

CONSULTANCY SERVICES FOR SURVEY, DESIGN AND EIA WORKS OF WATER SUPPLY AND
SEWERAGE FACILITIES IN 6 ISLANDS, MALDIVES

PACKAGE 5

SEWERAGE SYSTEM OF V. RAKEEDHOO, MALDIVES

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

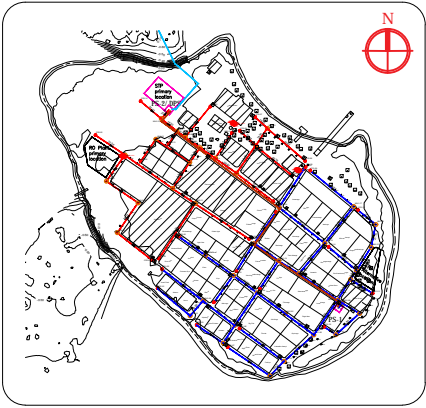
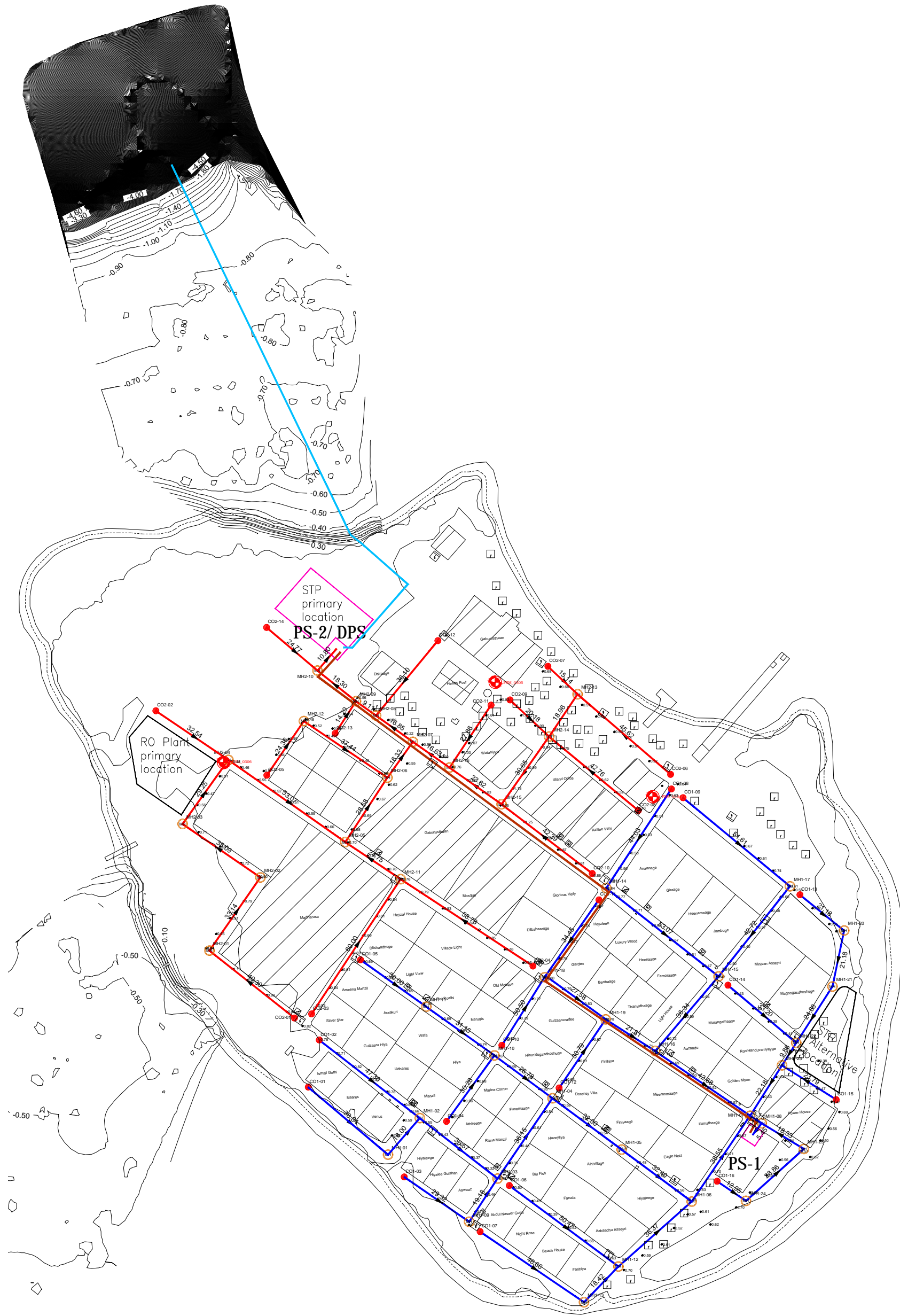


T: +960 333 3528 E: info@epoch.associates W: www.epoch.associates
A: 4A, 4th Floor, M. Ahigasdhoshuge, Fareedhee Magu Male' Republic of Maldives



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- 160mm Ø uPVC PS1 Gravity Sewer Main (SN4, SDR41) - 1241 m
160mm Ø uPVC PS2 Gravity Sewer Main (SN4, SDR41) - 889 m
110 mm Ø HDPE Pumping Main (PE100, PN16, SDR11) - 286 m
160 mm Ø HDPE Sea Outfall Pipe (PE100, PN16, SDR11) - 63 m on land - 153 m offshore - 216 m total
- 600mm Ø PE/PP Maintenance Shaft - 41 nos
160mm Ø uPVC Clean Out - 30 nos
- PERMANENT SURVEY MARK PSM_0304
330060.633E, 366565.383N
0.618m From MSL
- PERMANENT SURVEY MARK PSM_0305
330002.044E, 366607.914N
0.657m From MSL
- PERMANENT SURVEY MARK PSM_0306
329901.170E, 366578.095N
0.542m From MSL
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) CO1-02 and CO2-01

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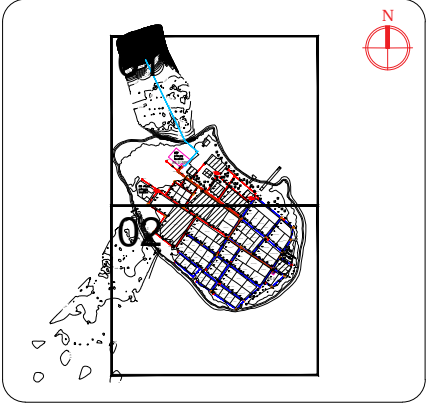
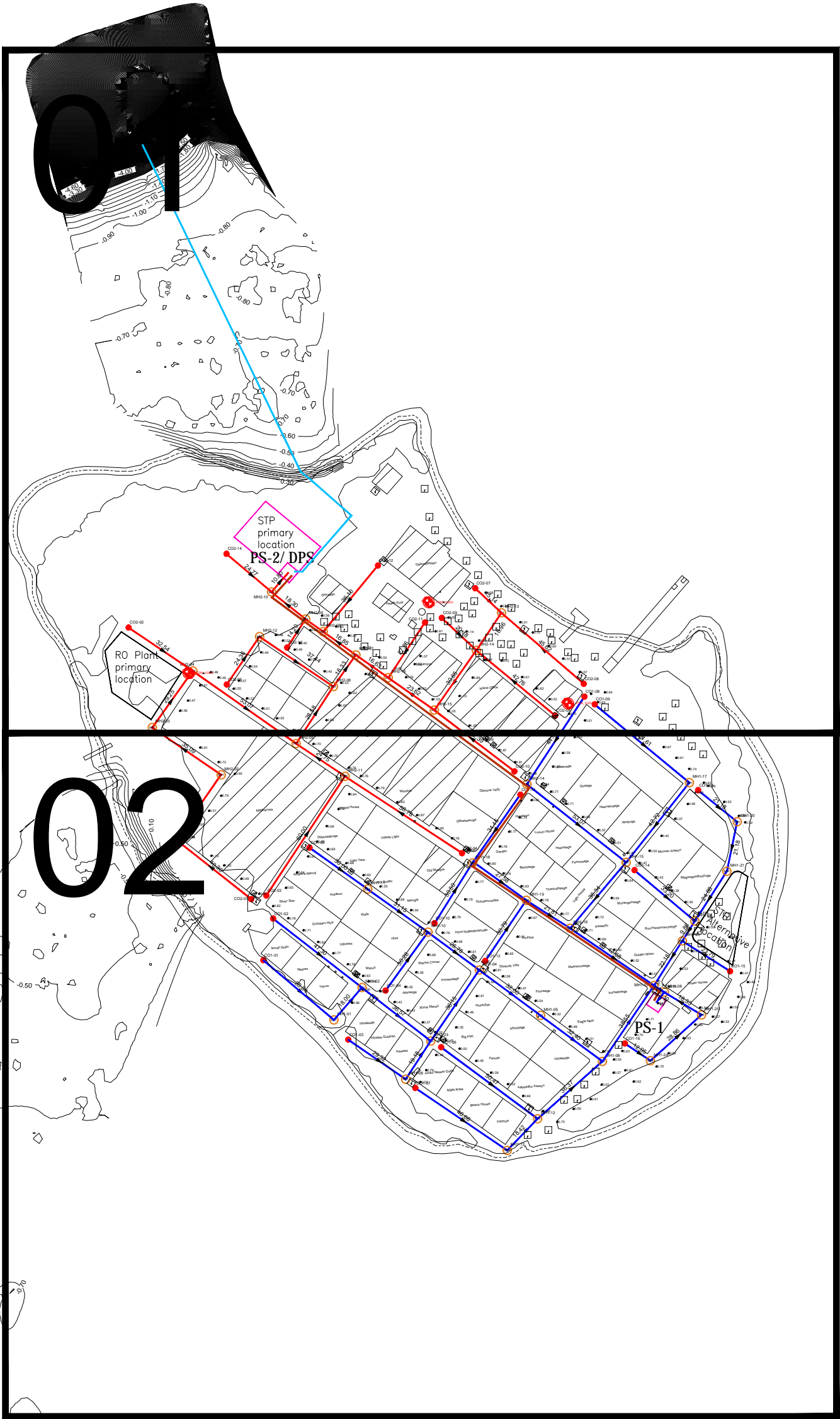
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Consultancy Services for
Survey, Design and EIA works of
Water Supply and Sewerage
Facilities
in 6 islands, Maldives – Package 5
Sewerage System in V. Keyodhoo

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,
Husnuheema Magu, Male', Maldives

DBACK INFRA
Water Supply and Sewerage
Infrastructure

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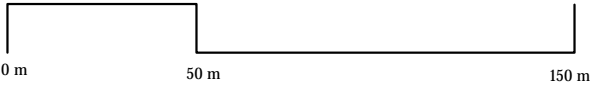
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EPOCH
T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West,
Husnuheemaa Magu, Male', Maldives

DBACK INFRA
Water Infrastructure Solutions

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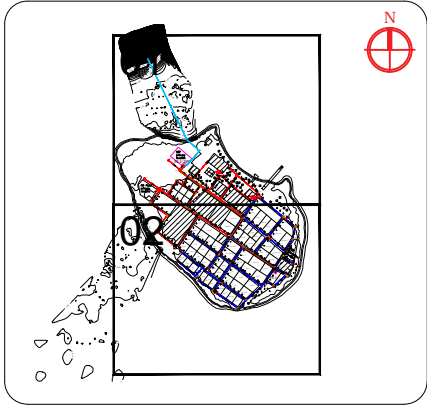


V. RAKEEDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK ZONE LAYOUT

1:2000



V. RAKEEDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK LAYOUT - ZONE 01
1:1000



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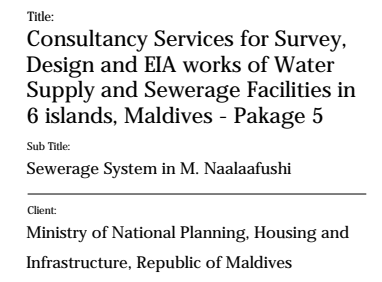
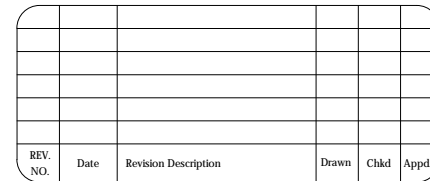
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A: G. Rosary West,
Hunnuheena Magu, Male', Maldives



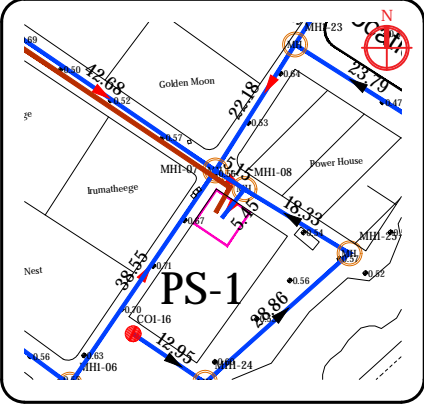
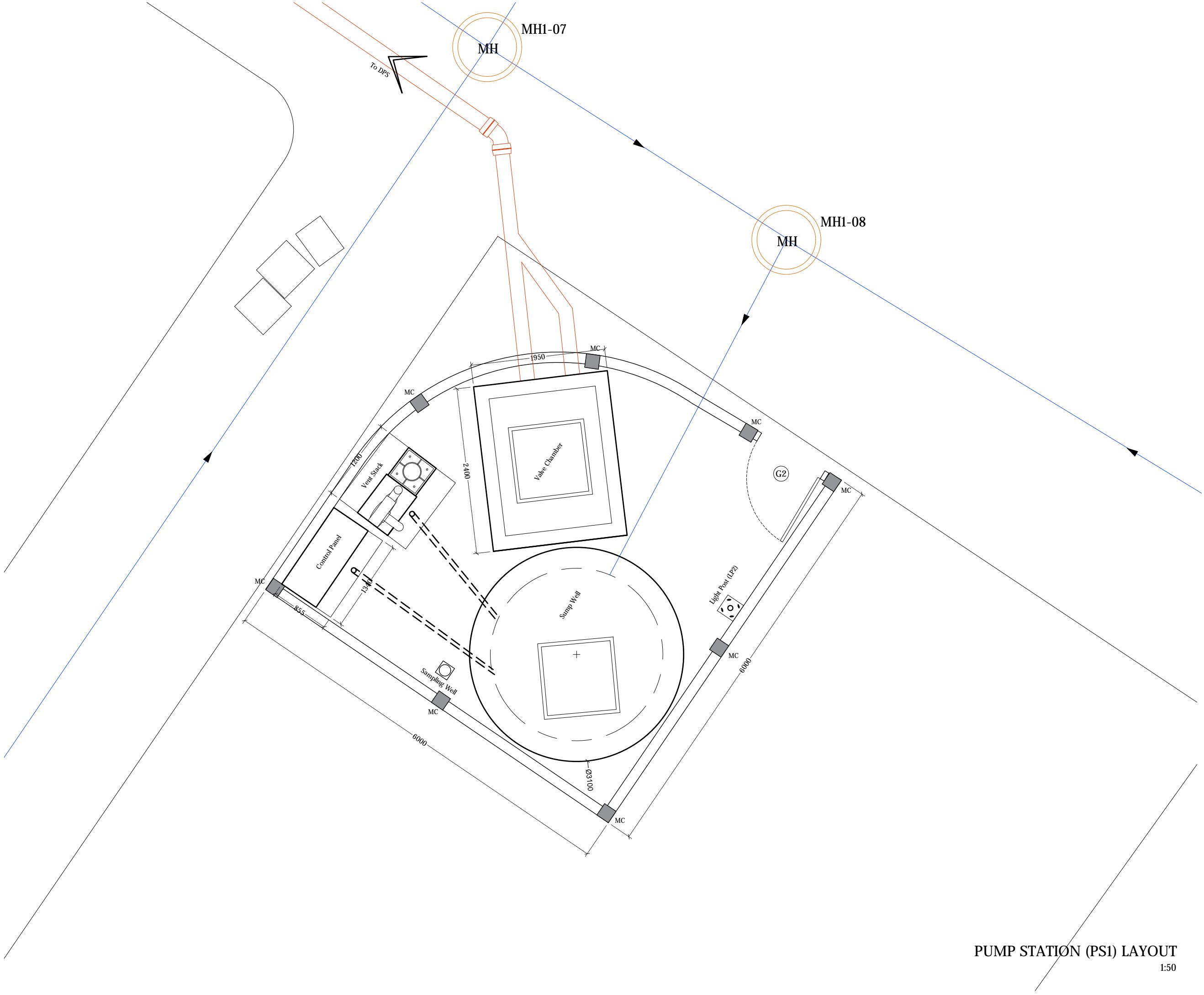
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EPOCH ASSOCIATES
T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West,
Husumheena Magu, Male', Maldives

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Legend

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

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Infrastructure, Republic of Maldives



T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husuheena Magu, Male', Maldives



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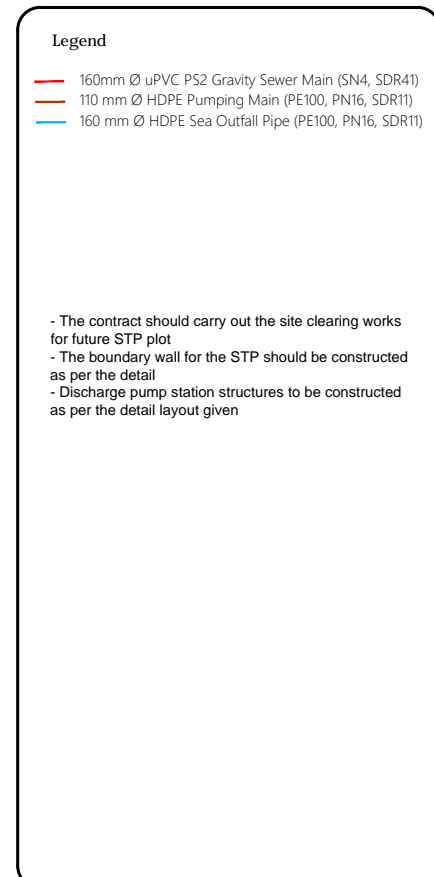
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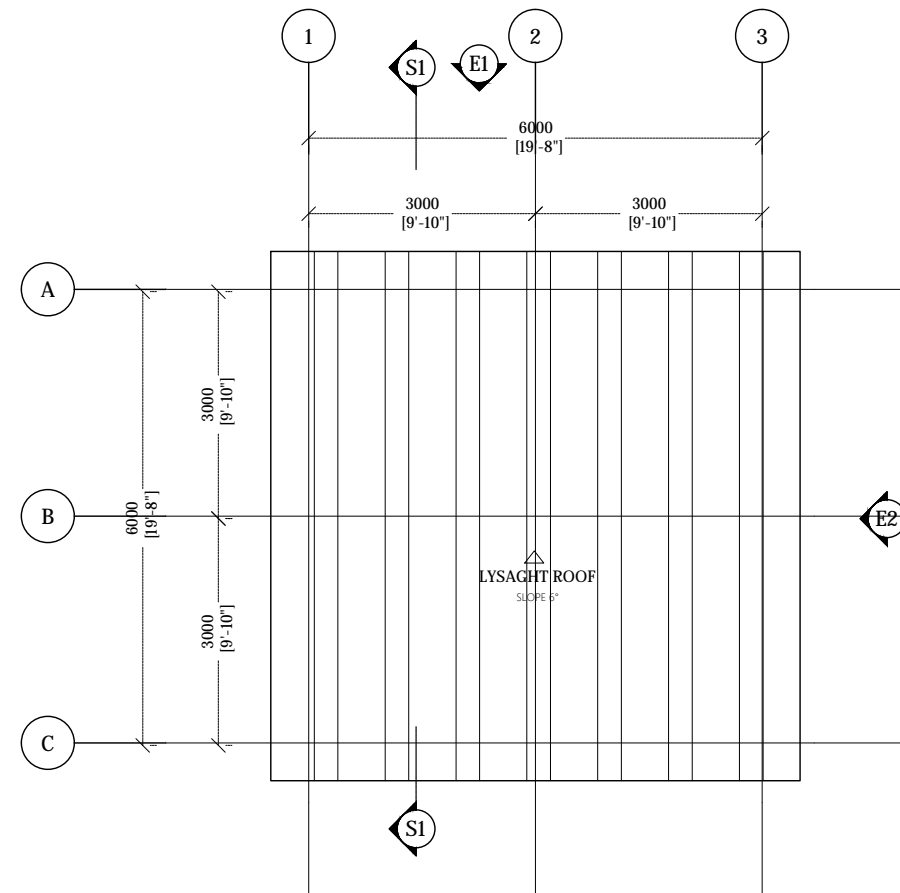
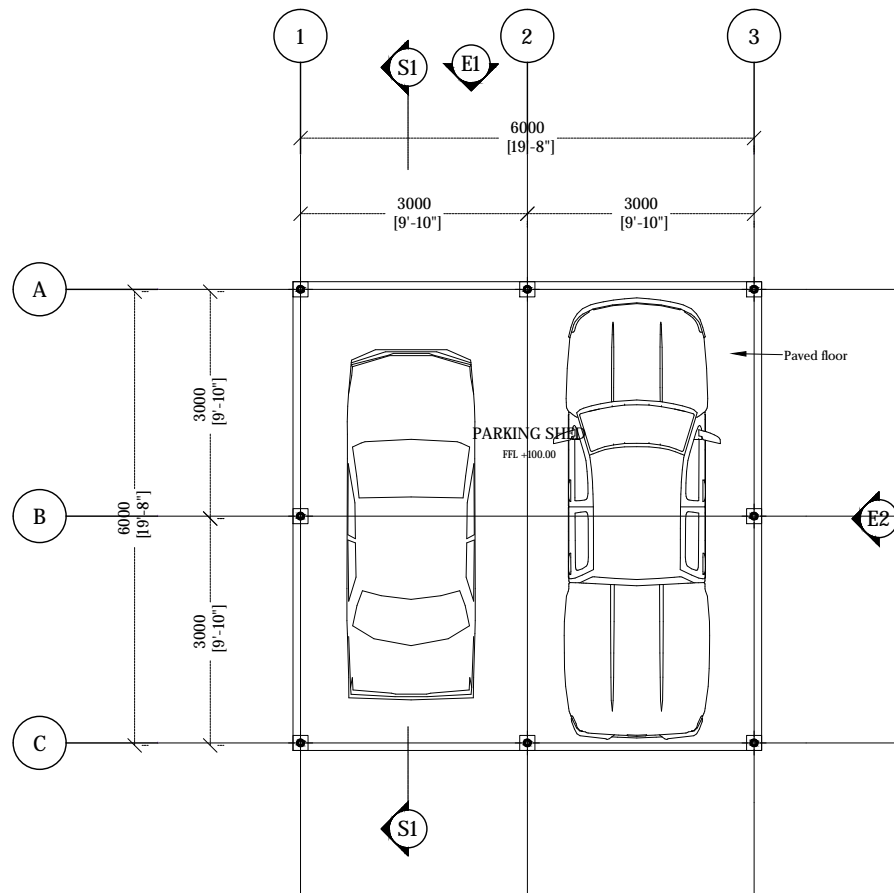
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PUMP STATION (PS1) LAYOUT
1:50



<p>Title:</p> <h1>Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5</h1> <p>Sub Title:</p> <h2>Sewerage System in V. Rakeedhoo</h2>	
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 <p>EPOCH ASSOCIATES</p> <p>T: +960 333 3528 E: info@epoch.associates W: www.epoch.associates A: G. Roary West, Hunumheena Magu, Male', Maldives</p>	 <p>FEDBACK INFRA Maldives Infrastructure Development</p>
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Legend

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Husnuheena Magu, Male', Maldives



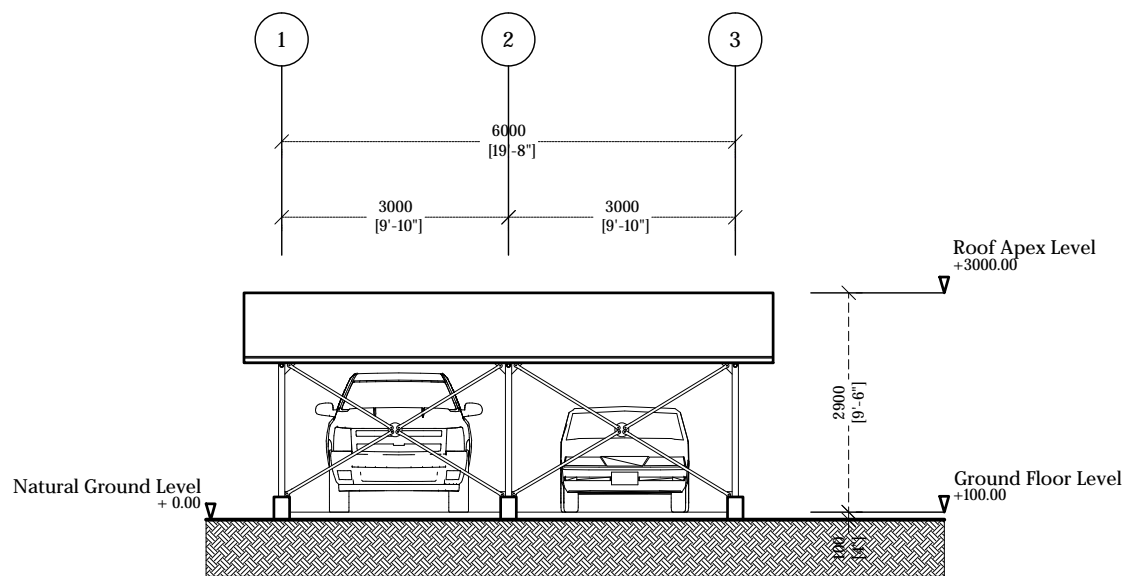
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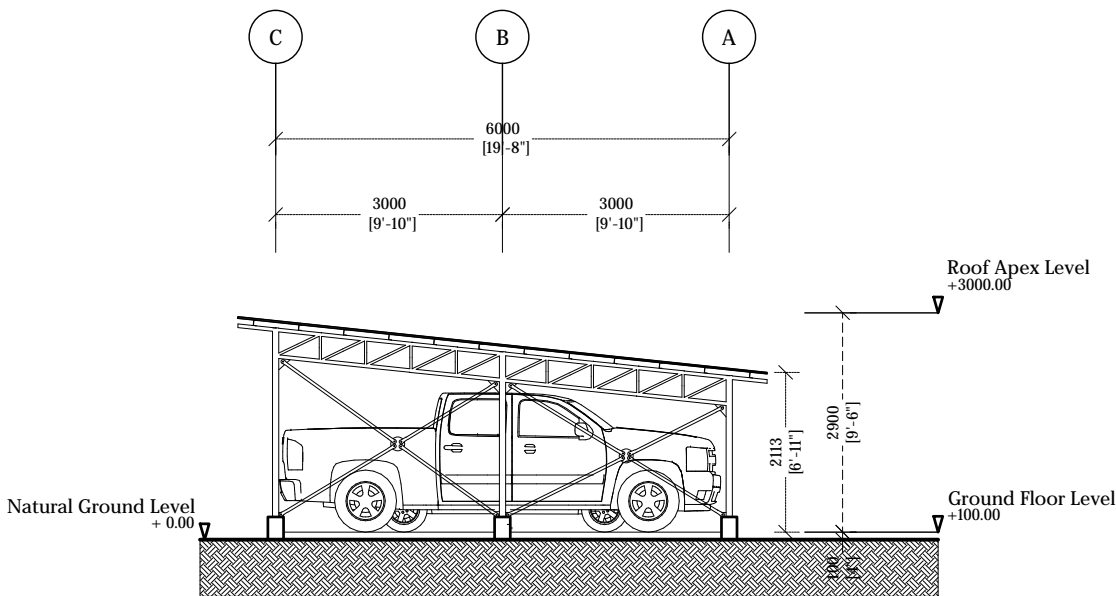
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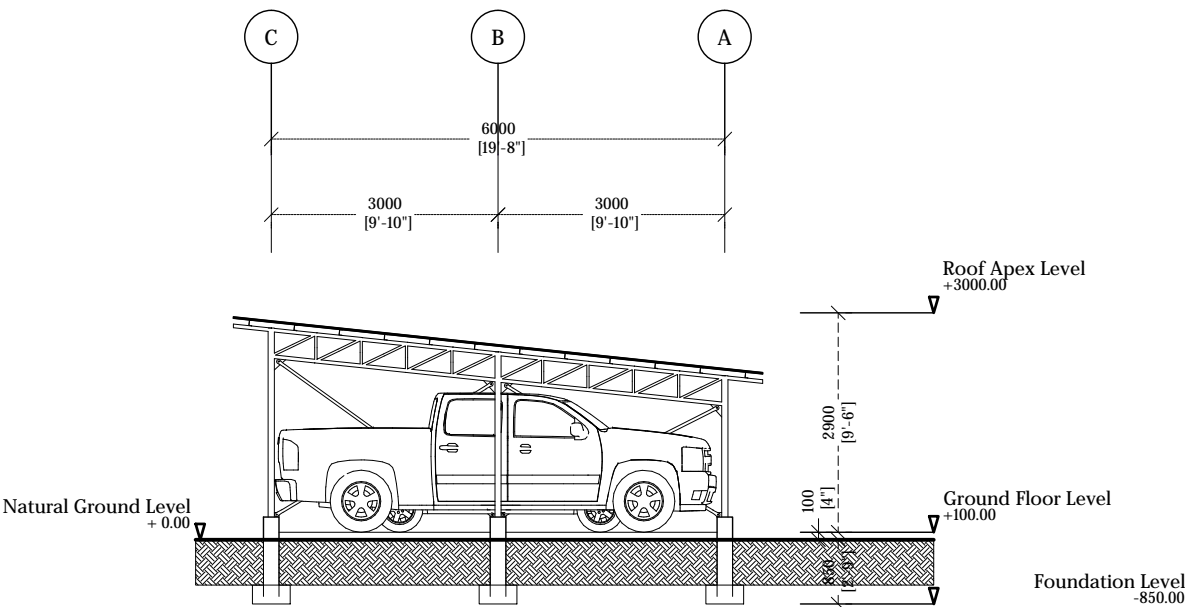
VEHICLE SHED ELEVATION E1

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VEHICLE SHED ELEVATION E2

1:100



VEHICLE SHED SECTION S1

1:100



Legend

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T: +960 333 3528
E: info@epochassociates
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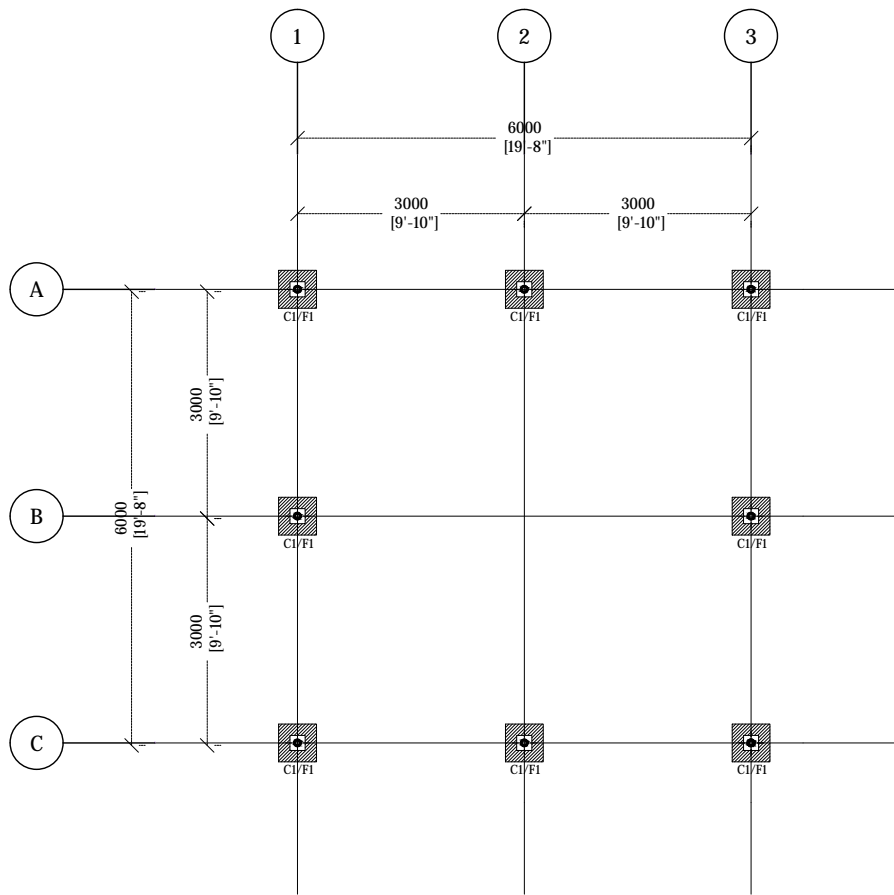
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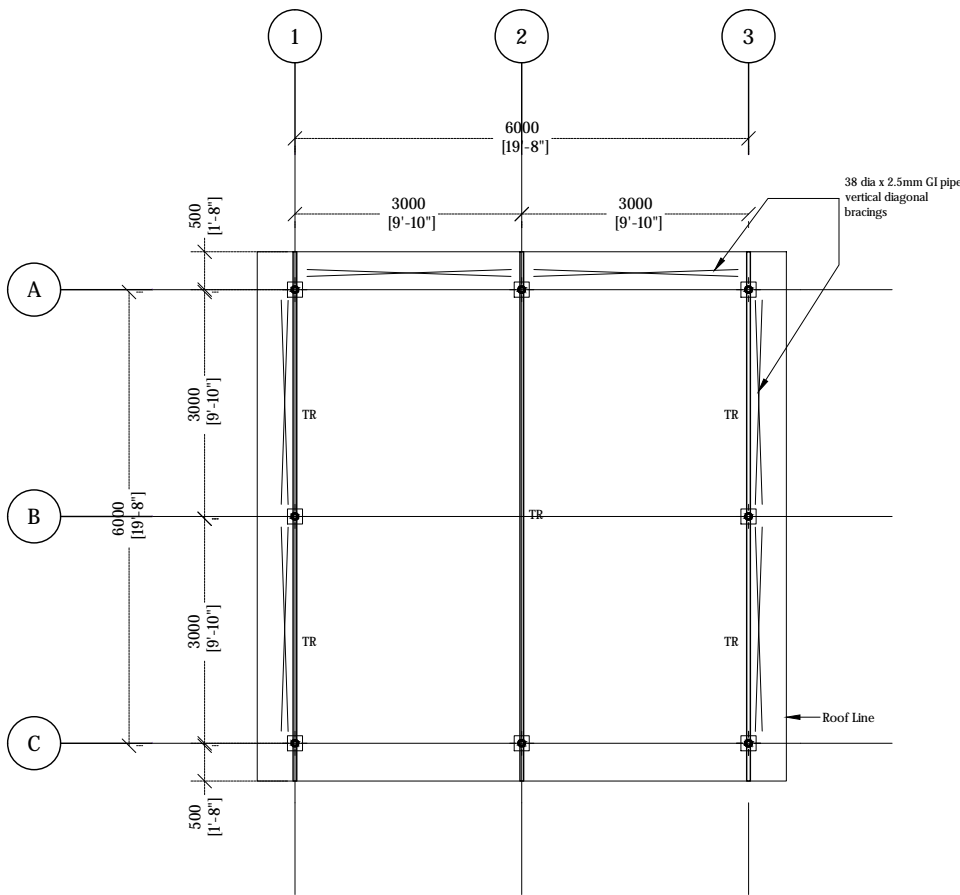
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VS-A(2)



VEHICLE SHED FOUNDATION PLAN

1:100



VEHICLE SHED ROOF TRUSS PLAN

1:100



Legend

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T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
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Maldivian Infrastructure Development

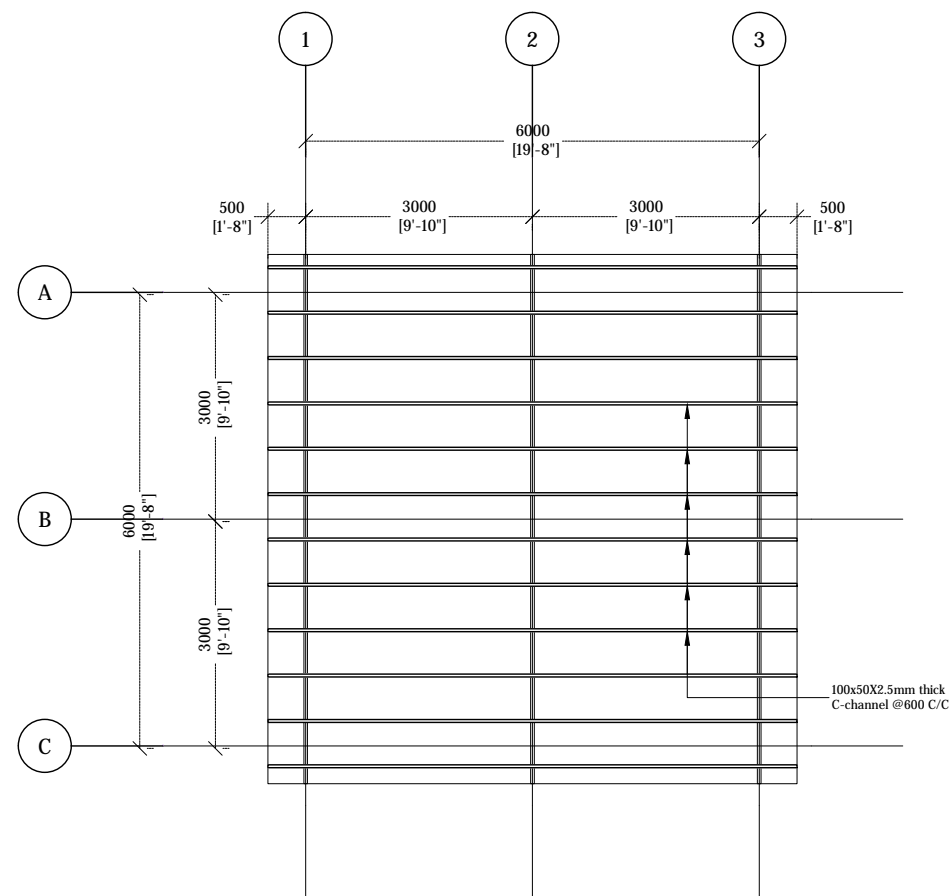
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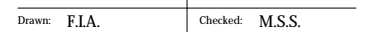
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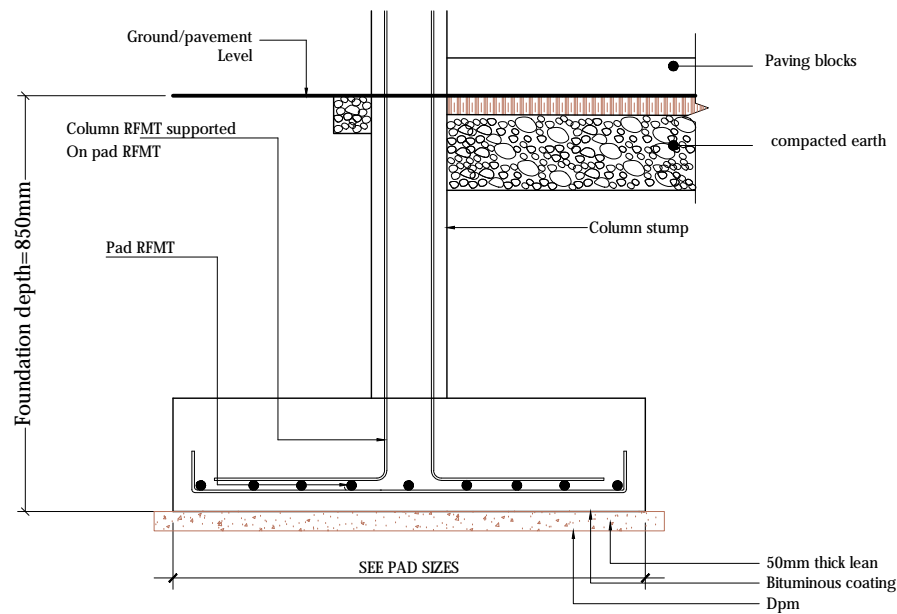


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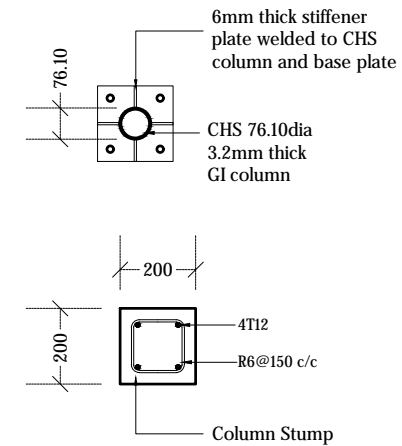
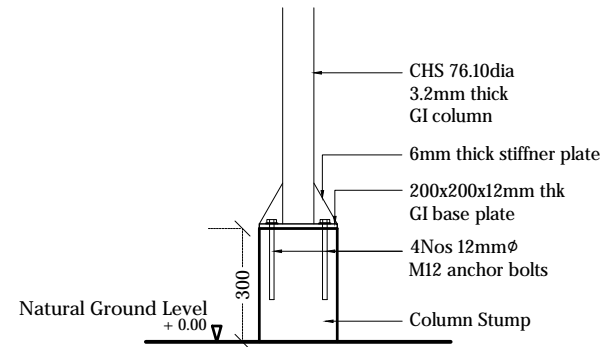


F1 - 500x500x250 - T10@150C/C B/W (B)

FOUNDATION PAD DETAILS

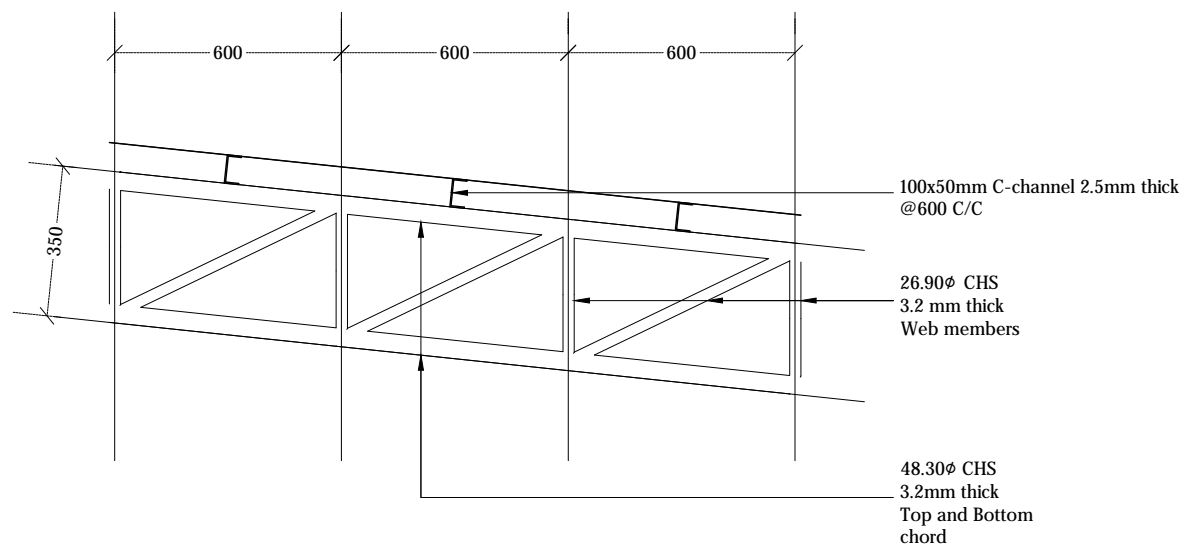
VEHICLE SHED FOOTING DETAIL

1:20



COLUMN DETAIL

1:20



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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T: +960 333 3528
E: info@epoch.associates
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A: G. Rosary West,
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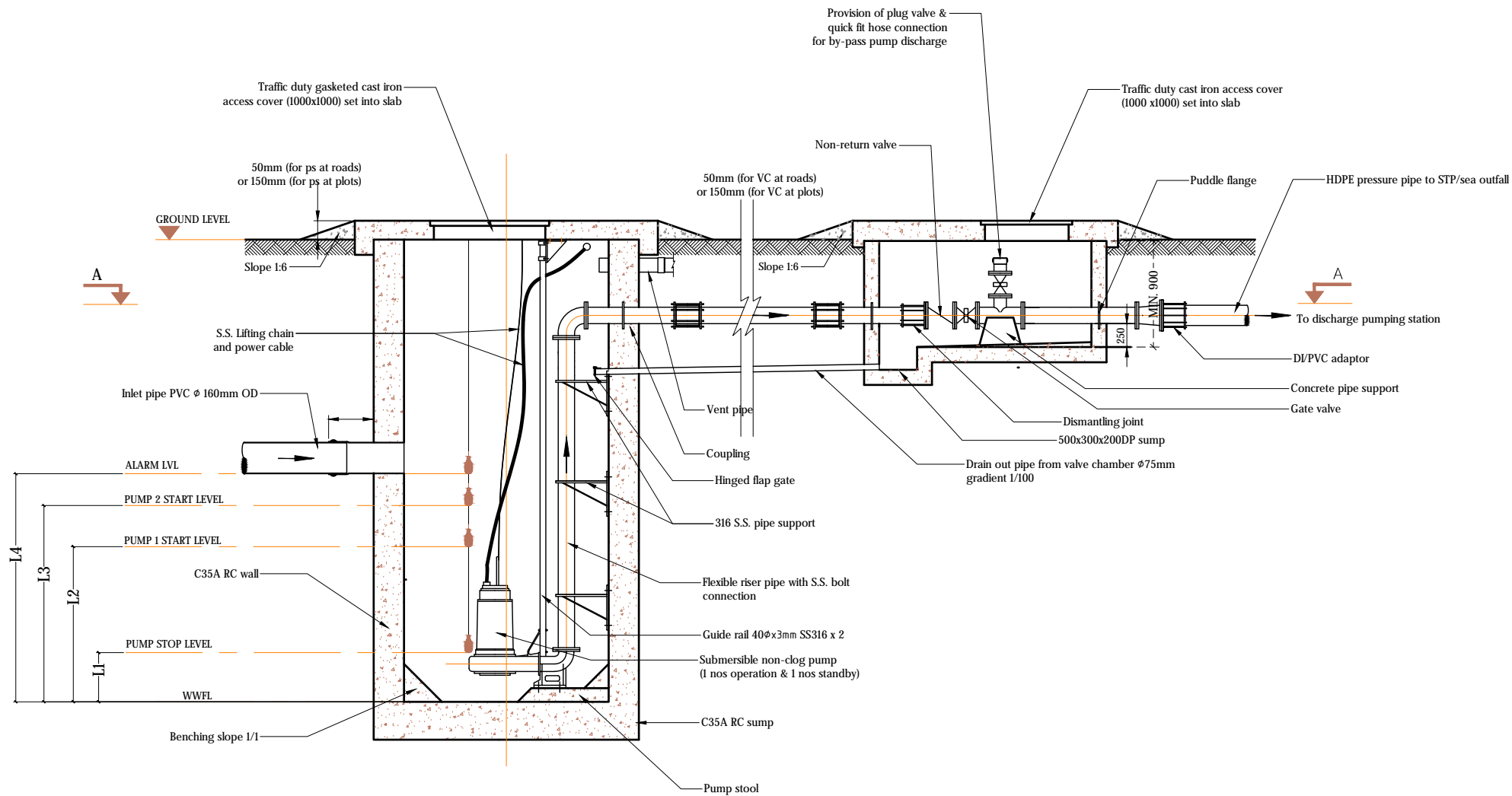
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PUMP STATION DESIGN DETAILS

(15 YEARS)

Pump Station	Diameter (Ø)	Depth (D)	Inlet Depth	Pump Capacity	Head	Levels			
						L1	L2	L3	L4
PSI	2.0m	2.70m	1.692m	1.5 l/s	8.8 m	0.300m	0.671m	0.821m	0.971m

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 polyethene.
- 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

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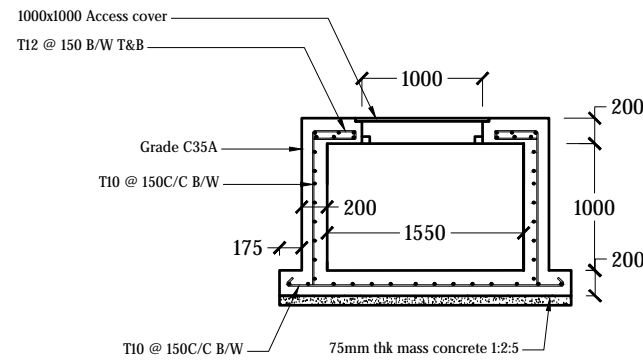
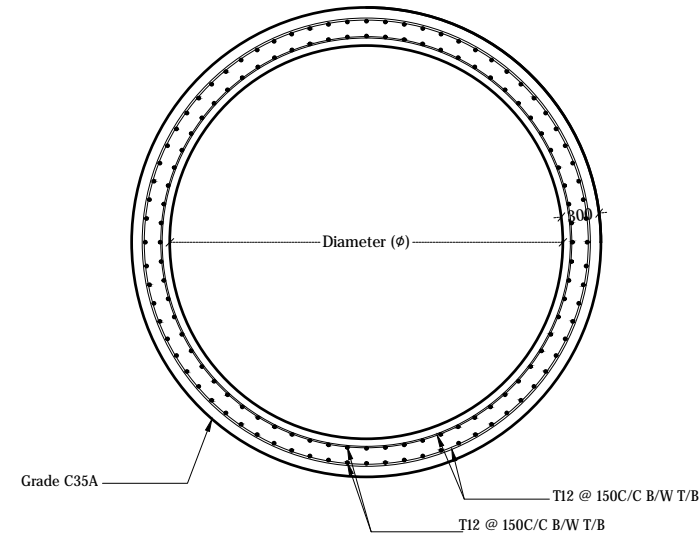
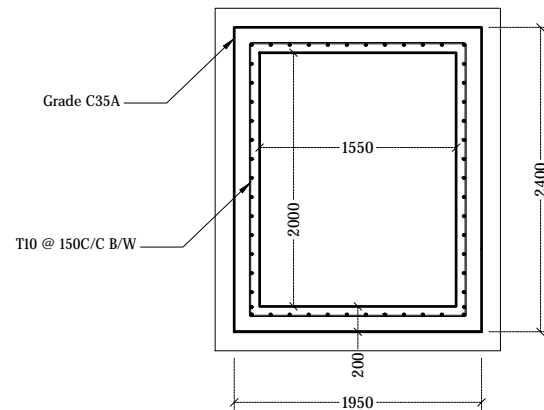
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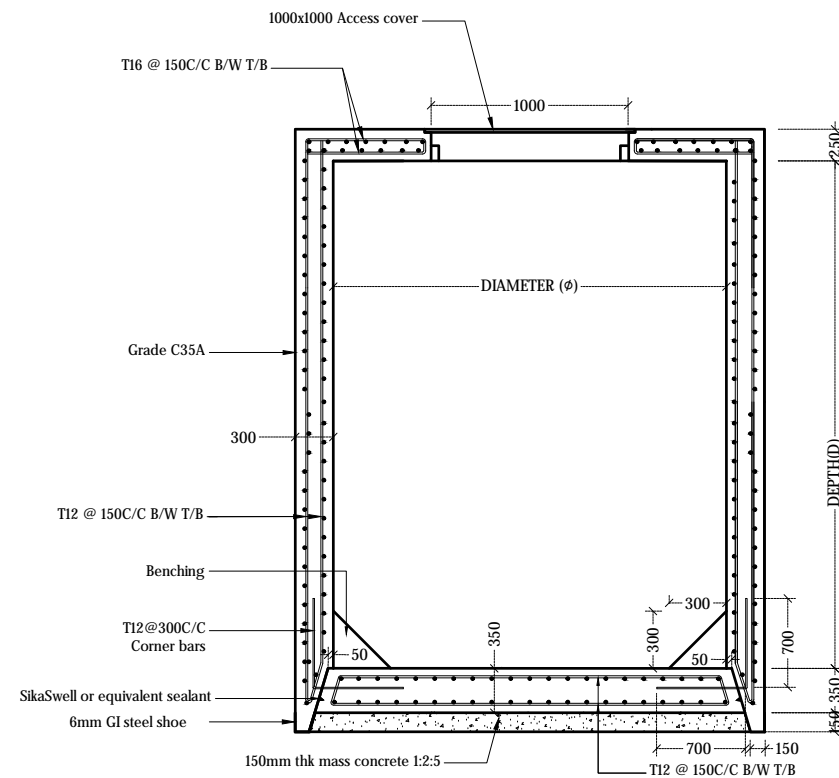
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Rev: W-(3)

PLAN VIEW



VALVE CHAMBER DETAIL



PUMP STATION DETAIL

Pump Station	Diameter (ϕ)	Depth (D)	Inlet Depth
PS1	2.0m	2.70m	1.692m

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



Drawn: F.I.A.	Checked: M.S.S.
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Designed: F.I.A.	Approved: I.W.
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Date: Sep 2020	SCALE (A3): NTS
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Project No: EP-WS/2019/05

Rev:	Page: W-(5)
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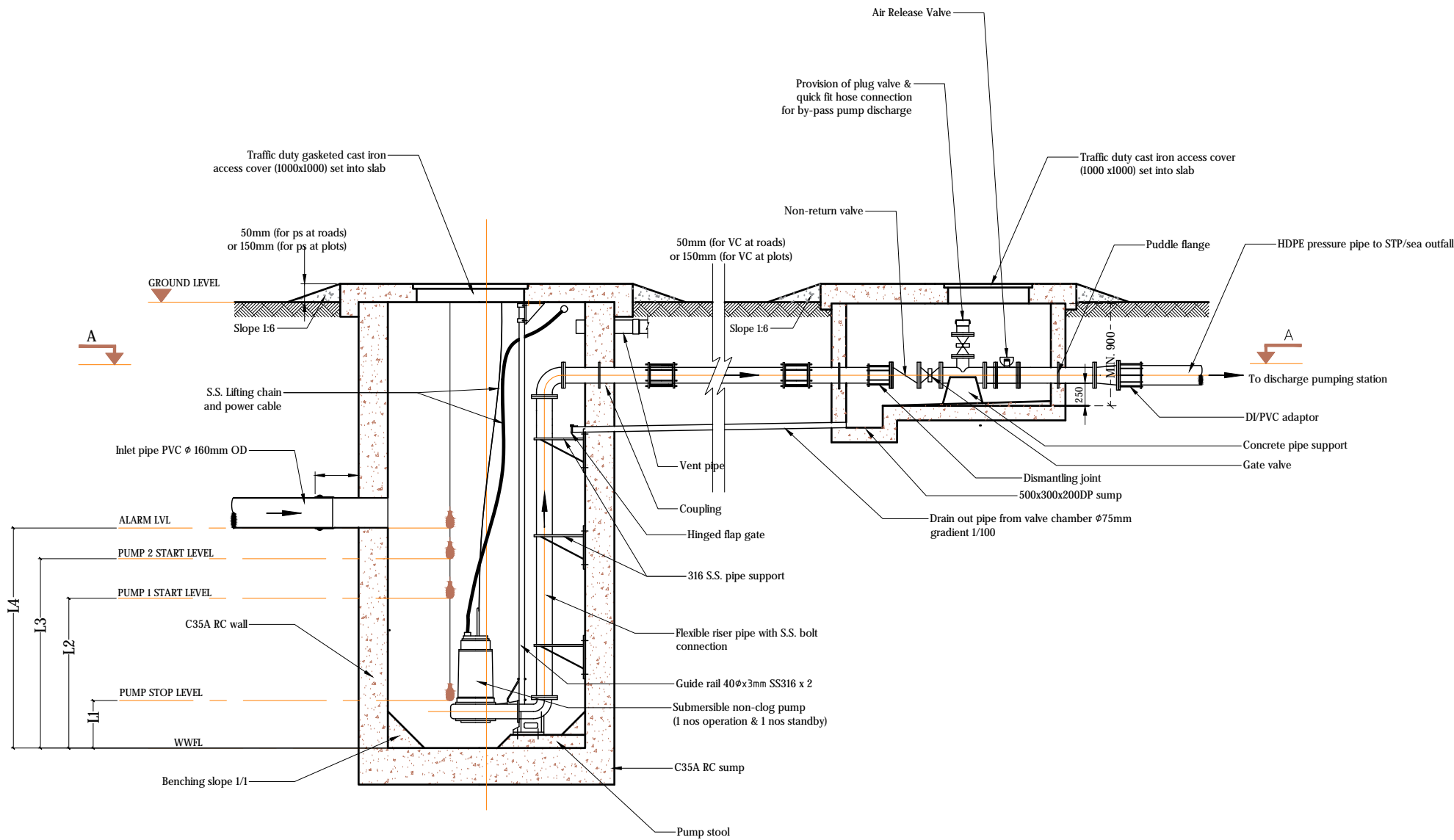
Legend

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 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



DISCHARGE PUMP STATION DESIGN DETAILS (15 YEARS)

Pump Station	Diameter (φ)	Depth (D)	Inlet Depth	Pump Capacity	Head	Levels			
						L1	L2	L3	L4
PS2/DPS	2.5m	2.70m	1.533m	2.6 l/s	18.2 m	0.300m	0.612m	0.762m	0.912m

DISCHARGE PUMP STATION DETAILS - LONGITUDINAL SECTION

NTS

Title:

Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5

Sub Title:

Sewerage System in V. Rakeedhoo

Client:

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



T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husuheena Magu, Male', Maldives



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Approved: I.W.

Date: Sep 2020

SCALE (A3): NTS

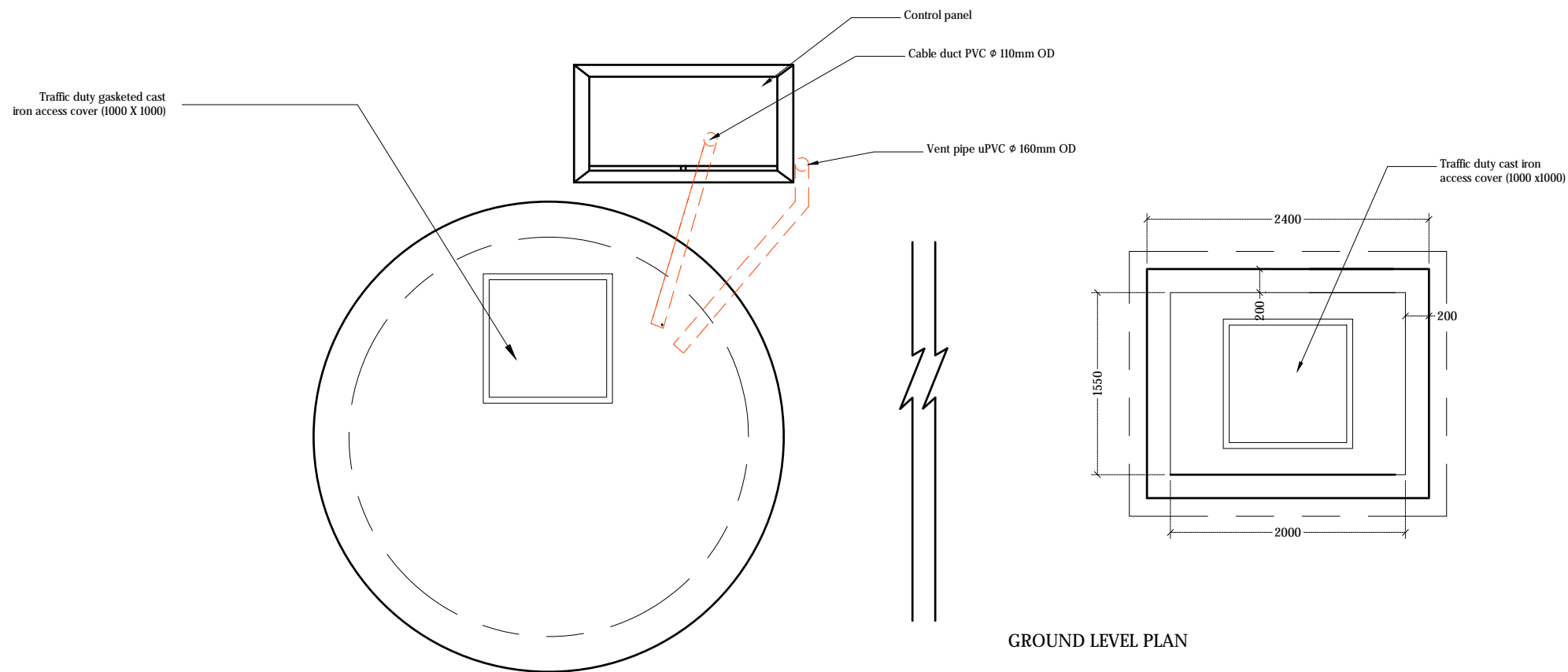
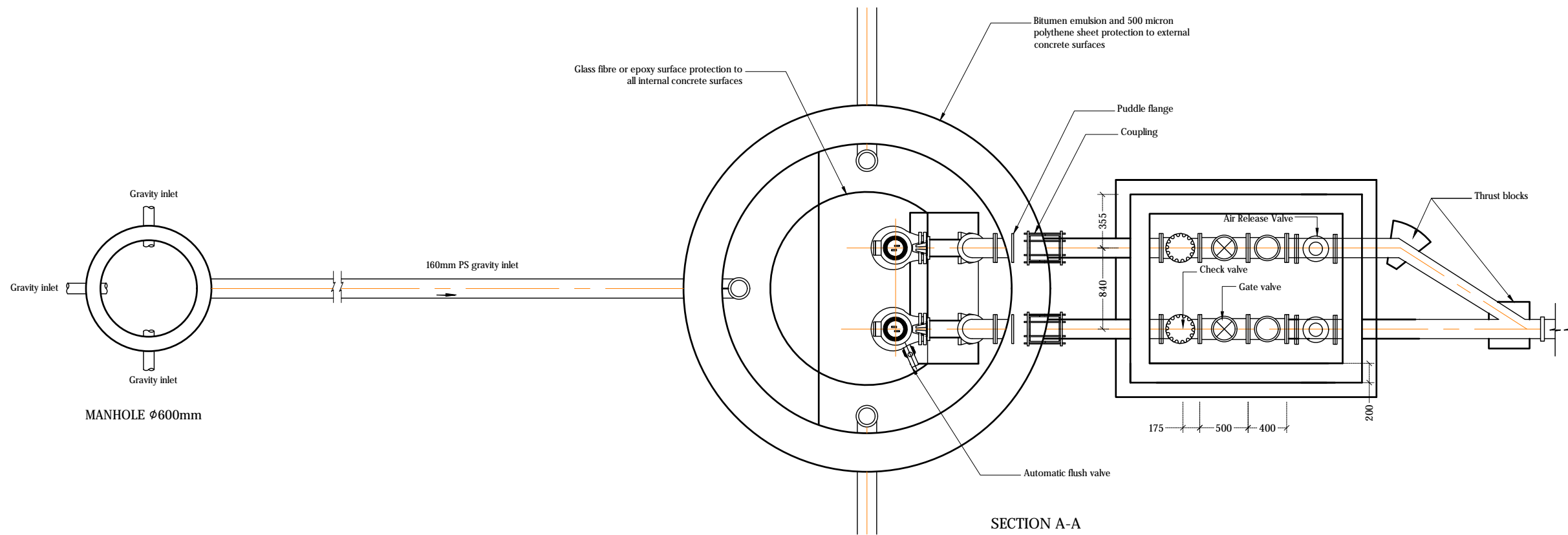
Project No:

EP-WS/2019/05

Rev:

Page:

W-(23)



GROUND LEVEL PLAN

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.
- All structural concrete shall be of grade C35A.
- All castings shall be done using sulphate resistant portland cement to BS 4027:1996.
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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.

Title:

Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5

Sub Title:

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E: info@epochassociates
W: www.epochassociates
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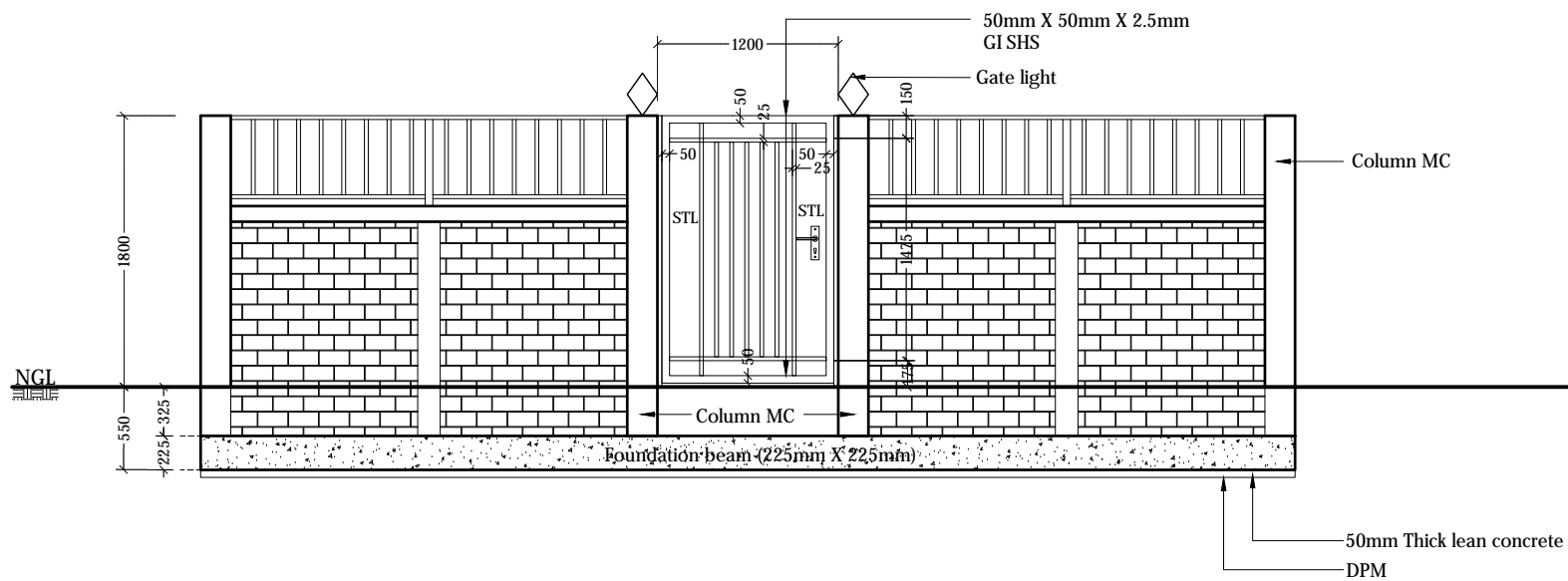
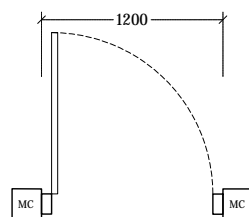
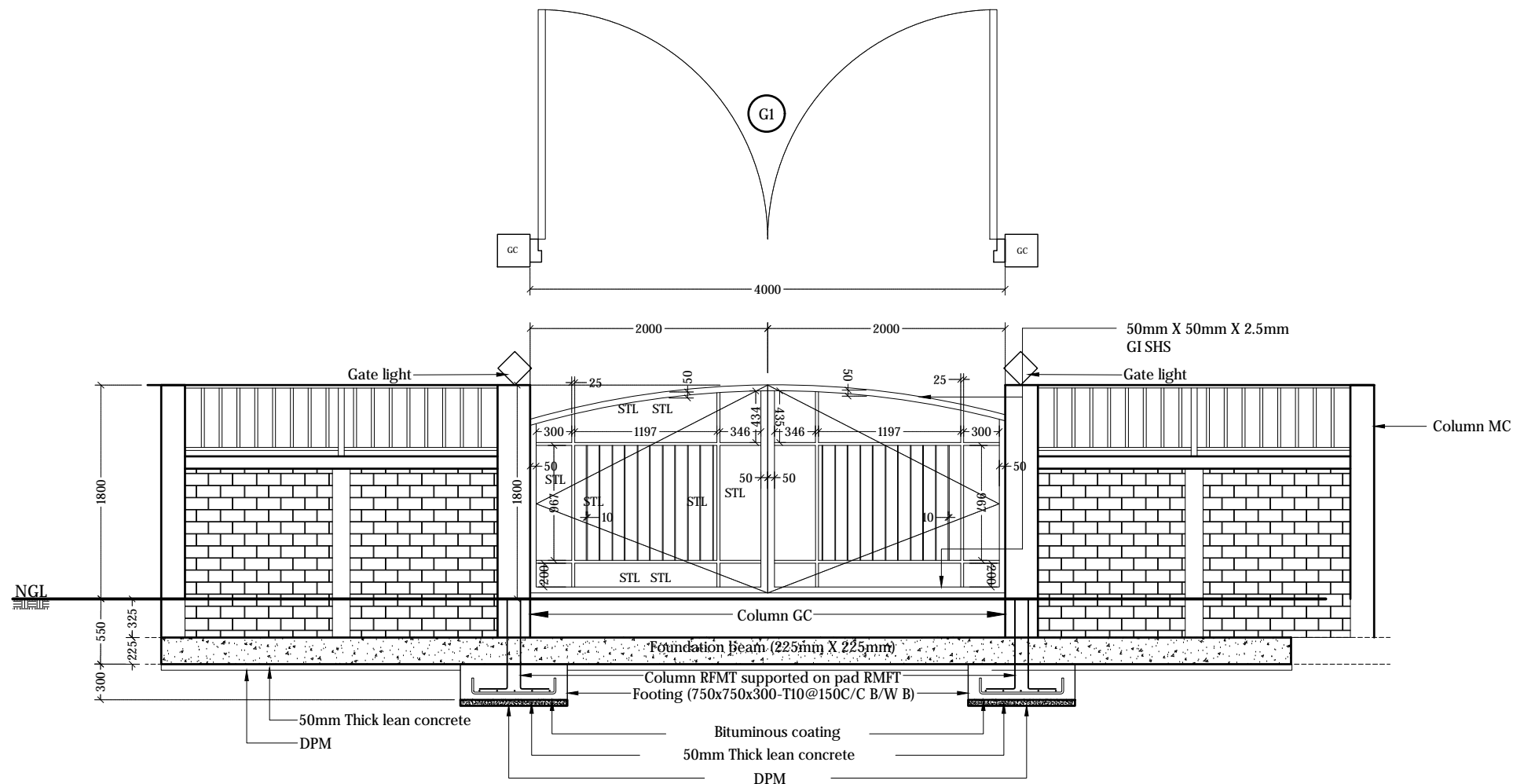
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Date: Sep 2020 SCALE (A3): NTS

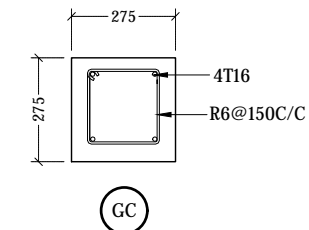
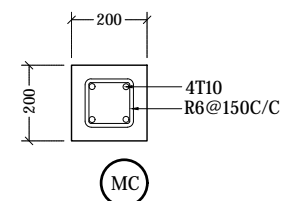
Project No: EP-WS/2019/05

Rev: Page:

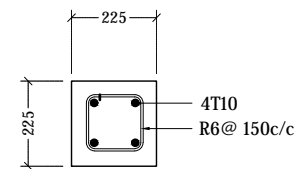
W-(24)



GATE DETAILS
1:50



COLUMN DETAILS
1:20



FOUNDATION BEAM DETAIL
1:20



Legend

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

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
**Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5**

Sub Title:
Sewerage System in V. Rakeedhoo

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

EPOCH
associates

T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husnuheena Magu, Male', Maldives

FOODBACK INFRA
Maldives Infrastructure Development

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

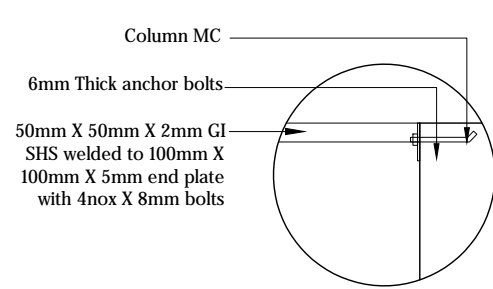
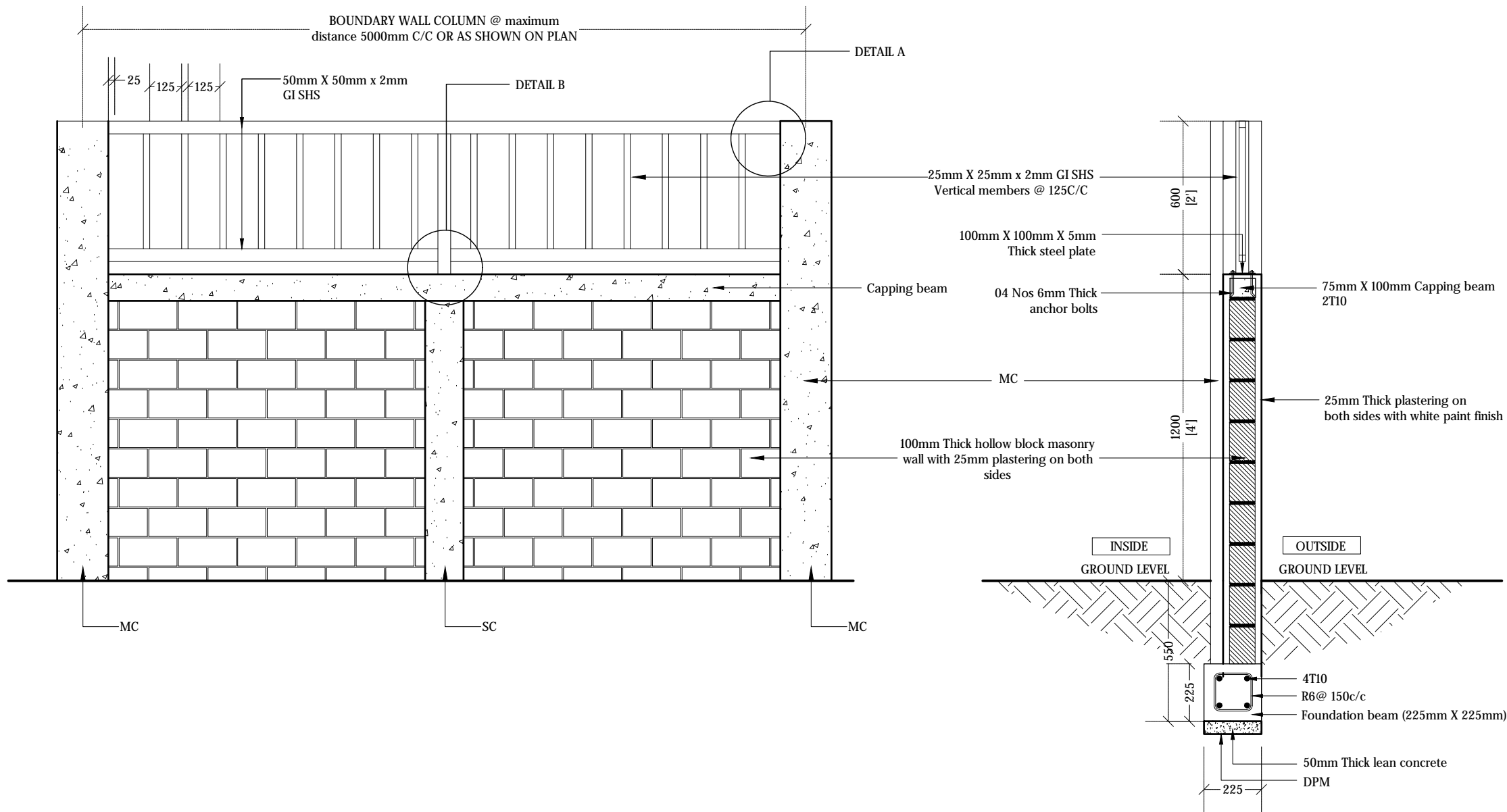
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3):

Project No: EP-WS/2019/05

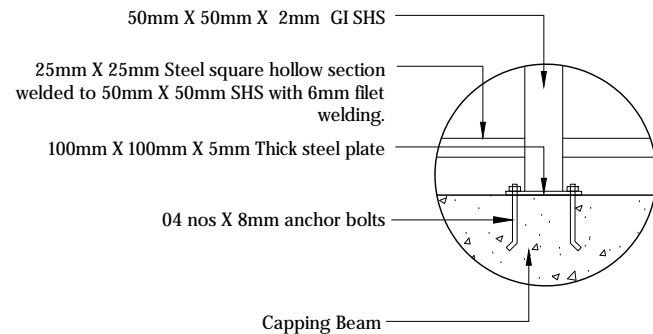
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W-(6)



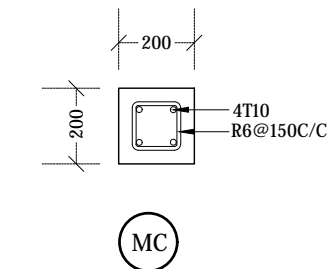
DETAIL A

1:10

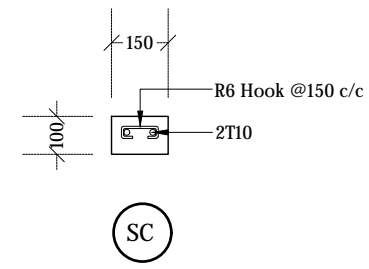


DETAIL B

1:10



MC
MAIN COLUMN
@ maximum distance 5000mm C/C



SC
STIFFENER COLUMN
(in between two main columns)

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

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Rakeedhoo

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

EPOCH
ASSOCIATES

T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Hunuheena Magu, Male', Maldives

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MALDIVES

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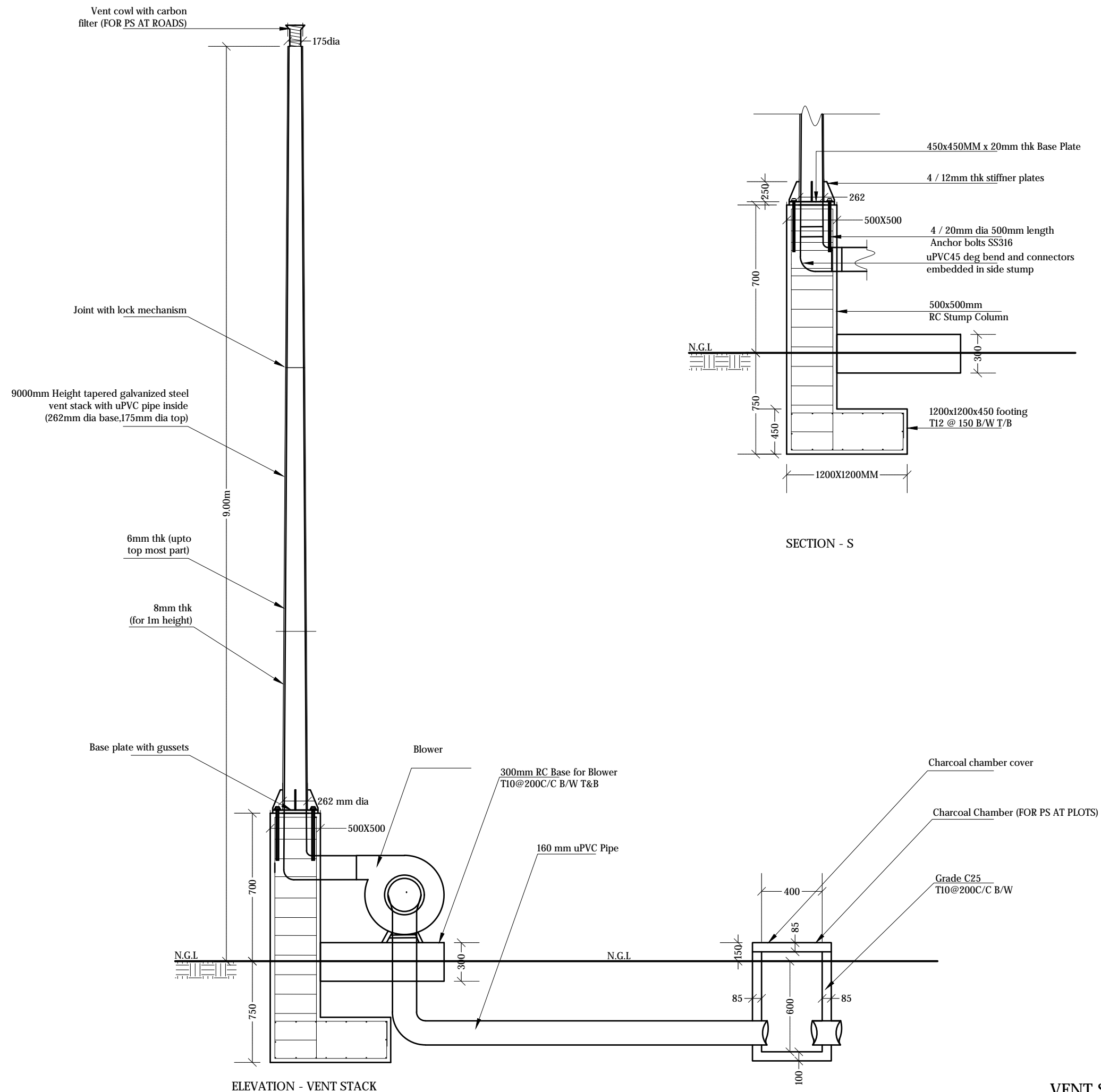
Date: Sep 2020 SCALE (A3): 1:20

Project No: EP-WS/2019/05


Rev: Page: W-(7)

PS & STP BOUNDARY WALL AND FENCING DETAILS

1:20



NTS



Legend

Notes:


- Vent stack shall be galvanized (minimum 250 micron) and finished with epoxy paint
- 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 casted with bonding agent

REV.	NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5


Sub Title:
Sewerage System in V. Rakeedhoo

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



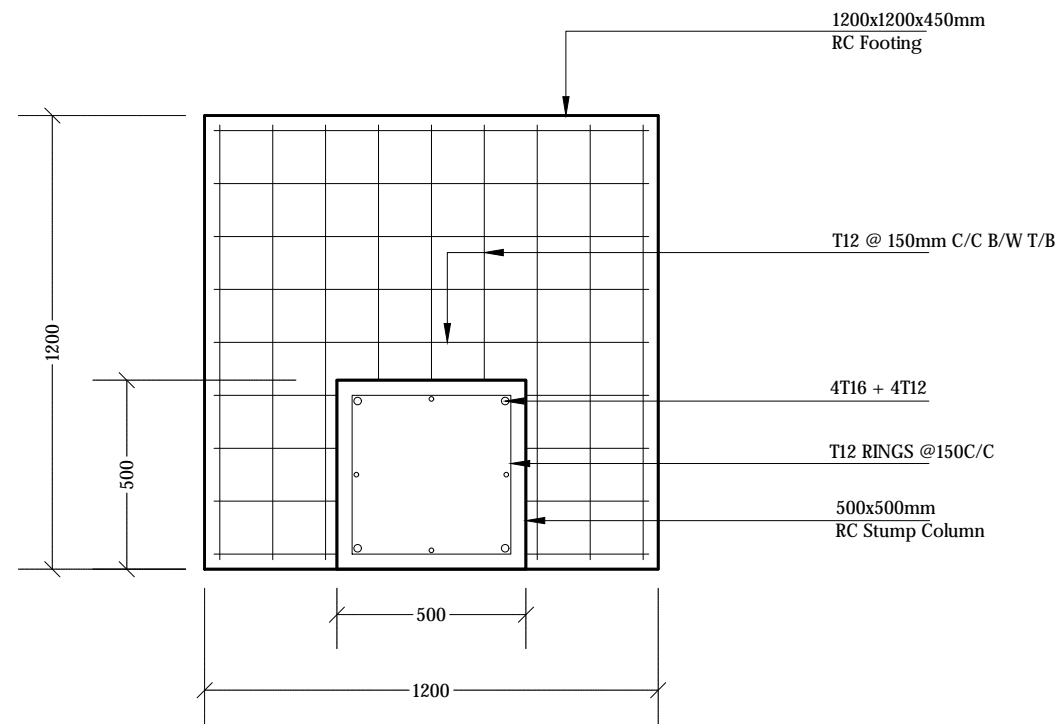
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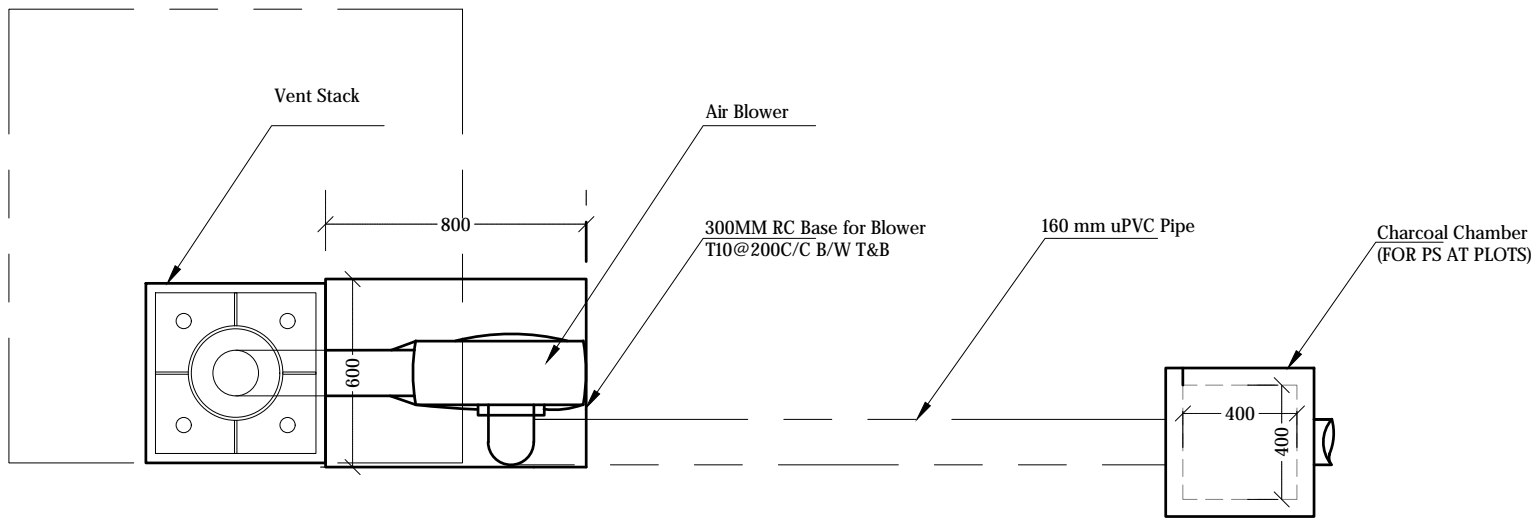


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Rev:	Page: (8)



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

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Rakeedhoo

Client:
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EPOCH
ASSOCIATES

T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husuheena Magu, Male', Maldives

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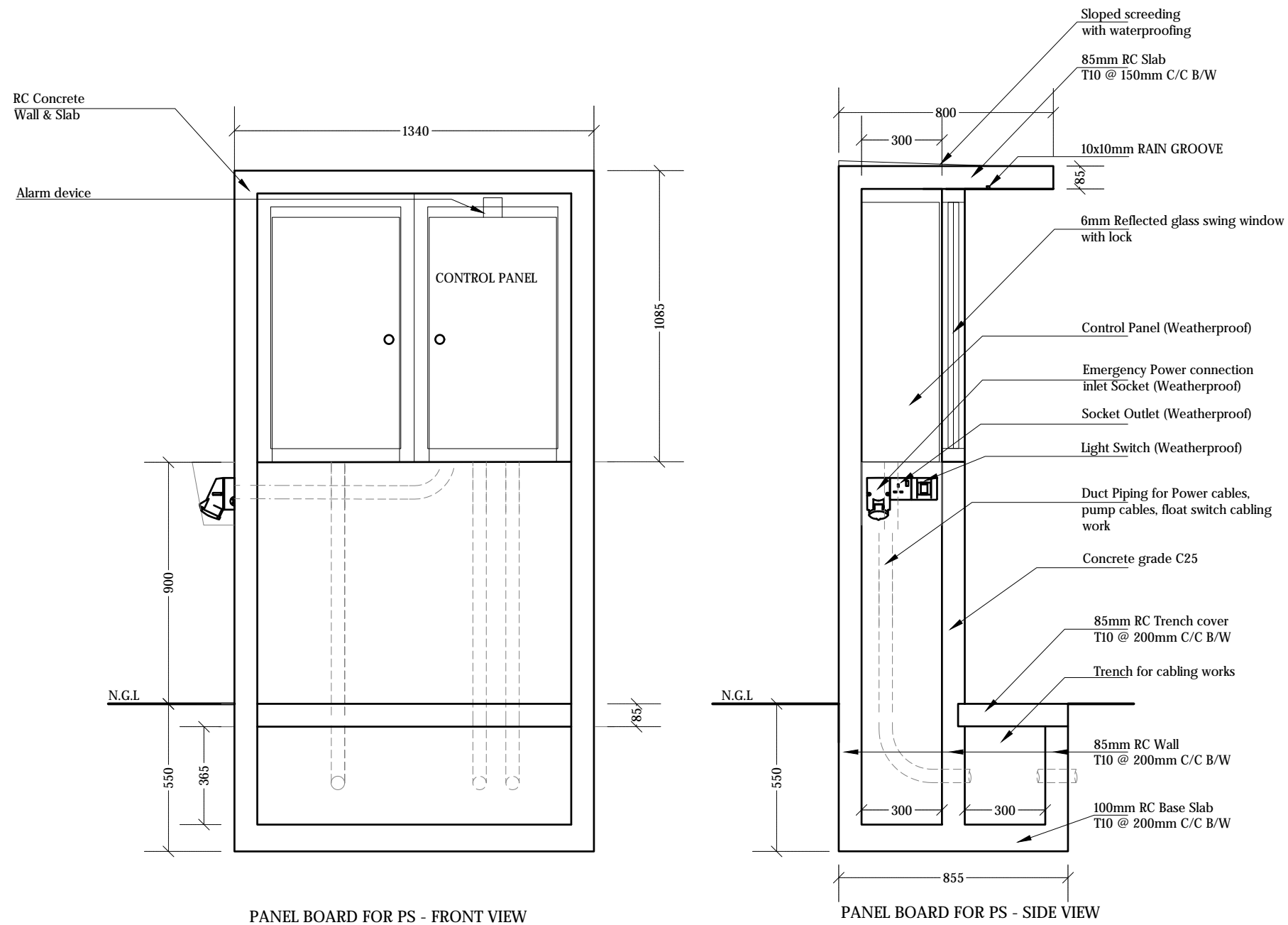
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Project No: **EP-WS/2019/05**

Rev: **W-(9)** Page:



CONTROL PANEL BOARD DETAILS

NTS



Legend

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Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

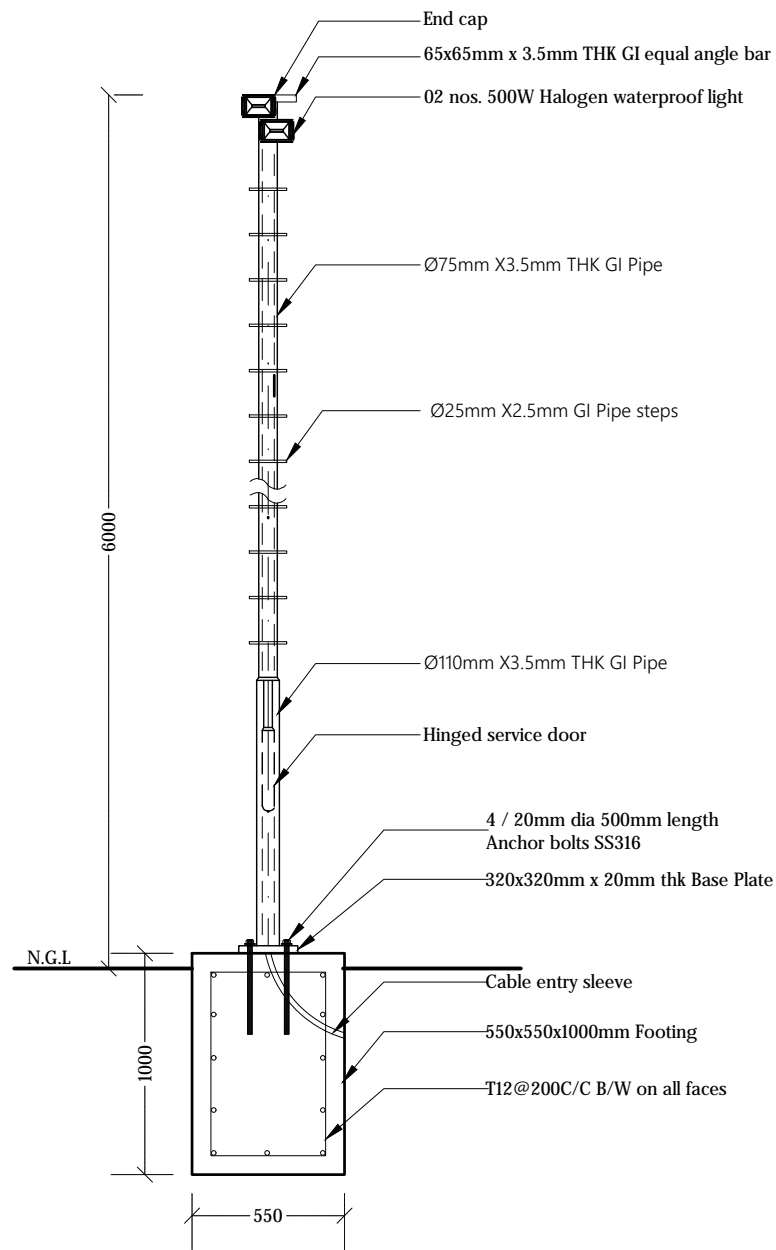
Sub Title:
Sewerage System in V. Rakeedhoo

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

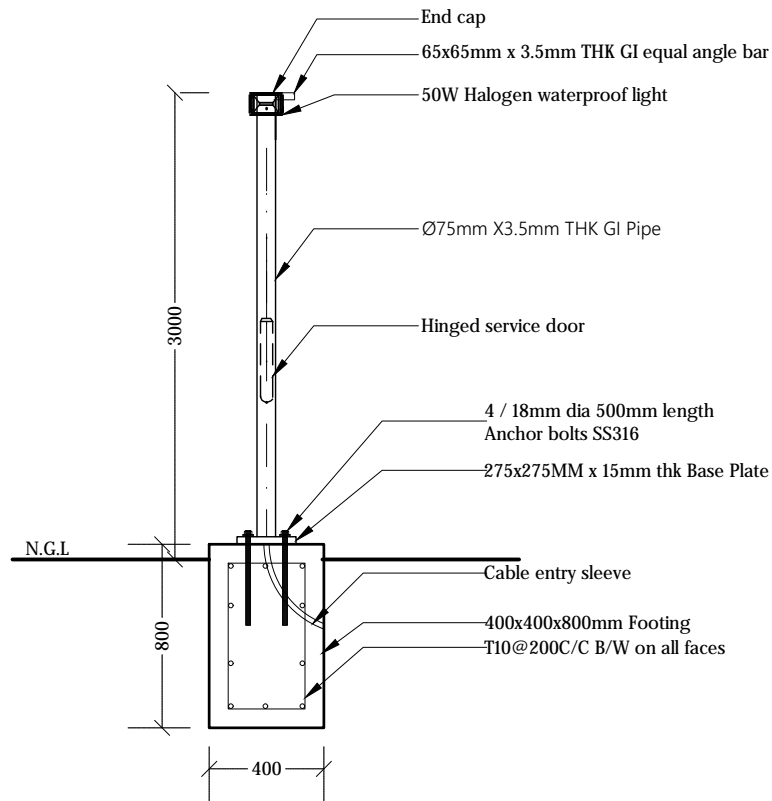
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FDBACK INFRA
Maldivian Infrastructure Development

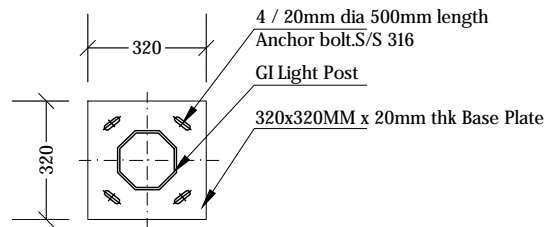
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Project No: EP-WS/2019/05	Page: W-(10)



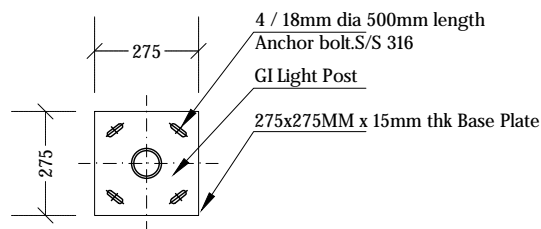
LIGHT POST DETAILS FOR STP COMPOUND (LP1)



LIGHT POST DETAILS FOR PUMP STATION (LP2)



BASE PLATE (LP1)



BASE PLATE (LP2)

LIGHT POST DETAILS

NTS



Legend

Notes:

- Light posts shall be galvanized (minimum 200 micron) and finished with epoxy paint
- All anchor bolts shall be SS316
- Cover for footings shall be 50mm
- Concrete shall be of grade C25
- All steel members and GI members to be applied with 2 coats of anti-corrosive paint with epoxy finishing paint
- All concrete cold joints shall be casted with bonding agent

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey,
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Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
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E: info@epochassociates
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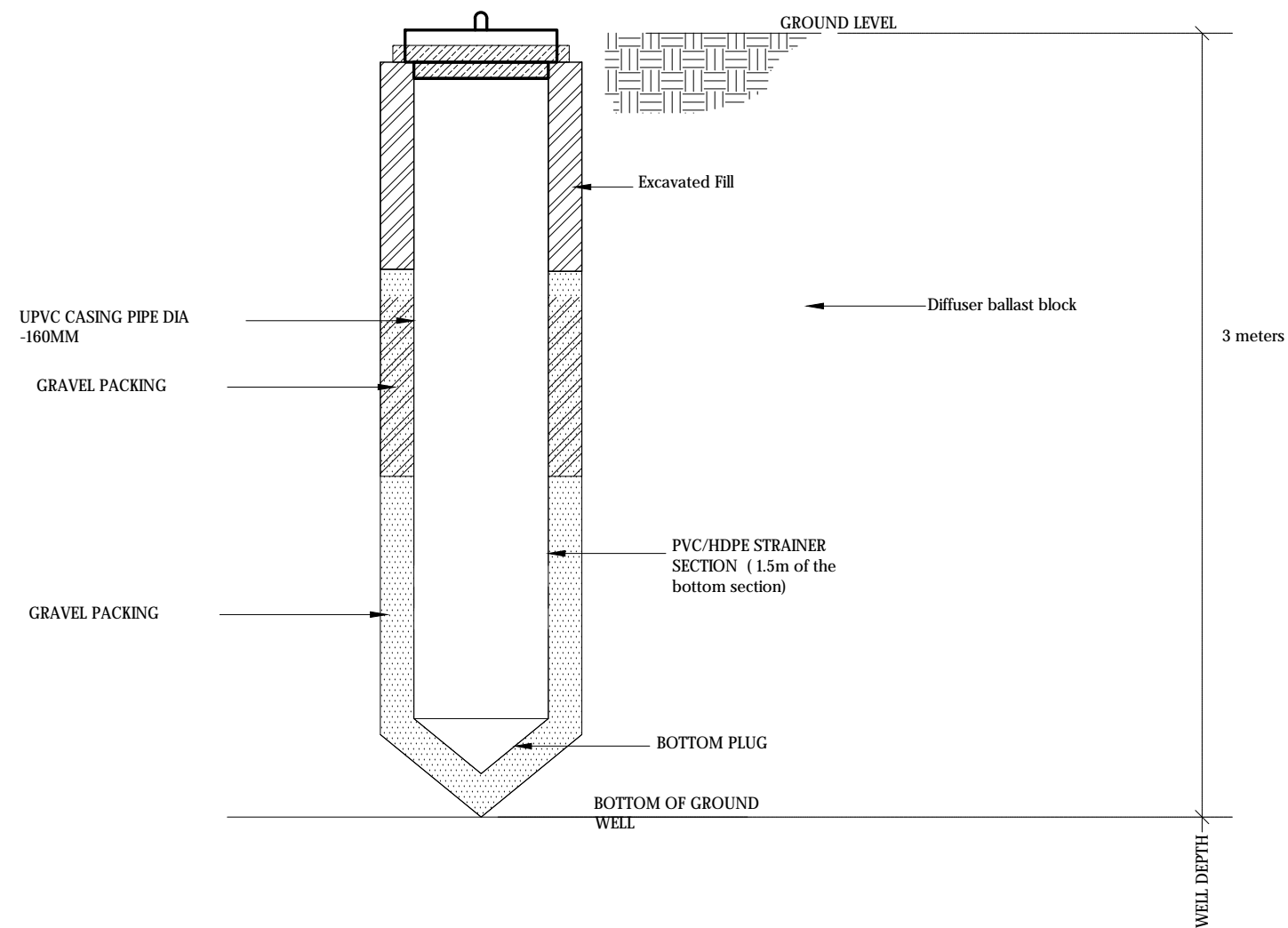
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Project No: EP-WS/2019/05

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SAMPLING WELL SECTION

NTS



Legend

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Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Rakeedhoo

Client:
Ministry of National Planning, Housing and
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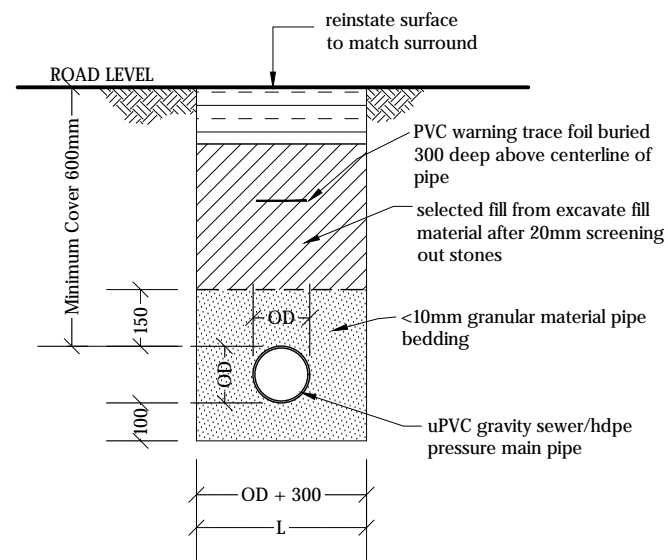


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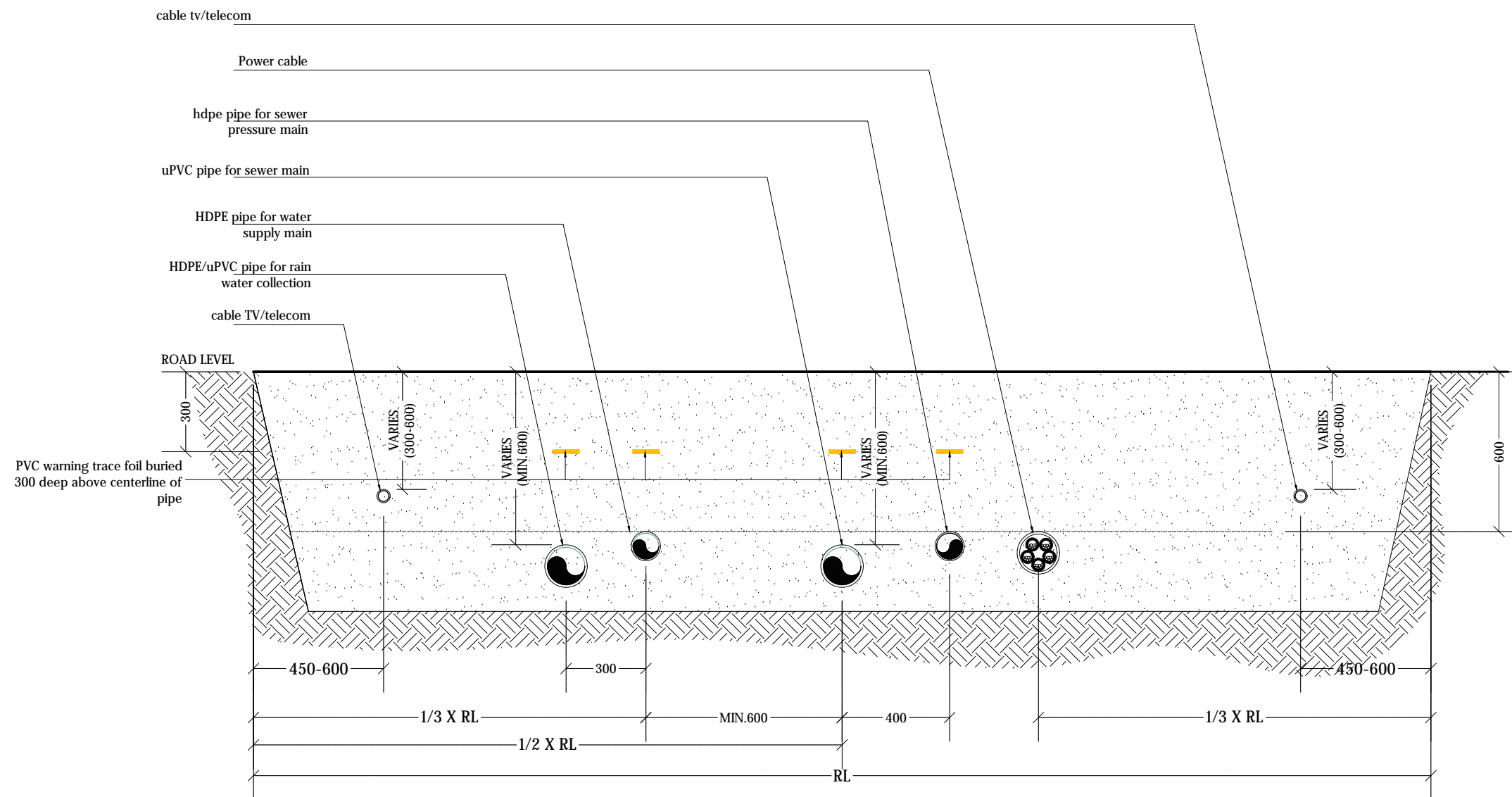


Feedback Infrastructure

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Project No: EP-WS/2019/05	Page: W-(22)



TRENCH & BEDDING DETAILS



TYPICAL ROAD SECTION

TRENCH AND BEDDING DETAILS

1:20

Legend

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

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Consultancy Services for Survey,
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Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

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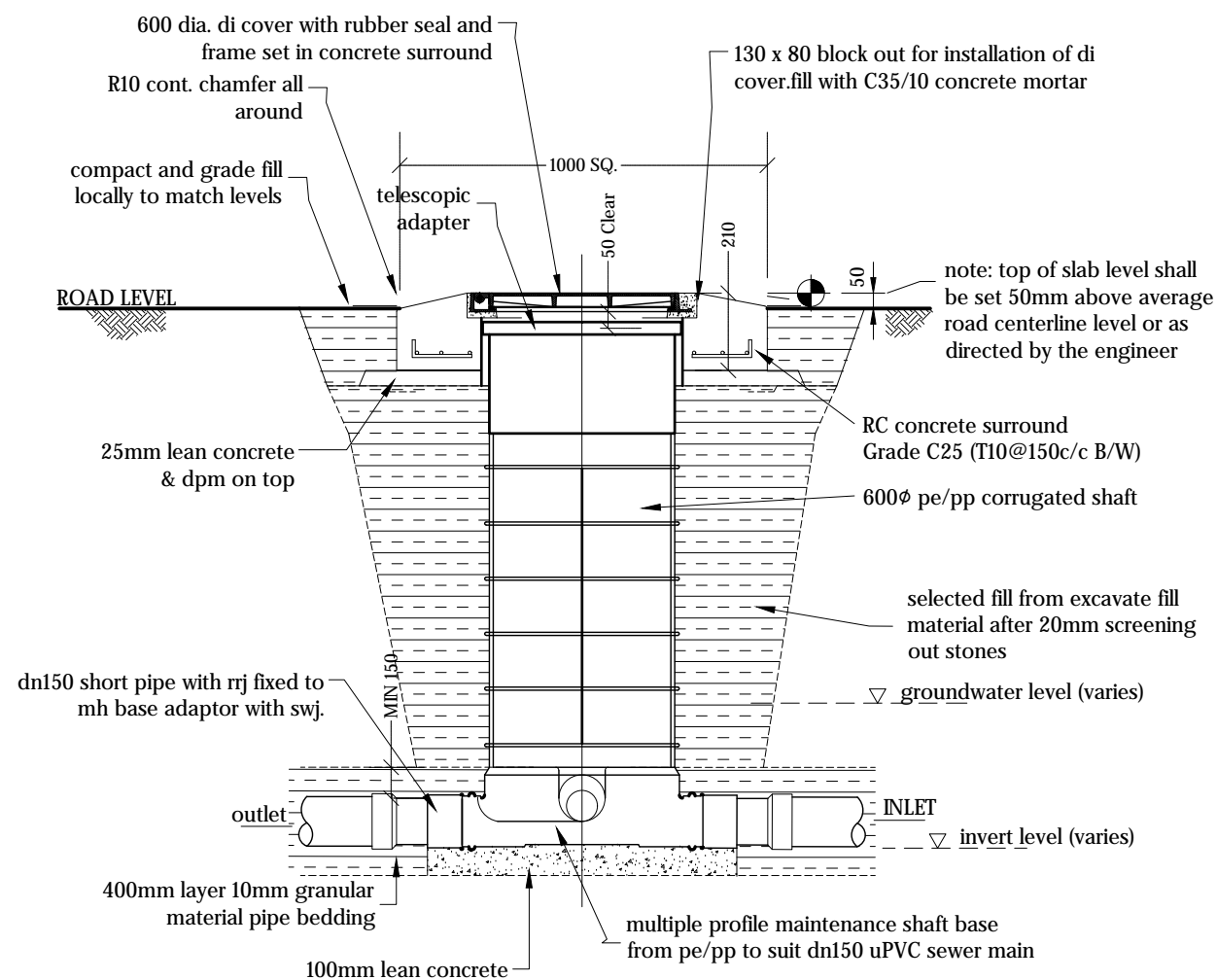
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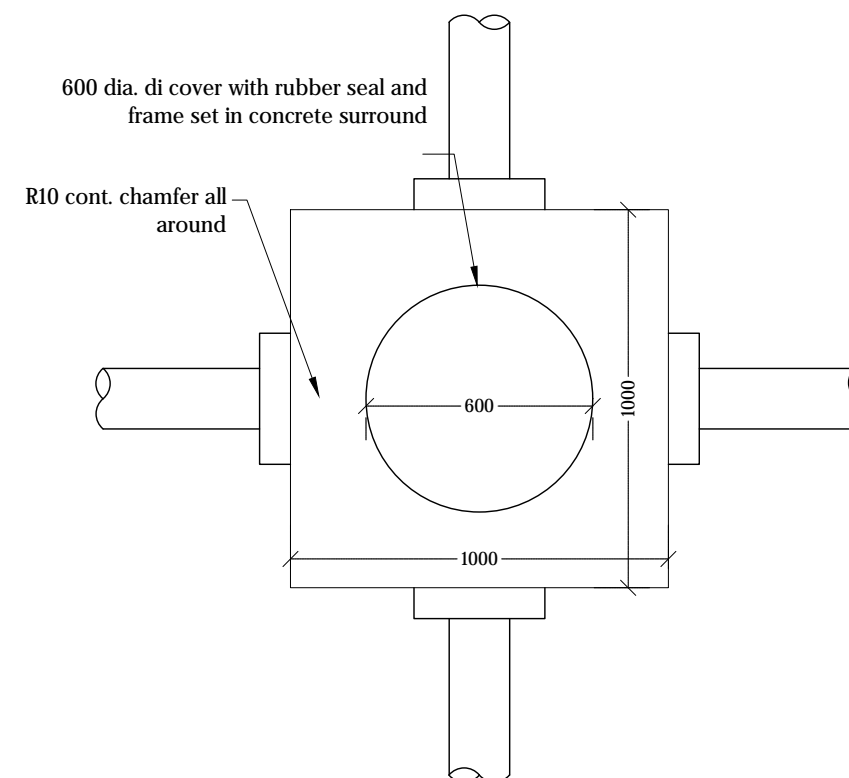
Project No: EP-WS/2019/05

Rev: Page:

W-(12)



ELEVATION - MAINTENANCE SHAFT (MH)



PLAN VIEW - MAINTENANCE SHAFT (MH)

MAINTENANCE SHAFT (MH) DETAILS

1:20



Legend

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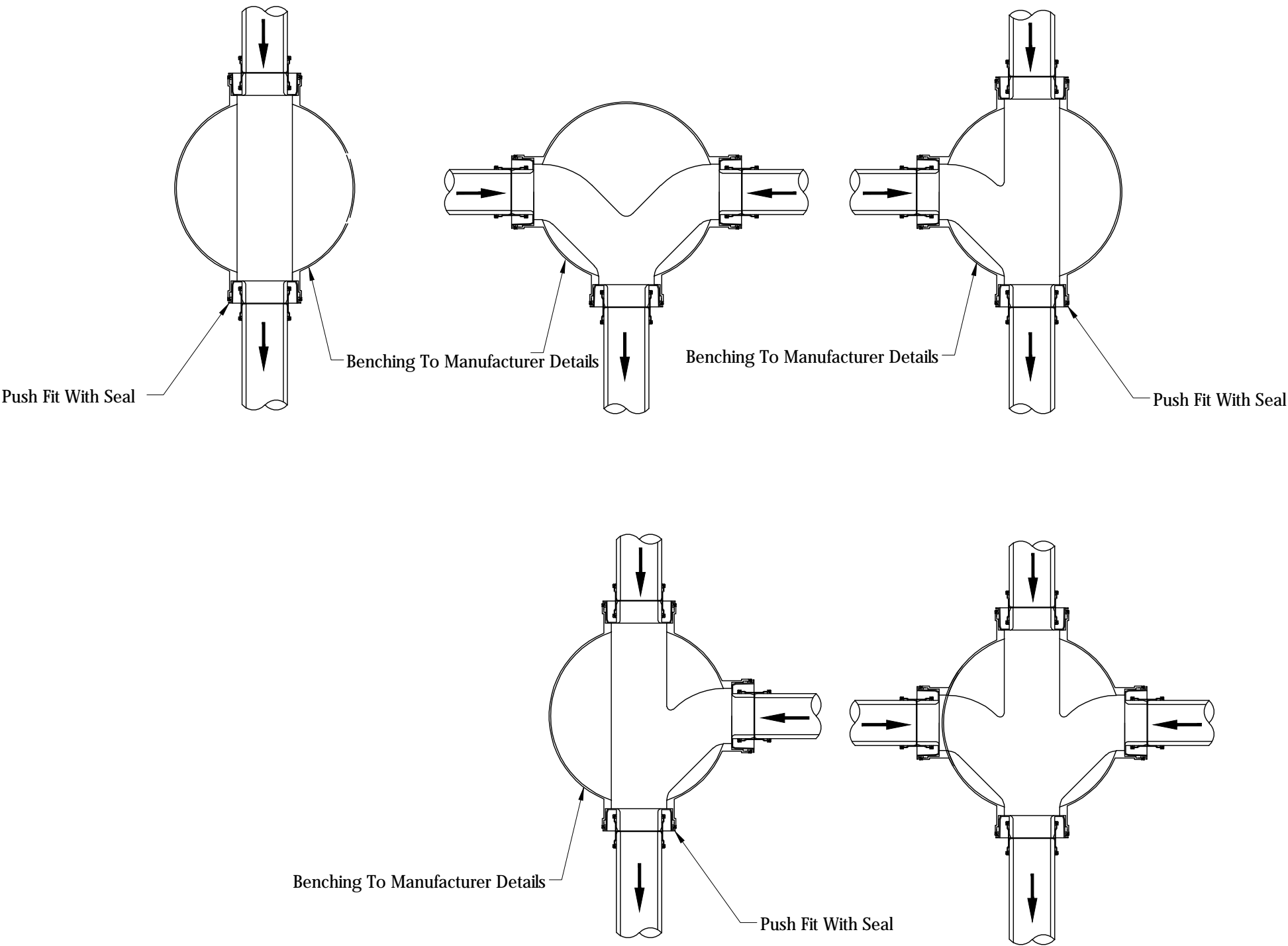
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Project No: EP-WS/2019/05

Rev: Page:

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TYPICAL MANHOLE BASE DETAILS

NTS

Legend

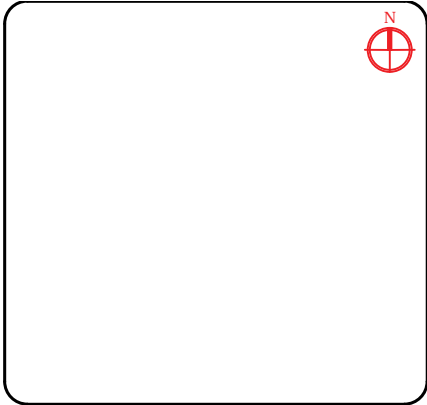
REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
 Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5
Sub Title:
 Sewerage System in V. Rakeedhoo
Client:
 Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

T: +960 333 3528
 E: info@epochassociates
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Building Infrastructure Happier

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Project No: EP-WS/2019/05	
Rev:	Page: W-(14)



Legend

ELEVATION - CLEANOUT (CO)

PLAN VIEW - CLEANOUT (CO)

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey,
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6 islands, Maldives - Package 5

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E: info@epoch.associates
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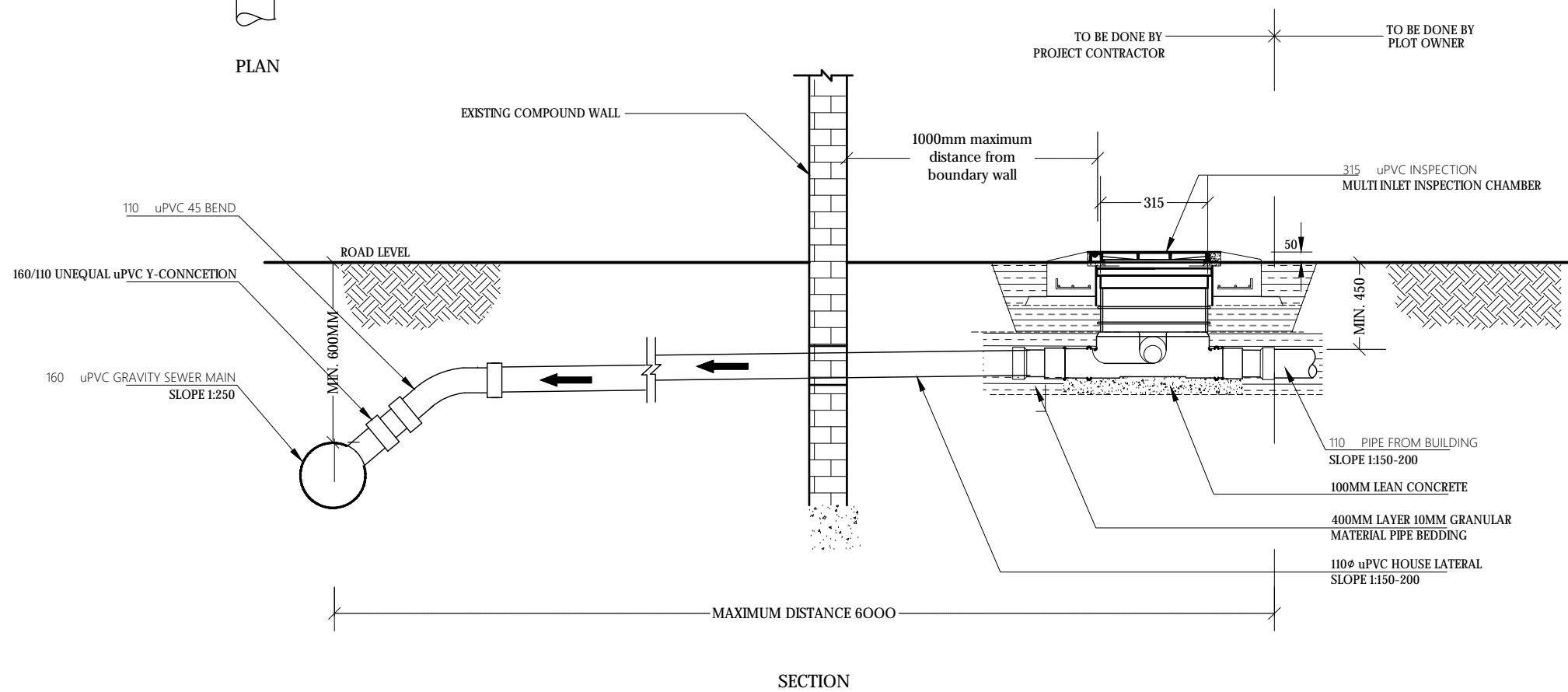
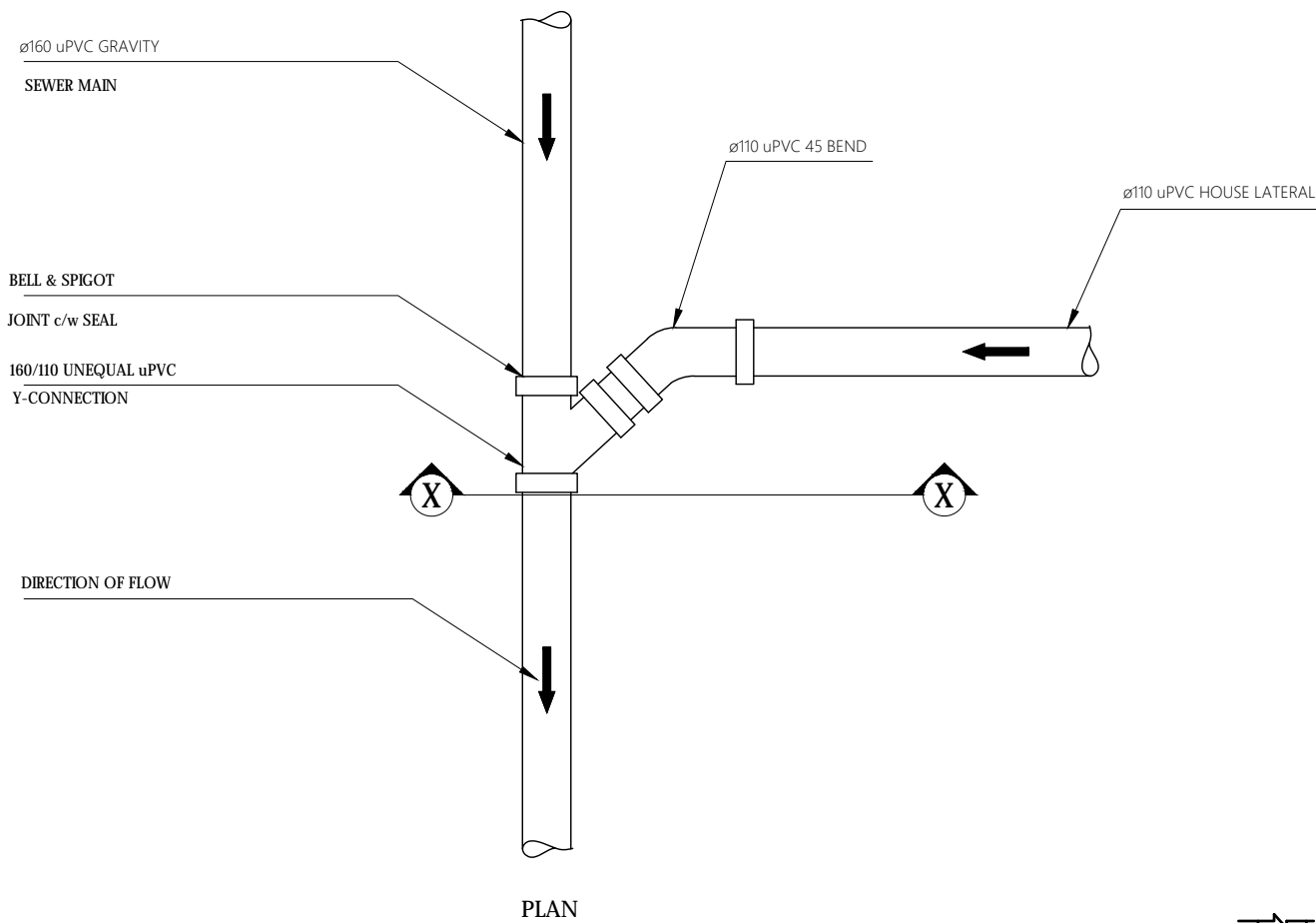
Date: Sep 2020	SCALE (A3): NTS
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Project No: EP-WS/2019/05

Rev:	Page: W-(15)
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CLEAN OUT DETAILS

NTS



TYPICAL HOUSE CONNECTION DETAIL

NTS



Legend

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.

[illegible]

Title:
Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Rakeedhoo

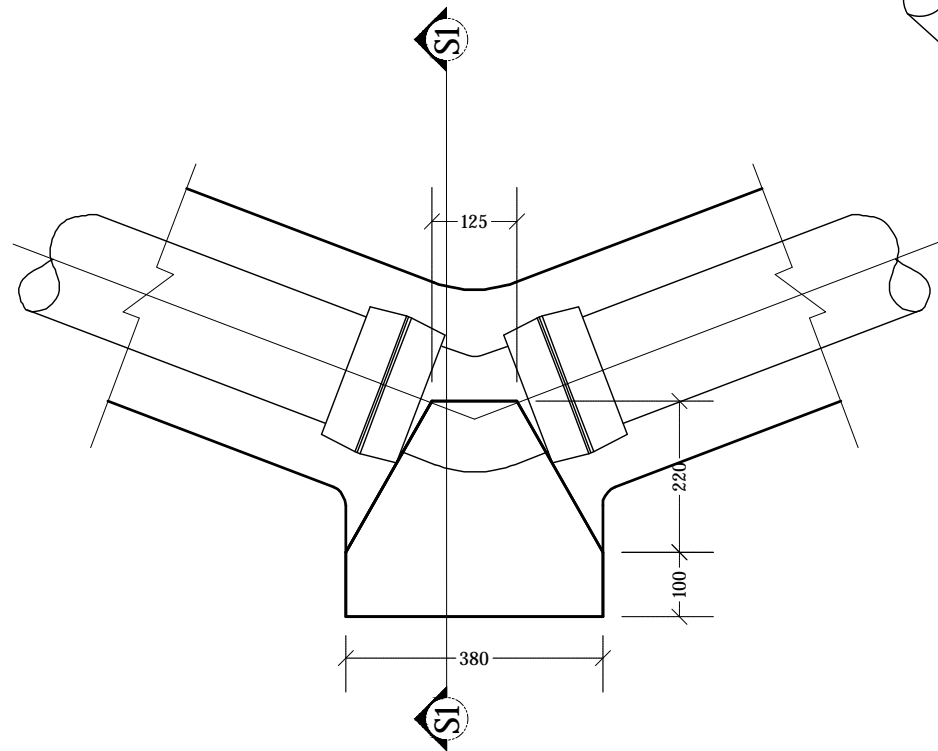
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Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives



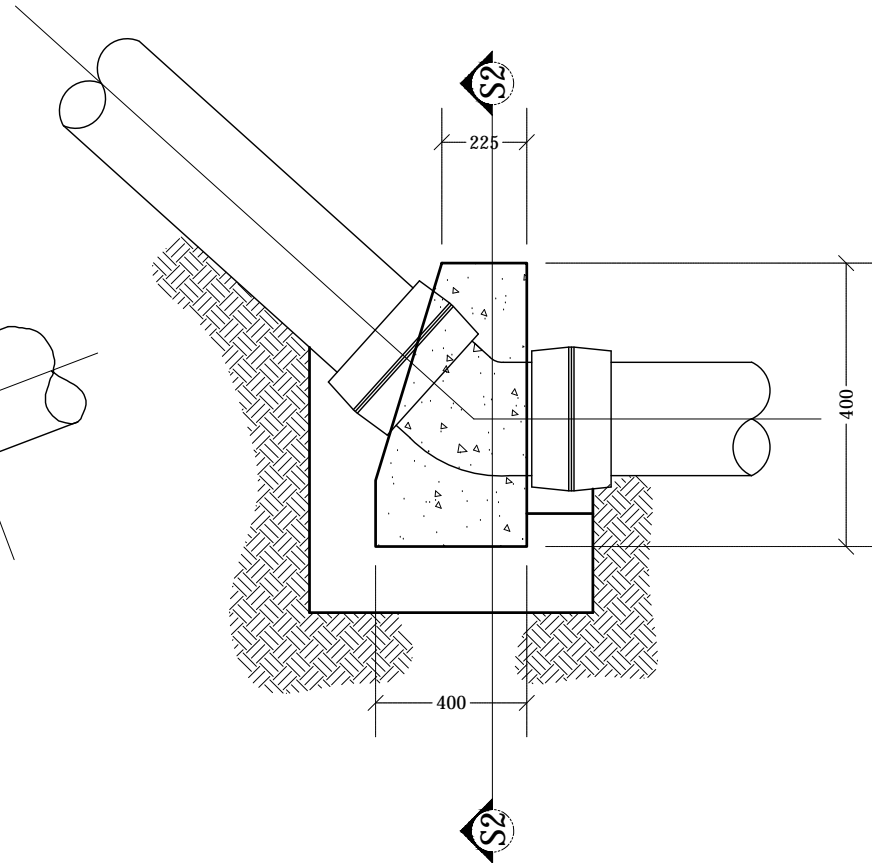
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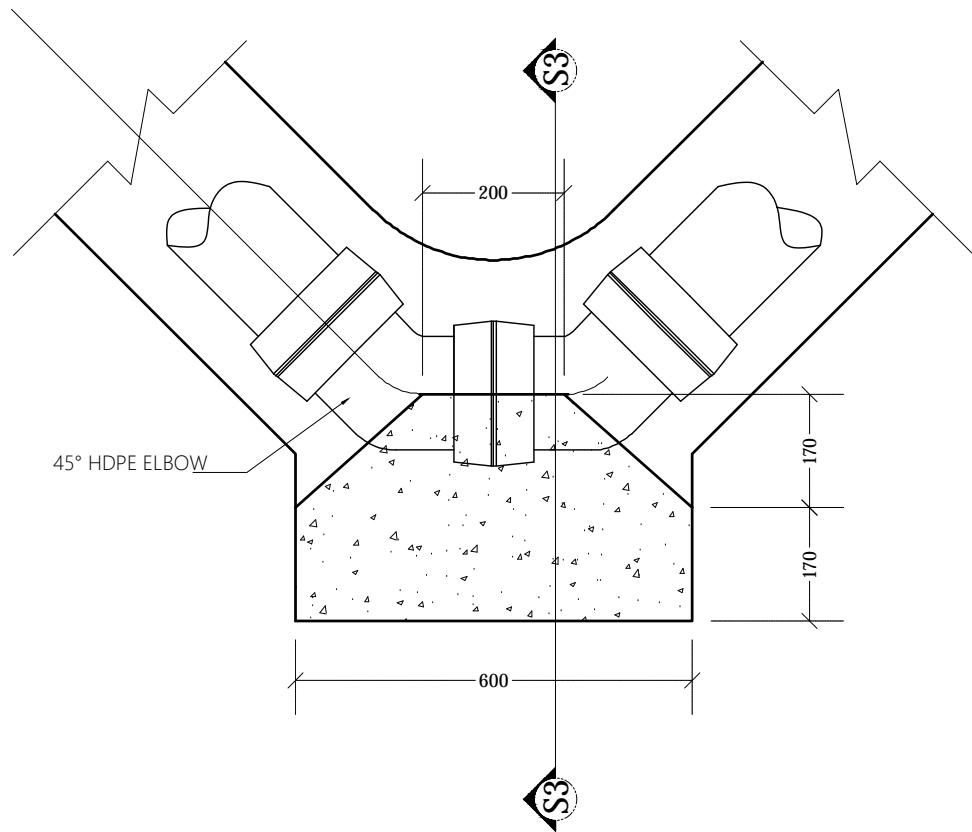
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Designed: F.I.A.	Approved: LW.
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/05	
Rev:	Page: W-(16)



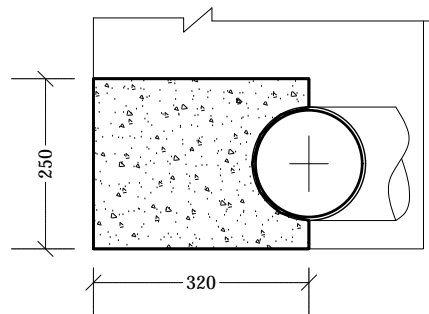
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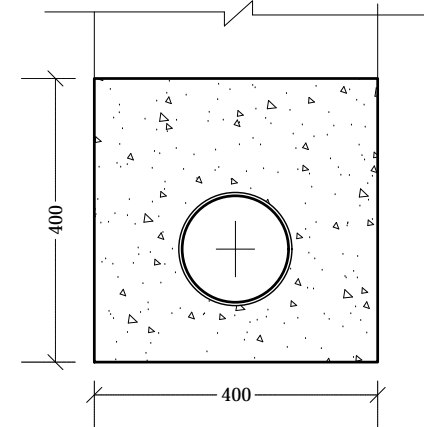
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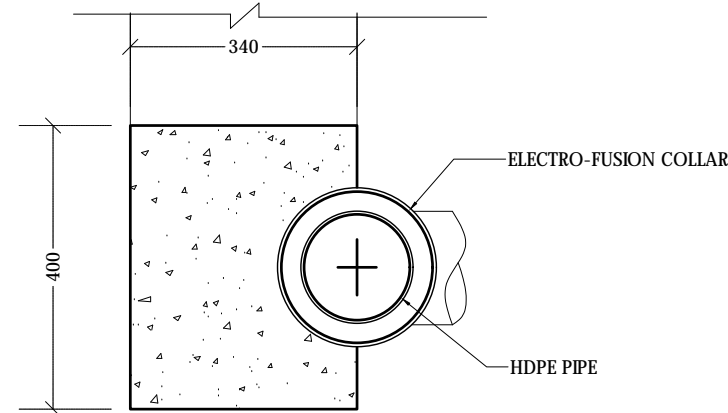
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SECTION S1-S1
NTS



SECTION S2-S2
NTS



SECTION S3-S3
NTS

THRUST BLOCK DETAILS
NTS

Legend

Notes:

- Concrete shall be of grade C25

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Rakeedhoo

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

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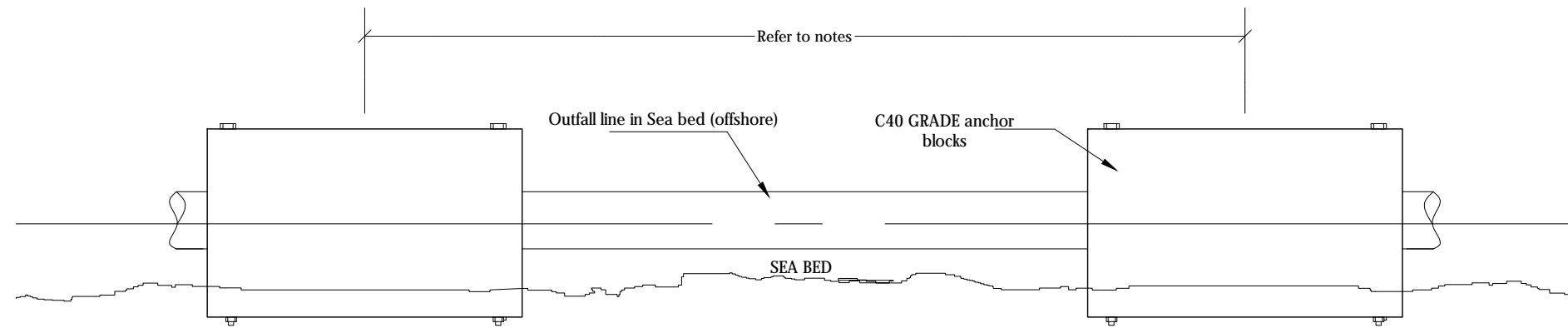
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FOODBACK

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/2019/05	Page: W-(17)

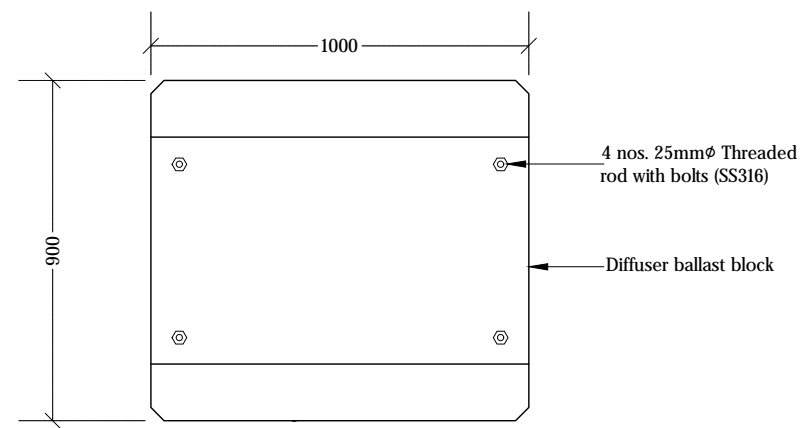
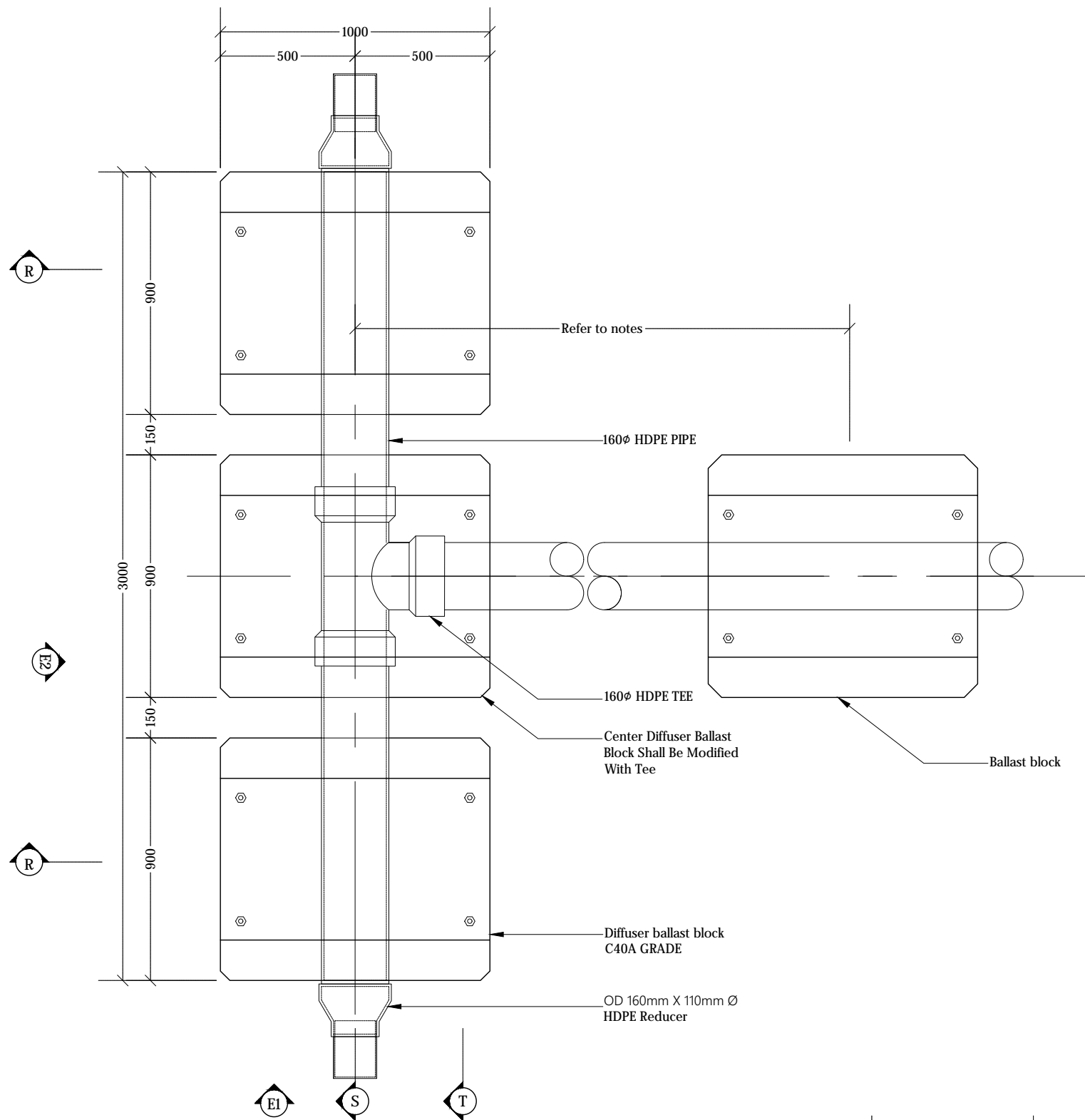


Technical drawing of the proposed structure showing a cross-section. The structure is dome-shaped with an outfall pipe at the top. Key components and dimensions are labeled:

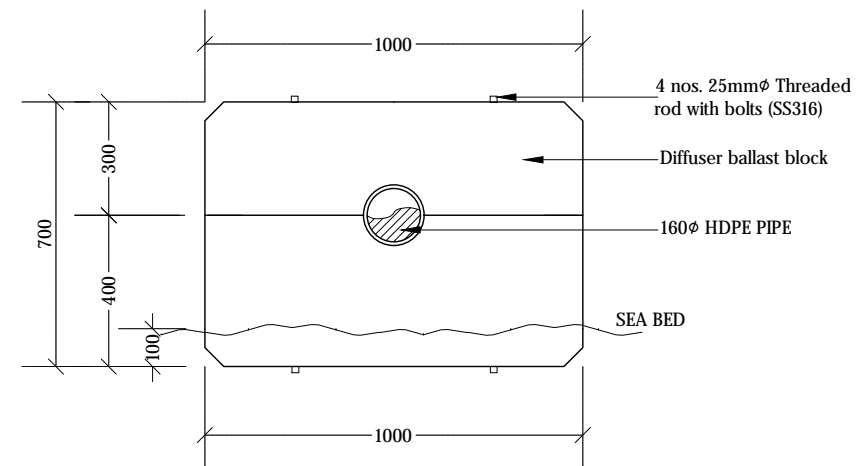
- Anchor blocks C40A GRADE**: Located at the top of the structure.
- 4 nos. 25mm ϕ Threaded rod with bolts (SS316)**: Four rods connecting the anchor blocks to the structure.
- Outfall pipe**: The central pipe at the top of the dome.
- T12 @200c/c B/W**: Reinforcement bars (T12) spaced at 200mm center-to-center.
- SEA BED**: The base of the structure.
- Dimensions**:
 - Vertical dimensions: 300 (top section), 300 (middle section), and 400 (base section).
 - Horizontal dimensions: 150 (left side), 600 (main width), and 150 (right side).

Technical drawing of a reinforced concrete slab cross-section showing reinforcement details. The slab has a total width of 1000 mm and a total depth of 150 mm. It features 4 nos. 25mm diameter threaded rods with bolts (SS316) spaced at 100 mm. The drawing also shows 27mm diameter holes and various dimensions for the reinforcement layout, including 100 mm, 150 mm, 400 mm, and 600 mm segments.

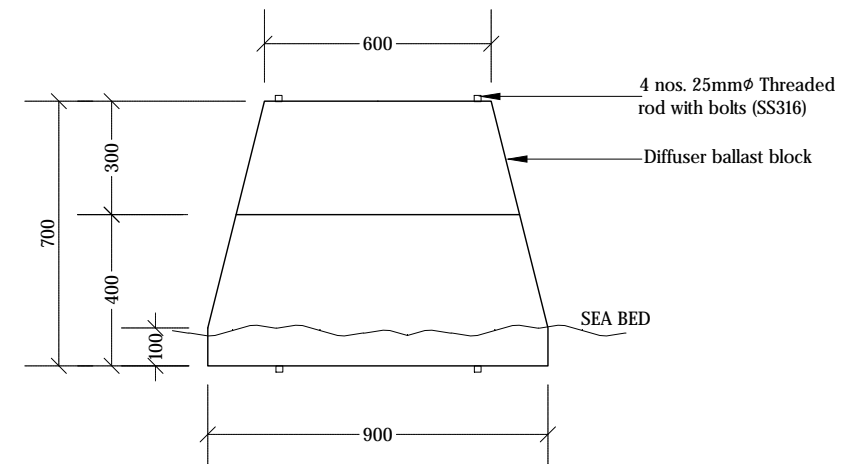
W-(18)



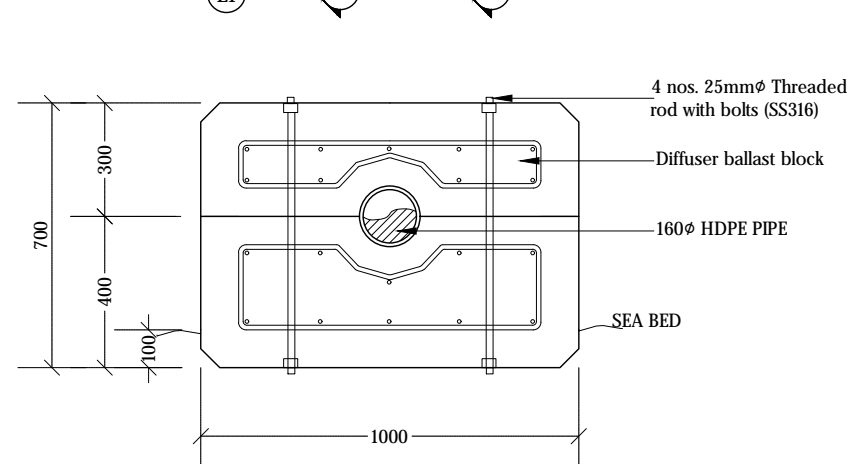
DIFFUSER BALLAST BLOCK PLAN



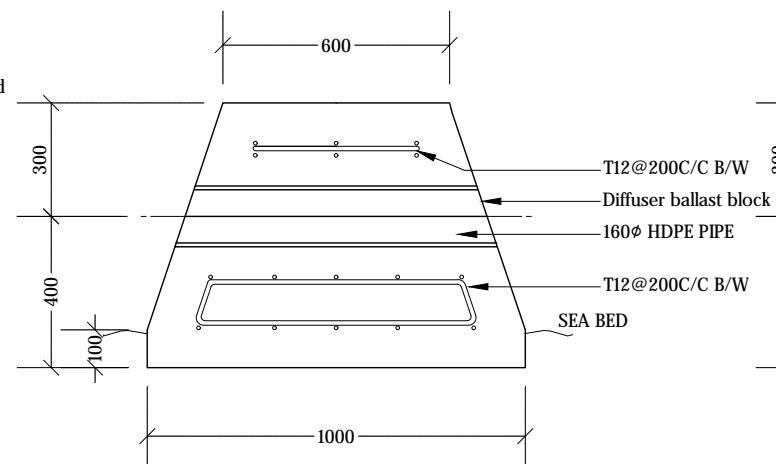
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E1



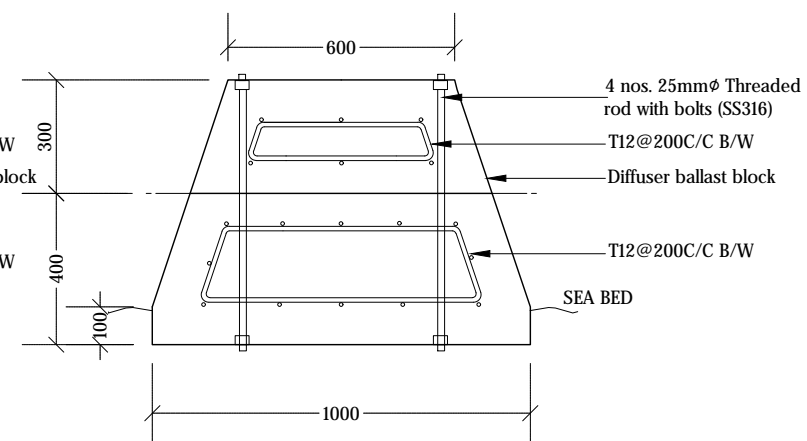
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E2



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. of 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.

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Rakeedhoo

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

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ASSOCIATES

T: +960 333 3528
E: info@epochassociates
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A: G. Rosary West,
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Maldives

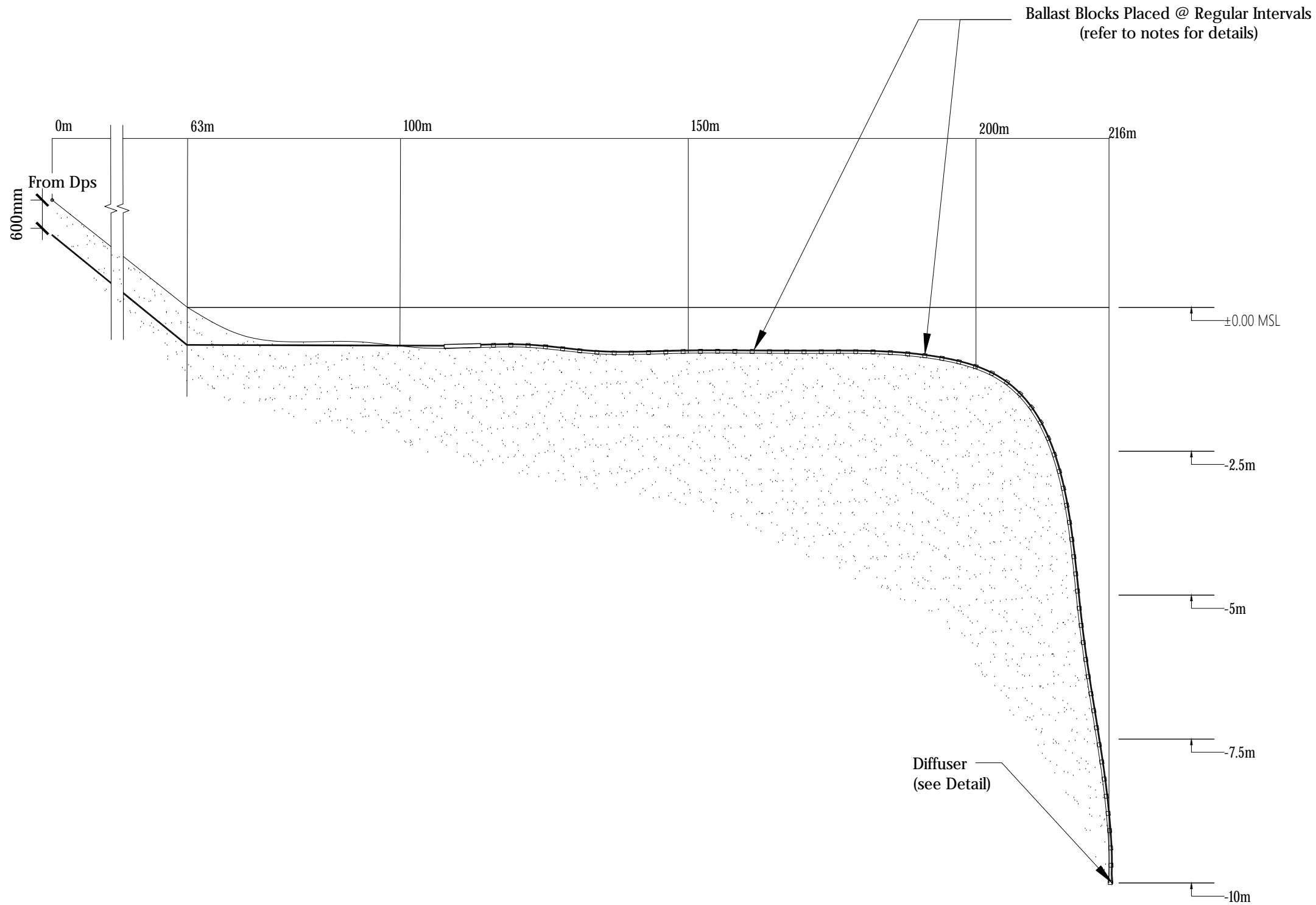
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

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Legend

- Notes:
1. Contractor should carry out a detailed bathymetric survey for the proposed area, revise and present a shop drawing for the outfall layout prior to commencement of outfall works.
 2. 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,
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Client:
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A: G. Rosary West,
Husnuheena Magu, Male', Maldives

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Building Sustainable Maldives

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

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

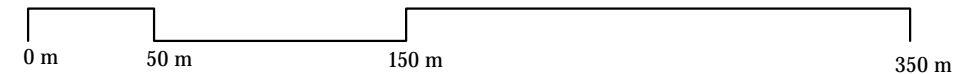
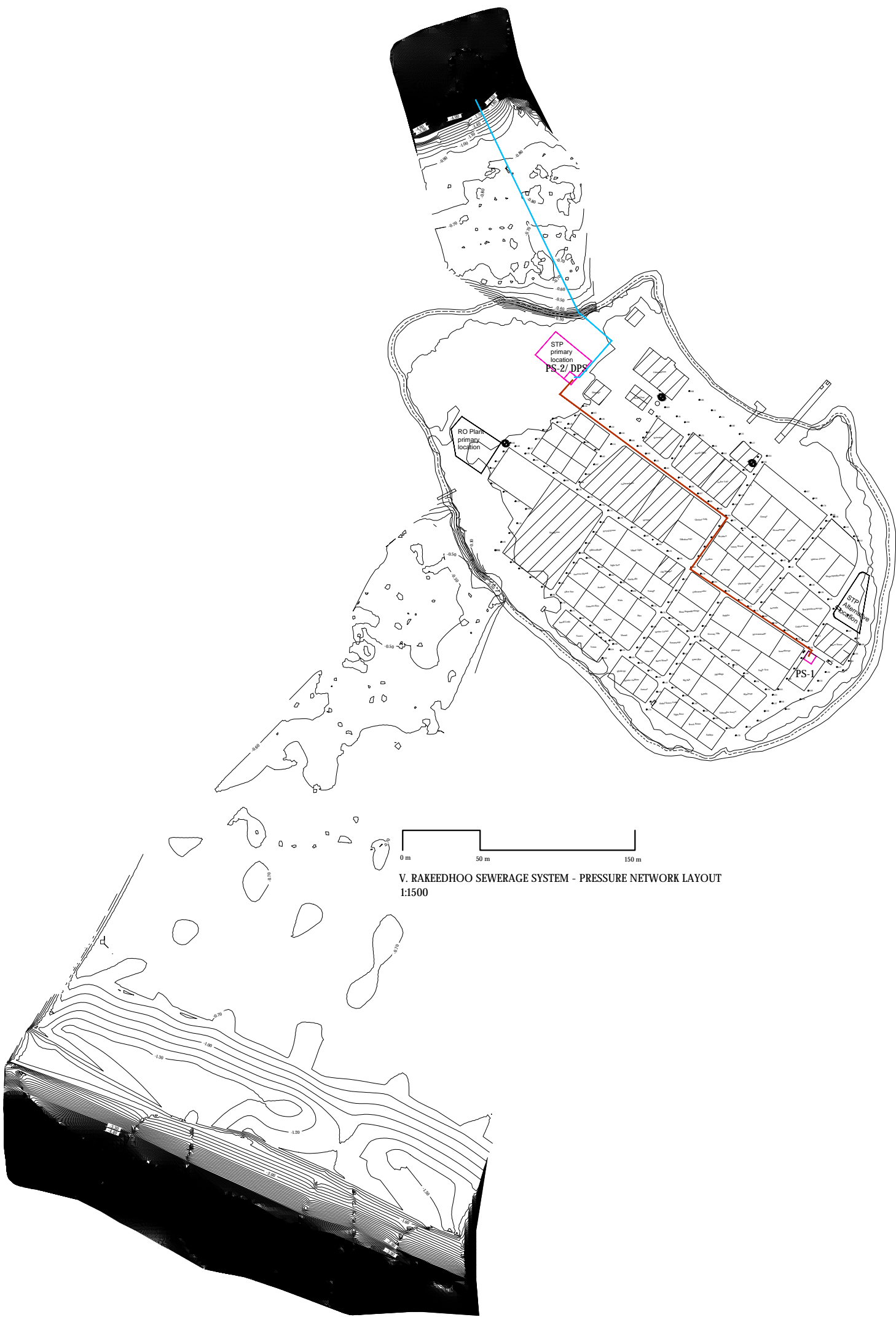
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

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SEA OUTFALL DETAILS

NTS



V. RAKEEDHOO SEWERAGE SYSTEM - PRESSURE NETWORK LAYOUT
1:3000



Legend

- 110 mm Ø HDPE Pumping Main (PE100, PN16, SDR11)
- 160 mm Ø HDPE Sea Outfall Pipe (PE100, PN16, SDR11)

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
Consultancy Services for
Survey, Design and EIA works of
Water Supply and Sewerage
Facilities
in 6 islands, Maldives – Package 5
Sewerage System in V. Rakeedhoo

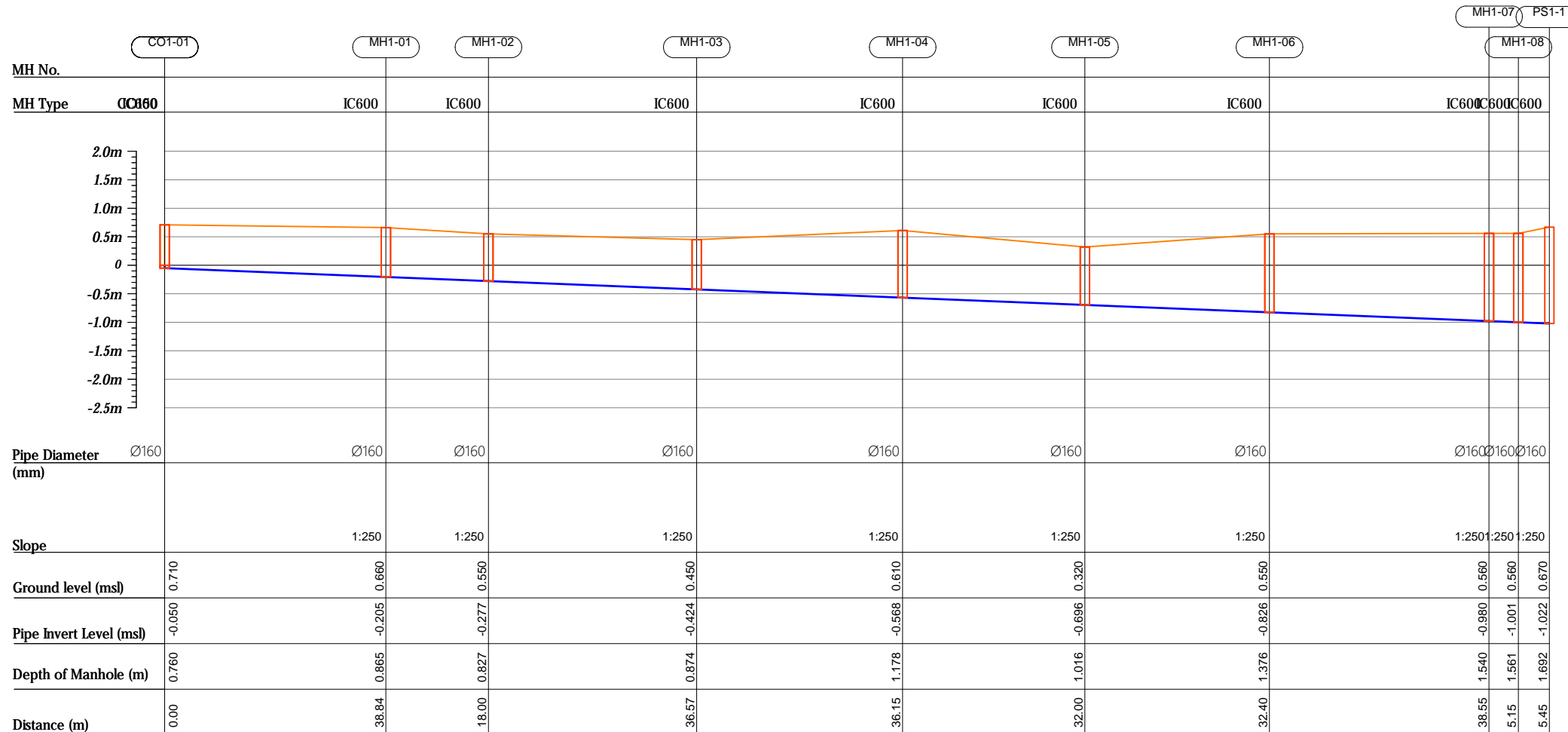
Client:
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Husnuheemaa Magu, Male', Maldives

DBACK INFRA
Water Supply and Sewerage

Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:3000
Project No: EP-WS/2019/05	Page:

Profile 01



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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6 islands, Maldives - Package 5*

Sub Title:
Sewerage System in V.Rakeedhoo

Client:
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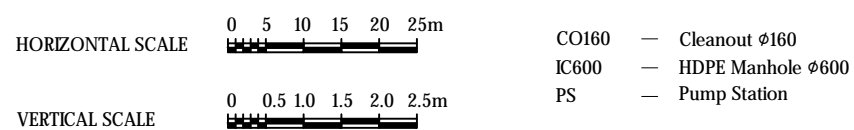
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Designed: F.I.A	Approved: LW
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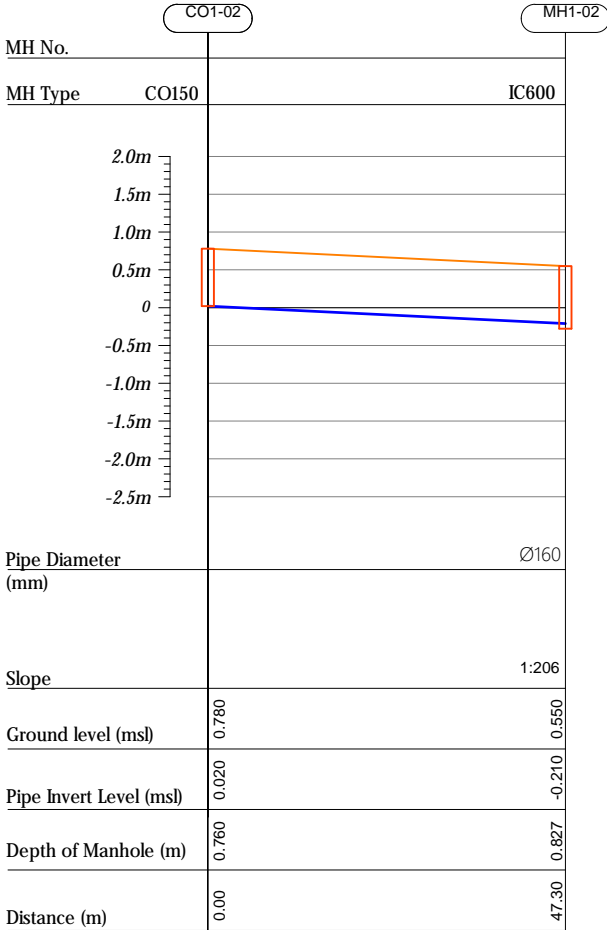
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Project No: 01010101

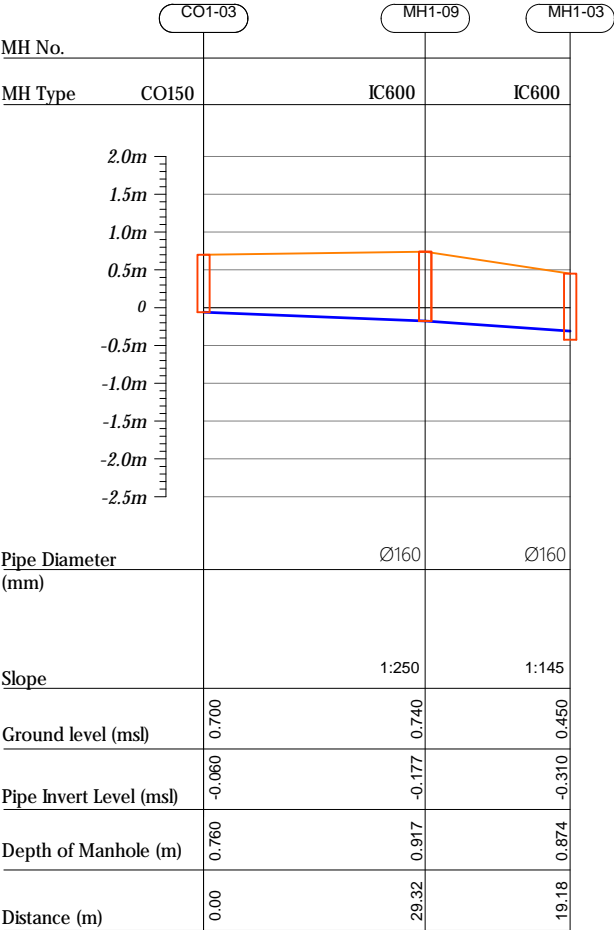
Rev: <i>R-01</i>	Page: <i>PS1-01</i>
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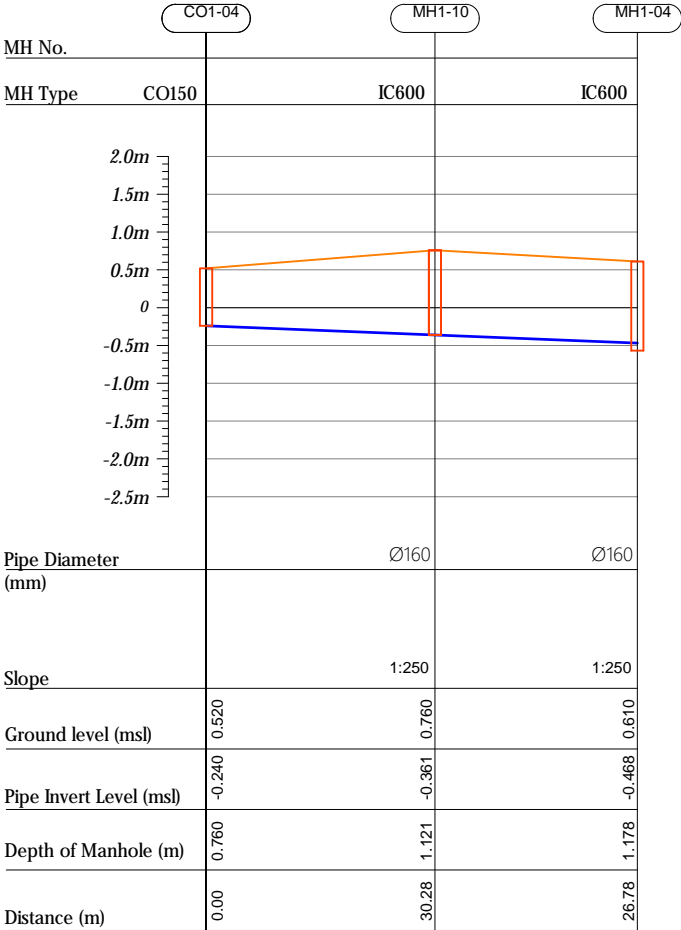
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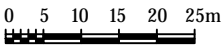
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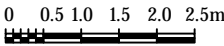
Profile 04



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
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V.Rakeedhoo

Client:
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Infrastructure, Republic of Maldives



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

DBAC INFRA
Maldivu Infrastructure Develop

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

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

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

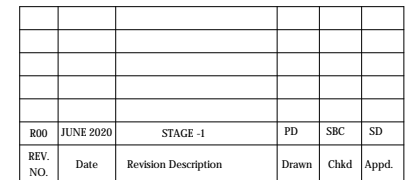
Project No: 01010101

Rev: R-01 Page: PS1-02

MH No.	CO1-05	MH1-11	MH1-10
MH Type	CO150	IC600	IC600
Pipe Diameter (mm)		Ø160	Ø160
Slope		1:250	1:250
Ground level (msl)	0.690	1.050	0.760
Pipe Invert Level (msl)	-0.070	-0.190	-0.315
Depth of Manhole (m)	0.760	1.240	1.121
Distance (m)	0.00	30.00	31.15

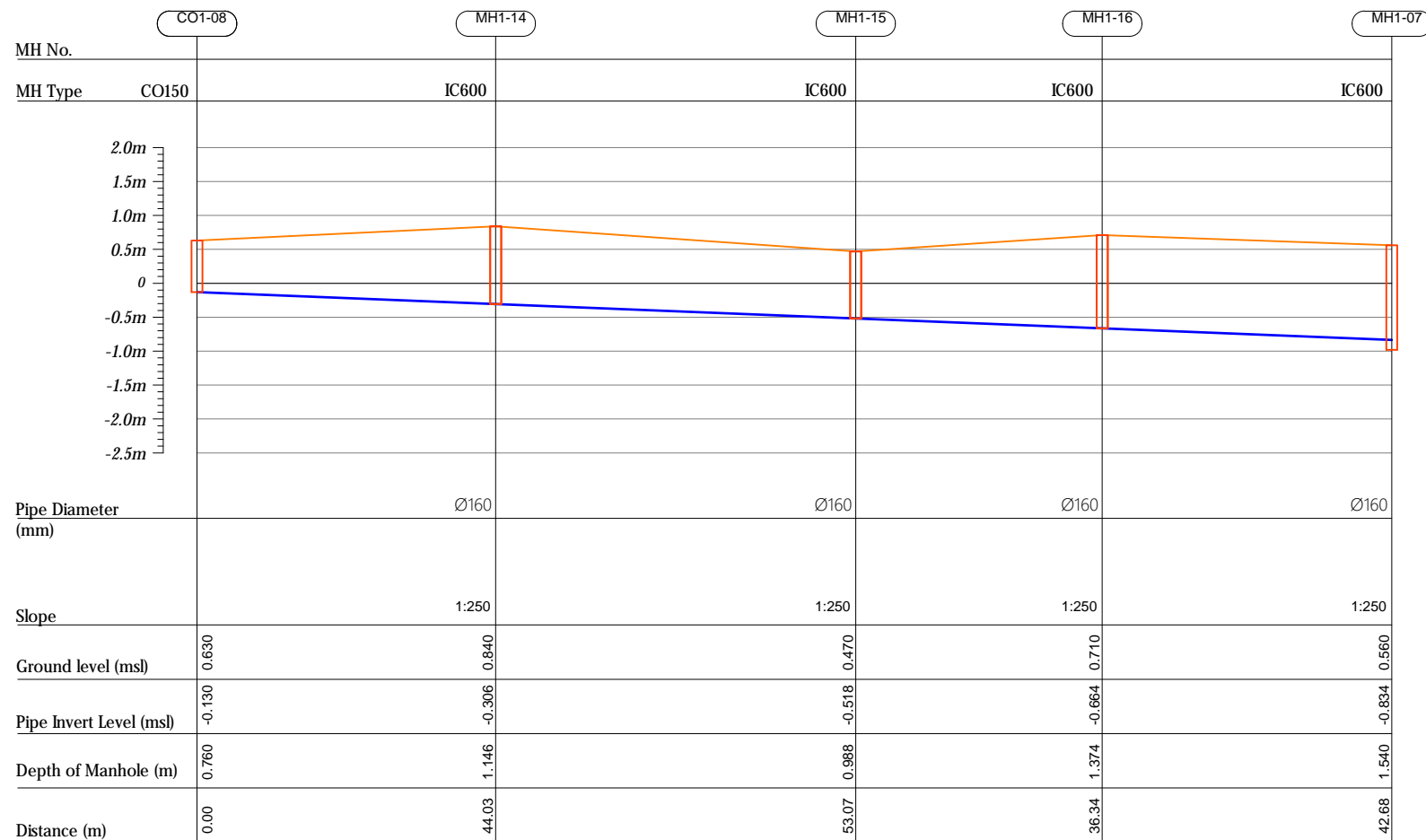
MH No.	CO1-06	MH1-12	MH1-06
MH Type	CO150	IC600	IC600
Pipe Diameter (mm)		Ø160	Ø160
Slope		1:250	1:250
Ground level (msl)	0.500	0.700	0.550
Pipe Invert Level (msl)	-0.260	-0.462	-0.607
Depth of Manhole (m)	0.760	1.162	1.376
Distance (m)	0.00	50.47	36.37

MH No.	CO1-07	MH1-13	MH1-12
MH Type	CO150	IC600	IC600
Pipe Diameter (mm)		Ø160	Ø160
Slope		1:250	1:250
Ground level (msl)	0.740	0.700	0.700
Pipe Invert Level (msl)	-0.020	-0.207	-0.280
Depth of Manhole (m)	0.760	0.907	1.162
Distance (m)	0.00	46.66	18.42

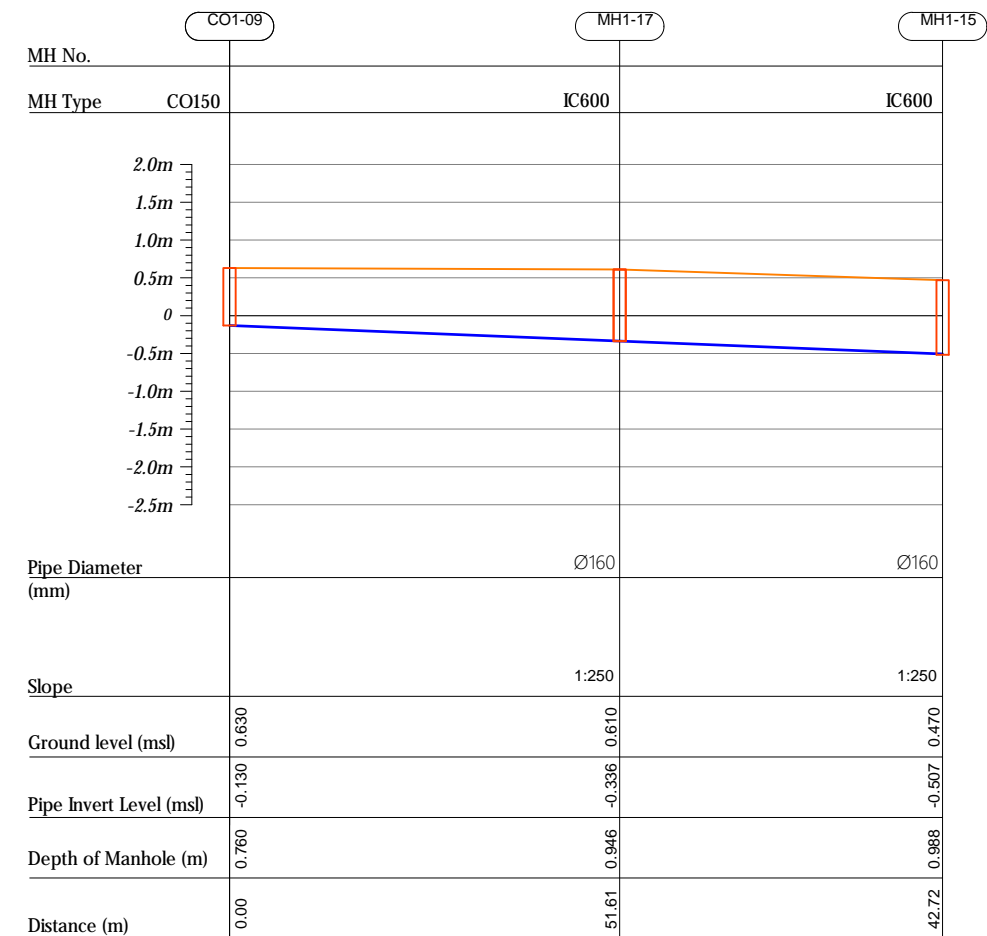


R-01 PS1-03

Profile 08



Profile 09




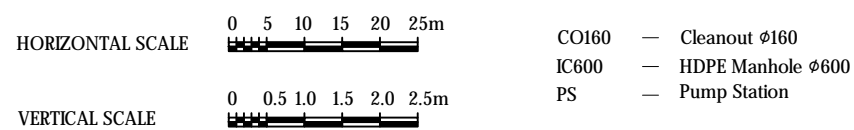
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REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

Title:
*Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5*

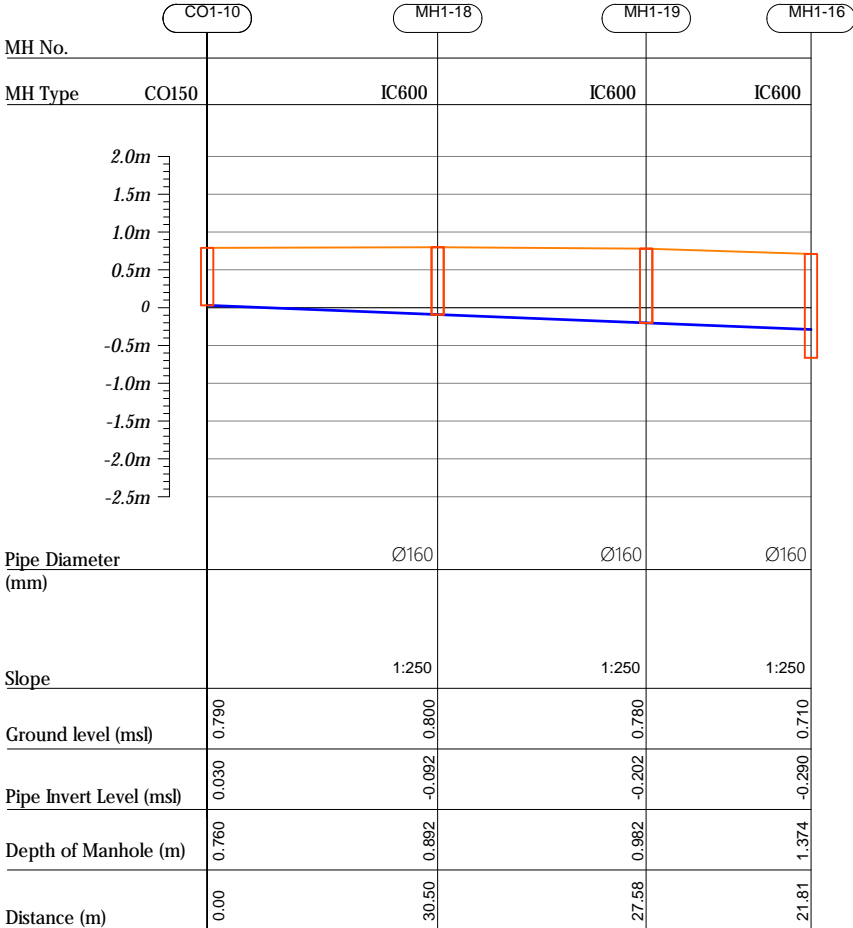
Sub Title:
Sewerage System in V.Rakeedhoo

Client:
*Ministry of National Planning, Housing and
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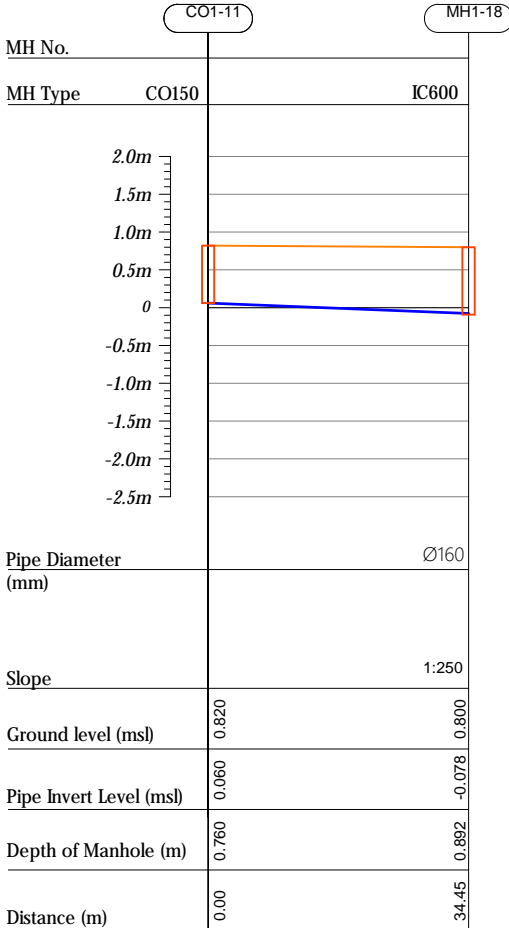
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Drawn: A.R.W	Checked: M.S.S
Designed: F.I.A	Approved: I.W
Date: Aug 2020	SCALE (A3): 1:100
Project No: 01010101	
Rev: R-01	Page: PSI-04



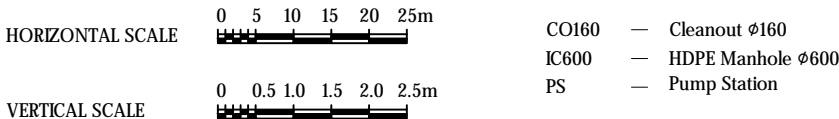
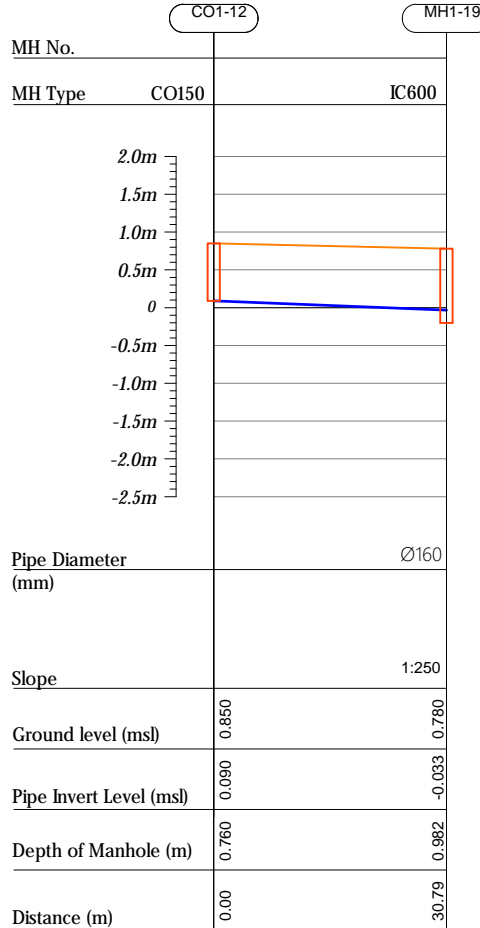
Profile 10



Profile 11



Profile 12



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
6 islands, Maldives - Package 5*

Sub Title:
Sewerage System in V.Rakeedhoo

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



Drawn: A.R.W	Checked: M.S.S
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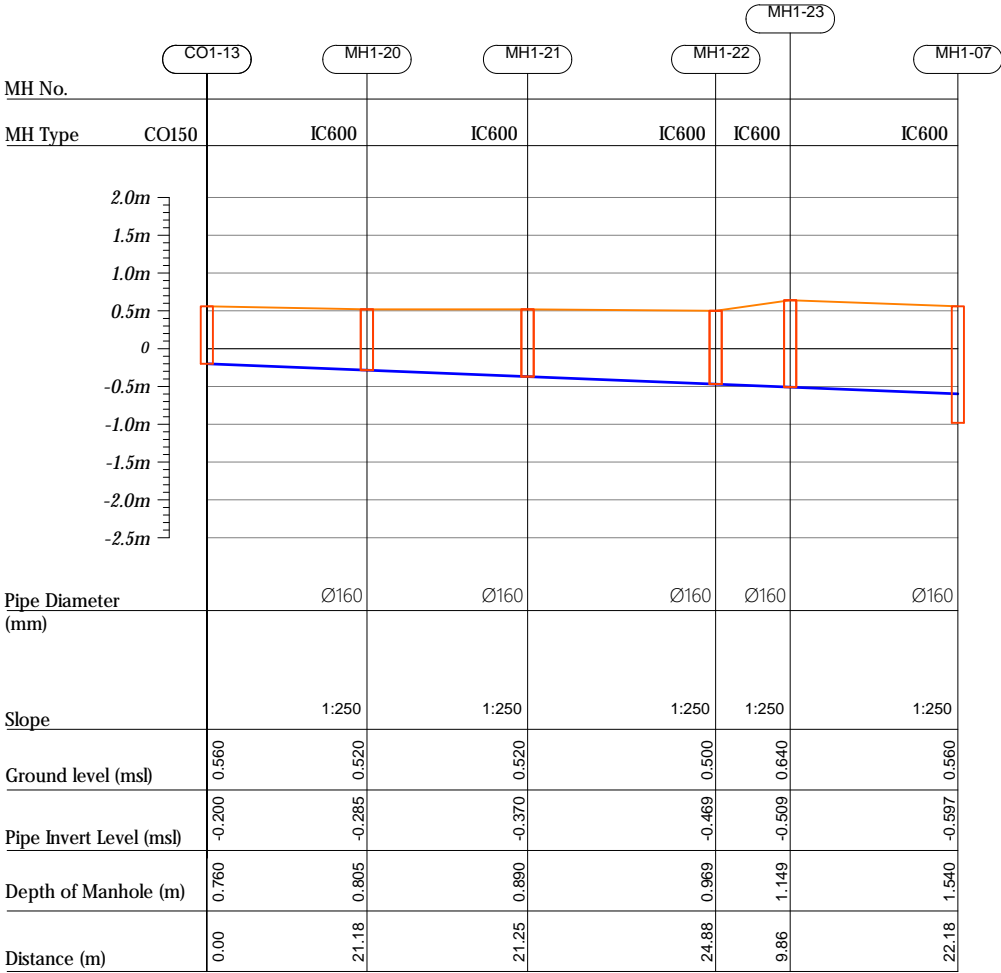
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Date: Aug 2020	SCALE (A3): 1:100
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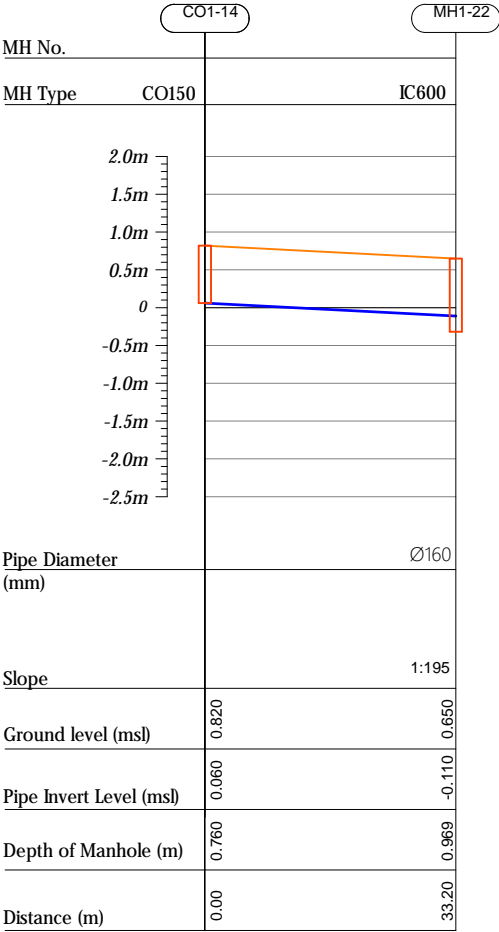
Project No: 01010101

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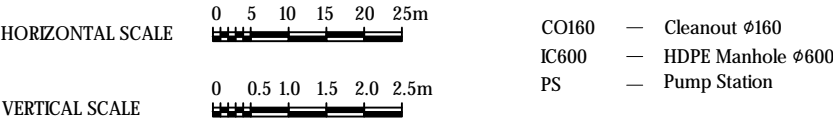
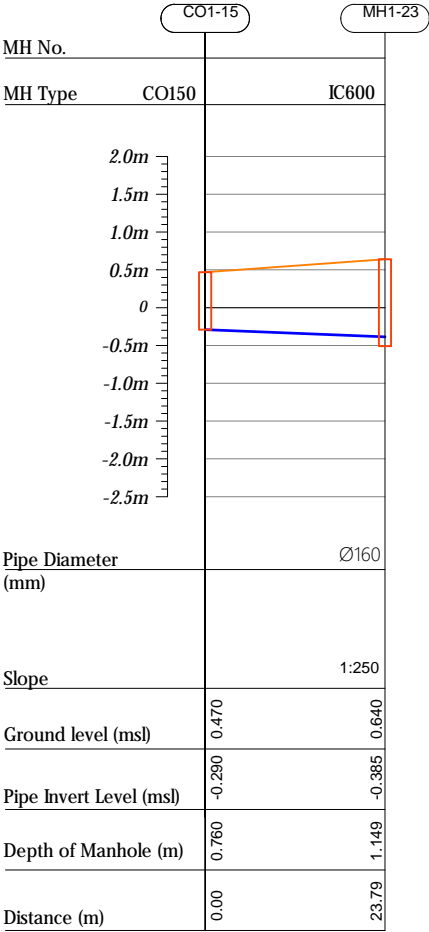
Profile 13



Profile 14



Profile 15



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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6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V.Rakeedhoo

Client:
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T: +960 333 3528

E: info@epoch.associates

W: www.epoch.associates

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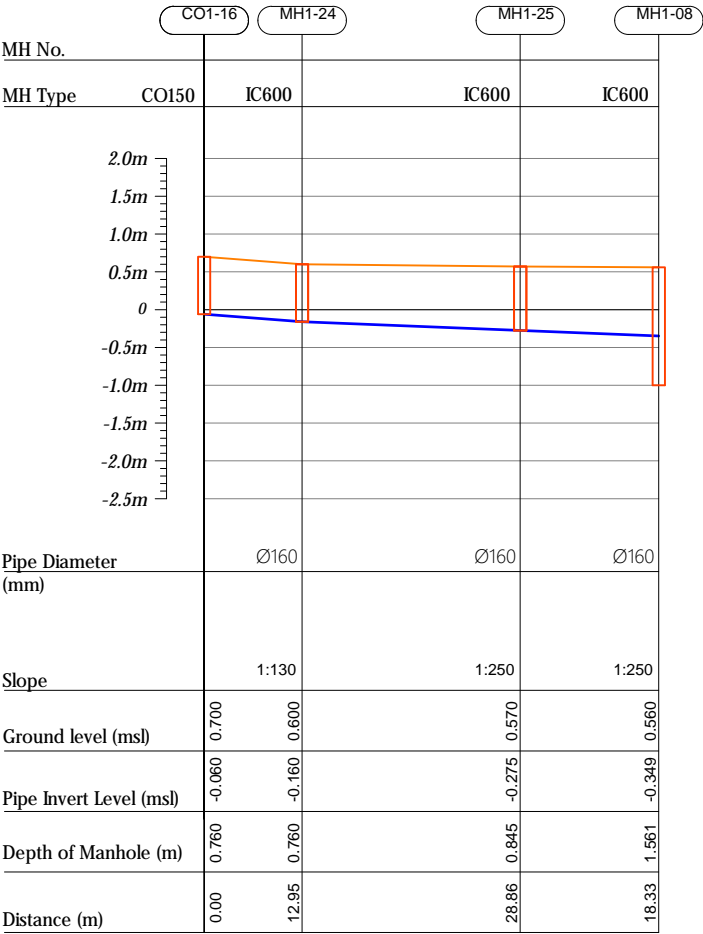
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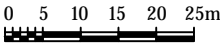
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Designed: F.I.A	Approved: LW
Date: Aug 2020	SCALE (A3): 1:100
Project No: 01010101	
Rev: R-01	Page: PS1-06

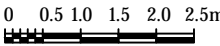
Profile 16



HORIZONTAL SCALE



VERTICAL SCALE



- CO160

IC600

PS
- —

—
- Cleanout Ø160

HDPE Manhole Ø600

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 6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V.Rakeedhoo

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



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E: info@epoch.associates
W: www.epoch.associates
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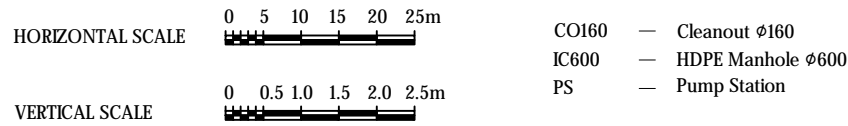
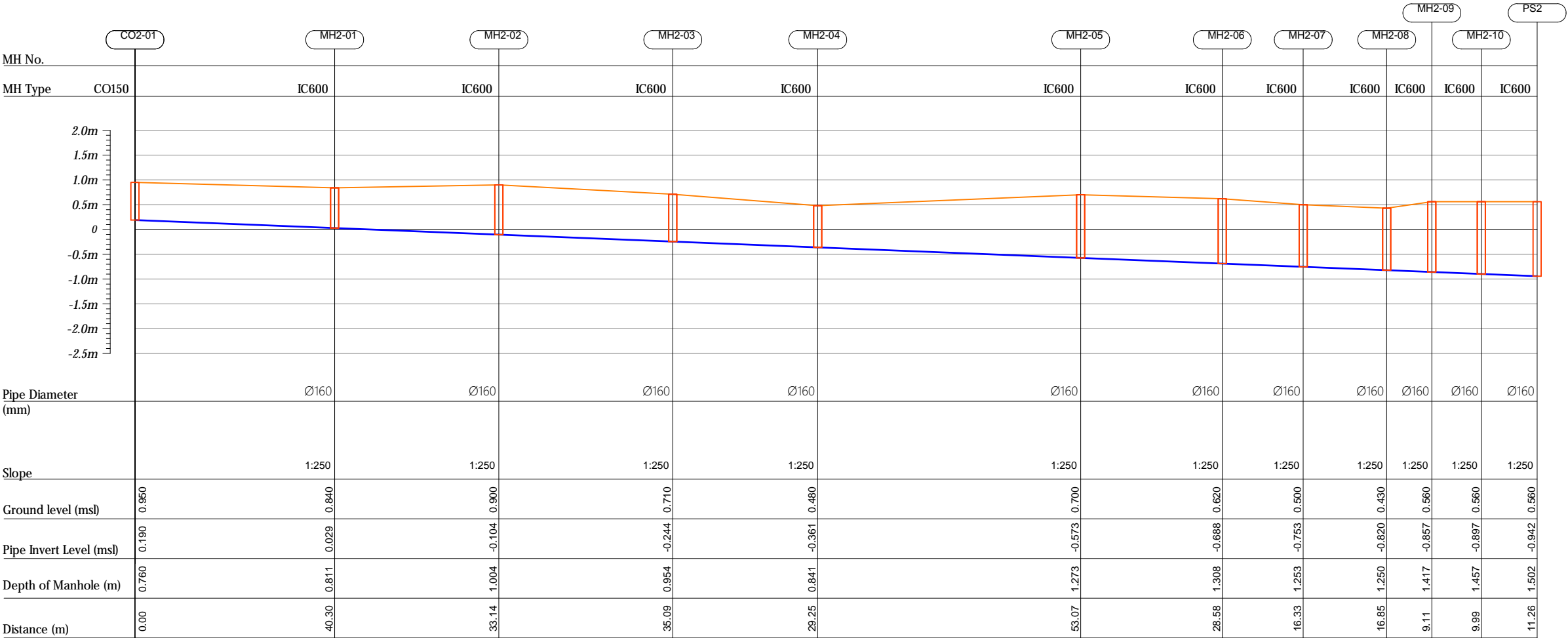
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Project No:	01010101

Rev: R-01

Page: PS1-07

Profile 01



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 6 islands, Maldives - Package 5

Sub Title:

Sewerage System in V.Rakeedhoo

Client:

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

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Drawn: A.R.W

Designed: F.L.A

Date: Aug 2020

Project No: 01010101

Checked: M.S.S

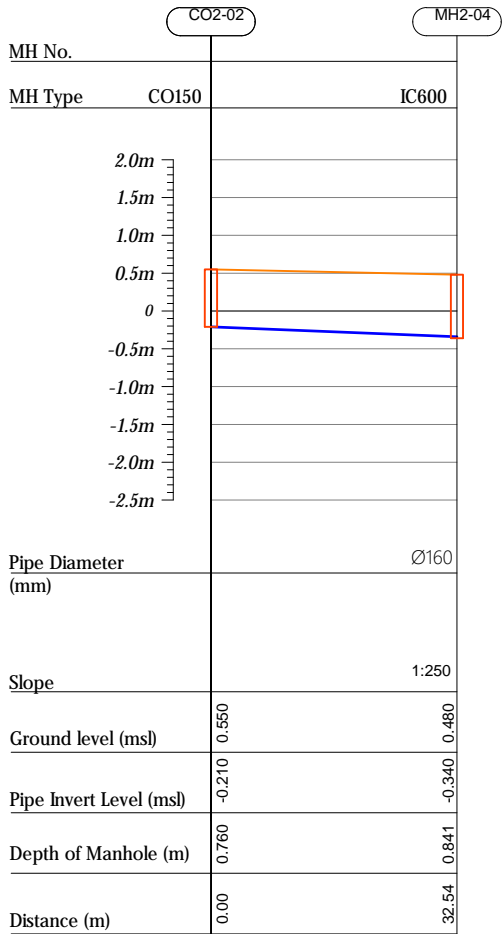
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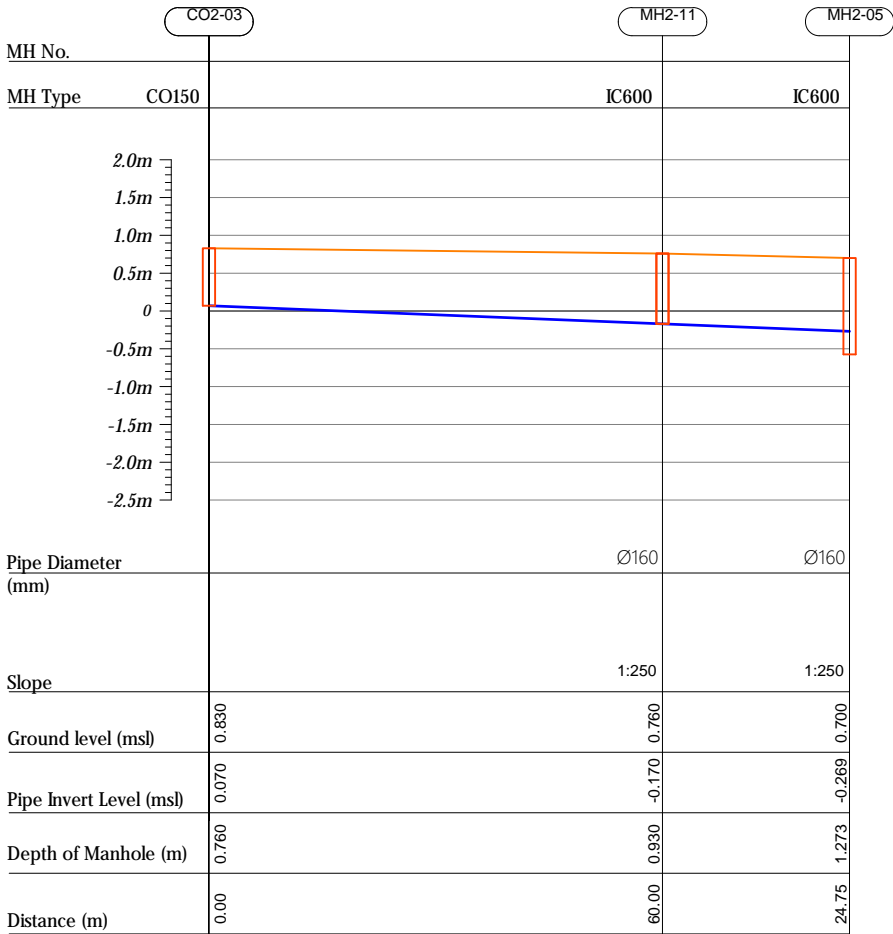
Rev: R-01

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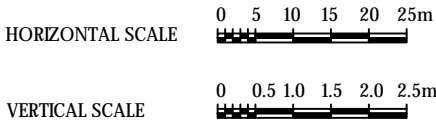
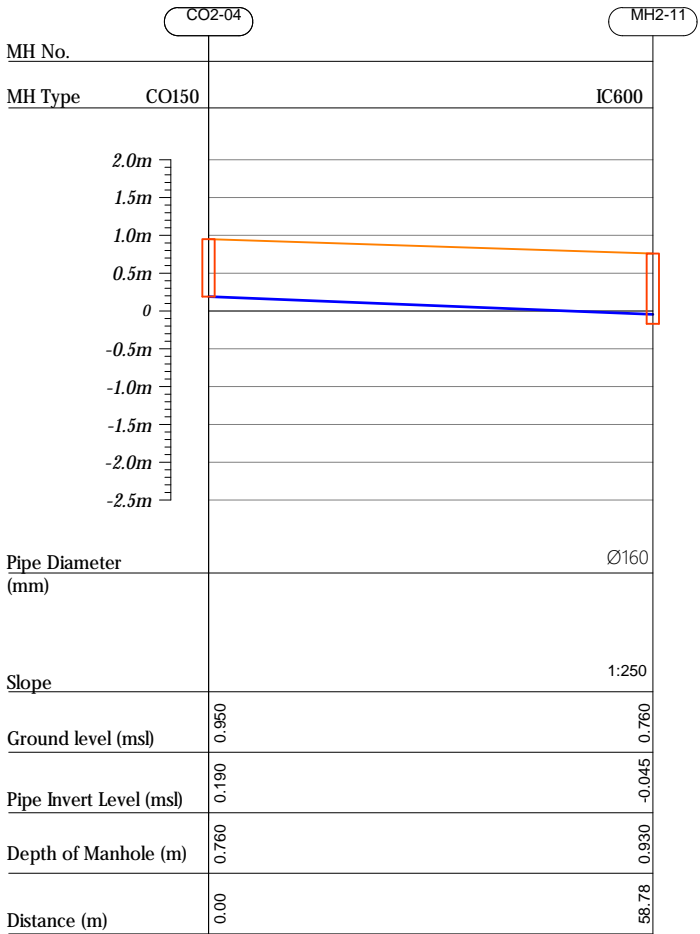
Profile 02



Profile 03



Profile 04



- 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 6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V.Rakeedhoo

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



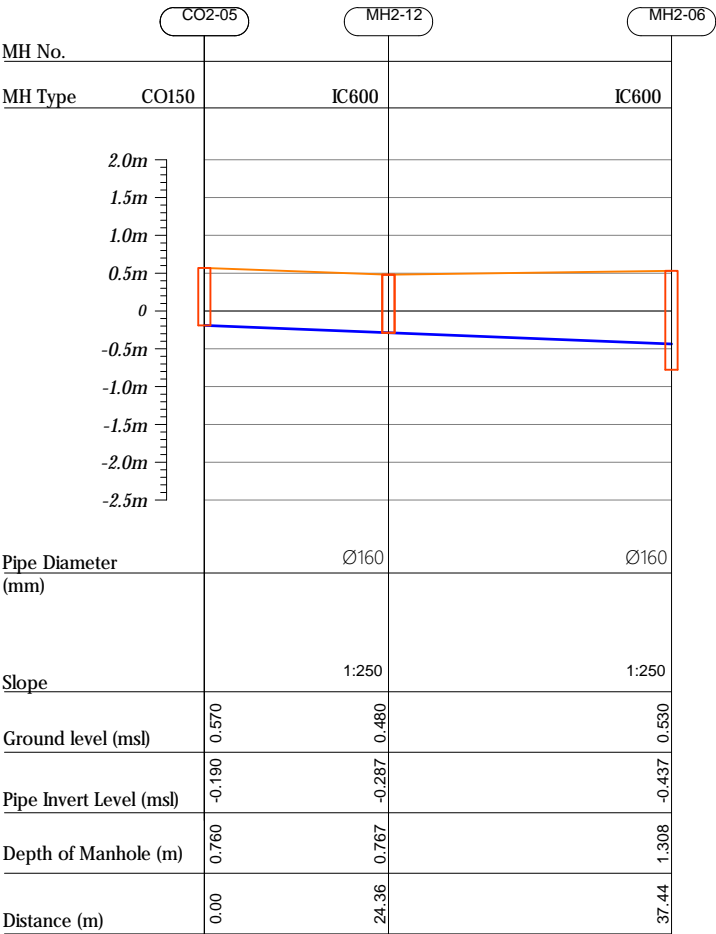
T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West,
Hussuvehemaa Magu, Male', Maldives

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Maldivuq Infrastructure Happpu

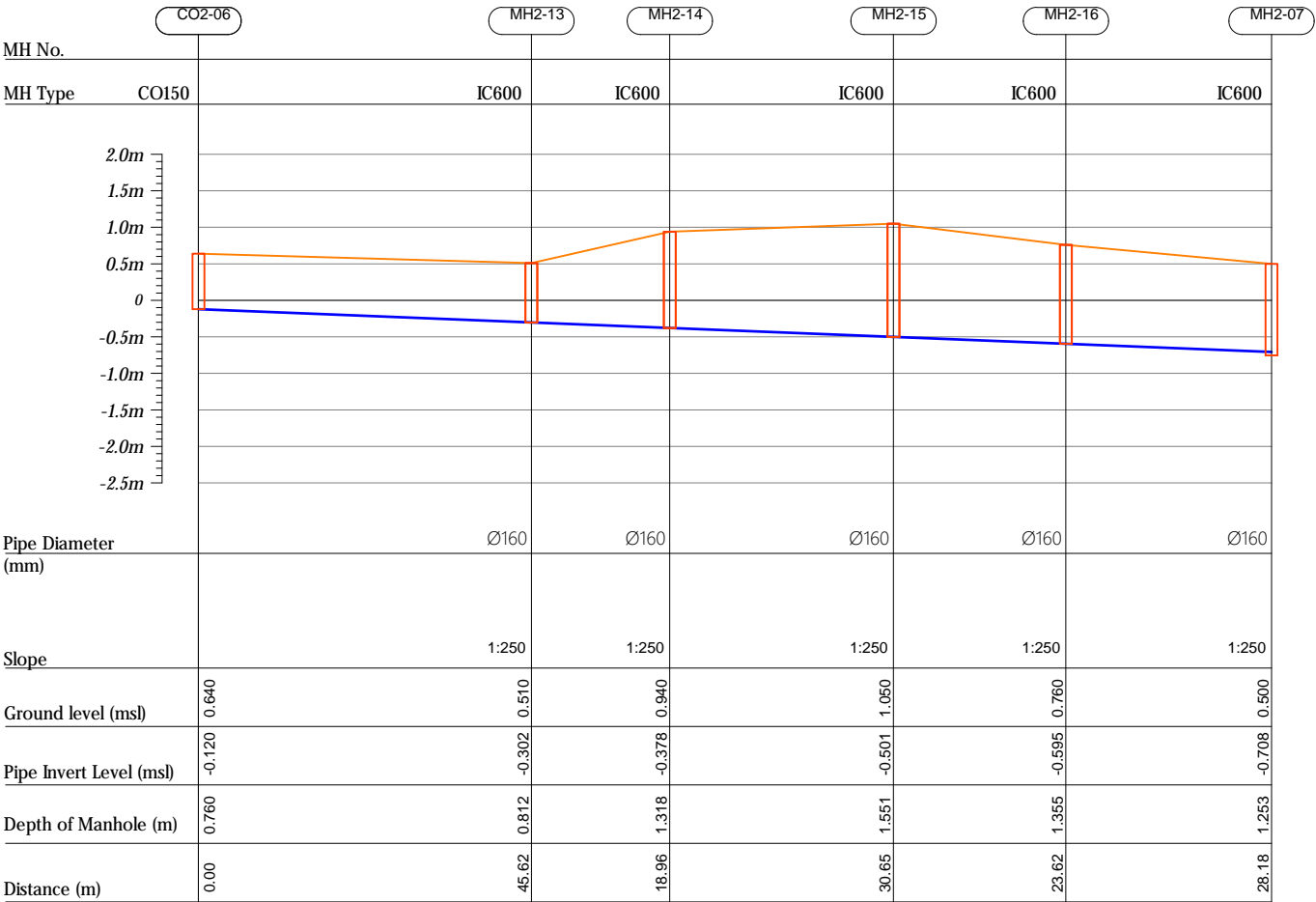
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Designed: F.L.A	Approved: LW
Date: Aug 2020	SCALE (A3): 1:100
Project No:	01010101

Rev: R-01
Page: PS2-02

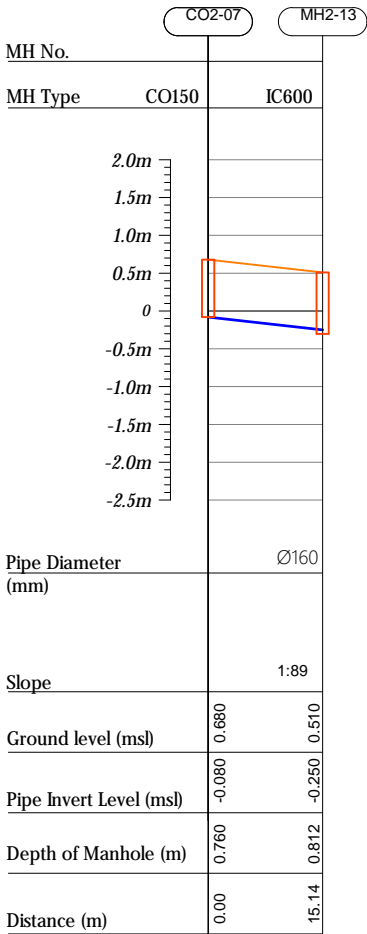
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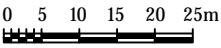
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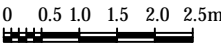
Profile 07



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:
Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V.Rakeedhoo

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



T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
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Hussuvehemaa Magu, Male', Maldives



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

Designed: F.I.A Approved: LW

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

Project No: 01010101

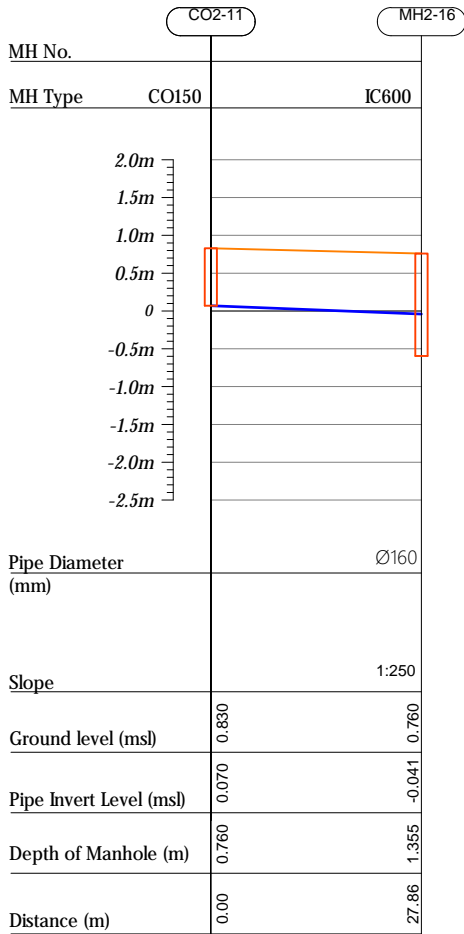
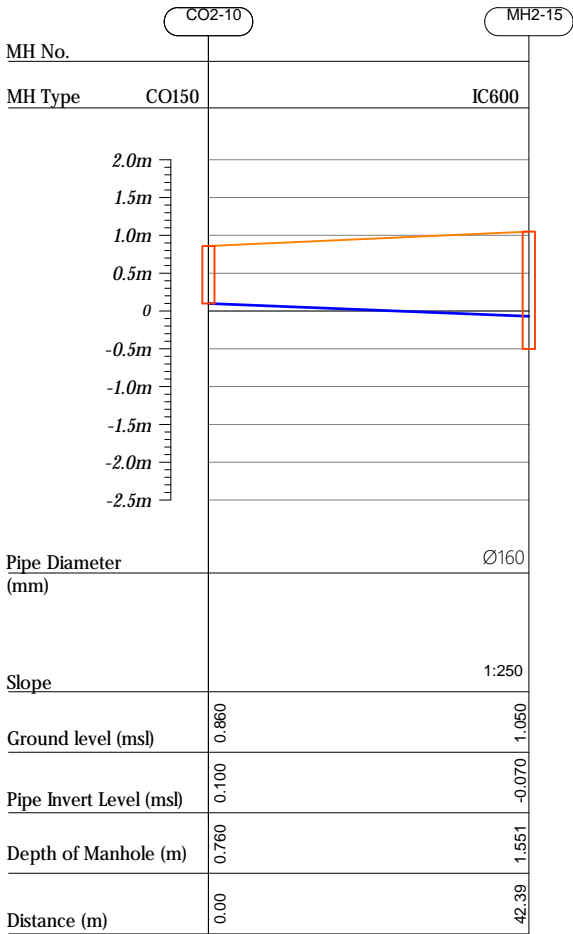
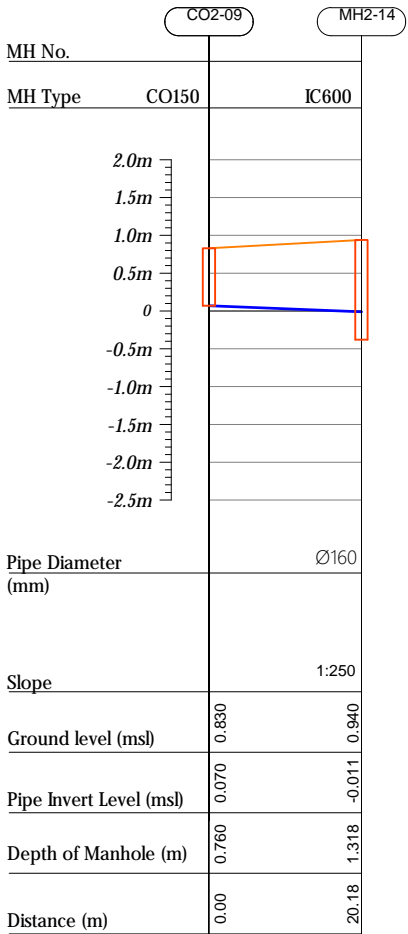
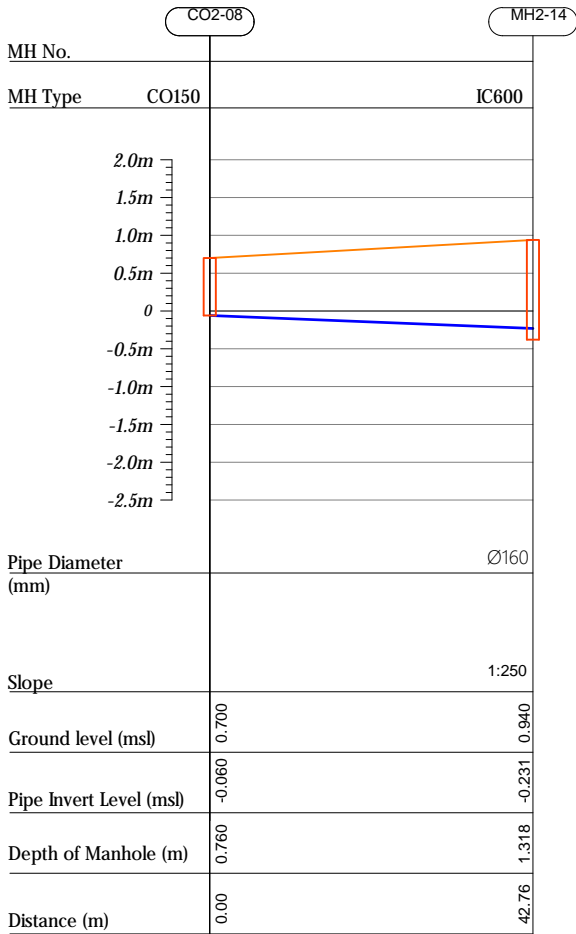
Rev: R-01 Page: PS2-03

Profile 08

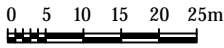
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Profile 10

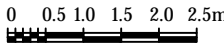
Profile 11



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,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V.Rakeedhoo

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



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

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

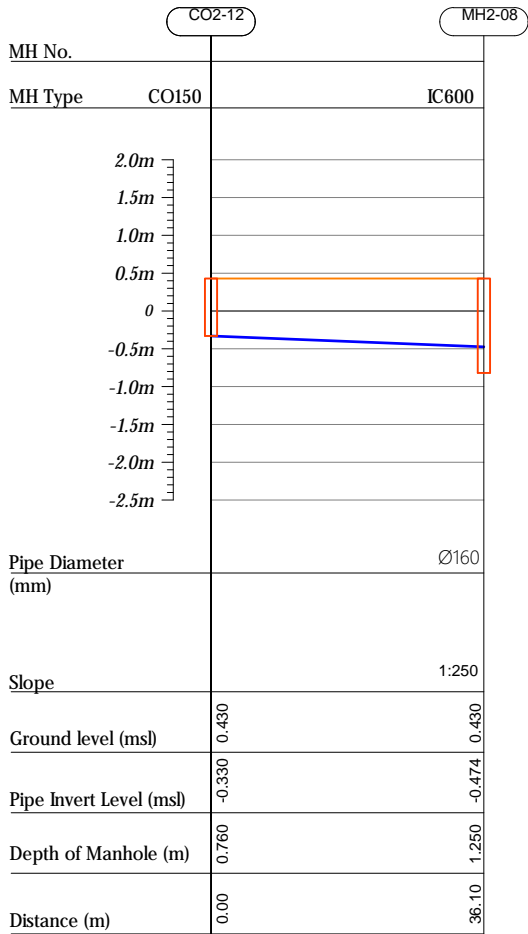
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Date: Aug 2020 SCALE (A3): 1:100

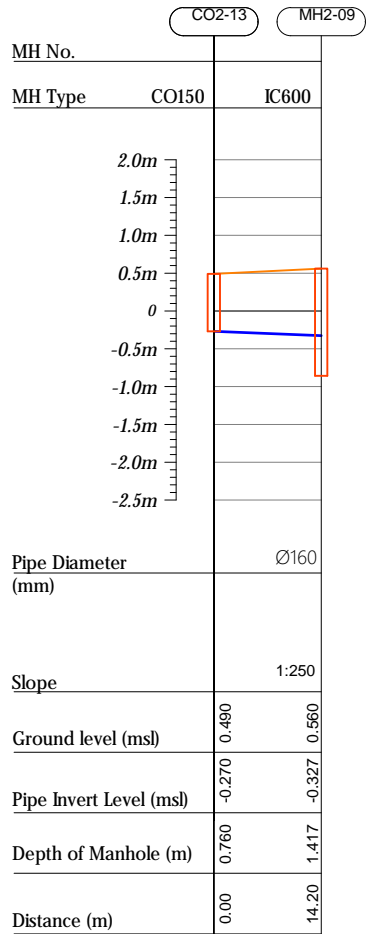
Project No: 01010101

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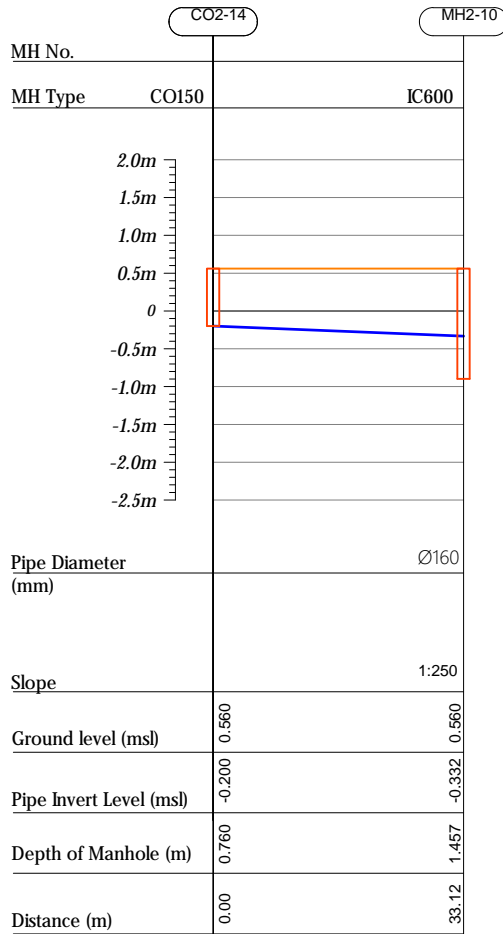
Profile 12





Profile 13



Profile 14



HORIZONTAL SCALE 

VERTICAL SCALE 

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	Appd.

Title:
*Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5*

Sub Title:
Sewerage System in V.Rakeedhoo

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



Drawn: A.R.W	Checked: M.S.S
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Designed: F.L.A	Approved: LW
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Date: Aug 2020	SCALE (A3): 1:100
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Project No: 01010101

Rev: <i>R-01</i>	Page: <i>PS2-05</i>
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