CONSULTANCY SERVICES FOR SURVEY, DESIGN AND EIA WORKS OF WATER SUPPLY AND SEWERAGE FACILITIES IN 7 ISLANDS, MALDIVES

PACKAGE 4

WATER SUPPLY SYSTEM OF ADH. DHIHDHOO,MALDIVES

For Ministry of National Planning and Housing Infrastructure, Republic of Maldives

EPOCH ASSOCIATES

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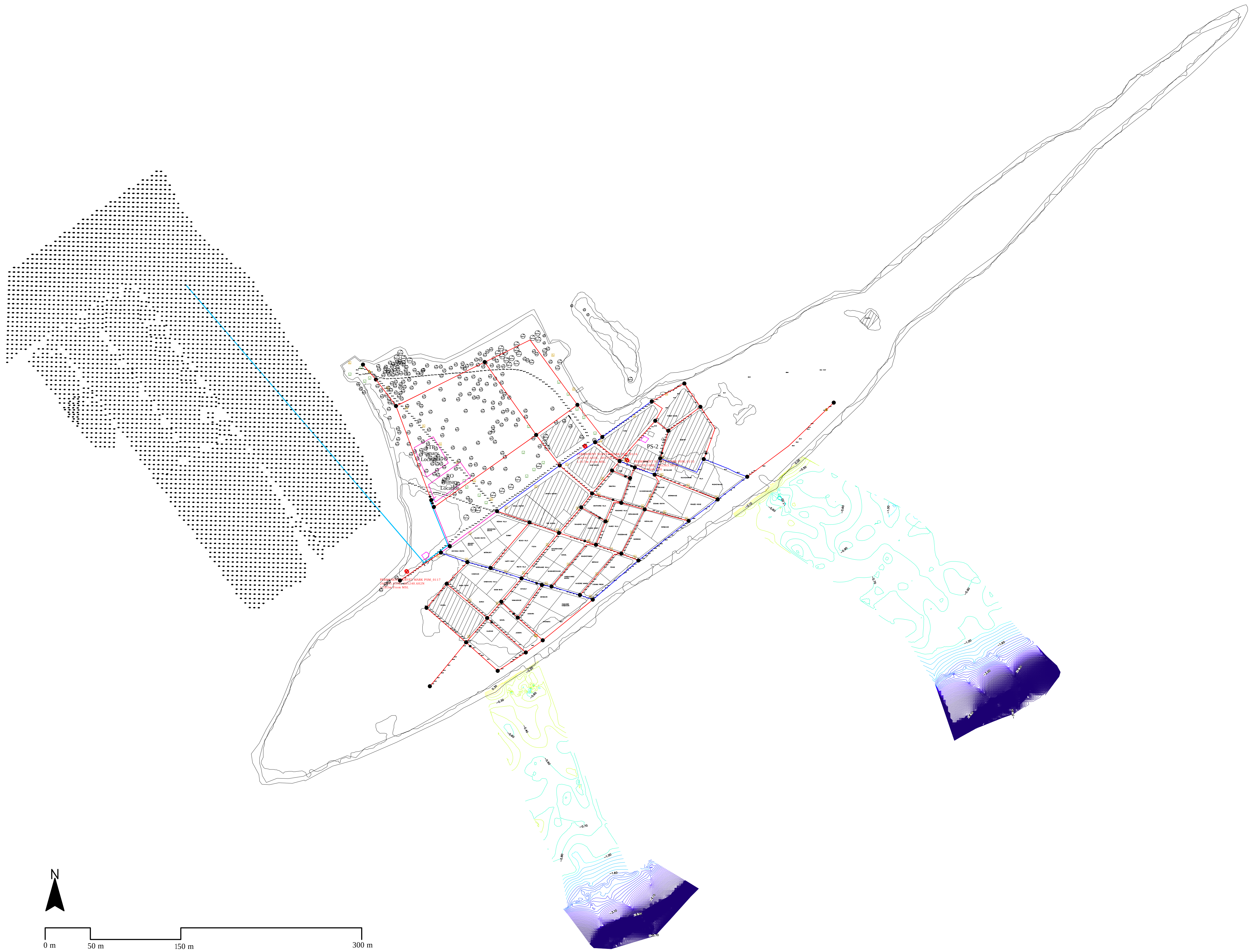

ADH. DHIHDHOO WATER SUPPLY NETWORK LAYOUT

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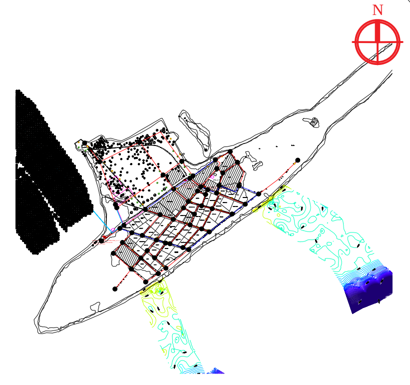

Legend

- Ø63 HDPE Water Main Distribution Pipe
- Ø75 HDPE Water Main Distribution Pipe
- Ø90 HDPE Water Main Distribution Pipe
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- Ø110 HDPE Brine Outfall Pipe
- Washout Valves
- Junction
- Gate Valves

Notes:

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3. This drawing to be read in conjunction with all other relevant drawing and specifications.
4. All pressure pipes and fittings shall be installed using electro-fusion and butt-fusion technologies.
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7. Minimum size of the main water supply network shall be OD 63mm PE100, PN10, SDR17 HDPE pipe.
8. Minimum size of the house service line shall be OD 25mm PE100, PN16, SDR11 HDPE pipe.
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MAINS DISTRIBUTION

DIAMETER (mm)	LENGTH HDPE (m)	TYPE OF PIPE
63	3048	HDPE (PE100,PN10,SDR17)
75	777	
90	138	
Total	3963	

Gate Valves	- 13 nos
Washout Valves	- 02 nos

OUTFALL

DIAMETER (mm)	LENGTH HDPE (m)	TYPE OF PIPE
110	- 118m (on land), 376m (offshore)	HDPE (PE100,PN10,SDR11)

PSM BENCHMARKS

PERMANENT SURVEY MARK PSM_0115
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1.744m From MSL

PERMANENT SURVEY MARK PSM_0116
264192.693E, 385379.004N
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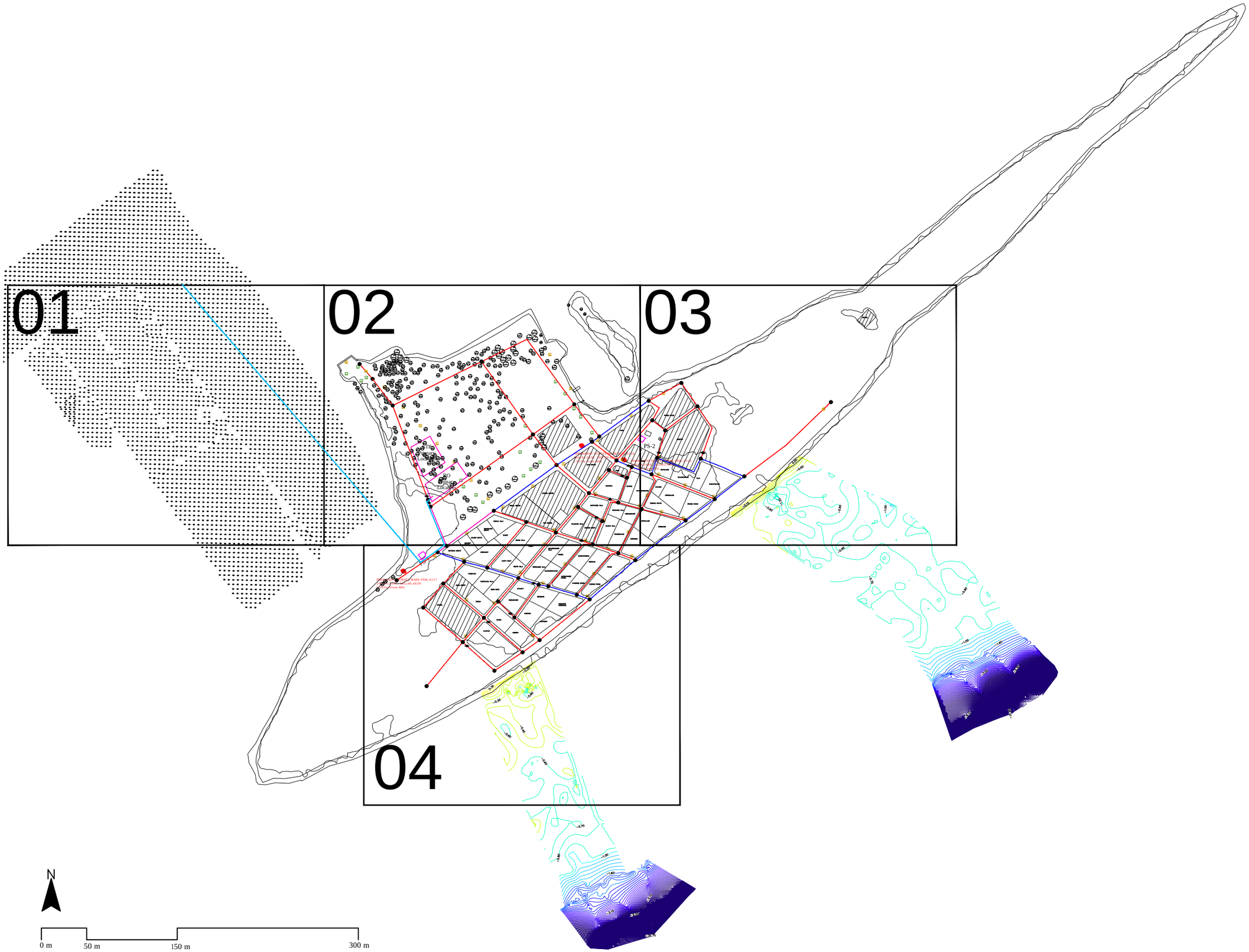

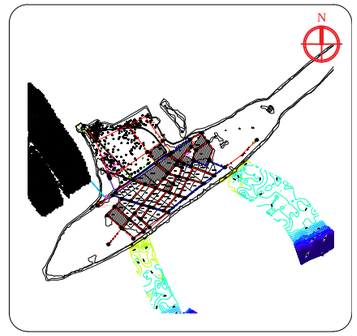

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N

0 m 50 m 150 m 300 m

ADH. DHIHDHOO WATER SUPPLY NETWORK ZONE LAYOUT

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WATER SUPPLY NETWORK - ZONE 1

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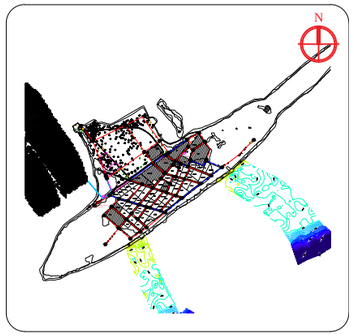

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DIAMETER (mm)	LENGTH HDPE (m)	TYPE OF PIPE
63	1048	HDPE (PE100,PN10,SDR17)
75	777	
90	138	
Total	1963	

Gate Valves	- 13 nos
Washout Valves	- 02 nos

OUTFALL

DIAMETER (mm)	LENGTH HDPE (m)	TYPE OF PIPE
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WATER SUPPLY NETWORK - ZONE 2

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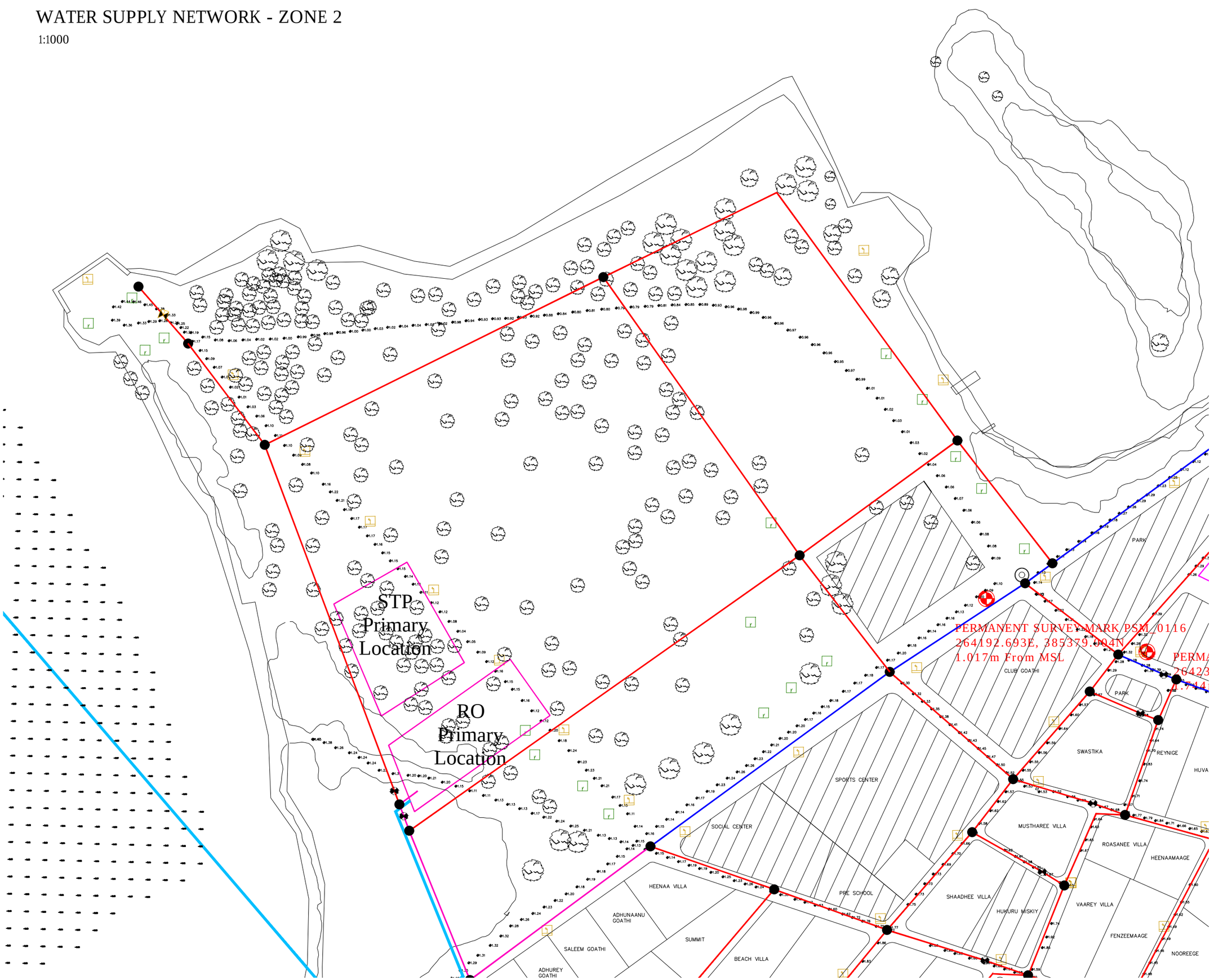

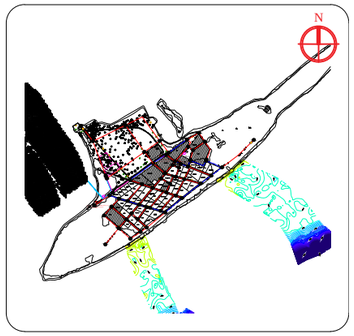

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90	138	
Total	3963	

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WATER SUPPLY NETWORK - ZONE 3

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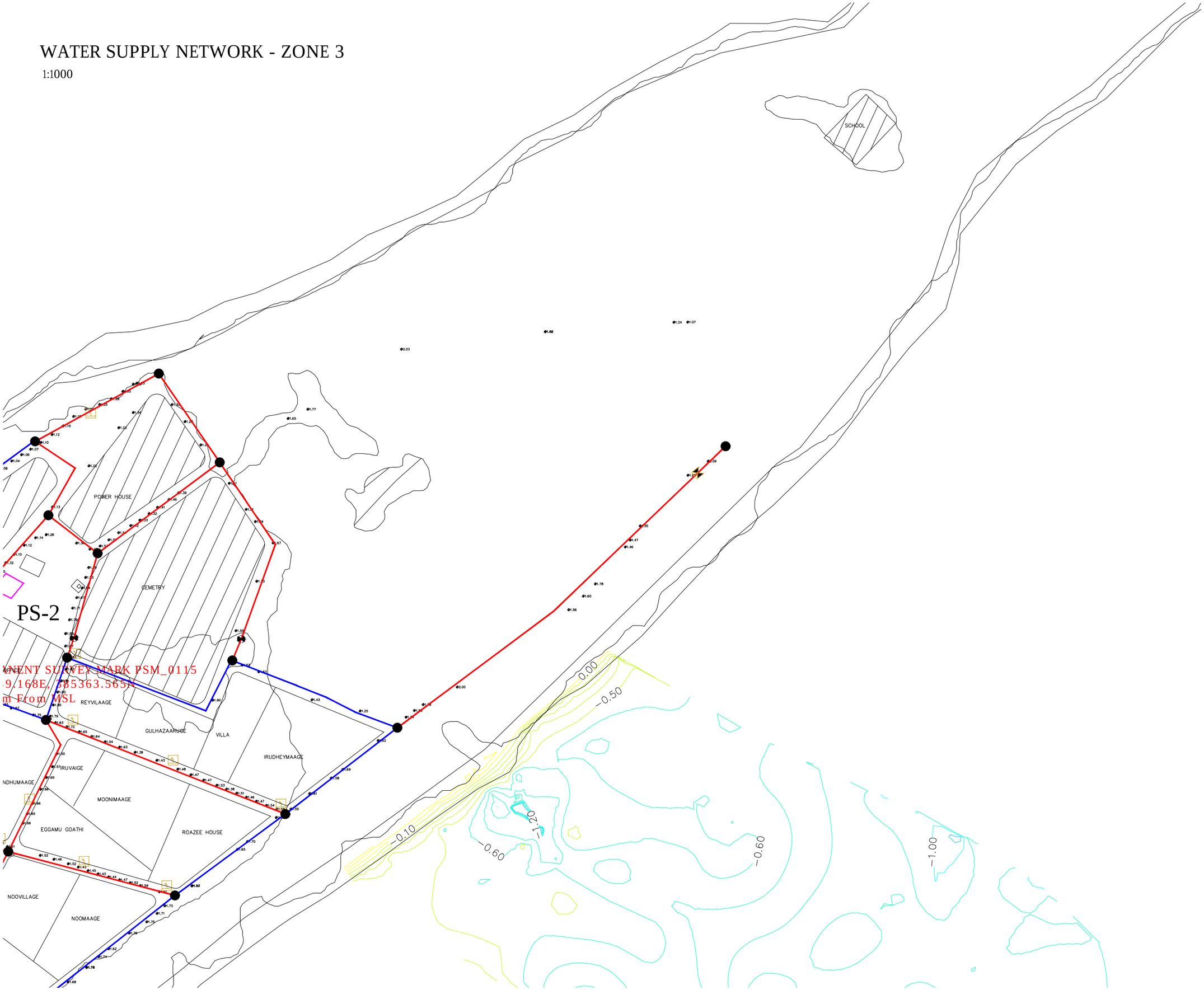

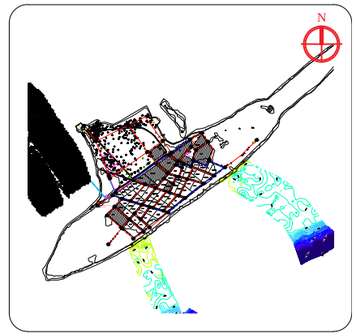

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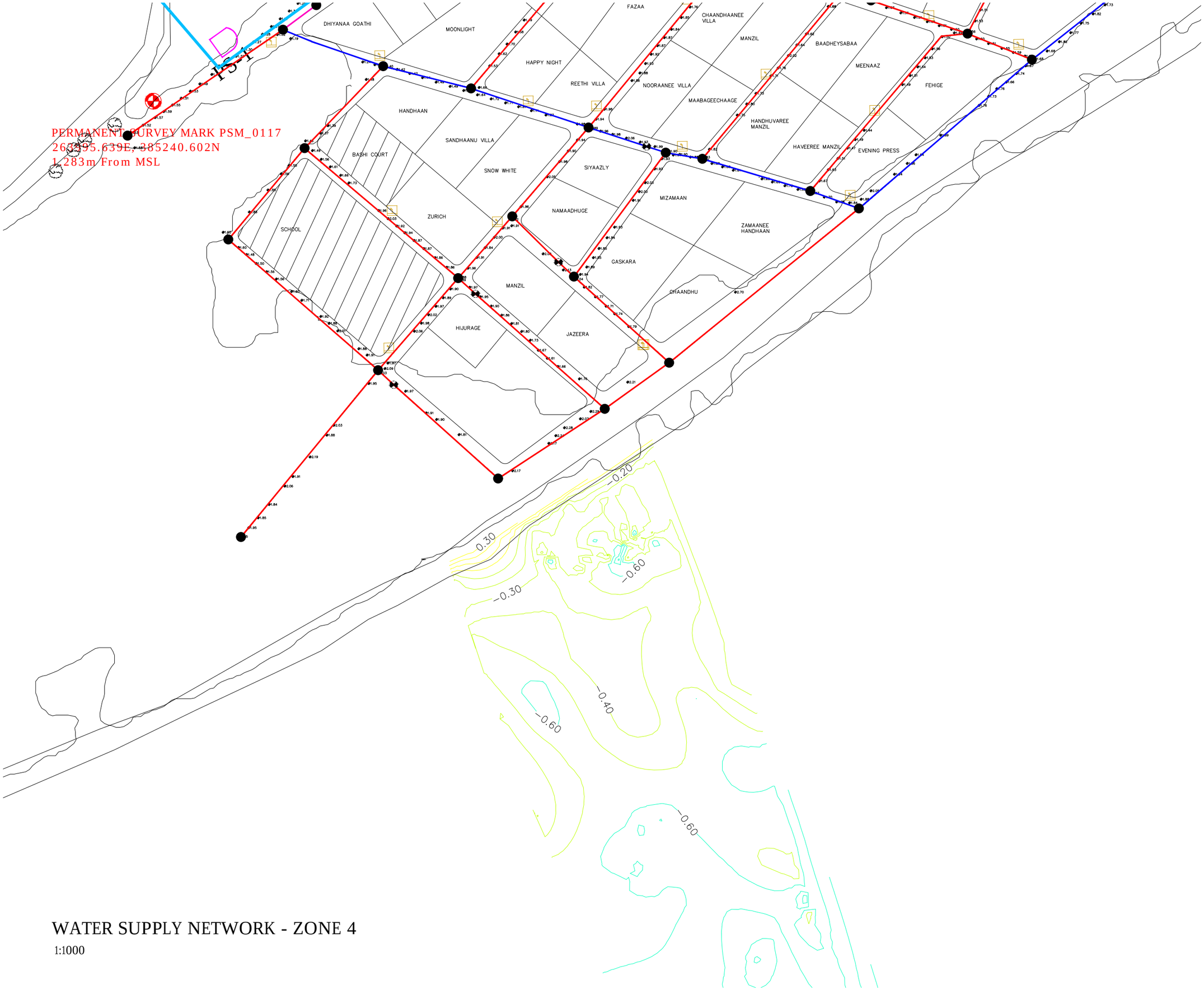

WATER SUPPLY NETWORK - ZONE 4

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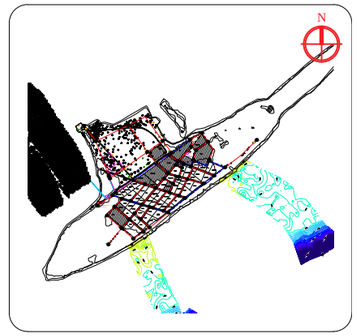

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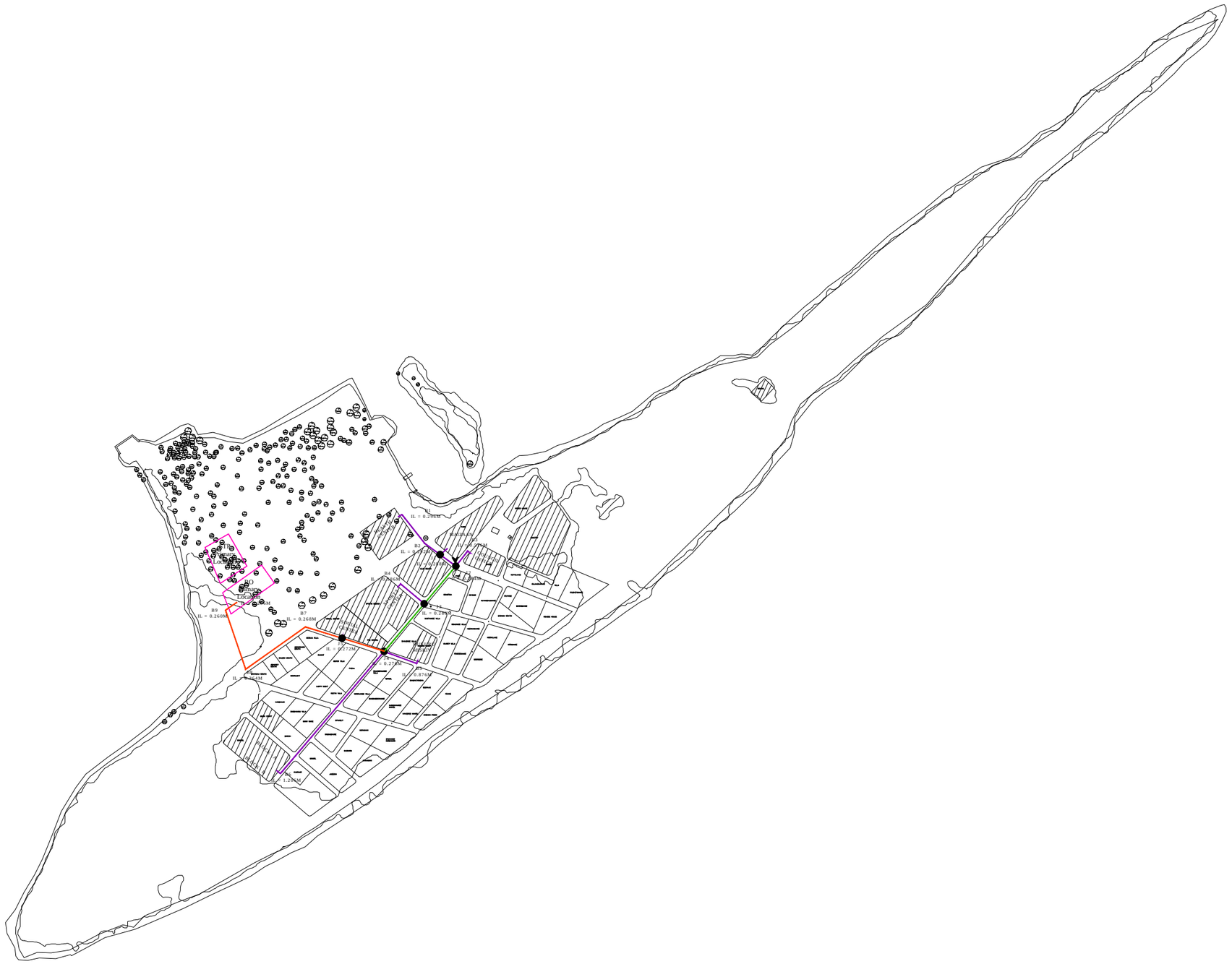
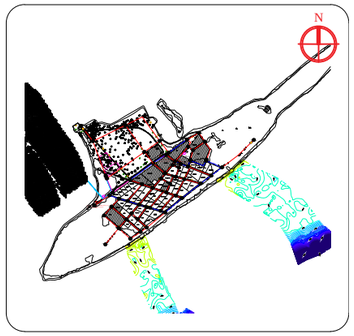


N

0 m 50 m 150 m 300 m

ADH. DHIHDHOO RAINWATER COLLECTION NETWORK LAYOUT

1:4000



Legend

- Ø160 HDPE Rainwater Flow Pipe
- Ø200 HDPE Rainwater Flow Pipe
- Ø250 HDPE Rainwater Flow Pipe
- Junction

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3. This drawing to be read in conjunction with all other relevant drawing and specifications.
4. All gravity pipes should be HDPE PE100, PN6, SDR26 pipes.
5. All gravity pipes are to be laid as per invert levels indicated. Any change based on site condition should be made based on approval from engineer.

RAINWATER FLOW PIPES

DIAMETER (mm)	LENGTH HDPE (m)	TYPE OF PIPE
160	320	HDPE (PE100,PN6,SDR26)
200	100	
250	209	
Total	629	

PSM BENCHMARKS

PERMANENT SURVEY MARK PSM_0115
264239.168E, 385363.565N
1.744m From MSL

PERMANENT SURVEY MARK PSM_0116
264192.693E, 385379.004N
1.017m From MSL

PERMANENT SURVEY MARK PSM_0117
263995.639E, 385240.602N
1.283m From MSL

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 7 islands, Maldives - Package 4

Sub Title:
Water Supply System in Adh.Dhihdhoo

Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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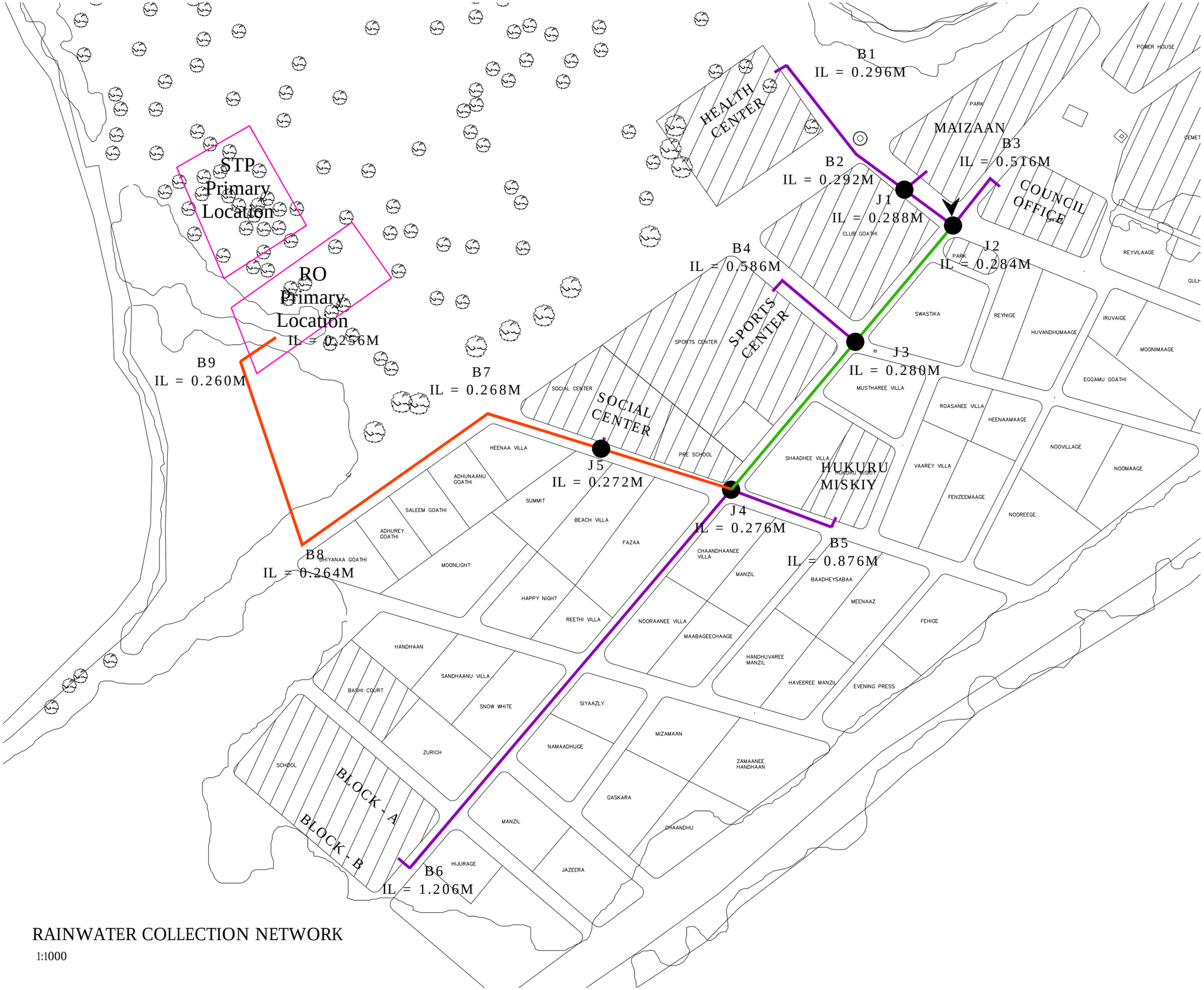
A: G. Rosary West,
Husnuheenaa Magu, Male', Maldives

FEEDBACK INFRA
Making Infrastructure Happen

Drawn:	F.I.A.	Checked:	M.S.S.
Designed:	F.I.A.	Approved:	I.W.
Date:	Sep 2020	SCALE (A3):	1:4000
Project No:	EP-WS/2019/04		
Rev:	R-01	Page:	07



RAINWATER COLLECTION NETWORK

1:1000

Legend

- Ø160 HDPE Rainwater Flow Pipe
- Ø200 HDPE Rainwater Flow Pipe
- Ø250 HDPE Rainwater Flow Pipe
- Junction

Notes:
1. All levels are shown in meters.
2. All levels are shown from mean sea level.
3. This drawing to be read in conjunction with all other relevant drawing and specifications.
4. All gravity pipes should be HDPE PE100, PN6, SDR26 pipes.
5. All gravity pipes are to be laid as per invert levels indicated. Any change based on site condition should be made based on approval from engineer.

RAINWATER FLOW PIPES

DIAMETER (mm)	LENGTH HDPE (m)	TYPE OF PIPE
160	320	HDPE (PE100,PN6,SDR26)
200	100	
250	209	
Total	629	

PSM BENCHMARKS

PERMANENT SURVEY MARK PSM_0115
264239.168E, 385363.565N
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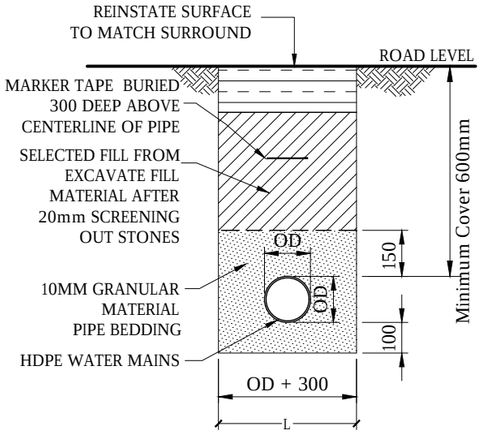
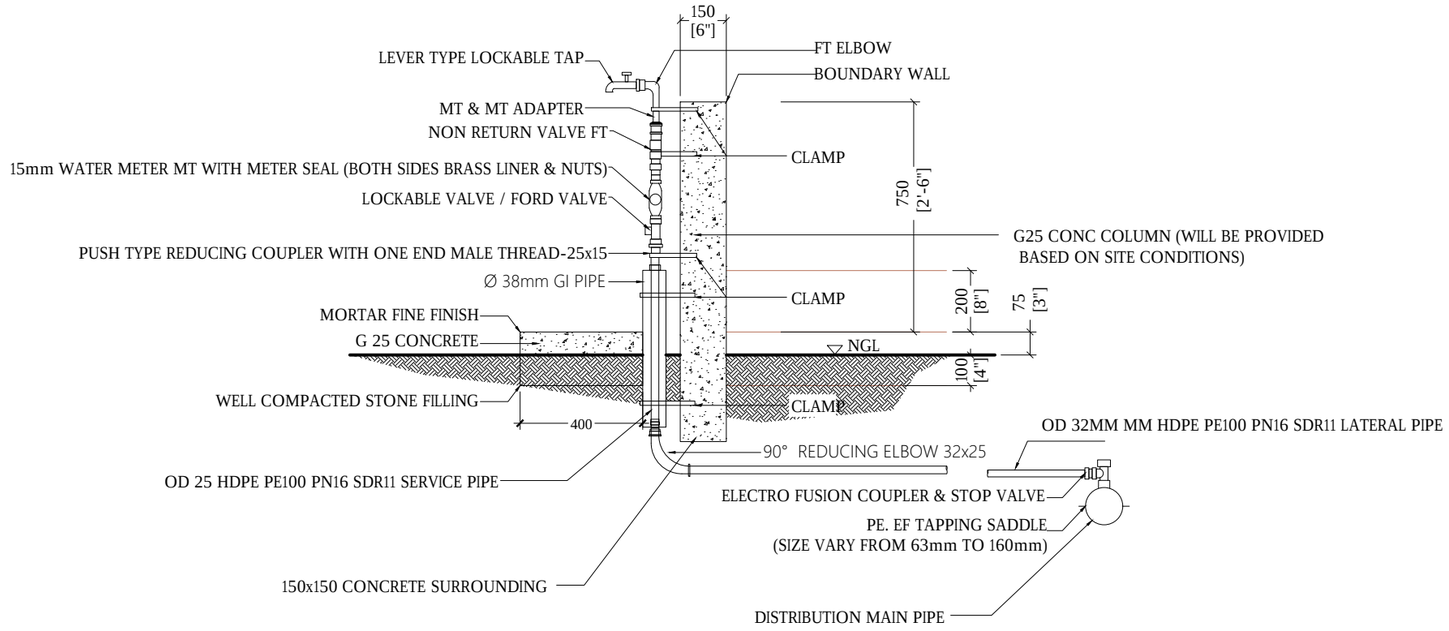
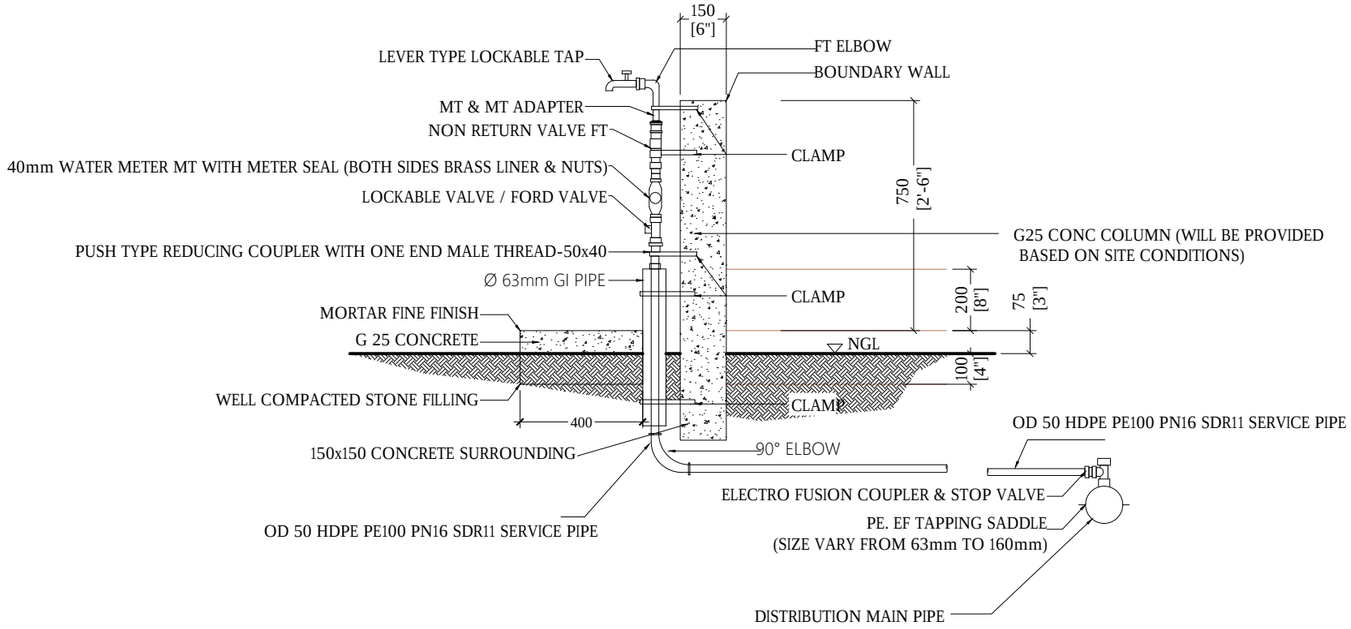
Project No:	EP-WS/2019/04		
Rev:	R-01	Page:	08



TRENCH & BEDDING DETAILS



WATER SUPPLY HOUSE CONNECTION DETAILS



WATER SUPPLY COMMERCIAL/INSTITUTIONAL CONNECTION DETAILS

WATER SUPPLY HOUSE AND
COMMERCIAL/INSTITUTIONAL CONNECTIONS

1:20

N

Legend

Notes:
- Location of house connection meters to be determined based on house connection survey.
- Commercial connections for public buildings and industrial buildings to be provided as per approved connections list from island council.

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
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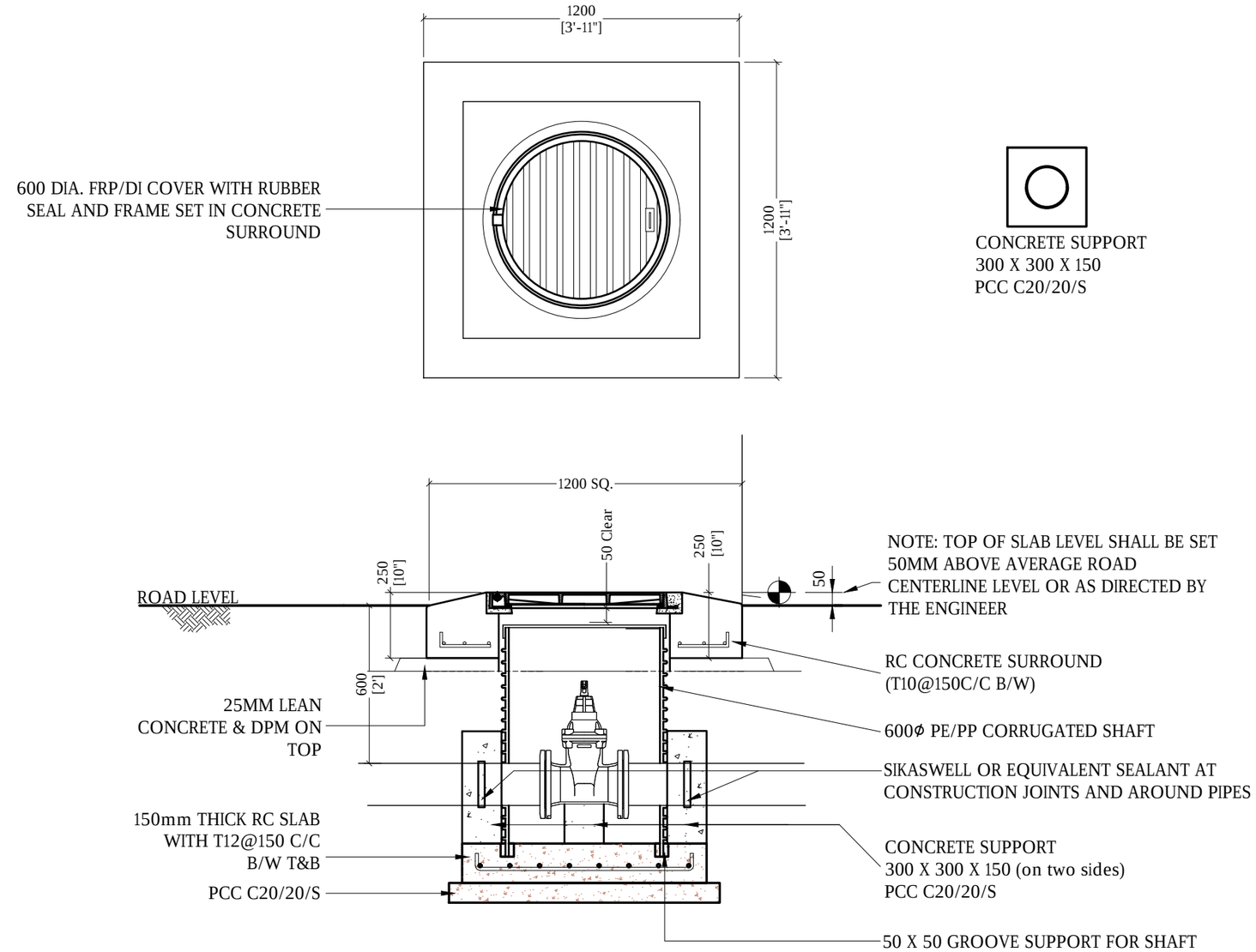
Project No: EP-WS/2019/04	
Rev: R-01	Page: W-01



SECTION - VALVE CHAMBER

CONCRETE SUPPORT
300 X 300 X 150
PCC C20/20/S

VALVE CHAMBER DETAILS

1:20

N

Legend

Notes:
-All structural concrete shall be of grade C25.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 75mm should be given for all reinforcements.

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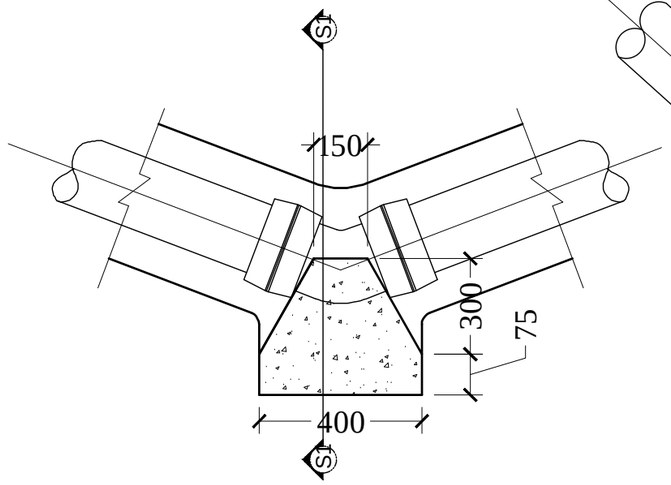
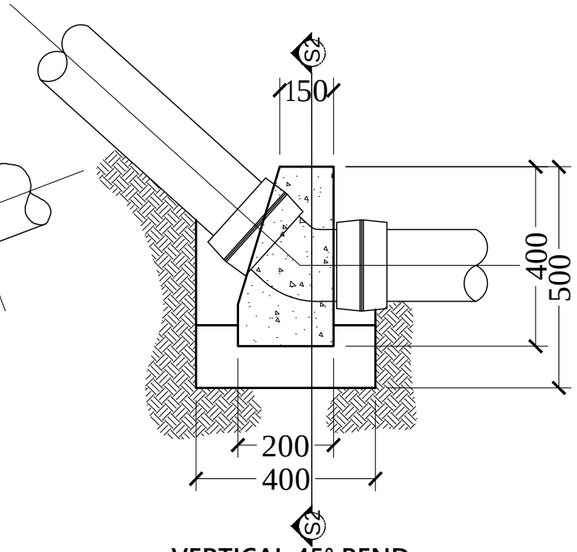
Project No: EP-WS/2019/04

Rev: R-01

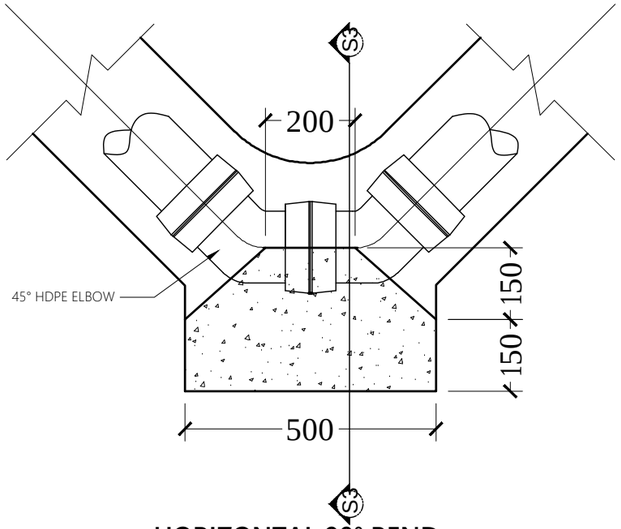
Page: W-02



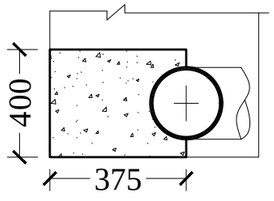
HORIZONTAL 45° BEND
NTS



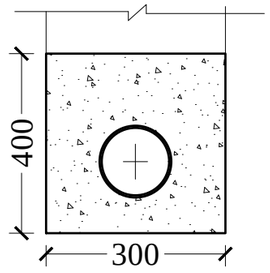
VERTICAL 45° BEND
NTS



HORIZONTAL 90° BEND
NTS



SECTION S1-S1
NTS



SECTION S2-S2
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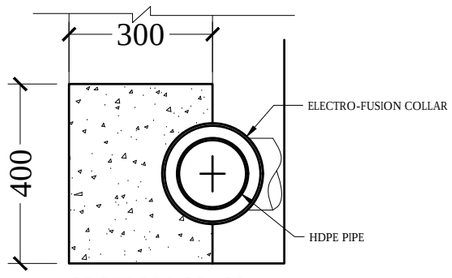

SECTION S3-S3
NTS

THRUST BLOCK DETAILS
NTS

N

Legend

Notes:
-All structural concrete shall be of grade C25.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

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Sub Title:
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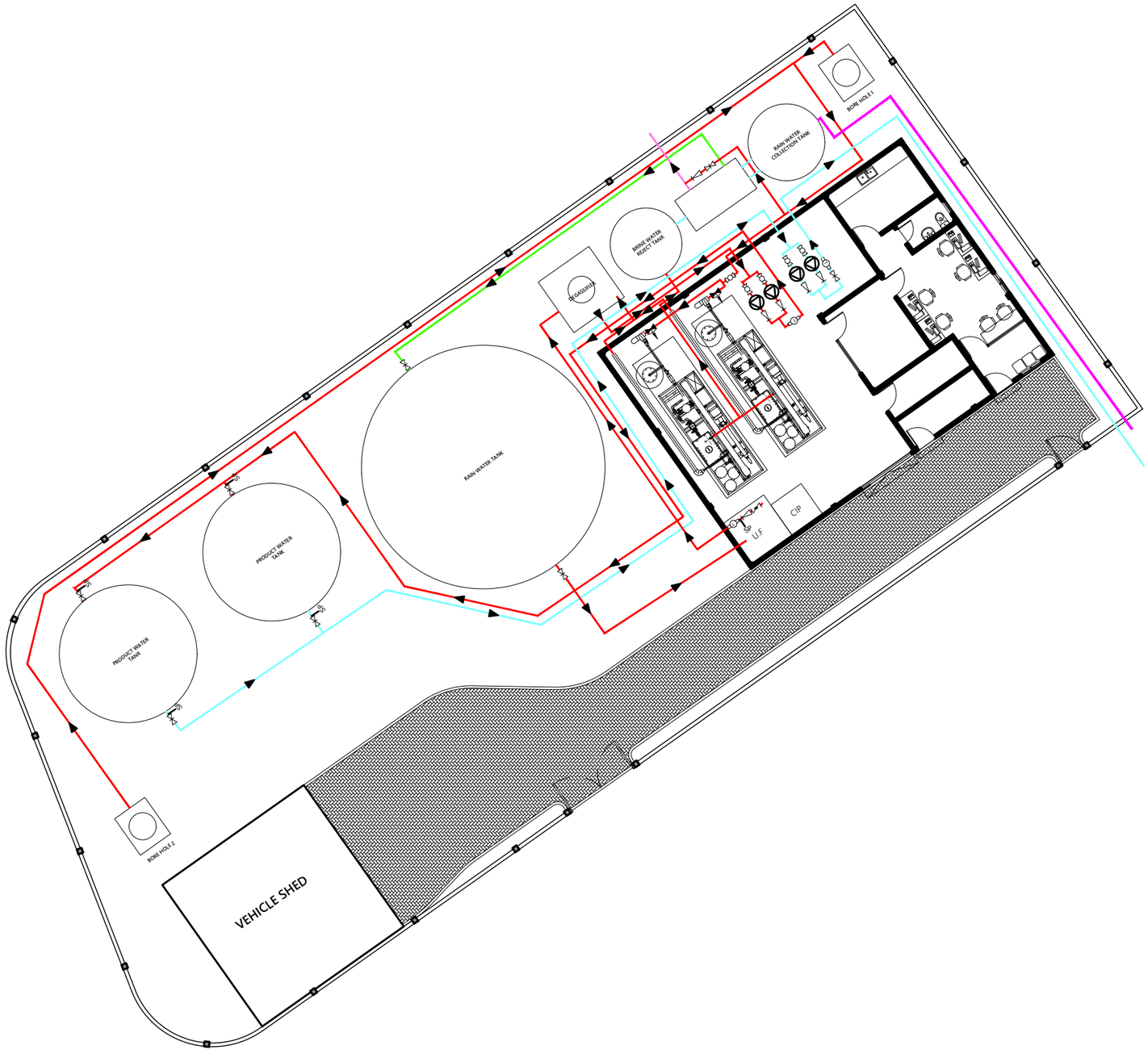
Date:	Sep 2020	SCALE (A3):	NTS

Project No: EP-WS/2019/04

Rev: R-01

Page: W-03



PUMP DETAILS

Borehole Pump : 2 Nos
- Flow (Q) = 5.55 m3/hr
- Head (H) = 50 m

High Pressure Pump : 2 Nos
- Flow (Q) = 2.78 m3/hr
- Pressure Range = 40-85 bar

Transfer Pump : 2 Nos
- Flow (Q) = 4.17 m3/hr
- Head (H) = 9 m

Distribution Pump Set : 2 Nos
- Flow (Q) = 3.00 m3/hr
- Head (H) = 35 m

Brine Pump : 2 Nos
- Flow (Q) = 3.89 m3/hr
- Head (H) = 13 m

Rain Water lift Well Pump : 2 Nos
- Flow (Q) = 35.24 m3/hr
- Head (H) = 12m

UF Feed Pump : 2 Nos
- Flow (Q) = 2.5 m3/hr
- Head (H) = 35 m

Gate Valve

Check Valve

Totalizer

Pump

Closed Gate Valve

SP Sampling Point

Butterfly Valve

Ball Valve

N

INTERNAL PIPE LAYOUT

1:200

N

Legend

- Ø90 HDPE (PE100, PN10, SDR17)
- Ø63 HDPE (PE100, PN10, SDR17)
- Ø160 HDPE (PE100, P10, SDR17)
- Ø110 HDPE (OUTFALL PE100, PN16, SDR11)
- Ø250 HDPE (RAINWATER PE100, PN6, SDR26)

Notes:

- All Pump sizes are based on 15 year demands.
- Rainwater collection Pump sizing is done considering Maximum Rainfall intensity of 50mm/hr.
- UF feed pump will be subject to Approved UF Plant suppliers approval.
- Both Feed Pump and High pressure pump capacity will need to be approved by the approved RO plant Supplier. The working pressure range will be established based on the approved suppliers requirements.
- Distribution Pump set will have Variable Frequency Drive.
- All pump control float switches and automated valves will be provided.
- Contractor to produce shop drawings of interior layout based on site condition for approval by engineer.

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Sub Title:

Water Supply System in Adh. Dhihdhoo

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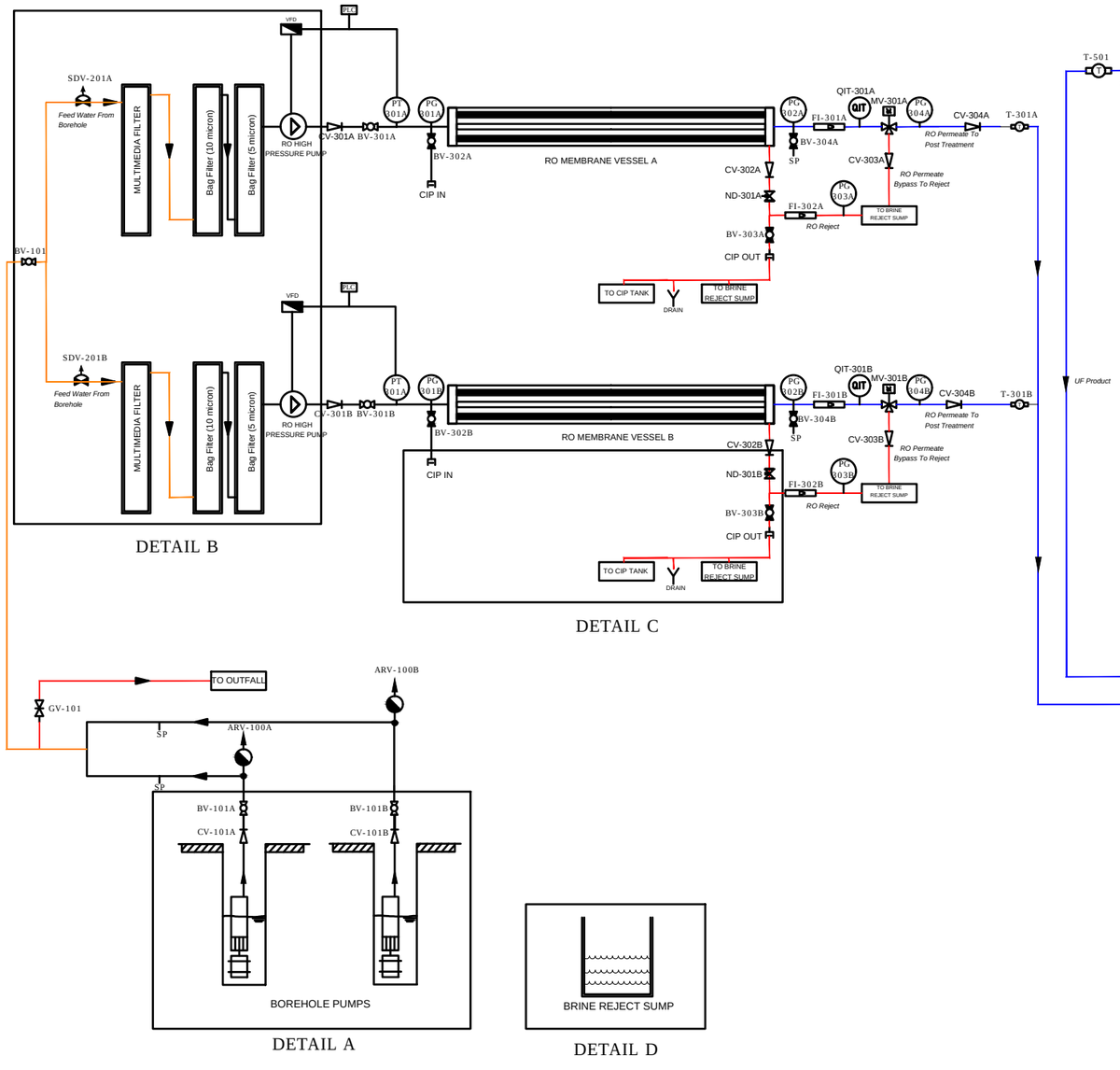
Rev: **R-01**

Page: **W-04**

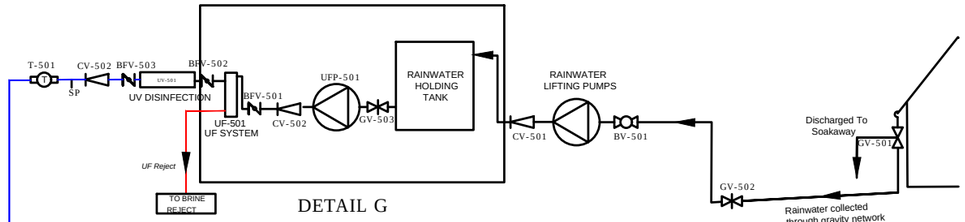


DETAIL B

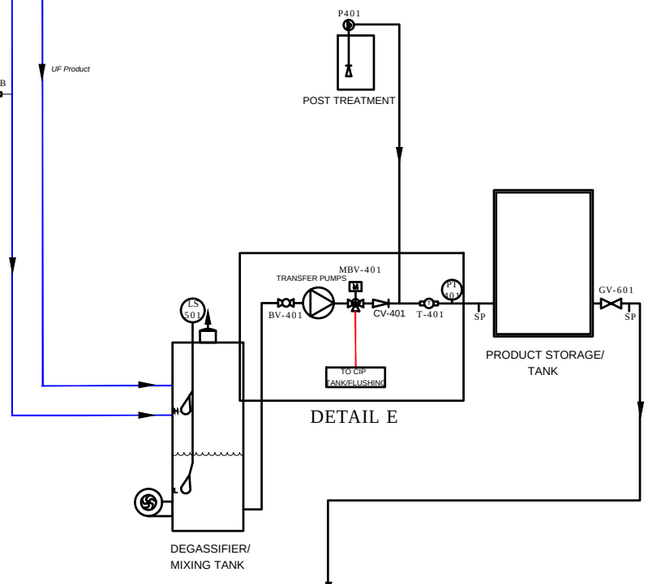
DETAIL C

DETAIL A

DETAIL D



DETAIL G



DETAIL E

DETAIL F

LEGEND

ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
MANUALLY OPERATED	BUTTERFLY	FLANGED CONNECTION	VALVE NORMALLY OPEN	LS - LEVEL SENSOR
DIAPHRAGM - SINGLE ACTING	BALL	TRAP	VALVE NORMALLY CLOSED	FT - FLOW TRANSMITTER
DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	3-WAY	SAMPLING POINT		SP - SAMPLING POINT
	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
				QIT - CONDUCTIVITY INDICATOR
				PLC - PROGRAMMABLE LOGIC CONTROLLER

IWRM PLANT P&I OVERVIEW

NTS

N

Legend

- FEED LINE
- REJECT LINE
- PRODUCT LINE

Note:

- CPVC pipe with PN10 rating to be used for the internal pipeline of the plant except for high pressure area (HPP to MV).
- From HPP to MV SS316 piping to be used.
- CPVC pipe with PN16 rating to be used for pipe fittings.
- CPVC pipe with SDR ratio 17 ratio to be used for network.
- HPP used to have a self cooled radial piston.
- CF filters to have a plastic housing with SS304 bolt fittings at connections.
- MM filters to be sized with 32" height by 7" diameter housing.
- Borehole Pumps set to include Variable Frequency Drive (VFD)

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
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Drawn: F.I.A. | Checked: M.S.S.

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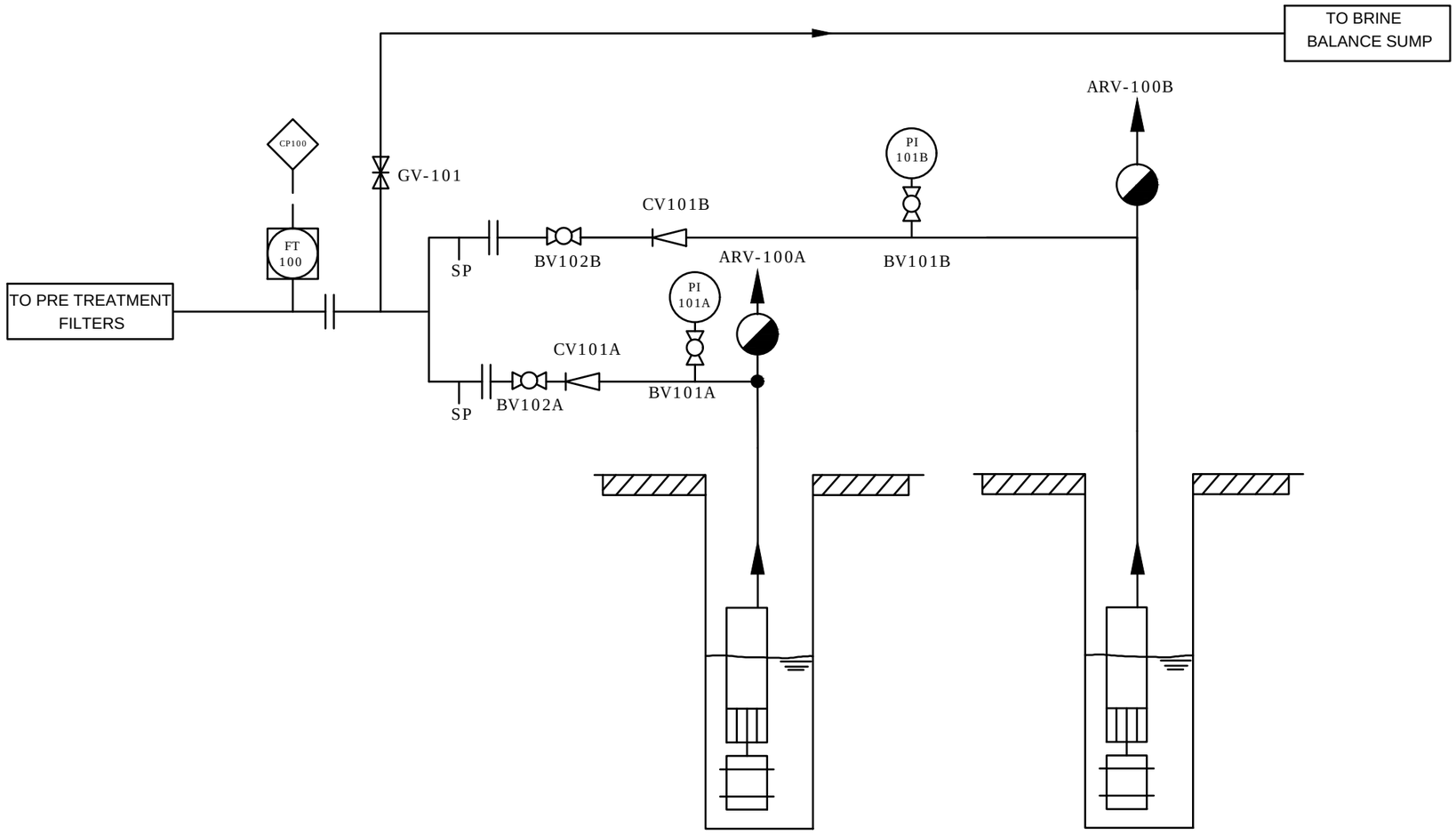
Project No: EP-WS/2019/04

Rev: R-01 | Page: W-05



BOREHOLE PUMPS

DETAIL A

LEGEND				
ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
MANUALLY OPERATED	BUTTERFLY	FLANGED CONNECTION	VALVE NORMALLY OPEN	LS - LEVEL SENSOR
DIAPHRAGM - SINGLE ACTING	BALL	TRAP	VALVE NORMALLY CLOSED	FT - FLOW TRANSMITTER
DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	3-WAY	SAMPLING POINT		SP - SAMPLING POINT
	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
				QIT - CONDUCTIVITY INDICATOR
				PLC - PROGRAMMABLE LOGIC CONTROLLER

IWRM PLANT P&I DETAIL A

NTS

N

Legend

Note:
- Borehole pumps to be controlled by Variable Frequency Drive (VFD)

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

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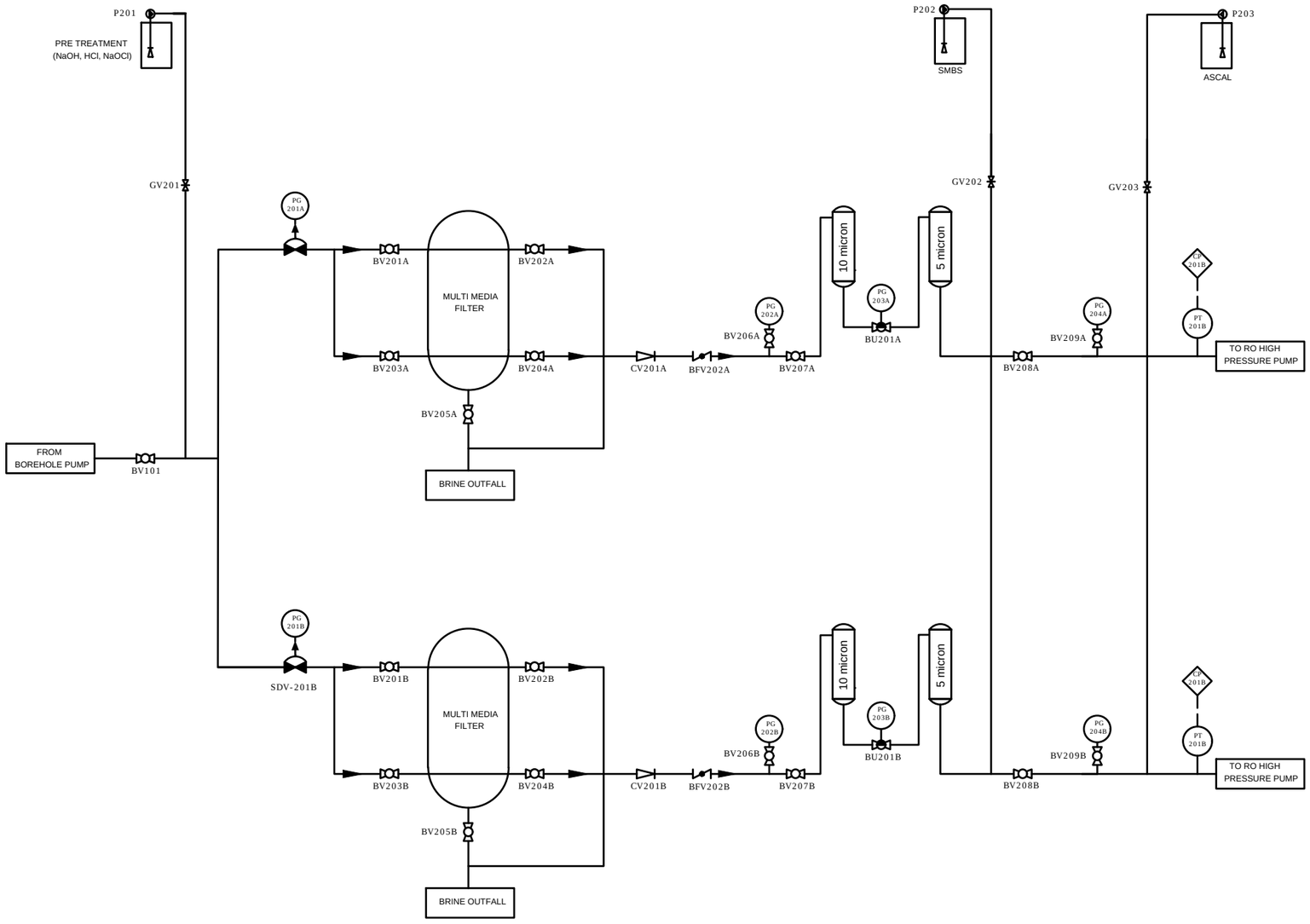
Project No:	EP-WS/2019/04		
Rev:	R-01	Page:	W-06



DETAIL B

LEGEND				
ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
MANUALLY OPERATED	BUTTERFLY	FLANGED CONNECTION	VALVE NORMALLY OPEN	LS - LEVEL SENSOR
DIAPHRAGM - SINGLE ACTING	BALL	TRAP	VALVE NORMALLY CLOSED	FT - FLOW TRANSMITTER
DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	3-WAY	SAMPLING POINT		SP - SAMPLING POINT
	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
				QIT - CONDUCTIVITY INDICATOR
				PLC - PROGRAMMABLE LOGIC CONTROLLER

IWRM PLANT P&I DETAIL B

NTS

N

Legend

Note:
- SMBS Pre dosing chemical to be used only if Chlorine based dosing chemical is added prior to filtration.
- Union valve to be connected in between the two cartridge filters.
- MM filters to be controlled manually.

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
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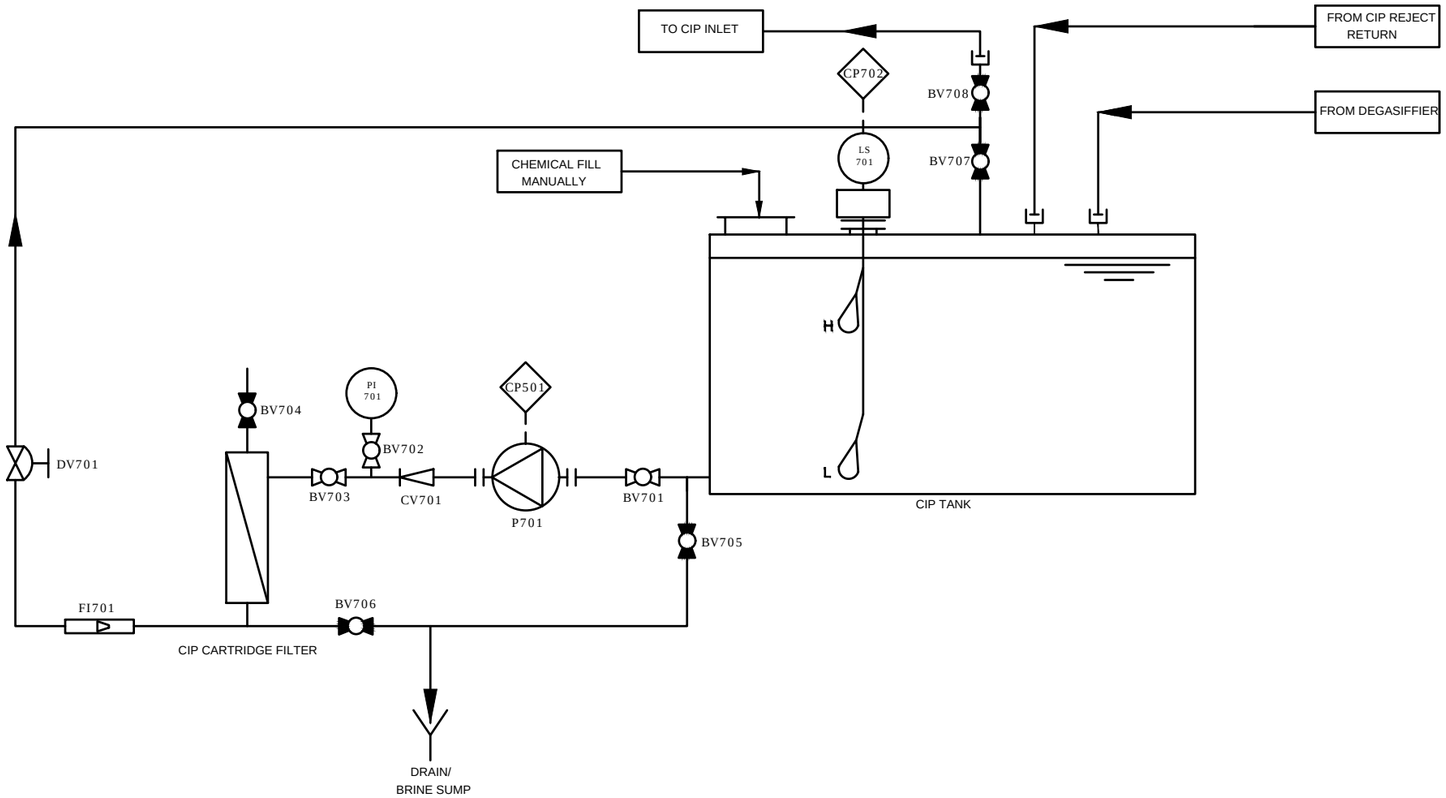
Project No: EP-WS/2019/04

Rev: R-01

Page: W-07



DETAIL C

LEGEND

ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
MANUALLY OPERATED	BUTTERFLY	FLANGED CONNECTION	VALVE NORMALLY OPEN	LS - LEVEL SENSOR
DIAPHRAGM - SINGLE ACTING	BALL	TRAP	VALVE NORMALLY CLOSED	FT - FLOW TRANSMITTER
DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	3-WAY	SAMPLING POINT		SP - SAMPLING POINT
	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
				QIT - CONDUCTIVITY INDICATOR
				PLC - PROGRAMMABLE LOGIC CONTROLLER

IWRM PLANT P&I DETAIL C

NTS

N

Legend

Note:
- Flexible hose VIC connection to be used for during CIP use and flushing.

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 7 islands, Maldives - Package 4

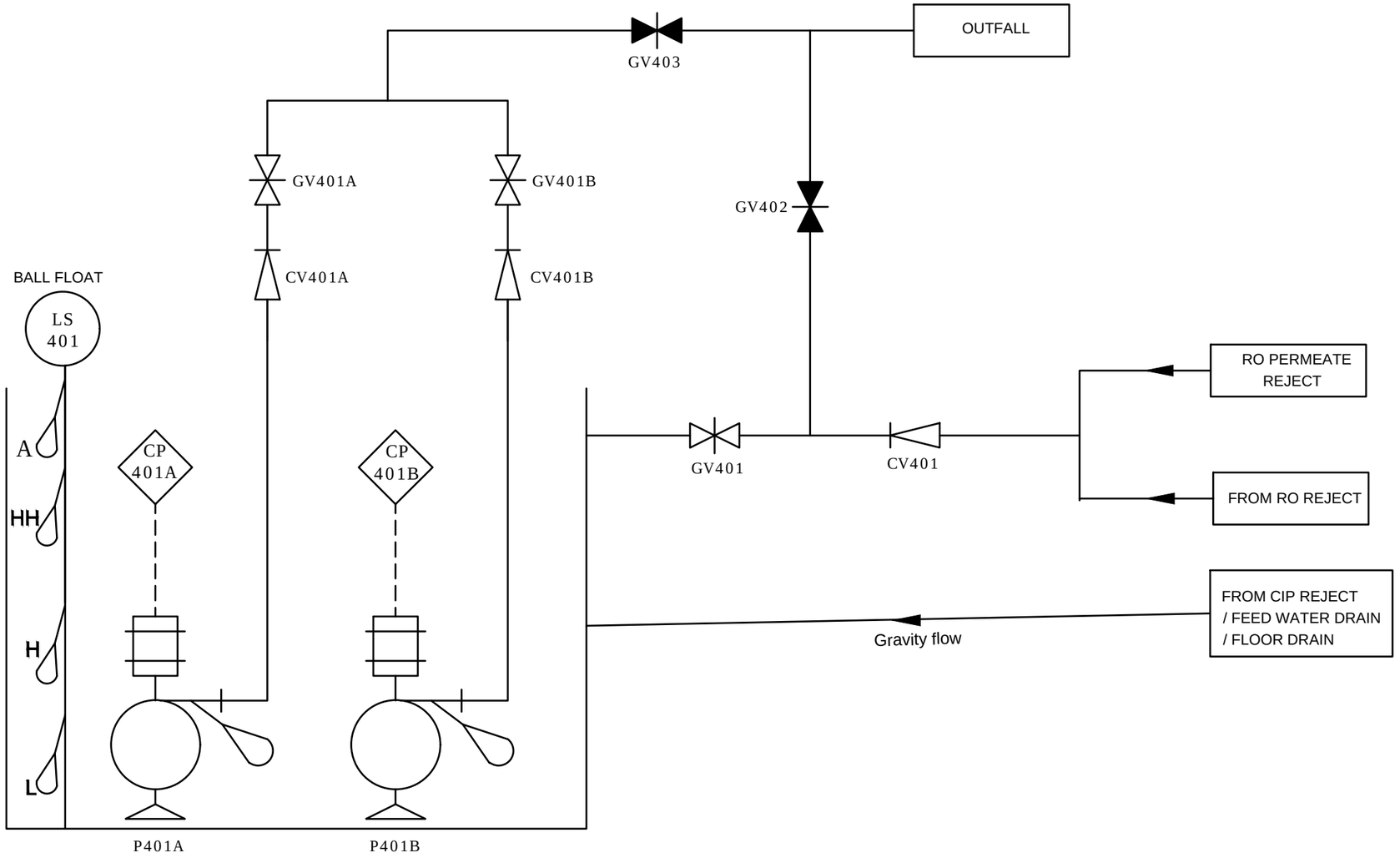
Sub Title:
Water Supply System in Adh. Dhihdhoo

Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

EPOCH
T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West, Husnuheenaa Magu, Male', Maldives

FEEDBACK INFRA
Making Infrastructure Happen

Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/04	
Rev: R-01	Page: W-08



BRINE BALANCE SUMPS

DETAIL D

LEGEND				
ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
MANUALLY OPERATED	BUTTERFLY	FLANGED CONNECTION	VALVE NORMALLY OPEN	LS - LEVEL SENSOR
DIAPHRAGM - SINGLE ACTING	BALL	TRAP	VALVE NORMALLY CLOSED	FT - FLOW TRANSMITTER
DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	GATE	SAMPLING POINT		SP - SAMPLING POINT
	3-WAY	FLOW INDICATOR		AR - AIR RELEASE
	SLUICE			P - PUMP
	MOTORIZED BALL			PG - PRESSURE GAUGE
	TORTALIZER			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
				QIT - CONDUCTIVITY INDICATOR
				PLC - PROGRAMMABLE LOGIC CONTROLLER

IWRM PLANT P&I DETAIL D

NTS

N

Legend

Note:
- Separate pipeline to be laid out connecting the drain points around the plant area, CIP reject and feed water drain.
- Either Dry mount of submersible pumps to be used.

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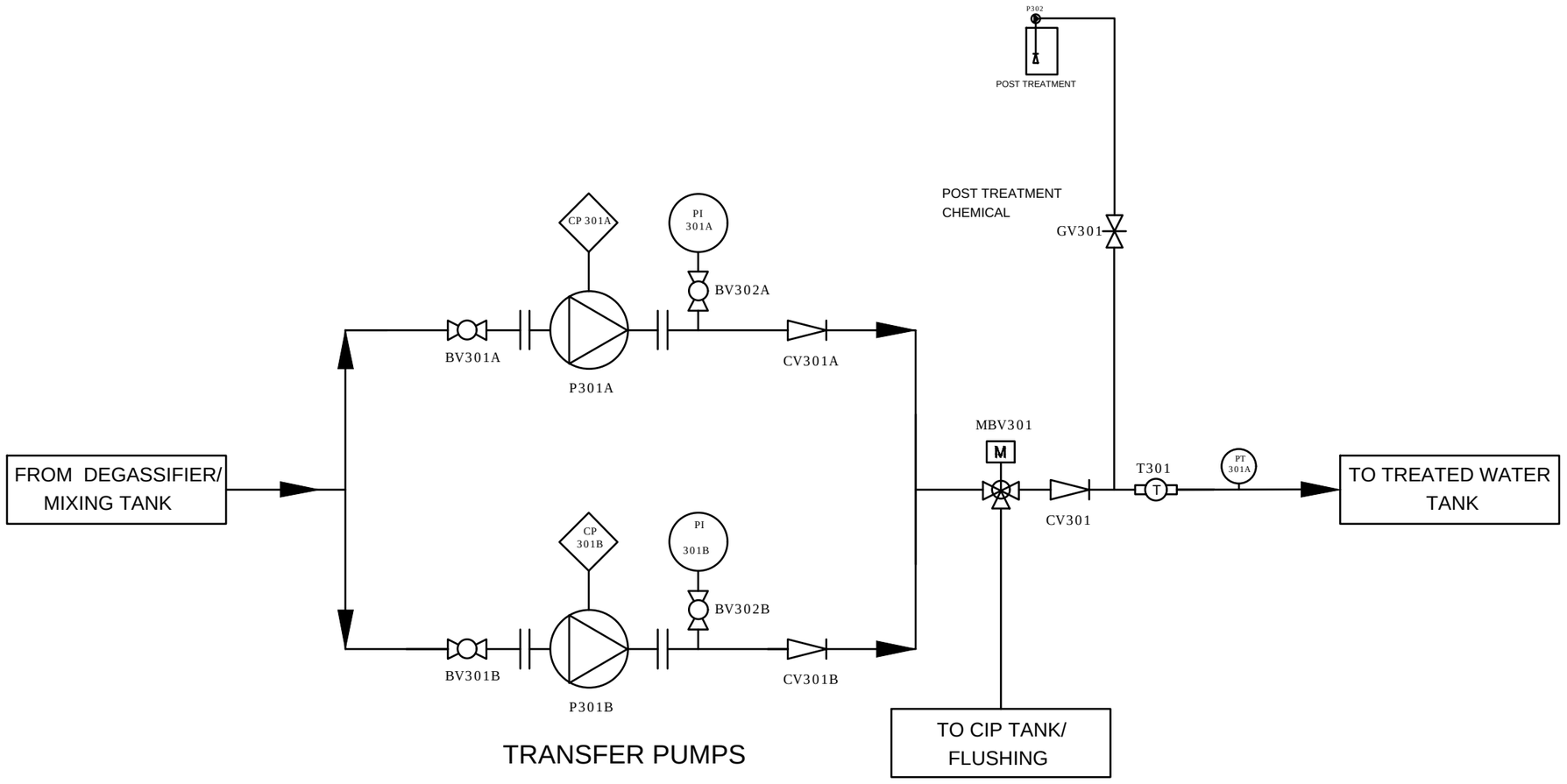

TRANSFER PUMPS

DETAIL E

LEGEND

ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
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DIAPHRAGM - SINGLE ACTING	BALL	TRAP	VALVE NORMALLY CLOSED	FT - FLOW TRANSMITTER
DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	3-WAY	SAMPLING POINT		SP - SAMPLING POINT
	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
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IWRM PLANT P&I DETAIL E

NTS

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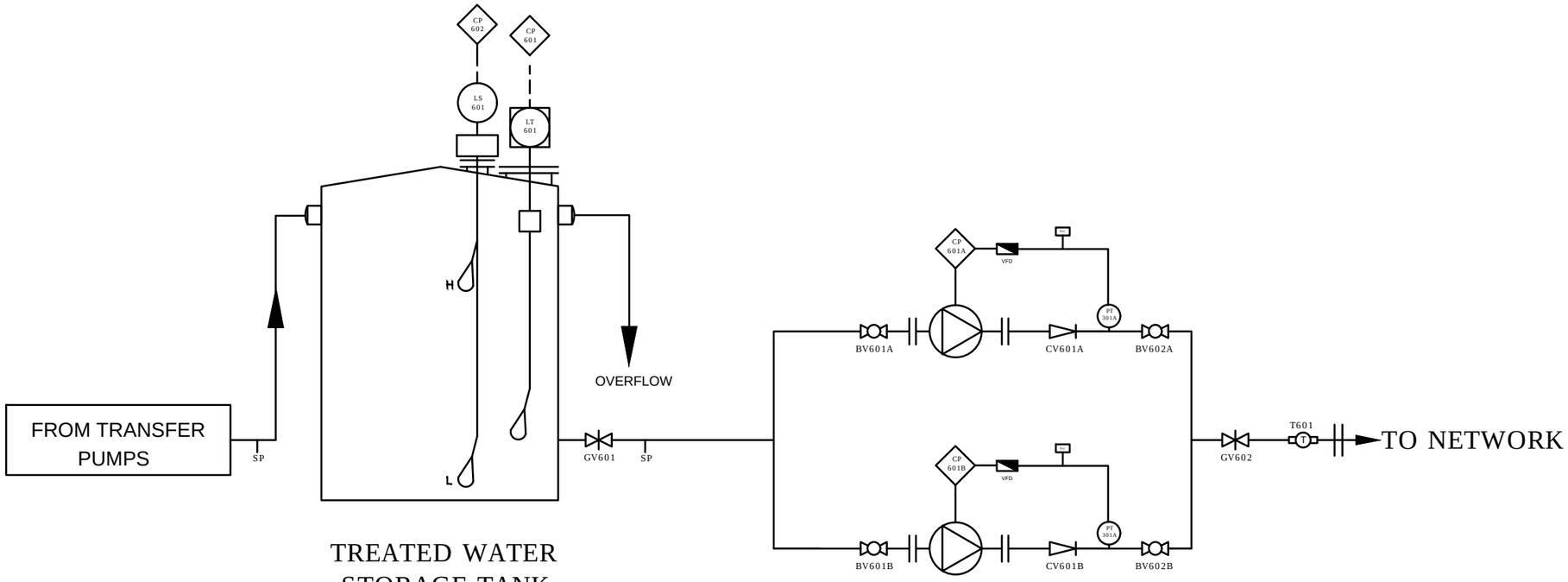
Rev: R-01

Page: W-10



DISTRIBUTION PUMPS

DETAIL F

LEGEND

ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
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DIAPHRAGM - DOUBLE ACTING	DIAPHRAGM	DISCHARGE TO ATMOSPHERE		PI - PRESSURE INDICATOR
PNEUMATIC PISTON	3-WAY	SAMPLING POINT		SP - SAMPLING POINT
	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
	MOTORIZED 3 WAY			LT - LEVEL TRANSMITTER
				QIT - CONDUCTIVITY INDICATOR
				PLC - PROGRAMMABLE LOGIC CONTROLLER

IWRM PLANT P&I DETAIL F

NTS

N

Legend

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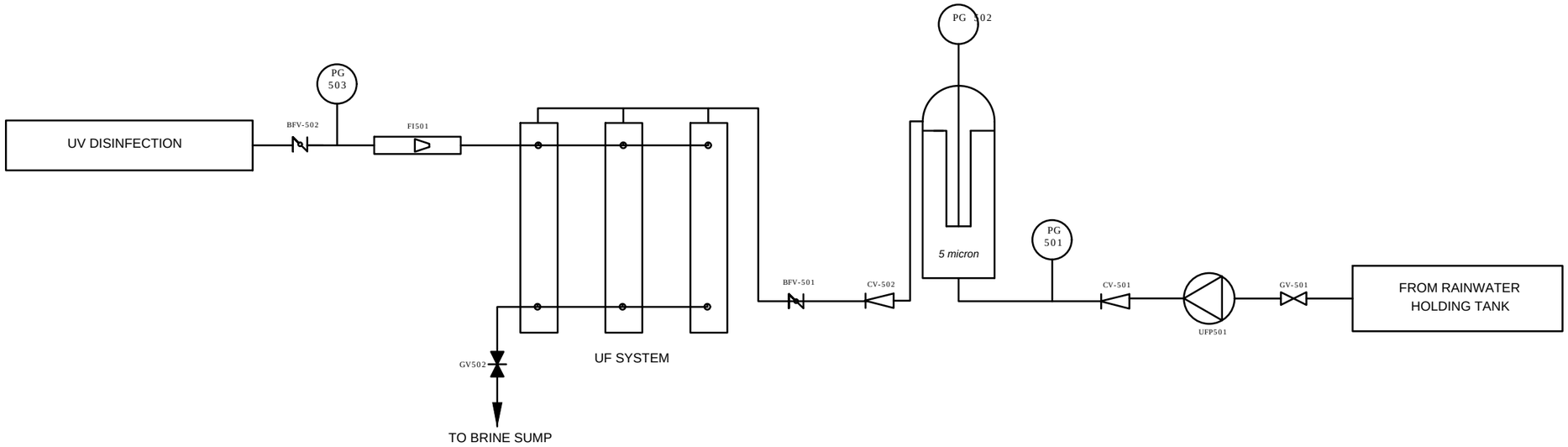
UV DISINFECTION



DETAIL G

LEGEND				
ACTUATION	VALVES	FEATURES	CONDITION	ABBREVIATIONS
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	SLUICE	FLOW INDICATOR		AR - AIR RELEASE
	MOTORIZED BALL			P - PUMP
	TORTALIZER			PG - PRESSURE GAUGE
	GATE			PS - PRESSURE SENSOR
	CHECK VALVE			CP - CONNECTION POINT
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IWRM PLANT P&I DETAIL G

NTS

N

Legend

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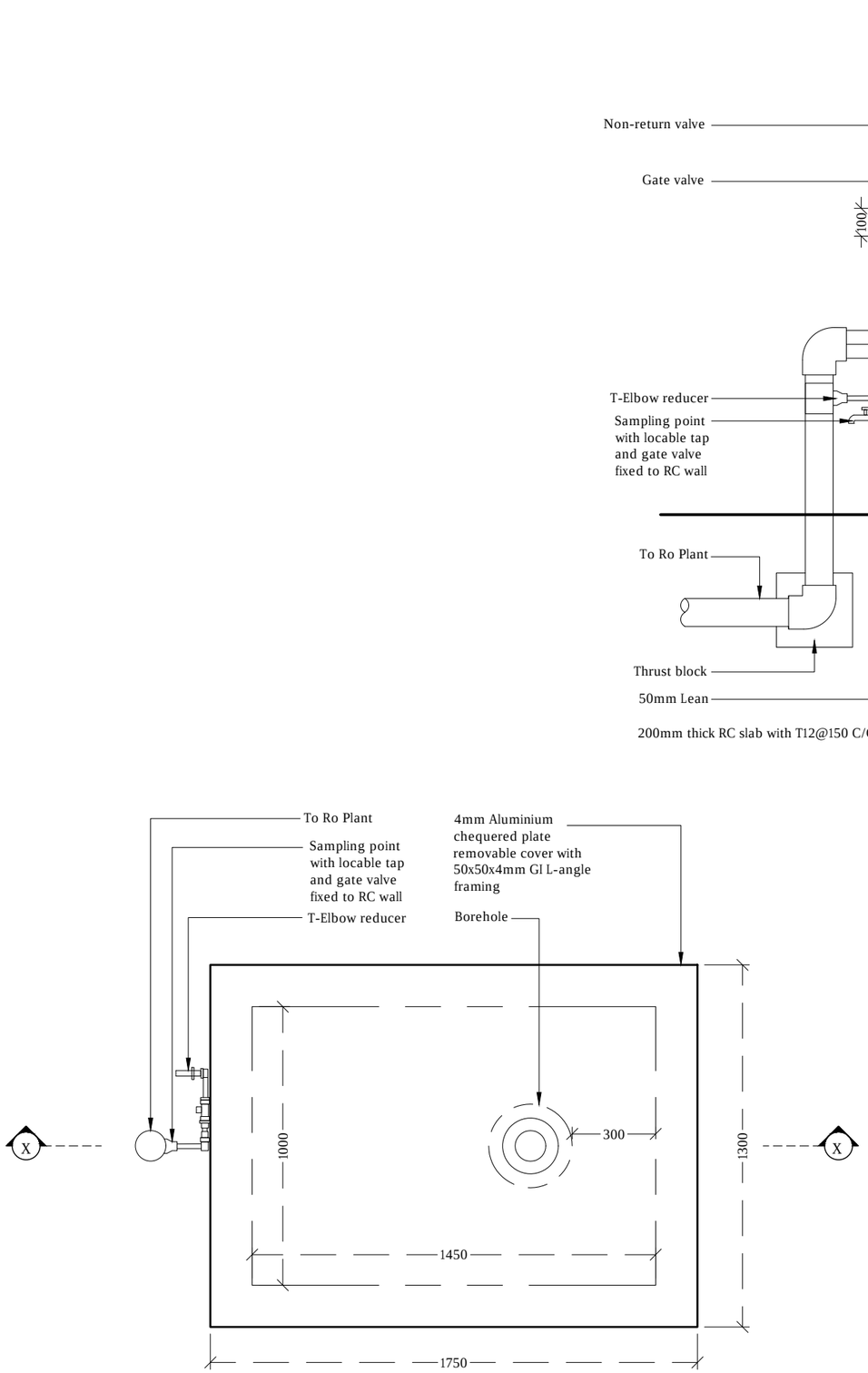
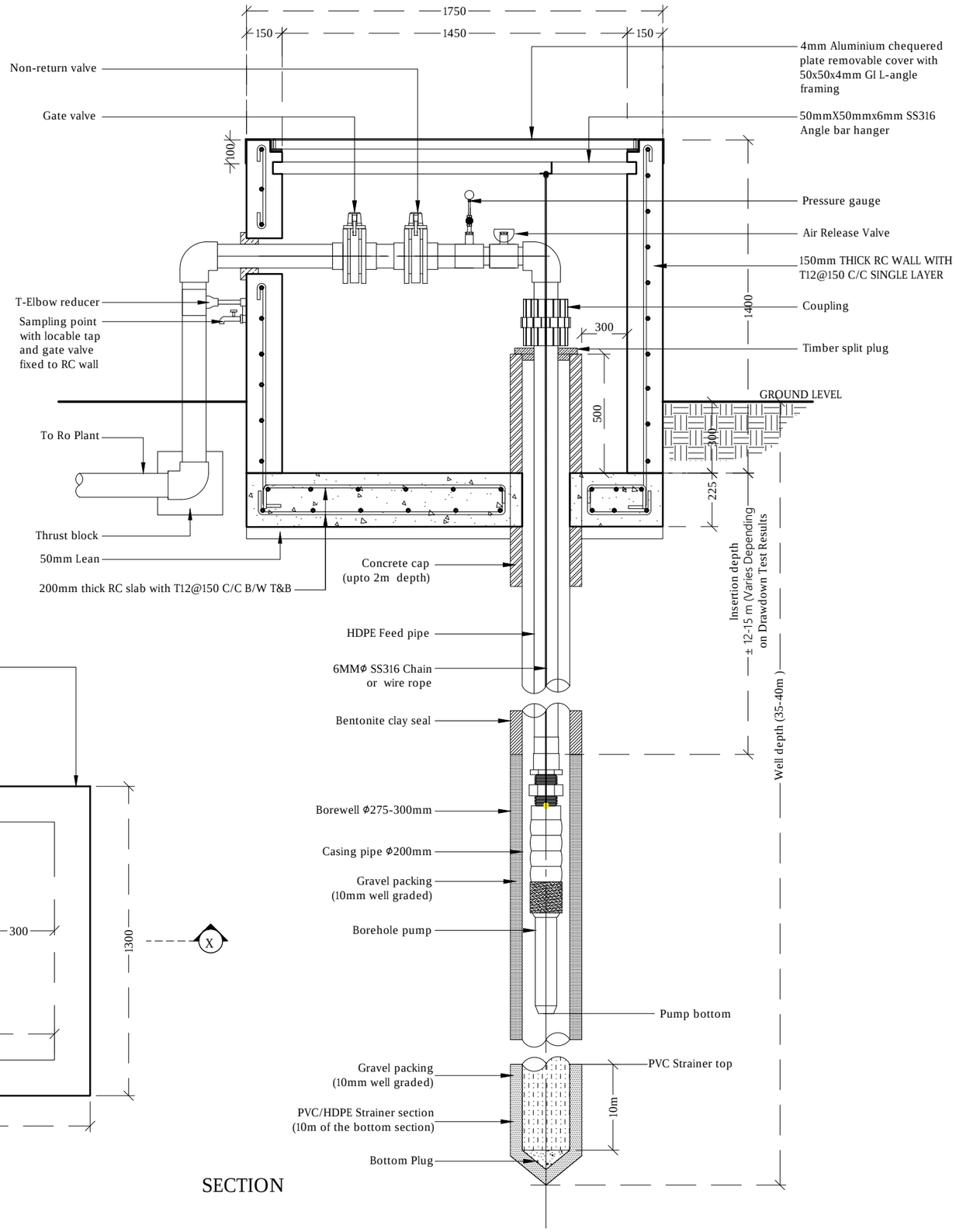


PLAN



SECTION

BOREHOLE DETAILS

NTS

N

Legend

Notes:
-All structural concrete shall be of grade C30.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 75mm should be given for all reinforcements.
- All concrete cold joints shall casted with bonding agent
-Casing pipe to be HDPE or PVC with a diameter of 200mm.
-Contractor to submit well development methodology for approval by engineer.
-Contractor to submit drill logs.
-Contractor to submit drawdown test results for approval by engineer prior to pipe insertion.

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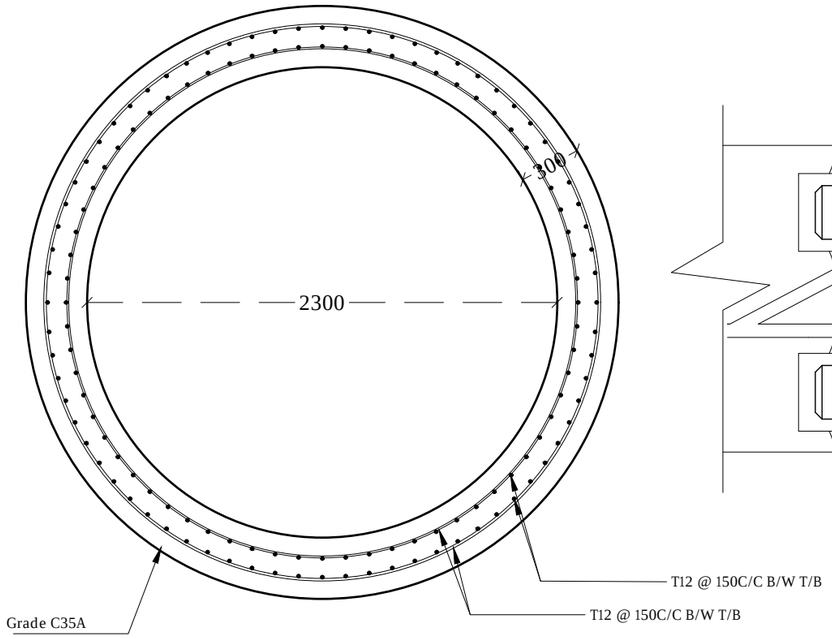
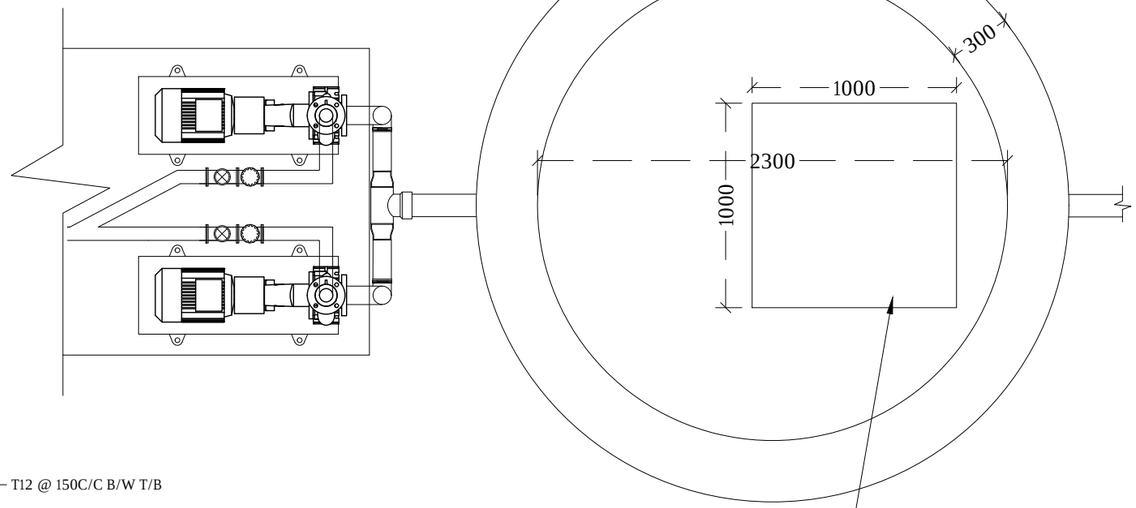
Rev: R-01

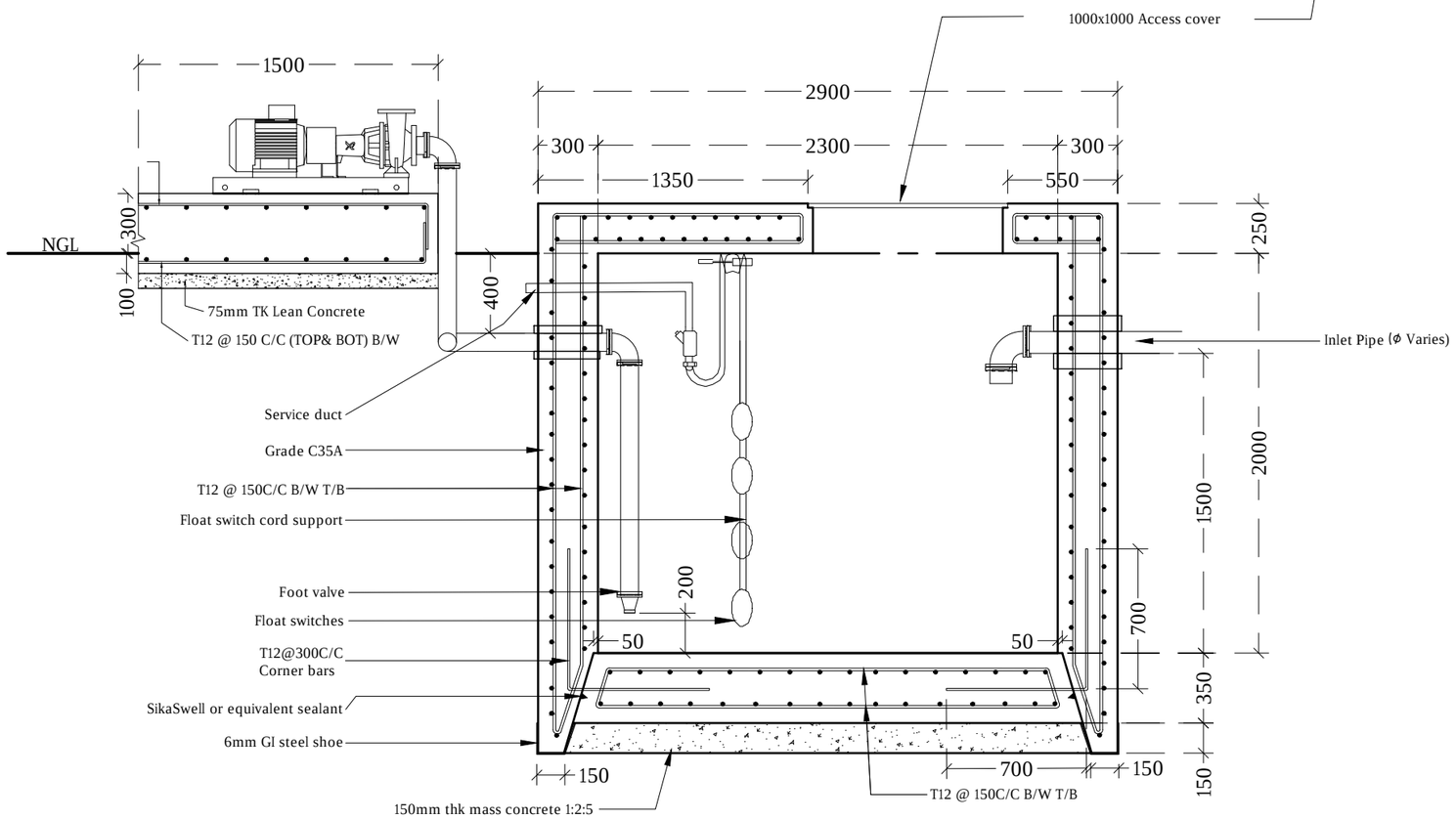
Page: W-13



BRINE WATER TANK PLAN - STRUCTURAL



BRINE WATER TANK PLAN



BRINE WATER TANK SECTION X-X

BRINE TANK DETAILS

1:30

Legend

Note:
-Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
-Orientation of tanks and pipe work to suit location.
-All structural concrete shall be of grade C35A.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 75mm should be given for all reinforcements.
-Internal concrete surfaces to be coated with 5mm thickness of epoxy bonded glass fibre and finished with gel coat or 500 microns epoxy paint coating.
-External concrete surfaces to be painted with 3 coats of bitumen/rubber emulsion and protected by 500 micron polyethene.
- All concrete cold joints shall casted with bonding agent.
- Corner bars (4T16@75C/C T&B) shall be provided around top slab opening.

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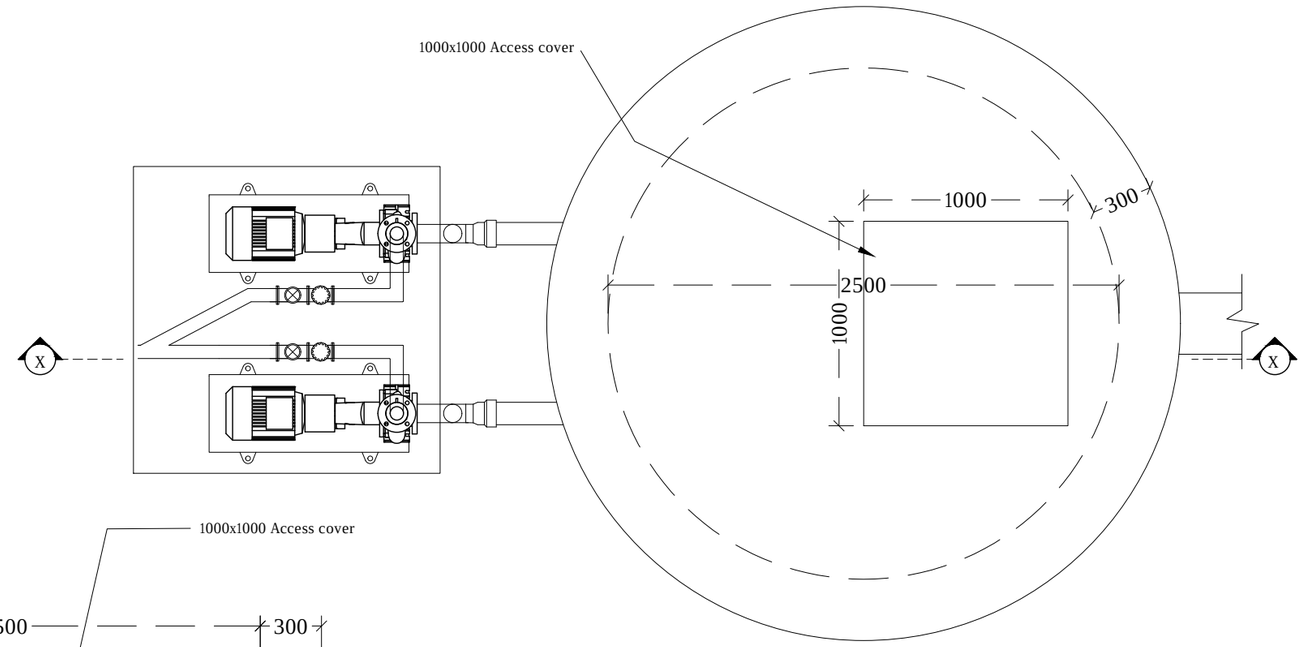
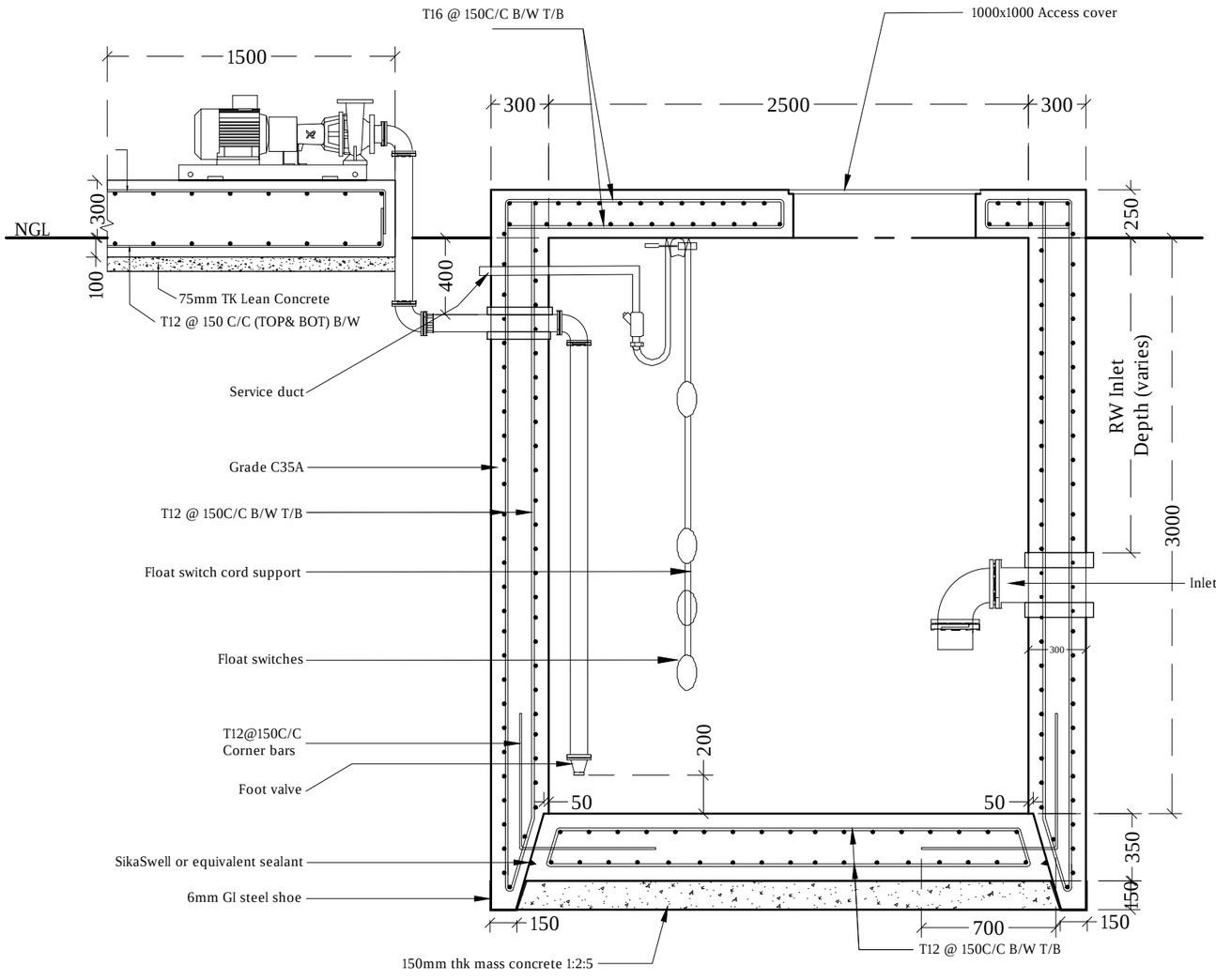
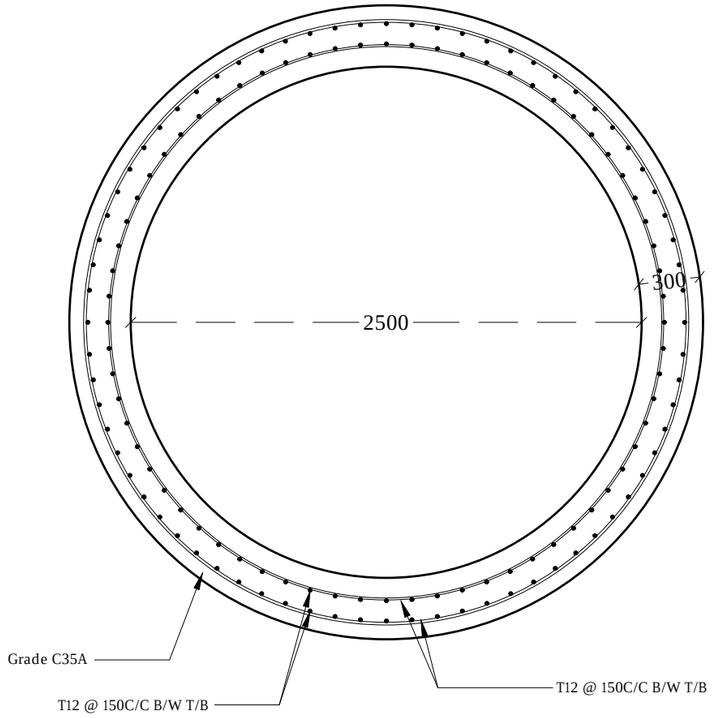
Project No: EP-WS/2019/04	
Rev: R-01	Page: W-14



RAIN WATER LIFT WELL PLAN



RAIN WATER LIFT WELL SECTION X-X



RAIN WATER LIFT WELL PLAN - STRUCTURAL

RAINWATER LIFT WELL DETAILS

1:30

N

Legend

Note:
-Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
-Orientation of tanks and pipe work to suit location.
-The rainwater lift well will have a filter to prevent entry of debris and dirt.
-All structural concrete shall be of grade C35A.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 75mm should be given for all reinforcements.
-Internal concrete surfaces to be coated with 5mm thickness of epoxy bonded glass fibre and finished with gel coat or 500 microns epoxy paint coating.
-External concrete surfaces to be painted with 3 coats of bitumen/rubber emulsion and protected by 500 micron polyethene.
- All concrete cold joints shall casted with bonding agent.
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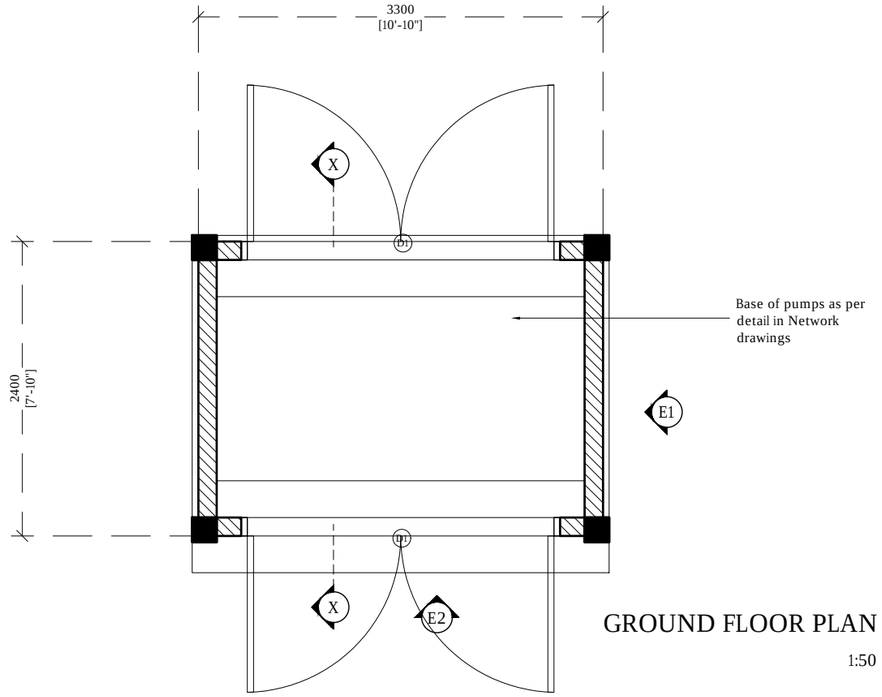
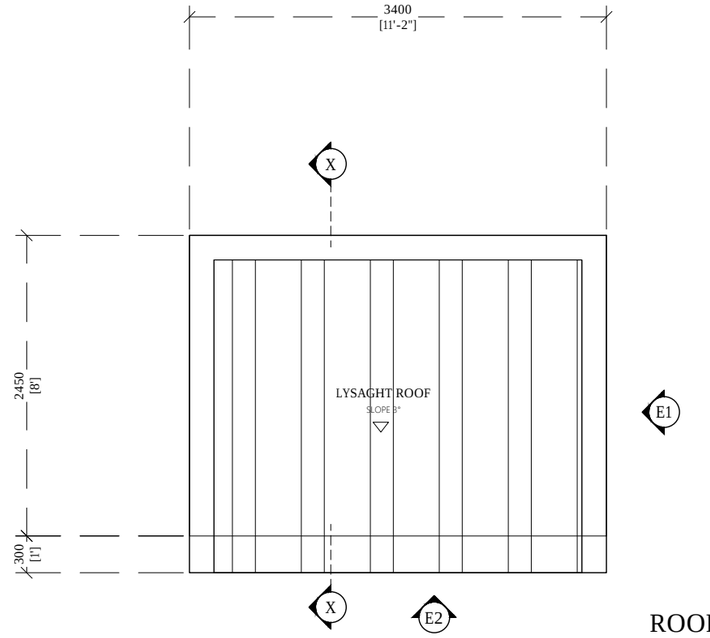


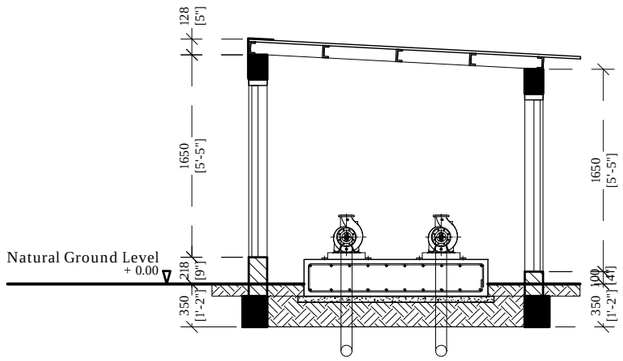
GROUND FLOOR PLAN

1:50



ROOF PLAN

1:50



SECTION X-X

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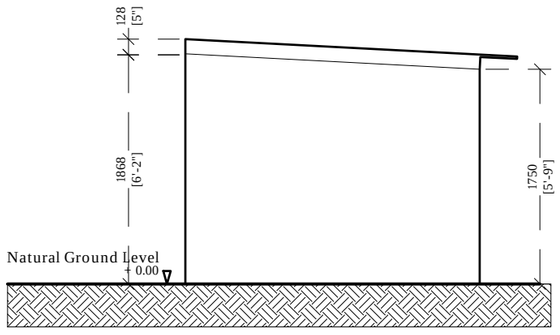

ELEVATION E1

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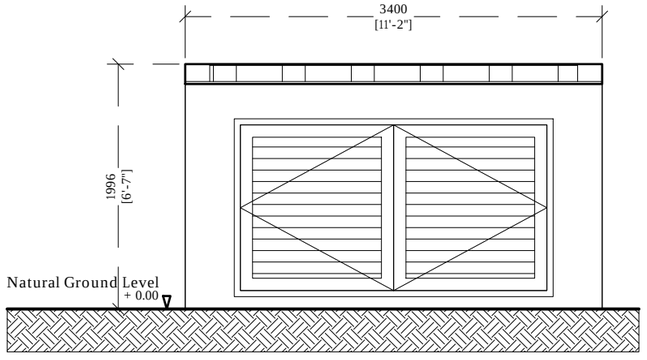

ELEVATION E2

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PUMP SHED DETAILS

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Legend

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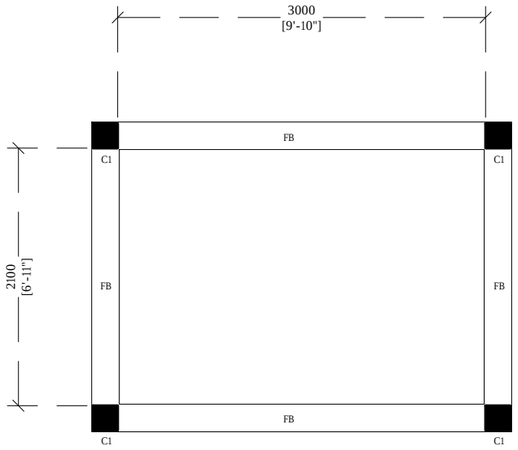
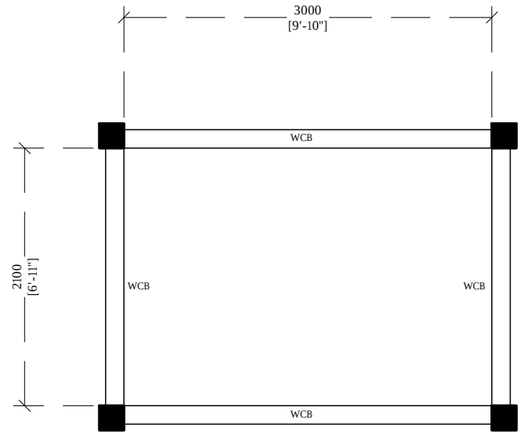


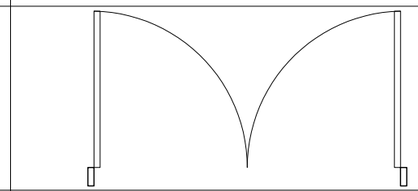
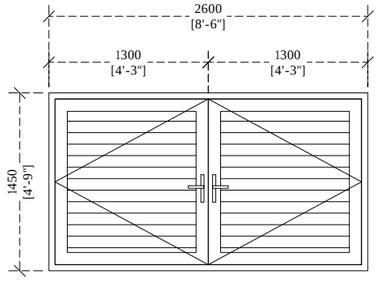
GROUND FLOOR PLAN

1:100



ROOF PLAN

1:100

Door ID	
Plan view	
Elevation view FFL	
Frame material	600 micron powder coated aluminum frames
Panel material	600 micron powder coated aluminum louvered panel with side aluminum frames with allowance for handle and lock
Openable area	-

General Door Notes:

Dimensions shown on DWG indicate effective openings of frame

All frame depths are 100mm
All dor panel thicknesses are 35mm
All window manel thickness are 25mm
Al frame edges shal be trimmed 3mm

All wodden components should be wood stained finish

All glazing should be of 6mm unless specified

External units must comply the following weather conditions:-
Wind pressure: 200 kg/sqm
Water tightness: 25 kg/sqm

All external frames / wall joints must be sealed with silicon sealant and the wedges trimmed with 12X12mm hardwood beading fixed to frames by brass nails

All hardware should be provided for the performance of al functions of the units

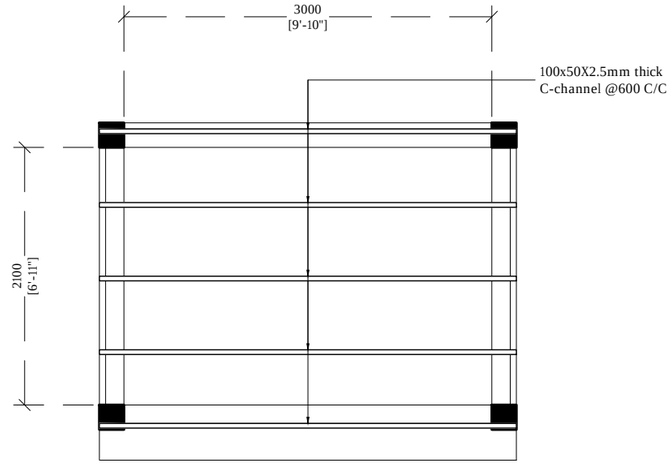
Hinges shall confirm to
1. Door size more than 700X1900mm
   WD: 125mm X2 sets
   SD: 150mm X3 sets
2. Door size less than 700X1900mm
   WD: 100mm X2 sets
   SD: 125mm X2 sets

Locks shall be cylinderical with master key sets

Door knobs shall be1000mm above FFL

Door Schedule

1:100



ROOF PLAN

1:100

PUMP SHED DETAILS

N

Legend

Notes:

- Cover for foundation pads and foundation beams shall be 50mm
- Cover for columns shall be 40mm
- Cover for roof beams shall be 30mm
- Concrete shall be of grade C25
- All concrete cold joints shall casted with bonding agent
- Roof purlins shall be fixed to roof beam with hot-dip galvanized bolts and GI cleats

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 7 islands, Maldives - Package 4

Sub Title:
Water Supply System in Adh. Dhihdhoo

Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

EPOCH Associates (Pvt) Ltd
T: +960 333 3528
E: info@epoch.associates
W: wwww.epoch.associates
A: G. Rosary West,
Husnuheenaa Magu, Male', Maldives

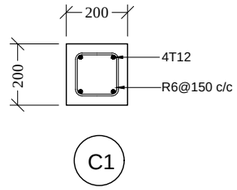
FEEDBACK INFRA
Working for Infrastructure Happier

Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:100

Project No: EP-WS/2019/04

Rev: R-01

Page: W-17



COLUMN DETAIL

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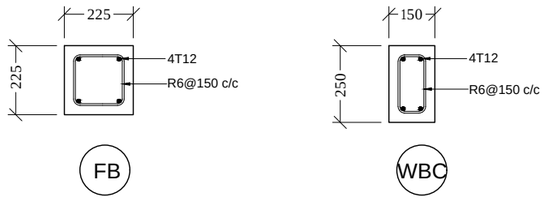

BEAM DETAILS

1:20

PUMP SHED BEAM AND COLUMN DETAILS

1:20

N

Legend

Notes:

- Cover for foundation pads and foundation beams shall be 50mm
- Cover for columns shall be 40mm
- Cover for roof beams shall be 30mm
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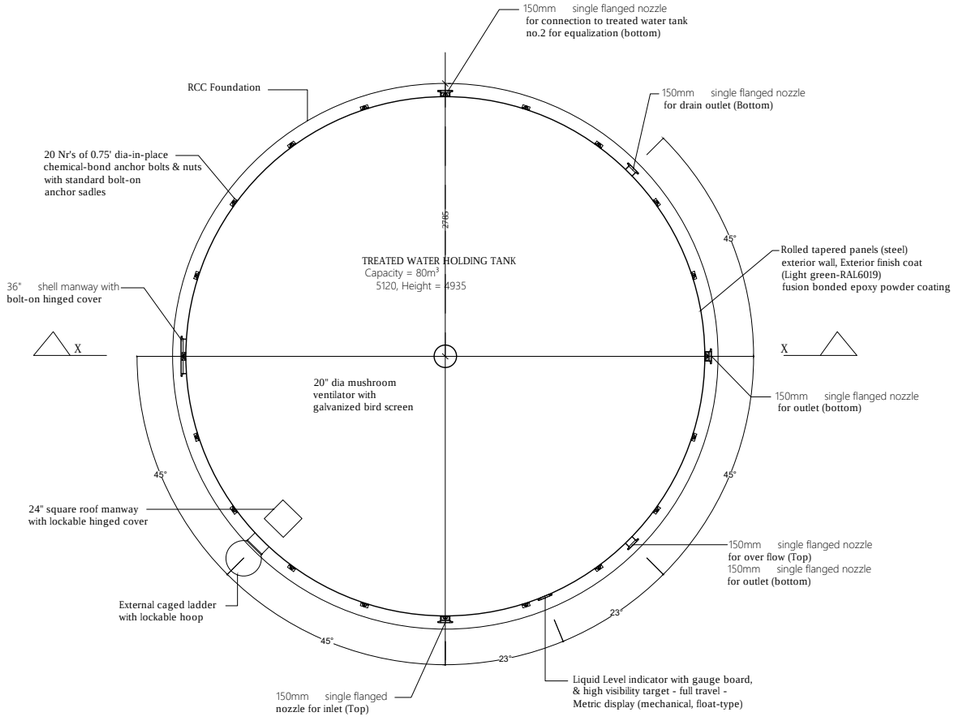
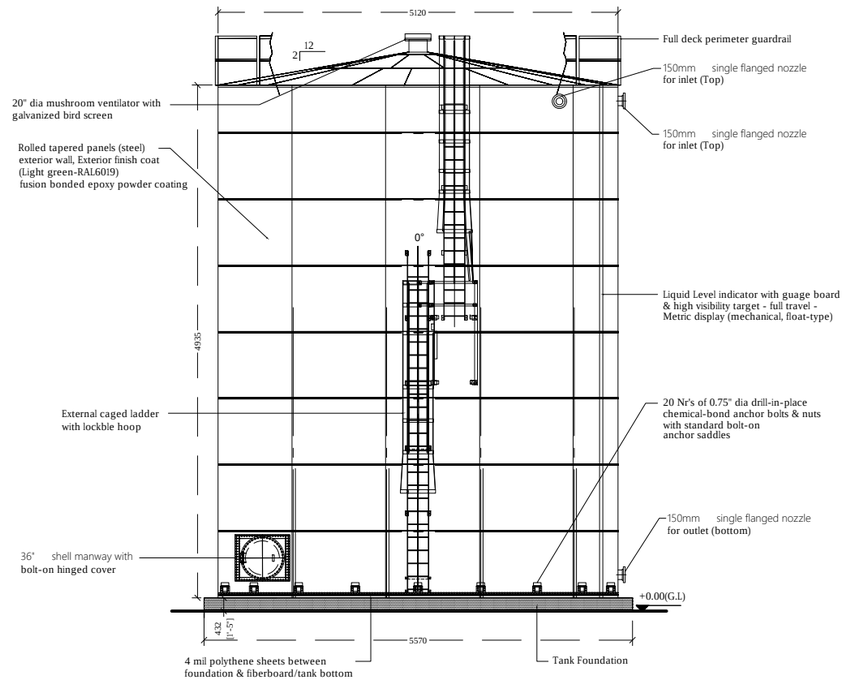
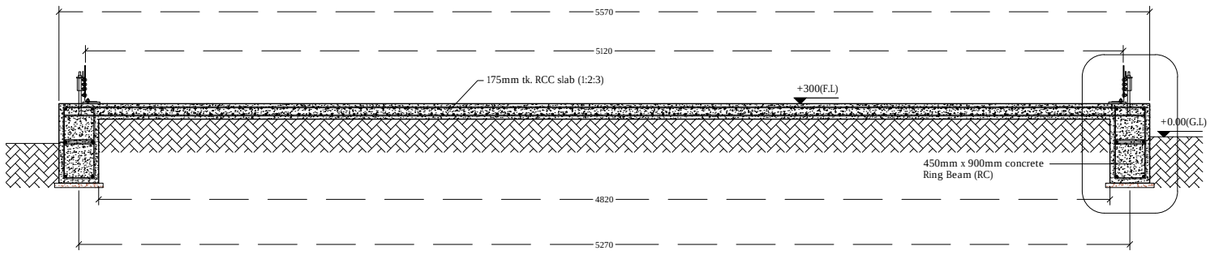
Rev: R-01



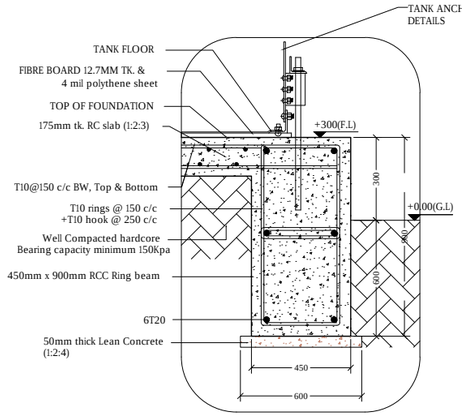
TREATED WATER HOLDING TANK AND FOUNDATION- PLAN



TREATED WATER HOLDING TANK AND FOUNDATION- ELEVATION



SECTION X-X



DETAIL

Note:-
Cover = 50mm
Lap length 50

TREATED WATER TANK DETAILS

NTS

N

Legend

Note:
-Orientation of tanks and pipe work to suit location.
-All structural concrete shall be of grade C30.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 75mm should be given for all reinforcements.
- All concrete cold joints shall casted with bonding agent.
-Tank foundation to be approved based on manufacturers recommendation.

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Date:	Sep 2020	SCALE (A3):	NTS

Project No: EP-WS/2019/04

Rev: R-01

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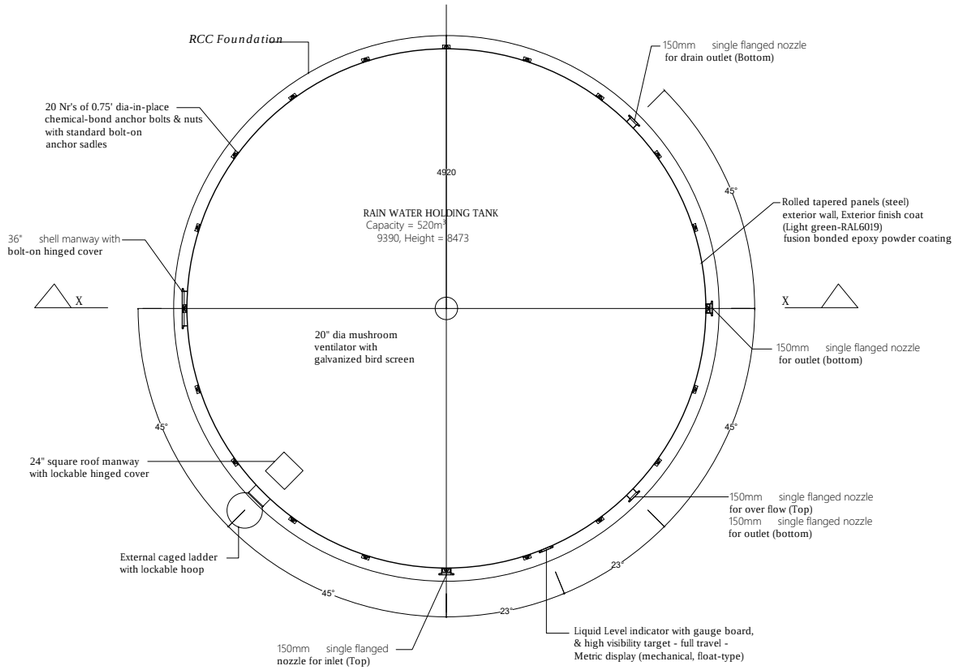
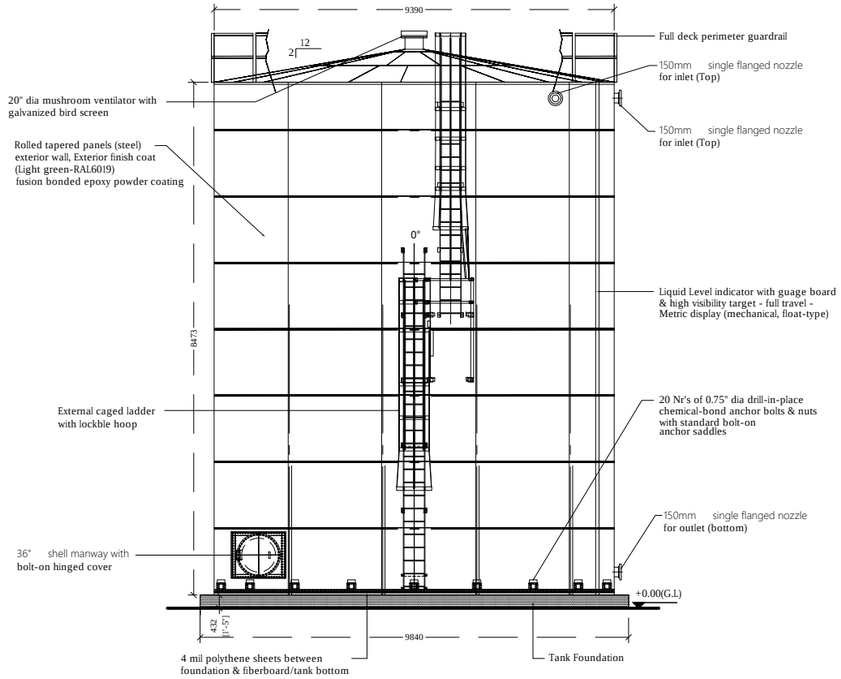
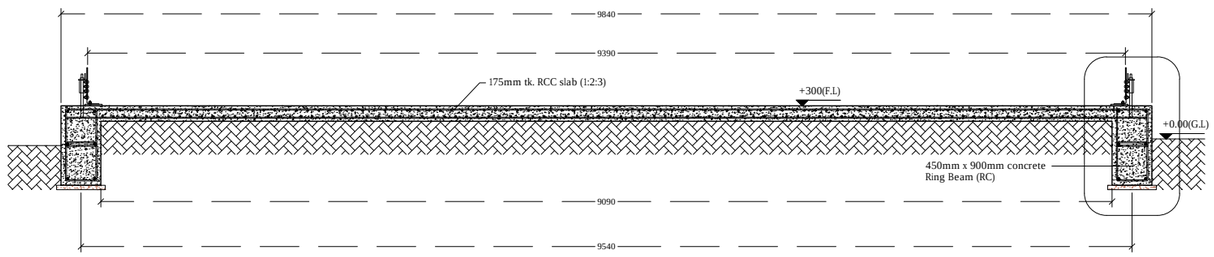


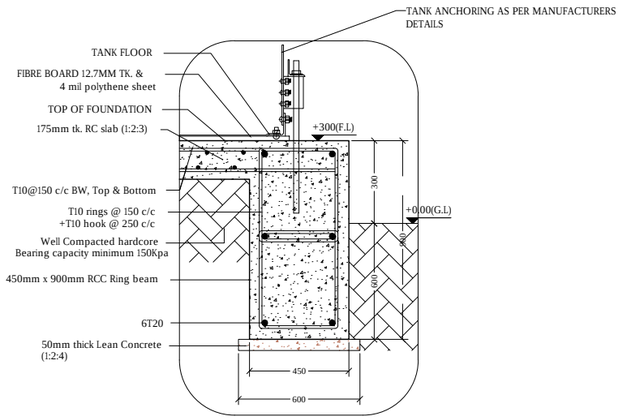
RAINWATER HOLDING TANK AND FOUNDATION- PLAN



RAINWATER HOLDING TANK AND FOUNDATION- ELEVATION



SECTION X-X



DETAIL

Note:-
Cover = 50mm
Lap length 50

RAINWATER HOLDING TANK DETAILS

NTS

N

Legend

Note:
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-All structural concrete shall be of grade C30.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 75mm should be given for all reinforcements.
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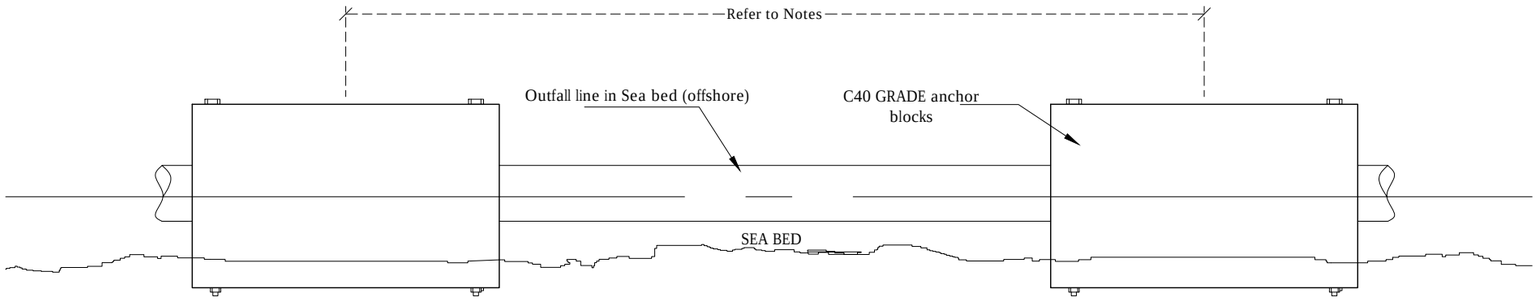
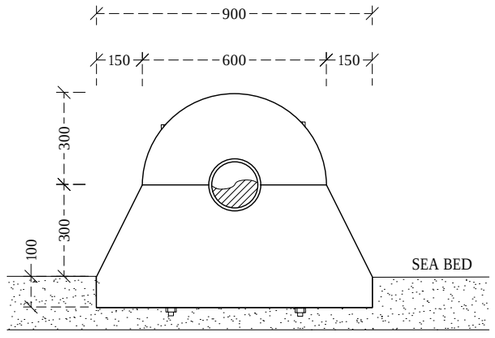
Project No: EP-WS/2019/04

Rev: R-01

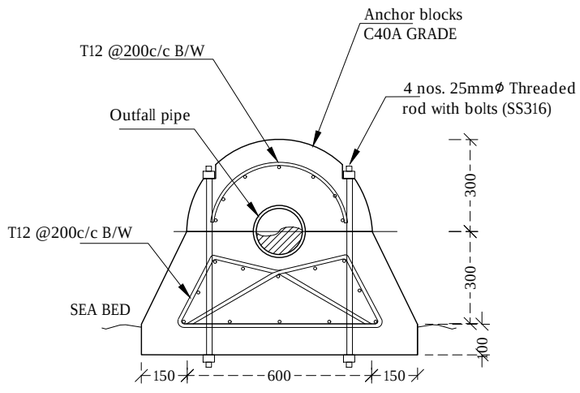
Page: W-20



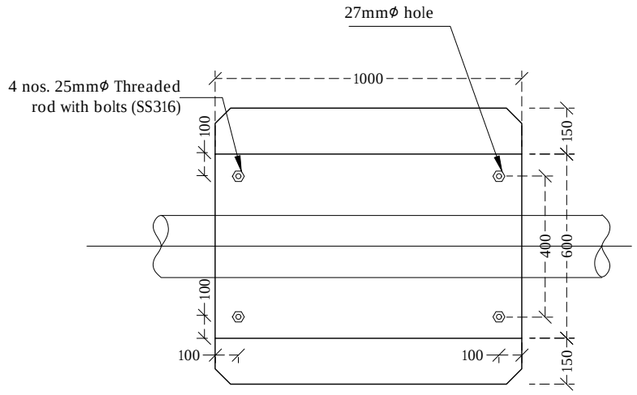
BALLAST BLOCK SIDE ELEVATION



BALLAST BLOCK FRONT ELEVATION



BALLAST BLOCK SECTION



BALLAST BLOCK PLAN

BALLAST BLOCK DETAILS

NTS

N

Legend

Notes:

- All backing rings for stub flanges , nuts and bolts shall be grade 316 stainless steel.
- All pipe work shall be bedded on 10mm thick neoprene rubber seat in semicircular recess matching the O.D. the pipe.
- Fabricate specific pipe clamps to provide firm clamping action according to pipe O.D.
- All structural concrete shall be of grade C40A.
- All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
- All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
- A cover of 75mm should be given for all reinforcements.
- In shallow water(regions where the depth is less than 1m), the ballast block spacing is 3.5m. In deeper water (regions where the depth is greater than 1m), the ballast block spacing is 2.0m. All distances are from c/c of blocks.
- All pipe connections to be placed inside the ballast blocks.

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Client:

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FEEDBACK INFRA

Drawn: F.I.A.	Checked: M.S.S.
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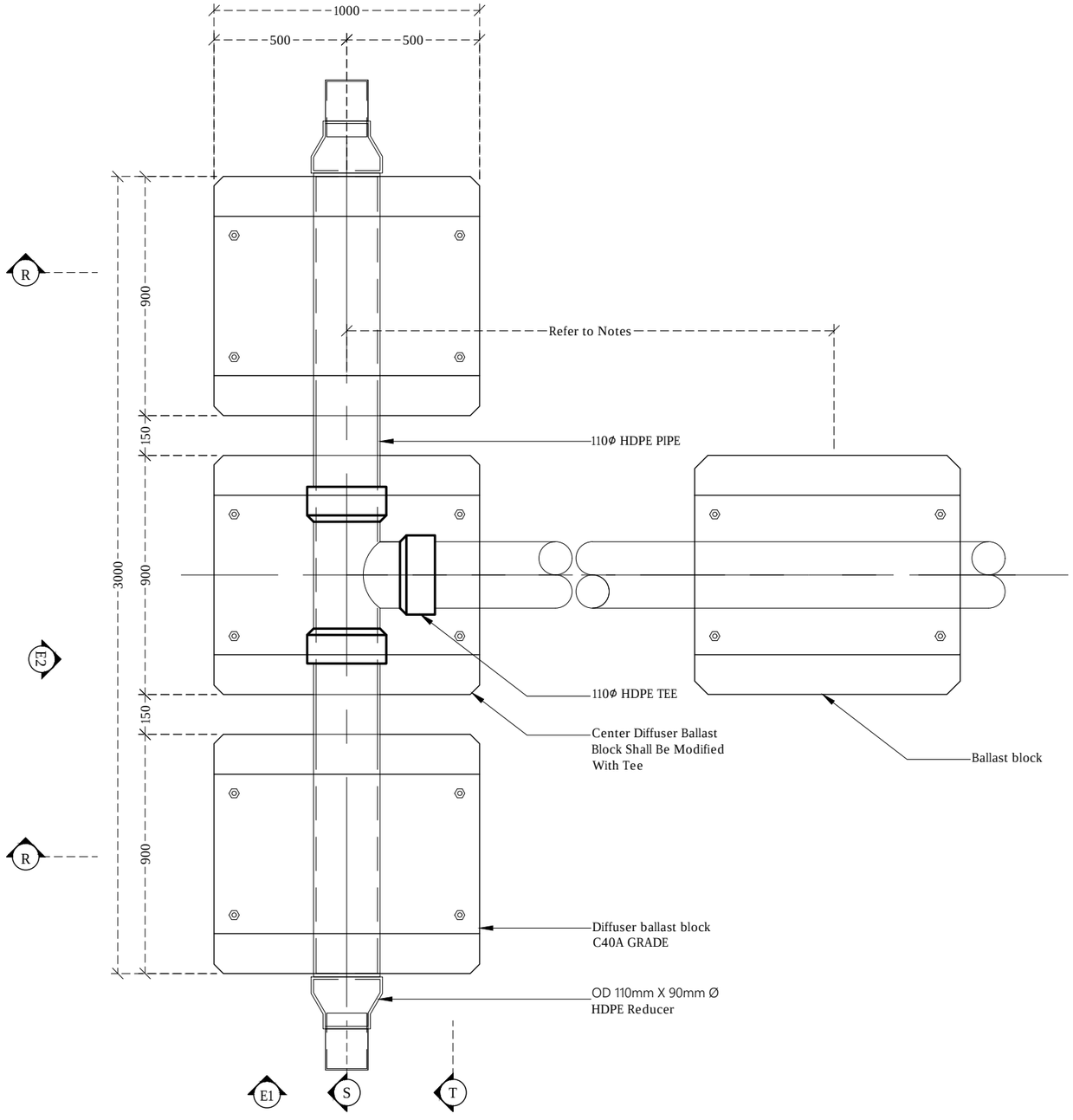
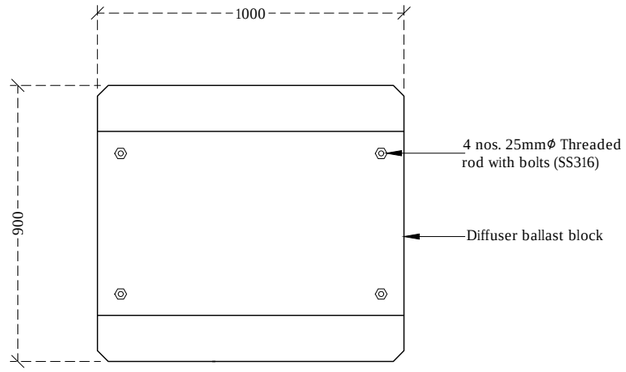
Date: Sep 2020	SCALE (A3): NTS

Project No: EP-WS/2019/04

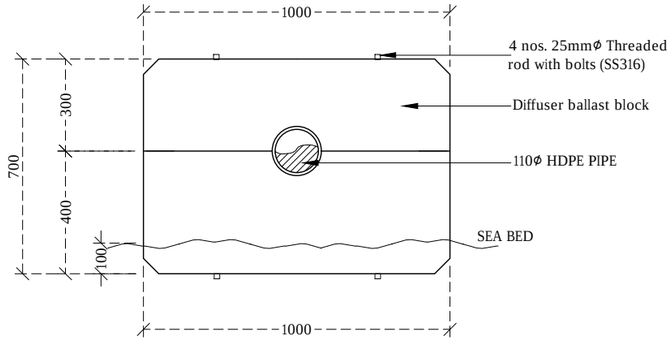
Rev: R-01

Page: W-21

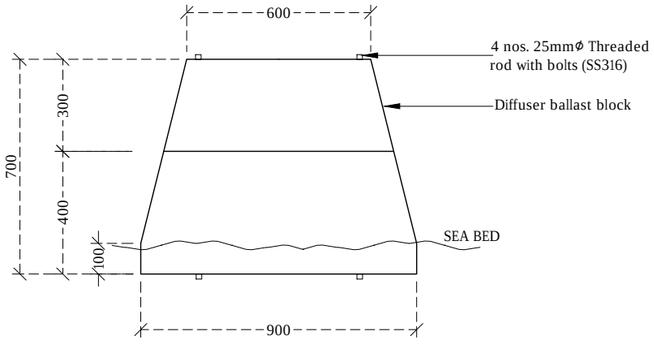




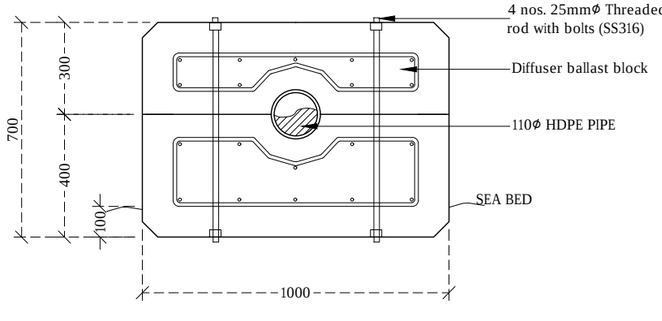
DIFFUSER BALLAST BLOCK PLAN



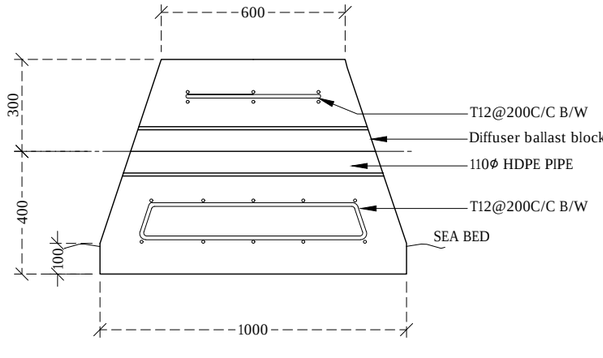
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E1



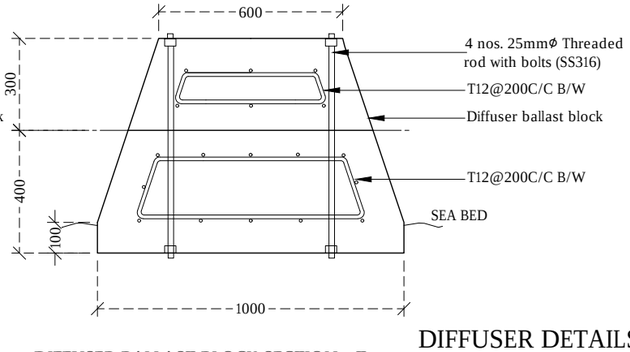
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E2



DIFFUSER BALLAST BLOCK SECTION - R



DIFFUSER BALLAST BLOCK SECTION - S



DIFFUSER BALLAST BLOCK SECTION - T

DIFFUSER DETAILS

NTS

Legend

Notes:

- All backing rings for stub flanges , nuts and bolts shall be grade 316 stainless steel.
- All pipe work shall be bedded on 10mm thick neoprene rubber seat in semicircular recess matching the O.D. the pipe.
- Fabricate specific pipe clamps to provide firm clamping action according to pipe O.D.
- All structural concrete shall be of grade C40A.
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Sub Title:

Water Supply System in Adh. Dhihdhoo

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FEEDBACK INFRA
Making Infrastructure Happen

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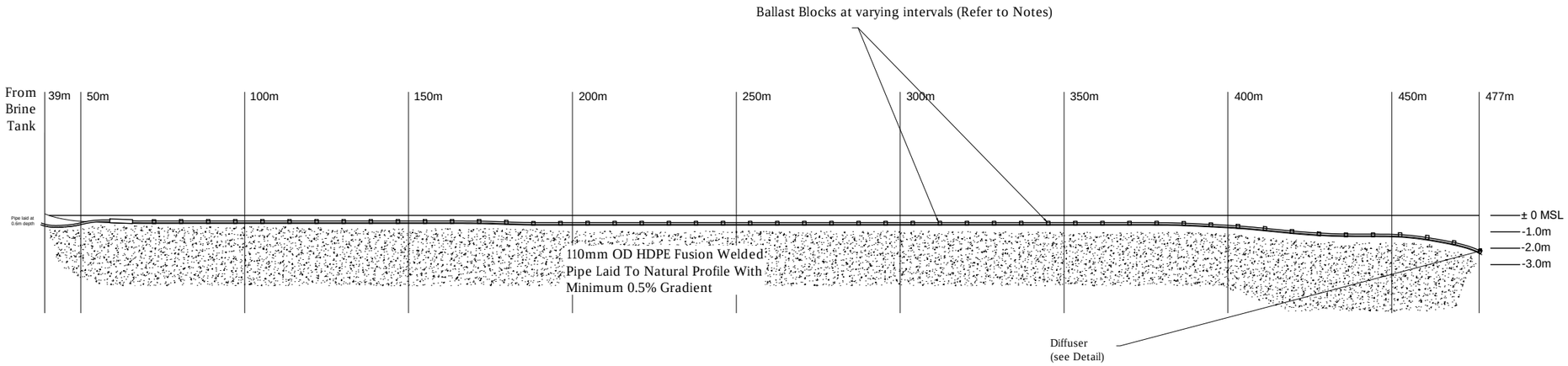
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/04	
Rev: R-01	Page: W-22



TYPICAL BRINE SEA OUTFALL DETAIL

NTS

N

Legend

Notes:

- The contractor to undertake a detailed inspection of the outfall site to assess the profile and condition of the reef below sea level and to prepare his methodology for installation and fixing.
- In shallow water(regions where the depth is less than 1m), the ballast block spacing is 3.5m. In deeper water (regions where the depth is greater than 1m), the ballast block spacing is 2.0m. All distances are from c/c of blocks.

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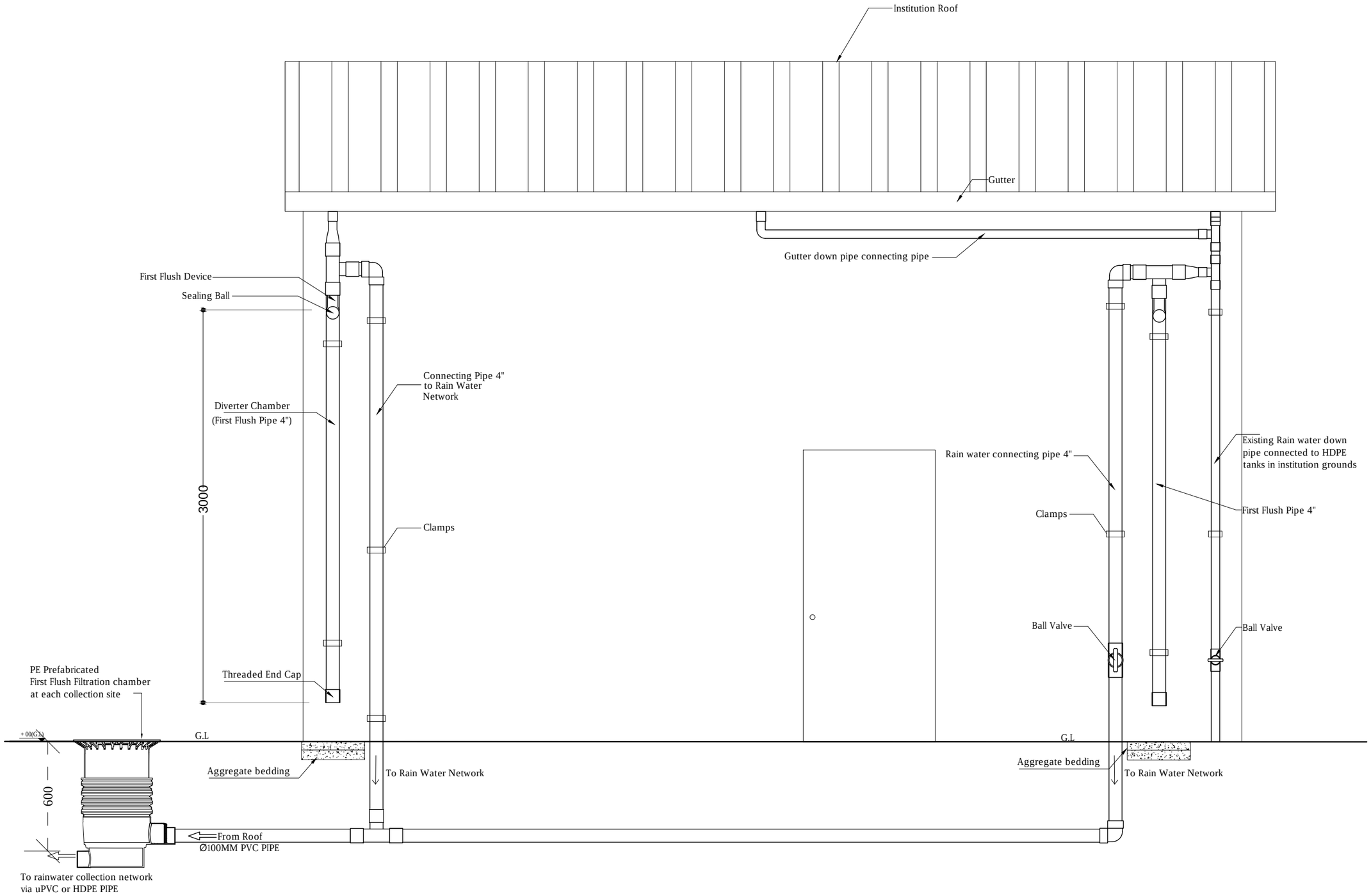

RAINWATER FIRST FLUSH MECHANISM

NTS

N

Legend

Notes:

- Prefab filtration chambers will be used as first flush mechanism.
- Filtration chambers suppliers to be approved by engineer.
- Number of chambers will be based on approved manufacturers roof area recommendations.
- Overflow mechanism will be installed on only corner down pipes or where necessary.
- All down pipes are 3 inch dia PVC pipes.
- The filtration chamber will have a screen to prevent entry of debris and dirt.
- Clamps and hangers shall be fixed at 1.5m intervals.

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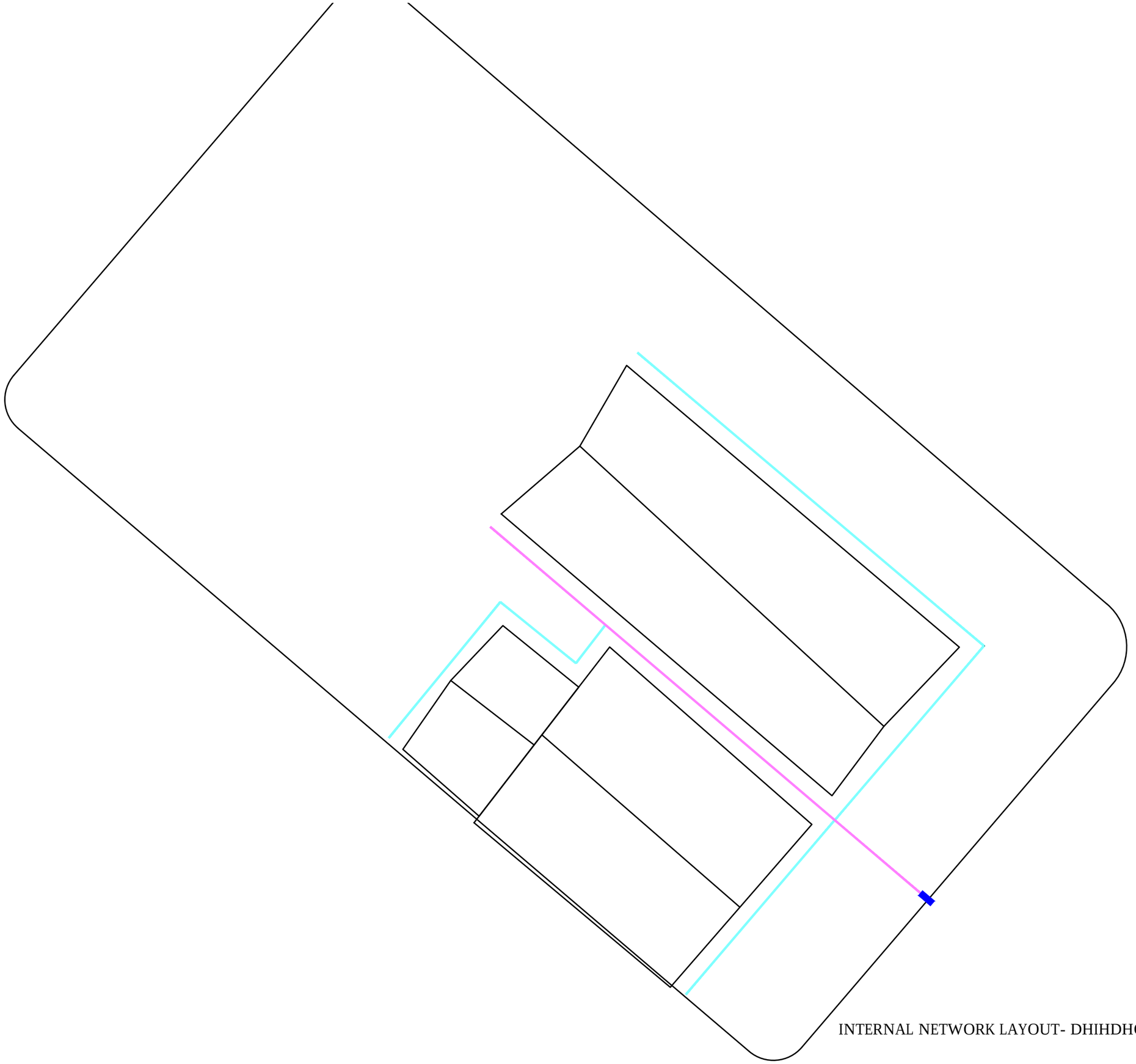

INTERNAL NETWORK LAYOUT- DHIHDHOO SCHOOL

1:200

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 96m

-Approximate Gutter Length = 86m

-Approximate Pipe Network Length (Diameter 160mm) = 30m

-Approximate Pipe Network Length (Diameter 110mm) = 66m

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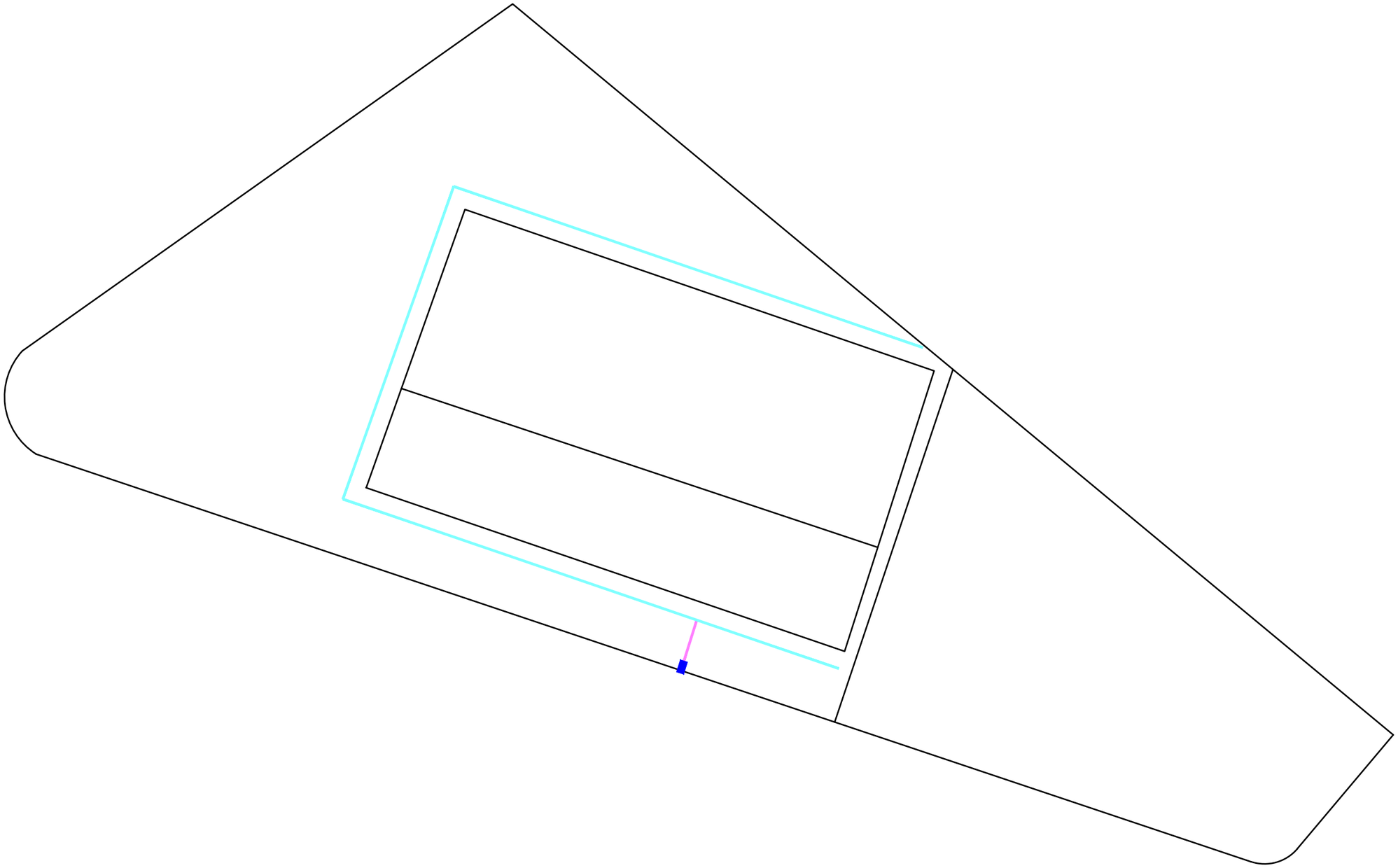
Rev:	R-01	Page:	W-25



INTERNAL NETWORK LAYOUT- SOCIAL CENTER

1:200

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 65m

-Approximate Gutter Length = 47m

-Approximate Pipe Network Length (Diameter 160mm) = 2m

-Approximate Pipe Network Length (Diameter 110mm) = 63m

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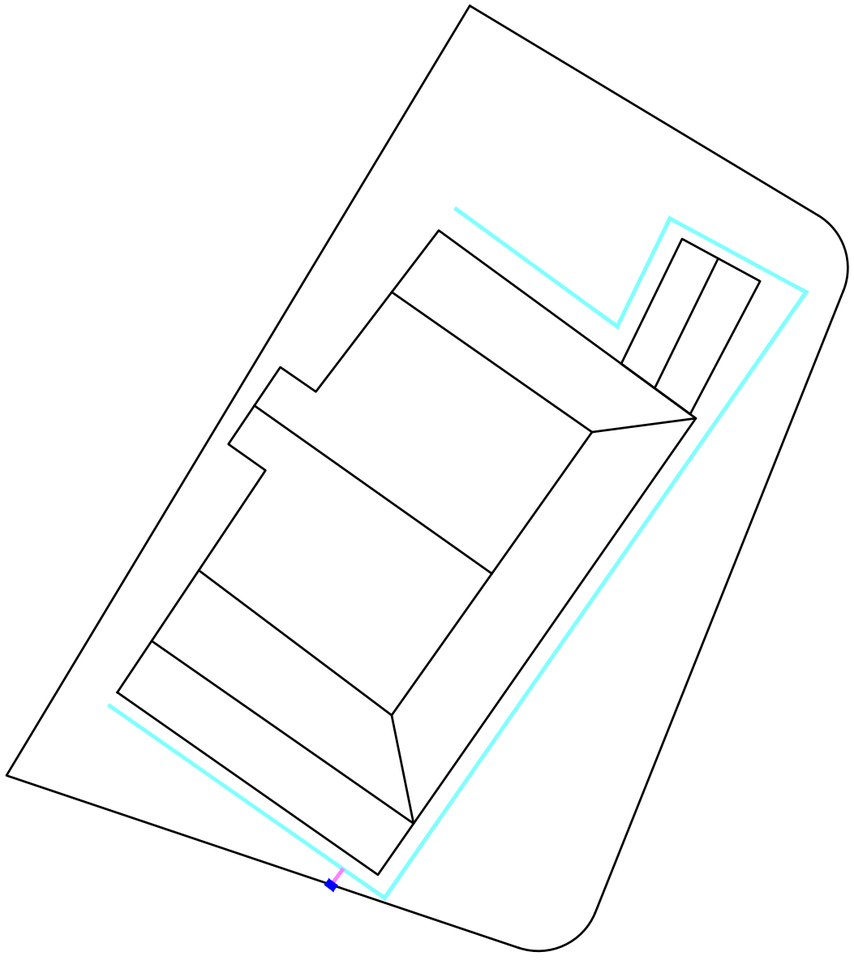
Project No: EP-WS/2019/04

Rev: R-01



INTERNAL NETWORK LAYOUT- HUKURU MISKIY

1:200

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 52m

-Approximate Gutter Length = 73m

-Approximate Pipe Network Length (Diameter 160mm) = 1m

-Approximate Pipe Network Length (Diameter 110mm) = 51m

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

Title:
Consultancy Services for Survey, Design and ElA works of Water Supply and Sewerage Facilities in 7 islands, Maldives - Package 4

Sub Title:
Water Supply System in Adh. Dhihdhoo

Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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Husnuheenaa Magu, Male', Maldives

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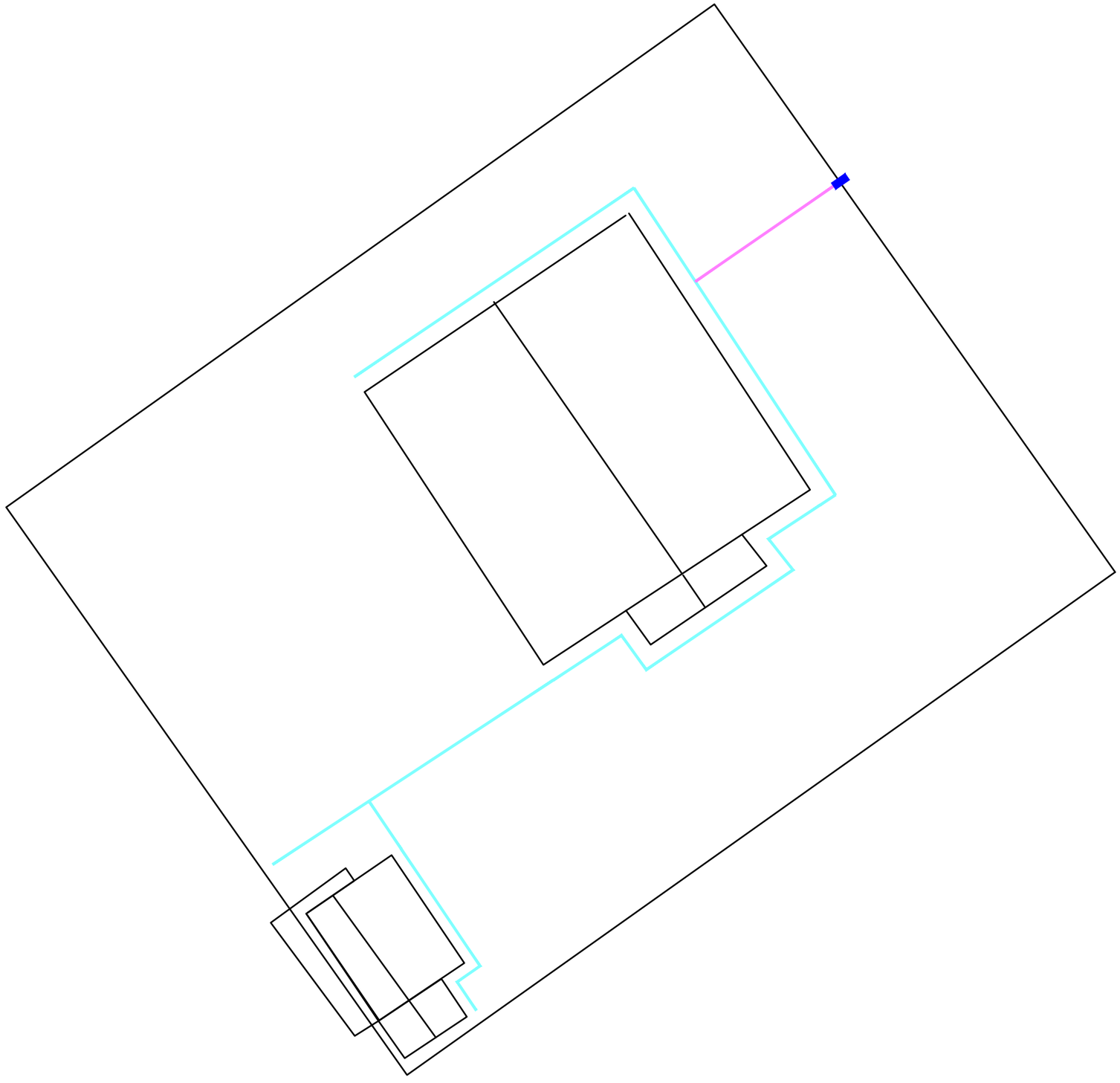
Drawn:	F.I.A.	Checked:	M.S.S.
Designed:	F.I.A.	Approved:	I.W.
Date:	Sep 2020	SCALE (A3):	1:200

Project No: EP-WS/2019/04

Rev: R-01



INTERNAL NETWORK LAYOUT- HEALTH CENTER

1:200

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 84m

-Approximate Gutter Length = 59m

-Approximate Pipe Network Length (Diameter 160mm) = 8m

-Approximate Pipe Network Length (Diameter 110mm) = 76m

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

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Date:	Sep 2020	SCALE (A3):	1:200

Project No: EP-WS/2019/04

Rev: R-01

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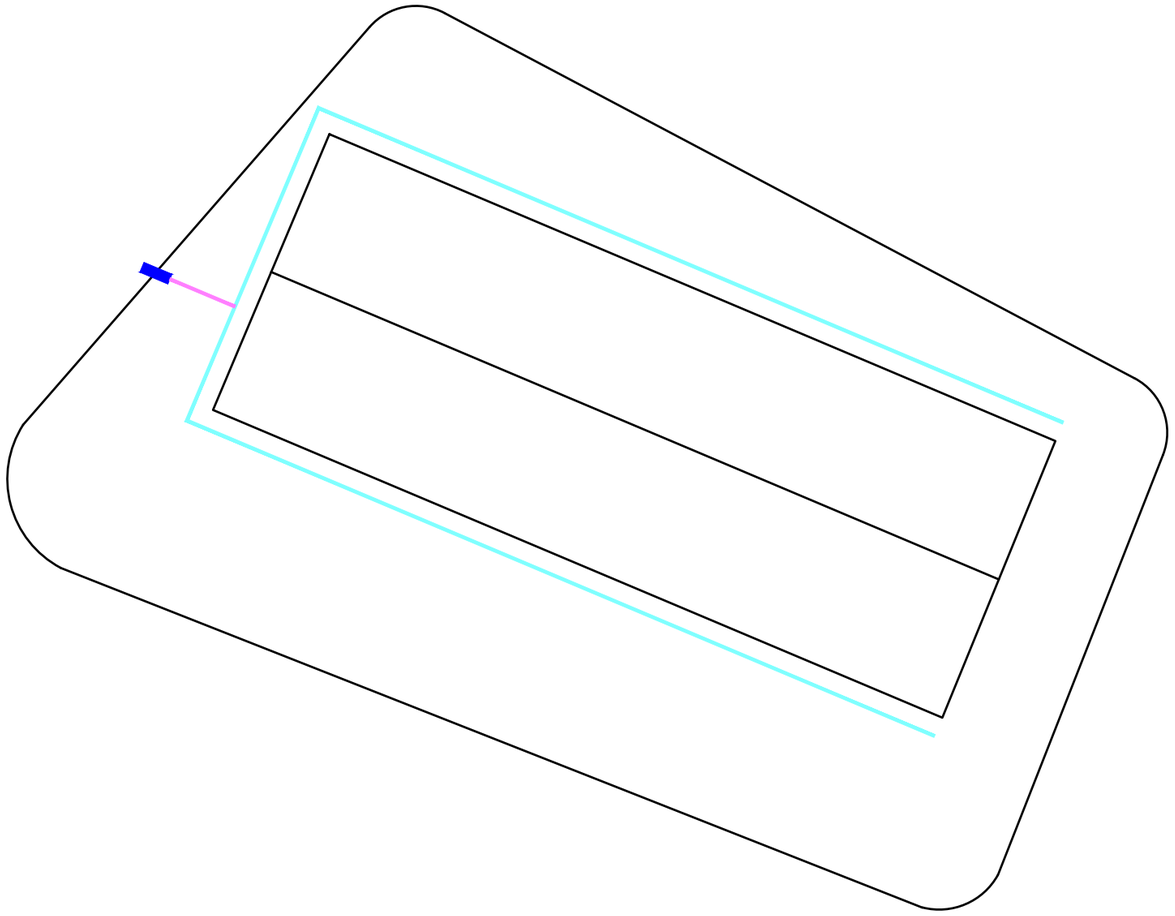

INTERNAL NETWORK LAYOUT- COUNCIL OFFICE

1:200

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 67m

-Approximate Gutter Length = 52m

-Approximate Pipe Network Length (Diameter 160mm) = 2m

65m

REV-NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

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Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:200

Project No: EP-WS/2019/04

Rev: R-01

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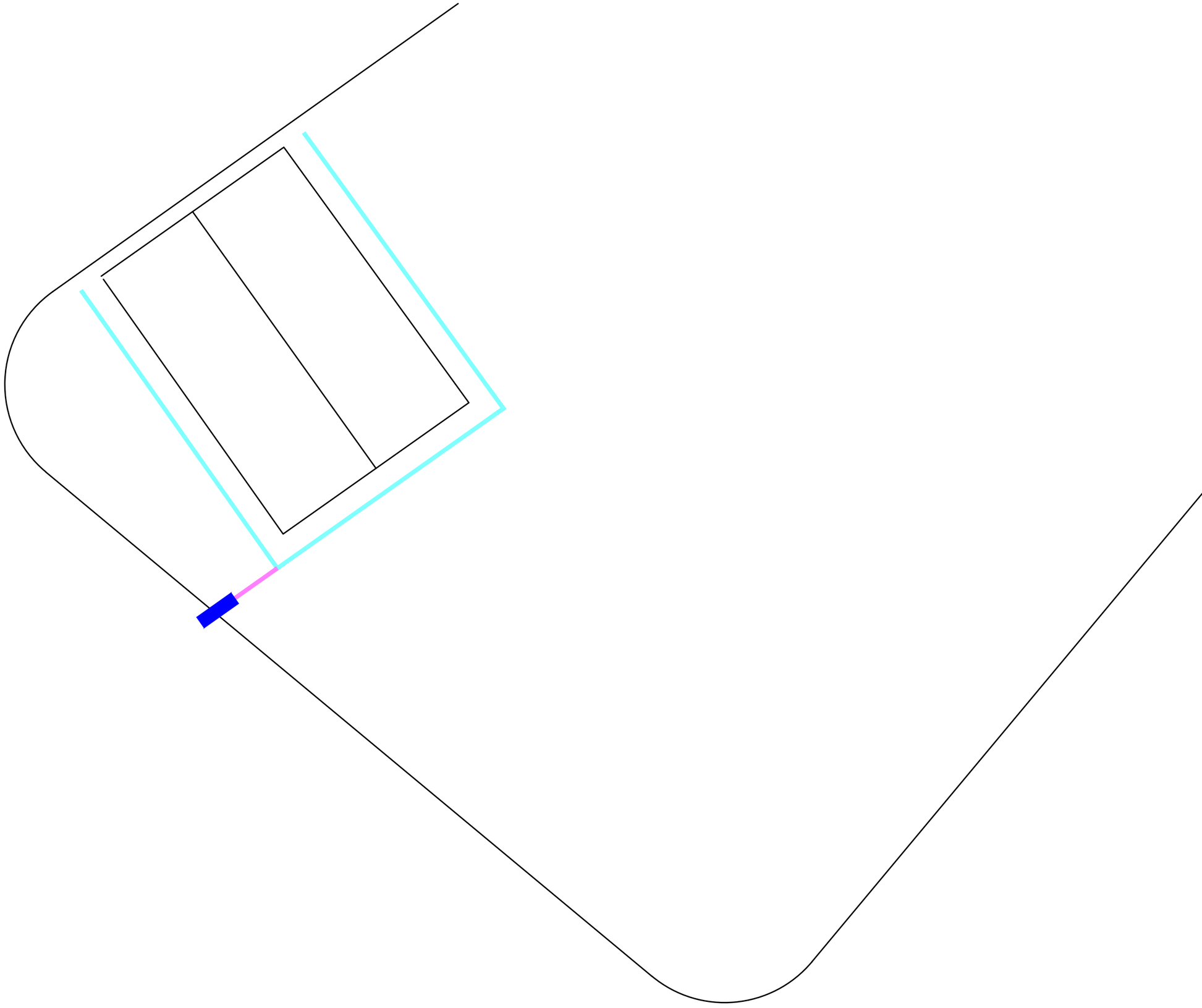

INTERNAL NETWORK LAYOUT- MAIZAAN

1:100

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 27m

-Approximate Gutter Length = 17m

-Approximate Pipe Network Length (Diameter 160mm) = 2m

-Approximate Pipe Network Length (Diameter 110mm) = 25m

R00	JUNE 2020	STAGE -1	PD	SBC	SD
REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:

Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 7 islands, Maldives - Package 4

Sub Title:

Water Supply System in Adh. Dhihdhoo

Client:

Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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FEEDBACK INFRA

Drawn:	F.I.A.	Checked:	M.S.S.
Designed:	F.I.A.	Approved:	I.W.
Date:	Sep 2020	SCALE (A3):	1:100

Project No: EP-WS/2019/04

Rev: R-01

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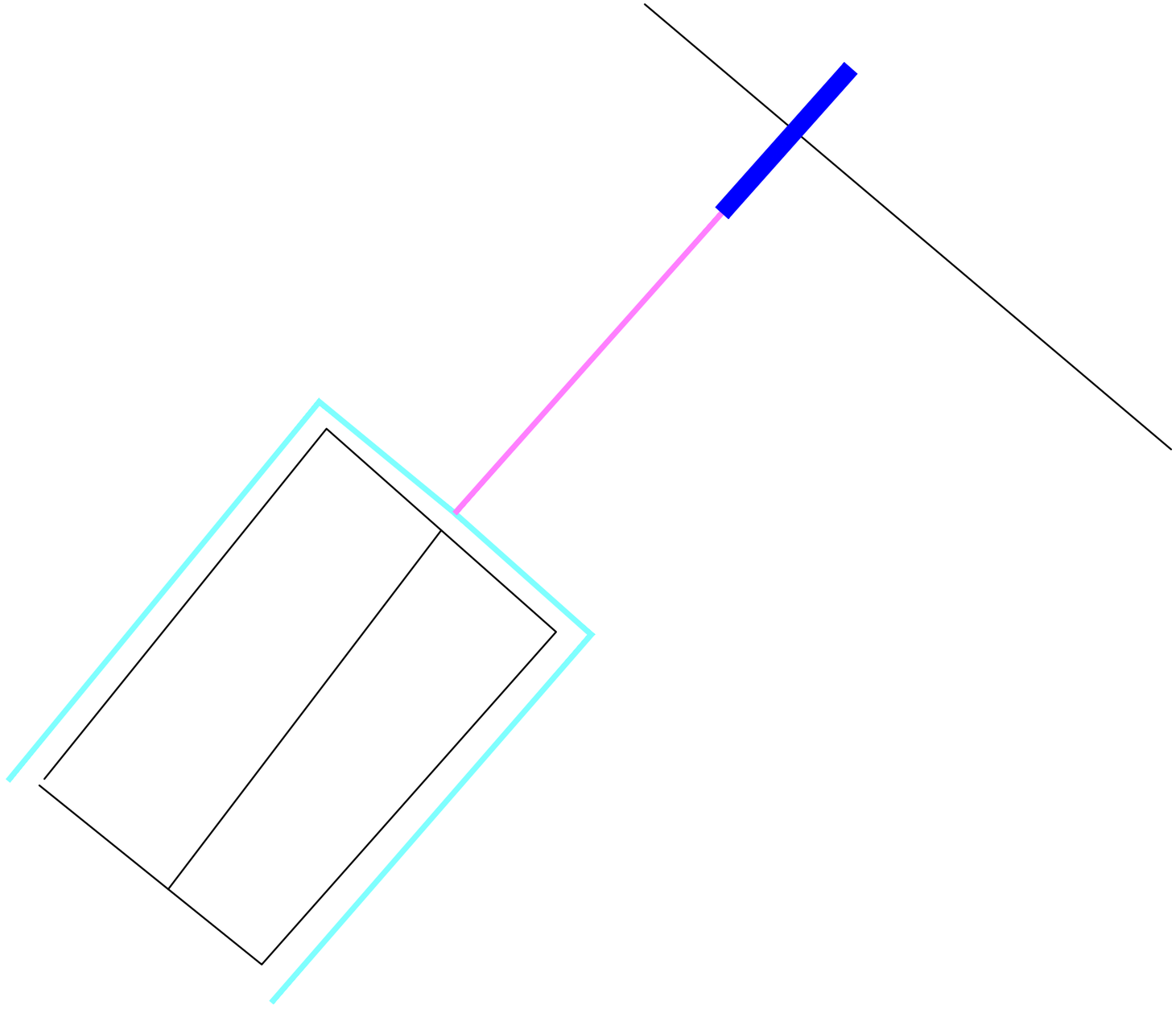

INTERNAL NETWORK LAYOUT - SPORTS CENTER

1:100

N

Legend

= PVC PIPES Ø160mm

= PVC PIPES Ø110mm

Notes:
- Shop drawings to be produced based on site location for engineers approval.

-Approximate Network Length = 35m

-Approximate Gutter Length = 18m

-Approximate Pipe Network Length (Diameter 160mm) = 8m

-Approximate Pipe Network Length (Diameter 110mm) = 27m

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 7 islands, Maldives - Package 4

Sub Title:
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Project No: EP-WS/2019/04

Rev: R-01

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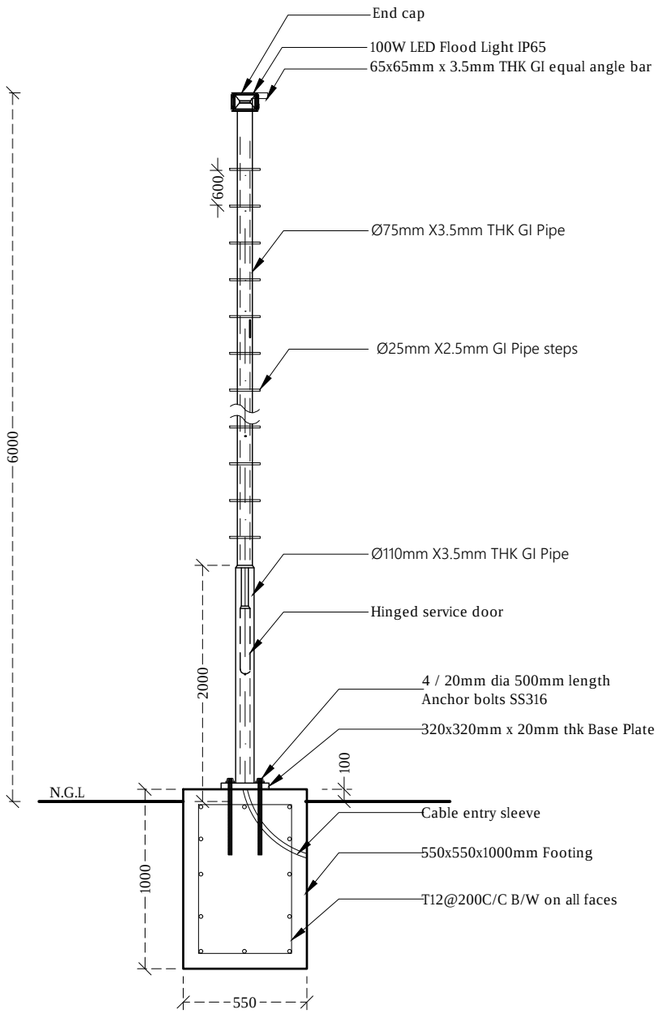
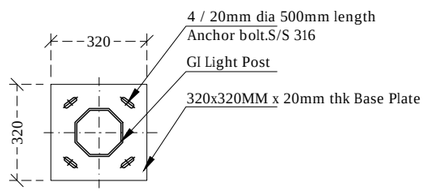


LIGHT POST DETAILS FOR STP COMPOUND (LP1)



BASE PLATE (LP1)

LIGHT POST DETAILS

NTS

N

Legend

Notes:
-Light posts shall be galvanized (minimum 200 micron) and finished with epoxy paint.
All structural concrete shall be of grade C25.
-All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
-All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
-A cover of 50mm should be given for all reinforcements.
-All steel members and GI SHS to be applied with 2 coats of anti-corrosive paint with epoxy finishing paint.
-All anchor bolts shall be SS316

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R00	JUNE 2020	STAGE -1	PD	SBC	SD

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Client:
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Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS

Project No: EP-WS/2019/04

Rev: R-01

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ARCHITECTURAL AND STRUCTURAL DRAWINGS OF

PROPOSED SINGLE STOREY BUILDING AT

RO PLANT ADMIN BUILDING AND VEHICLE SHED, ADH.DHIHDHOO

For Ministry of National Planning, Housing and Infrastructure

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Roof Framing Plan	S.3 (3)
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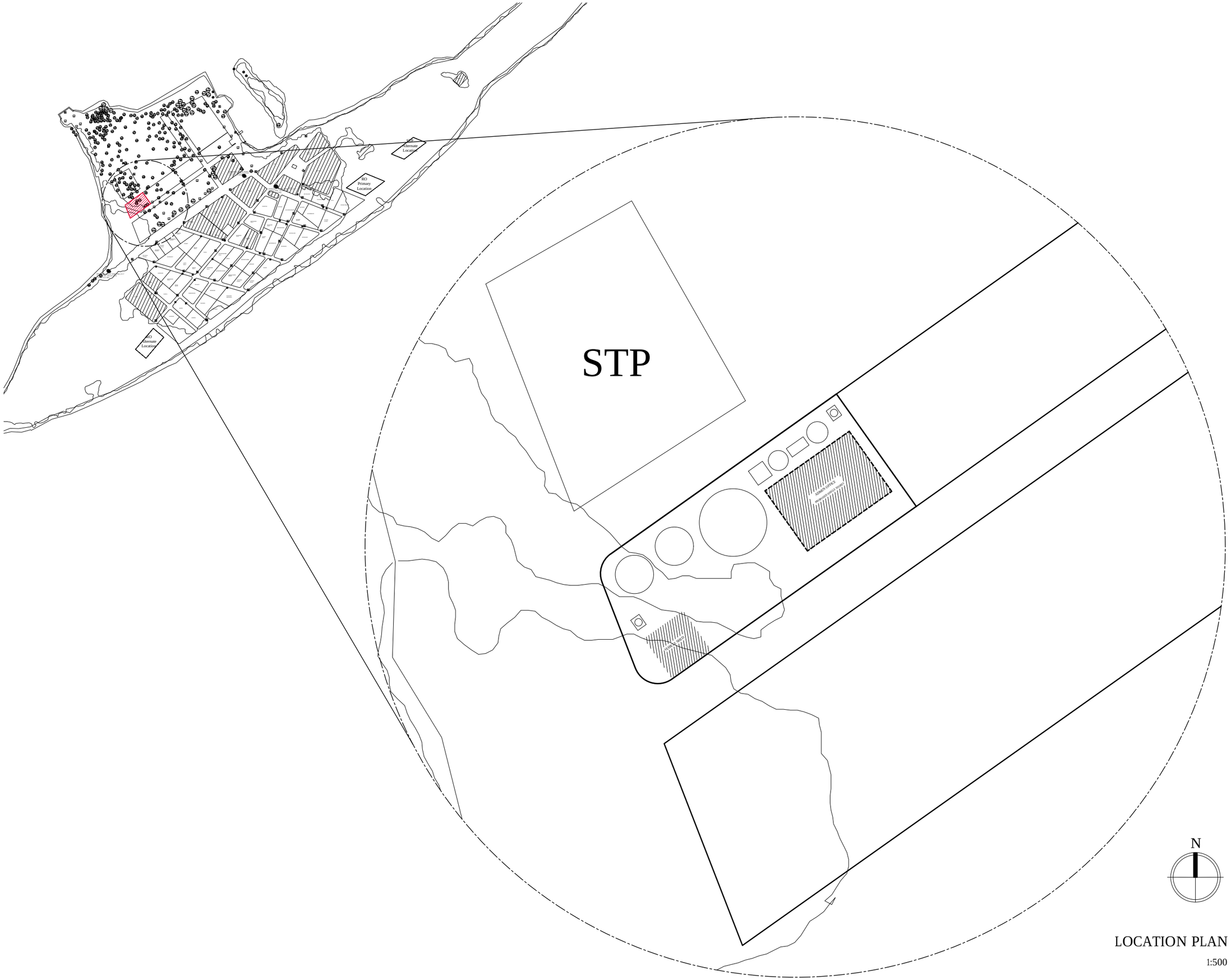
Elevations	A.6 (2)
Section	A.6 (2)
STRUCTURAL DRAWINGS (VEHICLE SHED)	
Foundation Plan	S.4 (1)
Roof Truss Plan	S.4 (2)
Roof Framing Plan	S.D (4)



LOCATION PLAN

1:500

Legend

Note:

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R01	NOV 2020		A.S.A.	F.I.A.	M.H.

Title:

Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities **in 7 Islands, Maldives – Package 4**

Sub Title:

Water Supply System in Adh. Dhihdhoo

Client:

Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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FEEDBACK INFRA
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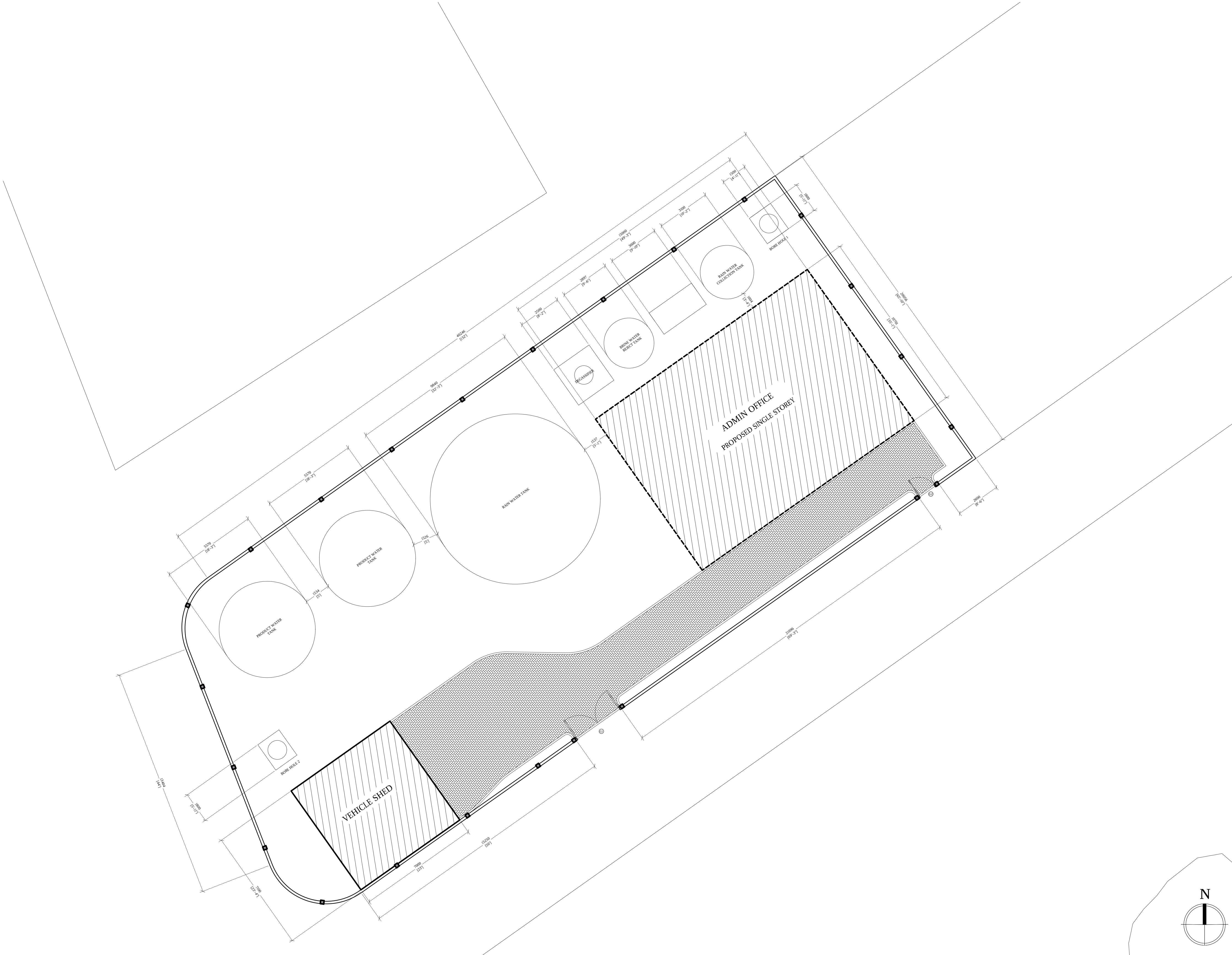
Drawn: A.S.A.		Checked: F.I.A.	
Designed: A.S.A.		Approved: M.H.	
Date: Nov 2020		SCALE (A3): 1:500	
Project No: EP-WS/2019/04			
Rev: R-01		Page: A.1 (1)	



SITE PLAN

1:200

Legend

Note:

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R01	NOV 2020		A.S.A.	F.I.A.	M.H.

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Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities
in 7 Islands, Maldives – Package 4

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Project No: EP-WS/2019/04

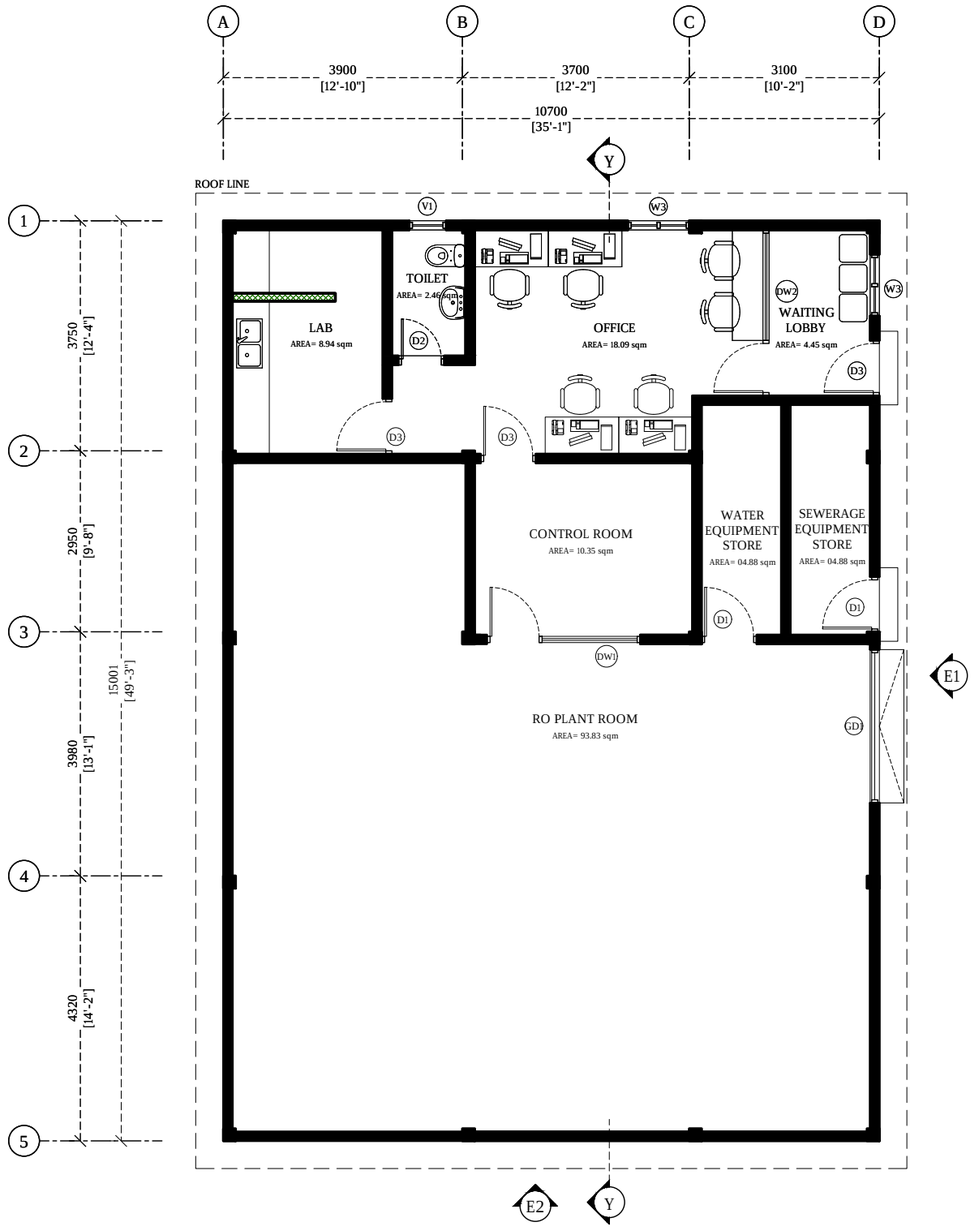
Rev: R-01

Page: A.1 (2)

ARCHITECTURAL AND STRUCTURAL DRAWINGS OF

PROPOSED SINGLE STOREY BUILDING AT

RO PLANT ADMIN BUILDING, ADH.DHIHDHOO



Wall Legend:

150mm thick masonry blocks with 20mm plaster on exterior and 12mm plaster on interior

100mm thick partition walls up to ceiling level

Wall Finish:

Internal Wall Finish: Easy to wash odour-less Nippon paint Ivory White

External Wall Finish: Weathe rbond Algae guard Nippon September Cream

Toilet and shower walls: 300x300mm ceramic wall lanka tiles up to ceiling height with tile adhesive. use joint filler of appropriate color for grouting joints between tiles

Floor Finish:

Floor Finishes: 600x600mm homogenous floor tiles with tile adhesive unless specified

Toilet Floor Finishes: 300x300mm homogenous non skid floor tiles with tile adhesive unless specified

Notes:

FFL of balconies and toilets should be 25mm lower than the FFL of respective floors

Water proofing to be applied in toilets, balconies and roof terrace prior to tiling

N

GROUND FLOOR PLAN

1:100

Legend

Note:

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
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Title:

Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities

in 7 Islands, Maldives – Package 4

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Project No: EP-WS/2019/04

Rev: R-01

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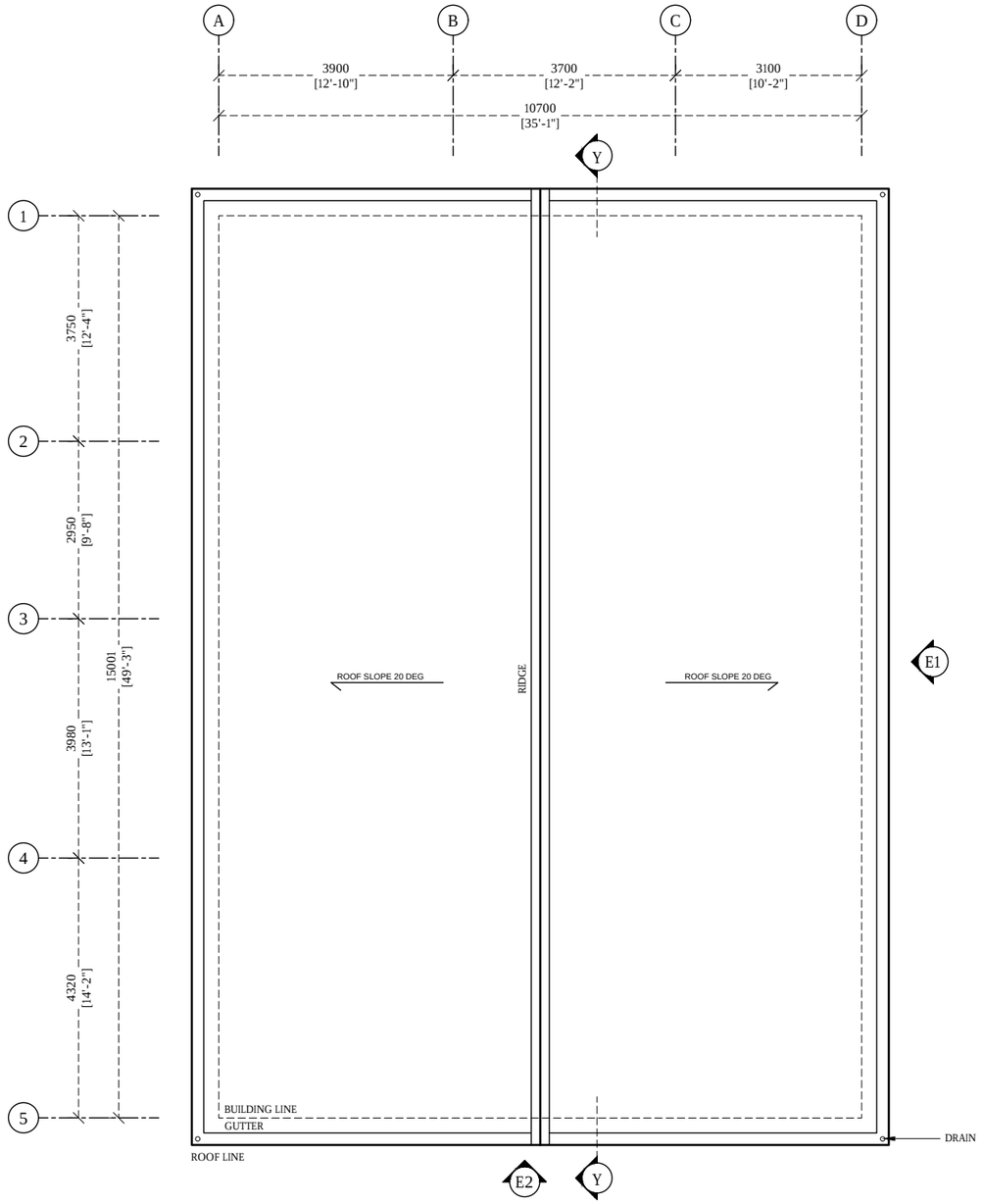

ROOF PLAN

1:100

Legend

Note:

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R01	NOV 2020		A.S.A.	F.I.A.	M.H.

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in 7 Islands, Maldives – Package 4

Sub Title:

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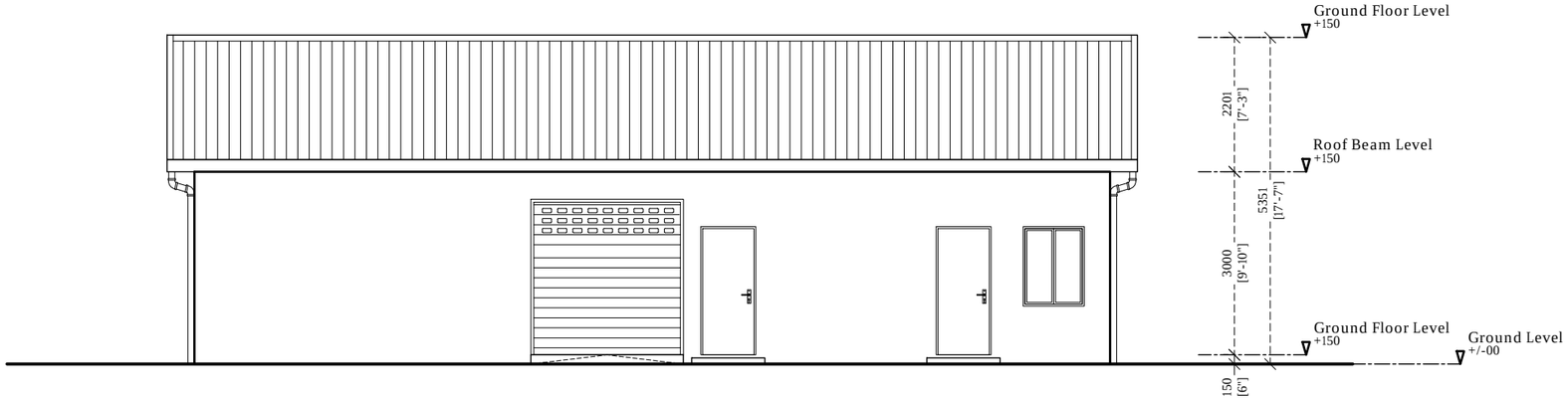
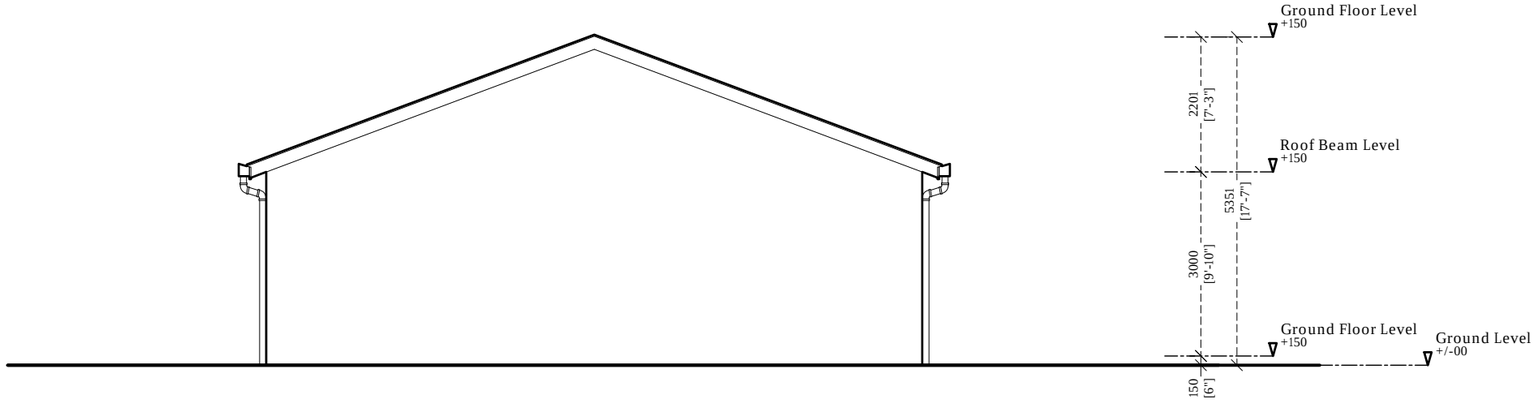
Project No: EP-WS/2019/04	
Rev: R-01	Page: A.2 (2)



ELEVATION E1

1:100



ELEVATION E2

1:100

ELEVATIONS

1:100

Legend

Note:

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Date: Nov 2020	SCALE (A3): 1:100

Project No: EP-WS/2019/04

Rev: R-01

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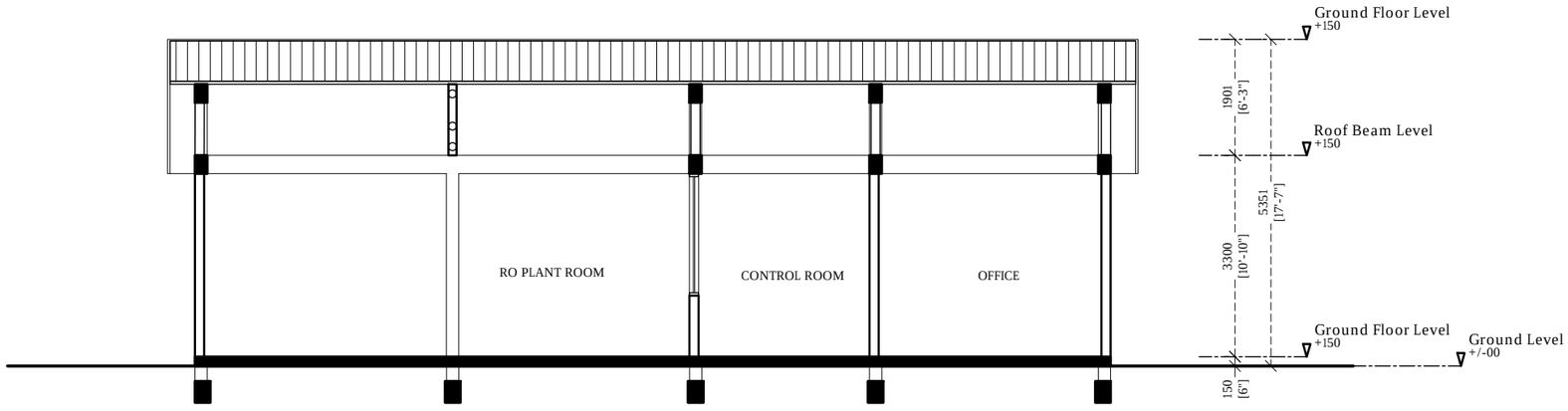

SECTION XX

1:100

SECTION

1:100

Legend

Note:

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Date:	Nov 2020	SCALE (A3):	1:100

Project No: EP-WS/2019/04

Rev: R-01

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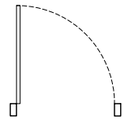
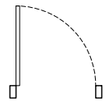
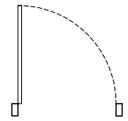
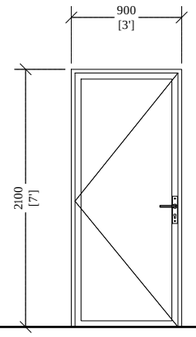
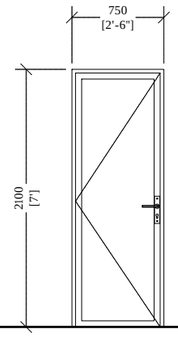
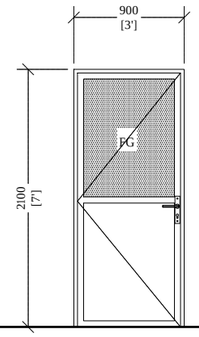
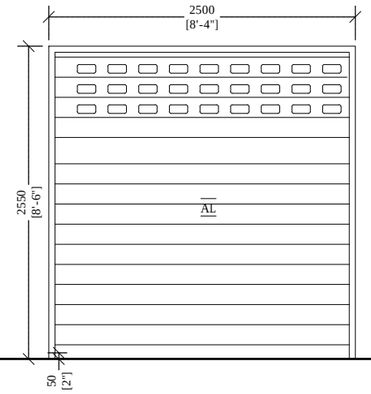
Plan view				
Elevation view				
FFL				
Frame material	Aluminum black powder coated	Aluminum black powder coated	Aluminum black powder coated	Aluminum framed roller shutter
Panel material	Aluminum cladding sheet	Aluminum cladding sheet	Aluminum cladding sheet & Fixed clear glass	Aluminium
Openable area	1.74	1.45	1.74	6.0

General Notes:

Dimensions shown on DWG indicate effective openings of frame

All frame depths are 100mm
All dor panel thicknesses are 35mm
All window manel thickness are 25mm
Al frame edges shal be trimmed 3mm

All wodden components should be wood stained finish

All glazing should be of 6mm unless specified

External units must comply the following weather conditions:-
Wind pressure: 200 kg/sqm
Water tightness: 25 kg/sqm

All external frames / wall joints must be sealed with silicon sealant and the wedges trimmed with 12X12mm hardwood beading fixed to frames by brass nails

All hardware should be provided for the performance of al functions of the units

Hinges shall confirm to
1. Door size more than 700X1900mm
   WD: 125mm X2 sets
   SD: 150mm X3 sets
2. Door size less than 700X1900mm
   WD: 100mm X2 sets
   SD: 125mm X2 sets

Locks shall be cylinderical with master key sets

Door knobs shall be1000mm above FFL

DOOR & WINDOW SCHEDULE -1

1:50

Legend

Note:

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.
R01	NOV 2020		A.S.A.	F.I.A.	M.H.

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Sub Title:
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Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

EPOCH ASSOCIATES
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A: G. Rosary West,
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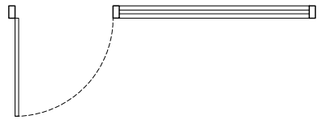
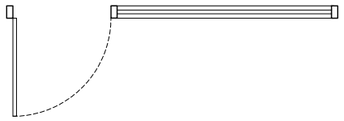
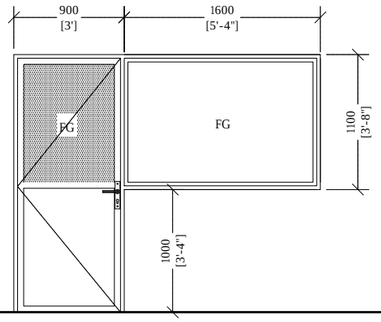
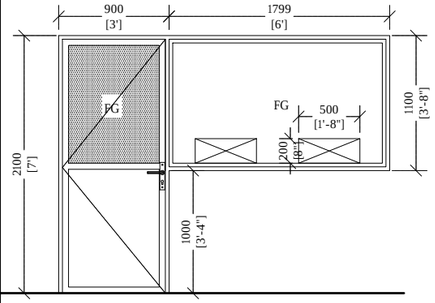
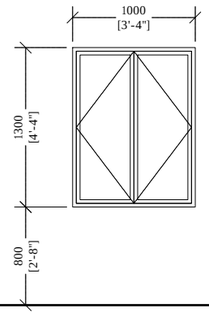
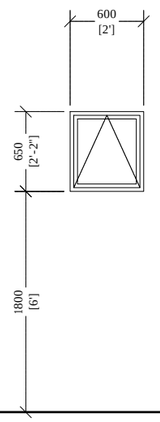
FEEDBACK INFRA

Drawn: A.S.A.	Checked: F.I.A.
Designed: A.S.A.	Approved: M.H.
Date: Nov 2020	SCALE (A3): 1:50
Project No: EP-WS/2019/04	
Rev: R-01	Page: A.5 (1)

Door ID	DW 1	DW 2	W3
Plan view			
Elevation view			
Frame material	Aluminum black powder coated	Aluminum black powder coated	Aluminum black powder coated
Panel material	Aluminum cladding sheet & Fixed clear glass	Aluminum cladding sheet & Fixed clear glass	Reflective Glass
Openable area	-	-	-

Door ID	V1
Plan view	
Elevation view	
Frame material	Aluminum black powder coated
Panel material	Reflective Glass
Openable area	0.32

General Notes:

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2. Door size less than 700X1900mm
   WD: 100mm X2 sets
   SD: 125mm X2 sets

Locks shall be cylinderical with master key sets

Door knobs shall be1000mm above FFL

DOOR & WINDOW SCHEDULE -2

1:50

Legend

Note:

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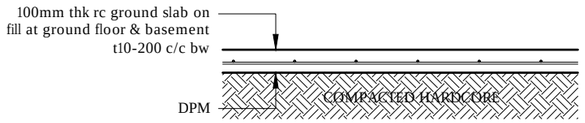
Project No: EP-WS/2019/04	
Rev: R-01	Page: A.5 (2)

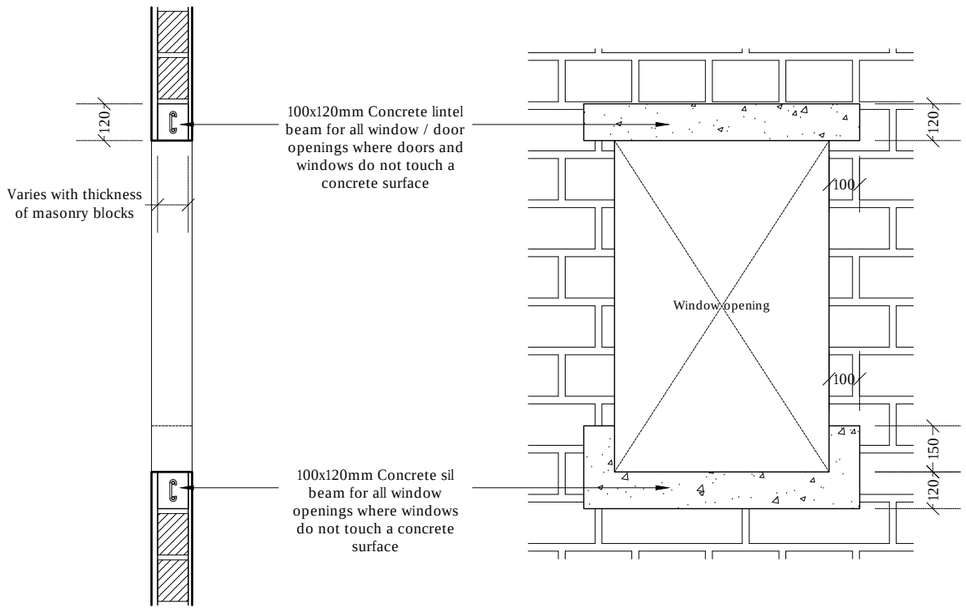


Note:

- All cover blocks shall be casted using grade C25/30 concrete with 5-10mm aggregates
- For slab, rebar spacer chairs spacing shall be minimum 1m spacing or 1 no. per 1 sqm

TYPICAL GROUND SLAB DETAIL

1:20



TYPICAL OPENING DETAIL

1:20

Legend

Note:

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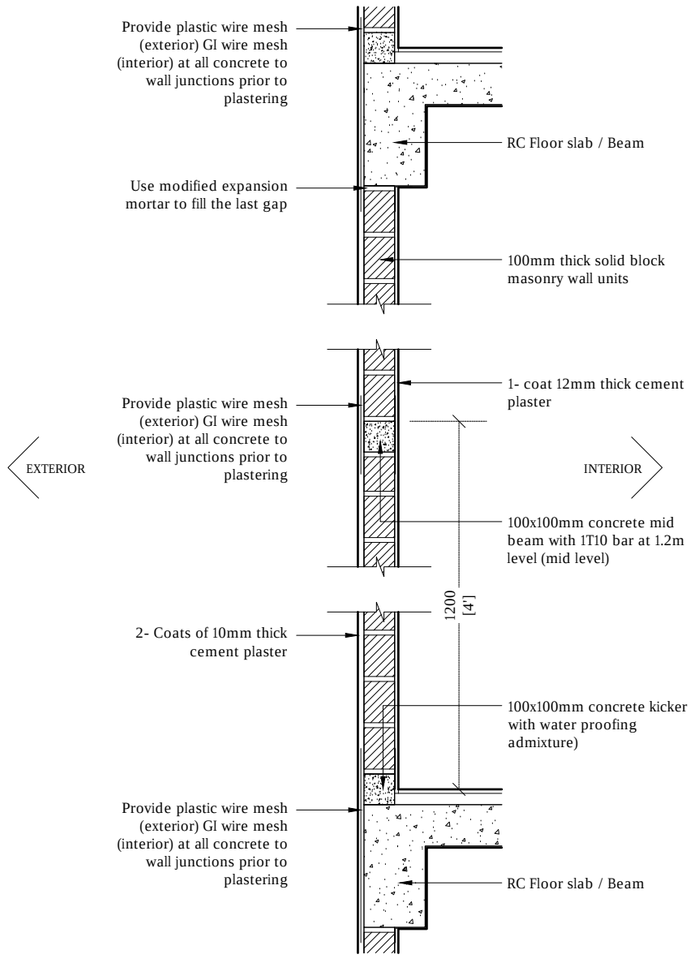

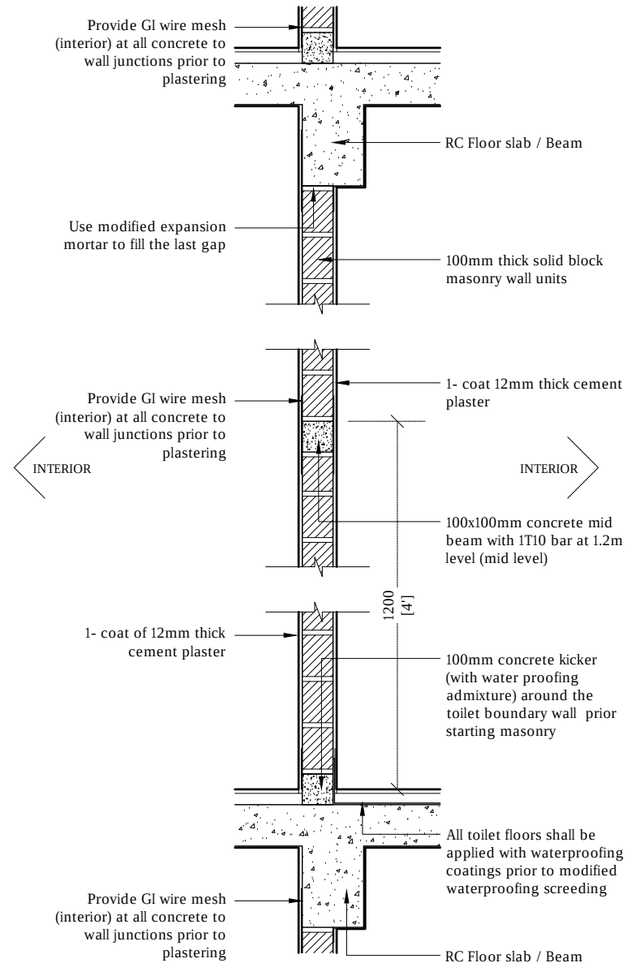

Note:

- Concrete surfaces shall be thoroughly cleaned with water & applied with mastercast 141 or equivalent bonding mortar prior to plastering.
- Plastering mortar mix shall be 1:4 (cement: sand) ratio.
- Plaster mix shall be modified using fibre wool & mastercast 141 or equivalent plasticisers as per manufacturer's specification.
- Height of placing blocks shall be maximum 1.2m per day.
- After initial coat of plastering, water curing shall be provided for minimum 3 days & after final coat water curing shall be provided for 7 days.

TYPICAL WALL CONSTRUCTION DETAIL

1:20

Legend

Note:

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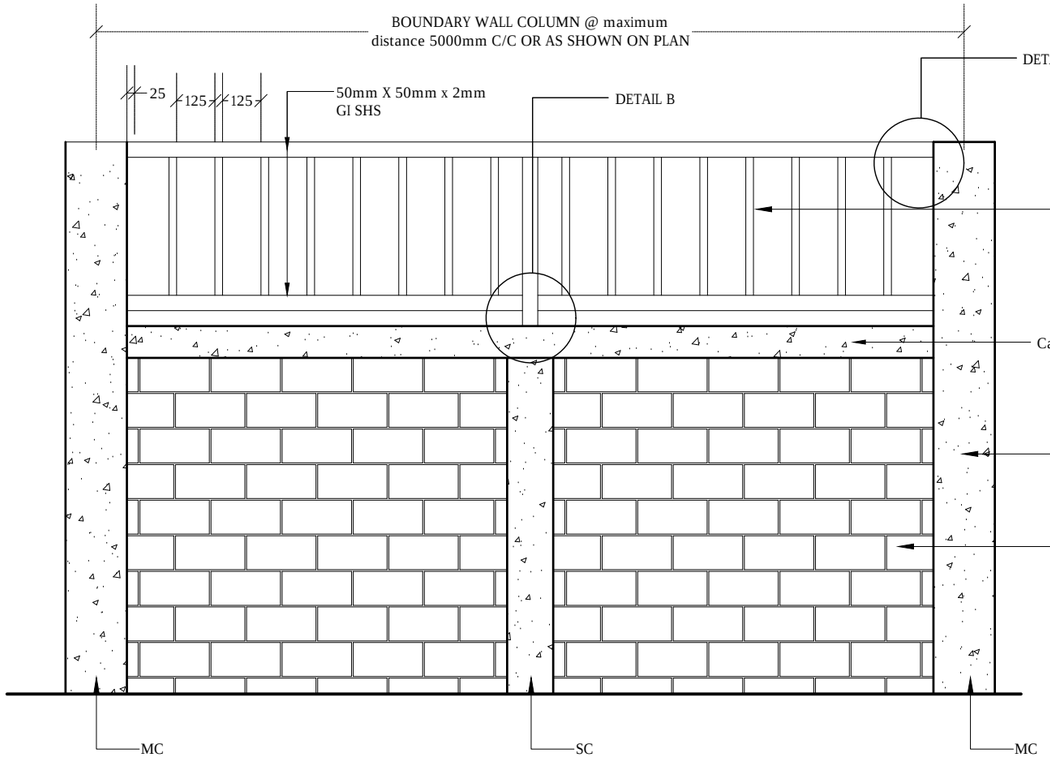
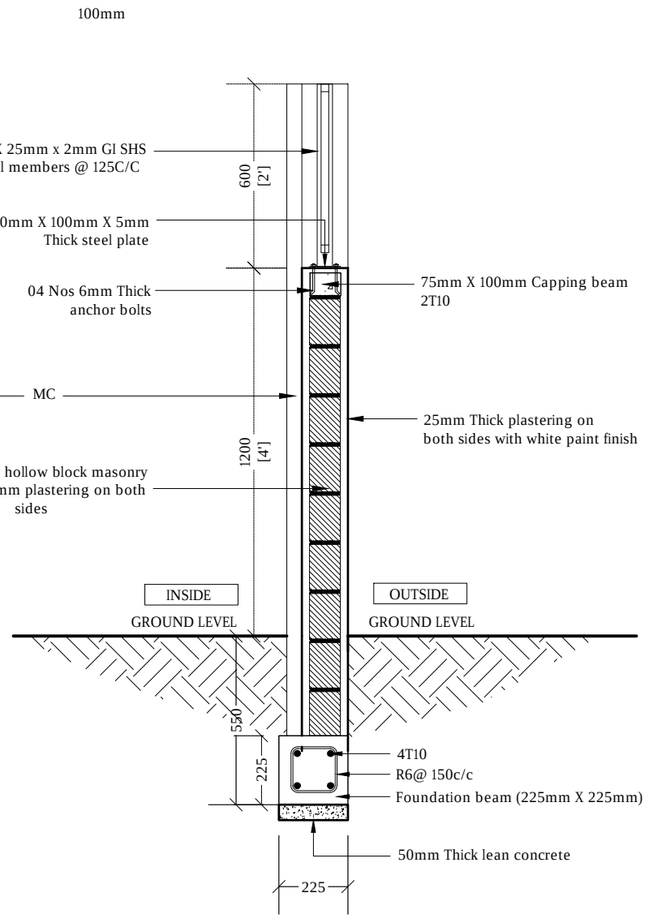
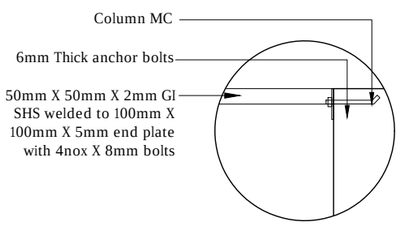
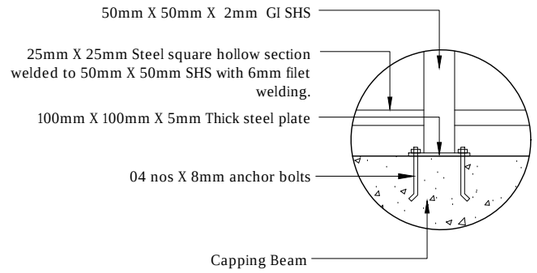






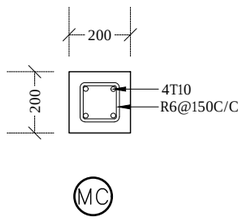
DETAIL A

1:10

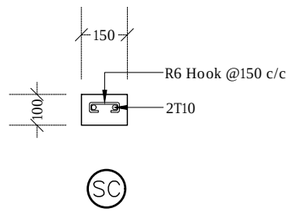


DETAIL B

1:10



MAIN COLUMN
@ maximum distance 5000mm C/C



STIFFENER COLUMN
(in between two main columns)

NOTE:
- FRAME MATERIAL : Steel gate frame 2.5mm thick GI sections SHS
- All steel members and GI SHS to be applied with 2 coats of anti-corrosive paint with epoxy finishing paint
- Allowance shall be made to fix pad lock in Gates

BOUNDARY WALL DETAIL

1:20

Legend

Note:

- FRAME MATERIAL : Steel gate frame 2.5mm thick GI sections SHS
- All steel members and GI SHS to be applied with 2 coats of anti-corrosive paint with epoxy finishing paint
- Allowance shall be made to fix pad lock in Gates
- Cover for foundation beams shall be 50mm
- Cover for columns (MC) shall be 40mm
- Concrete shall be of grade C25
- All concrete cold joints shall casted with bonding agent

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FEEDBACK INFRA
Making Infrastructure Happen

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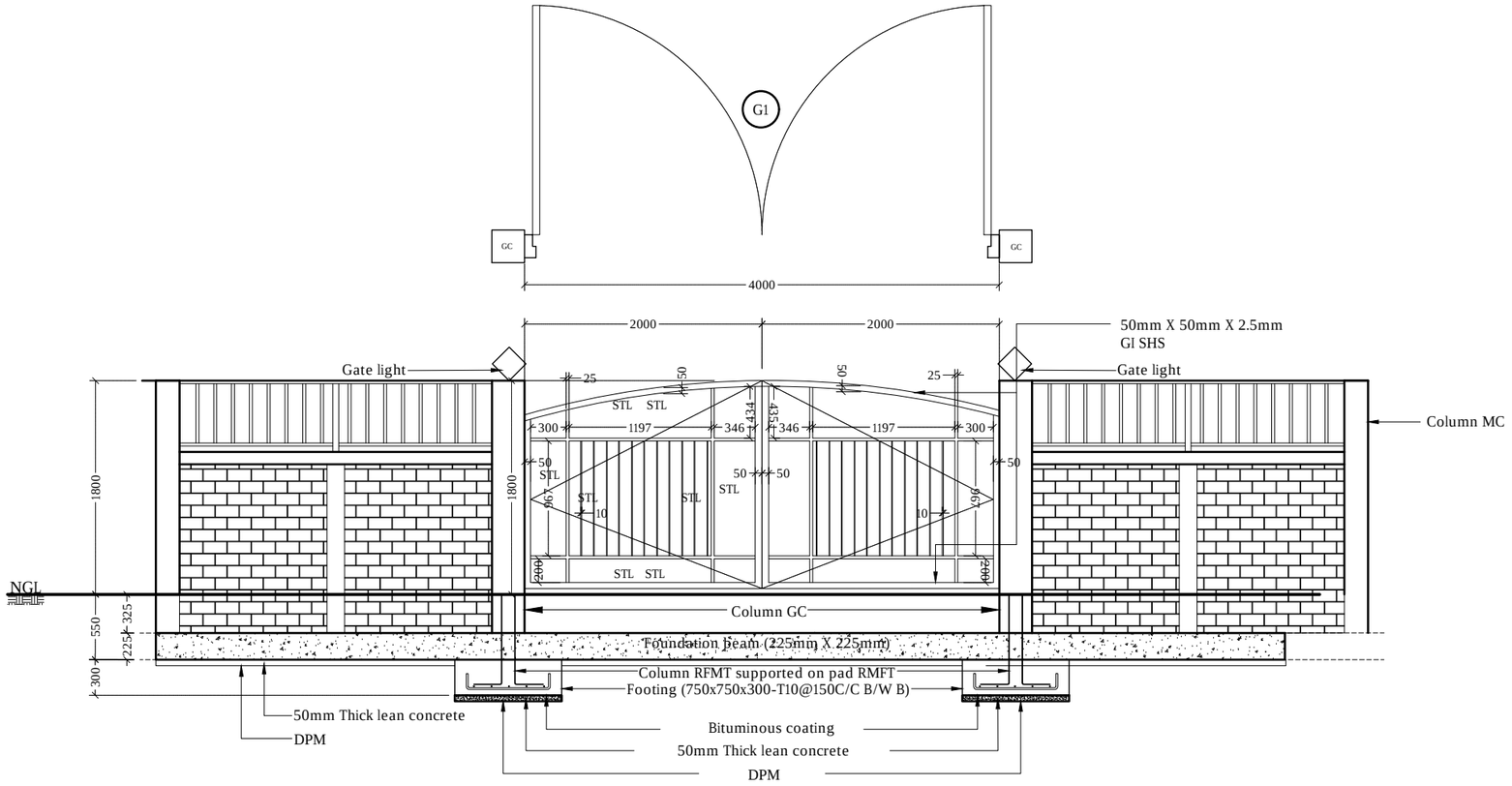
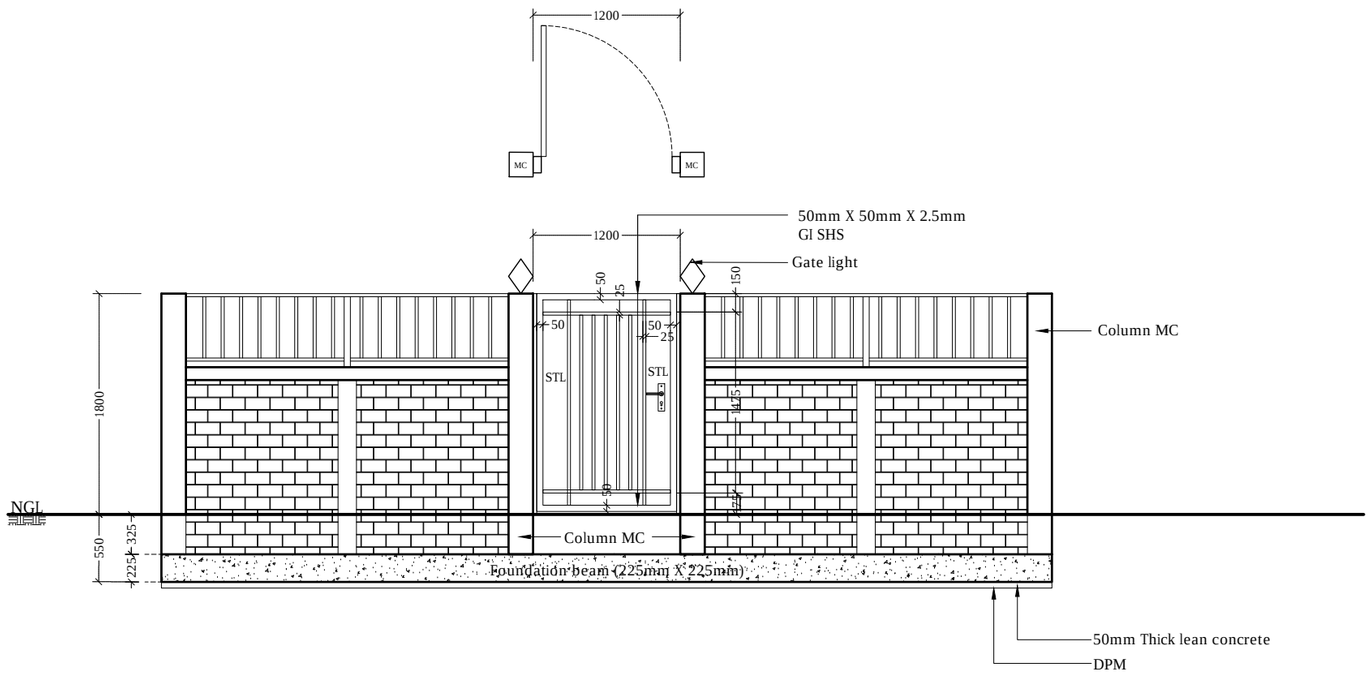
Project No: EP-WS/2019/04

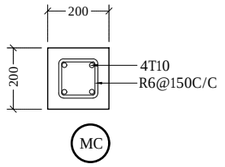
Rev: R-01

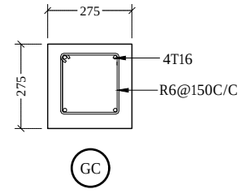
Page: A.D (3)



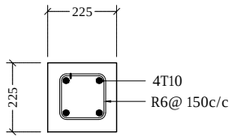


GATE DETAILS
1:50





COLUMN DETAILS
1:20



FOUNDATION BEAM DETAIL
1:20

Legend

Note:

- FRAME MATERIAL : Steel gate frame 2.5mm thick GI sections RHS
- PANEL MATERIAL : Steel frame with steel panels (STL) as shown on elevation view
- All steel members and GI SHS to be applied with 2 coats of anti-corrosive paint with epoxy finishing paint
- Allowance shall be made to fix pad lock in Gates
- Cover for foundation pads and foundation beams shall be 50mm
- Cover for columns (GC) and(MC) shall be 40mm
- Concrete shall be of grade C25
- All concrete cold joints shall casted with bonding agent

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FEEDBACK INFRA
Working Infrastructure Happier

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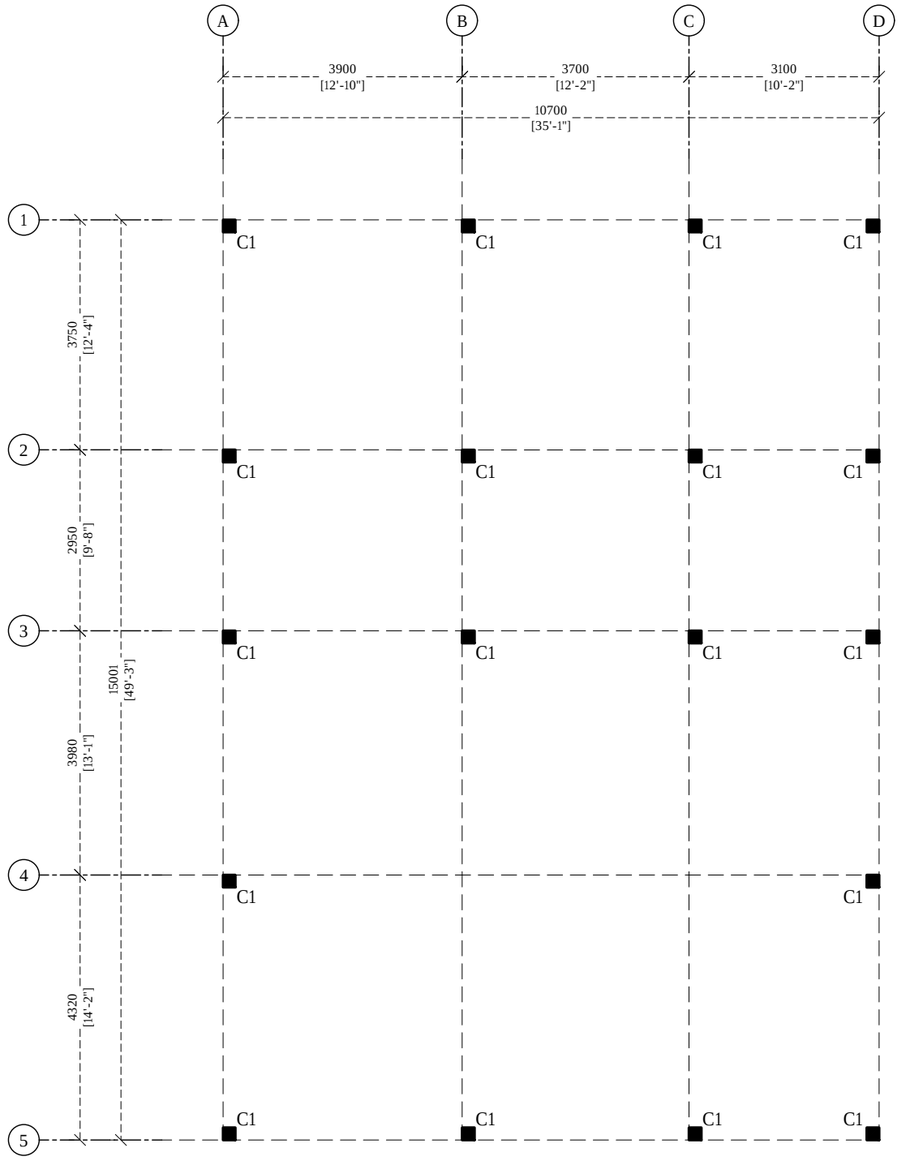
Rev: R-01	Page: A.D (4)



COLUMN LAYOUT PLAN

1:100

Legend

Note:

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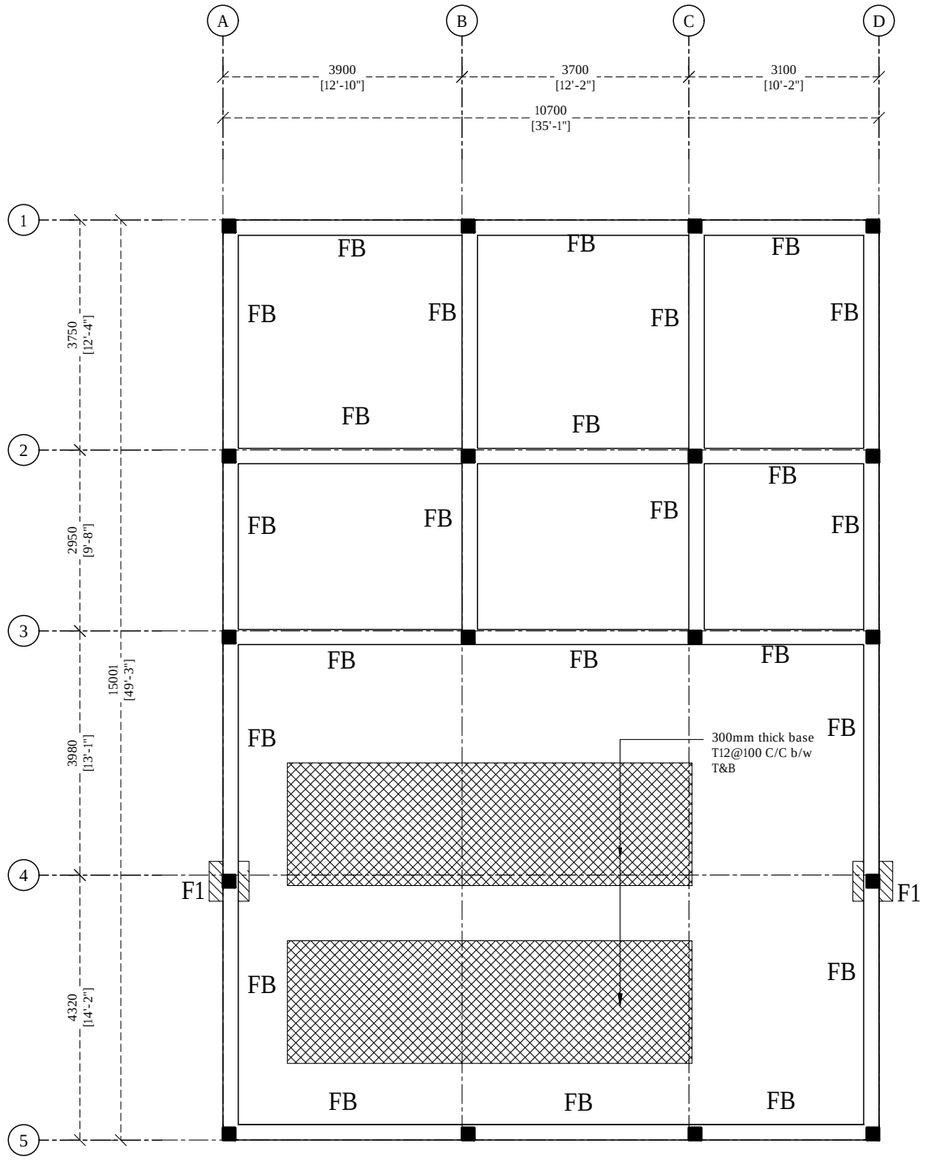

FOUNDATION PLAN

1:100

Legend

Note:

- Foundation Footing Depth : 850mm
- Foundation Beam Depth : 600mm

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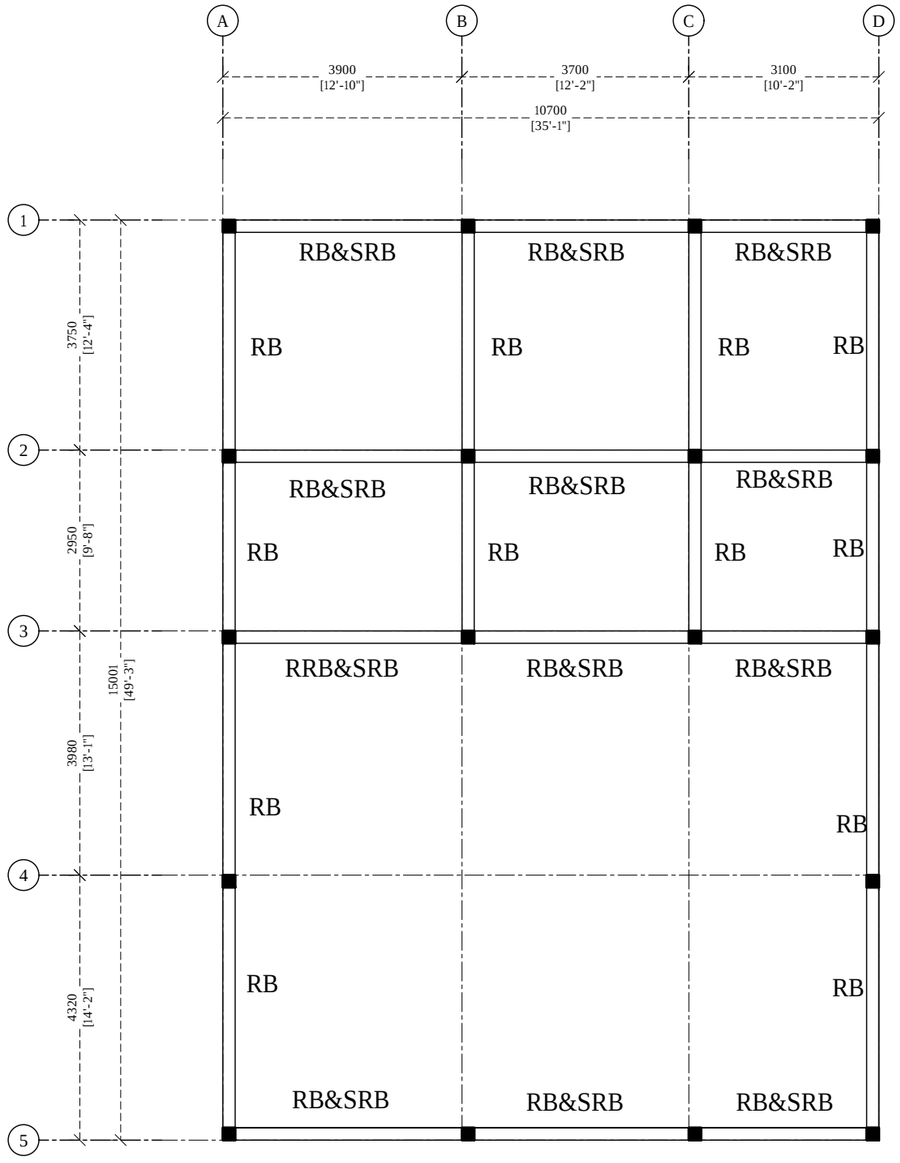

ROOF BEAM PLAN

1:100

Legend

Note:

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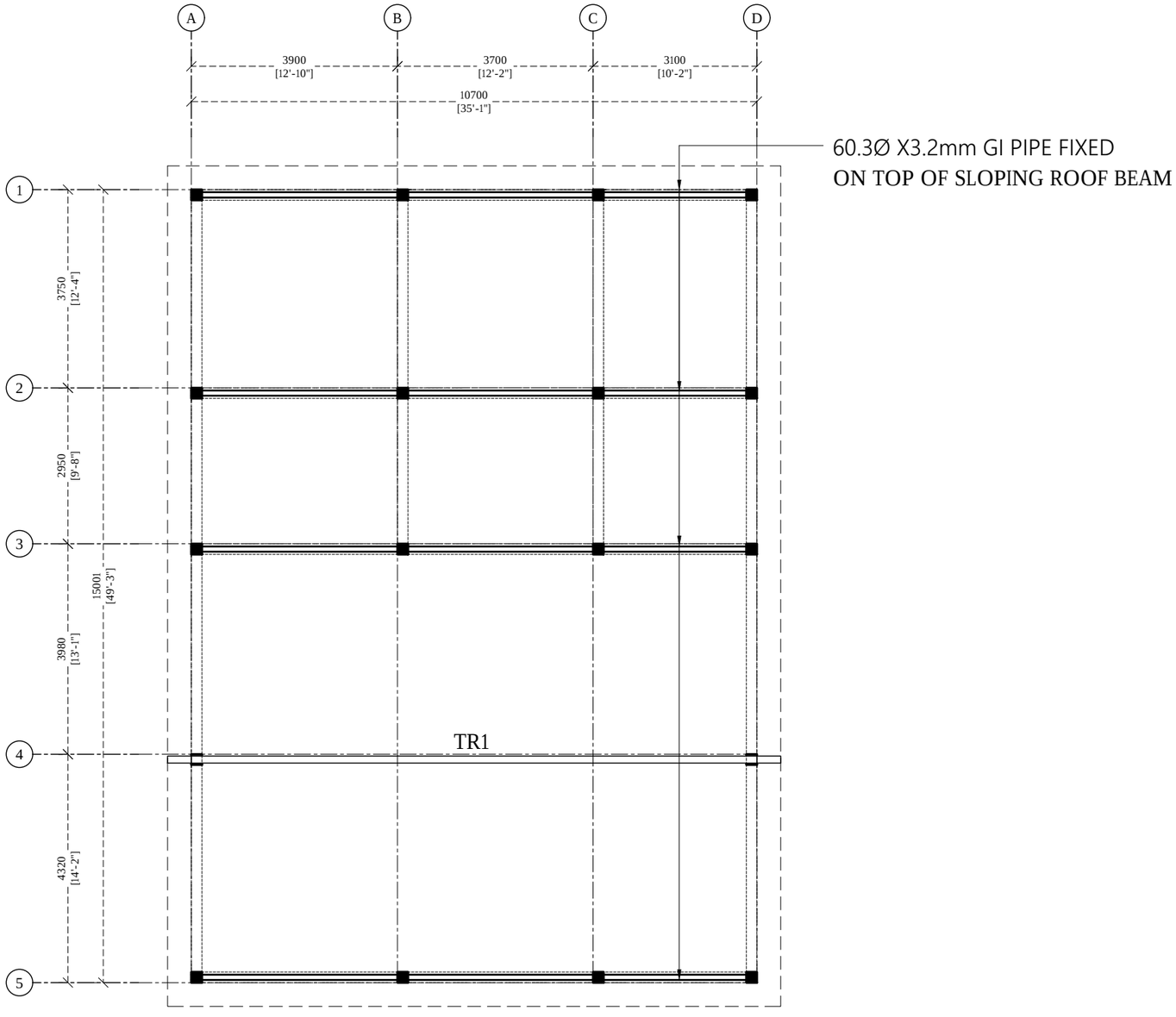

ROOF TRUSS PLAN

1:100

Legend

Note:

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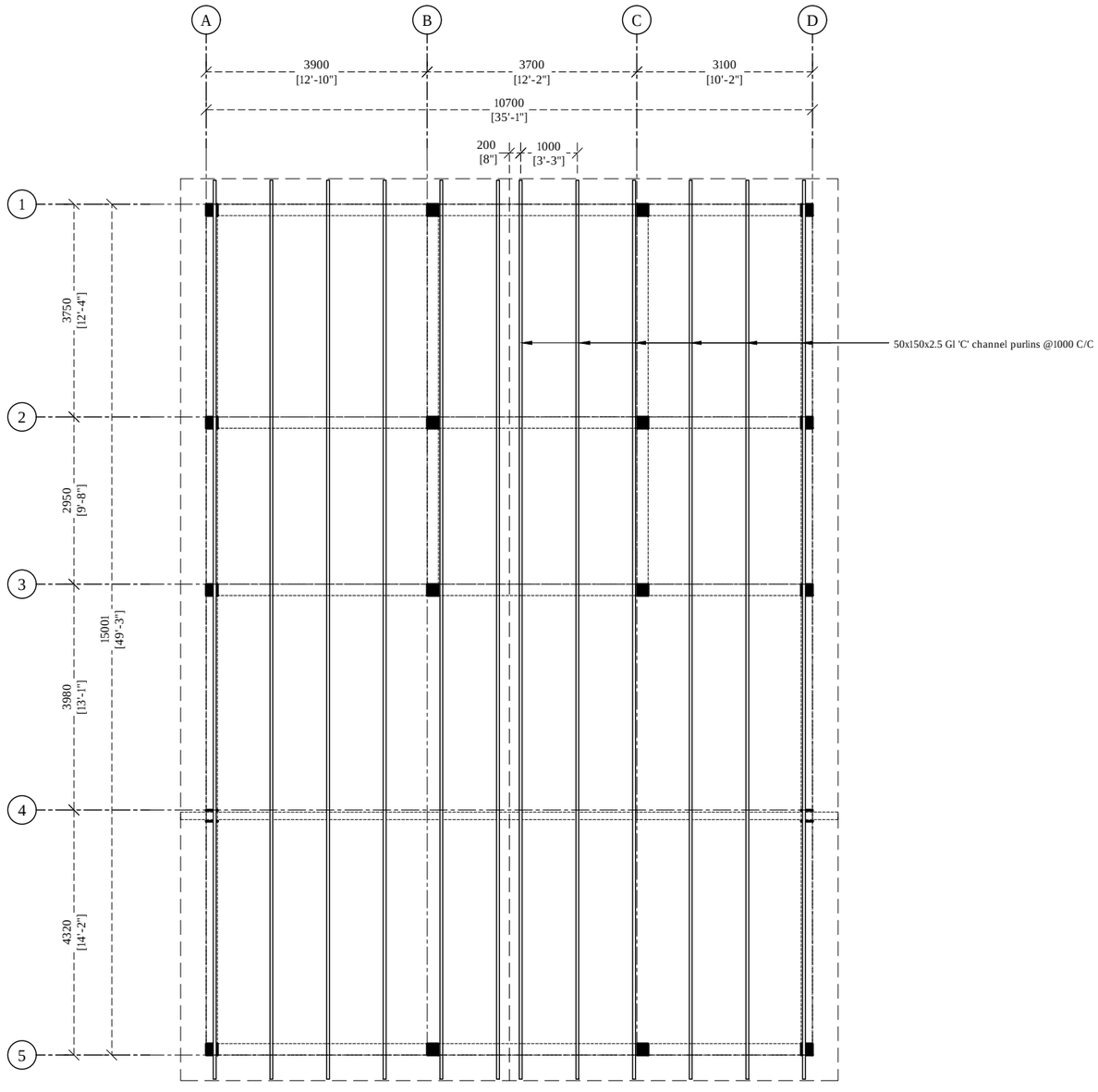

ROOF FRAMING PLAN

1:100

Legend

Note:

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R01	NOV 2020		A.S.A.	F.I.A.	M.H.

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in 7 Islands, Maldives – Package 4

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Water Supply System in Adh. Dhihdhoo

Client:

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EPOCH ASSOCIATES

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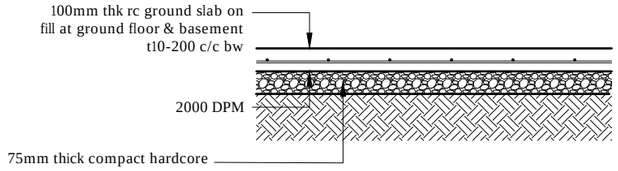
Making Infrastructure Happen

Drawn: A.S.A.	Checked: F.I.A.
Designed: A.S.A.	Approved: M.H.
Date: Nov 2020	SCALE (A3): 1:100

Project No: EP-WS/2019/04

Rev: R-01

Page: S.3 (3)

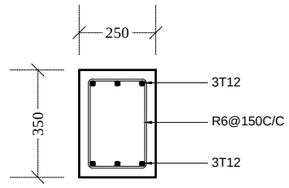


Note:

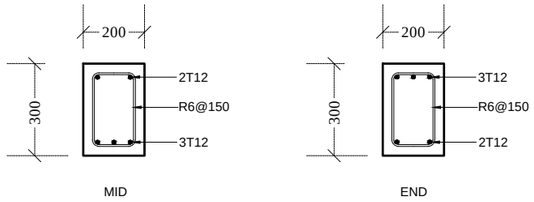
- All cover blocks shall be casted using grade C25/30 concrete with 5-10mm aggregates
- For slab, rebar spacer chairs spacing shall be minimum 1m spacing or 1 no. per 1 sqm

TYPICAL GROUND SLAB DETAIL

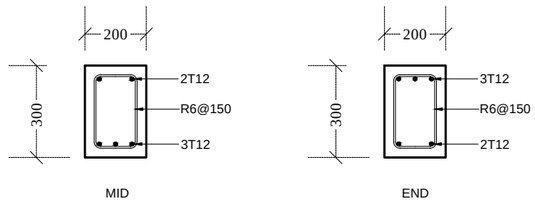
1:20



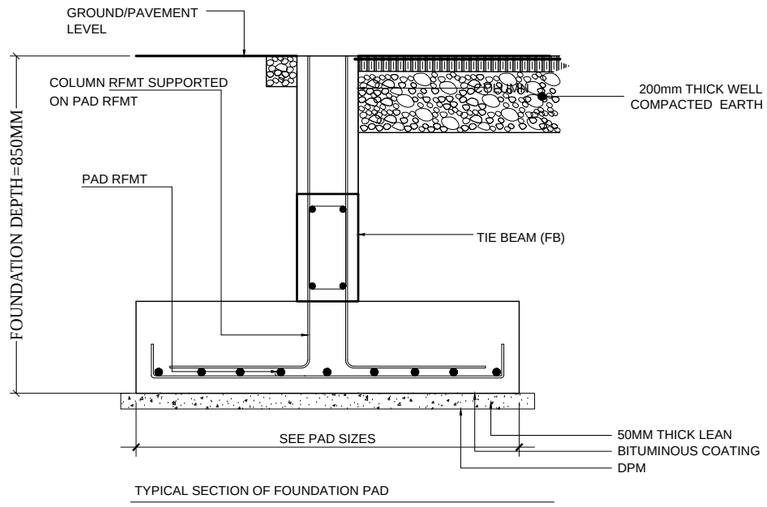
FOUNDATION BEAM (FB)



ROOF BEAM (RB)



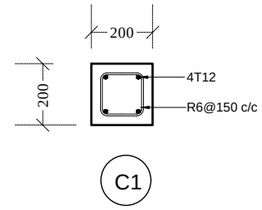
SLOPING ROOF BEAM (SRB)



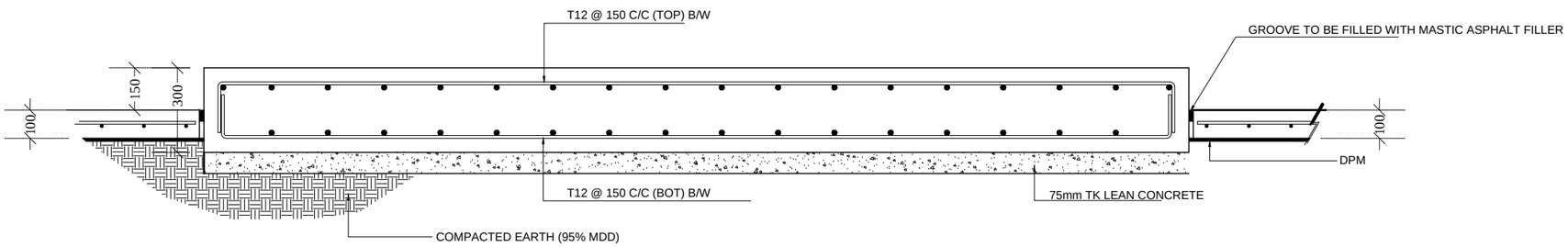
TYPICAL COLUMN SECTION

F1 - 650x650x250 - T10@150C/C B/W (B)

FOUNDATION PAD DETAILS



COLUMN DETAIL



RO PLANT BASE DETAIL

STRUCTURAL DETAILS

1:20

Legend

Note:

- Cover for foundation pads and foundation beams shall be 50mm
- Cover for floor slabs shall be 30mm
- Cover for columns shall be 40mm
- Concrete shall be of grade C25
- All concrete cold joints shall be casted with bonding agent
- laps = 45 dia (dia = bar dimeter)
- mid bars = 0.85 x span
- sup bars = 1/3 x span
- concrete mix = 1:2:3 (C:S:A)
- lean concrete mix = 1:2:5

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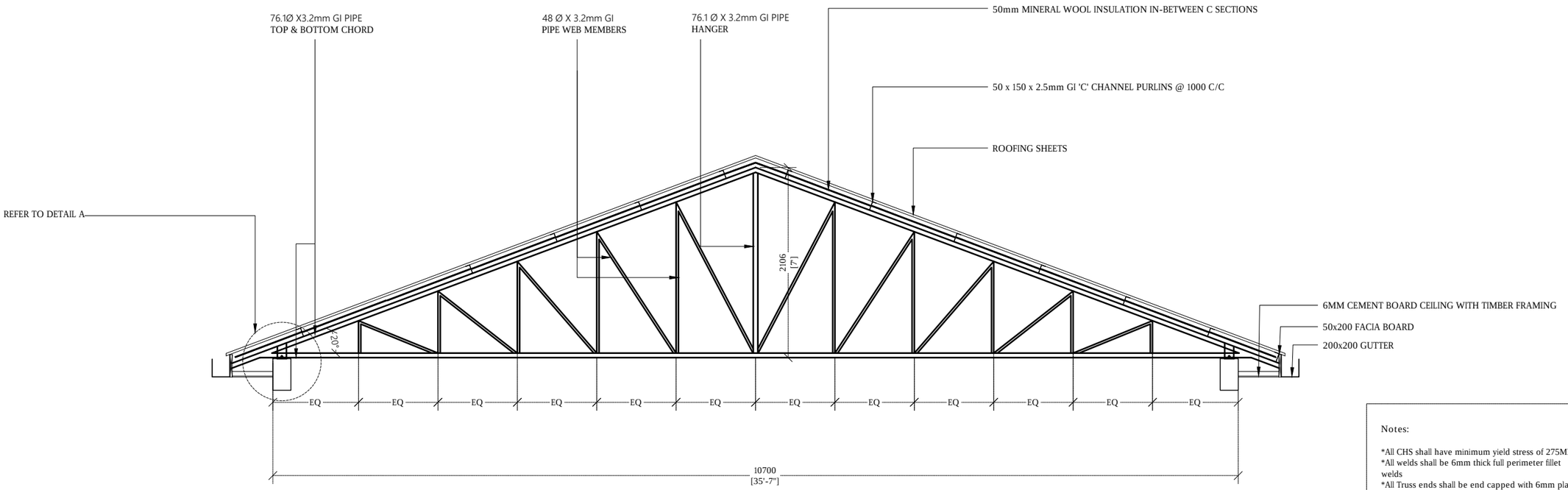
Rev: R-01	Page: S.D (1)

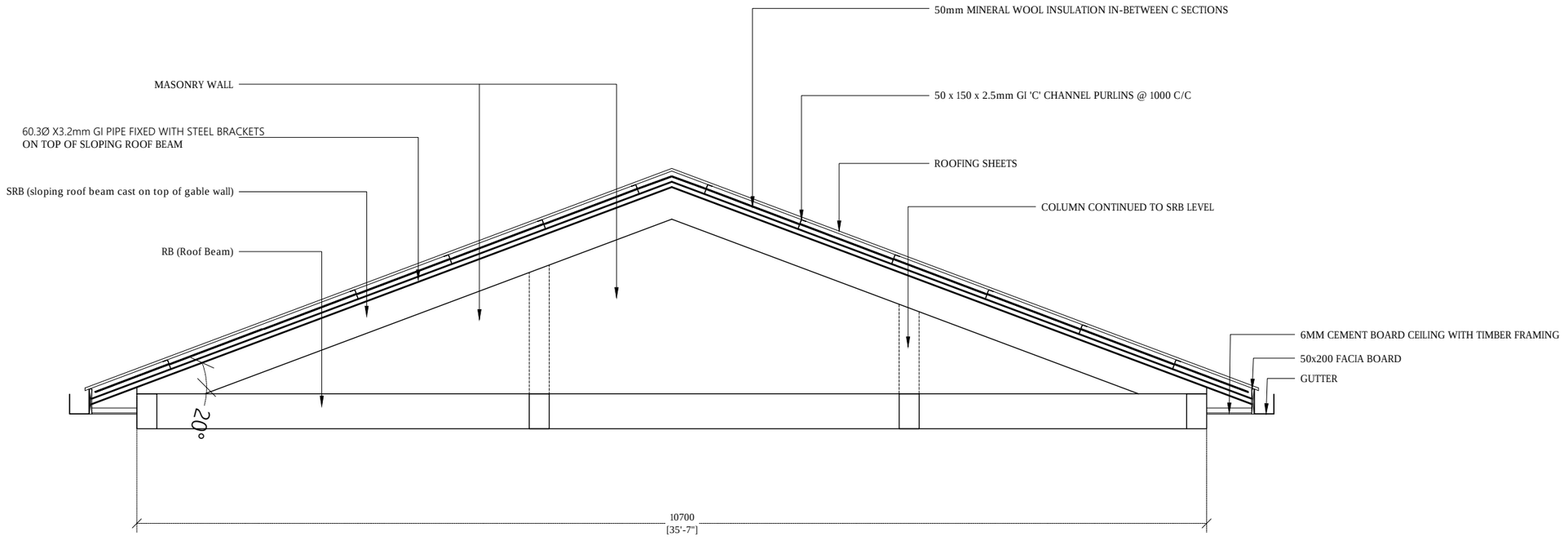


TRUSS DETAIL TR1 @ GRID 2

1:50

Notes:

*All CHS shall have minimum yield stress of 275MPa
*All welds shall be 6mm thick full perimeter fillet welds
*All Truss ends shall be end capped with 6mm plates
*All truss members shall be protected with anti corrosive coatings



DETAIL OF 63ϕx3.2MM PIPE FIXED ON GRID 1,3,4 & 5

1:50

Legend

Note:

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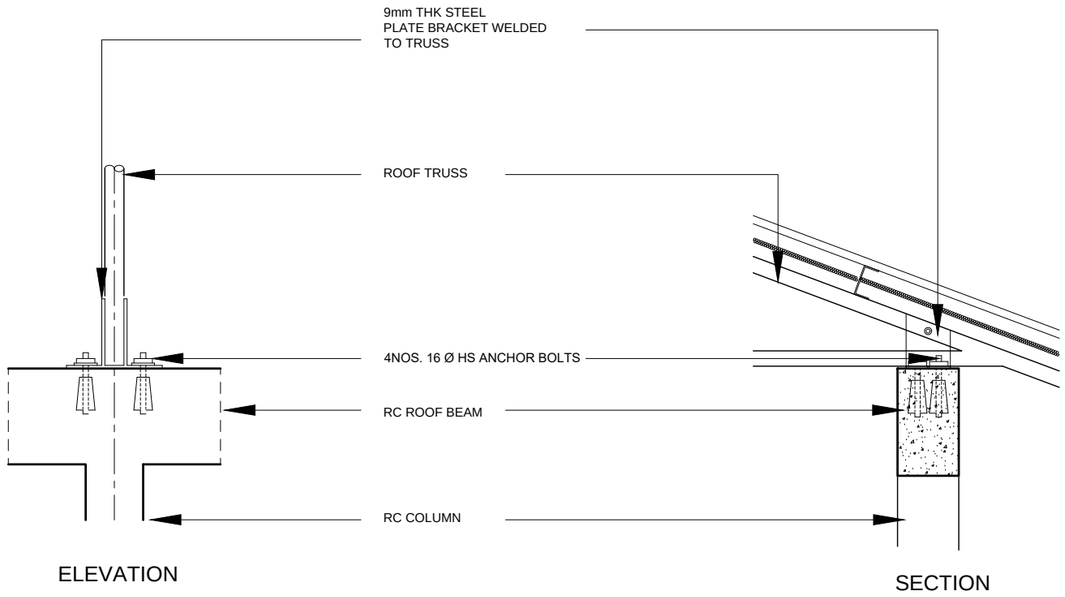

ELEVATION

SECTION

DETAIL A

1:20

Legend

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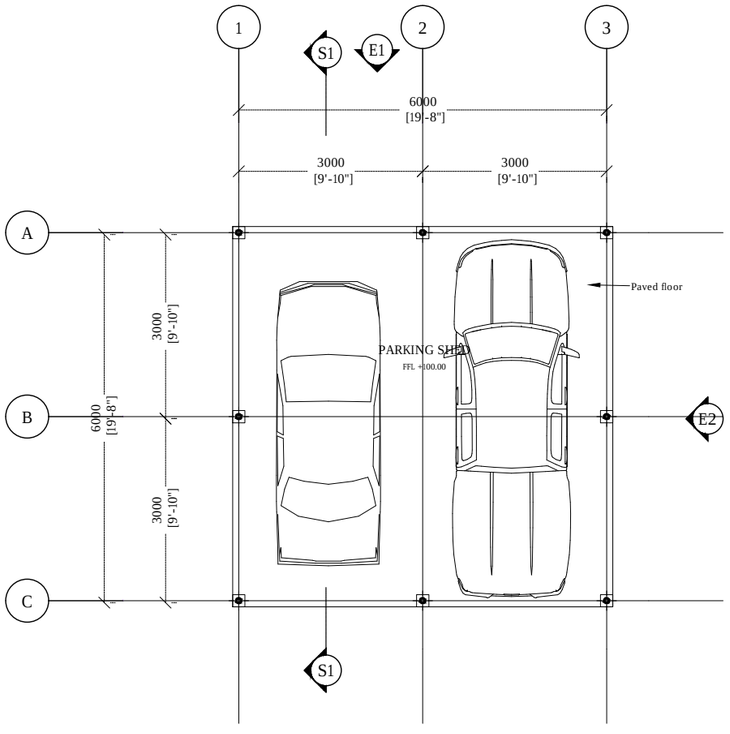
ARCHITECTURAL AND STRUCTURAL DRAWINGS OF

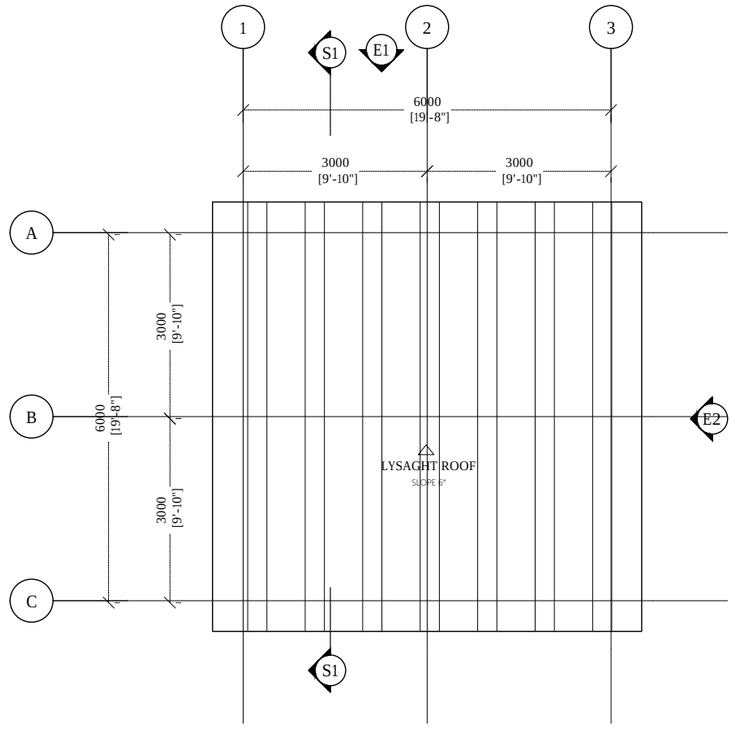
PROPOSED SINGLE STOREY BUILDING AT

RO PLANT VEHICLE SHED, ADH.DHIHDHOO



GROUND FLOOR PLAN

1:100



ROOF PLAN

1:100

Legend

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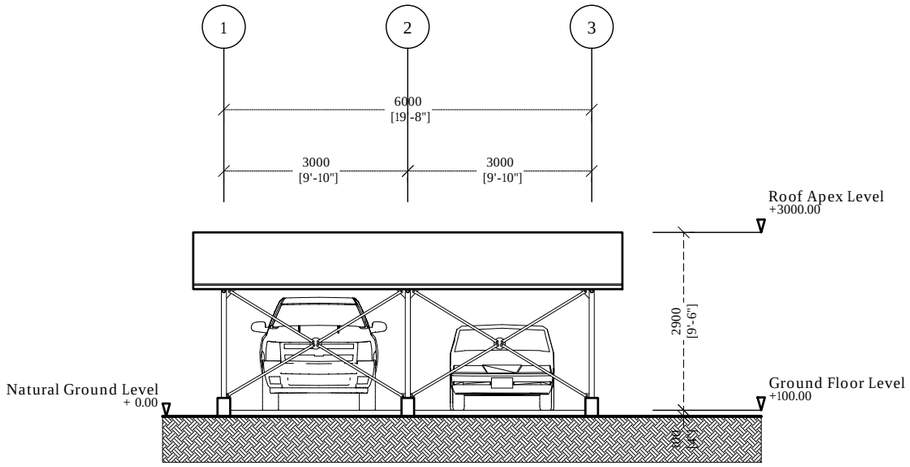
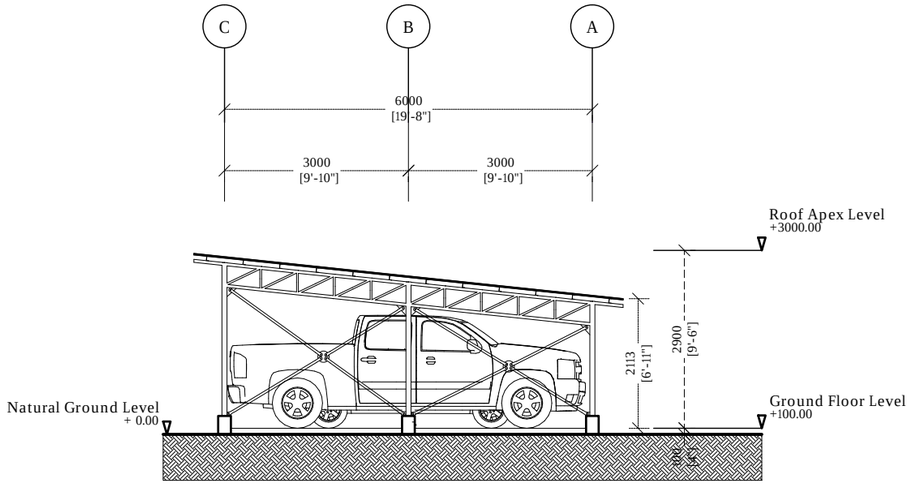


ELEVATION E1

1:100



ELEVATION E2

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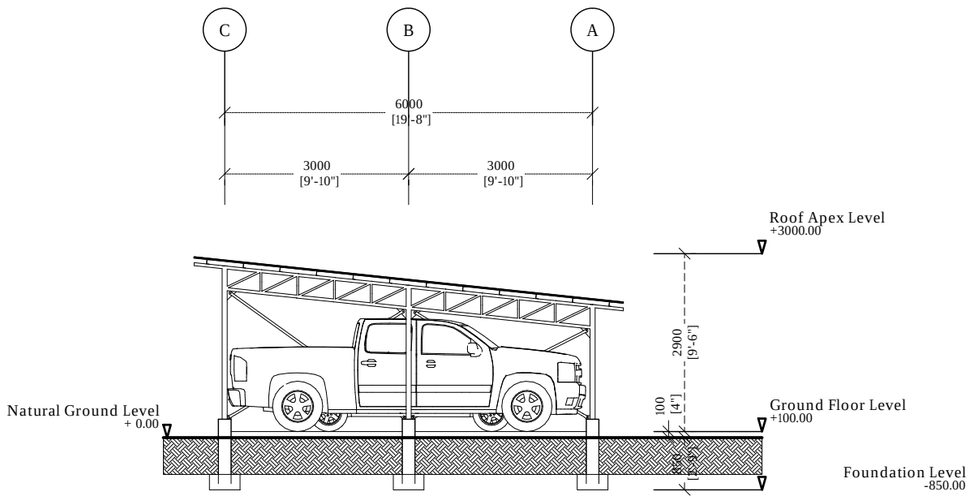

SECTION S1

1:100

Legend

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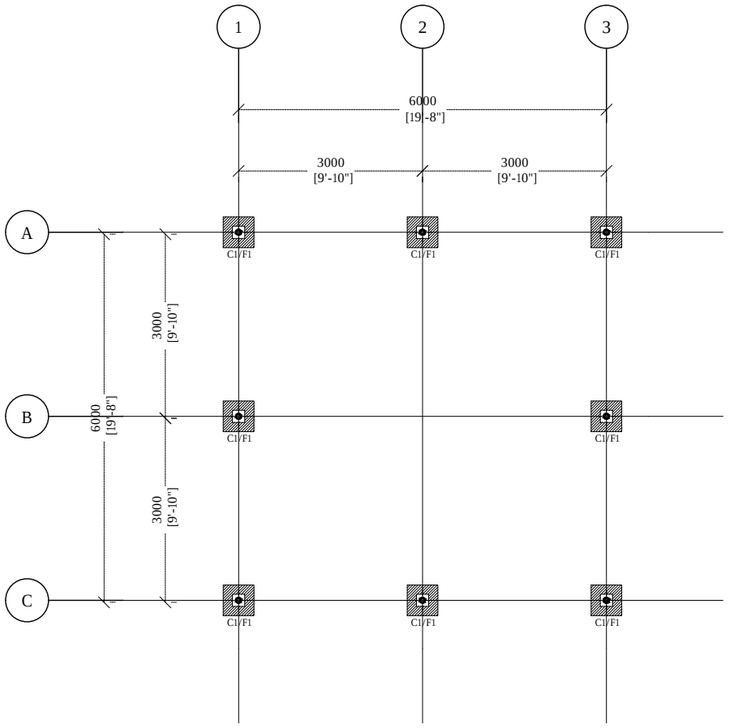
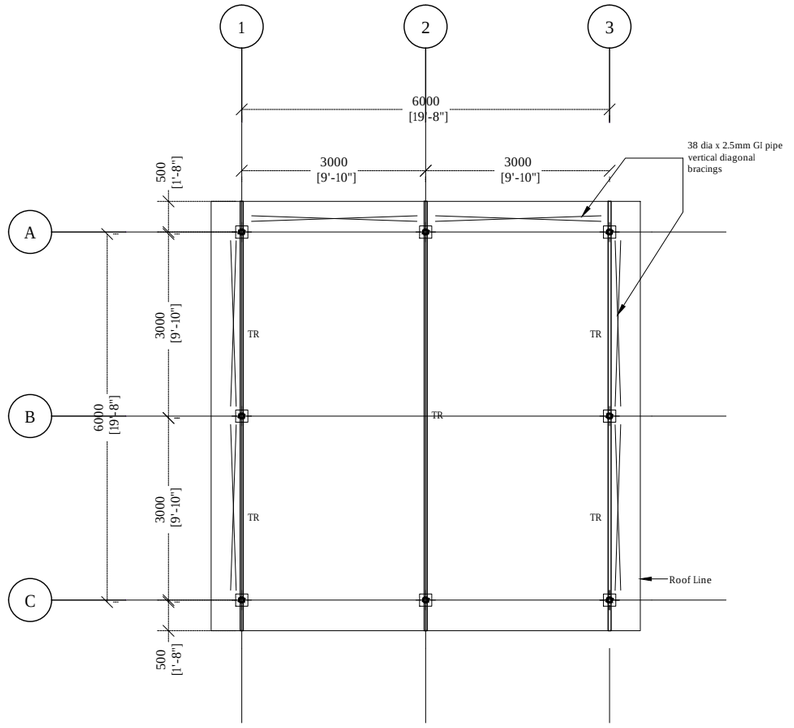


FOUNDATION PLAN

1:100



ROOF TRUSS PLAN

1:100

Legend

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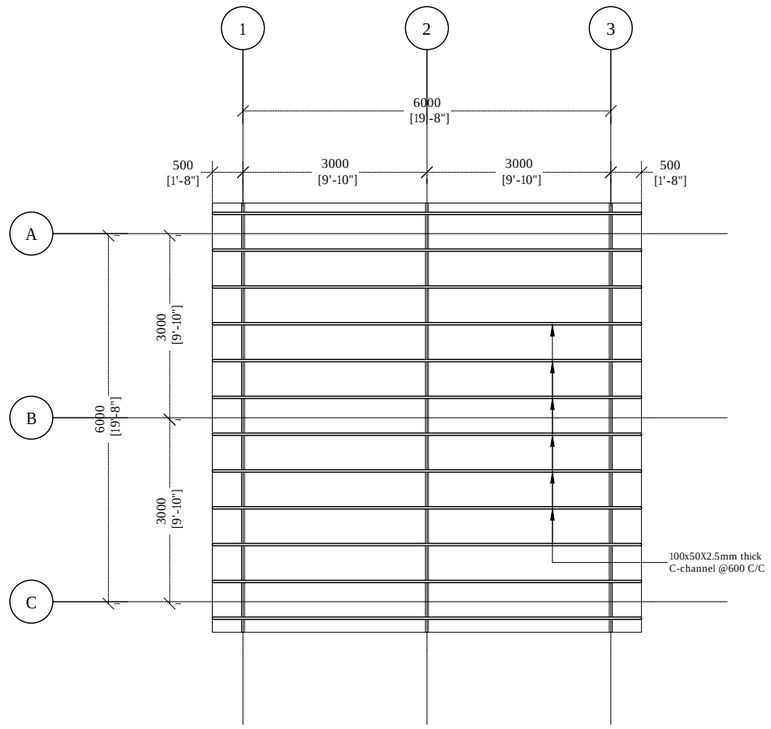

ROOF FRAMING PLAN

1:100

Legend

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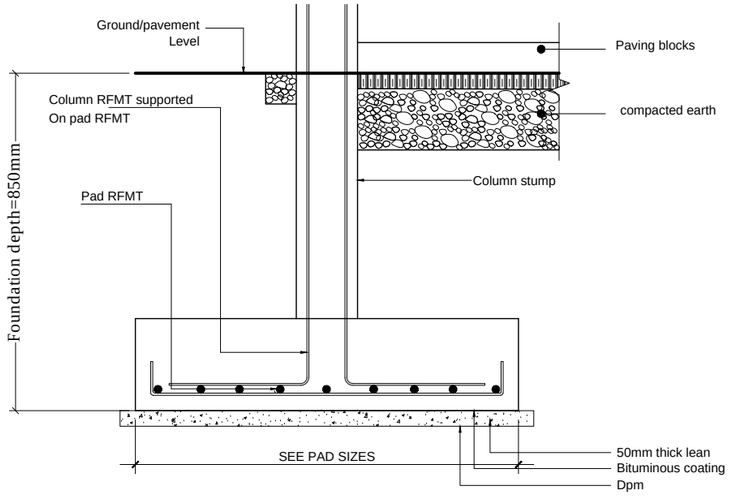
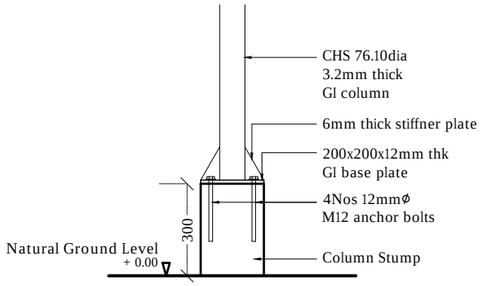


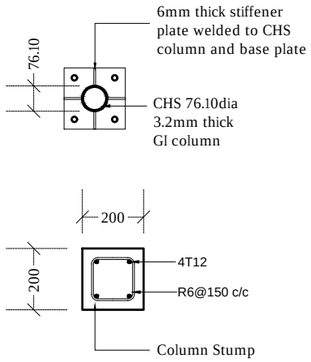
F1 - 500x500x250 - T10@150C/C B/W (B)

FOUNDATION PAD DETAILS

VEHICLE SHED FOOTING DETAIL

1:20





COLUMN DETAIL

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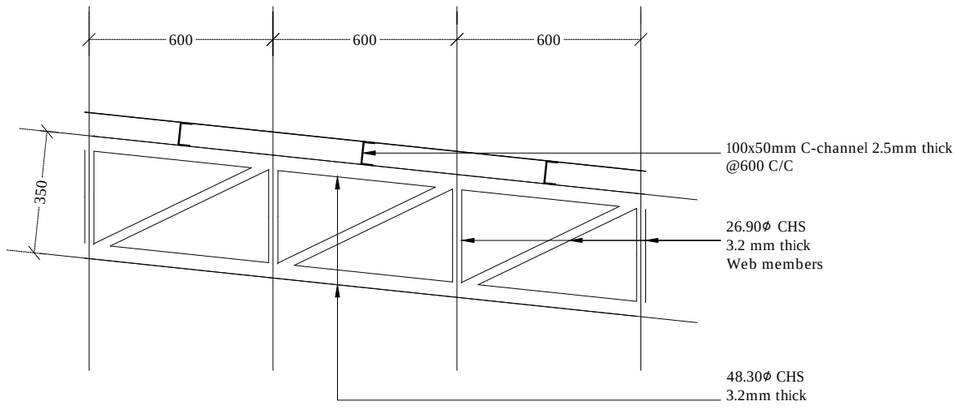

TRUSS DETAIL

1:20

Legend

Note:

*All CHS shall have minimum yield stress of 275MPa
*All welds shall be 6mm thick full perimeter fillet welds
*All Truss ends shall be end capped with 6mm plates
*All truss members shall be protected with anti corrosive coatings
*38 dia x 2.5mm Gl pipe to be used for all bracings.
*Cover for footings shall be 50mm.
*Cover for columns shall be 40mm.
*Concrete shall be of grade C25.

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BUILDING SERVICES DRAWINGS OF

PROPOSED SINGLE STOREY BUILDING AT RO PLANT ADMIN BUILDING, ADH. DHIHDHOO

For Ministry of National Planning, Housing and Infrastructure

CONTENTS

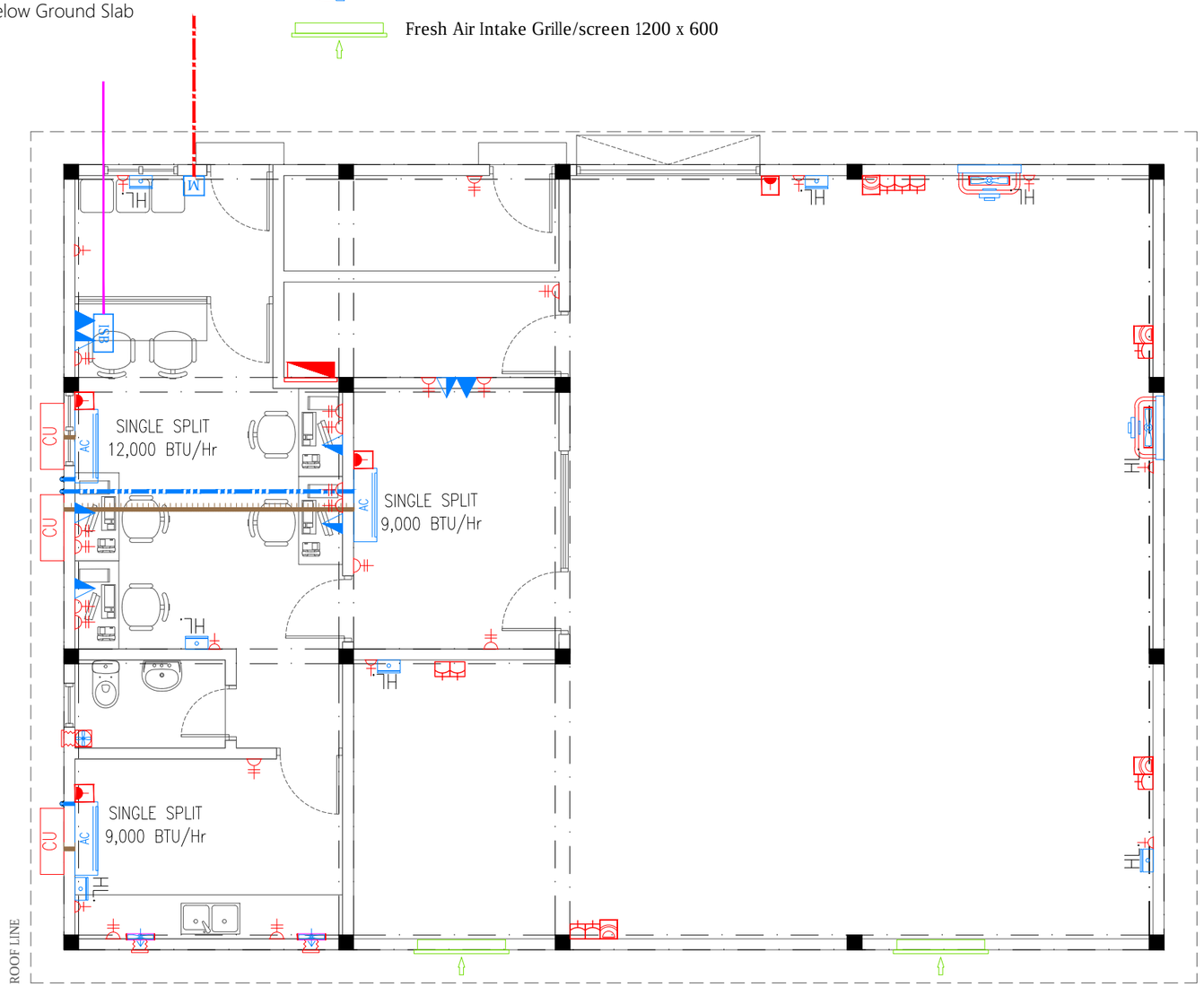
BUILDING SERVICES DRAWINGS	
GROUND FLOOR POWER AND ACV LAYOUT	PAC-01
GROUND FLOOR FDP LAYOUT	FDP-01
GROUND FLOOR LIGHTING LAYOUT	EL-01
GROUND FLOOR PLUMBING LAYOUT	PL-01
GROUND FLOOR DRAINAGE LAYOUT	DR-01
ROOF DRAINAGE LAYOUT	DR-02
SITE LIGHTING LAYOUT	EL-02

Legend

- 13A Twin Socket
- 13A Twin Socket With USB Ports
- 15A Switched Socket @ H.L.
- 15A Socket In Polycarbonate Box
- 15A Switch @ 1200mm From F.F.L.
- 13A Power Socket
- Distribution Board
- HL. High Level
- 82Ø PVC Duct For Tel./Internet Cable Lead In Below Ground Slab
- Main Incoming Cable For Power In 110Ø PVC Duct Below Ground Slab
- ISB Internet Switchboard
- Telephone Outlet
- Computer Network Outlet
- Emergency Light
- M Electricity Meter

Legend

- Refrigerant Pipes
- 25Ø Condensate Drain Pipe
- 40Ø Condensate Drain Riser Pipe
- AC Wall Mount Air Conditioner
- CU Outdoor Condensing Unit
- Ceiling Mounted Exhaust Fan 90m3/hr
- Wall Mounted Exhaust Fan
- Single Intake, Centrifugal, External Motor, 800m3/hr
- Fresh Air Intake Grille/screen 1200 x 600



GROUND FLOOR POWER AND ACV LAYOUT

1:75

Legend

Note:

- All 13A Power Outlets For Kitchen Hood Or Under Cabinet Or Wardrobe Lights At 1800mm From F.F.L.
- All Twin Sockets At 300mm From F.F.L. Except Located At Kitchen Cupboard Area Which Shall Be At 1200mm From F.F.L.
- All Computer, TV And Telephone Points At 300mm From F.F.L.
- All 20A Switched Neon Indicator At 1200mm From F.F.L.

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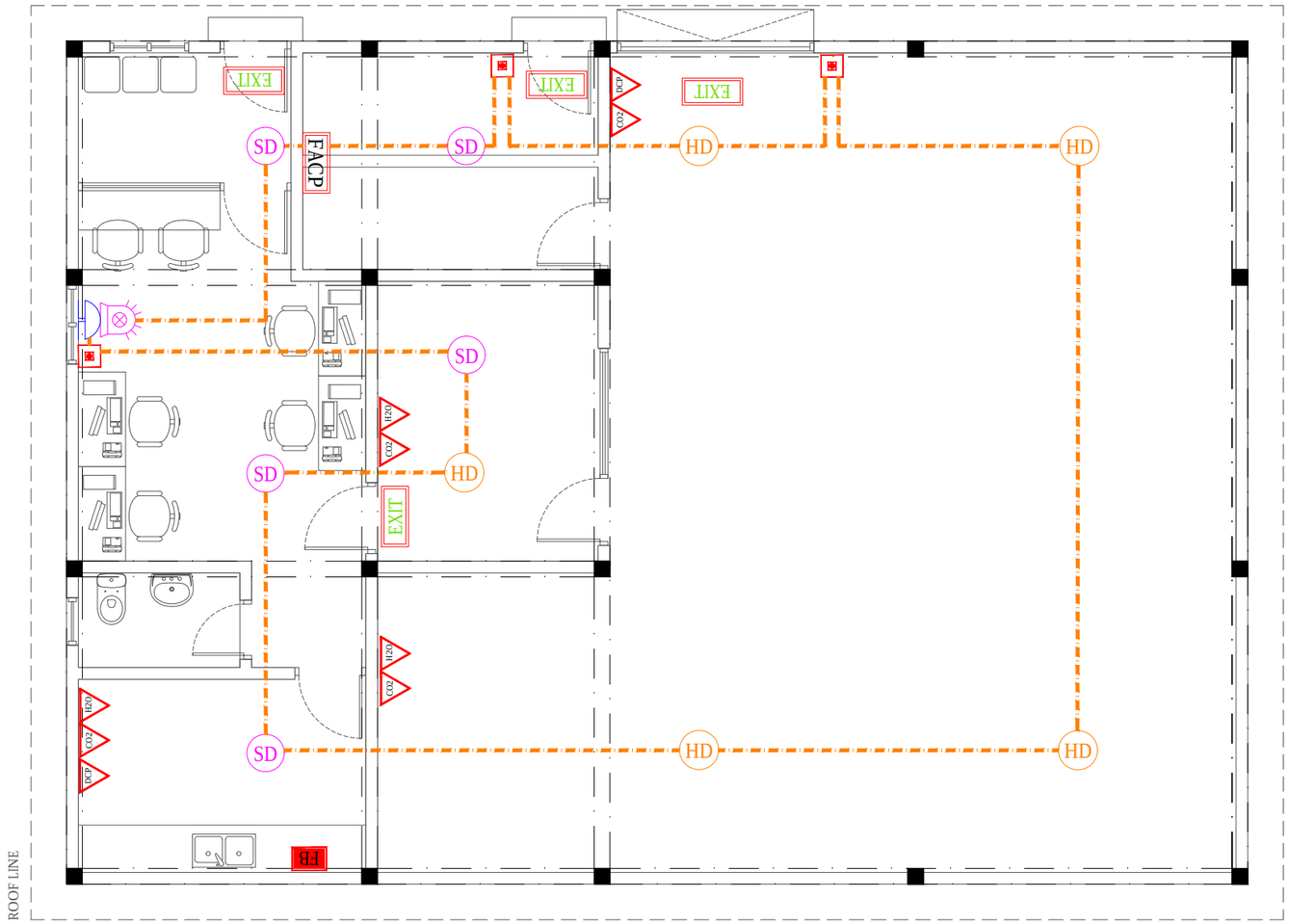
Legend

- DCP Extinguisher (load: 6kg) In Polycarbonate Enclosure
- CO_2 Extinguisher (load: 2kg) In Polycarbonate Enclosure
- H_2O Extinguisher (load: 9L) In Polycarbonate Enclosure
- Manual Call Point
- SD Smoke Detector
- HD Heat Detector
- Beacon
- Sounder Bell
- FB Fire Blanket
- 2.5mm^2 Fire Retardant Low Smoke (FRLS) Cables In FRLS Conduits
- FACP Fire Alarm Control Panel
- EXIT Exit Sign



GROUND FLOOR FDP LAYOUT

1:75

Legend

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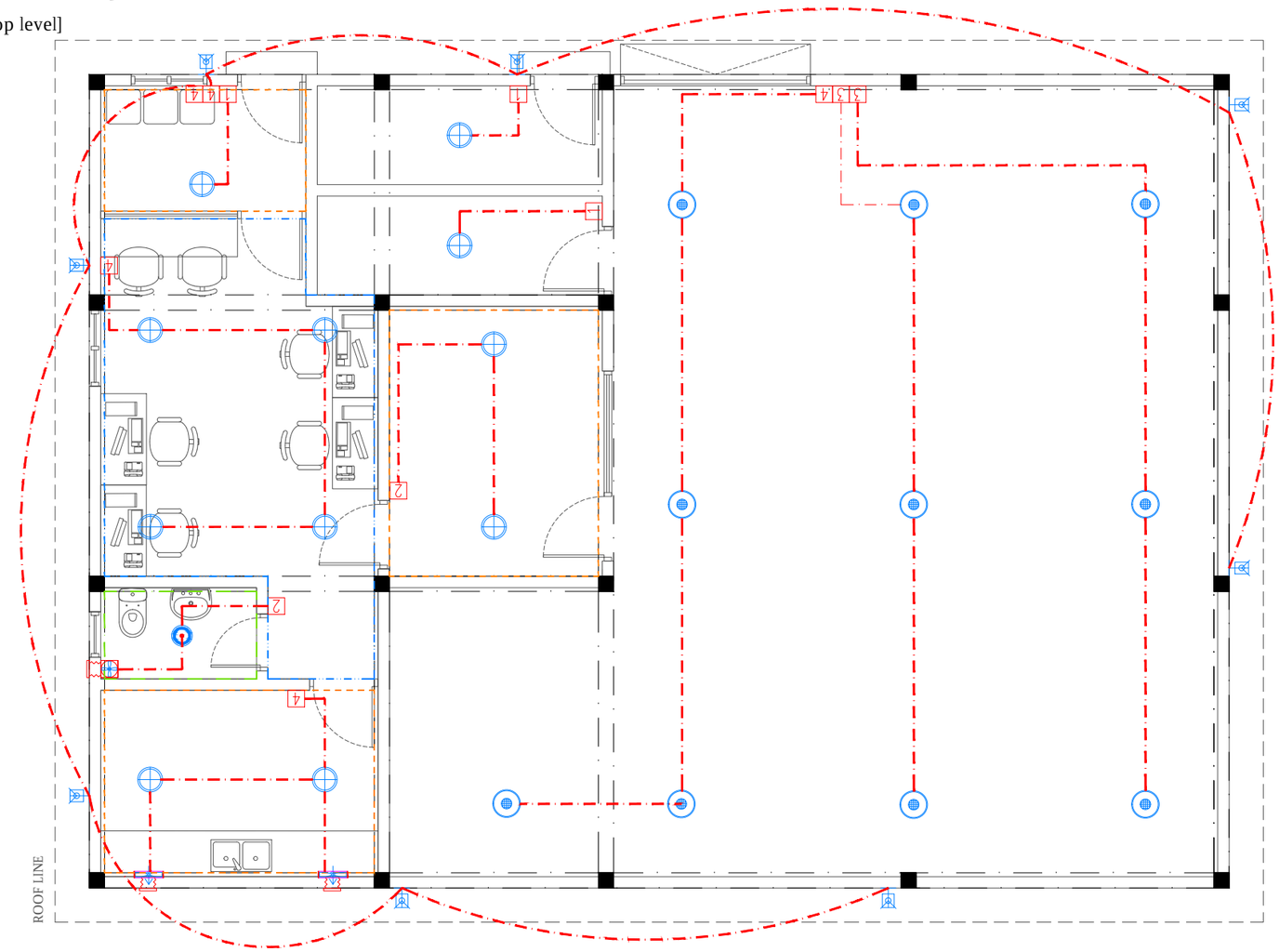
Legend

- Ceiling Light (12W)
- Recessed Ceiling Light (12W)
- Weather Proof Wall Light IP55 (12W)
- 60W, HPS, Low Bay Light
- Light Switch (1 Gang - 4 Gang)
- Two Way Light Switches (1 Gang - 4 Gang)
- SINGLE INTAKE, CENTRIFUGAL, EXTERNAL MOTOR, 800M3/Hr
- Ceiling Mounted Exhaust Fan 90m3/hr
- Wall Mounted Exhaust Fan
- Cement Board False Ceiling [200mm below beam bottom]
- Plaster Board False Ceiling [200mm below beam bottom]
- Plaster Board False Ceiling [at roof beam top level]



N

GROUND FLOOR LIGHTING LAYOUT

1:75

Legend

Note:

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R01	NOV 2020		H.R.	M.R.	M.R.

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in 7 Islands, Maldives – Package 4

Sub Title:
Water Supply System in Adh. Dhihdhoo

Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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A: G. Rosary West, Husnuheenaa Magu, Male', Maldives

FEEDBACK INFRA
Making Infrastructure Happen

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Designed:	H.R.	Approved:	M.R.
Date:	Nov 2020	SCALE (A3):	1:75

Project No: EP- WS/2019/04

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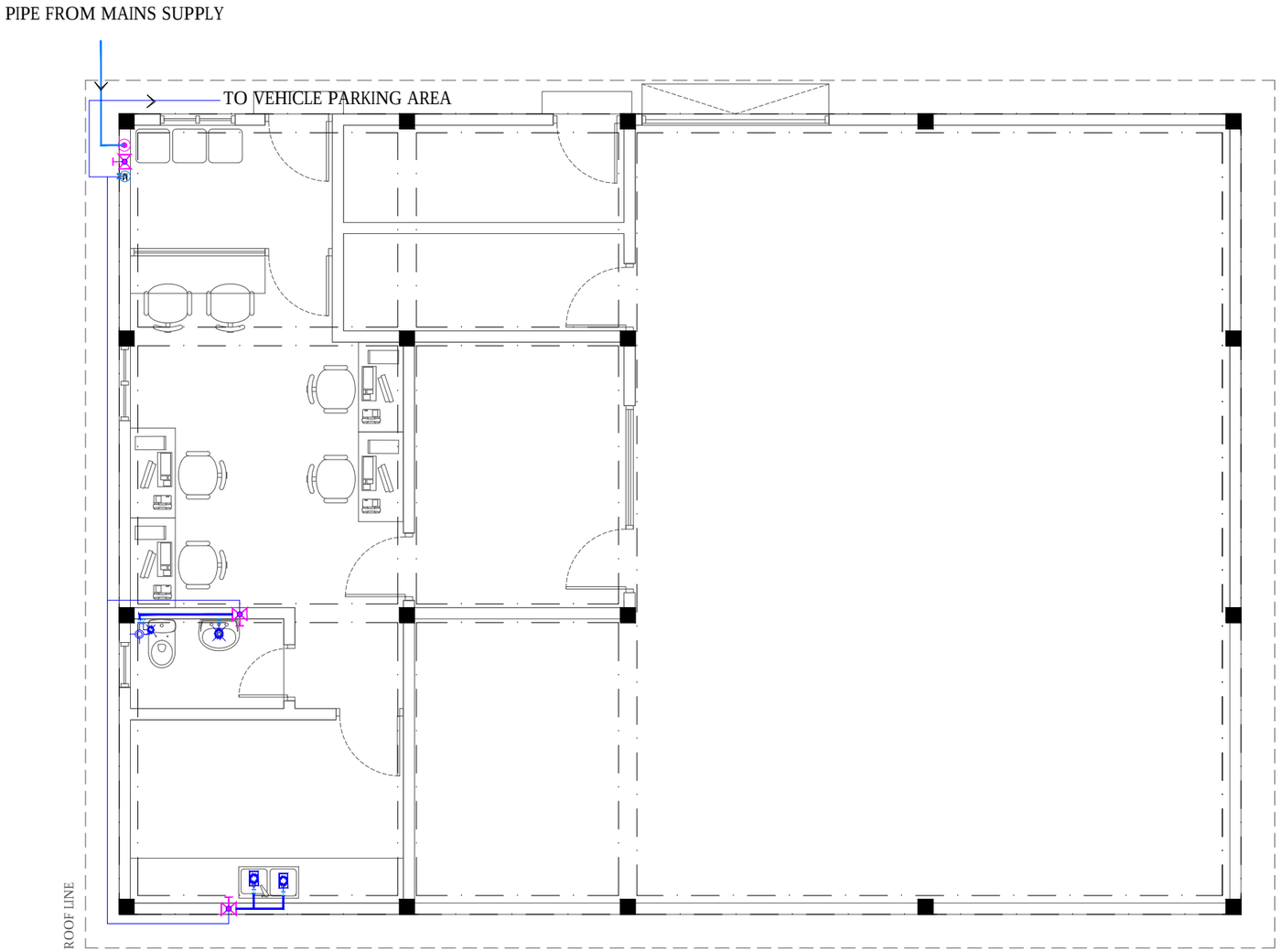
Page: EL-01

Legend

- 16Ø Cold Water Supply To Basin Faucet
- 16Ø Cold Water Supply To Bidet Shower
- 16Ø Cold Water Supply To Wall Tap
- 16Ø Cold Water Supply To Cistern
- Gate Valve
- Rise In Wall
- MWSC Meter
- 25Ø Cold Water Supply Pipes Running Underground
- 20Ø Cold Water Supply Pipes Running In Wall



GROUND FLOOR PLUMBING LAYOUT

1:75

Legend

Note:

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Project No: EP- WS/2019/04

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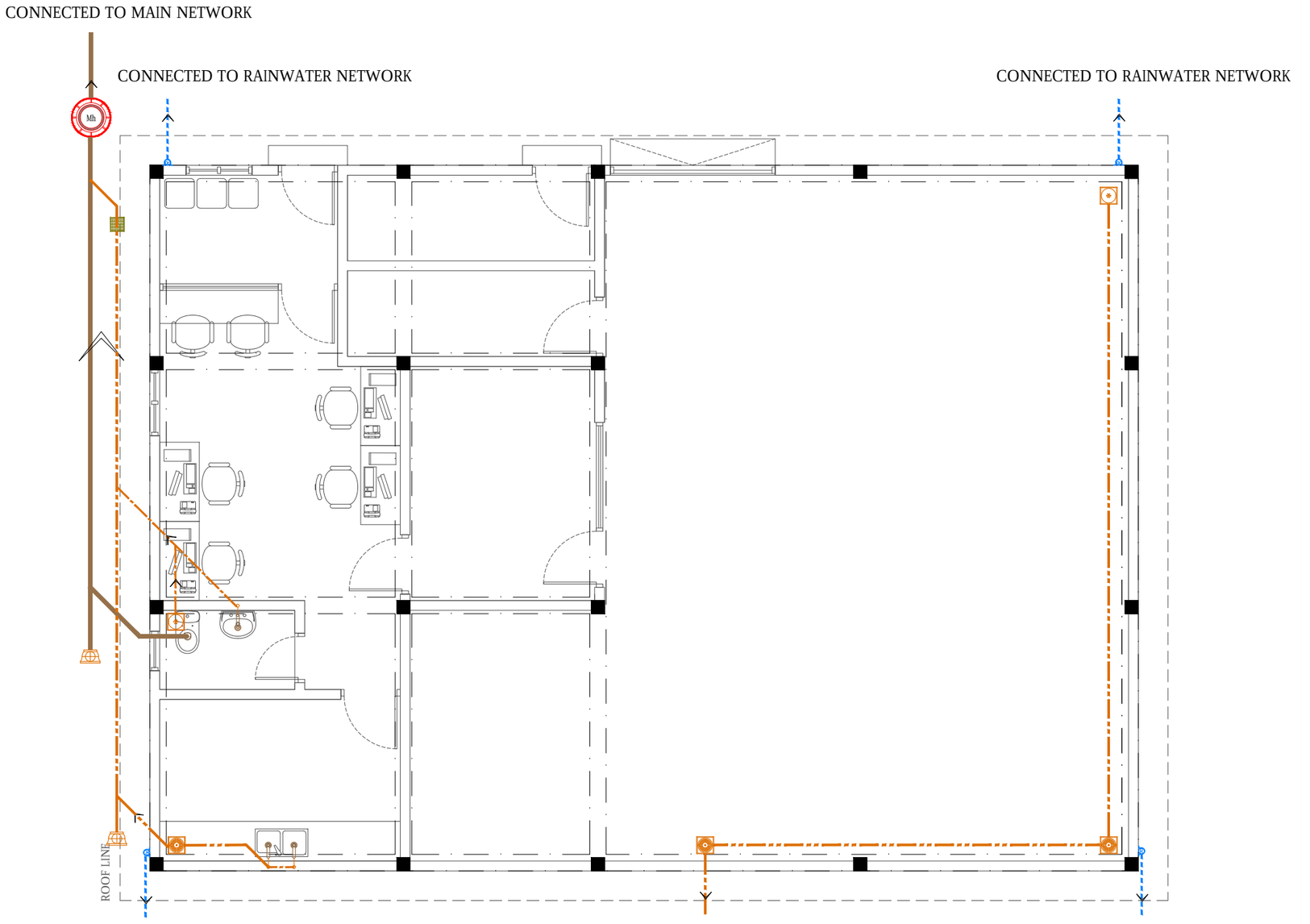
Legend

- Floor Drain
- Floor Gully
- 82Ø Soil Pipe (uPVC Pipe)
- 82Ø Soil Vent Pipe (uPVC Pipe)
- 63Ø Waste Pipe (uPVC Pipe)
- 63Ø Waste Vent Pipe (uPVC Pipe)
- 40Ø Waste Pipe (uPVC Pipe)
- 50Ø Manhole Vent Pipe (uPVC Pipe)
- 110Ø Rain Water Pipes (uPVC Pipe)
- Gully Trap
- 110Ø Rainwater Outlet
- Clean Out Point
- Bottle Trap



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GROUND FLOOR DRAINAGE LAYOUT

1:75

Legend

Note:

-All Drainage Pipes Should Have At A Slope Of 1/150
-All Floor Drains Should Have 'P' Traps

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Legend

- Floor Drain
- Floor Gully
- 82Ø Soil Pipe (uPVC Pipe)
- 82Ø Soil Vent Pipe (uPVC Pipe)
- 63Ø Waste Pipe (uPVC Pipe)
- 63Ø Waste Vent Pipe (uPVC Pipe)
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- 50Ø Manhole Vent Pipe (uPVC Pipe)
- 110Ø Rain Water Pipes (uPVC Pipe)
- Gully Trap
- 110Ø Rainwater Outlet
- Clean Out Point
- Bottle Trap

GROUND FLOOR DRAINAGE LAYOUT

1:75

Legend

Note:

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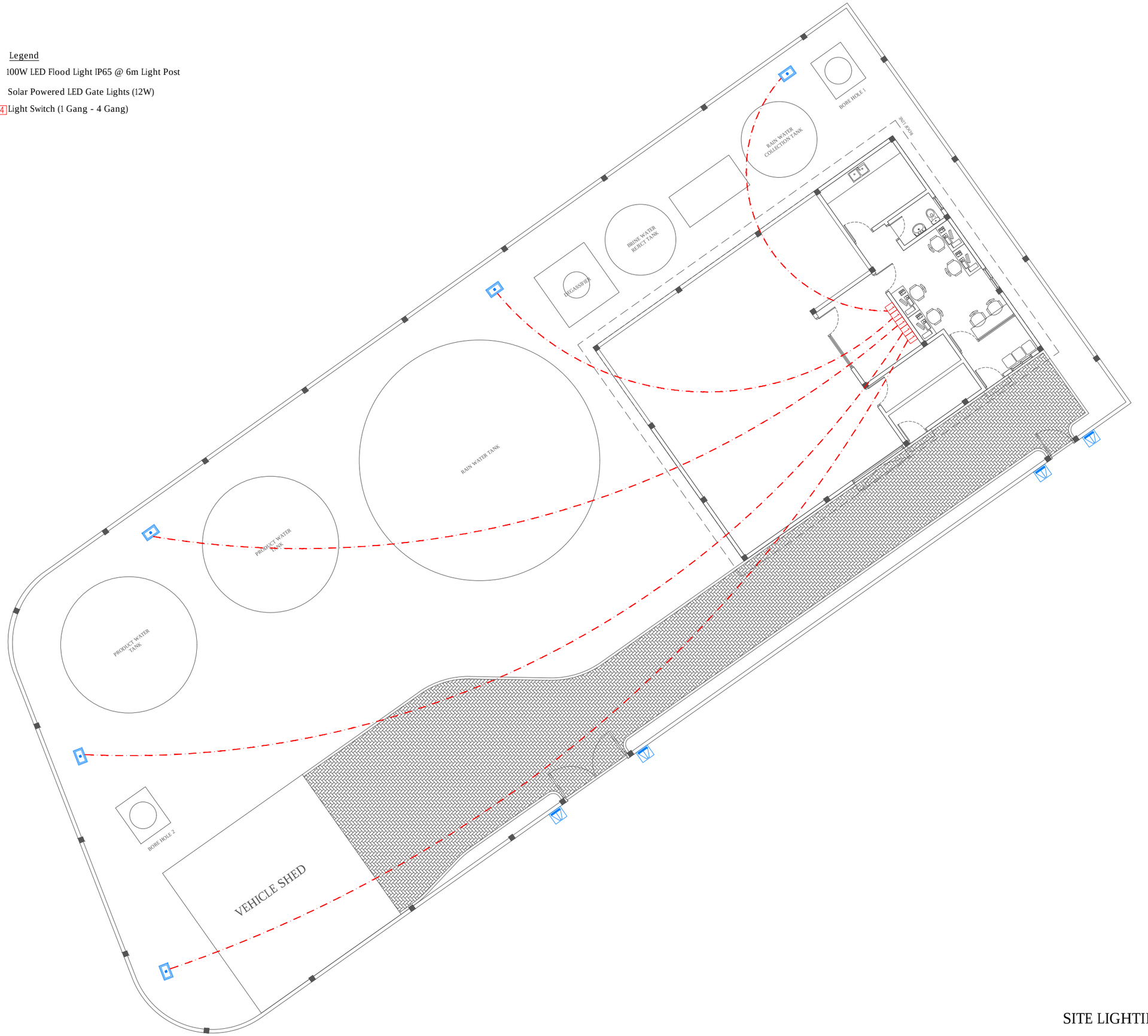
Legend

100W LED Flood Light IP65 @ 6m Light Post

Solar Powered LED Gate Lights (12W)

1 2 3 4 Light Switch (1 Gang - 4 Gang)



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SITE LIGHTING LAYOUT

1:150

Legend

Note:

-All Drainage Pipes Should Have At A Slope Of 1/150

-All Floor Drains Should Have 'P' Traps

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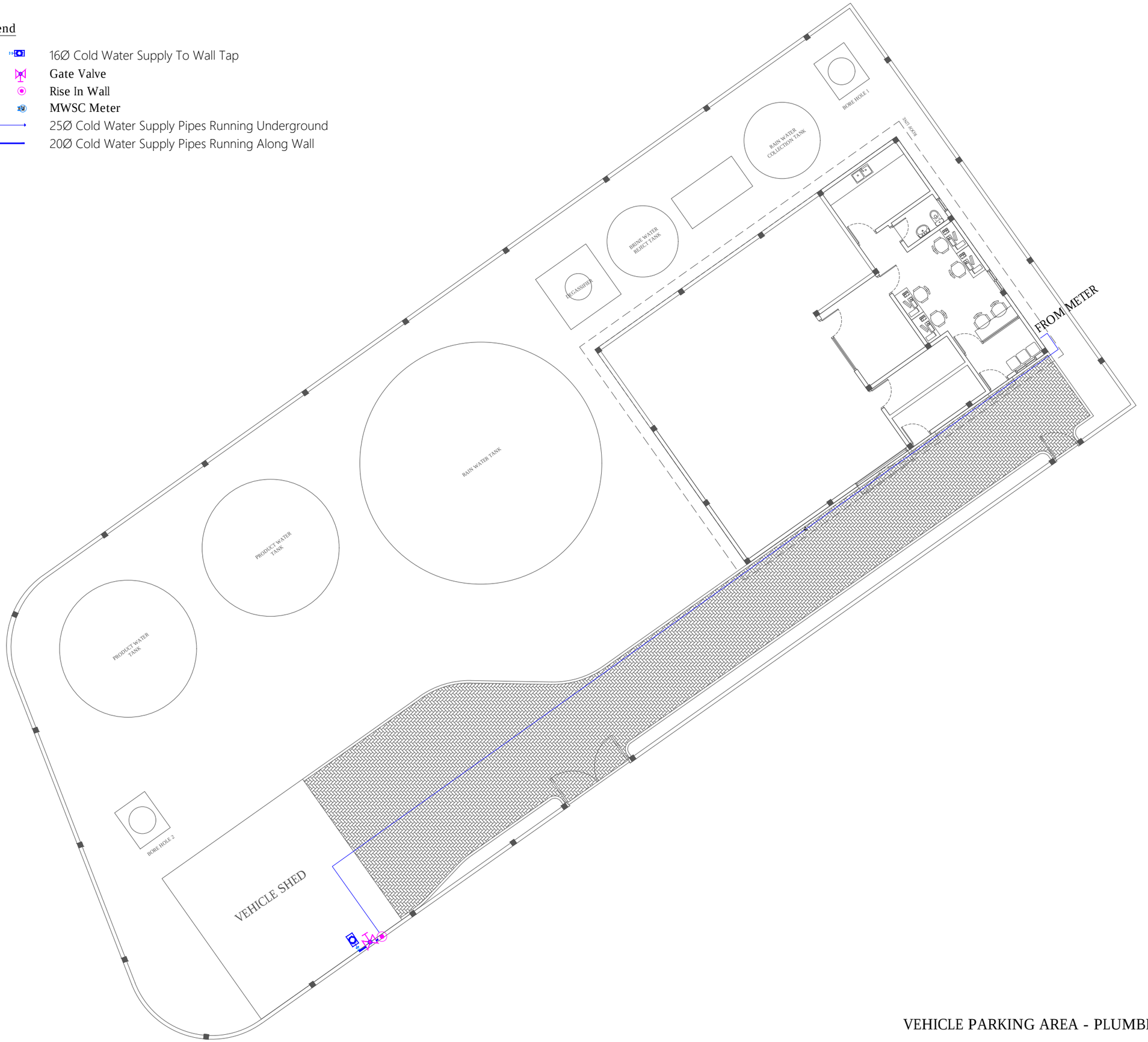
Legend

- 16Ø Cold Water Supply To Wall Tap
- Gate Valve
- Rise In Wall
- MWSC Meter
- 25Ø Cold Water Supply Pipes Running Underground
- 20Ø Cold Water Supply Pipes Running Along Wall



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VEHICLE PARKING AREA - PLUMBING LAYOUT

1:150

Legend

Note:

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-All Floor Drains Should Have 'P' Traps

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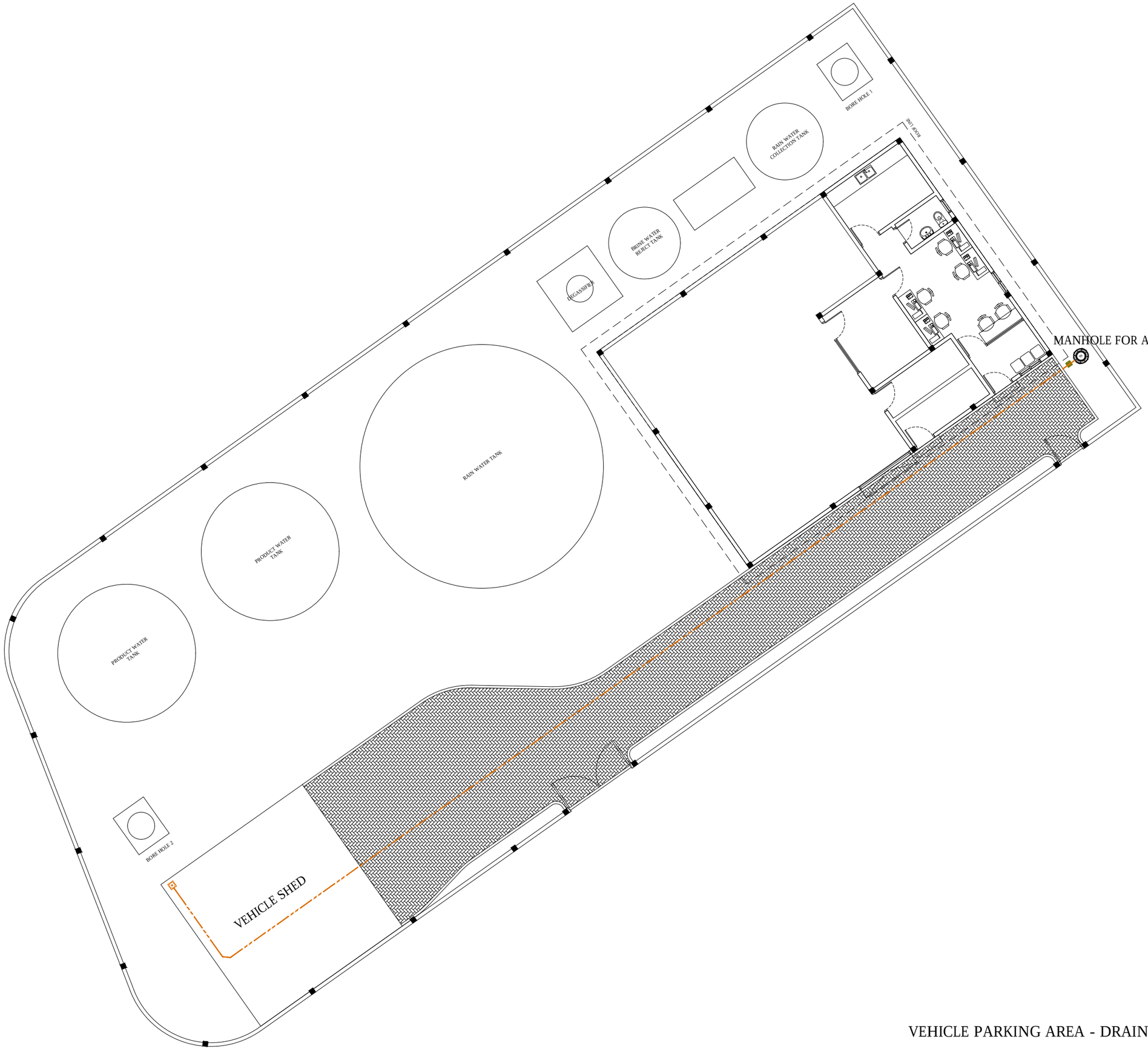

VEHICLE PARKING AREA - DRAINAGE LAYOUT

1:150

Legend

- Floor Drain
- 40Ø Stub For Washing Machine Or Tub
- 82Ø Soil Pipe (uPVC Pipe)
- 82Ø Soil Vent Pipe (uPVC Pipe)
- 63Ø Waste Pipe (uPVC Pipe)
- 63Ø Waste Vent Pipe (uPVC Pipe)
- 40Ø Waste Pipe (uPVC Pipe)
- 50Ø Manhole Vent Pipe (uPVC Pipe)
- 110Ø Rain Water Pipes (uPVC Pipe)
- Gully Trap
- Clean Out Point

Note:

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