CUSTOMER NAME : M/S TANGEDCO, CHENNAI Customer Consultant: **M/S DESEIN INDIA PVT LTD**

2 X 660MW ENNORE SEZ SUPERCRITICAL TPP
AT ASH DYKE OF NCTPS, CHENNAI
RO-DM PLANT

CONSULTANCY FOR DESIGN & DRAFTING OF CIVIL, ARCHITECTURAL AND STRUCTURAL WORKS

Sl. No.	Description of work	Qty	Unit	~ Size in m/ Capacity L x B x ht	Rate	Amount
	Filter Shed Structural steel framed structure with metal sheet roofing Structural steel framed structure with metal sheet roofing, RCC flooring, plinth protection, necessary partitions etc. Side open type structure. Side cladding starts at ~3.0m height from FFL continuing up to roof level. The shed has following areas					
1.1	Pump area to house 3 No.s DMF backwash pumps, 2 No.s DMF Air Blower, 2 No.s UF Air blowers along with associative trenches and supports. Provision of 2.0 MT monorail crane to be considered for pumps handling.	1	No.	24 x 8 x 5.5		
1.2	Filters frontal piping area to house frontal piping valve assembly of vessel, pipe rack assembly etc along with associative trenches & supports etc.	1	No.	7 x 34 x 5.5		
	UF-RO Building Structural steel framed structure with metal sheet roofing, RCC flooring, plinth protection, necessary partitions etc. Side closed type structure with brick cladding up to 3.0m height above FFL. Metal sheet cladding starts at ~3.0m height from FFL continuing up to roof level. Shed Elevations/Clear height to be noted from layout drawing. The building has following areas					
2.1	UF skid area to house 7 No.s of UF skids, 3 No.s RO-1 Cartridge filters along with trenches, supports, necessary partitions, etc	1	No.	16.5 x 37 x 6.0		
2.2	HP pump area to house 3 No.s SWRO HP pumps, 3 NO.s RO-2 Cartridge filters, 3 No.s RO-2 HP Pumps, along with associative trenches, supports, necessary partitions, etc. Provision of 1 no. EOT Crane of 7.5 MT capacity shall be considered for pump handling	1	No.	12 x 37 x 6.0		
2.3	RO skids area to house 3 No.s SWRO skids, 3 No.s ERD, 2 NO.s BWRO skids along with associative trenches, supports etc.	1	No.	16.5 x 37 x 6.0		
3.0	**UF-RO Pump house** RCC Framed structure building with RCC roof, RCC flooring, brick cladding. Side closed structure with plinth protection, to house 2 No.s UF CIP Pumps, 2 No.s UF Backwash pumps, 3 No.s Cartridge filter feed pumps, 3 No.s SWRO Flushing pumps, 3 No.s RO-1 permeate supply pumps, 2 No.s RO-1 CIP Pumps, 2 No.s RO-2 CIP Pumps, 1 No. RO-2 CIP Cartridge filters along with associative trenches, supports, necessary partitions etc. Provision of 2.0 MT monorail crane to be considered for pumps handling.	1	No.	45 x 7 x 5.0		

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4.0	**DM building** Structural steel framed structure with metal sheet roofing, RCC flooring, plinth protection, necessary partitions etc. Side open type structure. Side cladding starts at ~3.0m height from FFL continuing up to roof level. The building house 2 No.s SAV Vessels, 2 No.s SBA Vessels, 3 No.s MB Vessels and 3 No.s RO-2 permeate supply pumps along with associative trenches, supports, etc.	1	No.	42 x 8 x 7.5		
	RODM Chemical Building RCC Framed structure building with RCC roof, RCC flooring, brick cladding. Side closed structure with plinth protection, RCC staircase for roof access, necessary partitions, etc. The building has following areas					
5.1	Chemical dosing area to house dosing skids, chemical cleaning systems, 1 No.s AMT for SAC, 1 No.s AMT for SBA, 2 No.s AMT for MB, 10 No.s dosing skids, etc along with associative trenches, supports, necessary partitions, etc	1	No.	6 x 32 x 5.0		
5.2	Spares room to house equipment spares as storage along with necessary partitions, cub boards, standard accessories, etc	1	No.	6 x 4 x 5.0		
5.3	Chemical Store room to house chemicals as storage along with necessary partitions, cub boards, standard accessories, etc	1	No.	6 x 6 x 5.0		
	Remineralization Building Structural steel framed structure with metal sheet roofing, RCC flooring, plinth protection, necessary partitions etc. Side open type structure. Side cladding starts at ~3.0m height from FFL continuing up to roof level. The building has following areas.					
6.1	a) Pump area to house 3 No.s Remin. Filter feed pumps, 2 No.s Remin. Filter backwash pumps along with associative trenches and supports. Provision of 2.0 MT monorail crane to be considered for pumps handling.	1	No.	5 x 5 x 4.0		
6.2	b) Store room to house lime as storage along with necessary partitions, cub boards, standard accessories, etc	1	No.	10 x 5 x 4.0		
7.0	**Degasser tower Platform** RCC Framed structure with RCC roof, RCC flooring,. Side open structure with, staircase for roof access, etc.	1	No.	10m x 5m area platform elevated at 5.0 m above FGL.		
	Control Building A two storey building(3.5m clear ht ground floor + 4.0m cleat ht first floor) with RCC Framed structure, RCC roof, RCC flooring, RCC staircase, brick cladding. Side closed structure with plinth protection, necessary partitions, etc. Refer building plan & its elevation(i.e.View-X) shown in the layout drawing. The building has following areas					
8.1	Cable vault room @ Ground Floor to house cable	1	No.	10 x 54 x 3.5		
8.2	Battery room @ Ground Floor to house electrical batteries along with associative trenches & supports, necessary partitions, etc.	1	No.	5 x 4 x 3.5		

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8.3	Toilet (gents + ladies) room @ Ground Floor with necessary partitions, standard accessories etc.	1	No.	5 x 4 x 3.5		
8.4	Office room @ Ground Floor with necessary partitions, standard accessories, necessary false ceiling for air conditioning, etc.	1	No.	5 x 4 x 3.5		
8.5	Laboratory room @ Ground Floor with necessary partitions, standard accessories, necessary false ceiling for air conditioning, cub boards, etc.	1	No.	5 x 4 x 3.5		
8.6	LTMCC room @ First Floor to house MCC panels along with associative cutouts, supports, necessary partitions, etc	1	No.	10 x 39 x 4.0		
8.7	Control room-1 @ First Floor to house control panels along with associative cutouts, supports, necessary partitions, suitable false ceiling for air conditioning etc	1	No.	10 x 9 x 4.0		
8.8	Control room-2 @ First Floor to house control panels along with associative cutouts, supports, necessary partitions, suitable false ceiling for air conditioning etc	1	No.	10 x 6 x 4.0		
9.0	**DMF Backwash tank** Top covered, above ground RCC tank with standard accessories like ladders – inside and outside, safety hand rails with toe-guard all-around, etc. with suitable internal protective coating as per specifications	1	No.	15 x 15 x 3.5 m ht (600 cu.m net storage)		
10.0	**UF Permeate water storage tank** Two compartments, Top covered, above ground RCC tank with standard accessories like ladders – inside and outside, safety hand rails with toe-guard all-around, etc. with suitable internal protective coating as per specifications.	1	No.	10.5 x 15 x 3.5 m ht (400 cu.m net storage) per compartment		
11.0	**SWRO Inter Permeate storage tank** Top covered, above ground RCC tank with standard accessories like ladders – inside and outside, safety hand rails with toe-guard all-around, etc. with suitable internal protective coating as per specifications.	1	No.	15 x 15 x 3.5 m ht (600 cu.m net storage)		
12.0	**RCC Ring wall foundation for RO-II permeate storage tank** 17.0m dia , 5.6 ht vertical MS cylindrical tank with 1200 Cum storage capacity. Total working weight of tank is ~1300 MT.	1	No.	~17.0m dia ring wall with TOC ~750mm above FGL		
	Pedestal foundations for Pipe/Cable rack structures RCC pedestals & foundations for the following					
13.1	Pipe/cable rack for plant piping & cable routing from control building to UF RO system area as shown in the layout drawing.	1	Lot			
13.2	Pipe/cable rack for DMF vessel frontal piping in filter shed as shown in the layout drawing	1	Lot			
14.0	**Pedestal foundations for 11 No.s DMF vessels.** DMF vessel is horizontal tube tank with ~3.2 m dia x 7.0 m Long. Each DMF Vessel is weighing ~95 MT and supported over 2 pedestals.	1	Lot			

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15.0	**Pedestal foundations for 3 No.s lime stone filter vessels.** Filter vessel is vertical cylindrical tank with ~3.0 m dia x 4.0m ht. Each Vessel is weighing ~56 MT and supported over 4 pedestals.	1	Lot			
16.0	**SWRO HP Pump foundation** 3 No.s Machine foundations for SWRO HP Pump. Each working weight is of ~6.0MT & 3000rpm	1	Lot			
17.0	**Building internal foundations & trenches** Individual equipment foundations, trenches and pedestal supports within the buildings/sheds along with accessories for all equipment as per as shown in equipment layout.	1	Lot			
18.0	**External supports, foundations & trenches** Individual equipment foundations, trenches and pedestal supports outer side of the buildings/sheds around the plant along with accessories for all equipment as per as shown in equipment layout	1	Lot			
	Sub Total					
	Add Service Tax @ _____ %					
	Total					
Note: The following requirements may please be considered.						
01	The details furnished are preliminary and may undergo minor changes based on the comments from Customer.					
02	**The Fabrication drawings along with BOM of all the steel structures(as per the above scope) are in the scope of consultant(bidder).**					
03	Dimension given are approx. inside dimension. Suitable wall thickness to be assumed.					
04	All general requirements such as doors, windows, ventilators etc are to be considered.					
05	Any additional information please refer Civil requirements specified in the tender					
06	**Pile foundations may be required for sheds/other major structures as per customer specifications**					

Scope of Work:

The following are in the bidders scope:	
01	Three dimensional STAAD Modelling for above structures
02	Seismic Analysis of structures with Response spectrum as per relevent and latest Indian Standared(IS) Codes(using 'site specific response spectra', if provided)
	The coefficient method can be used for structures only if it is allowed by customer/consultant
03	The building/structure shall be designed for wind loads as per relevent Indian Standared codes
04	Design of sub structure shall be done as per relevantand latest Indian Standared Codes and geological data
05	Design of super structure shall be done as per relevant and latest Indian Standared Codes. (IS 800 WSM shall be used for design of steel structures)
06	Design of RCC Staircases shall be done as per relevant and latest Indian Standared Codes.
07	Design of monorails/monorail supports, crane supporting beams, EOT crane girders
08	Design of proper supports for machines/equipments resting on the floors.
09	The machine foundations shall be designed as per relevant and latest Indian Standared Codes
10	The design of RCC tanks as per relevant and latest Indian Standared Codes. Internationaly recognized standards shall be used if Indian Standards are not available.
11	Design calculation of all the above shall be prepared and submitted for approval
12	Preparing Detailed design drawings of the Buildings, Tanks machine foundations etc.
	The quantities of RCC, Reinforcement Steel, Struitural steel covered in a particular drawing shall be mentioned in same drawing.
13	The RCC building may have to analyzed as per IS-13920 and members shall have ductile detailing as per latest IS code of IS-13920
14	Preparation and submission of Architectural Plans. This shall include all architectural features including toilet details, flooring
	Preparation and subm,ission of two-dimensional Architectural Elevations and sections as per General Practice;
	Architectural Elevations for all sides if the elevations are not same in parallal faces;
	The number and location of the sections shall be such that maximum details are covered.
15	The plumbing detail drawings for all buildings, toilets and premises shall be prepared and submitted.

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16	The drainage and sewage system details near to the buildings shall be prepared and submitted.					
17	Design of cable trenches and preparation of layout and detailed drawings for trenches as per the inputs provided.					
18	The rooms such as Chemical Lab shall have adequate facilities for supporting its function such cup boards, platform slabs, tiling					
	the drawings for the same shall be prepared and submitted.					
19	a. Detailed engineering & submission of construction drawing for approval from customer consultant					
	b. Incorporating the comments / corrections as per the directions of the customer/customer consultant until getting final approval,					
	c. Visiting the project site in case of critical situation for assessing the site requirement / execution difficulty (Maximum 2 site visit of a designer)					
	d. Visiting customer(Chennai)/customer consultant's office(New Delhi) for personal clarification (Maximum 6 visits cumulative).					
20	The Fabrication drawings along with BOM of all the steel structures(as per the above scope) are in the scope of consultant(bidder).					
21	Architectural design and detailing aspects of all the buildings/sheds shall be rendered through professional services of an Architect					

Tentative Schdule for completion of Activities

Sl NO	Activity	Duration
1	Preparation and Approval of Design and drawings related to ***Buildings and Tanks.***	5 months
2	Preparation and Approval of Design and drawings of ***Internal*** Grade slabs, Eqpt Foundation and trenches +	3 Months
	Incorporating the customer/site comments for Sl No.1	
3	Preparation and Approval of Design and drawings of ***External*** pedestals and trenches +	2 Months
	Incorporating the customer/site comments for Sl No.1 & 2	
4	Incorporating the customer/site comments for all design and drawings + Obtaining Final approval of all drawings and sending final RFC drawings.	3 Months
	Total	**13 Months**