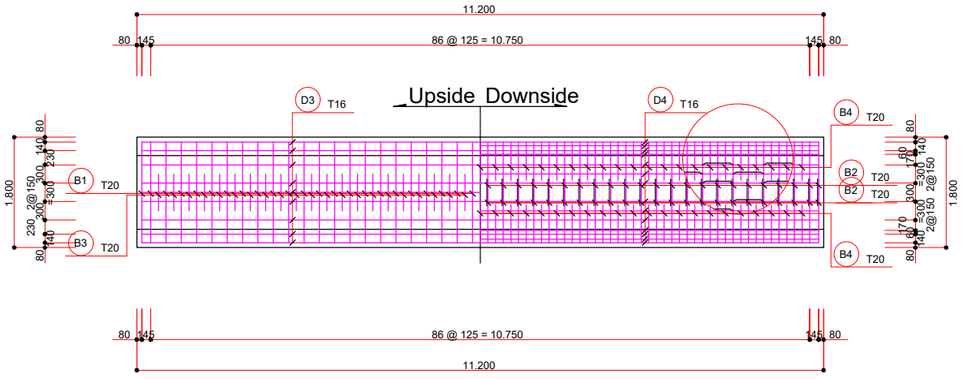
Upside Slab - Level 1

S=1:50



Downside Slab - Level 1

S=1:50



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-2 STRUCTURAL PLAN(2/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-02-04

PUMPING STATION-2 STRUCTURAL PLAN(3/6)

Details of Material

B1 T20 L=1.640 N=46

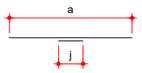
B3 T20 L=600 N=43

T2 T20 L=1.622 N=46

T4 T20 L=600 N=43

W1 T20 L=1.822 N=92

W2 T20 L=600 N=86



D1 T16 L=11.410 N=14
a=11.040 j=370X1

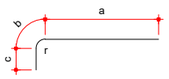
D2 T16 L=11.410 N=11
a=11.040 j=370X1

D3 T16 L=11.410 N=11
a=11.040 j=370X1

D4 T16 L=11.410 N=14
a=11.040 j=370X1

D5 T16 L=11.410 N=11
a=11.040 j=370X1

D6 T16 L=11.410 N=11
a=11.040 j=370X1

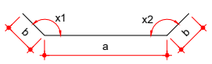


B2 T20 L=2.194 N=92
r=200 a=840 b=314 c=1.040

B4 T20 L=1.354 N=86
r=200 a=420 b=314 c=620

T1 T20 L=1.994 N=92
r=200 a=840 b=314 c=840

T3 T20 L=1.154 N=86
r=200 a=420 b=314 c=420

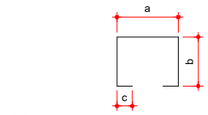


H1 T16 L=1.087 N=92
a=887 b=100 x1=135° x2=135°

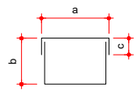
H2 T16 L=1.369 N=92
a=1.169 b=100 x1=135° x2=135°

R1 T20 L=883 N=178
a=283 b=300 x1=135° x2=135°

R2 T20 L=996 N=178
a=396 b=300 x1=135° x2=135°



R3 T20 L=1.556 N=84
a=538 b=480~338 c=100



S1 T16 L=1.620 N=63
a=535 b=175 c=100

S2 T16 L=2.020 N=63
a=535 b=375 c=100

S3 T16 L=1.620 N=63
a=535 b=175 c=100

S4 T16 L=1.620 N=63
a=535 b=175 c=100

List of Material

NO	DIA	Length (M)	Quantity	Total length (M)	Unitweight (KG/M)	Totalweight (TON)
B1	T20	1.640	46	75.440		
B2	"	2.194	92	201.848		
B3	"	600	43	25.800		
B4	"	1.354	86	116.444		
R1	"	883	178	157.174		
R2	"	996	178	177.288		
R3	"	1.556	84	130.704		
T1	"	1.994	92	183.448		
T2	"	1.622	46	74.612		
T3	"	1.154	86	99.244		
T4	"	600	43	25.800		
W1	"	1.822	92	167.624		
W2	"	600	86	51.600		
Sub total				1487.026	2.466	3.667
D1	T16	11.410	14	159.740		
D2	"	11.410	11	125.510		
D3	"	11.410	11	125.510		
D4	"	11.410	14	159.740		
D5	"	11.410	11	125.510		
D6	"	11.410	11	125.510		
H1	"	1.087	92	100.004		
H2	"	1.369	92	125.948		
S1	"	1.620	63	102.060		
S2	"	2.020	63	127.260		
S3	"	1.620	63	102.060		
S4	"	1.620	63	102.060		
Sub total				1480.912	1.579	2.338
Total				2967.938		6.005

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
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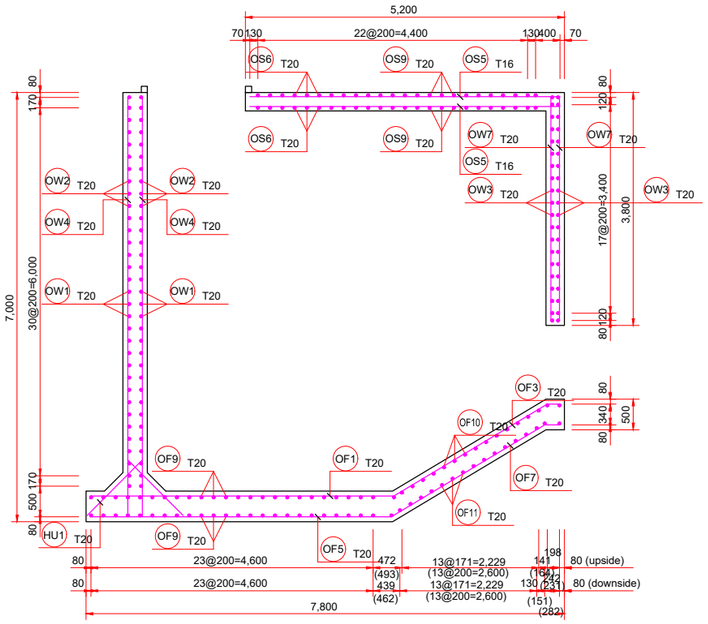
		TITLE	DATE		DRAWING No
		PUMPING STATION-2 STRUCTURAL PLAN(3/6)	JUNE, 2022		E-02-05

PUMPING STATION-2 STRUCTURAL PLAN(4/6)

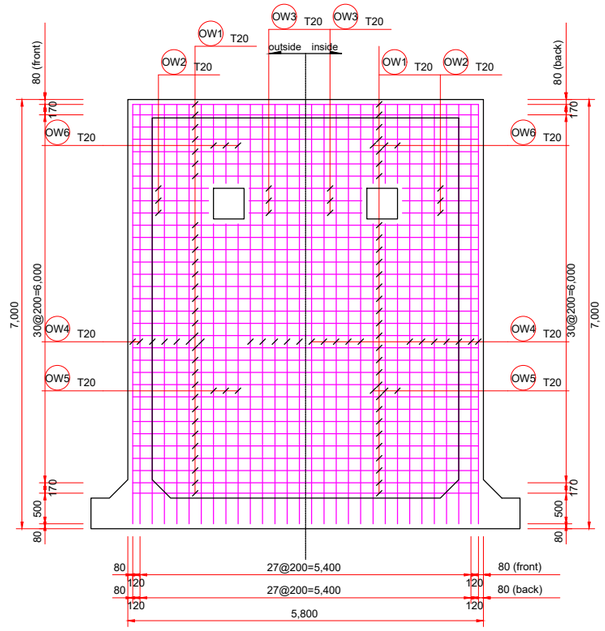
Longitudial Section of Pumping STATION-2

S=1:50



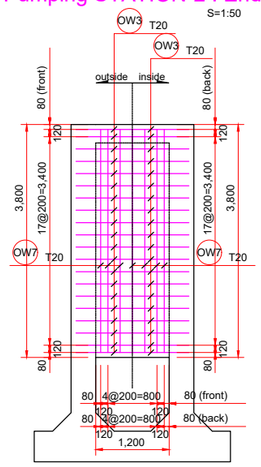
Wall of Pumping STATION-2 : Beginning point

S=1:50



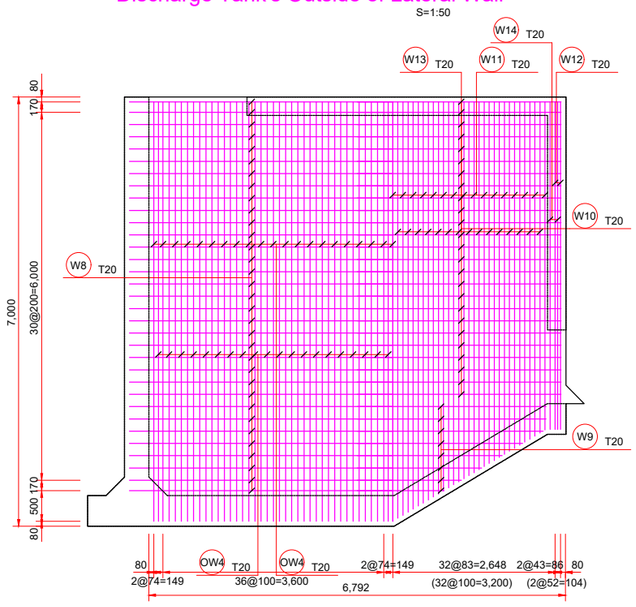
Wall of Pumping STATION-2 : End point

S=1:50



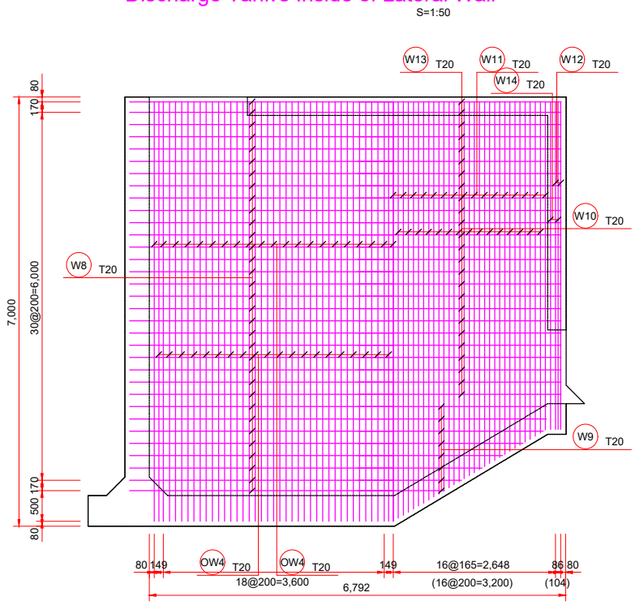
Discharge Tank's Outside of Lateral Wall

S=1:50



Discharge Tank's Inside of Lateral Wall

S=1:50

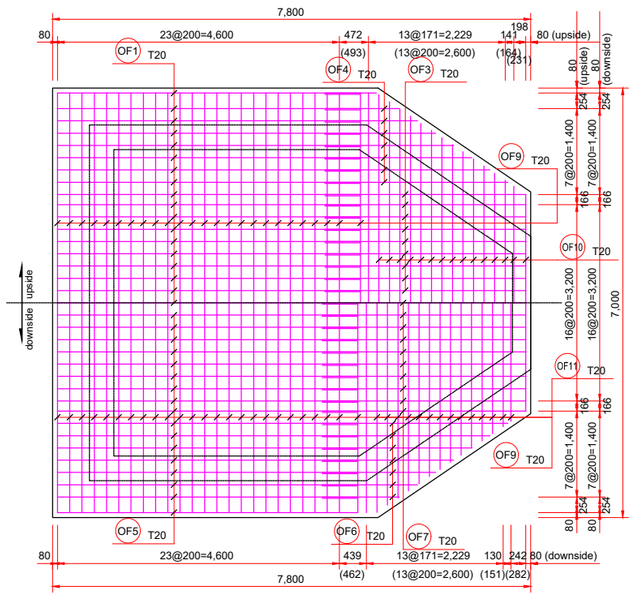


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1 : 50
		TITLE	DATE		DRAWING No
		PUMPING STATION-2 STRUCTURAL PLAN(4/6)	JUNE, 2022		E-02-06

PUMPING STATION-2 STRUCTURAL PLAN(5/6)

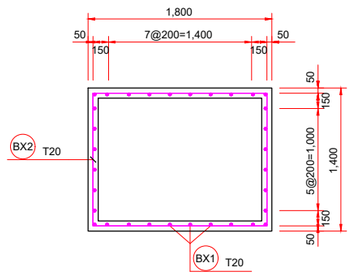
Pumping STATION-2 Basic Floor Plan

S=1:50



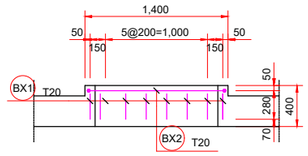
Upside BOX : Floor Plan

S=1:30



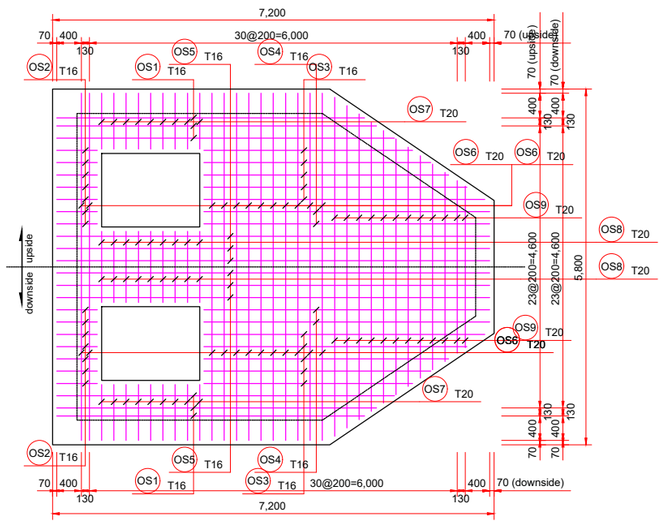
Upside BOX : Front view

S=1:30



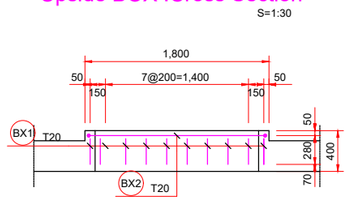
Discharge Tank's Upside Slab

S=1:50



Upside BOX :Cross Section

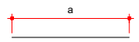
S=1:30



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-2 STRUCTURAL PLAN(5/6)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-02-07

PUMPING STATION-2 STRUCTURAL PLAN(6/6)

Details of Material



BX1 T20 L=350 N=32

OF1 T20 L=4,942 N=35

OF5 T20 L=4,898 N=35

OF9 T20 L=6,840 N=52

OF10 T20 L=5,160 N=15
a=6,785~3,534

OF11 T20 L=5,182 N=15
a=6,830~3,534

OS8 T20 L=1,160 N=18

OW1 T20 L=5,640 N=60

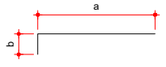
OW2 T20 L=1,240 N=12

OW3 T20 L=1,840 N=46

OW6 T20 L=1,290 N=12

W8 T20 L=4,298 N=132

W12 T20 L=5,840 N=8
a=5,340 b=500

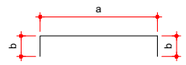


OW7 T20 L=4,140 N=14
a=3,640 b=500

W11 T20 L=6,596 N=64
a=6,840~5,351 b=500

W13 T20 L=6,595 N=60
a=6,790~5,400 b=500

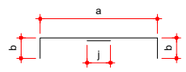
W14 T20 L=5,840 N=8
a=5,340 b=500



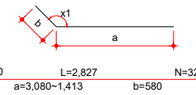
OS1 T16 L=6,264 N=12
a=5,507~5,021 b=500

OS6 T20 L=6,660 N=24
a=5,660 b=500

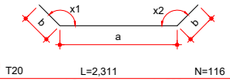
OS9 T20 L=5,081 N=24
a=5,526~2,635 b=500



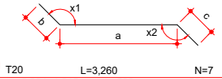
OS5 T16 L=8,550 N=12
a=7,060 b=500 j=490X1



W9 T20 L=2,827 N=32
a=3,080~1,413 b=580



HU1 T20 L=2,311 N=116
a=1,311 b=500



OF2 T20 L=3,260 N=7
a=2,984~1,215 b=580 c=580

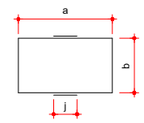
OF3 T20 L=4,438 N=19
a=3,278 b=580 c=580

OF4 T20 L=3,073 N=8
a=2,984~841 b=580 c=580

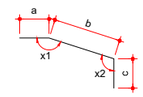
OF6 T20 L=3,304 N=7
a=3,029~1,259 b=580 c=580

OF7 T20 L=4,482 N=19
a=3,322 b=580 c=580

OF8 T20 L=3,117 N=8
a=3,029~885 b=580 c=580



BX2 T20 L=7,160 N=1
a=1,700 b=1,300 j=580X2



W10 T20 L=4,482 N=100
a=580 b=3,322 c=580

List of Material

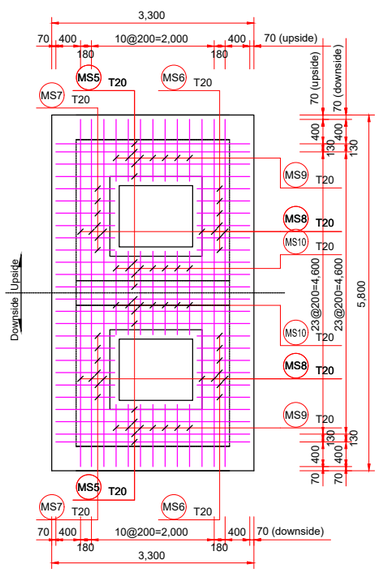
NO	DIA	Length (M)	Quantity	Total length (M)	Unitweight (KG/M)	Totalweight (TON)
BX1	T20	350	32	11.200		
BX2	"	7.160	1	7.160		
HU1	"	2.311	116	268.076		
OF1	"	4.942	35	172.970		
OF2	"	3.260	7	22.820		
OF3	"	4.438	19	84.322		
OF4	"	3.073	8	24.584		
OF5	"	4.898	35	171.430		
OF6	"	3.304	7	23.128		
OF7	"	4.482	19	85.158		
OF8	"	3.117	8	24.936		
OF9	"	6.840	52	355.680		
OF10	"	5.160	15	77.400		
OF11	"	5.182	15	77.730		
OS6	"	6.660	24	159.840		
OS7	"	1.410	36	50.760		
OS8	"	1.160	18	20.880		
OS9	"	5.081	24	121.944		
OW1	"	5.640	60	338.400		
OW2	"	1.240	12	14.880		
OW3	"	1.840	46	84.640		
OW4	"	7.340	212	1556.080		
OW5	"	5.390	12	64.680		
OW6	"	1.290	12	15.480		
OW7	"	4.140	14	57.960		
W8	"	4.298	132	567.336		
W9	"	2.827	32	90.464		
W10	"	4.482	100	448.200		
W11	"	6.596	64	422.144		
W12	"	5.840	8	46.720		
W13	"	6.595	60	395.700		
W14	"	5.840	8	46.720		
Sub Total				5909.422	2.466	14.573
OS1	T16	6.264	12	75.168		
OS2	"	1.160	28	32.480		
OS3	"	4.492	20	89.840		
OS4	"	5.160	8	41.280		
OS5	"	8.550	12	102.600		
Sub Total				341.368	1.579	0.539
Total				6250.790		15.112

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		PUMPING STATION-2 STRUCTURAL PLAN(6/6)	JUNE, 2022		E-02-08

PUMPING STATION-2 MACHINE ROOM STRUCTURAL PLAN(1/2)

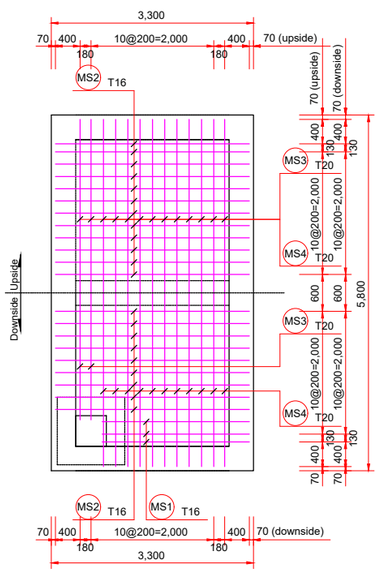
Machine Room Upside Slab

S=1:50



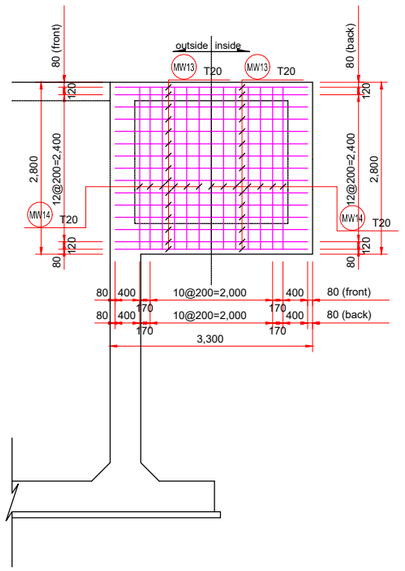
Machine Room Downside Slab

S=1:50



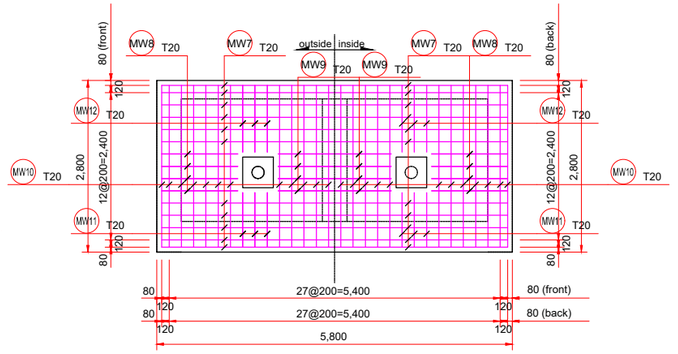
Machine Room's Lateral Wall

S=1:50



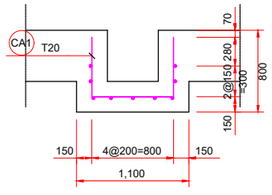
Machine Room's Wall of End Point

S=1:50



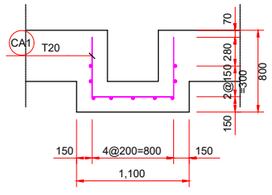
Cross Section : Ponding Area

S=1:30



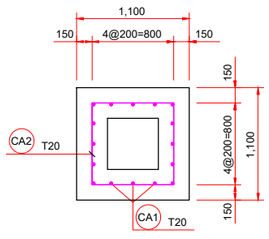
Front View : Ponding Area

S=1:30



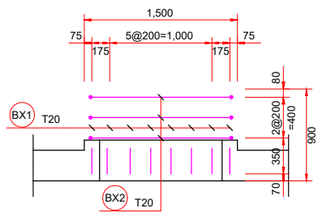
Floor Plan : Ponding Area

S=1:30



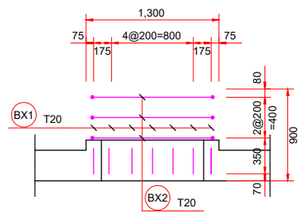
Upside BOX : Cross Section

S=1:30



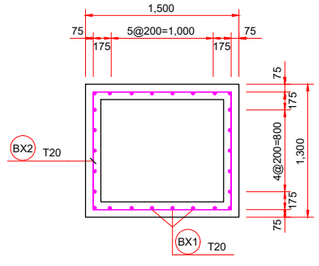
Upside BOX : Front View

S=1:30



Upside BOX : Floor Plan

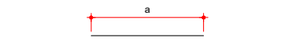
S=1:30



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		PUMPING STATION-2 MACHINE ROOM STRUCTURAL PLAN(1/2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-02-09

PUMPING STATION-2 MACHINE ROOM STRUCTURAL PLAN(2/2)

Details of Material



BX1 T20 L=750 N=52

MS10 T20 L=1,360 N=14

MW7 T20 L=5,640 N=22

MW8 T20 L=1,240 N=32

MW9 T20 L=1,840 N=16

MW10 T20 L=2,640 N=48

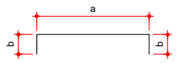
MW11 T20 L=890 N=18

MW12 T20 L=1,090 N=18

MW13 T20 L=3,140 N=60

MW14 T20 L=2,640 N=52

MW5 T20 L=1,890 N=18
a=1,390 b=500



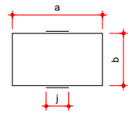
CA1 T20 L=1,960 N=8
a=800 b=580

MS2 T16 L=4,160 N=42
a=3,160 b=500

MS4 T20 L=6,660 N=22
a=5,660 b=500

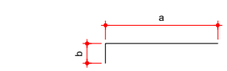
MS5 T20 L=4,160 N=28
a=3,160 b=500

MS8 T20 L=6,660 N=12
a=5,660 b=500



BX2 T20 L=6,160 N=6
a=1,350 b=1,150 j=580X2

CA2 T20 L=4,360 N=2
a=800 b=800 j=580X2



MS1 T16 L=2,900 N=6
a=2,400 b=500

MS3 T20 L=5,400 N=4
a=4,900 b=500

MS6 T20 L=1,360 N=24
a=860 b=500

MS7 T20 L=1,460 N=24
a=960 b=500

MS9 T20 L=1,510 N=28
a=1,010 b=500

List of Material

NO	DIA	Length (M)	Quantity	Total length (M)	Unitweight (KG/M)	Totalweight (TON)
BX1	T20	750	52	39.000		
BX2	"	6.160	6	36.960		
CA1	"	1.960	8	15.680		
CA2	"	4.360	2	8.720		
MS3	"	5.400	4	21.600		
MS4	"	6.660	22	146.520		
MS5	"	4.160	28	116.480		
MS6	"	1.360	24	32.640		
MS7	"	1.460	24	35.040		
MS8	"	6.660	12	79.920		
MS9	"	1.510	28	42.280		
MS10	"	1.360	14	19.040		
MW7	"	5.640	22	124.080		
MW8	"	1.240	32	39.680		
MW9	"	1.840	16	29.440		
MW10	"	2.640	48	126.720		
MW11	"	890	18	16.020		
MW12	"	1.090	18	19.620		
MW13	"	3.140	60	188.400		
MW14	"	2.640	52	137.280		
Sub Total				1,275.120	2.466	3.144
MS1	T16	2.900	6	17.400		
MS2	"	4.160	42	174.720		
Sub Total				192.120	1.579	0.303
Total				1,467.240		3.447

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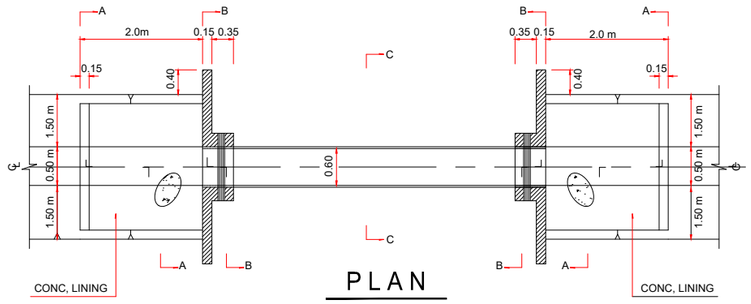
		TITLE	DATE		DRAWING No
		PUMPING STATION-2 MACHINE ROOM STRUCTURAL PLAN(2/2)	JUNE, 2022		E-02-10

PUMPING STATION CANAL SECTION

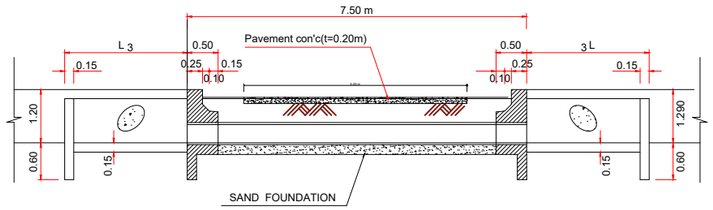
(Concreta Hume Pipe : 600mm)

DETAIL A

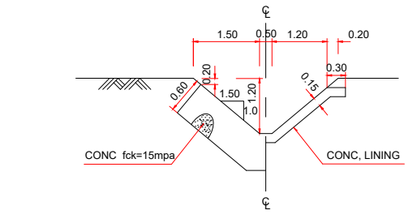
Drainage Canal



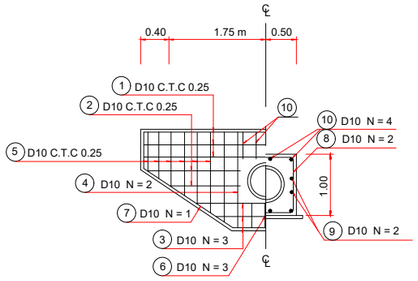
PLAN



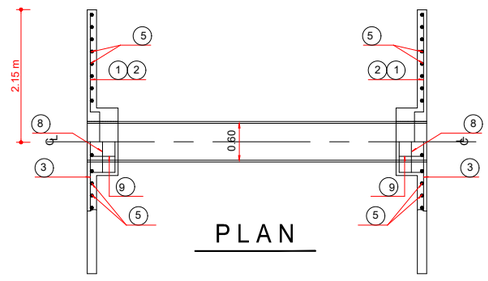
LONGITUDINAL SECTION



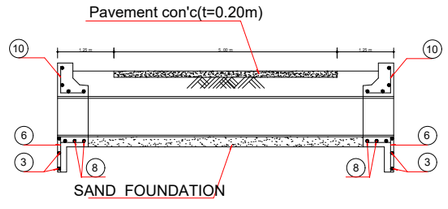
SECTION A



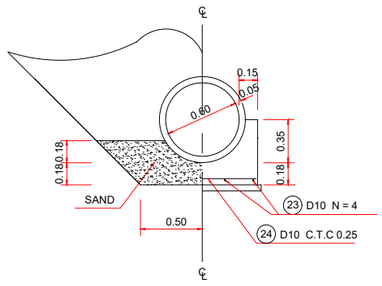
SECTION B



PLAN



LONGITUDINAL SECTION



SECTION C

Table of material

(1each)

Item	Size	Unit	Quantity	R E
		㎥		
Form	4times	㎡		
Hume Pipe	600 mm	ea		1EA:2.50m

table of re-bar

NO	DIA	CTC	Drainage Canal(inside + outside)			remark
			lenght	numbers	Total length	
1	10	0.25	6.00	6	36.00	
2	10	0.25	2.00	8	16.00	
3	10	0.25	3.10	6	18.60	
4	10	0.25	1.70	4	6.80	
5	10	0.25	1.10	28	30.80	
6	10	0.25	0.50	6	3.00	
7	10	0.25	7.32	2	14.62	
8	10	0.25	3.90	4	15.60	
9	10	0.25	0.40	16	6.40	
10	10	0.25	0.85	8	6.80	
subtotal		H10	154.64×0.560×1.03= 90 .00kg			2EA
total			90.0 kg			

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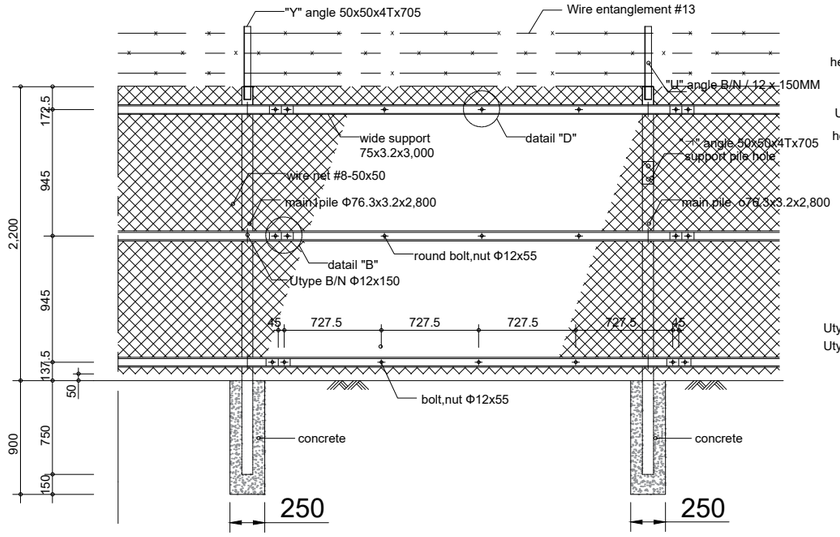
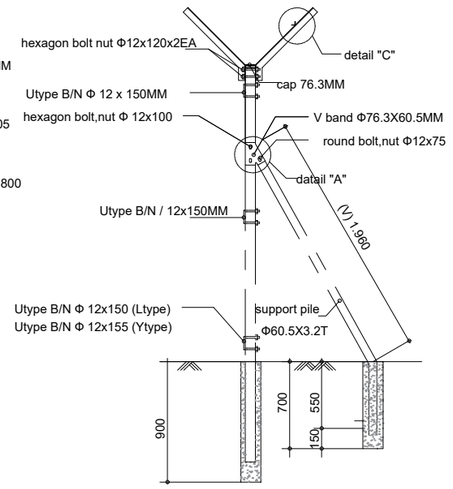
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		PUMPING STATION CANAL SECTION	JUNE, 2022		E-02-11

DATAIL OF SAFE FENCE

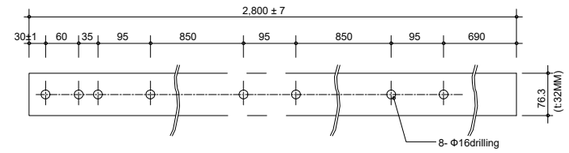
Front



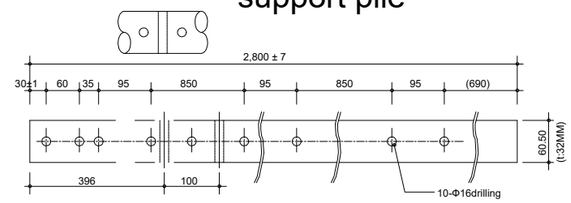
Pile



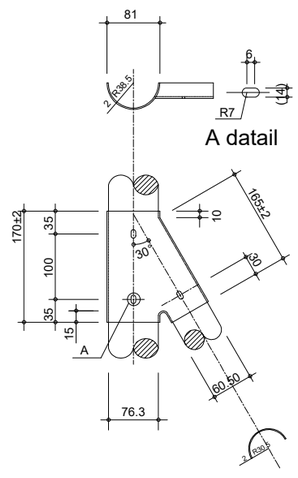
main pile



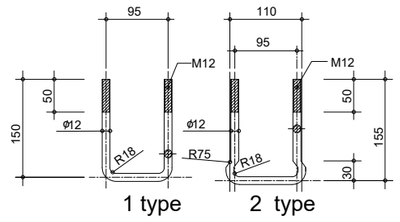
support pile



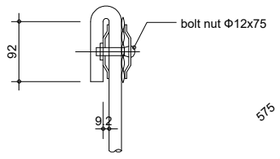
Detail "A"



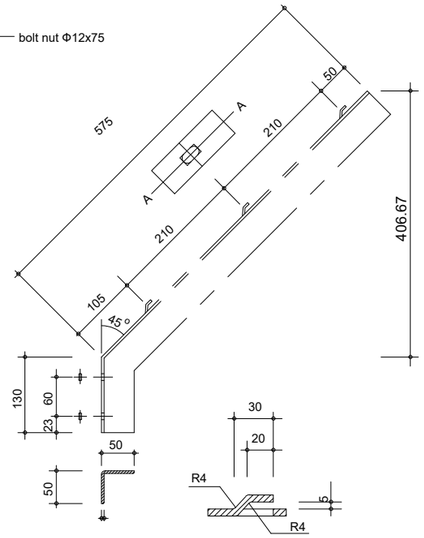
datail "B"



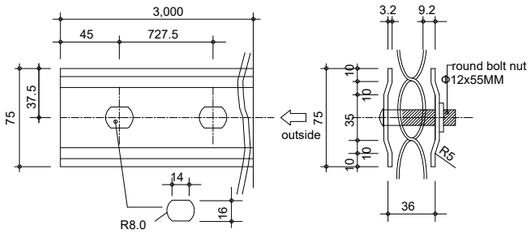
U bolt



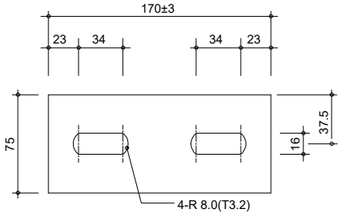
Detail "C"



datail "D"



connection



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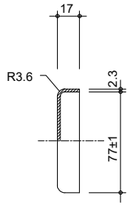
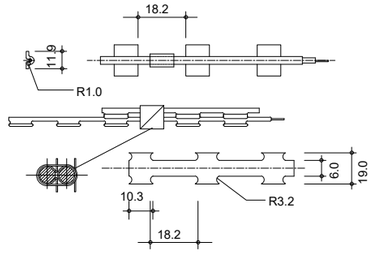


section A-A



material list

(per:3m)

name	quality	unit	quantity
main pile	ø76.3x3.2x2.95M	M	3.038
pile cap	ø76.3M	ea	1.000
support pile	ø60.5x3.2x2510	M	0.517
wide support	75x3.2x3000	ea	6.000
support connect	75x3.2x170MM	"	6.000
angle	4x50x50xL705MM	ea	2.000
wire net	#8x50x50MM	M^2	6.798
"U"type bolt,nut	ø12x150MM	ea	2.060
"	ø12x155MM	"	1.030
hexagon bolt,nut	ø12x120MM	"	2.060
"	ø12x100MM	"	0.412
round bolt,nut	ø12x75MM	"	0.206
"	ø12x55MM	"	10.300
"	ø12x75MM	"	5.150
iron wire	#20	KG	0.073
concrete(fck16)	fck16	m3	0.28
excavation	manpower	m3	0.28
barbed-wire	12 line	M	18.540

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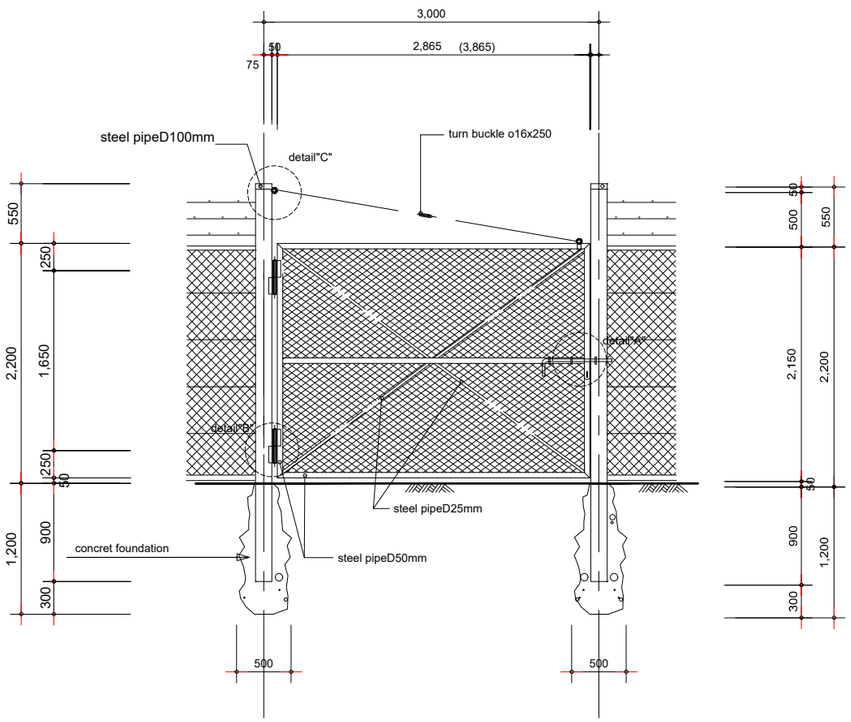
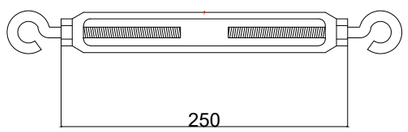
		TITLE	DATE		DRAWING No
		DATAIL OF SAFE FENCE	JUNE, 2022		E-02-12

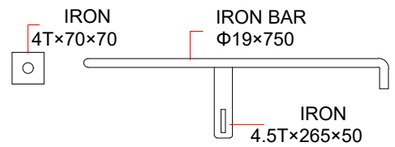
SAFETY FENCE GATE

Front(W=3.00M)





Turn Buckle
SCALE:NONE



Detail "A"
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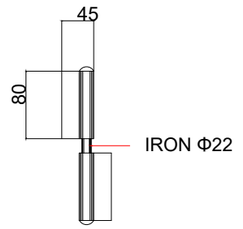

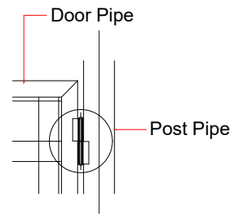

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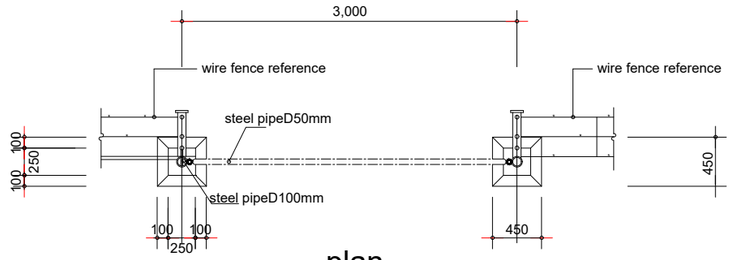

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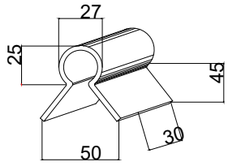

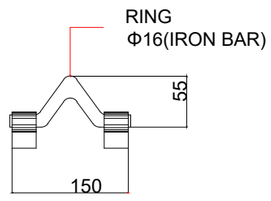

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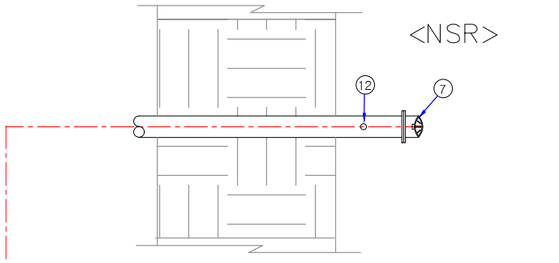
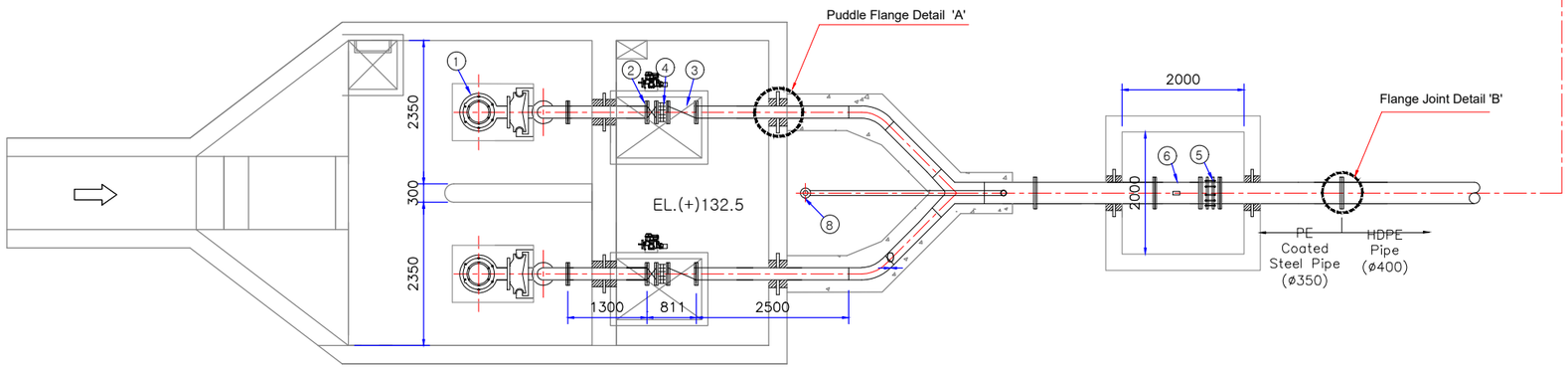
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		SAFETY FENCE GATE	JUNE, 2022		E-02-13

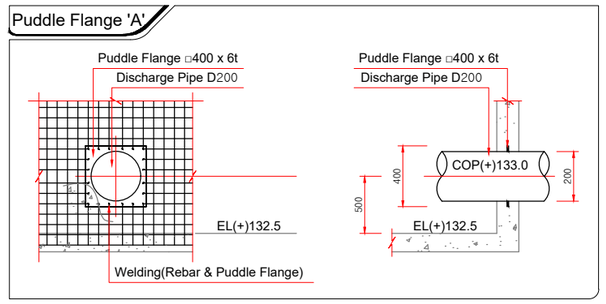
PUMPING STATION 1 Floor Plan

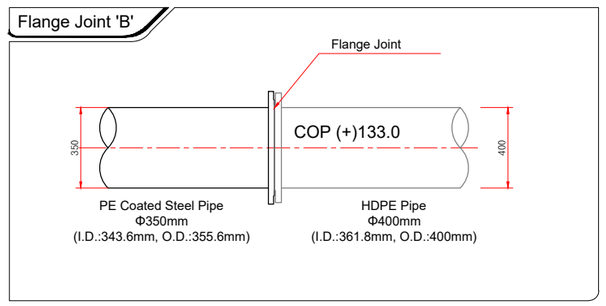
Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Submersible pump	D200 x 11kW	2	EA	
2	Butterfly Valve	D200, Electric	2	EA	
3	Swing check valve	D200	2	EA	
4	Dismantling joint	D200	2	EA	
5	Dismantling joint	D350	1	EA	
6	Ultrasonic flow meter	D350, Multi Path	1	EA	
7	Flap valve	D350	1	EA	
8	Air valve	D80	1	EA	
9	Gate valve	D80	1	EA	
10	Drainage pump	D50 x 1.5kW	1	EA	
11	Air vent	D100	1	EA	









Pump type	Submersible Pump			
Bore (Dmm)	Total Discharge quantity (㎥/hr)	Discharge quantity of each pump (㎥/hr)	Total head (m)	Electric motor output (kW x P)
200	471.6	235.8	7.7	11kW x 6P

Note

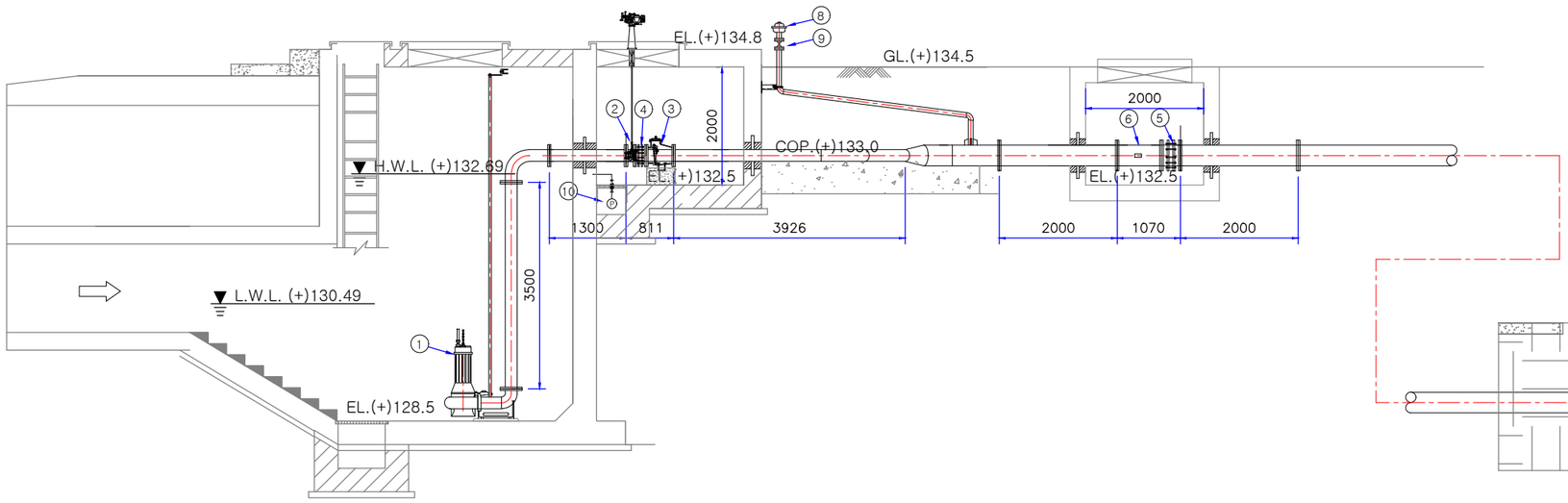
1. The common bed of a pump shall be fixed strongly with reinforcing rod or the steel frame of the existing bed.
2. The elevations on this drawings are rough and only reference.
3. All flange standard which is used shall be produced in identical standard.

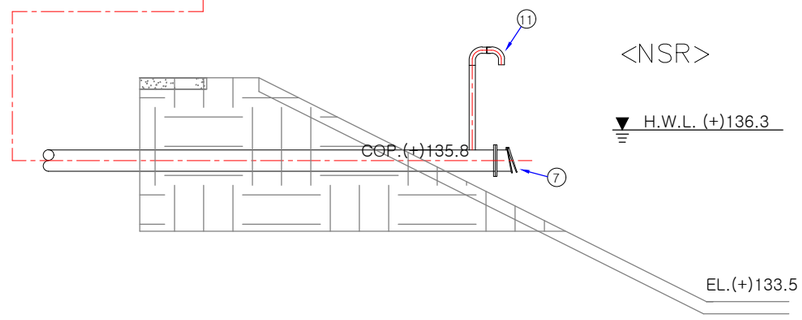
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong	1 : 50
		TITLE	DATE		DRAWING No
		PUMPING STATION 1 Floor Plan	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-01

PUMPING STATION 1 Longitudinal Cross Section

Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Submersible pump	D200 x 11kW	2	EA	
2	Butterfly Valve	D200, Electric	2	EA	
3	Swing check valve	D200	2	EA	
4	Dismantling joint	D200	2	EA	
5	Dismantling joint	D350	1	EA	
6	Ultrasonic flow meter	D350, Multi Path	1	EA	
7	Flap valve	D350	1	EA	
8	Air valve	D80	1	EA	
9	Gate valve	D80	1	EA	
10	Drainage pump	D50 x 1.5kW	1	EA	
11	Air vent	D100	1	EA	





Pump type	Submersible Pump			
Bore (Dmm)	Total Discharge quantity (㎥/hr)	Discharge quantity of each pump (㎥/hr)	Total head (m)	Electric motor output (kW x P)
200	471.6	235.8	7.7	11kW x 6P

Note

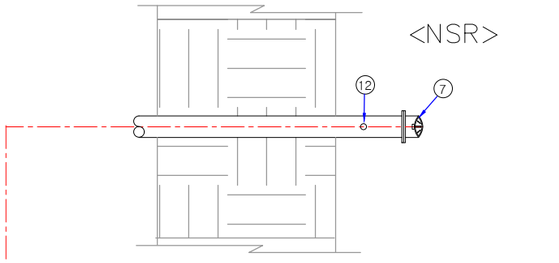
1. The common bed of a pump shall be fixed strongly with reinforcing rod or the steel frame of the existing bed.
2. The elevations on this drawings are rough and only reference.
3. All flange standard which is used shall be produced in identical standard.

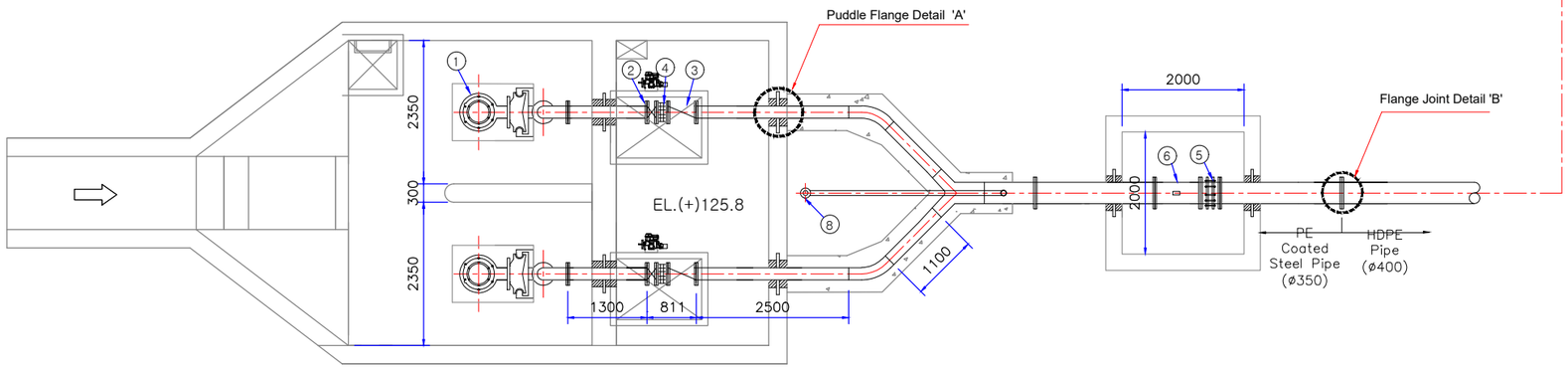
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	1 : 50
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		PUMPING STATION 1 Longitudinal Cross Section	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-02

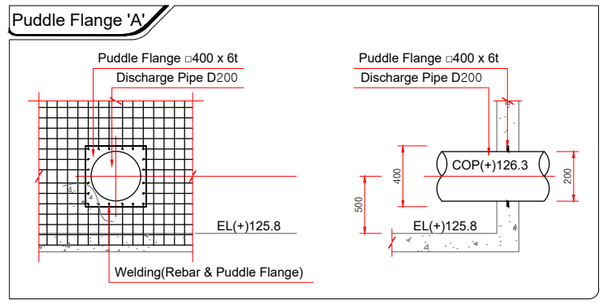
PUMPING STATION 2 Floor Plan

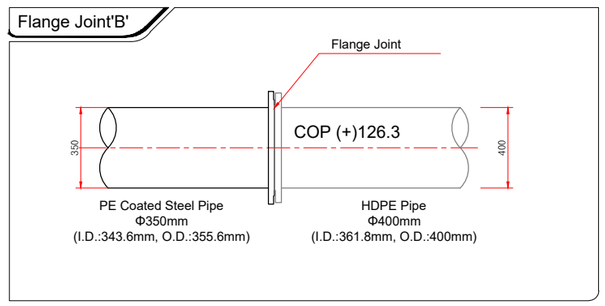
Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Submersible pump	D200 x 11kW	2	EA	
2	Butterfly Valve	D200, Electric	2	EA	
3	Swing check valve	D200	2	EA	
4	Dismantling joint	D200	2	EA	
5	Dismantling joint	D350	1	EA	
6	Ultrasonic flow meter	D350, Multi Path	1	EA	
7	Flap valve	D350	1	EA	
8	Air valve	D80	1	EA	
9	Gate valve	D80	1	EA	
10	Drainage pump	D50 x 1.5kW	1	EA	
11	Air vent	D100	1	EA	









Pump type	Submersible Pump			
Bore (Dmm)	Total Discharge quantity (㎥/hr)	Discharge quantity of each pump (㎥/hr)	Total head (m)	Electric motor output (kW x P)
200	554.4	277.2	7.7	11kW x 6P

Note

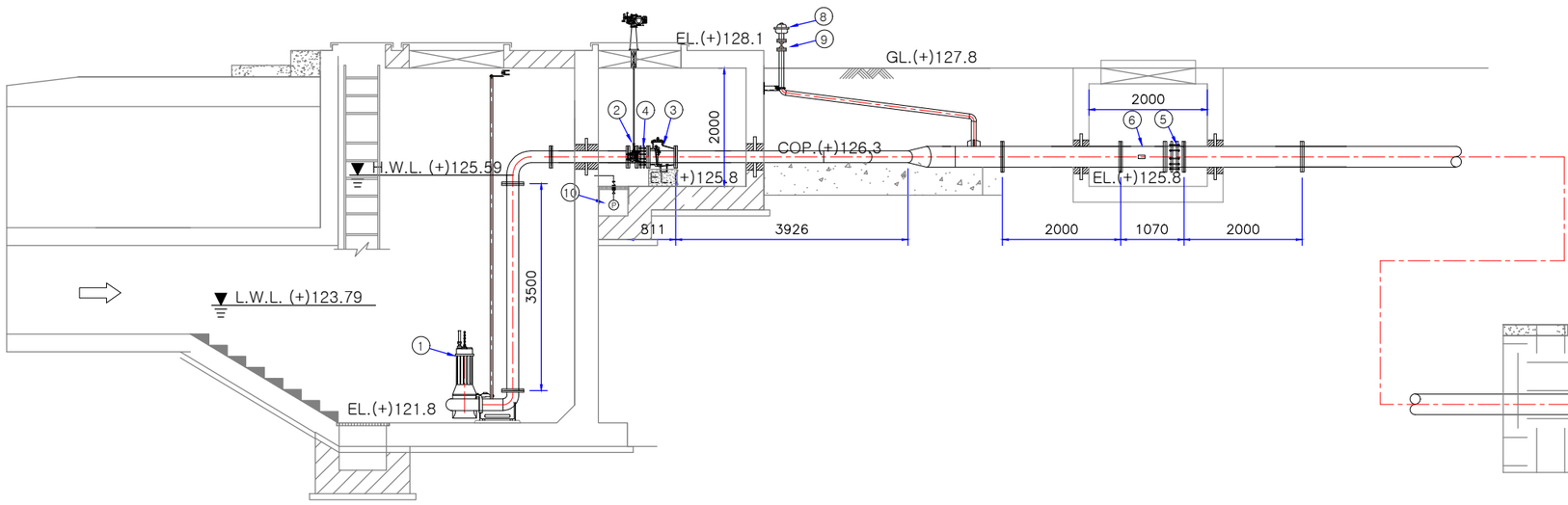
1. The common bed of a pump shall be fixed strongly with reinforcing rod or the steel frame of the existing bed.
2. The elevations on this drawings are rough and only reference.
3. All flange standard which is used shall be produced in identical standard.

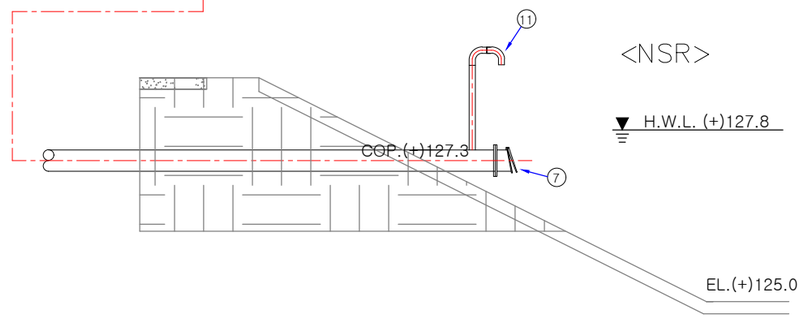
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	1 : 50
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		PUMPING STATION 2 Floor Plan	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-03

PUMPING STATION 2 Longitudinal Cross Section

Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Submersible pump	D200 x 11kW	2	EA	
2	Butterfly Valve	D200, Electric	2	EA	
3	Swing check valve	D200	2	EA	
4	Dismantling joint	D200	2	EA	
5	Dismantling joint	D350	1	EA	
6	Ultrasonic flow meter	D350, Multi Path	1	EA	
7	Flap valve	D350	1	EA	
8	Air valve	D80	1	EA	
9	Gate valve	D80	1	EA	
10	Drainage pump	D50 x 1.5kW	1	EA	
11	Air vent	D100	1	EA	





Pump type	Submersible Pump			
Bore (Dmm)	Total Discharge quantity (㎥/hr)	Discharge quantity of each pump (㎥/hr)	Total head (m)	Electric motor output (kW x P)
200	554.4	277.2	7.7	11kW x 6P

Note

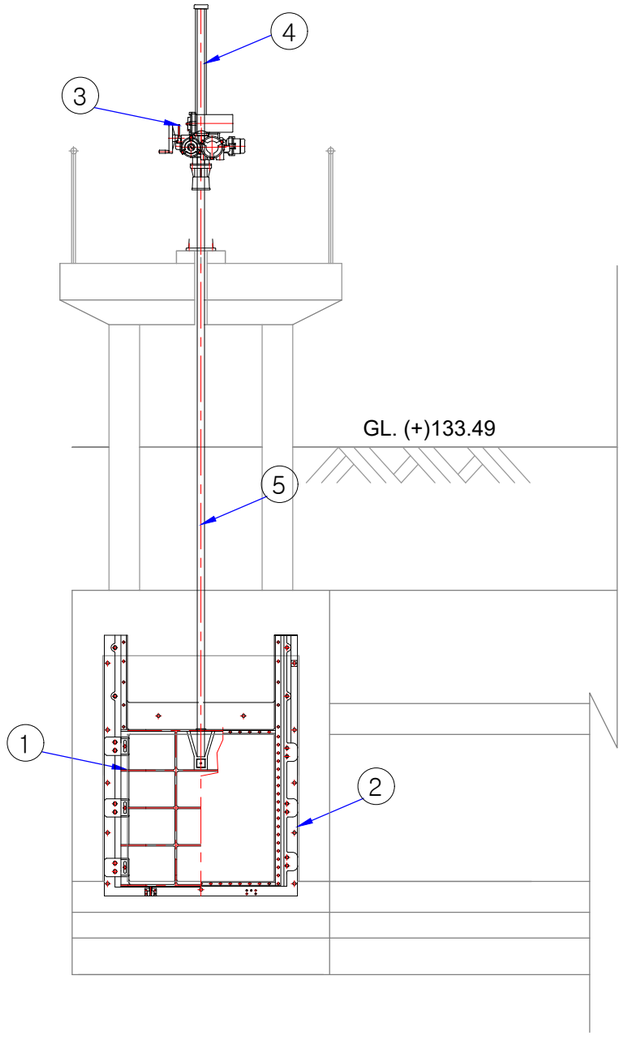
1. The common bed of a pump shall be fixed strongly with reinforcing rod or the steel frame of the existing bed.
2. The elevations on this drawings are rough and only reference.
3. All flange standard which is used shall be produced in identical standard.

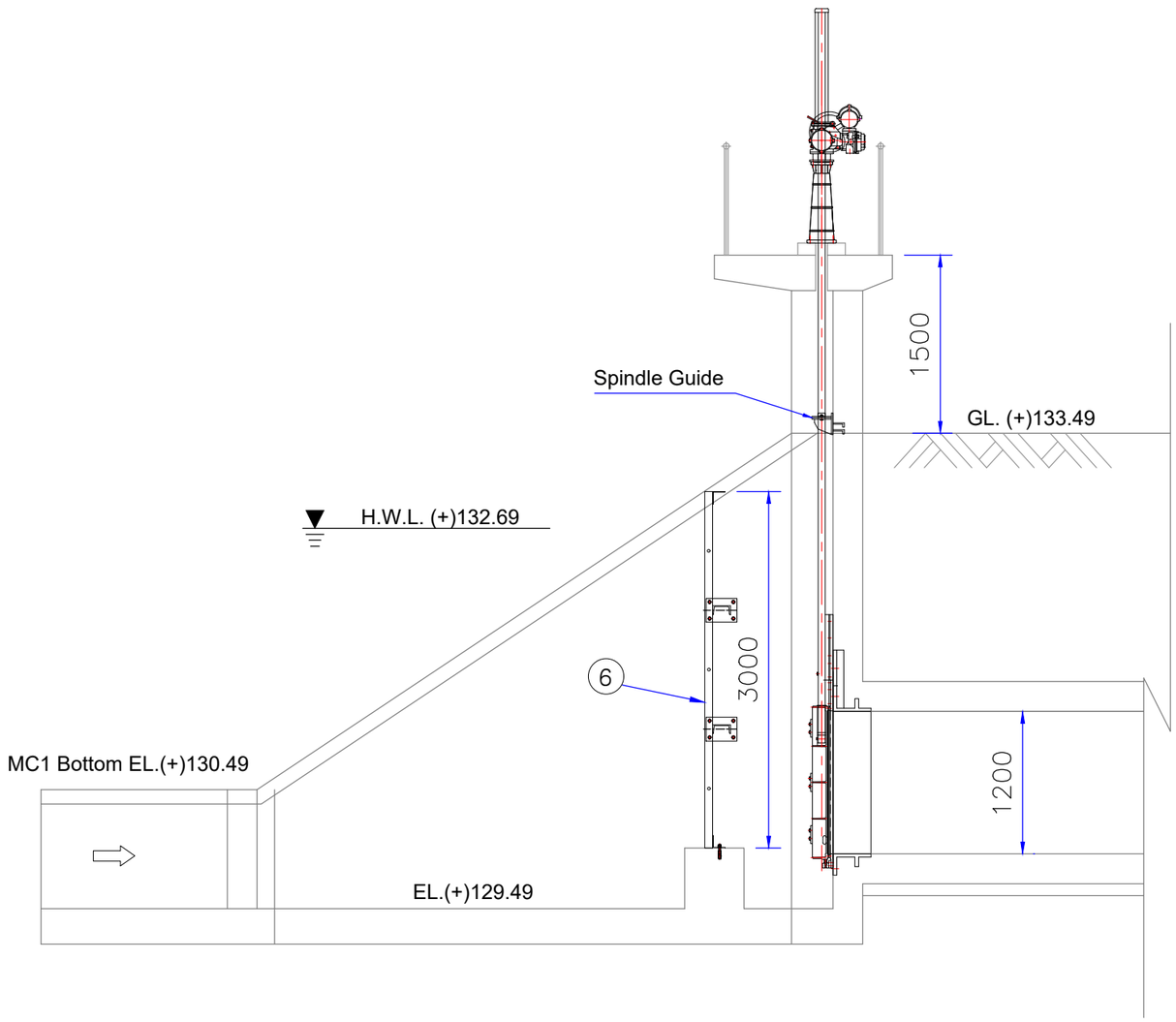
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	1 : 50
		TITLE	DATE		DRAWING No
		PUMPING STATION 2 Longitudinal Cross Section	JUNE, 2022		E-03-04

PS1 Sluice Gate Installation Drawing

Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Sliuce Gate	(B)1.2m x (H)1.2m	1	EA	
2	Sluice Gate Frame	(B)1.2m x (H)1.2m	1	EA	
3	Electric Actuator	3ton, 1.5kW	1	EA	
4	Stem	D60, EN 1.4301	3.0	m	
5	Stainless steel Rod	D60, EN 1.4301	3.0	m	
6	Screen	1.8m x 3.0m	1	EA	



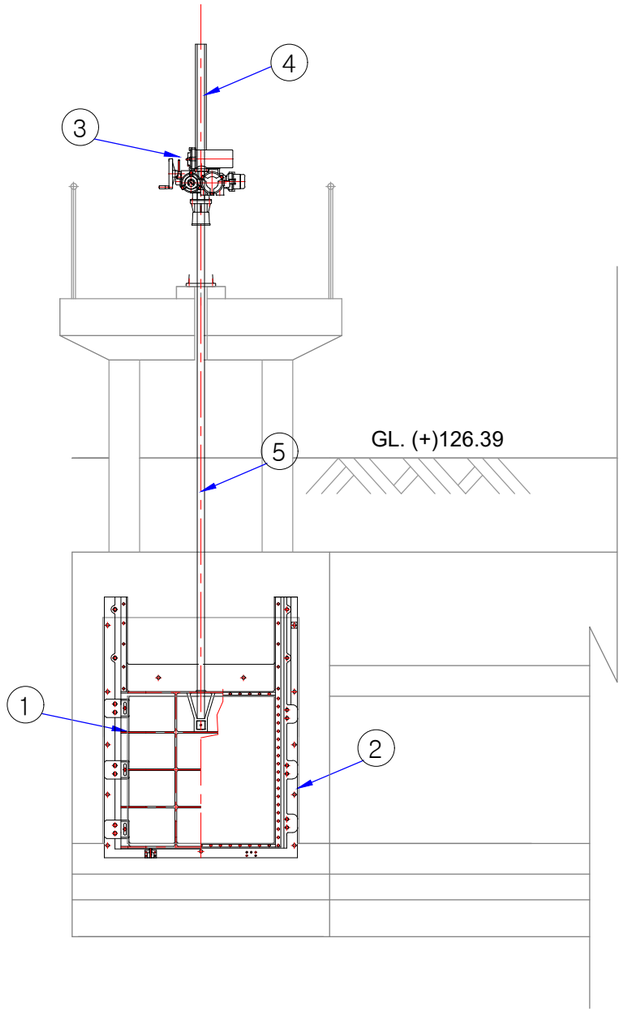


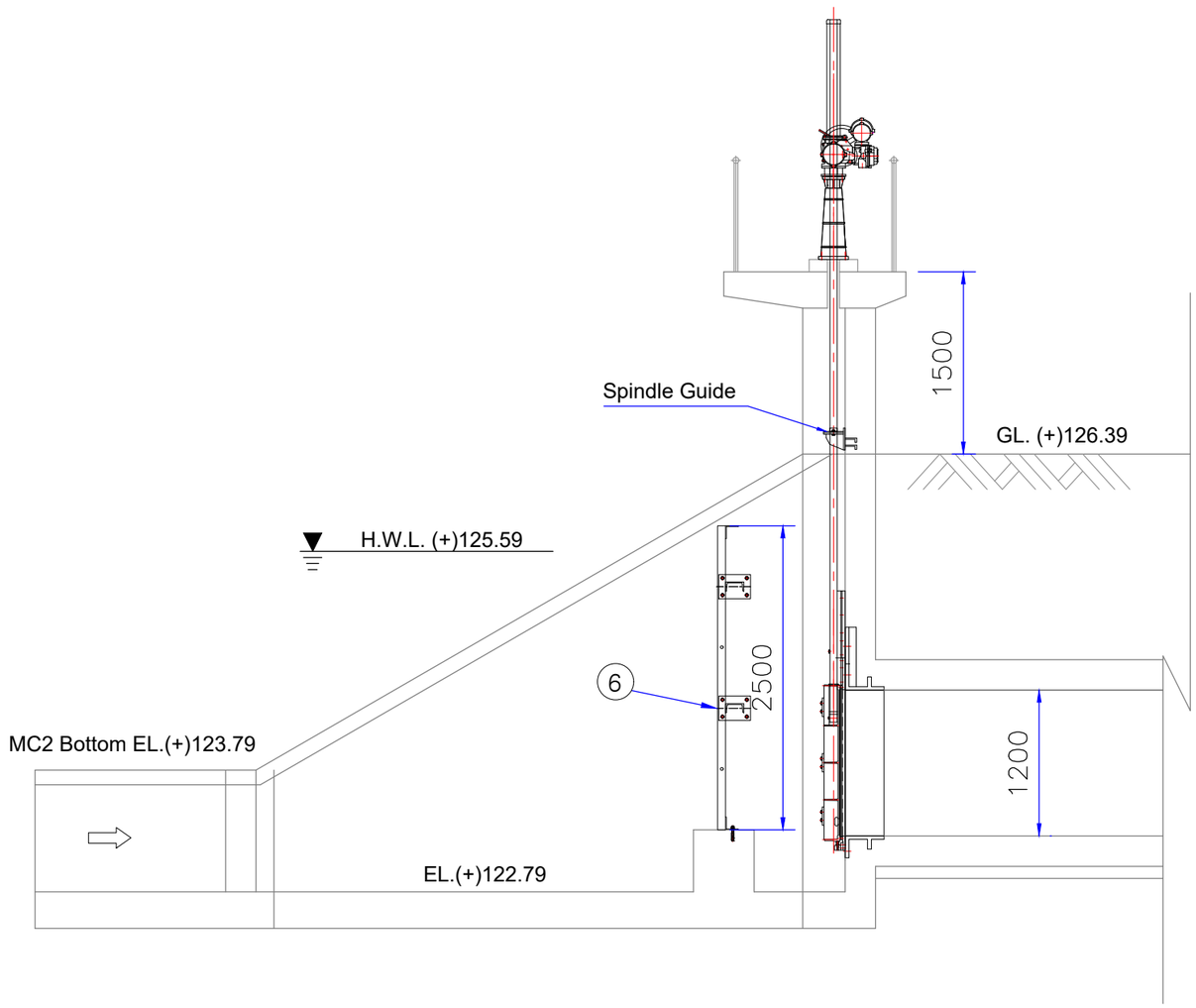
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	1 : 25
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		PS1 Sluice Gate Installation Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-05

PS2 Sluice Gate Installation Drawing

Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Sliuce Gate	(B)1.2m x (H)1.2m	1	EA	
2	Sluice Gate Frame	(B)1.2m x (H)1.2m	1	EA	
3	Electric Actuator	3ton, 1.5kW	1	EA	
4	Stem	D60, EN 1.4301	3.0	m	
5	Stainless steel Rod	D60, EN 1.4301	3.0	m	
6	Screen	1.8m x 2.5m	1	EA	





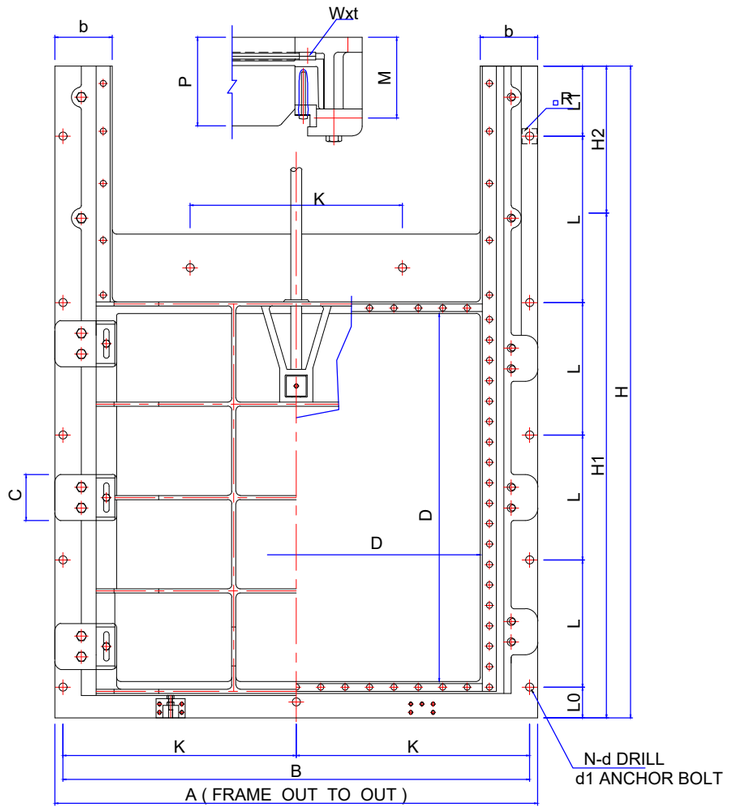
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	1 : 25
		TITLE	DATE		DRAWING No
		PS2 Sluice Gate Installation Drawing	JUNE, 2022		E-03-06

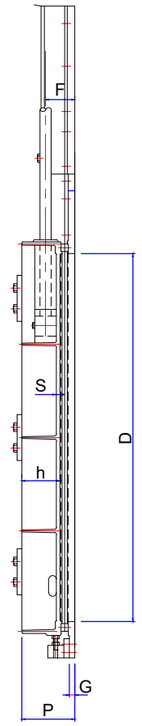
PS1,2 Sluice Gate Detail Drawing

(Scale : None)

Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Material	Remarks
1	Sluice Gate	EN GJL-200	
2	Sluice Gate Frame	EN GJL-200	
3	Stem	EN 1.4301	
4	Sluice Gate Seat	EN 1.4301	





Note

1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

UNIT : mm

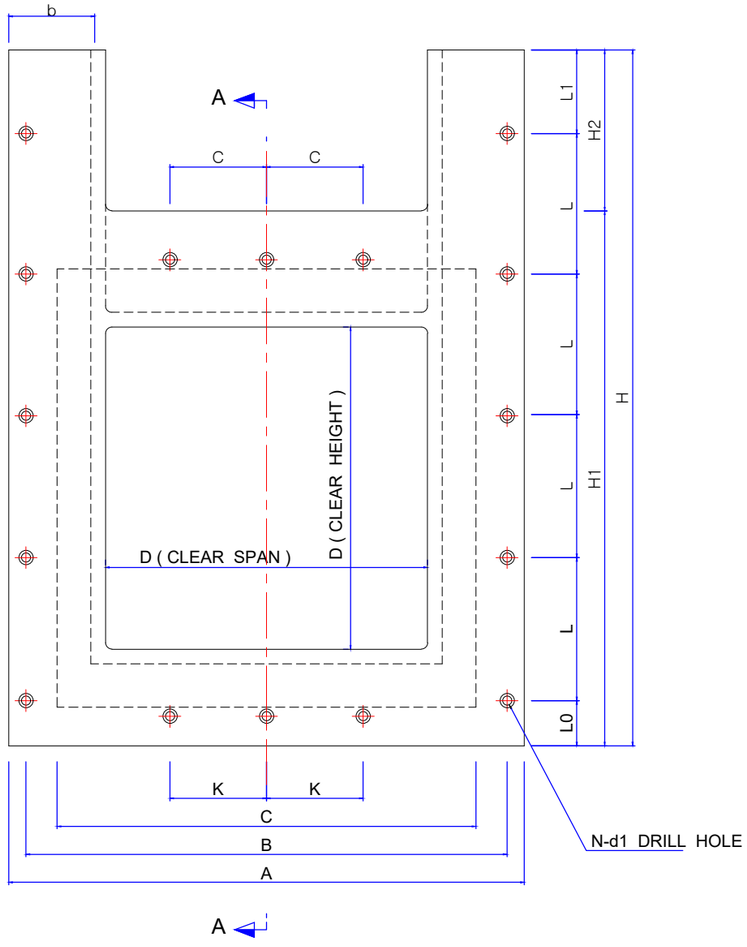
Gate Size (D)	A	B	C	F	G	H	H1	H2	L0	L	L1	K	Stem	REMARKS
1200 X 1200	1580	1500	150	114	38	2100	1580	520	90	460	50	750	ø60	PS1, PS2
	M	N	d	d1	P	s	w	t	□R	b	h		Lifting Weight	
	191	12	ø26	M24	229	16	40	9	120	190	175		2700kg	

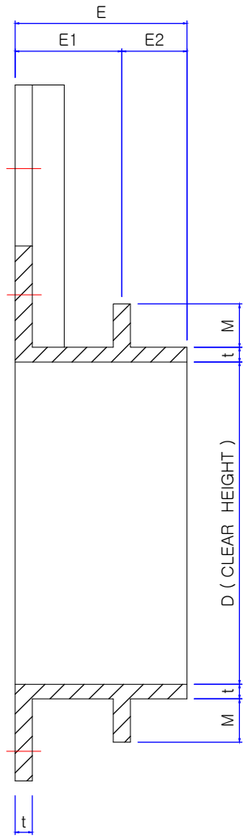
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		PS1,2 Sluice Gate Detail Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-07

PS1,2 Sluice Gate Flange Detail Drawing

(Scale : None)

No	Item	Material	Remarks
1	Sluice Gate	EN GJL-200	
2	Sluice Gate Frame	EN GJL-200	
3	Stem	EN 1.4301	
4	Sluice Gate Seat	EN 1.4301	





SECTION A-A

Note

1. This drawing is a general matter for the shape and structure of the sluice gate and is not limited to a specific shape and structure.
2. The above dimensions and materials can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.

UNIT : mm

Gate Size (D)	A	B	C	E	E1	E2	K	H	H1	H2	L0	L	L1	M	b	t	d1	N	REMARKS
1200 x 1200	1580	1500	1512	350	230	120	750	2100	1580	520	90	460	50	120	190	36	M24	12	PS1, PS2

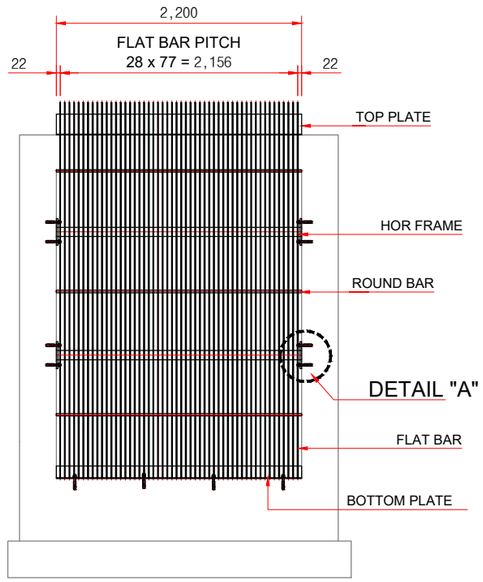
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		PS1,2 Sluice Gate Flange Detail Drawing	JUNE, 2022		E-03-08

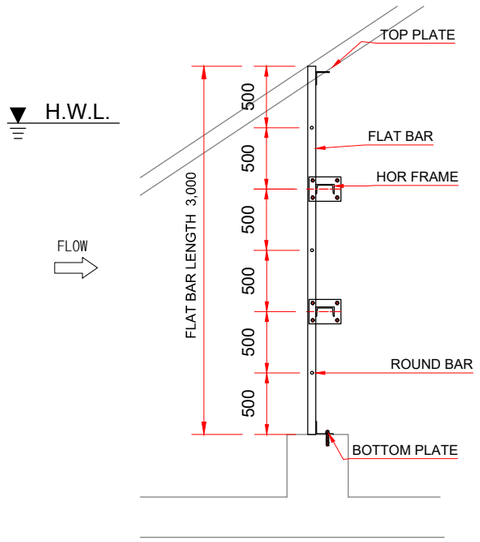
SC(2.2m x 3.0m) Screen Detail Drawing

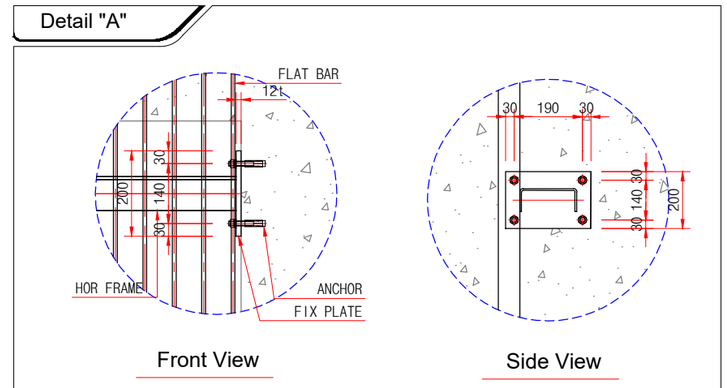
(Scale : None)

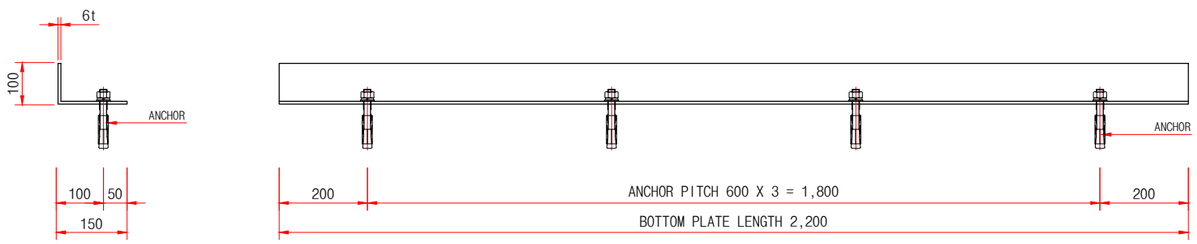
Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 3000L	77	EA	spacing 20
2	Top Plate	100 x 100 x 6t	1	EA	2.2m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.2m
4	Hor. Frame	150 x 75 x 6t	2	EA	2.2m
5	Round Bar	D 20 x 2200L	3	EA	
6	Fix Plate	250 x 200 x 12t	4	EA	
7	Anchor B/N	M16 x 125L	20	EA	









BOTTOM PLATE DETAIL

Note

1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)

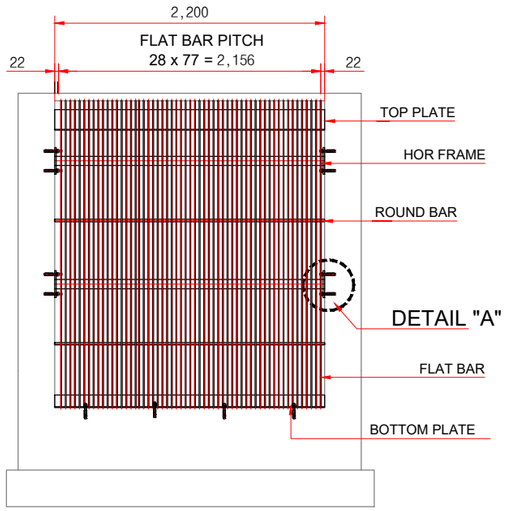
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		SC(2.2m x 3.0m) Screen Detail Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-09

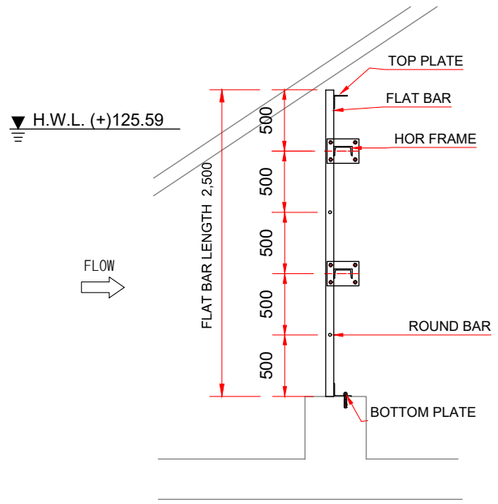
SC(2.2m x 2.5m) Screen Detail Drawing

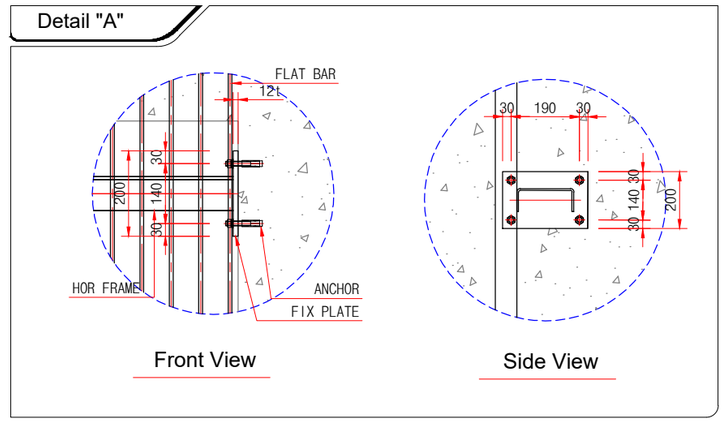
(Scale : None)

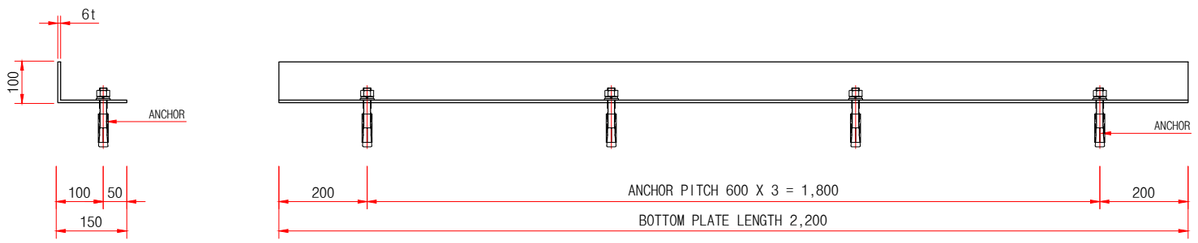
Unit is millimeter(mm) of The International System of Units(SI)

No	Item	Type	Q'ty	Unit	Remarks
1	Flat Bar	65 x 8t x 2500L	77	EA	spacing 20
2	Top Plate	100 x 100 x 6t	1	EA	2.2m
3	Bottom Plate	150 x 100 x 6t	1	EA	2.2m
4	Hor. Frame	150 x 75 x 6t	2	EA	2.2m
5	Round Bar	D20x 1800L	2	EA	
6	Fix Plate	250 x 200 x 12t	4	EA	
7	Anchor B/N	M16 x 125L	20	EA	









BOTTOM PLATE DETAIL

Note

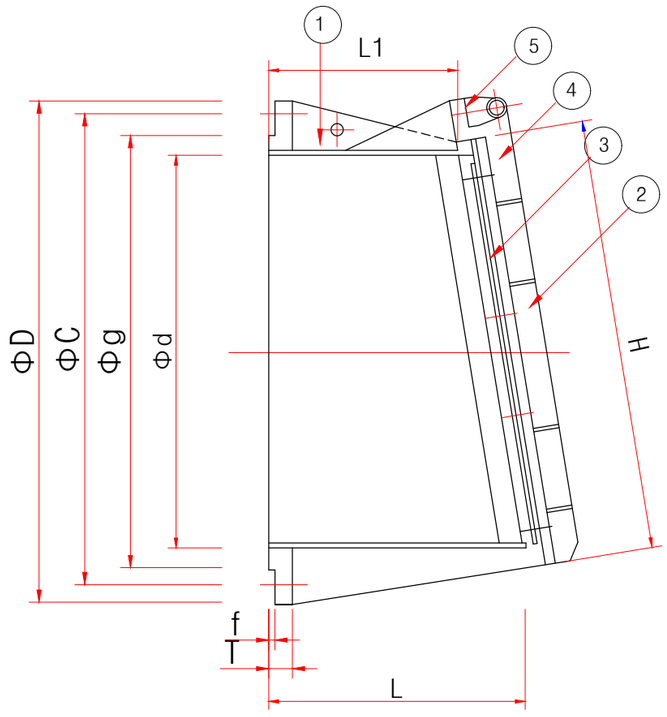
1. This drawing is a general matter for the shape and structure of screen and the above dimensions can be negotiated and changed according to the site situation when preparing approved manufacturing drawings.
2. All components are made of stainless steel(EN 1.4301)

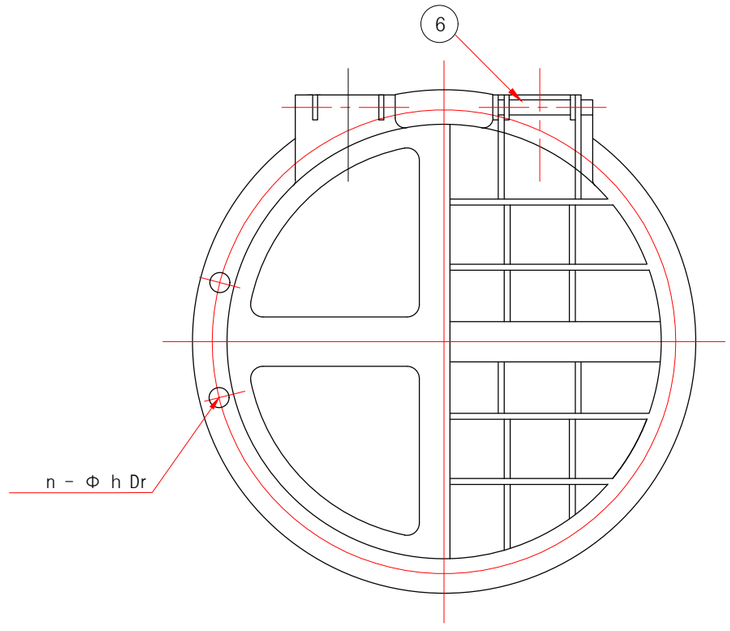
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong	NONE
		TITLE	DATE	DRAWING BY: Ko, Soo Seong	DRAWING No
		PS2 Screen Detail Drawing	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	E-03-10

PS1,2 Flap Valve Detail Drawing

(Scale : None)

No	Item	Material	Remarks
1	Body	EN S275	
2	Disk	EN S275	
3	Seat	RUBBER	
4	Arm	EN S275	
5	Bracket	EN S275	
6	Pin	EN 1.4301	





UNIT : mm

TYPE	d	L	FLANGE					L1	H
			Φ D	T X f	BOLT HOLE		Φ G		
					Φ C	n-Φh			
1 - DOOR	350	265	490	26X3	445	16-23	413	200	400

Note

The companion flange of this flap gate shall be manufactured in the same standard.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Ko, Soo Seong DRAWING BY: Ko, Soo Seong CHECKED BY: Jo, Jin Hoon	NONE
		TITLE	DATE		DRAWING No
		PS1,2 Flap Valve Detail Drawing	JUNE, 2022		E-03-11

ELECTRICAL SYMBOL & LEGEND

SYMBOL	ABBREVIATION	LEGEND
POWER EQUIPMENT		
	IS	INTERRUPTER SWITCH
	LA/SPD	LIGHTNING ARRESTER / SURGE PROTECTIVE DEVICE
	PF	POWER FUSE
	TR	TRANSFORMER
	ACB	AIR CIRCUIT BREAKER
	MCCB	MOLDED CASE CIRCUIT BREAKER
	ELB	EARTH LEAKAGE BREAKER
V	V	VOLT METER
A	A	AMPERE METER
	VS	VOLT METER SELECTOR SWITCH
	AS	AMPERE METER SELECTOR SWITCH
W	W	WATT METER
WH	WH	WATT-HOUR METER
VAR		VAR METER
PF	PF	POWER FACTOR METER
OCR	OCR	OVER CURRENT RELAY
OVGR	OVGR	OVER VOLTAGE GROUND RELAY
POR	POR	OPEN OR REVERSE PHASE VOLTAGE RELAY
UVR	UVR	UNDER VOLTAGE RELAY
EOCR	EOCR	ELECTRONIC OVER CURRENT RELAY
ELD	ELD	EARTH LEAKAGE DETECTOR
	THR	THERMAL RELAY
GR	GR	GROUND RELAY
	S.C	CAPACITOR
	MC	MAGNETIC CONTACTOR
	VT	VOLTAGE TRANSFORMER
	EVT	EARTH VOLTAGE TRANSFORMER
	CT	CURRENT TRANSFORMER
	ZCT	ZERO-PHASE-SEQENCE CURRENT TRANSFORMER
	TC	TRIP COIL
F	F	FUSE
G R		PILOT LAMP
	CTT	CURRENTESTING TERMINAL
	VTT	VOLTAGESTING TERMINAL

SYMBOL	ABBREVIATION	LEGEND
N P	NP	NAME PLATE
UPS	UPS	UNINTERRUPTIBLE POWER SUPPLY
T D	TD	TRANSDUCER
BZ	BZ	BUZZER
BL	BL	BELL
	ATS	AUTO TRANSFER SWITCH
PB	PB	PUSH BUTTON SWITCH
	SL	SELECTOR SWITCH
		POWER DISTRIBUTION PANEL / LOCAL CONTROL PANEL / MCC PANEL
	LP	LIGHTING PANEL BOARD / DISTRIBUTION BOARD
M	M	AC INDUCTION MOTOR
G	GEN	DIESEL GENERATOR
LIGHT FIXTURES		
		LED LAMP TYPE
		CEILING LAMP(LED)
	SW	TUMBLER SWITCH
SL	L, SL	OUTDOOR LIGHTING FIXTURE, POLE MOUNTED TYPE(LED)
J P		JOINT BOX / PULL BOX
LIGHTNING & EARTH		
		LIGHTNING PROTECTION AIR TERMINAL
		EARTH TEST BOX
		EARTH (GROUND) ROD
		CONNECTION POINT
		EARTH BONDING JUMPER
E		EARTH
CONDUIT, WIRE & CABLE		
		CONDUIT UP
		CONDUIT DOWN
		CONDUIT THRU-FEED
		HOME RUN TO PANEL BOARD
		CABLE OR WIRE, RUN IN CONDUIT, EMBEDED IN CEILING OR WALL
		CABLE OR WIRE, RUN IN CONDUIT, CONCEALED OR EMBEDDED IN FLOOR SLAB
		CABLE OR WIRE, RUN IN CONDUIT, CONCEALED OR EMBEDDED IN UNDERGROUND
		CABLE OR WIRE, RUN IN CONDUIT, EXPOSED
		CABLE & CONDUIT, UP AND DOWN

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

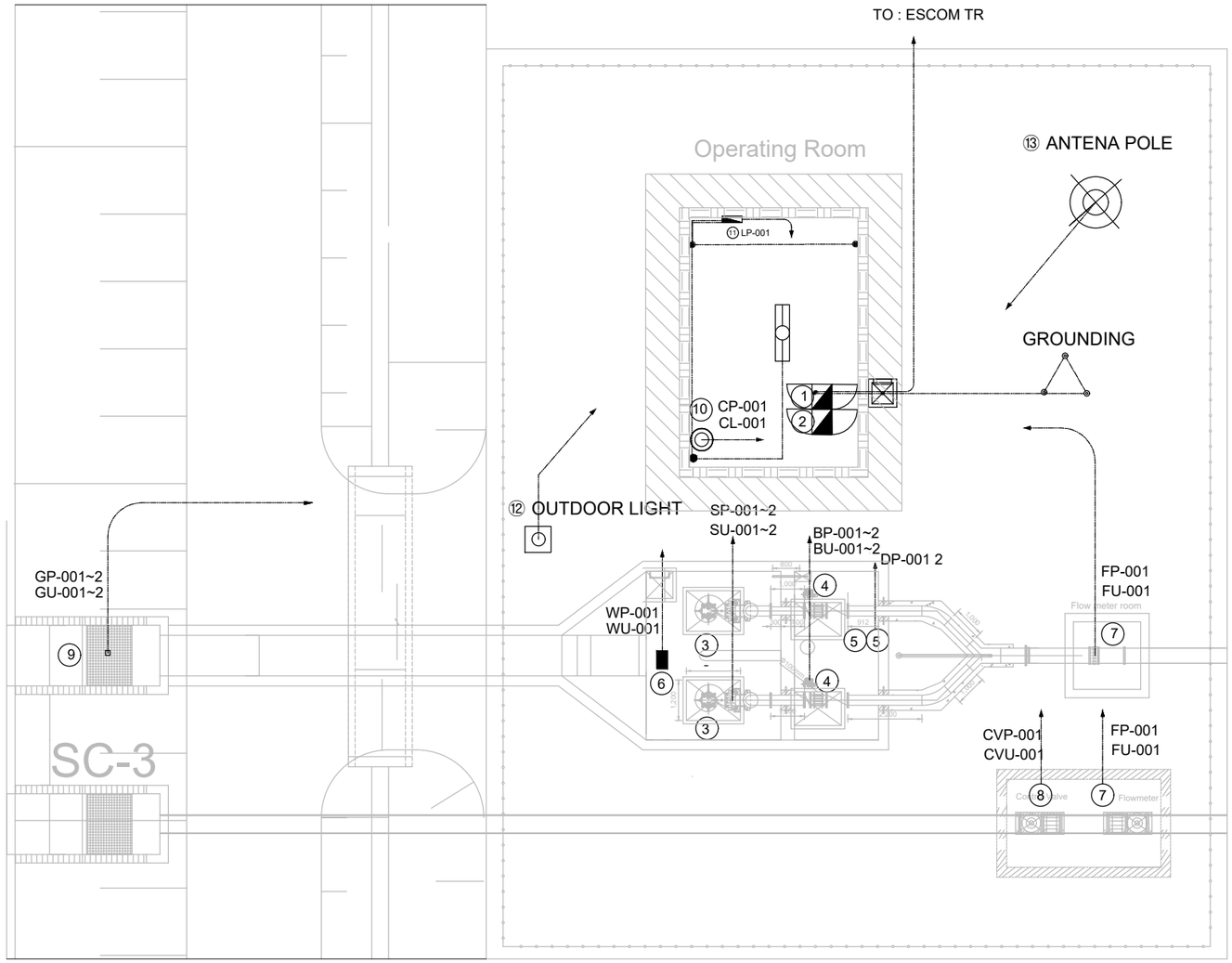
CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		DRAWING BY: An, Seong Il	
TITLE	DATE	CHECKED BY: Jo, Jin hoon	DRAWING No
ELECTRICAL SYMBOL & LEGEND	JUNE, 2022		E-04-01

CABLE WIRING & LAYOUT PLAN 1 (PS 1)

(Scale = None)



CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
1. POWER SUPPLY										
PO-001	ESCOM TR	MEASURING BOX	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	ENTRACE CAP
	MEASURING BOX	POWER PANNEL	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	
2. POWER EQUIPMENT										
SP-001~2	① POWER PANNEL	③ SUBMERSIBLE PUMP	0.6/1kV	F-CV	3Cx2set	4㎟	4㎟	STEEL 28MM	28	
SU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
BP-001~2	① POWER PANNEL	④ BUTTERFLY PUMP	0.6/1kV	F-CV	3Cx2set	2.5㎟	2.5㎟	STEEL 28MM	22	
BU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
DP-001	① POWER PANNEL	⑤ DRAINAGE PUMP	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
WP-001	① POWER PANNEL	⑥ WATER LEVEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟			
WU-001			0.6/1kV	F-CVVs	10C	1.5㎟				
FP-001	① POWER PANNEL	⑦ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	
CVP-001	① POWER PANNEL	⑧ CONTROL VALVA	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	E.L.P	30	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		E.L.P	30	
GP-001~2	① POWER PANNEL	⑨ GATE MOTOR	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
GU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
CP-001	① POWER PANNEL	⑩ CCTV(DOME CAMERA)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
CU-001			UTP CAT.5E 24AWG 4Pr*2					STEEL 28MM	28	
LP-001	① POWER PANNEL	⑪ LOW POWER PANNEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
LP-001	⑪ LOW POWER PANNEL	⑫ OUTDOOR LIGHT	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	**E.L.P**	30	
POLE	② R.T.U	⑬ ANTENA POLE	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	30	
			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	30	

NOTE(WATER LEVEL)

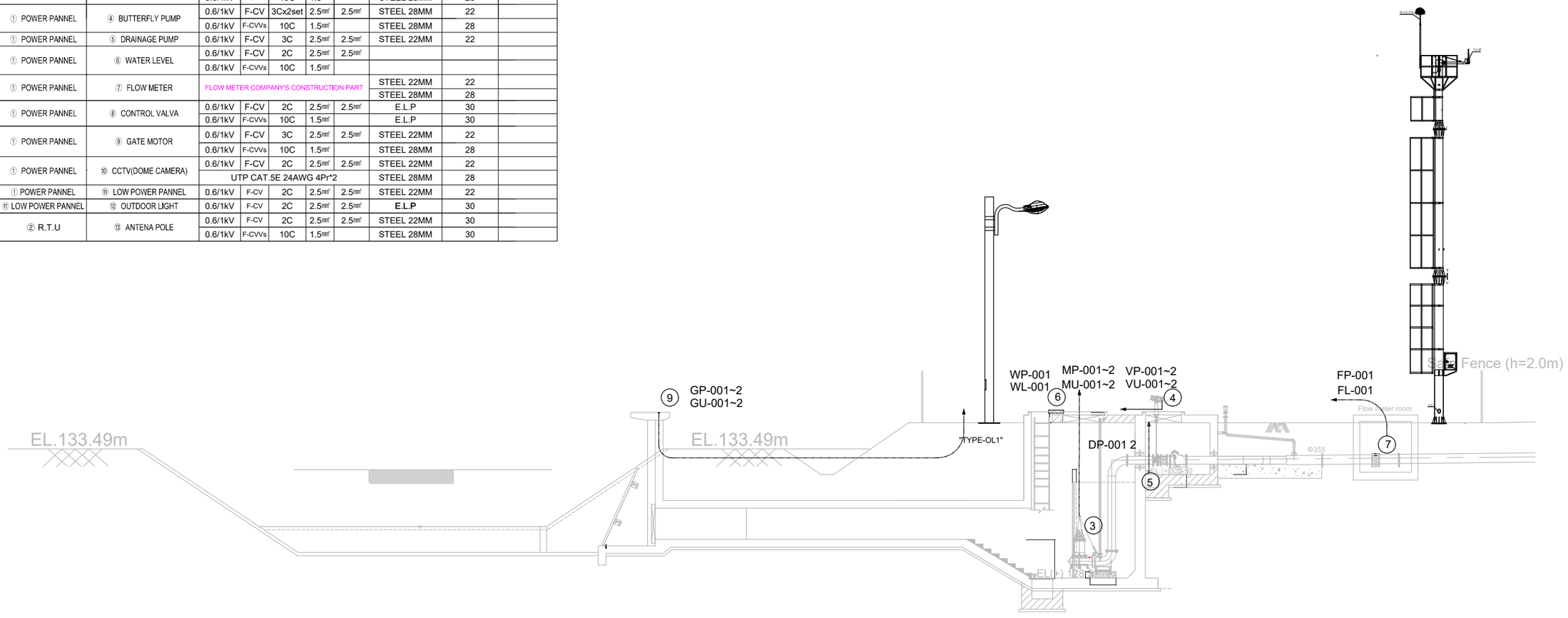
1. The control unit is attached to the inside of the RTU panel.
2. The water level measurement sensor is for 0.3 to 10 M.
3. The control unit and sensor use an F-CVVs cable and construct it to completely shield it.
4. The ultrasonic water level meter bracket is firmly fixed on the upper part and is installed so as not to interfere with the ultrasonic measurement angle range and the pump chamber wall.
5. The ultrasonic water level meter is waterproof and completely waterproof (including piping) after installation.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN 1 (PS1)	JUNE, 2022	CHECKED BY: Jo, Jin hoon	E-04-02

CABLE WIRING & LAYOUT PLAN 2 (PS 1)

(Scale = None)

CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
1. POWER SUPPLY										
PO-001	ESCOM TR	MEASURING BOX	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	ENTRACE CAP
	MEASURING BOX	POWER PANNEL	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	
2. POWER EQUIPMENT										
SP-001~2	① POWER PANNEL	③ SUBMERSIBLE PUMP	0.6/1kV	F-CV	3Cx2set	4㎟	4㎟	STEEL 28MM	28	
SU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
BP-001~2	① POWER PANNEL	④ BUTTERFLY PUMP	0.6/1kV	F-CV	3Cx2set	2.5㎟	2.5㎟	STEEL 28MM	22	
BU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
DP-001	① POWER PANNEL	⑤ DRAINAGE PUMP	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
WP-001	① POWER PANNEL	⑥ WATER LEVEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟			
WU-001			0.6/1kV	F-CVVs	10C	1.5㎟				
FP-001	① POWER PANNEL	⑦ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	
CVP-001	① POWER PANNEL	⑧ CONTROL VALVA	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	E.L.P	30	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		E.L.P	30	
GP-001~2	① POWER PANNEL	⑨ GATE MOTOR	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
GU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
CP-001	① POWER PANNEL	⑩ CCTV(DOME CAMERA)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
CU-001			UTP CAT.5E 24AWG 4Pr*2					STEEL 28MM	28	
LP-001	① POWER PANNEL	⑪ LOW POWER PANNEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
LP-001	⑪ LOW POWER PANNEL	⑫ OUTDOOR LIGHT	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	**E.L.P**	30	
POLE	② R.T.U	⑬ ANTENA POLE	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	30	
			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	30	

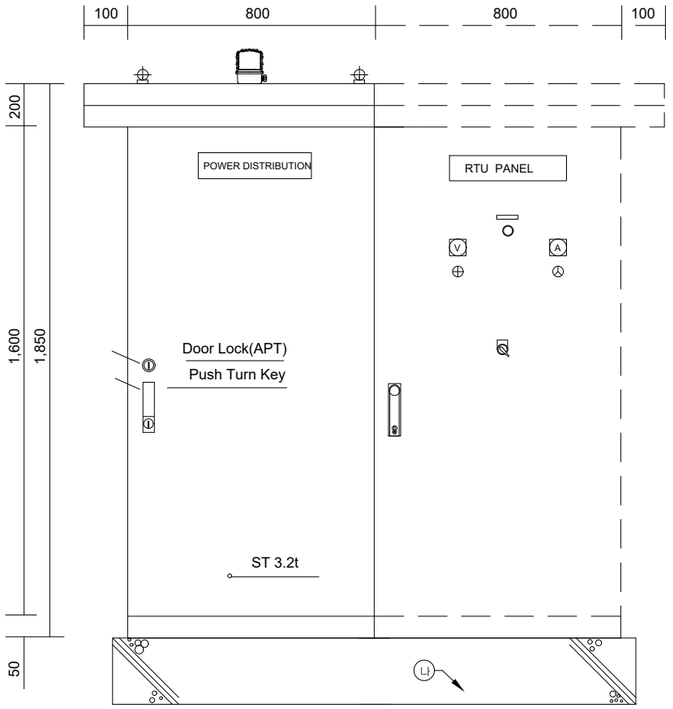


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN 2 (PS1)	JUNE, 2022	CHECKED BY: Jo, Jin hoon	E-04-03

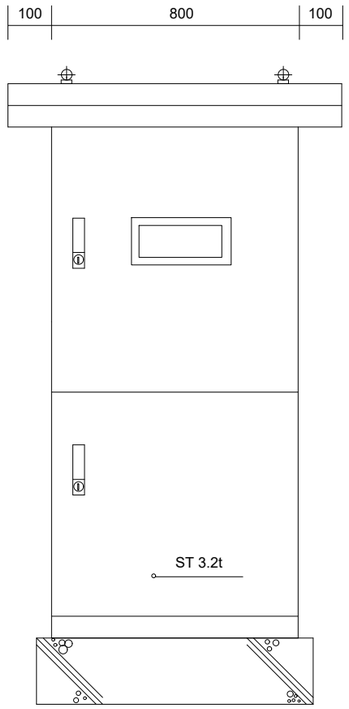
ELECTRIC PANEL LAYOUT (PS 1)

Unit is meter(m) of The International System of Units(SI)

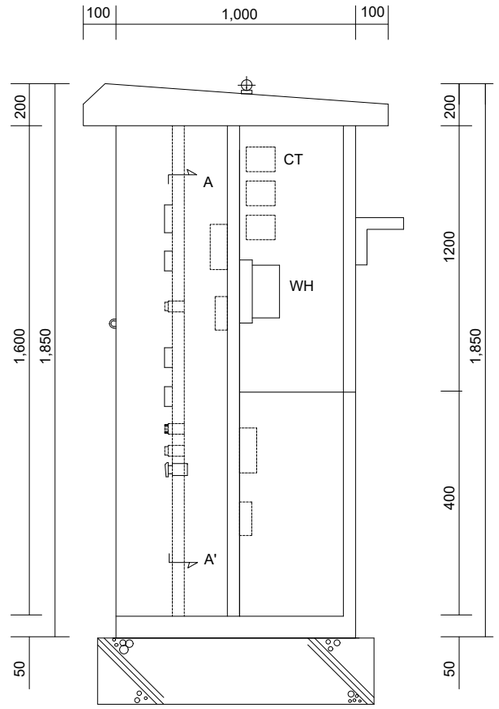
(Scale = None)



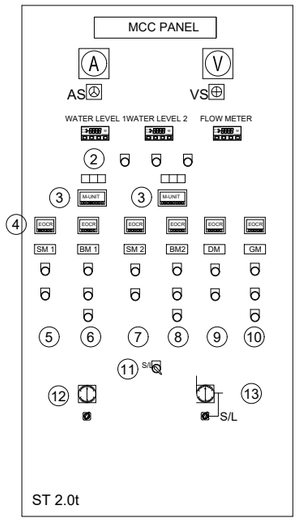
FRONT



REAR



SIDE



PARTIAL DETAILS

1. SIGNAL LAMP uses an LED type.
2. A name plate containing the manufacturer's contact information shall be attached to the CUBICLE.
3. Locks and STOP BARs must be installed in the CUBICLE DOOR
4. The SEQUENC circuit diagram must be attached to the inside of the CUBICLE.
5. The low voltage breakers MCCB and ELCB are installed in a standard type.

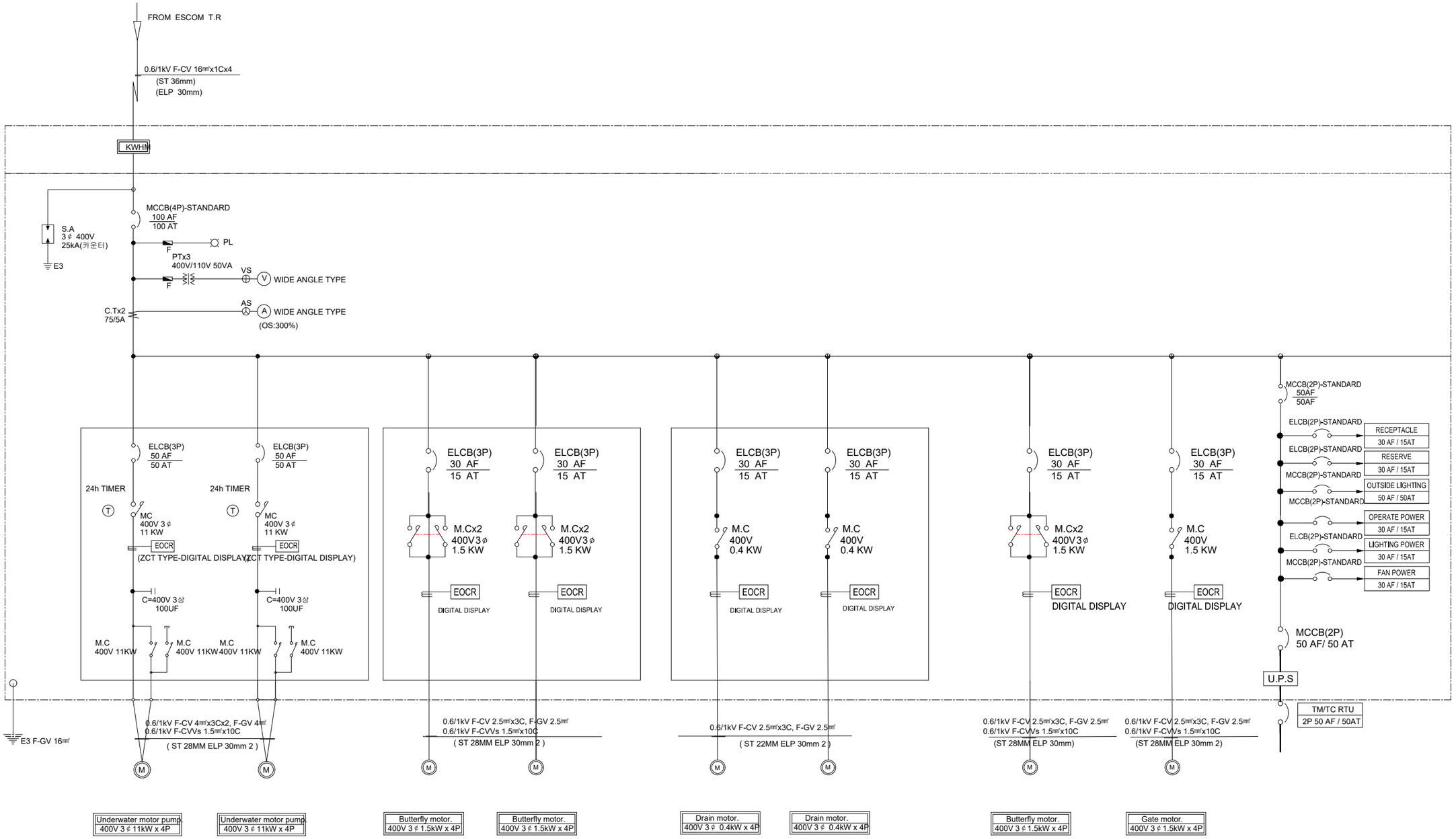
No	Contents
①	MONITORING UNIT(WATER LEVEL 1,2, FLOW METER)
②	Quadrangle LAMP (Suction tank low water level lighting)-Trip circuit configuration
	Quadrangle LAMP (Water motor pump EOCR trip light)
	Quadrangle LAMP (Light on when the underwater motor pump monitoring unit operates)
③	Underwater motor pump monitoring unit (supplied by the underwater motor pump manufacturer)
④	E.O.C.R
⑤	PUSH BUTTON WITH LAMP (Submerlin motor 1 is shut down)
⑥	PUSH BUTTON WITH LAMP (butterfly motor 1, open, stop, closed.)

No	Contents
⑦	PUSH BUTTON WITH LAMP (Submerlin motor 2 is shut down.)
⑧	PUSH BUTTON WITH LAMP (butterfly motor 2, open, stop, closed)
⑨	PUSH BUTTON WITH LAMP (Drain motor 2 is shut down.)
⑩	PUSH BUTTON WITH LAMP (Gate motor 2, open, stop, closed)
⑪	Selection S/W (Site/Remote Control) * Electrical Panel Control Overall Integrated Selection
⑫	24-hour timer (for automatic operation of the sub-merlin motor)
⑬	24-hour timer (for automatic operation of the sub-merlin motor)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin hoon	NONE
		TITLE	DATE		DRAWING No
		ELECTRIC PANEL LAYOUT(PS1)	JUNE, 2022		E-04-04

ELECTRIC POWER SINGLE DIAGRAM (PS 1)

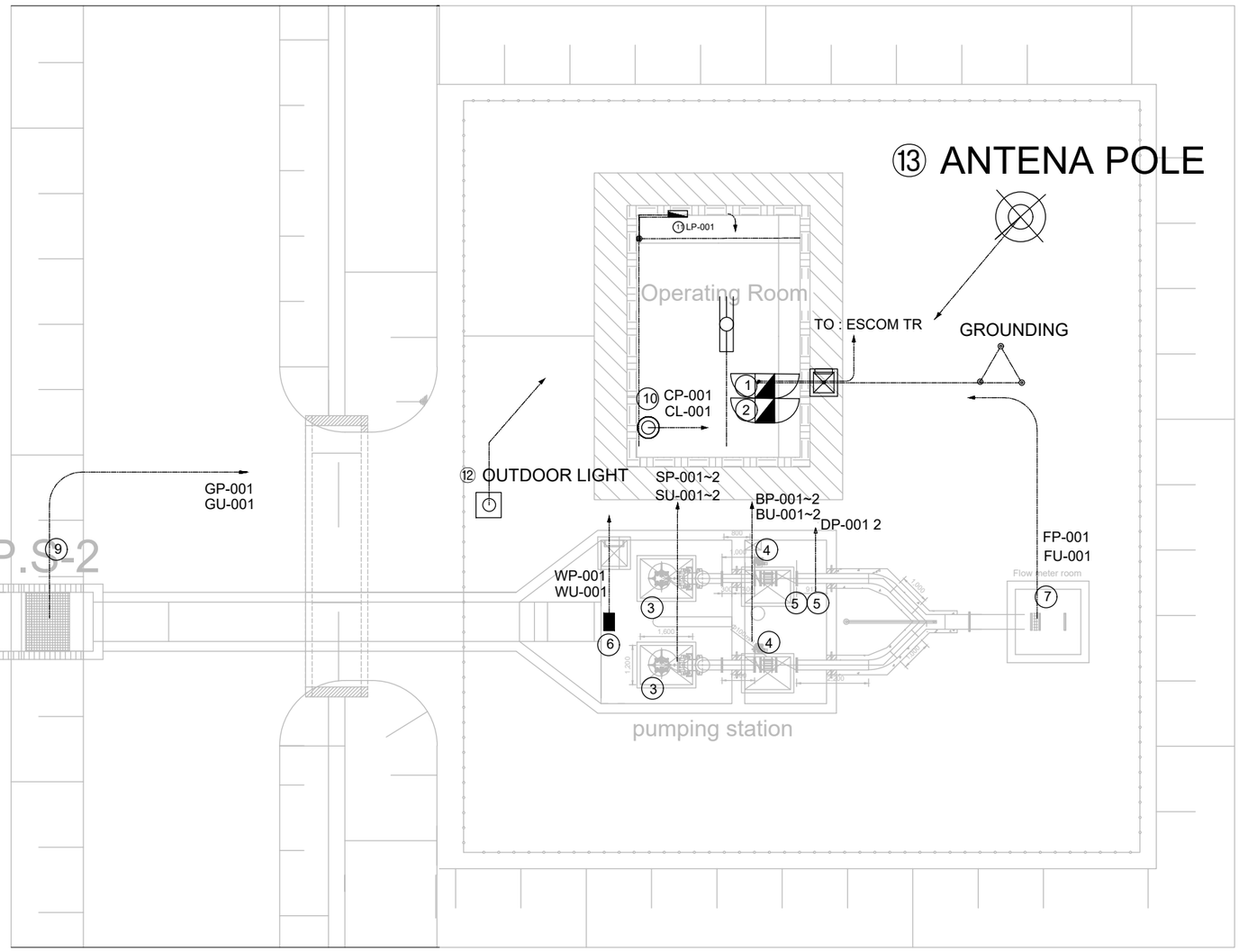
(Scale = None)



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin hoon	NONE
		TITLE	DATE		DRAWING No
		ELECTRIC POWER SINGLE DIAGRAM (PS1)	JUNE, 2022		E-04-05

CABLE WIRING & LAYOUT PLAN 1 (PS 2)

(Scale = None)



CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
1. POWER SUPPLY										
PO-001	ESCOM TR	MEASURING BOX	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	ENTRACE CAP
	MEASURING BOX	POWER PANNEL	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	
2. POWER EQUIPMENT										
SP-001~2	① POWER PANNEL	③ SUBMERSIBLE PUMP	0.6/1kV	F-CV	3Cx2set	4㎟	4㎟	STEEL 28MM	28	
SU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
BP-001~2	① POWER PANNEL	④ BUTTERFLY PUMP	0.6/1kV	F-CV	3Cx2set	2.5㎟	2.5㎟	STEEL 28MM	22	
BU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
DP-001	① POWER PANNEL	⑤ DRAINAGE PUMP	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
WP-001	① POWER PANNEL	⑥ WATER LEVEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
WU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① POWER PANNEL	⑦ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	
CVP-001	① POWER PANNEL	⑧ CONTROL VALVA	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	E.L.P	30	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		E.L.P	30	
GP-001~2	① POWER PANNEL	⑨ GATE MOTOR	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
GU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
CP-001	① POWER PANNEL	⑯ CCTV(DOME CAMERA)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
CU-001			UTP CAT.5E 24AWG 4Pr*2					STEEL 28MM	28	
LP-001	① POWER PANNEL	⑪ LOW POWER PANNEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
LP-001	⑪ LOW POWER PANNEL	⑫ OUTDOOR LIGHT	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	**E.L.P**	30	
POLE	② R.T.U	⑬ ANTENA POLE	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	30	
			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	30	

NOTE

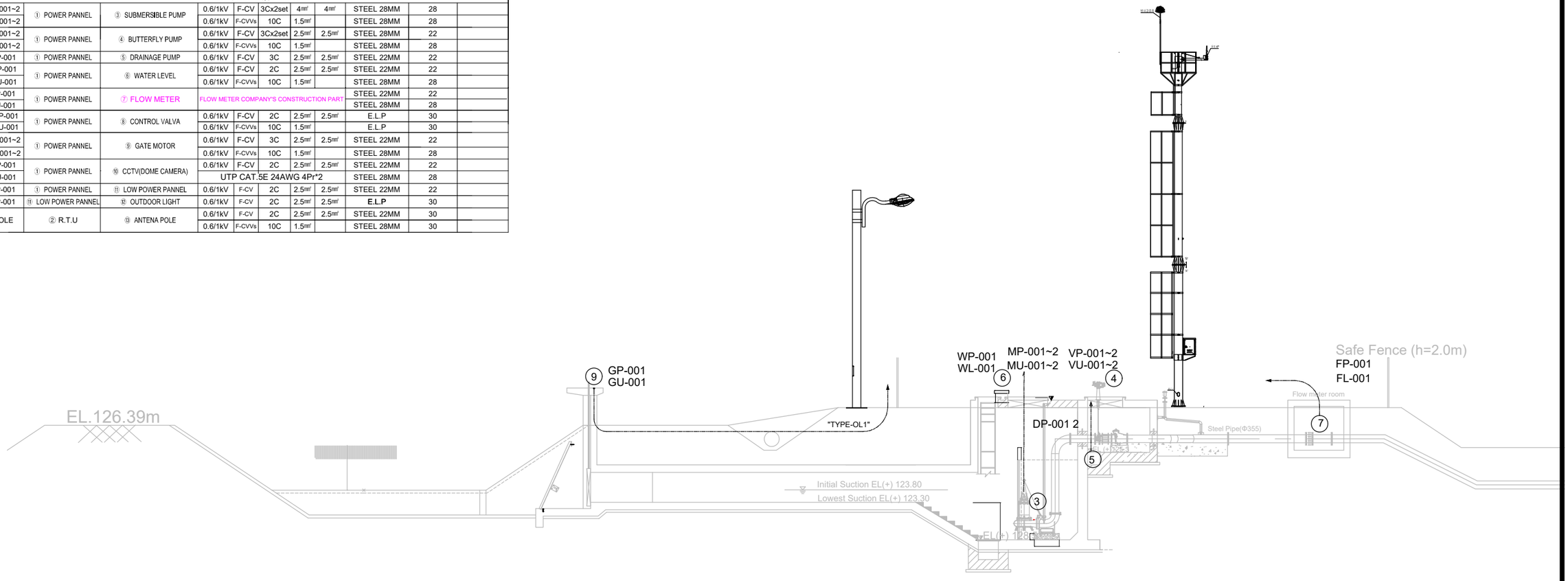
1. The location of the antenna pole and streetlight shall be installed in consultation with the supervisor.
2. CAMERA POLE AND ENCLOUSURE SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH REQUIREMENTS OF THE MALAWI ELECTRICAL CODE AND ELECTRIC UTILITY COMPANY.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin hoon	NONE
		TITLE	DATE		DRAWING No
		CABLE WIRING & LAYOUT PLAN 1 (PS2)	JUNE, 2022		E-04-06

CABLE WIRING & LAYOUT PLAN 2 (PS 2)

(Scale = None)

CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
1. POWER SUPPLY										
	ESCOM TR	MEASURING BOX	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	ENTRACE CAP
PO-001	MEASURING BOX	POWER PANNEL	0.6/1kV	F-CV	1C-4set	16㎟		STEEL 36MM	E.L.P 30MM	
2. POWER EQUIPMENT										
SP-001~2	① POWER PANNEL	③ SUBMERSIBLE PUMP	0.6/1kV	F-CV	3Cx2set	4㎟	4㎟	STEEL 28MM	28	
SU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
BP-001~2	① POWER PANNEL	④ BUTTERFLY PUMP	0.6/1kV	F-CV	3Cx2set	2.5㎟	2.5㎟	STEEL 28MM	22	
BU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
DP-001	① POWER PANNEL	⑤ DRAINAGE PUMP	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
WP-001	① POWER PANNEL	⑥ WATER LEVEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
WU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① POWER PANNEL	⑦ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	
CVP-001	① POWER PANNEL	⑧ CONTROL VALVA	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	E.L.P	30	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		E.L.P	30	
GP-001~2	① POWER PANNEL	⑨ GATE MOTOR	0.6/1kV	F-CV	3C	2.5㎟	2.5㎟	STEEL 22MM	22	
GU-001~2			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
CP-001	① POWER PANNEL	⑩ CCTV(DOME CAMERA)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
CU-001			UTP CAT.5E 24AWG 4Pr*2					STEEL 28MM	28	
LP-001	① POWER PANNEL	⑪ LOW POWER PANNEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
LP-001	⑪ LOW POWER PANNEL	⑫ OUTDOOR LIGHT	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	E.L.P	30	
POLE	② R.T.U	⑬ ANTENA POLE	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	30	
			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	30	

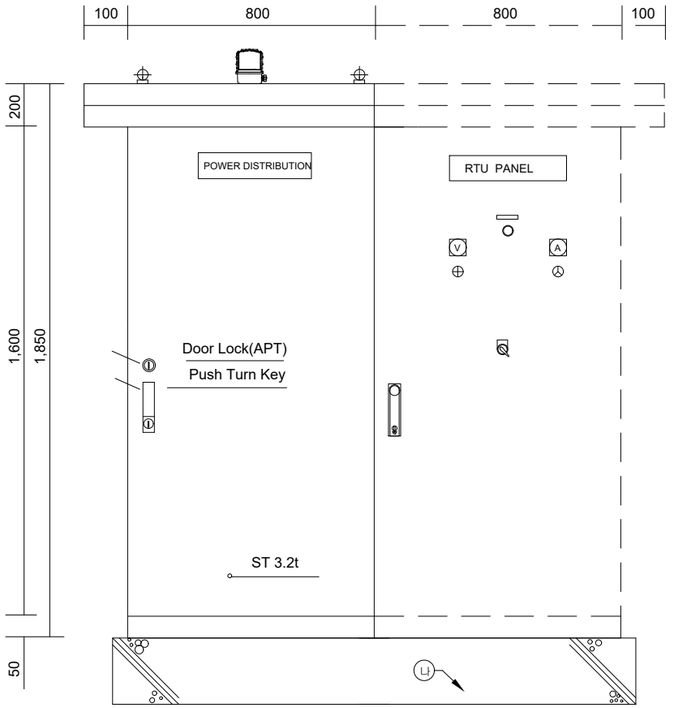


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN 2 (PS2)	JUNE, 2022	CHECKED BY: Jo, Jin hoon	E-04-07

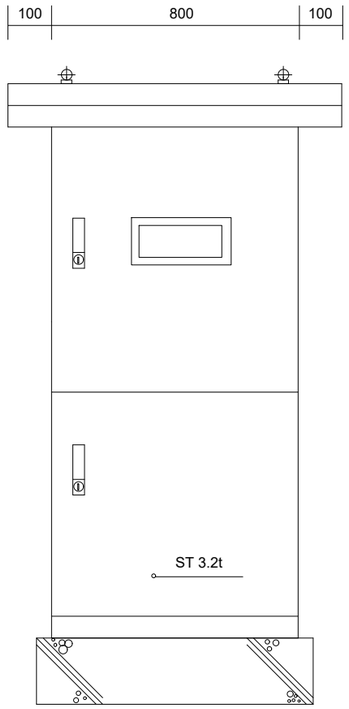
ELECTRIC PANEL LAYOUT (PS 2)

Unit is meter(m) of The International System of Units(SI)

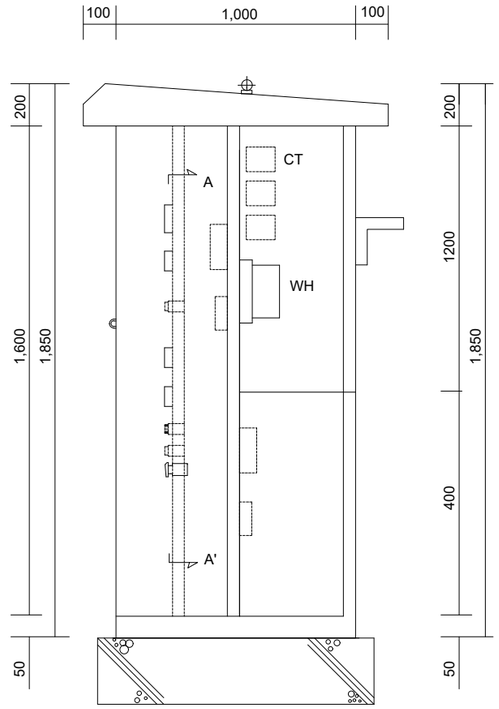
(Scale = None)



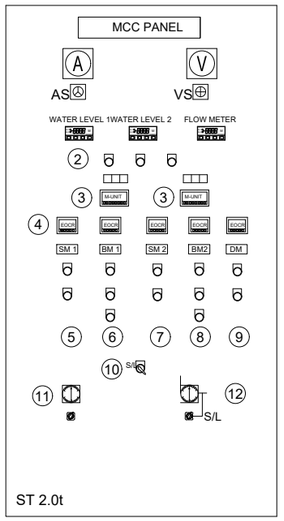
FRONT



REAR



SIDE



PARTIAL DETAILS

1. SIGNAL LAMP uses an LED type.
2. A name plate containing the manufacturer's contact information shall be attached to the CUBICLE.
3. Locks and STOP BARs must be installed in the CUBICLE DOOR
4. The SEQUENC circuit diagram must be attached to the inside of the CUBICLE.
5. The low voltage breakers MCCB and ELCB are installed in a standard type.

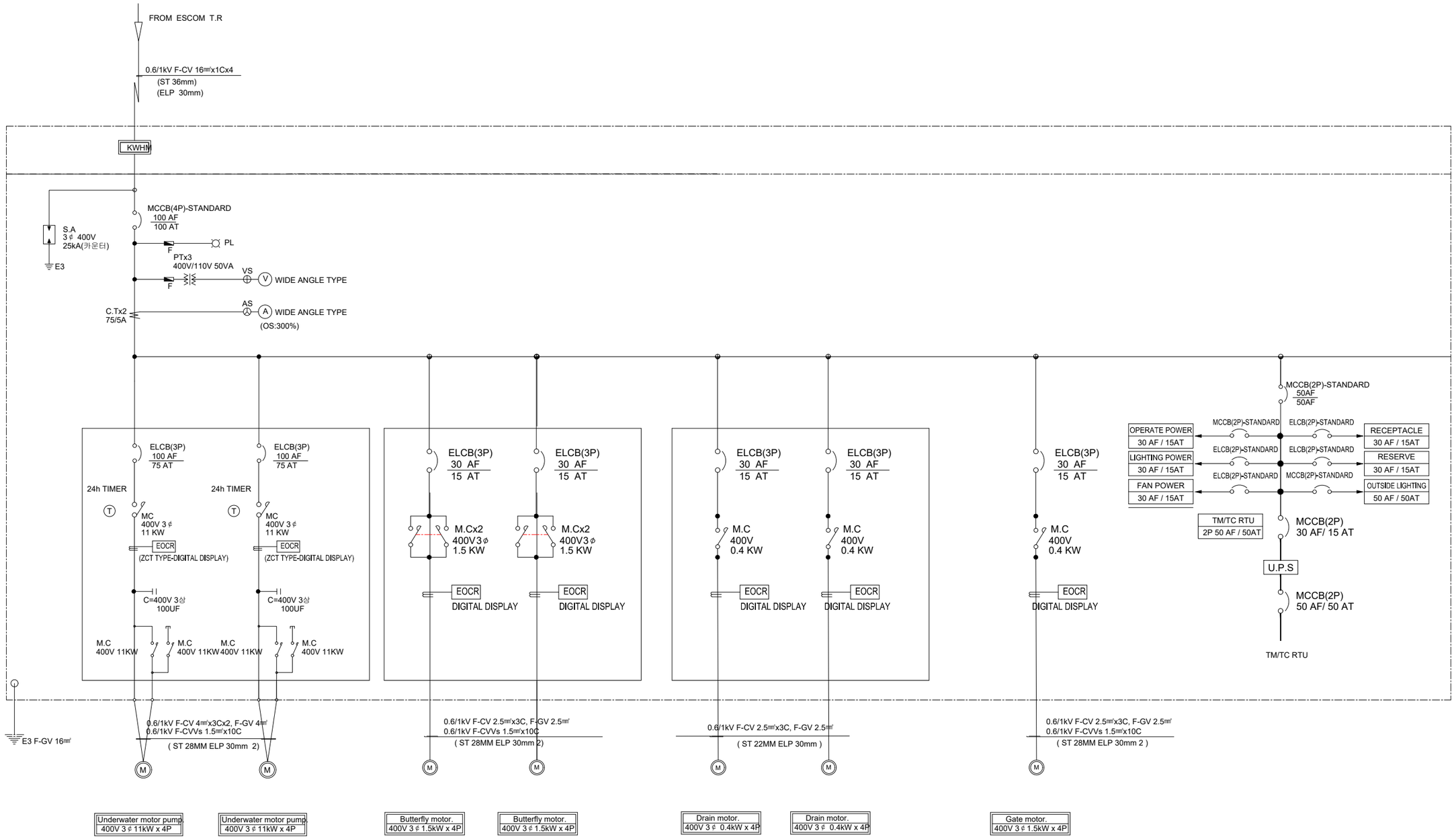
No	Contents
①	MONITORING UNIT(WATER LEVEL 1,2, FLOW METER)
②	Quadrangle LAMP (Suction tank low water level lighting)-Trip circuit configuration
	Quadrangle LAMP (Water motor pump EOCR trip light)
	Quadrangle LAMP (Light on when the underwater motor pump monitoring unit operates)
③	Underwater motor pump monitoring unit (supplied by the underwater motor pump manufacturer)
④	E.O.C.R
⑤	PUSH BUTTON WITH LAMP (Submerlin motor 1 is shut down)
⑥	PUSH BUTTON WITH LAMP (butterfly motor 1, open, stop, closed.)

No	Contents
⑦	PUSH BUTTON WITH LAMP (Submerlin motor 2 is shut down.)
⑧	PUSH BUTTON WITH LAMP (butterfly motor 2, open, stop, closed)
⑨	PUSH BUTTON WITH LAMP (Drain motor 2 is shut down.)
⑩	Selection S/W (Site/Remote Control) * Electrical Panel Control Overall Integrated Selection
⑪	24-hour timer (for automatic operation of the sub-merlin motor)
⑫	24-hour timer (for automatic operation of the sub-merlin motor)

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		ELECTRIC PANEL LAYOUT(PS2)	JUNE, 2022	CHECKED BY: Jo, Jin hoon	E-04-08

ELECTRIC POWER SINGLE DIAGRAM (PS 2)

(Scale = None)

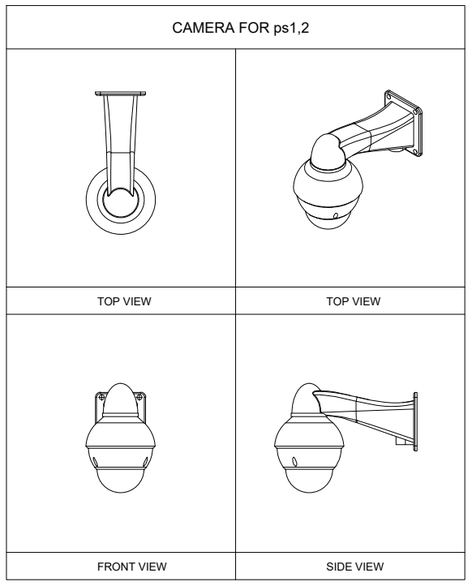


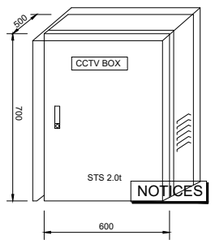
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		ELECTRIC POWER SINGLE DIAGRAM (PS2)	JUNE, 2022	CHECKED BY: Jo, Jin hoon	E-04-09

ELECTRIC DETAILS 1

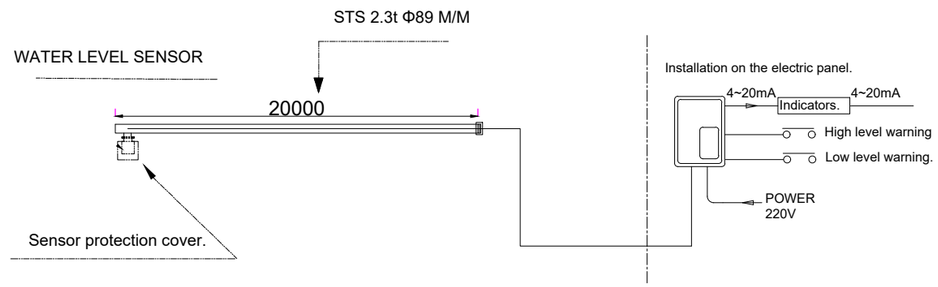
(Scale = None)

CAMERA FOR ps1,2





WATER LEVEL



1. THE LIGHTING FOR PTZ MONITORING CAMERAS SHALL BE CONTROLLED BY AUXILIARY CONTACTS AT REMOTE SITES.
2. THE WATERPROOF ENCLOSURE FOR CONNECTION WITH MONITORING CAMERA AND LIGHTINGS SHALL BE INSTALLED ON THE STAINLESS STEEL POLE, AND MANUFACTURED AFTER APPROVAL OF THE ENGINEER.
3. CAMERA POLE AND ENCLOUSURE SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH REQUIREMENTS OF THE MALAWI ELECTRICAL CODE AND ELECTRIC UTILITY COMPANY.
4. THE CONTROL BOX FOR LIGHTING AND CAMERA SHALL BE INSTALLED IN SAFE POSITION TO AVOID VANDALISM AND THEFT.

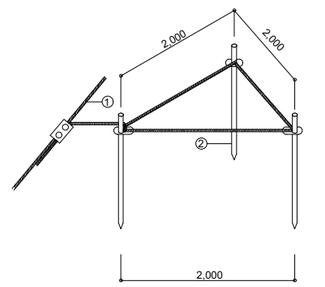
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin hoon	NONE
		TITLE	DATE		DRAWING No
		ELECTRIC DETAILS 1	JUNE, 2022		E-04-10

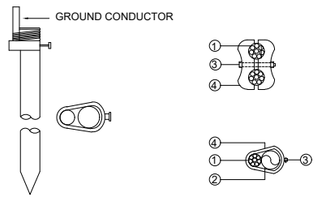
ELECTRIC DETAILS 2

Unit is meter(m) of The International System of Units(SI)

(Scale = None)

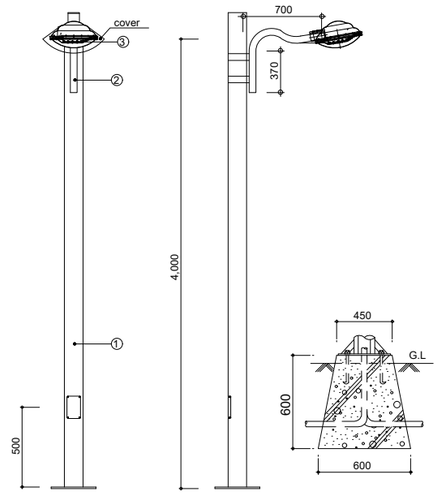
GROUNDING DETAILS





NO.	DESCRIPTION	MATERIAL/FINISHING	REMARKS
①	EARTH WIRE	BARE COPPER WIRE	
②	GROUND CONDUCTOR	18, L = 1,800mm	
③	CLAMP BOLT		
④	CLAMP		

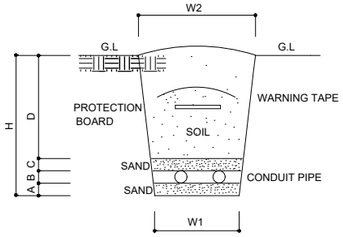
OUTDOOR LIGHTING FIXTURE



"TYPE-OL1"

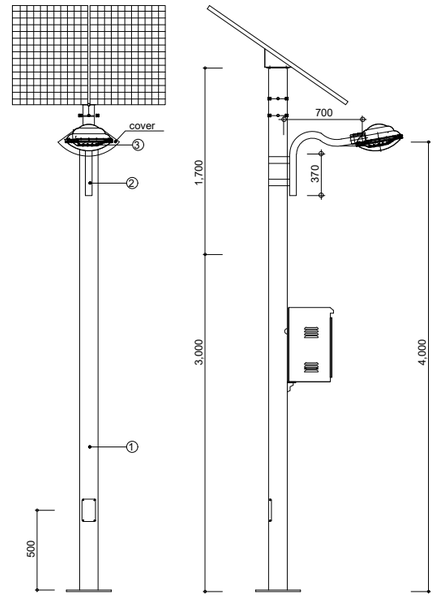
NO.	DESCRIPTION	MATERIAL / FINISHING	REMARKS
①	POLE	CONCRETE TYPE	
②	ARM	304 STS 60 2T	
③	LAMP	LED 60W	
④	VOLTAGE	AC 230V 50Hz	
⑤	POLE OF THE GATE STRUCTURE: STS 2m		

EXCAVATION FOR CONDUIT PIPE



A	B	C	D	H	W1	W2
100	100	100	500	800	600	800

OUTDOOR SOLAR LIGHTING FIXTURE



"TYPE-OL2"

NO.	DESCRIPTION	MATERIAL / FINISHING	REMARKS
①	POLE	CONCRETE TYPE	
②	ARM	304 STS Φ60 2T	
③	LAMP	LED 60W	
④	VOLTAGE	AC 230V 50Hz	
⑤	MODULE	100WP x 2EA	
⑥	BATTERY	100AH 2EA	

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: An, Seong Il	NONE
		DRAWING BY: An, Seong Il	
TITLE	DATE		DRAWING No
ELECTRIC DETAILS 2	JUNE, 2022	CHECKED BY: Jo, Jin hoon	E-04-11

F. SCADA System

General Layout Plan of SCADA SYSTEM

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Joint Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)
TITLE	General Layout Plan of SCADA SYSTEM
ORIGINAL DESIGNED BY	Detail Design
DATE	JUNE, 2022
DRAWING	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon
SCALE	NONE
DRAWING No	F-01-01

Control Vale Flowmeter
(Electric) (Ultrasonic)

Control Vale
Distribution Vale
(Manual)
Flowmeter
(Paddle)

Control Vale
Distribution Vale
(Manual)

NSR Vale
Flowmeter
(Paddle)
Distribution Vale
(Manual)

NSR Vale
Distribution Vale
(Manual)

Distribution Vale
(Manual)
Flowmeter
(Paddle)
Existing Reservoir

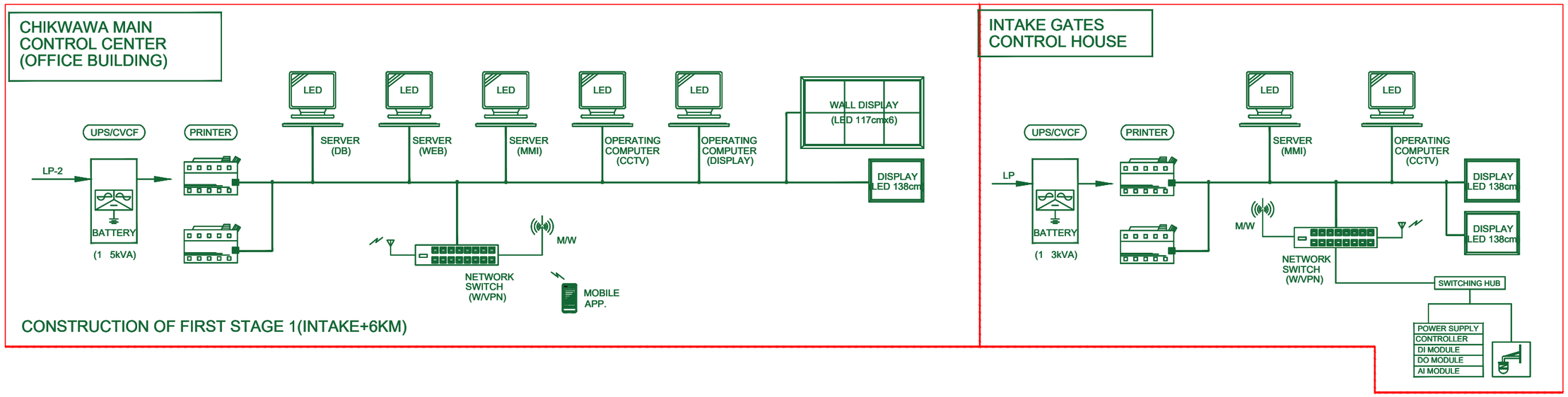
* Excluding the outlet valve of NSR

Local Number of SCADA & RTU Type

RTU Type	Combination of Facilities	Connections of Facilities	Location Numbers (1 ~ 53)
Type C	3 Valves 2 Flowmeters		51 (1 location)
Type D	3 Valves 1 Flowmeter		8, 9, 16, 17, 18, 31 (6 locations)
Type E	2 Valves 1 Flowmeter		13, 24, 26, 27, 29, 31, 34, 35, 37, 47, 49, 50, 52 (13 locations)
Type F	1 Valve & 1 Flowmeter		1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 14, 15, 19, 20, 21, 22, 25, 28, 30, 32, 36, 48 (22 locations)
	2 Valves		23, 38, 39, 40, 41, 42, 43, 44, 45, 46, 53 (11 locations)

Main Canal 1
Main Canal 2
Main Canal 3
PS1
PS2
SC1
SC2
SC2-1
SC2-2
SC3
SC4
SC5
SC6
SC7
SC8
SC9
SC10
SC11
SC12
SC13
SC14
SC15
SC16
SC17
SC18
SC19
SC19-1
Phata / Sande
ILLOVO AREA

SYSTEM CONFIGURATION OF SCADA



FIELD STATIONS

MC 3,4	MC 3-1	SC 1A-1	SC 1A-23	SC 1-2	SC 1-24	SC 1-25	SC 1-26	SC 2-3	SC 2-27	SC 2-28	SC 2-1-29	SC 2-1-30	SC 2-1-31	SC 2-1-32	SC 2-1-33
SC 2-1-34	SC 3-4	SC 3-38	SC 4-5	SC 4-39	SC 5-6	SC 5-40	SC 6-7	SC 6-41	SC 7-8	SC 8-9	SC 9-10	SC 9-35	SC 9-36	SC 9-37	SC 10-11
SC 10-42	SC 11-12	SC 11-13	SC 11-43	SC 12-14	SC 12-44	SC 13-15	SC 13-45	SC 14-16	SC 15-17	SC 16-18	SC 17-20	SC 17+46	SC 18-21	SC 18-47	SC 18-48
SC 18-49	SC 19-22	SC 19-50	SC 19-51	SC 19-52	SC 19-1-53	PS 1-4	PS 2-19								

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		SYSTEM COFIGURATION OF SCADA	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-01-02

ELECTRIC & SCADA SYSTEM CONFIGURATION TABLE

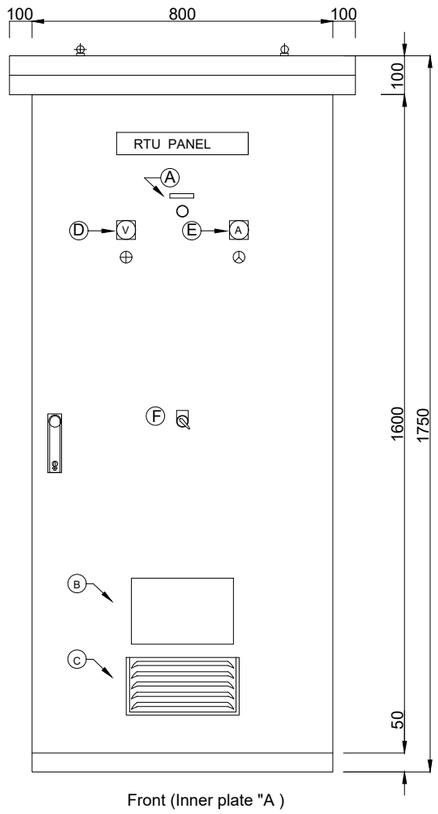
SORTATION		NO	CONFIGURATION												
			ELE.PANEL	RTU	GATE(EA)	Butterfly Valve(kw)	WATER LEVEL	FLOW METER (ULTRA)	FLOW METER (PADDLE)	CCTV	ANTENA POLE	SOLAR CAPACITY (kw)	BATTERY CAPACITY (Ah)	GENERATOR CAPACITY (kw)	COMMUNICATION
MC	MC2			MCS-I		5.5	1	1		1	1	2	49.6	20	M/W
	MCK					2.2		1							
	MC3-1			"B"TYPE		3.3		1				2	28.8	20	MOBILE N/W
SC	SC1A	1		"A"TYPE		0.75		1				2	28.8	5	MOBILE N/W
		23		"F"TYPE		0.4-2.2									MOBILE N/W
	SC1	2		"A"TYPE		1.1	1	1				2	28.8	7	MOBILE N/W
		24		"E"TYPE		0.4-2.2			1						MOBILE N/W
		25		"G"TYPE		0.4-2.2			1						MOBILE N/W
		26		"E"TYPE		0.4-2.2			1						MOBILE N/W
	SC2	3		"A"TYPE		2.2		1				2	28.8	10	MOBILE N/W
		27		"E"TYPE		0.4-2.2			1						MOBILE N/W
		28		"G"TYPE		0.4-2.2			1						MOBILE N/W
	SC2-1	29		"B"TYPE		2.2		1				2	28.8	10	MOBILE N/W
		30		"G"TYPE		0.4-2.2			1						MOBILE N/W
		31		"E"TYPE		0.4-2.2			1						MOBILE N/W
		32		"G"TYPE		0.4-2.2			1						MOBILE N/W
		33		"D"TYPE		0.4-2.2		1							MOBILE N/W
		34		"E"TYPE		0.4-2.2			1						MOBILE N/W
	SC3	4				0.75		1							
		38		"F"TYPE		0.4-2.2									MOBILE N/W
	SC4	5		"A"TYPE		0.75	1	1				2	28.8	5	MOBILE N/W
		39		"F"TYPE		0.4-2.2									MOBILE N/W
	SC5	6		"A"TYPE		0.75		1				2	28.8	5	MOBILE N/W
		40		"F"TYPE		0.4-2.2									MOBILE N/W
	SC6	7		"A"TYPE		0.75		1				2	28.8	5	MOBILE N/W
		41		"F"TYPE		0.4-2.2									MOBILE N/W
	SC7	8		"B"TYPE		0.4-2.2		1				2	28.8	5	MOBILE N/W
	SC8	9		"B"TYPE		0.4-2.2		1				2	28.8	5	MOBILE N/W
	SC9	10		"B"TYPE		0.4-2.2		1				2	28.8	5	MOBILE N/W
		35		"E"TYPE		0.4-2.2			1						MOBILE N/W
		36		"G"TYPE		0.4-2.2			1						MOBILE N/W
		37		"E"TYPE		0.4-2.2			1						MOBILE N/W
	SC10	11		"B"TYPE		0.4		1				2	28.8	5	MOBILE N/W
		42		"F"TYPE		0.4-2.2									MOBILE N/W
	SC11	12		"B"TYPE		0.4		1				2	28.8	5	MOBILE N/W
		13		"F"TYPE		0.4-2.2		1							MOBILE N/W
		43		"F"TYPE		0.4-2.2									MOBILE N/W
	SC12	14		"A"TYPE		0.75		1				2	28.8	5	MOBILE N/W
		44		"F"TYPE		0.4-2.2									MOBILE N/W
	SC13	15		"B"TYPE		0.75		1				2	28.8	5	MOBILE N/W
		45		"F"TYPE		0.4-2.2									MOBILE N/W
	SC14	16		SC14-15		0.4-2.2		1				2	28.8	5	MOBILE N/W
	SC15	17				0.4-2.2		1							
	SC16	19		"B"TYPE		0.4		1				2	28.8	5	MOBILE N/W
	SC17	20		"A"TYPE		0.75		1				2	28.8	5	MOBILE N/W
		46		"F"TYPE		0.4-2.2									MOBILE N/W
	SC18	21		"A"TYPE		1.1	1	1				2	28.8	7	MOBILE N/W
		47		"E"TYPE		0.4-2.2			1						MOBILE N/W
		48		"G"TYPE		0.4-2.2			1						MOBILE N/W
		49		"F"TYPE		0.4-2.2			1						MOBILE N/W
	SC19	22		"A"TYPE		2.2		1				2	28.8	7	MOBILE N/W
		50		"F"TYPE		0.4-2.2			1						MOBILE N/W
		51		"C"TYPE		0.4-2.2		1	1						MOBILE N/W
		52		"F"TYPE		0.4-2.2									MOBILE N/W
	SC19-1	53		"F"TYPE		0.4-2.2									MOBILE N/W

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		SYSTEM COFIGURATION OF SCADA	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-01-03

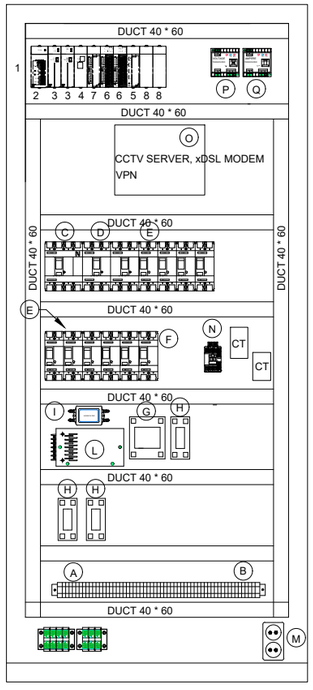
RTU PANEL LAYOUT (PS 1)

Unit is millimeter(mm) of The International System of Units(SI)

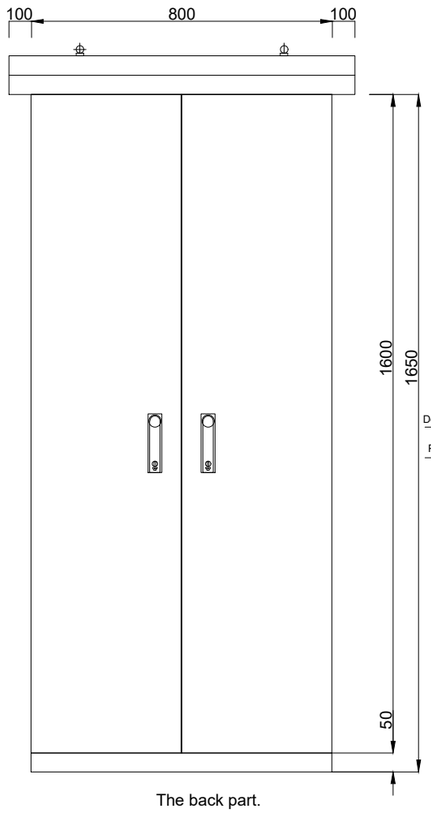
(Scale = None)



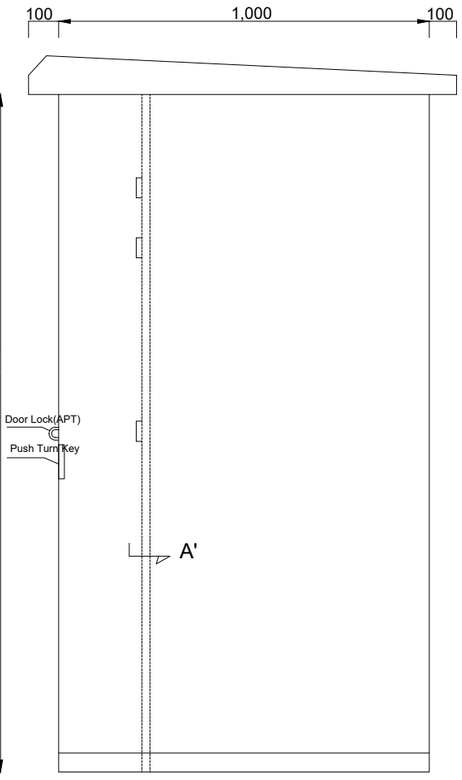
Front (Inner plate "A)



Inside the front.



The back part.



Side part.

Material list (front part)

NO	DESCRIPTION	SIZE	Q.TY	REMARK
A	NAME PLATE	60x15		
B	Drawing box			Installation inside the front door.
C	Dustproof pads	300x150		
D	Voltmeter	50mm		WIDE ANGLR
E	An ammeter	50mm		WIDE ANGLE
F	LOCAL-REMOTE	30Φ, 2WAY		SELECTOR S/W

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
1	MODULE BASE	Please refer to the specification.
2	POWER MODULE	Please refer to the specification.
3	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
4	COMMUNICATION MODULE	Please refer to the specification.
5	ANALOG INPUT MODULE	Please refer to the specification.
6	DIGITAL INPUT MODULE	Please refer to the specification.
7	DIGITAL OUTPUT MODULE	Please refer to the specification.
8	DUMMY MODULE	Please refer to the specification.

MCCB Related materials.

NO	ITEMS	DESCRIPTION
A	TERMINAL BLOCK	30A 10P
B	TERMINAL BLOCK	10A 10P
C	MCCB	2P, 50AF
D	ELCB	2P, 30AF
E	MCCB	2P, 30AF
F	ELCB	2P, 30AF
G	L/ARRESTER	POWER
H	L/ARRESTER	SIGNAL
I	NOISE FILTER	AC 220V, 10A

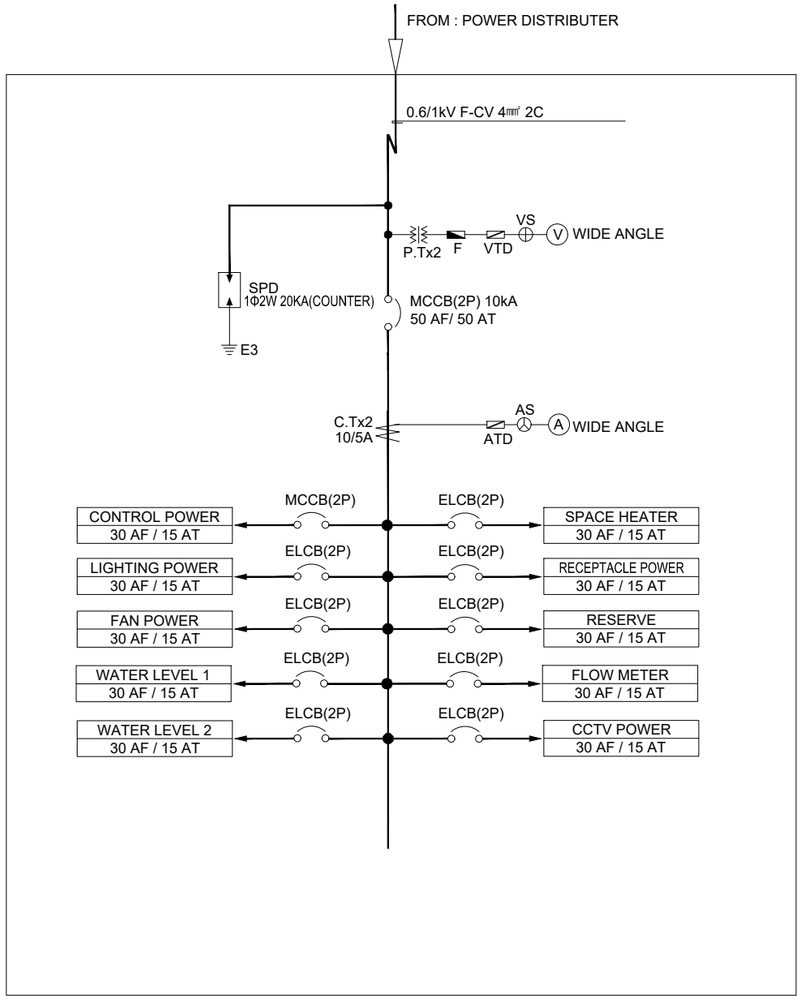
NO	ITEMS	DESCRIPTION
L	DC POWER SUPPLY	
M	CONSENT	220V 2
N	RELAY	
O	CCTV SERVER, xDSL MODEM	
P	CURRENT TRANSFOMER	Single Phase DC4~20mA
Q	VOLTAGE TRANSFOMER	Single Phase DC4~20mA
R		

* NOTE
1. TYPE : Indoor type, closed independent type.(Make the front into a double size.)
2. Quality of the material: ST 3.2t
3. INDOOR SWITCH
4. I/O MODULE It can be changed depending on the conditions of the site.
5. RTU class internal device placement may vary depending on the system configuration.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL LAYOUT(PS1)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-02-01

RTU PANEL SINGLE DIAGRAM (PS 1)

(Scale = None)



ITEMS	NAME	R T U		
		DI	DO	AI
Electric Panel	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		6	
	W.L F.M			3
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
PUMP	M.C. ON/OFF	5	5	
	EOCR	5	5	
	VALVE/GATE(O/S/C)	9	9	
	FAULT	3	3	
	LOCAL/REMORT	6		
RTU	OPEN DOOR	1		
	UPS	1		
	CCTV light	2	2	
TOTAL		35	31	5

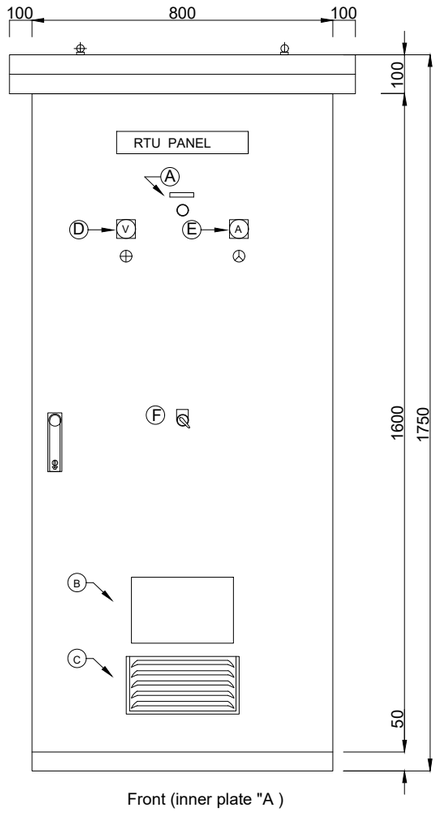
* NOTE

1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

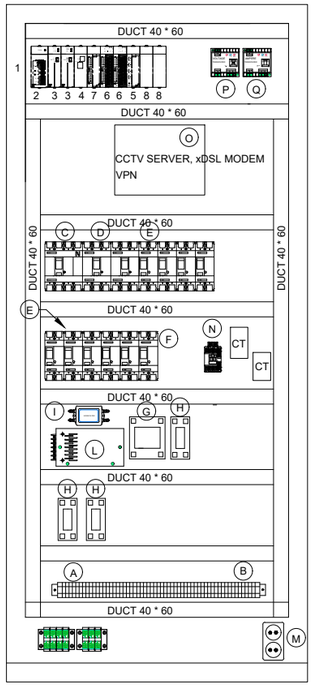
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL SINGLE DIAGRAM (PS1)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-02-02

RTU PANEL LAYOUT (PS 2)

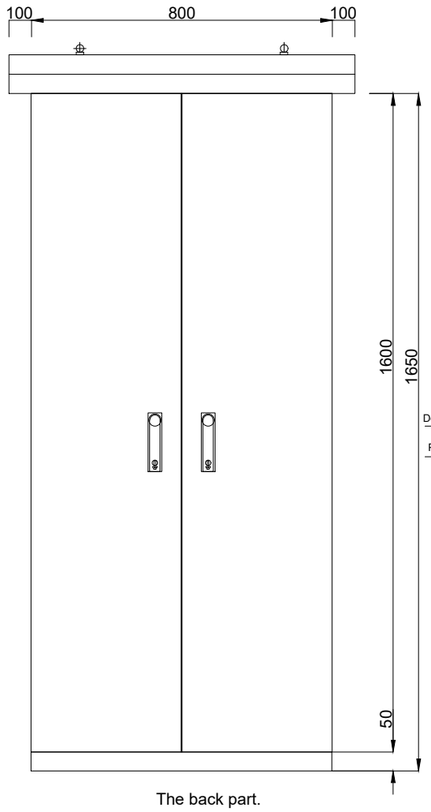
(Scale = None)



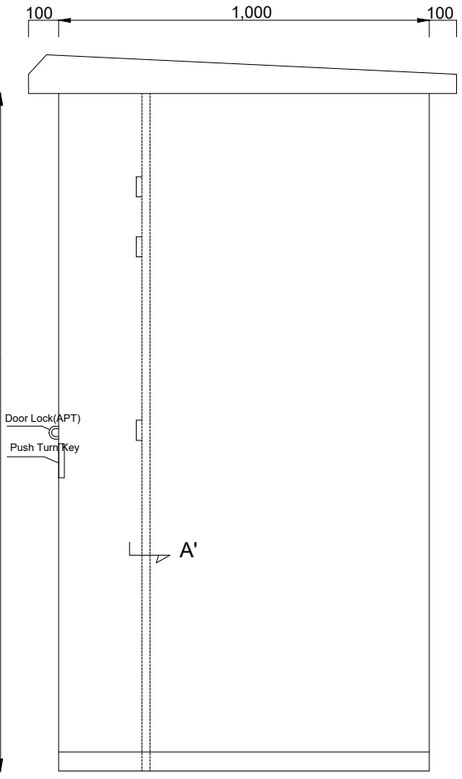
Front (inner plate "A)



Inside the front.



The back part.



Side part.

Material list (front part)

NO	DESCRIPTION	SIZE	Q.TY	REMARK
A	NAME PLATE	60x15		
B	Drawing box			Installation inside the front door.
C	Dustproof pads	300x150		
D	Voltmeter	50mm		WIDE ANGLR
E	An ammeter	50mm		WIDE ANGLE
F	LOCAL-REMOTE	30Φ, 2단		SELECTOR S/W

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
1	MODULE BASE	Please refer to the specification.
2	POWER MODULE	Please refer to the specification.
3	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
4	COMMUNICATION MODULE	Please refer to the specification.
5	ANALOG INPUT MODULE	Please refer to the specification.
6	DIGITAL INPUT MODULE	Please refer to the specification.
7	DIGITAL OUTPUT MODULE	Please refer to the specification.
8	DUMMY MODULE	Please refer to the specification.

MCCB Related materials.

NO	ITEMS	DESCRIPTION
A	TERMINAL BLOCK	30A 10P
B	TERMINAL BLOCK	10A 10P
C	MCCB	2P, 50AF
D	ELCB	2P, 30AF
E	MCCB	2P, 30AF
F	ELCB	2P, 30AF
G	L/ARRESTER	POWER
H	L/ARRESTER	SIGNAL
I	NOISE FILTER	AC 220V, 10A

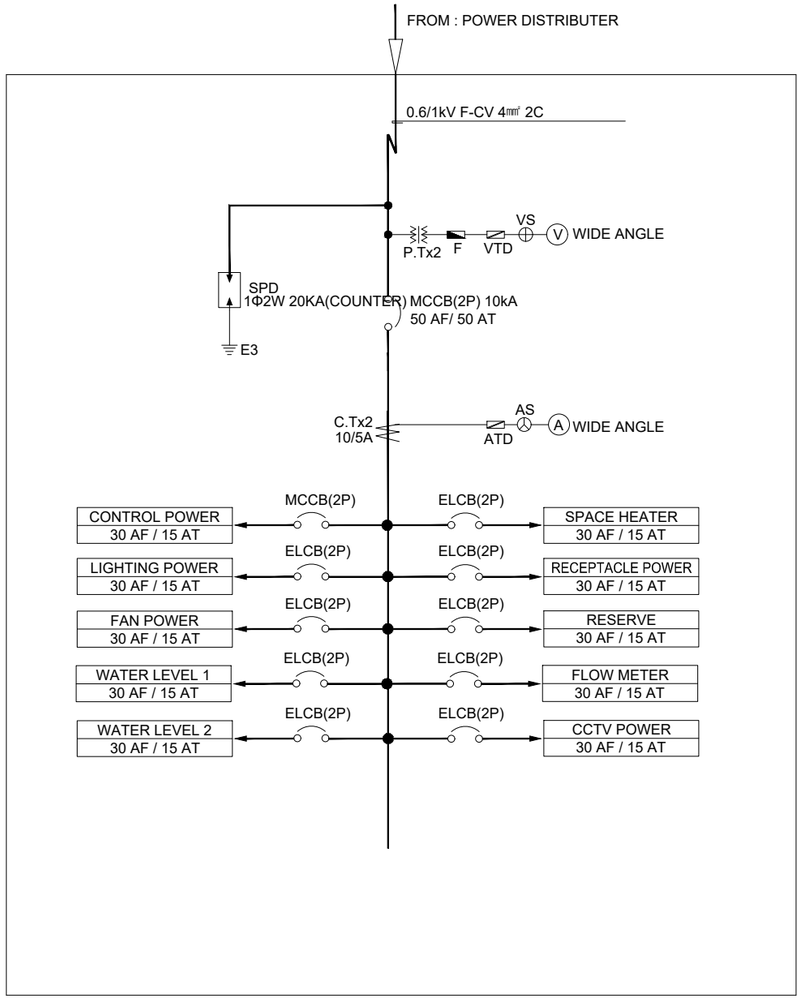
NO	ITEMS	DESCRIPTION
L	DC POWER SUPPLY	
M	CONSENT	220V 2
N	RELAY	
O	CCTV SERVER, xDSL MODEM	
P	CURRENT TRANSFOMER	Single Phase DC4~20mA
Q	VOLTAGE TRANSFOMER	Single Phase DC4~20mA
R		

* NOTE
1. TYPE : Indoor type, closed independent type.(Make the front into a double size.)
2. Quality of the material: ST 3.2t
3. INDOOR SWITCH
4. I/O MODULE It can be changed depending on the conditions of the site.
5. RTU class internal device placement may vary depending on the system configuration.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL LAYOUT (PS 2)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-03-01

RTU PANEL SINGLE DIAGRAM (PS 2)

(Scale = None)

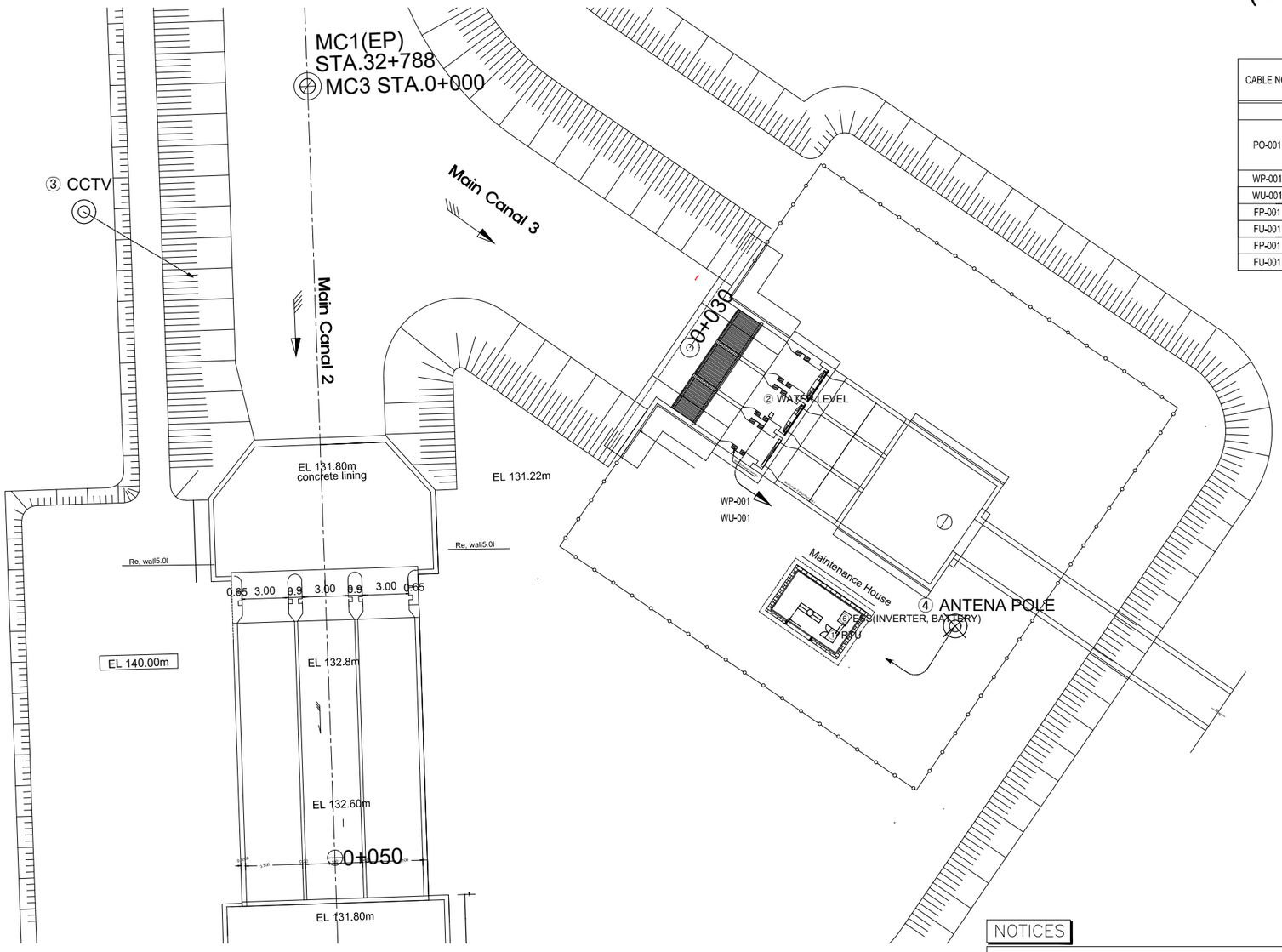


ITEMS	NAME	R T U		
		DI	DO	AI
Electric Panel	Voltage			1
	Current			1
	Display lamp		6	
	W.L, F.M			3
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
PUMP	M.C. ON/OFF	5	5	
	EOCR	5	5	
	VALVE/GATE(O/S/C)	6	6	
	FAULT	3	3	
	LOCAL/REMORT	6		
RTU	OPEN DOOR	1		
	UPS	1		
	CCTV light	2	2	
TOTAL		32	28	5

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL POWER SINGLE DIAGRAM (PS 2)	JUNE, 2022		F-03-02

CABLE WIRING & LAYOUT PLAN (MC3)

(Scale = None)



CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	① RTU	⑥ ESS(INVERTER, BATTERY)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
	① RTU	⑤ GENERATOR	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
			0.6/1kV	F-CVVs	5C	1.5㎟		STEEL 28MM	28	
WP-001	① RTU	② WATER LEVEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
WU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ CCTV(PTZ CAMERA)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
FU-001			UTP CAT.5E 24AWG 4Pr*2					STEEL 28MM	28	
FP-001	① RTU	④ ANTENA POLE	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
FU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	

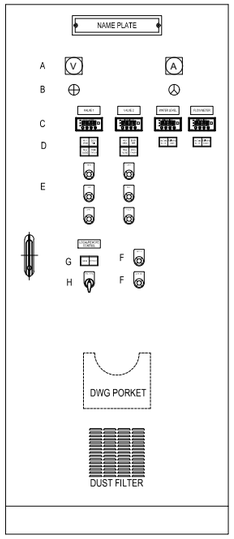
NOTICES

1. THE LIGHTING FOR PTZ MONITORING CAMERAS SHALL BE CONTROLLED BY AUXILIARY CONTACTS AT REMOTE SITES.
2. THE WATERPROOF ENCLOSURE FOR CONNECTION WITH MONITORING CAMERA AND LIGHTINGS SHALL BE INSTALLED ON THE STAINLESS STEEL POLE, AND MANUFACTURED AFTER APPROVAL OF THE ENGINEER.
3. CAMERA POLE AND ENCLOUSURE SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH REQUIREMENTS OF THE MALAWI ELECTRICAL CODE AND ELECTRIC UTILITY COMPANY.

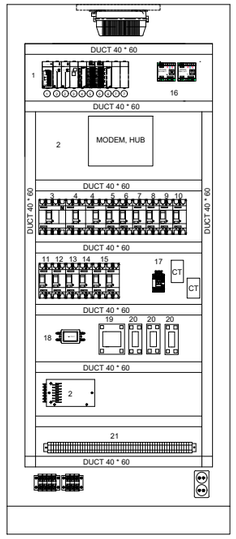
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN (MC3,MC4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-04-01

RTU PANEL LAYOUT (MC3)

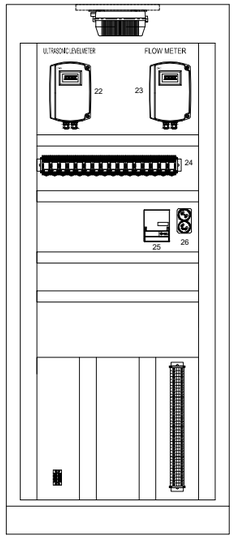
(Scale = None)



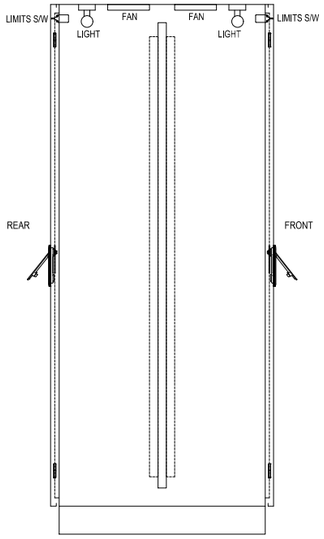
FRONT



FRONT INNER BOARD VIEW



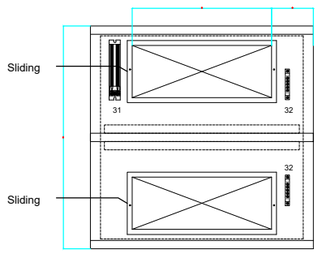
REAR INNER BOARD VIEW



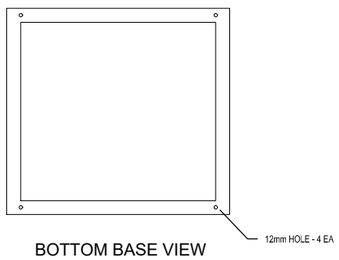
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

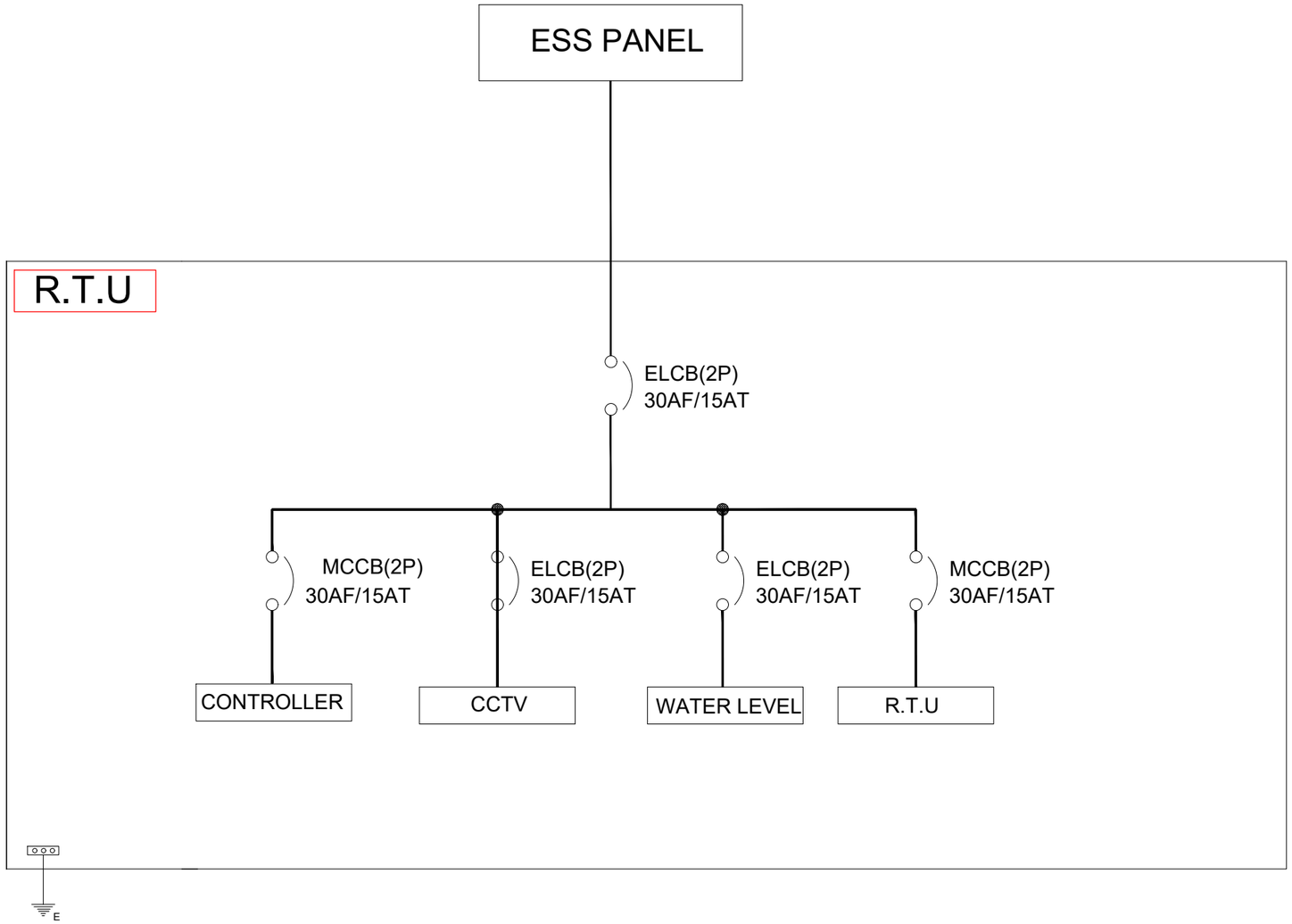
NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE	Please refer to the specification.
④	ANALOG INPUT MODULE	Please refer to the specification.
⑤	DIGITAL INPUT MODULE	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE	Please refer to the specification.
⑦	DUMMY MODULE	Please refer to the specification.

Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI, DO, AI, POWER)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	1EA	VALVE POWER
5	MCCB	2P 30AF	1EA	VALVE POWER
6	MCCB	2P 30AF	1EA	VALVE POWER
7	MCCB	2P 30AF	1EA	VALVE POWER
8	ELCB	2P 30AF	1EA	RECEPTACLE POWER
9	ELCB	2P 30AF	1EA	LIGHTING POWER
10	ELCB	2P 30AF	1EA	RESERVE
11	ELCB	2P 30AF	1EA	RESERVE
12	ELCB	2P 30AF	1EA	UPS The first side,
13	ELCB	2P 30AF	1EA	UPS The 2nd side,
14	ELCB	2P 30AF	1EA	FLOW METER POWER
15	ELCB	2P 30AF	1EA	WATER LEVEL POWER
16	TD	CT, VT	2EA	
17	CT		3EA	
18	NOISE FILTER	10A	1EA	
19	ARRESTER	POWER	1EA	
20	ARRESRER	SIGNAL	3EA	
21	MODEM UNIT		2EA	
22	WATER LEVEL UNIT		1LOT	
23	FLOW METER UNIT	AC220V/DC24V 9.0A	1EA	
24	RELAY	DC24V / 2a2b	1EA	
25	DC POWER SUPPLY	DC 24V 10A	16EA	
26	CONSENT	AC200V 2P	1EA	
			1EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	2EA	
D	A square sign	AC220V , LED , 4P	2EA	
E	PUSH BUTTON LAMP	OPEN/ON , LED , RED	2EA	
	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	2EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	1EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	1EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site. Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL LAYOUT (MC3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-04-02

ELECTRIC POWER SINGLE DIAGRAM (MC3)

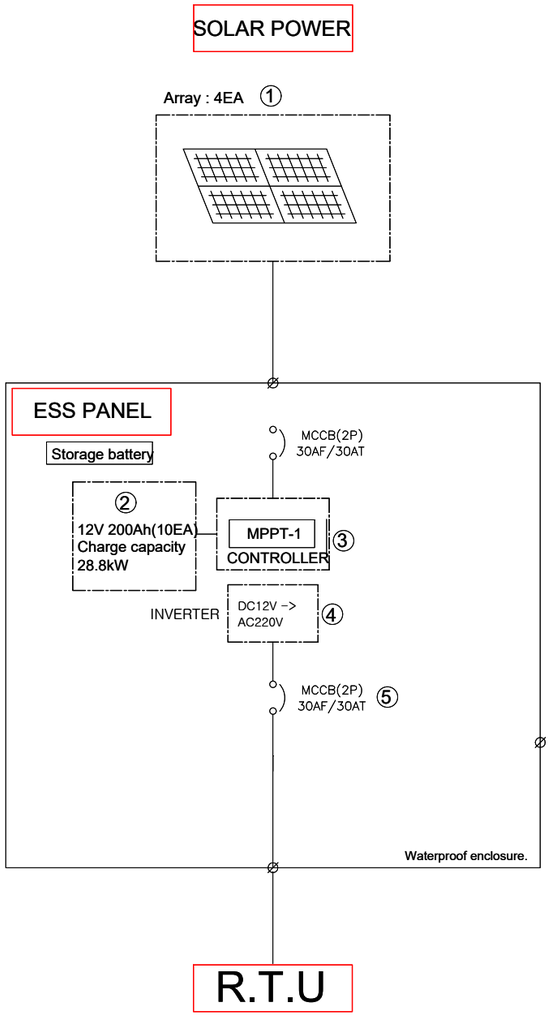


ITEMS	NAME	R T U		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		2	
	WATER LEVEL/FLOW METER			3
	LOCAL/REMOTE	1		
TOTAL		1	2	5

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		ELECTRIC POWER SINGLE DIAGRAM (MC3)	JUNE, 2022		F-04-03

SOLAR POWER GENERATOR SINGLE DIAGRAM(MC3)

(Scale = None)



PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	SOLAR PANEL	440-460 Wp*4ea
②	STORAGE BATTERY	12v 200ah* 10ea
③	CONTROLLER	12V
④	INVERTER	2KW
⑤	MCCB	2P 30AF/30AT

* NOTE

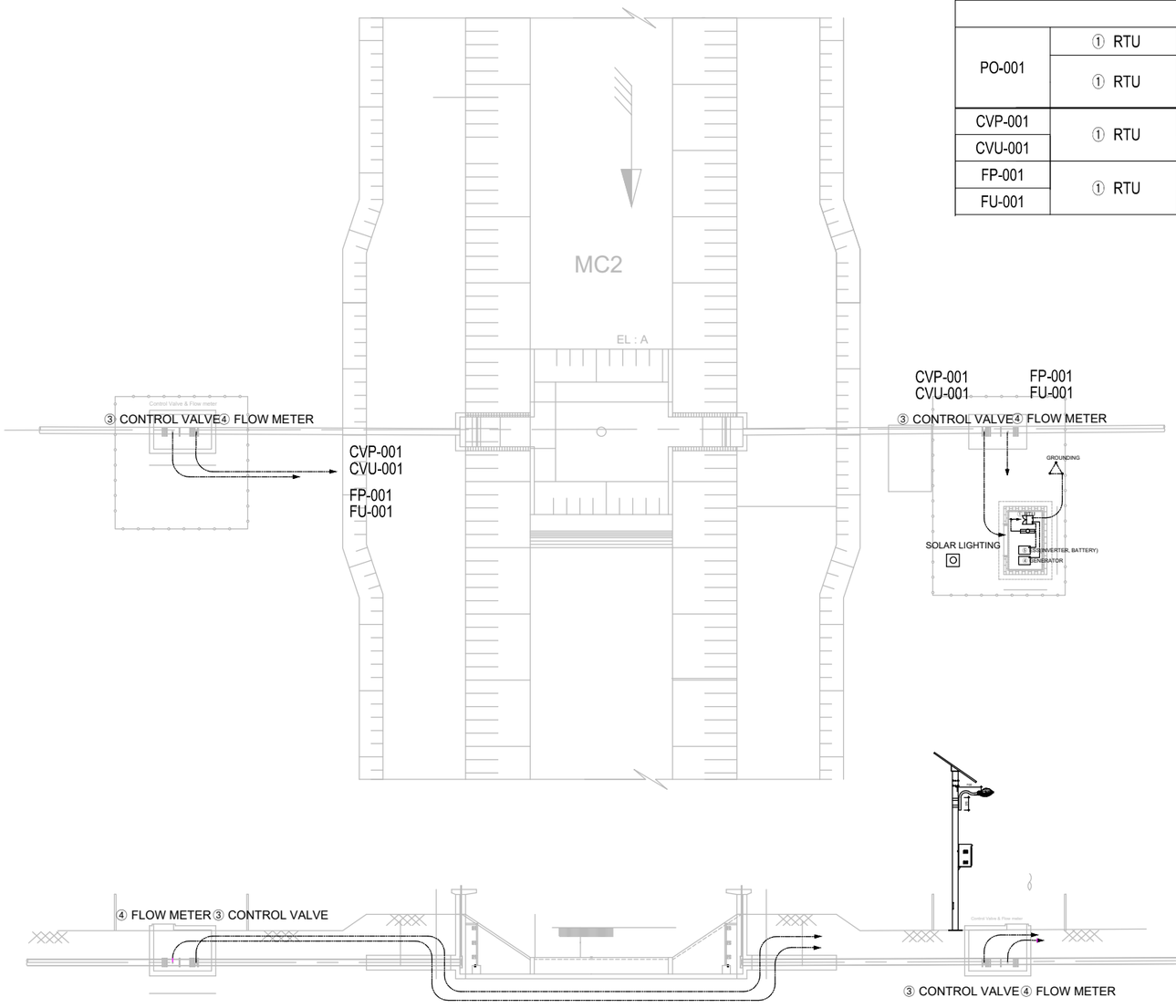
1. The capacity of the generator Refer to the electrical and SCADA facility table.
2. Remotely configure the generator to start.
3. The solar module capacity is 500W, totaling 2KW.
4. The solar module array consists of four series and one parallel.
5. Fix the solar panel to the roof..

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il	NONE SCALE
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		SOLAR POWER GENERATOR SINGLE DIAGRAM(MC3)	JUNE, 2022		F-04-04

CABLE WIRING & LAYOUT PLAN (SC14, 15)

(Scale = None)

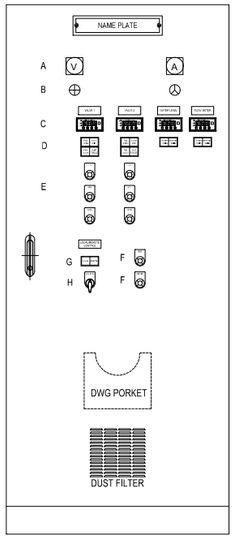
CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	① RTU	⑤ ESS(INVERTER,BATTERY)	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
	① RTU	④ GENERATOR	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
			0.6/1kV	F-CVVs	5C	1.5㎟		STEEL 28MM	28	
CVP-001	① RTU	② CONTROL VALVE	0.6/1kV	F-CV	3Cx2set	2.5㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	



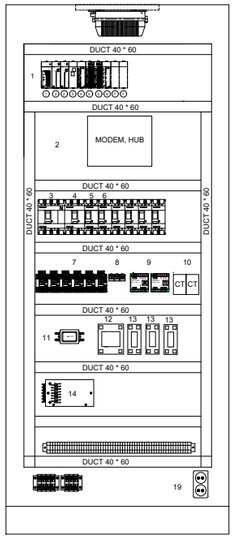
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN (SC14,15)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-05-01

RTU PANEL LAYOUT (SC14,15)

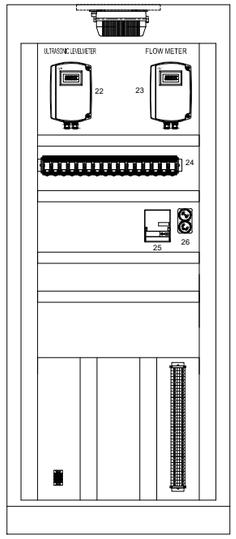
(Scale = None)



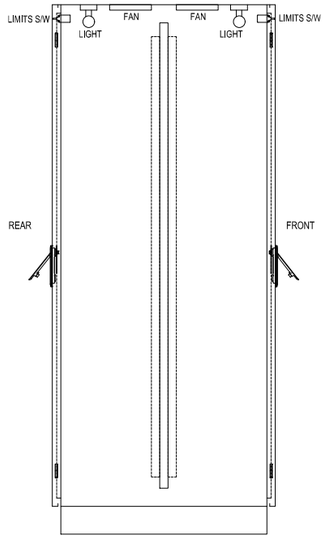
FRONT



FRONT INNER BOARD VIEW



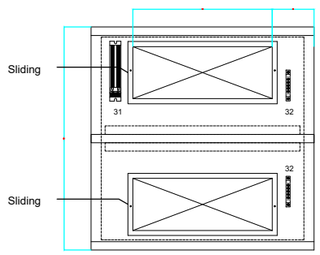
REAR INNER BOARD VIEW



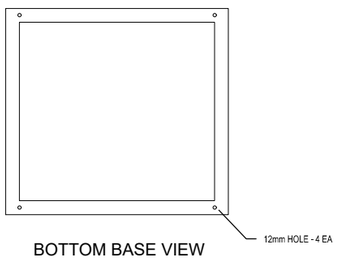
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE	Please refer to the specification.
④	ANALOG INPUT MODULE	Please refer to the specification.
⑤	DIGITAL INPUT MODULE	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE	Please refer to the specification.
⑦	DUMMY MODULE	Please refer to the specification.

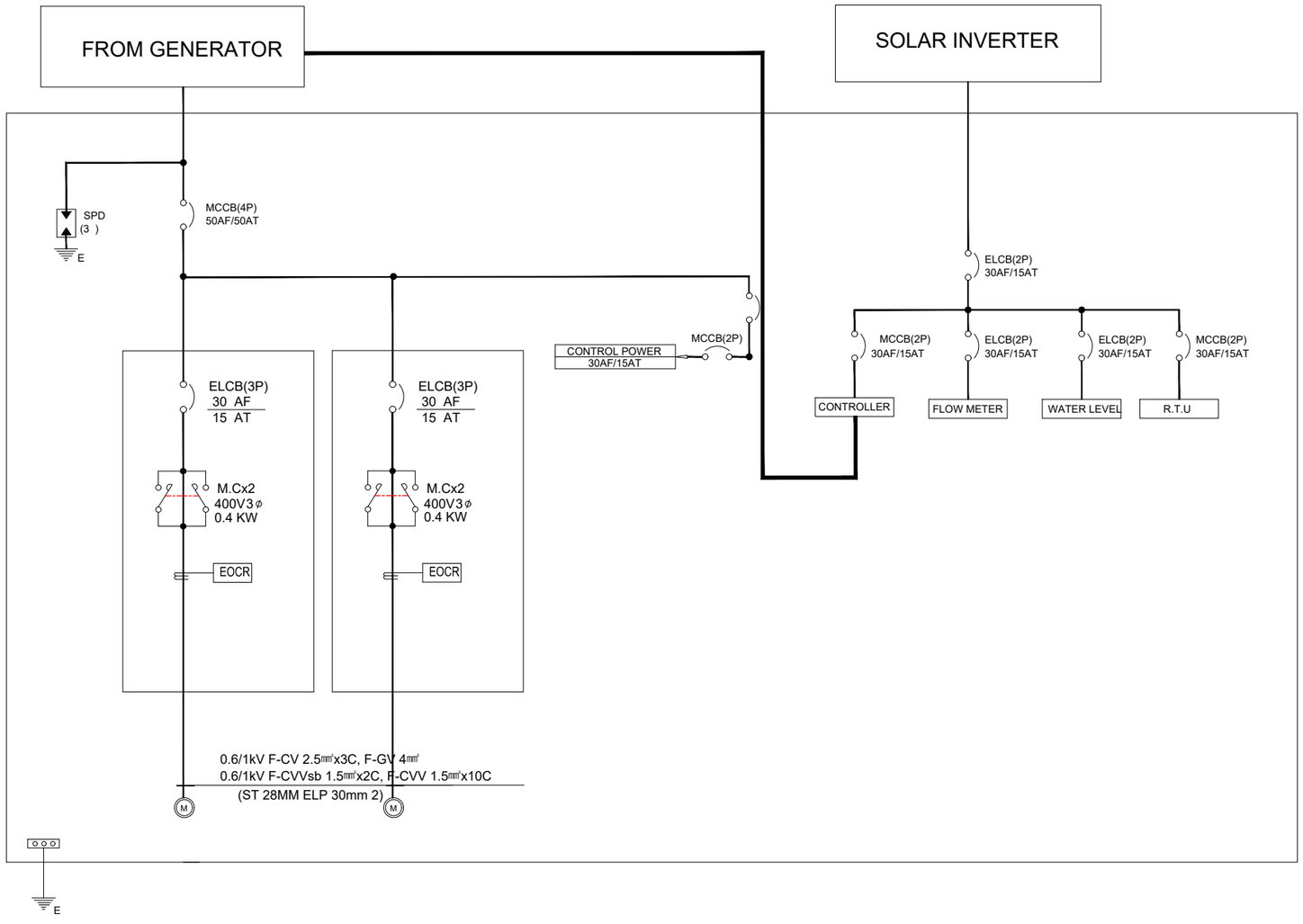
Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	2EA	VALVE POWER
5	MCCB	2P 30AF	5EA	
6	ELCB	2P 30AF	2EA	
7	MC	3P 1.4KW-5.5KW	4EA	VALVE
8	EOCR		2EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	WATER LEVEL		1LOT	
16	FLOW METER UNIT(ULTRA)		1LOT	
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	4EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	2EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	2EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	2EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site. Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL LAYOUT (SC14,15)	JUNE, 2022		F-05-02

ELECTRIC POWER SINGLE DIAGRAM (SC14,15)

(Scale = None)

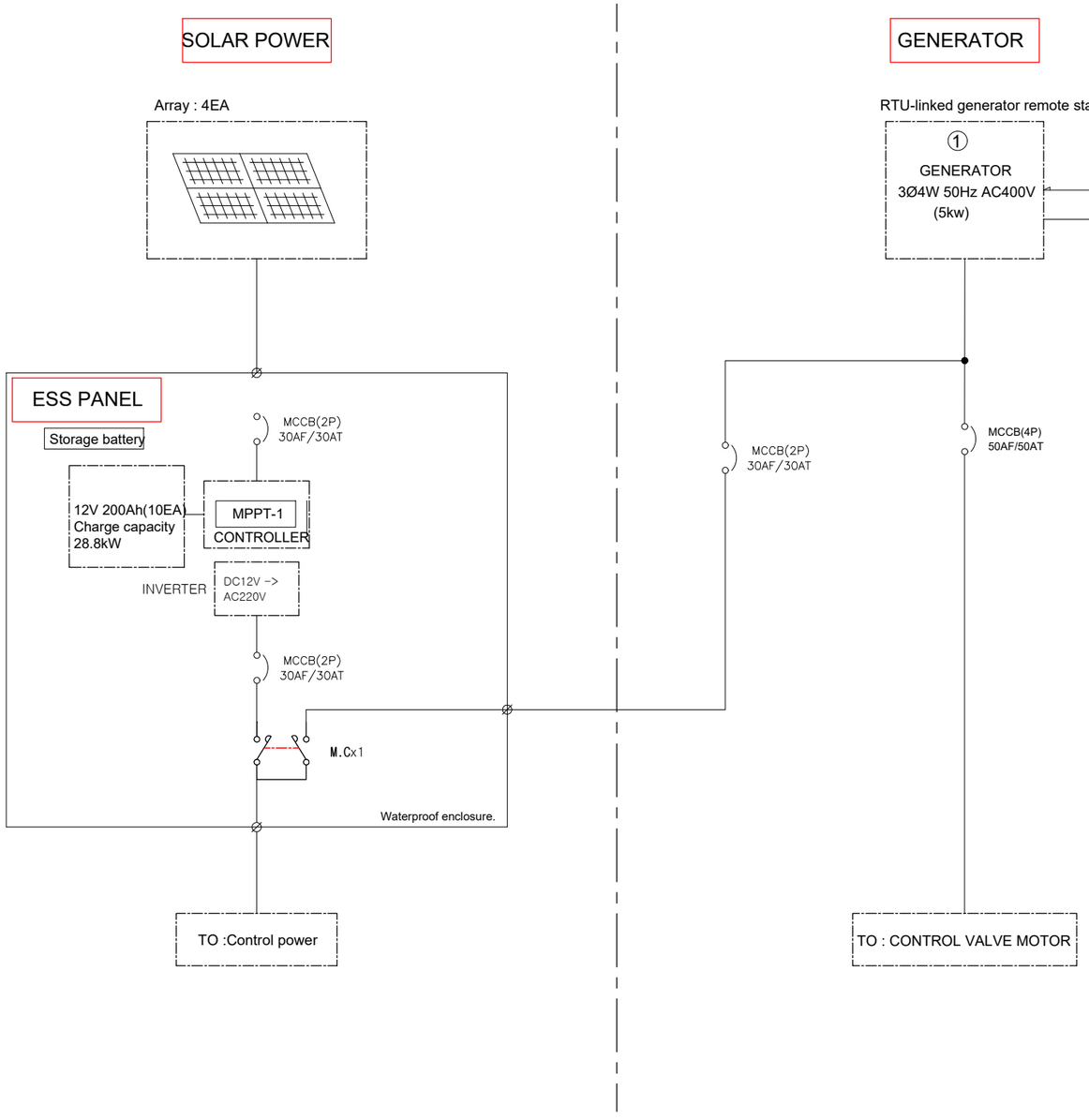


ITEMS	NAME	R T U		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER			2
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	6	6	
	FAULT		2	
	LOCAL/REMOTE	2		10
GENERATOR	GENERATOR ON/OFF	2	2	
	GENERATOR FAULT	1		
	GENERATOR FAILED	1		
	SOLAR FAULT	1	2	
TOTAL		16	23	14

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL SINGLE DIAGRAM (SC14,15)	JUNE, 2022		F-05-03

SOLAR POWER GENERATOR SINGLE DIAGRAM(SC14,15)

(Scale = None)



NO	ITEMS	DESCRIPTION
①	SOLAR PANEL	440-460 Wp*4ea
②	STORAGE BATTERY	12v 200ah* 10ea
③	CONTROLLER	12V
④	INVERTER	2KW
⑤	MCCB	2P 30AF/30AT
⑥	MC	2P 0.4kw*2ea
⑦	GENERATOR	Please refer to the specification.

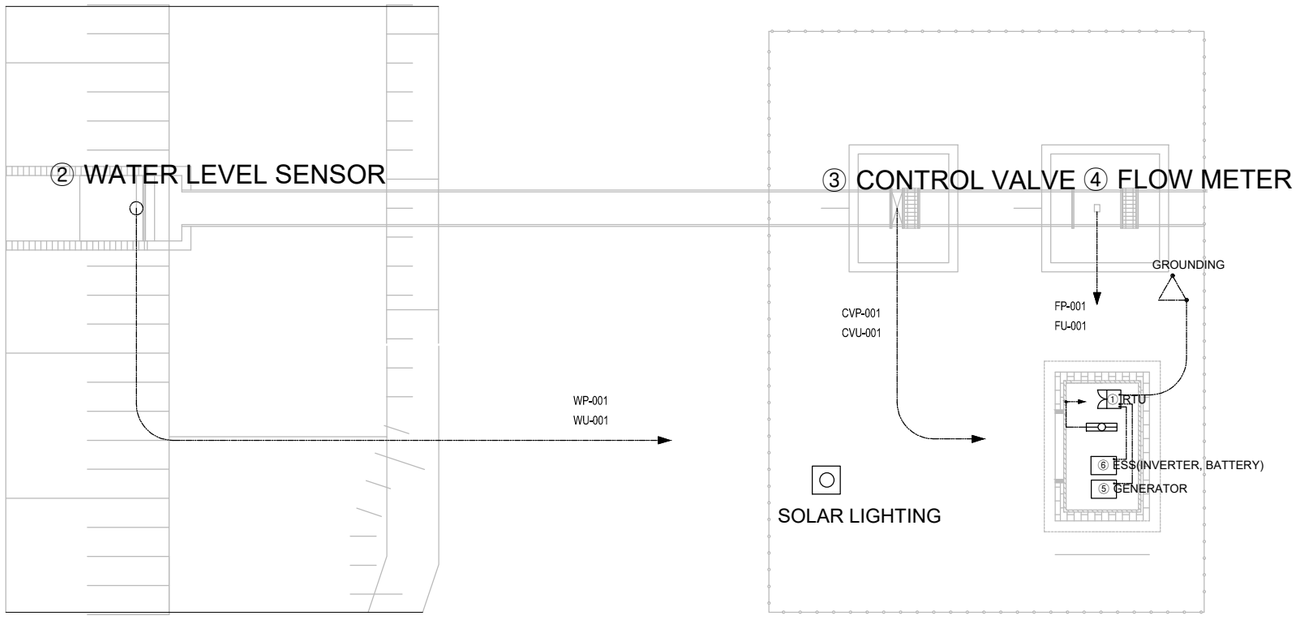
* NOTE

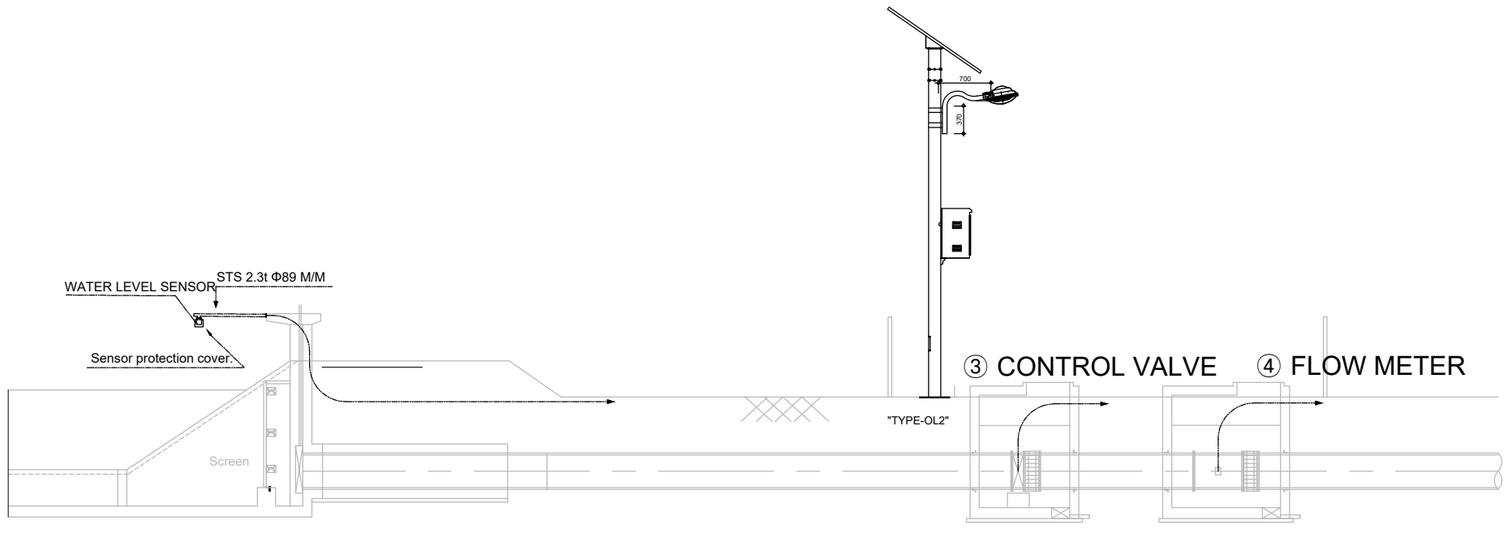
1. The capacity of the generator Refer to the electrical and SCADA facility table.
2. Remotely configure the generator to start.
3. The solar module capacity is 500W, totaling 2KW.
4. The solar module array consists of four series and one parallel.
5. Fix the solar panel to the roof..

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		SOLAR POWER & GENERATOR SINGLE DIAGRAM(SC14,15)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-05-04

CABLE WIRING & LAYOUT PLAN 2 (RTU "A" TYPE)

(Scale = None)





CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	⑦ INVERTER	① RTU	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
	⑤ GENERATOR	① RTU	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
			0.6/1kV	F-CVVs	5C	1.5㎟		STEEL 28MM	28	
WP-001	① RTU	② WATER LEVEL	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
WU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
CVP-001	① RTU	③ CONTROL VALVE	0.6/1kV	F-CV	3Cx2set	2.5㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	④ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	

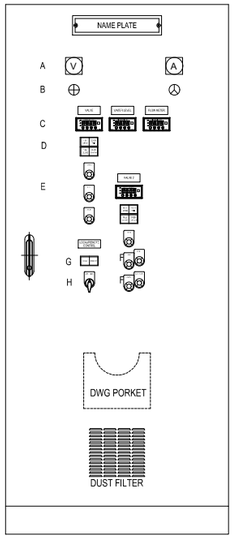
NOTE(WATER LEVEL)

1. The control unit is attached to the inside of the RTU panel.
2. The water level measurement sensor is for 0.3 to 10 M.
3. The control unit and sensor use an F-CVVs cable and construct it to completely shield it.
4. The ultrasonic water level meter is waterproof and completely waterproof (including piping) after installation.

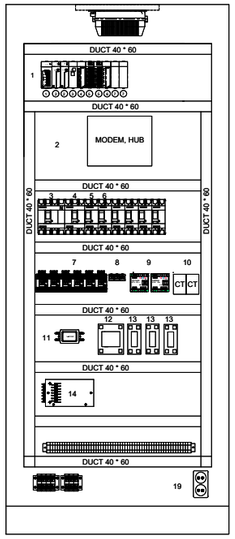
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "A"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-06-01

RTU PANEL LAYOUT (RTU " A" TYPE)

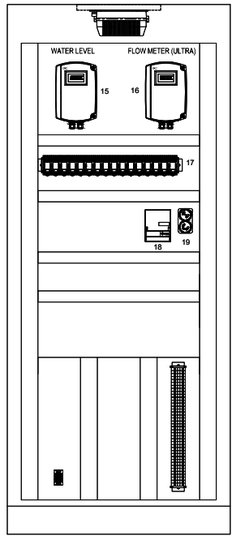
(Scale = None)



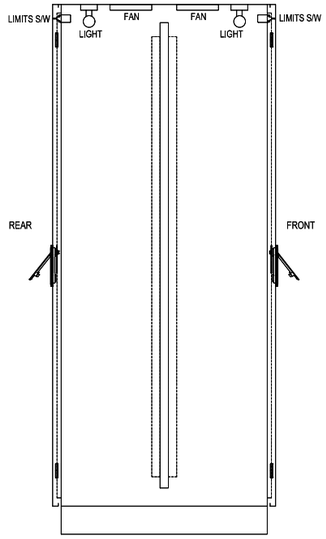
FRONT



FRONT INNER BOARD VIEW



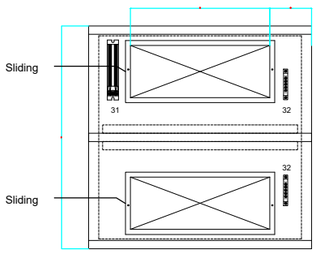
REAR INNER BOARD VIEW



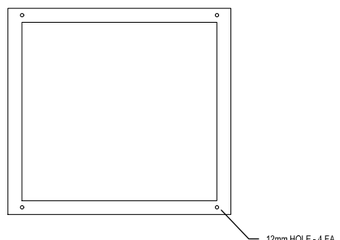
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE* 2EA	Please refer to the specification.
⑦	DUMMY MODULE* 2EA	Please refer to the specification.

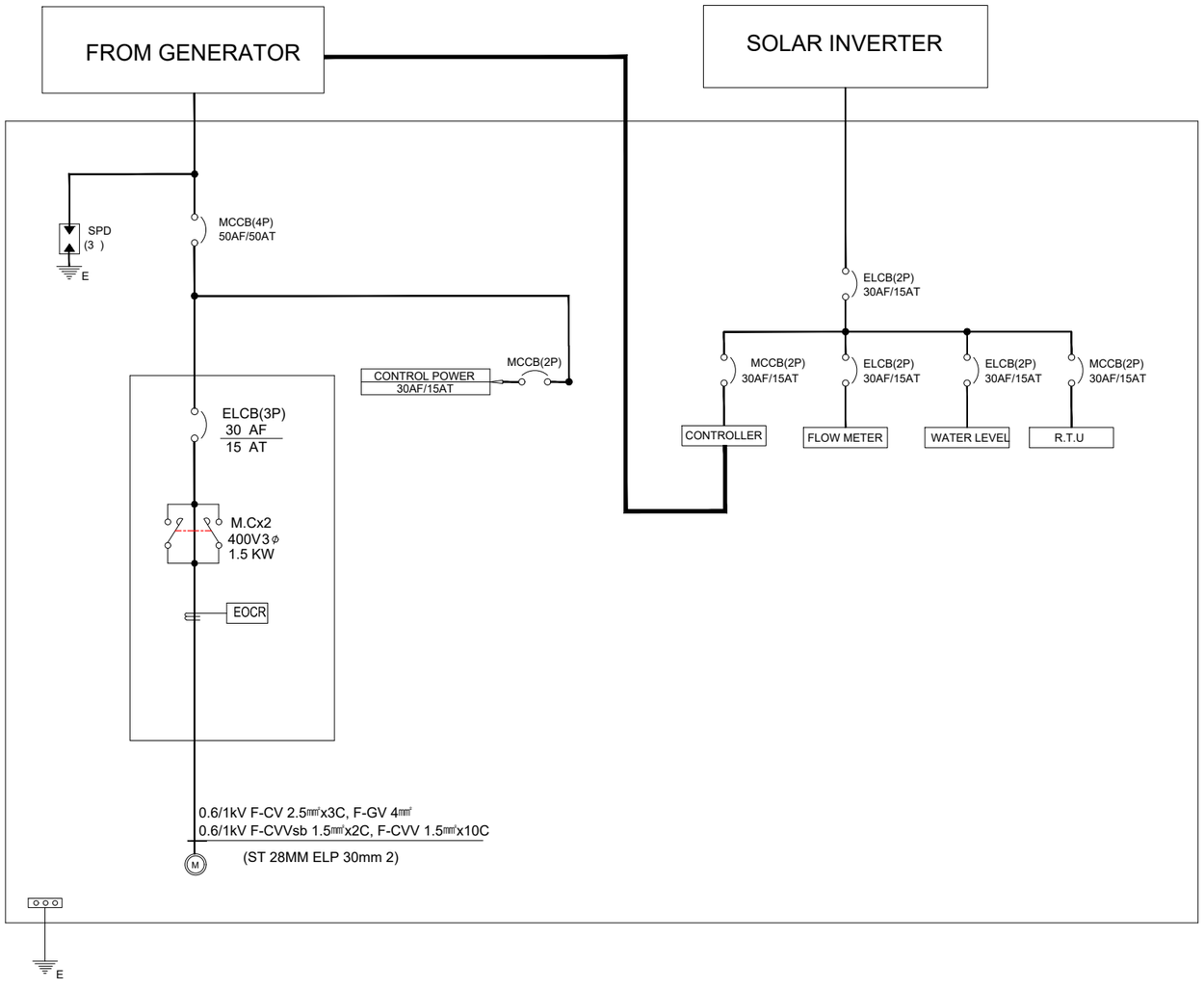
Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	1EA	VALVE POWER
5	MCCB	2P 30AF	4EA	
6	ELCB	2P 30AF	2EA	
7	MC	3P 1.4KW-5.5KW	2EA	VALVE
8	EOCR		1EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	WATER LEVEL		1LOT	
16	FLOW METER UNIT(ULTRA)		1LOT	
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	3EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	1EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	1EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	1EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL LAYOUT (RTU "A"TYPE)	JUNE, 2022		F-06-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "A" TYPE)

(Scale = None)



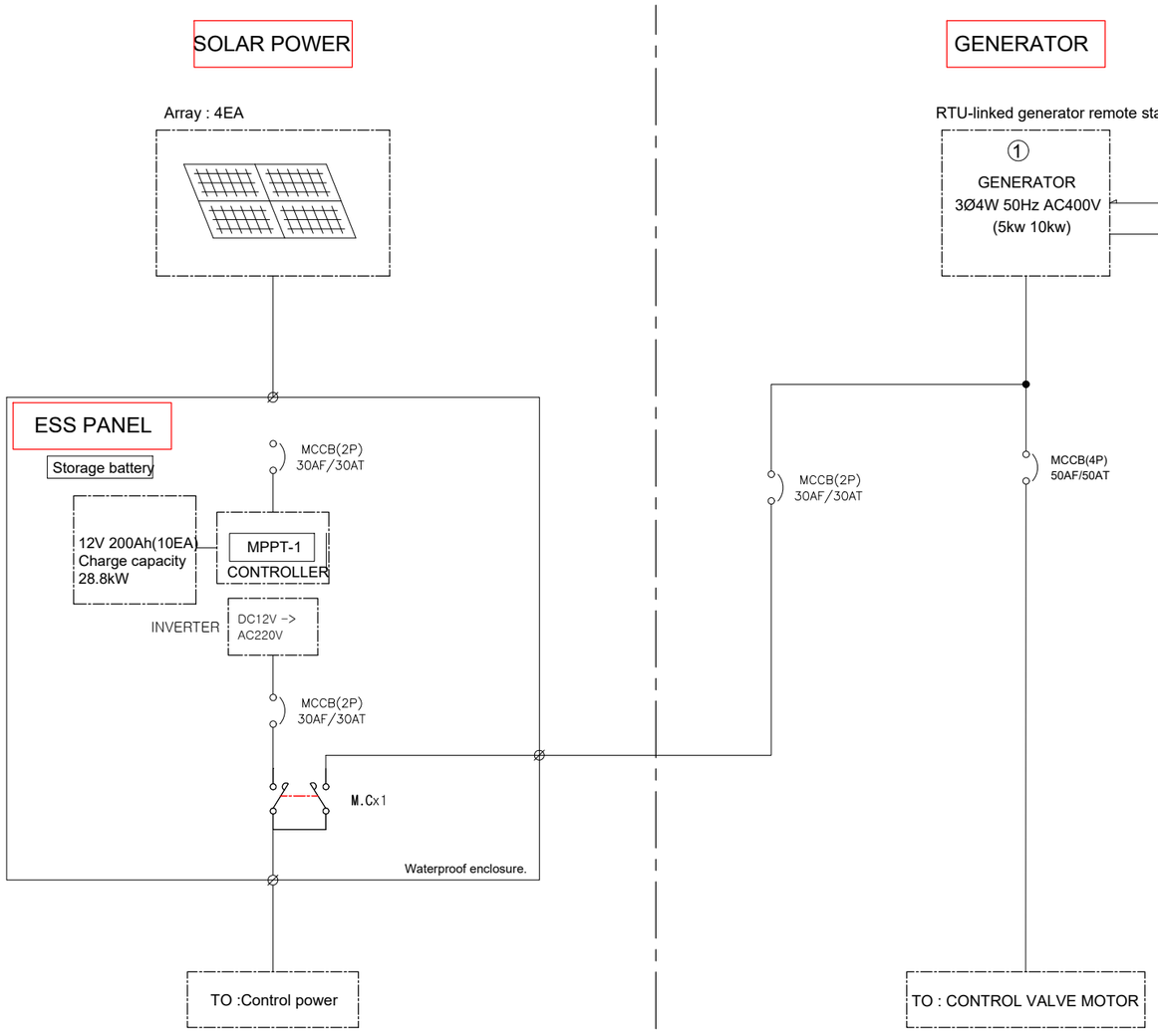
ITEMS	NAME	R T U		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	W.L / F.M			2
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	2	2	
	FAULT		1	
	LOCAL/REMOTE	1		2
GENERATOR	GENERATOR ON/OFF	2	2	
	GENERATOR FAULT	1		
	GENERATOR FAILED	1		
	SOLAR FAULT	1	2	
TOTAL		11	18	6

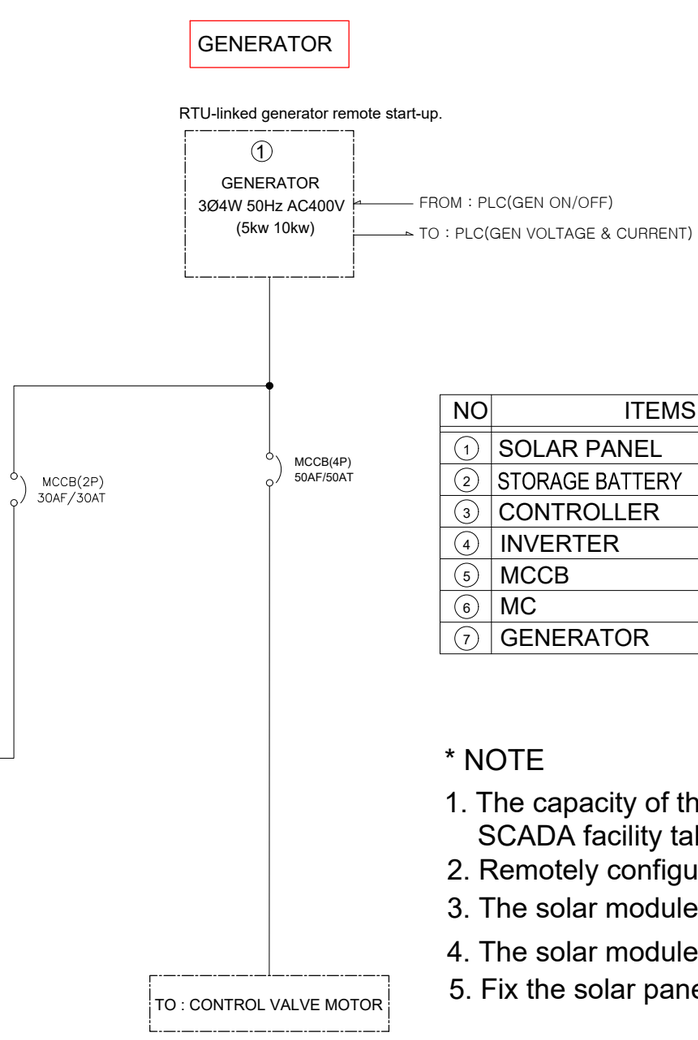
* NOTE
1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "A"TYPE)	JUNE, 2022		F-06-03

SOLAR POWER GENERATOR SINGLE DIAGRAM(RTU"A"TYPE)

(Scale = None)





NO	ITEMS	DESCRIPTION
①	SOLAR PANEL	440-460 Wp*4ea
②	STORAGE BATTERY	12v 200ah* 10ea
③	CONTROLLER	12V
④	INVERTER	2KW
⑤	MCCB	2P 30AF/30AT
⑥	MC	2P 0.4kw*2ea
⑦	GENERATOR	Please refer to the specification.

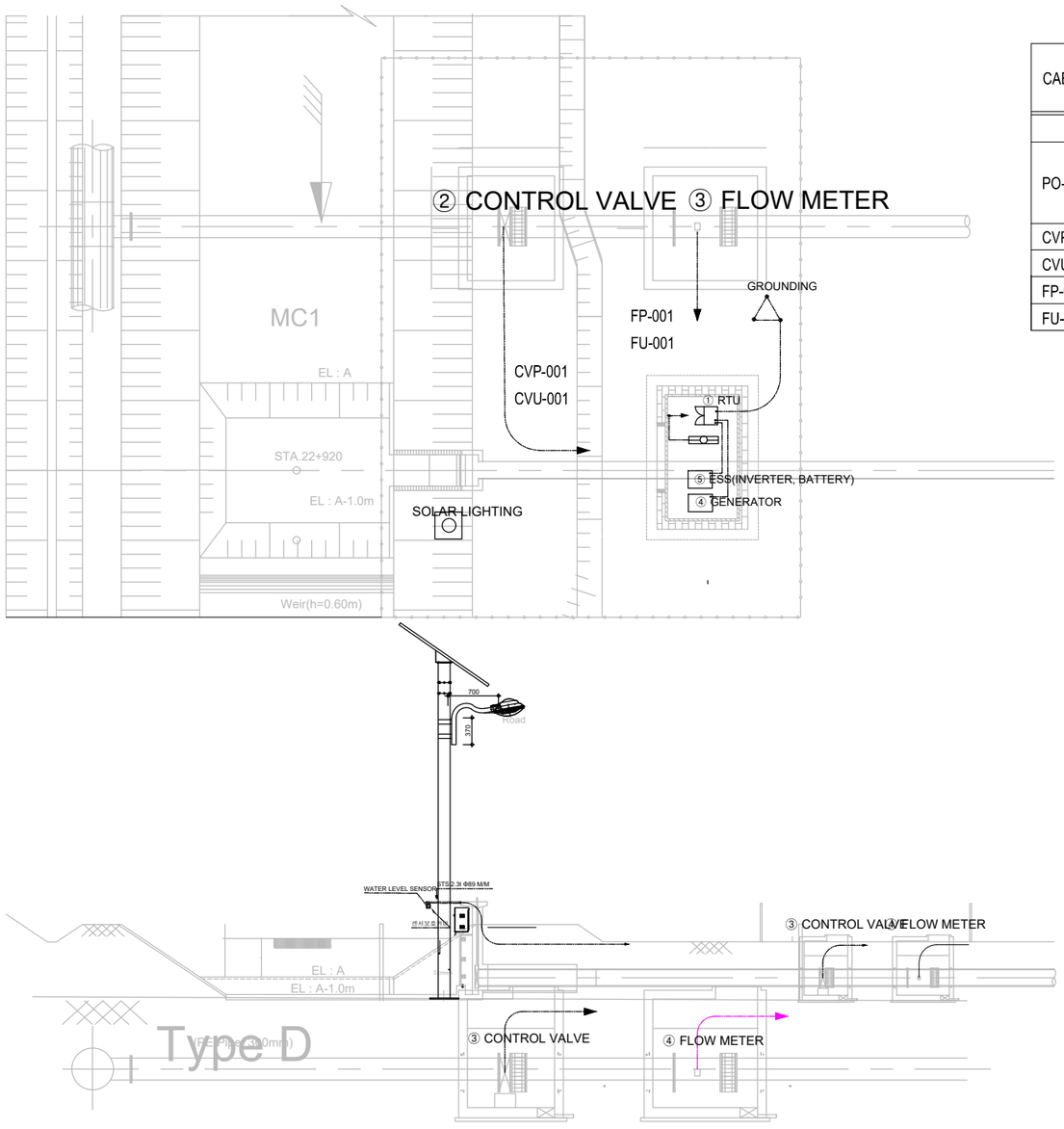
* NOTE

1. The capacity of the generator Refer to the electrical and SCADA facility table.
2. Remotely configure the generator to start.
3. The solar module capacity is 500W, totaling 2KW.
4. The solar module array consists of four series and one parallel.
5. Fix the solar panel to the roof..

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		SOLAR POWER & GENERATOR SINGLE DIAGRAM(RTU"A"TYPE)	JUNE, 2022		F-06-04

CABLE WIRING & LAYOUT PLAN 2 (RTU "B" TYPE)

(Scale = None)

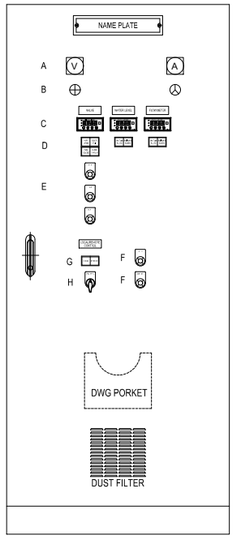


CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	① RTU	⑤ INVERTER	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
	① RTU	④ GENERATOR	0.6/1kV	F-CV	2C	2.5㎟	2.5㎟	STEEL 22MM	22	
			0.6/1kV	F-CVVs	5C	1.5㎟		STEEL 28MM	28	
CVP-001	① RTU	② CONTROL VALVE	0.6/1kV	F-CV	3Cx2Set	2.5㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	28	
FU-001								STEEL 28MM	28	

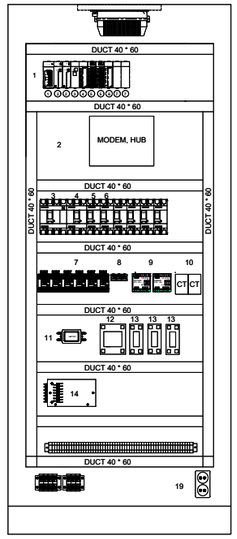
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-07-01

RTU PANEL LAYOUT (RTU "B"TYPE)

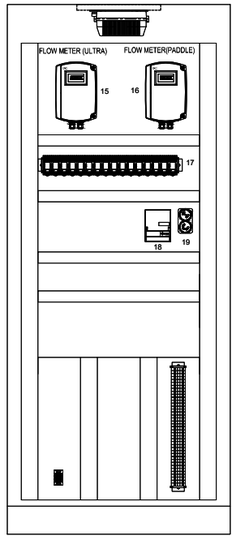
(Scale = None)



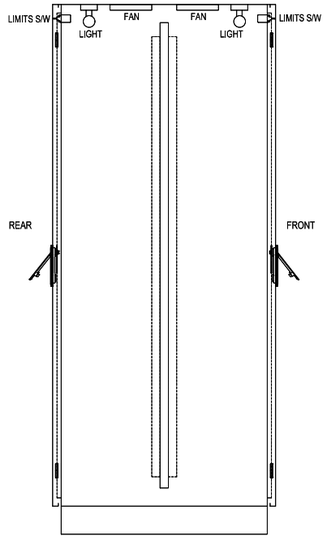
FRONT



FRONT INNER BOARD VIEW



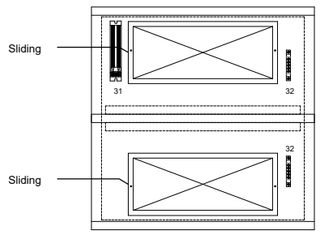
REAR INNER BOARD VIEW



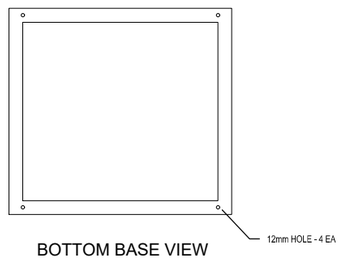
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE* 2EA	Please refer to the specification.
⑦	DUMMY MODULE* 2EA	Please refer to the specification.

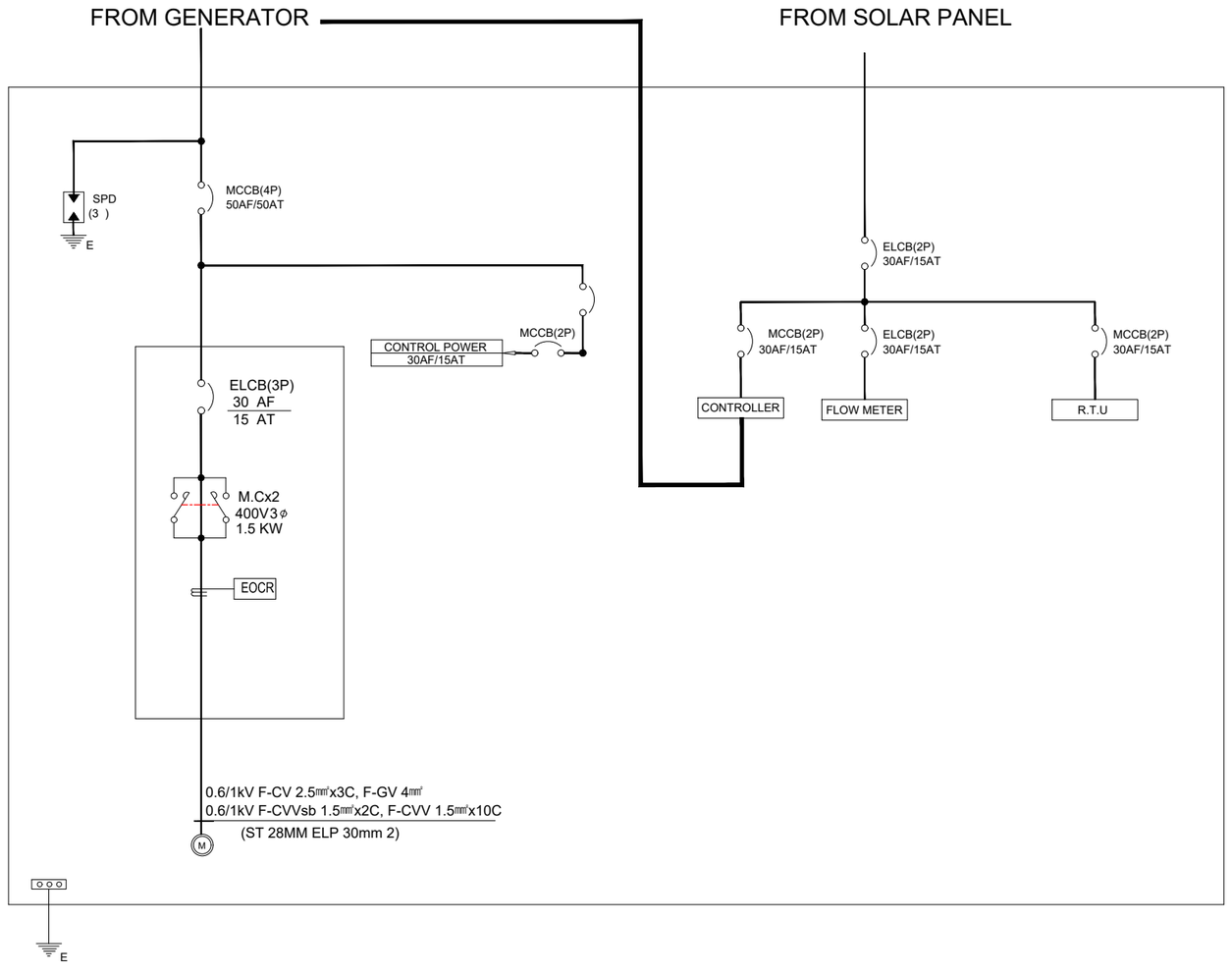
Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	3EA	VALVE POWER
5	MCCB	2P 30AF	2EA	
6	ELCB	2P 30AF	5EA	FLOW, ETC
7	MC	3P 1.4KW-5.5KW	6EA	VALVE
8	EOCR		3EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	FLOW METER UNIT(ULTRA)		1LOT	
16	FLOW METER UNIT(PADDLE)		1LOT	
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	5EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	3EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	3EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	3EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL LAYOUT (RTU "B"TYPE)	JUNE, 2022		F-07-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "B"TYPE)

(Scale = None)



ITEMS	NAME	R T U		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER			1
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	2	2	
	FAULT		1	
	LOCAL/REMOTE	1		2
GENERATOR	GENERATOR ON/OFF	2	2	
	GENERATOR FAULT	1		
	GENERATOR FAILED	1		
	SOLAR FAULT	1	2	
TOTAL		11	18	5

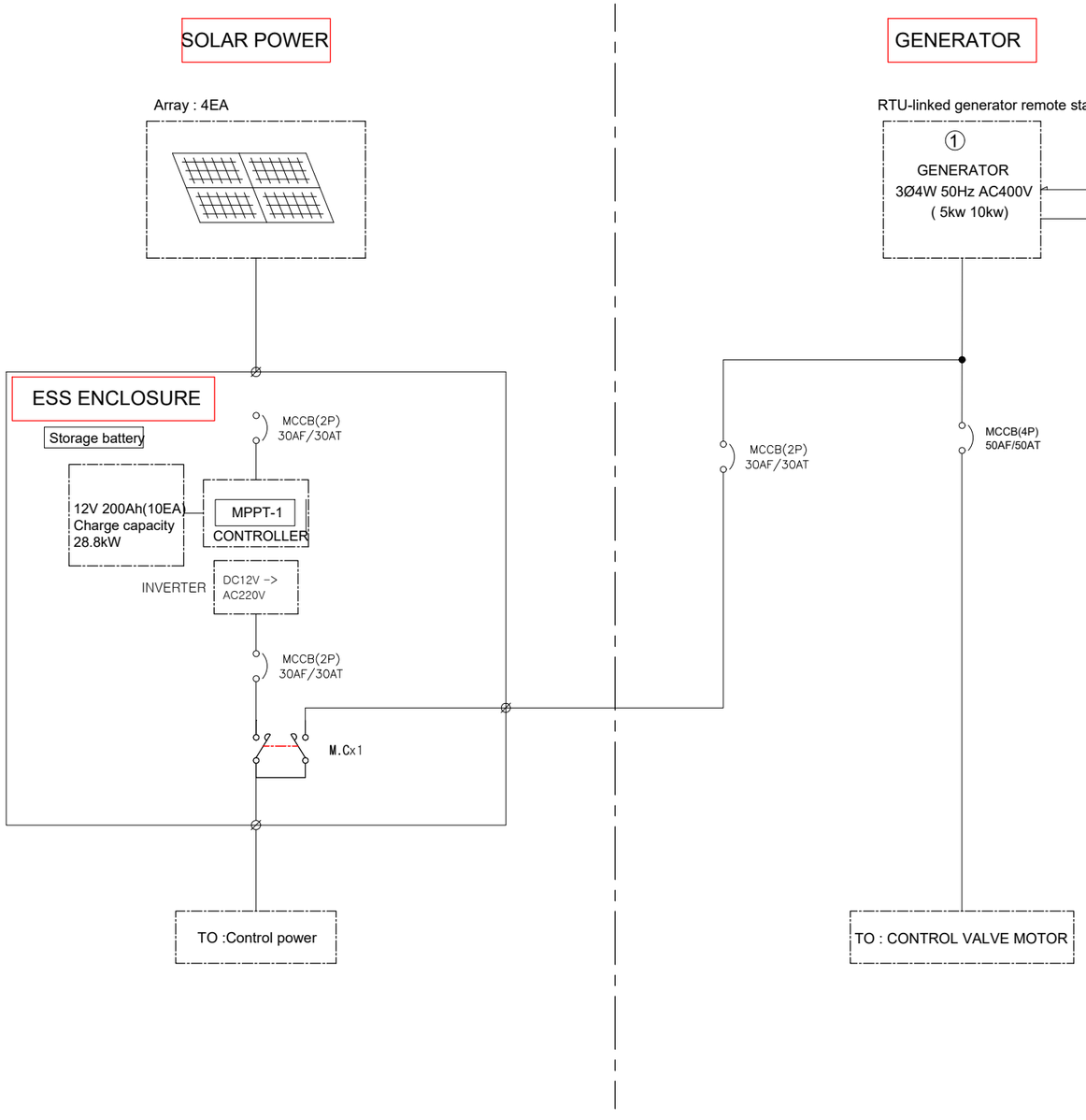
* NOTE

1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-07-03

SOLAR POWER GENERATOR SINGLE DIAGRAM(RTY"B"TYPE)

(Scale = None)



NO	ITEMS	DESCRIPTION
①	SOLAR PANEL	440-460 Wp*4ea
②	STORAGE BATTERY	12v 200ah* 5ea
③	CONTROLLER	12V
④	INVERTER	2KW
⑤	MCCB	2P 30AF/30AT
⑥	MC	2P 0.4kw*2ea
⑦	GENERATOR	Please refer to the specification.

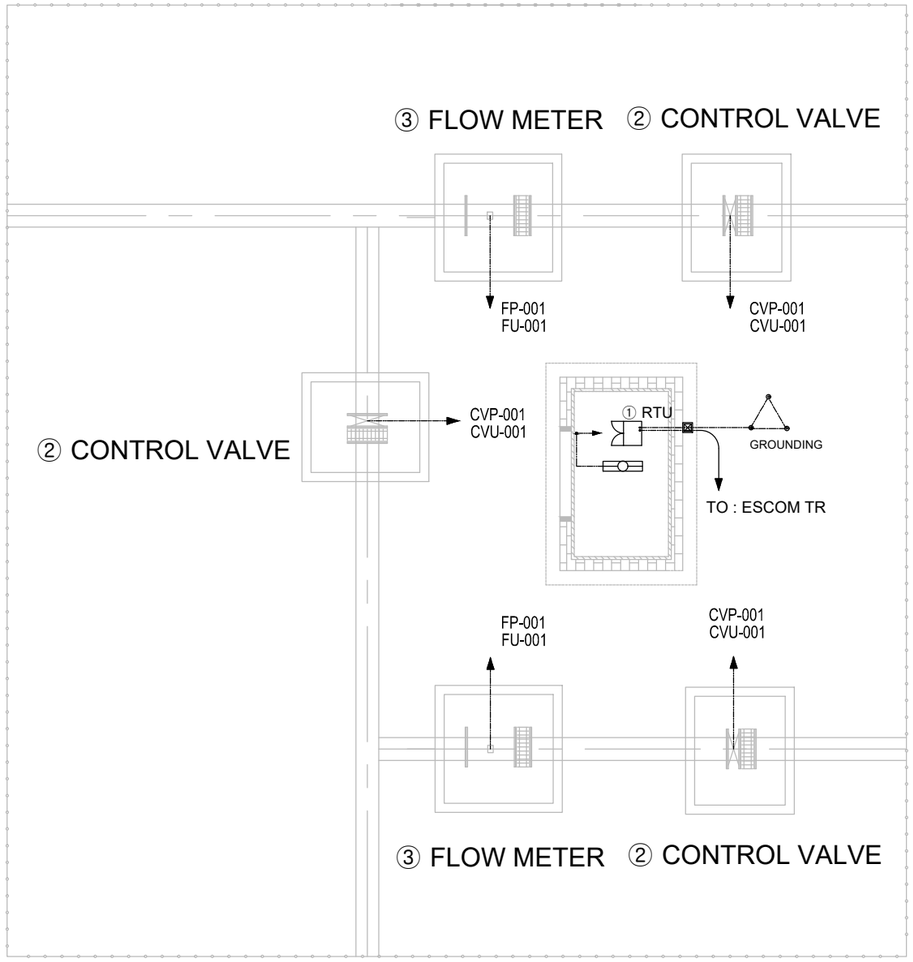
* NOTE

1. The capacity of the generator Refer to the electrical and SCADA facility table.
2. Remotely configure the generator to start.
3. The solar module capacity is 500W, totaling 2KW.
4. The solar module array consists of four series and one parallel.
5. Fix the solar panel to the roof..

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		SOLAR POWER & GENERATOR SINGLE DIAGRAM(RTU"B"TYPE)	JUNE, 2022		F-07-04

CABLE WIRING & LAYOUT PLAN 2 (RTU "C" TYPE)

(Scale = None)

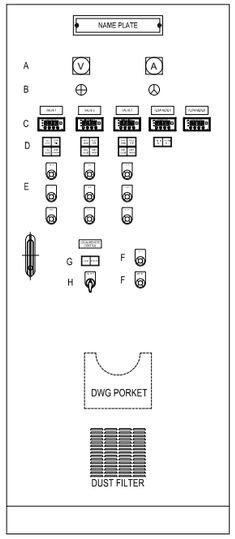


CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	ESCOM	① RTU	0.6/1kV	F-CV	2C	6㎟	2.5㎟	STEEL 28MM	28	
CVP-001	① RTU	② CONTROL VALVE	0.6/1kV	F-CV	3Cx2Set	4㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	

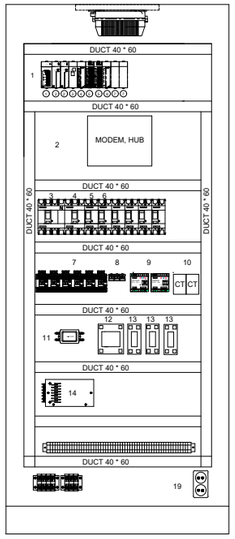
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il	NONE SCALE
		TITLE	DATE		DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-08-01

RTU PANEL LAYOUT (RTU "C"TYPE)

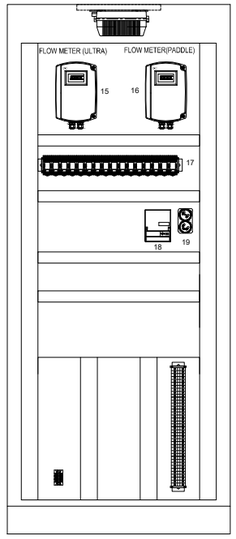
(Scale = None)



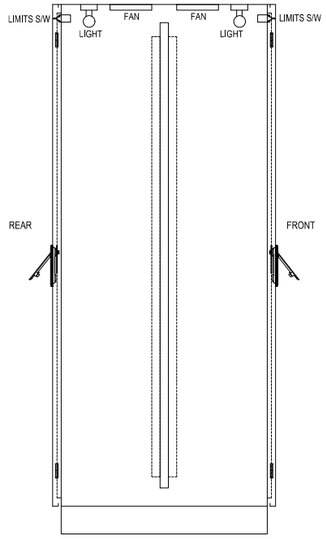
FRONT



FRONT INNER BOARD VIEW



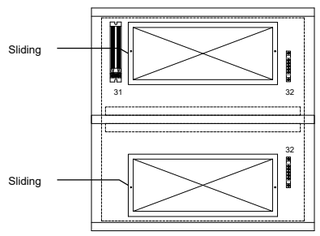
REAR INNER BOARD VIEW



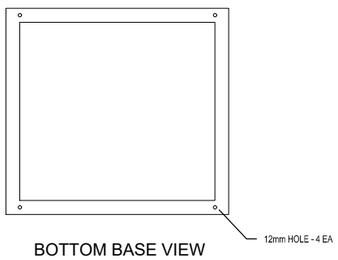
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE* 2EA	Please refer to the specification.
⑦	DUMMY MODULE* 2EA	Please refer to the specification.

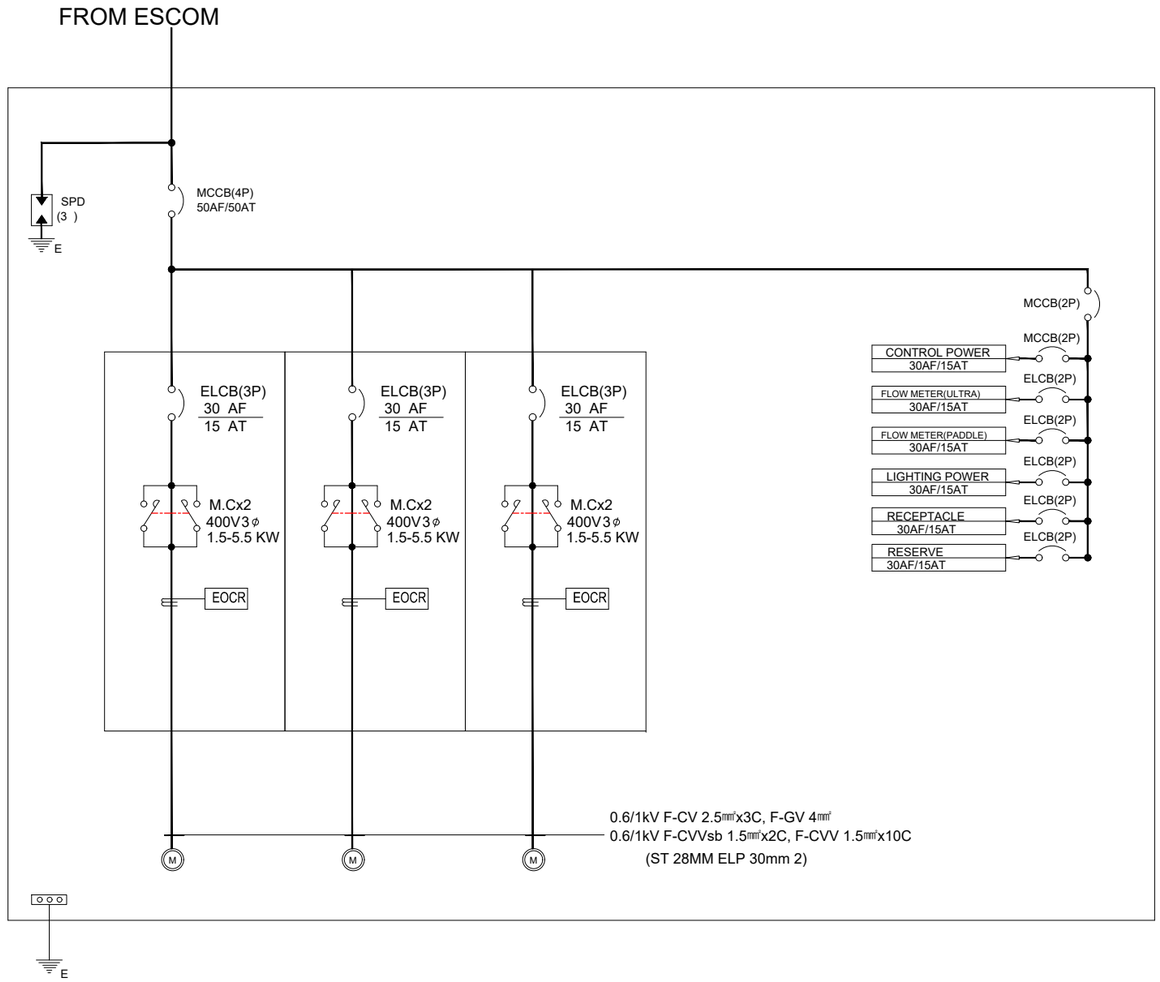
Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	3EA	VALVE POWER
5	MCCB	2P 30AF	2EA	
6	ELCB	2P 30AF	5EA	FLOW, ETC
7	MC	3P 1.4KW-5.5KW	6EA	VALVE
8	EOCR		3EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	FLOW METER UNIT(ULTRA)		1LOT	
16	FLOW METER UNIT(PADDLE)		1LOT	
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	5EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	3EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	3EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	3EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL LAYOUT (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-08-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "C"TYPE)

(Scale = None)



ITEMS	NAME	RTU		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER * 2			2
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	3	3	
	FAULT		1	
	LOCAL/REMOTE	1		2
TOTAL		7	15	6

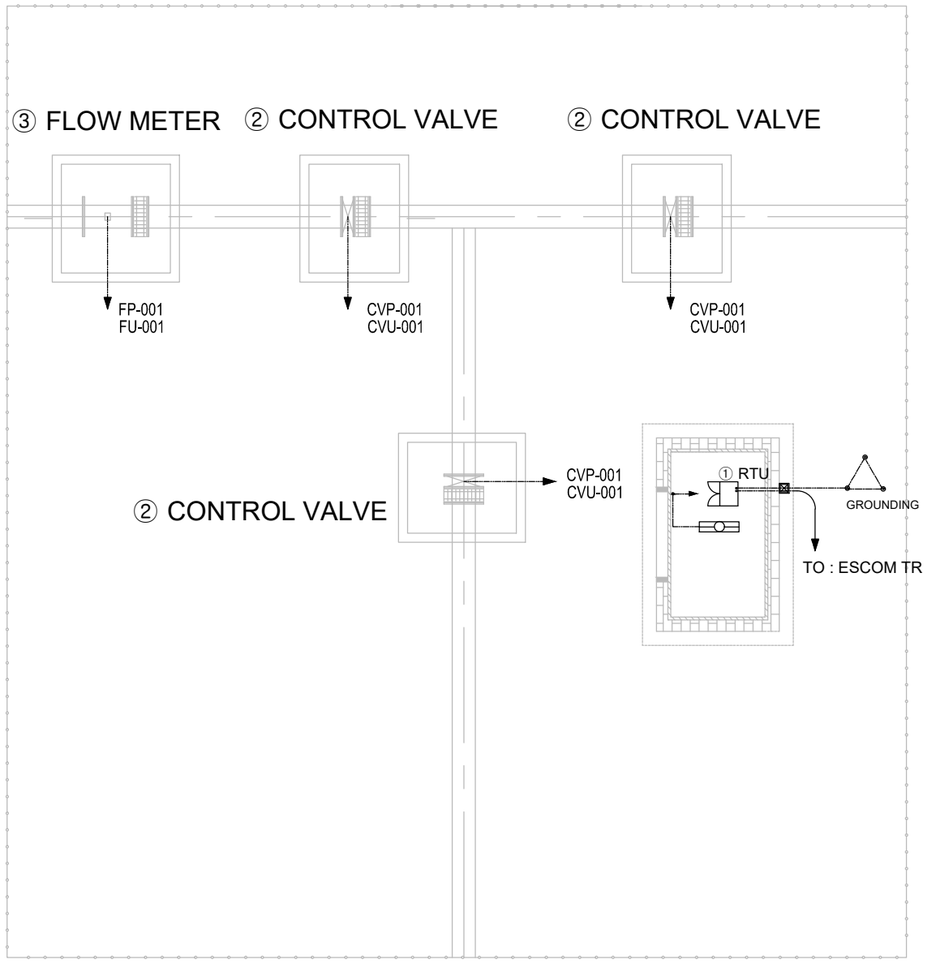
* NOTE

1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il	NONE SCALE
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "B"TYPE)	JUNE, 2022		F-08-03

CABLE WIRING & LAYOUT PLAN 2 (RTU "D" TYPE)

(Scale = None)

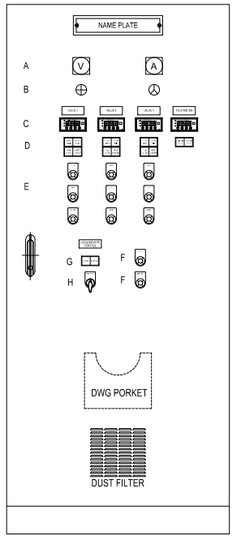


CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	ESCOM	① RTU	0.6/1kV	F-CV	2C	6㎟	2.5㎟	STEEL 28MM	28	
CVP-001	① RTU	② CONTROL VALVE	0.6/1kV	F-CV	3Cx2Set	4㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	

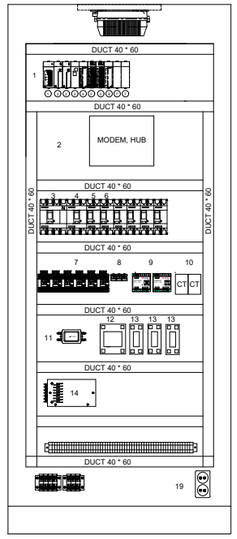
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "B"TYPE)	JUNE, 2022		F-09-01

RTU PANEL LAYOUT (RTU "D"TYPE)

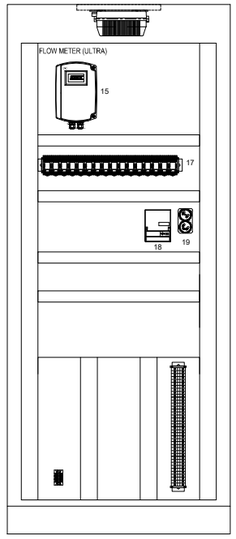
(Scale = None)



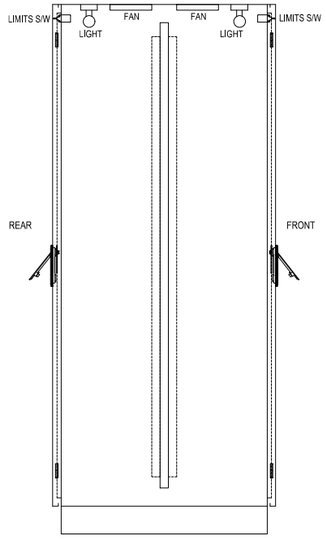
FRONT



FRONT INNER BOARD VIEW



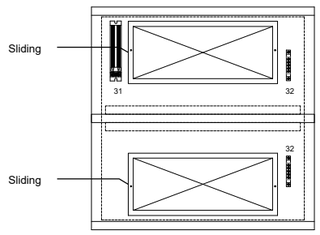
REAR INNER BOARD VIEW



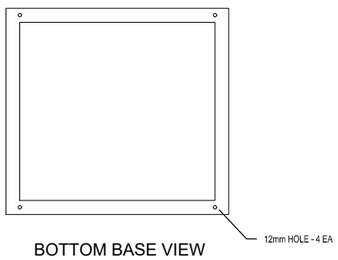
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE* 2EA	Please refer to the specification.
⑦	DUMMY MODULE* 2EA	Please refer to the specification.

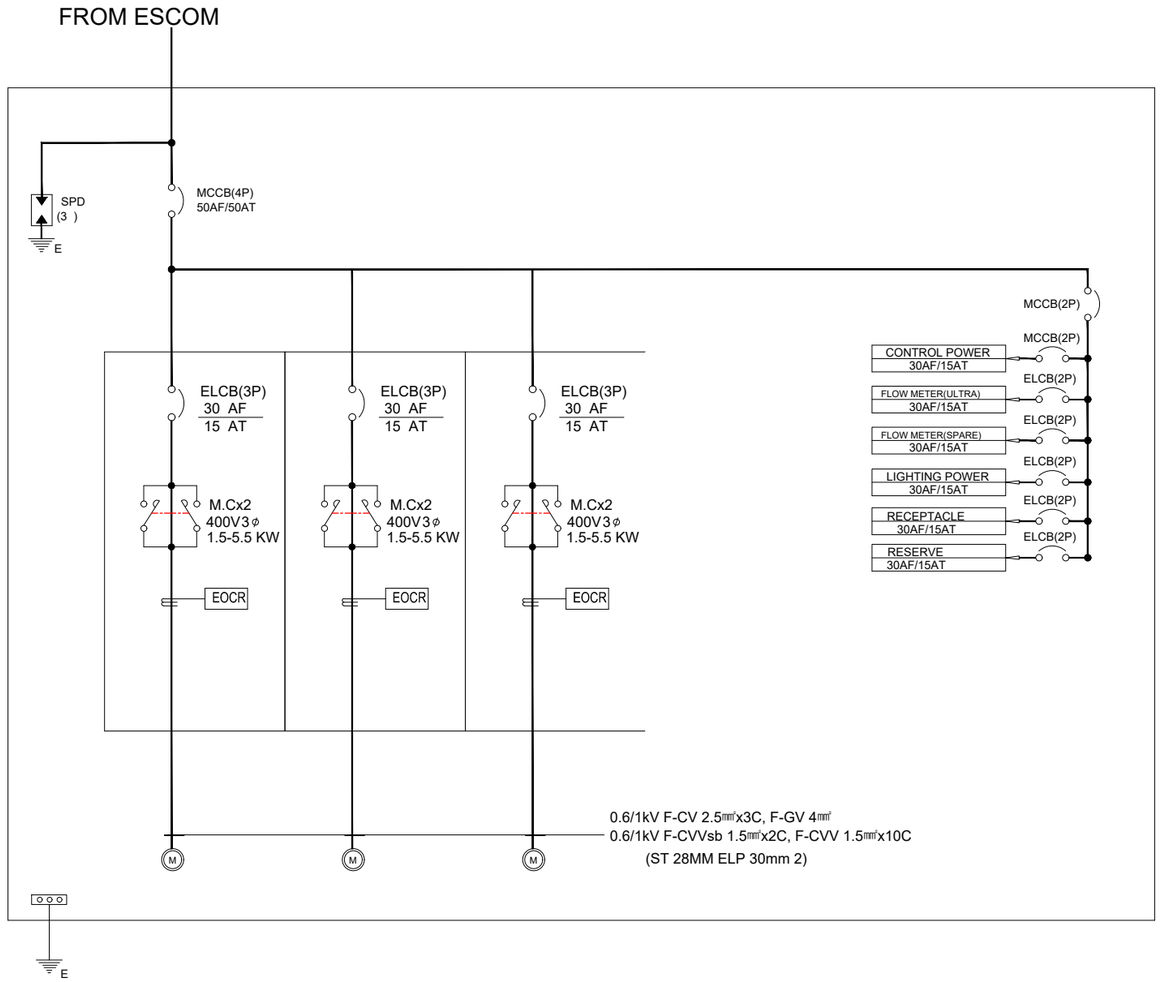
Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	3EA	VALVE POWER
5	MCCB	2P 30AF	2EA	
6	ELCB	2P 30AF	5EA	FLOW, ETC
7	MC	3P 1.4KW-5.5KW	6EA	VALVE
8	EOCR		3EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	FLOW METER UNIT(ULTRA)		1LOT	
16	FLOW METER UNIT(PADDLE)		1LOT	
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	4EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	3EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	3EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	3EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL LAYOUT (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-09-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "D"TYPE)

(Scale = None)



ITEMS	NAME	RTU		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER			1
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	3	3	
	FAULT		1	
	LOCAL/REMOTE	1		2
TOTAL		7	15	6

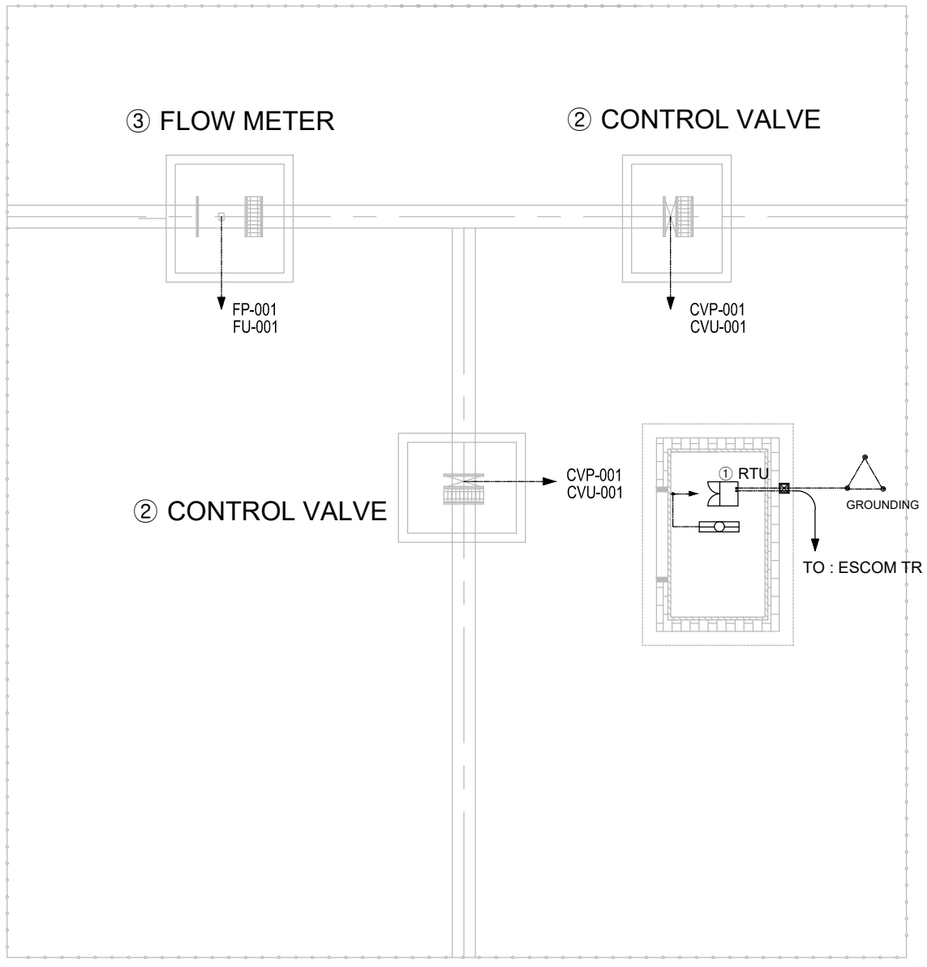
* NOTE

1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
				DRAWING BY: An, Seong Il	
		TITLE	DATE		DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-09-03

CABLE WIRING & LAYOUT PLAN 2 (RTU "E" TYPE)

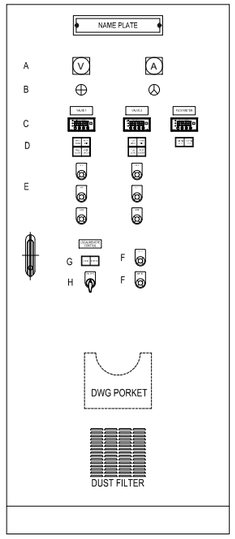
(Scale = None)



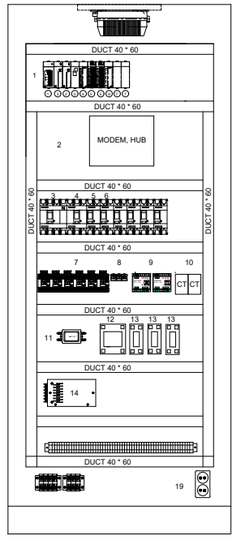
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-10-01

RTU PANEL LAYOUT (RTU "E"TYPE)

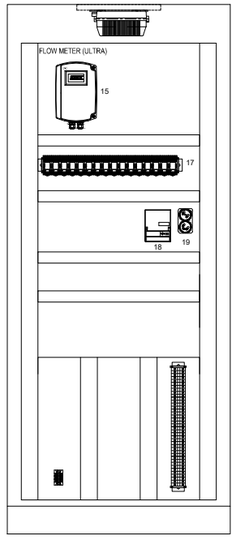
(Scale = None)



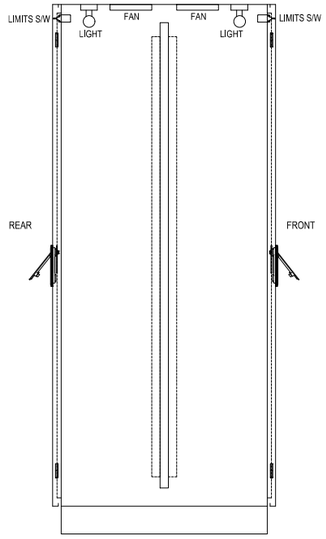
FRONT



FRONT INNER BOARD VIEW



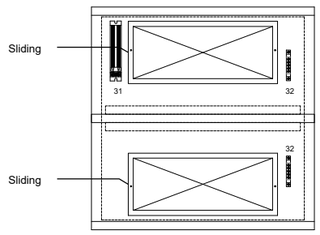
REAR INNER BOARD VIEW



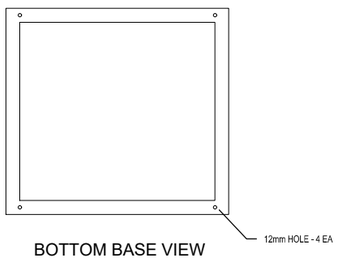
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE* 2EA	Please refer to the specification.
⑦	DUMMY MODULE* 2EA	Please refer to the specification.

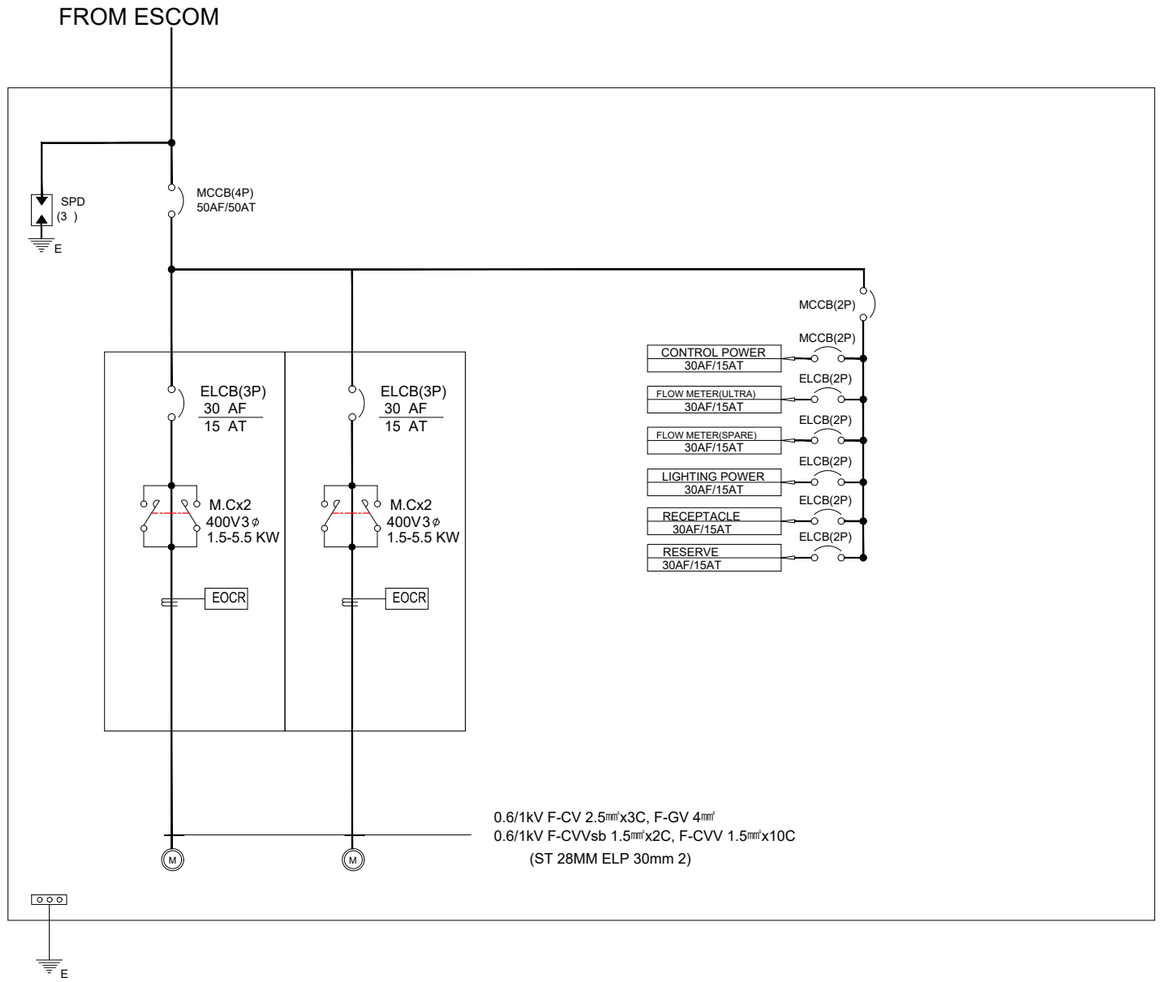
Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	2EA	VALVE POWER
5	MCCB	2P 30AF	2EA	
6	ELCB	2P 30AF	5EA	FLOW, ETC
7	MC	3P 1.4KW-5.5KW	4EA	VALVE
8	EOCR		2EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	FLOW METER UNIT(ULTRA)		1LOT	
16				
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	3EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	3EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	3EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	3EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		RTU PANEL LAYOUT (RTU "B"TYPE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-10-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "E"TYPE)

(Scale = None)



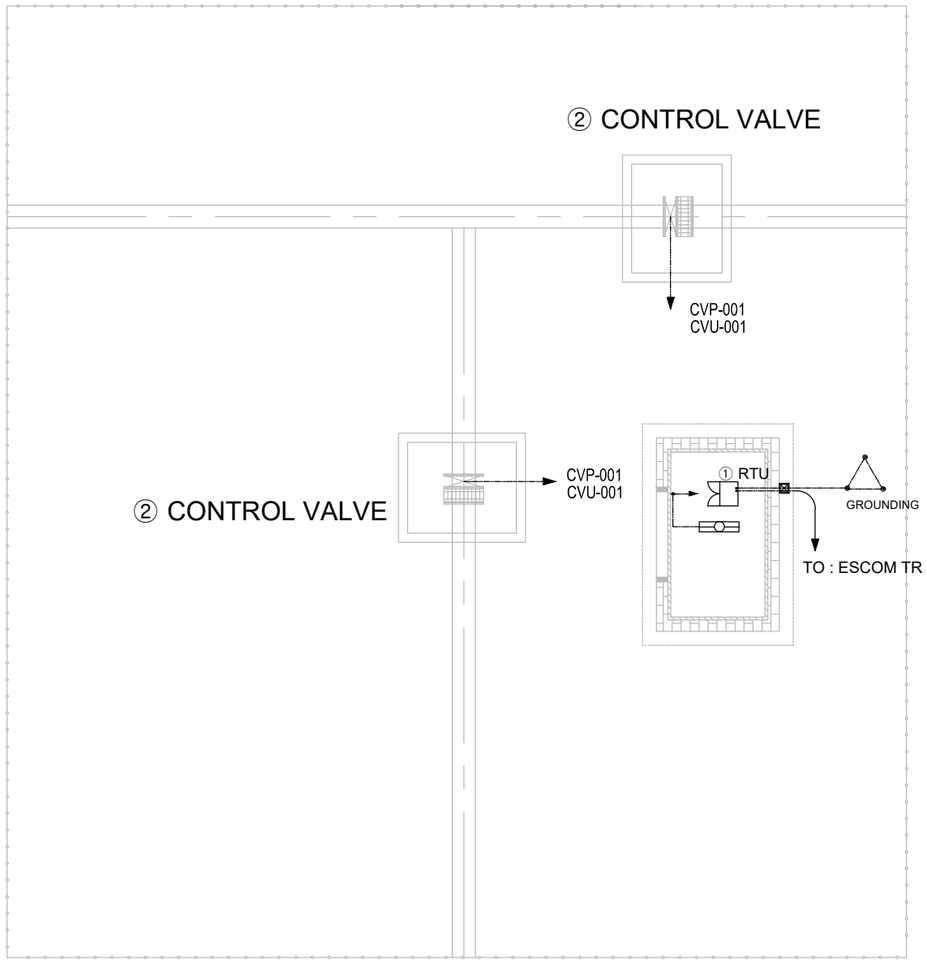
ITEMS	NAME	R T U		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER			1
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	2	2	
	FAULT		1	
	LOCAL/REMOTE	1		2
TOTAL		6	14	5

* NOTE
1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il	NONE SCALE
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "B"TYPE)	JUNE, 2022		F-10-03

CABLE WIRING & LAYOUT PLAN 2 (RTU "F" TYPE)

(Scale = None)

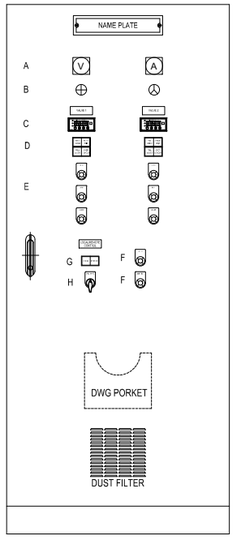


CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	ESCOM	① RTU	0.6/1kV	F-CV	2C	6㎟	2.5㎟	STEEL 28MM	28	
CVP-001	① RTU	② CONTROL VALVE	0.6/1kV	F-CV	3Cx2Set	4㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	

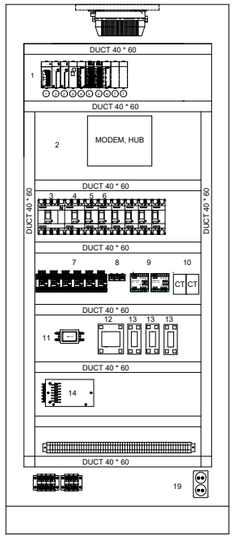
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "B"TYPE)	JUNE, 2022		F-11-01

RTU PANEL LAYOUT (RTU "F"TYPE)

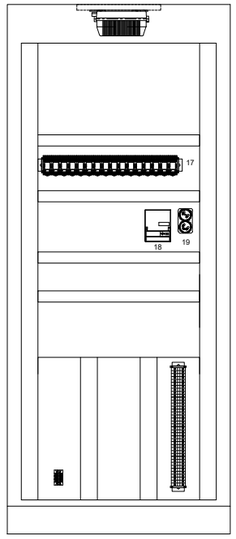
(Scale = None)



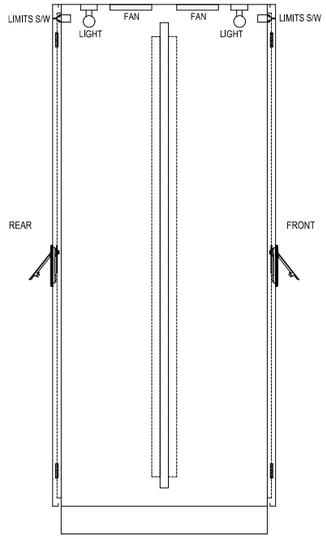
FRONT



FRONT INNER BOARD VIEW



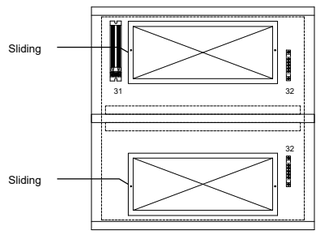
REAR INNER BOARD VIEW



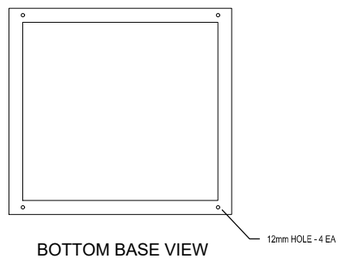
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
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NO	DESCRIPTION	NAME	Q'TY	REMARKS
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4	ELCB	3P 30AF	2EA	VALVE POWER
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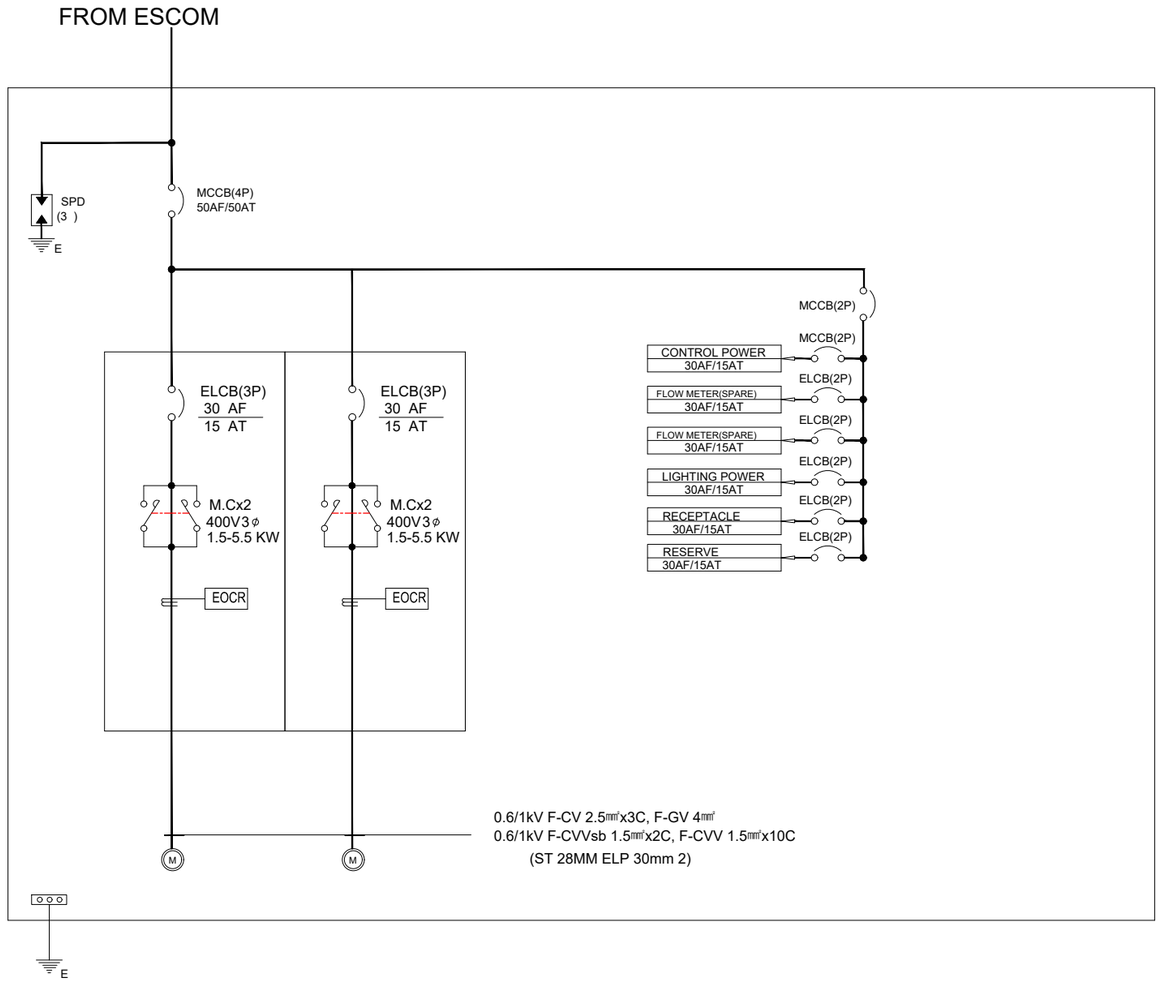
6	ELCB	2P 30AF	5EA	FLOW, ETC
7	MC	3P 1.4KW-5.5KW	4EA	VALVE
8	EOCR		2EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15				
16				
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	2EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	3EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	3EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	3EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il CHECKED BY: Jo, Jin Hoon	NONE SCALE
		TITLE	DATE		DRAWING No
		RTU PANEL LAYOUT (RTU "B"TYPE)	JUNE, 2022		F-11-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "F"TYPE)

(Scale = None)



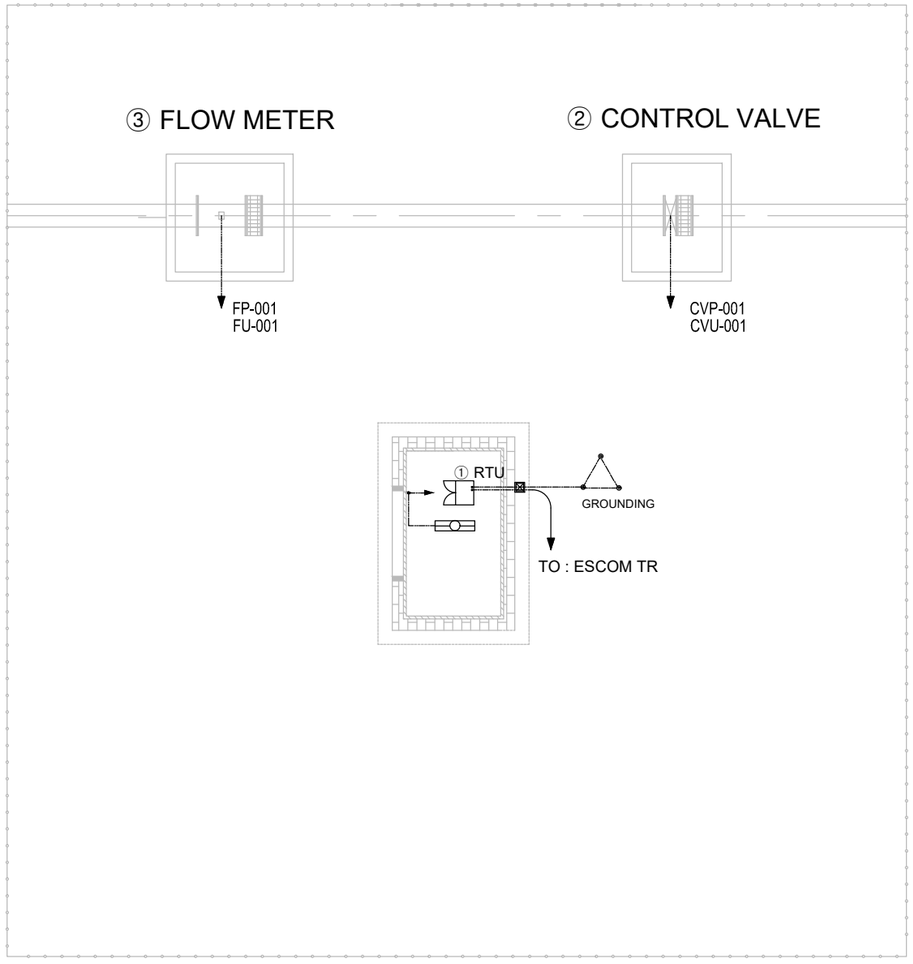
ITEMS	NAME	RTU		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER			
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	2	2	
	FAULT		1	
	LOCAL/REMOTE	1		2
TOTAL		6	14	4

* NOTE
1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il DRAWING BY: An, Seong Il	NONE SCALE
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "B"TYPE)	JUNE, 2022		F-11-03

CABLE WIRING & LAYOUT PLAN 2 (RTU "G" TYPE)

(Scale = None)



CABLE NO.	FROM	TO	CABLE				GROUND WIRE	CONDUIT		REMARK
		EQUIP. NAME	VOLT(V)	TYPE	NO.OF CABLES	SIZE	(GV)	CONDUIT TUBE	FLEXIBLE TUBE	
PO-001	ESCOM	① RTU	0.6/1kV	F-CV	2C	6㎟	2.5㎟	STEEL 28MM	28	
CVP-001	① RTU	② CONTROL VALVE	0.6/1kV	F-CV	3Cx2Set	4㎟	2.5㎟	STEEL 28MM	28	
CVU-001			0.6/1kV	F-CVVs	10C	1.5㎟		STEEL 28MM	28	
FP-001	① RTU	③ FLOW METER	FLOW METER COMPANY'S CONSTRUCTION PART					STEEL 22MM	22	
FU-001								STEEL 28MM	28	

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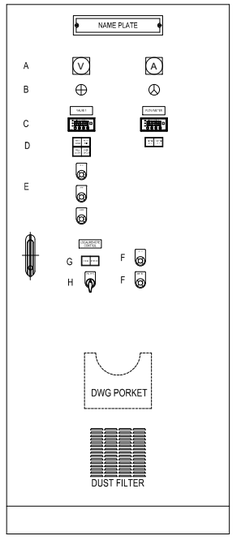
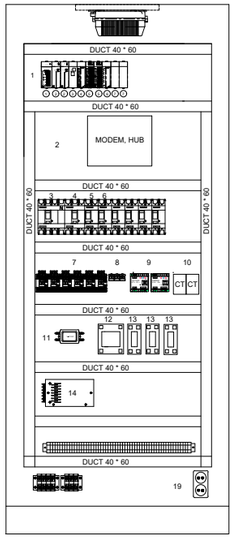
		TITLE	DATE		DRAWING No
		CABLE WIRING & LAYOUT PLAN (RTU "B"TYPE)	JUNE, 2022		F-12-01

RTU PANEL LAYOUT (RTU "G"TYPE)

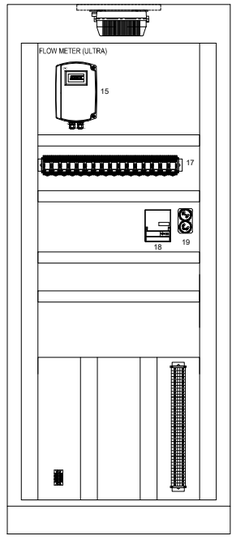
(Scale = None)



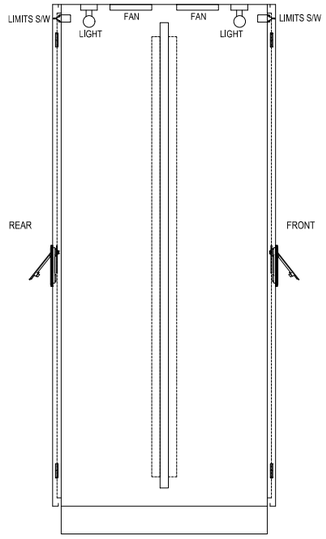
FRONT



FRONT INNER BOARD VIEW



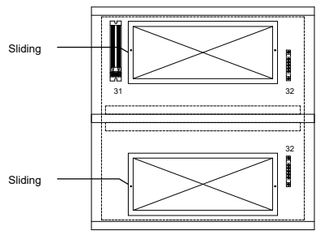
REAR INNER BOARD VIEW



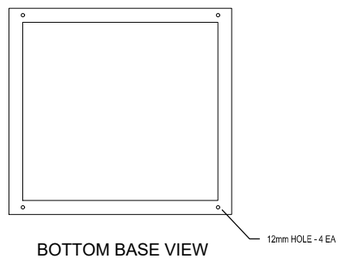
SIDE

NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)
3. SIGNAL LAMP: LED TYPE
4. INDICATOR: WATER LEVEL, FLOW METER
5. P.B.L: OUTDOOR LIGHTING(1, 2, 3)



BOTTOM VIEW



BOTTOM BASE VIEW

PLC MODULE SPEC & LIST

NO	ITEMS	DESCRIPTION
①	POWER MODULE	
②	PROCESSOR (CPU) MODULE * 2EA	Please refer to the specification.
③	COMMUNICATION MODULE* 2EA	Please refer to the specification.
④	ANALOG INPUT MODULE* 2EA	Please refer to the specification.
⑤	DIGITAL INPUT MODULE* 2EA	Please refer to the specification.
⑥	DIGITAL OUTPUT MODULE* 2EA	Please refer to the specification.
⑦	DUMMY MODULE* 2EA	Please refer to the specification.

Device List

NO	DESCRIPTION	NAME	Q'TY	REMARKS
1	MAIN PROCESS UNIT	MODULE(CPU×2, DI×2, DO×2, AI×2, POWER×2)	1EA	
2	SERIAL MODEM	WATER LEVEL, FLOW METER, VALVE	1EA	
3	MCCB	4P 50AF	1EA	AC220V
4	ELCB	3P 30AF	1EA	VALVE POWER
5	MCCB	2P 30AF	2EA	
6	ELCB	2P 30AF	5EA	FLOW, ETC
7	MC	3P 1.4KW-5.5KW	2EA	VALVE
8	EOCR		1EA	
9	TD	CT, VT	2EA	
10	CT		3EA	
11	NOISE FILTER	10A	1EA	
12	ARRESTER	POWER	1EA	
13	ARRESRER	SIGNAL	3EA	
14	MODEM UNIT		2EA	
15	FLOW METER UNIT(ULTRA)		1LOT	
16				
17	RELAY	DC24V / 2a2b	10EA	
18	DC POWER SUPPLY	DC 24V 10A	1EA	
19	CONSENT	AC200V 2P	3EA	
A	VM, AM		2EA	
B	SELECT S/W		2EA	
C	DIGITAL INDICATOR	AC220V , 4DIGIT	2EA	
D	A square sign	AC220V , LED , 4P	14EA	
	PUSH BUTTON LAMP	OPEN/ON , LED , RED	3EA	
E	PUSH BUTTON LAMP	STOP/OFF , LED , GREEN	3EA	
	PUSH BUTTON LAMP	CLOSE/OFF , LED , RED	3EA	
F	PUSH BUTTON SWITCH	RESET , LAMP TEST	2EA	
G	A square sign	AC220V , LED , 2P	2EA	
H	SELECTOR SWITCH	Double-stage return type. On-site, Remote.	1EA	

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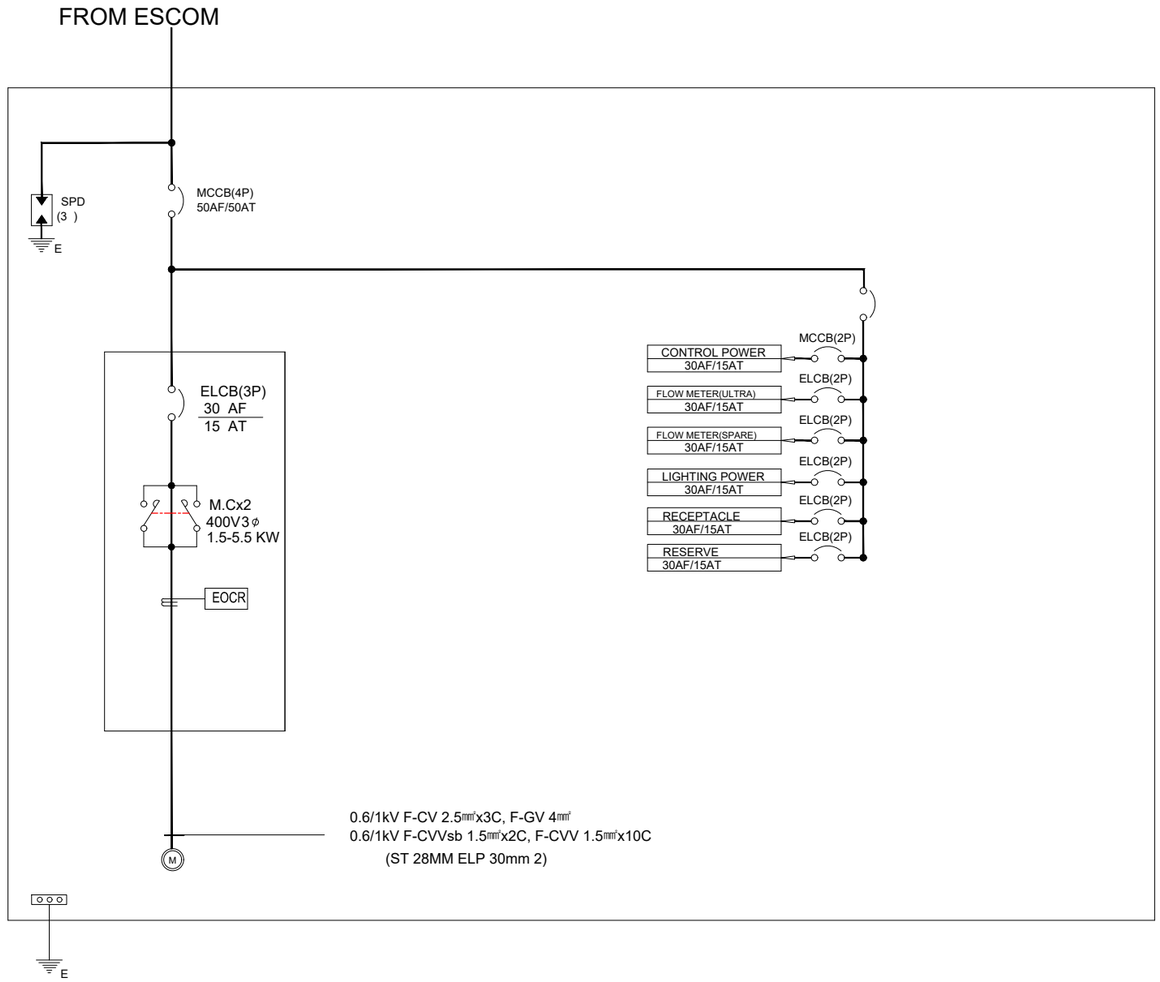
		TITLE	DATE		DRAWING No
		RTU PANEL LAYOUT (RTU "B"TYPE)	JUNE, 2022		F-12-02

ELECTRIC POWER SINGLE DIAGRAM (RTU "G"TYPE)

(Scale = None)



ITEMS	NAME	RTU		
		DI	DO	AI
RTU	VOLTAGE			1
	CURRENT			1
	DISPLAY LAMP		10	
	FLOW METER			1
	LOCAL/REMOTE	1		
	ALL RESET	1		
	LAMP TEST	1	1	
VALVE	OPEN/STOP/CLOSE	1	1	
	FAULT		1	
	LOCAL/REMOTE	1		2
TOTAL		5	13	5

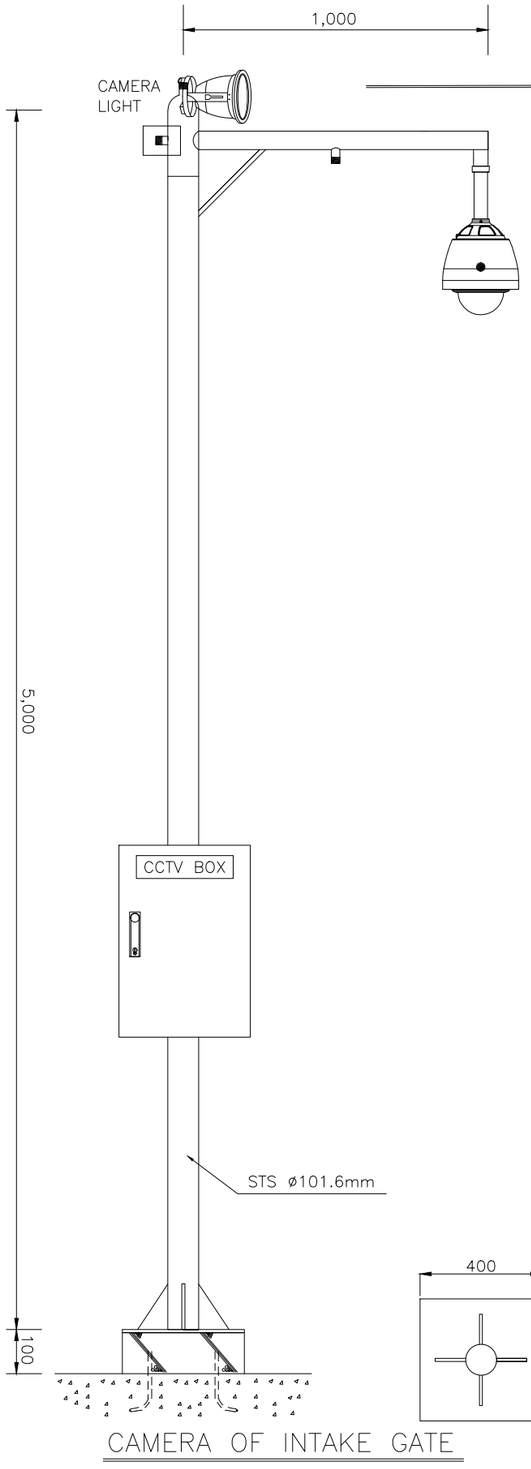
* NOTE

1. The SPD ground and the R.T.U. enclosure ground are connected to the power class through through a common ground and are connected to the ground through a ground rod.

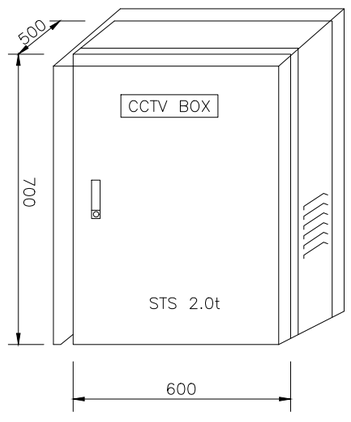
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
				DRAWING BY: An, Seong Il	
		TITLE	DATE	CHECKED BY: Jo, Jin Hoon	DRAWING No
		RTU PANEL SINGLE DIAGRAM (RTU "B"TYPE)	JUNE, 2022		F-12-03

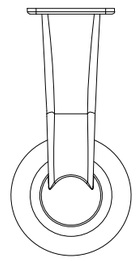
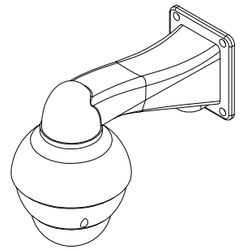
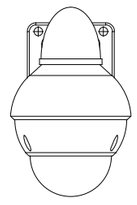
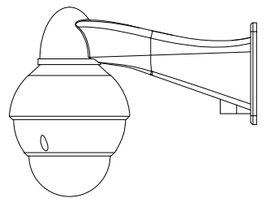
COMMUNICATION DETAILS (CCTV)

(Scale = None)



CAMERA OF INTAKE GATE



CAMERA FOR PS1,PS2,M3,4	
	
TOP VIEW	TOP VIEW
	
FRONT VIEW	SIDE VIEW

NOTICES

1. THE LIGHTING FOR PTZ MONITORING CAMERAS SHALL BE CONTROLLED BY AUXILIARY CONTACTS AT REMOTE SITES.
2. THE WATERPROOF ENCLOSURE FOR CONNECTION WITH MONITORING CAMERA AND LIGHTINGS SHALL BE INSTALLED ON THE STAINLESS STEEL POLE, AND MANUFACTURED AFTER APPROVAL OF THE ENGINEER.
3. CAMERA POLE AND ENCLOUSURE SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH REQUIREMENTS OF THE MALAWI ELECTRICAL CODE AND ELECTRIC UTILITY COMPANY.

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
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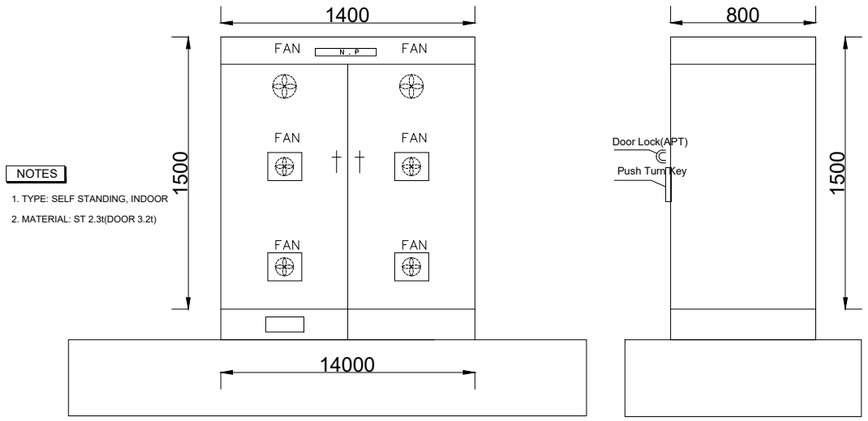
		TITLE	DATE		DRAWING No
		COMMUNICATION DETAILS(CCTV)	JUNE, 2022		F-13-01

COMMUNICATION DETAILS (SOLAR POWER)

(Scale = None)

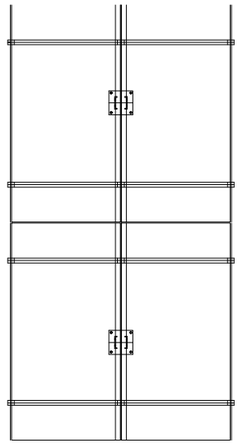


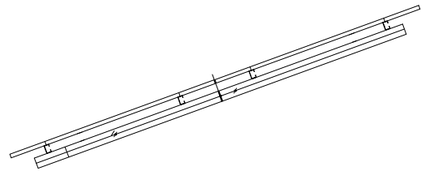
NOTES

1. TYPE: SELF STANDING, INDOOR
2. MATERIAL: ST 2.3t(DOOR 3.2t)

ESS(INVERTER, BATTERY) ENCLOUR

SCALE : 1 / NONE

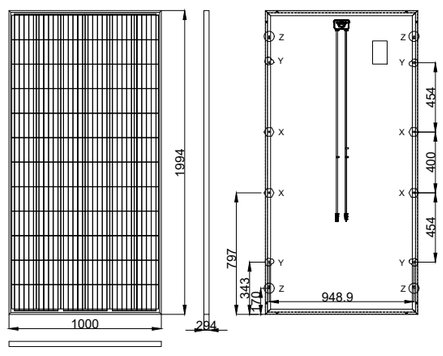




Fix the solar panel to the roof.

Photovoltaic power generation structure drawing.

SCALE : 1 / NONE



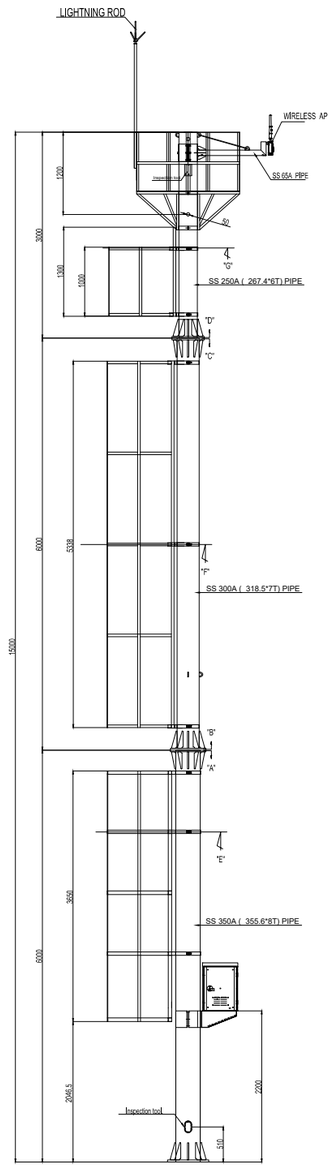
Details of solar modules

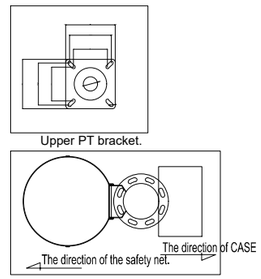
SCALE : 1 / NONE

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		COMMUNICATION DETAILS(SOLAR POWER)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-13-02

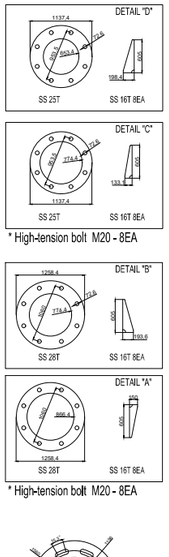
COMMUNICATION DETAILS (POLE)

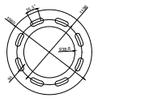
(Scale = None)



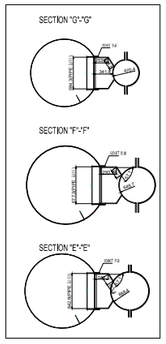


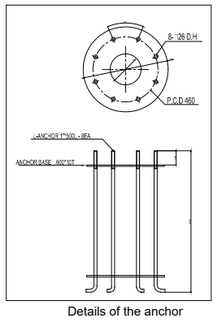
-NOTE-
1.MATERRIAL : SS 400
2.QUANTITY : EA
3. MELTING GALVANIZED



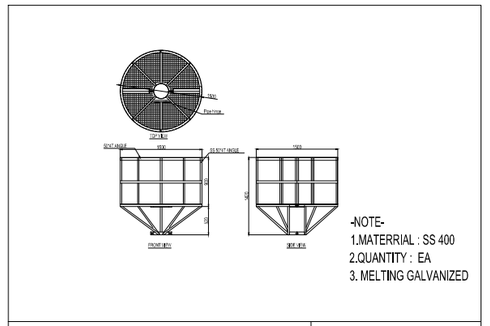


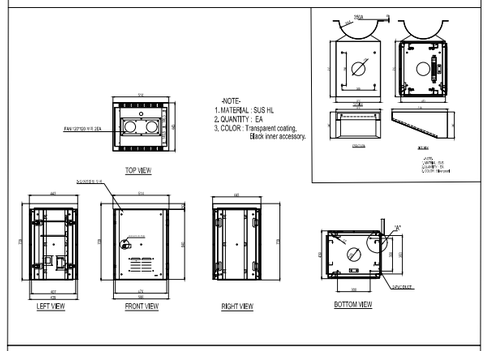
POLE BASE SS 25T
OD600-PCD460 8구

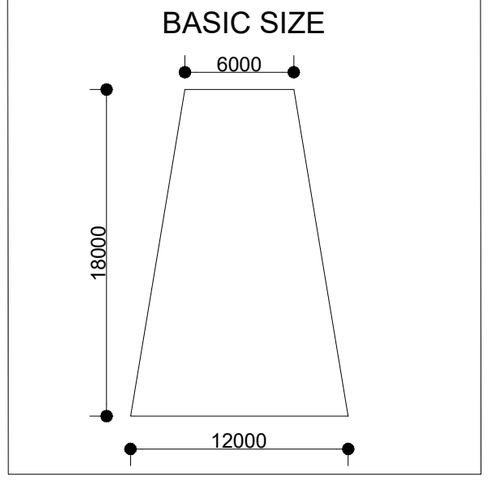




Details of the anchor





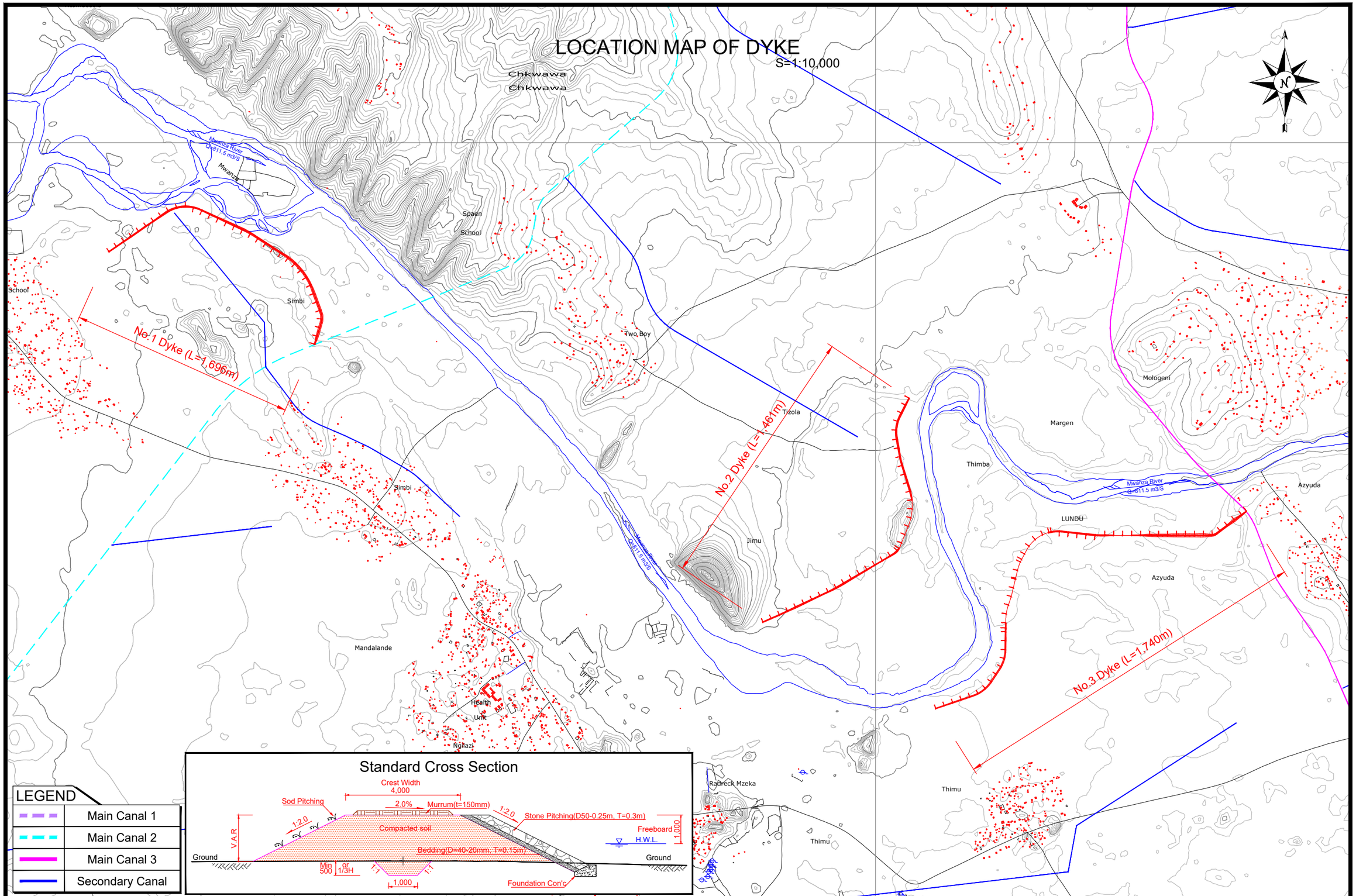


CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: An, Seong Il	NONE SCALE
		TITLE	DATE	DRAWING BY: An, Seong Il	DRAWING No
		COMMUNICATION DETAILS (POLE)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	F-13-03

G. Flood Protection Dyke

LOCATION MAP OF DYKE

S=1:10,000



LEGEND

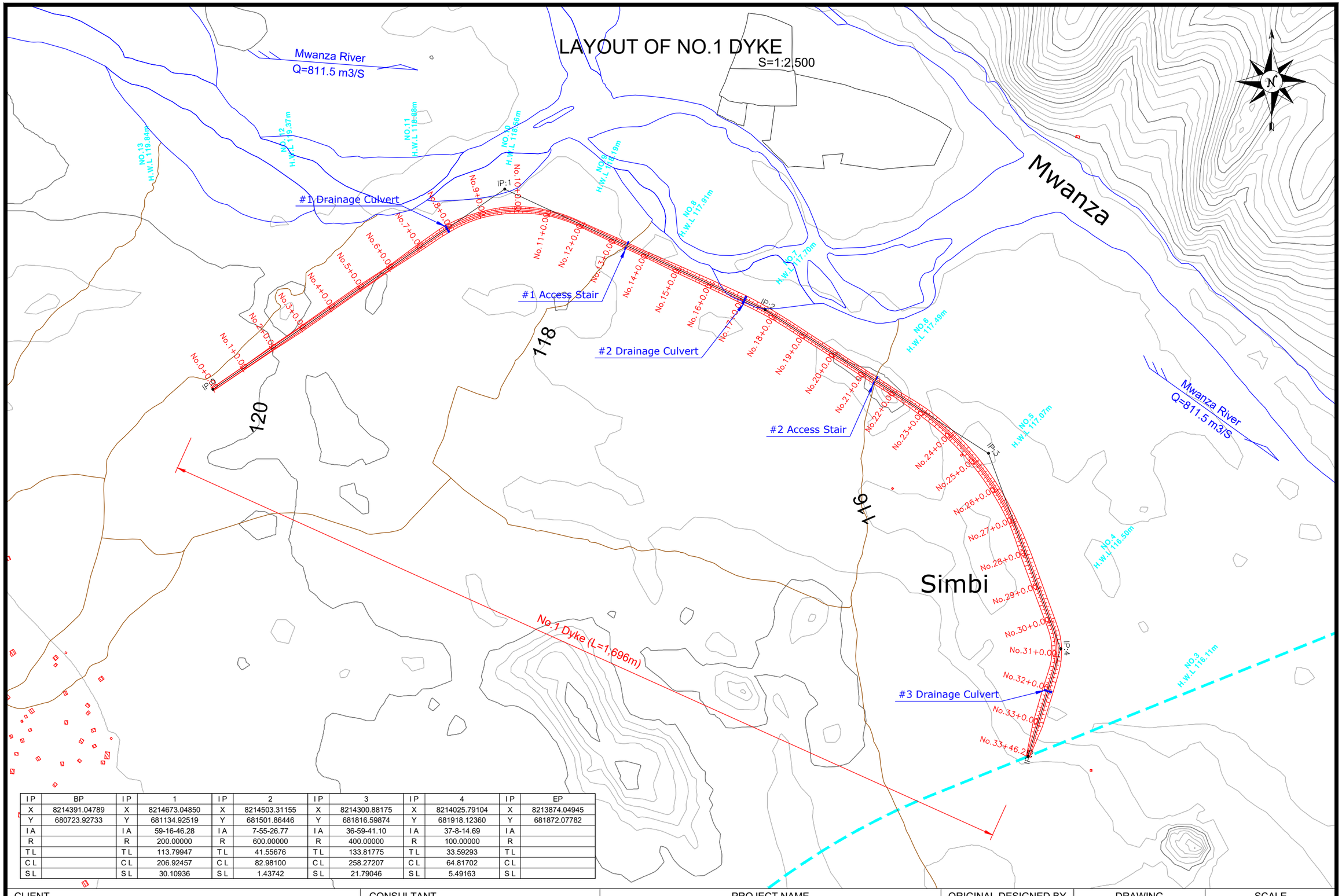
Main Canal 1	
Main Canal 2	
Main Canal 3	
Secondary Canal	

Standard Cross Section

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1:10,000
		TITLE	DATE		DRAWING No
		LOCATION MAP OF DYKE	JUNE, 2022		G-01-01

LAYOUT OF NO.1 DYKE

S=1:2,500



IP	BP	IP	1	IP	2	IP	3	IP	4	IP	EP
X	8214391.04789	X	8214673.04850	X	8214503.31155	X	8214300.88175	X	8214025.79104	X	8213874.04945
Y	680723.92733	Y	681134.92519	Y	681501.86446	Y	681816.59874	Y	681918.12360	Y	681872.07782
IA		IA	59-16-46.28	IA	7-55-26.77	IA	36-59-41.10	IA	37-8-14.69	IA	
R		R	200.00000	R	600.00000	R	400.00000	R	100.00000	R	
TL		TL	113.79947	TL	41.55676	TL	133.81775	TL	33.59293	TL	
CL		CL	206.92457	CL	82.98100	CL	258.27207	CL	64.81702	CL	
SL		SL	30.10936	SL	1.43742	SL	21.79046	SL	5.49163	SL	

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	1:2,500
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
LAYOUT OF NO.1 DYKE	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-02-01

LAYOUT OF NO.2 DYKE

S=1:2,500

I P	BP	I P	1	I P	2	I P	3	I P	4	I P	5	I P	6	I P	EP
X	8212326.23826	X	8212370.51793	X	8212514.32480	X	8212721.97537	X	8212961.19196	X	8213229.44574	X	8213417.20924	X	8213573.69482
Y	684369.92034	Y	684471.29161	Y	684775.32544	Y	685126.17325	Y	685221.96199	Y	685139.86206	Y	685106.16733	Y	685186.53201
I A		I A	1-43-4.58	I A	5-18-19.26	I A	37-33-29.47	I A	38-50-21.79	I A	6-50-35.82	I A	37-21-24.55	I A	
R		R	800.00000	R	800.00000	R	100.00000	R	300.00000	R	300.00000	R	200.00000	R	
T L		T L	11.99437	T L	37.06482	T L	34.00206	T L	105.76259	T L	17.93700	T L	67.61228	T L	
C L		C L	23.98693	C L	74.07666	C L	65.55140	C L	203.36255	C L	35.83134	C L	130.39990	C L	
S L		S L	0.08991	S L	0.85817	S L	5.62263	S L	18.09704	S L	0.53575	S L	11.11944	S L	

N

No.2-1 Dyke (L=867m)

No.2-2 Dyke (L=594m)

#1 Drainage Culvert

#2 Drainage Culvert

#3 Drainage Culvert

#1 Access Stair

#2 Access Stair

110

108

106

106

Thimba

Mwanza River
Q=811.5 m3/S

Mwanza River
Q=811.5 m3/S

NO.20
H.W.L 110.22m

NO.19
H.W.L 109.92m

NO.18
H.W.L 109.47m

NO.17
H.W.L 108.61m

NO.16
H.W.L 108.01m

NO.15
H.W.L 107.69m

NO.14
H.W.L 107.37m

NO.13
H.W.L 106.69m

NO.12
H.W.L 105.81m

NO.11
H.W.L 104.59m

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	1:2,500
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LAYOUT OF NO.2 DYKE	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-02-02

LAYOUT OF NO.3 DYKE

S=1:2,500

I P	BP	I P	1	I P	2	I P	3	I P	4
X	8211844.65897	X	8211938.20377	X	8212113.28629	X	8212380.08842	X	8212472.49439
Y	685333.10637	Y	685607.52023	Y	685723.01352	Y	685726.93676	Y	685757.73878
I A		I A	37-45-55.56	I A	32-34-6.27	I A	17-35-33.04	I A	5-11-40.00
R		R	200.00000	R	200.00000	R	200.00000	R	500.00000
T L		T L	68.40791	T L	58.42425	T L	30.94825	T L	22.68058
C L		C L	131.82623	C L	113.68519	C L	61.40945	C L	45.33008
S L		S L	11.37559	S L	8.35881	S L	2.38032	S L	0.51414
I P	5	I P	6	I P	7	I P	8	I P	EP
X	8212647.26215	X	8212846.33481	X	8212810.62398	X	8212810.62398	X	8212944.33872
Y	685798.86061	Y	685906.05358	Y	686239.35459	Y	686888.42319	Y	687066.70951
I A	15-3-36.84	I A	67-48-53.10	I A	6-6-55.82	I A	36-52-11.63	I A	
R	200.00000	R	200.00000	R	200.00000	R	50.00000	R	
T L	26.43746	T L	134.43179	T L	10.68371	T L	16.66667	T L	
C L	52.57014	C L	236.71813	C L	21.34714	C L	32.17506	C L	
S L	1.73978	S L	40.98113	S L	0.28515	S L	2.70463	S L	

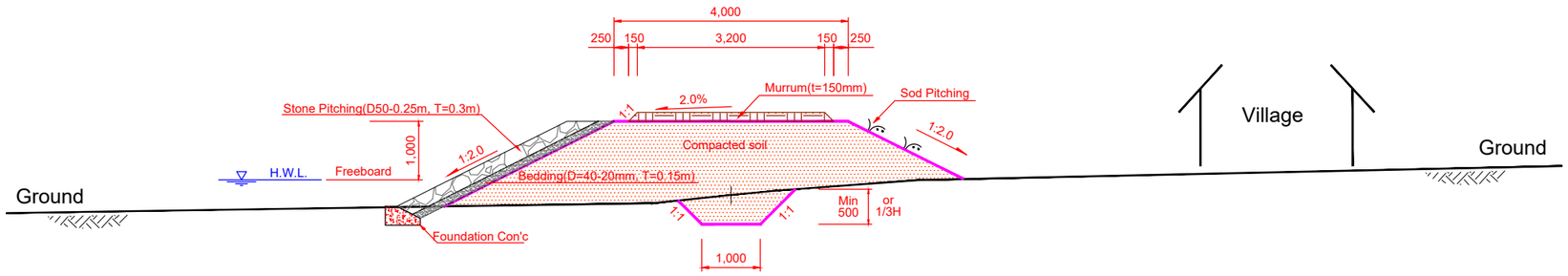
#4 Drainage Culvert
#3 Drainage Culvert
#2 Drainage Culvert
#3 Access Stair
#2 Access Stair
#1 Drainage Culvert
#1 Access Stair
No.3-3 Dyke (L=677m)
No.3-2 Dyke (L=363m)
No.3-1 Dyke (L=700m)
AZYUDA
LUNDU
Mwanza River
Q=811.5 m3/s
102
104
106
108
H.W.L 105.58m NO.6
H.W.L 103.78m NO.5
H.W.L 103.87m NO.7
H.W.L 103.85m NO.8
H.W.L 104.12m NO.9
H.W.L 104.28m NO.10
H.W.L 104.59m NO.11
H.W.L 105.37m NO.12
H.W.L 105.63m NO.13
H.W.L 107.37m NO.14
H.W.L 107.69m NO.15

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	1:2,500
		TITLE	DATE		DRAWING No
		LAYOUT OF NO.3 DYKE	JUNE, 2022		G-02-03

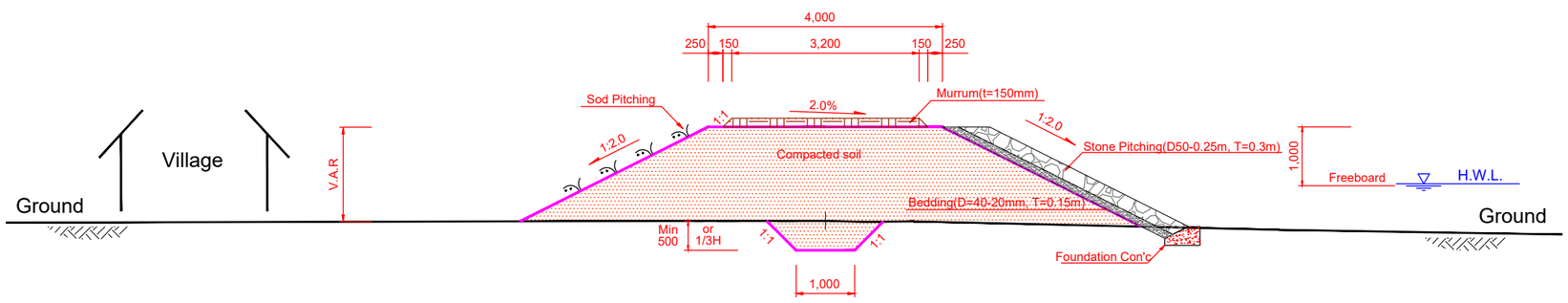
STANDARD CROSS SECTION DYKE

S=1:50

Unit is millimeter(mm) of The International System of Units(SI)



Right Dyke

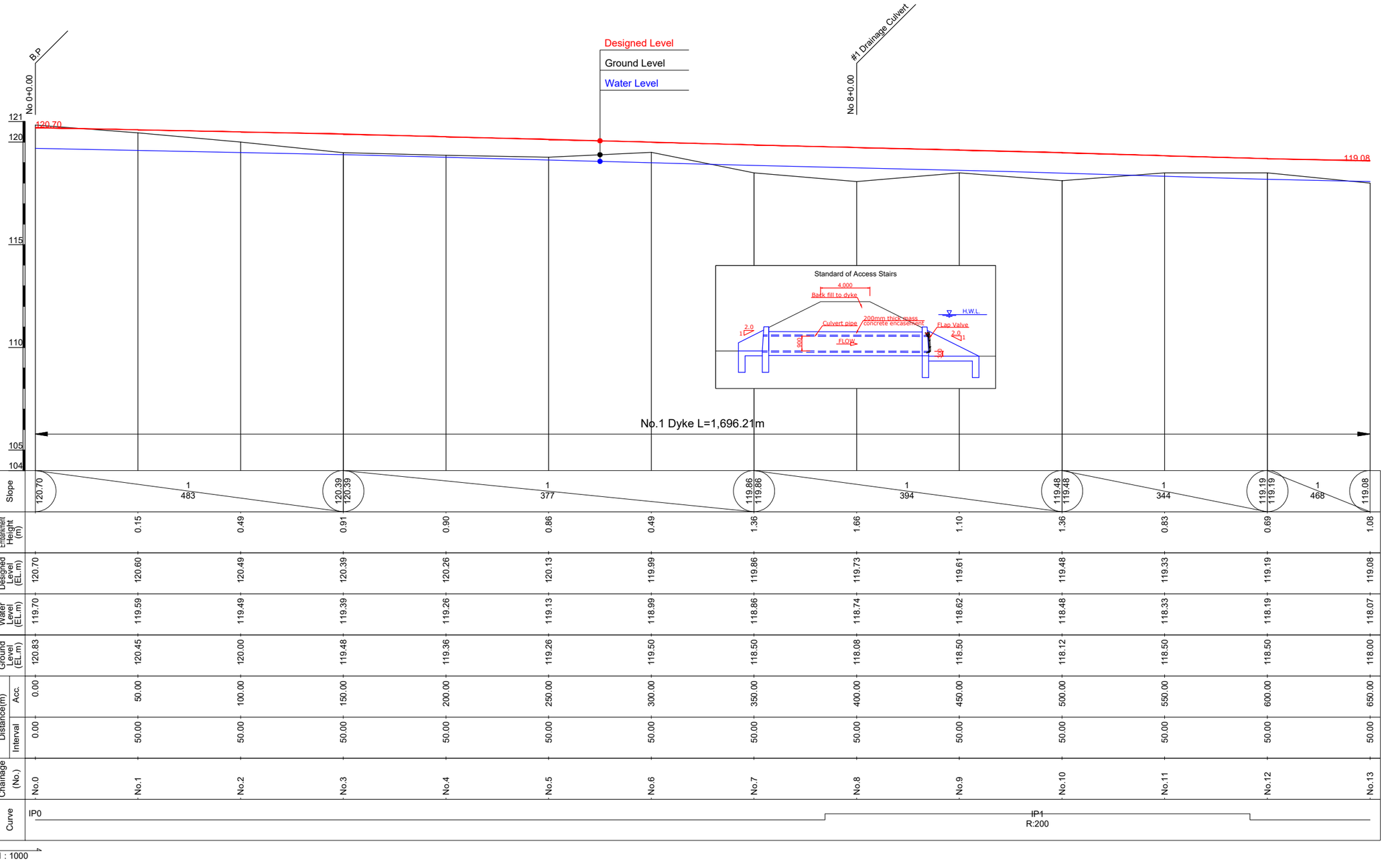


Left Dyke

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	S=1:50
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		STANDARD CROSS SECTION DYKE	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-03-01

LONGITUDINAL PROFILE FOR NO.1 DYKE(1/3)

H=1:1,000, V=1:100



No.1 Dyke(1/3)

1 : 100

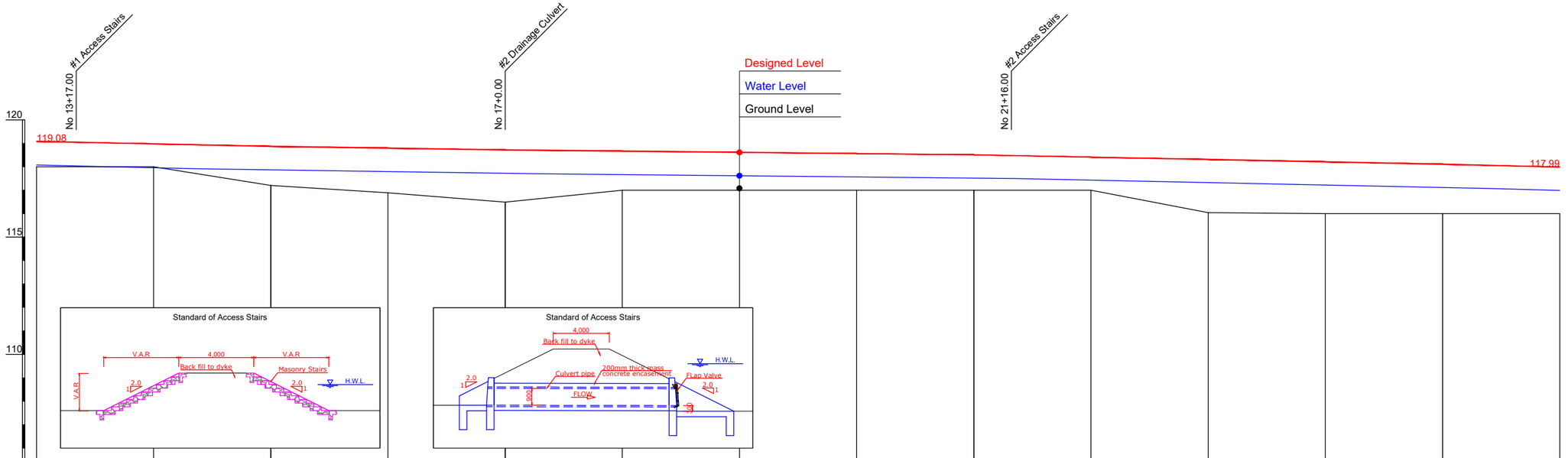
1 : 1000

		No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Slope		120.70	1/483	120.39 / 120.39	1/377	119.86 / 119.86	1/394	119.48 / 119.48	1/344	119.19 / 119.19	1/468	119.08			
Embankment Height (m)			0.15	0.49	0.91	0.90	0.86	0.49	1.36	1.66	1.10	1.36	0.83	0.69	1.08
Designed Level (EL.m)		120.70	120.60	120.49	120.39	120.26	120.13	119.99	119.86	119.73	119.61	119.48	119.33	119.19	119.08
Water Level (EL.m)		119.70	119.59	119.49	119.39	119.26	119.13	118.99	118.86	118.74	118.62	118.48	118.33	118.19	118.07
Ground Level (EL.m)		120.83	120.45	120.00	119.48	119.36	119.26	119.50	118.50	118.08	118.50	118.12	118.50	118.50	118.00
Distance(m)	Acc.	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00
	Interval	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Chainage (No.)		No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Curve		IP0							IP1 R:200						

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LONGITUDINAL PROFILE FOR NO.1 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-04-01

LONGITUDINAL PROFILE FOR NO.1 DYKE(2/3)

H=1:1,000, V=1:100



		No.13	No.14	No.15	No.16	No.17	No.18	No.19	No.20	No.21	No.22	No.23	No.24	No.25	No.26
Chainage (No.)															
Distance(m)	Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	Acc.	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00	1050.00	1100.00	1150.00	1200.00	1250.00	1300.00
Ground Level (EL.m)		118.00	118.00	117.21	116.89	116.49	117.00	117.00	117.00	117.00	117.00	116.05	116.00	116.00	116.00
Water Level (EL.m)		118.07	117.96	117.87	117.80	117.72	117.67	117.62	117.56	117.51	117.43	117.32	117.22	117.11	116.99
Designed Level (EL.m)		119.08	118.98	118.87	118.80	118.72	118.67	118.61	118.56	118.51	118.41	118.31	118.21	118.11	117.99
Embankment Height (m)		1.08	0.97	1.66	1.90	2.23	1.67	1.61	1.56	1.51	1.41	2.26	2.21	2.11	1.98
Slope		119.08	1/468	118.87 118.87	1/666	118.72 118.72	1/952			118.51 118.51	1/499			118.11 118.11	1/403 117.99
Curve		IP2 R:600												IP3 R:400	

No.1 Dyke(2/3)

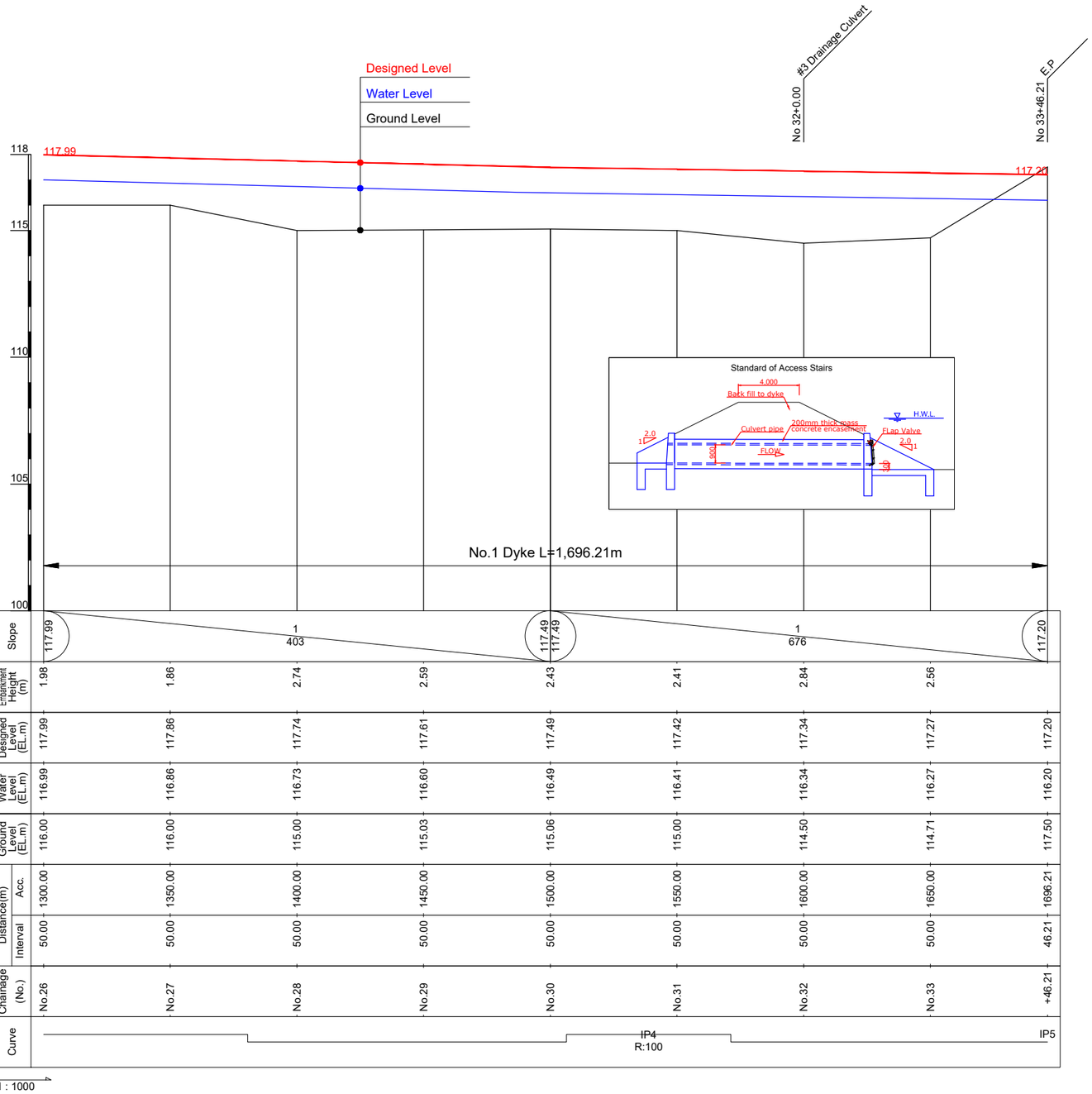
1 : 100

1 : 1000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LONGITUDINAL PROFILE FOR NO.1 DYKE(2/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-04-02

LONGITUDINAL PROFILE FOR NO.1 DYKE(3/3)

H=1:1,000, V=1:100



No.1 Dyke(3/3)

Slope	117.99	1/403			117.49 / 117.49	1/676			117.20
Embankment Height (m)	1.98	1.86	2.74	2.59	2.43	2.41	2.84	2.56	
Designed Level (EL.m)	117.99	117.86	117.74	117.61	117.49	117.42	117.34	117.27	117.20
Water Level (EL.m)	116.99	116.86	116.73	116.60	116.49	116.41	116.34	116.27	116.20
Ground Level (EL.m)	116.00	116.00	115.00	115.03	115.06	115.00	114.50	114.71	117.50
Distance(m) Acc.	1300.00	1350.00	1400.00	1450.00	1500.00	1550.00	1600.00	1650.00	1696.21
Distance(m) Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	46.21
Chainage (No.)	No.26	No.27	No.28	No.29	No.30	No.31	No.32	No.33	+46.21
Curve				IP4 R:100				IP5	

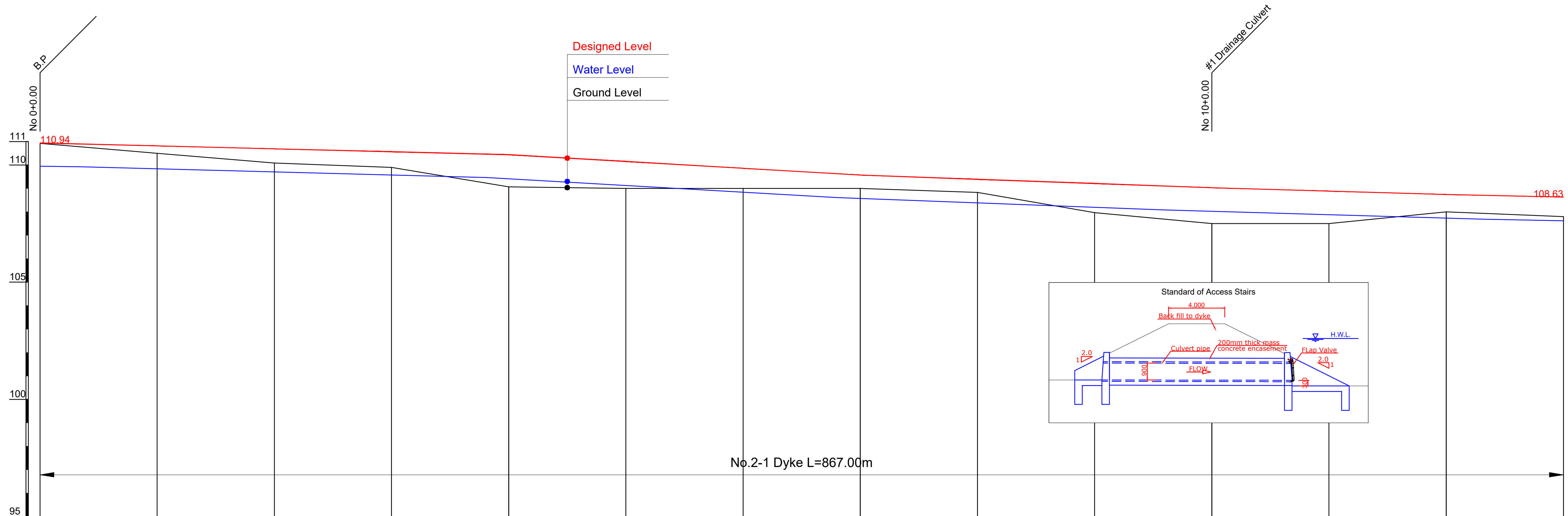
1 : 100

1 : 1000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:1,000, V=1:100
		TITLE	DATE		DRAWING No
		LONGITUDINAL PROFILE FOR NO.1 DYKE(3/3)	JUNE, 2022		G-04-03

LONGITUDINAL PROFILE FOR NO.2 DYKE(1/3)

H=1:1,000, V=1:100



No.2 Dyke(1/3)

1 : 100

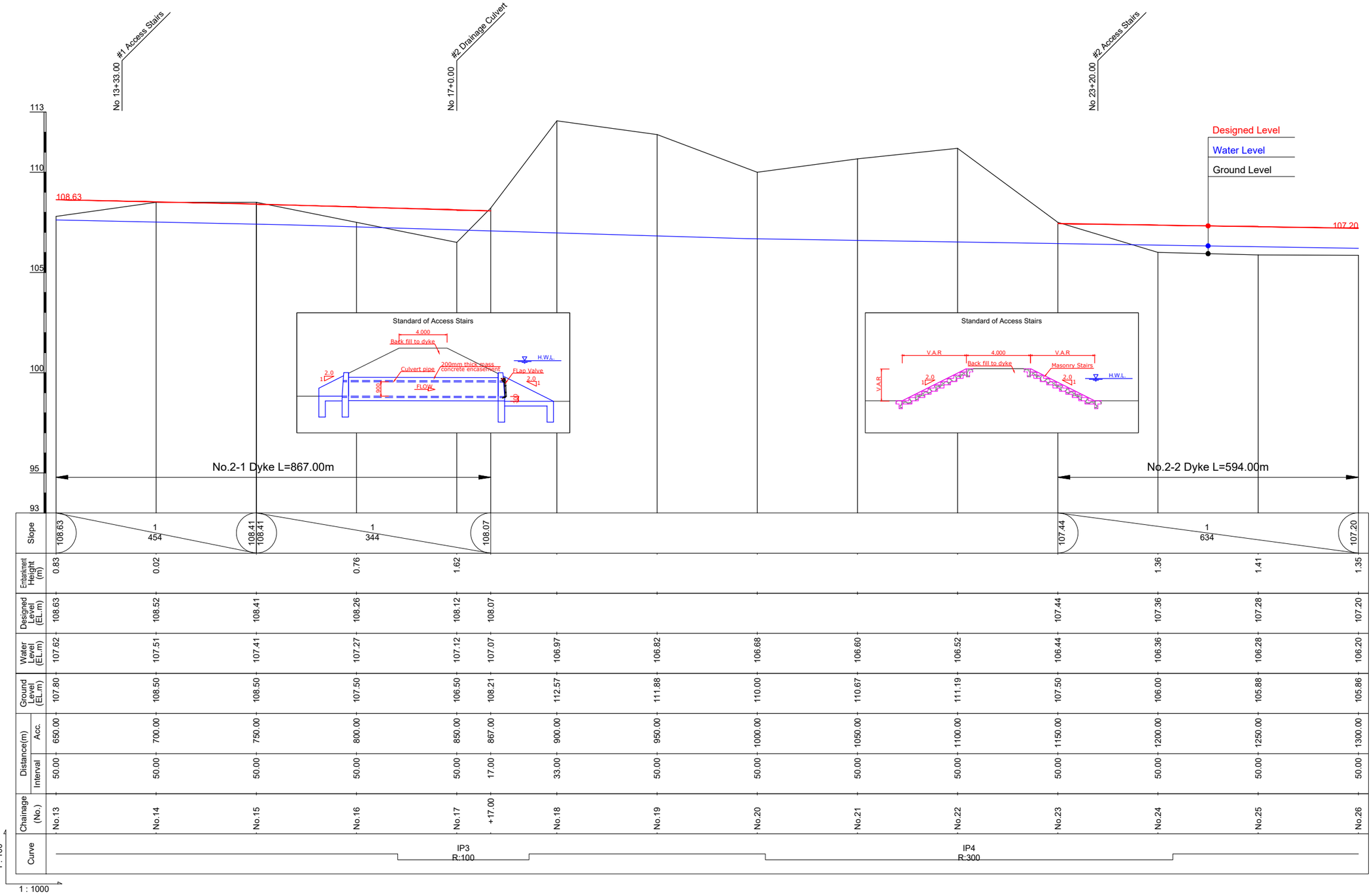
	No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Slope	110.94		1/400		110.44 110.44		1/172	109.57 109.57		1/277	109.03 109.03	1/344	108.74 108.74	1/454 108.63
Embankment Height (m)	0.02	0.31	0.60	0.67	1.37	1.15	0.86	0.57	0.56	1.24	1.53	1.38	0.74	0.83
Designed Level (EL.m)	110.94	110.82	110.69	110.57	110.44	110.15	109.86	109.57	109.39	109.21	109.03	108.89	108.74	108.63
Water Level (EL.m)	109.94	109.84	109.71	109.57	109.41	109.13	108.84	108.57	108.39	108.20	108.03	107.88	107.74	107.62
Ground Level (EL.m)	110.92	110.50	110.08	109.90	109.07	109.00	109.00	109.00	108.83	107.97	107.50	107.50	108.00	107.80
Distance(m) Acc.	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00
Distance(m) Interval	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Chainage (No.)	No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Curve	IP0		IP1 R:800							IP2 R:800				

1 : 1000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LONGITUDINAL PROFILE FOR NO.2 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-05-01

LONGITUDINAL PROFILE FOR NO.2 DYKE(2/3)

H=1:1,000, V=1:100



No.2 Dyke(2/3)

1 : 100

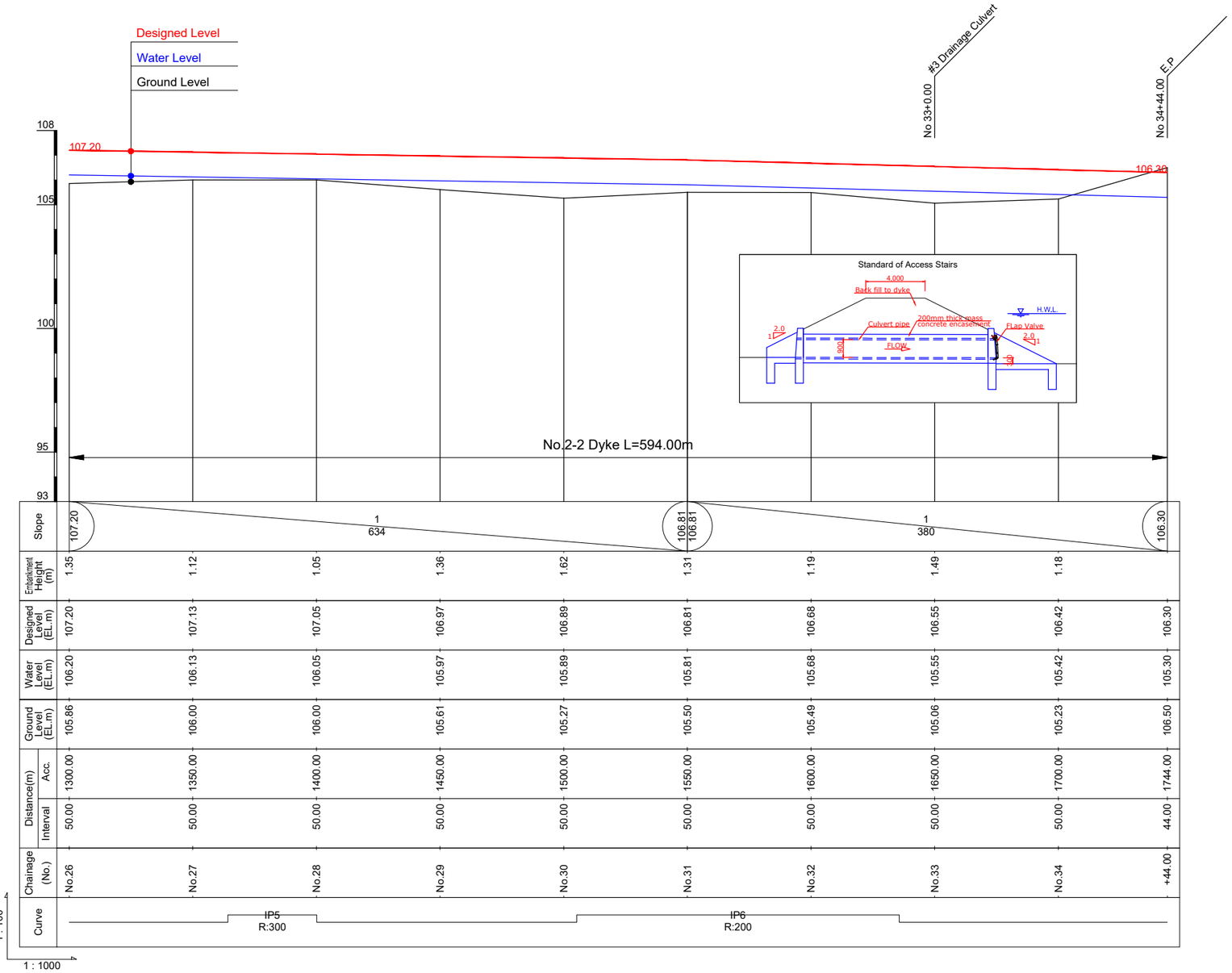
1 : 1000

Slope	108.63		1/454	108.41	108.41		1/344	108.07										107.44		1/634	107.20				
Embankment Height (m)	0.83		0.02				0.76	1.62										1.36		1.41	1.35				
Designed Level (EL.m)	108.63		108.52		108.41		108.26	108.12	108.07									107.44		107.36	107.28		107.20		
Water Level (EL.m)	107.62		107.51		107.41		107.27	107.12	107.07	106.97	106.82	106.68	106.60	106.52	106.44		106.36	106.28		106.20					
Ground Level (EL.m)	107.80		108.50		108.50		107.50	106.50	108.21	112.57	111.88	110.00	110.67	111.19	107.50		106.00	105.88		105.86					
Distance(m) Acc.	650.00		700.00		750.00		800.00	850.00	867.00	900.00	950.00	1000.00	1050.00	1100.00	1150.00		1200.00	1250.00		1300.00					
Distance(m) Interval	50.00		50.00		50.00		50.00	50.00	17.00	33.00	50.00	50.00	50.00	50.00	50.00		50.00	50.00		50.00					
Chainage (No.)	No.13		No.14		No.15		No.16	No.17	+17.00	No.18	No.19	No.20	No.21	No.22	No.23		No.24	No.25		No.26					
Curve							IP3 R:100										IP4 R:300								

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LONGITUDINAL PROFILE FOR NO.2 DYKE(2/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-05-02

LONGITUDINAL PROFILE FOR NO.2 DYKE(3/3)

H=1:1,000, V=1:100



Embankment Height (m)	Designed Level (EL.m)	Water Level (EL.m)	Ground Level (EL.m)	Distance(m) Acc.	Distance(m) Interval	Chainage (No.)
1.35	107.20	106.20	105.86	1300.00	50.00	No.26
1.12	107.13	106.13	106.00	1350.00	50.00	No.27
1.05	107.05	106.05	106.00	1400.00	50.00	No.28
1.36	106.97	105.97	105.61	1450.00	50.00	No.29
1.62	106.89	105.89	105.27	1500.00	50.00	No.30
1.31	106.81	105.81	105.50	1550.00	50.00	No.31
1.19	106.68	105.68	105.49	1600.00	50.00	No.32
1.49	106.55	105.55	105.06	1650.00	50.00	No.33
1.18	106.42	105.42	105.23	1700.00	50.00	No.34
	106.30	105.30	106.50	1744.00	44.00	+44.00

No.2 Dyke(3/3)

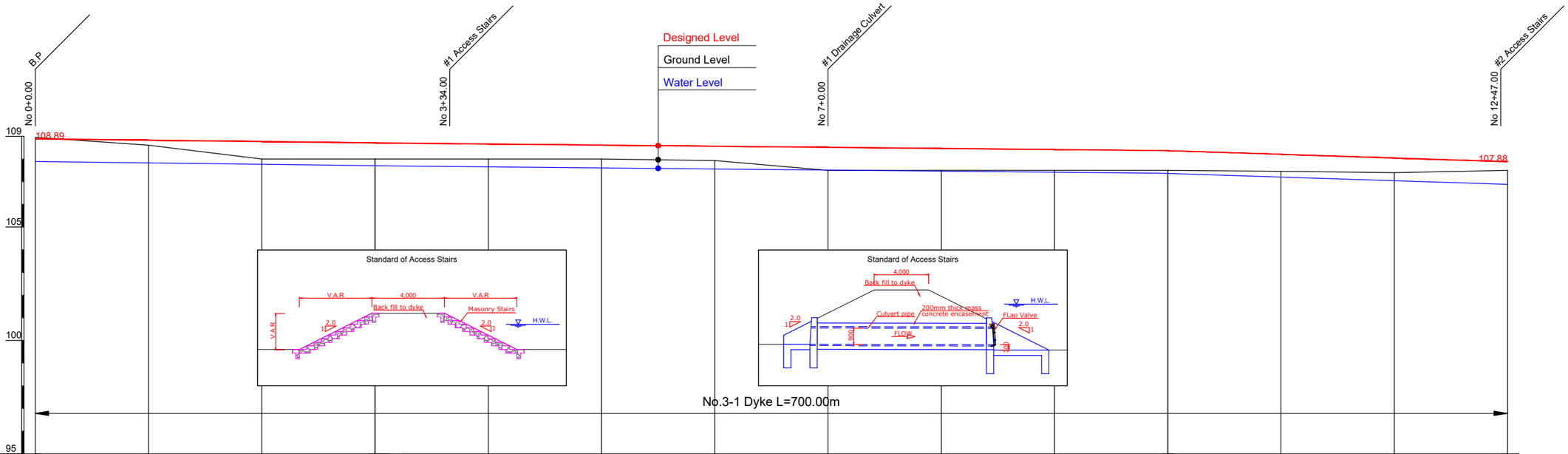
1 : 100

1 : 1000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:1,000, V=1:100
		TITLE	DATE		DRAWING No
		LONGITUDINAL PROFILE FOR NO.2 DYKE(3/3)	JUNE, 2022		G-05-03

LONGITUDINAL PROFILE FOR NO.3 DYKE(1/4)

H=1:1,000, V=1:100



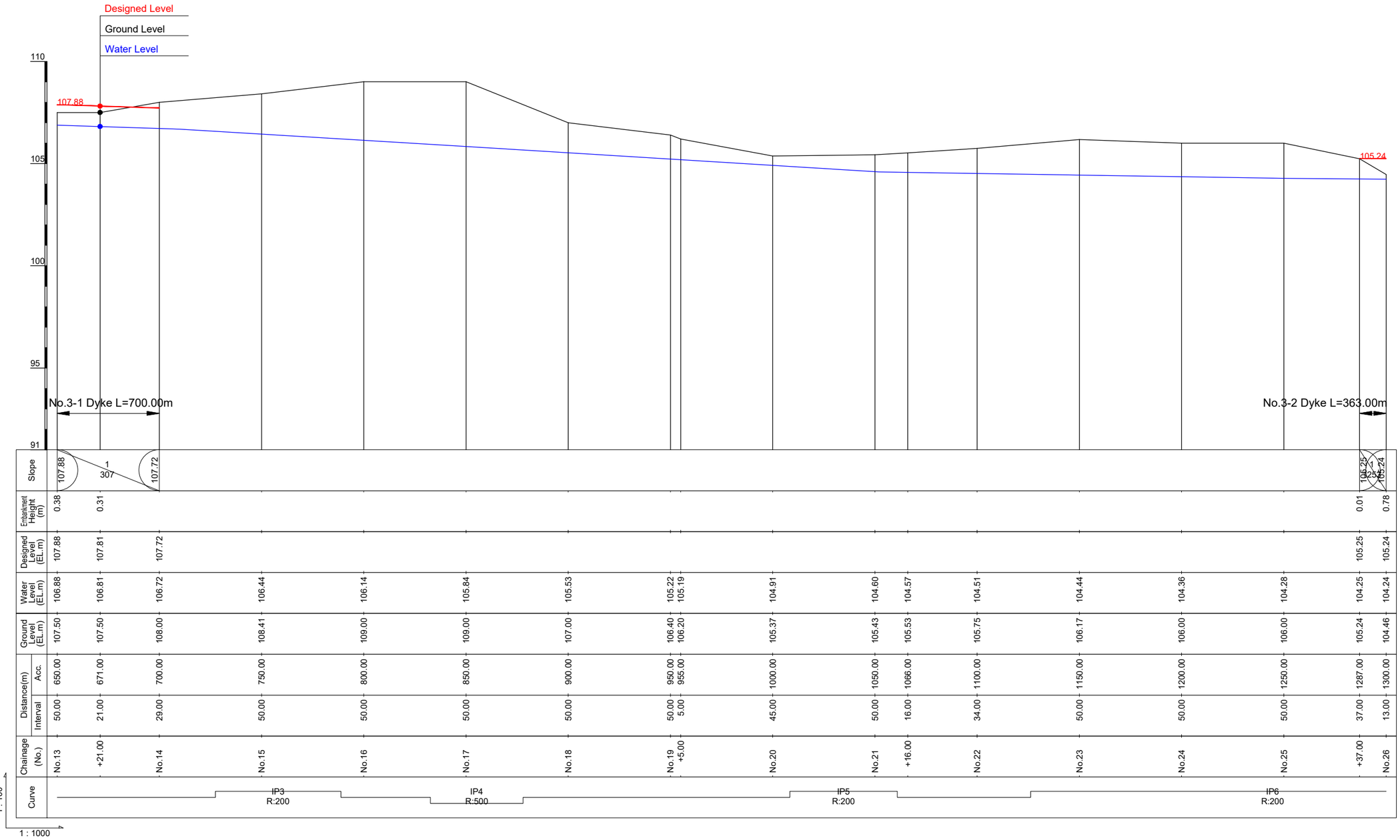
No.3 Dyke(1/4)

1 : 100

1 : 1000

		No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Chainage (No.)		No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13
Distance(m)	Interval	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	Acc.	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00
Ground Level (EL.m)		108.96	108.61	108.00	108.00	108.00	108.00	107.94	107.50	107.50	107.50	107.50	107.46	107.40	107.50
Water Level (EL.m)		107.89	107.83	107.77	107.71	107.66	107.61	107.56	107.51	107.46	107.42	107.36	107.20	107.04	106.88
Designed Level (EL.m)		108.89	108.83	108.77	108.71	108.66	108.61	108.56	108.52	108.47	108.42	108.37	108.21	108.05	107.88
Embankment Height (m)			0.22	0.77	0.71	0.66	0.61	0.63	1.01	0.97	0.92	0.87	0.75	0.64	0.38
Slope		108.89	1/833		108.71 / 108.71				1/1029			108.37 / 108.37	1/307		107.88
Curve		IP0					IP1 R:200					IP2 R:200			

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LONGITUDINAL PROFILE FOR NO.3 DYKE(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-06-01



LONGITUDINAL PROFILE FOR NO.3 DYKE(2/4)

H=1:1,000, V=1:100

No.3 Dyke(2/4)

1 : 100

Slope	107.88	1 307	107.72													105.25 1 3253	105.24
Embankment Height (m)	0.38	0.31														0.01	0.78
Designed Level (EL.m)	107.88	107.81	107.72													105.25	105.24
Water Level (EL.m)	106.88	106.81	106.72	106.44	106.14	105.84	105.53	105.22	105.19	104.91	104.60	104.57	104.51	104.44	104.36	104.28	104.25	104.24
Ground Level (EL.m)	107.50	107.50	108.00	108.41	109.00	109.00	107.00	106.40	106.20	105.37	105.43	105.53	105.75	106.17	106.00	106.00	105.24	104.46
Distance(m) Acc.	650.00	671.00	700.00	750.00	800.00	850.00	900.00	950.00	955.00	1000.00	1050.00	1066.00	1100.00	1150.00	1200.00	1250.00	1287.00	1300.00
Distance(m) Interval	50.00	21.00	29.00	50.00	50.00	50.00	50.00	50.00	5.00	45.00	50.00	16.00	34.00	50.00	50.00	50.00	37.00	13.00
Chainage (No.)	No.13	+21.00	No.14	No.15	No.16	No.17	No.18	No.19	+5.00	No.20	No.21	+16.00	No.22	No.23	No.24	No.25	+37.00	No.26
Curve				IP3 R:200		IP4 R:500					IP5 R:200					IP6 R:200		

1 : 1000

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

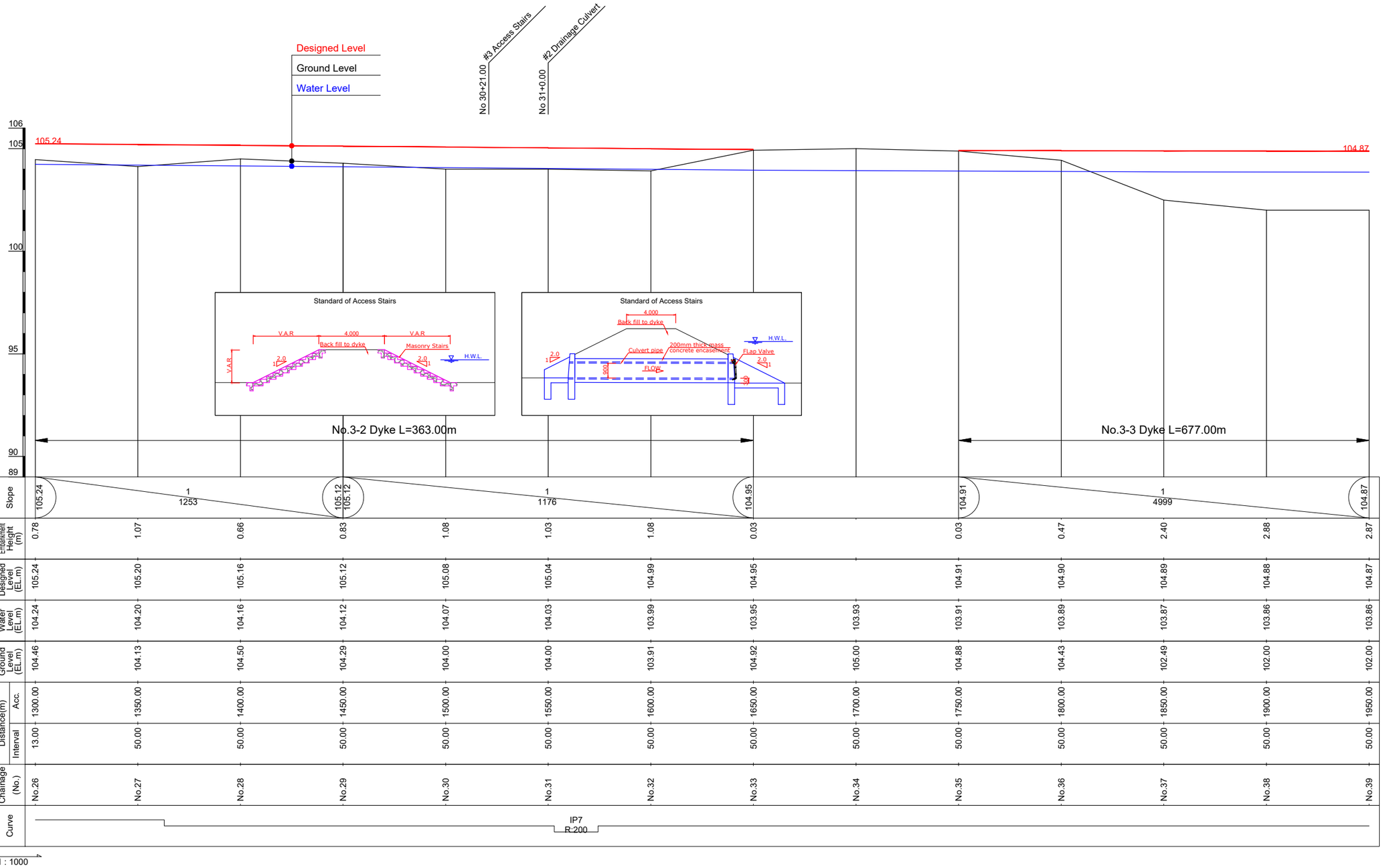
CONSULTANT

Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
LONGITUDINAL PROFILE FOR NO.3 DYKE(2/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-06-02

LONGITUDINAL PROFILE FOR NO.3 DYKE(3/4)

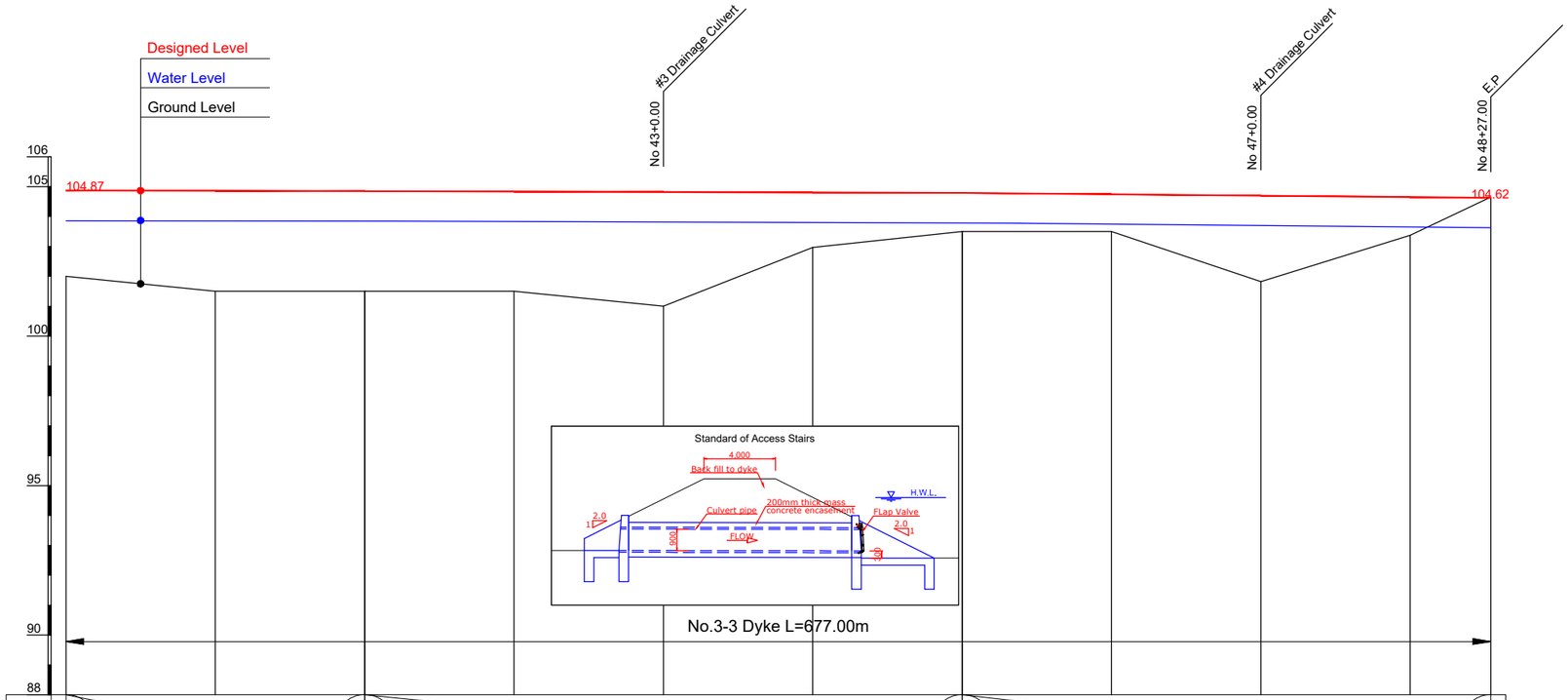
H=1:1,000, V=1:100



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	H=1:1,000, V=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		LONGITUDINAL PROFILE FOR NO.3 DYKE(3/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-06-03

LONGITUDINAL PROFILE FOR NO.3 DYKE(4/4)

H=1:1,000, V=1:100



No.3 Dyke(4/4)

Slope	104.87	1/4999	104.85 104.85	1/3333	104.79 104.79	1/1084	104.63				
Entainment Height (m)	2.87	3.36	3.35	3.33	3.82	1.84	1.29	1.24	2.87	1.28	
Designed Level (EL.m)	104.87	104.86	104.85	104.83	104.82	104.81	104.79	104.74	104.70	104.65	104.63
Water Level (EL.m)	103.86	103.85	103.85	103.84	103.82	103.80	103.79	103.75	103.70	103.65	103.62
Ground Level (EL.m)	102.00	101.50	101.50	101.50	101.00	102.96	103.50	103.50	101.82	103.38	104.65
Distance(m) Acc.	1950.00	2000.00	2050.00	2100.00	2150.00	2200.00	2250.00	2300.00	2350.00	2400.00	2427.00
Distance(m) Interval	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	27.00
Chainage (No.)	No.39	No.40	No.41	No.42	No.43	No.44	No.45	No.46	No.47	No.48	+27.00
Curve						IP8 R:50					IP9

1 : 100

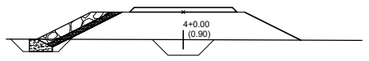
1 : 1000

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	H=1:1,000, V=1:100
		TITLE	DATE		DRAWING No
		LONGITUDINAL PROFILE FOR NO.3 DYKE(4/4)	JUNE, 2022		G-06-04

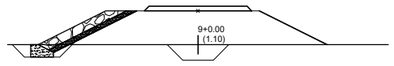
Cross Section of NO.1 DYKE(1/3)

S=1:100

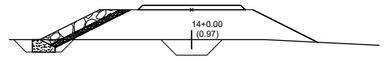
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



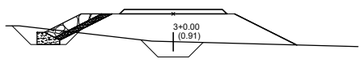
NO.		4+0.00
Design Level(El.m)		120.26
Original Ground Level(El.m)		119.36
Site Clearing(m)		9.46
Cutting(m2)		0.75
Embankment(m2)		5.98
Excavation(m2)		0.64
Backfill(m2)		0.28
Slope Protection	Stonework(m)	2.54
	Seeding(m)	2.05



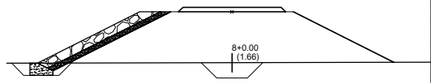
NO.		9+0.00
Design Level(El.m)		119.61
Original Ground Level(El.m)		118.50
Site Clearing(m)		10.27
Cutting(m2)		6.86
Embankment(m2)		7.61
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.03
	Seeding(m)	2.47



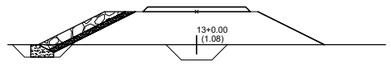
NO.		14+0.00
Design Level(El.m)		118.98
Original Ground Level(El.m)		118.00
Site Clearing(m)		9.92
Cutting(m2)		0.75
Embankment(m2)		6.61
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.74
	Seeding(m)	2.37



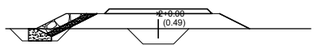
NO.		3+0.00
Design Level(El.m)		120.39
Original Ground Level(El.m)		119.48
Site Clearing(m)		9.28
Cutting(m2)		0.76
Embankment(m2)		5.72
Excavation(m2)		0.85
Backfill(m2)		0.44
Slope Protection	Stonework(m)	1.90
	Seeding(m)	2.27



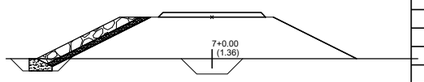
NO.		8+0.00
Design Level(El.m)		119.73
Original Ground Level(El.m)		118.08
Site Clearing(m)		12.48
Cutting(m2)		0.75
Embankment(m2)		12.88
Excavation(m2)		0.62
Backfill(m2)		0.26
Slope Protection	Stonework(m)	4.30
	Seeding(m)	3.68



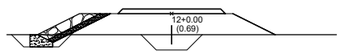
NO.		13+0.00
Design Level(El.m)		119.08
Original Ground Level(El.m)		118.00
Site Clearing(m)		10.18
Cutting(m2)		0.75
Embankment(m2)		7.41
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.98
	Seeding(m)	2.42



NO.		2+0.00
Design Level(El.m)		120.49
Original Ground Level(El.m)		120.00
Site Clearing(m)		7.82
Cutting(m2)		0.75
Embankment(m2)		3.20
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.66
	Seeding(m)	1.10

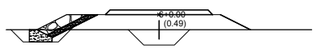


NO.		7+0.00
Design Level(El.m)		119.86
Original Ground Level(El.m)		118.50
Site Clearing(m)		11.28
Cutting(m2)		0.75
Embankment(m2)		9.87
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.60
	Seeding(m)	3.04

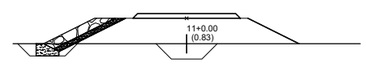


NO.		12+0.00
Design Level(El.m)		119.19
Original Ground Level(El.m)		118.50
Site Clearing(m)		8.60
Cutting(m2)		0.75
Embankment(m2)		4.45
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.10
	Seeding(m)	1.54

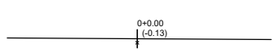
NO.		1+0.00
Design Level(El.m)		120.60
Original Ground Level(El.m)		120.45
Site Clearing(m)		6.48
Cutting(m2)		0.75
Embankment(m2)		1.40
Excavation(m2)		0.65
Backfill(m2)		0.29
Slope Protection	Stonework(m)	0.83
	Seeding(m)	0.41



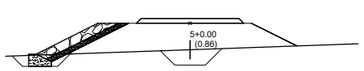
NO.		6+0.00
Design Level(El.m)		119.99
Original Ground Level(El.m)		119.50
Site Clearing(m)		7.81
Cutting(m2)		0.75
Embankment(m2)		3.19
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.66
	Seeding(m)	1.10



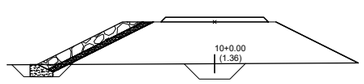
NO.		11+0.00
Design Level(El.m)		119.33
Original Ground Level(El.m)		118.50
Site Clearing(m)		9.18
Cutting(m2)		0.75
Embankment(m2)		5.47
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.42
	Seeding(m)	1.86



NO.		0+0.00
Design Level(El.m)		120.70
Original Ground Level(El.m)		120.83
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



NO.		5+0.00
Design Level(El.m)		120.13
Original Ground Level(El.m)		119.26
Site Clearing(m)		9.28
Cutting(m2)		0.75
Embankment(m2)		5.74
Excavation(m2)		0.56
Backfill(m2)		0.23
Slope Protection	Stonework(m)	2.81
	Seeding(m)	1.66



NO.		10+0.00
Design Level(El.m)		119.48
Original Ground Level(El.m)		118.12
Site Clearing(m)		11.30
Cutting(m2)		0.75
Embankment(m2)		9.93
Excavation(m2)		0.61
Backfill(m2)		0.26
Slope Protection	Stonework(m)	3.66
	Seeding(m)	3.00

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

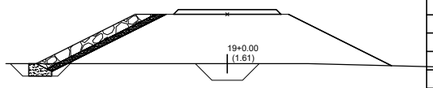
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.1 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-07-01

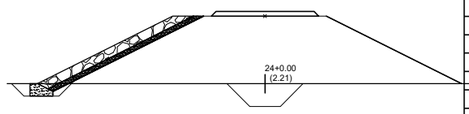
Cross Section of NO.1 DYKE(1/3)

S=1:100

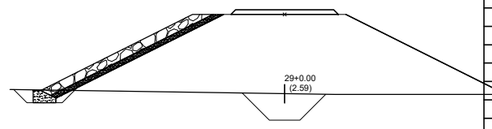
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



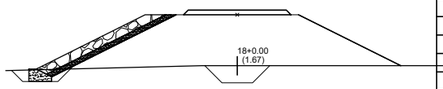
NO.		19+0.00
Design Level(El.m)		118.61
Original Ground Level(El.m)		117.00
Site Clearing(m)		12.43
Cutting(m2)		0.83
Embankment(m2)		12.57
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	4.17
	Seeding(m)	3.75



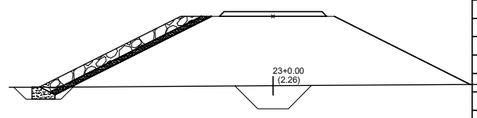
NO.		24+0.00
Design Level(El.m)		118.21
Original Ground Level(El.m)		116.00
Site Clearing(m)		14.68
Cutting(m2)		1.29
Embankment(m2)		19.87
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	5.50
	Seeding(m)	4.94



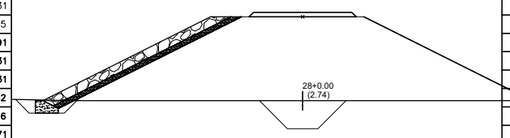
NO.		29+0.00
Design Level(El.m)		117.61
Original Ground Level(El.m)		115.03
Site Clearing(m)		16.06
Cutting(m2)		1.60
Embankment(m2)		25.10
Excavation(m2)		0.66
Backfill(m2)		0.29
Slope Protection	Stonework(m)	6.10
	Seeding(m)	5.84



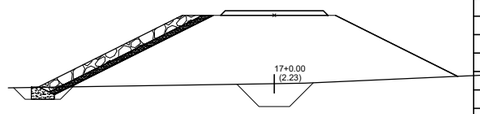
NO.		18+0.00
Design Level(El.m)		118.67
Original Ground Level(El.m)		117.00
Site Clearing(m)		12.69
Cutting(m2)		0.87
Embankment(m2)		12.44
Excavation(m2)		0.58
Backfill(m2)		0.24
Slope Protection	Stonework(m)	4.53
	Seeding(m)	3.72



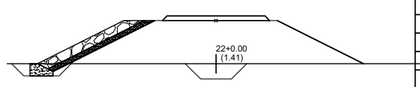
NO.		23+0.00
Design Level(El.m)		118.31
Original Ground Level(El.m)		116.05
Site Clearing(m)		14.91
Cutting(m2)		1.31
Embankment(m2)		19.31
Excavation(m2)		0.62
Backfill(m2)		0.26
Slope Protection	Stonework(m)	5.71
	Seeding(m)	4.97



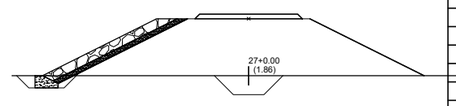
NO.		28+0.00
Design Level(El.m)		117.74
Original Ground Level(El.m)		115.00
Site Clearing(m)		16.84
Cutting(m2)		1.74
Embankment(m2)		27.66
Excavation(m2)		0.67
Backfill(m2)		0.30
Slope Protection	Stonework(m)	6.68
	Seeding(m)	6.12



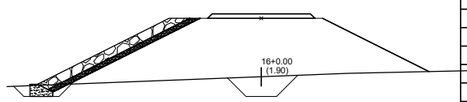
NO.		17+0.00
Design Level(El.m)		118.72
Original Ground Level(El.m)		116.49
Site Clearing(m)		14.48
Cutting(m2)		1.29
Embankment(m2)		19.83
Excavation(m2)		0.59
Backfill(m2)		0.25
Slope Protection	Stonework(m)	5.79
	Seeding(m)	4.46



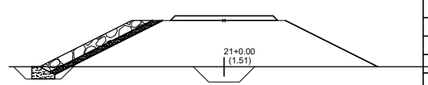
NO.		22+0.00
Design Level(El.m)		118.41
Original Ground Level(El.m)		117.00
Site Clearing(m)		11.48
Cutting(m2)		0.75
Embankment(m2)		9.60
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.71
	Seeding(m)	3.15



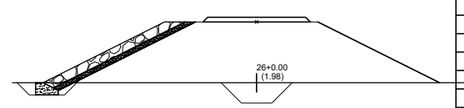
NO.		27+0.00
Design Level(El.m)		117.86
Original Ground Level(El.m)		116.00
Site Clearing(m)		13.29
Cutting(m2)		1.00
Embankment(m2)		15.36
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	4.72
	Seeding(m)	4.16



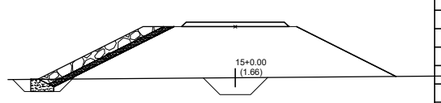
NO.		16+0.00
Design Level(El.m)		118.80
Original Ground Level(El.m)		116.89
Site Clearing(m)		13.55
Cutting(m2)		1.05
Embankment(m2)		16.06
Excavation(m2)		0.56
Backfill(m2)		0.23
Slope Protection	Stonework(m)	5.36
	Seeding(m)	3.88



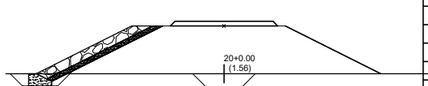
NO.		21+0.00
Design Level(El.m)		118.51
Original Ground Level(El.m)		117.00
Site Clearing(m)		11.88
Cutting(m2)		0.75
Embankment(m2)		11.33
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.93
	Seeding(m)	3.37



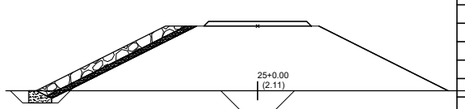
NO.		26+0.00
Design Level(El.m)		117.99
Original Ground Level(El.m)		116.00
Site Clearing(m)		13.79
Cutting(m2)		1.10
Embankment(m2)		16.91
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	5.00
	Seeding(m)	4.44



NO.		15+0.00
Design Level(El.m)		118.87
Original Ground Level(El.m)		117.21
Site Clearing(m)		12.49
Cutting(m2)		0.85
Embankment(m2)		13.05
Excavation(m2)		0.61
Backfill(m2)		0.25
Slope Protection	Stonework(m)	4.38
	Seeding(m)	3.62



NO.		20+0.00
Design Level(El.m)		118.56
Original Ground Level(El.m)		117.00
Site Clearing(m)		12.09
Cutting(m2)		0.79
Embankment(m2)		11.90
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	4.05
	Seeding(m)	3.49



NO.		25+0.00
Design Level(El.m)		118.11
Original Ground Level(El.m)		116.00
Site Clearing(m)		14.28
Cutting(m2)		1.19
Embankment(m2)		18.51
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	5.27
	Seeding(m)	4.71

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

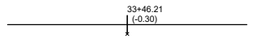
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.1 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-07-02

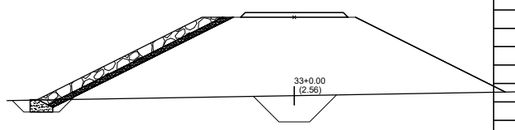
Cross Section of NO.1 DYKE(1/3)

S=1:100

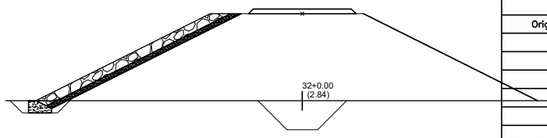
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



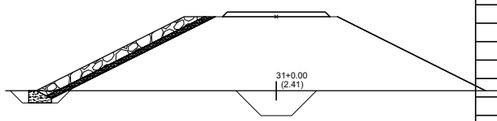
NO.		33+46.21
Design Level(El.m)		117.20
Original Ground Level(El.m)		117.50
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



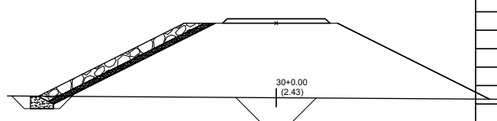
NO.		33+0.00
Design Level(El.m)		117.27
Original Ground Level(El.m)		114.71
Site Clearing(m)		16.07
Cutting(m2)		1.57
Embankment(m2)		24.94
Excavation(m2)		0.59
Backfill(m2)		0.24
Slope Protection	Stonework(m)	6.57
	Seeding(m)	5.46



NO.		32+0.00
Design Level(El.m)		117.34
Original Ground Level(El.m)		114.50
Site Clearing(m)		17.21
Cutting(m2)		1.85
Embankment(m2)		29.34
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	6.91
	Seeding(m)	6.35



NO.		31+0.00
Design Level(El.m)		117.42
Original Ground Level(El.m)		115.00
Site Clearing(m)		15.51
Cutting(m2)		1.47
Embankment(m2)		22.78
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	5.96
	Seeding(m)	5.40



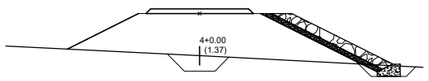
NO.		30+0.00
Design Level(El.m)		117.49
Original Ground Level(El.m)		115.06
Site Clearing(m)		15.58
Cutting(m2)		1.47
Embankment(m2)		22.98
Excavation(m2)		0.64
Backfill(m2)		0.28
Slope Protection	Stonework(m)	5.89
	Seeding(m)	5.53

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon DRAWING BY: Gim, Ho Jun CHECKED BY: Jo, Jin Hoon	S=1:100
		TITLE	DATE		DRAWING No
		Cross Section of NO.1 DYKE(1/3)	JUNE, 2022		G-07-03

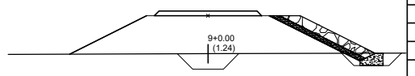
Cross Section of NO.2 DYKE(1/3)

S=1:100

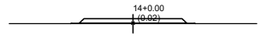
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



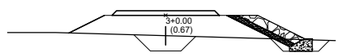
NO.		4+0.00
Design Level(El.m)		110.44
Original Ground Level(El.m)		109.07
Site Clearing(m)		11.37
Cutting(m2)		0.75
Embankment(m2)		10.16
Excavation(m2)		0.54
Backfill(m2)		0.22
Slope Protection	Stonework(m)	4.24
	Seeding(m)	2.59



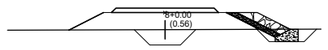
NO.		9+0.00
Design Level(El.m)		109.21
Original Ground Level(El.m)		107.97
Site Clearing(m)		10.83
Cutting(m2)		0.75
Embankment(m2)		8.81
Excavation(m2)		0.64
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.31
	Seeding(m)	2.81



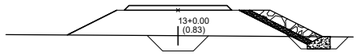
NO.		14+0.00
Design Level(El.m)		108.52
Original Ground Level(El.m)		108.50
Site Clearing(m)		4.07
Cutting(m2)		0.00
Embankment(m2)		0.07
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.04
	Seeding(m)	0.04



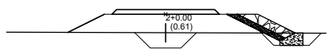
NO.		3+0.00
Design Level(El.m)		110.57
Original Ground Level(El.m)		109.90
Site Clearing(m)		8.49
Cutting(m2)		0.75
Embankment(m2)		4.33
Excavation(m2)		0.57
Backfill(m2)		0.23
Slope Protection	Stonework(m)	2.28
	Seeding(m)	1.29



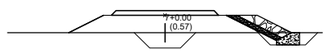
NO.		8+0.00
Design Level(El.m)		109.39
Original Ground Level(El.m)		108.83
Site Clearing(m)		8.09
Cutting(m2)		0.75
Embankment(m2)		3.60
Excavation(m2)		0.64
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.78
	Seeding(m)	1.27



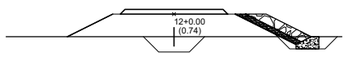
NO.		13+0.00
Design Level(El.m)		108.63
Original Ground Level(El.m)		107.80
Site Clearing(m)		9.16
Cutting(m2)		0.75
Embankment(m2)		5.46
Excavation(m2)		0.61
Backfill(m2)		0.25
Slope Protection	Stonework(m)	2.48
	Seeding(m)	1.80



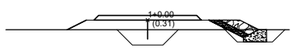
NO.		2+0.00
Design Level(El.m)		110.69
Original Ground Level(El.m)		110.08
Site Clearing(m)		8.26
Cutting(m2)		0.75
Embankment(m2)		3.90
Excavation(m2)		0.61
Backfill(m2)		0.26
Slope Protection	Stonework(m)	1.93
	Seeding(m)	1.33



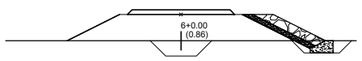
NO.		7+0.00
Design Level(El.m)		109.57
Original Ground Level(El.m)		109.00
Site Clearing(m)		8.12
Cutting(m2)		0.75
Embankment(m2)		3.67
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.83
	Seeding(m)	1.27



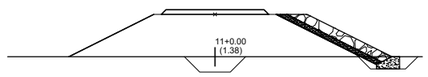
NO.		12+0.00
Design Level(El.m)		108.74
Original Ground Level(El.m)		108.00
Site Clearing(m)		8.81
Cutting(m2)		0.75
Embankment(m2)		4.80
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.21
	Seeding(m)	1.65



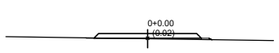
NO.		1+0.00
Design Level(El.m)		110.82
Original Ground Level(El.m)		110.50
Site Clearing(m)		7.10
Cutting(m2)		0.75
Embankment(m2)		2.20
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.26
	Seeding(m)	0.70



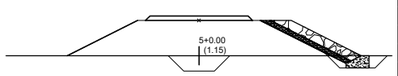
NO.		6+0.00
Design Level(El.m)		109.86
Original Ground Level(El.m)		109.00
Site Clearing(m)		9.28
Cutting(m2)		0.75
Embankment(m2)		5.65
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.48
	Seeding(m)	1.92



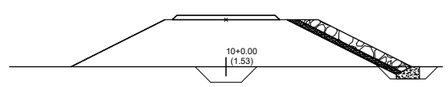
NO.		11+0.00
Design Level(El.m)		108.89
Original Ground Level(El.m)		107.50
Site Clearing(m)		11.39
Cutting(m2)		0.75
Embankment(m2)		10.12
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.65
	Seeding(m)	3.09



NO.		0+0.00
Design Level(El.m)		110.94
Original Ground Level(El.m)		110.92
Site Clearing(m)		4.12
Cutting(m2)		0.00
Embankment(m2)		0.08
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.12



NO.		5+0.00
Design Level(El.m)		110.15
Original Ground Level(El.m)		109.00
Site Clearing(m)		10.44
Cutting(m2)		0.75
Embankment(m2)		7.98
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.13
	Seeding(m)	2.57



NO.		10+0.00
Design Level(El.m)		109.03
Original Ground Level(El.m)		107.50
Site Clearing(m)		11.97
Cutting(m2)		0.77
Embankment(m2)		11.56
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.98
	Seeding(m)	3.42

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

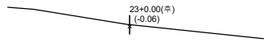
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.2 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-08-01

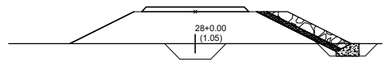
Cross Section of NO.2 DYKE(1/3)

S=1:100

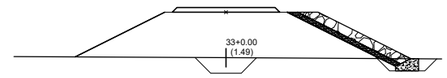
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



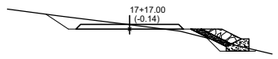
NO.		23+0.00(※)
Design Level(El.m)		107.44
Original Ground Level(El.m)		107.50
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



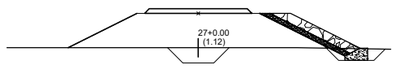
NO.		28+0.00
Design Level(El.m)		107.05
Original Ground Level(El.m)		106.00
Site Clearing(m)		10.03
Cutting(m2)		0.75
Embankment(m2)		7.12
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.90
	Seeding(m)	2.34



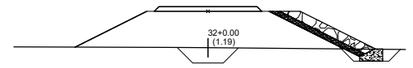
NO.		33+0.00
Design Level(El.m)		106.55
Original Ground Level(El.m)		105.06
Site Clearing(m)		11.79
Cutting(m2)		0.75
Embankment(m2)		11.12
Excavation(m2)		0.61
Backfill(m2)		0.25
Slope Protection	Stonework(m)	3.95
	Seeding(m)	3.26



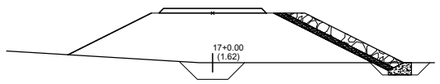
NO.		17+17.00
Design Level(El.m)		108.07
Original Ground Level(El.m)		108.21
Site Clearing(m)		6.85
Cutting(m2)		0.75
Embankment(m2)		0.11
Excavation(m2)		0.28
Backfill(m2)		0.11
Slope Protection	Stonework(m)	1.28
	Seeding(m)	0.00



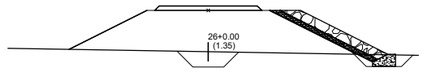
NO.		27+0.00
Design Level(El.m)		107.13
Original Ground Level(El.m)		106.00
Site Clearing(m)		10.35
Cutting(m2)		0.75
Embankment(m2)		7.78
Excavation(m2)		0.60
Backfill(m2)		0.25
Slope Protection	Stonework(m)	3.11
	Seeding(m)	2.51



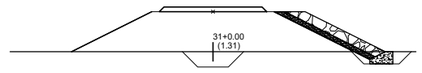
NO.		32+0.00
Design Level(El.m)		106.68
Original Ground Level(El.m)		105.49
Site Clearing(m)		10.62
Cutting(m2)		0.75
Embankment(m2)		8.35
Excavation(m2)		0.61
Backfill(m2)		0.25
Slope Protection	Stonework(m)	3.30
	Seeding(m)	2.61



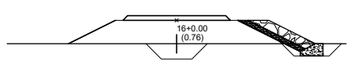
NO.		17+0.00
Design Level(El.m)		108.12
Original Ground Level(El.m)		106.50
Site Clearing(m)		11.81
Cutting(m2)		0.84
Embankment(m2)		11.93
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	4.18
	Seeding(m)	3.04



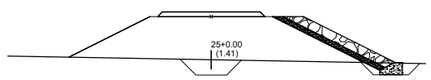
NO.		26+0.00
Design Level(El.m)		107.20
Original Ground Level(El.m)		105.86
Site Clearing(m)		11.21
Cutting(m2)		0.75
Embankment(m2)		9.77
Excavation(m2)		0.59
Backfill(m2)		0.24
Slope Protection	Stonework(m)	3.75
	Seeding(m)	2.84



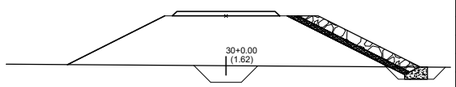
NO.		31+0.00
Design Level(El.m)		106.81
Original Ground Level(El.m)		105.50
Site Clearing(m)		11.09
Cutting(m2)		0.75
Embankment(m2)		9.41
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.49
	Seeding(m)	2.93



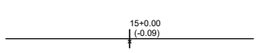
NO.		16+0.00
Design Level(El.m)		108.26
Original Ground Level(El.m)		107.50
Site Clearing(m)		8.90
Cutting(m2)		0.75
Embankment(m2)		4.97
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.27
	Seeding(m)	1.71



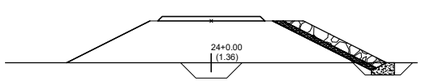
NO.		25+0.00
Design Level(El.m)		107.28
Original Ground Level(El.m)		105.88
Site Clearing(m)		11.45
Cutting(m2)		0.75
Embankment(m2)		10.34
Excavation(m2)		0.59
Backfill(m2)		0.24
Slope Protection	Stonework(m)	3.90
	Seeding(m)	2.96



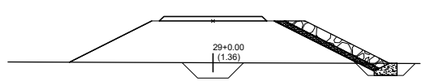
NO.		30+0.00
Design Level(El.m)		106.89
Original Ground Level(El.m)		105.27
Site Clearing(m)		12.33
Cutting(m2)		0.83
Embankment(m2)		12.59
Excavation(m2)		0.61
Backfill(m2)		0.25
Slope Protection	Stonework(m)	4.27
	Seeding(m)	3.55



NO.		15+0.00
Design Level(El.m)		108.41
Original Ground Level(El.m)		108.50
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



NO.		24+0.00
Design Level(El.m)		107.36
Original Ground Level(El.m)		106.00
Site Clearing(m)		11.29
Cutting(m2)		0.75
Embankment(m2)		9.89
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	3.60
	Seeding(m)	3.04



NO.		29+0.00
Design Level(El.m)		106.97
Original Ground Level(El.m)		105.61
Site Clearing(m)		11.28
Cutting(m2)		0.75
Embankment(m2)		9.89
Excavation(m2)		0.61
Backfill(m2)		0.26
Slope Protection	Stonework(m)	3.64
	Seeding(m)	3.00

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

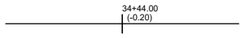
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.2 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-08-02

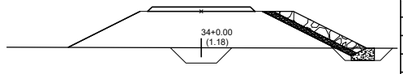
Cross Section of NO.2 DYKE(1/3)

S=1:100

Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



NO.		34+44.00
Design Level(El.m)		106.30
Original Ground Level(El.m)		106.50
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



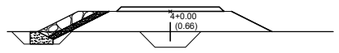
NO.		34+0.00
Design Level(El.m)		106.42
Original Ground Level(El.m)		105.23
Site Clearing(m)		10.58
Cutting(m2)		0.75
Embankment(m2)		8.28
Excavation(m2)		0.61
Backfill(m2)		0.26
Slope Protection	Stonework(m)	3.24
	Seeding(m)	2.61

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of NO.2 DYKE(1/3)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-08-03

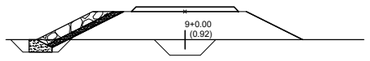
Cross Section of NO.3 DYKE(1/4)

S=1:100

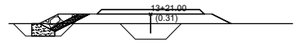
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



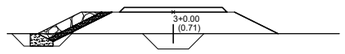
NO.		4+0.00
Design Level(El.m)		108.66
Original Ground Level(El.m)		108.00
Site Clearing(m)		8.49
Cutting(m2)		0.75
Embankment(m2)		4.26
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.04
	Seeding(m)	1.48



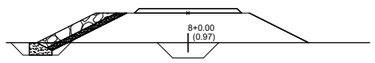
NO.		9+0.00
Design Level(El.m)		108.42
Original Ground Level(El.m)		107.50
Site Clearing(m)		9.52
Cutting(m2)		0.75
Embankment(m2)		6.10
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.61
	Seeding(m)	2.05



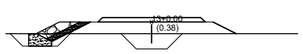
NO.		13+21.00
Design Level(El.m)		107.81
Original Ground Level(El.m)		107.50
Site Clearing(m)		7.10
Cutting(m2)		0.75
Embankment(m2)		2.20
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.26
	Seeding(m)	0.70



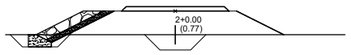
NO.		3+0.00
Design Level(El.m)		108.71
Original Ground Level(El.m)		108.00
Site Clearing(m)		8.69
Cutting(m2)		0.75
Embankment(m2)		4.59
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.14
	Seeding(m)	1.59



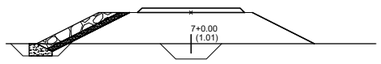
NO.		8+0.00
Design Level(El.m)		108.47
Original Ground Level(El.m)		107.50
Site Clearing(m)		9.71
Cutting(m2)		0.75
Embankment(m2)		6.48
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.72
	Seeding(m)	2.16



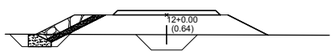
NO.		13+0.00
Design Level(El.m)		107.88
Original Ground Level(El.m)		107.50
Site Clearing(m)		7.38
Cutting(m2)		0.75
Embankment(m2)		2.57
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.41
	Seeding(m)	0.85



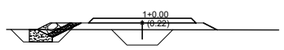
NO.		2+0.00
Design Level(El.m)		108.77
Original Ground Level(El.m)		108.00
Site Clearing(m)		8.93
Cutting(m2)		0.75
Embankment(m2)		5.01
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.28
	Seeding(m)	1.72



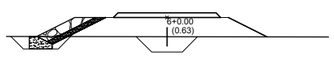
NO.		7+0.00
Design Level(El.m)		108.52
Original Ground Level(El.m)		107.50
Site Clearing(m)		9.91
Cutting(m2)		0.75
Embankment(m2)		6.87
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.83
	Seeding(m)	2.27



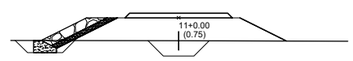
NO.		12+0.00
Design Level(El.m)		108.05
Original Ground Level(El.m)		107.40
Site Clearing(m)		8.43
Cutting(m2)		0.75
Embankment(m2)		4.15
Excavation(m2)		0.64
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.97
	Seeding(m)	1.46



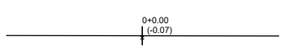
NO.		1+0.00
Design Level(El.m)		108.83
Original Ground Level(El.m)		108.61
Site Clearing(m)		6.73
Cutting(m2)		0.75
Embankment(m2)		1.73
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.04
	Seeding(m)	0.50



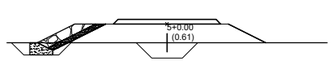
NO.		6+0.00
Design Level(El.m)		108.56
Original Ground Level(El.m)		107.94
Site Clearing(m)		8.36
Cutting(m2)		0.75
Embankment(m2)		4.05
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.95
	Seeding(m)	1.42



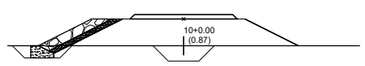
NO.		11+0.00
Design Level(El.m)		108.21
Original Ground Level(El.m)		107.46
Site Clearing(m)		8.85
Cutting(m2)		0.75
Embankment(m2)		4.87
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.22
	Seeding(m)	1.69



NO.		0+0.00
Design Level(El.m)		108.89
Original Ground Level(El.m)		108.96
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



NO.		5+0.00
Design Level(El.m)		108.61
Original Ground Level(El.m)		108.00
Site Clearing(m)		8.30
Cutting(m2)		0.75
Embankment(m2)		3.95
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	1.93
	Seeding(m)	1.37



NO.		10+0.00
Design Level(El.m)		108.37
Original Ground Level(El.m)		107.50
Site Clearing(m)		9.33
Cutting(m2)		0.75
Embankment(m2)		5.74
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.50
	Seeding(m)	1.94

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CONSULTANT

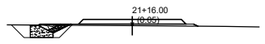
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.3 DYKE(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-09-01

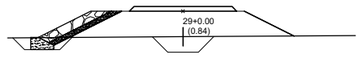
Cross Section of NO.3 DYKE(1/4)

S=1:100

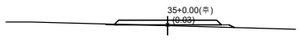
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



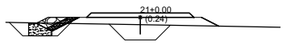
NO.		21+16.00
Design Level(El.m)		105.58
Original Ground Level(El.m)		105.53
Site Clearing(m)		6.08
Cutting(m2)		0.00
Embankment(m2)		0.23
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	0.65
	Seeding(m)	0.16



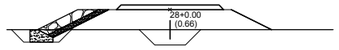
NO.		29+0.00
Design Level(El.m)		105.12
Original Ground Level(El.m)		104.29
Site Clearing(m)		9.18
Cutting(m2)		0.75
Embankment(m2)		5.49
Excavation(m2)		0.61
Backfill(m2)		0.25
Slope Protection	Stonework(m)	2.48
	Seeding(m)	1.82



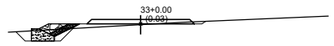
NO.		35+0.00(※)
Design Level(El.m)		104.91
Original Ground Level(El.m)		104.88
Site Clearing(m)		4.21
Cutting(m2)		0.02
Embankment(m2)		0.13
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.19



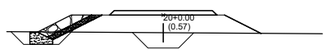
NO.		21+0.00
Design Level(El.m)		105.67
Original Ground Level(El.m)		105.43
Site Clearing(m)		6.83
Cutting(m2)		0.75
Embankment(m2)		1.81
Excavation(m2)		0.66
Backfill(m2)		0.29
Slope Protection	Stonework(m)	0.99
	Seeding(m)	0.63



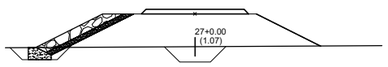
NO.		28+0.00
Design Level(El.m)		105.16
Original Ground Level(El.m)		104.50
Site Clearing(m)		8.49
Cutting(m2)		0.75
Embankment(m2)		4.25
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.03
	Seeding(m)	1.47



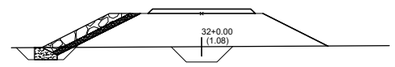
NO.		33+0.00
Design Level(El.m)		104.95
Original Ground Level(El.m)		104.92
Site Clearing(m)		6.19
Cutting(m2)		0.06
Embankment(m2)		0.19
Excavation(m2)		0.53
Backfill(m2)		0.21
Slope Protection	Stonework(m)	0.91
	Seeding(m)	0.00



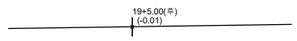
NO.		20+0.00
Design Level(El.m)		105.94
Original Ground Level(El.m)		105.37
Site Clearing(m)		8.16
Cutting(m2)		0.75
Embankment(m2)		3.70
Excavation(m2)		0.64
Backfill(m2)		0.28
Slope Protection	Stonework(m)	1.79
	Seeding(m)	1.33



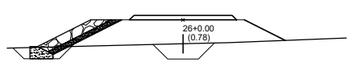
NO.		27+0.00
Design Level(El.m)		105.20
Original Ground Level(El.m)		104.13
Site Clearing(m)		10.13
Cutting(m2)		0.75
Embankment(m2)		7.34
Excavation(m2)		0.61
Backfill(m2)		0.26
Slope Protection	Stonework(m)	3.01
	Seeding(m)	2.35



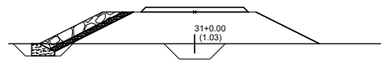
NO.		32+0.00
Design Level(El.m)		104.99
Original Ground Level(El.m)		103.91
Site Clearing(m)		10.17
Cutting(m2)		0.75
Embankment(m2)		7.42
Excavation(m2)		0.61
Backfill(m2)		0.26
Slope Protection	Stonework(m)	3.03
	Seeding(m)	2.37



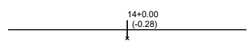
NO.		19+5.00(※)
Design Level(El.m)		106.19
Original Ground Level(El.m)		106.20
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



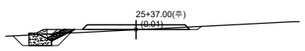
NO.		26+0.00
Design Level(El.m)		105.24
Original Ground Level(El.m)		104.46
Site Clearing(m)		8.88
Cutting(m2)		0.75
Embankment(m2)		5.05
Excavation(m2)		0.58
Backfill(m2)		0.24
Slope Protection	Stonework(m)	2.50
	Seeding(m)	1.49



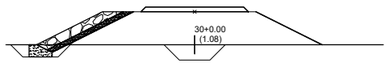
NO.		31+0.00
Design Level(El.m)		105.04
Original Ground Level(El.m)		104.00
Site Clearing(m)		9.99
Cutting(m2)		0.75
Embankment(m2)		7.02
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.87
	Seeding(m)	2.31



NO.		14+0.00
Design Level(El.m)		107.72
Original Ground Level(El.m)		108.00
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



NO.		25+37.00(※)
Design Level(El.m)		105.25
Original Ground Level(El.m)		105.24
Site Clearing(m)		6.16
Cutting(m2)		0.09
Embankment(m2)		0.13
Excavation(m2)		0.54
Backfill(m2)		0.22
Slope Protection	Stonework(m)	0.83
	Seeding(m)	0.00



NO.		30+0.00
Design Level(El.m)		105.08
Original Ground Level(El.m)		104.00
Site Clearing(m)		10.16
Cutting(m2)		0.75
Embankment(m2)		7.37
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	2.97
	Seeding(m)	2.41

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CONSULTANT

Korea Rural Community Corporation
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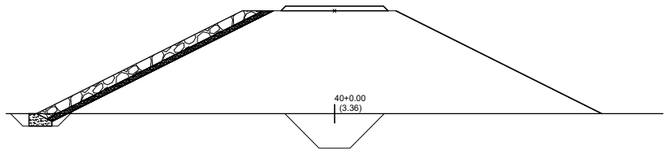
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.3 DYKE(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-09-02

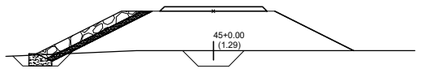
Cross Section of NO.3 DYKE(1/4)

S=1:100

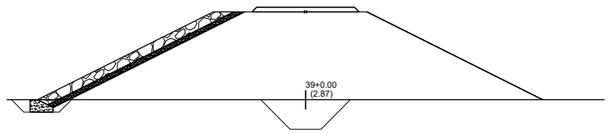
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



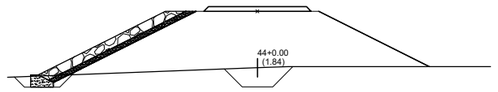
NO.		40+0.00
Design Level(El.m)		104.86
Original Ground Level(El.m)		101.50
Site Clearing(m)		19.29
Cutting(m2)		2.37
Embankment(m2)		38.37
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	8.07
	Seeding(m)	7.51



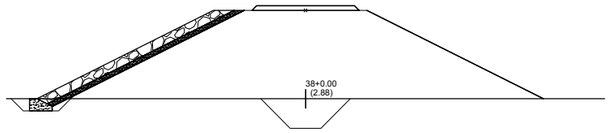
NO.		45+0.00
Design Level(El.m)		104.79
Original Ground Level(El.m)		103.50
Site Clearing(m)		11.12
Cutting(m2)		0.75
Embankment(m2)		9.33
Excavation(m2)		0.55
Backfill(m2)		0.22
Slope Protection	Stonework(m)	3.65
	Seeding(m)	2.88



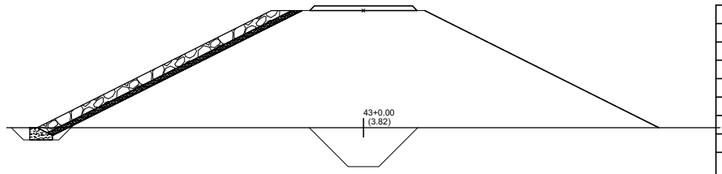
NO.		39+0.00
Design Level(El.m)		104.87
Original Ground Level(El.m)		102.00
Site Clearing(m)		17.33
Cutting(m2)		1.88
Embankment(m2)		29.83
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	6.97
	Seeding(m)	6.42



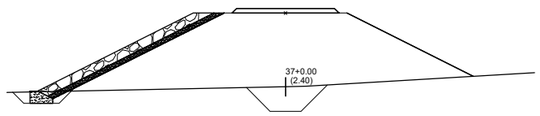
NO.		44+0.00
Design Level(El.m)		104.81
Original Ground Level(El.m)		102.96
Site Clearing(m)		13.54
Cutting(m2)		1.01
Embankment(m2)		15.63
Excavation(m2)		0.56
Backfill(m2)		0.23
Slope Protection	Stonework(m)	5.20
	Seeding(m)	4.03



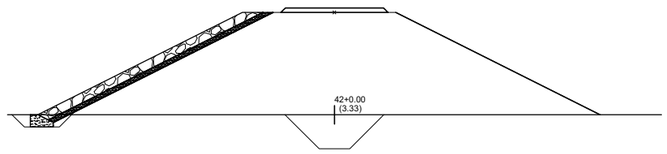
NO.		38+0.00
Design Level(El.m)		104.88
Original Ground Level(El.m)		102.00
Site Clearing(m)		17.37
Cutting(m2)		1.88
Embankment(m2)		29.97
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	7.00
	Seeding(m)	6.44



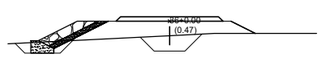
NO.		43+0.00
Design Level(El.m)		104.82
Original Ground Level(El.m)		101.00
Site Clearing(m)		21.13
Cutting(m2)		2.88
Embankment(m2)		47.32
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	9.10
	Seeding(m)	8.54



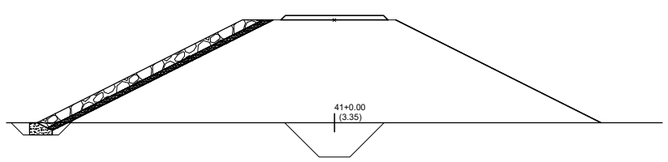
NO.		37+0.00
Design Level(El.m)		104.89
Original Ground Level(El.m)		102.49
Site Clearing(m)		15.02
Cutting(m2)		1.45
Embankment(m2)		21.99
Excavation(m2)		0.59
Backfill(m2)		0.24
Slope Protection	Stonework(m)	6.25
	Seeding(m)	4.61



NO.		42+0.00
Design Level(El.m)		104.83
Original Ground Level(El.m)		101.50
Site Clearing(m)		19.19
Cutting(m2)		2.34
Embankment(m2)		37.91
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	8.01
	Seeding(m)	7.46



NO.		36+0.00
Design Level(El.m)		104.90
Original Ground Level(El.m)		104.43
Site Clearing(m)		7.83
Cutting(m2)		0.75
Embankment(m2)		2.42
Excavation(m2)		0.54
Backfill(m2)		0.22
Slope Protection	Stonework(m)	1.98
	Seeding(m)	0.89



NO.		41+0.00
Design Level(El.m)		104.85
Original Ground Level(El.m)		101.50
Site Clearing(m)		19.25
Cutting(m2)		2.37
Embankment(m2)		38.20
Excavation(m2)		0.63
Backfill(m2)		0.27
Slope Protection	Stonework(m)	8.05
	Seeding(m)	7.49

CLIENT

REPUBLIC OF MALAWI
MINISTRY OF AGRICULTURE,
IRRIGATION AND WATER DEVELOPMENT

CONSULTANT

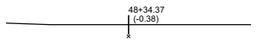
Korea Rural Community Corporation
In Jonit Venture with
Dasan Consultants Co., Ltd.
ISAN CORPORATION
EMD Consulting Engineers

PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
Cross Section of NO.3 DYKE(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-09-03

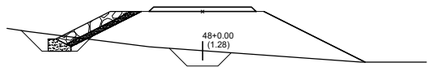
Cross Section of NO.3 DYKE(1/4)

S=1:100

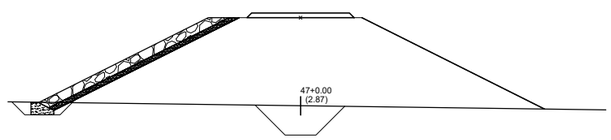
Unit is meter(m) of The International System of Units(SI).
The Quantity was calculated in Cross section



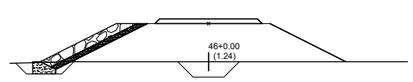
NO.		48+34.37
Design Level(El.m)		104.62
Original Ground Level(El.m)		105.00
Site Clearing(m)		0.00
Cutting(m2)		0.00
Embankment(m2)		0.00
Excavation(m2)		0.00
Backfill(m2)		0.00
Slope Protection	Stonework(m)	0.00
	Seeding(m)	0.00



NO.		48+0.00
Design Level(El.m)		104.65
Original Ground Level(El.m)		103.38
Site Clearing(m)		11.21
Cutting(m2)		0.76
Embankment(m2)		9.22
Excavation(m2)		0.88
Backfill(m2)		0.47
Slope Protection	Stonework(m)	2.56
	Seeding(m)	3.69



NO.		47+0.00
Design Level(El.m)		104.70
Original Ground Level(El.m)		101.82
Site Clearing(m)		17.38
Cutting(m2)		1.88
Embankment(m2)		29.92
Excavation(m2)		0.65
Backfill(m2)		0.29
Slope Protection	Stonework(m)	6.76
	Seeding(m)	6.66



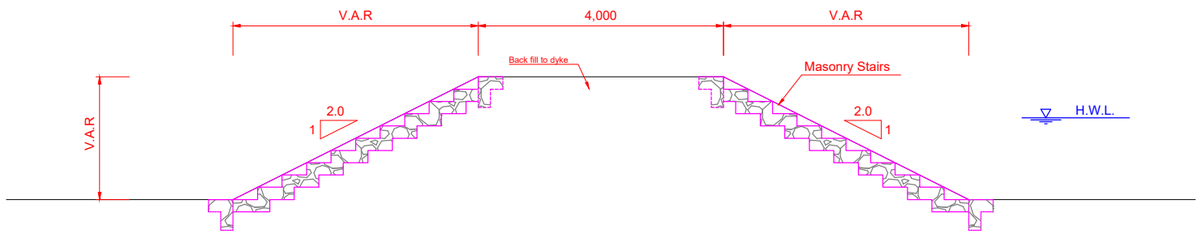
NO.		46+0.00
Design Level(El.m)		104.74
Original Ground Level(El.m)		103.50
Site Clearing(m)		10.78
Cutting(m2)		0.75
Embankment(m2)		8.81
Excavation(m2)		0.59
Backfill(m2)		0.25
Slope Protection	Stonework(m)	3.34
	Seeding(m)	2.78

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	Detail Design	DESIGNED BY: Choi, Dong Hoon	S=1:100
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Cross Section of NO.3 DYKE(1/4)	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-09-04

DETAILS OF ACCESS STAIRS

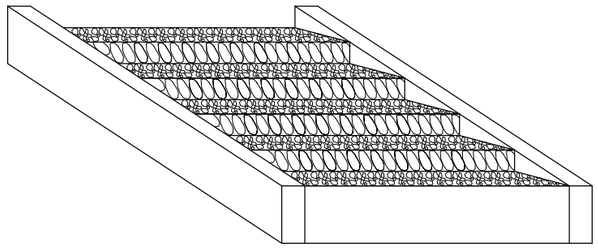
S=AS SHOWN

Unit is millimeter(mm) of The International System of Units(SI)



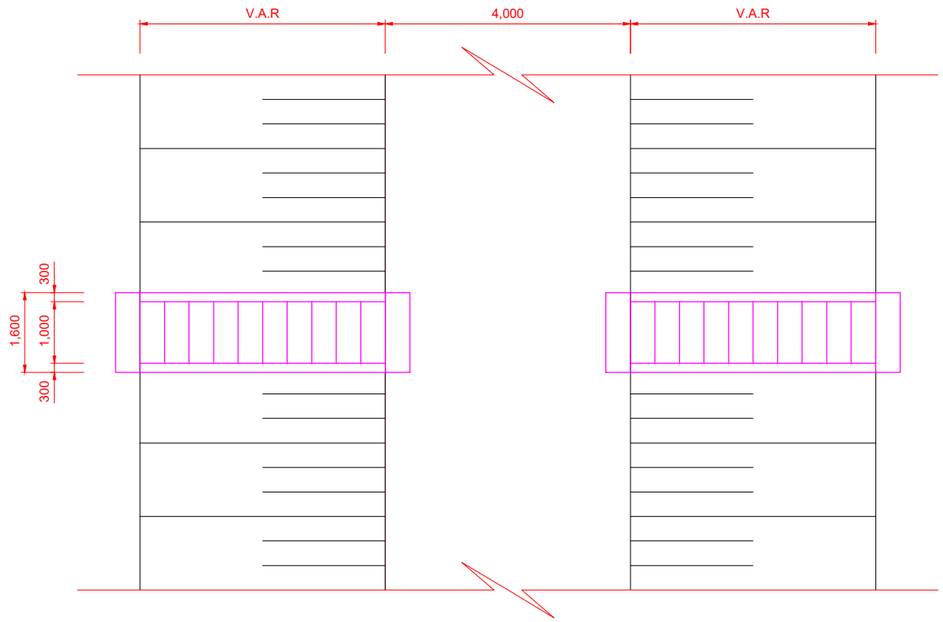
Typical Section

S=1:50



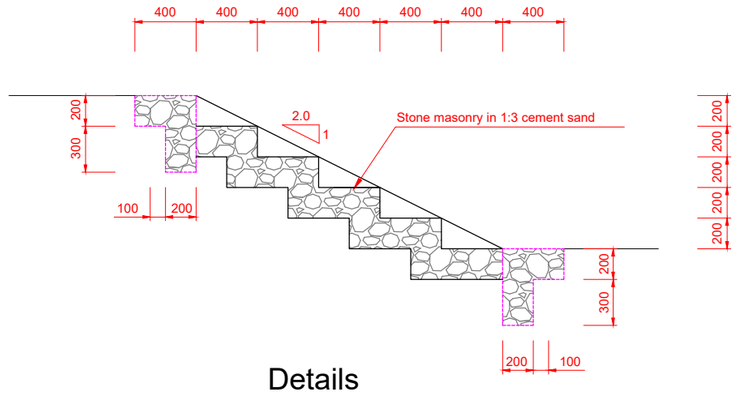
Elevation

S=None



Plan

S=1:50



Details

S=1:20

Detail

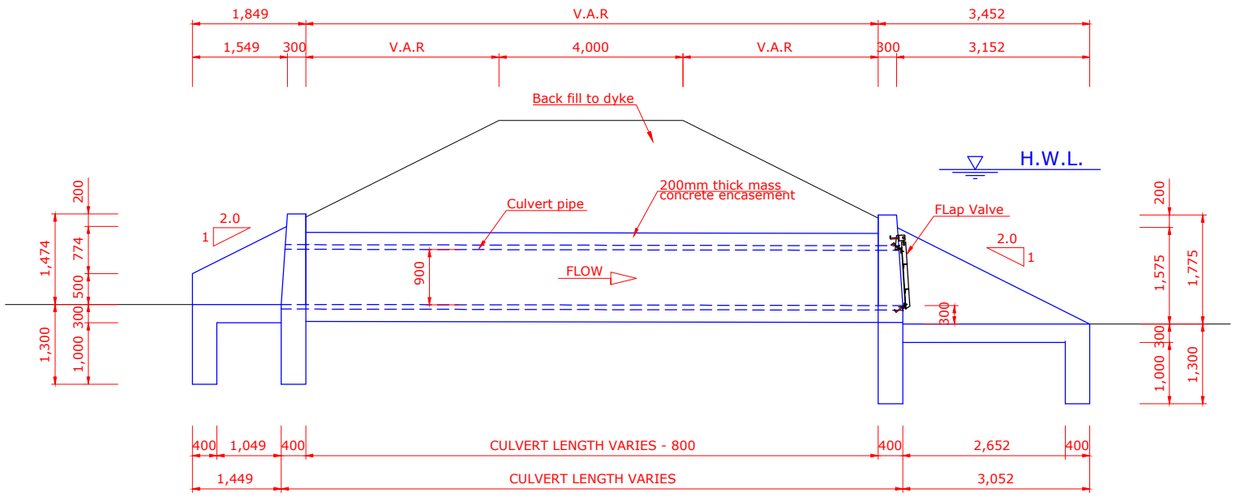
Dyke (No.)	Description	Station (No.)	Height (m)	Dyke (No.)	Description	Station (No.)	Height (m)
1	#1 Stair	13+17	1.6	3	#1 Stair	3+34	0.8
1	#2 Stair	21+16	1.4	3	#2 Stair	12+47	0.6
2	#1 Stair	13+33	0.6	3	#3 Stair	30+21	1.2
2	#2 Stair	23+20	0.6				

CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		DETAILS OF ACCESS STAIRS	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-10-01

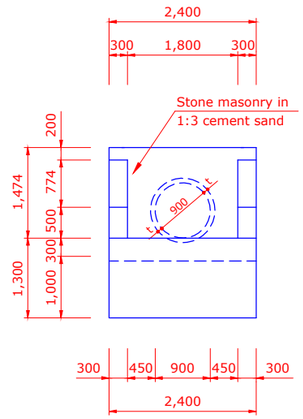
Unit is millimeter(mm) of The International System of Units(SI)

DETAILS OF CULVERT FOR CROSS DRAINAGE

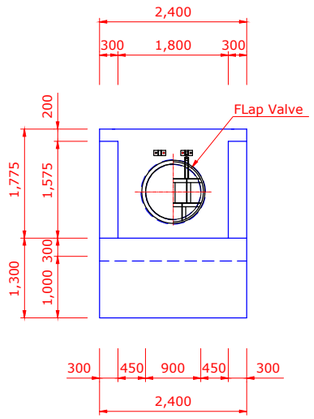
S=AS SHOWN



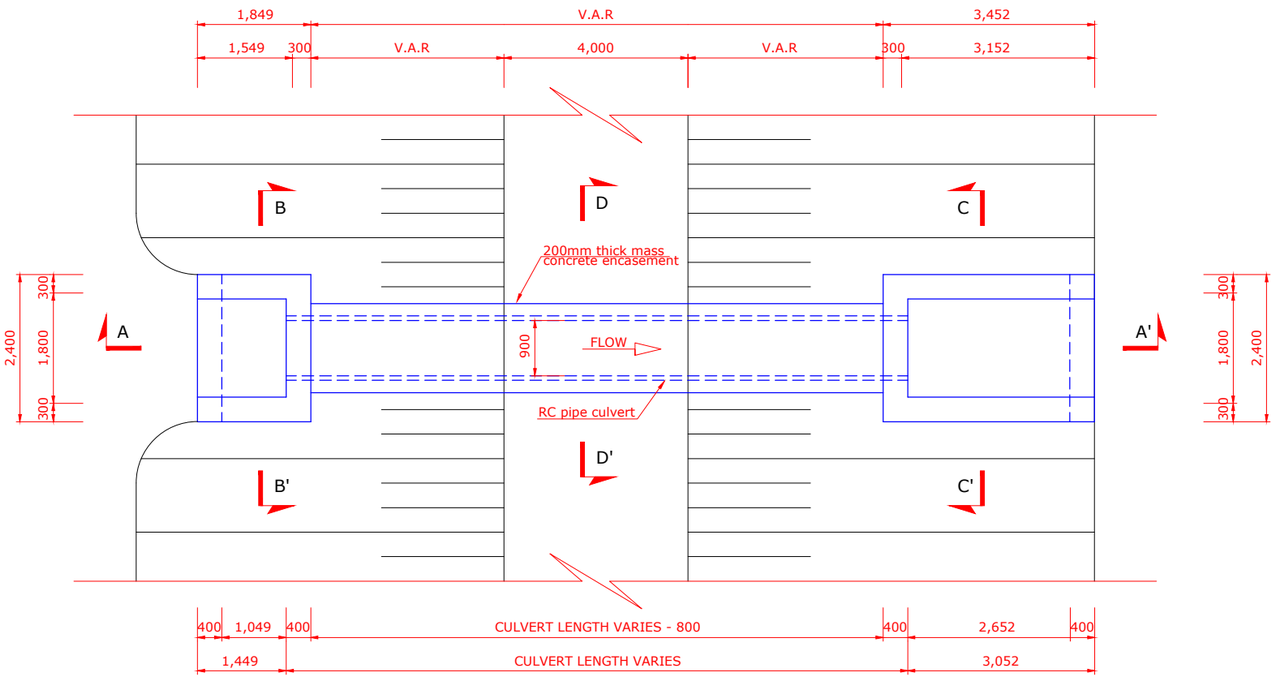
Section A-A'
S=1:50



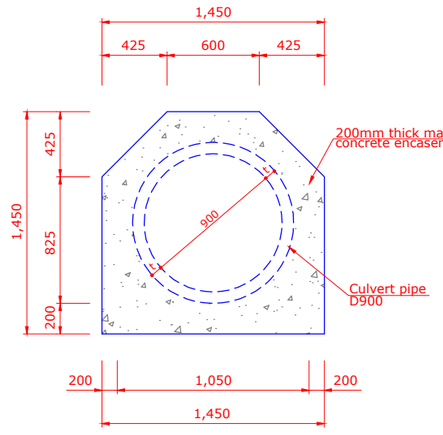
Section B-B'
S=1:50



Section C-C'
S=1:50



Plan
S=1:50



Section D-D'
S=1:20

Detail

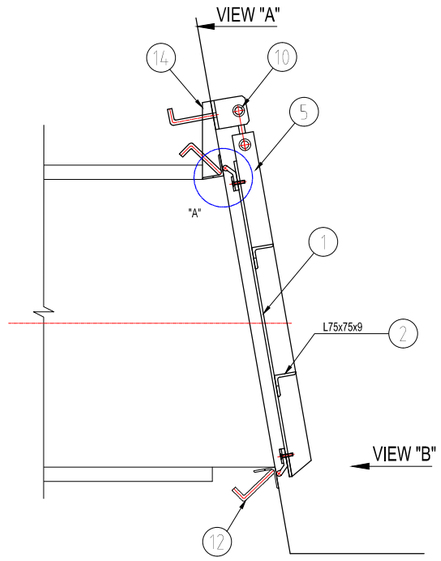
Dyke	Descriptions	Station (No.)	Diameter (Ø)	Length(m)				Remark
				Total	Inlet	Culvert Pipe	Outlet	
1	#1 Drainage Culvert	No.8+00	900	10.60	1.45	5.63	3.52	
	#2 Drainage Culvert	No.17+00	900	12.70	1.45	7.73	3.52	
	#3 Drainage Culvert	No.32+00	900	15.40	1.45	10.43	3.52	
2	#1 Drainage Culvert	No.10+00	900	10.20	1.45	5.23	3.52	
	#2 Drainage Culvert	No.17+00	900	10.00	1.45	5.03	3.52	
	#3 Drainage Culvert	No.33+00	900	10.00	1.45	5.03	3.52	
3	#1 Drainage Culvert	No.7+00	900	8.10	1.45	3.13	3.52	
	#2 Drainage Culvert	No.31+00	900	8.10	1.45	3.13	3.52	
	#3 Drainage Culvert	No.43+00	900	19.30	1.45	14.33	3.52	
	#4 Drainage Culvert	No.47+00	900	15.60	1.45	10.63	3.52	

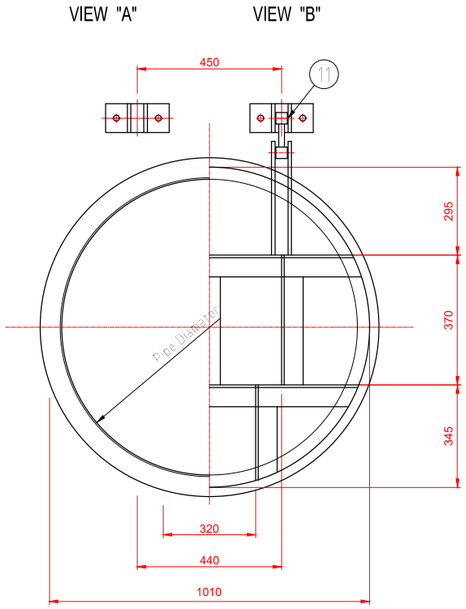
CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	S=AS SHOWN
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		DETAILS OF CULVERT FOR CROSS DRAINAGE	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-11-01

DETAILS OF FLAP VALVE

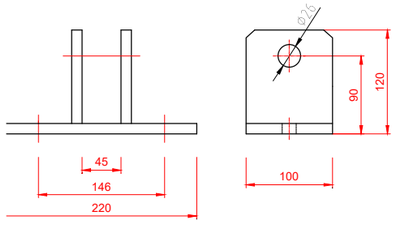
Unit is millimeter(mm) of The International System of Units(SI)

NO	DESCRIPTION	DIMENSION	MATERIAL	Q'TY	WT	REMARK
1	SKIN PLATE	t9	SS400			
2	ANGLE	L75x75x9	SS400			
3	BRACKET	t12	STS304			
4	HINGE	Φ40x40	STS304			
	HINGE	Φ20x80	STS304			
5	PLATE	t12	STS304			
6	FLAT BAR	40b x 6t	STS304			
7	BOLT.NUT.W	M10 x 40	STS304			
8	ANGEL	L75x75x9	STS304			
9	SEAL RUBBER	"LP" TYPE	NEOPRENE			
10	PIN B/N	M24x125	STS304			
11	SPLIT PIN	Φ5x35L	SS400			
12	ANCHOR BAR	Φ19 x 200	SS400			
13	ANCHOR B/N	M16x250L	SM45C			
14	SUPPORT PLATE	t9	SS400			

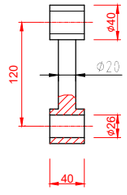




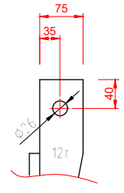
③ DETAIL OF BRACKET



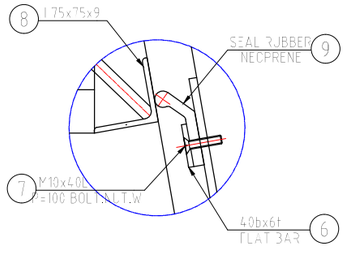
④ DETAIL OF HINGE



⑤ DETAIL OF PLATE



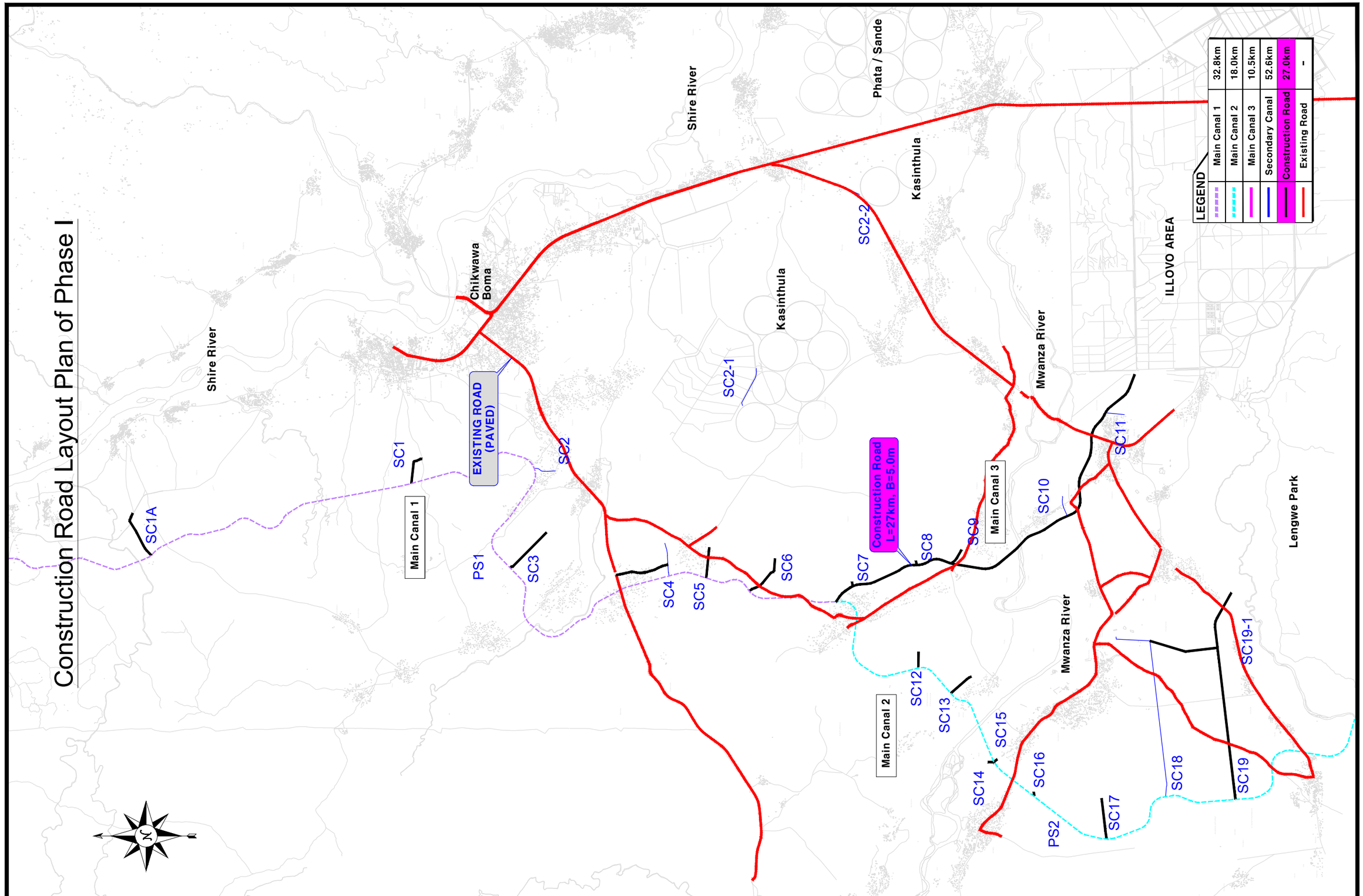
DETAIL OF "A"



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		DETAILS OF FLAP VALVE	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	G-11-02

H. Construction Road

Construction Road Layout Plan of Phase I



CLIENT	CONSULTANT	PROJECT NAME	ORIGINAL DESIGNED BY	DRAWING	SCALE
REPUBLIC OF MALAWI MINISTRY OF AGRICULTURE, IRRIGATION AND WATER DEVELOPMENT	Korea Rural Community Corporation In Jonit Venture with Dasan Consultants Co., Ltd. ISAN CORPORATION EMD Consulting Engineers	SHIRE VALLEY TRANSFORMATION PROGRAM (SVTP Phase 1)	DETAIL DESIGN	DESIGNED BY: Choi, Dong Hoon	1:NONE
		TITLE	DATE	DRAWING BY: Gim, Ho Jun	DRAWING No
		Construction Road Layout Plan of Phase I	JUNE, 2022	CHECKED BY: Jo, Jin Hoon	H-01-01