2.2 - Jnah Sea Outfall Drawings (Reference Drawings)



NOTES

LEGEND

- PROPOSED EMERGENCY SEA OUTFALL
- PROPOSED STORM NETWORK
- PROPOSED SEWER NETWORK

Rev.	Date	Revision Details	Chk'd.	Coord.	Appd.

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LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT
AND RECONSTRUCTION

Design Consultant : الاستشاري

خطيب وعلمي
Khatib & Alami

PROJECT TITLE اسم المشروع

Updating of the Study for the Remaining Parts of Phase III for Beirut City Services Upgrading Project

Drawing Title:

LOT 4

EMERGENCY SEA OUTFALL AT JNAH

GENERAL LAYOUT PLAN

	NAME
DRAWN	Foad Fayad
DESIGNED	Alaa Hammad
CHECKED	Adnan Kambriss
COORDINATED:	Abir Abou Jneid
APPROVED	Mohamad Ibrahim
SCALE	N.T.S
DATE	JUNE-2018

DRAWING NUMBER: RD-GE-00

PROJECT NUMBER: BY163000 - BX01

MODEL NAME: BY1630-TR-01

DESIGN STAGE: FINAL DESIGN

Sheet.No.: RD-GE-00

LIST OF DRAWINGS

GENERAL

DWG No	DRAWING TITLE
BYI63000-N-I60	LIST OF DRAWINGS

OVERFLOW PIPE PLANS

DWG No	DRAWING TITLE
BYI63000-N-I6I	PLAN OF THE PROPOSED OVERFLOW PIPES Ø800 & Ø900

OVERFLOW PIPE PROFILE

DWG No	DRAWING TITLE
BYI63000-N-I62	PLAN OF THE PROPOSED OVERFLOW PIPES Ø800 & Ø900

DETAILS

DWG No	DRAWING TITLE
BYI63000-N-I63	DETAILS OF SEWER MANHOLES MH-0A AND MH-0I
BYI63000-N-I64	DETAILS OF SEWER MANHOLES MH-02 AND PRESSURIZED MANHOLE MH-03
BYI63000-N-I65	CONNECTION DETAILS BETWEEN THE EXIST. BOX CULVERT & THE PROPOSED MANHOLE MH-02
BYI63000-N-I66	CONNECTION DETAILS BETWEEN THE EXIST. BOX CULVERT & THE PROPOSED PRESSURIZED MANHOLE MH-03
BYI63000-N-I67	STRUCTURAL DETAILS OF SEWER MANHOLES MH-0A AND MH-0I
BYI63000-N-I68	STRUCTURAL DETAILS OF SEWER MANHOLES MH-02 AND PRESSURIZED MANHOLE MH-03

SEA OUTFALL PLANS

DWG No	DRAWING TITLE
BYI63000-N-I69	SEA OUTFALL GENERAL LAYOUT PLAN
BYI63000-N-I70	SEA OUTFALL PLAN FROM ST.0+000 TO ST.0+260
BYI63000-N-I7I	SEA OUTFALL PLAN FROM ST.0+260 TO ST.0+560
BYI63000-N-I72	SEA OUTFALL PLAN FROM ST.0+560 TO ST.0+860
BYI63000-N-I73	SEA OUTFALL PLAN FROM ST.0+860 TO ST.0+908.60

SEA OUTFALL PROFILES

DWG No	DRAWING TITLE
BYI63000-N-I74	PROFILE OF EMERGENCY SEA OUTFALL(DNI400) BETWEEN ST. 0+000 & ST.0+600
BYI63000-N-I75	PROFILE OF EMERGENCY SEA OUTFALL(DNI400) BETWEEN ST.0+600 & ST.0+908.60

DETAILS

DWG No	DRAWING TITLE
BYI63000-N-I76	TYPICAL PROTECTION DETAILS BETWEEN POINT A (ST.0+000) AND POINT C (ST.0+200)
BYI63000-N-I77	TYPICAL PROTECTION DETAILS BETWEEN POINT A (ST.0+000) AND POINT C (ST.0+200)
BYI63000-N-I78	TYPICAL PROTECTION DETAILS BETWEEN POINT C (ST.0+200) AND POINT D (ST.0+300)
BYI63000-N-I79	TYPICAL PROTECTION DETAILS BETWEEN POINT D (ST.0+300) AND POINT F (ST.0+500)
BYI63000-N-I80	TYPICAL PROTECTION DETAILS BETWEEN POINT D (ST.0+300) AND POINT F (ST.0+500)
BYI63000-N-I8I	TYPICAL PROTECTION DETAILS BETWEEN POINT D (ST.0+300) AND POINT F (ST.0+500)
BYI63000-N-I82	TYPICAL PROTECTION DETAILS BETWEEN POINT F (ST.0+500) AND POINT H (ST.0+708.6)
BYI63000-N-I83	TYPICAL PROTECTION DETAILS BETWEEN POINT F (ST.0+500) AND POINT H (ST.0+708.6)
BYI63000-N-I84	TYPICAL PROTECTION DETAILS BETWEEN POINT F (ST.0+500) AND POINT H (ST.0+708.6)
BYI63000-N-I85	TYPICAL PROTECTION DETAILS BETWEEN POINT H (ST.0+708.6) AND POINT I (ST.0+908.6I)
BYI63000-N-I86	DETAILS OF CONCRETE COLLARS
BYI63000-N-I87	DETAILS OF RISERS AND PORTS
BYI63000-N-I88	PROTECTION DETAILS OF RISERS AND PORTS
BYI63000-N-I89	DETAILS OF THE DIFFUSER AT ST.0+708.60 AND ST.0+908.6I
BYI63000-N-I90	TYPICAL PROTECTION DETAILS WITH JUMPERS & CONCRETE MATRESS
BYI63000-N-I9I	SEA OUTFALL CONNECTION WITH PRESSURIZED MANHOLE MH-03

NOTES:

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد المنسب في ش.م.ل
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

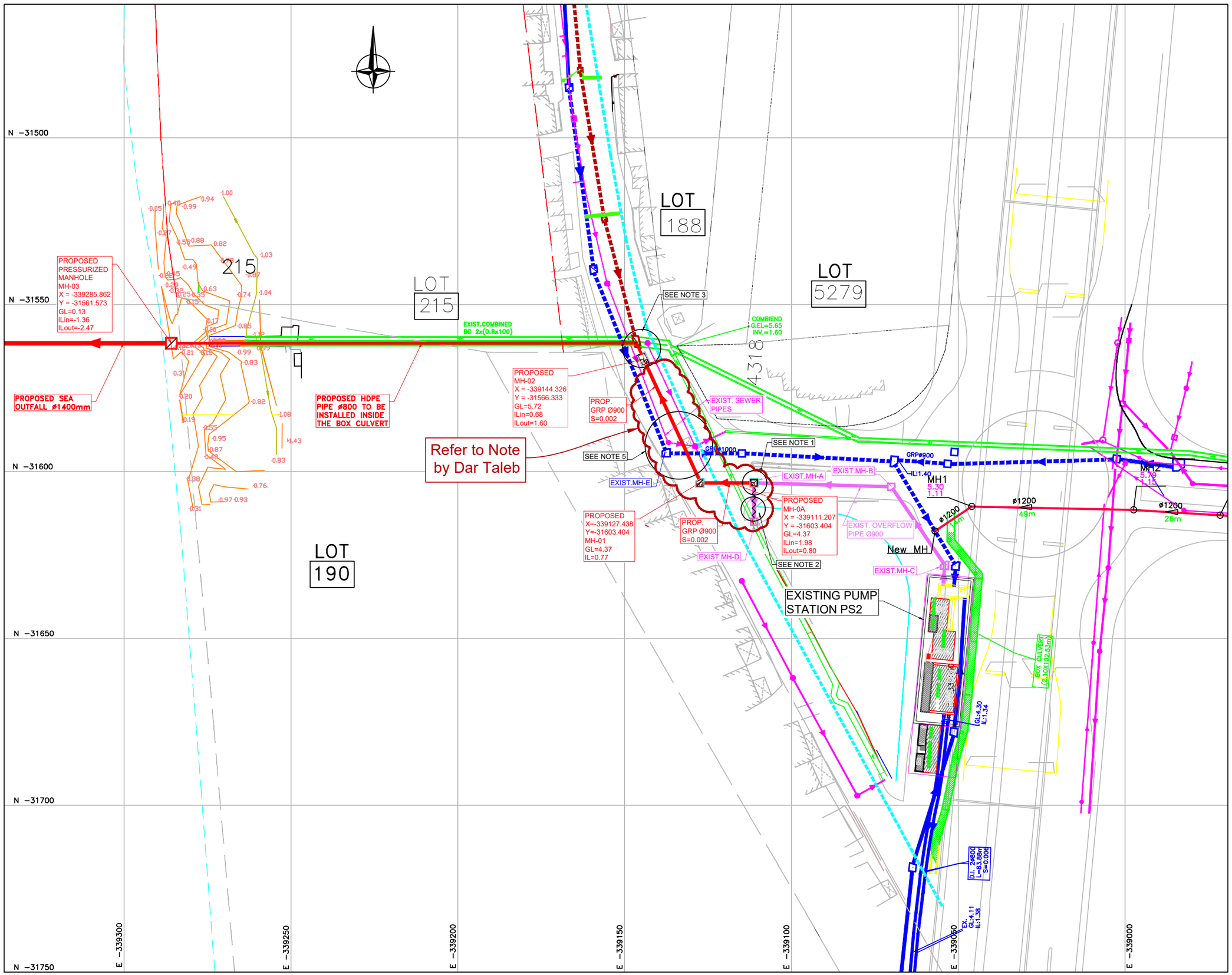
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

LIST OF DRAWINGS

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-160
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-160



LEGEND:-

- EXTENDED OVER FLOW PIPES Ø900 & Ø800
- EXISTING COMBINED DOUBLE CELLS BOX CULVERT 2x(0.8x1.00)
- EXISTING GRP SEWER PIPE Ø1000
- EXISTING ASBESTOS PIPE DN700
- EXISTING SEWER NETWORKS
- PROPOSED SEWER PIPE Ø1200
- EXISTING BOX CULVERT

NOTES

1- EXIST. SEWER MANHOLE MH-A TO BE DEMOLISHED AND TO BE REPLACED BY PROPOSED MANHOLE MH-0A.

2-EXISTING PIPE CONNECTION Ø900MM SHOULD BE DEMOLISHED AND THE OPINING AT THE EXISTING MANHOLE EXIST.MH-D TO BE BLOCKED

3- FOR PIPE CONNECTION DETAILS BETWEEN THE EXISTING BOX CULVERT & THE PROPOSED MANHOLE MH-02 REFER TO DRAWING#.....

4-LOCATION & INVERT LEVELS OF ALL EXISTING UTILITIES SHOULD BE CHECKED BY THE CONTRACTOR.

5- THE 2 EXISTING SEWER PIPES SHOULD BE CONNECTED TO THE EXISTING SEWER PIPE Ø900.

NOTE BY DAR TALEB

- **The sewer pipeline was recently inspected and found that the overflow pipe was exetended till the box culvert.**
- **The proposed sea outfall works shall start from MH02, excluding all the upstream pipeline part.**

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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الاستشاري: خطيب و علمي شركة الأحدث المتخصصة ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L.

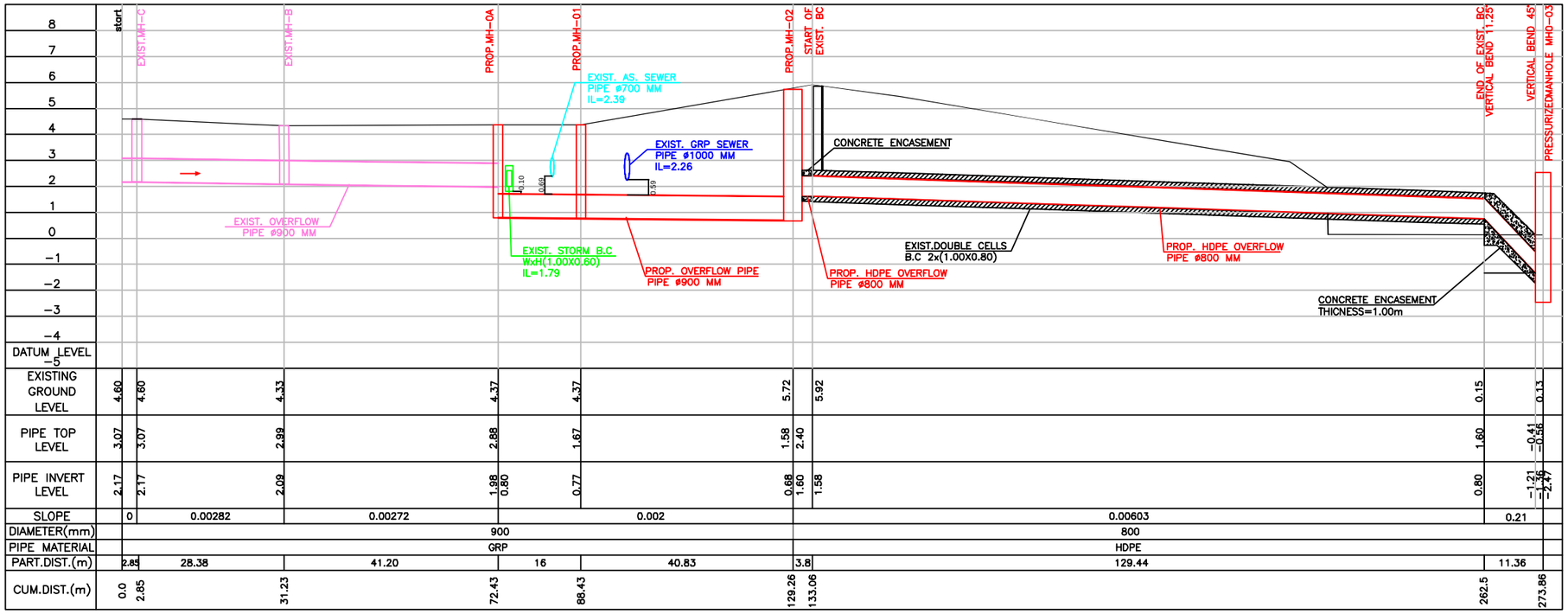
Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

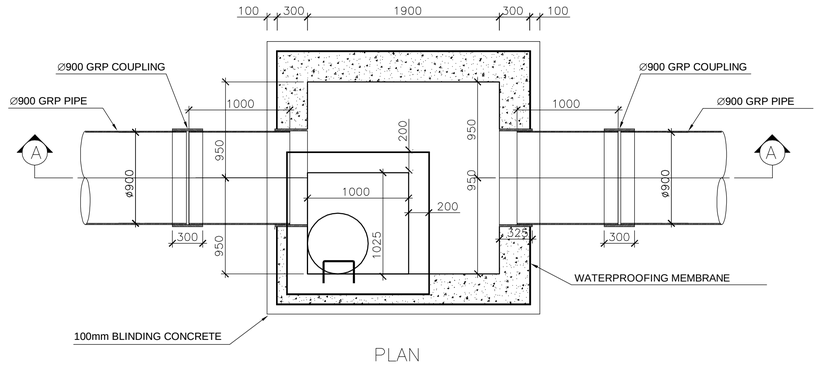
Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH
PLAN OF THE PROPOSED OVERFLOW PIPES Ø800 & Ø900

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-161
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-161

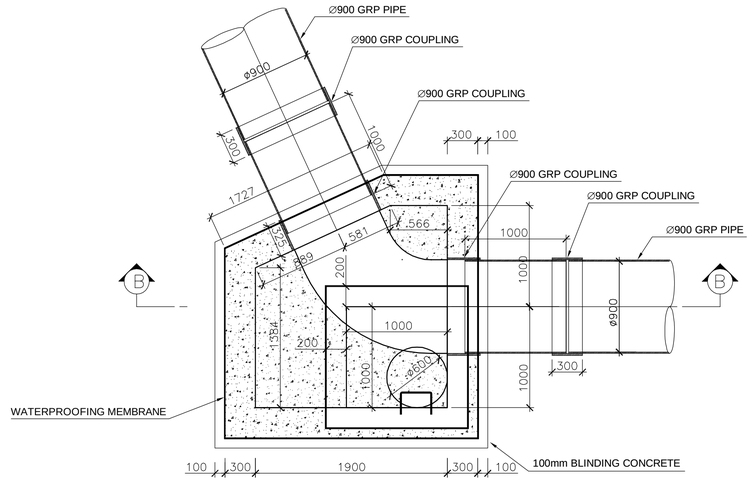

start
EXIST.MH-C
EXIST.MH-B
PROP.MH-0A
PROP.MH-01
PROP.MH-02
START OF EXIST. BC
END OF EXIST. BC VERTICAL BEND 11.25°
VERTICAL BEND 45°
PRESSURIZEDMANHOLE MHD-03
EXIST. AS. SEWER PIPE ø700 MM IL=2.39
EXIST. GRP SEWER PIPE ø1000 MM IL=2.26
CONCRETE ENCASEMENT
EXIST. OVERFLOW PIPE ø900 MM
EXIST. STORM B.C WxH(1.00X0.80) IL=1.79
PROP. OVERFLOW PIPE PIPE ø900 MM
PROP. HDPE OVERFLOW PIPE ø800 MM
EXIST.DOUBLE CELLS B.C 2x(1.00X0.80)
PROP. HDPE OVERFLOW PIPE ø800 MM
CONCRETE ENCASEMENT THICNESS=1.00m
0.10
0.09
0.59
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
DATUM LEVEL −5

| | | |



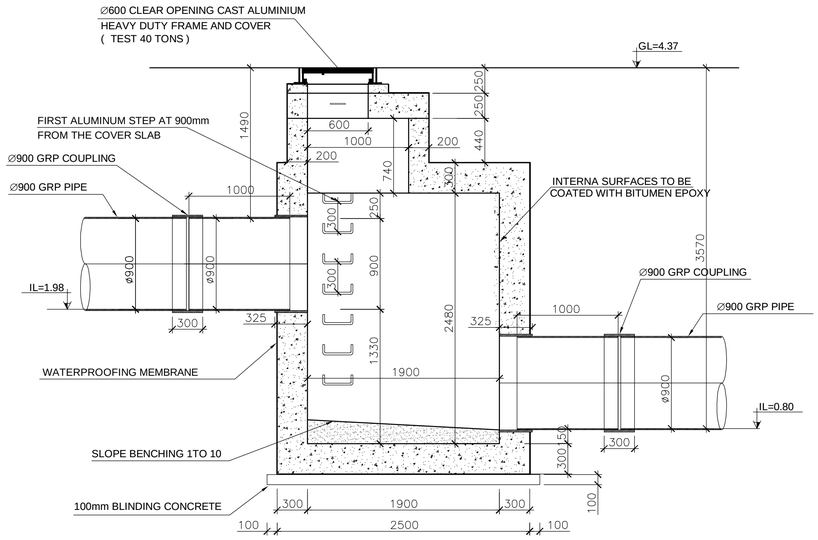
PLAN

DETAILS OF MANHOLE MH–0A



PLAN

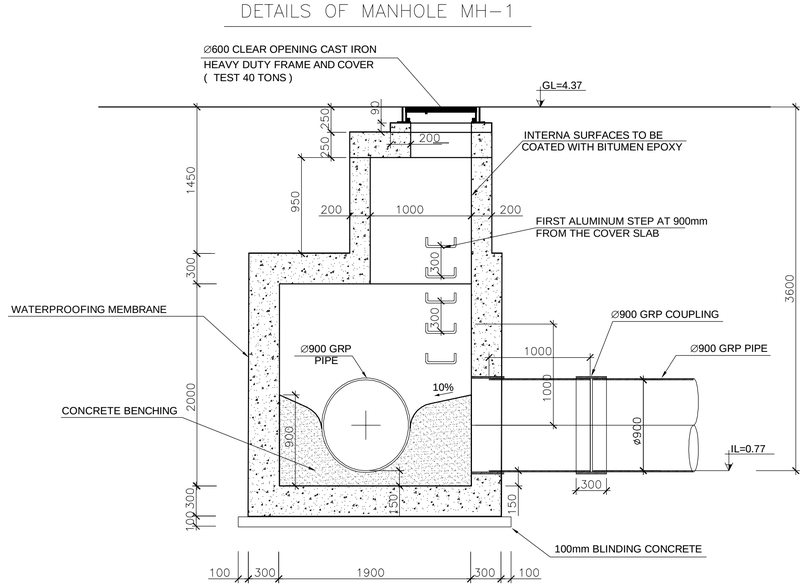
DETAILS OF MANHOLE MH–1



SECTION A–A

N.T.S

DETAILS OF MANHOLE MH–0A



SECTION A–A

N.T.S

DETAILS OF MANHOLE MH–01

NOTES :

1-ALL DIMENSIONS ARE IN MELLIMETER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الهندسية ش.م.ل

Khatib & Alami

Consolidated Engineering Company S.A.L

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

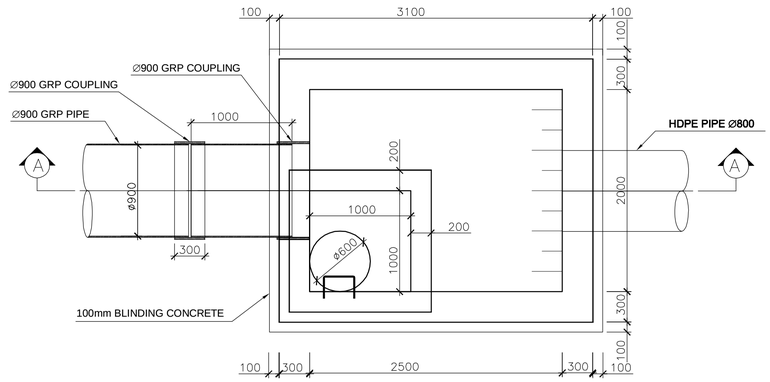
Drawing Title:

LOT 4

EMERGENCY SEA OUTFALL AT JNAH

DETAILS OF SEWER MANHOLES MH-0A and MH-01

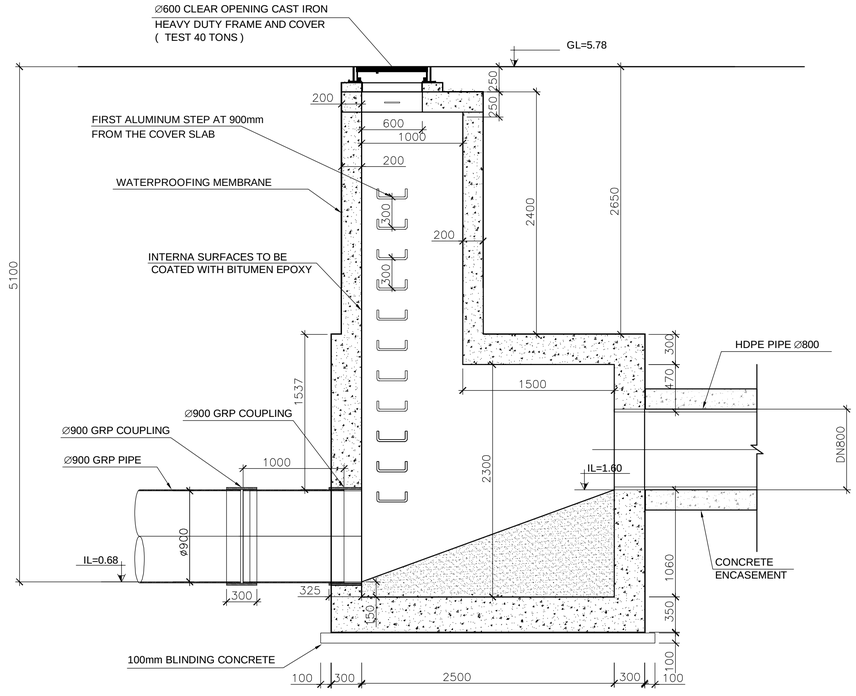
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Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-163



PLAN

N.T.S

DETAILS OF MANHOLE MH-02



SECTION A-A

N.T.S

DETAILS OF MANHOLE MH-02

NOTES :

1-ALL DIMENSIONS ARE IN MELLIMETER UNLESS OTHERWISE INDICATED.

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Khatib & Alami
Consolidated Engineering Company S.A.L

Project Title: اسم المشروع:

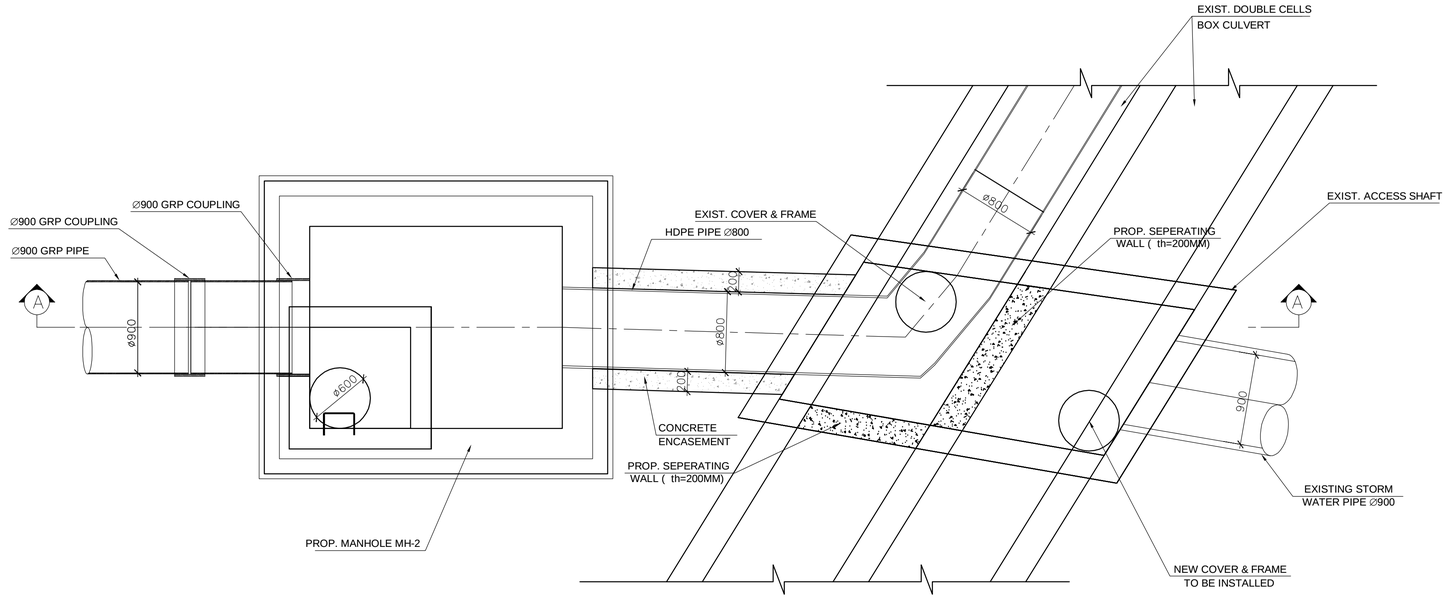
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

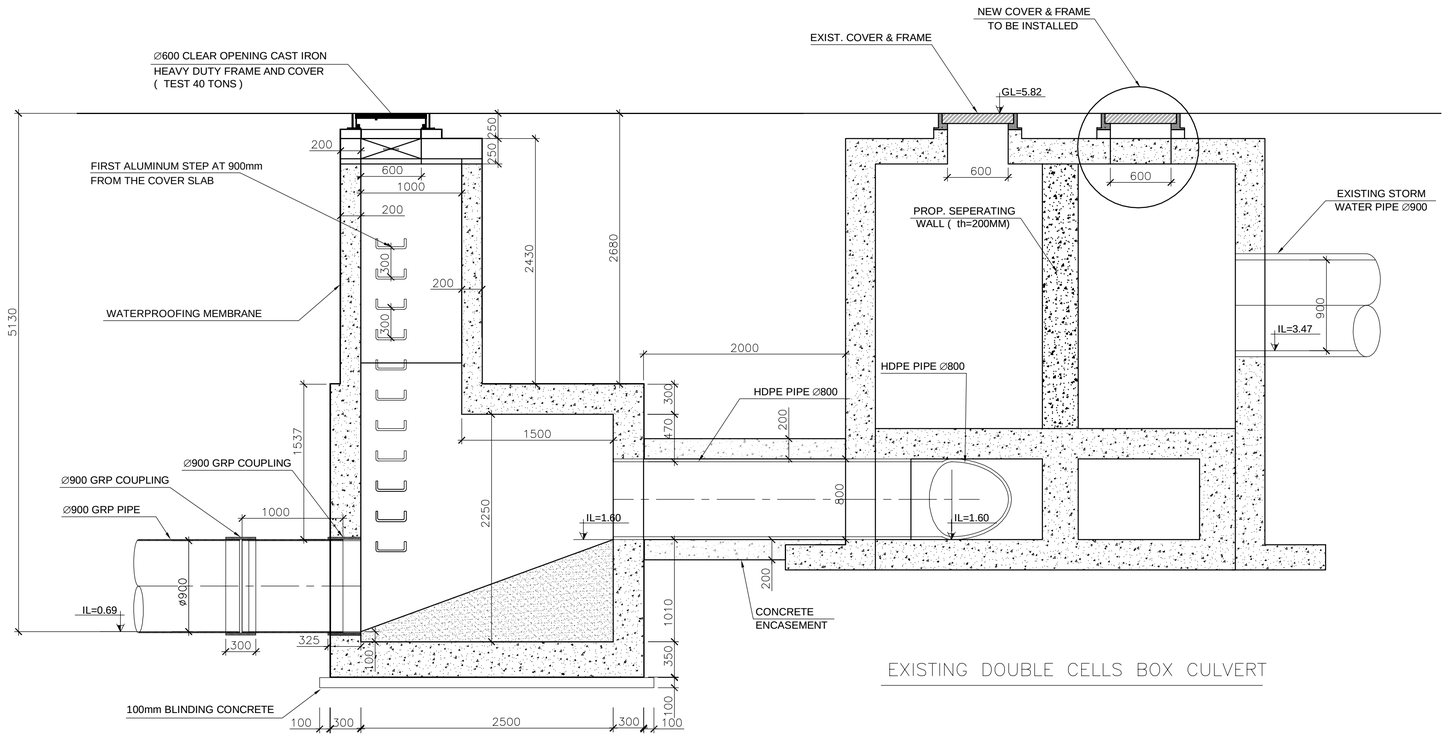
DETAILS OF SEWER MANHOLES MH-02 and PRESSURIZED MANHOLE MH-03

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-164
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number:
Approved:	A.R.ITANI	BY163000-BX01
Scale:	N.T.S	Model Name:
Date:	JUNE-2018	BY163000-N-SDT
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-164



SECTIONAL PLAN

N.T.S



EXISTING DOUBLE CELLS BOX CULVERT

DETAILS OF MANHOLE MH-02

SECTION A-A

N.T.S

CONNECTION DETAILS BETWEEN THE EXIST. BOX CULVERT & THE PROPOSED MANHOLE MH-02

NOTES :

1-ALL DIMENSIONS ARE IN MELLIMETER UNLESS OTHERWISE INDICATED.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

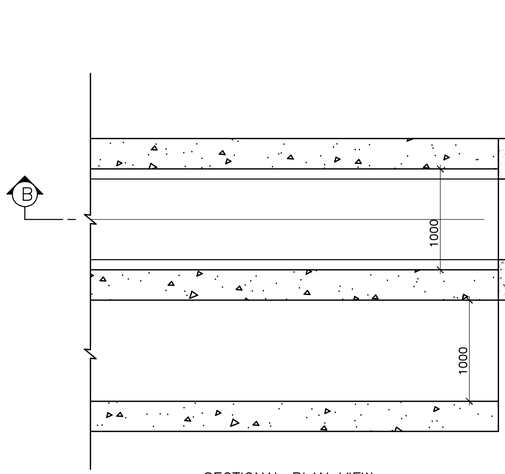
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

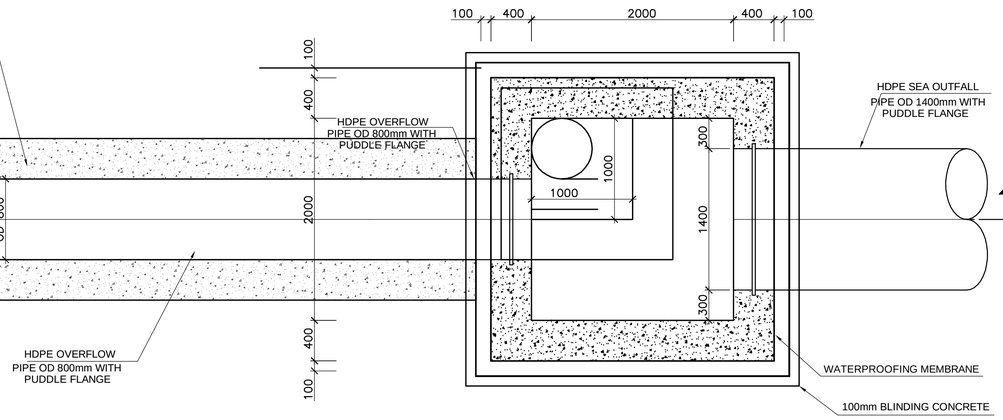
CONNECTION DETAILS BETWEEN THE EXIST. BOX CULVERT & THE PROPOSED MANHOLE MH-02

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Drawn:	A.CHALABI	BY163000-N-165
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-165



SECTIONAL PLAN VIEW
N.T.S

EXISTING DOUBLE CELLS BOX CULVERT



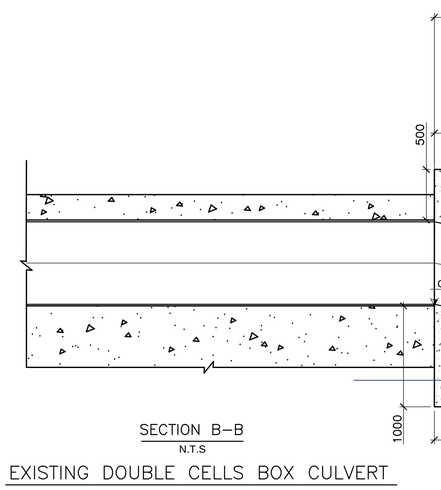
SECTIONAL PLAN VIEW

CONNECTION DETAILS BETWEEN PRESSURIZED MANHOLE MH–03

AND THE EXISTING DOUBLE CELLS BOX CULVERT

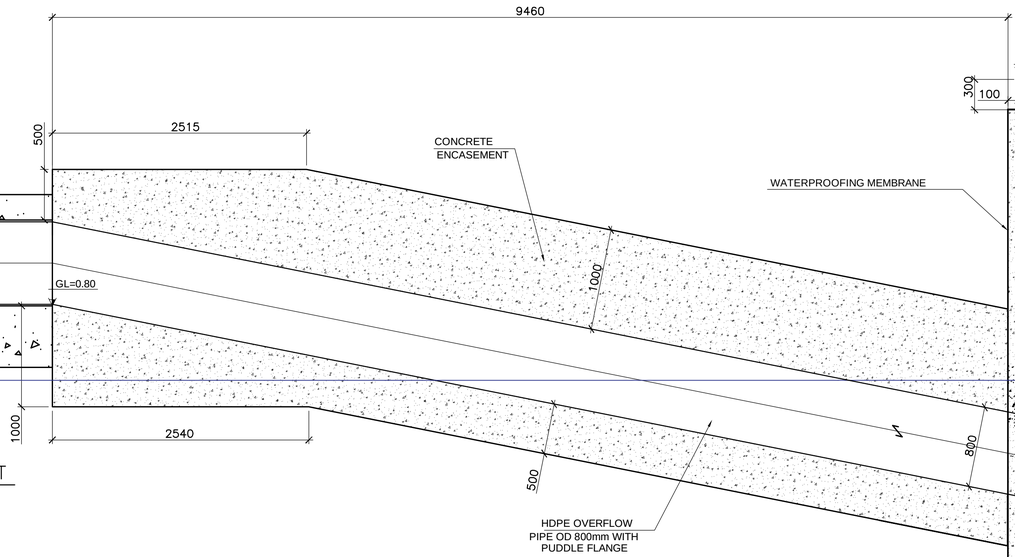
SECTIONAL PLAN VIEW
N.T.S

DETAILS OF PRESSURIZED MANHOLE MH–03



SECTION B–B
N.T.S

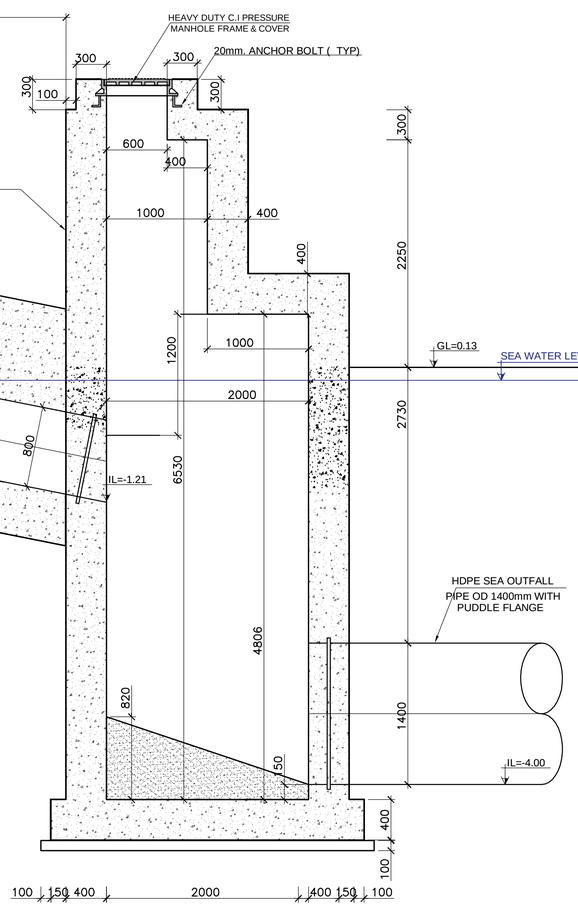
EXISTING DOUBLE CELLS BOX CULVERT



SECTION B–B

CONNECTION DETAILS BETWEEN PRESSURIZED MANHOLE MH–03

AND THE EXISTING DOUBLE CELLS BOX CULVERT



SECTION B–B
N.T.S

DETAILS OF PRESSURIZED MANHOLE MH–03

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Project Title: اسم المشروع:

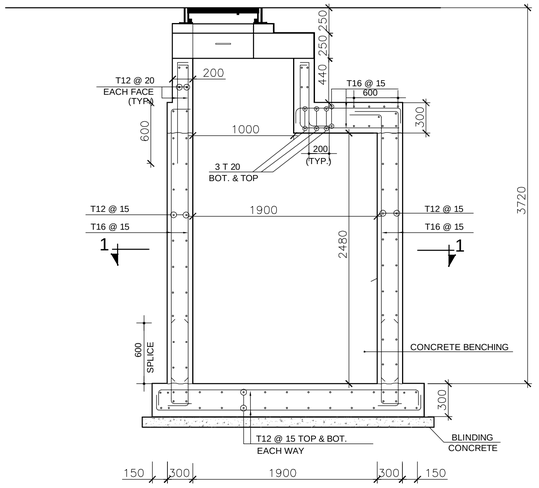
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

CONNECTION DETAILS BETWEEN THE EXIST. BOX CULVERT & THE PROPOSED PRESSURIZED MANHOLE MH-03

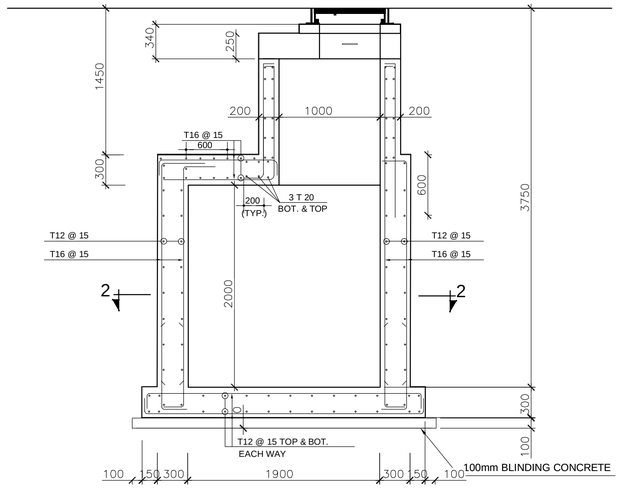
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Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-166



SECTION A–A

N.T.S

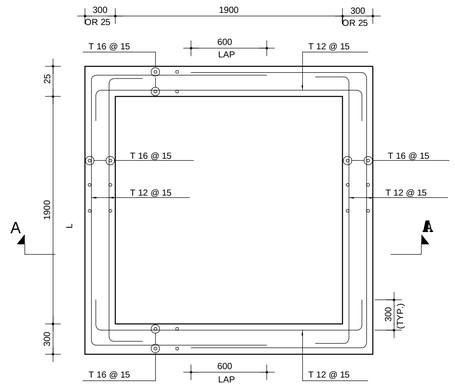
DETAILS OF MANHOLE MH–1



SECTION B–B

N.T.S

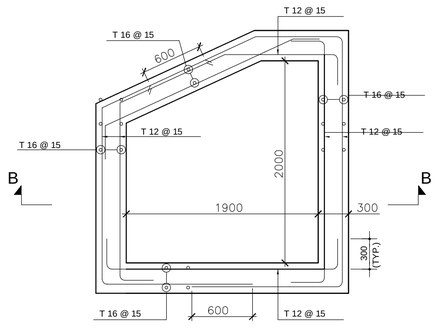
DETAILS OF MANHOLE MH–01



SECTION 1-1

N.T.S

DETAILS OF MANHOLE MH–0A



SECTION 2-2

N.T.S

DETAILS OF MANHOLE MH–01

NOTES :

1-ALL DIMENSIONS ARE IN MELLIMETER UNLESS OTHERWISE INDICATED.

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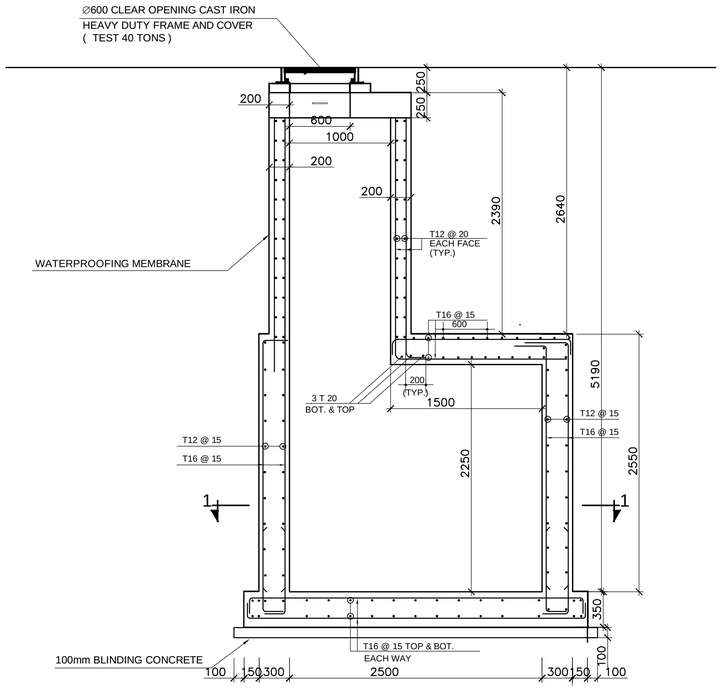
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

STRUCTURAL DETAILS OF SEWER MANHOLES MH-0A and MH-01

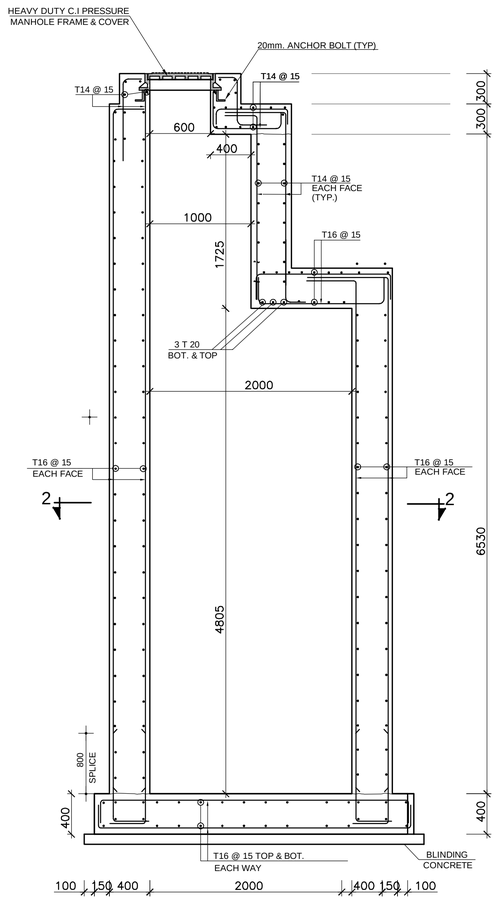
	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-167
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-167



SECTION A–A

N.T.S

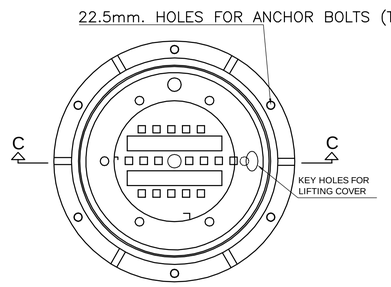
DETAILS OF MANHOLE MH–2



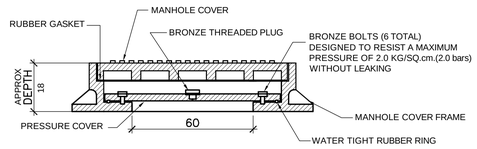
SECTION B–B

N.T.S

DETAILS OF PRESSURIZED MANHOLE MH–03

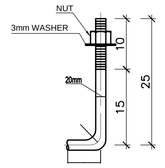


PLAN VIEW



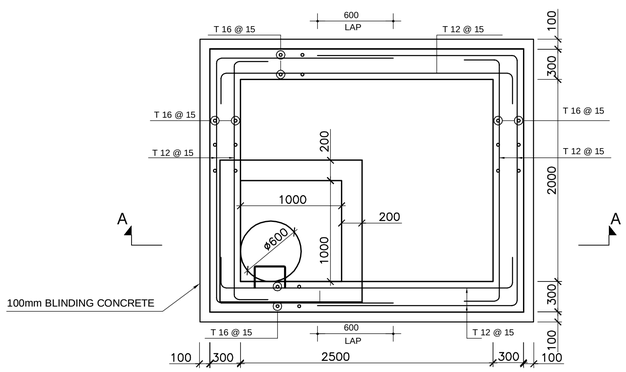
SECTION C–C

TYPICAL PRESSURIZED MANHOLE COVER



PRESSURE MH COVER
ANCHOR BOLT DETAIL

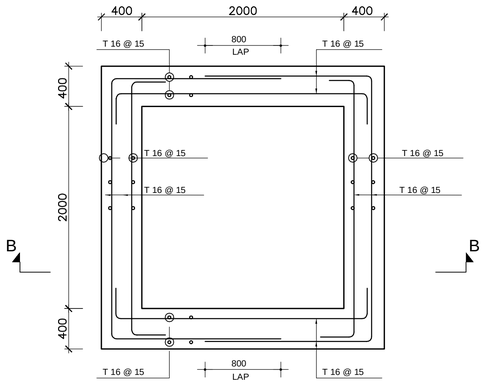
N.T.S



SECTION 1-1

N.T.S

DETAILS OF MANHOLE MH–02



SECTION 2-2

N.T.S

DETAILS OF PRESSURIZED MANHOLE MH–03

NOTES :

1-ALL DIMENSIONS ARE IN MELLIMETER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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CONSULTANT

خطيب وعلمي
شركة الاتحاد المتحد سكب ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

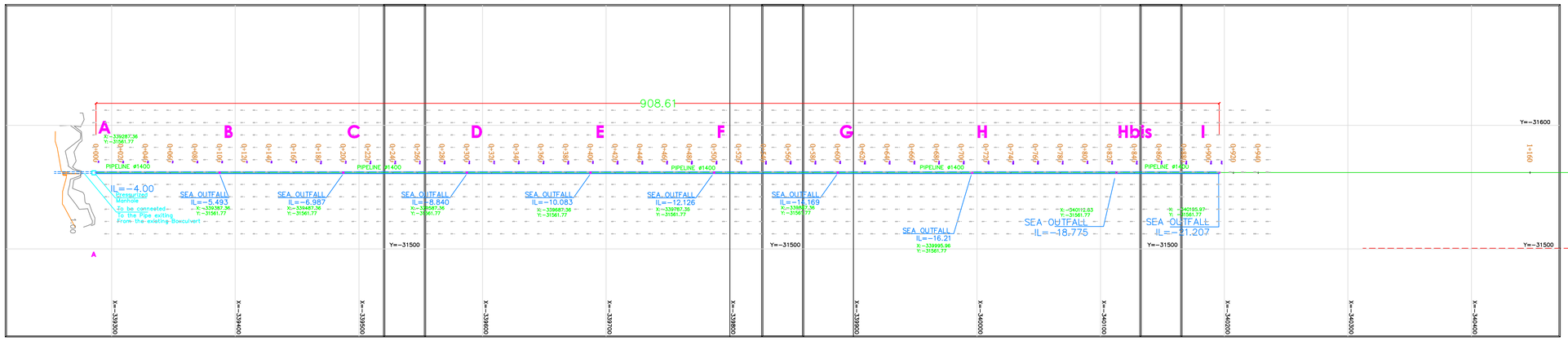
Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

STRUCTURAL DETAILS OF SEWER MANHOLES MH-02 and PRESSURIZED MANHOLE MH-03

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-168
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-168

SHEET-BY163000-N-169 SHEET-BY163000-N-170 SHEET-BY163000-N-171 SHEET-BY163000-N-172



LEGEND:-

- PROPOSED SEA OUTFALL
- CONTOUR LINE

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

اسم المشروع:
Project Title:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

SEA OUTFALL
GENERAL LAYOUT PLAN

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-169
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-169

LEGEND:-

PROPOSED SEA OUTFALL

CONTOUR LINE

A

B

C

X: −339287.36
Y: −31561.77

0+000 P1
0+020 P2
0+040 P3
0+060 P4
0+080 P5
0+100 P6
0+120 P7
0+140 P8
0+160 P9
0+180 P10
0+200 P11
0+220 P12
0+240 P13
0+260 P14

PIPELINE ø1400

PIPELINE ø1400

IL=−4.00
Pressurized
Manhole

To be connected
To the Pipe exiting
From the existing Boxculvert

100

SEA OUTFALL
IL=−5.493
X: −339387.36
Y: −31561.77

SEA OUTFALL
IL=−6.987
X:−339487.36
Y: −31561.77

SEA OU
IL=
X:−33
Y: −31

Y=−31500

A

X=−339300

X=−339400

X=−339500

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR
THE REMAINING PARTS OF PHASE III
FOR BEIRUT CITY SERVICES
UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

SEA OUTFALL PLAN
FROM ST.0+000 TO ST.0+260

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-170
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-170

908.61

D

E

F

0+240 P13

0+260 P14

0+280 P15

0+300 P16

0+320 P17

0+340 P18

0+360 P19

0+380 P20

0+400 P21

0+420 P22

0+440 P23

0+460 P24

0+480 P25

0+500 P26

0+520 P27

0+540 P28

0+560 P29

ø1400

PIPELINE ø1400

SEA OUTFALL
IL=−8.840
X: −339587.36
Y: −31561.77

SEA OUTFALL
IL=−10.083
X: −339687.36
Y: −31561.77

SEA OUTFALL
IL=−12.126
X: −339787.36
Y: −31561.77

SEA OUT
IL=−14
X: −33988
Y: −31561

Y=−31500

Y=−31500

X=−339600

X=−339700

X=−339800

LEGEND:-

PROPOSED SEA OUTFALL

CONTOUR LINE

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الاستشاري
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

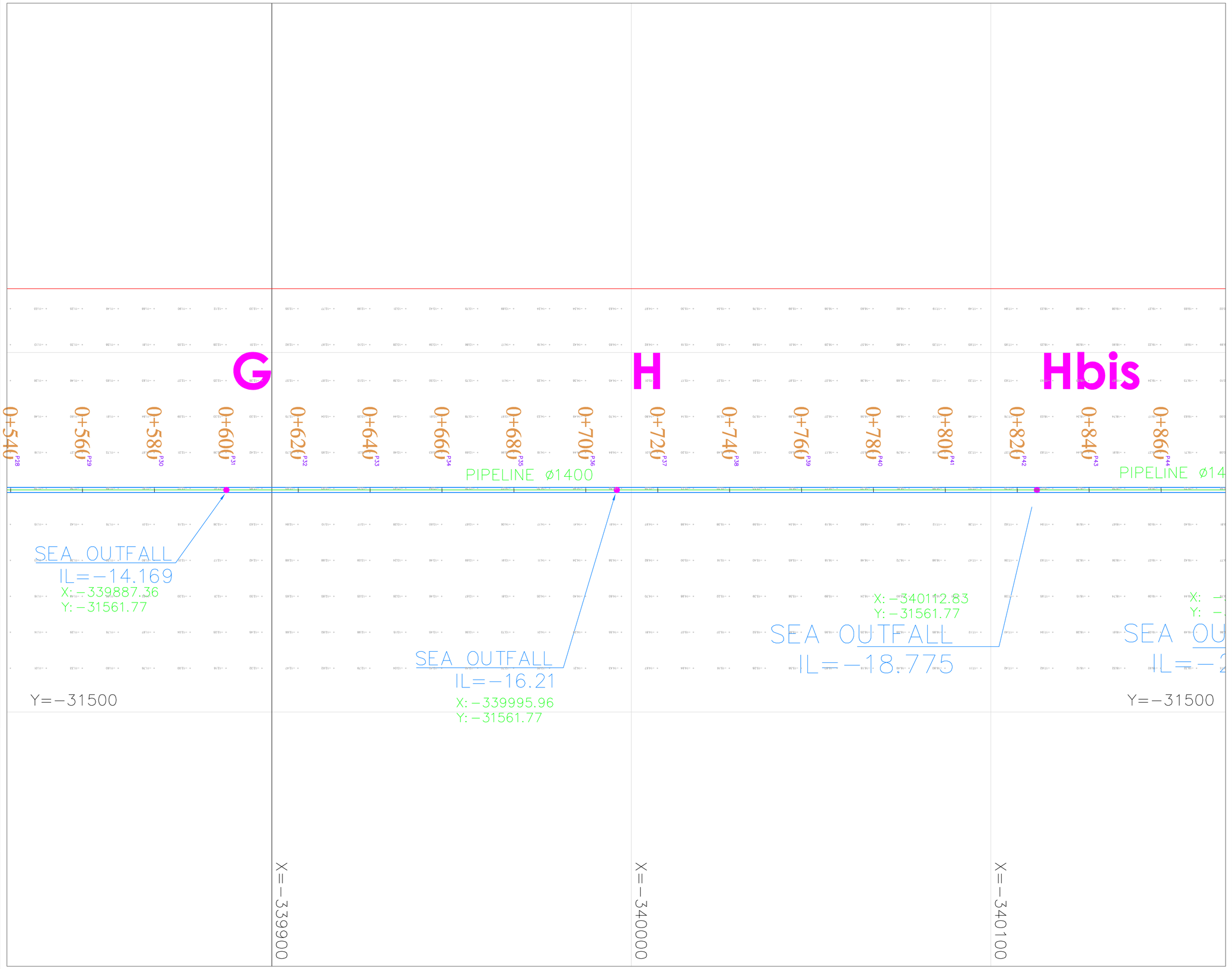
UPDATING OF THE STUDY FOR
THE REMAINING PARTS OF PHASE III
FOR BEIRUT CITY SERVICES
UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

SEA OUTFALL PLAN
FROM ST.0+260 TO ST.0+560

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-171
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-171



LEGEND:-

- PROPOSED SEA OUTFALL
- CONTOUR LINE

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة اتحاد المصممين شركاء
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

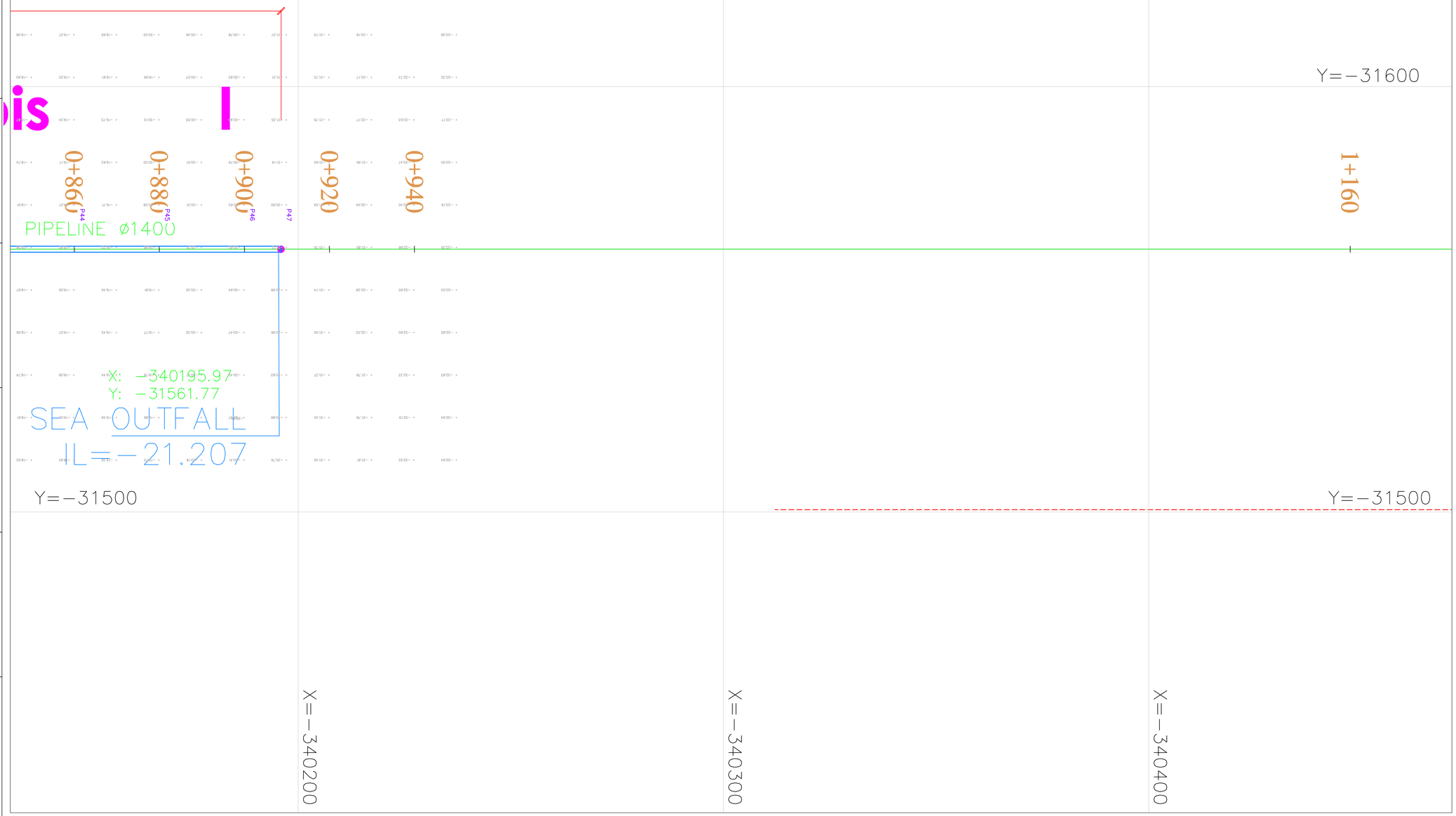
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

SEA OUTFALL PLAN
FROM ST.0+560 TO ST.0+860

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-172
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number:
Approved:	A.R.ITANI	BY163000-BX01
Scale:	N.T.S	Model Name:
Date:	JUNE-2018	BY163000-N-SDT
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-172



Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد المتحد للهندسة
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

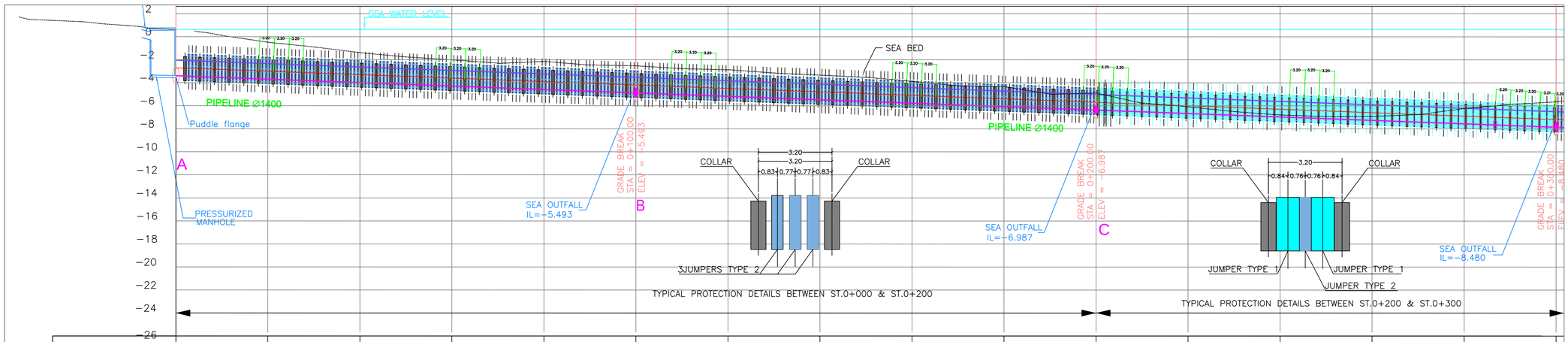
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL AT JNAH

SEA OUTFALL PLAN
FROM ST.0+860 TO ST.0+908.60

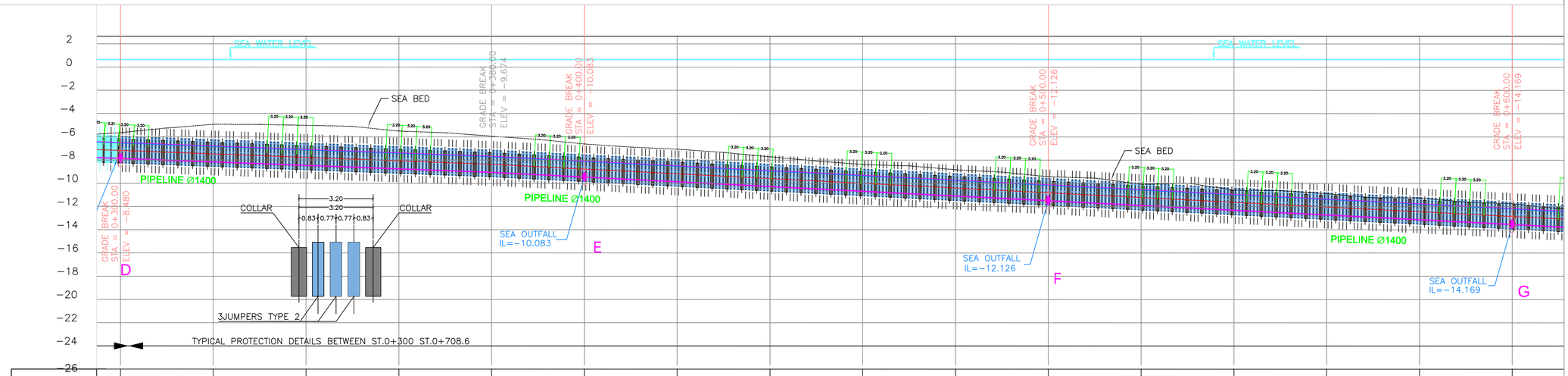
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Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE-2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-173



EXISTING ELEVATONS		-1.11	-2.02	-2.65	-2.78	-3.16	-3.51	-3.97	-4.50	-4.97	-5.52	-6.73	-7.44	-7.56	-6.87							
PROPOSED INVERT LEVEL	-4.00	-4.30	-4.60	-4.90	-5.19	-5.49	-5.79	-6.09	-6.39	-6.69	-6.99	-7.29	-7.58	-7.88	-8.18							
STATION	0+000.0	0+020.0	0+040.0	0+060.0	0+080.0	0+100.0	0+120.0	0+140.0	0+160.0	0+180.0	0+200.0	0+220.0	0+240.0	0+260.0	0+280.0							
CUT AND FILL		3.19	2.58	2.25	2.41	2.33	2.29	2.12	1.89	1.71	1.46	0.56	0.15	0.32	1.31							
PIPE DIAMETER	HDPE 1400 mm																					

SEA OUTFALL PROFILE (FROM STATION 0+000 TO ST 0+300)

(VER. SCALE = 1/200 HOR. SCALE = 1/500)



EXISTING ELEVATIONS	-6.29	-5.57	-5.66	-6.15	-6.59	-7.27	-7.71	-8.37	-9.03	-9.48	-10.08	-10.73	-11.23	-11.55	-11.91	-12.41						
PROPOSED INVERT LEVEL	-8.48	-8.78	-9.08	-9.38	-9.67	-10.08	-10.49	-10.90	-11.31	-11.72	-12.13	-12.53	-12.94	-13.35	-13.76	-14.17						
STATION	0+300.0	0+320.0	0+340.0	0+360.0	0+380.0	0+400.0	0+420.0	0+440.0	0+460.0	0+480.0	0+500.0	0+520.0	0+540.0	0+560.0	0+580.0	0+600.0						
CUT AND FILL	2.19	3.21	3.42	3.23	3.08	2.82	2.78	2.53	2.28	2.24	2.05	1.80	1.71	1.80	1.85	1.76						
PIPE DIAMETER																						

SEA OUTFALL PROFILE (FROM STATION 0+300 TO ST 0+600)

(VER. SCALE = 1/200 HOR. SCALE = 1/500)

LEGEND:-

- PROP. DN1400 EMERGENCY SEA OUTFALL
- CONCRETE COLLAR
- DIFFUSER

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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الاستشاري
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شركة الأبحاث المنشآت شرم
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

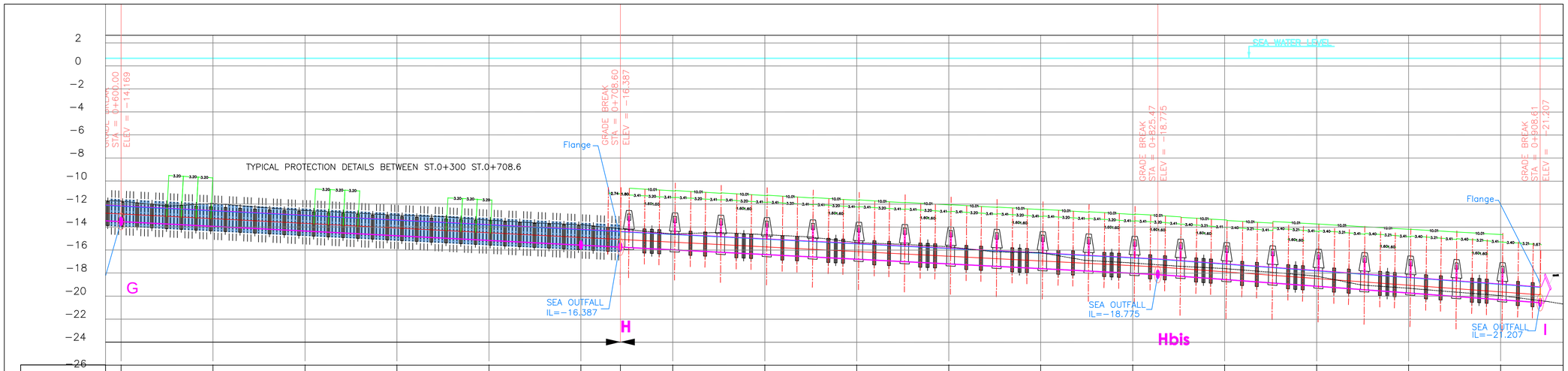
LOT 4
EMERGENCY SEA OUTFALL

PROFILE OF EMERGENCY SEA OUTFALL(DN1400) BETWEEN ST. 0+000 & ST.0+600

	Name:
Drawn:	A.CHALABI
Designed:	M. M. MANSOUR
Checked:	A.R.ITANI
Approved:	A.R.ITANI
Scale:	N.T.S
Date:	JUNE 2018

Drawing Number: BY163000-N-175
Project Number: BY163000-BX01
Model Name: BY163000-N-SDT
Sheet.No.: BY163000-N-174

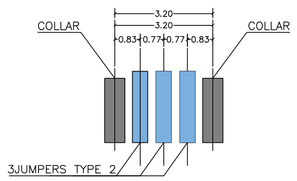
Design Stage: FINAL DESIGN



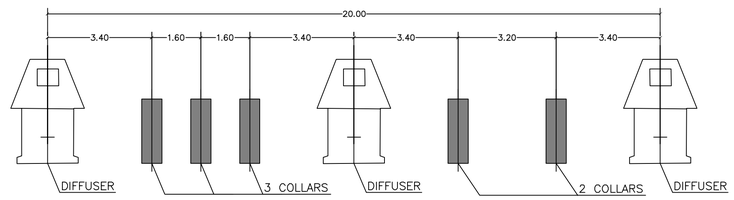
EXISTING ELEVATIONS	-12.41	-12.61	-13.22	-13.64	-14.07	-14.46	-14.154	-15.26	-15.32	-16.01	-16.38	-16.69	-17.78	-18.27	-18.93	-19.98	-20.62					
PROPOSED INVERT LEVEL	-14.17	-14.58	-14.99	-15.39	-15.80	-16.21	-16.387	-16.62	-17.03	-17.44	-17.85	-18.25	-18.66	-19.20	-19.78	-20.37	-20.96					
STATION	0+600.0	0+620.0	0+640.0	0+660.0	0+680.0	0+700.0	0+708.60	0+720.0	0+740.0	0+760.0	0+780.0	0+800.0	0+820.0	0+840.0	0+860.0	0+880.0	0+900.0					
CUT AND FILL	1.76	1.97	1.76	1.75	1.74	1.76	1.76	1.36	1.71	1.43	1.47	1.36	0.88	0.93	0.86	0.39	0.34					
PIPE DIAMETER																						
SLOPE																						

SEA OUTFALL PROFILE (FROM STATION 0+600 TO ST 0+918)

(VER. SCALE = 1/200 HOR. SCALE = 1/500)



TYPICAL PROTECTION DETAILS BETWEEN ST.0+300 ST.0+708.6



TYPICAL PROTECTION DETAILS BETWEEN ST.0+708.6 ST.0+908.6

LEGEND:-

- PROP. DN1400 EMERGENCY SEA OUTFALL
- CONCRETE COLLAR
- DIFFUSER

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الهندسية ش.م.ل
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

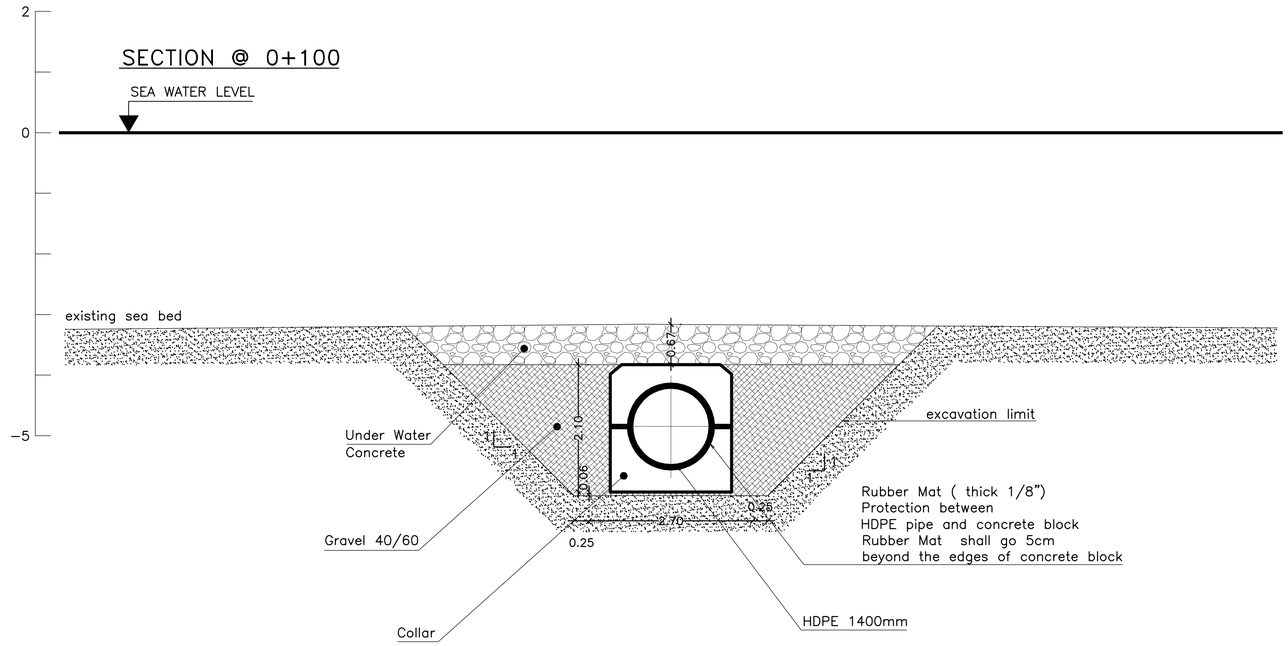
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

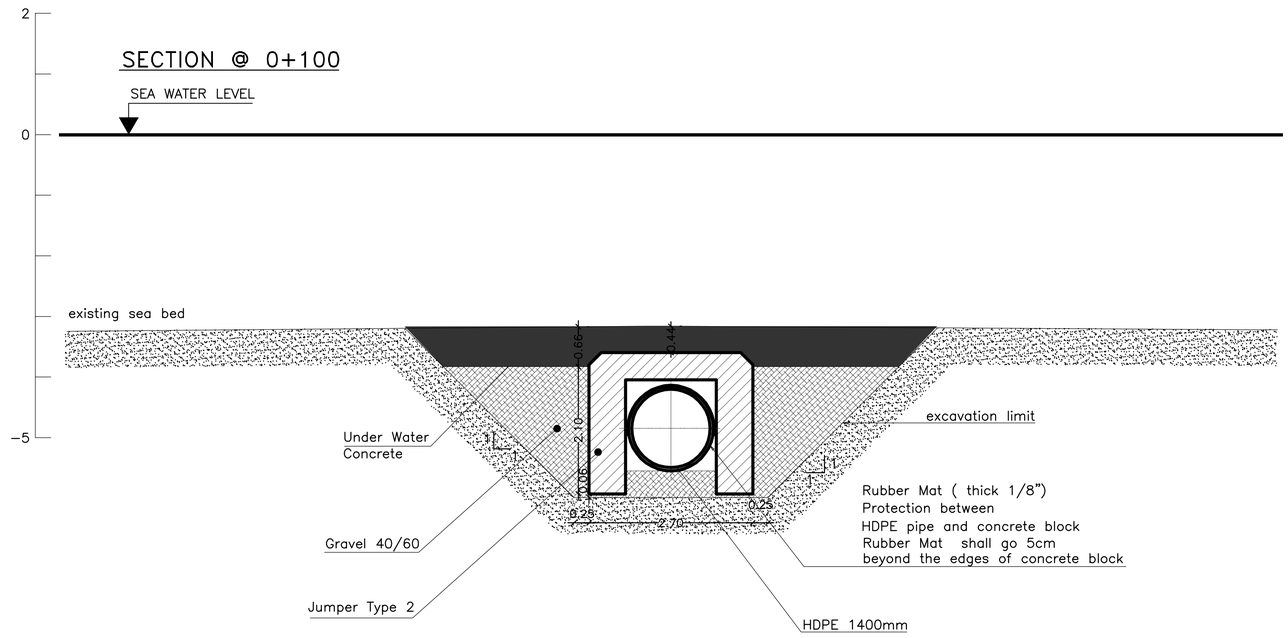
LOT 4
EMERGENCY SEA OUTFALL

PROFILE OF EMERGENCY SEA OUTFALL(DN1400) BETWEEN ST. 0+600 & ST.0+908.60

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-175
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-175



TYPICAL PROTECTION DETAIL
WITH COLLAR



TYPICAL PROTECTION DETAIL
WITH JUMPER TYPE 2

NOTES :

1-ALL DIMENSIONS ARE IN METER
UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الهندسية ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

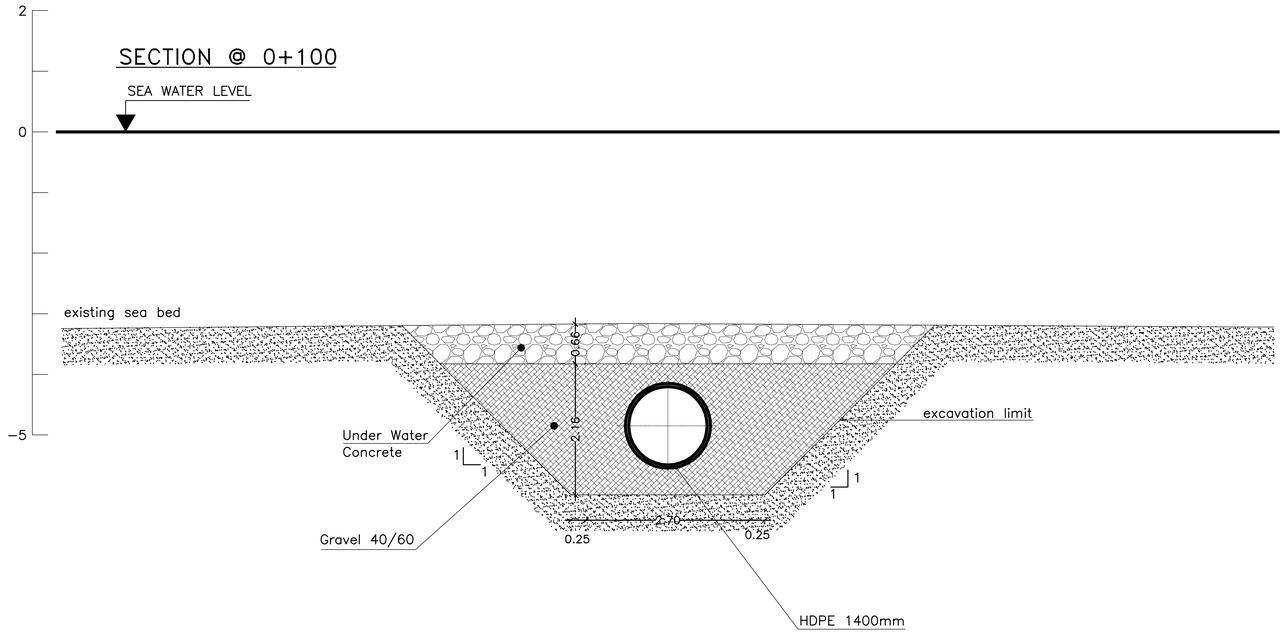
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT A (ST.0+000) and POINT C (ST.0+200)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-176
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number:
Approved:	A.R.ITANI	BY163000-BX01
Scale:	N.T.S	Model Name:
Date:	JUNE 2018	BY163000-N-SDT
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-176



TYPICAL PROTECTION DETAIL
WITH GRAVEL SURROUND

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

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COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

CONSULTANT

خطيب و علمي
شركة الاتحاد الهندسي ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

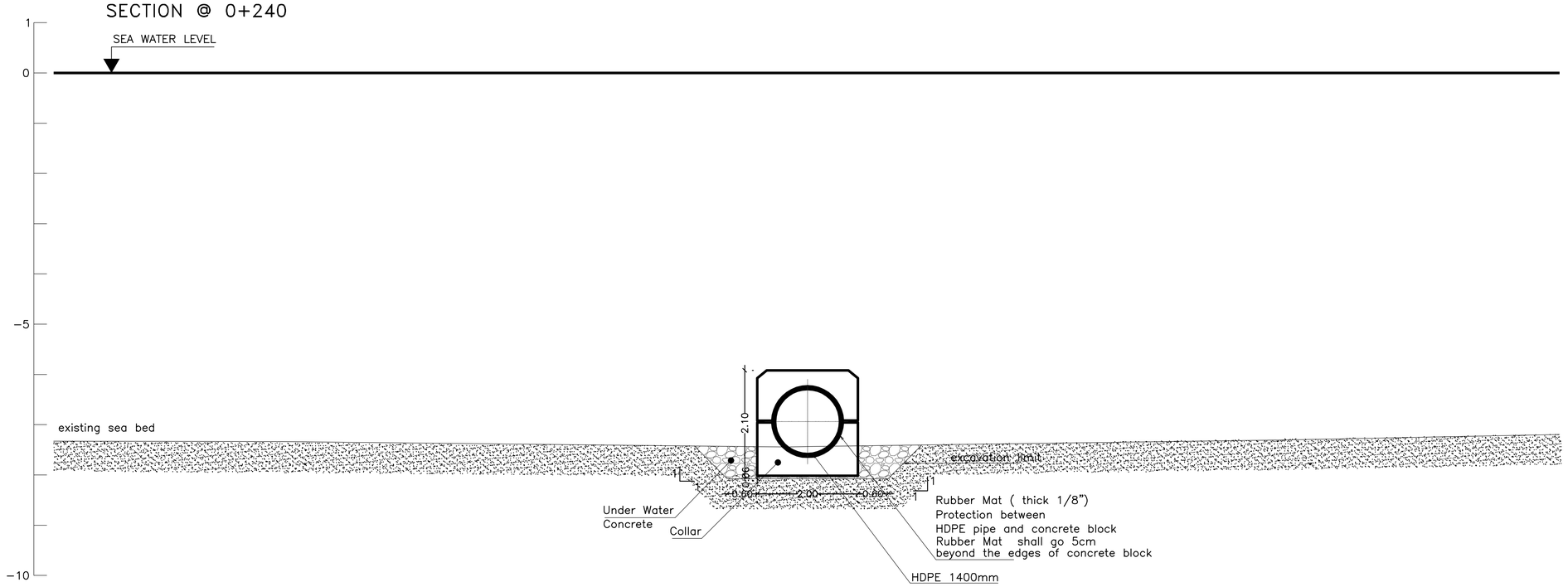
Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT A (ST.0+000) and POINT C (ST.0+200)

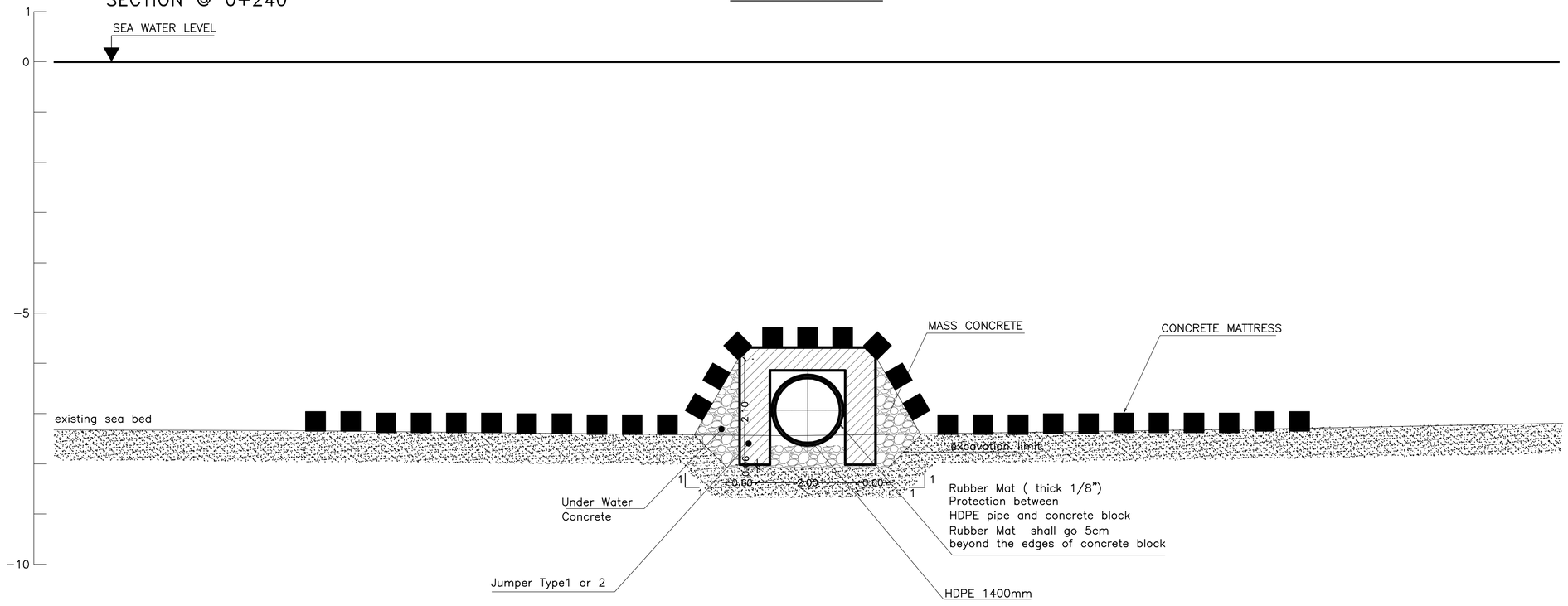
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Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number:
Approved:	A.R.ITANI	BY163000-BX01
Scale:	N.T.S	Model Name:
Date:	JUNE 2018	BY163000-N-SDT
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-177

SECTION @ 0+240



TYPICAL PROTECTION DETAIL
WITH COLLAR

SECTION @ 0+240



TYPICAL PROTECTION DETAIL
WITH JUMPERS TYPES 1 OR 2 WITH CONCRETE MATTRESS

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

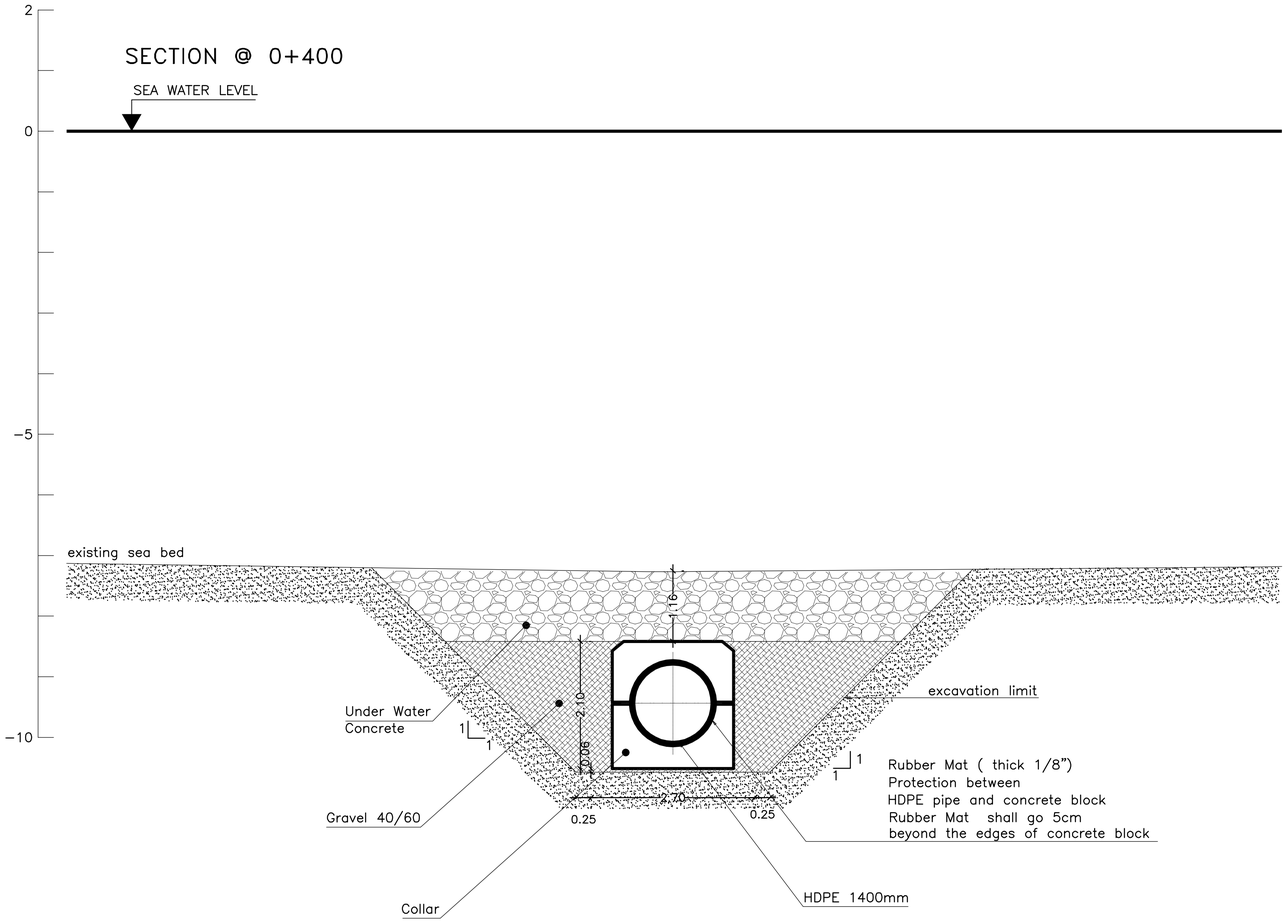
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT C (ST.0+200) and POINT D (ST.0+300)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-178
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-178



TYPICAL PROTECTION DETAIL
WITH COLLAR

NOTES :

1-ALL DIMENSIONS ARE IN METER
UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الاستشارية ش.م.ل
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

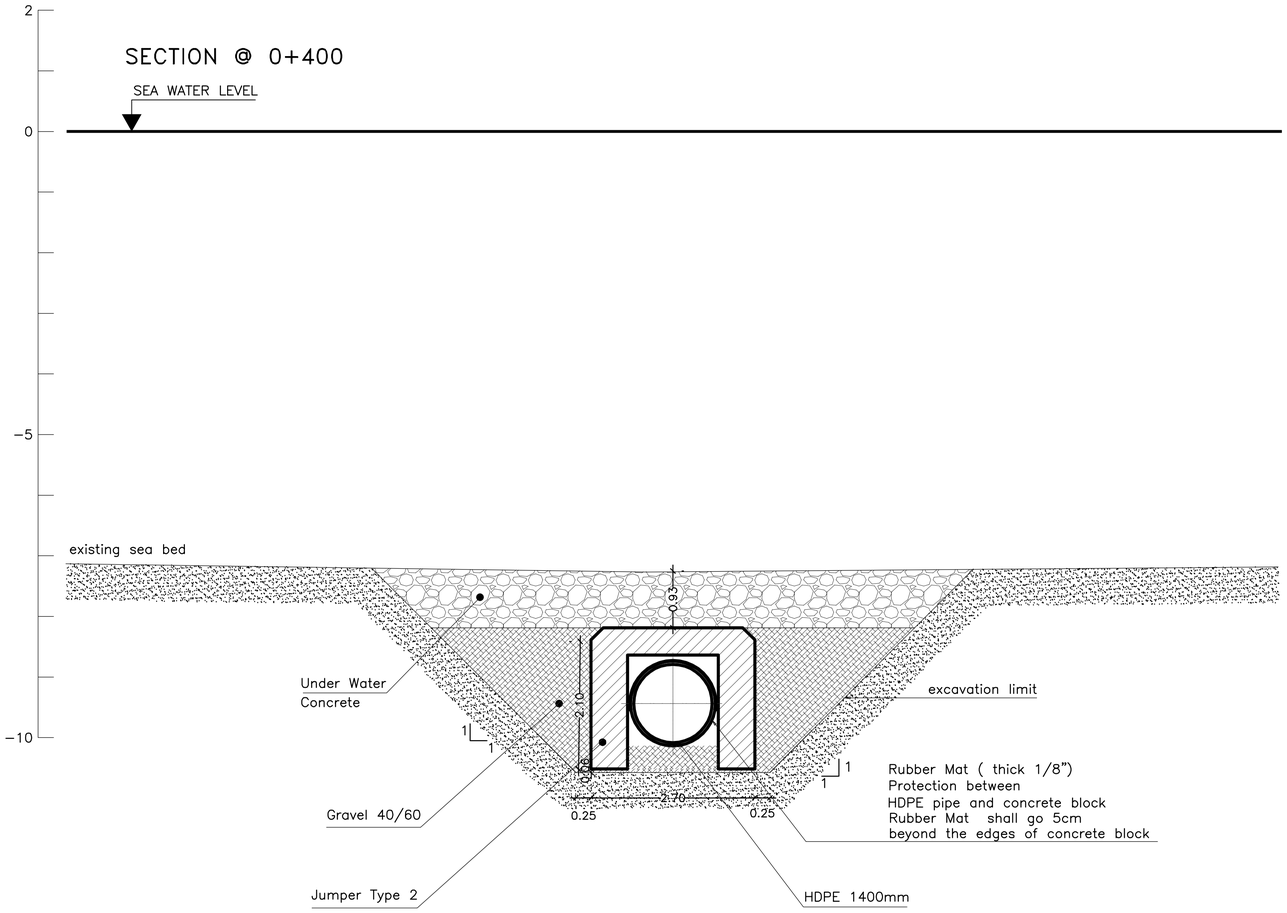
UPDATING OF THE STUDY FOR
THE REMAINING PARTS OF PHASE III
FOR BEIRUT CITY SERVICES
UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS
BETWEEN POINT D (ST.0+300) and
POINT F (ST.0+500)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-179
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-179



TYPICAL PROTECTION DETAIL WITH JUMPERS TYPES 1 OR 2

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الهندسية المتمرسة
Khatib & Alami
Consolidated Engineering Company S.A.L.

اسم المشروع:
Project Title:

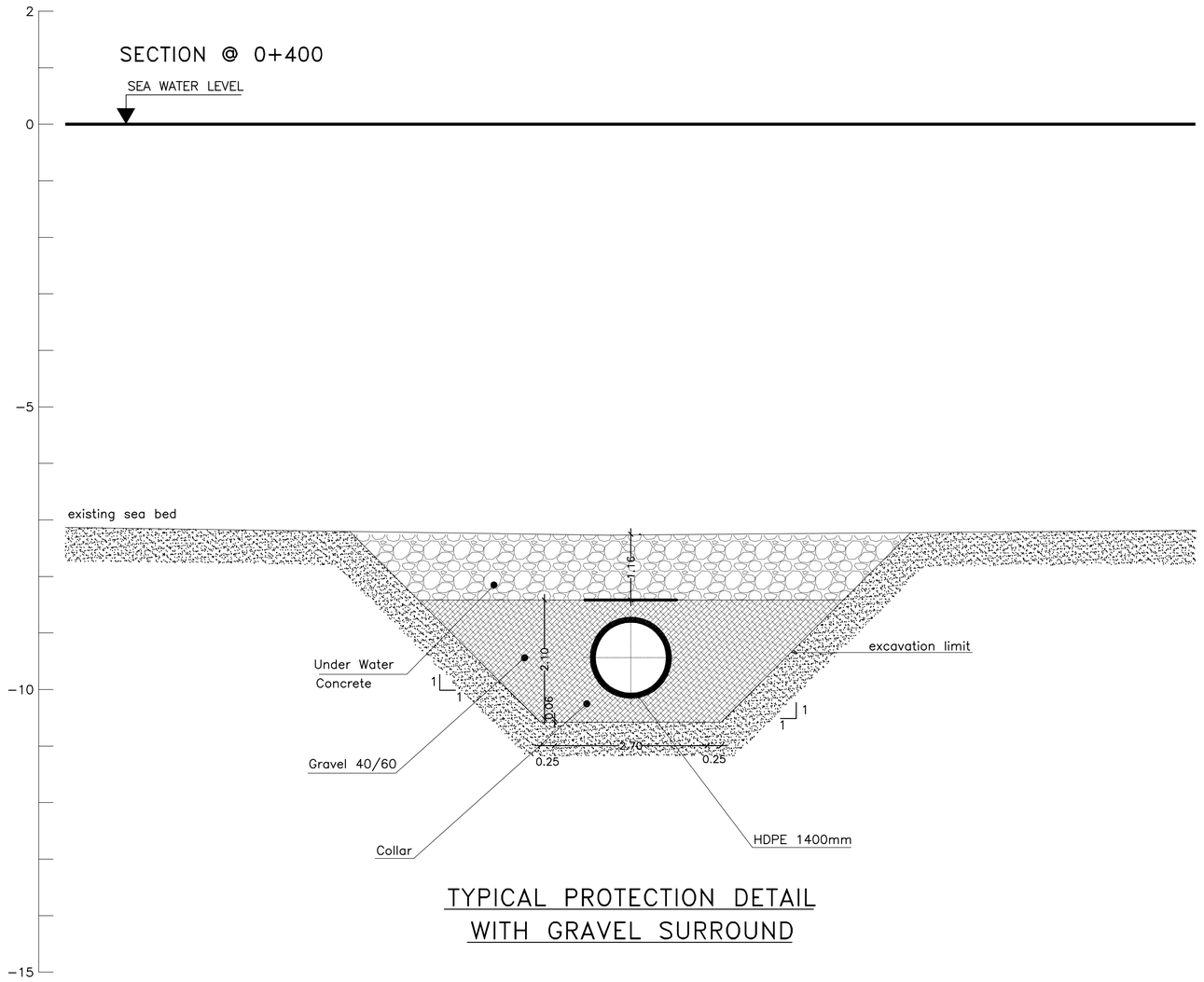
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT D (ST.0+300) and POINT F (ST.0+500)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-180
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-180



TYPICAL PROTECTION DETAIL WITH GRAVEL SURROUND

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

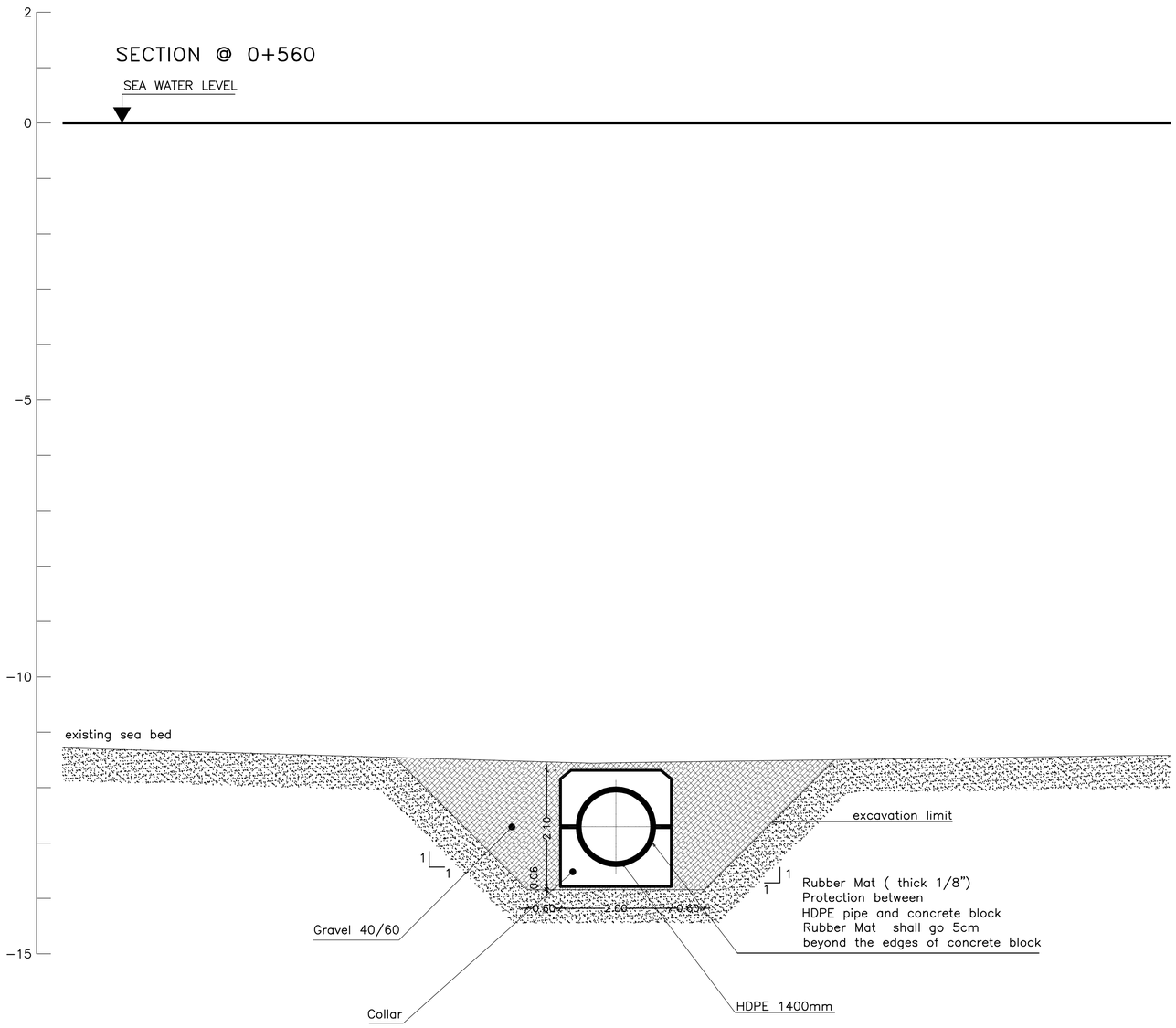
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT D (ST.0+300) and POINT F (ST.0+500)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-181
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-181



TYPICAL PROTECTION DETAIL
WITH GRAVEL SURROUND

NOTES :

1-ALL DIMENSIONS ARE IN METER
UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

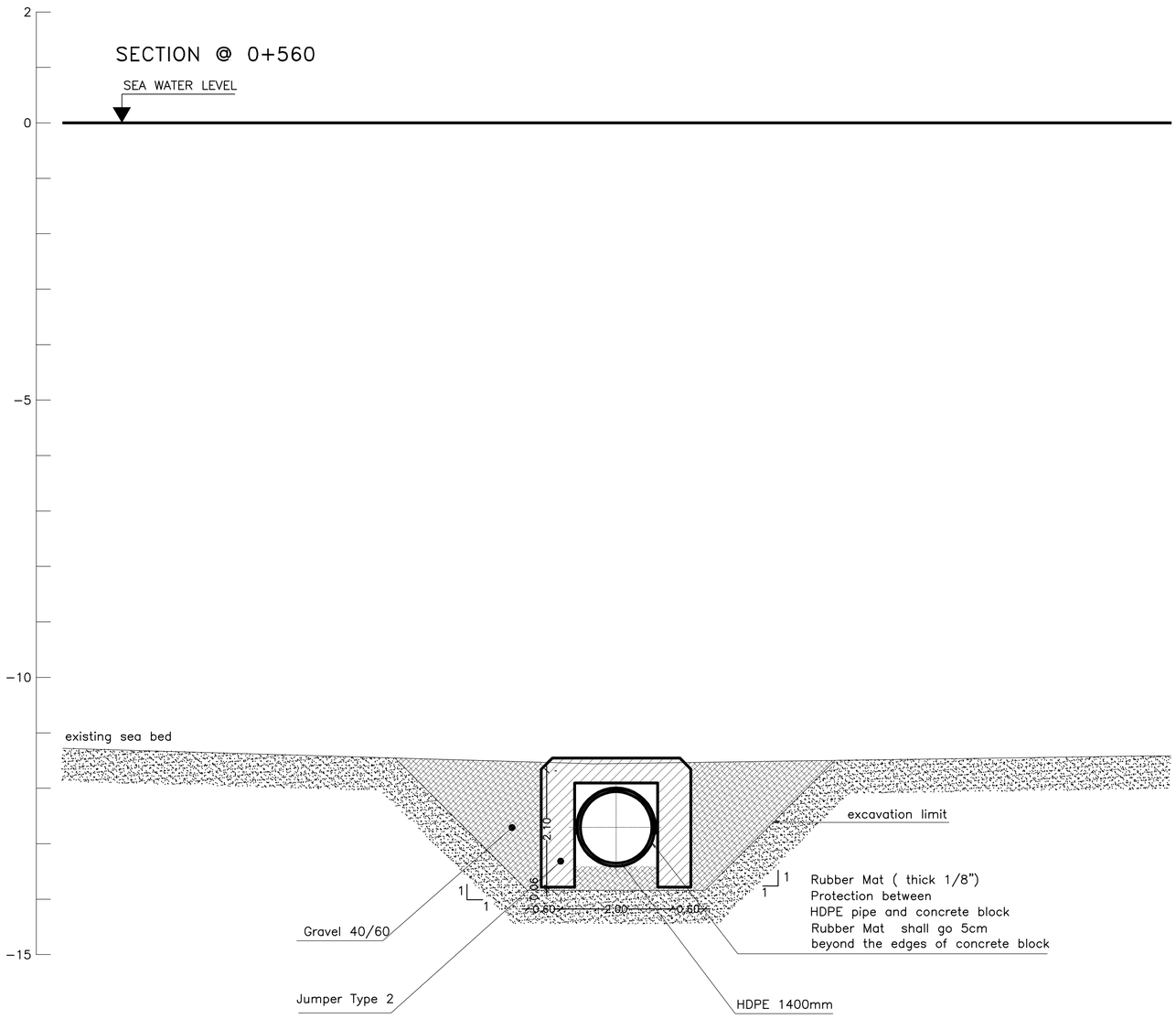
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT F (ST.0+500) and POINT H (ST.0+708.6)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-182
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-182



TYPICAL PROTECTION DETAIL WITH COLLAR

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

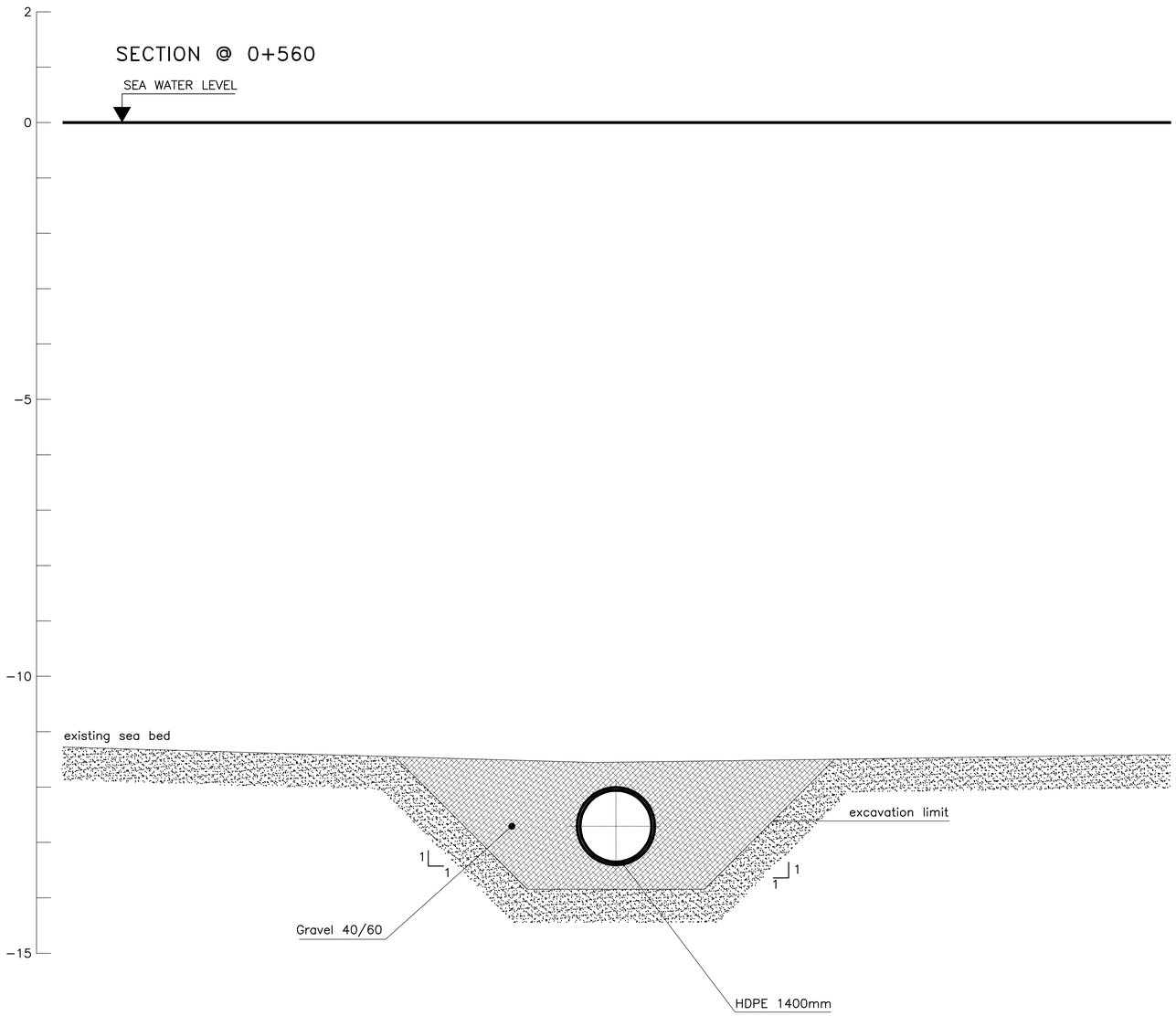
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT F (ST.0+500) and POINT H (ST.0+708.6)

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-183
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-183



TYPICAL PROTECTION DETAIL
WITH JUMPER TYPE 2

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الأبحاث الهندسية مؤسسة
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS BETWEEN POINT F (ST.0+500) and POINT H (ST.0+708.6)

	Name:
Drawn:	A.CHALABI
Designed:	M. M. MANSOUR
Checked:	A.R.ITANI
Approved:	A.R.ITANI
Scale:	N.T.S
Date:	JUNE 2018

Drawing Number: BY163000-N-184

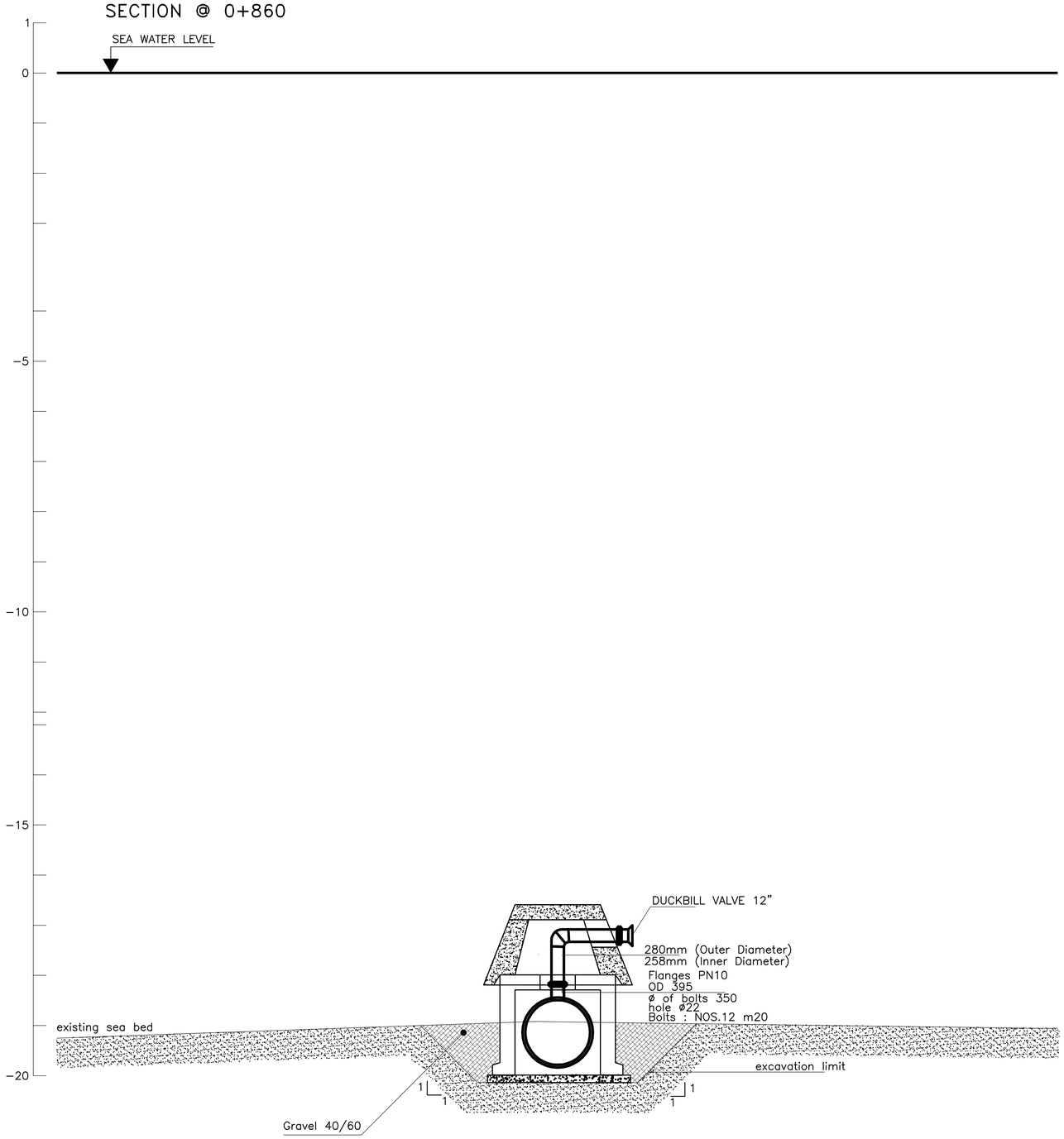
Project Number: BY163000-BX01

Model Name: BY163000-N-SDT

Design Stage: FINAL DESIGN

Sheet.No.: BY163000-N-184

SECTION @ 0+860



TYPICAL PROTECTION DETAIL FOR DIFFUSER

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الاتحاد الهندسية ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

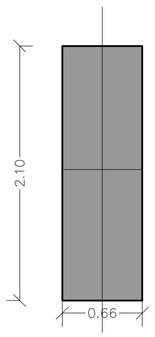
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

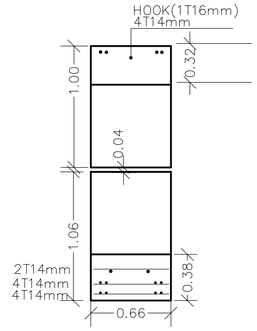
Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

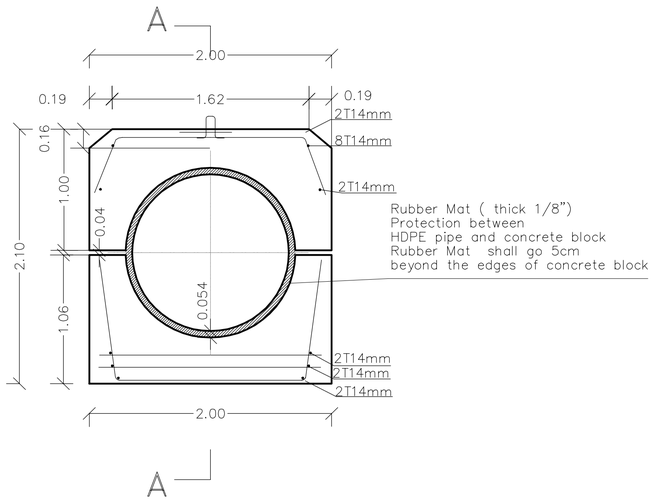
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Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-185

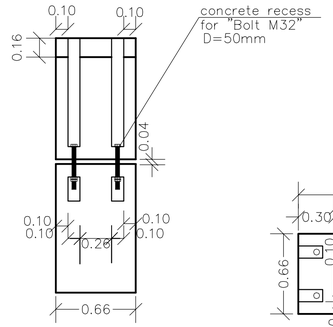




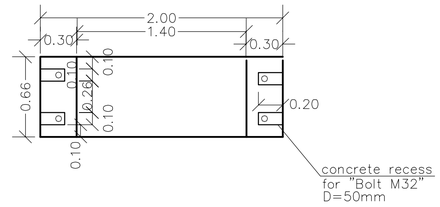
COLLAR
REINFORCEMENT
SECTION A–A



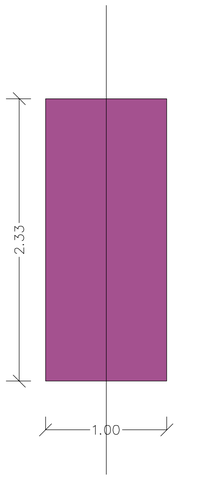
COLLAR
SECTION



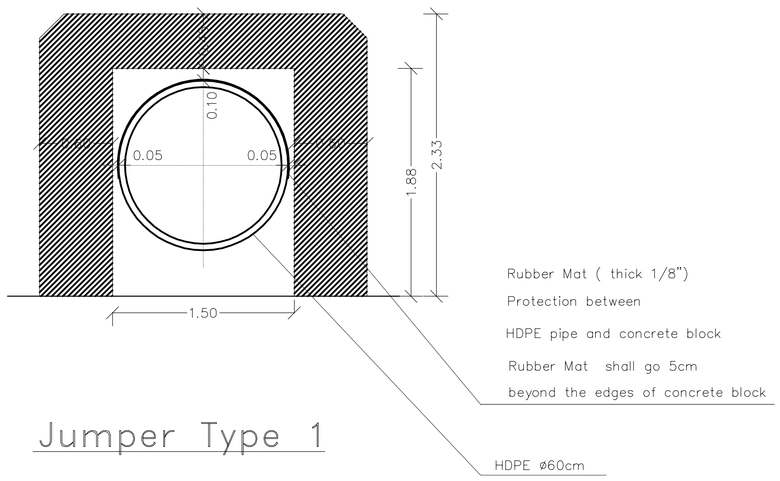
COLLAR
SIDE VIEW



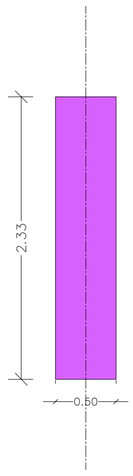
COLLAR
PLAN



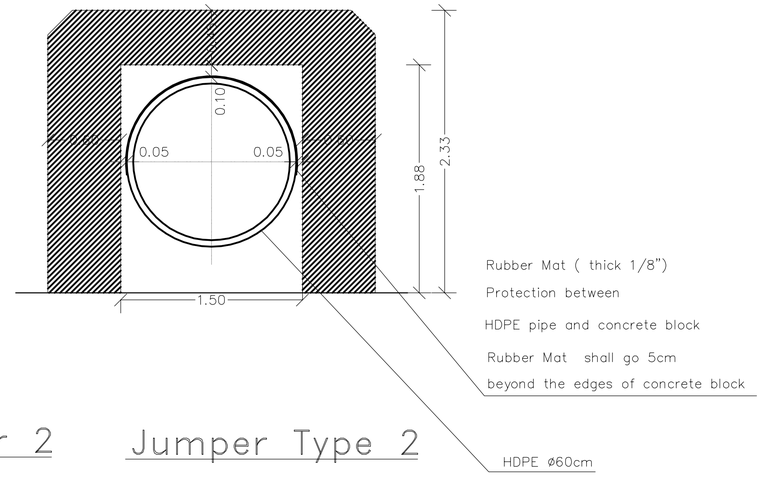
Jumper 1



Jumper Type 1



Jumper 2



Jumper Type 2

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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CONSULTANT

خطيب و علمي
شركة الأبحاث الصحية هندسية
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

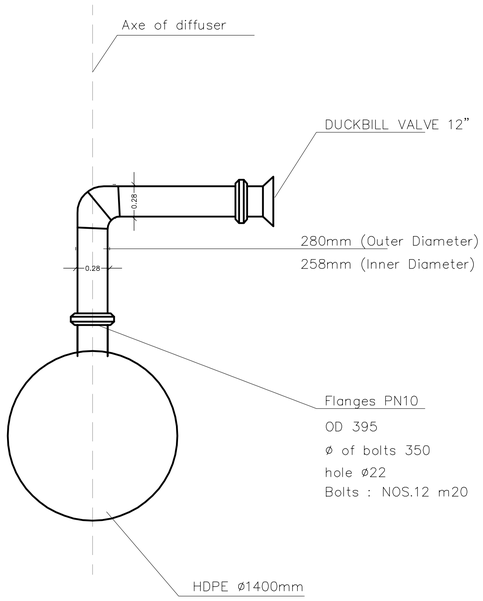
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

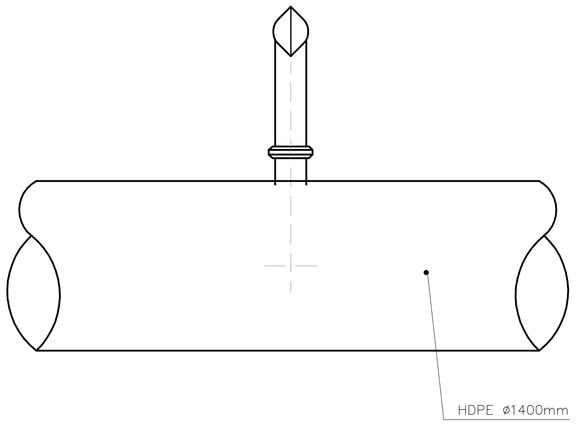
LOT 4
EMERGENCY SEA OUTFALL

DETAILS OF CONCRETE COLLARS

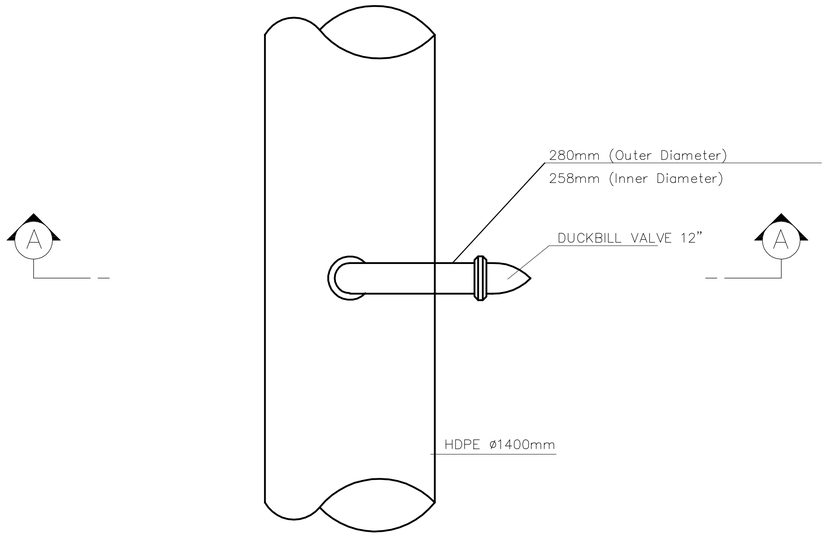
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Drawn:	A.CHALABI	BY163000-N-186
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-186



SECTION A–A



SIDE VIEW



PLAN

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الأبحاث الهندسية مؤسسة
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

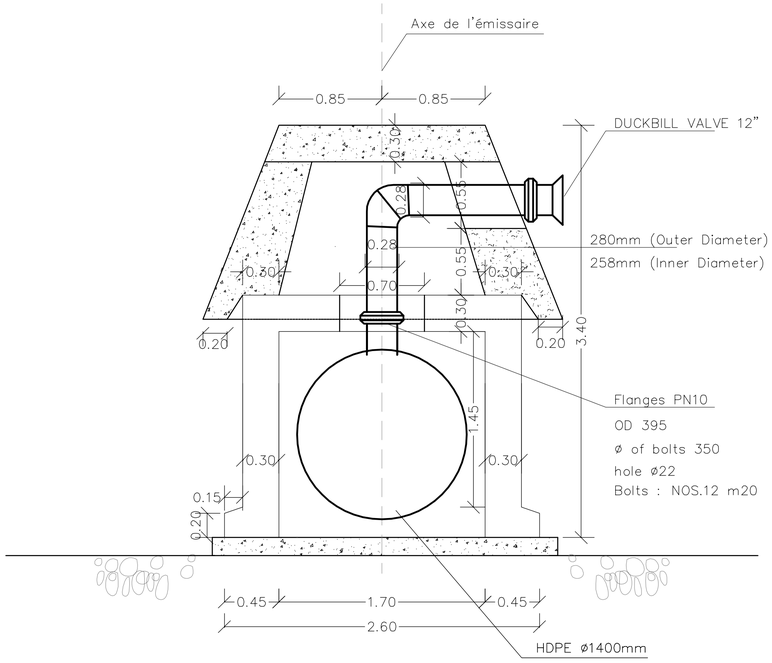
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

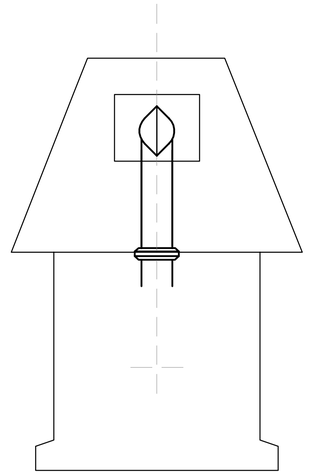
DETAILS OF RISERS and PORTS

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-187
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-187

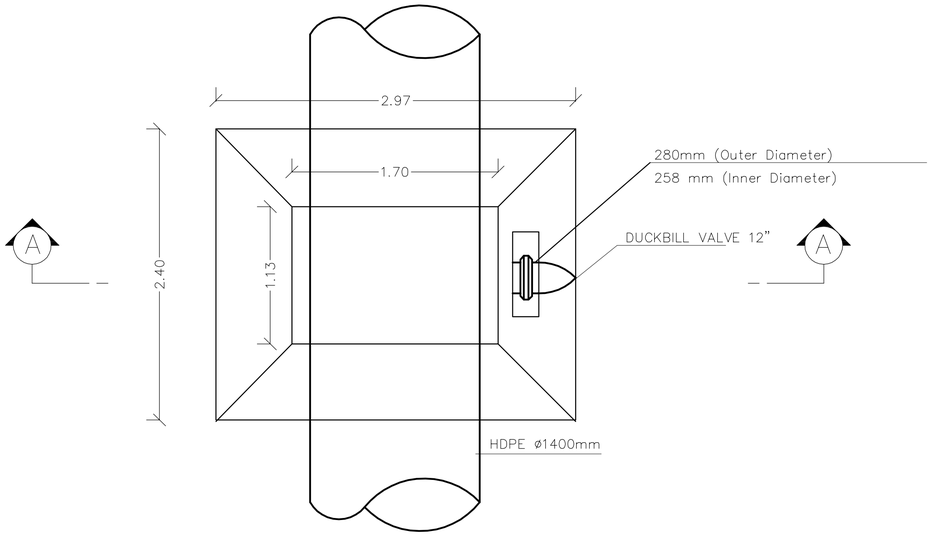


SECTION A–A

2



SIDE VIEW



PLAN

NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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شركة الأبحاث الهندسية ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

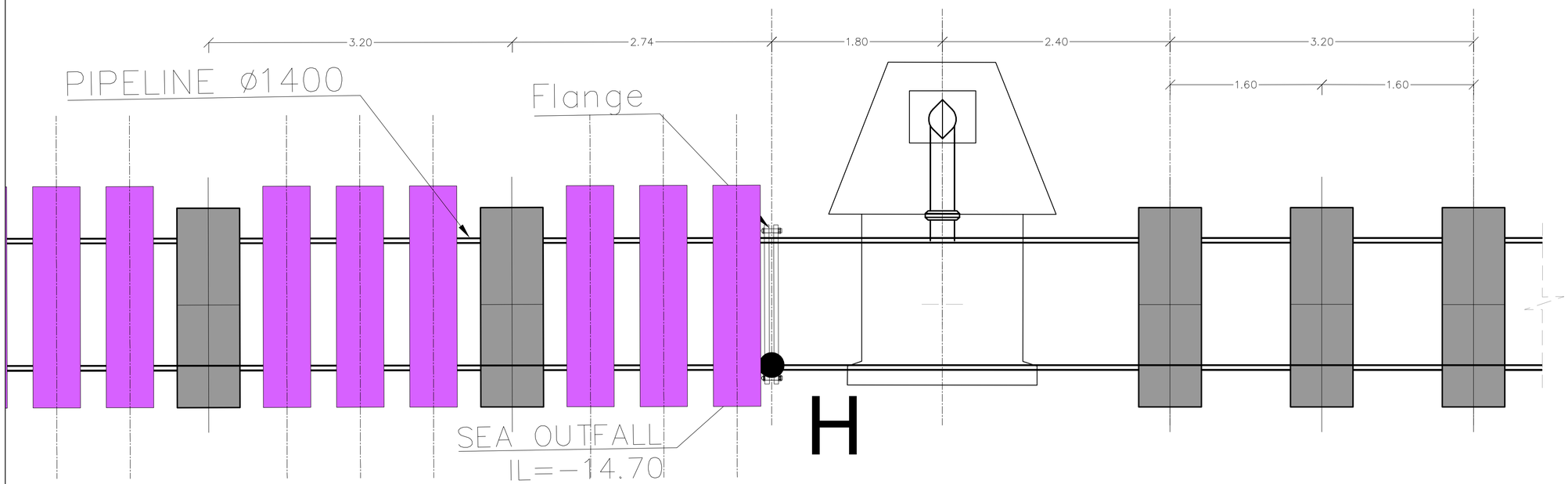
Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

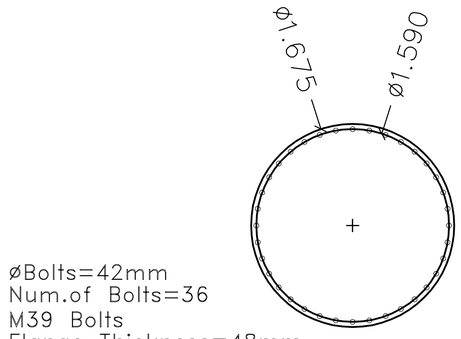
PROTECTION DETAILS OF RISERS and PORTS

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-188
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-188

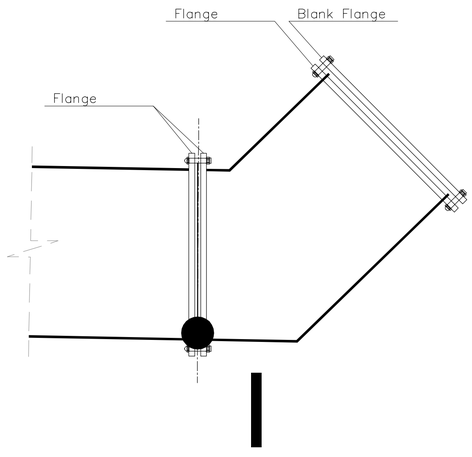
STA = 0+708.60



STA = 0+908.61



øBolts=42mm
Num.of Bolts=36
M39 Bolts
Flange Thickness=48mm



NOTES :

1-ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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مجلس الانماء و الاعمار

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

CONSULTANT

خطيب و علمي
شركة الاتحاد الهندسي ش.م.م
Khatib & Alami
Consolidated Engineering Company S.A.L.

Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

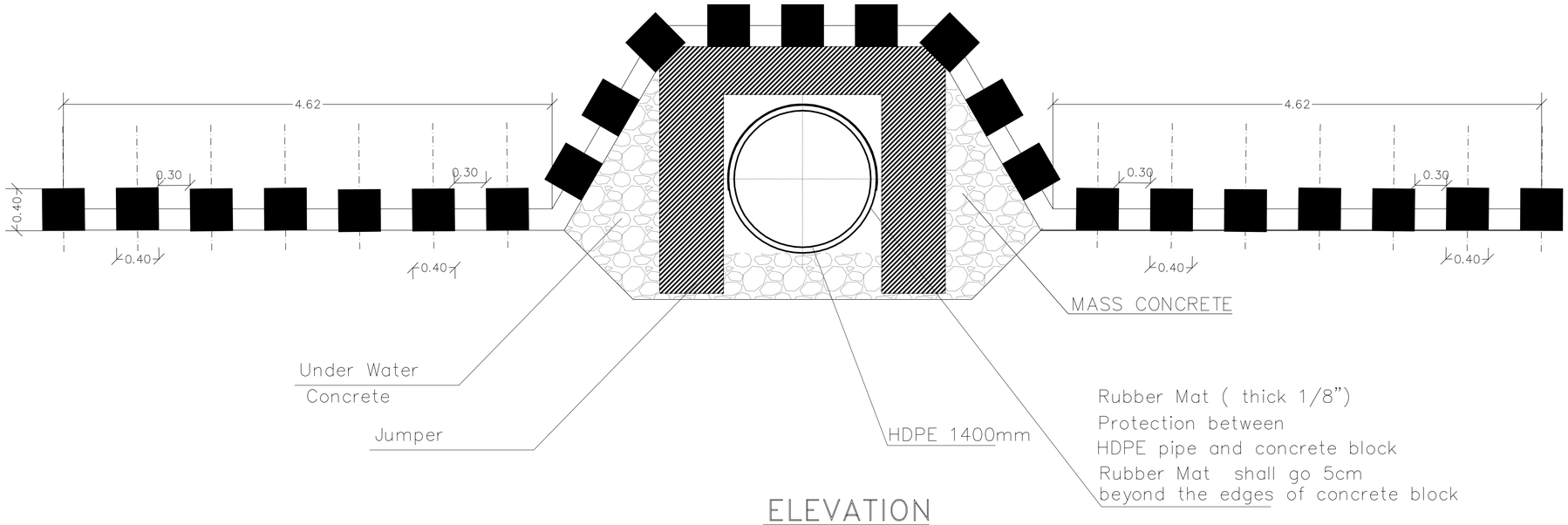
Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

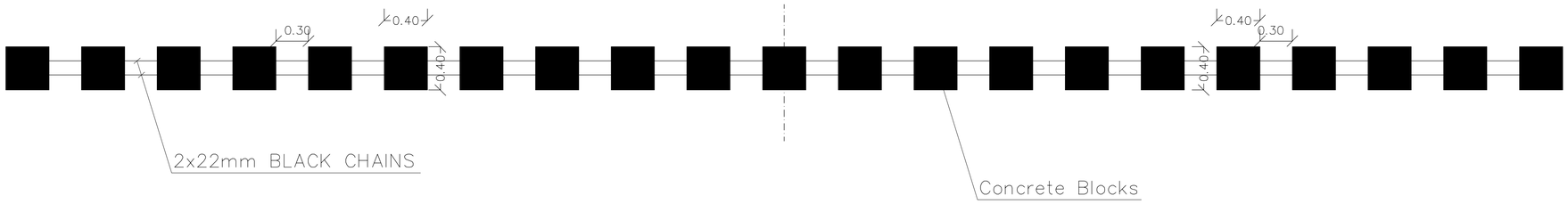
DETAILS OF THE DIFFUSER AT ST.0+708.60 and ST.0+908.61

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-189
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number:
Approved:	A.R.ITANI	BY163000-BX01
Scale:	N.T.S	Model Name:
Date:	JUNE 2018	BY163000-N-SDT
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-189

MATTRESS



ELEVATION



CONCRETE MATRESS
PLAN

NOTES :

1- ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Project Title: اسم المشروع:

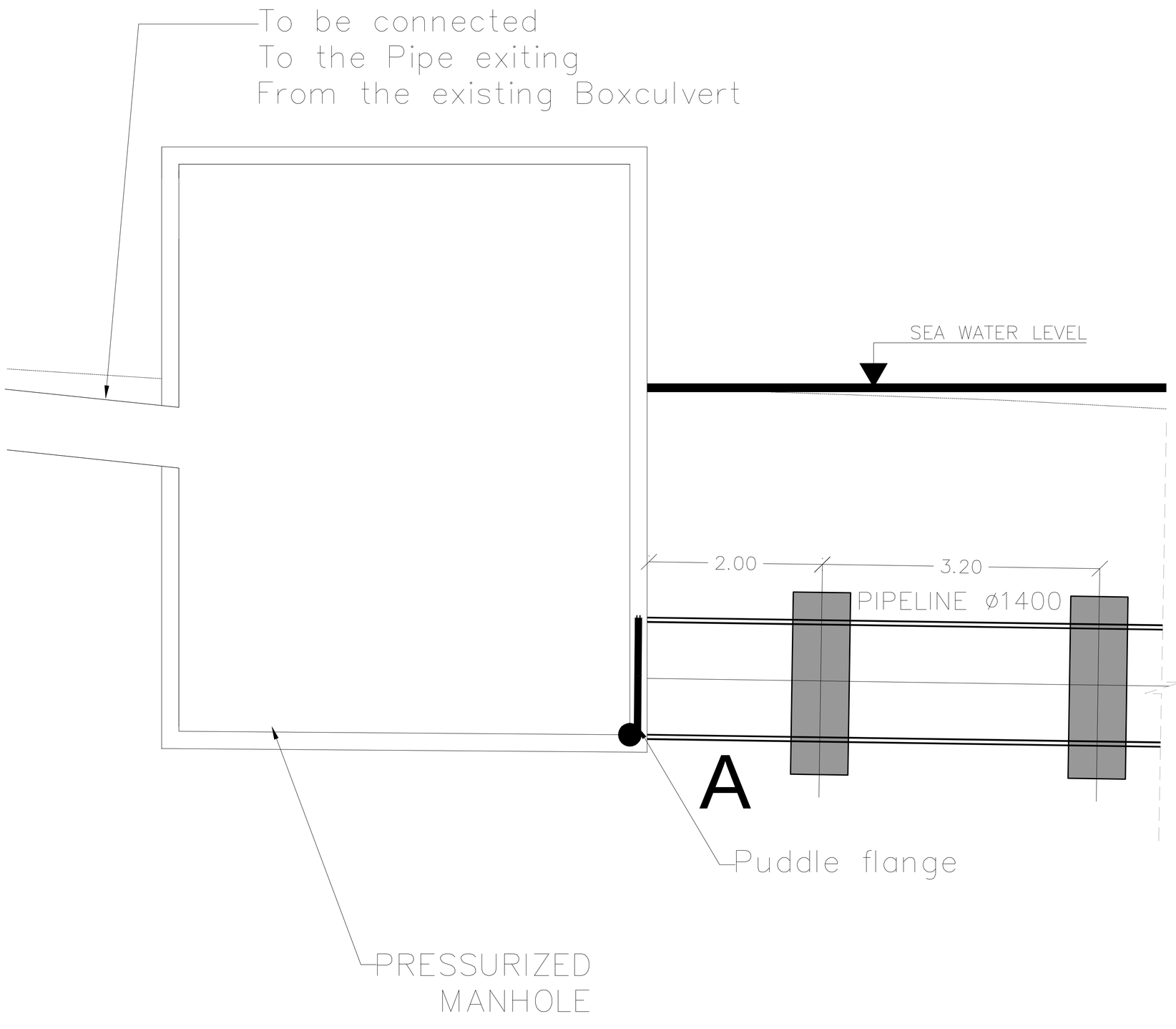
UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

TYPICAL PROTECTION DETAILS WITH JUMPERS & CONCRETE MATRESS

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-190
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number:
Approved:	A.R.ITANI	BY163000-BX01
Scale:	N.T.S	Model Name:
Date:	JUNE 2018	BY163000-N-SDT
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-190



NOTES :

1- ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.
2- FOR MORE DETAILS REFER TO DWG NO : BY163000-N-166 .

Rev.	Date	Revision Details	Drawn.	Chkd.	Appd.

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Project Title: اسم المشروع:

UPDATING OF THE STUDY FOR THE REMAINING PARTS OF PHASE III FOR BEIRUT CITY SERVICES UPGRADING PROJECT

Drawing Title:

LOT 4
EMERGENCY SEA OUTFALL

SEA OUTFALL CONNECTION WITH PRESSURIZED MANHOLE MH-03

	Name:	Drawing Number:
Drawn:	A.CHALABI	BY163000-N-191
Designed:	M. M. MANSOUR	
Checked:	A.R.ITANI	Project Number: BY163000-BX01
Approved:	A.R.ITANI	
Scale:	N.T.S	Model Name: BY163000-N-SDT
Date:	JUNE 2018	
Design Stage: FINAL DESIGN		Sheet.No.: BY163000-N-191

2.3 - Ramlet El Bayda Sea Outfall Drawings (Preliminary Concept Drawings)

Onshore GRP Sewer and Storm Line

(Follows Original SEATEC Proposal - Size Changed to DN 800 mm)

NOTES:

REVISION STATUS

REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
0	ISSUED FOR REVIEW	09-12-18	MS	LR	HL

CLIENT:

Municipality Of Beirut

ENGINEERING CONSULTANT:

Enola

PROJECT TITLE:

Sea Outfall at Ramlet El Bayda

DRAWING TITLE:

DRAWN BY	MS	CHECKED	LR	APPROVED	HL
PAPER SIZE	A2	DATE	09-12-18	SCALE	N.T.S
DRAWING NO.				SHT. NO.	REV. NO.
FPI-REB-SO-001				000	0

MANUFACTURER:

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SIZE: A2

FILE NAME:

PROJECT CODE: