

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

PACKAGE 4

## SEWERAGE SYSTEM OF ADH. DHIDHDHOO, MALDIVES

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

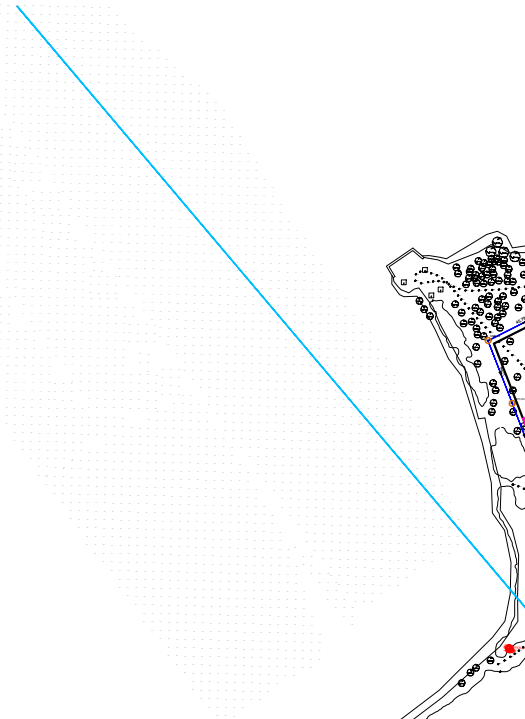


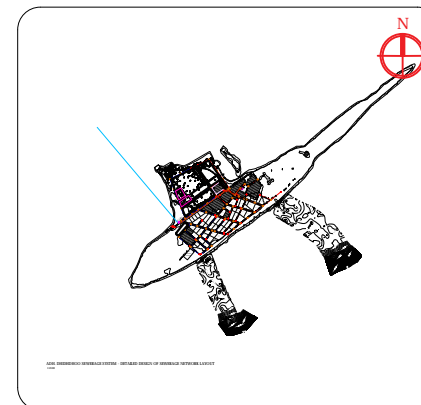
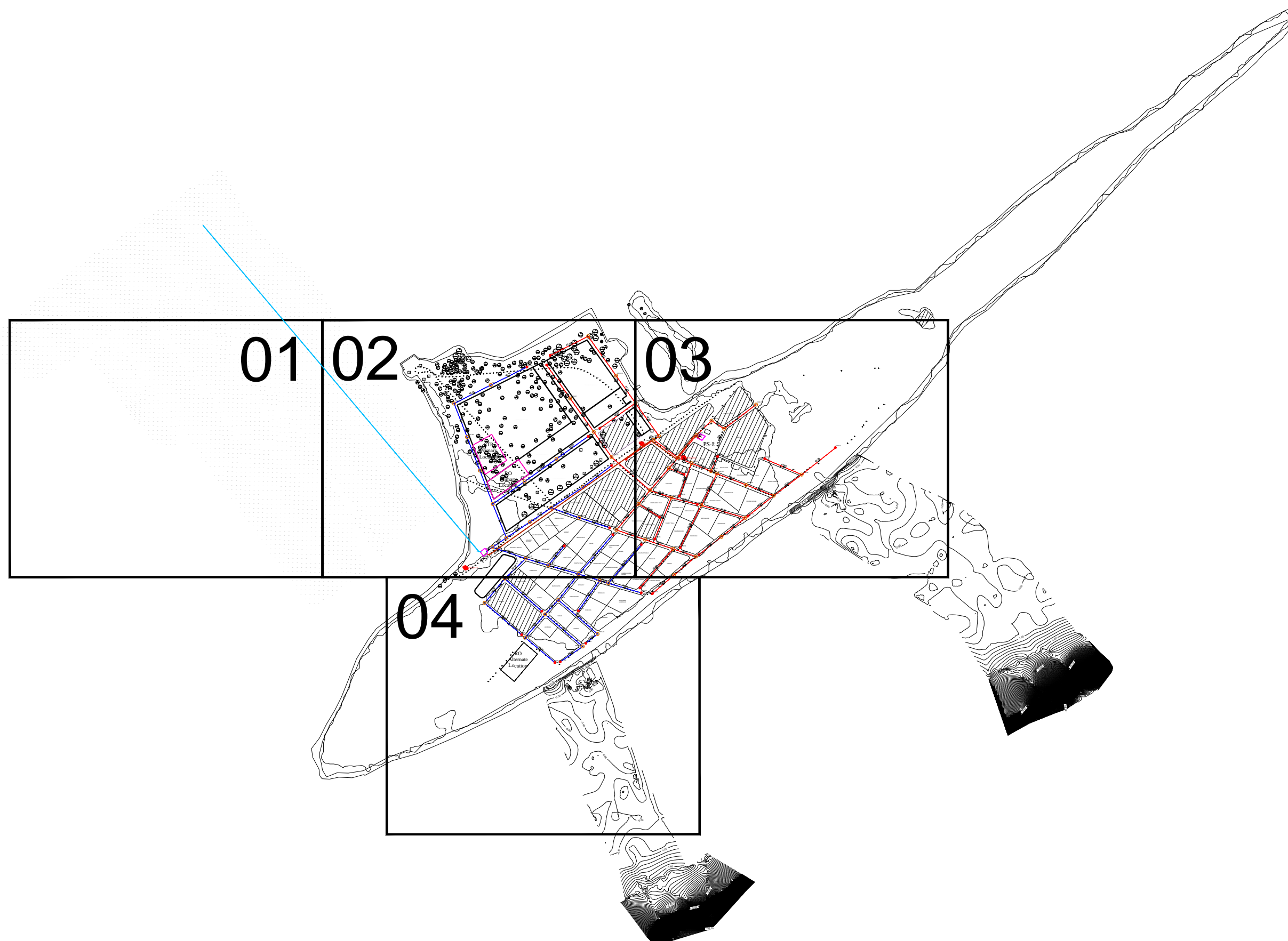
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## Legend

	160mm Ø uPVC PS1 Gravity Sewer Main (SN4, SDR41)	- 1452 m
	160mm Ø uPVC PS2 Gravity Sewer Main (SN4, SDR41)	- 1637 m
	110 mm Ø HDPE Pumping Main (PE100, PN16, SDR11)	- 294 m
	160 mm Ø HDPE Sea Outfall Pipe (PE100, PN16, SDR11)	- 24 m on land - 455 m offshore - 479 m total
	600mm Ø PE/PP Maintenance Shaft	- 56 nos
	160mmØ uPVC Clean Out	- 31 nos
	PERMANENT SURVEY MARK PSM_0115 2044239. 108E. 385363.563N 7.744m From MSL	
	PERMANENT SURVEY MARK PSM_0116 264192. 693SE. 385379.004N 1.017m From MSL	
	PERMANENT SURVEY MARK PSM_0117 263905. 639SE. 385240.602N 1.283m From MSL	

## NOTES

1. All levels shown are in meters.
2. All levels shown are from mean sea level
3. This drawing to be read in conjunction with all other relevant drawings and specifications.
4. All gravity sewer pipes shall be uPVC to BS EN1401-1:2019.
5. All gravity sewer mains shall be 160mm dia uPVC of wall thickness & stiffness rated to SN4 & SDR41.
6. All gravity house laterals shall be 110mm dia uPVC of wall thickness & stiffness rated to SD4 & SDR41.
7. All gravity sewer mains shall have minimum 0.4% slope.
8. All gravity sewer pipes shall be jointed using rubber ring push fit jointing method & rubber rings comply with BS 2494 (typ2).
9. Connection from the household to the inspection chamber is not included. Provision shall be given in IC for multiple connections.
10. All sewer pipes shall be buried under earth cover of minimum 0.6 meters.
11. Catchment over flow links are to be connected as indicated below:  
    a) CO-023 and CO1-10

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Design and EIA works of Water  
Supply and Sewerage Facilities in  
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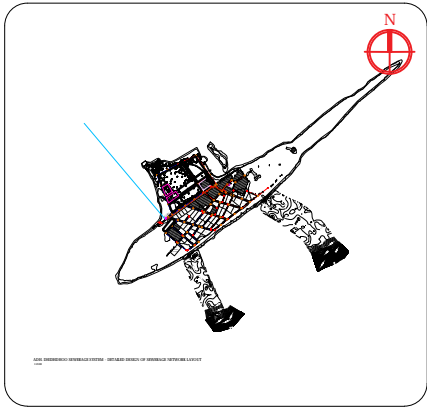
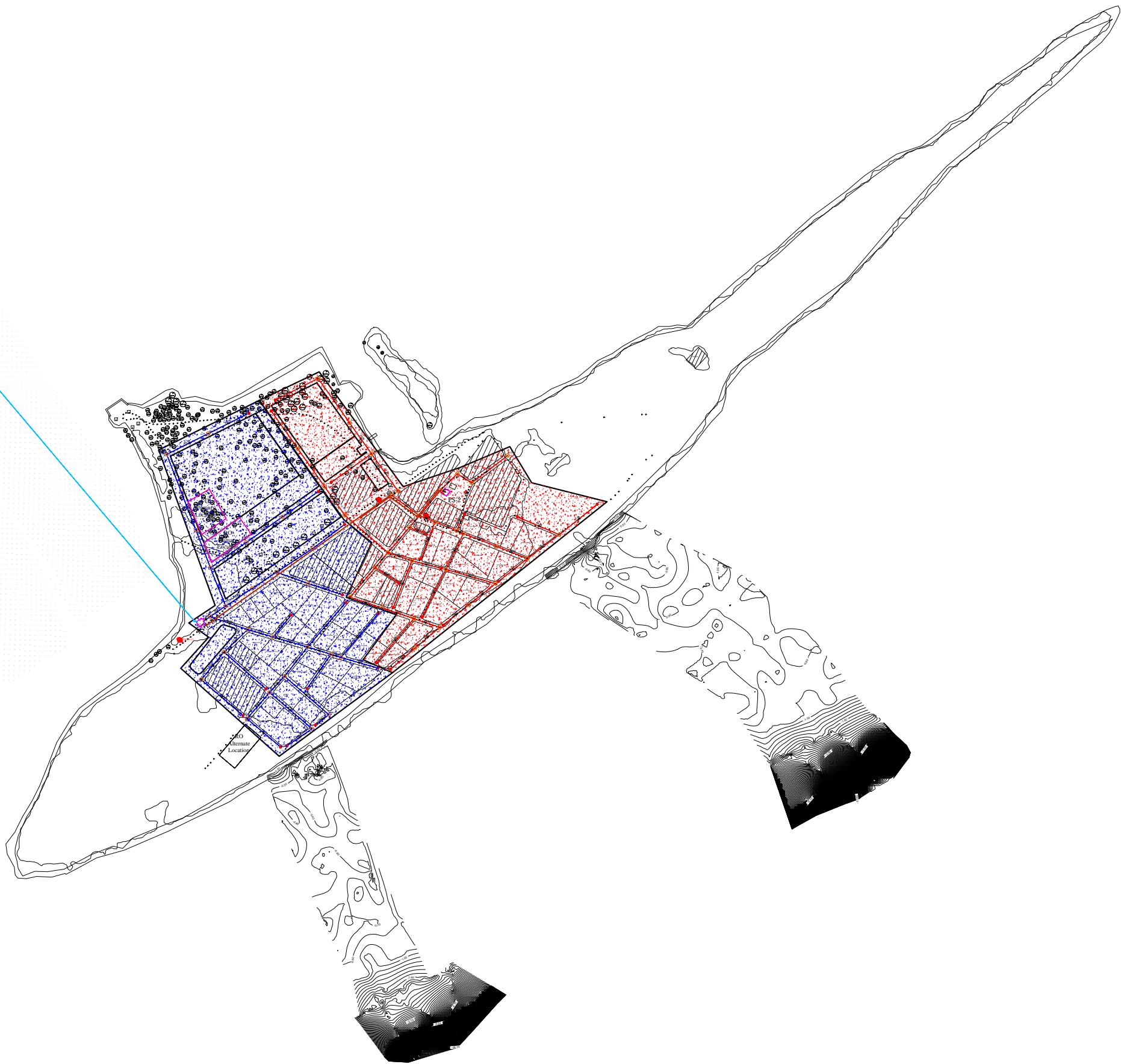
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**Sewerage System in ADh. Dhidhdhoo**

Client:  
Ministry of National Planning, Housing and  
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Legend

- PS-1 Catchment Area
- PS-2 Catchment Area

NOTES

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- Connection from the household to the inspection chamber is not included. Provision shall be given in IC for multiple connections.
- All sewer pipes shall be buried under earth cover of minimum 0.6 meters.
- Catchment over flow links are to be connected as indicated below:
  - CO2-03 and CO1-10

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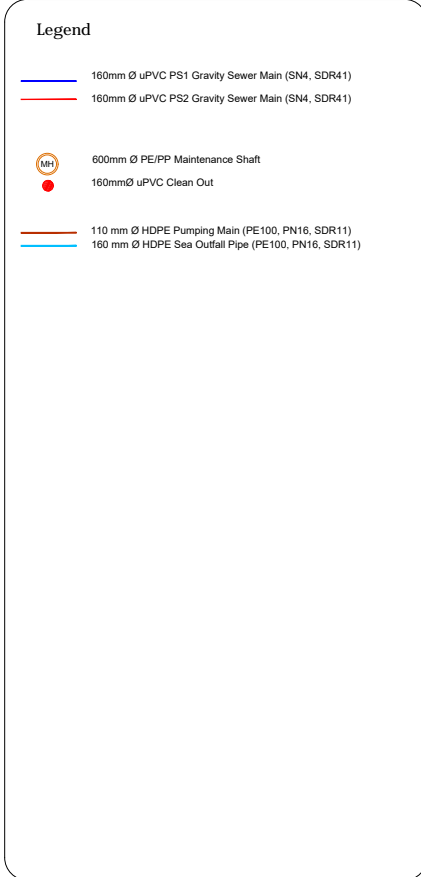
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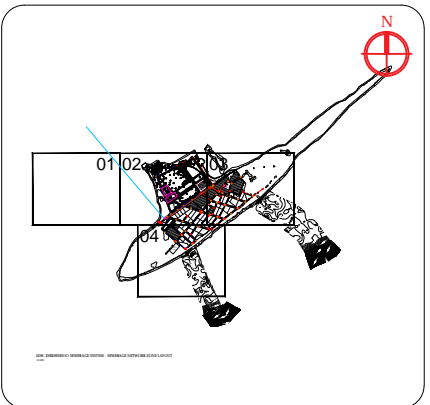
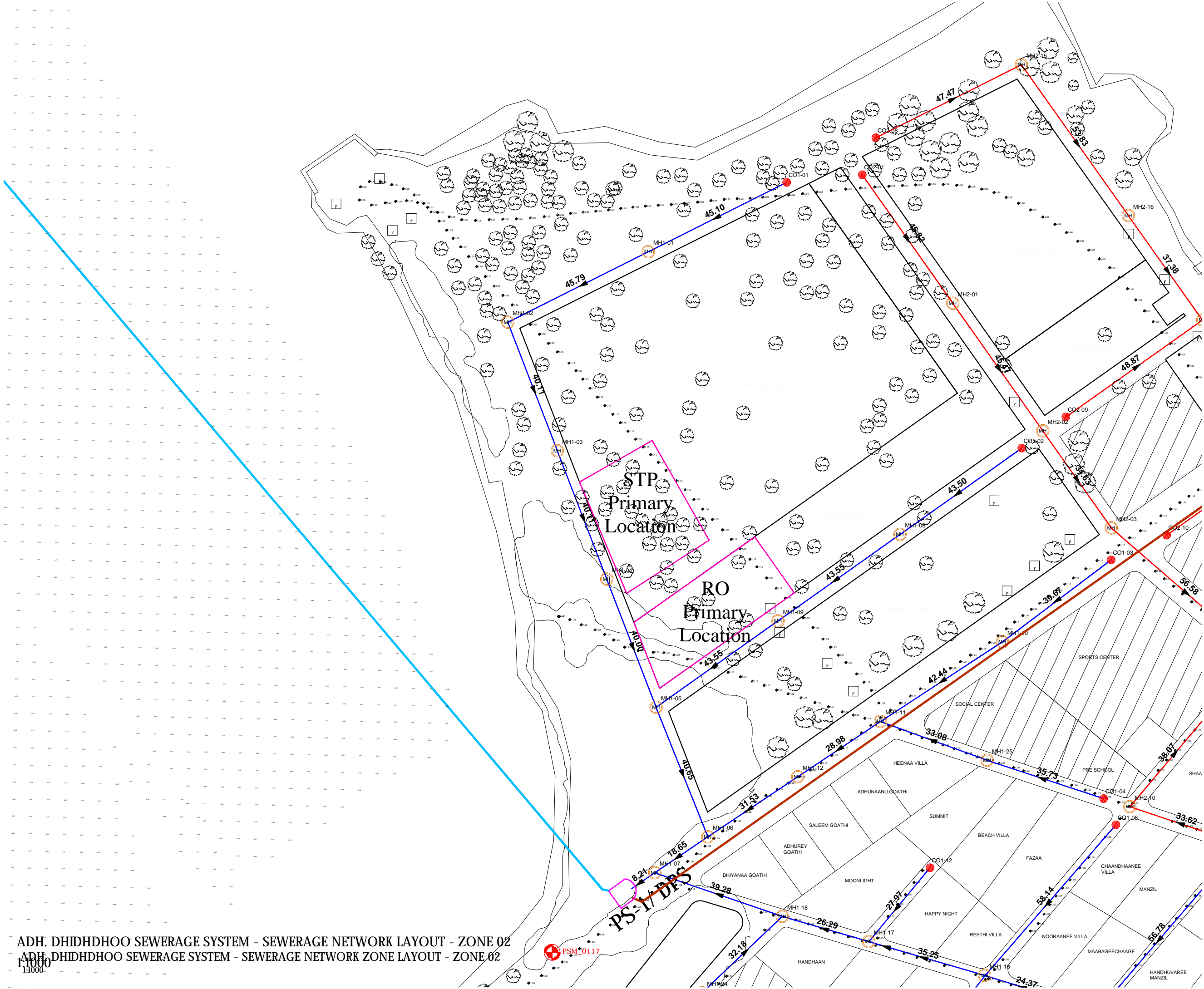
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**Legend**

- 160mm Ø uPVC PS1 Gravity Sewer Main (SN4, SDR41)
- 160mm Ø uPVC PS2 Gravity Sewer Main (SN4, SDR41)
- 800mm Ø PE/PP Maintenance Shaft
- 160mm Ø uPVC Clean Out
- 110 mm Ø HDPE Pumping Main (PE100, PN16, SDR11)
- 160 mm Ø HDPE Sea Outfall Pipe (PE100, PN16, SDR11)

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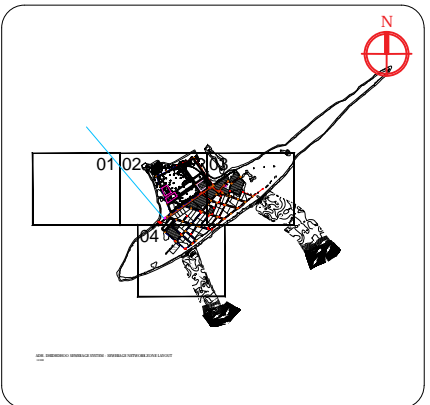
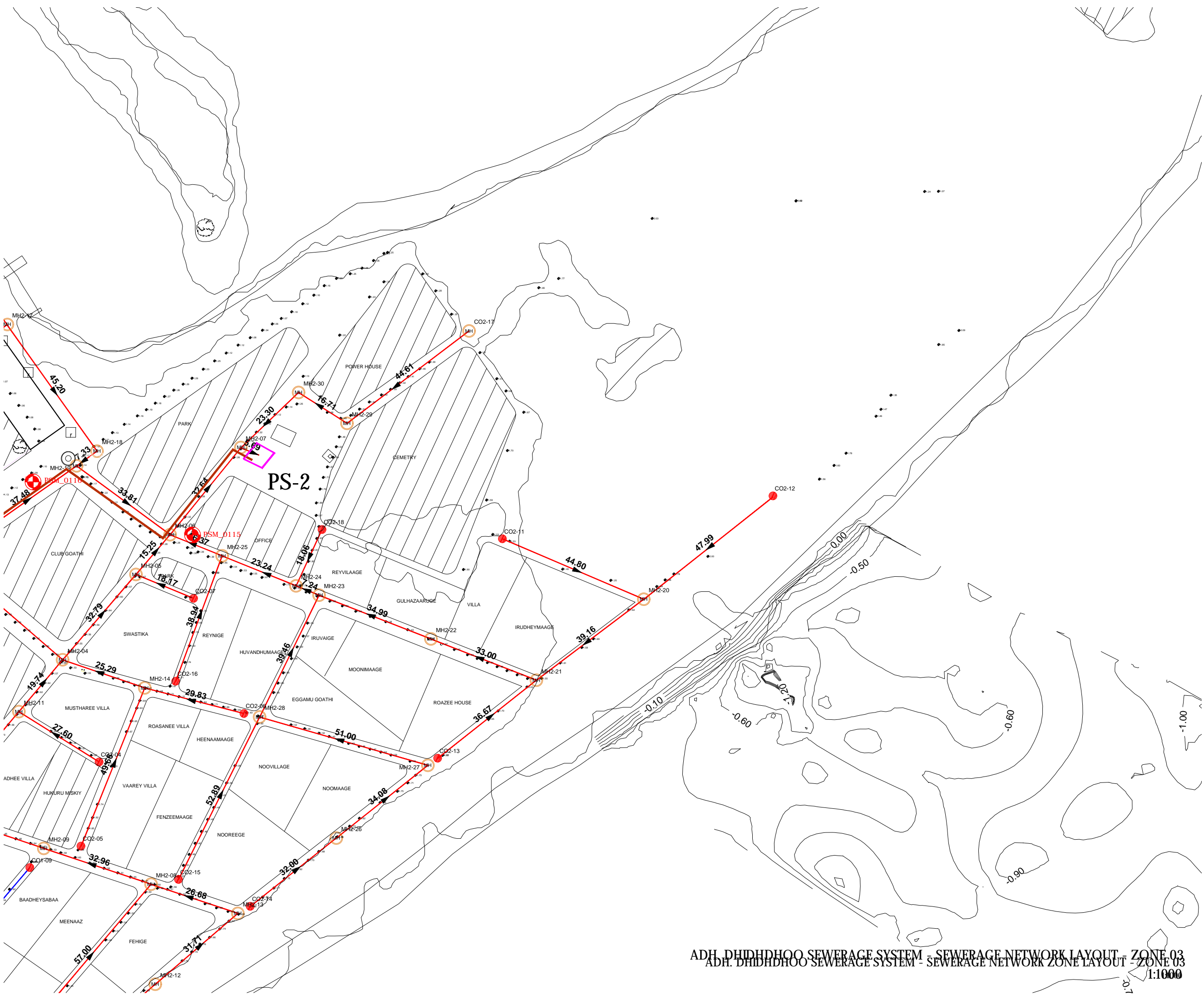
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ADH. DHIDHDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK LAYOUT - ZONE 02  
ADH. DHIDHDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK ZONE LAYOUT - ZONE 02  
1:1000  
13000





**Legend**

- 160mm Ø uPVC PS1 Gravity Sewer Main (SN4, SDR41)
- 160mm Ø uPVC PS2 Gravity Sewer Main (SN4, SDR41)
- 600mm Ø PE/PP Maintenance Shaft
- 160mmØ uPVC Clean Out
- 110 mm Ø HDPE Pumping Main (PE100, PN16, SDR11)
- 160 mm Ø HDPE Sea Outfall Pipe (PE100, PN16, SDR11)

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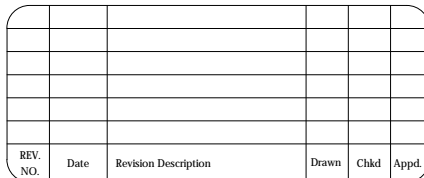
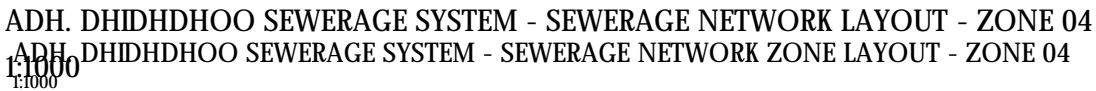
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ADH. DHIDHDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK LAYOUT - ZONE 03  
ADH. DHIDHDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK ZONE LAYOUT - ZONE 03  
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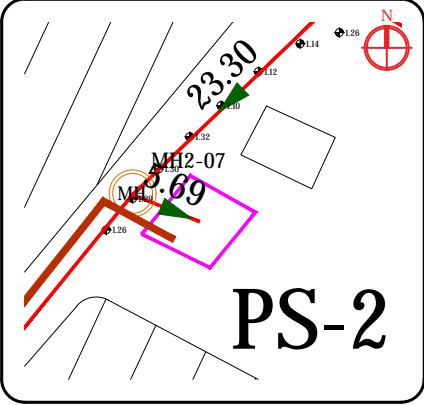
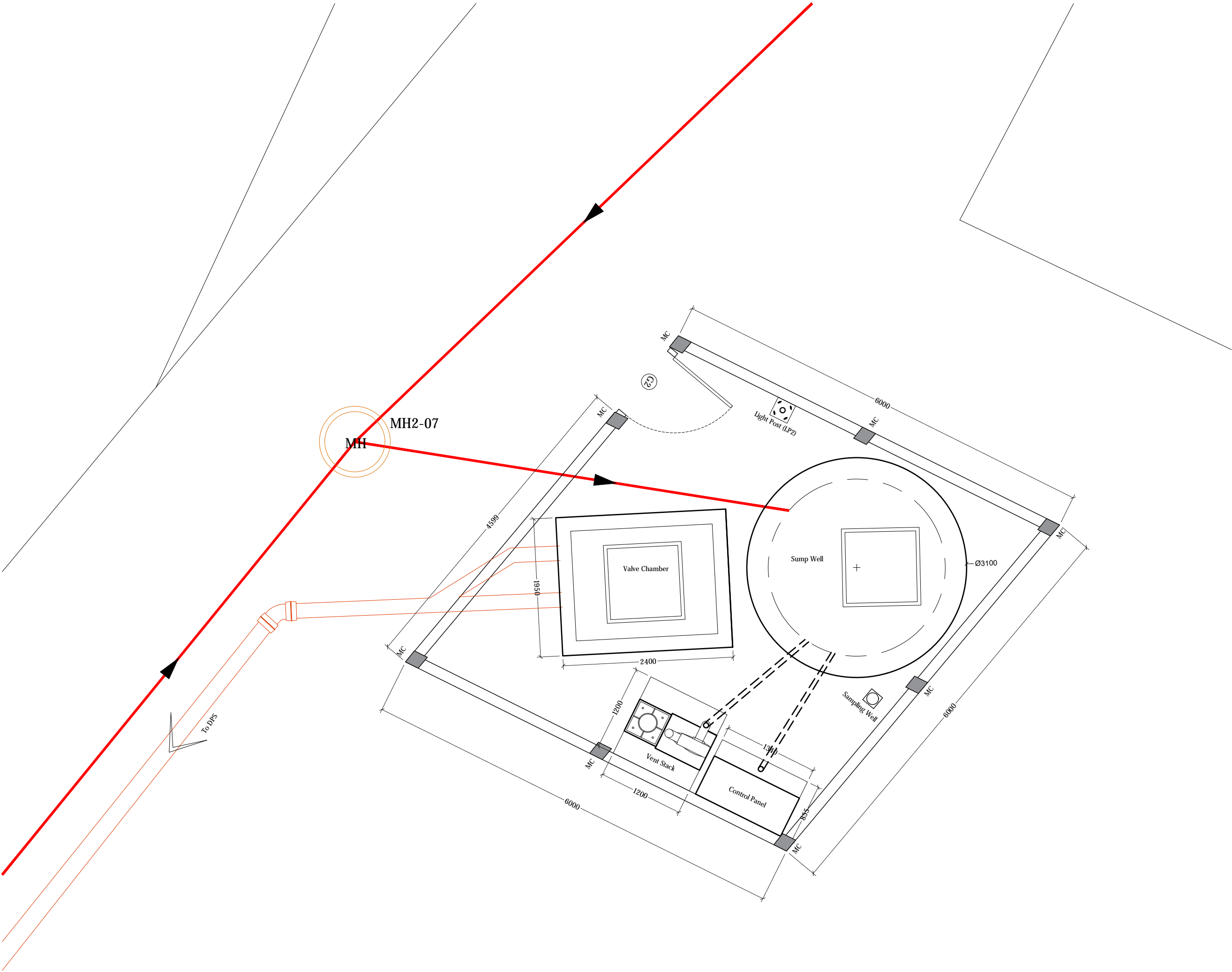


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07





Legend

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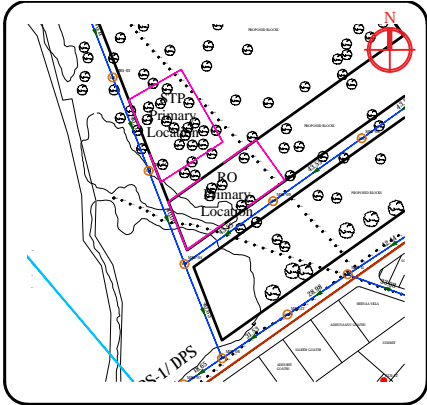
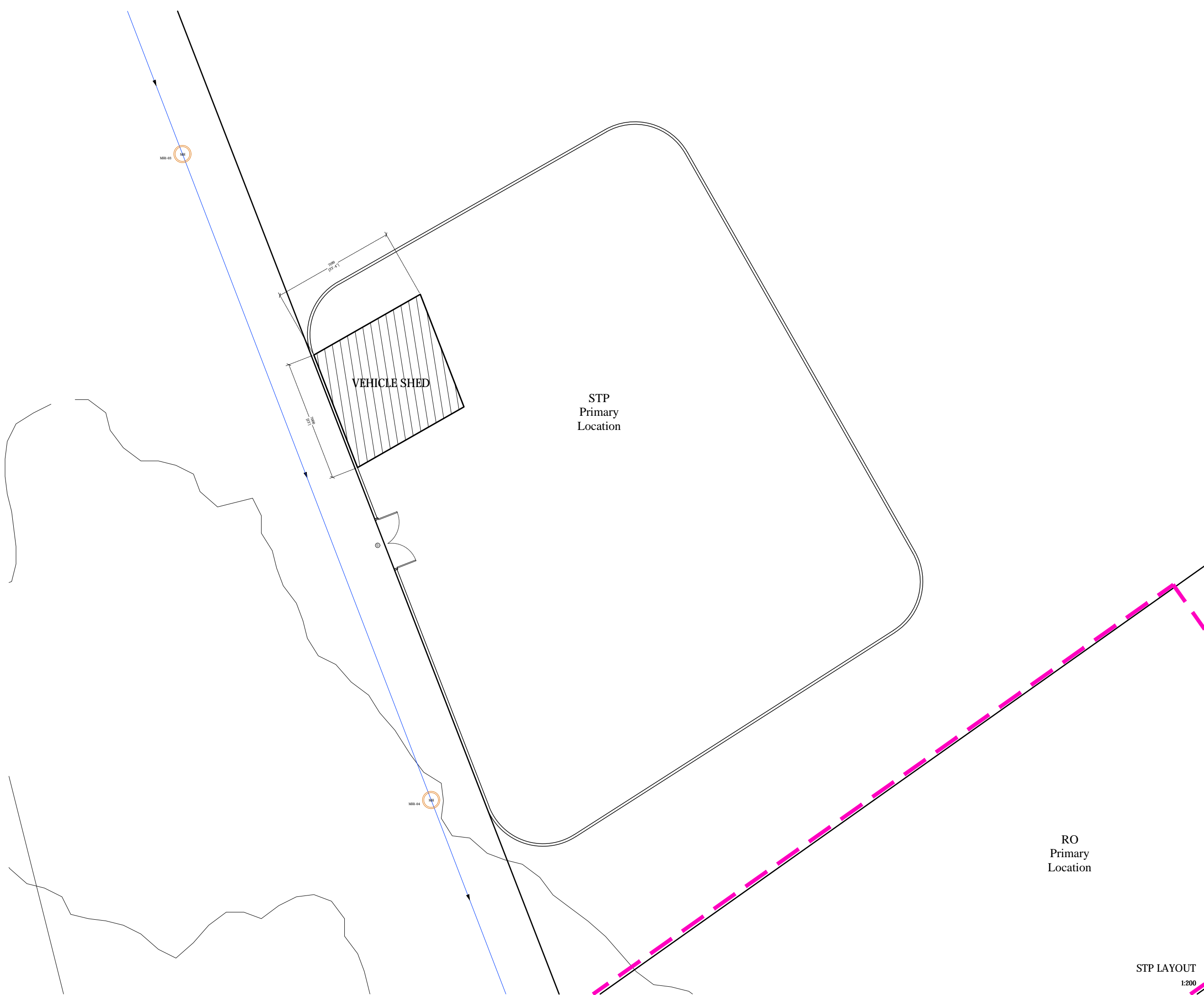
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PUMP STATION (PS2) LAYOUT  
1:50





Legend

160mm Ø uPVC PS1 Gravity Sewer Main (SN4, SDR41)

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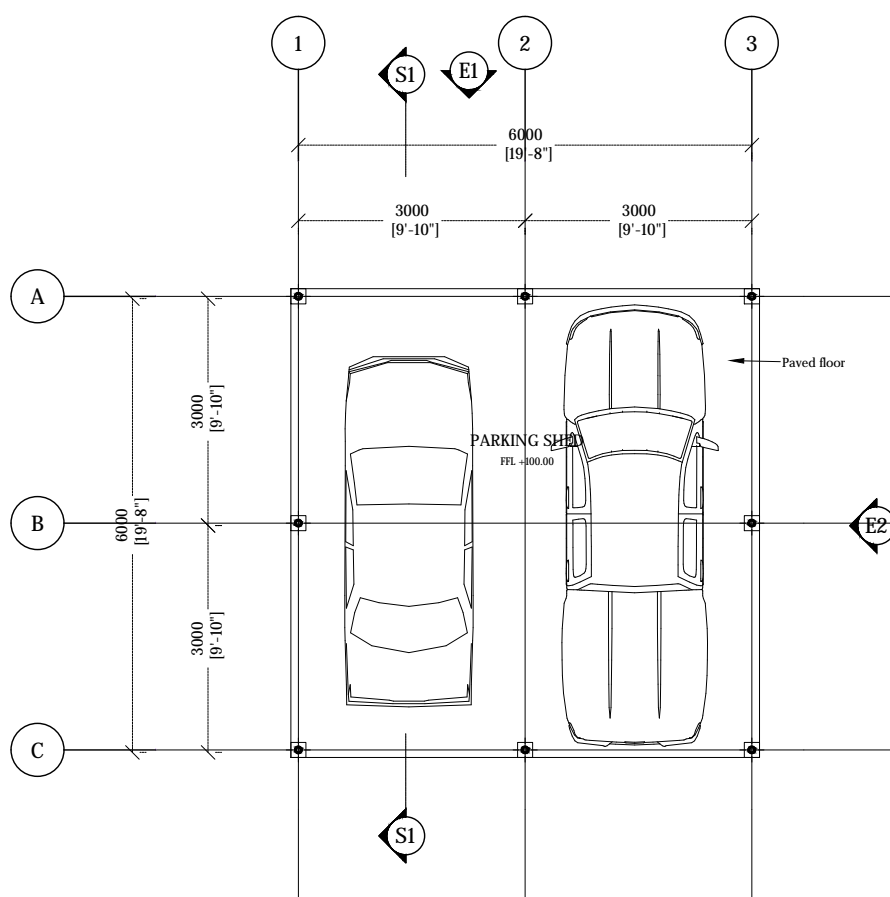
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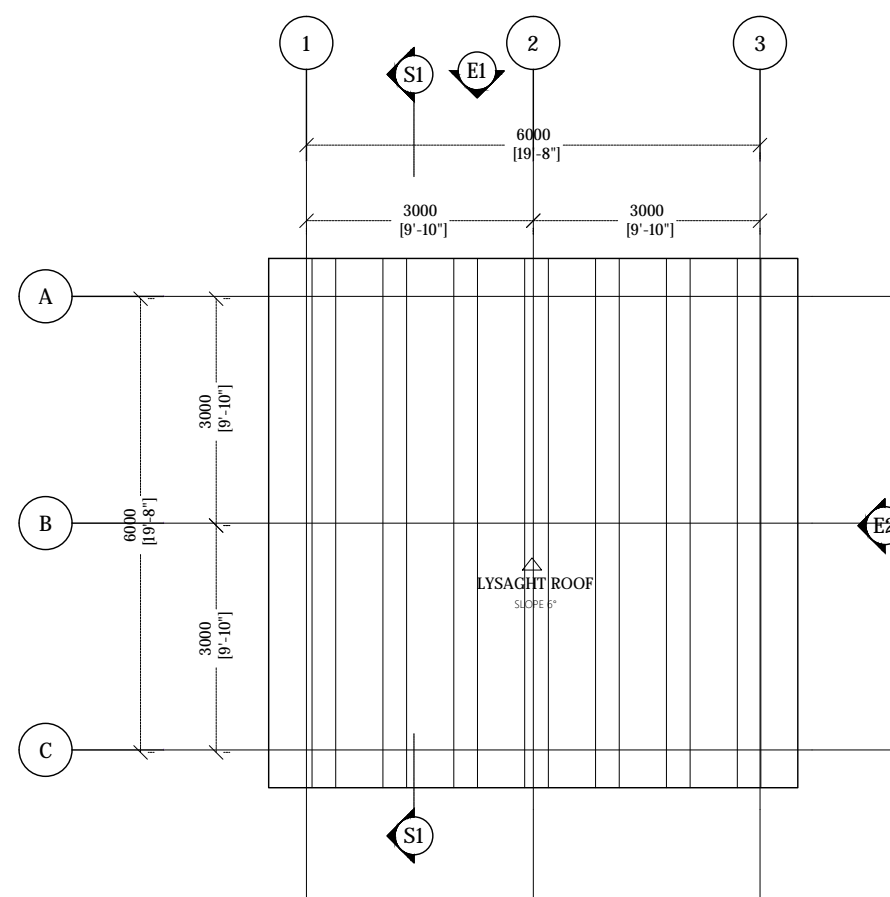
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STP LAYOUT  
1:200



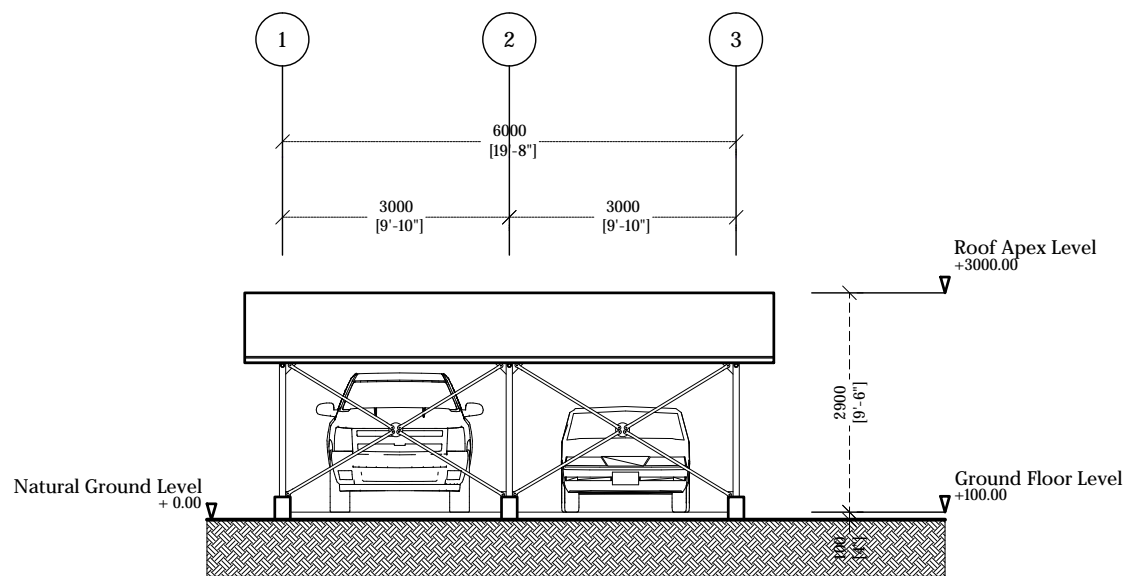
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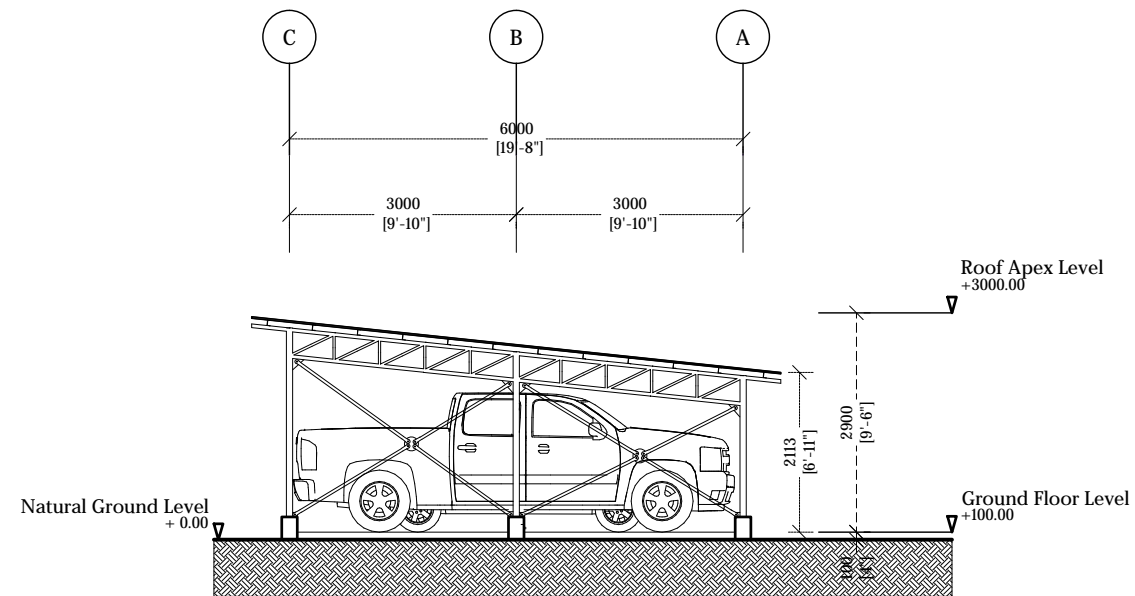
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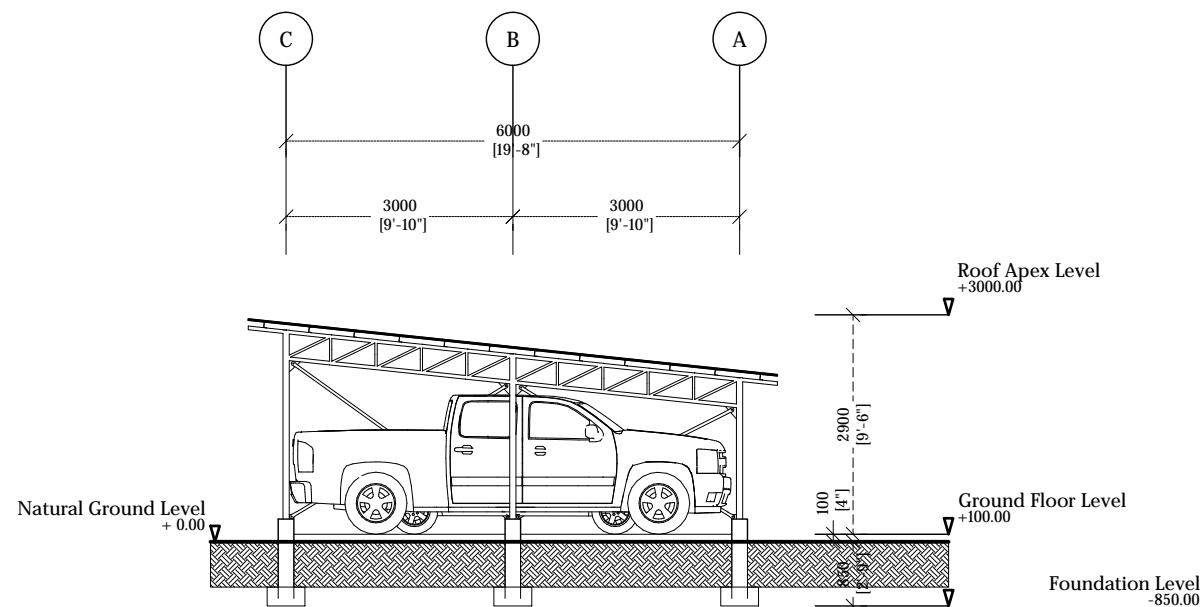
VEHICLE SHED ELEVATION E1

1:100



VEHICLE SHED ELEVATION E2

1:100



VEHICLE SHED SECTION S1

1:100



Legend

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VS-A(2)



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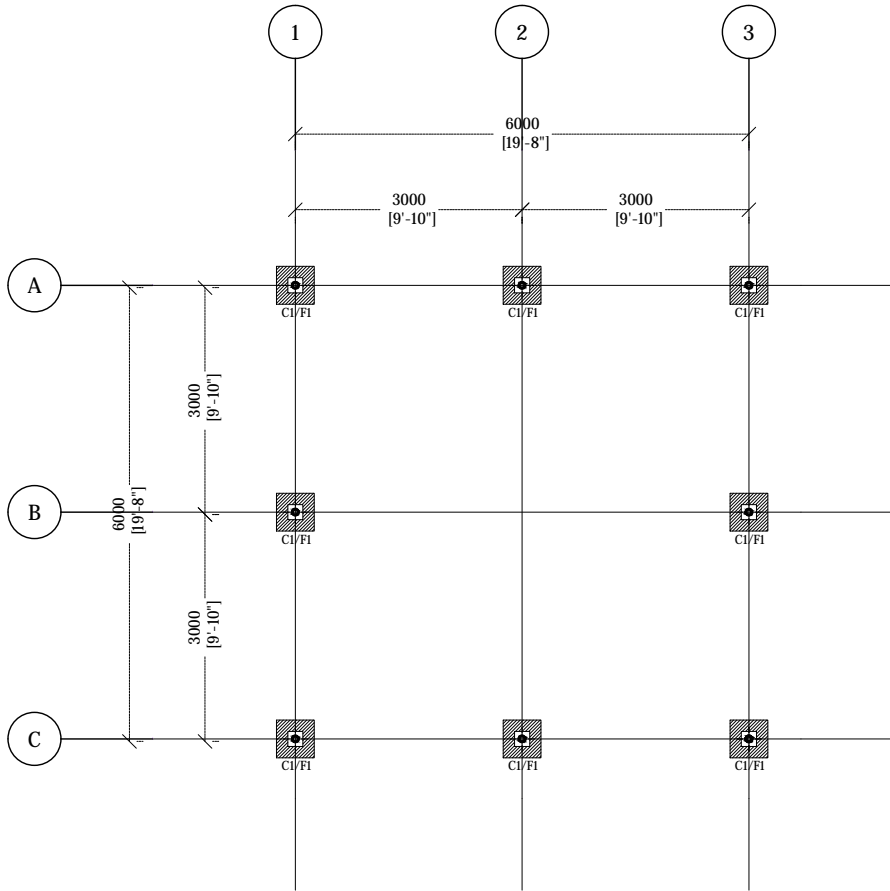
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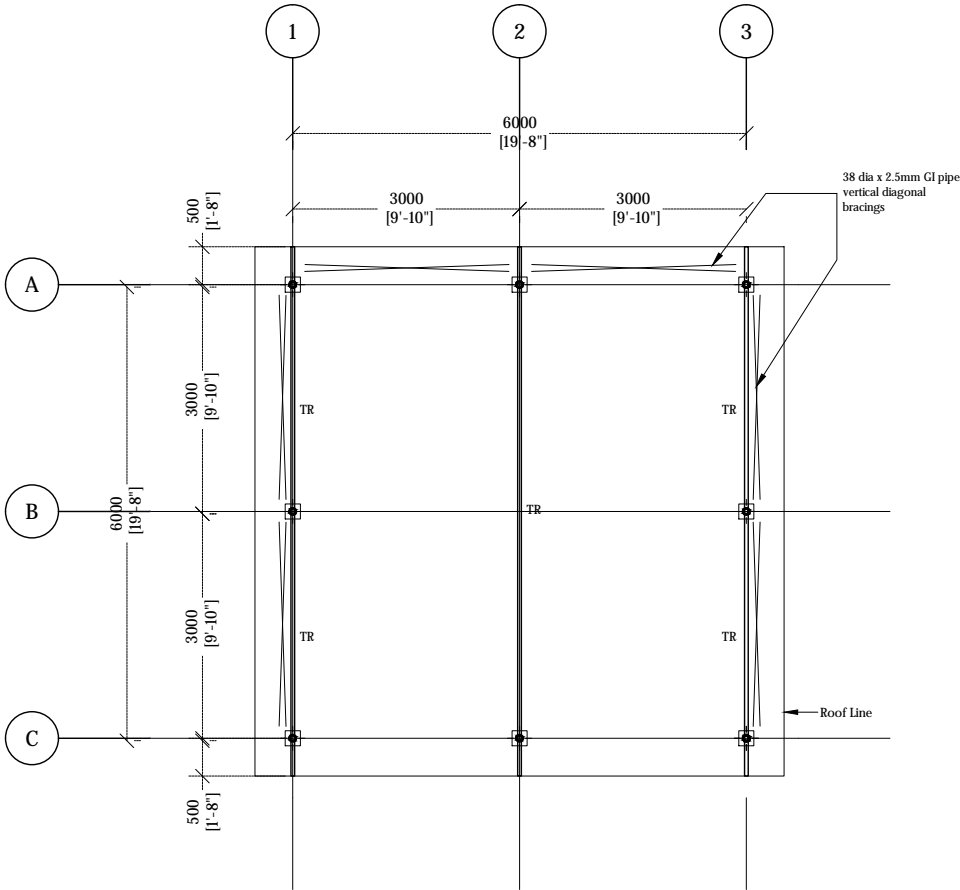
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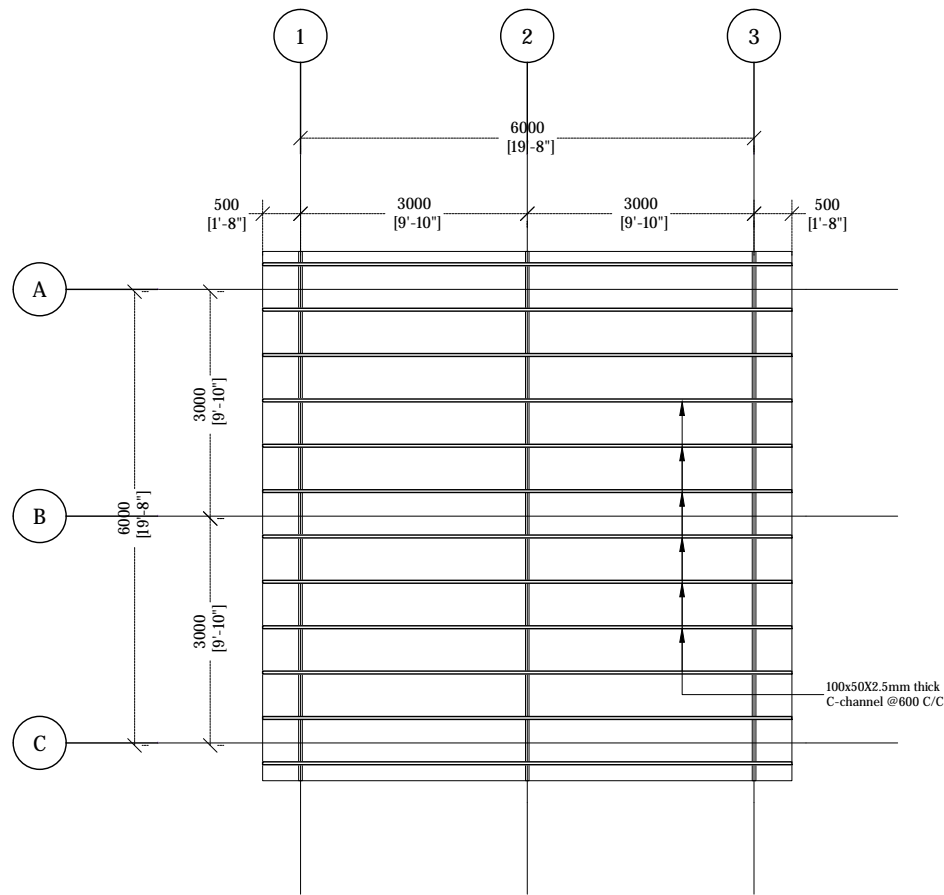
VEHICLE SHED FOUNDATION PLAN

1:100



VEHICLE SHED ROOF TRUSS PLAN

1:100



VEHICLE SHED ROOF FRAMING PLAN

1:100



Legend

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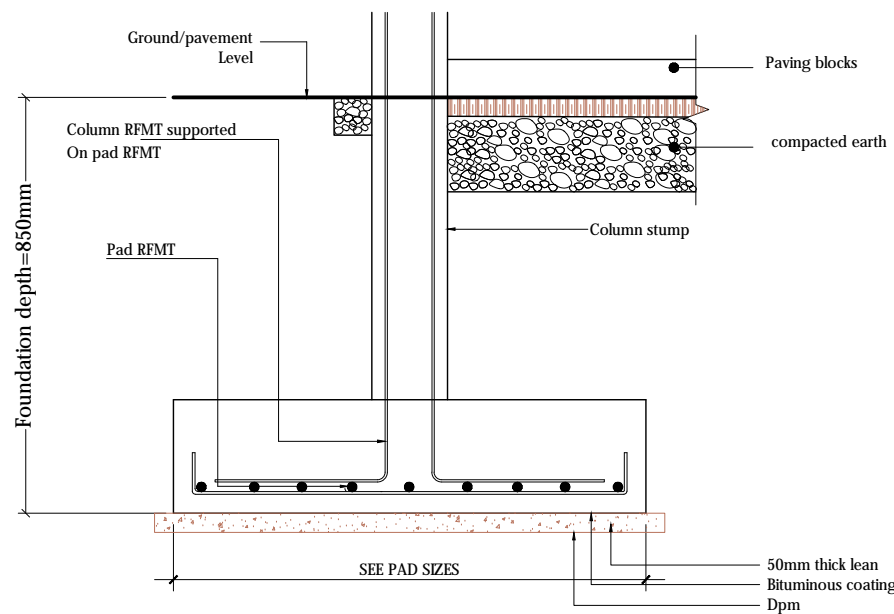
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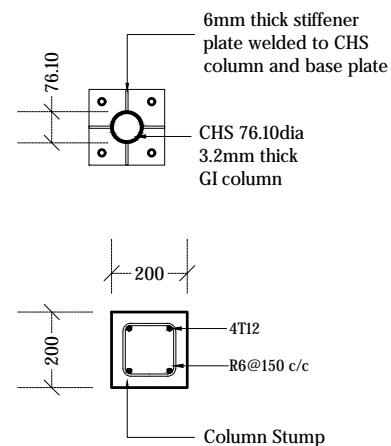
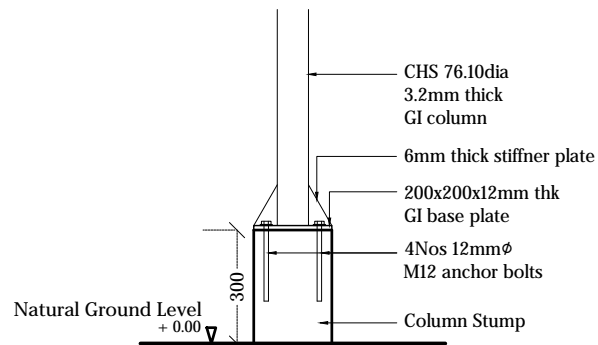


F1 - 500x500x250 - T10@150C/C B/W (B)

## VEHICLE SHED FOOTING DETAIL

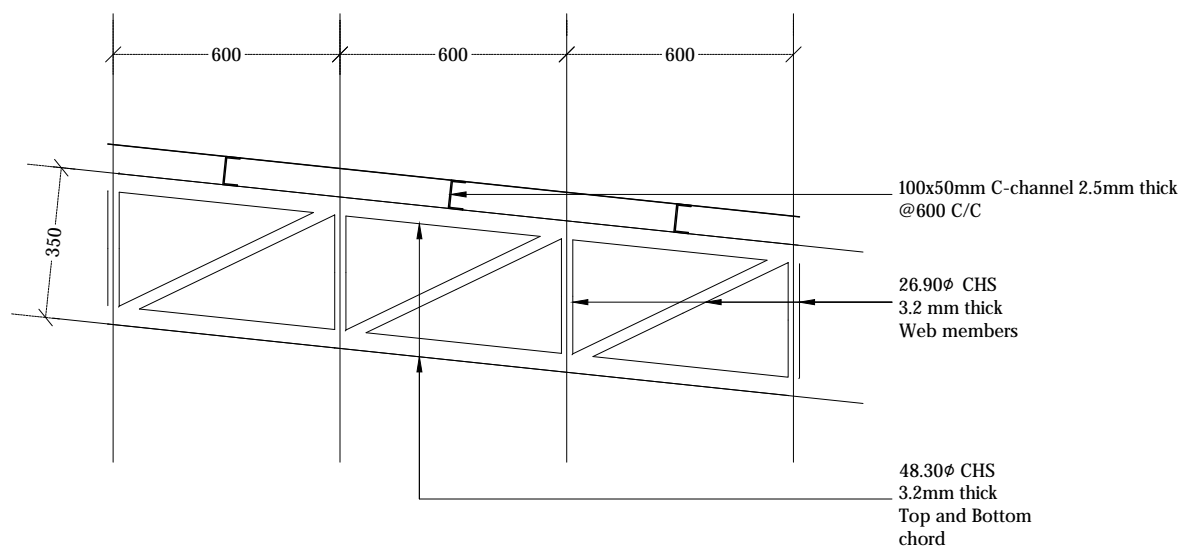
1:20

## FOUNDATION PAD DETAILS



## VEHICLE SHED COLUMN DETAIL

1:20



## VEHICLE SHED TRUSS DETAIL

1:20



### Legend

### 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
- \*38 dia x 2.5mm GI 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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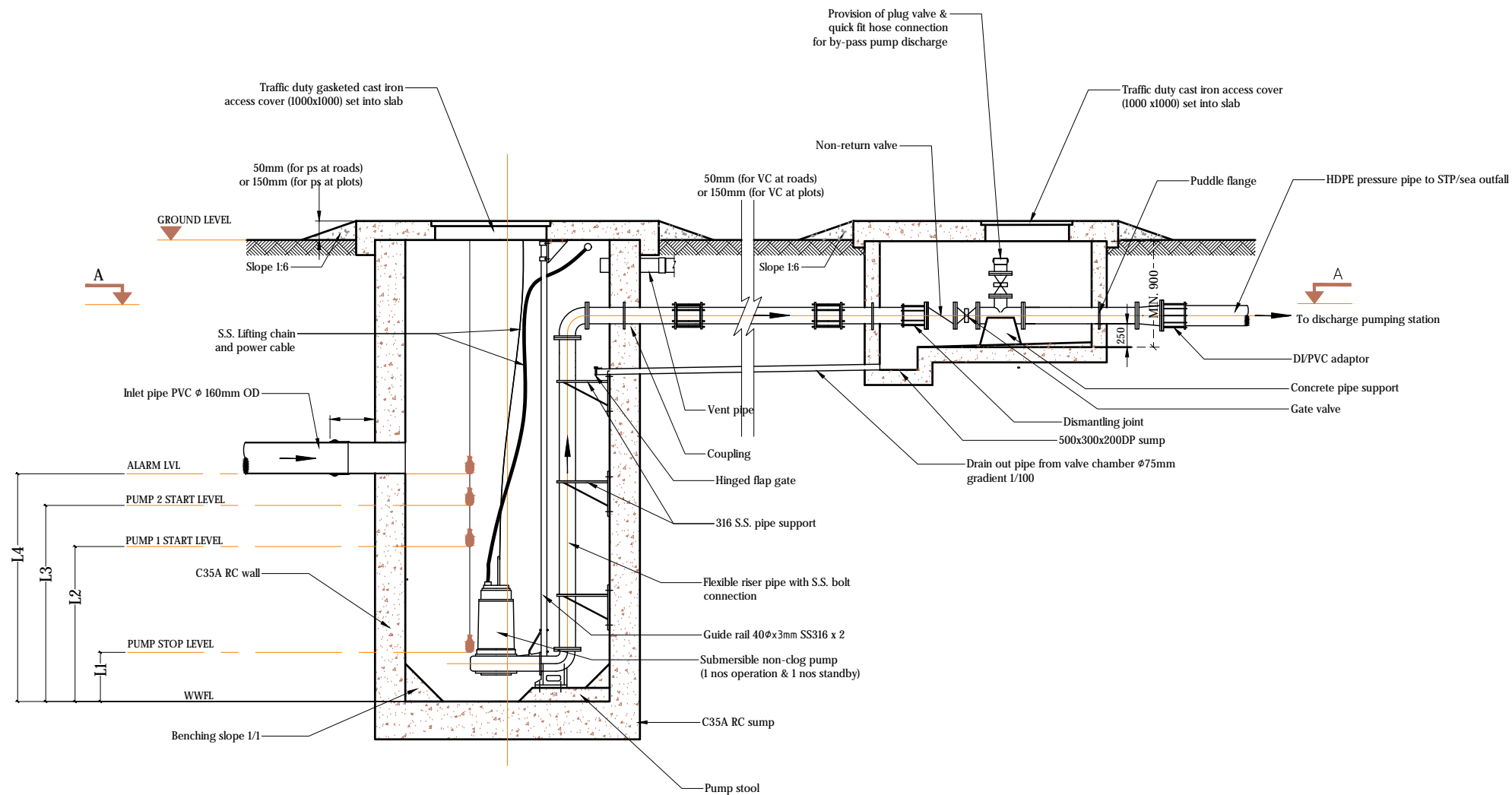
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VS-S(3)



PUMP STATION DESIGN DETAILS

(15 YEARS)

Pump Station	Diameter ( $\phi$ )	Depth (D)	Inlet Depth	Pump Capacity	Head	Levels			
						L1	L2	L3	L4
PS2	2.0m	3.10m	2.3m	1.0 l/s	9.37 m	0.300m	0.590m	0.740m	0.890m

PUMP STATION DETAILS - LONGITUDINAL SECTION  
NTS



Legend

Notes:

- Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
- Orientation of valve chamber pipework 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 polythene.
- All concrete cold joints shall casted with bonding agent

List of main instruments of pumping station:

1. Sewage pumps (1 duty & 1 standby)
2. Power cable
3. Auto-coupling with 40 $\phi$ x3mm SS316 guide rails
4. Stainless steel (316) suspension chain
5. Cable with float control and weight
6. Discharge pipe
7. Puddle flange
8. Bitumen emulsion and 500 micron polythene sheet protection to external concrete surfaces
9. Construction joint / water bars
10. Manhole cover double seal ductile heavy duty cast iron / SS 316 cover
11. Vent pipe with vent cowl

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7 islands, Maldives - Package 4

Sub Title:  
Sewerage System in ADh. Dhidhdhoo

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



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Drawn: F.I.A. Checked: M.S.S.

Designed: F.I.A. Approved: I.W.

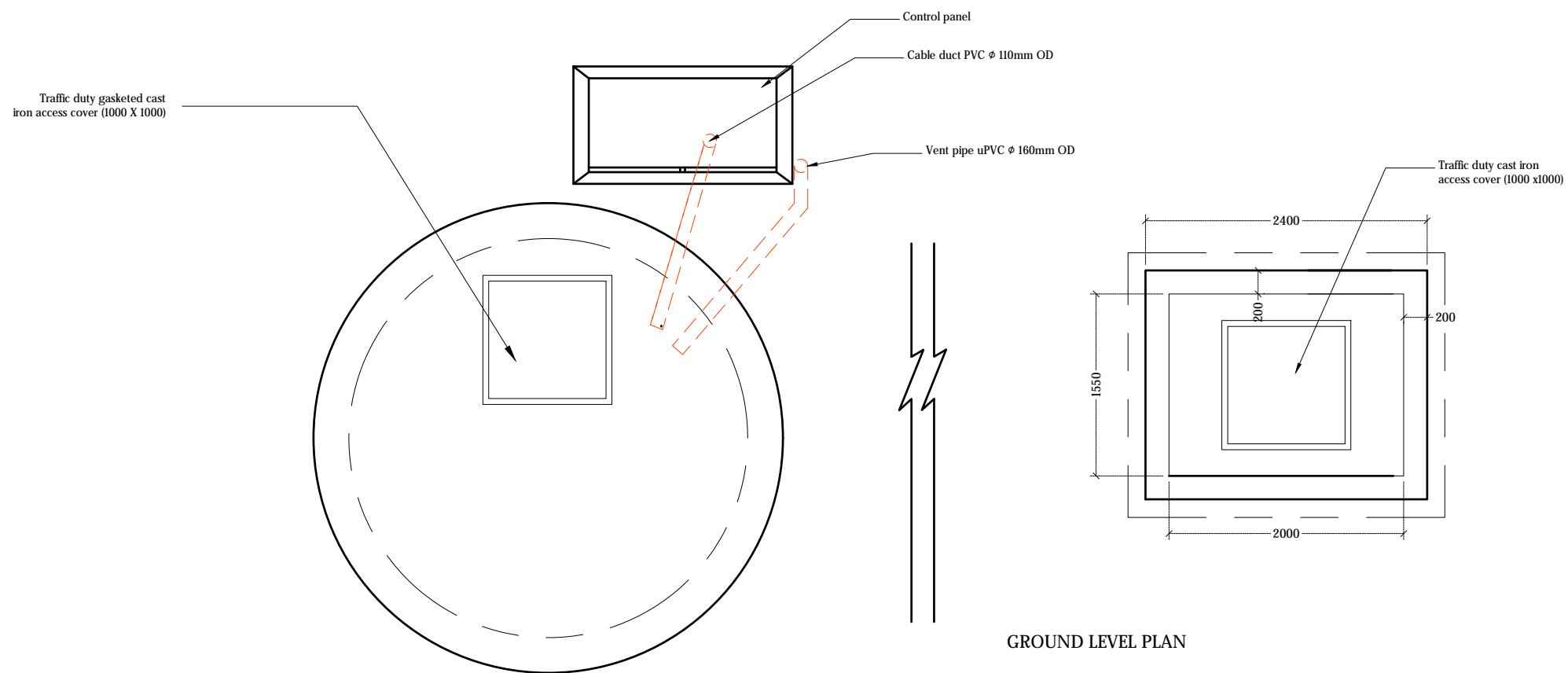
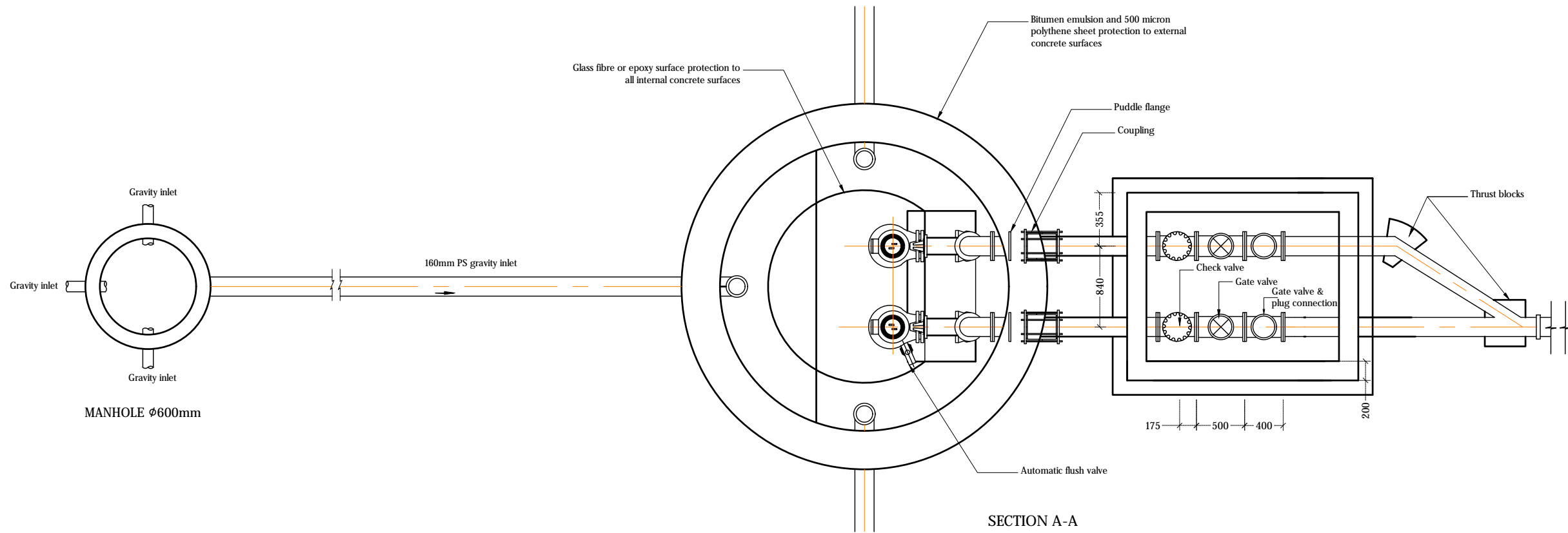
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/04

Rev: Page:

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GROUND LEVEL PLAN

PUMP STATION DETAILS - PLAN VIEW  
NTS



#### Legend

##### Notes:

- Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
- Orientation of valve chamber pipework 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 polythene.
- All concrete cold joints shall casted with bonding agent

##### List of main instruments of pumping station:

1. Sewage pumps (1 duty & 1 standby)
2. Power cable
3. Auto-coupling with 400x3mm SS316 guide rails
4. Stainless steel (316) suspension chain
5. Cable with float control and weight
6. Discharge pipe
7. Puddle flange
8. Bitumen emulsion and 500 micron polythene sheet protection to external concrete surfaces
9. Construction joint / water bars
10. Manhole cover double seal ductile heavy duty cast iron / SS 316 cover
11. Vent pipe with vent cowl

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

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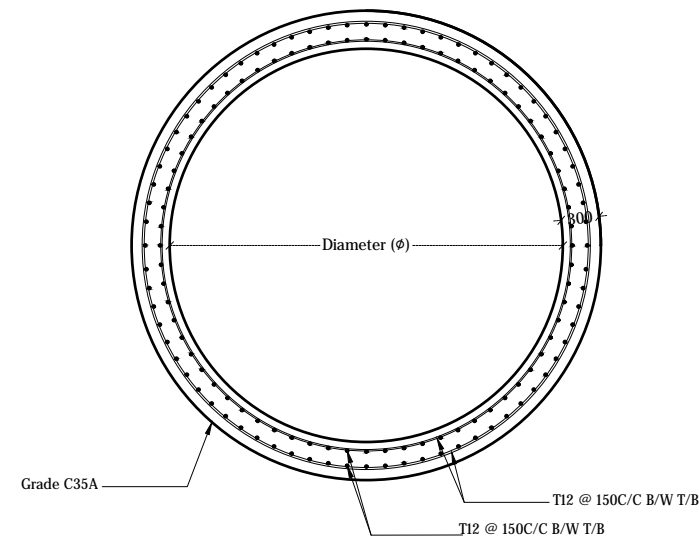
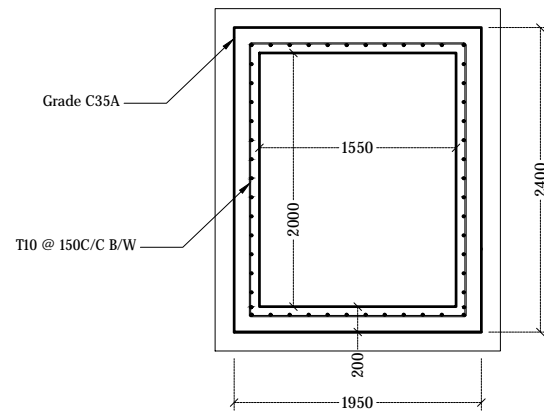
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Project No: EP-WS/2019/04

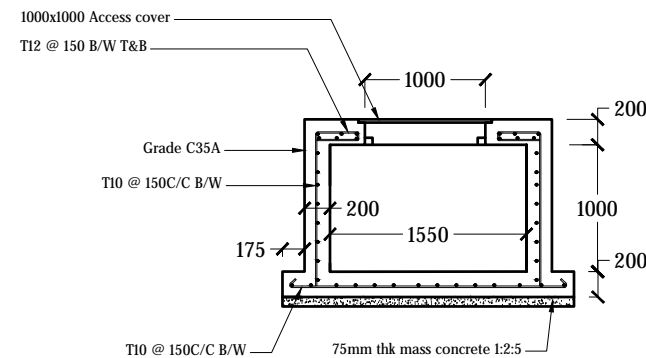
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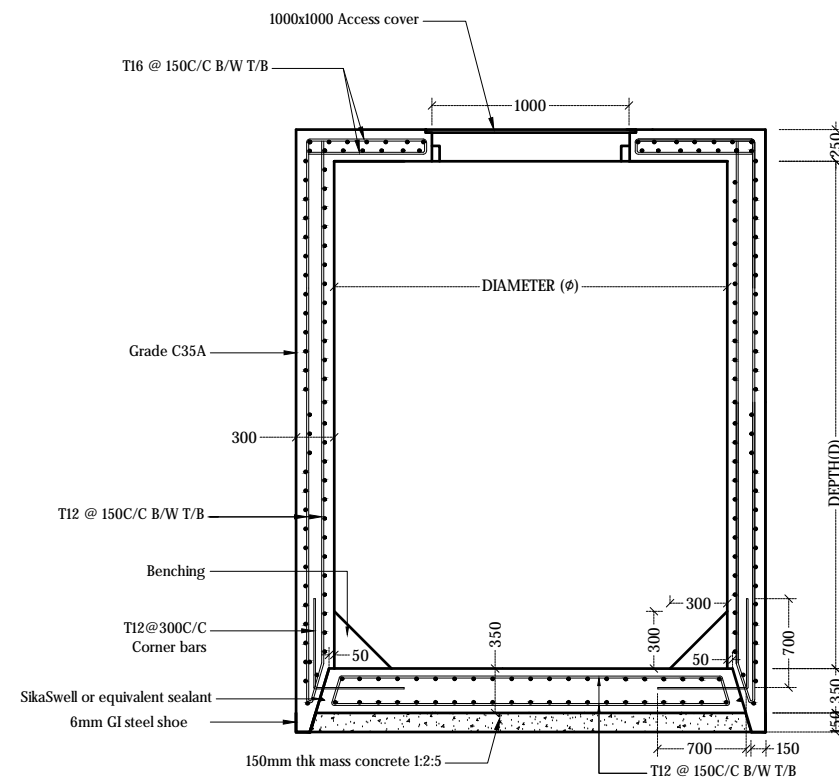
PLAN VIEW



SECTION



### VALVE CHAMBER DETAIL



### PUMP STATION DETAIL

Pump Station	Diameter ( $\phi$ )	Depth (D)	Inlet Depth
PS2	2.0m	3.10m	2.335m

## PUMP STATION STRUCTURAL DETAILS

NTS

Legend

Notes:

- Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
- Orientation of valve chamber pipework 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 be casted with bonding agent
- Corner bars (3T16 @ 75C/C T/B) shall be provided around top slab openings

- List of main instruments of pumping station:
- 1. Sewage pumps (1 duty & 1 standby)
- 2. Power cable
- 3. Auto-coupling with 400x3mm SS316 guide rail
- 4. Stainless steel (316) suspension chain
- 5. Cable with float control and weight
- 6. Discharge pipe
- 7. Puddle flange
- 8. Bitumen emulsion and 500 micron polythene sheet protection to external concrete surfaces
- 9. Construction joint / water bars
- 10. Manhole cover double seal ductile heavy duty cast iron / SS 316 cover
- 11. Vent pipe with vent cowl

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Designed: <b>F.I.A.</b>	Approved: <b>I.W.</b>
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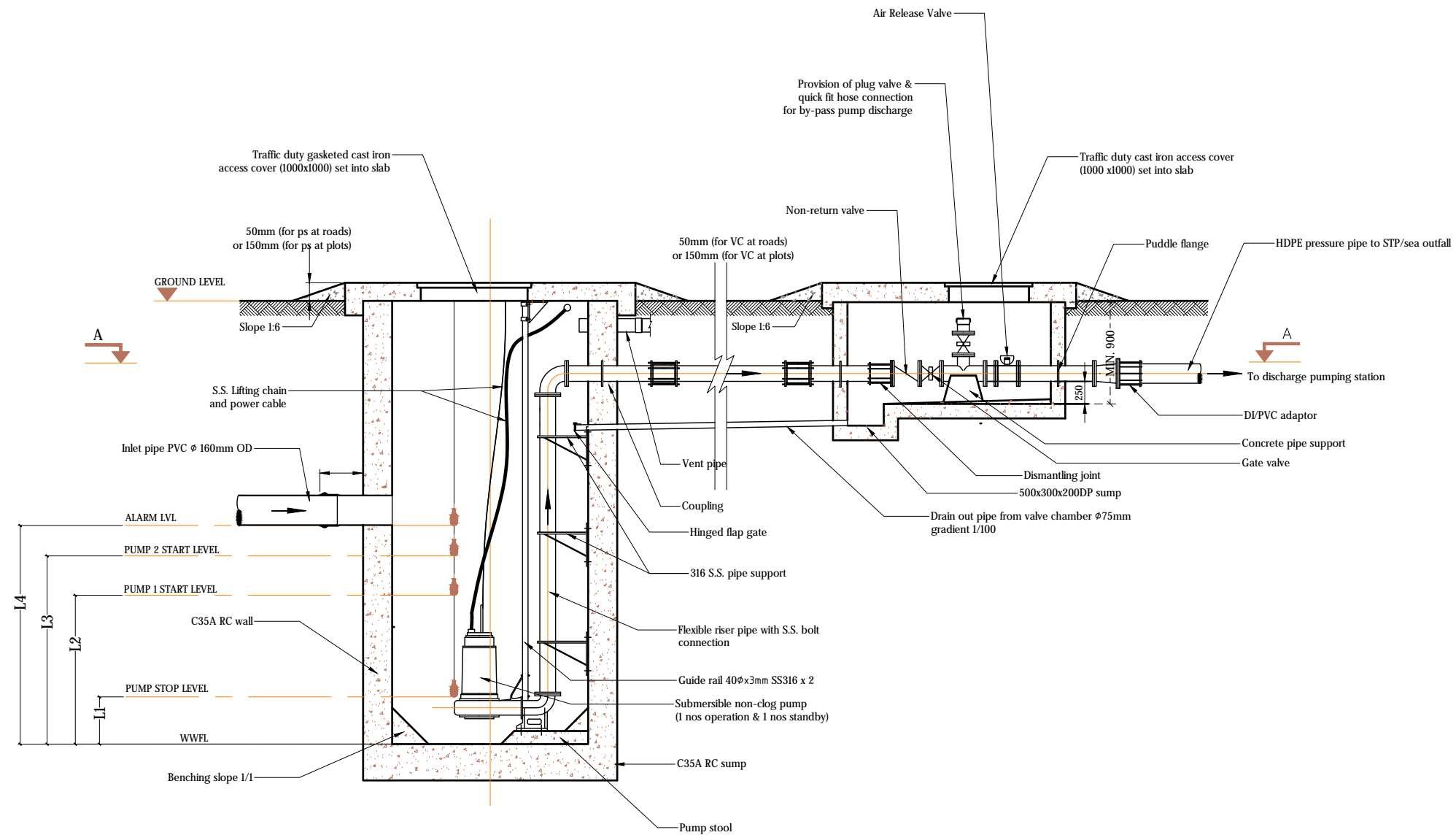
Date: Sep 2020	SCALE (A3): NTS
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Project No: EP-WS/2019/04

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DISCHARGE PUMP STATION DESIGN DETAILS (15 YEARS)

Pump Station	Diameter (Ø)	Depth (D)	Inlet Depth	Pump Capacity	Head	Levels			
						L1	L2	L3	L4
PS1/DPS	2.5m	3.10m	2.3m	1.9/s	23.21 m	0.300m	0.620m	0.770m	0.920m

DISCHARGE PUMP STATION DETAILS - LONGITUDINAL SECTION

NTS



Legend

Notes:

- Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
- Orientation of valve chamber pipework 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 polythene.
- All concrete cold joints shall casted with bonding agent

List of main instruments of pumping station:

1. Sewage pumps (1 duty & 1 standby)
2. Power cable
3. Auto-coupling with 40Øx3mm SS316 guide rails
4. Stainless steel (316) suspension chain
5. Cable with float control and weight
6. Discharge pipe
7. Puddle flange
8. Bitumen emulsion and 500 micron polythene sheet protection to external concrete surfaces
9. Construction joint / water bars
10. Manhole cover double seal ductile heavy duty cast iron / SS 316 cover
11. Vent pipe with vent cowl

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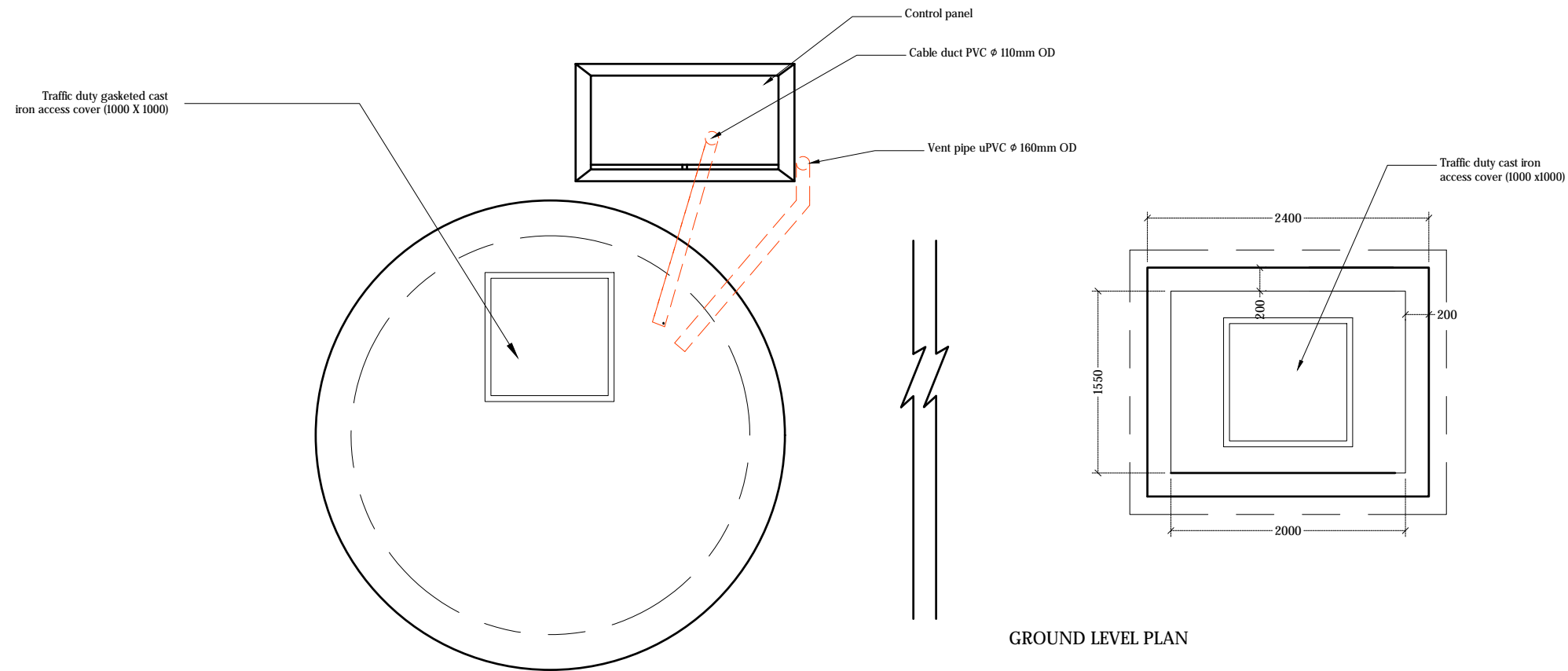
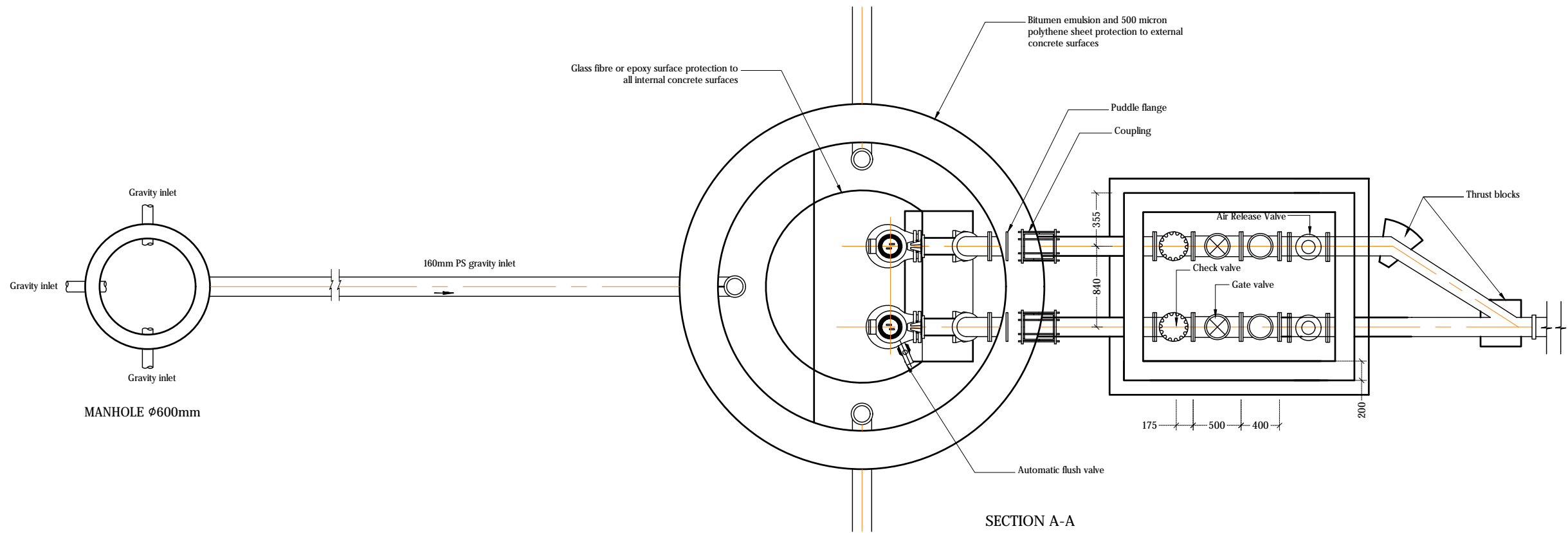
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Project No: EP-WS/2019/04

Rev: Page:

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## DISCHARGE PUMP STATION DETAILS - PLAN VIEW

NTS



### Legend

#### Notes:

- Pumps, pipe work, fittings and control panel shall be installed in accordance with manufacturers recommendations.
- Orientation of valve chamber pipework to suit location.
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#### List of main instruments of pumping station:

1. Sewage pumps (1 duty & 1 standby)
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3. Auto-coupling with 400x3mm SS316 guide rails
4. Stainless steel (316) suspension chain
5. Cable with float control and weight
6. Discharge pipe
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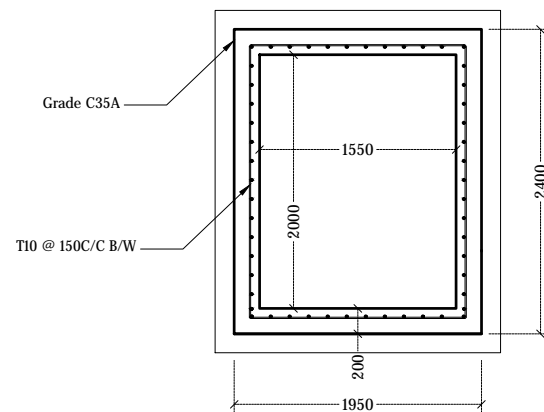
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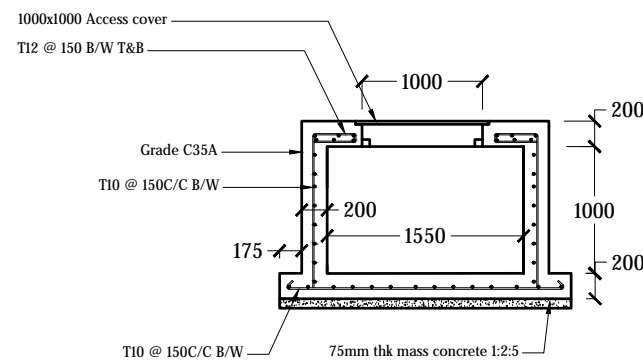
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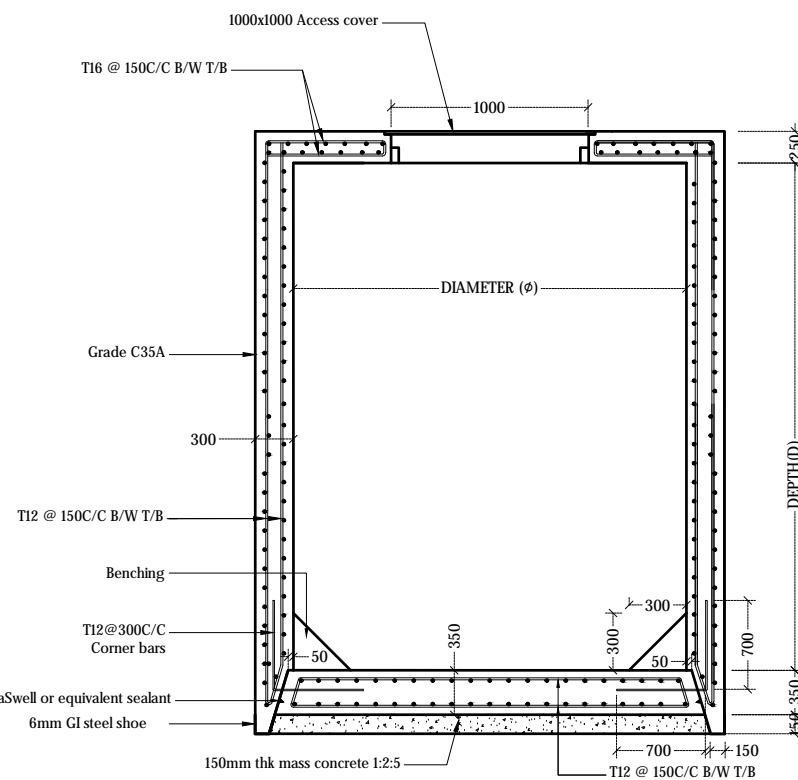
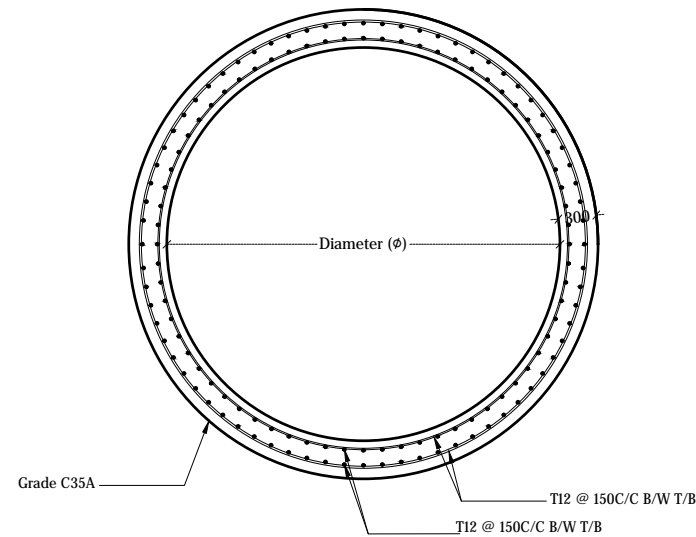
PLAN VIEW



SECTION



VALVE CHAMBER DETAIL



PUMP STATION DETAIL

Pump Station	Diameter (φ)	Depth (D)	Inlet Depth
PS1/DPS	2.5m	3.10m	2.294m

## DISCHARGE PUMP STATION STRUCTURAL DETAILS

NTS



## Legend

## Notes:

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- List of main instruments of pumping station:
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  7. Puddle flange
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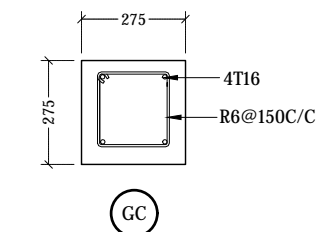
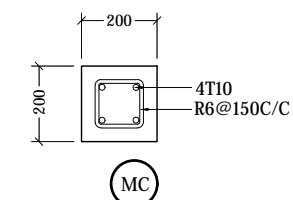
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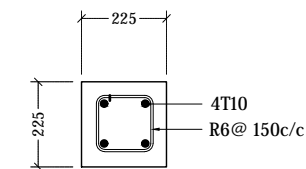
Project No: EP-WS/2019/04

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COLUMN DETAILS  
1:20



FOUNDATION BEAM DETAIL  
1:20



Notes:

- 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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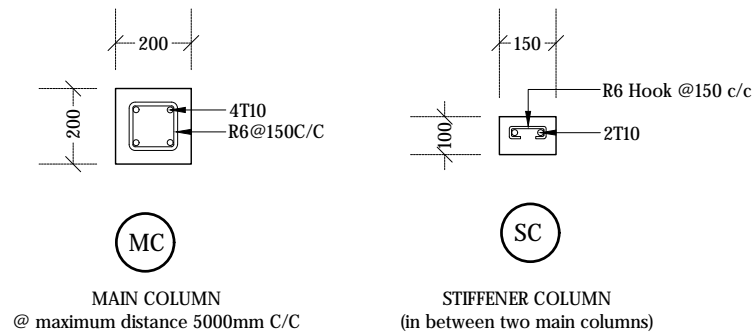
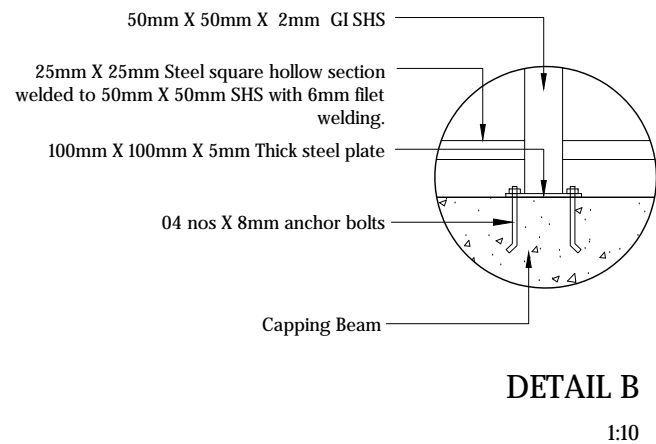
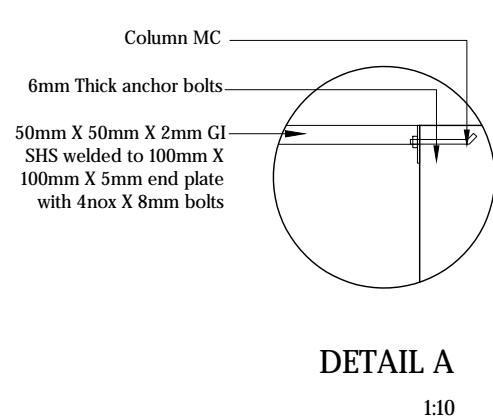
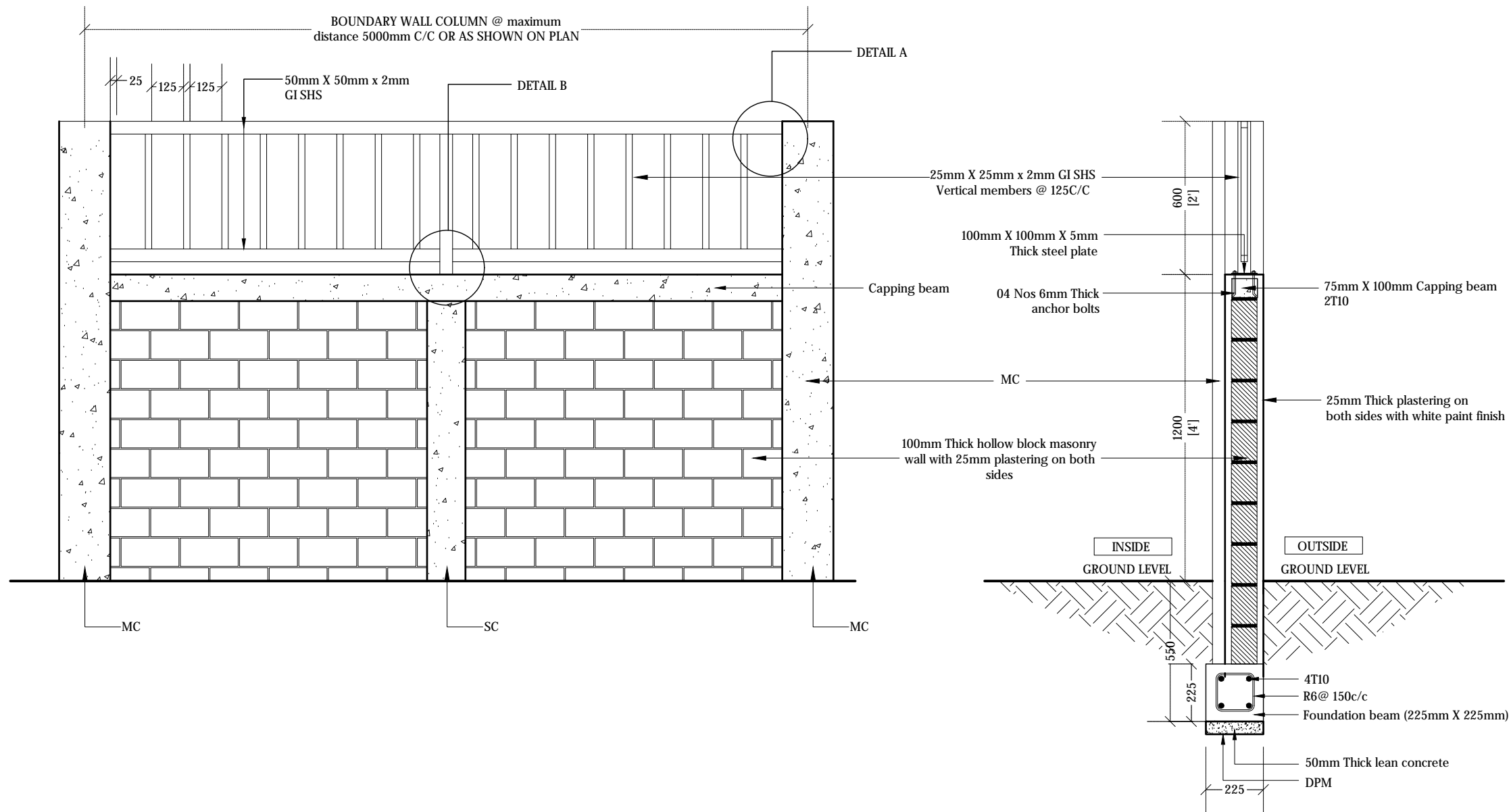


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Project No: EP-WS/2019/04	
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## GATE DETAILS





#### Legend

#### Notes:

- 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 be casted with bonding agent

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**FOODBACK INFRA**  
MALDIVES INFRASTRUCTURE DEVELOPMENT

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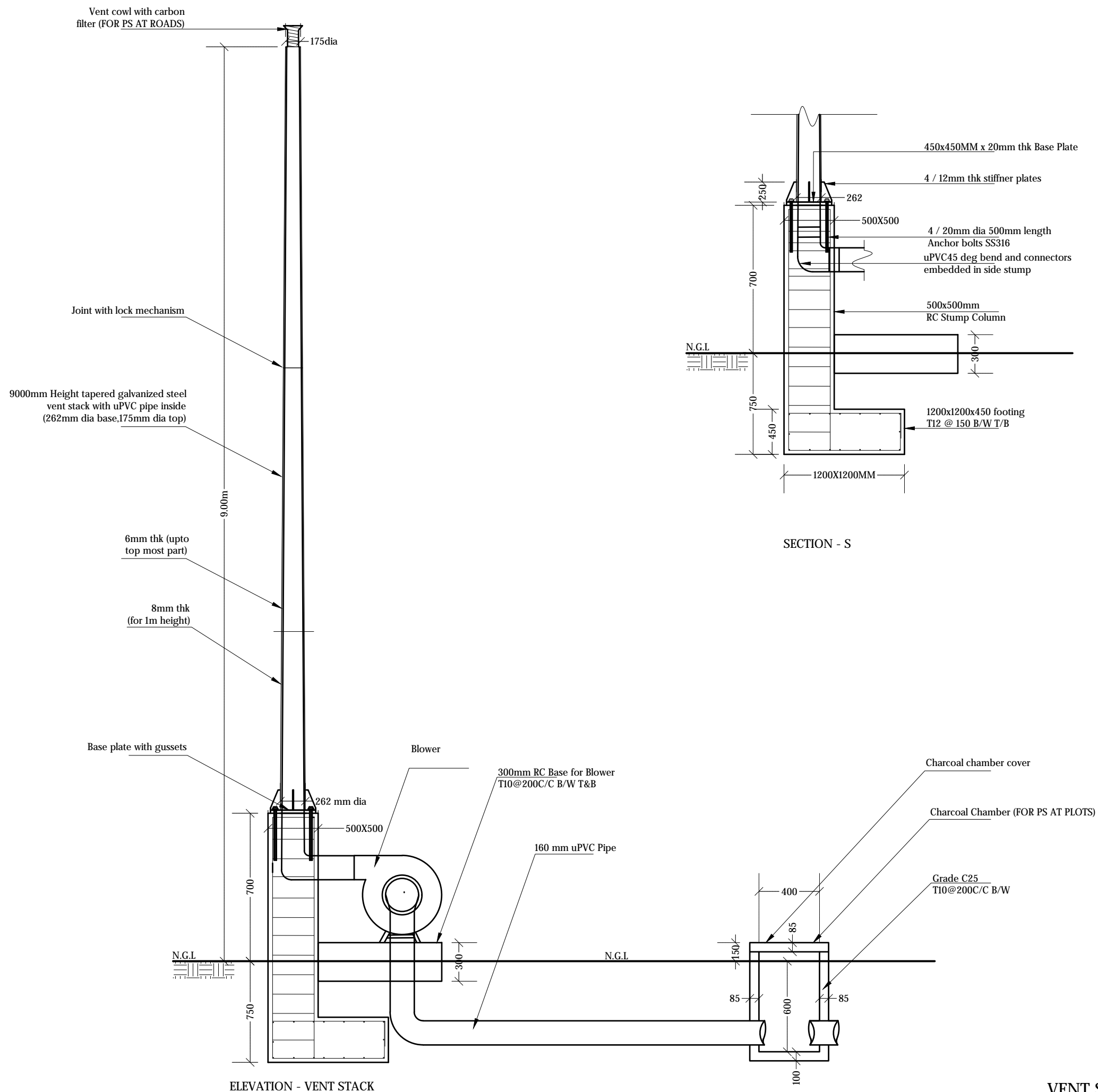
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## PS & STP BOUNDARY WALL AND FENCING DETAILS

1:20





## NTS

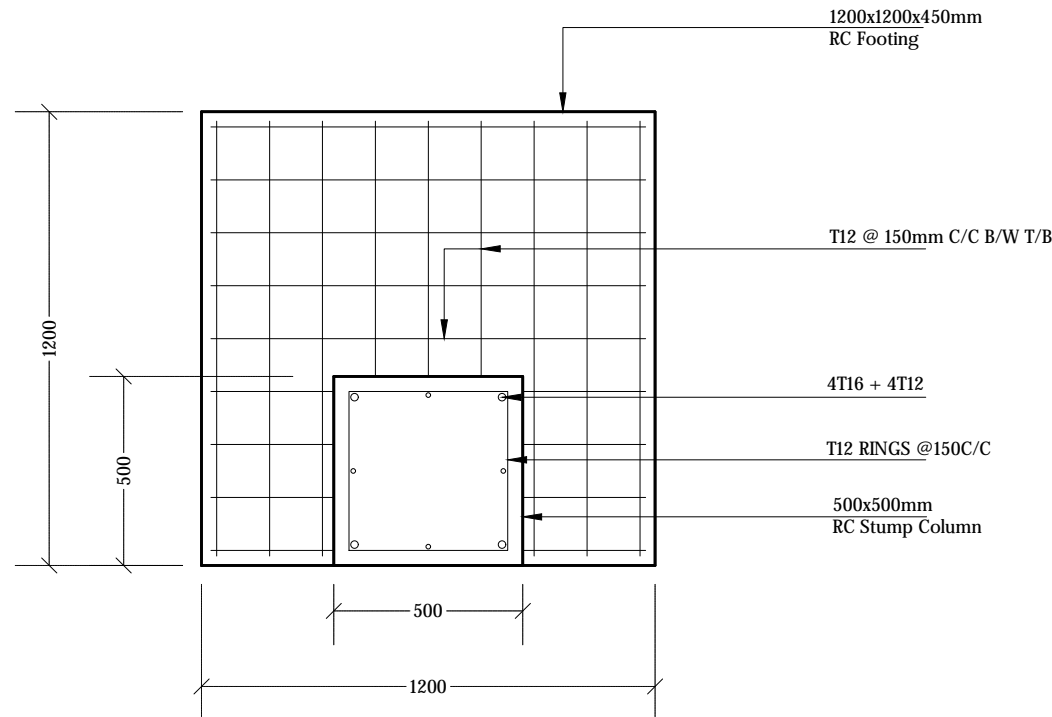
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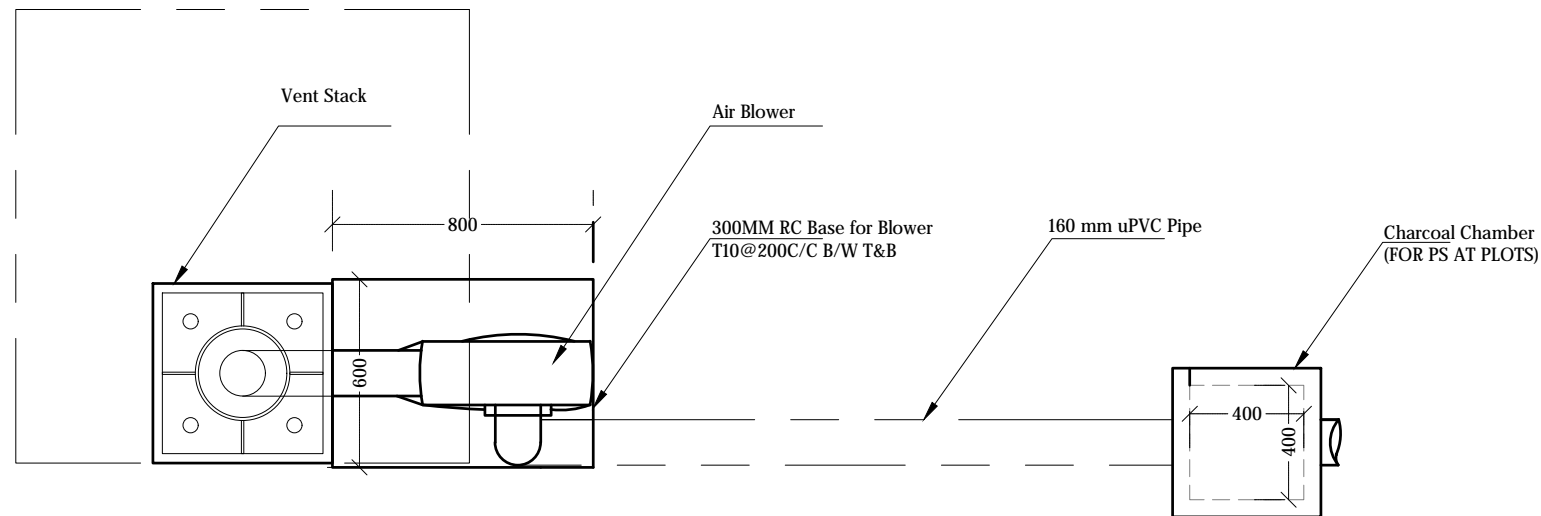
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**FEEDBACK INFRA**  
*Making Infrastructure Happen*

W-(8)



FOOTING & STUMP DETAILS OF VENT STACK



AIR BLOWER DETAILS (Plan View)

## VENT STACK AND AIR BLOWER DETAILS

NTS



### Legend

#### Notes:

- All anchor bolts shall be SS316
- Cover for footings shall be 50mm
- Cover for stump shall be 40mm
- Concrete shall be of grade C25
- All concrete cold joints shall be casted with bonding agent

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**FOODBACK INFRA**  
MALDIVES

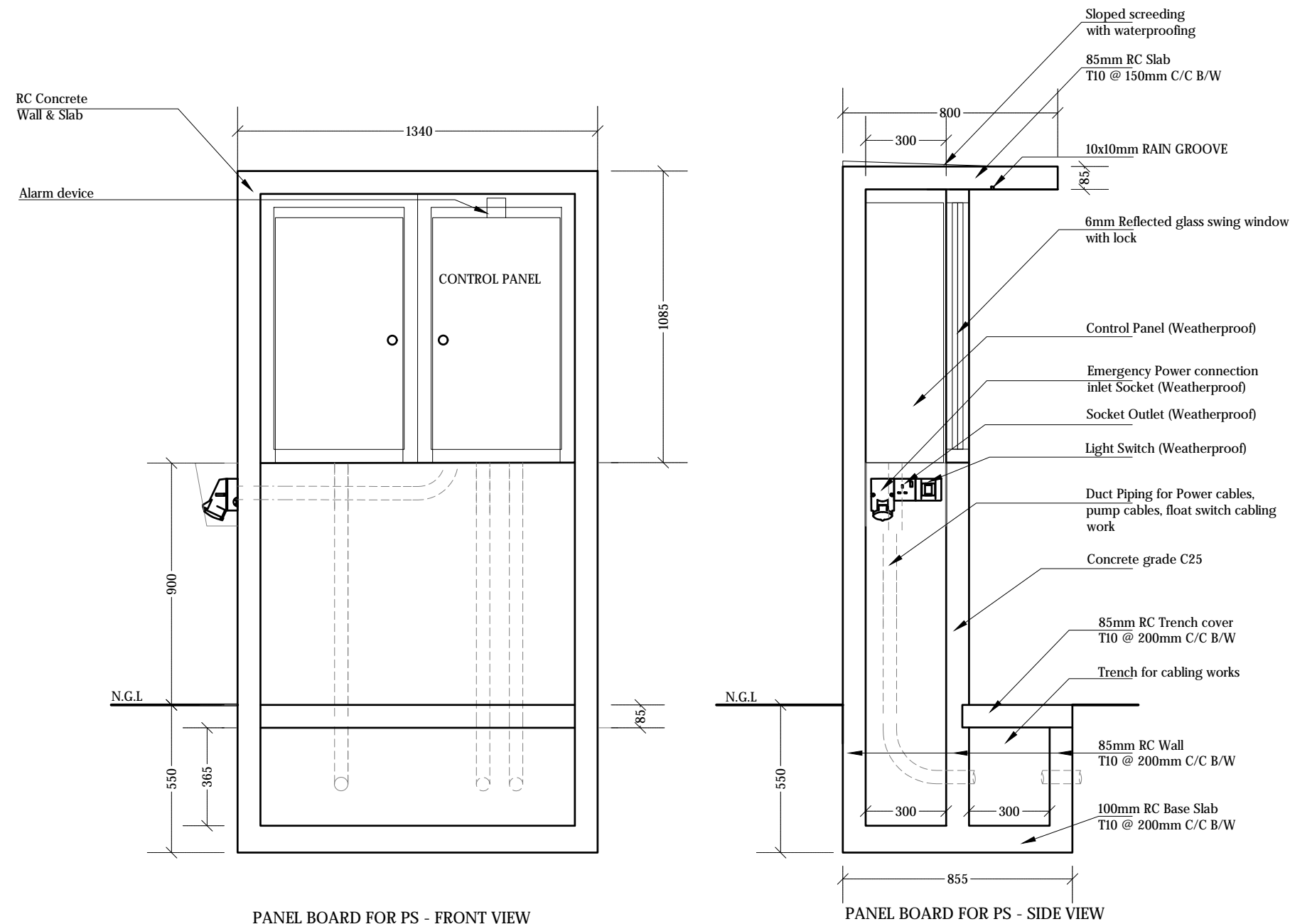
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Project No: EP-WS/2019/04

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## CONTROL PANEL BOARD DETAILS

NTS



Legend

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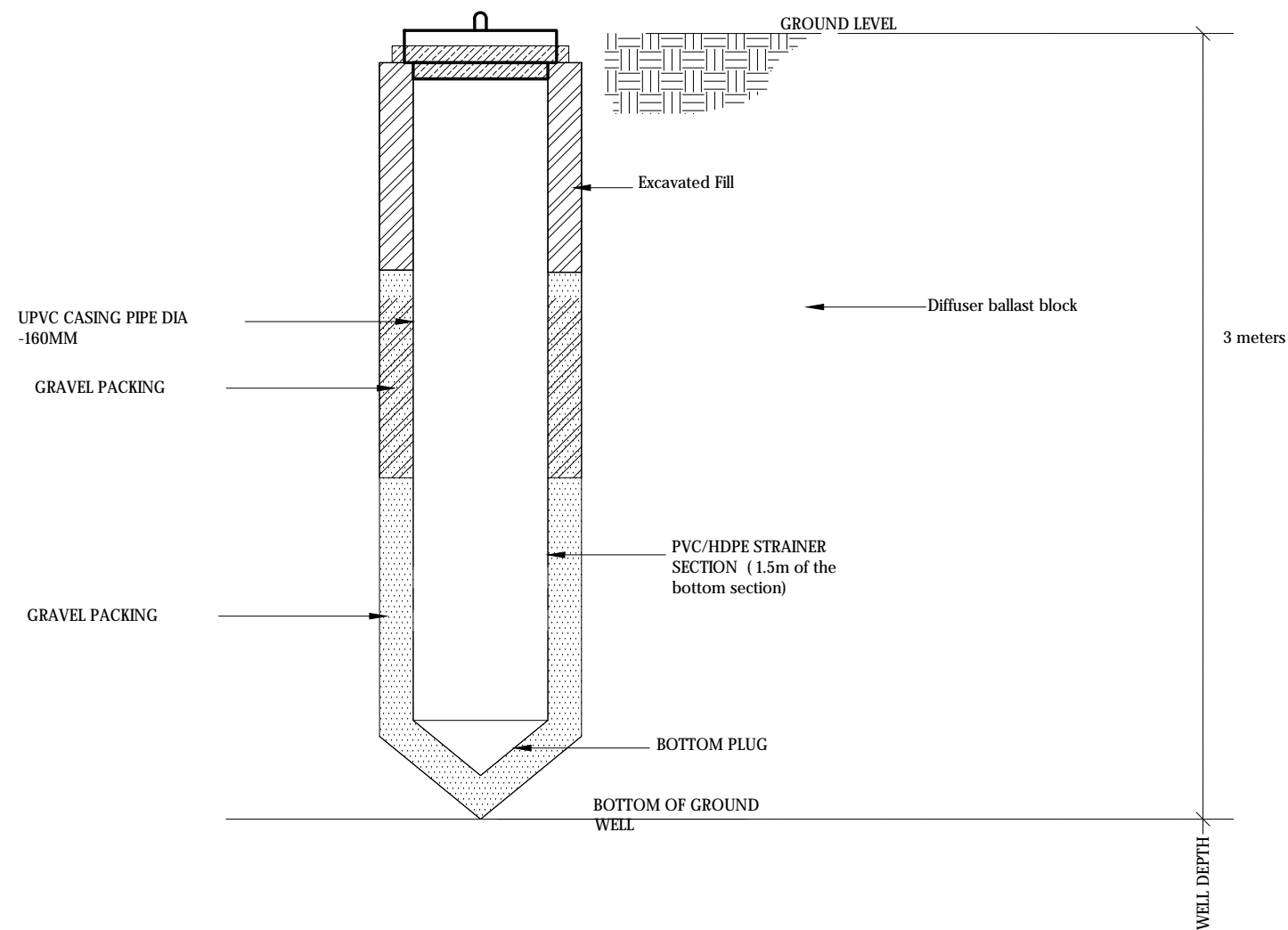
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		Rev:	Page: W-(10)





SAMPLING WELL SECTION

NTS



Legend

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Feedback Infrastructure

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Project No: EP-WS/2019/04	Page: W-(23)

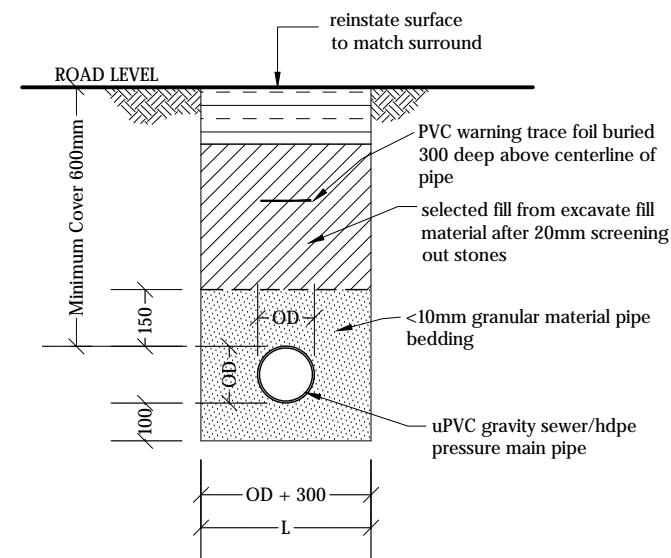


Diagram illustrating the cross-section of a road trench showing the layout of various underground utilities. The diagram includes labels for cable TV/telecom, power cable, HDPE pipe for sewer pressure main, uPVC pipe for sewer main, HDPE pipe for water supply main, and HDPE/uPVC pipe for rain water collection. It also shows the road level, a 300mm depth for the topsoil layer, and a 600mm depth for the trench. The trench is divided into sections with widths of 450-600mm, 300mm, and 450-600mm. The depth of the trench is 600mm. The diagram also shows the relative level (RL) and the buried line of the pipe.

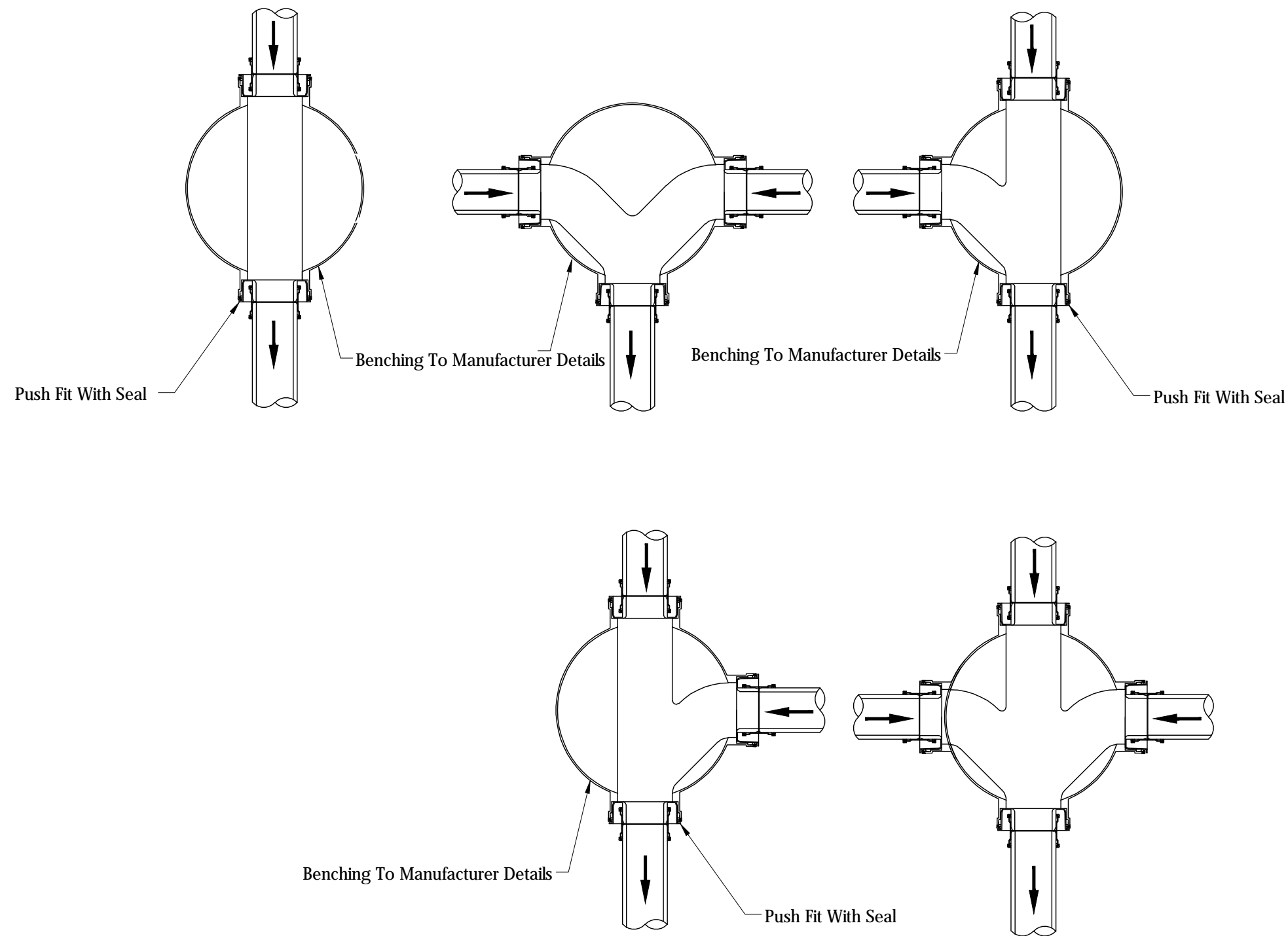
Labels and dimensions shown in the diagram:

- cable tv/telecom
- Power cable
- hdpe pipe for sewer pressure main
- uPVC pipe for sewer main
- HDPE pipe for water supply main
- HDPE/uPVC pipe for rain water collection
- ROAD LEVEL
- 300
- VARIES (300-600)
- VARIES (MIN.600)
- VARIES (MIN.600)
- VARIES (300-600)
- 600
- buried line of pipe
- 450-600
- 300
- 450-600
- 1/3 X RL
- 1/2 X RL
- MIN.600
- 400
- 1/3 X RL
- RL

## TRENCH AND BEDDING DETAILS







TYPICAL MANHOLE BASE DETAILS

NTS



Legend

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:  
Sewerage System in Adh. Dhidhdhoo

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

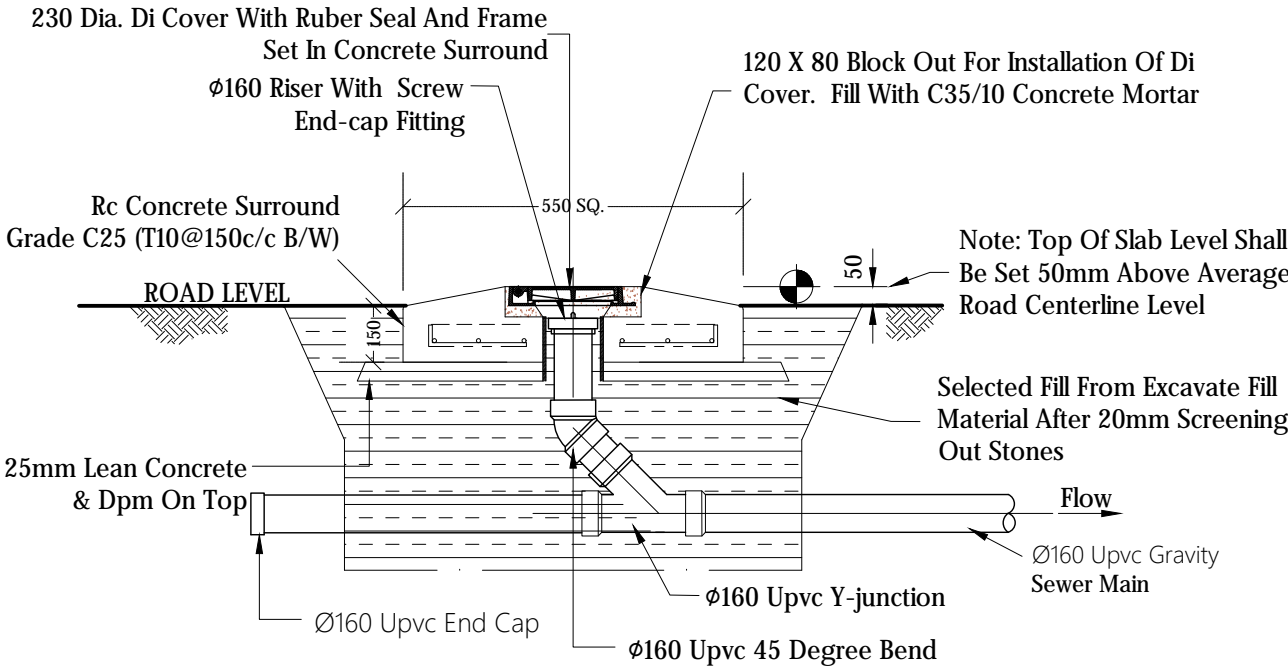
**EPOCH**  
ASSOCIATES  
T: +960 333 3528  
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W: www.epochassociates  
A: G. Rosary West,  
Husuheena Magu, Male', Maldives

**FBAC INFRA**  
Maldivian Infrastructure Development

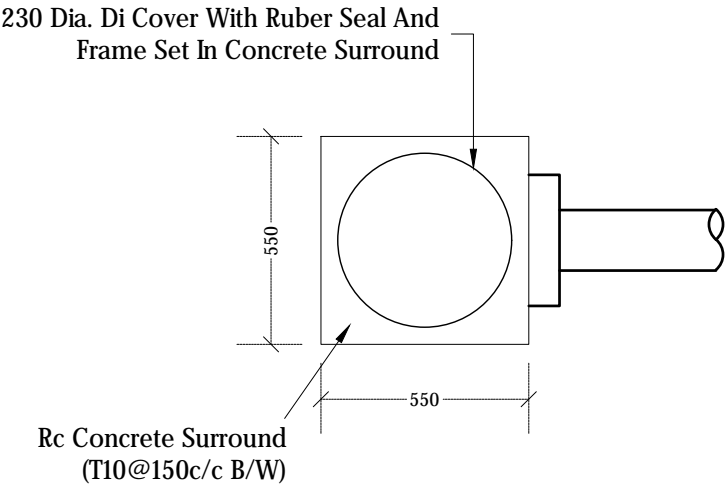
Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/04	Page: W-(14)



Legend



ELEVATION - CLEANOUT (CO)



PLAN VIEW - CLEANOUT (CO)

CLEAN OUT DETAILS

NTS

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

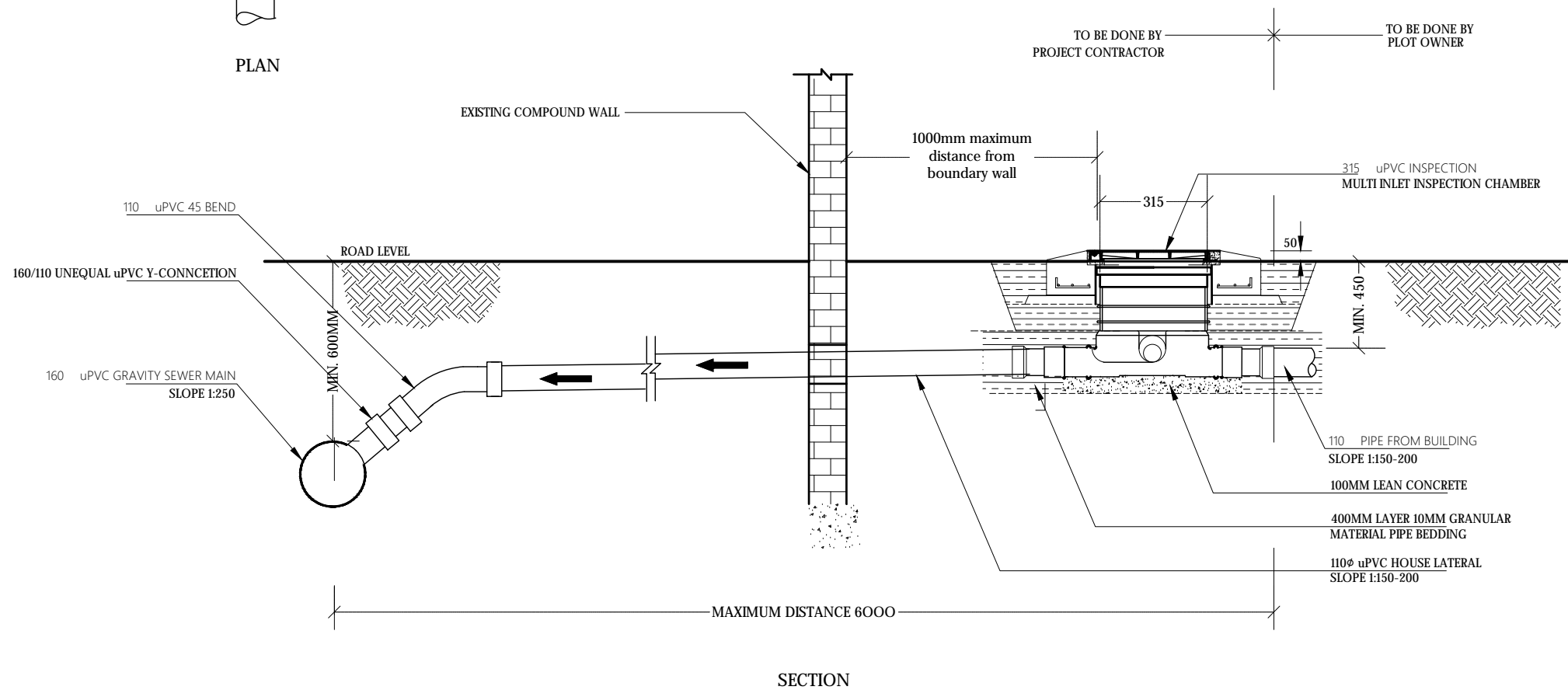
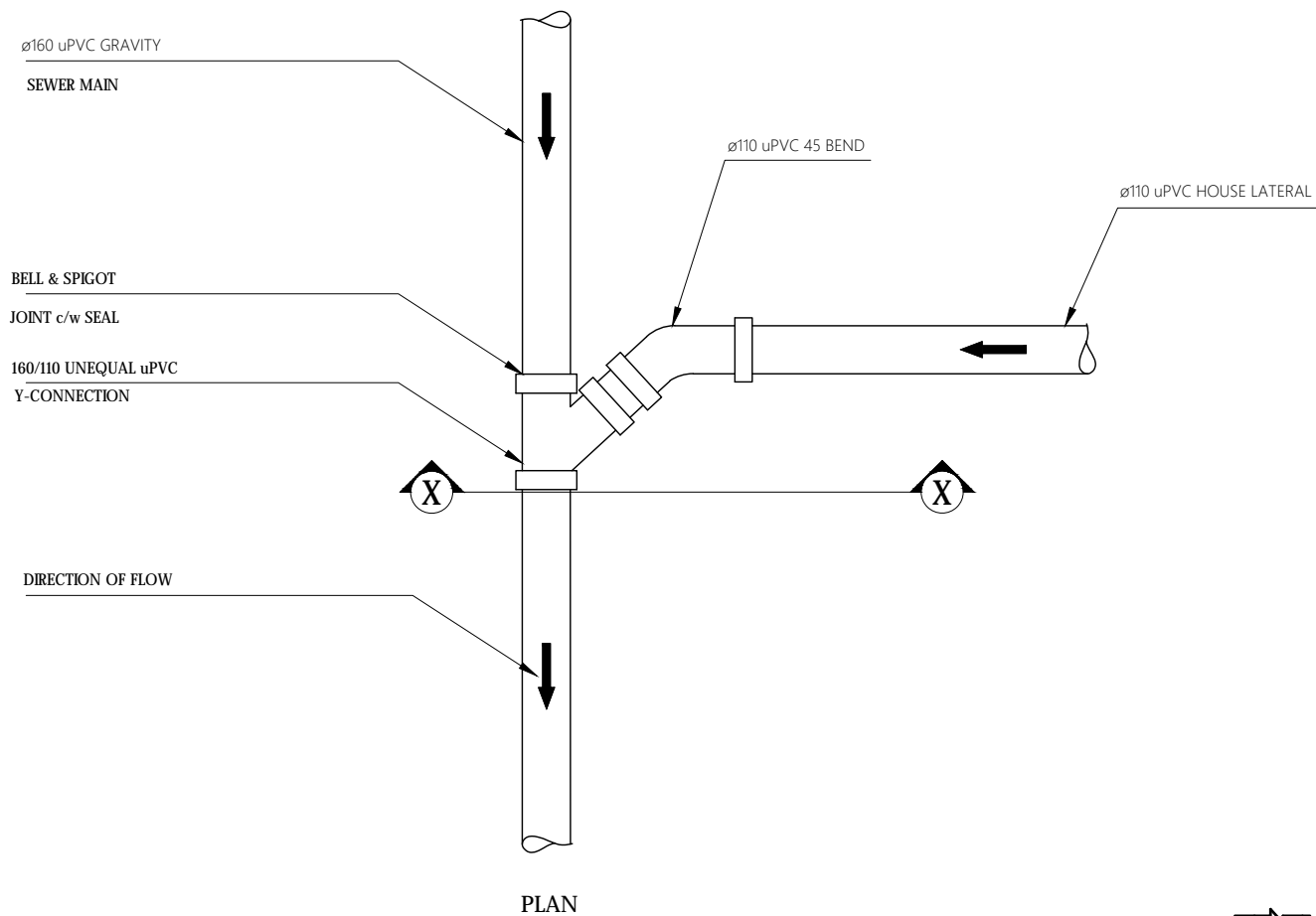
Sub Title:  
Sewerage System in Adh. Dhidhdhoo

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

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Maldives Infrastructure Development

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:	Page: W-(15)



## TYPICAL HOUSE CONNECTION DETAIL

NTS



### Legend

#### Notes:

1. Invert level at house inspection chamber and invert level of the sewer main on the road should be checked during the house connection survey and invert level should be adjusted in order to facilitate gravity flow from house inspection chamber to sewer main.

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Sub Title:  
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Husnuheena Magu, Male', Maldives



Drawn: F.I.A. Checked: M.S.S.

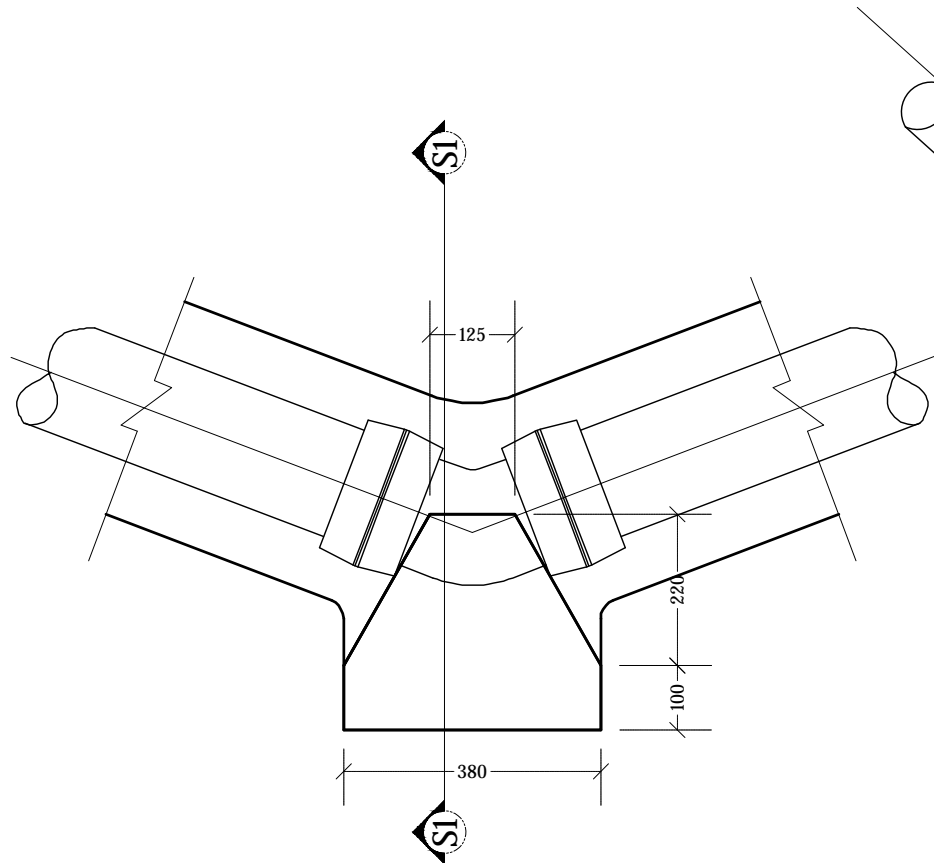
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3): NTS

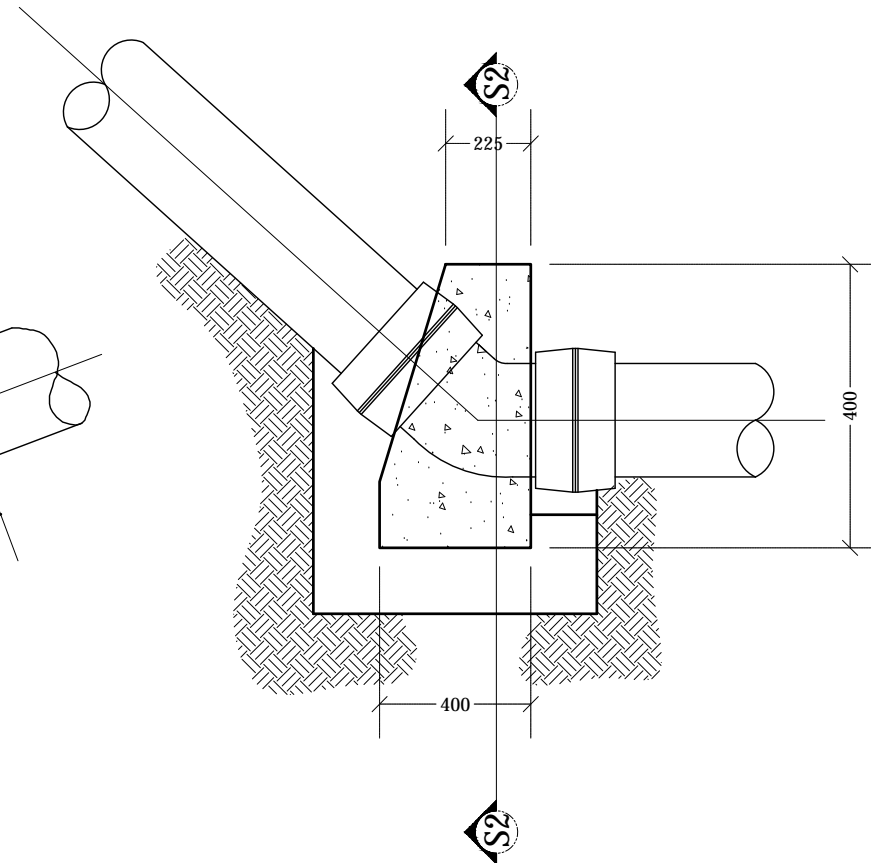
Project No: EP-WS/2019/04

Rev: Page:

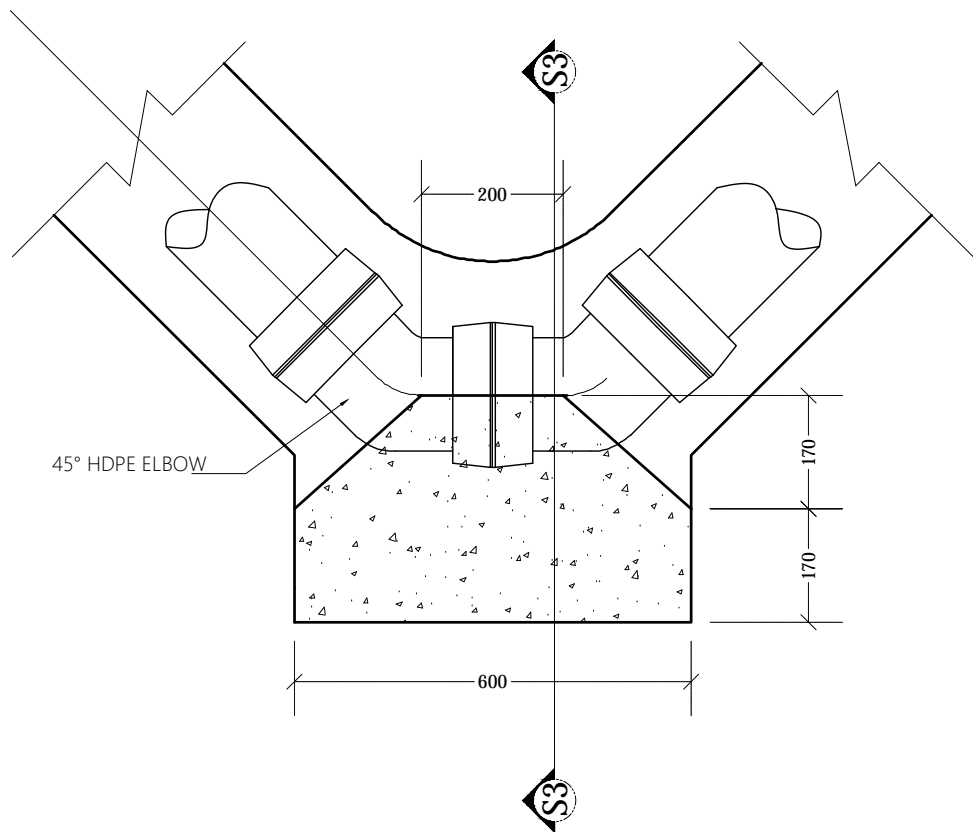
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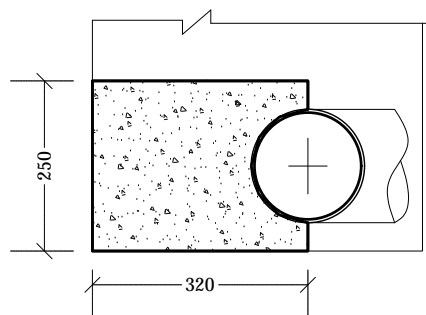
HORIZONTAL 45° BEND  
NTS



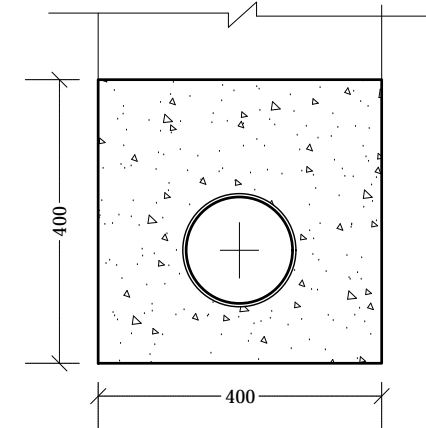
VERTICAL 45° BEND  
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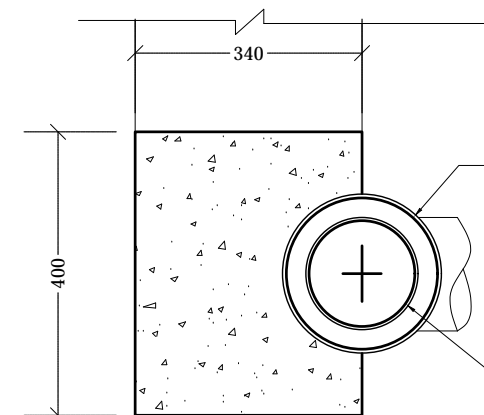
HORIZONTAL 90° BEND  
NTS



SECTION S1-S1  
NTS



SECTION S2-S2  
NTS



SECTION S3-S3  
NTS

ELECTRO-FUSION COLLAR  
HDPE PIPE

## THRUST BLOCK DETAILS

NTS



### Legend

### Notes:

- Concrete shall be of grade C25

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

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Supply and Sewerage Facilities in  
7 islands, Maldives - Package 4

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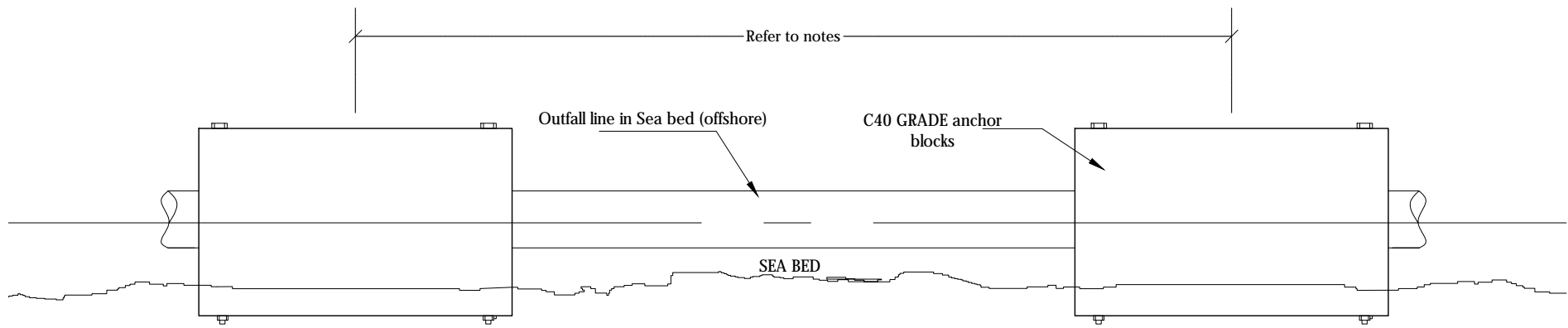
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3): NTS

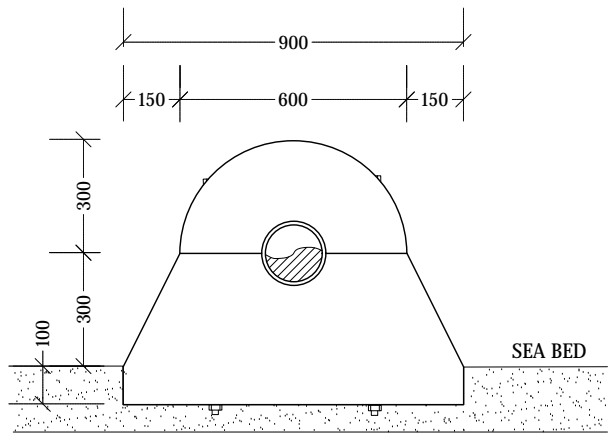
Project No: EP-WS/2019/04

Rev: Page:

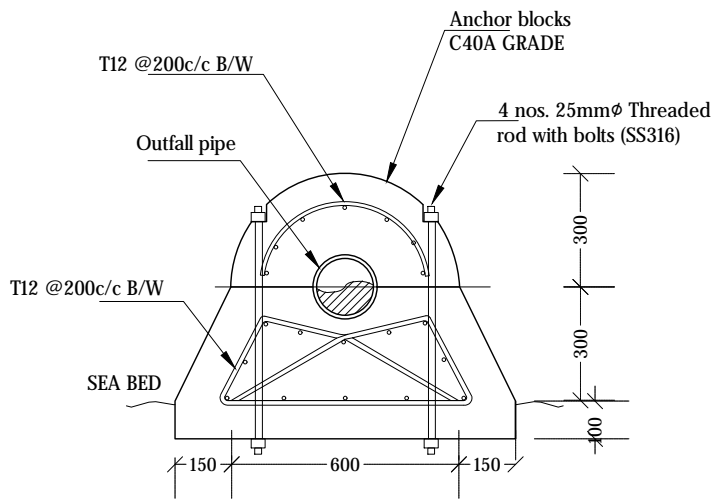
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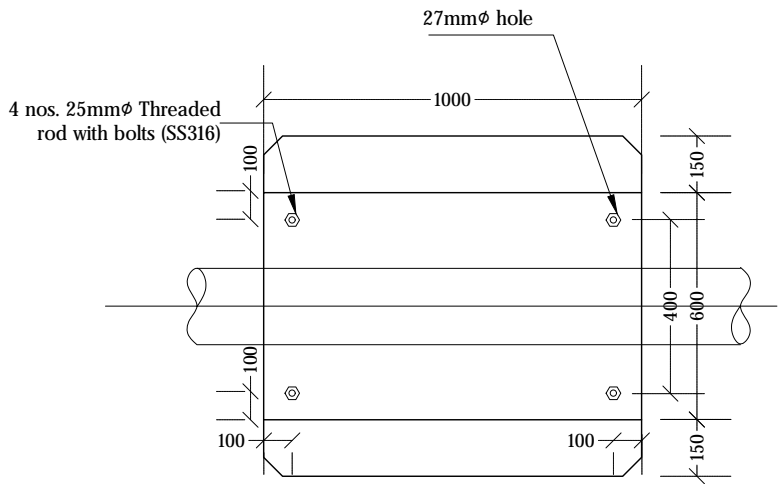
BALLAST BLOCK SIDE ELEVATION



BALLAST BLOCK FRONT ELEVATION



BALLAST BLOCK SECTION



BALLAST BLOCK PLAN

BALLAST BLOCK DETAILS

NTS

Legend

Notes:

1. All backing rings for stub flanges , nuts and bolts shall be grade 316 stainless steel.
2. All pipe work shall be bedded on 10mm thick neoprene rubber seat in semicircular recess matching the O.D. the pipe.
3. Fabricate specific pipe clamps to provide firm clamping action according to pipe O.D.
4. All structural concrete shall be of grade C40A.
5. All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
6. All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
7. A cover of 75mm should be given for all reinforcements.
8. 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.
9. All pipe connections shall be within blocks.

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**

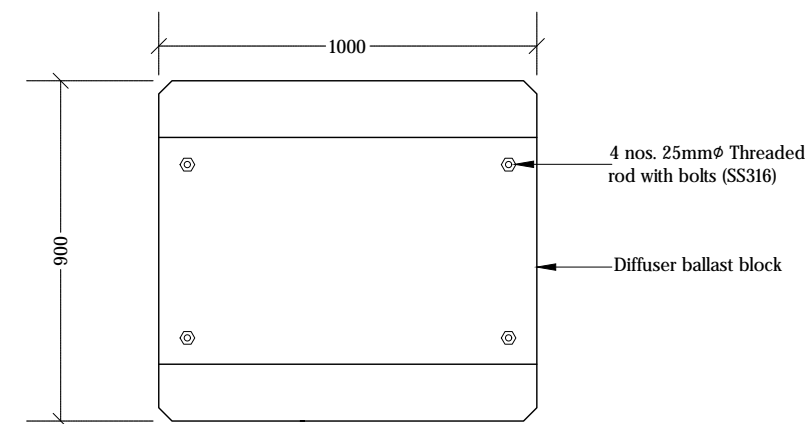
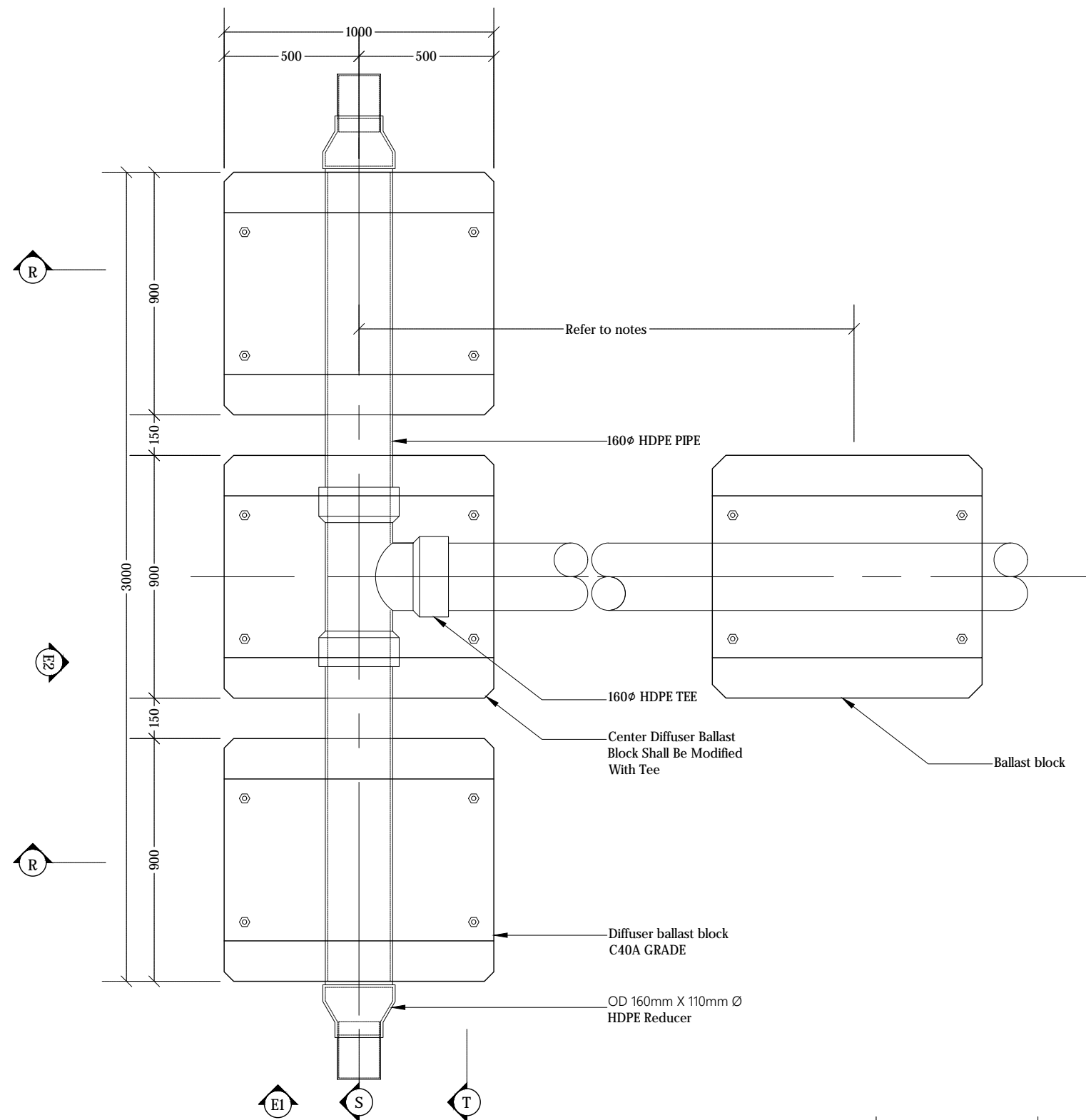
Sub Title:  
**Sewerage System in Adh. Dhidhdhoo**

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

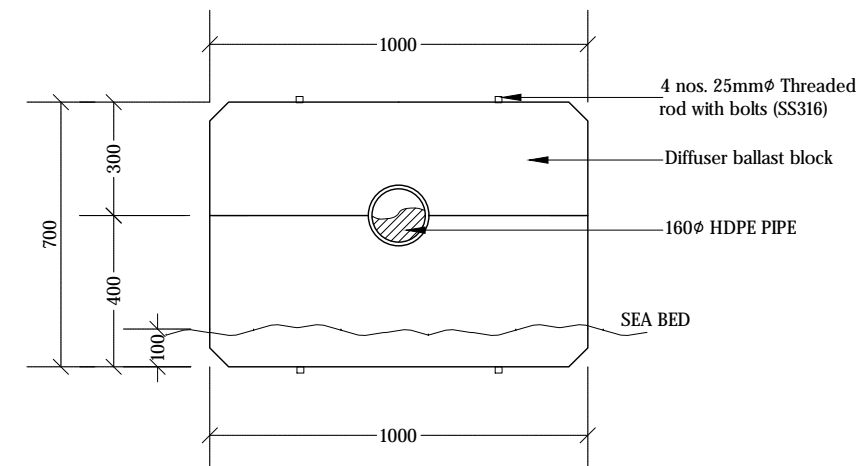
T: +960 333 3528  
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W: www.epochassociates  
A: G. Rosary West, Huseenuena Magu, Male', Maldives

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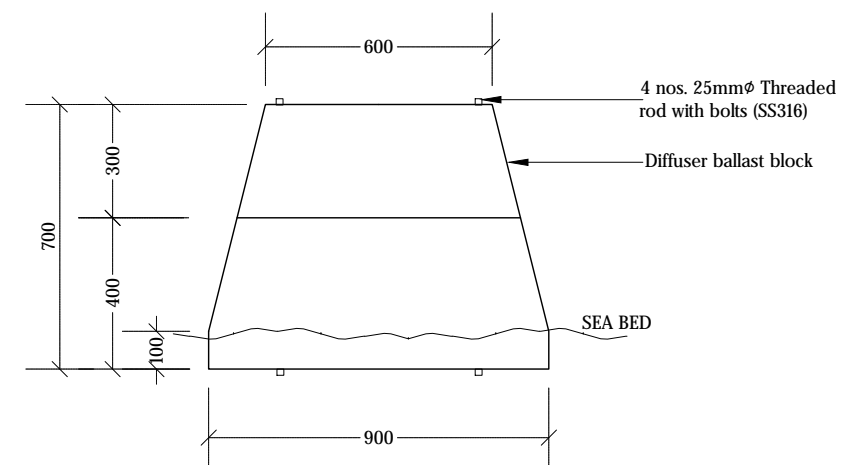
Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS
Project No:	EP-WS/2019/04
Rev:	Page: W-(18)



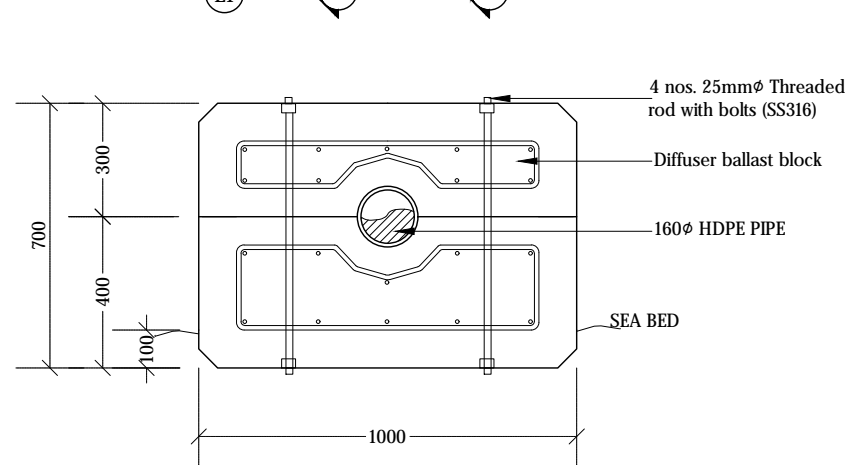
DIFFUSER BALLAST BLOCK PLAN



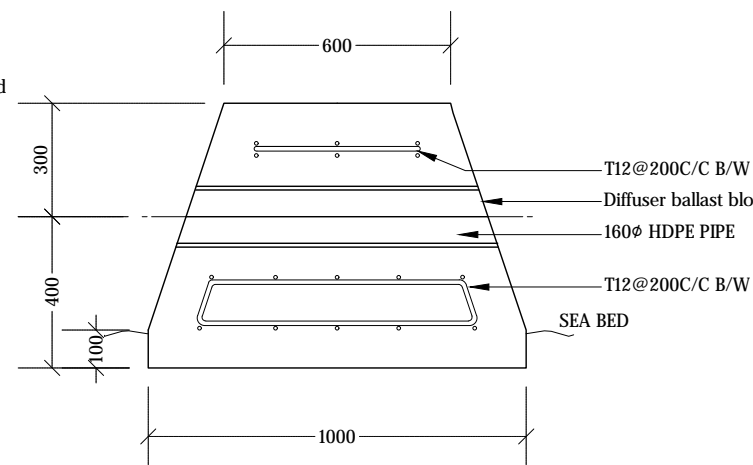
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E1



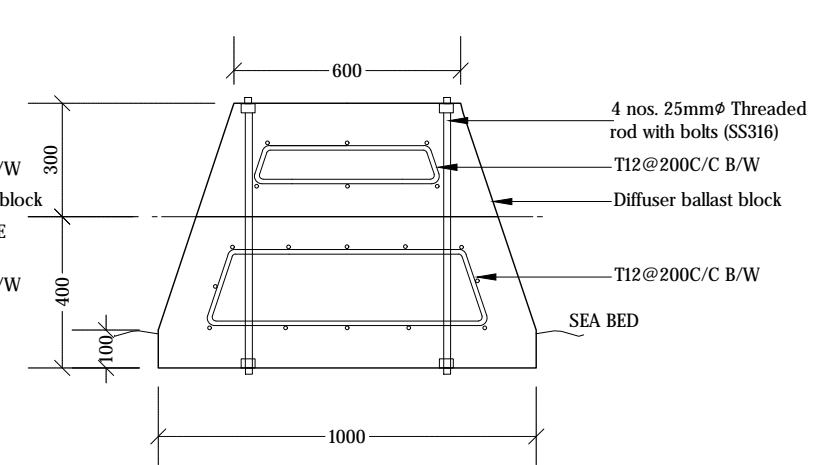
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E2



DIFFUSER BALLAST BLOCK SECTION - R



DIFFUSER BALLAST BLOCK SECTION - S



DIFFUSER BALLAST BLOCK SECTION - T

DIFFUSER DETAILS  
NTS

Legend

Notes:

1. All backing rings for stub flanges, nuts and bolts shall be grade 316 stainless steel.
2. All pipe work shall be bedded on 10mm thick neoprene rubber seat in semicircular recess matching the O.D. the pipe.
3. Fabricate specific pipe clamps to provide firm clamping action according to pipe O.D.
4. All structural concrete shall be of grade C40A.
5. All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
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7. A cover of 75mm should be given for all reinforcements.
8. 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.

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**

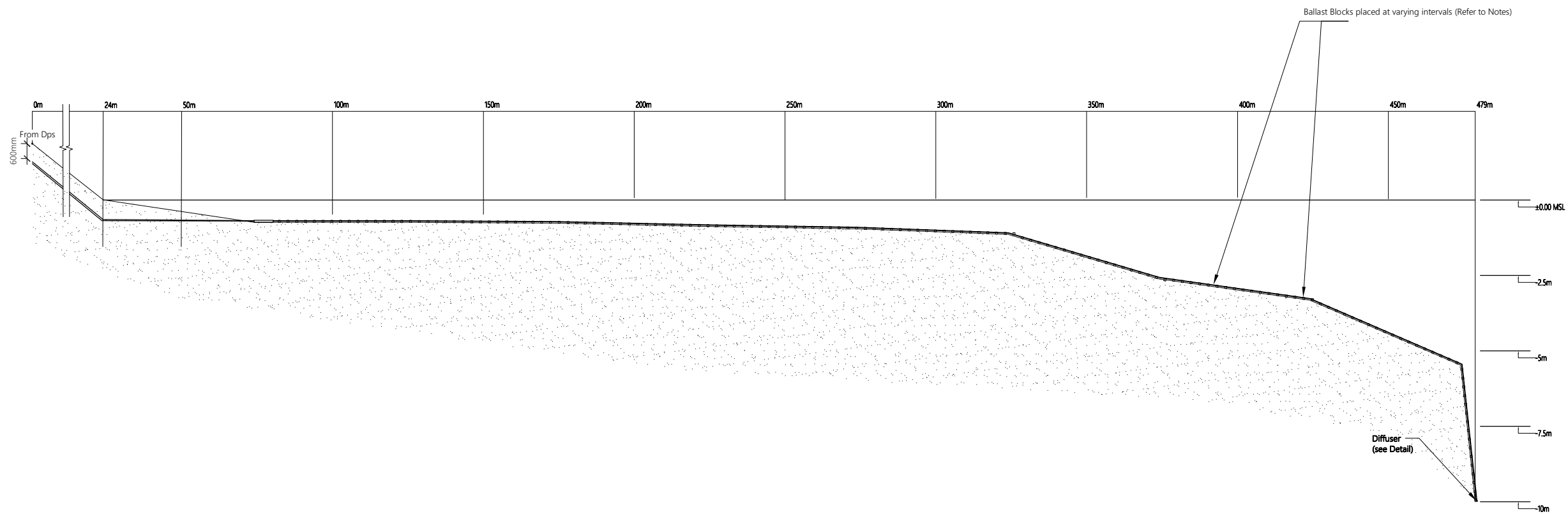
Sub Title:  
**Sewerage System in Adh. Dhidhdhoo**

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

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**INFRA**  
Working with you to make it 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	
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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:  
**Sewerage System in ADh. Dhidhdhoo**

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



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:	Page:

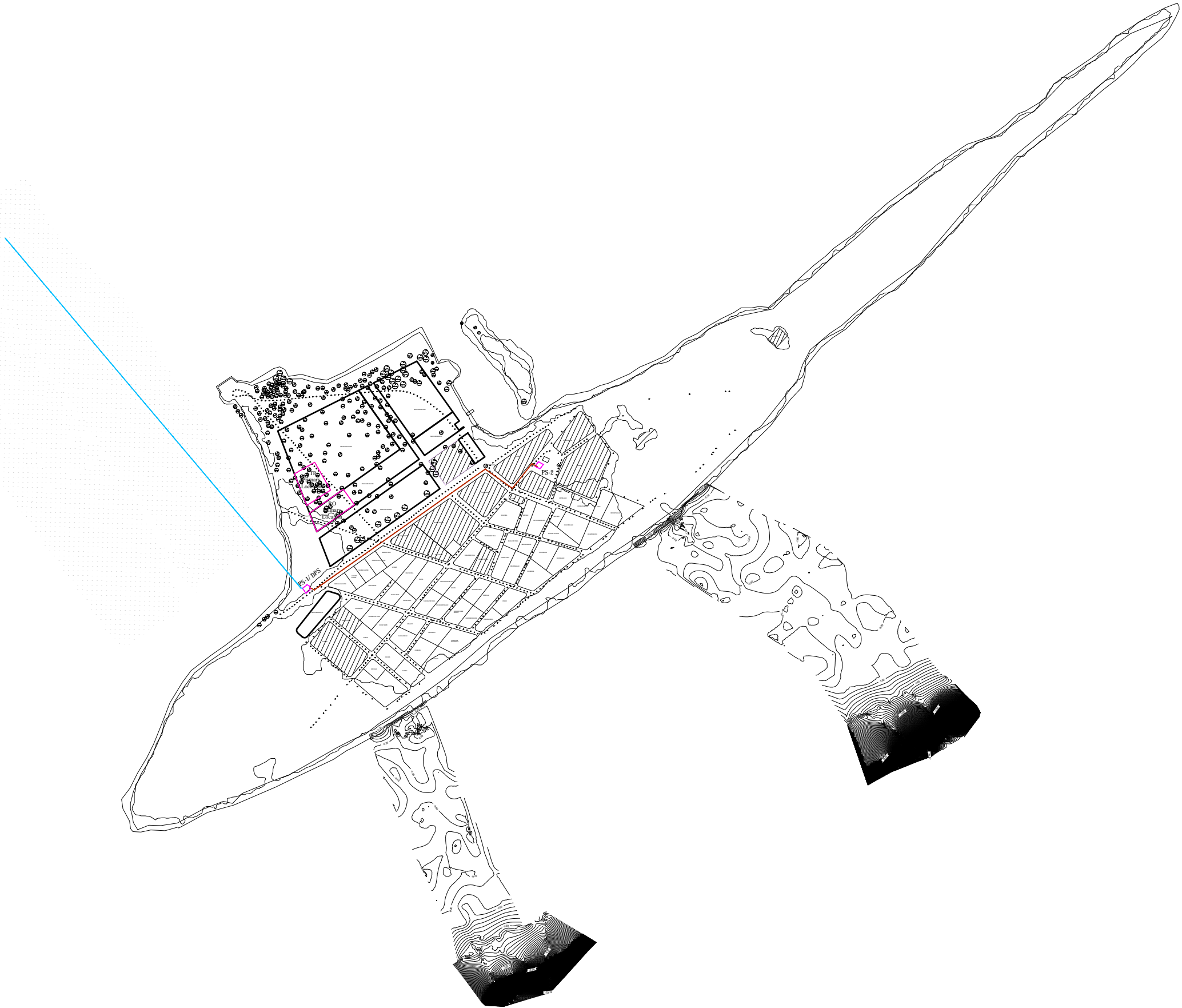
Rev: \_\_\_\_\_ Page: **W-(20)**

## TYPICAL SEA OUTFALL DETAILS

NTS



ADH. DHIDHDHOO SEWERAGE SYSTEM - PRESSURE NETWORK LAYOUT  
1:4500



Legend

Notes: Notes:

- THE CONSULTANT TO UNDERTAKE A DETAILED INSPECTION OF THE EXISTING PROFILE TO ASSESS THE PROBLEM OF CONGESTION AND TO THE RECOMMENDATION OF THE PROPOSED METHOD OF INSTALLATION AND FIXING, IN SHALLOW WATER (REGIONS WHERE THE DEPTH IS LESS THAN 3.5m. IN DEPTH GREATER THAN 3.5m, THE BALLAST BLOCK SPACING SHALL BE 2.0m. IN DEPTH GREATER THAN 3.5m, THE BALLAST BLOCK SPACING IS 2.0m. ALL DISTANCES ARE FROM C/C OF BLOCKS.

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:  
Consultancy Services for Survey,  
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7 islands, Maldives - Package 4

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Drawn: F.I.A. Checked: M.S.S.

Designed: F.I.A. Approved: I.W.

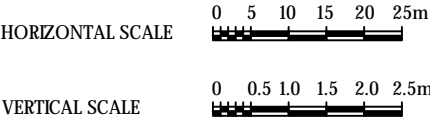
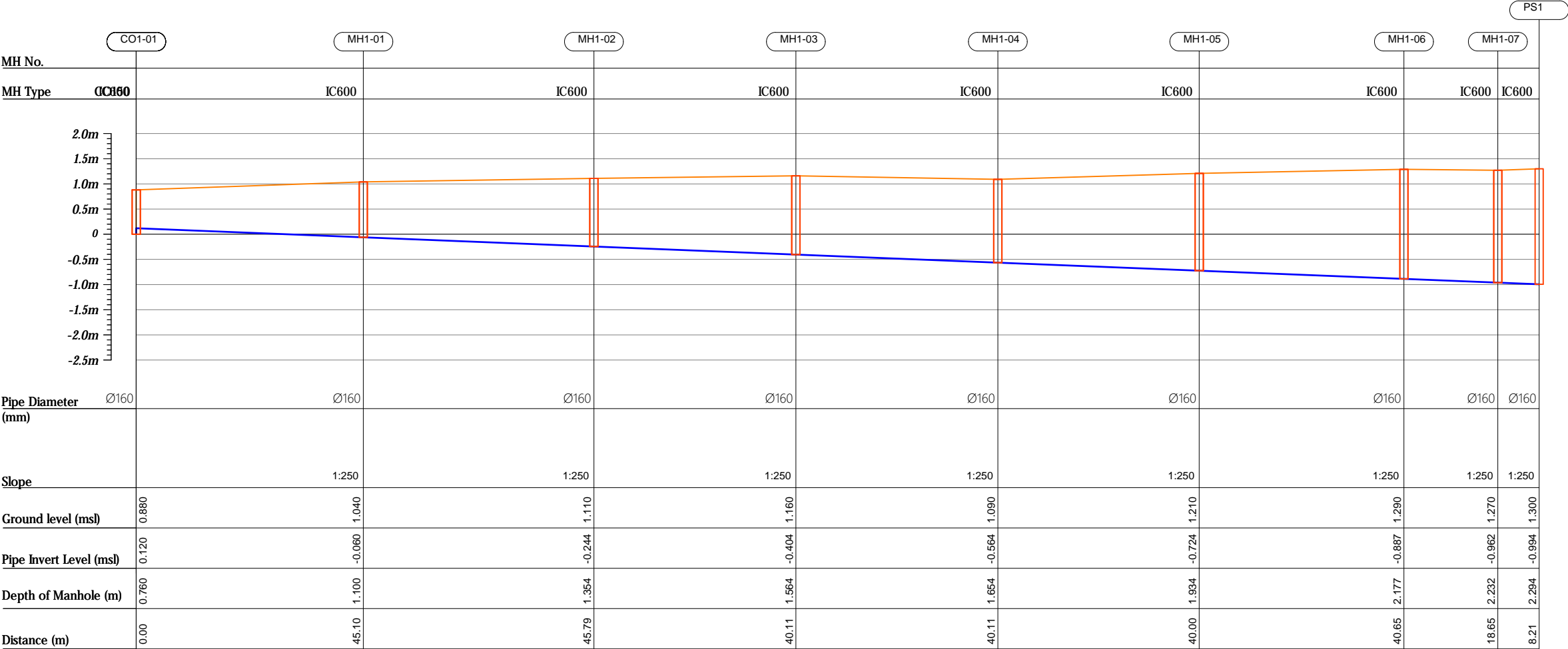
Date: Sep 2020 SCALE (A3): 1:4500

Project No: EP-WS/2019/04

Rev: Page: W-(21)



Profile 01



CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
PS — Pump Station

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

Title:  
Consultancy Services for Survey,  
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7 islands, Maldives - Package 4

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Drawn: A.R. Checked: M.S.S.

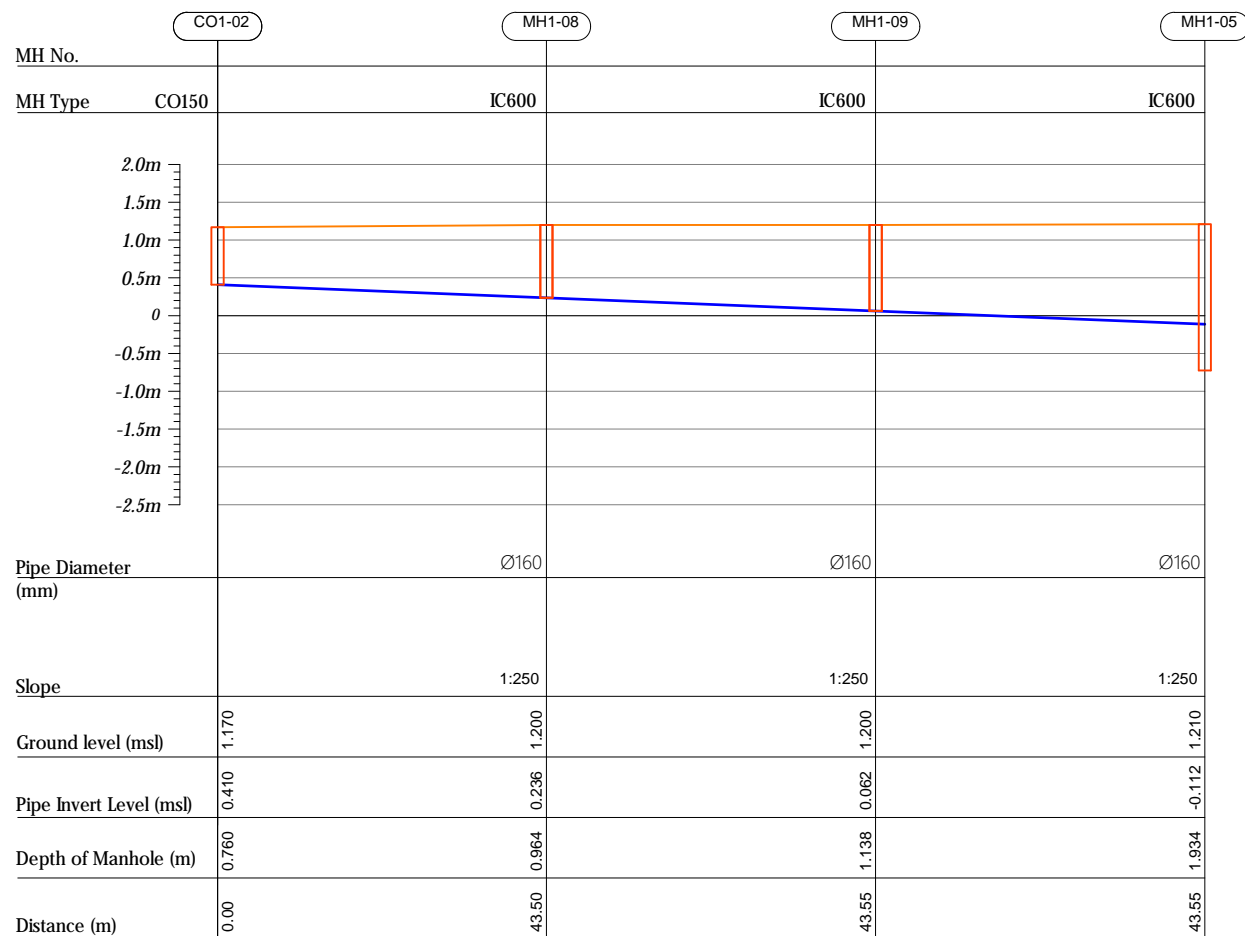
Designed: F.L.A. Approved: L.W.

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

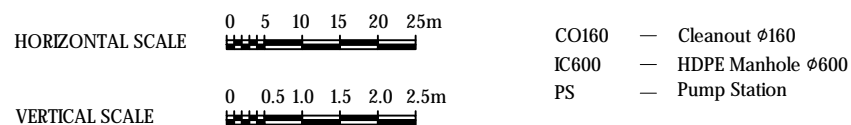
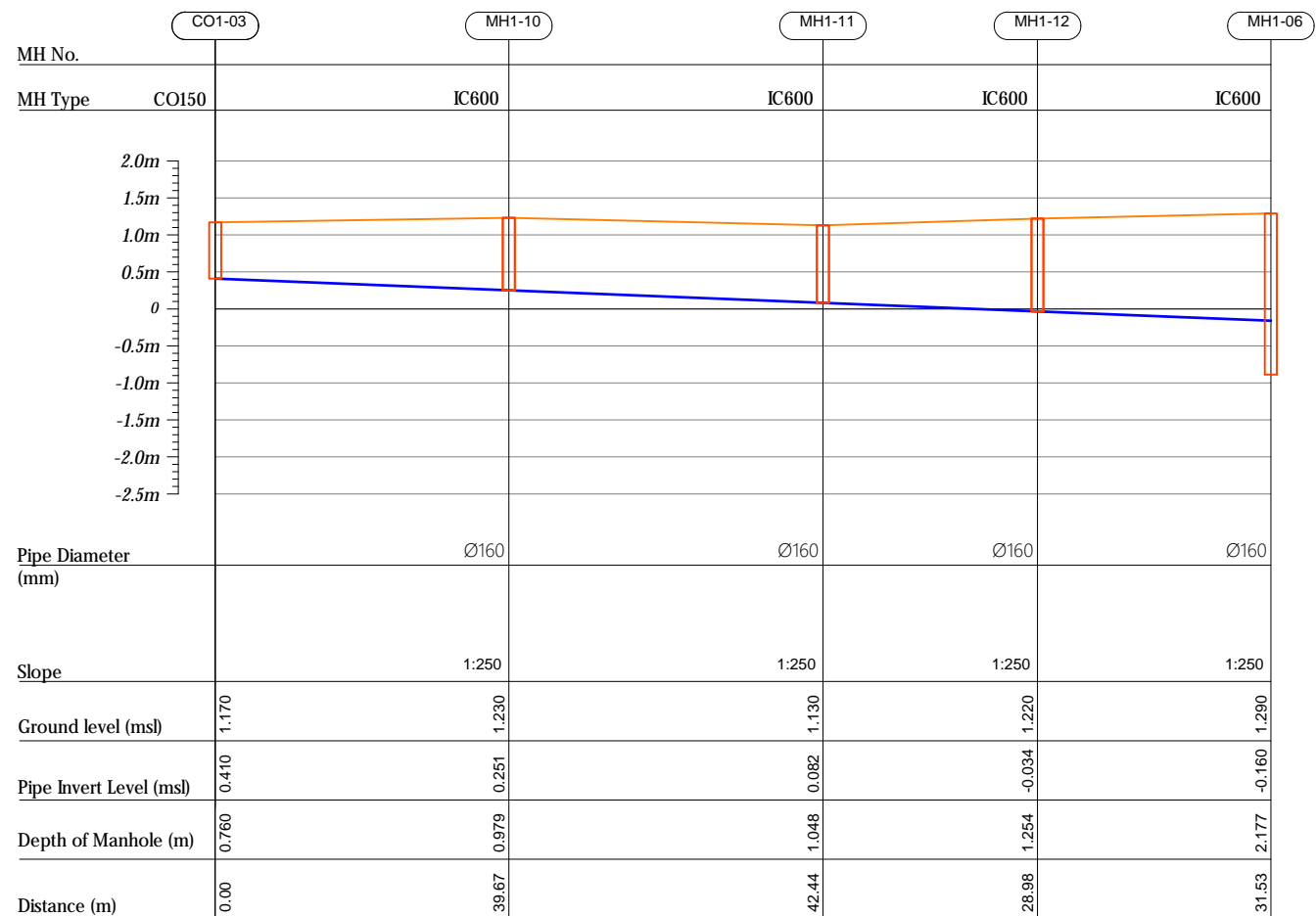
Project No: EP-WS/2019/04

Rev: R-01 Page: PS1-01

## Profile 02



### Profile 03



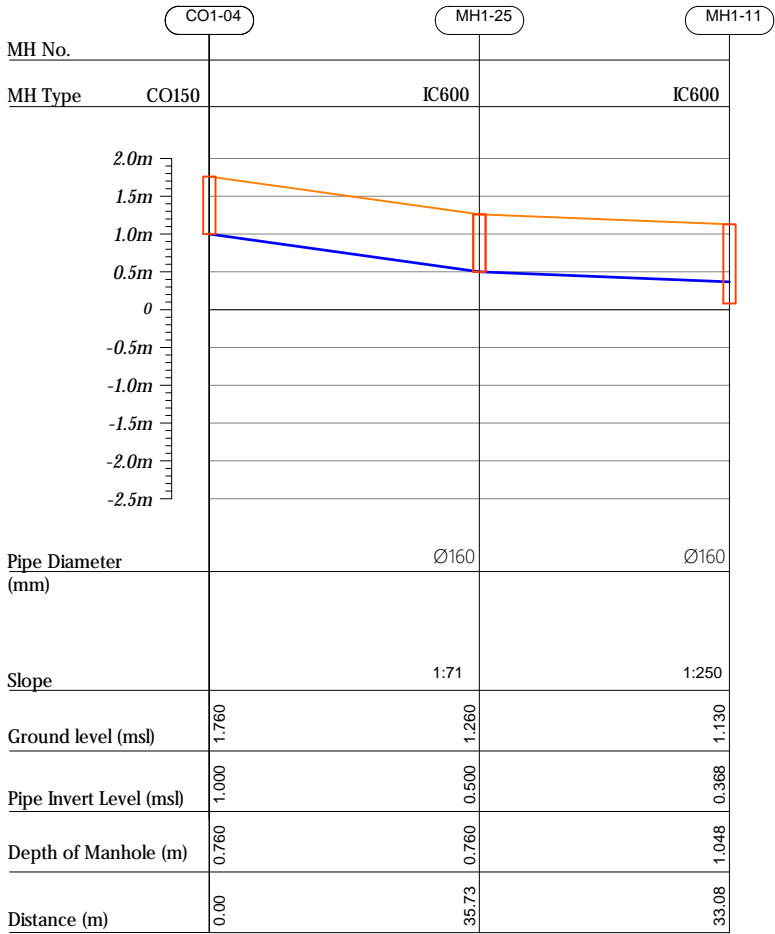
R00	JUNE 2020	STAGE -1	PD	SBC	SD
REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

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

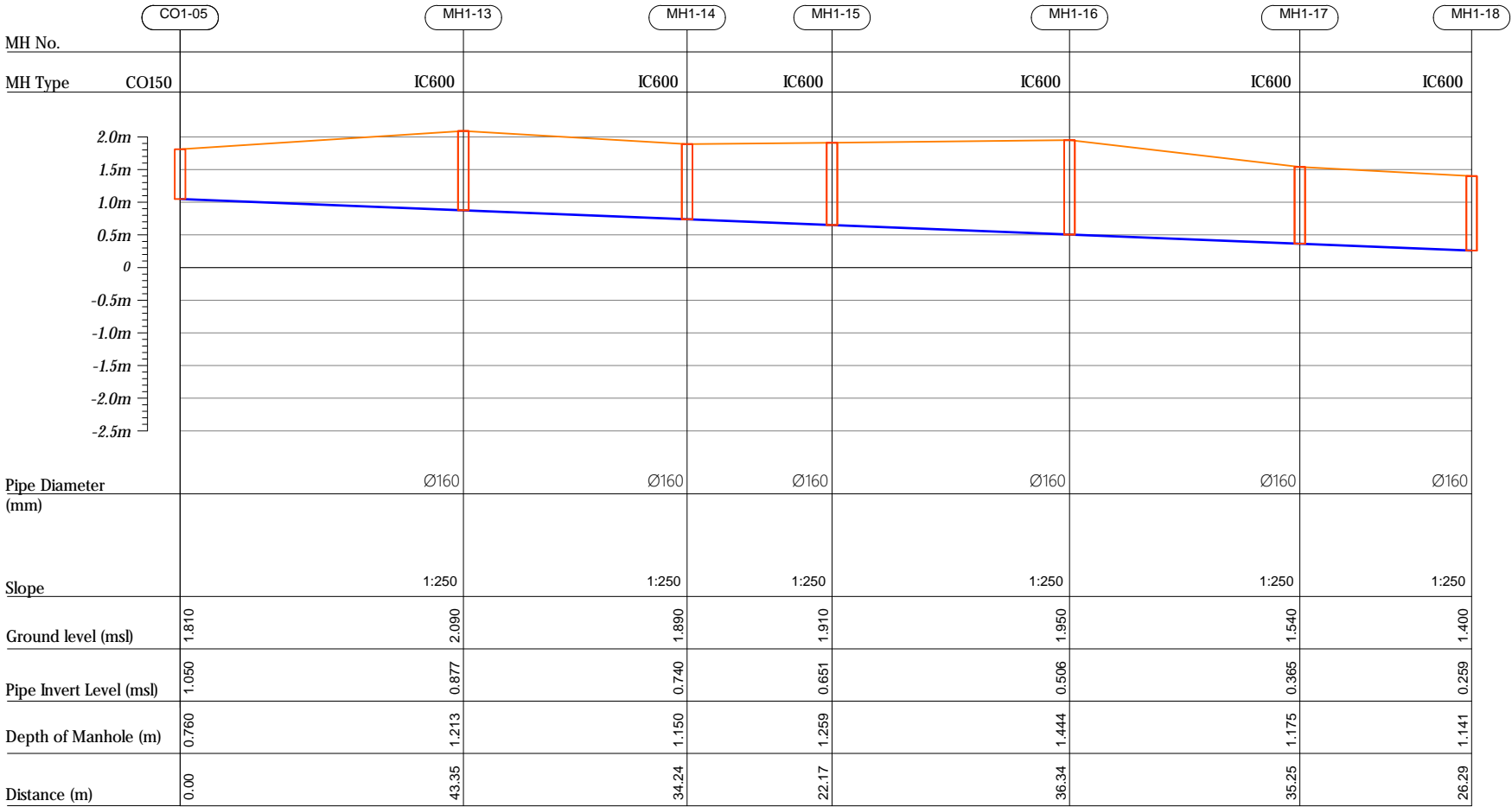
Sub Title:  
*Sewerage System in Adh.Dhihdhoo*

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

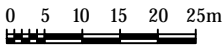
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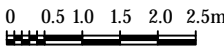
Profile 05



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160
- IC600 — HDPE Manhole Ø600
- PS — Pump Station

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

Title:  
Consultancy Services for Survey,  
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Supply and Sewerage Facilities in  
7 islands, Maldives - Package 4

Sub Title:  
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Client:  
Ministry of National Planning, Housing and  
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Drawn: A.R Checked: M.S.S

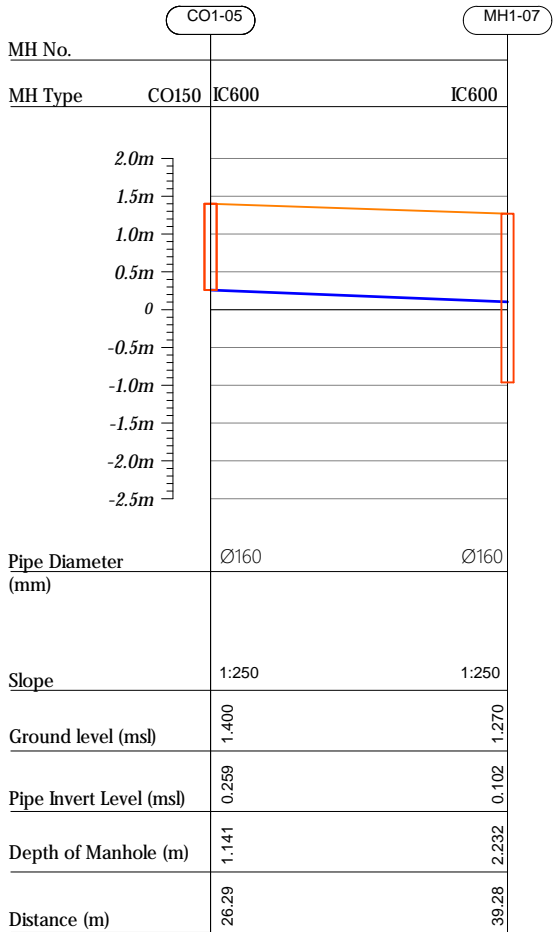
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Date: Sep 2020 SCALE (A3): 1:100

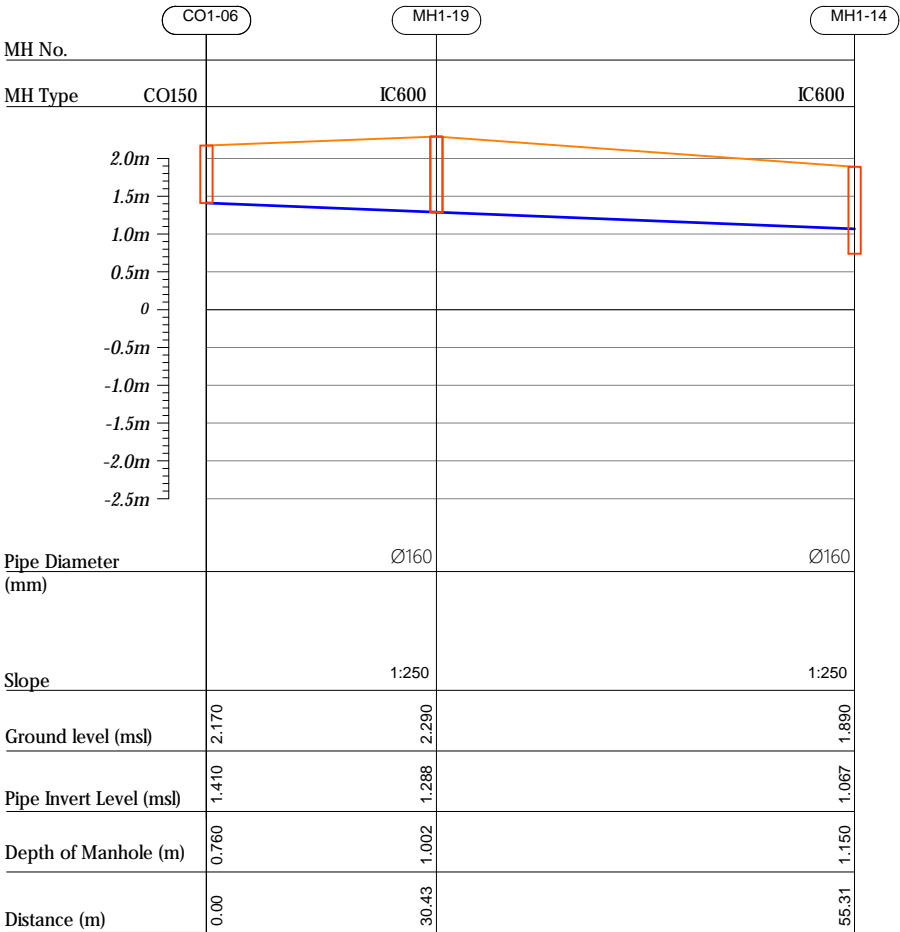
Project No: EP-WS/2019/04

Rev: R-01 Page: PS1-03

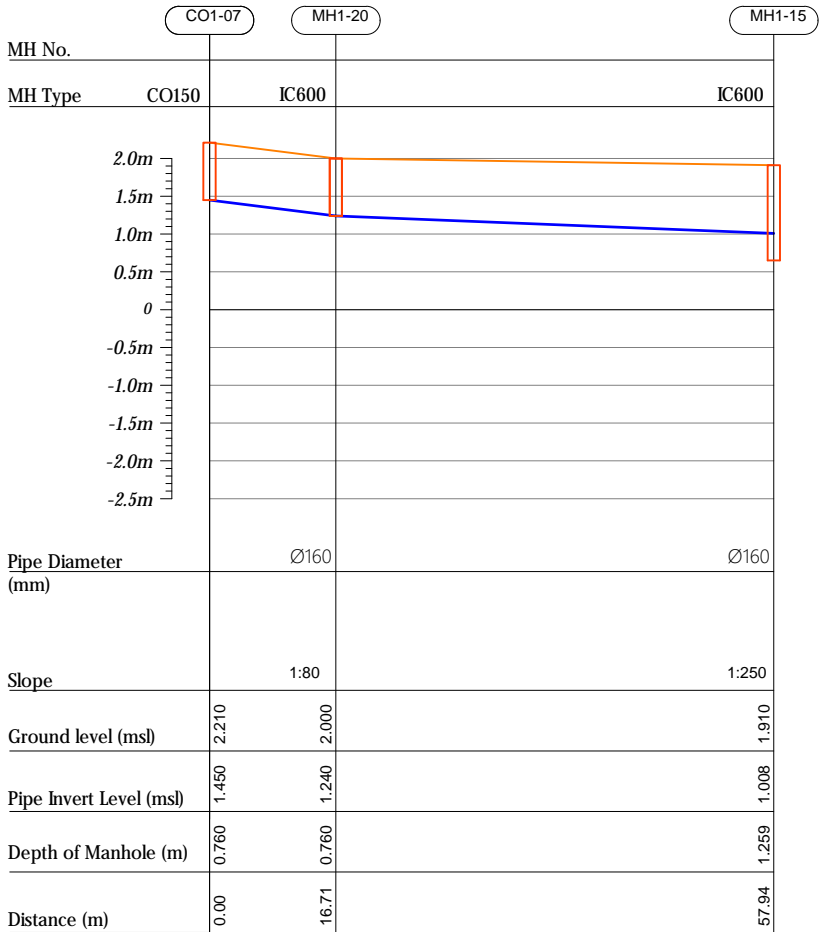
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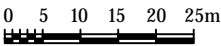
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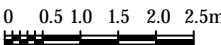
Profile 07



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160
- IC600 — HDPE Manhole Ø600
- PS — Pump Station

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

Title:  
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Husnuheemaa Magu, Male', Maldives



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Drawn: A.R Checked: M.S.S

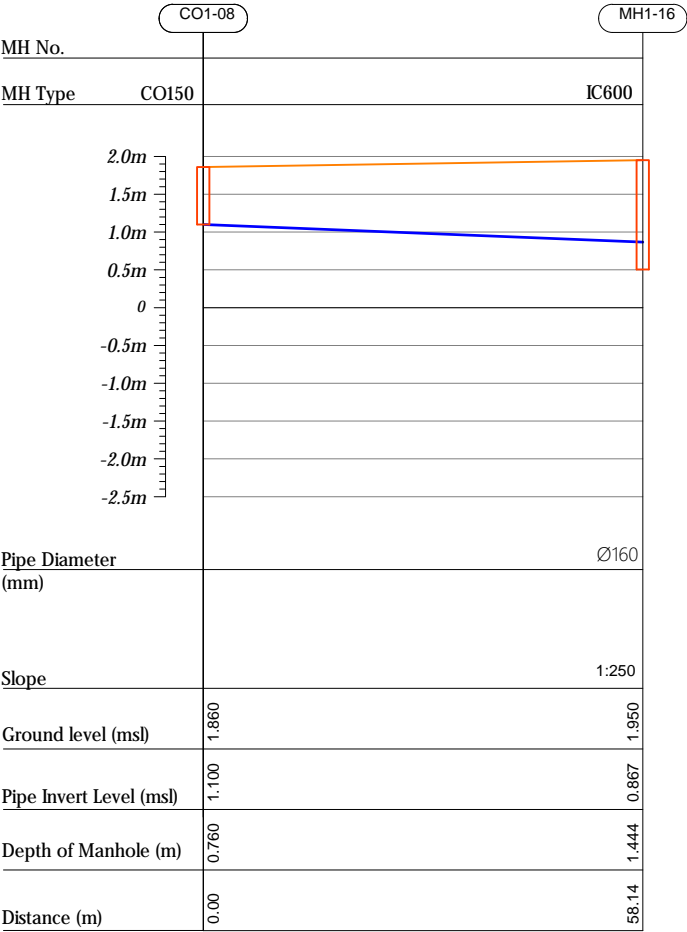
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Date: Sep 2020 SCALE (AS): 1:100

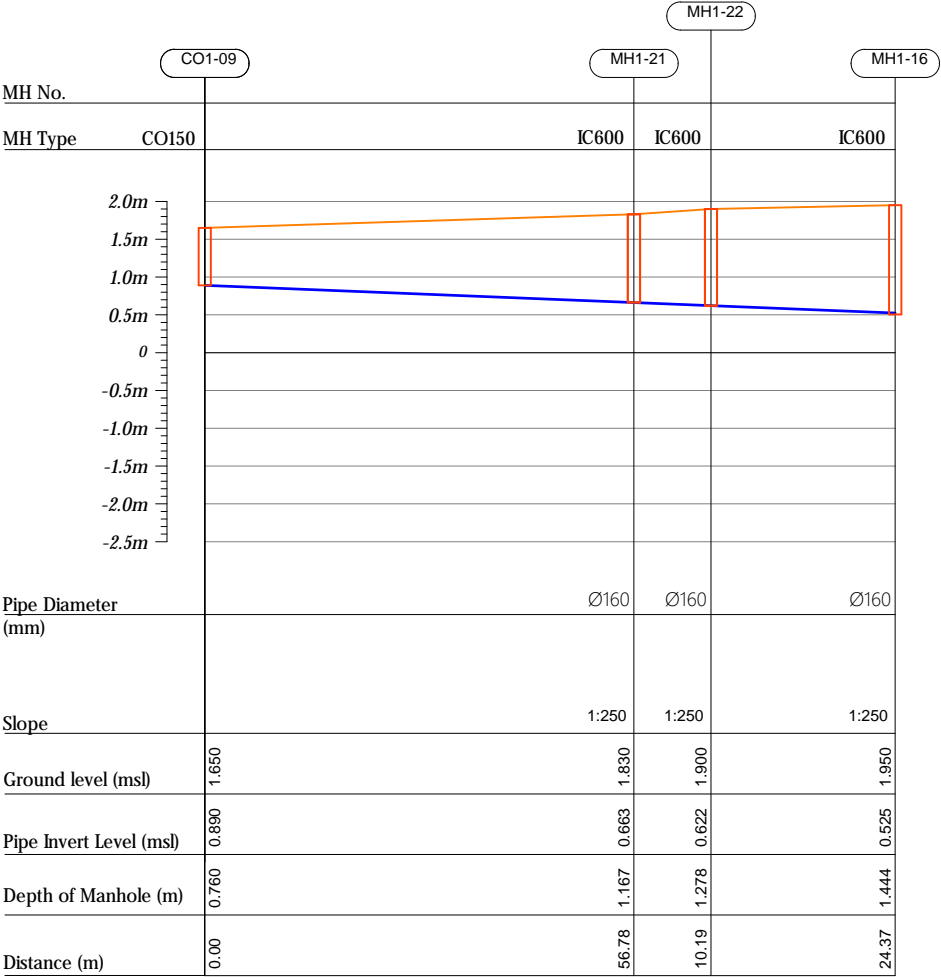
Project No: EP-WS/2019/04

Rev: R-01 Page: PS1-04

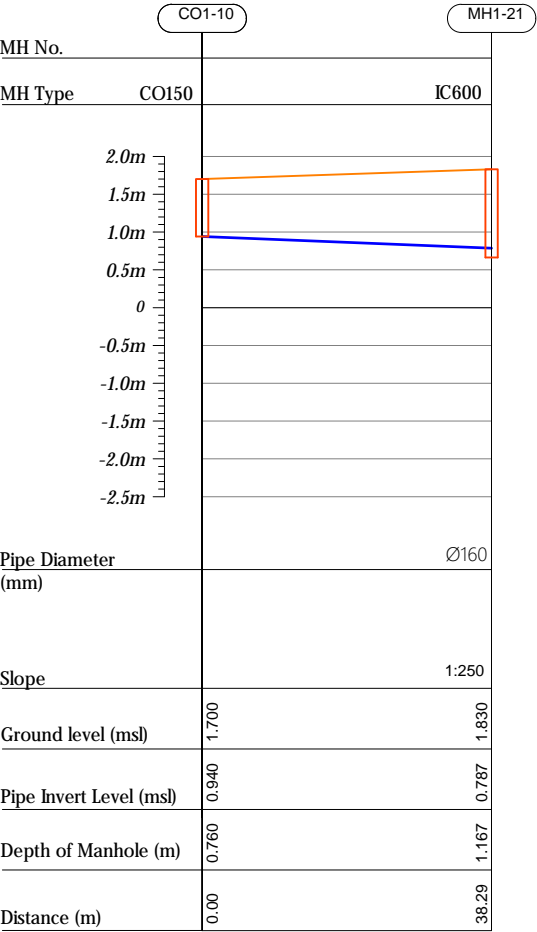
Profile 08



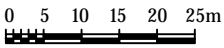
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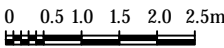
Profile 10



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160
- IC600 — HDPE Manhole Ø600
- PS — Pump Station

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

Title:  
Consultancy Services for Survey,  
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Sub Title:  
Sewerage System in Adh.Dhihdhoo

Client:  
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Hussuvehemaa Magu, Male', Maldives

DBAC INFRA  
Maldivuq Infrastructure Developm

Drawn: A.R Checked: M.S.S

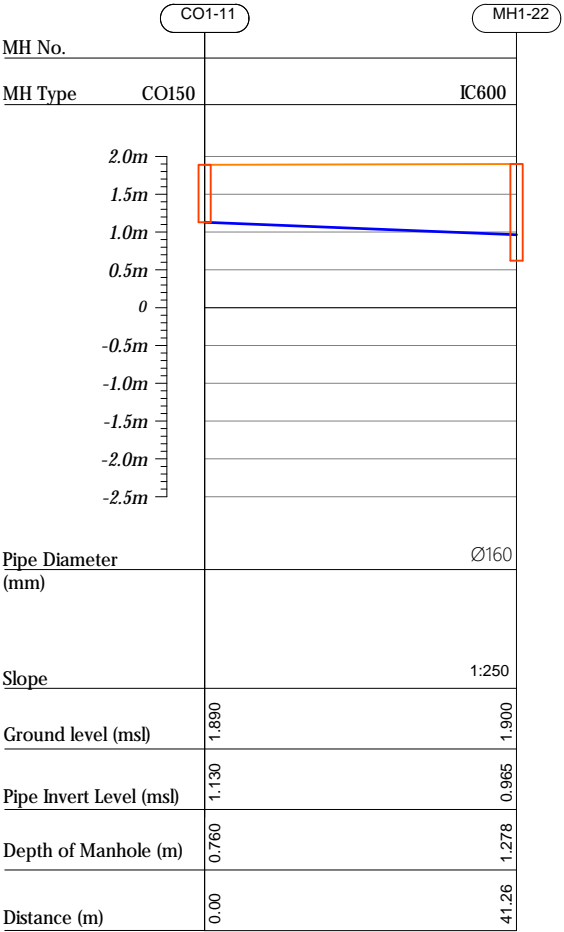
Designed: F.L.A Approved: LW

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

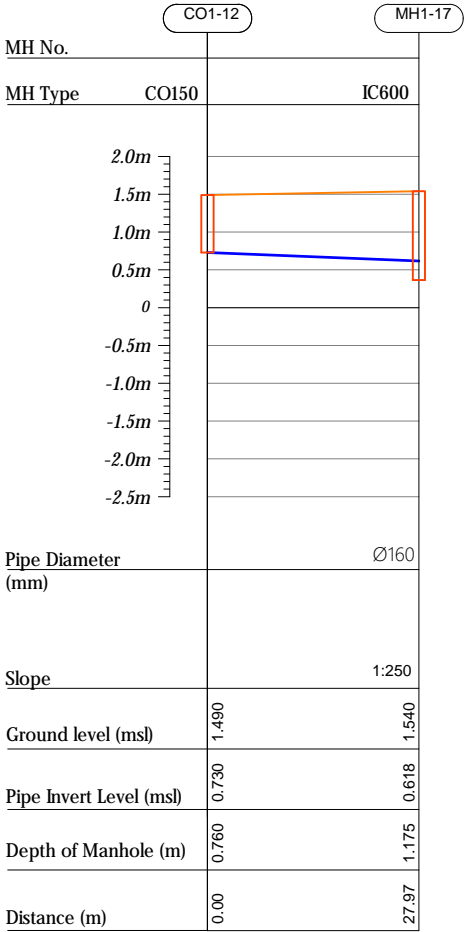
Project No: EP-WS/2019/04

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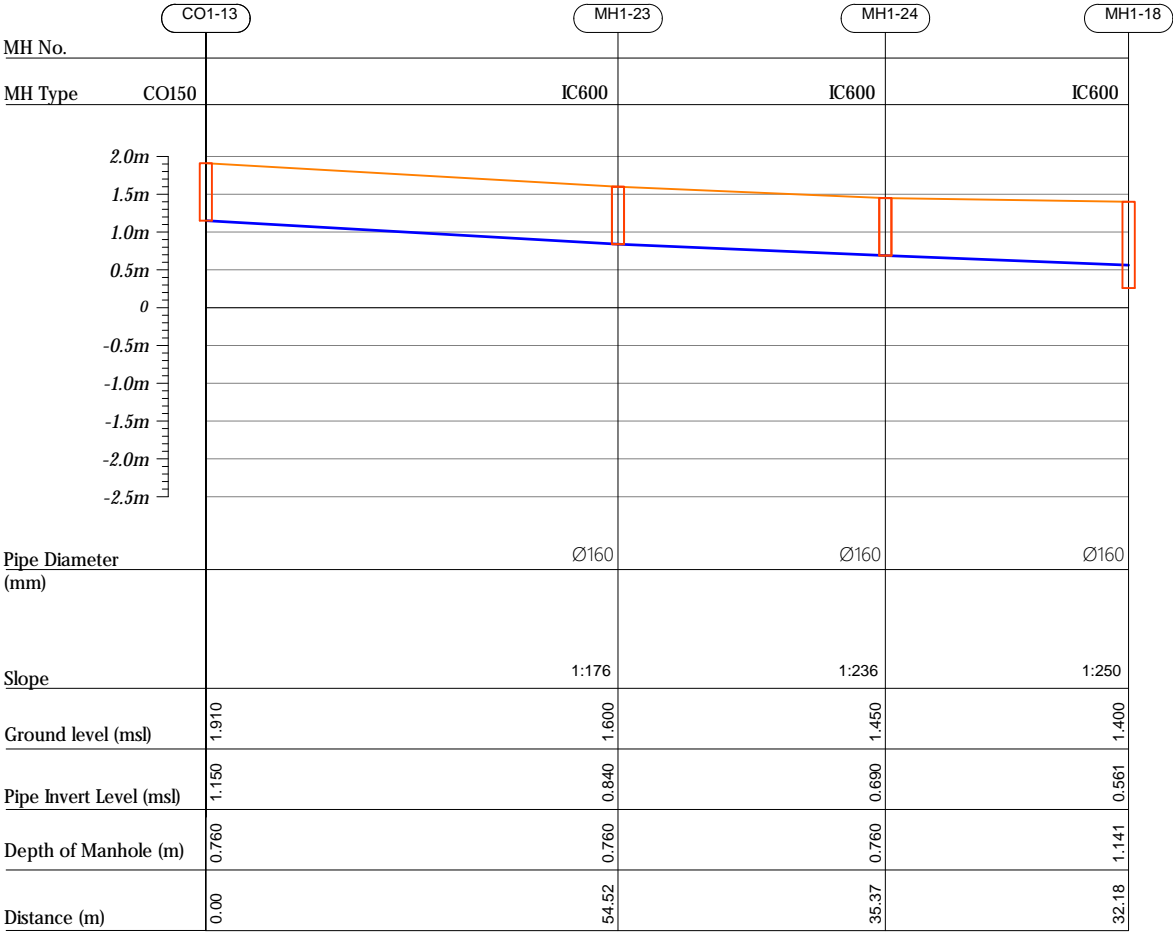
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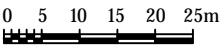
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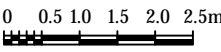
Profile 13



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160
- IC600 — HDPE Manhole Ø600
- PS — Pump Station

R00	JUNE 2020	STAGE -I	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:  
Sewerage System in Adh.Dhihdhoo

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



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

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Maldivu Infrastructure Develop

Drawn: A.R Checked: M.S.S

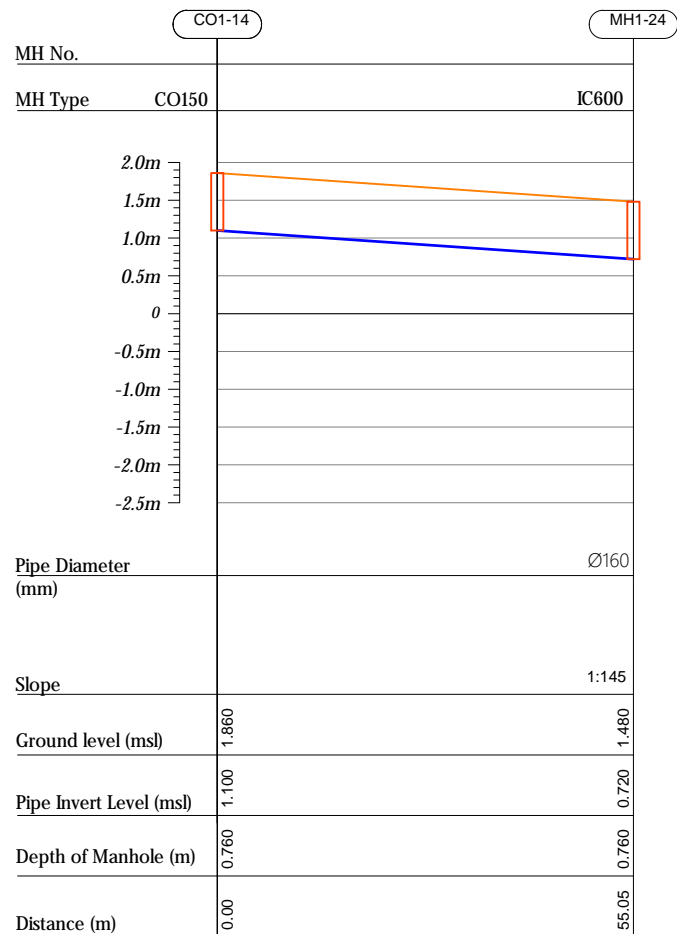
Designed: F.L.A Approved: L.W

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

Project No: EP-WS/2019/04

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## Profile 14



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

**Title:**  
*Consultancy Services for Survey,  
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7 islands, Maldives - Package 4*

Sub Title:  
*Sewerage System in Adh.Dhihdhoo*

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

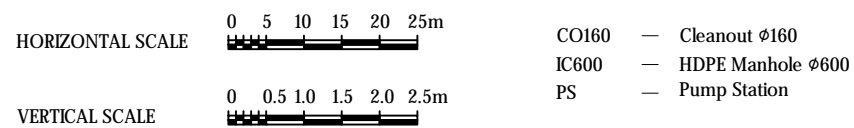
**EPOCH ASSOCIATES**  
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 Hursutheenaa Magu, Male', Maldives

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

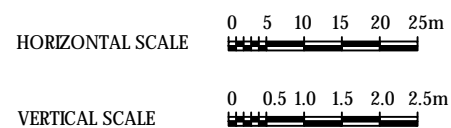
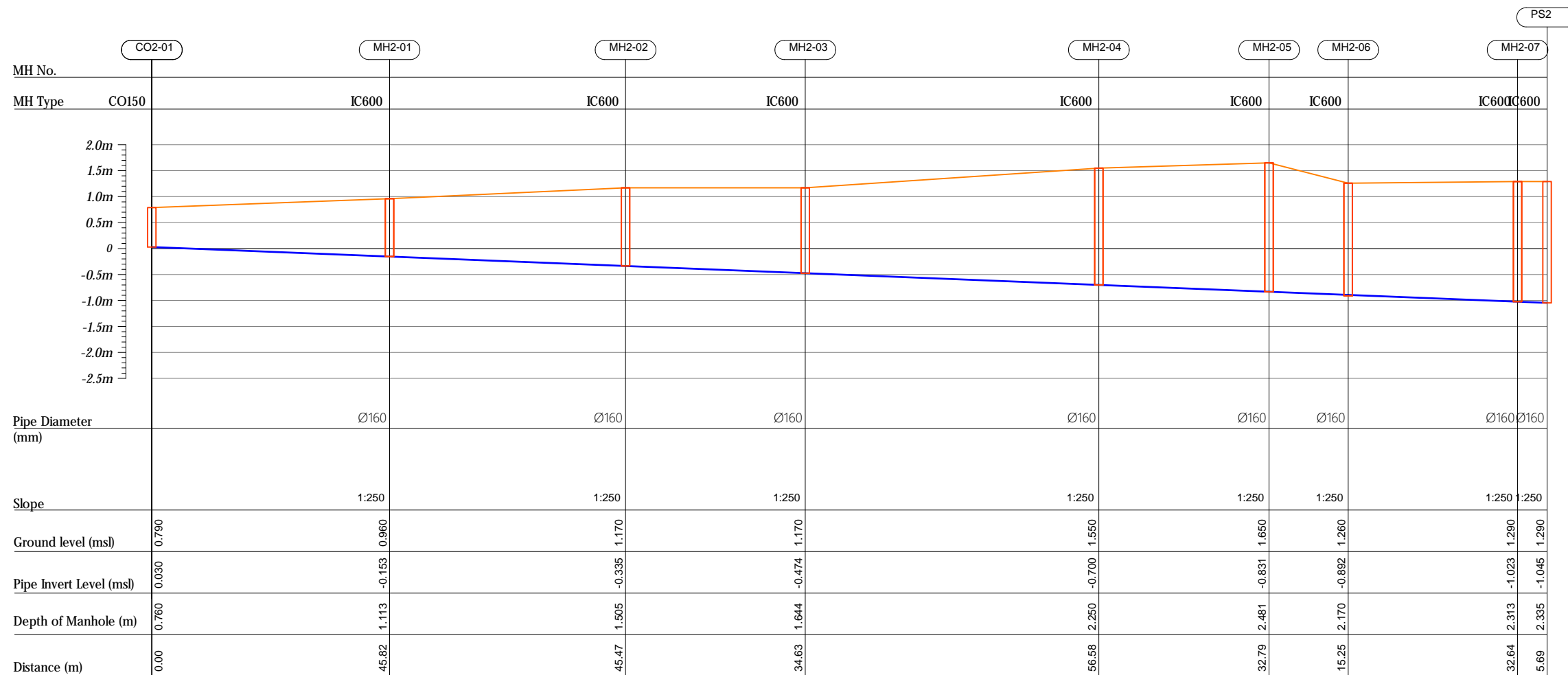
Project No: EP-WS/2019/04

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## Profile 01



CO160	—	Cleanout $\phi 160$
IC600	—	HDPE Manhole $\phi 600$
PS	—	Pump Station

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

Title:  
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Sub Title:  
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Husnuheena Magu, Male', Maldives

**FEEDBACK INFRA**  
Making Infrastructure Happen

Drawn: A.R	Checked: M.S.S
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Designed: F.L.A	Approved: LW
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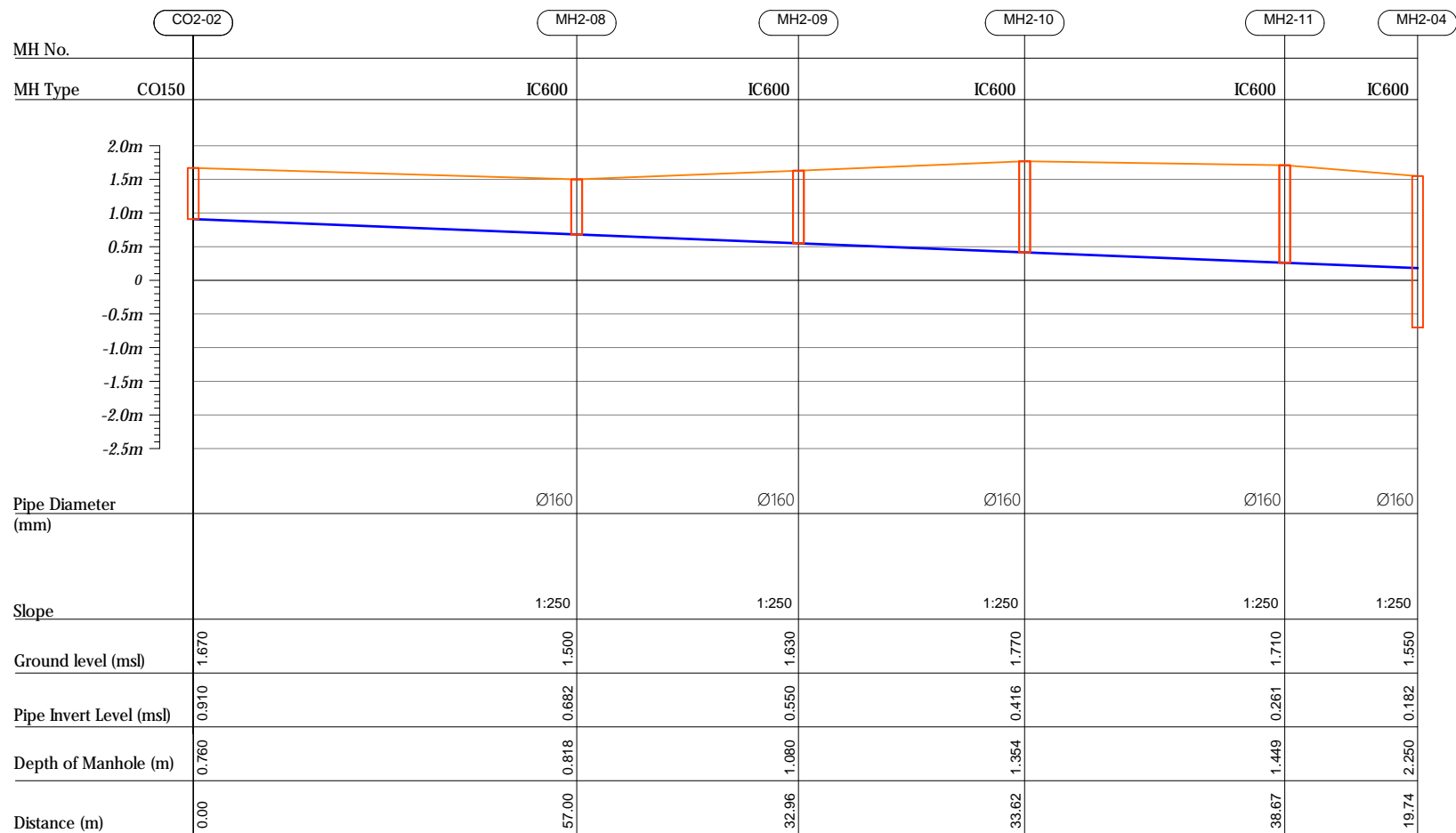
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Project No:	EP-WS/2019/04
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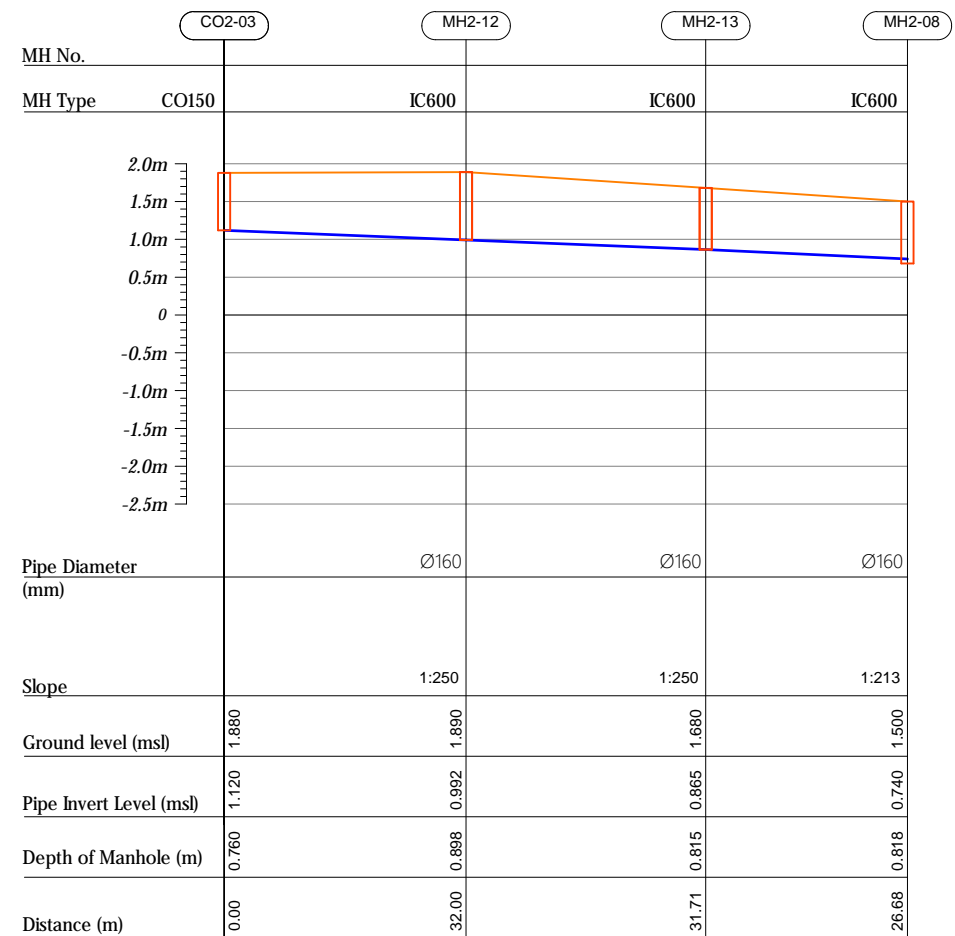
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## Profile 02



### Profile 03



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

**Title:**  
*Consultancy Services for Survey,  
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7 islands, Maldives - Package 4*

Sub Title:  
*Sewerage System in Adh.Dhihdhoo*

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



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

**FEEDBACK INFRA**  
Making Infrastructure Happen

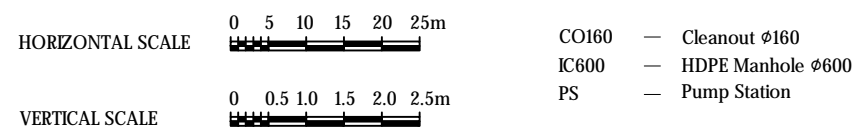
Drawn: A.R	Checked: M.S.S
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Designed: F.I.A	Approved: LW
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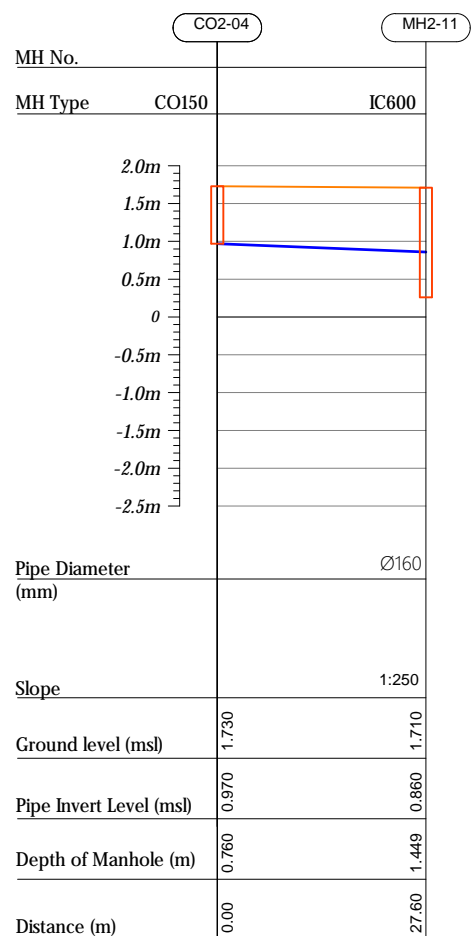
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Project No: EP-WS/2019/04

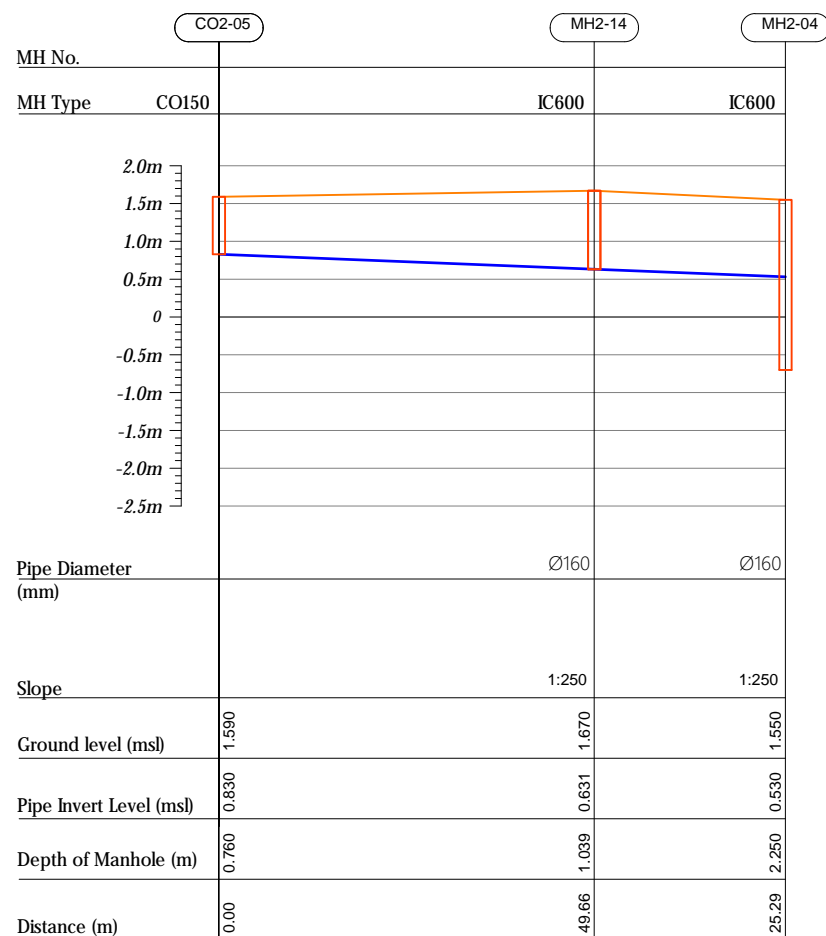
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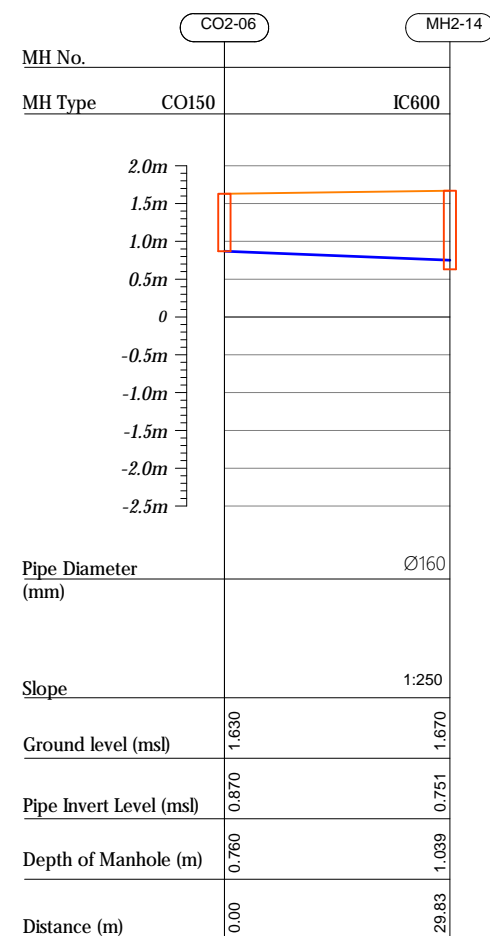
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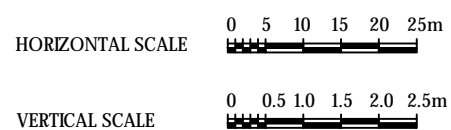
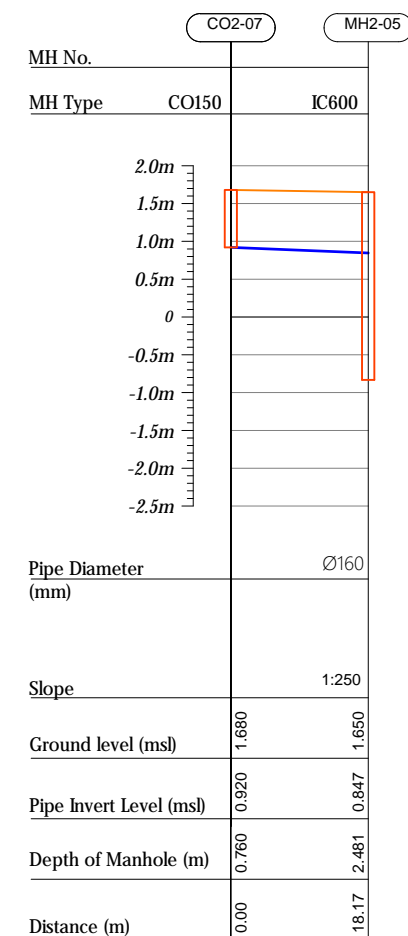
## Profile 05



## Profile 06



## Profile 07



CO160	—	Cleanout $\phi 160$
IC600	—	HDPE Manhole $\phi 600$
PS	—	Pump Station

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

Title:  
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Sub Title:  
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Husnuheena Magu, Male', Maldives



Drawn: A.R	Checked: M.S.S
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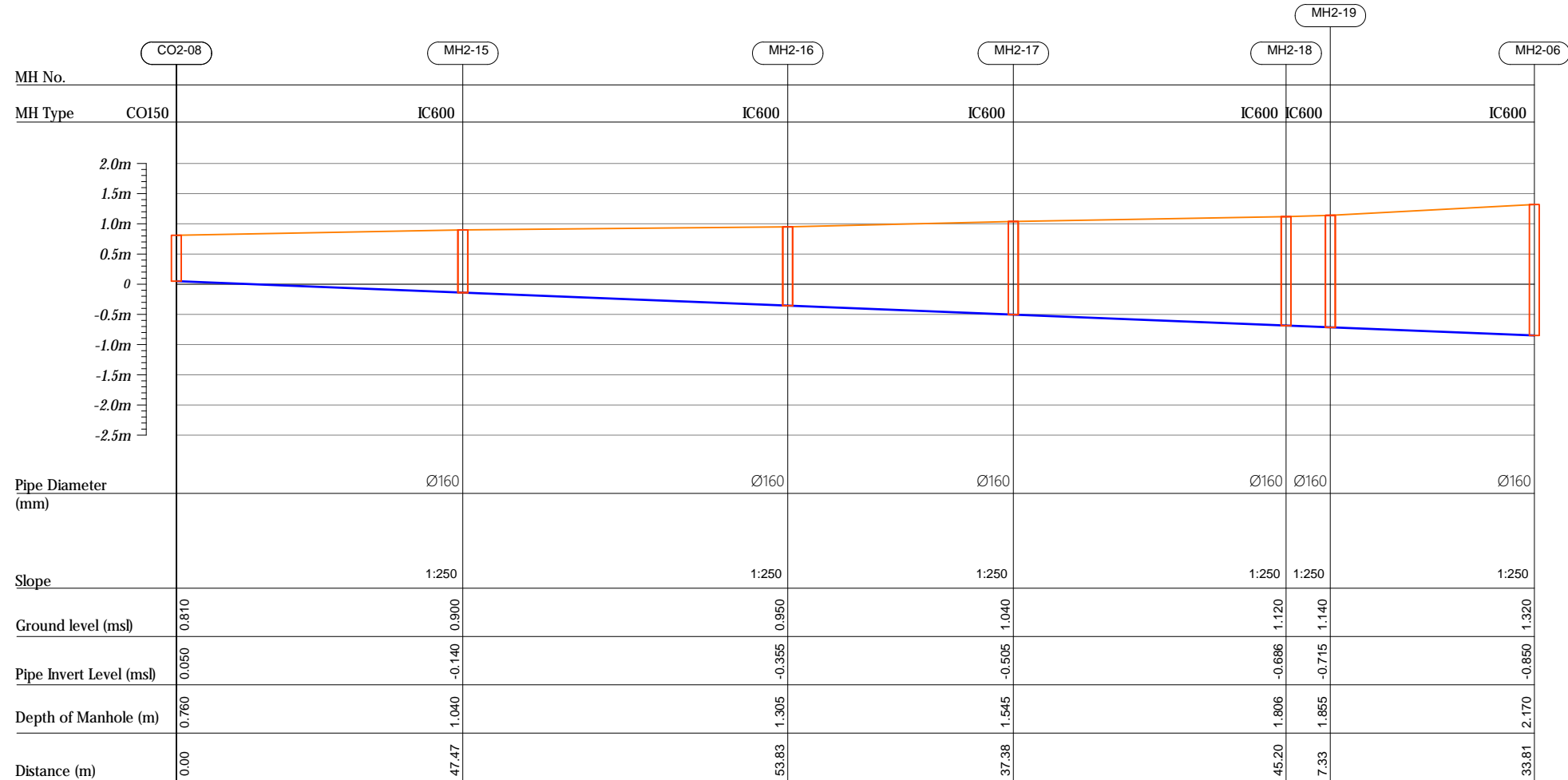
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Date: Sep 2020	SCALE (A3): 1:100
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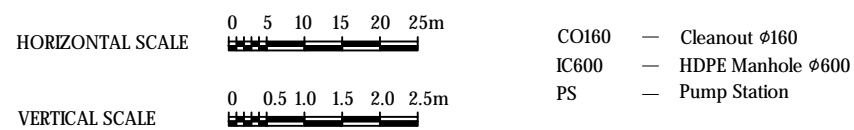
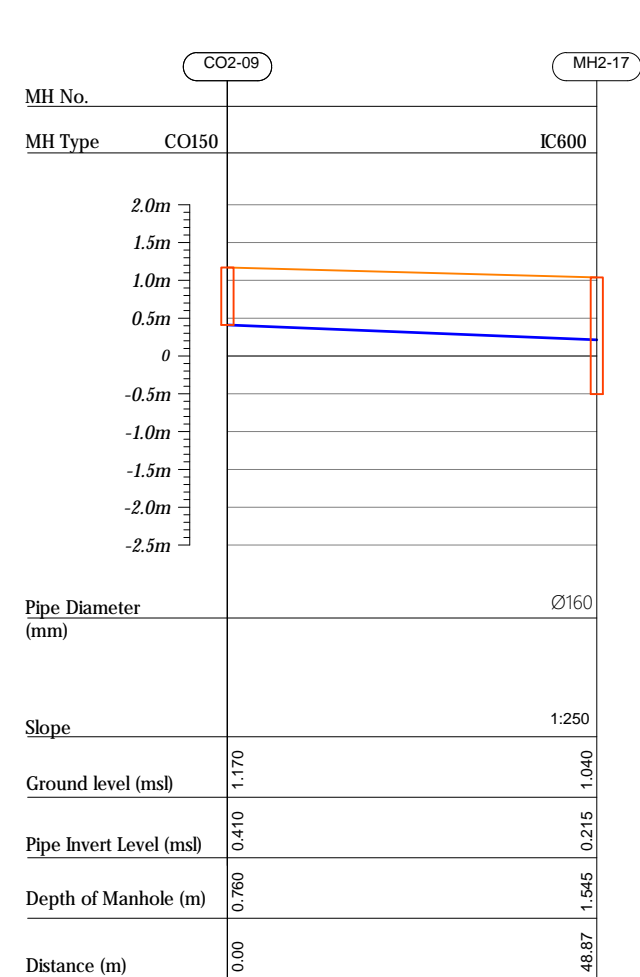
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## Profile 08



## Profile 09



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  
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7 islands, Maldives - Package 4*

Sub Title:  
*Sewerage System in Adh.Dhihdhoo*

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



Drawn: A.R	Checked: M.S.S
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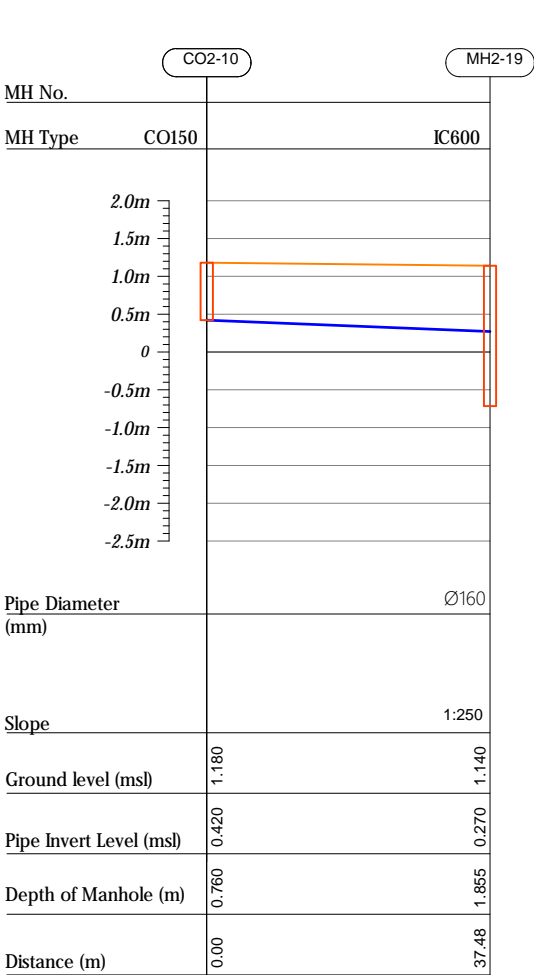
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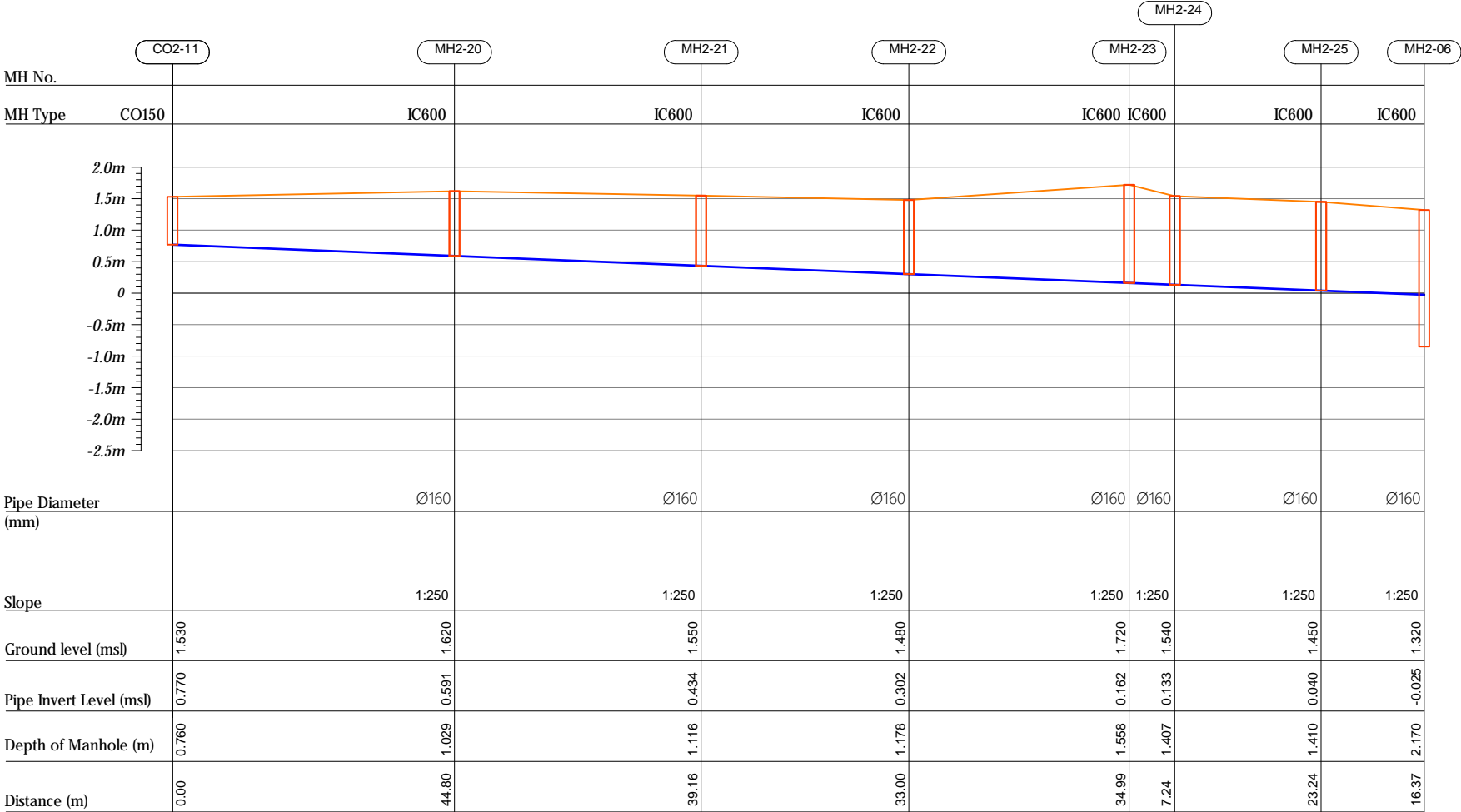
Project No: EP-WS/2019/04

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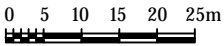
Profile 10



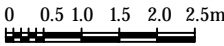
Profile 11



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
PS — Pump Station

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

Title:  
Consultancy Services for Survey,  
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Hussuhenias Magu, Male', Maldives

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Maldivu Infrastructure Develop

Drawn: A.R Checked: M.S.S

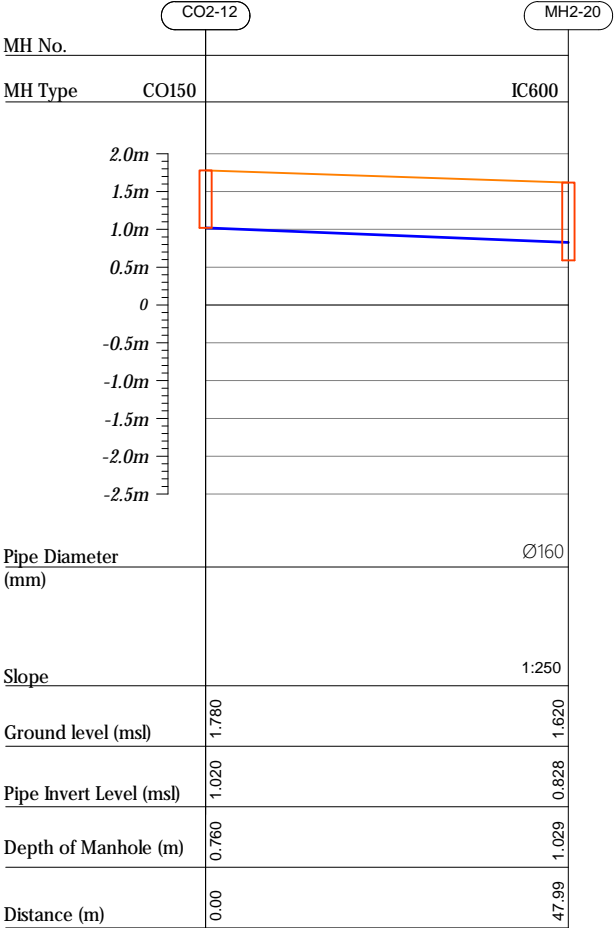
Designed: F.I.A Approved: L.W

Date: Sep 2020 SCALE (AS): 1:100

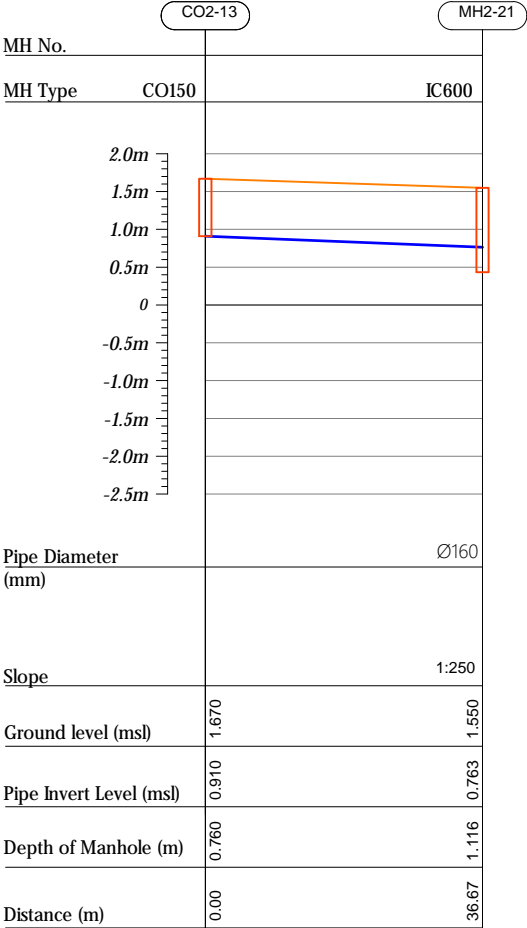
Project No: EP-WS/2019/04

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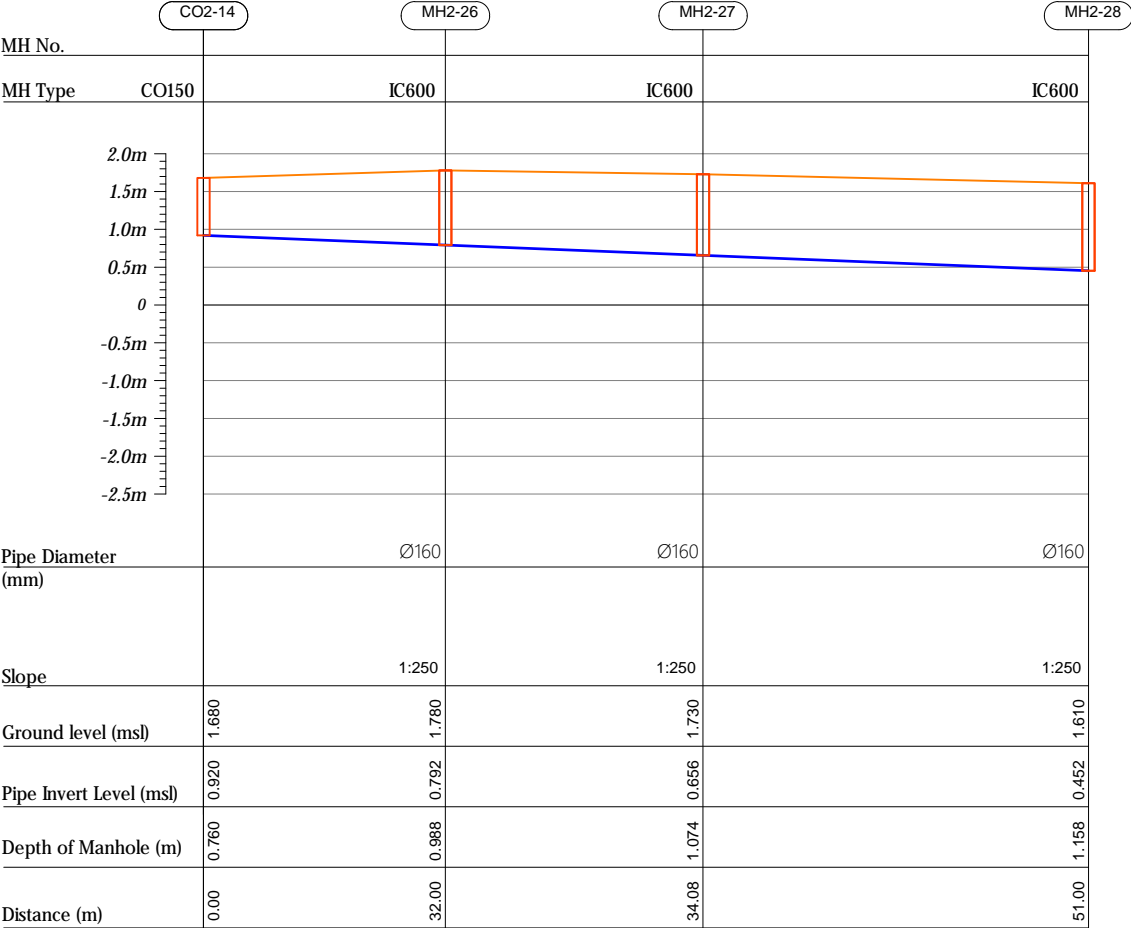
Profile 12



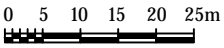
Profile 13



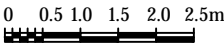
Profile 14



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
PS — Pump Station

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

Title:  
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Supply and Sewerage Facilities in  
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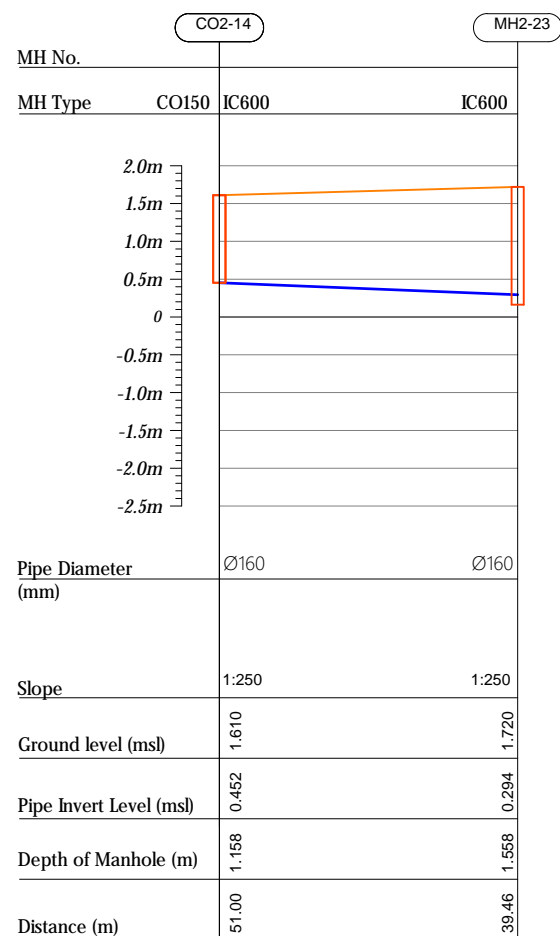
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Date: Sep 2020 SCALE (AS): 1:100

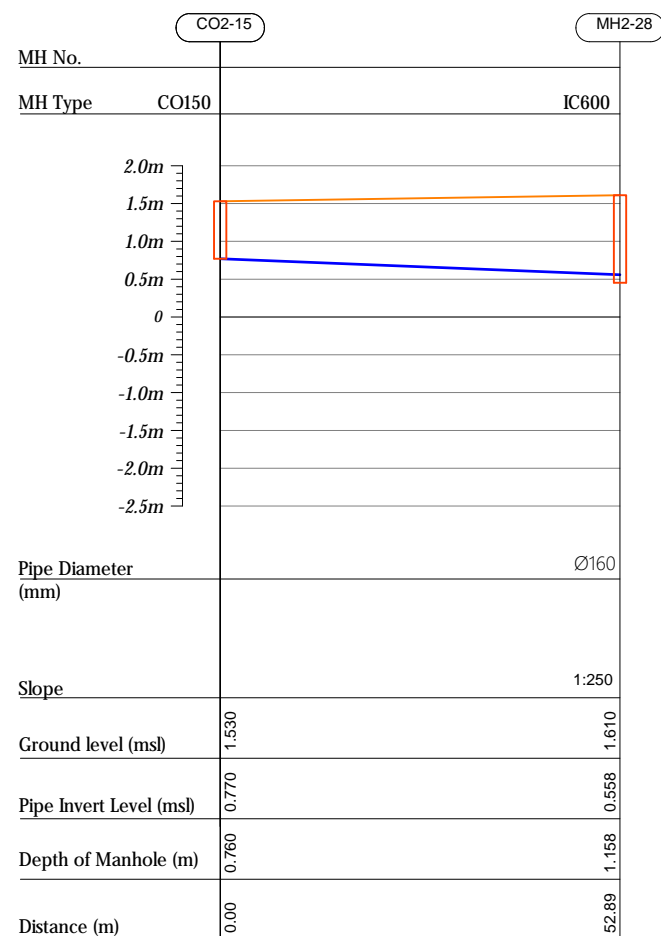
Project No: EP-WS/2019/04

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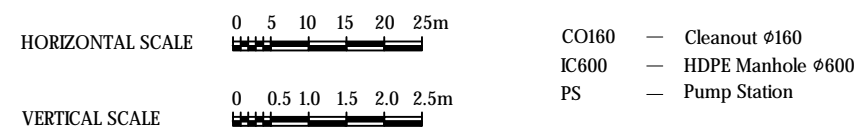
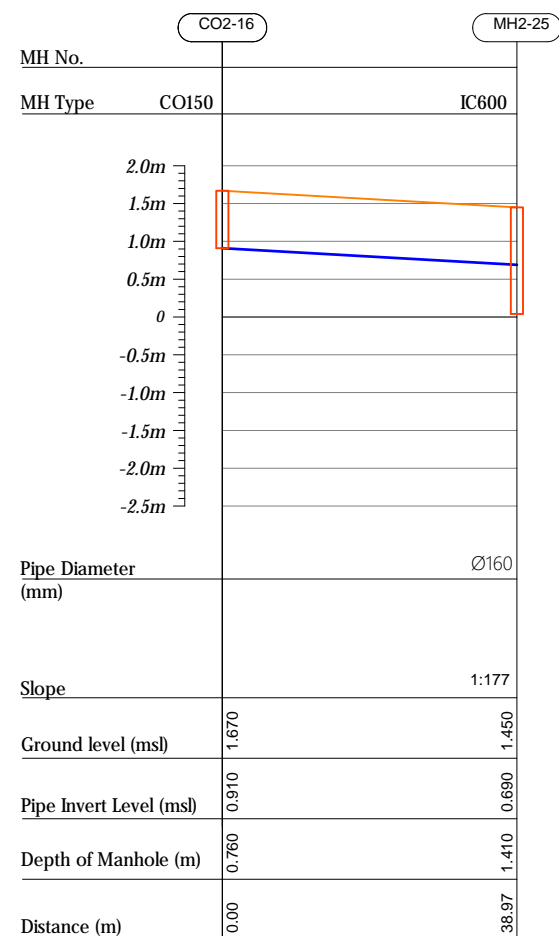
## Profile 14



## Profile 15



## Profile 16



REV. NO.	Date	Revision Description	Drawn	Chkd	App

Title:  
*Consultancy Services for Survey,  
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Husnuheena Magu, Male', Maldives



Drawn: A.R	Checked: M.S.S
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Designed: ELA	Approved: LW
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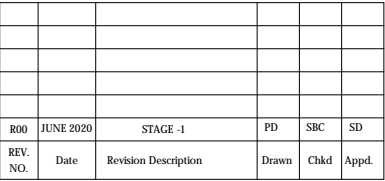
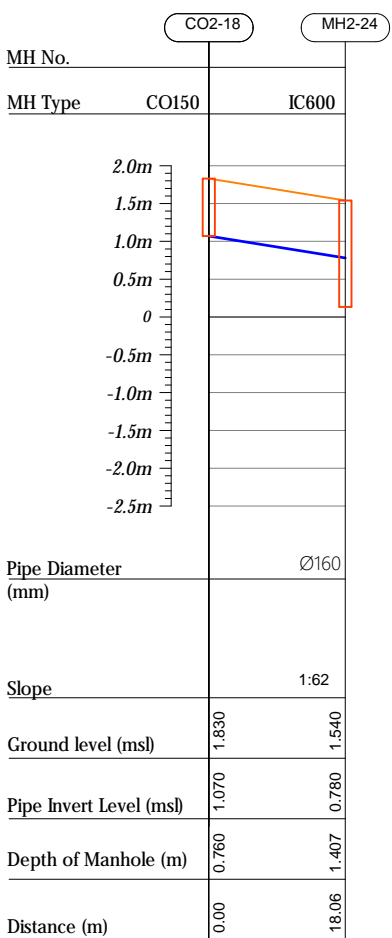
Date: Sep 2020	SCALE (A3): 1:100
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Project No:	EP-WS/2019/04
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