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VOLUME - IA

TECHNICAL CONDITIONS OF CONTRACT (TCC) FOR CIVIL CONSTRUCTION WORK/ TELIBANDA LAKE PURIFICATIONS RSCL, CHHATISGARH .

TCC No: HY/PE&SD/Civil works-Sub Contract/ Lake purification/RSCL,
Raipur,C.G. Rev.00

BHARAT HEAVY ELECTRICALS LIMITED

PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD



TECHNICAL CONDITIONS OF CONTRACT (TCC)
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TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter-I Project Information

1.0 Project Details			
1	Customer	:	Raipur Smart City Ltd
2	Project Information	:	Lake Purification & restoration with Phytoid technology by NEERI in Telibandha lake including O&M for 5 yrs, Raipur (C.G)
3	Location	:	Telibandha lake, Raipur (C.G)
4	Address Detail	:	Telibandha lake, Raipur (C.G)
5	Nearest Railway Station	:	Raipur
6	Road Approach	:	Raipur
7	Nearest Air Port	:	Raipur
11	Ambient Air Temperature (Average)	:	a) Maximum : 46 ⁰ C b) Minimum : 01 ⁰ C
12	Average Relative Humidity	:	23-95 %
13	Climatic Condition	:	Humid Sub 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II Scope of Works

2.0 SCOPE OF WORK

2.1 The work to be performed under the scope of this tender mainly consists of but not limited to complete **underground civil works** including excavation for foundations & pits, backfilling, leveling and grading, including removal of debris, RCC foundation works for equipment foundations, plant buildings, pits and other miscellaneous structures/services.

For building sizes and number of equipment refer plot plan, please note that these are tentative and likely to change.

I. Construction of Buildings

- i. Blower Room/Blower Shed

II. Construction of Equipment Foundation

- i. Blower Foundations
- ii. Pump Foundations
- iii. Blower Outlet Anchor Foundations
- iv. Floating Rafter Anchor Foundations

III. Construction of Chambers/Tanks

- i. Screen Chamber
- ii. Sedimentation Tank
- iii. Phytroid Chamber

IV. Miscellaneous Services

- i. Topographical survey of proposed plot. (refer Cl. No. 8.2, page 76 of 174 of Customer's Specification)
- ii. Soil Investigation to find soil bearing capacity
- iii. 1m paving around tanks and building
- iv. Any temporary activities required to complete the work.

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Chapter-II Scope of Works

- v. Micro grading & disposal of surplus and unserviceable material beyond proposed plant. Contractor to assess the lead by physically visiting the Plant site.
- vi. Approval from statutory and local authorities.
- vii. The plot for construction area / field office/ construction stores has to be developed by the contractor of its own and the Client shall only identify the space on as in where is basis. All the infrastructure facilities, which include roads, approaches, drainage system, pavements etc., shall be developed & provided by the contractor of its own.

2.3 THE WORK WILL INVOLVE.

All underground civil works connected with the above mentioned structures such as earth work, concrete work, embedment and painting etc.

2.4 CIVIL WORKS

The scope covers all Civil works within the battery limits. The important works covered are as below.

- a) Earthwork, filling and levelling in proposed plant, cutting of tree, shrubs, and other matters in proposed area.
- b) Excavation of earth and backfilling including dewatering of excavations for foundations, pits, etc. till the construction of the same is completed and disposal of surplus.
- c) Construction of RCC foundation footing for Buildings, trenches, pits/tanks, plinth beams at foundation level, grade slabs, roof slabs, equipment foundations etc.
- d) Preparation and submission of detailed calculations, arrangement drawings and detail drawings of formwork, staging and scaffolding for all reinforced concrete structures and foundations as directed by the Engineer for his checking and approval.
- e) Preparation of detailed working drawings and bar bending schedules for all reinforced concrete work and getting them approved by the BHEL Engineer.
- f) Fabrication and fixing structural steelwork for cable trench covers, plates etc.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II Scope of Works

- g) Fabrication supply and fixing of anchor bolts, sleeves, fixing frames, embedment etc. in concrete.
- h) Supply of all instruments and personnel for conducting necessary tests at site as specified/as directed by the Engineer.

2.5 GENERAL

- a) 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 B.H.E.L. It must not be used directly or indirectly in any way detrimental to the interest of the company.
- b) 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.
- c) 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.

2.6 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.

- a) 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.
- b) 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II Scope of Works

- c) Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
- d) 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.
- e) Arranging Supplier's/manufacturer's supervision for items of work done as per Supplier's/manufacturer's specifications when so specified.
- f) Carrying out topographic survey of the entire and establish levels and coordinates at suitable intervals from existing grid levels and coordinates furnished by the owner established bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide the owner/BHEL such a assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.
- g) Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

2.7 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.

FOR FURTHER DETAILED SCOPE OF WORKS REFER RELEVANT TECHNICAL SPECIFICATIONS PROVIDED IN THE SUBSEQUENT CHAPTERS IN THE TCC

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

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		Location will be finalized after joint survey with customer
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with customer
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipments, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
f	Firefighting equipments 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 labour colony (as per availability)		Yes	
b	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	
3.2.0	ELECTRICITY			
3.2.1	Electricity For construction purposes		Yes	
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			

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

S. No.	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.3.1	For construction purposes		Yes	
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 3. 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 equipments and consumables (T&P, Consumables etc)		Yes	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

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		
b	Drawings for construction methods	Yes		
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

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – III: Facilities in the scope of Contractor/BHEL

Sl. No	Description PART II 3.9.0 CONSTRUCTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
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	
l	Preparation of formats for completion of activities		Yes	
m	Providing one no. messenger cum office boy for BHEL site office		Yes	
N	Providing one office table & four no of chairs for BHEL-Office		Yes	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – IV: T&Ps and MMEs to be deployed by Contractor

F. 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.	Digital Concrete Mixer 0.25 to 0.40 cum with hopper/Self-loading mobile concrete mixer(AZAX with printer)	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.	Need based
5.	Dewatering Pump	4 nos.	
6.	Earth Compactor	2 nos.	Need based
7.	Reinforcement steel cutting & Bending machine	4 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)	1no	
14.	Cube mould (15cm.x15cm.x15cm.)	6 nos.	
15.	Sieve analysis sieve sets for coarse & fine aggregates	1 set	
16	Jar/Beaker for Bulk density test of sand	1 no.	
15	Proctor test equipments	1 set	

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – IV: T&Ps and MMEs to be deployed by Contractor

NOTE: -

- i) All the tools should be procured sufficient quantities by the Contractor.
- ii) The list of tools & tackles mentioned above are indicative only. The contractor has to mobilize the required tools & Plant sufficient quantity to carry out the erection, testing and commissioning. However, on instruction of Resident Construction Manager, additional tools and tackles has to be arranged by Bidder for smooth construction activities of the project.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – V: T&Ps to be deployed by BHEL on sharing basis

BHEL will not provide any tool, plants 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 on account 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VI: Time Schedule

6.1 TIME SCHEDULE

6.1.1

The entire work of construction including all facilities mobilization and demobilization, shall be completed Five (05) months from the date of commencement of work.

6.1.2

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.

6.1.3

The work shall be commenced on the mutually agreed date between the bidder and BHEL engineer and shall be deemed as completed in all respect only when the unit is in operation. 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.

6.2 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.

6.3 MOBILISATION

6.3.1

The activities for Excavation, Concreting, Architectural, structural & other civil construction works etc. shall be started as per directions of Construction manager of BHEL.

6.3.2

The contractor should mobilize manpower in order to complete the work in 3 months for civil construction and entire scope of work.

6.3.3

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

6.3.4

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

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VI: Time Schedule

TENTATIVE SCHEDULE

S.No.	Activity/Mile stone	Duration in months	
		Start	Finish
1	Site Mobilization and Preparatory Works	10.05.2018	
2	Construction of Screen Chamber, Sedimentation Tank, Phytoridbed	14.05.2018	15.07.2018
3	Construction of Equipment Foundations	14.05.2018	30.06.2018
4	Blower Room /Shed	30.05.2018	30.06.2018
5	Miscellaneous works	01.07.2018	09.10.2018

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

6.2 CONTRACT PERIOD

For the purpose of contract, the period shall be taken as Five (05) months. 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 on two-shift basis during construction, erection and during pre-commissioning and commissioning period, manpower should be provided round the clock basis as per site requirement without any extra cost to BHEL.

6.3 PROTECTION OF WORK

The contractor shall have total responsibility for protecting his works till 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 or 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VII: Payment Terms

7.1

The progressive payment for the work on accepted price of contract value will be released on the basis of running account bills & other bills as per the provisions of relevant clauses of GCC and SCC.

7.2

The following documents are to be submitted along with the Running Account Bills for process of payment

7.2.1 Tax Invoice with details of TIN number of BHEL and contractor.

7.2.2 Measurement books duly filled and signed officials of BHEL and contractor

7.2.3 Provident Fund Remittance challan of previous month.

7.2.4 ESI Remittance challan of previous month.

7.2.5 Invoice submitted along with running bills to indicate the GST amount charged and bear the GSTIN Number.

7.2.6 Bill submitted subsequently to be accompanied with a declaration that GST liability on the earlier bill has been discharged.

7.2.6.1 By paying money to the Government (along with Tax paid Challan Copy)

7.2.6.2 By utilization of Input Service tax Credit

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII Taxes & Duties

8.0 TAXES & DUTIES:

The quoted rates shall be exclusive of GST but inclusive of all other taxes, including any cess or surcharge or levy/tax by whatever name called, imposed under GST law or any other law at any time, for which input credit is not available to BHEL under any interpretation of the law.

GST at the applicable rates shall be payable extra. SAC code is 995424. However, the same shall not be paid if the input credit thereof is not available to BHEL due any reason attributable to the supplier/bidder.

TDS under GST as and when applicable, shall be deducted at prevailing rates.

GST as applicable on the LD/Penalty shall also be recoverable in addition to LD/Penalty applicable on delayed supplies.

Bidders have to comply with all requirements of the GST law as may be prescribed by the Government from time to time (including provisions related to E-way bills as and when prescribed). In the event of any non-compliance to any of the requirements of the GST law by the supplier/bidder, any consequential financial implication to BHEL, including interest on delayed discharge of BHEL's GST liability, denial of input credit of GST, etc., shall be recoverable from the supplier/bidder.

8.1 SUPPLY:

Bidders have to issue GST compliant invoices showing:

BHEL PE&SD R C Puram Hyderabad GSTIN No.36AAACB4146P1ZG under "Details of Receiver (Billed To)

BHEL's Customers details (mentioned in SCC/Dispatch Instructions) under "Details of Consignee (Shipped To)

State of Telangana as the "Place of Supply" irrespective of where the goods are shipped to, since these transactions fall under Section 10(1)(b) of the IGST Act in case of suppliers from outside Telangana.

Details of dispatch comprising of copies of GST Invoice, LR/Delivery challan, Packing list etc. have to be submitted to BHEL through email to the concerned purchase officer, prior to dispatch. BHEL shall issue GST invoice (on BHEL's customer) and forward the transporter's copy to the vendor for the movement of the goods. Thereafter, the vendor shall ensure immediate movement of goods under the same documentary details submitted to BHEL. In the event of any delay in movement of goods/submission of these documents to BHEL and/or any documentary discrepancies, any consequential financial implication to BHEL, including interest loss on discharge of BHEL's GST liability, denial of input credit of GST, etc., shall be recoverable from the supplier/bidder.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII Taxes & Duties

8.2 SERVICES (E&C, Supervision of E&C, Civil Works etc.):

Bidders have to issue GST compliant invoices showing:

BHEL, State of **Chattishgarh** (State in which the project site is located) GSTIN of BHEL in such State (to be obtained by the bidders before raising any invoice) under “Details of Receiver (Billed To)

BHEL’s Customers details (mentioned in SCC/Dispatch Instructions) under “Details of Consignee (Shipped To) State in which the project is located, as the “Place of Supply”.

The invoices shall be raised within the time limit prescribed under the GST law. In the event of any delay in submission of the invoice to BHEL, any consequential financial implication to BHEL, including interest loss on discharge of BHEL’s GST liability, denial of input credit of GST, etc., shall be recoverable from the supplier/bidder.

8.3 PAYMENT OF GST:

The GST amount on gross value of each invoice shall be claimed by the bidders along with the first stage payment by submission of GST invoice as mentioned above.

However, the amount of GST shall be paid only upon confirmation of the following:

The bidder declaring the invoice in his GSTR-1 and

Confirmation of payment of GST thereon by bidder on GSTN Portal.

However, BHEL, at its discretion, may release the GST amount based on undertaking from the bidders in format enclosed .

8.4 PENALTY:

In addition to the Penalty determined as per clause in GCC, GST on penalty is also recoverable.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I General

8.3 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.

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

- i. 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 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.
- ii. It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these act and rules including that of payment / deposit of 1% cess on the extant of work involving building or construction workers engaged by the contractor within a period of one month from the receipt of payment.
- iii. 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 workers) 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I General

1.1

The work covered under this specification is of highly sophisticated nature, requiring the best quality of workmanship for construction, engineering and construction management. The Bidder should ensure timely completion of work. The Bidder must have adequate quantity of tools, construction aids, equipment's etc., in his possession. He must also have on his rolls adequate, trained, qualified and experienced supervisory staff and skilled personnel.

1.2

The work shall be executed under the usual conditions affecting industrial construction and in conjunction with numerous other operations at site. The Bidder and his personnel shall co-operate with the personnel of other agencies, co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

1.3

All the work shall be carried out as per the instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the Bidder.

1.4

The Bidder shall at his cost perform any services, tests etc, although not specified but nevertheless required for the completion of work.

1.5

Contractor shall execute the work as per sequence prescribed by BHEL at site. The sequence of activities, methodology will be decided by the BHEL engineers depending upon the availability of material, drawings, work fronts etc. No claims for extra payment from the Contractor will be entertained on the grounds of deviation from the methods and sequence of construction advised and agreed by BHEL engineer or for any reasons whatsoever.

1.6

All the necessary certificates and licenses required to carry out this work are to be arranged by the Contractor expeditiously at his cost.

1.7

The work to be carried out under the scope of these specifications covers ,temporary storing of contractor's own construction material, using the same in the work, carrying out all other activities, viz. survey, excavation, concreting, backfilling, and all the other activities as defined in the scope of work enumerated in chapter-2, Part-I of TCC document, Bill of Quantities and elsewhere till handing over of the entire work. The work shall conform to dimensions and tolerances specified in the various drawings, documents etc. That will be provided during the course of construction. If any portion of the work is found to be

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I General

defective in workmanship or not conforming to drawings or other specifications, the Contractor shall dismantle and re-do the work duly replacing the defective materials at his cost failing which the work will be got done by BHEL at the cost and risk of the contractor.

1.8

The terminal points as decided by BHEL shall be final and binding on the Contractor.

1.9

During the course of execution of this work, certain rework/ modification/ rectification/ repairs/ fabrication/dismantling/reconcreting etc. will be necessary on account of feedback from customer/BHEL on account of design discrepancies and manufacturing defects and site operation/maintenance requirements. Contractor shall carryout such rework/ modification/rectification/fabrication/repairs etc., promptly and expeditiously. Claims of contractor, if any, for such works will be dealt as per relevant clauses of General Conditions of Contract.

1.10

Daily log sheets indicating the details of work carried out, man-hours, consumables used etc, shall be maintained by the Contractor and got signed by BHEL engineer every day.

1.11

All tools and tackles, fixtures, equipment, materials, manpower, supervisors/ engineers, consumables etc. required for this scope of work shall be provided by the Contractor. All expenditure including taxes and incidentals in this connection will have to be borne by him unless otherwise specified in the relevant clause.

1.12

The contractor shall make adequate security arrangements including employment of security personnel and ensure protection from theft, fire, pilferage, damage and loss of materials/equipments issued to him for the work. Special care will have to be taken to guard against pilferage / theft of cement, steel and/or other materials.

1.13

Contractor shall ensure proper housekeeping and remove all scrap materials periodically from various work area covered in the scope and deposit the same at the place earmarked for this purpose. In case of contractor's failure to do the same, BHEL reserves the right to remove scrap at contractor's cost and risk.

1.14

Access to site for inspection by BHEL and customer engineers shall be made available by the contractor at all times.

1.15

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I General

As Built Drawings: Contractor shall be supplied with two extra copies of the layout & detailed drawings. Contractor to incorporate in one of the copy with Red ink all the changes / deviations / alterations etc carried out at site due to various reasons, with site engineer's endorsement. Marked up drawings shall be submitted to BHEL for approval.

1.16

Site Inspection: The owner / employer or his authorized agents may inspect various stages of work during the currency of the contract awarded to him. The contractor shall make necessary arrangements for such inspection and carry out the rectification pointed out by the owner / employer without any extra cost to the owner / employer. No cost whatsoever such duplication of inspection of work be entertained.

1.17

BHEL will not supply any materials unless otherwise specified.

1.18

Makes of supply of cement, steel and painting materials shall be as per approved material list by Customer/BHEL.

1.19

The Contractor shall carry the work as per the Field Quality Plan issued by BHEL/CUSTOMER.

1.20

Lab has to be established at site for carrying out testing as per Field Quality Plan, like Cube testing machine, cube mounds etc.

1.21

Weigh batcher with printing facility should be available as per the deployment of parallel gangs.

1.22

Calibration of equipment's should be done by NABL/NPL accredited laboratories.

1.23

Welding procedure to be followed as per Field Quality plan. (Welding procedure and prequalification of welder required to be produced)(If required).

1.24

Indicative Field Quality Plan attached with the NIT.

1.25

Contractor should submit the royalty certificates for quantity of Coarse and fine aggregates used at site and clearance from Mining Department/Concerned authorities

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-I General

1.26

Field Quality Assurance Formats: It is the responsibility of the contractor to collect and fill up the relevant concrete pour card/FQA Log sheets and present the same to BHEL after carrying out the necessary checks as per the log sheets and obtaining the signature of BHEL / Customer in token of their acceptance. Monthly Running Bill Payment to the contractor will be linked with the submission of these Log sheets.

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Chapter-II LIST OF TECHNICAL SPECIFICATION

SL. NO.	DESCRIPTION	SPECIFICATION NUMBER	REV	PAGES
1	GENERAL SCOPE.	PEDC/STD.SPEC/001	0	4
2	PROPERTIES. STORAGE&HANDLING OF COMMON BUILDING MATERIALS.	PEDC/STD.SPEC/002	0	5
3	EARTHWORK INEXCAVATION & BACKFILLING.	PEDC/STD.SPEC/003	0	23
4	CEMENT CONCRETE-PLAIN& REINFORCED.	PEDC/STD.SPEC/004	0	56
5	INSERTS / EMBEDMENTS IN CONCRETE WORK.	PEDC/STD.SPEC/010	0	3
6	GROUTING.	PEDC/STD.SPEC/011	0	4
7	MASONRY & ALLIED WORKS.	PEDC/STD.SPEC/012	0	8
8	FINISH TO MASONRY & CONCRETE.	PEDC/STD.SPEC/013	0	7
9	PAINTING, WHITEWASHING,POLISHING etc.	PEDC/STD.SPEC/014	0	11
10	FLOOR FINISHES & ALLIED WORKS.	PEDC/STD.SPEC/015	0	26
11	METAL DOORS,WINDOWS, VENTILATORS, LOUVERS etc.	PEDC/STD.SPEC/017	0	10
12	ROOF WATER PROOFING, INSULATION & ALLIED WORKS.	PEDC/STD.SPEC/019	0	9
13	SUPPLY & LAYING RCC PIPES.	PEDC/STD.SPEC/024	0	4
14	PREMOULDED BITUMINOUS JOINT FILLER & SEALING COMPOUND.	PEDC/STD.SPEC/025	0	2
15	DEMOLITION & DISMANTLING.	PEDC/STD.SPEC/026	0	5
16	TYPE & MAKE OF MATERIALS TO BE USED.	PEDC/STD.SPEC/027	0	2
17	RUBBLE MASONARY.	PEDC/STD.SPEC/031	0	4
18	CHAIN LINK FENCING.	PEDC/STD.SPEC/032	0	3
19	TANK PADS.	PEDC/STD.SPEC/034	0	5
20	CONCRETE PAVEMENTS.	PEDC/STD.SPEC/035	0	11
21	ANTI TERMITE TREATMENT.	PEDC/STD.SPEC/036	0	4
22	COATING & WRAPING OF UNDER GROUND PIPES.	PEDC/STD.SPEC/038	0	15
23	UNDERGROUND EARTHING SYSTEM.	PEDC/STD.SPEC/039	0	7
24	GRADING AND FILLING	PEDC/STD.SPEC/0042	0	

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV QUALITY ASSURANCE AND INSPECTION

PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding CUSTOMER 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 vegetations, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) 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.
- 7) 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.
- 8) 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV QUALITY ASSURANCE AND INSPECTION

HIERARCHY

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

- Statutory Regulations
- RAIPUR SMART CITY LIMITED (RSCL)/ BHEL specification
- Items in Schedule of quantities
- IS/BS standards
- BHEL's standard specification (with prior approval of Engineer-in-charge).

NOTE: The above technical specification is not exhaustive. In case for any item of work, technical specification is not available, such items of works will be carried out in conformance to technical specification of CGPWD/manufacturer's recommendations/best engineering practice. In case of any dispute between two specifications or non-availability of specifications, customer's specification will prevail. Decision on applicability of any particular specifications will rest with BHEL engineer and his decision in the matter will be final & binding on the contractor. Contractor has to make himself well conversant with the Customer specification.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV QUALITY ASSURANCE AND INSPECTION

QUALITY ASSURANCE AND INSPECTION FOR CIVIL WORKS

1) Introduction

This part of the specification covers the sampling, testing and quality assurance requirement (including construction tolerances and acceptance criteria) for all civil and structural works covered in this specification.

This part of the technical specification shall be read in conjunction with other parts of the technical specifications, general condition of contract and special condition of contract which covers common QA requirements. Wherever IS code or standards have been referred they shall be the latest revisions. The rate for respective items of work or price shall include the cost for all works, activities, equipment, instrument, personnel, material etc. whatsoever associated to comply with sampling, testing and quality assurance requirement including construction tolerances and acceptance criteria and as specified in subsequent clauses of this part of the technical specifications.

The QA and QC activities in all respects as specified in the technical specifications/ drawings / data sheets /quality plans / contract documents shall be carried out at no extra cost to the owner. The contractor shall prepare detailed construction and erection methodology scheme which shall be compatible to the requirements of the desired progress of work execution, quality measures, prior approvals if any and the same shall be got approved by the Engineer. If required, work methodology may be revised/reviewed at every stage of execution of work at site, to suit the site conditions by the contractor at no extra cost to the owner.

2) QA and QC Manpower

The contractor shall nominate one overall QA coordinator for the contract detailing the name, designation, contact details and address at the time of post bid discussions. All correspondence related to Quality Assurance shall be addressed by the contractors QA coordinator to BHEL. BHEL shall address all correspondence related to Quality issues to the contractors QA coordinator. The contractor's QA coordinator shall be responsible for co-ordination of Quality activities between various divisions of the contractor and their sub-vendors on one hand & with BHEL/CUSTOMER on the other hand.

The contractor shall appoint a dedicated, experienced and competent QA&QC in charge at site, preferably directly reporting to the Project Manager, supported as necessary by experienced personnel, to ensure the effective implementation of the approved QAP. The contractor shall finalize and submit a deployment schedule of QA&QC personnel along with their details to BHEL for approval /acceptance and further shall ensure their availability well before the start of the concern activity.

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Chapter-IV QUALITY ASSURANCE AND INSPECTION

3) Laboratory and Field Testing

The field laboratory for QA and QC activities shall be constructed and set-up by the contractor. The Laboratory building shall be constructed and installed with the adequate facilities to meet the requirement of envisaged test set up. Temperature and humidity controls shall be available wherever necessary during testing of samples. The quality plan shall identify the testing equipment's/instrument, which the contractor shall deploy and equip the field quality laboratory for meeting the field quality plan requirements.

The contractor shall furnish a comprehensive list of testing equipment's / instrument required to meet the planned/scheduled tests for the execution of works for BHEL acceptance/ approval. The contractor shall mobilize the requisite laboratory equipment and QA&QC manpower at least 15days prior to the planned test activity as per the schedule of tests. All equipment's and instruments in the field shall be calibrated before the commencement of tests and then at regular intervals, as per the manufacturer's recommendation and as directed by the BHEL. The calibration certificates shall specify the fitness of the equipment's and instruments within the limit of tolerance for use. Contractor shall arrange for calibration of equipment's and instruments by an NABL / NPL accredited agency and the calibration report shall be submitted to BHEL.

The tests which cannot be carried out in the field laboratory shall be done at a laboratory of repute. This includes selected IITs, NCB, CSMRS, reputed government / autonomous laboratories / organizations, NITs and other reputed testing laboratories. The test samples for such test shall be jointly selected and sealed by the engineer and thereafter these shall be sent to the concerned laboratory through the covering letter signed by BHEL engineer. The test report along with the recommendations shall be obtained from the laboratories without delay and submitted to BHEL/CUSTOMER.

Based on the schedule of work agreed with the engineer-in-charge and the approved FQP, the contractor shall prepare a schedule of tests and submit them to the engineer-in-charge and organize to carry out the tests as scheduled /agreed.

4) Sampling And Testing of Construction Materials

The method of sampling for testing of construction materials and work / job samples shall be as per the relevant IS / standards / codes and in line with the requirements of the technical specifications / quality plans. All samples shall be jointly drawn, signed and sealed wherever required, by the contractor and the engineer or his authorized representative. The contractor shall carry out testing in accordance with the relevant IS

/standards / codes and in line with the requirements of the technical specifications /quality plans.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV QUALITY ASSURANCE AND INSPECTION

Where no specific testing procedure is mentioned, the tests shall be carried out as per the best prevalent engineering practices and to the directions of the Engineer. All testing shall be done in the presence of the engineer or his authorized representative in a NABL accredited / Govt. Laboratory acceptable to BHEL.CUSTOMER. This includes all IITs, NCB, CSMRS, reputed government / autonomous laboratories / organizations, NITs and other reputed testing laboratories. The test samples for such test shall be jointly selected and sealed by the engineer and thereafter these shall be sent to the concerned laboratory through the covering letter signed by BHEL engineer. The test report along with the recommendations shall be obtained from the laboratories without delay and submitted to CUSTOMER.

5) Purchase And Service

All structural steel shall be procured from main steel producers like SAIL, TISCO, RINL, Essar Steel, Ispat Industries, JSW Steel, Lloyds Steel Industries, Jindal Steel & Power and Sunflag Steel & Iron Co., Bhandara [only for rounds (15-105mm), flats (45-120 mm width & 4.75-28 mm thick), hex rods (15.5-42 mm) and wire rods (5.5-38 mm)]. In case of non-availability of some of the sections with main steel producers the contractor may propose to procure the sections from there-rollers of the main steel producers, the name of such re-rollers will have to be cleared by corporate quality assurance of CUSTOMER for which details such as BIS approval, main steel producer's approval, past experience for production of sections of specified material, details of machines plants testing facilities etc. Confirmation that the process control and manufacturing of steel sections by re-rollers shall be same as that of main steel producers, that billets for re-rolling will be sourced from main steel producers only shall be furnished with regards to re-roller. Even after clearance of re-rollers, induction of billets with identified and correlated Mill test certificates (TC's) in the process of re-rolling, sampling of steel, quality checks thereof and stamping of final product for further identification and correlation with TC's prior to dispatch shall be the responsibility of the contractor and these shall be performed in presence of the authorized representative of the main Contractor.

Reinforcement steel shall be procured from main steel producers like SAIL, TISCO, RINL, Essar Steel, Ispat Industries, JSW Steel, Lloyds Steel Industries, Jindal Steel & Power and Jai Balaji Industries Ltd, Durgapur (for 8-40mm reinforcement steel) and mill test certificates (TC) is to be obtained and submitted to CUSTOMER for co-relatio

TECHNICAL CONDITIONS OF CONTRACT (TCC) Chapter-IV QUALITY ASSURANCE AND INSPECTION

6) **Field Quality Plan**

The work at site shall be approved as per the approved FQP, Tentative FQP is attached for reference.

7) **General QA Requirements**

The contractor shall ensure that the works, BOIs and services under the scope of contract whether manufactured or performed within contractor's works or at his sub-contractor's premises or at the CUSTOMER's site or at any other place of work are in accordance with the CUSTOMER/BHEL technical specification, applicable standards /codes, approved drawings / data sheets / quality plans and BOQ. All the works, BOIs and services shall be carried out as per the best prevalent engineering practices and to the directions of the Engineer.

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Chapter-V LIST OF DRAWINGS

LIST OF DRAWINGS (Annexure-I)

S. NO.	TITLE	DRAWING No.	REV. NO.
1	PLOT PLAN (TENDER PURPOSE ONLY)		R00
2	RFP for Lake Purification & Restoration with Bioremediation or Equivalent Technology in Telibandha Lake, Raipur (C.G.)	NIT No: 63/RSCL/2017-2018	2 nd Call