



VOLUME - IA  
TECHNICAL  
CONDITIONS OF  
CONTRACT (TCC)  
HY/PE&SD/E&C/TCC/STP  
-RSCL/CIVIL/10 Rev 00

BHARAT HEAVY ELECTRICALS LIMITED



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

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**1.0 Project Information (1x3 MLD Sewage Treatment Plant  
at BudhaTalab for Raipur Smart City Ltd)**

1	Customer	:	Raipur Smart City Ltd, Raipur, Chhatisgarh
2	Project Title	:	Civil, Structural & Architectural works for 1x3MLD Sewage Treatment Plant at Budha Talab
3	Location	:	Raipur
4	Address Detail	:	Raipur, Chhatisgarh
5	Nearest Railway Station	:	Raipur Railway Station
6	Road Approach	:	Raipur
7	Nearest Air Port	:	Raipur
11	Ambient Air Temperature (Average)	:	a) Maximum : 46 <sup>0</sup> C b) Minimum : 01 <sup>0</sup> 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

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### 2.0 SCOPE OF WORK

This section lists, major scope of work for civil, structural & Architectural works for 1x3MLD Sewage Treatment Plant at Budha talab for Raipur Smart City Ltd, Raipur, Chhattisgarh to be carried out by contractor, but not limited to following for safe, speedy completion of this package.

2.1 The work to be performed under the scope of this tender mainly consists of but not limited to complete Civil, Structural and Architectural work and their maintenance for specified period of the following plant buildings, structural equipment foundations and other miscellaneous structures.

#### 2.1.1 Plant Buildings: -

- i. Air Blower Shed
- ii. MCC/ Control Room Building
- iii. Centrifuge Shed

#### 2.1.2 Equipment foundations/Tank foundations: -

- a) Raw Sewage Transfer Pumps
- b) Air Blower with Motor
- c) RAS Pumps
- d) SAS/ WAS Pumps
- e) Air Blower with motor for Sludge Sump
- f) NaOCl Dosing Pump
- g) NaOCl Dosing Tank
- h) Centrifuge feed pump with Motor
- i) Poly electrolyte Dosing Pump
- j) Poly electrolyte Dosing Sump
- k) Centrifuge
- l) Any other foundation which may be introduced a later date

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

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### **2.1.3 Reservoirs/Storage Tanks/Pits/Underground Structures**

1. Collection Chamber/ Pump House
2. Valve Chamber
3. Stilling Chamber
4. Fine Screen Chamber
5. Grit Chamber
6. Distribution Chamber
7. SBR Tanks
8. Chlorination tanks
9. Membrane Tank
10. Parshall Fume
11. Sludge Sump

### **2.1.4 Services: -**

- a) Concrete paving.
- b) Pipe trenches & Cable trenches within the boundary.

### **2.1.5 Miscellaneous: -**

Culverts, thrust blocks etc., shall be provided as per requirement.

### **2.1.6 Terminal Points: -**

- a) All Pipe trenches, Cable Trenches, etc. shall be terminated at boundary limit.

### **2.1.7 Exclusions: -**

- a) Dismantling of existing pipeline

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

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### 2.1.8 GENERAL

2.1.8.1 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.**

2.1.8.2 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.

2.1.8.3 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.

### 2.1.9 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.

2.1.9.1 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.

2.1.9.2 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.

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

2.1.9.4 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.

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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

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2.1.9.6 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.

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

### **2.1.10 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 <b>PART I</b>	Scope / to be taken care by		Remarks
		BHEL	Bidder	
<b>3.1</b>	<b>ESTABLISHMENT</b>			
<b>3.1.1</b>	<b>FOR CONSTRUCTION PURPOSE:</b>			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with customer (RSCL-Raipur)
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with customer (RSCL-Raipur)
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 and Area Development & Fencing for storage of project materials at respective sites as required.		Yes	
h	Chemical toilet along with all accessories exclusively for Employer at one location		Yes	
i	Adequate Unarmed security guards to be deployed round the clock at execution site & office cum storage area		Yes	
j	Fixing & maintaining new executive porta cabin with furniture & AC for employer		Yes	Aprox. Size(20X8X10) 1 nos at respective location of bidder's site as required.
<b>3.1.2</b>	<b>FOR LIVING PURPOSES OF THE BIDDER</b>			
a	Open space for labour colony (as per availability)	Yes*		Can be provided as per availability on chargeable basis
b	Labour Colony with internal roads,		Yes	

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

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	sanitation, complying with statutory requirements			
<b>3.2.0</b>	<b>ELECTRICITY</b>			
<b>3.2.1</b>	<b>Electricity for construction purposes</b> of Voltage 415/440 V		<b>Yes</b>	Bidder to arrange
a	Single point source		Yes	At a distance of approx. 1000 M from site (Distance is only estimated, it may vary up to an extent depending on site condition),
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
<b>3.2.2</b>	<b>Electricity for the office, stores, canteen etc. of the bidder</b>			
a	Single point source		Yes	At a distance of approx. 1000 M from site (Distance is only estimated, it may vary up to an extent depending on site condition)
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
d	Electricity for Employers portacabin/site office		Yes	
<b>3.2.3</b>	<b>Electricity for living accommodation of the bidder's staff, engineers, supervisors etc</b>			Not applicable
a	Single point source			
b	Further distribution including all materials, Energy Meter, Protection devices and its service			
c	Duties and deposits including statutory clearances if applicable			
<b>3.3.0</b>	<b>WATER SUPPLY</b>			
<b>3.3.1</b>	<b>For construction purposes</b>			

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

a	Making the water available at single point		Yes	Can be provided as per availability on chargeable basis
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
<b>3.3.2</b>	<b><u>Water supply for bidder's office, stores, canteen etc</u></b>			
a	Making the water available at single point		<b>Yes</b>	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
e	Packaged drinking water for Employer at site office		Yes	
<b>3.3.3</b>	<b><u>Water supply for Living Purpose</u></b>			Not applicable
a	Making the water available at single point			
b	Further distribution as per the requirement of work including supply of materials and execution			
<b>3.4.0</b>	<b>LIGHTING</b>			
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	
<b>3.5.0</b>	<b>COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER</b>			
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	

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

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<b>3.6.0</b>	<b>COMPRESSED AIR wherever required for the work</b>		Yes	
<b>3.7.0</b>	<b>Demobilization of all the above facilities</b>		Yes	
<b>3.8.0</b>	<b>TRANSPORTATION</b>			
a	For site personnel of the bidder		Yes	
b	For bidder's equipment and consumables (T&P, Consumables etc.)		Yes	

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

Sl. No	Description <b>PART II</b> <b>3.9.0 CONSTRUCTION FACILITIES</b>	Scope / to be taken care by		Remarks
		BHEL	Bidder	
<b>3.9.1</b>	<b>Engineering works for construction:</b>			
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		<b>YES</b>	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 is completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
j	Arranging the materials required for Work		Yes	

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

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Sl. No	Description <b>PART II</b> <b>3.9.0 CONSTRUCTION FACILITIES</b>	Scope / to be taken care by		Remarks
		BHEL	Bidder	
k	Coordination for inspection & checking and getting clearance from customer		Yes	
l	Preparation of formats for completion of activities		Yes	

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

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**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.

<b>S.No.</b>	<b>Description</b>	<b>Minimum Quantity</b>	<b>Remarks</b>
1.	Concrete Mixer 0.25 to 0.40 cum with hopper	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.x15cm.x15cm.)	6 nos.	
15.	Sieve analysis sieve sets for coarse & fine aggregates	1 set	
14.	Jar/Beaker for Bulk density test of sand	1 no.	

## TECHNICAL CONDITIONS OF CONTRACT (TCC)

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

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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 Civil, structural & Architectural work of the Sewage Treatment Plant & their auxiliaries as detailed elsewhere in the Tender Specification shall be completed within 6 (six) months from the date of commencement of work at site.

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

#### TENTATIVE SCHEDULE

Activity	Tentative schedule	
	Start Month	End Month
Mobilization for Site Establishment	July '19	July'19
Plant Buildings	July '19	Nov'19
Equipment/tank foundation.	July '19	Nov'19
Reservoirs/Storage Tanks/Pits/Underground Structures	July '19	Nov'19
Services(Storm water drains, laying of sewage pipelines), etc.	July '19	Nov'19
Handing Over	Dec'19	Dec'19

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-VI: Time Schedule

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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 6 (Six) 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 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 GUARANTEE PERIOD**

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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-VII: Taxes, Duties & Levies

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### **7.0 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.

### **7.1 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.

### **7.2 SERVICES (E&C, Supervision of E&C, Civil Works etc.):**

Bidders have to issue GST compliant invoices showing:

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-I General

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BHEL, State of \_\_\_\_\_ (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.

### **7.3 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.

### **7.4 PENALTY:**

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

### **7.5 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 compliance to the above titled Acts 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:-

- 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

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### 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 resources, 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 the complete work of collection from contractors own stores/storage yard, handling, transporting, unloading at construction site, temporary storage at site in open/closed stores, 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 installation. If any portion of the work is found to be 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.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-I General

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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 various other units completed earlier and also 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/equipment 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

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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-I General

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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

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.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II: Civil and Architectural Works

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### 2.0 SCOPE

The work will involve all civil, structural and architectural works connected with the above mentioned structures such as earth work, concrete work, brick work, steel work, embedment, plastering and painting, wooden and metal doors, windows and partitions, waterproofing, flooring, plumbing, road work, drainage, grouting, laying of RCC sewer lines, etc.

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

- 2.1 Excavation of earth and backfilling including dewatering of excavations for foundations, trenches, tunnels pits, etc. till the construction of the same is completed and disposal of surplus.
- 2.2 Foundation footing for structures, trenches, tunnels, sumps, grade beams, tie beams at foundation level, grade slabs, floor slabs and roof slabs, equipment foundations etc.
- 2.3 Complete civil and architectural works such as brick work, plastering, painting, all types of floor/roof finishes, all types joinery etc.
- 2.4 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.
- 2.5 Preparation of detailed working drawings and bar bending schedules for all reinforced concrete work and getting them approved by the BHEL Engineer.
- 2.6 Taking deliver from BHEL stores, fabrication and fixing structural steelwork for cable trench covers, plates etc.
- 2.7 Fabrication supply and fixing of anchor bolts, sleeves, fixing frames, embedment etc. in concrete.
- 2.8 Supply of all instruments and personnel for conducting necessary tests at site as specified/as directed by the Engineer.
- 2.9 Making appropriate fabrication drawing as per agreed schedule before starting fabrication work for any structural GA drawing.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II: Civil and Architectural Works

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- 2.10 Taking delivery from contractor stores and fabrication and erection of structural steel work including all interfacing works and miscellaneous works. The nature of work shall include columns , beams, splicing of steel works as needed, bracings, sheeting runners , sag rods, ties struts, walkways , galleries, stairs, ladders, hand railing , floor gratings, chequered plate work ,M.S pipes, equipment supporting platform, and all other structures required for the successful completion of the project.
- 2.11 Construction of temporary storage is in contractor's scope. Storage in go-down/open yard cement and reinforcement steel, proportioning of the various concrete ingredient materials, viz. cement, fine & coarse aggregate, chemical admixtures, etc. as per the approved concrete mix design for various grades of concrete, transporting to the work location, pouring the concrete in the specified formworks for foundation, column, beam, floors, etc. as the case may be as per the latest approved construction drawings & Bill of Quantities.
- 2.12 All other works, viz. Brickwork, Plastering, waterproofing works, backfilling, painting, etc. as defined in Bill/Schedule of quantities, construction drawings and time to time instructions issued by BHEL engineer required for completion of the work will be in the scope of the contractor.
- 2.13 All the works should conform to the specification provided in the Bill/Schedule of Quantities, relevant Indian Standards and best engineering practices.
- 2.14 Laying of RCC sewer lines including excavation, laying, jointing of pipes, road cutting, backfiling, etc. as per detailed item description of SOQ and direction and instruction of engineer-in-charge.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-III Structural Works

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### 3.0 SCOPE:

The works involve:

- 3.1 Temporary storage in contractor's storage cum fabrication yard allotted to them near the work area, fabrication and erection of structural steel work including all interfacing work and miscellaneous work. The nature of work shall include columns, beams, splicing of steel works as needed, bracings, purling, sheeting runners, sag rods, ties, struts walkways, galleries, stairs, ladders, handrails, floor gratings, chequered plate work, M.S, pipes, equipment supporting platforms and all other structures required for successful completion of project.
- 3.2 Taking delivery of M.S pipes from storage in contractor's storage cum fabrication yard allotted to them near the work area, fabrication and erection of handrail as per drawing and specifications.
- 3.3 Supply and fixing of floor gratings as per Specifications.
- 3.4 Supply of high tensile bolts, mild steel bolts, nuts, plain/taper and spring washers, all electrodes required for shop and field work.
- 3.5 Shop and final painting as per Technical Specification after properly cleaning the steel surfaces.
- 3.6 Grouting under stanchion bases.
- 3.7 All the works should conform to the specification provided in the Bill/Schedule of Quantities, relevant Indian Standards and best engineering practices.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IV ISSUE OF MATERIALS TO THE CONTRACTOR

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### **4.0 ISSUE OF MATERIALS TO THE CONTRACTOR**

All materials supply required as per BOQ is in the scope of contractor. However for expediting the work, and with mutual agreement, some materials, may be issued to the contractor in the manner as agreed either on returnable or recovery of material cost from contractor's bill. The rate of recovery as finalized by BHEL engineer will be final & binding on the contractor.

**4.1 FREE ISSUE ITEMS:** Nil as on date.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-V LIST OF TECHNICAL SPECIFICATIONS

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### **5.0 PREAMBLE TO THE SCHEDULE OF QTS. (SOQ) PROVIDED IN PRICE BID SPECIFICATION**

- 5.1 Details of the items in this Schedule shall be read in conjunction with the corresponding BHEL specifications, drawings and other documents and shall have precedence over any contrary statement mentioned any where in this document.
- 5.2 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.
- 5.3 Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 5.4 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.
- 5.5 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.
- 5.6 The rate shall also be inclusive of carrying out topography survey of site to establish levels and coordinates at suitable intervals, from 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.
- 5.7 The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-V LIST OF TECHNICAL SPECIFICATIONS

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- 5.8 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.
- 5.9 Payments will be made on the actual quantity of work executed against each SOQ item.
- 5.10 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.
- 5.11 Unless otherwise specified in the schedule of items, cement, structural and reinforcement steel will be issued by BHEL free of cost from BHEL stores inside the factory premises.
- 5.12 For ready mix concrete, cement will not be provided to the contractor. The rates decided for the concreting works, using Ready Mix Concrete shall be inclusive of cost of all ingredient materials, including cement & transporting through transit mixer pouring in the specified forms & location, compacting, curing, testing, etc.
- 5.13 In case of any discrepancy between item description, 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.
- 5.14 HIERARCHY

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

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

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-V LIST OF TECHNICAL SPECIFICATIONS

### LIST OF TECHNICAL SPECIFICATIONS(Annexure-I)

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	FABRICATION & STRUCTURAL STEEL WORK.	PEDC/STD.SPEC/005	0	25
6	ERECTION OF STRUCTURAL STEEL WORK.	PEDC/STD.SPEC/006	0	15
7	MISCELLANEOUS STEEL WORK.	PEDC/STD.SPEC/007	0	5
8	MISCELLANEOUS METAL.	PEDC/STD.SPEC/008	0	6
9	PAINTING ON STRUCTURAL STEEL.	PEDC/STD.SPEC/009	0	5
10	INSERTS / EMBEDMENTS IN CONCRETE WORK.	PEDC/STD.SPEC/010	0	3
11	GROUTING.	PEDC/STD.SPEC/011	0	4
12	MASONRY & ALLIED WORKS.	PEDC/STD.SPEC/012	0	8
13	FINISH TO MASONRY &CONCRETE.	PEDC/STD.SPEC/013	0	7
14	PAINTING, WHITEWASHING,POLISHING ETC.	PEDC/STD.SPEC/014	0	11
15	FLOOR FINISHES & ALLIED WORKS.	PEDC/STD.SPEC/015	0	26
16	GLASS & GLAZING.	PEDC/STD.SPEC/016	0	3
17	METAL DOORS,WINDOWS, VENTILATORS, LOUVERS ETC.	PEDC/STD.SPEC/017	0	10
18	ROLLING STEEL SHUTTERS & GRILLS.	PEDC/STD.SPEC/018	0	4
19	ROOF WATER PROOFING, INSULATION & ALLIED WORKS.	PEDC/STD.SPEC/019	0	9
20	FALSE CEILING.	PEDC/STD.SPEC/020	0	5
21	WATER SUPPLY WORKS.	PEDC/STD.SPEC/022	0	11
22	DRAINAGE & SANITATION.	PEDC/STD.SPEC/023	0	17
23	SUPPLY & LAYING RCC PIPES.	PEDC/STD.SPEC/024	0	4
24	PREMOULDED BITUMINOUS JOINT FILLER & SEALING COMPOUND.	PEDC/STD.SPEC/025	0	2
25	DEMOLITION & DISMANTLING.	PEDC/STD.SPEC/026	0	5

**TECHNICAL CONDITIONS OF CONTRACT (TCC)**  
**Chapter-V LIST OF TECHNICAL SPECIFICATIONS**

26	TYPE & MAKE OF MATERIALS TO BE USED.	PEDC/STD.SPEC/027	0	2
27	FALSE FLOORING.	PEDC/STD.SPEC/028	0	4
28	WATER BOUND MACADAM.	PEDC/STD.SPEC/030	0	7
29	RUBBLE MASONARY.	PEDC/STD.SPEC/031	0	4
30	CHAIN LINK FENCING.	PEDC/STD.SPEC/032	0	3
31	SHEETING WORK IN ROOF F / SIDING.	PEDC/STD.SPEC/033	0	4
32	TANK PADS.	PEDC/STD.SPEC/034	0	5
33	ANTI TERMITE TREATMENT.	PEDC/STD.SPEC/036	0	4
34	PILING.	PEDC/STD.SPEC/040	0	
	(A) PART I - PREAMBLE.	PEDC/STD.SPEC/0040 -a	0	2
	(B) PART II - GENERAL SPECIFICATIONS.	PEDC/STD.SPEC/0040 -b	0	4
	(C) PART III - SPECIFIC REQUIREMENTS.	PEDC/STD.SPEC/0040 -c	0	8
	(D)PILING PART-IV – MATERIAL FOR REINFORCED CONCRETE PILES	PEDC/STD.SPEC/0040 -d	0	8
	(E)PILING PART-V TESTING OF CONCRETE PILES	PEDC/STD.SPEC/0040 -e	0	11
35	<b>ALL RELEVANT BHEL SPECIFICATIONS</b>			

**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 CPWD/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-VI LIST OF DRAWINGS**

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**LIST OF DRAWINGS(Annexure-II)**

<b>S. NO.</b>	<b>TITLE</b>	<b>DRAWING No.</b>	<b>REV. NO.</b>
1	<b>PLOT PLAN *</b>	<b>PY-DG-0-M123-1040-01</b>	<b>R0</b>
2	ALL RELEVANT BHEL DRAWINGS.		

‘\*’ – Plot plan enclosed is not final and likely to change to meet BHEL’s requirements.