

KARACHI WATER & SEWERAGE BOARD

ADDITIONAL 65 MGD WATER SUPPLY SCHEME  
FROM HALEJI TO PIPRI, KARACHI

PACKAGE # 01  
CONSTRUCTION OF R.C.C LINED CANAL & R.C.C CONDUIT  
FROM HALEJI TO GHARO PUMPING STATION INCLUDING REVIVAL OF HALEJI LAKE  
AND REMODELING OF RESERVOIR BRANCH

VOLUME-IV  
TENDER DRAWINGS  
NOVEMBER, 2017

CONSULTANT:



**EA Consulting ( Pvt. ) Limited**

(Formerly Engineering Associates)

CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:



**Jers Engineering Consultant**

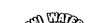




# **LIST OF DRAWINGS**

## LIST OF DRAWING

S.NO	DRAWING TITLE	DRAWING NO.
<b>PACKAGE # 01</b>		
01	LIST OF DRAWING	EA-942-65M-PI-U-LS01
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02	PROPOSED LAYOUT PLAN OF SITE OFFICE AT HALEJI LAKE	EA-942-65M-PI-U-GN01
<b>LOCATION PLAN</b>		
03	LOCATION PLAN	EA-942-65M-PI-U-LP01
<b>PLAN &amp; PROFILE (HALEJI LAKE TO GHARO PUMPING STATION)</b>		
04	PLAN & PROFILE ( STA = 0+000 TO 0+750 )	EA-942-65M-PI-U-PP01
05	PLAN & PROFILE ( STA = 0+750 TO 1+500 )	EA-942-65M-PI-U-PP02
06	PLAN & PROFILE ( STA = 1+500 TO 2+250 )	EA-942-65M-PI-U-PP03
07	PLAN & PROFILE ( STA = 2+250 TO 3+000 )	EA-942-65M-PI-U-PP04
08	PLAN & PROFILE ( STA = 3+000 TO 3+750 )	EA-942-65M-PI-U-PP05
09	PLAN & PROFILE ( STA = 3+750 TO 4+500 )	EA-942-65M-PI-U-PP06
10	PLAN & PROFILE ( STA = 4+500 TO 5+250 )	EA-942-65M-PI-U-PP07
11	PLAN & PROFILE ( STA = 5+250 TO 6+000 )	EA-942-65M-PI-U-PP08
12	PLAN & PROFILE ( STA = 6+000 TO 6+750 )	EA-942-65M-PI-U-PP09
13	PLAN & PROFILE ( STA = 6+750 TO 7+500 )	EA-942-65M-PI-U-PP10
14	PLAN & PROFILE ( STA = 7+500 TO 8+250 )	EA-942-65M-PI-U-PP11
15	PLAN & PROFILE ( STA = 8+250 TO 9+000 )	EA-942-65M-PI-U-PP12
16	PLAN & PROFILE ( STA = 9+000 TO 9+750 )	EA-942-65M-PI-U-PP13
17	PLAN & PROFILE ( STA = 9+750 TO 10+500 )	EA-942-65M-PI-U-PP14
18	PLAN & PROFILE ( STA = 10+500 TO 11+250 )	EA-942-65M-PI-U-PP15
19	PLAN & PROFILE ( STA = 11+250 TO 12+000 )	EA-942-65M-PI-U-PP16
20	PLAN & PROFILE ( STA = 12+000 TO 12+750 )	EA-942-65M-PI-U-PP17
21	PLAN & PROFILE ( STA = 12+750 TO 13+500 )	EA-942-65M-PI-U-PP18
22	PLAN & PROFILE ( STA = 13+500 TO 14+250 )	EA-942-65M-PI-U-PP19
23	PLAN & PROFILE ( STA = 14+250 TO 15+000 )	EA-942-65M-PI-U-PP20
24	PLAN & PROFILE ( STA = 15+000 TO 15+750 )	EA-942-65M-PI-U-PP21
25	PLAN & PROFILE ( STA = 15+750 TO 16+500 )	EA-942-65M-PI-U-PP22
26	PLAN & PROFILE ( STA = 16+500 TO 17+250 )	EA-942-65M-PI-U-PP23
27	PLAN & PROFILE ( STA = 17+250 TO 18+000 )	EA-942-65M-PI-U-PP24
28	PLAN & PROFILE ( STA = 18+000 TO 18+750 )	EA-942-65M-PI-U-PP25
29	PLAN & PROFILE ( STA = 18+750 TO 19+500 )	EA-942-65M-PI-U-PP26
30	PLAN & PROFILE ( STA = 19+500 TO 19+828.71 )	EA-942-65M-PI-U-PP27
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32	PLAN & PROFILE ( STA = 0+750 TO 0+891.843 )	EA-942-65M-PI-U-PP29

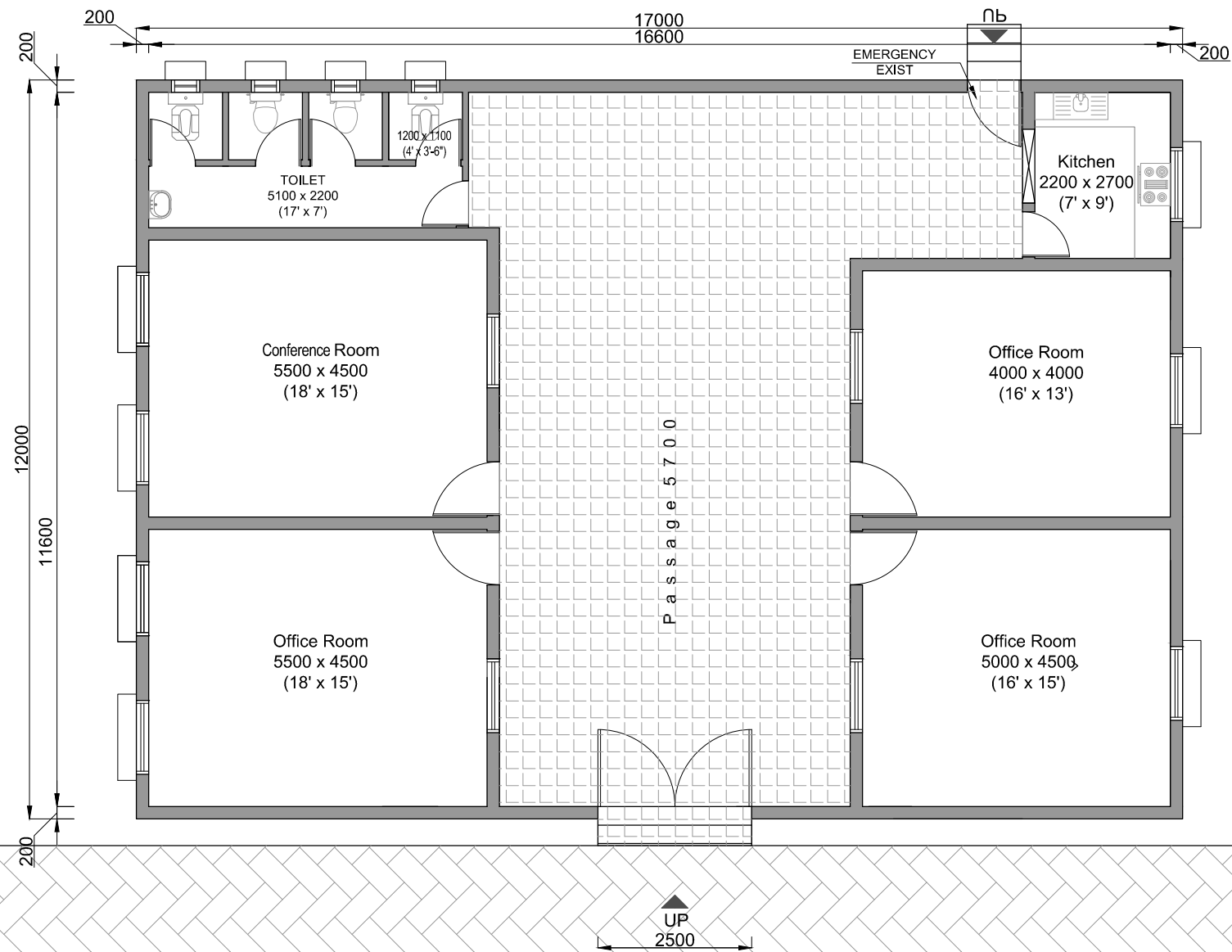
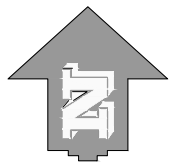
S.NO	DRAWING TITLE	DRAWING NO.
DETAIL DRAWINGS (HALEJI LAKE TO GHARO PUMPING STATION)		
33	INTAKE STRUCTURE AT HALEJI LAKE	EA-942-65M-PI-U-W400
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36	INTERCONNECTION POINT DETAILS	EA-942-65M-PI-U-W403
37	TYPICAL DETAIL OF SIPHON-II	EA-942-65M-PI-U-W404
38	BOX CULVERT DETAILS	EA-942-65M-PI-U-W405
39	TRANSITION STRUCTURE OF CANAL TO CONDUIT	EA-942-65M-PI-U-W406
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47	INTERCONNECTION POINT PENSTOCK STRUCTURE DETAILS	EA-942-65M-PI-U-W414
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50	CANAL & CONDUIT REINFORCEMENT DETAILS	EA-942-65M-PI-S-W401
51	TRANSITION STRUCTURE OF CONDUIT TO CANAL REINFORCEMENT DETAILS	EA-942-65M-PI-S-W402
52	INTERCONNECTION POINT PENSTOCK STRUCTURE REINFORCEMENT DETAIL	EA-942-65M-PI-S-W403
53	TYPICAL REINFORCEMENT DETAIL OF SIPHON II, III & IV	EA-942-65M-PI-S-W404
54	BOX CULVERT REINFORCEMENT DETAILS	EA-942-65M-PI-S-W405
55	TRANSITION STRUCTURE OF CANAL TO CONDUIT REINFORCEMENT DETAILS	EA-942-65M-PI-S-W406
56	TYPICAL REINFORCEMENT DETAIL OF SIPHON-V & VI	EA-942-65M-PI-S-W407
57	OVER FLOW CHAMBER REINFORCEMENT DETAIL	EA-942-65M-PI-S-W408
58	REINFORCEMENT DETAIL OF INTAKE CHAMBER AT KG CANAL	EA-942-65M-PI-S-W410
59	TYPICAL CONDUIT REINFORCEMENT SECTION FOR INTAKE FROM KG CANAL	EA-942-65M-PI-S-W411
60	INTERCONNECTION POINT PENSTOCK REINFORCEMENT STRUCTURE DETAIL	EA-942-65M-PI-S-W413

						<div>CLIENT:-</div> <div></div> <div>KARACHI WATER &amp; SEWERAGE BOARD</div>	PROJECT:- <div>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</div>					
							<div>CONSULTANT:-</div> <div></div> <div>EA Consulting ( Pvt. ) Limited</div> <div>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</div>	<div>IN ASSOCIATION WITH:-</div> <div></div> <div>Jers Engineering Consultant</div>	DRAWN	ASLAM	TITLE <div>PACKAGE # 01</div>	
									DESIGNED	NABEEL		
											CHECKED	MUNAWAR
0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A			APPROVED	ALI ASGHAR	N.T.S	Drawing No. <div>EA-942-65M-PI-U-LS01</div>	
ED.NO	DATE	DESCRIPTION	BY	CKD	APR							

**PROPOSED SITE OFFICE**  
**AT HALEJI LAKE**



PROPOSED SITE OFFICE  
AT HALEJI LAKE



NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE STATED.
2. FOR LOCATION OF SCHEMATIC DRAWING OF PROPOSED PUMP ROOM REFER DWG. NO. EA-942-65M-PIII-U-LP1.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-




ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN	M.NOMAN SIDDIQUI	TITLE	PACKAGE # 01
DESIGNED	NABEEL AHMED IDREES	PROPOSED LAYOUT PLAN OF SITE OFFICE AT HALEJI LAKE	
CHECKED	MUNAWAR ZAMAN	Scale / Sheet	Drawing No.
APPROVED	ALI ASGHAR	N.T.S (A1)	EA-942-65M-PI-U-GN01

# LOCATION PLAN





							 <b>KARACHI WATER &amp; SEWERAGE BOARD</b>	<b>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</b>	PROJECT:-						
	0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A			 <b>EA Consulting ( Pvt. ) Limited</b> <small>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</small>	IN ASSOCIATION WITH:-  <b>Jers Engineering Consultant</b>	DRAWN	ASLAM	TITLE		PACKAGE # 01
														LOCATION PLAN	
ED.NO	DATE	DESCRIPTION	BY	CKD	APR			CHECKED	MUNAWAR	Scale / Sheet		Drawing No.			
								APPROVED	ALI ASGHAR	N.T.S (A1)	EA-942-65M-PI-U-LP01				

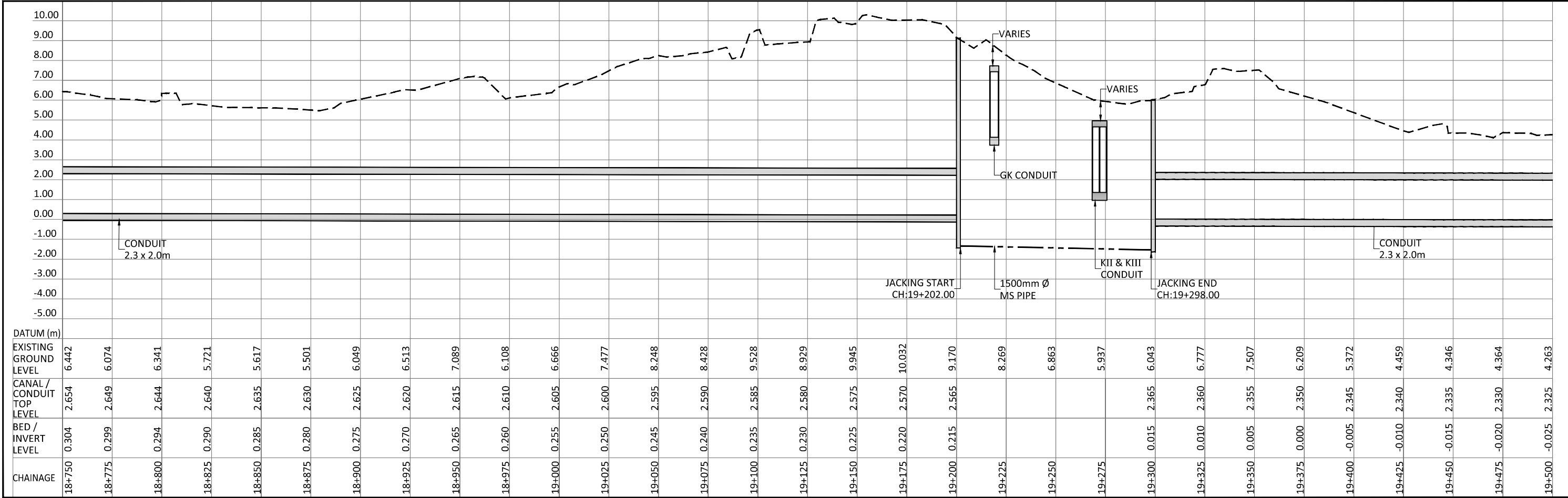
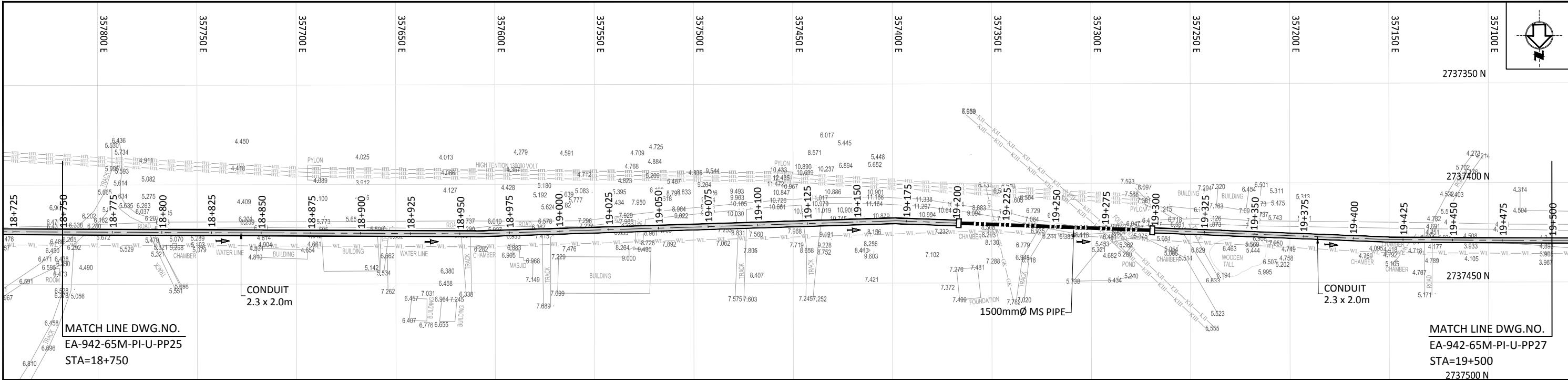
**PLAN & PROFILE**  
**HALEJI LAKE TO GHARO**  
**PUMPING STATION**



# **PLAN & PROFILE**







NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CONDUIT DETAIL REFER

DWG NO: EA-942-65M-PI-U-W401.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

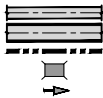
ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )



LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE



KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

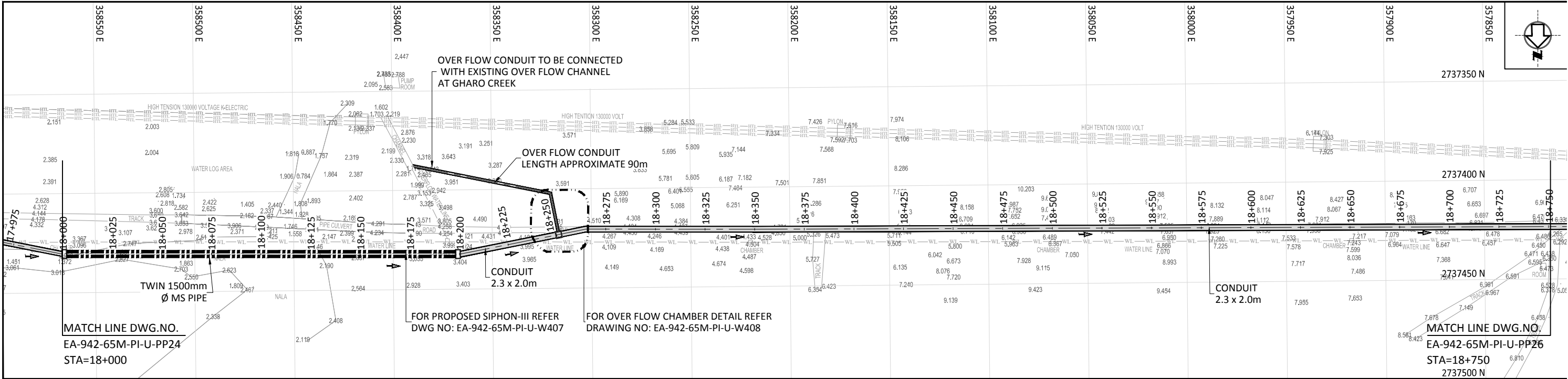
BOX CULVERTS

PROPOSED STRUCTURE

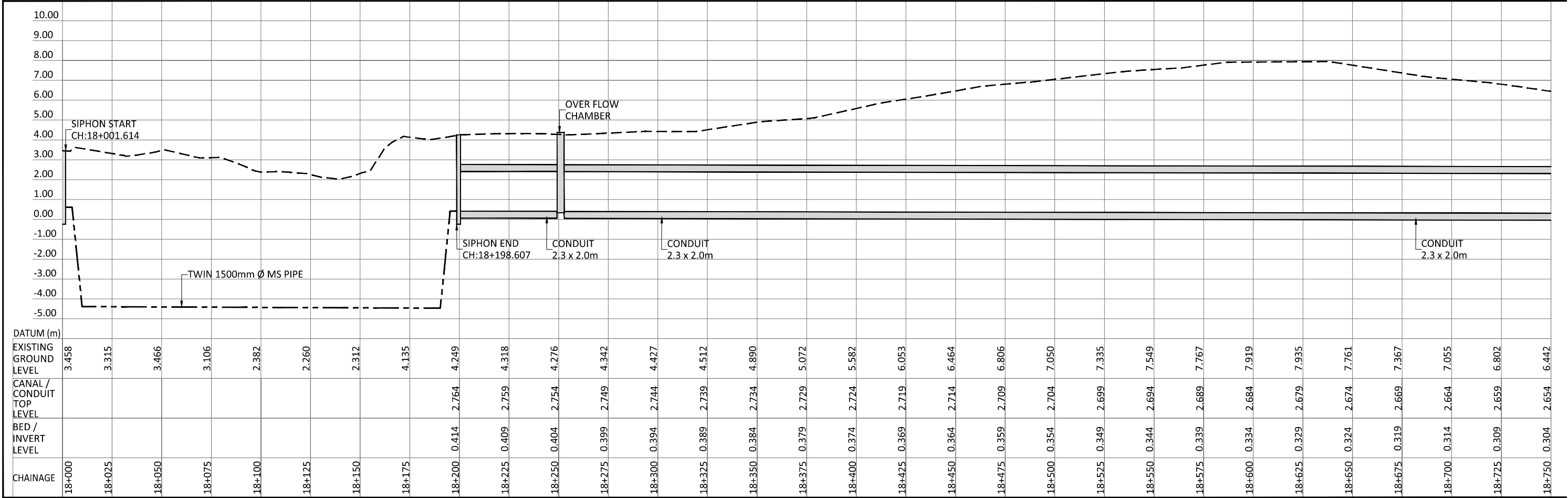
KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE



PLAN  
STA. 18+000 TO 18+750



PROFILE  
STA. 18+000 TO 18+750

**NOTES:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR TYPICAL CONDUIT DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.
3. FOR SIPHON-V DETAIL REFER DWG NO: EA-942-65M-PI-U-W407.
4. FOR OVER FLOW CHAMBER DETAIL REFER DWG NO: EA-942-65M-PI-U-W408.

**LEGEND FOR PLAN:-**

PROPOSED CONDUIT  
PROPOSED CHANNEL  
SIPHON PIPE LINE  
BOX CULVERT  
FLOW ARROW  
EXISTING SERVICES:  
WATER LINE  
ICI WATER LINE  
PORT QASIM WATER LINE  
PAKISTAN STEEL WATER LINE  
GREATER KARACHI (GK)  
KARACHI WATER (KII)

**LEGEND FOR PROFILE:-**

PROPOSED CONDUIT  
NATURAL GROUND LEVEL  
CANAL TOP LEVEL  
CANAL BED LEVEL  
SIPHON PIPE  
BOX CULVERTS  
PROPOSED STRUCTURE

KARACHI WATER ( KIII )  
ELECTRIC LINE  
SUI SOUTHERN GAS LINE

CLIENT:-  
**KARACHI WATER & SEWERAGE BOARD**

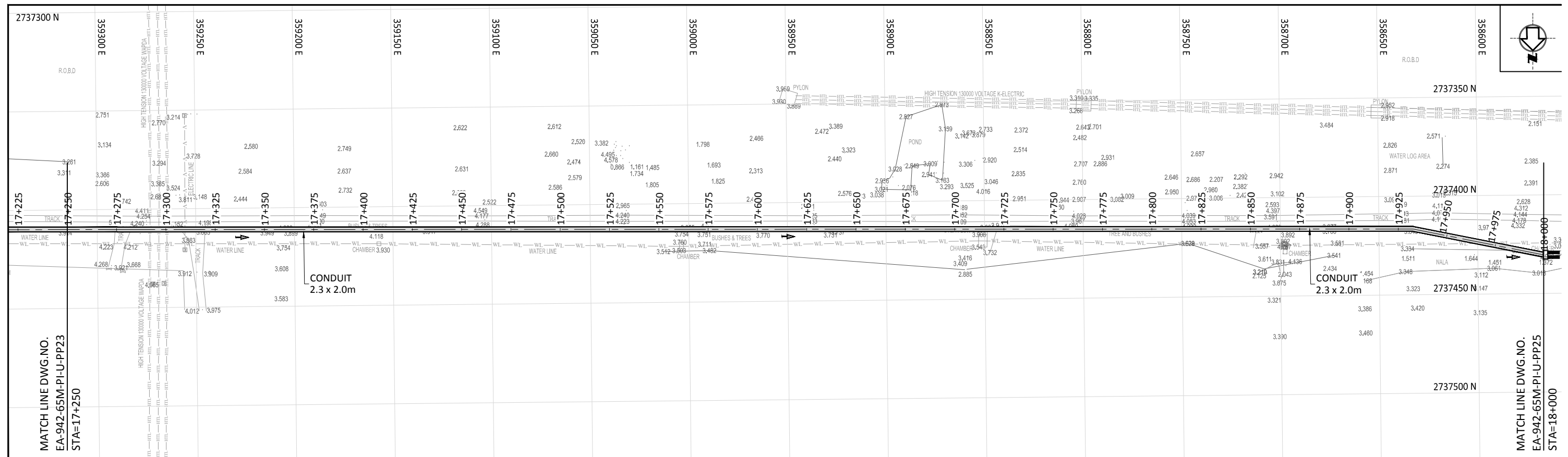
CONSULTANT:-  
**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-  
**Jers Engineering Consultant**

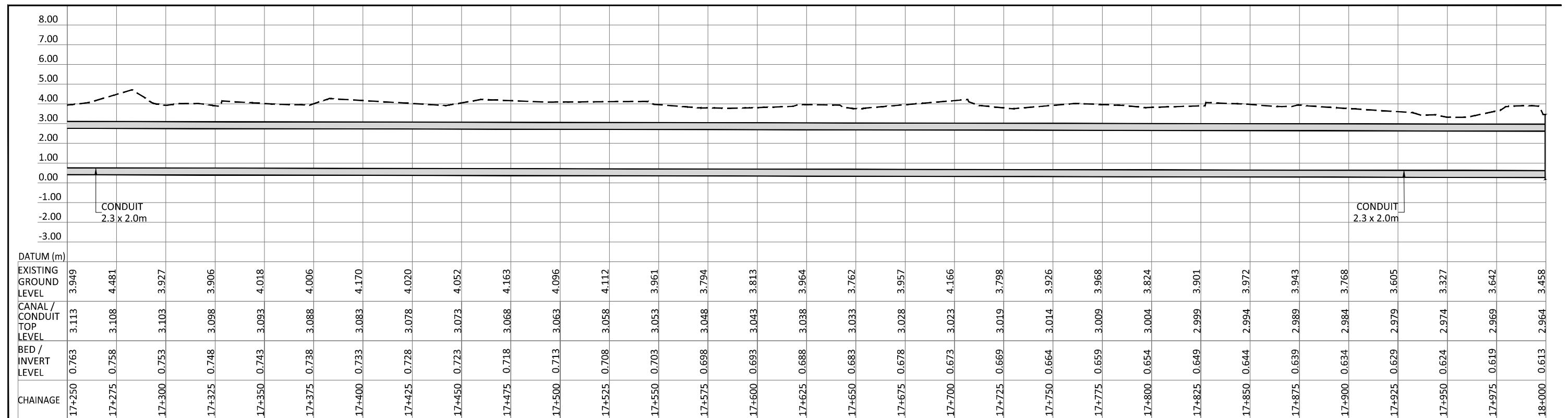
PROJECT:-  
**ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM	TITLE GRAVITY MAIN CONDUIT 2.3 x 2.0m PLAN & PROFILE (STA = 18+000 TO 18+750)	PACKAGE DWG No. EA-942-65M-PI-U-PP26
DESIGNED	NABEEL		
CHECKED	MUNAWAR		
APPROVED	ALI ASGHAR		





**PLAN**  
STA. 17+250 TO 18+000



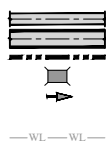
## PROFILE

STA. 17+250 TO 18+000

**NOTES:-**

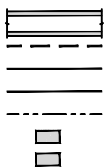
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR TYPICAL CONDUIT DETAIL REFER DWG  
NO: EA-942-65M-PI-U-W401.

**LEGEND FOR PLAN:-**  
**PROPOSED CONDUIT**  
**PROPOSED CHANNEL**  
**SIPHON PIPE LINE**  
**BOX CULVERT**  
**FLOW ARROW**  
**EXISTING SERVICES:**  
**WATER LINE**  
**ICI WATER LINE**  
**PORT QASIM WATER LINE**  
**PAKISTAN STEEL WATER L**  
**GREATER KARACHI (GK)**  
**KARACHI WATER ( KII )**



KARACHI WATER ( K III )  
ELECTRIC LINE  
SUI SOUTHERN GAS LINE  
**LEGEND FOR PROFILE:-**  
PROPOSED CONDUIT  
NATURAL GROUND LEVEL  
CANAL TOP LEVEL  
CANAL BED LEVEL  
SIPHON PIPE  
BOX CULVERTS  
PROPOSED STRUCTURE

—KIII—KIII—  
—V—V—V—  
—GAS—GAS—



0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-
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**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-	
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CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-

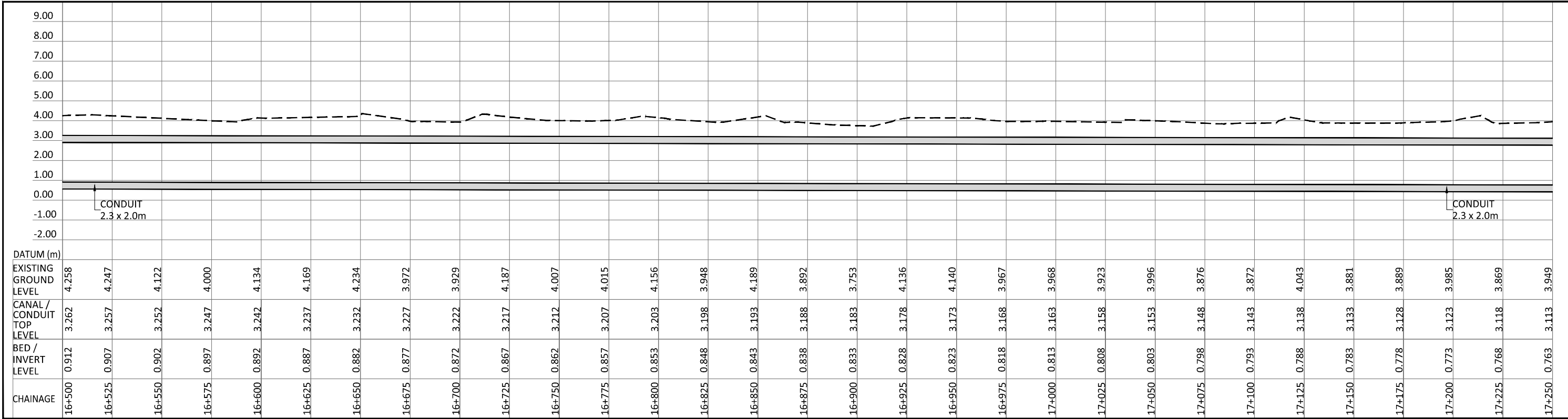
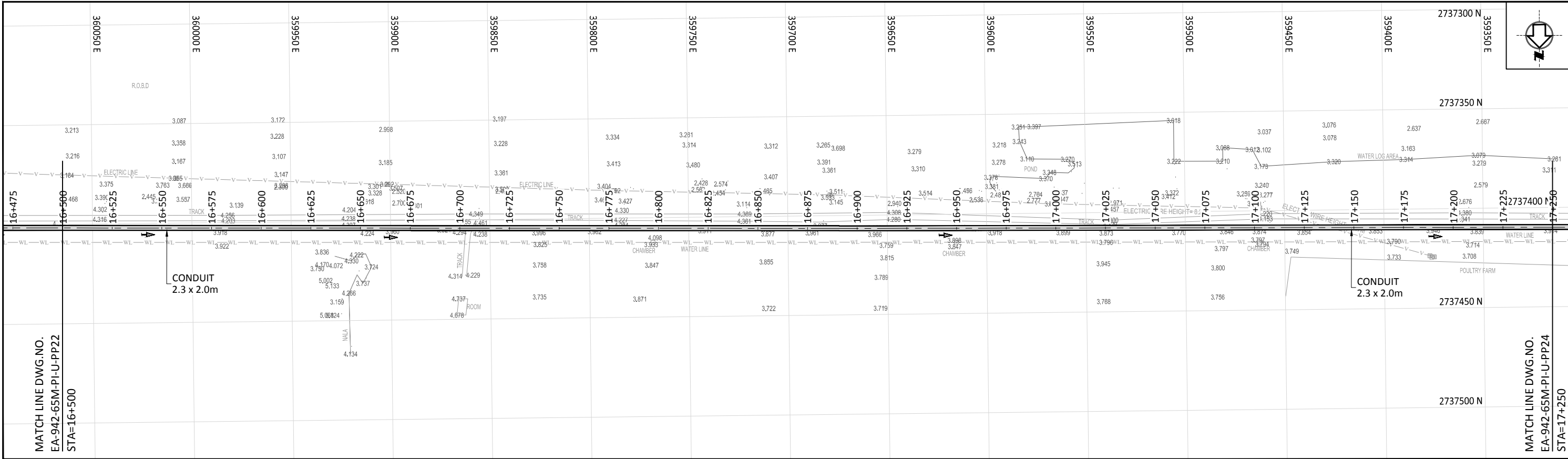


**Jers Engineering Consultant**

PROJECT:-
-----------

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM	TITLE GRAVITY MAIN CONDUIT 2.3 x 2.0m PLAN & PROFILE (STA = 17+250 TO 18+000)	DWG No. EA-942-65M-PI-U-PP24	PACKAGE
DESIGNED	NABEEL			
CHECKED	MUNAWAR			
APPROVED	ALI ASGHAR			



NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CONDUIT DETAIL REFER DWG

NO: EA-942-65M-PI-U-W401.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

CLIENT:-

KARACHI WATER & SEWERAGE BOARD

CONSULTANT:-

EA Consulting ( Pvt. ) Limited

IN ASSOCIATION WITH:-

Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.

DRAWN	ASLAM	TITLE	GRAVITY MAIN	PACKAGE
DESIGNED	NABEEL		CONDUIT 2.3 x 2.0m	
CHECKED	MUNAWAR		PLAN & PROFILE	
APPROVED	ALI ASGHAR		(STA = 16+500 TO 17+250)	

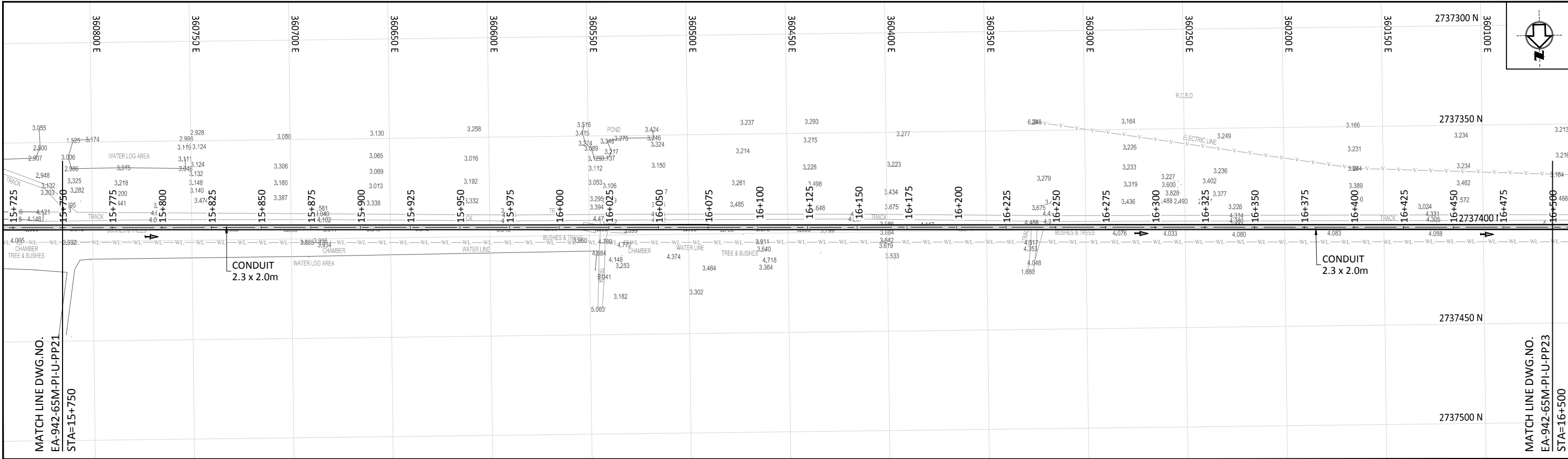
Scale / Sheet

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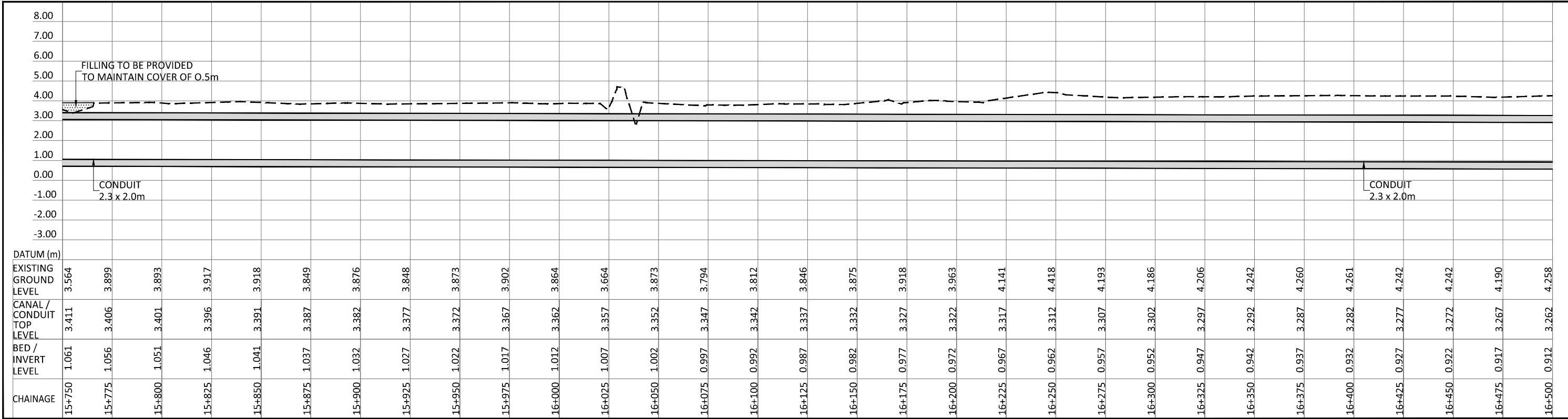
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DWG No.

EA-942-65M-PI-U-PP24



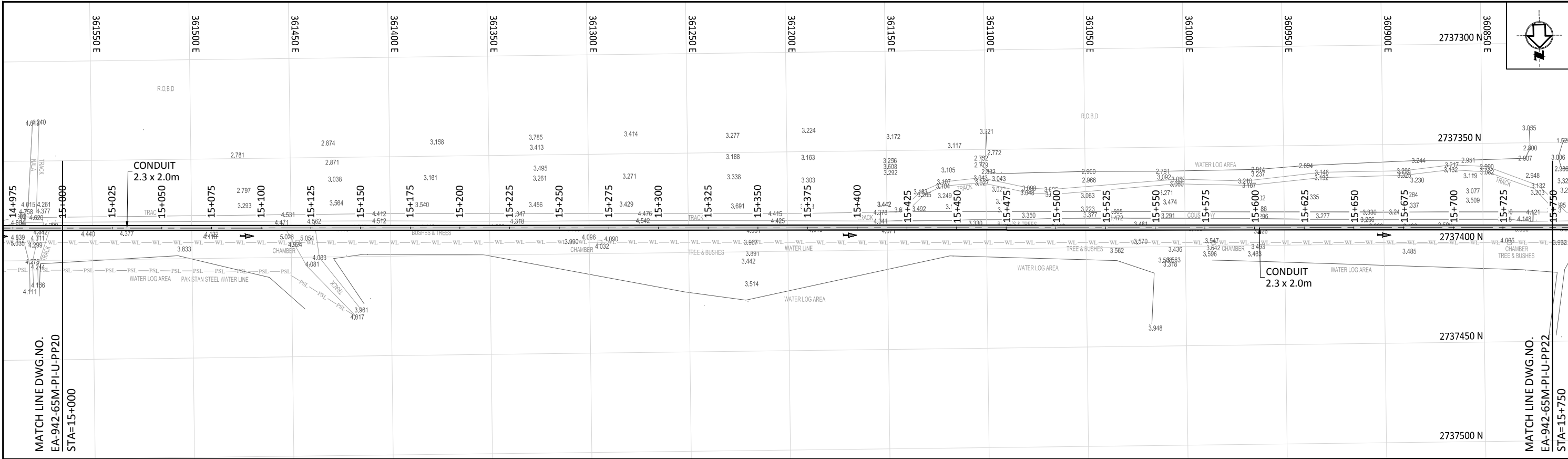
PLAN  
STA. 15+750 TO 16+500



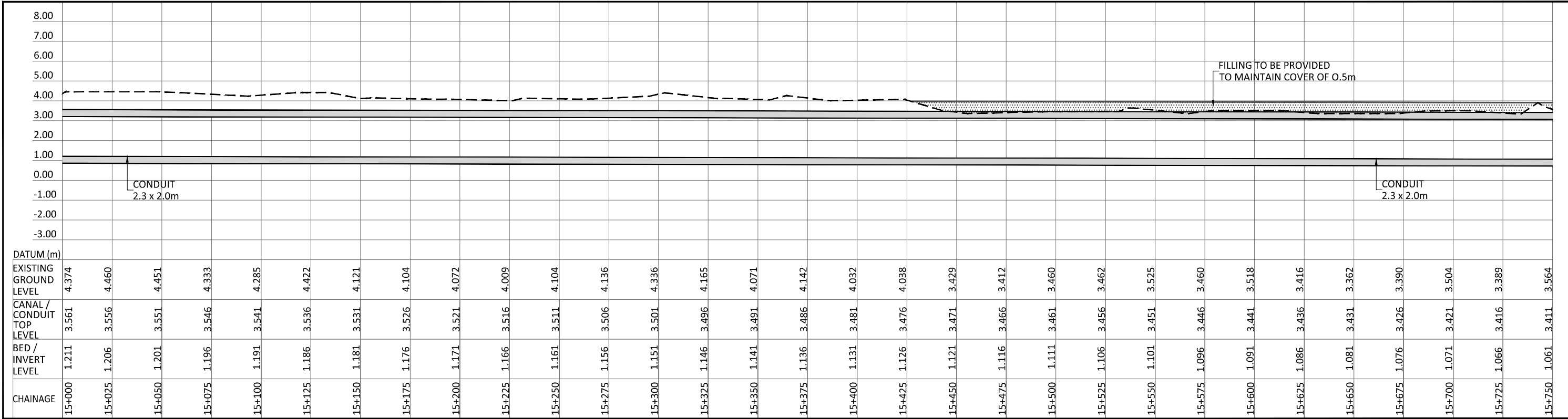
PROFILE  
STA. 15+750 TO 16+500

<b>NOTES:-</b> 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED. 2. FOR TYPICAL CONDUIT DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.						<b>LEGEND FOR PLAN:-</b> PROPOSED CONDUIT PROPOSED CHANNEL SIPHON PIPE LINE BOX CULVERT FLOW ARROW EXISTING SERVICES: WATER LINE ICI WATER LINE PORT QASIM WATER LINE PAKISTAN STEEL WATER LINE GREATER KARACHI (GK) KARACHI WATER ( KII )						<b>LEGEND FOR PROFILE:-</b> PROPOSED CONDUIT NATURAL GROUND LEVEL CANAL TOP LEVEL CANAL BED LEVEL SIPHON PIPE BOX CULVERTS PROPOSED STRUCTURE						<b>CLIENT:-</b>  <b>KARACHI WATER &amp; SEWERAGE BOARD</b>						<b>PROJECT:-</b> <b>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</b>					
<b>CONSULTANT:-</b>  <b>EA Consulting ( Pvt. ) Limited</b> CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS						<b>IN ASSOCIATION WITH:-</b>  <b>Jers Engineering Consultant</b>						<b>DRAWN</b> ASLAM						<b>TITLE</b> GRAVITY MAIN CONDUIT 2.3 x 2.0m PLAN & PROFILE (STA = 15+750 TO 16+500)						<b>PACKAGE</b>					
<b>DESIGNED</b> NABEEL						<b>CHECKED</b> MUNAWAR						<b>Scale / Sheet</b> H=1:1000 V=1:100 (A1)						<b>DWG No.</b> EA-942-65M-PI-U-PP22											
<b>APPROVED</b> ALI ASGHAR																													
<b>ED.NO</b> 0						<b>DATE</b> OCT,17						<b>DESCRIPTION</b> TENDER DRAWINGS						<b>BY</b> N.A.I						<b>CKD</b> M.Z					
<b>APR</b>																													



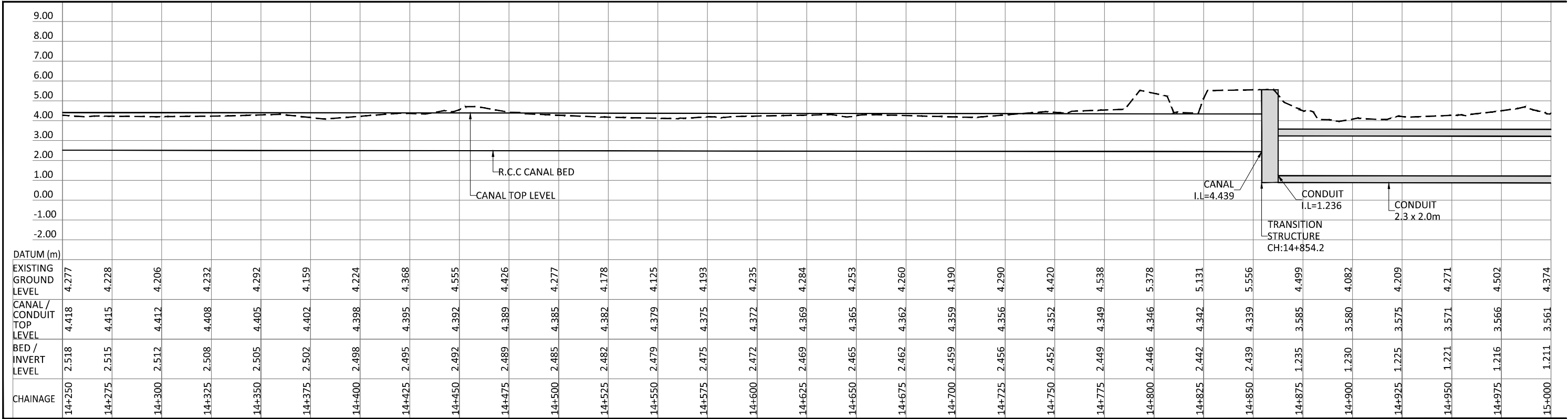
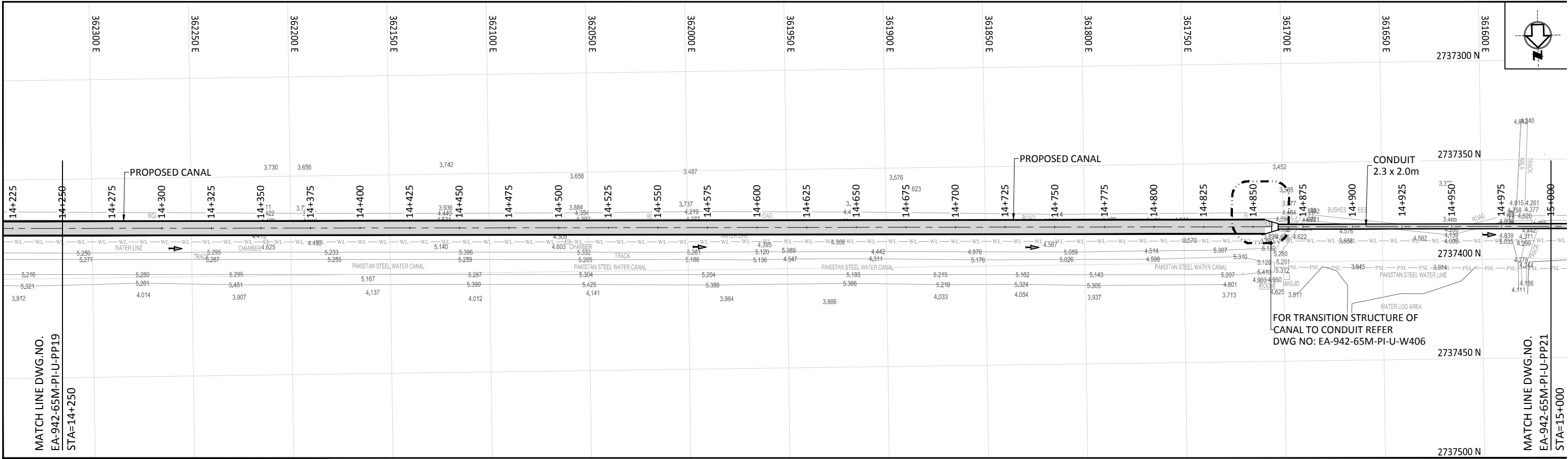


PLAN  
STA. 15+000 TO 15+750



PROFILE  
STA. 15+000 TO 15+750

<b>NOTES:-</b> 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED. 2. FOR TYPICAL CONDUIT DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.						<b>LEGEND FOR PLAN:-</b> PROPOSED CONDUIT PROPOSED CHANNEL SIPHON PIPE LINE BOX CULVERT FLOW ARROW EXISTING SERVICES: WATER LINE ICI WATER LINE PORT QASIM WATER LINE PAKISTAN STEEL WATER LINE GREATER KARACHI (GK) KARACHI WATER ( KII )						<b>LEGEND FOR PROFILE:-</b> PROPOSED CONDUIT NATURAL GROUND LEVEL CANAL TOP LEVEL CANAL BED LEVEL SIPHON PIPE BOX CULVERTS PROPOSED STRUCTURE						<b>CLIENT:-</b>  <b>KARACHI WATER &amp; SEWERAGE BOARD</b>						<b>PROJECT:-</b> <b>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</b>					
<b>CONSULTANT:-</b>  <b>EA Consulting ( Pvt. ) Limited</b> CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS						<b>IN ASSOCIATION WITH:-</b>  <b>Jers Engineering Consultant</b>						<b>DRAWN</b> ASLAM						<b>TITLE</b> GRAVITY MAIN CONDUIT 2.3 x 2.0m PLAN & PROFILE (STA = 15+000 TO 15+750)						<b>PACKAGE</b>					
<b>DESIGNED</b> NABEEL						<b>CHECKED</b> MUNAWAR						<b>Scale / Sheet</b> H=1:1000 V=1:100 (A1)						<b>DWG No.</b> EA-942-65M-PI-U-PP21											
<b>APPROVED</b> ALI ASGHAR																													
<b>ED.NO</b> 0						<b>DATE</b> OCT,17						<b>DESCRIPTION</b> TENDER DRAWINGS						<b>BY</b> N.A.I						<b>CKD</b> M.Z					
<b>APR</b>																													



NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL & CONDUIT DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

3. FOR TRANSITION STRUCTURE OF CANAL TO CONDUIT REFER DWG NO: EA-942-65M-PI-U-W406.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

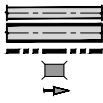
ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )



LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

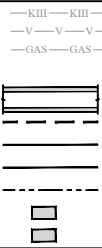
CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE



0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

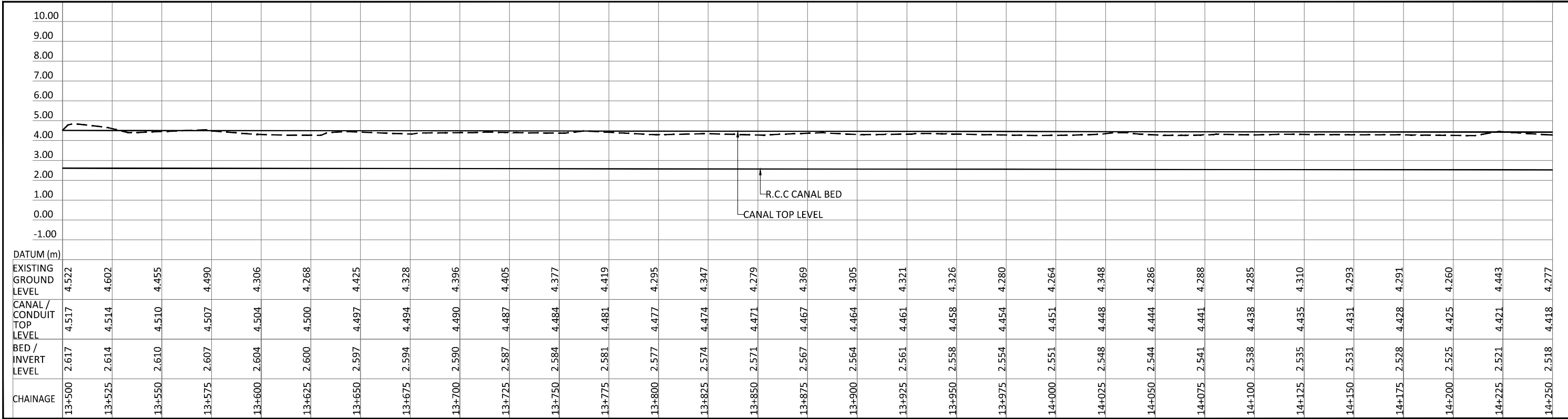
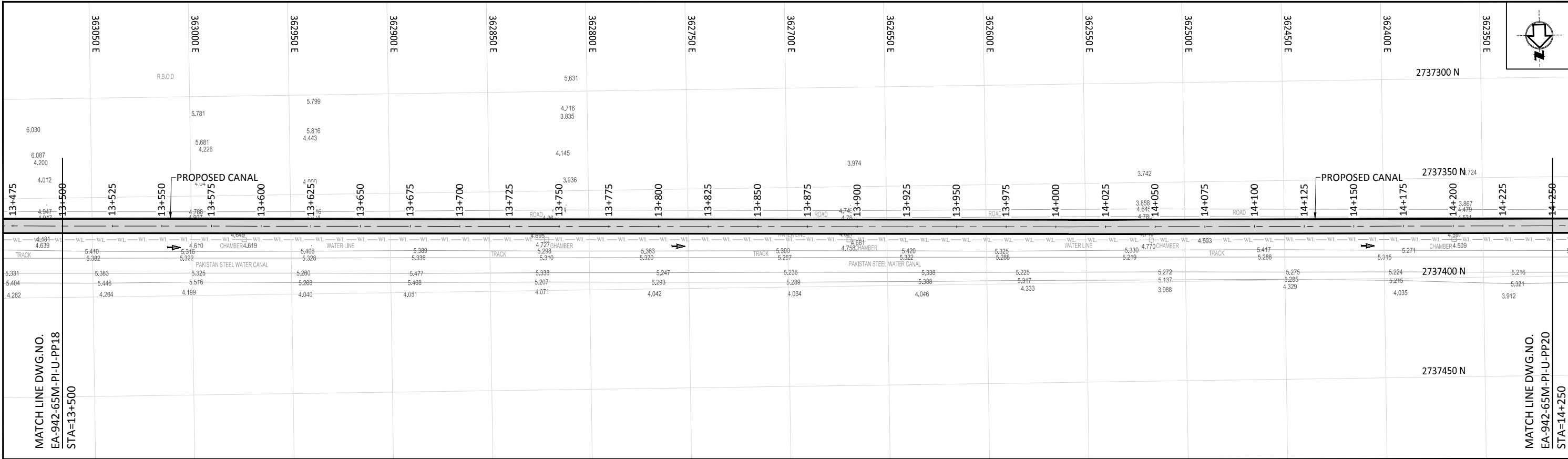
GRAVITY MAIN CANAL  
PLAN & PROFILE  
(STA = 14+250 TO 15+000)

Scale / Sheet  
H=1:1000  
V=1:100

(A1)

PACKAGE

DWG No.  
EA-942-65M-PI-U-PP2C



**NOTES:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

**LEGEND FOR PLAN:-**

PROPOSED CONDUIT  
PROPOSED CHANNEL  
SIPHON PIPE LINE  
BOX CULVERT  
FLOW ARROW  
EXISTING SERVICES:

WATER LINE  
ICI WATER LINE  
PORT QASIM WATER LINE  
PAKISTAN STEEL WATER LINE  
GREATER KARACHI (GK)  
KARACHI WATER (KII)

**LEGEND FOR PROFILE:-**

PROPOSED CONDUIT  
NATURAL GROUND LEVEL  
CANAL TOP LEVEL  
CANAL BED LEVEL  
SIPHON PIPE  
BOX CULVERTS  
PROPOSED STRUCTURE

**KARACHI WATER ( KIII )**

ELECTRIC LINE  
SUI SOUTHERN GAS LINE

**CLIENT:-**

**KARACHI WATER & SEWERAGE BOARD**

**CONSULTANT:-**

**EA Consulting ( Pvt. ) Limited**

**IN ASSOCIATION WITH:-**

**Jers Engineering Consultant**

**PROJECT:-**

**ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.**

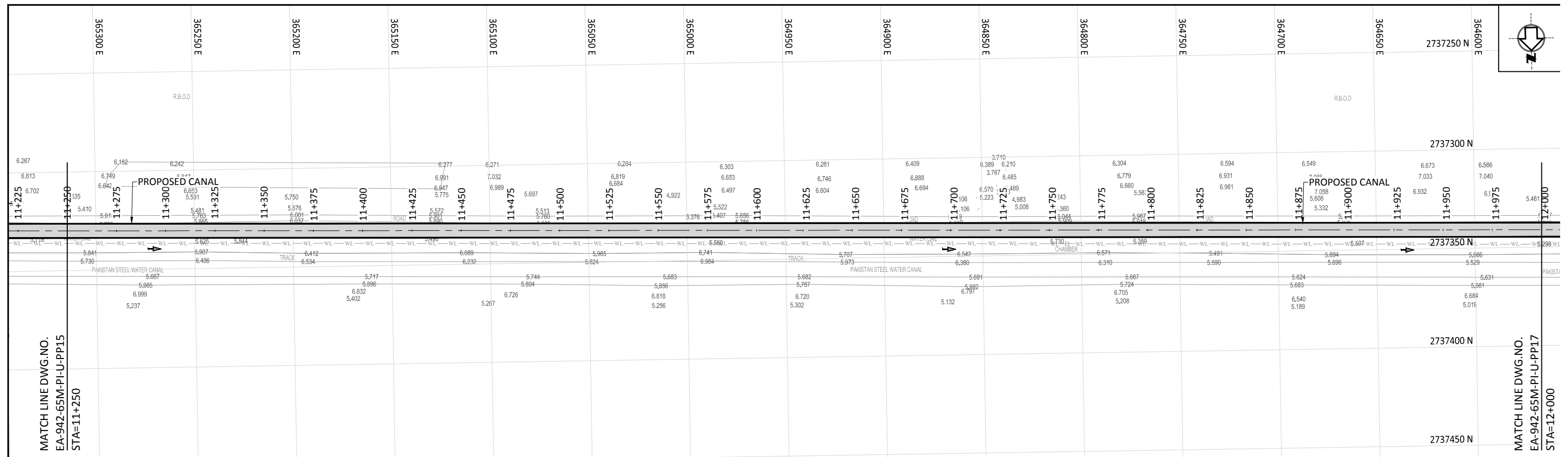
DRAWN	ASLAM	TITLE	GRAVITY MAIN CANAL PLAN & PROFILE (STA = 13+500 TO 14+250)	PACKAGE
DESIGNED	NABEEL			
CHECKED	MUNAWAR	Scale / Sheet	DWG No.	
APPROVED	ALI ASGHAR	H=1:1000 V=1:100	(A1)	EA-942-65M-PI-U-PP15

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR



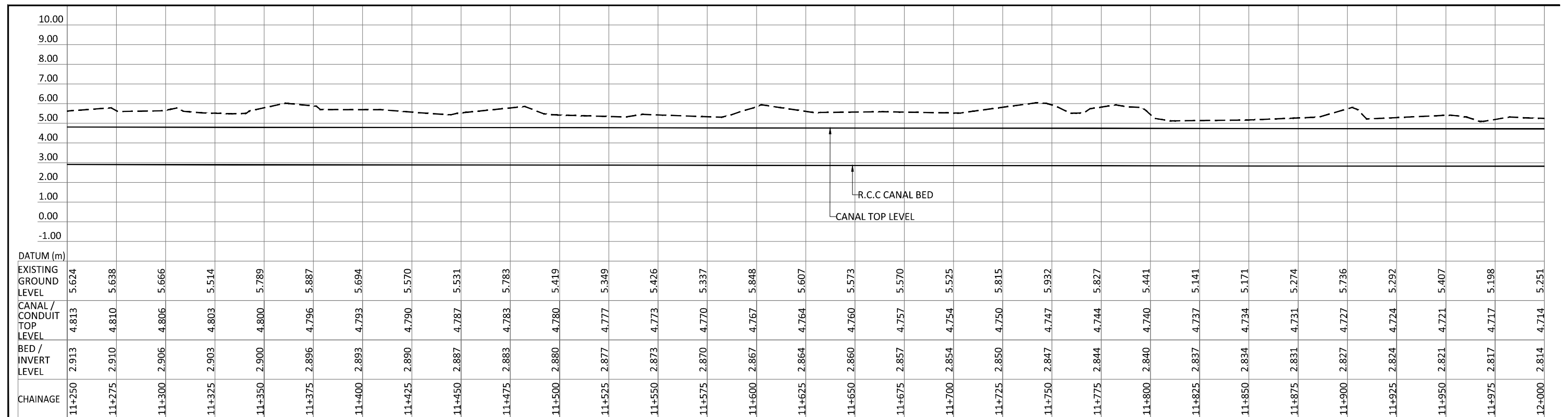






## PLAN

STA. 11+250 TO 12+000



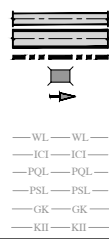
# PROFILE

STA. 11+250 TO 12+000

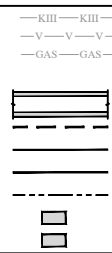
**NOTES:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

**LEGEND FOR PLAN:-**  
**PROPOSED CONDUIT**  
**PROPOSED CHANNEL**  
**SIPHON PIPE LINE**  
**BOX CULVERT**  
**FLOW ARROW**  
**EXISTING SERVICES:**  
**WATER LINE**  
**ICI WATER LINE**  
**PORT QASIM WATER LINE**  
**PAKISTAN STEEL WATER L**  
**GREATER KARACHI (GK)**  
**KARACHI WATER ( KII**



KARACHI WATER ( KIII )  
ELECTRIC LINE  
SUI SOUTHERN GAS LINE  
**LEGEND FOR PROFILE:-**  
PROPOSED CONDUIT  
NATURAL GROUND LEVEL  
CANAL TOP LEVEL  
CANAL BED LEVEL  
SIPHON PIPE  
BOX CULVERTS  
PROPOSED STRUCTURE



0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-
----------



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-	
--------------	--



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-
-----------------------

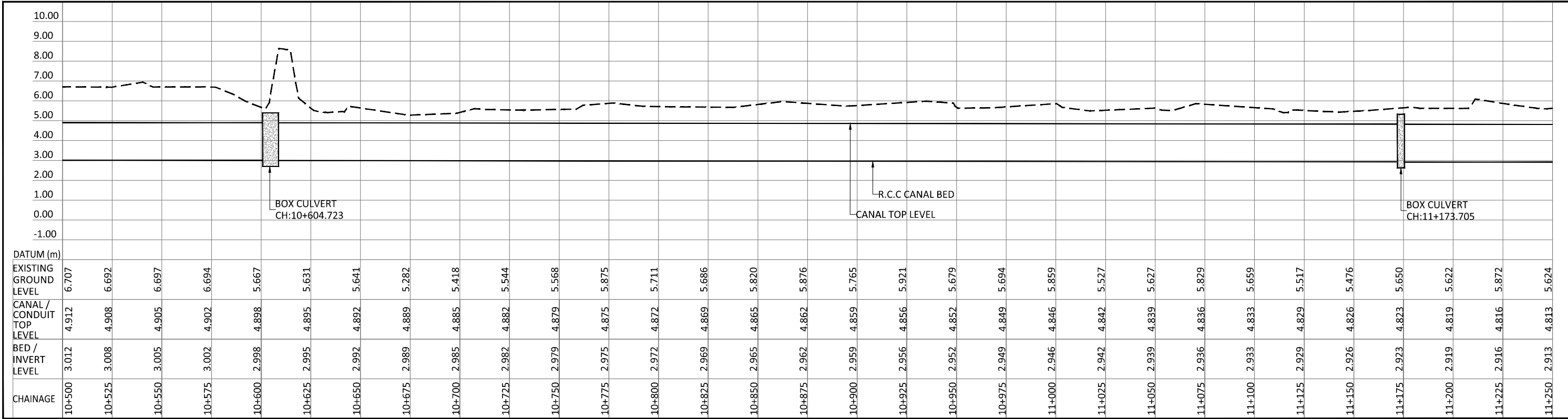
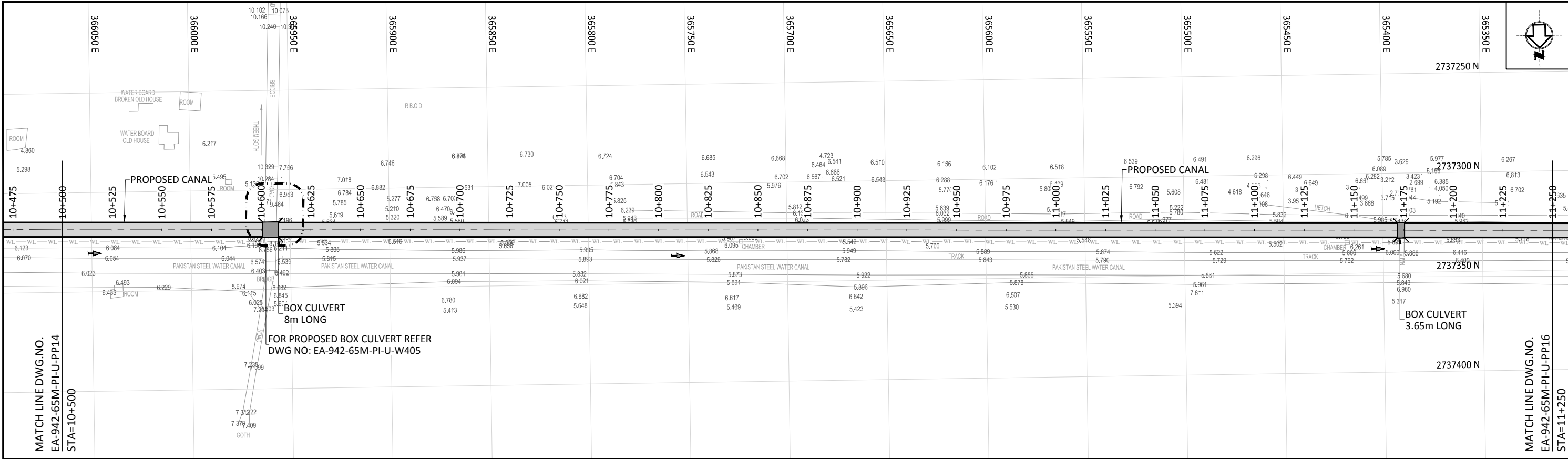


**Jers Engineering Consultant**

PROJECT:-
-----------

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM	TITLE GRAVITY MAIN CANAL PLAN & PROFILE (STA = 11+250 TO 12+000)		PACKAGE NO. 1
DESIGNED	NABEEL			
CHECKED	MUNAWAR	Scale / Sheet		DWG No.
APPROVED	ALI ASGHAR	H=1:1000 V=1:100	(A1)	EA-942-65M-PI-U-PP16



**NOTES:-**

- 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
- 2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.
- 3. FOR BOX CULVERT DETAIL REFER DWG NO: EA-942-65M-PI-U-W405.

**LEGEND FOR PLAN:-**

- PROPOSED CONDUIT
- PROPOSED CHANNEL
- SIPHON PIPE LINE
- BOX CULVERT
- FLOW ARROW
- EXISTING SERVICES:
- WATER LINE
- ICI WATER LINE
- PORT QASIM WATER LINE
- PAKISTAN STEEL WATER LINE
- GREATER KARACHI (GK)
- KARACHI WATER ( KII )

**LEGEND FOR PROFILE:-**

- PROPOSED CONDUIT
- NATURAL GROUND LEVEL
- CANAL TOP LEVEL
- CANAL BED LEVEL
- SIPHON PIPE
- BOX CULVERTS
- PROPOSED STRUCTURE

**CLIENT:-**

**KARACHI WATER & SEWERAGE BOARD**

**CONSULTANT:-**

**EA Consulting ( Pvt. ) Limited**

**IN ASSOCIATION WITH:-**

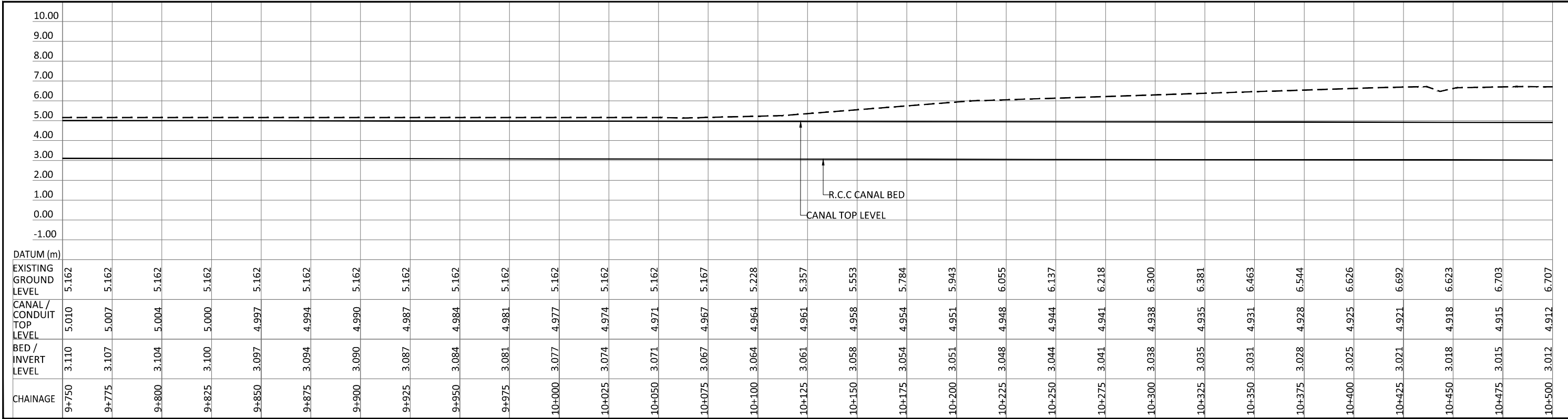
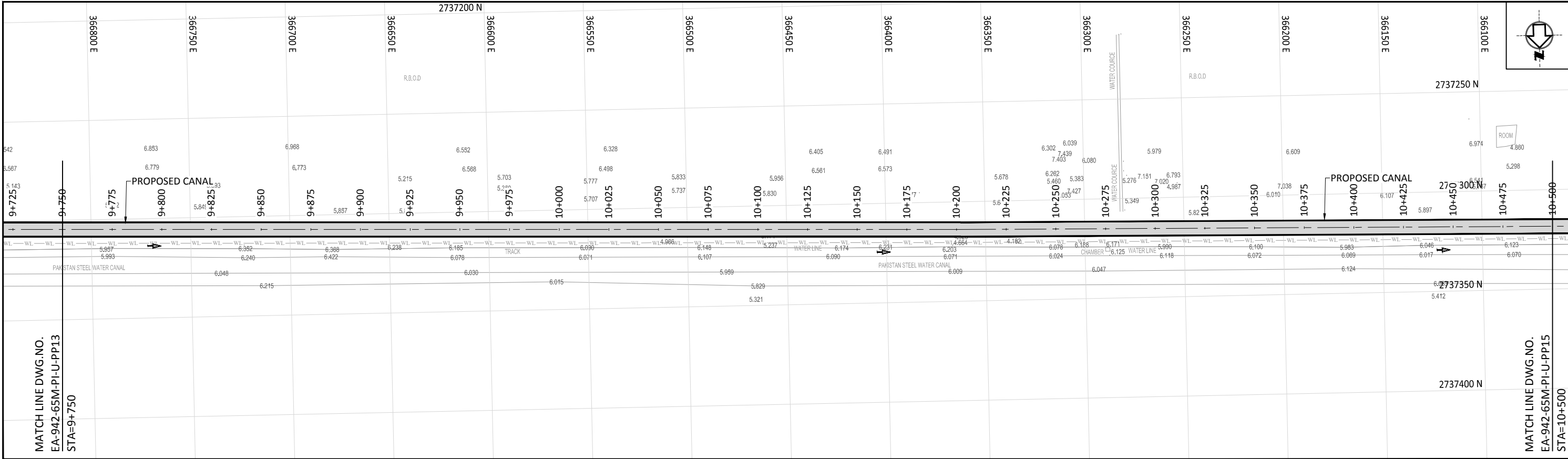
**Jers Engineering Consultant**

**PROJECT:-**

**ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM	TITLE	GRAVITY MAIN CANAL PLAN & PROFILE (STA = 10+500 TO 11+250)	PACKAGE
DESIGNED	NABEEL	Scale / Sheet H=1:1000 V=1:100 (A1)	DWG No. EA-942-65M-PI-U-PP15	
CHECKED	MUNAWAR			
APPROVED	ALI ASGHAR			





NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

KIII — KIII —

V — V —

GAS — GAS —

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER & SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited

CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.

DRAWN

DESIGNED

CHECKED

APPROVED

ASLAM

NABEEL

MUNAWAR

ALI ASGHAR

TITLE

GRAVITY MAIN CANAL PLAN & PROFILE (STA = 9+750 TO 10+500)

Scale / Sheet

H=1:1000

V=1:100

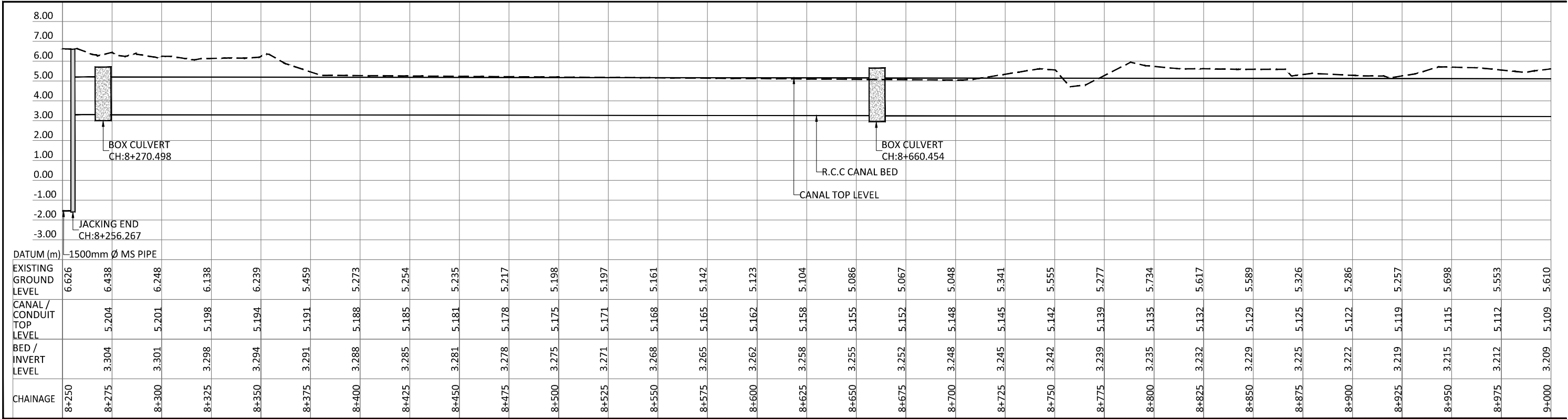
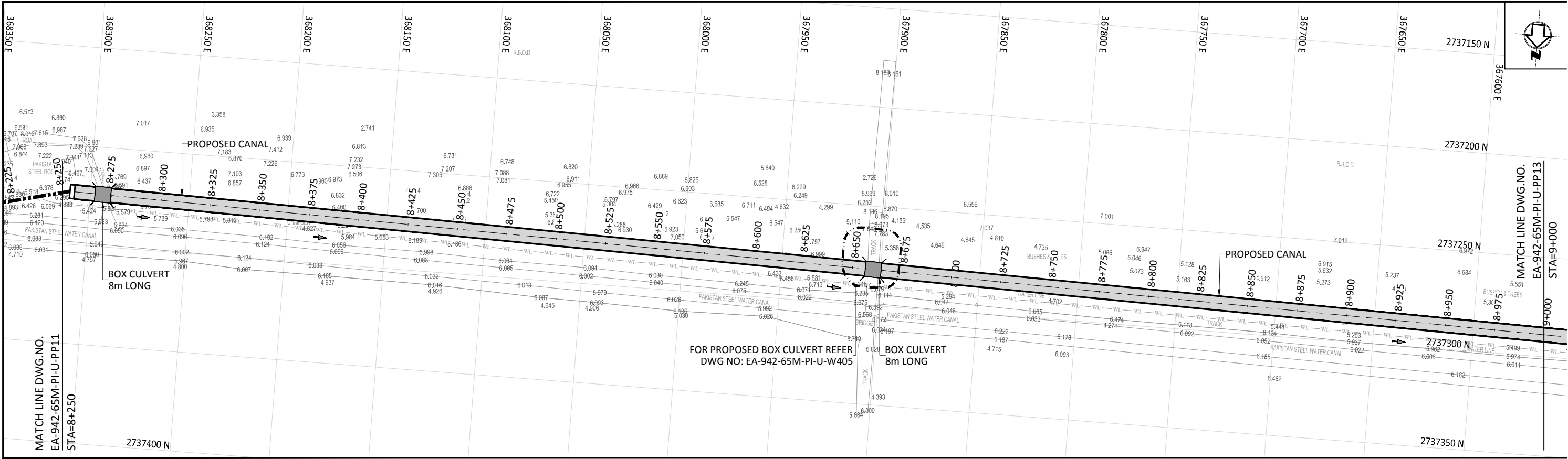
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DWG No.

EA-942-65M-PI-U-PP14

PACKAGE





NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.
3. FOR BOX CULVERT DETAIL REFER DWG NO: EA-942-65M-PI-U-W405.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

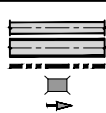
ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )



KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

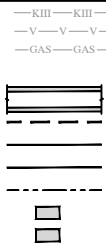
CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE



0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited

CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

GRAVITY MAIN CANAL  
PLAN & PROFILE  
(STA = 8+250 TO 9+000)

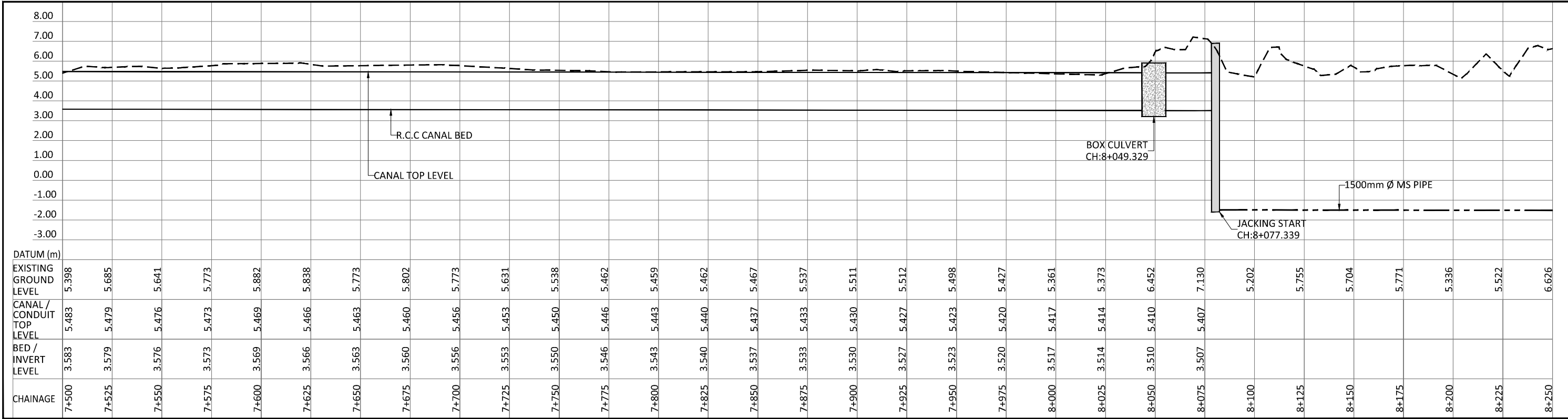
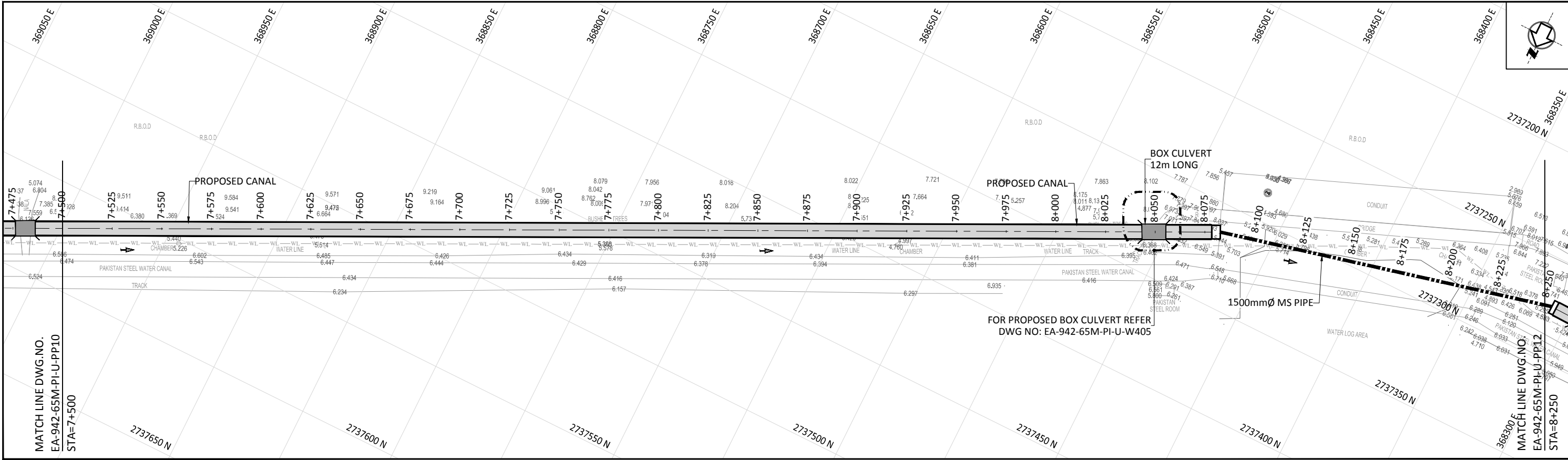
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V=1:100

(A1)

DWG No.

EA-942-65M-PI-U-PP12

PACKAGE



NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

3. FOR BOX CULVERT DETAIL REFER DWG NO: EA-942-65M-PI-U-W405.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

KIII — KIII

V — V

GAS — GAS

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER & SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

GRAVITY MAIN CANAL PLAN & PROFILE (STA = 7+500 TO 8+250)

Scale / Sheet

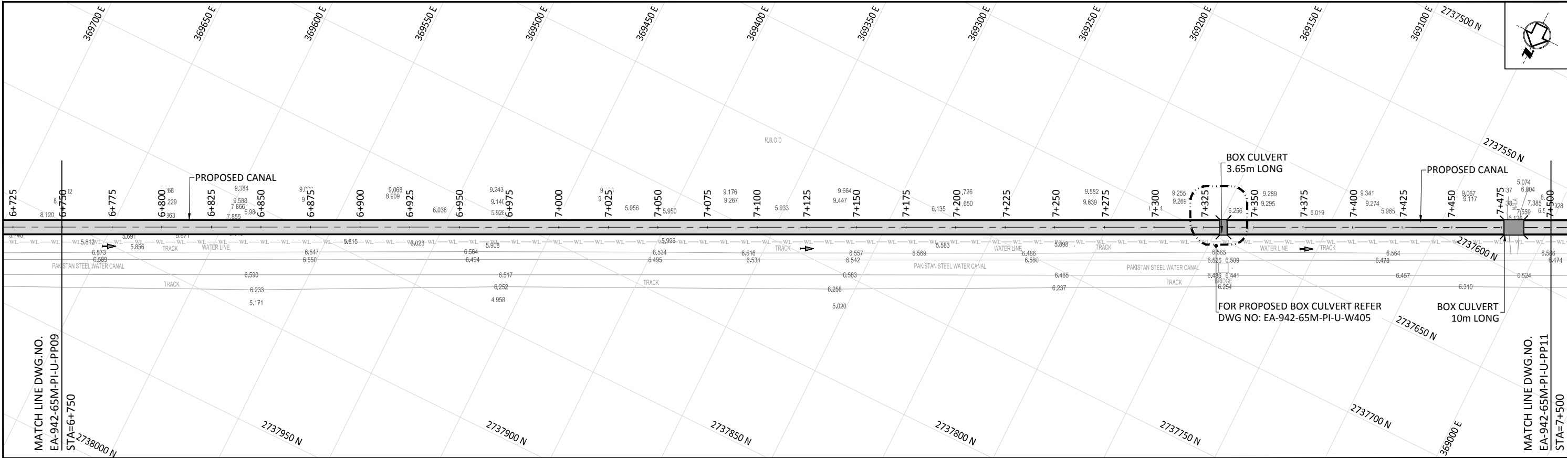
H=1:1000 V=1:100

DWG No.

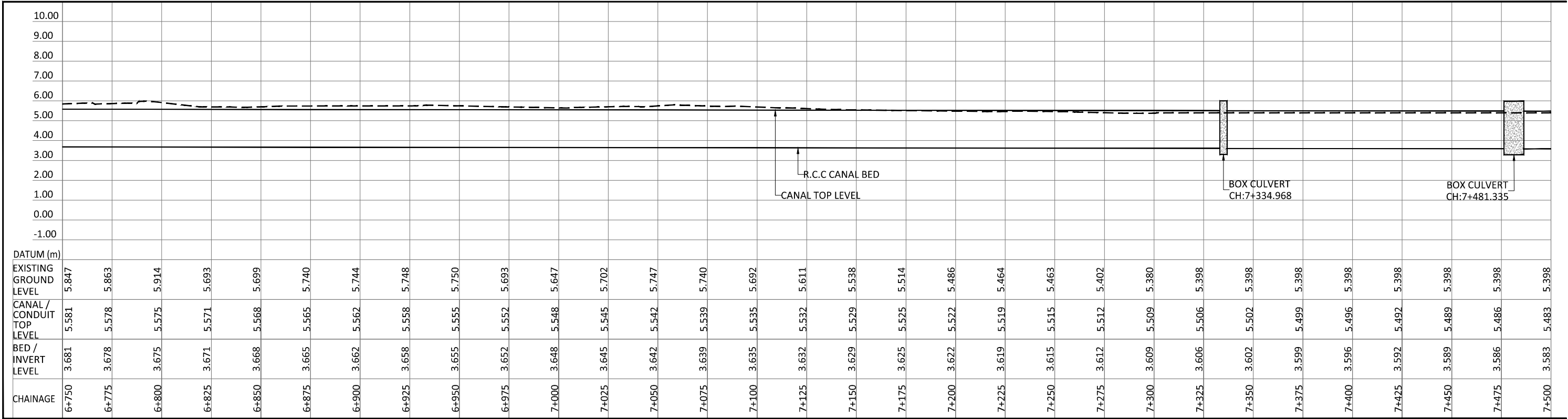
EA-942-65M-PI-U-PP11

PACKAGE





PLAN  
STA. 6+750 TO 7+500



PROFILE  
STA. 6+750 TO 7+500

**NOTES:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

3. FOR BOX CULVERT DETAIL REFER DWG NO: EA-942-65M-PI-U-W405.

**LEGEND FOR PLAN:-**

PROPOSED CONDUIT  
PROPOSED CHANNEL  
SIPHON PIPE LINE  
BOX CULVERT  
FLOW ARROW  
EXISTING SERVICES:  
WATER LINE  
ICI WATER LINE  
PORT QASIM WATER LINE  
PAKISTAN STEEL WATER LINE  
GREATER KARACHI (GK)  
KARACHI WATER ( KII )

KARACHI WATER ( KIII )  
ELECTRIC LINE  
SUI SOUTHERN GAS LINE

**LEGEND FOR PROFILE:-**

PROPOSED CONDUIT  
NATURAL GROUND LEVEL  
CANAL TOP LEVEL  
CANAL BED LEVEL  
SIPHON PIPE  
BOX CULVERTS  
PROPOSED STRUCTURE

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-

**KARACHI WATER & SEWERAGE BOARD**

CONSULTANT:-

**EA Consulting ( Pvt. ) Limited**

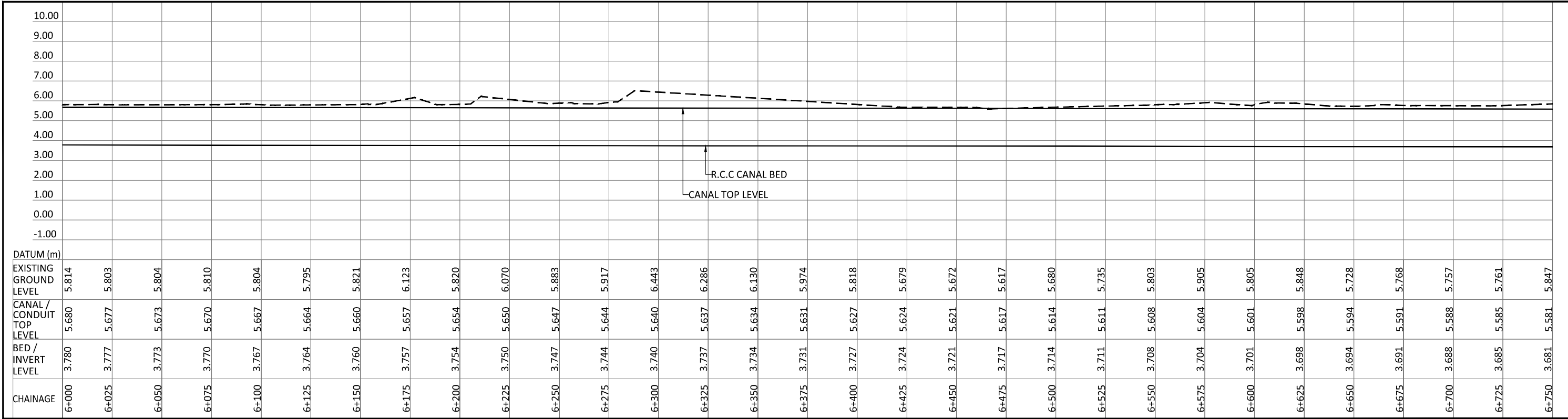
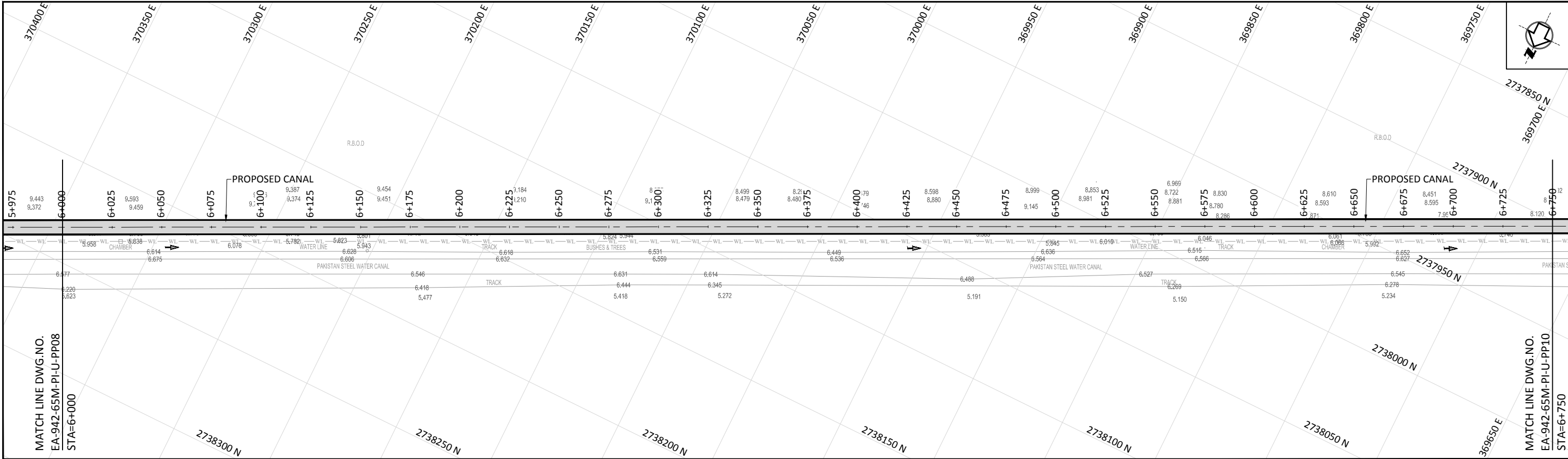
IN ASSOCIATION WITH:-

**Jers Engineering Consultant**

PROJECT:-

**ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM	TITLE	GRAVITY MAIN CANAL PLAN & PROFILE (STA = 6+750 TO 7+500)	PACKAGI
DESIGNED	NABEEL			
CHECKED	MUNAWAR	Scale / Sheet	DWG No.	
APPROVED	ALI ASGHAR	H=1:1000 V=1:100	(A1) EA-942-65M-PI-U-PP1C	



NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

KIII — KIII

V — V

GAS — GAS

0

OCT,17

TENDER DRAWINGS

N.A.I

M.Z

A.A

ED.NO

DATE

DESCRIPTION

BY

CKD

APR

0

OCT,17

TENDER DRAWINGS

N.A.I

M.Z

A.A

ED.NO

DATE

DESCRIPTION

BY

CKD

APR

0

OCT,17

TENDER DRAWINGS

N.A.I

M.Z

A.A

0

OCT,17

TENDER DRAWINGS

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OCT,17

TENDER DRAWINGS

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TENDER DRAWINGS

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TENDER DRAWINGS

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OCT,17

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TENDER DRAWINGS

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OCT,17

TENDER DRAWINGS

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OCT,17

TENDER DRAWINGS

N.A.I

M.Z

A.A

0

OCT,17

TENDER DRAWINGS

N.A.I

M.Z

A.A

CLIENT:-

KARACHI WATER AND SEWERAGE BOARD

CONSULTANT:-

EA Consulting ( Pvt. ) Limited

IN ASSOCIATION WITH:-

Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

GRAVITY MAIN CANAL PLAN & PROFILE (STA = 6+000 TO 6+750)

Scale / Sheet

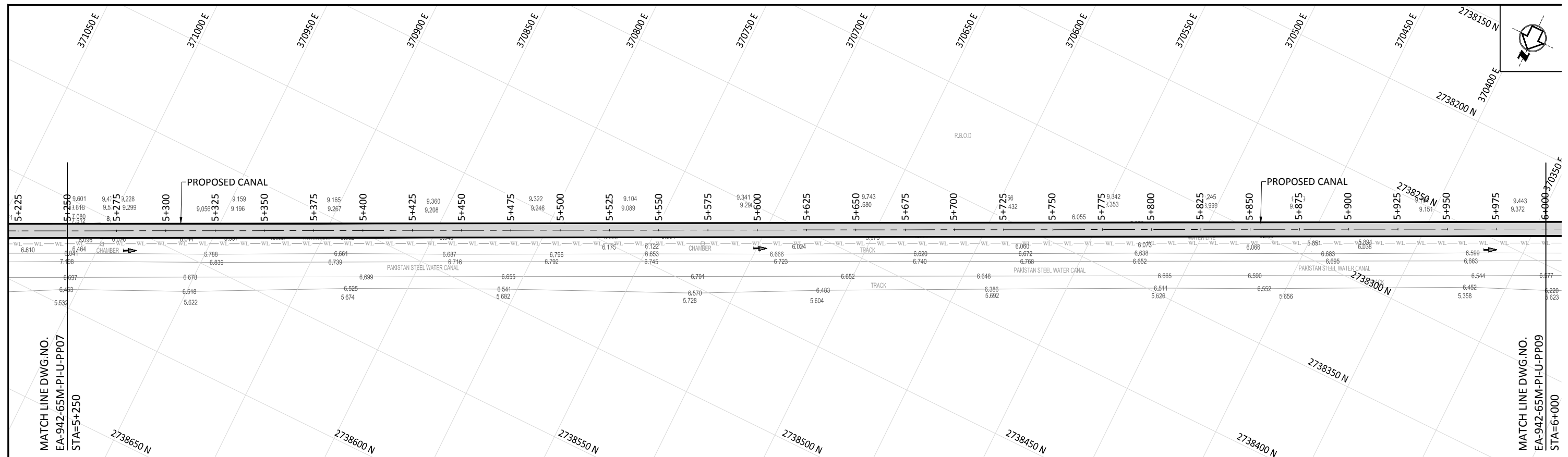
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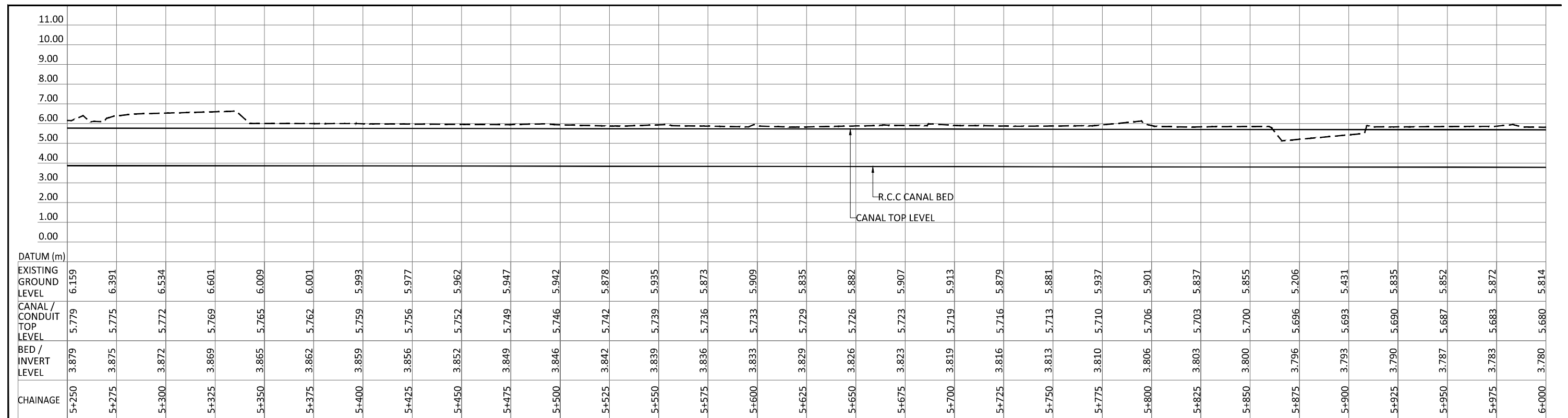
DWG No.

EA-942-65M-PI-U-PP08

PACKAGI



PLAN  
STA. 5+250 TO 6+000



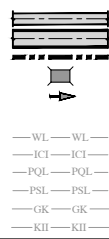
# PROFILE

STA. 5+250 TO 6+000

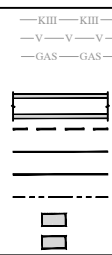
**NOTES:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

**LEGEND FOR PLAN:-**  
 PROPOSED CONDUIT  
 PROPOSED CHANNEL  
 SIPHON PIPE LINE  
 BOX CULVERT  
 FLOW ARROW  
**EXISTING SERVICES:**  
 WATER LINE  
 ICI WATER LINE  
 PORT QASIM STEEL WATER LINE  
 PAKISTAN STEEL WATER LINE  
 GREATER KARACHI (GK)  
 KARACHI WATER (KII)



KARACHI WATER ( KIII )
ELECTRIC LINE
SUI SOUTHERN GAS LINE
<b>LEGEND FOR PROFILE:-</b>
PROPOSED CONDUIT
NATURAL GROUND LEVEL
CANAL TOP LEVEL
CANAL BED LEVEL
SIPHON PIPE
BOX CULVERTS
PROPOSED STRUCTURE



0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-
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CONSULTANT:-	
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**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

**KARACHI WATER  
&  
SEWERAGE BOARD**

IN ASSOCIATION WITH:-

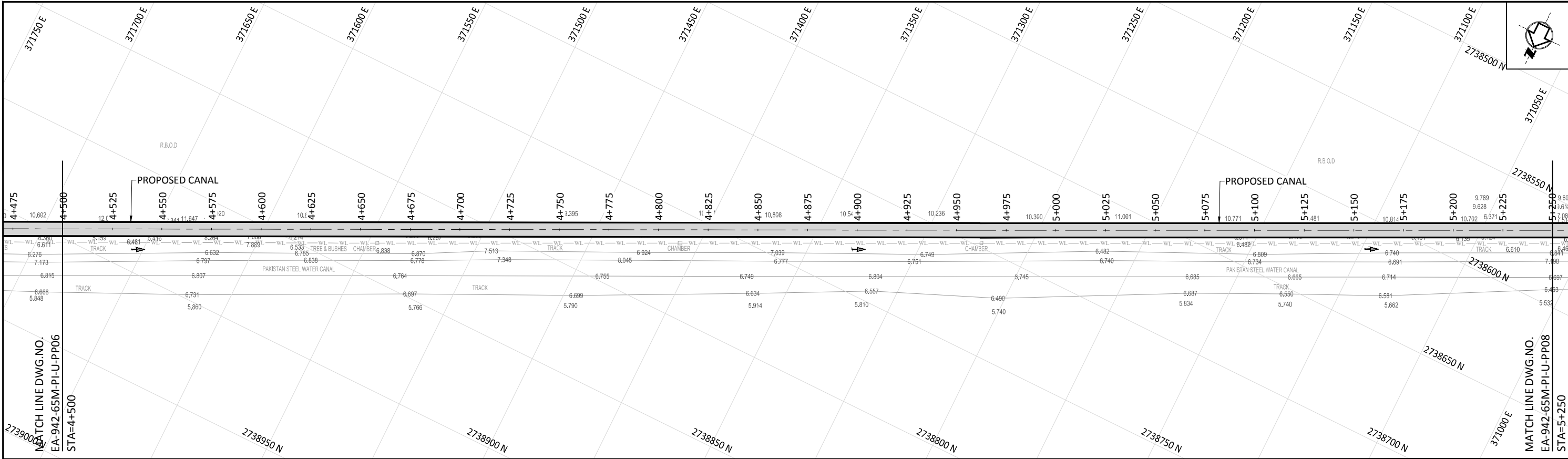


**Jers Engineering Consultant**

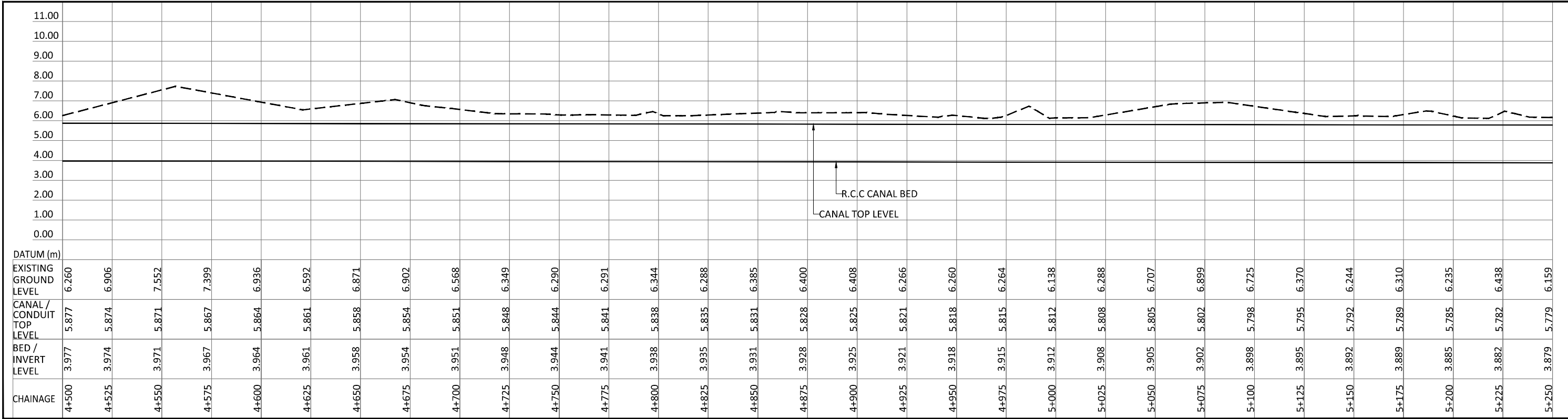
PROJECT:-
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**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

	DRAWN	ASLAM	TITLE	GRAVITY MAIN CANAL PLAN & PROFILE (STA = 5+250 TO 6+000)	PACKAGING
	DESIGNED	NABEEL			
	CHECKED	MUNAWAR			
	APPROVED	ALI ASGHAR	Scale / Sheet H=1:1000 V=1:100 (A1)	DWG No. EA-942-65M-PI-U-PP08	



PLAN  
STA. 4+500 TO 5+250



PROFILE  
STA. 4+500 TO 5+250

NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

LEGEND FOR PLAN:-

PROPOSED CONDUIT

PROPOSED CHANNEL

SIPHON PIPE LINE

BOX CULVERT

FLOW ARROW

EXISTING SERVICES:

WATER LINE

ICI WATER LINE

PORT QASIM WATER LINE

PAKISTAN STEEL WATER LINE

GREATER KARACHI (GK)

KARACHI WATER ( KII )

KARACHI WATER ( KIII )

ELECTRIC LINE

SUI SOUTHERN GAS LINE

LEGEND FOR PROFILE:-

PROPOSED CONDUIT

NATURAL GROUND LEVEL

CANAL TOP LEVEL

CANAL BED LEVEL

SIPHON PIPE

BOX CULVERTS

PROPOSED STRUCTURE

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-

KARACHI WATER AND SEWERAGE BOARD

CONSULTANT:-

EA Consulting ( Pvt. ) Limited

IN ASSOCIATION WITH:-

Jers Engineering Consultant

PROJECT:-

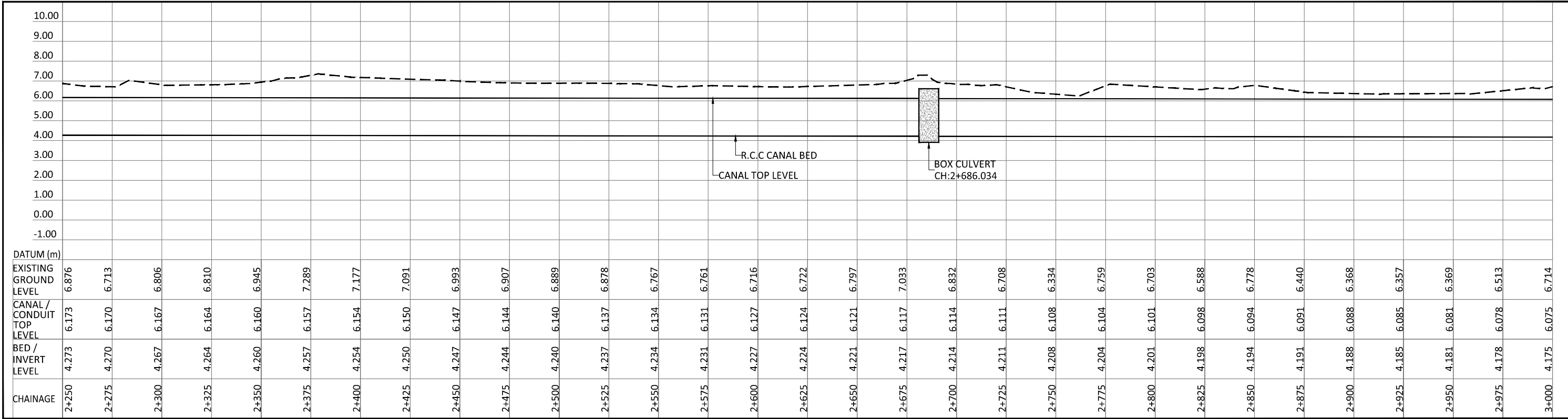
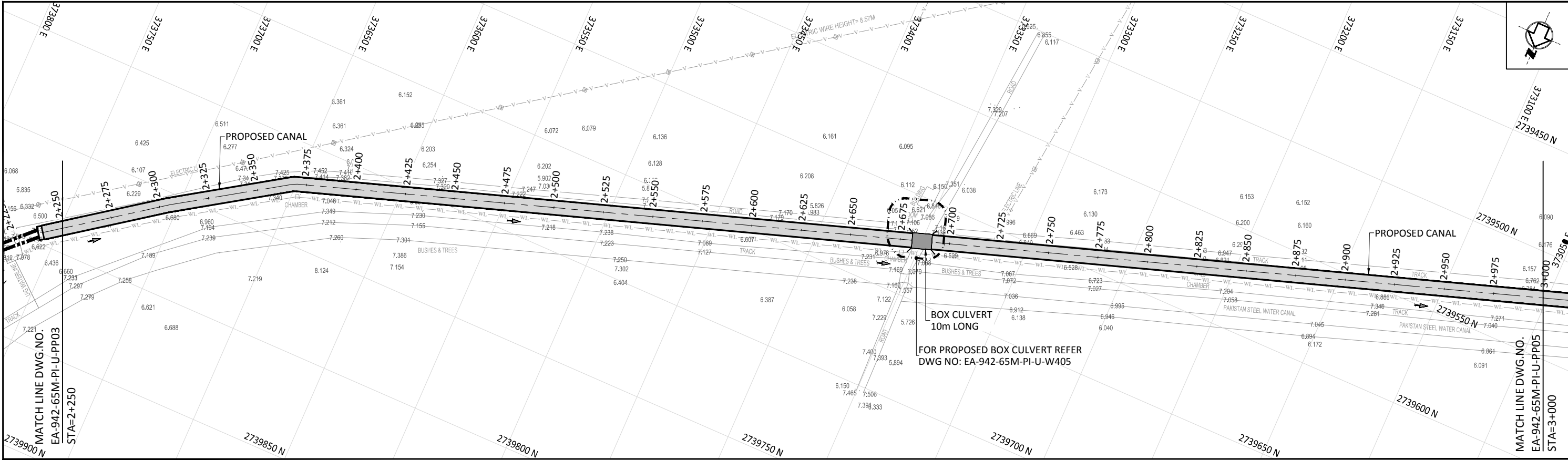
ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.

DRAWN	ASLAM	TITLE	GRAVITY MAIN CANAL PLAN & PROFILE (STA = 4+500 TO 5+250)	PACKAGE
DESIGNED	NABEEL			
CHECKED	MUNAWAR	Scale / Sheet	DWG No.	
APPROVED	ALI ASGHAR	H=1:1000 V=1:100	(A1)	EA-942-65M-PI-U-PP07

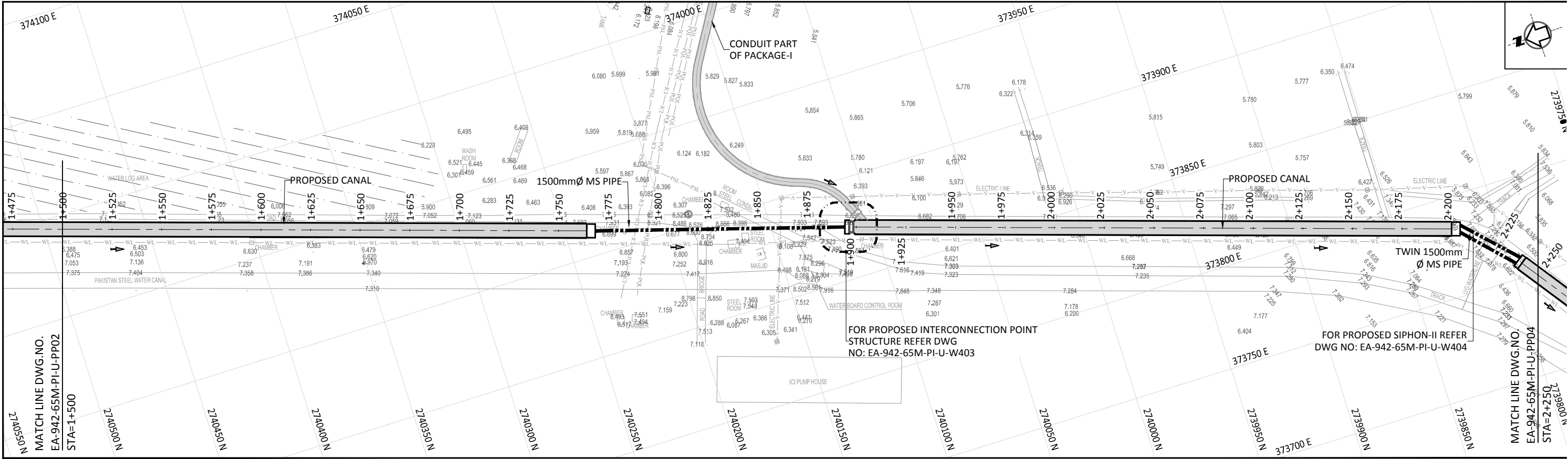




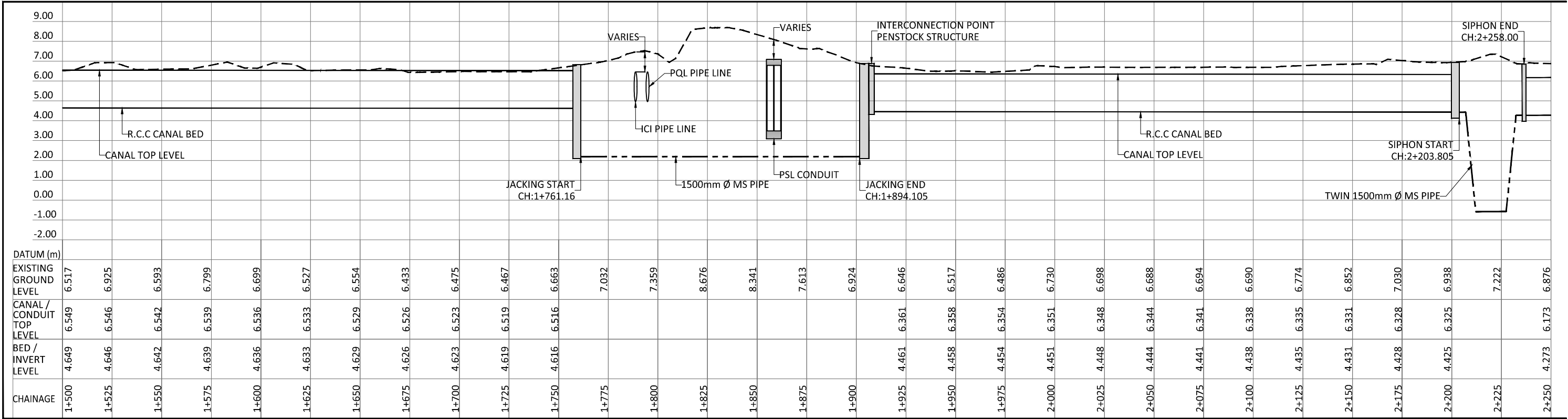






<b>NOTES:-</b> 1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED. 2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401. 3. FOR BOX CULVERT DETAIL REFER DWG NO: EA-942-65M-PI-U-W405.						<b>LEGEND FOR PLAN:-</b> PROPOSED CONDUIT PROPOSED CHANNEL SIPHON PIPE LINE BOX CULVERT FLOW ARROW EXISTING SERVICES: WATER LINE ICI WATER LINE PORT QASIM WATER LINE PAKISTAN STEEL WATER LINE GREATER KARACHI (GK) KARACHI WATER ( KII )						<b>LEGEND FOR PROFILE:-</b> PROPOSED CONDUIT NATURAL GROUND LEVEL CANAL TOP LEVEL CANAL BED LEVEL SIPHON PIPE BOX CULVERTS PROPOSED STRUCTURE						<b>CLIENT:-</b>  <b>KARACHI WATER &amp; SEWERAGE BOARD</b>						<b>PROJECT:-</b> <b>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</b>					
<b>CONSULTANT:-</b>  <b>EA Consulting ( Pvt. ) Limited</b> CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS						<b>IN ASSOCIATION WITH:-</b>  <b>Jers Engineering Consultant</b>						<b>DRAWN</b> ASLAM						<b>TITLE</b> GRAVITY MAIN CANAL PLAN & PROFILE (STA = 2+250 TO 3+000)						<b>PACKAGE</b>					
<b>DESIGNED</b> NABEEL						<b>CHECKED</b> MUNAWAR						<b>Scale / Sheet</b> H=1:1000 V=1:100						<b>DWG No.</b> EA-942-65M-PI-U-PP04											
<b>APPROVED</b> ALI ASGHAR																													

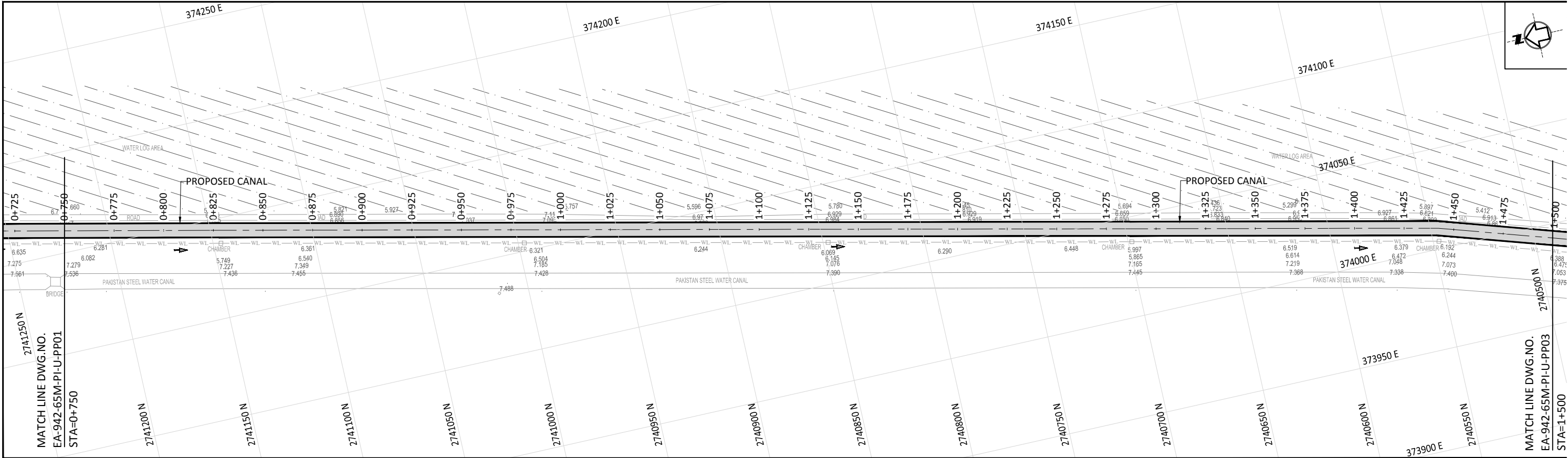


PLAN  
STA. 1+500 TO 2+250

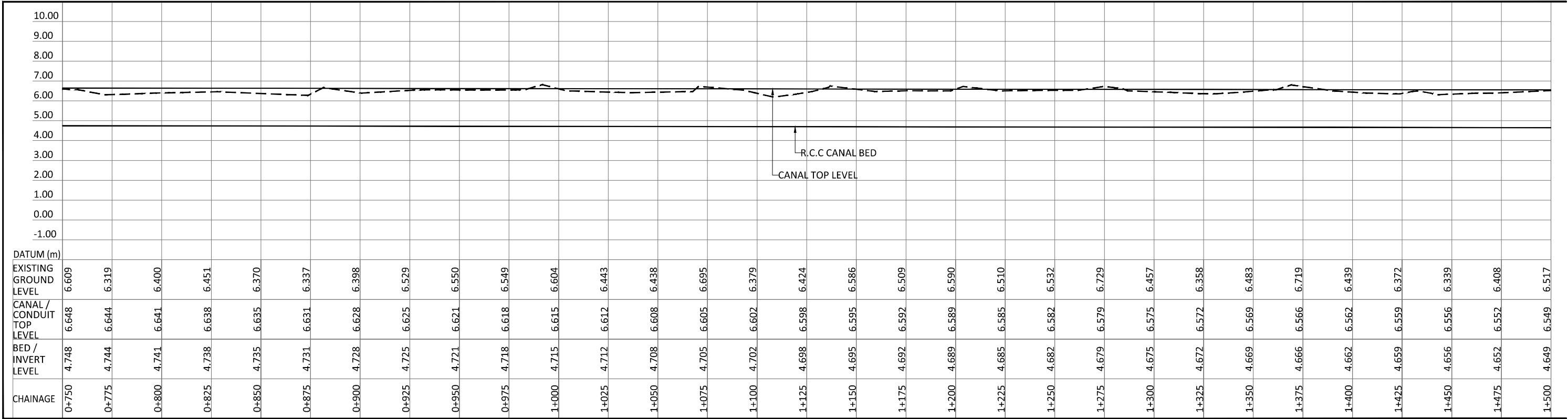


PROFILE  
STA. 1+500 TO 2+250

<div>NOTES:-</div> <div>1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.</div> <div>2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.</div> <div>3. FOR INTERCONNECTION POINT DETAIL REFER DWG NO: EA-942-65M-PI-U-W403.</div> <div>4. FOR SIPHON-II DETAIL REFER DWG NO: EA-942-65M-PI-U-W404.</div>										<div>LEGEND FOR PLAN:-</div> <div>PROPOSED CONDUIT</div> <div>PROPOSED CHANNEL</div> <div>SIPHON PIPE LINE</div> <div>BOX CULVERT</div> <div>FLOW ARROW</div> <div>EXISTING SERVICES:</div> <div>WATER LINE</div> <div>ICI WATER LINE</div> <div>PORT QASIM WATER LINE</div> <div>PAKISTAN STEEL WATER LINE</div> <div>GREATER KARACHI (GK)</div> <div>KARACHI WATER ( KII )</div>										<div></div> <div>KARACHI WATER ( KIII )</div> <div>PROPOSED CONDUIT</div> <div>ELECTRIC LINE</div> <div>SUI SOUTHERN GAS LINE</div> <div>LEGEND FOR PROFILE:-</div> <div>PROPOSED CONDUIT</div> <div>NATURAL GROUND LEVEL</div> <div>CANAL TOP LEVEL</div> <div>CANAL BED LEVEL</div> <div>SIPHON PIPE</div> <div>BOX CULVERTS</div> <div>PROPOSED STRUCTURE</div>										<div></div> <div>KIII — KIII</div> <div>V — V</div> <div>GAS — GAS</div> <div>0</div> <div>OCT,17</div> <div>TENDER DRAWINGS</div> <div>N.A.I</div> <div>M.Z</div> <div>A.A</div> <div>ED.NO</div> <div>DATE</div> <div>DESCRIPTION</div> <div>BY</div> <div>CKD</div> <div>APR</div>										<div>CLIENT:-</div> <div></div> <div>KARACHI WATER &amp; SEWERAGE BOARD</div> <div>CONSULTANT:-</div> <div></div> <div>EA Consulting ( Pvt. ) Limited</div> <div>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</div> <div>IN ASSOCIATION WITH:-</div> <div></div> <div>Jers Engineering Consultant</div>										<div>PROJECT:-</div> <div>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</div> <div>DRAWN</div> <div>ASLAM</div> <div>TITLE</div> <div>GRAVITY MAIN CANAL PLAN &amp; PROFILE (STA = 1+500 TO 2+250)</div> <div>PACKAGING</div> <div>DESIGNED</div> <div>NABEEL</div> <div>CHECKED</div> <div>MUNAWAR</div> <div>APPROVED</div> <div>ALI ASGHAR</div> <div>Scale / Sheet H=1:1000 V=1:100 (A1)</div> <div>DWG No. EA-942-65M-PI-U-PP03</div>									
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--



PLAN  
STA. 0+750 TO 1+500



PROFILE  
STA. 0+750 TO 1+500

**NOTES:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.

2. FOR TYPICAL CANAL DETAIL REFER DWG NO: EA-942-65M-PI-U-W401.

**LEGEND FOR PLAN:-**

PROPOSED CONDUIT  
PROPOSED CHANNEL  
SIPHON PIPE LINE  
BOX CULVERT  
FLOW ARROW  
EXISTING SERVICES:

WATER LINE  
ICI WATER LINE  
PORT QASIM WATER LINE  
PAKISTAN STEEL WATER LINE  
GREATER KARACHI (GK)  
KARACHI WATER ( KII )

KARACHI WATER ( KIII )  
ELECTRIC LINE  
SUI SOUTHERN GAS LINE

**LEGEND FOR PROFILE:-**

PROPOSED CONDUIT  
NATURAL GROUND LEVEL  
CANAL TOP LEVEL  
CANAL BED LEVEL  
SIPHON PIPE  
BOX CULVERTS  
PROPOSED STRUCTURE

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-

**KARACHI WATER & SEWERAGE BOARD**

CONSULTANT:-

**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-

**Jers Engineering Consultant**

PROJECT:-

**ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM	TITLE	GRAVITY MAIN CANAL PLAN & PROFILE (STA = 0+750 TO 1+500)	PACKAGE
DESIGNED	NABEEL			
CHECKED	MUNAWAR	Scale / Sheet	DWG No.	
APPROVED	ALI ASGHAR	H=1:1000 V=1:100 (A1)	EA-942-65M-PI-U-PP02	





**PLAN & PROFILE**  
**FROM KG CANAL TO**  
**PROPOSED HALEJI CANAL**








**DETAIL DRAWINGS**  
**HALEJI LAKE TO GHARO**  
**PUMPING STATION**

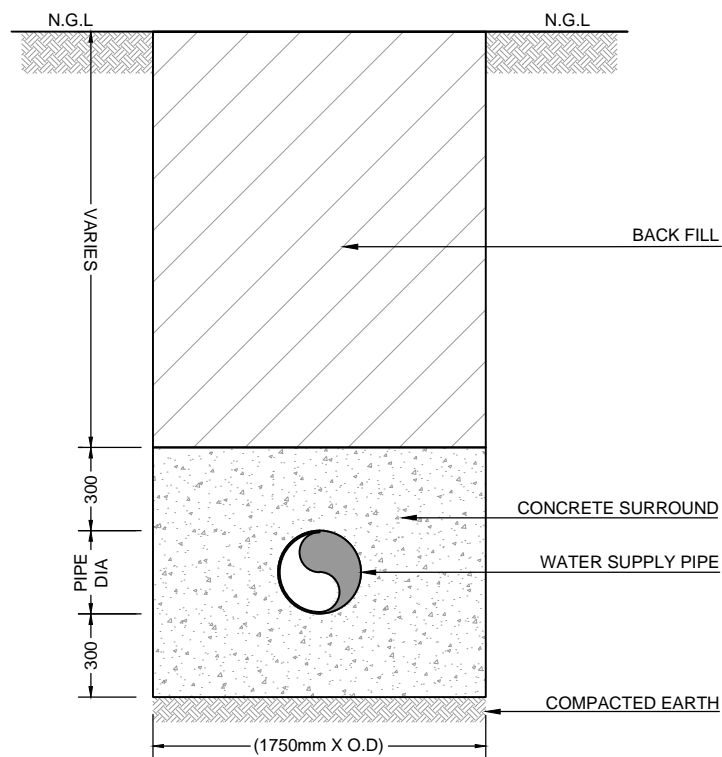
# **DETAIL DRAWINGS**

Diagram illustrating the cross-section of a canal with stone and R.C.C. lining. The channel has a bottom width of 7.75m and a depth of 2.25m. The channel is lined with R.C.C. 1:2:4 concrete, 0.15m thick on the bottom and 0.20m thick on the slopes. The top width of the channel is 30.00m. The side slopes are 1:1. The channel is flanked by stone lining on both sides, with a width of 30.00m on each side. The stone lining is 0.30m thick. The channel is labeled with 'SLOPE 1:2' on the outer slopes and 'SLOPE 1:1' on the inner slopes. The water level is marked as 'H W L'.

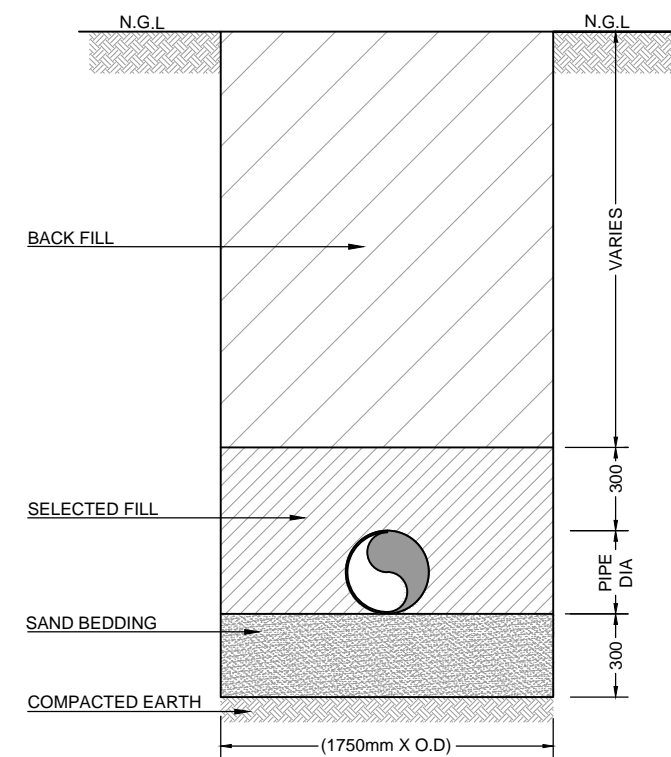
1. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE STATED.

						<div>CLIENT:-</div> <div></div> <div>KARACHI WATER &amp; SEWERAGE BOARD</div>	PROJECT:-				ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.				
							<div>CONSULTANT:-</div> <div></div> <div>EA Consulting ( Pvt. ) Limited</div> <div>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</div>	IN ASSOCIATION WITH:-		DRAWN	M.NOMAN SIDDIQUI	TITLE		PACKAGE # 01	
								DESIGNED	NABEEL AHMED IDREES	PROPOSED PLAN REMODELING OF RESERVOIR BRANCH AT HALEJI LAKE					
0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A				Jers Engineering Consultant		CHECKED	MUNAWAR ZAMAN	Scale / Sheet		Drawing No.
ED.NO	DATE	DESCRIPTION	BY	CKD	APR				APPROVED	ALI ASGHAR	N.T.S (A1)		EA-942-65M-PI-U-W410		

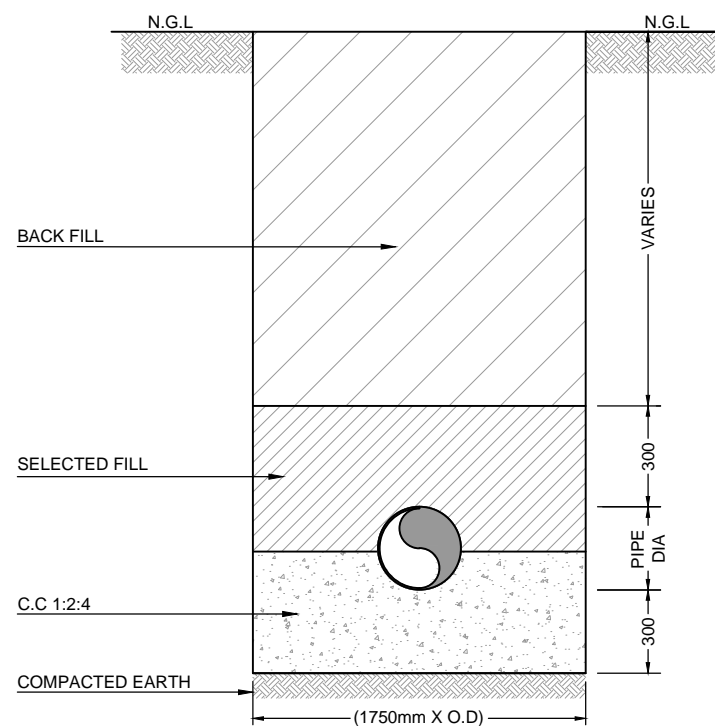




**TYPICAL SECTION OF PIPE  
UNDER THE ROAD**



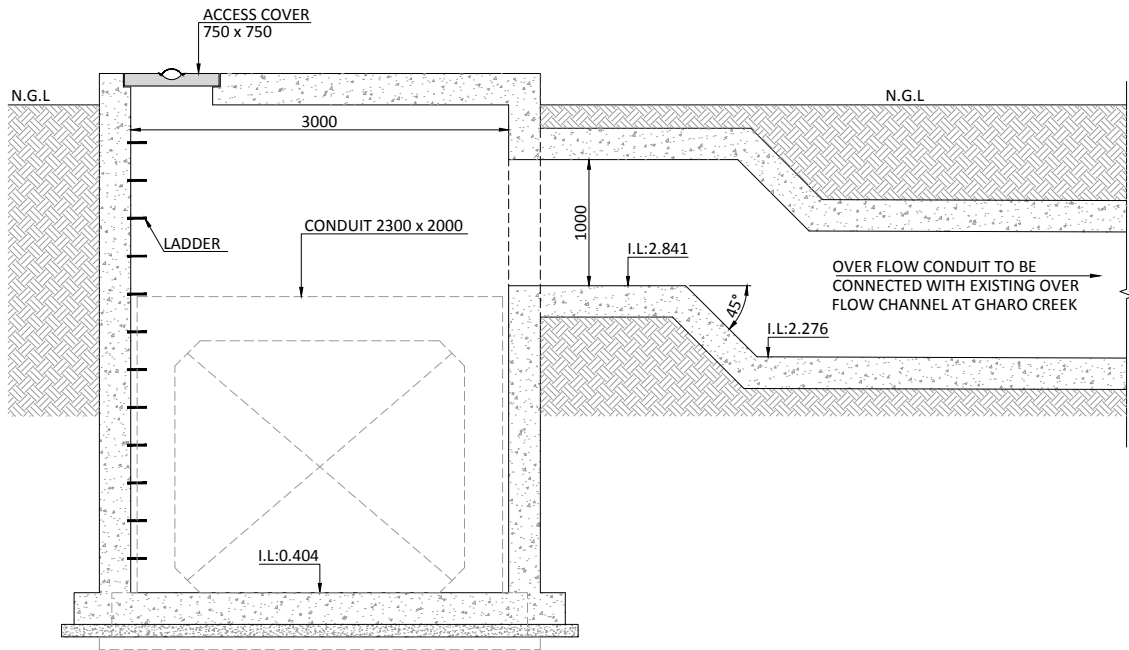
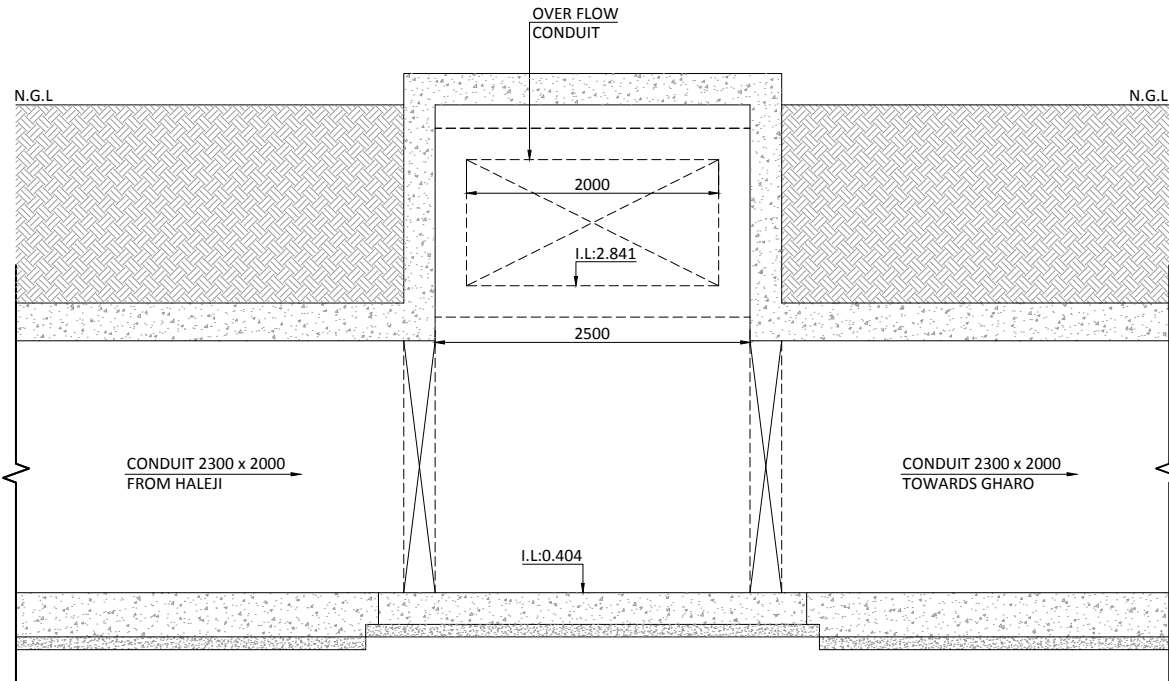
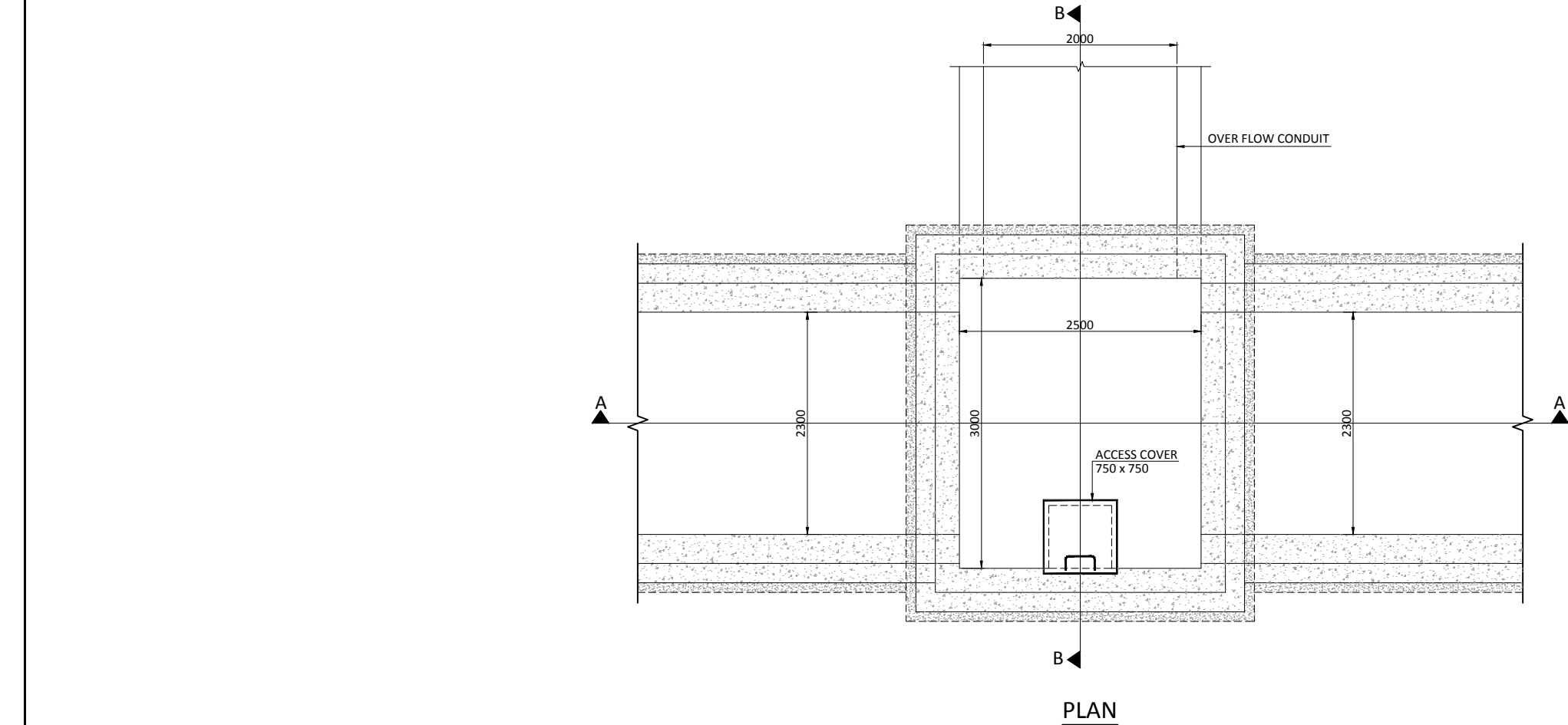
**TYPICAL SECTION OF PIPE  
UNDER THE SOIL**



**CONCRETE PIPE  
SUPPORT UNDER SLUSHY SOIL**




**NOTE:-**

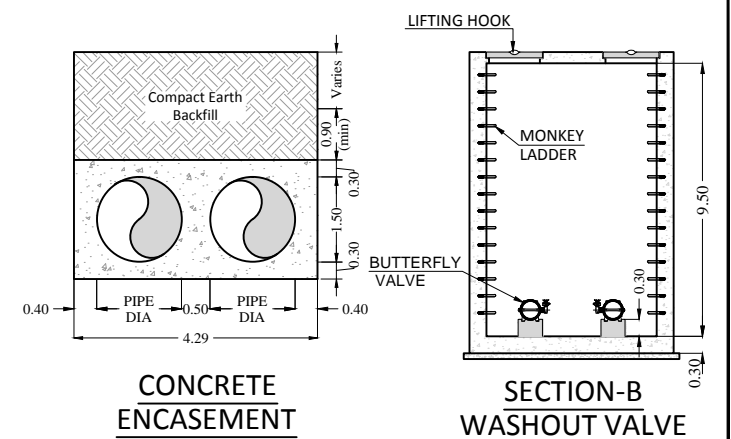
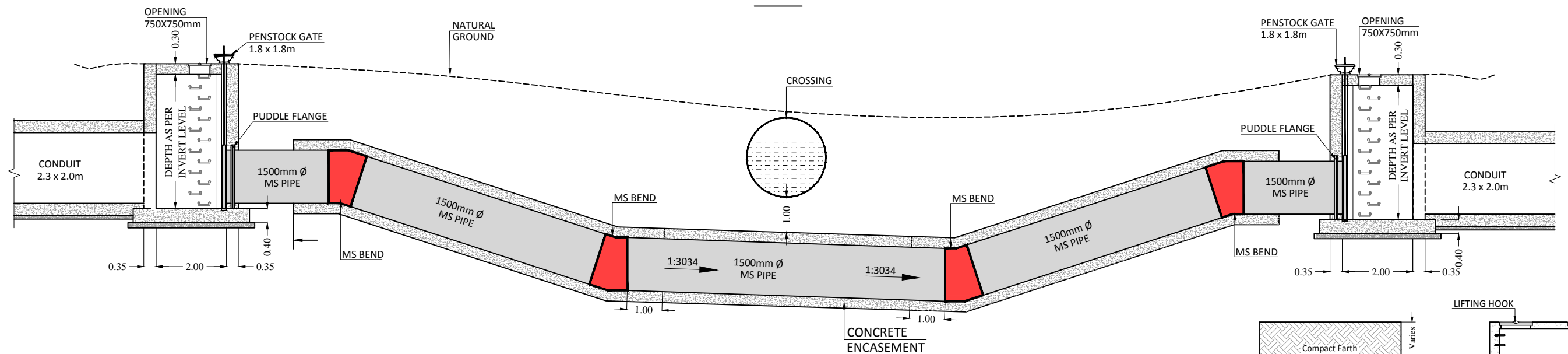
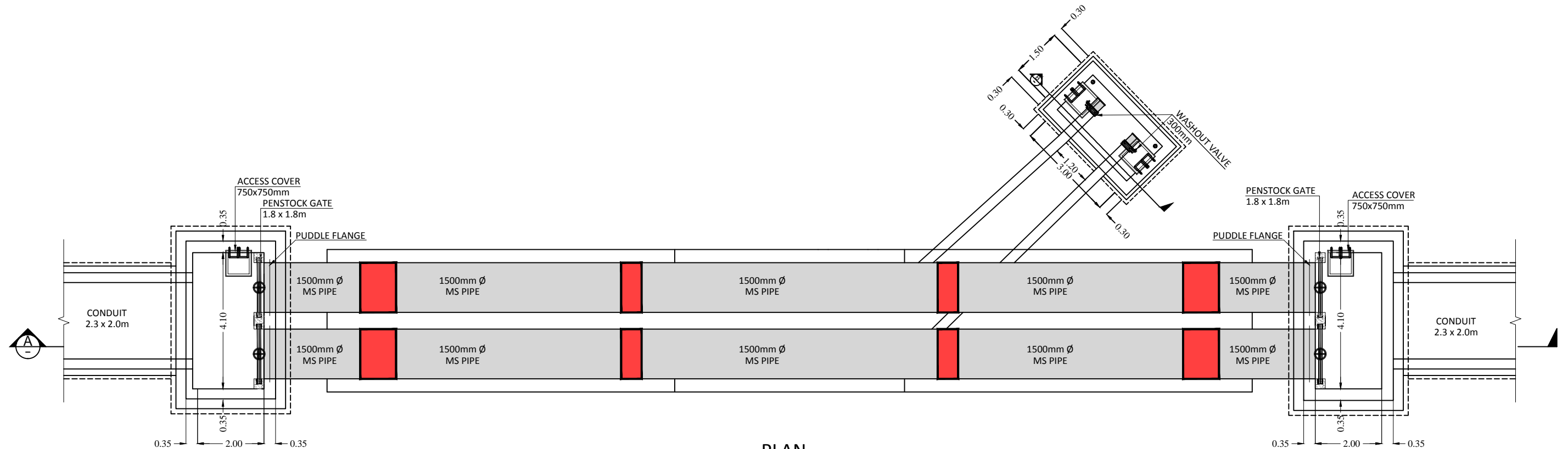
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. BEDDING SHALL BE FINALIZED ACCORDING TO MANUFACTURE'S INSTRUCTION.



SECTION A-A

SECTION B-B

<div>NOTE:-</div> <div>1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.</div> <div>2. FOR LOCATION OF OVER FLOW CHAMBER REFER DWG NO: EA-942-65M-PI-U-PP25</div> <div>3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DWG NO:EA-942-65M-PI-S-1006.</div>						<div>CLIENT:-</div> <div></div> <div>KARACHI WATER &amp; SEWERAGE BOARD</div>						<div>PROJECT:-</div> <div>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</div>						
						<div>CONSULTANT:-</div> <div> EA Consulting ( Pvt. ) Limited CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</div>			<div>IN ASSOCIATION WITH:-</div> <div> Jers Engineering Consultant</div>			DRAWN	ASLAM	TITLE <div>OVER FLOW CHAMBER DETAIL</div>			PACKAGE # 01	
									DESIGNED	NABEEL								
												CHECKED	MUNAWAR	Scale / Sheet		Drawing No.		
												APPROVED	ALI ASGHAR	N.T.S (A1)		EA-942-65M-PI-U-W408		
0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A													
ED.NO	DATE	DESCRIPTION	BY	CKD	APR													



**NOTE:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF SIPHON-V, & VI REFER DWG NO: EA-942-65M-PI-U-PP25 & PP26.
3. M.S PIPE PIECE & BEND ARE TO BE ADJUSTED AS PER SITE.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



**Jers Engineering Consultant**

PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN

FAZEEL

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

TYPICAL DETAIL OF SIPHON-III

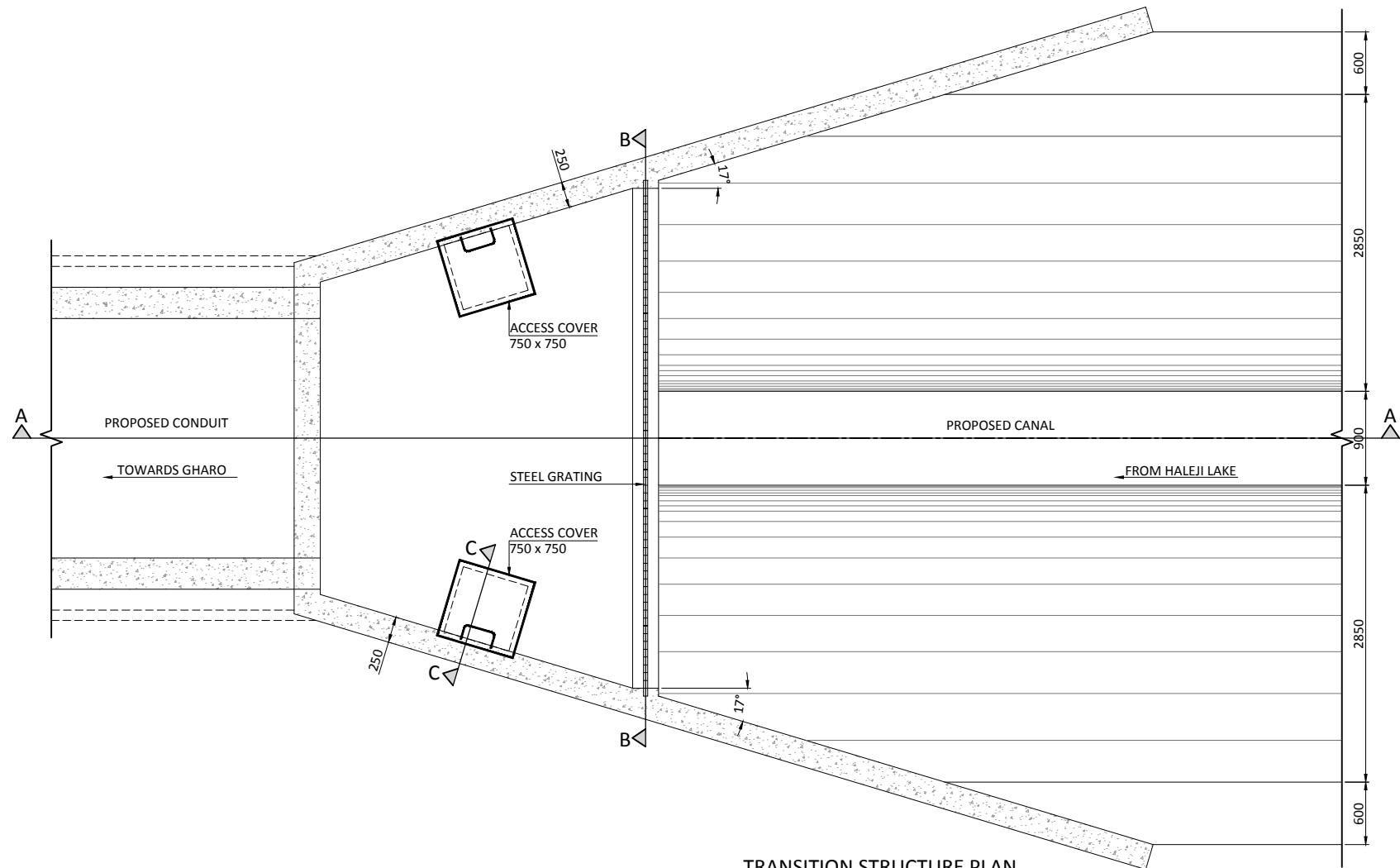
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N.T.S (A1)

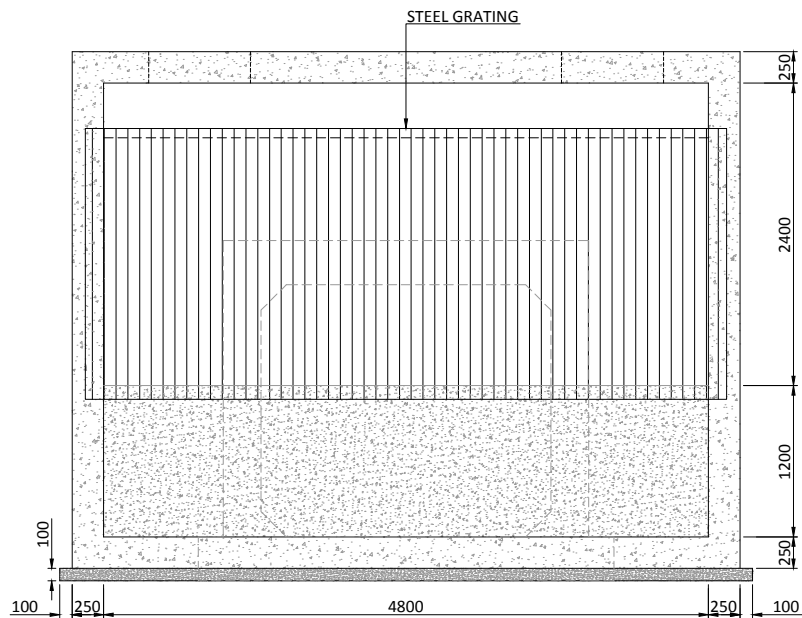
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EA-942-65M-PI-U-W407

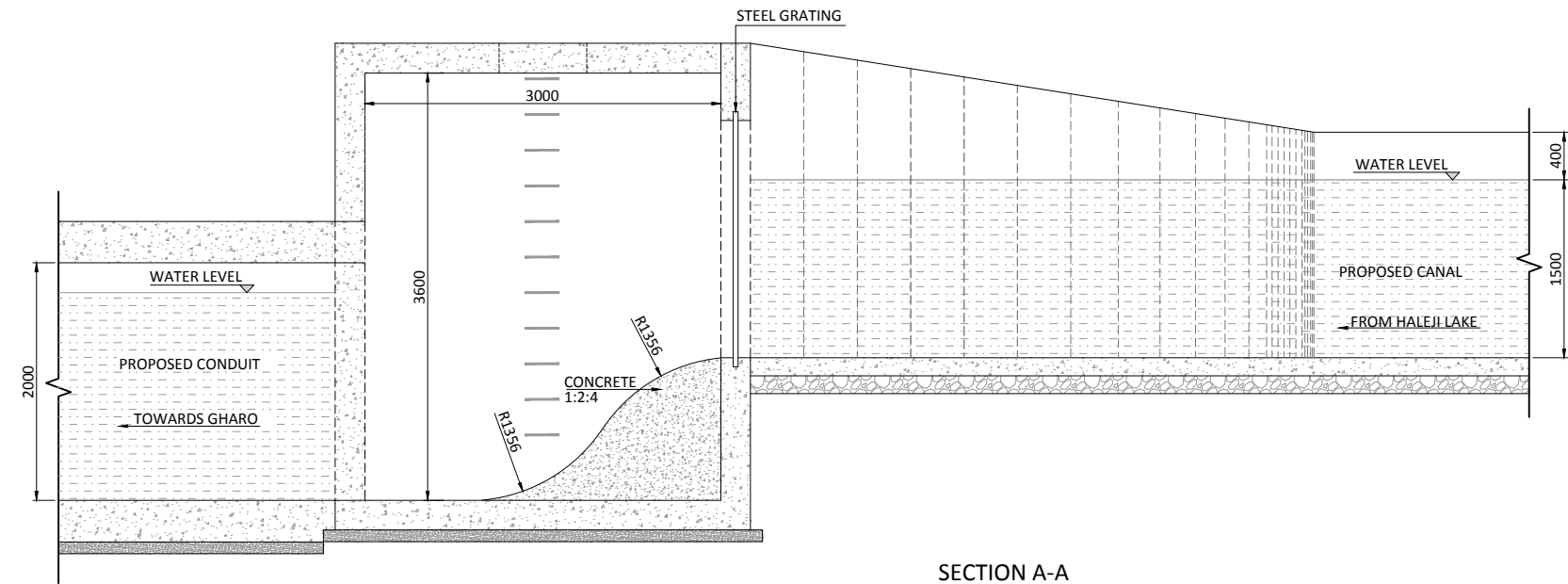
PACKAGE # 01



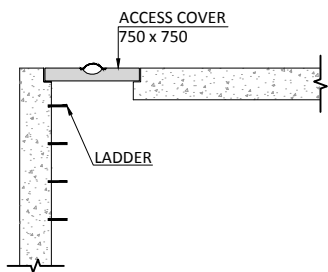
TRANSITION STRUCTURE PLAN



SECTION B-B



SECTION A-A



SECTION C-C

NOTE:-  
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.  
2. FOR LOCATION OF TRANSITION STRUCTURE REFER DWG NO: EA-942-65M-PI-U-PP20.  
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DWG NO:EA-942-65M-PI-S-1005.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

TRANSITION STRUCTURE  
OF CANAL TO CONDUIT

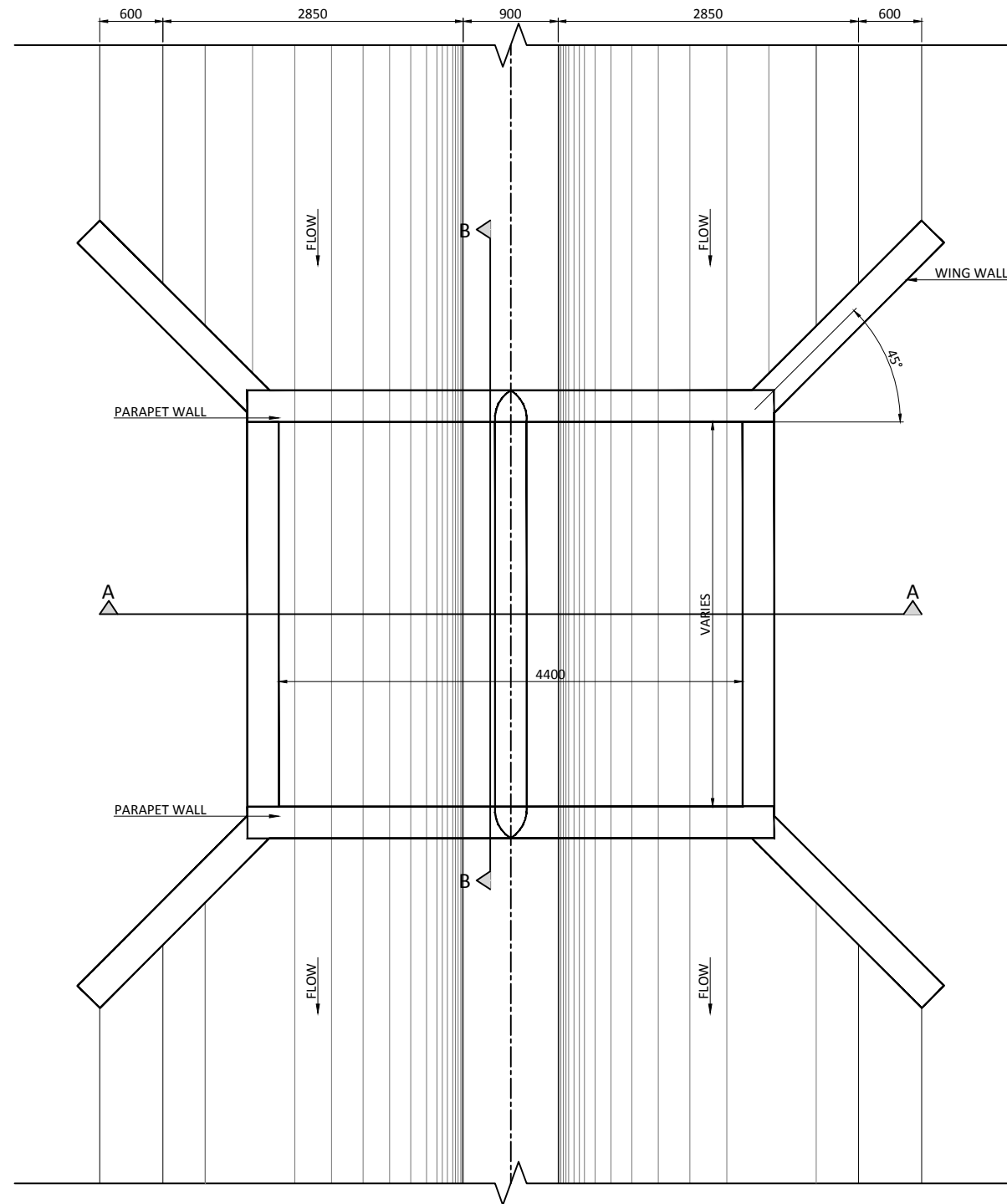
Scale / Sheet

N.T.S (A1)

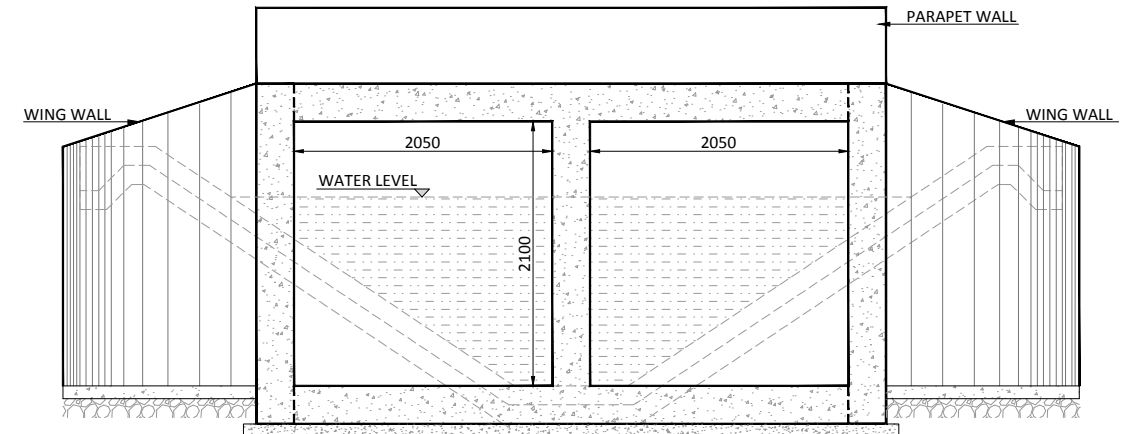
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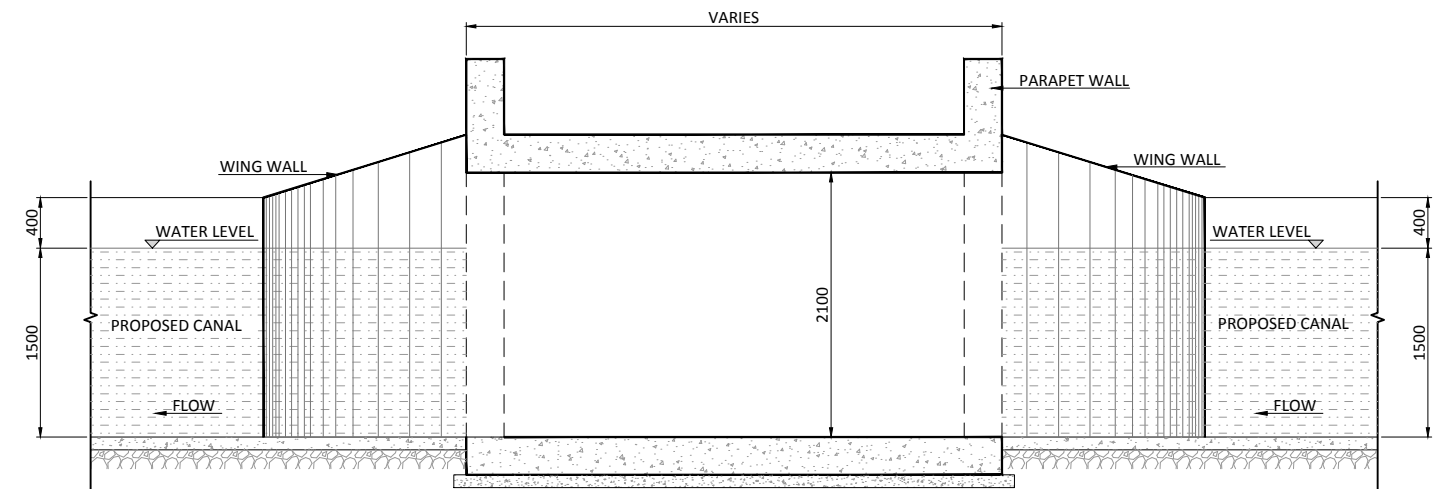
PACKAGE # 01



LAYOUT PLAN TYP. BOX CULVERT



SECTION A-A



SECTION B-B

NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF BOX CULVERT REFER DWG NO: EA-942-65M-PI-U-PP04, PP10, PP11, PP12, PP15, PP17 & PP18.
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DWG NO:EA-942-65M-PI-S-1004.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

BOX CULVERT DETAIL

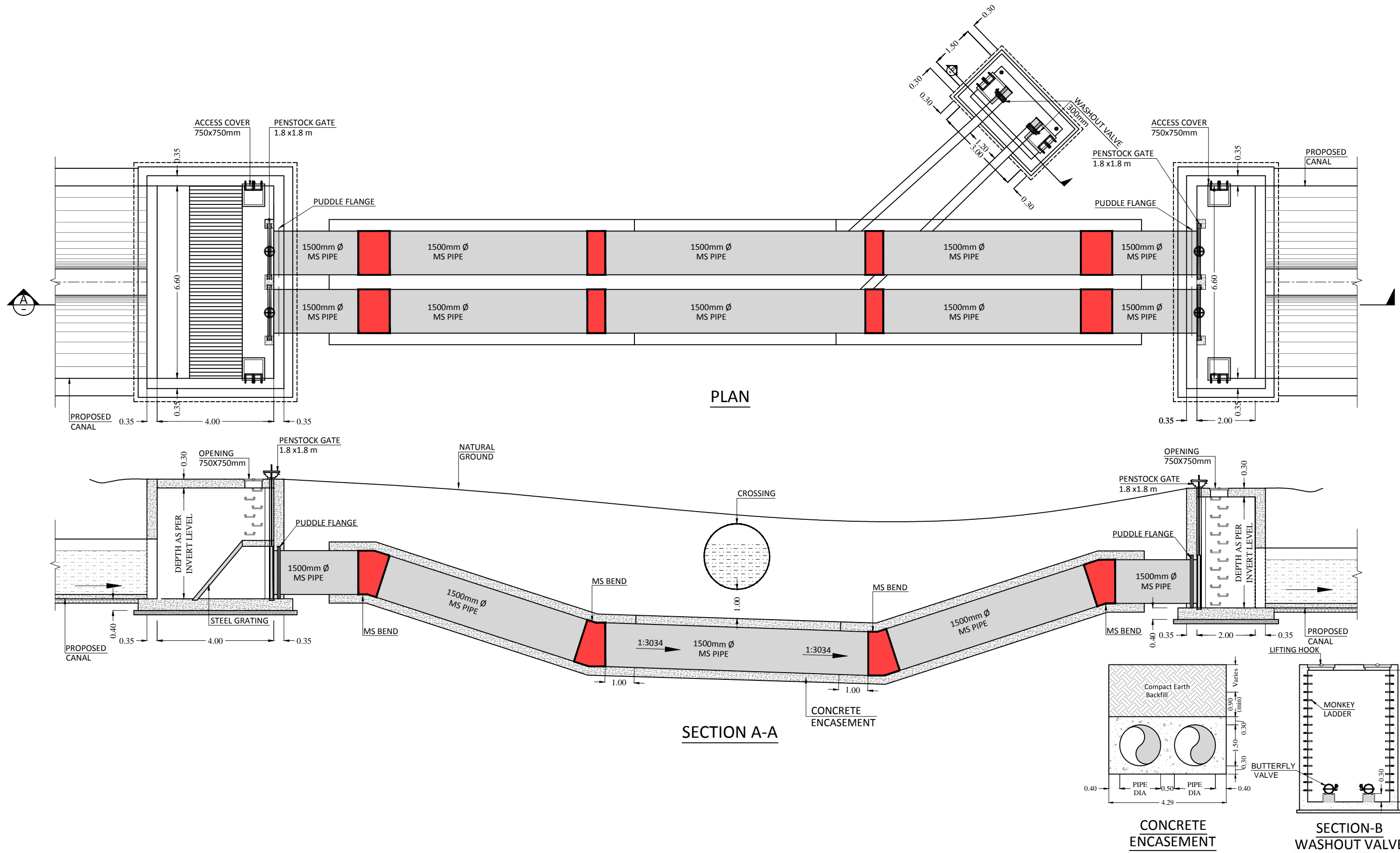
Scale / Sheet

N.T.S (A1)

Drawing No.

EA-942-65M-PI-U-W405

PACKAGE # 01



NOTE:-

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF SIPHON-II, III & IV REFER DWG NO: EA-942-65M-PI-U-PP03 & PP11.
3. M.S PIPE PIECE & BEND ARE TO BE ADJUSTED AS PER SITE.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

FAZEEL

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

TYPICAL DETAIL OF SIPHON-II

Scale / Sheet

N.T.S

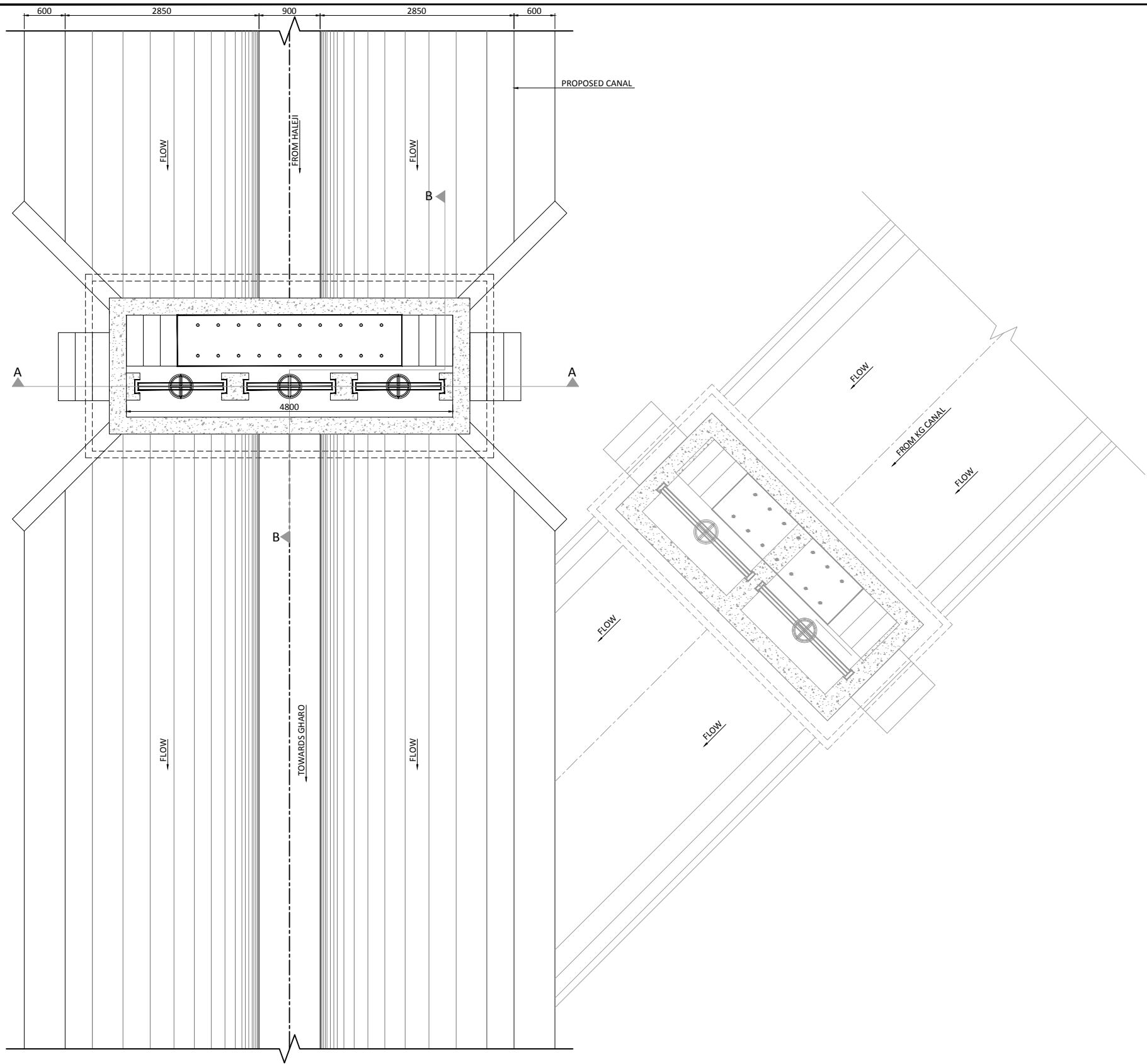
(A1)

Drawing No.

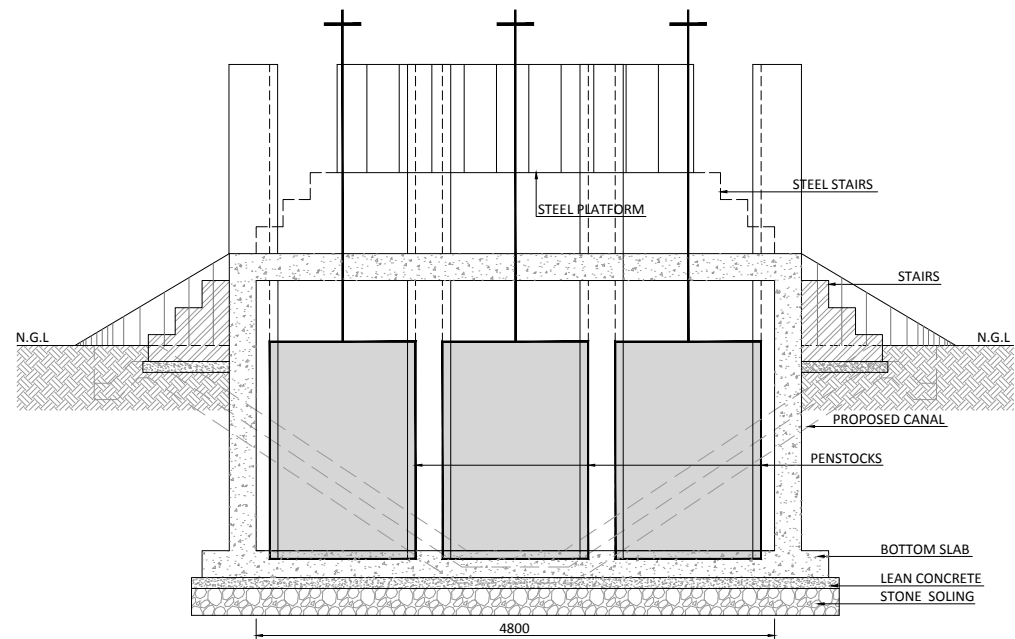
EA-942-65M-PI-U-W404

PACKAGE # 01

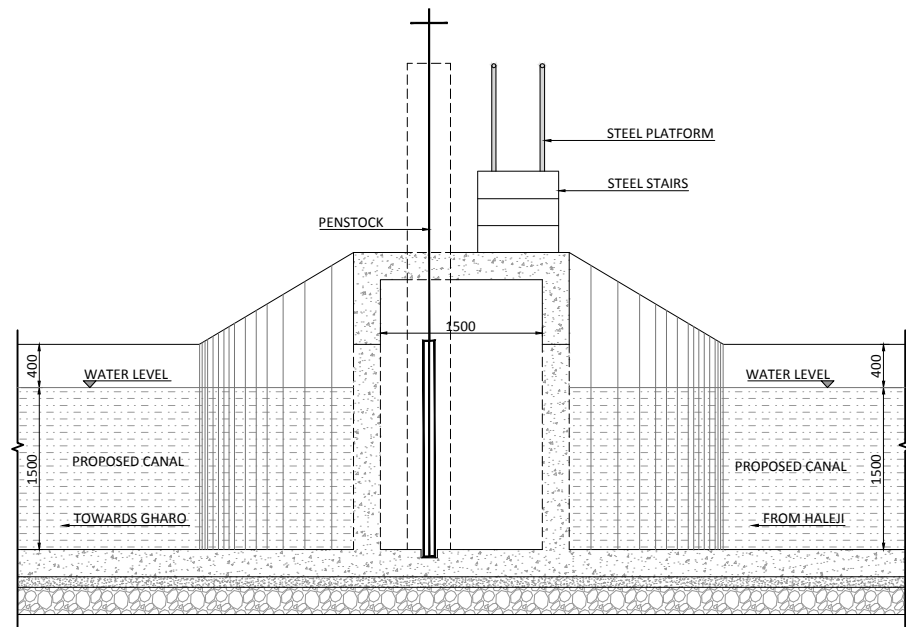




PLAN PENSTOCK STRUCTURE AT CANAL



SECTION A-A



SECTION B-B

NOTE:-  
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.  
2. FOR LOCATION OF INTERCONNECTION POINT REFER DWG NO: EA-942-65M-PI-U-PP03.  
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DWG NO:EA-942-65M-PI-S-1003.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

INTERCONNECTION POINT  
PENSTOCK STRUCTURE DETAIL

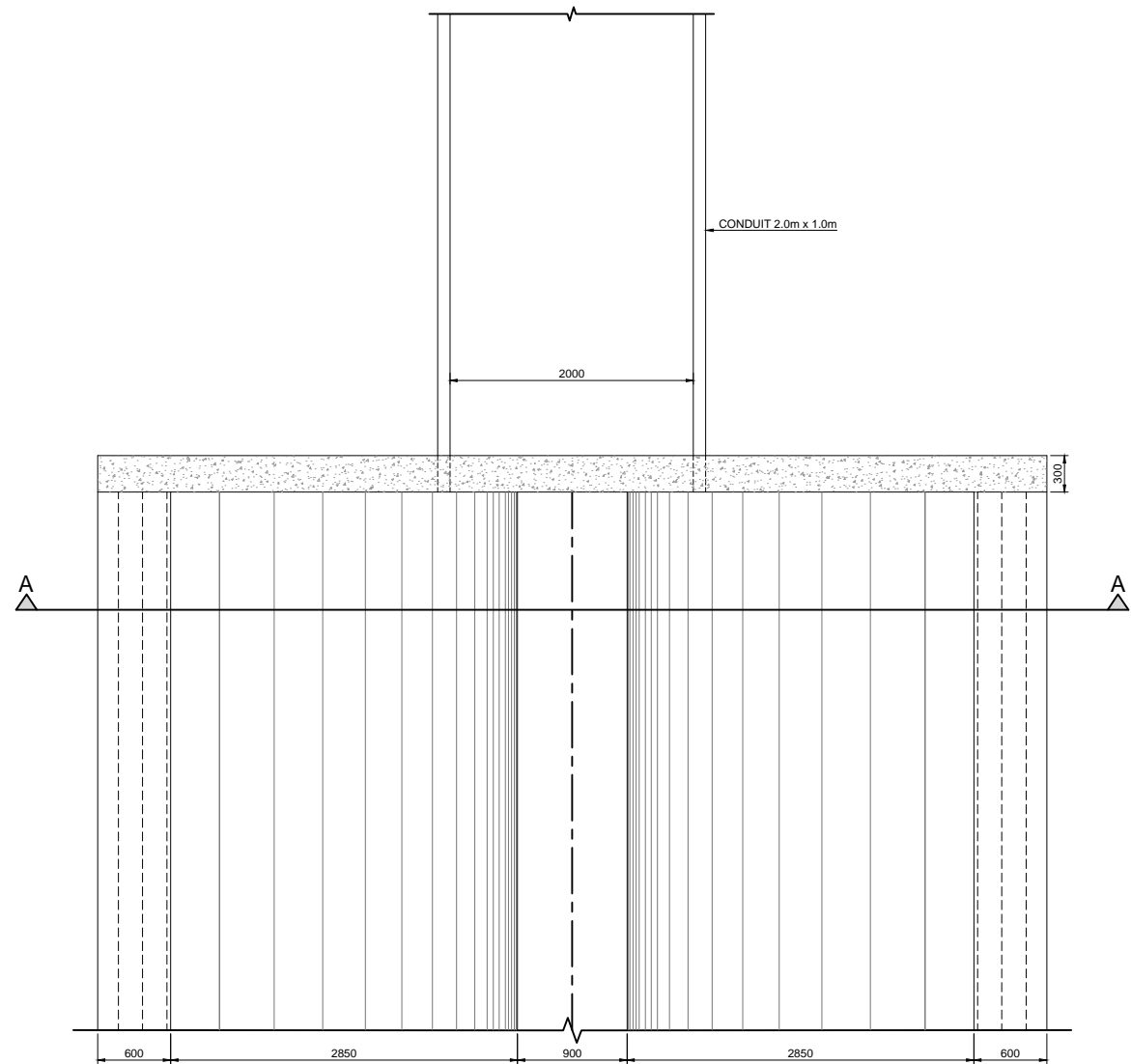
Scale / Sheet

N.T.S (A1)

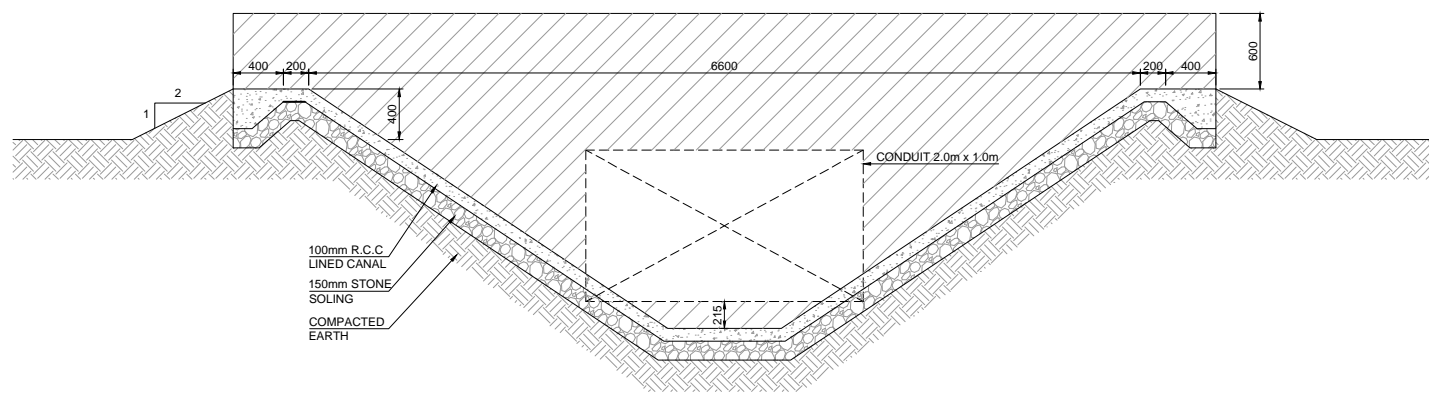
Drawing No.

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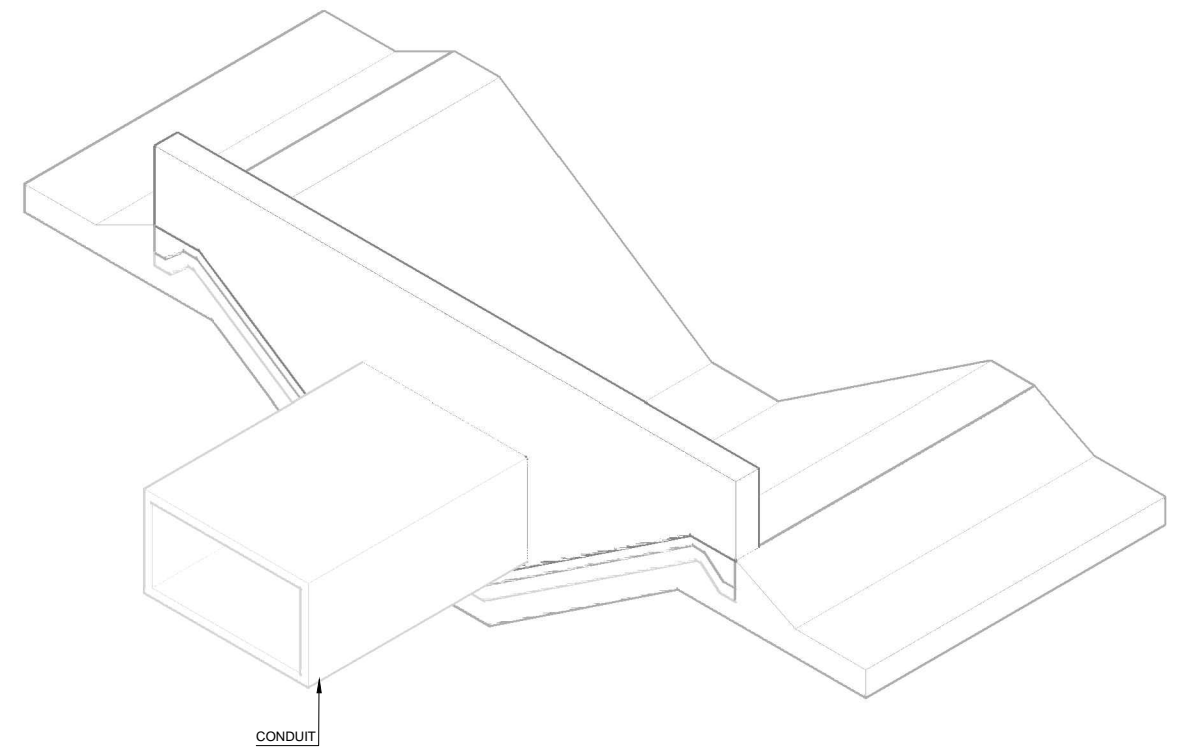
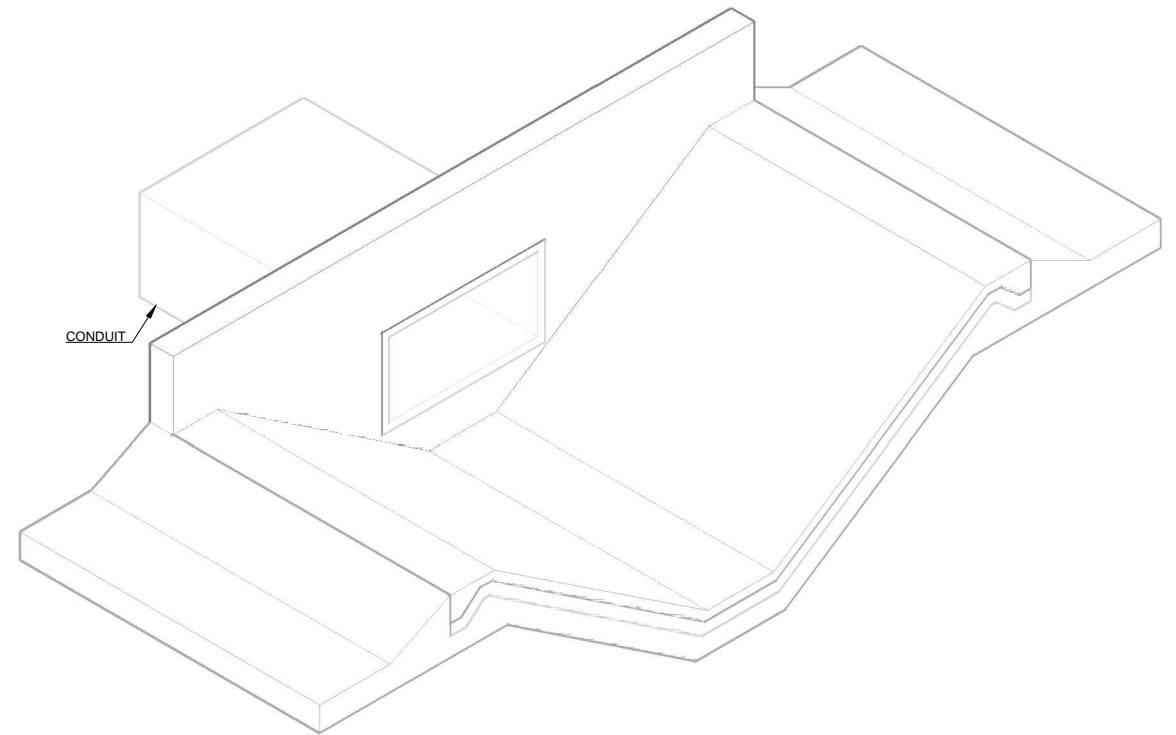
PACKAGE # 01



PLAN



SECTION A-A



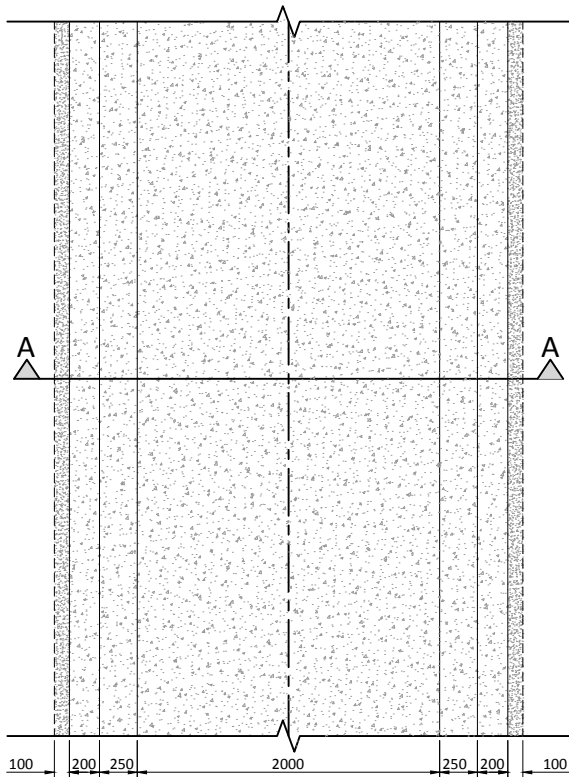
NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF TRANSITION FROM CONDUIT TO CANAL REFER DWG NO: EA-942-65M-PI-U-PP01.

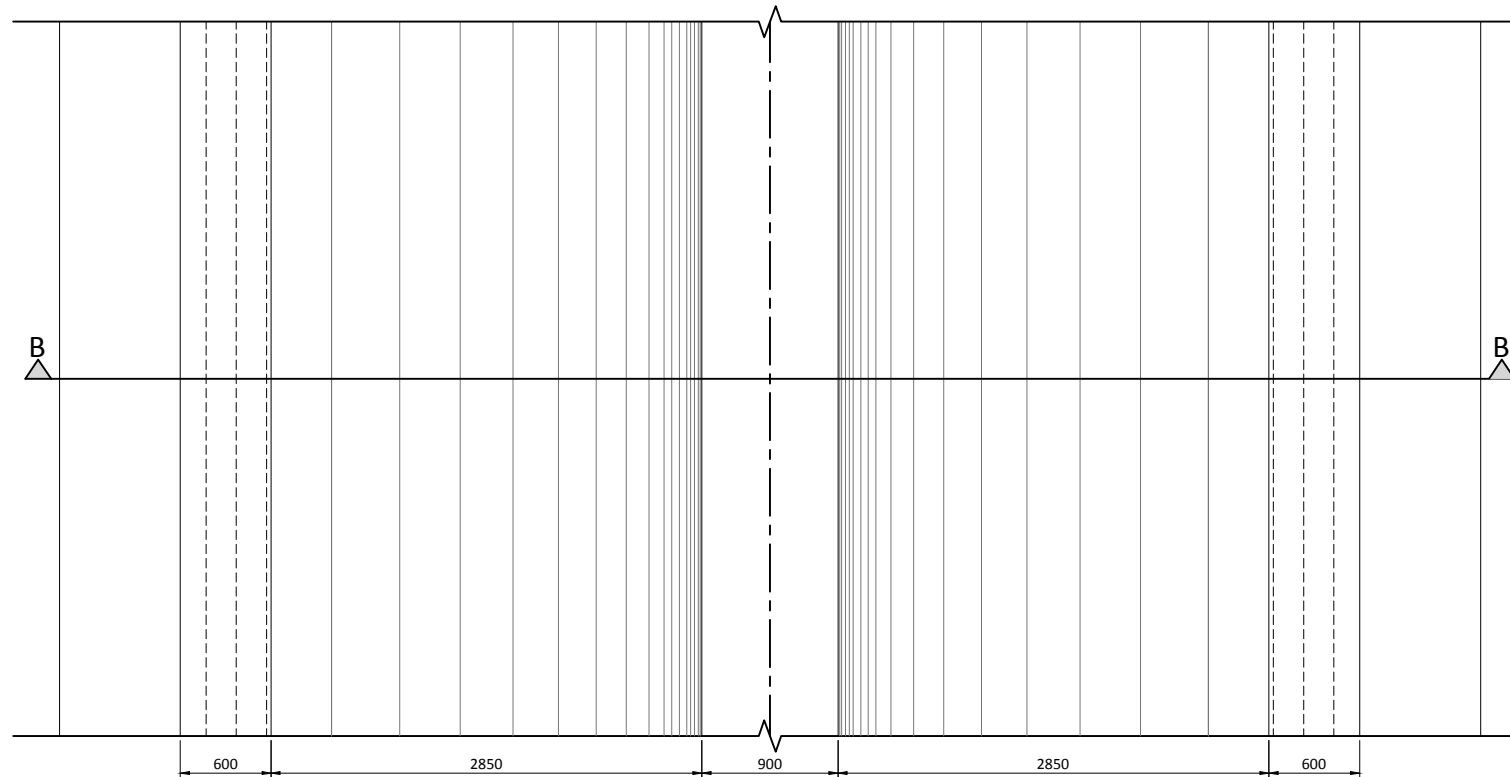
0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-	KARACHI WATER & SEWERAGE BOARD	
CONSULTANT:-	EA Consulting ( Pvt. ) Limited	IN ASSOCIATION WITH:-
	Jers Engineering Consultant	

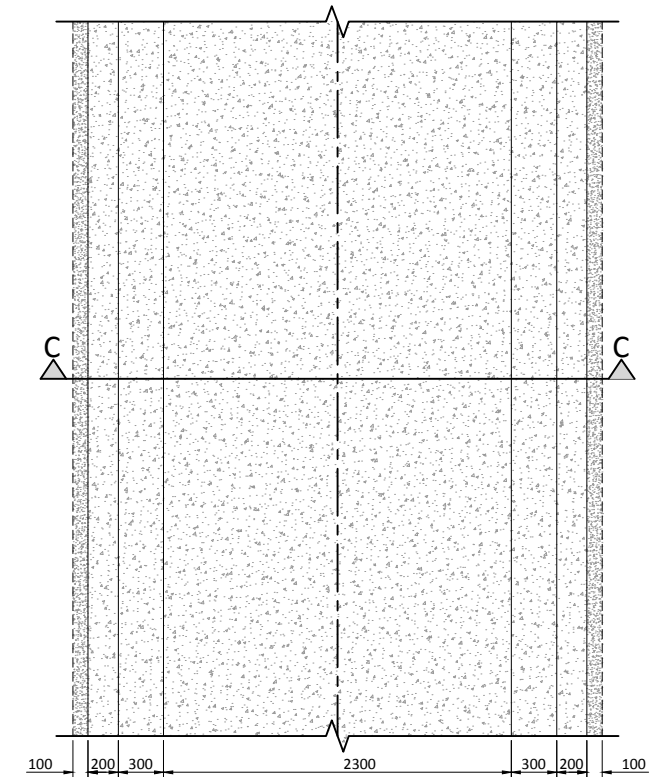
PROJECT:-	ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.	
DRAWN	ASLAM	TITLE
DESIGNED	NABEEL	TRANSITION STRUCTURE OF CONDUIT TO CANAL
CHECKED	MUNAWAR	Scale / Sheet
APPROVED	ALI ASGHAR	N.T.S (A1)
		Drawing No.
		EA-942-65M-PI-U-W402



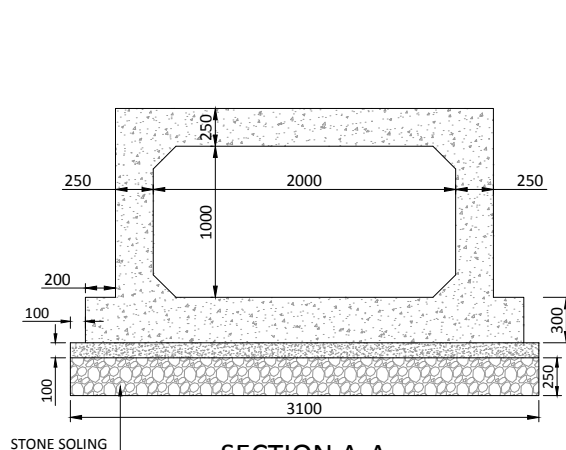
PLAN OF RCC CONDUIT  
HALEJI TO GHARO CH:0+000 TO 0+100



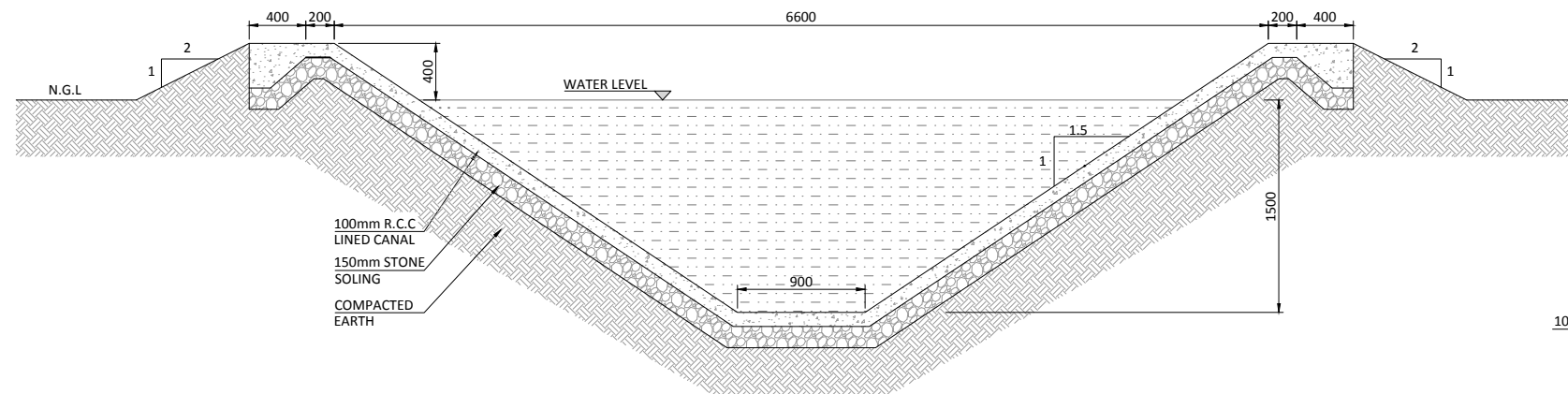
PLAN OF PROPOSED CANAL  
HALEJI TO GHARO CH:0+100 TO 14+862



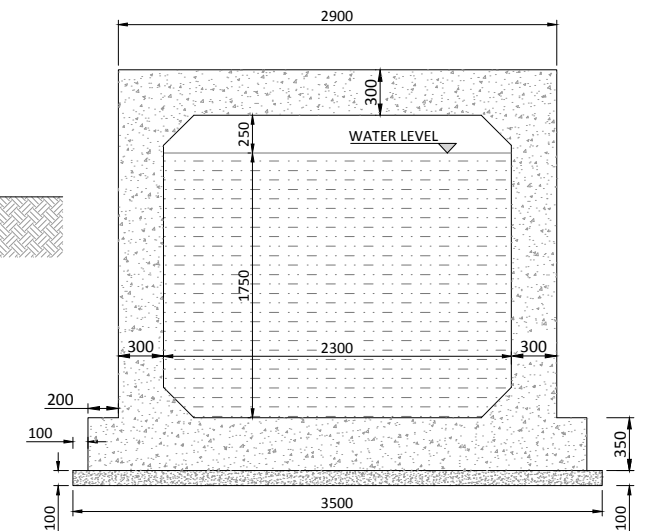
PLAN OF RCC CONDUIT FROM  
HALEJI TO GHARO CH:14+862 TO 19+828



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF CANAL & CONDUIT REFER DWG NO: EA-942-65M-PI-U-PP01 TO PP27
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DWG NO:EA-942-65M-PI-S-1002.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



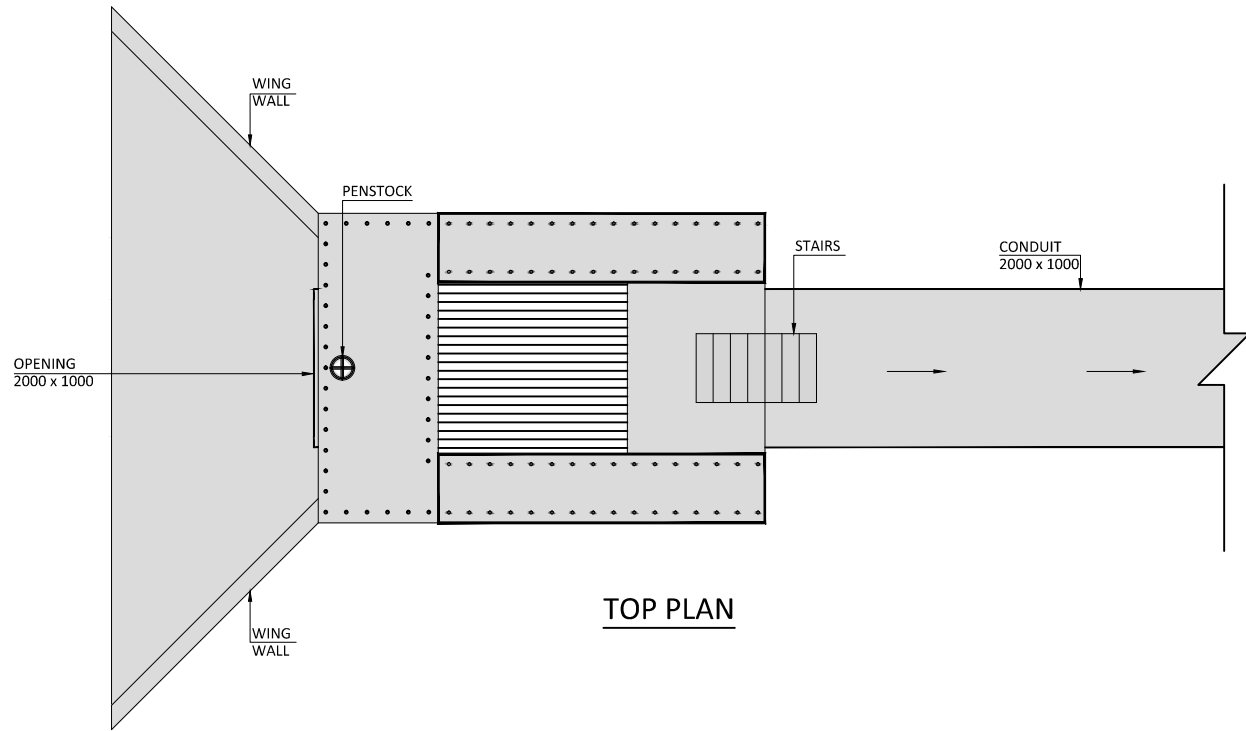
Jers Engineering Consultant

PROJECT:-

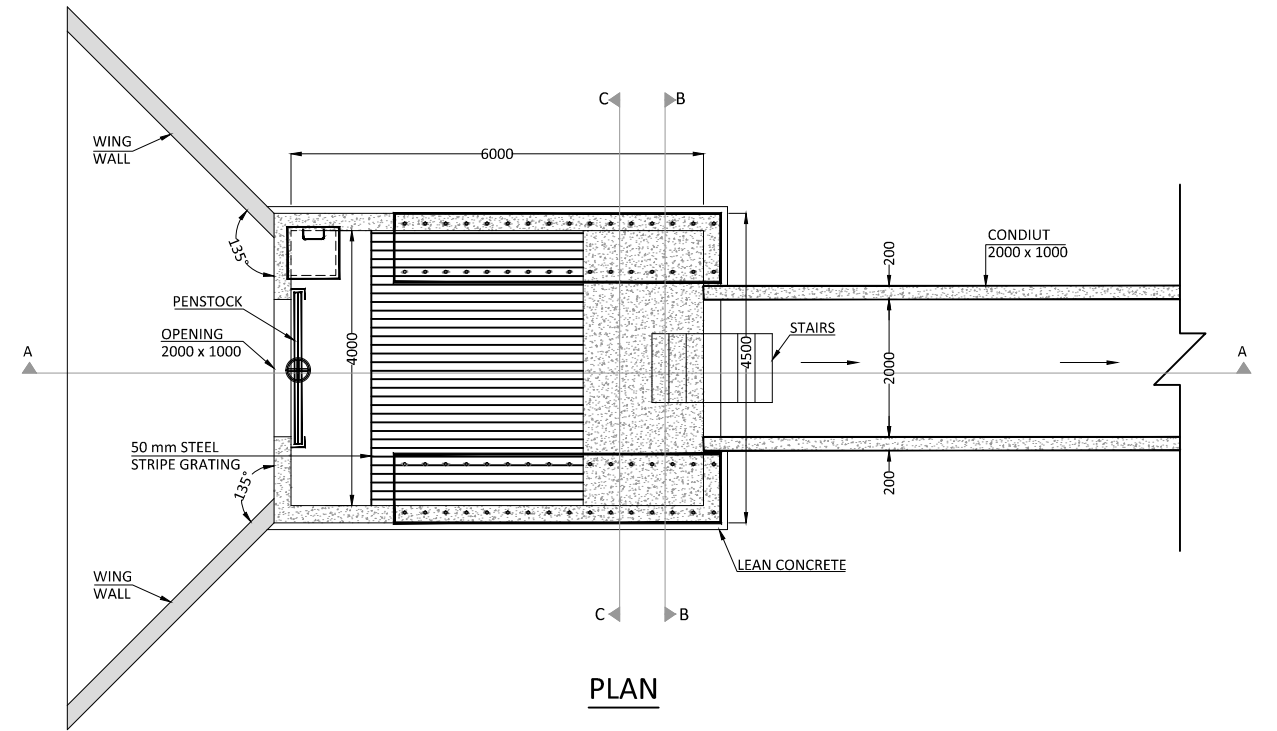
ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN	ASLAM
DESIGNED	NABEEL
CHECKED	MUNAWAR
APPROVED	ALI ASGHAR

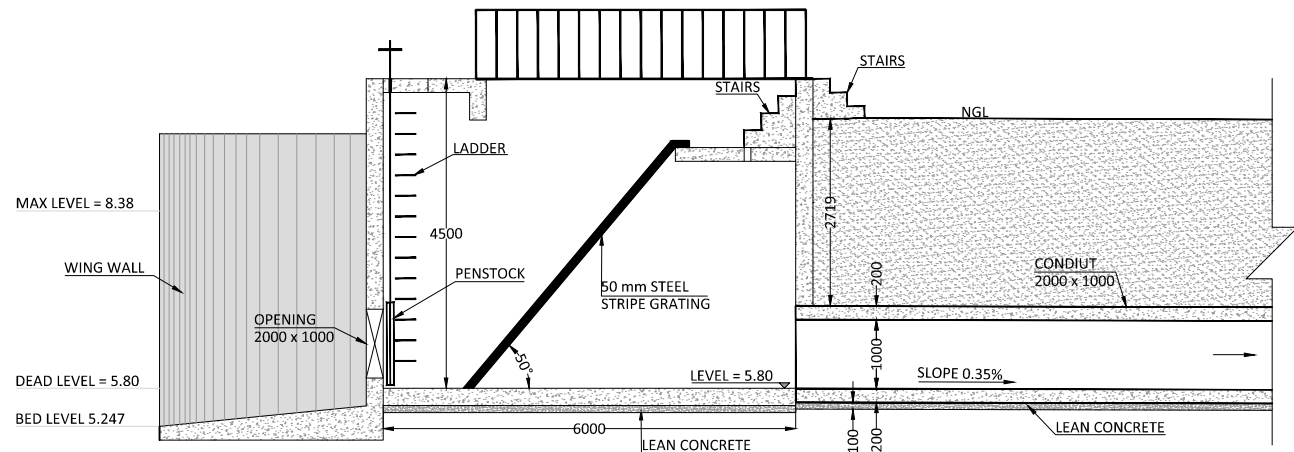
TITLE	PACKAGE # 01
CANAL & CONDUIT DETAIL	
Scale / Sheet	Drawing No.
N.T.S (A1)	EA-942-65M-PI-U-W401



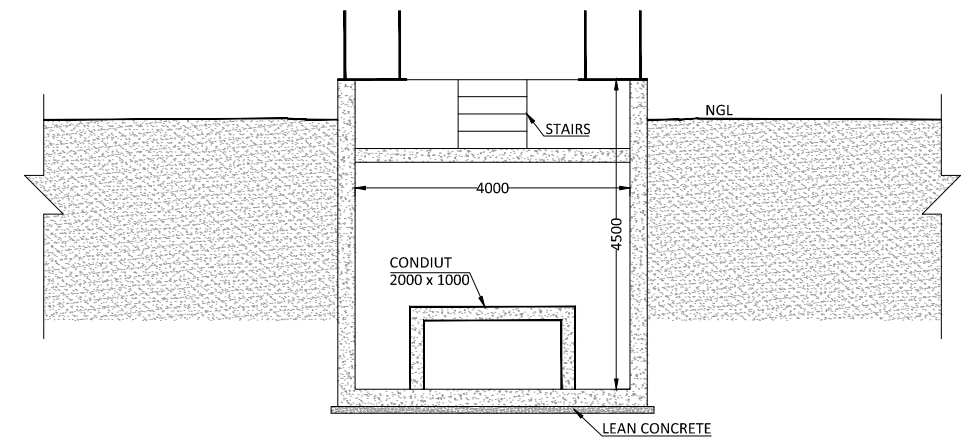
TOP PLAN



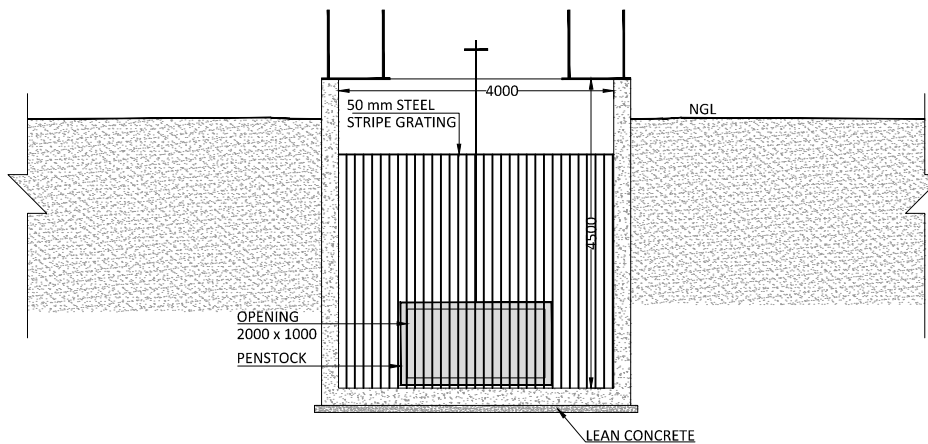
PLAN



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:-

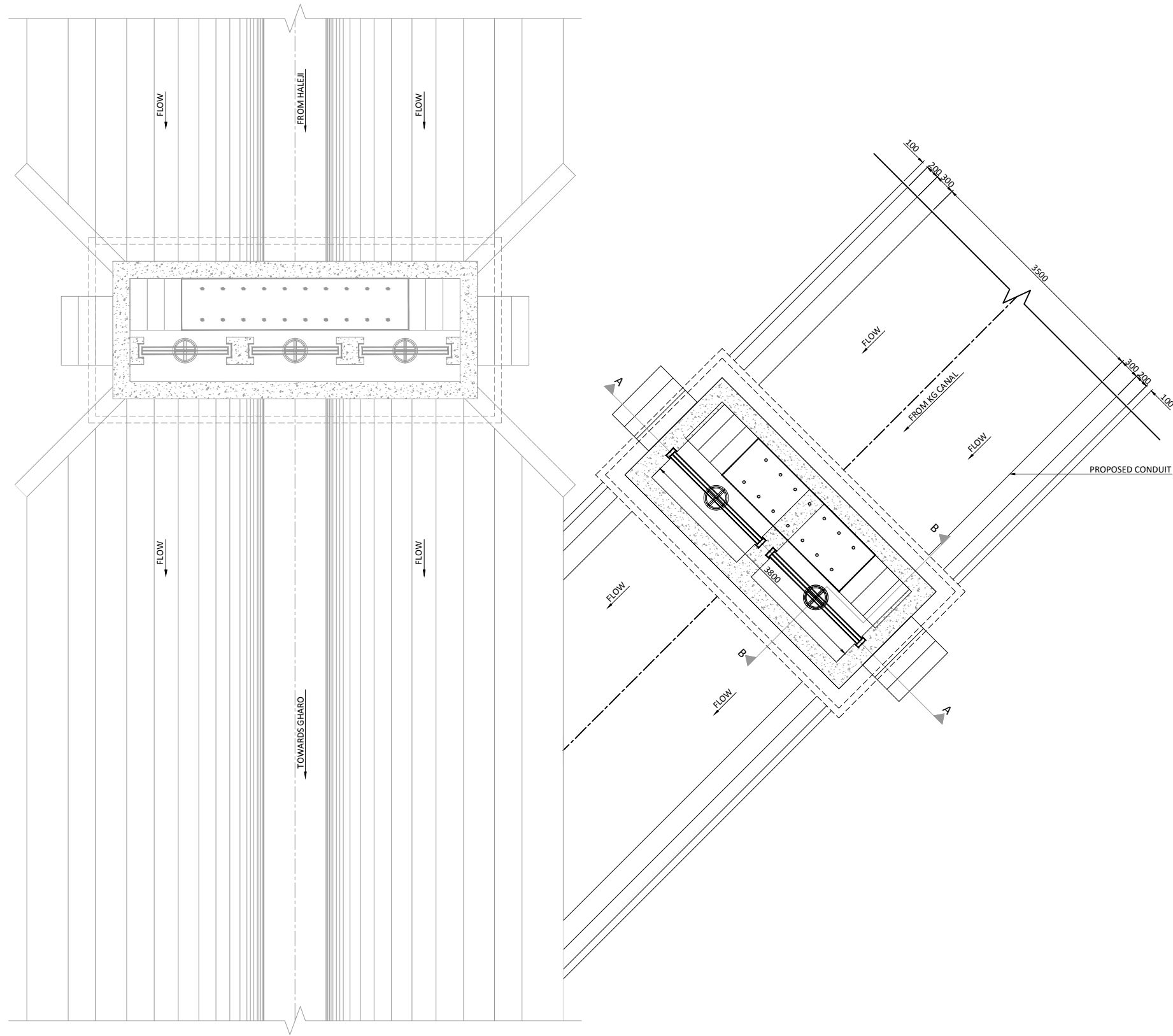
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF INTAKE STRUCTURE REFER DWG NO: EA-942-65M-PI-U-PP01
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DWG NO:EA-942-65M-PI-S-1001.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

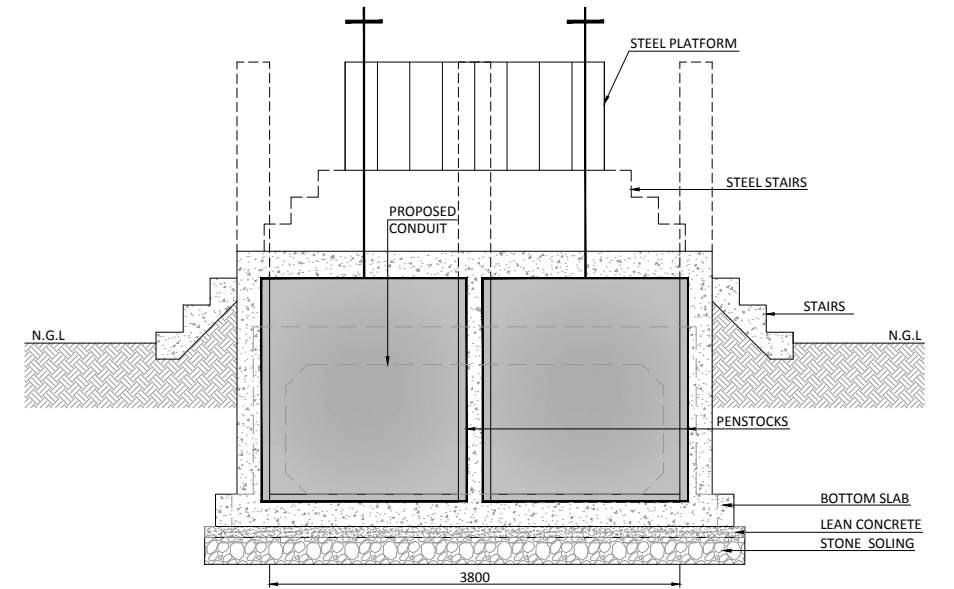
CLIENT:-		KARACHI WATER & SEWERAGE BOARD	
CONSULTANT:-		IN ASSOCIATION WITH:-	
EA Consulting ( Pvt. ) Limited		Jers Engineering Consultant	

PROJECT:-				PACKAGE # 01	
ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.				INTAKE STRUCTURE AT HALEJI LAKE	
DRAWN	FARHAN	TITLE		Scale / Sheet	
DESIGNED	NABEEL	N.T.S		(A1)	
CHECKED	MUNAWAR	Drawing No.		EA-942-65M-PI-U-W400	
APPROVED	ALI ASGHAR				

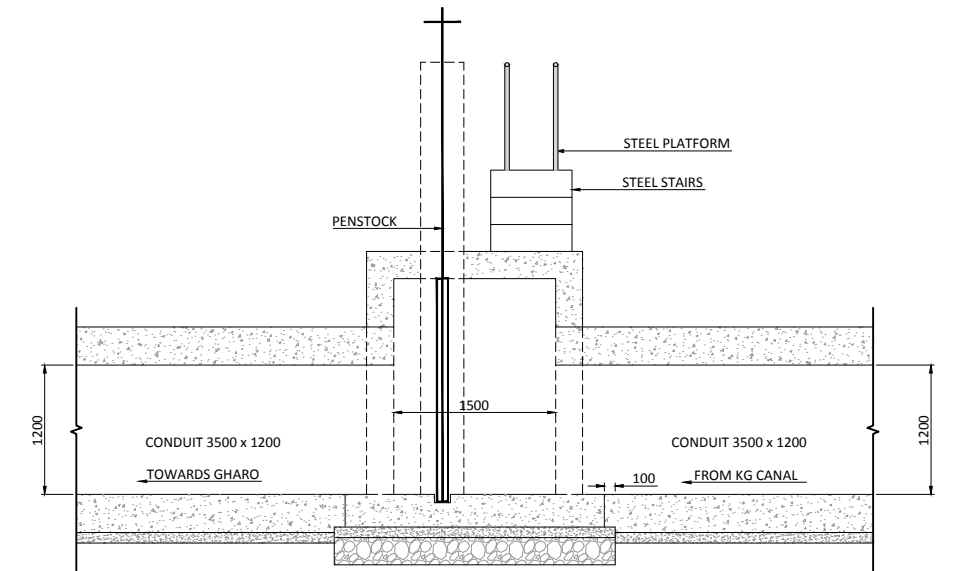
**DETAIL DRAWINGS**  
**FROM KG CANAL TO**  
**PROPOSED HALEJI CANAL**



PLAN OF TYPE. PENSTOCK STRUCTURE AT  
CONDUIT FROM KG CANAL



SECTION A-A



SECTION B-B

**NOTE:-**

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF INTERCONNECTION POINT REFER DRAWING NO: EA-942-65M-PI-U-PP02
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DRAWING NO:EA-942-65M-PI-S-2003.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



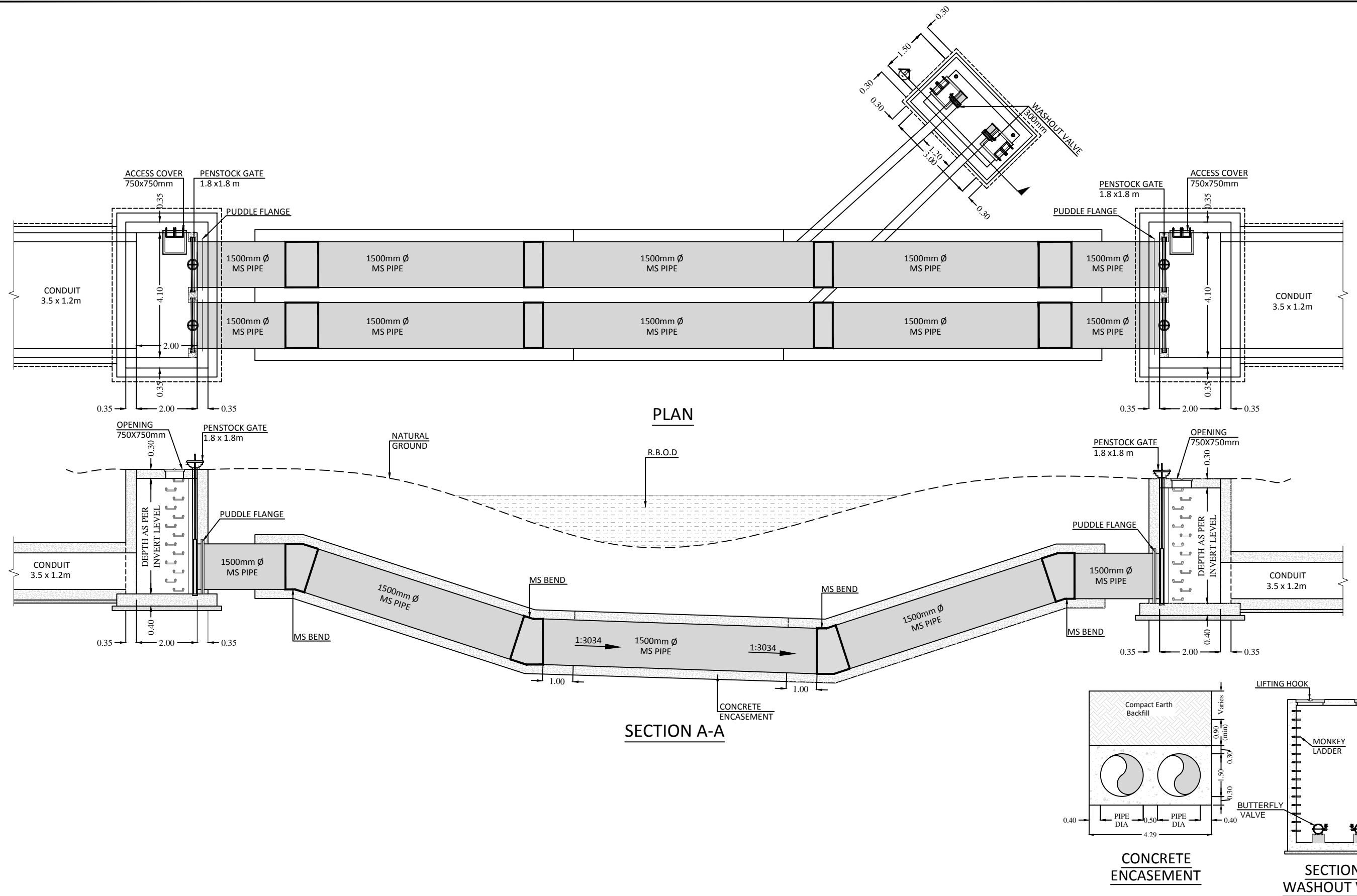
**Jers Engineering Consultant**

PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN	ASLAM
DESIGNED	NABEEL
CHECKED	MUNAWAR
APPROVED	ALI ASGHAR

TITLE	PACKAGE # 01
INTERCONNECTION POINT PENSTOCK STRUCTURE DETAIL	
Scale / Sheet N.T.S (A1)	Drawing No. EA-942-65M-PI-U-W414



**NOTE:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. FOR LOCATION OF SIPHON REFER DRAWING NO: EA-942-65M-PI-U-PP01.
3. M.S PIPE PIECE & BEND ARE TO BE ADJUSTED AS PER SITE.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



**Jers Engineering Consultant**

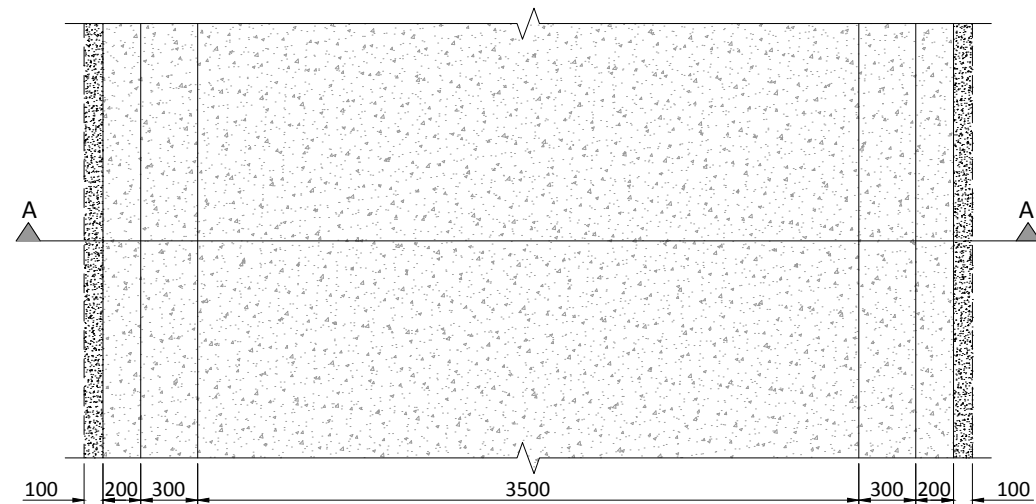
PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

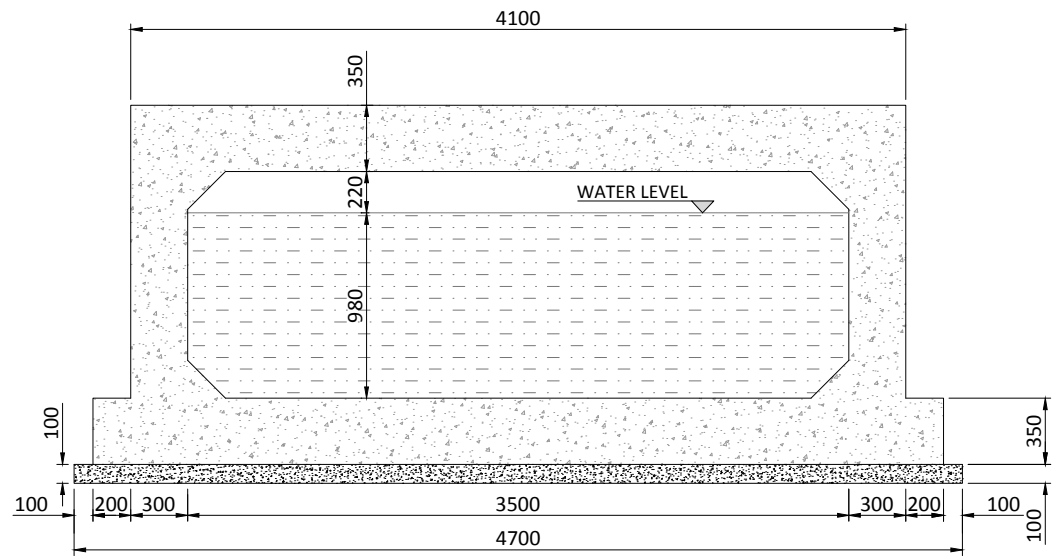
DRAWN	FAZEEL
DESIGNED	NABEEL
CHECKED	MUNAWAR
APPROVED	ALI ASGHAR

TITLE	PACKAGE # 01
TYPICAL DETAIL OF SIPHON- I	
Scale / Sheet N.T.S (A1)	Drawing No. EA-942-65M-PI-U-W413





PLAN OF RCC CONDUIT



SECTION A-A  
RCC CONDUIT FROM INTAKE CHAMBER OF  
KG CANAL TO INTERCONNECTION POINT

NOTE:-  
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.  
2. FOR LOCATION OF CONDUIT REFER DRAWING NO: EA-942-65M-PI-U-PP01 & PP02  
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DRAWING NO:EA-942-65M-PI-S-2002.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN

FAZEEL

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

TYPICAL CONDUIT SECTION FOR  
INTAKE FROM KG CANAL

Scale / Sheet

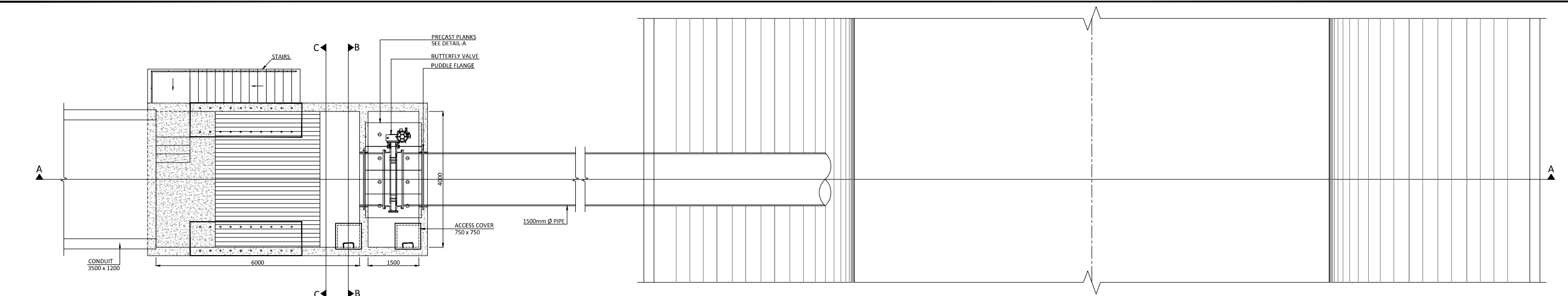
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Drawing No.

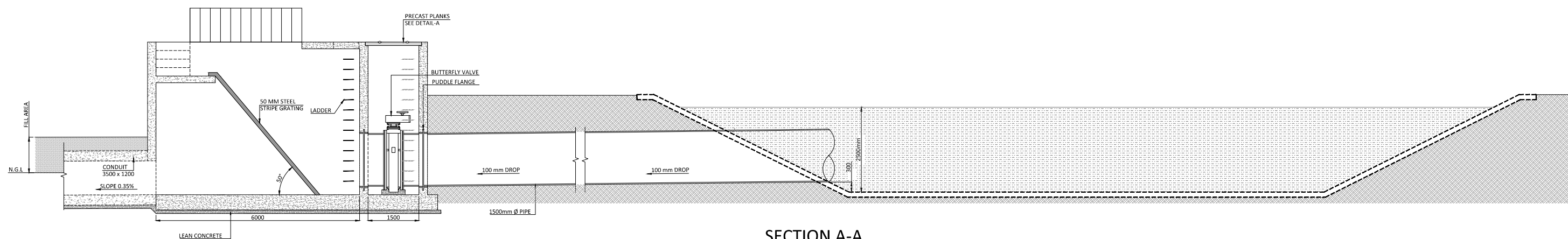
EA-942-65M-PI-U-W412

PACKAGE # 01

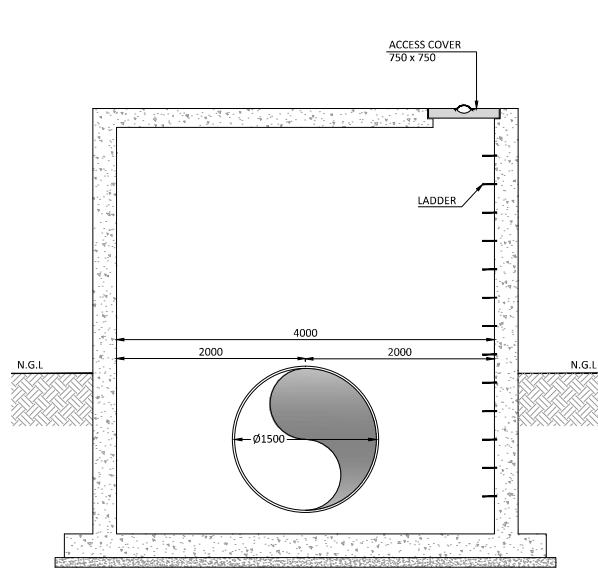




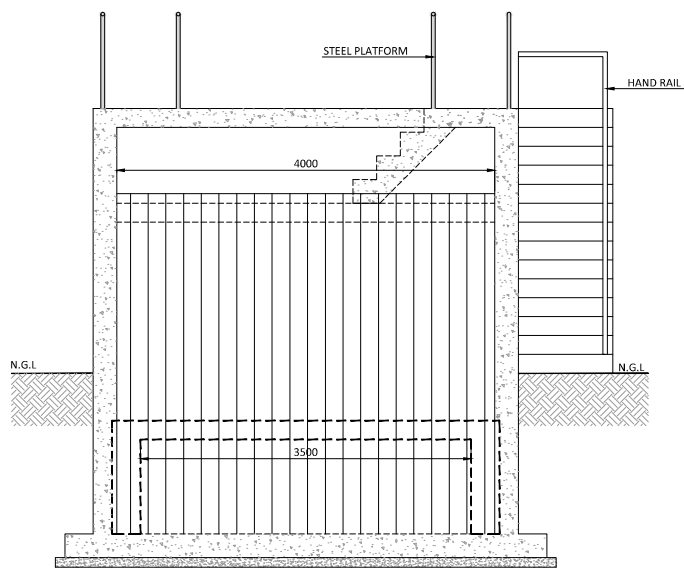
PLAN



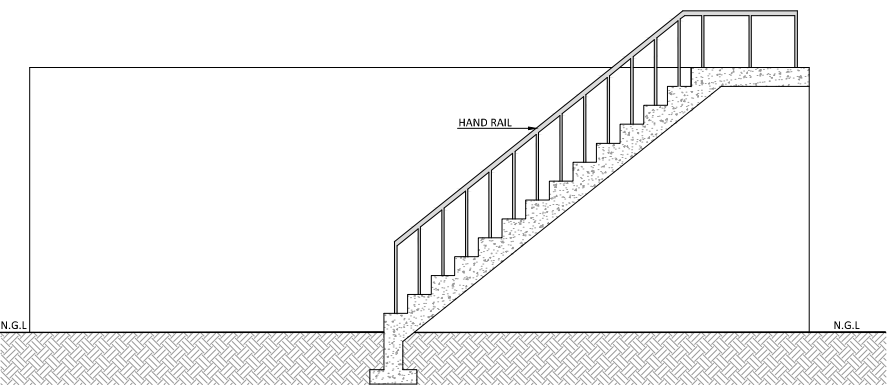
SECTION A-A



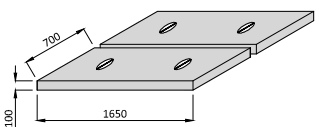
SECTION B-B



SECTION C-C



ELEVATION A-A



DETAIL-A

NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR LOCATION INTAKE FROM KG CANAL REFER DRAWING NO: EA-942-65M-PI-U-PP01.
3. FOR STRUCTURAL DIMENSIONAL DETAIL REFER DRAWING NO:EA-942-65M-PI-S-2001.

0	OCT,17	TENDER DRAWINGS	N.A.I	M.Z	A.A
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



**Jers Engineering Consultant**

PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN

ASLAM

DESIGNED

NABEEL

CHECKED

MUNAWAR

APPROVED

ALI ASGHAR

TITLE

DETAIL OF INTAKE CHAMBER AT KG CANAL

Scale / Sheet

N.T.S (A1)

Drawing No.

EA-942-65M-PI-U-W411

PACKAGE # 01

# **STRUCTURE DRAWINGS**

# GENERAL NOTES

## 1. STRUCTURE DESCRIPTION

- 1.1 THESE NOTES COVER THE DESIGN OF ALL THE NEW AND EVALUATION OF THE EXISTING STRUCTURES FOR THE PROJECT OF ADDITIONAL 65 MGD BULK WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.

## 2. GENERAL

- 2.1 THESE NOTES SHOULD BE READ IN CONJUNCTION WITH RELEVANT CONTRACT CONDITIONS, TECHNICAL SPECIFICATIONS AND BILL OF QUANTITIES FOR THE PROJECT. WHEREVER MORE THAN ONE SET OF STANDARDS IS USED TO SPECIFY MATERIAL, TEST OR LEVEL OF WORKMANSHIP, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN UNLESS SPECIFICALLY OTHERWISE NOTED.
- 2.2 ALL MATERIALS USED AND WORKMANSHIP INVOLVED IN THE EXECUTION OF ALL WORK COVERED UNDER THIS CONTRACT SHALL BE IN STRICT CONFORMITY WITH DRAWINGS, SPECIFICATIONS & CONTRACT CONDITIONS.
- 2.3 ALL DIMENSIONS INDICATED ON THE DRAWING ARE IN MILLIMETERS. ALL ELEVATIONS AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- 2.4 WHERE REFERENCE STANDARDS FOR TESTING MATERIALS AND WORKMANSHIP ARE NOT EXPLICITLY-STATED ON THE DRAWINGS AND CONTRACT DOCUMENTS, LATEST RELEVANT STANDARDS OF AASHTO, ASTM OR BS SHALL BE APPLICABLE AS INSTRUCTED BY THE ENGINEER.
- 2.5 SURVEY : ALL SURVEY COORDINATES SHOWN ON SURVEY / LAYOUT PLANS REFER TO SURVEY OF PAKISTAN COORDINATES SURVEY MONUMENTS ALSO EXIST AT REGULAR INTERVALS ALONG THE PROPOSED HIGHWAY ALIGNMENT TO ASSIST THE BRIDGE CONTRACTOR IN LOCATING THE PROPOSED WORK ON GROUND.
- 2.6 SETTING OUT : FINAL RESPONSIBILITY FOR PRECISE & ACCURATE SETTING OUT OF THE PROPOSED BRIDGES & COORDINATION WITH PROPOSED HIGHWAY ALIGNMENT RESTS SOLELY WITH THE CONTRACTOR. IF NECESSARY, THE CONTRACTOR SHALL CARRY OUT A DETAILED CLOSED TRAVERSE SURVEY ALONG THE PROPOSED ALIGNMENT CROSS - REFERENCED TO SURVEY OF PAKISTAN COORDINATE GRID FOR THIS PURPOSE.

## 3. DESIGN CRITERIA

- 3.1 EXCEPT FOR TRAFFIC LIVE LOAD TO BE ADOPTED IN THE DESIGN, THE COMPLETE DESIGN OF HIGHWAY BRIDGES HAVE BEEN CARRIED OUT IN ACCORDANCE TO 'AASHTO-LRFD BRIDGE DESIGN SPECIFICATION-4TH EDITION 2007' (AASHTO-LRFD).
- 3.2 TRAFFIC LIVE LOADS HAVE BEEN ADOPTED IN ACCORDANCE TO 'WEST PAKISTAN HIGHWAY CODE-1967' (WPHC).
- 3.3 DESIGN LOADS :
- 3.3.1 DEAD LOADS AND UNIT WEIGHTS :
- CONCRETE UNIT WEIGHT..... 24kN/m<sup>3</sup>
  - MINIMUM WEARING SURFACE (50mm ASPHALT)..... 1.2kN/m<sup>2</sup>
  - FUTURE WEARING SURFACE (50mm ASPHALT)..... 1.2kN/m<sup>2</sup>
  - UTILITIES AND SERVICES..... 0.75kN/m<sup>2</sup>
  - SOIL UNIT WEIGHT..... 20kN/m<sup>3</sup>
  - WATER UNIT WEIGHT..... 10kN/m<sup>3</sup>
  - STONE UNIT WEIGHT..... 26kN/m<sup>3</sup>
- 3.3.2 LIVE LOADS :
- THE BRIDGE IS DESIGNED FOR MORE CRITICAL OF CLASS-A OR CLASS-AA LOADING AS PER WPHC.
  - LIVE LOAD ON SIDE WALK..... 3.6kN/m<sup>2</sup>
- 3.3.3 SECONDARY LOADS :
- DESIGN WIND SPEED..... 160km/hr
  - TEMPERATURE RANGE..... 60°C
  - TEMPERATURE AT CONSTRUCTION..... 30°C
  - TEMPERATURE RISE..... + 30°C
  - TEMPERATURE FALL..... - 30°C
  - TEMPERATURE GRADIENT..... ZONE-1 (AASHTO-LRFD)
  - EARTH QUAKE ACCELERATION COEFF (A)..... 0.19 (AASHTO-LRFD)
  - EARTH QUAKE ZONE..... ZONE-2 (AASHTO-LRFD)
  - SOIL PROFILE (S3)..... (AASHTO-LRFD)

## 4. SOIL & FOUNDATION

- 4.1 EXCAVATION SAFETY AND THAT OF ADJOINING EXISTING STRUCTURE SHALL BE THE RESPONSIBILITY OF CONTRACTOR. HOWEVER, IN CASE OF ANY APPREHENSION, SAME CAN BE DISCUSSED WITH THE ARCHITECT / ENGINEER REGARDING THE VIABLE METHODOLOGY.
- 4.2 BEFORE PLACING FOUNDATION CONCRETE, THE EXCAVATION MUST BE INSPECTED BY GEOTECHNICAL ENGINEER TO ENSURE THAT COMPETENT BEARING STRATUM HAS BEEN REACHED.
- 4.3 ALL FOUNDATION SHALL REST ON FIRM AND VIRGIN SOIL. POCKETS OF LOOSE SOIL IF ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH SUITABLE SOIL AS PER APPROVAL OF ENGINEER REPRESENTATIVE.
- 4.4 THE SUB-GRADE BENEATH FOUNDATION SHALL BE SCARIFIED TO A DEPTH OF 6 INCHES, AND COMPACTED.
- 4.5 THE CONTRACTOR SHOULD CONFIRM THE ASSUMED BEARING CAPACITY PRIOR TO PROCEED THE WORK. FOUNDATION DESIGN IS BASED ON NET ALLOWABLE BEARING CAPACITY OF 150 Kpa AT 5FT DEPTH BELOW EXISTING GROUND LEVEL.

## 5. MATERIAL & WORKMANSHIP

ALL MATERIALS AND WORKMANSHIP SHALL MEET RELEVANT AASHTO AND ASTM STANDARDS AS DETAILED IN THE SPECIFICATIONS AND SUBJECT TO THE ENGINEER'S APPROVAL.

## 6. CEMENT

CEMENT USED SHALL BE FRESH, PAKISTAN-MANUFACTURED ORDINARY PORTLAND CEMENT CONFORMING TO PS-232. UNLESS OTHERWISE NOTED ON INDIVIDUAL DRAWINGS OR SPECIFIED ELSEWHERE IN THE PROJECT DOCUMENT. SRC TO BE USED WHEN DICTATED BY LOCAL CONDITIONS.

## 7. CONCRETE

- 7.1 FOLLOWING TYPES OF CONCRETE SHALL BE USED FOR ALL STRUCTURAL/NON STRUCTURAL COMPONENTS.

STRUCTURAL / NON STRUCTURAL COMPONENTS	CONCRETE TYPE	MINIMUM CEMENT CONTENTS	MAXIMUM WATER* CEMENT RATIO	28 DAYS MINIMUM COMPRESSIVE STRENGTH (CYLINDRICAL)	
		kg/cu.m	W/C	kg/sq.cm	Lbs/sq.in
LEAN CONCRETE	LEAN	175	0.55	100	1500
PILES	A3	400	0.49	280	4000
DECK SLAB, ABUTMENT, TRANSOM PIER SHAFTS, SHEAR KEY, WALLS, CULVERTS, DIAPHRAGM & CONDUIT	A3	400	0.49	280	4000
APPROACH SLAB, BARRIER, KERB & FOOTPATH	A1	300	0.49	210	3000
POST TENSIONED GIRDER	D1	450	0.40	350	5000

NOTES: \* TO INCREASE WORKABILITY OF THE CONCRETE, ENGINEER'S APPROVED PLASTICIZER / ADMIXTURE MAY USED AFTER DETERMINING THE QUANTITY AT DESIGN MIX STAGE.  
\* MAXIMUM SIZE OF AGGREGATE FOR ALL CLASSES OF CONCRETE IS 20mm.  
40mm AGGREGATE IS PERMITTED IN MASS CONCRETE WITH THICKNESS ≥ 450mm.

- 7.2 THE CONTRACTOR TO SUBMIT CONCRETE MIX DESIGN PRIOR TO COMMENCEMENT OF WORK.

## 8. MINIMUM CONCRETE COVER TO REINFORCEMENT

PILES, FOUNDATION BOTTOM..... 75mm TO THE NEAREST REINFORCEMENT  
PILECAPS, ABUTMENT, PIERS & TRANSOMS..... 50mm TO STIRRUPS  
DECK SLAB..... 40mm.  
POST-TENSIONED GIRDERS & DIAPHRAGMS..... 40mm

## 9. CONCRETE FINISH

ALL EXPOSED CONCRETE SURFACES ABOVE GROUND SHALL HAVE 'FAIR FACE' FINISH. ALL SHARP EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 25mm U.N.O. ALL FORM WORK SHALL BE OF SMOOTH STEEL PLATES PROPERLY STRENGTHENED & BRACED AGAINST WAVES WOBBLING OR BUCKLING.

## 10. REINFORCING STEEL

- 10.1 ALL REINFORCING STEEL BARS SHALL BE ROLLED FROM PRIME GRADE PAKISTAN STEEL BILLETS. REINFORCEMENT ROLLED FROM SCRAP STEEL, SHIP PLATES OR RE-ROLLED BILLETS SHALL NOT BE USED.
- 10.2 ALL REINFORCING BARS SHALL BE HIGH-YIELD, DEFORMED BARS WITH MINIMUM YIELD STRENGTH OF 415N/mm<sup>2</sup> (APPROX. 60,000 PSI) CONFORMING TO THE FOLLOWING STANDARDS.  
ASTM-615 GRADE 60 HOT-ROLLED
- 10.3 UNLESS NOTED OTHERWISE, LAPS IN REINFORCING BARS SHALL BE STAGGERED.
- 10.4 THE CONTRACTOR SHALL PREPARE ALL BAR BENDING SCHEDULE ETC. AND SUBMIT THEM FOR APPROVAL OF THE ENGINEER'S REPRESENTATIVE BEFORE EXECUTION OF WORK.
- 10.5 ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN FORMWORK AND HELD FIRMLY IN PLACE BEFORE PLACING OF CONCRETE BY MEANS OF 16 GAUGE BLACK ANNEALED WIRE AND ADEQUATELY DESIGN SPACERS AND SUFFICIENT SPACER CHAIRS TO HOLD RE-BARS IN POSITION.
- 10.6 UNLESS NOTED ON DRAWING FOLLOWING LAP LENGTHS SHALL BE FOLLOWED.
- (i)
- |                  |     |     |     |     |      |      |
|------------------|-----|-----|-----|-----|------|------|
| BAR DIA (mm)     | 10  | 12  | 16  | 20  | 25   | 32   |
| LAP SPLICES (mm) | 450 | 540 | 720 | 900 | 1320 | 2160 |
- (ii) SPIRAL REINFORCEMENT SHALL BE SPLICED BY LAPPING AT LEAST ONE AND ONE HALF (1 -1/2-) TURNS OR BY BUTT WELDING.
- (iii) ADDITIONAL LINKERS SHALL BE PROVIDED IN PILE REINFORCEMENT CAGE HAVING INDIVIDUAL LENGTH 9m OR MORE AT LOCATIONS AS SHOWN ON DRAWINGS.

## 11. PRESTRESSING SYSTEM

POST-TENSIONED PRESTRESSED GIRDER DRAWINGS ARE BASED ON A TYPICAL MULTISTRAND SYSTEM. HOWEVER, THE CONTRACTOR MAY SUGGEST ANY ALTERNATE EQUIVALENT INTERNATIONALLY ACCEPTED MULTIWIRE OR MULTISTRANDS SYSTEM, SUBJECT TO THE CONSULTANT'S APPROVAL AND WITHOUT ANY INCREASE IN CONTRACT COST TO EMPLOYER. IN CASE ALTERNATE POST-TENSIONED SYSTEM IS APPROVED, CONTRACTOR WILL BE REQUIRED TO SUBMIT DETAILED SHOP DRAWINGS & CALCULATIONS FOR CONSULTANT'S REVIEW AND APPROVAL.

## 12. PRESTRESSING STEEL (SEVEN-WIRE STRANDS)

STEEL FOR PRESTRESSING STRAND SHALL BE RELAXATION CLASS-I (NORMAL RELAXATION) STRESS - RELIEVED CARBON STEEL GRADE 270 MANUFACTURED TO ASTM A-416 OR EQUIVALENT BS STANDARD.

### LEGEND :

T _____ TOP	B/W _____ BOTH WAYS	VAR. _____ VARIES
T1 _____ FIRST LAYER FROM TOP	NF _____ NEAR FACE	LONG. _____ LONGITUDINAL BARS
T2 _____ SECOND LAYER FROM TOP	F.F _____ FAR FACE	TRANS. _____ TRANSVERSE BARS
T3 _____ THIRD LAYER FROM TOP	S.F _____ SIDE FACE	DIST _____ DISTRIBUTION BARS
B _____ BOTTOM	STAG. _____ STAGGERED	F.G.L _____ FINISHED GROUND LEVEL
B1 _____ FIRST LAYER FROM BOTTOM	ALT. _____ ALTERNATE	F.R.L _____ FINISHED ROAD LEVEL
B2 _____ SECOND LAYER FROM BOTTOM	N.S.P _____ NOT SHOWN IN PLAN	N.G.L _____ NATURAL GROUND LEVEL
B3 _____ THIRD LAYER FROM BOTTOM	N.S.E _____ NOT SHOWN IN ELEVATION	CH _____ CHAINAGE
E.F _____ EACH FACE	N.S.S _____ NOT SHOWN IN SECTION	S.Q.P _____ SETTING-OUT POINT
B.F _____ BOTH FACE	ABR. _____ ALTERNATE BARS REVERSED	S.O.L _____ SETTING-OUT LINE

## 13. POST TENSIONING PROCEDURE

POST-TENSIONING WILL BE DONE BY A RECOGNIZED COMPANY OR SUB-CONTRACTOR UNDER THE DIRECT SUPERVISION OF HIS QUALIFIED ENGINEER. ANY MISHAP LIKE BREAKING OF WIRE DURING POST-TENSIONING UNDER STRESSING/OVER STRESSING ANY BREAKING WILL BE NOTIFIED IMMEDIATELY TO THE DESIGN CONSULTANT AND THE ENGINEER IN CHARGE AT SITE AND THE WORK WILL BE STOPPED ON THAT GIRDER TILL THE REMEDIAL MEASURES ARE SUGGESTED BY THE DESIGN CONSULTANT.

## 14. BEARING PADS

ELASTOMERIC BEARING PADS SHOWN ON THE INDIVIDUAL DRAWINGS SHALL BE LAMINATED BEARINGS MADE FROM 100% VIRGIN, CRYSTALLIZATION RESISTANT, POLYCHLOROPRENE (NEOPRENE) OF 60/5 DURO HARDNESS MEETING THE REQUIREMENTS OF AASHTO M-251. INTERNAL STEEL PLATES SHALL BE ROLLED MILD STEEL CONFORMING TO ASTM A-366 OR ASTM A-283 GRADE "D".

## 15. STRUCTURAL STEEL

ALL STRUCTURAL STEEL INDICATED ON DRAWINGS INCLUDING PLATES, ANGLES, ETC., SHALL BE ROLLED FROM PRIME BILLETS CONFORMING TO ASTM A-36/A (AASHTO M-183M).

## 16. MISCELLANEOUS

- 16.1 REINFORCING STEEL NOTATION :
- THE FOLLOWING ARE EXAMPLES OF TYPICAL NOTATION USED TO CALL OUT DETAILS OF REINFORCING STEEL ON THESE DRAWING.
- 88 - T 20 - 101 - 150 - B
- LAYOUT / LOCATION OF BAR
- C/C SPACING BETWEEN BARS (mm)
- BAR MARK
- DIAMETER OF BAR (mm)
- TYPE OF BAR
- GRADE 60 DEFORMED BAR
- R- FOR MILD PLAIN ROUND BAR
- TOTAL NUMBER OF BARS

## 17. PILING WORKS

- 17.1 PILING WORK SHALL BE EXECUTED BY THE CONTRACTOR USING THE PERCUSSION, ROTARY OR OTHER APPROVED METHOD. A TEMPORARY STEEL CASING SHALL BE DRIVEN AHEAD OF THE BOREHOLE TO REQUIRED DEPTH TO ENSURE BOREHOLE STABILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REQUIRED SHAPE AND LENGTH OF BOREHOLE AND FINISHED PILE. ALL PILES TO BE REINFORCED BORED CAST-IN-PLACE OF DIAMETER AS INDICATED IN THE DWGS. THE PILES IN WATER SHALL BE CONSTRUCTED USING FLOATING EQUIPMENT SAND ISLAND ETC. SHALL NOT BE ALLOWED.
- 17.2 PILE CONCRETING WILL BE CONTINUED WITH IMMERSED TREMIE UNTIL THE INITIAL BATCH OF CONTAMINATED CONCRETE HAS OVER FLOWN AND THE PILE CONCRETE SURFACE IS ATLEAST 800mm ABOVE THE FINAL CUT-OFF LEVEL. THIS EXTRA LENGTH OF CONCRETE SUBSEQUENTLY BE CUT-OFF AFTER MINIMUM 3 DAYS TO ACHIEVE A UNIFORM SOUND CONCRETE BED. PILE ONCE REJECTED BY THE ENGINEER SHALL NOT BE ALLOWED FOR ANY TESTING BY CONTRACTOR TO PROVE ITS STABILITY FOR PERMANENT WORK. ADDITIONAL REQUIRED PILES DUE TO SUCH REJECTION BE DONE BY CONTRACTOR AT HIS OWN COST. IF TREMIE IS WITHDRAWN PREMATURELY BEFORE FINAL BATCH OF CONCRETE OR IS STUCK IN WET CONCRETE, THE PILE WILL BE REJECTED.
- 17.3 STRUCTURAL CONCRETE AND REINFORCING STEEL FOR THE PILES SHALL CONFORM TO THE GENERAL NOTES SPECIFICATIONS RELATING TO PILING WORK CONTAINED ELSEWHERE IN THE PROJECT DOCUMENTS.
- 17.4 REFER TO PILING SPECIFICATIONS (CONTRACT DOCUMENTS) FOR DETAILED PROCEDURE AND SEQUENCE OF LOADING, MEASURING AND TESTING OF TEST INDEX PILE.
- 17.5 LOAD TESTING WILL BE DONE AFTER A LAPSE OF ATLEAST 15 DAYS OR WHEN FIELD CURED CONCRETE CUBES INDICATE A CYLINDER STRENGTH OF 3000PSI (MINIMUM) WHICHEVER IS LATER. PROGRAM FOR LOAD TESTING SHALL BE NOTIFIED TO THE ENGINEER.
- 17.6 WORKING PILE WILL BE BORED AND CONSTRUCTED AFTER TEST PILE REPORT IS REVIEWED BY THE ENGINEER AND ANY MODIFICATIONS INSTRUCTED BY HIM.
- 17.7 CONTRACTOR SHALL ENSURE USE OF PROPERLY CALIBRATED LOADING DEVICE WHILE UNDERTAKING PILE LOAD TEST. A RECENT CALIBRATION CERTIFICATE OF JACK & PRESSURE GAUGE OBTAINED FROM AN INDEPENDENT REPUTABLE LABORATORY, SHALL BE SUBMITTED TO THE ENGINEER AS PROOF OF CALIBRATION IN ADVANCE OF THE ACTUAL LOAD TEST. (THE CERTIFICATE SHALL NOT BE OLDER THAN SIX MONTH)
- 17.8 ON COMPLETION OF THE LOAD TEST CONTRACTOR SHALL SUBMIT FINAL LOAD TEST REPORT COMPLETE WITH LOAD SETTLEMENT CURVES, OBSERVATION & CONCLUSION FOR THE CONSULTANT REVIEW AND ENGINEER'S INSTRUCTION. ENGINEER'S APPROVAL MUST BE OBTAINED BEFORE PROCEEDING WITH ANY FURTHER PILING WORK.

## 18. TENDER DOCUMENTS, DRAWINGS & CONSTRUCTION DRAWINGS




TENDER DRAWINGS ISSUED WITH TENDER DOCUMENTS ARE TO APPRAISE THE BIDDERS OF THE GENERAL NATURE & FAIR IDEA OF THE WORK TO PREPARE BOQ & TENDER DOCUMENTS. ENGINEER SHALL ISSUE THE DETAILED CONSTRUCTION DRAWINGS & SUCH FIELD SKETCHES FROM TIME TO TIME AS NECESSARY FOR THE EASE OF CONSTRUCTION.

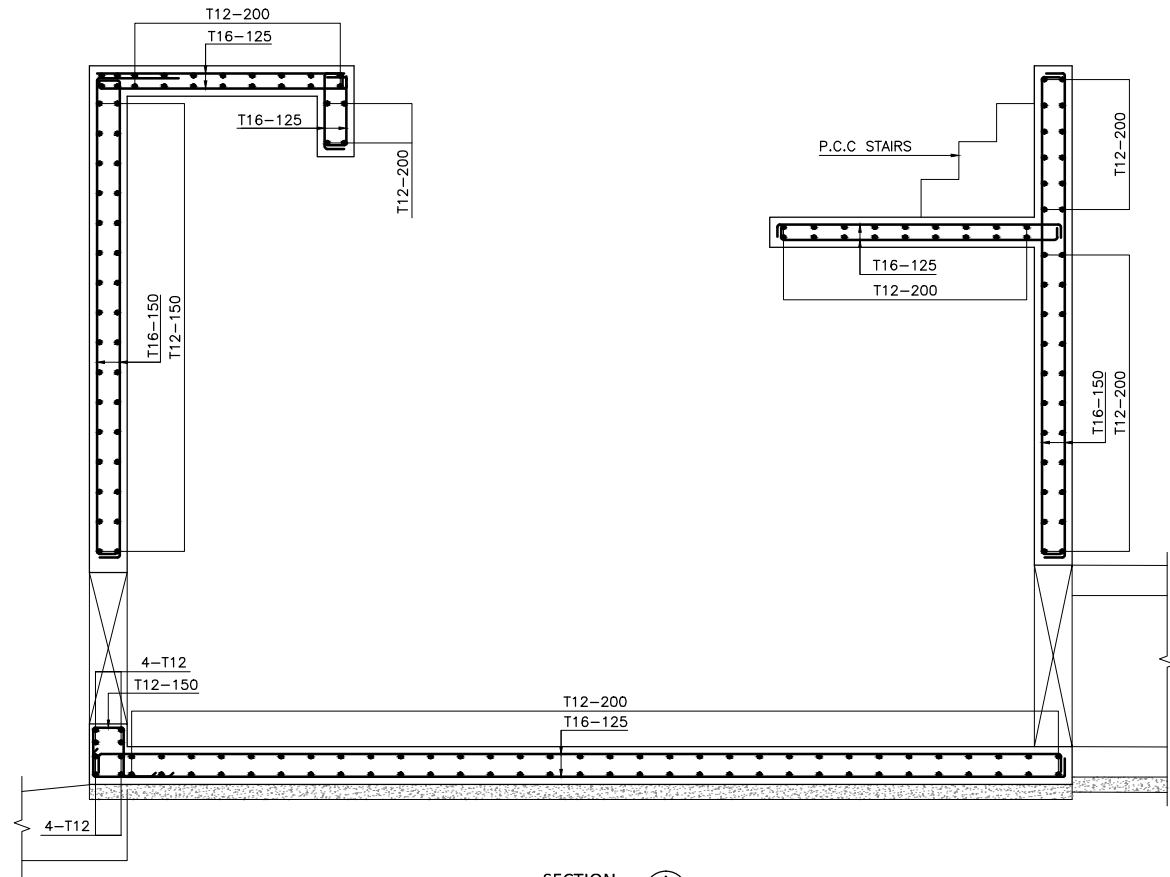
## 19. SCAFFOLDING

ALL SCAFFOLDING SHALL BE DESIGNED BY THE CONTRACTOR. SCAFFOLDING SHALL BE DESIGNED IN A WAY THAT THE TRAFFIC MOVEMENT UNDERNEATH CAN BE FLOW UNOBSTRUCTED AS SPECIFIED IN DIVERSION PLAN.

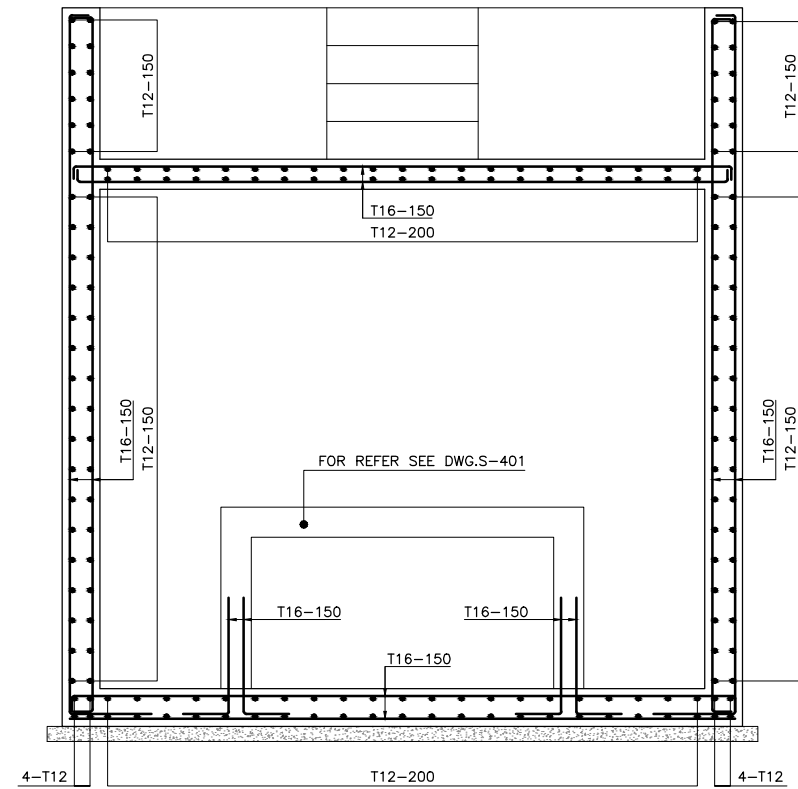
## 20. LAUNCHING OF PRECAST GIRDERS

- (A) CONTRACTOR SHALL SUBMIT ITS 'WORK STATEMENT' FOR LIFTING THE GIRDERS TO THE ENGINEER FOR ITS APPROVAL.
- (B) THE GIRDERS SHALL BE LIFTED BY LAUNCHING TRUSSES TO ENSURE THEIR PLACEMENT WITHOUT DAMAGE AND ACCIDENT. GIRDERS SHALL BE PLACED AT CORRECT POSITIONS AS SHOWN ON THE DRAWINGS AND TEMPORARILY BRACED LATERALLY UNTIL DIAPHRAGMS AND DECK SLABS ARE CAST.
- (C) PRECAST GIRDERS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY DEVICES TO BE DESIGNED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

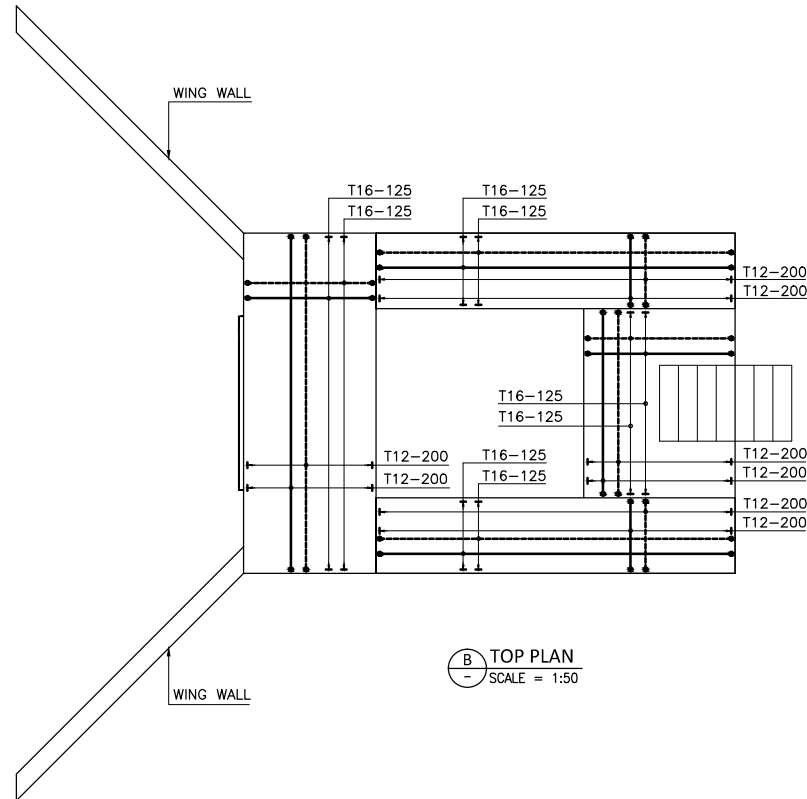
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						<div> KARACHI WATER &amp; SEWERAGE BOARD</div>			
						CONSULTANT:-		IN ASSOCIATION WITH:-	
						<div> EA Consulting ( Pvt. ) Limited <small>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</small></div>		<div> Jers Engineering Consultant</div>	
0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM	<div>PACKAGE # 01</div> <div>GENERAL NOTES</div> <div>Scale / Sheet N.T.S (A1)</div> <div>Drawing No. EA-942-65M-PI-S-0002</div>			
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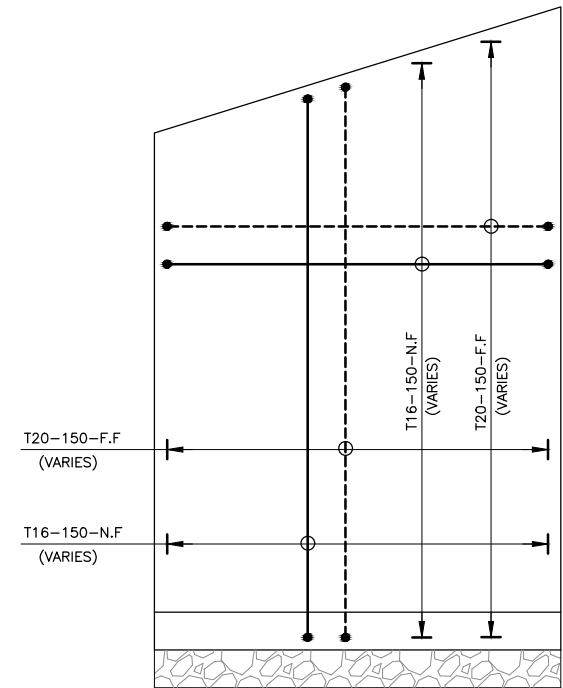
SECTION A  
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U-W400



SECTION B  
SCALE = 1:25  
U-W400



SECTION C  
SCALE = 1:25  
U-W400



TYP. ELEVATION OF WING WALL  
SCALE = 1:15

NOTE:-

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- FOR DIMENSIONAL DETAILS REFER DWG. NO:EA-942-65M-PI-U-W400.

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KARACHI WATER  
&  
SEWERAGE BOARD

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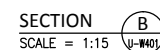
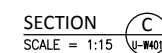
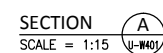


Jers Engineering Consultant



PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
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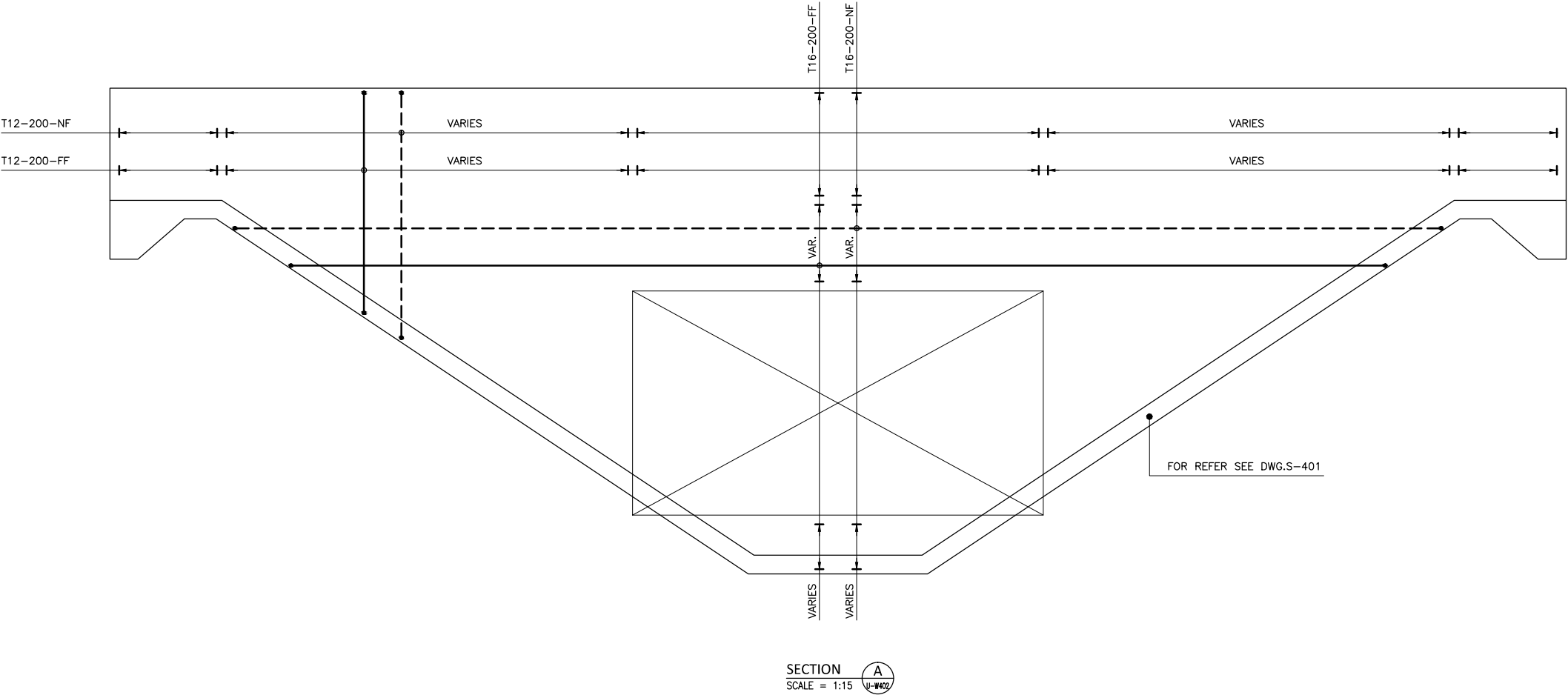
DRAWN	K.A	TITLE	PACKAGE # 01
DESIGNED	MS	INTAKE STRUCTURE AT HALEJI LAKE REINFORCEMENT DETAILS	
CHECKED	MS	Scale / Sheet	Drawing No.
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W400



1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.  
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W401.

						CLIENT:-  <b>KARACHI WATER &amp; SEWERAGE BOARD</b>		PROJECT:- <b>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</b>					
						CONSULTANT:-		IN ASSOCIATION WITH:-		DRAWN	K.A	TITLE <b>PACKAGE # 01</b> CANAL & CONDUIT REINFORCEMENT DETAILS	
0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM	 <b>EA Consulting ( Pvt. ) Limited</b> <small>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</small>		 <b>Jers Engineering Consultant</b>		DESIGNED	MS		
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NOTE:-

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CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



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PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN	K.A
DESIGNED	MS
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TITLE

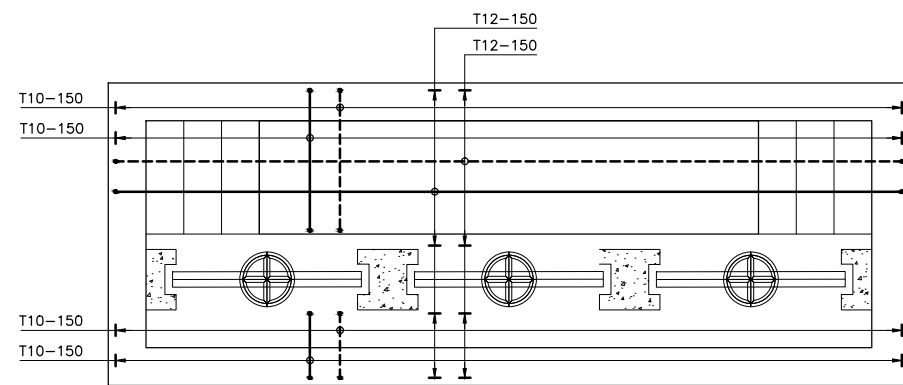
TRANSITION STRUCTURE  
OF CONDUIT TO CANAL REINFORCEMENT DETAILS

Scale / Sheet  
AS SHOWN (A1)

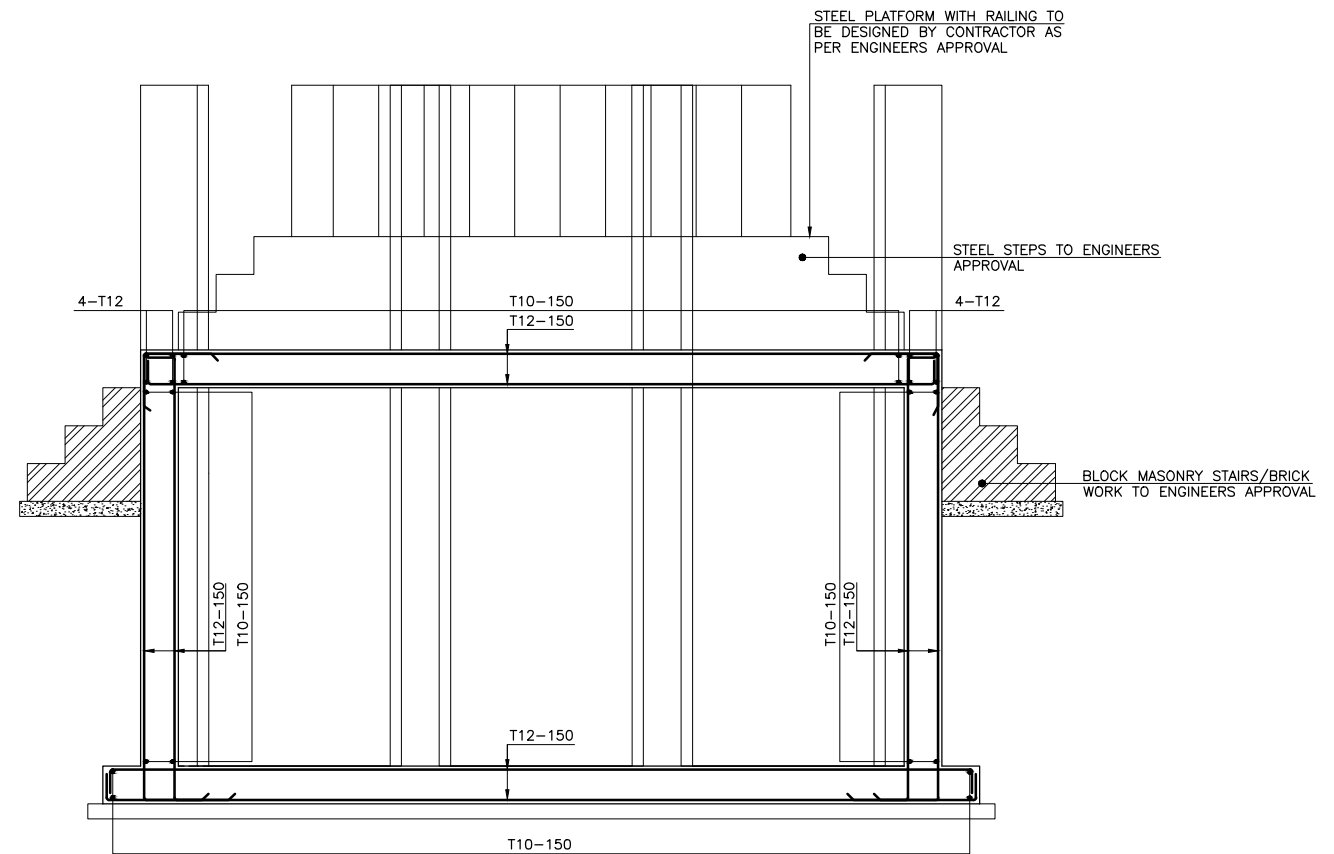
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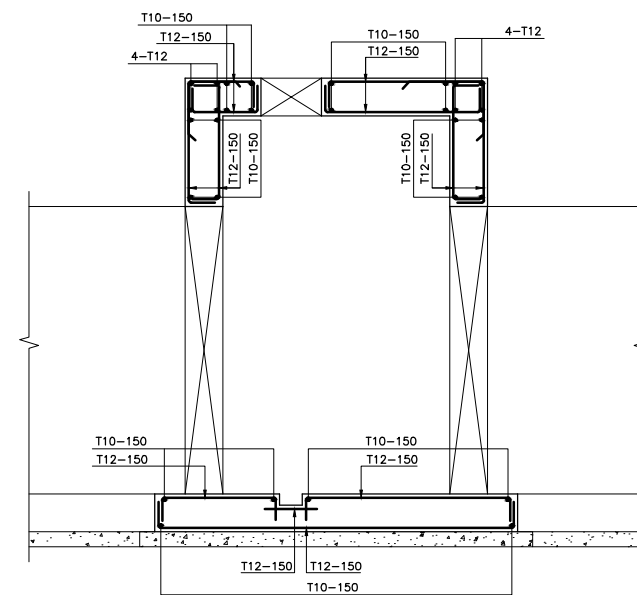
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**A** TOP SLAB REINFORCEMENT PLAN  
SCALE = 1:25



**SECTION A**  
SCALE = 1:25



**SECTION B**  
SCALE = 1:25

**NOTE:-**

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
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&  
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IN ASSOCIATION WITH:-

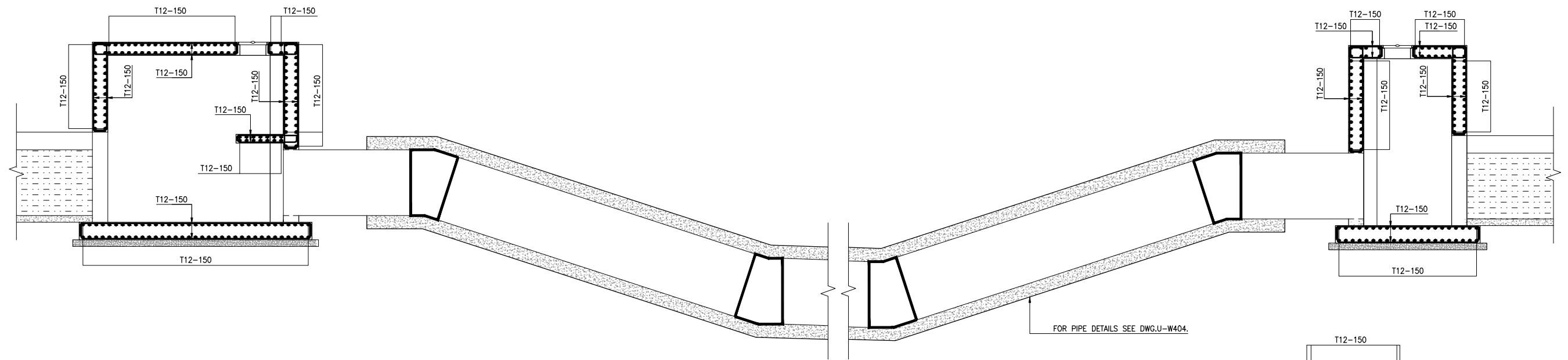


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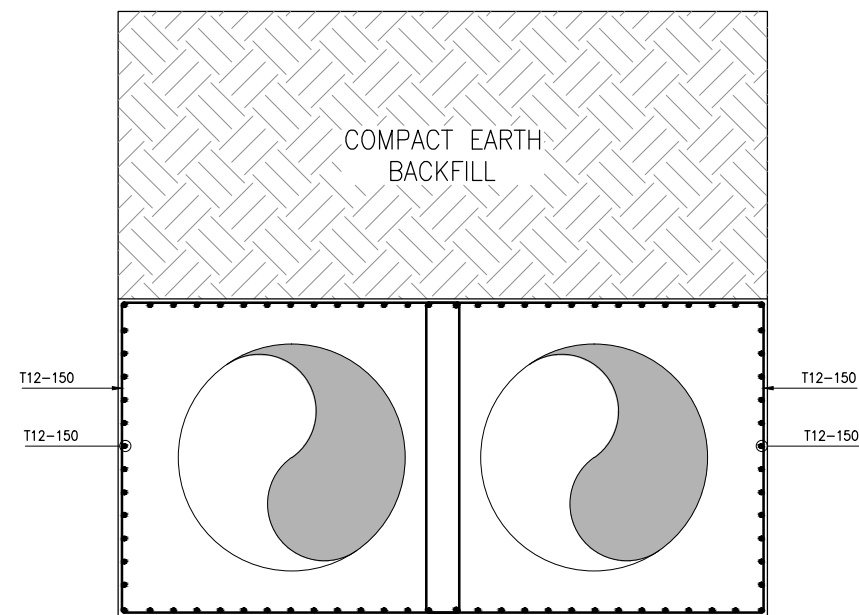
PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

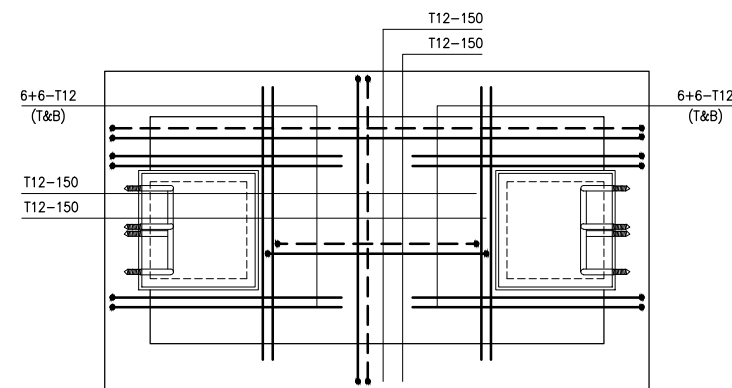
DRAWN	K.A	TITLE	PACKAGE # 01
DESIGNED	MS	INTERCONNECTION POINT PENSTOCK STRUCTURE REINFORCEMENT DETAIL	
CHECKED	MS	Scale / Sheet	Drawing No.
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W403



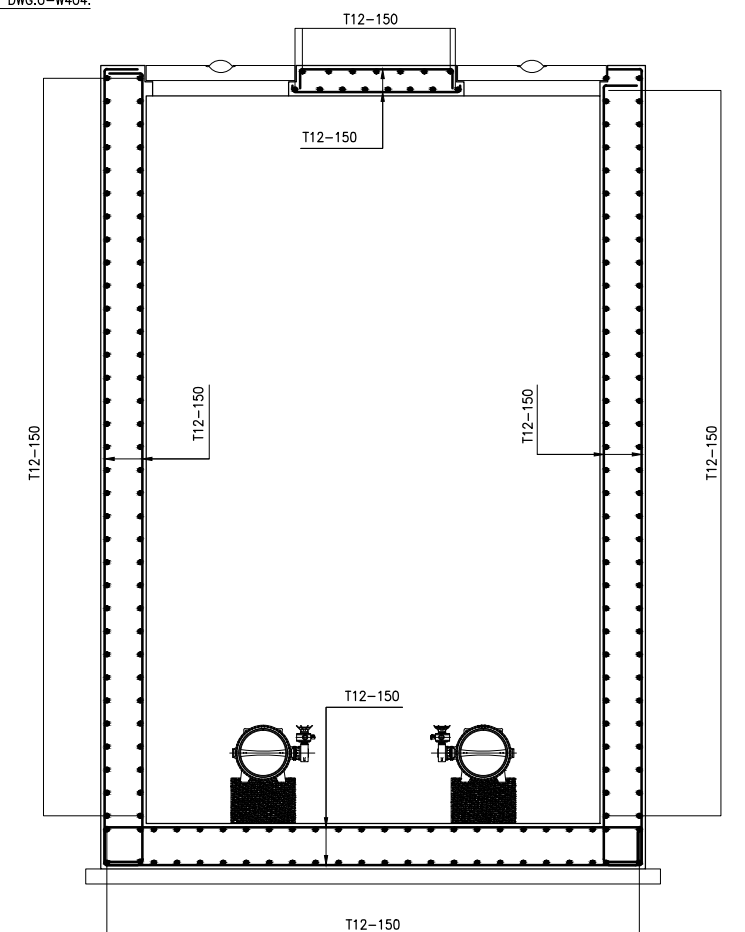
SECTION A  
SCALE = 1:50



CONCRETE ENCASEMENT  
REINFORCEMENT DETAILS  
SCALE = 1:25



TOP PLAN OF WASHOUT VALVE  
SCALE = 1:25



SECTION-B  
WASHOUT VALVE  
SCALE = 1:25

NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W404.

0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited

CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-

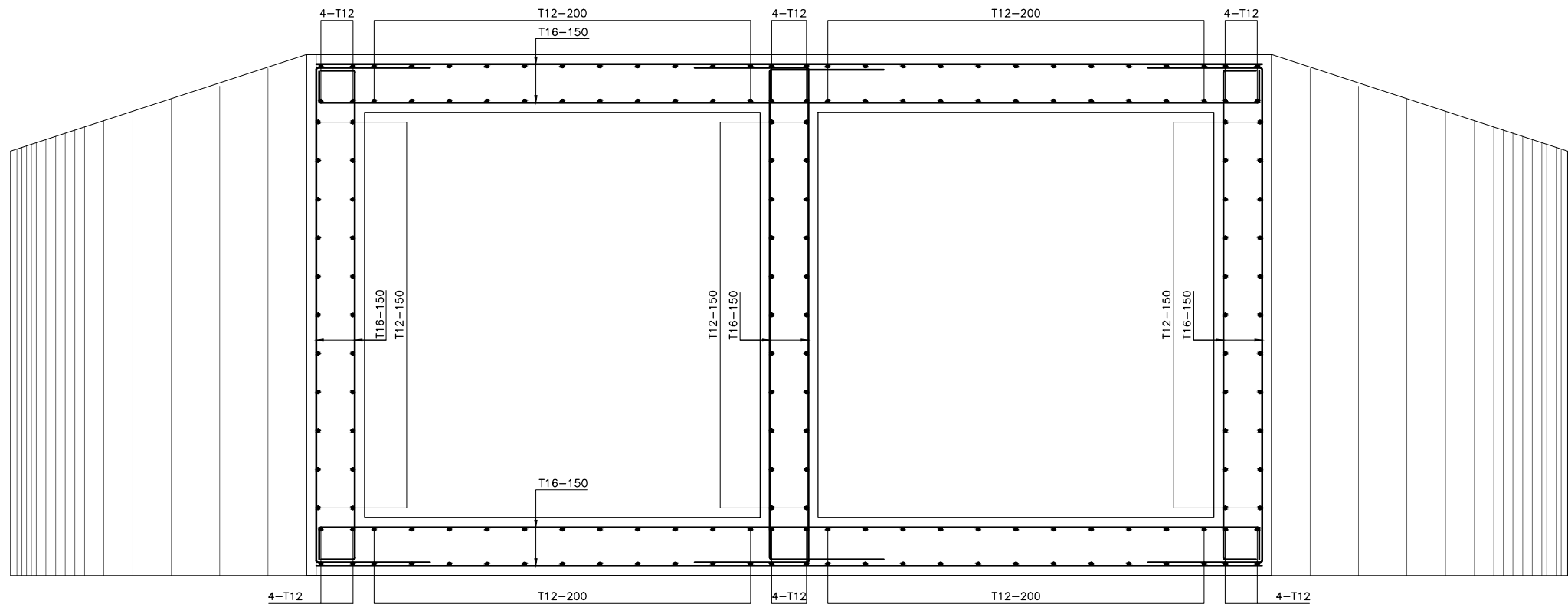


Jers Engineering Consultant

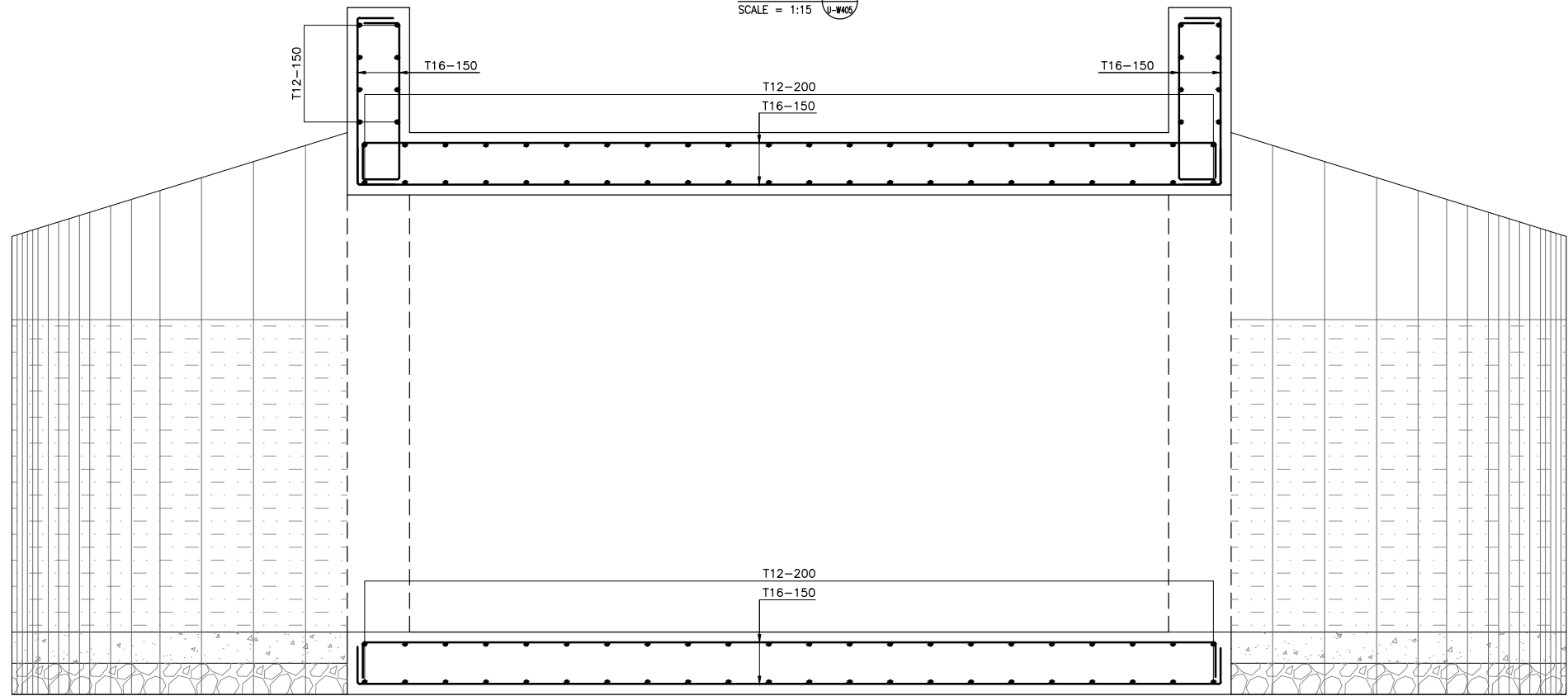
PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

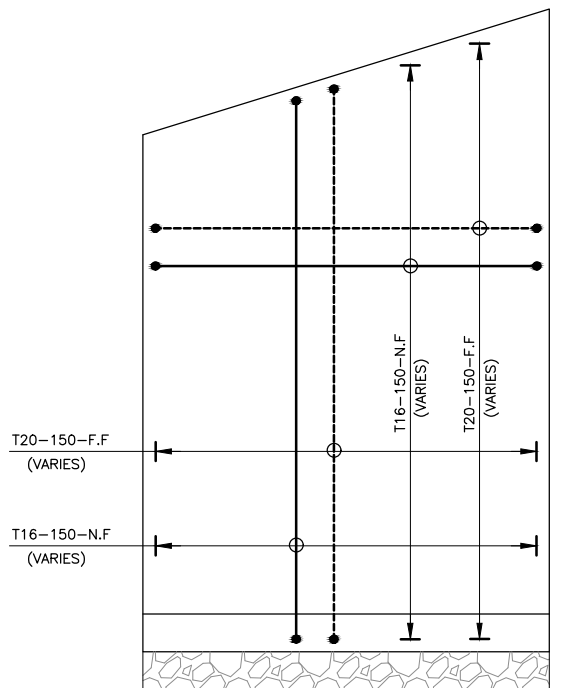
DRAWN	K.A	TITLE	PACKAGE # 01
DESIGNED	MS	TYPICAL REINFORCEMENT DETAIL OF SIPHON II, III & IV	
CHECKED	MS	Scale / Sheet	Drawing No.
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W404



SECTION A  
SCALE = 1:15  
U-W405



SECTION B  
SCALE = 1:15  
U-W405



SECTION A  
SCALE = 1:15  
TYP. ELEVATION OF WING WALL

NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W405.

0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



KARACHI WATER  
&  
SEWERAGE BOARD

CONSULTANT:-



EA Consulting ( Pvt. ) Limited  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-

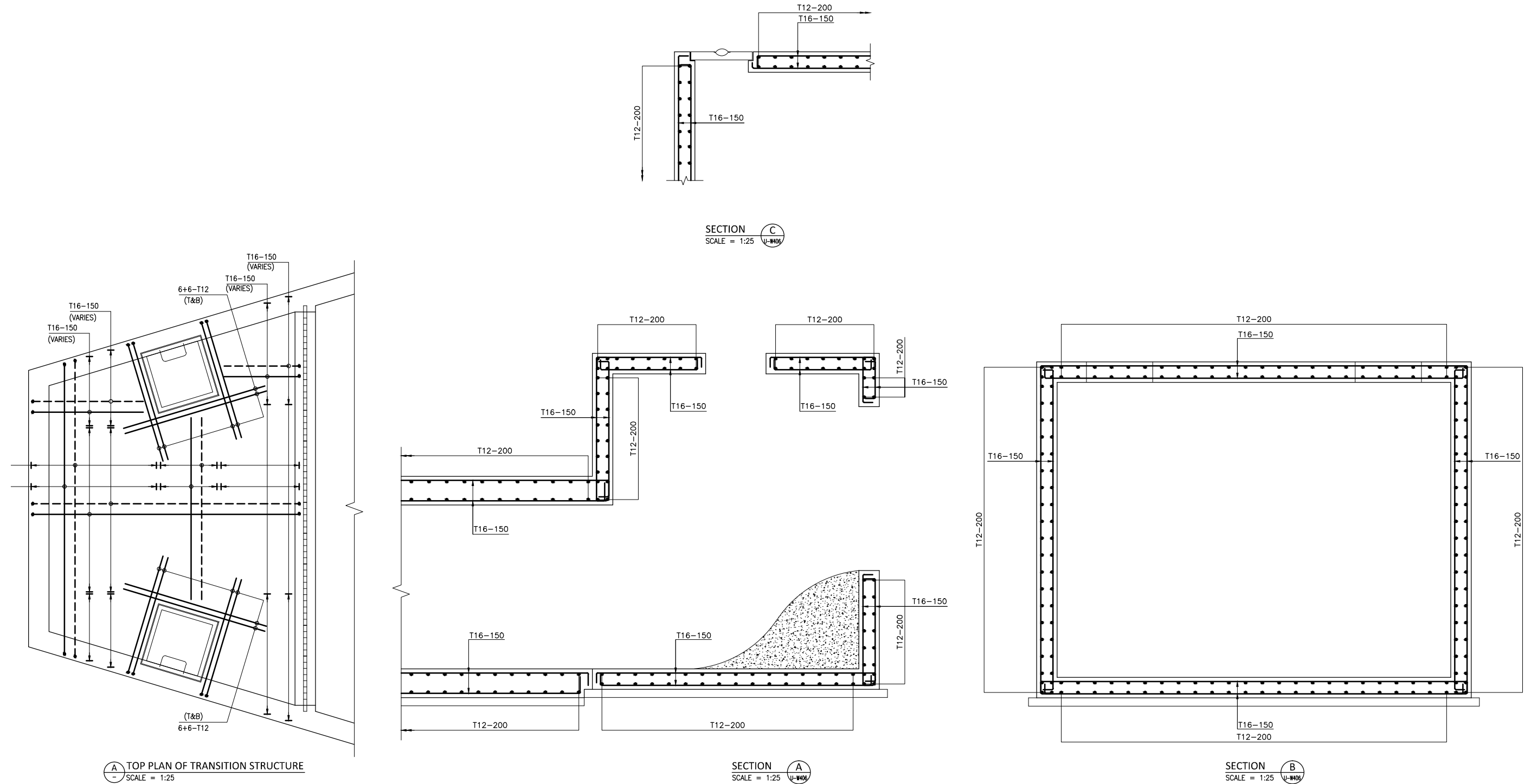


Jers Engineering Consultant

PROJECT:-

ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.

DRAWN	K.A	TITLE	BOX CULVERT REINFORCEMENT DETAILS	PACKAGE # 01
DESIGNED	MS			
CHECKED	MS	Scale / Sheet	Drawing No.	
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W405	



**NOTE:-**

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W406.

0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-

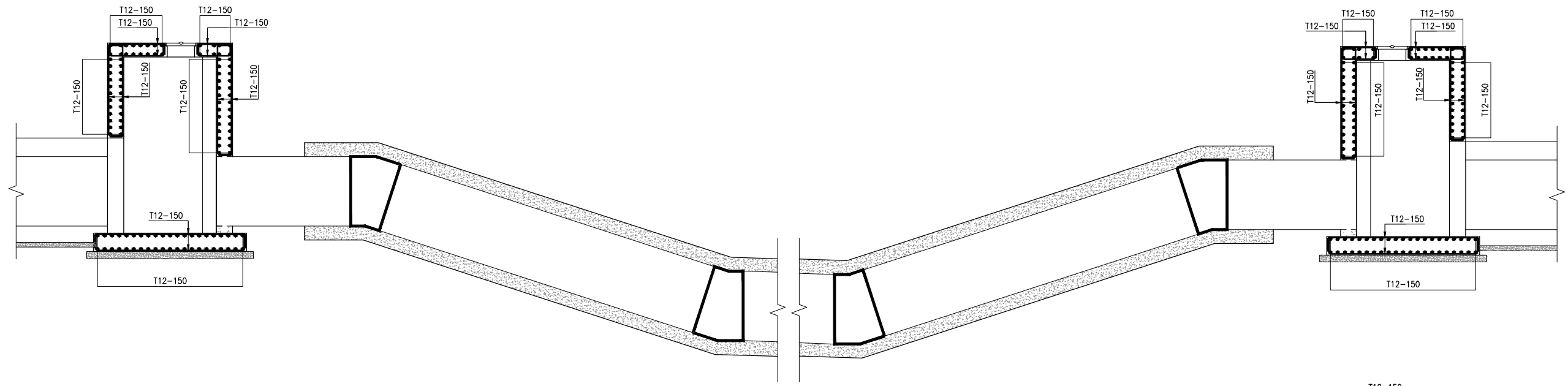


**Jers Engineering Consultant**

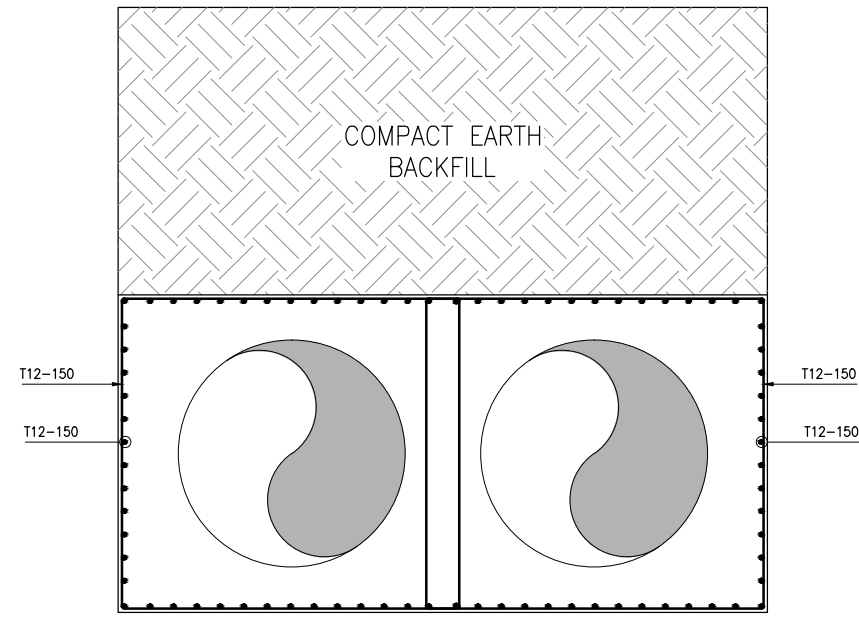
PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

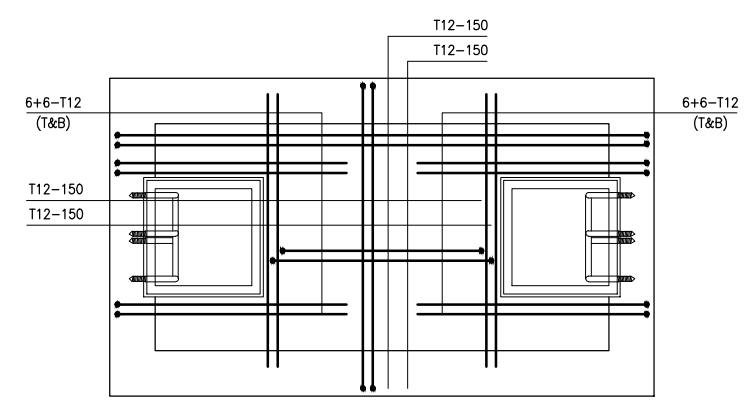
DRAWN	K.A	TITLE		PACKAGE # 01
DESIGNED	MS	TRANSITION STRUCTURE OF CANAL TO CONDUIT REINFORCEMENT DETAILS		
CHECKED	MS	Scale / Sheet	Drawing No.	
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W406	



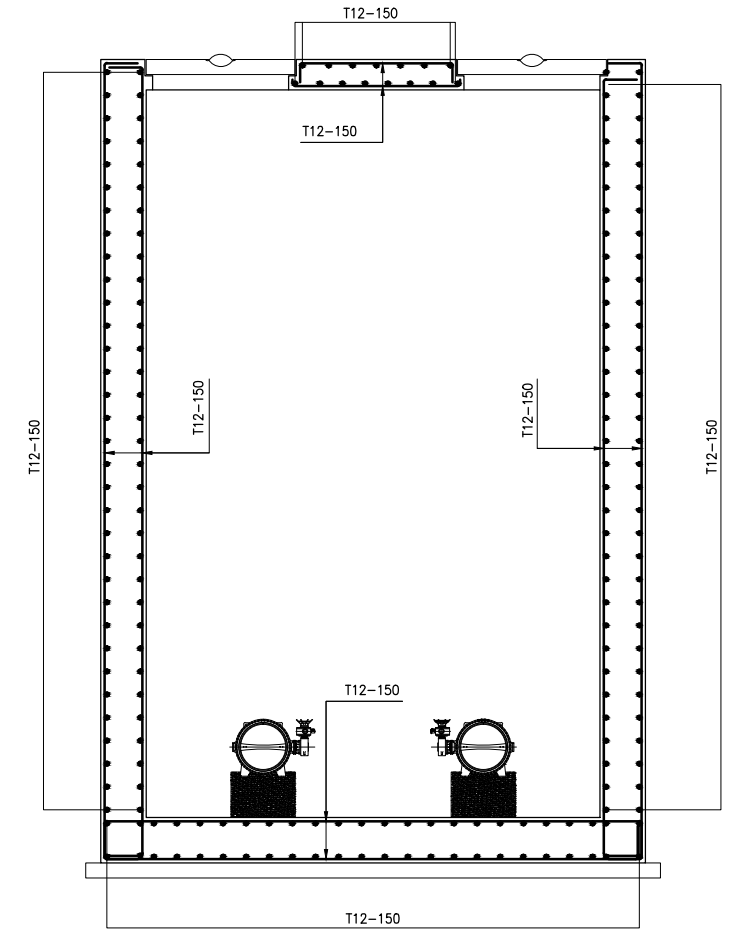
SECTION A  
SCALE = 1:50



CONCRETE ENCASEMENT  
REINFORCEMENT DETAILS  
SCALE = 1:25

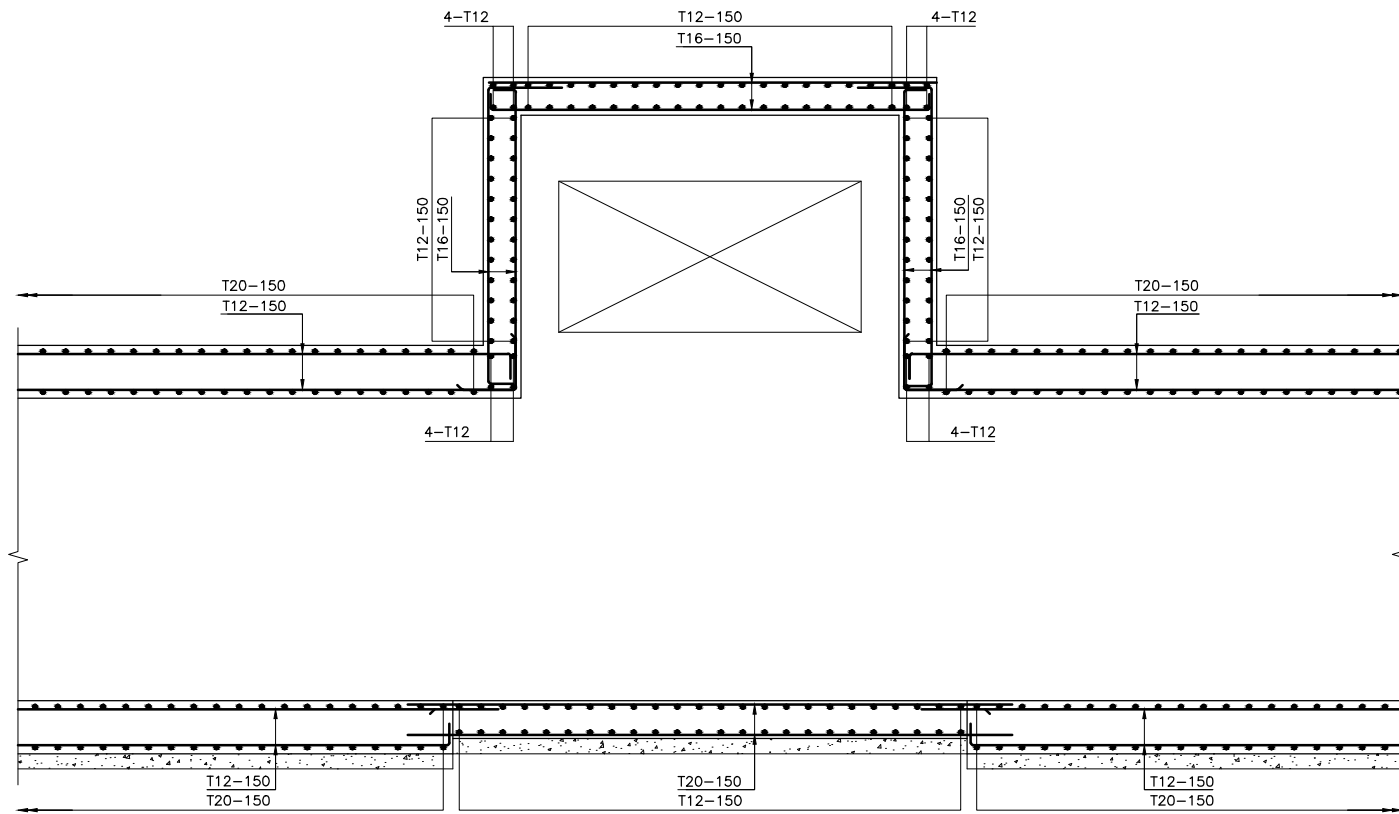


TOP PLAN OF WASHOUT VALVE  
SCALE = 1:25

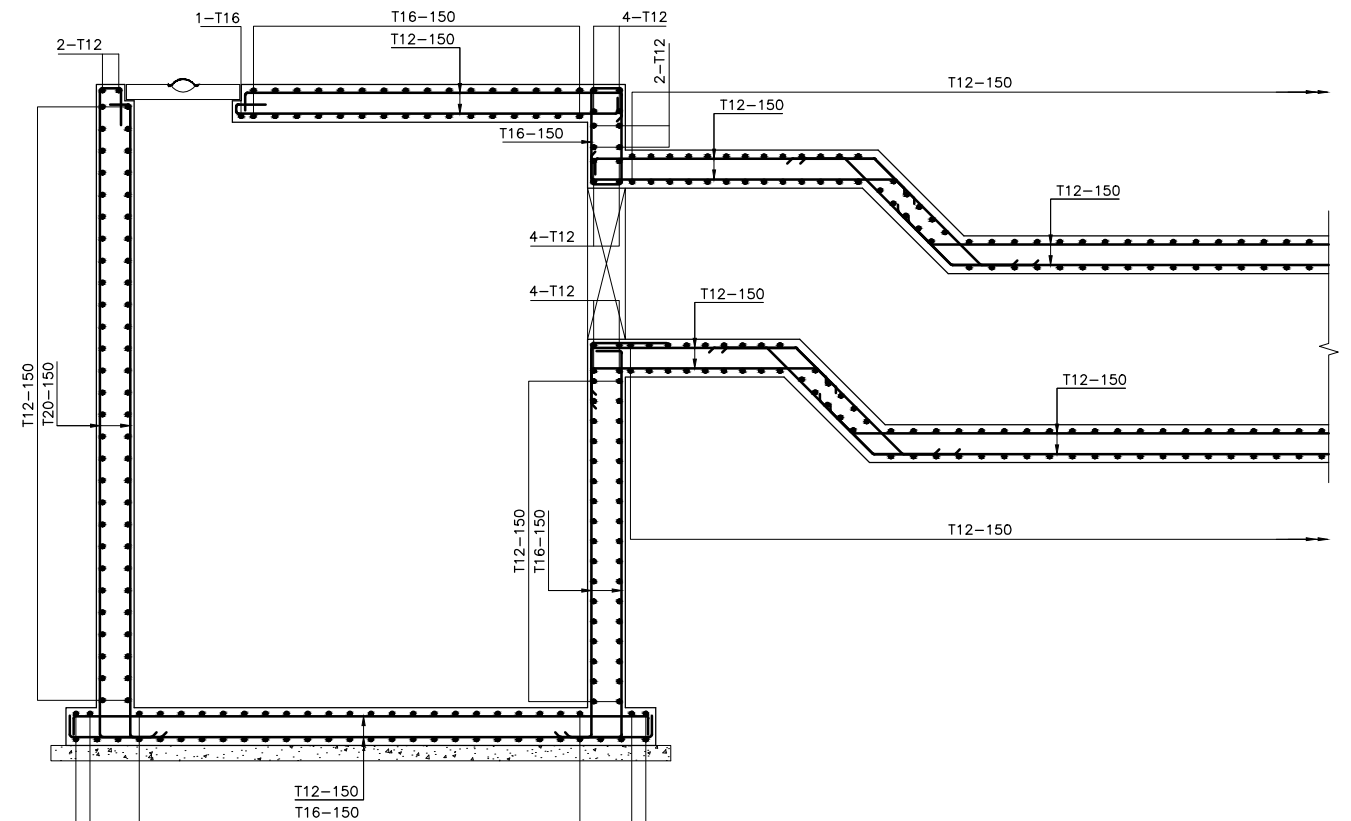


SECTION-B  
WASHOUT VALVE  
SCALE = 1:25

<div>NOTE:-</div> <div>1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.</div> <div>2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W407.</div>												CLIENT:-		<div>KARACHI WATER &amp; SEWERAGE BOARD</div>		PROJECT:- <div>ADDITIONAL 65 MGD WATER SUPPLY SCHEME FROM HALEJI TO PIPRI, KARACHI.</div>			
												CONSULTANT:-		IN ASSOCIATION WITH:-		DRAWN	K.A	TITLE <div>TYPICAL REINFORCEMENT DETAIL OF SIPHON-V &amp; VI</div> <div>PACKAGE # 01</div>	
						0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM	<div>ea</div> <div>EA Consulting ( Pvt. ) Limited</div> <div>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</div>		<div>JA</div> <div>Jers Engineering Consultant</div>		DESIGNED	MS		
						ED.NO	DATE	DESCRIPTION	BY	CKD	APR					CHECKED	MS	Scale / Sheet	Drawing No.
										APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W407						



SECTION **A**  
SCALE = 1:25  
U-W408



SECTION **B**  
SCALE = 1:25  
U-W408

**NOTE:-**

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W408.

0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



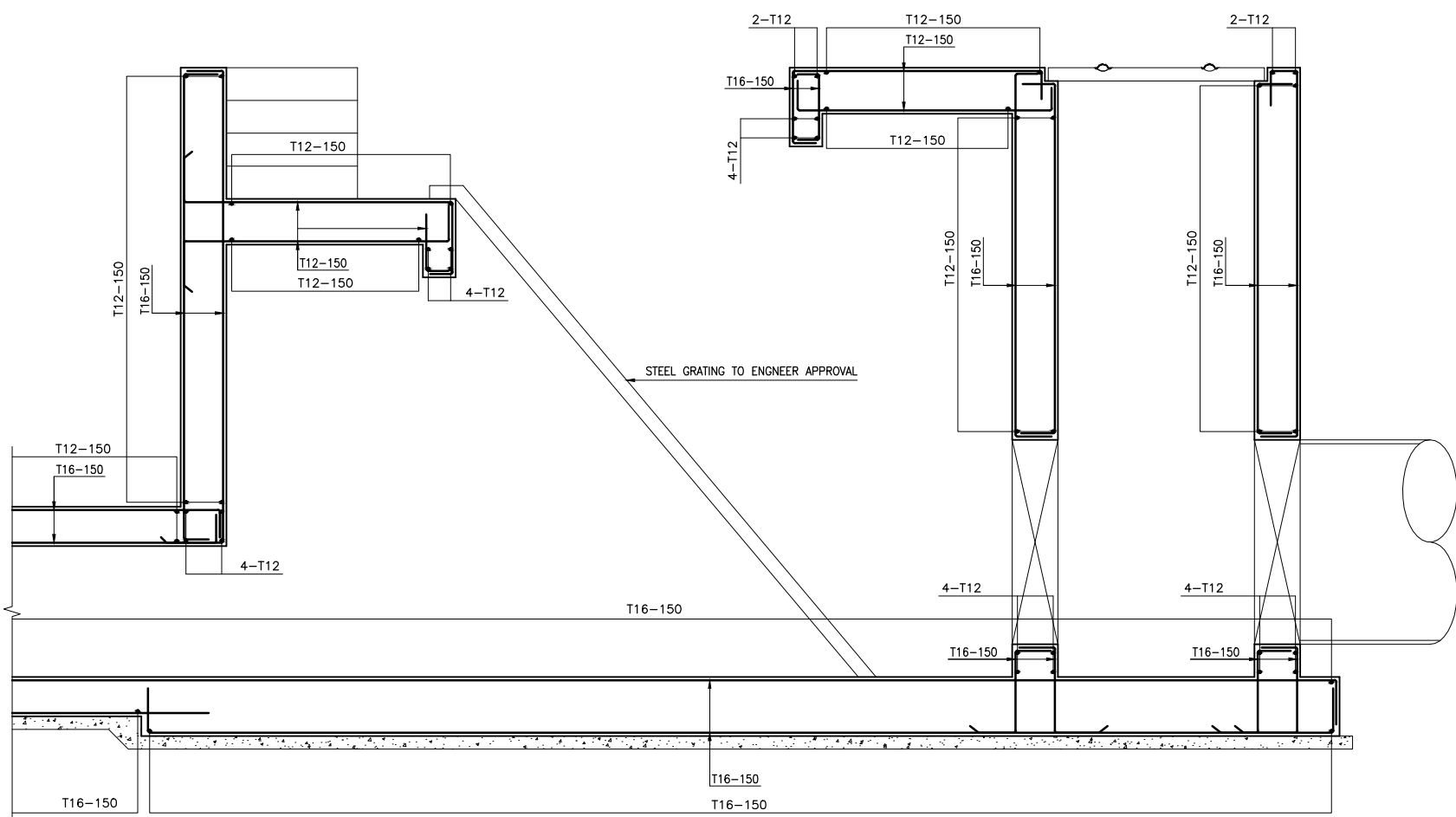
**Jers Engineering Consultant**

PROJECT:-

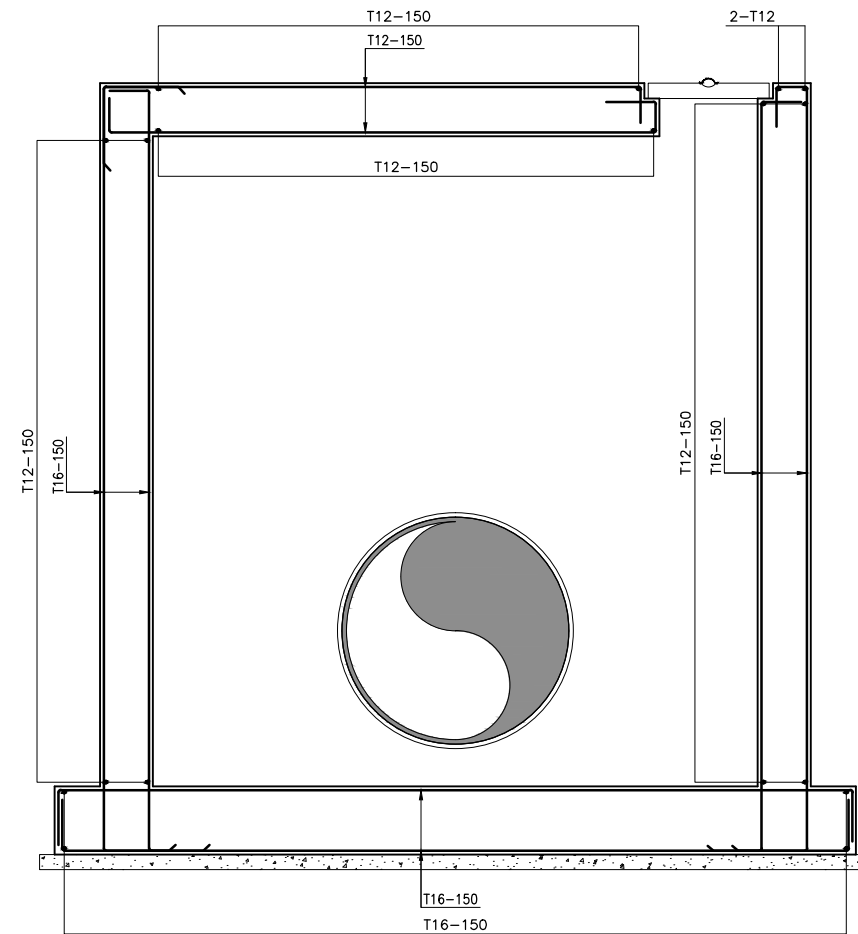
**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN	K.A	TITLE		PACKAGE # 01
DESIGNED	MS	OVER FLOW CHAMBER REINFORCEMENT DETAIL		
CHECKED	MS	Scale / Sheet	Drawing No.	
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W408	

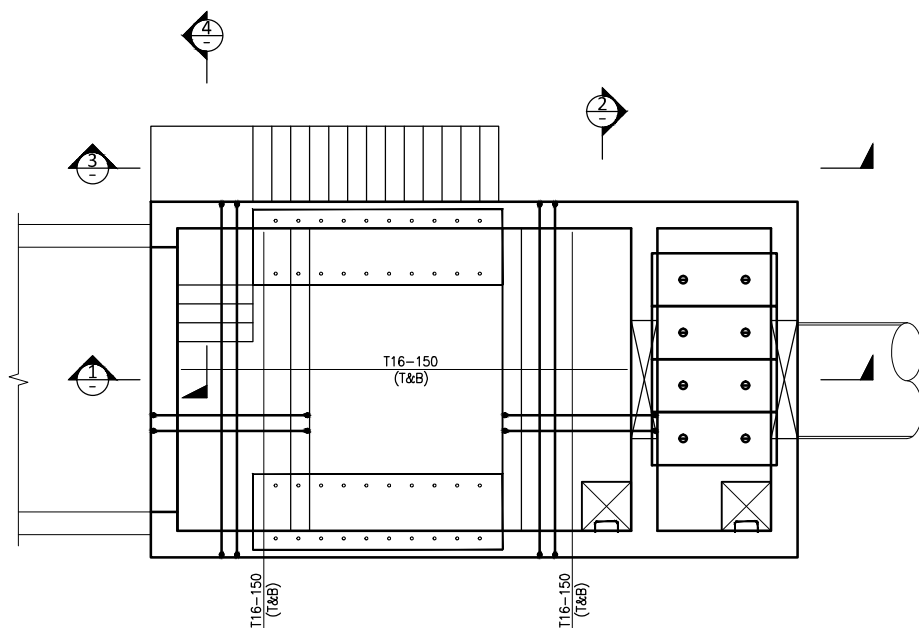




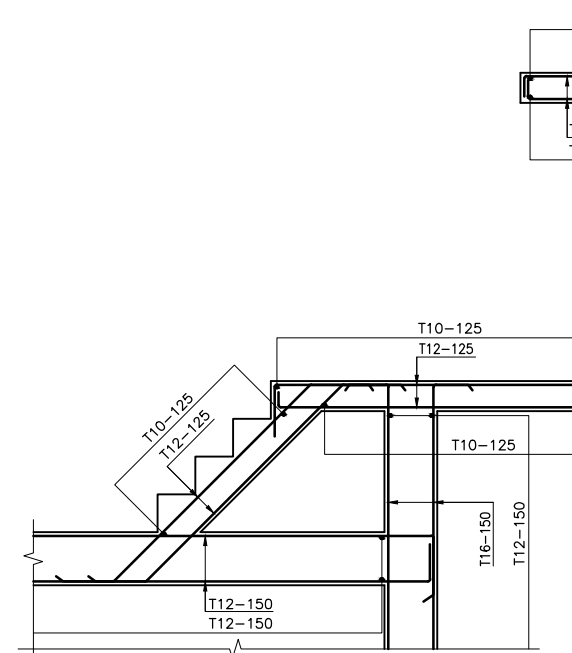
SECTION 1  
SCALE = 1:25



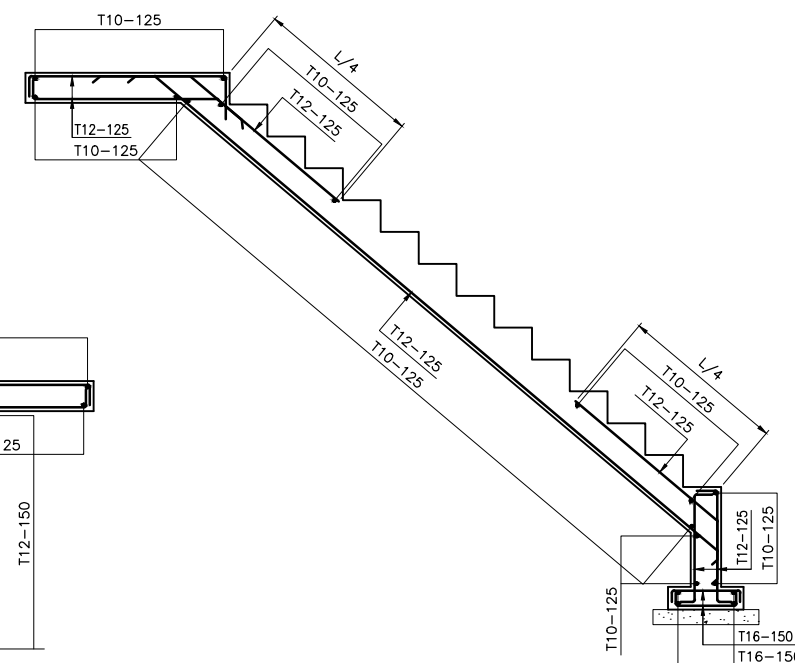
SECTION 2  
SCALE = 1:25



PLAN  
SCALE = 1:50



SECTION 4  
SCALE = 1:25



SECTION 3  
SCALE = 1:25

NOTE:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W410.

0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-

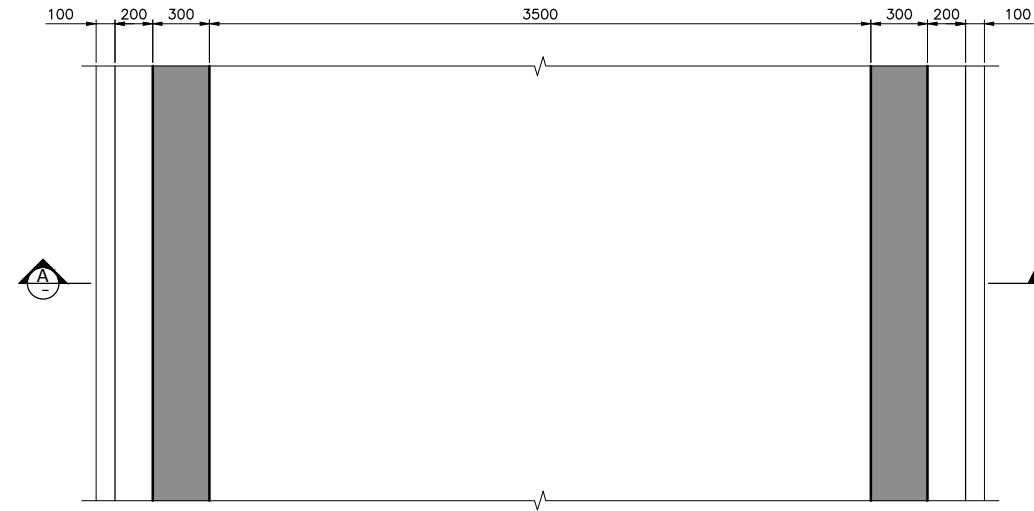


**Jers Engineering Consultant**

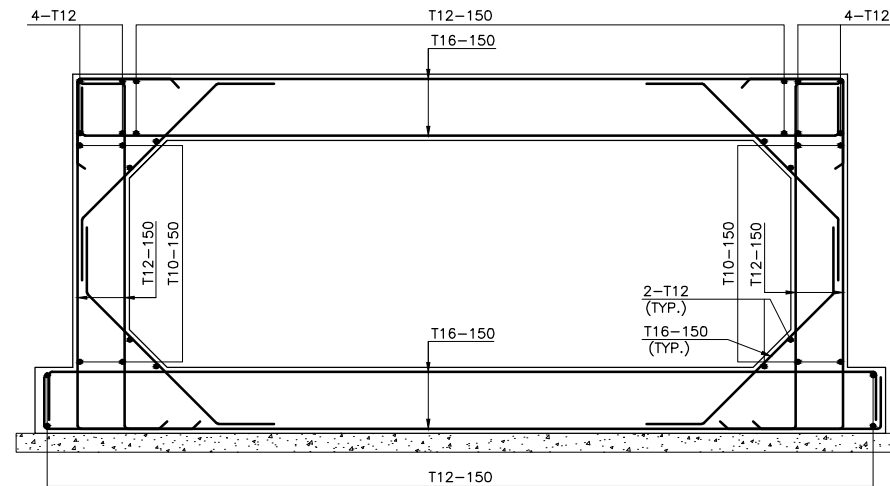
PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN	K.A	TITLE	PACKAGE # 01
DESIGNED	MS	REINFORCEMENT DETAIL OF INTAKE CHAMBER AT KG CANAL	
CHECKED	MS	Scale / Sheet	Drawing No.
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W410

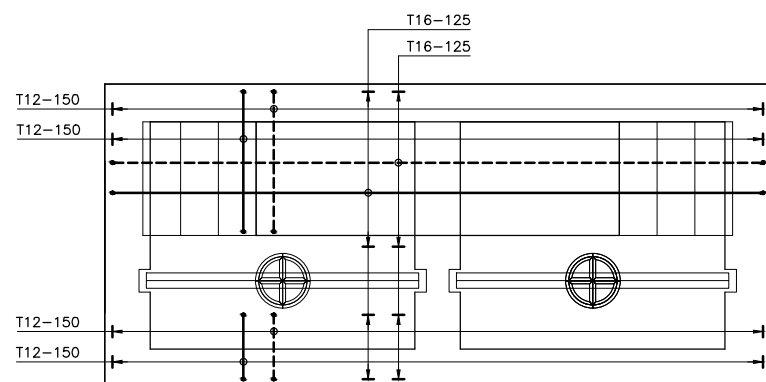


A PLAN OF RCC CONDUIT  
SCALE = 1:20

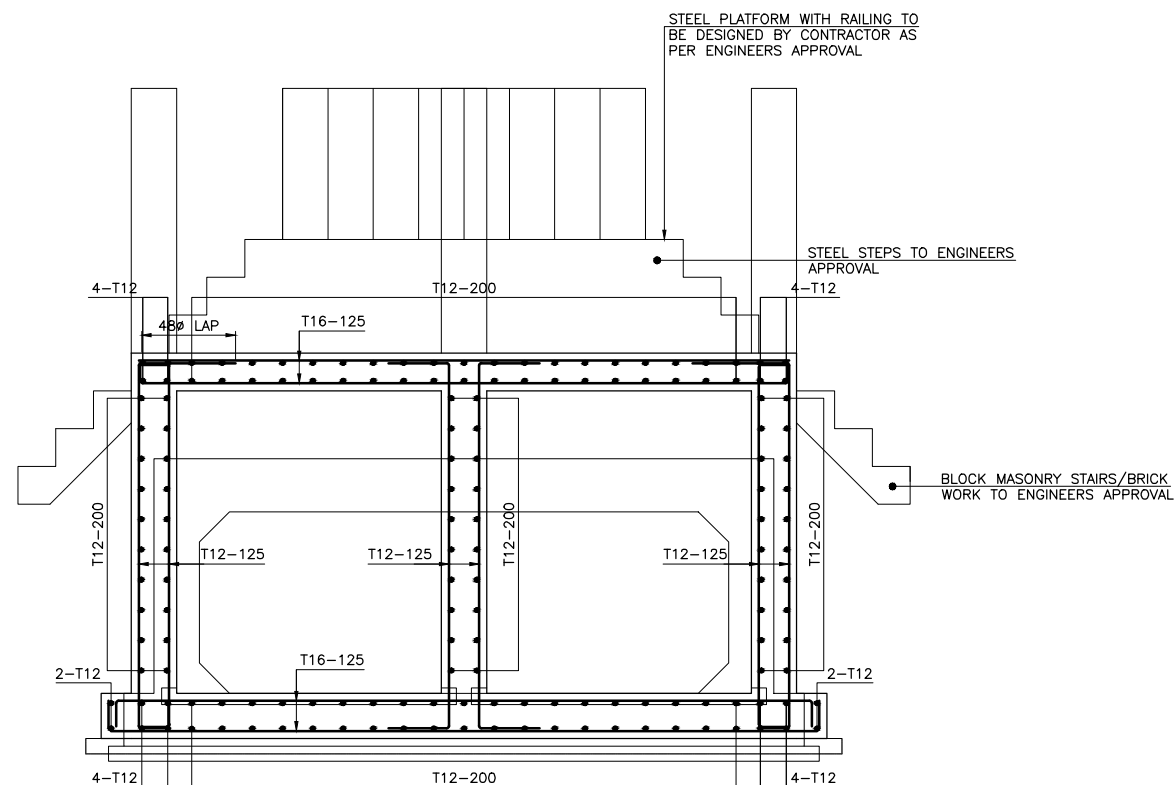


SECTION A  
SCALE = 1:20

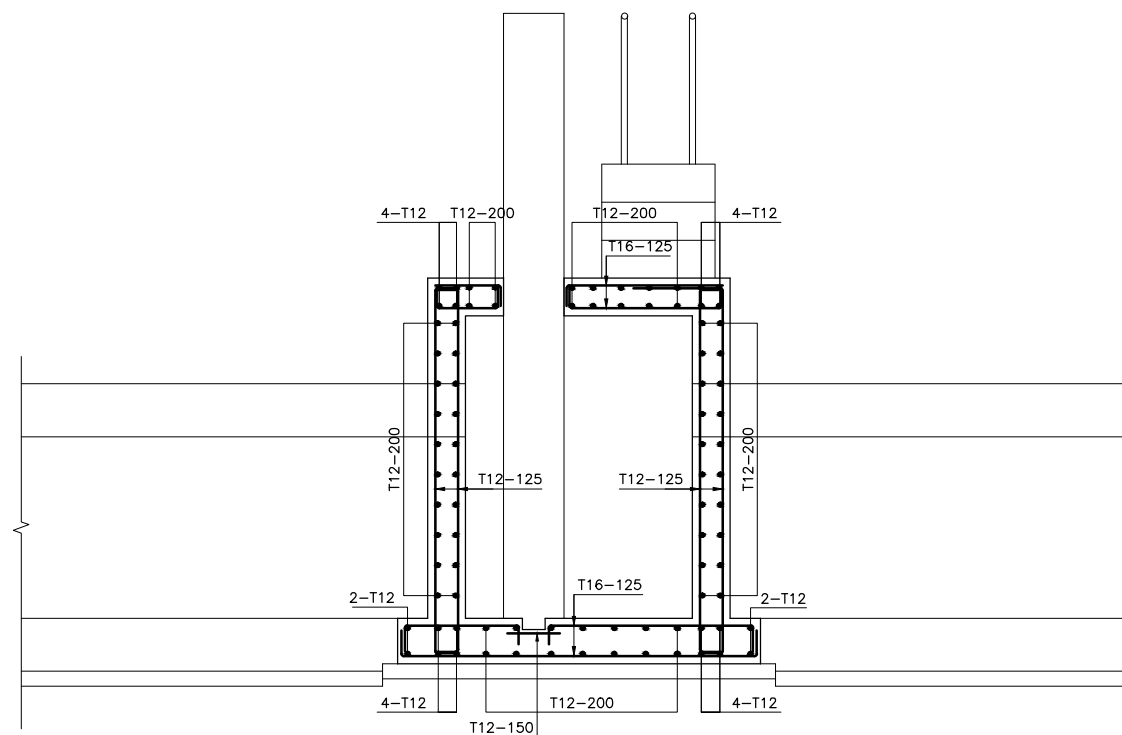
<div>NOTE:- 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED. 2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W411.</div>						CLIENT:-		<div>KARACHI WATER &amp; SEWERAGE BOARD</div>				PROJECT:-							
						<div>CONSULTANT:-</div> <div><div>EA Consulting ( Pvt. ) Limited</div><div>CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS &amp; PLANNING EXPERTS</div></div>						<div>IN ASSOCIATION WITH:-</div> <div><div>Jers Engineering Consultant</div></div>		DRAWN	K.A	<div>TITLE</div> <div>TYPICAL CONDUIT REINFORCEMENT SECTION FOR INTAKE FROM KG CANAL</div>		<div>PACKAGE # 01</div>	
														DESIGNED	MS				
														CHECKED	MS				
														APPROVED	AKM	Scale / Sheet		Drawing No.	
ED.NO		DATE	DESCRIPTION	BY	CKD	APR			AS SHOWN (A1)		EA-942-65M-PI-S-W411								



**SECTION A**  
TOP SLAB REINFORCEMENT PLAN  
SCALE = 1:25



**SECTION A**  
SCALE = 1:25  
(U-W413)



**SECTION B**  
SCALE = 1:25  
(U-W413)

**NOTE:-**

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. FOR DIMENSIONAL DETAILS REFER DWG NO:EA-942-65M-PI-U-W413.

0	OCT,17	ISSUED FOR TENDER	MS	MS	AKM
ED.NO	DATE	DESCRIPTION	BY	CKD	APR

CLIENT:-



**KARACHI WATER  
&  
SEWERAGE BOARD**

CONSULTANT:-



**EA Consulting ( Pvt. ) Limited**  
CONSULTING ENGINEERS, ARCHITECTS, ECONOMISTS & PLANNING EXPERTS

IN ASSOCIATION WITH:-



**Jers Engineering Consultant**

PROJECT:-

**ADDITIONAL 65 MGD  
WATER SUPPLY SCHEME FROM  
HALEJI TO PIPRI, KARACHI.**

DRAWN	K.A	TITLE	PACKAGE # 01
DESIGNED	MS	INTERCONNECTION POINT PENSTOCK REINFORCEMENT STRUCTURE DETAIL	
CHECKED	MS	Scale / Sheet	Drawing No.
APPROVED	AKM	AS SHOWN (A1)	EA-942-65M-PI-S-W413