Bharat Heavy Electricals Limited

Ranipet

Name of work: Design, Detailed Engineering and submission of construction drawings for Desalination projects

Sl. No.	Description of work	Qty	Unit	**Rate(Rs)**	**Amount(Rs)**
PROJECT I (PPCL BAMNAULI)					
01	RCC building for UF-RO-DM Building with necessary Equipment foundation and trenches, plinth protection, provision to fix 5.0MT monorail with hoist, staircase, acid resistant tiling for selected area, MCC room, lab room with AR tiling, air-conditioned PLC room with suitable foul ceiling, Office room, chemical storage room with partitions as per specifications, acid/alkali resistant tiles wherever required are to be considered. Over all area of UF-RO-MB building is 62mx36m consisting of : a) UF/RO equipment area 56x27x5m. In this elevated roof is of 27x9x10m for membrane tank area. b) MB System area: 6.5x18x7.5m clear ht. c) MB equipment area: 6.5x18x5m clear ht. Annexure rooms of 56x7.5x4m clear ht, consisting of MCC room, PLC room, lab, chemical store room, etc.	01	No.		
02	RCC building for NaOH/Alkali Building room with necessary Equipment foundation with plinth protection and trenches, plinth protection, toilet with standard fixtures and partitions as per specifications are to be considered. Over all area of NaOH building is 20.35mx7m consisting of a) Preparation room: 16.1x7x7.5 m clear ht. b) Toilet: 4x7x4 m clear ht.	01	No.		
03	RCC Aeration/Bio-reactor tank: Top open, with vent, drain & overflow facilities, with suitable protection inside coating, with aluminium ladders - inside and outside, safety hand rails with toe - guard all-around, level gauges, etc with suitable internal protective coating. (Drg Sl.No. 03) 8 x 5 x 4.5 m ht and 160 cu.m net storage capacity. (Above ground level).	01	No.		
04	RCC Membrane holding tanks: Top open with standard accessories like platform, staircase, handrails etc with Nozzles. Inside protection for the tanks also to be made. (Drg Sl.No.04) 3.05 m x 2.5 m x 3.35 m ht internally protective painting. (above ground).	02	No.		

05	RCC UF Permeate storage tanks: Top covered, with standard accessories like Aluminium ladders – inside and outside, safety hand rails with toe-guard all-around, level gauges, etc with suitable internal protective coating (Drg Sl.No.17) 5 x 8 x 3.5 m ht and 100 Cu.m net storage capacity for each. (above ground)	02	No.		
06	RCC Degasser water tank: Twin compartments, Top covered, with vent, drain & overflow facilities, with suitable protection inside coating, with aluminium ladders- inside and outside, safety hand rails with toe- guard all-around, level gauges, etc with suitable internal protective coating. The top roof to support 2 Nos degasser towers of 5MT each. (Drg Sl.No.35) Each compartment size of 3.85 x 4 x 3 m ht and 30 cu.m net storage capacity. (above ground)	01	No.		
07	RCC Neutralization pit Twin compartment, top open with provision to fix rung ladder, inside protective coating, Entire area of the Pit is to be covered with acid resistant tiles. (Drg Sl.No.71), Each compartment size of 8 x 4.85 x 2.5 m ht and 60 cu.m net storage capacity. (below ground).	01	No.		
08	RCC Waste water sump Top covered with provision to fix rung ladder, inside protective coating, Entire area of the Pit is to be covered with acid resistant tiles. (Drg Sl.No.65), 6 x 5 x 2.5 m ht and 60 cu.m net storage capacity (below ground).	01	No.		
09	**RCC Brine pit:** Top covered with provision to fix rung ladder, inside protective coating, Entire area of the Pit is to be covered with acid resistant tiles. (Drg Sl.No.68), 2.5 x 5 x 2.5 m ht and 30 cu.m net storage capacity (below ground).	01	No.		
10	RCC Foundation for RO permeate storage tank MS-Epoxy painted tank.(Drg Sl.No.45) 7.5m dia, 10m ht. 400 cu.m net storage capacity, Approx wt. is 475MT	02	No.		
11	RCC Storage area to house 4 no.s Bulk acid/alkali storage tanks (2no.s 28 MT and 2 no.s 15 MT - two foundation pedestals for each tank), transfer pump pedestals with acid resistant tiling, associated trenches, etc. .(Drg Sl.No.58) 14.8m x 7.9m (open area).	01	LOT		
12	Foundations for equipments of plant as listed in the drawing.	01	LOT		
13	External cable/pipe trenches and drain channels with RCC cover slab.	01	LOT		
14	Archicectural charges for plant building.				
	Total (A)				

Note: The following requirements may please be considered.
1) Dimension given are very approx. inside dimension. Suitable wall thickness to be assumed. All general requirements such as doors, windows, ventilators etc are to be considered.
2) Any additional information, shall be as per Civil specification mentioned in the tender.
3) Suitable protective coating for the inside surface of all tanks and sumps to handle process water to be considered.
4) All tanks should have Aluminium ladder with necessary safety handles/cages both outside and inside the tank. Tank top should have handrails with toe-guard all around as a standard feature.
5) The sizes mentioned above are approximate and will vary up to 10% to meet the customer requirement & accommodation of the equipments.

Scope of Work:	
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.
05	Design of super structure shall be done as per relevant and latest Indian Standared Codes.
06	Design of RCC Staircases shall be done as per relevant and latest Indian Standared Codes.
07	Design of monorails/monorail supports
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 building components 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 schedule, painting schedule etc.
	Preparation and submission 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.
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,
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)
	c. Visiting the project site in case of critical situation for assessing the site requirement / execution difficulty (Maximum 2 site visit of a designer) Project Location: Bamnauli, Delhi/NCR

	d. Visiting customer consultant's office for personal clarification (Maximum 3 visits). Consultant Location: Noida				
PROJECT II (RPCL YERMARUS)					
01	a) RCC UF-RO-MB Building: UF membrane tank hall: To house 1 Flash mixer, 2 nos flocculation tanks, 2 nos Membrane holding tanks with UF modules, 3 no.s strainers, with associated trenches, supports, etc. Provision to mount 5 MT mono rail hoist. Net storage capacity 20 x 16 x 10 m ht.	01	No.		
	b) UF plant area: To house 8 no.s pumps, 2 no.s tanks, 3 no.s blowers, 3 nos. cartridge filters, 10 no.s dosing skids, etc, 1 chemical store room with necessary partitions, associated trenches and acid/alkali resistant tiles wherever required. 1. UF Dosing area and entrance – 6 x 24 x 5m ht 2. Chemical store room – 6 x 8 x 5m ht. 3. UF plant Eqpt. area – 20 x 16 x 5m ht.	01	LOT.		
	c) RO plant area: To house 6 no.s HP pumps, 10 no.s LP pumps, 3 no.s cartridge filters, 4 no.s RO blocks, 2 no.s micron cartridge filters, 1 no. dosing skid, 1 no. CC tank, 1 lab room (3.5mx4m size) and office room (3.5mx4m size) and 1 AMT room with necessary partitions, associated trenches and acid/alkali resistant tiles wherever required. 1. RO plant Eqpt area – 32 x 24 x 5 m ht with lab and office rooms 2. AMT room – 8 x 4 x 5 m ht	01	LOT.		
	d) MB plant area: To house 3 no.s mixed bed systems. 8x 16 x 7.5 m ht.	01	LOT.		
	e) Air conditioned PLC room with suitable false ceiling, MCC room and toilet with necessary partitions 40 x 8 x 5 m ht.	01	LOT.		
02	RCC Flash Mixer tank: Top open with standard accessories like platform, staircase, handrails etc with Nozzles. (Drg Sl.No.14) 1.5 m X 1.5 m x 2 m ht (approx.), above ground, internally painted.	01	No.		
03	RCC Flocculator tanks: Top open with standard accessories like platform, staircase, handrails etc with Nozzles. (Drg Sl.No.16) 4 m x 4 m x 2.5 m ht (approx), above ground, internally painted.	02	No.		
04	RCC Membrane holding tanks: Top open with standard accessories like platform, staircase, handrails etc with Nozzles. Inside protection for the tanks also to be made. (Drg Sl.No. 18) 2.5 m x 4 m x 4 m ht (approx.) above ground, internally painted (above ground level)	02	No.		

05	RCC UF Permeate storage tank: Top covered, with standard accessories like Aluminium ladders – inside and outside, safety hand rails with toe-guard all-around, level gauges, etc with suitable internal protective coating (Drg Sl.No.32) 18 x 9 x 3.5 m ht (approx.) 500 cu.m net storage capacity (above ground level).	01	No.		
06	RCC Degasser water tank: Top covered, with vent, drain & overflow facilities, with suitable protection inside coating, with aluminium ladders- inside and outside, safety hand rails with toe- guard all around, level gauges, etc with suitable internal protective coating. The top roof to support 2 Nos degasser towers of 5MT each. (Drg Sl.No.48) 7 x 9 x 3.5 m ht (approx.) 200 cu.m net storage capacity (above ground)	01	No.		
07	RCC Potable storage tank: Top covered with standard accessories safety hand rails with toe guard all around, level gauges etc. with suitable internal protective coating Tank to be built on the roof of RODM building. (Drg Sl.No.79) 7.5x7.5x2.3 m ht (approx.) Over head, internally protected. 100 cu.m net storage capacity.	01	No.		
08	RCC RO2 permeate storage tank: Top covered, with vent, drain & overflow facilities, with suitable protection inside coating, with vent, drain & overflow facilities. With aluminium ladders- inside and outside, safety hand rails with toe-guard all around, level gauges, etc.(Drg Sl.No.53) 7 x 9 x 3.5 m ht (approx.) 200 cu.m net storage capacity (above ground)	01	No.		
09	RCC Bulk chemical storage pedestal 4 Nos. accommodating 2 tanks of weight 25MT each (two foundation pedestals for each tank). with acid resistant tiling, transfer pump pedestals etc. .(Drg Sl.No.67 & 69) 9.5m x 8m (open area).	01	No.		
10	RCC Neutralizing pit, (underground, open top): Twin compartment, with provision to fix standard accessories like agitators, vertical pumps, etc. Entire area of the Pit is to be covered with acid resistant tiles (Drg Sl.No.73) Each compartment – 10mx8mx~3.2m depth; 200cum each compartment.	01	No.		
11	Waste water pit (underground, open top): Entire area of the Pit is to be covered with acid resistant tiles. .(Drg Sl.No.70) 10m x 8m x ~3.2m depth; 200cum capacity	01	No.		
12	RCC External cable/pipe trenches and drain channels with RCC cover slab.	01	LOT.		
13	RCC Foundations for equipment of plant(Refer respecitve Tender Drawings)	01	LOT.		

14	Foundation at ground level for DM water storage tanks.(Drg Sl.No.78) Each tank – Dia. 10m, weighing 1000MT / 800cum tank capacity].	03	No.		
15	Archicectural Charges for plant building				
	Total (B)				
	Note: 1) Dimension given are inside dimensions only. Suitable wall thickness shall be assumed. All general requirements such as doors, windows, ventilators etc are to be considered. 2) Any additional information please refer customer civil specification in the tender. 3) Suitable protective coating for brackish water on the inside surface of all tanks and sumps. 4) All tanks should have aluminium ladder with necessary safety handles/cages both outside and inside the tank. Tank top should have handrails with toe guard all around as a standard feature. 5) The sizes mentioned above are approximate and will vary up to 10% to meet the customer requirement & accommodation of the equipments.				
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.				
05	Design of super structure shall be done as per relevant and latest Indian Standared Codes.				
06	Design of RCC Staircases shall be done as per relevant and latest Indian Standared Codes.				
07	Design of monorails/monorail supports				
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 building components 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 schedule, painting schedule etc.				
	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.				
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 stc. and 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)				
	c. Visiting the project site in case of critical situation for assessing the site requirement / execution difficulty (Maximum 2 site visit of a designer) Project Location: Yermarus, Raichur, Karnataka				
	d. Visiting customer consultant's office for personal clarification (Maximum 3 visits).				

	Consultant Location: Bangalore				
PROJECT III (KPCL BELLARY III)					
01	RCC Raw Water Storage tank: Top covered, with standard accessories like Aluminium ladders – inside and outside, safety hand rails with toe-guard all-around, level gauges, etc (Drg Sl.No.51). Foundation for 1 raw water pump on Chlorine contact sump. 20 m x 15 m x 4 m ht(approx.) -1000 Cu.m net storage capacity.	01	No.		
02	RCC Flash Mixer tank: Top open with standard accessories like platform, staircase, handrails etc with Nozzles (Drg Sl.No.52) 1.5 m x 1.5 m x 2 m ht (approx.) , above ground, internally painted	01	No.		
03	RCC Flocculation tanks: Top open with standard accessories like platform, staircase, handrails etc with Nozzles (Drg Sl.No.53) 3 m x 3 m x 2.5 m ht (approx), above ground, internally painted.	02	No.		
04	RCC Membrane holding tanks: Top open with standard accessories like platform, staircase, handrails etc with Nozzles. Inside protection for the tanks also to be made (Drg Sl.No.54) 2.5 m x 2 m x 4 m ht (approx.) above ground, internally painted	02	No.		
05	a) RCC UF Building UF membrane tank hall to house 1 Flash mixer, 2 flocculation tanks, 2 Membrane holding tanks with UFmodules, 2 basket strainers, 3 pumps, 2 blowers, 2 cartridge filters, 1 back pulse tank with associated trenches, supports. Provision to mount 5 MT mono blocks with hoist, etc., (Drg Sl.No.57). 10 x 18 x 10 m ht(appx.)	01	No.		
	b) UF plant area (a part of Sl.No.56) & cleaning system area to house 2 pumps and 1 no. CIP tank 10 x 6 x 5 m ht	01	No.		
	c) UF dosing system room for house no's of dosing system skids Chemical store room with necessary partitions. Raw water pump house with 2 pumps.(a part of Sl.No.56) 6 x 24 x 5 m ht	01	No.		
06	UF Product water tank: RCC, above ground, Top covered, with standard accessories like Aluminium ladders – inside and outside, safety hand rails with toe-guard all-around, level gauges, etc (Drg Sl.No.55) 15 x 9 x 3.2 m ht (approx.)300 cu.m net storage capacity.	01	No.		

07	a) RCC - RODM building: RO stack area with Equipment foundation (HP pumps, membrane stacks, Potable / Utility water pumps 4 Nos, etc and trenches, provision to fix one no. of 5 MT mono rail hoist. (a part of Drg Sl.No.59) 24m x 18 m x 5 m ht (excluding plinth protection).	01	No.		
	b) MB area with 2 blowers, 2 pumps, 1 mixed bed unit. (a part of Drg Sl.No.59) 12 m x 18 m x 7.5m ht (excluding plinth protection)	01	No.		
	c) RCC Air-conditioned PLC room with suitable false ceiling, Switchgear & Office room, with necessary partitions as per Tender requirements (Drg Sl.No.58) 36 m x 6.75 m x 5m ht (excluding plinth protection).	01	No.		
	d) Hall with Equipment foundation CC system, CC store, AMT & CDT and Lab, acid resistant tiling for selected area, etc with necessary partitions as per Tender requirements (Drg. Sl.No. 60) 36mX6.75m x 5m ht. excluding plinth protection.	01	No.		
08	RCC RO product water tank: Top covered with standard accessories safety hand rails with toe guard all around, level gauges etc. Tank to be built on the roof of RODM building (refer note no. 4 of drg and Sl. No. 61) 50 m3 (Over head,Internally protected). Approx. 10x5x1.5m	01	No.		
09	RCC Foundation for Degassed water storage tank: To be located outside RO DM building (Drg Sl.No.11) of weight 30 MT	01	No.		
10	RCC External cable/pipe trenches and drain channels with RCC cover slab.	01	No.		
11	RCC Foundations for equipment of plant.	01	No.		
12	4 Bulk chemical storage pedestals: Accommodating 2 tanks of weight 25MT each (two foundation pedestals for each tank) with acid resistant tiling, transfer pump pedestals etc. etc. (15 m x 10 m area).	01	No.		
	Add Archicectural service for plant building Rs. 1,50,000/- plus ST				
	Total (C)				
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.				
05	Design of super structure shall be done as per relevant and latest Indian Standared Codes.				
06	Design of RCC Staircases shall be done as per relevant and latest Indian Standared Codes.				
07	Design of monorails/monorail supports				
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 building components 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 schedule, painting schedule etc.
	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.
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 stc. and 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)
	Project Location: Bellary, Karnataka
	d. Visiting customer consultant's office for personal clarification (Maximum 3 visits).
	Consultant Location: Bangalore