

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

PACKAGE 5

SEWERAGE SYSTEM OF V. KEYODHOO, 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












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 |
| Sewerage Network Layout - Zone 03 | 06 |
| | |
| DETAILED DRAWINGS FOR SPECIFIC COMPONENTS | |
| PUMP STATION 1 LAYOUT | W-(1) |
| PUMP STATION 2 LAYOUT | W-(2) |
| STP LAYOUT | W-(3) |
| STP VEHICLE SHED ARCHITECTURAL DRAWINGS | VS-A(1) - VS-A(2) |
| STP VEHICLE SHED STRUCTURAL DRAWINGS | VS-S(1) - VS-A(3) |
| PUMP STATION DETAILS | W-(4) - W-(6) |
| DISCHARGE PUMP STATION DETAILS | W-(24) - W-(26) |
| GATE DETAILS | W-(7) |
| BOUNDARY WALL AND FENCING DETAILS | W-(8) |
| VENT STACK DETAILS | W-(9) |
| VENT STACK AND AIR BLOWER DETAILS | W-(10) |
| CONTROL PANEL BOARD DETAILS | W-(11) |
| LIGHT POST DETAILS | W-(12) |
| SAMPLING WELL DETAILS | W-(23) |
| TRENCH & BEDDING DETAILS | W-(13) |
| MAINTENANCE SHAFT (MH) DETAILS | W-(14) |
| TYPICAL MANHOLE BASE DETAILS | W-(15) |
| CLEANOUT DETAILS | W-(16) |
| TYPICAL HOUSE CONNECTION DETAILS | W-(17) |
| THRUST BLOCK DETAILS | W-(18) |
| BALLAST BLOCK DETAILS | W-(19) |
| T-HEAD DIFFUSER DETAILS | W-(20) |
| SEA OUTFALL DETAILS | W-(21) |
| PRESSURE NETWORK LAYOUT | W-(22) |
| PROFILE DIAGRAMS - PUMP STATION 01 | PS1-01 - PS1-12 |
| PROFILE DIAGRAMS - PUMP STATION 02 | P2-02 - PS2-05 |



1:2500



- | | | |
|---|---|--|
|  | 160mm Ø uPVC PS1 Gravity Sewer Main (SN4, SDR41) | - 2317 m |
|  | 160mm Ø uPVC PS2 Gravity Sewer Main (SN4, SDR41) | - 1578 m |
|  | 110 mm Ø HDPE Pumping Main (PE100, PN16, SDR11) | - 565 m |
|  | 160 mm Ø HDPE Sea Outfall Pipe (PE100, PN16, SDR11) | - 69 m on land - 88 m offshore - 157 m total |
|  | 600mm Ø PE/PP Maintenance Shaft | - 75 nos |
|  | 160mmØ uPVC Clean Out | - 52 nos |
|  | PERMANENT SURVEY MARK PSM 0301 338835.373E, 382048.909N 0.757m From MSL | |
|  | PERMANENT SURVEY MARK PSM 0302 339023.490E, 382905.977N 0.658m From MSL | |
|  | PERMANENT SURVEY MARK PSM 0302 338812.937E, 382876.671N 0.723m From MSL | |

Notes

1. All levels shown are in meters.
2. All levels shown are from mean sea level
3. This drawing to be read in conjunction with all other relevant drawings and specifications.
4. All gravity sewer pipes shall be uPVC to BS EN1401-1:2019.
5. All gravity sewer mains shall be 160mm dia uPVC of wall thickness & stiffness rated to SN4 & SDR41.
6. All gravity house lateral 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) CO2-01 and CO2-20
 - b) CO1-28 and CO2-10
 - c) CO1-02 and MH1-31

| | | | | | |
|-------------|------|----------------------|-------|------|-----|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| REV. NO. | Date | Revision Description | Drawn | Chkd | App |

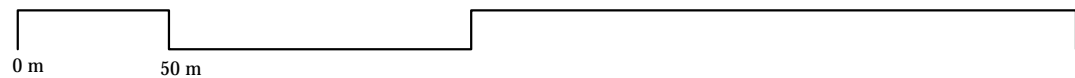
Title:
Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Pakage 5

Sub Title:
Sewerage System in V. Keyodhoo

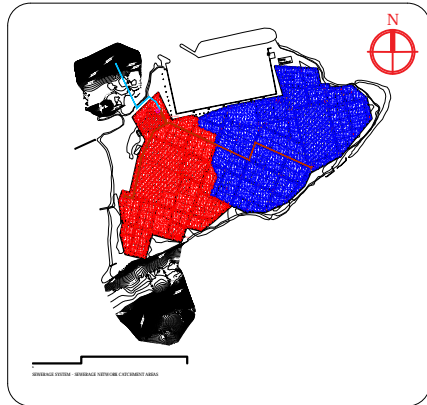
Client:
Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives



| | |
|---------------------------|--------------------|
| Drawn: F.I.A. | Checked: M.S.S. |
| Designed: F.I.A. | Approved: I.W. |
| Date: Sep 2020 | SCALE (A3): 1:2500 |
| Project No: EP-WS/2019/05 | |
| Rev: | Page: |



V. KEYODHOO SEWERAGE SYSTEM - SEWERAGE NETWORK CATCHMENT AREAS
1:2500



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

Sub Title:
Sewerage System in V. Keyodhoo

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,
Hunnuheena Magu, Male', Maldives

INFRA
Makun Sivaprasadarup
Kappu

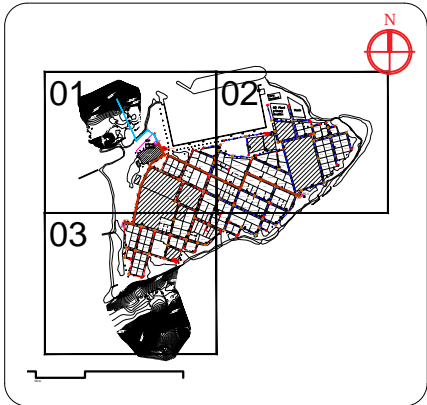
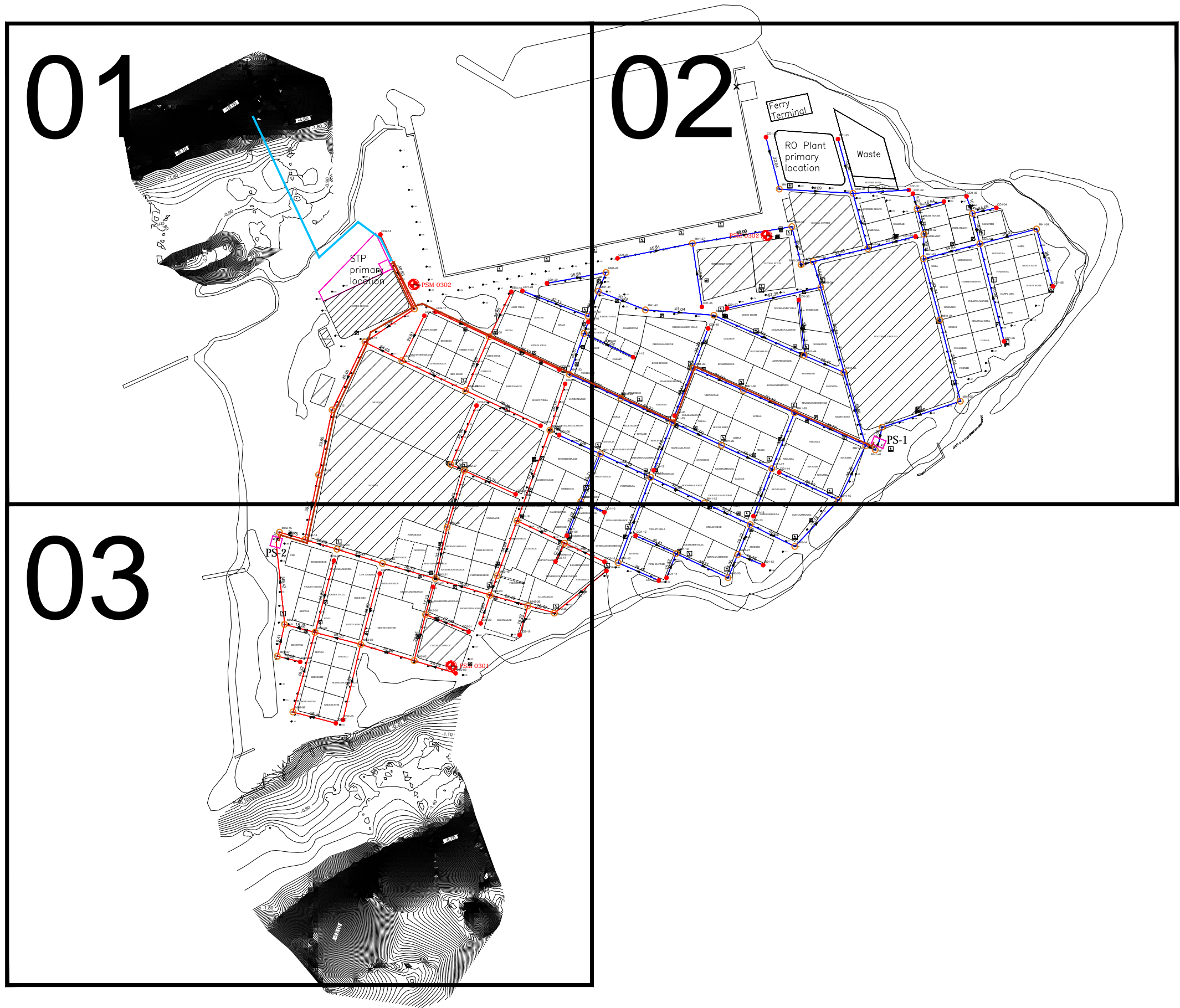
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): 1:2500

Project No: EP-WS/2019/05

Rev: Page:



Legend

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

| 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. Keyodhoo

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,
Husnuheena Magu, Male', Maldives

INFRA
Making Infrastructure Happen

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

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

Date: Sep 2020 SCALE (A3): 1:2500

Project No: EP-WS/2019/05

Rev: Page:

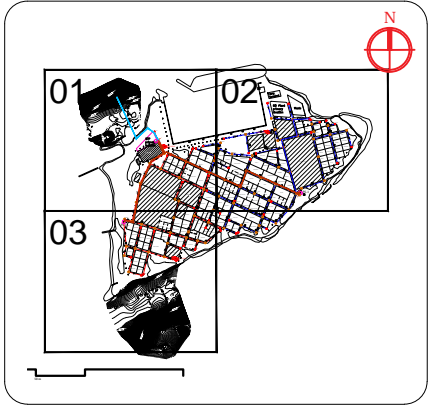
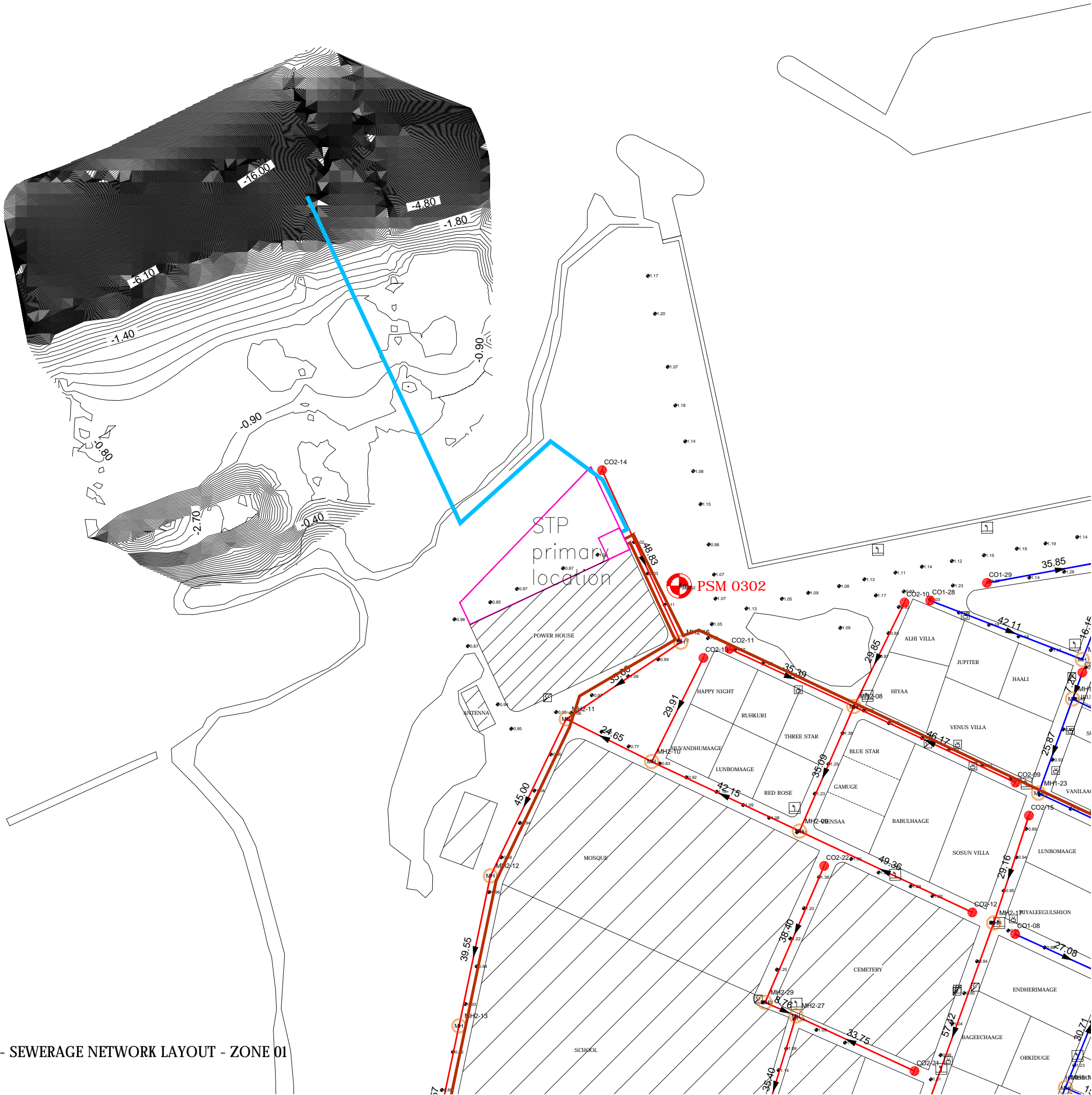
A-(3)



V. KEYODHOO SEWERAGE SYSTEM - SEWERAGE NETWORK ZONE LAYOUT

1:2500

V. KEYODHOO 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
 - 160mm Ø uPVC Clean Out
 - 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

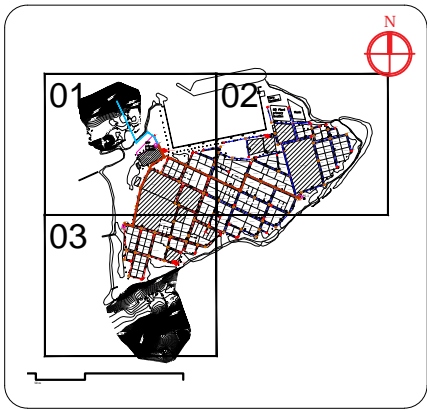
Sub Title:
Sewerage System in V. Keyodhoo

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): 1:1000
Project No: EP-WS/2019/05
Rev: Page: 04

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

INFRA
Building Infrastructure
Working with you



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)

| 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. Keyodhoo

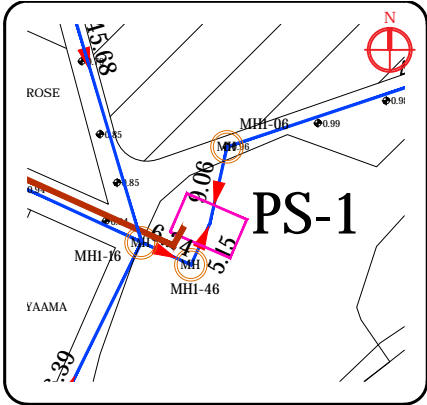
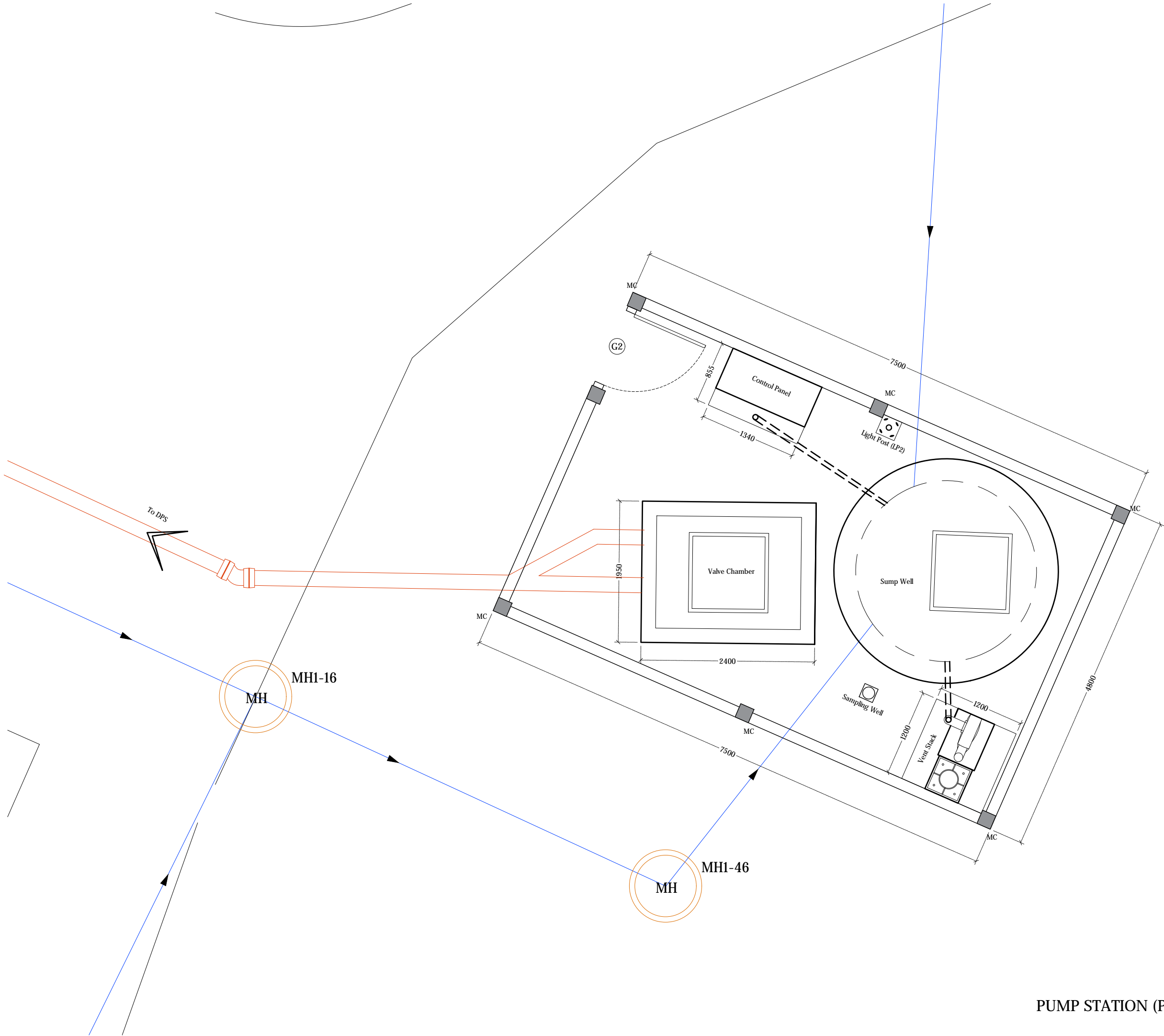
Client: Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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

INFRA
Working with you to create a better future

| | |
|---------------------------|--------------------|
| 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 |

V. KEYODHOO SEWERAGE SYSTEM - SEWERAGE NETWORK LAYOUT - ZONE 02
1:1000



Legend

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. Keyodhoo

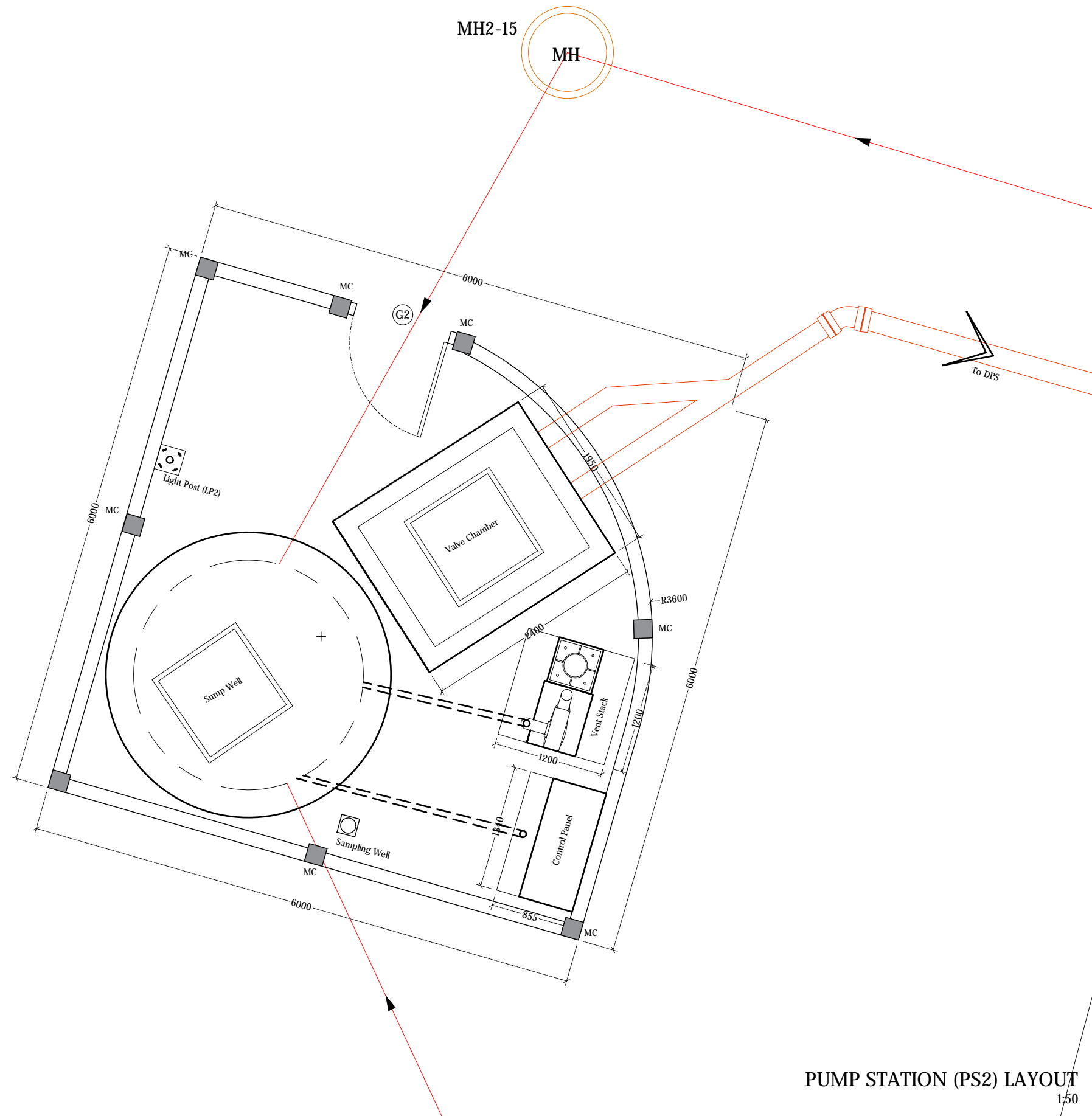
Client:
Ministry of National Planning, Housing and Infrastructure, Republic of Maldives

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

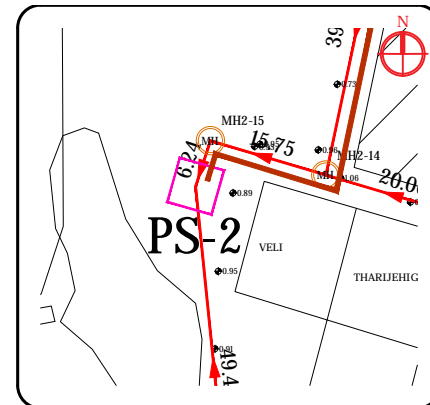
Working Safely, Improving Lives

| | |
|---------------------------|------------------|
| 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 | Page: W-(1) |

PUMP STATION (PS1) LAYOUT
1:50



PUMP STATION (PS2) LAYOUT
1:50



Legend


— 160mm Ø uPVC PS2 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. Keyodhoo

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

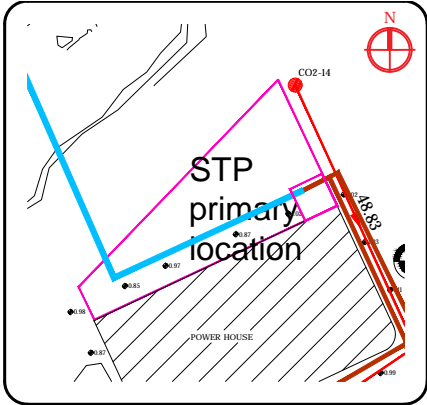
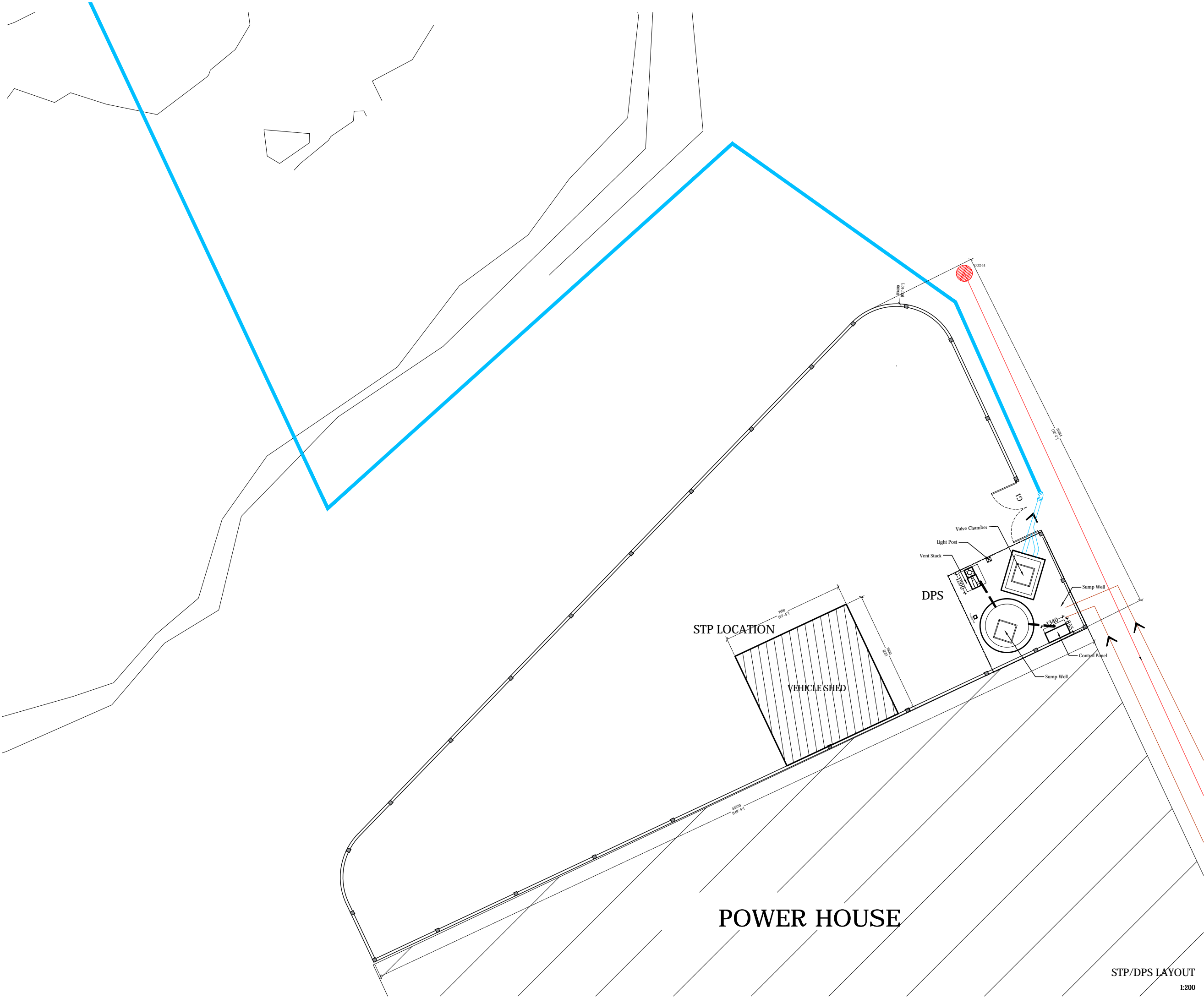


T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husnuheena Magu, Male', Maldives



Maldivian Infrastructure Development

| | |
|---------------------------|------------------|
| 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-(2) |



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. Keyodhoo

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,
Husuheenna Magu, Male', Maldives



Maldivian Infrastructure Development

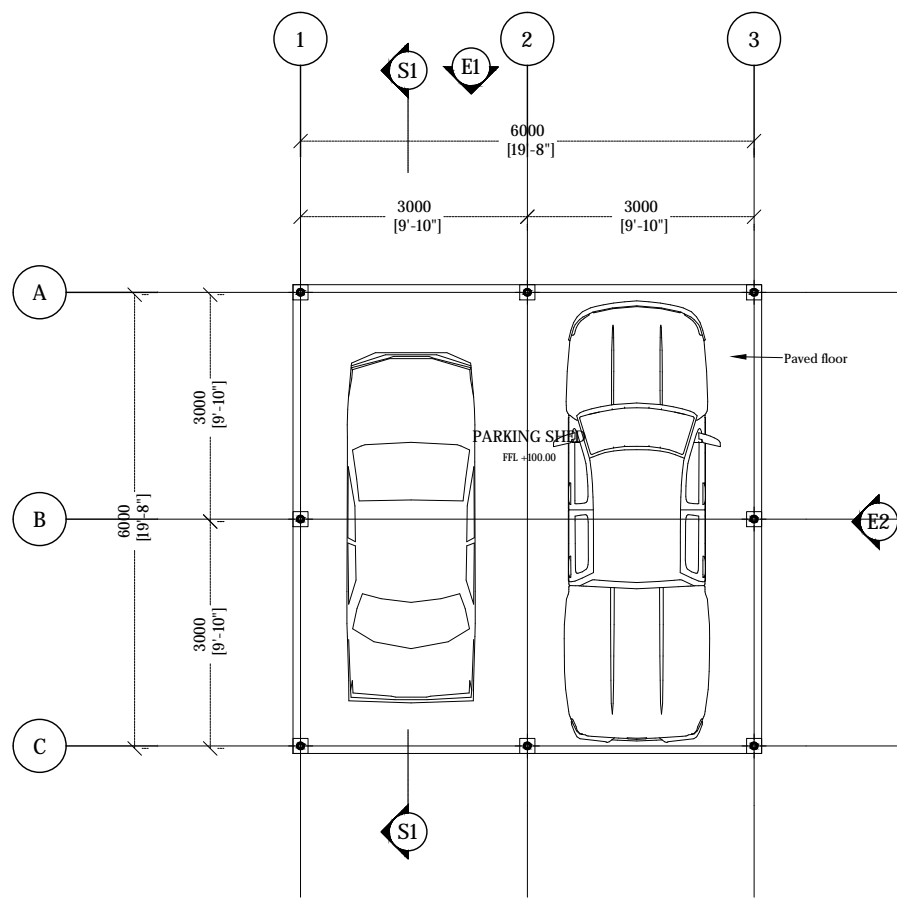
Drawn: F.I.A. Checked: M.S.S.

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

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

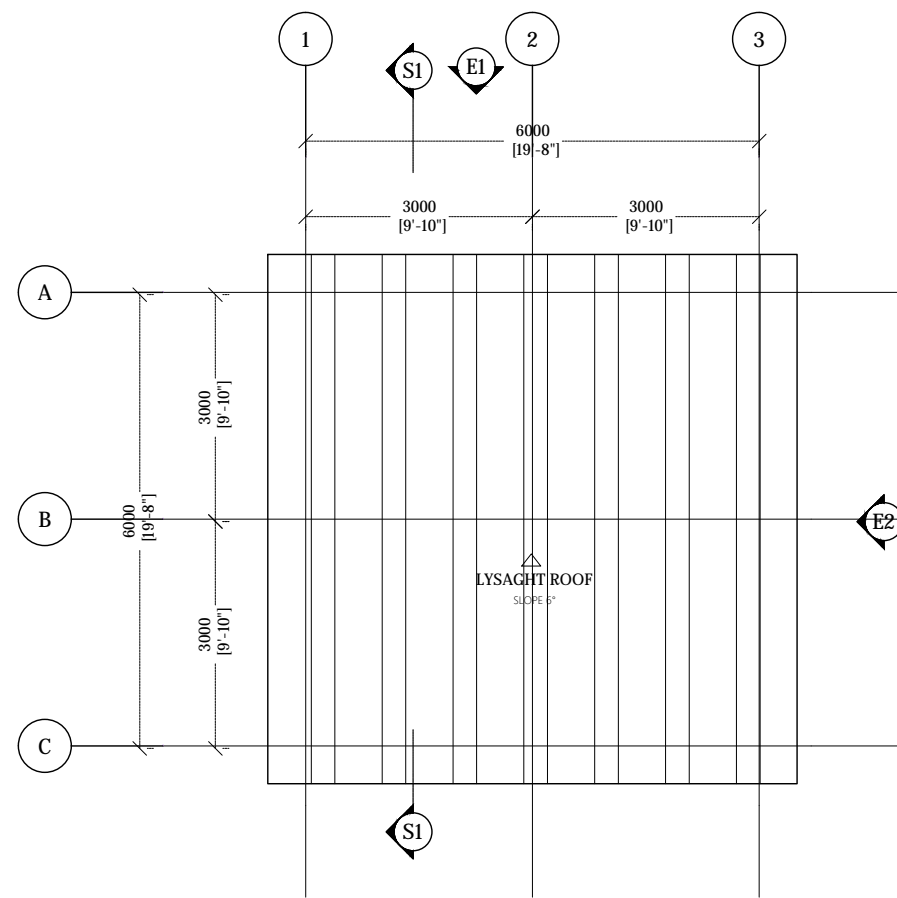
Project No: EP-WS/2019/05

Rev: Page: W-(3)



VEHICLE SHED GROUND FLOOR PLAN

1:100



VEHICLE SHED ROOF PLAN

1:100



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. Keyodhoo

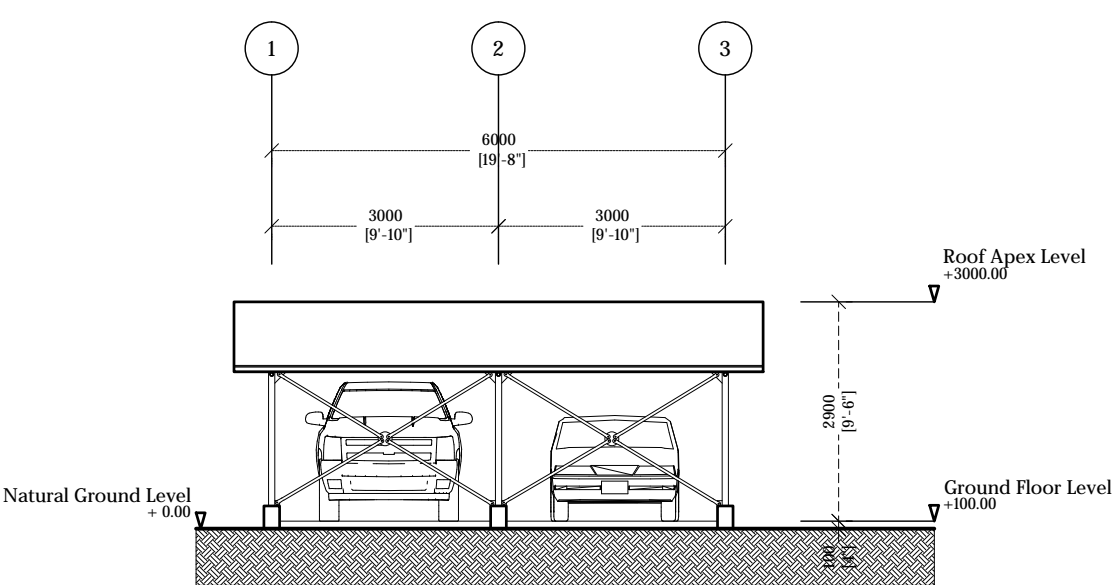
Client:
Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives

EPOCH
associates

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

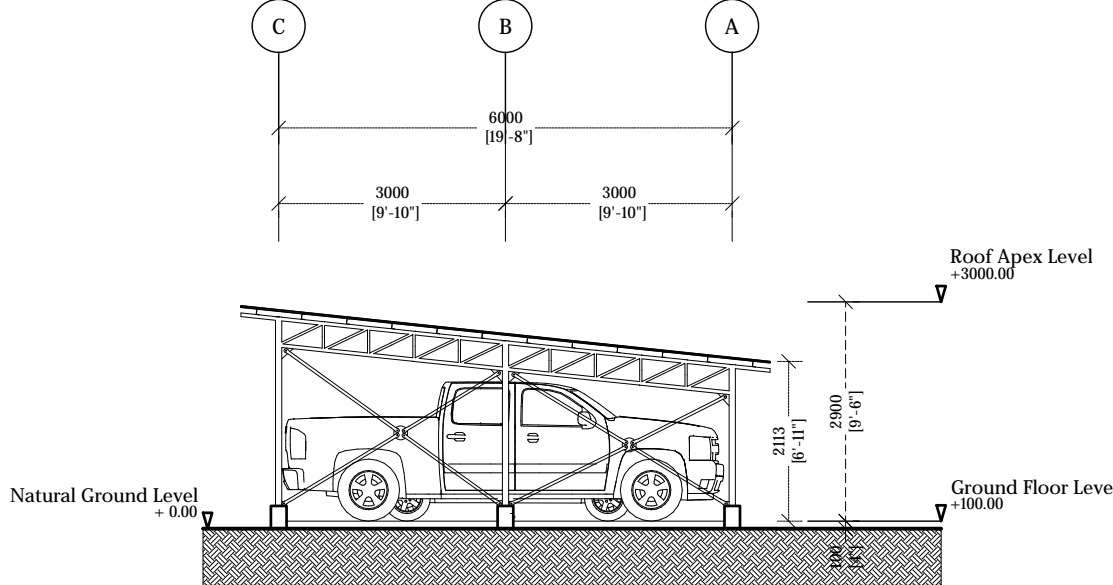
INFRA
Maldives

| | |
|---------------------------|-------------------|
| Drawn: F.I.A. | Checked: M.S.S. |
| Designed: F.I.A. | Approved: I.W. |
| Date: Sep 2020 | SCALE (A3): 1:100 |
| Project No: EP-WS/2019/05 | |
| Rev: | Page: VS-A(1) |



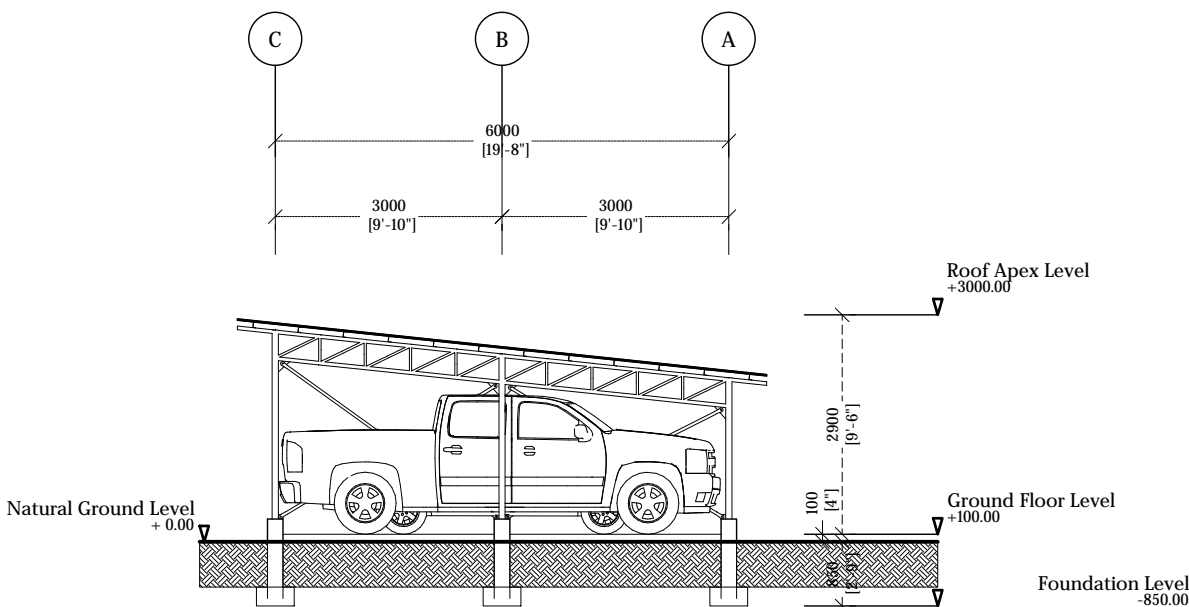
VEHICLE SHED ELEVATION E1

1:100



VEHICLE SHED ELEVATION E2

1:100



VEHICLE SHED SECTION S1

1:100



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. Keyodhoo

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,
Hunnuheena Magu, Male', Maldives



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

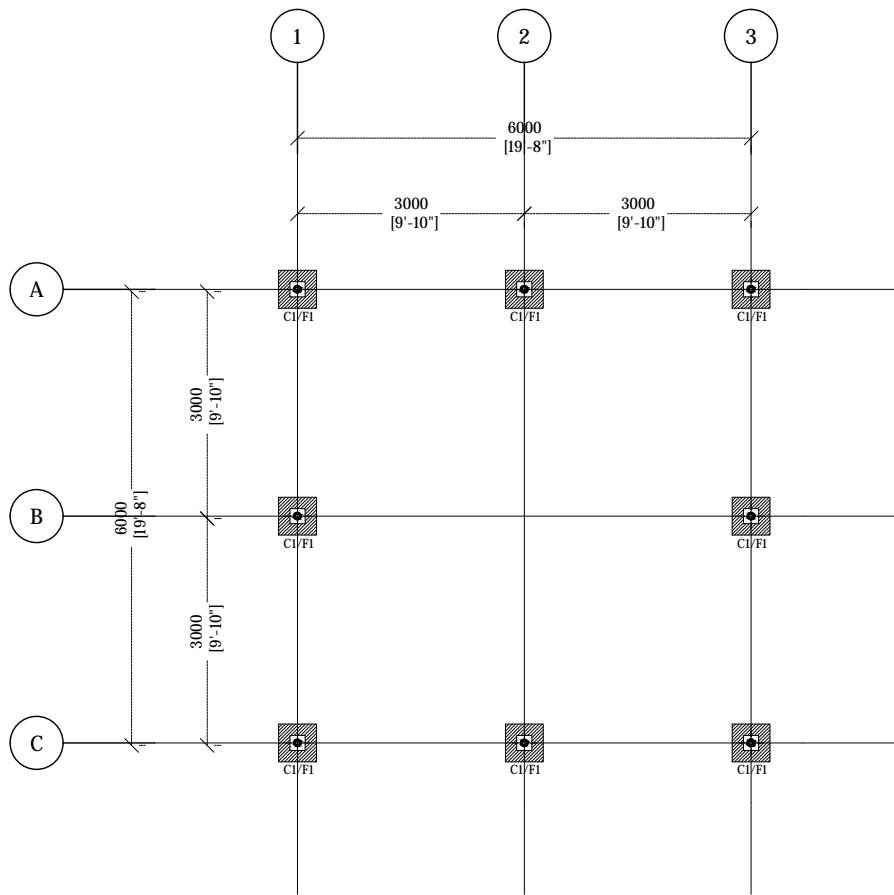
Designed: F.I.A. Approved: I.W.

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

Project No: EP-WS/2019/05

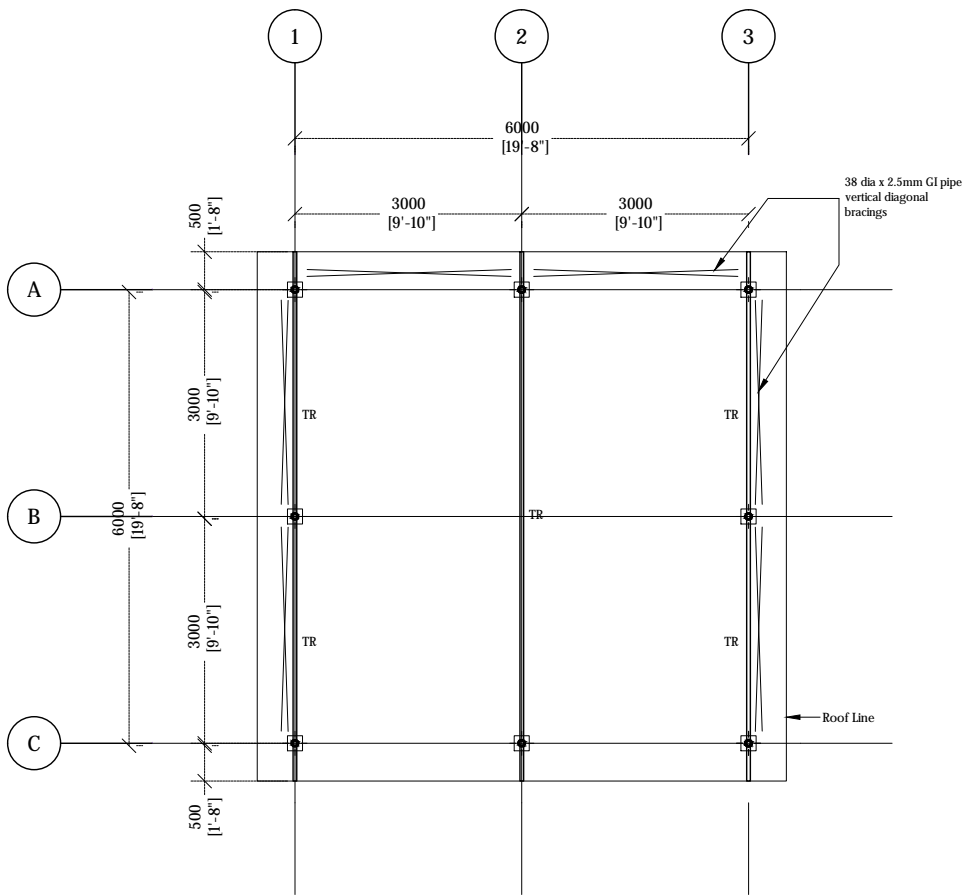
Rev: Page:

VS-A(2)



VEHICLE SHED FOUNDATION PLAN

1:100



VEHICLE SHED ROOF TRUSS PLAN

1:100



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. Keyodhoo

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,
Husnuheena Magu, Male', Maldives



Maldivian Infrastructure Development

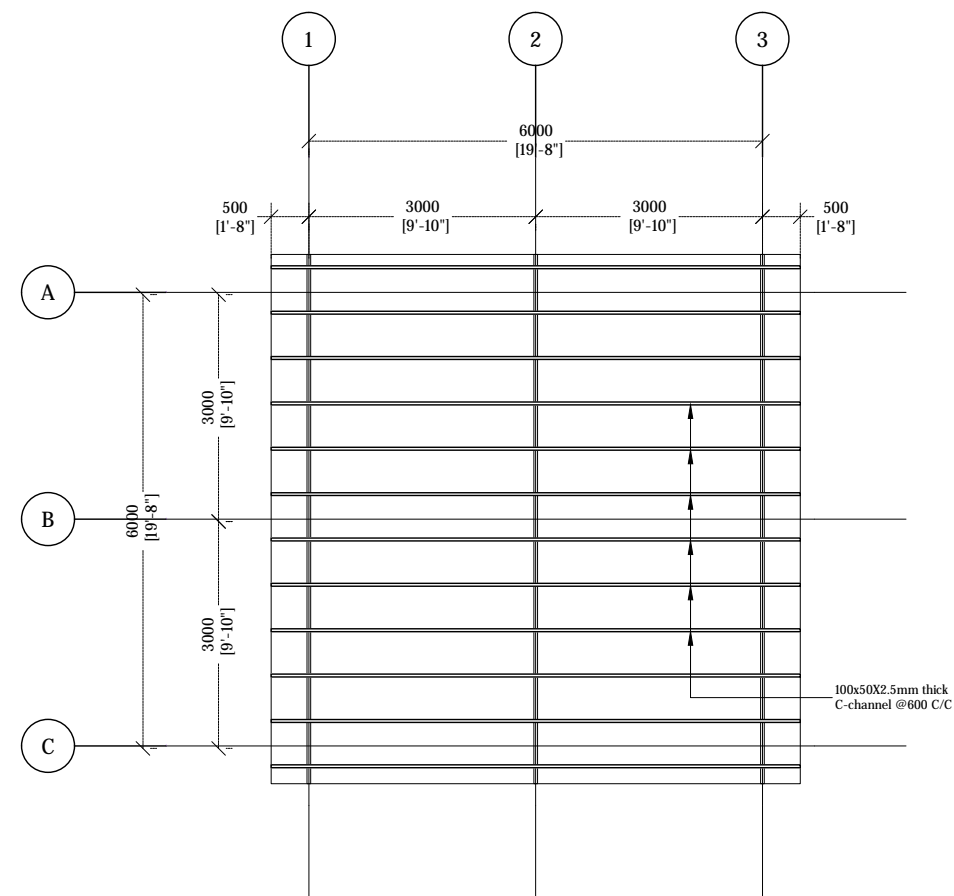
Drawn: F.I.A. Checked: M.S.S.

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

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

Project No: EP-WS/2019/05

Rev: Page: VS-S(1)



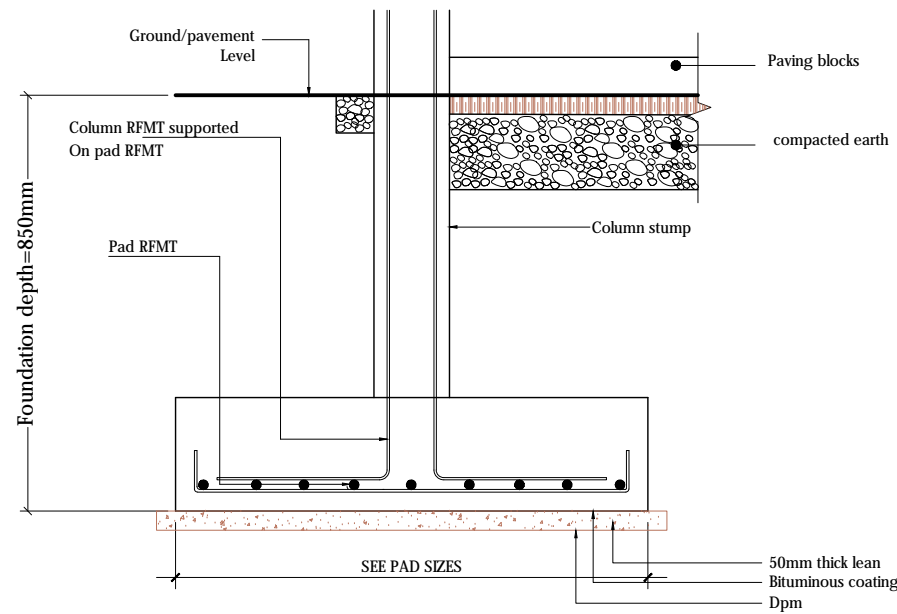
1:100



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

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

VS-S(2)

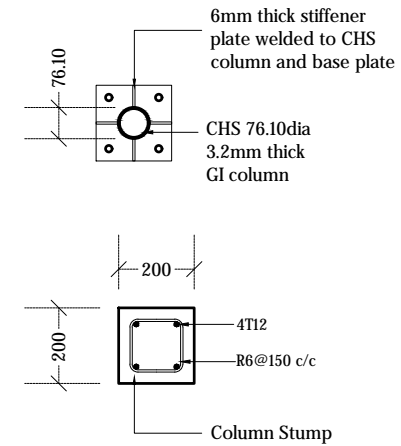
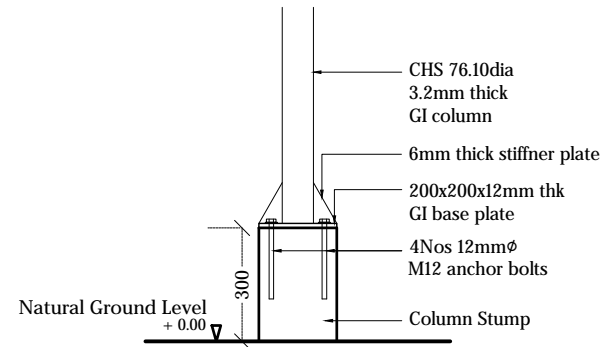


F1 - 500x500x250 - T10@150C/C B/W (B)

VEHICLE SHED FOOTING DETAIL

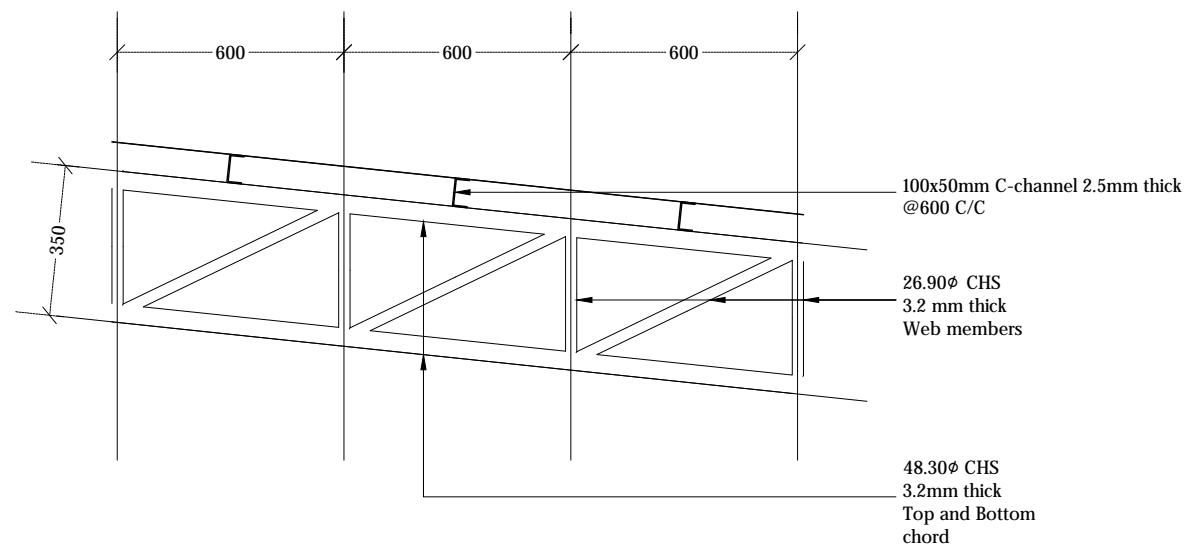
1:20

FOUNDATION PAD DETAILS



VEHICLE SHED COLUMN DETAIL

1:20



VEHICLE SHED TRUSS DETAIL

1:20



Legend

Notes:

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

| 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. Keyodhoo

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,
Husnuheena Magu, Male', Maldives

DBACK INFRA
Building Infrastructure Happens

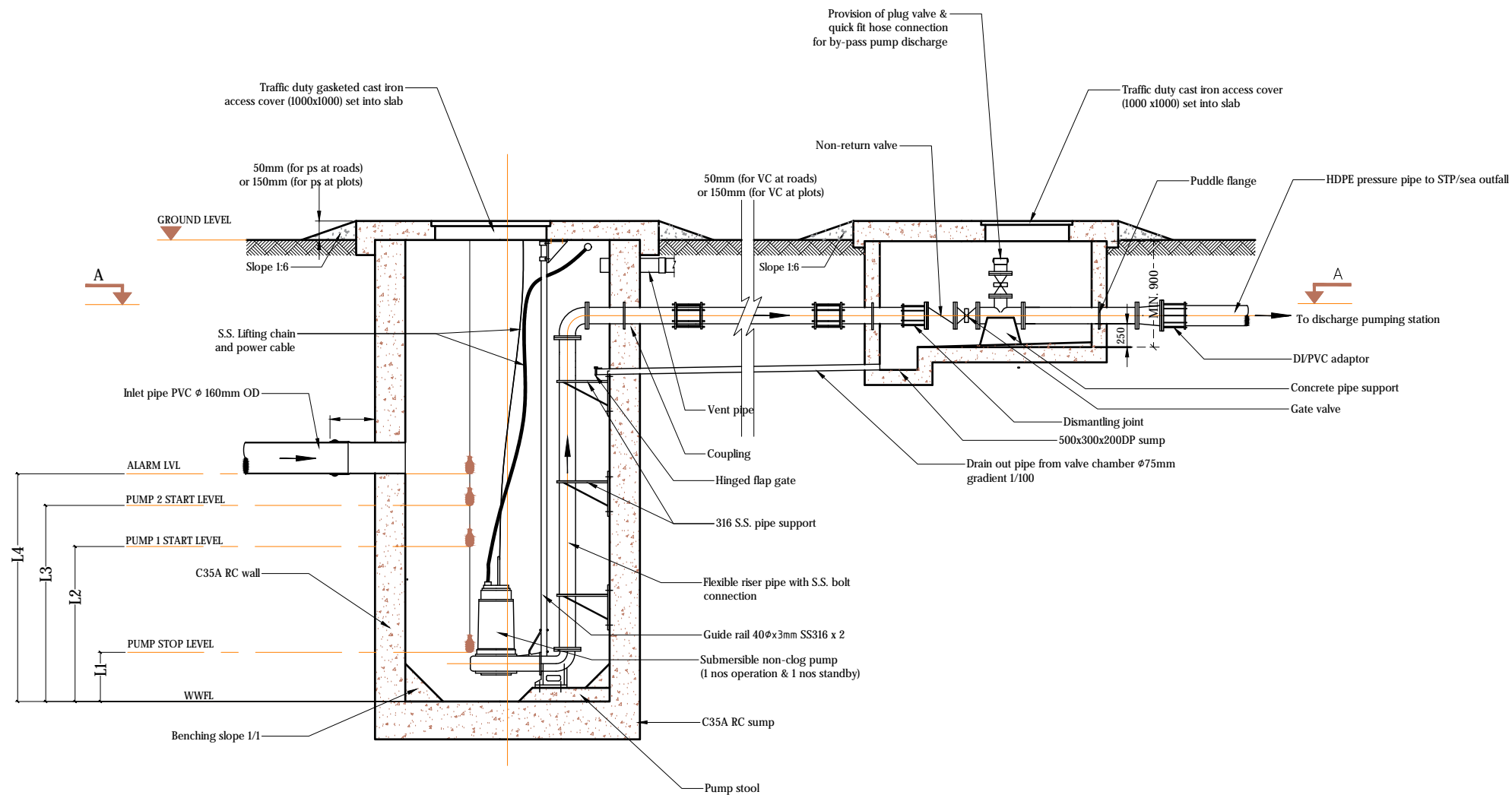
Drawn: F.I.A. Checked: M.S.S.

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

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

Project No: EP-WS/2019/05

Rev: Page: VS-S(3)



PUMP STATION DESIGN DETAILS

(15 YEARS)

| Pump Station | Diameter (φ) | Depth (D) | Inlet Depth | Pump Capacity | Head | Levels | | | |
|--------------|--------------|-----------|----------------|---------------|--------|--------|--------|--------|--------|
| | | | | | | L1 | L2 | L3 | L4 |
| PS1 | 2.0m | 3.00m | 1.963m, 2.049m | 4.7 l/s | 10.4 m | 0.300m | 0.675m | 0.825m | 0.975m |
| PS2 | 2.0m | 2.70m | 1.552m, 1.927m | 3.2 l/s | 8.1 m | 0.300m | 0.634m | 0.784m | 0.934m |

PUMP STATION DETAILS - LONGITUDINAL SECTION
NTS



Legend

Notes:

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

List of main instruments of pumping station:

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

| REV. NO. | Date | Revision Description | Drawn | Chkd | Appd. |
|----------|------|----------------------|-------|------|-------|
|----------|------|----------------------|-------|------|-------|

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. Keyodhoo

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,
Husuheenna Magu, Male', Maldives



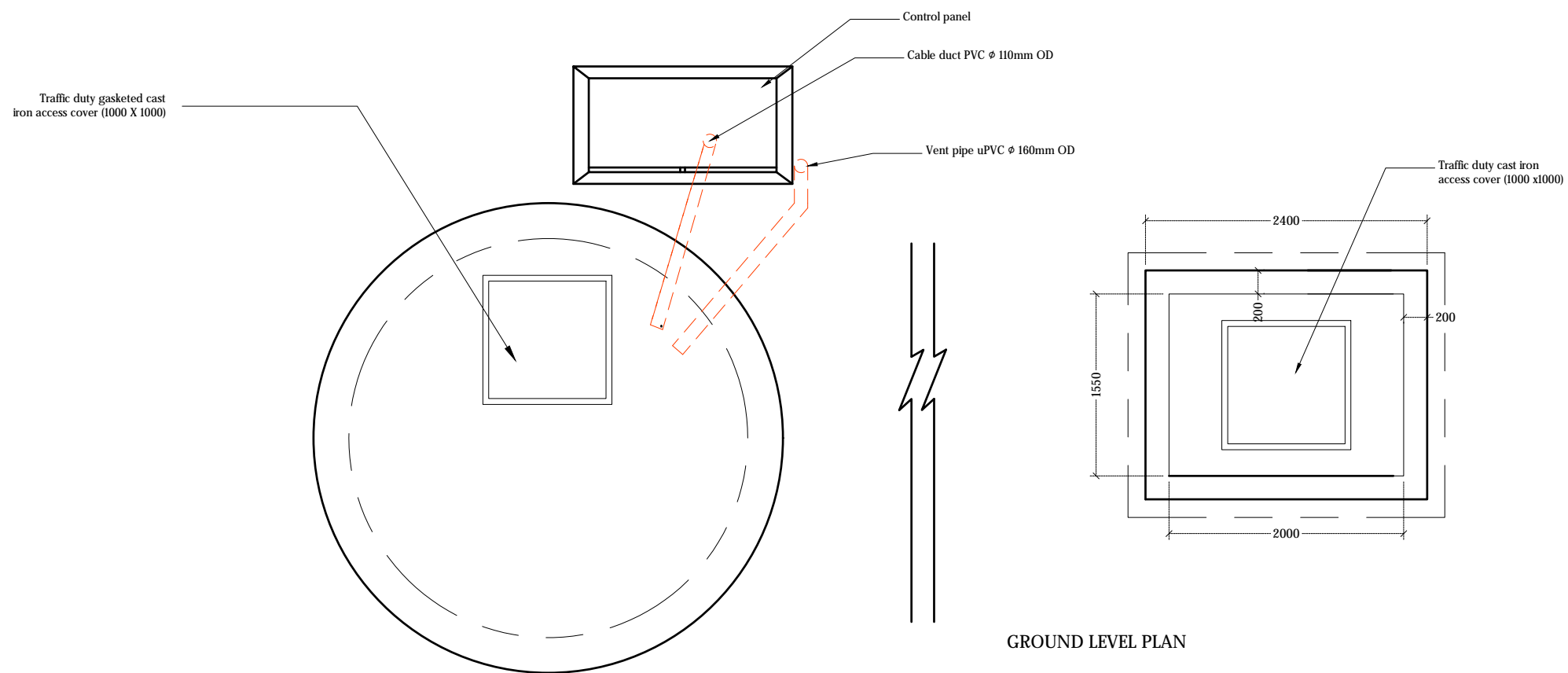
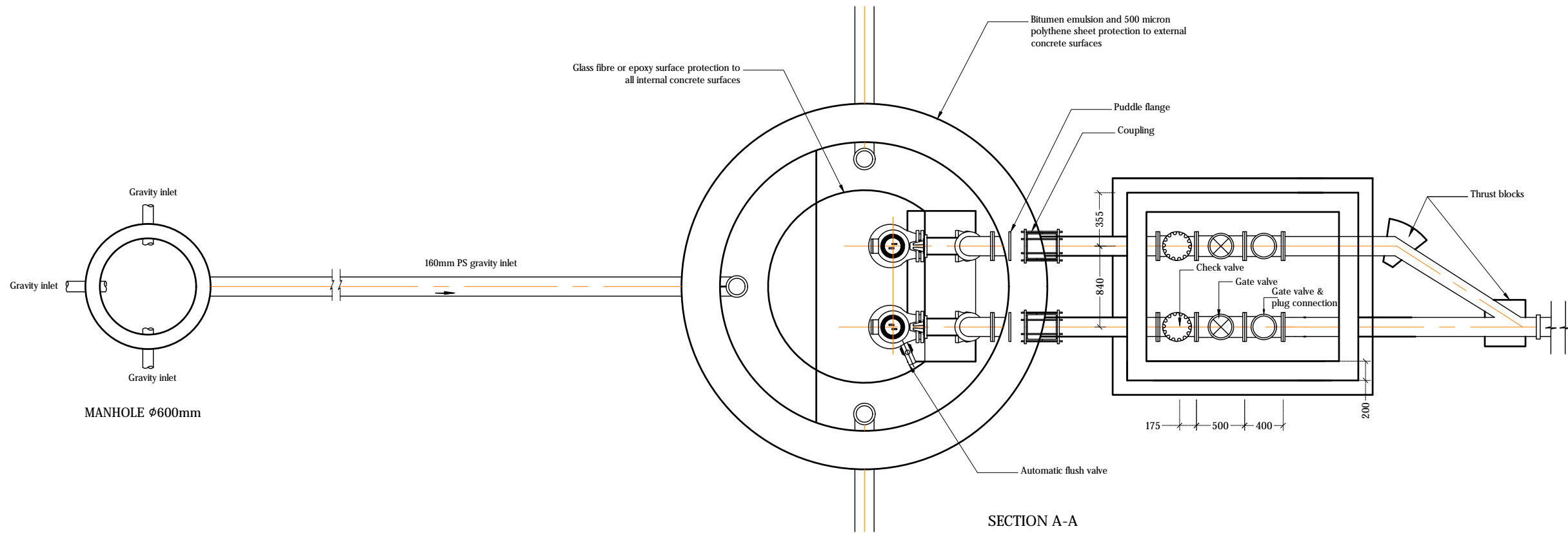
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page:
W-(4)



PUMP STATION DETAILS - PLAN VIEW
NTS



Legend

Notes:

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

List of main instruments of pumping station:

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

| REV. NO. | Date | Revision Description | Drawn | Chkd | Appd. |
|----------|------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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. Keyodhoo

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,
Husnuheena Magu, Male', Maldives



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

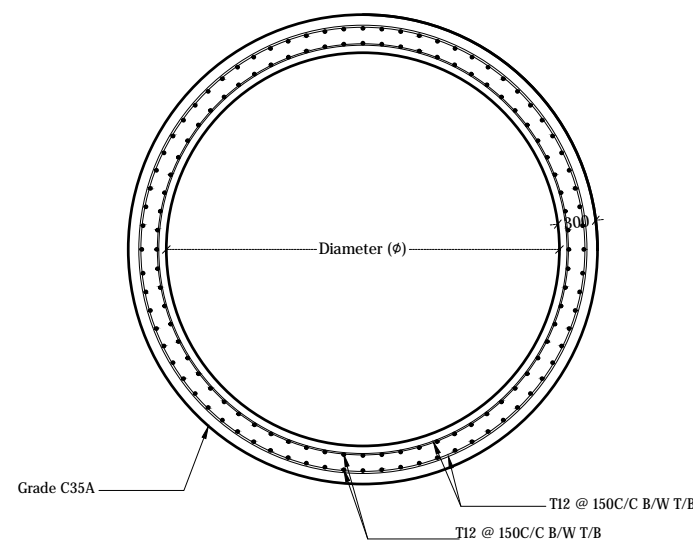
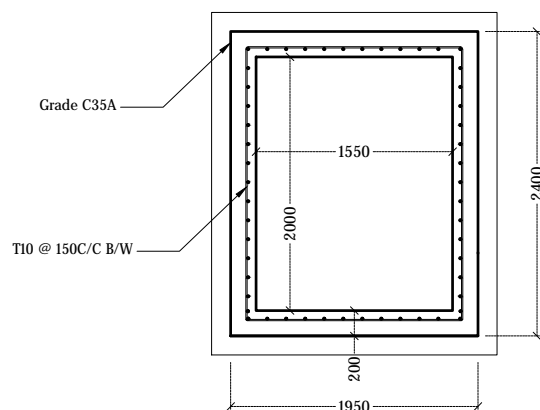
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3): NTS

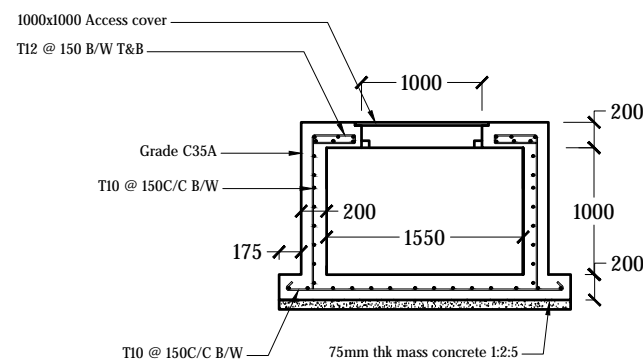
Project No: EP-WS/2019/05

Rev: Page: W-(5)

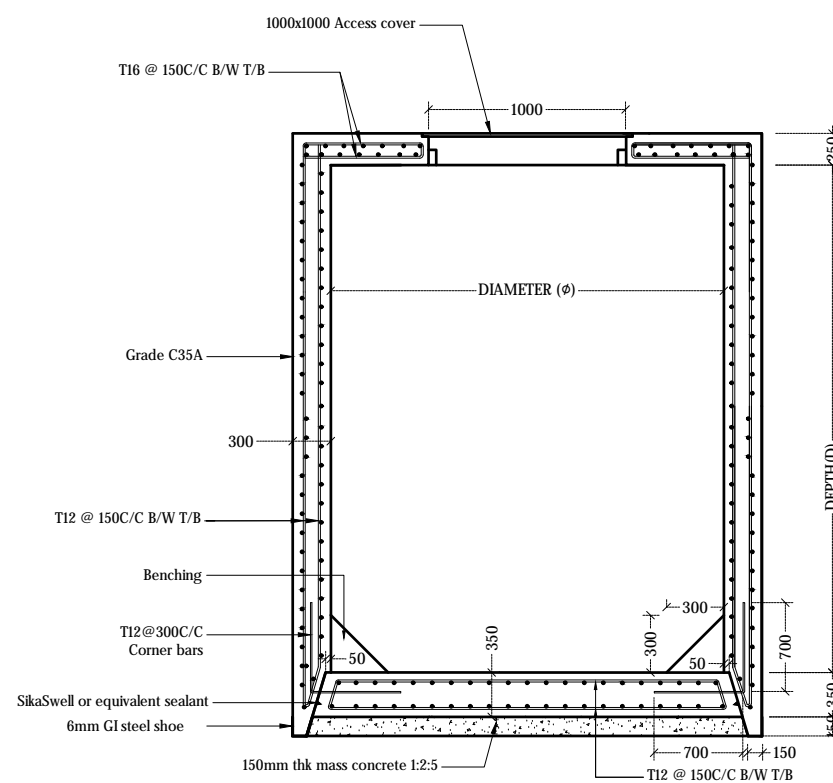
PLAN VIEW



SECTION



VALVE CHAMBER DETAIL



PUMP STATION DETAIL

| Pump Station | Diameter (ϕ) | Depth (D) | Inlet Depth |
|--------------|---------------------|-----------|----------------|
| PS1 | 2.0m | 3.00m | 1.963m, 2.049m |
| PS2 | 2.0m | 2.70m | 1.552m, 1.927m |

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

[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. Keyodhoo

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. |
|---------------|-----------------|

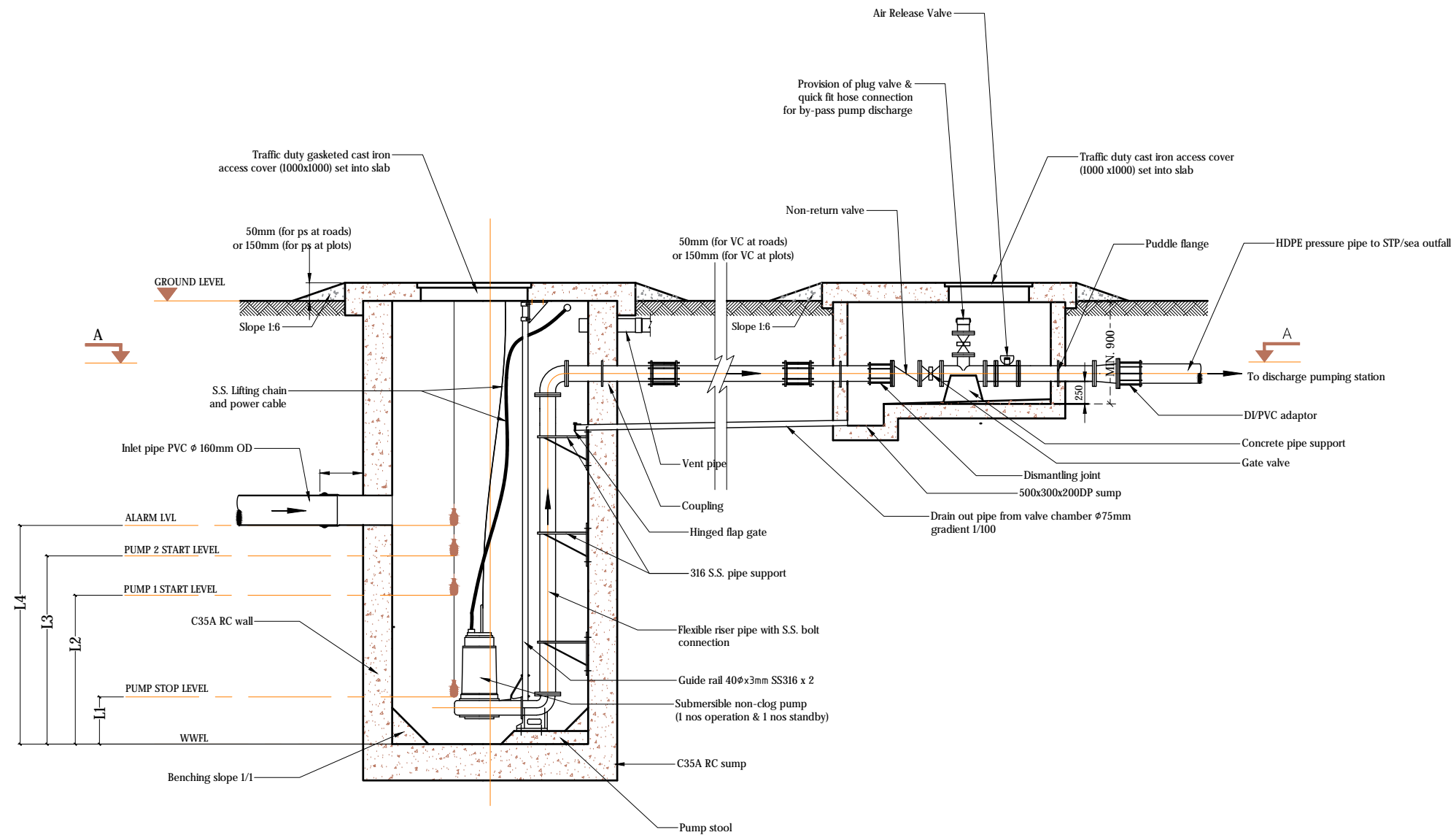
| | |
|-------------------------|-----------------------|
| Designed: F.I.A. | Approved: I.W. |
|-------------------------|-----------------------|

| | |
|----------------|-----------------|
| Date: Sep 2020 | SCALE (A3): NTS |
|----------------|-----------------|

Project No: EP-WS/2019/05

| | |
|------|-------|
| Rev: | Page: |
|------|-------|

Page:
W-(6



DISCHARGE PUMP STATION DESIGN DETAILS (15 YEARS)

| Pump Station | Diameter (φ) | Depth (D) | Inlet Depth | Pump Capacity | Head | Levels | | | |
|--------------|--------------|-----------|-------------|---------------|--------|--------|--------|--------|--------|
| | | | | | | L1 | L2 | L3 | L4 |
| DPS | 2.5m | 2.70m | 0.8m | 7.9 l/s | 17.5 m | 0.300m | 0.692m | 0.842m | 0.992m |

DISCHARGE PUMP STATION DETAILS - LONGITUDINAL SECTION

NTS



Legend

Notes:

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

List of main instruments of pumping station:

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

| REV. NO. | Date | Revision Description | Drawn | Chkd | Appd. |
|----------|------|----------------------|-------|------|-------|
|----------|------|----------------------|-------|------|-------|

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. Keyodhoo

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,
Husuheenna Magu, Male', Maldives

INFRA
Maldives
Sustainable Infrastructure

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

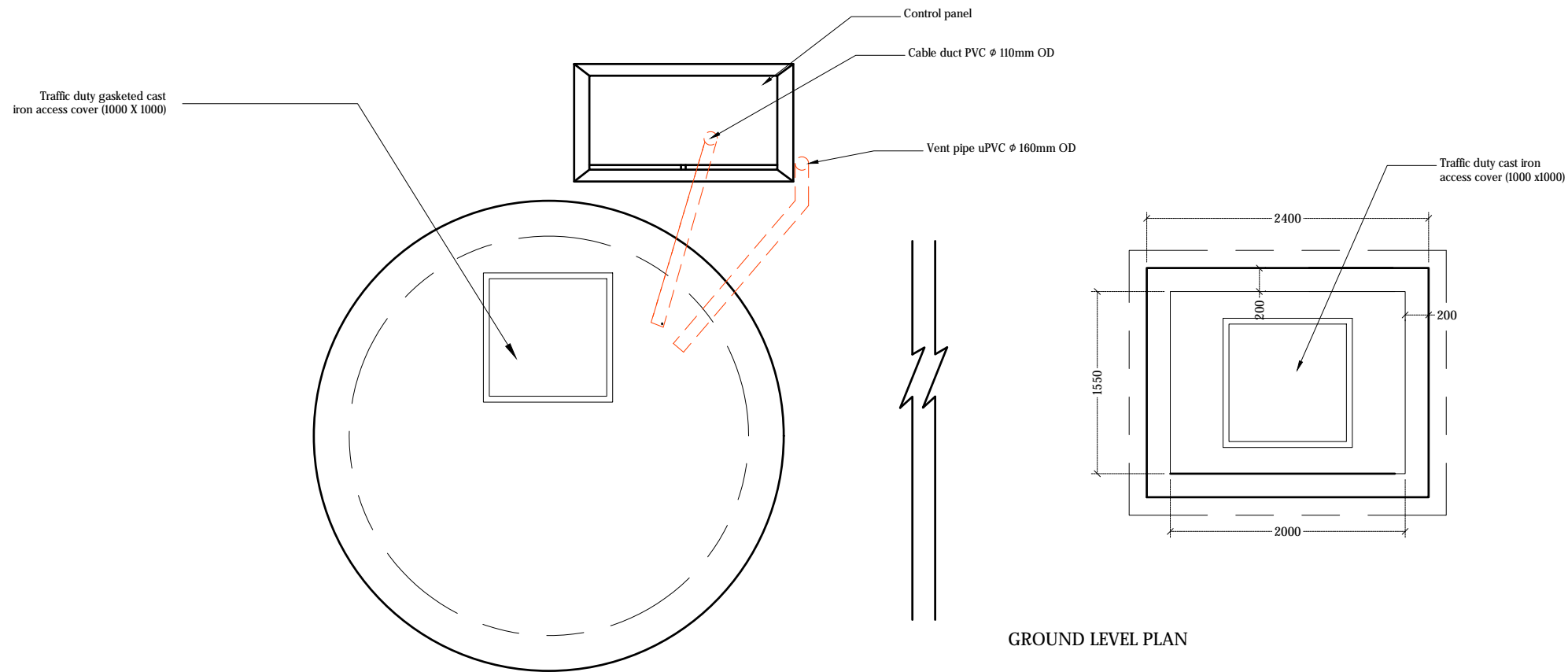
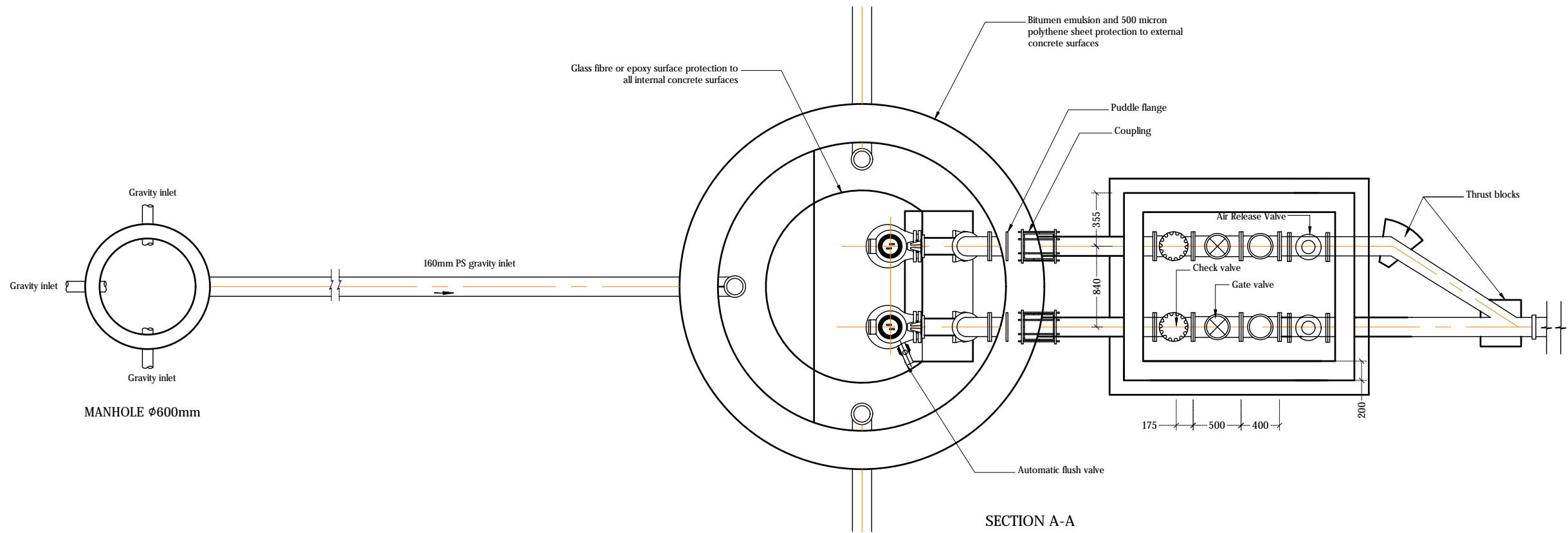
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page:

W-(24)



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.
- All structural reinforcement shall be epoxy coating of non-pre-stressed reinforcement to ASTM-A775/A775M.
- A cover of 75mm should be given for all reinforcements.
- Internal concrete surfaces to be coated with 5mm thickness of epoxy bonded glass fibre and finished with gel coat or 500 microns epoxy paint coating.
- External concrete surfaces to be painted with 3 coats of bitumen/rubber emulsion and protected by 500 micron polythene.
- All concrete cold joints shall casted with bonding agent

List of main instruments of pumping station:

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

| REV. NO. | Date | Revision Description | Drawn | Chkd | Appd. |
|----------|------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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. Keyodhoo

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



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

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

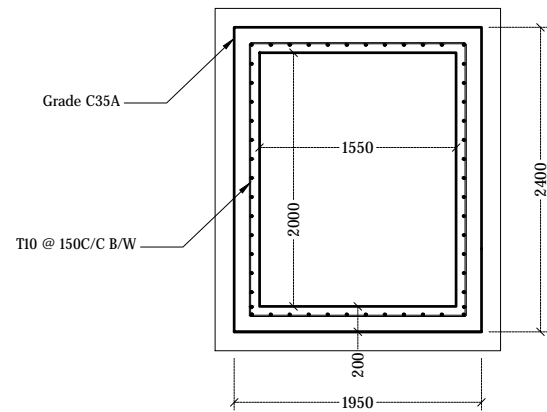
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

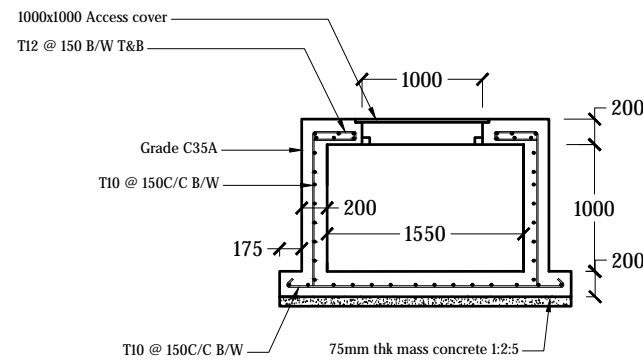
Rev: Page:

W-(25)

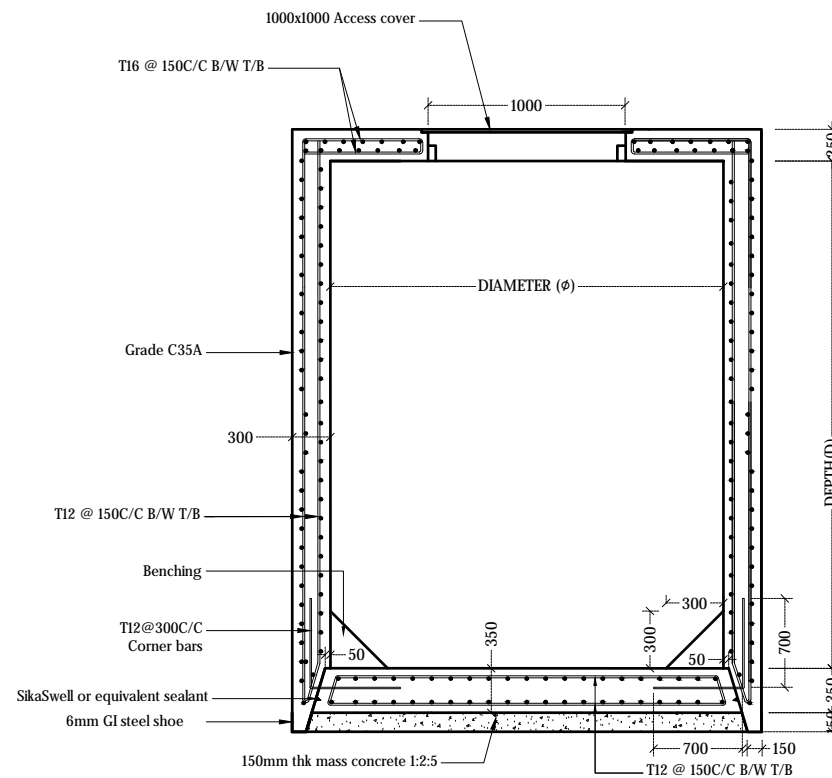
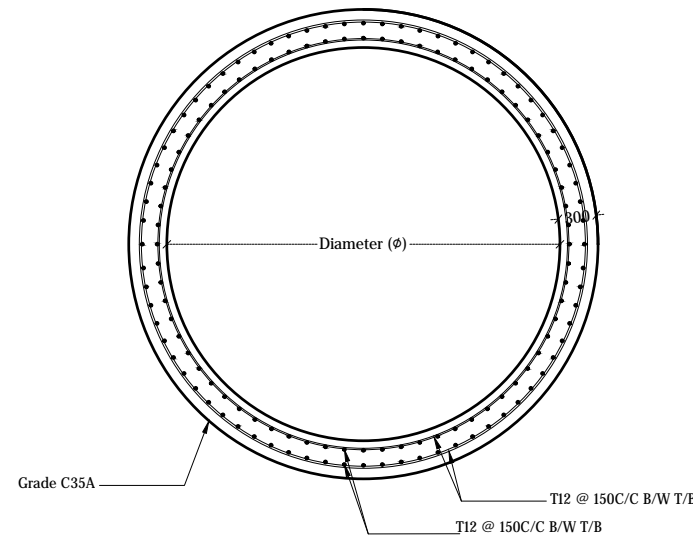
PLAN VIEW



SECTION



VALVE CHAMBER DETAIL



PUMP STATION DETAIL

| Pump Station | Diameter (φ) | Depth (D) | Inlet Depth |
|--------------|--------------|-----------|-------------|
| DPS | 2.5m | 2.70m | 0.8m |

DISCHARGE 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

| 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. Keyodhoo

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,
Husnuheena Magu, Male', Maldives



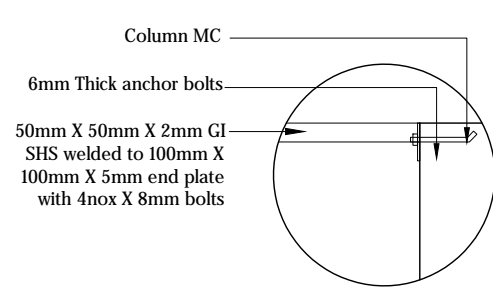
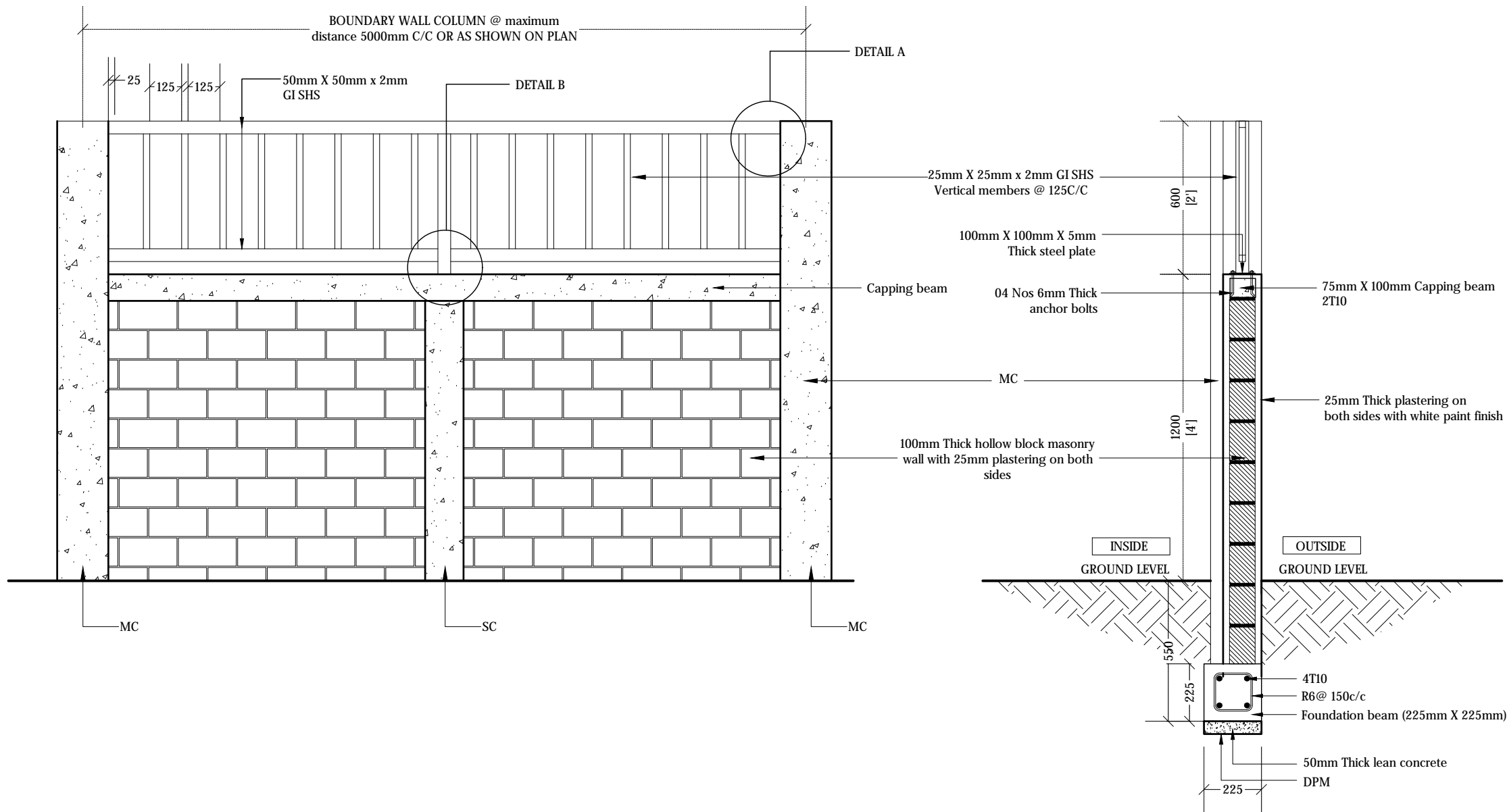
Drawn: F.I.A. Checked: M.S.S.

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

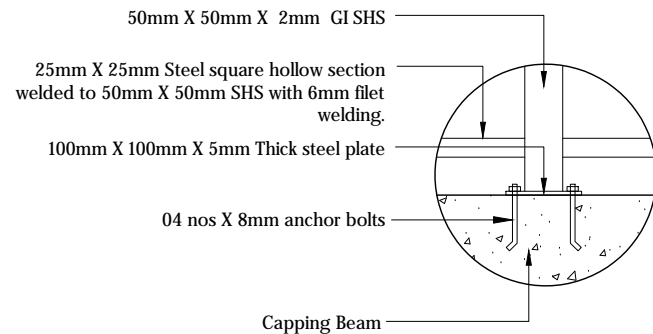
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

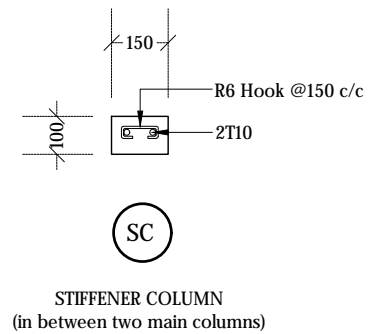
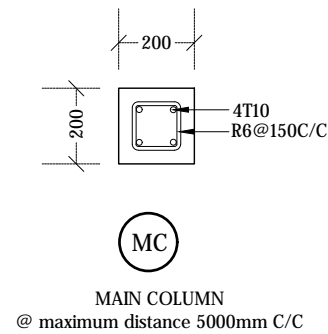
Rev: Page: W-(26)



DETAIL A
1:10



DETAIL B
1:10



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. Keyodhoo

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,
Husuheena Magu, Male', Maldives

FOODBACK INFRA
MALDIVES

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

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

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

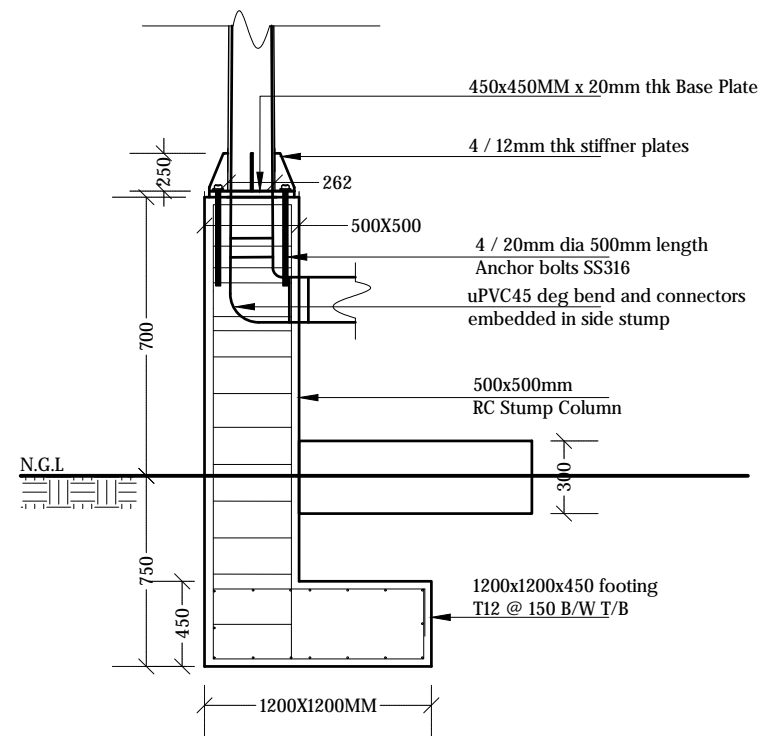
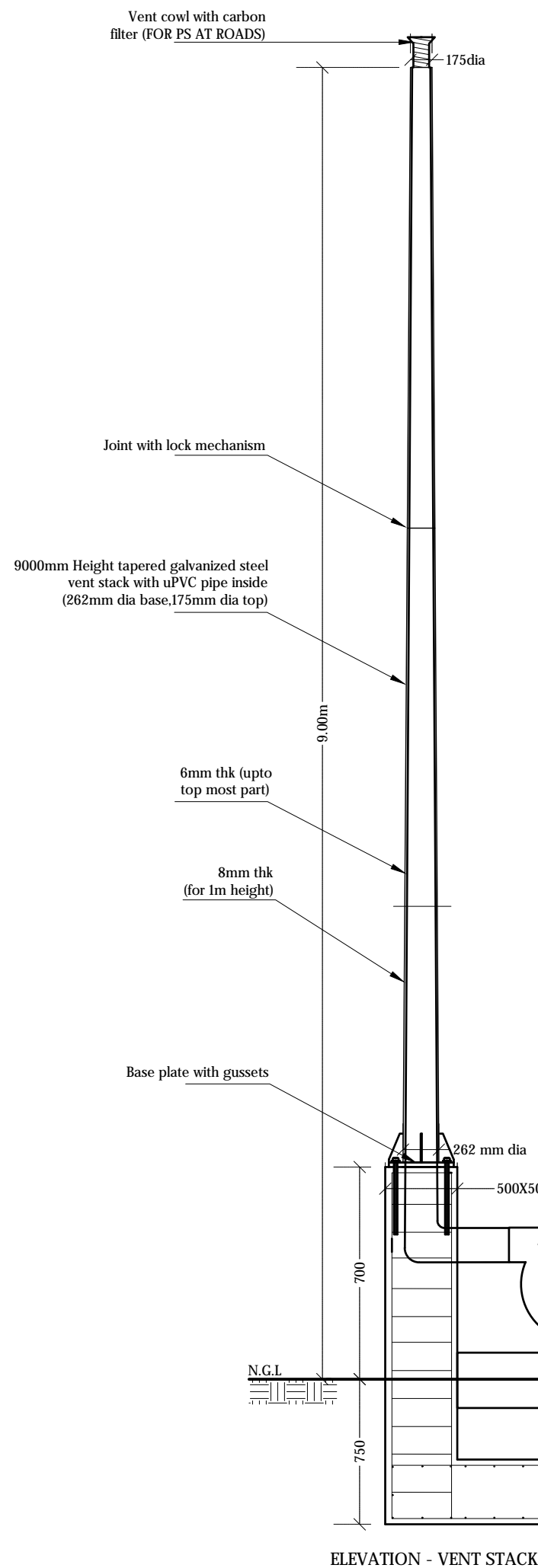
Project No: EP-WS/2019/05

Rev: Page:

W-(8)

PS & STP BOUNDARY WALL AND FENCING DETAILS

1:20



SECTION - S

VENT STACK DETAILS

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 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. Keyodhoo

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



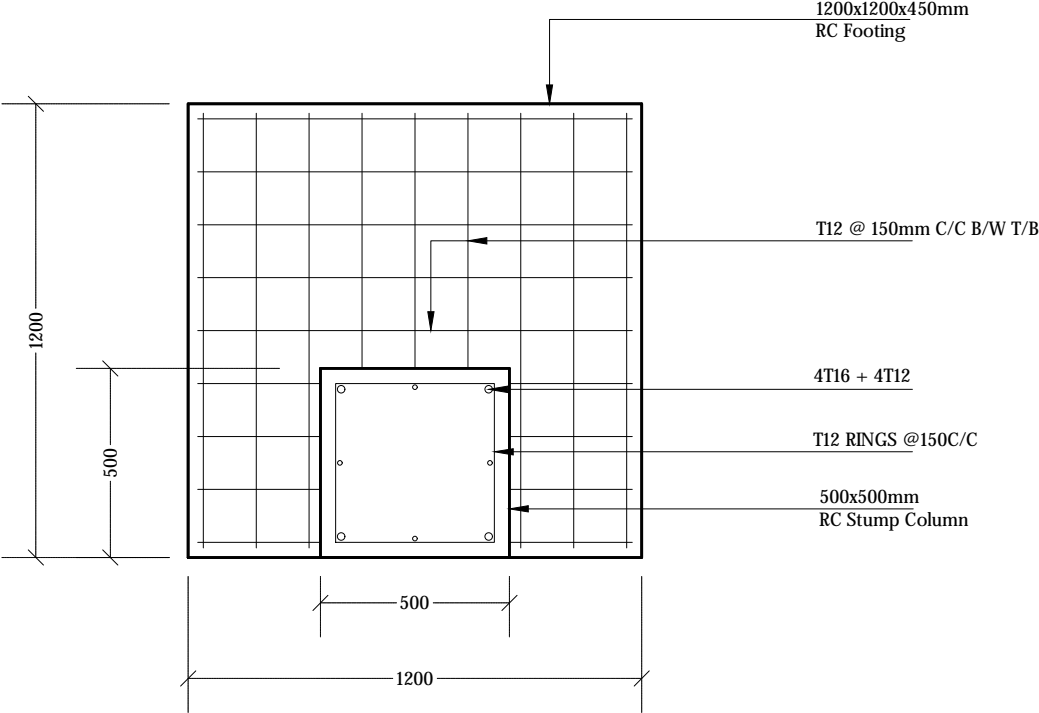
Drawn: F.I.A. Checked: M.S.S.

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

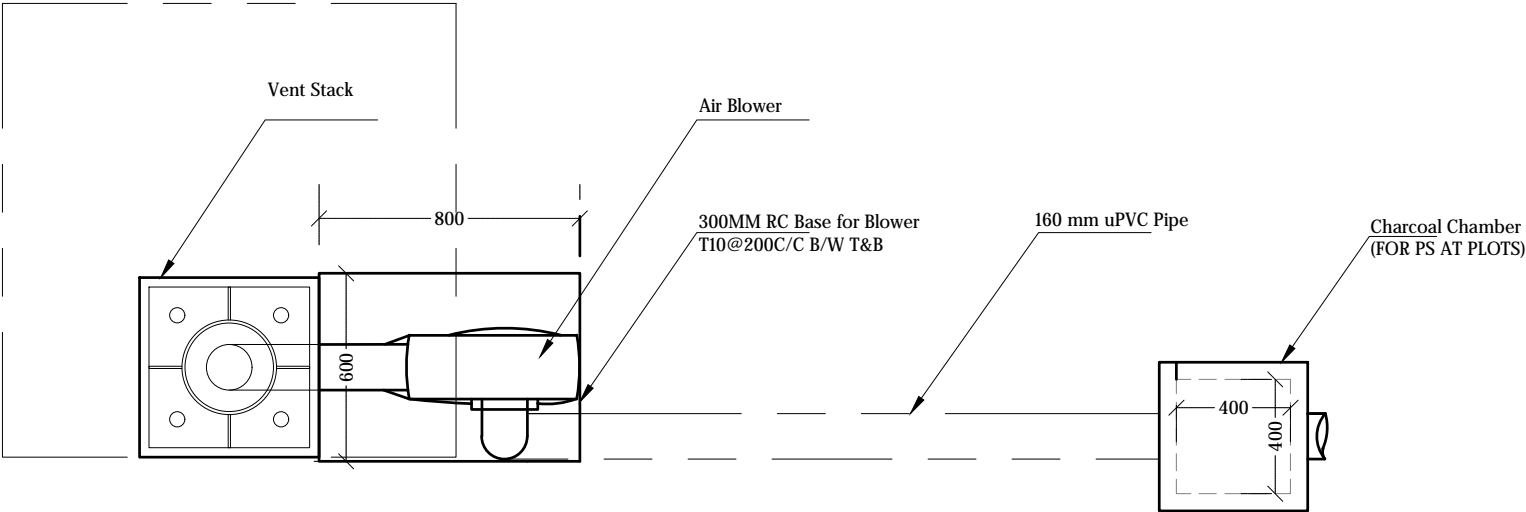
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(9)



FOOTING & STUMP DETAILS OF VENT STACK



AIR BLOWER DETAILS (Plan View)

VENT STACK AND AIR BLOWER DETAILS

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 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. Keyodhoo

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

Maldivian Infrastructure Development

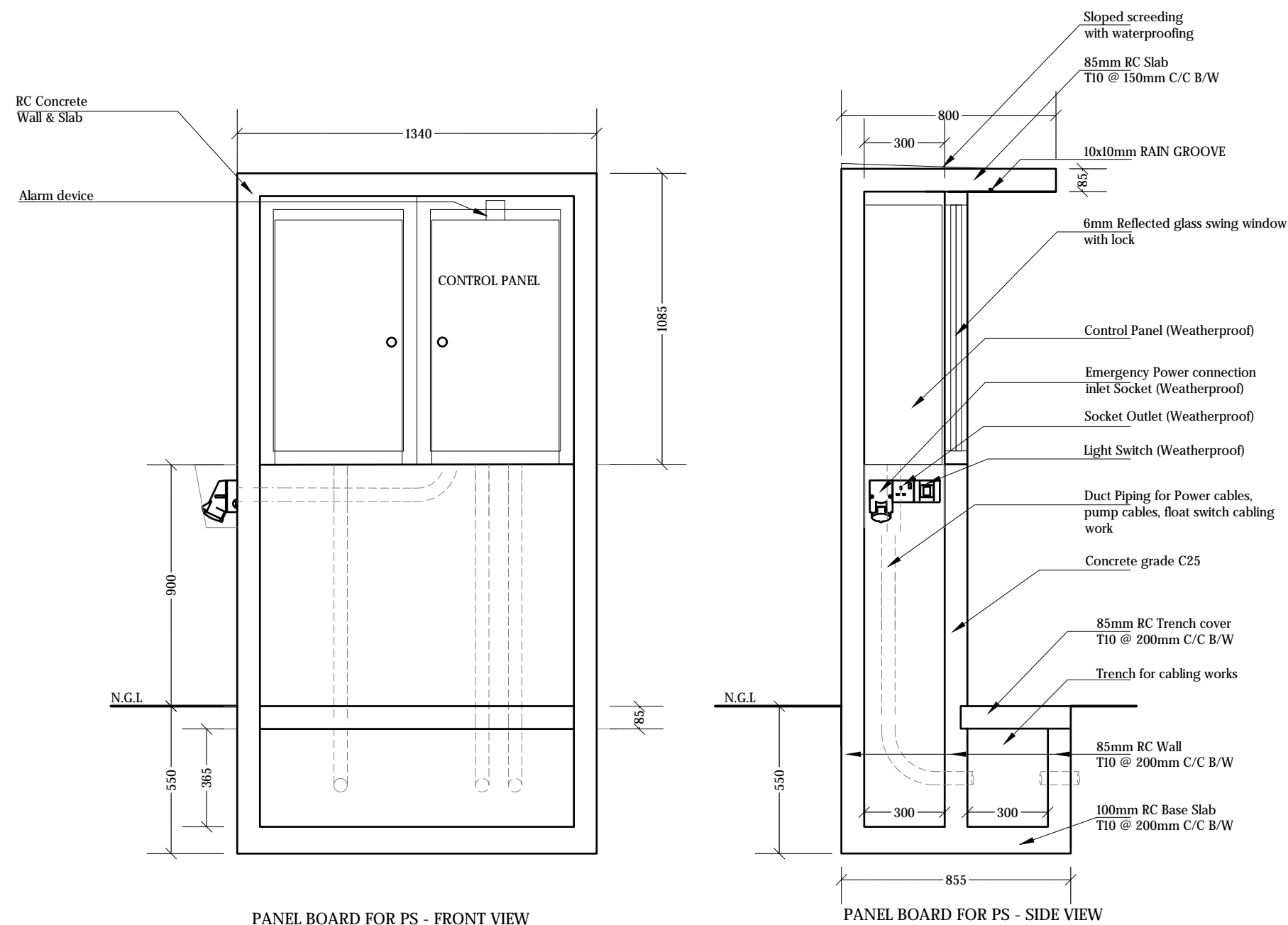
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(10)



CONTROL PANEL BOARD DETAILS

NTS



Legend

| REV. NO. | Date | Revision Description | Drawn | Chkd | Appd. |
|----------|------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

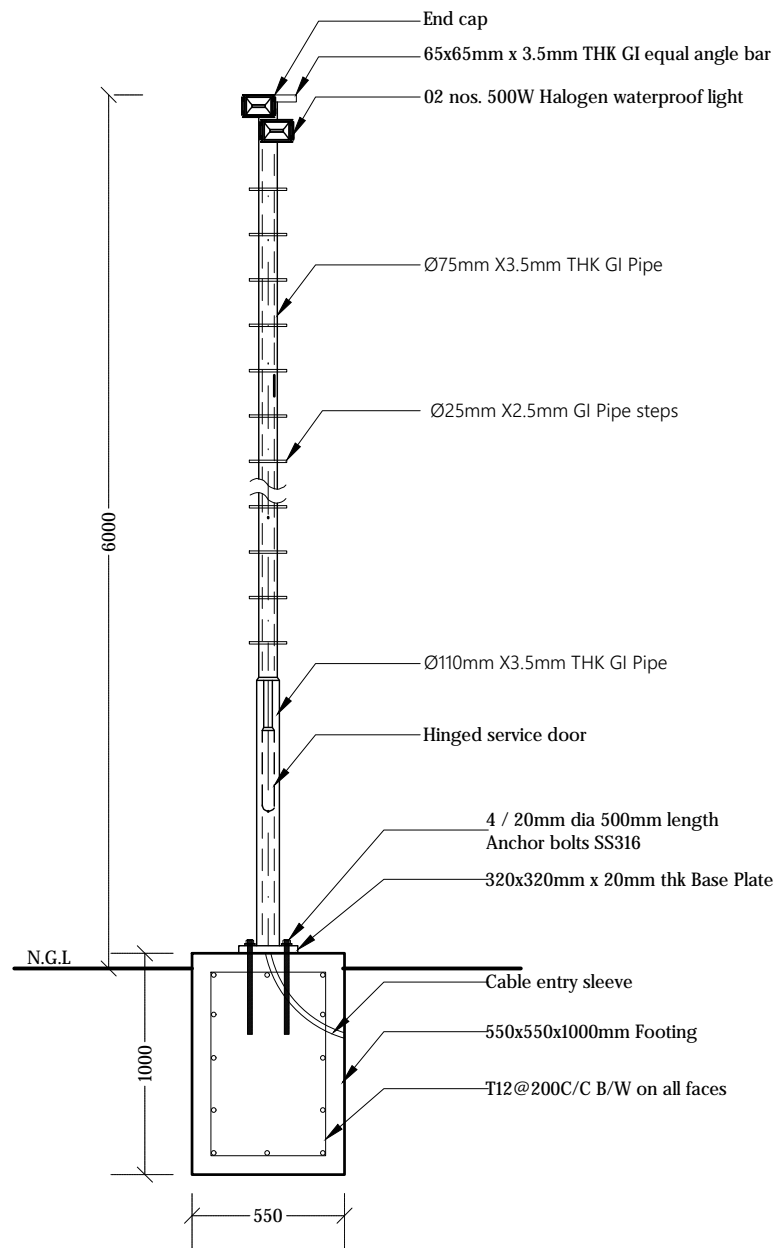
Title:
Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package 5

Sub Title:
Sewerage System in V. Keyodhoo

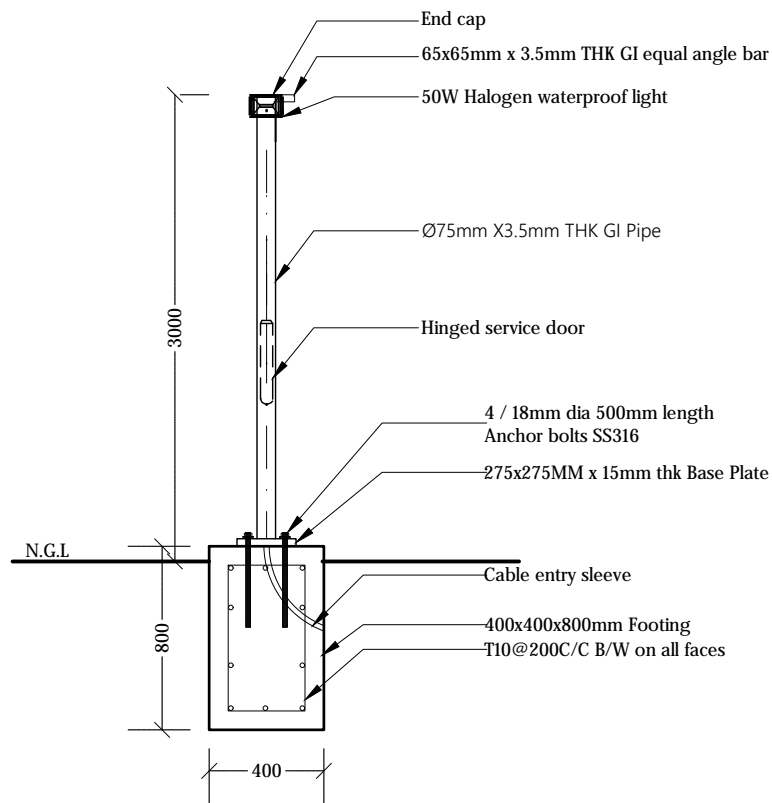
Client:
Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives



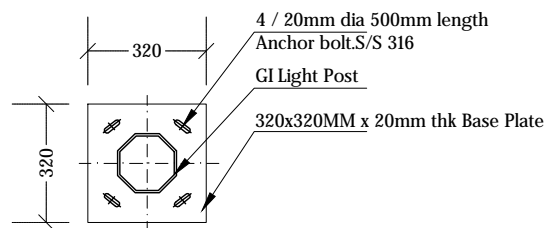
| | |
|---------------------------|-----------------|
| Drawn: F.I.A. | Checked: M.S.S. |
| Designed: F.I.A. | Approved: I.W. |
| Date: Sep 2020 | SCALE (A3): NTS |
| Project No: EP-WS/2019/05 | Page: W-(11) |



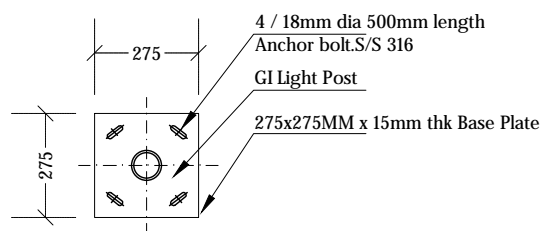
LIGHT POST DETAILS FOR STP COMPOUND (LP1)



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 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. Keyodhoo

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



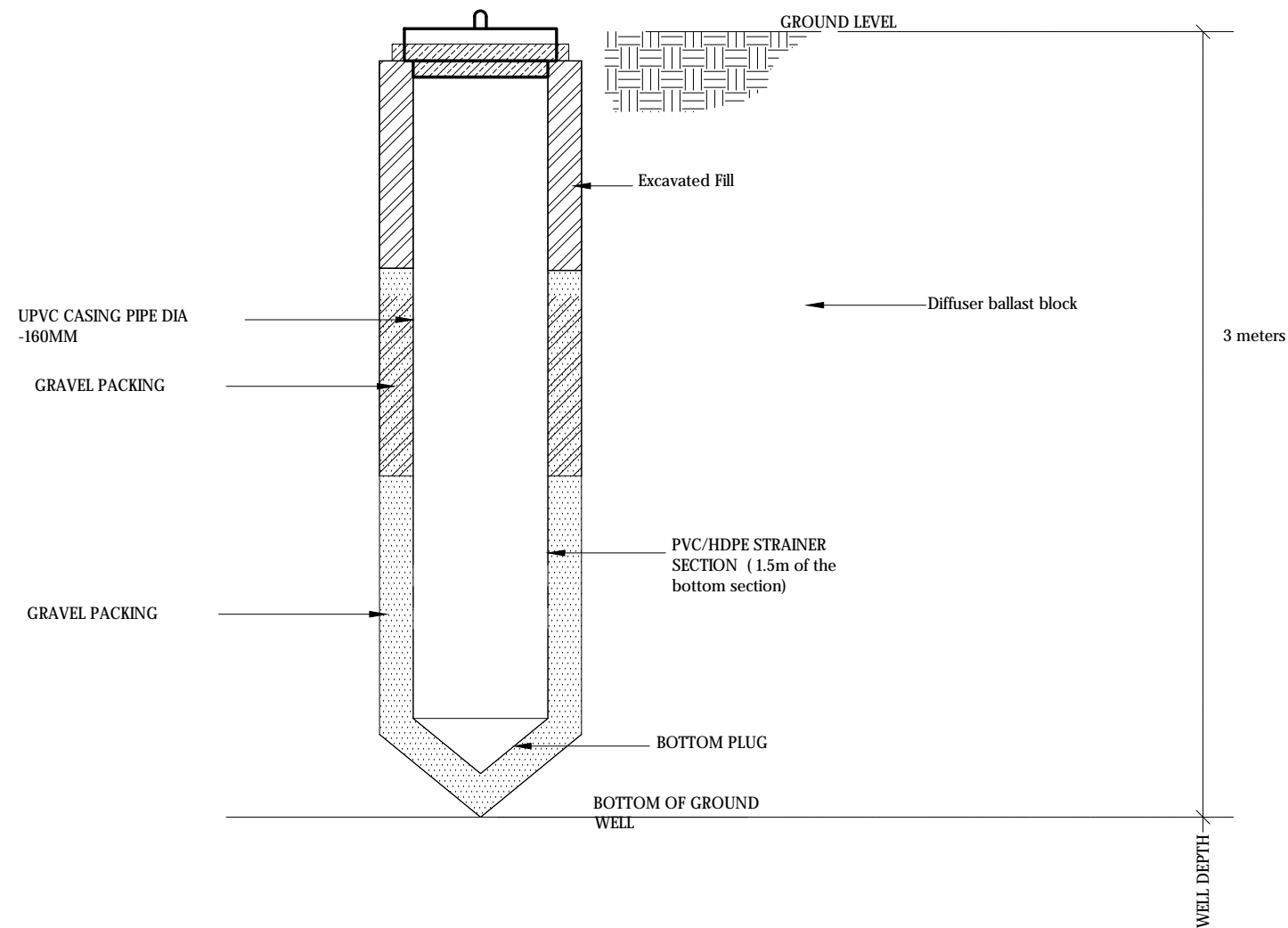
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(12)



SAMPLING WELL SECTION
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. Keyodhoo

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

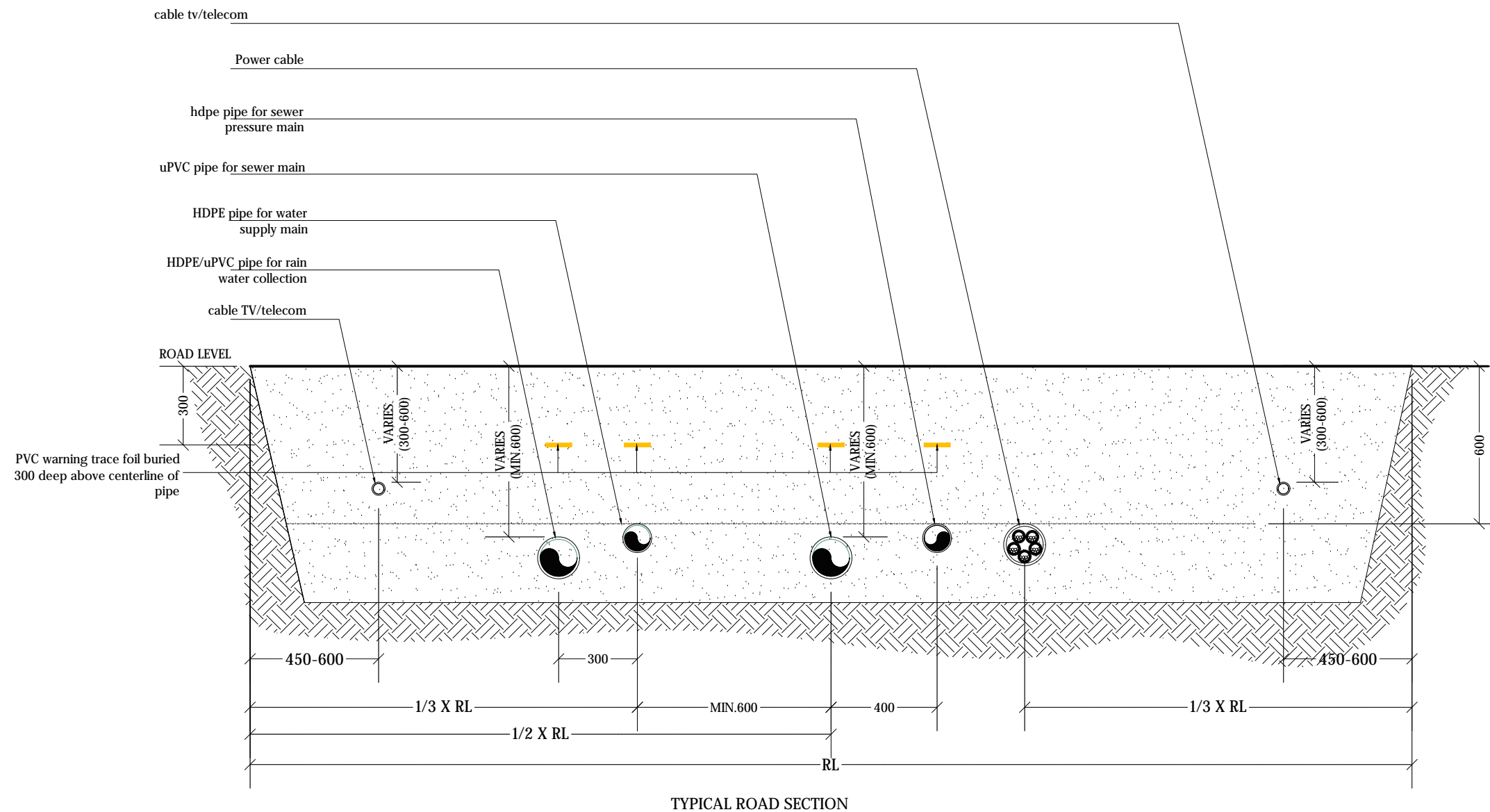
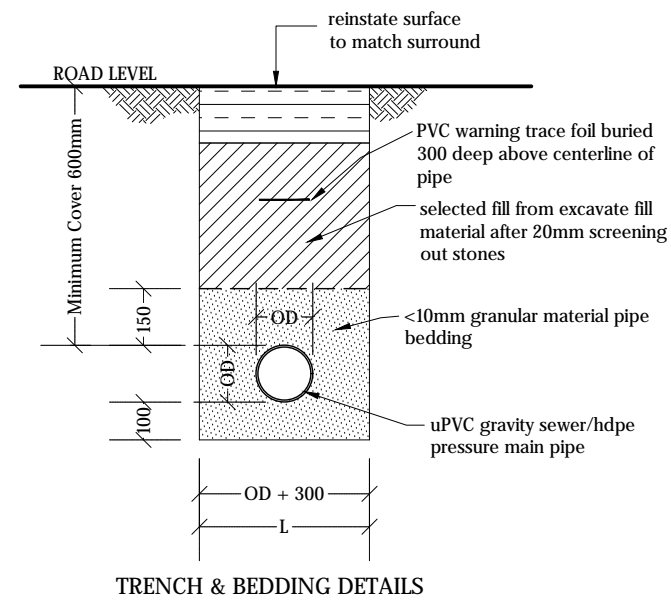


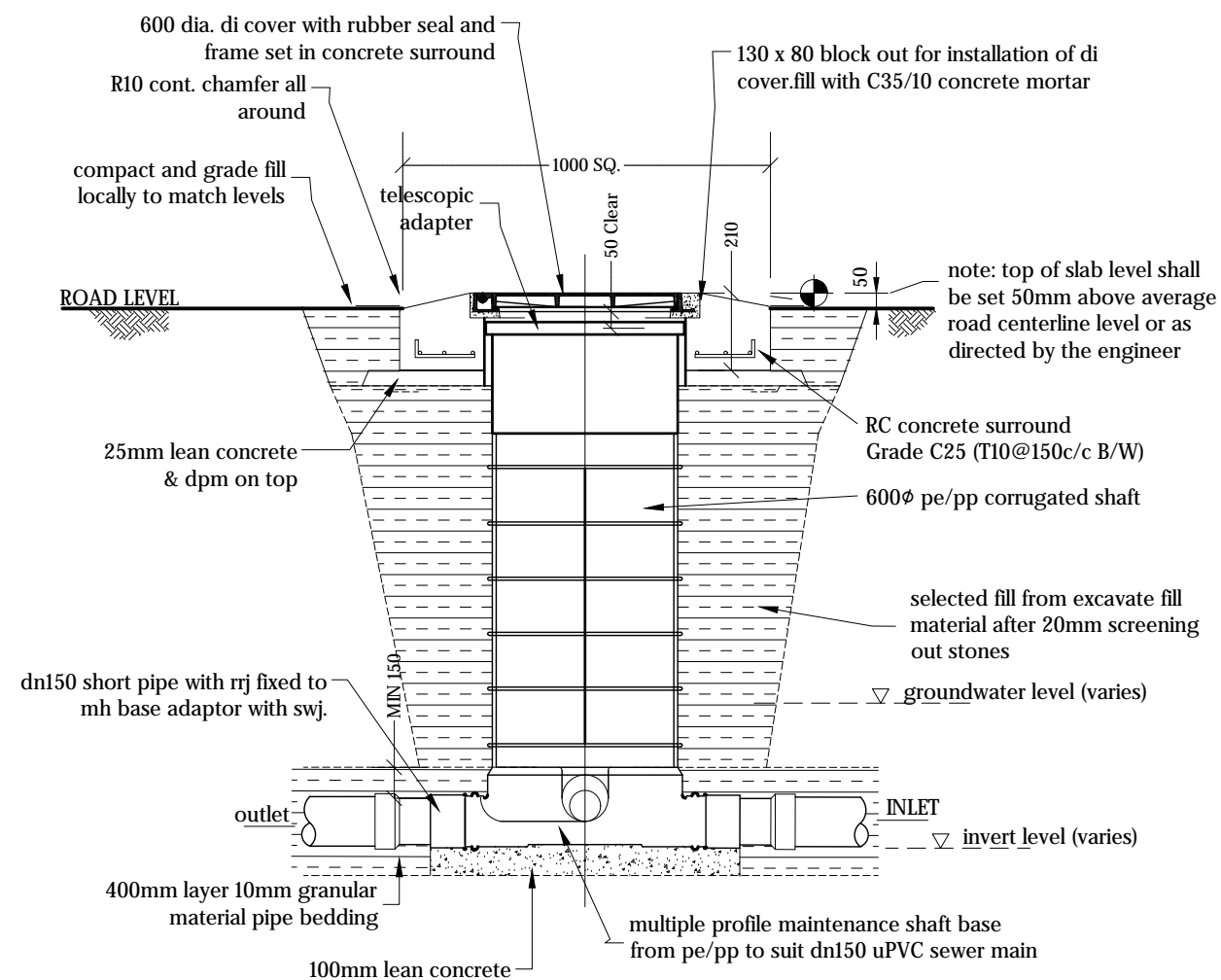
T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husuheena Magu, Male', Maldives



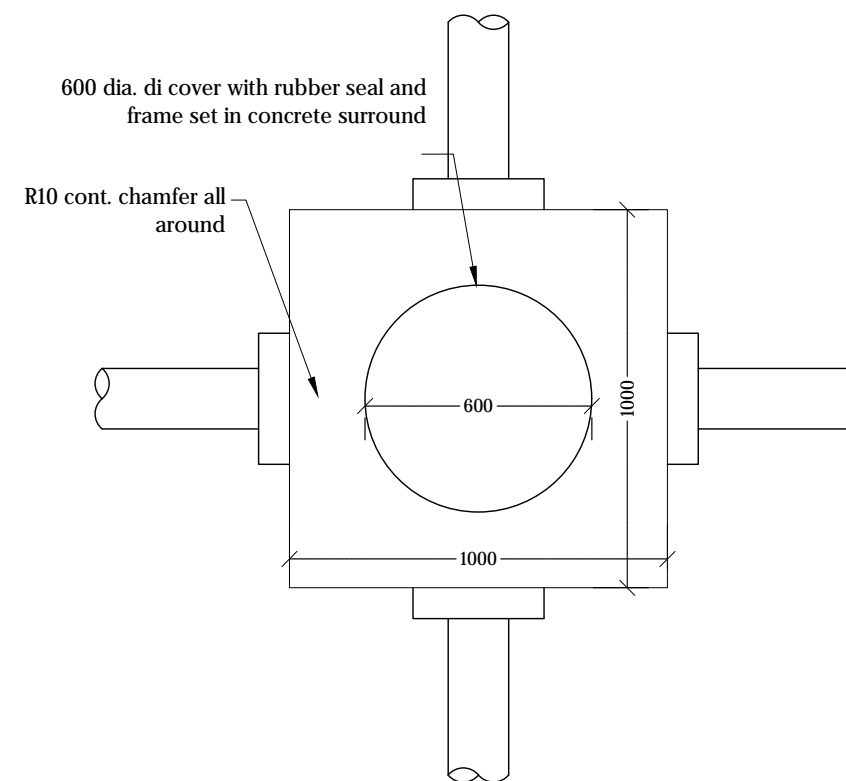
Maldivian Infrastructure Development

| | |
|---------------------------|-----------------|
| 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 | |
| Rev: | Page: W-(23) |





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. Keyodhoo

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, Huseheena Magu, Male', Maldives



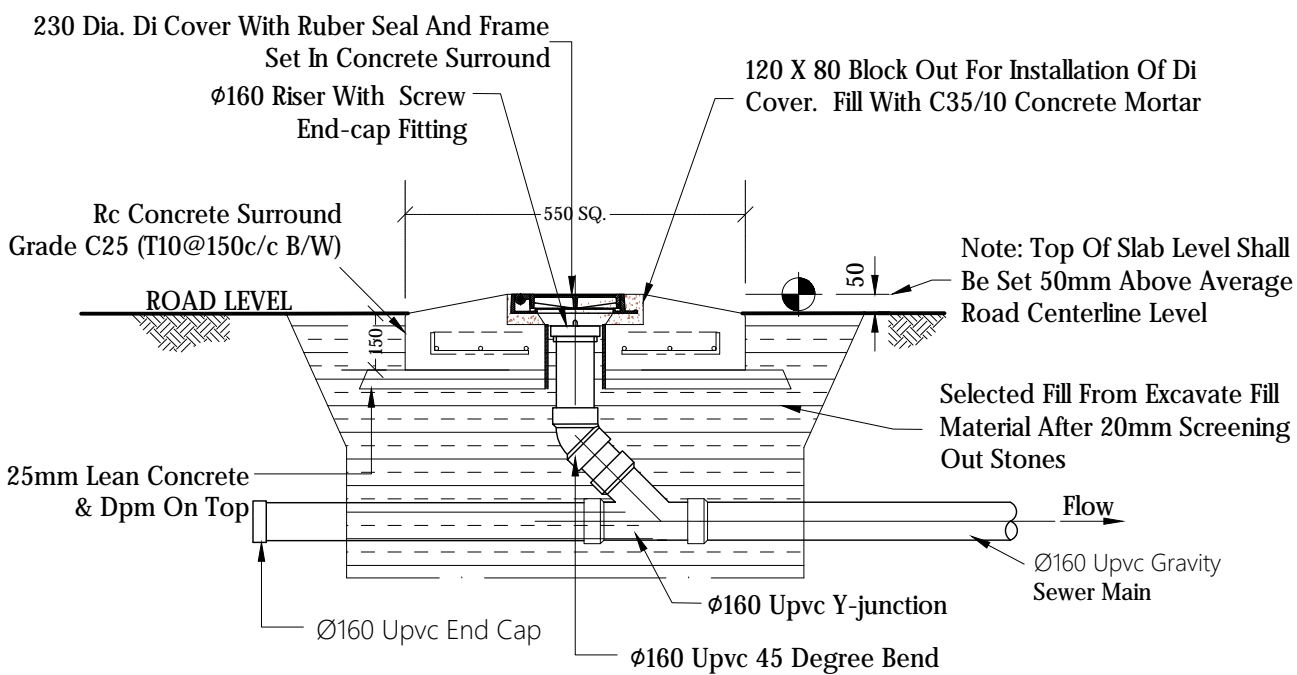
Drawn: F.I.A. Checked: M.S.S.

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

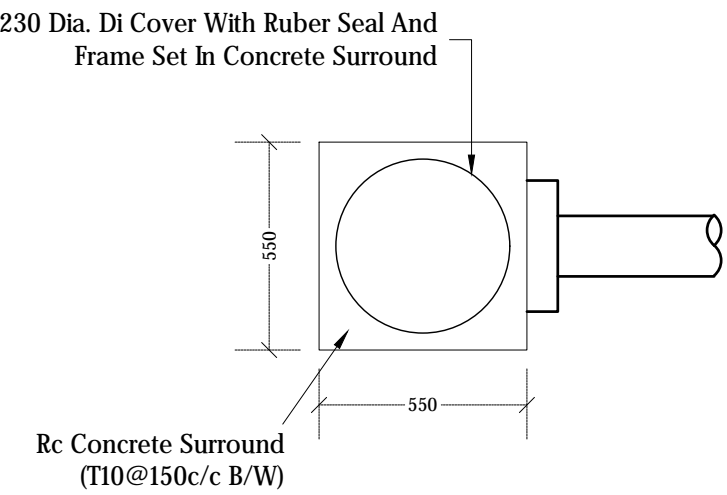
Date: Sep 2020 SCALE (A3): 1:20

Project No: EP-WS/2019/05

Rev: Page: W-(14)



ELEVATION - CLEANOUT (CO)



PLAN VIEW - CLEANOUT (CO)

CLEAN OUT 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. Keyodhoo

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



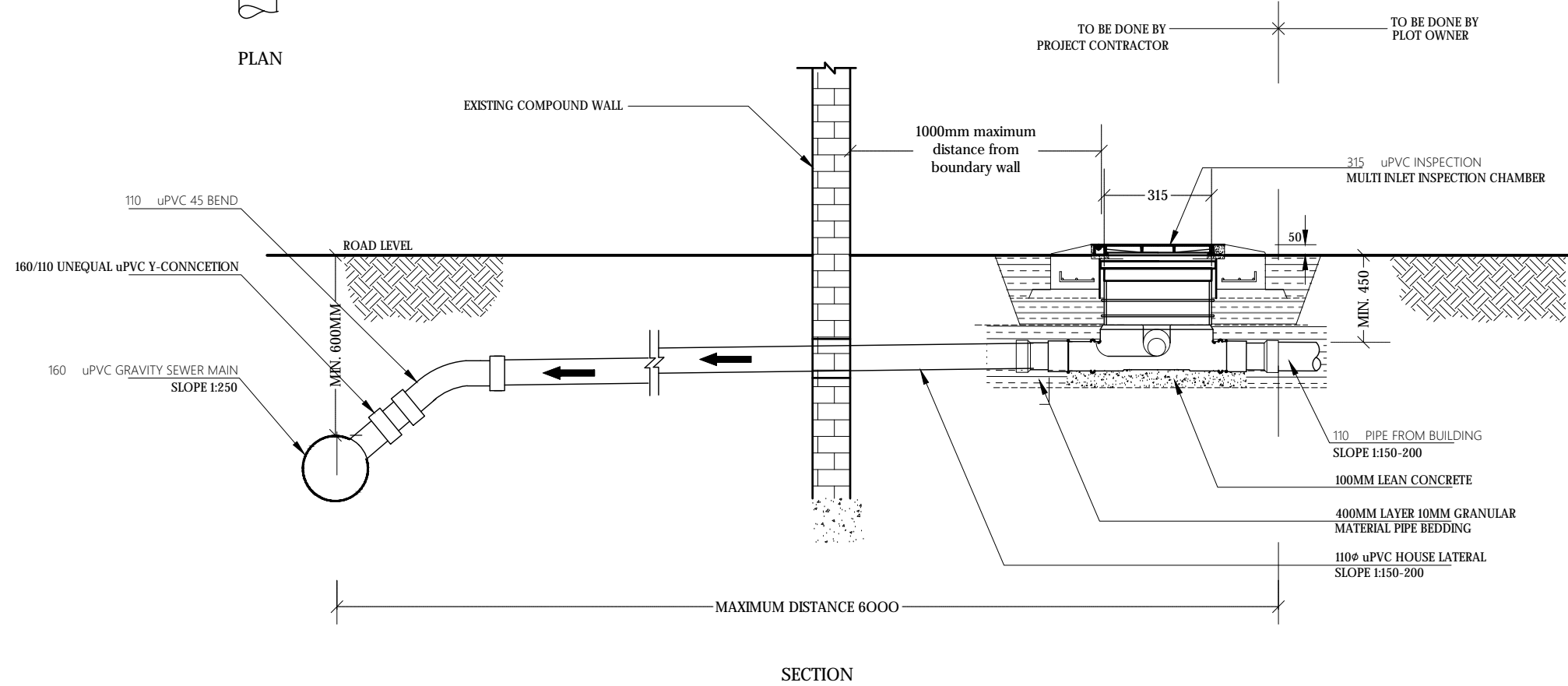
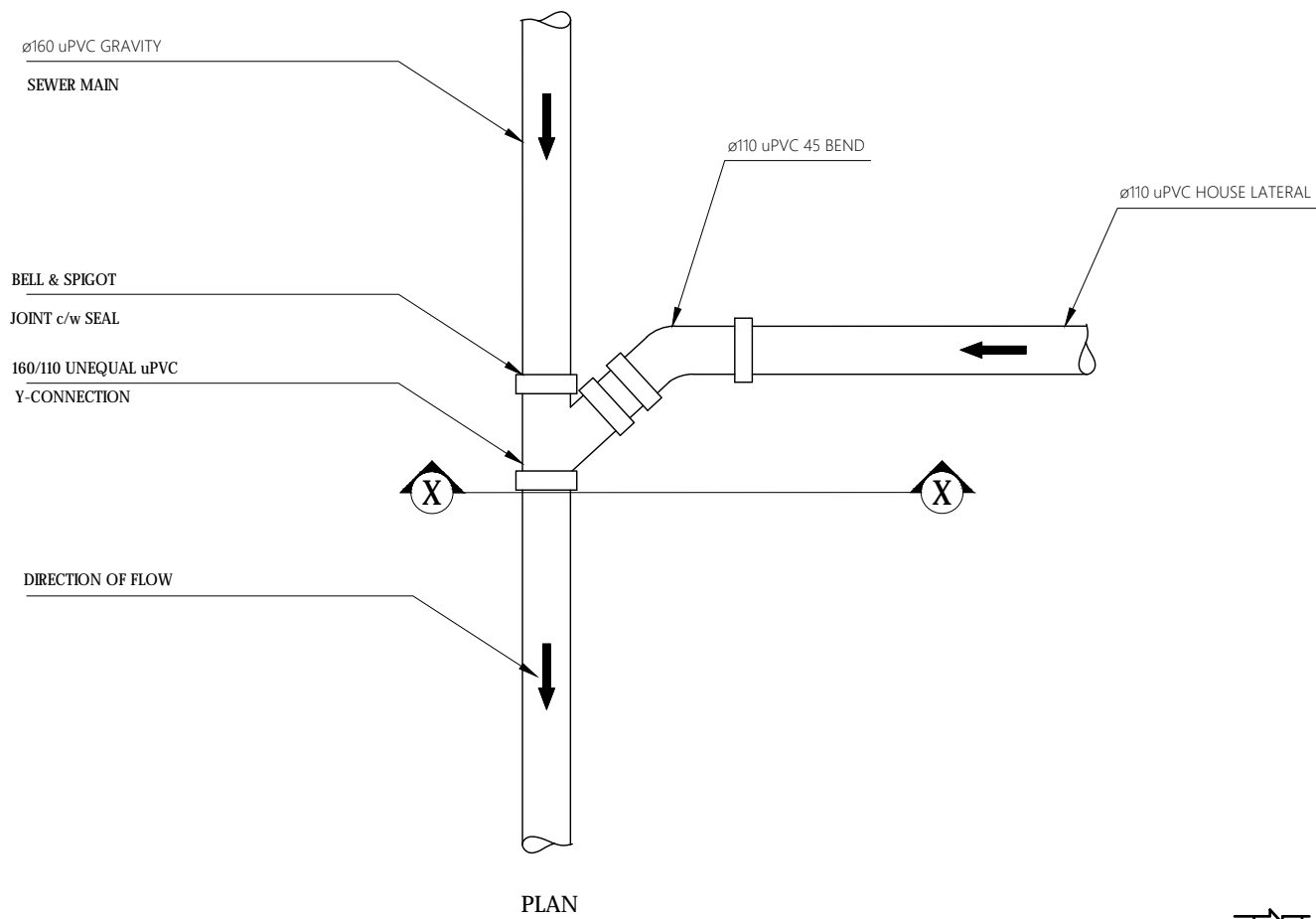
Drawn: F.I.A. Checked: M.S.S.

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

Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(16)



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. Keyodhoo

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

INFRA
Maldives

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

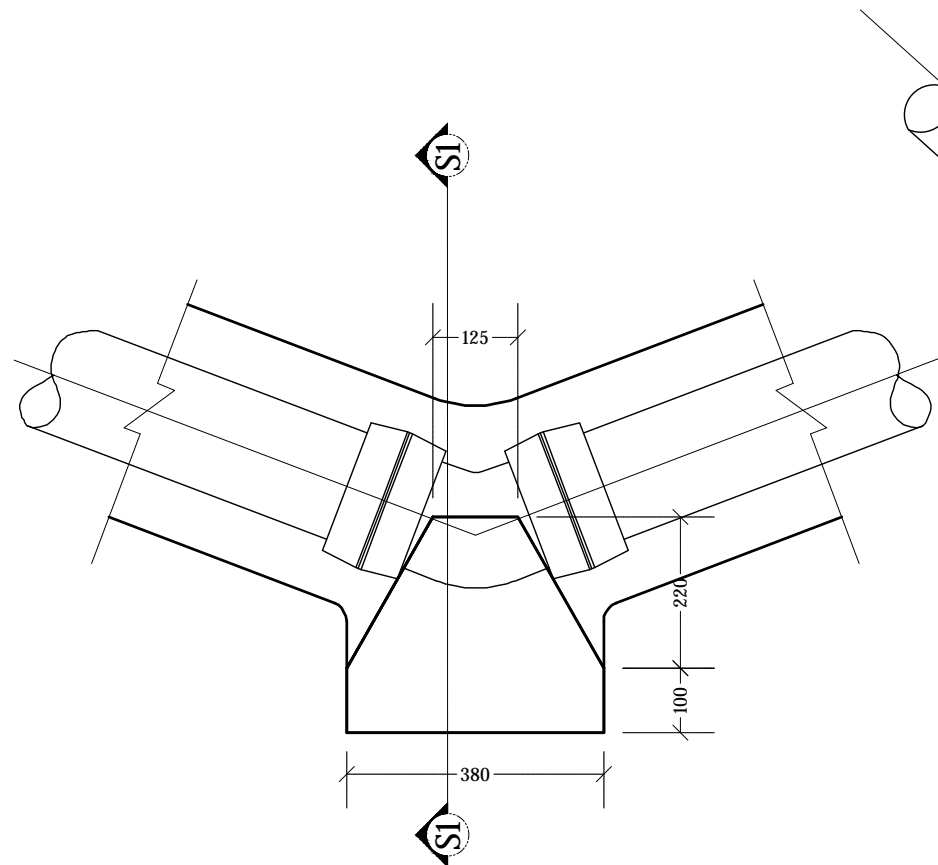
Designed: F.I.A. Approved: I.W.

Date: Sep 2020 SCALE (A3): NTS

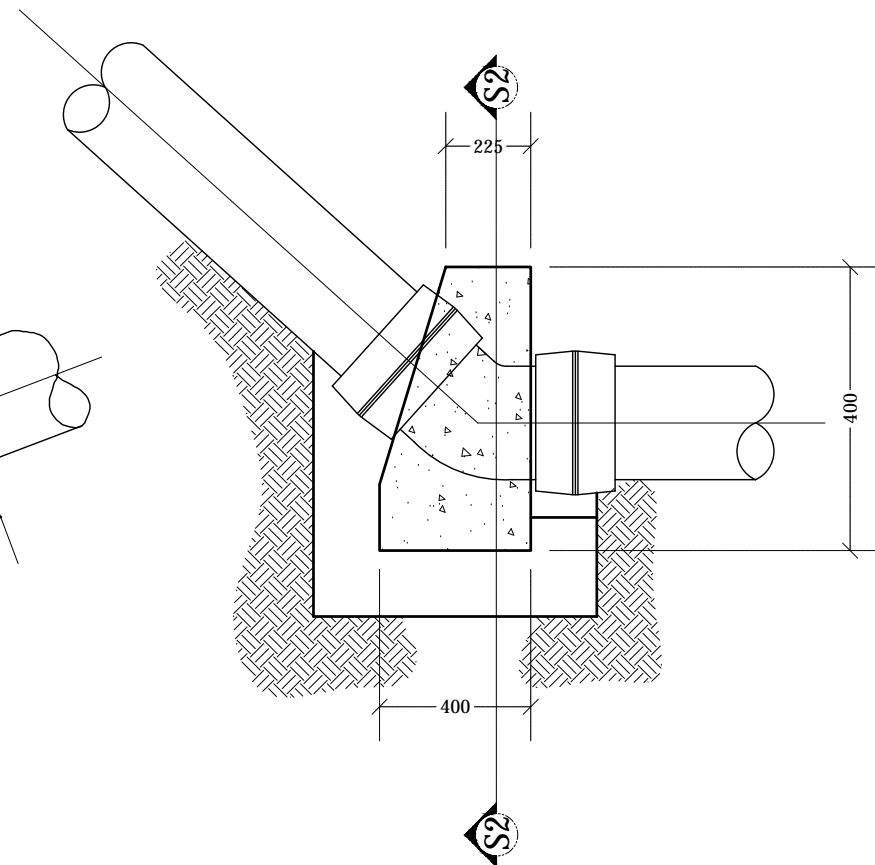
Project No: EP-WS/2019/05

Rev: Page:

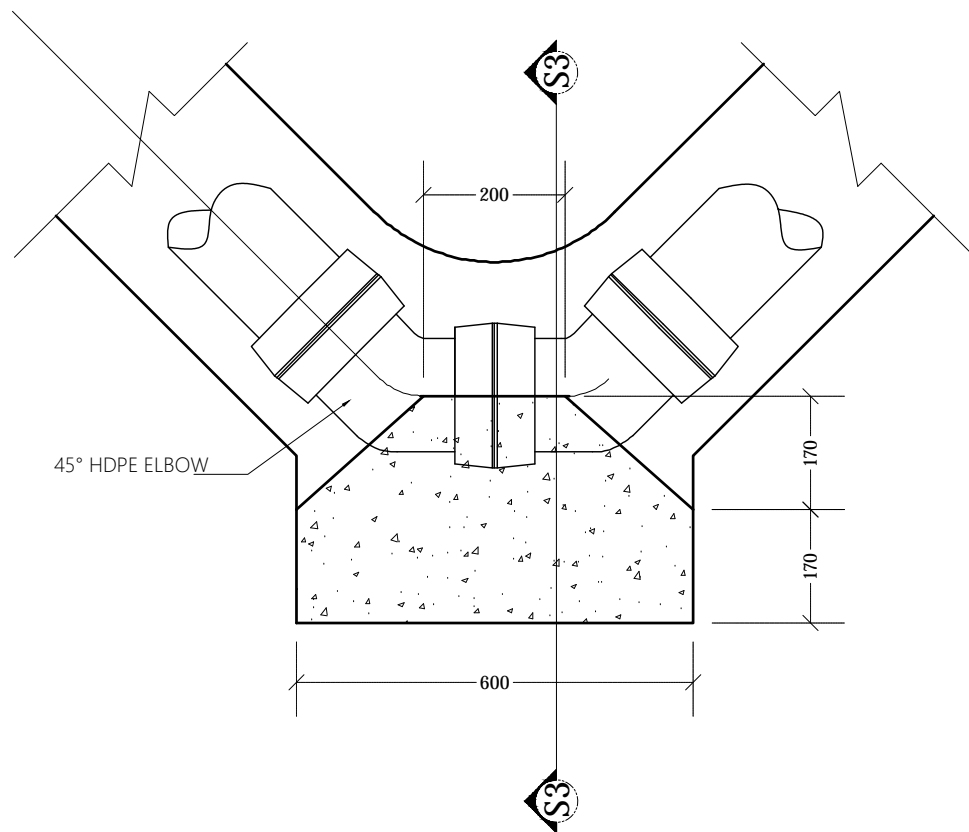
W-(17)



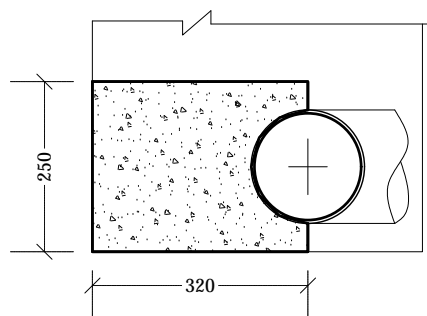
HORIZONTAL 45° BEND
NTS



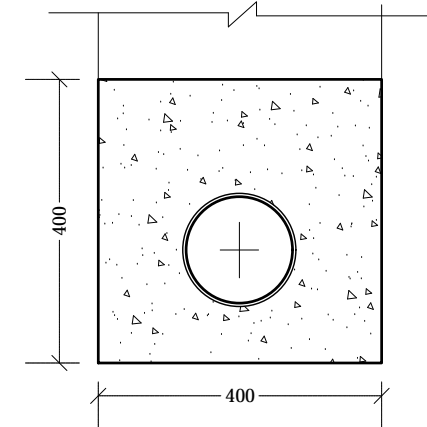
VERTICAL 45° BEND
NTS



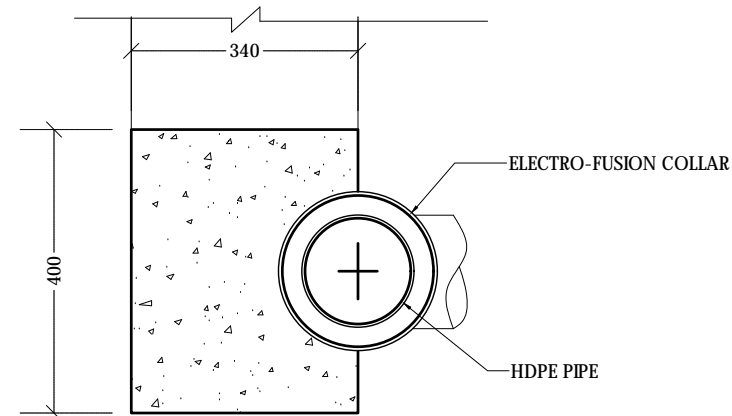
HORIZONTAL 90° BEND
NTS



SECTION S1-S1
NTS



SECTION S2-S2
NTS



SECTION S3-S3
NTS

THRUST BLOCK DETAILS
NTS

Legend

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. Keyodhoo

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,
Husuheenna Magu, Male', Maldives

FOODBACK

INFRA

Maldivian Infrastructure Development

Drawn: F.I.A.

Designed: F.I.A.

Date: Sep 2020

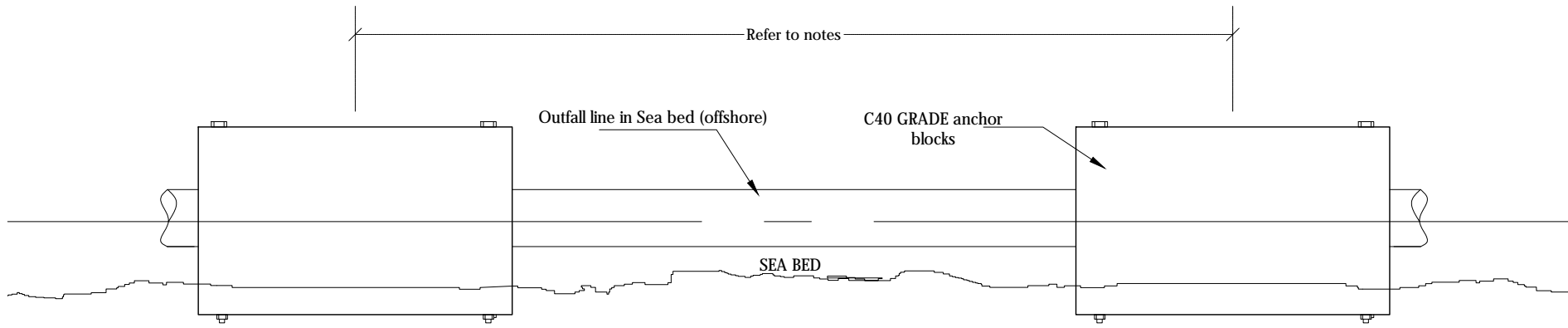
Project No: EP-WS/2019/05

Checked: M.S.S.

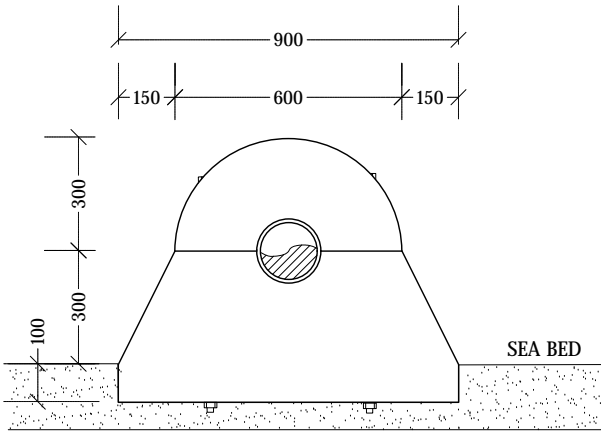
Approved: I.W.

SCALE (A3): NTS

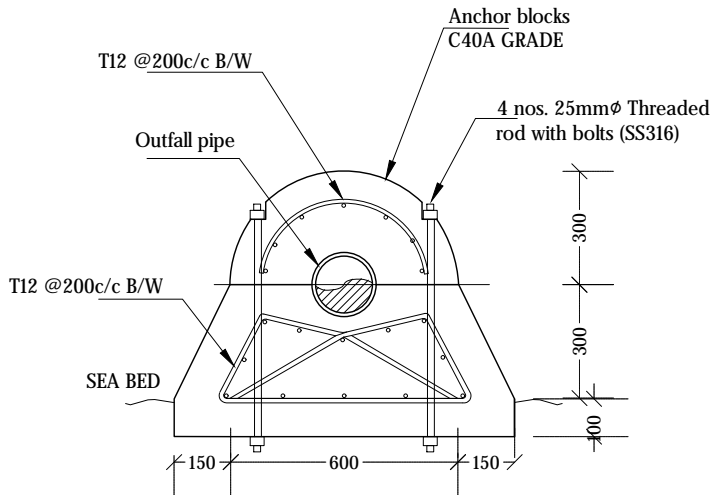
Page: W-(18)



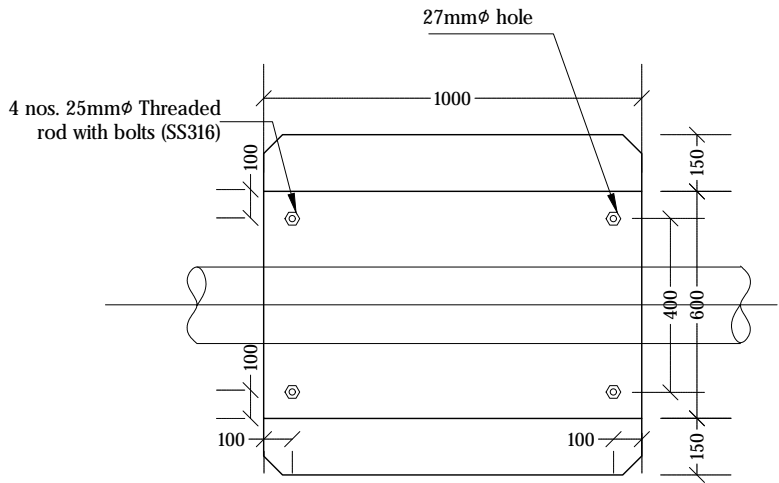
BALLAST BLOCK SIDE ELEVATION



BALLAST BLOCK FRONT ELEVATION



BALLAST BLOCK SECTION



BALLAST BLOCK PLAN

BALLAST BLOCK DETAILS

NTS

Legend

Notes:

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

| REV. NO. | Date | Revision Description | Drawn | Chkd | Appd. |
|----------|------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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

Sub Title:
Sewerage System in V. Keyodhoo

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

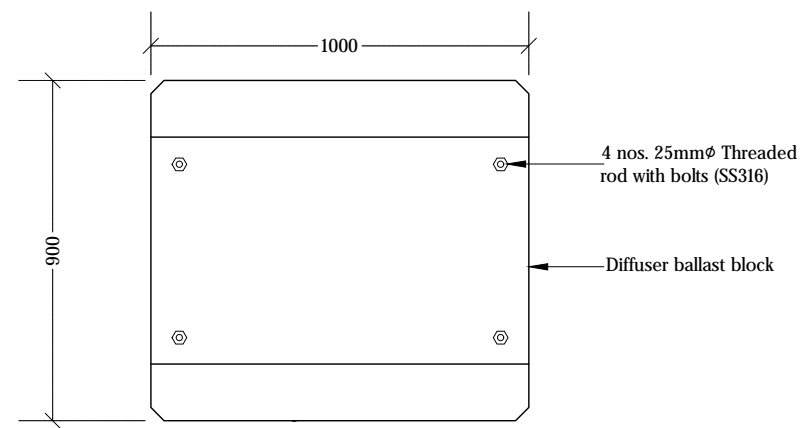
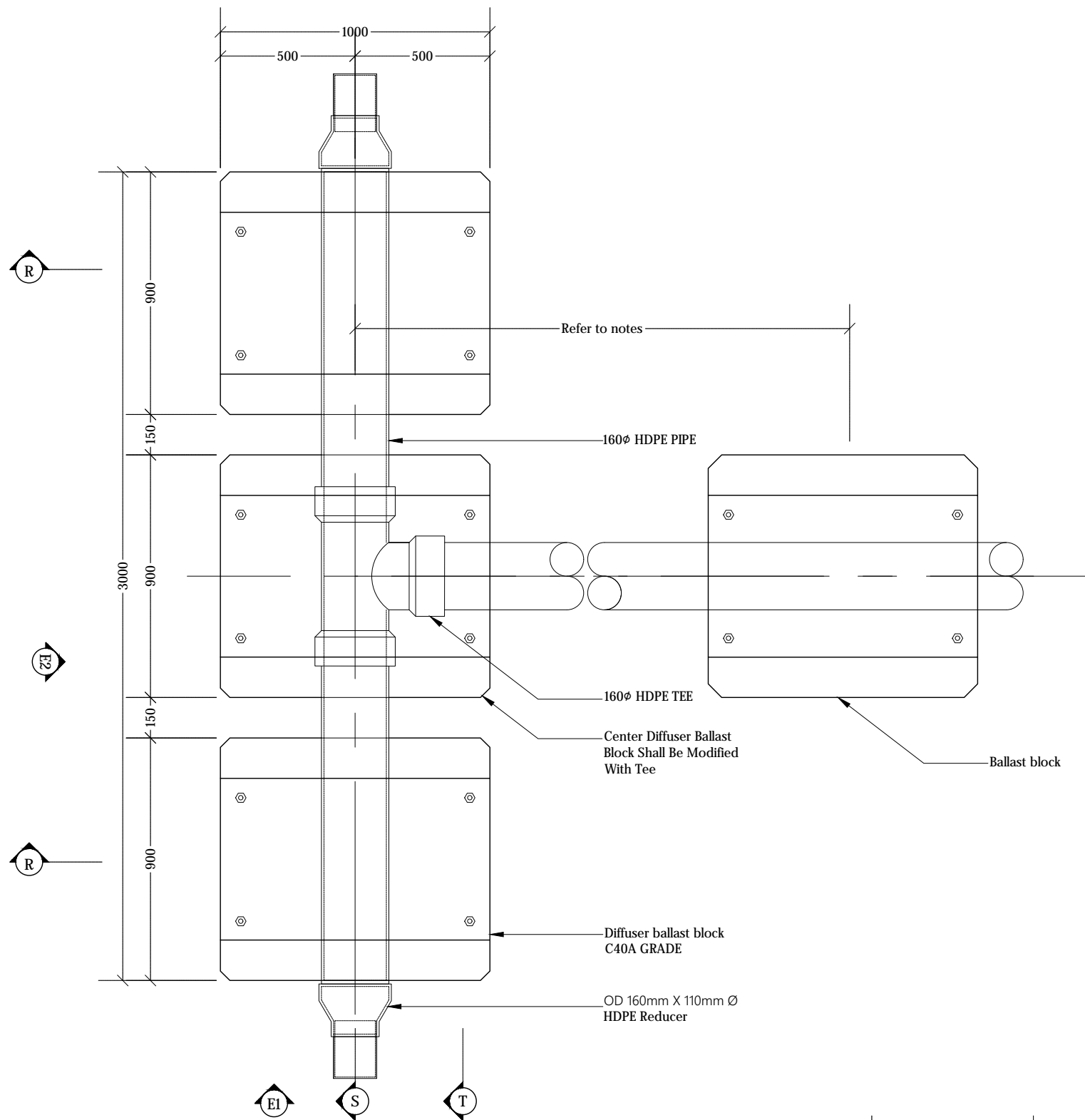


T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husnuheena Magu, Male', Maldives

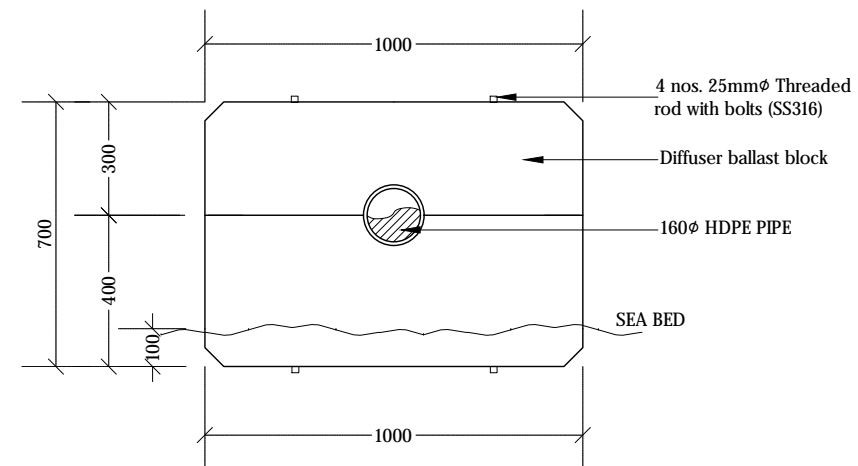


Feedback Infrastructure

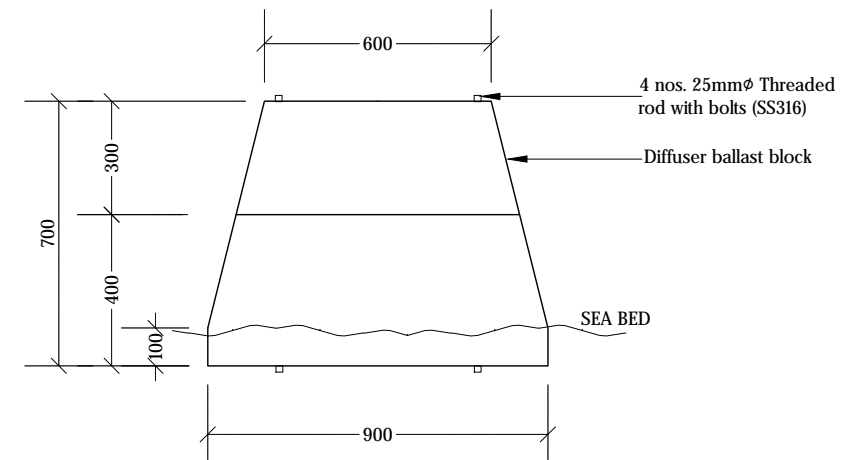
| | |
|---------------------------|-----------------|
| Drawn: F.I.A. | Checked: M.S.S. |
| Designed: F.I.A. | Approved: I.W. |
| Date: Sep 2020 | SCALE (A3): NTS |
| Project No: EP-WS/2019/05 | Page: W-(19) |



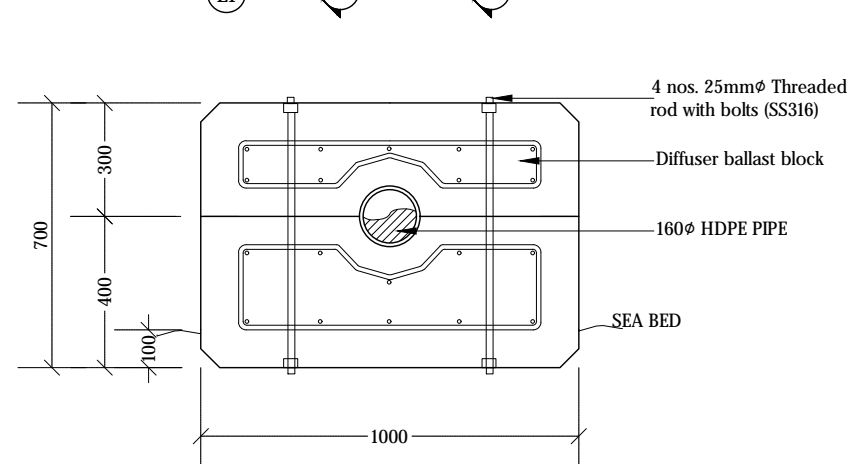
DIFFUSER BALLAST BLOCK PLAN



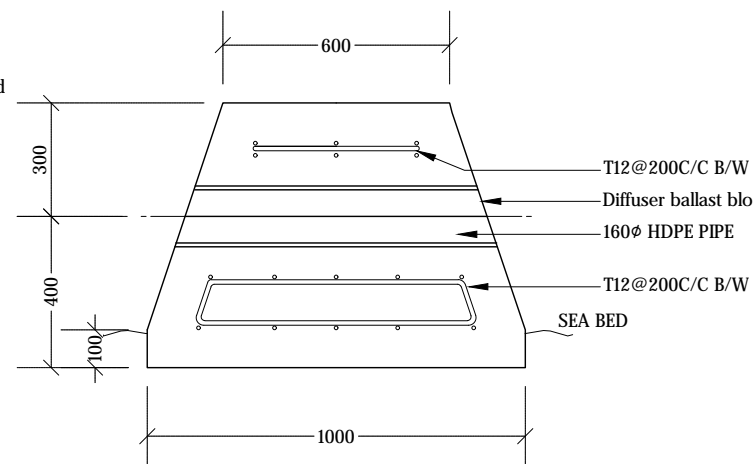
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E1



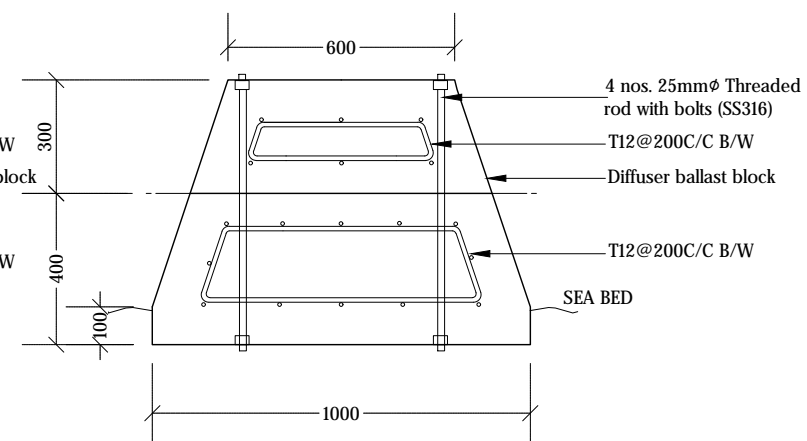
DIFFUSER BALLAST BLOCK FRONT ELEVATION - E2



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. Keyodhoo

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,
Hunnuheenna Magu, Male', Maldives

INFRA
SOLUTIONS

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

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

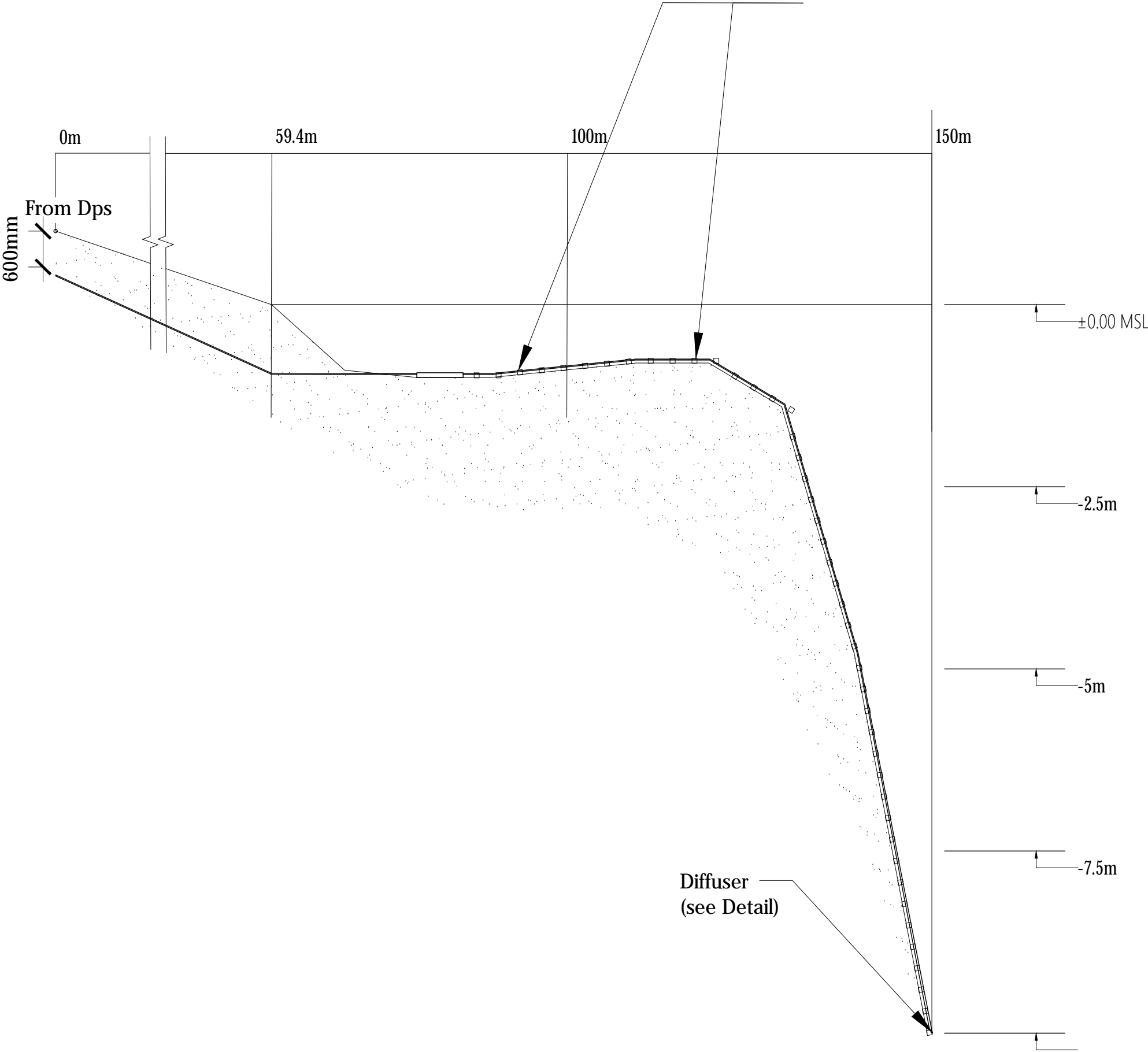
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(20)



Ballast Blocks Placed @ Regular Intervals (refer to notes for details)



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

Sub Title:
Sewerage System in V. Keyodhoo

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,
Husnuheena Magu, Male', Maldives



Maldivian Infrastructure Development

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

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

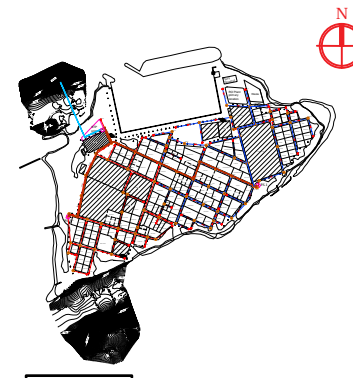
Date: Sep 2020 SCALE (A3): NTS

Project No: EP-WS/2019/05

Rev: Page: W-(21)



V. KEYODHOO SEWERAGE SYSTEM - PRESSURE NETWORK LAYOUT
1:2500



- 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

Sub Title:
Sewerage System in V. Keyodhoo

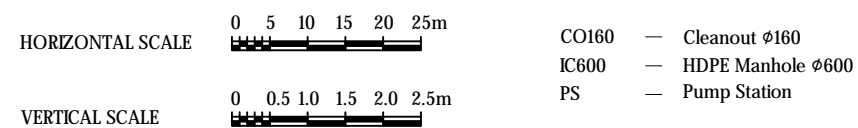
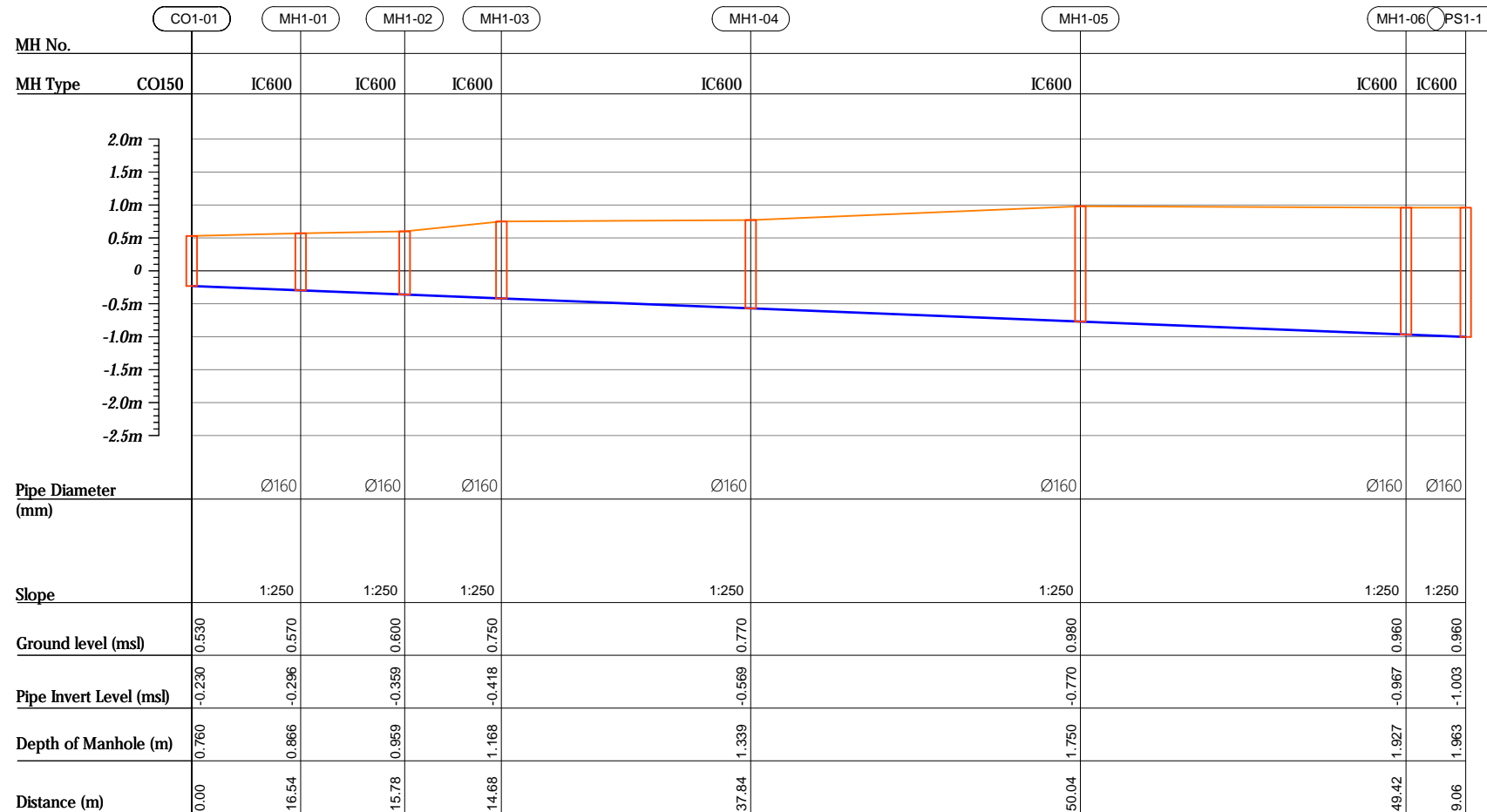
Client:
Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives

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
Rev: Page:
W-(22)

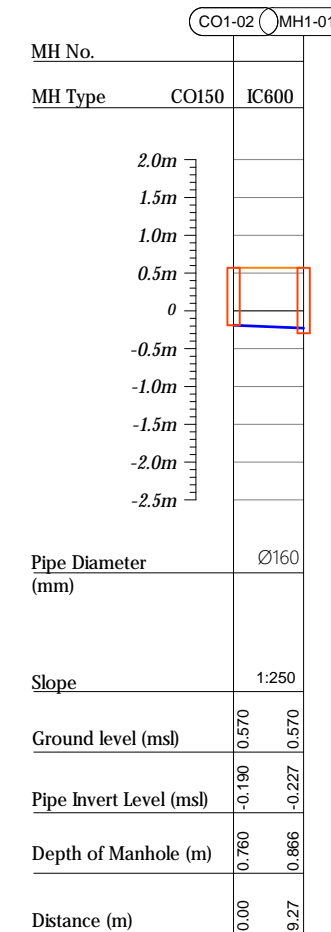
EPOCH
T: +960 333 3528
E: info@epochassociates
W: www.epochassociates
A: G. Rosary West,
Husnuheena Magu, Male', Maldives

DBACK INFRA
Building Infrastructure Happen

Profile 01



Profile 02



| | | | | | |
|-------------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

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



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

| | |
|---------------|--------------|
| Designed: EJA | Approved: LW |
|---------------|--------------|

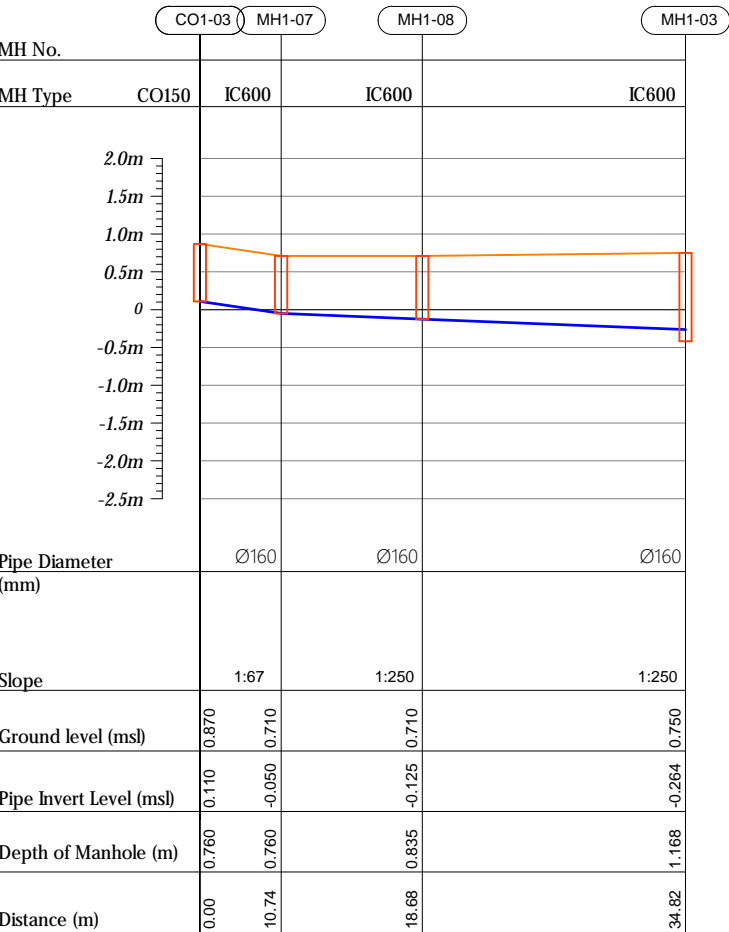
| | |
|----------------|-------------------|
| Date: Aug 2020 | SCALE (A3): 1:100 |
|----------------|-------------------|

Project No: 01010101

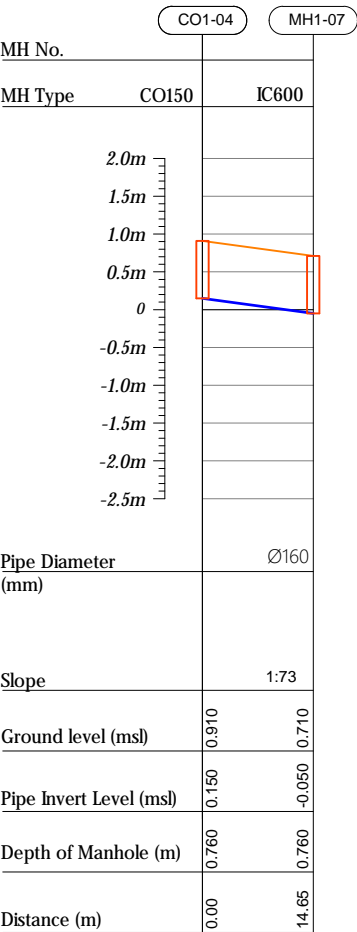
| | |
|------|-------|
| Rev: | Page: |
|------|-------|

| | |
|------|--------|
| R-01 | PS1-01 |
|------|--------|

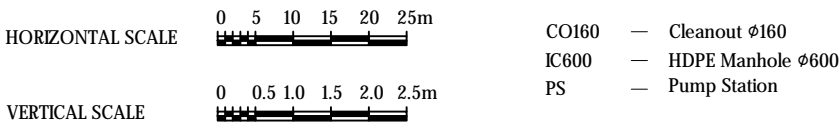
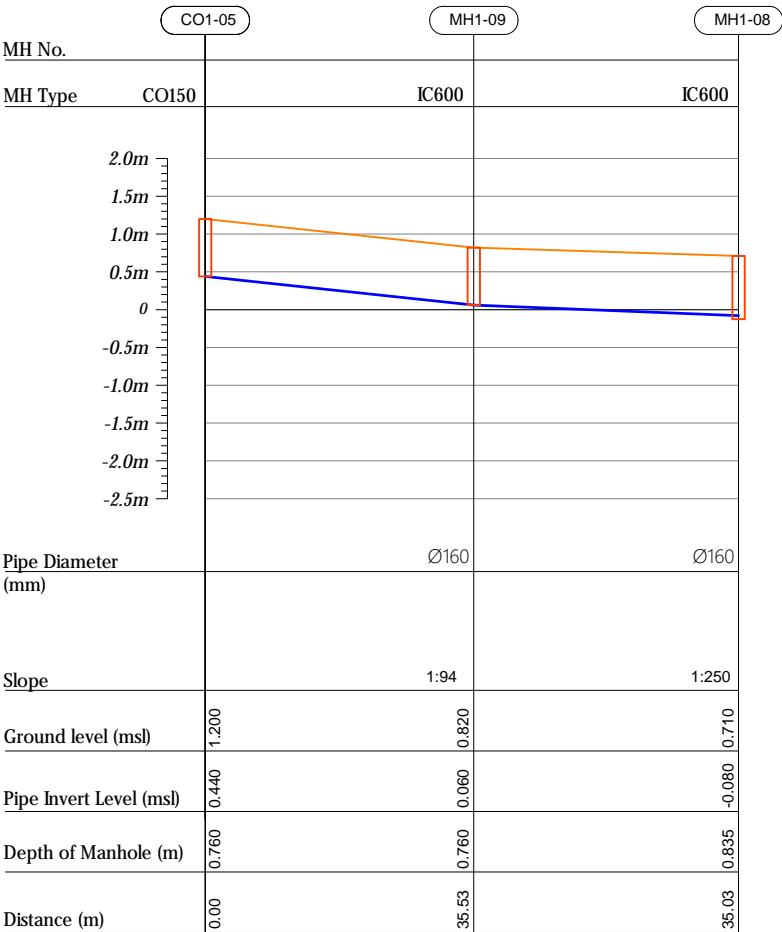
Profile 03



Profile 04



Profile 05



| | | | | | |
|-----------------|------------------|-----------------------------|--------------|-------------|--------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

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



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

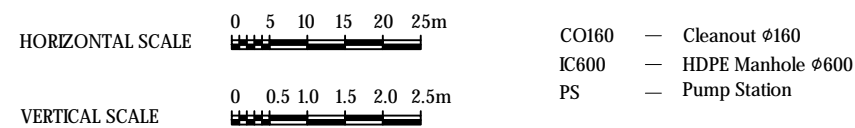
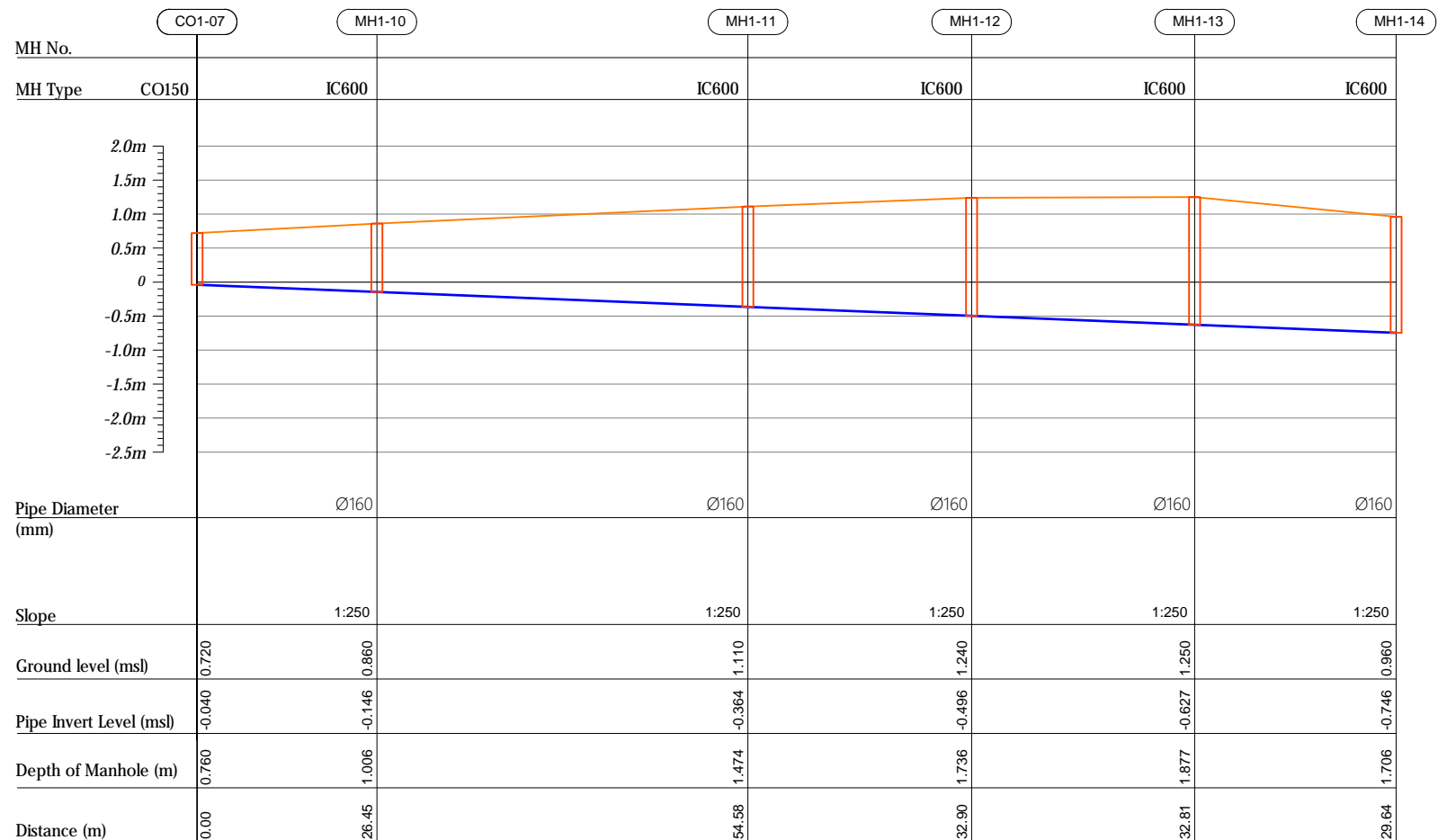
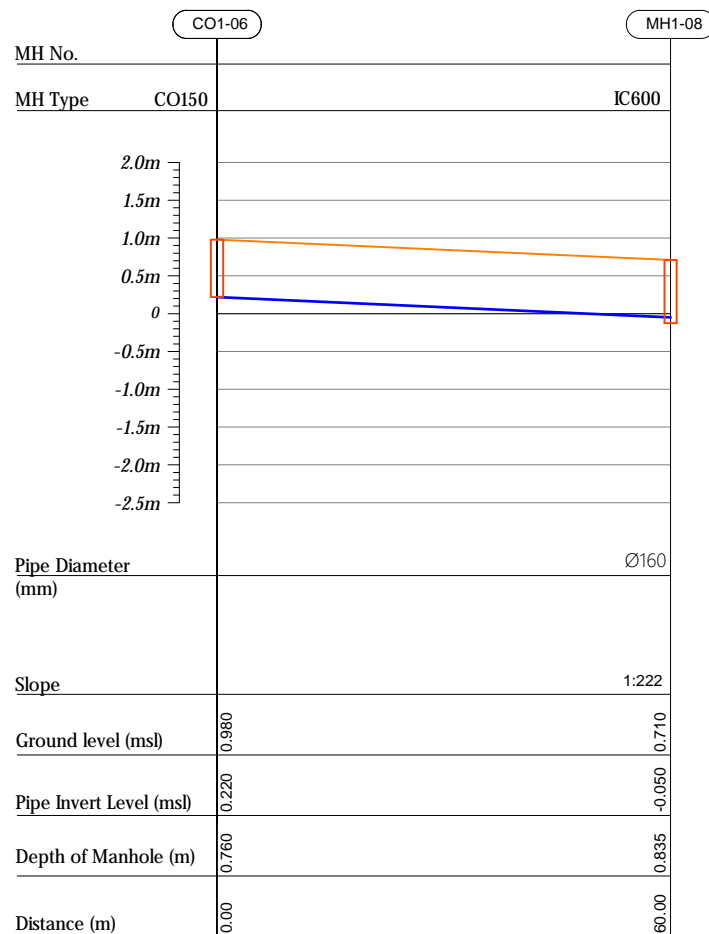
| | |
|-----------------|--------------|
| Designed: F.L.A | Approved: LW |
|-----------------|--------------|

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

Project No: 01010101

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

Profile 06




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

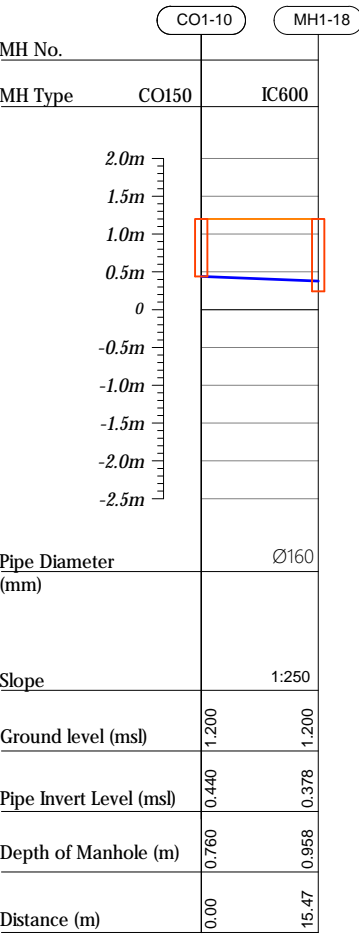
Title:
*Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package*

Sub Title:
Sewerage System in V.Keyodhoo

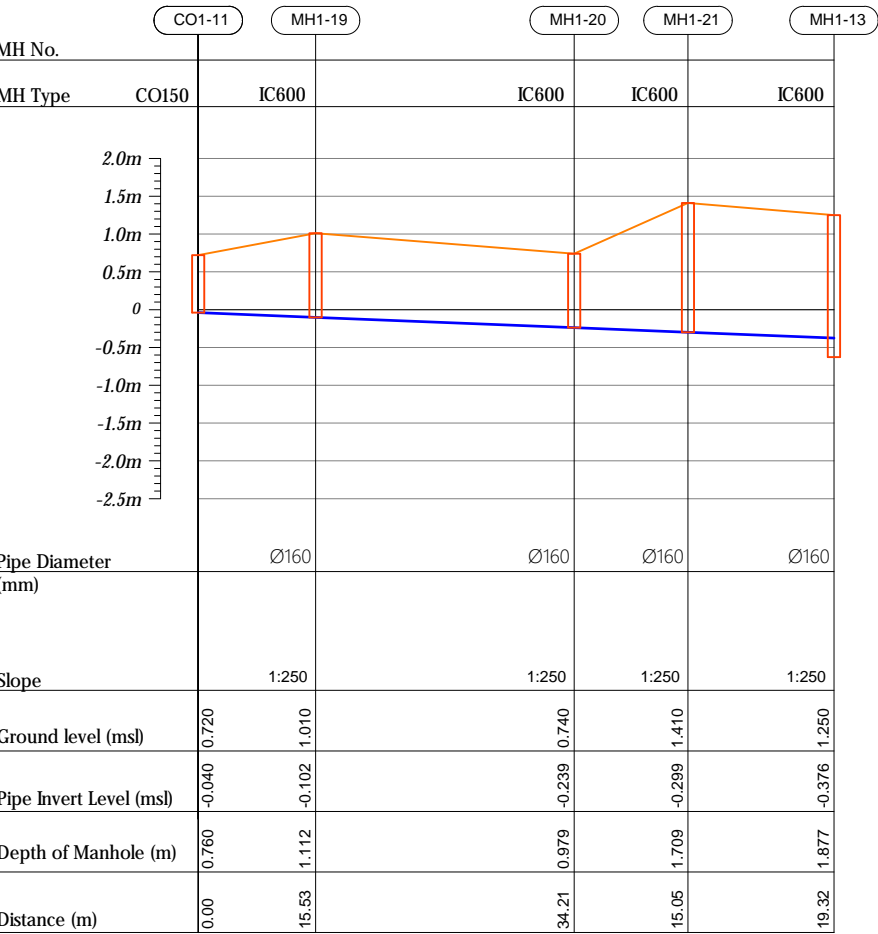
Client:
*Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives*

| | |
|---|--|
|  EPOCH ASSOCIATES | INFRA Matching Software & Hardware |
| T: +960 333 3528 E: info@epoch.associates W: www.epoch.associates A: G. Rosary West, Hunsunheemaa Magu, Male', Maldives | |
| 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 | |
| Rec: R-01 | Page: PS1-03 |

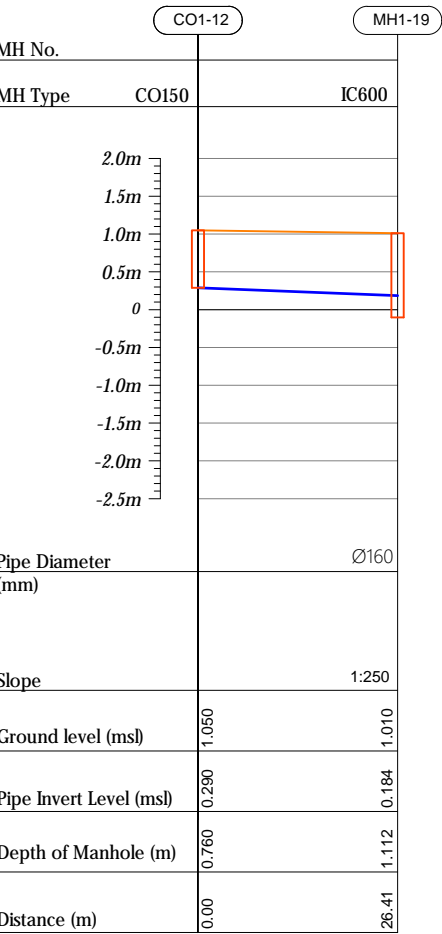
Profile 10



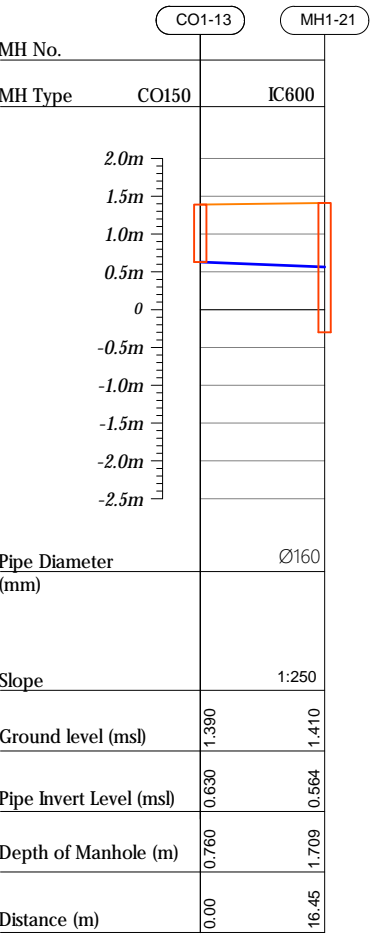
Profile 11



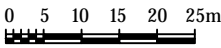
Profile 12



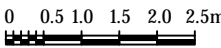
Profile 13



HORIZONTAL SCALE



VERTICAL SCALE



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

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

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

Sub Title:
Sewerage System in V.Keyodhoo

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

DBAC INFRA
Maldivu Infrastructure Develop

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

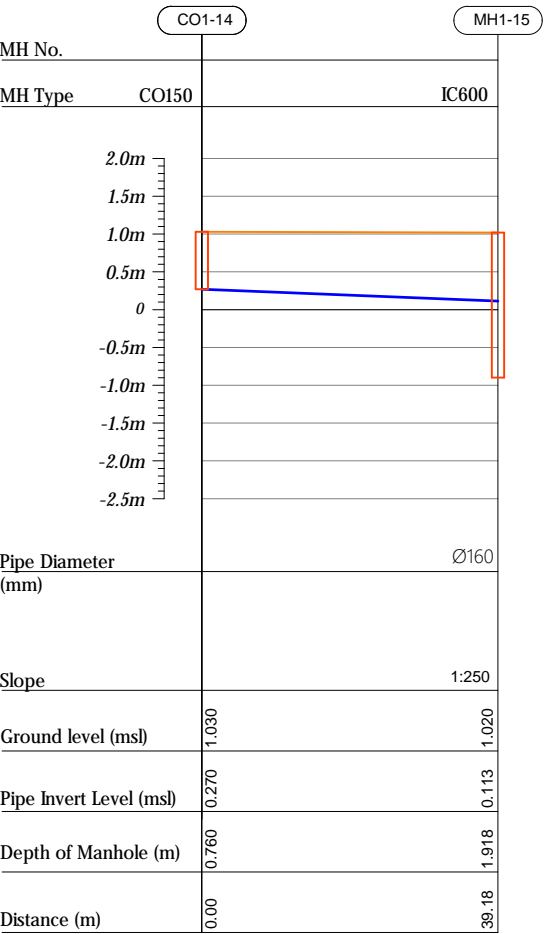
Designed: F.I.A Approved: L.W

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

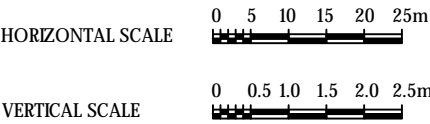
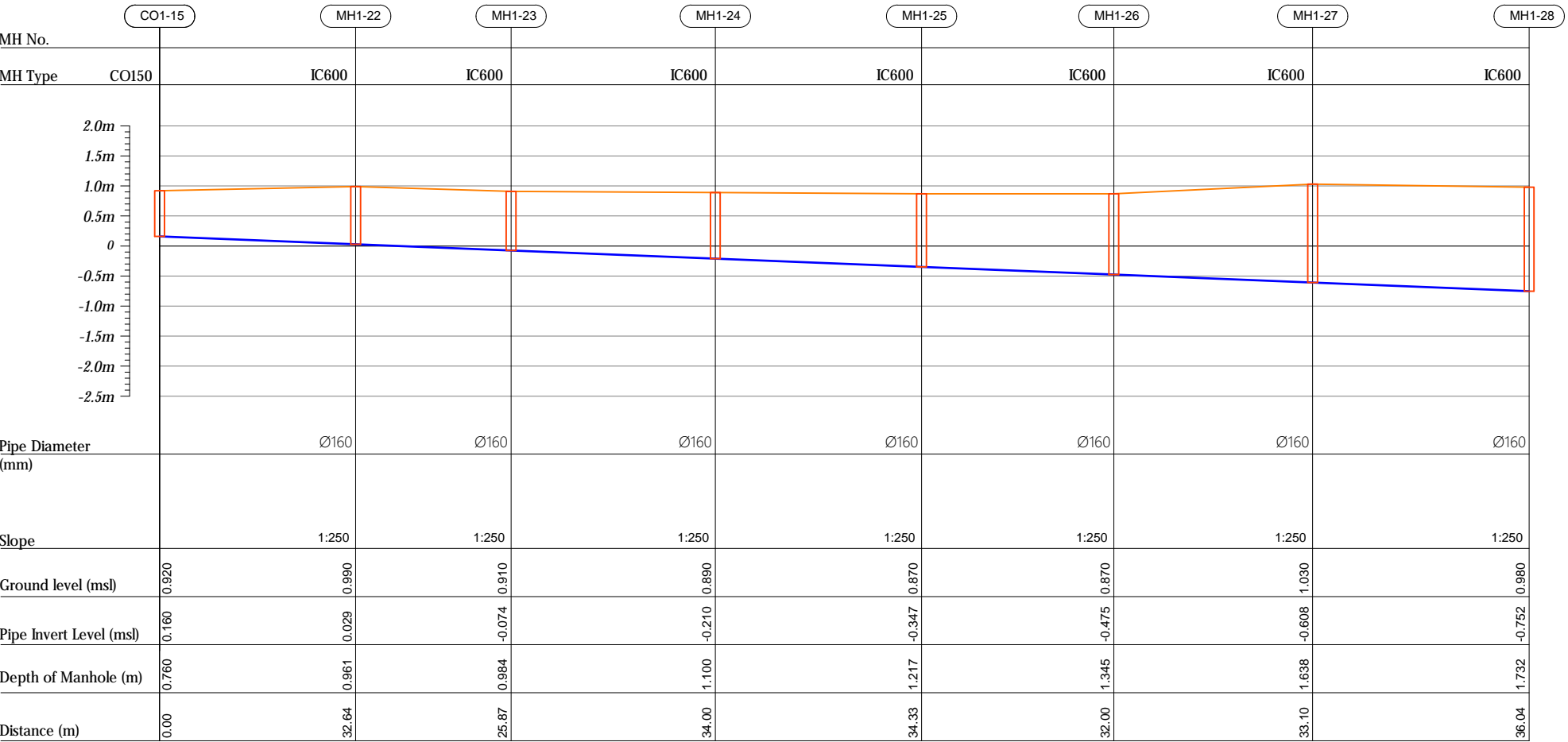
Project No: 01010101

Rev: R-01 Page: PS1-05

Profile 14



Profile 15



- 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

Sub Title:
Sewerage System in V.Keyodhoo

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

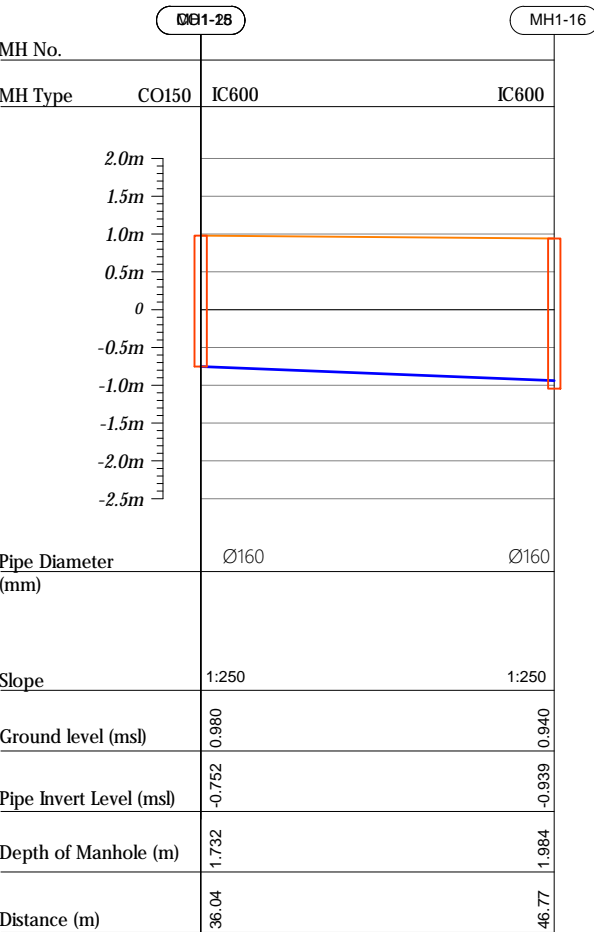


T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West,
Hussuvehemaa Magu, Male', Maldives

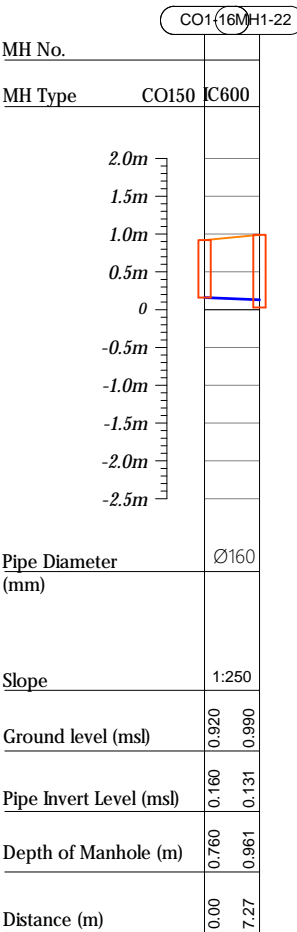
DBAC INFRA
Maldivu Infrastructure Developm

| | |
|----------------------|-------------------|
| Drawn: A.R.W | Checked: M.S.S |
| Designed: F.L.A | Approved: LW |
| Date: Aug 2020 | SCALE (A3): 1:100 |
| Project No: 01010101 | |
| Rev: R-01 | Page: PS1-06 |

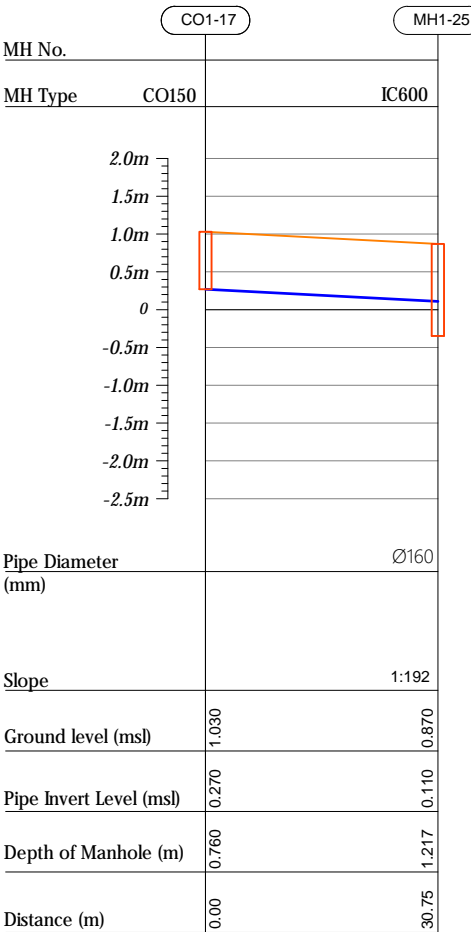
Profile 15



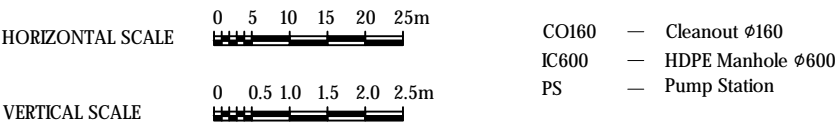
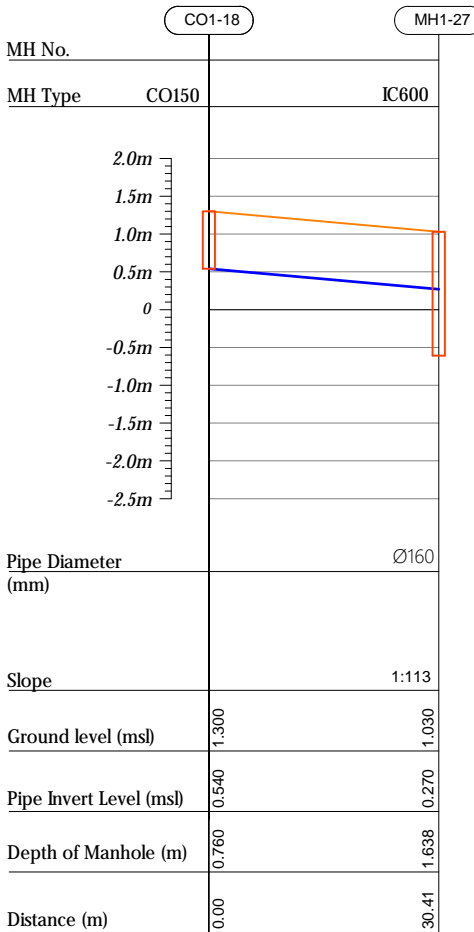
Profile 16



Profile 17



Profile 18



| | | | | | |
|-------------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

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



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

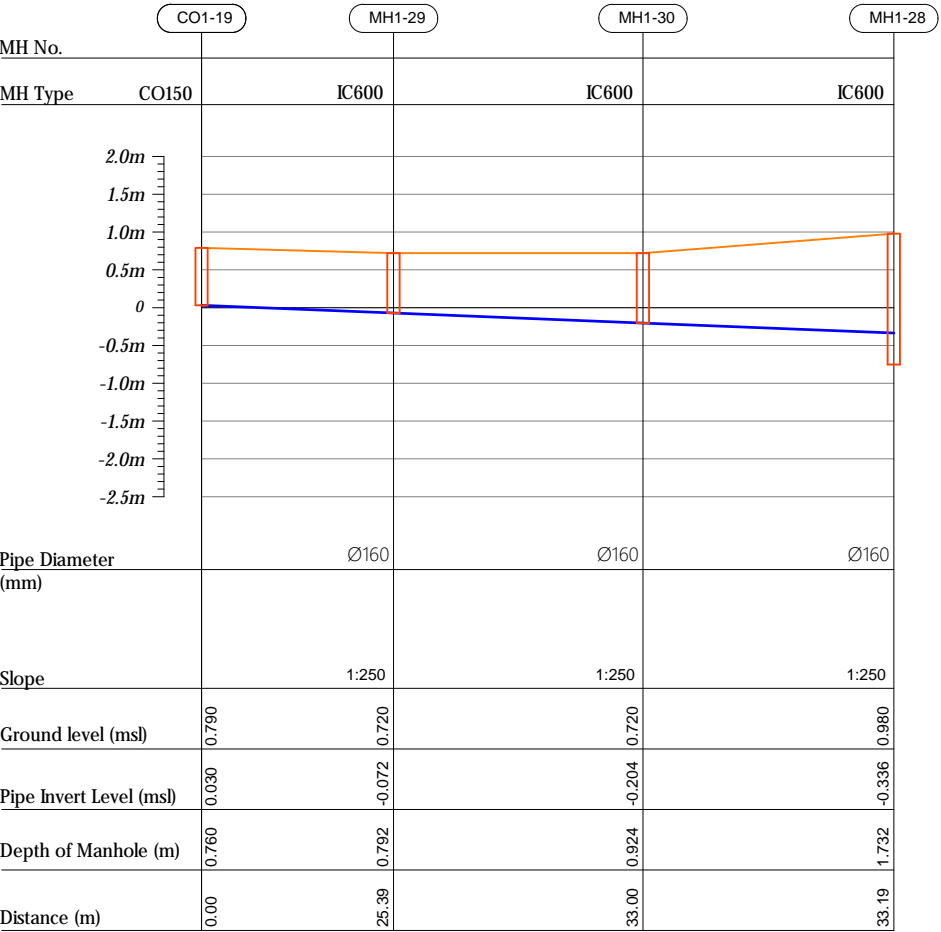
| | |
|-----------------|--------------|
| Designed: F.L.A | Approved: LW |
|-----------------|--------------|

Date: Aug 2020

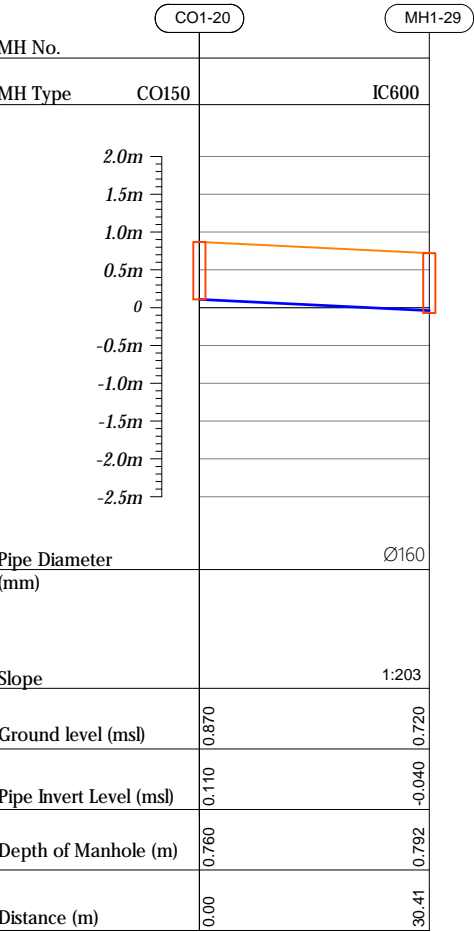
Project No: 01010101

| | |
|---------------------|------------------------|
| Rev: <i>R-01</i> | Page: <i>PS1-07</i> |
|---------------------|------------------------|

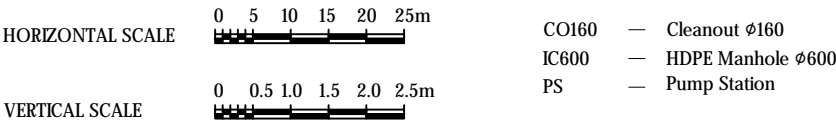
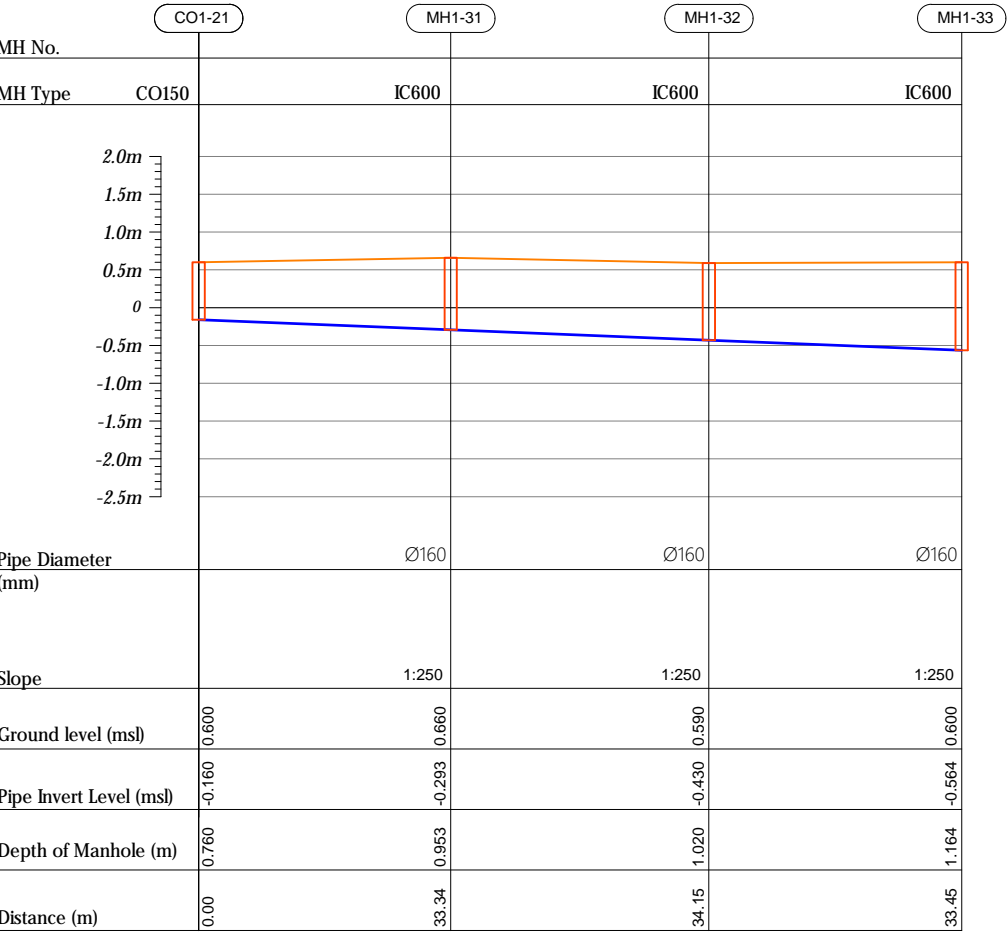
Profile 19



Profile 20



Profile 21



| | | | | | |
|----------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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

Sub Title:
Sewerage System in V.Keyodhoo

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

DBAC

INFRA

Making Infrastructure Happen

Drawn: A.R.W

Checked: M.S.S

Designed: F.I.A

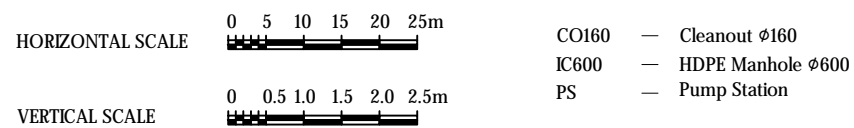
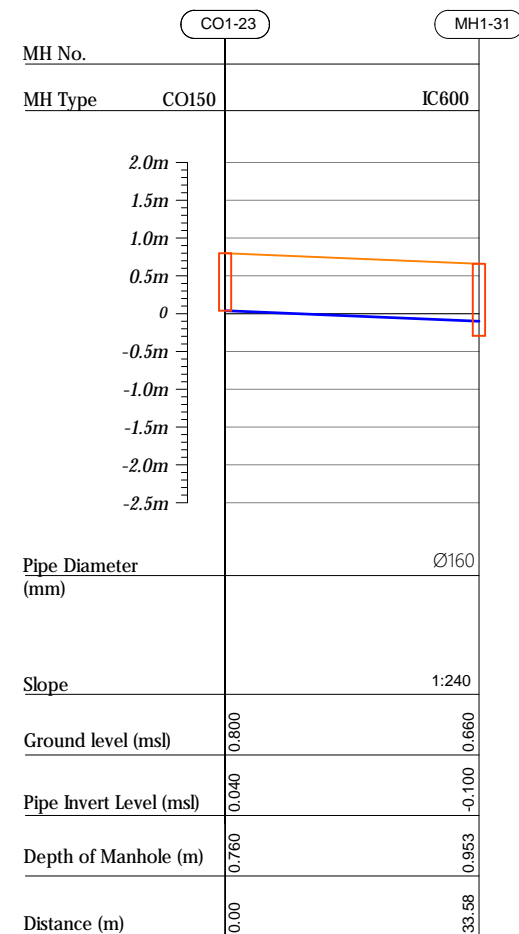
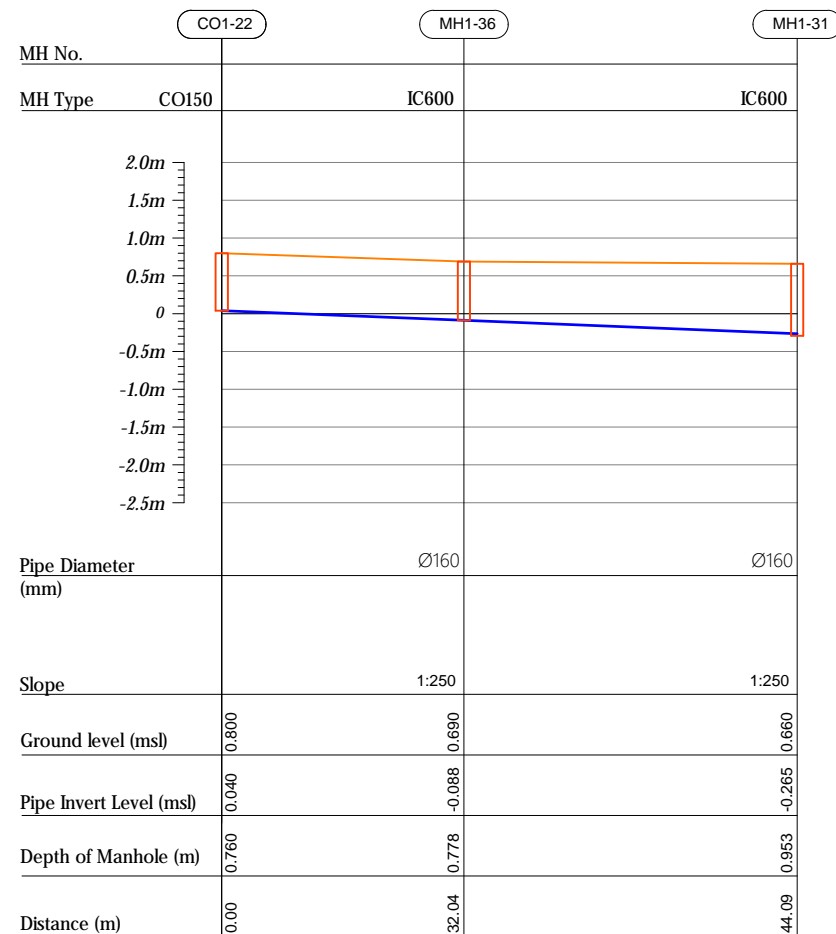
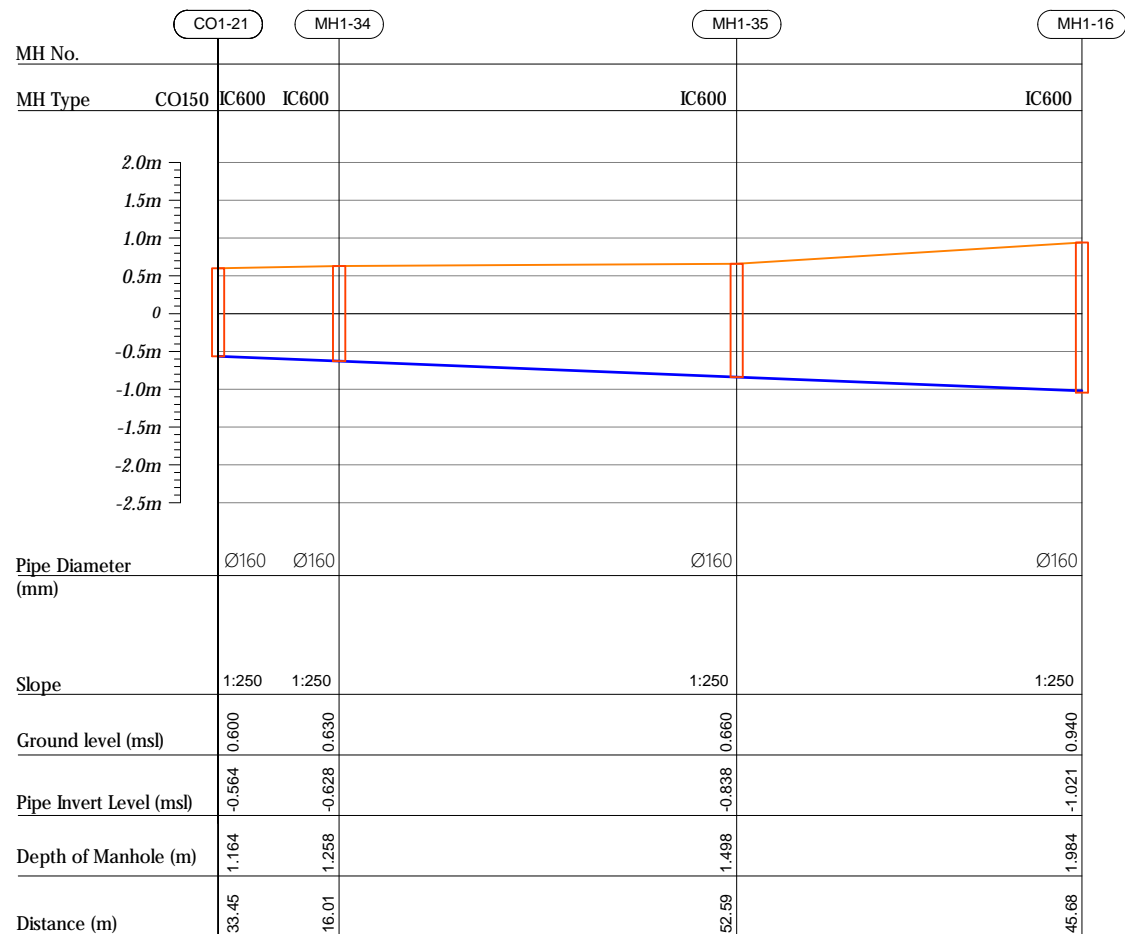
Approved: LW

Date: Aug 2020

SCALE (A3): 1:100

Project No: 01010101

Profile 21



| | | | | | |
|-------------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 000 | JUNE 2020 | STAGE -1 | PD | SEC | 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*

Sub Title:
Sewerage System in V.Keyodhoo

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



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

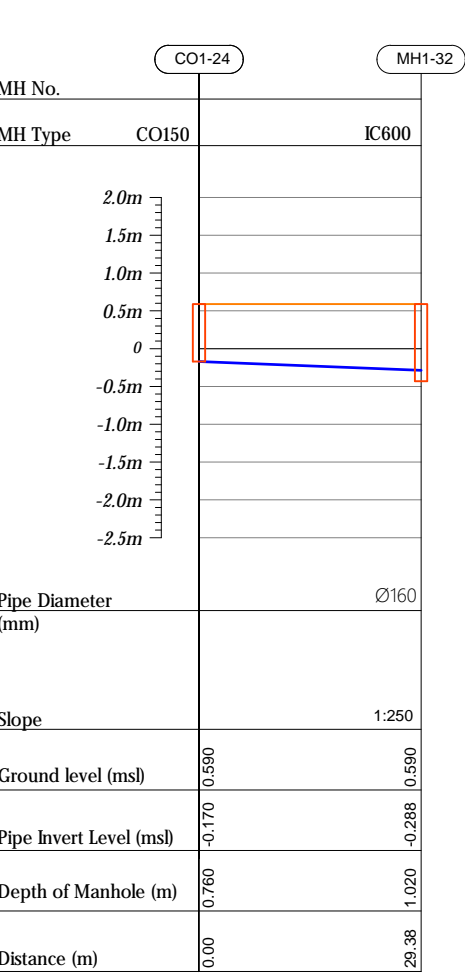
| | |
|-----------------|--------------|
| Designed: F.L.A | Approved: LW |
|-----------------|--------------|

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

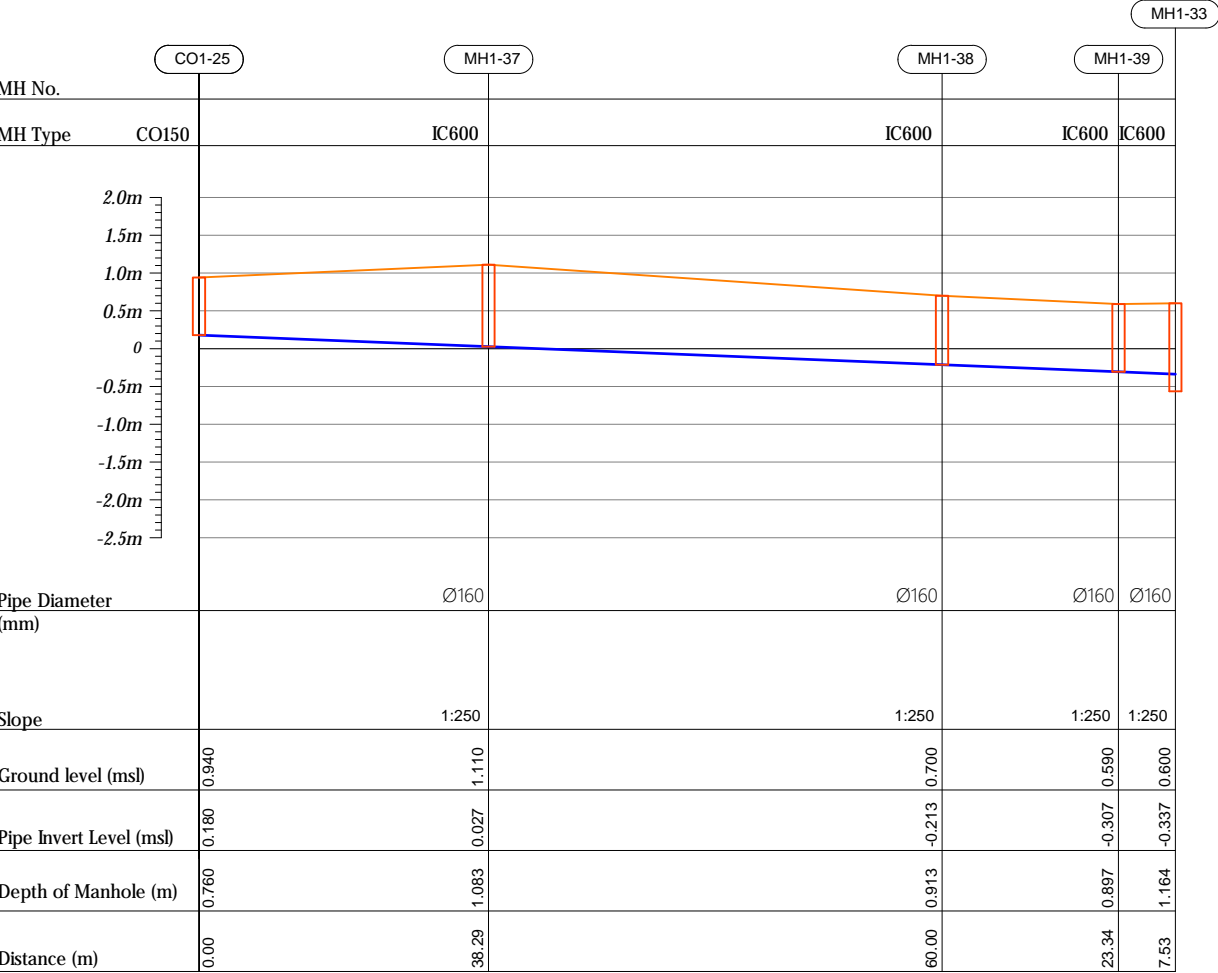
Project No: 01010101

| | |
|---------------------|------------------------|
| Rev: <i>R-01</i> | Page: <i>PS1-09</i> |
|---------------------|------------------------|

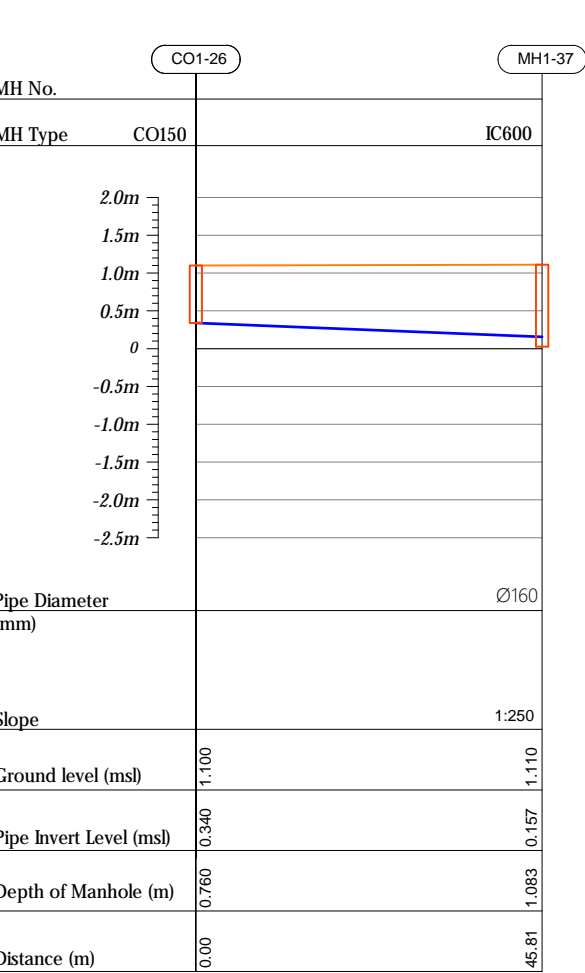
Profile 24



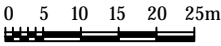
Profile 25



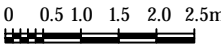
Profile 26



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

Sub Title:
Sewerage System in V.Keyodhoo

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,
Hussuvehena Magu, Male', Maldives



Maldivu Infrastructure Develop

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

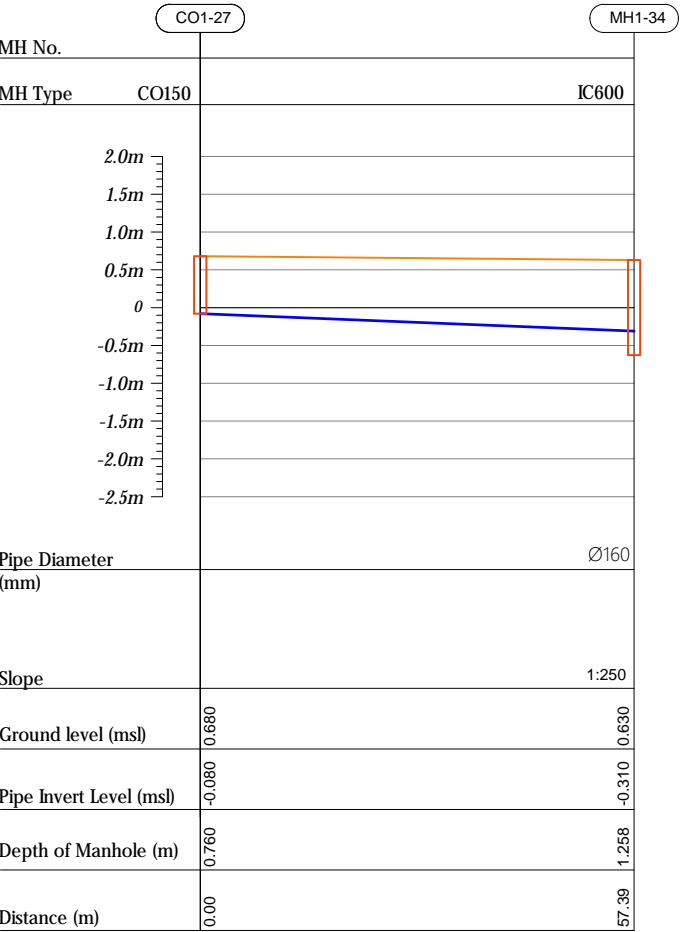
Designed: F.L.A Approved: L.W

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

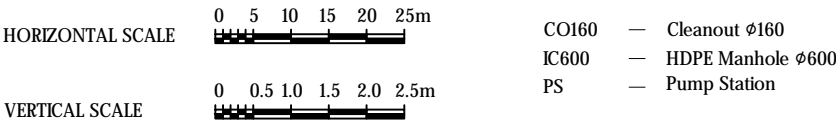
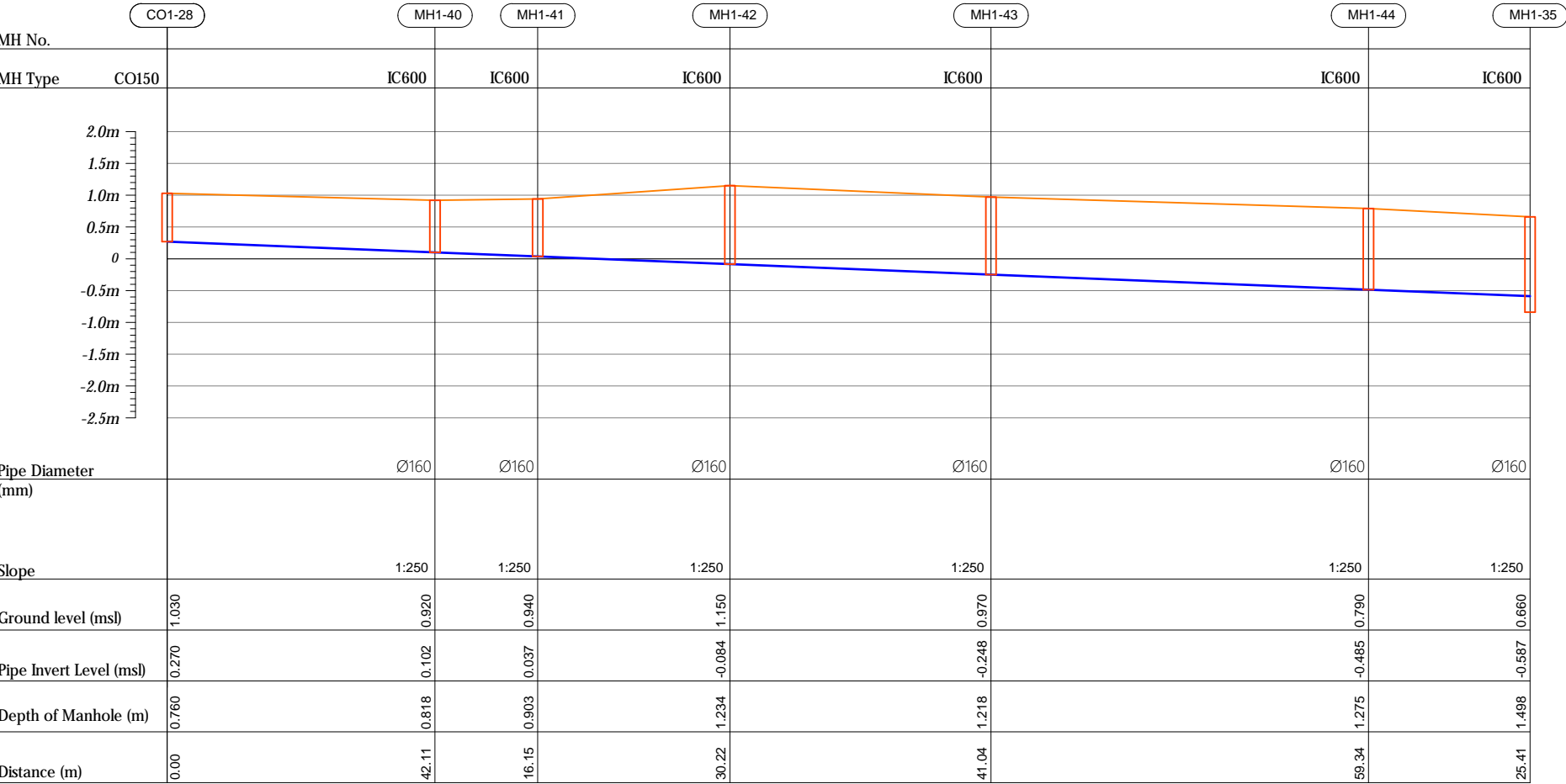
Project No: 01010101

Rev: R-01 Page: PS1-10

Profile 27



Profile 28



| | | | | | |
|----------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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

Sub Title:
Sewerage System in V.Keyodhoo

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,
Hussuvehemaa Magu, Male', Maldives

DBAC

INFRA

Makhuq Infrastructure

Maldives

Drawn: A.R.W

Designed: F.L.A

Date: Aug 2020

Project No: 01010101

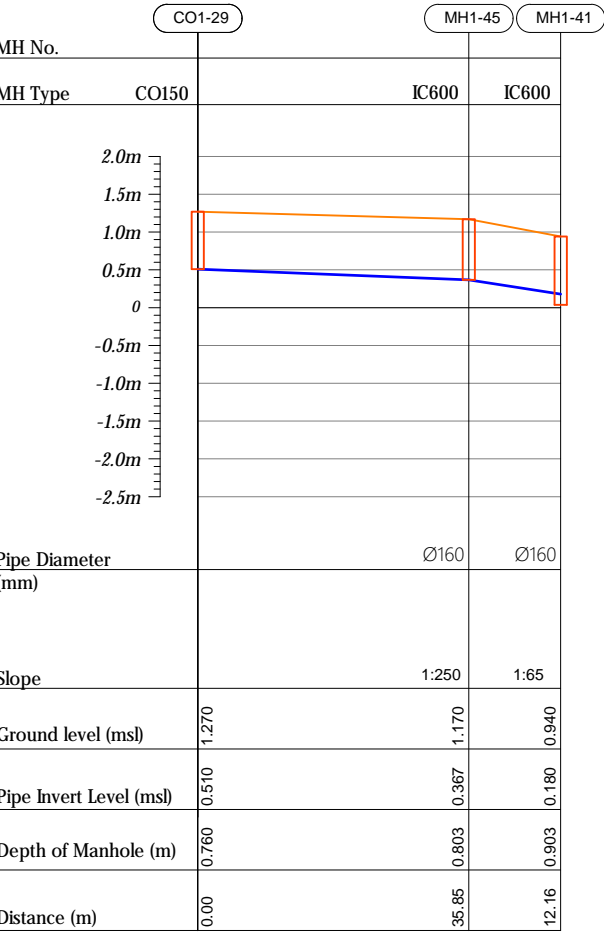
Checked: M.S.S

Approved: LW

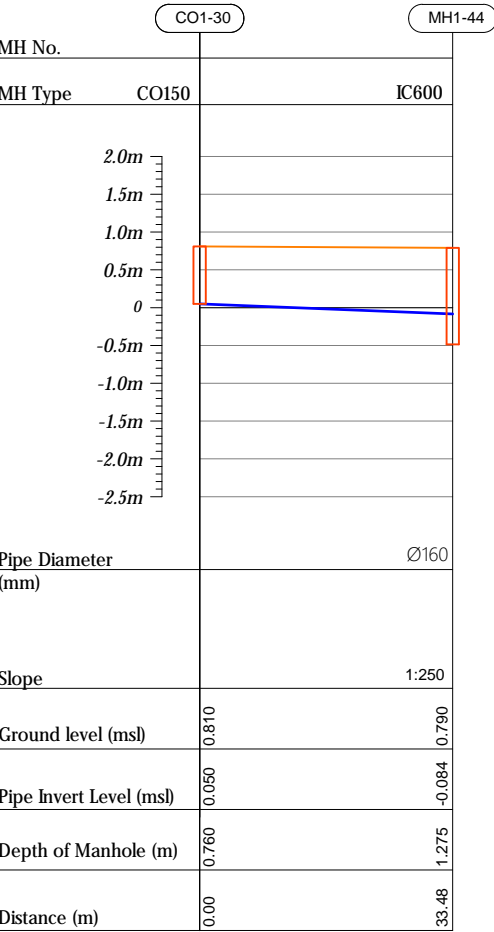
SCALE (A3): 1:100

Page: PS1-11

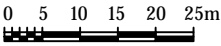
Profile 29



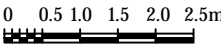
Profile 30



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

Sub Title:
Sewerage System in V.Keyodhoo

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



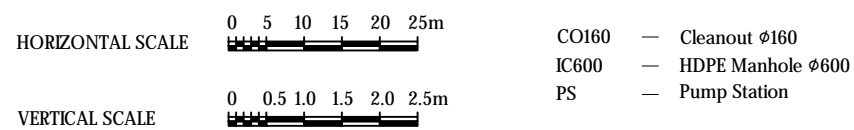
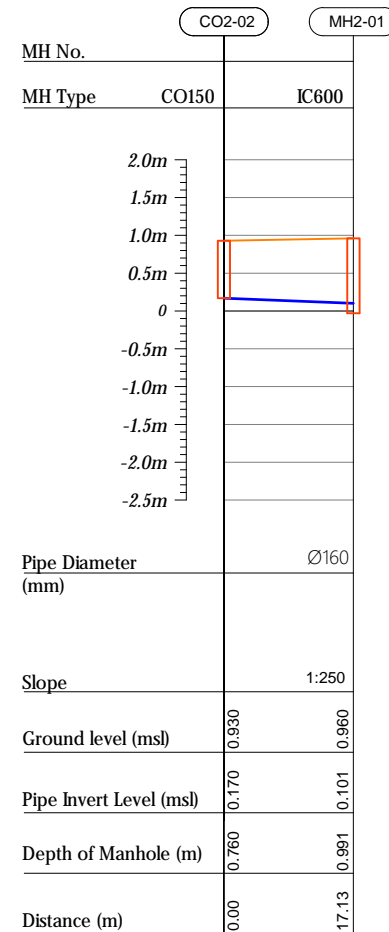
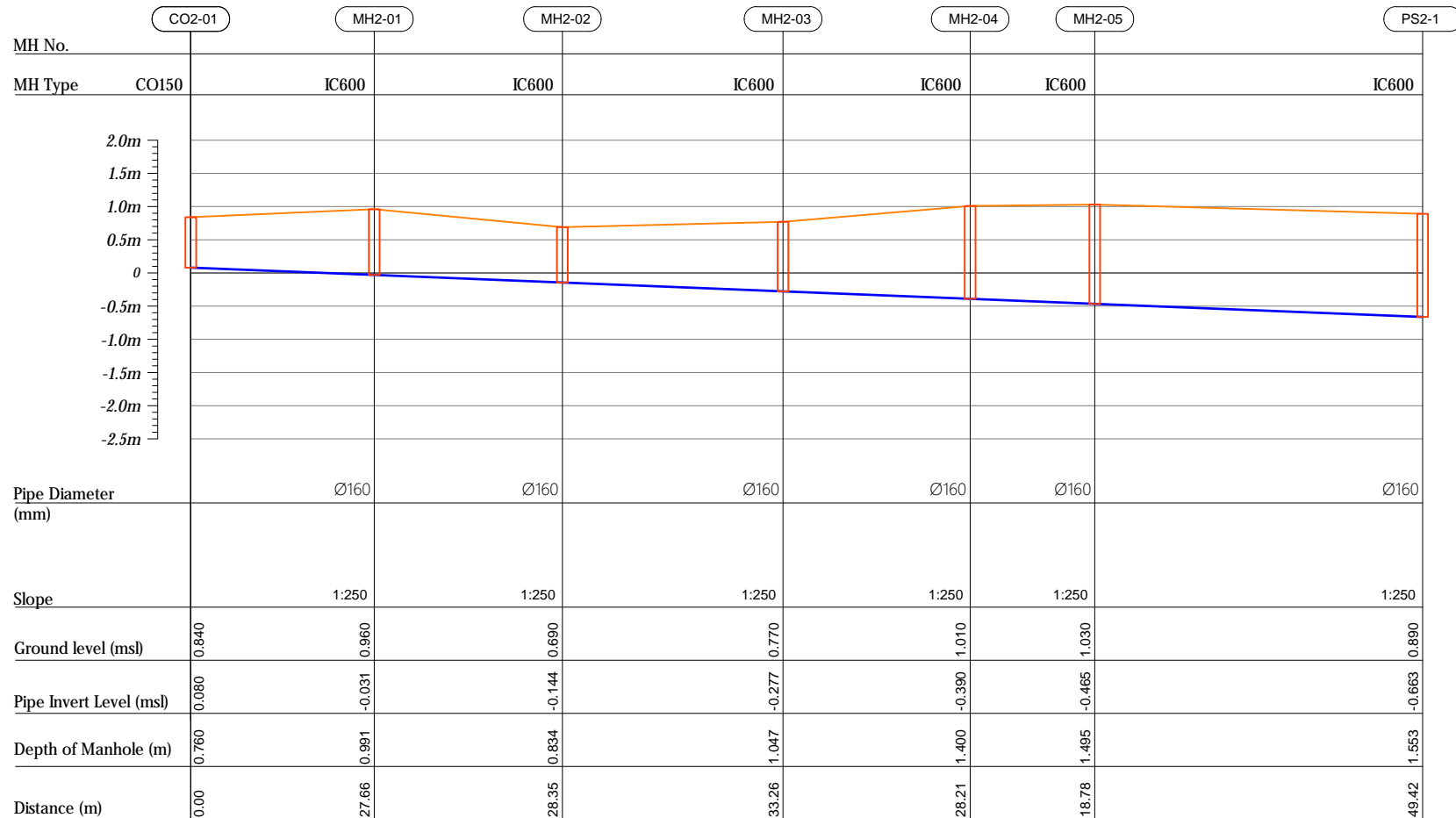
T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West,
Hussuvehemaa Magu, Male', Maldives



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: PS1-12 |

Profile 01




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

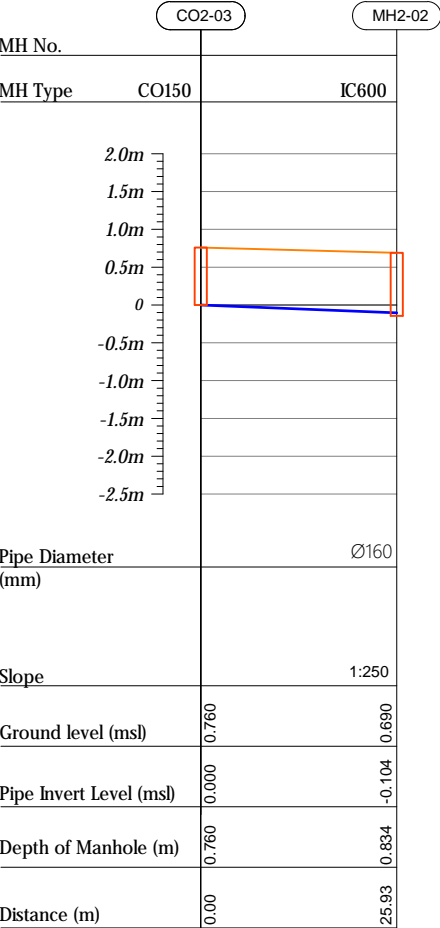
Title:
*Consultancy Services for Survey,
Design and EIA works of Water
Supply and Sewerage Facilities in
6 islands, Maldives - Package*

Sub Title:
Sewerage System in V.Keyodhoo

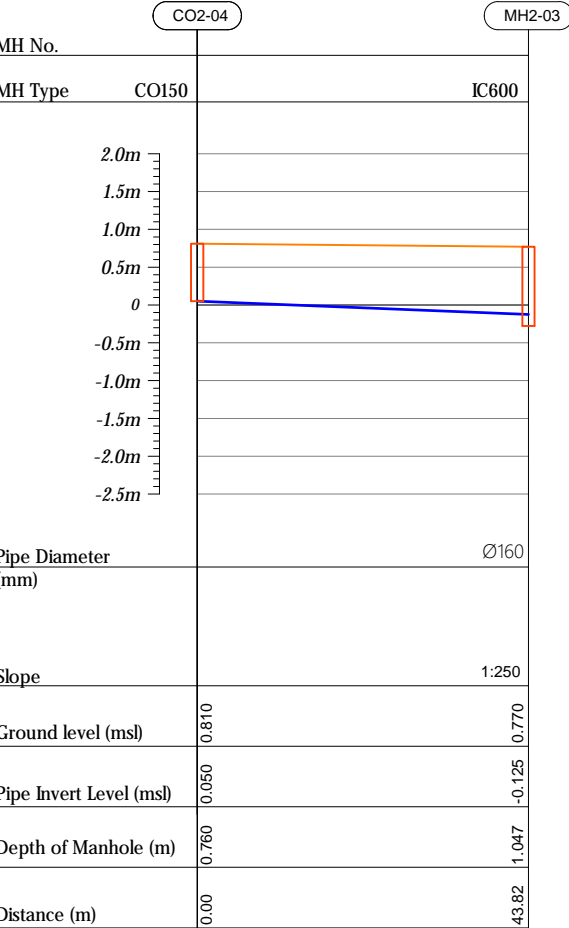
Client:
*Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives*

| | |
|--|--|
|  EPOCH ASSOCIATES | FEDBACK INFRA Making Softwarecare Happen |
| T: +960 333 3528 E: info@epochassociates W: www.epochassociates A: G. Rosary West, Hunsuhecmaa Magu, Male', Maldives | |
| 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 | |
| Recv: R-01 | Page: PS2-01 |

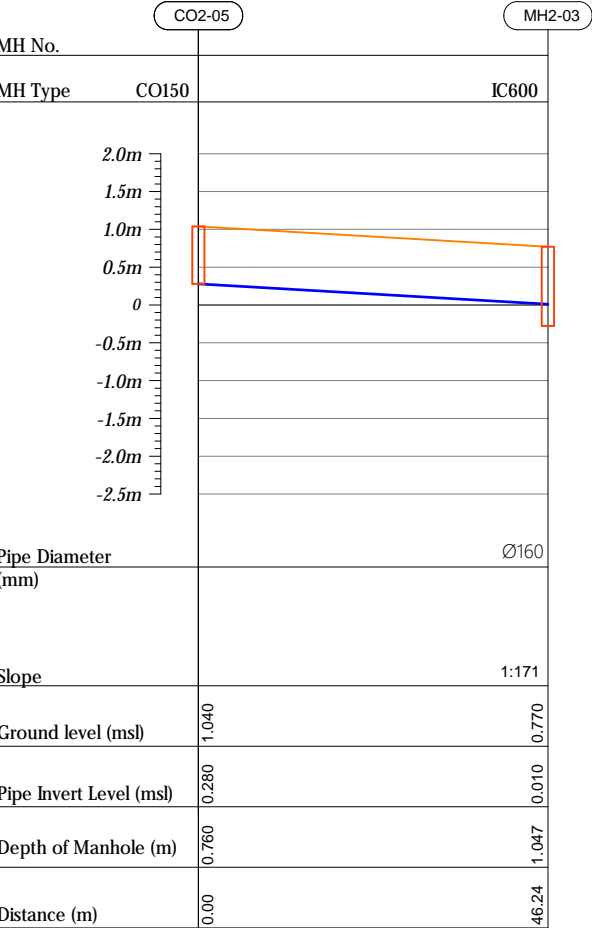
Profile 03



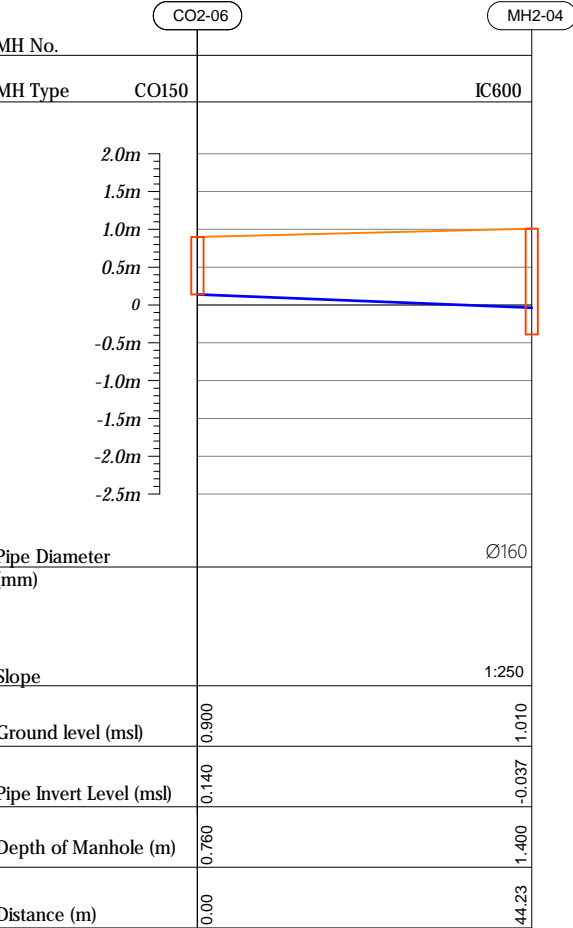
Profile 04



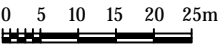
Profile 05



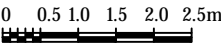
Profile 06



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

Sub Title:
Sewerage System in V.Keyodhoo

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

DBAC INFRA
Maldivu Infrastructure Develop

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

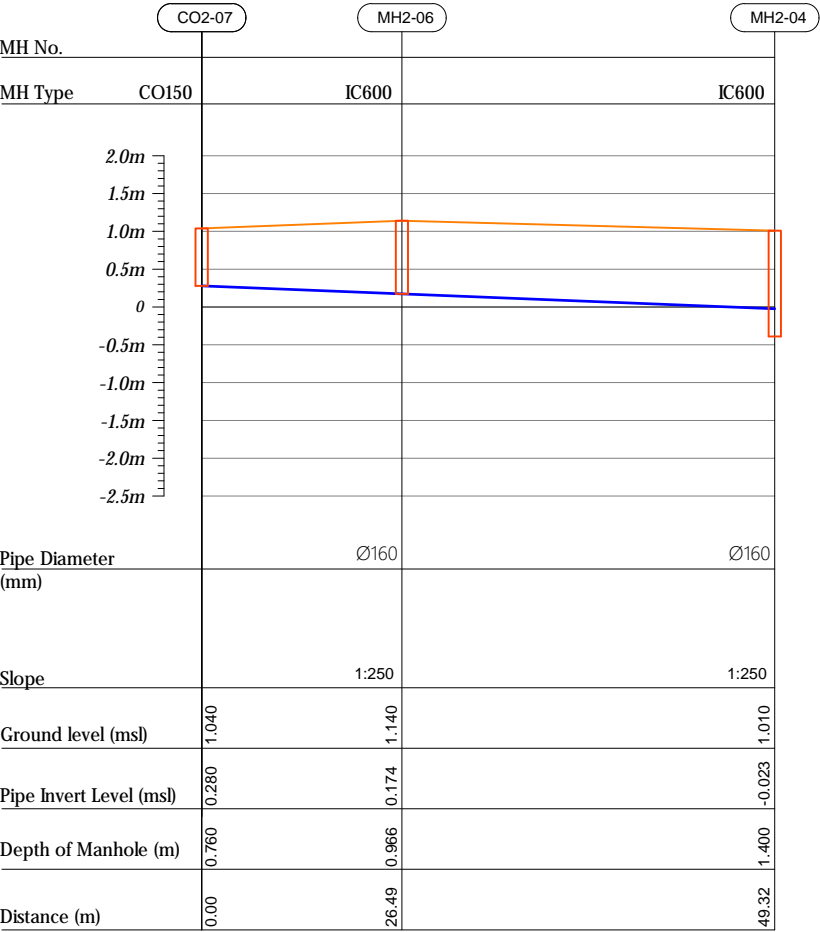
Designed: F.L.A Approved: L.W

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

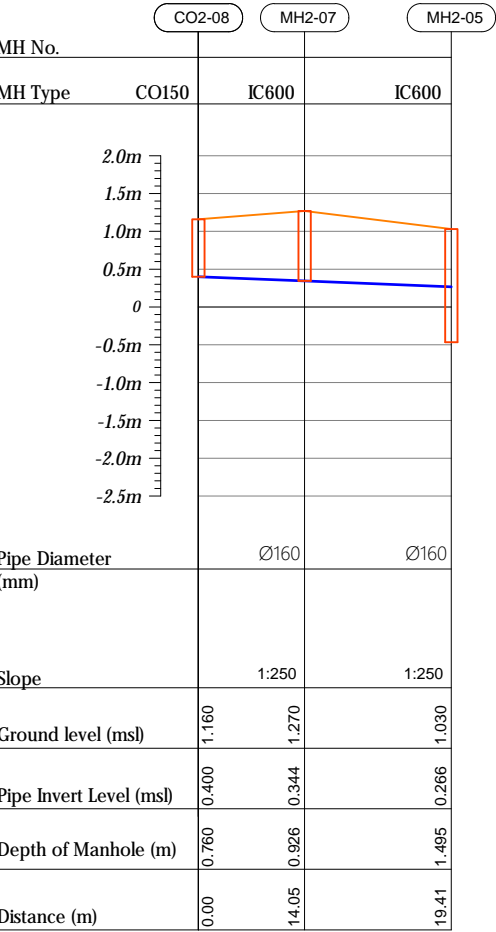
Project No: 01010101

Rev: R-01 Page: PS2-02

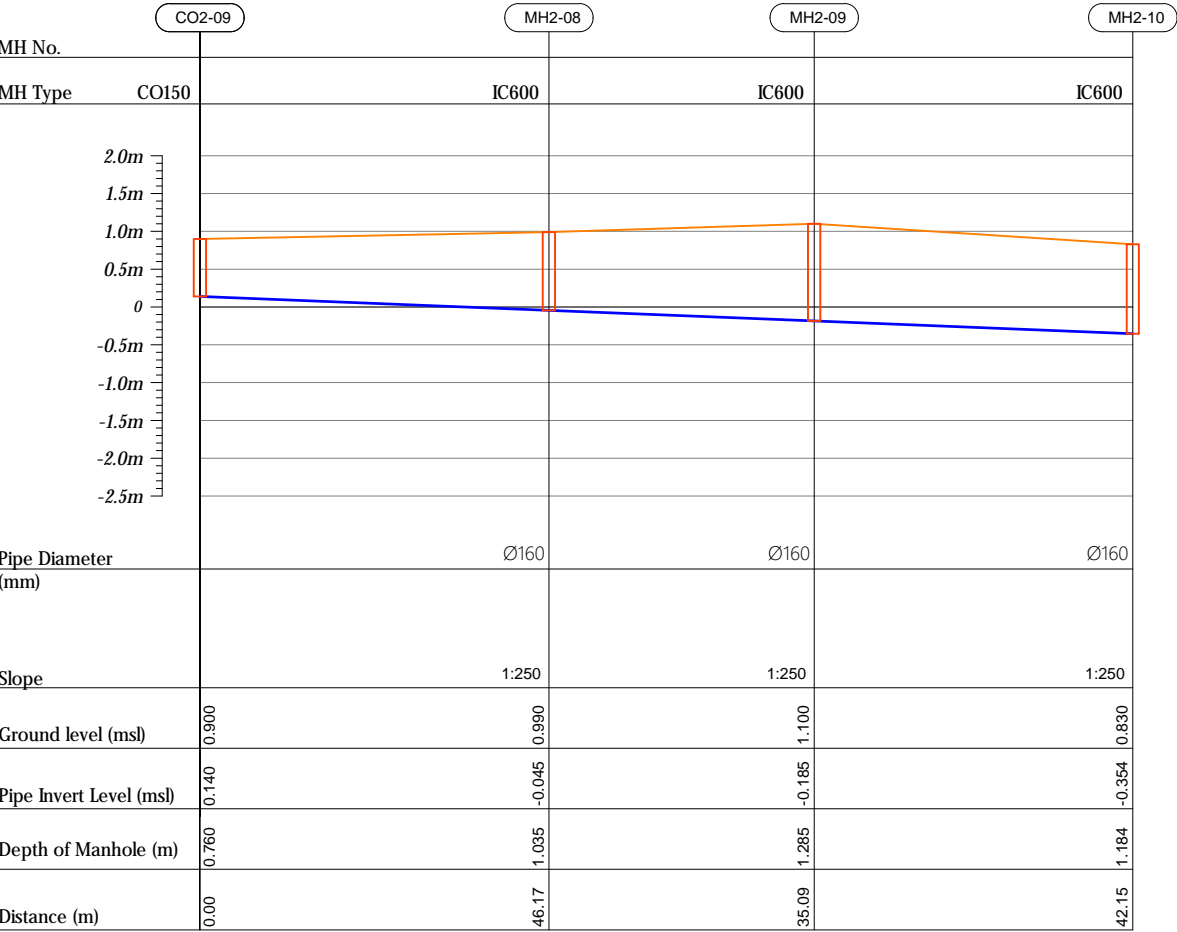
Profile 07



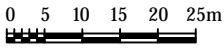
Profile 08



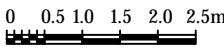
Profile 09



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

Sub Title:
Sewerage System in V.Keyodhoo

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,
Hussuvehena Magu, Male', Maldives



Drawn: A.R.W

Checked: M.S.S

Designed: F.L.A

Approved: L.W

Date: Aug 2020

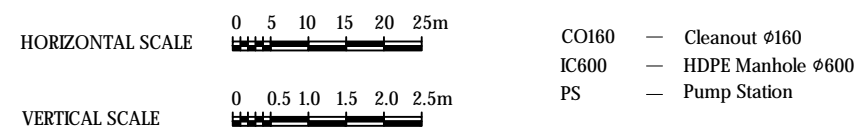
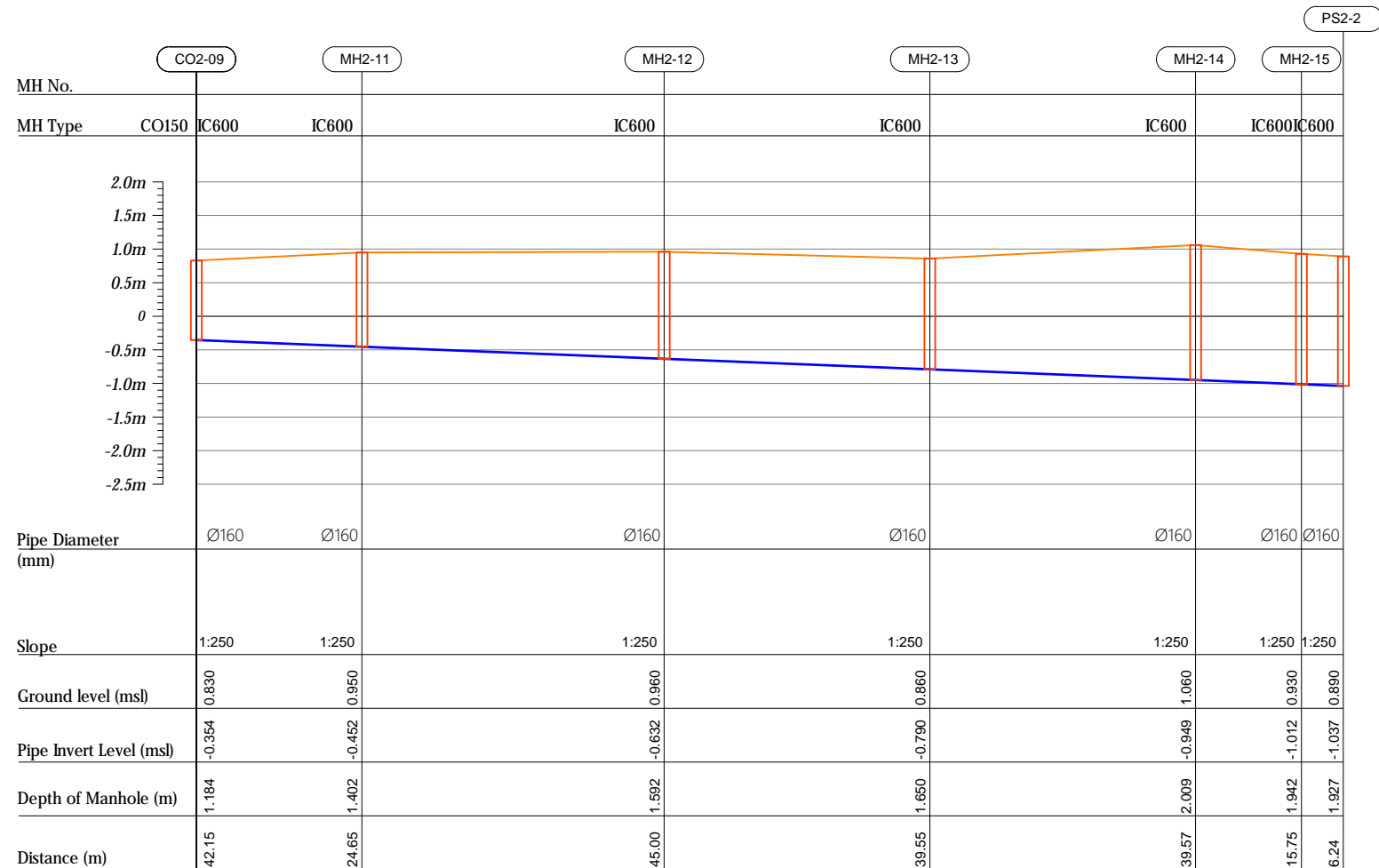
SCALE (A3): 1:100

Project No: 01010101

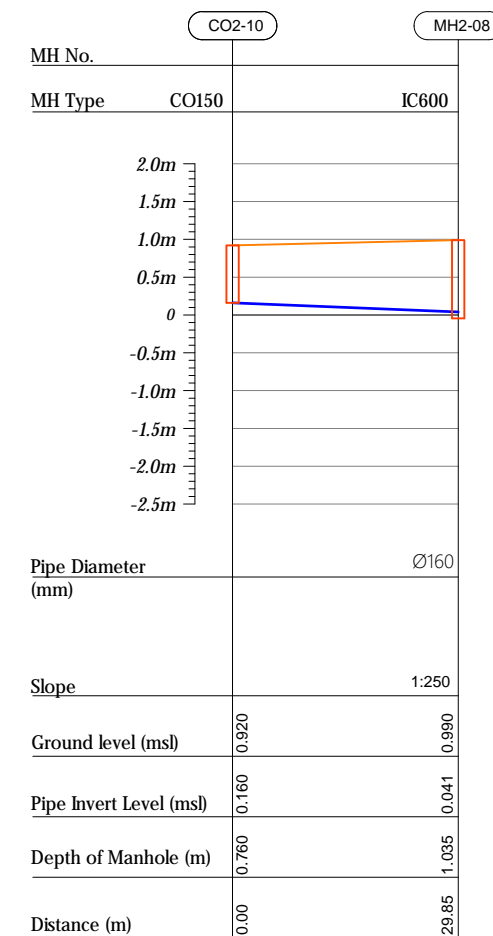
Rev: R-01

Page: PS2-03

Profile 09



Profile 10



| | | | | | |
|-------------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

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



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

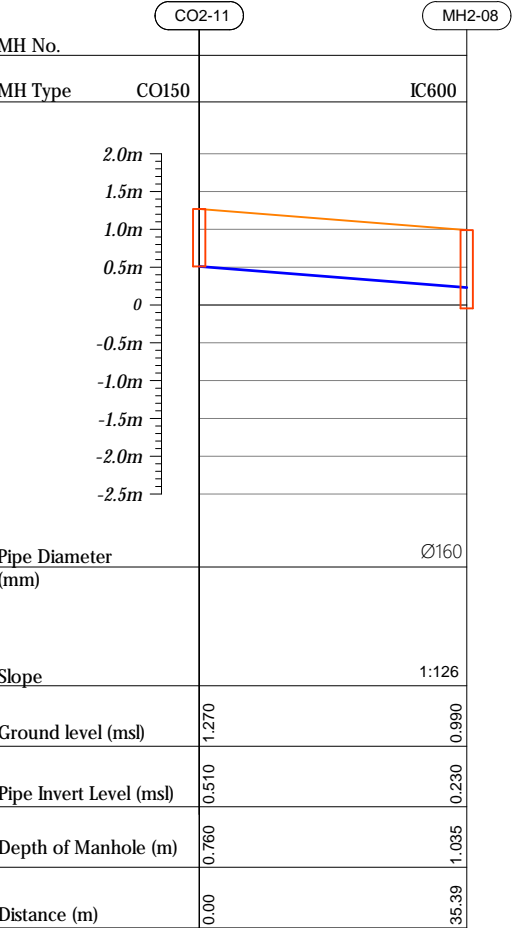
| | |
|---------------|--------------|
| Designed: EJA | Approved: LW |
|---------------|--------------|

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

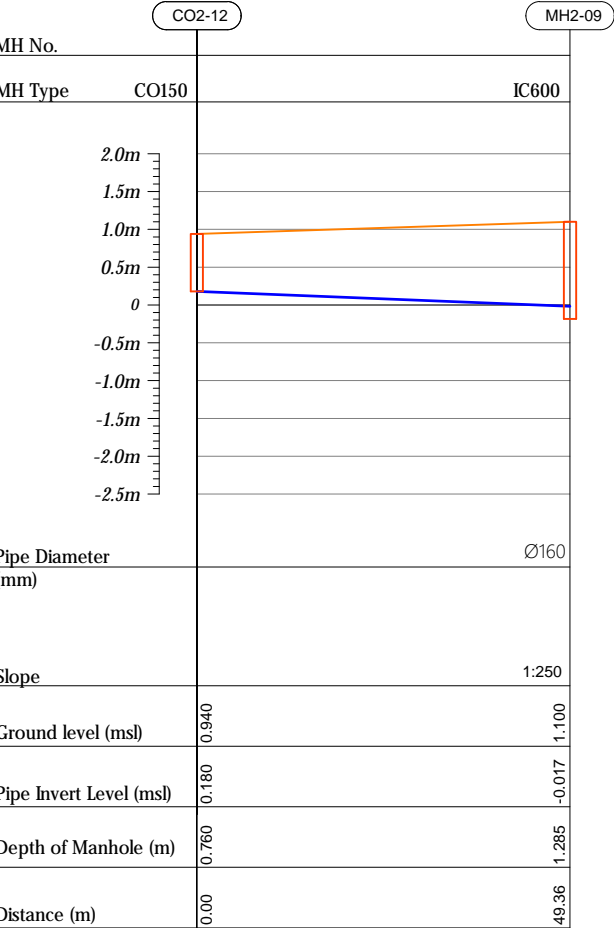
Project No: 01010101

| | |
|------|--------|
| Rev: | Page: |
| R-01 | PS2-04 |

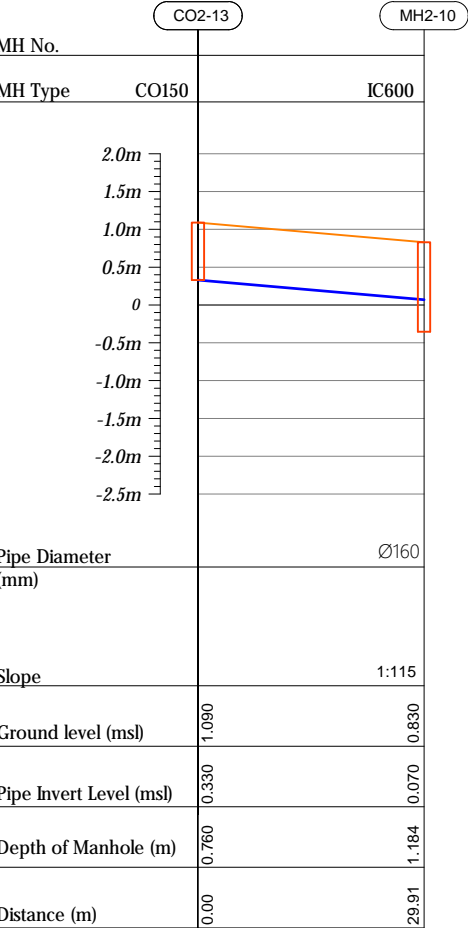
Profile 11



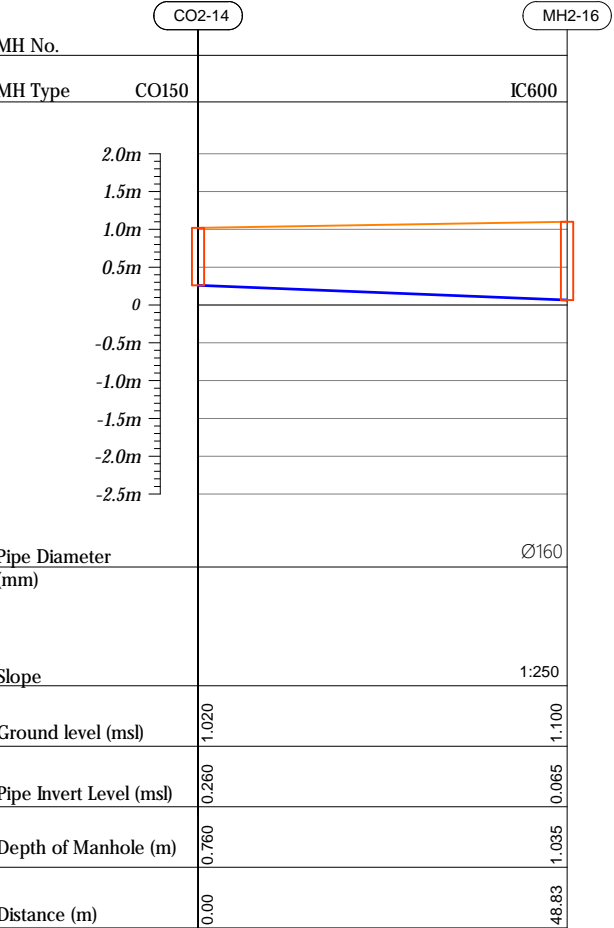
Profile 12



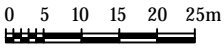
Profile 13



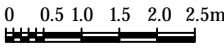
Profile 14



HORIZONTAL SCALE



VERTICAL SCALE



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

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

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

Sub Title:
Sewerage System in V.Keyodhoo

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

DBAC INFRA
Maldivu Infrastructure Develop

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

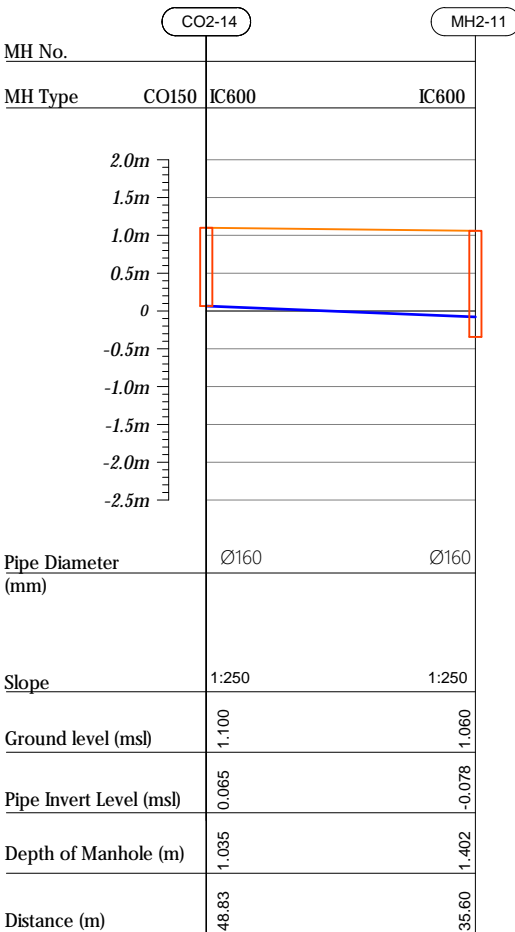
Designed: F.I.A Approved: L.W

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

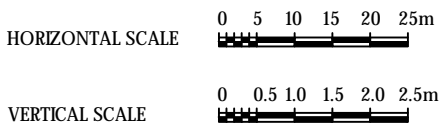
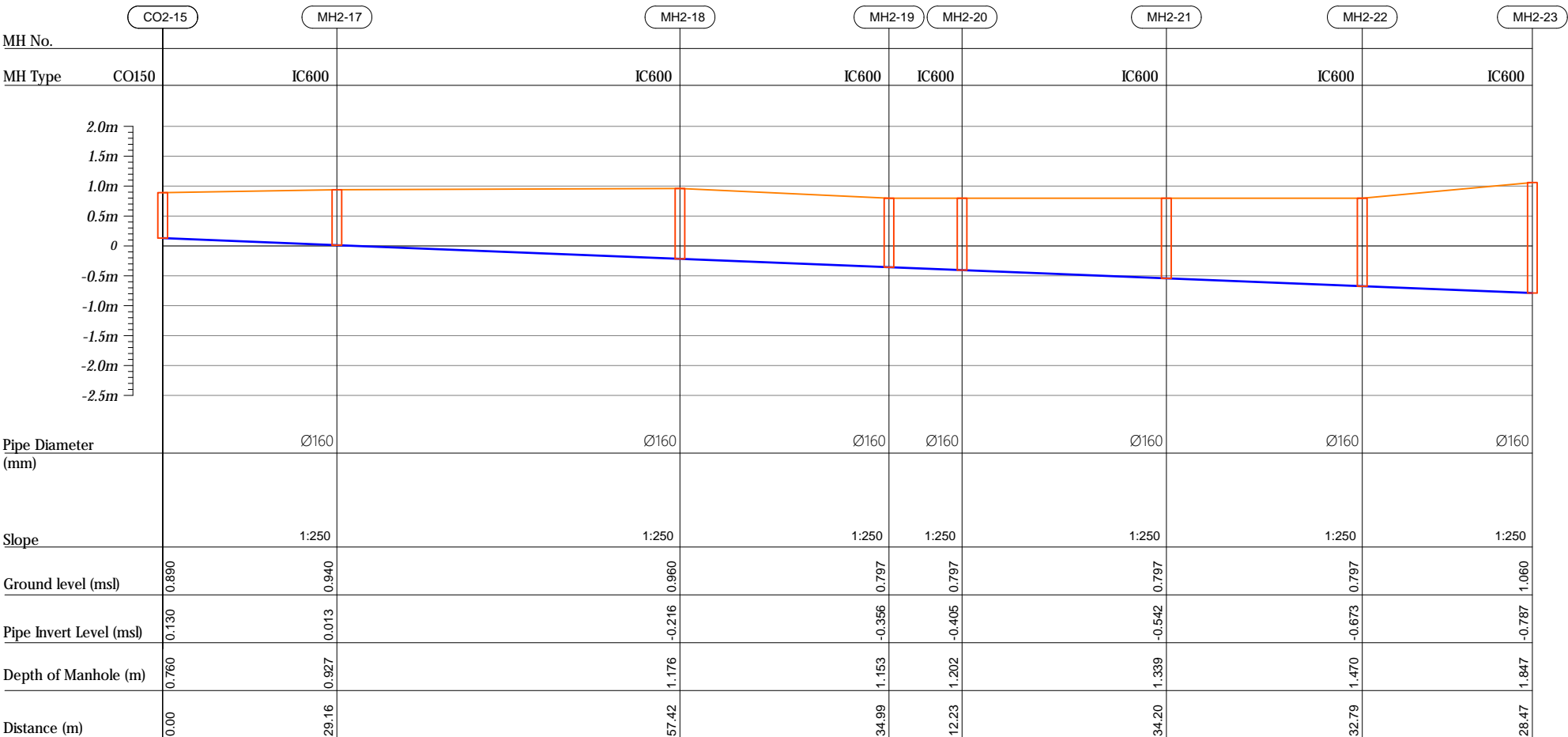
Project No: 01010101

Rev: R-01 Page: PS2-05

Profile 14



Profile 15



| | | |
|-------|---|-------------------|
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

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



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

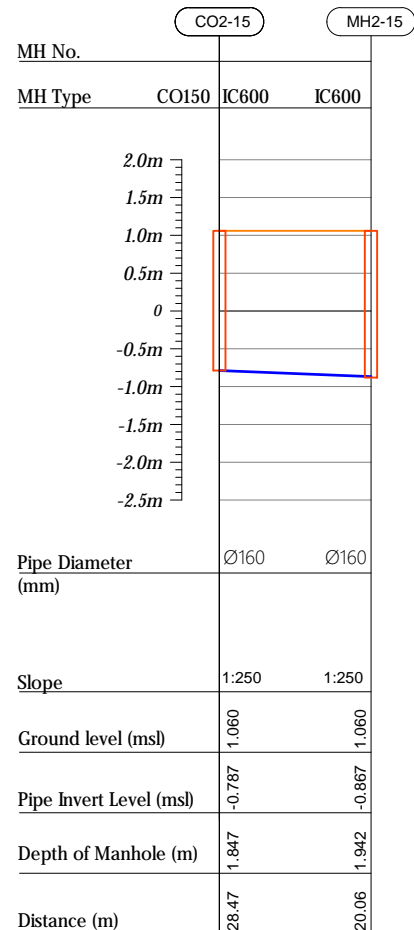
| | |
|-----------------|---------------|
| Designed: F.L.A | Approved: L.W |
|-----------------|---------------|

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

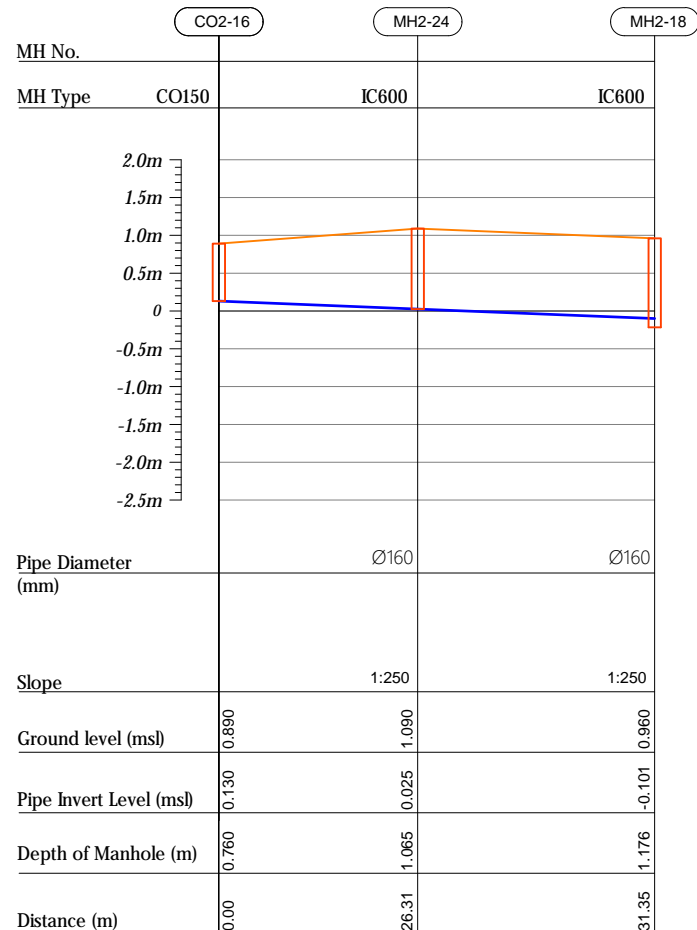
Project No: 01010101

| | |
|---------------------|------------------------|
| Rev: <i>R-01</i> | Page: <i>PS2-06</i> |
|---------------------|------------------------|

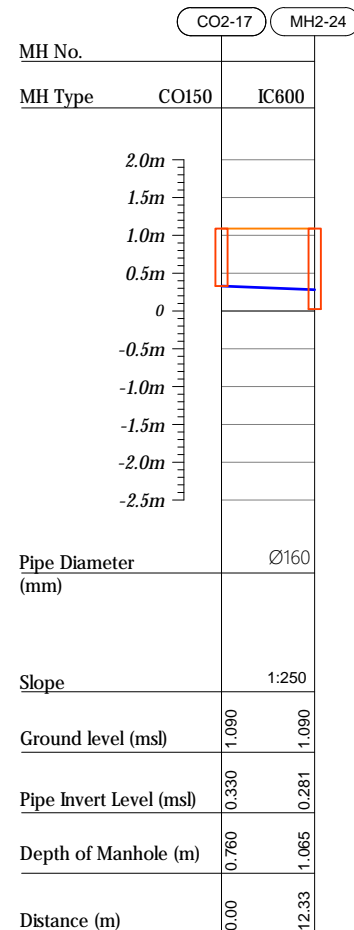
Profile 15



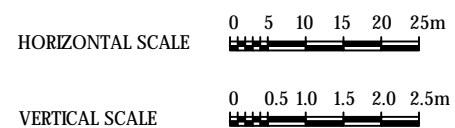
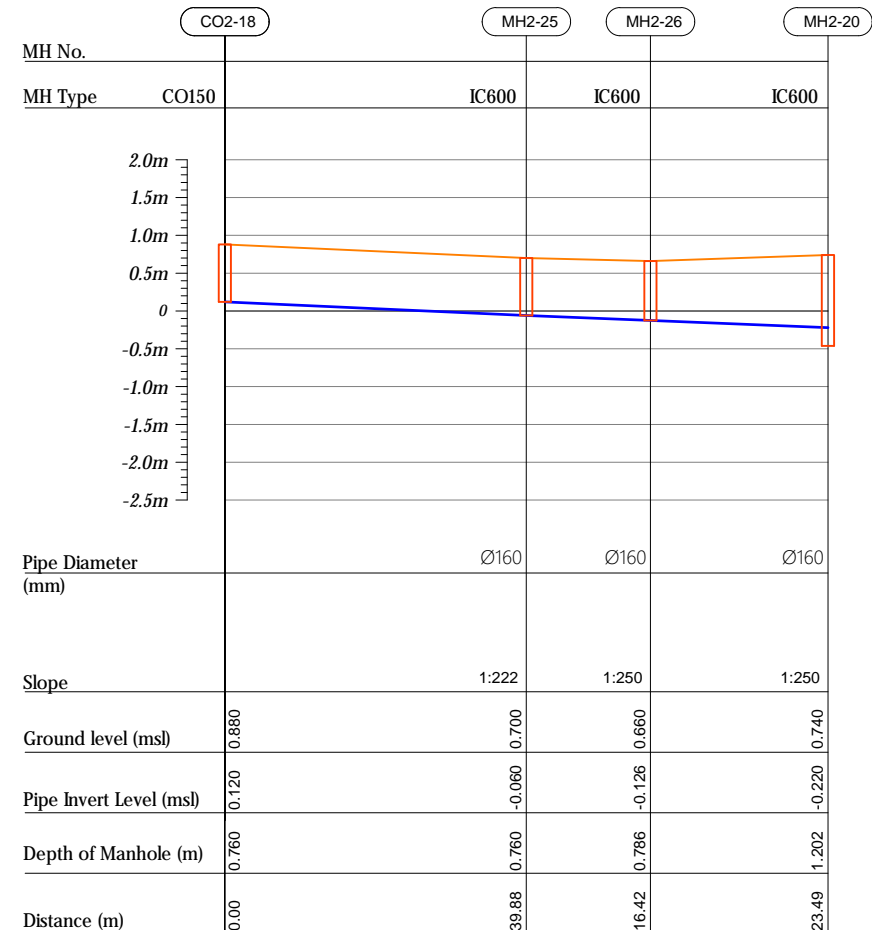
Profile 16



Profile 17



Profile 18



| | | |
|-------|---|-------------------------|
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

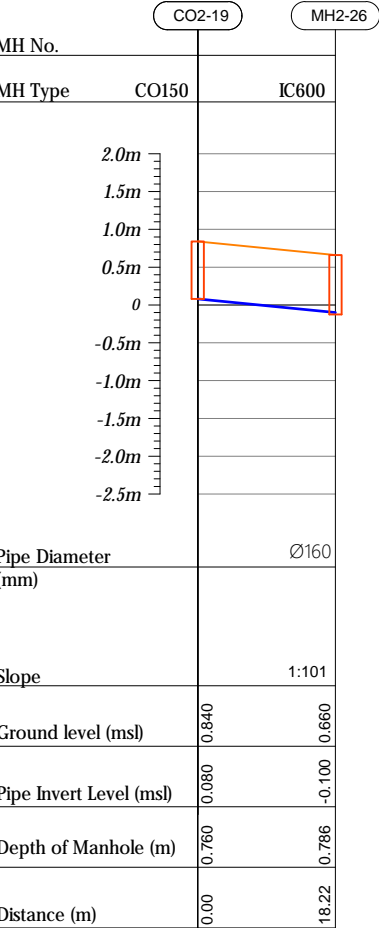
Client:
Ministry of National Planning, Housing and
Infrastructure, Republic of Maldives



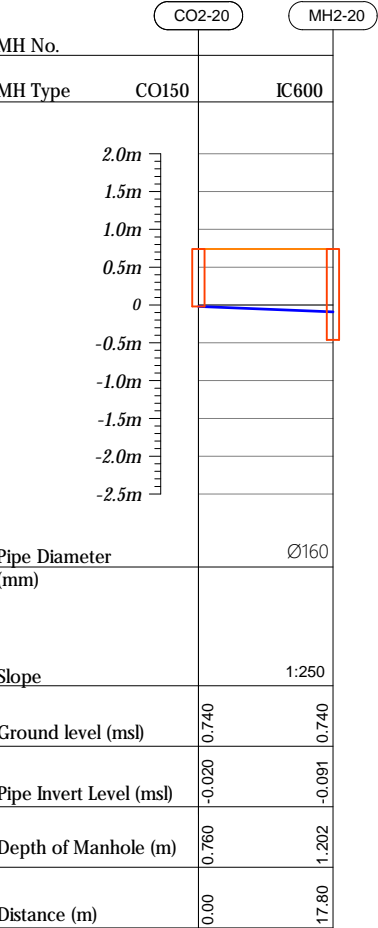
| | |
|----------------------|-------------------|
| Drawn: A.R.W | Checked: M.S.S |
| Designed: F.L.A | Approved: L.W |
| Date: Aug 2020 | SCALE (A3): 1:100 |
| Project No: 01010101 | |

| | |
|------|--------|
| Rev: | Page: |
| R-01 | PS2-07 |

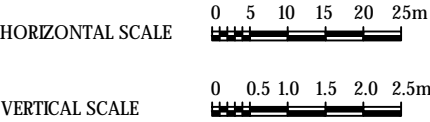
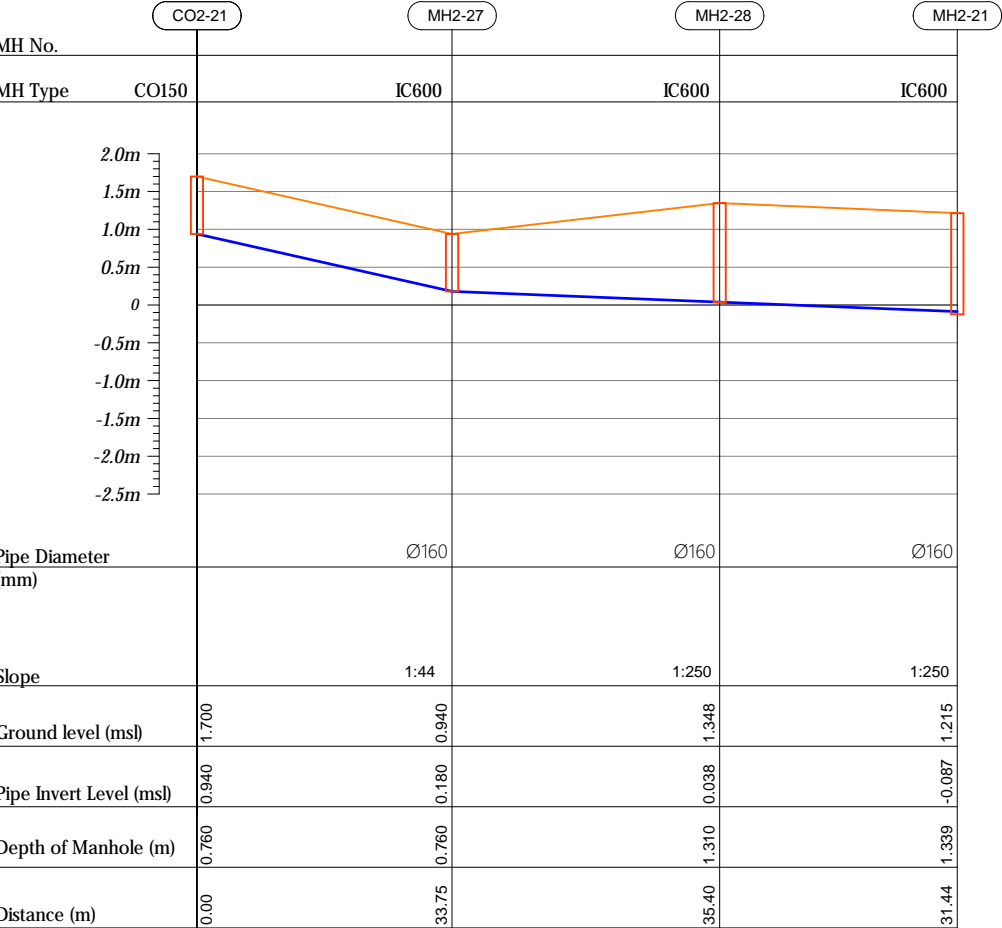
Profile 19



Profile 20



Profile 21



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

Sub Title:
Sewerage System in V.Keyodhoo

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



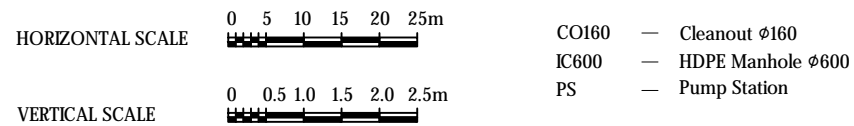
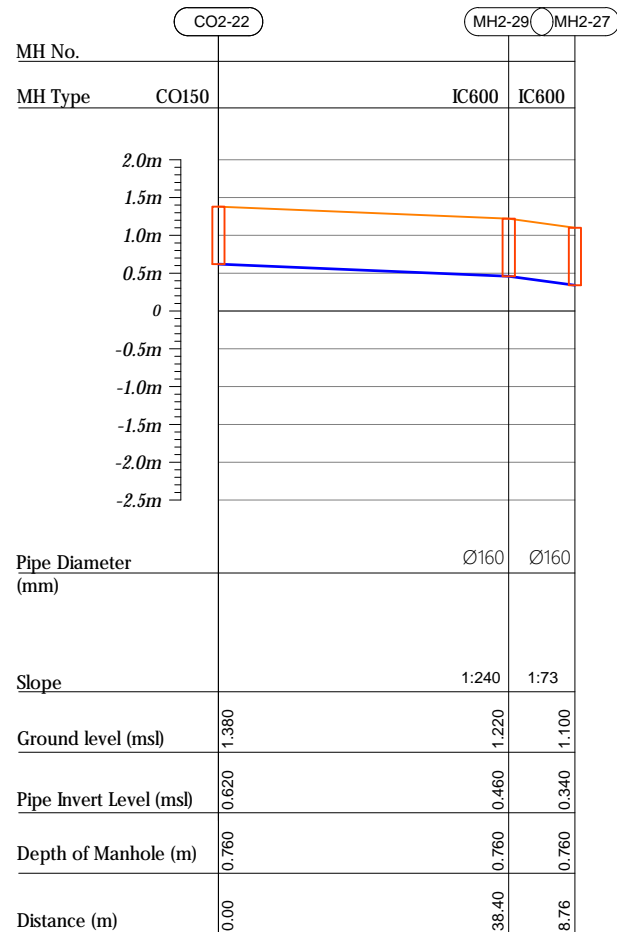
T: +960 333 3528
E: info@epoch.associates
W: www.epoch.associates
A: G. Rosary West,
Husnuheemaa Magu, Male', Maldives



| | |
|-----------------|-------------------|
| 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: PS2-08 |
|--------------|-----------------|

Profile 22




| | | | | | |
|-------------|-----------|----------------------|-------|------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 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*

Sub Title:
Sewerage System in V.Keyodhoo

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

| | |
|--|--|
|  EPOCH ASSOCIATES | FEEDBACK INFRA <i>Making Infrastructure Happen</i> |
| T: +960 333 3528 E: info@epoch.associates W: www.epoch.associates A: G. Rosary West, Humshemna Magu, Male', Maldives | |
| Drawn: A.R.W | Checked: M.S.S |
| Designed: F.I.A | Approved: L.W |
| Date: Aug 2020 | SCALE (ASR: 1:100) |
| Project No: | 01010101 |
| Rev: R-01 | Page: PS2-09 |