



**BID DOCUMENT**

**RAISING OF EMBANKMENT HEIGHT FOR ASH POND 'C' FROM RL202.0M TO RL205.0M AT ITPS**

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**ODISHA POWER GENERATION CORPORATION LTD.**

**IB THERMAL POWER STATION**

**BANHARPALI, JHARSUGUDA – 768 234**

**(ODISHA)**



**ODISHA POWER GENERATION CORPORATION LIMITED**  
**IB THERMAL POWER STATION**  
**At/PO: BANHARPALI, DIST: JHARSUGUDA – 768 234 (ODISHA)**

**NOTICE INVITING TENDER**

OPGC invites sealed bids from bona fide and financially sound Registered Agencies/Firms/Companies for execution of the following works & supplies for its thermal power plant at Banharpali:

**WORKS TENDER FOR UNIT#1&2 (NIT No. ITPS/CC-22/2020-21/02, Date: 19<sup>th</sup> May, 2020) (Telephone; 06645-289-232/355/328/245; Email: [bailochan.jena@opgc.co.in](mailto:bailochan.jena@opgc.co.in); [satya.tarai@opgc.co.in](mailto:satya.tarai@opgc.co.in); [rabinra.panda@opgc.co.in](mailto:rabinra.panda@opgc.co.in); [siba.pati@opgc.co.in](mailto:siba.pati@opgc.co.in))**

<b>S/ N</b>	<b>Name of the work</b>	<b>Tender cost</b>	<b>EMD (Rs.)</b>	<b>Contract Period</b>	<b>Bid Sale/ Issue date</b>	<b>Date of receipt &amp; submission /Opening of Bid</b>
1.	Raising of embankment height for Ash Pond 'C' at ITPS	Rs.11200/- including GST	1% of total quoted price	As per Bid Document	20.05.20 to 10.06.20	Up to 15:00 Hrs on 11.06.2020/ 15:30 Hrs onwards on 11.06.2020
2.	Ash Utilization in reclamation of low land inside plant at ITPS	Rs.5600/- including GST	1% of total quoted price	As per Bid Document	21.05.20 to 11.06.20	Up to 15:00 Hrs on 12.06.2020/ 15:30 Hrs onwards on 12.06.2020
3.	Expression of Interest for Utilization/Off-taking of Ash from OPGC	--	1% of total quoted price	As per Bid Document	20.05.20 to 09.06.20	Up to 15:00 Hrs on 10.06.2020/ 15:30 Hrs onwards on 10.06.2020
4.	Arc Flash Study and Training at ITPS	Rs.5600/- including GST	1% of total quoted price	As per Bid Document	25.05.20 to 16.06.20	Up to 15:00 Hrs on 17.06.2020/ 15:30 Hrs onwards on 17.06.2020
5.	Overhauling of Main Oil Pump, Servicing of HPT&IPT Stop & Control Valves and HRH Strainers, Inspection & Replacement of Generator Hydrogen Seals	Rs.5600/- including GST	1% of total quoted price	As per Bid Document	20.05.20 to 09.06.20	Up to 15:00 Hrs on 10.06.2020/ 15:30 Hrs onwards on 10.06.2020
6.	AOH of Boiler Pr. Parts, Boiler & Turbine valves, Fuel Firing System of Unit#2	Rs.5600/- including GST	1% of total quoted price	As per Bid Document	20.05.20 to 09.06.20	Up to 15:00 Hrs on 10.06.2020/ 15:30 Hrs onwards on 10.06.2020
7.	Upgradation of Chiller Unit (75TR) with installation, commissioning & testing.	Rs.5600/- including GST	1% of total quoted price	As per Bid Document	20.05.20 to 09.06.20	Up to 15:00 Hrs on 10.06.2020/ 15:30 Hrs onwards on 10.06.2020
8.	Repair of Boiler Tube Leakage at ITPS for the FY- 2020-21	Rs.5600/- including GST	1% of total quoted price	As per Bid Document	20.05.20 to 09.06.20	Up to 15:00 Hrs on 10.06.2020/ 15:30 Hrs onwards on 10.06.2020

- **e-Reverse Auction (E-RA) shall be conducted for the works at Sl. No. 1 & 6 above. The Transaction Fees for e-Reverse Auction shall be deposited to the account of MSTC Limited directly.**

The non-refundable **Transaction Fees towards e-Reverse Auction** as mentioned above shall be deposited by all Techno-Commercially qualified bidders directly to the account of MSTC before E-RA launch schedule. The date of conduct of E-RA shall be intimated in later stage to Techno Commercially qualified bidders via e-mail. Before participation in e-Reverse Auction, the bidder has to register in MSTC e-Procurement Portal well in advance and submit the E-RA fee amounting to the value intimated by M/s. MSTC Limited.

Cost of bid document (non-refundable) shall be paid by Demand Draft in favour of OPGC Ltd. drawn on State Bank of India (Code-9510) / Andhra Bank (Code-0662) / Central Bank of India (Code-283899) payable at ITPS, Banharpali or ICICI Bank, (Code-ICIC0003679) payable at Telenpali. Cost of bid document shall have to be submitted along with the bid and the DD towards the tender cost (separate from EMD) should be prepared on or before the last date of submission/receipt of tender,

otherwise the bid shall be liable for rejection. Small scale industries/National Small-Scale Industries Corporation/ MSME firms are exempted from payment of Cost of bid document only if they are entitled for exemption of the offered service. Tenderers seeking exemption shall claim in advance along with the photocopy of Valid Registration Certificates at least two days before the due submission date. However, OPGC reserves the right to accept/ reject the exemption request if the same is found unauthenticated or not relevant to the offered item. In case of any discrepancy found between tender document submitted by the agency and the master copy in our office, the latter should prevail. No claim on this account shall be entertained. Complete and signed sealed bids in hard copy form only shall be received at Contract Cell, ITPS. Bids shall be opened at Contract Cell, ITPS in the presence of the bidders or their authorized representatives, if present at the time of opening. If the last date of issue / receipt / opening happens to be a HOLIDAY, the tender will be issued/ received / opened at the respective time on the next working day. The photocopies of all the supporting documents required for participating in the tender mentioned in NIT/Tender paper shall be submitted along with the bid; otherwise the bid is liable for rejection. Bids without EMD will be rejected outright.

**NB: Bidders having the requisite qualifying requirements as specified in the bid document shall only be considered for tender evaluation.**

Bids received after stipulated date & time shall not be entertained. OPGC shall not take any liability on account of any postal/courier delay. OPGC reserves the right to accept / reject any or all tenders, seek additional clarifications, split up the scope among eligible bidders or cancel the tender altogether without assigning any reasons thereof.

**Important:** The detailed NIT along with Terms and Conditions are available for download at OPGC website at [www.opgc.co.in](http://www.opgc.co.in). Addenda/Corrigenda/ Extensions, if any, will be notified on the OPGC website only and will not be published in any other media. Interested companies or entities may visit OPGC website for the tender timeline and other details.

**Sd/- GM-SCM**  
**(Email: [bkmishra@opgc.co.in](mailto:bkmishra@opgc.co.in))**

**SAFE & CLEAN POWER IS OUR COMMITMENT**

**OPGC encourages all existing or new vendors/suppliers to register with us as empaneled vendors. Please visit our website [www.opgc.co.in](http://www.opgc.co.in) for details.**



## QUALIFYING CRITERIA

**Bidders having the following criteria shall only be considered to be qualified in the Techno-commercial Bid:**

**Raising of embankment height for Ash Pond “C” at ITPS.**

The bidder must have successfully completed at least one similar work of ash / earthwork of Rs.5.0 Cr or more OR two similar works of Rs.2.5 Cr or more OR three similar works of Rs.2.0 Cr or more during last three financial years (2017-18 to 2019-20). Sufficient documentary proof (Completion Certificate) in support of the above must be submitted along with the Techno-commercial Bid.

(Similar work, refers to construction of earthen dams, ash dykes, raising of bund for ash dyke, Construction of earthen embankments for road and railways)

1. Average Annual financial turnover during the last 3(three) years (2017-18, 2018-19 & 2019-20) should be **Rs.3.00 crore** or more. Audited Balance Sheet and Profit & Loss A/C must be submitted along with the Techno-commercial Bid.
2. The bidder must have own Provident Fund Code, GST No., Income Tax PAN and valid Tax Clearance certificate. Photocopies of these documents must be submitted along with the Techno-commercial Bid.
3. The bidder must have minimum machineries & equipments of his own as per the following:
  - a. Hydraulic excavator (Bucket capacity 0.9 Cum or more): 2No.
  - b. Dozer D-80-A 12 or above model: 1No
  - c. Dozer D-50-A 15 or above model: 1No.
  - d. Hywa / Dumper / Tipper: 10Nos.
  - e. Smooth steel drum Vibro-roller (Static weight 7-11MT or more): 1No.
  - f. Water Tanker: 2Nos.
4. Bidders, who do not possess the above machineries & equipments of their own, must submit sufficient documentary proof of being able to arrange the same on hire. Otherwise their bids will not be considered.
5. **The bidder must have minimum two numbers experienced Degree Engineers or three numbers experienced Diploma Civil Engineers for supervision of the work. The documentary proof (employment letter and qualification certificates) must be submitted along with the Techno-commercial Bid.**

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**Name of work: Raising of embankment height for Ash Pond 'C' at ITPS.**

**Information to Bidders**

- 1) The bids complete in all respect must be submitted in a sealed envelope super scribed with tender enquiry number, name of the work and due date of opening. Three separated envelopes of EMD, Techno-commercial and Price Bid should be kept in a fourth envelope and sealed and super scribed with tender enquiry number and Name of the work. **The bid documents are not transferable.** The bidder must submit the following along with the bid:
  - a) EMD of requisite amount as per NIT should be submitted in a sealed envelope along with the Technical bid.
  - b) Sealed EMD submitted by technically qualified bidder shall only be opened before price bid opening in same date.
  - c) Photocopies of Provident Fund Registration certificate, Service Tax Registration certificate, Income Tax PAN and valid VAT/ Sales Tax Registration / Clearance certificate.
  - d) Bid documents duly signed & stamped in all pages as a token of acceptance.
  - e) In case of bidders submitting the documents downloaded from OPGC web site, the cost of bid documents (as per NIT) must be submitted (separately from EMD) in the form of Demand Draft. **The draft towards cost of bid documents must be drawn on or before the last date of sale of bid documents.**
  - f) Original price bid duly filled in, signed & stamped on each page shall be submitted. Any price breakup (if required) must be submitted separately. The rates offered by the bidder shall be clearly written in English (clearly hand written or typed) both in words and figures and shall be free from any aberrations, deletions, corrections and overwriting. In case of any illegibility of the offer submitted by bidder the interpretation by OPGC shall be final and binding on the bidder. Insertion, postscript, addition and alteration shall not be accepted after submission of the bid.

**Note: Tenders submitted without the above requirements shall be liable for rejection.**

- 2) Bidders are advised to submit the tender based strictly on the terms and conditions and specifications contained in the tender documents and not stipulate any deviations in normal case.
- 3) **OPGC will award the contract to the successful bidder whose bid (offered/evaluated) has been found the lowest i.e. on L-1 basis.**
- 4) OPGC reserves the right to evaluate the quotation on such deviations having financial implications by adding the cost determined by OPGC.

- 5) Wherever it is mentioned in the specification that the contractor shall perform certain work or provide certain facilities, it is understood that the contractor shall do so at his cost.
- 6) **Before quoting the rates the Bidder should go through the specifications, scope of work, special condition of contracts etc. and get himself fully conversant with them. The bid should include cost of mobilization and cost to adhere to all safety norms as described in the tender. No relaxation or request for revision of quoted/accepted rates shall be entertained subsequent to the opening of bid on account of mobilization or Safety costs.**
- 7) The details of items in the price schedule shall be read in conjunction with the corresponding technical specifications. Items of work provided in the price schedule but not covered in the technical specifications shall be executed strictly as per instructions of Engineer in charge.
- 8) The Bidders shall quote rates inclusive of the complete cost towards consumables, tools and tackles, equipments, labour, levies, taxes and duties if any, **all safety PPE's as per OPGC norms to all workmen**, rectification, maintenance till handing over, supervision overheads, profits and all incidental charges not specifically mentioned but reasonably implied and necessary to complete the work according to contract. **However, bidders shall indicate the %(Percentage) of cost of PPEs included in their price.**
- 9) OPGC reserves the rights of accepting the whole or any part of the tender and bidder shall be bound to perform the same at their quoted rates.
- 10) Tender Cost & GST towards Tender paper cost should be by way of Demand Draft (DD). Offers made without Tender cost & GST towards Tender paper cost will be rejected. For each alternative Offer, a separate Tender cost & GST towards Tender paper cost should be submitted.
- 11) MSME (Micro/small/medium)/NSIC/SSI status of your firm
- 12) Small scale industries/National Small-Scale Industries Corporation/ MSME firms are exempted from payment of Earnest Money Deposit only if they are entitled for exemption of the offered service. Tenderers seeking exemption shall claim in advance along with the photocopy of Valid Registration Certificates at least two days before the due submission date. However, OPGC reserves the right to accept/ reject the exemption request if the same is found unauthenticated or not relevant to the offered item.

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**GENERAL CONDITIONS OF CONTRACT**



**ODISHA POWER GENERATION CORPORATION LIMITED**

**7<sup>TH</sup> FLOOR, MODULE – A, FORTUNE TOWERS,**

**CHANDRASEKHARPUR, BHUBANESWAR – 751 023**

**(ODISHA)**

**ODISHA POWER GENERATION CORPORATION LIMITED  
7<sup>TH</sup>. FLOOR, MODULE – A, FORTUNE TOWERS,  
CHANDRASEKHARPUR, BHUBANESWAR - 751 023**

**INSTRUCTION TO BIDDERS**

**VOLUME-I**



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**ODISHA POWER GENERATION CORPORATION LTD  
IB THERMAL POWER STATION  
BANHARPALI-768234, DIST. JHARSUGUDA**

**TENDER  
FOR**

**Name of work : Raising of embankment height for Ash Pond 'C' at ITPS .....**  
.....

(Here insert the name of the Works)

1. To be submitted by **3.00 P.M** of **dt.....** to **Contract Cell, ITPS.**
2. Techno-commercial bid shall be opened in presence of Bidders or their duly authorized representatives who may like to be present at **15.30 Hours** on **dt.....** in the office of **Contract Cell, ITPS.**

Issued to M/s .....

Signature of officer issuing the documents... **Sd/-**

Designation: A.G.M. **-SCM,**

Date:

**ODISHA POWER GENERATION CORPORATION LTD  
IB THERMAL POWER STATION, BANHARPALI**

**NOTICE INVITING TENDER**

1. Tenders are invited on behalf of the OPGC Ltd. for the work “Raising of embankment height for Ash Pond “C” at ITPS”.
2. The Tender & rates shall be in the prescribed form provided by OPGC.
3. The works are required to be completed within 12 (Twelve) months excluding rainy season and excluding mobilization period of fifteen days from the date of issue of Letter of Intent/Work Order, in accordance with phasing, if any, indicated in the Tender documents.
4. Normally Bidders having corresponding class of license, PF Code, Service Tax Registration, IT PAN, valid VAT/Sales Tax Clearance certificate, expertise for the work required to be executed and financial capacity will be considered.
5. The person who floats the NIT shall be the Accepting Authority herein after referred to as such for the purpose of this Tender.
6. Applications for issue of tender documents shall be submitted to Accepting Authority so as to reach his office not later than dt.....
7. A Bidder shall possess Income Tax PAN, VAT/Sales Tax Clearance certificate, PF Registration certificate and Service Tax Registration certificate.
8. Tender documents consisting of plans, drawings, specifications, Schedule(s) of Quantities / Price Schedule of various classes of work to be done, the Conditions of Contract and other necessary documents will be sold on payment of Rs..... in shape of Demand Draft in favour of Odisha Power Generation Corporation Ltd. drawn on State Bank of India (Code-9510) / Andhra Bank (Code-0662) / Central Bank of India (Code-Belpah) on or after dt..... and up to dt..... Cost of tender paper is not refundable.
9. Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their Tenders as to the nature of the ground and sub-soil (so far as is practicable and related to particular work), the form and nature of the site, nature of work, capacity of concerned plant, present condition of the plant, labour force problem relating to present Contract labour, custom & system of the local folk, means of access to the site, accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their Tender. A Bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.
10. Submission of a Tender by a Bidder implies that he has read this notice along with notice advertised in the Newspaper and all other tender documents and has made himself aware of the scope and specifications of the work to be done and of local conditions and other factors bearing on the execution of the works.
11. A Bidder should quote his rates in figures as well as in words. The amount for each item should be worked out and the requisite totals given. Special care shall be taken to write rates in figures as well as in words, and the amounts in figures only in such a way that interpolation is not possible. The total amount shall be written both in figures and in words. In case of figures, the words ‘Rs.’ should be written before the figure of rupees and the words ‘Paise’ after the decimal figures, e.g. Rs.2.15 P. In case of words, the words ‘Rupees’ should precede and the words ‘Paise’ should be written at the end. Unless the rate is in whole rupees and followed by the word ‘Only’ it should invariably be up to two places of decimal.
12. In the case of item rate Tenders, only rates quoted shall be considered. Any Tender containing percentage below / above the schedule of rate quoted is liable to be rejected. In case of lump sum tenders, only quoted amount shall be considered.
13. Any Bidder for the works shall not be witness in the Bid of any other Bidder for the same works. Failure to observe this condition shall render the Tender of the Bidder tendering as well as of those witnessing the Tender liable for rejection.
14. Tender shall be received up to 3.00 P.M of dt..... and Techno-commercial bid shall be opened from 3.30 P.M onwards on the same day in presence of those Bidders or their duly authorized representatives who may like to be present.

15. The Tender shall be accompanied by Earnest Money @ 1% of the total quoted price. The Earnest Money offered shall be either in shape of Demand Draft / Pay Order in favour of Odisha Power Generation Corporation Ltd. drawn on State Bank of India (Code-9510) / Andhra Bank (Code-0662) / Central Bank of India (Code-Belpah) **OR** Bank guarantee issued by any Nationalized / Scheduled Bank in the enclosed proforma.
- 15.1 The Tender shall be accompanied with letter of undertaking on non-judicial stamp paper of appropriate value in the prescribed format.
- 15.2 The Earnest Money shall be made payable without any condition/demure to the Owner on demand. The Earnest Money shall be valid for a period of six (6) calendar months from the date of opening of the price bid.
- 15.3 In consideration of the Owner opening and considering the Tender for purpose of award of Contract, the Bidder shall keep his Tender valid for a period of one hundred & eighty (180) days from the date of opening of the Tender, during which period the Bidder agrees not to vary, alter or revoke his Tender either in whole or in part. If the Bidder however, fails to keep his Tender valid for one hundred & eighty (180) days or varies its terms and conditions during the said period then the Owner shall be entitled to forfeit the Earnest Money amount without any notice or proof of damages etc. The Bidder shall submit his Tender as required in the Tender documents along with letter of undertaking in the proforma enclosed herewith.
- 15.4 The Earnest Money of all unsuccessful Bidders will be returned within thirty (30) days after the award of the Contract.
- 15.5 Any Tender not accompanied with both Earnest Money and letter of undertaking or any of the two in accordance with aforesaid provisions shall be rejected by the Owner as non-responsive Bid.
- 15.6 No interest will be payable by the Owner on the said amount covered under Earnest Money / other security deposits.
16. On finalization of Tender, Earnest Money of successful Bidder will be treated as part of the initial security at the option of the said Contractor or shall be returned to the successful bidder at his option.
17. A Bidder shall submit the Tender which satisfies each and every condition laid down in this notice and other tender documents, failing which the Tender will be liable to be rejected.
18. The Odisha Power Generation Corporation Ltd. do not bind themselves to accept the lowest or any Tender or to give any reasons for their decision. The Owner reserves the right to allow the Public Sector Undertakings price preference facilities as admissible under existing Govt. policy. The prospective Bidders may apprise themselves of the relevant Govt. notification in this regard before submission of their bid. The Odisha Power Generation Corporation Ltd. reserves the right of accepting the whole or any part of the Tender or split the total scope of work among eligible Bidders and Bidder (s) shall be bound to perform the same at his/their quoted rates.
19. GST, VAT/Sales Tax, Work Contract Tax or any other tax on materials in respect of this Contract shall be payable by the Contractor and the Owner will not entertain any claim whatsoever in this respect.

For and on behalf of Odisha Power Generation Corporation Ltd.

Signature...Sd/-

Designation: A.G.M. –SCM.

Date:

PROFORMA OF LETTER OF UNDERTAKING TO BE SUBMITTED BY THE BIDDER ALONG WITH HIS TENDER.  
(To be executed on non-judicial stamp paper of requisite value)

Ref:

Date:

To

Odisha Power Generation Corporation Ltd.,  
IB Thermal Power Station,  
Banharpali.

(Hereinafter referred to as the Owner)

I/We have read and examined the following documents relating to.....

(Name of the works)

- (a) Notice inviting Tender
- (b) Format for Letter of undertaking
- (c) General Conditions of Contract including Contractors Labour Regulations, Model Rules for Labour Welfare, Safety Code, Schedule A & B and Annexure - I to XVII.
- (d) Special Conditions of Contract including Scope of Work
- (e) Technical Specifications.
- (f) Price Schedule / Bill of Quantities
- (g) Drawings if any.

I/We hereby tender for execution of the works referred to in the aforesaid documents upon the terms and conditions contained or referred to therein and in accordance in all respects with the specifications, designs, drawings and other relevant details contained in Schedule of Quantities / Price schedule attached with the tender documents and the period (s) of completion as stipulated in Schedule 'A' of General Conditions of Contract.

In consideration of I/We being invited to Tender, I/We agree to keep the Tender open for acceptance for 180 days from the due date of opening of bid thereof and not to make any modifications in its terms and conditions which are not acceptable to the Owner.

A sum of **1% of total quoted price** towards Earnest Money is hereby forwarded in shape of Demand draft drawn on State Bank of India (Code-9510) / Andhra Bank (Code-0662) / Central Bank of India (Code-283899) in the manner prescribed in clause 15 of NIT enclosed herewith. If I/We fail to keep the Tender open as aforesaid or make any modifications in the terms and conditions of the Tender, which are not acceptable to the Owner, I/We agree that the Owner shall, without prejudice to any other remedy, be at liberty to forfeit the said earnest money absolutely. Should this Tender be accepted, I/We hereby agree to abide by and fulfill all the terms, conditions and provisions of the aforesaid documents.

If, after the Tender is accepted, I/We fail to commence the execution of the works as provided in the conditions, I/We agree that the Owner shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely.

Signature of Bidder .....

Duly authorized to sign the Tender on behalf  
of the (in block capitals) .....

.....

Dated.....

Witness.....

Postal Address.....

Telegraphic Address.....

Date.....

Telephone No.....

Fax No.....

Address.....

E-mail address .....

## INSTRUCTION TO BIDDER (S):

### 1.1 **Site visit & collection of information:**

The Bidders are advised to visit the site, collect information regarding communication, transportation, banking facility, availability of skilled / unskilled labours, their customs, religious or otherwise culture, political environment, climatic conditions, education & medical facilities etc. to their satisfaction and acquaint with the nature & condition of work prior to working out the price of the Tender.

1.2 Bidders are advised to submit Tenders based strictly on terms & conditions and specification contained in the tender documents and not stipulate any deviations. Should it however become unavoidable, deviations should be stipulated in the prescribed proforma only in the format in annexure VII of G.C.C. Owner reserves the right to evaluate the Tenders containing deviations by loading or offloading the cost of such deviations.

1.3 Addenda / Corrigenda issued to this tender must be signed & submitted with tender on due date or on extended date if any. The Bidder should write clearly the revised quantities on the Schedule of original Tender Documents and should price the work based on revised quantities / conditions. All those who were issued tender documents prior to issue of addenda / corrigenda shall be provided with another set of fresh blank price schedule / schedule of items free of cost. The Bidders shall submit their tender in the fresh schedule. But however, if the Bidder has already submitted his tender prior to issue of such addenda / corrigenda, they shall resubmit a fresh offer marked on the envelope as "Amended Offer". The original offer submitted by such party shall be destroyed in presence of the Bidder on the date of opening.

### 1.4 **PREPARATION OF BID:**

The Bidder(s) shall submit the bid in two parts, namely-

- 1) Part-I: Techno commercial Bid
- 2) Part-II: Price Bid

#### PART-I: TECHNO-COMMERCIAL BID

A complete set of original Tender documents as specified in clause 3.1 of G.C.C. issued to the Bidder except blank price bid / bill of quantity duly filled in as prescribed in different clauses of the Tender documents with signature & stamp in all pages as token of unconditional acceptance shall constitute Techno-commercial Bid.

The Bidder shall enclose the following documents in this Bid.

- a) Crossed Demand Draft for requisite amount drawn in favour of Odisha Power Generation Corporation Ltd **OR** Bank guarantee issued by any Nationalized / Scheduled Bank in the enclosed proforma in the manner prescribed in clause-15 of NIT enclosed herewith towards the Earnest Money without which the Tender will be summarily rejected.
- b) Details of work of similar nature and magnitude executed by the Bidder during last three years (Works executed in name of Bidder) in Annexure-I of G.C.C.
- c) Details of present commitments of the Bidder in Annexure-II of G.C.C.
- d) Details of equipments in Annexure-III of G.C.C.
- e) Organization chart showing number of qualified Engineers and Supervisory personnel in the roll of the firm in Annexure-IV of G.C.C.
- f) Duly filled in information about Bidder as per Annexure-V of G.C.C.
- g) List of enclosures as per Annexure-VI of G.C.C.
- h) Exception & deviation statement in Annexure-VII of G.C.C.

- i) Details of proposed organization in Annexure-VIII of G.C.C.
- j) Documents showing annual turnover in Annexure-IX of G.C.C.
- k) Photocopy of valid VAT/Sales Tax Clearance Certificate and IT PAN.
- l) Photocopy of Provident Fund Registration No. and Service Tax Registration No. of appropriate category issued by competent authority.
- m) Photocopy copy of the Registration of Firm / Company.
- n) Present & permanent Address for correspondence along with Telephone No./Fax No./E-mail address etc.
- o) Any other technical information, Bidder wishes to furnish.
- p) Letter of undertaking in judicial stamp paper of worth Rs.5.00 in the format enclosed.
- q) Documents in support of authentication of the person who signed the tender. Only proprietor, partner, directors or permanent employee with due power of attorney is recognized for such signature.

Note: If required additional sheet may be used to furnish all above information but in the format provided in General Conditions of Contract.

The techno-commercial bid with all its enclosures as mentioned in clause 1.4 should be put in an envelope, sealed & superscribed as "TECHNO-COMMERCIAL BID". This envelope must contain Name of the work, NIT No., Due date of opening and Name & Address of the Bidder on bottom left hand corner of the cover.

**PART-II: PRICE BID**

Price bid shall include -

- a) Original price bid / schedule of quantity duly filled in, signed & stamped on each page as token of unconditional acceptance shall constitute the Price Bid. The Bidder shall take utmost care in filling the tender documents corresponding to instruction to Bidder and relevant information elsewhere in Tender document.
- b) Price Bid shall be completed in all respects with all their attachments / enclosures, if any.
- c) The price bid shall be prepared in the manner prescribed in various clauses of Tender document and put in a separate sealed envelope super scribed as "PRICE BID". This envelope must contain Name of work, NIT No. at the top and Name & Address of the Bidder on left hand bottom corner of the cover.

**1.5 COMPLETE BID:**

Both the Techno-commercial & Price Bid in separate sealed cover shall be put in a third envelope, sealed & superscribed with Name of the Work, NIT No., Due date of opening. The full name, postal address, telegraphic address and telex/telephone/fax/E-Mail of the Bidder shall be written on the bottom left corner of the envelope.

**1.6 SUBMISSION OF BID:**

Completed Bid shall be submitted to the Owner within due date and during office hours only. The Tenders shall be put into a box, marked as Tender Box or handed over to Contract Cell against receipt of the same.

**1.7 OPENING OF TENDER:**

The techno-commercial bid shall be opened at a predetermined time, venue & date in presence of the Bidder(s) or their authorized representative who may like to be present. Partner, director or permanent employee of the firm duly authorized can only be authorized representative.

Price bid shall be opened at a future date under intimation to all technically qualified Bidders and in presence of them or their authorized representatives who shall participate.

**1.8 CAUTION TO BIDDER:**

The person who shall come to purchase tender documents, submit the Tender or participate in the opening of the Tender must abide by the safety rule of OPGC right from the plant gate. Some of the checkpoints are, the vehicle must have valid insurance & tax paid road permit, valid driving license of the driver / Owner as the case may be. Persons with full shoes shall be allowed to enter the plant & our plant gate shall provide other items such as hardhat, safety glass & visitor pass. Not more than 2(two) persons for one Tender shall be allowed to participate in Tender opening.

**1.9 ALL PAGES TO BE INITIALED:**

All the pages of Tender documents shall be initialed. But first & last pages of all volumes of documents shall be signed with date by the Bidders or their authorized representatives.

**1.10 RATES TO BE IN FIGURES & WORDS:**

The Bidder shall quote both in figures and in words for the rates and amount tendered by him in the Schedule of quantities / Price schedule forming part of the Tender document, in such a way that interpolation is not possible. The amount of each item shall be worked out and entered and requisite total given for all items. The tendered amount for the work shall be entered in the Tender and duly signed by the Bidder.

If any ambiguities are observed in the rates & amount given in words & figures the following procedure shall be followed:

- a) When there is difference between the rates in figures and words, rate, which corresponds to the amount worked out by the Bidder, shall be taken as correct.
- b) When the rate quoted by the Bidder in figures and words tally but the amount is incorrect, the rate quoted by the Bidder shall be taken as correct but not the amount.
- c) When it is not possible to ascertain the correct rate by either of above methods, the rate quoted in words shall be taken as correct.

1.10.1 The Bidder shall quote in English language only.

**1.11 CORRECTIONS & ERASES:**

No erases or over writings are permissible. All corrections and alterations in the entries of tender papers shall be signed by the Bidder with date.

**1.12 DETAILS & SIGNATURE OF BIDDER:**

1.12.1 The Tender shall contain the name, residence and place of business of person or persons making the Tender and shall be signed by the Bidder with his usual signature. Partnership firms shall furnish the full names of the partners in the Tender. It should be signed in the partnerships name by all the partners or by duly authorized representative followed by the name and designation of the person signing. Tender by a Corporation shall be signed by an authorized representative and a power of attorney / authorization on its behalf shall accompany the Tender. A copy of constitution of the firm with names of all partners shall be furnished. In case of cooperative society, the authorized representative of the society will sign the Tender. Similar principle shall be followed in case of any Trust and Hindu Undivided Family business.

1.12.2 When the Bidder signs a Tender in a language other than English, the total amount tendered or only rate quoted in maintenance Contract in addition be written in the same language. The signature should be attested, at least by one witness.

**1.13 ABNORMAL RATES:**

The Contractor is expected to quote the rate for each item after careful analysis of cost involved for the satisfactory performance and completion of item work considering all specifications and conditions of Contract. This will avoid loss of profit or gain in case of curtailment or change in specification for any other item. In case the rates quoted by the Bidder's for any item are unusually high or unusually low it will be sufficient cause for the rejection of the Tender unless



the Owner is convinced about the reasonableness of the analysis for rate furnished by the Bidder (on demand) after scrutiny.

**1.14 THE SCHEDULE:**

1.14.1 The work shall be executed strictly as per the Time Schedule, indicated in the tender documents.

1.14.2 Monthly / weekly work programme will be drawn up by the Contractor before commencement of work & submitted to Engineer-in-charge for approval. The programme & progress will be reviewed from time to time and if required, the programme may be re-scheduled by Engineer-in-charge. The Contractor shall also be responsible to provide materials within his scope in time to achieve the programme. In all matters concerning the extent of programme set out weekly and monthly, the decision of the Engineer-in-charge will be final and binding on the Contractor.

**1.15 RECORD KEEPING:**

Relevant records are to be maintained by the Contractor in day-to-day / monthly basis & furnished to Engineer-in-charge or his representative for scrutiny, Management Information System and payment etc.

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**GENERAL CONDITIONS OF CONTRACT**

**VOLUME-II**

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## SECTION-I

### 1.0 GENERAL

Odisha Power Generation Corporation Limited is a Govt. of Odisha undertaking and Ib Thermal Power Station, Banharpali is one of its units. At present AES Corporation, USA has 49% stake in Odisha Power Generation Corporation Limited. The Ib Thermal plant is situated close to Hirakud reservoir and at a distance of 40 Kms from Jharsuguda Railway Junction and 18 Kms from Belpahar Railway Station in the state of Odisha both on S.E. Railways. ITPS is at present operating 2x210 MW coal based power plant. The management is looking forward to engage a bonafide, resourceful, potential and experienced Contractor of good financial capacity for the jobs specified.

- 1.1 One set of Tender document shall be issued to each Bidder. Bidders shall be required to submit the Tender duly signed and stamped in all pages of the document along with their offers. All Tenders shall be prepared and submitted by typing or printing with indelible black ink on white paper in consecutively numbered pages and in solid binding along with duly filled-in formats given in the Annexure. One additional booklet containing the bill of quantities / price bid as issued to be submitted by the Bidder in two copies in the price bid part.
- 1.2 The tender document is not transferable. Transfer of tender documents issued to one Bidder to another is not permissible. Similarly, transfer of Tender submitted by one Bidder to another party is not permissible. The alteration of Tender once submitted shall not be entertained except in case of issue of Addenda / Corrigenda.
- 1.3 Tender shall be submitted under a covering letter indicating clearly the summary of tender chapters with annexure / schedules of the complete Tender.
- 1.4 Insertion, postscript, addition and alteration shall not be accepted unless confirmed by the Bidder's signature.
- 1.5 All the copies of Tender shall be complete in all respects with all their attachments/enclosures.
- 1.6 The Bidder shall satisfy the Owner that the firm represented possesses the necessary experience and that he has at his disposal suitable modern facilities and specialized employees to ensure that his work is of best quality and workmanship is according to the latest proven technology and engineering practices. The Bidder shall satisfy the Owner that he is financially in a position to fulfill Contractual obligations, offered to be undertaken by him.
- 1.7 Bidder's complete offer (all the parts) shall be prepared and submitted in double sealed envelope with Name of the work, NIT No. & date and Due date super scribed prominently on the outside of the envelope:

The full name, postal address, telegraphic address and telex/ telephone/ fax / E-mail address of the Bidder shall be written on the bottom left corner of the sealed envelopes.

### 1.8 SCOPE OF WORK AND PARTICULARS TO BE FURNISHED IN THE TENDER:

- i) The work shall be carried out on item rate basis / job rate basis for which schedule of quantities / blank price schedule have been issued for different items of work as defined in the scope of work, technical specification in Special Conditions of Contract.
  - ii) The Tender not covering the total scope of work and services as detailed out in tender documents is liable for rejection.
- 1.8.1 The Bidder shall carefully check the enclosed Technical Specifications and shall satisfy himself as to the suitability of the work as given in the Technical Specifications and shall take full responsibility for the completion of work as per defined scope.

### 1.9 PRICE QUOTATION:

- 1.9.1 The Bidder shall quote his price against each item of the schedule as indicated in Schedule of Quantities / Blank price schedule enclosed with technical specification, both in figures and in words clearly.
- 1.9.2 Rates shall be quoted both in figures & in words in clear legible letters. No overwriting is allowed. All scoring and cancellation should be countersigned by the Bidder. In case of illegibility, the interpretation of Owner shall be final.
- 1.9.3 Bidder shall quote rates against the items in the schedule of items for the work / price schedule as fully described and contained therein. No modifications to the work content in the items will be allowed.

- 1.9.4 The offered unit rates shall remain **FIRM** for variation in completed value of the Contract including the cost of additional / altered / new items of work to any extent.
- 1.9.5 Any request from the Bidder in respect of additions, alterations, modifications, corrections etc. of either terms and conditions or rates of his Tender after opening of Tenders may lead to rejection of his Tender.
- 1.10 **RECEIPT OF TENDER:**  
Tender shall be received at the office of concerned Engineer-in-charge / Contract cell as per advertisement. The Bidder has the option of sending the Tender by Registered Post or submitting the Tender in person, so as to reach the Engineer-in-charge / Contract cell as the case may be on or before the date and time set out for the same in the Invitation to Tender. Tender submitted by FAX/TELEX/TELEGRAM/ E-mail shall not be accepted.
- 1.11 **TENDER OPENING:**  
The Tender will be opened in the manner and at the time, date and place set for opening of Tenders as described in the Notice Inviting Tender/ Special Conditions of Contract.
- 1.12 **LANGUAGE TO BE USED IN FILLING OF BID DOCUMENTS:**  
The Tender shall be submitted in English language only.
- 1.13 **EARNEST MONEY:**  
Bidders shall submit Earnest Money of value as specified in Special Conditions of Contract / NIT and in the manner prescribed in clause-15 of Notice Inviting Tender. Earnest Money shall be returned to the unsuccessful Bidders at the expiry of the validity period unless otherwise extended or on finalization of the Contract. Earnest Money of the successful Bidder shall be returned after he furnishes the initial Security Deposit and Contract is signed. No interest shall be paid on Earnest Money. E.M.D. shall not be accepted in any other form than as mentioned above and the Tender shall be summarily rejected without E.M.D. The E.M.D. shall be returned in form of A/c payee Cheques / D.D. Bank charges shall be to the accounts of Contractor if D.D. is required.
- 1.13.1 Forfeiture of E.M.D. & rejection of Bid, if-
- The Tender is revoked during its validity period.
  - The prices are increased unilaterally after the Tender opening and during validity of offer.
  - The Owner accepts the Bidder's bid proposal and the Bidder refuse to enter into Contract after the Contract is awarded to him.
  - The Bidder fails to submit initial Security Deposit within the period specified in Special Conditions of Contract.
- 1.14 **NO CLAIM OR COMPENSATION FOR SUBMISSION OF TENDER:**  
The Bidder whose Tender is not accepted shall not be entitled to claim any costs, charges and expenses incidental to or incurred by him through or in connection with his submission of Tender or its consideration on the Owner, even though Owner may modify / withdraw the Invitation to Tender or does not accept the Tender.
- 1.15 **INCOME TAX PAN & VAT/SALES TAX CLEARANCE CERTIFICATE AND P.F. CODE:**  
Bidder shall furnish the valid Income Tax PAN and VAT/Sales Tax clearance certificate issued by the concerned authority & P.F. Code with the Technical Bid of the Tender.
- 1.16 **NOTICE ONBEHALF OF OWNER:**  
All notices of technical/commercial nature shall be issued by Engineer-in-charge from time to time after LOI is released till closure of Contract.
- 1.17 **SITE INFORMATION & LOCAL CONDITIONS:**
- 1.17.1 Site information  
Information regarding the work site, plant capacities, location, approach to site and metrological condition, work culture etc. as prevailing at the site can be obtained by the Bidders by site visit & interaction with Engineer-in-charge or others.
- 1.17.2 Local conditions

It is suggested that the Bidder must visit the site and shall satisfy and acquaint himself of the site condition and shall appraise himself of the procedure for engagement of labour and shall collect any other information which may be required before submitting the Tender.

- 1.17.3 Claims and objections due to ignorance of site conditions will not be considered after submission of Tender. The Bidder shall be deemed to have visited and carefully examined the site and surroundings, to have satisfied himself about the nature and details of all existing infrastructures and also as to the nature and conditions of the plant and equipment installed, means of transport and communications, whether by land, water or air and as to possible interruptions thereto and ingress & exit from the site, to have made independent enquiries, examined and satisfied himself as to the sites for disposal of surplus materials and debris, the available accommodation, and all other similar matters which may affect the work.
- i) The Bidder shall be deemed to have acquainted himself of Government taxes, laws, statute, regulations, levies and other charges relating to his work at site.
  - ii) Any neglect or omission or failure on the part of the Bidder in obtaining necessary and reliable information as stated above or on any other matter affecting the Bidder shall not relieve him from any risks or liabilities or the entire responsibility for completion of the work in accordance with the Tender Documents.
- 1.18 **OTHER CONDITIONS:**  
The Bidder is required to carefully examine the General Conditions of Contract, Special Conditions of Contract, the Technical Specification, drawings and other details relating to work and given in the tender documents and fully acquaint himself as to all conditions and matters which may in any way affect the work or the cost thereof. The Bidder shall be deemed to have on his own and independently obtained all information for the purpose of preparing the Tender and his Tender as accepted shall be deemed to have taken into account all contingencies as may arise due to such information or lack of the same.
- 1.18.1 The Bidder shall be deemed to have exhaustively examined the tender documents including the General Conditions of the Contract, Special Conditions of Contract, Technical Specifications to have obtained all information and clarifications on all matters whatsoever that might affect the carrying out the work and to have satisfied himself as to the adequacy of his Tender. He is deemed to have known the scope, nature and magnitude of the work and the requirements of materials and labour involved etc. and as to all work he has to complete in accordance with the Contract whatever be the defects, omissions or errors that may be found in the Tender Documents.
- 1.18.2 In case of conflict between the conditions given in the Special Conditions of Contract / Technical Specification and the General Conditions of the Contract, the conditions given in the technical specification shall prevail over the General & Special conditions of the Contract.
- 1.19 **SAFETY MEASURE:**  
The Contractor has to abide by the Owner's safety rules in vogue at the time of Tendering and enforcement of any additional rules from time to time during the Contract period and it's extension if any.
- 1.20 **STATUTORY PROVISION:**  
All statutory provisions like Contract Labour Acts, Employees Provident Fund Acts, Payment of Wage Act, Bonus Act, Minimum Wages Act, Workman Compensation Act, Sales Tax/Income Tax Acts at the time of submission of Contract and any new Acts applicable to such Contract / Contract labour during the Contract period shall be liability of the Contractor.
- 1.21 **EXECUTION OF CONTRACTS:**
- 1.21.1 After LOI / Work Order is accepted by the Contractor, Contract will be executed by and between Owner and the Contractor within 30 days as per prescribed proforma provided by OPGC. The agreement shall be executed on non-judicial stamp paper of appropriate value purchased in the State of Odisha.

End of Section-I

## SECTION-II

### 2.0 DEFINITIONS AND INTERPRETATIONS

The following words and expressions (as hereinafter defined) shall have the meanings hereby assigned to them except where the context otherwise requires.

- 2.1 "Accepting Authority" shall mean the authority mentioned in Schedule 'A'.
- 2.2 The 'Alteration / Variation of Order' means an order given in writing by the Engineer-in-charge to effect additions to or deletions from or alteration in the Works.
- 2.3 'Approved' shall mean approved in writing including subsequent written confirmation of previous verbal approval and 'Approval' means approved in writing including as aforesaid.
- 2.4 'Bidder' means a person or group of persons or a company who offer rates under certain conditions with an intention of performance against any invitation to Tender if accepted by the person inviting Tender.
- 2.5 The 'Completion Certificate' shall mean the certificate to be issued by the Engineer-in-charge certifying that the work is completed in all respect commensurate to the provisions of Contract & to his satisfaction.
- 2.6 'Constructional plant' shall mean all equipments, materials, appliances or things of whatsoever nature required for execution, completion or maintenance of the works (as hereinafter defined) but does not include materials or other things intended to form or forming part of the permanent work.
- 2.7 The 'Contract' shall mean enforceable agreement between the Owner and the Contractor for execution of the works including therein collectively all documents such as: -
- i) General Conditions of Contract
  - ii) Special Conditions of Contract including Scope of Work, Price Schedule / Bill of Quantities, Technical Specification & Approved Work Schedule.
  - iii) Agreed Statement of Deviation
  - iv) Field Quality Assurance Plan
  - v) Drawings if provided
  - vi) LOI / Work Order
  - vii) All relevant correspondence having bearing on Tender between Bidder & Owner before acceptance of Tender.

All the above documents are complementary to each other.

- 2.8 The 'Contractor' shall mean the successful Bidder whose Tender has been accepted by Owner and LOI accepted by the successful Bidder and includes his/their/its legal representative(s), successor(s) and permitted assignee(s).

'Contractor' is a person/firm/company in relation to any establishment who undertakes to produce a given result for the establishment other than a mere supply of goods or articles of manufacturer to such establishment through Contract labour or who supply Contract labour for any work of the establishment and includes a subcontractor or agent as the case may be.

- 2.9 All functions pertaining to the operation of Contract means all acts, such as planning, scheduling, testing, measuring, certification of bill, closing of Contract etc., directing, issue of spares & consumables and controlling the activities of Contractor necessary for execution of the Contract and coordinating between the functioning agency & Owner or his functionary representative.
- 2.10 'Day' means a day of 24 hours from midnight irrespective of the number of hours worked in that day. However, for the purpose of work involving shift working "Day" means a day of 24 hours from 6 a.m. to 6 a.m. next.

- 2.11 'Drawings' shall include maps, plans and tracings or prints thereof with any modification approved in writing by the Engineer-in-charge and such other drawings as may from time to time, be furnished or approved in writing by the Engineer-in-charge.
- 2.12 The 'Engineer-in-charge' or 'Officer-In-charge' shall mean the engineer / person as the case may be nominated by the Owner from time to time and shall include those who are expressly authorized by the Owner to act for and on his behalf for all functions pertaining to operation of the Contract.
- 2.13 'Excepted Risks' are risks due to riots (otherwise than among Contractors employees) and civil commotion (in so far as both these are uninsurable), war (whether declared or not), invasion, act of foreign enemies, hostilities, civil war, rebellion, revolution, insurrection, military or usurped power any acts of government, damage from aircraft, acts of god such as earth quake, lightening and unprecedented floods and other causes over which the Contractor has not control and accepted as such by the accepting authority or causes solely due to use or occupation by the Owner of the part of works in respect of which a certificate of completion has been issued.
- 2.14 The 'Final Certificate' in relation to the work shall mean the certificate regarding the satisfactory compliance of the various provisions of the Contract to be issued by the Owner or his representative after the period of risk-liability is over. Risk liability period shall be specified in Special Conditions of Contract.
- 2.15 'Headings' in this Contract document are given solely to facilitate reference and are not part of the Contract documents and are not to be taken into account in the interpretation of the provisions of the Contract.
- 2.16 'Language for Drawings & Instruction': All the drawings, titles, notes, instructions, dimensions etc. shall be in English language only.
- 2.17 'Letter of Intent (LOI)' shall mean an intimation by a letter to Bidder that their Tender has been accepted in accordance with the provisions contained in the letter and hence to take preparatory steps and compliance of formalities to commence the work from the date desired by Owner.
- 2.18 The 'Managing Director' shall mean the Managing Director of Odisha Power Generation Corporation Ltd or his successors in office as designated by the Owner.
- 2.19 'Market Rate' shall be the rate as decided by Engineer-in-charge on the basis of the cost of materials and labour at the site where the work is to be executed, plus the percentage mentioned in schedule-A to cover all overheads and profit (No percentage shall be added for materials issued by the Owner).
- 2.20 'Metric System': All technical documents regarding the measurement of works are given in the metric system and all work under the Contract should be carried out according to the metric system only. All documents concerning the work shall also be maintained in the metric system.
- 2.21 'Notice in writing or written notice' shall mean a notice in writing, typed or printed matters sent (unless delivered personally or otherwise proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received in the ordinary course of post, it would have been delivered.
- 2.22 The 'Owner' shall mean the Odisha Power Generation Corporation Limited (OPGCL), a company incorporated under the Companies Act, 1956 having its registered office at 7<sup>th</sup> Floor, Module – A, Fortune Towers, Chandrasekharpur, Bhubaneswar-751 023 or any other places if modified subsequently and shall include its Managing Director or other Administrative Officers authorised to deal with these presents and are concerned on his behalf and are posted in any of the offices of OPGCL and shall also include Owner's successors and assignees.
- 2.23 'Paying Officer' shall mean Head of Finance/Sr. Manager (Finance), ITPS.



- 2.24 The 'Period of Defect Liability' in relation to a work means the specified period from the date of issue of completion certificate up to the date of issue of final certificate, which the Contractor stands responsible for rectifying all defects that may develop in the works.
- 2.24 'Plans' shall mean all maps, drawings, sketches and layout as incorporated in the Contract in order to define broadly the scope and specifications of the work & works and all reproductions thereof.
- 2.25 'Schedule(s)' referred to in these conditions shall mean the relevant statement of details annexed to the tender papers issued by the Owner and the amendments thereto issued from time to time.
- 2.26 'Singular & Plural': Unless otherwise stated specifically, the singular shall include the plural and vice-versa wherever the context so requires. The 'Tender' shall mean the offer(s) submitted by the Bidder(s) & subsequent agreed conditions/clarifications for acceptance by the Owner. Words implying persons shall include relevant corporate companies or registered associations or body of individuals or firms of partnership, cooperative society as the case may be.
- 2.27 'Site / Work place' shall mean the lands and other spaces above & below the ground level on which the works are to be carried out, any other lands or places provided by the Owner for the purpose of the Contract.
- 2.28 'Specification' shall mean all directions, various technical details, standards, quality provisions and requirements attached to the Contract, which pertain to the method and manner of performing the work(s) to the quantities and qualities of the work(s) and the materials to be furnished under the Contract for the work(s) as may be amplified or modified by the Owner or the Engineer-in-charge during the performance of Contract in order to meet the unforeseen conditions in the best interests of the work(s). It shall also include the latest edition including all addenda / corrigenda or relevant BIS Specifications and other relevant codes.
- 2.29 The 'Sub-contractor' shall mean any person or firm or company (other than the Contractor) to whom whole or any part of the work has been entrusted by the Contractor, with the written consent of the Owner or his representatives and the legal representatives, successors and permitted assignee of such person, firm or company.
- 2.30 'Temporary Works' shall mean all temporary works of every kind required for execution, completion or maintenance of the Contracted works.
- 2.31 The "Tender" shall mean the offer submitted by the Bidder and subsequent conditions accepted by the Owner.
- 2.32 'Urgent Work' shall mean any urgent measures which in the opinion of Engineer-in-charge become necessary during the progress of the work to obviate any risk of accident or failure or disruption of generation which become necessary for security.
- 2.33 'Value of Contract' shall mean the sum accepted or the sum calculated in accordance with the prices accepted in Tender and/or the Contract rates as payable to the Contractor for the entire execution and full completion of the work. The 'Contract sum' shall mean:
- a) In case of lump sum Contracts, the sum for which the Tender is accepted.
  - b) In case of percentage rate Contracts, the estimated value of the works as mentioned in the Tender adjusted by the Contractor's percentage.
  - c) In case of item rate Contract, the value of works arrived at after multiplication of the quantities shown in the schedule of quantities by the item rates quoted by the Bidder for the various items.
- 2.34 'Week' means a period of seven consecutive days without regard to the number of hours worked in any day in that week.
- 2.35 'Working day' means any day, which is not declared to be holiday or rest day by the Owner.

- 2.36 The 'Works' shall mean and include all works to be executed in accordance with the Contract or part thereof as the case may be and shall include all extras, additions, altered or substituted works as required for the purpose of the Contract or as may be required to be executed by the Owner / Engineer-in-charge at an agreed price if not available in scope.
- 2.37 **NATURE OF CONTRACT:** The Contract may be for -
- a) Construction / Fabrication / Erection of plant & equipment.
  - b) Civil construction.
  - c) Operation (any system).
  - d) Maintenance (Civil/Electrical/Mechanical/Miscellaneous works, such as upkeepment of plant, Plantation etc.)
  - e) Composite / Turnkey package.
- 2.38 **Earnest Money:**  
The Bidder is required to submit 'Earnest Money' with Bids as guarantee (Bid guarantee) to abide by the terms & conditions of Tender document and comply with the work if offered.
- 2.39 **Schedule of Rate:**  
Schedule of Rates means the latest rate published by Works Department / P.H. Department. / Irrigation Department., Govt. of Odisha as the case may be.
- 2.40 **Schedule of Quantities:**  
Schedule of Quantities is details of item wise quantity issued by the Owner in the Price Bid and the rate & amount offered by the Bidder therein and its subsequent agreement by both parties. This is applicable for construction & civil maintenance job only.
- 2.41 **Price Schedule:**  
Price schedule is a document in which description of operation / maintenance, probable frequency during a stipulated period and blank unit rate are provided by the Owner. Bidder shall fill up the blanks and submit it as Price Bid, which is subsequently agreed by both the parties directly or after negotiation.
- 2.42 "Site In-charge" is an employee of Contractor who is categorically authorized to manage the site for day-to-day activities on his behalf.
- 2.43 "Labour" means workers employed by a Contractor directly or indirectly through a sub-contractor or by an agent to do any skilled, semi-skilled, unskilled, manual, technical or clerical work relating to the subject of Contract for hire or reward.
- 2.44 "Minimum wage" means wages as defined under the Minimum Wages Act-1948 and amended from time to time.

End of Section-II

## SECTION-III

### 3.0 **GENERAL INFORMATION TO BIDDER (S):**

#### 3.1 **ISSUE OF TENDER PAPER:**

Owner shall issue one set of priced tender documents which consists of:

- i) Instructions to Bidder including NIT & Proforma of letter of undertaking
- ii) General Conditions of Contract
- iii) Special Conditions of Contract including Technical Specification and Scope of Work
- iv) Blank Price Bid / Bill of Quantities
- v) Drawings

3.2 The Technical Bids shall be opened as per the stipulation in NIT. Information provided and documents submitted by the Bidders in Techno-commercial bid shall be processed, examined, verified and evaluated for ascertaining the suitability of Bidders to qualify for opening of Price bid. The price bids shall be opened with prior intimation to all technically qualified Bidders only and in presence of them or their authorized representatives. Only proprietor, partner, director or permanent employee with necessary power of attorney shall be accepted as authorized representative.

#### 3.3 **WITNESS:**

Witness and sureties should normally be persons of status and property. Their names, occupation and address shall be stated below their signature.

#### 3.4 **VALIDITY:**

Offers submitted by Bidders shall remain valid for a period of 180 days from the scheduled date of opening of the Tender. In case of Bidder revoking or canceling his Tender or varying any term(s) in regards thereof the Earnest Money paid by him shall be forfeited and bid cancelled.

#### 3.5 **ADDENDA/CORRIGENDA:**

3.5.1 Addenda / Corrigenda to the tender document may be issued reasonably prior to the date of submission of the Tenders to clarify documents or to reflect modification in the design or Contract terms. If such issues made, subsequent to sale of Tender paper, time extension shall be given and submission of Bid shall be dealt with in accordance with Clause 1.3 of Instructions to Bidder (s).

3.5.2 The addenda / corrigenda will be issued / mailed to each person or organization to which a set of tender documents has been issued. Each recipient shall acknowledge the receipt of the same and attach one copy of the addenda/corrigenda issued, which shall form part of Tender Documents. In case of paper publication of such addenda/corrigenda, copy of the same may be treated as part of original tender documents.

#### 3.5.3 **REVISED PRICE BID:**

In case of any deviation proposed by any of the Bidders and accepted by the Owner during evaluation of Technical Bid, the same shall be intimated to all technically qualified Bidders with provision of submission of fresh Price Bid taking into consideration the accepted deviation.

#### 3.6 **RIGHT OF OWNER TO ACCEPT OR REJECT TENDER:**

3.6.1 The right to accept the Tender rests with the Owner. The Owner further does not bind himself to accept the lowest Tender and reserves the authority to reject any or all the Tenders received without assigning any reason whatsoever. The whole work may be split up between two or more Contractors or accepted in part (not entirely) if considered expedient. The rates shall be the lowest/negotiated for such eventualities. Tenders in which any of the particulars and prescribed information is missing or incomplete in any respect and/or the prescribed conditions are not fulfilled are liable to be rejected. The decision of the Owner in respect of the above shall be final and binding on the Bidders.

3.6.2 Canvassing in connection with Tenders is strictly prohibited. The submitted Tenders of the Bidders who resort to canvassing are liable for rejection. Tenders containing uncalled remarks or any additional conditions are liable to be rejected.

#### 3.7 **BIDDER'S RESPONSIBILITY:**

The intending Bidders shall be deemed to have visited the site and familiarized themselves thoroughly with the site conditions before submitting the Tender. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the works in strict conformity with the drawings and specifications. The correctness of the details given in the Tender Documents as guideline information to help the bidder but to make up the Tender is not guaranteed.

**3.8 NOTE TO PRICE SCHEDULE / SCHEDULE OF QUANTITY:**

3.8.1 The Bidder shall be deemed to have studied the specifications and details of work to be done within time schedule and to be acquainted himself of the conditions prevailing at site.

3.8.2 Rates must be filled in the original Tender document. Any exceptions taken by the Bidder to the schedule of quantity / price schedule shall be brought out in the terms and conditions of offer.

3.8.3 The schedule of quantity / price schedule should be read in conjunction with all the other sections and documents of the Tender.

**3.9 EQUIPMENTS TO THE CONTRACTOR ON CHARGEABLE BASIS:**

Owner shall not provide any equipment to the Contractor on chargeable basis or otherwise.

**3.10 ISSUE OF PRIME MATERIALS:**

3.10.1 Rate shall be offered including the cost of labour & prime materials like steel, cement etc. in case of construction and civil repair maintenance work.

3.10.2 In case of mechanical & electrical maintenance, Owner shall provide steel materials other than reinforcement steel. Spares, lubricants, special consumables forming part of the job, fasteners, packing including mill internals etc. shall be provided by the Owner and shall not be included in price of Bidder. Other consumable shall be provided by Contractor.

The Contractor shall arrange and stock in full or in part of prime materials as per direction of Engineer-in-charge within 7 days of commencement of work and obtain a certificate from Engineer-in-charge to this effect. The payment against the prime materials shall be made progressively on certification of utilization from Engineer-in-charge.

**3.11 ARRANGEMENT BEYOND CONTRACT:**

It may be sometimes so required to provide materials & services by the Contractor beyond the Scope of Contract. In such situation, the price must be finalized before actual event.

**3.12 FOREIGN EXCHANGE VARIATION:**

In case imported items are involved in the Contract, the price fluctuation corresponds to the fluctuation in the price of foreign exchange. Hence, amount of foreign exchange involved, the exchange rate for the currency on the date of offer and rate of duty should be specifically mentioned by the Contractor.

**3.13 PRICE ESCALATION:**

In case of price escalation provision, base date, indices on the base date and documents / publications shall be referred on the due date and actual date of completion of work with out any ambiguity.

**3.14 PURCHASES FROM SUBCONTRACTOR / SUB VENDOR:**

The Owner shall not directly or otherwise be involved with any subcontractor or sub-vendor. No sales tax form 'C' / form IV or Road Permit to any of the Contractor/subcontractor/sub-vendor shall be issued under any circumstances.

**3.15 INCOME TAX / WORKS CONTRACT TAX / SALES TAX / ANY OTHER TAX & DUTIES:**

Income Tax / Works Contract Tax / Sales Tax / any other taxes & duties if applicable at the prevailing rate shall be paid by Contractor and shall be deducted from their Running bills if applicable.

**3.16 EXCISE:**

Certain items of work such as manufacturing of steel vessels and pipes etc attract excise duty. The Contractor shall register himself with excise department shall deal with directly and Owner shall take no liability on account of excise duty to be paid by the Contractor.

- 3.17 The price to be quoted by the Bidders shall be kept firm up to completion of work. No escalation shall be allowed.
- 3.18 The person signing the Tender should have requisite authorization of the firm submitting the Tender. This is applicable only to the Joint Stock Company & the authorized person shall be a director / partner / regular employee of the said firm. In case of unregistered firm, the Owner, Managing partners, or authorized partner to this effect shall sign the Tender.
- 3.19 **OVERRUN CHARGES:**  
Delay in completion of work beyond the control of the Contractor such as non-availability of front, drawings, specifications, materials or force majeure etc, Contractor has to increase the additional facility to complete the work in time. No overrun charge shall be considered. But, however the Engineer-in-charge shall examine the period of delay and possibility of adherence to schedule by providing reasonable additional manpower/facility and if satisfied that completion of work shall not be possible by providing reasonable additional manpower, time extension shall be allowed to the Contractor & no penalty shall be levied on this account. No overrun charge shall be paid.
- 3.20 **FACILITIES TO CONTRACTOR (S):**
- 3.20.1 **Water Supply:** (a) Water for drinking and sanitation purpose shall be provided to the Contractor for the site work, free of cost. (b) Unfiltered water for construction / maintenance works shall be supplied from the nearest source free of cost. But the Contractor shall arrange to transport water from the nearest source allowed to him for all purpose.
- 3.20.2 **Power Supply:** Power supply will be provided to the Contractor for the site work and office at a cost to be decided by the Owner. The power will be supplied from the nearest point to the site and Contractor shall arrange to tap the power to his site at his own cost.
- 3.20.3 **Land for Contractor's Field Office, Godown & Workshop**
- a) The Owner at his discretion and convenience may provide the land for construction of Contractor's temporary field office, godowns and site store required for the execution of the Contract near to the site but out of plant gate free of cost. The Contractor shall at his cost construct all these temporary building structures and provide water supply, sanitary & power supply arrangement as approved by the Engineer-in-charge, with due regard to Owner's Safety Rule.
- b) On completion of the work undertaken by the Contractor, they shall remove all temporary works erected by them and have the site cleared as directed by Engineer-in-charge. If the Contractor fails to comply with these requirements, the Engineer-in-charge has the right to remove any structure, such surplus, rubbish materials and dispose off the same as deemed fit and get the site cleared and the Contractor shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus materials disposed as aforesaid. The land provided shall be solely on temporary basis, which is terminable at any time without notice or without assigning any reasons. In the event of any such termination or the termination of the Contract / completion thereof, the Contractor shall forthwith vacate the premises. The Owner reserves the right to ask the Contractor for demolition at any time during the currency of the Contract to vacate the land by giving seven days notice on security / safety reasons or Owner's interest.
- c) **Medical facility:**  
Owner shall extend free medical consultancy / services as available at ITPS hospital to the Contractor personnel during their assignment but no medicine shall be provided.
- d) **Accommodation:**  
Owner may provide accommodation subject to availability to the company executives on chargeable basis, which has to be determined by the Owner from time to time. In such an event, rent for 6 months shall be retained from 1<sup>st</sup> Running bill of the Contractor as security & rent from second month shall be recovered from subsequent running bills. The amount hold as security shall be returned to the Contractor on handing over the vacate possession of accommodation with security amount.
- 3.21 **LIABILITY OF CONTRACTOR IN CASE OF STRIKE OF THEIR LABOURS:**
- 3.21.1 In case Contractor's labour go on strike with advance notice as per rule, it is responsibility of the Contractor to mobilize such manpower from their other sites or otherwise and continue the work so that execution of Contract is not affected. In such an event, the failure to perform shall lead the Owner to get the work done by any other agency, but at the cost & risk of the Contractor. Further, the Contract shall be terminated with seven (7) days notice in O&M Contract and the

Contractor may be debarred from participating in any future Bid in OPGC Ltd. In case of construction work, non-adherence to schedule shall lead to cancellation of Contract or imposition of penalty at the discretion of the Engineer-in-charge. If the labours go on strike without prior notice, the situation shall be treated as force majeure provided nonperformance is for a reasonable period only. If the situation is beyond reasonable control of the Contractor but has taken appropriate steps as a man of common prudence would have taken in his own case, Owner may consider in case to case basis to either terminate the Contract or otherwise get the work done by other means but at the cost & risk of the Contractor. Only events of such illegal strike, which make the performance impossible at the time of occurrence and for a considerable time period for mobilization, shall be considered as force majeure.

3.21.2 The operation shall continue round the clock for the entire Contract period without interruption unless otherwise notified by Engineer-in-charge. Hence, staff for attending maintenance job shall be kept ready by the Contractor on all Sundays and other National & festival holidays at their own cost. In case of construction work, the work shall be executed as per the direction of Engineer-in-charge.

3.21.3 For satisfactory performance of Contract & to meet the odd hour work and emergency requirement etc and to meet the schedule of construction work, the requisite number of manpower has to be arranged by the Contractor at their own cost.

**3.22 SPARES & CONSUMABLES:**

The items of materials, spares, consumables, tools & plants to be provided by Owner if any either on cost or free of charges shall be specified in Special Conditions Contracts.

**3.23 OTHER CONDITIONS:**

3.23.1 Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract, technical specifications, schedule, and drawings and any other documents forming part of this Contract documents.

3.23.2 Where any clause of the Special Conditions of Contract contradicts with any provisions of the General Conditions of Contract, the provisions of Special Conditions of Contract shall be deemed to override the provisions of General Conditions of Contract.

3.23.3 In case of contradiction among Bureau of Indian Standard Specifications, General Conditions of Contract, Drawings, Special Conditions of Contract, Notice Inviting Tender, Technical Specifications, Schedule of quantity & time, the following shall prevail in order of preference.

- i) Detailed work order forming part of Contract
- ii) Schedule of Quantities
- iii) Technical Specifications
- iv) Notice Inviting Tender
- v) Special Conditions of Contract
- vi) Drawings
- vii) General Conditions of Contract
- viii) Bureau of Indian Standard

3.24 Wherever it is mentioned in the specification that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost.

**3.25 DURATION OF CONTRACT:**

The period of Contract shall be specified in the Special Conditions of Contract. The Contract period shall reckon from the date of issue of LOI. OPGCL reserves the right to withdraw any item(s) of works from the scope by serving a 7 days notice to the Contractor without giving any reason for the same and take up the job departmentally or otherwise if performance of Contractor is found to be unsatisfactory. Value for the items of work thus withdrawn shall not be payable by the Owner. The Contractor shall not claim any compensation on this account.

3.25.1 The period of Contract may be extended with mutual consent if the delay is beyond the control of Contractor at the discretion of the Engineer-in-charge.

3.25.2 In case Owner desires to extend the period of any Operation / Maintenance Contract by an additional duration of 2/3 months, the Contractor has to accept the proposal of Owner at original rate and terms & conditions.

3.26

**MATERIALS HANDLING:**

Contractor shall draw all the materials from Warehouse being duly authorized by Engineer-in-charge. Requisite loading, transportation & unloading of all such materials shall be the responsibility of Contractor. Only in case of heavy materials, Owner shall provide means of loading / unloading at the cost to be specified in the Special Conditions of Contract.

End of Section-III

## SECTION-IV

### 4.0 **GENERAL OBLIGATIONS / GENERAL CONDITIONS:**

#### 4.1 **INTERPRETATION OF CONTRACT DOCUMENTS:**

- 4.1.1 Complete documents forming the Contract are to be taken as mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the Contract or any of them, the matter may be referred to the Engineer-in-charge who shall give his decisions and issue instructions to the Contractor directing in what manner the work is to be carried out. The decision of the Engineer-in-charge shall be final and conclusive and the Contractor shall carry out work in accordance with this decision.
- 4.1.2 Both details of drawings & specifications constitute integral part of the scope of work.
- 4.1.3 Notwithstanding any of the items of works mentioned in Technical Specification / Scope of work, the Contractor has to do all such works necessary for completion of the work to meet the end objective with due regard to sound engineering practice as directed by Engineer-in-charge.

#### 4.2 **SPECIAL CONDITIONS OF CONTRACT:**

- 4.2.1 Special conditions of Contract shall be read in conjunction with the General Conditions of Contract, Specifications of work, drawing and other documents forming part of this Contract wherever the context so requires.
- 4.2.2 Notwithstanding the sub-divisions of the documents into the separate sections and volumes each part shall be deemed to be supplementary & complementary to every other part and shall be read with the Contract Agreement so far as it may be practicable. All documents of Contract & Tender have nexus with each other.
- 4.3 If there are conflicting provisions made in any one of the documents forming part of the Contract, the Owner shall be the deciding authority with regard to the correctness of the document.
- 4.4 Any error or omission in any part of Contract documents shall not vitiate the Contract or release the Contractor from execution of the whole or any part of the works comprised therein according to drawings & specification or from any of his obligations under the Contract.
- 4.5 The materials, design and workmanship shall satisfy the relevant Bureau of Indian Standard, the job specifications contained herein and codes referred to. Where the job specifications stipulate the requirement in addition to those contained in the standard codes and specification, these additional requirements shall also be satisfied.

#### 4.6 **BIDDER TO OBTAIN HIS OWN INFORMATION ON SITE CONDITION & CONDITION OF WORK:**

- 4.6.1 The Bidder shall be deemed to have examined the tender documents, to have obtained his own information in all matters, whatsoever that might influence carrying out the works at the scheduled rates and satisfied himself to the sufficiency of his Tender. He is deemed to know the scope, nature as to what works he has to complete in accordance with the Contract document whatever be the defect, omission or errors that may be found in the Contract Document. The Contractor shall be deemed to have visited site and surrounding areas, to have satisfied himself to the nature of all existing structures, and also as to the nature and the conditions of available facilities like railways, roadways, bridges, culverts, means of transport and communications by land, water or air and possible interruptions thereto the access to and from site and to have made enquiries, examined & satisfied himself of the site for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus, materials, the available accommodation like depots, buildings as may be necessary for executing and completing the work to have made local, independent enquiries as to the sub-soil, water, land variations thereof, storms, prevailing winds and climatic conditions and all other similar matters affecting the works. He is deemed to have acquainted himself with his liability for payment of Government taxes, custom duties and other charges. He is deemed to have acquainted himself with the local labour attitude, work culture, customs & systems etc.
- 4.6.2 Any neglect or failure on the part of the Bidder in obtaining necessary and reliable information or issues stated at 4.6.1 or any other matters affecting the Contract shall not relieve him from any risks or liabilities or the entire responsibility for completion of the works at the scheduled rates and time in strict accordance with the Contract documents.
- 4.6.3 Any change in technological requirement shall be binding on the Contractor and no extra claim on this account shall be entertained.
- 4.6.4 No verbal agreement or inference from conversation with any officer or employee of the Owner either before, during or after execution of the Contract agreement shall in any way affect or modify the terms or obligations herein contained.



- 4.7 **MUTUAL LIABILITIES AMONG CONTRACTS:**  
The Contractor who are executing more than one Contract under OPGC, any penalty or recoveries of one Contract shall be made from other Contract & vice versa.
- 4.8 **CONTRACT REVIEW MEETING:**  
Engineer-in-charge shall arrange Contract Review Meeting in regular intervals in case the performance subject to any difficulty and take decision in connexion with amendment of time, quantity, price etc.
- 4.9 **SECURITY DEPOSIT:**
- 4.9.1 A sum of 10% of the accepted value of the Tender or actual value of the work to be executed whichever is higher for Contracts not exceeding Rs.1 crore, 7.5% for the value of Contracts above Rs.1 crore up to Rs.5 crore and 5% for the value of Contracts over Rs.5 crore shall have to be deposited by the Contractor as security deposit with the Owner & retained by the Owner until the expiry of defect liability period.
- 4.9.2 This may be deposited initially at 2% of the value of the Contract (referred as initial security deposit) within 10 days of receipt by him of LOI and the balance will be recovered in installments through the deduction @ 10% of the gross value of the each running bill for the Contract up to Rs.1 crore, 7.5% for Contract between Rs.1 crore to Rs.5 crore and 5% for Contract over Rs.5 crore, till total security deposit is collected. No further deduction from the bills will be made on this account subject to clause. 4.9.7 hereafter.
- 4.9.3 Alternatively the Contractor may at his option have to deposit the full amount as mentioned in clause 4.9.2 above towards security within 10 days of issue of LOI. This amount will have to be suitably enhanced to the tune of corresponding percentage of the executed value if any.
- 4.9.4 Contractor shall furnish the initial or total security amount by Demand Draft in the manner specified in Clause- 1.13 up to Contract value of Rs.25.00 lac only. Beyond Contract value of Rs.25.00 lac the initial or total security deposit shall be accepted in form of Bank Guarantee in the prescribed format from any nationalized or scheduled bank. In all the cases if total security is not deposited either in form of Demand Draft or Bank Guarantee the security as mentioned in Clause 4.9.2 shall be recovered from the running bill of the Contractor. The Bank Guarantee facility shall be extended to only companies of repute at the discretion of OPGC.
- 4.9.5 The earnest money deposited with the Tender shall be adjusted towards initial security deposit at the option of the Bidder.
- 4.9.6 If the Contractor/subcontractor or their employees damage, break, deface or destroy the property belonging to the Owner or others during the execution of the Contract, the same shall be made good by the Contractor at his own expense and in default thereof the Engineer-in-charge may cause the same to be made good by other agencies and recover expenses from the Contractor for which the certificate of the Engineer-in-charge shall be final.
- 4.9.7 All compensation or other sums of money payable by the Contractor to the Owner or recoveries to be made under terms of this Contract may be deducted from their security deposit or from any sums which may be due or may become due to the Contractor by the Owner on any account whatsoever. In the event of his security being reduced by reasons of any such deduction or sale, the Contractor shall within ten days thereafter make good by bank drafts, any sum or sums which may have fallen short of Security deposit amount or any part thereof. No interest shall be payable by the Owner for sum deposited/retained as security deposit.
- 4.9.8 The security deposit will be refunded after the expiry of the period of defect liability as stipulated in the Contract and on submission of final certificate.
- 4.9.9 **The variation in security deposit:**  
Any agency stands L1 in any Bid while they are executing any other Contract with Owner, the security deposit of such L1 Contract shall be enhanced to 20%. After successful completion of 1<sup>st</sup> milestone / initial three months as the case may be, 10% of the security may be refunded to the Contractor.
- 4.10 **FORFEITURE OF SECURITY DEPOSIT:**  
Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the Contract, the Owner shall be entitled to recover such sum by appropriating in part or whole the security deposit of the Contractor and to sell any Government security deposit of the Contractor forming whole or part of such security deposit. In the event of the security being insufficient or if no security has been taken from the Contractor, then the balance or the

total sum recoverable as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the Contractor under particular Contract or any other contract with Owner. The Contractor shall pay to the Owner on demand any balance remaining due. In case any dues cannot be recovered out of Contract(s), the amount may be recovered as debt liability.

In the event of any breach by the Contractor or any loss or damage caused to the Owner which in the opinion of the Owner has arisen, the decision of the Engineer-in-charge shall be final and binding on the Contractor or in the event of the termination of the Contract for any such breach, the security deposit is liable to be forfeited. The decision of forfeiture by the Owner shall be final and binding on the Contractor.

#### 4.11 **AMENDMENT OF QUANTITY, VALUE & PERIOD OF COMPLETION:**

In case of lump sum Contract, no deviation shall be allowed. But in case of lump sum Contract based on Bill of Quantities and item rate Contract if any deviation in quantity or omission of items are discovered in course of performance of Contract, the cumulative effect of which varies the Contract sum up to 5%, the error shall be rectified/amended and the value so varying shall be added with or deducted from the Contract sum @ original contract cost as the case may be. Deviation shall be allowed subject to recommendation of Technical Services department, if the varying value shall exceed 5% of Contract value only. In case of annual maintenance Contract in respect of mechanical maintenance, electrical maintenance, plant cleaning or any other operational activities time extension for completion of any item does not arise. But the period of service may be extended beyond Contract period at the discretion of management if situation so demands. In addition to this, the Engineer-in-charge reserves the power -

- a) to make alteration in, omission from, additions to or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work;
- b) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons. The Contractor shall be bound to carry out the work in accordance with any instructions given by the Engineer-in-charge to the extent the omission does not change the value of Contract by more than 10%. Consequent alterations, omissions, addition or substitution shall form part of the Contract as if originally provided therein and the Contractor may be directed to do in the manner above specified as part of the works. The Contractor shall carry out the work on the same conditions in all respect including rate on which he agreed to do the main work. But if such alteration, omission, addition or substitution radically change the original nature of the Contract shall be ordered by the Engineer-in-charge as a deviation and in the event of deviation being ordered which in the opinion of Contractor changes the original nature of the Contract, fresh rate shall be worked out by Engineer-in-charge with mutual consent.

Rate for such additional, altered or substituted work shall be determined by the Engineer-in-charge as follows:-

- i) If the rate for additional, altered or substituted items of work is specified in the schedule of quantities / price schedule, the Contractor shall carry out the additional, altered or substituted items at the same rate. In case of composite Tenders where two or more schedules of quantities may form part of the Contract, the applicable rate shall be taken from the schedule of quantity of that particular part in which the deviation is involved, failing that at the lowest applicable rate for the same item of work in the other schedules of quantities.
- ii) If the rate for altered, additional or substituted item of work is not specified in the schedule of quantities / price schedule, the rate for that item shall be derived from the rate for the nearest similar item specified therein. In case of composite Tenders where two or more schedules of quantities form part of the Contract, the rate shall be derived from the nearest similar item in the schedule of quantities of the particular part of works in which the deviation is involved failing that from the lowest of the nearest similar item in other schedule of quantities.
- iii) If the rate of any additional, altered or substituted item of work cannot be determined in the manner specified in sub-para (i) & (ii) above, then such item of work shall be carried out at the rate entered in the Schedule of Rates mentioned in schedule A plus/minus the percentage by which the tendered amount of the works actually awarded is higher or lower than the estimated amount of works actually awarded.

- iv) If the rate for any altered, additional or substituted item of work cannot be determined in the manner specified in sub paras (i) to (iii) of Clause 4.11, due to non-availability of rate in Schedule A, then the rate for such item of work shall be determined by the Engineer-in-charge on the basis of the purchase price as supported by the vouchers plus mutually agreed labour rate. In case the Engineer-in-charge considers the purchase price unreasonable, the price shall be determined on the basis of market rate(s) prevailing during the fortnight following the date of order.

#### 4.12 **SUSPENSION OF WORKS:**

The Contractor shall, on receipt of the order in writing of the Engineer-in-charge, suspend the progress of the works or any part thereof for such time and in such manner, as the Engineer-in-charge may consider necessary for any of the following reasons:

- i) On account of any default on part of the Contractor; or
- ii) For proper execution of the works or part thereof for reasons other than the default of the Contractor;  
In any of the above cases the Contractor shall properly protect and secure the works to the extent necessary and carry out the instructions given on that behalf by the Engineer-in-charge during such suspension period.

#### 4.12.1 **Compensation:**

Compensation for suspension of work under (ii) of Clause 4.12 shall be dealt with on request of Contractor by the Contract Review Meeting depending on the period of suspension & condition of suspension etc.

#### 4.12.2 **Time extension for suspension of work:**

Time extension for suspension of work under Clause 4.12 (ii) shall be dealt in accordance with Clause No.4.13

#### 4.13 **TIME EXTENSION FOR DELAY IN COMPLETION OF WORK:**

The time allowed for execution of total works as specified in the Schedule-"A" with due regard of achieving the corresponding milestone mutually agreed upon or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from the 15<sup>th</sup> day after the date on which the Owner issues written orders to commence the work.

As soon as possible after the Contract is finalized the Engineer-in-charge and the Contractor shall agree upon a Time and Progress Chart/PERT chart / L<sub>2</sub> network before agreement is signed. The chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate & forecast the dates of commencement and completion of various sections of the work corresponding to various milestones. The target date of achieving various milestones and activities between two consecutive milestones shall be agreed upon mutually and reviewed in regular intervals by Engineer-in-charge. During review, the date of achievement of milestone may be adjusted if required but not the date of completion of work as per schedule. However, no time extension shall be permitted beyond the time of completion as per Contract.

#### 4.13.1 **Time extension on account of quantity amendment /deviation:**

If the work is delayed due to increase in scope / quantity the time for completion of mile stone of the total works shall, in the event of any deviation/amendment resulting in additional quantity over the Contract quantity being ordered, be extended as under.

- a) in the proportion which the additional cost of the altered, additional, substituted works bears to the original Contract sum, plus
- b) 25% of the time calculated in (a) above or such further additional time as may be considered reasonable by the Engineer-in-charge.

Alternatively, variation in completion time of milestone may be worked out mutually in Contract Review Meeting depending on the prevailing conditions and need of the hour.

#### 4.13.2 **Time extension for suspension of work without fault of Contractor:**

In case of suspension of work for no fault of Contractor time extension shall be allowed to the Contractor as deemed proper by Contract Review Meeting on request of the Contractor.

4.13.3 **Time Extension for delay on account of: -**

- a) force majeure;
- b) abnormally bad weather, or
- c) delay on the part of other Contractors engaged by Owner in executing work not forming part of this Contract but having bearing on this Contract;
- d) non-availability of stores to be provided by the Owner under the Contract;
- e) any other related cause beyond the control of Contractor –

-provided the Contractor shall immediately give notice thereof in writing to the Engineer-in-charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-charge to proceed with the works. The case may be examined in the Contract Review Meeting and decision thereon shall be final.

4.13.4 Request for extension of time shall be made by the Contractor in writing within 24 hours of the happening of the event causing delay for consideration of Owner. The Contractor may also indicate the period of extension desired with supporting reasons.

4.13.5 In any such case the authority mentioned in Schedule-A may give a fair and reasonable extension of time for completion of the work on the recommendation of Contract Review Meeting. Such extension shall be communicated to the Contractor by the Engineer-in-charge in writing, within 15 days of the date of receipt of such request by the Engineer-in-charge.

4.14 **MATERIALS:**

- a) *The Contractor shall at his own expenses provide all materials required for the works other than those, which are to be supplied by the Owner.*
  - i. All materials to be provided by the Contractor shall be in conformity with the specifications laid down in the Contract and the Contractor shall if required by the Engineer-in-charge, furnish proof to the satisfaction of the Engineer-in-charge to that effect.
  - ii. If required the Contractor shall at his own expense and before 15 days of use of the material submit to the Engineer-in-charge the samples of materials proposed to be used in the works. The Engineer-in-charge shall within seven days of receipt of samples or within such further period as he may require and intimate to the Contractor in writing, whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith submit fresh samples to the Engineer-in-charge for his approval complying with the specifications laid down in the Contract.
  - iii. The Engineer-in-charge shall have full powers for removal of any or all of the materials brought to site by the Contractor which are not in accordance with the Contract specifications or do not conform in character or quality of samples approved by him. In case of default on the part of the Contractor in removing rejected materials, the Engineer-in-charge shall be at liberty to have them removed by other means. The Engineer-in-charge shall have full powers to procure other proper materials to be substituted for rejected materials and in the event of the Contractor's refusal to comply, he may cause the same to be supplied by other means. All costs, which may be incurred for such removal and/or substitution, shall be borne by the Contractor.
  - iv) The Contractor shall indemnify the Owner, its representatives or employees of the Owner against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any article or materials or part thereof included in the scope of Contractor. In the event of any claim being made or action being brought against the Owner, its representatives or employees of the Owner in respect of any such matters as aforesaid, the Contractor shall immediately be notified thereof, provided that such indemnity is not applicable when such infringement has taken place in complying with the specific directions issued by the Owner; but the Contractor shall pay any royalties or other charges payable in respect of any such use, the amount so paid being reimbursed to the Contractor only if the use was the result of any drawings and/or specifications issued after Contract agreement is signed.

Further, if any such action is instituted by any agency after closure of Contract or any structure or utility is eroded or damaged within 2 to 3 years of performance on account of related work of the Contractor, the

Contractor shall be liable for such cost and expenses for which Contractor shall provide corporate warranty for further 2 years beyond defect liability period.

- v. Subject as hereinafter provided in Condition 7.1 all charges on account of octroi, entry tax, sales tax, royalty and other duties on materials obtained for the works from any source (excluding materials supplied by the Owner) shall be borne by the Contractor.
- vi. The Engineer-in-charge shall be entitled to have tests carried out as specified in the Contract for any materials supplied by the Contractor other than those for which, as stated above, satisfactory proof has already been furnished, at the cost of the Contractor and the Contractor shall provide at his expense all facilities which the Engineer-in-charge may require for the purpose. If no tests are specified in the Contract, and such tests are required by the Engineer-in-charge, the Contractor shall provide all facilities required for the purpose and the charges for these tests shall be borne by the Contractor only if the tests disclose that the said materials are not in accordance with the provision of the Contract. The cost of materials consumed in tests shall be borne by the Contractor in all cases except when otherwise provided.
- vii. In addition the Contractor shall perform / submit at his own cost such tests/samples forming out of the same materials & in same process, such as concrete cube, welded test piece etc. as may be required by the Engineer-in-charge made out of the materials issued by the Owner or Contractor, except for the costs of materials used in such tests/samples.

b) *Material to be provided by the Owner:*

Materials to be provided by the Owner are shown in Schedule 'B' which also stipulates place of issue and rate (s) to be charged, free issue, allowable % of loss in respect thereof.

- i. If after issue of LOI the Contractor desires the Owner to provide any other materials, such materials may be provided by the Owner, if available, at rates to be fixed by the Engineer-in-charge. The Owner reserves the right not to issue any such materials. The non-issue of such materials will not entitle the Contractor for any compensation whatsoever either in time or in cost.
- ii. (1) The Owner may issue all the materials as per Contract to the Contractor at its warehouse, site stores, or nearest railhead. In case the materials are issued at the nearest railhead the cost of transportation only from such railhead to the site will be borne by the Owner subject to the reasonableness of such transportation cost being certified by the Engineer-in-charge. All other costs such as loading, unloading, transportation to Contractor's go-down, storage etc till the materials are utilized in the works and return of surplus & scrap, if any to the Owner shall be to the account of the Contractor.  
(2) For the materials listed in Schedule B, which the Owner has agreed to supply to the Contractor, he shall give a reasonable notice in writing his requirements to the Engineer-in-charge in accordance with the agreed phased programme. Such materials shall be supplied for the purposes of the Contract only and the value of materials so supplied at the rates specified in the aforesaid schedule shall be set off or deducted, as and when materials are consumed in items of work for which payment is being made to the Contractor from any sums there or which may thereafter become due to the Contractor under the Contract. At the time of submission of bills the Contractor shall properly account for the materials issued to him to the satisfaction of the Engineer-in-charge, certify that balance of materials supplied is available at site. The value of the stores/materials as may be supplied by to the Contractor by the Owner shall be debited to the Contractor's account at the rates as shown in Schedule-B and if they are not entered in the Schedule, they shall be debited at cost price which for the purpose of the Contract shall include cost of transportation & all other expenses whatsoever such as normal storage, supervision charges which shall have been incurred in obtaining the same at the Owner's stores.
- iii. The Contractor shall bear the cost of loading and transportation to site, unloading, storing under cover as required, assembling and joining the several parts together as necessary and incorporating or fixing materials in the works including all preparatory work of whatever description as may be required.
- iv. Surplus of all materials issued to the Contractor by the Owner for use, inclusion or fixing in the works (including preparatory work) shall, on completion or on foreclosures of the works, be returned by the Contractor at his expense, at the place of issue, after making due allowance for actual consumption, reasonable wear and tear and /or waste. The reasonable wastage percentage shall however be mentioned in Schedule-B against each items. If the Contractor is required to deliver such materials at a place other than the place of issue, he shall do so and the transportation charges from the site to such place, less the transportation charges which would have been incurred by the Contractor had such materials been delivered at the place of issue, shall be borne by the Owner.

- v. *Return of surplus Materials / scraps:*  
Percentage of wastage acceptable to the Owner in respect of cement, structural steel, reinforcement steel and other such materials is furnished in Schedule-B.  
Cut pieces of reinforcement rods of length 3.0 meters and above shall be accepted by the Owner and credited at the issue rates. Other pieces below 3 mtr lengths shall be returnable as scrap to Owner if issued.
- vi. Surplus materials returned by the Contractor shall be credited to him by the Engineer-in-charge at rates not exceeding those at which these were originally issued to him after taking into consideration any deterioration or damage which may have been caused to the said materials whilst in the custody of the Contractor.
- vii. If on completion of works the Contractor fails to return surplus materials out of those provided by the Owner, then in addition to any other liability which the Contractor would incur, the Engineer-in-charge may, by a written notice to the Contractor, require him to pay within a fortnight of receipt of the notice, for such unreturned surplus materials at the rates specified in Special Conditions of Contract.
- viii. *Empty cement bags:*  
The rate of cement is inclusive of cost of bag.

c) *General:*

Materials required for the works, whether brought by the Contractor or provided by the Owner, shall be stored by the Contractor only at places approved by the Engineer-in-charge. Storage and safe custody of materials shall be the responsibility of the Contractor.

- i. Owner's officials concerned with the Contract shall be entitled at any time to inspect and examine any materials intended to be used in works either on the site or at factory or workshop or other place(s) where such materials are assembled, fabricated, manufactured or at any place(s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.
- ii) All materials brought to the site shall become and remain the absolute property of the Owner and shall not be removed from the site/shifted to any place inside the plant without the prior written permission of the Engineer-in-charge. But whenever the works are finally completed or terminated and advance if any in respect of any such material is fully recovered, the Contractor shall at his own expense forthwith remove from the site all surplus material originally brought by him and upon such removal, the same shall revert in and become the property of the Contractor.
- iii) All plant, tools & other materials brought by the Contractor to the site must be declared at the time of bringing the same to the site & security gate pass obtained before entering the plant as records and reference.
- iv) It shall be the duty of the Contractor to inspect the materials issued to him at the time of taking delivery & satisfy himself that they are in good condition after the materials have been delivered by the Owner, it shall be the responsibility of the Contractor to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/or replaced by him at his own cost according to the direction of the Engineer-in-charge.
- v) Account of the materials issued by the Owner shall be maintained by the Contractor indicating the daily receipt, consumption and balance in hand in a manner prescribed by the Engineer-in-charge. All connected papers, requisitions, issues, returns etc. shall be always available for inspection in the Contractor's office at site.
- vi) Materials & equipments supplied by the Owner shall not be utilized for any other purpose(s) then issued for.

4.15 **LABOUR:**

- 4.15.1 The Contractor shall employ labour in sufficient numbers to maintain the required rate of progress / attend the repair-maintenance on it's occurrence and of quality to ensure workmanship of the degree specified in the Contract and to the satisfaction of the Engineer-in-charge. The Contractor shall not employ in connection with the works any person who has not completed his/her eighteen years of age.
- 4.15.2 The Contractor shall in respect of labour employed by him or his subcontractors comply with or cause to be complied with the Contractors Labour Regulations as per clause 8.5 in regard to all matters provided therein.
- 4.15.3 At present Employees State Insurance (ESI) Act is not applicable to IB TPS but may be extended at any time. In case of enforcement of the scheme, the Contractor shall be liable to pay his contribution and the employees contribution to the State Insurance Scheme in respect of all labour employed by him for the execution of the Contract, in accordance with the provision of "The Employees State Insurance Act, 1948" as amended from time to time. In case, the Contractor fails to submit full details of his account of labour employed and the contribution payable, the Engineer-in-charge shall

recover from the running bills of Contractor an amount of contribution as assessed by him. The amount so recovered shall be adjusted against the actual contribution payable for Employees State Insurance.

- 4.15.4 The Engineer-in-charge shall on a report having been made by an Inspecting Officer as defined in the Contractor Labour Regulations have been the power to deduct from the money due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or worker by reason of non-fulfillment of the Conditions of the Contract for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non-observance of the said Contractors Labour Regulations.
- 4.15.5 In the event of the Contractor committing a default or breach any of the provisions of the aforesaid Contractors Labour Regulations as amended from time to time or furnishing any information or submitting or filling any Form/Register/Slip under the provisions of these Regulations which is materially incorrect, then on the report of the Inspecting Officers as defined in the Contractors Labour Regulations the Contractor shall without prejudice to any other liability pay to the Owner a sum not exceeding Rs.500.00 as liquidated damages for every default, breach or furnishing, making, submitting, filling materially incorrect statement as may be fixed by the Engineer-in-charge and in the event of the Contractor's default continuing in this respect the liquidated damages may be enhanced to Rs.500.00 per day for each day of default subject to a maximum of ten percent of the contract value. The Engineer-in-charge shall deduct such amount from bills or security deposit of the Contractor and credit the same to the Welfare Fund constituted under Contract Labour (R&A) Act 1970. The decision of the Engineer-in-charge in this respect shall be final and binding.
- 4.15.6 **Model Rules for Labour Welfare:** The Contractor shall at his own expense comply with or cause to be complied with Model Rules for Labour Welfare as mentioned at (Cl. 8.4) or rules framed by Government from time to time for the protection of health and for making sanitary arrangements for workers employed directly or indirectly on the works. In case the Contractor fails to make arrangements as aforesaid, the Engineer-in-charge shall be entitled to do so and recover the cost thereof from the Contractor.
- 4.15.7 **Safety code:** The Contractor shall at his own expense arrange for the safety provisions as per Sec-IX or as required by the Engineer-in-charge, in respect of all labour directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith. In case the Contractor fails to make arrangements and provide necessary facilities as aforesaid, the Engineer-in-charge shall be entitled to do so and recover 150% of the cost of materials from the Contractor.
- (i) Failure to comply with Model Rules for labour welfare, Safety Code or the provisions relating to report on accidents and to grant of maternity benefits to female workers shall make the Contractor liable to pay to the Owner as liquidated damages an amount not exceeding Rs.500.00 for each default or materially incorrect statement. The decision of the Engineer-in-charge in such matters based on report from the Inspecting Officer as defined in the Contractors Labour Regulations at Clause 8.5 shall be final and binding and deductions for recovery of such liquidated damages may be made from any amount payable to the Contractor.
- 4.16 The Contractor shall not be permitted to enter in (other than for inspection purpose) or take possession of the site until instructed to do so by the Engineer-in-charge in writing. The portion of the site to be occupied by the Contractor shall be defined and/or marked on the site plan, failing which these shall be indicated by the Engineer-in-charge at site and the Contractor shall on no account be allowed to extend his operations beyond these areas. In respect of any land allotted to the Contractor for purposes of or in connection with the Contract, the Contractor shall be a licensee subject to the following and such other terms and conditions as may be imposed by licensor: -
- (i) that he shall pay a nominal license fee of Rs.1 per year or part of a year for use and occupation, in respect of each and every separate areas of land allotted to him.
- (ii) that such use or occupation shall not confer any right of tenancy of the land to the Contractor,
- (iii) that the Contractor shall be liable to vacate the land on demand by the Engineer-in-charge,
- (iv) that the Contractor shall have no right to any construction over this land without the written permission of the Engineer-in-charge. In case he is allowed to construct any structure he shall have to demolish and clear the same before handing over the completed work unless agreed to the contrary.
- 4.16.1 The Contractor shall provide, if required on the site, all temporary access thereto and shall alter, adapt and maintain the same as required from time to time and shall take up and clear them away as and when no longer required and as and when ordered by the Engineer-in-charge and make good all damages done to the site.
- 4.17 **SETTING OUT THE WORKS:**

The Engineer-in-charge in case of construction work shall supply dimensioned drawings, levels and other information necessary to enable the Contractor to set out the works and the Contractor shall set out the works and be responsible for the accuracy of the same. He shall rectify at his own cost and to the satisfaction of the Engineer-in-charge any error found at any stage, which may arise through inaccurate setting out unless such error is based on incorrect data furnished in writing by the Engineer-in-charge. The Contractor shall protect and preserve all benchmarks used in setting out the works till end of the Defects Liability Period unless the Engineer-in-charge direct their earlier removal. But in case of maintenance, the Engineer-in-charge shall direct the Contractor to attend certain job provided that all spares & consumables within the scope of Owner are available to the Contractor.

**4.18 SITE DRAINAGE:**

All water, which may accumulate on the site during the progress of the works or in trenches and excavations, from other than the Excepted Risks, shall be removed from the site to the satisfaction of the Engineer-in-charge and at the Contractor's expense.

**4.19 NUISANCE:**

The Contractor shall not at any time do, cause or permit any nuisance on site or do anything which shall cause unnecessary disturbance or inconvenience to Owners, tenants or occupiers of other properties near the site and to the public in general.

**4.20 MATERIALS OBTAINED FROM EXCAVATION/SCRAP/REJECTS:**

Materials of any kind obtained from excavation on the site shall remain the property of the Owner and shall be disposed of as the Engineer-in-charge may direct.

**4.21 TREASURE, TROVE, FOSSILS etc:**

All fossils, coins, articles of value or antiquity and structures and other things of geological or archaeological interest discovered on the site shall be the absolute property of the Owner and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing shall immediately upon discovery thereof and before removal acquaint the Engineer-in-charge with such discovery and carry out the Engineer-in-charge's directions as to the disposal of the same at the expense of the Owner.

**4.22 PROTECTION OF TREES:**

Trees designated by the Engineer-in-charge shall be protected from damage during the course of the works and earth level within 1 meter of each such tree shall not be charged. Where necessary such trees shall be protected by providing temporary fencing.

**4.23** The Contractor shall provide and maintain at his own expense all lights, guards, fencing and watch & ward as and when necessary or required by the Engineer-in-charge for the protection of the works or for the safety and convenience of those employed on the works or the public.

**4.24 CONTRACTOR'S SUPERVISION:**

The Contractor shall either himself supervise the execution of the works or shall appoint a competent person duly authorizing him to supervise the work on his behalf, if the Contractor has himself not sufficient knowledge and experience to be capable of receiving instructions or cannot give his full attention to the works. Such employee having power of attorney shall be considered to have the same force as the Contractor himself. If the Contractor fails to appoint a suitable person acceptable to the Engineer-in-charge, the Engineer-in-charge shall have full powers to suspend the execution of the works until such date as a suitable person is appointed and the Contractor shall be held responsible for the delay so caused to the works.

**4.25 INSPECTION AND APPROVAL:**

All works embracing more than one process / stage shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice to the Engineer-in-charge or his authorized representative when each stage is ready. In default of due notice the Engineer-in-charge shall be entitled to appraise the quality and extent thereof.

**4.25.1** No work shall be covered up or put out of view without the approval of the Engineer-in-charge or his authorized representative and the Contractor shall afford full opportunity for examination and measurement of any work which is



about to be covered up or put out of view and for examination of foundations before permanent work is placed thereon. The Contractor shall give due notice to the Engineer-in-charge or his authorized representative whenever any such work is ready for examination and the Engineer-in-charge or his representative shall without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examination and measuring such work or of examining such foundations. In the event of the failure of the Contractor to give such notice he shall, if required by the Engineer-in-charge, uncover such work at the Contractor's expense.

4.25.2 The Engineer-in-charge or his representative shall have powers at any time to inspect and examine any part of the works and the Contractor shall give such facilities as may be required for such inspection and examination.

**4.26 DUTIES & POWERS OF ENGR-IN-CHARGE'S REPRESENTATIVE:**

4.26.1 The duties of the representative of the Engineer-in-charge are to watch and supervise the works and to test and examine any materials to be used or workmanship employed in connection with the works. He shall have no authority to order any work involving any extra payment by the Owner or to make any variation in the works.

4.26.2 The Engineer-in-charge may from time to time in writing delegate to his representative any of the powers and authorities vested in the Engineer-in-charge and shall furnish to the Contractor a copy of all such written delegation of powers and authorities. Any written instruction or written approval given by the representative of the Engineer-in-charge to the Contractor within the terms of such delegation shall bind the Contractor and the Owner as though it has been given by the Engineer-in-charge.

4.26.3 Any work or material approved by the representative of Engineer-in-charge shall not be disapproved by Engineer-in-charge and can not order the pulling down, removal or breaking up thereof at Contractor's cost.

4.26.4 If the Contractor shall be dissatisfied with any decision of the representative of the Engineer-in-charge he shall be entitled to refer the matter to the Engineer-in-charge who shall there upon confirm, reverse or vary such decision. No claim of losses alleged to have been caused by any discrepancies out of instructions, doubts or misunderstanding shall in any event be admissible.

**4.26.5 OWNER NOT BOUND BY PERSONAL CONSENT OF ANY OFFICER OTHER THAN ENGINEER-IN-CHARGE.**

The Contractor shall not be entitled to any increase on the scheduled rates or any other rights or claims whatsoever by reason of any consent, explanation, statement or alleged understanding, promise or guarantees given or to have been given to him by any person other than Engineer-in-charge in writing.

**4.27 REMOVAL OF WORKMEN:**

The Contractor shall employ in and about the Execution of the works only such persons as are skilled and experienced in their several trades and the Engineer-in-charge shall be at liberty to object to and require the Contractor to remove from the works any person employed by the Contractor in or about the execution of the works who in the opinion of the Engineer-in-charge misconducts himself or is incompetent or negligent in the proper performance of his duties and such person shall not be again employed in the work without permission of the Engineer-in-charge.

**4.28 UNCOVERING AND MAKING GOOD:**

The Contractor shall uncover any part of the works and/or make openings in or through the same as the Engineer-in-charge may from time to time direct for his verification and shall reinstate and make good such part to the satisfaction of the Engineer-in-charge. If any such part has been covered up or put out of view after being approved by the Engineer-in-charge and is subsequently found on uncovering to be executed in accordance with the Contract, the expenses of uncovering and/or making opening in or through, reinstating and making good the same shall be borne by the Owner. In any other case all such expenses shall be borne by the Contractor.

**4.29 WORK DURING NIGHT SUNDAYS AND HOLIDAYS:**

Subject to any provisions to the contrary contained in the Contract, none of the permanent works except emergency maintenance work & operation shall be carried out during night or on Sundays or on authorized holidays without the permission in writing of the Engineer-in-charge. But in case of maintenance Contract, the Contractor shall be required to work any time any day as required by Engineer-in-charge.

**4.30 TIME OF PERFORMANCE:**

The work covered by this Contract shall be commenced on due date / within 15 days of issue of Letter of Intent as applicable. The Contractor should bear in mind that time is the essence of the Contract, unless such time be extended at the discretion of the Owner.

4.31 **FORCE MAJEURE:**

4.31.1 Any delays in or failure of performance of either parties thereto shall not constitute default hereunder or give rise to any claims for damages if any, to the extent such delays in or failure of performance caused by occurrences such as acts of God or the public enemy, expropriation or confiscation of facilities by Government Authority, compliance with any order or request of any Government authorities, act of war, rebellion, civil commotion, sabotage, fire, flood, earthquake, explosion, implosion, riots, public strife provided always that such occurrences result in impossibility of performance of the Contract.

4.31.2 Only events of force majeure, which impede the execution of the Contract at the time of occurrence, shall be taken into cognizance.

4.32 **FAILURE OF CONTRACTOR TO COMPLY WITH THE PROVISIONS OF THE CONTRACT:**

4.32.1 If the Contractor refuses or fails to execute the work or any part thereof with such diligence or fails to perform any of his obligations under the Contract or in any manner commits a breach of any of the provisions of the Contract it shall be open to the Owner at its option by serving 7 days notice to the Contractor to:

a) Determine the Contract: in which event the Contract shall stand terminated and shall cease to be in force and effect on and from the date appointed by the Owner on that behalf, whereupon the Contractor shall stop forthwith any of the Contract work then in progress, except such work as the Owner may in writing require to be done to safeguard any property or work, or installation from damages and the Owner for its part, may take over the work remaining unfinished by the Contractor and complete the same through fresh Contractor or by other means, at the risk and cost of the Contractor, and any of his sureties if any, shall be liable for any excess cost at the rates specified in the schedule of quantities and rates.

b) Without determining the Contract: to take over the work of the Contractor or any part thereof and complete the same through a fresh Contractor or by other means at the risk and cost of the Contractor. The Contractor and any of his sureties are liable for any excess cost over and above the cost at the rates specified in the schedule of quantities/rates, incurred by such works having been taken over and completed by the Owner. Besides the Contractor shall also be liable for any compensation accruing due to any loss incurred by the Owner.

c) In other cases, the decision of the Owner is binding on the Contractor.

4.32.2 In the events of clause 4.32.1 (a)

a) The whole or part of the security deposit furnished by the Contractor is liable to be forfeited without prejudice to the right of the Owner to recover from the Contractor the excess cost referred to in the sub-clause aforesaid, the Owner shall also have the right of taking possession and utilizing in completing the works or any part thereof, such of materials, equipments and T&P available at work site belonging to the Contractor as may be necessary and the Contractor shall not be entitled for any compensation for use or damage to such materials, equipments, tools & plants.

b) The amount that may have become due to the Contractor on account of the work already executed by him shall not be payable to him until after the expiry of six (6) calendar months reckoned from the date of termination of Contract or from taking over of the work or part thereof by the Owner as the case may be, during which period the responsibilities for faulty materials or workmanship in respect of such work shall under the Contract, rest exclusively with the Contractor. This amount shall be subject to deduction of any amounts due from the Contractor to the Owner under the terms of the Contract authorized or required to be reserved of retained by the Owner.

4.32.3 Before termination of the Contract as per clause 4.32.1(a)or(b) if in the judgment of the Owner, the default or defaults committed by the Contractor is/are curable and can be cured by the Contractor if an opportunity given to him, then the Owner may issue notice in writing calling the Contractor to cure the default within such time specified in the notice.

4.32.4 The Owner shall also have the right to proceed or take action as per 4.32.1(a) (b), in the event that the Contractor becomes bankrupt, insolvent, compounds with his creditors, assigns the Contract in favour of his creditors or any other persons, or being a company or a corporation goes into liquidation provided that in the said events it shall not be necessary for the Owner to give any prior notice to the Contractor.

4.32.5 Termination of the Contract as provided for in sub-clause 4.32.1(a)&(b) shall not prejudice or affect the rights of the Owner, which may have accrued up to the date of such termination.

4.33 **CONTRACTOR REMAINS LIABLE TO PAY COMPENSATION IF ACTION NOT TAKEN AS PER CLAUSE 4.32**

- 4.33.1 a) Non-exercise of power conferred on the Owner by Clause 4.32 when due, shall not imply a waiver of any of the conditions and shall be exercisable in the event of any further case of default by the contractor for which he is declared liable to pay compensation. The liability of Contractor for past & future compensation shall remain unaffected. The Owner may take possession of all or any T&P, materials and stores at the work site belonging to Contractor on payment at Contract rate/market rate as the case may be or rate worked out by Engineer-in-charge. Otherwise, Engineer-in-charge may serve notice to remove such T&P, materials and stores from the site within a stipulated time. In the event the Contractor fails to comply, the Engineer-in-charge may remove them at the cost & risk of the Contractor.  
b) In other cases, the decision of the Owner is binding on the Contractor.
- 4.33.2 In the event of Clause 4.32, Clause 4.33 shall be applicable without any prejudice. But in case of such cancellation the Owner shall not hold the estate of the deceased Contractor and/or the surviving partners of the Contractor's firm liable for any damages for non-completion of Contract.
- 4.34 **NO COMPENSATION FOR ALTERATION IN OR RESTRICTION OF WORK:**  
At any time from the commencement of the work if the Owner decides for whatsoever reason, not to carryout the whole work or part thereof as specified in the Tender, then Owner shall give notice in writing of the fact to the Contractor, who shall have no claim to any payment or compensation on whatsoever account (profit or advantage which he might have derived by executing the work in full) neither shall have any claim for compensation by reason of any alterations having been made from the original specification, drawings, designs and instructions which may involve any curtailment of the work as originally contemplated.
- 4.35 **CHANGE OF CONSTITUTION:**  
When the Contractor is a partnership firm the prior approval in writing from the Owner shall be obtained before any changes are made in the constitution of the firm. Where the Contractor is an individual or a Hindu Undivided family business concern, such approval as aforesaid shall, likewise be obtained before such Contractor enters into any partnership firm, where the reconstituted firm would have the right to carry out the work hereby undertaken by the Contractor. In either case if prior approval is not obtained, the Contract shall be deemed to have been allotted in contravention of clause 4.41 hereinafter and the action and consequence shall ensure as provided in that clause.
- 4.36 **TERMINATION OF CONTRACT FOR DEATH:**  
If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies or if the Contractor is a partnership concern and one of the partners dies then, unless the Owner is satisfied that the legal representative of the individual or the proprietary concern or the surviving partners of partnership firm are capable of carrying out and completing Contract, the Owner is entitled to cancel the Contract for the incomplete part without being in anyway liable for any compensation payment to the establishment of the deceased Contractor and/or to the surviving partners of the Contractor's firm on account of the cancellation of Contract. The decision of the Owner in such assessment shall be final and binding on the parties. In the events of satisfaction of the Engineer-in-charge that subcontractor, if any shall provide competent and efficient supervision over the work entrusted to them, may allow the surviving partner to complete the work contracted in case of partnership firm at the discretion of the Owner. In the event of such cancellation, the Owner shall not hold the estate of the deceased Contractor and/or the surviving partners of the Contractor's firm liable for damage for not completing the Contract.
- 4.37 **TERMINATION OF CONTRACT FOR CONTINUOUS UNSATISFACTORY PERFORMANCE:**  
The Contract may be terminated at any time by giving 15 days notice in case performance of the Contractor is found to be continuously unsatisfactory. In case of termination of Contract either on expiry of Contract period or during the period of Contract due to continuous poor performance, labour unrest, indiscipline etc., Owner shall have no liability for providing employment/compensation to the labours engaged by Contractor under any circumstance. EMD/Security retained from the Contractor so far and payable if any on any other accounts shall be forfeited. Balance work shall be carried out at the cost & risk of the defaulting Contractor.
- 4.38 **MEMBERS OF THE OWNER NOT INDIVIDUALLY LIABLE:**  
No official or employee of the Owner including Engineer-in-charge shall in any way be personally bound or liable for the acts or obligations of the Owner under the Contract or answerable for any default or omission in the observance or performance of the acts, matter or things which are herein contained.

4.39 **CONTRACTOR'S OFFICE/STORE/WORKSHOP AT SITE:**

The Contractor shall provide and maintain an office outside the plant gate for his Site In charge, staff and such office shall be opened at all reasonable hours to receive instructions, notices or other communications. The Contractor at all time shall maintain a site instruction book and compliance of these shall be communicated to the Engineer-in-charge from time to time and the whole documents to be preserved and handed over after completion of works.

4.40 **CONTRACTOR'S SUBORDINATE STAFF AND THEIR CONDUCT:**

4.40.1 The Contractor on award of the work shall identify, authorize and depute a qualified employee of the Contractor having sufficient experience in carrying out work of similar nature to whom the equipments, materials if any shall be issued and instruction for works given. The Contractor shall also provide to the satisfaction of the Engineer-in-charge sufficient and qualified staff to supervise the execution of the work, competent site-in-charge, foremen and leading hands including those specially qualified by previous experience to supervise the types of works comprised in the Contract in such manner as will ensure the best quality and expeditious working. At any time in the opinion of the Engineer-in-charge any additional, qualified experienced staff for supervision is considered necessary, they will be provided by the Contractor without additional financial burden to Owner. The Contractor shall ensure to the satisfaction of the Engineer-in-charge competent and efficient supervision over the work entrusted to them including their Sub-Contractors if any (deployed with prior permission of the Owner) and comply all statutory provisions of Contract Labour (R&A) Acts 1970.

4.40.2 If any of the Contractor's site-in-charge, assistants, foremen or any employee in the opinion of Engineer-in-charge be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties or that in the opinion of the Owner's Engineer-in-charge undesirable for administrative or any other ground, the continuance of such person(s) in Contractor establishment, then at the directions of Engineer-in-charge the Contractor shall at once remove such person(s) from the establishment of the Contractor at the Owner's premises without any financial burden to Owner.

4.40.3 The Contractor shall be responsible for the proper behavior of all the staff, foremen, workmen and others, shall exercise proper degree of control over them and in particular without prejudice to the said generality the Contractor shall be bound to prohibit/prevent any of the employees from trespassing or acting in anyway detrimental or prejudicial to the interest of the community or the properties or Owner's land or properties in the neighborhood. In the event of such trespassing, the Contractor shall be responsible for all consequent claims or actions for damages or injury or any other grounds whatsoever. The decision of the Engineer-in-charge upon any matter arising under this clause shall be final.

4.40.4 All Contractors personnel entering into the Owners premises shall be properly identified by badges of a type acceptable to the Owner which must be worn at all times on Owners premises.

4.40.5 Attention is drawn to the Contract Labour (R&A) Act 1970 whereby no master-servant relationship is created between the Owner and the Contractor's labour and no claim for employment / compensation of any such labour from the Owner shall be tenable or entertained.

4.41 **SUBLETTING OF WORK:**

In normal cases, sub-contracting is not permitted. But however Engineer-in-charge may permit the same in case he is satisfied that subcontracting is required. No power of attorney holder other than a regular employee, partner or director of the firm shall be considered for Site In-charge of Contractor. No Contractor with the power of attorney of some other Contractor shall be entertained to execute any work. The Contractor is advised not to enter into Contract before obtaining the consent of Engineer-in-charge to that effect.

4.41.1 No part of the Contract nor share or interest therein shall in any manner or degree be transferred, assigned or sublet by the Contractor directly or indirectly to any person, firm or corporation whatsoever except as provided for in the succeeding sub-clauses without the prior consent in writing of the Owner.

4.41.2 **Contractors liability not reduced by subcontract:**

Notwithstanding any subcontract with such approval as aforesaid and notwithstanding that the Engineer-in-charge shall have received copies of any subcontracts, the Contractors shall be and shall remain solely responsible for the quality and timely execution of the works and performance of all the conditions of the Contract in all respects as if such subcontract or subletting had not taken place, and as if such work had been done directly by the Contractor.

4.41.3 **No remedy for action taken under clause 4.41:**

For action taken by the Owner under the clause shall not relieve the Contractor of any of his liabilities under the Contract or give rise to any right or compensation, extension of time or otherwise.

4.42 **POWER OF INTERFERENCE:**

- 4.42.1 If the Contractor shall not commence the work in the manner described in the Contract documents or if he at any time in the opinion of the Engineer-in-charge-
- i) Fails to carry out the works in conformity with the Contract documents or
  - ii) Fails to carry out the works in accordance with the Contract schedule
  - iii) Substantially suspend work or the works for a period of seven days without approval of the Engineer-in-charge,
  - iv) Fails to carry out and execute the works to the satisfaction of the Engineer-in-charge.
  - v) Fails to supply sufficient or suitable constructional plant, temporary works, labour, materials or other things or Tools & Plants, minimum infrastructure facilities.
  - vi) Commit, suffer or permit any other breach of any of the provisions of the Contract on his part to be performed or observed or persist in any of the above mentioned breaches of the Contract for seven days, after notice in writing shall have been given to the Contractor by the Engineer-in-charge requiring such breach to be remedied, or
  - vii) If the Contractor during the continuance of the Contract shall become bankrupt, make any arrangement for composition with his creditors or go into liquidation, the Owner shall have the power to enter into the works and take over the possession of the materials, temporary work, constructional plant, stock and complete the works by other Contractors, firm or corporation as the Owner in his absolute discretion may think proper to employ and to use or authorize the use of any materials, temporary works, constructional plant, and stock as aforesaid, without making payment to the Contractor for the said materials, other than such as may be certified in writing by the Engineer-in-charge to be reasonable & not being liable for any loss or damage thereto. The Owner shall by reason of his taking possession of the work or of the works being completed by other Contractor (due account being taken of any such extra work or works which may be omitted) then the excess amount if any shall be deducted from any money which may be due for work done by the Contractor under the Contract and not paid for. Any further deficiency shall forthwith be made good by sell in such manner and for such price as he may think fit all or any of the constructional plant, materials etc. available at site.

4.43 **CONTRACTOR'S RESPONSIBILITY FOR COMPLIANCE OF STATUTORY NORMS & OTHER RULES APPLICABLE TO SUCH CONTRACT:**

The Contractor shall conform in all respect to the provisions of statutory regulations, ordinances, bylaws of any local or duly constituted authorities or public bodies, which may be applicable from time to time to the works or any temporary works. The Contractor shall keep the Owner indemnified against all penalties and liabilities of every kind, arising out of non-adherence to such statutes, ordinances, laws, rules, regulations etc. All costs & expenses borne by the Owner in way of penalty, associated litigations etc. on account of Contractor's default shall be recovered from the Contractor from his dues or from the dues of any other contract with Owner or as debt liability.

4.44 **OTHER AGENCIES AT SITE:**

The Contractor shall have to execute the work in such place and condition where other Agencies will also be engaged for other works such as site grading, filling & leveling, electrical & mechanical engineering works, operation & maintenance activities of running plant etc. No claim shall be entertained due to work being executed in the above circumstances. The Contractor shall do their work in a time & manner taking all safety precautions so as to avoid interference with other activities but their activities should not lag behind. Engineer-in-charge's decision in this respect is final.

4.45 **CORRESPONDENCES /NOTICES:**

4.45.1 **Power of Attorney:**

Owner/ Engineer-in-charge shall ordinarily correspond with the Contractor at the address furnished by the Contractor. Any notice to be sent to the Contractor by Owner shall be sent by registered post to the address of the Contractor. The Contractor shall submit due power of attorney in favour of their site-in-charge at site for the purpose of receipt of all letters, notices, drafts, cheques, job instruction and execution of job etc. from Owner and to correspond & transact with Owner on behalf of Contractor & pertaining to this Contract only.

4.45.2 **Address for Correspondence:**

The Contractor shall give full & correct address of his Registered Office with Telephone (s), Fax (s) and E-mail numbers etc. if any to the Owner for correspondence. In case of any change of address during currency of the Contract, the

Contractor shall forthwith intimate the same to the Owner failing which such act shall be treated as a fraudulent motive of Contractor.

**4.45.3 Notice to the Contractor:**

Any notice may be served on the Contractor or his site-in-charge at the job site or by registered mail directly to the address furnished by the Contractor or both. Proof of issue of such notice shall be conclusive on the Contractor having been duly informed of the contents therein.

**4.45.4 Notice to the Owner:**

Any notice to be given to the Owner under the terms of Contract shall be served by sending the same by Registered mail to or delivering the same at the respective site office of Ib Thermal Power Station, addressed to the Engineer-in-charge.

**4.45.5 Notices to local bodies:**

- i) Contractor shall comply with and give all notices required under any Government authority, instrument, rule or order made under any Act of Parliament, State laws or any regulation or bye-laws of any local authority relating to the works. He shall before making any variation from the Contract drawing necessitated by such compliance give to the Engineer-in-charge a written notice giving reasons for the proposed variation and obtain the Engineer-in-charge's instructions thereon.
- ii) The Contractor shall pay and indemnify the Owner against any liability in respect of any fees or charges payable under any Act of Parliament, State laws or any Government instrument, rule or order and any regulations or byelaws of any local authority in respect of the works.

**4.45.6 Instructions & Notices:**

- i) Subject as otherwise provided in this Contract, all notices to be given and all other actions to be taken on behalf of the Owner may be given or taken by the Engineer-in-charge / Officer-in-charge or his authorized representative.
- ii) All instructions, notices and communications etc., under the Contract shall be given in writing and if sent by registered post to the last known place of abode or business of the Contractor shall be deemed to have been served on the date when in the ordinary course of post these would have been delivered to him.
- iii) The Contractor or his site-in-charge shall be in attendance at the site (s) during all working hours and shall superintend the execution of the works with such additional assistance in each trade, as the Engineer-in-charge may consider necessary. In no case site-in-charge shall remain absent from site without prior permission of the Engineer-in-charge. Orders given to the Contractor's site-in-charge shall be considered to have the same force as if they had been given to the Contractor himself.
- iv) The Engineer-in-charge shall communicate or confirm the instructions to the Contractor in respect of the execution of work in a fieldwork Site Order Book maintained in the office of the Engineer-in-charge and the Contractor or his authorized representative shall confirm receipt of such instructions by signing the relevant entries in this Book. If required by the Contractor, he shall be furnished a copy of such instruction (s).

**4.46 RIGHTS OF OWNER ON VARIOUS INTERESTS:**

- i) The Owner reserves the right to distribute the work between more than one Contractor. The Contractor shall cooperate and afford the other Contractors all reasonable opportunity for access to the works for the carriage and storage of materials and execution of their works.
- ii) Wherever the work being done by any department of the Owner or by the Contractor engaged by the Owner as per the condition of work covered by this Contract, the respective rights and various interests involved shall be determined by the Engineer-in-charge to secure the completion of the various portions of the work in general harmony.

**4.47 NEGOTIATION OF RATES:**

In case Owner finds the lowest price to be at higher side in consideration of market price of various inputs including labour component, may call the lowest Bidders for negotiation of price based on analysis of their rate etc.

**4.48 ISSUE OF LOI:**

The Letter of Intent shall be released by the Owner or the Engineer-in-charge with the rates and other terms & conditions finally arrived at negotiation. The Contractor shall commence performance of the Contract on the basis of this LOI/Work order.

- 4.49 Firm work order shall be released / Contract agreement executed within 30 days of issue of Letter of Intent. Letter of Intent / Work Order shall be accepted by the Contractor by endorsement and return the duplicate copy of work order endorsed as unconditional acceptance of rates & terms and conditions of work order to the Owner and form part of Contract.

End of Section-IV

## **SECTION-V**

### **5.0 SCOPE & PERFORMANCE OF WORK**

#### **5.1 SCOPE OF WORK:**

Scope of particular work in detail is available in Special Conditions of Contract for information of Bidders.

#### **5.2 USE OF CONTRACT DOCUMENTS:**

The Contractor shall be provided drawings free of charge with tender documents / during the progress of work. He shall keep one copy of Contract documents with drawings on the site in good order and the same shall at all reasonable times be available for inspection and use by the Engineer-in-charge/his representatives / other inspecting officers.

5.2.1 None of these documents shall be used by the Contractor for any purpose other than that of this Contract.

5.2.2 The Contractor shall take necessary steps to ensure that all persons employed on any work in connection with this Contract have noticed that the Indian Official Secret Act 1923 (XIX of 1923) applied to them and shall continue to apply even after the execution of such works under the Contract.

#### **5.3 WORKS TO BE CARRIED OUT:**

The works to be carried out under the Contract shall except as otherwise provided in these conditions include all labours, materials, tools, plant, equipment and transport which may be required in preparation of and for full & entire execution for completion of works. The description given in the schedule of quantity shall unless otherwise stated, be held to include waste of materials, carriage and cartage, carrying in, return of empties, hoisting, setting, fitting and fixing in position and all other labour necessary in and for the full and entire execution and completion as aforesaid in accordance with good practice and recognized principles of engineering.

#### **5.4 SCHEDULE OF WORK:**

After receipt of LOI the schedule of work shall be drawn by the Contractor taking into account and dovetailing the technicality of work, sequence of work, material availability, materials on transit, materials on order, weather condition, nature & urgency of works, their permutation & combination for an integrated approach for timely completion of the works at ultimate cost. The Engineer-in-charge after scrutinizing the schedule submitted by the Contractor shall approve before actual work commences.

#### **5.5 EXECUTION OF WORKS:**

All the works shall be executed in strict conformity with the provisions of the Contract documents, specifications and instructions by the Engineer-in-charge whether mentioned in the Contract or not. The Contractor shall be responsible for ensuring that works are executed in the most substantial and proper workman like manner using the quality materials and labour during the progress of and up to completion of job in strict accordance with the specifications and to the entire satisfaction of the Engineer-in-charge.

#### **5.6 COORDINATION AND INSPECTION OF WORKS:**

The coordination and inspection of the day-to-day work under the Contract shall be the responsibility of the Engineer-in-charge or his authorized representatives. The Contractor shall maintain a fieldwork order book in which written instruction for specific job be entered. These shall be signed by the Contractor or his authorized representative by way of acknowledgment within 12 hours.

#### **5.7 GENERAL CONDITION OF WORK:**

The working time of the work is 48 hours per week per man in general. In case of overtime work is permitted in case of need, the Owner will not compensate for the same. Shift working at 2 to 3 shifts per day will become necessary and the Contractor shall take this aspect into consideration while formulating his rates for Tender. No extra claim will be entertained by the Owner on this account.

#### **5.8 REPORTING OF WORK STATUS:**

The Contractor shall submit to the Engineer-in-charge reports at regular intervals regarding the progress of work as desired from time to time.

#### **5.9 DRAWING / SEQUENCE TO BE PROVIDED BY OWNER:**



In the progress of work, detailed working drawings on the basis of which actual execution of the work has to proceed, shall be furnished in stages. The Contractor shall be deemed to have gone through the drawings issued to him thoroughly and carefully, in conjunction with all other connected drawings and discrepancies if any shall be brought to the notice of the Engineer-in-charge, before actually carrying out the works. Wherever drawing is not possible, sequence of operation or work instructions shall be given by the Engineer-in-charge as in case of maintenance works etc.

**5.10 LIABILITIES FOR DEFECTS, IMPERFECTIONS etc. AND RECTIFICATION THEREOF:**

If it shall appear to the Engineer-in-charge that any work has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by the Contractor for the execution of work are unsound or of quality inferior to that Contracted for, or otherwise provided not in accordance with the Contract, the Contractor shall on demand in writing from the Engineer-in-charge or his authorized representative specifying the work, materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct that work so specified and provide other proper and suitable materials or articles at his own charge and cost, and in the event of failure to do so within a period to be specified by the Engineer-in-charge in his demand aforesaid the Engineer-in-charge may on expiry of notice period rectify or removes, and re-execute the work or remove and replace with others, the materials or articles complained or as the case may be at the risk and expense in all respects of the Contractor. The decision of Engineer-in-charge as to any question arising under this clause shall be final and conclusive.

**5.11 TWELVE MONTHS PERIOD OF DEFECT LIABILITY FROM THE DATE OF ACTUAL COMPLETION OF WORK RECORDED IN COMPLETION CERTIFICATE:**

From the commencement to completion of the work, the Contractor shall take full responsibility for the care of all works including all temporary works and in case any damage, loss or injury shall happen to the work or to any part thereof or to any temporary works from any cause whatsoever, shall at his own cost repair and make good the same so that on completion the work shall be in good order and in conformity in every respects with the requirements of the Contract and the Engineer-in-charge's instruction.

The defect liability period shall be 12 months from the date of completion. On completion of such period and on final certification of satisfactory performance report of the Contracted work from Engineer-in-charge, the security deposit shall be released. The period of 12 months shall be counted from the date of completion of last repair of defect in case of any defect appears after completion of work / from the date of completion as mentioned in completion certificate.

**5.12 TRAINING OF APPRENTICES:**

The Contractor shall during the currency of the Contract when called upon by the Engineer-in-charge engage and also ensure engagement by subcontractor and other employed by the Contractor in connection with the works, such number of Apprentices in the categories mentioned in Schedule A and for such periods as may be required by the Engineer-in-charge. The Contractor shall train them as required under the Apprentices Act, 1961 and shall be responsible for all obligations of the employer under the Act, excluding the liability to make payment to Apprentices as required under the Act.

**5.13 CONTRACTOR'S LIABILITY & INSURANCE:**

From commencement to completion of the works, the Contractor shall take full responsibility of the site for taking care and precautions to prevent loss or damage and to minimize loss or damage to the maximum extent possible and shall be liable for any damage or loss that may happen to the works or any part thereof and all Owner's T & P from any cause whatsoever (save and except the Excepted Risks) and shall at his own cost repair and make good the same so that at completion of the works, all Owner's T & P shall be in good order and condition and in conformity in every

respect with the requirements of BIS standard and to the satisfaction of the Engineer-in-charge and to the satisfaction of Engineer-in-charge where BIS is not available.

- 5.13.1 In the event of any loss or damage to the works or any part thereof or to any T & P or to any material or articles at the site from any of the Excepted Risks the following provisions shall apply:
- a) The Contractor shall, as may be directed in writing by the Engineer-in-charge, remove from the site any debris and so much of the works as shall have been damaged, taking to the Owner's store such T & P, articles and/or materials as may be directed:
  - b) The Contractor shall, as may be directed in writing by the Engineer-in-charge, proceed with the erection and completion of the works under and in accordance with the provisions and conditions of the Contract.
- 5.13.2 Compensation on account of loss due to damage for Excepted perils:  
The value of re-execution of work, which is lost or damaged in Excepted Risks, shall be ascertained in the same rate under the Contract and added to the contract sum as deviation. Provided the Contractor was alert and has taken sufficient precaution as a man of general prudence should have taken to prevent the loss or damage to minimize the amount of such loss in his own case.
- 5.13.3 Where Owner's buildings or a part thereof is rented to the Contractor he shall insure the entire building if the building or any part thereof is used by him for the purpose of storing or using materials of combustible nature, as to which the decision of the Engineer-in-charge shall be final and binding.
- 5.13.4 The Contractor shall indemnify and keep indemnified the Owner against all losses and claims for injuries or damage to any persons or any property whatsoever which may arise out of or in consequence of the construction and maintenance works and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto.
- 5.13.5 Before commencing execution of the work, the Contractor shall, without in any way limiting his obligations and responsibilities under this condition, insure against any damage, loss or injury which may occur to any property. (excluding that of the Owner but including the Owner's building rented by the Contractor wholly or in a part and any part of which is used by him for storing combustible materials), or to any person (including any employee of the Owner) by or arising out of carrying out of the Contract.
- 5.13.6 The Contractor shall at all times indemnify the Owner against all claims, damages or compensation under the provisions of Payment of Wages Act, 1936. Minimum Wages Act, 1948; Employer's Liability Act, 1938; the Workmen's Compensation Act, 1923; Industrial Disputes Act, 1947 and the Maternity Benefit Act, 1961 or any Modifications thereof or any other law relating thereto and rules made hereunder from time to time or as a consequence of any accident or injury to any workman or other persons in or about the works, whether in the employment of the Contractor or not, save and except where such accident or injury has resulted from any act of the Owner, his agents or servants, and also against all costs, charges and expenses of any suit, action or proceedings arising out of such accident or injury and against all sum or sums which may with the consent of the Contractor be paid to compromise or compound any claim. Without limiting his obligations and liabilities as above provided, the Contractor shall insure against all claims, damages or compensation payable under the Workmen's Compensation Act, 1923 or any modification thereof or any other law relating thereto.
- 5.13.7 The Contractor shall ensure that similar insurance policies are taken out by his subcontractors (if any) and shall be responsible for any claims or losses to the Owner resulting from their failure to obtain adequate insurance protection in connection thereof. The Contractor shall produce or cause to be produced by his subcontractors (if any) as the case may be, the relevant policy or policies and premium receipts as and when required by the Engineer-in-charge.
- 5.13.8 If the Contractor and/or his subcontractors (if any) shall fail to effect and keep in force the insurance referred to above or any other insurance which he/they may be required to effect under the terms of the Contract then and in any such case the Owner may, without being bound to, effect and keep in force any such insurance and pay such premium or premiums as may be necessary for the purpose and from time to time deduct the amount so paid by the Owner from any moneys due or which may become due to the Contractor or recover the same as a debt due from the Contractor.

The above conditions are applicable for value of work below one crore rupees. But in case of contract involving considerable risk or damage and of value more than one crore, the Contractor has to obtain blanket insurance policy for all his works, T & P and manpower and assign in favour of the Owner.

5.14 **Retention of cost & expenses**

a) In the event the contractor is involved with violation of any act(s) relating to safety, environment, labour and workmen compensation, taxes & duties etc. and consequent legal action & penalty during execution of contract the issue is open

in relevant Govt. Department, estimated value of cost and expenses towards the same shall be retained from the final bill till disposal of the case.

b) If any contractor avoids to attend workmen's compensation commissioner court on summon, he shall not be entertained for award of any future contract in OPGC. The cost & expenses of compensation towards the death or permanent disablement shall be deducted from the corresponding Contract or any other Contract executed by the same Contractor in OPGC or lastly as debt liability.

End of Section-V

## SECTION-VI

### 6.0 **CERTIFICATE AND PAYMENT:**

#### 6.1 **SCHEDULE OF QUANTITY / PRICE SCHEDULE AND PAYMENT:**

##### 6.1.1 **Contractor's remuneration:**

The price to be paid by the Owner to the Contractor for the whole of the work done and for the performance of all the obligations undertaken by the Contractor under the Contract shall be ascertained by the application of the respective rates in schedule of quantity / price schedule (the inclusive nature of which is more particularly defined by way of application but not of limitation of item of activities, materials & expenses specified in clause No.6.1.2) and payment to be made accordingly to the work actually executed and approved by the Engineer-in-charge. The sum so ascertained shall (exception only as and to the extent expressly provided herein) constitute the remuneration of the Contractor under the Contract and no further or other payment whatsoever shall be or become due or payable to the Contractor under the Contract.

##### 6.1.2 **Activities & expenses to be included in rates:**

The prices/rates agreed both by the Contractor and Owner and subsequently incorporated in the Contract shall remain firm till the issue of Final Certificate and shall not be subject to escalation. The said schedule of quantity / price schedule shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in execution, completion and handing over the work to the Owner by the Contractor. The Contractor shall be deemed to have known the nature, scope, magnitude and the extent of the works and materials required though the Contract Document may not fully and precisely furnish them. He shall make such provision in the rates accepted as he may consider necessary to cover those of such items of work and materials as may be reasonable and necessary to complete the work. The opinion of the Engineer-in-charge as to the items of work which are necessary and reasonable for completion of work shall be final and binding on Contractor although the same may not be shown on or described specifically in Contract document.

##### 6.1.3 **Rates to cover taxes and duties:**

No exemption or reduction of custom duties, excise duties, sales tax, works Contract tax, entry tax or any port duties, royalty, transport charges, stamp duties of Central or State Government or Local Body or Municipal Taxes or duties, taxes or charges, income tax whatsoever will be granted or obtained and all expenses of which shall be deemed to be included in and covered by the accepted rates. The Contractor shall also obtain and pay for all permits or other privileges necessary to complete the work.

##### 6.1.4 **Accepted rates cannot be altered**

For work under item rate basis, no alteration will be allowed in the rates by reasons of works or any part of them being modified, altered, extended, diminished or omitted. The accepted rates are of fully inclusive rates, which have been agreed by the Contractor and the Owner and cannot be altered under any circumstances. However, if the quantity of such modification, alteration, extension, reduction or omission is substantial and exceeds 5% in the Contract price, the variation in rate may be examined and amended by Engineer-in-charge on recommendation of Contract Review Meeting (refer Clause No.4.11)

6.1.5 **The rates to cover for working in operating plant:** Contractor's rates shall be deemed to include the factors such as work shall be carried out in operating plant and shall take sufficient care in moving the plants, equipments and materials from one place to another, so that they do not cause any damage to any person or to the property of the Owner or to third party including overhead and underground cables/pipe lines. In the event of such damage including eventual loss of generation and operation of the plant or services in any plant or establishment as estimated by the Owner or ascertained by the third party shall be borne by the Contractor. The aforesaid risk shall be covered by insurance as per Clause 5.13.5. This shall be applicable when Contract value is more than one crore.

### 6.2 **PROCEDURE FOR MEASUREMENT OF WORK EITHER IN PROGRESS OR FINAL:**

#### 6.2.1 **Methods of measurement:**

The measurement shall be taken in accordance with the procedure set in the specifications. No local or general method of measurement shall be adopted. In case the method of measurement is not specified in the specifications, the procedure of Bureau of Indian Standard shall prevail.

#### 6.2.2 **Measurement of work in progress:**

All measurements shall be in metric system. All the works in progress will be jointly measured by the representatives of Owner and the Contractor progressively in construction & civil maintenance work. In case of mechanical /electrical / C&I maintenance & upkeep work etc. the item of work performed by the Contractor shall be recorded daily

preferably immediately on completion in the manner stipulated in conditions of Contract. Such measurements will be recorded in the prescribed measurement book by the representative of Owner and signed by both parties as token of acceptance by both either on completion of certain item or in an interval of days or hours as the case may be.

**6.2.3 Final measurement:**

On completion of work final measurement shall be taken in the similar fashion as stated earlier and sum total of part measurement shall be compared. Final measurement shall be considered for final payment.

**6.2.4** Before taking measurements of any construction work, the Engineer-in-charge or his authorized representative for the purpose shall give a notice with reasonable time to the Contractor. In case of operation or maintenance work the Contractor or his authorized representative shall obtain the signature of Engineer-in-charge or his representative in support of completion of any item of work to the satisfaction of Engineer-in-charge. All these details shall be recorded in measurement book in prescribed format to be provided by Engineer-in-charge / printed standard Measurement Book available in the market.

If the Contractor fails to attend or to send an authorized representative for measurement after such a notice or failure of Engineer-in-charge on Contractor's request in case of maintenance work as the case may be or fails to countersign or to record the objection within a week from the date of measurement, then in any such event, the measurement taken by the Engineer-in-charge / his representative shall be taken to be correct measurement of work.

**6.2.5** The Contractor shall, without extra charge, provide assistance in every measurement in respect of labour and other things necessary for measurements.

**6.2.6** If the Contractor objects to any of the measurements recorded in the measurement book, the matter shall be referred to the subsequent Contract Review Meeting. The decision taken in the Contract Review Meeting shall be final & binding.

**6.2.7 Billing:**

The Contractor shall submit bill in approved proforma in accordance with the Contract terms and the agreed billing schedules in duplicate to the Engineer-in-charge / Officer-in-charge as the case may be giving abstract and detailed measurement for the various items executed during a pre-determined period / month, as the case may be. In case of maintenance/ upkeepment contract, monthly bill shall be preferred during 1<sup>st</sup> week of the succeeding month. In case of construction work the bill shall be furnished after achieving milestone or as provided in the Contract. The Engineer-in-charge shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim as far as admissible, adjusted, if possible, before the expiry of 21 days from the presentation of the bill. This is applicable for running bills only.

**6.3 PAYMENT OF CONTRACTOR'S BILL:**

Payment due to the Contractor shall be made by the Owner, by Crossed Account Payee cheque forwarding the same to registered office or the notified office of the Contractor. The cheque shall also be handed over to the Contractor or their Site-in-charge if authorized for the purpose against due receipt. In no case will Owner be responsible if the cheque is mislaid or misappropriated by unauthorized person / persons. Demand draft may also be issued after deduction of bank commission charges if requested by the Contractor.

All payment shall be made in Indian currency only.

**6.3.1 Payment of running bill:**

Interim bills shall be submitted by the Contractor at intervals mentioned in Schedule A on or before the date fixed by the Engineer-in-charge for the work executed. The Engineer-in-charge / Officer-in-charge shall then arrange to have the bill verified by comparing with the measurement already taken.

**6.3.2** On certification of Engineer-in-charge, payment to which the Contractor is considered entitled by way of interim payment shall be made for all the work executed, after deducting there from the amounts already paid, the security deposit and such other amounts as may be deductible or recoverable in terms of the Contract.

**6.3.3** Payment of the Contractor's interim bills shall be made by the Owner within 21 days from the date of acceptance of the bill by Engineer-in-charge.

**6.3.4** Any interim certificate given relating to work done may be modified or corrected by any subsequent interim certificate or by the final certificate. No certificate of the Engineer-in-charge supporting an interim payment shall itself be conclusive evidence that any work to which it relates is / are in accordance with the Contract.

**6.4 RECEIPT OF PAYMENT:**

Receipt of payment made on account of work when executed by a firm, must be signed by the Contractor in case of proprietary firm and otherwise a person holding due power of attorney in this respect on behalf of the Contractor, except when the Contractors are described in their Tender as a limited company in which case the receipts must be signed in the name of the company by one of its principal officers or by some other persons having authority to give effectual receipt for the company.

6.5 **COMPLETION CERTIFICATE:**

6.5.1 **Eligibility criteria for issue of Completion Certificate: -**

No certificate of completion shall be issued nor shall the work be considered to be completed till the Contractor shall have removed from the premises on which the work has been executed, all such scaffolding, sheds and surplus materials except such as are required for rectification of defects, rubbish and all huts and sanitary arrangements required for his workmen on the site in connection with the execution of the work, as shall have been erected by the Contractor or the workmen and cleaned all dirt from the parts of building (s) in or upon or about which the work has been executed or of which he may have had possession for the purpose of the execution thereof and cleaned floors, gutters and drains, eased doors and sashes, oiled locks and fastenings, labeled keys clearly and handed them over to the Engineer-in-charge and made the whole premises fit for immediate occupation or use to the satisfaction of the Engineer-in-charge. If the Contractor shall fail to comply with any of the requirements of this conditions as aforesaid on or before the scheduled date of completion of the works, the Engineer-in-charge may at the expense of the Contractor fulfill such requirements and dispose of the scaffoldings, surplus materials and rubbish, etc. as he thinks fit and the Contractor shall have no claim in respect of any such scaffolding or surplus materials except for any sum actually realized by the sale thereof less the cost of fulfilling the requirements and any other amount that may be due from the Contractor. If the expenses of fulfilling such requirements are more than the amount realized on such disposal as aforesaid, the Contractor shall forthwith on demand pay such excess.

6.5.2 **Application for Completion Certificate.**

As soon as the work is completed and the Contractor fulfills his obligations in all respect, he shall be eligible to apply for Completion Certificate. The Owner or his representative shall normally issue to the Contractor the Completion Certificate within 30 days after receiving an application from the Contractor after verifying from the completion documents and satisfying himself that the work has been completed in accordance and as set out in the construction and erection drawings and the Contract Documents. In case of operation or maintenance Contract, satisfactory performance during Contract period shall be basis for issue of Completion Certificate.

6.5.3 **Issue of Completion Certificate:**

On receipt of request from the Contractor Engineer-in-charge shall inspect whole of the work and shall issue a certificate of completion indicating: -

- a) Date of completion of work
- b) Value of the Contract / value of work executed
- c) Quality of performance
- d) Level of safety maintained during the work.

6.5.4 If at any time before completion of the entire work, items or groups of items for which separate periods of completion have been specified, have been completed the Engineer-in-charge can take possession of any such parts being hereinafter in this condition referred to as 'the relevant part') notwithstanding anything expressed or implied elsewhere in this Contract:

(a) Within thirty days of the date of completion of such items or groups of items or of possession of the relevant part the Engineer-in-charge shall issue Completion Certificate for the 'relevant part' provided the Contractor fulfils his obligations under clause 6.5.1 for the 'relevant part'.

(b) The Defects Liability Period in respect of such items and the 'relevant part' shall be deemed to have commenced from the certified date of completion of such items or the 'relevant part' as the case may be.

(c) The Contractor may reduce the value insured under Clause 5.13 by the full value of the completed items or 'relevant part' as estimated by the Engineer-in-charge for this purpose. This estimate shall be applicable for this particular purpose only.

(d) In such case Compensation / Liquidated Damage for delay shall be calculated in accordance with Clause 6.9 on total value of the work, less the value of 'relevant part' taking into consideration the due date of completion as per Contract and subsequent time extension, if any.

**6.6 FINAL PAYMENT:**

During progress of work in case of construction work and period fixed for payment in case of provision of services such as operation and maintenance, running bills shall be preferred by the Contractor as per the terms of Contract and shall be paid on the basis of measurement certification of Engineer-in-charge / Officer-in-charge from time to time or in fixed intervals. But final bill shall be paid on receipt of -

- i) Final bill (n'th & final bill must be written over the bill)
- ii) Measurement book with all its supporting documents
- iii) Completion Certificate of Engineer-in-charge
- iv) Store clearance
- v) Evidence in support of clearance of labour dues.
- vi) Evidence in support of payment of PF dues
- vii) No claim certificate by the Contractor
- viii) Total amount of dues, less-
  - a) Payment already made through running bills
  - b) Advances if any
  - c) Penalty if any
  - d) Liquidated damage
  - e) Amounts towards the cost of tools & plants not returned to warehouse
  - f) Value of the surplus of material issued not returned to store.
  - g) Any estimated amount on account of default of Contractor in statutory or environmental matter or dispute open in Court of Law.
  - h) Clearance from Personnel & Administration department relating to rent for accommodation, water & electricity bills etc.

**6.7 TERMS OF PAYMENT:**

(a) The running bill corresponding to the terms of Contract raised by the Contractor shall be paid to him on certification of Engineer-in-charge.

(b) The bill for any permissible period shall be submitted within 7 days of expiry of the said period and payment shall be released within 21 days of submission of the bill provided the same is receipted by Engineer-in-charge.

(c) All statutory deductions levied by the Govt. or other statutory authorities at the rate prevailing at the time of payment of bill shall be deducted from the running bills.

(d) The Engineer-in-charge reserves the right to effect deductions towards penalty & other recoveries if any, under the terms & conditions of Contract.

(e) Final bill shall be settled after submission of the same with all related documents as per Clause 6.6 within the period specified in Clause 6.8

**6.8 TIME LIMIT FOR PAYMENT OF FINAL BILL:**

6.8.1 The final bill shall be submitted by the Contractor within three months of physical completion of the work. No further claims can be made by the Contractor after submission of the final bill and all claims shall be deemed to have either been included in the final bill or waived and extinguished. Payment of those items of the bill in respect of which there is no dispute and of items in dispute for quantities and rates as approved by Engineer-in-charge, shall be made within the period specified herein this clause, the period being reckoned from the date of receipt of the bill by the Engineer-in-charge. If the decision of Engineer-in-charge is not agreed by the Contractor, the dispute either in quantity or rate or both shall be referred to Contract Review Meeting and the decision made thereof shall be final & binding on both parties.

The time limit for release of final payment corresponding to the Contract value are furnished below: -

- (a) Contract value not exceeding Rs.5 lakhs Four months from the date of acceptance of Final bill by the Engineer-in-charge
- (b) Contract value exceeding Six month from the date of Rs.5 lakhs acceptance of Final bill by the Engineer-in-charge

Provided the Contractor has furnished all required documents in accordance to clause 6.6. The period of release of fund shall be counted from the date of compliance of last documents or formalities.

For above purpose, original Contract value or the actual value of the work whichever is higher shall be taken into consideration.

**6.9 LIQUIDATED DAMAGES FOR DELAY:**

If the Contractor fails to maintain the required progress in terms of achieving milestone fixed in the time & progress schedule or to complete the work as the case may be under Contract & clear the site on or before the due date or extended date of completion they shall without prejudice to any other right or remedy shall be liable for liquidated damage as stipulated below or such small amount as may be fixed by the Engineer-in-charge on the Contract value of the work or actual value of the work whichever is higher for every week during which the progress remains below the specified time of completion subject to the total amount of compensation for delay to be paid under this condition shall not exceed the under noted percentage of the Contract value or of the Contract value of the item or group of items of work for which a separate period of completion is given:

This will also be applicable to items or group of items for which separate period of completion has been specified.

**Rates & upper limit of Liquidated Damage:**

Completion period		% of Contract / Work value per week	Maximum % of Contract /work value
a.	Due Completion period (as originally stipulated) not exceeding 6 months	@ 1%	10%
b.	Due Completion period (as originally stipulated) exceeding 6 months but not exceeding 2 years	@ 0.5%	7.5%
c.	Due Completion period (as originally stipulated) exceeding 2 years	@ 0.25%	5%

6.9.1 The amount of liquidated damage (LD) may be adjusted or set-off against any sum payable to the Contractor under this or any other Contract with the Owner. In case at the time of the amount of LD comes to the notice of the Owner the Contractor does not have any amount pending with the Owner, the Contractor shall be served with a notice and in turn the Contractor has to deposit the said amount in shape of D/D with the Owner in the fashion mentioned earlier.

End of Section-VI



## SECTION-VII

### 7.0 STATUTORY OBLIGATION & INSURANCE

#### 7.1 TAXES:

7.1.1 The Contractor shall defray all taxes such as toll, local taxes, excise duty, royalty, income tax, sales tax, Service Tax, work contract tax and other payments and compensation, if any in connection with the procurement and handling of materials, fabrication and execution of works or any method or process connected with the works. Sales tax, Entry tax, Excise duty and any other tax on materials required for the work & works shall be payable by the Contractor and the Owner will not entertain any claim whatsoever in this respect. The final rate is inclusive of work contract tax & other taxes applicable to this work or materials thereto including Service Tax.

7.1.2 Notwithstanding anything contained elsewhere in the Contract, the Owner shall deduct at source from the payments due to the Contractor, the taxes as required under Odisha Sales Tax Act or as amended from time to time or under any other statute. It is for the Contractor to deal with the Sales Tax authorities directly in respect of any claim or refund relating to the above deductions and the Owner shall not be liable or responsible for any claims or payments or reimbursements in this regard. Income tax as applicable shall be deducted from all running bills.

#### 7.2 INSURANCE:

The Contractor shall obtain insurance coverage to the construction work & related materials against loss under force majeure and assign the policy to the Owner where risk involvement is expected. The Contractor shall also at his own expenses carry and maintain group insurance with accidental benefit from reputed insurance companies to the satisfaction of the Owner as follows: -

##### 7.2.1 **Employees State Insurance Act:**

At present this area is not included in the scope of ESI scheme but may be covered at any point of time. In that case the Contractor has to accept full and exclusive liability for compliance with all obligations imposed by the Employees State Insurance Act, 1948, and the Contractor further has to defend, indemnify and hold Owner harmless from any liability or penalty which may be imposed by the Central, State or Local Authority by the reason of any asserted violation by Contractor or subcontractor of the Employees State Insurance Act, 1948 and also from all claims, suits or proceeding that may be brought against the Owner arising under growing out of or by reasons of the work provided for by this Contract whether brought by employees of the Contractor, by third parties or by Central or State Government Authority or any political sub-division thereof. The Contractor agrees to fill in with the Employees State Insurance Corporation, the Declaration Forms and all forms which may be required in respect of the Contractor's or subcontractor's employees, whose aggregate remuneration is Rs.6500.00 per month or less or as amended from time to time and who are employed in the work provided for or those covered by ESI from time to time under the agreement. The Contractor shall deduct and secure the agreement of the subcontractor to deduct the employees' contribution as per the first schedule of the employee's State Insurance Act from wages and affix the employee's contribution cards at wages payments intervals. The Contractor shall remit and secure the agreement of the subcontractor to remit to the State Bank of India, employee's State Insurance Corporation Account, and the employee's contribution as required by the Act. The Contractor agrees to maintain all cards and records as required under the Act in respect of employee's and payments and Contractor shall secure the agreement of the subcontractor to maintain such records. Any expenses incurred for the contribution, making contributions or maintaining records shall be to the Contractor or subcontractor's account.

The Owner shall retain such sum as may be necessary from the total Contract value until the Contractor shall furnish satisfactory proof that all contributions as required by the employees State Insurance Act, 1948, have been paid. This will be pending on the contractor when the employee's State Insurance Act is extended to the place of work.

##### 7.2.2 **Workmen Compensation and Employer's Liability Insurance:**

Insurance shall be effected for all the Contractor's employees engaged in the performance of this Contract. If any of the work is sublet, the Contractor shall require the subcontractor to provide workmen's compensation and employee's liability insurance for the latter's employees if such employees are not covered under the Contractor insurance.

##### 7.2.3 **Any other insurance required under Law or by Owner:**

Contractor shall also carry and maintain any and all other insurances, which he may be required under any law from time to time. He shall also carry and maintain any other insurance, which may be required by the Owner.

##### 7.2.4 **Accident or Injury to workmen:**

The Owner shall not be liable for or in respect of any damages or compensation payable by law in respect or in consequence of an accident or injury to any workmen or other persons in the Employment of the Contractor or any

subcontractor save and except any accident or injury resulting from any willful act or default of the Owner, his agents or servants and the Contractor shall indemnify and keep indemnified the Owner against all such damages and compensation (save and except as aforesaid) and against all claims, demands, proceedings, costs, charges and expenses, whatsoever in respect or in relation thereto.

7.2.5 **Transit Insurance:**

The Contractor shall obtain adequate Transit insurance coverage at his own cost in respect of all items to be transported by the Contractor to the site of work.

7.3 **EMPLOYEES PROVIDENT FUND:**

The Contractor has to obtain P.F. code numbers from the P.F. Commissioner and photocopy of such coverage certificate shall be submitted to Engineer-in-charge prior to commencement of work. The Contractor has to furnish certified challan copy showing the amount deposited against this particular work if the Contractor executes works at different places in India and deposit the total amount in one challan only. In addition to this, Contractor shall furnish an undertaking with a list of deployed Contract labour for whom such amount is deposited. Contractor shall comply all P.F. formalities for all the workmen engaged for this work and keep OPGC indemnified.

End of Section-VII

## SECTION-VIII

### 8.0 LABOUR LAWS

#### 8.1 LABOUR LAWS:

Contractor shall comply with all laws, ordinances, regulations and notification / instruction of Govt. concerning the health, wages, welfare, safety and employment and non-employment of his workers and shall exclusively bear the consequences of failure to comply therewith.

The following points are to be observed strictly by the Contractor.

- i) No labour below the age of 18 (eighteen) years shall be employed on the work.
- ii) The Contractor shall not pay less than the notified wages by the appropriate government towards minimum wages from time to time and must comply with Minimum Wages Act. The payment has to be made to the labours in the presence of authorized representative of the Owner / Engineer-in-charge.
- iii) The Contractor shall at his expense comply with all labour laws and keep the Owner indemnified in respect thereof.
- iv) The Contractor shall pay equal wages for men & women in accordance with Equal Remuneration Act 1976.
- v) The Contractor under the Contract Labour (Regulation and Abolition) Act, shall have a valid Labour license from appropriate licensing authority prior to starting / within 15 days of commencement of the work under the Contract. Validity of the license shall be maintained till expiry of Contract period & its extension, if any.
- vi) The Contractor shall employ labour in sufficient numbers to maintain the schedule of work and of quality to ensure workmanship of the degree specified in the Contract and to the satisfaction of the Engineer-in-charge.
- vii) The Contractor shall furnish to the Engineer-in-charge at the interval of every 15 days a statement of the workmen employed on the works and also furnish information in Form-VIII, Part I & II under rule 73 of Odisha Contract Labour (R&A) Rule, 1975 or rules made there under.
- viii) The Contractor shall comply with the provisions of the Factories Act 1948, Payment of Wages Act 1936, Minimum Wages Act 1948, Employees Liability Act 1938, Workmen's Compensation Act 1923, the Maternity Benefit Act 1961, Employees Provident Fund (and Miscellaneous Provision) Act 1952 & Contract Labour (Regulation & Abolition) Act 1970 or any modifications thereof or any other laws relating thereto and rules made there-under from time to time. Owner shall not be held responsible for any injury sustained by Contractor's workmen while on duty.

In the event of any employment injury the Contractor has to pay necessary compensation pertaining to treatment & other associated benefits to the injured employee. In the event of fatal injury, death compensation to the legal heir of said employee shall be paid by the Contractor. In case of failure by the Contractor to pay the compensation as decided by the competent authority under the Workmen's Compensation Act, the Engineer-in-charge shall deduct the necessary amount from any outstanding bill of the Contractor or security and deposit the same with competent authority. In case before decision by the competent authority, if the Contract is being closed, estimated amount towards such compensation shall be retained from Contractor till finalization. For this purpose, the amount if falls short under the particular Contract shall be realized from any other Contract which the Contractor is executing. The Contractor has to make all statutory records and register required in support of compliance of above provisions. Relevant statutory return shall be submitted with appropriate authority as required under the above Acts & rules with a copy to P&A department of Owner. All the records shall be kept within the work premises and must be made available on demand by Owner/Concerned statutory authority for scrutiny.

- ix) The Contractor shall indemnify the Owner against any payments to be made under and for the observance of the provisions of the aforesaid Acts without prejudice to his rights to claim indemnity from his subcontractor, if any.
- x) The Contractor has to make payment to their staff and labours by 7<sup>th</sup> day of succeeding month irrespective of release of Contractor's payment by Owner. In case of any default in the matter of payment to the labour, the following penalty apart from legal liability shall be imposed and recovered from Contractor's running bills.
  - (a) 0.1% of Contract value will be deducted for each day of delay of wages disbursement after 7<sup>th</sup> day of last wage period subject to maximum 1% of Contract value.
  - (b) Repetition of three such cases may attract immediate termination of Contract without any further reference to Contractor as per terms of Contract.

- (xi) Owner shall not take responsibility of Contractor's labours either during execution of Contract or on closure of Contract or termination of Contract.
- (xii) However, in the event of default of any Contractor in payment to their labours for more than one month from the date of payment and if the service is essential for the Owner and the Contract can not immediately be terminated, the Engineer-in-charge shall make the payment to the workmen and recover the same amount from any due of the Contractor. Under such circumstances the Contract shall be liable for immediate termination as deemed fit by the Owner.
- (xiii) The Contractor shall ensure that all the employees engaged by the Contractor including his subcontractor, if any, obtain health certificate from any competent medical practitioner under the provisions of Factories Act without any financial implication to Owner.
- (xiv) Every worker who has worked under the Contractor shall be allowed leave with wages, national & festival holidays, weekly off and extra wages or overtime as per law. The Contractor should provide employment card, wage slip and should maintain such other records in respect of engagement of workers as required by Contract Labour (R&A) Act 1970 and rules made there under. This provision must be ensured by the Contractor.

## 8.2 CONTRACTOR TO INDEMNIFY THE OWNER:

8.2.1 The Contractor shall indemnify the Owner and every officer and employee of the Owner including the Engineer-in-charge and his staff against all actions, proceedings, claims, demands costs and expenses whatsoever arising out of or in connection with the matters referred to in Clause 8.1 and elsewhere which may be made against the Owner for or in respect of or arising out of any act / omission by the Contractor in the performance of his obligations under the Contract. The Owner shall not be liable for or in respect of any demand or compensation payable by law in respect of or in consequence of any accident or injury to any workmen or other person in the employment of the Contractor or his subcontractor and Contractor shall indemnify and keep indemnified the Owner against all such damage, compensation and against all claims, damages, proceedings, costs, charges and expenses whatsoever thereof or in relation thereto.

### 8.2.2 Payment of Claims and Damages:

Should the Owner have to pay any money in respect of such claims or demands as aforesaid the amount so paid and the cost incurred by the Owner shall be charged to and paid by the Contractor and the Contractor shall not be at liberty to dispute or question the right of the Owner to make such payments notwithstanding the same may have been made without his consent or authority or in law or otherwise to the contrary.

8.2.3 The Contractor shall intimate to the Workman Compensation Commissioner in Form EE-I within prescribed period the employment accident with relevant information with copy to the Owner. The Contractor shall take all legal steps for compliance of the provisions of Workman Compensation Act relating to accident failing which Owner under circumstance shall take up the case for which all costs and expenses shall be recovered from the Contractor and the said Contract shall be liable to be terminated & the Contractor liable to be debarred from future participation in bid. In case the amount can not be recovered from dues / security / dues of other contracts with Owner, the same shall be recovered as debt liability.

## 8.3 HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS:

In respect of all labours directly or indirectly employed in the works for the performance of Contract, the Contractor shall comply with or cause to be complied with all the rules and regulations of the local sanitary and other authorities or as framed by the Owner from time to time for the protection of health and sanitary arrangements for all workers.

## \*8.4 MODEL RULES FOR LABOUR WELFARE

### 8.4.1 First Aid:

- a) At every workplace where the number of workmen engaged exceeds 50, there shall be maintained in a readily accessible place first aid box containing the following equipments:
  - (i) 12 small sterilized dressings
  - (ii) 6 medium size sterilized dressings
  - (iii) 6 large size sterilized dressings
  - (iv) 6 large size sterilized burn dressings
  - (v) 6 (15 gms.) packet sterilized cotton wool
  - (vi) 1 (60 ml.) bottle containing a two per cent alcoholic solution of iodine

- (vii) 1 (60 ml.) bottle containing sal volatile having the dose and mode of administration indicated on the label.
  - (viii) 1 role of adhesive plaster
  - (ix) A snake-bite lancet
  - (x) 1 (30 gms) bottle of potassium permanganate crystals
  - (xi) 1 pair scissors
  - (xii) 1 copy of the first aid leaflet issued by the Director General, Factory Advice Service and Labour Institute, Government of India
  - (xiii) A bottle containing 100 tablets (each of 5 grains) of aspirin
  - (xiv) Ointment for burns
  - (xv) A bottle of a suitable surgical anti-septic solution.
- b) At every workplace where the number of workmen engaged does not exceed 50, there shall be maintained in a readily accessible place first aid box containing the following equipments:
- (i) 6 small sterilized dressings
  - (ii) 3 medium size sterilized dressings
  - (iii) 3 large size sterilized dressings
  - (iv) 1 (30 ml.) bottle containing a two percent alcoholic solution of iodine
  - (v) 3 large sterilized burn dressings
  - (vi) 1 (30 ml.) bottle containing sal volatile having the dose and mode of administration indicated on the label.
  - (vii) 1 snake-bite lancet
  - (viii) 1 (30 gms.) bottle of potassium permanganate crystals
  - (ix) 1 pair scissors
  - (x) 1 copy of the first aid leaflet issued by the Director General Factory Advice Service and Labour Institute, Government of India
  - (xi) A bottle containing 100 tablets (each of 5 grains) of aspirin
  - (xii) Ointment for burns
  - (xiii) A bottle of suitable surgical anti-septic solution.

The appliances shall be kept in good order and they shall be placed under the charge of a responsible person who shall be readily available during working hours. Suitable transport / conveyance facility shall be kept readily available to take injured person(s) who suddenly fall seriously ill and shifting of urgent cases to nearest hospital. If required, initial first aid may be provided in Owner's hospital in emergency, but subsequent treatment is Contractor's responsibility in any other hospital.

8.4.2 *Accommodation for Labour:* The Contractor shall during the progress of the works provide, erect and maintain necessary temporary living accommodation and ancillary facilities for labour at his own expense and up to the standards as approved by the Engineer-in-Charge at a place outside the Owner's premises.

8.4.3 *Drinking Water:* In every workplace, there shall be provided and maintained at suitable locations, easily accessible to labour, a sufficient supply of cold water fit for drinking.

Where drinking water is obtained from public water supply, each work place shall be provided with storage where drinking water shall be stored.

Every water supply storage shall be at a distance of not less than 15 meters from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well, which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door, which shall be dust and waterproof.

A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

*Washing and Bathing Places:* Adequate washing and bathing places shall be provided separately for men and women. Such places shall be kept in clean and drained condition.

*Standard number of Latrines and urinals:* There shall be provided within the precincts of every workplace latrines and urinals in an accessible place and in the following scales: -

a) Where females are employed, there shall be at least one latrine / urinal for every 25 females.

b) Where males are employed, there shall be at least one latrine / urinal for every 25 males.

Provided that where the no. of males employed exceeds 100, it shall be sufficient if there is one latrine for every 25 males up to first 100 and one for every 50 thereafter.

In calculating the no. of latrines required, any odd no. of workers less than 25 or 50, as the case may be, shall be reckoned as 25 or 50.

Other specifications shall comply to the Odisha Factories Rules-1950.

*Latrines and urinals:* Except in workplaces provided with water flushed latrines connected with a water-borne sewage system, all latrines shall be provided with receptacles on dry earth system which shall be cleaned at least four times daily and at least twice during working hours and kept in a strictly hygienic condition. Receptacles shall be tarred inside and outside at least once a year.

If women are employed, separate latrine and urinals, partitioned from those for men and labeled with bold letters in both Oriya & Hindi, such as "For Men" or "Women" shall be provided. A poster showing the figure of a man and of a woman shall also be exhibited at the entrance to latrines for each sex. There shall be adequate supply of water close to latrines and urinals.

8.4.4 *Construction of latrines:* Inside walls shall be constructed of masonry or other non-absorbent material and shall be cement-washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for the purpose and kept available for inspection. Latrine shall have at least thatched roof.

8.4.5 *Disposal of Excreta:* Unless otherwise arranged for by the local sanitary authority, arrangement for proper disposal of excreta by incineration at the workplace shall be made by the Contractor. Alternatively excreta may be disposed off by putting a layer of night soils at the bottom of pucca tank prepared for the purpose and covering it with a 15 cm layer of waste or refuse and then covering it with a layer of earth for a fortnight (when it will turn into manure).

The Contractor shall, at his own expense, carry out all instructions issued to him by the Engineer-in-Charge to effect proper disposal of soil and other conservancy work in respect of Contractor's workmen or employees on the site. The Contractor shall be responsible for payment of any charges, which may be levied by municipal authority for execution of such work on his behalf.

8.4.6 *Provision of shelters during rest:* At every workplace there shall be provided free of cost four suitable sheds, two for meals and two others for rest, separately for use of men and women Labour. Height of each shelter shall not be less than 12' from floor-level to lowest part of roofs. Sheds shall be kept clean and the space provided shall be on the basis of at least 12 sq.ft. per head.

8.4.7 *Crèches:* At a place at which 30 or more women workers are ordinarily employed, there shall be provided at least one room for use of children under the age of 6 years belonging to such women. Rooms shall not be constructed to a standard lower than that of waterproof roof, smooth & impervious floor and wall with heat resistant materials / wooden planks. Rooms shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be two Dhais in attendance. Sanitary utensils shall be provided to the satisfaction of local medical, health and municipal authorities. Use of huts shall be restricted to children, their attendants and mothers of children.

Where the number of women workers is more than 30 or more, the Contractor shall provide at least one hut and one Dhai to look after children of women workers.

Size of creche (s) shall vary according to the women workers employed.

Creche (s) shall be properly maintained and necessary equipment like toys etc. provided.

All other provisions shall comply to Odisha Factories Rules-1950.

- 8.4.8 *Canteen*: A cooked food canteen on a moderate scale shall be provided for the benefit of workers wherever 100 or more Contractor Labour are ordinarily employed and work continues for 6 months or more.
- 8.4.9 Planning, setting and erection of the above mentioned structures shall be approved by the Engineer-in-Charge, and the whole of such temporary accommodation shall at all times during the progress of the works be kept tidy and in a clean and hygienic condition to the satisfaction of the Engineer-in-Charge at the Contractor's expense. The Contractor shall conform generally to sanitary requirements of local medical, health and municipal authorities and at all times adopt such precautions as may be necessary to prevent soil, water & air pollution of the site.

On completion of the works the whole of such temporary structures shall be cleaned away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the whole of site left clean and tidy to the entire satisfaction of the Engineer-in-Charge at the Contractor's expenses.

- 8.4.10 *Anti-malaria precautions*: The Contractor shall at his own expense conform to all anti-malaria instructions given to him by the Engineer-in-Charge, including filling up any borrow pits which may have been dug by him.
- 8.4.11 *Enforcement*: The Inspecting Officer mentioned in the Contractors Labour Regulations at Clause 8.5.1(d) or any other officer nominated in his behalf by the Engineer-in-Charge shall report to the Owner all cases of failure on the part of the Contractor or his subcontractors to comply with the provision of these rules either wholly or in part and the Engineer-in-Charge shall impose such fines and other penalties as are prescribed in the conditions.
- 8.4.12 *Interpretations etc*: On any question as to the application, interpretation of effect of these rules, the decision of the Chief Inspector of Factories & Boiler, Labour Commissioner and Provident Fund Commissioner as the case may be shall be final and binding. Over & above the said provision, any court pronouncement having territorial jurisdiction shall be binding on both parties as the case may be.
- 8.4.13 *Amendments*: Government may, from time to time add to or amend Labour Laws and rules thereto and issue such directions as it may consider necessary for the proper implementation of these laws & rules or for the purpose of removing any difficulty which may arise in the administration thereof.

## 8.5 CONTRACT LABOUR REGULATION

8.5.1 *Definition*: In these regulations, unless otherwise expressed or indicated, the following words and expression shall have the meaning hereby assigned to them:

(a) "Inspecting Officer" means any officer as mentioned below corresponding to different departments:

<u>Govt.Deptt.</u>	<u>Designation</u>	
i) Labour:	Rural Labour Inspector to Labour Commissioner	
ii) Factory:	Inspector of Factories & Boilers to Inspector of Factories & Boilers.	Chief
iii) Provident Fund:	Provident Fund Inspector to Provident Fund Commissioner	

iv) Any other person of above departments duly authorized by competent authority.

*Owner's Inspecting Officer means officers as mentioned below:*

- i) Plant Manager
- ii) Engineer-in-charge
- iii) General Manager (P&A) or his authorized representative
- iv) Safety / Fire Officer

8.5.2 *Submission of information before commencement of work:*

Contractor shall, before commencement of the work, furnish in writing to the Engineer-in-charge of the area concerned the following information:

- (a) Name and address of subcontractors as and when they are engaged.
- (b) Date of Commencement of the work.
- (c) Number of workers employed and likely to be employed.
- (d) Wages for different categories of workers.

8.5.3(i) *Number of hours of work which shall constitute a normal working day:-*

The number of hours, which shall constitute a normal working day for an adult, shall be eight hours including ½ hr. rest after five hours of work. The working day of an adult worker can be so arranged that inclusive of intervals, if any, for rest it shall not spread over more than ten / twelve hours on any day with prior approval of competent authority. If an adult worker is made to work more than nine hours on any day or for more than forty eight hours in any week he shall, in respect of overtime work, be paid wages at double the ordinary rate of wages.

(ii) *Weekly rest:* Every worker shall be given a weekly day of rest, which shall be fixed and notified in advance. A worker shall not be required or allowed to work on the weekly rest day unless he has or will have a substituted rest day, on one of the three days immediately before or after the rest day provided that no worker shall work for more than ten consecutive days without a full rest day.

8.5.4 *Display of notice regarding Wages, Weekly Day of Rest etc.:* The Contractor shall before he commences his work under Contract, display and correctly maintain and continue to display and correctly maintain in clean and legible condition in conspicuous places at site, notice in English, Oriya & Hindi giving the rate of minimum wages, the hours of work for which such wages are payable, the weekly rest days workers are entitled to and name and address of the Inspecting Officers.

8.5.5 *Fixation of Wage Periods:* The Contractor shall fix wage periods in respect of which wages shall be payable. No wage period shall exceed one month.

8.5.6 *Payment of Wages:*

(i) Wages due to every worker shall be paid to him direct or to his authorized person. All wages shall be paid in current coins or currency or in both.

(ii) Wages of every worker engaged under the Contract shall be paid where the wage period is one week, within THREE days from the end of the Wage period; and in any other case before the expiry of the 7<sup>th</sup> day or 10<sup>th</sup> day from the end of the wage period according as the number of workers does not exceed 1,000 or exceeds 1,000.

(iii) When employment of any worker is terminated by or on behalf of the Contractor, the dues of such worker shall be paid with immediate effect.

(iv) Payment of wages shall be made at the work site on a working day except when the work is completed before expiry of the wage period, in which case final payment shall be made at the work site within 48 hours of the last working day and during normal time.

8.5.7 *Register of Workman:* A register of workmen shall be maintained in the Form appended in Annexure-X and the relevant particulars of every workman shall be entered therein immediately on his employment and kept at the work site.

8.5.8 *Employment Card:* The Contractor shall issue an employment card in the Form appended in Annexure-XI to each worker on the day of work or entry into his employment. On termination of employment the Employment Card shall be retained by the Contractor and a service certificate shall be issued in Form X.

8.5.9 *Register of Wages etc.:*

(i) A Register of Wages-cum-Muster Roll in the Form appended in Annexure-XII shall be maintained and kept at the work site or as near to it as possible.

(ii) A wage slip in the Form appended in Annexure-XV shall be issued to every worker employed by the Contractor at least a day prior to disbursement of wages.

8.5.10 *Deductions, which may be made from Wages:*

(i) Wages of a worker shall be paid to him without any deductions of any kind except the following:

(a) fines

(b) deductions for absence from duty. The amount of deduction shall be in proportion to the period for which he was absent.

(c) deduction for damage to or loss of goods expressly entrusted to the employed person for custody, or for loss of money which he is required to account for, where such damage or loss is directly attributable to his neglect or default.

(d) Rent of house accommodation / amenities

(e) deductions for recovery of advances or for adjustment of overpayment of wages. Advance granted shall be entered in a register; and

(f) any other deduction, which the Owner may from time to time allow.

(ii) No fines shall be imposed on any worker in respect of such acts and omissions on his part as have been approved by the Competent authority as in Clause 8.5.1.



- (iii) No fine shall be imposed on a worker and no deductions for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deduction.
  - (iv) The total amount of fines which may be imposed in any one wage period on a worker shall not exceed an amount equal to 3% of wages in respect of that wage period.
  - (v) No fine imposed on a worker shall be recovered from him in installments, or after expiry of sixty days from the date on which it was imposed. Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which it was imposed.
  - (vi) The Contractor shall maintain in English, Hindi & Oriya a list approved by the Labour Commissioner, clearly stating the acts and omissions for which penalty or fine may be imposed on a workman and display it in good condition in a conspicuous place on the work site.
  - (vii) The Contractor shall maintain a register of fines and the register of deductions for damage or loss in the Forms appended in Annexure-XIII & XIV respectively, which should be kept at the place of work.
- 8.5.11 *Register of Accidents:* The Contractor shall maintain a register of accidents in Form 26 prescribed under Rule 105 of Odisha Factory Rules, 1950 but the same shall include the following particulars:-
- (a) Full particulars of the labours who met with accident
  - (b) Rate of Wages
  - (c) Sex
  - (d) Age
  - (e) Nature of accident and cause of accident
  - (f) Time and date of accident
  - (g) Date and time when admitted in hospital
  - (h) Date of discharge from the hospital
  - (i) Period of treatment and result of treatment
  - (j) Percentage loss of earning capacity and disability as assessed by Medical Officer.
  - (k) Claim required to be paid under Workmen's Compensation Act.
  - (l) Date of payment of compensation
  - (m) Amount paid with details of the person to whom the same was paid
  - (n) Authority by whom the compensation was assessed
  - (o) Remarks
- 8.5.12 *Preservation of Registers:* The Register of workmen and the Register of Wages-cum-Muster Roll required to be maintained under these Regulations shall be preserved for 3 years after the date on which the last entry is made therein Form IX.
- 8.5.13 *Enforcement:* The Inspecting Officer shall either of his own or on a complaint received by him carry out investigations, and send a report to the Engineer-In-charge specifying the amounts representing worker's dues and amount of penalty to be imposed on the Contractor for breach of these Regulations, that have to be recovered from the Contractor, indicating full details of the recoveries proposed and the reasons therefore. It shall be obligatory on the part of the Engineer-in-charge on receipt of such a report to deduct such amounts from payments due to the Contractor.
- 8.5.14 *Disposal of amounts recovered from the Contractor:* The Engineer-in-charge shall arrange payment to workers concerned at the earliest from receipt of a report from the Inspecting Officer except in case where the Contractor had made an appeal under Clause 8.5.15. In case where there is an appeal, payment of workers dues would be arranged by the Engineer-in-charge, wherever such payments arise, within THIRTY days from the date of receipt of the decision of the authority specified in Clause 8.5.1
- 8.5.15 *Appeal against decision of Inspecting Officer:* Any person aggrieved by a decision of the Inspecting Officer may appeal against such decision before the higher authority concerned within THIRTY days from the date of the decision, forwarding simultaneously a copy of his appeal to the Engineer-in-charge.

*Inspection of Books and other Documents:* The Contractor shall allow inspection of the Registers and other documents prescribed under these Regulations by Inspecting Officers and the Engineer-in-charge/Owner/Owner's representative at any time on receipt of due notice at a convenient time.

*Interpretation, etc.:* On any question as to the application, interpretation or effect of these Regulations the decision of the Owner or his representative shall be final & binding.

*Amendments:* Government may, from time to time, add to or amend Labour laws and issue such directions if considered necessary for the proper implementation of Labour laws or for removing any difficulty, which may arise in the administration thereof.

**REGISTERS TO BE MAINTAINED BY THE CONTRACTOR:**

***Factory Act 1948:***

1. Register of Adult workers : Form-12
2. Register of leave with wages : Form-15
3. Register of Accident : Form-26
4. Register of over time : Form-10
5. Register of health : Form-31
6. Register for issue of PPEs
7. Register for compensatory holiday: Form-9
8. Muster Roll with Wages Register

***Contract Labour (R&A) Act 1970***

9. Muster Roll : Form-XII
10. Employment cards : Form-X
11. Register of Contract Work : (Form VII)Part-II

***Payment of Wages Act-1936***

12. Register of Fines : Form-XVII
13. Register of Deduction : Form-XIV
14. Register of Advance : Form-XVIII

***Minimum wages Act***

15. Wage slip : Form-XV

***Payment of Bonus Act***

16. Consolidated Register

***PF Act***

17. Contribution Register
18. Inspection Register

***Equal Remuneration Act 1976***

19. Form 'D' Register

***Miscellaneous Register***

20. Register for issue of PPEs

**End of Section-VIII**

## SECTION-IX

### 9.0 SAFETY PROVISIONS:

#### 9.1 GENERAL:

It is the objective of OPGC to maintain excellence in safety & loss control performance by Contractors at all locations of ITPS. The Owner will provide the environment, encouragement and support to achieve this objective but is the Contractor's responsibility to establish, maintain, and manage its own safety & loss prevention programme.

Contractor shall adhere to safe work practice and guard against hazardous and unsafe working condition and shall comply with Owner's safety rules as setout herein. Prior to start of work, Contractor will be provided copies of Owners Health & Safety Manual for information and guidance.

The contractor is expected to exert primary control through their line supervision to obtain desired performance. Repeated poor safety performance shall lead to termination of Contract and shall be debarred from future participation in Contract for one year.

#### 9.2 RESPONSIBILITY OF CONTRACTOR IN RESPECT OF SAFETY:

- 9.2.1 In respect of all labours, directly or indirectly employed in the work for the performance of Contract, the Contractor shall at his own expense comply all the safety provisions as per (i) Bureau of Indian Standards, (ii) The Electricity Act & Rules, (iii) Regulations adopted by Owner and other orders made there under and other acts as applicable.
- 9.2.2 The Contractor shall observe and abide by all fire/safety regulations of the Owner. Before starting of work, Contractor shall consult Engineer-in-charge and ensure that any loss or damage due to fire to any portion of the work under this Contract due to his fault shall be made good by the Contractor at his cost.
- 9.2.3 Before entry into the plant premises, all the Contractor labours shall be imparted safety training by Owner's Safety Officer / Fire Officer after which gate pass shall be issued.
- 9.2.4 The Contractor shall ensure that necessary skill in respect of various jobs is acquired by way of working & certificate to that effect is available, e.g. for riggers, fitter & other such workmen. Operators / drivers of various vehicles must have valid license from competent authority.

#### 9.3 SAFETY RULES OF OWNER:

- 9.3.1 The Contractor has to strictly abide by the Safety rules & regulations enforced by Owner from time to time. The Contractor shall provide proper Identity Card to their employees, which shall be produced for verification on demand at security gate & in working areas. All the Contractor workers have to be provided with personal protective equipment as per the BISH duly certified by Owner's Safety Officer. The Contractor has to make provision of standard PPEs as laid down in Clause 9.13 and get it approved from Owner's Safety Officer before commencement of the work, failing which the Contractor & their workmen shall not be allowed to enter into the plant / work site.
- 9.3.2 Any Contract labour who shall be detected inside the plant without use of any of the PPEs shall not be allowed to continue in duty. On first occasion, he shall be sent back with warning and on second occasion, he shall be sent back & shall be debarred from duty for 3 to 5 days without pay. Repetition of the same shall constrain the management to advise the Contractor to remove such person from his employment under this Contract.
- 9.3.4 The Contractor workmen are restricted to go to any other department / work place during duty without permission of Engineer-in-charge.
- 9.3.5 Any Contractor workman detected on duty in drunken condition shall not be allowed to continue at the Owner's site.
- 9.3.6 Face mask & apron / flash suit of approved standard are to be provided by the Contractor to electrical workmen as and when required.

#### 9.4 COMPENSATION:

For any accident of Contractor workmen while on work the Contractor shall pay compensation to their workmen, supervisor as per Factory / Labour Act. Owner shall not be liable for any such compensation.

#### 9.5 SAFETY IN OPERATION / MAINTENANCE:

9.5.1 Contractor shall have to undertake any job as & when required at mutually agreed time with the concerned Engineer-in-charge and with proper work permit (PTW) for safety consideration & uninterrupted running of the plant.

9.5.2 No workman can be engaged in over time during night hours & on holidays without specific approval of Engineer-in-charge.

9.6 **FIRST AID AND INDUSTRIAL INJURIES:**

- i) Contractor shall maintain first aid facilities for his employees and those of his subcontractors in addition to the facility provided by the Owner.
- ii) Contractor shall make outside arrangements for ambulance service for the treatment of industrial injuries. Names of those providing these services shall be furnished to Owner prior to start of work, and their telephone numbers shall be prominently posted in Contractor's field office.
- iii) All necessary personal protective equipments as considered adequate by the Engineer-in-charge / Safety Officer shall be kept available for the use of persons employed at the site and maintained in good condition suitable for use. The standard of Personal Protective Equipments (PPE'S) to be provided by the Contractors to their employees shall be as furnished under 'standard' of Personal Protective Equipments as laid down in Clause No.9.13
- iv) The Contractor shall report promptly to the Engineer-in-charge/his representative any injury, diseases, dangerous occurrence, near misses and shall cooperate with Engineer-in-charge and the Safety Officer in investigation process to establish basic causes and recommend appropriate improvements in control and remedial measures.

9.7 **NO SMOKING AREA:**

Smoking is strictly prohibited in plant premises in general & in the Battery Area, Hydrogen Area, tank farm, Diesel/petrol filling station & warehouse in particular. Violators of the "No Smoking" rules shall be removed from employment immediately. Smoking is prohibited in public place.

9.8 **NOTICES TO BE DISPLAYED:**

In addition to the duties imposed by statutory obligations, the Contractor shall notify on his work premises the following norms relating to safety, health and environment imposed by the Owner.

- ❖ Owner's Safety and Health Procedures & rules applicable to Contractor workmen in Owner's premises.

9.9 **BARRICADE:**

- i) Contractor shall erect and maintain barricades required in connection with his work to guard, protect & prevent accidents by others.:

**Areas to be guarded**

- a) Excavations
  - b) Hoisting areas
  - c) Areas considered hazardous by either Contractor or Owner.
  - d) Owner's existing property subject to damage by Contractor's operation.
  - e) Railroad / unloading spots.
  - f) Any other place as directed by Engineer-in-charge / Owner's Safety Officer.
- ii) Contractor's employees and those of his subcontractors shall abide by Owner's barricading practice and the provisions thereof.
  - iii) Barricades and hazardous areas adjacent to but not located in normal routes of travel shall be marked by red flasher lanterns at nights.

9.10 **SCAFFOLDING:**

- i) Scaffolding shall be moved, erected and used adjacent to exposed high voltage line only in accordance with the Owner's Safety & Health Procedures and in compliance with the requirements imposed by the Engineer-in-charge. All scaffold structures shall bear the scaffold identification serial number, the safe working load of its platform, the signature of Engineer-in-charge and a clear indication of the safe access period of seven days. Incomplete scaffolds must bear a caution – "Scaffolding Incomplete" (both in Hindi & Oriya).

The Contractor shall maintain a register of all scaffolds erected, dates of erection and reports of inspection and certificate of fitness. No scaffolding new or modified shall be used by any one unless it has been inspected by Owner's Safety Officer / competent person for satisfactory condition before use and thereafter before every subsequent seven days. If scaffolding members are provided by Owner, the Engineer-in-charge must certify the members of the scaffold before use.

In case of any modification or alteration in scaffolding, the Contractor must display on the scaffolds as "DO NOT USE" sign until it has been inspected and accepted as a safe structure by Owner's Safety Officer.

None other than a skilled & experienced workman shall erect, alter, modify the scaffolding under supervision of a competent person.

Any Contractor wishing to make use of an erected scaffold must ensure that permission has been granted by the Engineer-in-charge / competent person for the purpose and that the structure is capable of taking the load required for the related work. The Contractor must also confirm to the management instructions applicable to scaffold work control.

For work at height, but for short duration, where provision of a full scaffold is not reasonably practicable, safety harness must be used as per direction of Engineer-in-charge. Walking over unguarded beam at height is strictly forbidden.

- ii) Suitable scaffoldings should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period works as can be done safely from ladders. When a ladder is used a Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footsteps and handrails shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal and 4 vertical). No metallic ladder shall be allowed for use in work place.
- iii) Scaffolding or staging on more than 3.25 meters above the ground or floor shall swing or suspend from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise retarded at least one meter high above the floor or platform of such scaffolding or staging and extending along with the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- iv) Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform or gangway or the stairway is more than 3.25 meters above ground level or floor level, they shall be closely & rigidly constructed, should have adequate width and be suitably fastened as described in (ii) above.
- v) Every opening in the floor of a building or in working platform should be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1.0 meter.
- vi) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9.0 meter in length. The length of rung between the side rails of ladder shall in no case be less than 30 cm for ladder up to and including 3.0 meter in length. For longer ladders this length shall be increased at least 15 mm for each additional meter of length. Uniform step spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical power. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or public. The Contractor shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall bear the expenses of defense of every suit, action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit or action or proceedings to any such person or which may with the consent of the Contractor to compromise any claim by any such person.

All trenches 1.2 meters or more in depth shall at all times be provided with at least one ladder for each 50-meter length or fraction thereof.

Ladder shall be extended from bottom of the trench to at least 1.0 mtr above the surface of the ground. The sides of the trenches, which are 1.5 meters or more in depth, shall be stepped back to give suitable slope, or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated materials shall not be placed within 1.5 meters of the edge of the trench or half of the trench depth whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or under cutting shall be done.

#### 9.12 SAFETY MEASURE IN DEMOLITION WORK:

- I) Before any demolition work is commenced and also during the process of the demolition work-
  - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
  - b) No electric cable or apparatus, which is liable to be a source of danger, shall remain electrically charged.
  - c) All practical steps shall be taken to prevent danger to persons deployed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
- II) All personal protective equipments as considered necessary by the Engineer-in-charge / Safety Officer shall be kept available for the use of the persons employed at the site and maintained in good condition suitable for use. The standard of PPEs to be provided by the Contractors to their employees should correspond to Clause 9.13 hereinafter.
  - a) Workers employed on mixing asphaltic materials, cement and lime mortars/concrete shall be provided with protective footwear, protective gloves, dust mask and goggles.
  - b) Those engaged in white washing and mixing or stacking of cement bags or any materials, which are injurious to the eyes shall be provided with protective goggles & dust mask.
  - c) Those engaged in welding and gas cutting works shall be provided with protective face and eye-shields / welding mask, hand gloves & leather apron etc.
  - d) Stonebreakers shall be provided with protective goggles, protective clothing, hand gloves & dust mask and seated at sufficiently safe distances.
  - e) When workers are employed in sewers and manholes which are in use, the Contractor shall ensure that the manhole covers are opened and are ventilated at least for one hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or board to prevent accident to the public. In addition, procedure to work in confined space shall be strictly followed.
  - f) The Contractor shall not employ men below the age of 18 years and women on the work of painting the products containing lead in any form. No female worker shall be allowed to work without tight apron near rotating machines. Wherever men above the age of 18 years are employed on the work of lead painting the following precautions shall be taken -
    1. No paint containing lead products shall be used except in the form of paste or readymade paint.
    2. Suitable facemasks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint, dry rubbed and scrapped.
    3. All the required PPEs shall be provided by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash them on cessation of work.
- III) When the work is subject to a risk of drowning all necessary safety equipments sufficient PPEs including lifebuoy & rope shall be kept for use and all necessary steps shall be taken for prompt rescue of any person in danger and adequate provision shall be made for prompt first aid treatment of all injuries likely to be sustained during the course of work.
- IV) Use of hoisting machines and tackles including their attachment anchorage and supports shall conform to the following standard or conditions and must comply the provision of Factory Act.
  - a) These shall be of good mechanical construction, sound materials and adequate strength and free from inherent defect and shall be kept in good working order.
  - b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from inherent defects.
  - c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in charge of any hoisting machine including any scaffolding or give signals to the operator.

- d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension, the safe working load & date of testing shall be labeled on the equipment. Every hoisting machine and all gear referred to above shall be marked with the safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to shall be loaded beyond the safe working load except for the purpose of testing.
- e) In case of department machines, the safe working load shall be displayed on the equipment by the Engineer-in-charge. As regards Contractor's machines, the Contractor shall obtain necessary test certificate from competent authority and inform the Engineer-in-charge for verification, whenever he brings any machinery to site of work. The safe working load and date of load testing & due date of testing shall be labeled on the equipment in both cases.
- f) Length of chain used for lifting shall not be adjusted by putting knot or slashing under any circumstances.
- g) The lifting area including winch and other such equipment shall be isolated by suitable barricade to prevent entry of other persons & animals.
- V) Motors, gears, transmission lines, electric wiring and other dangerous part of hoisting appliances shall be provided with efficient safeguards. Hoisting appliances shall be provided with such means as to reduce to the minimum the accidental descent of the load. Adequate precaution shall be taken to reduce to the minimum risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel such as gloves, sleeves and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.
- VI) All scaffolding, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffoldings, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.
- VII) These safety provisions shall be brought to the notice of all concerned by displaying on a notice board at a conspicuous place of worksite. The person responsible for compliance of the safety code shall be named therein by the Contractor.
- VIII) To ensure effective enforcement of the rules and regulations relating to safety, the arrangements made by the Contractor shall be open to inspection by the Engineer-in-charge / Safety Officer of Owner or authorized representatives and the Inspecting Officers as defined in the Contract Labour (R & A) Act.
- IX) Notwithstanding the above clauses there is nothing to exempt the Contractor from the operations of any other Act or rules in force in the Republic of India. The works throughout including any temporary works, shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpaths at the site or in vicinity thereto or any existing works whether the property of the Owner or a third party is affected.
- X) Every Contractor's employee shall be at all times under the proper supervision when working in Owner's premises or outside working site under Contract. Where a Contractor / subcontractor himself works alone or with 2-3 persons and does not have specifically designated supervisors, the Contractor shall be treated as supervisor and ensure safety of self & his workmen.
- XI) The Contractor must ensure that all equipment brought to site are in good condition, maintained in good condition, complies with the requirements of the Factories Act and/or any other specific legislation and is used or erected safely. Minimum stock of PPEs must be maintained by the Contractor in site store to meet all times need at work.
- XII) Contractor workers engaged in areas involving coal dust must use dust mask in addition to safety shoes, hardhats & safety glasses.
- XIII) Contractor labour while working in heights or on utilities connected to moving equipments etc. must use safety belts / full body harness as per requirement.
- XIV) Contractor labours engaged in areas involving high noise such as crusher, grizzle feeder, traveling tripper & paddle feeders, locomotives, ball mill, FD, ID & PA fans, compressors, DG set, turbine hall etc. must use ear plug /ear muff.
- XV) The use of compressed air for cleaning of clothing and skin is forbidden.
- XVI) No source of ionizing radiation shall be brought to Owner's premises without the prior permission of the Engineer-in-charge.
- XVII) Ladders, long objects and cranes must not be used in the vicinity of exposed high voltage power line without permission of the Engineer-in-charge.

- XVIII) All site huts, storage facilities, shelters and the like shall be provided with fire extinguishers appropriate to the risk and with adequate means of escape which shall be kept clear at all times.
- XIX) Gas fires and radiant heaters are forbidden in site huts.
- XX) The Contractor may only use high-pressure water washing, on-line sealing and steam cleaning apparatus with prior permission of the Engineer-in-charge/his representative.
- XXI) **Overhead Crane:**
- a) No work on overhead crane is permissible when persons are either working or otherwise available under the said work. Roadways must be barricaded when work is carried out on roofs having eaves (overhanging edges of roof) parallel to roadways.
  - b) All girders, beams & overhead surfaces shall be kept free from nuts, bolts, tools and other materials.
- XXII) **Electrical:**
- a) Only authorized and qualified personnel shall work on the installations, wiring, trouble shooting or repair of electrical equipment.
  - b) All electrical work including temporary wiring shall be done in accordance with the current Indian Electricity Regulations and with the permission of concerned departmental electrical engineers/ competent authority.
  - c) No ladders other than electrically insulated fiber ladder shall be used by workmen of the Contractor.
  - d) All electrical equipments provided by the Contractor and any temporary supply installations should comply with the provisions of the relevant Indian Electricity Regulations.
  - e) Portable tools, headlamps and other portable apparatus should be identified by a serial number, registered and periodically inspected & tested. All such equipments used by the Contractor shall have a current test certificate of electrical safety.
  - f) For tapping of power for temporary work, socket & adopter shall be used. Inserting wire in plug socket shall be liable for severe penalty.
- XXIII) **Crane:**
- a) Cranes & other heavy equipment must be guided into and out of the plant by a person (pilot) walking in front of the vehicle at a SAFE distance.
  - b) No person shall ride on a crane ball, cable or boom etc.
  - c) Areas within the surrounding radius of the rear of the rotating super structure of the heavy crane shall be barricaded to prevent personnel from being struck or crushed by the crane while in operation at one place.
  - d) Crane booms must not be operated within 3 meters of live electrical wires.
  - e) *Light of Crane:* Head light & back light must be used irrespective of movement or working in a static condition.
- XXIV) **Vehicles:**
- a) Contractors shall not be permitted to use company mobile equipment such as cranes, tractors, and industrial trucks, machinery etc. unless specifically authorized in writing to do so.
  - b) Automobiles and other vehicles shall be parked only in designated areas.
  - c) Maximum speed limits shall be as per the road signs inside factory premises.
  - d) Vehicles traveling on plant roads at night must use headlights at low beam. All loads must be securely fastened.
  - e) No Contractor labour shall sit on the open truck or tractor/trailer body etc.
  - f) Nobody should enter or get out of any moving vehicles or equipments.
  - g) Proper cover shall be provided for vehicles carrying dust-emitting materials.
- XXV) **Hot Work Permit:**
- a) Contractor shall contact the Engineer-in-charge of the work to obtain a HWP before starting any flame cutting, welding, grinding or other hot work.
  - b) The Contractor shall provide a fire watch if the hazard dictates the need for one.
  - c) All compressed gas cylinders must be stored in upright position and properly secured with a valve cap.
  - d) Ensure availability of approved extinguishers in good working order and properly filled before starting the job.
  - e) Where cutting, burning or welding is to be done overhead, a person must be stationed below at a safe distance with an approved fire extinguisher. The area under overhead work shall be barricaded.
  - f) Arc welding done at floor level must be shielded to protect personnel from welding area.
  - g) Acetylene and oxygen welding / cutting must have approved back flow prevention check valves (i.e. Flash Back Arrestor). Cylinder must be closed / turned off after use.



- h) Tarpaulins used shall be fire resistant. The placement & use of tarpaulins shall be under strict supervision & control of company personnel.
- i) Fire hydrants and hoses are not to be used without written permission of Engineer-in-charge except to fight fires.
- j) No LPG shall be used for any industrial purpose.

**XXVI) Compressed Gas Cylinder:**

Compressed Gas Cylinder must be moved, stored or handled in an upright position. Transporting horizontally or by means of "barrel rolling" tactics is forbidden. No cylinder shall be moved with the protective cap off or regulator attached except when secured in an approved welding buggy. All cylinders whether charged or empty must be secured in an upright and approved manner remote from possible damage.

**XXVII) Confined spaces:**

No person shall enter a confined space (tank, vault, pit, sewer, or enclosed structure with restricted means of space) until such entry permit is issued and signed by the departmental Engineer-in-charge of the confined space work area.

**XXVIII) General Practices:**

**Intoxicants:**

- a) Possession of or drinking of alcoholic beverages is strictly prohibited on company premises. Violators will be immediately removed and permanently prohibited from entering the plant.
- b) Possession of drugs for other than medical reasons is forbidden on company premises.
- c) Contractor personnel must not enter any building or area not required by their work & wondering about the plant is prohibited.

**XXIX) House Keeping:**

- a) Good House-Keeping practices are to be followed and the work places kept clean and orderly. Rejects & scraps shall be deposited in proper waste containers / place as the case may be.
- a) At no time shall any materials or equipment be placed so as to block the aisles & emergency exits from work place.

**XXX) Machinery Guarding:**

Machinery, tools and equipments must not be operated without guards.

**XXXII) Fire Protection:**

- a) Fire hydrants, extinguishers, hose racks and other emergency equipment shall not be covered or blocked and fire equipment lines must always be kept clear.
- b) All fire incidents must be reported to the Engineer-in-charge / Fire Officer / Safety Officer regardless of duration or extent and meticulously investigated.

**XXXIII) Temporary Building:**

Temporary building and material storage areas shall only be allowed on written approval of the Engineer-in-charge. They shall not be set up under power lines or over pipe ways.

**XXXIV) Clearance Procedure:**

Contractor must utilize the plant safety clearance procedure for performing work on process equipment, machines, and electrical equipment, as close supervisory coordination and control are needed on these jobs.

**XXXV) Plant Utilities:**

Plant air, water, gas, electricity, fuel etc are not to be used by the Contractor unless the source of supply has been designated and authorized by Engineer-in-charge.

**9.13 MINIMUM QUALITY OF PERSONAL PROTECTIVE EQUIPMENT:**

Standard of personal protective equipments to be provided by the Contractors to their employees are indicated here below.

**NAME OF THE ITEMS WITH SPECIFICATION**

1. Industrial safety helmet conforming IS: 2925
2. Safety shoes conforming IS: 9473-1993
3. Dust mask conforming IS: 9473-1983
4. Safety belt conforming IS: 3521-1983

5. Safety glasses for dust protection

Lightweight safety glasses with side shield to protect against wind & ultraviolet ray with adjustable side arms for personalized fit.

6.(i) Ear muff conforming IS:6229

(ii) Ear plug or Ear seal

Unique closed cell polyester from smooth tapered surface similar to ear canal, swells slowly to fit individual Ear canal.

(Any one item out of three types of ear protection device should be issued)

7. Flame-Water-Oil-Acids & alkali resistant work wear (made of 100% cotton fabric)

8. Safety gloves of Kevlar or equivalent (high temp. resistance)

9. Face shield (conforming IS: 8521 part I type-I)

10. Electrical hand gloves 440v & 33 KV conforming IS: 4770

11. Hand gloves for chemical laboratory made from pure latex Acid and Alkali proof

12. Hand gloves for concentrated chemicals made from superior PVC inside cotton reinforce for better grip

13. Split chrome leather hand gloves for handling rough object.

14. Canvas hand gloves for handling smooth object & doing light work with it.

15. Flip up goggles with stationery frame fitted with ophthalmic grade zero power toughened lens and fitting frame. Blue lens for furnace. Green shade No.4 for gas cutting, dark green No.11 for glasses for ARC welding whenever is required.

16. Panoramic type safety goggles for acid & alkali whenever is required. Contractor shall ensure proper use of personal protective equipment by their workmen and supervisor on duty.

Before issue of the above PPEs depending on the need of the area of work the sample of the same must be provided to Owner's Safety Officer for inspection & approval.

The Contractor shall be issued entry pass for their employees after due verification of the quality of the standard PPE's and imparting necessary training well in advance (i.e. before 7 days of commencement of work) by Engineer-in-charge / Safety Officer.

- a) None of the Contractor's employees shall be allowed inside the plant premises without valid gate pass, safety shoes, helmet (hardhat) & safety glasses.
- b) Contractor shall ensure that all his employees use proper PPE's inside the plant premises as per the work & site requirement.
- c) During the course of execution of the work the Contractor must ensure use of appropriate tested tools by their workmen. Safe working practice must strictly be followed, e.g. use of proper plug & socket for electrical connections, right size & standard spanner, right capacity and tested lifting & pulling equipment etc.
- d) The Contractor must ensure tidiness of the work place during & after completion of the work.
- e) In case of any doubt relating to safety guidelines, the Contractor should seek advice of the Engineer-in-charge / Safety Officer immediately for clarification.

ANY DEFICIENCY IN SAFETY ASPECTS SHALL BE VIEWED SERIOUSLY BY THE OWNER. THE CONTRACTOR WILL BE PENALISED UP TO THE EXTENT OF Rs.10, 000/- (RUPEES TEN THOUSAND ONLY) PER EACH LAPSE AS DETERMINED BY THE ENGINEER-IN-CHARGE. OWNER RESERVES THE RIGHT TO TERMINATE THE CONTRACT AND DEBAR THE CONTRACTOR TO PARTICIPATE ANY FUTURE BIDDING IN CASE OF CONTINUED FLOUTING OF THE SAFETY NORMS PRESCRIBED BY THE OWNER.

9.14 **CARE IN HANDLING INFLAMMABLE GAS:**

The Contractor shall ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinder / inflammable liquids / paints etc as required under the law and/or as advised by the Owner's Fire Officer.

9.15 **TEMPORARY COMBUSTIBLE STRUCTURE:**

Temporary combustible structures shall not be built near or around work site.

9.16 **PRECAUTION AGAINST FIRE:**

The Contractor shall ensure availability of appropriate fire Extinguishers / Fire Bunkers and drums / fire buckets at work site as recommended by Engineer-in-charge.

**9.17 EXPLOSIVE:**

Explosive shall not be stored or used in the works or at site by the Contractor without the permission of the Engineer-in-charge in writing. The storage & use are also restricted to the extent & in the manner to which such permission is given. When explosives are required for the works they shall be stored in a special magazine to be provided at the cost of the Contractor in accordance with the Explosive Rules. The Contractor shall obtain necessary license for the storage and use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the Contractor and the Contractor shall indemnify the Owner against any loss or damage resulting directly or indirectly there from.

**9.18 CONTRACTOR'S LIABILITY:**

9.18.1 *Safety code:* The Contractor shall at his own expense arrange for the safety provisions as required by the Engineer-in-charge in respect of all labour directly employed for performance of the works and shall provide all facilities in connection herewith. In case the Contractor fails to make arrangements and provides necessary facilities as aforesaid, the Engineer-in-charge shall be entitled to do so and recover double the cost thereof from the Contractor.

9.18.2 Failure to comply with safety code or the provision relating to and report on accidents and to grant of maternity benefits to female workers or submission of materially incorrect statement shall make the Contractor liable to pay Liquidated damages an amount not exceeding Rs.500/- for each default. The decision of the Engineer-in-charge in such matters based on the reports from the Inspecting Officer or from representatives of Engineer-in-charge shall be final and binding and deductions for recovery of such liquidated damages may be made from any amount payable to the Contractor.

**9.19 PRESERVATION OF PEACE:**

The Contractor shall take requisite precautions and use his best endeavor to prevent any riotous or unlawful behavior by or amongst his workmen and other employed on the works and for the preservation of peace and protection of the inhabitants and security of property in the neighborhood of the work. In the event of the Owner requiring the maintenance of a special police force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the Contractor and if paid by the Owner shall be recoverable from the Contractor.

**9.20 OUTBREAK OF INFECTIOUS DISEASES:**

The Contractor shall remove from his camp such labour and their families who refuse protective inoculation and vaccination when required to do so by the Engineer-in-charge. Should Cholera, Plague or other infectious diseases break out, the Contractor shall burn the huts, bedding, clothes and other belongings of or used by the infected parties and promptly erect new huts on healthy site as required by the Engineer-in-charge failing which within the time specified in the Engineer's requisition, the said work may be done by the Owner and the cost thereof recovered from the Contractor.

**9.21 USE OF INTOXICANTS:**

The sale of dent spirits or other intoxicating beverages upon the work in any of the buildings, encampments or tenements owned, occupied by or within the control of the Contractor or any of his employee is forbidden and the Contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

In addition to the above, the Contractor shall abide by all provisions of Owner's Safety Code framed from time to time.

**End of Section-IX**

## **SECTION-X**

**10.0 PENALTY:**

**10.1 FOR NON-COMMENCEMENT OF WORK ON DUE DATE:**

The execution of work shall commence from 15<sup>th</sup> day after the date on which the Owner issues written orders to commence the work. If the Contractor commits default in commencing the execution of work as aforesaid, Owner shall without prejudice to any other right or remedy be at liberty to forfeit the earnest money absolutely. In addition, Owner reserves the right to terminate the Contract without any further reference to the Contractor.

**10.2 FOR NON-PERFORMANCE:**

In case the performance is discontinued by the Contractor without any cause attributable to Owner, the Contract can be terminated with three days notice at the discretion of Engineer-in-charge and the security & all other dues of the Contractor shall be forfeited. This shall be in addition to other penalties.

**10.3 FOR UNSATISFACTORY PERFORMANCE:**

If the performance does not commensurate either to the standard of work as per BI Standard/standard specified by the Owner or the progress is not as per time schedule, the Contract shall be terminated with 30 days notice and security & other dues of the Contractor shall be forfeited.

**10.4 FOR NON-PERFORMANCE DUE TO LABOUR STRIKE:**

In case of labour strike, the Contractor shall continue the work or keep the work continued by alternate arrangement failing which Owner reserves all rights to get the work done otherwise at the risk and cost of the contractor. Also Owner reserves the right to terminate the Contract and impose penalty as in Clause 10.2

**10.5 FOR NON-PAYMENT OF WAGES WITHIN SPECIFIED PERIOD:**

For non-payment of wages to his labours within the specified period penalty shall be imposed on the Contractor as per clause No.8.1 (x)

**10.6 FOR NON-COMPLIANCE OF OTHER STATUTORY OBLIGATIONS:**

In case of non-compliance of statutory provision within stipulated period, the Contract is liable for termination at the discretion of Engineer-in-charge.

**10.7 FOR NON-ADHERENCE TO SAFETY NORMS:**

Penalty shall be imposed on the Contractor as per Clause No.9.13 for non-adherence to safety norms.

**10.8** If generation loss contributes to the fault of Contractor, penalty to the tune of loss on account of disruption of generation or dues of Contractor including security, whichever is less shall be imposed. The Contractor shall also be debarred from participation in any future bidding for at least 3 years thereafter.

If Contractor disputes to the decision of Engineer-in-charge regarding his fault, the case shall be referred to Contract Review Committee. In such case the Contractor or his authorized representative shall be a member of the CRC for investigation and report. This joint report shall be final and binding on both parties.

**10.9** Jobs asked by Engineer-in-charge subject to availability of related materials shall be attended with immediate effect. However, if the Contractor fails to do the work within reasonable hours or maximum within 48 hours as the case may be, the job may be done by engaging other agency at the cost & risk of the Contractor. In such an event, Owner may terminate the Contract & debar the party from future work for two years.

**10.10 PENALTY FOR NON-RETURN OF EXCESS MATERIALS ISSUED BY THE OWNER.**

The Contractor shall return all surplus materials, scraps, tools & plant if issued for the work to the warehouse in proper manner and obtain receipt to this effect before issue of Completion Certificate by the Engineer-in-charge. If the same is not complied, the Contractor shall be liable for cost of the same and 20% additional charge over & above the value as per warehouse records and shall be recovered from Contractor's bills.

**10.11 PENALTY FOR KEEPING IDLE MACHINERIES, EQUIPMENTS, T & P etc. HIRED BY OWNER:**

In case of machinery, tools & plant and equipments arranged on hire by the Owner and provided to the Contractor for work, idle charges beyond reasonable period for such work shall be the liability of the Contractor.

10.12 **LIQUIDATED DAMAGE (LD):**

L.D. shall be imposed on Contractor as per clause No.6.9 for delay in completion of work.

10.13 In case of failure on part of Contractor to provide consumables or any other material under their scope & the work is affected on account of this shortfall, Owner reserves the right to arrange the same at the cost & risk of the Contractor. The amount so incurred by Owner with 25% additional charges shall be recovered from the Contractor.

10.14 For failure on part of the Contractor to meet the liability under W.C. Act, P.F. Act etc., penalty as per Clause 8.1 (viii) & 8.2.3 shall be imposed.

Notwithstanding any clause elsewhere in General Conditions of Contract, all the penalty on Contractor shall be deducted from Contractor's: -

1. Running Bill
2. Security deposit
3. Any other dues of Contractor

Or

In case the amount exceeds the dues of the Contractor in concerned Contract, the same shall be recovered from dues of other contract with Owner;

Or

If recovery shall not be possible from any of the aforesaid manner, the same shall be recovered as debt liability.

**End of Section-X**

## SECTION-XI

### 11.0 ARBITRATION:

All disputes or difference in respect of which the decision is not final and conclusive shall, on the initiative of either party, be referred to the adjudication of a sole arbitrator, within thirty days of receipt of notice from the contractor of his intention to refer the disputes to arbitration or by Engineer-in-Charge, the MD or MD-in-charge of OPGC shall finalize a panel of three arbitrators and intimate the same to the contractor. The contractor shall within fifteen days of the receipt of this list select and confirm his acceptance to the appointment one from the panel as arbitrator. If the contractor fails to communicate his selection of the name within the stipulated period, the MD or MD-in-charge of OPGC shall without delay select one from the panel and appoint him as the sole arbitrator. If the MD or MD-in-charge of OPGC fails to send such a panel within thirty days, as stipulated, the contractor shall send a similar panel to the MD or MD-in-charge of OPGC within fifteen days. The MD or MD-in-charge of OPGC shall then select one from the panel and appoint him as the sole arbitrator within fifteen days. If the MD or MD-in-charge of OPGC fails to do so, the contractor shall communicate to the MD or MD-in-charge of OPGC the name of one from the panel who shall then be the sole arbitrator. The appointment of sole arbitrator so made shall be final and conclusive.

If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reasons whatsoever, sole Arbitrators shall be appointed as aforesaid by the MD or MD-in-charge, OPGC. The work under the contractor, shall, however continue during the arbitration proceedings.

The Arbitrator shall be deemed to have entered on the reference, the date he issues notices to both the parties fixing the date of the first hearing.

The Arbitrator may, from time to time, with the consent of the parties, enlarge time for making and publishing the award. The Arbitrator shall give a separate award in respect of each dispute or difference and shall give a reasoned and speaking award/awards.

The venue of arbitration shall at Bhubaneswar only and jurisdiction for any proceedings arising out of or concerning or connected with such arbitration shall be of appropriate court at Bhubaneswar under the jurisdiction of Odisha High Court.

The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid at half by each of the parties. The costs of the reference and the award including the fees, if any, of the arbitrator shall be in the discretion of the arbitrator who may direct to and by whom and in what manner. Such costs or any part thereof shall be paid and may fix and settle the amount of costs to be so paid.

The award of the arbitrator shall be final and binding on both the parties.

Subject to aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made there under, and for the time being in force, shall apply to the arbitration proceeding under this clause.

Neither party is entitled to bring a claim to arbitration if the request for appointment of arbitrator has not been made within thirty days after expiration of warranty / guaranty period.

### 11.1 JURISDICTION / GOVERNING LAWS:

#### a) Jurisdiction

For all disputes, appropriate court at Bhubaneswar under the jurisdiction of Odisha High Court alone shall have exclusive jurisdiction in all matters arising under this contract.

#### b) Governing Laws

The Contract shall be governed by and constructed according to the laws in force in INDIA.

**End of Section-XI**

End of GCC Volume-II

## SCHEDULE 'A'

### REFERENCE TO GENERAL CONDITIONS OF CONTRACT

2.1	Accepting Authority	Authority who floats NIT
2.19 profit	Market Rate- percentage addition to	10 per cent      Cover overheads and
1.14	Earnest money	1% of the total quoted price
4.9	Security Deposit shall be calculated as under:	
	(i) Contract value up to Rs.1 crore	10%
	(ii) Contract Value more than Rs.1 crore but not exceeding Rs.5 crore	7.5% of contract value
	(iii) Contract value more than Rs. 5 crore	5% of contract value
	Schedule of Rates applicable	OPWD
3.25	Time allowed for execution of works or time schedule.	12 (Twelve) months excluding fifteen days mobilization .
	Authority competent to decide if "any other cause" OPGC of delay is beyond Contractor's control	
8.1(vii)	Duration of return of number and description by trades of workmen employed on works to be submitted to Engineer-in-Charge.	Fortnightly
	Authority competent to reduce compensation	OPGC amount.
5.11	Defects Liability Periods	Twelve months
5.12	Training of apprentices	Maximum number to be engaged as per the Apprentice Act.1961.
	Category	
	(a)	
	(b)	
	(c)	
	etc.	
6.3.1	Interim bills/running bill	Monthly in case of maint. Contract & after achieving Milestone as agreed in Schedule of work in construction contract.
11.1	Authority for appointing arbitrator	OPGC



SCHEDULE 'B'  
MATERIAL FOR ISSUE TO THE CONTRACTOR

Sl.No.	Particulars	Rate at which material will be issued		Qty.	Place of issue	Max. allowable %
		Unit	Rs.			of wastage
1	2	3	4	5	6	7
1	Cement if issued	MT			ITPS warehouse or nearest Railhead	3%
2	Reinforcement Steel a) Mild steel 6 mm & above dia	MT			ITPS warehouse or nearest Railhead	5%
	(b) Tor steel rod of all dia	MT			ITPS warehouse or nearest Railhead	5%
3	Structural Steel (plates and rolled Sections only)	MT			ITPS warehouse or nearest Railhead	5%
4	All spares		NA		-do-	NA
5	Lubricant		NA		-do-	NA
6	Fuel Oil		NA		-do-	NA
7	Conveyor belt		NA		-do-	NA
8	Railway sleepers		NA		-do-	NA
9	Mill liner		NA		-do-	NA
10	Ball for Ball mills		NA		-do-	NA
11	Rails		NA		-do-	NA
12	Point & crossing		NA		-do-	NA
13	Fish plate		NA		-do-	NA
14	Module		NA		-do-	NA
15	Cards		NA		-do-	NA
16	Monitor		NA		-do-	NA
17	Recorder		NA		-do-	NA
18	Indicator		NA		-do-	NA
19	Gauges, pressure temp		NA		-do-	NA
20	Switches		NA		-do-	NA

Signature of Issuing Officer.....

Date.....

Signature of Contractor.....

Date.....

ANNEXURE-I

NAME OF THE BIDDER:

NAME OF THE WORK:

DETAILS OF WORKS AND SERVICES OF SIMILAR NATURE DONE BY THE PARTY DURING THE LAST THREE YEARS

Sl. No.	Name of Claimant	Description of work	Value of work	Period		The work is done directly or through sub contractor	Remarks
				From	To		

Note: Photocopy of Performance Certificate / Completion Certificate of Owner in Support of the work mentioned above is required to be enclosed.

SIGNATURE OF THE BIDDER

NAME OF THE BIDDER:

NAME OF THE WORK:

CONCURRENT COMMITMENTS

Sl. No.	Full postal address of client & name of Officer-in-charge	Description of the work done	Value of contract	Date of commencement of work	Scheduled/Revised completion period	% age completion as on date	Expected date of completion	Remarks

SIGNATURE OF THE BIDDER:

NAME OF THE BIDDER:

NAME OF WORK:

DETAILS OF EQUIPMENTS, TOOLS & TACKLES

Bidder shall submit herein details of equipments, tools, tackles etc required to perform the work (a) already owned by Bidder and available for use in this contract (b) anticipated to be hired by contractor or (c) anticipated to be purchased by contractor. In case of (b) and (c) commitment of hirer or Contractor shall be stated.

Category	Category-wise Sl.No.	Ownership status (a), (b), (c)	Description, make model & capacity	Quantity	Capacity	Year of manufacture	Location of availability	Remarks

Photocopy of correspondence between contractor & hirer and between contractor & Contractor shall be furnished.

SIGNATURE OF BIDDER

NAME OF THE BIDDER:  
NAME OF WORK:

ORGANISATION CHART SHOWING NO. OF QUALIFIED ENGINEERS & SUPERVISORY PERSONNEL ETC. IN THE EMPLOYMENT OF CONTRACTOR & TO BE EMPLOYED.

Sl.No.	Class of manpower/ engineer/supervisor	Details of Personnel to be deployed on this work		No.
		Available with contractor	To be employed	

Note: Names and short resume of their qualification & experience may also be given for key personnel.

The tentative chart of your site organization as above furnished by you shall be subject to variation to suit the construction / maintenance / operation programme requirement and as directed by Owner / Engineer-in-charge.

SIGNATURE OF BIDDER

NAME OF THE BIDDER:

NAME OF THE WORK:

INFORMATION ABOUT BIDDER

1. In case of proprietary firm:

- 1.1 Name of the business:
- 1.2 Whether his business is registered with appropriate authority. If yes, name of authority.
- 1.3 Date of commencement of business:
- 1.4 Whether he pays Income Tax over Rs.10, 000/- per year

2. In case of partnership:

- 2.1 Name of the partnership with qualification:
- 2.2 Whether the partnership is registered with appropriate authority:
- 2.3 Date of establishment of firm:
- 2.4 How many of the partners of the firm pay Income Tax over Rs.10,000/- a year and if less, what is the amount paid by them. If all of them do not pay Income Tax, who of them is paying Income Tax.
- 2.5 Permanent Account No. under IT Act:

3. In case of Limited liability Company or Company Limited by Guarantee:

- 3.1 Amount of paid up capital:
- 3.2 Name of the Directors:
- 3.3 Date of incorporation with Registrar of Company.
- 3.4 Copies of balance sheet of the Company of the last two years:

Copies of audited profit & loss Account and the balance sheet shall be enclosed in case of individuals, partnership as well as limited companies for the last three years.

Signature of the Bidder

NAME OF THE BIDDER:

NAME OF THE WORK:

***LIST OF ENCLOSURES***

THE BIDDER IS REQUIRED TO ENCLOSE THE FOLLOWING DOCUMENTS AS PART OF HIS BID.

1. Photocopy of Power of attorney of the signatory of the tender
2. VAT/Sales Tax Clearance Certificate
3. Documents showing annual turnover for similar works or otherwise for the past two years such as annual report, profit and loss account etc.
4. Certificate by Nationalized / Schedule Bank/ Chartered Accountant Firm showing financial capacity.
5. Provident Fund Registration Certificate
6. Service Tax Registration Certificate
7. Bid Guarantee / E.M.D.
8. Letter of undertaking
9. Permanent Account Number of Income Tax

SIGNATURE OF BIDDER

NAME OF THE BIDDER:

NAME OF THE WORK:

EXCEPTIONS AND DEVIATIONS

Bidder may stipulate here exceptions and deviations to the tender conditions, if considered unavoidable.

Sl.No.	Page No. of tender document	Clause/Sub Clause of tender document	Subject	Deviation

SIGNATURE OF BIDDER



NAME OF BIDDER:

NAME OF WORK:

DETAILS OF PROPOSED ORGANISATION

The bidder shall submit herein details of Head Office and site organization proposal to be developed for execution of the work. Bidder shall also furnish the bio-data of the site-in-charge and key personnel to be deployed in the format provided in Annexure-IV.

Bidder agrees to augment the list in Annexure-IV with additional number/categories if required and if directed by Engineer-in-charge for smooth execution of work taken by the Contractor.

SIGNATURE OF BIDDER

LETTER OF AUTHORIZATION

(To be submitted on a non-judicial stamp paper of Rs.10 (Rupees ten) only)

Mr. / Mrs. \_\_\_\_\_ residing in \_\_\_\_\_  
and presently holding the position \_\_\_\_\_ of the \_\_\_\_\_  
\_\_\_\_\_ firm / Group / Individual, is duly authorized by the Firm / Group / Individual to sign  
and furnish all such information as desired by the OPGCL in this document in respect of the work  
\_\_\_\_\_

Signature:

Date:

(Secretary / General partner / Individual / Contractor / Applicant)

SEAL

WITNESS:

- 1.
- 2.

SUPPORTING / ATTACHED DOCUMENT LIST

Annexure No.	Supporting document/ Additional Sheet	Document No.
I		
II		
III		
IV		
V		
VI		
VII		
VIII		
IX		
X		
XI		
XII		
XIII		
XIV		
XV		
XVI		
XVII		
XVIII		

NAME OF THE BIDDER:

NAME OF THE WORK:

ANNUAL TURNOVER STATEMENT

The bidder shall indicate herein his annual turnover during preceding 3 years based on the audited balance sheet / profit & loss account statement.

FINANCIAL YEAR	ANNUAL TURNOVER (Rs.)	NET WORTH (Rs.)
Previous to previous year		
Previous year		
Present year		

- NOTE: 1. Copies of audited balance sheets with profit and loss account of 3 years shall be submitted along with the Technical bid in support of above entries.
2. Bidder shall work out Net worth on the following basis:  
Net worth: Reserve + Capital – Accumulated loss.

SIGNATURE OF BIDDER

**REGISTER OF WORKMEN**

- (i) Name and address of Contractor .....
- (ii) Name and address of establishment in/under which contract is carried on.....
- (iii) Nature and location of work.....
- (iv) Name & address of Principal Employer .....

Sl. No	Name & surname of worker	Age & Sex	Father' s/ Husband' s	Nature of employments /Designation	Permanent home address of workman (Village, & Tehsil / Taluk & district)	Local address	Date of commencement of employment	Date of termination of employment	Signature or thumb impression of the employee	Reason for termination	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

(a) Name and address of Contractor \_\_\_\_\_

(b) Name and address of establishment in/ under which contract is carried on: \_\_\_\_\_

(c) Nature and location of work:

(d) Name and address of Principal Employer:

Name of the workman	Sl. No. in the register of workman employed	Nature of employment / designation	Wage rate (with particulars of unit, in case of piece work)	Wages period	Periods of employment	Remarks	Signature of contractor
1	2	3	4	5	6	7	8

## REGISTER OF WAGES-CUM-MUSTER ROLL

- (i) Name and address of the contractor.....  
(ii) Name and address of establishment in/under which contract is carried on.....  
(iii) Nature and location of work.....  
(iv) Name and address of Principal employer.....  
(v) Wage period..... from.....to.....

Sl.No.	Serial number in Register of workmen employed by contractor	Name of employees	Designation / Nature of work	Daily attendance / No. of units worked	Total attendance / units of work done	Daily rate of wages / piece rate	Basic wages	D.A.	Overtime	Other cash payments (nature of payment to be indicated)	Total deduction	Net amount paid	Time & date of payment	Place of payment	Signature or thumb impression of workmen	Initials of contractor or his authorized representative	Initials of authorized or Principal employer	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19





## REGISTER OF FINES

(b) Name and address of Contractor \_\_\_\_\_

(b) Name and address of establishment in/ under which contract is carried on: \_\_\_\_\_

(c) Nature and location of work:

(d) Name and address of Principal Employer:

Sl.No.	Name workman / woman	Father' s / husband' s name	Designation	Act / omission for which fine imposed	Date of offence	Whether employer showed cause against fine	Name of person in whose presence employee' s explanation was heard (in case of contractor)	Rate of wages	Date of wages	Amount of fine imposed	Date on which fine realised	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

## REGISTER OF DEDUCTIONS FOR DAMAGES OR LOSS

(c) Name and address of Contractor \_\_\_\_\_

(b) Name and address of establishment in/ under which contract is carried on: \_\_\_\_\_

(c) Nature and location of work:

(d) Name and address of Principal Employer:

Sl. No.	Name of workman	Father' s/ husband' s name	Designation	Particulars of damage / loss	Date of damage	Whether worker showed cause against deduction	Name of person in whose presence employee' s explanation was heard	Amount of deduction imposed	Number of instrument	Date of recovery		Remarks
										1 <sup>st</sup> installment	Last installment	
1	2	3	4	5	6	7	8	9	10	11	12	13

WAGES SLIP

Name & address of Contractor:

Name & address of establishment in/under  
Which Contract is carried on:

Nature and location of work:

Name and address of Principal Employer:

Name and father's / husband's name of the workman:

For the week/fortnight/month ending:

Sex and identification token/ticket No.:

No. of days worked	Rate of daily wages/ piece rate	No. of units worked in case of piece rate workers	Dates on which overtime worked	Overtime hours and amount of overtime wages	Gross wages payable	Deductions, if any	Actual wages paid	Signature of the contractor or his representative
1	2	3	4	5	6	7	8	9

PROFORMA BANK GUARANTEE IN LIEU OF DD FOR EARNEST MONEY  
(on Non Judicial stamp paper of Appropriate value)

(Applicable to Bid value more than Rs.25 lakh only)

Ref:

Date:

Bank Guarantee No.

To

Odisha Power Generation Corporation Ltd.,  
1b Thermal Power Station,  
At/Po- Banharpali,  
Dist-Jharsuguda-768234.

Dear Sir,

In consideration of Odisha Power Generation Corporation having its Registered office at 7<sup>th</sup> Floor, Module – A, Fortune Towers, Chandrasekharpur, Bhubaneswar-751 023 (hereinafter called the "Owner" which expression shall unless repugnant to the subject or context include its successors and assigns) having issued Tender Specification Against NIT No \_\_\_\_\_ dt. \_\_\_\_\_ to M/s \_\_\_\_\_ having its Registered / Head office at \_\_\_\_\_

(hereinafter called the Bidder) who wishes to participate in the said tender for and you, as a special favour, have agreed to accept an irrevocable and unconditional Bank Bid Guarantee for an amount of Rs. \_\_\_\_\_ valid up to \_\_\_\_\_ On behalf of the Bidder, as a condition for participation in the said tender.

We, the \_\_\_\_\_ Bank incorporated under \_\_\_\_\_ law and having one of our branches at \_\_\_\_\_ and having our Registered office/Head office at \_\_\_\_\_ do here by unconditionally and irrevocably guarantee and under take to pay to the " Owner" immediately on demand without any demur reservation, protest, contest and recourse to the extent of the said sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only). Any such claim/demand made by the said "Owner" on us shall be conclusive and binding on us irrespective of any dispute or differences raised by the Bidder.

This guarantee shall be irrevocable and shall remain valid upto \_\_\_\_\_. If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s \_\_\_\_\_ on whose behalf this guarantee is issued.

We, the said Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the owner in writing and agree that any change in the constitution of the said tenderer or the said Bank shall not discharge our liability. In witness where of the Bank, through its authorised officer, has set its hand and stamp on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_

Witness:

(Signature)

(Signature)

\_\_\_\_\_

\_\_\_\_\_

Name

Name

Official Address

(Designation with Bank stamp)

Attorney as per Power of Attorney

No. \_\_\_\_\_

Date \_\_\_\_\_

FORM OF BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT  
(On Non-Judicial Stamp Paper)  
(Applicable to Bid of value more than Rs.25 lakh)

To  
Odisha Power Generation Corporation Ltd.,  
1b Thermal Power Station,  
At/Po-Banharpali,  
Dist-Jharsuguda-768 234.

In consideration of the Odisha Power Generation Corporation Ltd. (1b Thermal Power Station) having registered office at 7<sup>th</sup> Floor, Module – A, Fortune Towers, Chandrasekharpur, Bhubaneswar-751 023 (hereinafter called the “Owner / OPGC” which expression shall unless repugnant to the subject or context include its administrators successors and assigns) having agreed to the price, terms and conditions of Tender and Letter of Intent bearing no. \_\_\_\_\_ dated \_\_\_\_\_ issued which has been unequivocally accepted by the Contractor M/s \_\_\_\_\_ for the work of \_\_\_\_\_ (hereinafter called the said contract) to accept a performance Guarantee as herein provided for Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only ) from a Nationalized bank in lieu of the security deposit to be made by the contractor or in lieu of the deduction to be made from the contractor’s bills, for the due fulfillment of the terms and conditions contained in the said contract by the said contractor, We the \_\_\_\_\_ Bank (hereinafter referred to as “the said Bank” and having our registered office at \_\_\_\_\_ do hereby undertake and agree to indemnify and keep indemnified OPGC from time to time to the extent of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) against any loss or damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by OPGC by reason of any breach or breaches by the said Contractor of any of the terms and conditions contained in the said contract and to unconditionally pay the amount claimed by OPGC on demand and without demur to the extent aforesaid.

2. We \_\_\_\_\_ Bank, further agree that OPGC shall be the sole judge of and as to whether the said Contractor has committed any breach or breaches of any of the terms and conditions of the said Contract and the extent of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by OPGC on account thereof and the decision of OPGC that the said contractor has Committed such breach or breaches and as to the amount or amount of loss, damage, costs charges and expenses caused to or suffered by or that may be caused to or suffered by OPGC from time to time shall be final and binding on us.

3. We the said Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and till all the dues of OPGC under the said Contract or by virtue of any of the terms and conditions governing the said Contract have been fully and properly carried out by the said contractor and accordingly discharges this Guarantee, subject, however, that OPGC shall have no claim under the Guarantee after 90 (Ninety) days from the date of expiry of the Defects Liability period as provided in the said Contract i.e. \_\_\_\_\_ (Date) or from the date of cancellation of the said contract, as the case may be, unless a notice of the claim under this Guarantee has been served on the Bank before the expiry of the said period in which case the same shall be enforceable against the Bank notwithstanding the fact, that the same is enforced after the expiry of the said period.

4. OPGC shall have the full liberty without affecting in any way the liability of the Bank under this Guarantee or indemnity, from time to time to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor or to postpone for any time and from time to time any of the powers exercisable by it against the said Contractor and either to enforce or forbear from enforcing any of the terms and conditions governing the said Contract and either securities available to OPGC and the said Bank shall not be released from its liability under these presents by any exercise by OPGC or of the liberty with reference to the matters aforesaid or by reason of time being given to the said Contractor or any other forbearance, act or omission on the part of OPGC or any indulgence by OPGC to the said Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so releasing the Bank from its such liability

5. It shall not be necessary for OPGC to proceed against the Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank notwithstanding any security, which OPGC may have retained or obtained from the Contractor shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.

6. We, the said Bank, lastly undertake not to revoke this Guarantee during its currency except with the prior consent of OPGC in writing and agree that any change in the Constitution of the said Contractor or the said Bank shall not discharge our liability hereunder. If any further extension of this Guarantee is required the same shall be extended to such required periods on receiving instructions from M/s \_\_\_\_\_ on whose behalf this guarantee is issued.

In presence of  
WITNESS

- 1.
- 2.

For and on behalf of (Bank)

Signature \_\_\_\_\_

Name & Designation \_\_\_\_\_

Authorisation No. \_\_\_\_\_

Date and Place \_\_\_\_\_

Bank's Seal \_\_\_\_\_

NOTES:

FOR PROPRIETARY CONCERNS:

Shri \_\_\_\_\_ S/o \_\_\_\_\_ resident of \_\_\_\_\_ carrying on business under the name and style of \_\_\_\_\_ at \_\_\_\_\_ (hereinafter called "the said Contractor" which expression shall unless the context requires otherwise include his heirs, executors, administrators and legal representatives).

FOR PARTNERSHIP CONCERNS

M/s \_\_\_\_\_ a partnership firm with its office \_\_\_\_\_ (hereinafter called "the said Contractor" which expression shall unless the context requires otherwise include their heirs, executors, administrators and legal representatives); the names of their partners being (I) Shri \_\_\_\_\_ S/o \_\_\_\_\_ (II) Shri \_\_\_\_\_ S/o \_\_\_\_\_ etc.

FOR COMPANIES

M/s \_\_\_\_\_ a company registered under the Companies Act, 1956 and having its registered office in the state of \_\_\_\_\_ (hereinafter called "the said Contractor" which expression shall unless the context requires otherwise include its administrators, successors and assigns).

PERFORMANCE BANK GUARANTEE FOR LUMPSUM ADVANCE  
(On Non-Judicial Stamp Paper of Appropriate Value)

To  
Odisha Power Generation Corporation Ltd.,  
1b Thermal Power Station,  
At/Po-Banharpali,  
Dist-Jharsuguda-768 234.

In consideration of the Odisha Power Generation Corporation Ltd. (1b Thermal Power Station) having registered office at 7<sup>th</sup> Floor, Module – A, Fortune Towers, Chandrasekharpur, Bhubaneswar-751 023 (hereinafter called the "Owner" which expression shall unless repugnant to the subject or context include its successors and assigns) having agreed under the terms and conditions of the Letter of Intent bearing no. \_\_\_\_\_ dated \_\_\_\_\_ issued by the Owner which has been unequivocally accepted by \_\_\_\_\_ in connection with the work of \_\_\_\_\_ Specification No. .... (Hereinafter called the said contract) to make at the request of the Contractor a lump sum advance of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) for utilizing it for the purpose of the Contract on his furnishing a guarantee acceptable to the Owner. We, \_\_\_\_\_ Bank incorporated under \_\_\_\_\_ and having one of our branches at \_\_\_\_\_ (hereinafter referred to as "the said Bank" do hereby guarantee the due recovery by the Owner of the said advance with interest thereon as provided according to the terms and conditions of the Contract. If the said Contract fails to utilise the said advance for the purpose of the contract and / or the said advance together with interest thereon as aforesaid is not fully recovered by the Owner, we, \_\_\_\_\_ Bank here-by unconditionally and irrevocably undertake to pay to the owner on demand and without demur to the extent of the said sum of Rs. \_\_\_\_\_ /- (Rupees \_\_\_\_\_) only any claim made by the Owner on us for the loss or damage caused to or suffered by the owner by reason of the owner not being able to recover in full the said sum of Rs. \_\_\_\_\_ /- (Rupees \_\_\_\_\_) only with interest as aforesaid.

2. We, \_\_\_\_\_ Bank further agree that the Owner shall be the sole judge of and as to whether the said Contractor has not utilized the said advance or any part thereof for the purpose of the Contract and the extent of loss or damage caused to or suffered by the Owner on account of the said contractor as to the amount or amounts of loss or damage caused to or suffered by the Owner shall be final and binding on us.

3. We, the said Bank, further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and till the said advance with interest has been fully recovered and its claim satisfied or discharged and till Owner certifies that the said advance with interest has been fully recovered from the said Contractor, and accordingly shall have no claim under this Guarantee after 30 (thirty) days from the date of satisfactory completion of the said contract ( as per the mutually agreed work schedule ) i.e. up to and inclusive of (date) unless a notice of the claim under this Guarantee has been served on the bank before the expiry of the said period i.e. \_\_\_\_\_ (date) in which case the same shall be enforceable against the Bank notwithstanding the fact that the same is enforced after the expiry of the said period.

4. The owner shall have the full liberty without effecting in any way the liability of the Bank under this Guarantee of Indemnity, from time to time vary any of the terms and conditions of the said Contract or the advance or to extend time of performance by the said Contractor or to postpone for any time and from time to time any of the powers exercised by it against the said contractor and either to enforce or forbear from enforcing any of the terms and conditions governing the said Contract or the advance available to the owner and the said Bank shall not be released from its liability under these presents by any exercise by the Owner of the liberty with reference to the matters aforesaid or by reasons of time being given to the said contractor or any other forbearance act or omission on the part of the owner or any indulgence by the owner to the said Contractor on any other matter or thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of so releasing the Bank from its such liability.

5. It shall not be necessary for the Owner to proceed against the Contractor before proceeding against the Bank and the Guarantee here in contained shall be enforceable against the Bank not with standing any security, which the Owner may have retained or obtained from the contractor shall at the time when proceedings are taken the Bank hereunder be outstanding or unrealized.

6. We, the said Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the Owner in writing and agree that any change in the Constitution of the said contractor or the said Bank shall not discharge our liability hereunder.

If any further extension of this Guarantee is required the same shall be extended to such required periods on receiving instructions from M/s \_\_\_\_\_ on whose behalf this Guarantee is issued.

Notwithstanding anything contained herein before our liability under this Guarantee is restricted to Rs. \_\_\_\_\_/- (Rupees \_\_\_\_\_ only) together with interest. Our undertaking shall commence from the date of execution and shall remain in force up to \_\_\_\_\_ Dated this \_\_\_\_\_ day of \_\_\_\_\_

In presence of

For and on behalf of (the Bank)

WITNESS

Signature \_\_\_\_\_

1.

Name \_\_\_\_\_

2.

Designation \_\_\_\_\_

Authorisation No \_\_\_\_\_

Seal of the Bank \_\_\_\_\_

The above guarantee is accepted by the Owner

For and On behalf of the  
lb Thermal Power Station

NOTES

***For Proprietary Concerns***

Shri \_\_\_\_\_ Son of \_\_\_\_\_  
Resident of \_\_\_\_\_ carrying on business under the name and style of \_\_\_\_\_ at \_\_\_\_\_ (hereinafter called "the said Contractor" which expression shall unless the context requires otherwise include his heirs, executors, administrators and legal representatives) .

***For Partnership Concerns***

M/s \_\_\_\_\_ a partnership firm with its office \_\_\_\_\_ (hereinafter called " the said Contractor" which expression shall unless the context requires otherwise include their heirs, executors, administrators and legal representatives) the name of their partners being (I) Shri \_\_\_\_\_ S/o \_\_\_\_\_ (ii) Shri \_\_\_\_\_

S/o \_\_\_\_\_ etc.

***For Companies***

M/s \_\_\_\_\_ a company under the Companies Act 1956 and having its registered office \_\_\_\_\_ in the State of \_\_\_\_\_ (hereinafter called "the said Contractor" which expression shall unless the context requires otherwise include its administrators, successors and assigns).





**ODISHA POWER GENERATION CORPORATION LIMITED (OPGC)**

**IB THERMAL POWER STATION**

**BANAHARPALI, JHARSUGUDA, ODISHA**

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**EM-4/61 (Part-B)**

**SAFETY, HEALTH & ENVIRONMENT (SHE)**

**RULES & REGULATIONS FOR CONTRACTORS**

**Revision- 01, Dtd 26.08.2019**

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## 1. INTRODUCTION

The purpose of this standard is to specify the requirements for managing safety when contracting work. This safety standard is based on the best practices for managing contractor safety in the utility industry. CONTRACTOR shall perform all work required by his Contract in a safe, healthy and environment friendly manner. During work, the CONTRACTOR is directly responsible for; shall comply with; and enforce all laws, rules; regulations of OPGC are relevant to the work being performed. CONTRACTOR will manage all subcontractors on site and will be accountable for subcontractor performance with respect to Environment, Health & Safety and (EHS).

Prior to the start of any work, the Contractor shall survey and plan the work. The contractor shall review Contractor's SHE Program and submit their safety plan to the OPGC's concerned Project Manager.

## 2. SCOPE

This program lays down the SHE related requirements and guidelines and provides advice based on local experience and legal requirements for safe working practices for all activities of the project involved with high risks. This SHE management program also applies to all personnel involved in Company projects. All parties are required to comply with this safety program as well as all National, State and Local regulatory guidelines.

## 3. OBJECTIVE

This procedure has been developed to assist both OPGC and Contractor Managements to control these hazards and ensure that high standards of safety have been maintained at OPGC's work site. The procedure shall be provided at a minimum to all high contractors with other bid documents. Contractors participating in the bidding shall go through the procedure carefully & submit an undertaking in the format given as in **Appendix-2**.

## 4. ENVIRONMENT, HEALTH & SAFETY POLICY OF OPGC:

Contractor (s) shall strictly follow OPGC EHS Policy guidelines. The spirit of the EHS Policy shall be reflected during contract execution by implementing the minimum EHS expectation of OPGC as declared in the Policy objective. Refer OPGC EHS Policy as enclosed as enclosure.

## 5. RESPONSIBILITIES

**OPGC Project Manager** - OPGC personnel directly responsible for the project work execution and implementation of applicable EHS rules and regulations on the project involved.

**OPGC Site Safety Manager** - Person designated to coordinate and support Project Managers to enforce safety policies of OPGC on the project.

**Contractor's Site Manager** - Person designated as the senior site manager by the Contractor chosen for the project.

**Contractor's Safety Manager/Officer/Supervisor** - person designated to carry out, monitor, and enforce agreed safety rules and regulations, policies of the Contractor on the project, in compliance with the project agreements OPGC policies.

**Supervisor** - Lead field labor supervisor or foreman for the Contractor/Subcontractors.

**Personnel** – Individuals performing the labor tasks for the Contractor/Subcontractors.

## **6. DEFINITIONS AND INTERPRETATIONS**

In the Contract, the following words and phrases have the meaning hereby assigned to them, except where the context otherwise requires.

**Contractor** – A person or company contracting with OPGC to provide services.

**Sub-Contractor** - A person or company employed by the prime or general contractor who is contracting with OPGC to provide r services.

**Contractor Pre-qualification** – This process is an assessment of contractors wishing to work OPGC.

The process is independent of individual contracts and is carried out to ensure that only contractors with acceptable past safety performance and appropriate safety programs are awarded work.

**Contract Administrator** – An OPGC person assigned responsibility for administering contracts, including preparation of the contract tender or request for proposal (RFP) documents, arranging pre-bid meetings, coordinating the bid/ proposal evaluation process and recommending the awarding of the contract.

**Project Manager** – An OPGC person who is given the overall responsibility and authority for the successful completion of a project. His/ her responsibilities include the assignment of the contract monitor, conducting the pre-construction site meeting, resolving contractor safety performance issues, final inspection of the work, conducting the closing meeting with the contractor and completing the contractor evaluation.

**Contract Monitor (Engineer In Charge/EIC)** – An OPGC person who reports to the Project Manager and is responsible for monitoring the contractor's safety performance and providing feedback to the Project Manager. The Contract Monitor will compare the contractor's work and work methods with the standards and expectations defined in the contract.

**OPGC Contact Person**- The EIC of the Contract is termed as the OPGC contact person for that contract only.

**Contractor Safety Orientation** – A meeting at the start of each contract involving all contractor employees to discuss AES safety standards and the specific safety requirements for the contracted work.

**High-Risk Work** – Refer OPGC's list of high-risk activities (Appendices-1). Work that exposes people to hazards that, should an incident occur, may result in a lost time injury (LTI), fatality or permanent disability.

**Low-Risk Work** – Work that exposes contractor’s employees to hazards that, should an incident occur, may result in a minor injury but not a lost time injury; examples include but are not limited to, training, consulting, office equipment maintenance, office cleaning.

**Hazard Assessment** – An assessment of the contracted work to identify and document the hazards inherent to the work site and facility. The hazard assessment is provided to the bidders as part of the bid/request for proposal documents.

**Daily Job Safety Plan** – A process that individual employees and working crews must follow to assess and document the critical safety issues pertaining to the day’s work. That can be JSA/Method Statement/SOP/SMP

**Shall/Will:** The word 'shall' be understood as mandatory

**Should:** The word 'should' be understood as strongly recommended

**May:** The word 'may' be understood as indicating a possible course of action

**Restricted Areas:** A Restricted area is defined as that area over which OPGC exercise control of all movements and operations and where entry is granted only with permission from OPGC.

**Hazardous Areas:** An area in which there exists or may exist flammable or other hazardous atmosphere.

## **7. PROGRAM REQUIREMENT & IMPORTANT GENERAL SAFETY**

### **INSTRUCTIONS:**

The goal of this program is to complete the project with zero incidents. This goal can only be achieved when everyone commits to error-free performance. The commitment to achieve this goal will result in increased productivity and the prevention of job-related losses.

Active participation and personal cooperation of all supervision and employees, and a positive coordination of their efforts carrying out the following:

- Stop Work Authority program. It is both the right and responsibility of all EMPLOYEES, be they OWNER, CONTRATOR or SUB-CONTRACTOR to stop any work activity that currently has or has the potential to develop into an unsafe situation. Work must stop immediately after an unsafe situation is identified, regardless of the job’s priority or importance. Work shall resume only when the unsafe situation has been remediated. Never hesitate to stop work – it doesn’t matter if it’s later determined that invoking the work stoppage was an error. A person will not suffer retribution or negative consequences of any sort for stopping work for safety reasons. Establish and maintain a system for early detection and correction of unsafe practices and conditions.
- Contractors on OPGC site must obey OPGC safety rules, signs and instructions.
- All contract employees have a responsibility for their own safety and the safety of others.

- The Contractor shall not charge or back charge OPGC for any delays, work stoppage, or scheduling issues resulting from enforcement of the OPGC Safety Rules.
- Contractors are responsible for establishing control measures to protect employees under their control from exposure to hazards.
- Contractor shall furnish, erect, and maintain warning notices, signs, signals, lights, protective guards, enclosures, platforms, barricades and other devices as necessary to adequately protect all personnel on site; including but not limited to employees, subcontractors, other contractors, OPGC people and the public.
- If the scope of work requires the removal of existing guardrails, handrails, floor grating or other physical barrier, contractor shall have written permission from OPGC Project Manager/EIC. Barriers that have been removed to facilitate work must be properly replaced as soon as the work is completed. Unguarded openings must be attended always.
- If covers are required to protect floor openings, excavations, trenches, pits, then the contractor must ensure the cover can support, without failure, at least twice the weight of any employee, equipment and/or material that may be imposed on the cover at one time.
- Chemicals must be handled in authorized manner. Handling of chemical must be carried in accordance with Material Safety Data Sheet (MSDS) regulation and EIC /Officer In charge/supervisor's guideline.
- Establish and implement safety education programs designed to stimulate and maintain the interest and active participation of all personnel involved with the project. Such programs should include:
  - Safety meetings and safety communications;
  - Use of incident trends and causal analysis to preclude reoccurrence of similar incidents;
  - Use of proper work procedures, personal protective equipment, and mechanical guards;
- Safety instruction to individual employees and group safety training programs; and managing records, incidents, claims, losses, and development of incidence/loss experience summaries.

## **ESSENTIAL DUTIES:**

- (i) Use effective verbal and written communication skills.
- (ii) Listen to directions and suggestions from Project Manager/EIC/Supervisor/EHS officers regarding safe and proper work practices.
- (iii) Work up to a 12-hour shift. Never work beyond 12 hours unless otherwise OPGC Project Manager/EIC allows to do so.
- (iv) Climb and maintain balance on steel framework, stairs, ladders and scaffolds.

- (v) Identify workplace safety hazards and take all necessary corrective action to eliminate or minimize them.
- (vi) Understand and respond appropriately to all safety hazards and warning devices (i.e. back-up alarms, smell of smoke, different colored warning tags, warning sirens).
- (vii) Understand and implement lockout/tag out procedures in a safe manner.
- (viii) Participate in the jobsite Safety meetings as required.

## **8. OPGC SAFETY CARDINAL RULES/ZERO TOLERANCE ISSUES:**

“Cardinal Safety Rules” are OPGC rules that, if violated, have a high probability of resulting in a serious adverse outcome. Contractors must ensure that employees working under their control do not violate these Cardinal Safety Rules. Failure to comply with Cardinal Safety Rules will result in immediate corrective action for the employee and, if OPGC determines it appropriate, the Contractor, up to and including termination from the current job and removal from consideration for future OPGC contracts. The OPGC Cardinal Safety Rules are:

- (i) Personal Protective Equipment (PPEs) as applicable to a given task must be used at all times.
- (ii) All high or medium risk jobs must be performed with valid Job Safety Analysis (JSA) followed by pre-job briefing.
- (iii) No entry to ITPS plant premise or no permission to do any work at ITPS under the influence of alcohol or drugs.
- (iv) Do not walk or work under a suspended load & use only tested & certified lifting tools & tackles on the job.
- (v) Do not handle and operate equipments unless authorized & licensed to do so.
- (vi) Do not tamper or remove guards, hand rails and other safety systems unless authorized to do so.
- (vii) Ensure energy isolations, lock-out-tag-out (LOTO) and strictly follow work permit instructions.
- (viii) Never work of & above 06 feet (1.8 meters) without fall protection.
- (ix) All injuries & near misses must be reported.
- (x) Illegal handling or disposal of hazardous materials not allowed.

*(Note: - Deviation/lapses from the above cardinal rules but not limited to these are treated as major safety violation.)*

## **9. HYGIENIE, GENERAL PRACTICES / UTILITIES FOR REST & FOOD INTAKE:**

The Contractor shall ensure that its personnel shall maintain the highest standards of hygiene in connection with the performances of any contract for works or services it may have with OPGC.

The only safe source of drinking water is a drinking fountain/taps. Other sources shall not be used.



- Do not use air, gas, water, electricity, fuel or other site facilities/utilities unless the source of supply has been designated & authorized by OPGC.
- Contractor personnel must not enter any building or area not required by their work. Wandering about the plant is prohibited.
- Contractor personnel are permitted for taking food in designated places either in OPGC Canteen or in any other designated site.
- Contractors shall take rest in designated rest sites. Taking rest in work places is prohibited.
- Taking rest & food in unauthorized sites will be treated safety rule violation;

## **11. SITE ENTRY PROCEDURE**

The Contractor must comply at all times with the requirements of OPGC Site Security rules. The contractor for all personnel requiring admission to the Site, a Security gate pass request must be processed in advance.

**11.1.**“Gate Entry Pass” will be issued by the OPGC site administration and contractor person/people need to proceed to the OPGC contact person directly to follow the safety induction procedures. Gate Pass will be issued after site safety induction/training and fulfillment of other statutory requirements and duly certified by EIC on the gate pass entry request application. After imparting safety trainings, the gate passes will be stamped/ marked as ‘Safety training imparted’. No contractor and their employees shall be allowed to enter inside the Plant for carrying out jobs unless the safety training has been given to them and duly stamped as above

OPGC may issue to the Gate Entry Passes” for the admission of contractors and “Visitor Gate Passes” to the normal visitors.

These passes are to be returned on the demand of OPGC and in any case at the completion of the contract.

All Contractors’ staff must enter and leave the site via the Security Gate.

All Contractors’ staff will have to produce their gate entry pass if asked by Security when entering AND leaving site. .

If any of the Contractor’s or Sub-contractor’s staff is found unjustifiably outside the working areas, then they will be removed from Site.

Ensure your name is recorded on the appropriate Contractors daily attendance page.

**11.2.** The contractor shall furnish to EIC the list of materials such as lifting tools and tackles, power tools, T &Ps (testing status to be maintained), gas cylinders, and any hazardous chemicals along with MSDS to be mobilized before commencement of work. All these materials shall be checked at Plant gate by Security, EIC & EHS for no objection. Contractor at no situation shall enter untested or substandard or

unapproved tools, equipment or vehicles. Tested and approved tools, equipment & vehicles only can be entered into Plant Premises. Unauthorized entry of hazardous substance is strictly prohibited from Plant gate. Contractor materials shall be entered inside Plant with valid Security Certification on recommendation of EIC. Violation of the OPGC site entry rule shall be treated major safety violation. Strong disciplinary step will be booked against the violation.

## **12. PROJECT SAFETY PLAN & DAILY JOB SAFETY PLAN:**

After knowing the detail hazard information of high-risk jobs, contractor shall provide a comprehensive project safety plan fulfilling minimum Safety expectation of OPGC. This is applicable for construction of new projects or prolonged outages (> 20 days) or complex works.

Daily Job Safety plan shall be prepared by the Contractor in advance before commencement of a particular day's job in consultation to concerned OPGC EIC. Work Permits, Resource Planning & JSA all together can be considered as daily job safety plan.

The project safety plan & its suitability/ appropriateness for the Contract job shall be verified & approved by the Project Manager. This is one of the important Contractor's job planning activity.

## **13. HEALTH & FITNESS**

The Contractor shall ensure that all its employees engaged in the work are medically fit and healthy. Any medical disabilities including such disabilities which Contractor may consider will not adversely influence the employee's ability to perform his role in the work should be reported to OPGC prior to the start of the Work. Contractor shall provide health certificates in compliance with Odisha Factory rule for their personnel at the time of applying gate entry pass. No contractor personnel will be issued gate entry pass without the submission of health & fitness certificate in the prescribed form.

Contractors will closely monitor the requirement of health checkup at a maximum interval of one year or less for their employees in line with Odisha Factory Rules and based on their employees prevailing health condition.

## **14. WORK PERMIT**

Work Permits will be issued in accordance to OPGC PTW procedures before performing any activity/function such as entry inside confined space, inside tank/vessel, excavation, work involving radiation sources etc, work at height, working with machineries & equipment's. Specific permit for hot work e.g. cutting, welding, grinding, chipping or sand blasting shall also be issued. During such activities the contractor shall ensure that a fire watch is deployed, and the person must clearly understand his duty & responsibility. Project manager/ EIC or his authorized representative supervising the job shall be responsible for obtaining & clearing the permit with the knowledge and consent of the contractor or his representative. It shall be the responsibility of the contractor to see that none of his employees start the job until, an appropriate permit has been issued with proper isolations

followed by Pre-job briefing and job safety awareness by the EIC and the contractor or his safety coordinator.

## **15. HOUSE KEEPING & CLEAN SITE**

The Contractor shall ensure that the site of the works is kept free of surplus, waste or redundant materials or items and shall maintain a clean and tidy site throughout the duration of the work. Access ways and emergency exits shall be kept clear from obstruction at all times. Combustible scrap and debris shall be removed at regular intervals during the course of project. All solvents shall be kept in approved, properly labeled containers. Contractors' bill payment will be held up unless otherwise housekeeping of their job site is maintained.

## **16. SITE OFFICE AND STORES**

The Contractor will be allowed a working area on the site which shall be maintained by the Contractor for his site offices etc and on completion of the contract shall reinstate this area at his own expense, to the satisfaction of OPGC. The Contractor will also be given access to any reasonable area around the site.

## **17. SAFETY EQUIPMENT**

The Contractor shall, at its own expense, provide adequate safety equipment of an approved type and amount as is required for the execution of the contract works. The Contractor shall maintain this equipment in a professional manner as dictated by legal and industry standards. In addition, the Contractor shall keep up-to-date records of all said equipment.

### **17.1. PROTECTIVE PERSONNEL CLOTHING AND EQUIPMENT**

The Contractor shall, at its own expense, supply its personnel employed at the site of the works with adequate protective personal clothing and other protective equipment which shall be maintained in good condition or replaced, and shall be worn on all relevant occasions as specified by OPGC and good practice. It is the responsibility of the contractor to provide adequate instruction/training for the correct usage and maintenance of these equipment & PPEs, inspection & suitable storage of their Personal Protective Equipment. The Contractor is also responsible for ensuring that the PPE is used and maintained in accordance with the manufacturer's specifications.

**In the event that the Contractor fails to supply or provide adequate safety equipment or PPE, OPGC reserves the right to issue such safety equipment/PPE to the workforce provided by the Contractor and back charge the same from the Contractor with one and half times of the cost of item as administration fee and penalty for every item issued.**

PPEs shall meet the following minimum standard and shall be maintained in good condition to give desired level of protection to wearer. Contractor has to assess the quantity of PPE required considering the job hazard and nature of job.

**SPECIFICATION & SELECTION OF PPES:**

**A. SAFETY HELMET/HARD HAT-**

IS/ CE/ ANSI certified

Material- HDPE and ABS Plastic

Colour- **DARK YELLOW** with name of contractor mentioned in front portion.

All safety helmets shall have textile chin strap, padded head band & of Plastic or Cotton cradle.

Make & Brand- Karam/ MSA/Venus/ Udyogi/ or any other equivalent brand approved by OPGC EHS

**B. SAFETY GLASS/ SAFETY GOGGLES - IS/CE/ANSI certified**

Polycarbonate, UV protected, Anti scratch, Anti fog

Colour- Colourless for all time and strictly in low light areas and night time. Grey may be used in day time within areas with adequate visibility.

Make & Brand- 3M/ Uvex/ Udyogi UD 61/ Karam-ES005/Venus- G-203-CHC or any other equivalent brand approved by OPGC EHS

Prescription glasses users shall use cover the glass.

**C. SAFETY SHOE:**

IS/ CE/ ANSI certified

Leather with Steel Toe

Anti-Static, Anti Skit, Anti Shock, Oil & Acid resistant with shock absorber

Make & Brand- Bata / Liberty/ Jaypee 1217/ SG Security- Concord or Black night/ Udyogi-Tango, Mallcom- Tiger/ ACME Fabrick- Atom/ or any reputed brand approved by OPGC EHS

**D. DUST MASK-**

IS/ CE/ ANSI certified

**Venus V4 20 SLV- FFP2/ 3M with Fine particle filtration efficiency greater than 94%.**

**E. EAR PLUG/EAR SEAL/EAR MUFF-**

IS/CE/ ANSI certified

3M/ Venus/ Karam/ Equivalent

**F. HAND GLOVES -**

IS/ / ANSI certified

Material (Heavy Duty)- Finger Chome leather, 05 fingers provision

Material (Light Duty)- PVC dotted type of reputed brand

Make- Kaybee/ Udyogi/ Karam/ any reputed brand

Besides the above, for electrical, chemical handling or for any other special type activity, appropriate rating IS/CE/ANSI certified hand gloves shall be used.

**G. WELDING FACE SHIELD ATTACHABLE TO HELMET -**

IS/ CE/ ANSI certified /UV & IR protected, Superior quality

Make- Karam -ES 71, Unicare, Udyogi/ any other reputed brand

**H. FALL ARREST SYSTEMS (SAFETY HARNESS, ANCHORS, FALL ARRESTORS, LIFELINES ETC)**

Shall be IS/EN/ ANSI Certified with CE marking. Make- Karam/ Udyogi/MSA or any reputed brand finally approved by OPGC Safety Officer.

Life lines shall be EN 795, Class B of Karam Polyester webbing type or Polypropylene 16mm dia synthetic rope or 8mm standard wire rope 5000lbs (22KN) rating.

Refer section-41 (Fall Protection) for details.

Rest of the PPEs as appropriate to a particular hazard or as mentioned in MSDS (Material Safety Data Sheet) shall be provided to the persons engaged for the job by the Contractor in accordance with relevant BIS/ANSI/EN standards.

**17.2. PPE ZONES & PPE EXCUSE ZONES**

SI No	PPE type	Area of Use	Excuse areas/locations
1	Helmet	Compulsory from Plant Gate. Two-wheeler riders & pillion riders must use crash helmet while driving	Offices, Office Corridors, Control rooms, Canteen, hospital & Service Building front while people are with no work or with office work activities with no risk to head from external source.
		Compulsory while working in other facilities outside plant viz, Ubuda Coal loading point, Ash Pond, Ash brick plant, Sewage Treatment Plant and Colony premise.	
2	Safety Shoe	Compulsory from Plant Gate	Places other than the areas specified.
		Compulsory while working in other	
		Facilities outside plant viz, Ubuda Coal loading point, Ash Pond, Ash brick plant, Sewage Treatment Plant and Colony premise.	
3	Safety glass	Compulsory in all work areas	Main road from

		Compulsory while working in other facilities outside plant viz, Ubuda Coal loading point, Ash Pond, Ash brick plant, Sewage Treatment Plant and Colony premise.	Plant Gate to CHP Track hopper,  Other roads except the roads inside Boiler area, Offices, Office Corridors, Control rooms, Canteen, Hospital while people are with no work or with office work activities with no risk to eye from external source.
4	Ear Plug/Seal/ Ear Muff	In all high noise areas greater than noise level 85 dBA	Places other than high noise areas
5	Hand Gloves	Compulsory during all field works, material handling, working where risk of injury to hand prevails	Office activities
6	Dust mask	In all dust generating areas (ESP hopper cleaning, Dry Ash handling, Cleaning, Sweeping, Soil excavation, Asbestos/Asbestos containing material handling, Coal Handling Plant, Painting work, visible fugitive emission in Boiler and other areas etc)	Excuse for non-dust generating Areas
7	Welding face shield	During welding operation only	Non-Specified activities
8	Cutting glass	During cutting operation only	
9	Chemical respirators	During fuming Chemical handling or hazardous gas handling. Atmosphere with Chemical fumes, hazardous gas fumes. During welding operation.	
10	Chemical Suit/Apron	During hazardous Chemical/ substance handling, Lead acid Battery maintenance	
11	PVC/Rubber hand gloves	During hazardous chemical/substance/waste handling & Lead Acid battery maintenance.	

12	Chemical Goggle/ Face shield	During hazardous chemical/substance/waste handling & Lead Acid battery maintenance.
13	Encapsulated suit for Chlorine	In Chlorine atmosphere greater than 50 PPM
14	Self-Contained breathing apparatus	Toxic gas atmosphere (Chlorine, Ammonia, Carbon monoxide, Acid fumes) where chemical respirator is not recommended, Confined Space with hazardous fume or gases
15	Arc flash Suit with boot and hood of suitable rating	During Electric Panel Breaker & MCC modules Operation
16	Electrical hand gloves of suitable rating	Working with live electrical power sources
17	High temperature hand gloves & jacket	Working with Steam lines
18	Hard toe rubber gumboot	Working in Mud, Sludge, Water, dense wild grass areas, other place taking Safety Officer's approval
19	Lead laminated coverall	Working with radiographic substances
20	Reflected jacket	As advised by OPGC Project Manager/EHS
21	Cotton Boiler Suit	Working inside Boiler / and as advised by OPGC Project Manager/EHS
22	Full body harness	Working above 5.9 ft without fall protection
23	Welding jacket/suit & hand gloves	Standard flame-resistant welding jacket/suit & heat resistant leather hand gloves

**17.3. CONTROL ON PPE:** The samples of PPE to be used by contractor at site shall be submitted to OPGC Safety Officer in a d v a n c e for approval. On approval, the Safety officer will retain the sample. The approved quality PPE (Make/Brand and colour) shall be used by contractor at worksite

throughout the job. Any unauthorized change of model/ brand/ colour of PPE from the sample shall be considered as Safety violation and may lead to disciplinary action. On completion of work, the sample shall be returned to the contractor. The specification given above for different types of general PPEs is minimum quality standard. Contractors are free to provide better quality PPEs but such PPEs quality shall be approved from OPGC Safety Officer prior to use inside OPGC premises.

## **18. TRAINING**

### **18.1. SAFETY ORIENTATION**

The Contractor shall ensure that all its personnel have been given the necessary safety and job related training required by OPGC regulations and good practice prior to starting work.

Contractors will be responsible for providing their employees and any subcontract employee with all safety information provided to it by OPGC including, but not limited to:

Project-specific occupational health and safety expectations;

Exposure to atmospheric health, serious physical or chemical hazards; and Precautionary measures and procedures for performing the work.

### **18.2. PRE- JOB BRIEFINGS**

Contractors shall conduct pre-job briefings and toolbox talk/ safety talks with employees under their control prior to work each day. Additional job briefings shall be held if significant changes occur during the course of the work that might affect the safety of the employees.

## **19. COMPETENCY OF CONTRACT EMPLOYEES.**

Contractor shall assign competent employees as per the requirement of the job. Supervisors should be so qualified that he can clearly communicate with his team members. Besides, Supervisors shall be able to communicate in English. All high skilled & semiskilled employees must have job specific competence. OPGC will evaluate/verify competence and will reject employees who are not found with inadequate competency.

## **20. RESTRICTED AREAS**

All Contractors must receive authorization from the OPGC Contact Person before performing work in areas posted “DANGEROUS” or “HAZARDOUS” or “RESTRICTED” or some other warning signs. Contractors shall install warning tape for areas that require additional warning because of the work being performed there.

## **21. ALCOHOL AND DRUGS**

The Contractor shall ensure that its personnel do not at any time, during the performance of the work, partake of or be under the influence of any alcohol, drug or other intoxicating substance, while on duty, other than for bonafide medical reasons certified by qualified medical practitioner. Person found with violation of this rule will be immediately removed out of OPGC site and appropriate disciplinary action will be imposed to the contractor.



## 22. DRIVING & PARKING

All heavy vehicles and other related machinery required in connection with the work shall be fit for purpose, prior to and during the period of the work.

The Contractor shall ensure that only permitted personnel (by way of valid OPGC Driving License) are able to operate vehicles as per the classification of vehicle.

Contractor shall strictly comply with Speed limit of 20Kmph in all areas inside the plant for passenger vehicles. Heavy vehicles speed shall not exceed 10kmh at any point of time.

Parking of Vehicle is allowed only in the designated areas. Deliveries of materials, tools and/or equipment shall be coordinated with OPGC contact person and Security. After the delivery is made to the job site, the delivery vehicle must be parked in the designated parking area or must exit the job site.

Operators of mobile equipment must wear hard hats and safety glasses unless the equipment has a fully-enclosed cab. Seat belts must be worn when operating equipment. No Contractor shall permit earthmoving or compacting equipment that has an obstructed view to the rear to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level or unless a contractor-designated employee signals that it is safe to do so.

The Contractor undertakes to ensure that all drivers comply with the following basic rules:

- Always wear a seat belt;
- Always observe traffic rules, especially speed limits;
- Never drive after consuming alcohol/drugs;
- Never drive when very tired;
- Never overload the vehicle;
- Drive carefully;
- Be sure that before starting the vehicle the area near and under the vehicle/trailer is free from persons asleep.
- Vehicles are PUC certified with validity of expiry.
- Heavy vehicles are provided with fire extinguishers

**CRASH HELMET USE** – Riding two wheelers without the use of crash helmet from plant gate is prohibited. Contractor shall ensure, the crash helmet is all times being used by his people riding two-wheeler.

## **23. SAFETY MEETINGS**

The Contractor shall be responsible for maintaining and enhancing the safety awareness of its personnel including arranging its own safety meetings and participating as appropriate in safety meetings held by OPGC.

## **24. SAFETY INSPECTION / AUDIT**

The Contractor shall inspect the work site, equipment and tools on regular basis for compliance with these rules and regulations, and shall be obliged to take the necessary measures to correct unsafe conditions and unsafe practices.

The Contractor shall allow OPGC representative access at any time to plant, equipment, personnel and records when requested, to enable OPGC to inspect aspects of Contractor's operations relevant to safety and working environment.

## **25. REPORTING AND INVESTIGATION**

The Contractor shall report all near misses, incidents or accidents to OPGC contact person or central control room immediately.

The Contractor shall allow OPGC representative access at any time to plant, equipment, personnel and records when requested, to carry out formal investigations to find out the root causes and there by identify the required corrective actions to avoid the reoccurrences.

Upon completion of the Work under contract and/or on a monthly basis, whichever is more frequent, the Contractor shall prepare a summary report of its safety performance together with accident statistics and submit to OPGC.

## **26. INJURY MANAGEMENT**

Basic Life support facility (first aid) is available in OPGC. Contractor supervisors should be trained with first aid.

In case of an injury to some contract worker, please inform immediately available OPGC personnel or first aid center or central control room using **(phone 248/222/06645 222222)**.

Only trained and certified people shall provide first aid to the injured.

In case of doubt, injured personal shall not be moved or transport improper vehicles because it may complicate the injury more and some cases may lead to death.

Only Designated vehicles (Ambulance) shall be used for transportation of patients.

## **27. JOB SAFETY ANALYSIS (JSA) & JOB SAFETY BRIEFING (JSB)**

- The Contractor shall adopt the OPGC JSA & JSB practice/advice.
- The Contractor shall ensure that its supervisors and are fully conversant with OPGC JSA & JSB Process/ System.

- Under no circumstances must work be started until the appropriate JSA has been prepared and complete the Pre-job briefing.
- Competent person from the contractor and in-charge of the work from OPGC shall conduct the Pre-job briefing to all members.
- Competent person from the contractor and in-charge of the work from OPGC shall make available a copy of the safety document at site.
- Sample Job Safety analysis in prescribed format is furnished in appendix below.

## **28. EMERGENCY PROCEDURES**

The Contractor shall follow the OPGC Emergency Response Plan (ERP) during the period of the work and shall ensure that its staff are fully familiar with the actions to be taken in case of an emergency.

### **28.1. EMERGENCY PLANNING:**

Contractors must inform his people on the actions to be taken in the event of fire, explosion, personnel injuries or other emergencies. The contractor shall also keep abreast & acquaint of his persons regarding “Emergency Response Plan” of ITPS, assembly points, DO’s & DON’Ts during emergencies at regular intervals in monthly EHS meeting.

### **28.2. EVACUATION PROCEDURE:**

Identify the escape routes available to you before you commence work. Know the assembly points and directions to reach there in case of emergency.

When the emergency siren sounds, immediately leave the area by your nearest evacuation route to Emergency Assembly Point. If you are using power equipment or vehicles you must switch it off and make it safe before evacuating.

### ***DO NOT RUN AND DO NOT STOP TO COLLECT YOUR BELONGINGS.***

Report to the emergency assembly Points as per the instructions given on loud speakers/ public address system.

Obey instructions given by the OPGC contact person staff and assembly point coordinator.

Remain at the assembly point until instructed otherwise. Do not re-enter evacuated areas until the ‘**all clear**’ announcement is made by the Main Control Room.

Emergency Siren test is carried out every Saturday at 11:00 hours for two minutes and require no action.

### **28.3. REPORTING EMERGENCY:**

If you discover a fire, or any other serious incident/emergency phone **222/233/244** using the site telephones, this will connect you to the **Plant Main Control Room. Other**

<i>Emergency Contacts are-</i>	<i>Intercom</i>	<i>P&amp;T</i>
Fire Station	777	06645222257
Ambulance	277/248	06645222216

Give your name, location, and the details of the emergency. Follow any instructions given.

Only take emergency action if competent to do so, e.g. resuscitation, first aid, firefighting etc.

If safe to do so remain in the vicinity to give relevant information to the assistance when it arrives.

**Never** endanger **your** safety.

## **29. SAFETY SUPERVISOR**

If the numbers of contract workers are more than or equal to 50 (fifty), the Contractor shall be required to provide full time safety supervisor who will be responsible for ensuring the work is performed in accordance with the applicable safety requirements. For every 50(fifty) employees thereafter there shall be one Safety Supervisor/Officer. The On-Site Contractor Safety supervisor/officer(s) must have appropriate knowledge and skills, to ensure job site safety. For contractor worker less than 50(fifty) in job, the work supervisor can be utilized for safety supervision but in case the Project Manager find ineffective supervision, the contractor may be asked to provide independent safety supervisor.

Contractor Safety Supervisors should be qualified & experienced enough to deliver their assigned jobs effectively as per expectation of OPGC Project Manager/EIC & EHS. Before their work assignment, Contractor has to provide the list of their safety professional along with Safety In charge stating name, qualification, and experience & contact number to the Project Manager & EHS. The supervisors' competency will be evaluated by OPGC EHS prior to issue of gate pass. Only OPGC EHS competence certified Safety supervisors will be permitted for Safety Supervision at Contractor work sites.

Competency certification may vary depending on the nature & risk level involved with the contracted job. Contractors are not permitted to execute job without deployment of Safety Supervisor(s) as specified under this condition. Contractor Safety Supervisors performance will be monitored by OPGC EIC & EHS and the instruction & advice of OPGC shall be implemented promptly. OPGC will impose appropriate penalty if the Contractor fails to implement OPGC's safety expectation satisfactorily.

## **30. COMMUNICATIONS**

### **30.1. COMMUNICATIONS WITH OPGC**

The Project Manager or his authorized persons (EIC) and OPGC EHS shall be the point of communication for all EHS issues arising under this contract.

### **30.2. COORDINATION WITH OTHER OFFICIALS**

Contractor is fully responsible for coordinating with the proper authorities for moving heavy equipment, location of underground utilities, erecting barricades, traffic control, and other safety measures, unless otherwise specified.

### **30.3. COMMUNICATIONS WITH MEDIA RESTRICTED**

In the event of an accident or other condition on site, contractor shall not communicate with the media or any other entity without the expressed consent of OPGC.

### **31. EQUIPMENT CERTIFICATION**

The Contractor shall, at its own expense, ensure that all Portable electrical appliances, lifting equipment or other equipment required inspection or calibration has been inspected/ certified by an authorized and a liable inspection/certification authority/company prior to its use in the works.

### **32. RESTRICTED ARTICLES**

The Contractor shall be required to ensure that written approval signed by OPGC contact person has been obtained prior to taking dangerous items such as drugs, knives, radioactive, corrosive, poisonous or toxic materials onto OPGC premises.

### **33. PROHIBITED MATERIALS**

Contractor is strictly prohibited from using any of the following types of materials in performance of the work:

- Asbestos, Asbestos Containing Material (ACM).
- Mercury containing material.
- Surface coating systems that contain lead, cadmium, chromium, barium or mercury.

### **34. HAZARDOUS SUBSTANCES**

- Before delivery of any hazardous materials to OPGC site, Contractor shall provide Material Safety Data Sheets for all anticipated hazardous materials.
- All containers containing hazardous materials must be clearly labeled indicating their contents and appropriate hazard warning information.
- Hazardous materials must be stored in a secure location agreed with the **OPGC Contact person**.
- Don't dispose hazardous substances into drainage system and please inform any spill on the floor or on any personnel.

All operatives must understand the hazards of the materials they have to handle before use, some can be dangerous when used carelessly or when safeguards are overlooked. If in doubt, consult your own supervisor or OPGC Contact person for the relevant Hazard Data Sheet for specific health & safety information.

- Hazardous waste must not be dumped in general waste bins and the hazardous waste bins are provided around the plant premises.

### **35. SMOKING**

Plant premises are no smoking zone. Smoking is prohibited inside plant premises. Persons observed smoking inside Plant will be removed from job with immediate effect. Smoking is permitted inside declared/authorized smoking zone(s).

## **36. SUB CONTRACTOR**

The Contractor should ensure that sub-contractors shall be responsible for safety requirements as specified by OPGC. The Contractor shall regularly check sub Contractor's compliance with safety requirements

## **37. LIFTING MACHINERY AND EQUIPMENT**

### **37.1. LIFTING TACKLE (ALSO KNOWN AS LIFTING/ LOOSE GEAR)**

Any item used to connect a load to the lifting appliance, but which is not in itself, capable to lift, lower, transport or suspend the load, such as; Chain, wire rope and webbing slings, Rings, links, hooks, shackles, eye bolts, swivels, blocks, snatch blocks, Beam clamps and plate clamps, Lifting beams, frames, baskets, Waste bins, tool boxes, cargo nets, containers, pallets, etc.

### **37.2. STANDARD REQUIREMENTS**

- All lifting tackle shall be tested and certified by approved competent person.
- The Contractor shall make available, as necessary, any certificates and inspection records.
- Lifting tackle shall not be issued or used without a current test certificate.
- All lifting tackles shall be visually inspected before use to identify any damage. Damaged or defective equipment shall be immediately removed from service.
- Only equipment, which has been properly tested and is clearly marked/labeled/coded, may be used. The SWL (Safe Working Load) or WLL (Working Load Limit) must be clearly marked on all equipment and must be adhered to.
- Makeshift lifting devices formed from bolts, rods or reinforcing steel shall not be used.
- Slings shall not be shortened with knots, bolts or other makeshift devices.
- Synthetic web slings shall be marked or coded to show the manufacturer, the rated capacities for each type of hitch and the type of material.

Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

- Acid or caustic burns
  - Melting or charring of any part of the sling surface
  - Snags, punctures, tears or cuts
  - Broken or worn stitches
  - Distortion of fittings
- No heavy loads or excessive strain may be placed on ropes.

- Rope should not be driven over, ground into cinders or mud, wrapped around sharp or abrasive objects or burned by “snubbing off” too fast.
- Wire ropes or wire slings, shall not be used for raising, lowering or as means of suspension if any fraying, kinking or broken wires are apparent.

### 37.3. LIFTING EQUIPMENT OR APPLIANCES

Is a generic term - “Lifting equipment “shall mean any machine, driven by manual or mechanical power which is able to raise, lower, suspend or transport loads and includes the supporting structure and all Plant, Equipment appliance, structures. This may include but not limited to Continuous mechanical handling devices (i.e. conveyors). Cranes (mobile, tower, pedestal, etc.), Wall/pillar cranes, derricks, Runway beams, pad eyes, gin pole and gin wheels Winches, hoist (air and electric), crabs, teller hoists, Powered working platforms, Elevators and Lifts, overhead cranes.

### 37.4. STANDARD REQUIREMENTS

- **At no circumstances, rear seated hydra crane shall be used for any sorts of OPGC activity irrespective of site locations (inside or out side plant premises)**
- Lifting machinery and equipment shall be retested by an approved competent person after any major alteration or repairs thereto.
- Lifting machinery and equipment shall not be issued or used without a current test certificate.
- EOT crane operation shall be carried out by personal with valid rigger certificate with familiarization to operate the EOT cranes.
- All lifting operations are to be suitably planned and carried out with trained and qualified personnel. It shall be the duty of the Contractor to ensure that all employees under its control know and are able to apply hoist signals and their uses.
- One qualified person shall direct the rigging operation. This person shall give signals for the group. No crane operation will take place without an appointed and identifiable "SIGNAL MAN”.
- All lifting equipment shall be visually inspected before use to identify any damage. Damaged or defective equipment shall be immediately removed from service.

Only equipment, which has been properly tested and is clearly marked, may be used. The SWL (Safe Working Load) or WLL (Working Load Limit) must be clearly marked on all equipment and must be adhered to.

- All lifting operation should be carried out in the barricaded area; no one should be allowed to walk underneath of suspended load.
- It is the Contractors responsibility to satisfy the OPGC Contact Person that all lifting equipment and machinery conforms to the relevant statutory provisions.

- All lifting machinery and equipment and all parts and working gear thereof, both fixed and mobile shall be of good construction, sound material and free from patent defect and shall be maintained and operated to comply with OPGC standards.
- Every dangerous moving part of lifting machinery should be guarded.
- The hoisting mechanism of a crane shall not be used for any purpose other than lifting a load vertically.
- Cranes shall not be used to transport loads, unless specifically designed for this purpose. The hook of a crane shall be secured to prevent it swinging when the crane is in "Transit".
- Mobile Jib Cranes, side booms and "A" frames shall not work in the vicinity of overhead Power lines unless a safe working distance of total Length of the Jib + 10 feet is maintained.
- Cranes with more than one ton lifting capacity shall be fitted with a safe working load indicator, and a crane capacity chart displayed inside the operator's cabin.
- Contractor shall not operate the cranes of OPGC without permission from OPGC Contact person.
- Critical lift plans must be developed by a qualified person, and then submitted to the OPGC Contact person for review and approval.
- Contractor shall designate a person to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- Cranes with fixed or derricking jibs should be fitted with effective automatic safe load indicators which should be provided with appropriate visual and audible signals, properly maintained and tested by a competent person after the erection or installation of the crane.
- Vehicular equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set as necessary for the stability of the specific configuration of the equipment. Before lowering outriggers, the contractor must verify the surface is firm and will support the weight of the equipment and operation to be performed. The Contractor shall place outrigger pads if conditions require.
 

While extending, lowering outriggers and retracting the outriggers, the operator shall visually inspect the area to verify it is clear of all personnel and obstacles.
- Instructions issued by the manufacturer, specifying weather and wind speed conditions which would be likely to affect the safety of the operation, lifting appliance should either not be used or used subject to limitations, should be followed.

### *37.5. MULTIPLE LIFTS*

The simultaneous use of more than one lifting appliance to raise, suspend, support or lower a single load should be avoided. Where the simultaneous use of more than one lifting appliance is unavoidable;



contractor shall perform the lifting only with OPGC approved Risk assessment, Method statement and Rigging plan.

#### **37.6. PERSONNEL BASKETS AND MAN HOIST**

- Personnel baskets should be of good design construction, sound material, and adequate strength, free from obvious defect and certified and clearly marked with the maximum number of persons permitted.
- Where a man hoist is operated by means of a winch, or where person is carried in a cage, skip or similar plant or equipment designed to lift persons, the winch should be so constructed that the brake is automatically applied at all times except when the controls are in the operating position.
- No winch should be fitted with a pawl and ratchet gear on which the pawl has to be disengaged before the platform or cage can be lowered.

#### **37.7. INDUSTRIAL FORK LIFT**

- Industrial fork lift trucks shall not be used to lift a load greater than the maximum safe working load permitted for the truck.
- Passengers are forbidden to ride on vehicles, mobile plant or forklift trucks not specifically designed or fitted out for passengers use.
- The Forklift operator shall have a valid operating certificate from a recognized authority and a valid OPGC driving license.

#### **37.8. CONTAINERS**

- Every container for raising, suspending, supporting or lowering articles, tools, equipment, and other materials should be of good construction, sound material, and adequate strength, free from obvious defect and suitable for the purpose for which it is required.
- Provided with adequate and suitable arrangements for securing the container to the lifting appliance or to lifting gear, as appropriate;
- Marked with its tare weight and the weight of the load which it may carry with safety;
- So constructed as to prevent the accidental displacement of its load.

Loose materials or articles that could be displaced should be secured or covered to prevent such displacement.

### **38. HAND TOOLS**

- Tools shall not be placed on any type of energized equipment or where a tool might fall and become a hazard.
- Unacceptable placement includes on ladders, stairs, railings, mobile equipment, lying on the floor, on the scaffold, in walkways or cluttering work benches.

- Tools shall not be placed next to open trenches, manholes or vault openings.
- Tools, materials and parts used in elevated work locations shall be tied in place or kept in containers secured so that nothing can accidentally fall.
- Select the right tools for the job.
- Train your workers to select the right tools for each job and ensure that the tools are available.
- Inspect the tool and ensure that it is in good condition and keep it in good condition.
- Unsafe tools include wrenches with cracked or worn jaws; screwdrivers with broken tips, or split or broken handles; hammers with chipped, mushroomed or loose heads and broken or split handles; mushroomed heads on chisels; dull saws; and extension cords or electrical tools with broken plugs, improper or removed grounding systems, or split insulation.
- Use all tools correctly.
- Keep tools in a safe place.
- Carry the tools to and from the work site in a tool box, cabinet, or other appropriate tool holder or pouch.
- Store the tools in the proper storage area.
- Tools should not be carried up or down ladders by hand. Appropriate pouches shall be used. Where pouches are not available, tools shall be lifted and lowered by hand lines.
- Tools should not be thrown from one level to another, nor should they be thrown from one location to another on the same level.
- Spark proof tools should be inspected regularly to ensure that there are no steel splinters.

### **39. PORTABLE ELECTRICAL APPLIANCES.**

- All appliances should be tested and identified; records of test/re-test dates should be available.
- Equipments which do not have the test detail label will not permitted inside OPGC Premises.  
Any equipment which is in poor condition will not be permitted inside the OPGC premises.
- Where any portable hand tool requires a supply above 110Volts A.C obtain permission from your OPGC Contact Person. If permission is granted, a residual current device (RCD) must be connected in the circuit.
- Joining of cable is allowed only with industrial male and female sockets of IP67 rating. No twisting or taping of conductors is allowed.

- Bare cable/ conductors shall not be inserted to sockets.
- Contractors must ensure that electric equipment connected by cord and plug in good condition.
- Each employee must be properly trained before using tools or equipment requiring special instruction or training (e.g., power tools, vacuum equipment, etc.).
- Extension cords used with portable electric tools shall be of the 3-wire type unless the tool or appliance is double-insulated or operated from an isolated power service. The ground wire must either be permanently connected to the tool frame for grounding means.
- Extension cords lay across walkways or driveways must be covered by protection or warning devices to prevent pedestrian or vehicle hazards.
- Ground Fault Circuit Interrupters (GFCIs) are to be used whenever a portable electric tool is used.
- Electrically-powered tools may not be used on energized conductors.
- Compressed air hose connections shall be secured with a safety clip or retainer before use.
- If a machine guard is removed in order to work on equipment, it shall be replaced before the equipment is placed back in service. Lockout/Tagout procedures shall be followed.
- Power tools should be used, in accordance with the manufacturer's instructions.
- Where sparking or heat generated by the use of pneumatic tools, an approved coolant shall be used.
- Only patent pneumatic hose, couplings and fittings of the correct rating shall be used when using pneumatic tools.

## **40. TEMPORARY WIRING**

These provisions apply to temporary electrical power and lighting wiring methods. Temporary wiring shall be removed immediately upon completion of construction or the purpose for which the wiring was installed.

### **40.1. TEMPORARY POWER PROGRAM PROCEDURES**

- i. Only authorized and qualified people for electrical work shall work on the installation, wiring, troubleshooting or repair of electrical equipment.
- ii. All persons dealing with & handling electrical equipment shall be trained to apply the correct treatment for electric shock.
- iii. All portable tools, hand lamps & other apparatus must be connected to the system by means of appropriate rating plugs & sockets type.
- iv. All joints must be both electrically & mechanically sound. No twisting of conductors or tapping is permitted.

- v. Supplies to welding equipment must be specially arranged & the connections must be sufficient in size for the duty to be performed & properly protected against mechanical damage & electrical hazards.
- vi. All lamps for general illumination shall be protected from incidental contact or breakage. Metal-case sockets shall be grounded. Damaged cages/lamps shall be corrected upon notice.
- vii. Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this mean of suspension.
- viii. Portable electric lighting used in wet and/or other conductive locations, for example drums, tanks, and vessels shall be operated at 24 volts or less. However, 120 volt lights may be used on approval if protected by a GFCI.
- ix. Flexible cords and cables shall be protected from damage. Sharp corners and projections shall be avoided. Flexible cords and cables may pass through doorways or other pinch points, if protection is provided to avoid damage.
- x. Extension cord sets used with portable electric tool and appliances shall be of three-wire type and shall be designed for hard or extra-hard usage. Flexible cords used with temporary and portable lights shall be designed for hard or extra hard usage.
- xi. Electrical equipment shall not be opened, adjusted, repaired, or otherwise handled until it is de-energized and locked-out according to the lock-out policy.
- xii. De-energized equipment shall be tested before anyone works on it.
- xiii. All metal panels, boxes, covers, conduit, etc., that are part of electrical system shall be grounded.
- xiv. All splices and repairs shall be made inside an approved box or approved splice kit. Tape alone is not acceptable.
- xv. Metal ladders shall not be used for electrical work.
- xvi. All electrical equipment that is exposed to flammable gases or vapors, combustible dust, or ignitable fibres must meet hazardous location requirements in order to prevent explosions.
- xvii. Extension boards must have GFCI/RCCB protection with main power on/off switches. GFCI/RCCB should not be used as power on/off switching.
- xviii. Circuit breakers that protect hand tool receptacles shall have a maximum rating of 20 amps. Waterproof connectors shall be used as necessary.
- xix. All holes in panel boxes and gaps where circuit breakers are missing shall be securely plugged with a fireproof material.
- xx. Circuit breakers shall be matched as closely as possible to the electrical needs they supply.

## **41. FALL PROTECTION**

All persons, on any project that requires them to wear a personal fall arrest or restraint system, will follow these guidelines. A full body harness will be used whenever there is the potential for a fall from a height of 6 feet or more.

**41.1. PERSONAL FALL ARREST SYSTEMS (PFAS) & FULL BODY HARNESS:**

A personal fall-arrest system is generally required whenever an individual is at risk of falling 1.8 meter or 5.9 ft or more ft from an elevated position. A properly designed system should include three components:

- A. An **anchor points** capable of supporting a minimum of 5,000 lbs (22.2 kN) per attached worker; will serve as a secure connection point for lifelines, lanyards or deceleration devices.
- B. A **full-body harness** designed to distribute fall-arrest forces over thighs, pelvis, waist, chest and shoulders; if a fall occurs, D-ring located in centre of the back will hold worker in an upright position until rescued.
- C. A **connecting device** such as a lanyard, deceleration apparatus, lifeline or a combination of these items with locking snap hooks. Must have a minimum breaking strength of 5,000 Lbs.

**WARNING:**

The maximum arresting force an individual is permitted to sustain while wearing a harness is limited to 1,800 lbs (8kN). To stay below this impact force, workers should keep the free fall distance as short as possible (max. 1.8 meter) and consider the use of deceleration devices or shock absorbing lanyards.

During fall, the worker shall not come in contact any lower level and bring the worker to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 m).

Each worker shall be attached to a separate lifeline and lifelines shall be protected against being cut or abraded.

**FULL BODY HARNESS APPLICATION GUIDELINE-**

Deceleration apparatuses (shock absorbers) attached double lanyard type harnesses shall be used only at height with fall distance of 6 meter or more.

For fall distance of less than 6 meter or more than 06-meter, self-retractable type full body harness shall be used.

**Full body harness after one free fall shall not be used again, it shall be condemned.**

**Harness shall be checked/ inspected for wear/tear or any damage or expiry before use.**

#### **41.2. ANCHORAGE CONNECTORS AND POINTS**

An anchorage connector or point must be capable of supporting 5000lbs. per attached worker. This can be accomplished in a number of ways and must be engineered to ensure the point has that capability.

Only anchorages designed by a fall protection equipment manufacturer must approved by OPGC.

Anchorage Points in concrete or attached to wooden structures must be approved by both the Contractor's Qualified Person & EIC.

The anchorage point must be installed at dorsal D-ring (shoulder) height or higher. An anchorage point at feet level is unacceptable for fall arrest application and will not be allowed.

#### **41.3. AUTHORIZED FALL PROTECTION SYSTEMS/EQUIPMENT**

Only fall protection equipment approved by the OPGC will be used on OPGC projects.

##### **STORAGE**

The equipment should be stored and hung up freely by the back D-ring in a cool, dry place until needed. If materials appear to be faded or it tags and labels are illegible, consult the equipment manufacturer to determine if replacement is necessary.

#### **41.4. TIPS FOR FALL PROTECTION**

- Make sure the harness fits snugly. Tighten all straps.
- Use an anchorage point above your head. Do not tie-off at your feet unless there is no other place to tie-off.
- Use two lanyards for 100% tie-off. One lanyard must be attached at all times and when moving from position to position.
- Never hook two lanyards together to get extra reach.
- Except with specific lanyards, hooks may not be tied back into the lanyard itself.
- Use cheaters only when your lanyard will not reach a tie-off point. Cheaters will not be used while tied off to the inside of a man basket.
- Shock absorbing lanyards may not be used in conjunction with retractable lanyards.
- Never tie a knot in your lanyard to reduce its length

#### **41.5. ACCESS**

Stairways and stair towers with complete hand and guardrails do not require fall protection.

Fall protection is not required while using a ladder as a means of access as long as the climbing distance is less than 10 feet. Once a worker has climbed 10 feet a ladder climbing device is required or an enclosed cage must be present.

If the worker stops at any point to conduct work from a ladder, and the worker's feet are more than 6 feet above the adjacent surface, fall protective equipment is required. A three-point contact must be maintained with a ladder regardless of the height a worker is above an adjacent surface.

## **42. SCAFFOLDING**

All scaffolds and staging shall comply with OSHA standards. Prior to using any scaffolding, it shall be approved by OPGC. A "GREEN SCAF-TAG" indicating OPGC acceptance will be attached to the scaffolding, the scaffolding is not to be used until the approval is given. The scaffolding shall meet the following minimum requirements:

- Timber uprights and ledger shall not be used.
- Metal parts used for scaffolds shall be in good condition and free from corrosion.
- All poles, planks and general materials, used for scaffoldings, shall be kept in good condition and be inspected by a competent person appointed by the Contractor on each occasion before being used for erection.
- No materials, other than those specifically designed for the purpose, shall be used for scaffolding.
- A scaffold shall be erected only by men trained and certified in the job, working under the immediate supervision of a competent foreman, who knows the purpose of the scaffold and how it should be constructed to carry the loads which will be placed upon it.
- Scaffolds shall be securely supported or suspended and where necessary braced to ensure stability. Unless constructed as an independent scaffold, it shall be rigidly connected to the building or structure.
- In the case of partially erected or dismantled scaffolds still capable of being used, access thereto should be effectively blocked, and prominent warning notices shall be posted with a "RED SCAF-TAG".
- All platforms, scaffolds and other workplaces, from which persons may fall more than 1.8m (6 ft) shall have edge protection which consist of an upper rail not less than one meter (3 ft 3 inches) in height above the walkway and have at least one intermediate rail.
- Toe boards shall be fitted to all scaffolding.

When permanent hand rails have to be removed from elevated platforms, rope or wire hand rails shall be fitted in their place.

- Any load-bearing scaffolding should be constructed to a design previously submitted to and approved by an OPGC contact person.
- Parts of staging, tools and other articles and materials shall be properly lowered and shall not be thrown down from a height. They shall be raised by rope or other suitable means and not carried on the person.
- The Contractor's Representative shall ensure that no loose articles and materials are left lying about in any place from which they may fall on persons working, or passing beneath.
- While erecting the scaffolding a RED SCAFF-TAG need to be hung until erection is finished

#### **42.1. REQUIREMENTS FOR BOARDS AND PLANKS**

- Boards of 51 mm (2 inch) minimum thickness shall be used. These shall be at least 210 mm (8 inches) wide.
- The spacing of board supports shall depend on the thickness of the boards used and the load to be carried. There shall be at least three supports. Support for 51 mm (2 inch) boards shall not be more than 2.5 m (8 feet 6 inches) apart. All boards shall be supported at the ends.
- Boards shall be end-butteted and close boarded throughout. Overhanging of boards of any thickness shall not exceed four (4) times their thickness and not less than 50 mm.

#### **42.2. WORKING PLATFORM**

- All working platforms should be close boarded, and all boards should be lashed or secured.
- Widths of platforms vary according to scaffolds purpose.
- As a general rule, if the platforms are to be used only as a footing, they shall be at least 610 mm (24 inches) wide. If small quantities of materials have to be put on them, the platform width shall be increased to 813 mm (32 inches) wide.

#### **42.3. MOBILE TOWER**

- The height of a mobile tower should never exceed three times the length of the shortest side.
- There should be only one working platform on a mobile tower.
- Mobile scaffolds should only be used on ground which is firm and level.
- Moving the tower should only be done by pushing or pulling the base.
- The working platform must be clear of men and materials when the tower is being moved.
- Wheels should be turned outwards and brake must be on and locked before use.
- It is advised to tie the tower to the structure whenever possible.



- Never ride on a scaffold that is being moved.

#### 42.4. *INDEPENDENT TOWERS*

- The tubular scaffold used most often is the independent tower. The independent tower apart from necessary ties stands completely free from buildings or structures and is used mainly for access pipe bridges or high maintenance jobs where only a small working area is required.
- The foundation must be capable of carrying the weight of the tower, equipment and men.
- Base plates must be placed under all standards and if there is any danger of lateral movement they must be securely fixed, substitutes must not be used.
- Special precautions must be taken to provide stability on soft soil, or surfaces likely to be damaged.
- Standards must be vertical and joints must be staggered. The distance between standards must be no more than 2.5 m (8 feet 6 inches).
- Ledgers must be horizontal and fixed to the standards with load bearing clips.
- Generally, ledgers will be vertically spaced at about 2 m centers for easy erection; also providing ample headroom if an intermediate working platform is required.
- Diagonal bracings must be fitted on all lifts on all sides and a cross bracing should be fitted at the base and at other levels where necessary to keep the tower rigid, but at least every alternative lift.
- If the height of the tower is more than 3 1/2 times the length of the shortest side it must be adequately tied.
- It is good practice to tie scaffolds to the adjacent structure whenever possible irrespective of height.

#### 42.5. *LADDERS*

- All ladders used in the plant except in scaffoldings shall be made of Glass Reinforced Plastic (GRP) / FRP. No metallic / wood ladders are allowed in OPGC premises.
- Shall be factory made and shall be of sound construction.
- No ladders with treads nailed to the stringers or which are in any other way faulty or unsound shall be used.
- Unless OPGC has granted prior written consent, no ladder shall exceed 3.7 m (12 ft) in height.
- Ladders shall not be painted. Clear varnish or polyurethane is acceptable.
- All ladders shall only be used for the purpose for which they were designed.
- The Contractor shall ensure all ladders under their control are inspected for safe, clean and proper working parts before they are used.

- Defective ladders shall not be used, but instead shall be tagged and made inaccessible for use.
- Ladders should be placed upon a level, firm, solid and safe base and leaned against or hung from a solid, safe structure.
- When it is necessary to place a ladder on a non-level, smooth or slick surface, the base of the ladder shall be tied, blocked in place or held by another worker.
- The base of a straight or extension ladder shall be placed back from the wall at a distance equal to one-fourth of the ladder's working length.
- The top of an extension ladder shall be tied off when possible.
- No one shall go up or down a ladder without the free use of both hands.
- If material must be lifted, a hand line must be used.
- Employees shall face a ladder while ascending or descending.
- A ladder used to transfer to a landing must have side rails that extend at least 3 feet above the landing.
- Contractors shall ensure employees under their control are properly trained in ladder safety.
- Where ever the chance hitting ladder with moving traffic or some other equipments exists, adequate protections to be provided with warnings

#### **43. ACCESS TO TRANSFORMERS / SWITCH GEAR ROOMS/SWITCHYARD AND OTHER RESTRICTED AREAS**

Contractor will remain outside of all fenced electrical transformer, switchgear rooms, switchyard or any other high voltage areas and restricted areas unless authorized by the OPGC Contract person to enter. If it becomes necessary to enter these areas, the Contractor must notify the OPGC Contract person so that arrangements can be made to secure a safe work area.

#### **44. FIRE PROTECTION:**

Fire hydrants, extinguishers, hose racks, and other emergency equipment shall not be covered or blocked, and fire equipment lanes must always be kept clear.

All fires must be investigated and reported to OPGC regardless of duration or extent.

All contractor persons should know the method of raising alarm & operation of first aid firefighting appliances. Nobody should misuse the fire appliances, extinguishers etc.

#### **45. HOT WORK**

Any activity which involves naked flames or can produce heat energy or spark shall be considered as Hot Work. e.g. Welding, Burning, Grinding, Cutting.

- The Contractor must coordinate hot work activities with the OPGC Contact person.

- All welding, burning, or other hot work will be carefully planned and safely executed by completion of a Hot Work Permit from OPGC.
- Welding machines and its accessories must be approved type & safe to use. Power supply cable should be of proper rating, joint free, copper and cut resistance type.
- When 'Hot Work' is in progress precautions must be taken as per the Hot Work Permit issued by OPGC to minimize the risk to other persons, particularly from fire.
- Appropriate fire extinguishers shall be made available for the duration of the specific activities as mentioned in the Hot Work permit.
- ***The Contractor shall provide fire watches during hot work activity & shall ensure firewatchers are trained on the use of fire extinguishers and other appropriate fire fighting gear. Fire watchers during fire watching cannot be assigned with other task.***
- The Contractor shall ensure that firewatchers are equipped with appropriate equipment and dedicated only to the duties of the fire watch.
- The Contractor shall ensure that adequate guards and barriers (fire blanket, fire proof sheets) are used to ensure sparks and hot slag are confined to the immediate area and do not contact flammable or combustible materials.
- All open areas and floor grating/ wall openings shall be protected so that sparks or slag cannot reach flammable or combustible materials at any lower level.
- Hot work areas must be barricaded to prevent people from coming into contact with sparks and slag from hot work activities.
- The Contractor must store flammable and combustible chemicals where they are not subject to hot work or other sources of ignition.
- Use appropriate PPE for the job.

#### **46. CONFINED SPACES:**

A *Confined Space* is any space of an enclosed nature which is not designed for continuous human occupancy and presents a risk of death or serious injury from hazardous substance or dangerous conditions.

- The Contractor must coordinate Confined Space Entry work activities with the OPGC Contract person.

Confined Space Entry Permit shall be obtained to enter any Confined Space for any kind of work inside.

- Contractor shall perform no duties that might interfere and disturb the accepted safe working conditions in a confined space.
- Contractor shall maintain all safety barriers around the *Entry Point*.
- Appropriate PPE as per the Confined Space Entry Permit shall be used.
- Appropriate dust mask shall be worn by the *Entrant* if significant quantities of dust are present within the *Confined Space*.
- Head and eye protection shall be worn at all times by the *Entrant* unless specified otherwise by the *Control Room Engineer*.
- A body harness may be required by the *Entrant* if work is to be performed above ground level. An air purifying respirator and cartridge or Self Contained breathing Apparatus (SCBA) shall be used by the *Entrant* if *Entry* into a *Confined Space* containing a *Hazardous Atmosphere* is required and it is not physically possible to entirely remove the *Hazardous Atmosphere*.
- Contractor shall use the safety equipment as per the Confined Space Entry Permit.
- Fire extinguishers suitable for the type of fires those are appropriate to the hazards that may be present in the *Permit Required Confined Space*.
- ***Contractor shall deploy trained Confined Space Watcher/Hole Watcher to take control over the Confined Space entry & exit points during the period of work. Confined space opening either will be closed or entry prohibited through warning tape or barrier while no work is taking place inside the confined space. Contractor will not assign task other than Confined space watching to the watchers as long as they are performing the watching.***
- Contractor shall comply strictly with the following **Electrical safety precautions**
- Electrical equipment supplied from the mains should only be used where there are no practicable alternatives. Battery powered electrical equipment or pneumatic powered equipment shall be used whenever possible.
- If there are no practicable alternatives to using electrical equipment supplied from the mains, then they should be 24V. If this is not possible then they should be 110V supplied through a centre tapped transformer with the centre tap earthed.
- Electrical equipment supplied from the mains should contain Ground Fault Circuit Interrupters / Residual Current Devices.
- Electrical equipment supplied from the mains shall have a valid test certificate.

## **47. HIGH PRESSURE WATER/ SERVICE AIR CLEANERS**

Improper use of water jets/ Service Air can cause serious injury. The contractor may only use high pressure washing apparatus with the permission of the OPGC Contact Person.

The contractor must satisfy the OPGC Contact Person as to the training of the operators, the arrangements for the place of work and a safe system of work.

## **48. SCRAP/WASTE DISPOSAL:**

Waste Bins are provided on site for General Housekeeping materials, metal scrap, Hazardous and Oily wastes and Chemical Wastes. Special or Hazardous Materials must not be dumped in general housekeeping bins and metal scrap bins. Please consult with OPGC Contact person for more details.

## **49. GAS CYLINDERS**

The following regulations apply to all industrial transportable gas cylinders including containers for dissolved acetylene.

### **49.1. CYLINDER IDENTIFICATION**

Gas cylinders shall be colour coded in accordance with relevant BIS code or applicable Gas Cylinder rule.

Full and empty cylinders must be clearly distinguished and stored apart.

### **49.2. STORAGE OF CYLINDERS**

- No flammable materials shall be stored on the site with them, or in the immediate vicinity. Cylinders must be kept at a safe distance from any heat source.
- Cylinders shall be stored in such a manner that they can be readily removed in the event of fire.
- They shall be adequately secured to prevent falling over.
- Cylinders shall be stored vertically and secured.

### **49.3. HANDLING AND MOVEMENT OF CYLINDERS**

- Cylinders shall not be subjected to rough usage, or excessive shock, or used as rollers, or supports.
- Cylinders shall not be dropped from a height.
- A proper carriage, or platform and not a sling, shall be used for moving cylinders, whether empty or full.
- When cylinders are being transported, they shall be loaded and firmly wedged to prevent violent contact when the vehicle moves.
- On no account shall cylinder trolleys be towed by motor transport. The transportation of any gas filled cylinder shall always be in a proper rack, regularly maintained and properly inspected at least biannually.

The Contractor shall ensure that cylinders with faulty valve joints, immovable valve spindles, or valve leakage are immediately removed from the site.

- Only standard valve keys shall be used.
- Only standard automatic pressure regulators and pressure gauges shall be fitted to cylinders.
- Regulators and gauges shall be checked to ensure they are functioning properly and damaged gauges or regulators shall be removed from service.
- RED hose shall only be used for Acetylene and BLACK hose shall be used for Oxygen and Nitrogen.
- Hoses shall be pressure tested and examined to ensure that they are free from cuts, cracks, burns and excessive wear.
- Only secured hose connectors shall be used.
- It is strictly prohibited to bind hose connections with wire.
- All Oxy-acetylene sets which are portable shall be wheeled on a trolley.
- When not in use, blow-pipes and hoses shall not be left in confined spaces or enclosed areas.
- Where this cannot be done, the Oxygen and Acetylene connections shall be disconnected at the cylinders situated outside. Merely closing the valve is not a disconnection.
- Empty cylinders and cylinders no longer required shall be removed from the Site as soon as practicable, caps shall be in place.
- Flashback arrestors (ESAB or any other ISI approved type) shall be fitted at the outlet of the regulator and at inlet of the cutting torch.
- When not in use, all cylinders shall have protecting caps screwed on.
- Cylinder valves shall be closed immediately when gas is not required, or when the cylinder is empty and the hose depressurized.

## **50. RADIOGRAPHY AND RADIO ACTIVE SUBSTANCES**

- Radiography shall be done only after achieving a valid safety document. Proper barricading of the area and paging on the loud speakers should be done
- All operations involving the use of radioactive substances shall be supervised by the Contractor to ensure that protective measures are properly maintained and to check the extent of the protection afforded in practice.

- The Contractor is required to provide OPGC with a list of radioactive sources held by the Contractor and all employees who use or store these radio-active sources on OPGC's property.
- The Contractor shall be responsible for the supply, operation and regular testing of all necessary monitoring equipment and to ensure that all protection barriers are placed and altered as a result of survey radiation level readings in accordance with internationally acceptable levels.
- All radioactive substances not in use shall be kept securely in a dedicated storage place. The storage place should be clearly marked with the warning sign and the wording: "DANGER - RADIOACTIVE MATERIAL" in clear and indelible print. Its access hatch or door should be provided with a lock, the keys of which should be kept by the authorized radiographer.
- Only authorized personnel should handle radioactive sources.
- Before any radiography work is started, the Contractor shall be required to establish procedures dealing with accident/incidents and foreseeing an emergency.
- The procedure shall clearly define responsibilities and actions/measures to be implemented.
- The emergency procedures shall be submitted to OPGC Contact person for review and approval.
- The Contractor shall also ensure that all personnel involved have been carefully instructed.

**50.1.** During transport, radioactive substances should be kept in sealed sources for radiography with the exposure container should be kept inside a lead-lined box which has the radiation warning sign on the outside.

**50.2. HANDLING PROCEDURE AND PERSONAL PROTECTION**

- Keep maximum distance from the source.
- Provide maximum shielding
- Keep exposure time down.
- A radiography permit shall be obtained on each occasion radiological work is carried out.
- A barrier shall be erected around each area where the source is exposed so that the level of radiation at the barrier does not exceed 0.75 Micro Seiverts per hour in air.
- Suitable warning notices for display at barriers shall have the wording "*RADIATION - DO NOT ENTER*". The notices shall also include the radiation symbol.
- All persons using radioactive substances shall be trained and certified in the use of such substances.
- The perimeter of the area shall be patrolled during the period of source exposure.

- An exposed source must be immediately returned to its safe container on the request of the operating personnel, or in the event of a fire or other emergency occurring

Any worker liable to be exposed to ionizing radiation shall wear on the appropriate part of his body a film badge to measure the amount of radiation accumulated.

## **51. EXCAVATION**

- The Contractor shall ensure that no Excavation work shall be carried out without the issue of an appropriate Safety Document.
- Any buried cables or pipelines unexpectedly encountered during excavation work shall be reported immediately to the OPGC Central Control Room and the work shall cease.
- Where, because of the nature, shape and slope of the excavation, material is liable to fall more than 1.3 meters (4 ft.) onto a person working, the sides of the excavation must be adequately shored.
- Shoring shall be rigid and without holes or opening and be properly braced with support structure.
- The shoring of every excavation where men are to work shall be examined each day by the Contractor's Representative.
- Excavated earth shall not be stored close to the trench edges and a minimum distance of at least one and a half times the depth of the trench shall be observed.
- No load, plant or equipment should be placed or moved near the edge of any excavation where it is likely to cause the collapse of the side of the excavation.
- Excavations in which persons are working and into which a person is liable to fall shall be suitably or protected by a barrier.
- If the excavation is to remain open after dark, warning lights shall be placed around the excavation to warn others of its presence.
- Temporary crossings over the trench shall be at least 609 mm (2 feet) wide and sufficiently strong with a railing on one side.
- The Contractor shall be responsible for the provision of all barricades, roping off and the provision of flashing lights as is required for the safety of persons and vehicles.

## **52. SURPLUS MATERIALS**

Unless otherwise directed through written instructions issued by OPGC, Contractor shall promptly remove all excess surplus material from the jobsite. Final payment for performance of the work shall not be due and payable until such materials are removed from the jobsite. If surplus materials are not



removed from the job site within fifteen (15) days of completion of the Work, OPGC may dispose of the materials and offset the cost associated with disposal against the unpaid balance of the Contract Price.

### **53. SUSPENSION OF WORK AND LIMITATION OF LIABILITY**

OPGC reserves the right through the project contact to suspend all or any portion of the work being performed in violation of these provisions. OPGC shall not be liable in contract, tort (including without limitation negligence and strict liability) warranty or under any other legal theory for damages, costs or expenses related to any suspension or stoppage of work, loss of business, or other special, incidental, consequential or punitive damages in connection with any failure on the Contractor's part to establish, enforce, or adequately monitor its Health and Safety Program.

### **54. TEMPORARY BUILDING:**

Temporary buildings and material storage areas shall only be allowed upon written approval of the concerned Project Manager/EIC. They shall not be set up under power lines or pipe ways.

### **55. UNSAFE AND/OR INAPPROPRIATE BEHAVIOR, DISCIPLINARY ACTION**

Any Contractor employee who appears unable to perform his job in a safe manner or exhibits any type of behavior inappropriate for the work place will be reported to the Contractor's on-site supervisor for evaluation and possible removal from the site. OPGC will not tolerate at any time any conduct that threatens, intimidates or coerces an OPGC person, another Contractor or any member of the public.

#### **55.1. DISCIPLINARY ACTION AND PENALTY AGAINST SAFETY RULES VIOLATION**

- Unsatisfactory safety performance will go against the contractor in future bids.
- OPGC reserves the right to even terminate unsafe Contractor from Contract with notice.
- In addition to the above disciplinary action, additional penalty for Safety Violation shall be applicable.
- The penalty system is divided into two categories, Minor and Major. OPGC EHS shall decide about the minor or major safety penalty based on type of violations & risk involved with the violations

#### **55.2. EXAMPLES OF SAFETY VIOLATIONS**

- Not wearing / improper wearing of personal protective equipment (PPE) as per OPGC PPE rule.  
Example- Safety Shoe, Helmet, Safety glass, Earplug, Hand gloves and other PPEs.
- Using grinder without wheel guard
- Taking electrical connection without using ELCB.
- Using damaged welding cable, faulty joints in cable
- Non-use of flash back arrester in oxy acetylene cutting set
- Non-availability of standby person (hole watch) on man hole during entry into

- Confined space
  - Not responding to emergency sirens as per emergency handling procedure.
- Working overhead on road/ pathway without barricading
- Dumping excavated earth on edge of excavation
- Non-reporting of Near Miss, accident, fire and/or explosion and property damage incident.
- Improper housekeeping. Leaving work area with debris/ waste/ scrap material haphazardly
- Unauthorized disposal of hazardous substance (waste Oil, Grease, Chemical, Toxic Substance)
- Leaving excavated soil on road
- Spillage of waste on roads & work places
- Smoking inside plant premises.
- Unauthorized carrying of weapon inside Plant Premises.  Working without valid work permit.
- Not complying with written instruction on the work permit
- Working without Job Safety Analysis(JSA) for high & medium risk jobs
- Working without Job Safety briefing for high & medium risk jobs  Not providing fire extinguisher for hot work and fire watch.
- Use of none testing/ certified lifting machine, tools and tackles
- Use of substandard scaffold (such as substandard platform in terms of access, guard rail, toe guard & gaps on platform surface, non-use of soleplate/base plate, sagging scaffold etc.)
- Use of above 24V light fittings in confined space without approval
- Working above 5.9 ft height without fall protection
- Working without rigging & slinging safety measure  Persons working under suspended load in barricaded area  Abuse of safety equipment/ facility/ emergency equipment.
- Blocking access of emergency equipment or exits.
- Mishandling of gas cylinders
- Handling & disposal of hazardous substances in unauthorized manner.
- Violating OPGC any of the environmental guideline attached in separate sheet.

The following penalties shall be imposed on the contractor with the charge of safety violation by OPGC and shall be deducted from the Contractor's running/ final bill. Penalty can be imposed by E-I-C/Dept

Heads & TIs/ Safety Officer/ EHS Manager/Safety Rovers or any officer authorized by the OPGC management.

- For first instance of Safety rule violation, counseling and verbal warning with punching of yellow spot on I Card
- On observation of second instance of Safety rule violation, counseling and strong verbal warning with punching of blue spot on I Card
- On observation of 3<sup>rd</sup> Safety rule violation, punching of red spot on I Card with duty suspension or permanent removal from site
- For major Safety Violation for one instance also, there may be direct punching of red spot in I card with permanent removal/ termination of the Contractor employee(s) responsible for that violation.
- Inadequate Safety Supervision leading to repeated minor or medium risk type safety violation- Fine/Penalty of Rs.2000/- (Rs. two thousand only) and I card punching of responsible contractor Supervisor.
- Inadequate Safety Supervision leading to repeated major risk type safety violation- Fine/Penalty of Rs.2000/- (Rs. two thousand only) and I card punching of Contractor Supervisors with suspension or even termination of responsible contractor supervisor.

## **56. GENERAL GUIDELINES FOR ENVIRONMENTAL PROTECTION**

The Contractor shall pay due regard to the environment by acting to preserve air, water, human life, animal and plant life from adverse effects resulting from its work or operation and to minimize any nuisance which may arise from such work or operations.

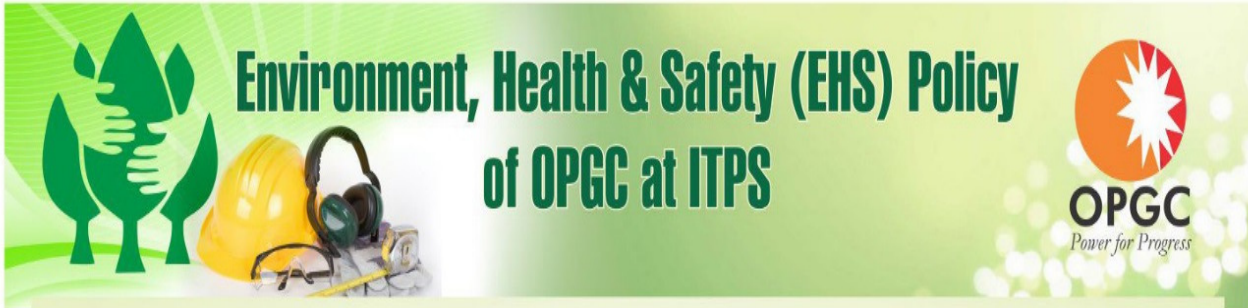
1. Uncontrolled releases of OPGC regulated materials, hazardous wastes, special wastes, and PCB or PCB contaminated materials from OPGC locations into the environment are prohibited.
2. All spills of OPGC regulated material, hazardous waste, special waste and PCB or PCB contaminated material must be cleaned up and waste residues generated disposed of properly. Planning must begin immediately and clean up must be initiated within 72 hours of discovery of the spill.
3. Use of PCB (Poly Chlorinated Biphenyl) containing products/ materials is prohibited.
4. Used oil & lubricants generated during work shall be collected in containers provided with lid and shall be placed at designated transit storage shed. This shall be subsequently sent to warehouse for storage in the designated shed in front of Store Shed No. 3 and final disposal to authorized recyclers / re-processors. Waste oil/lubricant spilled on the floor shall be contained and collected by the use of spill protection kit.
5. Used lead acid batteries shall be sent to Warehouse for storage at designated shed and final disposal to authorized recyclers / re-processors. Spilled lead acid shall be contained and collected by the use of

spill protection kit. New lead acid batteries shall be procured against return of damaged used batteries to Supplier.

6. E- Wastes and used Ni-Cd batteries, fluorescent lamps, mercury vapour lamps are also treated as hazardous materials. These are to be collected and stored in identified places on impervious floor and under shed to avoid contamination. These shall be disposed in authorized manner.
7. Oil contaminated scraps, cotton wastes and other oil contaminated wastes shall be collected in specified collecting bins (designated as oil contaminated waste collecting bin) that are to be kept near work area and shall be sent to Warehouse for storage in specified collecting bin and final disposal to authorized recyclers/reprocessors, if possible. Otherwise the wastes shall be disposed off by warehouse in lined impervious covered pits.
8. Onsite work areas shall not be stored with improper and/or excessive amounts of scraps and debris.
9. Lead waste & other Non-ferrous metal wastes like, zinc, brass, copper, nickel and electronic wastes etc shall not be thrown around. It shall be collected in collecting bins and sent regularly to warehouse for storage in designated bins/shed and final disposal to authorized recyclers/re-processors.
10. Spent Resins shall be collected in barrels, provided with lids and shall be disposed as per authorized disposal means.
11. Acid/alkali / any other hazardous chemical contaminated scraps/wastes shall be collected in designated collecting bins to be placed near the work area and shall be returned to Warehouse for storage in designated collecting bin and final disposal to authorized recyclers/re-processors or else, these scraps can be disposed of by Ware House in lined impervious covered pits. Similarly, acid/alkali/ any other hazardous chemical contaminated barrels/jars shall be returned to Warehouse for disposing it back either to the supplier (as per the condition of Purchase Order) or to the authorized recyclers.
12. Materials that yield Hazardous Substances shall be identified prior to their initial purchase.
13. Ample spill response materials shall be available to deal with any potential hazardous and special waste releases.
14. All containers used and stored on the site must have proper labels.
15. Debris and solid wastes generated during any activity shall be collected & disposed regularly at the designated place and the combustible materials shall be controlled fired under direct supervision of OPGC Fire or Safety Officer. It shall not be dumped /thrown here and there.
16. Tree trimming and pruning wastes shall be kept sufficiently away from plant. Steps shall be taken to dispose these to outside agencies to avoid unwanted fire.
17. Carry bags made of virgin or recycled plastic, which are less than 20 microns thick, are not allowed to be used in ITPS.
18. Energy efficient products (eco marked products) will be preferred for use inside ITPS.
19. Goods packing material shall be bio degradable and environmental friendly material.

20. All chemicals shall be procured with its material safety data sheet (MSDS). The MSDS shall remain with the chemical for its entire period of stock inside OPGC.
21. Hazardous chemicals or substances in bulk transport will come with MSDS, TREM Card, hazard labeling of the lorry and containers. The transporters staffs/ staff shall be properly trained on emergency handling of the chemical.
22. Emergency preparedness shall be in place to handle chemical emergency or any other hazardous material emergency so as to prevent risk to environment.
23. Vehicular emission and noise shall be minimized in work zones by restricting use of defective vehicles, machineries and Tools & Plants.
24. Vehicles shall be certified with valid pollution under control certificate.
25. Source air emissions shall be controlled so as to meet regulatory norms. In case of incidental higher emission level, immediate control measure shall be taken on priority. Continuous emission monitoring for Stack SPM, NO<sub>x</sub>, SO<sub>2</sub> shall be made available all time except the period of planned maintenance. Alternative offline monitoring shall be in practice during the period of on line equipment maintenance.
26. Fugitive emission shall be controlled in work places (CHP, AHP, ESP, Ash Pond & Dry ash storage silo areas). These places shall be tested for dust concentration periodically to ensure taking step to reduce dust emission level to acceptable state. People working in these areas shall use dust mask to prevent inhaling dust.
27. Sufficient water spraying shall be ensured in haul roads and working areas to reduce fugitive emission during earth work by mechanical means.
28. While painting any structural materials on ground, the structural materials shall be kept on any impervious barrier so as to avoid land contamination by paints.
29. Use of Ozone Depleting Substance (ODS) like CCL<sub>4</sub>, CFC-11, CFC-12, Halon and other ODS based substances shall be phased out in phased manner. Venting of ODS gas to atmosphere is forbidden. During phasing out process of these substances, these ODS shall not be released to atmosphere. These gases shall be handled as per local regulation guideline. CFC containing equipment like refrigerators and hydrogen driers shall be replaced with non CFC refrigerant containing equipment.
30. SF<sub>6</sub> consumption shall be managed in such way that there will be no waste or/ and release to atmosphere. The user shall maintain a consumption record covering the equipment name in which the gas is used, quantity and date of use.
31. Asbestos ropes and packing shall not be used in any work. No new asbestos sheets shall be used in any work. Before cutting/handling old asbestos sheets, the sheets shall be made wet and handled by using nose mask and hand gloves. Waste asbestos pieces shall be disposed in lined impervious covered pits.
32. During construction and maintenance works, melting of Bitumen should be done by using fuel oil / fire wood. In no case burning of rubber tyres will be allowed.
33. Smoking is prohibited inside plant.

34. Optimum utilization of water, energy and raw materials shall be ensured by minimizing the loss in any activity.
35. Spitting on walls is prohibited.
36. Preference shall be given for using eco-friendly materials/packing and technology, wherever it is techno-economically viable.
37. Special care shall be given for good housekeeping.
38. Non-biodegradable solid wastes like plastic pouches/packing materials shall be disposed in lined impervious covered pits.
39. Empty paint drums, brushes shall not be thrown around. It shall be the responsibility of the contractor to dispose it outside ITPS as per the provision of Hazardous Wastes (Management & handling) rule.
40. Waste water generated inside plant and sewage effluent shall be reused
41. Ground water and surface water adjacent to ash disposal area and coal pile area shall be tested periodically so as to ensure no adverse impact on environment.
42. Spillage and disposal of any liquid or solid waste into storm water drains is prohibited.
43. Spillage of Chemical or OPGC regulated material shall be reported to Manager (Environment) within 01 hour of the incident occurs.
44. For safe Handling and Transportation of Hydrogen, Chlorine, Petroleum Products and other Chemicals please MSIHC rule.
45. Any noisy operation more than 85dBA shall be carried with the use of appropriate noise abatement barrier. Wherever barrier cannot be provided, the person nearby must have ear protection.
46. Environmental monitoring equipment that has been originally designed and installed must be satisfactorily maintained and continually operated (with the exception of standard downtime for planned or unplanned maintenance).
47. Any abnormal environmental incident observed/ noticed shall be communicated to EHS



## Environment, Health & Safety (EHS) Policy of OPGC at ITPS



**Odisha Power Generation Corporation Limited., at Ib Thermal Power Station (ITPS), Banharpali, Jharsuguda, commits to have continual improvement in the Environment, Health and Safety standard in all its activities related to Power generation at all times;**

**To achieve this, the objectives envisaged for commitment are to-**

1. Provide the appropriate resources to ensure that all our people have the means to work safely and its surrounding environment is protected.
2. Minimize impact on the environment through control and prevention of Pollution.
3. Conserve all natural resources used as input.
4. Minimize fugitive emission & improve work zone condition.
5. Manage solid & hazardous waste in a safe and eco-friendly manner.
6. Believe "Put Safety First at OPGC" & "All Occupational Incidents are preventable".
7. Minimize risk due to hazards associated with its activities and prevent injury and illhealth to all persons working at ITPS.
8. Adopt Zero Tolerance on OPGC Safety Cardinal Rules and be responsible and accountable for Safety of all persons working at ITPS.
9. Empower to stop & report any work when there is a reasonable belief that the work poses imminent risk of injury.
10. Be responsible for own Safe Behaviors & those of co workers.
11. Reward outstanding Environment, Health & Safety performances & discourage at risk behaviours.
12. Comply with applicable Environment, Health & Safety regulations and other requirements.
13. Have on-site emergency plan & preparedness for handling various emergency situations related to Environment, Health & Safety.
14. Build Environment, Health & Safety awareness among all persons working for or on behalf of ITPS through training & awareness campaigns.
15. Communicate this Policy to all persons working at ITPS, contractors, suppliers, visitors and other interested parties.

**Alok Mukherjee**

Occupier & Director (Operation), OPGC

Date: 16.11.2015

Last Reviewed on 17.11.2018

**APPENDICES- 2**  
**OPGC High Risk Activities**

	<b>Activity</b>
<b>1</b>	Activities on or near equipment with the potential to cause Arc Flash
<b>2</b>	Activities in a road way with potential to be struck by vehicles (Does not include driving or travelling on a public road way.)
<b>3</b>	Activities with drowning potential
<b>4</b>	Activity involving work at height above 1.8 meters (6 feet) and any pole climbing
<b>5</b>	Handling of hazardous substance which can cause acute injury, exposure to ionization sources or potential to cause explosion
<b>6</b>	Activities with potential for live voltage exposure $\geq 50$ Volt
<b>7</b>	Activities on or around pressurized safety valves or other energized energy relief devices where there is the possibility of exposure to the stored energy if released
<b>8</b>	Hoisting and Rigging
<b>9</b>	Hot Work outside of its designated locations
<b>10</b>	Activities involving Confined Space entry or potential for entrapment/engulfment such as work inside a trench, tunnel, etc.
<b>11</b>	Tree trimming and related activities with the potential to cause injury by tree trimming equipment and / or hit by falling tree or limb
<b>12</b>	Activities involving operation of or working in the vicinity of operating plant equipment
<b>13</b>	Activities in potential explosive areas due to accumulation of combustible dust or vapor
<b>14</b>	Activities on or near rotating, rolling or moving equipment or its parts having the potential to cause cut, entrapment, crushing or caught by injuries
<b>15</b>	Activities with the potential to cause a hit by falling objects



### APPENDICES- 3

#### UNDERTAKING

#### FOR OPGC HSE RULES AND REGULATIONS FOR CONTRACTORS

I hereby undertake that:

- (1) I have received a copy of, and read, these regulations;
- (2) I agree to execute the work under all provisions contained herein;
- (3) I understand & will make my entire project team understands the applicable rules & regulations;

Signature: \_\_\_\_\_

Name : \_\_\_\_\_

Date: \_\_\_\_\_

Contract Company: \_\_\_\_\_

### APPENDICES- 4

<b>EHS Violation Record for Contractor</b>	<b>Date:</b>
<b>Ib Thermal Power Station, Banaharpali</b>	

Name of Violator: _____	
Location of Violation: _____	
Type of Violation: _____	
Contractor's Name _____	Signature-----
Observer's Signature Name _____	Signature _____

**Contractor Safety Management**  
**Appendix C – Hazard Assessment Form**

Hazard	Describe the Specific Hazard Present	OPGC's Actions to Control the Hazard	Contractor's Actions to Control the Hazard
Gravity <b>(Falling from a height, falling objects)</b>			
Electrical <b>(Contact, back feed, induction, static charge)</b>			
Mechanical <b>(Craning, rigging failure)</b>			
Kinetic <b>(Vehicle collisions, rotating shafts)</b>			
Chemical <b>(Hazardous materials, confined space)</b>			
Thermal <b>(Hot, cold)</b>			
Pressure <b>(Pneumatic tools, hydraulic, high pressure water, gas pipelines)</b>			
Water <b>(Working around, diving)</b>			
Other			

**Appendix D – Project Safety Plan/daily Job safety Plan**

<b>Date:</b>		<b>Name of the Work:</b>			
<b>Contractor's Supervisor:</b>		<b>Crew Members:</b>			
<b>No.</b>	<b>Task / Job Step</b>	<b>Conditions</b>	<b>Major Hazards</b>	<b>Barriers</b>	<b>B.E.</b>
1					
2					
3					
4					
5					

**Barrier Effectiveness (B.E)**

<b>Control Barriers</b>	<b>Safety Barriers</b>	<b>Support Barriers</b>	<b>Human Barrier</b>
1. Eliminate the Hazard 2. Reduce Energy to Safe Level 3. Physical Barrier	4. Protective Equipment 5. Warning Device 6. Minimize Chances of Error	7. Work Procedure 8. Training 9. Observer	10. Identify the Hazard Only (Be Careful)

## Contractor Pre- Qualification Questionnaire

**Important Instructions:**

This questionnaire must be completed entirety and accompanied with all requested attachments for OPGC review, prior to any opportunity to contract work with OPGC.

Omitting or reporting false information on this questionnaire could result in the disqualification or removal from OPGC's List of Qualified Contractors. OPGC reserves the right to conduct random or for-cause audits of the information stated in this questionnaire. Additional documentation may be requested by OPGC to support statements made on this questionnaire.

<b>Company's Name:</b>		<b>Contact Person:</b>	
<b>Postal Address:</b>			
<b>Telephone – Landline</b>		<b>Mobile</b>	
<b>Fax</b>		<b>E-mail</b>	
<b>Safety History</b> <i>(Please provide data for the previous two (2) calendar years)</i>		<b>Year</b>	<b>Year</b>
Number of First Aid Cases			
Number of Lost Time Incidents (LTI)			
Total number of lost time work days due to accidents			
Number of fatalities			
<b>Sr no.</b>	<b>Written Safety Programs, Policies and Procedures</b>	<b>Yes</b>	<b>No</b>
1	Does your company have a written Health, Safety and Environment Policy? <i>(if yes then provide a copy of the same)</i>		
2	Does your company hold separate safety meetings to address safety issues? If yes, who attends these meetings? <i>(please tick)</i> <input type="checkbox"/> All employees <input type="checkbox"/> Field employees only including supervisor <input type="checkbox"/> Field employees only excluding supervisor <input type="checkbox"/> Only Supervisors		
3	Do you conduct a pre-project hazard analysis? <i>(If yes then provide a copy of a completed hazard analysis)</i>		
4	Do you conduct weekly or daily pre-work safety talk / toolbox meetings?		
5	Does your company provide safety training to your employees? <i>(If yes then provide a list of the safety training courses provided and participants, in the last one (1) year)</i>		
I declare that the information provided here and in all attached documents is correct.			
<b>Signed , sealed and submitted on behalf of</b>			

<b>Company Name</b>		<b>Company Stamp/ Seal</b>
<b>Signature</b>		
<b>Name</b>	<b>Title</b>	<b>Date</b>
<b><u>FOR OFFICIAL USE ONLY</u></b>		<b>Reference No.</b>
<p>Based on past safety performance and the quality of safety management programs. The above contractor:  <i>(please tick one)</i></p> <p><input type="checkbox"/> Qualify to work for OPGC  <input type="checkbox"/> Does not qualify to work for OPGC</p>		
<b>Name</b>	<b>Signature</b>	<b>Date</b>

**OPGC EHS RULES AND REGULATIONS  
FOR CONTRACTORS  
UNDERTAKING**

I hereby undertake that:

- (1) I have received a copy of OPGC EHS rules & regulations for Contractors, and read, these rules & regulations;
- (2) I agree to execute the work under all provisions contained herein;
- (3) I understand & will make my employees who will work at OPGC site understand the applicable rules & regulations;

Signature: \_\_\_\_\_

Name : \_\_\_\_\_

Date: \_\_\_\_\_

Contract Company: \_\_\_\_\_ Seal-----



TECHNICAL SPECIFICATIONS

NAME OF WORK: RAISING OF BUNDS

HEIGHT FOR ASH POND 'C' FROM RL.202.0M TO RL.205.0M AT ITPS.

**1.0.0 Scope of work:**

**The Scope of work involves following items: -**

- i) Embankment height for pond-C are to be raised by upstream raising method from RL202M to RL205M for the periphery bund and connecting bund, as per drawing.
- ii) The collector well bund will be raised by center line method, as per drawing.
- iii) Ash will be used as core material for the embankment, both the side slopes & top of the embankment will be covered by one-meter thick soil.
- iv) Vertical sand chimney, horizontal sand blanket will be provided as per the drawing. The sand chimney of the existing embankment needs to be connected to the sand blanket of the elevated embankment
- v) Turfing of the embankment slope will be done in both the up-stream and downstream side slope of the embankment.
- vi) Slope protection with brick pitching will be done for stability of slope for the collector well bund
- vii) Raising the height of Collector well and outlet chamber in PST.
- viii) Structural approach bridge to collector well
- ix) Dismantling and laying of 350 MM MS Pipes with knife edge valves of reputed approved make for ash disposal at the elevated embankment level, as per requirement.

**2.0.0 General Requirement:**

- 2.1.0 The contractor shall furnish the list of all manpower, equipment and materials required to complete the work in accordance with the approved drawings and specifications.
- 2.1.1 The contractor shall have to use his own earth moving equipments, and other machineries required for the work of excavation and conveyance of earth/ ash from borrow area to the work area and also shall have to use his own vibrating roller to compact the ash/ soil used in the embankment construction.



## **EMBANKMENT WORKS**

### **3.1.0 Site Preparation**

#### **3.1.1 Cleaning and Grubbing**

Cleaning and grubbing operations shall be performed in the designated areas, as per site requirement. These sites should be cleared of all trees, stumps, roots, rubbish, bushes and other objectionable materials. Such materials from clearing operations shall be burned, removed from the site of work or otherwise disposed of as approved. All the materials to be burnt shall be burnt completely. Piling of burning shall be done in such a manner and in such location so as to cause the least fire risk. The burning shall be so thorough that all the materials are reduced to ashes. Special precautions shall be taken to prevent fire from spreading to the areas beyond limits of the areas specified and suitable equipment and supplies for preventing and suppressing fires shall be available at all times.

#### **3.1.2 Stripping**

The entire area upon which the dyke is to be constructed as shown in the drawings shall be stripped to a sufficient depth, as directed to remove all unsuitable materials. This will include removal of all debris, top soil/earth, vegetable matter including roots, loose rock, organic silt, swamp materials and other perishable or objectionable materials that are unsuitable for use in permanent construction or that might interfere with the proper bonding of the embankment with the foundation, or the proper compaction of the materials in the embankment, or that may be otherwise objectionable. However, the stripping shall not be less than 300mm minimum. The stripping shall be kept well in advance of other items of works to ensure that no undesirable materials will get mixed with approved embankment material and to enable proper inspection and measurement. Materials from stripping operation shall be disposed off in such a way as not to detract from the finished appearance of the project or as directed.

#### **3.2.0 Removal of water within construction area.**

The method of removal of water from foundation excavation shall be efficient and effective. Where the excavation in the foundation extends below the water table, the portion below the water table shall be dewatered in advance of excavation.

The dewatering shall be accomplished in a manner that will prevent loss of fines from the foundations, will maintain stability of the excavated slopes and bottom of cut-off trench and will result in all construction operation being performed in dry condition. The use of sufficient number of properly screened wells or other equivalent methods shall be used as approved for dewatering. The seepage along the bottom of the excavation shall also be controlled, which may require supplementing the dewatering systems by pipe drains leading to sumps from which water shall be pumped.

During placing and compacting of earth materials, the water level at every point shall be maintained below the bottom of earth fill until the compacted fill at that point has reached a depth of 3 m after which level shall be maintained at least 1.5 m below the top of the compacted fill. When the fill has been constructed to an elevation, which will permit the dewatering systems to maintain water level at or below the designated elevations as determined by the Engineer-in-Charge, the pipe drains shall be filled with grout composed of water and cement or clay. Any alternative method with the approval of Engineer-in-Charge can also be adopted for dewatering.

### **3.4 Borrow Areas**

#### **3.4.1 General**

All materials required for the construction of the embankment which are not available from foundation excavations, or other required excavation, shall be obtained from the borrow

areas to be identified by the contractor at his own cost and risk. The limits of each borrow area to be used in the various zones of embankment shall be flagged in the field.

The depth of the cut in all the borrow areas will be designated by the Engineer-in-Charge and the cuts shall be made to such designated depths only. Shallow cuts will be permitted in the borrow areas if uncertified materials with uniform moisture contents are encountered. Each designated borrow area shall be fully exploited before switching over to the next designated borrow area. Haphazard exploitation of borrow pits shall not be permitted. The type of equipment used and the operations in the excavation of materials in borrow areas shall be such as will produce the required uniformity of mixture of materials for the embankment. Borrow pits shall be operated so as not to impair the usefulness or mar the appearance of any part of the work or any other property. The surface of wasted materials shall be left in a reasonably smooth and even condition.

#### **3.4.2 Preparation of Borrow Areas**

All areas required for borrowing earth for embankment shall be cleared of all trees and stumps, roots, bushes, rubbish and other objectionable material. Particular care shall be taken to exclude all organic matter from the material to be placed in the embankment. All cleared organic materials shall be completely burnt to ashes or disposed off as directed. The cleared areas shall be maintained free of vegetable growth during the progress of the work.

#### **3.4.3 Stripping of Borrow Areas**

Borrow area shall be stripped off the topsoil, sod and any other matter which is unsuitable for the purpose for which the borrow area is to be excavated. Stripping operations shall be limited only to designated borrow areas. Materials from stripping shall be disposed off in exhausted borrow areas or in the approved adjacent areas, as directed.

#### **3.4.4 Borrow Area Watering**

Borrow area watering will be done wherever necessary in the manner considered necessary by the Engineer-in-Charge of the work. The initial moisture content of material in the borrow area shall be estimated with the help of laboratory tests. The optimum moisture content for the material in the particular borrow areas shall be obtained from the field laboratory if available, otherwise by sample testing in outside laboratory. From the optimum moisture content and initial moisture content, the amount of additional water required shall be decided. The required additional moisture, so decided shall be introduced in to the borrow area by watering well in advance of the excavation to ensure uniformity of moisture content. If in any location of a borrow area before or during excavation, there is excessive moisture, steps shall be taken to reduce the moisture to secure the material with moisture content closest to the optimum by excavating drainage ditches, by allowing adequate time for drying or by any other means. To avoid formation of pools in the borrow areas during excavation operations, drainage ditches from borrow areas to the outlets shall be excavated wherever necessary.

#### **3.4.5 Stock piling**

Stock piling shall be done at approved locations only. Before any area is used for stockpiling, it shall be cleared and stripped off all vegetation and top soil as necessary to prepare the stockpile area.

Stockpiling of fill material by end dumping the material down a slopping face/chute shall not be permitted if segregation of the material takes place. Any material, when stockpiled shall be protected from being rendered less suitable for placement in the fill due to weathering effects viz. drying, over wetting due to rain etc.

### **3.5.0 Ash Pond Bunds**

#### **3.5.1 General**

The bunds shall be constructed to the lines and grades shown in the drawings. The embankment is divided into zones within which fill materials having different characteristics are to be placed. Placement of fill within these zones as shown in the drawings shall be performed in an orderly sequence and in an efficient and workman like manner, so as to produce within each zone, fills having such qualities of density, strength and permeability as will ensure the highest practicable degree of stability and performance of the whole embankment.

No bushes roots, sods or other perishable or unsuitable materials shall be placed in the embankment. The suitability of each part of the foundation for placing embankment materials thereon and of all materials for use in embankment construction will be determined by the field laboratory.

The difference in elevation between different zones of the embankment at any cross-section above the existing level of embankment foundation shall not exceed 60 cm. unless specifically authorized by the Engineer-in-Charge. The embankment for each zone shall be maintained in continuous and approximately horizontal layers in the reach programmed for construction in that season. The construction can be taken up in discontinuous portions or reaches, provided that the slopes of the bonding surface parallel to the axis between the previously completed portions of the embankment and materials to be placed in each zone shall not be steeper than 3 to 1.

#### **3.5.5 Ash Foundation**

The foundation ash shall be tested for its natural density. In reaches where the relative density is less than 70% / 95% of standard proctor dry density, the foundation ash shall be densified by any of the approved methods to obtain a minimum relative density of 70% / 95% of standard proctor dry density. Until the foundation has been tested and the relative density found to exceed 70% / 95% of standard proctor dry density, earth fill shall not be allowed to be placed. This is necessary to minimize the effects of any structural readjustments in a loose foundation.

#### **3.5.6 Earth fill Materials**

The materials for the respective zone of embankment shall be obtained from the designated borrow areas, which will also specify the depth of cut in the borrow areas required for obtaining the desired gradation in the materials. In general, all material from a particular borrow area shall be a mixture of materials obtained for the full depth of cut. Ash could be collected directly from the ash pond 'A', from the designated areas, indicated by Engineer-in-charge. The depth of cut in all parts of borrow area shall be determined by the Engineer-in-charge and the cuts shall be made to such depths only. Ash should be collected from the area beyond 25m from the inner edge of bunds of ash pond.

#### **3.5.7 Placing Earth fill/ Ash fill**

The distribution and gradation of the materials throughout the earth fill or ash fill shall be as shown on the drawings or as directed. The fill materials shall be free from lenses, pockets streaks or layers of materials differing substantially in texture or gradation from the surrounding material. The combined excavation and placing operations shall be such that the materials when compacted in the fill will be blended sufficiently to produce the best practicable degree of compaction and stability. Successive loads of materials shall be dumped on the fill so as to produce the best practicable distribution of the material. No stones, cobbles or rock fragments, having maximum dimensions of more than 12.5 cms. shall be placed in the fill. Such stones and cobbles shall be removed either at the borrow pit or after being transported to the embankment but before the materials in the fill are rolled and compacted. Such stones or cobbles shall be used in the riprap or rock toe of the embankment if suitable or wasted as directed. The materials shall be placed in the fill in continuous horizontal layers, not more than 225 mm in thickness after being rolled as herein specified. During construction, a small transverse slope from center towards edges should be given to avoid pools of water forming due to rains. If in the opinion of the Engineer-in-Charge, the surface of prepared foundation or the rolled surface of any layer of earth fill is too dry or smooth to bond properly with the layer of material to be placed thereon it shall be moistened or worked with harrow, scarifier or other suitable equipment, in an approved manner to a sufficient depth to provide a satisfactory bonding surface before the succeeding layer of earth fill material is placed. If the rolled surface of any earth fill is found to be too wet for proper compaction of layer of earth fill material to be placed thereon, it shall be raked up and allowed to dry, or be worked with harrow, scarifier or any other suitable equipment to reduce the moisture content to the required amount, and then it shall be compacted before the succeeding layer of fill material is placed. When compacting the soil against steep rock abutment or walls of concrete structures, the construction surface of embankment shall be sloped away from the rock or concrete structures, for a distance of 2.5 m to 3.5 m at an inclination of 6:1 or steeper. If the foundation surface is too irregular to allow the use of large roller directly against the structure or rock outcrop, the roller shall be used to compact the soil as close to the structure or the outcrop as possible, and the portion of the embankment directly against the rock or the structure shall be compacted with pneumatic hand tampers in thin layers. The moisture content of the fill placed against the rock or the structure shall be slightly above the optimum, to allow it to be compacted into all irregularities of the rock. In placing the fill on rock foundation, the foundation shall first be prepared as detailed earlier. Care shall be taken in placing the first layer of the fill so that no damage is caused by the hauling machinery, which will get concealed by the spread layer of the fill. Sheep foot rollers shall not be employed for compaction till the thickness of the layers compacted by other means is greater by 0.3 m than the depth of the foot of the roller drum. The soil for the first layer shall be at moisture content sufficient to enable satisfactory bonding of the fill with the rock surface.

### **3.5.8 Weather Conditions**

Embankment material shall be placed only when the weather conditions are satisfactory to permit accurate control of the moisture content in the embankment materials. During monsoon before stopping work on embankment, for any continuous spell, the top surface shall be graded and rolled with a smooth wheeled roller to facilitate run off. Prior to resuming work, the top surface shall be scarified and moistened or allowed to dry as necessary and approved by the Engineer-in-Charge for resumption.

### **3.5.9 Moisture Control**

The water content of the earth fill materials prior to and during compaction shall be distributed uniformly through each layer of material and it shall be between 0 to 2% less than the optimum moisture content. Moisture determination of soils as well as needle moisture determination of soils shall be carried out as per E-9 and E-22 of USBR/Earth Manual. As far as practicable, the material shall be brought to the proper moisture content in the borrow area before excavation. If additional moisture is required, it shall be added by sprinkling water before rolling of a layer. If the moisture is greater than required, the material shall be spread and allowed to dry before starting rolling. Moisture control shall be strictly adhered to. The moisture content shall be relatively uniform throughout the layer of material. If necessary, ploughing, disking, harrowing or blending with other materials may have to be resorted to, to obtain uniform moisture distribution. If the moisture content is more or less than the range of the optimum practicable moisture content or if it is not uniformly distributed throughout the layer, rolling and adding of further layer shall be stopped. Further work shall be started again only when the above conditions are satisfied.

### **3.5.10 Compaction Equipment**

For compacting the earth/ash fill Vibrating roller of 10 MT capacities shall be used with the number of passes as determined from trail operation. Vibratory roller having 10MT load (static linear load of 20 to 35 Kg/cm), frequency range of 1100 to 1800 rpm with amplitude of vibration between 0.5 mm and 1.7mm have been proved to be effective for constructing earth/ ash layers. The pressure exerted by the rollers shall be such that the roller will not cut into the ash surface. Small hand held vibratory rollers for compaction shall be used near edges/interfaces with concrete and other structures.

### **3.5.11 Rolling**

When each layer of material has been conditioned so as to have the proper moisture content uniformly distributed throughout the material, it shall be compacted by passing the tamping roller. The exact number of passes shall be determined by the field laboratory (to have a density equal to 95% of standard proctor dry density) after necessary test. The layers shall be compacted in strips overlapping not less than 0.6 m.

The rollers or loaded vehicles shall travel in a direction parallel to the axis of the dam with speed not exceeding 4 km/hr. Turns shall be made carefully to ensure uniform compaction. Rollers shall always be pulled. Density tests shall be made after rolling. Dry density attained shall satisfy the compaction standards specified in "Criteria for control of compacted Dam Embankment" of U.S. Bureau of reclamation reproduced.

In locations, where compaction of the fill material by means of the roller is impracticable, or undesirable, the fill in various locations as below shall be specially compacted as specified herein.

- i) Portions of the earth fill in embankment adjacent to concrete structures and embankment foundation designated to be treated as specially compacted earth fill.
- ii) Earth fill in embankment adjacent to steep abutments.
- iii) Earth fill in locations specially designated

Earth fill / ash fill shall be spread in layers not greater than 225mms. in thickness when loose, and shall be moistened to have the required moisture content in accordance with paragraph 4.6. When each layer of material has been conditioned to have the required moisture content it shall be compacted to specified density by special rollers pneumatic tampers or by other approved methods and all equipment and methods used shall be subject to approval based on evidence of actual performance and field compaction tests.

### **3.5.12 Tamping**

Rollers will not be permitted to operate within 1.0 meter of concrete and masonry structures. In locations where compaction of the earth fill material by means of roller is impracticable or undesirable, the earth fill shall be specially compacted as specified herein at the following locations.

- (i) Portions of the earth fill in embankment adjacent to concrete structures & embankment foundations designated on drawings as specially compacted earth fill.
- (ii) Earth fill in embankment adjacent to steep abutments; and
- (iii) Earth fill at locations specially designated.

Earth fill shall be spread in layers of not more than 10 cms. in thickness when loose and shall be moistened to have the required moisture content as specified when each layer of material has been conditioned to have the required moisture content, it shall be compacted to the specified density by special rollers, mechanical tampers or by other approved methods; and all equipment and methods used shall be subject to approval based on evidence of actual, performance and field compaction tests. The moisture control and compaction shall be equivalent to that obtained in the earth fill actually placed in the embankment in accordance with the specifications.

### **3.5.13 Dressing Slopes**

The outside slopes of the embankment shall be neatly dressed to lines as the placing of fill progress. Compaction shall extend over the full width of the embankment, and material in earth slopes shall be compacted as for the rest of the structure. To ensure proper compaction on the edge, the cross-section of the filling during construction shall be kept suitably wider by minimum 300 mm wider beyond the edge and the cross-section dressed to the designed requirement after compaction. Small vibratory compactors may be used wherever necessary.

All humps and hallows varying more than 15 cms. from the neat lines of the embankment shall be regarded. Material used to fill depression shall be thoroughly compacted and bonded to the original surface. Slopes shall be maintained until final completion and acceptance. Any material that is lost by rains, weathering or other causes shall be replaced.

### **3.5.14 Settlement Allowance**

In the earth fill embankment settlement allowance of 1% will be provided. If the embankment is raised in more than one season, provision for settlement shall be made in the last season's constructions by slight steepening of slopes near the top.

### **3.5.15 Road Surfaces**

Road shall be constructed at the top of earth bund and at the other locations as indicated in the drawings.

### **3.5.16 Inspection and Tests**

It is necessary to maintain a thorough check on the quality of fill materials delivered to the embankment and that the data and in-situ properties of the materials after compaction be obtained for comparison with design assumptions. To achieve these objectives, a programme of fill testing and inspection shall be planned to affect quality control.

### **3.5.17 Scope of Testing and Inspection Required**

Field control of fill materials will require visual and laboratory checks. The checks on the effectiveness of placement and compaction procedures will require to be made by field density tests at prescribed intervals. The control shall be method, type and/or an end result basis. The contractor has to arrange tools, tackles, machinery, chemicals etc. for testing at site. If testing is not possible at site, tests will be done at approved reputed laboratory at the cost of contractor.

### **3.5.18 Embankment Test Section**

Placement of compaction methods specified will have to be verified by test embankment section to be built prior to starting of fill operations or at an early stage of construction. The initial stage of embankment construction itself could be made to serve the purpose of test embankments.

The test sections referred herein shall be used to establish:

- a) Layer thickness of fill materials.
- b) Optimum practicable moisture content.
- c) Number of passes of sheep foot roller, or weight of vibratory rollers vis-a-vis number of passes for effective compaction.
- d) For pneumatic tyred compaction, the tests required will be such as to determine the most appropriate ballast loading tyre pressure, moisture content and number of coverages for compaction of material in the zone.

When an appreciable change in material occurs, additional test section should be made during construction. The procedure for construction of test embankment section is as follows:

- A. Select a location on the embankment where uninterrupted placing operations are being performed. This area 15 m by 30 m should be carefully marked and referenced so that its limits will be easily recognized. In order to expedite the determination of moisture content to be used, more than one test section may be established on the embankment at the same time.
- B. During construction of the test section, which will most probably continue for several shifts, a complete record of the procedure should be kept. This record should include the number of layers placed, the spread thickness of each layer, the moisture content at which the materials were rolled, the designation (No. 1 and No. etc.) of the roller used, the condition of the rollers (clean or dirty) the action of the materials being rolled (such as wavy under the rollers, the amount of penetration of the roller teeth after different number of roller trips etc.) and the borrow pit location from which the materials came.
- C. Check the rollers to make certain that they meet all the requirements of the specification.
- D. Determine the required spread thickness of layer that will compact to the specified thickness after rolling specified number of times and maintain this thickness as long as number of roller passes is kept the same.
- E. Using the available data from borrow pit investigations of the materials to be used in the test section the optimum moisture content as determined by laboratory test will be known and 3 percent less than this moisture content should be used in the first 3 or 4 layers rolled.
- F. After 3 or 4 layers have been placed at 3 percent less than the laboratory optimum moisture content, field density test should be made throughout the section. These tests should be made for at least each 93 sq. meter of test section area, and should be so distributed over the area that they will detect the effects of different compaction conditions encountered during construction. For example, if the section is located near an abutment, certain parts of the area will receive more compaction from track travel than others, hence some tests should be made in the portion compacted only by the rollers and so reported.



- G. The next step is to compact another 3 or 4 layers at the moisture content slightly higher (1 percent or 2 percent) than the moisture content previously used, maintaining the same rolled thickness of layer, and number of roller passes, as in above field density tests, are again made over the test section.
- H. If the resulting field dry densities (of material passing the No. 4 sieve) from (g) above show an increase with increase of moisture then increase the moisture again by another 1 percent or 2 percent and repeat the test. If an increase in moisture results in a decrease in field density then place the next layers slightly dry of the original moisture content used and repeat the test.
- I. This procedure is nothing more than developing on the embankment a moisture density relation or compaction curve for a certain roller, thickness of layer, and a given number of roller trips. If special studies during investigation have indicated that the material being tested should be placed within certain moisture limits, or if the moisture limits to be used have been specified, the procedure outlined above should include tests at these moisture contents or moisture contents both greater and smaller than the specified limits.
- J. The roller compaction curve is now compared with the standard laboratory compaction curve. If the field density of materials passing the No 4 sieve (from the roller curve) is greater than the standard compaction density at the specified moisture content, the test section should be continued decreasing the number of roller trips while maintaining the specific desirable moisture content until the most economical compactive effort is determined. When the roller trips are decreased, the required spread thickness of layer that will compact to the specified thickness of compacted material should be reckoned.

#### 3.6.1.1 **Before Compaction**

Materials delivered to the fill shall be visually examined and their properties estimated by way of inspection.

These checks shall include:

**a) Borrow Areas**

- I. Excavation of borrow areas shall be limited in extent and depth as indicated on plans.
- II. Estimation of moisture contents of materials by visual examination and feel.
- III. Samples shall be taken for laboratory analysis in case the soil is of different characteristics.

These inspection checks shall be supplemented by sampling the materials at prescribed minimum intervals and by testing the samples in the laboratory for gradation and moisture content.

**b) Embankment**

- I. Water content tests shall be carried out in the laboratory while placing the fill materials.
- II. Moisture content shall be controlled by adding water or aerating soil according to laboratory tests.
- III. It shall be ensured that the methods of dumping, spreading and moisture conditions are such that which results in reducing segregation and or variation of moisture content to a minimum.

**3.6.1.2 During Compaction**

It is intended that the checks on operations during compaction shall verify:

- I. That the layer thickness of the materials is as specified.
- II. That the fill is compacted by the specified number of passes of the Specified machinery.
- III. That no excessive rutting, weaving or scaling of the fill occurs during compaction.

**3.6.1.3 After Compaction**

The condition of the fill after compaction shall be observed and recorded particularly with respect of rutting or weaving. However, the properties of materials after

compaction shall be determined primarily by fill density tests. Routine tests on samples taken from constructed embankments shall include; besides density tests, grain size distribution, atterberg limits, permeability, shear and consolidation characteristics.

#### 3.6.1.4 **Frequency of Testing**

It will be necessary to carry out sampling and testing of materials before and after compaction at sufficient frequencies so that effective checks on the fill operations are maintained.

Testing shall be performed at higher rates than those given in Table-I, during initial stages of placing each zone in order to establish control and testing techniques. Also testing should be conducted at higher rates in case of special problems of control caused by such factors as material variation, equipment performance and of weather.

In addition, these tests shall be made:

- i) In areas where the degree of compaction is doubtful.
- ii) In areas where the embankment operations are concentrated.
- iii) For “record” tests at the locations of all embedded instruments.

Areas of doubtful density may be detected by observations by the inspector. Possible locations of the insufficient compaction include:

- i) The junction between areas of mechanical tamping and rolled embankment along abutments or cut off walls.
- ii) Areas where roller turn during rolling operations.
- iii) Areas where too thick a layer is being compacted.
- iv) Areas where improper water content exists in a material.
- v) Areas where less than specified number of roller passes were made.
- vi) Areas where dirt clogged rollers are being used to compact the material.
- vii) Areas where oversized rock, which has been over-looked, is contained in the fill.
- viii) Areas where materials have been placed containing minor amounts of frost, or at nearly freezing temperatures.
- ix) Areas that were compacted by rollers that have possibly lost part of their ballast.
- x) Areas containing material differing substantially from the average.

### **3.6.2 Inspection and tests**

Control tests shall be conducted in the field and in the laboratory from time to time determine whether the fill produced by methods employed satisfied the requirements of the specifications. The work should be inspected regularly by the Engineer-in-charge.

Field density tests should be particularly and specifically made as follows:

- I. In every 2000 cum. of filling placed.
- II. In areas where the degree of compaction is doubtful.
- III. In areas where filling operations are concentrated, i.e. on the same day two or more layers are placed one over the other.

Relevant tests to be conducted at the filling area as per IS specifications and to the frequency as mentioned above are:

- I. Determination of field moisture content (As per IS 2720 part II)
- II. Determination of field density by core cutter method (As per IS – 2720 part XXIX)

**3.6.3** All tests shall be conducted by the contractor in the presence of Engineer-in-charge or his authorized representatives.

### **3.6.4 Records and Reports**

Records of borrow area materials and embankment placing operations be maintained in order to have a continuous check on the suitability and availability of fill materials and quality of the fill. Thus, it will be possible to have complete description of materials in any portion of the embankment.

#### **Field Test Data**

Records of Field Test data results should be presented in the form of statistical analysis sheets and summary sheets in order to provide control required for enforcement of statistical requirements of the specifications.

The test data summary sheets and inspection report be used to form the basis of construction control report which should be issued from the site at fortnightly intervals during construction period. The report would contain narrative accounts of the progress

and problems of fill construction, statistical analysis of test data and photographs of the fill operations.

#### **4.0. Turfing**

- a. Turfing will be done preferably with dub grass.
- b. The turf thickness should be minimum 75mm.
- c. The contractor has to arrange the turf (grass) at his own risk and cost
- d. The contractor has to sprinkle water over the turfed area regularly and hand over the area with live green grass.

#### **5.0.0. Sand Blanket, Chimney and Filter**

The material for blanket, chimney and sand filters shall consist of clean sound and well-graded coarse sand. The materials shall be free from debris, wood, vegetable matter and other deleterious matter. The gradation of sand material shall meet the requirements w.r.t base material according the provision of IS: 9429 the filter materials shall be suitably compacted to a firm condition to achieve a relative density of 70%.

#### **5.1.0. Placing**

Sand blanket shall be laid subsequent to site clearance, stripping and excavation, if any. The foundation area shall be cleared before laying the bottom layer of blanket material. Filter material shall be laid in layers not exceeding 15 cm. Care shall be taken to ensure that materials of different layers do not get mixed, both at the time of placing and during compaction. After the layers of filter blanket material have been laid and compacted as directed by the Engineer earth fill material shall be laid. Sand chimney of specified thickness shall be laid at the specified location by excavating and removing the already compacted bund material, exposing sand chimney in the lower layers earlier laid, and refilling the trench with sand in layers. The layer of sand shall be well rammed. The depth of each layer of chimney to be laid shall not be more than 15 cm or as directed by the Engineer-In-Charge.

While excavating the earth for filling sand for chimney drain, the top layer of sand, which has been mixed with earth/ash, shall also be removed. Alternatively, the sand chimney can also be laid in layers simultaneously with the laying of each layer of fill. In such case, the top level of sand layer shall always be kept at about 100 mm above earth/ash level on both sides. Each layer of sand shall be compacted. Care shall be taken to avoid mixing of earth/ash and sand. The sand filter around the rock-toe and below riprap shall closely follow the levels of the embankment in the area. Sand filter shall be laid subsequent to stripping of foundation and / or trimming of slope of compacted bund. The surface to receive the sand filter shall be properly cleaned before laying of filter material. The sand filter shall be laid in layers. The thickness of the layers shall not be more than 15 cm or as directed by the Engineer. The sand layer shall be well compacted. Care shall be taken that materials of different layers do not get mixed, both at the time of placing and during compaction.

#### **6.0 Placing Filters**

Before the first layer of filter materials is placed, the embankment shall be trimmed neatly to the slope and grades indicated on the drawings. The filter materials shall be placed in layers of uniform thickness and care shall be taken to avoid segregation of course and

fine materials in each layer, formation of pockets and mixing of material from one layer with material of another layer or earth fill.

## **7.0 CONCRETE WORKS**

### **7.1 General**

All concrete works shall be executed in accordance with relevant Indian Standards. Before placement of concrete, following tests shall be done on the concrete samples taken from the concrete being used for permanent works:

Compressive strength in the form of concrete cubes as per IS:456-2000

Slump test to check the consistency of concreting as per IS:456-2000

Air content test as per IS:9103-1979

### **7.2 Proportioning of concrete**

All concrete works shall be executed using M-20 grade concrete mix and unless specified otherwise all concrete shall be air entrained by using an approved air-entraining agent. The air to be entrained shall vary from 2% to 7%.

The amount on account of difference in the cement content of the original mix on which the tender price has been quoted and subsequently set out in concrete construction shall not be paid.

### **7.3 Mixing of concrete**

All concrete contents shall be thoroughly mixed in the concrete mixers after proper batching by weight measurement method.

Mixing shall be continued until there is a uniform distribution of the materials and the mass is uniform in colour and consistency. If there is segregation after unloading from the mixer, the concrete shall be rejected. For mixers of one cubic metre capacity or less, the mixing of each batch shall continue for 1.5 to 2 minutes after all materials, except the full amount of water, are put in the mixer. For larger capacity mixers, the minimum mixing time shall be increased by 15 seconds for each additional 0.5 cubic metre capacity.

### **7.4 Placing of concrete**

#### **7.4.1 Preparation for Placing of Concrete**

All surfaces on which or against which concrete is to be placed, including surface of construction joints between successive concrete placement, reinforcing steel and embedded parts, shall be thoroughly cleaned of dirt, mud, debris, grease, oil dried mortar or grout, laitance, loose particles or other deleterious matter.

Surface seepage and other water shall be so controlled, to the satisfaction of the Engineer-in-Charge, that at no time during the placement or hardening of the concrete will it wash, mix with, or seep into the concrete.

Whenever concrete is to be placed on earth, a layer of lean concrete shall first be placed before placing concrete of the specified grade. The thickness of such layer of lean concrete shall be as shown on the drawings or as directed by the Engineer-in-Charge.

Surface upon or against which additional concrete is to be placed shall be chipped and roughened to a depth of not greater than 25 mm.

The roughening shall be performed by chipping, sand blasting or other satisfactory methods and in such manner as not to loosen, crack or shatter any part of the concrete beyond the roughened surface.

After being roughened, the surface of the concrete shall be cleaned thoroughly of the loose fragments, dirt and other objectionable substances and shall be sound and hard and in such condition as to assure good mechanical bond between old and new concrete. All concrete which is not hard, dense and durable shall be removed to the depth required to secure a satisfactory surface.

Prior to placement of new concrete against the old concrete surfaces and the concrete surfaces over which flood has passed shall be chipped and roughened to a depth of not greater than 25 mm or sand blasted to make them clean and free from loose materials/laitance, oil, grease, etc. so as to develop good bond between the old and new concrete.

Just before placement of concrete, the rock/concrete surface shall be cleaned by high velocity water jet (about 5 kg/cm<sup>2</sup> at the nozzle) followed by careful blowing of high pressure air jet so as to make the surface free from dirt, mud, debris, grease, oil, laitance, grout, loose particles and other deleterious matter. Contractor shall also use picks, wire brushes, if necessary for cleaning. All pools of water shall be removed from depressions.

#### **7.4.2 Concrete Placement**

The method and equipment used for placing concrete shall be such as shall permit the delivery of concrete of the required consistency into the work without objectionable delay, segregation, porosity or loss of workability.

All surfaces of forms and metal work including reinforcement bars that has become encrusted with dried mortar or grout from concrete previously placed, shall be cleaned of all such matter or grout before the surrounding or adjacent concrete is placed.

Concrete shall be placed in lifts as shown on the drawings or as directed by the Engineer-in-Charge.

In reinforced concrete works, which have congested parts, care shall be taken to see that all the bars are properly embedded and that no voids are left. On flat, horizontal surfaces, where the congestion of steel near the forms makes placing difficult, a mortar of the same cement sand ratio as is used in the concrete shall be first deposited to cover the forms.

After the surfaces have been prepared, all approximately horizontal surfaces of rock and construction joints shall be coated with cement slurry with water cement ratio of approximately of 0.60 by weight or as directed by the Engineer-in-Charge. It shall then be covered with layers of mortar approximately 20 mm to 40 mm thick for rock surface and approximately 15 mm thick for construction joints. The mortar shall have the same proportion as that of concrete mix unless otherwise prescribed by the Engineer-in-Charge. The consistency shall be suitable for placing and working in the manner hereinafter specified. The mortar shall be spread uniformly and thoroughly with stiff brooms into all irregularities of the surfaces. Concrete shall then be immediately laid upon the fresh mortar.

No concrete shall be placed in running water or during rain, high winds, dust storms, excessive heat or cold and similar conditions without prior approval of the Engineer-in-Charge.

In all cases, concrete shall be deposited as nearly as practicable directly in its final position and shall not be caused to flow by vibrators or otherwise in a manner which shall permit or cause segregation.

The maximum time interval between placing successive layers within a lift shall not exceed 30 minutes. However, depending upon the job requirements and climatic conditions, the Engineer-in-Charge can allow to increase this time interval using appropriate methods of vibration/agitation.

Concrete shall not be piled up in the forms in a manner that causes movement of the unconsolidated concrete, or permit mortar to escape from the coarse aggregate.

#### **7.4.3 Concrete in R.C.C. Walls etc.**

Concrete shall be placed in lifts of heights as shown on the approved construction drawings or as directed by the Engineer-in-Charge. Within each lift, concrete shall be

deposited in approximately horizontal layers about 40 cm in thickness unless otherwise directed by the Engineer-in-Charge.

At locations where lift heights are not shown on the drawings, the Contractor shall submit to the Engineer-in-Charge for approval, details of the placing procedure, which he proposes. No concrete shall be placed at such locations without the prior approval of the Engineer-in-Charge.

Slabs shall be placed in one lift unless otherwise indicated or directed by the Engineer-in-Charge.

In walls, lifts shall terminate at such levels as will conform to the structural requirements. The placement of concrete shall be carried out at such rate and in such a manner that the formation of cold joints is prevented.

Where slabs and beams are placed continuously with walls and columns, the concrete in walls and columns shall have been in place for at least 2 hours or for a longer period when so directed by the Engineer-in-Charge before placing concrete in the slabs and beams.

#### **7.4.4 Rate of Placing of Concrete**

Concreting shall be done as a continuous operation until the structure or section is completed or until a satisfactory construction joint can be made. The Contractor shall make all arrangement necessary to maintain continuity of concrete placing in any particular pour during meal periods, shift changes, or any other such interruptions.

Concrete shall not be placed faster than the placing crew can compact it properly.

In placing thin members and columns, precaution shall be taken against too rapid placement which may result in movement or failure of the form due to excessive lateral pressure. An interval of at least 24 hours, unless otherwise approved or directed by the Engineer-in-Charge, shall elapse between the completion of columns and walls and the placing of slabs, beams or girders supported by them.

The rate of placing shall be such as to have no objectionable effect on placement of concrete, particularly near forms and in and around embedded equipment where the rate shall not exceed the limit placed by the Engineer-in-Charge.

#### **7.5 Consolidation of Concrete**

Consolidation of newly placed concrete shall ordinarily be done with internal vibrators of approved design. The equipment of vibration shall have adequate power and shall be of high frequency, rugged and reliable.

Operators of vibrators shall be experienced, and competent in handling these devices.

Ample stand-by-units and parts as well as systematic servicing shall be provided.

Vibrators shall not be used to cause concrete to move more than a short distance laterally, otherwise fine wet material may run ahead and separate from the coarse aggregate.

Inadvertent or unintended revibration of concrete is beneficial provided the concrete becomes momentarily plastic again during revibration. Revibration shall be resorted to only after specific instructions are given by the Engineer-in-Charge.

Where vibration is used to full advantage for consolidation of newly placed concrete, no supplementary rodding or other working of the concrete is necessary.

Concrete shall be compacted and worked into all corners and angles of forms, obstructions, and locations with congested reinforcement. Special care shall be taken to attend to these places with ample, properly applied additional vibration or rodding as the case may be, without permitting the concrete materials to segregate.

Internal vibrators of approved weight and frequency 7000 to 9000 r.p.m. to secure maximum consolidation shall be used.



External i.e. form vibrators of an approved type shall be used only in inaccessible locations and where it is impracticable to use immersion type vibrators after their use has been specifically authorised by the Engineer-in-Charge. The form vibrators shall be designed to receive vibrations without losing shape and causing leakage of mortar.

The immersion type mechanical vibrators, complying with **IS: 2505-1980**, electric, air driven or diesel, shall generally be inserted vertically and the vibrating head shall be allowed to penetrate under the action of its own weight. In very shallow concrete, some consolidation can be obtained by using vibrators in horizontal position.

Internal vibrators, when used, shall be inserted at regular intervals and vibration, with the vibrator fully into the layer being compacted, shall be continued till acceptable degree of compaction has been achieved taking care to avoid excessive paste and laitance.

The entire depth of new layer of concrete shall be vibrated and ordinarily the vibrators should penetrate the layer below (which has not yet become rigid) for several millimeters to ensure thorough bond between the layers.

Under ordinary job conditions, there is little likelihood of damage from direct revibration of lower layer or by vibration transmitted by embedded steel provided the disturbed concrete still is or again becomes plastic. Vibrators shall not, however, be inserted into lower courses that have commenced final set nor shall they be directly applied to or allowed to disturb reinforcement extending into hardened or partially hardened concrete. Systematic spacing of points of vibrators shall be established to ensure that no portion of the concrete is missed. It shall be ensured that zones of influence overlap and the concrete is properly consolidated.

In compacting the surface of a concrete lift, the coarser particles of the aggregate in the surface shall be embedded while the concrete is being vibrated, but the surface left with the desired degree of roughness.

Disturbance of the surface concrete at construction joints during early stage of hardening shall be on timber walkways constructed so as not to cause injury to the concrete.

When smooth surfaces are required, for all surfaces which shall be permanently exposed to the weather and for all surfaces next to embedded metal work around which it is desired to prevent leakage, the adjacent concrete shall be properly vibrated, spaded or tamped.

To ensure even and dense surfaces which are free from aggregate pockets, honey combing or air holes, it may be necessary to supplement internal vibration with hand spading or tamping all along the boundaries of the concrete and around embedded parts, while the concrete is plastic under vibrating action.

## **7.6 CURING AND PROTECTION OF CONCRETE**

Plant and materials required for curing and protection of concrete shall be available at the location of each concrete placement before concrete placement is started and the water used for curing shall meet the requirement set out in these documents.

All concrete shall be protected against injury (damage) until final acceptance.

Exposed finished surfaces of concrete shall be protected from the direct rays of the sun for at least 72 hours after placement.

Fresh exposed concrete shall also be protected from the action of the rains, flowing water and mechanical injury.

No fire shall be permitted in direct contact with concrete at any time.

Concrete in which standard Portland cement is used shall be kept continuously moist for not less than 14 days for normal concrete and 21 days for concrete containing puzzolana, by covering with water saturated materials or a system of perforated pipes, mechanical

sprinklers or porous hose or by any other approved method. Curing period where special cement may be used shall be as approved by the Engineer-in-Charge.

Construction joints shall be cured in the same manner as the other concrete and shall also, if practicable, be kept moist for at least 72 hours prior to the placing of additional concrete upon the joint.

Horizontal surfaces shall be cured by sprinkling water or by covering with damp sand or may be cured by the use of wet quilts or mats, which will satisfactorily supply the required curing water. If damp sand or quilt is used for curing, it shall later be completely removed. The time of applying damp sand shall be specified by the Engineer-in-Charge before which curing shall be carried out by other approved methods.

The method of keeping formed concrete surface moist shall be continuous sprinkling or spraying of water as may be necessary to prevent any portion of the surface from drying during the specified period.

The water and other methods of curing shall be so handled as not to stain concrete surfaces, which shall be exposed.

The actual method of curing adopted shall be subject to the approval of the Engineer-in-Charge.

The contractor shall have on hand and ready to install before actual concrete placement is started, all equipment needed for adequate curing and protection at all locations of concrete placement.

In limited areas and for special purposes, the use of an approved and properly applied compound may be permitted at the discretion of the Engineer-in-Charge to restrict the evaporation of the mixing water. Such curing compound shall be of the surface membrane type which will thoroughly seal the surface. Curing compound shall not be used on joints where bonding is required.

Curing compounds shall be applied according to the manufacturer's recommendations to provide a continuous uniform membrane over all areas. Curing compounds shall be applied only after moist curing has been carried out for at least 24 hours.

A curing compound shall not be used on any unformed surface where, in the opinion of Engineer-in-Charge, the irregularities in that surface would prevent the membrane forming an effective seal, on any surface which has a temperature lower than manufacturer's recommended application temperature, or any surface where a bond is required for additional concrete, or where a curing compound is placed on a surface where a bond is required, it shall be removed by sand blasting or by other means satisfactory to the Engineer-in-Charge.

Curing membranes shall be protected from damage at all times.

Care shall be taken not to disturb the steel reinforcement projecting from any placement for at least 24 hours after the completion of such placement.

Finished concrete surface shall be protected from stains or abrasion and surface of edges likely to be injured during the construction period shall be kept properly protected by leaving forms in place or erecting protective covering to the satisfaction of the Engineer-in-Charge.

In case, the curing operations are inadequate or unsatisfactory, the Engineer-in-Charge shall be entitled to take such steps as he may deem necessary to make good the deficiencies and defects.

## **7.7 REPAIR OF CONCRETE**

Repair of concrete shall be performed by skilled workmen and in the presence of the Engineer-in-Charge.

No repair work shall be carried out until the Engineer-in-Charge, has inspected the location of the proposed repair and accepted the method of repair.

The Contractor shall correct all imperfections on the concrete surfaces as necessary to produce surfaces that shall conform to the required standards.

All materials, procedures and operations used in the repair of concrete shall be subject to approval by the Engineer-in-Charge.

Surfaces of concrete finished against forms shall be smooth and free from projections. Immediately upon the removal of forms and within 24 hours thereof, wherever practicable, all unsightly ridges or fins shall be removed and any local bulging on exposed surfaces shall be remedied by tooling and rubbing. All holes left by the removal of fasteners from the tie rods shall, after being reamed with a toothed reamer, be neatly filled with dry pack mortar.

All honeycombed, porous, fractured or otherwise defective concrete and surface concrete in which, in the opinion of the Engineer-in-Charge, additions are required to bring it to the prescribed lines, shall be removed by chipping concrete.

The chipped openings shall be sharp edged and keyed, and shall be filled to required lines with fresh concrete or as found suitable. Where concrete is used for filling, the chipped openings shall be not less than 100 mm in depth and the fresh concrete shall be reinforced and dowelled to the surface of the openings as directed by the Engineer-in-Charge.

Dry pack mortar shall consist of one part of cement to two parts of sand by volume and just enough water so that the mortar as used, sticks together on being molded into a ball by slight pressure of the hands and does not free water when so pressed but leaves the hands damp. The mortar shall be fresh when placed and any mortar that is not used within 30 minutes, after preparation shall be wasted with all consequences to the Contractor.

The mortar shall be placed in layers not more than 25 mm thickness after being compacted and each layer shall be thoroughly tamped to the satisfaction of the Engineer-in-Charge. Each layer except the last shall be roughened thoroughly to provide effective bond with the succeeding layers. The last or finishing layer shall be smoothed to form a surface continuous with the surrounding concrete. Dry pack mortar shall be used for filling behind reinforcement or for filling holes that extend completely through a concrete section. Shot Crete shall be used for holes too wide for dry pack mortar filling and too shallow for concrete filling and no deeper than the far side of the reinforcement that is nearest to the surfaces.

All patches shall be bonded thoroughly to the surface of the chipped openings and shall be sound and free from shrinkage cracks and trummy areas.

Concrete surfaces where high velocity flows may occur and as required by the Engineer-in-Charge, repair to the surfaces shall be bonded with an epoxy adhesive acceptable to the Engineer-in-Charge.

## **7.8 DEFECTIVE AND DAMAGED CONCRETE**

Concrete which is damaged from any cause and which is not manufactured, placed and compacted in accordance with these specifications and is found to have lower strength, density etc. than specified, as determined from test samples or core samples, shall be removed and replaced by the Contractor.

## **7.9 PAYMENTS**

Measurement of concrete work shall be made for making progressive payments against the total contract price using the agreed item rates entered in the contract document.

## **8.0 FORMWORK**

### **8.1 SCOPE OF WORK**

The specifications described hereunder relate to the Formwork. This work shall include all labour, plant, materials and services related to the design, fabrication, supply, erection, maintenance and removal of formwork and false work to be carried out by the contractor under this contract.

The formwork shall be fabricated and erected to the dimensions of finished surfaces of concrete as shown on the approved construction drawings or as otherwise directed by the Engineer-in-Charge.

### **8.2 SUBMITTALS**

**At least 30 days prior** to the construction of formwork for concrete and other works, the contractor shall submit, to the Engineer-in-Charge, the following:

Shop drawings, details and structural computations of the formwork construction.

Details of materials which the contractor intends to use for the fabrication of formwork.

The Engineer-in-Charge reserves the right to ask for any additional information deemed necessary to be included in the submitted documents.

### **8.3 GENERAL**

Forms or formwork shall mean the mould into which concrete is placed.

False work or shoring shall mean the structural supports and bracing for forms used in any part of the works.

All exposed concrete surfaces having slopes of 1.5: 1 or steeper shall be formed unless otherwise directed.

Where the character of the natural material cut in, to receive concrete is such that it can be trimmed to the prescribed lines, the use of forms shall not be required.

In these specifications, form work / false work has been indicated for concrete work, the same shall apply for other works also like masonry etc.

### **8.4 MATERIALS**

Forms shall be of timber; steel or other approved material except that the sheeting for all exposed surfaces, where form lining is not specified, shall be of tongue and groove timber of uniform width unless otherwise directed by the Engineer-in-Charge.

All materials used in formwork construction shall be of adequate strength and quality for their intended purpose and shall be satisfactory to the Engineer-in-Charge.

Timber shall be sound, straight, free from warp, decay and loose knots and shall be dressed smooth.

Where plywood is used, it shall be non-warping, non-wrinkling and manufactured with special waterproof glues. Plywood sheets shall be of uniform width and length.

The surface of steel or steel lined forms shall be smooth. Forms with dents, buckled areas or other surface irregularities shall not be used.

Reuse of forms and form lumber shall be allowed only if they are cleaned and repaired and capable of producing the finish required for the concrete. Timber or plywood forms repaired with metal patches shall not be used unless permitted by the Engineer-in-Charge.

Damaged forms or forms which have deteriorated through usage shall not be used.

Form oil used on surfaces of timber or plywood forms shall be paraffin base refined, pale, mineral oil. The oil used on the surface of steel forms shall be specially compounded petroleum oil and other oils of animal or vegetable origin and gums or resins which are heavier in body and frequently darker than petroleum oils shall be used in case of steel

lining forms. The contractor may use any other material also for coating of the formwork with the approval of the Engineer-in-Charge.

Forms of the same material / character shall be used for similar exposed surface in order to produce a uniform appearance.

The type, size, shape, quality and strength of all materials from which forms are made shall be the sole responsibility of the contractor but subject to the approval of the Engineer-in-Charge.

#### **8.5 DESIGN, FABRICATION, ERECTION AND MAINTENANCE OF FORMWORK**

Forms and false work shall be designed, fabricated, erected and removed in accordance with the applicable provisions of the Recommended Practice for Concrete formwork as per relevant IS codes, as required by the Engineer-in-Charge and as specified herein.

All false work shall be designed to withstand safely all live and dead loads, necessary pressures, ramming and vibrations without significant deflection from the prescribed lines, which might be applied to the falsework during all stages of construction, service and removal.

The Contractor shall be solely responsible for the design, construction and maintenance of all formwork and falsework required in the work.

Detailed drawings of shoring and false work shall be prepared by the Contractor. The calculations and drawings shall show the size and specification of the false work, including the type and grade of all materials used in the construction, design loads on false work supports, horizontal forces imposed on the false work and used for design purpose and details of splices and connections including nails, spikes and other fasteners.

False work shall be constructed only after the false work drawings have been approved by the Engineer-in-Charge.

The approval by the Engineer-in-Charge of Contractor's drawings shall not relieve the Contractor of his responsibility for the adequacy of form and false work or for the successful completion of the work.

The Contractor shall construct the false work strictly in accordance with the approved false work drawings, one set of which shall be kept on the site at all times and no changes shall be allowed without prior written acceptance of such changes by the Engineer-in-Charge.

Forms shall be designed to permit the concrete to be deposited, as nearly as practicable, directly in its final position and to allow inspection, checking and clean up of the formwork and reinforcement to be completed without delay.

Formwork and false work shall be designed, constructed, erected and maintained such as to confine the concrete without loss of mortar and produce finished surface, which are within the tolerances specified.

Forms for concrete against which backfill is to be placed or which shall not be exposed to view may be constructed of smooth tight boards not less than 25 mm nominal thickness. Forms for concrete exposed to flow of water or exposed to view shall be constructed of steel or plywood, which is smooth and free from defects with matched and sanded joints to give a symmetrical pattern over the entire area. Chamfer strips (40 mm x 40 mm) shall be used on all exposed corners, unless otherwise specified or required by the Engineer-in-Charge.

Forms ties, supports, anchors, braces, spreaders and other similar devices which shall be embedded in the concrete for holding the forms shall incorporate threaded metal bars to facilitate removal of forms. Wood spreaders shall not be left in the forms. Any metal remaining embedded in the concrete shall be at least 50 mm from the surface of concrete.

Holes left in the concrete by removal of parts of form ties or similar devices shall be well filled with cement mortar and neatly finished to match the adjacent concrete.

Form inserts or similar permanently embedded items shall be accurately located and securely fastened in place. The number and location of form ties and bolts shall be such as to ensure that forms fit tightly against the concrete previously placed and remain in tight contact during operations.

Forms shall be set and maintained within the specified tolerance limits such that the complete concrete surfaces are within these limits.

All form surfaces shall be thoroughly cleaned before erection and shall be lubricated with a non-staining mineral oil. All excess oil shall be wiped off the forms prior to placement of concrete. Oil shall not be allowed to come into contact with reinforcing steel or other embedded items. For use of timber forms, the oil shall be capable of penetrating the timber and keeping it sufficiently oily to eliminate sticking and preventing absorption of water and consequent warping.

The oils shall be applied by brush, spray or swab and the forms shall be covered fully and evenly without excess or drip. Care shall be taken to prevent oil from getting in the surface of construction joints. Special care shall be taken to oil thoroughly the form strips for narrow groove seats, windows, doors and elsewhere so as to prevent swelling of the forms and consequent damage to concrete prior to the removal of forms.

Immediately before concrete is placed, all forms shall be inspected to ensure that they are properly placed, sufficiently rigid, clean, tight and properly surface treated and free from encrustations of mortar, grout or other foreign materials. No concrete shall be placed until formwork has been inspected and accepted by the Engineer-in-Charge. Where forms of continuous surfaces are placed in successive units, the forms shall fit tightly over the surface so as to prevent leakage of mortar from the concrete and to maintain accurate alignment of the surface.

Where timber forms are used, the laying shall be in the direction which will blend architecturally into the lines of the structures as decided by Engineer-in-Charge.

Curved and special forms shall be such that these will result in smooth concrete surfaces. They shall be designed and constructed so that they will not warp or spring up during erection or placing concrete.

When metal sheets are used for lining forms, the sheets shall be placed and maintained on the form with the minimum number of wrinkles, humps or other imperfections. The use of sheet metal to cover imperfections in the lining of timber faced forms for surfaces that shall be permanently exposed to view shall not be permitted.

Where plywood or hardboard is used for form lining, the joints between the sheets shall be smooth and as perfect as practicable and no patching of the plywood or hardboard shall be permitted for permanently exposed surfaces. Minor imperfections in the plywood may be corrected by the use of plastic wood secured firmly in place and sand papered smooth.

Wire ties shall be permitted for the forms when specially approved by the Engineer-in-Charge and shall be cut off flush with the surface of concrete, after the forms are removed. Wire ties shall not be used when permanently exposed finished surfaces are required.

Forms shall be so constructed that the finished concrete surfaces shall be of uniform texture in accordance with the type of finish specified for concrete surfaces in these specifications.

The erection of formwork in position shall be rapid enough, rigid and strong to withstand concreting operations and maintain the alignment. Panels of similar shape shall be identical and inter-changeable.

For special section/shapes, timber/steel form shall be used as approved by the Engineer-in-Charge.

The contractor shall strengthen or modify the formwork whenever required by the Engineer-in-Charge.

Unless authorized, suitable mouldings shall be placed to level all exposed edges at construction joints and any other edges shown on the drawings or as required by the Engineer-in-Charge. The final detailed drawings shall show any formed recesses, slots, block outs and similar construction details which have to be taken into account in fixing the formwork.

Forms shall be maintained, at all times, in good condition particularly as to size, shape, strength, rigidity, tightness and smoothness of surface.

The Engineer-in-Charge will, at any time, have the right to reject formwork, which he considers to be no longer fit for use.

## **8.6 REMOVAL OF FORMWORK**

Forms shall not be removed until the concrete has hardened and has attained a crushing strength of at least twice the stress, which the concrete may be subjected to at the time of removal of forms.

Duration for which the forms shall remain in place shall be decided by the Engineer-in-Charge, with reference to weather condition, shape, and position of the structure or structural members and the nature and magnitude of dead and live loads. The forms shall not be removed without the permission of the Engineer-in-Charge.

The forms shall be removed with great caution and without jarring the structure or throwing heavy forms upon the floor. In order to achieve this end, wedges and clamps shall be used whenever practicable instead of nails.

In order to avoid excessive stresses in concrete that might result from swelling of the forms, wood forms for wall opening shall be loosened as soon as this can be accomplished without damage to the concrete. Forms for the opening shall be constructed so as to facilitate such loosening.

The Contractor shall be solely responsible for any damage that may be caused by negligence, lack of proper precautions due to haste etc. in the matter of removal of forms and shall make the same good to the satisfaction of the Engineer-in-Charge.

## **8.7 PAYMENTS**

No separate measurement or payment will be made for any formwork used, as required, at any location of any works and the cost for this is deemed to be included in the contract price.

## **9.0. DEWATERING AND DRAINAGE**

### **9.1 SCOPE OF WORKS**

The specifications described hereunder relate to the works of dewatering and drainage to be carried out by the Contractor, which shall include supply of all labour, construction plant, material and performance of all services required to remove sludge/ muddy water, service water and natural surface flow or ground water seepage from the work areas for the construction of various structures covered under the contract.

The works shall be executed in accordance with the Contractor's designs, specifications and sequences as approved by the Engineer-in-Charge.

### **9.2 SUBMITTALS**

**Within 30 days** after the date of issue of the Letter of Acceptance, the Contractor shall submit, to the Engineer-in-Charge, the detailed design of dewatering system.

This design shall be consistent with the outline description submitted by the Contractor with his bid and shall include the following:

Design assumptions and calculations

Layouts of drainage / dewatering facilities

The Engineer-in-Charge reserves the right to require any additional information deemed necessary to be included in the submitted documents.

### **9.3 GENERAL**

The pumped water carried in pipes or channels shall be discharged at point sufficiently away from the edge of foundation excavation as directed by the Engineer-in-Charge. Care shall be taken to ensure that there is no seepage and flow of water back to the working areas.

## **9.4 DEWATERING OF SURFACE CONSTRUCTION SITES**

### **9.4.1 General**

The Contractor shall perform all works necessary to drain the surface construction sites of rain, ground water and service water. The works shall include, but not limited to the following:

Design and construction of drainage, ditches, pits and pump sumps

Design, furnishing, operation and maintenance of dewatering equipment

Relocation of dewatering facilities required for the performance of other works, if any.

All auxiliary works required for safe and continuous dewatering of the construction sites.

Dewatering of surface construction sites located near a river/stream shall be done up to the existing water level in the river/stream by gravity as directed by the Engineer-in-Charge. Suitable drainage shall be made joining the course downstream of the construction site to provide required gradient to facilitate proper and efficient dewatering. Below the water level of the stream, dewatering shall be done by pumping water collected in the sumps and discharging the same into course of the river/stream downstream of the construction site.

### **9.4.2 Requirements and Design**

The Contractor shall design and install complete facilities at the surface construction sites. The surface water dewatering systems shall be designed to accommodate, without undue disruption to the works, any rainfall event and taking into account the extent of the sites to be dewatered and the dewatering arrangements proposed.

Claims for extension of time due to delays caused by unfavorable weather conditions will not be considered.

The Contractor shall provide adequate pumping capacity, including standby units, to handle all water entering into any of the surface construction sites. In addition, he shall provide sumps and pumps and well points in the immediate vicinity of the structure foundations using such water conductors as are necessary to conduct the water away from the work site as per the requirement of works to be executed in a manner so that such operation shall be kept free from standing or running water.

Power for operating the dewatering system shall be arranged by the Contractor. The Contractor shall make his own arrangements for sufficient standby power at his cost to carry on the works during any interruption of power. The standby power supply shall undergo weekly trial runs lasting at least 30 minutes.

The Contractor shall ensure that all dewatered / drainage water is disposed off without causing interference on the site and that no drainage water runs into adjacent works.

The dewatering systems shall be designed and installed in such a way that modifications and extensions to the systems are possible while they are in full operation.

All the components of the dewatering systems shall be installed and operated in accordance with the approved method and the construction time schedule or approved modification thereof.



The approval by the Engineer-in-Charge of the dewatering system shall not relieve the Contractor from being fully responsible for the design, construction, operation, maintenance, safety and removal of the facilities provided for the dewatering system and he shall be liable for any damage or delays caused by its failure.

#### **9.4.3 Materials and Execution**

Drainage ditches shall be excavated along the top of excavated slopes. Such ditches shall be kept well back from excavation edges in order to prevent saturating the upper part of the slopes. The ditches shall be regularly cleaned out of all accumulated silt and other matter so that water may flow freely at all times.

Where excavation is to be made below the ground water table, the Contractor shall lower the water table sufficiently below any working surface by means of properly screened wells and/or ditches to ensure that the foundation surface remain free of standing water and undamaged by the passage of construction traffic. All ditches shall be outside the foundation areas. The water shall be collected and removed by pumping, if no outflow by gravity is possible.

Where concrete / masonry is to be placed, the water table shall be maintained below the lowest part of the finished excavation for minimum of one day following the raising of structure above the natural ground water table and for such additional time as may be necessary to preclude damages to structure foundation.

In trenches and foundations, the dewatering shall at all times enable to carry out the excavation works in dry.

Upon completion of dewatering, temporary pipes and pump sumps beneath permanent structures shall be closed off and completely filled with grout, mortar or concrete as directed by the Engineer-in-Charge.

#### **9.5 MEASUREMENT AND PAYMENT**

No measurement for payment against dewatering and drainage would be recorded as the cost for the same are deemed to be included in the contract price

##### **10.0.0 Technical Requirement of the pipes:**

###### **10.1.1 Ash slurry piping:**

Ash slurry piping shall be designed to handle ash slurry at the system design conveying rate. The ash slurry piping system shall include all pipes of adequate cross section and suitable fittings required for all slurry pipe from existing pipe laid on ash pond 'A' area up to various discharge points on pipeline 'A', 'B', 'C' and 'D'. The proposed extension of pipe is envisaged to be done by the M.S pipes of 350mm NB of 9.5mm thickness. The pipe length of extension are to be proposed to be laid such that the friction losses are barest minimum for all the pipe lines without exerting undue pressure on the ash slurry pump.

The ash slurry pipeline & fitting shall be conforming to IS: 3589. the test certificate and quality control (QAP) details shall be furnished along with the pipe.

###### **10.2.0 Fittings:**

10.2.1. All fittings (bends, elbows, laterals & spool pieces) used in fly ash slurry transportation and slurry disposal piping shall be of integral wear back MS plates welded construction. Minimum thickness of wear back shall be twice the pipe wall thickness.

10.2.3. All bends and fittings shall be fabricated/manufactured as per good engineering practice and shall be of large radius (Min. 3D) construction. The welding of these fittings shall be as per the relevant Indian Standards with continuous weld run.

###### **10.3.0 Bends:**

10.3.1. The bends shall be fabricated out of the pipe material. The bends shall be of Metre bends construction and the bend ends shall be provided with suitable extension for jointing with the main slurry pipe with dresser type sleeve coupling on both ends. The bends shall be

provided with double back at the wearing part of the pipe and it shall cover at least half the periphery of the pipe bend.

**10.4.0 Discharge Points:**

10.4.1. Each discharge point shall be provided with a set of two valves, one along the line and other to the discharge spool. The two valves shall be a set of valves – one open valve and one blank valve, each of which are interchangeable so that blank plate valve from the discharge point shall be shifted to the pipe so that the slurry flow is diverted to the ash pond. The Butterfly valves should conform to IS:2062. The “Discharge point Tee” shall be provided with suitable flanges to hold the valves complete with rubberized Gasket or equivalent suitable material to render the joint leak free. The tee-off shall be provided at an angle of 120° to discharge the ash slurry into the slurry pond or as directed by EIC for smooth discharge of slurry into the pond.

**10.5.0 Steel Platform:**

10.5.1. The steel sections for platform should be conforming to latest edition of Indian standard.

**10.6.0 Connection of the New Pipeline with Existing Pipe:**

The existing ash slurry pipelines are made of M.S of 350 N.B. diameter of 9.5mm thickness, four in number. New slurry pipes are also made of M.S to maintain interchangeability. Welding joints shall be provided to connect both the new and old pipe, for the ash slurry pipelines.

**10.7.0 Painting:**

10.7.1. The pipe and all the fitting shall be painted with one coat of metallic primer followed by two coats of epoxy base paints of black colour. The pipe shall be cleaned of all the mud, rust and greasy material/ oil with wire brush and oil/grease removing agents. The paint on the welded surface shall be done after grinding the welded parts and making them smooth and free from any cuts and burrs. The contractor shall ensure that the paint is dried in sun and is free from peel offs.

**11.0.0 House keeping**

After completion of the work the agency has to clear all the left out materials, other arrangements made for the work and clean the site properly so that final clearance/ completion certificate can be issued.



### **SPECIAL CONDITIONS**

**NAME OF WORK: RAISING OF BUNDS HEIGHT OF ASH POND 'C' FROM RL.202.0M TO RL.205.0M OF ITPS.**

**1. Scope of work:**

- i) Raising of bunds of Ash pond 'C' and providing sand blanket, sand filter etc. complete as shown in the drawings. Pond ash from and soils from borrow areas shall be used in Raising of bunds. Any damage, slips, erosion etc. in existing bunds shall also be made good by the contractor.
- ii) Raising the height of collector well with platform along with structural steel ladder is to be provided from the partition bund up to the collector well with required RCC foundations & structural steel supports in natural soil.
- iii) Providing turfing on the upstream and downstream face of all new construction.
- iv) Laboratory tests during construction (at frequencies indicated in the technical specifications) including submission of test results and reports. The contractor has to provide all test equipments and materials required for the tests. He has to get the tests done required for the work which cannot be carried out at site at his risk & cost in any approved Govt. laboratory.
- v) Transportation and storage at site (including insurance during transit and storage) of materials and equipment.
- vi) Dismantling of existing cross over discharge pipe including excavation of earth to required depth.
- vii) Supply & erection of 350NB & 600NB 9.5mm thickness M.S ERW pipe, including supply and erection of 350NB manually operated knife edge gate valve of reputed approved make suitable for bottom & fly ash medium.

- viii) Any other work not specifically mentioned but required to make the raising of bunds height of Ash pond 'C' complete in all respects. However, the cost of these works will be paid to the contractor at a mutually agreed rate as per clause no.4.11 of GCC.
- ix) The area for contractor site office is to be arranged by contractor at his own cost & risk.

## **2.0 Time for completion.**

The time of completion of the entire work under the scope of this tender shall **be twelve calendar months without rainy season to be reckoned from the issue of work order/ LOI.**

The contractor is required to mobilize his men, materials, plant & equipment at his work site within 15 days of the date of issue of LOI/Work order at the commencement of the contract, failing which the Engineer-In-Charge will annul the contract agreement at his discretion. In the event of any such annulment, the owner reserves the right to recover the cost and other financial losses from the contractor in any manner deemed legally correct besides forfeiture of the EMD converted as ISD. The onus of proving that the delay in mobilization was beyond the control lies with the contractor. The Engineer-in-charge after satisfying himself with the reason for the delay if any, may allow extension of time to avoid the annulment of the contract.

## **3.0 Quality Control and Quality Assurance**

The contractor shall institute a quality control and quality assurance system to demonstrate compliance with the requirements of the contract. Such system shall be in accordance with the details stated in the contract. Compliance with the quality control and quality assurance system shall not relieve the contractor his duties, obligations or responsibilities.

- 4.0** Security deposits & Income tax, Sales tax as applicable shall be recovered from the bills. Security deposit shall be refunded after twelve months of successful completion of the work if no defect is found.
- 5.0** All the vehicles used for the purpose of the work should have proper documents and driver should have professional license.
- 6.0** Any defective work noticed within the defect liability period shall be rectified by the contractor immediately on receipt of information.
- 7.0** If management at any point of time feels that the agency is intentionally avoiding the work, it may engage any other agency to get the work done and deduct an amount equal to twice the amount spent to get the work done. Contractor shall have no right to dispute the agency through which work is done & the amount spent to get the work done.
- 8.0** At any time from the commencement of the work if the owner decides for whatsoever reason, not to carry out the whole work or part thereof as specified in the tender, then owner shall give notice in writing of the fact to the contractor, who shall have no claim to any payment or compensation on whatsoever account (profit or advantage which he might have derived by executing the work

in full) neither shall he have any claim for compensation by reason of any alterations having been made from the original specification drawings, design and instruction which may involve any curtailment of the work as originally contemplated.

- 9.0 All water, which may accumulate on the site during the progress of the work or in trenches, shall be removed from the site to the satisfaction of the Engineer-in-charge at the contractor's expense.
- 10.0 The contractor shall not any time do, cause or permit any nuisance on the site or do anything which shall cause unnecessary disturbance or inconvenience to owner or occupiers of the other properties near the site and to the public generally and must ensure healthy environment and shall not pollute any water source. In the event contractor fails to do so all penalties and cost of compliance of the same shall be charged from the contractor.
- 11.0 As the works are of emergency nature and are to be completed in a time schedule, the contractor may be requested to carry out works during night and/or on Sundays and authorized holidays for which the contractor be given permission in writing by the Engineer-in-charge
- 12.0 The contractor has to arrange construction water at his own cost and arrangement.
- 13.0 The contractor has to construct and repair haul road for transportation of earth, ash and other construction material on ash pond and at any place for smooth movement of his transport vehicles and machineries at his own cost and maintain them during construction. He has to sprinkle water over the entire haul road to prevent dust blowing and air pollution.
- 14.0 The contractor has to keep experienced supervisors at excavation/loading point and unloading/compaction site with site order books to receive order/direction from engineer during site visit.
- 15.0 Above all the contractor should visit the site and get him acquainted with the site condition before quoting rate for the tender. Further he should go through the job safety analysis and comply to all the points for safe execution of work and prevention of environment pollution.
- 16.0 All statutory dues as levied by Central, State Government and Local authorities shall be recovered from the contractor's bill. Such deductions shall not be reimbursed in any case.
- 17.0 The contractor has to arrange earth & turf at his own risk and cost.
- 18.0 The contractor has to submit his work program before commencement of work.
- 19.0 The contractor has to arrange Cement & Steel required for the work. OPC, PSC, PPC cement of OCL, UTCC, ACC Bargarh Brand conforming to corresponding IS code shall be used. Reinforcement of SAIL/ TATA/ RASHTRYA ISPAT NIGAM make shall be used.
- 20.0 **Contract Price:**
  - a) The Contract Price will remain fixed and shall not be changed for any changes in the cost of labour, materials or other matters.

- b) The contractor shall pay all duties and taxes in consequence of his obligations under the contract and the contract price shall not be adjusted for such costs, except on account of legislation or Govt. order.
- c) Any quantities, prices or rates of payment per unit quantity which may be set out in the Schedule are only to be used for assessment of interim payments and the Owner will pay the Contractor a firm Contract price on completion of all works.
- d) The contract price will be paid to the Contractor in Indian Rupees (INR) only.

#### **21.0 Records and Measurement**

- a) Measurements shall be taken jointly by the Engineer-in-charge or his authorized representative and by the contractor or his authorized representative.
- b) Before taking measurements of any work, the EIC or the person deputed by him for the purpose shall give a reasonable notice to the contractor. If the contractor fails to attend or send an authorized representative for measurement after such a notice or fails to countersign or record the objection within a week from the date of measurement, then in any such event measurements taken by the EIC or the person deputed by him shall be taken to be the correct measurement of the work.
- c) The Contractor shall, without extra charge, provide assistance with every appliance, labour and other things for measurements.

Format No: ER 5/10– F2, JOB SAFETY ANALYSIS (JSA), IB THERMAL POWER STATION, OPGC							
Serial No.	Dept	Equipment	Location	Job description:			
	Ash Pond	Ash Pond	Ash Pond	Raising of embankment height for ash pond C			
JSA performed by:	Signature	Reviewed & Approved by	Signature	Date of Issue	Date of revision		Revision No
Anil Panda		Akhila Satapathy		20.04.2020			
HAZARD TEXT / TYPE (For reference to identify the Hazard type)							
PHYSICAL HAZARDS	PHYSICAL HAZARDS	PHYSICAL HAZARDS	ELECTRIC AL HAZARDS	CHEMICAL/ GAS HAZARDS	EXCAVATION	OTHERS	
Noise	Fall from height	Force (Push/Pull)	Shock/ Electrocutio n	Flammable/ Explosive substances	Collapse/Sliding	Fire	
Radiation	Fall (Slip/Trip)	Caught in/on or between	Static electricity	Inhalation of toxic fumes	Underground live cable damage	Heavy Wind/Rain	
Confined space	Fall down/below	Struck by/against	Arc flash/ blast	Ingestion/Absorption	ERGONOMICS	Dust exposure	
Exposure to pressurized Steam/Air	Fall of Objects from height	Extreme weather (Hot/Cold)	BIOLOGIC AL HAZARDS	Body/Eye Contact	Poor Posture	Oil spill	
Contact with Hot surface	Contact with moving parts	Poor illumination	Snake/Insect bite/Virus infection	Spillage	Repetitive motion	Human factor	
PPEs to be used	Safety Helmet, Safety Shoes, Safety goggles, Dust mask, Hand gloves, Ear Plug, Full body harness etc.						
Tools required	Phowrah, belcha, trowel, bucket, gainti, Excavator, HYVA, JCB, Dozer, Roller, Water Tanker, Concrete Mixer, etc						

Important Note- While deciding hazard control measures, consider hierarchy of hazard control steps in order of preference.

SEQUENCE OF BASIC STEPS	SAFETY, HEALTH & ENVIROMENT HAZARDS	SAFE JOB STEPS / HAZARD CONTROL MEASURES				Are control Measures adequate to mitigate the risk (Yes/No)
		Elimination/ Substitution	Engineering	Administrative	PPE	
1. Cleaning of wild grass from work site.	1.Sliping from the slope. 2.Injury due to slip of sickle.			1. A supervisor must be engaged to monitor the work properly. 2.The workers should move carefully while going down/up the slope of bank. 3.The workers must use dust mark, safety grass during dry weather to protect them shelves from ash blowing.	Wear safety helmet, shoes, safety goggle, dust mask	Yes



<p>2. Mobilisation of construction materials like ash brick, chips, sand, by truck / tractor to ash pond</p>	<p>1.Road accident 2.Tilting of vehicle as the road is narrow at places. 3.Slipping in to ash pond and drowning .</p>	<p>1. Narrow dyke top road will be restricted for entry of vehicles.</p>	<p>1. Guard posts are provided along the road edges for safe movement of vehicles</p>	<p>1.The drivers should have valid driving license. 2.All the vehicles should have valid documents like Fitness certificate, Insurance, R.C.Book. 3.The vehicles should not be driven more than 5 KM/hr. 4.The driver should not drive the vehicle in alcoholic condition. 5.The driver must be accompanied with an assistant. 6.No people should be allowed to sit on trolley. 7.The braking system should be perfect. 8.Tyre in good condition. 9.The trolley rod should be in good condition. 10.While parking the vehicle for loading &amp; Unloading, stopper should be provided on both front and rear wheel. 11.Only work during day time.</p>		<p>Yes</p>
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3. Excavation of ash from ash pond	Slip of excavator / vehicle inside the excavated pit due to collapse of ash	N.A	1. Haul road to be made inside ash pond for proper approach of excavator and vehicle. 2. Rigidity of the area near the excavator to be ensured	1. Vehicles must be kept away from the excavated pit and collapsible ash. 2. Excavator must be kept away from loosely filled ash / collapsible ash / water logged area inside ash pond		Yes
4. Loading of ash in ash pond	Hitting with the Vehicles/ persons during loading.	N.A	1. Rigidity of area soil near excavator to be ensured. 2. Vehicles will be fixed with back gear alarms.	1. No person will be allowed to stay within the swing area of boom of excavator. 2. Supervisor at loading to be kept himself away from the swing area of the excavator; and must keep himself away from the approaching vehicle	Wear safety helmet, shoes, safety goggle, dust mask	Yes
5. Excavation of earth from borrow area	Slip of excavator / vehicle inside the excavated pit due to collapse of slope of excavated pit	N.A	1. Rigidity of area soil near excavator to be ensured	1. Vehicles must be kept away from the excavated pit and collapsible slope. 2. Excavator must be kept away from collapsible earth/slope.		Yes

6. Loading of earth	Hitting with the Vehicles/ persons during loading.	N.A	1. Rigidity of area soil near excavator to be ensured. 2. Vehicles will be fixed with back gear alarms.	1. No person will be allowed to stay within the swing area of boom of excavator. 2. Supervisor at loading to be kept himself away from the swing area of the excavator; and must keep himself away from the approaching vehicle	Wear safety helmet, shoes, safety goggle, dust mask	Yes
7. Transportation of ash from ash pond to filling area and earth from borrow area to ash pond site.	Blowing of dust, Inhalation of dust Air Pollution due to fugitive emission	N.A	1. Sprinkling of water	Before vehicle movement water sprinkling to be ensured	Dust mask to be used by the work men	Yes
8. Transportation of ash from ash pond to filling area and earth from borrow area to ash pond site.	Tilting of vehicle as the road is narrow at places.	1. Extreme narrow dykes of ash pond are restricted for movement of heavy vehicles	1. Guard posts are provided along both the edges of ash pond A	1. Speed of the vehicle to be limited to 10 KMPH at the embankment top 2. Vehicle to be ply on the middle of the embankment, and in circumstances it should move to the edge of the dyke.	Vehicle seat belt to be ensured	Yes

<p>9. Transportation of ash from ash pond to filling area and earth from borrow area to ash pond site.</p>	<p>Road accident, Vehicle run over</p>	<p>N.A</p>	<p>1. The vehicle should be in good condition with proper Braking condition, Tyre condition, gear, horn, back horn, back light 2. Periodic maintenance of vehicles to be ensured</p>	<p>1. All vehicles will have valid documents like RC Book, insurance, fitness certificate 2. Driver must have valid driving license. 3. The driver must not drive in alcoholic condition. 4. The driver must have good vision 5. While parking the vehicle for loading and unloading stoppers should be provided on both front and rear wheel. 6. Flag men will be deployed at the junction point of road for traffic control</p>		<p>Yes</p>
<p>10. Transportation of ash from ash pond to filling area and earth from borrow area to ash pond site.</p>	<p>Blockage of road</p>	<p>N.A</p>		<p>1. The vehicle should not be parked on the road</p>		<p>Yes</p>

11. Unloading of ash/earth in embankment construction	1. Slip of vehicle 2. Drowning of person in ash pond	N.A	Bund will be provided near the edge of the dumping location of the embankment. 2. No vehicle will be allowed to cross the bund 3. Back horn, back light and proper brake to be ensured.	1. Supervisor will be provided in the site for adequate supervision 2. The supervisor must keep himself away from the approaching vehicle. 3. No person will be allowed inside the equipment movement area 4. Long rope with lifebuoy will be kept ready at site for emergency.		Yes
12. Spreading of ash/earth	Hitting of dozer	N.A	1. Back horn and back light of dozer must be ensured	1. No person will be allowed in the direction of movement of dozer.		Yes
13. Rolling of earth / ash for compaction	Hitting of roller	N.A	1. Back horn and back light of roller must be ensured	1. No person will be allowed in the direction of movement of roller.		Yes
14. Reversing the truck / tractor / vehicles on the narrow dyke, and Unloading of material at site	1. Road accident 2. Tilting of vehicle as the road is narrow at places.			1. Supervisor to be deployed at site alongwith flagman for controlling the vehicle movement 2. Nobody should be allowed in the direction of movement of vehicles		Yes

15. Stacking and spreading of materials on the bund of Ash pond embankment & road.	Injury due to slip of spades,crowbar.			1.The person should be careful while stacking materials on the bund. 2.Person should stacked the materials properly so as not to cause any inconvenience to other people working in the area. 3.Person should spread the earth properly & carefully.		Yes
16. Concreting,brick masonry.	1.Falling from height while working. 2.Dust ingress in Nose & Eye during cleaning of surface. 3.Falling of materials on ground while working and create environmental hazard.		1.Scaffolding to be made properly as per requirement. 2.The ground will be cleaned immediately.			Yes
17) Excavation of earth using Excavator / JCB and manually, excavaton for sand chimney / sand blanket / pipe removal	1) Contact with live cable/equipment may cause shock/electrocution	na	The existing live cables and water pipe lines to be rerouted as needed.	Excavation clearance may please be taken before starting of excavation.	Use electric shock proof hand gloves,safety shoe safety glass,safety helmet.	Yes
18) Excavation of earth using Excavator / JCB and manually, excavaton for sand chimney / sand blanket / pipe removal	2) Fall (Slip/Trip)	na	Working site shall be cleaned properly. Hard Barricading of the excavted pit to prevnet any fall.	na	na	Yes

19) Excavation of earth using Excavator / JCB and manually, excavator for sand chimney / sand blanket / pipe removal	3) Struck by/against	na	Experienced operator shall be deployed for dressing/excavation.	Workers shall be instructed to work carefully. License holder & Experienced operator to be deployed for excavation. Signal (Flag) man to be deployed with provision of flags for signalling. Barricade the swing area.	Use safety helmet, shoe, hand gloves and goggles.	Yes
20) Excavation of earth using Excavator / JCB and manually, excavator for sand chimney / sand blanket / pipe removal	4) Fall (Down/Below) after excavation	na	5) Barricade the excavated area after excavation	Barricade the excavated area with hard barication.	na	Yes
21) Sand filling, back filling, hammering, PCC and other cement concrete works.	1) Body/Hand injury	na	Work carefully.	Take rest in between. Avoid bad posture.	na	Yes
	2) Contact with cement dust/Irritation on hand/leg	na	na	na	Safety goggles, dust mask and hand gloves to be used. RUBBER-WET CEMENT & COTTON-DRY CEMENT	Yes
	3) Struck by against.	na	Work carefully.	Deploy trained workmen	na	Yes
22) Working with mixture machine.	1) Contact with moving equipments.	na	Gaurding of the rotating shaft of mixture machine. Loose clothes should not be wear near by.	Keep distance from the movable/swing area of the machine. Used only experience worker . Barrcade the working area of mixture machine.	na	Yes

23) Cutting bending and placing of TMT reinforcement & Shuttering works	1) Body/Hand injury	na	Gaurding of the cutting machine.	Deploy trained workmen	Use safety helmet, shoe, hand gloves.	Yes
	2) Cutting of hand					Yes
	3) Contact with fire sparks	na	na	na	Face shield attachd with safety helmet shall be used and apron shall also be used required.	Yes
	4) Power supply with authorized sources	na	Used RCCB distrution board with privision of earthing and weather protecion.	na		
	5) Exposure to dust	na	na	na	Use safety googles and nose mask.	Yes
	6) Irritation on hand/legs	na	na	na	Use rubber hand gloves and gum boot.	Yes
Lifting and Shifting of material / pipe by Hydra	Fall of object (Material)		Before engaging the hydra physical inspection to be done. Use certified lifting tools(Sling,Cha in Block, D Shackels,). Don't lift load above of rated capacity. . Barricate the lifting/working	Do not work or move under any hanging load. Maintain proper distance from moving hydra. Use of hydra should be under experienced supervision. Deploy experienced rigger. Proper signalling to be use whenever any material will lift		



			area to prohibited the movement of people.			
	Struck by/against the hydra/ material		Deploy traffic controller (Signal man) to control the movement of people.	Barricade the lifting/working area to prohibit the movement of people. Ensure the working personel should maintain proper distance from moving hydra.		
	Contact with live cable/wiring/elect. Board.		Electric supply if any shall be made off.			
Erection of structural materials / MS Pipe	Body/hand/leg/other body part injury		Deploy trained workmen		Use handgloves along with helmet, shoe, glass, earplug & dustmask.	
	Fall (Slip/Trip)		Clean the site properly;		use full body harness and anchor properly.	
	Fall from height.		Deploy trained scaffolders for erection & dismantling of the scaffolding.			
	Fall of objects from height.		The scaffolding area shall be barricaded.			
	Exposure to Dust	Use dust mask & safety glass				

Review the job while execution	1. Identify while working	1. Take appropriate action.				
Emergency Safety Measures ( Rescue/Fire Brigade etc.): Contact MCR or inform to emergency contact no.		Emergency Contacts-Main Control Room- 222, 233,244, Fire- 777, 222257, Ambulance- 248/337, Hospital-666				
Overall Job Risk Category- (High/Medium/Low) :	<b>High</b>					
JSA Review during PJB:						
Pre Job Briefing (PJB) is applicable to all persons involved with the task.						
Pre Job Briefing (PJB) Acknowledgement: I undertake that the JSA is communicated to me effectively						
Name	Agency's name	Signature				



**ODISHA POWER GENERATION CORPORATION LTD**

**IB THERMAL POWER STATION**

**BANAHARPALLI**

**HAZARD IDENTIFICATION & RISK ASSESSMENT ( OCCUPATIONAL HEALTH & SAFETY )**

**Name of work : Raising of embankment height for ash pond C**

**FORMAT NO: ER 5/10-F1**

FORMAT REVISION NO: 02/00		DOCUMENT REVISION STATUS : R- 21			DOCUMENT REVISION DATE : 10.08.18								
Sl. No.	Responsible Deptt.	Activity	Description of Hazard	Risk	Routine/Non-Routine(R/NR)	Existing Control	Qualitative Criteria		Quantitative Criteria			Significant/Non significant	
							Legal	Interested party concern	Likelihood	Severity	Risk Level		
1	2	3	4	5	6	7	8	9	10	11	12	13	
	<b>ASH POND</b>	Earth excavation work(Manual)	Collapsing of earth	Injury / disability	R	EM-4/29,EM-4/36,EM-4/29	N	N	1	2	2	NS	
			Falling into trench	Injury leading to fractures.	R	EM-4/79,EM-4/36,EM 4/43	N	N	1	2	2	NS	
		Transportation of debris.	Faliure of vehicle due to over loading/unsafe driving/mechanical failure	Injury/Fatal	R	EM- 4/47,	N	N	1	1	1	NS	
			Falling of dust in eye while loading & unloading	Eye irritation	R	EM-4/93,	N	N	1	2	2	NS	

			Exposure to hazardous waste which are mixed with debris	Injury	R	EM-4/8	N	N	1	2	2	NS
		Ash pond works										
		(a) Re-built of slope	Hitting of excavator to dumper driver/helper/supervisor	Injury/Disability/Fatal	R	EM-4/36	N	N	1	3	3	NS
			Exposure to dust	Respiratory problem	R	EM-4/93,	N	N	1	2	2	NS
		(b) Turfing	Hiting of spade with body parts during cutting of turf by spade	Injury	R	EM-4/29,	N	N	1	2	2	NS
			Fall from slope of ash dyke during placing of turf	Injury	R	EM-4/36,EM-4/47	N	N	1	2	2	NS
			Fall from slope of ash dyke during watering to turf	Injury	R	EM-4/36,EM-4/47	N	N	1	2	2	NS
		( c) Stone pitching	Hiting of stone with body parts while unloading from dumper	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Hiting of stone with body parts due to fall of stone while carrying from stack to work spot manually	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Slip/Fall while carrying stone on slope of ash dyke	Injury/ disability/Fatal	R	EM 4/47	N	N	1	2	2	NS
			Hiting of stone with body parts while placing stones	Injury	R	EM 4/47,EM-4/45	N	N	1	2	2	NS
			Slip/Fall while placing stone on slope of ash dyke	Injury/ disability	R	EM 4/47,EM-4/45	N	N	1	2	2	NS
		(d) Supression of ash blowing	Exposure to dust while sprinklig water	Physical Discomfort	R	EM-4/93,,EM-4/45	N	N	1	1	1	NS
		<b>Raising of ash pond</b>										
		(a) Ash embankment construction engaging machineries	Hitting of excavator to dumper driver/helper/supervisor	Injury/Disability/Fatal	NR	EM 4/47,EM-4/21	N	N	1	2	2	NS
			Exposure to dust during unloading of earth	Physical Discomfort	NR	EM-4/93,EM-4/45	N	N	1	1	1	NS

			Slipping/over topping of roller during rolling	Major injury/ Fatal	NR	EM 4/47,EM-4/74,EM-4/21	N	N	1	3	3	NS
			Hitting by roller during rolling	Injury/Disability/Fatal	NR	EM-4/47,EM-4/74	N	N	1	3	3	NS
			Vehicle movement on narrow dyke wall	Injury/Disability/Fatal	NR	EM-4/47,EM-4/74, Signage displayed,Traffic pole constructed near both edge of the dyke for high visibility	N	N	1	3	3	NS
		(b) Earth embankment or earth covering	Hitting of excavator to dumper driver/helper/supervisor	Injury/Disability/Fatal	R	EM-4/74,EM-4/29	N	N	1	3	3	NS
			Exposure to dust during unloading of earth	Physical Discomfort	R	EM-4/93,,EM-4/45	N	N	1	1	1	NS
			Slipping/over topping of roller during rolling	Major injury/ Fatal	R	EM-4/74,EM-4/21	N	N	1	3	3	NS
			Hitting by roller during rolling	Injury/Disability/Fatal	R	EM-4/74,EM-4/21	N	N	1	3	3	NS
		( c)Sand blanket & chimney construction	Hitting by dumper during unloading sand	Injury/Disability/Fatal	NR	EM-4/74,EM-4/21	N	N	1	3	3	NS
			Exposure to sand blown during transportation & unloading	Physical Discomfort,Eye injury	NR	EM-4/74,EM-4/21	N	N	1	3	3	NS
		(d)Inverted filter construction	Hiting of stone/boulder with body parts while unloading from dumper	Injury	NR	EM-4/29,EM-4/74	N	N	1	2	2	NS
			Hiting of stone/metal with body parts due to fall of stone while carrying from stack to work spot manually	Injury	NR	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Slip/Fall while carrying stone/metal/sand on slope of ash dyke	Injury/ disability/Fatal	NR	EM 4/47	N	N	1	2	2	NS
			Hiting of stone/metal with body parts while placing stones	Injury	NR	EM-4/47,EM-4/45	N	N	1	2	2	NS

			Slip/Fall while placing stone/metal /sand on slope of ash dyke	Injury/ disability	NR	EM-4/47,EM-4/45	N	N	1	2	2	NS
		(e) Drain construction	Hiting of stone/boulder with body parts while unloading from dumper	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Hiting of stone/metal with body parts due to fall of stone while carrying from stack to work spot manually	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Slip/Fall while carrying stone/metal/sand and concrete on slope of ash dyke	Injury/ disability/Fatal	R	EM 4/47	N	N	1	2	2	NS
			Hiting of stone/metal with body parts while placing stones	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Slip/Fall while placing stone/metal /sand & concrete on slope of ash dyke	Injury/ disability	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
		(f) Road construction	Hiting of construction materilas with body parts while unloading from dumpers	Injury	R	EM-4/47,EM-4/45,EM-4/74	N	N	1	3	3	NS
			Hiting of stone with body parts due to fall of stone while carrying from stack to work spot manually	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Hiting of stone with body parts while placing stones	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Slipping/over topping of roller during rolling	Major injury/ Fatal	R	EM-4/74,EM-4/21	N	N	1	2	2	NS
			Exposure to dust while cleaning surface	Respiratory problems / Lung infection/	R	EM-4/93,,EM-4/45	N	N	1	1	1	NS
				Eye irritation	R	EM-4/45	N	N	1	2	2	NS
			Contact with hot material	Burn Injury	R	EM-4/45,EM 4/43	N	Y	1	2	2	NS
		(g) Turfing	Hiting of spade with body parts during cutting of turf by sapde	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS

			Fall from slope of ash dyke during placing of turf	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
			Fall from slope of ash dyke during watering to turf	Injury	R	EM-4/47,EM-4/45	N	N	1	2	2	NS
		Stacking of construction materials at work site	Road accident due to dumping of construction material and work on road	Injury	NR	EM 4/47,EM-4/74,EM-4/21	N	N	1	2	2	NS
		Movement of Dumpers/Dozer/tractors/tankers & oth, heavy vehicles & light vehicles on ash pond dykes	Slipping/over topping of vehicle during transportation of materials	Major injury/ Fatal	R	EM 4/47, EM 4/74, Effective supervision and training. Flaggers, Vehicle Speed control. Edge Guard Provision	N	N	1	3	3	NS
			Hitting by heavy vehicles & machinery during rolling	Injury/Disability/Fatal	R	EM-4/74,EM-4/21	N	N	1	2	2	NS
			Exposure to dust during movement of vehicles/machineries	Physical Discomfort, Eye injury	R	EM-4/93,,EM-4/45	N	N	1	1	1	NS
			Exposure to noise<85db during running of vehicles	Physical Discomfort	R	EM-4/23,EM-4/45	N	N	1	2	2	NS
			Exposure to noise>85db during running of vehicles	Hearing impaired	R	EM-4/23,EM-4/45	N	N	2	2	4	NS
			Exposure to vehicular emission during working of heavy vehicles & machineries	Physical Discomfort, Eye injury	R	EM-4/74,EM-4/21	N	N	1	1	1	NS
		Painting	Falling of objects from height	Injury	NR	EM-4/25,EM-4/45	N	N	1	3	3	NS
			Inhalation of fumes	Respiratory problems	NR	EM-4/47,EM-4/45	N	N	1	1	1	NS
			Falling from height	Injury	NR	EM 4/79, EM-4/47, MP-08	N	N	1	3	3	NS
			Collapse/failure of scaffolding	Injury	NR	EM 4/7, 4/47, MP-08	N	N	1	3	3	NS
		Cleaning activities/Sanitary works	Exposure to dust	Respiratory problems	R	EM-4/93,,EM-4/45	N	N	1	1	1	NS

			Exposure to noise<85db	Physical discomfort	R	EM-4/23,EM-4/45	N	N	1	1	1	NS
			Exposure to noise>85 db	Hearing impairment	R	EM-4/23,EM-4/45	Y	N	1	2	2	NS
			Exposure to micro organisms / bacteria during cleaning or repair of toilets / urinals / pipelines	Health hazards due to infection	R	EM-4/41,EM-4/45,EM-4/61	N	N	1	2	2	NS
		Earth excavation work in shallow foundation/trenches	Collapsing of earth	Injury	R	EM-4/47,EM-4/36	N	N	1	2	2	NS
			Falling into trench	Injury leading to fractures	R	EM-4/47,EM-4/36,EM-4/79	N	N	1	2	2	NS
		Concreting at height	Fall from height	Injury	R	EM-4/7,EM-4/79,EM-4/43,MP-08	N	N	1	3	3	NS
			Failure of scaffolding	Injury	R	EM 4/7, MP-08	N	N	1	3	3	NS
			Falling of constructions materials	Injury	R	EM 4/47	N	N	1	2	2	NS
			Exposure to dust	Respiratory problems	R	EM-4/93,,EM-4/45	N	N	1	1	1	NS
			Contact with concrete	Skin irritation	R	EM-4/45	N	N	1	1	1	NS
		Grass cutting	Snake bite by poisonous snake	Fatal	R	EM 4/43,EM-4/45	N	N	1	3	3	NS
			Contact with vegetation	Skin irritation	R	EM-4/45	N	N	1	1	1	NS
			Thorn prick	Injury	R	EM-4/29	N	N	1	1	1	NS
		Transportation of debris	Faliure of vehicle due to overloading/unsafe dtiving /mechanical failure	Accident	R	EM 4/45	N	N	1	3	3	NS
			Falling of dust in eye while loading & unloading	Eye irritation	R	EM-4/93,,EM-4/45	N	N	1	2	2	NS





## INTEGRITY PACT

### Between

Orissa Power Generation Corporation Ltd. (OPGC), a company registered under the Companies Act 1956 and having its registered office at Zone-A, 7<sup>th</sup> Floor, Fortune Towers, Chandrasekharpur, Bhubaneswar- 751023, Orissa (India) hereinafter referred to as "Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

### And

\_\_\_\_\_, description of the party along with address), hereinafter referred to as "Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

(The Principal and the Bidder/ Contractor together are collectively referred to as the "Parties" and individually as a "Party" in this Pact).

### Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for... ("Contract") The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal enter into an Integrity Pact ("**Pact**") with the Bidder(s)/ Contractor(s) for the tender process and execution of the Contract and will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the Contract for compliance with the principles mentioned above.

### Section 1 – Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee/Director/management representative of the Principal, personally or through family members or through third party, will in connection with the tender process for, or the execution of a Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s)/ Contractor(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information ( other than the clarifications sought for by the Bidder(s)/Contractors with respect to the bidder specific information required to be provided only to the concerned Bidder(s)/Contractor(s),) and will not provide to any Bidder(s)/Contractor(s) confidential / additional information through which the Bidder(s) /Contractor(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the tender process or execution of the Contract all known prejudiced persons including those employees/ Directors/management representatives of the Principal who have family relationships with the employees or Directors of the Bidder(s)/Contractor(s).

1.2 If the Principal obtains information on the conduct of any of its employees/ Directors/ management representative which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Chief Vigilance Officer for further enquiry and initiation of disciplinary actions against the person(s) concerned.

## **Section 2 – Commitments of the Bidder(s)/ Contractor(s)**

2.1 The Bidder(s)/ Contractor(s) commit itself to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commits itself to observe the following principles during its participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees/ Directors/ management representative involved in the tender process or the execution of the Contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the Contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act and any other such similar applicable Acts; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.1.5 The Bidder(s) / Contractor(s) will not, directly or through any other person or firm, approach any Government officials, ministers, political persons public servants, or any external agencies in an effort to influence the bidding decision making process or to attain any undue favours to the Bidder(s) / Contractors(s).

2.1.6 The Bidder(s)/Contractor(s) shall exclude, from the tender process or execution of the Contract all known prejudiced persons including those employees / Directors /management representatives of the Bidder(s) / Contractor(s) who have family relationships with the employees or Directors of the Principal.

2.1.7 The Bidder(s)/Contractor(s) shall disclose the circumstances, arrangements, undertakings or relationships that constitute, or may reasonably be considered to constitute, an actual or potential conflict of interest with its obligations specified in the tender process or under any contract which may be negotiated or executed with the Principal. Bidder(s)/Contractor(s)

and their employees, agents, advisors and any other person associated with the Bidder(s)/Contractor(s) must not place themselves in a position which may, or does, give rise to conflict of interest (or a potential conflict of interest) between the interests of the Principal or any other interests during the tender process or through operation of the Contract.

2.1.8 The Bidder(s)/Contractor(s) will not indulge in any corrupt, fraudulent, coercive undesirable or restrictive practice in the tender process or the execution of the Contract.

2.2 The Bidder(s)/ Contractor(s) or its sub contractors or its agents will not instigate third persons to commit offences outlined above or be an accessory to such offences.

### **Section 3 – Disqualification from tender process, termination of the Contract and exclusion from future contracts**

If the Bidder(s)/ Contractor(s), during the tender process or before award of the Contract or during the execution of the Contract has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put its reliability or credibility in question, the Principal may disqualify the Bidders(s)/ Contractor(s) from the tender process or decide not to award the Contract or terminate the awarded Contract or blacklist the Bidder(s)/Contractor(s). I and seek damages as specified in Section 4.

### **Section 4 – Compensation for Violations**

4.1 If the Principal has disqualified the Bidder(s)/ Contractor(s) from the tender process prior to the award of the Contract according to Section 3 or 5, the Principal is entitled to demand and recover the damages by encashment of the Earnest Money Deposit/ Bid Security deposited by the Bidder(s)/ Contractor(s) while making submission in the tender process.

4.2 If the Principal has terminated the Contract according to Section 3 or 5, or if the Principal is entitled to terminate the Contract according to section 3 or 5, the Principal is entitled to demand and recover from the Contractor liquidated damages equivalent to ---% of the Contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher, in addition to the Liquidated Damages already agreed to by the Bidder(s)/ Contractor(s) in the Contract..

### **Section 5 – Previous Transgression**

5.1 The Bidder(s)/ Contractor(s) declares that no previous transgressions occurred in the last three (3) years with any other organization in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify its exclusion from the tender process or the execution of the Contract.

5.2 If the Bidder/ Contractor has made incorrect statement/disclosure on this subject or hides such information, the Principal is entitled to disqualify the Bidder/Contractor from the tender process or the execution of the Contract,if already awarded, may terminate the Contract and claim compensation as mentioned in section 4.

### **Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors**

6.1 The Bidder(s)/ Contractor(s) undertake(s) to demand from his sub-contractors a commitment consistent with this Integrity Pact. This commitment shall be taken only from those sub-contractors whose contract value is more than 20% of Bidder's/ Contractor's contract value with the Principal.

6.2 The Principal will enter into individual Integrity Pacts with identical conditions as this one with all Bidders and Contractors for the tender process.

6.3 Only those Bidder(s)/ Contractor(s) who have entered or expressed intention of entering into Integrity Pact with the Principal shall be eligible to participate in the tender process or execution of the Contract.

6.4 The Principal will disqualify the Bidder(s)/ Contractor(s) from the tender process who do not execute the Integrity Pact or violate its provisions.

### **Section 7 – Criminal Charges against violating Bidders/ Contractors/ Subcontractors**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office of the State in which the Principal has its Registered Office.

### **Section 8 –Independent External Monitor(s)**

8.1 The Principal will appoint one or more competent and credible Independent External Monitor(s) (“**Monitor**”) for monitoring the implementation of this Pact. The task of the Monitor will be to review independently and objectively, whether and to what extent the Parties comply with the obligations of the Integrity Pact.

8.2 The Monitor shall not be subject to instructions by the representatives of the Parties and shall perform his functions neutrally and independently. The Monitor shall report to the OPGC Board.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all the document related to the tender process or the execution of the Contract of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) shall grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to the document in its possession related to the tender process or execution of the Contract. The same is applicable to Sub-contractor(s) of the Bidder(s)/ Contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Subcontractor(s) with strict confidentiality.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the Parties related to the tender process or the execution of the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Bidder/ Contractor. The Parties shall offer to the Monitor the option to participate in such meetings.

8.5 As soon as the Monitor notices, or believes to have noticed, a violation of the Integrity Pact, he will so inform the Managing Director of the Principal and request him to take corrective action, or heal the situation, or to take other relevant action. The Monitor may in this regard submit non-binding recommendations. Beyond these actions, the Monitor shall have no right to demand from the Parties that they act in a specific manner, refrain from action or tolerate action.

8.6 If the Monitor reports to the Managing Director of the Principal, a substantiated suspicion of an offence under relevant IPC / PC Act, the Managing Director of the Principal shall within reasonable time, taken visible action to proceed against such offence.

8.7 The number of Independent External Monitor(s) shall be decided by OPGC.

8.8 The word ‘Monitor’ would include both singular and plural.

### **Section 9 – Pact Duration**

9.1 This Pact shall become effective from the date when both the Parties have executed it or the Parties have shown their intent to enter into the Pact, whichever is earlier. This Pact will expire for the Contractor after it meets all the obligations of the Contract and for all other Bidders 6 months after the Contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this Pact as specified as above, unless it is discharged/ determined by the Principal

**Section 10 – Other Provisions**

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. Bhubaneswar.

10.2 Changes and supplements to the Pact as well as notices of termination of the Pact to be sent to any Party shall be made in writing by mutual agreement between the Parties.

10.3 If the Bidder/ Contractor is a partnership or a consortium, this Pact shall be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those Bidder(s)/ Contractor(s) who have expressed their intention through submission in the tender process or have entered into this Pact with the Principal will be eligible to participate in the bidding.

For & On behalf of the Principal

For & On behalf of the Bidder/ Contractor

(Office Seal)

(Office Seal)

Place-----

Date-----

Witness: \_\_\_\_\_

Witness: \_\_\_\_\_

(Name & Address) \_\_\_\_\_

(Name & Address) \_\_\_\_\_



**BILL OF QUANTITIES**

**Name of work: Raising of embankment height for ash pond C at ITPS**

Sl. No.	Description of item.	Unit	Qty.
1	Cleaning & grubbing of work areas including removal of shrubs, cutting and uprooting of trees, disposal and the dressing of slopes up to 6 inches with earth cover (cutting/filling) with all cost of materials, labour etc. complete as per direction of Engineer-in-charge.	Sqm	8400.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
2	Embankment raising with ash; by excavation of ash from Ash Pond 'A' by mechanical means loading into and transportation by mechanical means and unloading the ash within initial lead of 3 km on properly prepared and scientifically approved surface including spreading and leveling the earth in 22.5 cm layers to make ready for watering and compaction with Vibratory rollers and dozers including watering earthwork up to OMC condition and compaction by vibratory roller & dozer in layers not exceeding 22.5cm to required density in dams and dykes for all heights including construction, maintenance, watering and lighting of haul road, hire & running charges of all machineries, royalty, taxes and borrow area etc. complete as per the direction of Engineer-in-charge. (measurement of the fill to be taken on the finished compacted section under OMC condition.)	Cum	71568.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
3	Embankment raising with ash; by excavation of ash in ash pond 'A' area by mechanical means loading into and transportation by mechanical means and unloading the soil within initial lead of 1 km on properly prepared and scientifically approved surface including spreading and leveling the earth in 22.5 cm layers to make ready for watering and compaction with sheep foot rollers and dozers but excluding watering and compaction in dams and dykes for all heights including construction, maintenance, watering and lighting of haul road and borrow area etc. complete as per the direction of Engineer-in-charge. (measurement of the fill to be taken on the finished compacted section under OMC condition.)	Cum	30672.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
4	Embankment raising with earth by excavation of any approved type of soil in approved borrow area by mechanical means loading into and transportation by mechanical means and unloading the soil within initial lead of 5 km on properly prepared and scientifically approved surface including spreading and leveling the earth in 22.5 cm layers to make ready for watering and compaction with Vibratory rollers and dozers including watering earthwork up to OMC condition and compaction by vibratory roller & dozer in layers not exceeding 22.5cm to required density in dams and dykes for all heights including construction, maintenance, watering and lighting of haul road, hire & running charges of all machineries, royalty, taxes and borrow area etc. complete as per the direction of E.I.C. (measurement of the fill to be taken on the finished compacted section under OMC condition.)	Cum	74010.00

	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
5	Embankment raising by watering ash/earth up to OMC condition and compaction by vibratory rollers and dozer in layers not exceeding 25 cm to required density including hire and running charges of all the machineries complete as per direction of EIC (Measurement to be taken on the finished compacted section of the fill under OMC condition)	Cum	176250.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
6	Supplying and spreading sand of approved specification on compacted surface of earth dam or dykes for filter blanket and other horizontal filter zone to proper thickness including surface dressing within initial lead complete as per direction of Engineer-in-charge.	Cum	10800.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
7	Supplying and filling sand of approved specification in vertical chimney to proper line & level using removable sheet metal separators up to designed height of filter chimney within initial lead as directed by the Engineer-in-charge.	Cum	6180.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
8	Excavation of compacted Ash/Earth for vertical sand chimney and connecting sand blanket to sand chimney including trimming of slopes and depositing the excavated materials away from site within an initial lead of 1 Km as per direction of EIC	Cum	8610.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
9	Fine dressing and turfing in position with compact dub grass and ramming with thapias including cost, conveyance, taxes and labour charges etc. complete as per direction of Engineer-in-charge.	Sqm	38805.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
10	Collecting, stacking and conveying from stack and spreading moorum consolidation with PRR including hire and running charges of PRR & turfing, watering etc. complete as per direction of Engineer-in-charge.	Cum	1312.50
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
11	Providing and laying reinforced cement concrete R.C.C (1:1.5:3) using 12 mm size hard granite crusher broken chips including watering, curing, cost, conveyance, royalties, taxes of all materials required for the work etc. complete as per direction of Engineer -in-charge.	Cum	40.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
12	Rigid and smooth centering and shuttering for R.C.C works including false works and dismantling them after casting including cost of materials, conveyance, taxes and labour charges etc. all complete as per direction of Engineer-in-charge.	Sqm	160.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		

13	Supplying, cutting, bending & binding and placing TMT reinforcement in position of required dia as per drawing including cost of materials, conveyance, taxes, labour, etc. all complete as per direction of Engineer-in-charge.	Qntl	44.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
14	Supplying, fabrication and erection of all type of mild steel iron work for all type of structures, sheds, grills, doors, fencing posts ash pond approach bridge etc. with approved quality (SAIL or TISCO make) steel structural, angles, channels, plates, of all sections at all levels and elevations, painting with 02 coats of High gloss enamel paint over a coat of red oxide primer including all cost of materials, conveyance, taxes, labour charges, T&P, scaffoldings etc. complete in all respect as per the direction of the Engineer-in-Charge.	MT	15.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
15	Dismantling of existing cross over 350 NB discharge pipe including excavation of earth as per requirement, dismantling of support pedestals, cutting and shifting of pipes, pedestals etc. all complete as per direction of EIC.	Mtr	2400.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
16	Dismantling and shifting of existing 200 NB MS Pipe including excavation as per requirement, dismantling, cutting of pipes and shifting including shifting of support pedestals etc. all complete as per direction of EIC.	Mtr	1500.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
17	Erection, welding and positioning of 200 NB MS Pipeline (dismantled and stored at site vide item no. 16) including supply fabrication and installation of pipe support clamps etc. all complete as per instruction of EIC.	Mtr	1500.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
18	Supply of 350NB, 9.5mm thick M.S. ERW pipe	Mtr	500.00
	<b>Rate in figures: -</b>		
	<b>Rate in words: -</b>		
19	Fabrication, Erection and welding in position of 350NB M.S pipe including supply and installation of support pedestals pipe clams etc. all complete as per direction of EIC.	Mtr	2800.00
	<b>Rate in figures: -</b>		
	<b>Rate in words: -</b>		
20	Supply of 600NB, 9.5mm thick M.S. ERW pipe with wrapping coating	Mtr	120.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
21	Erection & welding of 600NB M.S ERW pipe including all fittings and raising spindle etc. all complete as per direction of EIC.	Mtr	120.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
22	Painting of two coats of synthetic high gloss enamel paint of any approved colour shed of appcolite paint over a coat of primer with all cost of materials, conveyance, labour etc. all complete.	Sqm	1105.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		



23	Supply of 600NB flanged type butter fly valve both side flange type & with gear box hand operated of L&T make with all accessories etc. complete including materials conveyance loading unloading etc.	Nos	3.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
24	Erection of 600NB butter fly valve with raising spindle & hand wheel operated of reputed make suitable for ash water medium with all cost of labour etc. all complete as per direction of EIC	Nos	3.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
25	Supply of 350NB manually operated with hand wheel knife-edge gate valve, Plate thickness 16mm & Plate material SS 304 grade, valve body cast steel, working pressure - 12kg/cm <sup>2</sup> , Provision for gland packing with gland follower of reputed approved make suitable for bottom & flyash medium etc. all complete as per direction of EIC.	Nos	10.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
26	Erection of 350NB manually operated knife-edge gate valve of reputed approved make suitable for bottom & flyash medium with all cost of materials, conveyance, T & P, labour etc. all complete as per direction of EIC.	Nos	16.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
27	Dismantling stone pitching/ dry stone spalls including T&P, sorting the dismantled materials, disposal of unserviceable materials and stacking the serviceable materials with all lifts and lead of 1000 meters, with all cost of labour conveyance etc. all complete as per direction of EIC.	Cum	72.00
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
28	Providing stone riprap to the slopes of dyke with quarried and blasted stone boulders of size 0.30m and above including dumping on slopes filling interstices with small stones & wedges and packing surface to proper line and levels including fixing wave breakers complete with all leads & lifts complete as directed by the Engineer-in-charge.	Cum	1953.00
	<b>Rate in figures: -</b>		
	<b>Rate in words: -</b>		
29	Ash brick masonry in cement mortar(1:6) in foundation and plinth for all type of works of all thickness including all cost, splays cutting, watering, curing, conveyance, T & P, Scaffoldings, royalties, taxes & Duties of all materials and labour charges etc. complete as per direction of Engg.-in-charge. (Ash brick will be supplied from Ash Brick Plant of OPGC free of cost. Contractor has to arrange his own conveyance for transportation to Site)	Cum	250.00
	<b>Rate in figures: -</b>		
	<b>Rate in words: -</b>		
30	Ash bricks 23cm. Size pitching on flat including filling the interstices with sandy soil including all cost, conveyance, T & P, royalties, taxes of all materials required for the work & labour charges etc. complete as per the direction of Engineer-in-charge.	Sqm	2062.50
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		
31	Cement concrete(1:3:6) using 12 mm graded hard granite crusher broken chips including all cost, laying of concrete watering, curing, conveyance, T & P, royalties,	Cum	63.50

	taxes of all materials required for the work , Scaffolding & labour charges etc. complete as per the direction of Engineer-in-charge.		
	<b>Rate in figures:-</b>		
	<b>Rate in words:-</b>		

**Total Amount of Sl. No. (1 to 31) :-**

**Amount in figures:-**

**Amount in words:-**

**(During Tender opening, only above total amount will be read out and not unit rates of individual items)**

- N.B.:-**
- 1) The quoted price shall be inclusive of all applicable taxes, duties, levies, royalties, etc., but excluding GST and the quoted price shall remain firm and fixed during entire tenure of contract.
  - 2) GST shall be paid extra by OPGC as applicable at prevailing rule.

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