

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 and Housing Infrastructure, Republic of Maldives

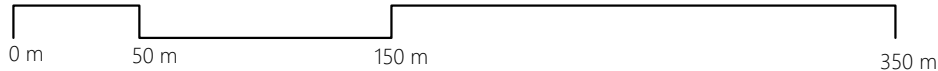


**T:** +960 333 3528 **E:** info@epoch.associates **W:** www.epoch.associates  
**A:** 4A, 4th Floor, M. Ahigasdhoshuge, Fareedhee Magu Male' Republic of Maldives



CONTENTS

OVERALL LAYOUT	
Sewerage Network Layout	A-(1)
Sewerage Network Catchment Areas	A-(2)
Sewerage Network Zone Layout	A-(3)
Sewerage Network Layout - Zone 01	04
Sewerage Network Layout - Zone 02	05
DETAILED DRAWINGS FOR SPECIFIC COMPONENTS	
PUMP STATION 1 LAYOUT	W-(1)
STP LAYOUT	W-(2)
PUMP STATION DETAILS	W-(3), W(4), W(5)
GATE DETAILS	W(6)
PUMP STATION BOUNDARY WALL DETAILS	W-(7)
VENT STACK DETAILS	W-(8)
VENT STACK AND AIR BLOWER DETAILS	W-(9)
CONTROL PANEL BOARD DETAILS	W-(10)
LIGHT POST DETAILS	W-(11)
TRENCH & BEDDING DETAILS	W-(12)
MAINTENANCE SHAFT (MH) DETAILS	W-(13)
TYPICAL MANHOLE BASE DETAILS	W-(14)
CLEANOUT DETAILS	W-(15)
TYPICAL HOUSE CONNECTION DETAILS	W-(16)
THRUST BLOCK DETAILS	W-(17)
BALLAST BLOCK DETAILS	W-(18)
T-HEAD DIFFUSER DETAILS	W-(19)
SEA OUTFALL DETAILS	W-(20)
PRESSURE NETWORK LAYOUT	W-(21)
PROFILE DIAGRAMS - PUMP STATION 01	PS1-01 - PS1-07
PROFILE DIAGRAMS - PUMP STATION 02	PS2-01 - PS2-05



1:3000



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 EN4101-1:2019.
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 SN4 & 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 C/S FOR SUCH CONNECTIONS.
10. ALL SEWER PIPES SHALL BE BURIED UNDER EARTH COVER OF MINIMUM 0.6 METERS.
11. CATCHMENT OVER FLOW LINES ARE TO BE CONNECTED AS INDICATED BELOW.
  - a) C01-02 and C02-01

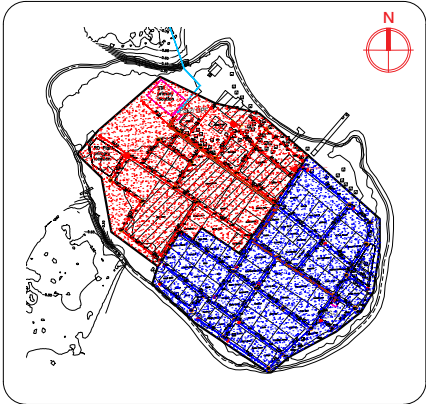
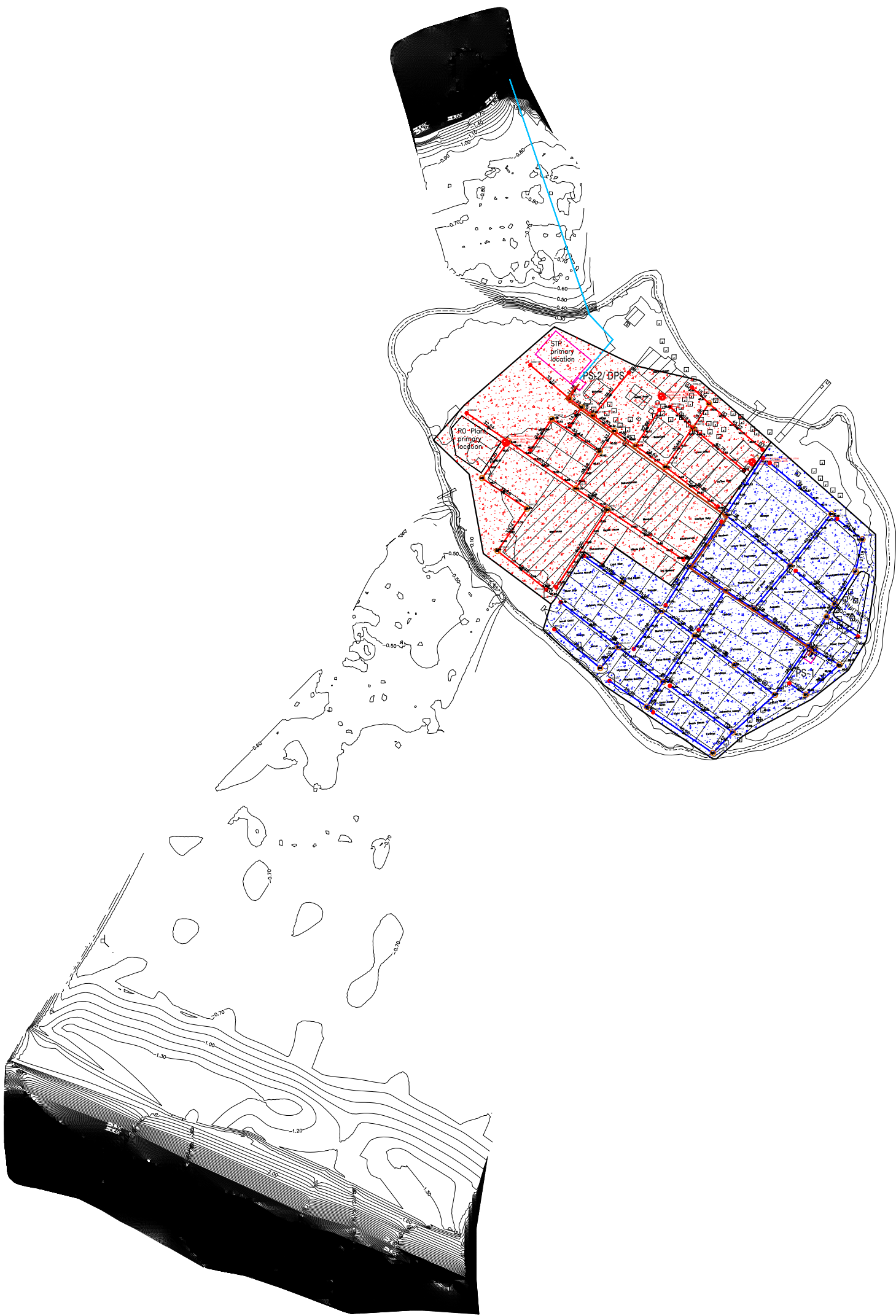
REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

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): 1:3000
Project No: EP-WS/2019/05	

Rev.	Page:
	<b>A-(1)</b>



Legend

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

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. Keyodhoo**

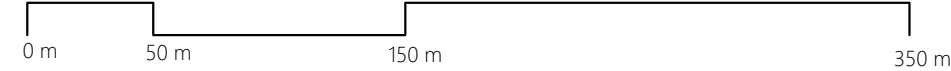
Client:  
**Ministry of National Planning, Housing and  
Infrastructure, Republic of Maldives**

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

**FEEDBACK INFRA**  
Maldives Infrastructure Solutions

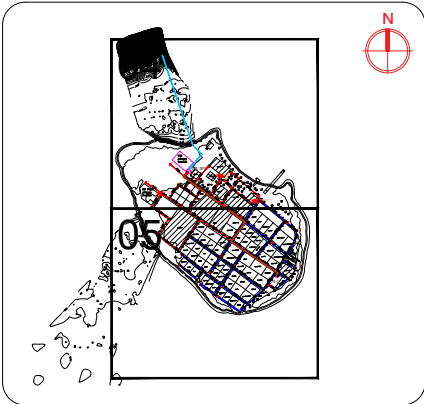
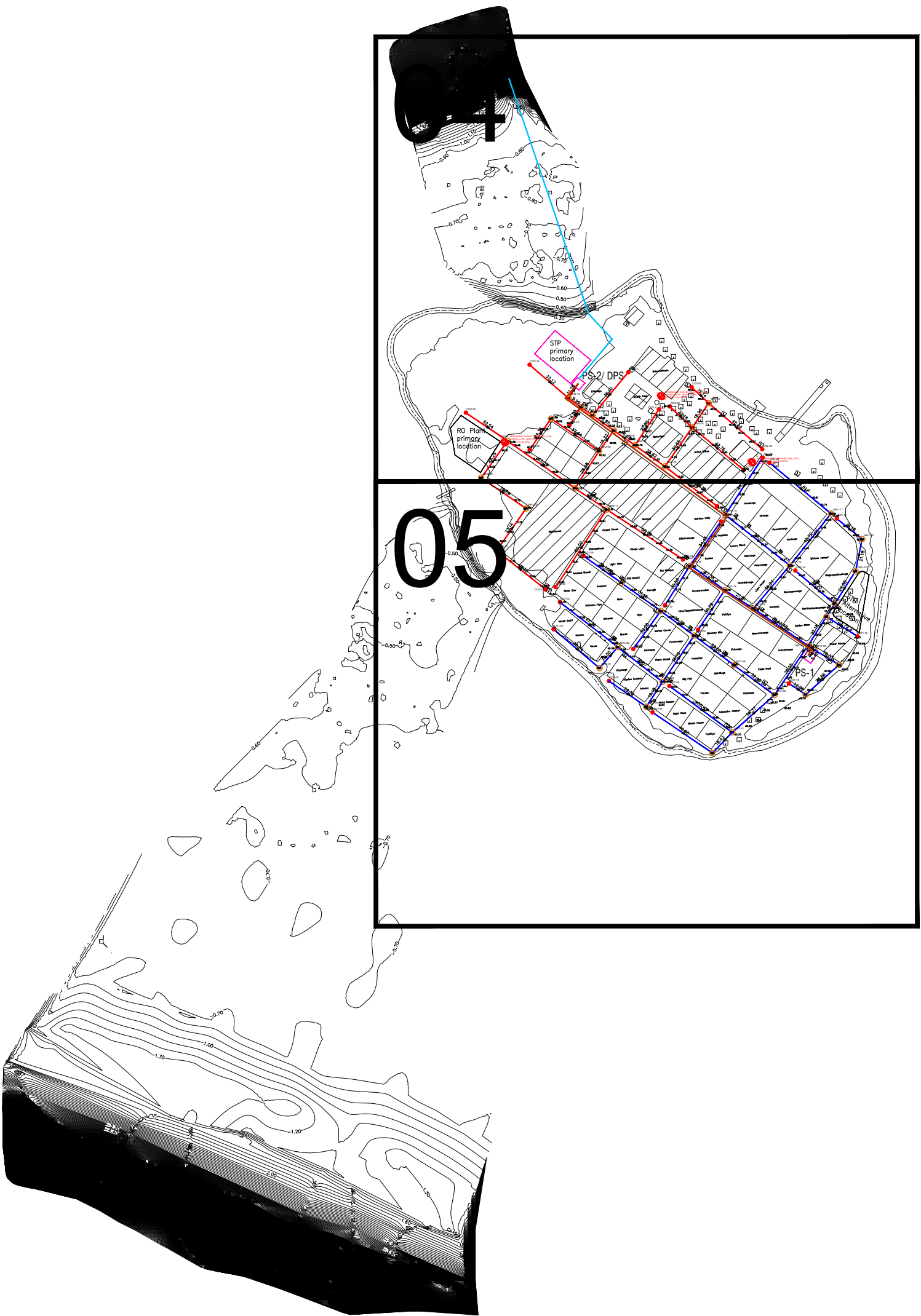
Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:3000
Project No: EP-WS/2019/05	Page:

Rev: A-(2)



V. RAKEEDHOO SEWERAGE SYSTEM - SEWERAGE NETWORK CATCHMENT AREAS  
1:3000





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
- 160 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.

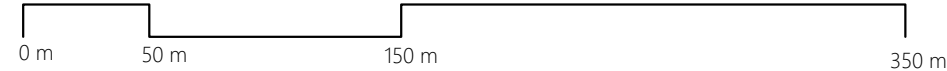
Title:  
**Consultancy Services for  
Survey, Design and EIA works of  
Water Supply and Sewerage  
Facilities  
in 6 islands, Maldives – Package 5  
Sewerage System in V. Keyodhoo**

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

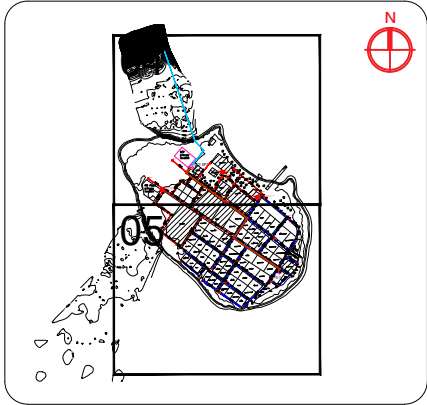
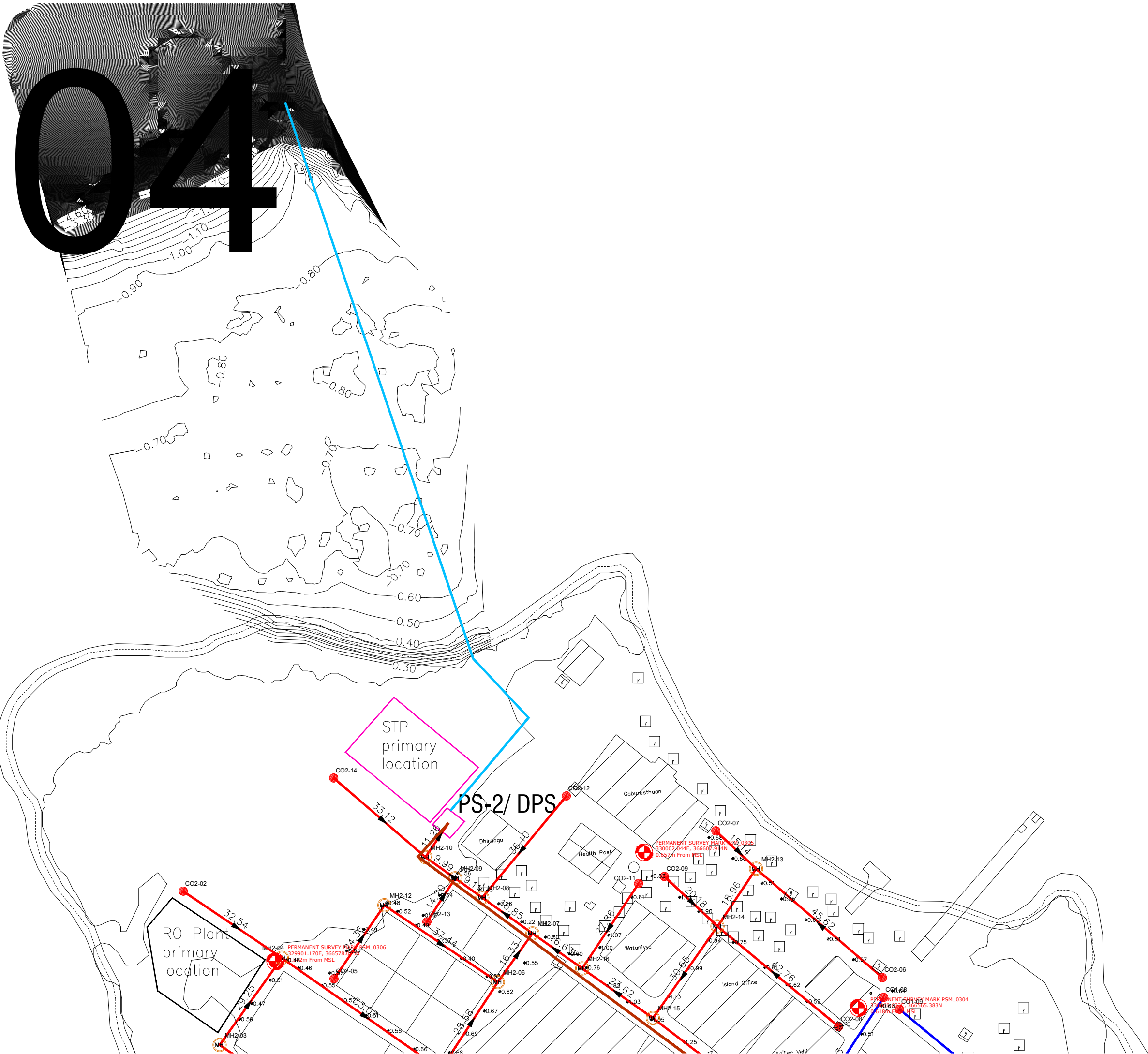
**EPOCH**  
T: +960 333 3528  
E: info@epoch.associates  
W: www.epoch.associates  
A: G. Rosary West,  
Husnuheena Magu, Male', Maldives

**FEEDBACK INFRA**  
Maldives Infrastructure Development

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:



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



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
- 160 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**

Sub Title:  
**Sewerage System in M. Naalaafushi**

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

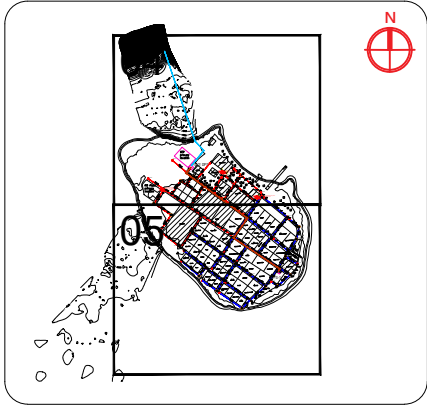


T: +960 333 3528  
E: info@epochassociates  
W: www.epochassociates  
A: G. Rosary West, Husehneena Magu, Male', Maldives



Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:1000
Project No: EP-WS/2019/05	Page: 04

05



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
- 160 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 - Pakage 5**

Sub Title:  
**Sewerage System in M. Naalaafushi**

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

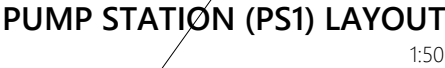
**EPOCH**  
ASSOCIATES

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

**FEEDBACK INFRA**  
Maldivian Infrastructure Solutions

Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:1000
Project No: EP-WS/2019/05	Page: 05
Rev:	





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

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**

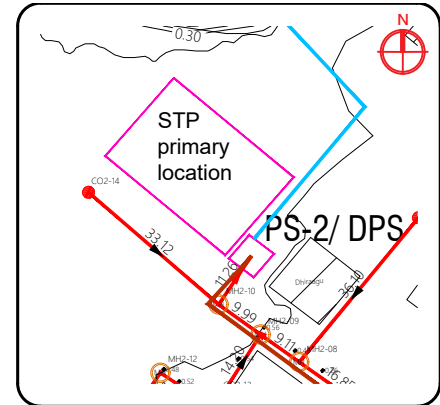
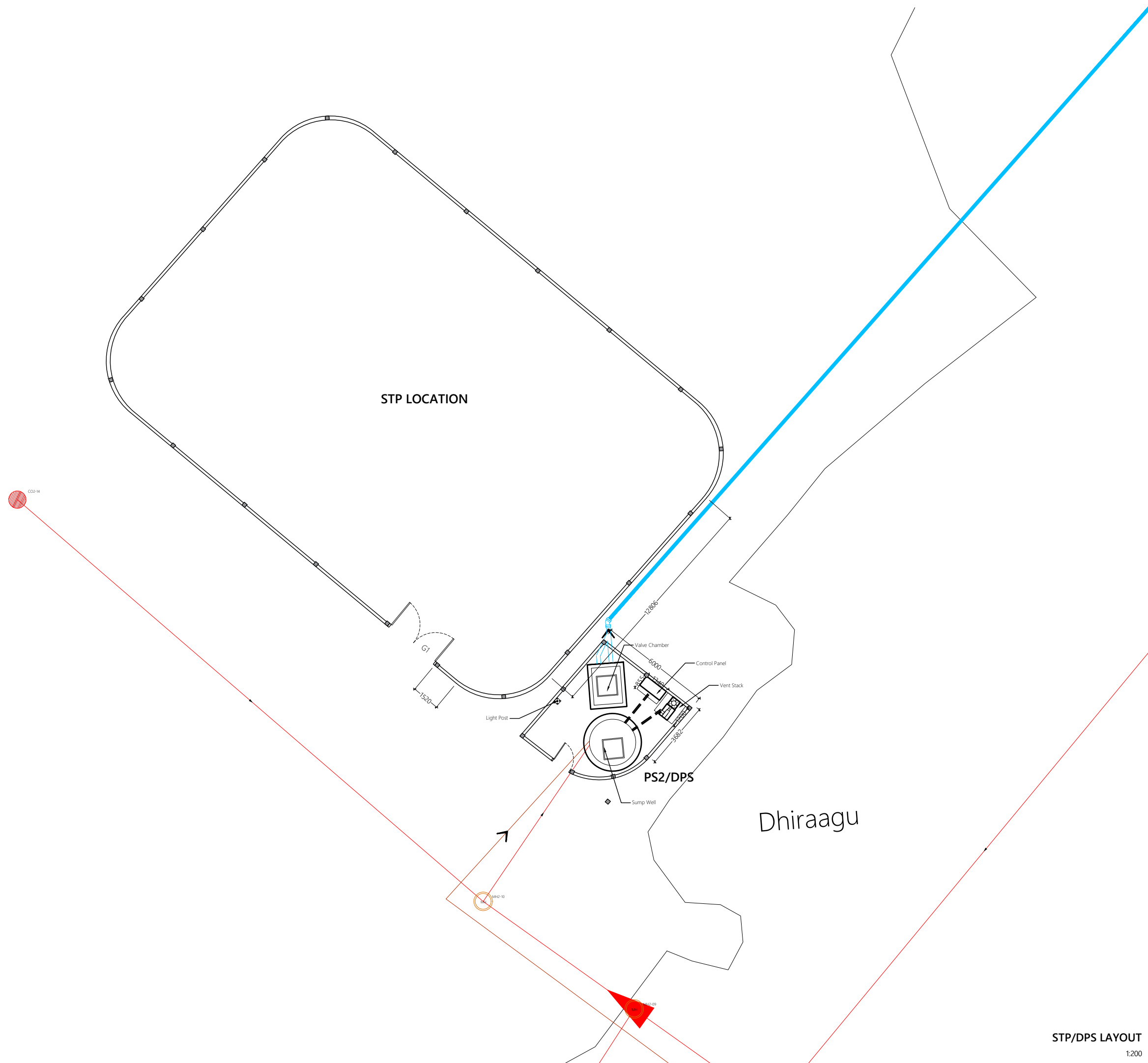
Sub Title:  
**Sewerage System in V. Rakeedhoo**

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



Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:50
Project No: EP-WS/2019/05	
Rev:	Page:

W-(1)



**Legend**

- 160mm Ø uPVC PS2 Gravity Sewer Main (SN4, SDR41)
- 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**

Sub Title:  
**Sewerage System in V. Rakeedhoo**

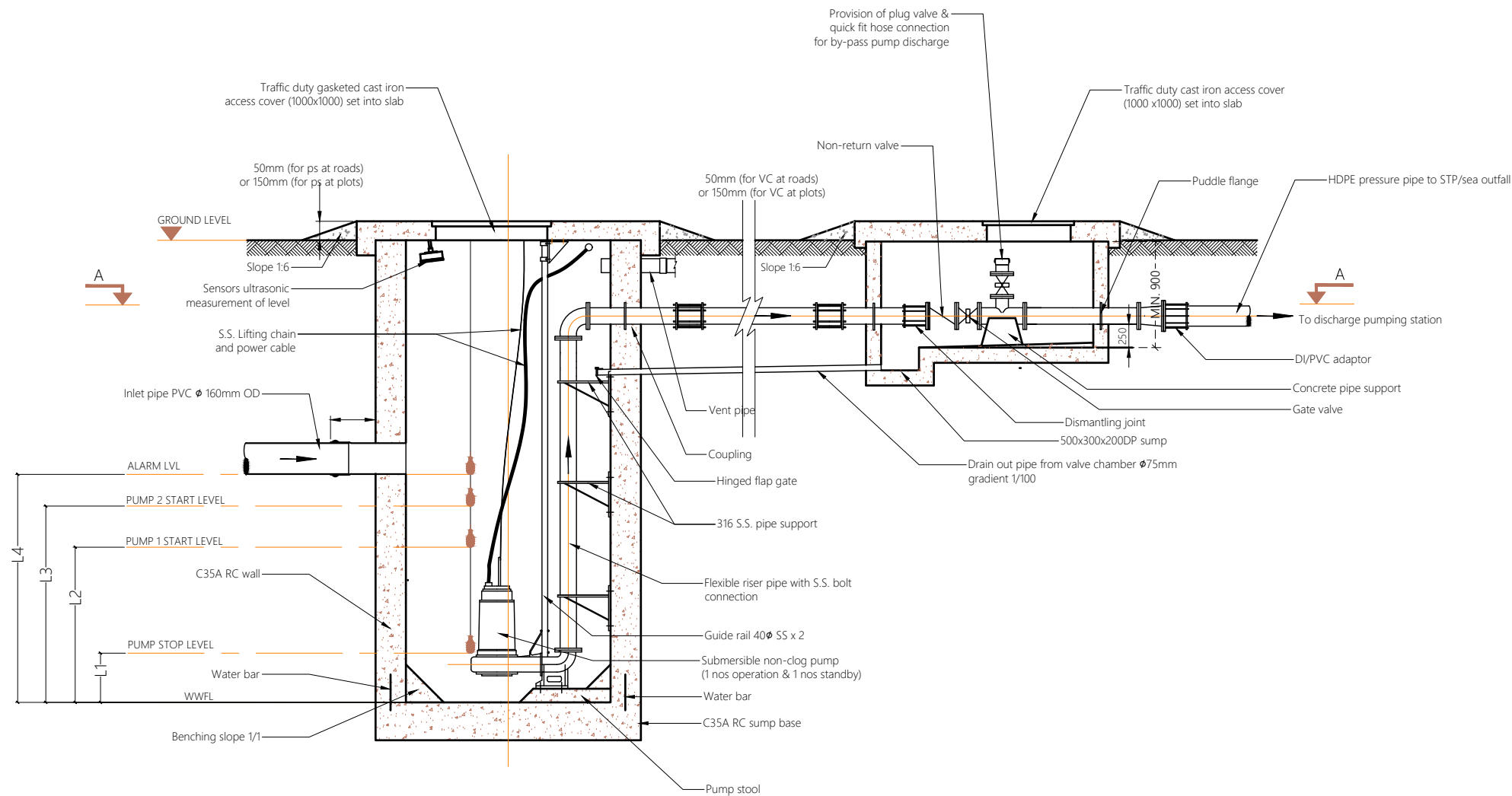
Client:  
**Ministry of National Planning, Housing and Infrastructure, Republic of Maldives**

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

**FEEDBACK INFRA**  
Maldivian Infrastructure Development

Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): 1:200
Project No: EP-WS/2019/05	Page: W-(2)

STP/DPS LAYOUT  
1:200



PUMP STATION DESIGN DETAILS

(15 YEARS)

Pump Station	Diameter (Ø)	Depth (D)	Inlet Depth	Pump Capacity	Head	Levels			
						L1	L2	L3	L4
PS1	2.5m	2.70m	2.213m	1.5 l/s	8.7 m	0.300m	0.347m	0.497m	0.647m
PS2/DPS	2.5m	2.70m	1.502m/ 0.8m	2.6 l/s	18.4 m	0.300m	0.381m	0.531m	0.681m

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.

List of main instruments of pumping station:

1. Sewage pumps (1 duty & 1 standby)
2. Power cable
3. Auto-coupling with 40Ø SS 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

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  
W: www.epochassociates  
A: G. Rosary West, Huseenuena Magu, Male', Maldives



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

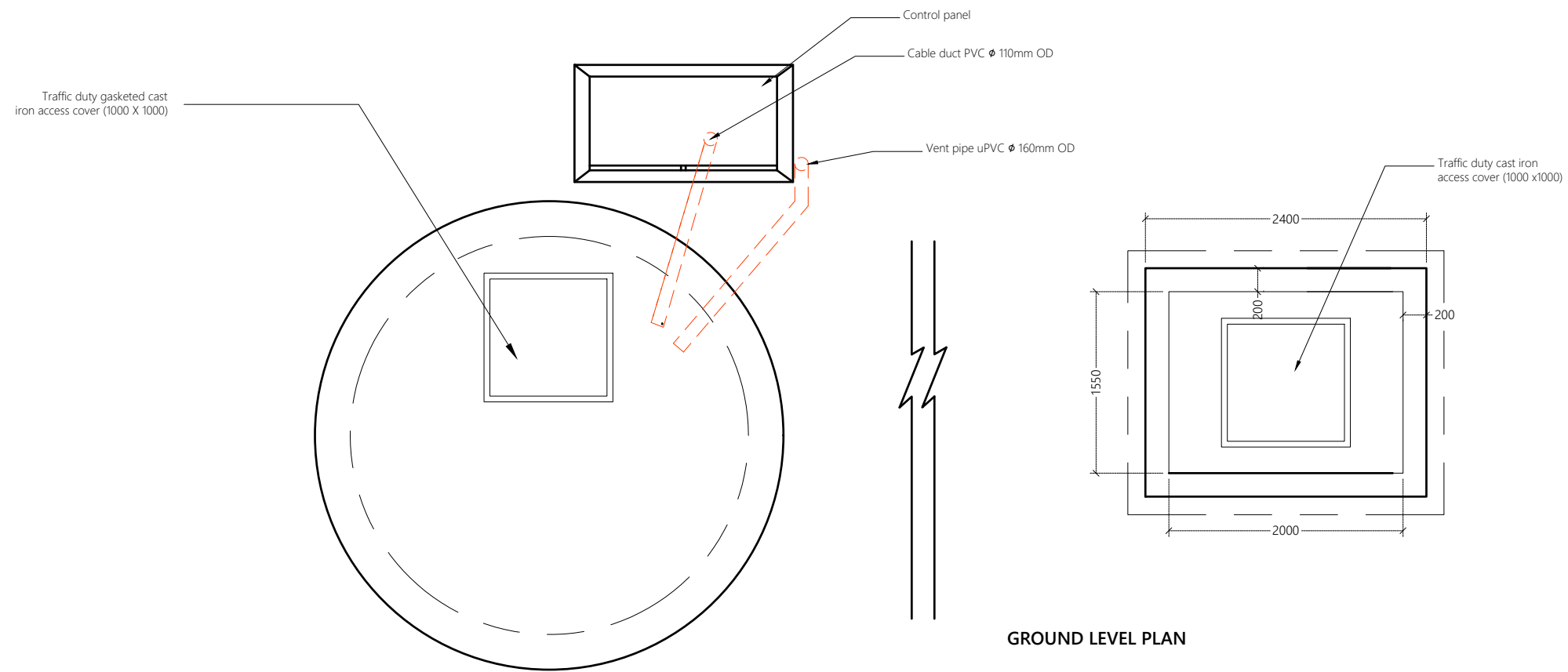
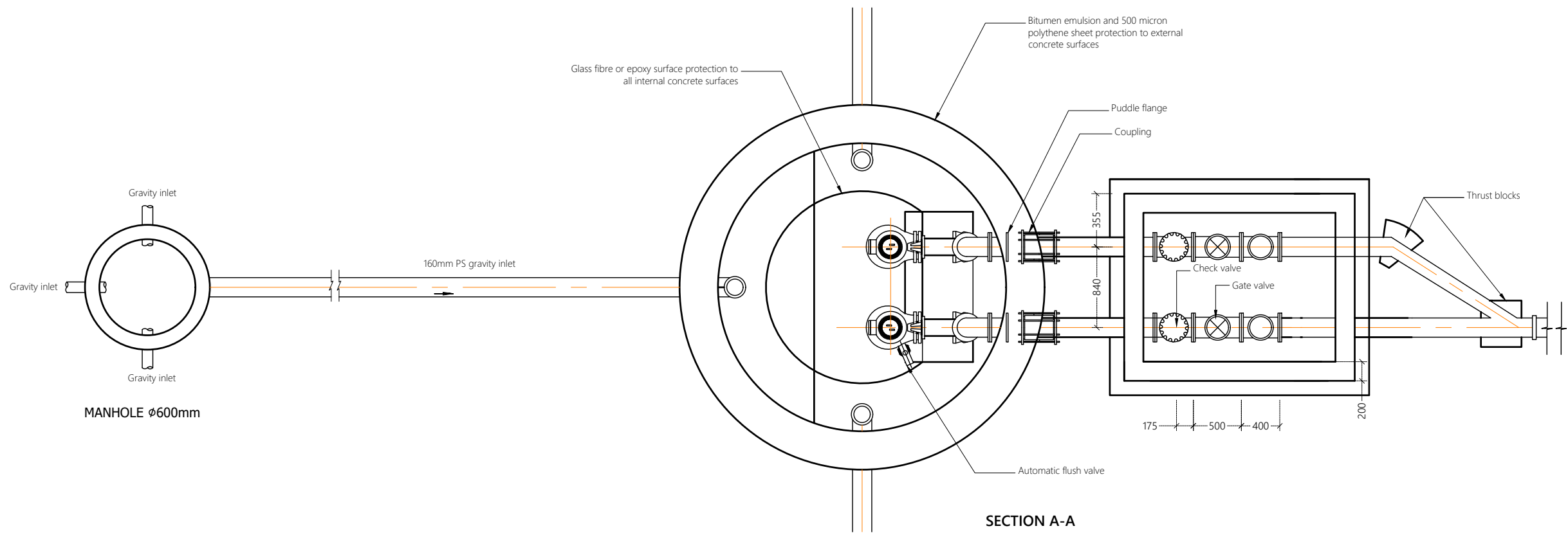
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(3)





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 polyethene.

- List of main instruments of pumping station:
1. Sewage pumps (1 duty & 1 standby)
  2. Power cable
  3. Auto-coupling with 400 SS 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

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  
W: www.epochassociates  
A: G. Rosary West, Huseenuheena Magu, Male', Maldives



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

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

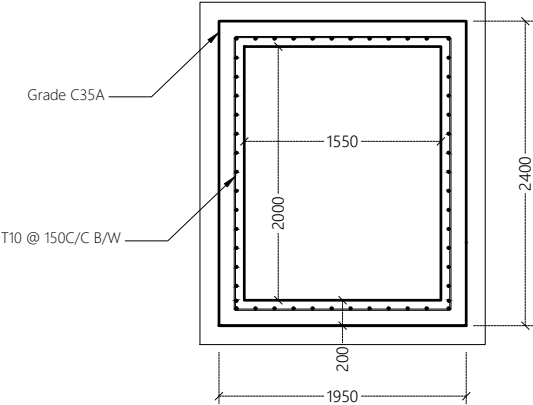
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

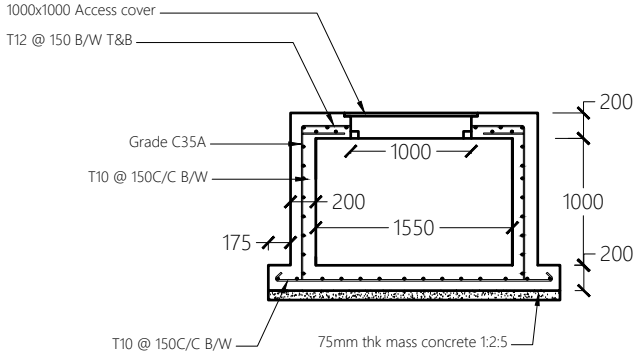
Rev: Page:

W-(4)

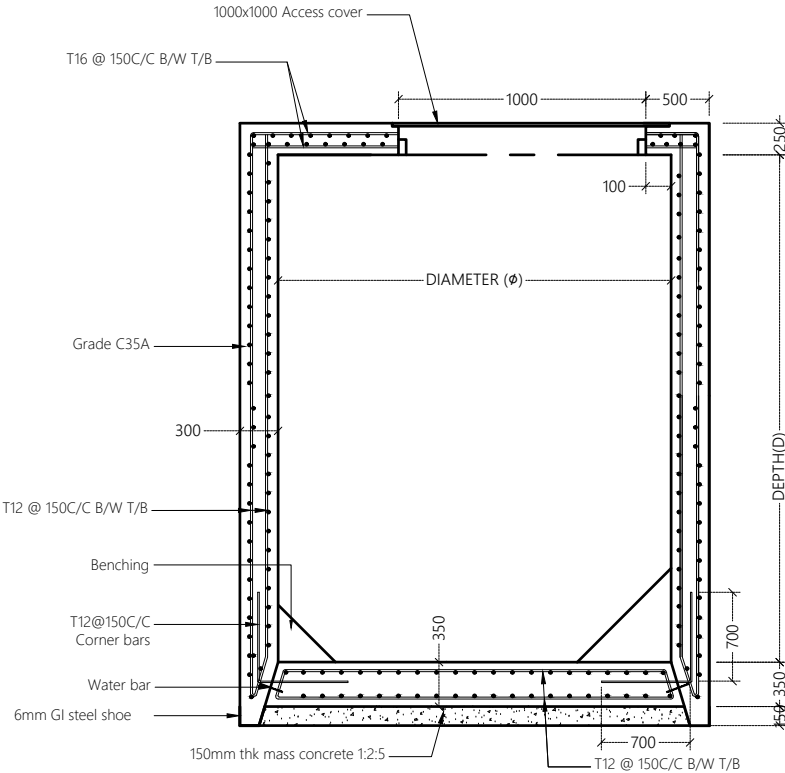
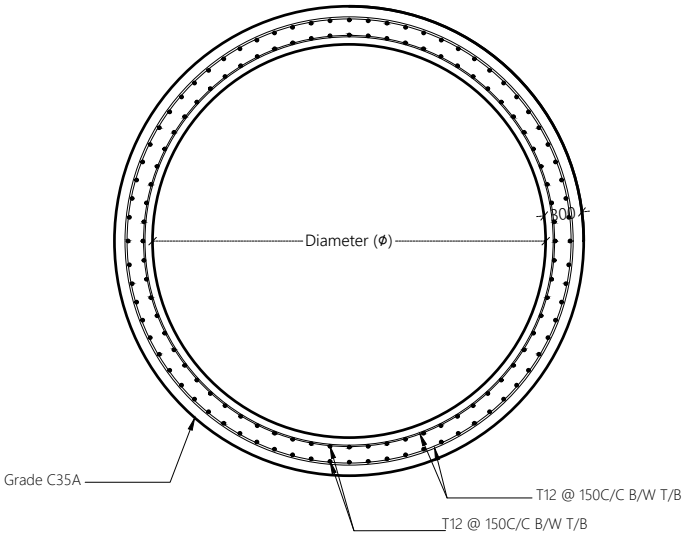
PLAN VIEW



SECTION



VALVE CHAMBER DETAIL



PUMP STATION DETAIL

Pump Station	Diameter (Ø)	Depth (D)	Inlet Depth
PS1	2.5m	2.70m	2.213m
PS2/DPS	2.5m	2.70m	1.502m/ 0.8m

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.

- List of main instruments of pumping station:
1. Sewage pumps (1 duty & 1 standby)
  2. Power cable
  3. Auto-coupling with 40Ø SS 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

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**

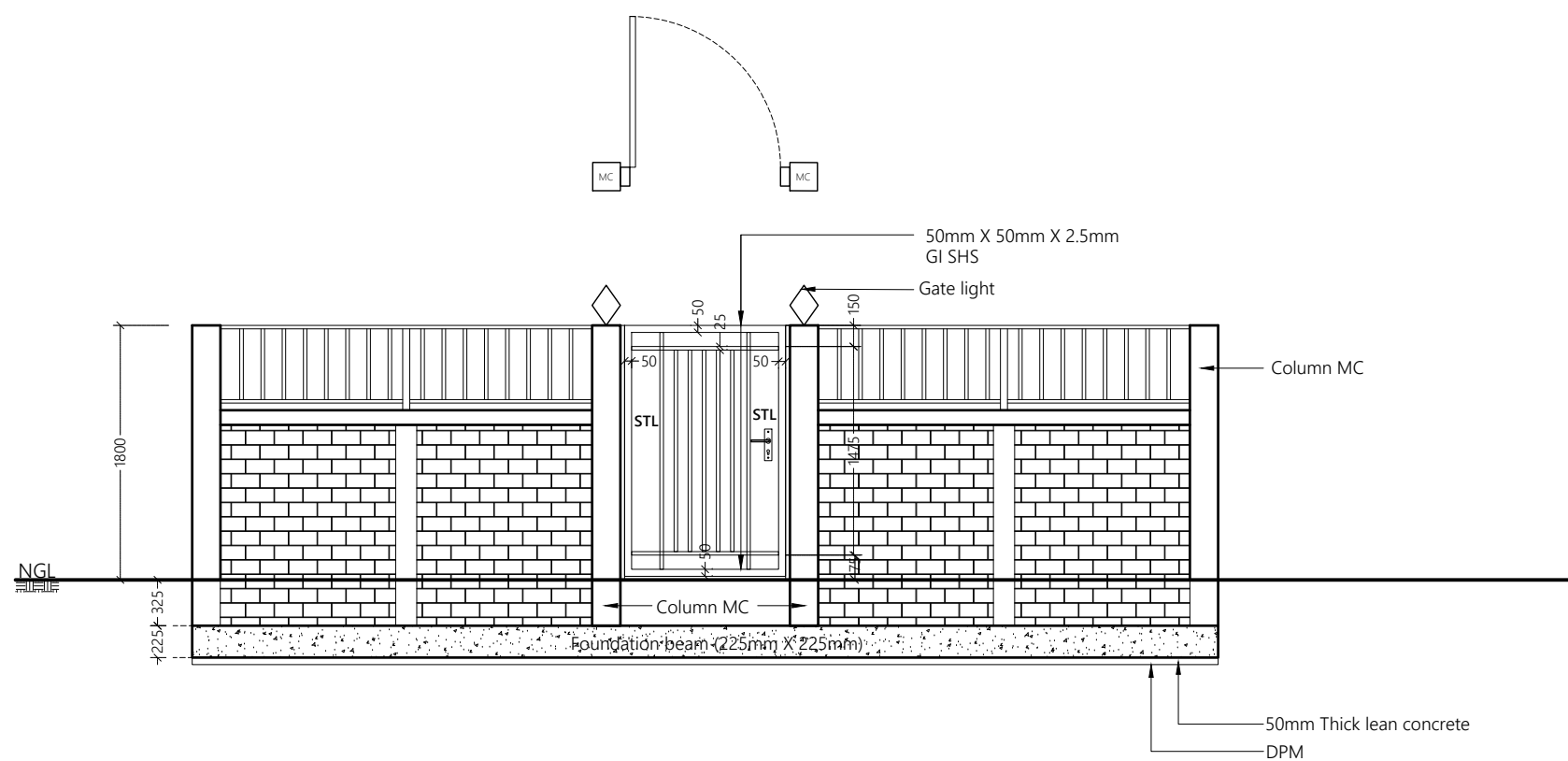
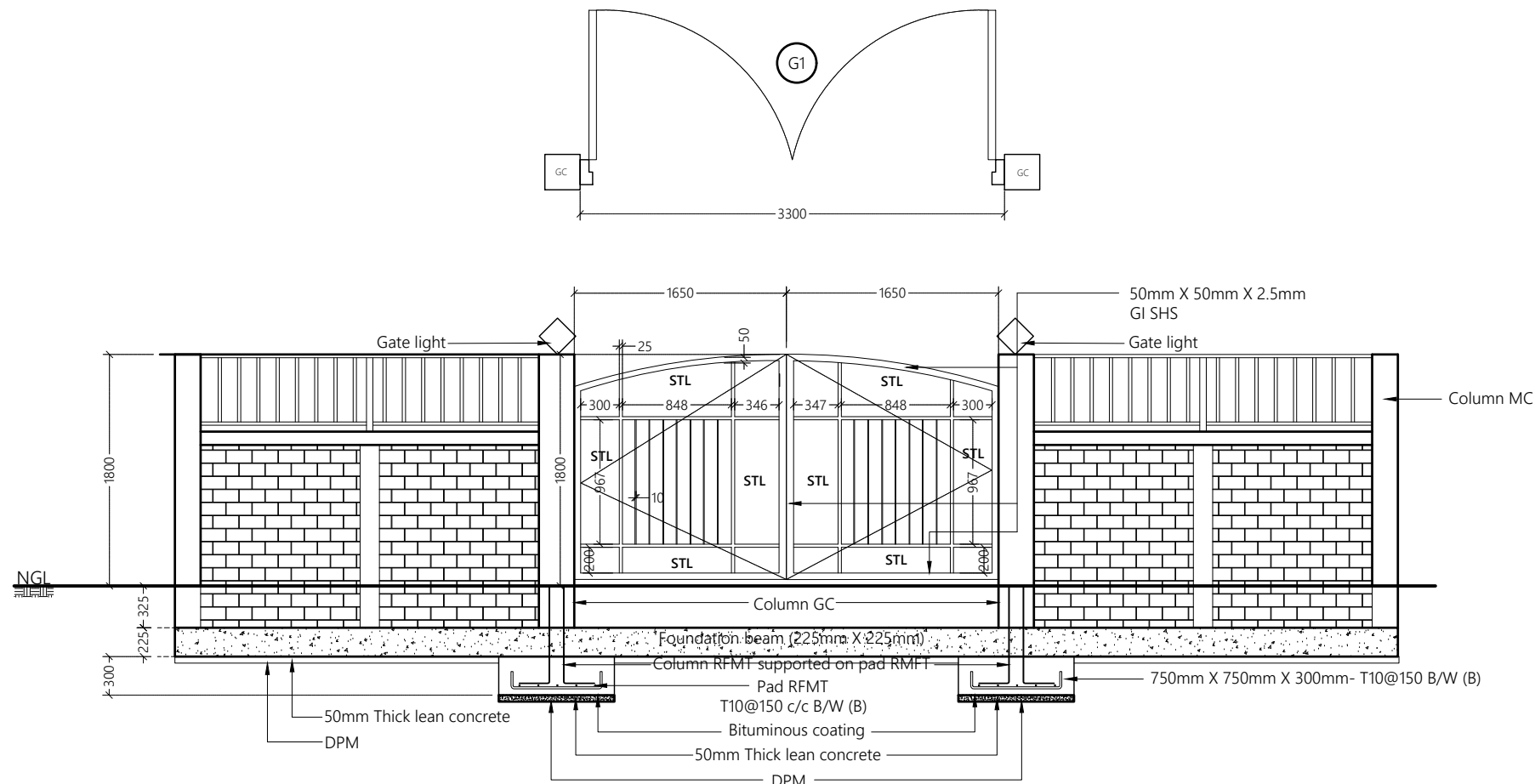
Sub Title:  
**Sewerage System in V. Rakeedhoo**

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

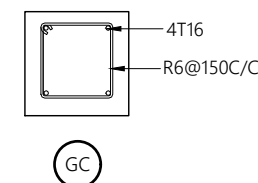
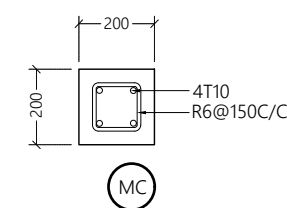
**EPOCH ASSOCIATES**  
T: +960 333 3528  
E: info@epochassociates  
W: www.epochassociates  
A: G. Rosary West, Huseenuheena Magu, Male', Maldives

**INFRA**  
Maldives  
Sustainable Infrastructure Development

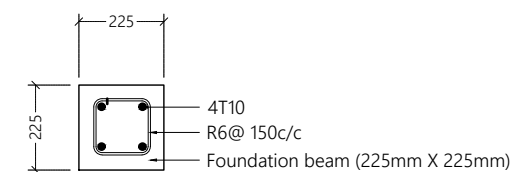
Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/05	Rev: W-(5)



**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

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, Huseenuena Magu, Male', Maldives

**FEEDBACK INFRA**  
Maldives Infrastructure Support

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

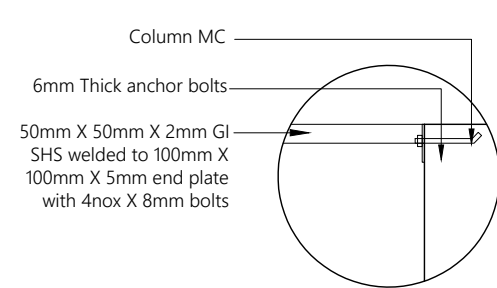
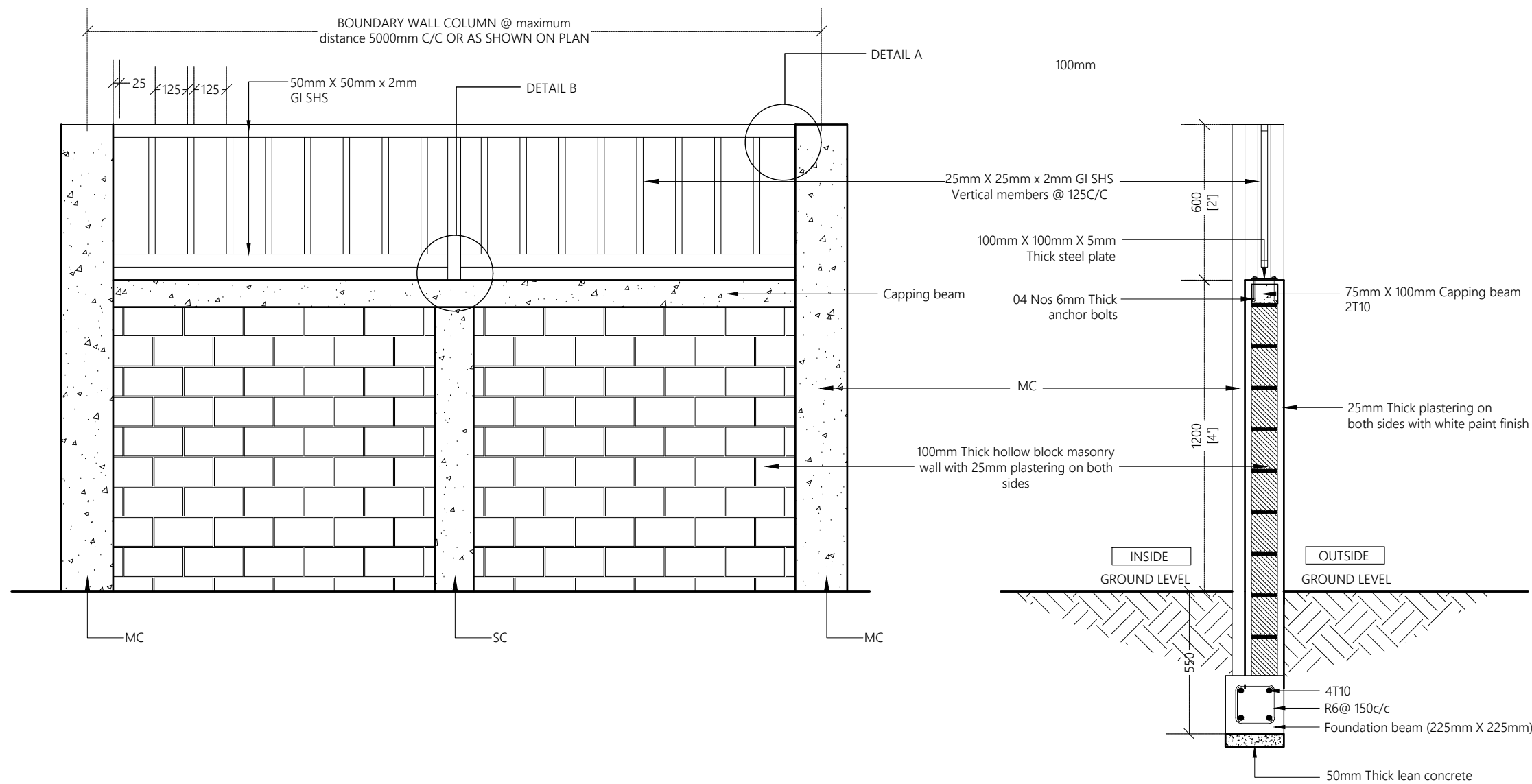
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3):

Project No: EP-WS/2019/05

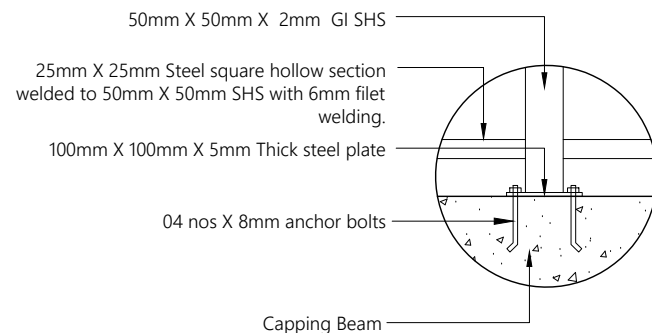
Rev: Page:

**W-(6)**



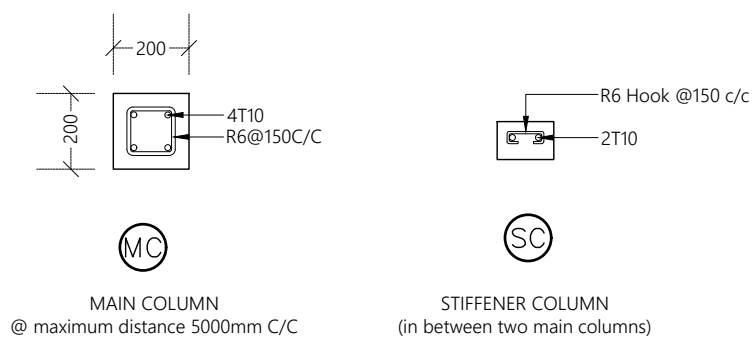
DETAIL A

1:10



DETAIL B

1:10



## BOUNDARY WALL AND FENCING DETAILS

1:20



### 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

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, Huseenuheena Magu, Male', Maldives

**FEEDBACK INFRA**  
Maldives

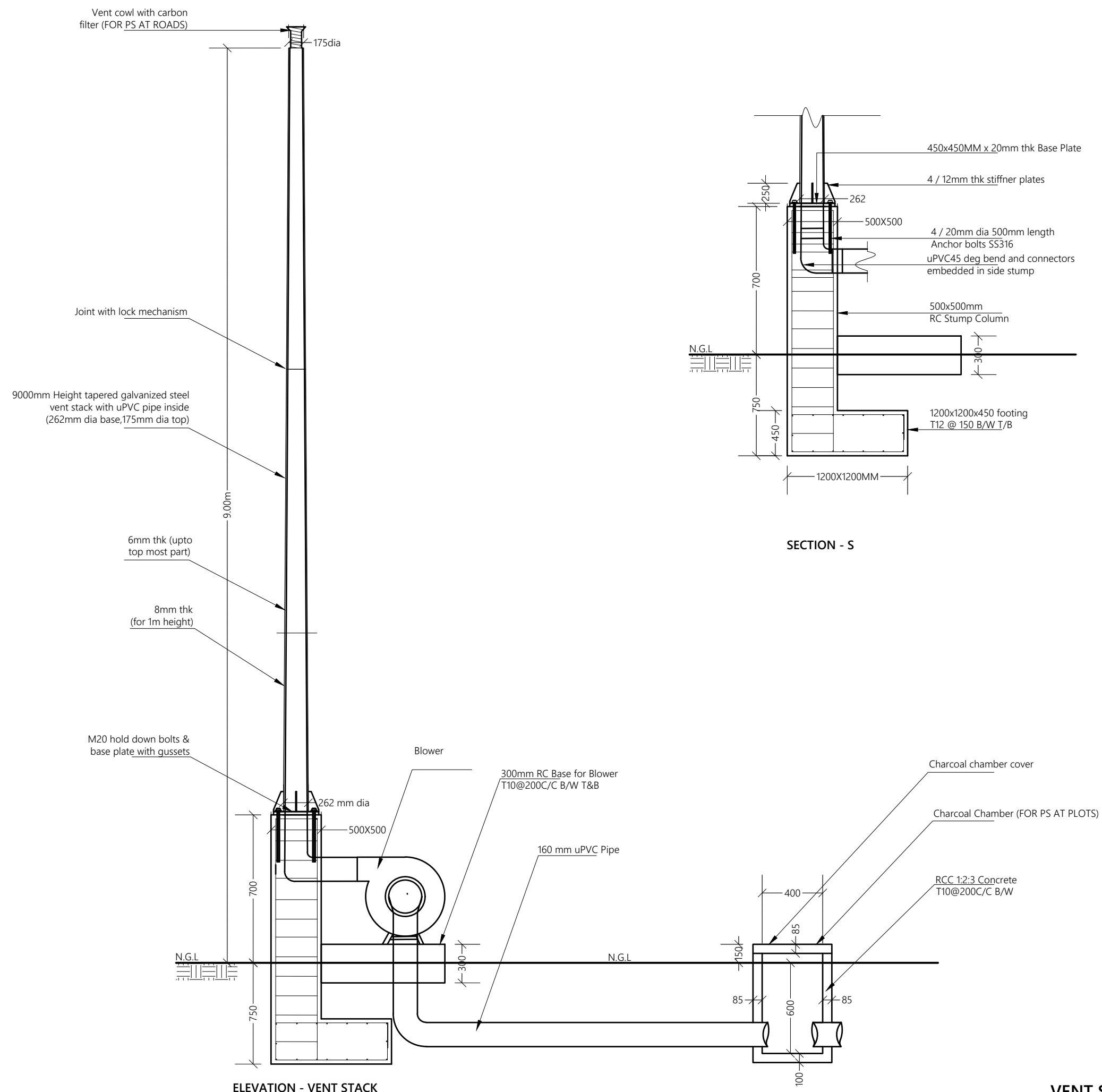
Drawn: F.I.A. Checked: M.S.S.

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

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

Project No: EP-WS/2019/05

Rev: Page: W-(7)

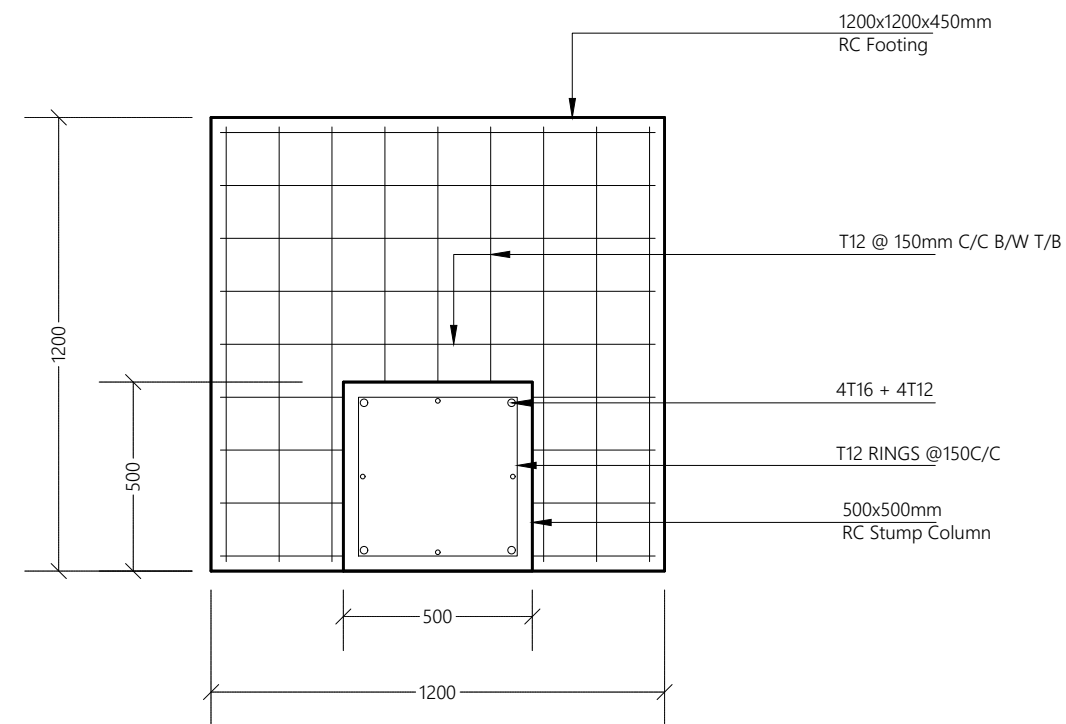


## NTS

REV. NO.	Date	Revision Description	Drawn	Chkd	App	

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	
Rev:	Page:

Page:  
**W-(8)**



Vent Stack

800

600

Air Blower

300MM RC Base for Blower  
T10@200C/B/W T&B

160 mm uPVC Pipe

400

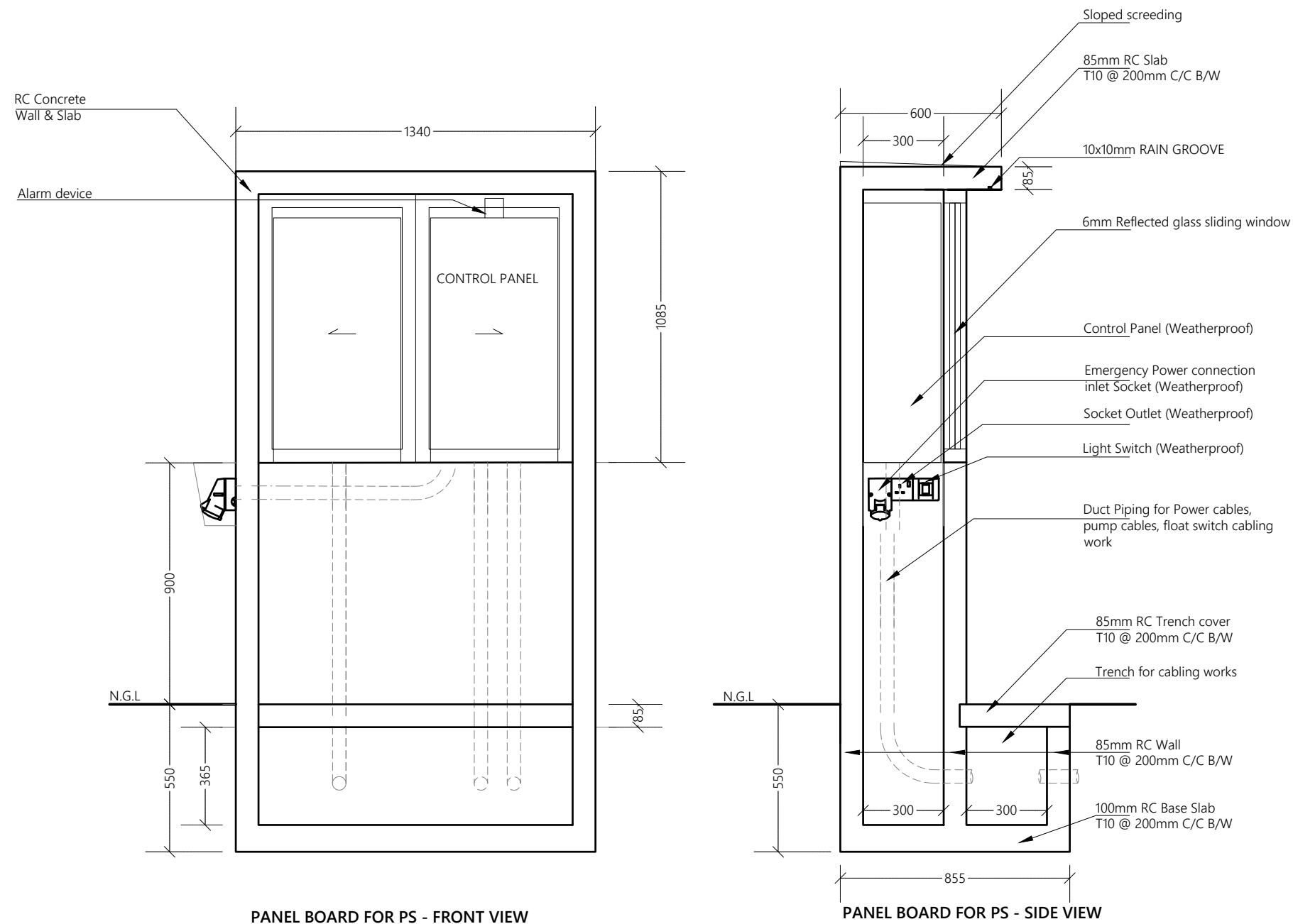
400

Charcoal Chamber  
(FOR PS AT PLOTS)

## VENT STACK AND AIR BLOWER DETAILS

W-(9)





## CONTROL PANEL BOARD 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**

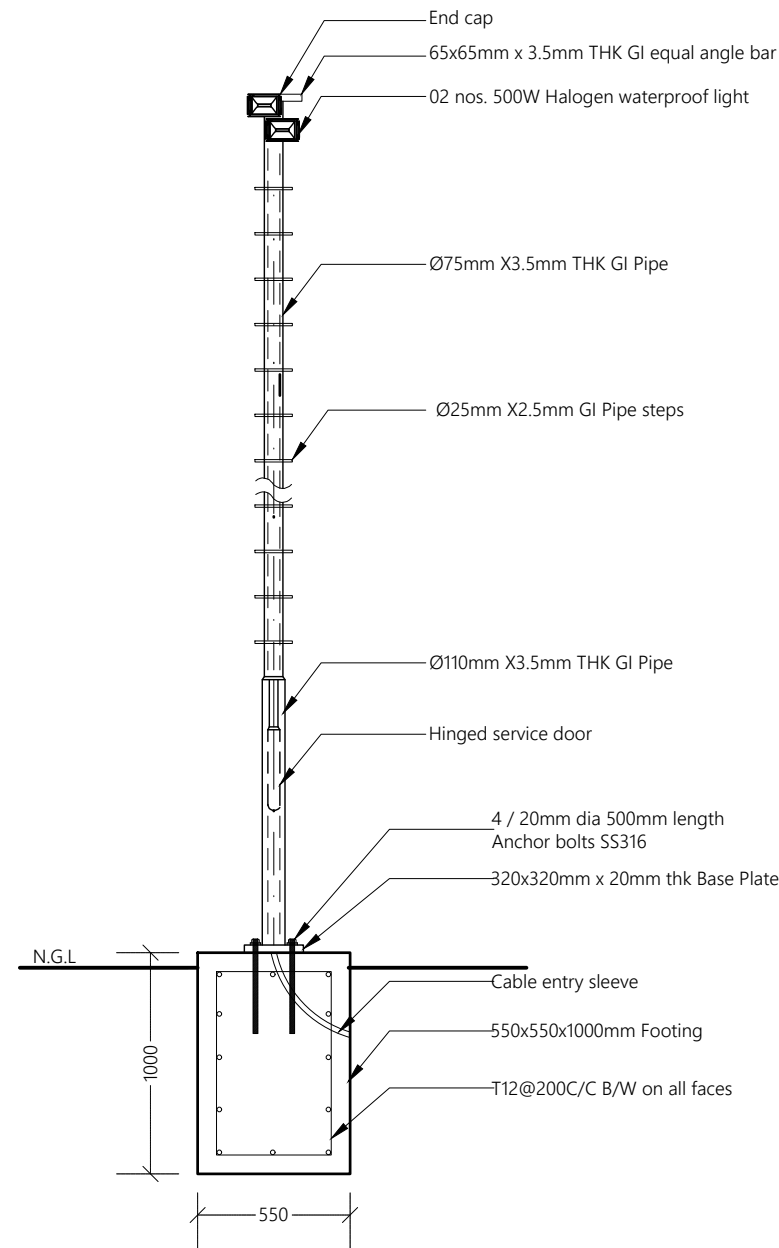
Client:  
**Ministry of National Planning, Housing and Infrastructure, Republic of Maldives**

**EPOCH ASSOCIATES**

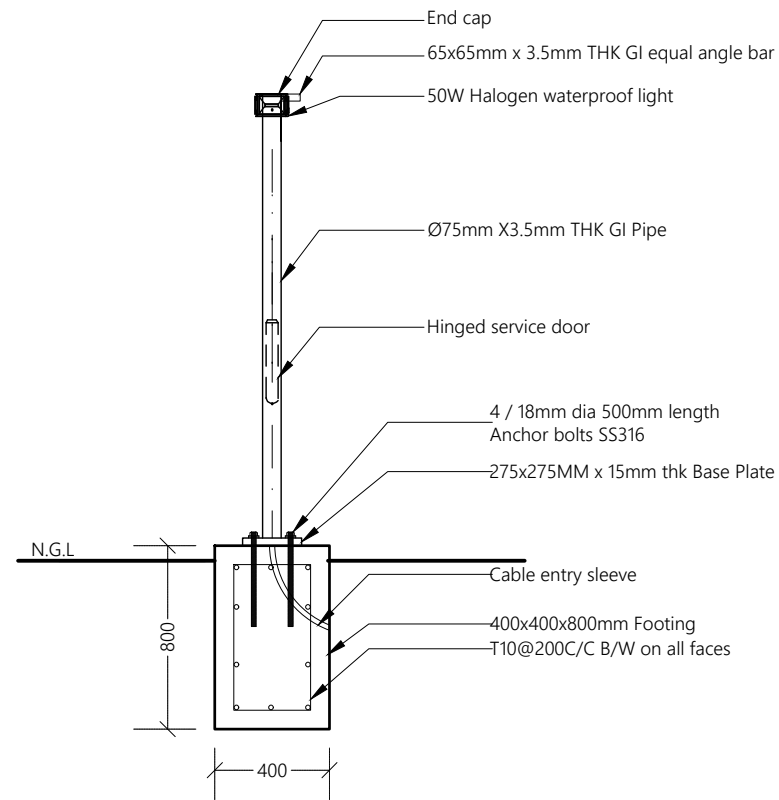
T: +960 333 3528  
E: info@epochassociates  
W: www.epochassociates  
A: G. Rosary West, Huseenuheena Magu, Male', Maldives

**FEEDBACK INFRA**  
Working Safely, Constructing Happily

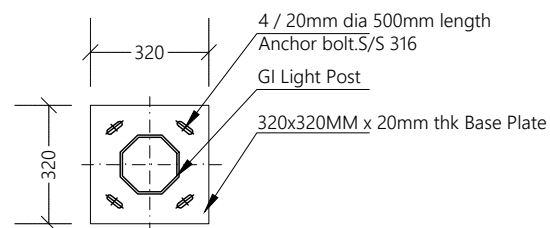
Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/05	Page: W-(10)



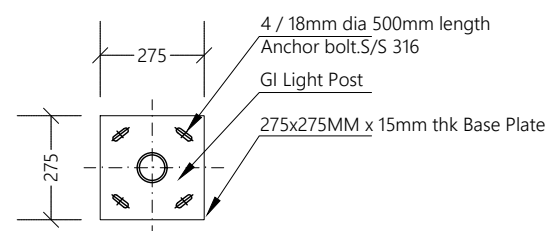
LIGHT POST DETAILS FOR STP COMPOUND (LP1)



LIGHT POST DETAILS FOR PUMP STATION (LP2)



BASE PLATE (LP1)



BASE PLATE (LP2)

NOTE:  
 - CONCRETE COVER :50mm  
 - All steel members and GI SHS to be applied with 2 coats of anti-corrosive paint with epoxy finishing paint

## LIGHT POST DETAILS

NTS



### Legend

REV. NO.	Date	Revision Description	Drawn	Chkd	Appd.

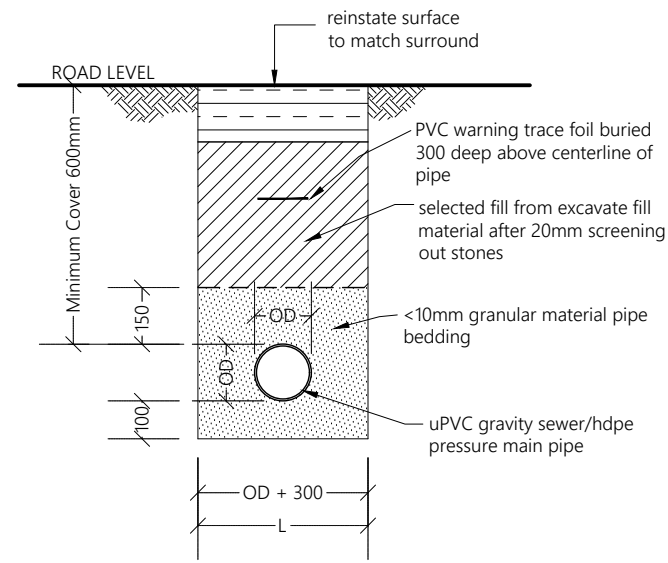
Title:  
**Consultancy Services for Survey, Design and EIA works of Water Supply and Sewerage Facilities in 6 islands, Maldives - Package 5**

Sub Title:  
**Sewerage System in V. Rakeedhoo**

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



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-(11)
Rev:	



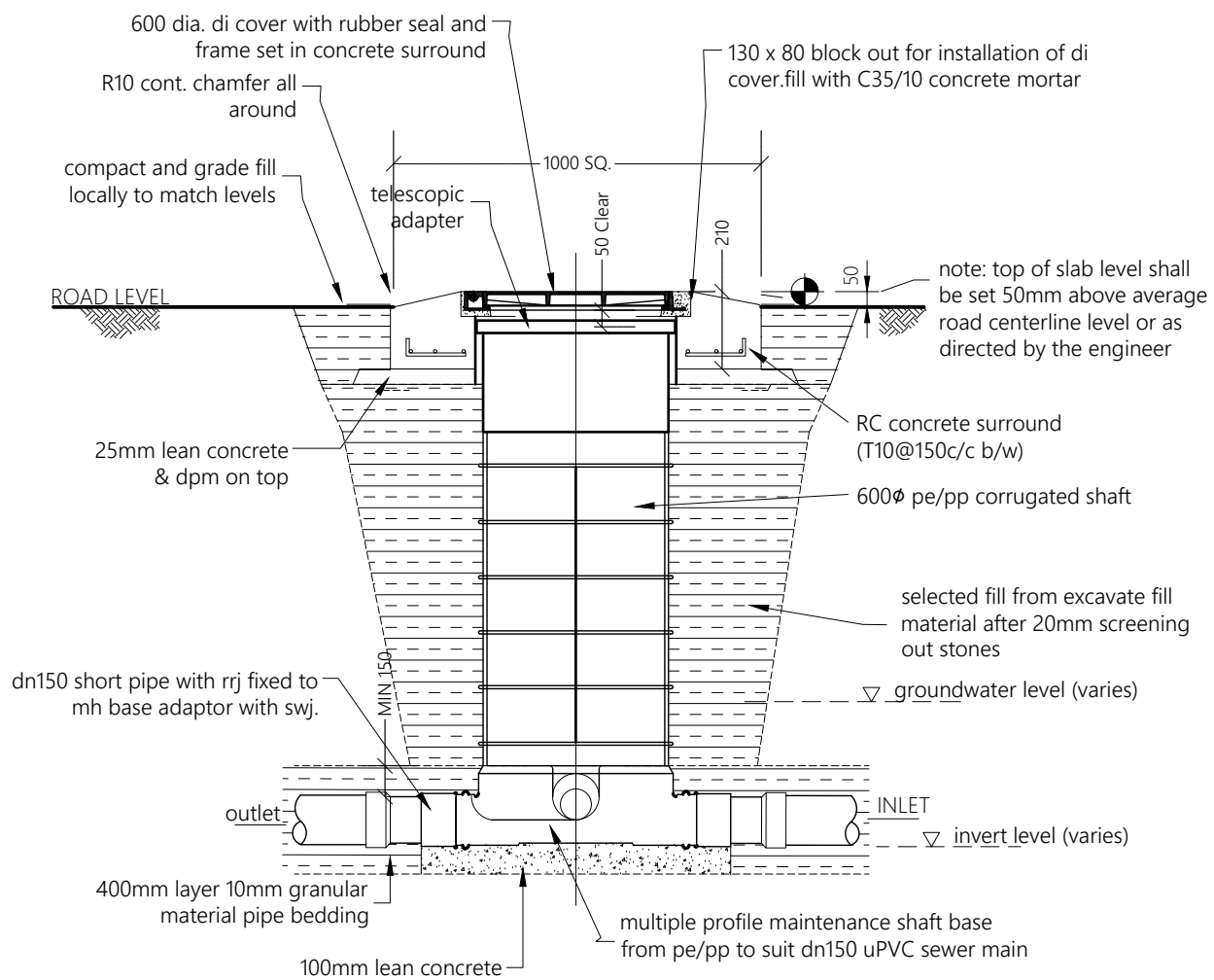
The diagram illustrates a cross-section of a road structure with various utility layers and components. The layers are labeled as follows:

- ROAD LEVEL**: The top surface of the road.
- 300**: A vertical dimension indicating the thickness of the top layer.
- VARIES (300-600)**: A vertical dimension indicating the variable thickness of a layer.
- VARIES (MIN.600)**: A vertical dimension indicating the variable thickness of a layer, with a minimum of 600.
- VARIES (300-600)**: A vertical dimension indicating the variable thickness of a layer.
- VARIES (MIN.600)**: A vertical dimension indicating the variable thickness of a layer, with a minimum of 600.
- VARIES (300-600)**: A vertical dimension indicating the variable thickness of a layer.

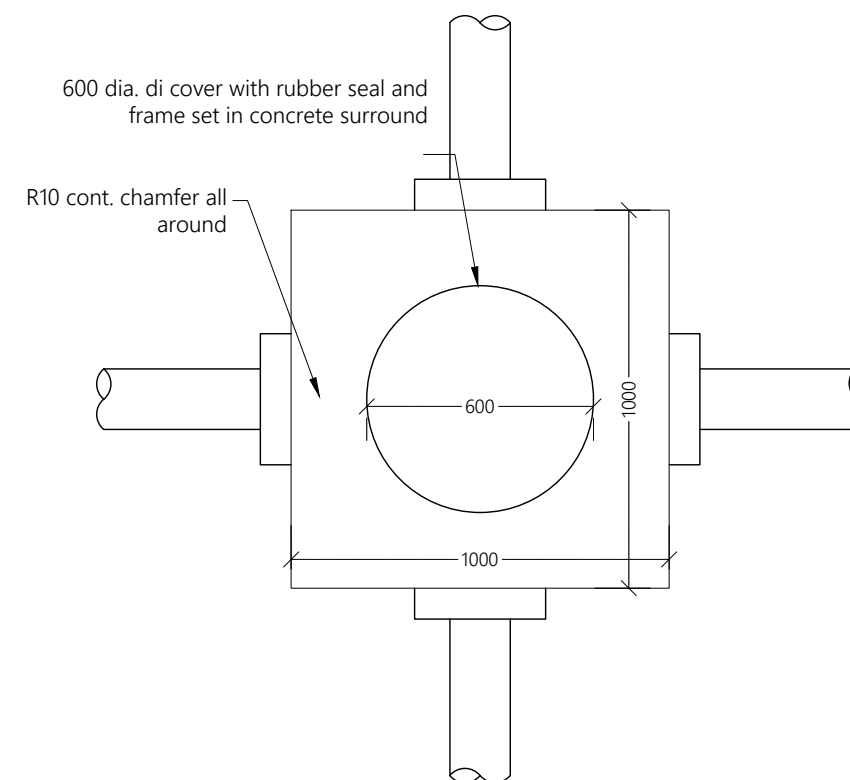
The components shown in the diagram are:

- buried rline of pipe**: A horizontal line representing the buried mainline of a pipe.
- 450-600**: A horizontal dimension indicating the width of a section.
- 300**: A horizontal dimension indicating the width of a section.
- 1/3 X RL**: A horizontal dimension indicating a distance based on the road level (RL).
- 1/2 X RL**: A horizontal dimension indicating a distance based on the road level (RL).
- MIN.600**: A horizontal dimension indicating a minimum distance.
- 400**: A horizontal dimension indicating the width of a section.
- 1/3 X RL**: A horizontal dimension indicating a distance based on the road level (RL).
- 450-600**: A horizontal dimension indicating the width of a section.
- RL**: The Road Level, indicated by a horizontal line at the bottom.

W-(12)



ELEVATION - MAINTENANCE SHAFT (MH)



PLAN VIEW - MAINTENANCE SHAFT (MH)

## MAINTENANCE SHAFT (MH) DETAILS

1:20



### 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**

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

**FEEDBACK INFRA**  
Maldives Infrastructure Development

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

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

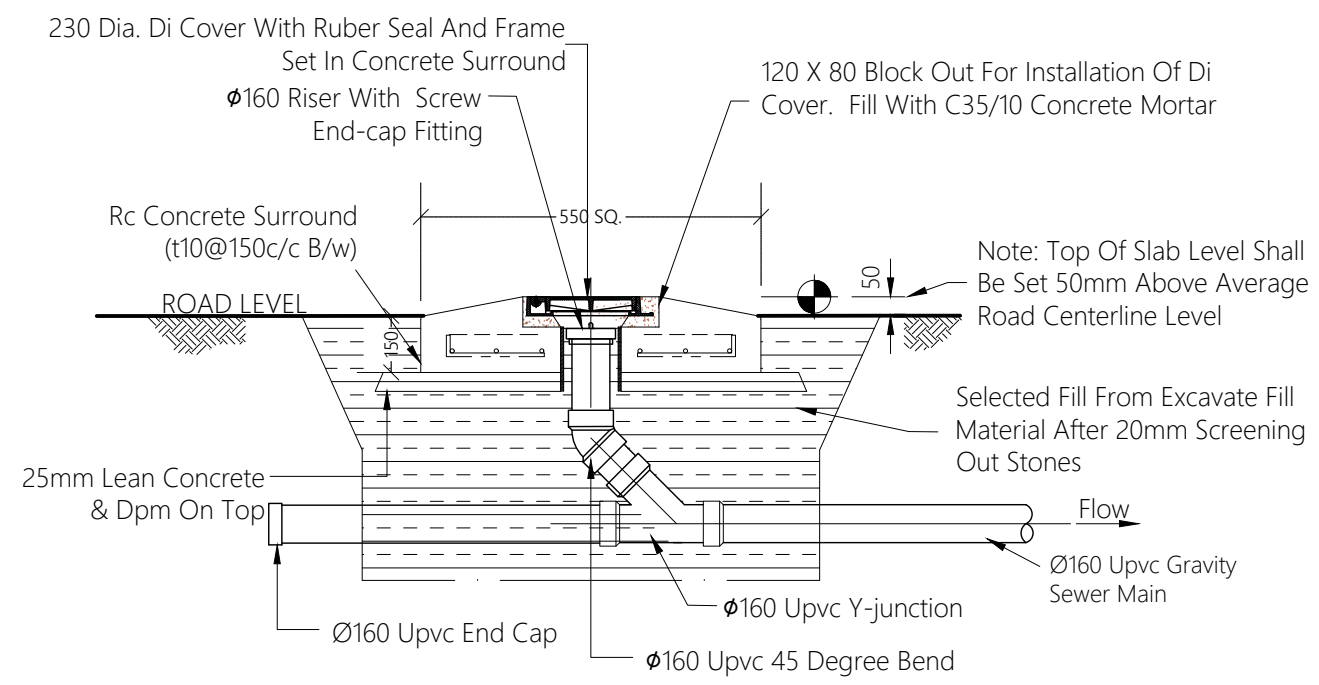
Date: Sep 2020 SCALE (A3): 1:20

Project No: EP-WS/2019/05

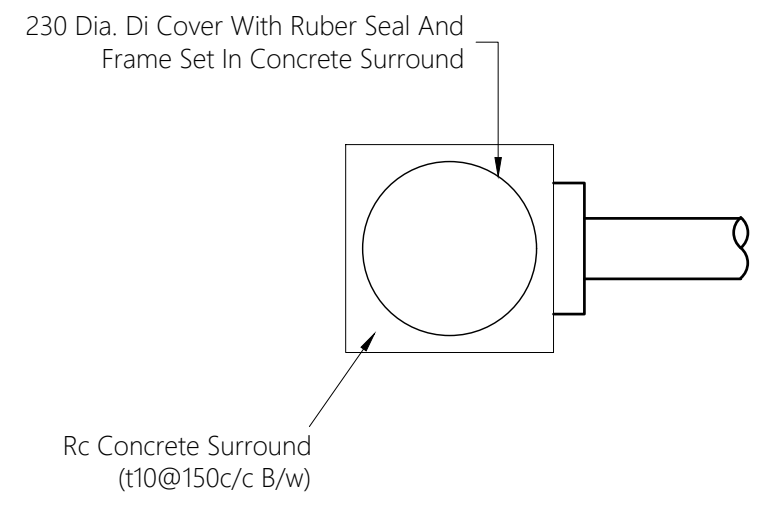
Rev: Page:

W-(13)





ELEVATION - CLEANOUT (CO)



PLAN VIEW - CLEANOUT (CO)

## CLEAN OUT DETAILS

NTS

N

**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**

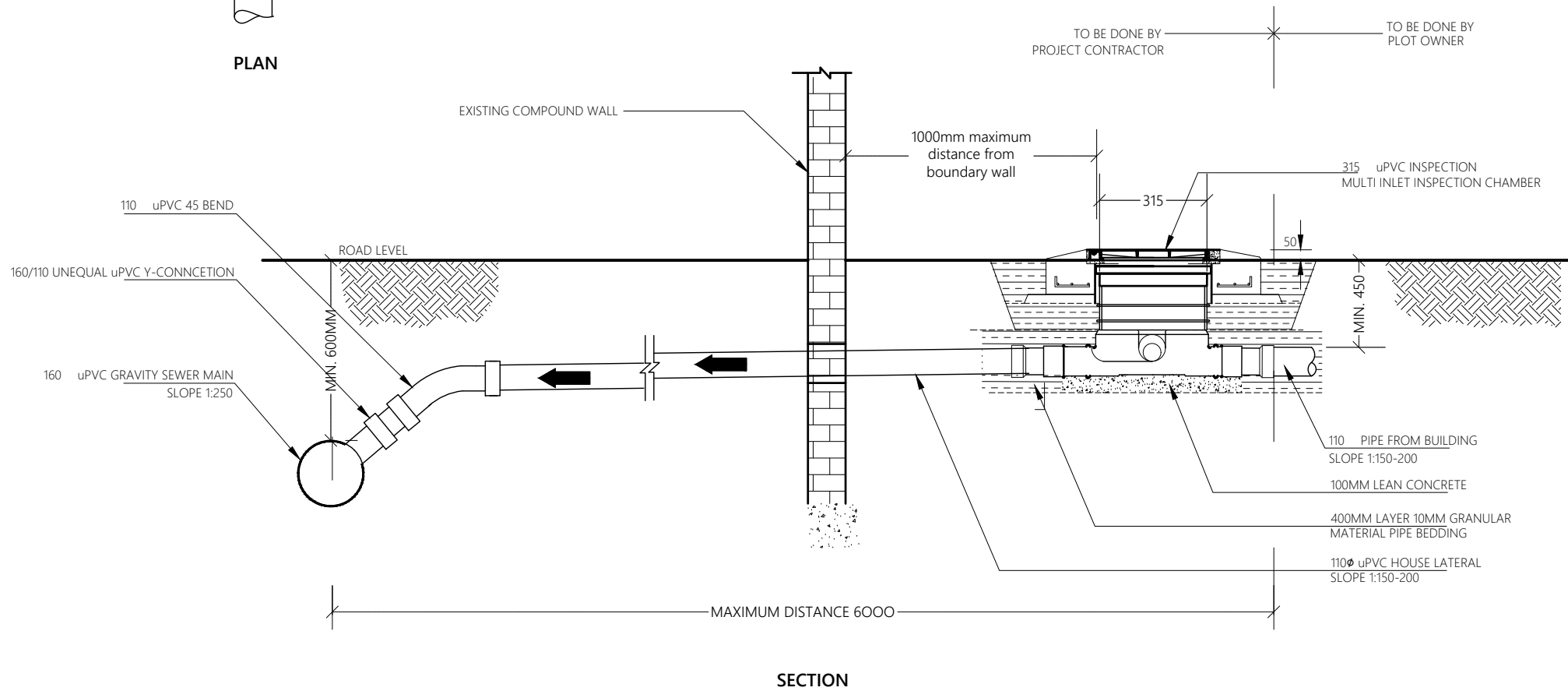
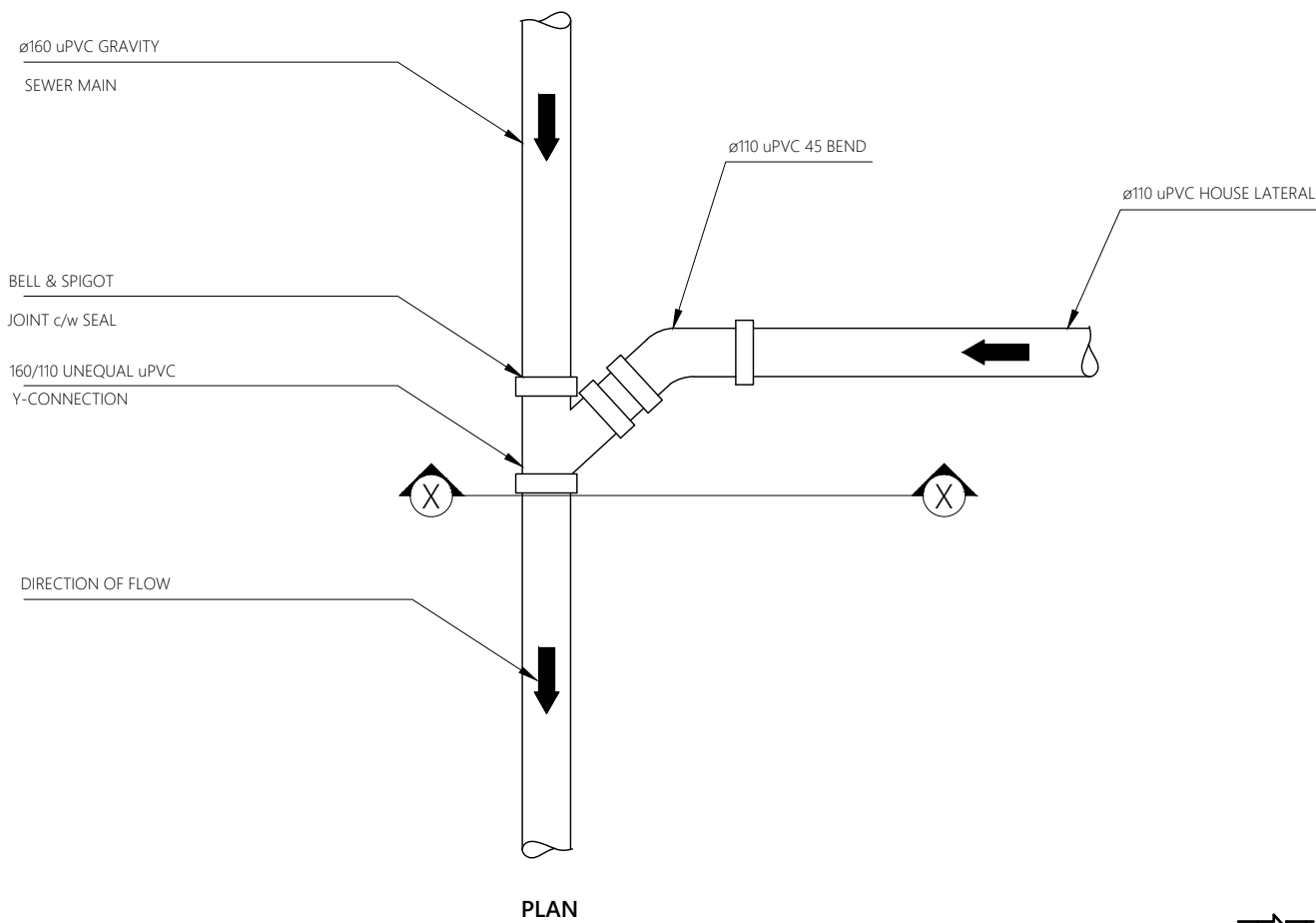
**EPOCH**  
ASSOCIATES

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

**FEEDBACK INFRA**  
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	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.

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,  
 Husnuheena Magu, Male', Maldives



Drawn: F.I.A.      Checked: M.S.S.

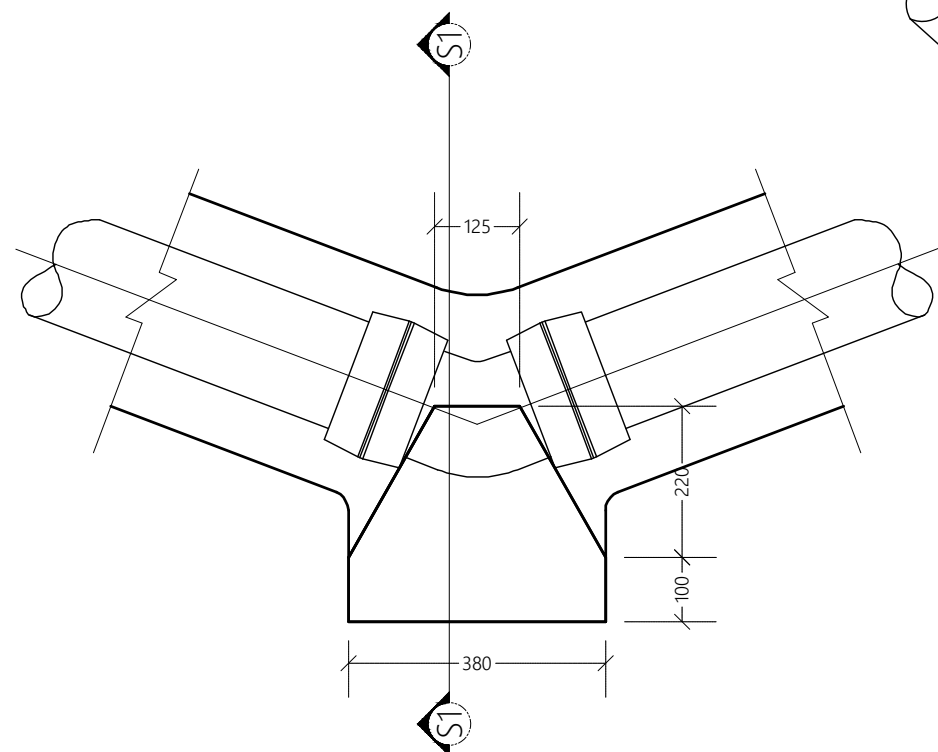
Designed: F.I.A.      Approved: I.W.

Date: Sep 2020      SCALE (A3): NTS

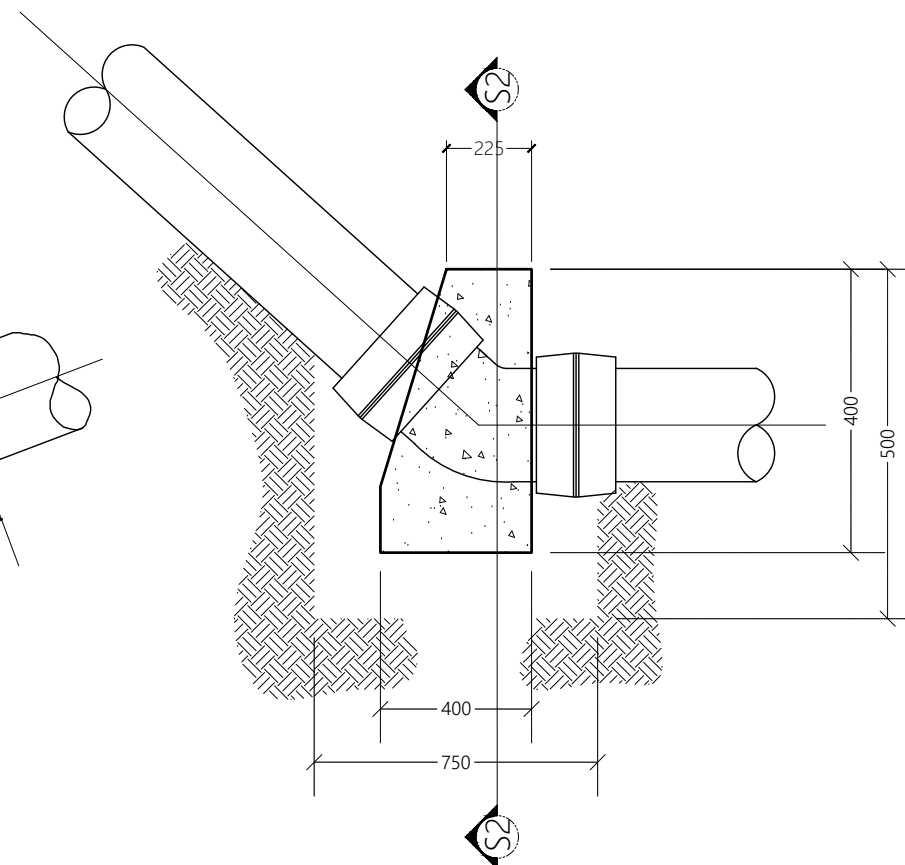
Project No: EP-WS/2019/05

Rev:      Page:

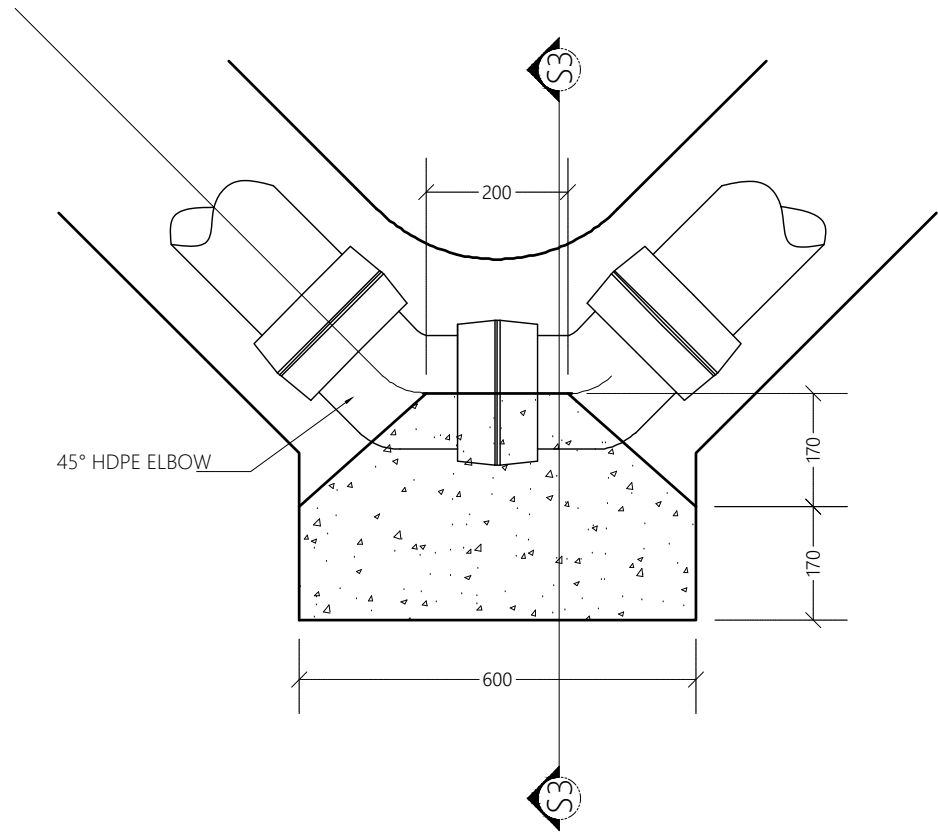
W-(16)



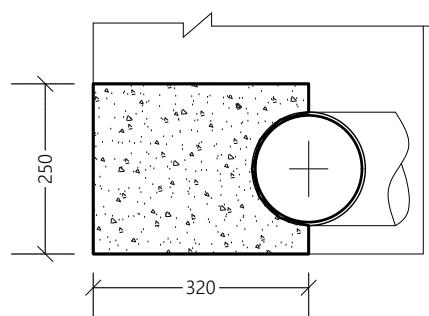
**HORIZONTAL 45° BEND**  
NTS



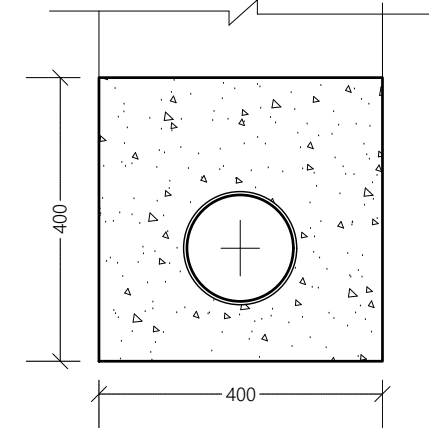
**VERTICAL 45° BEND**  
NTS



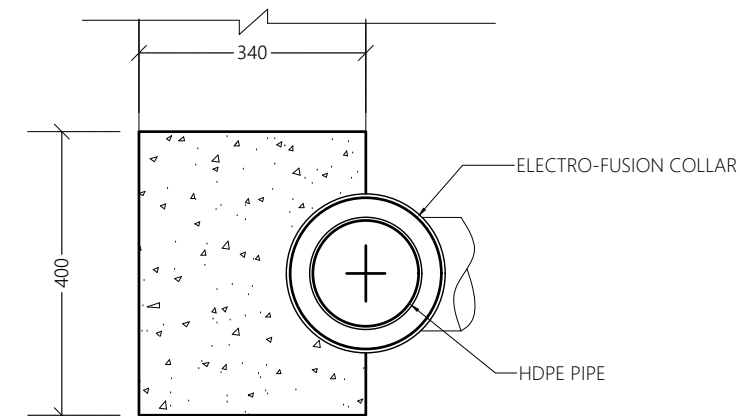
**HORIZONTAL 90° BEND**  
NTS



**SECTION S1-S1**  
NTS



**SECTION S2-S2**  
NTS



**SECTION S3-S3**  
NTS

## THRUST BLOCK 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**

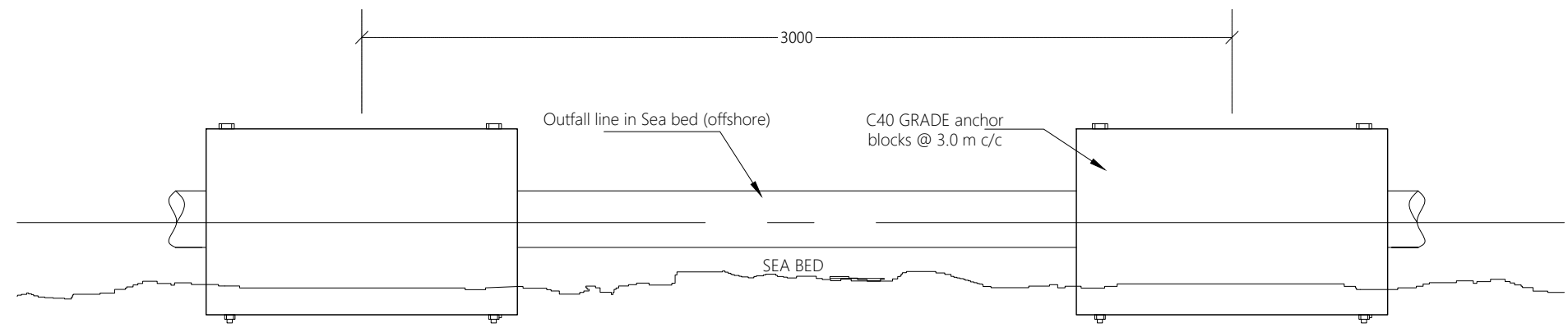
Sub Title:  
**Sewerage System in V. Rakeedhoo**

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

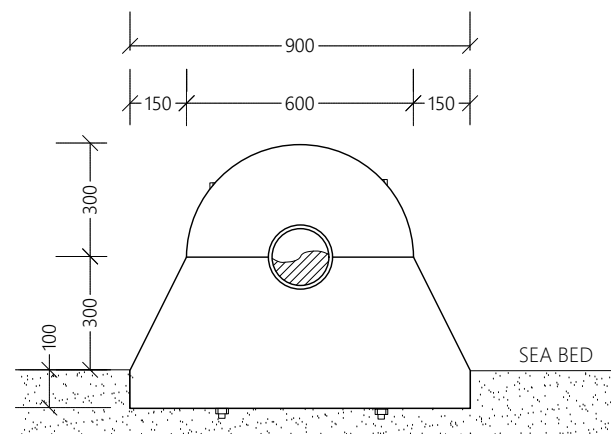
**EPOCH ASSOCIATES**  
T: +960 333 3528  
E: info@epochassociates  
W: www.epochassociates  
A: G. Rosary West, Huseenuheena Magu, Male', Maldives

**FEEDBACK INFRA**  
Maldivian Infrastructure Development

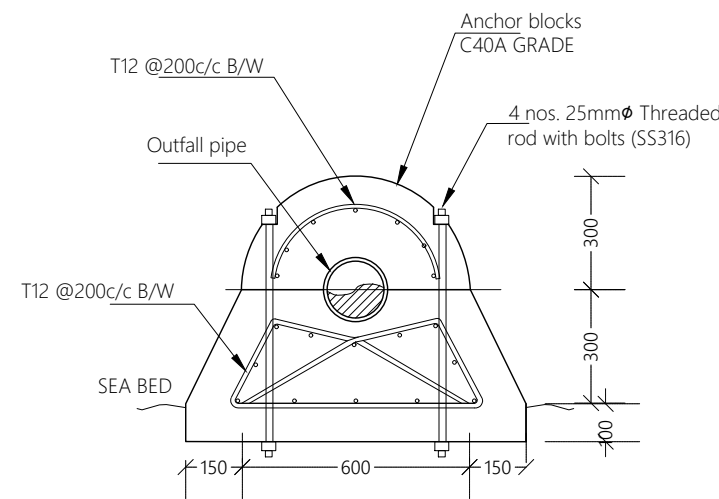
Drawn: F.I.A.	Checked: M.S.S.
Designed: F.I.A.	Approved: I.W.
Date: Sep 2020	SCALE (A3): NTS
Project No: EP-WS/2019/05	Page: W-(17)



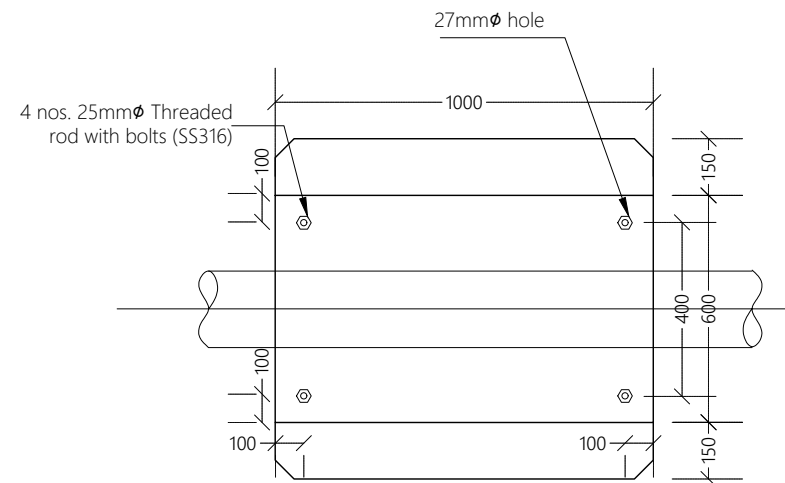
BALLAST BLOCK SIDE ELEVATION



BALLAST BLOCK FRONT ELEVATION



BALLAST BLOCK SECTION



BALLAST BLOCK PLAN

BALLAST BLOCK 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**

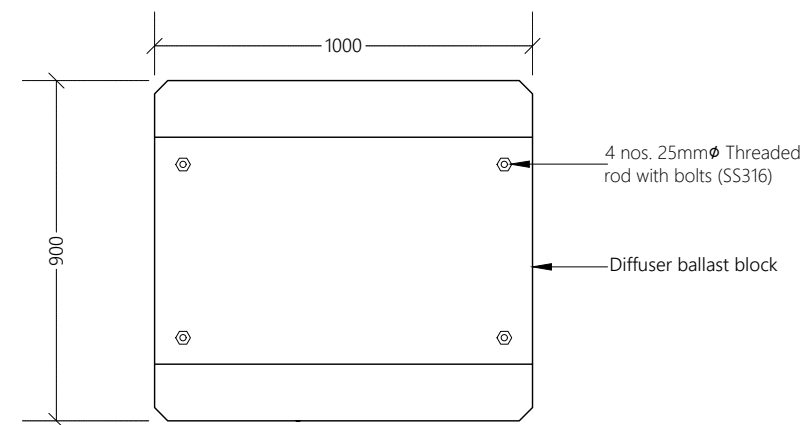
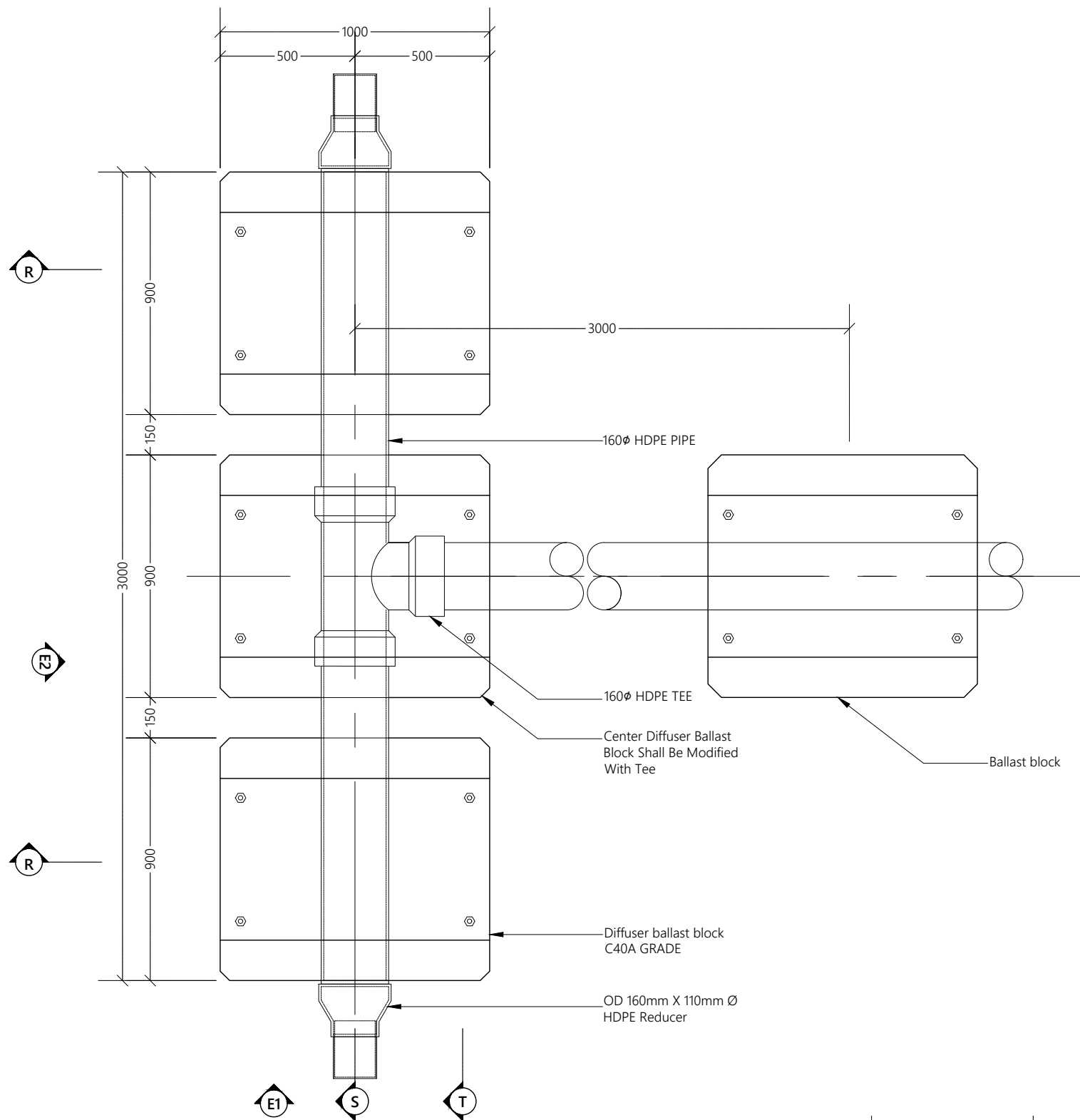
Sub Title:  
**Sewerage System in V. Rakeedhoo**

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

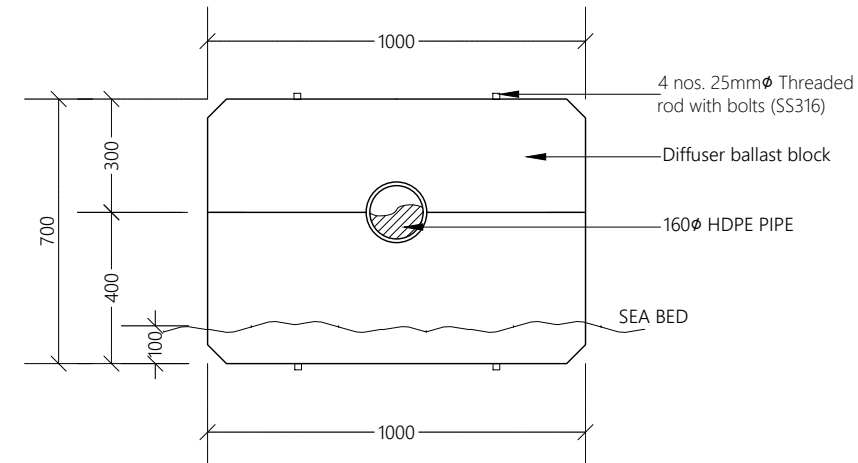
T: +960 333 3528  
E: info@epochassociates  
W: www.epochassociates  
A: G. Rosary West, Huseenuheena Magu, Male', Maldives

Working Safely, Constructing Happily

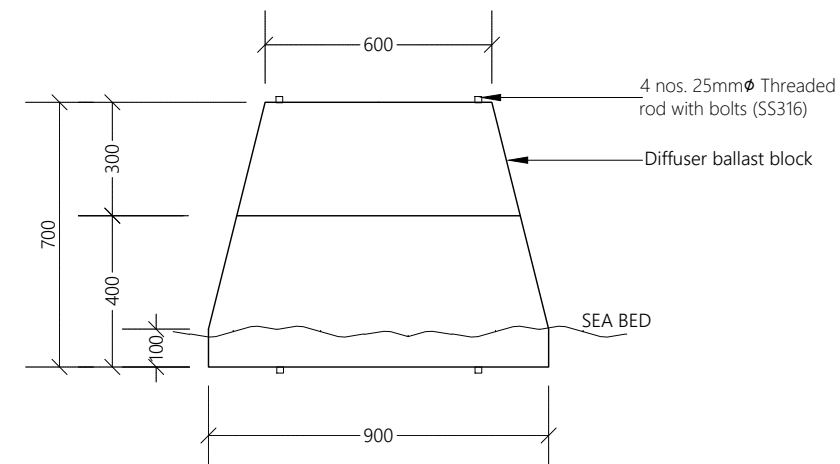
<small>Drawn:</small> F.I.A.	<small>Checked:</small> M.S.S.
<small>Designed:</small> F.I.A.	<small>Approved:</small> I.W.
<small>Date:</small> Sep 2020	<small>SCALE (A3):</small> NTS
<small>Project No:</small> EP-WS/2019/05	
<small>Rev:</small>	<small>Page:</small> <b>W-(18)</b>



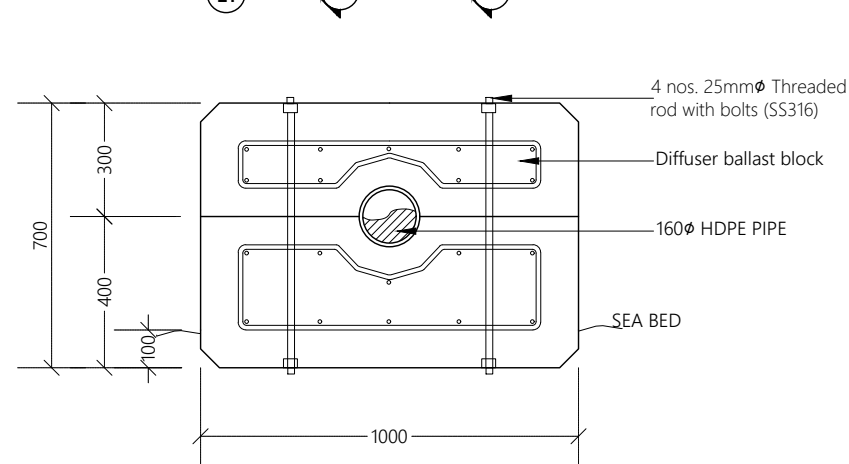
DIFFUSER BALLAST BLOCK PLAN



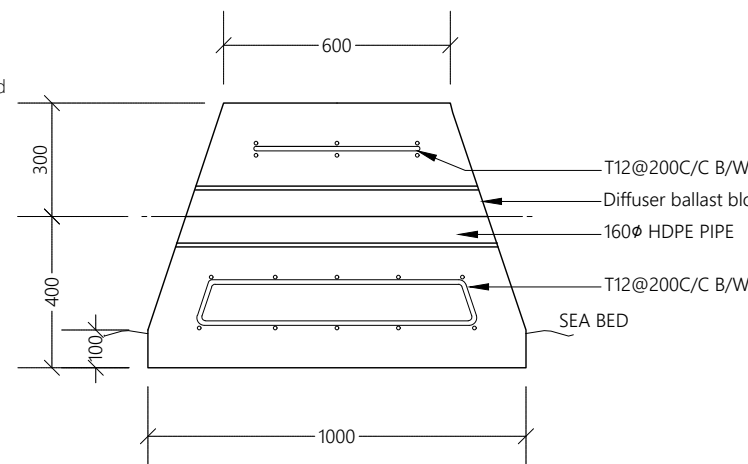
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E1



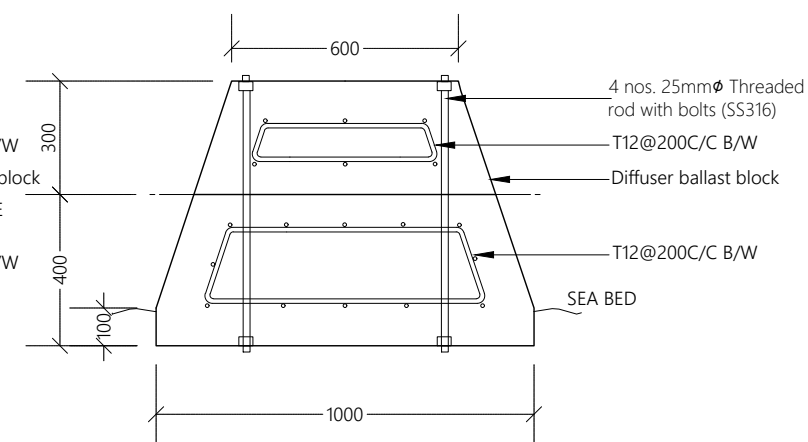
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E2



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.
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.

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

**FEEDBACK INFRA**  
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/2019/05

Rev: Page: W-(19)



Legend

Notes:

THE CONTRACTOR TO UNDERTAKE A DETAILED INSPECTION OF THE OUTFALL SITE TO ASSESS THE PROFILE AND CONDITION OF THE REEF BELOW SEA LEVEL AND TO PREPARE HIS METHODOLOGY FOR INSTALLATION AND FIXING.

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, Huseenuheena Magu, Male', Maldives

 **FEEDBACK INFRA**  
Maldives Sri Lanka Singapore

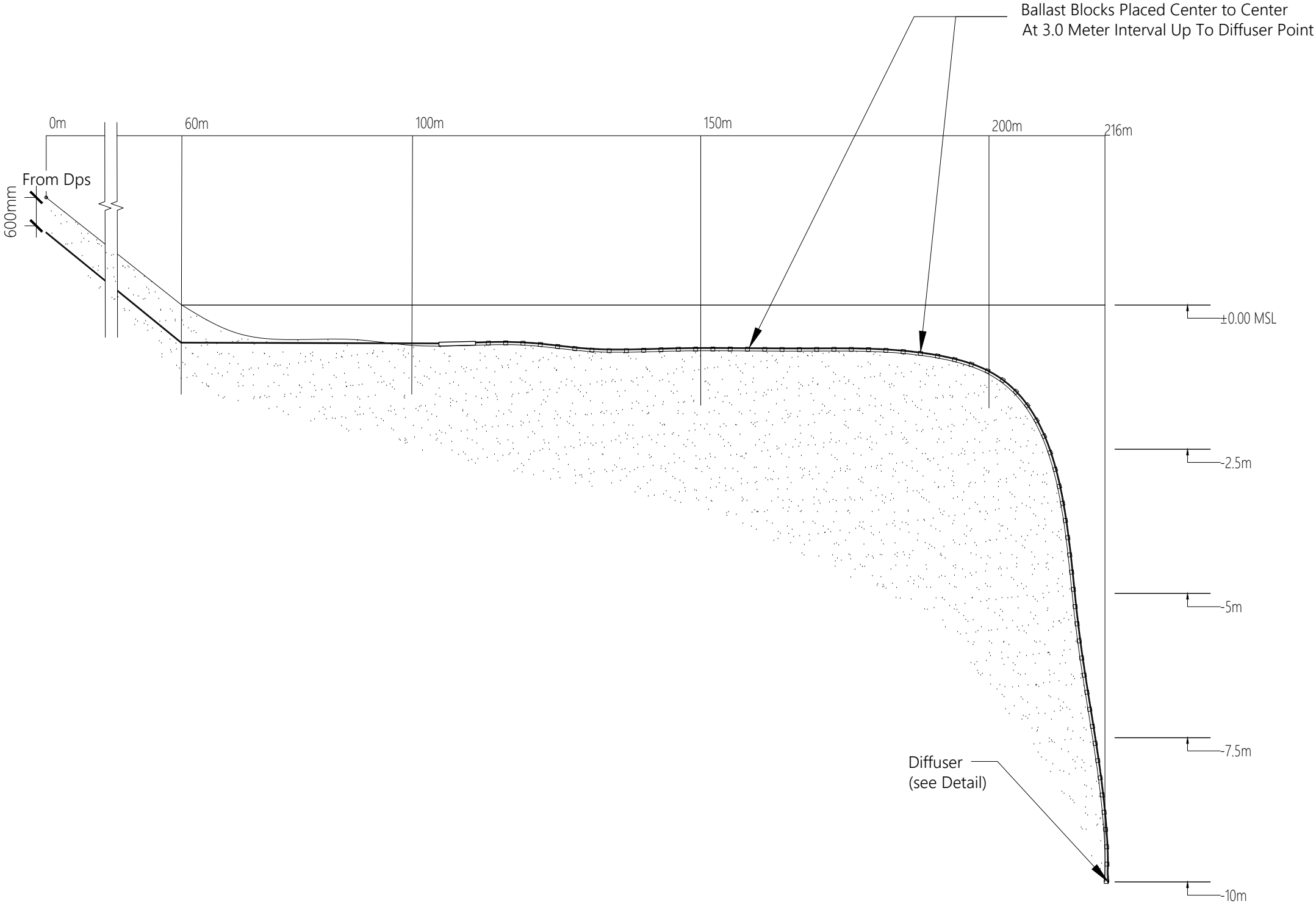
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): NTS

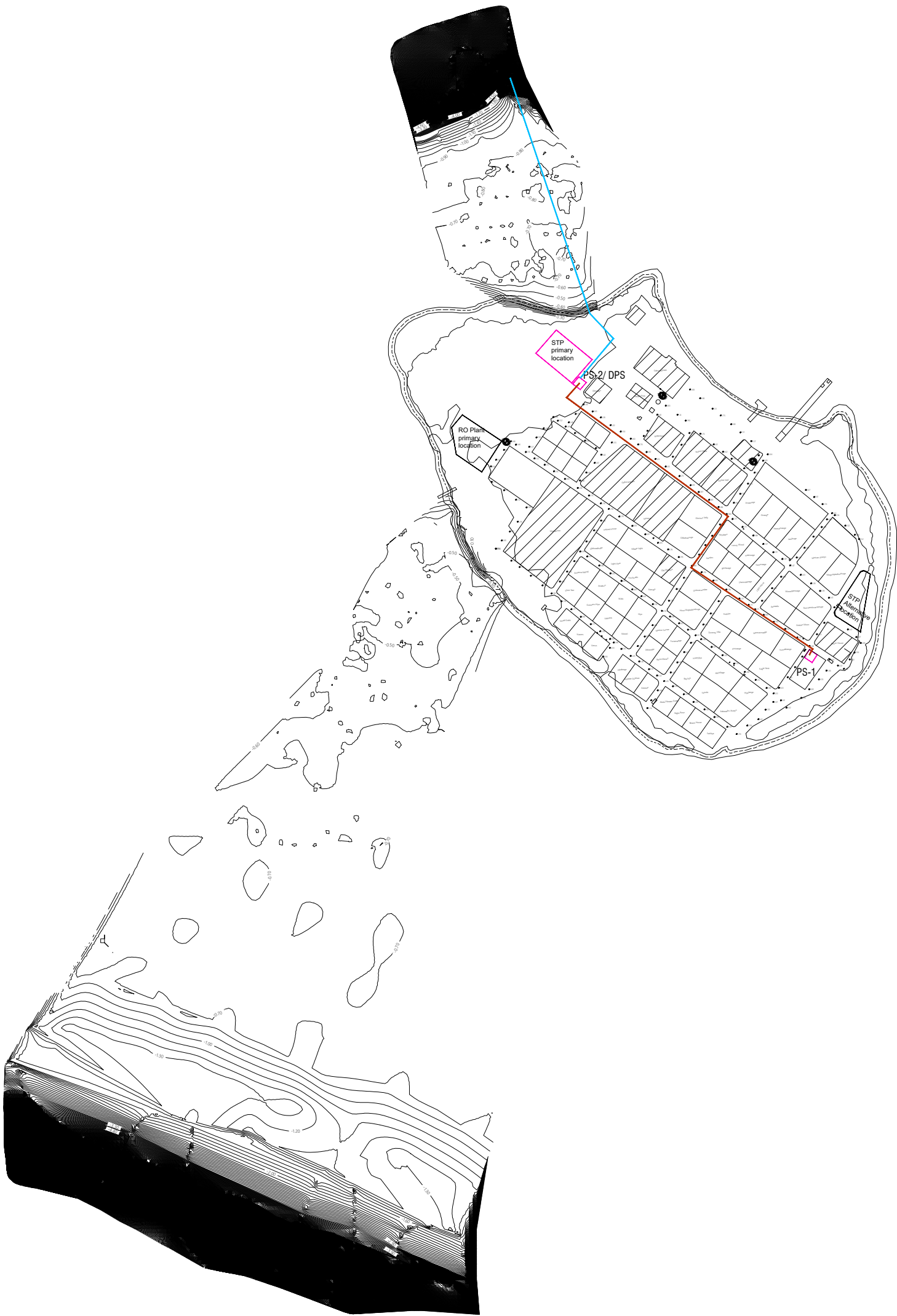
Project No: EP-WS/2019/05

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



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

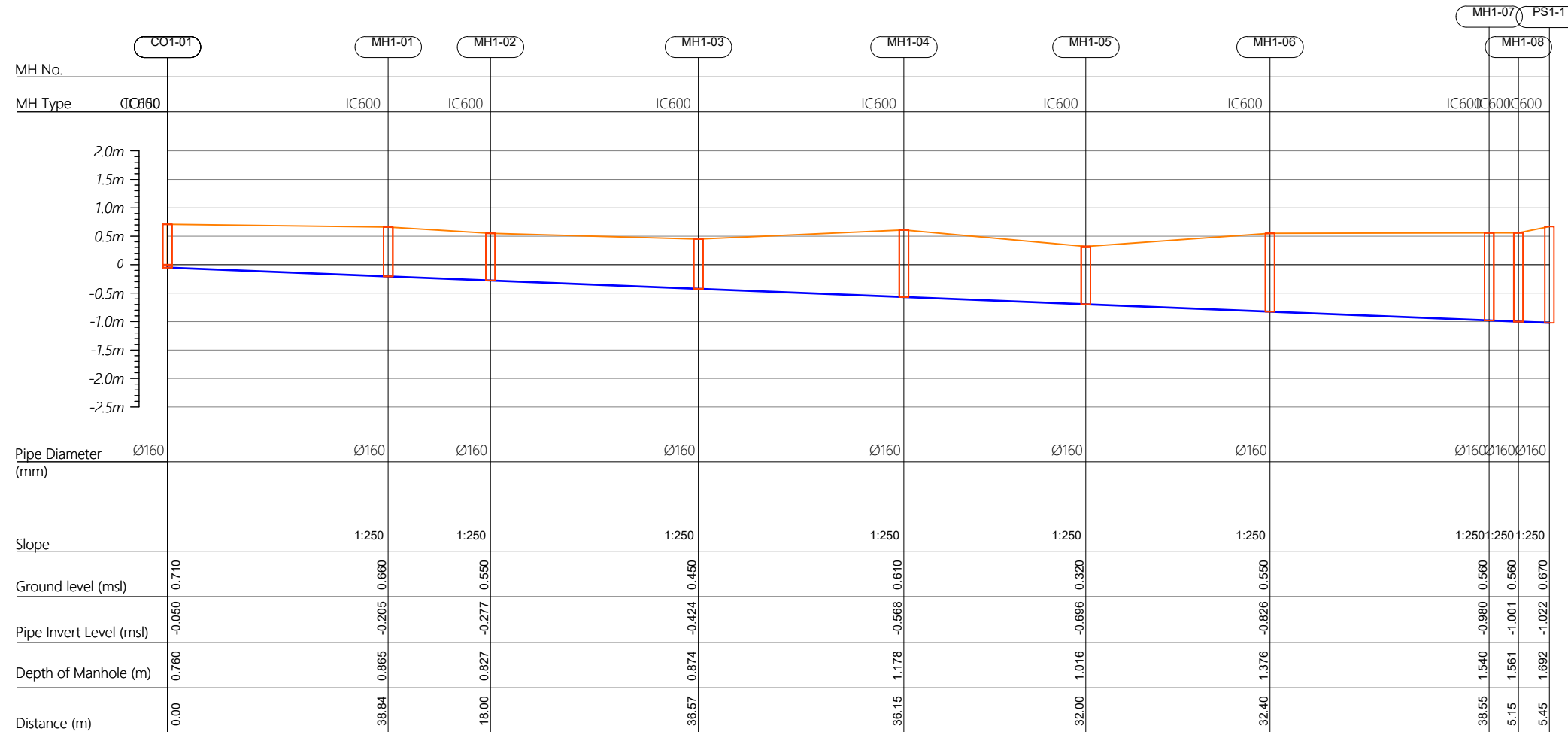
**EPOCH**  
T: +960 333 3528  
E: info@epoch.associates  
W: www.epoch.associates  
A: G. Rosary West,  
Husnuheena Magu, Male', Maldives

**FEEDBACK INFRA**  
Maldives Infrastructure Development

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	
Rev:	Page:



## Profile 01



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*



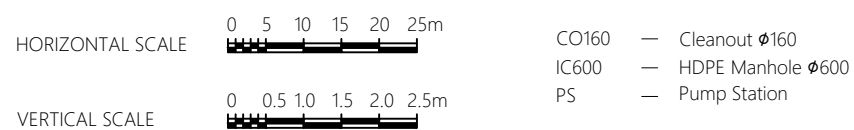
Drawn: A.R.W	Checked: M.S.S
--------------	----------------

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

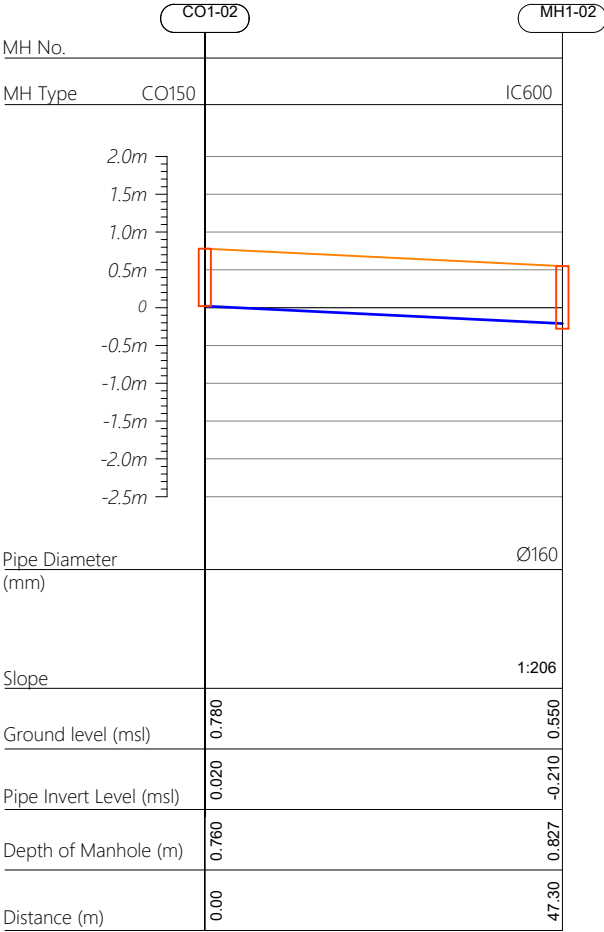
Date: Aug 2020 SCALE (A3): 1:100

Project No: 01010101

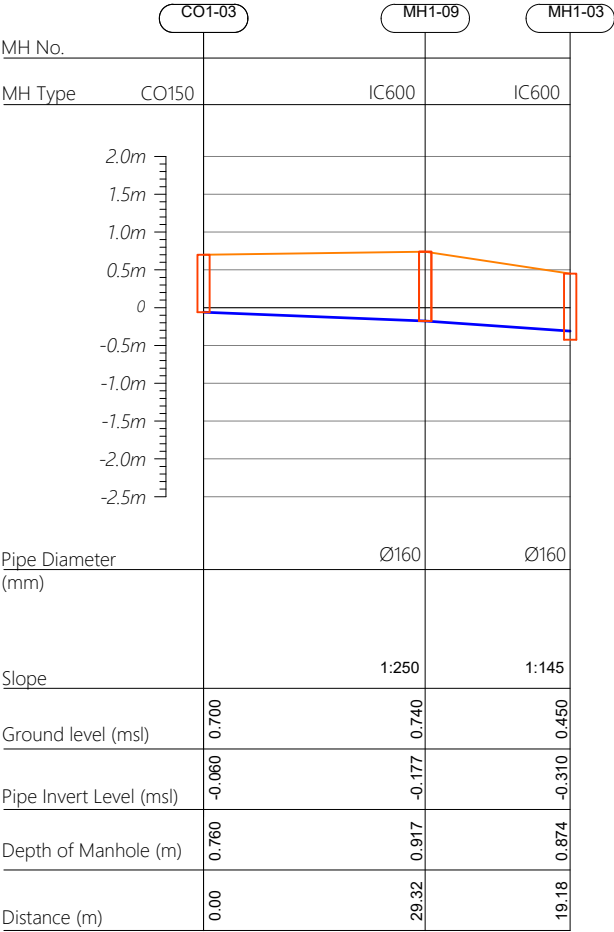
Rev: **R-01** Page: **PS1-01**



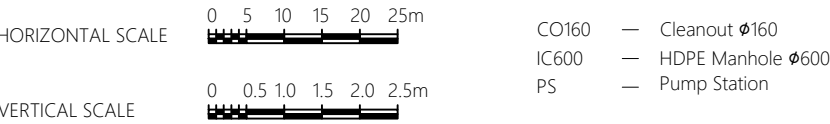
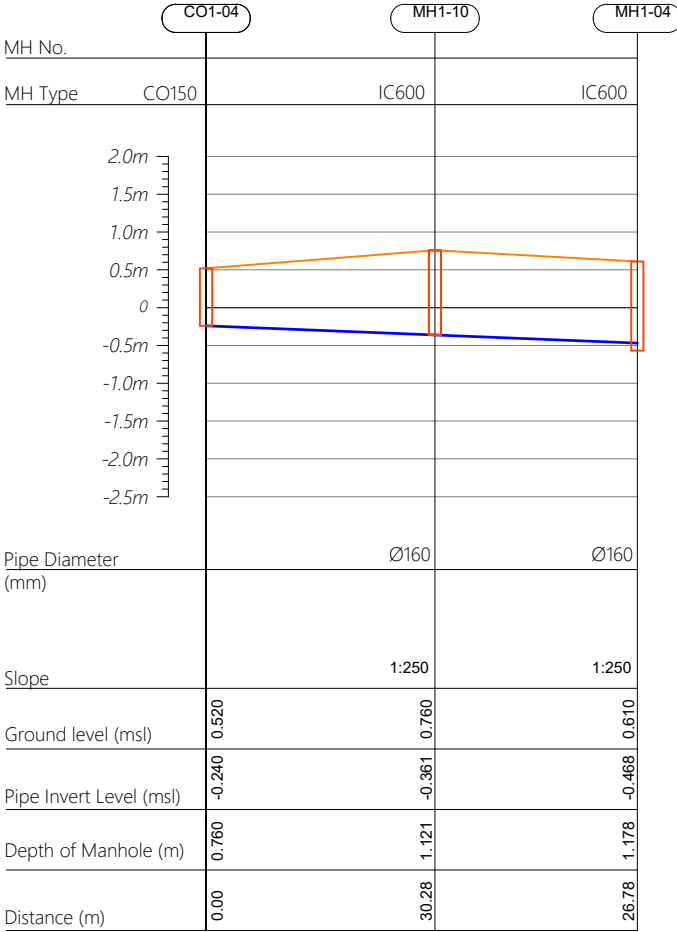
Profile 02



Profile 03



Profile 04



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**

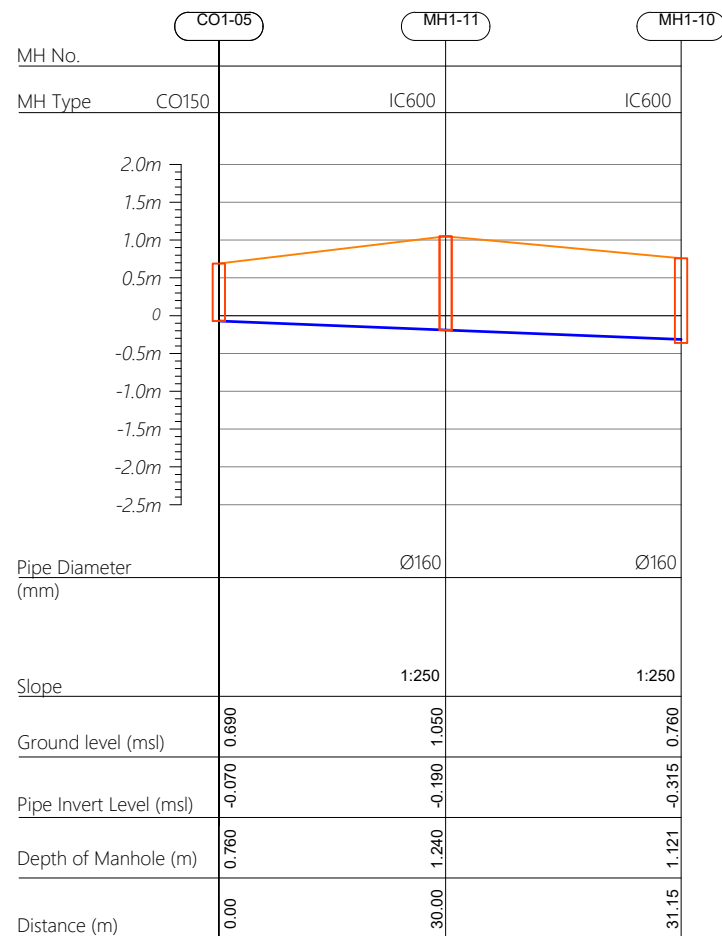
**EPOCH**  
ASSOCIATES  
T: +960 333 3528  
E: info@epoch.associates  
W: www.epoch.associates  
A: G. Rosary West,  
Husnuheemaa Magu, Male', Maldives

**FBACK INFRA**  
Making Infrastructure Happen

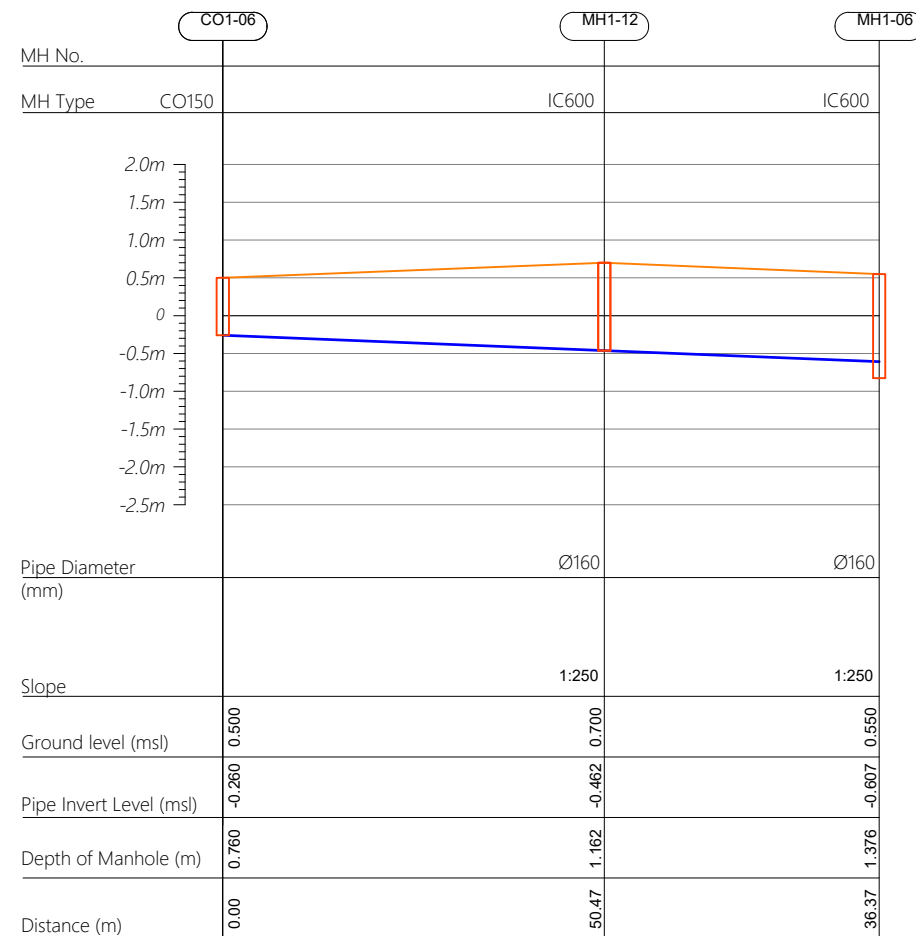
Drawn: A.R.W	Checked: M.S.S
Designed: F.I.A	Approved: I.W
Date: Aug 2020	SCALE (A3): 1:100
Project No: 01010101	

Rev: R-01	Page: PS1-02
-----------	--------------

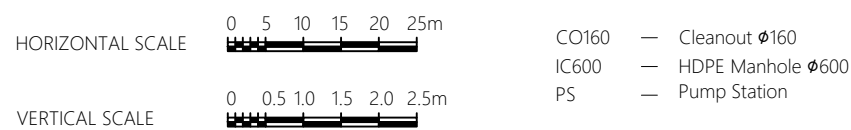
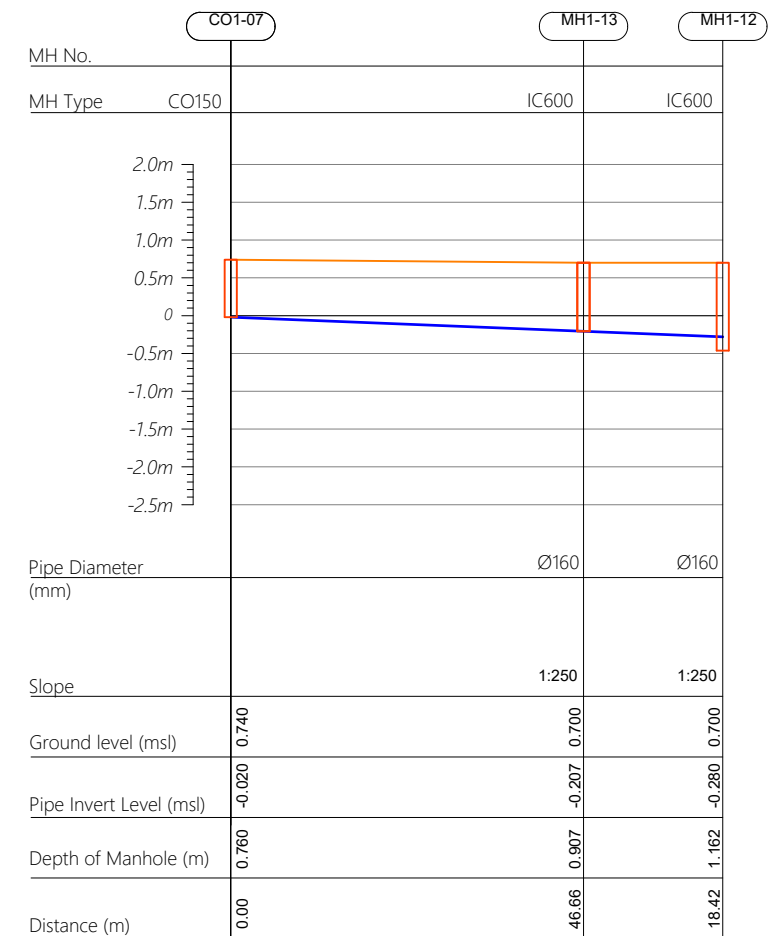
## Profile 05



## Profile 06



## Profile 07



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
--------------	----------------

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

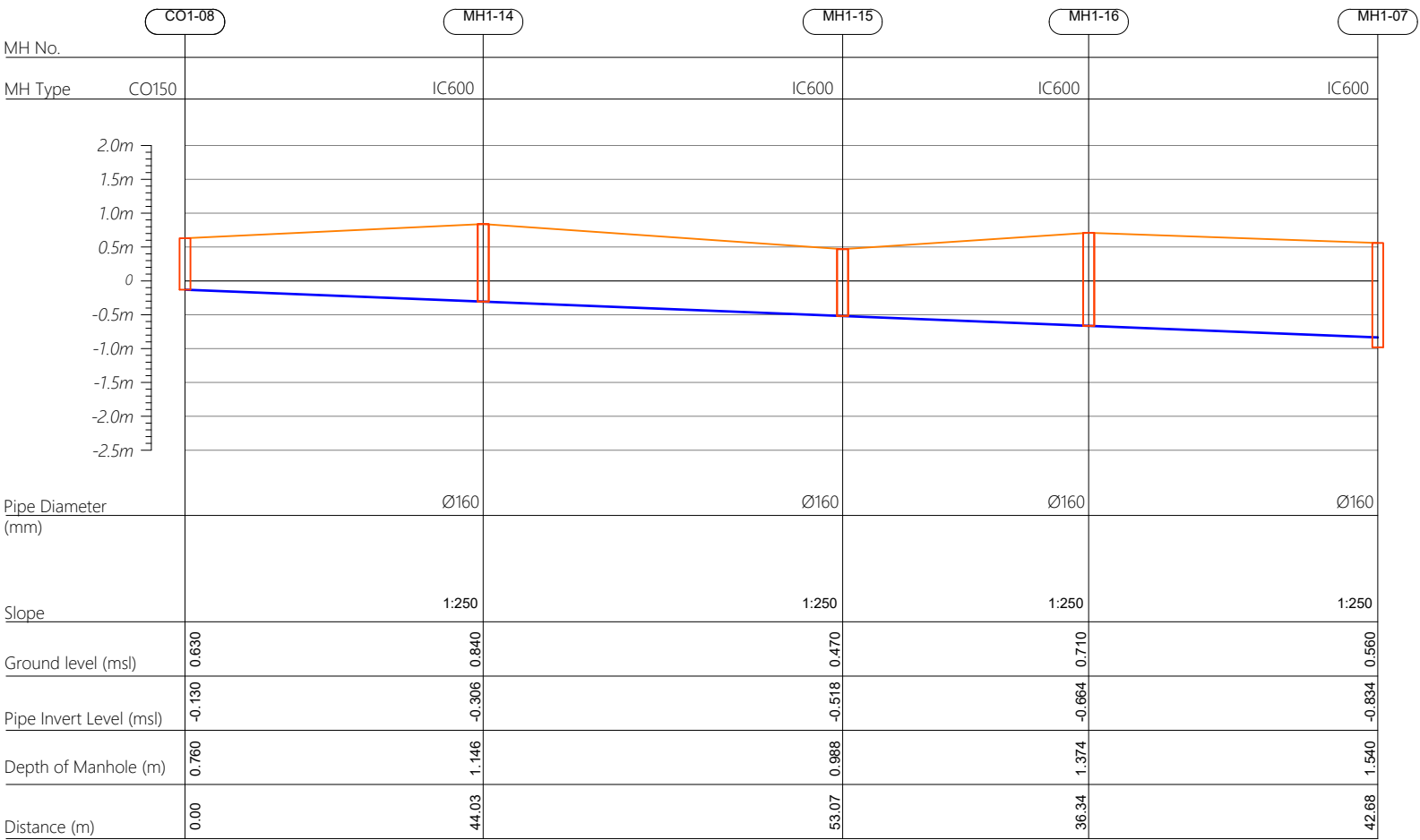
Date: Aug 2020	SCALE (A3): 1:100
----------------	-------------------

Project No: 01010101

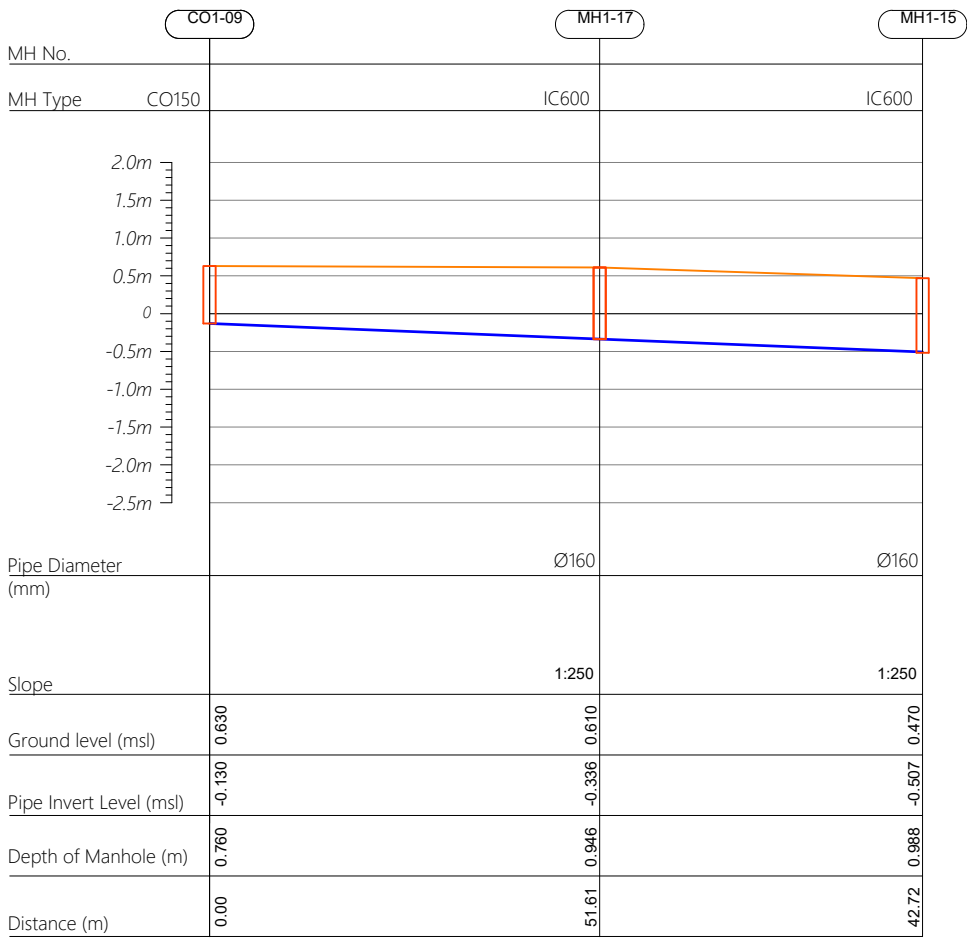
Rev. \_\_\_\_\_ Page: \_\_\_\_\_

R-01 PS1-03

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  
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,  
Husnuheemaa Magu, Male', Maldives



Making Infrastructure Happen

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

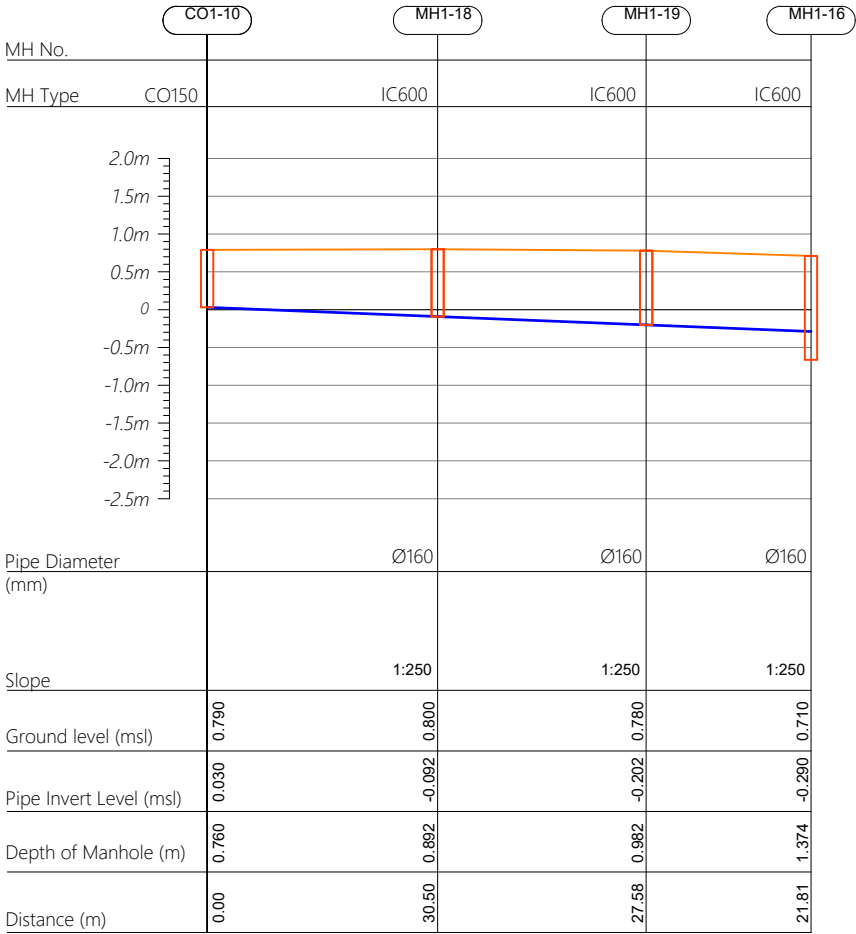
Designed: F.I.A Approved: I.W

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

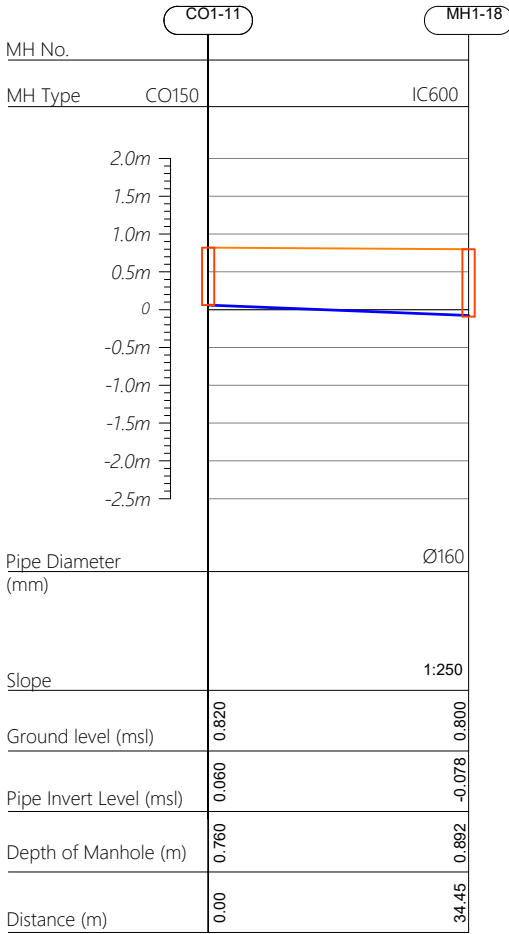
Project No: 01010101

Rev: R-01 Page: PS1-04

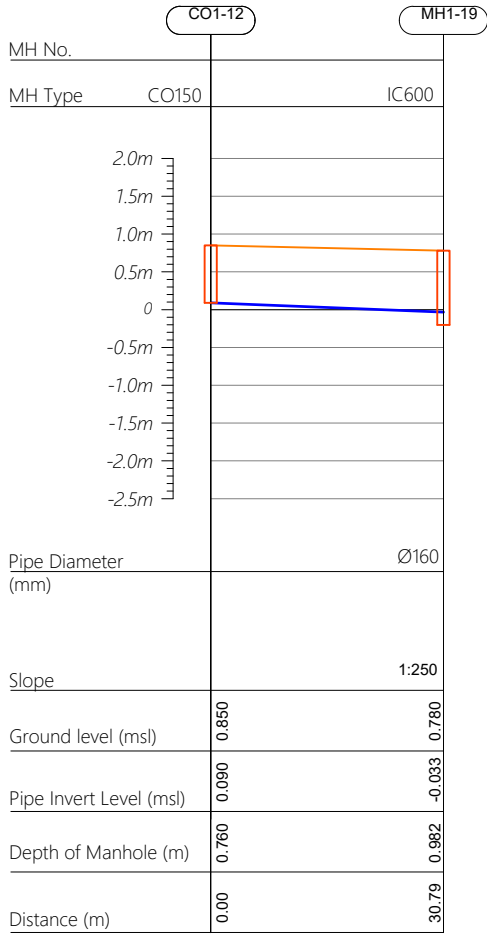
Profile 10



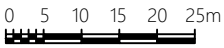
Profile 11



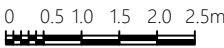
Profile 12



HORIZONTAL SCALE



VERTICAL SCALE



CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
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**



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



Making Infrastructure Happen

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

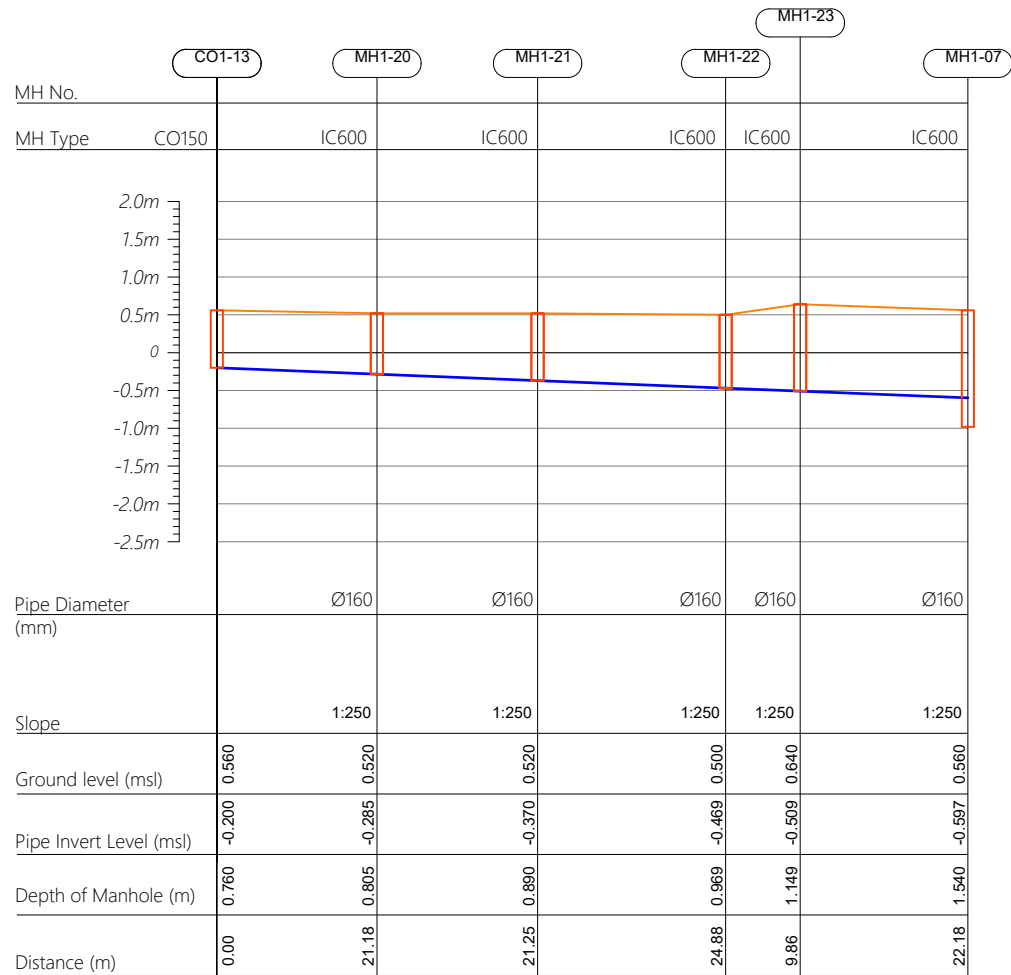
Designed: F.I.A Approved: I.W

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

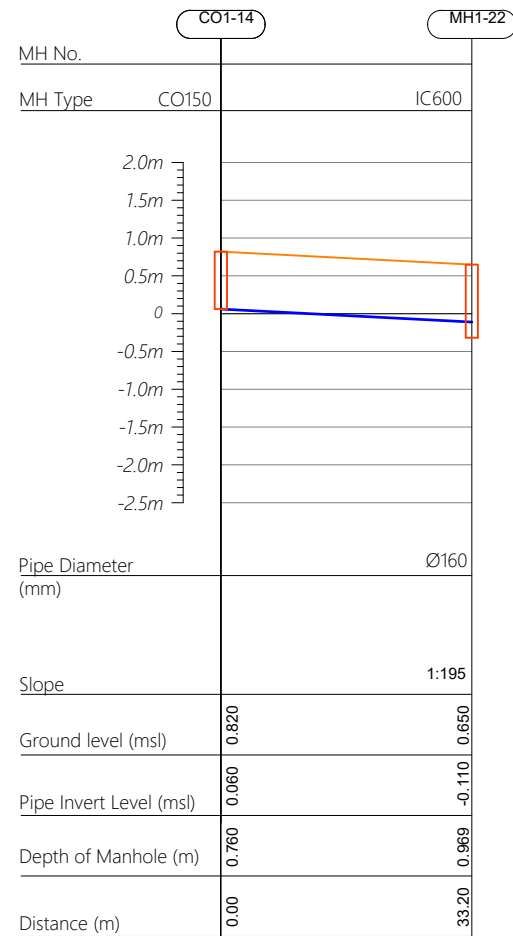
Project No: 01010101

Rev: R-01 Page: PS1-05

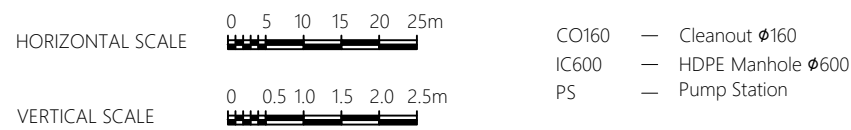
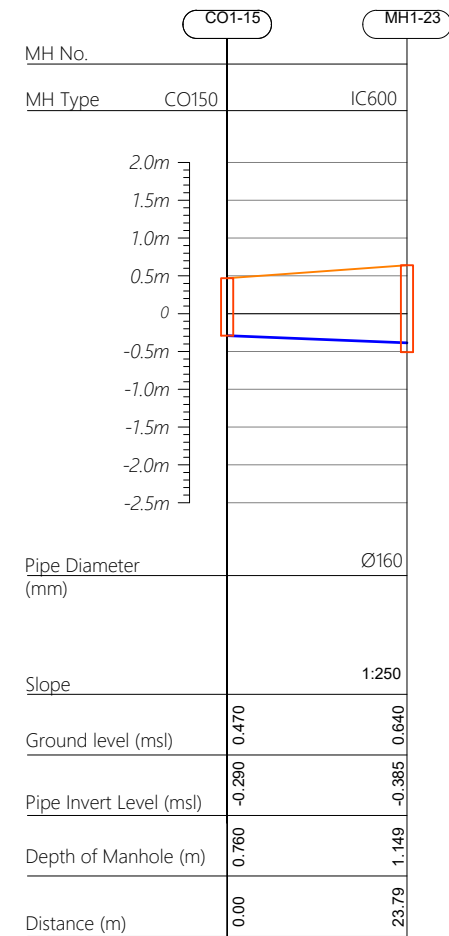
## Profile 13



## Profile 14



## Profile 15



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
--------------	----------------

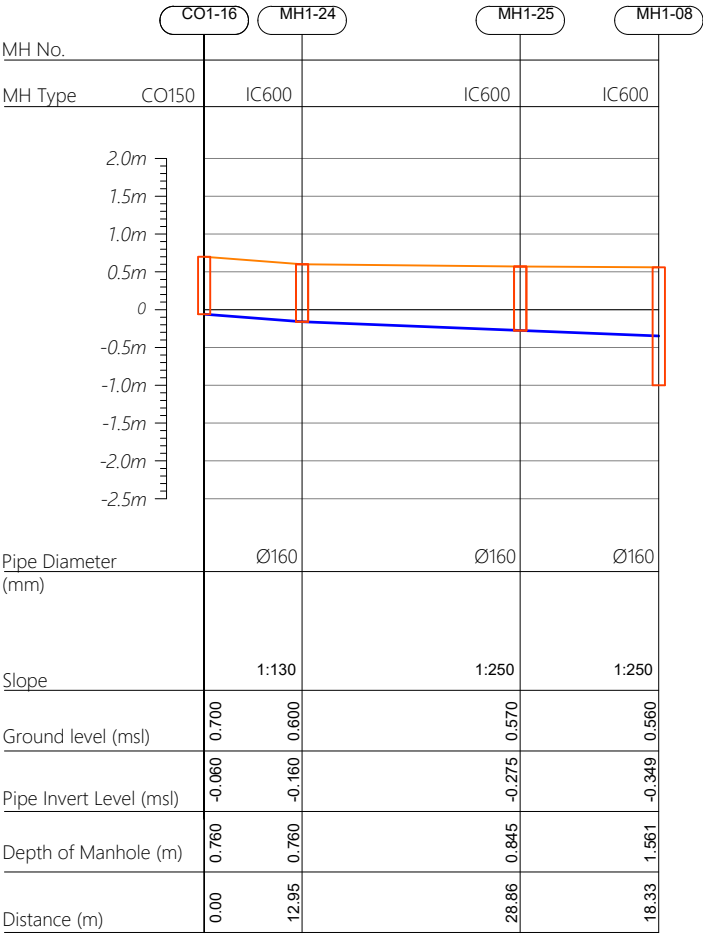
Designed: F.I.A	Approved: I.W
-----------------	---------------

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

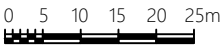
Project No: 01010101

Rev:	Page:
R-01	PS1-06

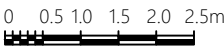
Profile 16



HORIZONTAL SCALE



VERTICAL SCALE



- CO160
- IC600
- PS
- Cleanout Ø160
- HDPE Manhole Ø600
- 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*

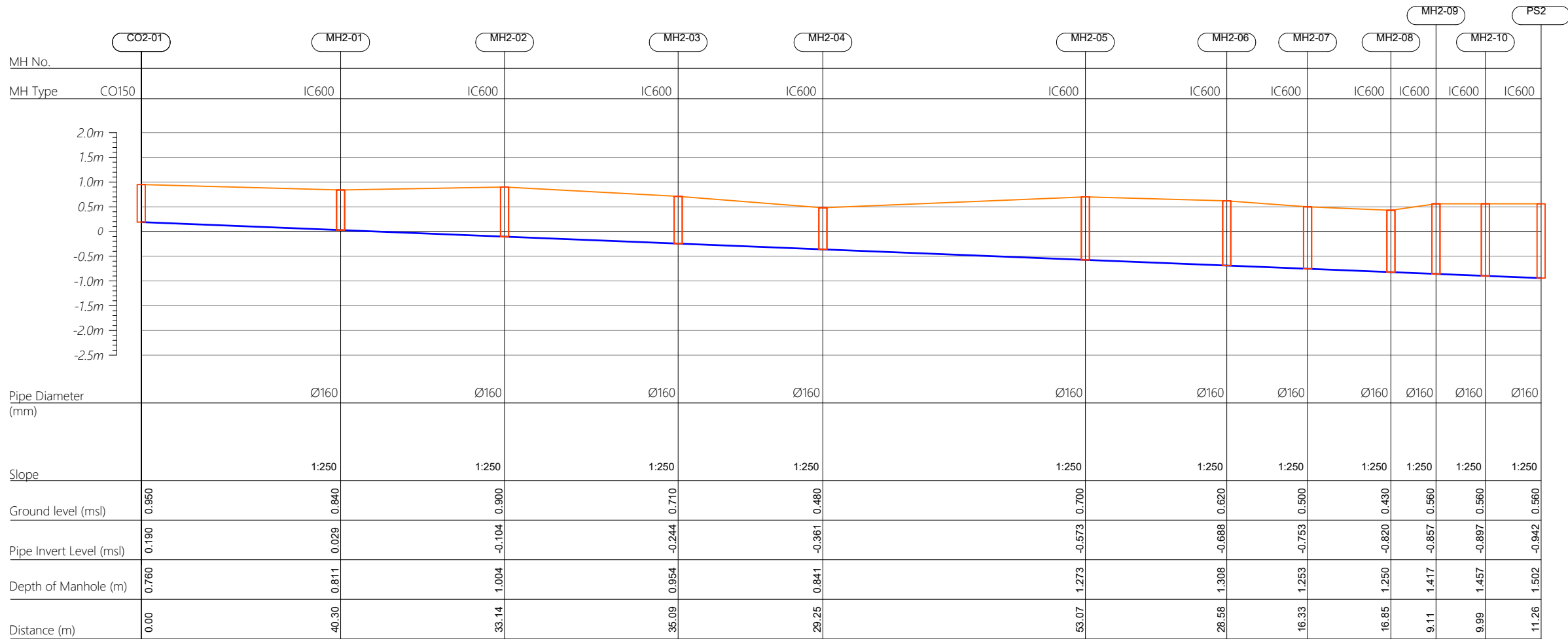
  
T: +960 333 3528  
E: info@epoch.associates  
W: www.epoch.associates  
A: G. Rosary West,  
Husnuheemaa Magu, Male', Maldives

  
Making Infrastructure Happen

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: PS1-07
-----------	--------------

## Profile 01



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
--------------	----------------

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

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

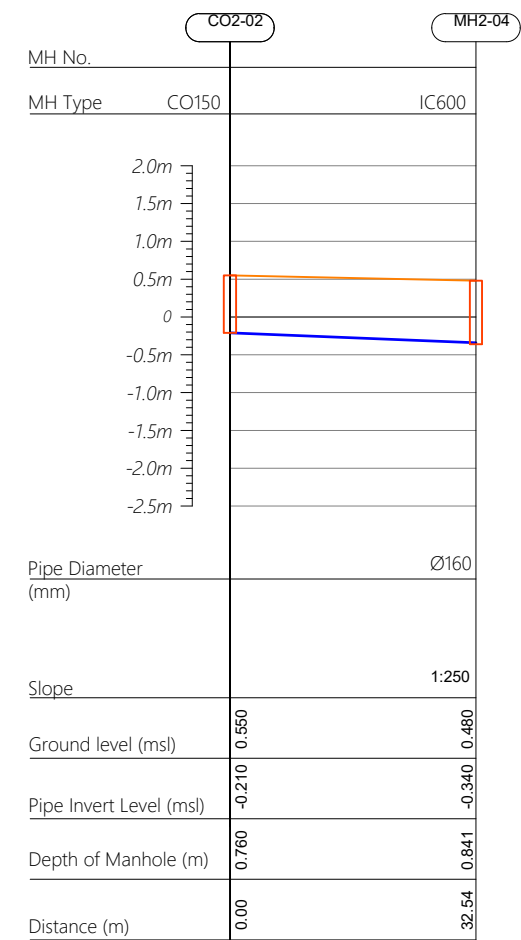
Project No: 01010101

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

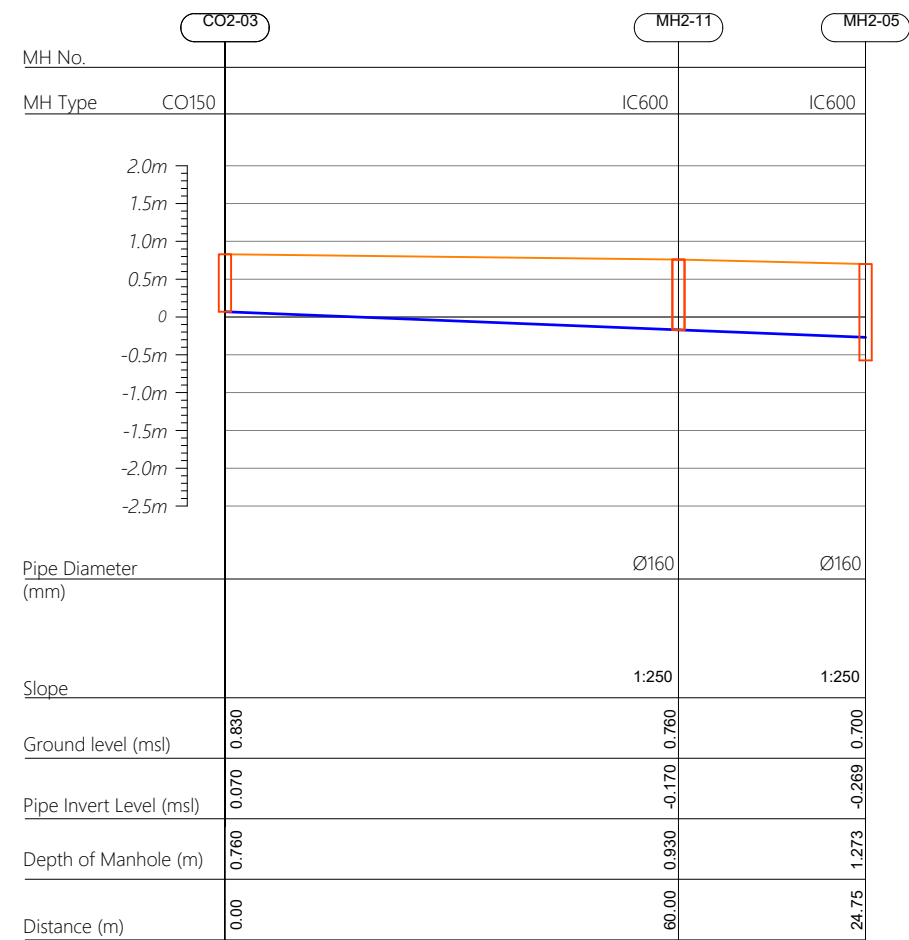




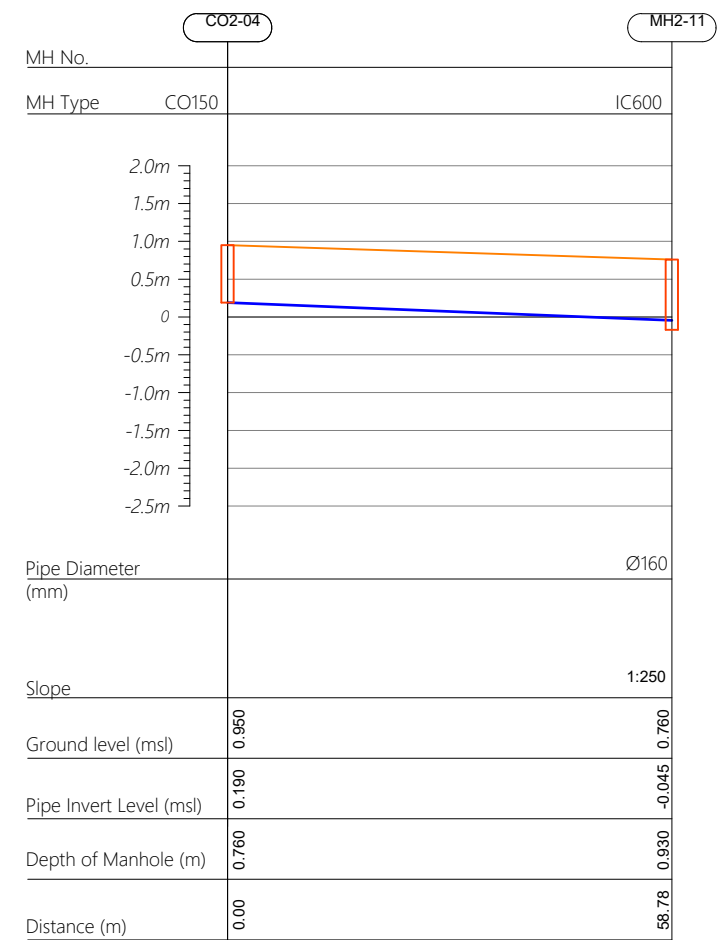
Profile 02



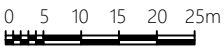
Profile 03



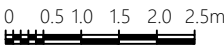
Profile 04



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
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**



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



Making Infrastructure Happen

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

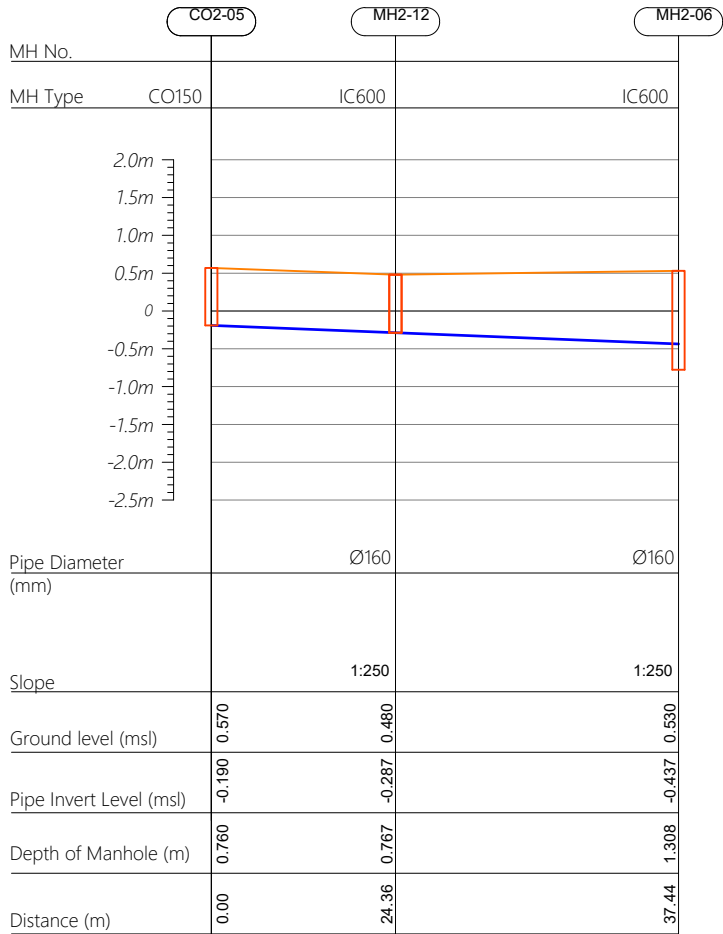
Designed: F.I.A Approved: I.W

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

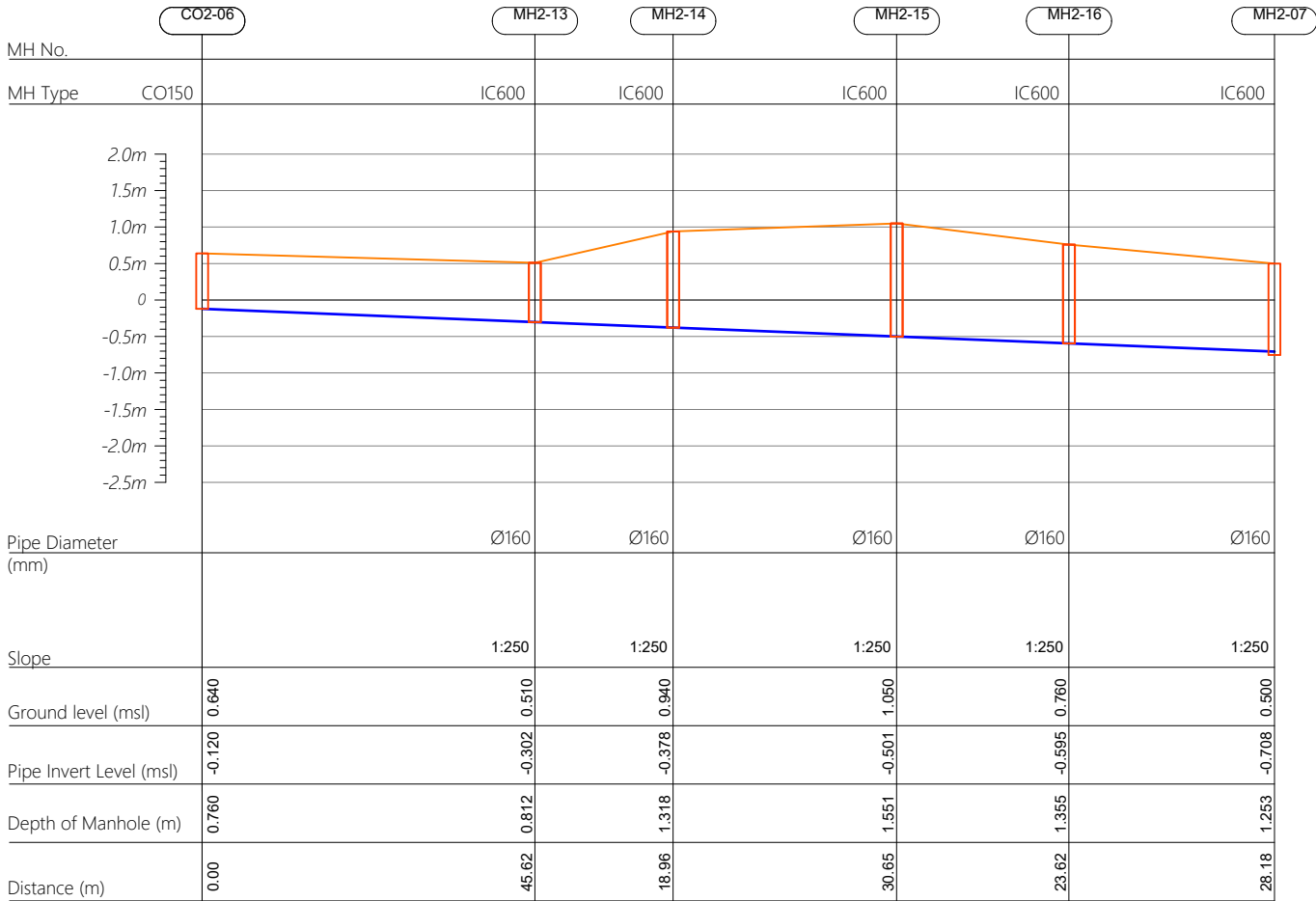
Project No: 01010101

Rev: R-01 Page: PS2-02

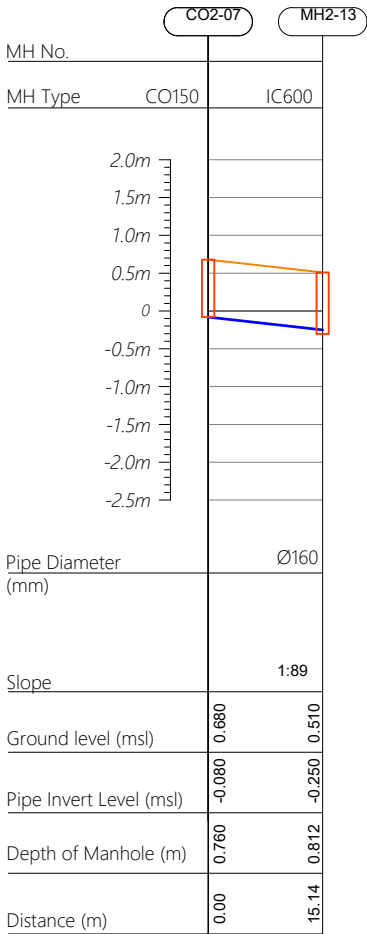
Profile 05



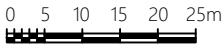
Profile 06



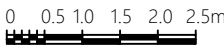
Profile 07



HORIZONTAL SCALE



VERTICAL SCALE



- CO160 — Cleanout Ø160
- IC600 — HDPE Manhole Ø600
- 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**



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



Maldivuq Infrastructure Happa

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

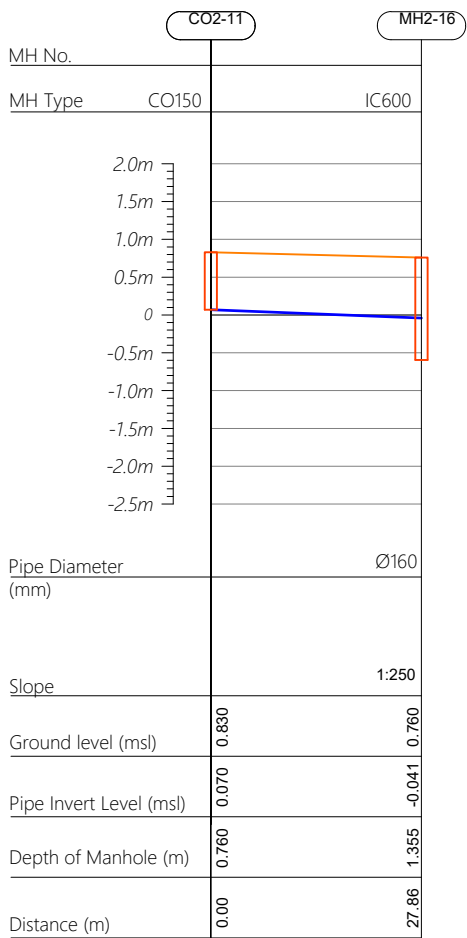
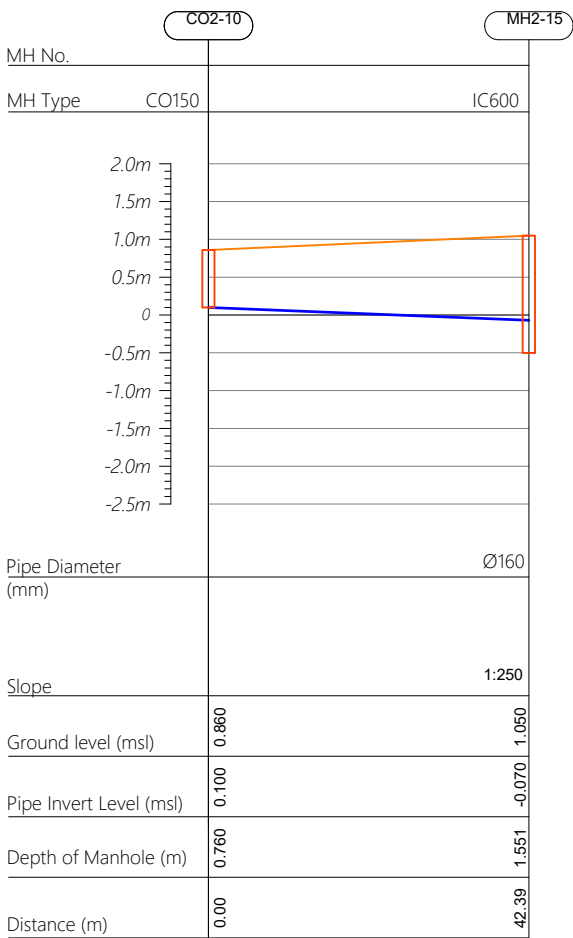
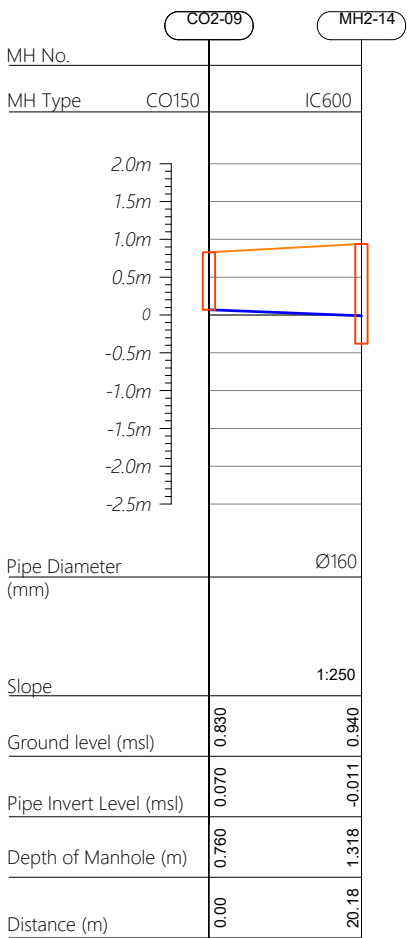
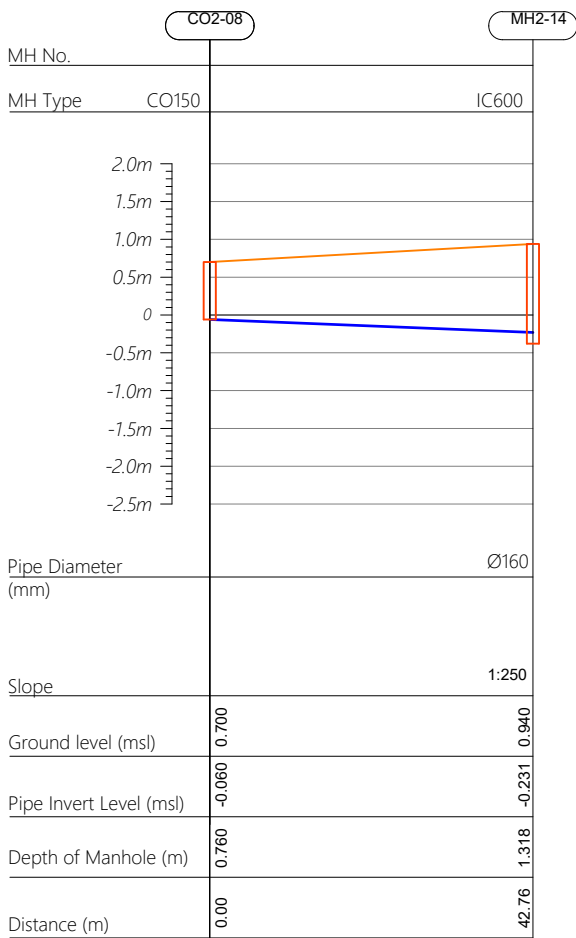
Rev: R-01      Page: PS2-03

Profile 08

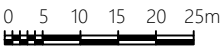
Profile 09

Profile 10

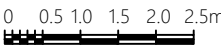
Profile 11



HORIZONTAL SCALE



VERTICAL SCALE



CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
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**



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



Making Infrastructure Happen

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

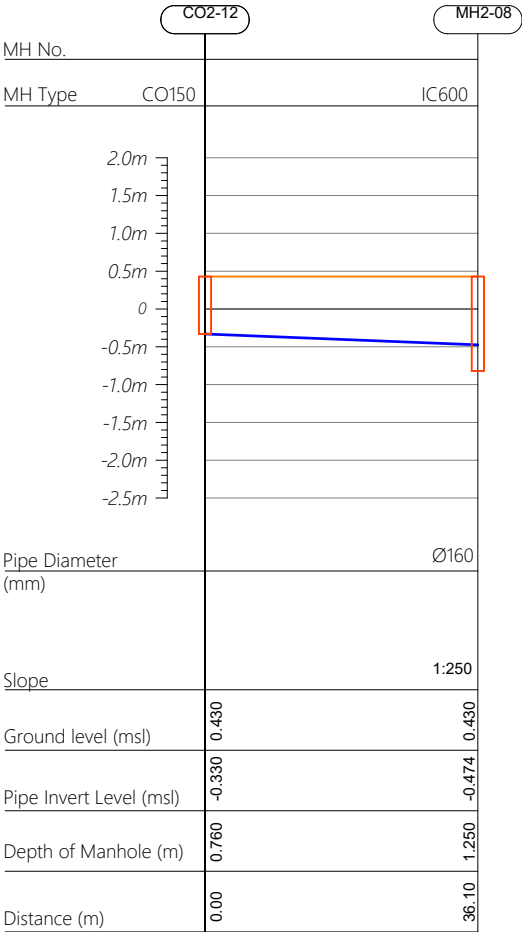
Designed: F.I.A Approved: I.W

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

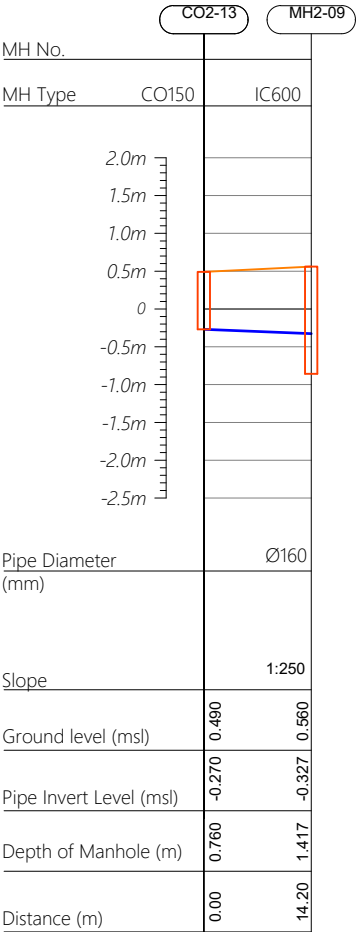
Project No: 01010101

Rev: R-01 Page: PS2-04

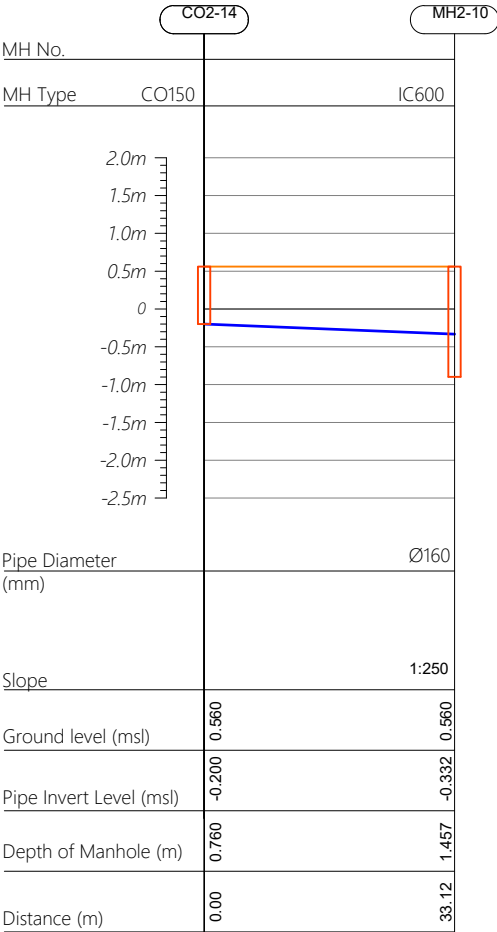
Profile 12



Profile 13



Profile 14



CO160 — Cleanout Ø160  
IC600 — HDPE Manhole Ø600  
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**



**EPOCH**  
ASSOCIATES

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



**FIDBACK INFRA**  
Making Infrastructure Happen

Drawn: A.R.W

Designed: F.I.A

Date: Aug 2020

Project No: 01010101

Checked: M.S.S

Approved: I.W

SCALE (A3): 1:100

Rev: R-01

Page: PS2-05