

RFP No: **CANW-1/IWAI/JMV/15**

Assignment Title: Construction of Multimodal IWT Terminal at Haldia, West Bengal

Amendment – 4

This amendment forms an integral part of the Bid Document issued on 3<sup>rd</sup> March, 2016

Consequent to the queries received from the potential Bidders regarding various issues, the modifications suggested to the original Bid Document for Construction of Multimodal IWT Terminal at Haldia, West Bengal are as under:

S. No.	Volume, Section and clause No. in Bid document	Original Text							Amendment								
1	Vol I, Section II, ITB 4.1	Maximum number of members in the JV shall be: 2 <b>(Two)</b>							Maximum number of members in the JV shall be: 3 <b>(Three)</b>								
2	Vol I, Section II, ITB 6.3	Tender fee is required: <b>Yes</b> <b>A fee of Rs 6,000 (Rs. Six thousand) is to be paid through Demand Draft in favor of IWAI Fund; payable at Noida on or before date of opening of bids, i.e. DATE _____</b>							Tender fee is required: <b>Yes</b> <b>A fee of Rs 6,000 (Rs. Six thousand) is to be paid through Demand Draft in favor of IWAI Fund; payable at Noida on or before date of opening of bids, i.e. (17<sup>th</sup> June, 2016)</b>								
3.	Vol I, Section II, ITB 34.3 a)	Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: 20% by value of contract Works and not whole of Works or any particular length / stretch							Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: 25% by value of contract Works and not whole of Works or any particular length / stretch								
4.	Vol I, Section III, Clause 2.3.2	<b>Factor</b>	2.3 Financial Situation							<b>Factor</b>	2.3 Financial Situation						
		<b>Sub-Factor</b>	Criteria						<b>Documentation Required</b>	<b>Sub-Factor</b>	Criteria						<b>Documentation Required</b>
			<b>Requirement</b>	<b>Bidder</b>				<b>Requirement</b>			<b>Bidder</b>						
				<b>Single Entity</b>	<b>All partners combined</b>	<b>Each partner</b>	<b>At least one partner (This shall be the Lead Partner )</b>				<b>Single Entity</b>	<b>All partners combined</b>	<b>Each partner</b>	<b>At least one partner (This shall be the Lead Partner )</b>			
<b>2.3.2. Average Annual Turnover</b>	Minimum average annual turnover of INR 9000 Million / USD 150 Million or an equivalent amount in a freely convertible currency, calculated as total certified payments received for contracts in progress or completed, within the last three (3) years from 1 <sup>st</sup> April 2012 to 31 <sup>st</sup> March 2015	Must meet requirement	Must meet requirement	Must meet sixty percent (60 %) of the requirement	Must meet Seventy percent (70%) of the requirement	Form FIN -2		<b>2.3.2. Average Annual Turnover</b>	Minimum average annual turnover of INR 1479 Million / USD 24.65 Million or an equivalent amount in a freely convertible currency, calculated as total certified payments received for contracts in progress or completed, within the last three (3) years from 1 <sup>st</sup> April 2012 to 31 <sup>st</sup> March 2015	Must meet requirement	Must meet requirement	Must meet twenty five percent (25 %) of the requirement	Must meet Fifty percent (50%) of the requirement	Form FIN -2			

5.	Vol I, Section III, Clause 2.4.2	Factor	2.3 Financial Situation					
		Sub-Factor	Criteria				Docu ment ation Requ ired	
			Requirement	Sin gle Enti ty	Bidder			
					Joint Venture			
			All part ner s com bin ed	Eac h part ner	At least one partn er (This shall be the Lead Part ner)			
		2.4.2 Specif ic Experi ence	a) Participation as contractor, joint venture member, management contractor, or subcontractor, in at least one (1) contracts within the last ten (10) years from 1 <sup>st</sup> April 2005 to 31 <sup>st</sup> March 2015.  With a value of at least one contract of at least INR 9000 Million or USD 150 Million / two contracts each with the value of at least INR 4500 Million or USD 75 Million / three contracts each with the value of at least INR 3000 Million or USD 50 Million or an equivalent amount in a freely convertible currency that have been successfully and substantially completed and that are similar to the proposed Works within last ten (10) years. The similarity shall be based on the physical size, complexity, methods / technology or other characteristics as described in Part 2, Employer's Requirements. Jetty or Harbour with pile	Mus t mee t requ irem ent	Must mee t requ irements	Mus t mee t 30% of requ irem ent	Must meet 60% of requir ement	Form EXP 2(a)
		2.4.2 Specif ic Experi ence	a) Participation as contractor, joint venture member, management contractor, or subcontractor, in at least one (1) contracts within the last ten (10) years from 1 <sup>st</sup> April 2005 to 31 <sup>st</sup> March 2015.  With a value of at least one contract of at least INR 3944 Million or USD 65.73 Million / two contracts each with the value of at least INR 2958 Million or USD 49.3 Million / three contracts each with the value of at least INR 1972 Million or USD 32.87 Million or an equivalent amount in a freely convertible currency that have been successfully and substantially completed and that are similar to the proposed Works within last ten (10) years. The similarity shall be based on the physical size, complexity, methods / technology or other characteristics as described in Part 2, Employer's Requirements. Jetty or Harbour with pile	Mus t mee t requ irem ent	Must mee t requ irements	Mus t mee t 25% of requ irem ent	Must meet 50% of requir ement	Form EXP 2(a)

			foundation in river / sea or construction of bridge in river executed under BOQ contracts shall also be considered as similar works.  *Cost of works of previous years shall be increased by 7% per year based on Rupee value to bring them to 2014-15 price level.								foundation in river / sea or construction of bridge in river executed under BOQ contracts shall also be considered as similar works.  *Cost of works of previous years shall be increased by 7% per year based on Rupee value to bring them to 2014-15 price level.						
6.	Vol I, Section III, Clause 2.4.2	Factor	2.3 Financial Situation						Sub-Factor	Criteria						Documentation Required	
		Requirement	Bidder				Documentation Required										
			Single Entity	All partners combined	Each partner	At least one partner (This shall be the Lead Partner)											
		2.4.2 Specific Experience	b) For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum experience in one of the following key activities: • <i>Designing of Jetty or Harbour in river/sea or a bridge in river of minimum INR 4500 Million or USD 75 Million</i> • <i>Marine / River civil works involving minimum 1200 mm diameter or equivalent area piles in marine / river conditions.</i>	Must meet requirements	Must meet requirements	Must Meet 30% of requirements	Must meet 60% of the requirements	Form EXP-2(b)									
		Factor	2.3 Financial Situation						Sub-Factor	Criteria						Documentation Required	
		Requirement	Bidder				Documentation Required										
			Single Entity	All partners combined	Each partner	At least one partner (This shall be the Lead Partner)											
		2.4.2 Specific Experience	b) For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum experience in one of the following key activities: • <i>RCC well foundation works involving minimum 7000 mm diameter or equivalent area in marine / river conditions.</i> • <i>Marine / River civil works involving minimum 1200 mm diameter or equivalent area piles in marine / river conditions.</i>	Must meet requirements	N/A	N/A	Must meet requirements	Form EXP-2(b)									

7.	Vol I, Section III, Clause 2.4.2	Not existing	Factor	2.3 Financial Situation					
			Sub-Factor	Criteria					Documentation Required
				Requirement	Bidder				
					Single Entity	Joint Venture			
		All partners combined	Each partner	At least one partner (This shall be the Lead Partner)					
			2.4.2 Specific Experience	c) Designing of Jetty or Harbour in river/sea or a bridge in river/sea or a Canal or RCC Dam or elevated viaduct structure of minimum INR 3944 Million or USD 65.73 Million.	Must meet requirements or can be through a specialist Design Consultant on Sub-contract	Must meet requirements or can be through a specialist Design Consultant on Sub-contract	N/A	Must meet requirements or can be through a specialist Design Consultant on Sub-contract	Form EXP-2(b)

8.	Vol I, Section III, Clause 2.6, Pg. 39	<table><tr><th>S. No.</th><th>Equipment</th><th>Minimum Capacity</th><th>Max. age (years)</th><th>Minimum number required.</th></tr><tr><td>1</td><td>Crane (Tyre mounted)</td><td>100 T</td><td>5</td><td>1 no.</td></tr><tr><td>2</td><td>Crane (tyre mounted)</td><td>50 T</td><td>5</td><td>1 no.</td></tr><tr><td>3*</td><td>Pile Driving Rigs with minimum 10T winch complete with DMC/Bailor/Chisel etc.</td><td>-</td><td>5</td><td>2 nos.</td></tr><tr><td>4*</td><td>Hydra</td><td>10 to 12 T</td><td>5</td><td>4 nos.</td></tr><tr><td>5*</td><td>Trailer</td><td>-</td><td>5</td><td>2 nos.</td></tr><tr><td>6*</td><td>Winches</td><td>10 to 12 T</td><td>5</td><td>2 nos.</td></tr><tr><td>7</td><td>Concrete batching plant</td><td>30 cum.</td><td>3</td><td>1 no.</td></tr><tr><td>8</td><td>Transit mixer</td><td>5 cum.</td><td>3</td><td>2 nos.</td></tr><tr><td>9</td><td>Concrete pump with adequate pipelines</td><td>30 cum.</td><td>3</td><td>1 no.</td></tr></table>	S. No.	Equipment	Minimum Capacity	Max. age (years)	Minimum number required.	1	Crane (Tyre mounted)	100 T	5	1 no.	2	Crane (tyre mounted)	50 T	5	1 no.	3*	Pile Driving Rigs with minimum 10T winch complete with DMC/Bailor/Chisel etc.	-	5	2 nos.	4*	Hydra	10 to 12 T	5	4 nos.	5*	Trailer	-	5	2 nos.	6*	Winches	10 to 12 T	5	2 nos.	7	Concrete batching plant	30 cum.	3	1 no.	8	Transit mixer	5 cum.	3	2 nos.	9	Concrete pump with adequate pipelines	30 cum.	3	1 no.	<table><tr><th rowspan="2">Sl. No.</th><th colspan="3">Equipment Type and Characteristics</th><th rowspan="2">Minimum Number required (To commensurate with progress of work for completion / as schedule)</th></tr><tr><th>Equipment</th><th>Minimum Capacity</th><th>Max. age (years)</th></tr><tr><td>1*</td><td>Crane (Tyre mounted / Crawler)</td><td>100T</td><td>10</td><td>1 No.</td></tr><tr><td>2*</td><td>Crane (Tyre mounted / Crawler)</td><td>50T</td><td>10</td><td>2 Nos.</td></tr><tr><td>3*</td><td>Pile Driving Rigs with minimum 7.5T winch complete with DMC/Bailor/Chiesel etc.</td><td>-</td><td>10</td><td>2 Nos.</td></tr><tr><td>4*</td><td>Hydra</td><td>10 to 12 T</td><td>10</td><td>4 nos.</td></tr><tr><td>5*</td><td>Trailer</td><td>-</td><td>10</td><td>2 Nos.</td></tr><tr><td>6*</td><td>Winches</td><td>7.5 T</td><td>10</td><td>2 Nos.</td></tr><tr><td>7</td><td>Concrete Batching Plant</td><td>30 cum/hour</td><td>5</td><td>1 Nos.</td></tr><tr><td>8</td><td>Transit Mixer</td><td>5 cum</td><td>5</td><td>2 Nos.</td></tr><tr><td>9.</td><td>Concrete pump with adequate pipelines</td><td>30 cum/hour</td><td>5</td><td>2 Nos.</td></tr></table>	Sl. No.	Equipment Type and Characteristics			Minimum Number required (To commensurate with progress of work for completion / as schedule)	Equipment	Minimum Capacity	Max. age (years)	1*	Crane (Tyre mounted / Crawler)	100T	10	1 No.	2*	Crane (Tyre mounted / Crawler)	50T	10	2 Nos.	3*	Pile Driving Rigs with minimum 7.5T winch complete with DMC/Bailor/Chiesel etc.	-	10	2 Nos.	4*	Hydra	10 to 12 T	10	4 nos.	5*	Trailer	-	10	2 Nos.	6*	Winches	7.5 T	10	2 Nos.	7	Concrete Batching Plant	30 cum/hour	5	1 Nos.	8	Transit Mixer	5 cum	5	2 Nos.	9.	Concrete pump with adequate pipelines	30 cum/hour	5	2 Nos.
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		<p>*- These equipment must be owned by bidder and by lead member in case of JV</p> <p>Notes:</p> <ul style="list-style-type: none"><li>Bidders are requested to verify latest position in respect of “Duties on Contractor’s Equipment” from Department of Revenue, Ministry of Finance, Government of India.</li><li>The equipment listed above should not be older than 5 years of age.</li><li>The Bidder shall furnish the details of proposed equipment using Form EQU included in Section IV.</li></ul>	<p>*- These equipment must be owned / hired by bidder and by lead member in case of JV</p> <p>Notes:</p> <ul style="list-style-type: none"><li>Bidders are requested to verify latest position in respect of “Duties on Contractor’s Equipment” from Department of Revenue, Ministry of Finance, Government of India.</li><li>The Bidder shall furnish the details of proposed equipment using Form EQU included in Section IV.</li></ul>																																																																																																							
9.	Vol. I, Section III, Clause No. 2.5,	The titles mentioned in ‘column 4’ and ‘column 5’ of the table are ‘ <b>Total Work Similar Experience (years)</b> ’ and ‘ <b>Works Experience (years)</b> ’ respectively.	The titles mentioned in ‘column 4’ and ‘column 5’ shall be read as ‘ <b>Similar Experience (years)</b> ’ and ‘ <b>Total Work Experience (years)</b> ’ respectively.																																																																																																							
10.	Vol. I, Section VII, Part V, Article 21, Clause No. 21.3 (c),	c) Any civil commotion, boycott or political agitation which <b>prevents construction of the Lock</b> by the Contractor for an aggregate period exceeding 10 (ten) days in an Accounting Year;	c) ‘Any civil commotion, boycott or political agitation which <b>prevents the Works</b> by the Contractor for an aggregate period exceeding 10 (ten) days in an Accounting Year;’																																																																																																							

11.	Vol. I, Section VII, Schedules, Schedule - M, Clause No. 1,	I ..... with Article 12 of the Agreement have been successfully undertaken to determine compliance of <b>the Lock</b> with the provisions of the Agreement, and I am satisfied that <b>the Lock</b> can be safely and reliably placed in service of the Users thereof.	“I ..... with Article 12 of the Agreement have been successfully undertaken to determine compliance of <b>the Works</b> with the provisions of the Agreement, and I am satisfied that <b>the Works</b> can be safely and reliably placed in service of the Users thereof”
12.	Vol. II, Clause No. 1.2.7,	The drawing no. in the clause is mentioned as ‘ <b>Drawing I-525/HT/1007</b> ’.	The same shall be read as ‘ <b>Drawing I-525/HT/1001 (SH. 1 of 2)</b> ’.
13.	Vol. II, Clause No. 1.2.8,	Total built up area (m <sup>2</sup> ) mentioned in ‘S. No. 4 – Electrical Substation’ is ‘ <b>1089 m<sup>2</sup></b> ’	Total built up area (m <sup>2</sup> ) mentioned in ‘S. No. 4 – Electrical Substation’ shall be read as ‘ <b>545 m<sup>2</sup></b> ’.
14.	Vol. II, Clause No. 1.2.8.4,	The drawing no. in the clause is mentioned as ‘ <b>Drawing I-525/HT/1019</b> .’	The same shall be read as ‘ <b>Drawing I-525/HT/1020</b> .’
15.	Vol. II, Clause No. 1.2.9,	The drawing no. in the clause is mentioned as ‘ <b>Drawing I-525/HT/1009</b> .’	The same shall be read as ‘ <b>Drawing I-525/HT/1010</b> .’
16.	Vol. II, Clause No. 1.2.13,	A drainage system for carrying the storm water run-off from the terminal area is to be planned, designed and provided with a provision for Phase-1B development.	Shall be read as, ‘ <b>A covered drainage system with settling pond</b> for carrying the storm water run-off from the terminal area is to be planned, designed and provided with a provision for Phase-1B development.’
17.	Vol. II, Clause No. 2.1.21,	Cross slope: <b>Unidirectional 1.5% for all roads</b>	Cross slope: <b>2.5%</b>
18.	Vol. II, Cl. 2.1.4.2		‘ <b>Clause No. 2.1.4.2 - Safety factors</b> ’ is added. Refer Annexure-I. (Attached)
19.	Vol. II, Clause No. 4.2.6,	Under special circumstances, change from weigh batching to appropriate volume batching may be permitted by Employer on specific request from the Contractor. However, in such cases all conversions from mass of ingredients to volume shall be based on actual and appropriate bulk densities physically measured at site and approved by the Employer.	<b>Deleted.</b>

20.	Vol. II, Cl.. 4.8.2.3,	Hand Mixing  The measured quantity of sand shall be levelled on a clean water-tight masonry platform and cement bags emptied on top. The cement and sand shall be thoroughly mixed dry by being turned over and over, backward and forward, several times till the mixture is of uniform colour. The quantity of dry mix, which can be consumed within initial setting time of cement shall then be mixed with just sufficient quantity of water to bring the mortar to the consistency of stiff paste.	<b>Deleted.</b>
21.	Vol. II, Cl. 4.20.2.1,	Dispatch of Fenders: 'Fenders shall not be dispatched from manufacturer's works to the Site without the written Employer of the Employer"	Dispatch of Fenders: 'Fenders shall not be dispatched from manufacturer's works to the Site without the written <b>consent</b> of the Employer'
22.	Vol. II, Cl. 5.2.1,	The drawing no in the first line of the clause is mentioned as ' <b>Drawing I-525/HT/1021</b> '	The same shall be read as ' <b>Drawing I-525/HT/1022</b> '.
23.	Vol. II, Cl. 5.2.5.3,	The drawing no in the first para on page no. 313 is mentioned as 'Drawing I-525/HT/1021'	The same shall be read as ' <b>Drawing I-525/HT/1022</b> '
24.	Vol. II, Cl No. 7.2 (i),	The Scope of Work includes design, engineering, manufacture, supply delivery to site, storage at site, erection, painting, testing, commissioning and handing over of Belt conveyor <b>BC-1, BC-2, BC-3, BC-4, BC-5, BC-6, Pipe Conveyor PC-1/PC-2</b> , Transfer Towers & mobile barge loader as specified herein, required for loading ash into a Barge.	The Scope of Work includes design, engineering, manufacture, supply delivery to site, storage at site, erection, painting, testing, commissioning and handing over of Belt conveyor <b>BC-3, BC-4, BC-5, BC-6, Pipe Conveyor PC-1/PC-2 (with a provision for Phase-1B expansion)</b> , Transfer Towers & mobile barge loader as specified herein, required for loading ash into a Barge.
25.	Vol. II, Clause No. 7.6.5.1 (a),	Carrying idlers shall have troughing up to <b>35</b> deg	Carrying idlers shall have troughing up to <b>45</b> deg'
26.	Vol. II, Clause No. 10.4.2,	The last para is mentioned as 'The spout shall be lined with durable and replaceable <b>Hardox-400</b> Liners. Liner plate thickness shall not be less than <b>12 mm.</b> '	The same shall be read as, 'The spout shall be lined with durable and replaceable <b>SS-304</b> Liners. Liner plate thickness shall not be less than <b>3 mm.</b> '

27.	Vol-II, Cl. No. 13.1,	<p><b>Scope of Work</b></p> <p>The Scope of Work is for the installation of Fire Fighting Systems in buildings. The firefighting system shall consist of dry powder stored pressure by nitrogen gas with inbuilt pressure gauge to indicate pressure.</p> <table><tr><th>S. No.</th><th>Area</th><th>Class of fire</th><th>Classification of occupancy</th><th>System proposed</th></tr><tr><td>1</td><td>Buildings</td><td>A, B &amp; C</td><td>Ordinary Hazard</td><td>Dry power stored pressure confirming to IS: 13849. Pressurised by nitrogen gas with inbuilt pressure gauge to indicate pressure</td></tr></table> <p>However, if in the opinion of the Bidder, the above requirement needs to be enhanced for better performance or any other imperative criteria, the same shall be quoted separately as an alternative.</p>	S. No.	Area	Class of fire	Classification of occupancy	System proposed	1	Buildings	A, B & C	Ordinary Hazard	Dry power stored pressure confirming to IS: 13849. Pressurised by nitrogen gas with inbuilt pressure gauge to indicate pressure	<p><b>Scope of Work</b></p> <p>The Scope of Work is for the installation of Fire Fighting Systems in buildings, covered shed and oil storage area.</p> <table><tr><th>S. No.</th><th>Area</th><th>Class of fire</th><th>Classification of occupancy</th><th>System proposed</th></tr><tr><td>1</td><td>Buildings &amp; Covered shed</td><td>A, B &amp; C</td><td>Ordinary Hazard</td><td>Dry powder stored pressure confirming to IS: 13849. Pressurised by nitrogen gas with inbuilt pressure gauge to indicate pressure</td></tr><tr><td>2</td><td>Oil drum storage area</td><td>A &amp; B</td><td>Ordinary Hazard</td><td>Foam type extinguisher confirming to IS: 10204.</td></tr></table> <p>However, if in the opinion of the Bidder, the above requirement needs to be enhanced for better performance or any other imperative criteria, the same shall be quoted separately as an alternative.</p>	S. No.	Area	Class of fire	Classification of occupancy	System proposed	1	Buildings & Covered shed	A, B & C	Ordinary Hazard	Dry powder stored pressure confirming to IS: 13849. Pressurised by nitrogen gas with inbuilt pressure gauge to indicate pressure	2	Oil drum storage area	A & B	Ordinary Hazard	Foam type extinguisher confirming to IS: 10204.
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28.	Volume I, Article 28		To be included: <b>"Construction Documents" means Drawings, plans, specifications, detailed construction scheme, methodology etc., associated with a construction project.</b>																									
29.	Volume II, 2.1.16	Ordinary Portland Cement of minimum grade 53 as per IS:8112	Ordinary Portland Cement of minimum grade 53 as per IS: 8112. <b>In addition, cement in accordance with IS 456 &amp; IS 4651 part4 shall be considered.</b>																									
30.	Volume II, 2.1.20.7	Ordinary Portland Cement of minimum grade 53 as per IS:8112	Ordinary Portland Cement of minimum grade 53 as per IS: 8112. <b>In addition, cement in accordance with IS 456 &amp; IS 4651 part 4 shall be considered.</b>																									
31.	Volume II, 4.1.6.2	As in this case for coastal regions, epoxy coated TMT bars confirming to IS:13620-1993 shall be considered.	As in the case for <b>marine structures</b> , epoxy coated TMT bars confirming to IS: 13620-1993 shall be considered.																									

32.	Volume II, 4.1.7.1	Bricks for masonry works shall conform to IS:1077– Specification for common burnt clay building bricks and shall be of class 5.0	Bricks for masonry works shall conform to IS:1077– Specification for common burnt clay building bricks and shall be of class <b>7.5</b>
33.	Volume II, 4.2.6	Under special circumstances, change from weigh batching to appropriate volume batching may be permitted by Employer on specific request from the Contractor. However, in such cases all conversions from mass of ingredients to volume shall be based on actual and appropriate bulk densities physically measured at site and approved by the Employer.	Deleted.
34.	Volume II, 4.2.7.3	<b>Hand Mixing</b> Hand mixing of concrete shall not be permitted. However, for non-critical structures located' at far away isolated places, this may be permitted by the Employer as a special case. Ten percent (10%) extra cement shall have to be added to the normal mix when mixed by hand. It shall be carried out on a water tight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. No extra payment shall be made to the Contractor for mixing by hand or for using extra cement due to hand mixing. However, extra cement consumed shall be considered for reconciliation purposes where such concreting is allowed by the Employer.	<b>Hand Mixing</b> Hand mixing of concrete shall not be permitted.
35.	Volume II, 4.2.8.3	All concrete shall be conveyed from the mixer to the place of final deposit as rapidly as possible in suitable buckets, dumpers, containers or conveyors, which shall be mortar leak tight.	All concrete shall be conveyed from the mixer to the place of final deposit as rapidly as possible in suitable <b>'buckets with crane, dumpers, boom placers, pumps or conveyors'</b> which shall be mortar leak tight.
36.	Volume II, 4.2.8.4	<b>Placing and Compaction</b>	<b>Placing and Compaction</b> Below statement is included at the end of this clause : "Formation of cold joints shall be avoided".
37.	Volume II, 4.2.17.1	<b>Repair and Replacement of Unsatisfactory Concrete</b>	Deleted.

38.	Volume II, 4.2.17.2	<b><i>Curing of Patched Work</i></b>	Deleted.
39.	Volume II, 4.3.2.4	<p><b><i>Drilling Fluid</i></b></p> <p>Bentonite used in the works shall be of the best quality. Bentonite shall be mixed thoroughly with clean fresh water to make a suspension, which will maintain the stability of the pile excavation for the period, necessary to place concrete and complete construction. The fluid used shall be such as to form a suspension, which remains stable under the saline conditions likely to be encountered at the Site and suitable in all respects for the construction of marine piles.</p> <p>Control test shall be carried out on the bentonite suspension using suitable apparatus. The frequency of testing the drilling fluid and the method and procedure of sampling shall be as directed by the Employer. The density of freshly mixed bentonite suspension shall be measured daily as a check on the quality of the suspension being formed.</p> <p>The measuring device shall be calibrated to read to within 0.005 g/ml. Tests to determine density, viscosity, shear strength and pH value shall be applied to bentonite used in the works.</p>	<p><b><i>Drilling Fluid</i></b></p> <p>The below statement is added.</p> <p><b>Note:</b></p> <p><b>Before selection of source test for bentonite powder shall be made at external approved laboratory to satisfy requirements of relevant IS code. At site during piling work, tests on bentonite mud shall be made to satisfy requirements of IS 2911. At site, laboratory and other required facilities shall be made available.</b></p>

40.	Volume II, 4.3.2.12	<p><b>Load Tests</b></p> <p>Vertical load tests shall be carried out on the specially constructed test piles. In addition to vertical load tests, the Contractor shall carry out horizontal load test on bored piles specially constructed for the purpose. Maximum test loads shall be as determined by the Employer according to I.S. Specifications considering the design horizontal loads. One static load test shall also be carried out on a routine pile taking help from the adjoining permanent Piles/additional tension piles or installing soil anchors.</p>	<p><b>Load Tests</b></p> <p>Vertical load tests shall be carried out on the specially constructed test piles. <b>Initial load test by Static method/Reaction loading shall be carried out one on each diameter of land piles. Routine vertical load test by Static method/ Reaction loading shall be carried out one on each diameter of land piles.</b> In addition to vertical load tests, the Contractor shall carry out horizontal load test on bored piles specially constructed for the purpose. Maximum test loads shall be as determined by the Employer according to I.S. Specifications considering the design horizontal loads. One static load test shall also be carried out on a routine pile <b>in river</b> taking help from the adjoining permanent Piles/additional tension piles or installing soil anchors.</p>
41.	Volume II, 4.4.1	<p><b>General</b></p> <p>It is proposed to provide the formation level of +37.0 m MSL within the terminal, upto the boundary wall of the terminal, stockyard, parking and road area &amp; locations where buildings have to be constructed.</p> <p>The formation level of +37.0 m shall be achieved by carrying out cutting and filling of the existing ground levels inside the terminal area.</p>	<p><b>General</b></p> <p>It is proposed to provide the formation level of <b>+7.80 m CD</b> within the terminal, upto the boundary wall of the terminal, stockyard, parking and road area &amp; locations where buildings have to be constructed.</p> <p>The formation level of <b>+7.80 m CD</b> shall be achieved by carrying out cutting and filling of the existing ground levels inside the terminal area.</p>
42.	Volume II, 4.8.2.3	<p><b>Hand Mixing</b></p> <p>The measured quantity of sand shall be levelled on a clean water-tight masonry platform and cement bags emptied on top. The cement and sand shall be thoroughly mixed dry by being turned over and over, backward and forward, several times till the mixture is of uniform colour. The quantity of dry mix, which can be consumed within initial setting time of cement shall then be mixed with just sufficient quantity of water to bring the mortar to the consistency of stiff paste.</p>	Deleted.

43.	Volume II, 4.20.4	The ladders and connecting hardware shall be made of zinc metallized steel, steel grade St 37-2, DIN 17100 or equivalent and approved by the Employer, hot dip in factory to achieve a commercial coating of not less than 600 g of zinc per square meter.	<b>The ladders and connecting hardware shall be made steel grade St 37-2, DIN 17100 or equivalent and approved by the Employer.</b>
44.	Volume II, 4.20.5	<b>Rubbing Strip</b> Wooden / Galvanised iron rubbing strip complete in all respects shall be provided as instructed by the Employer at relevant locations of the berth suitably. Painting of the same shall be done.	<b>Rubbing Strip</b> Wooden / <b>Stainless steel</b> rubbing strip complete in all respects shall be provided as instructed by the Employer at relevant locations of the berth suitably. <b>If wooden rubbing strip provided</b> , painting of the same shall be done.
45.	Volume II, <b>2.1.17</b>	<b>Embankment of Approach Trestle</b> Embankment of approach trestle shall be designed for the movement of vehicular traffic IRC class AA, class 70R, etc. in addition to the movement of maintenance cranes, when necessary. The design shall be carried out as per applicable Indian Standards. The gradient of the embankment shall not be steeper than 1 in 30. The retaining structure of the embankment is of reinforced earth wall.	<b>Embankment of Approach Trestle</b> Embankment of approach trestle shall be designed for the movement of vehicular traffic IRC class AA, class 70R, etc. in addition to the movement of maintenance cranes, when necessary. The design shall be carried out as per ' <b>IRC – SP-102-2014</b> ' and <b>other</b> applicable Indian Standards. The gradient of the embankment shall not be steeper than 1 in 30.
46.	Volume II, 2.1.18	<b>Type of Bearings</b> The types of bearings for the approach trestles are as follows: <ul style="list-style-type: none"> <li>• Neoprene / Elastomeric</li> <li>• POT-PTFE</li> <li>• Roller-Rocker</li> </ul>	<b>Type of Bearings</b> The types of bearings for the approach trestles <b>and conveyor trestle</b> are as follows: <ul style="list-style-type: none"> <li>• Neoprene / Elastomeric</li> <li>• POT-PTFE</li> <li>• Roller-Rocker (<b>Should be used only for through type steel girder and conveyor trestle</b>)</li> </ul>
47.	Volume II, <b>7.8.2.1</b>	<b>Fabrication</b> <ul style="list-style-type: none"> <li>• <b>Drawings</b></li> </ul> The Contractor will be provided fabrication drawings based on the design drawings	<b>Fabrication</b> <ul style="list-style-type: none"> <li>• <b>Drawings</b></li> </ul> The Contractor shall prepare the fabrication drawings
48.	Vol-II, Cl. 3.7.2	The Employer shall provide land area limited to 2 acres within the Project Site for the Contractor's working area. No space for the labour camp shall be provided.	<i>The Employer shall provide land area limited to <b>5 acres</b> within the Project Site for the Contractor's working area. No space for the labour camp shall be provided.</i>

49.	Vol-II, Cl. 16		<p><i>Added:</i></p> <p><b>16. Dumper Trucks and Forklift</b></p> <p><b>16.1 Dumper Trucks</b></p> <p><i>Dumper Trucks powered by a diesel engine shall be provided, to operate in all weather conditions. The minimum capacity of the dumper truck shall be 20 Tonnes.</i></p> <p><b>16.2 Forklift</b></p> <p><i>Fork lift shall be powered by a diesel engine to operate in all weather conditions. The minimum capacity of the equipment shall be 10T and to be supplied with drum handling attachment. The drum handling equipment should be capable of handling 4 drums at a time.</i></p> <p><i>The Fork lift shall conform to IS 4357-1974 for stability testing of fork lift trucks. The acceptance criteria of fork lift trucks shall conform to IS 10517 - 1983.</i></p>
50.	Vol-II, Cl. 1.2.17	Two numbers of mobile harbour crane having lifting capacity of 50 T at 20 m radius shall be procured and installed at berth no – 3 & 4.	<i>Two numbers of mobile harbour crane having <b>lifting capacity of 50 T at 17 m radius</b> shall be procured and installed at berth no – 3 &amp; 4.</i>
51.	Vol-II, Cl. 2.1.4.1.2	Loads due to mobile crane with a 40 T lifting capacity on hook at 20 m radius for berths only	<i>Loads due to mobile crane with a <b>50 T lifting capacity on hook at 17 m radius</b> for berths only</i>
52.	Vol-II, Cl. 11.2.1.1	The crane shall have a lifting capacity of minimum 40T on hook up to a radius of 20 m from crane centerline.	<i>The crane shall have a lifting capacity of minimum <b>50T</b> on hook up to a radius of <b>17 m</b> from crane centerline.</i>
53.	Vol. II - Annexure 1 Geotechnical Investigation Report	<b>Annexure 1</b> Geotechnical Investigation Report	<b>Annexure 1</b> Geotechnical Investigation Report – R1 (Attached)
54.	Vol-I, Cl. 4.3	The Employer represents and warrants that the environmental clearances are not required for construction of the Project but the proposed EMP is to be implemented by the Contractor.	<i>Environmental clearances / CRZ Clearance as required will be obtained in Employer but the proposed EMP is to be implemented by the Contractor.</i>
55.	Vol-I, Cl. 3.7	<b>Seismic Zone</b> The terminal falls under the seismic Zone IV	<b>Seismic Zone</b> <i>The terminal falls under the seismic Zone <b>III</b></i>

56.	Vol-II, Cl. 2.1.19	<p><b>Stockyard Development</b> The top 2 m of the Stockyard shall be heavily compacted in layers of 225 mm. Stockyard shall be developed to 8 m high stockpiling of stone aggregate and 3 high stacking of oil drums for future provision. The stockyard should also have provision to stack containers in future. Ground improvement, if necessary shall be carried out to achieve required bearing capacity accordingly.</p> <p>Density of stone aggregate: 1.6 T/cum</p>	<p><b>Stockyard Development</b> <i>The top 2 m of the Stockyard shall be heavily compacted in layers of 225 mm. Stockyard shall be developed to <b>4m high stockpiling</b> of stone aggregate and 3 high stacking of oil drums. The stockyard should also have provision to have <b>4 high stacking of containers</b> in future. Ground improvement, if necessary shall be carried out to achieve required bearing capacity accordingly.</i></p> <p><i>Density of stone aggregate: 1.6 T/cum</i></p>
57.	Vol-II, Cl. 10.4.3	Conveyor Outreach - 11 m (approx.)	Conveyor Outreach - <b>31 m (approx.) from the centreline of feeding point and minimum 7 m from the centreline of fender pile.</b>
58.	Vol-II, Cl. 10.5.4	Idlers Internal rolling friction resistance of idler rolls shall not exceed 0.011 while testing.	Idlers <i>Internal rolling friction resistance of idler rolls shall not exceed <b>0.015</b> while testing.</i>
59.	Vol-II, Cl. 10.5.5	All pulleys shall be statically balanced. The balance weight shall not exceed 0.25% of the total weight of the pulley.	<i>All pulleys shall be statically balanced. The balance weight shall not exceed <b>1.0% of the total weight</b> of the pulley.</i>
60.	Vol-II, Cl. 7.6.5.1 (I)	The internal rolling friction co-efficient of the idler unit shall not exceed 20% to 30% of the composite friction factor of the Conveyor System taken as 0.022. Weight of revolving parts of the idlers shall be kept to minimum.	<i>The internal rolling friction co-efficient of the idler unit shall not exceed 20% to 30% of the composite friction factor of the Conveyor System <b>taken as 0.015</b>. Weight of revolving parts of the idlers shall be kept to minimum.</i>
61.	Vol-II, Cl. 2.1.9	Daily maximum and minimum temperature difference is $\pm 25^{\circ}\text{C}$	<i>For designing, the temperature variation of <math>\pm 15^{\circ}\text{C}</math> shall be considered.</i>
62.	Vol-II, Cl. 4.4.1	<p>The Contractor shall first clear the area of any obstructions or old structures and carry out a detailed topographic survey of the whole area. Formation level shall be such that there shall be no flooding of the site. It is proposed to provide the formation level of +37.0 m MSL within the terminal, upto the boundary wall of the terminal, stockyard, parking and road area &amp; locations where buildings have to be constructed. While carrying out site grading, it is ensured that no existing natural drainage shall be blocked without providing required cross drainage structures or alternative drainage arrangement.</p> <p>The formation level of +37.0 m shall be achieved by carrying out cutting and filling of the existing ground levels inside the terminal area.</p>	<p><i>The Contractor shall first clear the area of any obstructions or old structures and carry out a detailed topographic survey of the whole area. Formation level shall be such that there shall be no flooding of the site. It is proposed to provide the formation level of <b>+7.80m CD</b> for the entire Site, upto the boundary wall of the terminal, stockyard, parking and road area &amp; locations where buildings have to be constructed. While carrying out site grading, it is ensured that no existing natural drainage shall be blocked without providing required cross drainage structures or alternative drainage arrangement.</i></p> <p><i>The formation level of <b>+7.80m CD</b> shall be achieved by carrying out cutting and filling of the existing ground levels inside the terminal area. The filling up area shall be protected by suitable slope protection works as indicated in 'Drawing no – I525/HT-1023'</i></p>

63.	Vol-II, Cl. 7.4.2	2 rows of ash ..... transfer tower TT - 3 & 4. Pipe conveyor handle ash and dispatch to dispatch conveyor BC-5 & 6 which further transfer ash onto mobile barge loader at tower T-1 and T-2. Fixed Barge loader dispatch ash by telescopic dust proof spout to barge refer Layout drawing number I-525/HT/1001.	2 rows of ash ..... transfer tower TT - 3 & 4. Pipe conveyor handle ash and dispatch to dispatch conveyor BC-5 & 6 which further transfer ash onto <b>fixed barge loader</b> at tower T-1 and T-2. Fixed Barge loader dispatch ash by telescopic dust proof spout to barge refer Layout drawing number I-525/HT/1016.
64.	Vol II, Cl. 7.2 (i)	The Scope of Work includes design, engineering, manufacture, supply delivery to site, storage at site, erection, painting, testing, commissioning and handing over of Belt conveyor BC-1, BC-2, BC-3, BC-4, BC-5, BC-6, Pipe Conveyor PC-1/PC-2, Transfer Towers & mobile barge loader as specified herein, required for loading ash into a Barge. Work includes all Mechanical, Structural, associated Electrical, control and instrumentation work.	The Scope of Work includes design, engineering, manufacture, supply delivery to site, storage at site, erection, painting, testing, commissioning and handing over of Belt conveyor BC-1, BC-2, BC-3, BC-4, BC-5, BC-6, Pipe Conveyor PC-1/PC-2, Transfer Towers & <b>fixed barge loader</b> as specified herein, required for loading ash into a Barge. Work includes all Mechanical, Structural, associated Electrical, control and instrumentation work.
65.	Vol II, Cl. 7.2 (iv)	Dust Extraction System for the facility covering all transfer point in the transfer towers, discharge point at the ash silo end and for the mobile barge loader end.	Dust Extraction System for the facility covering all transfer point in the transfer towers, discharge point at the ash silo end and for the <b>fixed barge loader</b> end.
66.	Vol-II, Cl. 12	Grab type Gantry Crane	<b>Deleted.</b>
67.	Vol-II, Cl. 11.2.2.1	Crane Classification: Heavy lift operation 50 T on hook – A4 Grab Operation – A8 Container Operation – A7	Crane Classification: Heavy lift operation 50 T on hook – <b>A3</b> Grab Operation – <b>A6</b> Container Operation – <b>A5</b>
68.	Vol-I, Cl. 2.3	Test for gates	<b>Deleted.</b>
69.	Vol-I, Cl. 10.2.2	Within 20 (twenty) days of appointment date, the Contractor shall appoint a proof check consultant (the “Proof Consultant”) after proposing to the Employer a panel of three names of qualified and experienced firms from whom the Employer may choose one to be the Proof Consultant. Provided, however, that if the panel is not acceptable to the Employer and the reasons for the same are furnished to the Contractor, the Contractor shall propose to the Employer a revised panel of three names for obtaining the consent of the Employer. The Contractor shall also obtain the consent of the Employer for two key personnel of the Proof Consultant who shall have adequate experience and qualifications in harbour civil works and gates respectively.	Within 20 (twenty) days of appointment date, the Contractor shall appoint a proof check consultant (the “Proof Consultant”) after proposing to the Employer a panel of three names of qualified and experienced firms from whom the Employer may choose one to be the Proof Consultant. Provided, however, that if the panel is not acceptable to the Employer and the reasons for the same are furnished to the Contractor, the Contractor shall propose to the Employer a revised panel of three names for obtaining the consent of the Employer. The Contractor shall also obtain the consent of the Employer for two key personnel of the Proof Consultant who shall have adequate experience and qualifications <b>in harbour civil works.</b>
70.	Vol-I, Cl. 8.3.1	Cl. 8.3.1	<b>Cl. 8.3.1 Deleted.</b>

71.	Vol-II, Cl. 4.18.1	<b>General</b> This specification covers the installation and commissioning of the complete water supply distribution system with in the port area including the supply of potable water to cargo vessels and buildings and the supply of raw water for landscaping and greenery				<b>General</b> This specification covers the installation and commissioning of the complete water supply distribution system with in the port area including the supply of potable water to cargo vessels and buildings and the supply of raw water for landscaping and greenery. <b>Two numbers of pumps (1 W + 1 S) shall be provided to pump potable water from UG reservoir to overhead tank with nominal pressure.</b>																																										
72.	Vol-II, Cl. 7.4.3	<table><tr><td>S. No.</td><td>Description</td><td>Fly Ash</td></tr><tr><td>1</td><td>Bulk Density</td><td>0.7 T/m3</td></tr><tr><td>2</td><td>Angle of Repose</td><td>42 °</td></tr><tr><td>3</td><td>Angle of Surcharge on the Conveyor</td><td>30 °</td></tr><tr><td>4</td><td>Abrasiveness</td><td>Very abrasive</td></tr><tr><td>5</td><td>Size</td><td>1 to 100 micro meter</td></tr></table>				S. No.	Description	Fly Ash	1	Bulk Density	0.7 T/m3	2	Angle of Repose	42 °	3	Angle of Surcharge on the Conveyor	30 °	4	Abrasiveness	Very abrasive	5	Size	1 to 100 micro meter	<table><tr><td>S. No.</td><td>Description</td><td>Fly Ash</td></tr><tr><td>1</td><td>Bulk Density</td><td>0.7 T/m3</td></tr><tr><td>2</td><td>Angle of Repose</td><td>42 °</td></tr><tr><td>3</td><td>Angle of Surcharge on the Conveyor</td><td>30 °</td></tr><tr><td>4</td><td>Abrasiveness</td><td>Very abrasive</td></tr><tr><td>5</td><td>Size</td><td>1 to 100 micro meter</td></tr><tr><td>6</td><td>Moisture content</td><td>2 %</td></tr></table>				S. No.	Description	Fly Ash	1	Bulk Density	0.7 T/m3	2	Angle of Repose	42 °	3	Angle of Surcharge on the Conveyor	30 °	4	Abrasiveness	Very abrasive	5	Size	1 to 100 micro meter	6	Moisture content	2 %
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73.	Vol-II, Cl. 6, Para. 6, s. no. 1	There shall be pneumatic unloading fly ash facility consist of electrically operated compressor, pneumatic pipe upto silo top with all necessary fitting.				There shall be pneumatic unloading fly ash facility consist of electrically operated compressor, pneumatic pipe upto silo top with all necessary fitting. <b>It is envisaged that four (4) silos can be loaded at a time by using one (1) compressor. Accordingly two (2) compressors with a common header shall be provided for flexibility in operation.</b>																																										
74.	Vol-II, Cl. 7.6.2, s. no. d	Deck plates shall be provided under the loading points; extending 1.0 m before and after the end of the loading skirts and above the V plows protecting the return pulleys. <b>For the reclaiming conveyors in Storage shed the deck plate shall be provided for the entire travel length of the scraper-reclaimer.</b> Similarly for the berth conveyor(s) deck plate shall be provided throughout the travel length of the Unloading cranes.				Deck plates shall be provided under the loading points; extending 1.0 m before and after the end of the loading skirts and above the V plows protecting the return pulleys. Similarly for the berth conveyor(s) deck plate shall be provided throughout the length.																																										

75.	Vol – I, Schedule – B	<p>The development of the Terminal shall include but not limited to the following items:</p> <ul style="list-style-type: none"> <li>• Site Grading</li> <li>• Berthing Structures including all associated facilities</li> <li>• Approach trestles connecting the berths with back-up storage area</li> <li>• <b>Conveyor trestle</b></li> <li>• Stockyard Development</li> <li>• Buildings viz. Terminal Administration building, Worker's Amenity building, Security office, Electrical Substation, Weigh Bridge building and Compressor House for Ash Handling</li> <li>• Storage Shed</li> <li>• Internal Roads and Vehicle Parking Area</li> <li>• Water Supply Works</li> <li>• Storm Water Drainage Works</li> <li>• Sewerage System</li> <li>• Gate House Complex and Emergency Gates</li> <li>• Diversion of Existing Road within the Terminal</li> <li>• New Culverts outside the Terminal area</li> <li>• Electrical Works</li> <li>• Mobile Harbour Cranes</li> <li>• Silos with Conveyor System to Berths</li> <li>• Fixed barge loader with loading spout</li> <li>• Road Weigh Bridge</li> <li>• Fire Fighting System</li> <li>• Model Studies (Optional)</li> <li>• Communication and IT System</li> </ul> <p>The detailed technical specifications for the above mentioned items are provided in Volume-II of Bidding Document.</p>	<p>The development of the Terminal shall include but not limited to the following items:</p> <ul style="list-style-type: none"> <li>• Site Grading</li> <li>• Berthing Structures including all associated facilities</li> <li>• Approach trestles connecting the berths with back-up storage area</li> <li>• Stockyard Development</li> <li>• Buildings viz. Terminal Administration building, Worker's Amenity building, Security office, Electrical Substation, Weigh bridge control room and RIO / compressor room for ash handling</li> <li>• Covered Shed</li> <li>• Internal Roads and Vehicle Parking Area</li> <li>• Water Supply Works</li> <li>• Storm Water Drainage Works</li> <li>• Sewerage System</li> <li>• <b>Gate House Complex, Emergency Exit Gates, Access Gates, Boundary Wall and Fencing</b></li> <li>• Diversion of Existing Road</li> <li>• Electrical Works</li> <li>• Mobile Harbour Cranes</li> <li>• Silos with Conveyor System</li> <li>• Fixed barge loader with loading spout</li> <li>• <b>Road Weigh Bridge, dumper trucks, forklift and front end loader</b></li> <li>• Fire Fighting System</li> <li>• <b>Numerical Model Studies (Optional)</b></li> <li>• Communication and IT System</li> <li>• <b>Environmental Management plan</b></li> </ul> <p>The detailed technical specifications for the above mentioned items are provided in Volume-II of Bidding Document.</p>
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76.	Vol – II, Cl. 1.2.1	<p>The broad items of works covered are listed below:</p> <ul style="list-style-type: none"> <li>• Site Grading</li> <li>• Berthing Structures including all associated facilities</li> <li>• Approach trestles connecting the berths with back-up storage area</li> <li>• Stockyard Development</li> <li>• Buildings viz. Terminal Administration building, Worker's Amenity building, Security office, Electrical Substation, Weigh Bridge building and Compressor House for Ash Handling</li> <li>• Covered Shed</li> <li>• Internal Roads and Vehicle Parking Area</li> <li>• Water Supply Works</li> <li>• Storm Water Drainage Works</li> <li>• Sewerage System</li> <li>• Gate House Complex and Emergency Gates</li> <li>• Diversion of Existing Road within the Terminal</li> <li>• New Culverts outside the Terminal area</li> <li>• Electrical Works</li> <li>• Grab Type Gantry Cranes</li> <li>• Mobile Harbour Cranes</li> <li>• Silos with Conveyor System to Berths</li> <li>• Fixed barge loader with loading spout</li> <li>• Road Weigh Bridge</li> <li>• Fire Fighting System</li> <li>• Model Studies (Optional)</li> <li>• Communication and IT System</li> </ul>	<p>The broad items of works covered are listed below:</p> <ul style="list-style-type: none"> <li>• Site Grading</li> <li>• Berthing Structures including all associated facilities</li> <li>• Approach trestles connecting the berths with back-up storage area</li> <li>• Stockyard Development</li> <li>• Buildings viz. Terminal Administration building, Worker's Amenity building, Security office, Electrical Substation, Weigh Bridge building and RIO / Compressor Room for Ash Handling</li> <li>• Covered Shed</li> <li>• Internal Roads and Vehicle Parking Area</li> <li>• Water Supply Works</li> <li>• Storm Water Drainage Works</li> <li>• Sewerage System</li> <li>• <b>Gate House Complex, Emergency Exit Gates, Access Gates, Boundary Wall and Fencing</b></li> <li>• Diversion of Existing Road</li> <li>• Electrical Works</li> <li>• Mobile Harbour Cranes</li> <li>• Silos with Conveyor System</li> <li>• Fixed barge loader with loading spout</li> <li>• <b>Road Weigh Bridge, dumper trucks, forklift and front end loader</b></li> <li>• Fire Fighting System</li> <li>• <b>Numerical Model Studies (Optional)</b></li> <li>• Communication and IT System</li> <li>• <b>Environmental Management plan</b></li> </ul>
77.	Vol II : Cl. 1.2.3	Wooden rubbing strip for the protection of edges of berth from rubbing of mooring ropes.	Wooden/stainless steel rubbing strip for the protection of edges of berth from rubbing of mooring ropes
78.	Vol II: Cl 1.2.15	<p><b>Gate House Complex and Emergency Gate</b></p> <p>A gate house complex shall be provided in the southern boundary of the terminal at the location shown in the overall layout. Typical details and dimensions of entry gate are shown in Drawing I-525/HT/1009.</p>	<p><b>Gate House Complex, Emergency Exit Gate, Access Gate, Boundary Wall and Fencing</b></p> <p>A gate house complex shall be provided in the southern boundary of the terminal at the location shown in the overall layout. Typical details and dimensions of gate house complex are shown in Drawing I-525/HT/1009.</p> <p>The boundary wall, fencing, access gate and emergency exit gate shall be provided as mentioned in 'Drawing I-525/HT/1023.</p>

79.	Vol –I Schedule – J 1. Project completion Schedule		<b>Schedule – J : S.No 1 ‘Project completion Schedule’ is amended and attached as “Annexure 3”.</b>
80.			<b>‘4.19.5 Sewage Treatment Plant’ is added and attached as “Annexure 4”.</b>
81.	Vol-II, Cl. 1.2.21.2,	11kV Indoor Switchgear, Drawout type, VCB of rating 630 A, as per the attached SLD. Qty-19 Nos.	11kV Indoor Switchgear, Drawout type, <b>Vacuum Circuit Breaker(VCB)</b> of rating 630 A, as per the attached SLD. <b>Qty. - 5 Nos.</b>
82.			11kV Indoor Switchgear, Drawout type, <b>Vacuum Contactor(VC)</b> of rating 400 A with HT Fuse, as per the attached SLD. <b>Qty. -12 Nos.</b>
83.	Vol-II, Cl. 1.2.21.2, S.No. 3	11kV/433V, 750KVA, indoor Dry type Utility Transformers, having off circuit tapping of +/-10%, in steps of 2.5%, winding temperature detectors with scanner for temperature alarm and trip, door safety limit switch and accessories. Qty. – 2Nos.	11kV/433V, <b>1250KVA</b> , indoor Dry type Utility Transformers, having off circuit tapping of +/-10%, in steps of 2.5%, winding temperature detectors with scanner for temperature alarm and trip, door safety limit switch and accessories. Qty. – 2 Nos.
84.	Vol-II, Cl. 1.2.21.2, S.No. 4	11kV Capacitor Panel of rating 1000kVAR as per the attached SLD at substation with 11kV main Circuit Breaker, sets of Fuse and Vacuum Contactors for each capacitor bank, automatic Power Factor Correction Relay, Capacitor banks (star connected) with series reactors, discharge resistance, residual voltage transformer & neutral displacement protection relay. Qty. – 1 set	11kV Capacitor Panel of rating <b>750kVAR</b> as per the attached SLD at substation with 11kV main Circuit Breaker, sets of Fuse and Vacuum Contactors for each capacitor bank, automatic Power Factor Correction Relay, Capacitor banks (star connected) with series reactors, discharge resistance, residual voltage transformer & neutral displacement protection relay. Qty. – 1 set
85.	Vol-II, Cl. 1.2.21.2, S.No. 5	415V Capacitor Panel of rating 355kVAR as per the attached SLD at substation with Air Circuit Breaker, sets of Fuse and Contactors for each capacitor bank, automatic Power Factor Correction Relay, Capacitor banks (delta connected) with series reactors, discharge resistance, residual voltage transformer & neutral displacement protection relay. Qty. – 1 set	415V Capacitor Panel of rating <b>300kVAR</b> as per the attached SLD at substation with Air Circuit Breaker, sets of Fuse and Contactors for each capacitor bank, automatic Power Factor Correction Relay, Capacitor banks (delta connected) with series reactors, discharge resistance, residual voltage transformer & neutral displacement protection relay. <b>Qty. – 2 sets</b>
86.	Vol-II, Cl. 1.2.21.2, S.No. 9	415V Silent DG Set, 250kVA at ESS with AMF Panel and exhaust pipes as per pollution norms, including foundation.	415V Silent DG Set, <b>300kVA</b> at ESS with AMF Panel and exhaust pipes as per pollution norms, including foundation.
87.	Vol-II, Cl. 5.1.9,	The output from the unit shall be 250KVA (at alternator output), 415 volts, 3 ph, 50 Hz, 0.8 power factor.	The output from the unit shall be <b>300KVA</b> (at alternator output), 415 volts, 3 ph, 50 Hz, 0.8 power factor.

88.	Vol-II, Cl. 5.1.13, S.No.-1,2 & 3,	<p>List of Approved Makes:</p> <p><b>HT Switchgear</b> - Adlec (Schneider) / SPC Electrotech (L&amp;T) / RISHA (L&amp;T) / NITYA (Siemens)/Schneider/Siemens/L&amp;T</p> <p><b>LT Switchgear</b> - Adlec (Schneider) / RISHA (L&amp;T, ABB) / SPC Electrotech (L&amp;T) / Vidhyut Control (L&amp;T) / NITYA (Siemens)/Schneider/Siemens/L&amp;T</p> <p><b>Distribution Boards</b> - SPC Electrotech (L&amp;T) / NITYA (Siemens) / RISHA (L&amp;T, ABB) / Adlec(Schneider)</p>	<p>List of Approved Makes:</p> <p><b>HT Switchgear</b> – Milestone(Siemens)/ Advance(Siemens)/ SPC Electrotech(L&amp;T)/Risha(L&amp;T) / Adlec(Schneider)</p> <p><b>LT Switchgear</b> – Advance(Siemens)/ Nitya (Siemens)/Milestone(L&amp;T)/ Vidhyut Control(L&amp;T)/ SPC Electrotech(L&amp;T)/ Adlec(Schneider)/ Tricolite(Schneider)</p> <p><b>Distribution Boards</b> – Advance(Siemens)/ Nitya (Siemens)/Milestone(L&amp;T)/ Vidhyut Control(L&amp;T)/SPC Electrotech(L&amp;T)/ Adlec(Schneider)/ Tricolite(Schneider)</p>
89	Vol II, Cl. 2.1.1	<p><b>Codes and Standards</b></p> <p>The codes and standards stated here below or elsewhere in these documents shall be the latest editions prevailing till December 2015</p>	<p><b>Codes and Standards</b></p> <p>The codes and standards stated here below or elsewhere in these documents shall be the <b>latest editions and amendments.</b></p>
90	Vol II, Cl no 7.11.2	<p><b>Technical Specification</b></p> <p>Before fabrication all steel that is subsequently over coated shall be shot blasted to SA ½ quality standard and primed immediately after blasting with one coat of approved shop primer. Therefore the skin plate, tank, frame, fitting, shall be coated with anticorrosive and antifouling paint system to achieve minimum guarantee life to first maintenance of 15 years based on ISO 12944. Contractor shall select a proven painting schedule from reputed paint manufacture's to ensure guarantee life.</p> <p>Colour scheme of final painting shall be as approved by the Employer</p>	<p><b>Technical Specification</b></p> <p>Before fabrication all steel that is subsequently over coated shall be shot blasted to <b>SA 2½</b> quality standard and primed immediately after blasting with one coat of approved shop primer. Therefore the skin plate, tank, frame, fitting, shall be coated with anticorrosive and antifouling paint system to achieve minimum guarantee life to first maintenance of 15 years based on ISO 12944. Contractor shall select a proven painting schedule from reputed paint manufacture's to ensure guarantee life.</p> <p>Colour scheme of final painting shall be as approved by the Employer</p>

## Annexure - I

### 2.1.4.2 Safety Factors

Design of the marine piles shall be carried out in accordance with the recommendations given in IS 2911, IS 14593 and IRC 78. The following safety factors shall be used to establish the safe geotechnical working load capacities of the piles as given below:

End Bearing	SF = 2.5
Skin Friction on compression piles	SF = 2.5
Skin Friction on tension piles	SF = 3.0
Lateral Load	SF = 2.0

## SCHEDULE-J

## 1. Project Completion Schedule

[illegible]

## Annexure - 4

### 4. 19.5 Sewage Treatment Plant

#### 4. 19.5.1 General

The sewage treatment plant of 20 KLD (FAB Technology) shall be provided which should be compact, odour free and shall consume low power.

Plant shall be installed below ground level or at any desirable depth and shall generate minimum amount of excess sludge. Waste water after treatment below shall be suitable for A/C cooling towers irrigation and scrubber make-up.

Parameters for design of Sewage Treatment Plant:

Natural of Effluent	Domestic Sewage
Daily Average Flow	180 Cu.m/day
pH	6.0 – 8.8
BOD	280 – 380 Mg / L.
Suspended Solids	200 – 480 Mg/L.
COD	600 – 800 Mg / L
Oil & Grease	20 Mg/L
Coliform count	< 106 – 107 (Assumed)

Standards of the Effluent Discharge after treatment shall be as follows:

Parameters	Value
pH	6.0 – 8.8
BOD	Less than 20 Mg/L
Suspended Solids	Less than 10 Mg/L
COD	Less than 180 Mg/L
Oil & Grease	Less than 10 Mg/L
Coliform count	<103 at the CCT outlet

#### 4. 19.5.2 Process description

In order to conserve water, the treatment plant shall be designed to ensure that treated effluent (water) characteristics are well below the permissible limits, even under varying flow conditioning which are typical for such systems. The selected process shall be able to withstand the shock load situation. To achieve same plant room areas, it is proposed to better use the principle of aerobic attached growth process.

The treatment plant shall be designed with a capacity to handle 20kl/day of wastewater. Wastewater will flow via gravity collection system through a bar screen chamber to a sump chamber. A bar screen shall be provided at the inlet point in the bar screen chamber and the wastewater will flow through this bar screen into the sump. Bar screen shall also be designed that it can be cleaned manually by going down to a platform in the chamber. Two horizontal centrifugal pumps shall be provided in the sump to pump the collected wastewater to the reactor. Air will be introduced in the sump through pipe grid, to avoid the sewage from becoming septic.

Wastewater from the sump shall be lifted by means of effluent lifting pumps into Equalized Reactors where BOD/COD reduction is achieved by virtue of aerobic microbial activity. Reactor would be running in series. Oxygen required will be supplied through coarse bubble air diffusers.

The excess bio-solids washed in the biological process are separated in the downstream Clarifier/Tube Settler Tank. The clear supernatant will be collected in the Chlorine water tank cum filter feed tank. The treated sewage is further pumped through filtration units. The sewage after CCT is disinfected and shall meet the coliform norms of <1000 counts with minimal dosage of sodium hypochlorite. The coliform count in the treated effluent shall be almost nil.

The tertiary treatment consists of removing the residual suspended solid load, by filtering through Dual Media Filter and passing the water through Activated Carbon Filter so that traces of BOD/COD and excess chlorine are removed. The tertiary treated water is stored in the final holding tank and can be safely used for irrigation purpose.

For cooling tower make-up the treated sewage from final holding tank is further passed through softening plant for cooling tower makeup purpose.

The biological sludge generated from the reactor which is settled in the Clarifier/Tube settler, is pumped into sludge sump, the sludge shall be pumped and filled in a tanker for suitable disposal by client.

#### **4. 19.5.3 Blowers and aeration system**

The treatment plant shall be provided with rotary positive displacement blower with a common base and a central panel, belt drive system, drip proof induction type electric motors, necessary valves including a pressure relief valve and intake and discharge silencing. Each blower motor unit shall be housed in an enclosure. All piping and related accessories necessary to connect the blowers to the plant air header shall be provided by the plant manufacturer.

All air piping from the blower motor unit to the air header shall be approved steel pipe with malleable iron fittings. Flexible reinforced rubber connecting sleeves shall be provided wherever required.

Each air diffusion device shall be connected to the air header with individual 28-80 dia drop pipings in SS 304. The drop pipe assembly shall be connected to the air header in a manner to permit raising the dropping and diffusion device above the water surface quickly and without disturbing airflow to the other diffusers. Each diffuser drop pipe shall be equipped with non-clog fine bubble diffusers of sufficient quantity to keep pressure loss through the drop pipe assembly to a minimum. The air diffusion devices shall be designed to distribute air over the entire length of the tank and to have efficiency such that an adequate supply of oxygen is maintained in the tanks of treat the sewage load for which the plant is designed.

The blowers shall be coupled with VFD for optimizing the energy consumption depending on the oxygen demand which shall be coupled with a proportion type (DO) Dissolved Oxygen controller.

#### **4. 19.5.4 Special notes**

Cost of pump shall include provision of isolation valves at inlet and outlet, non-return valves at outlet, pressure gauge, and steel channel arrangement at base, power and control cable from and to electrical panel, level controllers and alarm system.

- Providing of air educator system shall be made for following through MS epoxy painted piping, fittings and valves.
- Sludge recycle piping from clarifier.
- Sludge wasting piping from clarifier.
- Skimmer return piping from clarifier.
- Contractor to note that All submersible pipelines shall be in SS 304