

VOLUME - IA


Technical Conditions of Contract (TCC) for SULPHUR PIT
BRICK LINING WORKS

FOR

IOCL Paradip-Standby SRU (525TPD) Train
project

BHARAT HEAVY ELECTRICALS LIMITED

Technical Conditions of Contract (TCC) for SULPHUR PIT BRICK LINING WORKS

 <p>बीएच ईएल BHEL Maharaja Company</p>	<p>Technical Conditions Of Contract (TCC) PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD</p>	<p>Ref No: HY/PE&SD/Proj ects/TCC/2020- 21/Brick Lining/01</p>		
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<p>COPYRIGHT AND CONFIDENTIAL 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>	<p>TECHNICAL CONDITIONS OF CONTRACT (TCC)</p> <p>FOR</p> <p>SULPHUR PIT BRICK LINING WORKS</p> <p>FOR</p> <p>IOCL PARADIP-STANDBY SRU (525TPD) TRAIN PROJECT</p>			
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Volume IA **Part I** **Contract specific details**

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Chapter I- Project Information

1.0 Project Details			
1	Customer	:	IOCL, Paradip, Odisha
2	Project Information	:	IOCL Paradip-Standby SRU (525TPD) Train project
3	Location	:	Paradip, Odisha
4	Address Detail	:	IOCL, Paradip, Jagatsinghpur District, Odisha, India
5	Nearest Railway Station	:	Paradip Railway Station
6	Road Approach	:	118KM from Bhubaneswar via Cuttack and NH 53
7	Nearest Air Port	:	Biju Patnaik Airport, Bhubaneswar, Odisha, 125KM
11	Ambient Air Temperature (Average)	:	a) Maximum : 39 ⁰ C b) Minimum : 16 ⁰ C
12	Average Relative Humidity	:	71 %
13	Climatic Condition	:	Tropical Climate

Bidder is advised to visit the project site and appraise himself about the local conditions and infrastructure available in the area for fulfilling their commitments under the contract. BHEL will not admit any claims whatsoever on account of Contractor's non-familiarization of local conditions.

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Chapter II- Scope of Work

Supplying, Providing and laying on pit wall and floor of Acid Resistant Brick lining (Class II), as per IS:4860 with 6mm thick joint (vertical & horizontal) of potassium silicate mortar as per IS:4832, Part-I & pointing exposed brick joints 20mm deep with resin based furane mortar as per IS:4832 Part-II and 50mm insulating castable (Composition: Al_2O_3 ($\geq 40\%$), Fe_2O_3 ($\leq 1\%$) as per EIL standard 6-79-0008 Type-I on concrete surface (to be lined), prior to brick lining, all complete at all levels including water seal NITOPROOF 100/120 or Equivalent on concrete surfaces. (SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE).

Work shall be executed as per the instructions of BHEL site engineer. In case of any dispute, decision of BHEL site engineer shall be final and binding on contractor. For detailed scope of work, please refer chapter 1, part-II of this TCC

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Chapter III- Facilities in the scope of BHEL/Contractor

S. No.	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1	ESTABLISHMENT			
3.1.1	FOR CONSTRUCTION PURPOSE:			
a	Open space for office (as per availability)		Yes	
b	Open space for storage (as per availability)		Yes	
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipment, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc.		Yes	
f	Firefighting equipment like buckets, extinguishers etc.		Yes	
g	Fencing of storage area, office, canteen etc. of the bidder		Yes	
3.1.2	FOR LIVING PURPOSES OF THE BIDDER			
a	Open space for labor colony (as per availability)		Yes	
b	Labor Colony with internal roads, sanitation, complying with statutory requirements		Yes	
3.2.0	ELECTRICITY			
3.2.1	Electricity For construction purposes		Yes	Electricity shall be provided by BHEL/IOCL at one point on chargeable basis. Further distribution shall be done by contractor.
3.2.2	Electricity for the office, stores, canteen etc. of the bidder		Yes	
3.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc.		Yes	
3.3.0	WATER SUPPLY			

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S. No.	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.3.1	For construction purposes		Yes	Water shall be provided by IOCL at one point on chargeable basis. Further distribution shall be done by contractor.
3.3.2	<u>Water supply for bidder's office, stores, canteen etc.</u>		Yes	
3.3.3	<u>Water supply for Living Purpose</u>		Yes	
3.4.0	LIGHTING			
a	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	
b	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area At the construction site /area		Yes	
c	Providing the necessary consumables like bulbs, switches, etc. during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	
3.6.0	COMPRESSED AIR wherever required for the work		Yes	
3.7.0	Demobilization of all the above facilities		Yes	
3.8.0	TRANSPORTATION			
a	For site personnel of the bidder		Yes	
b	For bidder's equipment and consumables (T&P, Consumables etc.)		Yes	

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Sl. No	Description PART II 3.9.0 CONSTRUCTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.9.1	Engineering works for construction:			
a	Providing the construction drawings for all the works covered under this scope	Yes		Drawing schedule shall be finalized at the time of kick off meeting
b	Drawings for construction methods			NA
c	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	In consultation with BHEL
d	Shipping lists etc. for reference and planning the activities		Yes	In consultation with BHEL
e	Preparation of construction (Concreting B/W, etc.) schedules and other input requirements		Yes	In consultation with BHEL
f	Review of performance and revision of site construction schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly construction schedules based on S. No. e. hard copy to Construction manager, by email to HO.		Yes	In consultation with BHEL
h	Daily construction / work plan based on S. No. g. hard copy to Construction manager, by email to HO.		Yes	In consultation with BHEL
i	Periodic visit of senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two Weeks.		Yes	
j	Arranging the materials required for Work		Yes	
k	Coordination for inspection & checking and getting clearance from customer		Yes	

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Sl. No	Description PART II 3.9.0 CONSTRUCTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1	Preparation of formats for completion of activities		Yes	
3.10	Work Permits, gate pass etc. from customer for manpower, machinery and material		Yes	
3.11	Ambulance Services for contractor's site staff		Yes	

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Chapter IV- Tools & plants to be deployed by Contractor

LIST OF TOOLS AND PLANT:

The following tools and equipment but not limited to, are required for the efficient execution of the civil works. The contractor shall make them available for construction purposes, including all consumables likely to be used at his own cost at the time of mobilization.

S.No.	Description	Minimum Quantity	Remarks
1.	Concrete batching plant (Stationary/Movable)	2 nos.	
2.	Needle Vibrator (Needle type 40mm)	4 nos.	
3.	Needle Vibrator (Needle type 25mm)	2 nos.	
3.	Surface Vibrator	1 no.	
4.	Concrete Pump	1 no.	
5.	Dewatering Pump	2 nos.	
6.	Earth Compactor	2 nos.	Need based
7.	Reinforcement steel cutting & Bending machine	2 nos.	
8.	Welding Machine	2 nos.	
9.	Grinding Machine	4 nos.	
10.	Excavator	1 no.	Need based
11.	Theodolite with staff	1 no.	
12.	Dumpy level with staff	1 no.	
13.	Compression testing machine (for concrete cubes)		
14.	Cube mould (15cm x 15cm x 15cm)	6 nos.	
15.	Sieve analysis sieve sets for coarse & fine aggregates	1 set	
14.	Jar/Beaker for Bulk density test of sand	1 no.	

BHEL will not provide any tool, plants, facilities or any testing facility/apparatus for the work. It will be contractor's responsibility to arrange all required tools, plants and other testing apparatus, etc. at their own cost. The prices quoted & finalized are inclusive of the charges towards providing such T&P. No extra payment will be entertained because of this.

However, subject to availability, BHEL may provide few T&P to the contractor for expediting and in larger interest of the project. In case any such facility is provided to the contractor, BHEL will make necessary recovery in the running account/final bills towards the hire charges. A departmental charge @ 5% will also be affected such cases. The decision of BHEL on the hire charges will be final and binding on contractor.

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Chapter V- Time Schedule

5.1 TIME SCHEDULE

5.1.1

The entire work of Soil investigation survey as detailed elsewhere in the Tender Specification shall be completed within **Two (2) Month** from the date of commencement of work at site.

5.1.2

During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL and the program of milestone events.

5.1.3

The work shall be commenced on the mutually agreed date between the bidder and BHEL engineer. The decision of BHEL in this regard shall be final and binding on the contractor. The scope of work under this contract is deemed to be completed only when so certified by the site Engineer.

5.2 COMMENCEMENT OF CONTRACT PERIOD

The date of commencement of contract period shall be the mutually agreed date between the bidder and BHEL engineer to start the work. In case of discrepancy, the decision of BHEL engineer will be final.

5.3 MOBILISATION

5.3.1

The activities for this work shall be started as per directions of Construction manager of BHEL.

5.3.2

The contractor should mobilize manpower in order to complete the work in **Two (2) Month**.

5.3.3

Requisite Material, men and machinery should be arranged in order to complete the project within stipulated time.

5.3.4

The contractor has to augment his resources in such a manner that following major milestones of the project are achieved on specified schedules:

In order to meet above schedule in general, and any other intermediate targets set, to meet project, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL.

5.4 CONTRACT PERIOD

For the purpose of contract, the period shall be taken as **Two (2) Month**. Completion of the work shall be as per BHEL Bar Charts revised from time to time. In order to expedite the work, the contractor has to deploy manpower as per site requirement without any extra cost to BHEL.

5.5 GUARANTEE PERIOD

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The guarantee period of twelve months shall commence from the date of completion of all works as certified by the BHEL site engineer.

5.6 PROTECTION OF WORK

The contractor shall have total responsibility for protecting his works until it is taken over by the Employer. No claim will be entertained by the Employer or the representative of the Employer for any damage or loss to the Contractor's works and the Contractor shall be responsible for complete restoration of the damaged works to original conditions to comply with the specification and drawings. Should any such damage to the Contractor's Works occur because of other party not being under his supervision or control, the Contractor shall make his claim directly with the party concerned.

If disagreement, conflict, or dispute develops between the Contractor and the other party or parties concerned regarding the responsibility for damage to the Contractor's Works the same shall be rectified. The Contractor shall not cause any delay in the repair of such damaged Works because of any delay in the resolution of such disputes. The Contractor shall proceed to repair the Work immediately and no cause thereof will be assigned pending resolution of such disputes.

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Chapter VI- Statutory Regulation

6.1 GST: For All types of works excepting works covered under sl no 6.2

6.2 BUILDING & OTHER CONSTRUCTION WORKERS (REGULATION OF EMPLOYMENT AND CONDITIONS OF SERVICE) ACT, 1996 (BOCW Act) AND RULES OF 1998 READ WITH BUILDING & OTHER CONSTRUCTION WORKERS CESS Act, 1996 & CESS RULES, 1998 and

INTER-STATE MIGRANT WORKMEN ACT, 1979 (IN CASE BIDDER ENGAGE MANPOWER FROM OTHER STATE)

In case any portion of work involves execution through building or construction workers and/or inter-state migrant workers, then compliance to the above titled Acts as applicable shall be ensured by the contractor and contractor shall obtain license and deposit the cess under the Act. In the circumstances, it may be ensured as under:-

It shall be the sole responsibility of the contractor in the capacity of employer to forthwith (within a period of 15 days from the award of work) apply for a license to the Competent Authority under the BOCW Act and/or ISMW Act as applicable and obtain proper certificate thereof by specifying the scope of its work. It shall also be responsibility of the contractor to furnish a copy of such certificate of license / permission to BHEL within a period of one month from the date of award of contract.

It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these acts and rules including that of payment / deposit of cess as per the applicability under above referred Acts within a period of one month from the receipt of payment.

It shall be the responsibility of the sub-contractor to furnish the receipts / challans towards deposit of the cess together with the number, name and other details of beneficiaries (building/Inter-state Migrant workmen) engaged by the sub-contractor during the preceding month.

It shall be the absolute responsibility of the sub-contractor to make payment of all statutory payments & compensations to its workers including that is provided under the Workmen's Compensation Act, 1923.

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Chapter VI- Field quality control plan

1. Work shall be executed as per approved field quality control plan (FQCP). Indicative quality control plan of IOCL is attached as Annexure-IV. Contractor shall prepare, submit the field quality control plan in line with IOCL QCP.
Submitted FQCP shall be reviewed and approved by BHEL/IOCL/ TECHNIP.

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Chapter VIII: HSE (Health, Safety, Environment) and PPE (personal Protective Equipment) Guidelines

1. Contractor shall follow all the HSE guidelines as mentioned chapter IX off SCC and IOCL (Annexure-I).
2. Contractor shall deploy one (1) number of qualified and experienced safety officer for the entire period of contract.
3. Contractor shall submit the biodata of safety officer to BHEL/Customer (IOCL), for approval.
4. In case of any dispute/ contradiction, IOCL HSE rules and guidelines shall prevail.

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Volume IA **Part II** **Technical Specification**

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Chapter-I: SCOPE OF WORK

1) SCOPE OF WORK

Supplying, Providing and laying on pit wall and floor of Acid Resistant Brick lining (Class II), as per IS:4860 with 6mm thick joint (vertical & horizontal) of potassium silicate mortar as per IS:4832, Part-I & pointing exposed brick joints 20mm deep with resin based furane mortar as per IS:4832 Part-II and 50mm insulating castable (Composition: Al_2O_3 ($\geq 40\%$), Fe_2O_3 ($\leq 1\%$) as per EIL standard 6-79-0008 Type-I on concrete surface (to be lined), prior to brick lining, all complete at all levels including water seal NITOPROOF 100/120 or Equivalent on concrete surfaces. (SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE).

2) THE WORK WILL INVOLVE

All civil works connected with the above mentioned work, brick work, embedment, plastering and painting, waterproofing, flooring etc.

3) GENERAL

The drawings enclosed with this tender are intended to give the tenderer a general idea of the type and extent of work involved. The drawings are as such only indicative and not to be considered as the exact construction drawings.

Further this is to be noted that the drawings and the documents furnished along with this specification are the sole property of BHEL. It must not be used directly or indirectly in any way detrimental to the interest of the company.

The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably imply and necessary for completion of the job as a whole all as desired and as directed by the engineer.

The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.

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4) ALSO INCLUDED IN THE SCOPE

Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the “Schedule of items” shall include but not be limited to the following.

Furnishing all labour, materials, supervision, construction plans, equipment, supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provide by the engineer during the course of works.

Furnishing samples of all materials required by the engineers for testing/inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.

Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.

Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that are required for all works including temporary works.

Arranging manufacturer’s supervision for items of work done as per manufacturer’s specifications when so specified.

Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

5) WORK BY OTHERS

No work under the specification will be provided by any agency other than the contractor unless specifically mentioned elsewhere in the contract.

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Chapter-II: TECHNICAL SPECIFICATIONS & DRAWINGS FOR INFORMATION

TECHNICAL SPECIFICATIONS & DRAWINGS FOR INFORMATION.

NOTE: Contractor has to make himself well conversant with the
Customer specification and drawings.

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LIST OF TECHNICAL SPECIFICATIONS & DRAWINGS

S.NO.	DRAWING No.	TITLE	REV.NO.
1	080557C-26899053-PIP-A0201-001	PLOT PLAN (TENDER PURPOSE ONLY)	R1
2	080557C-26899053-CIV-A2401-028_R3-(3shfts)	SULPHUR PIT GA & RCC DETAIL	R3
3	080557C-000-JSS-1700-016	SPECIFICATION FOR ACID PROOF BRICK LINING	B
4	080557C-000-DW-1702-001	GENERAL NOTES FOR CONCRETE WORKS-PMC	C
5	080557C-26899053-CIV-A2011-001	GENERAL NOTES FOR PCC & RCC WORKS	R01
6	6-79-0008	STANDARD SPECIFICATION FOR INSULATING CASTABLES	R3
7	080557C-000-JSS-1700-005	SPECIFICATION FOR MATERIALS OF CIVIL & STRUCTURAL WORKS	B
8	080557C-000-JSS-1700-010	SPECIFICATION FOR PLASTERING AND POINTING	B
9	080557C-000-JSS-1700-013	SPECIFICATION FOR MASONRY WORKS	B
10	080557C-000-PP-807	JOB SPECIFICATION FOR MATERIAL RECEIVING, INSPECTION, HANDLING, STORAGE & PRESERVATION	0

Note: Please refer annexure-II for all the specifications mentioned above.

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Chapter-III: PREAMBLE FOR THE SCHEDULE OF QUANTITIES.

PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding Technip FMC/IOCL specifications, drawings and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.
- 2) The work shall be carried out as per construction drawings, specifications, the description of the items in this schedule and/or Engineer's instructions., Drawings enclosed with these documents are only indicative giving some idea of the type of work involved. The layout, sizes and details of the building, structures and foundations shown in tender drawings may vary at a large extent during actual construction. Final drawings will be issued progressively during the execution of the work.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant , temporary works, labour materials, levies , taxes , transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services , temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetation's, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) The rate shall also be inclusive of carrying out topography survey of site to establish levels and coordinates at suitable intervals, form existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
- 7) Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellation should be counter signed by the bidder. In case of illegibility, the interpretation of the engineer shall be final. All entries shall be in English language.
- 8) Engineers decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.

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- 9) In case of any discrepancy between item descriptions, relevant drawing and / or specification, clarification shall be sought at tender stage itself. Otherwise, it shall be assumed that the bidder has quoted for the more stringent requirement.

HIERARCHY

In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows

- Statutory Regulations
- Technip FMC/ IOCL specification
- EIL specification
- Items in Schedule of quantities
- IS/BS standards
- BHEL's standard specification (with prior approval of Engineer-in-charge).