







TTTD-106-1 Rev No. 5	Form No.	 <b>HYDERABAD</b>	<b>PROJECT ENGINEERING &amp; SYSTEM DIVISION</b> <b>BHEL, HYDERABAD –32.</b>				<b>PY51574</b>
							Rev No. 00
<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.		<b><u>TECHNICAL SPECIFICATION FOR</u></b> <b><u>CATHODIC PROTECTION SYSTEM</u></b>					
		<b><u>PROJECT</u></b>		<b><u>: DAHEJ PETROCHEMICAL COMPLEX</u></b>			
		<b><u>CUSTOMER</u></b>		<b><u>: ONGC Petro –additions Limited (OPaL), SEZ ,Dahej- Gujarat</u></b>			
		<b><u>CONSULTANT</u></b>		<b><u>:M/S ENGINEERS INDIA LIMITED, NEW DELHI</u></b>			
D Ate Ref		<b>Revisions :</b>	<b>Prepared by:</b>	<b>Checked by:</b>	<b>Approved By:</b>	<b>Date</b>	
		<b>00</b>	<b>HARISH</b>	<b>KAMALUDDIN</b>	<b>KAMALUDDIN</b>	<b>09.07.19</b>	

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<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <p style="text-align: center;"><b>COPYRIGHT AND CONFIDENTIAL</b></p> <p>The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.</p> </div> <div style="width: 85%; text-align: center;"> <p><b>INDEX</b></p> <table border="1" style="margin: 20px auto;"> <thead> <tr> <th>SL NO</th> <th>DESCRIPTION</th> <th>PAGE NO</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>INTENT OF SPECIFICATION</td> <td></td> </tr> <tr> <td>2.</td> <td>SPECIAL NOTES TO BIDDERS</td> <td></td> </tr> <tr> <td>3.</td> <td>PROJECT DESCRIPTION</td> <td></td> </tr> <tr> <td>4.</td> <td>SCOPE OF BALANCE CATHODIC PROTECTION SYSTEM</td> <td></td> </tr> <tr> <td>5.</td> <td>CLARITY OF SCOPE IN OTHER AREAS (SCOPE MATRIX)</td> <td></td> </tr> <tr> <td>6.</td> <td>DEVIATION TO SPECIFICATION</td> <td></td> </tr> <tr> <td>7.</td> <td>VARIANT TABLE</td> <td></td> </tr> </tbody> </table> </div> </div>				SL NO	DESCRIPTION	PAGE NO	1.	INTENT OF SPECIFICATION		2.	SPECIAL NOTES TO BIDDERS		3.	PROJECT DESCRIPTION		4.	SCOPE OF BALANCE CATHODIC PROTECTION SYSTEM		5.	CLARITY OF SCOPE IN OTHER AREAS (SCOPE MATRIX)		6.	DEVIATION TO SPECIFICATION		7.	VARIANT TABLE	
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<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.	<p><b>1. INTENT OF SPECIFICATION:</b></p> <p>1.1. This specification comprises the details of Balance Scope of Works for Cathodic Protection system for Fire Fighting items, to be carried out by contractor, but not limited to following for erection, testing, commissioning and performance testing, final handling over as mentioned hereinafter for the Cathodic Protection System , which form part of project.</p> <p><b>2. SPECIAL NOTES TO BIDDERS</b></p> <p>2.1 This specification shall be read in conjunction with all its enclosures.</p> <p>2.2 Cathodic Protection System : This system consist of Impressed Current Cathodic Protection (C.P) System for soil side corrosion prevention of all underground Cooling water lines &amp; fire water lines and bottom plate of the storage tanks (Hydro carbon and Condensate storage tank)</p> <p>2.3 There are several leftover erection works and leftover supplies, w.r.t. overall completion of the system. The bidder/vendor shall complete following :</p> <ul style="list-style-type: none"> <li>• Make the left-over supplies, that are required for completion of fire protection system (such as cables lugs, glands etc.)</li> <li>• Complete the left-over erection works, that are required for completion of Cathodic Protection system</li> <li>• Commission the Cathodic Protection system.</li> <li>• Hand-over the Cathodic Protection system, including all sub-systems, to customer.</li> </ul> <p>The details of the above are provided in the “scope of work” section of this specification.</p> <p><b>2.4</b> In this specification, enough clarity has been brought by BHEL regarding the site front facilities, nature and Quantum of Balance works of Cathodic Protection system , that must be completed to commission the systems.</p> <p>2.5 It may be noted that the best efforts have been made to give full clarity of the scope to the bidder. Bidder is advised to visit the site and understand the scope of works before making a quotation against this specification. However no price implications shall be acceptable w.r.t. non-familiarity of works or additional works related to the line items given in the scope of works specified in relevant clauses of this specification.</p> <p>2.6 The Bidder shall at his cost perform any services, tests etc, although not specified but required for the completion of work.</p> <p>2.7 During the course of execution of this work, certain rework/ modification/ rectification/ repairs / fabrication/dismantling/grouting etc. will be necessary because of feedback from customer for the work completed earlier. Contractor shall carryout such rework /</p>		
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		<p>2.8 All tools and tackles, fixtures, equipment, materials, manpower, supervisors/ engineers, consumables such as welding electrodes, welding receptacles etc. required for this scope of Cathodic protection work shall be provided by the Contractor. All expenditure in this connection shall be included in the main package price. No separate price for the same shall be offered.</p> <p>2.9 The Bidder shall accept full responsibility for the completeness and for the faultless working of all the equipment and the CP system as a whole.</p> <p>2.10 Bidder to quote strictly as per BHEL's price format. Failure to do shall make their offer liable for rejection. Any tampering/modification/change of the BHEL's price format is not allowed and such bidders are liable for rejection of bidders offer.</p> <p>2.11 The entire work of Erection, Testing and Commissioning of CP system works as detailed elsewhere in the Tender Specification shall be completed within two months from the date of commencement of work at site as certified by site engineer.</p>																										
<b>3. PROJECT DESCRIPTION</b>		<table border="1"> <thead> <tr> <th>A</th> <th colspan="2">Project Details</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Plant Location</td> <td>Near village Ambhetha Dahej SEZ in the Gulf of Khambhat</td> </tr> <tr> <td>2</td> <td>State</td> <td>Gujarat</td> </tr> <tr> <td>3</td> <td>Nearest Important Town</td> <td>Bharuch at a distance of 45 Kms Vadodara at a distance of 140 Kms</td> </tr> <tr> <td>4</td> <td>Nearest Railway Station</td> <td>Bharuch</td> </tr> <tr> <td>5</td> <td>Nearest Port</td> <td>Dahej at a distance of 10 Kms</td> </tr> <tr> <td>6</td> <td>Nearest Airport</td> <td>Vadodara at a distance of 140 km</td> </tr> <tr> <td>7</td> <td>Nearest National Highway</td> <td>New Delhi –Mumbai Trunk route. Passing through Bharuch-45 KM.</td> </tr> </tbody> </table>			A	Project Details		1	Plant Location	Near village Ambhetha Dahej SEZ in the Gulf of Khambhat	2	State	Gujarat	3	Nearest Important Town	Bharuch at a distance of 45 Kms Vadodara at a distance of 140 Kms	4	Nearest Railway Station	Bharuch	5	Nearest Port	Dahej at a distance of 10 Kms	6	Nearest Airport	Vadodara at a distance of 140 km	7	Nearest National Highway	New Delhi –Mumbai Trunk route. Passing through Bharuch-45 KM.
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<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.	<b>4. SCOPE OF BALANCE CATHODIC PROTECTION SYSTEM WORKS:</b> a. The erection works to be taken-up for Cathodic Protection System:																																																										
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<b>B</b>	<b>Balance Erection works for CW Lines</b>			
1	Cable Termination	3Nos	CRJB	CRJB erected. Only cable termination pening inside CRJB.
2	Cable Termination	4 Nos	AJB	CW line 2. AJB erected. Only cable termination pening inside CRJB.
3	Cable Termination	1 No	RMCP	cw Line & fire water. Cable termination pending at RMCP end
4	Thermit Weld connection	2 Nos	CRJB	Thermit weld connections to be carried out for CW Line & fire water lines.
5	Cable Termination Of FO Cable	1 No	RMCP	CW Line,fire water Lines . Cable termination pending at RMCP end (located near GIS building) and Operating Work station in control room
6	Accessories & Cable Dressing	1 No	RMCP	CW Line & fire water lines. This is inside RMCP panel.
7	Excavation and RCC work for approx. size of 100x300 MM	100 Mtr	Excavation & RCC	CW Line & fire water lines.
8	Cable Termination	1 No	MJB	Only cable termination to be acried out.
<b>C</b>	<b>Balance Erection works for Hydrocarbon Storage Tank</b>			
1	Cable Termination	1 No	PDB	FOAM Tank & HSD Tank 1. Erection of PDB completed. Cable also erceted. Only termination pending
2	Cable Termination	1 No	MJB	FOAM Tank & HSD Tank. 1. Erection of MJB completed. Cable also erceted. Only termination pending
3	Cable Termination with Installations	1No	CDB	FOAM Tank & HSD Tank. CDB installation is also pending. Support structure to be mounted ( material available). Cable termination pending
4	Accessories & Cable Dressing	1 No	RMCP	FOAM Tank & HSD Tank. This is inside RMCP panel.
<b>D</b>	<b>Balance Erection works for CS Tank</b>			
1	Accessories & Cable Dressing	1 No	RMCP	CS Tank. This is inside RMCP panel.
2	Auto monltering System	1 No	PC	RMCP Panel to PC System. Cabling is completed. Termination work is pending

Ref.  
Doc

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E	Balance Erection works for RMCP			
1	RMCP refurbishment I. RMCP Panel electrical wiring maintenance for all RTUs II. HMI replacement III. MCB replacement IV. Fibre optic patching and maintenance for all RTUs V. Ethernet switch connection replacement for all RTUs VI. SMPS repair in control room	1 Lot	RMCP	<b>RMCP-1</b> RMCP wiring to be checked and continuity of all wires to be established. Utility plug socket is missing and need to be re-fit. HMI socket need to be replaced. MCB-C2 was found faulty, need to be rectified. Fibre optic patching and termination to be carried out. Ethernet switch to be replaced. TRU to RMCP wiring termination to be carried out. Media converter 100x1GB- 2 Nos. <b>RMCP-2</b> Fibre optic patching and termination to be carried out. Ethernet switch to be replaced. TRU to RMCP wiring termination to be carried out. Media converter 100x1GB- 2 Nos. <b>RMCP-3</b> RMCP, TRU-3 and TRU-4 : Power wiring to be carried out. MCB-C2: 2 nos. to be replaced. Fibre optic patching and termination to be carried out. Ethernet switch to be replaced. TRU to RMCP wiring termination to be carried out. Media converter 100x1GB- 2 Nos. Control Room : Ethernet to FO switch in control room required. SMPS required for given supply to Ethernet to FO switch in Control room


4.1 All Erection hardware / support structure required shall be deemed to be included in Price quoted by bidder in their offer.

**5. CLARITY OF SCOPE IN OTHER AREAS (SCOPE MATRIX):**


5.1. **Mechanical**

MECHANICAL				
Sl. No	Item	By BHEL	By Bidder	Remarks
1.	Support structure if any required for installation of CP system	No	Yes	

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<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.		<b>5.2. Civil</b>											
		<b>CIVIL</b>											
		<b>S No.</b>	<b>Item Description</b>	<b>By BHEL</b>	<b>By Bidder</b>	<b>Remarks</b>							
		1.	Making openings in walls for cables, etc., and making them good after installation for the purpose of installing bidder's supplied items. Excavation for installation of pipes	No	Yes								
		<b>5.3. Electrical</b>											
		<b>ELECTRICAL</b>											
		<b>S No.</b>	<b>Item Description</b>	<b>By BHEL</b>	<b>By Bidder</b>	<b>Remarks</b>							
		1.	Connection and termination works for control panels such as cable glands, lugs and equipment as per scope.	No	Yes								
		<b>6. DEVIATIONS TO SPECIFICATIONS:</b>											
		6.1. <b>No deviation on the "scope of work furnished in cl. No. 4" is acceptable.</b> Bidders are advised to quote strictly as per BHEL's specification requirements. Any deviation to the specification or omission of any part of scope by bidder is not permissible. In such cases, the quotation/ bid shall be liable for rejection. Otherwise bidder shall comply with specification without any additional price implications on the omitted scope/deviation to participate in the bid.											
6.2. Bidders may raise pre-bid queries on the specification before the cut-off date. The same shall be reviewed by BHEL and suitable clarification shall be provided to all bidders. Bidders are advised to use the format attached with this specification (Annexure -02) to raise pre-bid queries. All such applicable deviations /clarification shall have cross reference to page number /section / clause /para etc. of this specification or its annexure with proper reasons for the deviations for purchaser's consideration. Any such applicable deviations /clarification not listed under the above section, even if reflected in any other portion of the bidder's proposal shall not be considered applicable.													
<b>7. VARIANT TABLE:</b>													
<table border="1"> <tr> <th>Sl. No.</th> <th>Material Code</th> <th>Variant</th> </tr> <tr> <td>1.</td> <td>PY9751574013</td> <td>01</td> </tr> <tr> <td>2.</td> <td>PY9751574021</td> <td>02</td> </tr> </table>					Sl. No.	Material Code	Variant	1.	PY9751574013	01	2.	PY9751574021	02
Sl. No.	Material Code	Variant											
1.	PY9751574013	01											
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	Ref. Doc.				