

Rev 00
14th
Aug.2012

VOLUME I-A

TECHNICAL CONDITIONS OF CONTRACT (TCC)

(Doc. No.: BHEL/PESD/RUPPL-GTG/TCC/002)

BHARAT HEAVY ELECTRICALS LIMITED



SI No	DESCRIPTION	Chapter	PAGE No.
Volume-IA	Part-I: Contract specific details		
1	Project Information	Chapter-1	3
2	Scope of Work	Chapter-2	5
3	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-3	6
4	Time Schedule	Chapter-4	10
5	Terms of Payment	Chapter-5	11
6	Taxes and other Duties	Chapter-6	12
7	Specific Inclusion	Chapter-7	14
8	Specific Exclusion	Chapter-8	15
Volume-IA	Part-II : Technical Specifications		
1	General	Chapter-1	16
2	Civil Works	Chapter-2	18
3	Electrical works	Chapter-3	19
4	Painting	Chapter-4	20-21

CHAPTER-1
PROJECT INFORMATION

1.1	<p>INTRODUCTION</p> <p>BHEL is in receipt of an order from M/s Reliance Utilities and Power Private Limited (RUPPL) for supply, erection, commissioning and testing of 2 No.s of Frame 6B Gas Turbine Generator Packages at their petrochemical complex at Dahej, Gujarat, India.</p> <p>LOCATION:</p> <p>The project site is located at Dahej SEZ area. Nearest Railway station is Bharuch, which comes on Mumbai Delhi main route and nearest Airport is Vadodara which is 70 kms from Bharuch. The proposed site is 50 kms from Bharuch railway station and connected by a six lane highway from Bharuch.</p> <p>i.) Latitude : 21° 39’ ii.) Longitude : 72° 33’ iii.) Near : Dahej Luhara, Guj. (Gulf of Kutch) iv.) Nearest Town : Bharuch v.) Nearest Highway : NH8 & SH6 (Dahej Road) vi.) Nearest Commercial Port : Gujarat Chemical Terminal Port Company Limited vii.) Nearest Airport : Vadodara viii.) Nearest Railway Station : Bharuch</p> <p>Site Elevation : 415 meter above MSL</p>
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1.2	CLIMATIC CONDITIONS		
	i.	Meteorological Data	: Dry Climate
	ii.	Maximum Recorded Ambient Temperature	: 47 ° C
	iii.	Low Ambient Design Temperature	: 5.6 ° C
	iv.	Electrical Design Temperature for equipment located outdoors	: 47 ° C
	v.	Design Surface Temperature (surfaces exposed to solar radiation)	: 55°C
	vi.	Relative Humidity Annual mean	
		Maximum	: 89%
		Normal	: 79 %
		Minimum	: 56%
	vii.	Average annual mean wind speed	: 44 m/sec
	viii.	Annual Average Rain fall	: 1002 mm
	ix.	Predominant Wind Direction	: South west to North East
x.	Seismic Zone	: Zone-III as per IS 1893	
xi.	Basic Wind Speed	: As per IS-875 (Part-3)	
xii.	Design Seismic Zone	: 3 with zone factor of 0.16	
xiii.	Importance Factor	: 1.5	

CHAPTER- 2

SCOPE OF WORK

The work to be carried out under the scope of these specifications is broadly as under:

- 1) Site development, viz. leveling, grading, storm water drain, development of open storage yard with 200mm thick hard granular murum, base/foundation preparation for installation of Porta cabins, barbed wire fencing with gates of site and storage areas, laying of water distribution network, soak pit, installation of water storage tanks, etc. for the site office area allotted to BHEL.
- 2) Illumination of the site office area and open storage yard.
- 3) Electrical distribution board for providing power connection to E&C contractor & other contractors/vendors.
- 4) Construction of store shed building having Pantry, toilet & meeting area.
- 5) Fabrication, assembly, painting and supply of storage racks and storage stands for storage of materials.
- 6) The work has to be executed as per the approved drawings & bill of quantities for various items of the work as per the direction & instruction of engineer-in-charge.
- 7) All the construction materials, tools & tackles are in the scope of the contractor.

CHAPTER- 3
FACILITIES IN THE SCOPE OF CONTRACTOR/BHEL (SCOPE MATRIX)

Sl.No	Description	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 owner
B	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with owner
C	Construction of bidder's office, piping fabrication yard, canteen and storage building including supply of materials and other services		Yes	
D	Bidder's all office equipment, office / store / canteen consumables		Yes	
E	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
F	Firefighting equipment like buckets, extinguishers etc		Yes	
G	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	FOR LIVING PURPOSES OF THE BIDDER			
A	Open space for labor colony (as per availability)	Yes		Location will be finalized after joint survey with owner
B	Labor Colony with internal roads, sanitation, complying with statutory requirements		Yes	

BHEL-PESD (E&C)

Tender Specification No: PESD-E&C/RUPPL-GTG/002

Technical Conditions of Contract –Volume I A (Part I : Contract Specific Details)

Page 6

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.2	ELECTRICITY			
3.2.1	Electricity For construction purposes of Voltage 415 V (to be specified whether chargeable or free)			Chargeable
A	Single point source	Yes		At a distance of 200.0M 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	
3.2.2	Electricity for the office, stores, canteen etc of the bidder (to be specified whether chargeable or free)			Chargeable
A	Single point source	Yes		At a distance of 200.0.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	
3.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc	Yes		Chargeable

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
A	Single point source	Yes		At a distance of 200.0.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	
3.3	WATER SUPPLY			
3.3.1	For construction purposes: (to be specified whether chargeable or free)			Chargeable
A	Making the water available at single point	Yes		In case of inadequate supply / non-availability of construction water from customer, contractor shall have to arrange construction water at his own expenses.
B	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.2	<u>Water supply for bidder's office, stores, canteen etc</u>			Chargeable
A	Making the water available at single point	Yes		
B	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.3	<u>Water supply for Living Purpose</u>			Chargeable
A	Making the water available at single point	Yes		
B	Further distribution as per the requirement of work including supply of materials and execution		Yes	

Sl.No	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.4	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	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
A	Telephone, fax, internet, intranet, e-mail etc		Yes	
3.6	COMPRESSED AIR wherever required for the work		Yes	
3.7	TRANSPORTATION			
A	For site personnel of the bidder		Yes	
B	For bidder's equipment and consumables (T&P, Consumables etc)		Yes	

CHAPTER-4 TIME SHCHEDULE

4.1 SCHEDULE & MOBILIZATION

4.1.1 INITIAL MOBILIZATION AND TENTATIVE SCHEDULE

Contractor shall reach at site, make his site establishment and be ready to commence the work within two weeks from the date of fax Letter of Intent or as per directions of Construction Manager/ Project Manager of BHEL.

The contractor has to subsequently augment his resources in such a manner that the entire related works are completed to achieve the following **tentative** schedule:

ACTIVITY	TENTATIVE SCHEDULE OF COMPLETION
Mobilisation of staff, tools & tackles, etc.	Within two weeks from date of award
Completion of entire works	Three months after start of work
Checking, testing, Handing over & demobilisation	Two months after completion of the entire work

4.1.2

In order to meet above schedule and other intermediate targets/activities as set by BHEL Engineer- In charge at site, contractor shall arrange all necessary resources and work force in consultation with BHEL engineer at site to undertake works concurrently in all possible fronts as made available to contractor.

4.1.3

Contractor shall specifically note that there is likely to be some delay in supplies of materials / release of work fronts / other reasons. Contractor shall have to work round the clock on such critical activities as a part of catch up programme to meet the project requirement to the extent possible and shall also provide required resources as part of scope of work.

Start of Contract Period and Duration.

The total contract period for completion of entire work shall be **5(Five) months** from the date of handing over of site to bidder. However the contractor shall have to mobilize his resources earlier than the start of contract period for preparatory work.

The contractor shall complete all the work in the scope of this contract within the contract period

CHAPTER-5 TERMS OF PAYMENT

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

CHAPTER-6 TAXES AND OTHER DUTIES

6.1.0 TAXES, DUTIES, LEVIES

6.1.1

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

However, provisions regarding Service Tax and Value Added Tax (VAT) on output services and goods shall be as per following clauses.

6.1.2 Service Tax & Cess on Service Tax

Service Tax and Cess on Service Tax as applicable on output Services are excluded from contractor's scope; therefore contractor's price/rates shall be exclusive of Service Tax and Cess on Output Services. In case, it becomes mandatory for the contractor under provisions of relevant act/law to collect the Service Tax & Cess from BHEL and deposit the same with the concerned tax authorities, such applicable amount will be paid by BHEL.

Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract. Contractor shall submit serially numbered Service Tax and Cess Invoice, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely,

- I. The name, address and the registration number of the contractor,**
- II. The name and address of the party receiving taxable service,**
- III. Description, classification and value of taxable service provided and,**
- IV. The service tax payable thereon.**

All the four conditions shall be fulfilled in the invoice before release of service tax payment.

Contractor shall obtain prior written consent from BHEL before billing the amount towards such taxes.

With introduction of Cenvat Credit Rules 2004, which came into force w.e.f. 10.09.2004, Excise Duty paid on Input Goods including Capital Goods and Service Tax paid on Input Services that are used for providing the output services can be taken credit of against the Service Tax payable on output services. However BHEL may opt for availing the abatement provision in which case cenvat credit may not be available on input duty.

6.1.3 VAT (Sales Tax /WCT)

As regards Value Added Tax (VAT) on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be **exclusive** of the same. Where such taxes are required to be paid by the contractor, this will be reimbursed on production of proof of payment made to the authorities by the Contractor. In any case the Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. The contractor has to take all necessary steps to **minimize tax on input goods** by purchasing the materials from any registered dealer of the concerned state only. In case contractor opts for composition, it will be with the prior express consent of BHEL. Deduction of tax at source shall be made as per the provisions of law unless otherwise found exempted. In case tax is deducted at source as per the provisions of law, this is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made unless specifically agreed to.

6.1.4 Modalities of Tax Incidence on BHEL

Wherever the relevant tax laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor.

6.1.5 New Taxes/Levies

In case the Government imposes any new levy/tax on the output service/ goods/work after award of the contract, the same shall be reimbursed by BHEL at actual.

In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of Price Bid. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

No reimbursement/recovery on account of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any. In case PVC is not applicable for the contract, Bidder has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/levies etc. in his price bid.

CHAPTER-7 SPECIFIC INCLUSIONS

SPECIFIC INCLUSIONS

7.1

Fabrication, erection, welding, painting & erection of the roof truss including materials & consumables.

7.2

All electrical works including works for store shed & storage yard electrical lighting works.

7.3

The contractor will be required to provide an electrical distribution board having 5 (five) points of 63 Amp (Industrial power receptacle).

7.4

It may be specifically noted that it should not be construed or claimed by the contractor that with the technical specification and “exclusions and/or inclusions” detailed in this tender specification, BHEL has covered the entire scope of work and/or the details thereof to be executed by the contractor.

CHAPTER-8 SPECIFIC EXCLUSIONS

8.0 EXCLUSIONS

The following are specific exclusions from the scope of work/specification: -

NIL

Part-II: Technical Specifications

CHAPTER-1 GENERAL

1.1

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

1.2

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

1.3

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. The following drawings are being enclosed as tender drawings,

- i) Plot plan - Ann. II
- ii) Architectural Plan for store building- Ann. III
- iii) Roof Truss details- Ann. IV

1.3

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

1.4

During the course of execution of this work, certain rework/ modification/ rectification/ repairs/ fabrication etc. will be necessary on account of feedback from various power plants already commissioned and/or units under erection and commissioning 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. 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. Claims of contractor, if any, for such works will be dealt as per clauses of Section-2.15 of General Conditions of Contract.

1.5

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.

1.6

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.

1.7

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

1.8

Contractor shall mobilize sufficient quantity of sleepers for stacking of materials in his custody.

1.9

Bidder to indicate the space required for fabrication yard (both open & closed) in the offer.

1.10

BHEL will supply only the General Arrangement (G.A.) drawings for the structures & other works. The contractor has to prepare the fabrication drawings, bar bending schedule and any other detailing required for proper and smooth execution of the work. These fabrication drawings, bar-bending schedule, etc. shall be got approved from BHEL engineer before commencement of the work. The cost of these works shall be included in the respective items of the work .No extra payments will be made to the contractor on account of these works.

CHAPTER-2

CIVIL WORKS

The contractor's scope of services for various civil works are detailed in this chapter.

2.0 Site Development & construction of store shed

2.1

The entire site development works, viz. leveling, grading, access roads(two layers of WBM road as per the item provided in the rate schedule), storm water drain, development of open storage yard, base/foundation preparation for installation of Porta cabins, barbed wire fencing with gates of site and storage areas(with storage bins), laying of water distribution network, soak pit, installation of water storage tanks, etc. for the site office area allotted to BHEL are in the scope of the contractor.

2.2 A store building of approximate size 24 x 12 m. has to be constructed for storing the BHEL's material. It will have a small store office. A toilet block having WC & urinal facilities with wash basin and another Kitchen & dining hall is to be constructed in one portion of the store building. Storage racks (approx. 1.5m.(Length) x 0.5m.(Width) x 1.5m.(Ht.) – 21 nos.) will have to be fabricated by the contractor. These areas will have separate access and will cater to the daily need of the BHEL site staffs. Construction of this store building is in the scope of the contractor. The building will have steel truss and roof sheeting.

CHAPTER-3 ELECTRICAL WORKS

The contractor's scope of services for various civil works are detailed in this chapter.

3.0 Site area illumination & lighting of the store shed

- 3.1 The entire site will have adequate illumination as per the items provided in the rate schedule.
- 3.2 Electrical wiring & lighting arrangements (all electrical light & fan fittings) in the store building, toilet, Kitchen.
- 3.3 Provision & installation of LT switchgear, distribution board (for 3- 63 Amp. Power sockets & MCB boards) along with laying of cables from RUPPL's power source to BHEL area and within the BHEL site area)

CHAPTER-4 PAINTING

4.1

All protective paints for the protection of weld joint fit-ups, application of primers on finished weld joints are in the scope of contractor.

4.1.1

The primer and thinner will be provided by contractor as part of scope of work along with other like arrangements for surface preparation and paint application like sand/shot-blasting, consumables like surface cleaning agents, paint brush, brush cleanser, labour and necessary tools and plants as required for completion of work.

4.1.2

Contractor shall submit manufacturer's batch test certificate / test certificate from BHEL approved laboratory for the primers and paints. Prior approval of BHEL for each and every batch of the primer & paints shall be mandatory. In order to achieve a desired minimum paint dry film thickness (DFT) as specified in BHEL drawing, number of coats may be applied and method of application shall be as recommended by the paint manufacturer. **Contractor shall arrange required paints & primers and other consumables for above works.**

4.2

Preservation of all components/equipment during various stages of erection, commissioning till handing over is in the contractor's scope. All prescribed methods of surface cleaning prior to application of preservative paint shall be followed by the contractor. **Contractor has to arrange all primer and paints, and other consumables like wire brush, painting brush required for this work.**

4.3

All exposed metal parts of the equipment including piping, supports, structures, railing, tanks/vessels, GT sets, Common System Equipment, Balance of Plant Equipment with associated auxiliaries etc. as covered under these tender specifications, as applicable shall be painted after thoroughly cleaning the surface from dust, rust, greases, oils, scales, etc, by wire brush, scrapping etc; as specified in relevant erection documents.

The above parts shall then be painted with specified no. Of coats of specified paint over the shop primer/paint. Also, where the shop primer/paint has peeled off, the affected area shall be cleaned thoroughly by the specified method and then primer coat applied. Similarly, certain components may be supplied without any primer/paint coat from shop. The surface of such items shall be cleaned as per specifications, coated with suitable primer and then coated with final paint coats. The dry film thickness after final coat should be as per specification.

4.4

In addition, color banding, legend and identification marking, direction of flow/rotation marking etc. Is part of work.

4.5

The surface preparation/cleaning, treatment, Identification marking Colour Codes and Final/Finish painting works shall be carried out by contractor as per BHEL/RIL Specification .For any non-confirmation/dispute between BHEL & RIL specification, the procedure/instructions as laid down in customer & their consultant's specification shall supersede BHEL specification and shall be binding on contractor.

Painted surface thickness as per standard shall be demonstrated by the contractor. Paint thickness measurement instrument shall be in the scope of contractor.

Painting the inner side of aluminum/GI/steel cladding, with anti-corrosive paint as specified. Also all other accessories for painting, cleaning the surfaces etc. shall be arranged by the contractor.

Touch-up painting of switchgear panel, 415 Volt LT MCC, Control Panels or any other equipment /devices wherever necessary.

4.6 STRUCTURALS

Structural components may be supplied by BHEL without any primer/paint coat. The surface of such items shall be cleaned as per specifications and then coated with two coats of Primer.

4.7 PANELS, JUNCTION BOXES

4.7.1

Panels and Junction Boxes shall be Touch-up painted as and where original shop paint is peeled off. Necessary surface cleaning and preparation shall be done by the contractor as per relevant painting codes followed by two coats of Primer and two coats of Finish Paint.