VOLUME - II PART - 2

SECTION – 5

TECHNICAL SCHEDULES

Table of Contents

VOLUME – II

SECTION 5

SCHEDULE -1 FUNCTIONAL GUARANTEES - PROCESS

A. Performance Guarantees under Penalty

Sl. No.	Performance Parameter Particulars	Guaranteed Value
1	Specific Power consumption KW / M3	

B. Performance Guarantees under Rejection

Sl. No.	Particular	Value inclusive of design, manufacture and all other Tolerances	Applicable Test Codes
1.0	Noise Level		
	Near field noise level produced by any equipment measured at 1.0 m from the equipment surface and height of 1.5 m from the floor level	.....85.....dBA	

C. Schedule of Performance Guarantees under compulsory correction

Bidder shall provide the following guaranteed parameters for the offered Desalination Plant.

S. No	UNIT EQUIPMENT	PARAMETERS	OUTLET PARAMTER	BIDDER GUARANTEE
1.0	**UF outlet**	SDI_{15}	<3	
2.0	**RO outlet (at entire operating feed TDS range and temperature 25 - 35 deg C)**			

S. No	UNIT EQUIPMENT	PARAMETERS	OUTLET PARAMTER	BIDDER GUARANTEE
		a) pH	6.5 - 7.5	
		b) TDS	< 350 mg/l	
		c) Product water	1 MLD	

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE -2 TECHNICAL DATASHEET

(TO BE FILLED IN BY BIDDER)

MECHANICAL

DOSING TANK			
Note:	**Add a separate sheet for each dosing Tank**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Quantity	Nos	
2	Fluid to be handled	-	
3	The Holding Capacity of each tank	Lit	
4	Type	-	
5	Diameter of Tank	m x m	
6	Effective liquid depth	m	
7	Free Board	-	
8	Nozzles suitable for	-	
9	MOC	-	
10	Stairs, handrails, Operating Platform	-	
B	OPERATING CONDITION		
1	Pumping pressure	°C	
2	Operating temperature	°C	
3	Concentration of chemical	%	
4	Size of Solid Particles	Mm	
5	Type of Suction	-	
6	Dosing Arrangement	-	
7	Presence of Corrosive Components	-	
8	Liquid density	-	
C	Others		
1	Level Switch	-	
2	Protection for tank	-	
3	Level Gauge	-	
4	Service /treated water connection	-	
5	Agitator required	-	

DOSING PUMP			
Note:	**Add separate sheet for each Dosing Pump**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Quantity	Nos	
2	Fluid to be handled		
3	Nature of liquid to be handled	-	
4	Capacity of tank	Lit	
5	Type of pump	-	
6	Flow rate of Pump	LPH	
7	Suction pressure	Kg/cm2	
8	Continuous/Discontinuous/Manual/Automatic	-	
9	Type	-	
10	Range	%	
B	OPERATING CONDITION		
1	Pumping temperature	°C	
2	Design Temperature, Max	°C	
3	Concentration of chemical	%	
4	Size of Solid Particles	Mm	
5	Type of Suction	-	
6	Dosing Arrangement	-	
7	Presence of Corrosive Components	-	
8	Capacity of the dosing tank	Lit	
C	Others		
1	Level Switch	-	
2	MOC of casing	-	
3	MOC of Diaphragm	-	
4	Seal type	-	
5	Driver	-	
6	Input Power supply	-	
7	Accessories	-	

STORAGE TANKS			
Note:	**Add a separate sheet for each storage tank**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Quantity	Nos	
2	Fluid to be handled		
3	Presence of Corrosive/Toxic Components	-	
4	Tank Capacity (effective liquid volume)	m3	
5	Nominal Capacity of Tank	m3	
6	Type	-	
7	Dimensions of Tank	m x m	
8	Effective liquid depth	m	
9	Free Board	mm	
10	Cover required	-	
11	Bottom Drain	-	
12	Slope for Tank Bottom	-	
13	Pump Pit required	-	
14	Size of Pump Pit	-	
15	Slope in Pump pit	-	
16	Vent required	-	
17	Tank MOC	-	
18	Internal Painting /Linning	-	
19	Stairs/hand railings/Operating platform	-	
20	Type of construction	-	
B	OPERATING CONDITION		
1	Pumping temperature	°C	
2	Design Temperature, Max	°C	
C	Others		
1	Level Switch/Level Indicator/Level Transmitter	-	
2	Rungs - MOC	-	

TRANSFER PUMPS			
Note	**Add a Separate sheet for each Transfer pump**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Quantity	Nos	
2	Fluid to be handled	-	
3	Presence of Corrosive/Toxic Components	-	
4	Pump flow rate	m3	
5	Differential Pressure	Kg/cm2	
6	Type	-	
B	OPERATING CONDITION		
1	Pumping temperature	°C	
2	Design Temperature, Max	°C	
3	Size of Solid Particles	mm	
4	Viscosity of Liquid at storage	°C	
5	Liquid density	Kg/cm2	
6	NPSH required	-	
C	Others		
1	Low Level protection on dry run	-	
2	MOC of Casing	-	
3	MOC of Casing	-	
4	Seal Type	-	
5	Drive Motor	-	
6	Rated voltage	V	
7	Rating	KW	
8	Type of operation	-	
9	Type of Mounting	-	
10	Class of Insulation	-	
11	Motor Guard	-	
Note:	Vendor to select the pump head as per site conditions and pipe routing.		

UF SYSTEM			
Note	**Add separate sheet for each filter**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Flow	m3/hr	
2	No of UF skids	Nos	
3	Design flux considered	LMH	
4	Design Recovery	%	
5	MWCO	Kilo Dalton	
6	Type of filtration		
7	Mode of filtration		
8	Material of construction of UF membranes		
9	Transmembrane Pressure (TMP) for normal operation	MWC	
10	Outlet water Quality - as per technical schedules - YES/NO	-	
11	Train configuration	-	
12	Membrane surface considered	M^2	
13	Quantity of Membranes	No	
14	Make of Membrane considered	-	
15	MOC of SKID considered	-	
16	Enclosed UF projection sheet - Yes/No		

RO SYSTEM			
Note	**Add separate sheet for RO- Stage 1 and Polishing RO**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Flow	m3/hr	
2	No. of skids	Nos	
3	Design flux considered	LMH	
4	Design Recovery	%	
5	Material of construction of RO membranes	-	
6	Type		
7	Outlet water Quality- as per technical schedules - YES/NO	-	
8	Train configuration	-	
9	Membrane surface considered	M^2	
10	Quantity of Membranes	No	
11	Make of Membrane considered	-	
12	MOC of SKID considered	-	
13	Enclosed RO projection sheet - YES/No		

CARTRIDGE FILTERS & SELF-CLEANING FILTERS			
Note	**Add separate sheet for each filter**		
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	Inlet Flow rate	m3/hr	
2	Quantity	No	
3	Type of fluid to be handled	-	
4	Location of installation	-	
5	MOC of Housing	-	
6	MOC of Cartridge/Filter	-	
7	Differential Pressure switch/Transmitter installed across the filter - Yes/No		
8	Micron rating of filter	Microns	

POND WATER CLARIFICATION SYSTEM			
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
1	**Pond Water Transfer pumps**		
	Numbers	Nos	
	Capacity	m3/hr	
	Type		
	Material of Construction		
	Casing		
	Impeller		
	Shaft		
	Wear Rings		
	Shaft Sleeves		
2	**Inlet Chamber**		
	Quantity		
	Material of Construction		
	Retention time		
3	**HRSCC**		
	Quantity		
	Material of Construction		
	MOC of inlet pipe		

POND WATER CLARIFICATION SYSTEM			
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
	Rise Rate (max)		
	MOC		
	Design inlet flow rate		
	Turbidity at clarifier outlet		
	Detention period for flocculation zone		
	Detention period for clarification zone		
	Velocity in launder		
	Platform with railing		
	Rake bridge:		
	MOC		
	Other features		
	Sludge blows off:		
	Continuous		
	Intermittent		
	Sludge Disposal Pumps		
	Quantity		
	Type		
	Head		
	Capacity for each pump		
	Type of lubrication		
	Material of construction		
	Casing		
	Impeller		
	Shaft		
	Shaft sleeves		
	Packing		
	Flexible coupling		
	Bolts & nuts		
	Electric supply		
	Enclosure & insulation		
	Speed of pump motor rating		
4	**AIR BLOWER FOR SLUDGE PIT**		
	Quantity		

POND WATER CLARIFICATION SYSTEM			
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
	Type		
	MOC		
	Capacity and head		
5	**CLARIFIED WATER STORAGE TANK & PUMP HOUSE**		
	Quantity		
	Effective capacity		
	MOC		
	Type		
	Level indicator		
6	**FERRIC CHLORIDE DOSING TANK**		
	Quantity		
	MOC of tank		
	Solution strength		
	Capacity of each tank		
	Type of agitator		
	MOC of agitator		
	Dissolving basket		
7	**FERRIC CHLORIDE DOSING PUMPS**		
	Quantity		
	Type		
	MOC		
	Capacity of each pump		
8	**POLY ELECTROLYTE DOSING TANK**		
	Quantity		
	MOC of tank		
	Solution strength		
	Capacity of each tank		
	Type of agitator		
	MOC of agitator		
	Dissolving basket		
9	**POLY ELECTROLYTE DOSING PUMPS**		
	Quantity		

POND WATER CLARIFICATION SYSTEM			
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
	Type		
	MOC		
	Capacity of each pump		
10	**DUAL MEDIA FILTERS**		
	Quantity		
	Type		
	Design surface flow rate		
	MOC		
	Capacity of each filter		
	DMF outlet quality		
11	**DMF BACK WASH PUMPS**		
	Quantity		
	Type		
	Head		
	Capacity for each pump		
	Type of lubrication		
	Material of construction		
	Casing		
	Impeller		
	Shaft		
	Shaft sleeves		
	Packing		
	Flexible coupling		
	Bolts & nuts		
	Enclosure & insulation		
	Speed of pump motor rating		
12	**FILTER AIR BLOWER**		
	Quantity		
	Type		
	MOC		
	Capacity and head		
13	**FILTERED WATER STORAGE TANK & PUMP HOUSE**		
	Quantity		

POND WATER CLARIFICATION SYSTEM			
S. NO	**DESCRIPTION**	**UNIT**	**QTY/MAKE/SPECIFICATION**
	Effective capacity		
	MOC		
	Type		
	Level indicator		
14	**Filtered Water Transfer Pumps**		
	Numbers	Nos	
	Capacity	m3/hr	
	Type		
	Material of Construction		
	Casing		
	Impeller		
	Shaft		
	Wear Rings		
	Shaft Sleeves		

Note:

1. Bidder shall provide relevant MSDS for all the chemicals involved in the Desalination Plant.
2. Bidder shall provide all the product catalogues, if required at a later stage for review.

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

ELECTRICAL

(A) TECHNICAL DATA SHEET FOR LV SWITCHGEAR

(Data to be furnished for each Switchboard)

Sl. No.	Description	Unit	PCC	MCC	DB
1	**SWITCHGEAR ASSEMBLY**				
a	Make				
b	Reference standard(s)				
c	Rated voltage & frequency	V & Hz			
d	Short circuit rating				
e	Short circuit withstand rating for 1 second	kA(rms)			
f	Dynamic short circuit withstand rating	kA(peak)			
g	One minute power frequency withstand voltage	kV(rms)			
h	Degree of Protection				
i	Type of steel				
j	Sheet steel thickness for load bearing member	mm			
k	Sheet steel thickness for enclosure & door	mm			
l	Thickness for gland plate	mm			
m	Construction of PCC-Form 4b, Drawout	Yes / No			
n	Construction of MCC-Form 4b, Drawout	Yes / No			
o	Construction of DB-Form 4b, Fixed	Yes / No			
p	Overall dimension of each switchboard (Separate list to be furnished)	mm x mm x mm			
2	**BUS BAR**				
a	Material & grade of main horizontal bus bar				
b	Material & grade of Earth bus bar				
c	Maximum temperature rise over 50°C	°C			

Sl. No.	Description	Unit	PCC	MCC	DB
d	Short circuit withstand rating for 1 second	kA(rms)			
e	Dynamic short circuit withstand rating	kA(peak)			
f	Bus bar provided with				
g	Insulating sleeve	Yes / No			
h	Phase barriers	Yes / No			
i	Cast resin shrouds for joint	Yes / No			
j	Bus connections silver plated / made with anti-oxide grease				
3	**CIRCUIT BREAKER**				
a	Make				
b	Rated voltage & frequency	V & Hz			
c	In-panel rating of following IEC rated breakers at 50°C design ambient temperature				
d	1250A breaker	A			
e	630A breaker	A			
f	400A breaker	A			
g	250A breaker	A			
h	200A breaker	A			
i	160A breaker	A			
j	100A breaker	A			
k	63A breaker	A			
l	40A breaker	A			
	32A breaker	A			
m	Short circuit withstand rating for 1 second	kA(rms)			
n	Short circuit breaking current	kA(rms)			
o	Short circuit making current	kA(peak)			
p	Maximum temperature rise over 50°C ambient	°C			
q	Rated operating duty				

Sl. No.	Description	Unit	PCC	MCC	DB
r	Total tripping time (max.)	ms			
s	Total closing time (max.)	ms			
t	No. of breaker operations permissible without requiring inspection, replacement of contacts and other main parts				
u	At 100% rated current				
v	At 100% rated interrupting current				
w	Material of contacts				
x	Main				
y	Arcing				
z	Thickness of silver plating	mm			
aa	Type of operating mechanism				
bb	VA burden & rated voltage for				
cc	Spring charging motor	VA & V			
dd	Closing coil	VA & V			
ee	Trip coil	VA & V			
ff	Isolating Switch				
gg	Make				
hh	Type				
ii	Rated voltage	V			
jj	Utilization category				
4	**MCCB**				
a	Make				
b	Type				
c	Rated voltage	V			
d	Current rating				
e	Short circuit current rating				
f	Power Contactors				
g	Make				
h	Rated voltage	V			

Sl. No.	Description	Unit	PCC	MCC	DB
i	Coil voltages	V			
j	Utilization category				
k	Reversible motor				
l	Non-reversible motor				
m	DC application				
5	**Multi-function Meter**				
a	Make				
b	Type				
c	Accuracy class				
d	Measuring functions				
e	Energy Meter				
f	Make				
g	Type				
h	Accuracy class				
i	Measuring functions				
j	Relays				
k	Type & make of motor protection relay				
l	Type & make of feeder protection relay				
m	Type & make of voltage relay				
n	Type & make of check synchronizing relay				
o	Local Push Button Stations				
p	Enclosure material & thickness				
q	Degree of protection of enclosure				
r	Local Push Button Stations (Flame-proof Type)				
s	Enclosure material & thickness				
t	Degree of protection of enclosure				
u	Local Motor Starters				
v	Enclosure material & thickness				
w	Degree of protection of enclosure				

Sl. No.	Description	Unit	PCC	MCC	DB
6	**MPCB**				
a	Make				
b	Type				
c	Rated voltage	V			
d	Current rating				
e	Short circuit current rating				
f	MCB				
g	Make				
h	Type				
i	Rated voltage	V			
j	Current rating				
k	Short circuit current rating				

(B) TECHNICAL DATA SHEET FOR BATTERY

S. No.	Description	Unit	Data
a	Manufacturer of battery		
b	Quantity	Nos.	
c	Applicable standard		
d	DC System Voltage	V	
e	Container material		
f	Type of the cell		
g	Cell designation as per IS		
h	Weight of complete cell Without electrolyte With electrolyte	Kg	
i	Plates No. of positive plates per cell Types of positive plates Types of negative plates		
j	Cell dimensions	mm x mm	
k	Rated battery voltage	V	
l	No. of cells per battery		
m	Rated cell voltage	V	
n	Ampere Hour rating	AH	
o	Battery capacity referred to a cell end voltage of 1.1	AH	
p	Discharge duty cycle considered for Battery sizing	hour	
q	5 hour rating at 27°C to 1.1 V per cell	A	
r	WH efficiency	%	
s	AH efficiency at 5 hour discharge rate	%	
t	Maximum short circuit current for a dead short across terminals when	KA	

S. No.	Description	Unit	Data
	Battery is under float charging Battery is under boost charging		
u	Internal resistance of each cell of battery	Ohm	
v	Mounting arrangement		
w	Racks Material No. of racks Overall dimension of rack		

(C) TECHNICAL DATA SHEET FOR BATTERY CHARGER

S. No.	Description	Unit	Data
a	Manufacturer's name and address		
b	No. of Chargers	Nos.	
c	Type		
d	Battery charger rating (Current & Voltage) Float Boost	A / V	
e	Reference Standard	IEC	
f	Ambient temperature	ºC	
g	DC System Voltage	V	
h	Degree of Protection of Panel		
i	AC Input rating		
j	Voltage	V	
k	Frequency	HZ	
l	AC input current –float mode	A	
m	AC input current –boost mode	A	

S. No.	Description	Unit	Data
n	DC output rating		
o	Voltage - float mode	V	
p	Voltage - Boost mode	V	
q	c)current –float mode	A	
r	d)current –boost mode	A	
s	Percentage DC output voltage variation of the float charger for the corresponding input variation.		
t	Percentage DC output voltage variation of the Boost charger for the corresponding input variation.		
u	Ripple content in the DC output peak to peak Float Charger Boost Charger	%	
v	Battery charging current Float mode Boost Mode	A	
w	Maximum Boost Charging Current of Battery	A	
x	Maximum Boost Charging Voltage of Battery	V	
y	Maximum time for Boost Charging of Battery	Hours	
z	Type of load limiting feature		
2	Rectifier Transformer		
a	Make		
b	Rating		
c	Blocking diode		
d	Make		

S. No.	Description	Unit	Data
e	Current rating	A	
f	SCR		
g	a) Make		
h	b) Current rating	A	
i	AC MCCB		
j	Make		
k	Current Rating	A	
l	Breaking capacity		
m	DC MCCB		
n	Make		
o	Current Rating	A	
p	Breaking capacity		
q	Type of cooling		
r	Heat dissipation	W	
s	Efficiency of complete charger	%	
t	Type of sheet steel & Thickness of sheet metal	mm	
u	Dimensions in mm (LxDxH)	mxmxm	
v	Weight of complete panel	kg	
w	Paint shade inside Outside		
3	DISCHARGE RESISTOR		
a	Make & Type		
b	Quantity		
c	Rating	A	
d	Resistor Material		
e	Temperature rise	°C	
f	Degree of Protection	mxmxm	
g	Thickness of sheet metal	mm	

S. No.	Description	Unit	Data
h	Dimensions in mm (LxDxH)		
i	Weight of complete panel	kg	

(D) TECHNICAL DATA SHEET FOR UPS

S. No	Description	Unit	Data
1.	**General**		
a	UPS rating	kVA/kW	
b	Make		
c	Make & place of manufacture		
d	No. of UPS		
e	Type		
f	Reference Standard		
g	In put AC Voltage with variation	V	
h	Input Frequency , Hz with variation	Hz	
i	Output Voltage with variation	V	
j	Out put Frequency, Hz with variation	Hz	
k	Design Ambient temperature		
l	Efficiency of complete UPS (AC to AC)	%	
m	DC System voltage	V	
n	Total Harmonic distortion		
o	Voltage regulation	%	
p	Frequency regulation	%	
q	Transient voltage regulation	%	
r	Over load response of UPS		
s	Dynamic response		
t	Noise level	dB	
u	Cooling		
v	Communication interface		
w	Heat dissipation	kW	
x	Thickness of sheet metal		
y	Dimensions in mm (LxDxH)		
z	Weight of complete panel(kg)		
aa	Paint shade – inside – out side		

S. No	Description	Unit	Data
bb	List of protections/ indications/ metering/annunciations provided in UPS		
2.	**UPS Enclosure**		
a)	Material		
b)	Thickness of sheet		
c)	Degree of protection		
3.	**Charger/Rectifier**		
a)	Make		
b)	Type		
c)	Current rating		
d)	Voltage rating		
4.	**Static inverter**		
a)	Make		
b)	Type		
c)	Current rating		
d)	Voltage rating		
e)	AC output voltage variation		
f)	Guaranteed efficiency		
g)	Total harmonic content at rated load		
5.	**Static transfer switch**		
a)	Make		
b)	Type		
c)	Current Rating	A	
d)	Voltage rating	V	
e)	Transfer time	m.sec	
6.	**Manual by-pass switch**		
a)	Make		
b)	Type		
c)	Current Rating	A	
d)	Voltage rating	V	

S. No	Description	Unit	Data
7.	**Voltage stabiliser**		
a)	Make		
b)	Type		
c)	Capacity	kVA	
e)	Input voltage & no. of phase		
h)	Type of cooling		
i)	Class of insulation		
n)	Output volt with setting range		
o)	Voltage regulation for input variation of +/- 10% and 0 to 100% load variation and PF 0.6 to 1.0		
p)	Servomotor drive details		
q)	Output Current at Rated voltage	A	
s)	Efficiency at Rated load 75% load 50% load	%	
8.	**Input Transformer**		
a)	Make		
b)	KVA rating	kVA	
c)	Voltage ratio, frequency & no. of phase		
d)	Vector group		
e)	Insulation class		
f)	Rated current		
9.	**Output Transformer**		
a)	Make		
b)	KVA rating	kVA	
c)	Voltage ratio, frequency & no. of phase		
d)	Vector group		
e)	Insulation class		

S. No	Description	Unit	Data
f)	Rated current		
9.	MCCB		
a)	Make		
b)	Rating	A	
c)	Type		
10.	**HRC and Semiconductor Fuses**		
a)	Make		
b)	Type		
c)	Rating	A	
11.	**Cables**		
a)	Make		
b)	Type		
c)	Conductor material		
d)	Insulation material		
f)	Cable size between UPS-A & UPS-B	Sq.mm	
g)	Cable size between UPS & SCVS	Sq.mm	

(E) TECHNICAL DATA SHEET FOR CABLE TRAYS

S. No	Description	Offered Data			
		600 mm	450 mm	300 mm	150 mm
1	**General**				
a	Name of the Supplier				
b	Place of manufacture				
c	Material				
d	Thickness of Galvanising				
e	Ladder type Tray				
f	Standard length				
g	Sheet steel thickness				
h	Tray Height				
i	Weight per meter				

S. No	Description	Offered Data			
		600 mm	450 mm	300 mm	150 mm
j	Rung spacing				
k	Perforated type Tray				
l	Standard length				
m	Sheet steel thickness				
n	Tray Height				
i	Weight per meter				
o	Tray Cover				
p	Standard length				
q	Sheet steel thickness				
r	Weight per meter				
s	Coupler plate				
t	Size				
u	Sheet steel thickness				
v	Bends				
w	Sheet steel thickness				
x	Height				
y	Bending radius				
z	Weight				
aa	Tees				
bb	Sheet steel thickness				
cc	Height				
dd	Bending radius				
ee	Weight				
ff	Cross				
gg	Sheet steel thickness				
hh	Height				
ii	Bending radius				
jj	Weight				
kk	Reducers				

S. No	Description	Offered Data			
		600 mm	450 mm	300 mm	150 mm
ll	Sheet steel thickness				
mm	Height				
nn	Bending radius				
oo	Weight				
pp	Elbows				
qq	Sheet steel thickness				
rr	Height				
ss	Bending radius				
tt	Weight				
uu	Hardwares				
vv	Material				
ww	Thickness of Galvanizing				
2	**Cable tray support system**				
a	Name of the Supplier				
b	Type				
c	Material				
d	Thickness of Galvanizing				

(F) TECHNICAL DATA SHEET FOR CABLING ACCESSORIES

Sl.No.	Description	Offered Data
1	**TERMINATION KITS**	
a	Make:	
b	Type:	
c	Voltage Grade & Size:	
d	Kit no. as per catalogue	
2	**STRAIGHT THROUGH JOINTS**	
a	Make:	
b	Type:	
c	Voltage Grade & Size:	

Sl.No.	Description	Offered Data
d	Kit no. as per catalogue	
3	**CABLE GLANDS**	
a	Make of gland:	
b	Standards Applicable	
c	Type of compression	
d	Material:	
e	Type of surface finish	
4	**CABLE LUGS**	
a	Make of lugs:	
b	Standards Applicable	
c	Type	
d	Material:	
e	Whether tinning provided for copper lugs	
5	**EARTHING MATERIAL**	
a	Make	
b	Standards Applicable	
c	Weight of zinc coating	
d	For flats 5mm thick and over	
e	For flats under 5mm thickness	
f	For wires	
6	**LIGHTNING PROTECTION SYSTEM**	
a	Make	
b	Standards Applicable	
c	Weight of zinc coating	
d	For flats 5mm thick and over	
e	For flats under 5mm thickness	
f	For rods	
7	**TREFOIL CLAMPS**	
a	Material	

Sl.No.	Description	Offered Data
b	Type	
c	Size	
d	Short circuit withstand rating	
8	**OMEGA CLAMPS**	
a	Make	
b	Material and type	
c	Surface Treatment of steel clamps	
d	Minimum thickness of Galvanization	
e	Nylon self locking tie strips	
f	Width (mm)	
g	Tensile Strength (kg)	
9	**STRIP CLAMPS**	
a	Make	
b	Material and type	
c	Surface Treatment of steel clamps	
d	Minimum thickness of Galvanization	
10	**FIRE STOP SEAL SYSTEM**	
a	Make & place of manufacture	
b	Type	
c	Fire rating	
d	Applicable standards for testing	
e	Type of system	
f	Fire rating	
g	Major Components of sealing system	

(G) TECHNICAL DATA SHEET FOR LT MOTORS

(To be furnished for each rating of Motor)

S. No.	Description	Specified Data	Details by Bidder
a	Make and place of manufacture		
b	Application		

S. No.	Description	Specified Data	Details by Bidder
c	Quantity		
d	Type of motor	Squirrel cage	
e	Duty	S1	
f	Applicable standard	IEC	
g	Frame size		
h	Required BKW rating of the driven equipment	....kW	
i	Design margin considered	Minimum 10%	
j	Rated continuous output of motor at 50°C ambient	.....kW	
k	Rated voltage and frequency	400V, 50Hz	
l	Full load current	..... Amps	
m	Efficiency at 100% load	%	
n	Energy efficient rating		
o	Type of starting	DOL	
p	No. of hot / cold starts	2/3	
q	Degree of protection of enclosure	IP55	
r	Method of cooling	TEFC	
s	Insulation class	F	
t	Temperature rise over 50°C ambient. (by resistance)	70°C	
u	Electric Actuator		
v	Make		
w	Type (with integral starter)		
x	Model no.		
y	Rating		

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 3

DEVIATION SCHEDULE TO COMMERCIAL SPECIFICATION

All deviations from the Commercial Specifications shall be filled in by the Bidder clause by clause in this schedule.

SL NO	PART/ SECTION	CLAUSE NO.	DESCRIPTION	DEVIATION	REASON FOR DEVIATION

The Bidder hereby certifies that the above-mentioned are the only deviations from the Owner's Commercial Specifications for this enquiry. The Bidder further confirms that in the event any other data and information presented in the Bidder*s proposal and accompanying documents including drawings, catalogues, etc., are at variance with the specific requirements laid out in the Owner*s Commercial Specifications, then the latter shall govern and shall be binding on the Bidder for the quoted price.

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 4

DEVIATION SCHEDULE TO TECHNICAL SPECIFICATION

All deviations from the Technical Specifications shall be filled in by the Bidder clause by clause in this schedule.

SL NO	PART/ SECTION	CLAUSE NO.	DESCRIPTION	DEVIATION	REASON FOR DEVIATION

The Bidder hereby certifies that the above-mentioned are the only deviations from the Owner*s Technical Specifications for this enquiry. The Bidder further confirms that in the event any other data and information presented in the Bidder*s proposal and accompanying documents including drawings, catalogues, etc., are at variance with the specific requirements laid out in the Owner's Technical Specifications, then the latter shall govern and shall be binding on the Bidder for the quoted price.

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 5

SCHEDULE OF SUB-VENDORS / SUB-CONTRACTORS LIST

Sl. No.	Equipment/Item	Sub Vendor/Subcontractor	Place	Experience Details

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 6

QUALITY ASSURANCE PLAN

SL. NO.	COMPONENT	CHARACTERISTIC CHECKED	CLASSIFI-CTION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORM	FORMAT OF RECORD	INSPECTION BY			REMARKS
									P	W	V	
1	2	3	4	5	6	7	8	9	10			11

LEGENDS: P- PERFORMANCE, W-WITNESS, V-VERIFY, 1-CONSULTANT, 2-VENDOR, 3-OWNER

SCHEDULE – 7

DETAILS OF SIMILAR WORKS DONE DURING PAST FIVE YEARS

Sl. No.	Full postal address of client & name of officer-in-charge with Telex/Tel. No.	Description of the work (shall indicate parameters)	Value of contract	Completion time as stated	Date of commencement of work	Actual completion time (Month)	Month & year of completion
1	2	3	4	5	6	7	8

Certified that documentary proof for the above information shall be enclosed

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 8

CONCURRENT COMMITMENTS OF THE BIDDER

Sl. No.	Full postal address of client & name of officer-in-charge	Description of the work	Value of contract	Date of commencement of work	Schedule completion period	% of completion as on date	Expected date of completion
1	2	3	4	5	6	7	8

Certified that documentary proof for above information is enclosed

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 9

UTILITY CONSUMPTION LIST

ITEM NO.		NAME OF EQPT.

Sl. No.	System / Equipment	Quantity	Quantity per Operation Mode		Electricity (KW)		INST. AIR (NM^3/HR) kg/cm^2 (g)		Plant Air (NM3/HR) kg/cm^2 (g)		Cooling Water (M3/HR) kg/cm^2 (g)		Demi Water (M3/HR) kg/cm^2 (g)		Filtered Water (M3/HR) kg/cm^2 (g)		Aux. Steam (KG / HR) kg/cm^2 (g)	
			C	I	C	I	C	I(*T)	I	I(*T)	C	I	C	I	C	I	C	I

C – Continuous ; I – Intermittent ; T – Operating Hours per 24 Hours

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 10

LUBRICANTS LIST

ITEM NO.							EQUIPMENT				
Sl. No.	GRADE	MAKER'S BRAND				INTIAL CHARGE (L/SET)	REPLACEMENT CHARGE		MAKE-UP		LOCATION TO BE USED
		CALTEX	MOBILE	ESSO	SHELL		QUANTITY (L/SET)	INTERVAL	QUANTITY	INTERVAL	

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 11

OVERALL TIME SCHEDULE

(Bidder to fill-in and submit with his Bid)

The Overall Project Schedule shall be as specified in Vol-I (including Supply, fabrication of larger tanks, Erection, Trail run and commissioning) from the date of order finalisation.

Schedule of Supply for Major items by bidder. Based on the below schedule, bidder shall provide the best possible earlier supply of materials.

S. No	Description	Remarks (from the date of LOA/Purchase order)
1	Civil design and drawings	
	Delivery at FOB (Bhuj or Mundra)	
2a	ASCF, UF, RO system skid 1 for 0.5 MLD	
2b	ASCF, UF, RO system skid 2 for 0.5 MLD	
3	Membranes (RO/ UF)	
5	Material for fabrication of larger tanks to site	
7	Supply of Piping material	
8	Electrical and Control System	
9	Shipping of materials from Mundra / Bhuj port to site	
10	Erection works at site	
11	Readiness of RO water availability with Skid-1 (0.5 MLD WTP Package	
12	Total systems (2 X 0.5 MLD Desal plant, raw water piping, RO water distribution piping and reject water piping and evaporation pond development) completeness & handover	

Bidder to Provide:

Sl. No.	Work Description	Weeks from Date of LOA	
		Start	Finish
1.0	**Design and Engineering**		
a)	Civil		
b)	Structural		
c)	Mechanical		
d)	Electrical		
f)	C & I		
2.0	**Manufacture**		
a)	Mechanical & Piping works		
b)	Electrical works		
c)	C & I		
3.0	**Delivery at FOB (FOR Site)**		
a)	Foundation bolts and inserts		
b)	Mechanical equipment		
c)	Electrical equipment		
d)	Control and Instrumentation equipment		
e)	Piping		

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 12

SCHEDULE OF WEIGHTS AND DIMENSIONS

The bidder shall state hereunder the weights and dimensions of various packages for shipment comprising the complete scope.

Description	Dimensions (In Metres) L x B x H	Weight (In Tonnes)
1	2	3

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 13

SCHEDULE OF PLACES OF TEST AND INSPECTION

The Bidder shall indicate the item of Equipment to be supplied, name of the Manufacturer or Sub-Contractor and place of test and inspection as shown below:

Item of Equipment	Manufacturer/Sub-Contractor	Place of test and Inspection
1	2	3

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 14

SCHEDULE OF RECOMMENDED SPARES

The Bidder shall indicate hereunder the quantity of Recommended Spares for equipment included in his offer.

Sl. No.	Manufacturer & Part No.	Description	Qty.	If set, Nos. Per set	Unit Price ($.)	Total Price ($.)	Remarks
1	2	3	4	5	6	7	8

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 15

SCHEDULE OF SPECIAL TOOLS AND TACKLES

The bidder shall give below the list of special maintenance tools & tackles offered by him.

Sl. No.	Particulars	Unit / Qty

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____

SCHEDULE – 16

CHECKLIST

Sl. No.	Item / Description	Reference	Declaration, strike out whichever is not applicable	If no, reasons for not enclosing
1	FUNCTIONAL GUARANTEES	SCHEDULE – 1	Yes/No	
2	TECHNICAL DATASHEET	SCHEDULE – 2	Yes/No	
3	DEVIATION SCHEDULE TO COMMERCIAL SPECIFICATION	SCHEDULE – 3	Yes/No	
4	DEVIATION SCHEDULE TO TECHNICAL SPECIFICATION	SCHEDULE – 4	Yes/No	
5	SCHEDULE OF SUB-VENDORS / SUB-CONTRACTORS LIST	SCHEDULE – 5	Yes/No	
6	QUALITY ASSURANCE PLAN	SCHEDULE – 6	Yes/No	
7	DETAILS OF SIMILAR WORKS DONE DURING PAST FIVE YEARS	SCHEDULE – 7	Yes/No	
8	CONCURRENT COMMITMENTS OF THE BIDDER	SCHEDULE – 8	Yes/No	
9	UTILITY CONSUMPTION LIST	SCHEDULE – 9	Yes/No	
10	LUBRICANTS LIST	SCHEDULE – 10	Yes/No	
11	OVERALL TIME SCHEDULE	SCHEDULE – 11	Yes/No	
12	SCHEDULE OF WEIGHTS AND DIMENSIONS	SCHEDULE – 12	Yes/No	
13	SCHEDULE OF PLACES OF TEST AND INSPECTION	SCHEDULE – 13	Yes/No	
14	SCHEDULE OF RECOMMENDED SPARES	SCHEDULE – 14	Yes/No	
15	SCHEDULE OF MAINTENANCE TOOLS AND TACKLES	SCHEDULE – 15	Yes/No	

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

COMPANY SEAL

DATE _____