

HPCL

MISC.CIVIL WORKS AT KANDLA

**HINDUSTAN PETROLEUM CORPORATION
LIMITED
ENGINEERING & PROJECTS
MUMBAI-400 001**



TENDER DOCUMENT

FOR

ROADS AND MISCELLANEOUS CIVIL JOBS

AT

**KANDLA TERMINAL,
GANDHIDHAM, KACHCHH,
GUJARAT - 370201.**

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INTRODUCTION

HINDUSTAN PETROLEUM CORPORATION LTD.
ENGG & PROJECTS DEPTT.
GRESHAM ASSURANCE HOUSE, 2ND FLOOR, A-1595(3) 1,
1-A SIR P. M. ROAD, 132 SHAHID B. SINGH ROAD, FORT,
MUMBAI-400001

INTRODUCTION

The proposed job is for construction of Enclosure wall, Asphalted Ring road, Oil Water Separator, Drains, RCC Driveway, Box Culverts etc as a part of our Augmentation of facilities at our HPCL Kandla Terminal – Unit I, P.B. No.43, Village Kharirohar, Gandhidham – 370201, GUJARAT.. **The vendor has to visit the site and get fully familiarised about the scope of job, obtain all local information and study the tender thoroughly prior to quoting.**

Before commencement of work the contractor shall prepare detailed work plan for effective execution of various segments so as to complete the entire job within the specified time. Party has to prepare necessary working drawings and obtain approval of HPCL before execution.

Kandla Terminal being a working location, necessary cold/ hot work permits as per OISD-105 is to be obtained by the party for daily execution of job and party shall abide by all the rules and regulations of the terminal and ensure that no activity of the terminal operation is obstructed.

Vendors are required to go through the job description in the following pages thoroughly and carefully and visit site and obtain all site and meteorological and local information before quoting for the items.

The completion period for the entire job is Four (4) months

Water and Power required for job shall be arranged by the contractor at his own cost.

In case of any clarifications, same may be obtained from Ch. Manager – E&P, Jaideep Roy, Engg & Projects Deptt, Gresham Assurance House, 2nd Floor, A-1595(3) 1, 1-A Sir P. M. Road, 132, Shahid B. Singh Road, Fort, MUMBAI - 400001, Tel. No. 022-22608500

DECLARATION

DECLARATION**(to be submitted along with unpriced bid)**

M/s _____ hereby declare/clarify that we have not been banned or delisted by any Government or quasi Government agencies or Public Sector Undertakings.

Stamp & Signature of the Bidder

NOTE: If a bidder has been banned by any Government or Quasi Government agencies or PSU's, this fact must be clearly stated with details. If this declaration is not given along with the unpriced bid, the tender will be rejected as non-responsive.

CONTACT PARTICULARS

NAME OF PERSON	
TEL NO. OFFICE	
TEL NO. RES.	
MOBILE NO.	
E-MAIL ID	

UNPRICED BID

ROADS AND MISC CIVIL JOBS AT KANDLA TERMINAL				
Unpriced Bid				
S No	Tender Line No	Description	Unit	Total Qty
1	1	Excavation up to 2m depth	M3	2200
2	2	Micro Grading	SM	6300
3	3	sand Filling using river sand	M3	300
4	4	Rubble Soling	M3	60
5	5	PCC 1:3:6	M3	220
6	6	PCC 1:2:4	M3	55
7	7	Murrum Filling	M3	500
8	8	RCC 1:1:2	M3	130
9	9	RCC 1:2:4 for coping	M3	20
10	10	RCC 1:1.5:3 for driveway	M3	130
11	11	Reinforcement Steel	TM	15
12	12	RR Masonry in CM 1:5	M3	570
13	13	Brick Masonary in CM 1:5	M3	210
14	14	Plastering 12mm in CM 1:5	SM	1850
15	15	Pointing on RRM using CM1:5	SM	870
16	16	WBM first layer 75 mm thick	SM	5000
17	17	WBM second layer 75 mm thick	SM	5000
18	18	WBM third layer 75 mm thick	SM	5000
19	19	Asphalt carpet layer	SM	3850
20	20	RCC/PCC Dismantling	M3	65
21	21	Earthen wall dismantling	M3	670
22	22	Dismntlng Brick/Stone Msonry	M3	250
23	23	Dismantling of WBM/Asphalt Layer	M3	265
24	24	Hume pipe 600 mm dia NP3 class	MT	25
25	25	Hume pipe 450 mm dia NP3 class	MT	25
26	26	CI Cover 450mmx450mm	EA	6
27	27	CI cover 800mmx800mm	EA	6
28	28	4" HPCL supplied P/l laying	MT	180
29	29	8" HPCL supplied P/l laying	MT	120
30	30	4" HPCL Supplied valve fix	EA	15
31	31	8" HPCL Supplied valve fix	EA	9
32	32	S&F Shalitex Board	SM	32
33	33	S&A Nitobond EP	SM	140

TIME SCHEDULE

TIME SCHEDULE

**DESCRIPTION OF WORK : ROADS AND MISCELLANEOUS CIVIL JOBS AT
HPCL KANDLA TERMINAL, GANDHIDHAM, GUJRAT**

PART	LOCATION	COMPLETION PERIOD FROM DATE OF ISSUE OF FOI/LOI/PO
	HPCL KANDLA TERMINAL, POST BOX NO.43, KHARIROHAR, GANDHIDHAM (KACHCHH) - 370201	4 (Four) months

NOTE :

- 1.0 Time for completion shall be reckoned from the date of issue of Fax/ Letter of Intent/ Purchase Order by HPCL which ever is earlier.
- 2.0 Time for completion shall include the time required for mobilization, demobilization, carrying out the works as per requirements of Contract Document and instructions of HPCL Engineer-in-Charge.

**SPECIAL
CONDITIONS

OF

CONTRACT**

1.0 GENERAL

- 1.1 Special Conditions of Contract (SCC) shall be read in conjunction with the General Conditions of Contract (GCC) also referred to as General Terms & Conditions of Works Contract, Schedule of Rates, specifications of work, drawings and any other document forming part of this Contract wherever the context so requires.
- 1.2 Notwithstanding the sub-division of the document into these separate sections and volumes, every part of each shall be deemed to be supplementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.
- 1.3 Where any portion of the GCC is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provision(s) of the Special Conditions of Contract shall be deemed to override the provision(s) of GCC only to the extent that such repugnancies or variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of GCC.
- 1.4 Wherever it is stated in this Bidding Document that such and such a supply is to be affected or such and such a work is to be carried out, it shall be understood that the same shall be affected and/or carried out by the Contractor at his own cost, unless a different intention is specifically and expressly stated herein or otherwise explicit from the context. Contract Price shall be deemed to have included such cost.
- 1.5 The materials, design & workmanship shall satisfy the applicable relevant Indian Standards, the job specifications contained herein & codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the absence of any Standard / Specifications / Codes of practice for detailed specifications covering any part of the work covered in this bidding document, the instructions / directions of Engineer-in-Charge will be binding upon the Contractor.
- 1.6 In case of contradiction between relevant Indian standards, GCC, Special Conditions of Contract, Specifications, Drawings and Schedule of Rates, the following shall prevail in order of precedence.
- i) Detailed Purchase Order along with Statement of Agreed Variations, if any, and its enclosures .
 - ii) Schedule of Rates with Quantities.
 - iii) Fax of Intent (FOI)/Letter of Intent(LOI)
 - iv) Scope of Work
 - v) Technical Specifications

- vi) Drawings
 - vii) Special Conditions of Contract
 - viii) General Conditions of Contract
 - ix) Instructions to Bidders
 - x) Relevant Indian Standards/ Specifications.
- 1.7.1 Safety Helmets shall be provided to all workers engaged by the Contractor. Shoes and Gloves shall also be provided in adequate number by the Contractor.
- 1.7.2 Safety Belts and Harnesses shall be provided by the Contractor in adequate number for the workers working at heights.
- 1.7.3 All Diesel driven equipment shall be provided with proper Flame Arrestors, Mufflers, etc as applicable.
- 1.7.4 Proper earthing shall be provided for all Cutting,Grinding,welding equipments and generators as deployed by the contractor..

2.0 THE WORK

2.1 Scope of Work & Scope of Supply

- 2.1.1 The scope of work and Scope of Supply covered in this Contract will be as described in Scope of work for respective sections, Job Specifications, Standard Specifications, Drawings, and Schedule of Rates etc.

2.2 Time Schedule

- 2.2.1 It is described in detail elsewhere in the tender document.
- 2.2.2 Time is the essence of this Contract. The period of completion given includes the time required for mobilization as well as testing, rectifications, if any, retesting, demobilization and completion in all respects to the satisfaction of the Engineer-in-Charge.
- 2.2.3 A joint programme of execution of work will be prepared by the Engineer-in-Charge and Contractor. This programme will take into account the time of completion period of the Contract.
- 2.2.4 Monthly/weekly execution programme will be drawn up by the Engineer-in-Charge jointly with the Contractor based on availability of materials, work fronts and the joint programme of execution as referred to above. The Contractor shall scrupulously adhere to the Targets / Programmes by deploying adequate personnel, Construction Equipment, Tools and Tackles and also by Timely Supply of required materials coming within his scope of supply as per Contract. In all matters concerning the extent of target set out in the weekly /

monthly programme and the degree of achievement, the decision of the Engineer-in-Charge will be final and binding upon the Contractor.

2.2.5 Contractor shall give every day category-wise labour and equipment deployment report along with the progress of work done on previous day in the proforma prescribed by the Engineer-in-Charge.

2.3 **Measurement of Works**

2.3.1 Mode of measurement will be as specified in Specifications or SOR.

2.4 **Payment Office**

2.4.1 **Payment will be released towards submission of duly certified Running Account Bills at Disbursement section at Gresham Assurance House, 2nd Floor, A-1595(3) 1 1-A, Sir P M road, 132, Shahid B Singh Road, Fort, Mumbai-400001.**

2.5 **Temporary Works**

2.5.1 All temporary works, enabling works, including dewatering of surface and subsoil water, preparation and maintenance of temporary drains at the work site, preparation and maintenance of approaches to working areas, wherever required, for execution of the work, shall be the responsibility of the Contractor and all costs towards the same shall be deemed to have been included in the quoted prices.

2.6 **Quality Assurance**

2.6.1 Detailed quality assurance programme to be followed for the execution of Contract under various divisions of works will be mutually discussed and agreed to.

2.6.2 The Contractor shall establish, document and maintain an effective quality assurance system as outlined in the specifications and various codes and standards.

2.6.3 Quality Assurance System plans / procedures of the Contractor shall be furnished in the form of a QA manual. This document should cover details of the personnel responsible for the quality assurance, plans or procedures to be followed for quality.

2.6.4 The Owner/Consultant or their representative shall reserve the right to inspect/witness, review any or all stages of work at shop/site as deemed necessary for quality assurance and / or timely completion of the work.

2.6.5 In case Engineer-in-Charge feels that Contractor's Engineer(s)/Supervisor are incompetent or insufficient, Contractor has to deploy other experienced Engineer(s)/Supervisor as per site requirement and to the full satisfaction of Engineer-in-Charge.

2.6.6 In case Contractor fails to follow the instructions of Engineer-in-Charge with respect to above clauses, next payment due to him may not be released unless and until he complies with the instructions to the full satisfaction of Engineer-in-Charge.

2.7 **Leads**

2.7.1 For the various works, in case of contradiction, leads mentioned in the Schedule of Rates shall prevail over those indicated in the Technical specifications.

3.0 **ROYALTY**

3.1 **Royalty**

3.1.1 All royalties etc., as may be required for any Entry permits, including right of way etc., to be arranged by Contractor shall be deemed to have been included in the quoted prices.

3.1.2 Contractor's quoted rates should include the royalty on different applicable items as per the prevailing State Government rates. Any increase in prevailing rate of royalty shall be borne by the Contractor at no extra cost to the Owner.

4 **PROVIDENT FUND, LABOUR, LABOUR LAWS AND SITE REQUIREMENTS**

4.1 **Provident Fund**

4.1.1 The Contractor shall strictly comply with the provisions of Employees Provident Fund Act and register himself with Regional Provident Fund Commissioner (RPFC) before commencing work. The Contractor shall deposit Employees and Employers contributions to the RPFC every month. The Contractor shall furnish along with each Running bill, the challan / receipt for the payment made to the RPFC for the preceding month. The Contractor shall furnish the code number allotted by the RPFC Authority to the Engineer-in-Charge before commencing the work.

4.1 **Labour License**

4.2.1 Before starting of work, Contractor shall obtain a license from concerned authorities under the Contract Labour (Abolition and Regulation) Act 1970, and furnish copy of the same to Owner.

4.3 Labour Relations

4.3.1 In case of labour unrest/labour dispute arising out of non-implementation of any law, the responsibility shall solely lie with the Contractor and he shall remove/resolve the same satisfactorily at his cost and risk.

4.3.2 The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and to preserve peace and protection of persons and property in the neighbourhood of the Works against such conduct.

4.4 Employment of Labour

4.4.1 The Contractor shall not recruit personnel of any category from among those who are already employed by other agencies working at site but shall make maximum use of local labour available.

4.5 Site Cleaning

4.5.1 The Contractor shall clean and keep clean the work site from time to time to the satisfaction of the Engineer-in-Charge for easy access to work site and to ensure safe passage, movement and working.

4.5.2 The Contractor shall dispose off the unserviceable materials, debris etc., to the earmarked area within the Plant premises as decided by the Engineer-in-Charge. No extra payment shall be paid on this account. Serviceable materials shall be stored in designate area separately after obtaining acknowledgement of HPCL Officer.

4.5.3 HPCL Review/Approval of Drawings, Design and other documents submitted by Contractor

4.5.3.1 HPCL will normally require and utilize a maximum time frame of seven (07) working days from the date of Receipt for Review/Approval of Drawings, Design and other documents submitted by Contractor. Upon Review of

the submitted documents, HPCL may give their comments and ask for redesign/ resubmission after necessary rectifications/ modifications and the time frame of 7 working days will be applicable for same.

4.6 **Protection of Existing Facilities**

4.6.1 Contractor shall obtain all safety clearance (viz. Excavation, Hot/Cold work permit) from the Owner, as may be required from time to time, prior to start of work.

4.6.2 Contractor shall obtain plans and full details of all existing and planned underground services from the Owner and shall follow these plans closely at all times during the performance of work. Contractor shall be responsible for location and protection of all underground lines and structures at his own cost.

4.6.3 Despite all precautions, should any damage to any structure / utility etc. occur, the Contractor shall contact the Owner / authority concerned and Contractor shall forthwith carry out repair at his expenses under the direction and to the satisfaction of Engineer-in-Charge and the Owner/concerned authority.

4.6.3 Contractor shall take all precautions to ensure that no damage is caused to the existing pipelines, cables etc., during construction. Existing structures, existing Compound wall, Tiling and other items damaged / disturbed during construction shall be repaired and restored to their original condition by Contractor after completion of construction to the complete satisfaction of Owner.

4.6.4 If required, Contractor shall in consultation with Owner and the concerned authorities, take adequate measures for strengthening the existing electric poles, Cast iron pipes, sewer lines, GI Pipelines telephone poles etc in the proximity of proposed Construction works. Contractor shall take adequate protective measures to prevent damage to these facilities during construction. Contractor shall have to adopt such method of construction as will be suitable for working in these areas using the limited space available and without causing any damage to these facilities. Contractor shall be deemed to have taken cognizance of all such constraints, etc. while working in this area and Contractor shall not be entitled to claim any extra at a later stage.

4.7 **Work Front**

4.7.1 The work involved under this Contract may include such works as have to be taken up and completed after other agencies have completed their jobs. The Contractor will be required and bound to take up and when the fronts are available for the same and no

claim of any sort whatsoever shall be admissible to the Contractor on this account.

4.8 **Site Facilities**

4.8.1 The Contractor shall arrange for the following facilities at site, for workmen deployed/engaged by him / his sub-contractor, at his own cost:

- i) Arrangement for First Aid.
- ii) Arrangement for clean & potable drinking water.
- iii) A crèche where 10 or more women workers are having children below the age of 6 years.
- iv) Any other facility/utility as may be required under the Contract as per the existing legislation.

4.9 **Contractor's Site Office and Stores**

4.9.1 Owner shall provide space only for contractor's site office and stores and fabrication yard, if any at site. However, same shall be dismantled prior to submission of Final Bill.

4.9.2 The Contractor's Labour and Staff will not be permitted to stay within the premises.

4.9.3 The Contractor shall remove all temporary buildings / facilities etc., before leaving the site after completion of works in all respect.

4.10 **Construction**

4.10.1 **Rules and Regulations**

Contractor shall observe in addition to Codes specified in respective specification, all national and local laws, ordinances, rules and regulations and requirements pertaining to the work and shall be responsible for extra costs arising from violations of the same.

5.0 **Procedures**

5.1 If required by HPCL, Various procedures and method statements to be adopted by Contractor during the construction as required as per the respective specifications shall be submitted to Engineer-in-Charge in due time for approval.

5.2 **Security**

5.2.1 The Contractor shall arrange to obtain through the Engineer-in-Charge, well in advance, all necessary entry permits/gate passes for his staffs and labourers and entry and exit of his men and

materials shall be subject to vigorous checking by the security staff.

5.3 Drawings and Documents

5.3.1 Drawings accompanying the Bidding Document are indicative of scope of work and issued for bidding purpose only. Purpose of these drawings is to enable the tenderer to make an offer in line with the requirements of the owner.

5.3.2 The contractor as per 'scope of work' shall carry out preparation of detailed and working drawings. Detailed construction layout drawings as needed shall be prepared by contractor and got reviewed by Engineer-in-Charge before taking up the work.

5.4 Survey and Level/Setting Out Work

5.4.1 The Engineer-in-Charge shall furnish the relevant existing grid point with Bench Mark on the land. It shall be Contractor's responsibility to shift the existing benchmark to his work site to set out the necessary control points and alignment of the various works. The Contractor shall have to employ efficient survey team for this purpose and the accuracy of such setting out works shall be the Contractor's sole responsibility.

5.4.2 The Contractor shall at his own expense provide all assistance, which the Engineer-in-Charge may require for checking the setting out of works.

5.4.3 The Contractor shall be entirely responsible for the horizontal and vertical alignment, the level and correctness of every part of the work and shall rectify any errors or imperfections therein. The Contractor at his own cost shall carry out such rectifications, when instructions are issued to his effect by the Engineer-in-Charge or his representative.

5.5 Checking of Levels

5.5.1 Contractor shall be responsible for checking levels / orientation / alignment of all foundations, fixtures, etc. well in advance of taking up erection work, and bring to the notice of Engineer-in-Charge, discrepancies, if any. Necessary rectifications on account of any minor variations shall be carried out by the Contractor within the contracted rates.

5.6 Construction Equipment & Mechanisation of Construction Activities

5.6.1 The Contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and Time Schedule, progressively deploy adequate equipments, and tools & tackles and augment the same as decided by the Engineer-in-Charge depending on the exigencies of the work so as to suit the construction schedule. The Owner shall supply no construction Equipment, Contractor to ensure deployment of all required tools, tackles & equipments and take all safety precautions during execution of work.

5.6.2 The Contractor shall mechanize the construction activities to the maximum extent by deploying all necessary construction equipment / machinery in adequate numbers and capacities.

5.7 **Rounding off**

5.7.1 All payments to and recoveries from the Contractor shall be rounded off to the nearest rupee. Wherever the amount to be paid / recovered consists of a fraction of a rupee (paise), the amount shall be rounded off to the next higher rupee if the fraction consists of 50 (fifty) paise or more and if the fraction of a rupee is less than 50 (fifty) paise, the same shall be ignored.

5.8 **Contractor's Billing System**

5.8.1 HPCL will provide an approved format for Measurement sheets, Bill Summary and Bill Abstract. Contractor has to ensure that these data are updated for each subsequent RA and Final Bill. Contractor has to capture measurements, Abstract and Bill on format provided by HPCL on computer (soft copy.)

5.8.2 HPCL will utilize these data for processing and verification of the Contractor's bill.

5.8 **Site Organization**

5.8.1 The Contractor shall without prejudice to his overall responsibility to execute and complete the works as per specifications and time schedule progressively deploy adequate qualified and experienced personnel together with skilled / unskilled manpower and augment the same as decided by Engineer-in-Charge depending on the exigencies of work to suit the construction schedule without any additional cost to Owner.

5.8.2 The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer-in-Charge may consider necessary for the proper fulfilling of the

Contractor's obligations under the Contract Such superintendence shall be given by sufficient persons having adequate knowledge of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) for the satisfactory and safe execution of the Work. The workmen deployed by the Contractor should also possess the necessary license etc., if required under the existing laws, rules and regulations.

5.9 Additional / Extra Works

Owner reserves the right to execute any additional works / extra works, during the execution of work, either by themselves or by appointing any other agency, even though such works are incidental to and necessary for the completion of works awarded to the Contractor. The Contractor identified vide this tender shall not raise any objections, whatsoever to all such steps taken by HPCL.

5.10 Responsibility of Contractor

5.10.1 It shall be the responsibility of the contractor to obtain the approval for any revision and/or modifications decided by the contractor from the Owner / Engineer-in-Charge before implementation. Also such revisions and / or modifications if accepted / approved by the Owner / Engineer-in-Charge shall be carried out at no extra cost to the owner. Any change required during functional requirements or for efficient running of system, keeping the basic parameters unchanged and which has not been indicated by the contractor in the data / drawings furnished along with the offer shall be carried out by the contractor at no extra cost to the owner.

5.10.2 All expenses towards mobilization at site and demobilization including bringing in equipment, work force, materials, dismantling the equipment, clearing the site etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained. It shall be noted that the quoted rates are deemed to include mobilization of workforce ,equipments , tools & tackles and working during time extension granted by HPCL

5.10.3 It shall be entirely the contractor's responsibility to provide, operate and maintain all necessary construction equipment, scaffoldings and safety gadgets, lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedule.

5.10.4 Preparing approaches and working area for the movement and operation of the lifting equipments, leveling the areas for assembly and erection shall also be responsibility of the contractor. The

contractor shall acquaint himself with access availability facilities, local labour etc. to provide suitable allowances in his quotation. The contractor may have to build temporary access roads to aid his own work, which shall also be taken care of while quoting for the work.

5.10.5 The procurement and supply in sequences and at the appropriate time of all materials, and consumables shall be entirely the contractor's responsibility and his rates for execution of work will be inclusive of supply of all these items.

5.11 Coordination with other agencies

5.11.1 Contractor shall be responsible for proper coordination with other agencies operating at the site of work so that work may be carried out concurrently, without any hindrance to others. The Engineer - in - Charge shall resolve disputes, if any, in this regard, and his decision shall be final and binding on the Contractor.

5.12 Underground and overhead structures

5.12.1 The Contractor will familiarize himself with and obtain information and details from the Owner in respect of all existing structures, overhead lines, existing pipelines and utilities existing at the job site before commencing work. The Contractor shall execute the work in such a manner that the said structures, utilities, pipelines etc. are not disturbed or damaged, and shall indemnify and keep indemnified the Owner from and against any destruction thereof or damages thereto.

5.13 Statement of final bills - issue of No Claim/ No Due Certificate

5.13.1 The Contractor shall furnish a No-Due declaration indicating that there are no balance dues to his sub-vendor/sub-contractors along with the Final Bill and a No-Claim Certificate declaring that there are no balance or pending Claims from HPCL towards the subject PO.

5.14 Working hours

5.15.1 Depending upon the requirement, time schedule / drawing programmes and the target set to complete the job in time, the works may have to continue beyond normal working hours to the extent of round the clock and Holidays also, for which no extra claim shall be entertained.

6.0 TESTS, INSPECTION AND COMPLETION

6.1 Tests and Inspection

- 6.1.1 The Contractor shall carry out the various tests as enumerated in the technical specifications of this Bidding Document and technical documents that will be furnished to him during the performance of the work at no extra cost to the Owner.
- 6.1.2 All the tests either on the field or at outside laboratories concerning the execution of the work and supply of materials by the Contractor shall be carried out by Contractor at his cost.
- 6.1.3 The work is subject to inspection at all times by the Engineer-in-Charge. The Contractor shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this bidding document, the technical documents that will be furnished to him during performance of work and the relevant codes of practice.
- 6.1.4 Compressed air as required for carrying out works shall be arranged by the Contractor at his own cost.
- 6.1.5 For material supplied by Owner, Contractor shall carry out the tests, if required by the Engineer-in-Charge, and the cost of such tests shall be reimbursed by the Owner at actual to the Contractor on production of documentary evidence.
- 6.1.6 All results of inspection and tests will be recorded in the inspection reports, proforma of which will be approved by the Engineer-in-Charge. These reports shall form part of the completion documents. Any work not conforming to execution drawings, specifications or codes shall be rejected and the Contractor shall carry out the rectifications at his own cost.
- 6.2 **Final Inspection**
- 6.2.1 After completion of all tests as per specification the whole work will be subject to a final inspection to ensure that job has been completed as per requirement. If any defect is noticed, the Contractor will be notified by the Engineer-in-Charge and he shall make good the defects with utmost speed. If however, the Contractor fails to attend to these defects within a reasonable time (time period shall be fixed by the Engineer-in-Charge) then Engineer-in-Charge may have defects rectified at Contractor's cost.
- 6.3 **Inspection of Supply Items**
- 6.3.1 All inspection and tests on bought out items shall be made as required by specifications forming part of this contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Programme from the contractor / manufacturer.

- 6.3.2 Inspection calls shall be given for association of Owner , as per mutually agreed programme in prescribed proforma , giving details of equipment and attaching relevant test certificates and internal inspection report of the contractor. All drawings, general arrangement and other contract drawings, specifications, catalogues etc. pertaining to equipment offered for inspection shall be got approved by Owner and copies shall be made available to Owner before hand for undertaking inspection.
- 6.3.3 The contractor shall ensure full and free access to the inspection engineer of Owner at the contractor's or their sub-contractor's premises at any time during contract period to facilitate him to carry out inspection and testing assignments.
- 6.3.4 The contractor / sub - contractor shall provide all instruments, tools, necessary testing and other inspection facilities to inspection engineer of Owner free of cost for carrying out inspection.
- 6.3.5 Where facilities for testing do not exist in the contractor's / sub-contractor's laboratories, samples and test pieces shall be drawn by the contractor / sub-contractor in presence of Inspection Engineer of Owner and duly sealed by the later and sent for tests in Government approved test house or any other testing laboratories approved by the Inspection Engineer at the contractor's cost.
- 6.3.6 The contractor shall comply with the instructions of the Inspection Engineer fully and with promptitude.
- 6.3.7 The contractor shall ensure that the equipment / assemblies / component of the item required to be inspected are not assembled or dispatched before inspection.
- 6.3.8 The contractor shall not offer any item for inspection in painted conditions unless otherwise agreed in writing with the Owner .
- 6.3.9 The contractor shall ensure that the items once rejected by the inspection engineer are not used in the subsequent works. Where parts rejected by the inspection engineer have been rectified or altered, such parts shall be segregated for separate inspection and approval, before being used in the work.
- 6.3.10 On satisfactory completion of final inspection and testing, inspection certificate shall be issued in requisite copies for all accepted items. For stage inspection and for rejected items, only inspection memo shall be issued indicating therein the details of observations and remarks.
- 6.3.11 All inspections and tests shall be made as required by the specifications forming part of this contract. Contractor shall advise

HPCL in writing at least fifteen days in advance of the date of final inspection / tests. Manufacturers inspection or testing certificate for items and materials supplied may be considered for acceptance, at the discretion of Engineer-in-Charge. All costs towards testing etc. shall be borne by the contractor within their quoted rates.

6.4 **Documentation**

6.4.1 **Completion Documents**

I) The following documents shall also be submitted by the Contractor in triplicate as part of completion documents :

- a) Test certificate for materials supplied by the Contractor.
- b) Certified records of field tests on materials / equipment, as applicable.
- c) Material appropriation statement as required.
- d) Construction drawings showing therein the a built conditions of the work duly approved by the Engineer-in-Charge along with one set of reproducible on polyester film (drawings prepared by Contractor)
- e) Other documents as mentioned in Technical Specification.

6.4.2 **"AS BUILT" Drawings**

I) Upon completion of work, the Contractor shall complete all drawings to "As built" status (including all vendor / Sub - vendor's drawings for bought out items) and provide the Owner, the following :

- a. One complete set of all original tracings / reproducible.
- b. Three complete sets of prints.

7.0 **OTHERS**

7.1 **Project Scheduling and Monitoring**

7.1.1 The following schedules / documents / reports shall be prepared and submitted by the CONTRACTOR for review / approval at various stages of the contract.

7.1.2 **Along With Bid**

The Bidder is required to submit as Project Time Schedule in Bar Chart Form, along with the Bid. The Schedule shall cover all activities

including mobilization etc. as per the completion time stipulated in the Bidding Document.

7.2.3 **After placement of Purchase Order**

Upon placement of Purchase Order, Contractor has to furnish A detailed bar chart within 15 days of issue of FOI.

7.2.4 **Project Review Meetings**

7.2.4.1 The CONTRACTOR shall present the programme and status at various review meetings as required.

I) **Weekly Review Meeting**

Level of Participation HPCL's Site-in-Charge/Consultant & Contractor's Job Engineers.

Agenda

a) Weekly programme v/s actual achieved in the past week and programme for next week.

b) Remedial Actions and hold up analysis.

II) **Monthly Review Meeting**

Level of Participation HPCL's Senior officials; Consultant & Contractor.

Agenda

a) Progress Status / statistics..

b) Completion Outlook

c) Major hold ups / slippages.

d) Assistance required.

e) Critical issues.

f) Client query / approval.

Venue : As decided by HPCL.

7.2.5 **Progress Reports**

I) **Monthly Progress Report**

This report shall be submitted in three copies on a monthly basis within Ten calendar days from cut-off date as agreed upon, covering overall scenario of the work. The report shall include but not be limited to the following :

- a) Brief introduction of the work.
- b) Activities executed / achievements during the month.
- c) Scheduled vs actual percentage progress and progress curves for sub-ordering, manufacturing / delivery, sub-contracting, construction activities and overall quantum wise status of purchase orders against scheduled.
- d) Areas of concern / problems / hold ups, impact and action plans.
- e) Resource deployment status.
- f) Annexure giving status summary for Material Requisitions and deliveries, sub-contracting and construction

Distribution: HPCL & Consultant
Two copies & One at Site.

II) Daily Report:

Daily report in duplicate as out lined in 2.2.5 of SCC and any other additional information/data/guideline/job procedure sought by Engineer-in-Charge shall be submitted without fail to HPCL at site by contractor.

7.3 General Environment Requirement

- 7.3.1 The contractor has to ensure efficient use of natural resources like water, fuel oil and lubricants. The contractor should ensure proper awareness to workers to maintain a green and clean environment inside / outside the plant. The contractor must collect and dispose of all the waste and scrap materials at the designated place only as directed by Engineer - in - Charge.

8.0 General

- 8.1 It shall be distinctly understood that notwithstanding the reviews and suggestions if any, by the Engineer-in-charge, the sole and ultimate responsibility for the stability and performance of the form work and staging and all other temporary works shall be that of the contractor.
- 8.2 The partners or Directors of the Contractor shall meet the officers of the HPCL at the site of works or at their respective offices whenever requested to do so.
- 8.3 In order to exercise the required degree of constant control over the ingredients of concrete and their proportions the contractor shall set up proper supervision. A Measuring Glass for checking the silt content of sand shall be maintained and same shall be diligently recorded for every lot of sand on daily basis.

Any other apparatus deemed necessary by the HPCL or its consultants for proper control shall be provided by the contractor at his own cost.

- 8.4 HPCL may ask for any tests to be performed on any construction material. Such test shall be performed at the contractor's expenses either at site, in the site laboratory or elsewhere as directed by the Site Engineer-in-charge. The opinion of the Engineer-in-charge on the mode of testing and interpretation of the results thereof shall be final and binding on the contractors and shall be without appeal.
- 8.5 HPCL/Project Architect / Consultant shall supply to the contractor reasonably complete engineering drawings. All the drawings required for the complete execution of the work will not be released simultaneously but in installments as the work progresses. Bar bending schedules and shop drawings required for proper execution of work shall be prepared by the contractor and submitted well in advance to the HPCL and its Project Architect / Consultant to permit scrutiny, corrections resubmissions and final approval without causing any delay in the construction work.
- 8.6 HPCL reserves the right to use the premises and any portion of site for execution of any work not included in this contract which the HPCL may desire to get executed by other agencies. The contractor shall allow all reasonable facilities for the execution of such work but shall not be required to provide any plant or material for which work except by special arrangement with the HPCL in such a manner as not to impede the progress of the works included in this contract and the contractor shall not be responsible for any damage or delay which may happen or be occasioned by such work.
- 8.7 In addition to previous stipulations, the contractor shall be represented at site at all times during the tenure of the contract by responsible and qualified supervisor approved by HPCL. They shall be in constant attendance upon all activities of the work.
- 8.8 Although Schedule of Probable quantities and Rates has been divided into various sections, the rates quoted for a particular item of work in one sub-section shall be made applicable to similar item of work in any other sub-section if that item is not listed in the Schedule of that other sub-section, as required.
- 8.9 Limited area will be provided within the Premises by HPCL for storing materials. However, partition and temporary roof if required for ensuring proper storage shall be provided by the Contractor. Safety & Security of the materials brought by the party will be totally their own and HPCL cannot be held responsible in any manner.

- 8.10 The contractor shall confirm to the provisions of the Govt. Act relating to the work and to the regulations and bylaws of the local authorities. The contractor shall give all notices required by the said Act and obtain all required permissions and licenses and pay all fees payable to such authorities in connection with constructing and maintaining temporary power and water supply at the site for the said project. All aspects of temporary works including their stability shall be the sole and ultimate responsibility of the contractor.
- 8.11 **Labour camp shall not be erected within HPCL's premises nor shall any workmen be allowed to live at the site without HPCL's written consent.**
- 8.12 Frequency of testing of various materials shall be as per attached test schedule/technical specification. Testing of various materials should be carried out as per the relevant IS standards mentioned in the technical specifications attached to the tender. Party should submit manufacturer's certificates for the various materials and the above tests will be carried out in addition to the certificates submitted. **Cost of testing should be borne by the party.** In case of delay in testing materials, HPCL reserves the right to have the same tested at party's cost.
- 8.13 This project is subjected to inspection by various audit/vigilance agencies of government of India/Hindustan Petroleum Corporation Ltd. If any inspection of works is carried by such agencies, Contractor shall extend his full co-operation to these agencies in examining records, works etc. On inspection by such agencies, in their inspection report, if it is pointed out that Contractor has not carried out work according to guideline laid down in these tender documents and also if any recoveries in some items are pointed out therein, same shall be recovered from Contractor's R/A bills / final bill. The items under dispute shall not be paid in full till inspection agency gives their No-Objection report.
- 9.0 **WATER :**
Water for this work shall be arranged by the Contractor only.
- 10.0 **POWER :**
Power required for the work shall be arranged by Contractor only.
- 11.0 **SITE DRAINAGE:** All water, which may accumulate on the site during the progress of work or in trenches and excavations from other than, expected risk shall be removed from the site to the satisfaction of the EIC at the contractor's expense.

- 12.0 The contractor shall at all times give access to the staff of the statutory bodies as well as other agencies associated with the project and shall provide them all facilities like scaffolding, water, lighting etc. at site for discharging their duties.
- 13 Contractor's Personnel shall be available at all reasonable working hours to receive instructions, notices or communications and clear away on completion and make good all works distributed.
- 14 The contractor shall provide and maintain proper temporary sheds for the storage and protection of materials etc. and other work that may be brought or executed in the site including the tools and materials of subcontractors and remove on completion. Sheds for storage of cement of adequate capacity as directed by EIC shall be provided and the same have floors raised from the ground. The contractor will be responsible for storage of cement in good and water tight condition.
- 15 The contractor shall provide storage facilities in the open for storing MS Reinforcement steel required by him for the works. All the materials at site will be stored by the contractor.
- 16 The Contractor shall provide at his cost all temporary lighting arrangement required for the works to enable the contractors and sub-contractors to complete the work in the specified time including that for the work man of any subcontractor or special tradesman
- 17 Watching and Lighting : The contractor shall provide and maintain at his own expense all lights, night illumination of the premises, Guards, fencing and watching as and when necessary or required by the Engineer- in-charge / Project Architect / Consultant for the protection of works or for the safety and convenience of those employed on the works or the public.
- 18 Theodolite, levels, plump bobs, prismatic compass, chain, steel and metallic tape and all other surveying instruments found necessary on the works shall be provided by the contractor for the due performance of their contracts as instructed by HPCL. The Engineer in charge will use any or all measure instruments or tools belonging to the contractor as and when he chooses for checking the complete works as well as the work in progress
- 19 All scaffolding and ladders that may be necessary for taking measurements at site will be provided by the contractor.
20. **No concreting shall be done during the absence of HPCL representative.**
21. The contractor shall not be permitted to enter on (other than for inspection purpose) or take possession of site until instructed to do so by EIC in writing. The portions 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 HPCL at site and the operations beyond the areas, in respect of any land permitted by the HPCL for the use of the contractor for the purpose of or in connection with the contract, the same shall be subject to the following and such other terms and condition as may be imposed by HPCL. Such use or occupations shall not confer any right of tenancy of the land to the contractor.

22. The contractor shall have no right to put up any construction of his own of any nature or type on HPCL's land except temporary constructions for storage of equipment's for the work under the contract or as a resting place for the labourers employed by him for the work provided that he obtain the requisite previous permission in writing from HPCL or from EIC. In accordance with the HPCL procedure with permission they would be entitled to refuse in their absolute discretion. Such construction will be erected at the contractors own cost. The contractor shall at his own cost demolish all such constructions and remove the debris thereof. As also all his materials and equipment's and clean and level the site thereof before handing over the completed work to the HPCL.
23. The contractor shall provide if necessary or if required for the site all temporary access thereof 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 EIC and make good all damages done to the site.
The contractor shall note that the final bill will not be certified for payment till the action as above is completed by the contractor to the entire satisfaction of EIC.
24. All drawings, tracings, photo prints and writing (except letter) shall be the sole property of HPCL and must be returned to them on completion of work
The drawings maintained on the site are to be carefully mounted on boards of appropriate size. They are to be protected from ravages from termites, ants, silverfish and other insects.
25. The completion of the work may entitle working in the monsoon also. The contractor must maintain labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule No extra rate will be considered for such work in monsoon.
The Time schedule includes monsoon window period also. Hence request for time extension due to monsoon will not be entertained by HPCL.
26. During the execution of the work contractor must check his work with his drawings. The contractor shall be responsible for all the errors in this connection and shall have to rectify all defects and / or error at his own cost failing which HPCL reserves the rights to get the same rectified at the risk and cost of the contractor.

27. During inclement weather the contractor shall suspend concreting and plastering for such time as EIC may direct and shall protect from injury all works in the course of erection.
28. Should the work be suspended by reason of rain, strike, lockouts or other cause the contractor shall take all precautions necessary for the protection of the work at his own expense shall make good any damages arising from any of this cause.
29. All rubbish including muck and sludge, as it accumulate from time to time during the progress of the work and at completion including that of subcontractors and specific tradesmen to be cleared and carted away and all materials condemned by the EIC shall be removed from site as and when required during the entire duration of the work at no extra cost.
30. The contractor shall provide suitable pillar with flat tops and build the same in concrete for temporary benchmarks. All the pegs for setting out the works and fixing the necessary levels required for the execution thereof shall if desired by the EIC likewise be built in masonry at such places and in such manner as the HPCL may determine
31. If required, the contractor has to provide all necessary holds, sleeves, slits and depression etc. in form work and concrete to place pipe lines or ancillary service in any form as shown in the drawings or as directed by HPCL. The materials other than the formwork, concrete and steel will be supplied free of cost, but all labour shall be borne by the contractor and he shall not be paid for.
32. The contractor shall cover up and protect from injury due to any cause to all new work and any other requisite protection for the whole of the works executed whether by himself or special tradesman or sub contractors and any damage caused must be made good by the contractors at his own expense.
- 33.

33.1. Identity Cards

The Contractor shall be given approved identity cards to all his workers, which will have to be produced by the Contractors' workmen as and when demanded by the HPCL's representatives or Security men.

33.2. Action where there is no specification

In case of any class of work over which there is no specification mentioned, the same shall be carried out in accordance with the latest edition of Indian Standard Specifications subject to the approval of the Engineer in Charge(EIC).

33.3. Typographical or Clerical Errors

The EIC's clarifications regarding partially omitted particulars or typographical or clerical errors shall be final and binding on the Contractor.

33.4. As Built Drawings

Contractor shall within one month of completion of work submit 'As Built' drawings (**original tracings and 3 sets of prints alongwith Soft copy in a CD**) of all the works carried out by him. Contractor will not receive final payment in case of failure to comply with this condition.

33.5. Removal of Debris

Contractor shall arrange to dispose off debris and any other waste product created while carrying out the work, outside Client's premises. The Contractor shall take due care while disposing of such waste materials and ensure that any rules/regulations laid down by Municipal Corporation, Client or any other statutory Body are not violated. The Contractor shall be responsible and answerable to any complaint arising out of improper disposal of wastage. Quoted rate shall involve the cost of same and no extra payment shall be made towards this account.

33.6. Sample

The Contractor shall prepare a sample of each item, if required, strictly in accordance with the specifications **free of cost**, for approval of Consultants and Client. The work on these items shall proceed further only after the approval of the mock-up.

33.7. The Contractor shall submit original copies of invoices for verification if asked by EIC/Consultant, order forms for any materials purchased for project work, to Client/ Consultants.

34. The rates quoted by the tenderer in the schedule of quantities will be deemed to be for the finished work and shall include all charges for :

- a) Plant, double scaffolding, frame work, English ladders, ropes, nails, spikes, tools, materials and workmen, protection from weather, temporary supports, platform and the maintenance of the same.
- b) All temporary canvas, lights, tarpaulin, barricade, water shoots etc.
- c) All such temporary weather-proof sheds at such places and in a manner approved by the Consultants for the storage and protection of materials against the effects of sun and rain.
- d) All testing of materials.

e) No tools and plants shall be issued by the Client under the Contract. The Contractor should provide the temporary ply partition to cover certain location of Bank premises wherever necessary.

35. **No scaling of any drawings shall be carried out at site by workmen/labour during execution of work. The details required for the execution of any item shall be timely given by the client/consultants in weekly co-ordination site meetings.**

36. **Working on holidays**

For timely completion of project, contractor is required to deploy more labour & fluent material supply as required on site as directed by consultant and HPCL. **The normal working hours will be from 0830 hrs to 1700 hrs on normal working days from Monday through Saturday and excluding Sundays and holidays.** Permission for working beyond 1700 hrs on normal working days from Monday through Saturday and for working on Sundays & Holidays may be permitted by HPCL based on written request by Contractor. Concreting activity may not be permitted to be carried out after daylight hours.

It is therefore imperative that the Contractor mobilises sufficient manpower and tools & tackles to complete the work within 0830 hrs to 1700 hrs from Monday through Saturday only excluding Sundays & holidays.

SCHEDULE OF QUANTITIES

JOB SCHEDULE FOR ROADS & MISC.CIVIL JOBS AT KANDLA TERMINAL

NOTE:

- Quoted rate shall be applicable for any height, depth, level and thickness of wall etc unless otherwise specified.
- Samples of all materials will have to be approved by EIC before using the same.
- All IS Codes referred to shall be of Latest Edition only.

SL NO.	DESCRIPTION
1.0	EXCAVATION IN ANY TYPE OF SOIL Excavation in any type of soil or hard strata upto a maximum depth of 2.0 meters including bailing out of water if encountered, shoring, back filling and compacting the excavated earth in the sides of foundations. Rate to include carting away surplus excavated earth to an unobjectionable place outside the terminal premises or as directed by site in charge
2.0	MICRO GRADING Carrying out micro grading of existing surface in areas specified by EIC, near facilities, beside roads and as directed by HPCL. Scope of job includes leveling of existing surface including carting of earth from mounds, and undulations etc to low lying areas, spreading of existing/imported earth and compaction etc complete. The finished surface shall be level with no undulations or depressions. The maximum depth of cutting/filling will be around 300 mm. Scope of job does not include supply of earth. Earth wherever required for leveling shall be paid through a separate item.
3.0	SAND FILLING Supplying and filling good quality river sand below foundation and plinth in Layers of 200 mm compacted thickness including watering and compacting till maximum compaction is achieved.
4.0	RUBBLE SOLING Providing and laying 230/ 150mm thick dry trap stone soling including hand packing, filling interstices with chips, spalls and binding with grit/selected murrum/ sand, watering, compacting by ramming.
	PLAIN CEMENT CONCRETE (for Items 5 and 6) Providing and laying PCC using 20mm & down size Graded crushed aggregates including providing and fixing form work, machine mixing, compaction and curing etc complete as per specification. Concrete shall be confirming to IS-456-Latest edition.
5.0	PCC 1:3:6
6.0	PCC 1:2:4
7.0	MURRUM FILLING Supplying , Spreading and Filling, Watering and compacting with 10 Mt roller in

	layers of 150mm layers with good quality imported Murrum in the base/sub base courses of foundation! roads/drive ways and as directed by EIC. The job to include testing at site/ laboratory to achieve optimum moisture content/max. dry density in the field. The party need to make all the necessary arrangements at the site for the same.
	REINFORCED CEMENT CONCRETE (For items 8 - 10) Providing, mixing and laying RCC of following mix with 20 mm and down size graded crushed aggregate including providing and fixing necessary steel/plywood shuttering, scaffolding, vibrating, curing, hacking the surface to receive plastering etc. complete. Concrete shall conform to IS-456 latest edition and rate shall be exclusive of the cost of steel reinforcement which will be paid under separate item. Item no. 8 to 10 to be executed as per enclosed specifications. The below said items will require different working practices like Channels for driveway, Angle supports for coping and shuttering for Box culverts & Oil water separation tanks etc. Party to quote each item according keeping in view of requirements etc complete and the same shall be in accordance with the latest IS code requirements.
8.0	RCC 1: 1:2 for box culverts/ Precast slabs, pedestals etc. Rate should be inclusive of transportation and laying of precast slabs at the desired location as advised by EIC.
9.0	RCC 1:2:4 for Coping (avg. 100 mm thk). Job to include providing drip mould by putting half cut PVC pipe in situ concrete.
10.0	RCC 1:1.5: 3 DRIVEWAY: Rate also includes, Providing and fixing steel channel shuttering with provision for fixing reinforcement bars in position. Casting of slab in alternate panels of size 6M X 3M (or as instructed by engineer in charge) including vibrating with screed vibrators. Providing broom finish to the top surface when concrete is green. Pond curing for 15 days. Rate to also include providing polythene formwork below RCC Driveway casting as instructed by EIC. Rate shall be exclusive of steel reinforcement, which shall be paid under a separate item.
11.0	STEEL REINFORCEMENT Supplying, fabricating, and placing in position HYSD steel reinforcement bars of various diameter & conforming to IS 1786 including cutting, bending & supply and binding with 18 SWG binding wire. Payment shall be made as per reinforcement drawings and at theoretical weights only. Measurement of chairs, spacers and laps will not be considered for payment, but the same shall be provided as per IS code requirements. Party to quote accordingly.
12.0	RANDOM RUBBLE MASONRY Providing & constructing uncoursed Rubble Masonry in CM 1:5 using trap /granite /qualizite /gneiss /locally available best quality stones. Rate to include shifting of stones within the terminal, hammer dressing of stones as specified, providing bond stones, raking of joints for pointing ,scaffolding and curing etc complete as per specification.

13.0	Brick Masonry in CM: 1:5: Providing and constructing brick masonry in CM 1:5 using locally available approved quality bricks having strength of minimum 50 kg /sqcm. Rate to include raking the joints to 1 cm deep, scaffolding, soaking of bricks prior to use and curing etc. complete as per enclosed
14.0	PLASTERING Providing and applying 12 mm thick plaster with water proofing compound of CICO or approved equivalent make as per manufacturer's recommendations in CM 1: 5 on top surface of coping, pedestals or wherever required as directed by EIC using screened sand including finishing smooth and providing rounded ends and drip moulds at junction with wall, scaffolding and curing etc. Complete.
15.0	POINTING Providing raised pointing using CM 1:3 with projection of 25mm wide and 12mm thick on RR masonry. Rate to include scaffolding, curing etc complete.
	WBM SURFACE (for items 16 to 18) Providing and laying water bound Macadam surface in three layers each of 75 mm compacted thickness with good quality granite stone with size ranging from 40-63mm.The job also to include filling interstices with 10-12mm chips of same material and binding with good quality murrum. Each layer shall be laid correct to the line and level as directed by EIC. The job also to include raking the surface to receive asphalt carpet at later stage.
16.0	75MM FIRST LAYER
17.0	75MM SECOND LAYER
18.0	75MM THIRD LAYER
19	ASPHALT CARPET & SEAL COAT
	ASPHALT CARPET (by Mechanical Paver) Providing and laying 50 mm thk (Compacted thickness) premix asphalt carpet on top of the WBM surface. Rate to include <ul style="list-style-type: none"> i) Cleaning the WBM surface to bare top metal ii) Premixing the aggregates of specified grading as detailed below with hot molten asphalt in mechanical mixers. iii) Providing tack coat using 80/100asphalt @ 9.8 kg per 10sq.m area prior to laying premix Asphalt carpet. iv) Spreading the premix asphalt carpet by mechanical paver v) Checking the camber with camber boards. vi) Rolling the above layer with 10MT roller. NOTE: Hot molten asphalt mixed with aggregate (66% of 12 to 20mm size and 34% 6 to 12 mm size graded crushed stone aggregate @ 56 kg bitumen per cum of aggregate. Rate to include necessary repair of WBM surface laid over cable trench /pipeline.

	<p>SEAL COAT Providing and laying premix 12 mm thick seal coat on top of bituminous carpet and roll with 10 MT road roller to full compaction. Rate to include premixing the coarse crushed stone aggregates with preheated asphalt @ 80 kg per cum in mechanical mixer, spreading and rolling to achieve maximum compaction.</p>
20.0	<p>DISMANTLING of RCC/PCC Dismantling of Existing RCC/PCC structures as a part of re arranging facilities. The rate to include the job at all heights and levels and underground also. The rate to include disposal of debris to an unobjectionable place outside terminal premises or as directed by EIC Complete.</p>
21.0	<p>EARTHEN WALL DISMANTLING: Dismantling of Existing earthen wall as a part of re arranging facilities. The rate to include breaking RR Stone Masonry top covering layer approx 300 mm thk over earthen wall also rate includes the job at all heights and levels and underground also. The rate to include disposal of debris to an unobjectionable place outside terminal premises or as directed by EIC Complete.</p>
22.0	<p>STONE/ BRICK MASONRY DISMANTLING: Dismantling of Existing stone/ Brick masonry wall as a part of re arranging facilities. the job at all heights and levels and underground also. The rate to include disposal of debris to an unobjectionable place outside terminal premises or as directed by EIC Complete.</p>
23.0	<p>DISMANTLING WBM/ ASPHALT LAYERS: Dismantling of Existing WBM/ Asphalt layers as a part of re arranging facilities. The rate to include disposal of debris to an unobjectionable place outside terminal premises or as directed by EIC Complete.</p>
	<p>HUME PIPE: (for items 24 and 25) Supplying & laying NP3 Class Hume pipes at designated areas. Job to include excavation (a min of 200 dia more than the hume pipe dia on both sides) sand bedding 200mm thick followed by a 150mm thick layer of PCC 1:2:4, fixing in position the hume pipe & collars using cement paste, back filling the trench using approved quality river sand to a depth of 150mm and then placing the murrum & compacting the same using a surface vibrator etc complete as advised Bv EIC. Partv to quote for this item including all the above job. No separate payment will be made.</p>
24.0	600 mm dia NP3 Class
25.0	450 mm dia NP3 Class
	<p>Supply and Fixing CI Cover: Rate to include supply and fixing of following sizes CI Cover (Make: Neco or Approved Equivalent) in RCC with its frame etc. complete as advised by EIC.</p>
26.0	450 mm x 450 mm size
27.0	800 mm x 800 mm size
	<p>LAYING OF HPCL SUPPLIED PIPES (for item 28 and 29) Laying of HPCL supplied following size pipes for oil water separators etc., across the brick walls, including making chases in the walls or concrete floors, fixing with bends, elbows etc. complete . As per instructions of EIC.</p>
28.0	100 mm NB

29.0	200 mm NB
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	<p>FIXING OF HPCL SUPPLIED GATE VALVES (for item No 30, 31) Fixing of HPCL supplied following sizes gate valves of approved quality/ Make as per instructions of Engineer in charge. Job to also include, supply and fixing of gaskets and suitable size nuts bolts etc complete.</p>
30	100 mm NB
31	200 mm NB
32	<p>SUPPLY AND FIXING SHALITEX EXPANSION BOARDS:IS 1838(Part I) 1983 Job includes supply and fixing of Shalitex Expansion Joint Boards or approved Equivalent for RCC driveway job at new TT filling gantry. Job to include cutting the board to required length and width, providing a watertight expansion joint. Rate also to include filling the top 36 mm wide x 12 mm depth above the expansion board with Tarplastic compound to make the joint totally water proof. Note : Party shall submit the Manufacturer's test certificate of the above material including application procedure to Engineer in charge before execution of job.</p>
33	<p>SUPPLY AND APPLYING NITOBOND EP Scope of job includes supply and application of Nitobond EP or approved Equivalent to existing RCC Driveway as per manufacturers instructions. Job to also include cleaning of all surfaces to be treated as dust free. All laintence should be removed by etching with Reebaklens and wire-brushing.also the existing concrete must be chipped to a sound substrate. Surfaces contaminated with oil or grease, should be removed by using a strong industrial detergent or organic degreaser. Surface should be washed thoroughly with water and dried before the application of Nitobond EP</p>

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS - CIVIL – MATERIALS

1.0 WATER

1.1 Water used shall be clean and free from organic impurities etc. Potable water is generally considered satisfactory for construction and during purpose. Water for construction purpose shall be tested for suitability as per IS codes at the start of the project and also at every **three** months interval.

2.0 CEMENT

2.1.0 Cement used shall be any of following types with prior approval of Engineer in Charge: -

- a) Ordinary or Low Heat Portland Cement conforming to IS: 269-1976.
- b) Rapid Hardening Portland cement conforming to IS: 8041-1978.
- c) Portland Blast Furnace Slag Cement conforming to IS: 455-1976.
- d) Portland Pozzolana cement conforming to IS; 1489-1976.
- e) White Portland cement conforming to IS: 8042-19789.
- f) Ordinary Portland cement conforming to IS: 8112 (43-Grade)

NOTE: -

- i) Low Heat Portland cement conforming to IS: 269-1976 shall be used with adequate precautions with regard to removal of formwork etc.,
- ii) White Portland cement is generally used for architectural and decorative purpose and is generally meant for non structural use.
- iii) Generally ordinary Portland cement is used for construction purposes.

2.2.0 ORDINARY PORTLAND CEMENT

Shall conform to the requirements of IS 8112 (43 Grade).

2.2.1 Physical Requirements

- i) Fineness; - Specific surface shall not be less than 2250cm²/grn.
- ii) Soundness: - Expansion (unaerated) shall be not more than 10 mm by Le Chatelier method. If it fails, expansion of aerated sample shall not be more than 5mm. Expansion by Autoclave test shall not be more than 0.8%.
- iii) Setting Time :-
 - a) Initial: not less than 30 minutes.
 - b) Final: Not more than 10 hours.
- iv) Compressive Strength of mortal cubes (1 cement :3 standard sand) shall not be less than following:
 - 330 kgf/cm² at 168+/-2 hours
 - 430 kgf/cm² at 672+/-4 hours

2.3.0 PORTLAND POZZOLANA CEMENT

shall conform to the requirements of IS 1489-1976

2.3.1 Physical Requirements :-

- i) Fineness :- Specific surface shall not be less than 3000 Sq. cm/gm.
- ii) Soundness :- Expansion (unaerated) shall be not more than 10mm by Le Chatelier method. If it fails, expansion of aerated sample shall not be more than 5mm. Expansion by Autoclave test shall not be more than 0.8%

iii) Setting Time :-

a) Initial: not less than 30 minutes

b) Final: not more than 10 hours

iv) Compressive Strength of mortar cubes (1 cement: 3 standard sand) shall not be less than following:

--- 220 kgf/cm² at 168+/-2 hours

--- 310 kgf/cm² at 672+/-4 hours.

v) Drying shrinkage :- not more than 0.15%

2.4.0 TESTING

The details of test for cement shall be as given in IS: 4031-1968 (Methods of physical tests for hydraulic cement) and IS: 4032-1968 (Method of chemical! analysis of hydraulic cement).

3.0 AGGREGATES:

3.1.0 Aggregates shall consist of naturally occurring stones, gravel and sand and shall be hard, strong dense durable clear and free from veins, adherent coating and injurious amounts of disintegrated pieces and deleterious substances.

3.1.1 Aggregates shall not contain harmful organic impurities such as pyrites, laminated material, alkali, seashells and organic impurities and those, which may attack the reinforcement when used in RCC work. Aggregates shall not be chemically reactive with alkalis of cement.

3.2.0 FINE AGGREGATES:

3.2.1 Aggregates most of which passes 4.75mm size IS sieve is known as fine aggregates. The sum of the percentage of all deleterious materials shall not exceed 5%.

3.2.2 Fine- aggregates shall be either sand or crushed stone dust. However, generally sand is used as fine aggregate for concrete or mortar. Two varieties of sand are available normally:

i) **FINE SAND:** This shall be natural river sand conforming to the requirements of IS:383-1970. Its grading shall be within the limits of grading zone IV of the table shown below:

IS SIEVE

PERCENTAGE PASSING FOR

DESIGNATION	PERCENTAGE PASSING FOR			
	GRADING ZONE I	GRADING ZONE II	GRADING ZONE III	GRADING ZONE IV
10 mm	100	100	100	100
4.75 mm	90-100	90-100	90-100	95-100
2.36 mm	60-95	75-100	85-100	95-100
1.18 mm	30-70	55-90	75-100	90-100
600 microns	15-34	35-59	60-79	80-100
300 microns	5-20	8-30	12-40	15-50
150 microns	0-10	0-10	0-10	0-15

Note-Fine aggregate conforming to grading Zone IV shall not be used in reinforced concrete unless ascertained for suitability by mix designing.

ii) **COARSE SAND:-**This shall be either river sand or pit sand conforming to the requirements of IS:383-1970. It shall be clean, sharp, angular, strong and composed of hard silicious material. Its grading shall be within the limits of zone I, II or III of the table shown above.

3.2.3 The maximum quantity of silt content shall not exceed 8%.

3.2.4 TESTING:-

The details of test shall be as per IS:2386 (part I) -1963 to IS:2386 (part VIII)-1963 (Methods of testing aggregates for concrete).

3.3.0 COARSE AGGREGATES:-

3.3.1 Coarse aggregates used for concrete can be either stone, gravel (river bed shingle or pit gravel) or brick. However, crushed stone shall be used as coarse aggregates for concretes.

3.3.2 STONE:-

This shall be crushed or broken from hard stone obtained from approved quarry. It shall be hard, strong, dense, durable, clean and free from soft, thin, flat, elongated or laminated, flaky pieces and shall be roughly cubical in shape. It shall be clean and free from dirt and any foreign matter. However the total amount of deleterious materials shall not exceed 5% of its weight.

3.3.2.1 SIZE :- Graded aggregate of nominal sizes 40, 20, 16 or 12.5 mm shall conform to the requirement of the table given below:

IS SIEVE	PERCENTAGE PASSING FOR NOMINAL SIZE OF			
	40 MM	20MM	16MM	12.5MM
80.0	100	-----	-----	-----
40.0	95-100	100	-----	-----
20.0	30-70	95-100	100	100
16.0	-----	-----	90-100	-----
12.5	-----	-----	-----	90-100
10.0	10-35	25-55	30-70	40-85
4.75	0-35	0-10	0-10	0-10
2.36	-----	-----	-----	-----

3.3.2.2 Single size aggregate (ungraded) of nominal sizes 63, 40, 20, 16, 12.5 or 10 mm shall conform to the requirements of the table given below:-

IS SIEVE DESIGNATION	PERCENTAGE PASSING FOR NOMINAL SIZE OF					
	63 MM	40 MM	20 MM	15 MM	12.5 MM	10 MM
80	100	-----	-----	-----	-----	-----
63	85-100	100	-----	-----	-----	-----
40	0-30	85-100	100	-----	-----	-----
20	0-5	0-20	85-100	100	-----	-----
16	-----	-----	-----	85-100	100	-----
12.5	-----	-----	-----	-----	85-100	-----
10.5	-----	0-5	0-20	0-30	0-45	85-100
4.75	-----	-----	0-5	0-5	0-10	0-20
2.36	-----	-----	-----	-----	-----	0-5

3.3.3 TESTING:

The details of test shall be as per IS : 2386 (part-I)-1963 to IS 2386 (part VIII)-1963 (Methods of testing aggregates for concrete).

4.0 BRICKS:-

4.1.0 Common burnt clay building bricks having compressive strength upto 400 kg/cm² shall conform to IS:1077-1976.

4.1.1 Burnt clay bricks having compressive strength more than 400 kg/cm² shall conform to IS:2180-1978

4.1.2 Bricks shall be hand or machine molded and free from cracks and flaws and nodules of free lime. Bricks of 9 cm height shall be provided with frog of I to 2 cm deep on one of its flat sides. No frog is required for 4 cm height bricks and extruded bricks.

4.2.0 CLASSIFICATION :-

4.2.1 Bricks shall be classified based on their compressive strength as given in table below:

CLASS DESIGNATION	AVERAGE COMPRESSIVE STRENGTH NOT LESS THAN KG/SQ. CM.
350	350
300	300
250	250
200	200
175	175
150	150
125	125
100	100
75	75
50	50
35	35

4.2.1.1 Each class of brick shall be further divided into sub classes A and B based on tolerances and shape.

4.2.1.2 Sub class A bricks shall be smooth rectangular faces with sharp corners and uniform colour.

4.2.1.3 Sub class B bricks may have slightly distorted and rounded edges.

4.2.1.4 The bricks of class designation 100 shall have smooth rectangular faces with sharp corners and emit clear ringing sound when struck. Tolerances on dimensions upto +/-3% shall be permitted. Dimension test to be carried out as per IS.

4.2.1.5 Bricks of class designation 75, 50 and 35 may be permitted to have slight distorted and rounded edges provided no difficulty shall arise on this account in laying of uniform courses. Tolerances on dimensions upto +/- 8% shall be permitted. Dimension test to be carried out as per IS.

4.3.0 PHYSICAL REQUIREMENTS:

4.3.1 Compressive Strength: This shall conform to table given above. Compressive strength of any individual brick shall not fall below this minimum requirement by more than 20%.

4.3.2 Water Absorption :- Shall not be more than 20% upto class 125 and not more than 15% for higher classes.

4.3.3 Efflorescence :- The rating of efflorescence shall not be more than moderate upto class 125 and not more than slight for higher classes.

4.4.0 TESTING:-

The details of test shall be as per IS-3495-1976 Part I, II and III (Method of test of burnt clay building brick).

Part I: Determination of Compressive Strength

Part II : Determination of water absorption

Part III : Determination of efflorescence

Percentage of Deleterious materials (testing).

5.0 STEEL REINFORCEMENT:-

5.1.0 The steel reinforcement as specified shall be as follows:-

a) Mild steel and medium tensile bars - IS 432 Part 1-1982.

b) Cold twisted HYSD bars IS 1786-1979.

MILD STEEL AND MEDIUM TENSILE STEEL:-

5.1.1.1 The physical requirements for mild steel, Grade I and II and medium tensile bars shall be as per table below:

PROPERTY	NOMINAL SIZE OF BARS	MILD STEEL		MEDIUM TENSILE STEEL
		GR.I	GR.II	
i) ULTIMATE TENSILE STRESS, KG/SQ. MM MINIMUM	ALL SIZES	42	38	55
ii) YIELD STRESS, KG/SQ. MM MINIMUM.	UPTO & INCL. > 20 MM >	26	23.5	36
	UPTO AND) INCL. 40 MM)	24	21.5	34.5
	OVER 40 MM	24	21.5	33
iii) ELONGATION, PERCENT MINIMUM	UNDER 10 MM	20	20	17
	10 MM & OVER	23	23	20

NOTE: - Mild steel Grade II is available in two varieties designated as ST 42-0 and ST 32-0. ST 42-0 only shall be used conforming to above requirements. ST 32-0 shall not be used as reinforcement.

5.1.1.2 Note: Grade II mild steel bars shall not be used in the following conditions:

- i) Where structures are located in earthquake zones subjected to severe damage.
- ii) Where the structures are subjected to dynamic loading (other than wind loadings such as railway and highway bridges).
- iii) Where welding has to be employed for fabrication
- iv) Where the design of structures are based on plastic theory.

5.1.1.3 WEIGHT:

The tolerance on weight for round and square bars shall be the following percentage of the weight calculated based on unit weight of 0.785 kg/cm²/m run.

- Upto and including 8mm - + 4%
- Over 8mm - + 2.5%

5.1.1.4 TESTING

The details of test shall be as follows:

- i) Tensile test: As per IS 226-1962 and IS 1608-1972.
- ii) Bend test: As per IS 1599-1960.

5.1.2 COLD TWISTED BARS:

5.1.2.1 The physical requirements of all sizes of cold twisted bars whether plain or deformed shall be as follows:

--- Tensile strength :- Minimum 49.5 kgf/sq. mm

--- 0.2% proof stress :- Minimum 42.5kgf/sq.mm

--- Elongation:- Minimum on gauge length 5.65/60 where so is the cross sectional area of the test piece - 14.5%

5.1.2.2. WEIGHT:

The tolerance on the weight of the bars shall be the following percentages of the weight calculated on the above:

- Upto and including 8 mm - + 4%
- Above 8mm - + 2.5%

5.1.2.3 TESTING:

The details of test shall be as per IS 226-1962, IS 1608-1972 and IS 1599-1974 for selection and preparation of test samples, tensile test and bend test.

STRUCTURAL STEEL:**SCOPE OF WORK:**

The work covered by this specification consists of supplying, fabricating and erecting of structural steel members for columns, beams, trusses, ladders, grills, doors etc., made out of RS joists, plates, angles, bars, flats, box sections etc., complete in strict accordance with the specifications and the applicable drawings.

MATERIALS:

All structural steel shall be of standard sections as marked on the drawings and shall be free from scale, blisters, laminations, cracked edges and defects of any sort.

All structural steel and electrodes shall comply in all respects with I. S. for structural steel.

WORKMANSHIP:

All workmanship shall be of first class quality in every respect to the greatest accuracy being observed to ensure that all parts will fit together properly on erection.

All ends shall be cut true to planes. They must fit the abutting surfaces closely.

All stiffeners shall be fit tightly at both ends.

All butt ends of compression members shall be in close contact through the area of the joints.

The base connection shall be provided as shown on drawings and the greatest accuracy of workmanship shall be ensured to provide the best connections.

Figured dimensions on the drawings shall be taken.

ERECTION AND MARKING:

Erection and fabrication shall be according to I. S. 800-1984 section-II. During erection, the work shall be securely braced and fastened temporarily to provide safety for all erection stresses etc. No permanent welding shall be done until proper alignment has been obtained.

Any parts which do not fit accurately or which are not in accordance with the drawings and specifications shall be liable to rejection and if rejected, shall at once be made good.

Engineer-in-Charge shall have full liberty at all reasonable times to enter the contractor's premises for the purpose of inspecting the work and no work shall be taken down, painted or dispatched until it has been inspected and approved.

The contractor shall supply free of charge all labour and tools required for testing of work.

DELIVERY AT SITE:

Contractor shall deliver the component parts of the steel work in an undamaged state at the site of the works and the Engineer-in-Charge shall be entitled to refuse acceptance of any portion which has been bent or otherwise damaged before actual delivery on work.

PAINTING:

Painting shall be strictly according to I. S. 1477-1971 (Part-I-Pre-treatment) and I. S.1477-1971(Part II-painting).

Painting shall be carried out on dry surfaces free from dust, scale etc. The paint shall be approved by the Engineer-in-Charge.

Two coats of Synthetic Enamel paint of approved colour and make over two coats of red oxide primer shall be applied on steel, except where it is to be encased in concrete or where surfaces are to be field welded.

WELDING:

Welding shall be in accordance with I. S. 816-1969, I. S. 819-1957, I. S. 1261-1959, I. S. 1323-2982 and I. S. 9595-1989 as appropriate

WELDING CONSUMABLE:

Covered electrodes shall conform I. S. 814 (Part-II) - part II) 1974 or I. S. 1395-1972.

Fill rods and wires for gas welding shall conform to I. S. 1278-1972.

The bare wire electrodes for submerged arc welding shall conform to I. S. 7280-1974. The combination of arc and flush shall satisfy the requirements of I. S. 3613-1974 .

The filler rods and bare electrodes for gas shielded metal arc welding shall conform to I. S. 6419-1971 and I. S. 6560-1972 as appropriate.

TYPES OF WELDING:

Shielded metal arc welding (Direct or alternating current) or Oxyacetylene welding may be used. Field welding may be used. Field welding shall be by D. C.

WELDING PROCEDURE:

Welding should be done with the structural steel in flat position in a down hand manner wherever possible. Adequate steps shall be taken to maintain the correct arc length, rate of travel, current and polarity for the type of electrode and nature of work. Welding plant capacity shall be adequate to carry out the welding procedure laid down. Adequate means of measurement of the current shall be available either as a part of the welding plant or by the provision of a portable ammeter. In checking welding current, a tolerance of 10% or 30 amperes from the specified value, whichever is less, shall be permitted.

The welding procedure shall be such as to ensure that the weld metal can be fully and satisfactorily deposited through the length and thickness of all joints so that distortion and shrinkage stresses are reduced to the minimum and thickness of welds meet the requirements of quantity specified.

WORKMANSHIP:**PREPARATION OF FUSION FACES:**

Fusion faces shall be cut by steaming machine or gas cutting and later dressed by filing or grinding so that they shall be free from irregularities such as would interfere with the deposition of the specified size of weld to cause the defects. Fusion faces and the surrounding surfaces shall be free from heavy slag, oil paint or any substance which might affect the quantity of the weld or impede the progress of welding. The welding face shall be free of rust and shall have metal shine surfaces.

The parts to be welded shall be brought into as close contact as possible and the gap due to faulty workmanship or incorrect fit up shall not exceed 1/16". If separation of 1/16" or more occurs locally, the size of the fillet weld shall be increased at such position by an amount equal to the width of the gap.

The parts to be welded shall be maintained to their correct position during welding. They shall be securely held in position by means of tack welds, service bolts, clamps or rings before commencing welding so as to prevent relative movement due to distortion, wind or any other cause.

All welds shall be deposited in a pre-arranged order and sequence taking due account of the effects of distortion and shrinkage stresses.

After making each run of welding, all slag shall be removed and shall be protected by clean boiled lined oil till approved.

The weld metal, as deposited shall be free from crack, slag, excessive porosity, cavities and other faults.

The weld metal shall be properly fused with the parent metal without overlapping or serious undercutting at the toes of the weld.

The surface of the weld shall have a uniform and consistent contour and regular appearance.

In welds containing crack, porosity or cavities in which the weld metal tends to overlap on the parent metal without proper fusion, the defective portions of the welds shall be out cut and re-welded. Where serious under cutting occurs, additional weld metal shall be deposited to make good reduction.

MODE OF MEASUREMENT:

All structural steel shall be measured on weight basis in metric tones or quintals or kgs as mentioned in the schedule of quantities. The length or areas of various members including gusset plates shall be measured correct to two places of decimals and the net weight worked out from the standard steel tables published by Bureau of Indian Standards.

No separate measurements shall be taken for welding, riveting, bolting, field connections Etc. The rate shall include cost of all labour, materials, scaffolding, transport and also cost of welding, riveting and bolting, field connections if any all to complete the job as per specifications.

PLUMBING WORK

GI PIPES & SOCKETS

MATERIALS:

The pipes shall be galvanized mild steel welded and seamless, screwed and socketed tubes conforming to the requirement of IS-1239 /1982 for specified grade. They shall be of diameter (nominal bore) as specified in the description of item.

The pipes and sockets shall be clean finished, well galvanized in and out, free from cracks, surface flaws, laminations and other defects. All screw threads shall be clean and well cut. The ends shall be cut clean and square with the axis of the tube. Unless otherwise specified, the pipes below GI or concealed in walls or floors shall be C class and those supported on walls shall be of B class .

All screwed tubes and sockets shall have pipe thread conforming to the requirements of IS: 544-1975. Tubes shall be screwed with taper threads while the sockets with parallel threads.

PIPE FITTING:

The fittings shall be of seamless wrought steel or mild steel tubulars complying with the requirements given above or as specified. The fittings shall be designated by the respective nominal bores of the pipes, for which they are intended.

The fittings shall have screw threads at the ends shall be parallel for female threads and taper threads for male.

CUTTING, LAYING AND JOINTING

The pipes and fittings shall be inspected at site before use to ascertain that they conform to the specifications given above. The defective pipes shall be rejected. Where the pipes have to be cut or re-threaded, the ends shall be carefully filed out so that no obstruction to the bore is offered. The ends of the pipes shall then be threaded with pipe dies and taps carefully in such a manner as will not result in slackness in the joints when two pieces are screwed together.

The taps and dies shall be used only for straightening the screw thread which have become bent or damaged and shall not be used for turning of the threads so as to make them slack, as the later procedure may not result in a water tight joint. The screw threads of the pipes and fittings shall be protected from damage until they are fitted.

The pipes shall be cleaned and cleared of all foreign matter before being laid. In jointing the pipes, the inside of the socket and the screwed end of the pipes shall be oiled and rubbed over with white lead and a few turns of Teflon tape or spun yam wrapped round the screwed end of the pipe. The end shall then be screwed in the socket, Tee etc., with the pipe wrench. Care shall be taken that all pipes and fittings are properly joined so as to make the joints completely water tight and pipes are kept at all times free from dust and dirt during fixing. Burrs from the joints shall be removed after screwing. After laying, the open ends of the pipe shall be temporarily plugged to prevent access of water, soil or any other foreign matter.

At Y threads exposed after jointing shall be painted or in the case of under ground piping thickly coated with approved anti corrosive paint to prevent corrosion. The pipes shall be laid in chases or exposed to suit the conditions or as specified. All pipes laid in chases shall be coated with hessian cloth impregnated with bitumen and pipe exposed shall be painted with two coats of synthetic enamel.

TESTING OF JOINTS:

After laying and jointing, the pipes and fittings inspected under working conditions of pressure and flow. Any joint found leaking shall be redone and all leaking pipes removed and replaced without any extra cost. The following procedure shall be followed for testing of pipes. NO work shall be covered until it has been tested and found OK by EIC.

The pipes and fittings after they are laid shall be tested at hydraulic pressure of 2 kg/sqcm. The pipes shall be slowly and carefully charged with water allowing all air to escape and avoiding all shock or water hammer. The draw off points shall be plugged and stopcocks shall be closed and specific hydraulic pressure shall be applied gradually. The test pump shall be stopped, the test pressure shall be maintained without loss in pressure for at least half an hour. The pipes and fittings shall be tested in sections as the work of laying proceeds, keeping the joints exposed for inspection during testing.

MEASUREMENTS:

The length shall be measured in running meter correct to a centimeter. For the finished work, which shall include GI pipe and GI fittings such as bends, tees, elbows, reducers, crosses, plugs, sockets, nipples, unions and nuts but excludes brass or gun metal taps, valves etc.

TECHNICAL SPECIFICATIONS - CIVIL WORKMANSHIP**EARTHWORK****GENERAL, DEFINITIONS****DEADMEN OR TELL TALES:**

Mounds of earth left undisturbed in pits dug out for borrowing earth.

FORMATION:

Final shape or profile of the ground after excavation or filling up.

PROFILE:

The pattern to which the earth is to be out or made up and dressed.

FILL:

Shall mean earth, sand, stabilized aggregate or other material specified to replace earth or rock removed during construction.

CLASSIFICATION

The earth shall be classified, measured and paid separately for categories as mentioned below:

ORDINARY SOIL

Any soil which can be removed with the ordinary or close application of bicks or jumpers or scarifiers and rippers.

ORDINARY ROCK

Which may be quarried by crowbars or picks such as limestone, sandstone, hard laterite, hard conglomerate, and un-reinforced concrete below ground level shall be treated as ordinary rock.

PROTECTION

- a) Trenches and foundation pits shall be securely fenced and proper caution sign and night lighting shall be arranged.
- b) Any excavation shall not be carried out below the foundation level of adjoining structure unless proper precautions like underpinnig shoring etc are taken.

EXACAVATION FOR FOUNDATION**SCOPE**

Excavation for normal spread footings, trenches, u/g storage tanks, excavation over large areas, etc.

SITE CLEARENCE

Before the earth work is started the area shall be cleared of shrubs, vegetation, grass brush, wood, trees and rubbish.

The roots of trees shall be removed to a minimum 600mm below ground level or 30 cm below formation level whichever is lower and the hollows shall be filled up with earth, leveled and rammed.

SETTING OUT AND MAKING PROFILES

Masonry pillars will be erected at suitable points to serve as benchmark, for execution of work. These bench marks shall be connected to standard bench mark if required by Engg.-in-charge / Architects. In addition to these pillars, centre line pillars shall also be erected by the contractor and footing positions shall be marked with the help of these pillars.

The necessary profile shall be set out. The level shall be taken at an interval as directed by Engg.-in-charge / Architects but the intervals shall not be more than 5 meters in any case. The levels shall be recorded in field books and plotted on plan before starting the excavation and the same shall be countersigned by the Engg.-in-charge / Architects.

CUTTING FOR FOUNDATION:

The cutting shall be done to minimum depths as indicated in the drawings and if required the depth shall be increased to obtain proper strata for foundations. Any excess excavation carried out by the contractor without the proper authorization from etc shall not be paid and the excess depth shall be made good by the contractor by PCC 1:4:8.

CUTTING TRENCHES: Unless otherwise indicated on the drawings, trench excavation shall be by open out and the bottom of the trenches for piping shall be accurately graded so that the pipe is uniformly supported along its entire length. After trench bottom has been graded all holes or depressions for other type of piping joints shall be cut below the trench to the depth necessary for the particular joint.

BACKFILLING:

Backfilling of the excavated spaces shall be done with the selected material from the excavation. Backfilling shall be done to the original ground level or the elevation shown on the plan in layers of 150mms to 220mms and well compacted. When the excavated earth is not suitable or adequate for backfill then approved backfill material shall be brought from outside and the same shall be paid separately. Backfilling is to be done in such a manner as not to cause undue thrust on the any part of the structure.

TRENCH BACKFILL:

Backfilling of trenches for pipelines shall be done first over the middle portion of each length of pipe bringing the cover to a depth of at least 300mm over the top of the pipe while leaving all field joints exposed. After all required tests on the piping have been carried out and approved by the Engg.-in-charge / Architects the remaining trench backfill shall be accomplished. Extreme care shall be exercised during backfilling operations to prevent damages to coated or wrapped pipes.

SIDE PROTECTION FOR DEEP EXCAVATION:

In case of excavation for foundations exceeding 2.0 meters depth from existing ground level, proper precautions shall be taken to prevent sides from collapse. This can be ensured by adopting anyone of the following methods given below and as directed by EIC.

1. Stepping
2. Side slopes
3. Planking and Strutting

The first two methods can be adopted where the soil is not loose and sloping/stepping is possible. The sides slopes shall be done to such a degree that the sides are stable. In case of very loose and trecherous soil, planking and strutting shall be done to avoid collapse. Planking and strutting shall be done in accordance with IS 3764 (Safety code for excavation works). Sheetings, shorings and bracings shall be maintained in place until immediately before filling or backfilling and then shall be removed by stages as the filling or the backfilling progresses. The responsibility of designing, supplying and erecting a sound and stable shoring system rests with the contractor and shall be approved by EIC before execution.

DEWATERING:

In case of water being encountered during the excavation for foundation, the contractor shall arrange for adequate capacity of dewatering system. Pumping shall be controlled to dispose of water to drainage ditches and shall not be routed to cause inconvenience to the construction operation in general.

MEASUREMENT:

The length, breadth and depth shall be measured to nearest centimeter and the quantity shall be worked out in cubic meters to two decimal places. The depth shall be taken as per drawing or as excavated under special conditions under instructions from Engineer-in-Charge/Architects. The width and length shall be taken as per length and width of PCC as per drawing.

MORTARS:**CEMENT MORTAR:****SCOPE**

This shall cover cement mortars used in general building works for masonry work and plastering.

Materials:

Cement, Water and Waterproofing compound: As specified in Materials specifications.

Sand:

sand as specified in clause 3.2.0 of materials section shall be used.

Proportioning:

Proportion of sand and cement shall be as specified. The unit of measurement for cement shall be a bag of cement weighing 50kgs and this shall be taken as 0.035 cum. Sand in specified proportion shall be measured in boxes of suitable sizes. It shall be measured on the basis of its dry volume. If the sand is wet, the quantities shall be increased suitably to allow for bulkage.

If the sand as specified for plastering is not available, proper sieving shall be carried out at site to obtain the required fineness modulus and only such sieved sand shall be used for plastering work.

Mixing:

The mixing of mortars shall be done in mechanical mixers operated manually or by power. The Engg.-in-Charge / Architects may however relax this condition taking into account the nature and the location of the work.

Mixing in Mechanical Mixers:

Cement and sand in specified proportion shall be mixed dry thoroughly in a mixer and then water shall be added gradually and wet mixing shall continue for at least one minute. Water shall be added only in such proportion to bring the mortar to the consistency of a stiff paste. Only the quantity of mortar which can be used within 30 minutes of its mixing shall be prepared at a time. The mixer shall be cleaned with water each time before suspending the work.

Hand Mixing:

The measured quantity of sand shall be leveled on clean masonry platform and cement bags emptied on top. The cement and sand shall be thoroughly mixed dry by turning over backwards and forwards several times till the dry

mixture is of a uniform colour. The quantity of dry mix which can be used within 30 minutes shall then be mixed in masonry troughs with just sufficient quantity of water to bring the mortar to the consistency of a stiff paste.

CONCRETE WORKS :

MATERIALS:

Water, cement, lime, surkhi, coarse aggregates, fine aggregate shall be as specified in above Section.

Cement Concrete:

Scope:

This shall cover plain cement concrete in leveling courses, subgrades, coping, kerbs, steps, sills etc.

Proportion:

Shall be done by volume, Boxes of suitable sizes shall be used for measuring sand and aggregates. The unit measurement of cement shall be a bag of 50 kgs and this shall be taken as 0.035 cum.

While measuring the aggregates, shaking, heaping, ramming shall not be done.

The proportioning of sand shall be on the basis of its dry weight and in case of damp sand allowances for bulkage shall be made. Different sizes of boxes are advised to be used while measuring sand with bulkage allowance.

Mixing shall be done in mechanical mixers. Mixing by hand shall not be permitted unless specific prior permission of the Engg.-in-Charge/ Architects has been obtained in writing.

Machine Mixing:

The mixture drum shall be cleaned with water and half the required quantity of dry coarse aggregates shall be placed first in the hopper followed by cement and sand and finally the balance quantity of coarse aggregates shall be put in the hopper. The dry material shall be mixed for at least four turns of the drum after which the correct quantity of water shall be added gradually while the drum is in motion. The materials shall be mixed for not less than a period of two minutes and until a uniform colour and consistency is obtained.

Hand Mixing:

Shall be done on smooth clean watertight platform. Measured quantity of sand shall be spread and the required number of bags of cement shall be distributed evenly on top of sand. The sand and cement shall be mixed intimately by turning the mixture over and over again to get a uniform colour. The sand cement mixture shall be spread and measured quantity of coarse aggregates shall be distributed on top of it. This shall be mixed at least three times by shoveling. A hollow shall be made in the middle of the mixed pile and three quarter of total quantity of water shall be poured into it while the material is turned in towards the centre with spades. The remaining water shall be added slowly turning the whole mixture over and again until a uniform colour and consistency is obtained.

CONSISTENCY:

The quantity of water to be used for each mix of 50 kg cement to obtain the required consistency shall not be more than 34 liters for 1:3:6 mix, 30 liters for 1:2:4 mix, 27 litres for 1:1:5:3 mix.

In case of vibrated concrete, the limits specified shall be suitably reduced to avoid segregation. The quantity of water shall be regulated by carrying out regular slump cone tests as specified. The following slumps shall be adopted for different kind of works :

Description	Slump in mm	
	With Vibrators	Without Vibrators
Plain Cement Concrete :		
Mass concrete in foundation, Footings, retaining, walls And pavements :	10 - 25	50 - 75
Thin sections of flooring less than 75mm thk	25 - 40	75 - 100
Reinforced concrete :		
Mass concrete in RCC Foundations, footings Retaining walls	10 - 25	80
Beams, slabs and columns Simply reinforced	25 - 40	100 - 125
Thin RCC sections or Sections with congested steel	40 - 50	125 - 150

LAYING:

The concrete shall be laid gently in layers not exceeding 150mm. Mechanical vibrators shall be used for compaction.

Hand compaction may be permitted by Engg.-in-charge / Architects depending upon the thickness of the member and feasibility of vibrating the same. Hand compaction shall be done with the help of tamping rods. Next layer of concrete shall be carried out before initial setting starts in the previous layer i.e. within 30 minutes.

Concreting shall not be carried out if the temperature falls below 4°C. During hot weather care shall be taken to see that the temperature of concrete does not exceed 38°C. When the concreting is suspended, necessary removal of laitance and roughening of surface for jointing shall be done before concrete sets. On the resumption of work the joint shall be thoroughly cleaned, roughened, watered and a grout of neat cement slurry (1Kg of cement in 2Lt of water) shall be applied uniformly.

CURING:

Green work shall be protected from rain by suitable covering. After about 1 to 2 hours of concreting, the surface of concrete shall be protected from drying with the help of moist gunny bag, sand or any other approved method. After 24 hours the surface shall be flooded with water of min. 25mm depth. The curing shall continue for minimum 14 days or more if required by Engg.-in-Charge / Architects. The masonry work can be started after 48 hours of concreting, but the curing shall continue for minimum 14 days along with masonry.

FORM WORK :

Shall be as specified in R.C.C. section.

REINFORCED CEMENT CONCRETE:**SCOPE:**

This shall cover general reinforced cement concrete work in footings, columns, beams, piers, slabs, overhead /underground tanks, retaining walls, etc.

SETTING OUT WORKS:

All the center lines and reference lines shall be permanently marked on brick masonry pillars and these pillars along with the center line marking shall be preserved till the completion of work. Reference bench marks wherever required shall also be built and maintained.

MATERIALS:

All materials like cement, sand, aggregates and steel shall conform to the specifications details in the Materials section.

CEMENT:

Cement supplied in bags (gunny, multiply paper or cloth) shall be stored and stacked in dry and waterproof sheds. Bags shall be stacked at least 10 to 20 cms clear above the floor. A space of 60 cms all round shall be left between the exterior walls and the stacks. Cement bags should be placed close together to reduce circulation of air as much as possible. Bags shall be stored one above the other in stacks not more than 10 bags to avoid lumping under pressure. If more than 7 bags are stacked one above the other the same should be arranged in header and stretcher fashion to avoid toppling. For extra safety during monsoon or when cement is to be stored for longer periods, the entire stack shall be enclosed in polythene sheets or any other suitable water proofing material. When removing the cement bags for use, first in first out principle should be adhered to. Each consignment of cement when received at site, shall be stacked separately to permit easy access for inspection and facilitate removal.

Aggregates required for concrete work shall be stored separately as their sizes and grades. All aggregates shall be stored on a clean hard surface, preferably on a floor of bricks.

FORMWORK

Unless specified the formwork shall be of plywood not less than 10mm thick or steel plates not less than 3mm thick with suitable frames. Plain surfaces shall be adequately strengthened at edges and centre bracing to prevent buckling, warping or bending. Faces in contact shall be free from adherings, grouts, projecting nails, splits and other defects.

FIXING AND ERECTING FORMWORK:**PROPS:**

Props used for shuttering shall be of steel, timber posts, and ballis. In no case ballis used shall be of diameter less than 100mm at mid length and 80 mm at thin end. Maximum permissible spacing in case of ballis shall be 1.2 meters centre to centre.

In case of structures with two or more floors, the weight of concrete shuttering and centering of any upper floor being cast shall be suitably supported on one floor below the topmost floor already cast. Formwork and concreting of upper floors shall not be done until concrete of the lower floor has set for at least 14 days. For all cantilever beams and slabs, the props shall not be removed for 28 days.

The above specification is applicable only for spans upto 4.5 meters and heights upto 3.5 meters. In case any of the limits are exceeded the formwork shall be properly designed.

BRACINGS:

Upto 3.0 meter height, single stage bracing shall be provided and from 3.0 - 4.5 meter height double stage bracing shall be provided.

SHUTTERING:

All the joints in shuttering shall be leak proof. Faulty joints shall be caulked to prevent leakage. Connections shall be constructed to permit easy removal of the shuttering and shall be either nailed, screwed, bolted, clamped or wired.

The connections should be strong enough to retain the correct shape during consolidation of concrete. The chamfers beveled edges and molding shall be made in the formwork itself. Opening for the fan clamps and other fittings for services shall be provided in the shuttering as directed. Care shall be taken while providing dowel bars so that the holes in the shuttering are leak proof. Shuttering shall be true to line and level and braced to prevent deformation under the weight and pressure of wet concrete, constructional load, wind and other pressures. The shuttering of beams and slabs shall be so erected that the shuttering on the sides of the beams and of the soffit of the slabs can be removed without disturbing the beam bottoms.

SURFACE TREATMENT FOR SHUTTERING:

Any approved mould oil or other material shall be used. For timber shuttering the surfaces coming in contact with concrete shall be well wetted and coated with soap solution, raw linseed oil or form oil of approved manufacturer.

CAMBER

Suitable camber shall be provided in horizontal members especially in long spans to compensate the effects of deflection. The camber for beams and slabs shall be 4 mm per meter and the camber for cantilever at the free end shall be 1/50 of the projected length.

REMOVAL OF FORMWORK:

The formwork shall be removed in such a way that no damage is done to the concrete work due to shock or vibration.

In case of horizontal members, formwork should be eased carefully in order to prevent the load being suddenly transferred to the concrete. The minimum required period before de-shuttering is given in the table below: -

Part of Structure For removal of formwork	Minimum period
Sides of foundations, columns, Beams and walls	48 hours
Undersides of slabs upto 4.5 m span	7 days
Undersides of slabs above 4.5 m span And undersides of beams upto 6.0m span	14 days
Undersides of beams over 6.0 m and Upto 9.0 m span	21 days
Undersides of beams over 9.0 m span	28 days

Note:

In case of cantilever slabs and beams, the centering shall remain till structures for counteracting or bearing –down have been erected and have attained adequate strength.

Proper precautions shall be taken to allow for the decrease in the rate of hardening with all cements in cold weather.

MEASUREMENT:

Wherever specified as a separate item, the formwork shall be paid for separately. The concrete items mentioned in the tender are inclusive of shuttering and formwork.

REINFORCEMENT:

All the reinforcement used in RCC work shall conform to the specifications as described in Materials section.

GENERAL:

All reinforcement shall be clean and free from loose mill scales, dust, coats of paint, oil, loose rust or other coatings which may destroy or reduce bond.

BENIDNG AND OVERLAPPING:

All reinforcement bars shall be made perfectly straight before bending. Bars shall be bent by suitable machine or manually round by a pin having a diameter not less than four times the diameter of the bar being bent, producing a gradual and even motion. Bars shall be bent cold. No reinforcement shall be bent when in position on the works.

Bending shall comply with the dimensions. given in the approved bending schedule (tolerances permitted is 0.5%) In case of mild steel, the ,ends of rods shall be bent into a semicircular hook having clear diameter equal to four times the

diameter of the bar with a length beyond the bend equal to four times the diameter of the bar. In case of deformed bars, the hooks are not required.

Overlapping of the bars where necessary, shall be done as directed by the Engg.-in-charge / Architects. The overlapping bars shall be bound together at interval not exceeding ten times the diameter of the smaller diameter bar with two strands of annealed steel wires of 18 SWG thickness twisted tight. The overlap shall be staggered for different bars and located at points, along the span, where neither shear nor bending movement is maximum. Where facility is available welding of bars shall be restored to in view of overlap.

PLACING IN POSITION:

Reinforcement bars shall be placed in position as shown in the drawings. The bars crossing one another shall be tied together at every intersection with two strands of binding wire. Tack welding shall also be permitted in lieu of binding with steel wire.

The bars shall be kept in position by the following methods: -

- a) In case of beam and slab construction, precast cover blocks (cement mortar 1:2 blocks, pieces of broken mosaic tiles or plastic cover blocks) of thickness equal to the specified cover shall be placed between the bars and shuttering.
- b) In case of cantilever and double reinforced beams or slabs, the vertical distance between horizontal bars shall be maintained by introducing chair spacers of steel at 1 meter or less spacing to avoid sagging.
- c) In case of columns and walls, the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them or with cover blocks suitably tied to the reinforcement.

MEASUREMENT:

Reinforcement including authorised spacer bars and laps shall be measured in lengths of different diameters as actually used in the work nearest to a centimeter and their weight calculated on the basis of standard tables. Wastages and unauthorized overlaps shall not be paid. Annealed steel wire required for binding shall not be measured. Wherever welding is restored in lieu of laps such welds shall be measured separately in numbers for different size of reinforcement.

CONCRETING

The concrete shall be as specified under "Cement Concrete". Concrete shall be mixed by mechanical mixer only and no hand mixing shall be allowed for RCC works.

CONSISTENCY:

The consistency of the concrete shall be such that it flows sluggishly into the forms and around the reinforcement without any segregation of coarse aggregate from mortar. The consistency shall depend on the mode of compaction viz., vibrated or hand tamped. The slump tests are mandatory and shall be carried out at regular intervals so that the consistency of concrete can be monitored.

For details see under cement concrete.

PLACING OF CONCRETE:

Concreting shall commence only after inspection and approval by Engg.-in-Charge / Architects of shuttering, centering and reinforcement are placed. The approval for concreting shall be given in writing by Engg.-in-charge / Architects.

Shuttering shall be clean and free from shavings, saw dust, pieces of wood or other foreign material and proper de-shuttering agent shall be applied to the surface.

Proper arrangements shall be provided for conveying the concrete to the place of deposition without disturbing the reinforcement. This can be achieved by providing wooden planks or catwalks supported directly on centering by means of wooden blocks or lugs. The labour shall not be allowed to walk on the reinforcement.

In case of columns and walls it is desirable to place concrete without construction joints. To achieve this a concrete pouring window should be provided in one of the sides of formwork approximately 2 to 3 feet from bottom to facilitate placement of concrete and compaction of the bottom portion and avoid segregation of the concrete. Rate of concreting in vertical direction shall be restricted to one meter per hour.

The concrete deposited in its final position shall be in a cohesive mass and no segregation shall be allowed. In deep trenches and footings, concreting shall be placed through chutes as directed by Engg.-in-Charge / Architects.

COMPACTION

Concrete shall be compacted into a dense mass immediately after placing by means of mechanical vibrators. Use of mechanical vibrators for compaction may be relaxed depending on the thickness of the members and feasibility of vibrating the same. Hand compaction shall be done with the help of tamping rods. The different layers of concrete shall be placed before the final setting of the previous layer takes place.

Concrete shall be judged being properly compacted when the mortar fills the spaces between the coarse aggregates and begins to cream up to form an even surface. If vibrating table and the external vibrators are being used, they shall be stopped as soon as the compaction is over. In case of needle vibrators the needle shall be withdrawn slowly to prevent formation of loose pockets. Shaking of the reinforcement for purpose of compaction shall not be allowed. Compaction shall be completed within thirty minutes from the time of addition of water to the dry mixture.

CONSTRUCTION JOINTS

Before starting the concrete, the position and location of the construction joint shall be decided, if not indicated on the drawings, and proper arrangements like stop board with necessary slots for reinforcement bars shall be made. No construction joint shall be located in valleys. Preferably the joint shall be kept at places where the shear force is minimum and the joint shall be straight and at right angles to the direction of the main reinforcement. In case of columns, the joint shall be horizontal and 10 to 15 cm below the bottom of the beam. Any concrete flowing through the joints of stop board shall be removed soon after the initial set.

When the work has to be resumed, the joints shall be thoroughly cleaned with wire brush and loose particles removed. A coat of neat cement slurry at the rate of 2.75 kg of cement per square meter shall be applied before fresh concrete is laid.

CURING:

Shall be as specified in "Cement Concrete".

FINISHING:

In case of roof slabs, the top surface shall be finished even and smooth before the concrete begins to set.

In case of RCC slabs which are to be treated with any flooring shall be roughened with wire brushes while the concrete is green.

STRENGTH OF CONCRETE:

The compressive strength on work tests for different mixes shall be as follows:

Concrete Mix	Compressive strength	
	Kg/cm ²	
	7 days	28 days
1:1:2	210	315
1:1.5:3	175	265
1:2:4	140	210

INSPECTION AND RECTIFICATION OF DEFECTS:

Immediately on removal of forms, the RCC works shall be examined by the Engg. -in-Charge / Architects before any defects are made good.

The work that has sagged or contains honey combing to an extent detrimental to the structural safety or architectural concept shall be rejected.

Surface defects on a minor nature may be accepted and the same shall be rectified as follows:

- a) Bulges due to movement of forms, ridges at forms, ridges at form joints shall be carefully chipped and then rubbed with a grinding stone.
- b) Honeycombed and other defective areas must be chipped out, the edges being out as straight as possible and perpendicular to the surface. Shallow patches are first treated with a coat of thin grout (1 cement: 1 sand) and then filled with mortar similar to that used in concrete. Large and deep patches shall be filled up with concrete held in place by forms and shall be reinforced.
- c) Holes left by bolts shall be filled carefully with mortar. Holes extending right through the concrete shall be filled with mortar with a pressure gun.
- d) The same amount of care to cure the material in patches should be taken as with the whole structure.

POST TREATMENT OF SURFACE:

The surface which has to receive plaster or where it has to be joined with brick masonry walls shall be properly roughened immediately after the shuttering is removed.

ACCEPTANCE CRITERIA OF CONCRETE WORK:

Minimum of six sample cubes shall be taken for all concreting work (periodicity as specified in 9.6 of section III) and three cubes shall be tested after 7 days curing and balance after 28 days curing.

7 Days Test:

The average strength of the three specimens shall be accepted as the compressive strength of the concrete provided that the difference between maximum and minimum strength of the three cubes does not exceed 15% of average strength.

In case the 7 days strength is not satisfactory all further work structurally interlinked with the concrete represented by the samples shall be stopped till the remaining three cubes are tested for 28 days strength and are found satisfactory.

28 Days Test:

The tests should generally be carried out on 28th day, but in no case, should be delayed beyond 35 days. The strength of the cubes shall be as specified in table above if they are tested on the 28th day. In case, the cubes are tested after 28 days, the minimum acceptable compressive strength shall be increased by 1.5 kg/cm² for each day beyond 28th day.

The acceptance criteria of 28 days test shall be as follows;

- a) If the average compressive strength of three cubes is more or equal to the compo Strength shown in table above, the concrete shall be accepted at full rates.
- b) If the average compo Strength of the three cubes is less than specified but not less than 75% of the specified strength, the concrete shall be accepted at reduced rates at the discretion of EIC. The reduced rate shall be calculated on proportionate basis, i.e. for every percent decrease in the specified strength the rate shall be reduced by the same, percentage.
- c) If the average compressive strength of the three cubes is less than 75% of the specified strength, eic shall either reject the defective portion or get it dismantled along with the structurally connected work as considered necessary at the risk and cost of the contractor. Eic may also desire to carry out additional tests on the defective work and if on the basis of these additional tests, eic is satisfied about the structural adequacy of the concrete the concrete work may be accepted at the reduced rate as specified in b) above except, for the reduced strength below 75% for which the reduction shall be 1.5 times for every percent decrease below 75%

Example: Average compressive strength is 70% of specified strength. The rate payable shall be $75 - 1.5(75-70) = 67.5\%$ of tendered rate.

MEASUREMENT

All measurements shall be as per IS 1200

KOTA STONE FLOORING:**MATERIAL**

Kota stone slab shall be of selected quality, hard, sound, dense and homogenous in texture free from cracks, decay, weathering and flaws. The exposed surface of the slab shall be machine polished to a smooth even and true plane and the edges machine cut square and to the required shape where necessary. The thickness of the slab shall be 20, 30 or 40 mm as specified. Tolerance of +2 mm shall be allowed in thickness and +/- 5mm shall be allowed in respect of length and breadth. The sample of the slab shall be approved by engineer in charge before commencing work. Other materials like lime, cement, sand shall conform to specifications detailed in Materials section Lime used for flooring shall be of class 8 type.

PREPARATION OF SURFACE AND LAYING:

Subgrade concrete or RCC slab on which kota stone flooring is to be laid shall be cleaned, wetted and mopped. The bedding for the slab shall be in cement mortar 1:4 or with lime and sand mortar 1:2 or as specified. The average thickness of the bedding mortar below the slab shall be 20 mm and thickness at any place under the slab shall not be less than 12mm.

Mortar of the specified mix shall be spread under the area of each slab roughly to the average thickness specified in the item. The slab shall be washed clean before laying. Neat cement grout of honey like consistency shall be spread over

the mortar bed as much area as can be covered with the slabs within half an hour. The stone slab shall be laid on the neat cement floor and shall be evenly and firmly bedded to the required level and slope. Each slab shall be gently tapped with a wooden mallet so as ensure proper bedding. The thickness of joint shall not exceed 1.5 mm and shall be of uniform thickness and in straight lines. Joints shall be grouted solid with neat cement slurry for the full depth. Surplus cement slurry on the surface of the slab shall be cleaned off. Slabs which are fixed in the floor adjacent to wall shall enter not less than 12mm under the plaster, skirting or dado.

CURING AND POLISHING:

The flooring shall be well wetted with sand or water for seven days. After the bedding and the joints have completely set the surface shall be machine polished to mirror finish.

KOTA STONE IN RISERS, SKIRTING OR DADO:**MATERIALS:**

As specified above.

LAYING, CURING AND POLISHING:

Kota stones shall be laid against a bedding of cement mortar 1:4 20mm average thickness to the full height of the skirting to a true plane level and plumb. The projection of the skirting shall be 6mm beyond the plaster surface. The skirting surface shall be re-polished by hand to the satisfaction of the Engg.-in-charge / Architects. Curing shall be done for a minimum period of seven days.

MEASUREMENTS:

Measurement shall be done for the actual length of skirting and deduction shall be made for the areas not covered by skirting in running meters.

MASONRY:**BRICKWORK:**

SCOPE: Shall cover brick masonry works of 225 thick or more in all buildings, walls, etc.

CLASSIFICATION: Brick work shall be classified according to the class designation of bricks used.

MORTAR: The mortar shall be as specified, Materials, preparation and mixing of mortar shall be as specified in "MORTAR" section.

SOAKING OF BRICKS: Bricks required for masonry in cement! lime mortar shall be thoroughly soaked in clean water for at least one hour in tanks of tanks of sufficient size immediately before use. The soaked bricks shall be kept on wooden planks or brick platform to avoid earth smearing on them.

LAYING: Bricks shall be laid in English bond unless otherwise specified. Half or cut bricks shall not be used except where necessary to complete the bond. Closure in such cases shall be cut to the required size and used near the end of the wall.

A layer of mortar shall be spread on full width over a suitable length of lower course. Each brick shall be properly bedded and set home in position by gently tapping with handle of trowel or wooden mallet. Its inside faces shall be buttered with mortar before the next brick is laid and pressed against it. On completion of a course, all vertical joints shall be fully filled from the top with mortar.

The wall shall be taken, truly plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate course shall come directly one over the other. The thickness of the brick courses shall be kept uniform and for this purpose, wooden edge with graduations giving thickness of each brick course including shall be used. The height of window sill, bottom of lintels and such other important points shall be marked on it. A set of tools comprising of a wooden straight edge, mason spirit level, square, two foot rule, line and pins, strings and plumb shall be kept on the side of the work.

Both the faces of walls of thickness greater than 225 mm shall be kept in proper plane. The connecting brick work shall be carried out nearly at one level and no portion of work shall be left more than one meter below the rest of the work. Where this is not possible the work shall be raked back according to bond (and not left toothed) at an angle not exceeding 45 degrees.

All iron fixtures, pipes outlets of water, holdfasts of doors, windows, etc. which are required to be built in walls shall be embedded in cement mortar or in cement concrete as specified in their correct position as the work proceeds.

The work done per day should not be more than one meter in height.

JOINTS:

Bricks shall so be laid that all joints are full of mortar. The thickness of joints shall not exceed one cm for brickwork of any class designation. All face joints shall be raked to a minimum depth of 10 mm by a raking tool during the progress of work where the mortar is still green so as to provide proper key for the plaster or pointing to be done.

Where plastering or pointing is not required to be done the joints shall be struck flush and finished at the time of laying. The face of brickwork shall be cleaned on the same day on which brickwork is laid and all mortar dropping shall be removed promptly.

CURING:

Brickwork shall be protected from rain by suitable covering when mortar is green. Masonry work in cement mortar and lime mortar shall be kept constantly moist on all faces for a minimum period of seven days. Brickwork carried out during the day shall be suitably marked indicating the date on which the work is done to keep a control on the curing period.

SCAFFOLDING:

For all exposed brickwork or tile work, double scaffolding having two sets of vertical supports shall be provided. For all other brickwork single scaffolding shall be permitted. Where single scaffolding is provided, the horizontal scaffolding pole shall rest in a hole provided only in the header course. No holes for scaffolding shall be provided in pillars, columns and immediately near the skewback of arches.

MEASUREMENT:

Unless otherwise specified, all brick masonry works shall be measured correct to a centimeter and the area shall be calculated in square meters to the nearest two decimal places.

STONEMASONRY:**SCOPE:**

Shall include all stonemasonry work in general and erection of stonewalls.

MATERIALS:

Cement, sand shall conform to the specifications detailed in Materials section. Mortars of specified mix shall conform to "Cement Mortars".

RANDOM RUBBLE MASONRY:

Stone : Stones used for this purpose shall be hard, sound, free from decay, weathering and defects like cavities, cracks, flaws, sand holes, veins, patches of soft or loose materials, etc. Stone shall be sharp, angular and round stones shall not be used.

Generally, blue basalt or granite shall be used for masonry works.

The length of the stone shall not exceed three times the height and the breadth on base shall not be greater than $\frac{3}{4}$ th of the thickness of wall. The height of stone may be upto 30 cm.

Stones shall be hammer dressed on the face, sides and the beds to enable it to come into close proximity with adjacent stones. The bushing in the face shall not project more than 20 mm. For exposed masonry and 10 mm for masonry which is to be plastered.

LAYING:

Stones shall be wetted before use. The wall shall be carried up truly plumb. Every stone shall be fitted carefully with the adjacent stones to form neat and close joints. The bond shall be obtained by using bond stones. Face stones shall extend well into the backing and these shall be arranged to break joints as much as possible and avoid long vertical lines of joints. The interior filling of the wall shall consist of rubble stones of any shape but shall not pass through a circular ring of 15 cm dia. Thickness of these inner stones shall not be less than 10 cm. The inner stones shall be carefully laid hammered down with a wooden mallet into position and solidly bedded into mortar. Use of chips and spalls shall be limited and should be used only to avoid thick mortar joints.

Bond Stones: Bond stones or through stones running right through the thickness of walls shall be provided in walls upto 60 cm thick and in case of walls more than 60 cm thick, a set of two or more bond stones overlapping each other by 15 cm shall be provided in a line from face to back. At least one bond stone shall be provided for every 1.0 sqm. of wall surface.

Joints: Stones shall be so laid that all joints are full of mortar. Face joints shall not be more than 25mm thick. When plastering and pointing is not required to be done, the joints shall be struck flush or raised pointed as per requirement and finished at the time of laying.

SCAFFOLDING, CURING AND MEASUREMENT:

Shall be as per Brick Masonry.

PLASTERING:**SCOPE:**

This covers cement plaster finishes to column, ceilings, walls and similar surfaces on backgrounds met with such as brick, stone or concrete.

MATERIALS:

All materials like sand and cement shall conform to specifications detailed in 'materials section'.

MORTAR:

The mortar of the specified mix using the type of sand described in the item shall be used. It shall be as specified in "Cement Mortars", For external and undercoat work, the fine aggregate conforming to Grading IV and for finishing coat work the fine aggregate conforming to Grading V shall be used.

SCAFFOLDING:

Scaffolding shall be done in line with details specified under "BRICK WORK".

PREPARATION OF SURFACE

Dust and loose mortar shall be brushed out. Efflorescence if any shall be removed by brushing and scraping. The surface shall then be thoroughly washed with water, cleaned and kept wet before plastering is commenced.

In case of concrete surface if chemical retarder has been applied to the formwork, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the retarders is left on the surface.

APPLICATION:

Ceiling plaster shall be first completed before commencement of wall plaster.

Plastering shall be started from the top and worked down towards the floor. All putlog holes shall be properly filled in advance of the plastering as the scaffolding is being taken down. To ensure even thickness and a true surface, plaster of about 15 x 15 cm shall be first applied horizontally and vertically, at 3 meters intervals over the entire surface to serve as gauges. The surfaces of these gauged areas shall be truly in the plane of the finished plaster surface. The mortar shall then be laid on the wall, between the gauges with trowel. The mortar shall be applied in a uniform manner slightly more than the specified thickness and brought to true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally the surface shall be finished off true with trowel or wooden float according to whether a smooth or a sandy granular texture is required. Excessive trowelling or overworking the float shall be avoided.

All comers, arrises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering comers, arrises, junctions, etc, where required shall be done without any extra payment. Such rounding or chamfering shall be carried out with proper templates to the sizes required. Plastering and finishing shall be completed within half an hour of adding water to the dry mortar. In suspending work at the end of the day the plaster shall be left out clean to line both horizontally and vertically and while recommencing the edge of the old work shall be scraped, cleaned and wetted to enable proper jointing.

Notes:

Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm to any comers or arrises.

Horizontal joints in plaster shall not occur on parapet tops and copings as these invariably lead to leakages.

No portion of the surface shall be left out initially to patch up later on.

CURING:

Curing shall be commenced as soon as the plaster has hardened sufficiently. Plaster shall be kept wet for a period of seven days.

20mm THICK CEMENT PLASTER (TWO COAT WORK) :**MORTAR:**

This shall be done at detailed under cement mortars. Generally coarse sand shall be used for the undercoat (first coat) and fine sand for the finishing coat (second coat) unless otherwise specified.

APPLICATION

The plaster shall be applied in two coats, i.e. 12mm thick under coat and 8 mm. Thick finishing coat and shall have an average total thickness of not less than 20mm.

12mm thick undercoat:

This shall be applied as detailed above. However, when the plaster has been brought to true surface with a wooden straight edge, the surface shall be left rough and 2mm deep furrows shall be made with a scratching tool to form key for the finishing coat. The surface shall be kept wet till the finishing coat is applied.

8mm thick finishing coat:

The finishing coat shall be applied as detailed above after the undercoat has sufficiently set but not dried and in any case within 48 hours of laying the undercoat. The surface shall be finished with special rubbing by sponge pads and other tools recommended for cement plaster work to obtain a uniform textured surface.

Curing shall be as detailed above.

CEILING CEMENT PLASTER:**SCAFFOLDING:**

Shall. be as detailed under "Brick Masonry" and stage scaffolding shall be provided independent of the walls.

PREPARATION OF SURFACE: Projecting burrs of mortar formed due to gaps at joints in shuttering shall be removed, the 'Surface shall be scrubbed with wire brushes. Concrete surfaces shall be hacked at spacing not more than 5cm centers and depth shall not be less than 3mm. Surface shall be well wetted before applying the plaster.

MORTAR

Mortar of specified mix shall be used and shall conform to the specifications detailed under "Cement Mortars".

APPLICATION:

Ceiling plaster shall not be commenced until the slab above has been finished and centering has been removed. In the case of ceilings of roof slabs, plaster shall not commence until the terrace work has been completed. This is to ensure that ceiling plaster is not disturbed by the vibrations set or in the above operations. To ensure even thickness and true surface, gauges of plaster 15 x 15 cm shall be first applied at not more than 1.5 meter centers in both directions true in the plane of finished surface.

The plaster shall be then applied in a uniform manner to a thickness little more than the specified thickness and shall be then brought to true and even surface by working with a wooden straight edge reaching across the gauges. Finally the surface shall be finished true with a trowel to obtain a smooth surface. The work shall be checked frequently with a true straight edge not less than 2.5 meter long.

THICKNESS

The average thickness of plaster shall not be less than 6mm. The minimum thickness over a portion of the surface shall not be less than 4mm.

POINTING:

SCOPE: This shall include cement mortar pointing on brickwork and stone work.

MATERIALS:

Cement and sand for plastering shall conform to specifications detailed in Materials section.

SCAFFOLDING:

For exposed brickwork or stonework, scaffolding having two sets of vertical supports shall be provided.

MORTAR:

Shall be of specified mix and as specified in Cement Mortars.

PREPARATION OF SURFACE:

The joints shall be raked out properly while the mortar is green. Efflorescence if any, shall be removed by brushing and scraping. The surface shall be washed with water and kept wet before pointing is commenced. The joints shall be raked in such a fashion that the minimum depth of new mortar measured from either the sunk surface of the finished pointing or from the edge of the brick/stone shall not be less than 12mm.

APPLICATION AND FINISHING:

The mortar shall be pressed into the raked out joints with a pointing trowel according to the type of pointing required. Care shall be taken that mortar does not spread over the corner, edges and surface of the masonry. The pointing lines shall be truly horizontal and vertical except where the joints are slanting as in RR masonry. Lines of joints from different directions shall meet neatly at the junctions. The pointing shall be finished with proper tool as follows:

1. Flush Pointing: The mortar shall be pressed into the joints and shall be finished off flush and level with the edges of bricks/stones. The edges shall be neatly trimmed with a trowel and a straight edge.

2. Raised Pointing: Raised pointing shall project from the wall facing with its edges cut parallel so as to have a uniformly raised band with about 6mm projection and 10mm width.

3. Sunk Pointing: The mortar shall be pressed into joints and the top of the horizontal joint shall then be neatly pressed back about 3mm or as directed with the pointing tool.

CURING:

The pointing shall be kept wet for about 7 days and during this period it shall be protected from all damages.

MEASUREMENTS:

Length and breadth shall be measured correct to a cm and area shall be calculated in square meters up to two decimal places. The measurement of plaster shall be taken before the plastering is done. No deductions shall be made or extra paid for openings less than 0.5 sqm. Openings more than 0.5 sqm shall be deducted but additional measurements shall than 0.5 sqm shall be deducted but additional measurements shall be taken for jambs, sills and soffits. Skirting of the wall shall not be measured (if the skirting is of different finish)

TESTING OF BUILDING MATERIALS

The contractor shall carryout the following tests at his own expense and as directed by the Engg.-in-charge / Architects. Engg.-in-charge / Architects reserves their right to ask the contractor to carry out any further tests on any material which is being used in the project.

WATER: Suitability for construction/ concreting purposes as per IS 456-2000

Periodicity: One test at the beginning of the project and once in every change of source

SANDS

Tests to be conducted

- a. Particle size - Lab
- b. Silt content - Field
- c. Bulking of sand-Field
- d. Percentage of Deleterious material / Organic impurities -lab

Is code for material- IS-383-1970

IS code for testing - IS-2386 (Part I) to IS-2386 (Part VIII)

Periodicity of testing

Whenever there is a change in source of supply or as directed by the Engineer-in-Charge.

Remarks

1. Silt content should not exceed 8%.
2. For sand pad foundation no need of particle size distribution. Only silt & bulk content to be carried out.

Sand (for plastering)

Tests to be conducted

- a) Particle size - Lab
- b) Silt content - Field
- c) Percentage of Deleterious/ organic impurities - Lab.

IS code for material- IS-1542

IS code for testing - IS-I727

Periodicity of testing

Same as above, Test shall be repeated for Minimum qty. 500 sq. m of plastering.

Remarks

1. Silt content not to exceed 5%
2. Sand to be sieved in sieve size 4.75 mm

COARSE AGGREGATE

Tests to be conducted

- a. Percentage of Soft deleterious materials- Field (Visual)
- b. Particle size distribution
- c. Aggregate value;
 - I. Crushing - Lab
 2. Impact - Lab

3. Abrasion - Lab (Only for Roads)

IS code for material - IS-383-1970

IS code for testing - IS-2386 (Part I) to IS 2386 (Part VIII)

Periodicity of Testing

Minimum 45 cum. Tests to be repeated for every 45 cum of coarse aggregate or part thereof.

Remarks

Percentage of soft deleterious materials. Usually visual inspection shall be carried out. If Engg.-in-Charge / Architects has doubts, the same may be tested in Lab.

CEMENT

Tests to be conducted

a. fineness - Lab

b. Soundness - Lab

c. Setting Time - Lab

d. Compressive strength - Lab

Periodicity of Testing

Minimum qty. 20 MT, Tests to be repeated for every 100 MT or part thereof or change of supplier.

Remarks

Cement to be tested if supplied by the contractor. Cement to be tested if stored for more than 3 months.

CEMENT CONCRETE

Tests to be conducted

a. Slump test - Field

b. Cube strength - Lab/field

Periodicity of Testing

a. Once for minimum 5 cum.

b. Minimum 15 cum of part thereof.

Remarks

Cube strength to be taken for both 7 days as well as 28 days. Cubes of critical members (decided by Engg.-in-Charge) shall be tested at lab.

REINFORCEMENT STEEL

Tests to be conducted

a. Free from defects - Field (Visual)

Weight - Lab

Size - Lab

Ultimate tensile stress - Lab

Yield stress - Lab

Elongation percentage - Lab

Bend Re-bend test - Lab

IS code for material

- IS-432 for mild steel
- IS-1786 for Tor steel

IS code for testing - IS-1608

Periodicity of Testing

Minimum qty: 10 MT, tests shall be repeated for every 10 MT of each size (dia) or part thereof.

Remarks

- a. Steel shall be tested if supplied by contractor.
- b. Steel shall be tested if stored in open yard for more than one year.

BRICKS

Tests to be conducted

- a. Compressive Test - Lab
- b. Water absorption - Lab
- c. Efflorescence - Lab
- d. Percentage of Deleterious material- Lab.
- e. Dimension test-Lab

IS code for material - IS-1 077 -1986

IS code for Testing - IS-3495 (Part I) to IS-3495 (Part III)

Periodicity of Testing

Minimum 20000 bricks but tests shall be repeated for every 40000 or part thereof depending on the volume of work.

THEORITICAL CONSUMPTION OF CEMENT IN VARIOUS ITEMS OF WORK

ITEM / WORK	UNIT	CONSUMPTION / UNIT IN 50 KG BAGS
MORTARS		
1:3	CUM	10.2
1:4	CUM	7.6
1:5	CUM	6.2
1:6	CUM	5.0
CONCRETE		
1:1:2	CUM	12.2
1:1.5:3	CUM	8.0
1:2:4	CUM	6.4
1:3:6	CUM	4.4
1:4:8	CUM	3.4
BRICK MASONARY		
1:4	CUM	1.8
1:5	CUM	1.56
1:6	CUM	1.24
HALF BRICK MASONARY		
1:3	SQM	0.29
1:4	SQM	0.21
STONE MASONARY		
1:6	CUM	1.7
PLASTERING - 12 MM THICK		
1:6	SQM	0.072
1:5	SQM	0.084
1:4	SQM	0.102
PLASTERING - 20 MM THICK		
1:3	SQM	0.23
1:4	SQM	0.17

For all other works, which are not covered in the above list, the actual cement consumed during the execution shall be recorded i.e., for water proofing works, etc.

LIST OF APPROVED BRAND / MANUFACTURERS

Sl. No.	MATERIAL	BRAND / MANUFACTURER
1	Cement	ACC, Birla, L & T, Gujarat Siddhi, Gujarat Ambuja, Rajshri.
2	Reinforcement steel	SAIL, TISCO, RIN
3	Water proofing compound	CICO, IMPERMO, ACCOPROOF, ROFFE, CHEMISOL
4	Plastic emulsion	ICI Dulux, Berger, Asian, J & N, Goodlass nerolac
5	Synthetic enamel paint	Berger, Asain, J&N, Goodlass nerolac.
6	Cement Paint	Snowcem, Nitcocem, Terracem.
7	Ceramic tiles	Kajaria, Johnson, Somani, Bell, Naveen.
8	Hardware for doors/ windows	CIEF or Approved equivalent
9	Aluminium sections	Jindal, INDAL, HINDALCO
10	Glazing	Modi float, Asahi float
11	Kitchen sink	Nirali, AMC,
12	Sanitary ware	Parry, Hindustan, Neycer,
13	CP fittings	Jaquar or equivalent
14	GI pipes	Tata, Jindal, Zenith or approved equivalent
15	GI Fittings	R Brand Kirti or approved equivalent
16	CI pipes and fittings	NECO
17	Gate valves	Leader , Sant
18	Watermeter	Capstan or approved equivalent
19	Flush doors	Anchor, Kitply, Alpro
20	CI covers	NECO
21	RCC hume pipe	Indian Hume Pipe or approved equivalent
22	PVC pipes	Finolex, Supreme, Garware

**SAFETY, HEALTH
AND
ENVIRONMENT
REQUIREMENTS
(SHE POLICY)**

SAFETY , HEALTH & ENVIRONMENT POLICY**SPECIFICATION FOR SAFETY HEALTH AND ENVIRONMENT (SHE)
MANAGEMENT****CONTENTS**

CLAUSE NO.	TITLE
1.0	SCOPE
2.0	REFERENCES
3.0	REQUIREMENT OF SAFETY, HEALTH AND ENVIRONMENT (SHE)
3.1	MANAGEMENT RESPONSIBILITY
3.2	HOUSE KEEPING
3.3	SAFETY, HEALTH & ENVIRONMENT
4.0	DETAILS OF SHE MANAGEMENT SYSTEM BY CONTRACTOR
4.1	ON AWARD OF CONTRACT
4.2	DURING JOB EXECUTION

1.0 SCOPE

This specification establishes the Safety Health and Environment (SHE) management requirement to be complied with by the Contractors during construction.

Requirements stipulated in this specification shall supplement the requirements of SHE Management given in relevant Act (s) / legislations. General Conditions of Contract (GCC), Special Conditions of Contract (SCC) and Job Specifications. Where different documents stipulate different requirements, the most stringent shall be adopted.

2.0 REFERENCES

This document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Job Specifications

3.0 REQUIREMENTS OF SAFETY HEALTH & ENVIRONMENT (SHE) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

3.1 MANAGEMENT RESPONSIBILITY

3.1.1 The Contractor should have a documented SHE policy to cover commitment of their organization to ensure health, safety and environment aspects in their line of operations.

3.1.2 The SHE management system of the Contractor shall cover the SHE requirements including but not limited to what is specified under Para 1.0 and para 2.0 above.

3.1.3 Contractor shall be fully responsible for planning and implementing SHE requirements. Contractor as a minimum

requirement shall designate / deploy the following to co-ordinate the above :

No. of workers deployed

Up to 250	- Designate one safety supervisor
Above 250 & up to 500 safety	- Deploy one qualified and experienced Engineer / officer
Above 500 less)	- One additional safety (for every 500 or engineer/officer as above.

Contractor shall indemnify & hold harmless Owner / HPCL & either representatives free from any and all liabilities arising out of non - fulfilments of SHE requirements.

- 3.1.4 The Contractor shall ensure that the Safety, Health and Environment (SHE) requirements are clearly understood & faithfully implemented at all levels at site.
- 3.1.5 The Contractor shall promote and develop consciousness for Safety , Health and Environment among all personnel working for the Contractor. Regular awareness, programme site meetings shall be arranged on SHE activities to cover hazards involved in various operations during construction.
- 3.1.6 Arrange suitable first aid measures such as First Aid Box, trained personnel to give First Aid, Stand by Ambulance or Vehicle and install fire protection measures such as : adequate number of steel buckets with sand and adequate fire extinguishers to the satisfaction of HPCL/Owner.
- 3.1.7 The Contractor shall evolve a comprehensive planned and documented system for implementation and monitoring of the SHE requirements. This shall be submitted to HPCL/Owner for approval. The monitoring for implementation shall be done by regular inspections and compliance to the observations thereof. The Contractor shall get similar SHE requirements implemented at

his sub-contractor(s) work site/office. However, compliance of SHE requirements shall be the sole responsibility of the Contractor. Any review / approval by HPCL/Owner shall not absolve contractor of his responsibility / liability in relation to all HSE requirements.

- 3.1.8 Non-Conformance on SHE by Contractor (including his Sub-contractors) as brought out during review/audit by HPCL/Owner representatives shall be resolved forthwith by Contractor. Compliance report shall be provided to HPCL/Owner.
- 3.1.9 The Contractor shall ensure participation of his Resident Engineer / Site-in-Charge in the Safety Committee / SHE Committees meetings arranged by HPCL/Owner. The compliance of any observations shall be arranged urgently. He shall assist HPCL/Owner to achieve the targets set by them on SHE during the project implementation.
- 3.1.10 The Contractor shall adhere consistently to all provisions of SHE requirements. In case of non-compliance or continuous failure in implementation of any of SHE provisions; HPCL/Owner may impose stoppage of work without any Cost & Time implication to Owner and/or impose a suitable penalty for non-compliance with a notice of suitable period, up to a cumulative limit of 1.0% (one percent) of Contract Value with a maximum limit of Rs. 10 lakhs. This penalty shall be in addition to all other penalties specified else where in the contract. The decision of imposing stoppage work, its extent & monetary penalty shall rest with HPCL/Owner & binding on the Contractor.
- 3.1.11 All fatal accidents and other personnel accidents shall be investigated by a team of Contractor's senior personnel for root cause & recommend corrective and preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to HPCL/Owner. Owner / HPCL shall have the liberty to independently investigate such occurrences and Contractor shall extend all necessary help and co-operation in this regard.

3.2 HOUSE KEEPING

3.2.1 Contractor shall ensure that a high degree of house keeping is maintained and shall ensure inter alia the followings wherever applicable:

- a. All surplus earth and debris are removed/disposed off from the working areas to identified location(s).
- b. Unused/Surplus Cables, Steel items and steel scrap lying scattered at different places within the working areas are removed to identified location(s).
- c. All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
- d. Roads shall be kept clear and materials like: pipes, steel, sand boulders, concrete, chips and bricks etc. shall not be allowed on the roads to obstruct free movement of men & machineries.
- e. Fabricated steel structural, pipes & piping materials shall be stacked properly for erection.
- f. Water logging on roads shall not be allowed.
- g. No parking of trucks / trolleys, cranes and trailers etc. shall be allowed on roads which may obstruct the traffic movement.
- h. Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
- i. Trucks carrying sand, earth and pulverised materials etc. shall be covered while moving within the premises.
- j. Only properly designed steel scaffolding materials to be used for working at heights more than 3.0M . Double

scaffolding using wooden ballis may be allowed for working at height less than 3.0M

3.3 SAFETY, HEALTH AND ENVIRONMENT

- 3.3.1 The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen, and, HPCL/Owner. Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.
- 3.3.2 The Contractor shall ensure that all their staff and workers including their sub-contractor(s) shall wear Safety Helmet and Safety shoes. Contractor shall also ensure use of safety belt, protective goggles, gloves etc. by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.
- 3.3.3 Contractor shall ensure that a proper Safety Net System shall be used at appropriate locations. The safety net shall be located not more than 30 feet (9.0 metres) below the working surface at site to arrest or to reduce the consequences of a possible fall of persons working at different heights.
- 3.3.4 Contractor shall ensure that flash back arrester shall be used while using Gas Cylinders at site. Cylinders shall be mounted on trolleys.
- 3.3.5 The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling and erection of materials and equipments. All lifting equipments shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the Contractor before starting the actual operations at night.

- 3.3.6 Hazardous and/or toxic materials such as solvent coating, or thinners shall be stored in appropriate containers.
- 3.3.7 All hazardous materials shall be labelled with the name of the materials, the hazards associated with its use and necessary precautions to be taken.
- 3.3.8 Contractor shall ensure that during the performance of the work, all hazards to be health of personnel, have been identified, assessed and eliminated.
- 3.3.9 Chemical spills shall be contained & cleaned up immediately to prevent further contamination.
- 3.3.10 All personnel exposed to physical agents such as ionizing radiation, ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.
- 3.3.11 Where contact or exposure of hazardous materials could exceed limits or could otherwise have harmful affects, appropriate personal protective equipments such as gloves, goggles, aprons, chemical resistant clothing and respirator shall be used.
- A Crèche where 10 or more female workers are having children below the age of 6 years.
 - Reasonable Canteen facilities are made available at appropriate location depending upon site conditions.
- 3.3.13 Suitable facilities for toilet, drinking water, proper lighting shall be provided at site and labour camps, commensurate with applicable Laws / Legislation.
- 3.3.14 Contractor shall ensure storage and utilization methodology of materials that are not detrimental to the environment.

Where required Contractor shall ensure that only the environment friendly materials are selected.

- 3.3.15 All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials substances and wastes. Contractor shall not dump, release or otherwise discharge or dispose off any such materials without the express authorization of HPCL/Owner.

4.0 DETAILS OF SHE MANAGEMENT SYSTEM BY CONTRACTOR

4.1 On Award of Contract

The Contractor shall prior to start of work submit his Safety Health and Environment Manual or procedure and SHE Plans for approval by HPCL/Owner. The Contractor shall participate in the pre-start meeting with HPCL/Owner to finalise SHE Plans including the following :

- Job procedure to be followed by Contractor for activities covering. Handling of equipment, Scaffolding, Electric Installation, describing the risks involved, actions to be taken and methodology for monitoring each activity.
- HPCL/Owner review / audit requirement.
- Organization structure along with responsibility and authority records / reports etc. on SHE activities.

4.2 During job execution

- 4.2.1 Implement approved Safety Health, and Environment management procedure including but not limited to as brought out under para 3.0. Contractor shall also ensure to:

- arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.
- arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage

of chemical / explosive materials and its use and implement all precautions mentioned therein.

- submit timely the completed checklist on SHE activities, Monthly SHE report, accident reports, investigation reports etc. as per HPCL/Owner requirements. Compliance of instructions on SHE shall be done by Contractor and informed urgently to HPCL/Owner.
- ensure that Resident Engineer / Site-in-Charge of the Contractor shall attend all the Safety Committee / SHE meetings arranged by HPCL/Owner. Only in case of his absence from site that a second senior most person shall be nominated by him in advance and communicated to HPCL/Owner.
- display at site office and work locations caution boards, list of hospitals, emergency services available.
- provide posters, banners for safe working to promote safety consciousness.
- carryout audits / inspection at sub contractor works as per approved SHE document and submit the reports for HPCL/Owner review.
- assist in SHE audits by HPCL/Owner, and submit compliance report.
- generate & submit HSE records / report as per SHE Plan.
- appraise HPCL/Owner on SHE activities at site.

EMD FORMAT

EMD FORMAT**(SPECIMEN)**

BANK GUARANTEE IN LIEU OF EARNEST MONEY
(On Non-Judicial stamp paper of appropriate value)

TO : Hindustan Petroleum Corporation Limited
 (Address as applicable)

IN CONSIDERATION OF MESSRS. HINDUSTAN PETROLEUM CORPORATION LIMITED a Government of India Company registered under the Companies Act, 1956, having its registered office at 17, Jamshedji Tata Road, Bombay-20 (hereinafter called "The Corporation" which expression shall include its successor in business and assigns) issued a tender on Messrs. a partnership firm/sole proprietor business/a company registered under the Companies Act, 1956 having its office at (hereinafter called "the Tenderer" which expression shall include its executors, administrators and assigns) against Tender no..... dated (hereinafter called "the tender" which expression shall include any amendments/alterations to "the tender" issued by "the Corporation") for the supply of goods to/execution of services for "the Corporation" and "the Corporation" having agreed not to insist upon immediate payment of Earnest Money for the fulfilment of the said tender in terms thereof on production of an acceptable Bank Guarantee for an amount of Rs..... (Rupees only).

We, Bank having office at Bombay (hereinafter referred to as "the Bank" which expression shall include its successors and assigns) at the request and on behalf of "the Tenderer" hereby agree to pay to the Corporation without any demur on first demand an amount not exceeding Rs..... (Rupees only) against any loss or damage, costs, charges and expenses caused to or suffered by "the Corporation" by reason of non performance and fulfilment or for any breach on the part of "the Tenderer" of any of the terms and conditions of the said "tender".

2. We, Bank further agree that "the Corporation" shall be sole Judge whether the said "Tenderer" has failed to perform or fulfill the said "tender" in terms thereof or committed breach of any of the terms and conditions of "the order" and the extent of loss, damage, cost, charges and expenses suffered or incurred or would be suffered or incurred by "the Corporation" on account thereof and we waive in favour of "the Corporation" all the rights and defences to which we as guarantors and/or "the Tenderer" may be entitled to.

3. We, Bank further agree that the amount demanded by "the Corporation" as such shall be final and binding on "the Bank" as to "the Bank" 's liability to pay and the amount demanded and "the Bank" to undertake to pay "the Corporation" the amount so demanded on first demand and without any demur notwithstanding any dispute raised by "the Tenderer" or any suit or other legal proceedings including arbitration pending before any court, tribunal or arbitrator relating thereto, our liability under this guarantee being absolute and unconditional.

4. We, Bank further agree with "the Corporation" that "the Corporation" shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said "tender"/or to extend time of performance by "the Tenderer" from time to time or to postpone for any time to time any of the powers exercisable by "the Corporation" against "the Tenderer" and to forbear to enforce any of the terms and conditions relating to "the tender" and we shall not be relieved from our liability by reason of any such variation or extension being granted to "the Tenderer" or for any forbearance, act or omission on the part of "the Corporation" or any indulgence by "the Corporation" to "the tenderer" or by any such matter or things whatsoever which under the law relating to sureties would but for this provision have the effect of relieving us.

- 5. NOTWITHSTANDING anything hereinbefore contained, our liability under this Guarantee is restricted to Rs. (Rupees..... only). Our liability under this guarantee shall remain in force until expiration of six months from the due date of opening of the said "tender". Unless a demand or claim under this guarantee is made on us in writing within said period, that is, on or before all rights of "the Corporation" under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities thereunder.

- 6. We, Bank further undertake not to revoke this guarantee during its currency except with the previous consent of "the Corporation" in Writing.

- 7. We, Bank lastly agree that "the Bank" 's liability under this guarantee shall not be affected by any change in the constitution of "the Tenderer".

- 8. "The Bank" has power to issue this guarantee in favour of "the Corporation" in terms of the documents and/or the Agreement/Contract or MOU entered into between "the Tenderer" and "the Bank" in this regard.

IN WITNESS WHEREOF the Bank has executed this document on this day of

For Bank
(by its constituted attorney)

(Signature of a person authorised
to sign on behalf of "the Bank")

GENERAL TERMS & CONDITIONS OF CONTRACT

GENERAL TERMS & CONDITIONS OF WORKS CONTRACT

1 PRELIMINARY

1.1 This is a Contract for execution of _____ work at _____ . (please fill up the blanks)

1.2 The tenderer for the abovementioned item of work is _____ . (please give the name and address of the tenderer)

1.3 The terms and conditions mentioned hereunder are the terms and conditions of the Contract for the execution of the work mentioned under item 1.1 above.

1.4 It is the clear understanding between Hindustan Petroleum Corporation Limited and the tenderer _____ that (name and address of the tenderer) in case the tender of _____ is (name and address of the tenderer) accepted by Hindustan Petroleum Corporation Limited and an intimation to that effect is so issued and also a Purchase Order is placed with

_____ (name and address of the tenderer) this document will be termed as a Contract between the parties and terms and conditions hereunder would govern the parties interest.

1.5 Interpretation of Contract Documents: All documents forming part of the Contract are to be taken mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the contract, the decision of the Owner/Engineer-in-Charge/Site-in-Charge shall be the final and the contractor shall abide by the decision. The decision shall not be arbitrable. Works shown upon the drawings but not mentioned in the specification or described in the specifications without being shown on the drawings shall nevertheless be deemed to be included in the same manner as if they are shown in the drawings and described in the specifications.

1.6 Special conditions of Contract : The special conditions of contract, if any provided and whenever and wherever referred to shall be read in conjunction with General Terms and Conditions of contract, specifications, drawings, and any other documents forming part of this contract wherever the context so requires. Notwithstanding the subdivision of the documents into separate sections, parts volumes, every section, part or volume shall be deemed to be supplementary or complementary to each other and shall be read in whole. In case of any misunderstanding arising the same shall be referred to decision of the Owner/ Engineer-in-Charge/Site-in-Charge and their decision shall be final and binding and the decision shall not be arbitrable. It is the clear understanding that wherever it is mentioned that the Contractor shall do/perform a work and/or provide facilities for the performance

of the work, the doing or the performance or the providing of the facilities is at the cost and expenses of the work not liable to be paid or reimbursed by the Owner.

2. DEFINITIONS

In this contract unless otherwise specifically provided or defined and unless a contrary intention appears from the contract the following words and expressions are used in the following meanings; 2.1 The term "Agreement" wherever appearing in this document shall be read as "Contract".

2.2 The "Authority" for the purpose of this Contract shall be the **Chairman and Managing Director** or any other person so appointed or authorised.

2.3 The "**Chairman and Managing Director**" shall mean the Chairman and Managing Director of HINDUSTAN PETROLEUM CORPORATION LIMITED or any person so appointed, nominated or designated and holding the office of Chairman & Managing Director.

2.4 The "**Change Order**" means an order given in writing by the Engineer-in-Charge or by Owner to effect additions to or deletion from or alterations into the Work.

2.5 The "**Construction Equipment**" means all appliances and equipment of whatsoever nature for the use in or for the execution, completion, operation or maintenance of the work except those intended to form part of the Permanent Work.

2.6 The "**Contract**" between the Owner and the Contractor shall mean and include all documents like enquiry, tender submitted by the contractor and the purchase order issued by the owner and other documents connected with the issue of the purchase order and orders, instruction, drawings, change orders, directions issued by the Owner/Engineer-in-charge/Site-in-Charge for the execution, completion and commissioning of the works and the period of contract mentioned in the Contract including such periods of time extensions as may be granted by the owner at the request of the contractor and such period of time for which the work is continued by the contractor for purposes of completion of the work.

2.7 "**The Contractor**" means the person or the persons, firm or Company whose tender has been accepted by the Owner and includes the Contractor's legal heirs, representative, successor(s) and permitted assignees.

2.8 The "**Drawings**" shall include maps, plans and tracings or prints thereof with any modifications 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.

2.9 The "**Engineer-in-Charge or Site-in-Charge**" shall mean the person appointed or designated as such by the Owner and shall include those who are expressly authorised by the owner to act for and on its behalf.

2.10 "**The Owner**" means the **HINDUSTAN PETROLEUM CORPORATION LIMITED** incorporated in India having its Registered office at **PETROLEUM HOUSE, 17, JAMSHEDJI TATA ROAD, BOMBAY - 400020** and Marketing office at _____ or their successors or assignees.

2.11 The "**Permanent Work**" means and includes works which form a part of the work to be handed over to the Owner by the Contractor on completion of the contract.

2.12 The "**Project Manager**" shall mean the Project Manager of **HINDUSTAN PETROLEUM CORPORATION LIMITED**, or any person so appointed, nominated or designated.

2.13 The "**Site**" means the land on which the work is to be executed or carried out and such other place(s) for purpose of performing the Contract.

2.14 The "**Specifications**" shall mean the various technical and other specifications attached and referred to in the tender documents. It shall also include the latest editions, including all addenda/corrigenda or relevant Indian Standard Specifications and Bureau Of Indian Standards.

2.15 The "Sub-Contractor" means any person or firm or Company (other than the Contractor) to whom any part of the work has been entrusted by the Contractor with the prior written consent of the Owner/Engineer-in-Charge/Site-in-Charge and their legal heirs, representatives, successors and permitted assignees of such person, firm or Company.

2.16 The "Temporary Work" means and includes all such works which are a part of the contract for execution of the permanent work but does not form part of the permanent work conforming to practices, procedures applicable rules and regulations relevant in that behalf.

2.17 The "Tender" means the document submitted by a person or authority for carrying out the work and the Tenderer means a person or authority who submits the tender offering to carry out the work as per the terms and conditions.

2.18 The "Work" shall mean the works to be executed in accordance with the Contract or part thereof as the case may be and shall include extra, additional, altered or substituted works as maybe required for the purposes of completion of the work contemplated under the Contract.

3. SUBMISSION OF TENDER

3.1 Before submitting the Tender, the Tenderer shall at their own cost and expenses visit the site, examine and satisfy as to the nature of the existing roads, means of communications, the character of the soil, state of land and of the excavations, the correct dimensions of the work facilities for procuring various construction and other material

and their availability, and shall obtain information on all matters and conditions as they may feel necessary for the execution of the works as intended by the Owners and shall also satisfy of the availability of suitable water for construction of civil works and for drinking purpose and power required for fabrication work etc. Tenderer, whose tender may be accepted and with whom the Contract is entered into shall not be eligible and be able to make any claim on any of the said counts in what so ever manner for what so ever reasons at any point of time and such a claim shall not be raised as a dispute and shall not be arbitrable. **Ⓢ A pre-bid meeting may be held as per the schedule mentioned in the tender.**

3.2 The Tenderer shall be deemed to have satisfied fully before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the schedule of quantities which rates and prices shall except as otherwise provided cover all his obligations under the contract.

3.3 It must be clearly understood that the whole of the conditions and specifications are intended to be strictly enforced and that no work will be considered as extra work and allowed and paid for unless they are clearly outside the scope, spirit, meaning of the Contract and intent of the Owner and have been so ordered in writing by Owner and/or Engineer-in-Charge/Site-in-Charge, whose decision shall be final and binding.

3.4 Before filling the Tender the Contractor will check and satisfy all drawings and materials to be procured and the schedule of quantities by obtaining clarification from the Owner on all the items as may be desired by the Tenderer. No claim for any alleged loss or compensation will be entertained on this account, after submission of Tender by the Tenderer/Contractor and such a claim shall not be arbitrable. **Ⓢ3.5 Unless specifically provided for in the tender documents or any Special Conditions, no escalation in the Tender rates or prices quoted will be permitted throughout the period of contract or the period of actual completion of the job whichever is later on account of any variation in prices of materials or cost of labour or due to any other reasons. Claims on account of escalation shall not be arbitrable.**

3.6 The quantities indicated in the Tender are approximate. The approved schedule of rates of the contract will be applicable for variations upto plus or minus 25% of the contract value. No revision of schedule of rates will be permitted for such variations in the contract value, including variations of individual quantities, addition of new items, alterations, additions/deletions or substitutions of items, as mentioned above. Quantities etc. mentioned and accepted in the joint measurement sheets shall alone be final and binding on the parties.

3.7 Owner reserve their right to award the contract to any tenderer and their decision in this regard shall be final. They also reserve their right to reject any or all tenders received. No disputes could be raised by any tenderer(s) whose tender has been rejected.

3.8 The Rates quoted by the Tenderer shall include Costs and expenses on all counts viz. cost of materials, transportation of machine(s), tools, equipments, labour, power,

Administration charges, price escalations, profits, etc. etc. except to the extent of the cost of material(s), if any, agreed to be supplied by Owner and mentioned specifically in that regard in condition of Contract, in which case, the cost of such material if taken for preparation of the Contractor's Bill(s) shall be deducted before making payment of the Bill(s) of the Contractor. The description given in the schedule of quantities shall unless otherwise stated be held to include wastage on materials, carriage and cartage, carrying in and return of empties, hoisting, setting, fitting and fixing in position and all other expenses necessary in and for the full and complete execution and completion of works and in accordance with good practice and recognised principles in that regard.

3.9 Employees of the State and Central Govt. and employees of the Public Sector Undertakings, including retired employees are covered under their respective service conditions/rules in regard to their submitting the tender. All such persons should ensure compliance to the respective/applicable conditions, rules etc. etc. Any person not complying with those rules etc. but submitting the tender in violation of such rules, after being so noticed shall be liable for the forfeiture of the Earnest Money Deposit made with the tender, termination of Contract and sufferance on account of forfeiture of Security Deposit and sufferance of damages arising as a result of termination of Contract.

®3.10 In consideration for having a chance to be considered for entering into a contract

with the Owner, the Tenderer agrees that the Tender submitted by him shall remain valid for the period prescribed in the tender conditions, from the date of opening of the tender. The Tenderer shall not be entitled during the said validity period, to revoke or cancel the tender without the consent in writing from the Owner. In case the tenderer revokes or cancels the tender or varies any of terms of the tender without the Consent of the Owner, in writing, the Tenderer forfeits the right to the refund of the Earnest Money paid along with the tender.

®3.11 The prices quoted by the Tenderer shall be firm during the validity period of the bid and Tenderer agrees to keep the bid alive and valid during the said period. The Tenderers shall particularly take note of this factor before submitting their tender(s).

3.12 The works shall be carried out strictly as per approved specifications. Deviations, if any, shall have to be authorised by the Engineer-in-Charge/Site-in-Charge in writing prior to implementing deviations. The price benefit, if any, arising out of the accepted deviation shall be passed on to the Owner. The decision of Engineer-in-Charge shall be final in this matter.

3.13 The contractor shall make all arrangements at his own cost to transport the required materials outside and inside the working places and leaving the premises in a neat and tidy condition after completion of the job to the satisfaction of Owner. All materials except those agreed to be supplied by the Owner shall be supplied by the contractor at his

own cost and the rates quoted by the Contractor should be inclusive of all royalties, rents, taxes, duties, octroi, statutory levies, if any, etc. etc.

3.14 The Contractor shall not carry on any work other than the work under this Contract within the Owners premises without prior permission in writing from the Engineer-in-Charge/Site-in-charge.

3.15 The Contractor shall be bound to follow and ensure compliance to all the safety and security regulations and other statutory rules applicable to the area. In the event of any damage or loss or sufference caused due to non-observance of such rules and regulations, the contractor shall be solely responsible for the same and shall keep the Owner indemnified against all such losses and claims arising from the same.

3.16 At any time after acceptance of tender, the Owner reserves the right to add, amend or delete any work item, the bill of quantities at a later date or reduce the scope of work in the overall interest of the work by prior discussion and intimation to the Contractor. The decision of Owner, with reasons recorded therefor, shall be final and binding on both the Owner and the Contractor. The Contractor shall not have right to claim compensation or damage etc. in that regard. The Owner reserves the right to split the work under this contract between two or more contractors without assigning any reasons.

3.17 Contractor shall not be entitled to sublet, sub contract or assign, the work under this Contract without the prior consent of the Owner obtained in writing.

3.18 All signatures in tender document shall be dated as well as all the pages of all sections of the tender documents shall be initialled at the lower position and signed, wherever required in the tender papers by the Tenderer or by a person holding Power of Attorney authorising him to sign on behalf of the tenderer before submission of tender.

3.19 The tender should be quoted in English, both in figures as well as in words. The rates and amounts tendered by the Tenderer in the Schedule of rates for each item and in such a way that insertion is not possible. The total tendered amount should also be indicated both in figures and words with the signature of tenderer. **® If some discrepancies are found between the rates given in words and figures of the amount shown in the tender, the following procedure shall be applied :**

(a) When there is a difference between the rates in figures and words, the rate which corresponds to the amount worked out by the tenderer shall be taken as correct.

(b) When the rate quoted by the tenderer in figures and words tallies but the amount is incorrect, the rate quoted by the tenderer shall be taken as correct.

(c) When it is not possible to ascertain the correct rate in the manner prescribed above the rate as quoted in words shall be adopted.

3.20 All corrections and alterations in the entries of tender paper will be signed in full by the tenderer with date. No erasures or over writings are permissible. 3.21 Transfer of tender document by one intending tenderer to the another one is not permissible. The tenderer on whose name the tender has been sent only can quote.

3.22 The Tender submitted by a tenderer if found to be incomplete in any or all manner is liable to be rejected. The decision of the Owner in this regard is final and binding. In case of any error/discrepancy in the amount written in words and figures, the lower amount between the two shall prevail.

4. DEPOSITS

a) EARNEST MONEY DEPOSIT (EMD)

The tenderer will be required to pay a sum as specified in the covering letter, as earnest money deposit alongwith the tender either thru a crossed demand draft or a non-revokable Bank Guarantee in favour of Hindustan Petroleum Corporation Limited, from any Scheduled Bank (other than a Co-Operative Bank) payable at Mumbai in favour of Hindustan Petroleum Corporation Limited, Mumbai in the proforma enclosed. The earnest money deposit will be refunded after finalisation of the contract.

Note: Public sector enterprises and small scale units registered with National Small Scale Industries are exempted from payment of Earnest Money Deposit. Small scale units registered with National Small Scale Industries should enclose a photocopy of their registration certificate with their quotation to make their quotation eligible for consideration. The Registration Certificate should remain valid during the period of the contract that may be entered into with such successful bidder. Such tenderers should ensure validity of the Registration Certificate for the purpose.

@ b) SECURITY DEPOSIT:

The tenderer, with whom the contract is decided to be entered into and intimation is so given will have to make a security deposit of one percent (1%) of the total contract value in the form of account payee crossed demand draft drawn in favour of the Owner, within 15 days from the date of intimation of acceptance of their tender, failing which the Owner reserves the right to cancel the Contract and forfeit the EMD.

1% of PO/Contract value as Security deposit will be acceptable in the form of Demand draft upto Rs. 50,000/- and in the form of Demand draft / Bank guarantee beyond Rs. 50,000/-. Composite PBG for 10% of PO value towards Security Deposit and Performance bank guarantee shall be accepted; which shall be valid upto a period of 3 months beyond the expiry of Defect liability period.

Demand Draft should be drawn on Scheduled Banks, other than co-operative bank.

5. EXECUTION OF WORK

All the works shall be executed in strict conformity with the provisions of the contract documents and with such explanatory details, drawings, specifications and instructions as may be furnished from time to time to the Contractor by the Engineer-in-Charge/ Site-in-Charge, whether mentioned in the Contract or not. The Contractor shall be responsible for ensuring that works throughout are executed in the most proper and workman- like manner with the quality of material and workmanship in strict accordance with the specifications and to the entire satisfaction of the Engineer-in- Charge/Site-in-Charge.

The completion of work may entail working in monsoon also. The contractor must maintain the necessary work force as may be required during monsoon and plan to

execute the job in such a way the entire project is completed within the contracted time schedule. No extra charges shall be payable for such work during monsoon. It shall be the responsibility of the contractor to keep the construction work site free from water during and off the monsoon period at his own cost and expenses.

For working on Sundays/Holidays, the contractor shall obtain the necessary permission from Engineer Incharge/Site Incharge in advance. The contractor shall be permitted to work beyond the normal hours with prior approval of Engineer-In-Charge/Site-In-Charge and the contractors quoted rate is inclusive of all such extended hours of working and no extra amount shall be payable by the owner on this account.

5.a. SETTING OUT OF WORKS AND SITE INSTRUCTIONS

5.a.1. The Engineer-in-Charge/Site-in-Charge shall furnish the Contractor with only the four corners of the work site and a level bench mark and the Contractor shall set out the works and shall provide an efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

5.a.2. The Contractor shall provide, fix and be responsible for the maintenance of all necessary stakes, templates, level marks, profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance and shall be responsible for consequences of such removal or disturbance should the same take place and for their efficient and timely reinstatement. The Contractor shall also be responsible for the maintenance of all existing survey marks, either existing or supplied and fixed by the Contractor. The work shall be set out to the satisfaction of the Engineer-in-Charge/Site-in-Charge. The approval thereof or joining in setting out the work shall not relieve the Contractor of his responsibility.

5.a.3. Before beginning the works, the Contractor shall, at his own cost, provide all necessary reference and level posts, pegs, bamboos, flags ranging rods, strings and other materials for proper layout of the work in accordance with the scheme, for bearing marks acceptable to the Engineer-in-Charge/Site-in-Charge. The Centre longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct marks at the centre to enable theodolite to be set over it. No work shall be started until all these points are checked and approved by the Engineer-in-Charge/Site-in-Charge in writing. But such approval shall not relieve the contractor of any of his responsibilities. The Contractor shall also provide all labour, materials and other facilities, as necessary, for the proper checking of layout and inspection of the points during construction.

5.a.4. Pillars bearing geodetic marks located at the sites of units of works under construction should be protected and fenced by the Contractor.

5.a.5. On completion of works, the contractor shall submit the geodetic documents according to which the work was carried out.

5.a.6. The Engineer-in-Charge/Site-in-Charge shall communicate or confirm his instructions

to the contractor in respect of the executions of work in a "work site order book" maintained in the office having duplicate sheet and the authorised representative of the contractor shall confirm receipt of such instructions by signing the relevant entries in the book.

5.a.7. All instructions issued by the Engineer-in-Charge/Site-in-Charge shall be in writing.

The Contractor shall be liable to carry out the instructions without fail.

5.a.8. If the Contractor after receipt of written instruction from the Engineer-in-Charge/Site-in-Charge requiring compliance within seven days fails to comply with such drawings or 'instructions' or both as the Engineer-in-Charge/Site-in-Charge may issue, owner may employ and pay other persons to execute any such work whatsoever that may be necessary to give effect to such drawings or 'instructions' and all cost and expenses incurred in connection therewith as certified by the Engineer-in-Charge/ Site-in-Charge shall be borne by the contractor or may be deducted from amounts due or that may become due to the contractor under the contract or may be recovered as a debt.

5.a.9. The Contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the work and shall rectify effectually any errors or imperfections therein. Such rectifications shall be carried out by the Contractor, at his own cost.

5.a.10. In case any doubts arise in the mind of the Contractor in regard to any expressions, interpretations, statements, calculations of quantities, supply of material rates, etc. etc., the contractor shall refer the same to the Site-in-Charge/ Engineer-in-Charge for his clarification, instructions, guidance or clearing of doubts. The decision of the Engineer-in-Charge/Site-in-Charge shall be final and the contractor shall be bound by such a decision.

5.a.11. "The Contractor shall take adequate precautions, to ensure that his operations do not create nuisance or misuse of the work space that shall cause unnecessary disturbance or inconvenience to others at the work site".

5.a.12. "All fossils, coins articles of value of antiquity and structure or other remains of geological or archaeological discovered on the site of works shall be declared to be the property of the Owner and Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such articles or thing and shall immediately inform the Owner/ Engineer-in-Charge/Site-in-Charge."

5.a.13. "Contractor will be entirely and exclusively responsible to provide and maintain at his expenses all lights, guards, fencing, etc. when and where even necessary or/as required by the Engineer-in-Charge/Site-in-Charge for the protection of works or safety and convenience to all the members employed at the site or general public."

5.b. COMMENCEMENT OF WORK

The contractor shall after paying the requisite security deposit, commence work within 15 days from the date of receipt of the intimation of intent from the Owner informing that the contract is being awarded. The date of intimation shall be the date/day for counting the starting day/date and the ending day/date will be accordingly calculated. Penalty, if any, for the delay in execution shall be calculated accordingly. Contractor should prepare detailed fortnightly construction programme for approval by the Engineer-in-Charge within one month of receipt of Letter Of Intent. The work shall be executed strictly as per such time schedule. The period of Contract includes the time required for testing, rectifications, if any, re-testing and completion of work in all respects to the entire satisfaction of the Engineer-in-Charge. A Letter of Intent is an acceptance of offer by the Owner and it need not be accepted by the contractor. But the contractor should acknowledge a receipt of the purchase order within 15 days of mailing of Purchase Order and any delay in acknowledging the receipt will be a breach of contract and compensation for the loss caused by such breach will be recovered by the Owner by forfeiting earnest money deposit/bid bond.

5.c. SUBLETTING OF WORK

5.c.1. No part of the contract nor any share or interest thereof shall in any manner or degree be transferred, assigned or sublet, by the Contractor, directly or indirectly to any firm or corporation whatsoever, without the prior consent in writing of the Owner.

5.c.2. At the commencement of every month the Contractor shall furnish to the Engineer-in-charge/Site-in-Charge list of all sub-contractors or other persons or firms engaged by the Contractor.

5.c.3 The contract agreement will specify major items of supply or services for which the Contractor proposes to engage sub-Contractor/sub-Vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit the proposals in this regard to the Engineer-in-charge/Designated officer-in-charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer-in-charge/Designated officer-in-charge will not relieve the contractor from any of his obligations, duties and responsibilities under the contract.

5.c.4. Notwithstanding any sub-letting with such approval as resaid and notwithstanding that the Engineer-in-Charge shall have received copies of any sub-contract, the Contractor shall be and shall remain solely to be responsible for the quality and proper and expeditious execution of the works and the performance of all the conditions of the contract in all respects as if such subletting or sub-contracting had not taken place and as if such work had been done directly by the Contractor.

5.c.5 Prior approval in writing of the Owner shall be obtained before any change is made in the constitution of the contractor/Contracting agency otherwise contract shall be deemed to have been allotted in contravention of clause entitled "sub-letting of works"

and the same action may be taken and the same consequence shall ensue as provided in the clause of “sub- letting of works”.

5.d EXTENSION OF TIME

® 1) **If the Contractor anticipates that he will not be able to complete the work within the contractual delivery/ completion date (CDD), then the Contractor shall make a request for grant of time extension clearly specifying the reasons for which he seeks extension of time and demonstrating as to how these reasons were beyond the control of the contractor or attributable to the Owner. This request should be made well before the expiry of the Contractual Delivery/ Completion Date (CDD).**

2) If such a request for extension is received with a Bank Guarantee for the full Liquidated Damages amount calculated on the Total Contract Value, the concerned General Manager of the Owner shall grant a Provisional extension of time, pending a decision on the request.

3) The concerned General Manager of the Owner shall expeditiously decide upon the request for time extension and in any case not later than 6 months from the CDD or date of receipt of the request, whichever is later.

4) Grant of any extension of time shall be by means of issuance of a Change Order.

5) In order to avoid any cash crunch to the Contractor, a Bank Guarantee could be accepted against LD, as stated above. Once a decision is taken, the LD shall be recovered from any pending bills or by encashment of the BG. Any balance sum of Contractor or the BG (if LD is fully recovered from the bills) shall be promptly refunded/returned to the Contractor.

5.e. SUSPENSION OF WORKS

5.e.1. Subject to the provisions of this contract, the contractor shall if ordered in writing by the Engineer- in-Charge/Site-in-Charge for reasons recorded suspend the works or any part thereof for such period and such time so ordered and shall not, after receiving such, proceed with the work therein ordered to ususpended until he shall have received a written order to re-start. The Contractor shall be entitled to claim extension of time for that period of time the work was ordered to be suspended. Neither the Owner nor the Contractor shall be entitled to claim compensation or damages on account of such an extension of time.

5.e.2. In case of suspension of entire work, ordered in writing by Engineer-in-Charge/Site-in-Charge, for a period of 30 days, the Owner shall havethe option to terminate the Contract as provided under the clause fortermination.The Contractor shall not be at liberty to remove from the site of the works any plant or materials belonging to him and the Employer shall have lien upon all such plant and materials.

5.e.3. The contract shall, in case of suspension have the right to raise a dispute and have the same arbitrated but however, shall not have the right to have the work stopped from further progress and completion either by the owner or through other contractor appointed by the owner.

5.f. OWNER MAY DO PART OF WORK

Notwithstanding anything contained elsewhere in this contract, the owner upon failure of the Contractor to comply with any instructions given in accordance with the provisions of this contract, may instead of Contract and undertaking charge of entire work, place additional labour force, tools, equipment and materials on such parts of the work, as the Owner may decide or engage another Contractor to carryout the balance of work. In such cases, the Owner shall have the right to deduct from the amounts payable to the Contractor the difference in cost of such work and materials with ten percent overhead added to cover all departmental charges. Should the total amount thereof exceed the amount due to the contractor, the Contractor shall pay the difference to the Owner within 15 days of making demand for payment failing which the Contractor shall be liable to pay interest at 24% p.a. on such amounts till the date of payment.

5.g. INSPECTION OF WORKS

5.g.1. The Engineer-in-Charge/Site-in-Charge and Officers from Central or State Government will have full power and authority to inspect the works at any time wherever in progress, either on the site or at the Contractor's premises/workshops of any person, firm or corporation where work in connection with the contract may be in hand or where the materials are being or are to be supplied, and the Contractor shall afford or procure for the Engineer-in-Charge/Site-in-Charge every facility and assistance to carryout such inspection. The Contractor shall, at all times during the usual working hours and at all other times at which reasonable notice of the intention of the Engineer-in-Charge/Site-in-Charge or his representative to visit the works shall have been given to the Contractor, either himself be present to receive orders and instructions, or have a responsible agent, duly accredited in writing, present for the purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself. The Contractor shall give not less than seven days notice in writing to the Engineer-in-Charge/Site-in-Charge before covering up or otherwise placing beyond reach of inspection and measurement any work in order that the same may be inspected and measured. In the event of breach of above, the same shall be uncovered at Contractor's expense for carrying out such measurement and/or inspection.

5.g.2. No material shall be removed and despatched by the Contractor from the site without the prior approval in writing of the Engineer-in-charge. The contractor is to provide at all times during the progress of the work and the maintenance period proper means of access with ladders, gangways, etc. and the necessary attendance to move and adapt as directed for inspection or measurements of the works by the Engineer-in-Charge/Site-in-Charge.

5.h. SAMPLES

5.h.1. The contractor shall furnish to the Engineer-in-charge/Site-in-Charge for approval when requested or required adequate samples of all materials and finishes to be used in the work.

5.h.2. Samples shall be furnished by the Contractor sufficiently in advance and before commencement of the work so as the Owner can carry out tests and examinations thereof

and approve or reject the samples for use in the works. All material samples furnished and finally used/applied in actual work shall fully be of the same quality of the approved samples.

5.i. TESTS FOR QUALITY OF WORK

5.i.1. All workmanship shall be of the respective kinds described in the contract documents and in accordance with the instructions of the Engineer-in-Charge / Site-in-Charge and shall be subjected from time to time to such tests at Contractor's cost as the Engineer-in-Charge/Site-in-Charge may direct at the place of manufacture or fabrication or on the site or at all or any such places. The Contractor shall provide assistance, instruments, labour and materials as are normally required for examining, measuring and testing any workmanship as may be selected and required by the Engineer-in-Charge/Site-in-Charge.

5.i.2. All the tests that will be necessary in connection with the execution of the work as decided by the Engineer-in-charge/Site-in-Charge shall be carried out at the contractors cost and expenses.

5.i.3. If any tests are required to be carried out in connection with the work or materials or workmanship to be supplied by the owner, such tests shall be carried out by the Contractor as per instructions of Engineer-in-Charge/Site-in-Charge and expenses for such tests, if any, incurred by the contractor shall be reimbursed by the Owner. The contractor should file his claim with the owner within 15 (fifteen) days of inspection/test and any claim made beyond that period shall lapse and be not payable.

5.j. ALTERATIONS AND ADDITIONS TO SPECIFICATIONS, DESIGNS AND WORKS

5.j.1. The Engineer-in-Charge/Site-in-Charge shall have powers to make any alterations, additions and/or substitutions to the schedule of quantities, the original specifications, drawings, designs and instructions that may become necessary or advisable or during the progress of the work and the Contractor shall be bound to carry out such altered/extra/new items of work in accordance with instructions which may be given to him in writing signed by the Engineer-in-Charge/Site-in-Charge. Such alterations, omissions, additions or substitutions shall not invalidate the contract. The altered, additional or substituted work which the Contractor may be directed to carry on in the manner as part of the work shall be carried out by the Contractor on the same conditions in all respects on which he has agreed to do the work. The time for completion of such altered added and/or substituted work may be extended for that part of the particular job. The rates for such additional altered or substituted work under this Clause shall, be worked out in accordance with the following provisions:

5.j.2. If the rates for the additional, altered or substituted work are specified in the contract for similar class of work, the Contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract.

5.j.3. If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for similar class of work as are specified in the contract for the work. In the opinion of the Engineer-in-Charge/Site-in-Charge as to whether or not the rates can be reasonably so derived from the items in this contract, will be final and binding on the Contractor.

5.j.4. If the rates for the altered, additional or substituted work cannot be determined in the manner specified above, then the Contractor shall, within seven days of the date of receipt of order to carry out the work, inform the Engineer-in-Charge/Site-in-Charge of the rate at which he intends to charge for such class of work, supported by analysis of the rate or rates claimed and the Engineer-In-Charge/Site-in-Charge shall determine the rates on the basis of the prevailing market rates for both material and labour plus 10% to cover overhead and profit of labour rates and pay the Contractor accordingly. The opinion of the Engineer-in-Charge/Site-in-Charge as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the contractor.

5.j.5. The quantities indicated in the Tender are approximate. The approved schedule of rates of the contract will be applicable for variations of upto +25% of the estimated contract value. No revision of schedule of rates will be permitted for such variations in the contract value, even for variations of individual quantities, addition of new items, alterations, additions/deletions or substitutions of items, as mentioned above.

5.j.6. In case of any item of work for which there is no specification supplied by the Owner and is mentioned in the tender documents, such work shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same, the work should be carried out as per standard Engineering Practice subject to the approval of the Engineer-in-Charge/ Site-in-Charge.

5.k. PROVISIONAL ACCEPTANCE

Acceptance of sections of the works for purposes of equipment erection, piping, electrical work and similar usages by the Owner and payment for such work or parts of work shall not constitute a waiver of any portion of this contract and shall not be construed so as to prevent the Engineer from requiring replacement of defective work that may become apparent after the said acceptance and also shall not absolve the Contractor of the obligations under this contract. It is made clear that such an acceptance does not indicate or denote or establish to the fact of execution of that work or the Contract until the work is completed in full in accordance with the provisions of this Contract.

5.l. COMPLETION OF WORK AND COMPLETION CERTIFICATE

As soon as the work is completed in all respects, the contractor shall give notice of such completion to the site in charge or the Owner and within thirty days of receipt of such notice the site in charge shall inspect the work and shall furnish the contractor with a certificate of completion indicating:

- a) defects, if any, to be rectified by the contractor
- b) items, if any, for which payment shall be made in reduced rates
- c) the date of completion.

5.m. USE OF MATERIALS AND RETURN OF SURPLUS MATERIALS

5.m.1. Notwithstanding anything contained to the contrary in any or all of the clauses of this

contract, where any materials for the execution of the contract are procured with the assistance of Government either by issue from Government stocks or purchase made under orders or permits or licences issued by Government, the contractor shall use the said materials economically and solely for the purpose of the contract and shall not dispose them of without the permission of the Owner.

5.m.2. All surplus(serviceable) or unserviceable materials that may be left over after the completion of the contract or at its termination for any reason whatsoever, the Contractor shall deliver the said product to the Owner without any demur. The price to be paid to the Contractor, if not already paid either in full or in part, however, shall not exceed the amount mentioned in the Schedule of Rates for such material and in cases where such rates are not so mentioned, shall not exceed the CPWD scheduled rates. In the event of breach of the aforesaid condition the contractor shall become liable for contravention of the terms of the Contract.

5.m.3. The surplus (serviceable) and unserviceable products shall be determined by joint measurement. In case where joint measurement has failed to take place, the Owner may measure the same and determine the quantity.

5.m.4. It is made clear that the Owner shall not be liable to take stock and keep possession and pay for the surplus and unserviceable stocks and the Owner may direct the Contractor to take back such material brought by the Contractor and becoming surplus and which the Owner may decide to keep and not to pay for the same.

5.n. DEFECT LIABILITY PERIOD

The contractor shall guarantee the work executed for a period of 12 months from the date of completion of the job. Any damage or defect that may arise or lie undiscovered at the time of completion of the job shall be rectified or replaced by the contractor at his own cost. The decision of the Engineer In-charge/Site-Incharge/Owner shall be the final in deciding whether the defect has to be rectified or replaced.

Equipment or spare parts replaced under warranty/guarantees shall have further warranty for a mutually agreed period from the date of acceptance.

The owner shall intimate the defects noticed in writing by a Registered A.D. letter or otherwise and the contractor within 15 days of receipt of the intimation shall start the rectification work and complete within the time specified by the owner failing which the owner will get the defects rectified by themselves or by any other contractor and the expenses incurred in getting the same done shall be paid by the Contractor under the provision of the Contract.

Thus, defect liability is applicable only in case of job/works contract (civil, mechanical, electrical, maintenance etc.) where any damage or defect may arise in future (i.e. within 12 months from the date of completion of job) or lie undiscovered at the time of completion of job.

In other words, in case of service contracts (like car hire etc.) where there is no question of damage or defect arising in future, the defect liability clause is not applicable.

5.o. DAMAGE TO PROPERTY

5.o.1. Contractor shall be responsible for making good to the satisfaction of the Owner any

loss of and any damage to all structures and properties belonging to the Owner or being executed or procured by the Owner or of other agencies within the premises of the work of the Owner, if such loss or damage is due to fault and/or the negligence or willful acts or omission of the Contractor, his employees, agents, representatives or sub-contractors.

5.o.2. The Contractors shall indemnify and keep the Owner harmless of all claims for damage to Owner's property arising under or by reason of this contract.

6. DUTIES AND RESPONSIBILITIES OF CONTRACTOR

6.a. EMPLOYMENT LIABILITY TOWARDS WORKERS EMPLOYED BY THE CONTRACTOR

6.a.1 The Contractor shall be solely and exclusively responsible for engaging or employing persons for the execution of work. All persons engaged by the contractor shall be on Contractor's payroll and paid by Contractor. All disputes or differences between the Contractor and his/their employees shall be settled by Contractor.

6.a.2. Owner has absolutely no liability whatsoever concerning the employees of the Contractor. The Contractor shall indemnify Owner against any loss or damage or liability arising out of or in the course of his/their employing persons or relation with his/their employees. The Contractor shall make regular and full payment of

wages and on any complaint by any employee of the Contractor or his sub contractor regarding non-payment of wages, salaries or other dues, Owner reserves the right to make payments directly to such employees or sub- contractor of the Contractor and recover the amount in full from the bills of the Contractor and the contractor shall not claim any compensation or reimbursement thereof. The Contractor shall comply with the Minimum Wages Act applicable to the area of work site with regard to payment of wages to his employees and also to employees of his sub contractor.

6.a.3. The Contractor shall advise in writing or in such appropriate way to all of his employees and employees of sub-contractors and any other person engaged by him that their appointment/employment is not by the Owner but by the Contractor and that their present appointment is only in connection with the construction contract with Owner and that therefore, such an employment/appointment would not enable or make them eligible for any employment/appointment with the Owner either temporarily or/and permanent basis.

6.b. NOTICE TO LOCAL BODIES

The contractor shall comply with and give all notices required under any Government authority, instruction, rule or order made under any act of parliament, state laws or any regulations or by-laws of any local authority relating to the works.

6.c. FIRST AID AND INDUSTRIAL INJURIES

6.c.1 Contractor shall maintain first aid facility for his employees and those of his sub-contractors.

6.c.2. Contractor shall make arrangements for ambulance service and for the treatment of all types of injuries. Names and telephone numbers of those providing such services shall be furnished to Owner prior to start of construction and their name board shall be prominently displayed in Contractor's field office.

6.c.3. All industrial injuries shall be reported promptly to owner and a copy of contractor's report covering each personal injury requiring the attention of a physician shall be furnished to the Owner.

6.d. SAFETY CODE

6.d.1. The Contractor shall at his own expenses arrange for the Safety provisions as may be necessary for the execution of the work or as required by the Engineer-in-Charge in respect of all labours directly or indirectly employed for performance of the works and shall provide all facilities in connections therewith. In case the contractor fails to make arrangements and provide necessary facilities as aforesaid, the Owner shall be entitled to do so and recover the cost thereof from the Contractor.

6.d.2. From the commencement to the completion of the works, the contractor shall take full responsibility for the care thereof and of all the temporary works (defined as meaning all temporary works of every kind required in or for the execution, completion or maintenance of the works). In case damage, loss or injury shall happen to the works or to any part thereof or to temporary works or to any cause whatsoever repair at his (Contractor's) own cost and make good the same so that at the time of completion, the works shall be in good order and condition and in conformity in every respect with the requirement of the contract and Engineer-in-Charge's instructions.

6.d.3. In respect of all labour, directly or indirectly employed in the work for the performance of the Contractor's part of this agreement, the contractor shall at his own expense arrange for all the safety provisions as per relevant Safety Codes of C.P.W.D Bureau of Indian Standards, the Electricity Act/I.E. Rules. The Mines Act and such other Acts as applicable.

6.d.4. The Contractor shall observe and abide by all fire and safety regulations of the Owner. Before starting construction work, the Contractor shall consult with Owner's Safety Engineer or Engineer-in-Charge/Site-in-Charge and must make good to the satisfaction of the Owner any loss or damage due to fire to any portion of the work done or to be done under this agreement or to any of the Owner's existing property.

6.d.5. The Contractor will be fully responsible for complying with all relevant provisions of the Contract Labour Act and shall pay rates of Wages and observe hours of work/conditions of employment according to the rules in force from time to time.

6.d.6. The Contractor will be fully responsible for complying with the provision including documentation and submission of reports on the above to the concerned authorities and shall indemnify the Corporation from any such lapse for which the Government will be taking action against them.

6.d.7. Owner shall on a report having been made by an inspecting Office as defined in the Contract Labour Regulations have 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(s) by reasons of non-fulfillment of conditions of contract for the benefit of workers no-payment of wages or of deductions made from his or their wages which are not justified by the terms of contract or non observance of the said contractor's labour Regulation.

6.e. INSURANCE AND LABOUR

Contractor shall at his own expense obtain and maintain an insurance policy with a Nationalised Insurance Company to the satisfaction of the Owner as provided hereunder.

6.e.1. EMPLOYEES STATE INSURANCE ACT

i. The Contractor agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by Employees State Insurance Act, 1948, and the Contractor further agrees to defend indemnify and hold Owner harmless from any liability or penalty which may be imposed by the Central, State or local authority by reason of any asserted violation by Contractor, or sub-contractor of the Employees' State Insurance Act, 1948 and also from all claims, suits or proceedings that may be brought against the Owner arising under, growing out of or by reason 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.

ii. The Contractor agrees to file with the Employees State Insurance Corporation, the Declaration forms and all forms which may be required in respect of the Contractor's or sub-contractor's employee whose aggregate emuneration is within the specified limit and who are employed in the work provided or those covered by ESI Act under any amendment to the Act from time to time. The Contractor shall deduct and secure the agreement of the sub-contractor to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the employee's contribution cards at wages payment intervals. The Contractor shall remit and secure the agreement of the sub contractor to remit to the State Bank of India, Employee's State Insurance Corporation Account, the Employee's contribution as required by the Act.

iii. The Contractor agrees to maintain all records as required under the Act in respect of employees and payments and the Contractor shall secure the agreement of the sub contractor to maintain such records. Any expenses incurred for the contributions, making contribution or maintaining records shall be to the Contractor's or sub-contractor's account.

i v. 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.

v . WORKMAN'S COMPENSATION AND EMPLOYEE'S LIABILITY INSURANCE

Provide Insurance for all the Contractor's employees engaged in the performance of this contract. If any of the work is sublet, the Contractor shall ensure that the sub contractor provides workmen's compensation and Employer's Liability Insurance for the latter's employees who are not covered under the Contractor's insurance.

vi. AUTOMOBILE LIABILITY INSURANCE

Contractor shall take out an Insurance to cover all risks to Owner for each of his vehicles plying on works of this contract and these insurances shall be valid for the total contract period. No extra payment will be made for this insurance. Owner shall not be liable for any damage or loss not made good by the Insurance Company, should such damage or loss result from unauthorised use of the vehicle. The provisions of the Motor Vehicle Act would apply.

vii. **FIRE INSURANCE**

Contractor shall within two weeks after award of contract insure the Works, Plant and Equipment and keep them insured until the final completion of the Contract against loss or damage by accident, fire or any other cause with an insurance company to be approved by the Employer/Consultant in the joint names of the Employer and the Contractor (name of the former being placed first in the Policy). Such Policy shall cover the property of the Employer only.

6.e.2. ANY OTHER INSURANCE REQUIRED UNDER LAW OR REGULATION OR BY OWNER

i. Contractor shall also provide and maintain any and all other insurance which may be required under any law or regulations from time to time. He shall also carry and maintain any other insurance which may be required by the Owner.

ii. The aforesaid insurance policy/policies shall provide that they shall not be cancelled till the Engineer-in-Charge has agreed to their cancellation.

iii. The Contractor shall satisfy to the Engineer-in-Charge/Site-in-Charge from time to time that he has taken out all insurance policies referred to above and has paid the necessary premium for keeping the policies alive till the expiry of the defects liability period.

iv. The contractor shall ensure that similar insurance policies are taken out by his sub-contractor (if any) and shall be responsible for any claims or losses to the Owner resulting from their failure to obtain adequate insurance protections in connection thereof. The contractor shall produce or cause to be produced by his sub-contractor (if any) as the case may be, the relevant policy or policies and premium receipts as and when required by the Engineer-in-Charge/Site-in-Charge.

6.e.3. LABOUR AND LABOUR LAWS

i. The contractor shall at his own cost employ persons during the period of contract and the persons so appointed shall not be construed under any

circumstances to be in the employment of the Owner.

ii. All payments shall be made by the contractor to the labour employed by him in accordance with the various rules and regulations stated above. The contractor shall keep the Owner indemnified from any claims whatsoever inclusive of damages/costs or otherwise arising from injuries or alleged injuries to or death of a person employed by the contractor or damages or alleged damages to the property.

iii. No labour below the age of eighteen years shall be employed on the work. The Contractor shall not pay less than what is provided under the provisions of the contract labour (Regulations and Abolition) Act, 1970 and the rules made thereunder and as may be amended from time to time. He shall pay the required deposit under the Act appropriate to the number of workman to be employed by him or through sub contractor and get himself registered under the Act. He shall produce the required Certificates to the Owner before commencement of the work. The Owner recognises only the Contractor and not his sub contractor under the provisions of the Act. The Contractor will have to submit daily a list of his workforce. He will also keep the wage register at the work site or/and produce the same to the Owner, whenever desired. A deposit may be taken by the Owner from the Contractor to be refunded only after the Owner is satisfied that all workmen employed by the Contractor have been fully paid for the period of work in Owner's premises at rates equal to or better than wages provided for under the Minimum Wages Act. The contractor shall be responsible and liable for any complaints that may arise in this regard and the consequences thereto.

iv. The Contractor will comply with the provisions of the Employee's Provident Fund Act and the Family Pension Act as may be applicable and as amended from time to time.

v. The Contractor will comply with the provisions of the payment of Gratuity Act, 1972, as may be applicable and as amended from time to time.

vi. IMPLEMENTATION OF APPRENTICES ACT, 1961

The Contractor shall comply with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-in-Charge may, at his discretion, cancel the contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provision of the Act.

vii. MODEL RULES FOR LABOUR WELFARE

The Contractor shall at his own expenses comply with or cause be complied

with Model rules for Labour Welfare as appended to those conditions or rules framed by the Government from time to time for the protection of health and for making sanitary arrangements for worker employed directly or indirectly on the works. In case the contractor fails to make arrangements as aforesaid the Engineer-in-Charge/Site-in-Charge shall be entitled to do so and recover the cost thereof from the contractor.

6.f. DOCUMENTS CONCERNING WORKS

6.f.1. All documents including drawings, blue prints, tracings, reproducible models, plans, specifications and copies, thereof furnished by the Owner as well as all drawings, tracings, reproducibles, plans, specifications design calculations etc. prepared by the contractor for the purpose of execution of works covered in or connected with this contract shall be the property of the Owner and shall not be used by the contractor for any other work but are to be delivered to the Owner at the completion or otherwise of the contract.

6.f.2. The Contractor shall keep and maintain secrecy of the documents, drawings etc. issued to him for the execution of this contract and restrict access to such documents, drawings etc. and further the Contractor shall execute a SECRECY agreement from each or any person employed by the Contractor having access to such documents, drawings etc. The Contractor shall not issue drawings and documents to any other agency or individual without the written approval by the Engineer-in-Charge/Site-in-Charge.

6.f.3. Contractor will not give any information or document etc. concerning details of the work to the press or a news disseminating agency without prior written approval from Engineer-in-charge/Site-in-Charge. Contractor shall not take any pictures on site without written approval of Engineer-in-Charge/Site-in-Charge.

7. PAYMENT OF CONTRACTOR'S BILLS

®7.1. Payments will be made against Running Accounts bills certified by the Owner's Engineer-in-Charge/Site-in-Charge within 15 days from the date of receipt of the bill.

7.2. Running Account Bills and the final bill shall be submitted by the Contractor together with the duly signed measurements sheet(s) to the Engineer-in-Charge/Site-in-Charge of the Owner in quadruplicate for certification.

The Bills shall also be accompanied by quantity calculations in support of the quantities contained in the bill along with cement consumption statement, actual/theoretical, wherever applicable duly certified by the Engineer-in-Charge/Site-in-Charge of the Owner.

7.3. All running account payments shall be regarded as on account payment(s) to be finally adjusted against the final bill payment. Payment of Running Account Bill(s)

shall not determine or affect in any way the rights of the Owner under this Contract to make the final adjustments of the quantities of material, measurements of work and adjustments of amounts etc.etc. in the final bill.

7.4. The final bill shall be submitted by the Contractor within one month of the date of completion of the work fully and completely in all respects. If the Contractor fails to submit the final bill accordingly Engineer-in-Charge/Site-in-Charge may make the measurement and determine the total amount payable for the work carried out by the Contractor and such a certification shall be final and binding on the Contractor. The Owner/Engineer- in-Charge/Site-in-Charge may take the assistance of an outside party for taking the measurement, the expenses of which shall be payable by the Contractor.

7.5. Payment of final bill shall be made within 30 days from the date of receipt of the certified bill by the Disbursement Section of the owner.

®7.6 Wherever possible, payment shall be tendered to the contractor in electronic mode (e-payment) through any of the designated banks. The contractor will comply by furnishing full particulars of Bank account (mandate) to which the payments will be routed. Owner reserves the right to make payment in any alternate mode also.

7.a. MEASUREMENT OF WORKS

7.a.1. All measurements shall be in metric system. All the works will be jointly measured by the representative of the Engineer-in-Charge/Site-in-Charge and the Contractor or their authorised agent progressively. Such measurement will be recorded in the Measurement Book/Measurement Sheet by the Contractor or his authorised representative and signed in token of acceptance by the Owner or their authorised representative.

7.a.2. For the purpose of taking joint measurement, the Contractor/representative shall be bound to be present whenever required by the Engineer-in-Charge/Site-in-Charge. If, however, they are absent for any reasons whatsoever, the measurement will be taken by the Engineer-in-Charge/Site-in-Charge or his representative and the same would be deemed to be correct and binding on the Contractor.

7.a.3. In case of any dispute as to the mode of measurement for any item of work, the latest Indian Standard Specifications shall be followed. In case of any further dispute on the same the same shall be as per the certification of an outside qualified Engineer/ Consultant. Such a measurement shall be final and binding on the Owner and the Contractor.

7.b. BILLING OF WORKS EXECUTED

The Contractor will submit a bill in approved proforma in quadruplicate to the Engineer-in-Charge/Site-in-Charge of the work giving abstract and detailed measurement for the various items executed during a month, before the expiry of the first week of the succeeding month. The Engineer-in-Charge/Site-in-Charge shall take or cause to be taken the requisite measurements for the purpose of having the bill verified and/or checked before forwarding the same to the disbursement office of the Owner for further action in terms of the Contract and payment thereafter. The Engineer-in-Charge/Site-in-Charge shall verify the bills within 7 days of submission of the Bill by the Contractor.

7.c. RETENTION MONEY

10% of the total value of the Running Account and Final Bill will be deducted and retained by the Owner as retention money on account of any damage/defect liability that may arise for the period covered under the defect liability period clause of the Contract free of interest. Any damage or defect that may arise or lie undiscovered at the time of issue of completion certificate connected in any way with the equipment or materials supplied by contractor or in workmanship shall be rectified or replaced by the contractor at his own expense failing which the Owner shall be entitled to rectify the said damage/defect from the retention money. Any excess of expenditure incurred by the Owner on account of damage or defect shall be payable by the Contractor. The decision of the Owner in this behalf shall not be liable to be questioned but shall be final and binding on the Contractor. Thus, deduction towards retention money is applicable only in case of job/works contracts (civil, mechanical, electrical, maintenance etc.) where any damage or defect may arise in future (i.e. within 12 months from the date of completion of job) or lie undiscovered at the time of issue of completion certificate.

®7.d. STATUTORY LEVIES

7.d.1 The Contractor accepts full and exclusive liability for the payment of any and all taxes, duties, octroi, rates, cess, levies and statutory payments payable under all or any of the statutes etc.

® Variations of taxes and duties arising out of the amendments to the Central / State enactments, in respect of sale of goods / services covered under this bid shall be to HPCL's account, so long as :

- They relate to the period after the opening of the price bid, but before the contracted completion period (excluding permitted extensions due to delay on account of the contractors, if any) or the actual completion period, whichever is earlier; and

- The vendor furnishes documentary evidence of incurrence of such variations, in addition to the invoices/documents for claiming Cenvat /Input Tax credit, wherever applicable.

All contributions and taxes for unemployment compensation, insurance and old age pensions or annuities now or hereafter imposed by Central or State Governmental

authorities which are imposed with respect to or covered by the wages, salaries or other compensations paid to the persons employed by the Contractor and the Contractor shall be responsible for the compliance with all obligations and restrictions imposed by the Labour Law or any other law affecting employer-employee relationship and the Contractor further agrees to comply and to secure the compliance of all sub-contractors with all applicable Central, State, Municipal and local laws, and regulations and requirements of any Central, State or Local Government agency or authority.

Contractor further agrees to defend, indemnify and hold harmless from any liability or penalty which may be imposed by the Central, State or Local authorities by reason of any violation by Contractor or sub-contractor of such laws, regulations or requirements and also from all claims, suits or proceedings that may be brought against the Owner arising under, growing out of, or by reasons of the work provided for by this contract by third parties, or by Central or State Government authority or any administrative sub-division thereof. The Contractor further agrees that in case any such demand is raised against the Owner, and Owner has no way but to pay and pays/makes payment of the same, the Owner shall have the right to deduct the same from the amounts due and payable to the Contractor. The Contractor shall not raise any demand or dispute in respect of the same but may have recourse to recover/receive from the concerned authorities on the basis of the Certificate of the Owner issued in that behalf.

7 . d . 2 . The rates quoted should be inclusive of all rates, cess, taxes and sales tax on works contracts wherever applicable. However, wherever the sales tax on works contract is applicable and is to be deducted at source, the same will be deducted from the bills of the Contractor and paid to the concerned authorities. The proof of such payments of sales tax on works contract will be furnished to the contractor.

7.d.3. Income tax will be deducted at source as per rules at prevailing rates, unless certificate, if any, for deduction at lesser rate or nil deduction is submitted by the Contractor from appropriate authority.

® 7.d.4 The contractor shall provide accurate particulars of PAN number as required, to enable issuance of TDS (Tax Deduction at Source) certificate.

7.e. MATERIALS TO BE SUPPLIED BY CONTRACTOR

7.e.1. The Contractor shall procure and provide the whole of the materials required for construction including tools, tackles, construction plant and equipment for the completion and maintenance of the works except the materials viz. steel and cement which may be agreed to be supplied as provided elsewhere in the contract. The contractor shall make arrangement for procuring such materials and for the transport thereof at their own cost and expenses.

7.e.2. The Owner may give necessary recommendation to the respective authority if so desired by the Contractor but assumes no responsibility of any nature. The Contractor shall procure materials of ISI stamp/certification and supplied by reputed suppliers borne on DGS&D list.

7.e.3. All materials procured should meet the specifications given in the tender document. The Engineer-in-charge may, at his discretion, ask for samples and test certificates for any batch of any materials procured. Before procuring, the Contractor should get the approval of Engineer-in-Charge/Site-in-Charge for any materials to be used for the works.

7.e.4. Manufacturer's certificate shall be submitted for all materials supplied by the Contractor. If, however, in the opinion of the Engineer-in-Charge/Site-in-Charge any tests are required to be conducted on the material supplied by the Contractor, these will be arranged by the Contractor promptly at his own cost.

7.f. MATERIALS TO BE SUPPLIED BY THE OWNER

7 . f . 1 . Steel and Cement maybe supplied by the Owner to the contractor against payment by Contractor from either godown or from the site or within work premises itself and the contractor shall arrange for all transport to actual work site at no extra cost.

7.f.2. The contractor shall bear all the costs including loading and unloading, carting from issue points to work spot storage, unloading, custody and handling and stacking the same and return the surplus steel and cement to the Owner's storage point after completion of job.

7.f.3. The contractor will be fully accountable for the steel and cement received from the Owner and contractor will give acknowledgement/receipt for quantity of steel and cement received by him each time he uplifts cement from Owner's custody.

7.f.4. For all computation purposes, the theoretical cement consumption shall be considered as per CPWD standards.

7.f.5. Steel and Cement as received from the manufacturer/stockists will be issued to the contractor. Theoretical weight of cement in a bag will be considered as 50 Kg. Bags weighing upto 4% less shall be accepted by the contractor and considered as 50 Kg. per bag. Any shortage in the weight of any cement bag by more than 4% will be to the Owner's account only when pointed out by the Contractor and verified by Engineer-in-Charge/Site in Charge at the time of Contract or taking delivery.

7.f.6. The contractor will be required to maintain a stock register for receipt, issuance and consumption of steel and cement at site. Cement will be stored in a warehouse at site. Requirement of cement on any day will be taken out of the warehouse.

Cement issued shall be regulated on the basis of FIRST RECEIPT to go as FIRST ISSUE.

7.f.7. Empty cement bag shall be the property of the Contractor. Contractor shall be penalised for any excess/under consumption of cement. The penal rate will be twice the rate of issue of cement for this work.

7.f.8. All the running bills as well as the final bills will be accompanied by cement consumption statements giving the detailed working of the cement used, cement received and stock-on-hand.

7.f.9. The Contractor will be fully responsible for safe custody of cement once it is received by him and during transport. Owner will not entertain any claims of the contractor for theft, loss or damage to cement while in their custody.

7.f.10. The contractor shall not remove from the site any cement bags at any time.

7.f.11. The Contractor shall advise Engineer-in-charge/Site-in-charge in writing atleast 21 days before exhausting the Cement stocks already held by Contractor to ensure that such delays do not lead to interruptions in the progress of work.

7.f.12. Cement shall not be supplied by the Owner for manufacturing of mosaic tiles, precast cement jali and any other bought out items which consume cement and for temporary works.

7.f.13. Cement in bags and in good usable condition left over after the completion of work shall be returned by the contractor to the Owner. The Owner shall make payment to the Contractor at the supply rate for such stocks of cement they accept and receive. Any refused stock of cement shall be removed by the Contractor from the site at his cost and expenses within 15 days of completion of the work.

8. PAYMENT OF CLAIMS AND DAMAGES

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

8.2. In every case in which by virtue of the provisions of Workmen's Compensation Act, 1923, or other Acts, the Owner is obliged to pay Compensation to a Workman employed by the Contractor in execution of the works, the Owner will recover from the Contractor the amount of compensation so paid and without prejudice to the rights of Owner under the said Act. Owner shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due to the Contractor whether under this contract or otherwise. The

Owner shall not be bound to contest any claim made under Section 12 sub section (1) of the said Act, except on the written request of the Contractor and upon his giving to the Owner full security for all costs for which the owner might become liable in consequence of contesting such claim.

8.a. ACTION AND COMPENSATION IN CASE OF BAD WORK

If it shall appear to the Engineer-in-Charge/Site-in-Charge that any work has been executed with bad, imperfect or unskilled workmanship, or with materials, or that any materials or articles provided by the Contractor for execution of the work are not of standards specified/inferior quality to that contracted for, or otherwise not in accordance with the contract, the CONTRACTOR shall on demand in writing from the Engineer-in-Charge/Site-in-Charge or his authorised 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 the work so specified and at his own charge and cost and expenses and in the event of failure to do so within a period of 15 days of such intimation/information/knowledge, the Contractor shall be liable to pay compensation equivalent to the cost of reconstruction by the Owner. On expiry of 15 days period mentioned above, the Owner may by themselves or otherwise rectify or remove and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expenses in all respects of the Contractor. The decision of the Engineer-in- Charge/ Site-in-Charge as to any question arising under this clause shall be final and conclusive and shall not be raised as a dispute or shall be arbitrable.

8.b. INSPECTION AND AUDIT OF CONTRACT AND WORKS

This project is subject to inspection by various Government agencies of Government of India. The contractor shall extend full cooperation to all the Government and other agencies in the inspection of the works, audit of the Contract and the documents of Contract Bills, measurements sheets etc. etc. and examination of the records of works and make enquiries interrogation as they may deem fit, proper and necessary. Upon inspection etc. by such agencies if it is pointed out that the contract work has not been carried out according to the prescribed terms and conditions as laid down in the tender documents and if any recoveries are recommended, the same shall be recovered from the contractors running bills/final bill/from ordered/suggested Security Deposit/retention money. The Contractor shall not rise any dispute on any such account and the same shall not be arbitrable.

9. CONTRACTOR TO INDEMNIFY THE OWNER

The Contractor shall indemnify the Owner and every member, officer and employee of the Owner, also the Engineer-in-Charge/Site-in-Charge and his staff against all the actions, proceedings, claims, demands, costs, expenses, whatsoever arising out of or in connection with the works and all actions, proceedings, claims,

demands, costs, expenses which may be made against the Owner for or in respect of or arising out of any failure by the Contractor in the performance of his obligations under the contract. The Contractor shall be liable for or 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 sub contractor and Contractor shall indemnify and keep indemnified the Owner against all such damages, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

10. LIQUIDATED DAMAGES

® i) In case of any delay in completion of the work beyond the CDD, the Owner shall be entitled to be paid Liquidated Damages by the Contractor. The liquidated damages shall be initially at the rate of 0.5% (half percent) of the total contract value for every week of the delay subject to a maximum of 5% of the total contract value. The liquidated damages shall be recovered by the Owner out of the amounts payable to the Contractor or from any Bank Guarantees or Deposits furnished by the Contractor or the Retention Money retained from the Bills of the Contractor, either under this contract or any other contract.

ii) The Contractor shall be entitled to give an acceptable unconditional Bank Guarantee in lieu of such a deduction if Contractor desires any decision on a request for time extension.

iii) Once a final decision is taken on the request of the Contractor or otherwise, the LD shall be applicable only on the basic cost of the contract and on each full completed week(s) of delay (and for part of the week, a pro-rata LD amount shall be applicable).

iv) This final calculation of LD shall be only on the value of the unexecuted portion/quantity of work as on the CDD.

v) Contractor agrees with the Owner, that the above represents a genuine pre-estimate of the damages which the Owner will suffer on account of delay in the performance of the work by Contractor. The Contractor further agrees that the LD amount is over and above any right which owner has to risk purchase under Clause 12.4 and any right to get the defects in the work rectified at the cost of the contractor.

11. DEFECTS AFTER TAKING OVER OR TERMINATION OF WORK CONTRACT BY OWNER

The Contractor shall remain responsible and liable to make good all losses or damages that may occur/appear to the work carried out under this Contract within a period of 12 months from date of issue of the Completion Certificate and/or the date of Owner taking over the work, which ever is earlier. The Contractor shall issue a Bank

Guarantee to the Owner in the sum of 10% of the work entrusted in the Contract, from any nationalised Bank acceptable to the Owner and if however, the Contractor fails to furnish such a Bank Guarantee the Owner shall have right to retain the Security Deposit and Retention Money to cover the 10% of the Guarantee amount under this clause and to return/refund the same after the expiry of the period of 12 months without any interest thereon.

12. TERMINATION OF CONTRACT

12.1 The owner may terminate the contract at any stage of the construction for reasons to be recorded in the letter of termination.

12.2 The Owner inter alia may terminate the Contract for any or all of the following reasons that the contractor

- a) has abandoned the work/Contract.
- b) has failed to commence the works, or has without any lawful excuse under these conditions suspended the work for 15 consecutive days.
- c) has failed to remove materials from the site or to pull down and replace the work within 15 days after receiving from the Engineer written notice that the said materials or work were condemned and/or rejected by the Engineer under specified conditions.
- d) has neglected or failed to observe and perform all or any of the terms acts, matters or things under this Contract to be observed and performed by the Contractor.
- e) has to the detriment of good workmanship or in defiance of the Engineer's instructions to the contrary sub-let any part of the Contract.
- f) has acted in any manner to the detrimental interest, reputation, dignity, name or prestige of the Owner.
- g) has stopped attending to work without any prior notice and prior permission for a period of 15 days.
- h) has become untraceable.
- i) has without authority acted in violation of the terms and conditions of this contract and has committed breach of terms of the contract in best judgement of the owner.
- j) has been declared insolvent/bankrupt.
- k) in the event of sudden death of the Contractor.

12.3 The owner on termination of such contract shall have the right to appropriate the Security Deposit, Retention Money and invoke the Bank Guarantee furnished by the contractor and to appropriate the same towards the amounts due and payable by the contractor as per the conditions of Contract and return to the contractor excess money, if any, left over.

® 12.4 In case of Termination of the contract, Owner shall have the right to carry out the unexecuted portion of the work either by themselves or through any other contractor(s) at the risk and cost of the Contractor. In view of paucity of time, Owner shall have the right to place such unexecuted portion of the work on any nominated contractor(s). However, the overall liability of the Contractor shall be restricted to 100 % of the total contract value.

12.5 The contractor within or at the time fixed by the Owner shall depute his authorised representative for taking joint final measurements of the works executed thus far and submit the final bill for the work as per joint final measurement within 15 days of the date of joint final measurement. If the contractor fails to depute their representative for joint measurement, the owner shall take the measurement with their Engineer-in-Charge/Site-in-Charge or any other outside representatives. Such a measurement shall not be questioned by the Contractor and no dispute can be raised by the Contractor for purpose of Arbitration.

12.6 The Owner may enter upon and take possession of the works and all plant, tools, scaffoldings, sheds, machinery, power operated tools and steel, cement and other materials of the Contract at the site or around the site and use or employ the same for completion of the work or employ any other contractor or other person or persons to complete the works. The Contractor shall not in any way object or interrupt or do any act, matter or thing to prevent or hinder such actions, other Contractor or other persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon thereafter the Engineer shall give a notice in writing to the Contractor to remove surplus materials and plant, if any, and belonging to the Contractor except as provided elsewhere in the Contract and should the Contractor fail to do so within a period of 15 days after receipt thereof the Owner may sell the same by public auction and shall give credit to the contractor for the amount realised. The Owner shall thereafter ascertain and certify in writing under his hand what (if anything) shall be due or payable to or by the Owner for the value of the plant and materials so taken possession and the expense or loss which the Owner shall have been put to in procuring the works, to be so completed, and the amount if any, owing to the Contractor and the amount which shall be so certified shall thereupon be paid by the Owner to the Contractor or by the Contractor to the Owner, as the case may, and the Certificate of the Owner shall be final and conclusive between the parties.

12.7 When the contract is terminated by the Owner for all or any of the reasons mentioned above the Contractor shall not have any right to claim compensation on account of such termination.

13. FORCE MAJEURE

13.1. Any delay in or failure of the performance of either part hereto shall not constitute default hereunder or give rise to any claims for damage, if any, to the extent such delays or failure of performance is caused by occurrences such as Acts of God or

an enemy, expropriation or confiscation of facilities by Government authorities, acts of war, rebellion, sabotage or fires, floods, explosions, riots, or strikes. The Contractor shall keep records of the circumstances referred to above and bring these to the notice of the Engineer-in-Charge/Site-in-Charge in writing immediately on such occurrences. The amount of time, if any, lost on any of these counts shall not be counted for the Contract period. One decision of the Owner arrived at after consultation with the Contractor, shall be final and binding. Such a determined period of time be extended by the Owner to enable the Contractor to complete the job within such extended period of time.

13.2. If Contractor is prevented or delayed from the performing any of its obligations under this Agreement by Force Majeure, then Contractor shall notify Owner he circumstances constituting the Force Majeure and the obligations performance of which is thereby delayed or prevented, within seven days of the occurrence of the events.

14. ARBITRATION

14.1 All disputes and differences of whatsoever nature, whether existing or which shall at any time arise between the parties hereto touching or concerning the agreement, meaning, operation or effect thereof or to the rights and liabilities of the parties or arising out of or in relation thereto whether during or after completion of the contract or whether before after determination, foreclosure, termination or breach of the agreement (other than those in respect of which the decision of any person is, by the contract, expressed to be final and binding) shall, after written notice by either party to the agreement to the other of them and to the Appointing Authority hereinafter mentioned, be referred for adjudication to the Sole Arbitrator to be appointed as hereinafter provided.

®14.2 The appointing authority shall either himself act as the Sole Arbitrator or nominate some officer/retired officer of Hindustan Petroleum Corporation Limited (referred to as owner or HPCL) or a retired officer of any other Government Company in the Oil Sector of the rank of Ch. Manager & above or any retired officer of the Central Government not below the rank of a Director, to act as the Sole Arbitrator to adjudicate the disputes and differences between the parties. The contractor/vendor shall not be entitled to raise any objection to the appointment of such person as the Sole Arbitrator on the ground that the said person is/was an officer and/or shareholder of the owner, another Govt. Company or the Central Government or that he/she has to deal or had dealt with the matter to which the contract relates or that in the course of his/her duties, he/she has/had expressed views on all or any of the matters in dispute or difference.

14.3 In the event of the Arbitrator to whom the matter is referred to, does not accept the appointment, or is unable or unwilling to act or resigns or vacates his office for any reasons whatsoever, the Appointing Authority aforesaid, shall nominate another person as aforesaid, to act as the Sole Arbitrator.

14.4 Such another person nominated as the Sole Arbitrator shall be entitled to proceed with the arbitration from the stage at which it was left by his predecessor. It is expressly agreed between the parties that no person other than the Appointing Authority or a person nominated by the Appointing Authority as aforesaid, shall act as an Arbitrator. The failure on the part of the Appointing Authority to make an appointment on time shall only give rise to a right to a Contractor to get such an appointment made and not to have any other person appointed as the Sole Arbitrator.

14.5 The Award of the Sole Arbitrator shall be final and binding on the parties to the Agreement.

14.6 The work under the Contract shall, however, continue during the Arbitration proceedings and no payment due or payable to the concerned party shall be withheld (except to the extent disputed) on account of initiation, commencement or pendency of such proceedings.

14.7 The Arbitrator may give a composite or separate Award(s) in respect of each dispute or difference referred to him and may also make interim award(s) if necessary.

①4.8 The fees of the Arbitrator and expenses of arbitration, if any, shall be borne equally by the parties unless the Sole Arbitrator otherwise directs in his award with reasons. **The lumpsum fees of the Arbitrator shall be Rs. 40,000/- per case for transportation contracts and Rs. 60,000/- for engineering contracts and if the sole Arbitrator completes the arbitration including his award within 5 months of accepting his appointment, he shall be paid Rs. 10,000/- additionally as bonus. Reasonable actual expenses for stenographer, etc. will be reimbursed. Fees shall be paid stagewise i.e. 25% on acceptance, 25% on completion of pleadings/documentation, 25% on completion of arguments and balance on receipt of award by the parties**

14.9 Subject to the aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made thereunder, shall apply to the Arbitration proceedings under this Clause.

14.10 The Contract shall be governed by and constructed according to the laws in force in India. The parties hereby submit to the exclusive jurisdiction of the Courts situated at _____ (say Mumbai*) for all purposes. The Arbitration shall be held at _____ (say Mumbai*) and conducted in English language.

14.11 The Appointing Authority is the Functional Director of Hindustan Petroleum Corporation Limited.

(Note:- * = While printing the GTCs, each Purchasing Authorities at various location, may mention the correct place before printing the GTC and not leave Clause 14.10 blank

or as stated above. Bracketed portion is to be removed.

15. GENERAL

15.1. Materials required for the works whether brought by the or supplied by the Owner shall be stored by the contractor only at places approved by Engineer-in-Charge/Site-in-Charge. Storage and safe custody of the material shall be the responsibility of the Contractor.

15.2. Owner and/or Engineer-in-Charge/Site-in-Charge connected with the contract, shall be entitled at any time to inspect and examine any materials intended to be used in or on the works, either on the site or at factory or workshop or at other place(s) manufactured or at any places where these are laying or from which these are being obtained and the contractor shall give facilities as may be required for such inspection and examination.

15.3. In case of any class of work for which there is no such specification supplied by the owner as is mentioned in the tender documents, such work shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same the work should be carried out as per standard Engineering practice subject to the approval of the Engineer-in-Charge/Site-in-Charge.

15.4. Should the work be suspended by reason of rain, strike, lockouts or other cause the contractor shall take all precautions necessary for the protection of the work and at his own expense shall make good any damages arising from any of these causes.

15.5 The contractor shall cover up and protect from injury from any cause all new work also for supplying all temporary doors, protection to windows and any other requisite protection for the whole of the works executed whether by himself or special tradesmen or sub- contractors and any damage caused must be made good by the contractors at his own expense.

15.6 If the contractor has quoted the items under the deemed exports, then it will be the responsibility of the contractor to get all the benefits under deemed exports from the Government. The Owner's responsibility shall only be limited to the issuance of required certificates. The quotation will be unconditional and phrases like "subject to availability of deemed exports benefit" etc. will not find place in it.

®16. Integrity Pact : Effective 1st September, 2007, all tenders and contracts shall comply with the requirements of the Integrity Pact (IP) if the value of such tenders or contracts exceed Rs.1 crore. Failure to sign the Integrity Pact shall lead to outright rejection of bid.

17. Grievances of parties participating or intend to participate in the tender shall be addressed in writing to the officer designate of the Grievance Redressal Cell where the tenders have to be submitted within the stipulated period. Detailed mechanism of Grievance Redressal is available on the HPCL website.

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