



ISG-BANGALORE

Enquiry Specification For  
Plant Telephone System Including  
Cables and Accessories

Specification no


Raw Material Handling System for 3  
MTPA Integrated Steel Plant at  
Nagarnar, Chhattisgarh.

IS-1-11-2008/038


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**SECTION - I**

**1.0 GENERAL PROJECT INFORMATION:**

National Mineral Development Corporation (NMDC) is setting up a Green field integrated steel plant in Nagarnar, Chhattisgarh, with a production capacity of 3.0 MTPA.

For the integrated steel plant all Raw material required for the blast Furnace, Sinter Plant, Coke ovens, lime stone/Dolomite Calcinations plant as well as interplant transportation of finished sinter, Coke, fines generated in coke ovens and Blast furnaces, Granulated slag Transportation etc. shall be covered in the Raw Material Handling System (RMHS). BHEL is the EPC contractor for the RMHS Package and M/s NMDC has appointed M/S MECON as the owner's Engineer (Consultant) for the project.

**1.1 Site Conditions**

In absence of Meteorological details of Nagarnar, data of nearest Meteorological Station Jagadapur are given below:

latitude /Longitude	29°05' Latitude, 82°10' Longitude.
Average altitude of the land	553.0 m above MSL
Absolute maximum avg. Temperature	46.1° C
Absolute minimum avg. Temperature	2.8° C
<b>Design Ambient Temperature</b>	<b>50° C</b>
Maximum Relative Humidity	87 %
Minimum Relative Humidity	27 %
<b>Design Relative Humidity</b>	<b>80 %</b>
Mean Wind speed	10 Kmph
<b>Design wind Speed</b>	<b>50 m/s</b>
Maximum Rainfall	259.7mm in 24 hrs
Ambient Air Quality	Residential

**Note:** Temperature inside shop premises is generally taken as 5°C above ambient, unless otherwise specified.

## 1.2 Power Supply Characteristics

<b>Parameter</b>	<b>HT</b>
Power Supply	<b>6.6 K.V, 3phase, 50 Hz, 3 wire</b>
Voltage variations	<b>+ 6% - 9%</b>
<i>Frequency variation</i>	<b>+ 3% - 6%</b>
System neutral	<b>Resistance grounded</b>
System short circuit level	<b>40 kA rms. for 3 second</b>
<b>Parameter</b>	<b>LT</b>
Power Supply	415V, 3phase, 50 Hz, 4 wire
Voltage variations	+ 10% - 10%
Frequency variation	+ 3% - 6%
System neutral	solidly grounded
System short circuit level	50 kA rms. at 415V for 1 second



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**SECTION- II**

**Applicable Standards**

The design, manufacture, assembly and testing as well as performance (including safety, earthing and other essential provisions) of equipment and accessories covered under this specification shall, in general, comply with the latest issue of:

- Latest applicable Standards and Codes of Practices published by Indian Standards Institution (BIS).
- Latest IPSS (Interplant Standards for Steel Industry)
- Latest Indian Electricity Rules & statutory requirements of Central Govt. and State Govt.
  
- Indian DOT/TEC standards

In case, the tenderer is not in a position to comply fully with certain IS/IPSS specifications or in respect of certain items for which there are no IS/IPSS specifications, the tenderer may base his proposals on IEC recommendations or other reputed national or international standards subject to the approval of the Purchaser. The components and materials used and the equipment supplied shall conform to high standards of design, engineering and workmanship and shall be suitable for efficient operation and reliable service in steel plant conditions. All equipments supplied and all work done including system design and detailed engineering shall also comply with the statutory requirements of Govt. of India and the respective governments of state in which the plant is situated . The installation shall also confirm to Indian Electricity Act and Indian Electricity Rules.



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**SECTION – III**

**SCOPE OF SUPPLY AND SERVICES**

<b>SCOPE OF SUPPLY</b>		
Sl No.	Description	
1	Supply of telephone cabling system from Customer's EPABx up to telephone set instrument (EPABx & telephone sets are not in bidder's scope)	1 lot
2	All the cable trays, erection hardware & consumables	1 lot
3	Commissioning spares	1 lot
<b>SCOPE OF SERVICES</b>		
1	The scope of services at site will include erection, testing, commissioning, PG test, PAT/FAT and liquidating the defects and handing over of Plant telephone cabling system in ready to switch on condition on TURN KEY basis.	1 lot

**General Notes:**

1	Any item required for the completeness of the system but not mentioned explicitly shall be included in the offer.
2	Technical deviations if any shall be brought out clearly by the Vendor in the deviation sheet provided otherwise it will be presumed that the bids are in line with the technical specifications
3	The makes of components shall be strictly as per enclosed MECON approved list .Prior MECON/BHEL approval of vendor is required for procurement of any item not in this list
4	Addition of 10% telephone set locations shall be provided at no extra cost during detailed engineering irrespective of location of telephone sets.
5	The scope of work of the bidder shall start from subscriber's side of Main Distribution Frame(MDF)of Small Auto Telephone Exchange(SAX) to the telephone hand set inside the shop premises including jumpering of cables.
6	The bidder shall work in co-ordination with the centralized package tenderer. However the Telephone exchange(SAX) & telephone handset shall be provided by the inter plant package contractor



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7	<p>Regarding sl.no.2 scope of supply ,please note that it shall include Junction boxes, distribution boards ,brackets glands, conduits, lugs, conduit sleeves, earthing material , nut-bolts, washers , screws brackets, supports, hangers, saddles, cleats, clamps etc., as required to complete the proper installation are also included in Bidder's scope.</p> <p>Please note that Bidder can use the BHEL cable bridge arrangement for laying the cables. However where BHEL cable bridge /cable tray along conveyors are not available, vendor to make own arrangement</p>
8	<p>Regarding scope of services please note that it shall include:</p>
a	<p>The scope of services will include complete design, engineering, submission of drawings for approval, manufacture/procurement, factory testing, arranging inspection by BHEL/MECON/NMDC/their representative, packing, loading, forwarding, delivery at Plant site.</p>
b	<p>Preparation of cable schedules and routing diagram of all cables involved in the system .</p>
c	<p>Erection, installation, laying of cables/trays, testing, and commissioning of <b>PLANT TELEPHONE CABLES &amp; ACCESSORIES.</b></p>
d	<p>Earthing of equipment to BHEL earth grid</p>
e	<p>Digging of trenches, if necessary</p> <p>The cables laid directly buried underground, the telephone cables shall be laid by excavating trench in normal soil up to a depth of 1mtr unless otherwise specified, providing 75 mm of sand or riddle earth both above and below cable, providing precast concrete slab on top and bricks on sides for cable protection against damage and back filling. The precast concrete slabs on top as specified above shall be marked "Telephone Cable". Route marker to be provided on top of the ground.</p>
f	<p>Arranging for necessary tools &amp; tackles for testing individual point connectivity</p>



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**SECTION-IV**

**TECHNICAL SPECIFICATION**

**Design Consideration**

The scope of work starts from EPABx located as indicated in Plot plan.

The integrated cable network for the shop shall be designed by the bidder keeping 50% spare cable pairs and will terminate all cables in a cabinet /Distribution box(D.B. ). From this cabinet / D.B the bidder shall bring the cables to subscriber side of Main Distribution Frame (M.D.F) of the Small Auto Telephone Exchange (SAX) for the concerned shop including jumpering of cables in the M.D.F.

The EPABx is located in Building Area Shop Office (refer Plot plan).The telephone locations are planned as in Section-IV & these locations are marked in Plot Plan

The scope includes supply of Telephone cables ,Junction boxes ,conduits , flexible conduits ,PVC pipes & accessories, Telephone connection box, termination junction box, Telephone distribution boxes of different sizes, Erection accessories etc.,

EPABx & Telephone sets not in vendor's scope

Main/Sub-distribution frame, Junction box shall be reputed make & approval from MECON will be required

The scope shall broadly cover the above items and shall also include such items and accessories not mentioned here but required for satisfactory operation of the telephone cabling system

Essential commissioning spares to be considered in bidder's scope which shall be vetted & approved by customer during detailed engineering

**Telecommunication cables**

All cables shall have copper conductor. Each conductor shall consist of 0.51 m.m dia. & 0.63 m.m dia .solid wire of annealed high conductivity copper, twisted in pairs, fully filled with petroleum jelly. The cables shall conform to the latest edition of the standard specification.

I.T.D spec. No. S/WT – 143B for Petroleum Jelly Filled armored telephone cables.

I.T.D spec. No. S/WS – 113C for PVC insulated, PVC sheathed telephone cables.

i) Telephone cable of polythene insulated fully filled with petroleum jelly, polythene sheathed Poly-Al. Moisture barrier with another polyethylene sheath, armored with two numbers of galvanized steel-tape over abedding of water proof cotton tape complying with P&T specification ITD, S/WS-129D, ITD, S/WT-143B.

ii) Telephone cable 0.51m.m dia annealed Copper conductor PVC insulated, screened, PVC sheathed, unarmored & overall PVC jacked.

Telephone distribution Box of different size to be considered.

All erection accessories in bidder's scope.

**Location of Telephone sets**

Sl No.	LOCATION in RMHS Area	Identified Room in Building	No: of telephones for which cabling is planned
1	Dispatcher-1	MCC Room	3
		PCC Room	3
		Dispatcher control room	2
		Electrical shift office room	1
		Engineering station	1
2	Dispatcher-2	MCC Room	3
		PCC Room	2
		Dispatcher control room	2
		Electrical shift office room	1
		Engineering station	1
3	Dispatcher-3	HT MCC & PCC Room	4



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SI No.	LOCATION in RMHS Area	Identified Room in Building	No: of telephones for which cabling is planned
		MCC Room	4
		Conference room	1
		Dispatcher control room	2
		Engineering station	1
4	Dispatcher-4	MCC Room	3
		PCC Room	3
		Dispatcher control room	2
		Electrical shift office room	1
		Engineering station	1
5	Dispatcher-5	MCC Room	3
		PCC Room	3
		Dispatcher control room	2
		Electrical shift office room	1
		Engineering station	1
6	Dispatcher-6	MCC Room	3
		PCC Room	3



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Sl No.	LOCATION in RMHS Area	Identified Room in Building	No: of telephones for which cabling is planned
		Dispatcher control room	2
		Electrical shift office room	1
7	ECR-1	PCC & CMCC Room	3
		IMCC Room	3
8	ECR-2	MCC Room	3
		PCC Room	3
9	HT-SS-RM		4
10	HT-SS-LD		4
11	HT-SS-CH		4
12	Wagon Tippler Complex		8
13	Worker's Rest room at 4 locations -1 each		4
14	Area Repair Shop at 2 locations-1 each		2
15	Electrical repair shop		1
16	Mechanical Repair Shop		1
17	Sub Store at 3 locations-1 each		3



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SI No.	LOCATION in RMHS Area	Identified Room in Building	No: of telephones for which cabling is planned
18	DS Pump House at 3 locations-1 each		3
		<b>Total</b>	<b>106</b>



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**SECTION-V**

**INSPECTION & TESTING**

- 5.1 The Inspection for equipment under scope shall be done in general as per approved QAP. Please note that the QAP will be finalized during detailed engineering only and shall be approved by MECON & NMDC.
- 5.2 Test of all equipment shall be conducted as per latest ISS/ IPSS/CCIR standards applicable and approved QAP. Tests shall also confirm to International Standards IEC/VDE/DIN/BS (in case corresponding test are not mentioned in ISS/ IPSS).
- 5.3 All routine tests shall be carried out at manufacturer's works in the presence of purchaser or his representative. Inspection call shall be given at least 3 weeks in advance with all test reports. Supplier shall carryout/demonstrate various routine tests and any other test specified by Customer at suppliers works at no extra cost.
- 5.4 All reports / certificates shall bear company seal and signature of supplier / manufacturer.
- 5.5 Where ever type test certificates are required the vendor shall submit type test certificates for similar equipment supplied by him elsewhere. In case type test certificates for similar equipment are not available, the same shall be conducted in the presence of purchaser or his representative if purchaser so desires, without any financial implications to the purchaser and submitted Type test certificates should not be older than 5 years.
- 5.6 Supplier shall produce during inspection:
- Raw material inspection certificate.
  - Internal Test reports (Type test certificate shall be produced for exactly the same rating/specifications)
  - Statutory certificates as required.
- 5.7 All Inspection & Testing shall be carried out based on the following documents:-
- Relevant Standards
  - Specifications
  - Approved Drawings.
  - Data sheets.
  - Approved BOM
  - Calibration Certificate of all the measuring instruments



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g. Approved QAP

- 5.8 All the equipment shall be tested at site to know its condition and to prove suitability for required performance. The supplier/vendor shall be responsible for satisfactory working of the complete system in an integrated manner and its guaranteed performance

**IMPORTANT:** The vendor shall maintain and ensure necessary safety measures as required for inspection and tests if any test equipment is found not complying with proper safety requirements, then the inspection agency may withhold inspection till such time the desired safety requirements are met.



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**SECTION-VI  
Documentation**

Sl. No	DESCRIPTION	No. Of Copy	Status	Time sched. (from LOI)
1	Datasheet ,BOM with make & Model of all items in scope of supply enclosing Technical literature / Catalog Type test certificates where ever applicable to be provided	14	Approval	Within 10 days from LOI
2	QAP for telephone system	14	Approval	Within 10 days from LOI
3	FQP for telephone system	14	Approval	Within 10 days from LOI
4	Commissioning spares list.	14	Approval	Within 10 days from LOI
5	GA drawings , Mounting details, Wiring diagram/interconnecting arrangement details	14	Approval	Within 10 days from LOI
6	Cable list & routing diagram	14	Information	Within 1 month from LOI
7	Termination Diagram	14	Information	Within 1 month from LOI
8	Type test and Routine Test Certificate	8	Information	Along with inspection call
9	Storage/ erection / Operation and Maintenance manuals with all catalogues and leaflets	8	Information	Before 15 days of dispatch
10	Reproducible tracing films for all drawings	8	Information	Within 15 days from dispatch
11	As built drawings in neatly bound volumes	8	Information	Within 15 days from dispatch
12	CD ROM for all drawings in Auto CAD	4	Information	Within 15 days from dispatch
13	List of 2 years maintenance spares	4	Information	Within 10 days from LOI

**Notes:**

1. All drawings, documents and catalogues shall be available in soft copy.
2. Manually prepared drawings are not acceptable
3. Soft copy in CD-ROM and reproducible tracings of all drawings / documents shall be submitted along with final / as-built submission
4. For all technical tables, diagrams, calculations, results, drawings, test

data and scales adopted in the design the standard international unit system (SI) as per International Standardization Organization (ISO) shall be uniformly employed.

5. All engineering documents and drawings shall be of international A series size, ie., of A0, A1, A2, A3 and A4.
6. The drawings are to be submitted to customer for approval should be in BHEL format. If the drawings are approved with comments, then the same shall be resubmitted within 3-4 days after incorporating the comments. This will not be treated as final submission.
7. Test certificates shall be strictly in A4 size and invariably consists of details such as Name Plate Data, Project and Customer's name.
8. When a drawing is revised, a record of revisions shall be indicated at the left hand bottom corner of the drawing.
9. Designed/ Drawn/Checked/Approved columns the drawings should be signed. The test certificates should be signed by competent authority.
10. Erection drawings shall show all details and particulars in sequence required for erection and installation.
11. Erection instructions shall be complete with necessary instructions for checking and recording proper assembly equipments.
12. O&M Manual shall contain the following:
  - Details on preventive / repair maintenance for equipments and accessories used.
  - Details about the general specifications, design capacities of the equipments, their functions.
  - Required dismantling devices, tools etc.
  - Proper procedure & sequence of operation
- a. All manuals shall be supplied in folders, preferably in A4 size. The volume number and section number of the O&M Manual shall be intimated to the supplier later.
13. The complete documentation in volumes submitted by the supplier at the end of the order as per required number of copies.
14. Approval drawings shall not relieve the supplier of his responsibility in terms of the contract.



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**SECTION-VII**

**INFORMATION TO BE FURNISHED ALONG WITH THE OFFER**

<b>Slno</b>	<b>Description</b>
1	Please mark point wise confirmation for each clause for all sections in a copy of this enquiry specification which also includes the annexures .Deviations major/minor shall be clearly brought out with clause number in the deviation sheet. If no deviations are brought out for technical issues in the deviation sheet ,it is assumed that all clauses are acceptable
2	Please mention quoted against each item in the price format and provide for technical scrutiny (Please DO NOT mention any price in this format).
3	Only approved makes to be used .If a specific item is not listed in the approved makes list , prior approval is to be taken for use of make from MECON
4	One set of the following for reference: 01. Technical write-up 02. Technical literature / Catalog of major component 03 Bill of Material with make & Model 04. Filled up QAP However please note that the details will be finalized only during detail engineering & these drawings are only for reference.

	CONTRACTOR	BHEL, ISG, BANGALORE	QUALITY ASSURANCE PLAN  FOR Plant Telephone system	PROJECT	NMDC RMHS FOR 3.0MTPA STEEL PLANT
	ORDER NO. & DATE	HO(CONTRACTS)/NISP/RMHS/7657 dtd 01.08.2011		PACKAGE NO.	PACKAGE 1
				PACKAGE NAME	RMHS

<p>INSTRUCTIONS FOR FILLING UP :</p> <p>1 QAP shall be submitted for each of the equipment separately with break up of assembly / sub-assembly &amp; part/component or for group of equipment having same specification.</p> <p>2 Use numerical codes as indicated for extent of inspection &amp; tests and submission of test certificates &amp; documents. Additional codes &amp; description for extent of inspection &amp; tests may be added as applicable for the plant and equipment.</p> <p>3 Separate identification number with quantity for equipment shall be indicated wherever equipment having same specification belonging to different facilities are grouped together.</p> <p>4 Weight in tonnes (T) must be indicated under column 5 for each item. Estimated weights may be indicated wherever actual weights are not available.</p>	<p>CODES FOR EXTENT OF INSPECTION, TESTS, TEST CERTIFICATES &amp; DOCUMENTS :</p> <table border="0"> <tr> <td style="width: 50%;"> <p>Code Description</p> <p>1. Visual</p> <p>2. Dimensional</p> <p>3. Fitment &amp; Alignment</p> <p>4. Physical Test(Sample)</p> <p>5. Chemical Test (Sample)</p> <p>6. Ultrasonic Test</p> <p>7. Magnetic Particle Test(MPT)</p> <p>8. Radiography test</p> <p>9. Dye Penetration Test</p> <p>10. Measurement of IR Value :</p> <p style="margin-left: 20px;">a) Before HV Test</p> <p style="margin-left: 20px;">b) After HV Test</p> <p>11. High voltage test/Dielectric test.</p> <p>12. Routine test as per relevant IS/other standard.</p> <p>13. Type tests as per relevant IS/ other standard.</p> </td> <td style="width: 50%;"> <p>Code Description</p> <p>14. Impulse Test.</p> <p>15. Partial Discharge Test.</p> <p>16. Heat run test/Temp. rise test.</p> <p>17. Enclosure protection Test.</p> <p>18. Calibration.</p> <p>19. Noise &amp; Vibration.</p> <p>20. Test Certificates for bought out components.</p> <p>21. Tank pressure test.</p> <p>22. Paint shade verification.</p> <p>23. Short time rating.</p> <p>24. Operation &amp; functional check.</p> <p>25. Overspeed Test.</p> <p>26. Flame proof test</p> <p>27. Clearance and creepage distance.</p> <p>28. Acceptance Test</p> <p>29. FR/FRLS as per available standards</p> <p>30. Galvanising test</p> </td> </tr> </table> <p>DOCUMENTS :</p> <p>31 ROD review of documents</p> <p>32 Ferruling/Earthing check</p> <p>33 Interchangeability</p> <p>34 BOM check</p> <p>35 Continuity test</p> <p>36 Dynamic balancing of rotor</p> <p>37 PI Value of Measurement</p> <p>38 Coil balance test</p> <p>D1. Approved GA drawings</p> <p>D2. Approved single line / schematic diagram.</p> <p>D3. Catalogues / Approved data sheet.</p> <p>D4. Approved bill of materials.</p> <p>D5. Unpriced P.O.copy.</p> <p>D6. Calibration Certificate of all measuring instruments and gauges.</p> <p>D7. Manufacturers drawings</p> <p>D8.Schedule with size and quantity</p> <p>D9.Internal inspection report</p> <p>D10.Ascillographic test records for breakers and contactors</p>	<p>Code Description</p> <p>1. Visual</p> <p>2. Dimensional</p> <p>3. Fitment &amp; Alignment</p> <p>4. Physical Test(Sample)</p> <p>5. Chemical Test (Sample)</p> <p>6. Ultrasonic Test</p> <p>7. Magnetic Particle Test(MPT)</p> <p>8. Radiography test</p> <p>9. Dye Penetration Test</p> <p>10. Measurement of IR Value :</p> <p style="margin-left: 20px;">a) Before HV Test</p> <p style="margin-left: 20px;">b) After HV Test</p> <p>11. High voltage test/Dielectric test.</p> <p>12. Routine test as per relevant IS/other standard.</p> <p>13. Type tests as per relevant IS/ other standard.</p>	<p>Code Description</p> <p>14. Impulse Test.</p> <p>15. Partial Discharge Test.</p> <p>16. Heat run test/Temp. rise test.</p> <p>17. Enclosure protection Test.</p> <p>18. Calibration.</p> <p>19. Noise &amp; Vibration.</p> <p>20. Test Certificates for bought out components.</p> <p>21. Tank pressure test.</p> <p>22. Paint shade verification.</p> <p>23. Short time rating.</p> <p>24. Operation &amp; functional check.</p> <p>25. Overspeed Test.</p> <p>26. Flame proof test</p> <p>27. Clearance and creepage distance.</p> <p>28. Acceptance Test</p> <p>29. FR/FRLS as per available standards</p> <p>30. Galvanising test</p>
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ABBREVIATIONS USED :

**CONTR: CONTRACTOR W: WITNESS R: REVIEW**

**MFR: MANUFACTURER RSI: RANDOM SAMPLE INSPECTION I/TYPE/SIZE/LOT**

**AIA: APPROVED INSPECTION AGENCY CHP: CUSTOMER HOLD POINT**

EQUIPMENT DETAILS						INSPECTION AND TESTS										Test Certificates & documents to be submitted to MECON	Acceptance Criteria Standards/IS/BS/ ASME/Norms and Documents	REMARKS/ SAMPLING PLAN	
Sl. No.	Description (with equipment heading,place of use and brief specification)	Identification/ Billing schedule No.	Quantity		Manufacturer's Name and Address	Expected Schedule of Final Inspn	Raw Material and Inprocess stage Inspection				Final Inspection / Test by								
			No / M	T			MFR	VENDOR	BHEL	MECON/NMDC	MFR	VENDOR	BHEL	MECON/NMDC					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
1					NMDC Approved Vendor	To Match the Target													
2																			
3																			
4																			
5																			
6																			
7																			
8																			

For Manufacturer (Stamp & Signature)	<b>PROJECT DOC/DRG NO:</b> <b>MECON QAP No.:</b> <b>SHEET : 1 of 1</b>	<b>REV.</b>
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**ANNEXURE-III**  
**APPROVED MAKES OF COMPONENTS**

<b>B. LV EQUIPMENT</b>		
<b>S.N.</b>	<b>ITEM DESCRIPTION</b>	<b>PREFERRED MAKES</b>
1	LT POWER CABLES (PVC / XLPE)	UNIVERSAL/ RPG CABLES (ASIAN)/ POLYCAB/ FINOLEX/ TORRENT/ HAVELLS/ KEI/ SPECIAL CABLES/ TCL / SPECIAL CABLES/ RALLISON/ PARAMOUNT/ CORDS/ LAPP/ CHANDRESH / RAVIN
2	PVC CONTROL CABLES	LAPP/ UNIVERSAL/ RPG CABLES (ASIAN)/ POLYCAB/ FINOLEX/ TOSHNIWAL/ DELTON/ KEI/ SPECIAL CABLES/ TCL SPECIAL CABLES/ RALLISON/ PARAMOUNT/ CORDS/ HAVELLS/ RAVIN
3	HEAT RESISTANT CABLES (EPR / CSP & SR)	LAPP/ UNIVERSAL/ RPG CABLES (ASIAN)/ FINOLEX/ TOSHNIWAL/ DELTON/ TORRENT/ SPECIAL CABLES
4	TRAILING CABLES	LAPP/ UNIVERSAL/ ASIAN
5	LIGHTING WIRE (PVC) FRLS	DELTON/ FINOLEX/ UNIVERSAL/ HAVELLS/ INCAB/ KEI/ GEMSCAB/ PARAMOUNT/ POLYCAB
6	OPTICAL FIBRE CABLE	MOLEX / LUCENT / FINOLEX / ERICSON / STERLITE / HFCL / OPTEL
7	CABLE GLANDS	LAPP/ HANSEL/ PHOENIX/ COMET/ PRECISSIONQUALITY/ SUNIL & CO./ ELECTROMAC
8	UPS	EMERSON/DB-ELECTRONICS/ NUMERIC/ GE/ LIFELINE/ FUJI/ HI-REL
9	MOULDED CASE CIRCUIT BREAKER (MCCB)	SCHNEIDER (MG)/ L&T/ ABB/ SIEMENS/ GE POWER CONTROL / BCH
10	MOTOR PROTECTION CIRCUIT BREAKERS. (MPCB)	SCHNEIDER/ L&T/ ABB/ SIEMENS/ GE POWER CONTROL
11	MINIATURE CIRCUIT BREAKER. (MCB)	SIEMENS/ L&T/ GE POWER CONTROL/ SCHNEIDER (PROTEC / MG)/ STANDARD/ INDOASIAN/ HAVELLS/ MDS (LEGRAND)/ ABB
12	MINIATURE CIRCUIT BREAKER. (MCB)	SIEMENS/ L&T/ GE POWER CONTROL/ SCHNEIDER (PROTEC / MG)/ STANDARD/ INDOASIAN/ HAVELLS/ MDS (LEGRAND)/ ABB
13	HRC FUSE FOR LT APPLICATION	GE POWERCONTROL/ L&T/ SIEMENS/ INDO ASIAN/ HAVELLS/ STANDARD/ BUSSMAN/ CONTROL & SWITCH GEAR/ ABB/ AREVA
14	POWER CONTACTOR / AUX. CONTACTORS	ABB/ SIEMENS/ SCHNEIDER (TELEMECANIQUE)/ L&T/ GE POWER CONTROL/ CONTROL & SWITCHGEAR/ BCH

15	ELECTRONIC OVER LOAD RELAYS	SIEMENS/ L&T/ BCH/ SCHNEIDER-SAMWHA/ LG
16	THERMAL (BIMETALLIC) OVER LOAD RELAYS	BCH/ L&T/ SEIMENS/ SCHNEIDER(TELEMECANIQUE)/ ROCKWELL AUTOMATION/ ABB/ CONTROL & SWITCHGEAR/ GE POWER CONTROL
17	MOTOR PROTECTION RELAY (NUMERICAL TYPE)	L&T/ SEIMENS/ SCHNEIDER(TELEMECANIQUE)/ ABB / AREVA/EASUN/REROYLLE
18	MASTER CONTROLLER (STEP CONTROL TYPE)	EPCC/ INDUSTRIAL SYNDICATE/ STROM KRAFT/ SCHNEIDER (SQUARE D)/ SCHNEIDER (TELEMECANIQUE)/ ELECTROMAG/ SPEED O CONTROL
19	RESISTANCE BOXES (FECHRAL EDGE WOUND)	EPCC/ ELECTROMAG/ BCH
20	DIGITAL TYPE MULTI-FUNCTION METER	CONSERVE/ L&T/ SECURE/ RISHABH/ SIEMENS/ ABB
21	MIMIC PANELS & ANNUNCIATION	L&T/ ADVANI OERLIKON/ GE POWER CONTROL/ BHEL/ BCH/ TRANSRECT/ MINLEC/ TIRUPATI ELECTRONICS/ ADVANCE POWER CONTROL/ CONTROL DEVICES
22	CURRENT TRANSFORMER ( LV )	ABB/ JAYSHREE/ INTRAVIDHYUT/ INDCOIL/ PRAGATI/ PRECISE/ KAPPA/
23	INDICATING LAMPS	BINAY/ SIEMENS/ L&T/ VAISHNO/TECNIC/OSRAM/ AREVA/ ESBEE/ ESSEN/ BCH/ TELEMECANIQUE/
24	PUSH BUTTONS	SALZER/ TECNIC/ BCH/ L&T/ SCHNEIDER/ SIEMENS/ GE POWERSVAISHNO/ CONTROL DEVICES/ ESSEN/ CONTROL & SWITCHGEAR
25	TERMINAL BLOCKS	EPCC/ CONNECT WELL/ ELMEX/ PHOENIX CONTACT/ ESSEN DEINKI/ WAGO/ LAPP/ S&S/ HANSEL
26	SELECTOR SWITCHES & CONTROL	ABB/ GE POWER CONTROL/ BCH/ EPCC/ KAYCEE/ SIEMENS/ TEKNIK/ L&T/ CONTROL & SWITCHGEAR/ AREVA/ VAISHNO/ JYOTI/ SALZER
27	INDICATING INSTRUMENTS	IMP/AE/MECO/L&T/MOTWANI/CONZERVE/RISHABH INSTRUMENTS/SECURE METERS/ABB/SIEMENS/EMERSEN/RAIL/THOSHNIWAL INDIA/ENERCON/AREVA/KAPPA
28	CONVENTIONAL NON DRAW OUT TYPE MCC / POWER DISTRIBUTION BOARDS (PDB) / ROLL TABLE DISTRIBUTION BOARDS	VENUS/ ANDREW YULE/ BCH/ SCHNEIDER ELECTRIC/ HAVELLS/ STANDARD/ TRICOLITE/ ADVANCE POWER CONTROL/ HINDUSTAN CONTROL/ CONTROL & SWITCHGEAR/ L & T/ SIEMENS/ GE POWER CONTROL/ ABB/ SWITCHING

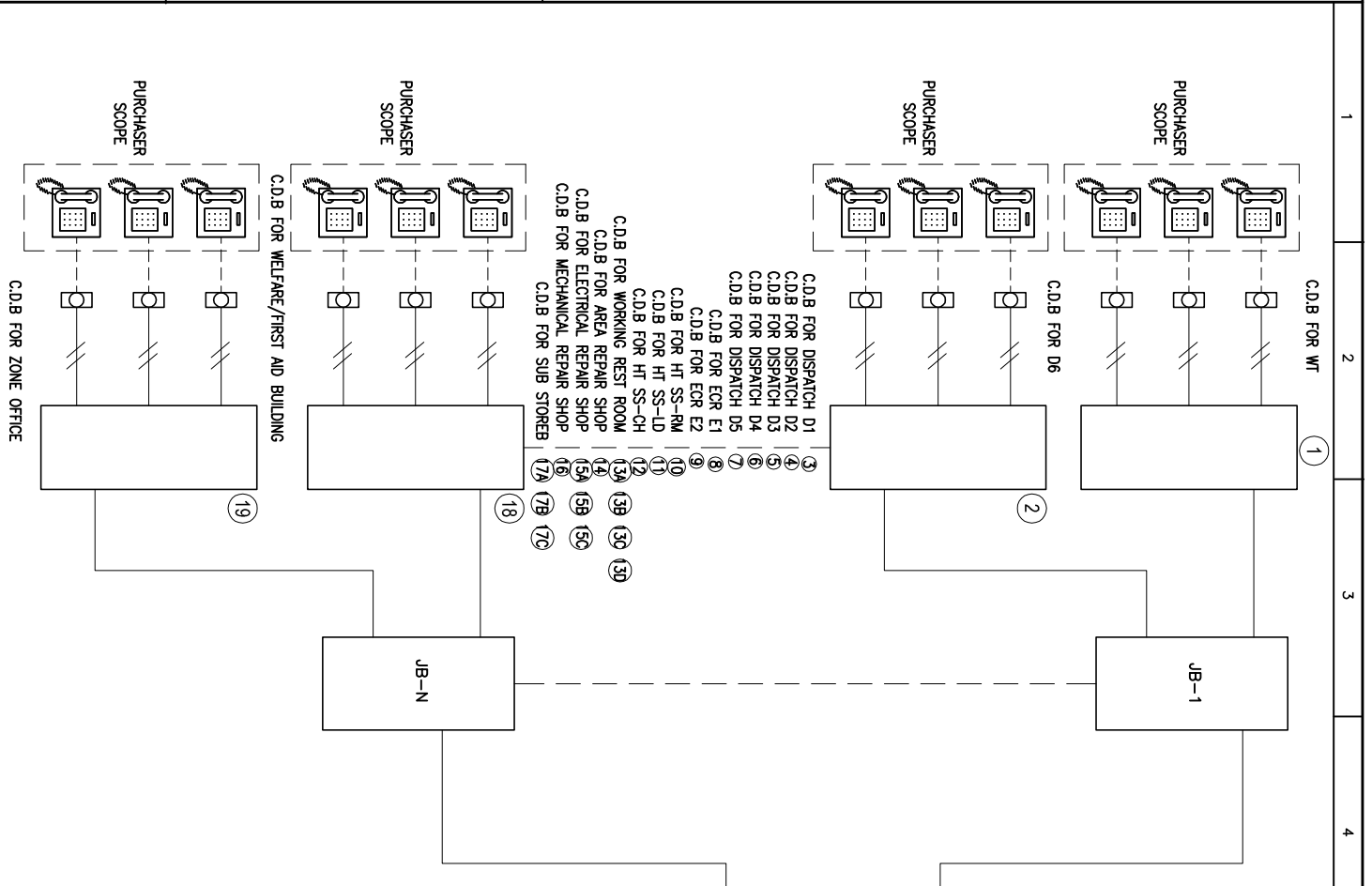
		CIRCUITS/ KMG A TO Z SYSTEMS/ SEN & SINGH ENGINEERS/ MEDITRON
29	ADDRESSABLE MANUAL CALL POINTS INCLUDING HAND SETS . UL /FM /ULC APPROVED	SIMPLEX / NOTIFIER / EDWARDS/ SIEMENS
30	ANALOG LINEAR HEAT SENSING CABLE WITH METAL BRAID STEEL/ BRONZE, COPPER WITH NYLON BRAID UL /FM /LPC APPROVED	KIDDE / L.G.M / PATOL.
31	DIGITAL LINEAR HEAT SENSING CABLE WITH NYLON BRAID WITH METAL BRAID STEEL, BRONZE, COPPER UL /FM /ULC /MIL /LPC APPROVED CONTROL UNIT FOR DIGITAL LHS CABLE UL /FM /ULC /MIL /LPC APPROVED	KIDDE / L.G.M / PATOL.
32	TELEPHONE CABLE SUPPLIERS	DELTON CABLES / TELE-LINK NICCO / FINOLEX.

UN-PRICE FORMAT - SUPPLY		(REV 00)				
INDENT NO. IS-1-11-2008/038 dtd 25/05/2013		DATE : 16.08.2013				
PROJECT – NMDC-RMHS 3.0MTPA Steel Plant, Nagarnar						
Plant telephone System.						
SI No	Description	Qty				
<b>SCOPE OF SUPPLY</b>						
	Description					
1	Supply of telephone cabling system from Customer's EPABx up to telephone set instrument (EPABx & telephone sets are not in bidder's scope)	1 lot				
2	All the cable trays, erection hardware & consumables	1 lot				
3	Commissioning spares	1 lot				
<b>SCOPE OF SERVICES</b>						
1	The scope of services at site will include erection, testing, commissioning, PG test, PAT/FAT and liquidating the defects and handing over of Plant telephone cabling system in ready to switch on condition on TURN KEY basis.	1 lot				
<b>GRAND TOTAL in Rupees</b>						

Price : (In Words Rupees .....only)

Vendors Signature with Seal

PROJECT DRAWING NO. .NMDC/BHEL/01/24/BE/.../026  
 INVENTORY NO.



NOTE:

1. No. of JB'S ARE INDICATIVE ONLY IT WILL BE FINALISED DURING DETAILED ENGINEERING.
2. No. OF CONNECTIONS IN EACH BUILDING AND ITS ARE LOCATIONS TO BE SPECIFIED.
3. No OF PAIR FOR TELEPHONE CABLE WILL BE DECIDED DURING DETAILED ENGINEERING.
4. CABLE NETWORK INSIDE THE SHOP COMPLEX SHALL BE DESIGNED KEEPING 50% OF SPARE CABLE PAIRS.

SUBSCRIBER SIDE

JB

MAIN SIDE

MDF

MAIN DISTRIBUTION FRAME

SAX PROVIDED BY INTER PLANT PACKAGE CONTRACTOR SMALL AUTO TELEPHONE EXCHANGE

PURCHASER SCOPE

BLOCK DIAGRAM FOR TELEPHONE SYSTEM

JOB NO.	DIR NO.	STATUS	DISTRIBUTION	TO	No. OF
IS-1-11-2008					

DESIGNED	H.U.Y	APPROVED	DATE: 29.11.12
CHECKED	A.Z	PROJ. :	B.Babu
DRAWN			

3.0 MTPY STEEL PLANT (NISP) AT NAGANAR, CHHATTISGARH  
 RAW MATERIAL HANDLING SYSTEM (PACKAGE 01)

**BHARAT HEAVY ELECTRICALS LTD**  
 INDUSTRIAL SYSTEMS GROUP, BANGALORE

**MECON LIMITED**

BASIC INTER CONNECTION SCHEME FOR  
 FDA, CVM, PA SYSTEM  
 AND TELEPHONE SYSTEM

NMDC LIMITED

APPROVAL

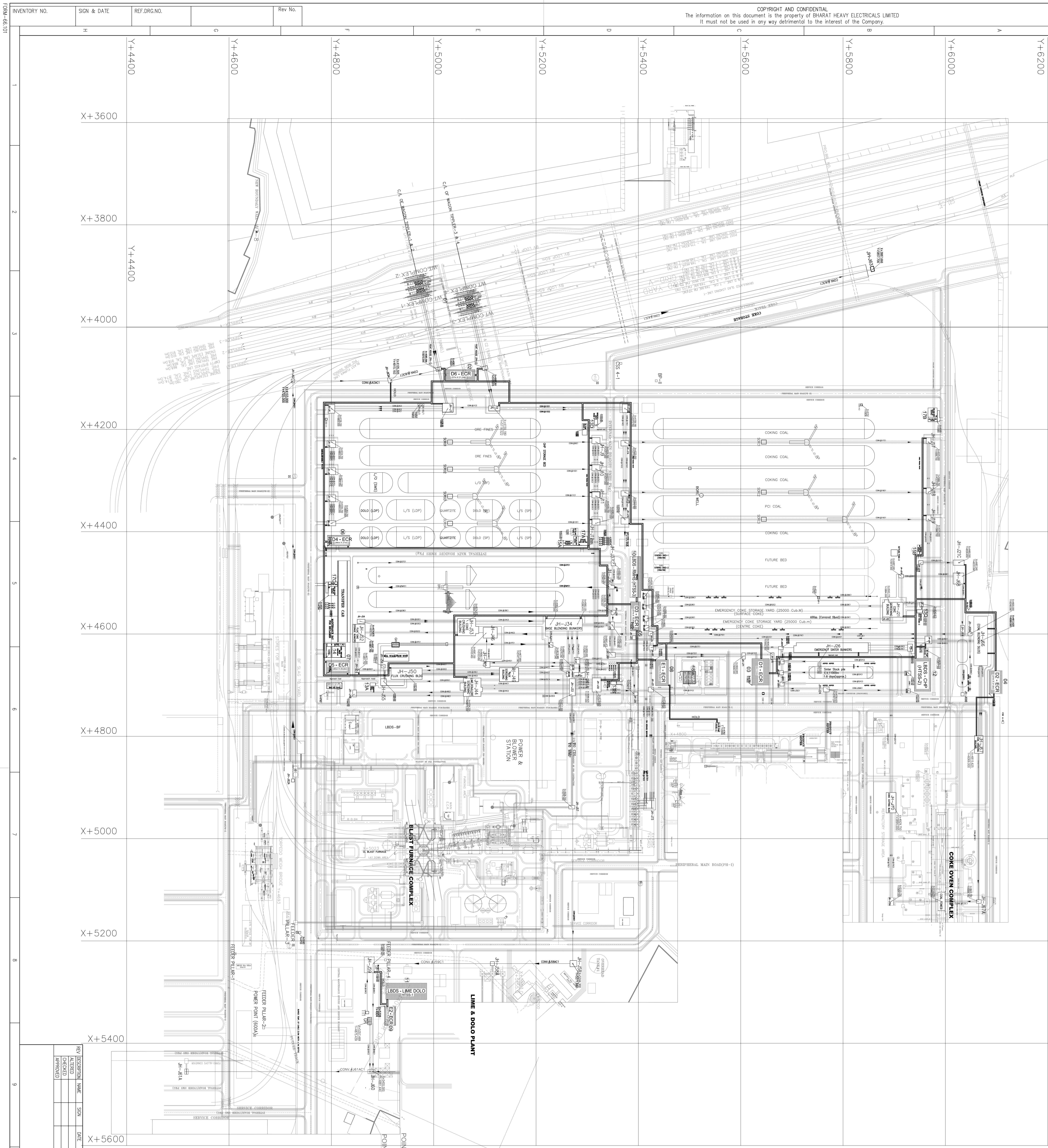
REFERENCE

RECORD

CONSTRUCTION

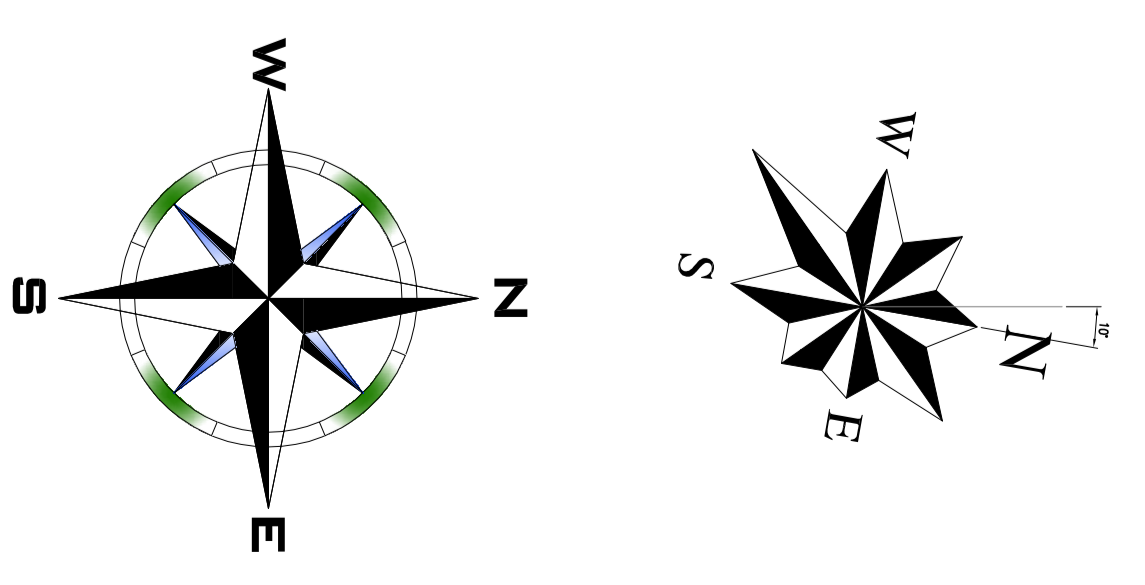
BHEL DRAWING NO. IS-0-1C-669-501-E001

PROJECT DRAWING NO. NMDC/BHEL/01/26/BE/.../024



- NOTES:**
1. ALL THE COORDINATES ARE IN METERS.
  2. GRADED LEVEL FOR MAIN RMHS AREA IS RL(+561.00M).
  3. ALL THE COORDINATES MARKED ARE INTERSECTION/WORKING POINTS.
  4. ① ② ③ ETC. ARE THE TENTATIVE TELEPHONE LOCATIONS.  
EXACT LOCATIONS SHALL BE DECIDED DURING DETAIL ENGINEERING.
  5. TELEPHONE LOCATIONS 16 & 19 WILL BE LOCATED LATER AS PER SITE CONDITION.

**LEGEND :**  
 : CABLE (ROUTED) ROUTE



REV. NO.	DESCRIPTION	DATE	BY	CHKD.
1	ISSUED FOR APPROVAL	01.05.2013	Rajou	
2	CHECKED			
3	APPROVED			

JOB NO.	DATE
IS-01-11-2008	

APPROVAL	INFORMATION	REFERENCE	RECORD	CONSTRUCTION
		NMDC LIMITED 3.0 MTPY STEEL PLANT (NSP) AT NAGARNAR, CHHATTISGARH RAW MATERIAL HANDLING SYSTEM (PACKAGE 01)		
		BHARAT HEAVY ELECTRICALS LTD INDUSTRIAL SYSTEMS GROUP, BANGALORE		

DESIGNED	VIS	SCALE	SHEET	REV.
BSMANN	Sreedhara	1:1	1 OF 1	0
CHECKED	RN			
APPROVED	Rajou			

Price Bid for Plant Telephone System

SI No	Description	Qty	UOM	Unit Ex-works Price including Packing & Forwarding Charges	Total Ex-works Price including Packing & Forwarding Charges	Excise Duty including Cess	CST against exchange of "C" & "E1" form	Freight Charges	Service Tax	Any other Taxes & levies	Total Price including P&F Charges, ED,CST,Freight, Service Tax and any other taxes & levies.
<b>SCOPE OF SUPPLY</b>											
	Description										
1	Supply of telephone cabling system from Customer's EPABx up to telephone set instrument (EPABx & telephone sets are not in bidder's scope)	1	Lot								
2	All the cable trays, erection hardware & consumables	1	Lot								
3	Commissioning spares	1	Lot								
<b>SCOPE OF SERVICES</b>											
1	The scope of services at site will include erection, testing, commissioning, PG test, PAT/FAT and liquidating the defects and handing over of Plant telephone cabling system in ready to switch on condition on TURN KEY basis.	1	Lot								
<b>GRAND TOTAL in Rupees</b>											

Price : (In Words Rupees ..... only)

**Note:**

- Above quoted price includes Design, Engineering, Manufacturing/Procurement, Supply, Transportation, receipt of material from stores, Erection & Commissioning, Handing over & Demonstration of Performance Guarantee and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the specifications.
- Above quoted price is inclusive of all the equipments & items, accessories, hardware, foundation Bolts, Gaskets, Couplings, grouting materials, painting, shims etc. including all items required for completing the system, other than specifically mentioned under exclusions.
- Price to be indicated in Price format ( Rev-0) only & it should be sent in sealed envelope to MM deptt. Unpriced price format dully signed to be sent to Project Engineering and MM Deptt. confirming that Pricebid as per Price Format for all items and Taxes and Duties etc. In the unpriced format itemwise "quoted" and "not quoted" should be mentioned against each item
- Incase of discrepancy between ' Price in figures' and 'Price in words' in this price format, the price entered in words shall prevail and shall be taken for tender evaluation and finalisation of the award of work. This tender is being floated to award the scope of work on turn key basis as per specifications.

Vendors Signature with Seal



## HSE Management System Manual For Vendors

Doc. No. IS/HSE/Vendor

### Site Safety Plan

#### CONFORMATION TO BE GIVEN BY VENDORS ALONGWITH TECHNICAL OFFER

**Bharat Heavy Electricals Limited**  
**Industrial Systems Group**  
**Prof. C.N.R.Rao Circle, Malleswaram,**  
**BANGALORE 560 012**  
**Phone: 080 - 3365096, Fax: 080 - 3365096**

**Regd. Office: "BHEL House" Siri Fort, New Delhi - 110 049.**

ISG BANGALORE	Written by: R.BABU	Approved by: M.R.Thakurta Management Representative
REV. NO. 00	Sheet No. 1 of 16	DATE: 28 <sup>th</sup> October 2006





## HSE Management System Manual For Vendors

### Table of Contents

DOCUMENT NO.	DESCRIPTION
IS/HSE/Vendor	1. Details of Project
	2. Health, Safety and Environment Policy
	3. Roles of Site Personnel
	4. Safety Awareness & Training:
	5. Site Safety Inspection:
	6. Emergency Preparedness and Response Plan:
	7. Electrical Safety Inspection:
	8. Transportation and Material Handling Equipment:
	9. Erection of equipment:
	10. Commissioning of equipment:
	11. Use of Personal Protective Equipment (PPE):
	12. Housekeeping:
	13. Accident Investigation and Reporting:
	14. Protection against Fire
	15. Protection against Noise
	16. Welding Sets
	17. Civil / Structural Work
	18. FIRE FIGHTING PLAN
	19. NOISE STANDARDS
	20. List of Applicable Statutory / Regulatory requirements
	21. SAFETY DECLARATION BY SUB-CONTRACTOR
<b>Checklist / Formats : Available at BHEL Site for use</b>	
IS-QII-4-409/010	SAFETY DECLARATION BY SUB-CONTRACTOR
IS:HSE:CL01	CHECK LIST FOR WORKING AT HEIGHT
IS:HSE:CL02	CHECK LIST FOR HOUSE KEEPING
IS:HSE:CL03	CHECK LIST FOR SCAFFOLDING
IS:HSE:CL04	CHECK LIST FOR GENERAL SAFETY INSPECTION
IS:HSE:CL05	CHECK LIST FOR HEAVY MATERIAL HANDLING EQUIPMENT INSPECTION
IS:HSE:CL06	CHECK LIST FOR ARC WELDING TRANSFORMER
IS:HSE:CL07	CHECK LIST FOR DC ARC WELDING GENERATOR

**Note:**

1. This Site Safety Plan is to be used at all Sites. Project Specific Details and Site Organization Chart are to be added in Section -1.
2. The Checklists provided are to be used and maintained as records.
3. These documents and records are verifiable for compliance under Quality & HSE systems.

ISG BANGALORE	Written by: R.Babu 	Approved by: M.R.Thakurta  Management Representative
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# HSE Management System Manual For Vendors


.IS/HSE/Vendor

SITE SAFETY PLAN

## 1. Details of Project

1.	Name of the Project & Site	
2.	Job Number	
3.	Customer	
4.	Overall Scope of work: Design / Supply / Installation	Civil Structural Mechanical Electrical & Instrumentation Others
5.	Project Schedule	Starting Date: Completion Date:
6.	Erection & Commissioning Machinery / Tools / Instruments Required:	
7.	Sub-Contractor Details	Name of the Sub-contractor  Job order No.:  Duration of Completion:
8.	Name of Vendor's Residence Manager	Attach Site Organization Chart Will be furnished on award of Contract
9.	Designated Safety Officer of Vendor	Will be furnished on award of Contract

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	<b>HSE Management System Manual For Vendors</b>
.IS/HSE/Vendor	<b>SITE SAFETY PLAN</b>

**2. HEALTH, SAFETY & ENVIRONMENTAL POLICY OF BHEL ISG ( TO be adhered by the VENDOR)**



The Management is committed to be an environmentally sound company in its activities, products, services and to provide safe and healthy working environment to all employees as an integral part of business performance and strive towards zero accident through:


- Compliance with applicable Legislation and Regulations.
- Promoting the objective to minimize waste generation and to conserve/reduce/reuse resources such as raw materials, water and power.
- Enhancement of Environmental, Safety and Occupational Health awareness amongst employees, customers and suppliers by proactive communication and training.
- Continual improvement through periodical review of EMS and OHSAS to ensure its suitability, adequacy and effectiveness.
- Regular evaluation and proactive measures for prevention of accidents/ occupational diseases.
- Communication of HSE Policy to all employees and interested parties.
- Coordination with concerned agencies/regulatory bodies engaged in Occupational Health, Safety & Environmental activities.

**3. Roles of Site Personnel :**

**Resident Manager:**

- Ensuring that Health, Safety, Environment Management System (HSEMS) requirements are implemented and maintained at sites in consultation with BHEL Resident Manager. He shall have commensurate authority and organisational freedom in that regard.
- He shall report on the performance of the HSEMS to the BHEL Resident Manager for review.
- Identification and evaluation of Environmental Aspects & Impacts, Occupational Health & Safety Hazards and assess Risks at Site.

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	<b>HSE Management System Manual For Vendors</b>
.IS/HSE/Vendor	<b>SITE SAFETY PLAN</b>

**Duties & Responsibilities of the Designated Safety Officer at Site:**

- To advise on safety aspects to all personnel at site including vendor's sub-contractors.
- To carry out Site safety inspection in order to observe the physical conditions of work and the work practices and procedures followed by Sub-contractors and to render advise on measures to be adopted for removing the unsafe physical conditions and preventing unsafe actions by sub-contractor's personnel.
- To organize / verify the availability of personal protective equipment
- To investigate select accidents
- Co-ordinate hazard and risk management
- Furnish Safety Declaration to BHEL Resident Manager.
- Impart Safety Training to all site personnel including sub-contractors working at Site in consultation with BHEL Resident Manager.

**4. Safety Awareness & Training:**



Safety Awareness and consciousness among workers, supervisors and executives is imparted by the Designated Safety Officer of BHEL / Sub-contractor. This is done by way of following.


- Talk on Safety issues as per Site Safety Plan
- Posters and Notices at prominent places
- Display of warning boards
- Creating awareness and response for emergencies like Fire, Shock, accidents, dangerous occurrences and on First-aid, Emergency assistance agencies and their contact telephone numbers etc.
- Use of Personnel Protective Equipment

**5. Site Safety Inspection:**

Designated Safety Officer will inspect the site on Daily basis

- To identify unsafe conditions and unsafe actions by the labourers and bring to the notice of Resident Manager. The main objective of the Daily Inspection is to rectify the potentially dangerous situations and avoid occurrence of any incident.
- To suggest suitable remedial action to correct the unsafe conditions / acts.
- To use appropriate checklists to verify and record the safety observations.

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	<b>HSE Management System Manual For Vendors</b>
IS/HSE/Vendor	<b>SITE SAFETY PLAN</b>

#### 6. Emergency Preparedness and Response Plan:



- Use the **Emergency Preparedness and Response Plan IS/HSE/EPR/01** available at site to be followed
- First aid kits are to be kept in the site office or the locations in the vicinity of work place. The kit is to be maintained. Records of FIRST AID treatment given to be maintained in a register.
- Whoever first notices the accident occurrence shall immediately notify the same to Designated Safety Officer / Other BHEL executives.
- Determine the area of accident and organize for evacuation of the personnel.
- Organize for sending the injured person to nearby First-aid / Health Center / Hospitals depending on the emergency.
- In the event of fire organize for extinguishing the fire using the apparatus available and for major fire notify the local / nearby Fire Station.


#### 7. Electrical Safety Inspection:

- All the electrical distribution system, sub system, relevant protection unit at electrically powered machines and tools are inspected periodically including earthing at two points, to avoid electrical shocks.
- Checklist for House keeping and General safety inspection is to be followed for periodical inspection.
- For safe operation all the Electrical portable tools and devices are connected with Earth Leakage Circuit Breaker (ELCB) protection at Distribution Board and continuity of earth connection is to be ensured.
- The ELCBs are tested periodically and records of such tests are maintained.
- After each inspection the filled up check list date wise is to be retained by Resident Manager.

#### 8. Transportation and Material Handling Equipment:

- Checklist of Inspection of Material Handling Equipment shall be used and records are to be maintained.

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	<b>HSE Management System Manual For Vendors</b>
.IS/HSE/Vendor	SITE SAFETY PLAN

**9. Erection of equipment:**

- Erection Manual is to be followed during erection of equipment.
- SAFETY MANAGEMENT AT ERECTION SITES
- Checklists provided by BHEL, shall be used and records are to be maintained.

**10. Commissioning of equipment:**



- The instructions given in Commissioning Manual are to be followed during Commissioning of Standard equipment.
- Wherever Checklists are provided, the same shall be used and records are to be maintained.


**11. Use of Personal Protective Equipment (PPE):**

- Personal Protective Equipment shall be provided by Vendor for all workers, labour and other site personnel during construction.
- The PPE in use shall conform to IS or other relevant standard and the same shall be discarded in case it is damaged or worn out. The specification of PPE is available with BHEL site & HQs for reference.

**LIST OF required Personnel Protective Equipment (PPE) to be maintained at site**

<b>HEAD PROTECTION</b>	<ul style="list-style-type: none"> <li>• Industrial Safety Helmet</li> <li>• Leather Cap</li> </ul>
<b>FACE PROTECTION</b>	<ul style="list-style-type: none"> <li>• Plastic face Shield,</li> <li>• Welding Hand Shield,</li> <li>• Welding Head Shield.</li> </ul>
<b>EAR PROTECTION</b>	<ul style="list-style-type: none"> <li>• Ear muff / plugs</li> </ul>
<b>EYE PROTECTION</b>	<ul style="list-style-type: none"> <li>• Goggles,</li> <li>• Welding filter lens</li> </ul>
<b>BODY PROTECTION</b>	<ul style="list-style-type: none"> <li>• Aluminised suit,</li> <li>• Fire proximity suit,</li> <li>• Apron,</li> <li>• Safety Belt,</li> <li>• Pant &amp; Jerkin,</li> <li>• Cotton coverall,</li> <li>• Over coat,</li> </ul>

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	<b>HSE Management System Manual For Vendors</b>
IS/HSE/Vendor	<b>SITE SAFETY PLAN</b>

	<ul style="list-style-type: none"> <li>• Gloves,</li> <li>• Barrier cream,</li> <li>• Hand cleanser,</li> </ul>
<b>FOOT PROTECTION</b>	<ul style="list-style-type: none"> <li>• Kevlar Safety Boots,</li> <li>• Gum Boots (Knee Boots),</li> <li>• Safety Shoes,</li> <li>• Cotton socks,</li> <li>• leather leg guard.</li> </ul>
<b>NASAL PROTECTION</b>	<ul style="list-style-type: none"> <li>• Cloth &amp; Paper respirator ( Dust &amp; Mist),</li> <li>• Chemical fume respirator,</li> <li>• Welding fume respirator,</li> <li>• Canister gas mask,</li> <li>• Air line respirator,</li> <li>• Self breathing apparatus.</li> </ul>

#### 12. Housekeeping:



- **The Site Safety Plan** document Reference No. IS/HSE/SSP/01 available at BHEL site office is to be followed regarding the Housekeeping of materials, equipment. Scraps etc. during construction.
- The Housekeeping Checklist IS:HSE:CL02 available in this document shall be followed and records are to be maintained.


#### 13. Accident Investigation and Reporting: To be followed as per BHEL Guidelines given below in consultation with BHEL & Customer:

##### GUIDELINES FOR RESIDENT MANAGERS ON CONTRACT LABOUR, SAFETY & ACCIDENT REPORTING SYSTEM

##### CONTRACT LABOUR

- 1) Form V under Contract Labour (Regulation and Abolition Act) may be arranged from the customer, who is the principal employer, in the name of sub-contractor directly and ensure that the sub-contractor shall obtain licence under Contract Labour (Regulation and Abolition Act).
- 2) Ensure PF coverage in respect of all the contract labour deployed by our sub-contractors.

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- 3) Ensure ESI coverage, wherever applicable, in respect of all the contract labour deployed by our sub-contractors.
- 4) Ensure gate pass issued by the customer to all the contract labour deployed by our sub-contractors
- 5) Ensure Insurance coverage in lieu of Workmen's Compensation in respect of all the contract labour deployed by our sub-contractors.
- 6) Ensure payment of minimum wages, bonus, gratuity and other statutory payments to the contract labour


**SAFETY**

- 7) Ensure compliance of all safety measures/aspects by sub-contractors.
- 8) Ensure usage of PPEs as per the safety norms for each work / site by BHEL employees and persons engaged by the sub-contractors.
- 9) Ensure compliance of safety aspects envisaged in HSE Management System Manual.

**ACCIDENT REPORTING SYSTEM**

- 10) In case of major accidents resulting in serious bodily injury or death, report the same to Business Manager, DGM (HR), etc. at HQ immediately.
- 11) If the accident happened to any contract labour, please obtain a letter from the contractor regarding the accident and forward the same to the customer after obtaining concurrence from HQ.
- 12) In case of Fatal Accident to contract labour, local Police shall be informed by the contractor under intimation to you.
- 13) In case of Fatal Accident to BHEL employee, local Police shall be informed by the Resident Manager under intimation to HQ.
- 14) Obtain the concurrence and approval of Business Manager & DGM(HR) before signing any Accident Notice Forms under the Factories Act or Form EE under Workmens Compensation Act, etc. or any other documents related to the accident.
- 15) In case of Fatal Accident to contract labour, ensure contractor shall arrange for postmortem and other formalities and hand over the body to the relatives.



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- 16) In case of major accidents resulting in serious bodily injury or death to contract labour, Resident Manager shall forward the prescribed Form ( Notice of Accidents or Dangerous Occurrences Resulting in Death or Bodily Injury under the Factories Act Rules of the state in which site is situated) filled and submitted by the sub-contractor to the Customer for onward transmission to the Assistant Labour Commissioner and other concerned Authorities within the prescribed time limit.
- 17) In case of major accidents resulting in serious bodily injury or death to BHEL employee, Resident Manager shall fill and submit the prescribed Form ( Notice of Accidents or Dangerous Occurrences Resulting in Death or Bodily Injury under the Factories Act Rules of the state in which site is situated) to the Customer for onward transmission to the Assistant Labour Commissioner and other concerned Authorities within the prescribed time limit.
- 18) Contact Resident Manager / HR executive of Power Sector Site at the same location, if available, and take their assistance, in case if they had already handled a similar accident case at the same location.
- 19) Ensure providing the details like age (date of birth), wages of the person met with an accident and injured or expired.
- 20) Ensure depositing of Workmens Compensation amount decided by the authority under The Workmens Compensation Act with the Commissioner of Workmens Compensation by the contractor or their Insurance Company.
- 21) Inform HQ regarding the payment of Workmens Compensation to the dependents of the person expired through the authorities.

#### **HSE ACCIDENT / INCIDENT REPORTING**

- 22) Strictly comply with section 17.0 of HSE Management System Manual in respect of Accident / Incident reporting system
- 23) Submit the Accident / Incident Report format to HQ immediately after occurrence of accident.
- 24) Submit the Accident / Incident Investigation Report format to HQ after completion of the investigation

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#### 14. Protection against Fire

- The GENERAL SAFETY INSPECTION Checklist - IS:HSE:CL04 available in BHEL Site shall be followed and records are to be maintained.
- **FIRE FIGHTING PLAN** Extract from: Chapter 4 – Internal Appliances of Fire Protection Manual Issued by Tariff Advisory Committee Bombay as elaborated below is to be followed for finalizing the requirement of fire extinguishers at site. (Please refer point No. 18 below.)

#### 15. Protection against Noise

- The Equipment used at Construction site must follow the acceptable ambient noise level as detailed below in **NOISE STANDARDS**.



#### 16. Welding Sets

- Whenever Welding sets are brought by the contractor to site, the healthiness of the equipment is to be checked and inspected and the record is to be maintained as per the checklist IS:HSE:CL06 and CL07 available at BHEL site..

#### 17. Civil / Structural Work

Wherever Civil work is involved the following work instructions / checklist are available at BHEL site to be referred and followed.

- **Work Instructions for Civil Work at Site** – IS:CW:01, Rev:01, Dated 04.09.1996.
- Safety Management at Construction Site Document no. IS/HSE/SSM/01, Rev.00 Dated 11.06.1996
- Checklist for Scaffolding IS:HSE:CL03
- Checklist for Working at Height IS:HSE:CL01
- Formats for Field Quality Plan IS:CW:01, Rev.02, Dated 15.05.1997.

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### 18. FIRE FIGHTING PLAN

Extract from: Chapter 4 – Internal Appliances of Fire Protection Manual Issued by  
Tariff Advisory Committee Bombay.

Class of Fire	Suitable type of appliances
A. Fire in ordinary combustible (wood, vegetable, fiber, paper etc.)	Chemical extinguishers of soda acid, gas / expelled water and anti-freeze types and water buckets.
B. Fires in flammable liquids, paints, grease, solvents etc.	Chemical extinguishers of Foam, Carbon Dioxide and Dry powder type and sand buckets.
C. Fire in gaseous substances under pressure	Chemical Extinguishers of Carbon Dioxide and Dry Powder Type.
D. Fire in reactive Chemicals, active metals	Special type of Dry Powder extinguishers and sand buckets.
E. Fire in electrical equipments.	Chemical Extinguishers of Carbon Dioxide and Dry Powder Type and sand buckets.
Clause 4.1.3.2	One 9 litre Water / Sand Bucket for every 100 sq.metre area
Clause 4.1.3.5.1	One no. of Not less than 2 kg, Dry Powder CO <sub>2</sub> extinguisher within 15 metres of apparatus for rooms containing electrical transformers & switchgear.
Clause 4.1.3.5.2	One no. 5 kg, Dry Powder CO <sub>2</sub> extinguisher within 15 metres of Motors / other Electrical equipment.


The following example will illustrate the method of determining the number of fire extinguishers required to give adequate protection for a given property:

Light engineering workshop ( light hazards).

Area: 315m X 112m = 35300 sq.m

Type of fire:

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1. Class A Fire due to normal combustibles
2. Class B Fire due to existence of spray painting process and storage of flammable liquids
3. Class E fire due to two electrical DB and motors

Number of appliances

Basic protection

353 buckets and  
59 water type extinguishers

OR

90 Water type extinguishers if buckets are dispensed with.

For Class B fires 2 Water type extinguishers are replaced by 2 Foam Extinguishers.

For Class E fires 6 Dry Powder Extinguishers are provided. Thus the total no. of fire extinguishers are

Water type: 88



Foam type: 2


Dry powder type: 6

**TOTAL 96**

**Reference Standards for Fire Extinguishers:**

Sl.No.	Standard / Year	Description
1.	IS940 : 1989	Specifications of Portable fire extinguisher, water type (gas cartridge)
2.	IS2171 : 1999	Specifications of Portable fire extinguisher, Dry powder (Cartridge type)
3.	IS2878 : 1986	Specifications for Fire extinguisher, Carbon Di-oxide Type, (Portable & trolley mounted)
4.	IS10204 : 2001	Specifications of Portable fire extinguisher, mechanical foam type
5.	IS10658 : 1999	Specifications for Higher capacity Dry powder Fire extinguisher (Trolley mounted)
6.	IS13385 : 1992	Specifications for Fire extinguisher, 50 capacity wheel mounted water type (Gas Cartridge)
7.	IS13386 : 1992	Specifications for Fire extinguisher, 50 l capacity, mechanical foam type

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8.	FPM / June 1995	Fire Protection Manual (Part-I) By Tariff Advisory Committee
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#### 19. NOISE STANDARDS

NOISE : (Ambient standard)

Area Code	Category of Area	Limit in dB (A) Leq	
		Day time (6 AM to 9 PM)	Night time (9 PM to 6 AM)
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence Zone	50	40



Silence Zone is defined as area upto 100 metres around such premises as hospitals, educational institutions and courts.


Source: EPA Notification [G.S.R. 1063(E), DT. 26<sup>th</sup> Dec. 1989]

**Domestic appliances & Construction equipment acceptable noise level:**

Sl.No.	Type of Appliances	Standard dB(A)
1.	Window Air-conditioner to 1 Ton to 1.5 Tons	68
2.	Air Coolers	60
3.	Refrigerators	46
4.	Diesel Generators for Domestic Purpose	85-90
5.	Compactors (Rollers) Front Loaders, Mixers, Crane movable, Vibrators and Saws	75



Source: EPA Notification [G.S.R. 742(E), DT. 30<sup>th</sup> Aug. 1990]


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**20. List of Applicable Statutory / Regulatory Requirements:**

Sl.No.	Standard	Applicable or Not
1.	Indian Electricity Rules, 1956	Yes/ No
2.	The Electricity Act, 2003	Yes/ No
3.	The Indian Electricity Act, 1910	Yes/ No
4.	The Motor Vehicle Act, 1988	Yes/ No
5.	The Central Motor Vehicle Rules, 1989	Yes/ No
6.	The Gas Cylinder Rules 2004	Yes/ No
7.	The Environment (Protection) Act, 1986	Yes/ No
8.	The National Environment Tribunal Act 1995	Yes/ No
9.	The Noise Pollution ( Regulation & Control) Rules, 2000	Yes/ No
10.	Battery (Management and Handling) Rules, 2000	Yes/ No
11.	Ozone Depleting Substances (Regulation and Control) Rules, 2000	Yes/ No
12.	Pollution Control Act, Rules and Notifications, September 2001	Yes/ No
13.	Pollution Control Law – Environmental Standard for Ambient Air, Automobiles, Fuels, Industries and Noise – July 2000	Yes/ No
14.	CBIP Guidelines	Yes/ No
15.	Contract Labour ( Regulation and Abolition ) Act, 1970	Yes/ No
16.	Factories Act, 1948 with relevant state rules	Yes/ No
17.	The Buildings And Other Construction Workers (Regulation Of Employment And Conditions Of Service) Act, 1996	Yes/ No
18.	The Inter-state Migrant Workmen (Regulation Of Employment And Conditions of Service) Act, 1979	Yes/ No
19.	The Child Labour (Prohibition and Regulation) Act, 1986	Yes/ No
20.	Minimum Wages Act, 1948 with relevant state amendments	Yes/ No
21.	Payments of Wages Act, 1936	Yes/ No
22.	Payment of Bonus Act, 1965	Yes/ No
23.	Payment of Gratuity Act, 1972	Yes/ No
24.	Employees' State Insurance Act, 1948	Yes/ No
25.	The Employees' Provident Funds And Miscellaneous Provisions Act, 1952	Yes/ No
26.	Fatal Accidents Act, 1855	Yes/ No
27.	The Personal Injuries (Compensation Insurance ) Act, 1963	Yes/ No
28.	Workmen's Compensation Act, 1923	Yes/ No
29.	The Industrial Disputes Act, 1947	Yes/ No
30.	Environmental Standards for TPP	Yes/ No
31.	The Indian Boilers Act, 1923	Yes/ No
32.	Tariff Advisory Committee - Insurance	Yes/ No
33.	Hazardous goods TAC	Yes/ No

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## 21. SAFETY DECLARATION BY SUB-CONTRACTOR



1. Name of Sub-contractor
2. Work Order No.
3. Nature of work
4. Project
5. Number of workers deployed
 

Category:			
1.	-	Nos.	
2.	-	Nos.	
3.	-	Nos.	
4.	-	Nos.	
6. Number of workers attended safety induction training.
7. Safety appliances issued to workmen
 

Name of the appliances:	
2. Safety Helmet	
3. Safety Boots	
4. Hand gloves	
5. Safety belts	
6. Safety goggles	
7. Dust masks	
8. First Aid box provided at site
9. Safety clearance taken from concerned authority for starting the job.
10. Sand and water provided at the welding station
11. Fire extinguishers provided at site

Signature of sub-contractor with seal

Date:

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# SAFETY CODE FOR CONTRACTORS

<b>INTER PLANT STANDARD FOR SAFETY IN STEEL INDUSTRY</b>	
<b>SAFETY IN CONTRACT WORKS</b>	<b>IPSS : 1-11-011-01</b>

## 0. FORWORD

- 0.1 This Inter Plant Standard formulated by the Standard Committee on Personnel Safety Appliances & Procedures, IPSS 1:11 with the active participation of the representatives of steel plants and associated organizations in the field, was adopted in May, 2001.
- 0.2 This is one of the series of Inter Plant Standards in the area of the safety in the steel plants with a view to providing guidance to all concerned in accident prevention.

## 1.0 SCOPE OF WORK

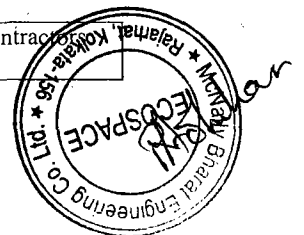
- 1.1 Safety is the responsibility of the Contractor and his staff / employees/ workmen engaged/ deployed for execution of work under the Contract, individually and collectively. For this purpose, the Contractor staff means and includes all its associates and sub-contractors / vendors/ sub-vendors and their staff/ employees/ workmen deployed for execution of the work covered under the Contract. The Contractor shall ensure that his workmen participate in the safety awareness, health care and safety training programmes whenever such programmes are organised by the Employer or the Contractor.
- 1.2 The Contractor's scope of work shall include, but not limited to execution of work/ Contract, adequate safety arrangements for men machinery etc. engaged during the execution of the Contract.
- 1.3 While executing the Contract, the Contractor / his supervisor has to ensure safety of the surroundings with regard to Employer's work place/ site and other contractor's men/ machine/ materials/ system etc.

## 2.0 DETAILED PROCEDURE/ PROTOCOL

- 2.1 Before starting the work, a safe work procedure/ protocol shall be prepared and signed jointly by the executing department, representative of Safety Deptt. and the Contractor or his representative. This procedure/ protocol shall be prepared by breaking the whole job into small elements and listing them separately in the sequence. Against these elements, the agency responsible for doing it, would be mentioned. Any other details about these elements, may also be mentioned in the remarks column.

## 3.0 MEMORANDUM OF UNDERSTANDING (MOU)

- 3.1 A Memorandum of Understanding, placed at Enclosure-A, shall be signed between the Contractor and the representative of the Contracts Department (on behalf of the Plant) after award of the Contract.



## GENERAL TERMS & CONDITIONS

### 1.0 SUPERVISOR

1.1 The Contractor shall engage qualified and competent supervisors for executing the Contract. The supervisor must be able to i) read drawing ; ii) understand the safety aspect of the job ; iii) take necessary precautionary measures ; iv) ensure leadership for the safe execution of the job.

### 2.0 SAFETY SUPERVISION

2.1 The Contractor shall provide at least one competent full time safety supervisor who shall be nominated for each contract depending on the number of persons employed and safety requirements of the job including round the clock supervision on safety aspects, wherever required.

### 3.0 GATE PASS

3.1 The Contractor shall, in accordance with prescribed procedure, obtain gate passes (photo passes) from Employer's Security Department who shall make it available to the Contractor, to enable the Contractor and his staff / employees/ workmen to enter the work area inside the plant as well as un-enclosed (open) work area like township. The Contractor shall make arrangement for instant photography for those contract workers who may be required to go to work in emergency and do not have photo passes.

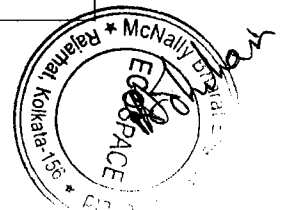
### 4.0 SAFETY INDUCTION

4.1 In order to provide basic industrial safety training to the workers of Contractor, Employer will provide on request, the general safety induction to the workmen/ supervisor at Safety Engineering Department. The Contractor shall submit the list of persons with full details for the job of safety induction to the Engineer for arranging the same. The Contractor shall not engage untrained personnel for executing any Contract inside the works. Job safety induction is a compulsory thing for every job to start with.

4.2 If at any point of time, Contractor feels or needs any special safety training for carrying out a particular job the same shall be arranged by the concerned Engineer of the Employer. For this, the Contractor shall inform the concerned Engineer of the Employer well in advance of commencement of such job.

4.3 The Contractor shall motivate and encourage his employees/ workmen to make personnel contribution towards enhancing safety on the basis of their knowledge and experience.

4.4 The Contractor shall have adequate number of Pocket Sized Safety Cards containing safety instructions prepared on the basis of Employer's

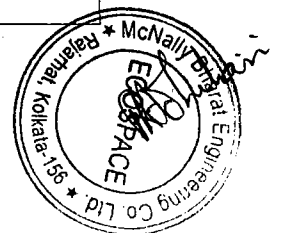


model safety book for Contractors workers in Hindi or regional languages as may be required and shall issue them to all his employees/ workmen and ensure that they read it before commencing the work. The safety instructions from these Safety Cards shall be read and explained by the Contractor or his representative to those employees/ workmen who are illiterate and cannot read and ensure that they have been understood. If the employees are signing in the attendance register, the Contractor shall arrange to write "Safety Sentence" on the top of each page below which each employee will either sign or put his thumb impression as a token of his/ her attendance also for having read/ understood the safety instructions. The "Safety Sentence" shall be "I have read/ understood the Safety Instructions and I shall work according to these instructions".

- 4.5 The work areas where a different system of keeping attendance exists, the Contractor or his representative shall furnish the list of employees/ workmen deployed on the job on any particular day and on top of which the following sentence will be recorded by the representative of the Contractor. "I have explained the safety instructions to my workers mentioned below and assure that they have understood the instructions and shall work according to these instructions".
- 4.6 The Contractor shall provide safety induction every day before start of the job i.e.briefing the nature of work to be carried and the necessary precautions to be taken while executing the job/ Contract during the particular day.
- 4.7 Contractors shall follow all special safety precautions issued by the executing authority or his site engineer from time to time.

## 5.0 LEGAL AND PENAL

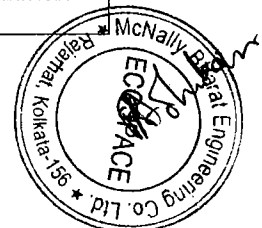
- 5.1 The Contractor shall abide by the provisions of all statutory acts and rules as applicable and maintain register/ documents, submit periodic reports and returns furnish information/ report relating to accidents occurring in the area of work to competent authority in time.
- 5.2 The Contractor shall be liable for prosecution and penalty in accordance with as prescribed under the law of land, terms & conditions of Contract as well as rules of the Company relating to safety, for not observing those provisions by the Contractor or his employees/ workmen.
- 5.3 The Contractor shall keep the Company indemnified against all losses/ claims due to accidents/ injuries/ damages caused at the Contractor's works site. He shall be fully responsible for accidents caused due to the Contractor or his agents or workmen's negligence or carelessness in regard to observance of the safety requirements and shall be liable to pay compensation for injuries.
- 5.4 The Engineer or Head of the Safety Department or their authorized nominees, upon their satisfaction that the Contractor is not conforming to the safety requirements, may direct stoppage of work and direct the



Contractor to remedy the defects or supply the facility/ equipment as the case may be. The Contractor shall not proceed with the work until he has complied with such directions to the satisfaction of the Engineer/ Safety Department.

- 5.5** If a Driver or any staff of the Contractor is caught in theft case or in any unauthorized movement of materials or in the activity which is punishable under the law or not authorized by the plant, the Contractor shall bear the full responsibility for the loss and other consequences which may result to the plant due to such illegal / unauthorized acts besides the action to terminate the Contract by the plant.
- 5.6** The Contractor shall be responsible to ensure that vehicles belonging to him are not driven in reckless or rash manner so as to become a potential threat to the safety of the traffic in the plant or township area. The drivers of the vehicles shall be made to adhere to the speed limits wherever applicable. Failure to comply with the above may result in termination of the Contract. In case of accident or injury or damage caused by the Contractor's vehicle or staff to any person or property, the financial responsibility to compensate be borne solely by the Contractor and this amount may, at the discretion of the Competent Authority of the Plant, be recovered from the bills or security or other deposits of the Contractor.
- 5.7** The Contractor shall ensure that all his employees/ workmen are covered under "Workmen Compensation Act" and shall pay compensation to his workmen as and when the eventuality for the same arises.
- 5.8** To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the Contractor shall be open to inspection by the Engineer or his representatives, Safety Engineer and Labour Officer.
- 5.9** The Contractor shall enclose along with his first bill a true copy of the Safety Induction Form (Annexure-1A) duly certified by the Executing Authority regarding use of safety appliances, following of safety instructions and observance of all safety laws, failing which the bill will not be processed for payment.
- 5.10** Notwithstanding the above clauses, there is nothing in those to exempt the Contractor from the operation of any other Act or rule in Republic of India for the safety of men and materials.
- 5.11** The Safety violations have been classified in to five categories (I to V) as enlisted at Annexure-1.

Without prejudice to the right conferred by the Clause 5.4 above for stoppage of work for violations of safety requirement, the contractor shall be liable for penalty at the rates indicated below depending upon the category of violation.



Category	Penalty Rs./ Violation
I	1000/-
II	2500/-
III	7500/-
IV	20000/-
V	3 lakhs or 20% of the contracts value whichever is lower.

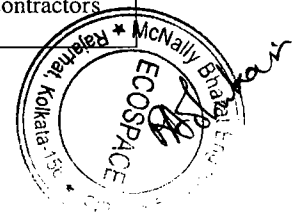
In the event of repetition of violation for third time and onwards by the contractors, the penalty shall be imposed at double of the penalty rate for the second violation.

## 6.0 PPE & SAFETY APPLIANCES

- 6.1 The Contractor shall provide all the PPE (Personal Protective Equipment) and safety appliances required to carry out the job to all the workmen deployed by the Contractor and also ensure that his workmen use those PPE and safety appliances while on the job. The Contractor shall not pay any cash amount in lieu of PPE to the workers.
- 6.2 The PPE and safety appliances provided by the Contractor shall be of the standard as prescribed by the Inter Plant Standardisation in Steel Industry (IPSS) or by Bureau of Indian Standards (BIS). If materials conforming to IPSS or BIS standards are not available, PPE and safety appliances shall be procured by the Contractor as approved by the Employer.
- 6.3 If the Contractor fails to ensure provision of safety appliances required to carry out the job safely to the workmen and that his workmen do not use the PPE and safety appliances as needed for safe working, Engineer and the Safety Engineering Department upon the satisfaction that the Contractor is not conforming to the safety requirement may direct the Contractor for stoppage of work and require the Contractor to remedy the defects. The Contractor shall not proceed with the work until he has complied with each direction to the satisfaction of Engineer and Safety Engineering Department.

## 7.0 SITE CLEARANCE

- 7.1 Prior to commencement of work, the Contractor shall obtain a clearance from the Safety Engineering Department of the Employer and concerned department/ section of the Employer where the job is to be carried out.

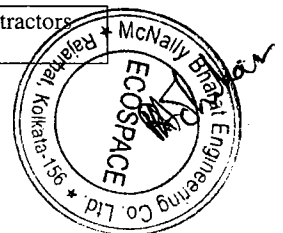


The Employer/ Engineer shall not permit the Contractor to commence the work unless Contractor or his representative produces such clearance certificate. The Department concerned shall grant such clearance after ensuring that:

- a) The Contractor himself has undergone Safety Induction Training organized by the Employer's Safety Engineering Department in the preceding twelve months.
- b) The Contractor's workers, identified for particular work / Department, have undergone Safety Induction Training in the preceding twelve months.
- c) The Contractor has arranged PPE and Safety appliances for himself and for all his workmen, as required.
- d) The Contractor possesses work permit issued by the Employer or Employer's representative for which the "Work Clearance Form" (Annexure-1B) shall be filled in triplicate by the Contractor for record of :
  - i) Safety.
  - ii) Department/ Section of the Employer granting clearance and
  - iii) Contractor.
- e) The Contractor and his supervisors along with the Contract documents and job instructions received from the Employer, will come to Employer's Safety Engineering Department where the Contractor will obtain Safety Rule Book for Contractor and seek clarifications, if any. The Contractor is not permitted to stop the job without clearance from Employer's Safety Engineering Department.
- f) The Contractor shall possess handling equipment, tools & tackles of adequate capacity and tested quality.

**7.2** Contractor shall obtain specific permission in accordance with IPSS: 1-11-007-01 "Procedure to Permit to Work" and IPSS: 1-11-005-98 "Procedure for working at height by Contractor's Workers" from the Engineer of the company or the companies Safety Department before commencing the following:

- a) Working in an operating plant / equipment ;
- b) Working at height ;
- c) Working in areas expected to have toxic/ poisonous gases ;



- d) Major site activities irrespective of the clearance already obtained;
- e) Wherever there are hazardous of electricity moving. The Contractor shall obtain the copies of the above IPSS procedures from the Engineer or the Safety Engineering Department.

7.3 The executing department shall take necessary shut down of operating plant before commencement of job in that area. The Contractor shall ensure that shut down/ clearance is taken before sending workers to such locations particularly in the area where there are hazardous of gases, electricity, moving machinery etc.

## 8.0 SKILL AND COMPETENCE OF WORKMEN

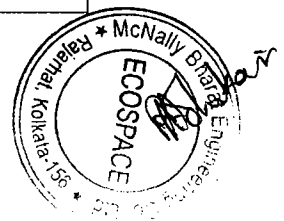
- 8.1 The Contractor shall be responsible to engage competent and skilled workers.
- 8.2 Before starting of the day's job, the Contractor shall ensure that safety briefing has been done to his workers by himself or his supervisors who have been imparted safety induction earlier and also maintain records to this effect.

## 9.0 PHYSICAL FITNESS OF WORKMEN

- 9.1 The Contractor shall ensure that his employees/ workmen subject themselves to such medical examination as required under the law or under the company's rule and keep a record of the same.
- 9.2 The Contractor shall not permit any employee/ workmen to enter the work area under the influence of alcohol.

## 10.0 DEALING WITH ACCIDENT

- 10.1 The Contractor shall maintain a safety register, keep records of all minor and major accidents, serious or averted (near miss) accidents, with or without injuries to human beings and shall submit a report about the accident to the Engineer promptly, on the form prescribed by the Employer.
- 10.2 The Contractor's supervisor/ officer in charge shall arrange to take the injured person first to Plant Medical Unit with IOW (Injury on Work) form given on Annexure-1C and under no circumstances, take the injured person directly to his own doctors. The information of fatal accident shall be given on **Annexure-1D**.
- 10.3 The Contractor shall not interfere with the site of accident, unless inspected and / or permitted by the competent authorities.
- 10.4 The Contractor shall arrange to avoid any sort of commotions at site in the event of an accident.



## 11.0 MISCELLANEOUS

### 11.1 Safety Records (Statutory Records)

The Contractor shall keep record of :

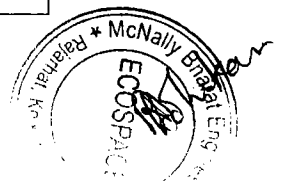
- i) Test certificates of all lifting tools & tackles, pressure vessels etc.
- ii) Periodical inspection report of safety appliances,
- iii) Maintaining accident analysis report in proper format in consultation with Employer's Engineer.
- iv) Safety record as per Factory Rules/ Safety Codes or any other statutory provision shall also be maintained. However, necessary help in this regard can be taken from concerned Safety Organisation.

### 11.2 Gas Lines

To work in dangerous gas lines e.g. Coke Ovens gas line, Blast Furnace gas line, LD gas line etc. Employer will provide job safety induction to the Contractor's personnel. For this the Contractor shall give in writing the list of personnel likely to work in gas line (new/ old) to the Engineer who in turn will arrange the safety induction to the Contractor's personnel inside Employer's Works. The Contractor shall ensure the presence of his personnel at place of safety induction (normally Central Gas Safety Station, E&E Department) and follow the steps, General rules & regulations as imparted during the training.

### 11.3 Electrician/ Other Electrical Personnel

The Contractor shall engage qualified and competent electricians and other electrical personnel while working on electrical lines (which may be High Tension, Medium Tension and Low Tension electrical lines) for safe execution of Contract. The electricians and other electrical personnel must possess requisite certificate issued from competent authority. **Electrical Equipment** The Contractor shall ensure proper earthing of all electrical equipment/ machinery prior to start of the machine. The Contractor shall also ensure daily examination of the earthing of equipment/ machinery prior to start of the job in order to avoid electrical hazards. The Contractor shall ensure use of proper cable (may be welding cable or power cable or control cable). The joints of the cables shall be perfectly insulated. The Contractor shall also ensure the use of proper plugs, sockets and other electrical fittings while executing any Contract.

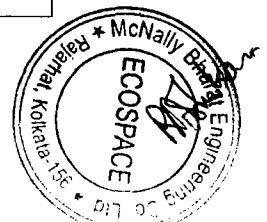


**11.4 Scaffolding/ lifting/ lowering/ dismantling of equipment or fabricated structurals or any other materials.**

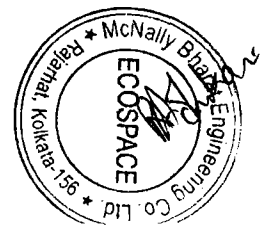
- i) For safe execution of the Contract, Contractor shall make a programme of a piece/whole job, in sequence of steps involved in execution the required safety measures to be taken during the execution of the job.
- ii) The Contractor shall ensure the use of sufficiently strong scaffolding with sufficiently strong hand railings during the execution of the job. The Employer will provide prints of "Standard Scaffolding Drawing" on request by the Contractor. Scaffold/ platform to be used by more than 2 persons has to be approved by the Site Engineer and the concerned Safety Organisation, jointly. The Contractor shall ensure the use of scaffoldings at construction site by his personnel working at height, fabricated as per standard drawing for scaffolding. If the scaffolding as per the standard drawing is not found suitable at site, the Contractor shall make necessary modification to strengthen the same. For any civil engineering job, the Contractor will provide adequate support before casting or any superstructure and provide approach, scaffolding etc., in such a manner that is safe, easy for movement of men, women and materials.
- iii) The Contractor shall make his own arrangement for the area lighting/ spot lighting at fabrication yard. The Employer will provide power source at one point only near to the fabrication yard.
- iv) The Employer will provide area lighting at erection site only. The Contractor shall make his own arrangement for spot lighting. The source of power supply at the nearest possible point will be shown by the engineer at site.

**11.5 House keeping**

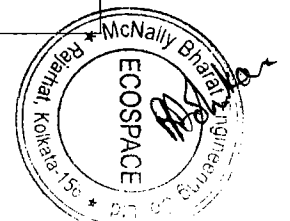
- i) The Contractor shall ensure good house keeping in his working area, fabricating yard as well as at erection site. The safe approach to the working place must be ensured. Place for keeping raw materials, semi-finished materials should be clearly marked with proper identification. Machine component shall be kept properly under shed.
- ii) The Contractor shall keep the scrap material at one place duly barricaded and shall remove the same regularly from the work place.
- iii) The Contractor shall stack properly the fabricated or any other items likely to be erected very shortly at erection site, in such a way that the materials do not cause congestion at site or create unsafe condition for free and safe approach.



- iv) The Contractor should put up a board (minimum 4' x 3') indicating the name of the Contractor, details of the job, order No., starting date and likely completion date of the job. On completion of the job, the Contractor shall clear the site (good materials and scrap). The board so displayed shall be taken out of the site. Any material left after the job is over will be picked up by the Employer and the Contractor will be charged back for the same.
  - v) **Barricading:** The Contractor shall ensure barricading of the unsafe area, which can lead to accidents to any unknown person working in that area. In order to remove unsafe condition and prevent accidents, this unsafe area such as trench/ pit/ foundation, any type of opening made or left in any floor of the building including staircase etc. must be barricaded. The hand railings shall be immediately provided in all the floors, stairs etc. before proceeding for erection/ dismantling.
  - vi) Removal of muck shall be done within 24 hours from road sides.
  - vii) The Contractor shall be responsible for removing all unwanted materials /scaffolds from the work site.
  - viii) The Contractor shall issue written as well as oral instructions from time to time, in addition to the precautions, measures spelt out above so as to ensure that the workers adhere to safety norms specifically needed for the particular job during the execution of the work. .
- 11.6 The Contractor shall ensure that compressed air is not used for removing the dust from one's clothes. Compressed shall not be blown against any one as it may injure or even kill him / her.
- 11.7 The Contractor shall provide, maintain and arrange for periodical checking of adequate numbers of fire extinguishers of appropriate type and other facilities (e.g. sand buckets, asbestos covering etc.) in fire prone areas.
- 11.8 The Contractor shall provide clearly demarcated access and exits at work site to take care in case of outbreak of fire or any other eventualities.
- 11.9 The Contractor shall ensure that smoking or keeping of naked light near gas lines, valves and any other equipment connected with gas distribution system and handling of all inflammable material is strictly prohibited.
- 11.10 The Contractor shall ensure that no one takes rest/ shelter below any dumped slag, boulder or any other cut pit/ excavation near any stock of materials, electrical installations and gas lines etc.
- 11.11 The Contractor shall ensure the availability of first aid box at the working sites.



- 11.12 Make available all necessary personal safety equipments/appliances such as safety helmets, safety boots, full body harness, gloves, leather gloves for welders, clear glass, safety goggles and other relevant PPEs as advised by Safety Department or Departmental Safety Officer for the use of persons employed at the site of work and maintain in condition suitable for immediate use and shall take steps to ensure proper use of equipment by the workers
- 11.13 Usage of full body harness and anchoring it at rigid place is to be ensured by the Contractor or his supervisor who shall be present all the time on working spot.
- 11.14 Use only steel pipe scaffolding. However, temporary hanging platforms made of bamboos can be used where it will be securely fastened from top.
- 11.15 Contractor shall also ensure the presence of supervisor at site during the execution of the job.
- 11.16 Obtain passes from Safety Department for those persons who will be required to work at height of above 2 meters.
- 11.17 In case of contracts involving deployment of workers at a height exceeding 10 meters, the following clauses will also apply –
- A) Persons carrying out such jobs should be selected by the Contractors within age group of 20 to 50 years with doctors certificate about fitness to work at height in the format prescribed by NMDC.
  - B) All such persons should be medically examined for fitness and fit certificate may be issued by Plant Hospital, Nagarnar, Rs. 500/- per contract labour will be charged from the Contractors towards this medical examination by Plant Hospital, Nagarnar.
  - C) Special Training is to be imparted by Safety Department for such persons.
- 11.18 (i) Operating Authority will assess the penalty amount having regard to all the circumstances, in particular the nature and gravity of the violation on the advice of the Head of safety Department and will issue a show cause notice specifying therein the proposed penalty. Considering the cause shown by the Contractor, if any, the Operating Authority shall pass final orders which shall then be binding on the Contractor. The penalty amount shall be recoverable from any bill and / or EMD / SD of the Contractor without any further reference to him.
- (ii) In case of violations from Category (I) & (II) i.e. occasional violation and minor violation, if repeated for the second time and onwards, the penalty will be recovered, from the dues of the contractor by the Finance Department on the advice from SED (Safety Engineering



Department) officials and the Operating Authority will be kept informed only.

(iii) For the violations of Category- III and Category – IV as mentioned above and detailed in the Annexure, if repeated for the second time and onwards, the penalty will be recovered by the Finance Department against an advice from SED (As decided in consultation with the Operating Authority within 3 days from violation).

(iv) In case of violation of Category – V i.e Fatal cases, SED officials will impose fine of Rs. 3,00,000/- or 20% of the contract value whichever is lower on the contractor without consulting Operating Authority and direct Finance Deptt. To deduct from the contractor's dues. The Enquiry Committee of the fatal cases may recommend suspension / banning business dealing with the contractor, if found appropriate.

11.19 Contractors should ensure that his workers follow all jobs specific safety precautions as instructed from time to time by Contract Operating Authority or his representative.

11.20 a) Persons working on platform above 02 meter from the ground level and persons working on the ground level on the periphery of the pit which is 02 meter or more deep must wear ISI safety belt and persons working on the platforms which are 05 meter above the ground level, but less than 10 meters, must undergo safety training for 'Working at height' being imparted by Safety Engineering Department and must also wear safety belt. A certificate for such safety training for 'Working at height' will be issued to the person by Safety Engineering Department valid for a maximum period of one year.

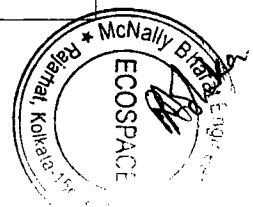
b) Persons working on the platform above 10 meter from the ground level and persons working on the ground level on the periphery of the pit which is 10 meter or more deep must use ISI safety Belt and obtain medical / mental fitness certificate from the Medical Officer of the company / Civil Surgeon, Nagarnar. On the basis of this certificate, Safety Engineering Department will impart safety training for working at height and issue height pass. Height pass issued will be in the name of individual worker and its validity will be for a maximum period of 01 year only.

c) on expiry, certificates of safety training for working at height as per (a) above and height passes as per (b) above will be renewed after the workers passes the tests and imparted training once again.

## 12.0 Operational Control Procedures:

### Purpose:

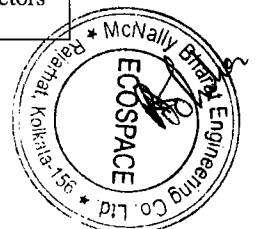
To establish and maintain the procedure and to ensure that –



- i. Operational controls as applicable to the organizations and its activities
- ii. Controls related to purchased goods, equipments and services
- iii. Controls related to Contractors
- iv. Documented procedures to cover situations where their absence could lead to deviations from OHS policy
- v. Stipulating operating criteria

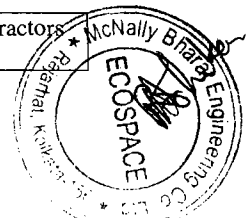
**Procedure:**

- i. Identify those activities, operation and services that are having hazards and risk assessed and identified and prioritized significant risks where operational control is required.
- ii. Documented operational control procedures shall be prepared to cover the activities, operations and services.
- iii. Operational Control Procedures shall be made available at the place of work in printed or electronic form.
- iv. Critical equipment, machinery and other sources from point of OH & S shall be identified and their preventive maintenance schedule shall be laid down in order to reduce / control or prevent incidents.
- v. Machinery and equipment shall be operated, monitored as per the Operational Control Procedures and laid down criteria and records shall be maintained.
- vi. Controls related to contractors for adherence to all safety precautions and applicable guidelines.

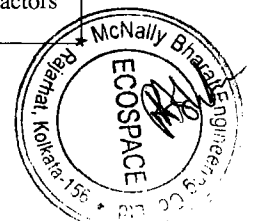


**Annexure-I**

Category	Violations	Fine
I.	1. Occasional violation of not wearing crash helmet in works/ office area.	Rs.1000/-
II.	<p><b><u>Minor Violations.</u></b></p> <ol style="list-style-type: none"> <li>1. Height pass not made/ available.</li> <li>2. Unauthorized entry at height/ hazardous location.</li> <li>3. Proper ladder/ steps not provided for descending.</li> <li>4. Shuttering not done (below 2 Mtr level) of excavation.</li> <li>5. Over hanging burden in pit not removed in excavation.</li> <li>6. Power cable clamped with GI wires to post/ pillar.</li> <li>7. Power cable tied on reinforced rod/ structure without proper insulation.</li> <li>8. Loose connection taken from board without proper board plug.</li> <li>9. Fitness certificate of cranes/ hydramoc/ heavy vehicles not available.</li> <li>10. Crane rope conditions not OK.</li> <li>11. Rope of crane not clamped properly.</li> <li>12. Tyres of vehicle having patching/ bolting.</li> <li>13. Not wearing safety helmet at site.</li> <li>14. Working in slippers/ barefoot.</li> <li>15. Hand gloves not used.</li> <li>16. Gas cutting without goggle.</li> <li>17. Rolling/ lifting of cylinder/ dragging on the ground (without cage).</li> <li>18. Welding with non-standard holder.</li> <li>19. Welding machine earthing not done (double body earthing).</li> <li>20. Gas Hose Pipe clamping done by wires.</li> <li>21. LPG cylinder date expired/ over.</li> <li>22. Wet bags not put on gas cylinder.</li> <li>23. Loading/ unloading of cylinder – cushion not given.</li> <li>24. Condition of hose pipe not good.</li> <li>25. Working with leaking cylinder.</li> <li>26. Using non power cable instead of welding cable.</li> <li>27. Working without work permit/ shut-down.</li> <li>28. Not putting red flags/ stopper.</li> <li>29. Dismantling of structure without authorized plan.</li> <li>30. Unauthorized Oxygen tapping.</li> <li>31. Working on NMDC installation without permission.</li> <li>32. Not having proper gate passes/ other area passes.</li> <li>33. Use of damaged slings/ tools/ ropes.</li> <li>34. Hand grinders/ mixer machines without guard.</li> <li>35. Not reporting of accident.</li> </ol>	Rs.2500/-



	<p>36. Taking shelter behind electrical panel.</p> <p>37. Driving of heavy vehicles on the main road during restricted hours.</p> <p>38. Parking at unauthorized place.</p> <p>39. Truck side panel/ broken, not OK.</p> <p>40. Dropping/ spillage of material on the road.</p> <p>41. No number plate on the vehicle.</p> <p>42. No indicator light/ brake light on vehicles.</p>	Rs.2500/-
III.	<b><u>Major Violations.</u></b>	
	<p>1. Using bamboo/ or other non-standard material for scaffolding.</p> <p>2. Railing not given at platforms or opening of floor.</p> <p>3. Scaffolding planks not tied.</p> <p>4. Throwing / dropping of material from height.</p> <p>5. Proper ladder/ approach not given for working at height.</p> <p>6. Walkway/ cross over path not provided.</p> <p>7. No barricading of excavated pits.</p> <p>8. No top cover on power distribution board.</p> <p>9. Sleeping under truck.</p> <p>10. Absence of supervisor at work site.</p> <p>11. Welding screen not used.</p>	Rs.7500/-
IV.	<b><u>High Risk Violations.</u></b>	
	<p>1. Full body harness (FBH) not wearing.</p> <p>2. Life line of FBH not anchoring.</p> <p>3. Floor opening left unguarded in the area of work.</p> <p>4. Working at roof without daily permit.</p>	Rs.20,000/-
V.	<b>Fatal Accident Cases.</b>	Rs.3,00,000/- or 20% of contract value whichever is lower.



**ANNEXURE-1A**

(Name of the Organisation)

(Name of the Unit)

**SAFETY INDUCTION FORM**

**Safety induction to the Contractor for starting a job.**

1. Name and address of the Contractor :
2. Contract/ Award Letter/ Work Order No. :
3. Name of the Department awarding Contract. :
4. a) Probable date of starting the job :  
b) Duration :
5. Place & nature of work :
6. Name & designation of supervisors :  
i) Department (1) (2)  
ii) Contractual (1) (2)
7. Necessary safety precautions explained. :
8. Safety appliances advised for usage to the Workers:

Safety Engineering Department  
or Engineer's representative

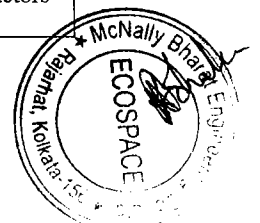
I have gone through the Safety Rules Book for Contractors and received a copy of the same. I shall follow all safety precautions/ instructions given to me and shall be responsible for safety of my staff/ employees/ workmen.

Signature of Contractor

Certified that requisite Safety Appliances are available with workers and Contractor is permitted to start the work.

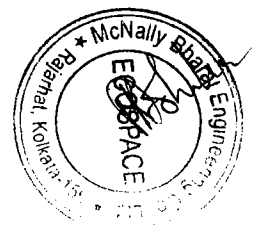
Signature of Engineer

Certified that requisite Safety Appliances are being used and safety precautions/ measures are being adopted.



Safety Officers of Employer  
Copy to :

1. Safety Department.
2. Operation/ Works Department.
3. Contractor with one spare copy.



**ANNEXURE-1B**

(Name of the Organisation)

(Name of the Unit)

**WORK CLEARANCE FORM FOR CONTRACTORS**

1. Name of Contractor's firm with address :
2. Engaged by which Department :
3. Name of the representative / supervisor of the Contractor supervising the job. :
4. Precise nature of work to be carried :  
out / work order reference.
5. Precise location of work :
  1. Proposed date and time of commencement :  
of work.
  2. Expected No. of days required for the work. :
  3. Whether Contractor's workers are to be :  
engaged in G/A/B/C shifts and No. of  
people engaged.

I accept responsibility for ensuring that all men under my control shall observe the statutory safety requirement and follow the safety instructions of the plant.

Date :

Signature of the Contractor

Certified that the Contractor has been engaged by us for the work described above.

Date :

Signature of the Engineer

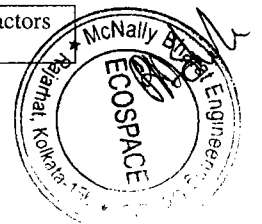
(Certificate to be given by the Department/Section where work is to be carried out)

You are authorised to carry out the work described below :

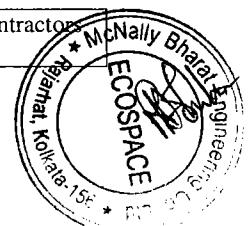
Date :

Signature of the Safety Officer of the Employer.

Note :



1. The form shall be filled-in in triplicate by the Contractor for the record of (I) Safety Engineering Department, (ii) Department/ Section granting clearance, (iii) Contractor.
2. These certificates are not a substitute for the electrical permits and do not give permission to use masked lights or work in gas hazardous areas or enter closed vessels or for explosives, which shall be taken separately whenever required.



**ANNEXURE-1C**

(Name of the Organisation)

(Name of the Unit)

**INJURY ON WORK**

(Contractor's Employees)

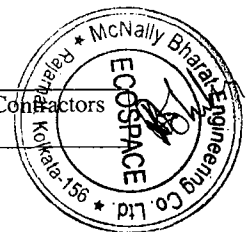
1. Name of the firm :
2. Name of the Contractor :
3. Name of Department (Awarding Contract) :
4. Name of the injured person :
5. Designation, gate pass No./ Token No. :
6. Date and time of accident :
7. Department where accident happened :
8. Exact place of occurrence :
9. Eye witness (name & designation) :
  - 1)
  - 2)
10. Persons appraised of :
  - 1)
  - 2)
11. Brief account of the accident :

Date:

Signature of the Contractor /Contractor's supervisor

(Particulars to be filled in by the Medical Officer)

1. Nature of injury :
2. Injured person is fit/ unfit to return : to duty.
3. If unfit, period of rest recommended :



4. This employee has been notified that :  
he is fit/ unfit as per SI. No.2.  
(strike out which is not applicable).

Date:

Signature of the Medical Officer.

Name :

Seal :



**Annexure-1C (contd.)**

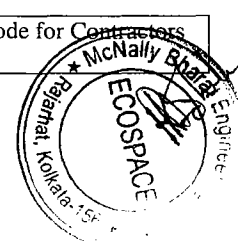
Note :

1. When an injury occurs to a Contractor's employee while inside the factory, the injured person should be sent to Plant Medical Unit immediately, with this form in triplicate.
2. The Medical Officer on duty at Plant Medical Unit will retain one copy and send one copy to Safety Engineering Department. The third copy shall be returned to the Contractor concerned after duly filling up the forms. In case, the Contractor takes the injured person to his private doctor, he shall do so by giving a written undertaking to the doctor in Plant Medical Unit and to the Manager, Safety Engineering Department. If the private doctor declares the injured person unfit for duty more than 2 days, this becomes a reportable accident under the Factories Act and the Contractor shall immediately report this to the Manager, Safety Engineering Department for sending reports to concerned Government agencies. The Contractor shall also keep the manager (Safety) inform about :
  - a) The condition of the injured person ;
  - b) The period of disability and
  - c) Any loss of earning capacity certified by the doctor.

The Contractor shall produce the fitness certificate from the attending doctor after the injured person is declared fit for duty.

(Name of the Organisation)

(Name of the Unit)



NOTICE OF FATAL ACCIDENT

(Contractor's Employees)

Date:

From  
(Name and address of the Contractor)

To  
The Engineer  
(Superintendent/ Manager)

Dear Sir,

We regret to inform you that \_\_\_\_\_, an  
employee of M/s \_\_\_\_\_ met with a fatal accident at  
\_\_\_\_\_ AM/ PM, dated \_\_\_\_\_ at \_\_\_\_\_. At the time of  
accident, he was engaged  
in \_\_\_\_\_

\_\_\_\_\_  
(Description of work)

Yours faithfully,

Signature of the Contractor /  
Contractor's supervisor

