BIDDER shall ensure the conformity of product / deliverable during internal processing and delivery to the intended destination.Requirements mentioned in the MR/ tender shall be adhered to.

**5.10** BIDDER shall establish system to ensure that inspection and testing activities are carried out in line with requirements.Where necessary, measuring equipment shall be calibrated at specified frequency, against national or international measurement standards; where no such standard exists, the basis used for calibration shall be recorded.The measuring equipment shall be protected from damage during handling, maintenance and storage.

**5.11** BIDDER shall ensure effective monitoring, using suitable methods, of the processes involved in production and other related processes for delivery of the scope of contract.

**5.12** BIDDER shall monitor and measure the characteristics of the product/deliverable to verify that product requirement has been met.The inspection (stage as well as final) by BIDDER and EIL / Owner personnel shall be carried out strictly as per the approved ITPs or ITPs forming part of the contract.Product release or service delivery shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by relevant authority and where applicable by Owner / EIL.

**5.13** BIDDER shall establish and maintain a documented procedure to ensure that the product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery

**5.14** All non-conformities (NCs) / deficiencies found by the BIDDER'S inspection / surveillance staff shall be duly recorded, including their disposal action shall be recorded and resolved suitably.Effective corrective actions shall be implemented by the BIDDER so that similar NCs including deficiencies do not recur.The BIDDER shall take appropriate actions to address the Risks and Opportunities in the project.

**5.15** All deficiencies noticed and reported by EIL / Owner shall be analysed by the BIDDER and appropriate corrective actions shall be implemented.BIDDER shall intimate EIL / Owner of all such corrective action implemented by him.

**5.16** BIDDER should follow the standards, specifications and approved drawings. Concessions/Deviations shall be allowed only in case of unavoidable circumstances. In such situations Concession/deviation request must be made by the BIDDER through online system of EIL vendor portal for document exchange. URL of EIL vendor portal for document exchange is http://edocx.eil.co.in/vportal. BIDDER shall have documented procedure for control of documents.

**5.17** All project records shall be carefully kept, maintained and protected for any damage or loss until the project completion, then handed over to EIL / Owner as per contract requirement (Refer Specification Nos. 6-78-0002 - Specification for Documentation Requirements from Contractors and 6-78-0003 - Specification for Documentation Requirements from Suppliers), or disposed as per relevant project procedure.

## 6.0 AUDITS

BIDDER shall plan and carry out the QMS audit for the job. Quality audit program shall cover design, procurement, construction management and commissioning as applicable including activities carried out by sub-vendors and sub-contractors. This shall be additional to the certification body surveillance audits carried out under BIDDER'S own ISO 9001 certification scheme.


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The audit programs and audit reports shall be available with bidder for scrutiny by EIL / Owner.EIL or Owner's representative reserves the right to attend, as a witness, any audit conducted during the execution of the WORKS.

In addition to above, EIL, Owner and third party appointed by EIL/Owner may also perform Quality and Technical compliance audits.BIDDER shall provide assistance and access to their systems and sub-contractor / vendor systems as required for this purpose.Any deficiencies noted shall be immediately rectified by BIDDER.

## 7.0 DOCUMENTATION REQUIREMENTS

BIDDER shall submit following QMS documents immediately after award of work (Within one week) for record / review by EIL / Owner/ TPIA(Third Party Inspection Agency), as applicable:

- Organization chart (for complete organization structure and for the project)
- Project Quality Plan/Quality Assurance Plan
- Job specific Inspection Test Plans, if not attached with PR
- Job Procedures
- Inspection/Test Formats

In addition to above QMS documents, following documentation shall be maintained by the BIDDER for submission to EIL / Owner on demand at any point of time during execution of the project:

- Quality Manual
- Certificate of approval for compliance to ISO9001 standard
- Procedure for Control of Non-conforming Product
- Procedure for Control of Documents
- Sample audit report of the QMS internal and external audits conducted during last one year
- Customer satisfaction reports from at least 2 customers
- Project QMS audit report
- Technical audit reports for the project
- Corrective action report on the audits

Documents as specified above are minimum requirements. BIDDER shall submit any other document/data required for completion of the job as per EIL/Owner instructions.


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# ठेकेदारों से प्रलेखन अपेक्षाओं हेतु विनिर्देश

# SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM CONTRACTORS

| Rev. No. | Date | Purpose | Prepared by | Checked by | Standards Committee Convener | Standards Bureau Chairman |
|---|---|---|---|---|---|---|
| | | | | | Approved by | |
| 3 | 29-09-2025 | General Revision | QMS Standards Committee | QMS Standards Committee | AK | MN |
| 2 | 12-06-2020 | General Revision | QMS Standards Committee | QMS Standards Committee | SKB | SKS |
| 1 | 12-03-2015 | General Revision | QMS Standards Committee | QMS Standards Committee | MPJ | SC |
| 0 | 04-06-2009 | Issued as Standard Specification | QMS Standards Committee | QMS Standards Committee | SCT | ND |



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**Abbreviations:**

| | |
|---|---|
| DEC | Detailed Engineering Contractor |
| DCI | Document Control Index |
| EIL | Engineers India Limited |
| EPCC | Engineering Procurement Construction Contract |
| FOA | Fax of Acceptance |
| IC | Inspection Certificate |
| IRN | Inspection Release Note |
| ITP | Inspection and Test Plan |
| LOA | Letter of Acceptance |
| LSTK | Lumpsum Turnkey |
| ODC | Over Dimension Consignment |
| PMC | Project Management Consultancy |
| QMS | Quality Management System |
| URL | Universal Resource Locator |

**QMS Standards Committee**

**Convener:** Mr. Anil Kumar

**Members:**
Mr. Himangshu Pal (SCM-Inspection)
Mr. Ravindra Kumar (Const.)
Mr. Vinod Kumar (CQA)
Mr. Swapnil Vaishnav (Projects)
Mr.Vijay Kumar Garg (SCM)
Mr.Raju Kumar Pandey (Equipment Division)


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| 2.0 | DEFINITIONS | 4 |
| 3.0 | REFERENCE DOCUMENTS | 4 |
| 4.0 | DOCUMENTATION AND DATA REQUIREMENTS | 4 |


**Annexures:**

| S. No. | Title | Doc. No. |
|---|---|---|
| 1. | Format for completeness of Final Documentation | Format No. 3-78-0004 |



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## 1.0 SCOPE

This specification establishes the Documentation Requirements from Contractors.

All documents/data against the Tender / Contract shall be developed and submitted to EIL/Owner by the contractor for review / records, in line with this specification.

## 2.0 DEFINITIONS

### 2.1 Contractor

For the purpose of this specification, the word "CONTRACTOR" means the person(s), firm, company or organization who has entered into a contractwith EIL / Owner for delivery of some products and services.The word is considered synonymous to bidder, supplier or vendor.

### 2.2 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

## 3.0 REFERENCE DOCUMENTS

- Specification for Quality Management System Requirements from Bidders (Doc. No. 6-78-0001)

## 4.0 DOCUMENTATIONAND DATA REQUIREMENTS

### 4.1 Order Acknowledgement and Assigning Project Manager

After placement of order, Contractor shall acknowledge order through V-Portal within 7 days of receipt of FOA/PO. Contractor shall assign a Project Manager for that order though online portal and provide requisite details. Project Manager details shall include e-mail address, mailing address, mobile/telephone nos., fax nos. and name of Project Manager. All the system generated emails pertaining to that order shall be sent to the assigned Project Manager.

### 4.2 Documents/Data to be submitted by the Contractor

**4.2.1** The contractor shall submit the documents and data against the Tender/Contract as per the list specified in respective Tender/Contract.

**4.2.2** Review of the contractor drawings / Documents by EIL would be only to review the compatibility with basic designs and concepts and in no way absolve the contractor of his responsibility/contractual obligation to comply with Tender/Contract requirements, applicable codes, specifications and statutory rules/regulations. Any error/deficiency noticed during any stage of manufacturing/execution/ inspection / installation shall be promptly corrected by the contractor without any extra cost or time, whether or not comments on the same were received from EIL during the drawing review / inspection stage.

**4.2.3** Unless otherwise specified, submission of documents for Review/Records shall commence as follows from the date of Fax of Intent /Letter of Intent/ Fax of Acceptance (FOA)/ Letter of Acceptance (LOA):

| | | |
|---|---|---|
| QMS | - | 1week |
| Document Control Index | - | 2weeks |
| Other Documents/Drawings | - | As per approved Document Control Index |


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**4.2.4** Documents as specified in Tender/Contract are minimum requirements.Contractor shall submit any other document/data required for completion of the job as per EIL/Owner instructions.

## 4.3 Style and Formatting

**4.3.1** All Documents shall be in ENGLISH language and in M.K.S System of units.

**4.3.2** Before submitting the drawings and documents, contractor shall obtain the title block from EIL and ensure that the following information are properly entered in each drawing:

- Tender Number
- Name of Equipment / Package
- Equipment / Package Tag No.
- Name of Project
- Owner
- Main Contractor (if work is sub-contracted)
- Drawing / Document Title
- Drawing / Document No.
- Drawing / Document Revision No. and Date

## 4.4 Review and Approval of Documents by Contractor

**4.4.1** All the Drawing/Documents shall be reviewed, checked, approved and duly signed/stamped by contractor before submission.Revision number shall be changed during submission of the revised contractor documents and all revisions shall be highlighted by clouds. Whenever there is a requirement of any sub- contractor/DEC drawings to be reviewed by EIL, the same shall be submitted by the contractor duly reviewed, approved and stamped by the sub- contractor/DEC and the contractor.Direct submission of sub- contractor's drawings without contractor's approval shall not be entertained.

## 4.5 Transportation Plan

Transportation Plan for Over Dimensional Consignments (ODC), if any, shall be submitted within 2 weeks of receiving FOA / LOA, for approval. Unless otherwise mentioned, consignments with parameters greater than following shall be considered as over dimensional.

Dimensions : 4 meters width x 4 meters height x 20 meters length

Weight : 32 MT (Metric Ton)

Dimensions and weight provided above are inclusive of all nozzles, attachments, transportation saddles etc.

Physical Route survey for ODC movement shall be submitted to EIL within 8 weeks of receiving FOA / LOA.

## 4.6 Document Category

Following review codes shall be used for review of contractor Drawings/Documents:

**Code 1** - No comments. Proceed withManufacture/ Fabrication/ Constructionas per the document.

**Code 2** - Proceed with Manufacture/Fabrication/Constructionas per commented document.Revised document required.


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**Code 3** - Document does not conform to basicrequirements as marked.Resubmitfor review.

**Code R** - Document is retained for Records. Proceed withManufacturing/ fabrication as per Tender/ ContractRequirement.

**Code V** - Void, Document is returned as invalid.

Document is marked as Void under following conditions:

a) Wrong item drawing uploaded.
b) Superseded or obsolete submission.
c) Duplicate submission.
d) Out of sequence submission.
e) Mismatch in document name and title under which document uploaded.
f) Document not legible.
g) For PMC projects, document not signed and stamped by contractor and DEC

## 4.7 Methodology for Submission of Documents to EIL/Owner

### 4.7.1 Document Control Index (DCI)

Contractor shall create and submit Document Control Index (DCI) for review based on PO/PR/MR along with schedule date of submission of each drawing/document on EIL Vendor Portal.The DCI shall be specific with regard to drawing/document no. and the exact title. Proper sequencing of the drawings/documents should be ensured in schedule date of submission.

### 4.7.2 Submission of Drawings/Documents / Data

Drawings/documents, data and DCI shall be uploaded on the EIL VendorPortal. The detail guidelines for uploading documents on EIL Vendor Portal are available on following URL:

http://edocx.eil.co.in/vportal

### 4.7.3 Statutory Approvals

Wherever approval by any statutory body is required to be taken by Contractor, the Contractor shall submit copy of approval by the authority to EIL.

### 4.7.4 Schedule and Progress Reporting

Contractor shall submit monthly progress report (MPR) and updated procurement, engineering and manufacturing status (schedule vs. actual) and highlight constraints, if any, along with action plan for mitigation, to the EIL / Owner by 1st week of every month. One month Look-ahead schedule including the mobilization plan shall be submitted within 2 weeks from FOA / LOA.In case of exigencies, EIL/Owner can ask for report submission as required on weekly/fortnightly/ad-hoc basis depending upon supply status and contractor shall furnish such reports promptly without any price implication.Format for progress report shall be submitted by the contractor during kick off meeting or within one week of receiving FOA/LOA, whichever is earlier.

Contractor shall submit progress reports including Daily Progress Reports (DPR) through planning portal. “EIL CP Contractor Daily Update System” available in following url: https://www6.eil.co.in/CDUS/


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### 4.7.5 Quality Assurance Plan/Inspection and Test Plan

Inspection and test plans attached if any, to the tender are generic and indicative only. Immediately after receipt of the order, contractor shall submit within one week of receiving FOA/LOA, job specific ITPs based on the indicative ITPs. Further, contractor shall also submit Quality Assurance Plan for project activities in the scope of contract, starting from manufacturing to handing over/ commissioning, these plans shall cover/identify the activities, relevant procedure, if any, code of conformance, resources for performance and checking/monitoring, approval requirements and authority, records to be generated and audit scope by EIL/Owner.

For EPCC/LSTK/Package contracts, the contractor shall prepare a list of items/ equipment and their inspection categorization plans for all items included in the scope of supply immediately after receipt of order and obtain approval for the same from EIL. The items shall be categorized into different categories depending upon their criticality for the scope of inspection of TPIA and/or EIL.

### 4.7.6 Inspection Release Note (IRN)/ Inspection Certificate (IC)

Contractor shall ensure that all documents viz. documents reviewed, manufacture's test certificate etc., mentioned in Inspection Release Note(IRN), issued by EIL/third party against the materials supplied by contractor, are sent to EIL along with the IRN.

IRN/ IC shall be issued by EIL Inspector/ third party inspection agency only after all the drawings/documents as per DCI are submitted and are accepted under review code-1& code R. Material/Equipment dispatch from contractor's/sub vendor's works shall not commence till above condition is met.

Note 1: Nonfulfilling above requirement shall result into appropriate penalty or with- holding of payment as per conditions of Tender/Contract.

Note 2: For items where IRN/IC is issued by TPIA, supplier to ensure that following as a minimum must be mentioned by TPIA in IRN/IC

a) Tender document number
b) List of drawings / documents with EIL approval code
c) Tests witnessed, documents reviewed
d) Compliance statement by TPIA that product meets the requirement as specified in EIL standard specifications, Inspection Test Plan / Quality Assurance Plan (QAP) and approved documents.

### 4.7.7 Pre-Commissioning& Commissioning Activities Management System (PCAMS)

Pre-Commissioning& Commissioning activities management system software shall be followed for Mechanical completion, check listing of loops, punch points, hydro test and issue of Formats during the Pre-Commissioning and Commissioning activities and the same can be accessed on following URL

https://pcams.eil.co.in/

## 4.8 Final Documentation

### 4.8.1 As built Drawings


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Minor Shop/Site changes made by contractor after approval of drawings under 'Code 1' by EIL and deviations granted through online system, if any, shall be marked in hard copies of drawings which shall then be stamped 'As-built' by the contractor.These 'As-built' drawings shall be reviewed and stamped by EIL Inspector/Site engineer/TPIA also, as the case may be. Format for completeness of final documents (Format No. 3-78-0004) is attached with this specification.Contractor shall prepare scanned images files of all marked – up 'As – built' drawings. Simultaneously contractor shall incorporate the shop/site changes in the native soft files of the drawings also.

### 4.8.2 As built Final Documents

As built final documents shall be submitted as listed in Tender/Contract

### 4.8.3 Packing/Presentation of Final Documents

Final Documents shall be legible photocopies in A4, A3 size only.Drawings will be inserted in plastic pockets (both sides transparent, sheet thickness minimum 0.1 mm) with an extra strip of 12 mm wide for punching so that drawings are well placed.

Final Documentation shall be bound in hard board plastic folder(s) of size 265 mm x 315 mm (10½-inch x 12½-inch) and shall not be more that 75 mm thick. It may be of several volumes and each volume shall have a volume number, index of volumes and index of contents of that particular volume.Where numbers of volumes are more, 90mm thickness can be used.Each volume shall have top Poly Vinyl Chloride (PVC) sheet of minimum 0.15 mm thick duly fixed and pressed on folder cover and will have 2 lever clips.In case of imported items documents, 4 lever clip shall also be accepted.All four corners of folders shall be properly metal clamped.Indexing of contents with page numbering must be incorporated by contractor.Spiral/Spico bound documents shall not be acceptable.As mentioned above, books should be in hard board plastic folders with sheets punched and having 2/4 lever clips arrangement.

Each volume shall contain on cover a title block indicating Tender No., name of project, name of customer, package equipment tag no. & name (if applicable).Each volume will have hard front cover and a reinforced spine to fit thickness of book.These spines will also have the title printed on them.Title shall include also volume number (say 11 of 15) etc.

### 4.8.4 Submission of Soft copies

Contractor shall submit to EIL, the scanned images files as well as the native files of drawings/documents, along with proper index.

In addition to hard copies, contractor shall submit soft copies of all the final drawings and documents in pen drive or any other specified medium with proper identification tag, all text documents prepared on computer, scanned images of all important documents (not available as soft files), all relevant catalogues, manuals available as soft files (editable copies of drawings/text documents, while for catalogues/manuals/proprietary information and data PDF files can be furnished). All soft files shall be appropriately named, systematically indexed, and duly bookmarked in PDF format to facilitate ease of reference and access.

All the above documents shall also be uploaded on the EILVendor Portal and if applicable on Client Server also.


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### 4.8.5 Completeness of Final Documentation

Contractor shall get the completeness of final documentation verified by EIL/TPIA and attach the Format for Completeness of Final Documentation (Format No. 3-78-0004) duly signed by EIL or TPIA as applicable to the final document folder.


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# COMPLETENESS OF FINAL DOCUMENTATION

| | | |
|---|---|---|
| Name of Supplier/Contractor | : | |
| Customer | : | |
| Project | : | |
| EIL's Job No. | : | |
| Purchase Order No./ Contract No. | : | |
| Purchase Requisition No./ Tender No. | : | Rev. No.: |
| Name of the Work/ Equipment | : | |
| Tag. No. | : | |
| Supplier's/ Contractor's Works Order No. | : | |

Certified that the Engineering Documents/ Manufacturing & Test Certificates submitted by the supplier (as per Index sheet mentioned in Annexure-1) are complete in accordance with the Vendor Data Requirements of Purchase Requisition / Tender.

| | | | |
|---|---|---|---|
| Signature | : ……. | Signature | : ……. |
| Date | : ……. | Date | : ……. |
| Name | : …….. | Name | : …….. |
| Designation | : …… | Designation | : …… |
| Department | : …… | Department | : …… |
| | Supplier/Contractor | | EIL/TPIA |



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**Annexure-1**

| Final Documentation Index Sheet | | | |
|---|---|---|---|
| PR/PO/Tender No. | | Revision No. | |
| | | | |
| Serial No. | Document Title | Page/ Folder No. | No. of Pages |
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|---|---|---|---|
| Signature | : …… | Signature | : …… |
| Date | : …… | Date | : …… |
| Name | : …….. | Name | : …….. |
| Designation | : …… | Designation | : …… |
| Department | : …… | Department | : …… |

Supplier / Contractor

EIL / TPIA



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# आपूर्तिकर्ताओं से प्रलेखन अपेक्षाओं हेतु विनिर्देश

# SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM SUPPLIERS

| Rev. No. | Date | Purpose | Prepared by | Checked by | Standards Committee Convener | Standards Bureau Chairman |
|---|---|---|---|---|---|---|
| | | | | | Approved by | |
| 3 | 29-09-2025 | General Revision | QMS Standards Committee | QMS Standards Committee | AK | MN |
| 2 | 01-06-2020 | General Revision | QMS Standards Committee | QMS Standards Committee | SKB | SKS |
| 1 | 12-03-2015 | General Revision | QMS Standards Committee | QMS Standards Committee | MPJ | SC |
| 0 | 04-06-2009 | Issued as Standard Specification | QMS Standards Committee | QMS Standards Committee | SCT | ND |



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**Abbreviations:**

| | |
|---|---|
| DCI | Document Control Index |
| EIL | Engineers India Limited |
| EPS | Electronic Procurement System |
| FOA | Fax of Acceptance |
| IC | Inspection Certificate |
| IRN | Inspection Release Note |
| ITP | Inspection and Test Plan |
| LOA | Letter of Acceptance |
| LR | Lorry Receipt |
| MR | Material Requisition |
| ODC | Over Dimension Consignment |
| PO | Purchase Order |
| PR | Purchase Requisition |
| PVC | Polyvinyl Chloride |
| QAP | Quality Assurance Plan |
| QMS | Quality Management System |
| RPO | Regional Procurement Office |
| TPIA | Third Party Inspection Agency |
| URL | Universal Resource Locator |
| V-Portal | Vendor Portal |

**QMS Standards Committee**

**Convener:** Mr. Anil Kumar

**Members:**
Mr. Himangshu Pal (SCM-Inspection)
Mr. Ravindra Kumar (Const.)
Mr. Vinod Kumar (CQA)
Mr. Swapnil Vaishnav (Projects)
Mr.Vijay Kumar Garg (SCM)
Mr.Raju Kumar Pandey (Equipment Division)


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| 3.0 | REFERENCE DOCUMENTS | 4 |
| 4.0 | DOCUMENTATION REQUIREMENTS | 4 |


**Annexures:**

| S. No. | Title | Doc. No. |
|---|---|---|
| 1. | Format for completeness of Final Documentation | Format No. 3-78-0004 |


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## 1.0 SCOPE

This specification establishes the Documentation Requirements from Suppliers.

All documents/data against the PO / PR / MR shall be developed and submitted to EIL/Owner by the suppliers for review / records, in line with this specification.

## 2.0 DEFINITIONS

### 2.1 Supplier

For the purpose of this specification, the word "SUPPLIER" means the person(s), firm, company or organization who has entered into a contract with EIL / Owner for delivery of some products and/orservices.The word is considered synonymous to bidder, contractor or vendor.

### 2.2 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

## 3.0 REFERENCE DOCUMENTS

- Specification for Quality Management System Requirements from Bidders (Doc. No. 6-78-0001)

## 4.0 DOCUMENTATION REQUIREMENTS

### 4.1 Order Acknowledgement and Assigning Project Manager

After placement of order, Supplier shall acknowledge order through V-Portal within 7 days of receipt of FOA/PO. Supplier shall assign a Project Manager for that order though online portal and provide requisite details. Project Manager details shall include e-mail address, mailing address, mobile/telephone nos., fax nos. and name of Project Manager. All the system generated emails pertaining to that order shall be sent to the assigned Project Manager.

### 4.2 Documents/Data to be submitted by the Supplier

**4.2.1** The Supplier shall submit the documents and data against the PO/PR/MR as per the list given in respectivePO/PR/MR.

**4.2.2** Review of the supplier drawings/ documents by EIL would be only to review the compatibility with basic designs and concepts and in no way absolve the supplier of his responsibility/contractual obligation to comply with PR requirements, applicable codes, specifications and statutory rules/regulations.Any error/deficiency noticed during any stage of manufacturing/execution/inspection/ installation shall be promptly corrected by the supplier without any time and cost implications, irrespective ofcomments on the same were received from EIL during the drawing review stage or not.

**4.2.3** Unless otherwise specified, submission of documents for Review/Records shall commence as follows from the date of Fax of Intent /Letter of Intent/ Fax of Acceptance (FOA)/ Letter of Acceptance (LOA):

| | | |
|---|---|---|
| QMS | - | 1week |
| Document Control Index | - | 2weeks |
| Other Documents/Drawings | - | As per approved Document Control Index |


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**4.2.4** Documents as specified in PO/PR/MR are minimum requirements.Supplier shall submit any other document/data required for completion of the job as per EIL/Owner instructions.

### 4.3 Style and Formatting

**4.3.1** All Documents shall be in ENGLISH language and in M.K.S(Meter-Kilogram-Second) System of units.

**4.3.2** Before forwarding the drawings and documents, contractor shallobtain the title block from EIL and ensure that the following information are properly mentioned in each drawing:

- Purchase Requisition Number
- Name of Equipment / Package
- Equipment / Package Tag No.
- Name of Project
- Client
- Drawing / Document Title
- Drawing / Document No.
- Drawing / Document Revision No. and Date

### 4.4 Review and Approval of Documents by Supplier

**4.4.1** All, the Drawing/Documents shall be reviewed, checked, approved and duly signed/stamped by supplier before submission.Revision number shall be changed during submission of the revised supplier documents and all revisions shall be highlighted by clouds. Whenever the supplierrequires any sub-supplier drawings to be reviewed by EIL, the same shall be submitted by the supplier duly reviewed, approved and stamped by the supplier.Direct submission of sub-supplier's drawings without contractor's / suppliers' approval shall not be entertained.

### 4.5 Document Category

Following review codes shall be used for review of supplier Drawings/Documents:

**Code 1** - No comments. Proceed with Manufacture / Fabrication / Construction as per the document.

**Code 2** - Proceed with Manufacture / Fabrication / Construction as per commented document. Revised document required.

**Code 3** - Document does not conform to basic requirements as marked.Resubmitfor review.

**Code R** - Document is retained for Records. Proceed with Manufacturing / fabrication as per Tender/ ContractRequirement.

**Code V** - Void, Document is returned as invalid.

Document is marked as Void under following conditions:

a) Wrong item drawing uploaded.
b) Superseded or obsolete submission.
c) Duplicate submission.
d) Out of sequence submission.
e) Mismatch in document name and title under which document uploaded.
f) Document not legible.
g) For PMC projects, document not signed and stamped by contractor and DEC


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## 4.6 Methodology for Submission of Documents to EIL/Owner

### 4.6.1 Document Control Index (DCI)

Supplier shall create and submit Document Control Index (DCI) forreview based on PO/PR/MR along with schedule date of submission of each drawing/document on EIL Vendor Portal.The DCI shall be specific with regard to drawing/document no. and the exact title. Proper sequencing of the drawings/documents should be ensured in schedule date of submission.

### 4.6.2 Submission of Drawings/Documents / Data

Drawings/documents, data and DCI shall be uploaded on the EIL Vendor Portal as per approved DCI. The detailed guidelines for uploading documents on EIL VendorPortal are available on URL:**http://edocx.eil.co.in/vportal**

### 4.6.3 Statutory Approvals

Wherever approval by any statutory body is required to be taken by Supplier, the Supplier shall submit copy of approval by the authority to EIL.

### 4.6.4 Manufacturing Schedule

Supplier shall prepare milestone based(milestones such as document submission, sub ordering, manufacturing, Inspection, dispatches, etc.) manufacturing schedule for the order, to meet delivery as per FOA/PO terms. Supplier shall submit manufacturing schedule to concerned Regional Procurement Office (RPO) of EIL, with a copy to Head office monitoring team/Owner for review within 7 days from date of FOA/PO.Same shall be uploaded in the EPS portal of EILi.e.,https://www6.eil.co.in/epsinspection/supp

### 4.6.5 Schedule and Progress Reporting

Supplier shall submit Monthly Progress Report(MPR) on or before the 9$^{th}$ of every monthindicating following milestone-based progress details as minimum:

- Drawing submission and approval status and schedule for submission of revised drawing / fresh Drawing requiring approval as per approved DCI
- Sub-ordering plan/details for all major items indicating item description, sub-order number, Date of sub-ordering, sub-vendor name, Location, contractual delivery data and expected delivery dates at main vendor's shop and other critical details requiring timely receipt of sub-ordered items at shop.
- Shop manufacturing progress indicating major milestone progress, in case of missing any milestone date, catch up plan for the same and expected dispatch date from shop and expected delivery date at site.
- Area requiring special attention/concern and proposed action plan to resolve the same.

First Monthly Progress Report (MPR) shall be submitted within2 weeks from FOA/LOA.In case of exigencies, EIL/Owner can ask for report submission as required on weekly/fortnightly/ad-hoc basis depending upon supply status and supplier shall furnish such reports promptly without any price implication.Format for progress report shall be submitted by the Supplier during kick off meeting or within 2 weeks of receiving FOA/LOA, whichever is earlier.


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## 4.7 Inspection and Testing

### 4.7.1 Quality Assurance Plan/Inspection and Test Plan

If Inspection and test plans (ITP)are attached with MR/PR same shall be followed along with additional tests requirement (if any) mentioned in MR/ PR. However for cases wherein EIL Standard ITPs not available/ have not been attached with MR/PR, Supplier shall submit within one week of receiving FOA/LOA, the Quality Assurance Plan for inspection & testing at various stages of production, quality control records for critical bought out items/ materials and site assembly & testing as may be applicable to the specific order and obtain approval from concerned Regional procurement Office of EIL/third party inspection agency, as applicable.

For Package equipment contracts, the supplier shall prepare a list of items/ equipment and their inspection categorization plan for all items included in the scope of supply immediately after receipt of order and obtains approval for the same from EIL. The items shall be categorized into different categories depending upon their criticality for the scope of inspection of TPIA and/or EIL.

### 4.7.2 Inspection Requirements:

Supplier shall perform internal inspection as per ITP/ approved QAP at their works based on approved documents/drawings. Upon satisfactory internal inspection, supplier shall raise inspection call through Inspection call Module of EPS (https://www6.eil.co.in/epsinspection) to concerned Regional Procurement Office (RPO) of EIL/ TPIA/ Owner with advance notice as per contractalong with Internal test reports. Where inspection is not in the scope of EIL and is carried out by nominated Third Party Inspection agency (TPIA), Inspection Release Note (IRN) issued by the nominated TPIA along with Manufacturer's Test Certificate (MTC) shall be uploaded in EIL EPS Portal (https://www6.eil.co.in/epsinspection).

All changes w.r.t. PR shall be recorded through agreed variations or Concessions & Deviations. Conflict, if any, between PR / Job specifications and approved drawings, shall be brought to the notice of EIL / owner bythe supplier/ contractor. Decision of EIL / owner will be binding on the supplier and to be complied without time and cost implications.

Identified bought out items/ raw material shall be procured under TPIA as per ITP.

### 4.7.3 Inspection Release Note (IRN)/ Inspection Certificate (IC)

IRN/ IC shall be issued by EIL Inspector/ third party inspection agency on successful inspection, review of test reports/ certificates as per specifications &ITP/ agreed quality plan (as applicable) and only after all the drawings/documents as per DCI are submitted and are accepted under review code-1or code R. Supplier shall ensure that necessary documents/manufacturing and test certificates are made available to EIL/TPIA as and when desired.

Note 1: Non fulfilling above requirement shall result into appropriate penalty or with- holding of payment as per conditions of PO/PR/MR.

Note 2: For items where IRN/IC is issued by TPIA, supplier to ensure that following as a minimum must be mentioned by TPIA in IRN/IC:

a) PR document number
b) List of drawings/documents with EIL approval code
c) Tests witnessed, documents reviewed


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d) Compliance statement by TPIA that product meets the requirement as specified in EIL PR, standard specifications, Inspection Test Plan/QAP and approved documents.

**4.8 Transportation Plan**

Transportation Plan for Over Dimensional Consignments (ODC), if any, shall be submitted within 2 weeks of receiving FOA/LOA, for approval. Unless otherwise specified, consignments with parameters greater than following shall be considered as over dimensional.

Dimensions : 4 meters width x 4 meters height x 20 meters length

Weight : 32 MT (Metric Ton)

Dimensions and weight provided above are inclusive of all nozzles, attachments, transportation saddles etc.

Physical Rout survey for ODC movement shall be submitted to EIL within 8 weeks of receiving FOA / LOA.

**4.9 Dispatch Details**

Upon receipt of IRN/IC from EIL inspector/TPIA, supplier shall dispatch items within 2 days. Item wise dispatch details shall be uploaded in EIL's EPS module within 24 hours of any item dispatched from shop, indicating PR item no, Quantity dispatched, Transporter's name, LR Number/ LR date.

**4.10** Vendorshall ensure timely uploading of Manufacturing Schedule, Monthly Progress Report,Inspection Certificate (IRN)issued by the TPIA (as applicable for PO where Inspection is under nominated Third Party Inspection Agency)and updation ofitem wise dispatch details in EPS portal of EIL (https://www6.eil.co.in/epsinspection).

**4.11 Final Documentation**

**4.11.1** Supplier shall prepare final documents in line with VDR(Vendor Document Requirements) attached with PR/Tender. A copy of final document along with filled in Format for Completeness of Final Documentation (Format No. 3-78-0004) to be submitted to EIL Inspector/TPIA for review & approval within 2 weeks from dispatch. Upon receipt of EIL/TPIA endorsement on Completeness of Final Documents, supplier shall submit soft/hard copies of Final documents to EIL/Owner in requisite quantity as per PO/PR details, along with covering letter. A copy of covering letter to be submitted to the concerned Regional Procurement Office (RPO) of EIL/Owner.

**4.11.2 As Built Drawings**

Minor Shop changes made by Supplier after approval of drawings under 'Code 1' by EIL and deviations granted through online system, if any, shall be marked in hard copies of drawings which shall then be stamped 'As-built' by the supplier.These 'As-built' drawings shall be reviewed and stamped by EIL Inspector/TPIA.Supplier shall prepare scanned images files of all marked – up 'As – built' drawings. Simultaneously Supplier shall incorporate the shop changes in the native soft files of the drawings also.

**4.11.3 Packing/Presentation of Final Documents**

Final Documents shall be legible photocopies in A4, A3 size only.Drawings will be inserted in plastic pockets (both sides transparent, sheet thickness minimum 0.1 mm) with an extra strip of 12 mm wide for punching so that drawings are well placed.


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Final Documentation shall be bound in Hard board Plastic folder(s) of size 265 mm x 315 mm (10½-inch x 12½-inch) and shall not be more that 75 mm thick. It may be of several volumes and each volume shall have a volume number, index of volumes and index of contents of that particular volume.Where number of volumes are more, 90mm thickness can be used.Each volume shall have top PVC sheet of minimum 0.15 mm thick duly fixed and pressed on folder cover and will have 2 lever clips.In case of imported items documents, 4 lever clip shall also be accepted.All four corners of folders shall be properly metal clamped.Indexing of contents with page numbering must be incorporated by supplier.Spiral/Spico bound documents shall not be acceptable.As mentioned above, books should be in hard board plastic folders with sheets punched and having 2/4 lever clips arrangement.

Each volume shall contain on cover a Title Block indicating package Equipment Tag No. & Name, PO/Purchase Requisition No., Name of Project and Name of Customer.Each volume will have hard front cover and a reinforced spine to fit thickness of book.These spines will also have the title printed on them.Title shall include also volume number (say 11 of 15) etc.

### 4.11.4 Submission of Soft Copies

Supplier shall submit to EIL, the scanned images files as well as the native files of drawings/documents, along with proper index.

In addition to hard copies, Supplier shall submit soft copies of all the final drawings and documents in pen drive or any other specified medium with proper identification tag, all text documents prepared on computer, scanned images of all important documents (not available as soft files), all relevant catalogues, manuals available as soft files (editable copies of drawings/text documents, while for catalogues/manuals/proprietary information and data, PDF files can be furnished). All soft files shall be appropriately named, systematically indexed, and duly bookmarked in PDF format to facilitate ease of reference and access.

All the above documents shall also be uploaded on the EILVendor Portal and if applicable on Client Server also.

### 4.11.5 Completeness of Final Documentation

Supplier shall get the completeness of final documentation verified by EIL/TPIA,as applicable, and attach the Format for Completeness of Final Documentation (Format No. 3-78-0004) duly signed by EIL Inspector or TPIA as applicable to the final document folder.


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# COMPLETENESS OF FINAL DOCUMENTATION

| | | |
|---|---|---|
| Name of Supplier/Contractor | : | |
| Customer | : | |
| Project | : | |
| EIL's Job No. | : | |
| Purchase Order No./ Contract No. | : | |
| Purchase Requisition No./ Tender No. | : | Rev. No.: |
| Name of the Work/ Equipment | : | |
| Tag. No. | : | |
| Supplier's/ Contractor's Works Order No. | : | |

Certified that the Engineering Documents/ Manufacturing & Test Certificates submitted by the supplier (as per Index sheet mentioned in Annexure-1) are complete in accordance with the Vendor Data Requirements of Purchase Requisition / Tender.

| | | | |
|---|---|---|---|
| Signature | : …… | Signature | : …… |
| Date | : …… | Date | : …… |
| Name | : …….. | Name | : …….. |
| Designation | : …… | Designation | : …… |
| Department | : …… | Department | : …… |
| | Supplier/Contractor | | EIL/TPIA |



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**Annexure-1**

| Final Documentation Index Sheet | | | |
|---|---|---|---|
| PR/PO/Tender No. | | Revision No. | |
| | | | |
| Serial No. | Document Title | Page/ Folder No. | No. of Pages |
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| Date | : …… | Date | : …… |
| Name | : …….. | Name | : …….. |
| Designation | : …… | Designation | : …… |
| Department | : …… | Department | : …… |

Supplier / Contractor

EIL / TPIA



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# निर्माण स्थल पर स्वास्थ्य, सुरक्षा एवं पर्यावरण प्रबंधन हेतु मानक विनिर्देश

# STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENTAL MANAGEMENT AT CONSTRUCTION SITES

| Rev. No. | Date | Purpose | Prepared by | Checked by | Standards Committee Convenor | Standards Bureau Chairman |
|---|---|---|---|---|---|---|
| | | | | | Approved by | |
| 2 | 18/04/2023 | REVISED & UPDATED | BT | RK | JPV | SM |
| 1 | 07/06/2022 | REVISED & UPDATED | BT | RK | JPV | SM |
| 0 | 23/12/2020 | REVISED & UPDATED | BT | RK | AKK | S Mazumdar |



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**Abbreviations:**

| | | |
|---|---|---|
| AERB | : | Atomic Energy Regulatory Board |
| ANSI | : | American National Standards Institute |
| BARC | : | Bhabha Atomic Research Centre |
| BS | : | British Standard |
| BOCW | : | Building and other construction workers |
| BOO/BOOT | : | Build, Own, Operate/Build, Own, Operate, Transfer |
| EIL | : | Engineers India Limited |
| EIC | : | Engineer In charge |
| ELCB | : | Earth Leakage Circuit Breaker |
| EPC | : | Engineering, Procurement and Construction |
| EPCC | : | Engineering, Procurement, Construction and Commissioning |
| ESI | : | Employee State Insurance |
| GCC | : | General Conditions of Contract |
| GM | : | General Manager |
| GTAW | : | Gas Tungsten Arc Welding |
| HOD | : | Head of Department |
| HSE | : | Health, Safety & Environment |
| HIRAC | : | Hazard, Identification Risk Assessment & Control |
| HMV | : | Heavy Motor Vehicle |
| HV | : | High Voltage |
| IS | : | Indian Standard |
| ISO | : | International Organization for Standardization |
| IE | : | Indian Electricity |
| LTI | : | Lost Time Injuries |
| LMV | : | Light Motor Vehicle |
| LOTO | : | Lock Out & Tag Out |
| LPG | : | Liquefied Petroleum Gas |
| LSTK | : | Lump Sum Turn Key |
| MV | : | Medium Voltage |
| OH&S | : | Occupational Health and Safety |
| OISD | : | Oil Industry Safety Directorate |
| PPE | : | Personal Protective Equipment |
| PUC | : | Pollution Under Control |
| RC | : | Registration Certificate |
| RCCB | : | Residual Current Circuit Breaker |
| RCM | : | Resident Construction Manager or Site-in-Charge, as applicable |
| SCC | : | Special Conditions of Contract |
| SLI | : | Safe Load Indicator |
| SWL | : | Safe Working Load |
| TPI | : | Third Party Inspection |
| TBT | : | Tool Box Talks |

**Construction Standards Committee**

**Convenor:** Sh John Paul V, ED(Construction)

**Members:** Sh.Janak Kishore, ED (Projects)
Sh.Biswajit Mandal, CGM (SCM)
Sh. Udayan Chakravarty, Sr.GM (Piping)
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## 1.0 SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied by Contractors/Vendors including their sub-contractors/sub vendors during construction.

This specification is not intended to replace the necessary professional judgment needed to design & implement an effective HSE system for construction activities and the contractor is expected to fulfill HSE requirements in this specification as a minimum. It is expected that contractor shall implement best HSE practices beyond whatever are mentioned in this specification.

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

## 2.0 REFERENCES

The document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Building and other construction workers Act, (Refer Appendix-D)
- Indian Factories Act,(Refer Appendix-D)
- Job (Technical) specifications
- Relevant International/ National Codes (refer Appendix-A for standards/codes on HSE)
- Relevant State & National Statutory requirements.
- Operating Manuals Recommendation of Manufacturer of various construction Machineries
- Occupation Health and Safety Management System (OHSAS 18001:2007/ISO 45001) and Environmental Management System (ISO 14001:2015)

## 3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENTAL (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

### 3.1 Management Responsibility

#### 3.1.1 HSE Policy & Objectives

The Contractor should have a documented and duly approved HSE policy &objectives to demonstrate commitment of their organization to ensure health, safety and environmental aspects in their line of operations.
The Contractor's senior management shall provide strong visible leadership and continuously demonstrate commitment to develop, operate and maintain, review and continually improve a HSE culture at site which empowers individuals to take responsibility for their safety and embrace and accept nothing but responsible HSE behaviour.
Contractor shall refer in clause No. 3.3.23 for Key Performance Indicator (KPI).

#### 3.1.2 Management System

The HSE management system of the Contractor shall cover the HSE requirements & commitments to fulfill them, including but not limited to what have been specified under clauses 1.0 and 2.0 above. The Contractor shall obtain the approval of its site specific HSE Plan from EIL/ Owner prior to commencement of any site works. Corporate as well as Site management of the Contractor shall ensure compliance of their HSE Plan at work sites in its entirety in true spirit.

#### 3.1.3 Indemnification


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Contractor shall indemnify & hold harmless, Owner/EIL & their representatives, free from any and all liabilities arising out of non-fulfillment of HSE requirements or its consequences.

3.1.4 **Deployment &Qualifications of Safety Personnel**

The Contractor shall designate/deploy various categories of HSE personnel at site as indicated below insufficient number. In no case, deployment of safety Supervisor / Safety Steward shall substitute deployment of Safety Officer / Safety Engineer what is indicated in relevant statute of BOCW Act i.e. deployment of safety officer/Safety Engineer is compulsory at project site. The Safety supervisors, Safety stewards/Observer etc. would facilitate the HSE tasks at grass root level for construction sites and shall assist Safety Officer /Engineers.

Contractor shall appoint safety personnel as given below for every work shift:

(i) Safety Observer/Steward: Contractor shall depute one Safety Observer/Steward for every 100 workers or part thereof

(ii) Safety Supervisor: In addition to above(i), contractor shall depute one Safety Supervisor for every 250 workers or part thereof

(iii) Safety Engineer: In addition to above (i&ii), one safety engineer/ officer for every 1000 workers or part thereof.

Contractor shall intimate/obtain prior permission from EIC before demobilizing any safety personnel. The Contractor shall mobilize suitable safety personnel as replacement.

a) Safety Steward/Observer

As a minimum, he shall possess class XII pass certificate and trained in fire-fighting as well as in safety/occupational health related subjects, with minimum two year of practical experience in construction work environment and should have adequate knowledge of the local language spoken by majority of the workers at the construction site.

b) Safety Supervisor

As a minimum, he shall possess a recognized graduation Degree in Science (with Physics & Chemistry) or a Diploma in Engg. Or Tech. with minimum Two years of practical experience in construction work environment and should possess requisite skills to deal with construction safety & fire related day-to-day issues.

c) Safety Officer / Safety Engineer

Safety Officer/Engineer should possess following qualification & experience:


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(i) Recognized degree in any branch of Engg. or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than two years, **or** possessing recognized diploma in any branch of Engg. or Tech with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than five years.

(ii) Recognized degree or one year diploma in Industrial safety(from any Indian Institutes recognized by AICTE or State Council of Tech. Education of any Indian State/Union territory) with at least one paper in construction safety (as an elective subject).

(iii) Preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

Alternately

(i) Person possessing Graduation Degree in Science with Physics **or** Chemistry and degree or one year diploma in Industrial Safety (from any Indian institutes recognized by AICTE or State Council of Tech. Education of any Indian State/ Union Territory) with practical experience of working in a building, plant or other construction works (as Safety Officer, in line with Indian Factories Act, 1948) for a period of not less than five years, may be considered as Safety Officer.

d) HSE In-Charge

In case there is more than one Safety Officer at any project construction site, one of them, who is senior most by experience (in HSE discipline), may be designated as HSE In-Charge. Duties & responsibilities of such person shall be commensurate with that of relevant statute and primarily to coordinate with top management of EIL/Client and contractors.

In case the statutory requirements i.e. State or Central Acts and / or Rules as applicable like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than above clarifications, the same shall be followed.

Contractors shall ensure physical availability of safety personnel at the place of specific work location, where Hot Work Permit is required/granted. No work shall be started at any of the project sites until above safety personnel & concerned Site Engineer of Contractor are physically deployed at site. The Contractor shall submit a HSE Organogram clearly indicating the lines of responsibility and reporting system and elaborate the responsibilities of safety personnel in their HSE Plan.

Upon fulfilling the basic requirement of qualification and relevant experiences, the performance of contractor HSE personnel's is to be monitored.

The good performing contractor's HSE personnel at site shall be rewarded upon assessment of performance by EIL/Owner. The non-performing HSE personnel shall be counselled by EIL/Owner & suitable action may be taken for suspension from site for 3-6 days. Contractor shall arrange training for non performing HSE personnel.

HSE In –Charge of the contractor shall be given the status at par with the other heads of department and shall report to Head of Project.

The Contractor shall verify & authenticate credentials of such safety personnel and furnish Bio-Data/Resume/Curriculum Vitae of the safety personnel as above for EIL/Owner's approval, at least 1 month before the mobilization. The Contractor, whenever required, shall arrange submission of original testimonials/certificates of their Safety personnel, to EIL/Owner (for verification/scrutiny, etc.)


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Imposition/ Realization of penalty shall not absolve the Contractor from his/her responsibility of deploying competent safety officer at site.

Adequate planning and deployment of safety personnel shall be ensured by the Contractor so that field activities do not get affected because of non-deployment of competent & qualified safety personnel in appropriate numbers.

### 3.1.5 Implementation, Inspection/Monitoring

a) The Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements.

b) The Contractor shall also ensure that the HSE requirements are clearly understood & implemented conscientiously by their site personnel at all levels at site.

c) The Contractor shall ensure physical presence of their field engineers / supervisors, during the continuation of their contract works / site activities including all material transportation activities. Physical absence of experienced field engineers / supervisors of Contractor at critical work spot during the course of work may invite halting / stoppage of work.

d) The Contractor shall regularly review inspection report internally and implement all practical steps / actions for improving the status continuously.

e) Contractor skilled workmen like riggers, scaffold erectors, welders, crane operators etc. should have sufficient past experience and skill on the relevant job.

f) The Contractor shall ensure important safety checks right from beginning of works at every work site locations and to this effect format No. HSE-10 "Daily Safety Check List" shall be prepared by field engineer & duly checked by safety personnel for conformance.

g) The Contractor shall carry out inspection to identify various unsafe conditions of work sites/machinery/equipment's as well as unsafe acts on the part of workmen/supervisor/engineer while carrying out different project related works.

h) Adequate records for all inspections shall be maintained by the Contractor and the same shall be furnished to EIL/Owner, whenever sought.

i) To demonstrate involvement/commitment of site management of Contractor, at least one Monthly Safety Walk through in a month shall be carried out by Contractor's head of site (along with his area manager/field engineers)and a report shall be furnished to EIL/Owner as per format No: HSE-1" Safety walk through report" followed by compliance for unsatisfactory remarks.

j) As a general practice lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent person(approved by concerned State authorities) before being used at site and also at periodical interval (e.g. during replacement, extension, modification, elongation/reduction of machine/parts, etc.) as per relevant statutes. Hydraulic Mobile Crane, cranes, lifting machinery, mobile equipment's/ machinery/ vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by contractor. Contractor shall also maintain records of maintenance of all other site machinery (e.g. generators, rectifiers, compressors, cutters, etc.) & portable tools/equipment's being used at project related works (e.g. drills, abrasive wheels, punches, chisels, spanners, etc.).The Contractor shall not make use of arbitrarily fabricated 'derricks' at project site for lifting/ lowering of construction materials.

k) Site facilities /temporary. installations, e.g. batching plant, cement godown, DG-room, temporary electrical panels/distribution boards, shot-blasting booth, fabrication yards, etc. and site welfare facilities, like labour colonies, canteen/pantry, rest-shelters, motor cycle/bicycle-shed, First-aid centers, urinals/toilets, etc. should be periodically inspected by Contractor (preferably utilizing HR/Admin. personnel to inspect site welfare facilities) and records to be maintained.


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3.1.6 **Behaviour Based Safety**

a) The contractor shall develop a system to implement Behavior-Based Safety (BBS) through which work groups can identify, measure and change the behaviors of employees and workers towards construction safety aspects.

b) The BBS process shall include the following:
- Identify the behaviors critical to achieve required safety performance.
- Communicate the behaviors and how they are performed correctly byall
- Observe the work force and record safe/at risk behaviors. Intervene with workers to give positive reinforcement when unsafe behaviors are observed. Provide coaching/correction when at risk behaviors are observed
- Collect and record observation data
- Summarize and analyze observation data
- Communicate observation data and analysis results to all employees
- Provide recognition or celebrate when safe behavior improvements occur
- Change behaviors to be observed or change activators or change consequences as appropriate.
- Communicate any changes to workforce

c) Contractor through its own HSE committee shall implement the above process.

d) The necessary procedures and Monthly reporting formats shall be developed by the contractor for approval by EIL/Owner.

e) The HSE committee of contractor shall observe individual's behavior for safe practices adapted for utilization/execution of work for followings a minimum:-
- PPE
- Tools & equipment's
- Hazard Identification & control
- House keeping
- Confined space entry
- Hot works
- Excavation
- Loading & unloading
- Work at height
- Stacking & storage
- Ergonomics

f) EIL/Owner and Contractor's site staff at all levels shall monitor the behavior of contractor employees that create and/or contribute to the unsafe situations at work place.

g) Contractor shall arrange Behavior Based safety (BBS) training of their employees at site on yearly basis.

3.1.7 **Awareness and Motivation**

a) The Contractor shall promote and develop awareness on Health, Safety and Environmental protection among all personnel working for the Contractor.

b) The contractor shall display safety statistics board at all prominent location .Also shall provide dedicated notice board for displaying of safety alerts or any other safety related notices for awareness site workforces.

c) Regular awareness programs and fabrication shop/work site meetings at least on monthly basis shall be arranged on HSE activities to cover hazards/risks involved in various operations during construction.

d) Contractor's workmen & supervisory staff shall participate in common Tool Box Meeting as & when organized/required at site to avoid any incident/accident or occupational disease arising out of multidisciplinary jobs/activities being performed by various contracting agencies in the same location at different elevation.


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e) Contractor to motivate & encourage the workmen & supervisory staff by issuing/ awarding them with tokens/ gifts/ mementos/ monetary incentives/ certificates etc. The motivational program shall be organized on regular basis.

f) Contractor shall assess & recognize the behavioral change of its site engineers / supervisors periodically and constantly motivate / encourage them to implement HSE practices at project works

g) Life Saving Rules (refer Appendix-I for details) are to be displayed at prominent location of site.

3.1.8 **Fire Prevention & First-Aid**

The Contractor shall deploy First aider & suitable First-aid measures such as First Aid Box (Refer Appendix-B for details), stand-by Emergency Vehicle. Additionally separate ambulance with trained personnel/male or female nurse to administer First Aid shall be provided by the Contractor beyond deployment of 500 workmen during day/night working hours.

a) The Contractor shall arrange installation of fire protection measures such as adequate number of steel buckets with sand & water and adequate number of appropriate portable fire extinguishers (Refer Appendix-C for details) to the satisfaction of EIL/Owner.

b) The Contractor shall arrange EMERGENCY MOCK DRILL like fire, bomb threat, gas leakage, earth quake, etc. at each site at least once in three months, involving site workmen and site supervisory personnel & engineers. The Contractor shall maintain record of such mock drills at project site.

c) The contractor shall require to tie-up with the hospitals located in the neighborhood for attending medical emergency.

3.1.9 **Documentation**

The Contractor shall evolve a comprehensive, planned and documented system covering the following as a minimum for implementation and monitoring of the HSE requirements and the same shall be submitted for approval by owner/EIL.

- HSE Organogram
- Site specific HSE Plan
- Safety Procedures, forms and Checklist. Indicative list of HSE procedures is attached as Appendix :H
- Inspections and Test Plan
- Risk Assessment & HIRAC for critical works.
- HIRAC Register as per Format no: HSE-19 to identify, assess, analyze & mitigate the construction hazards& incorporate relevant control measures before actually executing site works.
- Environmental Aspect Impact Register as per Format no: HSE-18 (identify, assess, analyze & mitigate the environmental impact & incorporate relevant control measures).
- Legal Register to identify and comply to all applicable HSE related legal requirements.

The monitoring for implementation shall be done by regular inspections and compliance of the observations thereof. The Contractor shall get similar HSE requirements implemented at his sub-contractor(s) work site/office, if applicable. However, compliance of HSE requirements shall be the responsibility of the Contractor. Any review/approval by EIL/Owner shall not absolve contractor of his responsibility/liability in relation to fulfilling all HSE requirements.

3.1.10 **Audit**

Safety Audit shall be conducted at initial stage by EIL/Owner to understand the readiness to start the job after mobilization of contractor's RCM at site& Suitable action shall be taken by contractor to comply the audit observation(s).

The Contractor shall submit an Audit Plan to EIL/Owner indicating the type of audits covering following as minimum:


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a) Internal HSE audits regularly on six monthly basis by engaging internal qualified auditors (viz. safety officers/Construction personnel having 5years experience in construction safety and Lead Auditor Course: OHSAS 18001/ISO 45001 certification).However, minimum two internal HSE audit will have to be conducted irrespective of time period of the contract.

b) External HSE audits regularly on yearly basis by engaging authorized auditing agencies (viz. National Safety Council etc.)or qualified external auditors (viz safety officers/Construction personnel having 10years experience in construction safety and Lead Auditor Course: OHSAS 18001/ISO 45001certification). However, minimum one external HSE audit will have to be conducted irrespective of time period of the contract.

c) EIL/Owner may participate in Opening and closing meeting of external audits and provide inputs to the external auditor. Outcome of external audit shall be discussed during HSE Meeting with EIL/Owner.

All HSE shortfalls/ non-conformances on HSE matters brought out during review/audit, shall be resolved forthwith(generally within a week) by Contractor& compliance report shall be submitted to EIL/Owner.

In addition to above audits by contractor, the contractor's work shall be subjected to HSE audit by EIL/Owner at any point of time during the pendency of contract. The Contractor shall take all actions required to comply with the findings of the Audit Report and issue regular Compliance Reports for the same to OWNER/ EIL till all the findings of the Audit Report are fully complied.

Failure to carry-out HSE Audits& its compliance (internal & external) by Contractor, shall invite penalization.

3.1.11 **Meetings**

i. The Contractor shall ensure participation of his top most executive at site (viz. Resident Construction Manager / Resident Engineer/ Project Manager / Site-in-Charge) along with safety officer in Safety Committee/HSE Committee meetings arranged by EIL/Owner usually on monthly basis or as and when called for. In case Contractor's top most executive at site is not in a position to attend such meeting, he shall inform EIL/Owner in writing before the commencement of such meeting indicating reasons of his absence and nominate his representative – failure to do so may invite very stringent penalization against the specific Contractor, as deemed fit as per Contract. The obligation of compliance of any observations during the meeting shall be always time bound. The Contractor shall always assist EIL/Owner to achieve the targets set by them on HSE management during the project implementation.

ii. In addition, the Contractor shall also arrange internal HSE meetings chaired by his top most executive at site on fortnightly basis and maintain records. Such internal HSE meetings shall essentially be attended by field engineers / supervisors including safety personnel of the Contractor and its associates. Records of such internal HSE meetings shall be maintained by the Contractor for review by EIL/Owner or for any HSE Audits.

iii. Agenda of internal HSE meeting should broadly cover: -

a) Confirmation of record notes /minutes of previous meeting
b) Discussion on outstanding subjects of previous points / subjects, if any
c) Incidents / Accidents (of all types) at project site, if any
d) Current topics related to site activities / subjects of discussion
e) House keeping
f) Behavioral Safety
g) Information / views / deliberations of members / site sub-contractors
h) Report from Owner / Client
i) Status of Safety awareness, Induction programs & Training programs

The time frame for such HSE meeting shall be religiously maintained by one and all.


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3.1.12 **Intoxicating drinks & drugs and smoking**

a) The Contractor shall ensure that his staff members & workers (permanent as well casual) shall not be in a state of intoxication during working hours and shall abide by any law relating to consumption & possession of intoxicating drinks or drugs in force.

b) The Contractor shall not allow any workman to commence any work at any locations of project activity who is/are influenced / effected with the intake of alcohol, drugs or any other intoxicating items being consumed prior to start of work or working day.

c) Awareness about local laws on this issue shall form part of the Induction Training and compulsory work-site discipline.

d) The Contractor shall ensure that all personnel working for him comply with "No-Smoking" requirements of the Owner as notified from time to time. Cigarettes, lighters, auto ignition tools or appliances as well as intoxicating drugs, dry tobacco powder, etc. shall not be allowed inside the project / plant complex.

e) Smoking shall be permitted only inside smoking booths, if any, exclusively designated & authorized by the Owner/EIL.

3.1.13 **Penalty**

The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliances and also for repeated failure in implementation of any of the HSE provisions, EIL/Owner may impose stoppage of work without any cost & time implication to the Owner and/or impose a suitable penalty.

The amount of penalty to be levied against defaulted Contractor shall be up to a cumulative limit of

2.0% (Two percent) of the contract value for Item Rate or Composite contracts with an overall ceiling of 1,00,00,000(Rupees One Crore).

0.5% (Zero decimal five percent) of the contract value for LSTK, OBE, EPC,BOO/BOOT, EPCC or Package contracts with an overall ceiling of 10,00,00,000(Rupees Ten Crores.)

This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stop-work-instruction and imposition of penalty shall rest with EIL/Owner. The same shall be binding on the Contractor. Imposition of penalty does not make the Contractor eligible to continue the work in unsafe manner.
The amount of penalty applicable for the Contractor on different types of HSE violations is specified below:

| Sl. No. | Violation of HSE Norms | Penalty Amount |
|---|---|---|
| 1. | For not using personal protective equipment like Helmet, Safety Shoes, and other safety gadgets as applicable as per nature of work. | Rs.500/- per day/Item / Person |
| 2. | Working without Work Permit/Clearance | Rs.20,000/- per occasion |
| 3 | Execution of work without deployment of requisite field engineer / supervisor at work spot | Rs.5,000/- per violation per day |
| 4. | Unsafe electrical practices (not installing ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/cables on the roads, electrical jobs by incompetent person, etc.) | Rs.10,000/- per item per day |


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| Sl. No. | Violation of HSE Norms | Penalty Amount |
|---|---|---|
| 5. | Working at height without full body harness, using non-standard/ rejected scaffolding and not arranging fall protection arrangement as required, like hand-rails, life-lines, Safety Nets etc. | Rs.10,000/- per case per day |
| 6. | Unsafe handling of compressed gas cylinders (No trolley, jubilee clips double gauge regulator, and not keeping cylinders vertical during storage/handling, not using safety cap of cylinder). | Rs.1,000/- per item per day |
| 7. | Use of domestic LPG for cutting purpose / not using flash back arresters on both the hoses/tubes on both ends. | Rs.5,000/-per occasion |
| 8. | No fencing/barricading of excavated areas / trenches. | Rs.5,000/- per occasion |
| 9. | Not providing shoring/strutting/proper slope and not keeping the excavated earth at least 1.5M away from excavated area. | Rs.5,000/-per occasion |
| 10. | Non display of scaffold tags, caution boards on erected scaffolds. | Rs.1,000/- per occasion per day |
| 11. | Traffic rules violations like over speeding of vehicles, rash driving, talking on mobile phones during vehicle driving, wrong parking, not using seat belts, vehicles not fitted with reverse horn / warning alarms / flicker lamps during foggy weather. | Rs.3,000/-per occasion per day |
| 12. | Absence of Contractor's RCM/SIC or his nominated representative (prior approval must be taken for each meeting for nomination) from site HSE meetings whenever called by EIL/Owner& failure to nominate his immediate deputy for such HSE meetings. | Rs.10,000/- per meeting |
| 13. | Failure to maintain HSE records by Contractor Safety personnel, in line with approved HSE Plan/Procedures/Contract specifications. | Rs.10,000/- per month |
| 14. | Failure to conduct daily site safety inspection (by Contractor's Site Engineer &safety officer), internal HSE meeting, internal HSE Awareness/Motivation Program and Site HSE Training at predefined frequencies (as approved in HSE Plan). | Rs.10,000/- per occasion |
| 15. | Failure to fill online/submit the monthly HSE report by 5th of subsequent month to Engineer-in-Charge/ Owner | Rs10,000/-per occasion and Rs.1,000/-per day of further delay |
| 16. | Poor House Keeping | Rs.5,000 /- per occasion per subject |
| 17. | Failure to report &follow-up accident (including Near Miss) reporting system within specific time-frame. | Rs.20,000/- per occasion |
| 18. | Degradation of environment (not confining toxic spills, spilling oil/lubricants onto ground) | Rs.10,000/- per occasion |


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| Sl. No. | Violation of HSE Norms | Penalty Amount |
|---|---|---|
| 19. | Not medically examining the workers before allowing them to work at height / to work in confined space / to work in shot-blasting / to work for painting / to work in bitumen or asphalt works, not providing ear muffs while allowing them to work in noise polluted areas, made them to work in air polluted areas without respiratory protective devices, etc. | Rs.5,000/- per occasion per worker |
| 20. | Violation of any other safety condition as per job HSE plan / work permit and HSE conditions of contract (e.g.using crowbar on cable trenches, improper welding booth, not keeping fire extinguisher ready at hot work site, unsafe rigging practices, non-availability of First-Aid box at site, not providing dead man handle switch for blasting, whiplash arrestor for the compressor line, not using hood with respiratory devices by blaster for shot//grit blasting, etc.) | Rs.5,000/- per occasion |
| 21. | Penalty for non-deployment of ambulance in case of man-power more than 500 or not providing dedicated emergency vehicle in case of man-power less than 500. | Rs.3,000 per day |
| 22. | Failure to carry-out Safety audit in time (internal & external),close-out of identified shortfalls of Observations of Safety Aspects(OSA),etc. | Rs.20,000/- per occasion (for internal audit &OSA). Rs.30,000/-per occasion for external audit |
| 23. | Carrying out sand blasting instead of grit/shot blasting | Rs.50,000/- per day |
| 24. | Failure to deploy adequately qualified and competent Safety Officer | Rs.10,000/- per day per Officer |
| 25. | Utilization of Hydraulic Mobile Crane /back-hoe loader for material shifting or any other unauthorized /unsafe lifting works | Rs.25,000/- per occasion |
| 26. | Any Fatal Accident | Rs.10,00,000/-per fatality |
| 27. | Any violation not covered above | To be decided by EIL/Owner. |

Note: Penalty amount deducted from the contractor shall be utilized by owner/EIC for the promotion of the safety during the currency of the project.

The Contractor shall make his field engineers/supervisors fully aware of the fact that they keep track with the site workmen for their behavior and compliance of various HSE requirements. Safety lapses / defects of project construction site shall be attributable to the concerned job supervisor / engineer of the Contractor, (who remains directly responsible for safely executing field works). For repeated HSE violations, concerned job supervisor / engineer shall be reprimanded or appropriate action, as deemed fit, shall be initiated (with information to EIL & Owner) by the concerned Contractor.

Contractor shall initiate verbal warning shall be given to the worker/employee during his first HSE violation. A written warning shall be issued on second violation and specific training shall be arranged / provided by the Contractor to enhance HSE awareness/skill including feedback on the mistakes/ flaws. Any further violation of HSE stipulations by the erring individuals shall call


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for his forthright debar from the specific construction site. A record of warnings for each worker/employee shall be maintained by the Contractor, like by punching their cards / Gate passes or by displaying their names at the Project entry gate. Warnings, penalizations, appreciations etc. shall be discussed in HSE Committee meetings by site Head of the Contractor.

3.1.14 **Accident/ Incident investigation**

All accidents/incidents shall be informed to EIL/Owner at least telephonically by Contractor immediately and in writing within 24 hours on Format No. HSE-2 as applicable, by Contractor. Thereafter, a Supplementary Accident/Incident investigation Report on Format No. HSE-3 shall be submitted to EIL/Owner within 72 hours. Near Miss incident(s), Dangerous accidents/incident shall also be reported on Format No. HSE-4 within24 hours. The accident/ incident shall be investigated by a team of Contractor's senior Site personnel (involving Site-in-Charge or at least by his deputy) for establishing root-cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to EIL/Owner. Owner/EIL shall have the liberty to independently investigate such occurrences and the Contractor shall extend all necessary help and cooperation in this regard. EIL/Owner shall have the right to share the content of this report with the outside world.

## 3.2 House Keeping

The Contractor shall ensure that a high degree of housekeeping is maintained and shall ensure inter-alia; the followings:

a) All surplus earth and debris are removed/disposed-off from the working areas to designated location(s).

b) Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identify location(s).

c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).

d) Roads shall be kept clear and materials like pipes, steel, sand, boulders, concrete, chips and bricks etc. shall not be allowed on the roads to obstruct free movement of men & machineries.

e) Fabricated steel structural, pipes & piping materials shall be stacked properly.

f) Water logging on roads shall not be allowed.

g) No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, which may obstruct the traffic movement.

h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.

i) Protective measures to be ensured with projected rebar by suitable means.

j) Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the plant area/ or these materials shall be transported with top surface wet.

k) The contractor shall ensure that the atmosphere in plant area and on roads is free from particulate matter like dust, sand, etc. by keeping the top surface wet for ease in breathing.

l) At least two exits for any unit area shall be assured at all times – same arrangement is preferable for digging pits/ trench excavation/ elevated work platforms/ confined spaces etc.

m) Welding cables and the power cable must be segregated and properly stored and used. The same shall be laid away from the area of movement and shall be free from obstruction.

n) Upkeep/cleaning of site to be carried out on regular basis by the contractor. Contractor shall earmark the area for waste/scrap disposal and ensure that all waste/scrap arising out of the day's work is properly disposed to the earmarked area.

o) Hazardous waste shall be segregated and shall be kept separately at designated place.

p) Contractor shall present the status of housekeeping in HSE meeting.


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The Contractor shall carry-out regular checks (minimum one per fortnight) as per format No. HSE-11 for maintaining high standard of housekeeping and maintain records for the same. The Contractor shall provide supervisor for housekeeping exclusively for management of day-to-day housekeeping activities.

## 3.3 HSE Measures

### 3.3.1 Construction Hazards

The Contractor shall ensure identification of all Occupational Health, Safety & Environmental hazards in the type of work he is going to undertake and enlist mitigation measures. Contractor shall carry out HIRAC specifically for high risk jobs/critical jobs like

a) Working at height (+2.0 Mts height) for cold (incl. colour washing, painting, insulation etc.) & hot works.
b) Work in confined space,
c) Deep excavations &trench cutting (depth > 2.0 mts.)
d) Operation & Maintenance of Batching Plant.
e) Shuttering / concreting (in single or multiple pour) for columns, parapets & roofs.
f) Erection & maintenance of Tower Crane.
g) Erection of structural steel members / roof-trusses / pipes at height more than 2.0 Mts. with or without crane.
h) Erection of pipes (full length or fabricated) at height more than 2.0 Mts. height with Crane of 100T capacity.
i) All lifts using 100T Crane plus mechanical pulling.
j) All lifts using two cranes in unison (Tandem Lifting).
k) Any lift exceeding 80% capacity of the lifting equipment's (Hydraulic Mobile Crane, crane etc.).
l) Laying of pipes (isolated or fabricated) in deep narrow trenches – manually or mechanically.
m) Maintenance of crane / extension or reduction of crane-boom on roads or in yards.
n) Erection of any item at >2.0 Mts. height using 100T crane or of higher capacity
o) Hydrostatic test of pipes, vessels & columns and water-flushing.
p) Radiography jobs (in-plant & open field)
q) Work in Live Electrical installations / circuits
r) Handling of explosives &Blasting operations
s) Demolishing/ dismantling activities
t) Welding/ gas cutting jobs at height (+2.0 Mts.)
u) Lifting/placing roof-girders at height(+2.0 Mts.)
v) Lifting & laying of metallic / non-metallic sheet over roof/structures.
w) Lifting of pipes, gratings, equipment's/vessels at heights (+2.0 Mts.) with & without using cranes
x) Calibration of equipment, instruments and functional tests at yards / work-sites.
y) Operability test of Pump, Motors (after coupling) & Compressors.
z) Cold or Hot works inside Confined Space.
aa) Transportation & shifting of ODC consignments into project areas.
bb) Working in "Charged/Live" elect. Panels
cc) Stress Relieving works (Electrically or by Gas-burners).
dd) Pneumatic Tests
ee) Card board blasting
ff) Grit Blasting activity
gg) Catalyst loading/unloading
hh) Erection/dismantling of scaffolding
ii) Chemical cleaning


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The necessary HSE measures devised shall be put in place, prior to start of an activity &also shall be maintained during the course of works, by the Contractor. Copies of such HIRAC shall be kept available at work sites by the Contractor to enable all concerned carrying out checks / verification.

A list of typical construction hazards along with their effects & preventive measures is given in **Appendix-E.**

### 3.3.2 Accessibility

h) The Contractor shall provide safe means of access(in sufficient numbers)& efficient exit to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen and EIL/Owner.

i) The Contractor shall implement use of all measures including use of "life line", "fall-arresters", "retractable fall arresters", "safety nets" etc. during the course of using all safe accesses& exits, so that in no case any individual remains at risk of slip & fall during their travel.

j) A ladder or step- ladder must have a level and firm footing, in case of use of fixed ladders, sufficient foot hold and hand hold to be provided.

k) The access to operating plant / project complex shall be strictly regulated. Any person or vehicle entering such complex shall undergo identification check, as per the procedures in force / requirement of EIL/Owner.

l) Accessibility to 'confined space' shall be governed by specific system / regulation, as established at project site.

### 3.3.3 Personal Protective Equipment (PPEs)

a) The Contractor workmen shall be permitted entry inside the project premises only with proper PPEs.

b) The Contractor shall ensure that all their staff, workers and visitors including their sub-contractor(s) have been issued (records to be kept) & wear appropriate PPEs like nape strap type safety helmets preferably with head &sweat band with ¾" cotton chin strap (made of industrial HDPE), High ankle safety shoes with steel toe cap and antiskid sole, Coverall, full body harness (CE marked and conforming to EN361), protective goggles, gloves, ear muffs, respiratory protective devices, etc. All these gadgets shall conform to applicable IS Specifications/CE or other applicable international standards. The Contractor shall implement a regular regime of inspecting physical conditions of the PPEs being issued / used by the workmen of their own & also its sub-agencies and the damaged / unserviceable PPEs shall be replaced forthwith.

c) Owner/EIL may issue a comprehensive color scheme for helmets to be used by various agencies. The Contractor shall follow the scheme issued by the owner/EIL and shall choose colour other than white (for Owner) or blue (for EIL). All HSE personnel shall preferably wear dark green band on their helmet or green color safety helmet so that workmen can approach them for guidance during emergencies.HSE personnel shall preferably wear such dresses with fluorescent stripes, which are noticeable during night, when light falls on them.

d) Florescent jackets with respective company logo to be worn by the contractor workmen with different color coding for categories like supervisor and workmen.

e) Workers required using or handling alkalies, acid or other similar corrosive substance at site shall be provided with appropriate protective equipment, in accordance with MSDS.

f) For shot blasting, the usage of protective face shield and helmets, gauntlet and protective clothing is mandatory. Such protective clothing should conform relevant IS Specification.

g) For off-shore jobs/contracts, contractor shall provide PPEs (new) of all types to EIL & Owner's personnel, at his (contractor's) cost. All personnel shall wear life jacket at all time.

h) An indicative list of HSE standards/codes is given under **Appendix-A**.


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i) Contractor shall ensure procurement & usage of following safety equipment's/ accessories (conforming to applicable IS mark / CE standard) by their staff, workmen & visitors including their subcontractors all through the span of project construction / pre-commissioning/ Commissioning:-

i. PPEs (Helmet with company name/logo, Safety Goggles, Coverall, Ear-muff, Face Shield, Hand Gloves, High Ankle Safety Shoes, Gum Boot etc.)
ii. Barricading tape / warning signs
iii. Rechargeable Safety torch (flame-proof)
iv. Safety nets (with tie-chords)
v. Fall arresters
vi. Emergency Man-basket/rescue kit for height works
vii. Portable ladders (varying lengths)
viii. Life-lines (steel wire-rope, dia. not less than 8.0 mm)
ix. Full body double lanyard Safety harness with Rebar/ladder hook or scaffolding hook.
x. Lanyard
xi. Karabiner
xii. Retractable fall arresters (various length)
xiii. Portable fire extinguishers (DCP type) – 5 kg&10 kg capacity
xiv. Portable Multi Gas detector
xv. Sound level meter
xvi. Digital lux meter
xvii. Fire hoses & flow nozzles
xviii. Fire blankets/ Fire retardant cloth (with eyelets)
xix. Flame retardant/Flame resistant coverall-based on hazard identification & risk assessment, if required.

3.3.4 **Working at height**

a) The Contractor shall issue permit for working (PFW) at height after verifying and certifying the checkpoints as specified in the attached permit (Format No. HSE-6). He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence of personal protective equipment's. Contractor's Safety Officer shall verify compliance status of the items of permit document after implementation of action is completed by Contractor's execution / field engineers at work site. HIRAC for specific works at height duly commented by EIL/Owner, shall be kept attached with particular Permit for Work (PFW) at site for ready reference & follow-up.

b) Such PFW shall be initially issued for one single shift or expected duration of normal work and extended further for balance duration, if required. EIL/Owner can devise block-permit system at any specific area, in consultation with project specific HSE Committee to specify the time-period of validity of such PFW or its renewal. This permit shall be applicable in areas where specific clearance from Owner's operation Deptt./Safety Deptt. is not required. EIL / Owner's field Engineers/Safety Officers/Area Coordinators may verify and counter sign this permit (as an evidence of verification) during the execution of the job.

c) All personnel shall be medically examined & certified by registered doctor, confirming their 'medical fitness(Vertigo or epilepsy must be covered under test report)for working at height. Contractor shall develop the model for conducting vertigo test. The fitness examination shall be done once in six months. Sticker for "PASS FOR HEIGHT WORK" shall be pasted on the safety helmet of the site personnel.

d) In case work is undertaken without taking sufficient precautions as given in the permit, EIL/Owner Engineers may exercise their authority to cancel such permit and stop the work till satisfactory compliance/rectification is arranged made. Contractors are expected to maintain a register for issuance of permit and extensions thereof including preserving the


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used permits for verification during audits etc.

e) The Contractor shall arrange (at his cost) and ensure use of Fall Arrester Systems by his workers. Fall arresters are to be used while climbing/descending tall structures or vessels / columns etc. These arresters should lock automatically against the anchorage line, restricting free fall of the user. The device is to be provided with a double security opening system to ensure safe attachment or release of the user at any point of rope. In order to avoid shock, the system should be capable of keeping the person in vertical position in case of a fall. All the fall arrest systems should be cleaned after use and stored in a clean &dry area. Defective Safety Harness, lanyards & life line must be discarded from workplace and record to be maintained.

f) The Contractor shall ensure that Full body harnesses with double lanyards conforming EN361 and having authorized CE marking is used by all personnel while working at height. The lanyards and life lines should have enough tensile strength to take the load of the worker in case of a fall. One end of the lanyard shall be firmly tied with the harnesses and the other end with life line. The harness should be capable of keeping the workman vertical in case of a fall, enabling him to rescue himself.

g) The Contractor shall provide Roof Top Walk Ladders for carrying out activities on sloping roofs in order to reduce the chances of slippages and falls.

h) The Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net, preferably a knotted one with mesh ropes conforming to IS 5175/ ISO 1140 shall have a border rope & tie cord of minimum 12mm dia. The Safety Net shall be located not more than 6.0 meters below the working surface extending on either side upto. sufficient margin to arrest fall of persons working at different heights.

i) In case of accidental fall of person on such Safety Net, the bottom most portion of Safety Net should not touch any structure, object or ground.

j) Grade separators shall be provided in Pipe-rack/Tech-structures to arrest falling objects like welding spatters, welding rods, nuts, bolts, tools etc. and to facilitate U/G and A/G works simultaneously.

k) Beam Clamps may be used for construction of localized temporary working platforms sheds for welding booths etc. at height in all types of steel structure due to faster installation and requirement of less scaffolding materials.

l) Hanging Platform, manufactured by Standard HSE equipment vendors must be encouraged for painting of Buildings etc.

m) All the tools used at height (like spanner, screw driver etc.) shall be provided with securing arrangement like back-pack/waist pouch to prevent accidental slippage from worker hand.

n) The Contractor shall install temporary lightening arrester in tall structures during construction to save human life and to avoid damage to equipment's& machineries. During the possibility of a thunderstorm, all the work at height where a person can be exposed to lightning shall be stopped.

o) To the extent possible use Roller arrangement to shift overhead pipes from one end to other in Pipe Racks Area.

p) Providing of steel scaffold stair tower system with landings at regular intervals as and when required for height work.

q) The Contractor shall ensure positive isolation while working at different levels like in the pipe rack areas. The working platforms with toe boards & hand rails shall be sufficiently strong & shall have sufficient space to hold the workmen and tools& tackles including the equipment's required for executing the job. Such working platforms shall have mid-rails, to enable people work safely in sitting posture.

### 3.3.5 Scaffoldings& Barricading

a) Suitable steel scaffoldings only shall be provided to workmen for all works that cannot be safely done from the ground or from solid construction except such short period work that


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can be safely done using ladders or certified (by 3rd party competent person) man-basket. When a ladder is used, an extra workman shall always be engaged for holding the ladder. The ladder shall be inspected before use for cracked or split stiles, missing, broken, loose or damaged rungs & splinters. The ladder shall be of adequate length to enable it to extend to at least 1.0m above the landing place or working point. Metallic ladders shall be only used as access.

b) The Contractor shall ensure that the scaffolds used during construction activities shall be strong enough to take the designed load. Main Contractor shall always furnish duly approved construction-design details of scaffold &SWL (from competent designers) free of charge, before they are being installed/ constructed at site. Owner/EIL reserves the right to ask the Contractor to submit certification and or design calculations from his Head Office/ Design/Engineering expert regarding load carrying capacity of the scaffoldings. All steel tubing, couplers and fittings used for scaffolding shall conform to IS 3696 or an acceptable equivalent. Only metallic scaffold boards shall be allowed to use. Steel tubes shall be free from cracks, splits. Surface flaws & other defects. All couplers & fittings shall be properly oiled and maintained. Nuts shall have a free running fit on their bolts. Bolts with worn or damaged thread shall be replaced.

c) All scaffolds shall be inspected by a competent Scaffolding Inspector (person with scaffolding related experience in construction field and having a training of scaffolding supervisor from a institute/agency like National Safety Council etc.). He shall paste a GREEN tag (duly signed by competent Scaffolding Inspector) on each scaffold found safe and a RED tag (duly signed by competent Scaffolding Inspector) on each scaffold found unsafe. Scaffolds with GREEN tag only shall be permitted to be used and Scaffolds with RED ones shall immediately be made inaccessible. Work being found continuing on scaffolds with RED tag shall be considered unauthorized work by Contractor and may invite penalization from EIL/Owner. For every 120-125 $m^2$ /$m^3$ area / volume or its parts thereof minimum one TAG shall be provided.

d) The Contractor shall ensure positive barricading (indicative as well as protective) of the excavated, radiography, heavy lift, high pressure hydrostatic & pneumatic testing and other such areas. Sufficient warning signs shall be displayed along the barricading areas.

e) Scaffolding shall be constructed using foot seals or base plates only. Base plates shall be used below each standard on surface .Sole plate of timber shall be used beneath the base plate to achieve greater load distribution.

3.3.6 **Electrical installations**

a) All electrical installations/ connections shall be carried out as per the provisions of latest revision of following codes/standards, in addition to the requirements of Statutory Authorities and IE/applicable international rules& regulations:

- OISD STD 173 : Fire prevention & protection system for electrical installations
- SP 30 (BIS) : National Electric Code

b) All electrical installations shall be approved by the concerned statutory authorities.

c) All temporary electrical installations / facilities shall be regularly checked by the licensed/competent electricians of the Contractor and appropriate records shall be maintained in format no: HSE-12" Inspection of temporary electrical booth/installation at project construction site". Such inspection records are to be made available to EIL/Owner, whenever asked for.

3.3.6.1 The Contractor shall meet the following requirements:


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a. Shall make Single Line Diagram (SLD) for providing connection to each equipment's & machinery and the same (duly approved by EIL/Owner) shall be pasted on the front face of DBs (distribution boards) or JBs (Junction boxes) at every site.(A typical Switch Board Sketch is attached as Appendix -G)

b. Ensure that electrical systems and equipment including tools & tackles used during construction phase are properly selected, installed, used and maintained as per provisions of the latest revision of the Indian Electrical/ applicable international regulations.

c. Shall deploy qualified & licensed electricians for proper & safe installation and for regular inspection of construction power distribution system/points including their earthing. A copy of the license shall be submitted to EIL / Owner for records. Availability of at least one competent (ITI qualified) / licensed electrician (by State Elec. authorities) shall be ensured at site round the clock to attend to the normal/emergency jobs.

d. All switchboards / welding machines shall be kept in well-ventilated & covered shed/ with rain shed protection. The shed shall be elevated from the existing ground level to avoid water logging inside the shed. Installation of electrical switch board must be done taking care of the prevention of shock and safety of machine.

e. No flammable materials shall be used for constructing the shed. Also flammable materials shall not be stored in and around electrical equipment / switchboard. Adequate clearances and operational space shall be provided around the equipment.

f. Fire extinguishers and insulating mats shall be provided in all power distribution centers.

g. Temporary electrical equipment shall not be employed in hazardous area without obtaining safety permit.

h. Proper housekeeping shall be done around the electrical installations.

i. All temporary installations shall be tested before energizing, to ensure proper earthing, bonding, suitability of protection system, adequacy of feeders/cables etc.

j. All welders shall use hand gloves irrespective of holder voltage.

k. Multilingual (Hindi, English and local language) caution boards, shock treatment charts and instruction plate containing location of isolation point for incoming supply, name & telephone No. of contact person in emergency shall be provided in substations and near all distribution boards / local panels.

l. ELCB tester /test meter shall be used for testing the ELCBs operation. ELCBs testing shall be carried out by using ELCB tester on monthly basis but in specific cases like heavy rain as decided by owner/EIC. Record of the testing shall be maintained.

m. Regular inspection of all installations at least once in a month. (**Ref. Format HSE-12**).

3.3.6.2 The following features shall also be ensured for all electrical installations during construction phase by the contractor:

a. Each installation shall have a main switch with a protective device, installed in an enclosure adjacent to the metering point. The operating height of the main switch shall not exceed 1.5 M. The main switch shall be connected to the point of supply by means of armoured cable.


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b. The outgoing feeders shall be double or triple pole switches with fuses / MCBs. Loads in a three phase circuit shall be balanced as far as possible and load on neutral should not exceed 20% of load in the phase.

c. The installation shall be adequately protected against overload, short circuit and earth leakage by the use of suitable protective devices. Fuses wherever used shall be HRC type. Use of rewirable fuses shall be strictly prohibited. ELCB/RCCB (Residual Current Circuit Breaker) must be fitted with all Electrical installation. The earth leakage devices shall have an operating current not exceeding 30 mA.

d. All connections to the hand tools / welding receptacles shall be taken through proper switches, sockets and plugs.

e. All single phase sockets shall be minimum 3 pin type only. All unused sockets shall be provided with socket caps.

f. Only 3 core (P+N+E) overall sheathed flexible cables with minimum conductor size of 1.5 $mm^2$ copper shall be used for all single phase hand tools.

g. Only metallic distribution boxes with double earthing shall be used at site. No wooden boxes shall be used.

h. All power cables shall be terminated with compression type cable glands. Tinned copper lugs shall be used for multi-strand wires / cables.

i. Cables shall be free from any insulation damage.

j. Minimum depth of cable trench shall be 750 mm for MV & control cables and 900 mm for HV cables. These cables shall be laid over a sand layer and covered with sand, brick & soil for ensuring mechanical protection. Cables shall not be laid in waterlogged area as far as practicable. Cable route markers shall be provided at every 25 M of buried trench route.

When laid above ground, cables shall be properly cleated or supported on rigid poles of atleast 2.1 M high. Minimum head clearance of 6 meters shall be provided at road crossings.

k. Underground road crossings for cables shall be avoided to the extent feasible. In any case no underground power cable shall be allowed to cross the roads without pipe sleeve.

l. All cable joints shall be done with proper jointing kit. No taped/temporary joints shall be used.

m. An independent earthing facility should preferably be established within the temporary installation premises. All appliances and equipment shall be adequately earthed. In case of armored cables, the armour shall be bonded to the earthing system. IS: 3043 Code for earthing practices shall be followed at project site.

n. All cables(green colour) and wire rope used for earth connections shall be terminated through tinned copper lugs.

o. In case of local earthing, earth electrodes shall be buried near the supply point and earth continuity wire shall be connected to local earth plate for further distribution to various appliances. All insulated wires for earth connection shall have insulation of green colour. Periodical check tests of all electrodes should be carried out and record shall be maintained of such checks.


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p. Separate core shall be provided for neutral. Earth / Structures shall not be used as a neutral in any case.

q. ON/OFF position of all switches shall be clearly designated / painted for easy isolation in emergency.

### 3.3.7 Welding/ Grinding/Gas cutting

a) Contractor shall ensure that flash back arrestors conforming to BS:6158 or equivalent are installed on all gas cylinders as well as at the torch end of the gas hose, while in use.

b) All cylinders shall be mounted on trolleys and provided with a closing key. Empty & filled-up gas cylinders shall be stored separately with TAG, protecting them from direct sun or rain. Minimum 2 nos. of Portable DCP type fire extinguishers (10 kg) shall be maintained at the gas cylinder stores. Stacking & storing of compressed gas cylinders shall be arranged away from DG set, hot works, Elect. Panels / Elec. boards, etc.

c) The burner and the hose placed downstream of pressure reducer shall be equipped with Flash Back Arrester/Non Return Valve device.

d) The hoses for acetylene and oxygen cylinders must be of different colours. Their connections to cylinders and burners shall be made with a safety collar.

e) At end of work, the cylinders in use shall be closed and hoses depressurized.

f) Cutting of metals using gases, other than oxygen &acetylene, shall require written concurrence from Owner.

g) Grinding activity shall not be carried out in confined spaces without a valid work permit.

h) All grinding/cutting machines shall be guarded and fitted with Dead-Man switch and this shall not be bypassed any time.

i) All welding/grinding machines shall have effective earthing at least at distinctly isolated two points.

j) In order to help maintain good housekeeping, and to reduce fire hazard, live electrode bits shall be contained safely and shall not be thrown directly on the ground.

k) The hoses of Acetylene and Oxygen shall be kept free from entanglement & away from common pathways / walkways and preferably be hanged overhead in such a manner which can avoid contact with cranes, Hydraulic Mobile Crane or other mobile construction machinery.

l) Hot spatters shall be contained / restricted appropriately (by making use of effective fire-retardant cloth/fabric) and their flying-off as well as chance of contact with near-by flammable materials shall be stopped. The Fire retardant blanket shall be woven from ceramic yarn with eyelets.

m) The Contractor shall arrange adequate systems & practices for accumulation / collection of metal & other scraps and remnant electrodes and their safe disposal at regular interval so as to maintain the fabrication and other areas satisfactorily clean & tidy.

n) All gas cylinders must have a cylinder cap on at all times when not in use.

### 3.3.8 Ergonomics and tools & tackles

a) The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health. Competency of the crane operator to be thoroughly checked prior to engaging in crane operation.

b) All lifting tools, tackles, equipment, trailers, trucks/dumpers, accessories including cranes shall be tested periodically by statutory/competent authority for their condition and load carrying capacity. Valid test & fitness certificates from the applicable authority shall be submitted to Owner/EIL for their review/acceptance before the lifting tools, tackles,


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equipment, trailers, trucks/dumpers, accessories and cranes are used. Third party inspection certificate is mandatory for all lifting tools & tackles before put into use.

c) Load testing of Cranes by competent person must be made mandatory after each modification/alteration of crane configuration/change in boom length. All heavy equipment's including cranes must be maintained in good condition &record of such maintenance shall be maintained. Routine preventive maintenance of the crane to be carried out& record to be maintained for such preventive maintenance. Healthiness of the crane to be checked by Crane Expert on regular basis as per manufacturer guidelines.

d) HIRAC/JSA for assembly/dismantling activity of the crane to be submitted for approval of EIC.

e) No one should stand/work below the mast & boom of the crane. Mast of the crane should not be used for unintended lifts.

f) Mast of the crane to be kept in right position during dismantling activity of the crane.

g) Log book of all crane to be maintained.

h) Only authorized person shall be allowed to give signal to the operator.

i) Lifting/Loading/Unloading activities shall be carried out by the trained riggers under supervision of rigging Foreman.

j) Prior to marching/movement of the crane, obstructions free access/route to be ensured.

k) Skilled Technician to be engaged for AC gas checking and refilling of refrigerant and should follow the safe operating procedure for cranes.

l) Manufacturer's instructions to be followed without any deviation.

m) The contractor shall not be allowed to use defective equipment or tools not adhering to safety norms.

n) Adequate capacity of Chain pulley blocks with valid TPI certificate to be used for lifting/lowering/dragging/erection of piping material .

o) Colour coding system for lifting tools & tackles shall be followed on quarterly basis for a particular colour as mentioned below:

| Period | Colour Code |
|---|---|
| January, February, March | Blue |
| April,May, June | Yellow |
| July, August, September | Green |
| October, November, December | Orange |
| For Quarantine (Unsafe Tools & Tackles) | Red |

Contractor shall arrange non-sparking tools for project construction works in operating plant areas / hydrocarbon prone areas.

i. Wherever required the Contractor shall make use of Elevated Work Platforms (EWP) or Aerial Work Platforms (mobile or stationary) to avoid ergonomical risks and workmen shall be debarred to board such elevated platform during the course of their shifting / transportation.

ii. Contractor shall ensure installation of Safe Load Indicator (SLI) on all cranes (while in use) to minimize overloading risk. SLI shall have capability to continuously monitor and display the load on the hook, and automatically compare it with the rated crane capacity at the operating condition of the crane. The system shall also provide visual and audible warnings at set capacity levels to alert the operator in case of violations.

iii. The contractor shall be responsible for safe operations of different equipments mobilized and used by him at the workplace like transport vehicles, Tower Crane, engines, cranes, mobile ladders, scaffoldings, work tools, etc. Strictly avoid standing close to Hydraulic Mobile Crane/vehicles tyres during operation.

iv. The contractor shall deploy cranes in good working condition of maximum allowable years of service from the year of manufacture as specified below: -

20 years for cranes of 50 MT & below capacity,25 years for 51 MT to 100 MT,30 years for cranes above 101 MT.


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v. In general Man basket shall not be lifted by Hydraulic Mobile Crane. Generally Crane shall be used for lifting the man basket.

vi. Tower Crane, Crane, Hydraulic Mobile Crane or equivalent, Hydraulic Rig &Boom Lift shall be inspected on fortnightly basis as per Format No. HSE-20, HSE-21, HSE-22, HSE-23 & HSE-24.

vii. The Contractor shall arrange periodical training for the operators of Hydraulic Mobile Crane, crane, excavator, mobile machinery, Tower Crane, etc. at site by utilizing services from renowned manufacturers.

viii. Hydraulic Mobile Crane or equivalent having steering control mechanism shall be permitted at construction site only for the purpose of loading/unloading. However, continuous rigger availability during marching of hydraulic crane at site shall be ensured by contractor.

### 3.3.9 Occupational Health

a) The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures.

b) For surface cleaning operations, sand blasting shall not be permitted even if not explicitly stated elsewhere in the contract.

c) To eliminate radiation hazard, Tungsten electrodes used for Gas Tungsten Arc Welding shall not contain Thorium.

d) Appropriate respiratory protective devices(hood with respiratory devices) shall be used to protect workmen from inhalation of air borne contaminants like silica, asbestos, gases, fumes, etc.

e) Workmen shall be made aware of correct methods for lifting, carrying, pushing & pulling of heavy loads. Wherever possible, manual handling shall be replaced by mechanical lifting equipment's.

f) Fuelling of construction equipments/Diesel Generator set shall be carried out by hand operated pump.

g) In view of the congested working environment and associated hazards, deployment of manpower/machineries shall be in staggered manner keeping adequate safe distance between two adjacent work spot.

h) For jobs like drilling/demolishing/dismantling/steam blowing/cardboard blasting etc. where noise pollution exceeds the specified limit of 85decibels, ear muffs shall be provided to the workers. The Noise level monitoring record shall be maintained.

i) To avoid work related upper limb disorders (WRULD) and backaches, Display Screen Equipments' workplace stations shall be carefully designed & used with proper sitting postures. Power driven hand-held tools shall be maintained in good working condition to minimize their vibrating effects and personnel using these tools shall be taught how to operate them safely & how to maintain good blood circulation in hands.

j) The Contractor shall arrange health check-up(by registered medical practitioner) for all the workers at the time of induction. Health check may have to be repeated if the nature of duty assigned to him is changed necessitating health check or doubt arises about his wellness. EIL/Owner reserves the right to ask the contractor to submit medical test reports. Regular health check-ups are mandatory for the workers assigned with Welding, Radiography, Blasting, Painting, Heavy Lift and Height (>2m) jobs. All the health check-ups shall be conducted by registered Medical practitioner and records are to be maintained by the Contractor.

k) The Contractor shall arrange Medical Camps at regular intervals at work sites and labor colonies to assess health condition of workers.


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l) The Contractor shall ensure vaccination of all the workers including their families, during the course of entire project span.

### 3.3.10 Hazardous substances

a) Hazardous, inflammable and/or toxic materials such as solvent coating, thinners, anti-termite solutions, water proofing materials shall be stored in appropriate containers preferably with lids having spillage catchment trays and shall be stored in a good ventilated area. These containers shall be labeled with the name of the materials highlighting the hazards associated with its use and necessary precautions to be taken. Respective MSDS (Material Safety Data Sheet) shall be made available at site &may be referred whenever problem arises.

b) Where contact or exposure of hazardous materials are likely to exceed the specified limit or otherwise have harmful effects, appropriate personal protective Equipment's such as gloves, goggles/face-shields, aprons, chemical resistant clothing, respirator, etc. shall be used.

c) The work place shall be checked prior to start of activities to identify the location, type and condition of any asbestos materials which could be disturbed during the work. In case asbestos material is detected, usage of appropriate PPEs by all personnel shall be ensured and the matter shall be reported immediately to EIL/ Owner.

### 3.3.11 Slips, trips & falls

a) The contractor shall establish a regular cleaning and basic housekeeping programme that covers all aspects of the workplace to help minimize the risk of slips, trips & falls. The contractor shall take positive measures like keeping the work area tidy, storing waste in suitable containers & harmful items separately, keeping passages, stairways, entrances & exits especially emergency ones clear, cleaning up spillages immediately and replacing damaged carpet/ floor tiles, mats & rugs at once to avoid slips, trips & falls.

b) Grating removal permit system should be implemented during construction phase. So that after permanent gratings are installed on platforms and tech structure floors; removal of any gratings for whatever purpose (including for lifting piping material etc.) is required to be sanctioned by signed permit by HSE officers of both contractor and Engineer-in-charge. The spot where gratings are removed shall be hard-barricaded during course of work. The removed gratings shall be re-installed immediately after completion of work or at the time of cessation of work every day whichever is earlier and the permit shall be closed on daily basis. A register shall be maintained for recording all the grating removal permits and their closure shall be monitored on daily basis.

### 3.3.12 Radiation exposure

a) All personnel exposed to physical agents such as ionizing &non-ionizing radiation, including ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

b) For Open Field Radiography works, requirements of Bhabha Atomic Research Centre (BARC)/ Atomic Energy Regulatory Board (AERB) shall be followed.

c) The Contractor shall implement an effective system of control (as described in the AERB regulations) at site for handling radiography-sources & for avoiding its misuse & theft.

d) The contractor shall generate the Format No: HSE-8 "Permit for radiation work" before start of work.

e) In case the radiography work has to be carried out at day time, suitable methodology to be used so that other works, people are not affected.

### 3.3.13 Explosives/Blasting operations


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a) Blasting operations shall be carried out as per latest Explosive Rules (Indian/ International) with prior permission. The Contractor shall obtain license from Chief Controller of Explosives (CCoE) for collection, transportation, storage of explosives as well as for carrying out blasting operations.

b) The Contractor shall prepare exclusive method statement (in cognizance with statutory requirements)for rock blasting works &diffusing unfired explosives, if any, at project site before carrying out actual task. Nowhere blasting shall be carried out by the Contractor or its agency without the involvement of competent supervisor and licensed blaster.

### 3.3.14 Demolition/ Dismantling

a) The contractor shall adhere to safe demolishing/ dismantling practices at all stages of work to guard against unsafe working practices.

b) The contractor shall disconnect service lines (power, gas supply, water, etc.)/ make alternate arrangements prior to start of work and restore them, ifrequired as directed by EIL/ Owner at no extra cost.

c) Before carrying out any demolition/dismantling work, the contractor shall take prior approval of EIL/Owner and generate the Format No.HSE-9. For revamp jobs in operating plants where location of underground utilities is not known with certainty, the contractor shall depute an experienced engineer for supervision and shall make adequate arrangements for Fire-fighting& First-Aid during the execution of these activities.

d) The Contractor shall arrange approved HIRAC/ Method Statement for the specific demolition / dismantling task and corresponding action plan commensurate with hazards / risks associated therein. In no case any activity related to demolition / dismantling shall be carried out by the Contractor without engaging own supervision / field engineer.

### 3.3.15 Road Safety

a) The Contractor shall ensure adequately planned road transport safety management system.

b) The vehicles shall be fitted with reverse warning alarms & flashing lights / fog-lights and usage of seat belts shall be ensured.

c) The Contractor shall also ensure a separate pedestrian route for safety of the workers and comply with all traffic rules & regulations, including maintaining speed limit of 20 KMPH or indicated by owner for all types of vehicles / mobile machinery. The maximum allowable speed shall be adhered to.

d) In case of an alert or emergency, the Contractor must arrange clearance of all the routes, roads, access. The Contractor shall deploy sufficient number of traffic controllers at project site routes / roads/ accesses, to alert reversing movement of vehicles & machinery as well as pedestrians. Experienced drivers/operators with valid driving license (LMV/HMV)shall be allowed to drive/operate the vehicles/equipment's. The Contractor shall maintain copy of PUC,RC and Insurance etc. for all the vehicles/equipment's.

e) Dumpers, Tippers, etc. shall not be allowed to carry workers within the plant area and also to & from the labour colony to & from project sites.

f) Hydraulic Mobile Crane or equivalent)shall only be allowed for handling(loading/unloading) the materials at fabrication/ storage yards and in no case shall be allowed to transport the materials over project / plant roads.

g) The Contractor shall not deploy any such mobile machinery / Equipment's, which do not have competent operator and / or experienced banks-man/signal-man. Such machinery/equipment's shall have effective limit-switches, reverse-alarm, front& rear-end lights etc. and shall be maintained in good working order.

h) The Contractor shall not carry-out maintenance of vehicles / mobile machinery occupying space on project / plant roads and shall always arrange close supervision for such works.


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i) For pipeline jobs, the contractor shall submit a comprehensive plan covering transportation, loading / unloading of pipes, movement of side booms, movement of vehicles on the ROW, etc.

j) Height barrier/Restriction to be provided on both side of the HT lines, if required.

k) Contractor's shall arrange /install visible road signs, diversion boards, caution boards, etc. on project roads for safe movement of men and machinery.

### 3.3.16 Welfare measures

Contractor shall, at the minimum, ensure the following facilities at work sites:

a) A crèche at site where 10 or more female workers are having children below the age of 6 years.

b) Adequately ventilated / illuminated rooms at labour camps & its hygienic up-keeping.

c) Reasonable canteen facilities at site and in labour camps at appropriate location depending upon site conditions. Contractor shall make use of "industrial" variety of LPG cylinder & satisfactory illumination at the canteens. Necessary arrangement for efficient disposal of wastes from canteens & urinals /toilets shall also be made and regular review shall be made to maintain the ambience satisfactorily hygienic &shall also comply with all applicable statutory requirements.

d) Adequately lighted & ventilated Rest rooms at site (separate for male workers and female workers).

e) Provision for suitable mobile toilets to be made available by Contractor for remote/scattered job locations.

f) Urinals, Toilets, drinking water, washing facilities, adequate lighting at site and labour camps, commensurate with applicable Laws/ Legislation.

g) The contractor shall ensure the test report of drinking water.

h) The contractor at periodic interval shall arrange to prevent mosquito breeding by fumigation/spraying of insecticides at workplace/fabrication yard.

### 3.3.17 Environment Protection

Contractor shall ensure proper storage and utilization methodology of materials that are detrimental to the environment. Where required, Contractor shall ensure that only the environment friendly materials are selected and emphasize on recycling of waste materials, such as metals, plastics, glass, paper, oil & solvents. The waste that cannot be minimized, reused or recovered shall be stored and disposed of safely. In no way, toxic spills shall be allowed to percolate into the ground. The contractor shall not use the empty areas for dumping the wastes.

The contractor shall ensure availability of stack emission test report of DG set. Monitoring of air quality emission of DG stack shall be carried out on yearly basis. However, air quality emission shall be monitored first time on commissioning of DG Set.

Contractor to submit Environmental Aspect Impact Register detailing the list of activities in his scope, the respective environmental impact and the actions taken to minimize the impact. Environmental Aspect Impact Register to be prepared as per Format HSE-18 and to be updated and maintained till job completion. Environmental Aspect Impact Register of the contractor shall be reviewed by EIL/Owner on half-yearly basis.

The contractor shall strive to conserve energy and water wherever feasible.

The contractor shall ensure dust free environment at workplace by sprinkling water on the ground at frequent intervals. The air quality parameters for dust, poisonous gases, toxic releases,


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harmful radiations, etc. shall be checked by the contractor on daily basis and whenever need arises.

The contractor shall not be allowed to discharge chemicals, oil, silt, sewage, sullage and other waste materials directly into the controlled waters like surface drains, streams, rivers, ponds. A discharge plan suggesting the methods of treating the waste before discharging shall be submitted to EIL/Owner for approval.

For pipeline jobs, top soil shall be stacked separately while making ROW through fields. This fertile soil shall be placed back on top after backfilling.

For offshore construction barges, arrangements shall be made for safe disposal of human, food & other wastes and applicable laws in this regard shall be followed.

### 3.3.18 Rules & Regulations

All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials, substances and wastes. Contractor shall not dump, release or otherwise discharge or disposes off any such materials without the express authorization of EIL/Owner. An indicative list of Statutory Acts & Rules relating to HSE is given under Appendix-D.

### 3.3.19 Weather Protection

Contractor shall take appropriate measures to protect workers from severe storms, rain, solar radiations, poisonous gases, dust, etc. by ensuring proper usage of PPEs like Sun glasses, Sun screen lotions, respirators, dust masks, etc. and rearranging/ planning he construction activities to suit the weather conditions. Effective arrangement (without creating inconvenience to project facilities & permanent installations) for protecting workmen from hailstorm, drizzle in the form of temporary shelter shall be made at site.

### 3.3.20 Communication

All persons deployed at the work site shall have access to effective means of communication so that any untoward incident can be reported immediately and assistance sought by them.

All health & safety information shall be communicated in a simple & clear language easily understood by the local workforce.

For information to all, typical subjects that should be communicated are: -

Inside the company (Top to down)

a. Quality Policy
b. HSE Policy contents
c. Environment Policy
d. HSE Objectives
e. Safety Cardinal Rules
f. HSE Target – reached or missed
g. Praises & Warnings to personnel for HSE Management
h. Safety Walk Through Reports and safety defects / shortfalls (by management)
i. HSE Audit results
j. Revised Statutory Health & Safety provisions, if any
k. H & S publicity
l. Suggestions

Inside the Company (Bottom to up)


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a. Complaints
b. Compliances on safety defects / shortfalls
c. Suggestions
d. Proposals for changes & improvements
e. HSE Reports (including near-miss reports)

### 3.3.21 Confined Space Entry

The contractor shall generate a work permit (Format No. HSE -7) before entering a confined space. People, who are permitted to enter into confined space, must be medically examined & certified by registered doctor, confirming their 'medical fitness for working in confined space'. All necessary precautions mentioned therein shall be adhered to. An attendant shall be positioned outside a confined space for extending help during an emergency. Effective communication shall be maintained between personnel in confined space and outside by combination of visual/voice or portable radio. Compressed gas cylinders shall not be taken into confine space. Entry Register for confined space to be maintained with the name and time of entry/exit. All appropriate PPEs and air quality parameters shall be checked before entering a confined space. It shall be ensured that the piping of the equipment which has to be opened is pressure- free by checking that blinds are in place, vents are open and volume is drained. Inside confined space works, only electrical facilities / installations of 24V shall be permitted. Contractor shall ensure usage of safe & suitable arrangement of oxygen supply for individual workmen (during the course of work in confined space), if oxygen concentration is found to be less than 19.5% (v/v) there. All persons must be made aware of the risk associated with Nitrogen &all precautionary measures shall be taken when vessel/sphere/pipelines etc. are being purged with nitrogen.
Rescue arrangement must be readily available at workplace to fulfill requirement of the emergency situation.

### 3.3.22 Heavy Lifts

a) The contractor shall submit detailed rigging study/ plan for EIL/ Owner approval prior to lifting equipment requiring a crane of approx. 100 MT capacity or more due to constraints of its dimensions, location of foundation height, approach & weight.

b) Contractor shall generate the format no. HSE-15 "Permit for heavy lift/critical erection"

c) The Safe Working Load (SWL) and manufacturer's serial numbers shall be clearly marked on the slings and the lifting gears, either by tagging, stamping, engraving or embossing.

d) Prior to actual lifting activities, contractor shall check the validity of the crane inspection certificate issued by statutory/ competent authority. This requirement shall also apply to all rigging equipment's utilized for the job.

e) The contractor shall, at all times, be responsible for all rigging activities.

f) The Contractor shall ensure medical fitness of all workmen who are engaged / involved in erection of equipment's, vessels etc. and such fitness checks shall be carried-out every six months interval with the help of a registered medical practitioner & record shall be maintained

g) Adequate safety measures such as positive barricading, usage of appropriate PPEs, permit to work, etc. shall be taken during all heavy or critical lifts.

h) Ground condition should be suitable to sustain the Ground Bearing Load of the Crane with full load condition.

i) For lifting any material (irrespective of shape, size or volume), at any height, it is always advisable to prepare a Plan of Erection (PoE) taking into consideration hazards & risks associated therein – this can enable people to put their own experiences of various natures & side-by-side establish a practical method for risk-free erection / lifts. The contractor shall


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prepare PoE & shall document the same, when risks are identified as "medium" or "high" and the same shall be approved by its competent / qualified engineer.

### 3.3.23 Key Performance Indicators

The contractor shall measure an activity in both leading & trailing indicators for statistical and performance measurement. The activities pertaining to key performance indicators are covered in Monthly HSE Report (Format No. HSE-5). The contractor shall try to achieve a statistically fair record and strive for its continual improvement.

Leading Indicators viz:-:

- Number of Safety Inductions carried-out at site (for workmen & staff members)
- Number of HSE inspections carried out
- Number of "Safety Walk Through" carried-out by site-head.
- Number of HSE shortfalls / lapses identified per contractor& closed-out in time.
- Number of Safety Meetings conducted (in-house / with contractors)
- Number of HSE Audits made (internal & external) vis-à-vis non conformances raised
- Number of HSE Awareness / Motivational program conducted by contractors
- Number of HSE Trainings conducted at site for supervisors & workmen
- Study of Near miss case reported
- Encouragements / Awards / Recognitions to workmen, job supervisors & field engineers.
- Suggestions for improvement

Trailing Indicators viz:-:

- Calculation of HSE statistics viz frequency rate, severity rate, LTA free man hours etc.
- Analysis of incidents / accidents (nature, severity, types etc.)
- Study of Incident / Accident with respect to :-
    - Variety
    - Period of the year / project span
    - Timings of the incident / accident
    - Age profile of victims
    - Body parts involved
    - Penalty levied for causing incident / accident

### 3.3.24 Unsuitable Land Conditions

Contractor shall take appropriate measures and necessary work permits/clearances if work is to be done in or around marshy areas, river crossings, mountains, monuments, etc. The Contractor shall make right assessment and take all necessary action for developing work areas to make them safe & suitable for crane operations or other vehicular movement before carrying out any project related activity / operation. Contractor shall take all necessary actions to make the surroundings of its site establishments (site office, stores, lay-down area etc.) work-worthy safe and secure.

### 3.3.25 Under Water Inspection

Contractor shall ensure that boats and other means used for transportation, surveying & investigation works shall be certified seaworthy by a recognized classification society. It shall be equipped with all life saving devices like life jackets, adequate fire protection arrangement sand shall possess communication facilities like cellular phones, wireless, walkie-talkie. All divers used for seabed surveys, underwater inspections shall have required authorized license, suitable life-saving kit. Number of hours of work by divers shall be limited as per regulations. EIL/ Owner shall have the right to inspect the boat and scrutinize documents in this regard.


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### 3.3.26 Excavation

The Contractor shall obtain permission from competent authorities prior to excavation wherever required.

The Contractor shall locate the position of buried utilities (water line, cable route, etc.) by referring to project / plant drawing / in consultation with EIL/Owner. The Contractor shall start digging manually to locate the exact position of buried utilities & thereafter use mechanical means.

In case of non-availability of sufficient data/drawings, underground services i.e. underground cable/ pipe shall be checked by cable detector/pipe locator by the contractor.

The Contractor shall keep soil heaps at least 1.5 M away from edge or a distance equal to depth of pit (whichever is more)

All excavated pits greater than 10 Sq.M plan area and depth more than 1.5M shall have at least two access routes for ingress and egress. Also, additional access routes shall be provided such that distance between any two access routes shall not be more than 20M.

The Contractor shall maintain sufficient "angle of repose" during excavation – shall also provide slope or suitable bench as decided by EIL / Owner.

The Contractor shall arrange "battering" or "benching" wherever required for preventing collapse of edge of excavations.

Avoid vertical wall of less than 2mtrs between two adjacent deep excavated pit/area. Further deep excavation should not be kept open for a longer duration.

The Contractor shall identify & arrange de-watering pump or well-point system to prevent earth collapse due to heavy rain / influx of underground water.

The Contractor shall arrange protective fencing/hard barricading with warning signal around excavated pits, trenches, etc. along with minimum 2 (two) entries, exits / escape ladders.

The Contractor must avoid "underpinning" / under-cutting to prevent collapse of chunk of earth during excavation.

The Contractor shall use "stoppers" to prevent over-run of vehicle wheels at the edge of excavated pits / trenches. Vehicles movement should be restricted to minimum three meters away from the excavated pit.

The Contractor shall arrange strengthening of "shoring" & "strutting" proactively to avoid collapse of earth / edges due to vehicular movement in close proximity of excavated areas / pits/ trenches, etc.

## 3.4 Tool Box Talks (TBT)

Contractor shall conduct daily TBT with workers prior to start of work and shall maintain proper record of the meeting. A suggested format is given below. The Job specific TBT is to be conducted by the immediate supervisor of the workers.

The Contractor shall conduct TBT before start of every morning or evening shift or night shift activities, for alerting the workers on specific hazards and their appropriate dos & don'ts. The Contractor shall provide sufficient rests to the site workmen and their foremen to avert fatigue & thereby endangering their lives during the course of site works.


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| TOOLBOX TALK RECORDING SHEET | | |
|---|---|---|
| Date & Time | | |
| Work Location | | |
| Subject (Nature of work) | | |
| Presenter | | |
| Hazards involved | | |
| Precautions to be taken | | |
| Worker's Name | Signature | Section |
| | | |
| | | |
| | | |
| Remarks, in any | | |

The topics during TBT shall include

- Hazards related to work assigned on that day and precautions to be taken.
- Any forthcoming HSE hazards/events/instruction/orders, etc.

The above record can be kept in local language, which workers can read. These records shall be made available to EIL/ Owner whenever demanded.

### 3.5 Training & Induction Programme

a) Initial induction of workers into Construction oriented activities and appraising them about the methodology of works and how to carry-out safely and the same should not be inter mixed with Tool Box Talks or HSE Training. In this regard careful action should be made& maintained for imparting HSE induction to every individual, irrespective of his task/designation/level of employment, whereas, HSE Training should be imparted to specific person/group of people who are to carry-out that specific task more than once – for example, Riggers must be trained for working at heights, welders must be trained for work in confined space, fitters/carpenters, mesons must be trained for work at heights, etc.
Contractor shall arrange suitable facilities (e.g training room/place, audio visual facilities etc.) for organizing such training on HSE.

b) Contractor shall conduct Safety induction programme on HSE for all his workers and maintain records. Sticker for "Safety Induction" shall be pasted on the safety helmet of the site personnel. The Gate Pass shall be issued only to those workers who successfully qualify the Safety induction programme. Contractor to conduct effective safety induction program at work site by making efforts to arrange Video film/Virtual Reality (VR) technology pertaining to the escape routes, assembly points, risks involved in the event of an emergency etc while imparting safety induction.

c) The Contractor brief the visitors about the HSE precautions which are required to be taken before their proceeding to site and make necessary arrangements to issue appropriate PPEs like Aprons, hard hats, ear-plugs, goggles & safety shoes etc., to his visitors. The Contractor shall always maintain relevant acknowledgement from visitor on providing him brief information on HSE actions.

d) Contractor shall submit job specific training schedule for approval of EIL/Owner &ensure that all his personnel possess appropriate training to carry out the assigned job safely. The training should be imparted in a language understood by them and should specifically be trained about

- Potential hazards to which they may be exposed at their workplace


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- Measures available for prevention and elimination of these hazards

The topics during training shall cover, at the minimum: -

- Why safety should be considered during work - explanation
- Education about hazards and precautions required
- Employees' duties & responsibilities
- Emergency and evacuation plan
- HSE requirements during project activities
- Fire fighting and First-Aid
- Use of PPEs
- Occupational health issues – dos & don'ts
- Local laws on intoxicating drinks, drugs, smoking in force
- Common environmental subjects – lighting, ventilation, vibration, smoke/fumes etc.

e) Records of the training shall be kept and submitted to EIL/ Owner.

f) The Contractor shall make regular program for conducting Safety Training on various topics related to various activities & their safe-guarding utilizing experienced persons / outside agency / faculty. A program for Safety Training (indicative list as per Appendix –F) shall be furnished by the Contractor in its HSE Plan.

g) For offshore and jetty jobs, contractor shall ensure that all personnel deployed have undergone a structured sea survival training including use of lifeboats, basket landing, use of radio communication etc. from an agency acceptable to Owner/EIL.

## 3.6 ADDITIONAL SAFETY REQUIREMENTS FOR WORKING INSIDE A RUNNING PLANT

As a minimum, the contractor shall ensure adherence to following safety requirements while working in or in the close vicinity of an operating plant:

a) Contractor shall obtain permits for Hot work, Cold work, Excavation and Confined Space from Owner in the prescribed format.

b) The contractor shall monitor record and compile list of his workers entering the operational plant/unit each day and ensure & record their return after completing the job.

c) Contractor's workers and staff members shall use designated entrances and proceed by designated routes to work areas only assigned to them. The workers shall not be allowed to enter units' area, tanks area, pump rooms, etc. without work authorization permit.

d) Work activities shall be planned in such a way so as to minimize the disruption of other activities being carried out in an operational plant/unit and activities of other contractors.

e) The contractor shall submit a list of all chemicals/toxic substances that are intended to be used at site and shall take prior approval of the Owner.

f) Specific training on working in a hydrocarbon plant shall be imparted to the work force and mock drills shall be carried out for Rescue operations/First-Aid measures.

g) Proper barricading/cordoning of the operational units/plants shall be done before starting the construction activities. No unauthorized person shall be allowed to trespass. The height and overall design of the barricading structure shall be finalized in consultation with the Owner and shall be got approved from the Owner.

h) Care shall be taken to prevent hitting underground facilities such as electrical cables, hydrocarbon piping during execution of work.


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i) Barricading with water curtain shall be arranged in specific/critical areas where hydrocarbon vapors are likely to be present such as near horton spheres or tanks. Positioning of fire tenders (from owner) shall also be ensured during execution of critical activities.

j) Emergency evacuation plan shall be worked out and all workmen shall be apprised about evacuation routes. Mock drill operations may also be conducted.

k) Flammable gas test shall be conducted prior to any hot work using appropriate measuring instruments. Sewers, drains, vents or any other gas escaping points shall be covered with flame retardant tarpaulin.

l) Respiratory devices shall be kept handy while working in confined zones where there is a danger of inhalation of poisonous gases. Constant monitoring of presence of Gas/Hydrocarbon shall be done.

m) Clearance shall be obtained from all parties before starting hot tapping, patchwork on live lines and work on corroded tank roof.

n) Positive isolation of line/equipment by blinding for welding/cutting/grinding shall be done. Closing of valve will not be considered sufficient for isolation.

o) Welding spatters shall be contained properly by using fire retardant blanket and in no case shall be allowed to fall on the ground containing oil. Similar care shall be taken during cutting operations. Fire watcher to be deployed to ensure the same.

p) The vehicles, cranes, engines, etc. shall be fitted with spark arresters on the exhaust pipe and got it approved from Safety Department of the Owner.

q) Plant air should not be used to clean any part of the body or clothing or use to blow off dirt on the floor.

r) Gas detectors should be installed in gas leakage prone areas as per requirement of Owner's plant operation personnel.

s) Flame proof electrical distribution board, plug and socket shall be used for electrical appliances.

t) Experienced full time safety personnel shall be exclusively deployed to monitor safety aspects in running plants.

### 3.7 Self-Assessment and Enhancement

The contractor shall develop a method of check & balance through self-assessment& enhancement techniques and shall explore the opportunities for continual improvement in the HSE system.

### 3.8 HSE Promotion

The contractor shall encourage his workforce to promote HSE efforts at workplace by way of organizing workshops/seminars/training programs, celebrating HSE awareness weeks &National Safety Day, conducting quizzes & essay competitions, distributing pamphlets, posters & material on HSE, providing incentives for maintaining good HSE practices and granting incentives/ bonus for completing the job without any lost time accident.

### 3.9 Lock Out and Tag Out(LOTO) for Isolation of Energy Source

a) Contractor shall follow the LOTO/Isolation procedure of owner for all energy source isolations installed/under purview by /of owner i.e. "Brown field"

b) For all the other energy source (not under purview of client/owner)i.e. "Green field" Contractor shall develop a system to ensure the isolation of equipments, pipelines, Vessel, electrical panels from the energy source covering following as minimum:-


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- Identification of all energy source viz electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, radiation and other forms of stored or kinetic energy.
- Establishing the energy isolation devices viz manually operated electrical circuit breakers, disconnection switches, blind flanges, etc.
- Installation of Lock Out devices for preventing the inadvertent release of stored energy and Tag Out devices ("Danger", "Do Not operate" or Do not Remove"tags) to indicate that testing, maintenance or servicing is underway and the device cannot be operated until the tag out device is removed.
- Lock Out and Tag out log book
- Permit for isolation and de-isolation of energy source as per format No.: HSE-16
- Availability of competent persons like experienced operators at substations, pump house, units etc. supervisors etc.

c) Contractor shall ensure that all the sources are locked out and tagged properly before giving clearance to start the job.

d) After the completion of job, contractor shall ensure all tools and tackles are removed and nobody is present in the working area and signing on LOTO log book.

e) Only on confirmation of above the contractor will remove their lock and tag from the isolation points and give instructions for energizing the same. Only the person carrying out the task shall himself carry the key for the lock in /Lock out.

## 4.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR

### 4.1 On Award of Contract

The Contractor shall submit a comprehensive Health, Safety and Environmental Plan or programme for approval by EIL/Owner prior to start of work. The Contractor shall participate in the pre-start meeting with EIL/Owner to finalize HSE Plans which shall including the following:

- HSE policy & Objectives
- Job procedure to be followed by the Contractor for construction activities including handling of equipment's, scaffolding, electric installations, etc. describing the risks involved, actions to be taken and methodology for monitoring each activity. Indicative list of procedures is enclosed as Annexure-H
- EIL/Owner review/audit requirement.
- Organization structure along with responsibility and authority, on HSE activities.
- Administrative & disciplinary steps involving implementation of HSE requirements
- Emergency evacuation plan/ procedures for site and labour camps
- Procedures for reporting & investigation of accidents and near misses.
- HSE Inspection
- HSE Training programme at project site
- HSE Awareness program eat project site
- Reference to Rules, Regulations and statutory requirements.
- HIRAC
- Environment Aspect Impact Register
- Legal Register
- HSE documentation viz reporting, analysis & record keeping.

### 4.2 During Job Execution

Contractor shall implement approved Health, Safety and Environment management plan or programme including but not limited to as brought out under para 3.0. Contractor shall also ensure:

a) to arrange workmen compensation insurance, registration under ESI Act, third party liability insurance, registration under BOCW Act etc., as applicable.


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b) to arrange all HSE permits before start of activities (as applicable), like permits for hot work, working at heights (Refer Format No. HSE-6), confined space (Refer Format No. HSE-7), Radiation Work Permit (Refer Format No. HSE-8), Demolishing/ Dismantling Work Permit (Refer Format No. HSE-9),Permit for erection/modification & dismantling of scaffolding(Refer Format No:HSE-14),Permit for heavy lift/critical erection (Refer Format No:HSE-15) ,Permit for energy Isolation & De-isolation" (HSE-16) ,storage of chemical/explosive materials & its use and implement all precautions mentioned therein. In this regard, requirements of *Oil industry Safety Directorate Standard No.* Std -105 "Work Permit Systems" shall be complied with while working in existing Oil or Gas processing plants. List of the persons involved shall be maintained as annexure to the work permit issued for a particular activity.

c) to submit, timely, the completed checklist on HSE activities in Format No.HSE-1, Monthly HSE report in Format No.HSE-5 (use of web based package (www.eil.co.in/conthse) is compulsory wherever the facility is available else a hard copy is to be submitted), accident/ incident reports, investigation reports etc. as per EIL/Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to EIL/Owner.

d) that his top most executive at site attends all the Safety Committee/HSE meetings arranged by EIL/Owner and carries out safety walk regularly. Only in case of his absence from site that a second senior most person shall be nominated by him, in advance, and communicated to EIL/Owner for performing the above tasks.

e) display at site office and at prominent locations HSE Policy, caution boards, list of hospitals, emergency services available, safety signs like Men at work, Speed Limits, Hazardous Area, various do's & don'ts, etc.

f) provide posters, banners for safe working to promote safety consciousness.

g) identify, assess, analyze & mitigate the construction hazards& incorporate relevant control measures before actually executing site works. (HIRAC = Hazard Identification, Risk Analysis and Control).

h) identify, assess, analyze & mitigate the environmental impact & incorporate relevant control measures through Environmental Aspect Impact Register

i) Identify and comply to all applicable HSE related legal requirements by preparing and maintaining a Legal register.

j) To maintain & monitor the level of legal compliance at site, a committee shall be formed comprising of contractor's RCM as Head and lead representatives as member(s)from HR/Legal, HSE and discipline engineer(s) (Civil, Mechanical, Electrical, Instrumentation) as applicable. Committee shall review the applicable legal requirements during periodical meetings and monitor the compliance status.

k) arrange testing, examination, inspection of own as well as borrowed construction equipment's/ machinery (stationary &mobile) before being used at site and also at periodical interval, through own resources and also by 3rd party competent agencies (as deemed fit in statutes). Records of such test, examination etc. shall be maintained & shall be submitted to EIL/Owner as & when asked for.

l) carryout audits/inspection (internal & external) at his works as well as sub-contractor works as per approved HSE plan/procedure/programme & submit the compliance reports of identified shortfalls for EIL/Owner review.

m) Arranging HSE training for site workmen (of his own &subcontractors) through internal or external faculty at periodical intervals.

n) Assistance& cooperate during HSE audits by EIL/Owner or any other 3rd party and submit compliance report.

o) Generate & submit of HSE records/report as per this specification.

p) Contractor shall arrange minimum 100 lux. illumination level at construction site for night works& record shall be maintained.


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q) Mobile phones shall not be permitted in operational area of the Project Site. However, intrinsically safe mobile phone can be permitted on approval from EIL/Owner. Alternatively, telephone booth(s) may be set up by the contractor after obtaining approval from EIL/Owner. Use of mobile phone shall also be restricted during construction activities such as height work, erection of material, confined space and Pre-commissioning & Commissioning activities at all project sites.

r) The contractor shall assign responsible person as in charge for night works and it shall be informed to owner/EIL.

s) Appraise EIL/Owner on HSE activities at site regularly.

t) Carry-out all dismantling activities safely, with prior approval of EIL/Owner representative.

u) The Contractor shall ensure that "Hot works" and painting works do not continue at the same place/ location at project site for which chance or probability of "fire" incident exists.

### 4.3 During Short Listing of the Sub-Contractors

The contractor shall review the HSE management system of the sub-contractors in line with the requirements given in this specification. The contractor shall be held responsible for the shortcomings observed in the HSE management system of the sub-contractor(s) during execution of the job.

## 5.0 RECORDS

At the minimum, the contractor shall maintain/ submit HSE records in the following reporting formats:

| | |
|---|---|
| Safety Walk Through Report | HSE-1 |
| Accident/ Incident Report | HSE-2 |
| Supplementary Accident/ Incident Investigation report | HSE-3 |
| Near Miss Incident Report | HSE-4 |
| Monthly HSE Report | HSE-5 |
| Permit for working at height | HSE-5 |
| Permit for working in confined space | HSE-7 |
| Permit for radiation work | HSE-8 |
| Permit for demolishing/ dismantling | HSE-9 |
| Daily Safety checklist | HSE-10 |
| Housekeeping Assessment & compliance | HSE-11 |
| Inspection of temporary electrical booth/installation | HSE-12 |
| Inspection for scaffolding | HSE-13 |
| Permit for erection/modification &dismantling of scaffolding | HSE-14 |
| Permit for heavy lift/critical erection. | HSE-15 |
| Permit for Energy isolation and de-isolation. | HSE-16 |
| Permit for Excavation | HSE-17 |
| Environmental Aspect Impact Register | HSE-18 |
| HIRAC Register | HSE-19 |
| Checklist for Tower Crane | HSE-20 |
| Crane Inspection Checklist | HSE-21 |
| Hydraulic Mobile Crane Inspection Checklist | HSE-22 |
| Hydraulic Rig Inspection Checklist | HSE-23 |


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| | |
|---|---|
| Boom Lift Inspection Checklist | HSE-24 |
| Inspection reports of Equipment/tools/tackles | * |
| Report of Toolbox Talks | As indicated in specification |
| PPE issue report/register | * |
| Site inspection reports | * |
| Training records | * |

(*) The formats shall be developed by contractor in consultation with EIL/Owner.



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**APPENDIX-A**
**(Sheet 1 of 2)**

| **A.** | **IS CODES ON HSE** |
|---|---|
| SP: 53 | Safety code for the use, Care and protection of hand operated tools. |
| IS: 838 | Code of practice for safety & health requirements in electric and gas welding and cutting operations |
| IS: 1179 | Eye & Face precautions during welding, equipment etc. |
| IS: 1860 | Safety requirements for use, care and protection of abrasive grinding wheels. |
| IS: 1989 (Pt -II) | Leather safety boots and shoes |
| IS: 2925 | Industrial Safety Helmets |
| IS: 3016 | Code of practice for fire safety precautions in welding & cutting operation. |
| IS: 3043 | Code of practice for earthing |
| IS: 3764 | Code of safety for excavation work |
| IS: 3786 | Methods for computation of frequency and severity rates for industrial injuries and classification of industrial accidents |
| IS: 3696 | Safety Code of scaffolds and ladders |
| IS: 4083 | Recommendations on stacking and storage of construction materials and components at site |
| IS: 4770 | Rubber gloves for electrical purposes |
| IS: 5121 | Safety code for piling and other deep foundations |
| IS: 5216 (Pt-I) | Recommendations on Safety procedures and practices in electrical works |
| IS: 5557 | Industrial and Safety rubber lined boots |
| IS: 5983 | Eye protectors |
| IS: 6519 | Selection, care and repair of Safety footwear |
| IS: 6994 (Pt-I) | Industrial Safety Gloves (Leather & Cotton Gloves) |
| IS: 7293 | Safety Code for working with construction Machinery |
| IS: 8519 | Guide for selection of industrial safety equipment for body protection |
| IS: 9167 | Ear protectors |
| IS: 11006 | Flash back arrestor (Flame arrestor) |
| IS: 11016 | General and safety requirements for machine tools and their operation |
| IS: 11057 | Specification for Industrial safety nets |
| IS: 11226 | Leather safety footwear having direct moulded rubber sole |
| IS: 11972 | Code of practice for safety precaution to be taken when entering a sewerage system |
| IS: 13367 | Code of practice-safe use of cranes |
| IS: 13416 | Recommendations for preventive measures against hazards at working place |


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**APPENDIX-A**
**(Sheet 2 of 2)**

## B. INTERNATIONAL STANDARDS ON HSE

| | | |
|---|---|---|
| Safety Glasses | : | ANSI Z 87.1, ANSI ZZ 87.1, AS 1337, BS 2092, BS 1542, BS 679, DIN 4646/ 58311 |
| Safety Shoes | : | ANSI Z 41.1, AS 2210, EN 345 |
| Hand Gloves | : | BS 1651 |
| Ear Muffs | : | BS 6344, ANSI S 31.9 |
| Hard Hat | : | ANSI Z 89.1/89.2, AS 1808, BS 5240, DIN 4840 |
| Goggles | : | ANSI Z 87.1 |
| Face Shield | : | ANSI Z 89.1 |
| Breathing Apparatus | : | BS 4667, NIOSH |
| Welding & Cutting | : | ANSI Z49.1 |
| Safe handling of compressed: | P-1 | (Compressed Gas Association Gases in cylinders 1235 Jefferson Davis Highway, Arlington VA 22202 - USA) |
| Full body harness | : | EN-361 |
| Lanyard | : | EN-354 |
| Karabiner | : | EN-362 and EN-12275 |


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**APPENDIX-B**

## DETAILS OF FIRST AID BOX

| SL. NO. | DESCRIPTION | | QUANTITY |
|---|---|---|---|
| 1. | Small size Roller Bandages, 1 Inch Wide | (Finger Dressing small) | 6 Pcs. |
| 2. | Medium size Roller Bandages, 2 Inches Wide | (Hand & Foot Dressing) | 6 Pcs. |
| 3. | Large size Roller Bandages, 4 Inches Wide | (Body Dressing Large) | 6 Pcs. |
| 4. | Large size Burn Dressing | (Burn Dressing Large) | 4 Pkts. |
| 5. | Cotton Wool | (20 gms packing) | 4 Pkts. |
| 6. | Antiseptic Solution Dettol (100 ml.) or Savlon | | 1 Bottle |
| 7. | Mercurochrome Solution (100 ml.) 2% in water | | 1 Bottle |
| 8. | Ammonia Solution (20 ml.) | | 1 Bottle |
| 9. | A Pair of Scissors | | 1 Piece |
| 10. | Adhesive Plaster (1.25 cm X 5 m) | | 1 Spool |
| 11. | Eye pads in Separate Sealed Pkt. | | 4 pcs. |
| 12. | Tourniqut | | 1 No. |
| 13. | Safety Pins | | 1 Dozen |
| 14. | Tinc. Iodine/ Betadine (100 ml.) | | 1 Bottle |
| 15. | Polythene Wash cup for washing eyes | | 1 No. |
| 16. | Potassium Permanganate (20 gms.) | | 1 Pkt. |
| 17. | Tinc. Benzoine (100 ml.) | | 1 Bottle |
| 18. | Triangular Bandages | | 2 Nos. |
| 19. | Band Aid Dressing | | 5 Pcs. |
| 20. | Iodex/Moov(25 gms.) | | 1 Bottle |
| 21. | Tongue Depressor | | 1 No. |
| 22. | Boric Acid Powder (20 gms.) | | 2 Pkt. |
| 23. | Sodium Bicarbonate (20 gms.) | | 1 Pkt. |
| 24. | Dressing Powder (Nebasulf) (10 gms.) | | 1 Bottle |
| 25. | Medicinal Glass | | 1 No. |
| 26. | Duster | | 1 No. |
| 27. | Booklet (English& Local Language) | | 1 No. each |
| 28. | Soap | | 1 No. |
| 29. | Toothache Solution | | 1 No. |
| 30. | Vicks (22 gms.) | | 1 Bottle |
| 31. | Forceps | | 1 No. |
| 32. | Snake –Bite Lancet | | 1No. |
| 33. | Note Book | | 1 No. |
| 34. | Splints | | 4 Nos. |
| 35. | Lock | | 1 Piece |
| 36. | Life Saving/Emergency/Over-the counter Drugs | | As decided at site |

Box size: Suitable size first aid box to be used for first aid items

Note : The medicines prescribed above are only indicative. Equivalent medicines can also be used. A prescription, in this regard, shall be required from a qualified Physician.


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**APPENDIX-C**

## TYPE OF FIRES VIS-À-VIS FIRE EXTINGUISHERS

| Fire Extinguisher → / Fire ↓ | Water | Foam | $CO_2$ | Dry Powder | Multi purpose (ABC) |
|---|---|---|---|---|---|
| Originated from paper, clothes, wood | ✔ | ✔ | can control minor surface fires | can control minor surface fires | ✔ |
| Inflammable liquids like alcohol, diesel, petrol, edible oils, bitumen | × | ✔ | ✔ | ✔ | ✔ |
| Originated from gases like LPG, CNG, $H_2$ | × | × | ✔ | ✔ | ✔ |
| Electrical fires | × | × | ✔ | ✔ | ✔ |

LEGEND : ✔ : CAN BE USED

× : NOT TO BE USED

**Note:** Fire extinguishing equipment must be checked atleast once a year and after every use by an authorized person. The equipment must have an inspection label on which the next inspection date is given. Type of extinguisher shall clearly be marked on it.



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**APPENDIX-D**

## List of Statutory Acts & Rules Relating to HSE

- The Indian Explosives Act and Rules
- The Motor Vehicle Act and Central Motor Vehicle Rules
- The Factories Act and concerned Factory Rules
- The Petroleum Act and Petroleum Rules
- The Workmen Compensation Act
- The Gas Cylinder Rules and the Static & Mobile Pressure Vessels Rules
- The Indian Electricity Act and Rules
- The Indian Boiler Act and Regulations
- The Water (Prevention & Control & Pollution) Act
- The Water (Prevention & Control of Pollution) Cess Act
- The Mines & Minerals (Regulation & Development) Act
- The Air (Prevention & Control of Pollution) Act
- The Atomic Energy Act
- The Radiation Protection Rules
- The Indian Fisheries Act
- The Indian Forest Act
- The Wild Life (Protection) Act
- The Environment (Protection) Act and Rules
- The Hazardous Wastes (Management & Handling) Rules
- The Manufacturing, Storage & import of Hazardous Chemicals Rules
- The Public Liability Act
- The Building and Other Construction Workers (Regulation of Employment and Condition of Service) Act
- Other statutory acts Like EPF, ESIS, Minimum Wages Act.


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**APPENDIX-E(Sheet 1 of 12)**

## CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| (A) EXCAVATION<br><br>Pit Excavation upto 3.0m | Falling into pit | Personal injury | Provide guard rails/ barricade with warning signal<br>Provide atleast two entries/ exits.<br>Provide escape ladders. |
| | Earth Collapse | Suffocation/ Breathlessness Buried | Provide suitable size of shoring and strutting, if required.<br>Keep soil heaps away from the edge equivalent to 1.5m or depth of pit whichever is more.<br>Don't allow vehicles to operate too close to excavated areas. Maintain atleast 2m distance from edge of cut.<br>Maintain sufficient angle of repose. Provide slope not less than 1:1 and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock.<br>Battering/benching the sides. |
| | Contact with buried electric cables<br>Gas/ Oil Pipelines | Electrocution<br>Explosion | Obtain permission from competent authorities, prior to excavation, if required.<br>Locate the position of buried utilities by referring to plant drawings.<br>Start digging manually to locate the exact position of buried utilities and thereafter use mechanical means. |
| Pit Excavation beyond 3.0m | Same as above plus<br>Flooding due to excessive rain/ underground water | Can cause drowning situation | Prevent ingress of water<br>Provide ring buoys<br>Identify and provide suitable size dewatering pump or well point system |
| | Digging in the vicinity of existing Building/ Structure | Building/Structure may collapse<br>Loss of health & wealth | Obtain prior approval of excavation method from local authorities.<br>Use under-pining method<br>Construct retaining wall side by side. |
| | Movement of vehicles/ Equipments close to the edge of cut. | May cause cave-in or slides.<br>Persons may get buried. | Barricade the excavated area with proper lighting arrangements<br>Maintain at least 2m distance from edge of cut and use stop blocks to prevent over-run<br>Strengthen shoring and strutting |



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**APPENDIX-E: (Sheet 2 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| Narrow deep excavations for pipelines, etc. | Same as above plus Frequent cave-in or slides | May cause severe injuries or prove fatal | Battering/benching of sides<br>Provide escape ladders |
| | Flooding due to Hydro- static testing | May arise drowning situation | Same as above plus<br>Bail out accumulated water<br>Maintain adequate ventilation. |
| Rock by excavation blasting | Improper handling of explosives | May prove fatal | Ensure proper storage, handling & carrying of explosives by trained personnel.<br>Comply with the applicable explosive acts & rules. |
| | Uncontrolled explosion | May cause severe injuries or prove fatal | Allow only authorized persons to perform blasting operations.<br>Smoking and open flames are to be strictly prohibited |
| | Scattering of stone pieces in atmosphere | Can hurt people | Use PPE like goggles, face mask, helmets etc. |
| Rock excavation by blasting (Contd) | Entrapping of persons/ animals. | May cause severe injuries or prove fatal | Barricade the area with red flags and blow siren before blasting. |
| | Misfire | May explode suddenly | Do not return to site for atleast 20 minutes or unless announced safe by designated person. |
| Piling Work | Failure of pile-driving equipment | Can hurt people | Inspect Piling rigs and pulley blocks before the beginning of each shift. |
| | Noise pollution | Can cause deafness and psychological imbalance. | Use personal protective equipment's like ear plugs, muffs, etc. |
| | Extruding rods/casing | Can hurt people | Barricade the area and install sign boards<br>Provide first-aid |
| | Working in the vicinity of 'Live-Electricity' | Can cause electrocution/ Asphyxiation | Keep sufficient distance from Live-Electricity as per IS code.<br>Shut off the supply, if possible<br>Provide artificial/rescue breathing to the injured |
| (B) CONCRETING | Air pollution by cement | May affect Respiratory System | Wear respirators or cover mouth and nose with wet cloth. |
| | Handling of ingredients | Hands may get injured | Use gloves & other PPE. |
| | Protruding reinforcement rods. | Feet may get injured | Provide platform above reinforcement for movement of workers or provide end caps for protection on reinforcement bars. |



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**APPENDIX-E :(Sheet 3 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | Earthing of electrical mixers, vibrators, etc. not done. | Can cause electrocution/ asphyxiation | Ensure earthing of equipments and proper functioning of electrical circuit before commencement of work. |
| | Falling of materials from height | Persons may get injured | Use hard hats<br>Remove surplus material immediately from work place.<br>Ensure lighting arrangements during night hours |
| | Continuous pouring by same gang | Cause tiredness of workers and may lead to accident. | Insist on shift pattern<br>Provide adequate rest to workers between subsequent pours. |
| | Revolving of concrete mixer/ vibrators | Parts of body or clothes may get entrapped. | Allow only mixers with hopper<br>Provide safety cages around moving motors<br>Ensure proper mechanical locking of vibrator. |
| Super-structure | Same as above plus Deflection in props or shuttering material | Shuttering/props may collapse and prove fatal | Avoid excessive stacking on shuttering material<br>Check the design and strength of shuttering material before commencement of work<br>Rectify immediately the deflection noted during concreting. |
| | Passage to work place | Improperly tied and designed props/planks may collapse | Ensure the stability and strength of passage before commencement of work.<br>Do not overload and stand under the passage. |
| (C) REINFOR-CEMENT | Curtailment and binding of rods | Persons may get injured | Use PPE like gloves, shoes, helmets, etc.<br>Avoid usage of shift tools |
| | Carrying of rods for short distances/at heights | Workers may get injured their hands and shoulders. | Provide suitable pads on shoulders and use safety gloves.<br>Tie up rods in easily liftable bundles<br>Ensure proper staging. |
| | Checking of clear distance/ cover with hands | Rods may cut or injure the fingers | Use measuring devices like tape, measuring rods, etc. |
| | Hitting projected rods and standing on cantilever rods. | Persons may get injured and fell down | Use safety shoes and avoid standing unnecessarily on cantilever rods<br>Avoid wearing of loose clothes |



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**APPENDIX-E:(Sheet 4 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | Falling of material from height | May prove fatal | Use helmets<br>Provide safety nets |
| | Transportation of rods by trucks/ trailers | Protruded rods may hit the persons | Use red flags/lights at the ends<br>Do not protrude the rods in front of or by the side of driver's cabin.<br>Do not extend the rods 1/3rd of deck length or 1.5m whichever is less |
| (D)WELDING AND GAS CUTTING | Welding radiates invisible ultraviolet and infra-red rays | Radiation can damage eyes and skin. | Use specified shielding devices and other PPE of correct specifications.<br>Avoid thoriated tungsten electrodes for GTAW |
| | Improper placement of oxygen and acetylene cylinders | Explosion may occur | Move out any leaking cylinder<br>Keep cylinders in vertical position<br>Use trolley for transportation of cylinders and chain them<br>Use flashback arrestors |
| | Leakage/ cuts in hoses | May cause fire | Purge regulators immediately and then turn off<br>Never use grease or oil on oxygen line connections and copper fittings on acetylene lines<br>Inspect regularly gas carrying hoses<br>Always use red hose for acetylene & other fuel gases and black for oxygen |
| | Opening-up of cylinder | Cylinder may burst | Always stand back from the regulator while opening the cylinder<br>Turn valve slowly to avoid bursting<br>Cover the lug terminals to prevent short circuiting |
| | Welding of tanks, container or pipes storing flammable liquids | Explosion may occur | Empty & purge them before welding<br>Never attach the ground cable to tanks, container or pipe storing flammable liquids<br>Never use LPG for gas cutting |


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**APPENDIX-E:(Sheet 5 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES ...(Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| (E) RADIOGRAPHY | Ionizing radiation | Radiations may react with the skin and can cause cancer, skin irritation, dermatitis, etc. | Ensure Safety regulations as per BARC/AERB before commencement of job.<br>Cordon off the area and install Radiation warning symbols<br>Restrict the entry of unauthorized persons<br>Wear appropriate PPE and film badges issued by BARC/AERB |
| | Transportation and Storage of Radiography source | Same as above | Never touch or handle radiography source with hands<br>Store radiography source inside a pit in an exclusive isolated storage room with lock and key arrangement. The pit should be approved by BARC/AERB.<br>Radiography source should never be carried either in passenger bus or in a passenger compartment of trains.<br>BARC/AERB has to be informed before source movement.<br>Permission from Director General of Civil Aviation is required for booking radio isotopes with airlines. |
| | Loss of Radio isotope | Same as above | Try to locate with the help of Survey Meter.<br>Inform BARC/AERB (*) |
| (F) ELECTRICAL INSTALLATION ANDUSAGE | Short circuiting | Can cause Electrocution or Fire | Use rubberized hand gloves and other PPE<br>Don't lay wires under carpets, mats or door ways.<br>Allow only licensed electricians to perform on electrical facilities<br>Use one socket for one appliance<br>Ensure usage of only fully insulated wires or cables<br>Don't place bare wire ends in a socket<br>Ensure earthing of machineries and equipment's<br>Do not use damaged cords and avoid temporary connections<br>Use spark-proof/flame proof type field distribution boxes. |

(*) Atomic Energy Regulatory Board (AERB),
Bhabha Atomic Research Centre (BARC)
Anushakti Nagar, Mumbai – 400 094



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**APPENDIX-E:(Sheet 6 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | | | Do not allow open/bare connections<br>Provide all connections through 30mAELCB<br>Protect electrical cables/equipments from water and naked flames<br>Check all connections before energizing |
| | Overloading of Electrical System | Bursting of system can occur which leads to fire | Display voltage and current ratings prominently with 'Danger' signs.<br>Ensure approved cable size, voltage grade and type<br>Switch off the electrical utilities when not in use<br>Do not allow unauthorized connections.<br>Ensure proper grid wise distribution of Power |
| | Improper laying of overhead and underground transmission lines/cables | Can cause electrocution and prove fatal | Do not lay un armoured cable directly on ground, wall, roof of trees<br>Maintain atleast 3m distance from HT cables<br>All temporary cables should be laid atleast 750 mm below ground on 100 mm fine sand overlying by brick soling<br>Provide proper sleeves at crossings/ inter-sections<br>Provide cable route markers indicating the type and depth of cables at intervals not exceeding 30m and at the diversions/termination |
| (G) FIRE PREVENTION AND PROTECTION | Small fires can become big ones and may spread to the surrounding areas | Cause burn injuries and may prove fatal | In case a fire breaks out, press fire alarm system and shout "Fire, Fire".<br>Keep buckets full of sand & water/ fire extinguishing equipment near hazardous locations.<br>Confine smoking to 'Smoking Zones' only.<br>Train people for using specific type of fire fighting equipments under different classes of fire.<br>Keep fire doors/shutters, passages and exit doors unobstructed.<br>Maintain good housekeeping and first-aid boxes (for details refer Appendix-B).<br>Don't obstruct assess to Fire extinguishers.<br>Do not use elevators for evacuation during fire.<br>Maintain lightening arrestors for elevated structures.<br>Stop all electrical motors with internal combustion. |


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**APPENDIX-E :(Sheet 7 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | | | Move the vehicles from dangerous locations.<br>Remove the load hanging from the crane booms<br>Remain out of the danger areas. |
| | Improper selection of Fire extinguisher | It may not extinguish the fire | Ensure usage of correct fire extinguisher meant for the specified fire (for details refer Appendix-C).<br>Do not attempt to extinguish Oil and electric fires with water. Use foam cylinders/$CO_2$/sand or earth. |
| | Improper storage of highly inflammable substances | Same as above | Maintain safe distance of flammable substances from source of ignition.<br>Restrict the distribution of flammable materials to only min. necessary amount.<br>Construct specifically designed fuel storage facilities.<br>Keep chemicals in cool and dry place away from heat. Ensure adequate ventilation.<br>Before welding operation, remove or shield the flammable material properly.<br>Store flammable materials in stable racks, correctly labeled preferably with catchment trays.<br>Wipe off the spills immediately |
| | Short circuiting of electrical system | Same as above<br>Can cause Electrocution | Don't lay wires under carpets, mats or door ways<br>Use one socket for one appliance.<br>Use only fully insulated wires or cables.<br>Do not allow open/bare connections.<br>Provide all connections through 30mAELCB.<br>Ensure earthing of machineries and equipments. |
| (H) VEHICULAR MOVEMENT | Crossing the Speed Limits (Rash driving) | Personal injury | Obey speed limits and traffic rules strictly.<br>Always expect the unexpected and be a defensive driver.<br>Use seat belts/helmets.<br>Blow horn at intersections and during overtaking operations.<br>Maintain the vehicle in good condition.<br>Do not overtake on curves, bridges and slopes. |
| | Adverse weather condition | Same as Above | Read the road ahead and ride to the left.<br>Keep the wind screen and lights clean.<br>Do not turn at speed.<br>Recognize the hazard, understand the defense and act correctly in time. |


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**APPENDIX-E :(Sheet 8 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | Consuming alcohol before and during the driving operation | Same as above | Alcohol and driving do not mix well. Either choose alcohol or driving.<br>If you have a choice between hitting a fixed object or an on-coming vehicle, hit the fixed object<br>Quit the steering at once and become a passenger. Otherwise take sufficient rest and then drive.<br>Do not force the driver to drive fast and round the clock.<br>Do not day dream while driving |
| | Falling objects/ Mechanical failure | May prove fatal | Ensure effective braking system, adequate visibility for the drives, reverse warning alarm.<br>Proper maintenance of the vehicle as per manufacturer instructions |
| (I) PROOF TESTING (HYDROSTATIC/ PNEUMATIC TESTING) | Bursting of piping<br>Collapse of tanks<br>Tanks flying off | May cause injury and prove fatal | Prepare test procedure & obtain EIL/owner's approval.<br>Provide separate gauge for pressurizing pump and piping/equipment.<br>Check the calibration status of all pressure gauges, dead weight testers and temperature recorders.<br>Take dial readings at suitable defined intervals and ensure most of them fall between 40-60% of the gauge scale range.<br>Provide safety relief valve (set at pressure slightly higher than test pressure) while testing with air/ nitrogen.<br>Ensure necessary precautions, stepwise increase in pressure, tightening of bolts/nuts, grouting, etc. before and during testing.<br>Keep the vents open before opening any valve while draining out of water used for hydro-testing of tanks.<br>Pneumatic testing involves the hazard of released energy stored in compressed gas. Specific care must therefore be taken to minimize the chance of brittle failure during a pneumatic leak test. Test temperature is important in this regard and must be considered when the designer chooses the material of construction. |


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**APPENDIX-E :(Sheet 9 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | | | A pressure relief device shall be provided, having a set pressure not higher than the test pressure plus the lesser of 345 KPa (50 psi) or 10% of the test pressure.<br>The gas used as test fluid, if not air, shall be nonflammable and nontoxic. |
| (J) WORKING AT HEIGHTS | Person can fall down | May sustain severe injuries or prove fatal | Provide guard rails/barricade at the work place<br>Use PPE like full body harness, life line, helmets, safety shoes, etc.<br>Obtain a permit before starting the work at height above 2 meters<br>Fall arrest and safety nets, etc. must be installed<br>Provide adequate working space(min. 0.6 m)<br>Tie/weld working platform with fixed support<br>Use roof top walk ladder while working on a slopping roofs<br>Avoid movement on beams |
| | | May hit the scrap/material stacked at the ground or in between | Keep the work place neat and clean<br>Remove the scrap immediately |
| | Material can fall down | May hit the workers working at lower levels and prove fatal | Same as above plus<br>Do not throw or drop materials or equipment from height. i.e. do not *bomb* materials<br>All tools to be carried in a tool-kit<br>Bag or on working uniform<br>Remove scrap from the planks<br>Ensure wearing of helmet by the workers working at lower levels.<br>Multiple activities at same location to be avoided.<br>. |
| (K) CONFINED SPACES | Suffocation/ drowning | Unconsciousness, death | Use respiratory devices, if reqd.<br>Avoid overcrowding inside a confined space<br>Provide Exhaust fans for ventilation<br>Do not wear loose clothes, neck ties, etc.<br>Fulfill conditions of the permit |


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**APPENDIX-E:(Sheet 10 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | | | Check for presence of hydrocarbons, $O_2$ level<br>Obtain work permit before entering a confined space<br>Ensure that the connected piping of the equipment which is to be opened is pressure free, fluid has been drained, vents are open and piping is positively isolated by a blind flange |
| | Presence of foul smell and toxic substances | Inhalation can pose threat to life | Same as above plus<br>Check for hydrocarbon and Aromatic compounds before entering a confined space<br>Depute one person outside the confined space for continuous monitoring and for extending help in case of an emergency |
| | Ignition/ flame can cause fire | Person may sustain burn injuries or explosion may occur | Keep fire extinguishers at a hand distance<br>Remove surplus material and scrap immediately<br>Do not smoke inside a confined space<br>Do not allow gas cylinders inside a confined space<br>Use low voltage (24V) lamps for lighting<br>Use tools with air motors or electric tools with max. voltage of 24V<br>Remove all equipment's at the end of the day |
| (L) HANDLING AND LIFTING EQUIPMENTS | Failure of load lifting and moving equipment's | Can cause accident and prove fatal | Avoid standing under the lifted load and within the operating radius of cranes.<br>Check periodically oil, brakes, gears, horns and tyre pressure of all moving machinery.<br>Check quality, size and condition of all chain pulley blocks, slings, U-clamps, D-shackles, wire ropes, etc.<br>Allow crane to move only on hard, firm and leveled ground.<br>Allow lifting slings as short as possible and check gunny packings at the friction points.<br>Do not allow crane to tilt its boom while moving<br>Install Safe Load Indicator.<br>Ensure certification by applicable authority. |


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**APPENDIX-E :(Sheet 11 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| | Overloading of lifting equipments | Same as above | Safe lifting capacity of derricks and winches written on them shall be got verified<br>The max. safe working load shall be marked on all lifting equipments<br>Check the weight of columns and other heavy items painted on them and accordingly decide about the crane capacity, boom and angle of erection<br>Allow only trained operators and riggers during crane operation. |
| | Overhead electrical wires | Can cause electrocution and fire | Do not allow boom or other parts of crane to come within 3m reach of overhead HT cables<br>Hook and load being lifted shall preferably remain in full visibility of crane operators. |
| (M) SCAFFOLDING, FORMWORK AND LADDERS | Person can fall down | Person May sustain severe injuries and prove fatal | Provide guard rails for working at height.<br>Face ladder while climbing and use both hands.<br>Ladders shall extend about 1m above landing for easy access and tying up purpose.<br>Do not place ladders against movable objects and maintain base at 1/4 unit of the working length of the ladder.<br>Suspended scaffolds shall not be less than 500 mm wide and tied properly with ropes.<br>No loose planks shall be allowed.<br>Use PPE, like helmets, safety shoes etc. |
| | Failure of scaffolding material | Same as above | Inspect visually all scaffolding materials for stability and anchoring with permanent structures.<br>Design scaffolding for max. load carrying capacity.<br>Scaffolding planks shall not be less than 50X250 mm full thickness lumber or equivalent. These shall be cleated or secured and must extend over the end supports by at least 150mm and not more than 300mm.<br>Don't overload the scaffolds.<br>Do not splice short ladders to make a longer one. Vertical ladders shall not exceed 6m. |
| | Material can fall down | Persons working at lower level gets injured | Remove excess material and scrap immediately.<br>Carry the tools in a tool-kit bag only.<br>Provide safety nets. |



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**APPENDIX-E:(Sheet 12 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS &PREVENTIVE MEASURES (...Contd.)**

| ACTIVITY | TYPE OF HAZARD | EFFECT OF HAZARD | PREVENTIVE MEASURES |
|---|---|---|---|
| (N) STRUC-TURAL WORKS | Personal negligence and danger of fall | Can cause injury or casualty | Do not take rest inside rooms built for welding machines or electrical distribution system.<br>Avoid walking on beams at height.<br>Wear helmet with chin strap and full body harness while working at height.<br>Use hand gloves and goggles during grinding operations.<br>Cover or mark the sharp and projected edges.<br>Do not stand within the operating radius of cranes. |
| | Lifting/ slipping of material | Same as above | Do not stand under the lifted load.<br>Stack properly all the materials. Avoid slippage during handling.<br>Control longer pieces lifted up by cranes from both ends.<br>Remove loose materials from height.<br>Ensure tightening of all nuts & bolts. |
| (O)PIPELIN E WORKS | Erection/ lowering failure | Can cause injury | Do not stand under the lifted load.<br>Do not allow any person to come within the radii of the side boom handling pipes.<br>Check the load carrying capacity of the lifting tools & tackles.<br>Use safe Load Indicators (SLI).<br>Use appropriate PPEs. |
| | Other | Same as above | Wear gum boots in marshy areas.<br>Allow only one person to perform signaling operations while lowering of pipes.<br>Wedges to be provided below the pipe to prevent spool/pipe roll out.<br>Provide night caps on pipes.<br>Provide end covers on pipes for stoppage of pigs while testing/ cleaning operations. |
| (P) GRIT BLASTING | Pollution in neighboring area, hit by grit sand high pressure air | Can cause personal injury | Ensure the blasting is done in enclosed shed.<br>Keep safe distance while blasting operations.<br>Wear positive pressure blast hood or helmet with view-window, ear-muff/plug, gloves, overall or leather coat /apron, rubber shoes. |



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**APPENDIX-F**

## TRAINING SUBJECTS / TOPICS

(For contractors' personnel)

1. The Law & Safety – Statutory Requirement / Applicable statutes / Duties of employer / employee.
2. Policy & Administration – Why HSE? / Duties & Responsibilities of Safety Personnel at project site / Effect of incentive on accident prevention.
3. HSE & Supervision – Duties of Supervisor / HSE integrated supervision / Who should be held responsible for site accidents?
4. Safety Budget / Cost of Accidents – Direct costs / Indirect costs.
5. Hazard Identification / Type of hazards / HIRAC.
6. Behavioral Safety & Motivation.
7. Housekeeping – Storage / Stacking / Handling of materials / Hydraulic Mobile Crane handling.
8. Occupational Health in Construction sector.
9. Personal Protective Equipment's – Respiratory & Non- respiratory.
10. Electricity & Safety – ELCB / Fuse / Powered tools / Project illumination.
11. Handling of Compressed Gas – Transportation / Storage / FBAs / Fire prevention.
12. Machine Safety – Machine guarding / Maintenance.
13. Transportation – Hazards & risks in transp. of materials / ODC consignments.
14. Cranes & Other Lifting machinery – Legal requirements vis-à-vis essential safety requirements.
15. Communication – HSE Induction / TBTs / Safety Committee / Safety meeting / Safety propaganda / Publicity.
16. Excavation – Risks & Dangers / Safety measures.
17. Working at Heights – Use of ladder / Work on roofs / Scaffolds / Double harness lanyards / Life-line / Fall arrester / Safety Nets / Floor openings.
18. Hazards in Welding & important safety precautions.
19. Gas Cutting – Hazards & safety measures.
20. Fire prevention & fire protection.


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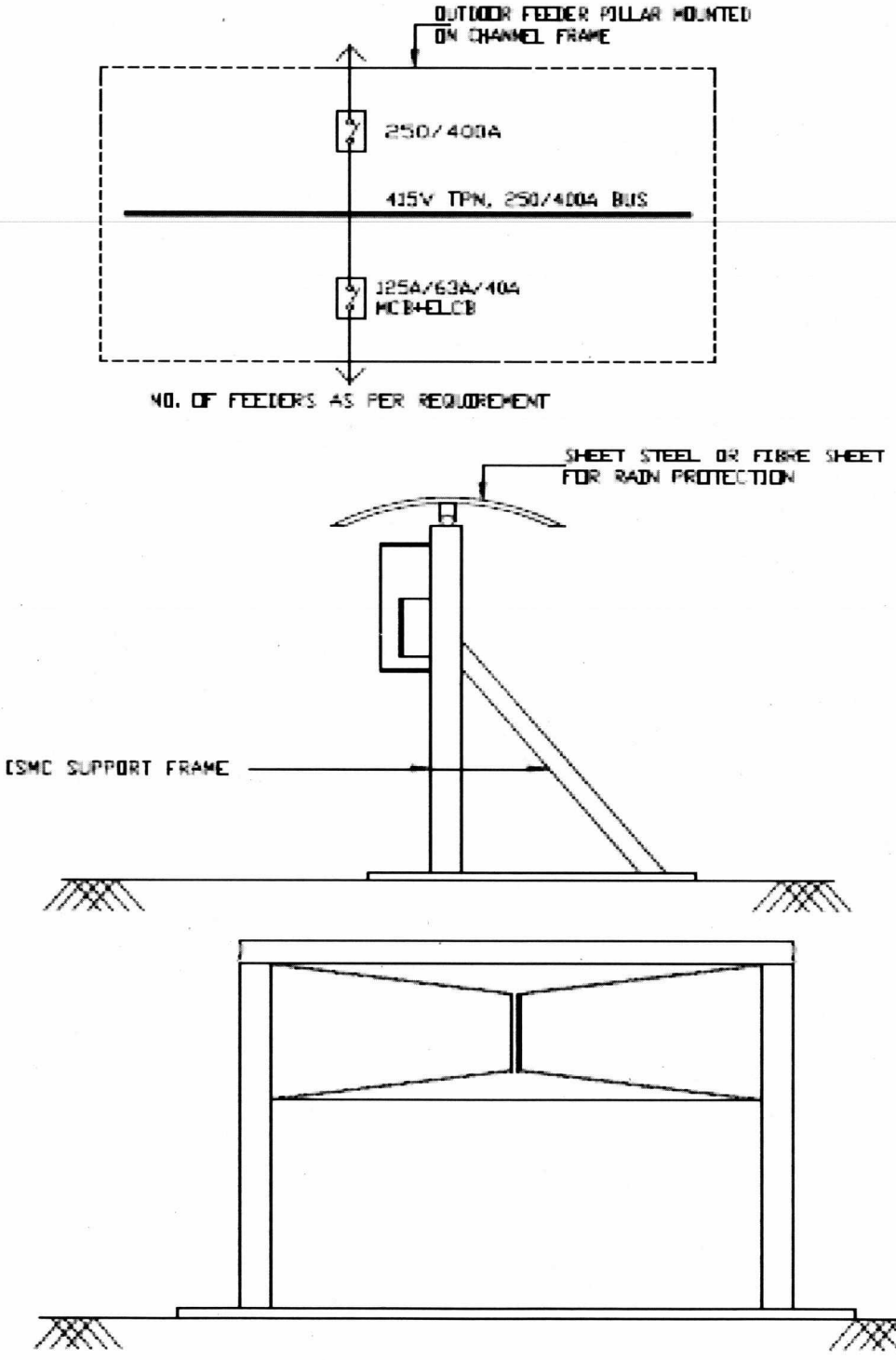
**APPENDIX - G**

## CONSTRUCTION POWER BOARD(typ)




NOTES:-

1. CONTRACTOR TO INSTALL TEMPORARY CONST. POWER BOARD AS SHOWN IN THE DRG. ITS LOCATION SHALL BE EASILY ACCESABALE.
2. POWER DISTRIBUTION BOARD SHALL BE EARTHED AT TWO POINTS BY MINIMUM 40X5MM GI STRIP FROM THE AVILABLE GRID OR DIRECTLY CONNECTED TO TWO DIRECTLY DRIVEN EARTH ELECTRODES.
3. DISTRIBUTION BOARD SHALL BE FABRICATED BY USING 14MM CRCA SHEET STEELWITH HINGED DOORSAND ALL COMPONENT MOUNTED IN IT.
4. ALL INCOMING AND OUTGOING CABLESSHALL HAVE BOTTOM ENTRY.



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**APPENDIX-H**

## LIST OF PROCEDURES (MINIMUM) TO BE FORMING PART OF HSE PLAN:-

A. HSE Management Procedures:

- HSE Risk Management (including HIRA)
- HSE Legal Compliance and Other Requirements
- HSE Objectives & Performance
- HSE Training and Competence (including Induction)
- HSE Motivation &Award Scheme
- HSE Audits
- HSE Sub Contractor Management
- HSE Emergency Management
- HSE Incidents Reporting and Management
- HSE procedure for Behaviour based Safety
- First Aid & Management
- Roles, Responsibility, accountabilities and Authorities

B. Job procedures/Safe Operating procedures

- Setting Up Site &Signages
- Working at Height
- Confined Space Entry
- Permit to Work (including hot works)
- Housekeeping
- Transportation of materials including Manual Handling
- Earthmoving Operations & excavation
- Scaffolding
- Fire Prevention/Protection
- Hazardous Substance handling & Storage
- Personal Protective Equipment


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## APPENDIX-I

## LIFE SAVING RULES

### Bypassing Safety Controls

**Obtain authorisation before overriding or disabling safety controls**

- I understand & use safety-critical equipment and procedure which apply to my task
- I obtain authorization before:
  - disabling or overriding safety equipment
  - deviating from procedures
  - crossing a barrier

### Confined Space

**Obtain authorisation before entering a confined space**

- I confirm energy sources are isolated
- I confirm the atmosphere has been tested and is monitored
- I check and use my breathing apparatus when required
- I confirm there is an attendant standing by
- I confirm rescue plan is in place
- I obtain authorization to enter

### Driving

**Follow safe driving rules**

- I always wear a seatbelt
- I do not exceed the speed limit, and reduce my speed for road conditions
- I do not use phones or operate devices while driving
- I am fit, rested and fully alert while driving
- I follow journey management requirements

### Energy Isolation

**Verify isolation and zero energy before work begins**

- I have identified all energy sources
- I confirm that hazardous energy sources have been isolated, locked and tagged
- I have checked there is zero energy and tested for residual or stored energy

### Hot Work

**Controls flammables and ignition sources**

- I identify and control ignition sources
- Before starting any hot work:
  - I confirm flammable material has been removed or isolated
  - I obtain authorization
- Before starting hot work in a hazardous are I confirm:
  - a gas test has been completed
  - gas will be monitored continually

### Line of Fire

**Keep yourself and others out of the line of fire**

- I position myself to avoid:
  - moving objects
  - vehicles
  - pressure releases
  - dropped objects
- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potentialdropped objects

### Safe Mechanical Lifting

**Plan lifting operations and control the area**

- I confirm that the equipment and load have been inspected and are fit for purpose
- I only operate equipment that I am qualified to use
- I establish and obey barriers and exclusion zones
- I never walk under a suspended load

### Work Authorization

**Work with a valid permit when required**

- I am authorised to perform the work
- I understand the permit
- I have confirmed that hazards are controlled and it is safe to start
- I stop and reassess if conditions change

### Work at Height

**Protect yourself against a fall when working at height**

- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area

### Excavation

**Follow safe excavation procedure**

- Before starting any excavation:
  - I confirm availability of underground utilities
  - I obtain authorization
  - I take adequate precautions to prevent collapse of soil



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**(Sheet 1 of 6)**

## SAFETY WALK-THROUGH REPORT

(Name & signature of walk through performer to be inserted at the bottom of each page)

Project : _____ Report no. : _____

Date : _____ Ccontractor : _____

Inspection by : _____ Owner : _____

Frequency : Monthly Job no. : _____

Note : Write 'NA' wherever the item is not applicable

| SL. NO. | ITEM | Satisfactory/ Yes | Non satisfactory/ No | Remarks | Action |
|---|---|---|---|---|---|
| 1. | HOUSEKEEPING | | | | |
| a) | Waste containers provided and used | | | | |
| b) | Sanitary facilities adequate and Clean | | | | |
| c) | Passageways and Walkways Clear | | | | |
| d) | General neatness of working areas | | | | |
| e) | Other | | | | |
| 2. | PERSONNEL PROTECTIVE EQUIPMENT | | | | |
| a) | Goggles; Shields | | | | |
| b) | Face protection | | | | |
| c) | Hearing protection | | | | |
| d) | Foot protection | | | | |
| e) | Hand protection | | | | |
| f) | Respiratory Masks etc. | | | | |
| g) | Full body harness conforming to CE, EN 361 | | | | |
| h) | Hard hat (HDPE) | | | | |
| i) | Other | | | | |
| 3. | EXCAVATIONS/OPENINGS | | | | |
| a) | Openings properly covered or barricaded | | | | |
| b) | Excavations shored | | | | |
| c) | Excavations barricaded | | | | |
| d) | Overnight lighting provided | | | | |
| e) | Other | | | | |

Safety walk-through performer (Name & Signature).....


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**(Sheet 2 of 6)**

| SL. NO. | ITEM | Satisfactory/ Yes | Non satisfactory/ No | Remarks | Action |
|---|---|---|---|---|---|
| 4. | WELDING & GAS CUTTING | | | | |
| a) | Gas cylinders chained upright | | | | |
| b) | Cables and hoses not obstructing | | | | |
| c) | Screens or shields used | | | | |
| d) | Flammable materials protected | | | | |
| e) | Live electrode bits contained properly | | | | |
| f) | Fire extinguisher (s) accessible | | | | |
| g) | Other | | | | |
| 5. | SCAFFOLDING & BARRICADING | | | | |
| a) | Fully decked platforms | | | | |
| b) | Guard and intermediate rails in place | | | | |
| c) | Toe boards in place | | | | |
| d) | Adequate shoring | | | | |
| e) | Adequate access | | | | |
| f) | Positive barricading for critical activities | | | | |
| g) | Installation of warning signs | | | | |
| h) | Other | | | | |
| 6. | LADDERS | | | | |
| a) | Extension side rails 1 m above | | | | |
| b) | Top of landing | | | | |
| c) | Properly secured | | | | |
| d) | Angle + $70^0$ from horizontal | | | | |
| e) | Other | | | | |

Safety walk-through performer (Name &Signature).....



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**FORMAT NO. : HSE-1 REV 1**

**(Sheet 3 of 6)**

| SL. NO. | ITEM | Satisfactory/ Yes | Non satisfactory/ No | Remarks | Action |
|---|---|---|---|---|---|
| 7. | HOISTS, CRANES AND DERRICKS | | | | |
| a) | Condition of cables and sheaves OK | | | | |
| b) | Condition of slings, chains, hooks and eyes O.K. | | | | |
| c) | Inspection and maintenance log-books maintained | | | | |
| d) | Outriggers used | | | | |
| e) | Reverse horn installed / active / coupled with gear | | | | |
| f) | Signs/barricades provided | | | | |
| g) | Signals observed and understood | | | | |
| h) | Qualified operators | | | | |
| i) | Other | | | | |
| 8. | MACHINERY, TOOLS AND EQUIPMENT | | | | |
| a) | Proper instruction | | | | |
| b) | Safety devices | | | | |
| c) | Proper cords | | | | |
| d) | Inspection and maintenance | | | | |
| e) | Other | | | | |
| 9. | VEHICLE AND TRAFFIC | | | | |
| a) | Rules and regulations observed | | | | |
| b) | Inspection and maintenance | | | | |
| c) | Licensed drivers | | | | |
| d) | Other | | | | |

Safety walk-through performer (Name &Signature).....


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**(Sheet 4 of 6)**

| SL. NO. | ITEM | Satisfactory/ Yes | Non satisfactory/ No | Remarks | Action |
|---|---|---|---|---|---|
| 10. | TEMPORARY FACILITIES | | | | |
| a) | Emergency instructions posted | | | | |
| b) | Fire extinguishers provided | | | | |
| c) | Fire-aid equipment available | | | | |
| d) | Secured against storm damage | | | | |
| e) | General neatness | | | | |
| f) | In accordance with electrical requirements | | | | |
| g) | Other | | | | |
| 11. | FIRE PREVENTION | | | | |
| a) | Personnel trained& instructed to make use of facility | | | | |
| b) | Fire extinguishers checked periodically & record maintained | | | | |
| c) | No smoking in Prohibited areas. | | | | |
| d) | Fire Hydrants not obstructed | | | | |
| e) | Regular fire drill conducted | | | | |
| 12. | ELECTRICAL | | | | |
| a) | Use of 3-core armored cables everywhere | | | | |
| b) | Usage of 'All insulated' or 'double-insulated' electrical tools | | | | |
| c) | All electrical connection are routed through ELCB | | | | |
| d) | Natural Earthing at the source of power (Main DB) | | | | |
| e) | Continuity and tightness of earth conductor | | | | |
| f) | Effective covering of junction boxes, panels and other energized wiring places | | | | |
| g) | Ground fault circuit interrupters provided | | | | |
| h) | Prevention of tripping hazards maintained | | | | |
| f) | DCP extinguishers arranged & licensed electrician engaged at site | | | | |

Safety walk-through performer (Name &Signature).....


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**(Sheet 5 of 6)**

| SL. NO. | ITEM | Satisfactory/ Yes | Non satisfactory/ No | Remarks | Action |
|---|---|---|---|---|---|
| 13. | HANDLING AND STORAGE OF MATERIALS | | | | |
| a) | Safely stored or stacked | | | | |
| b) | Passageways clear / free from obstructions | | | | |
| c) | Fire fighting facility in place | | | | |
| 14. | FLAMMABLE GASES AND LIQUIDS | | | | |
| a) | Containers clearly identified / protected from fire | | | | |
| b) | Safe storage & transportation arrangement made | | | | |
| c) | Fire extinguishers positioned nearby | | | | |
| d) | Facilities kept away from electric spark, hot spatters & ignition source. | | | | |
| 15. | WORKING AT HEIGHT | | | | |
| a) | Approved Erection plan and work permit in place | | | | |
| b) | Safe access, Safe work platform & Safety nets provided | | | | |
| c) | Life lines, Fall arrester, Full body harness with double lanyards used; | | | | |
| d) | Health Check record available for workers going up? | | | | |
| e) | Protective handrails arranged around floor openings | | | | |
| 16. | CONFINED SPACE | | | | |
| a) | Work Permit obtained from requisite authority | | | | |
| b) | Test for toxic gas and sufficient availability of oxygen conducted & status | | | | |
| c) | Supervisor present at site & at least one person outside the confined space for monitoring deputed | | | | |
| d) | Availability of safe means of entry, exit and ventilation (register for entry & exit maintained) | | | | |
| e) | Fire extinguisher and first-aid facility ensured | | | | |
| f) | Lighting provision made by using 24V Lamp | | | | |
| g) | Proper usage of PPEs ensured | | | | |
| 17. | RADIOGRAPHY | | | | |
| a) | Proper storage and handling of source as per BARC/ AERB guidelines (authorized radiographer available) | | | | |
| b) | Work permit obtained | | | | |

Safety walk-through performer (Name &Signature).....



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**FORMAT NO. : HSE-1 REV 1**

**(Sheet 6 of 6)**

| SL. NO. | ITEM | Satisfactory/ Yes | Non satisfactory/ No | Remarks | Action |
|---|---|---|---|---|---|
| c) | Cordoning of the area done | | | | |
| d) | Use of appropriate PPE's ensured | | | | |
| e) | HSE training to workers/supervisors imparted during the fortnight (indicate topic) | | | | |
| f) | Minimum occupancy of workplace ensured | | | | |
| 18. | HEALTH CHECKS | | | | |
| a) | All Workers medically examined and found be fit for working at heights (slinging, rigging, painting etc.) in confined space in excavation / trenching in shot blasting | | | | |
| b) | Availability of First Aid box with contents | | | | |
| c) | Proper sanitation at site, office and labour camps | | | | |
| d) | Arrangement of medical facilities. | | | | |
| e) | Measures for dealing with illness at site & labour camps. | | | | |
| f) | Availability of Potable drinking water for workmen & staff. | | | | |
| g) | Provision of crèches for children. | | | | |
| h) | Stand by vehicle / ambulance available for evacuation of injured | | | | |
| i) | Adherence to Govt. Guidelines/procedures during epidemic and pandemic (as applicable). | | | | |
| 19. | ENVIRONMENT | | | | |
| a) | Chemical and Other Effluents properly disposed | | | | |
| b) | Cleaning liquid of pipes disposed off properly | | | | |
| c) | Seawater used for hydro-testing disposed off as per agreed procedure | | | | |
| d) | Lubricant Waste/Engine oils properly disposed | | | | |
| e) | Waste from Canteen, offices, sanitation etc. disposed properly | | | | |
| f) | Disposal of surplus earth, stripping materials, Oily rags and combustible materials done properly | | | | |
| g) | Green belt protection | | | | |

Safety walk-through performer (Name &Signature).....



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**FORMAT NO. : HSE-2 REV 0**

**(Sheet 1 of 3)**

## ACCIDENT REPORT

(To be submitted by Contractor after every Accident within 24 hours to EIL/ Owner)

**Report No.**: _____ **Date**: _____

**Project site**: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

| | | |
|---|---|---|
| **Non-disabling injury (Non-**LTI) | Hospitalized but resumed duty before end of 48 hrsof accident | |
| **Disabling injury (other** LTI) | Hospitalized & failed to resume duty within next 48 hrs | |
| **Fatal** (LTI): | Death / Expiry | |
| **First Aid case** | Resume duty after first aid | |

Name of the injured:_____ Father's name of victim: _____

Sub Contractor's Name: .....

Gate Pass No.:.....Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

**Date & time of Accident / Incident**: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

**Profession of victim:**

| | | | | | |
|---|---|---|---|---|---|
| Bar bender | | Carpenter | | Meson | |
| Fitter | | Helper | | Gas cutter | |
| Grinder | | Welder | | Electrician | |
| Driver | | Rigger | | M/c.operator | |
| Engineer | | Manager | | Other/specify | |

**Qualification**

| | | | | | |
|---|---|---|---|---|---|
| No formal education | | Non-Matriculate | | Matriculate | |
| Graduate | | Post- grad | | Other/specify | |

**Job Experience**

| | | | | | |
|---|---|---|---|---|---|
| NIL | | Less than 2 yrs | | 2-5 yrs | |
| 5-10 yrs | | 11-15 yrs | | 15 years and above | |

**Location where the incident happened**: _____

_____


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**FORMAT NO. : HSE-2 REV 0**

**(Sheet 2 of 3)**

**Activity / Works that were continuing during incident / accident: -**

| | | | | | |
|---|---|---|---|---|---|
| Excavation | | Demolition | | Concrete carrying | |
| Concrete pouring | | Transportation of materials (manually) | | Transportation of materials (mechanically) | |
| Work on or adjacent to water | | Work at height (+2.0 mts) | | Scaffold preparation | |
| Scaffold dismantling | | Piling works | | Welding | |
| Grinding | | Gas-cutting | | Pipe fit-ups & fabrication | |
| Structural fabrications | | Machine works | | Hydro-testing works | |
| Electrical works | | Erection activities | | Other/specify | |

**What exactly the victim was doing just before the incident / accident?** .....

.....

.....

**Nature of injury**:

| | | | | | |
|---|---|---|---|---|---|
| Bruise or Contusion | | Abrasion (superficial wound) | | Sprains or strains | |
| Cut or Laceration | | Puncture or Open wound | | Burn | |
| Inhalation of toxic or Poisonous fumes or gases | | Absorption | | Amputation | |
| Fracture | | Other/specify | | | |

**Parts of body involved in incident / accident**

| | | | | | |
|---|---|---|---|---|---|
| Head | | Face | | Eyes | |
| Throat | | Arm (above wrist) | | Hand (including wrist) | |
| Fingers | | Truck (Abdomen / Back / Chest / Shoulder) | | Throat | |
| Leg (above ankle) | | Foot (incl. ankle) | | Toes | |
| Multiple | | | | Other/specify | |

**Accident type**:

| | | | | | |
|---|---|---|---|---|---|
| Struck against | | Struck by | | Fall from Elevation | |
| Fall on same level | | caught in | | caught under | |
| caught in between | | Rubbed or abraded | | Contact with (Electricity) | |
| Contact with (Temp./ extremes) | | Contact with chemicals oroils | | Vehicle accident | |
| Other/specify | | | | | |

Signature Not Verified
Digitally signed by MD MAZHER ALI
Date: 2026.05.14 16:21:49 IST
Location: eProcure-EPROC



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