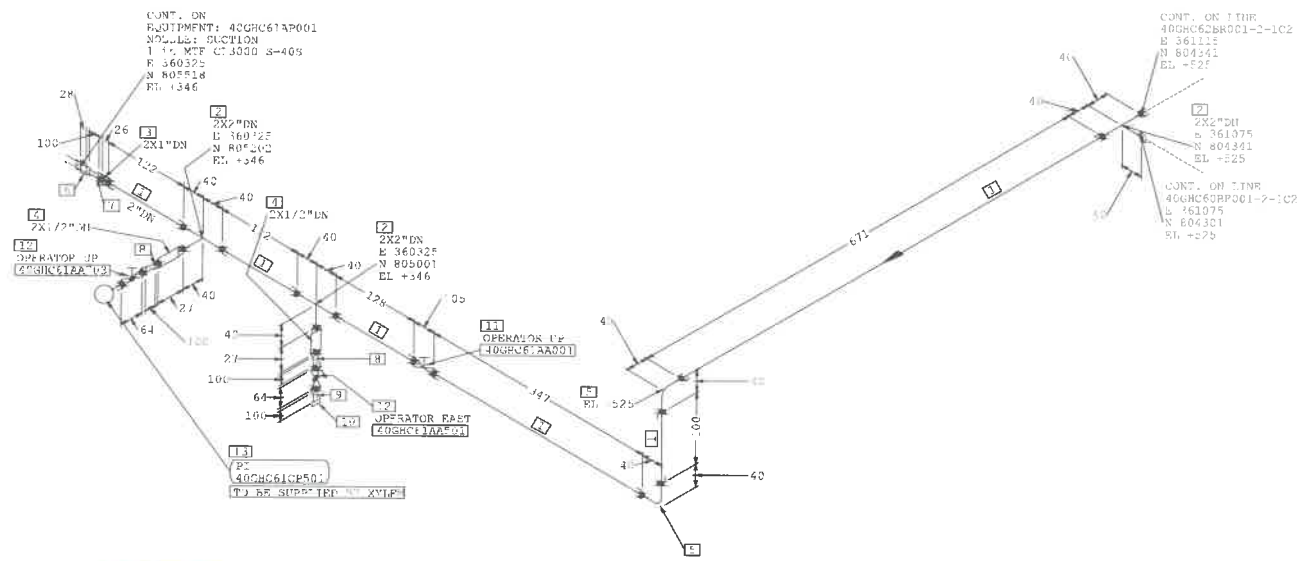
		UNITS	REQUESTED	PROVIDED BY VENDOR
1	GENERAL DATA			
1.1	Number of pumps		2x110%	
1.2	KKS numbers		40GHC61 AP001 / 40GHC62 AP001	
1.3	Manufacturer / Model		(Note 1)	
1.4	Installation		Outdoor	
1.5	Design and manufacturing codes		ISO 9905, 5199, 9908 or equivalent (Note 1)	
1.6	Service		Demineralized water distribution	
1.7	Pumped Fluid		Demineralized water	
1.8	Temperature min / max	°C	1 / 43	
1.9	Density	kg/m3	1000 (at 5ºC)	
2	PUMPS RATED POINT			
2.1	Flow per pump at discharge	m3/h	12.852	
2.2	Required Total Dinamic Head	m	35.96	
2.3	NPSH available / required	m	7,209 / 4,758 maximum (Note 5)	
2.4	Suction pressure	bar a	0,762 to 1,836 (Note 6)	
2.5	TDH at shutoff	m	135% of rated TDH (Note 2)	
2.6	Minimum flow	m3/h	30% of rated flow (Note 7)	
2.7	Design pressure / hydraulic test pressure	bar g	(Note 1)	
2.8	Efficiency at design point	%	(Note 1)	
2.9	Pump power	kW	(Note 1)	
2.10	Pump Speed	rpm	(Note 1)	
3	TECHNICAL FEATURES			
3.1	Pump type		Horizontal centrifugal	
3.2	Pump model		(Note 1)	
3.3	Number of stages		1	
3.4	Impeller diameter			
3.4.1	Rated	mm	(Note 1)	
3.4.2	Max	mm	At least 4 mm bigger than rated impeller	
3.4.3	Min	mm	(Note 1)	
3.5	Mechanical seal		Included	
3.6	Mechanical seal fluid		Pumped fluid	
3.7	Motor-pump assembly first critical speed	rpm	> 120% of nominal speed	
3.8	Max. reversal speed allowable for the motor-pump assembly	rpm	(Note 1)	
3.9	Motor-pump coupling		Flexible adjustable with spacer (Note 9)	
3.10	Radial bearing type		(Note 1)	
3.11	Axial bearing type		(Note 1)	
3.12	Lubrication		(Note 1)	
3.13	Lubrication piping		(Note 1)	
4	DRIVER			
4.1	Motor Type		TEFC	
4.2	Motor Manufacturer		(Note 1)	
4.3	Motor Voltage/Phase/Frequency	(V / - / Hz)	400 / 3 / 50	
4.4	Motor Nominal power	(kW)	(Note 1)	
4.5	Motor Rated current / Ratio starting current - rated current	(A / -)	d starting current is not exceed 5.5 times rated current	
4.6	Motor Speed	rpm	Single speed	
4.7	Enclosure Classification	IP		
4.8	Motor indoor/outdoor		IP 54/IP 55	
4.9	Terminal boxes and other equipment		IP 65	
4.10	Motor Insulation class / Maximum heating class		F / B	
4.11	Motor Accesories			
5	MATERIALS (note 1)			
5.1	Pump-motor support base		Structural steel ASTM A36 or equivalent	
5.2	Pressure casing		AISI 316 or equivalent	
5.3	Inner case parts		AISI 316 or equivalent	
5.4	Impeller		AISI 316 or equivalent	
5.5	Wear rings		Hard faced AISI 316 or equivalent	
5.6	Shaft		AISI 316 or equivalent	
5.7	Bushings		AISI 316 or equivalent	
5.8	Case and gland studs		AISI 4140 or equivalent	
5.9	Case gasket		AISI 316 spiral wound	
6	ACCESORIES			
6.1	Anchor (foundation) bolts		Included	
6.2	Vent/Drains valves in the casing		Included	
6.3	Motor winding temperature		(Note 1)	
6.4	Pressure gauge (suction and discharge)		Included	
6.5	Filters upstream pumps (one per each pump) including PDIT (Instruments)		Included (Note 10)	
6.7	Counter flange, gasket, bolts, nuts, washers in vendor scope		Included	
7	DIMENSIONS AND LOADS			
7.1	Pump size (length / width / height)	mm	(Note 1)	
7.2	Motor size (length / width / height)	mm	(Note 1)	
7.3	Total assembled group (length / width / height)	mm	(Note 1)	
7.4	Weights		(Note 1)	
7.5	Pump	kg	(Note 1)	
7.6	Electric motor	kg	(Note 1)	
7.7	Total (empty)	kg	(Note 1)	
7.8	Total (full of water)	kg	(Note 1)	
8	CONNECTIONS			
8.1	Suction nozzle (diameter / type and class)		(Note 1) / flanged RF ASME B16.5 class 150	
8.2	Discharge nozzle (diameter / type and class)		(Note 1) / flanged RF ASME B16.5 class 150	
8.3	Max. forces on nozzles Fx/Fy/Fz	kg	2 times API 610 loads	
8.4	Max. moments on nozzles Mx/My/Mz	kg·m	2 times API 610 loads	

	UNITS	REQUESTED	PROVIDED BY VENDOR
9 PAINTING			
9.1 Painting		accordance with ISO 12944-5 for the appropriate environment category (C3, Im1, Im2 and Im3)	
14 SCOPE OF SUPPLY		REQUIRED	OFFERED
10.1 Mechanical/main scope			
10.2 Pump units (including electric driver, coupling and auxiliary systems		By vendor	
10.3 Piping, valves and supports within the package		By vendor	
10.4 System integration into a skid mounted package		By vendor	
10.6 Anchor bolts and embedment parts		By vendor	
10.7 Electrical scope			
10.8 Instrumentation and control scope			

Notes:

(1) Vendor to provide or verify.
(2) The pump head curve must be continuously rising with a shutoff head is 135% of rated head, and must be constantly decrease maintaining a uniform slope from the point of zero flow to the design point.
(3) The pump and driver shall be capable of continuous operation at 110% of rated flow.
(4) Minimum driver efficiency = 90 % @ rated point.
(5) NPSH required must be lower than 66% of available NPSH.
(6) Suction pressure will vary in the indicated range based on the level of the corresponding tank.
(7) The pump must be able to pump at least a minimum flow of 30% of rated flow. MCSF <=30% of rated flow
(8) All cooling needs of the pump must be satisfied with the pumped fluid.
(9) The pump and motor shall be coupled by a flexible coupling incorporating a spacer of sufficient length to allow dismantling of the pump bearings and shaft seals without disturbing the motor or piping.
(10) Pressure drop for pump filter has been estimated 0,3 bar. If pressure drop is higher shall be considered in the pump TDH and NPSHa
(11) The pump should operate within a Preferred Operating Region of 70 % to 120 % of best efficiency flowrate of the pump, and Rated flow shall be within the region of 80 % to 110 % of best efficiency flowrate of the pump, and the Allowable Region from MCSF to to halfway between the end of the POR and end of the curve or based on vibration within the upper limit of this International Standard or temperature rise or other limitation, specified by the manufacturer



ITEM	DESCRIPTION	DN	QTY
PIPE			
1	PIPE, PE, S-40S, ASME B36.19M, ASTM A312 TP316L, SEAMLESS	2	1491 MM
FITTINGS			
2	TEE, SW, CL3000, ASME B16.11, ASTM A182 F316L	2X2	3
3	REDUCING COUPLING, SW, CL3000, ASME B16.11, ASTM A182 F316L	2X1	1
4	REDUCING INSERT, CL3000, MSS SP-79, ASTM A182 F316L	2X1/2	2
5	90° ELBOW, SW, CL3000, ASME B16.11, ASTM A182 F316L	2	2
6	UNION, FTE-PTE, CL3000, MSS SP-83, ASTM A182 F316L	1	1
7	NIPPLE, POE x TOE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1	1
8	NIPPLE, PBE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1/2	2
9	NIPPLE, POE x TOE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1/2	1
10	CAP, FTE, CL3000, ASME B16.11, ASTM A182 F316L	1/2	1
VALVES			
11	GATE VALVE, Class 800, SW, ANSI B16.11, ASTM A182 Gr.F316L	2	1
12	GLOBE VALVE, Class 800, SW, ANSI B16.11, ASTM A182 Gr.F316L	1/2	2
INSTRUMENTS			
13	PI-40GHC61CP501	1/2	1

GENERAL NOTES

1. X=0.00 m Y=0.00 m LOCAL COORDINATES CENTER CORRESPONDS TO E=257.805,194 m N=171.472,800 m IN CASSINI
2. RELATIVE LEVEL +0.000 m CORRESPONDS TO THE LEVEL +136.200m OF PLANT DATUM (MLS=+572,60).
3. ALL COORDINATES, ELEVATIONS AND DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS, COORDINATES AND ELEVATIONS ARE TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
5. FOR MECHANICAL AND PIPING DESING CRITERIA REFER TO DOCUMENT: JO003-10-YM_-MRD-IDM-001
6. FOR LINE LIST REFER TO DOCUMENT:JO003-10-YM_-MLL-IDM-001
7. FOR PAINTING SPECIFICATION REFER TO DOCUMENT: JO003-10-VDJ-MIO-IDM-001
8. FOR INSULATION SPECIFICATION REFER TO DOCUMENT: JO003-10-VDK-MIM-IDM-001
9. FOR INSTRUMENT HOOK UP DETAILS REFER TO DOCUMENT: JO003-10-YYI-YR_-IDM-001

P&ID	JO003-10-GHC-MDD-IDM-001	KKS LINE	40GHC61BR001-2-1C2	PIPING CLASS / Ø (in)	1C2	2 in	OPERATION TEMPERATURE (°C)	38.	DESIGN TEMPERATURE (°C)	60.
OPERATION PRESSURE(barg)	.84	DESIGN PRESSURE (barg)	4.	TEST PRESSURE (barg)	6.		INSULATION TYPE THICKNESS (mm)	-	COLOUR (RAL)	Green (6018)

OWNER | OWNER'S ENGINEER: K&M ADVISORS

DESIGNER: idom | EPC CONTRACTOR: sepcoIII 山东电建

PROJECT

Samra Phase IV Add-On Combined Cycle Project

REV	DATE	DESCRIPTION	DONE	CHECKED	APPROVED
2	02-03-2018	AS BUILT	MM	IAG	DSP
1	29-06-2017	FOR CONSTRUCTION	IBG	IAG	DSP
0	16-05-2017	FOR CONSTRUCTION (WITH HOLDS)	IBG	IAG	DSP

STATUS: FOR INFORMATION / FOR APPROVAL / VALID FOR PURCHASE / NON USE/SEN / FOR CONSTRUCTION / FOR OWNER REVIEW / AS BUILT

EPC CONT. SIGNATURE | DATE

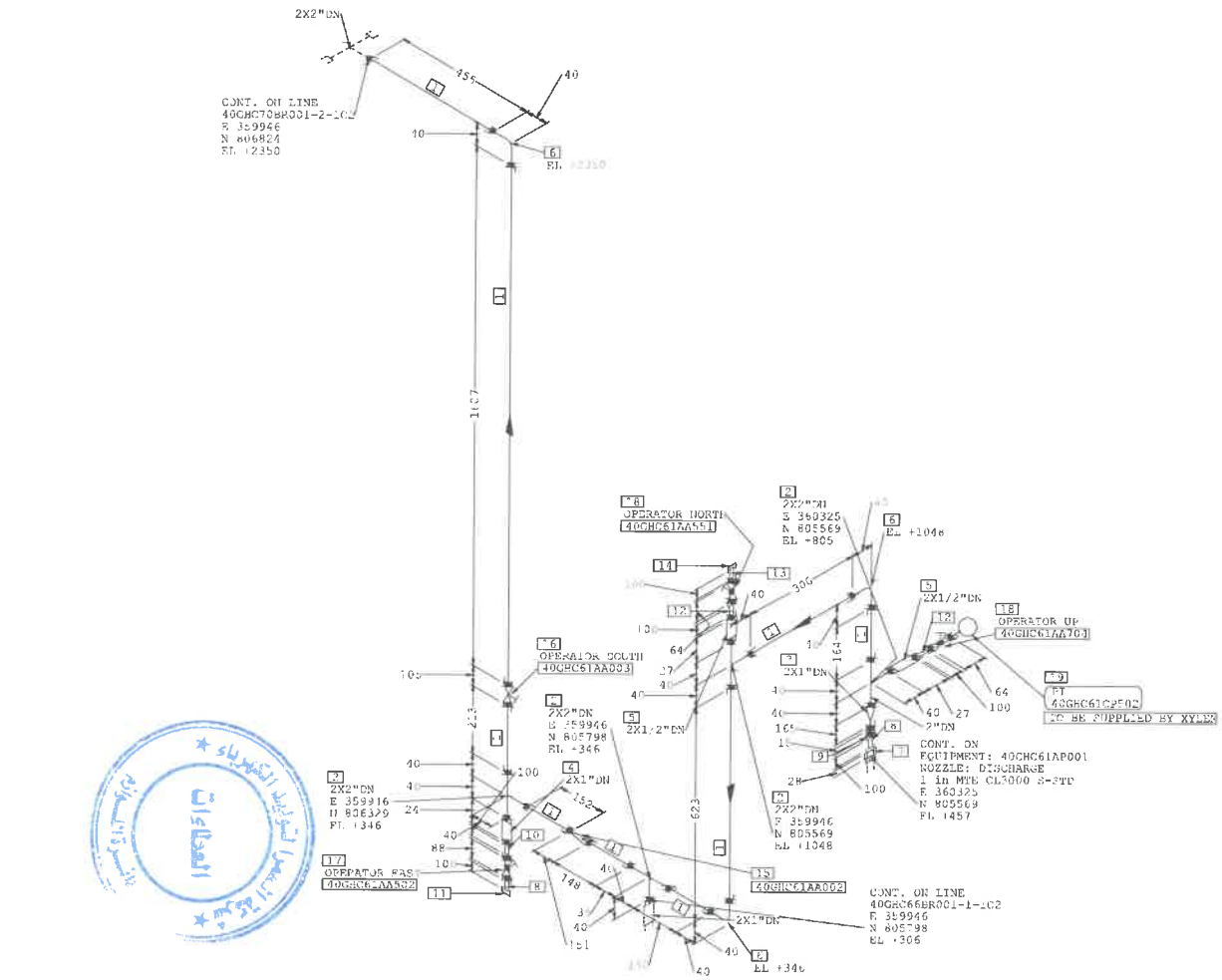
DOCUMENT NUMBER: 40GHC61BR001-2-1C2

DOCUMENT NAME: JO003-10-GHC-MDI-IDM-001

SIZE: A1 | SCALE: N/A | SHEET: 1 | NEXT: -

Demi Water Storage and Distribution System, Isometrics

JO003-10-GHC-MDI-IDM-001



ITEM	DESCRIPTION	DN	QTY
PIPE			
1	PIPE, PE, S-40S, ASME B36.19M, ASTM A312 TP316L, SEAMLESS	2	3812 MM
FITTINGS			
2	TEE, SW, CL3000, ASME B16.11, ASTM A182 F316L	2X2	4
3	CONCENTRIC SWAGED, PExPE, S-40S x S-40S, CL3000, MSS SP-95, ASTM A403 WP316L CLS	2X1	1
4	REDUCING INSERT, CL3000, MSS SP-79, ASTM A182 F316L	2X1	1
5	REDUCING INSERT, CL3000, MSS SP-79, ASTM A182 F316L	2X1/2	2
6	90° ELBOW, SW, CL3000, ASME B16.11, ASTM A182 F316L	2	3
7	UNION, ITE+FTE, CL3000, MSS SP-83, ASTM A182 F316L	1	1
8	NIPPLE, POE x TOE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1	2
9	COUPLING, SW, CL3000, ASME B16.11, ASTM A182 F316L	1	1
10	NIPPLE, PBE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1	1
11	CAP, FTE, CL3000, ASME B16.11, ASTM A182 F316L	1	1
12	NIPPLE, PBE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1/2	2
13	NIPPLE, POE x TOE, S-40S, ASME B36.19M, 100 MM LONG, ASTM A312 TP316L	1/2	1
14	CAP, FTE, CL3000, ASME B16.11, ASTM A182 F316L	1/2	1
VALVES			
15	BALL CHECK VALVE, Class 800, SW, ANSI B16.11, ASTM A182 Gr.F316L	2	1
16	GATE VALVE, Class 800, SW, ANSI B16.11, ASTM A182 Gr.F316L	2	1
17	GLOBE VALVE, Class 800, SW, ANSI B16.11, ASTM A182 Gr.F316L	1	1
18	GLOBE VALVE, Class 800, SW, ANSI B16.11, ASTM A182 Gr.F316L	1/2	2
INSTRUMENTS			
19	PI-40GHC61CP502	1/2	1

GENERAL NOTES

1. X=0.00 m Y=0.00 m LOCAL COORDINATES CENTER CORRESPONDS TO E=257,805,194 m N=171,472,800 m IN CASSINI.
2. RELATIVE LEVEL +0.000 m CORRESPONDS TO THE LEVEL +136.200m OF PLANT DATUM (MLS=+572.60).
3. ALL COORDINATES, ELEVATIONS AND DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS, COORDINATES AND ELEVATIONS ARE TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
5. FOR MECHANICAL AND PIPING DESING CRITERIA REFER TO DOCUMENT: JO003-10-YM_-MRD-IDM-001
6. FOR LINE LIST REFER TO DOCUMENT:JO003-10-YM_-MLL-IDM-001
7. FOR PAINTING SPECIFICATION REFER TO DOCUMENT: JO003-10-VDJ-MO-IDM-001
8. FOR INSULATION SPECIFICATION REFER TO DOCUMENT: JO003-10-VDK-MIM-IDM-001
9. FOR INSTRUMENT HOOK UP DETAILS REFER TO DOCUMENT: JO003-10-YYI-YR_-IDM-001

P&ID	JO003-10-GHC-MDD-IDM-001	KKS LINE	40GHC61BR002-2-1C2	PIPING CLASS / Ø (in)	1C2	2 in	OPERATION TEMPERATURE (°C)	38.	DESIGN TEMPERATURE (°C)	60.
OPERATION PRESSURE(barg)	1.7	DESIGN PRESSURE (barg)	4.	TEST PRESSURE (barg)	6.	INSULATION TYPE THICKNESS (mm)	-	COLOUR (RAL)	Green (6018)	

OWNER | OWNER'S ENGINEER: K&M ADVISORS

DESIGNER: idom | EPC CONTRACTOR: sepcoIII 山东电建 山东电力建设第三工程公司

PROJECT

Samra Phase IV Add-On Combined Cycle Project

REV	DATE	DESCRIPTION	DONE	CHECKED	APPROVED
2	02-03-2018	AS BUILT	MMT	IAH	DSP
1	29-06-2017	FOR CONSTRUCTION	BIG	IAG	DSP
0	16-05-2017	FOR CONSTRUCTION (WITH HOLDS)	BIG	IAG	DSP

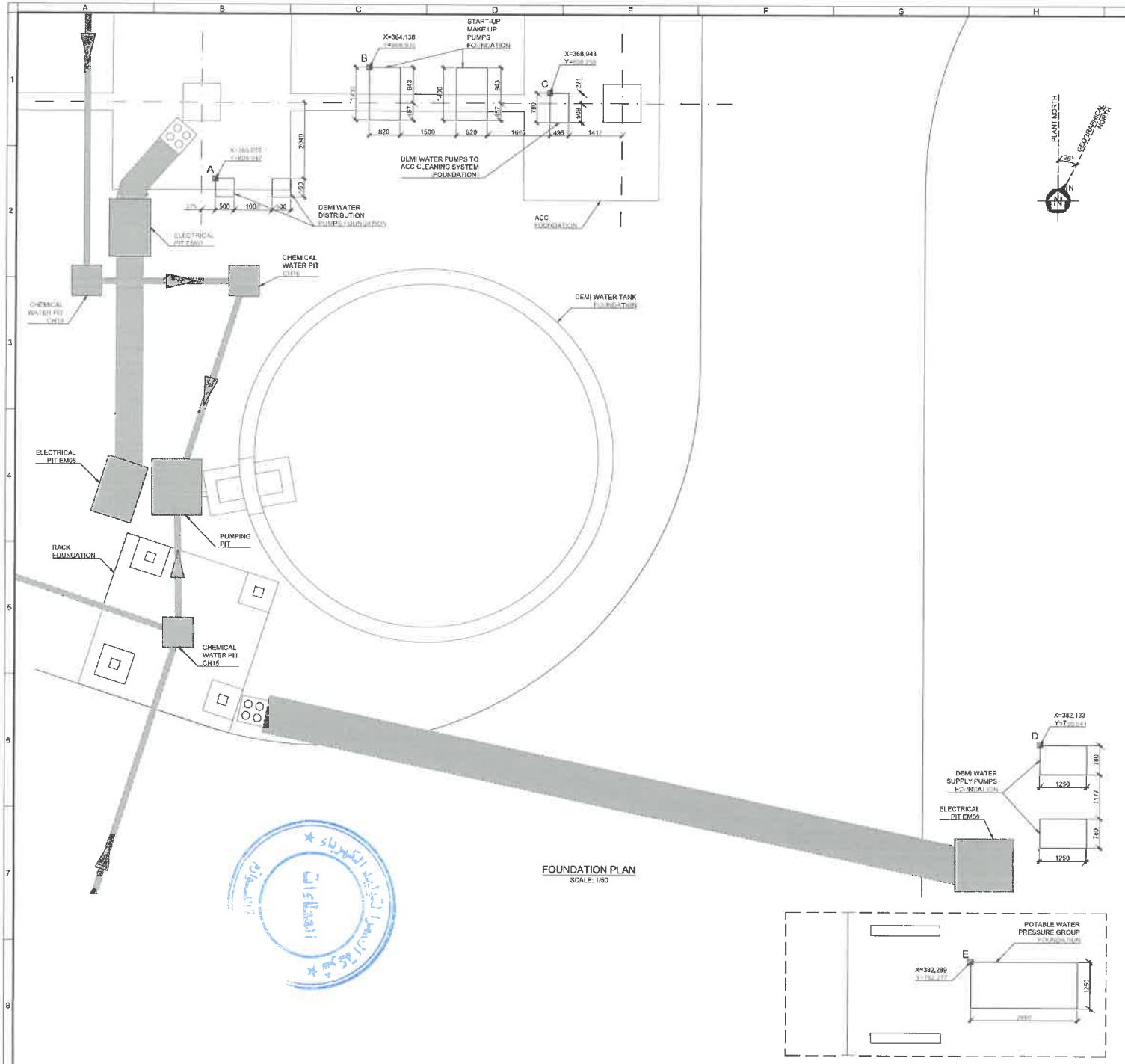
EPC CONT. SIGNATURE | DATE

STATUS: FOR INFORMATION ☐ FOR APPROVAL ☐ VALID FOR PURCHASE ☐ FOR CONSTRUCTION ☐ FOR OWNER REVIEW ☐ AS BUILT ☒

DOCUMENT NUMBER	SIZE	SCALE	SHEET	NEXT
40GHC61BR002-2-1C2	A1	N/A		

DOCUMENT NAME: JO003-10-GHC-MDI-IDM-001

Demi Water Storage and Distribution System, Isometrics



FOUNDATION PLAN
SCALE: 1/50

KEY PLAN

GENERAL NOTES

- X=0.00 m Y=0.00 m LOCAL COORDINATES CENTER CORRESPONDS TO E=257,805,164 m N=171,472,800 m IN CASSINI.
- RELATIVE LEVEL +0.000 m CORRESPONDS TO THE LEVEL +136.200m OF PLANT DATUM (MLS=+672.60).
- STEAM TURBINE BUILDING FINISHED FLOOR IS AT ELEVATION ±0.000.
- ALL COORDINATES AND ELEVATIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE

NOTES

1. FOR CONCRETE GENERAL NOTES SEE JO003-10-YG_-CDO-IDM-001.
   LEAN CONCRETE SHALL BE 14/18MPa.
2. BELOW GRADE CONCRETE SHALL BE COATED BY THREE LAYERS OF BITUMEN
3. SOIL STABILIZATION AS PER APPROVED GEOTECHNICAL REPORT.

LEGEND

T.O.C. TOP OF CONCRETE

URB. URBANIZATION LEVEL

T.O.G. TOP OF GROUTING

SCALE 1:50 0 0,5 1 2 3 4 5m

REFERENCE DOCUMENTS

OWNER | OWNER'S ENGINEER: K&M ADVISORS

DESIGNER: idom | EPC CONTRACTOR: SEPCOIII 山东电力建设第三工程公司

PROJECT

Samra Phase IV Add-On Combined Cycle Project

REV	DATE	DESCRIPTION	DONE	CHECKED	APPROVED
-					-
2	17-09-2017	AS BUILT	MMT	AFZ	DSP
1	20-04-2017	FOR CONSTRUCTION	MMT	AFZ	DSP
0	30-03-2017	FOR OWNER REVIEW	PDU	AFZ	DSP

EPC CONT. SIGNATURE | DATE

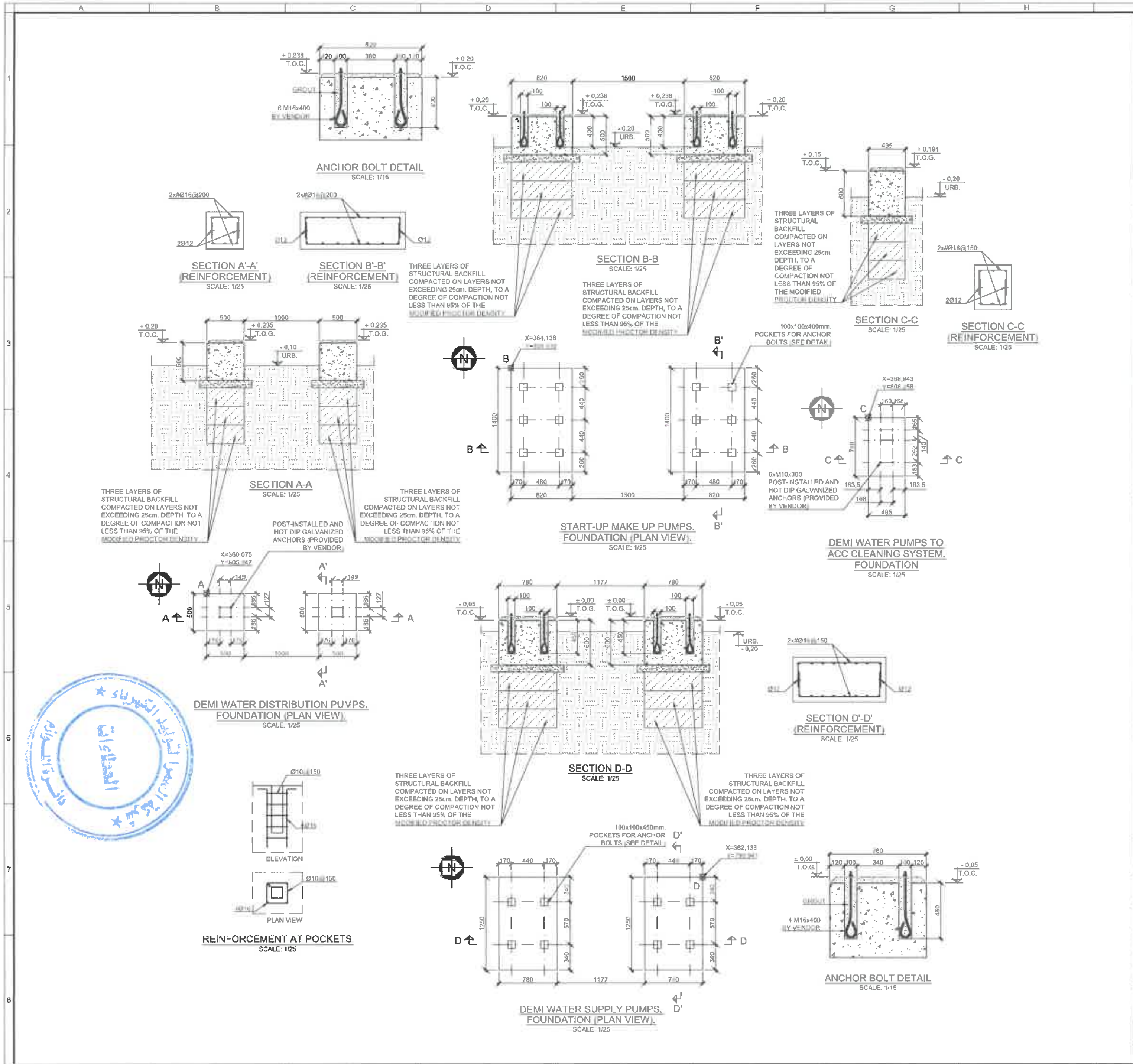
STATUS: FOR INFORMATION ☐ | FOR APPROVAL ☐ | VALID FOR PURCHASE ☐ | FOR DESIGN ☐ | FOR CONSTRUCTION ☐ | FOR OWNER REVIEW ☐ | AS BUILT ☒

DOCUMENT NUMBER: JO003-10-GHC-CDF-IDM-001

DOCUMENT NAME: DEMI WATER PUMPS FOUNDATION DRAWINGS

SIZE: A1 | SCALE: 1/50 | SHEET: 1 | NEXT: 2

JO003-10-GHC-CDF-IDM-001-2 Demi Water Pumps Foundation Drawings.dwg



KEY PLAN

GENERAL NOTES

- X=0.00 m Y=0.00 m LOCAL COORDINATES CENTER CORRESPONDS TO E=257.805,194 m N=171.472,800 m IN CASSINI.
- RELATIVE LEVEL +0.000 m CORRESPONDS TO THE LEVEL +136,200m OF PLANT DATUM (MLS=+572,60).
- STEAM TURBINE BUILDING FINISHED FLOOR IS AT ELEVATION ±0,000.
- ALL COORDINATES AND ELEVATIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE

NOTES

1. FOR CONCRETE GENERAL NOTES SEE JO003-10-YG_-COO-IDM-001. LEAN CONCRETE SHALL BE 14/18MPa.
2. BELOW GRADE CONCRETE SHALL BE COATED BY THREE LAYERS OF BITUMEN
3. SOIL STABILIZATION AS PER APPROVED GEOTECHNICAL REPORT.

LEGEND

T.O.C.	TOP OF CONCRETE
URB.	URBANIZATION LEVEL
T.O.G.	TOP OF GROUTING

SCALE 1:15 — 0, 0,5, 1, 1,5m

SCALE 1:25 — 0, 0,5, 1, 2, 2,5m

REFERENCE DOCUMENTS

OWNER

OWNER'S ENGINEER — K&M ADVISORS

DESIGNER

EPC CONTRACTOR — SEPCOIII 山东电建 山东电力建设第三工程公司 SEPCOIII Electric Power Construction Corporation

PROJECT

Samra Phase IV Add-On Combined Cycle Project

REV	DATE	DESCRIPTION	DONE	CHECKED	APPROVED
2	17-08-2017	AS BUILT	MMT	AFZ	DSP
1	20-04-2017	FOR CONSTRUCTION	MMT	AFZ	DSP
0	26-03-2017	FOR OWNER REVIEW	PRLL	AFZ	DSP

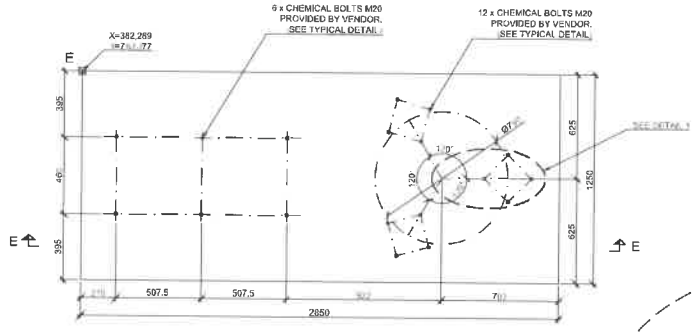
STATUS: FOR INFORMATION ☐ FOR APPROVAL ☐ VALID FOR PURCHASE ☐ FOR DESIGN ☐ FOR CONSTRUCTION ☐ FOR OWNER REVIEW ☐ AS BUILT ☒

EPC CONT. SIGNATURE | DATE

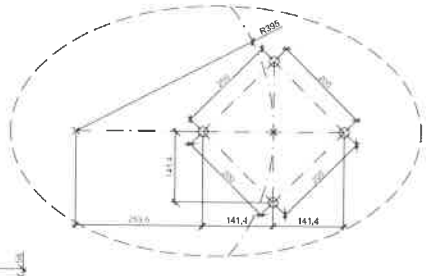
DOCUMENT NUMBER: JO003-10-GHC-CDF-IDM-001

SIZE: A1 | SCALE: VAR. | SHEET: 2 | NEXT: 3

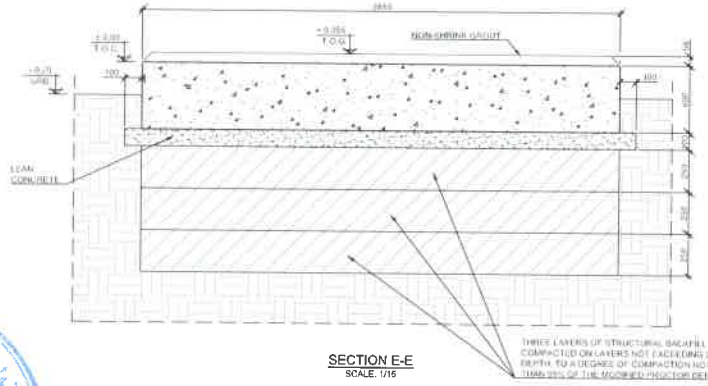
DOCUMENT NAME: DEMI WATER PUMPS FOUNDATION DRAWINGS



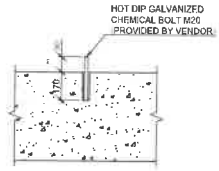
POTABLE WATER PRESSURE GROUP
FOUNDATION (PLAN VIEW)
SCALE 1/15



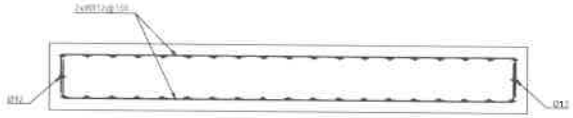
DETAIL 1
SCALE 1/5



SECTION E-E
SCALE 1/15



M20 ANCHOR BOLT
(TYPICAL DETAIL)
SCALE 1/15



SECTION E-E
(REINFORCEMENT)
SCALE 1/15

KEY PLAN

GENERAL NOTES

- X=0.00 m Y=0.00 m LOCAL COORDINATES CENTER CORRESPONDS TO E=257,805,194 m N=171,472,800 m IN CASSINI.
- RELATIVE LEVEL +0.000 m CORRESPONDS TO THE LEVEL +186.200m OF PLANT DATUM (MLS=+572,60).
- STEAM TURBINE BUILDING FINISHED FLOOR IS AT ELEVATION ±0.000.
- ALL COORDINATES AND ELEVATIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE

NOTES

1. FOR CONCRETE GENERAL NOTES SEE J0003-10-YG_-CDO-IDM-001.
   LEAN CONCRETE SHALL BE 14/18MPa.
2. BELOW GRADE CONCRETE SHALL BE COATED BY THREE LAYERS OF BITUMEN
3. SOIL STABILIZATION AS PER APPROVED GEOTECHNICAL REPORT.

LEGEND

T.O.C.	TOP OF CONCRETE
URB.	URBANIZATION LEVEL
T.O.G.	TOP OF GROUTING

SCALE 1:5 0 0.1 0.5m

SCALE 1:15 0 0.5 1 1.5m

REFERENCE DOCUMENTS

OWNER

OWNER'S ENGINEER

K&M ADVISORS

DESIGNER

EPC CONTRACTOR

sepcoIII 山东电建 山东电力建设第三工程公司 SEPCOIII Electric Power Construction Corporation

PROJECT

Samra Phase IV Add-On Combined Cycle Project

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
2	17-08-2017	AS BUILT	NMT	AFZ	DSP
1	20-01-2017	FOR CONSTRUCTION	NMT	AFZ	DSP
0	26-03-2017	FOR OWNER REVIEW	PRI	AFZ	DSP

EPC CONT. SIGNATURE / DATE

STATUS: FOR INFORMATION; FOR APPROVAL; VALID FOR PURCHASE; FOR DESIGN; FOR CONSTRUCTION; FOR OWNER REVIEW; AS BUILT

DOCUMENT NUMBER: J0003-10-GHC-CDF-IDM-001

DOCUMENT NAME: DEMI WATER PUMPS FOUNDATION DRAWINGS

SIZE A1 | SCALE VAR. | SHEET 3 | NEXT -

J0003-10-GHC-CDF-IDM-001-2 Demi Water Pumps Foundation Drawings.dwg