



MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF STANDARD GAUGE TRACKWORKS (BALLASTED AND BALLASTLESS) IN KASHELI DEPOT TRACKS FOR LINE 5 CORRIDOR OF MUMBAI METRO RAIL PROJECT OF MMRDA, MUMBAI.

CONTRACT NO: MMRDA/MPIU/ML5/CA-303

TENDER DOCUMENTS

VOLUME 2

GENERAL CONDITIONS OF CONTRACTS

SPECIAL CONDITIONS OF CONTRACT (INCLUDING SCHEDULES)

CONDITIONS OF CONTRACT ON SAFETY, HEALTH & ENVIRONMENT

MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

**Metro PIU, 7th Floor, New Administrative Building,
Bandra-Kurla Complex, Bandra € , Mumbai –400 051, India**



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GENERAL CONDITIONS OF CONTRACT

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| Definitions | 1 | DEFINITIONS AND INTERPRETATION |
| | 1.1 | In the contract (as defined below) the words and expressions defined below shall have the meanings assigned to them, except where the context requires otherwise. Words indicating persons or parties include corporations and other legal entities except where the context requires otherwise. |
| | 1.1.1 | Documents |
| | 1.1.1.1 | “Appendix to Form of Tender” means the completed pages in title Appendix, which are appended to and form part of the Tender. |
| | 1.1.1.2 | “Bill of Quantity” means a document containing various items of payment and contains schedule of Payment also |
| | 1.1.1.3 | “Construction and/or Manufacture Documents” means all drawings, calculations, computer software (programs), samples, patterns, models, operation and maintenance manuals, and other manuals and information of a similar nature, to be submitted by the Contractor. |
| | 1.1.1.4 | “Contract” means the Contract Agreement, the Letter of Acceptance, the letter of tender, General Conditions of Contract, Special Conditions of Contract, the Employer’s Requirements, the Tender, the Notice Inviting Tender, Instructions to Tenderers, the Contractor’s Proposal, the Schedules, and such further documents which are listed in the Letter of Acceptance or Contract Agreement (if completed). |
| | 1.1.1.5 | “Contract Agreement” means the contract agreement referred to in Sub-Clause 1.4. It shall also include all subsequent modifications/ amendments to the Contract as a result of the communications or negotiation proceedings between the parties. |
| | 1.1.1.6 | “Contractor’s Proposal” means the proposal submitted by the Contractor with the Tender, as modified and accepted by the employer and included in the Contract. Such documents may include the Contractor’s preliminary design. |
| | 1.1.1.7 | “Contractor’s Document” means the calculations, computer programme and other softwares, drawings, manuals and other documents of a technical nature (if any) supplied by the Contractor under the Contract. |
| | 1.1.1.8 | “Design Data” means all specifications, plans, drawings, details, graphs, sketches, models, levels, setting-out dimensions, calculations duly checked by the Contractor and other documents relating to the design of the Works prepared or to be prepared by or on behalf of the Contractor. |
| | 1.1.1.9 | “Drawings” means the Employer’s Drawings and the Drawings submitted by the Contractor and any modification of such drawings as any, from time to time, be furnished or for which the Engineer has issued a Notice of No Objection. |

- 1.1.1.10** “**Employer’s Requirements**” means the description of the scope, standard, design criteria, specifications, drawings, programme of work, indigenisation programme (where applicable) as included in the Contract, and any alterations and modifications thereto in accordance with the Contract.
- 1.1.1.11** “**Interim Payment Schedule**” means the schedule included for each Cost Centre in the Pricing Document and accepted by the Employer to be used for interim payments in relation to achievement of milestones under that Cost Centre, as the same may be revised from time to time in accordance with Clause 11.
- 1.1.1.12** “**Letter of Acceptance**” means the formal acceptance to work by the Employer of the Tender.
- 1.1.1.13** “**Notice to Proceed**” means the notice issued by the Employer to the Contractor communicating the date on which the Works are to be commenced
- 1.1.1.14** “**Letter of Tender**” means the document entitled letter of tender, which was completed by the Contractor and includes the signed offer to the Employer for the Works.
- 1.1.1.15** “**Safety, Health and Environment (SHE) Manual**” means that Employer’s manual containing the requirements and conditions to be met during the execution of the Works by the Contractor.
- 1.1.1.16** “**Schedules**” means the information and data submitted with the Tender, as included in the Contract.
- 1.1.1.17** “**Tender**” means the Contractor’s priced offer to the Employer for the designing where ever applicable, execution, manufacture, and completion of the whole of Works, testing and commissioning including Integrated Testing and Commissioning where ever applicable) and remedying of any defects therein, as accepted by the Letter of Acceptance.
- 1.1.1.18** “**Schedule of Milestones**” means the schedule included in each Cost Centre in the Pricing Document, describing the Milestones and stipulating dates by which the Milestones are to be achieved under that Cost Centre in order to maintain interim payments by the Employer to the Contractor in accordance with the Interim Payment Schedule for that Cost Centre, as the same may be revised from time to time in accordance with the Contract.
- 1.1.1.19** “**Schedule of Payment**” means the schedule included in the Bill of Quantity for payment in various stages on part of the works.
- 1.1.1.20** “**Special Conditions of Contract**” means any special conditions of contract issued by the Employer prior to submission of the Tender or negotiated and agreed in writing by the Employer and the Contractor prior to and conditional upon acceptance of the Tender.
- 1.1.1.21** “**Works Programme**” means the programme showing the sequence, method and timing of investigations, design, issue of No Objection Notices, execution, manufacture, delivery to site, erection, installation, testing, commissioning of the Works (including Integrated Testing and Commissioning), indigenisation (where applicable) and related activities in the form and content prescribed by the Employer’s Requirements, or any amended or varied version thereof, as submitted by the Contractor and for which the Engineer has issued a Notice of No Objection.

- 1.1.2 Persons**
- 1.1.2.1** “**Party**” means the Employer or the Contractor as the context requires
- 1.1.2.2** “**Tenderer or Bidder**” means the person submitting a bid/Tender.
- 1.1.2.3** “**Contractor**” means the person whose Tender has been accepted by the Employer and the legal successors in title to such person, but not (except with the consent of the Employer) any assignee of such person.
- 1.1.2.4** “**Contractor’s Representative**” shall mean a person named by the Contractor in the Contract or appointed from time to time by the Contractor under Sub-clause .3 to act on behalf of Contractor.
- 1.1.2.5** “**Designated Contractors**” means any of the following whose activities or the works they are engaged to carry out, affect or are affected by the Works, in any way or at any time:
- a) contractors, design consultants and utility authorities engaged on the Project from time to time by the Employer;
 - b) sub-contractors of any tier of the contractors above; provided that the definition shall exclude the Contractor and his sub-contractors of any tier in relation to the Works.
- 1.1.2.6** “**Other Contractor**” means a person employed by or having Contract directly or indirectly with the Employer otherwise than through the Contractor
- 1.1.2.7** “**Designer**” means the Contractor, or part of the group forming the contractor, person, firm or company or group of companies, or any replacement, carrying out the Design of Works or part thereof.
- 1.1.2.8** “**Employer**” means **MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY (MMRDA)**, its legal successors and assignees.
- 1.1.2.9** “**Engineer**” means any person nominated or appointed from time to time by the Employer to act as the Engineer for the purposes of the Contract and notified as such in writing to the Contractor.
- 1.1.2.10** “**Engineer’s Representative**” means any Assistant of the Engineer appointed from time to time by the Engineer under Sub-clause 3.3
- 1.1.2.11** “**Sub-contractor**” means any person named in the Contract as a sub-contractor, manufacturer or supplier for a part of the Works or any person to whom a part of the Works has been sub-contracted with the consent of the Employer and the legal successors in title to such person, but not any assignee of such person.
- 1.1.3 Dates, Times and Periods**
- 1.1.3.1** “**Commencement Date**” means the date on which the Contractor shall commence the Works on the written instructions of the Employer contained in the Notice to Proceed.
- 1.1.3.2** “**Contract Period**” means the period from the Commencement Date to the end of Defects Liability Period including Integrated Testing and Commissioning and as certified by the Engineer under Clause 7.11 (or as extended under Sub-Clause 10.3).

- 1.1.3.3** “Day” means a calendar day, “Week” means 7 calendar days, “Month” means a calendar month and “Year” means 365 days.
- 1.1.3.4** “Effective Date” means the date on which the Contract comes into force and effect.
- 1.1.3.5** “Gazetted Holiday” means every holiday which is observed by MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY (MMRDA) as a gazetted holiday as well as a weekly holiday.
- 1.1.3.6** “General Holiday” means Sunday
- 1.1.3.7** “Key Date” means a date identified as such in the Contract.
- 1.1.3.8** “Milestone” means the completion of a part of the Works or the occurrence of an event identified as such in the Schedule of Milestones.
- 1.1.3.9** “Stage” means level of progress of the works identified as such and more particularly described in the Employer’s Requirements for which a Key Date for the achievement thereof is stipulated in the Contract.
- 1.1.3.10** “Time for Completion” means the time for completing the Works or a section or a part thereof (as the case may be), and passing the Tests on Completion, including Integrated Testing and Commissioning, as stated in the contract, calculated from the Commencement Date.
- 1.1.4** **Tests and Completion**
- 1.1.4.1** “Factory Tests” means the tests required to be carried out in the factory premises on components, equipment, subsystem, system, etc. during and/or after manufacture in the factory.
- 1.1.4.2** “Integrated Testing” in the contracts where applicable means the programme of tests performed by the Contractor at the direction of the Engineer following satisfactory completion of Contractor’s tests on his equipment, sub-systems or system to verify and confirm the compatibility and compliant performance of his equipment/ sub-system/ system with the equipment/ sub-system/ system provided by others
- 1.1.4.3** “Milestone Certificate” means the certificate to be issued by the Engineer in relation to the achievement or otherwise of Milestones.
- 1.1.4.4** “Performance Certificate” means the certificate issued by the Engineer under Sub-Clause 10.9.
- 1.1.4.5** “Taking Over Certificate” means a certificate issued under Clause 9.1.
- 1.1.4.6** “Tests on Completion” means the tests specified in the Contract and designated as such, including Integrated Testing where applicable and any other such tests as may be agreed by the Engineer and the Contractor, or instructed as a Variation, which are to be carried out before the Works, or any Section are taken over by the Employer.
- 1.1.5** **Money and Payments**
- 1.1.5.1** “Contract Price” means the sum stated in the Letter of Acceptance as payable to the Contractor, subject to such additions thereto or deductions there from as may be made under the provisions of the Contract,
- 1.1.5.2** “Cost” means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site,

- 1.1.5.3** “**Cost Centre Amount**” means the amount apportioned to a Cost Centre as set out in the Pricing Document, as the same may be revised from time to time in accordance with the Contract.
- 1.1.5.4** “**Final Payment Certificate**” means the payment certificate issued by the Engineer under Sub-Clause 11.9.
- 1.1.5.5** “**Final Statement**” means the agreed statement defined in Sub-Clause 11.10.
- 1.1.5.6** “**Foreign Currency**” means a freely convertible international trading currency in which part of the Contract Price is payable, but not the Local Currency.
- 1.1.5.7** “**Interim Payment Certificate**” means any payment certificate issued by the Engineer under Sub-Clause 11.5, other than the Final Payment Certificate.
- 1.1.5.8** “**Local Currency**” means Indian Rupees.
- 1.1.6** **Other Definitions**
- 1.1.6.1** “**Approval or Approved**” means Approval in writing including subsequent written confirmation of previous verbal approval.
- 1.1.6.2** “**Contractor’s Equipment**” means all machinery, apparatus, appliances, other things of whatsoever nature required for purpose of the Contract, including without limitation, Contractor’s Plant and Equipment, or Materials to or from the Site, but does not include Plant, or Materials intended to form or forming part of the Permanent Works.
- 1.1.6.3** “**Cost Centre**” means a group of activities and/ or items of work identified.
- 1.1.6.4** “**Materials**” means things of all kinds (other than Plant) to be provided and incorporated in the Permanent Works by the Contractor, including the supply-only items (if any), which are to be supplied by the Contractor as specified in the Contract.
- 1.1.6.5** “**Plant**” means the machinery, equipment, and apparatus and the likes, intended to form or forming part of the Permanent Works, including the supply-only items (if any), which are to be supplied by the Contractor as specified in the Contract.
- 1.1.6.6** “**Section**” means a part of the Works specifically designated in the Appendix to Form of Tender as a Section (if any).
- 1.1.6.7** “**Site**” means the places provided by the Employer where the Works are to be executed and to which Plant, Rolling Stock and Materials are to be delivered, and any other place as may be specifically designated in the Contract as forming part of the Site. Site includes Depot, where Rolling Stock will be delivered, tested and commissioned as provided in the Contract.
- 1.1.6.8** “**Scheduled Bank**” means a bank included in the second schedule to the Reserve Bank of India Act, 1934, or modifications thereto.
- 1.1.6.9** “**Specification**” means the Specification referred to in the contract and any modification thereof or addition thereto, as may from time to time be furnished or approved in writing by the Engineer.
- 1.1.6.10** “**Test**” means such Tests as are prescribed in the Specifications or by the Engineer or Engineer’s Representative, whether performed by the Contractor or by the Engineer or his Representative or any agency acting under the direction of the Engineer.

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| | 1.1.6.11 | “Variation” means any alteration and/ or modification to the Employer’s Requirements, which is instructed by the Engineer or approved as a variation by the Engineer, in accordance with Clause 12. |
| | 1.1.6.12 | “Works” means the work, both permanent and temporary, or services to be carried out, designed, manufactured, fabricated, delivered to Site, erected, installed, completed, tested, commissioned, (including Integrated Testing and Commissioning) and remedying of any defects, and/ or supplied in accordance with the Contract and include Plant, Rolling Stock and Materials and their accessories. |
| | 1.1.6.13 | “Permanent Works” means the permanent works to be designed and executed in accordance with the Contract. |
| | 1.1.6.14 | “Temporary Works” means all temporary works of every kind (other than Contractor’s Equipment) required for the execution and completion of the Works, and the remedying of any defects. |
| | 1.1.6.15 | “Project” means Mumbai Metro Rail Project, |
| Interpretation | 1.2 | In the Contract except where the context requires otherwise: |
| | 1.2.1 | <ul style="list-style-type: none"> (a) words indicating one gender include all genders; (b) words indicating the singular also include the plural and words indicating the plural also include the singular and (c) “written” or “in writing” means hand-written, type written, printed or electronically made and resulting in a permanent record. <p>The marginal words and other headings shall not be taken into consideration in the interpretation of these condition.</p> |
| | 1.2.2 | Terms and expressions not herein defined” shall have the meanings assigned to them in the “Indian General Clauses Act, 1897” or the Indian Contract Act or the Indian Sale of Goods Act or any other applicable Indian Law, as the case may be. |
| Law and Language | 1.3 | The contract shall be governed by the Acts and Laws of India, the rules, regulations and bye-laws of the concerned public bodies and authorities. Language of the Contract shall be English. |
| Contract Agreement | 1.4 | The Employer and the Contractor shall execute a Contract Agreement, with such modifications, as may be necessary to record the Contract. The costs of stamp duties and similar charges imposed by law shall be borne by the Contractor. |
| Priority of Documents | 1.5 | <p>The documents forming the Contract are to be taken a mutually explanatory of one another. If there is an ambiguity or discrepancy in the documents, the Engineer shall issue any necessary clarification or instruction to the Contractor, and the priority of the documents shall be as follows:</p> <ul style="list-style-type: none"> a) The Contract Agreement; b) The Letter of Acceptance; c) Pre-and Post-bid proceeds d) Form of Tender e) BOQ/Payment schedule f) NIT g) ITT h) The Outline Design Specifications (Design Criteria) and Outline Construction Specifications; or any other specification |

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| | | <ul style="list-style-type: none"> i) Drawings j) The Employer's Requirements k) The Special Conditions of Contract; l) The General Conditions of Contract; m) The Contractor's Proposal; and n) Any other document forming part of the Contract. |
| Care and Supply of Construction and/or Manufacture Documents | 1.6 | <p>The Construction and/or Manufacture Documents shall be in the custody and care of the Contractor during the Contract. Unless otherwise stated in the Employer's Requirements, the Contractor shall provide three copies for the use of the Engineer and assistants (as referred to in Sub-Clause 5.3). The Contractor shall keep on Site one complete set of the documents forming the Contract, the Construction and/or Manufacture Documents, Variations, other communications given or issued from time to time and the documents/samples mentioned in Sub-Clause 5.3. The Employer, the Engineer and their assistants (as referred to in Sub-Clause 3.3) shall have the right to access these documents all reasonable times.</p> <p>On discovery of any technical error or defect in a document intended to be used for the purpose of Contract, the Contractor shall promptly give notice to the Engineer of such error or defect.</p> |
| Communications | 1.7 | <p>Communications between parties, unless otherwise specified shall be effective only when made in writing. A notice will be effective only when delivered.</p> |
| Employer's Use of Contractor's Documents | 1.8 | <p>As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.</p> <p>The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:</p> <ul style="list-style-type: none"> (a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works, (b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and (c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor. |

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| Contractor's Use of Employer's Documents | 1.9 | As between the Parties, the Employer shall retain the copyright and other Intellectual property rights in the Employer's Requirements and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract. |
| Compliance with Statutes, Regulations and Laws | 1.10 | <p>The Contractor shall familiarize themselves and conform in all aspects with:</p> <p>(a) the provision of any enactment in India as applicable from time to time</p> <p>(b) the regulations or bye-laws of any local body and utilities.</p> <p>(c) The Contractor shall be bound to give all notices required by statute, regulations or by-laws, as aforesaid and to pay all fees and bills payable in respect thereof. The Contractor will arrange necessary clearances and approvals before the Work is taken up. Ignorance of Rules, Regulations and Bylaws shall not constitute a basis for any claim at any stage of work.</p> <p>The Contractor shall indemnify the Employer against all penalties and liabilities of every kind of breach of any such enactment, laws, regulations, bye-laws or rules.</p> |
| Joint and Several Liability | 1.11 | <p>If the Contractor is (under applicable Laws) a joint venture, consortium, or other incorporated grouping of two or more Persons:</p> <p>a) these Persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;</p> <p>b) these Persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and</p> <p>c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.</p> |
| | 2 | The Employer |
| General Obligations | 2.1 | The Employer shall provide the Site/area of works and shall pay the Contractor in accordance with the Contract. |
| Access to and Possession of the Site | 2.2 | <p>The Employer shall grant the Contractor right of access to, and / or possession of, the Site progressively for the completion of Works. Such right and possession may not be exclusive to the Contractor. The Contractor will draw/modify the schedule for completion of Works according to progressive possession/right of such sites.</p> <p>If the Contractor suffers delay from failure on the part of the Employer to grant right of access to, or possession of the Site, the Contractor shall give notice to the Engineer in a period of 28 days of such occurrence. After receipt of such notice the Engineer shall proceed to determine any extension of time to which the Contractor is entitled and shall notify the Contractor accordingly.</p> <p>For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time and no monetary claims whatsoever shall be paid or entertained on this account.</p> |

Permits, Licences or Approvals 2.3

It shall be Contractor's exclusive responsibility to get approvals, permits or license required for the Contract. However, the Employer may (where he is in a position to do so) provide reasonable assistance to Contractor at the request and cost of the Contractor in getting Permits, License or Approvals required during the Contract.

The rendering of such assistance by the Employer shall not be interpreted as a pretext by the Contractor as condoning of any delay or non- performance of any of the Contractors obligations. The following-up of all such applications shall be the responsibility of the Contractor.

Assignment by the Employer 2.4

The Employer shall be fully entitled without the consent of the Contractor, to assign the benefit of the part thereof and any interest therein or there under to any third party.

3

THE ENGINEER

Appointment of Engineer 3.1

The Employer shall notify the Contractor in writing of the appointment and identity of the Engineer and of any replacement from time to time.

Duties and Authorities of the Engineer 3.2

The Engineer shall carry out the duties specified in the Contract. The Engineer shall have no authority to amend the Contract.

The Engineer may exercise the authority specified in, or necessarily to be implied from the Contract. If the Engineer is required to obtain the specific approval of the Employer before exercising such authority, such requirements shall be as stated in Special Conditions of Contract. Any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Engineer.

The Engineer shall have no authority to relieve the Contractor of any of his duties, obligations, or responsibilities under the Contract. Any proposal, inspection, examination, testing, consent, approval or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility, including responsibility for his errors, omissions, discrepancies, and non-compliance with Sub-Clause 5.4.

Engineer's Authority to Delegate 3.3

The Engineer shall copy to the Employer all communications given or received by him in accordance with the Contract.

i. The Engineer, may from time to time assign and delegate authority to Engineer's representatives/assistants and may also revoke such assignments and delegations. The delegation or revocation shall be in writing and shall be applicable only after same has been notified in writing to the Contractor.

ii. Each Assistant to whom duties have been assigned or authority has been delegated, shall be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any determination, approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test or similar act by an assistance shall have the same effect as though the act had been an act of the Engineer. However,

a) Any failure to disapprove any Plant, Goods, Material, design and workmanship shall not prejudice the right of the

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| | | <p>Engineer to reject such Plant, Goods, Material, design and workmanship;</p> <p>b) if the Contractor questions any determination or instruction of an assistant of the Engineer, the Contractor may refer the matter to the Engineer within three days of such decision having been given, who shall confirm, reverse or vary such determination or instruction.</p> |
| Engineer's Instructions | 3.4 | <p>The Contractor shall comply with instructions given by the Engineer in accordance with the Contract.</p> <p>The Contractor shall give reasonable notice to the Engineer of any instruction, which he considers necessary for the execution of the Works, to enable the Engineer to issue the instruction so that progress of the Works is not delayed. The Engineer shall not, however, be bound to issue any instruction which, in his opinion, is unnecessary.</p> <p>No act or omission by the Engineer or the assistants to the Engineer in the performance of any of the Engineer's duties or the exercise of any of the Engineer's powers under the Contract shall, in any way, operate to relieve the Contractor of any of the duties, responsibilities, obligations or liabilities imposed upon the Contractor by any of the provisions of the Contract.</p> |
| Engineer to Attempt Agreement | 3.5 | <p>When the Engineer is required to determine value, cost or extension of time, he shall consult with the Contractor and the Employer in an endeavour to reach agreement. If agreement is not achieved, the Engineer shall determine the matter fairly, reasonably and in accordance with the Contract, with the approval of Employer.</p> |
| General Obligations | 4 4.1 | <p>THE CONTRACTOR</p> <p>The Works as completed by the Contractor shall be wholly in accordance with the Contract and fit for the purposes for which they are intended, as defined in the Contract. The Works shall include any work which is necessary to satisfy the Employer's Requirements, the Contractor's Proposal and Schedules, or is implied by the Contract, or arises from any obligation of the Contractor, and all works not mentioned in the Contract but which may be inferred to be necessary for stability, or completion, or the safe, reliable and efficient operation of the Works.</p> <p>The Contractor shall design, if in the scope of work, manufacture, execute, install, complete, test (including Integrated Testing in case of rolling stock and signalling contracts) and commission, the Works, including providing Construction and/or Manufacture Documents, within the Time for Completion and shall remedy any defects within the Contract Period. The Contractor shall provide all superintendence, labour, Plant, Materials, Contractor's Equipment, Temporary Works and all other things, whether of a temporary or permanent nature, required in and for such design, works and remedying of defects.</p> <p>Before commencing design, if in the scope of the contract, the Contractor shall satisfy himself regarding the Employer's Requirements (including design criteria and calculations, if any) and the items of reference mentioned in Sub-Clause 4.8.</p> <p>The Contractor shall give notice to the Engineer of any error,</p> |

fault or other defect in the Employer's Requirements or such items of reference. After receipt of such notice, the Engineer shall determine whether Clause 12 shall be applied, and shall notify the Contractor accordingly.

The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations, of all methods of construction, manufacture, and of all the Works, irrespective of any approval or consent by the Engineer.

The Contractor shall be deemed to have satisfied himself before submitting his tender as to the correctness and sufficiency of his Tender to cover all his risks, liabilities and obligations set out in or implied by the Contract and all matters and things necessary for the proper design, manufacture, execution, installation, completion, testing, Integrated Testing whichever is in the scope of the contract, commissioning of the Works and remedying of the Defects.

The Contractor acknowledges responsibility for ascertaining and securing at his own cost:

- a) conditions bearing upon the proper transportation, disposal, handling and storage of materials (including but not limited to hazardous toxics Substances and excavated materials);
- b) availability of electricity, water and gas;
- c) availability of skilled manpower;
- d) the character of equipment and facilities needed preliminary to and during the manufacture, installation, execution, testing, Integrated Testing, and commissioning of the Works and remedying of any defects;
- e) the protection of the environment and adjacent structures which will be necessary preliminary to and during the manufacture, installation, execution, testing, Integrated Testing, and Commissioning of the Works and remedying of any defects;
- f) the location of and the authorization required for and the means of diversion of any services and facilities required for the purposes of the Works.

The Contractor shall whenever have required by the Engineer, submit details of the arrangement and methods which the Contractor proposed to adopt for the execution of the Works. No alteration to these arrangements or methods shall be made without the approval of the Engineer.

Performance Security Amount

4.2

4.2.1

(i) Within 30 days of receipt of the Letter of Acceptance, the successful Tenderer shall furnish Performance Security in the form of a bank guarantee from a branch in India of a scheduled foreign bank or from a scheduled commercial bank in India acceptable to the Employer for an amount of ten per cent of the Contract value in types and proportions of currencies in which the Contract Price is payable. The approved form provided in the 'Instructions to Tenderers' documents or any other form approved by the Employer shall be used for Bank Guarantee. The Bank Guarantee shall be valid up to 6 months beyond the Defect Liability Period. In case the contract value exceeds beyond 25% of the original contract value, the contractor shall have to submit additional performance security.

(ii) Whenever the contract value exceeds beyond 25% of the original contract value either due to employer's variation or

due to contractor's variation, the contractor shall submit additional performance security equal to an amount of 10% of the variation reduced by an amount equal to 5% of the work already certified as completed by the Engineer-in-Charge on the date of variation subject to a maximum limit of 10% of the variation amount.

(iii) No additional performance security will be required to be submitted if the variation is within 25% of the original contract value.

Forfeiture 4.2.2

Failure of the successful Tenderer to furnish the required Performance Security shall be a ground for the annulment of the award of Contract and forfeiture of the tender security

The whole of the Performance Security amount shall be liable to be forfeited by the Employer at the discretion of the Employer, in the event of any breach of contract on the part of the Contractor.

Release 4.2.3

i. On completion of the entire work, one half of the Performance Security shall be refunded to the Contractor, on issue of Taking over Certificate by the Engineer, in accordance with Sub-Clause 9.1 and 9.2 of these conditions. This shall not relieve the Contractor from his obligations and liabilities, to make good that may be detected during the Defects Liability Period

ii. The balance amount shall become due and shall be paid to the Contractor on signing of the Performance Certificate after the expiry of the final Defects Liability Period as per Clause 10.9 of these conditions.

Guarantees and Warranties 4.2.4

Within 30 days of the date of Letter of Acceptance of the Tender, the Contractor shall submit to the Employer:

a) An Undertaking in the approved format from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Tender and against which the Employer shall have raised no objection.

b) A written Guarantee in the approved format from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Tender and against which the Employer shall have raised no objection.

c) A warrantee in the approved format from the Contractor. In the event that the Contractor shall comprise two or more members, corporations acting in partnership, joint venture, consortium or otherwise each such member or corporation shall submit a parent company Undertaking and Guarantee.

Notwithstanding any other provision of the Contract:

a) submission by the Contractor of the requisite Performance security, parent company Undertakings and written Guarantees shall be condition precedent to the

Contractor's entitlement to any payment, under the Contract;

- b) failure by the Contractor to provide a Performance security or parent company Undertakings or parent company Guarantees shall entitle the Employer either to suspend the Works or to terminate the Contract forthwith by notice in writing to that effect, notwithstanding that the Contractor may have been permitted to proceed with the Works, and the Contractor shall not be entitled to any compensation whatsoever as a consequence of such suspension or termination.

Representation on Works 4.3

Unless the Contractor's Representative is named in the Contract, the Contractor shall, within 14 days of Notice to Proceed, submit to the Engineer for consent the name and particulars of the person the Contractor proposes to appoint. The Contractor shall not revoke the appointment of the Contractor's Representative without the prior consent of the Engineer. The Contractor's Representative so nominated shall have full authority to act on behalf of the Contractor. The Contractor's Representative shall give his whole time to directing the preparation of the Construction and/or Manufacture Documents and the execution of the Works. The Contractor's Representative shall receive (on behalf of the Contractor) all notices, instructions, consents, no objection certificate approvals, certificates, determinations and other communications under the Contract. Whenever the Contractor's Representative is to be absent from the Site, a suitable replacement person shall be appointed, with prior consent of Engineer.

Failure on part of the Contractor to comply with these provisions shall constitute a breach of Contract leading to action under Sub-Clause 13.2.

The Contractor's Representative may delegate any of his powers, functions and authorities to any competent person, and may at any time revoke any such delegation. Any such delegation or revocation shall be in writing and shall not take effect until the Engineer has given prior consent thereto. The Contractor's Representative and such persons shall be fluent in the language of day to day communication and the Contractor shall be bound by and fully liable for the acts or omissions of the Contractor's Representatives or any of his employees and/or delegates, agents or nominees.

Facilities for and co-ordination with others. 4.4

The Contractor shall not impede and shall afford all necessary facilities, access and/or services to the Employer, Engineer, Designated Contractors, utility undertakings, other relevant authorities and other contractors (whether employed by the Employer or not) who are carrying out on, or in the vicinity of, the Site, works not included in the Contract but forming part of the Project.

A. The Contractor shall take all reasonable steps to ensure that the Works are co-ordinated and integrated with the design, manufacture, installation execution and testing of such other works and shall in particular (but without limitation):

- (i) comply with any direction which the Engineer may give for the integration of the design of the Works with the design

of any other part of the Project

(ii) Consult, liaise and co-operate with those responsible for carrying out such other works, including where necessary, in the preparation of (ii) consult, liaise and co-operate with those responsible for carrying out such designs, the preparation of co-ordinated programmes, method statements, co-ordination drawings and specifications together with arrangements of service priorities and zoning;

(iii) participate in Integrated Testing and Commissioning of the system with Designated Contractors and demonstrate to the satisfaction of the Engineer that the Works have been designed and constructed in a manner compatible with the works of Designated Contractors.

B. The Contractor shall undertake design co-ordination with other contractors who are carrying out works forming part of the Project as described in the Employer's Requirements. At the end of each such co-ordination period, the Contractor and the other contractor with whose works the interface period refers shall jointly state in writing that their design co-ordination activities are complete and that their respective designs are integrated and can be finalised without interference with each other's designs or the designs with which their designs have already been integrated. A copy of this joint written statement shall be provided to the Engineer within 7 days of the end of the said design co-ordination period. Unless and until copies of all relevant and necessary design co-ordination statements have been submitted to the Engineer, the Engineer shall be entitled to suspend any review or further review of the Contractor's or the other contractor's design submissions. Such suspension shall not be grounds for the Contractor to claim nor shall be entitled to receive an extension of time or additional payments.

C. The Contractor shall provide within the Site, staging, storage and unloading areas for the use of Designated Contractors, if any, who are undertaking trackwork, fare collection system, supply, testing and commissioning of Rolling Stock, escalators, ESCALATORS, signaling and telecommunications and traction power installation works, etc. Separate locations shall be provided for each such contractor. The exact size and location of these staging, storage and unloading areas, and the commencement date shall be co-ordinated and agreed during the design interface period with each Designated Contractor.

D. Any other contract which depends for its execution on the Contract or upon which the Contract is dependent for its own execution shall be identified by the Engineer as a "Designated Contract". The Contractor shall provide attendance on Designated Contractors in accordance with the Employer's Requirements and as instructed by the Engineer. The identity of the contractor for a Designated Contract may not be known before the execution of the Contract but this shall not be a ground for the Contractor to object to the subsequent appointment of a Designated Contractor.

E. The Contractor shall in accordance with the requirements of the Engineer co-ordinate his own Works with that of Designated Contractors through Co-Ordinated Installation Programme (CIP) stated in the Employer's Requirements, or as the Engineer may require, and shall afford the Designated Contractors all reasonable opportunities for carrying out their

works.

F. The Contractor shall afford all reasonable opportunities, for carrying out their work, to other contractors employed by the Employer and their workmen respectively and the workmen of the Employer who may be engaged on or near the Site of any work, ancillary to the Works, but, not included in the Contract and shall not cause them inconvenience.

G. If the Contractor shall suffer delay by reason of failure by any Designated Contractor to meet the specified installation interfacing and co-ordination, completion dates, which delay shall be caused otherwise than by fault of the Contractor, or, if compliance with sub- clause (f) herein shall involve the Contractor in delay beyond that which could be reasonably foreseen by an experienced contractor at the time of tender, then the Engineer shall take such delay into account in determining any extension of time to which the Contractor is entitled under the Contract.

H. It shall be the responsibility of the Contractor to ensure that the full extent of the Works under the Contract and the works to be carried out by Designated Contractors within the Works or, in, on, under, through and over the Site are co-ordinated and integrated in their design, manufacture, installation and construction. Such responsibility shall neither be mitigated nor in any other way affected by virtue of similar responsibilities being placed on other contractors.

The Contractor shall be deemed to have made adequate allowance in the Contract Price and in the Works Programme in respect of these obligations.

If any act or omission of the Contractor whether directly or indirectly results in the delay in the execution of the works of a Designated Contractor, the Contractor, in addition to his liability in respect of liquidated damages if they become due, shall pay to the Employer, or the Engineer may deduct from Interim Payment Certificates such amount as the Engineer shall have certified in respect of additional payments or costs to the Designated Contractor in respect of such delay.

4.5

Sub-contractor

4.5.1

The Contractor shall not sub-contract the whole of the Works. Unless otherwise stated in the Special Conditions of Contract:

4.5.2

a) the Contractor shall not be required to obtain consent for purchases of Materials which are in accordance with the makes specified in the Contract or provisions of labour or for the sub- contracts for which the Sub-contractor is named in the Contract;

b) the prior consent of the Engineer shall be obtained for other proposed Sub-contractors;

c) not less than 28 days before the intended date of each Sub-contractor commencing work, the Contractor shall notify the Engineer of such intention; and the Contractor shall give fair and reasonable opportunity for contractors in India to be appointed as Sub-contractors.

4.5.3

The Contractor shall be responsible for observance by all Sub-contractors of all the provisions of the Contract. The Contractor shall be responsible for the acts or defaults of any Sub-contractor, his representatives or employees, as fully as if they were the acts or defaults of the Contractor, his representatives or employees and nothing contained in Sub-

clause (a) of clause 4.5 shall constitute a waiver of the Contractor's obligations under this contract. The Contractor shall provide to the Engineer of all the Sub Contracts including terms, conditions and pricing. The Contractor shall endeavour to resolve all matters and payments amicable and speedily with the sub-contractors.

4.5.4

The contractor shall ensure that their sub-contractors, material/equipment suppliers, consultants and other agencies deployed by them in connection with execution of the contract do not make any claim or raise any dispute before MMRDA. For this, necessary provision is to be made in the agreement between contractor and their sub-contractors/consultants/other agencies. Similarly, the agreement should also incorporate the provision of dispute resolution. An undertaking in the following format shall be submitted by contractor in respect of each such agency: -
 "Name of work.....
 In connection with above work, M/s....., Contractor has/is engaging M/s....., as sub-contractor(or consultant or material/equipment supplier or service provider). For this, the terms and conditions of agreement include necessary provisions for resolution of dispute if any arising between contractor and sub-contractor.

It is confirmed by the sub-contractor that any claim/dispute arising out of the above work shall be resolved in terms of agreement and shall not be raised before MMRDA and also shall not make any claim against MMRDA before any forum/court.

Signature of Contractor

Assignment of Contractor's and Sub- Contractor's Obligations

4.6

The Contractor shall not assign a right or benefit under the Contract without first obtaining Employer's prior written consent, otherwise than by:

- a) a charge in favour of the Contractor's bankers of any money due or to become due under the Contract, or
- b) assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

If a Subcontractor's obligations extend beyond the expiry date of Defects Liability Period, then the Contractor shall assign the benefits of such obligations to the Employer. In the event that a sub-contractor of any tier provides to the Contractor or any other sub-contractor a warranty in respect of Plant, Materials or services supplied in connection with the Works, or undertakes a continuing obligation of any nature whatsoever in relation to such Plant, Materials or services (including without limitation an obligation to maintain stocks of spare parts) extending for a period exceeding that of the Defects Liability Period or where there is more than one Defects Liability Period exceeding that of the latest Defects Liability Period, and if the Engineer so directs in writing within 21 days of the expiry of the Defects Liability Period or the latest Defects Liability Period (as the case may be), the Contractor shall immediately assign or obtain the assignment of the benefit of such warranty or obligation to the Employer or at the direction of the Employer, to any third party referred to in Sub-Clause 2.4.

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| Compensation for breach | 4.7 | Any breach of Sub-clauses 4.5 to 4.6 shall entitle the Employer to rescind the contract under Clause 13.2 of these conditions and also render the Contractor liable for loss or damage arising due to such cancellation. |
| Setting Out | 4.8 | The Contractor shall be responsible for |
| | 4.8.1 | <p>a) the accurate setting out of the Works in relation to the original points, lines and levels of reference given by the Engineer in writing</p> <p>b) the correctness of position, levels, dimensions and alignments of all parts of the Works</p> <p>c) the provisions of all necessary instruments, equipment, apparatus and labour in connection with the foregoing responsibilities</p> <p>d) Carefully protecting and preserving all bench marks, sight rails, pegs and other things used in setting out the Works</p> <p>The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy or correctness thereof and the Contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs and other things used in setting out the Works.</p> |
| Errors in Setting out | 4.8.2 | If at any time during the execution of the Work, an error appears in the positions, levels, dimensions or alignment of any part of the Works, the Contractor on being required to do so by the Engineer shall, at Contractor's cost, rectify such error to the satisfaction of the Engineer. |
| Site Data | 4.9 | <p>i. The Employer shall have made available to the Contractor with the Tender documents such relevant data in Employer's possession on hydrological and sub-surface conditions. The accuracy or reliability of the data/studies/reports and of any other information supplied at any time by the Employer or Engineer is not warranted with respect to the viability of his design and execution of Works and the Contractor shall be responsible for interpreting all such data. The Contractor shall conduct further investigations considered necessary by him at his own cost and any error, discrepancies if found in Employer's data at any stage will not constitute ground for any claim for extra time and costs.</p> <p>ii. The Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works.</p> <p>iii. The Contractor shall also be deemed to have inspected and examined the Site, its surroundings, the above data and other available information with respect to the viability of his design and execution of Works and to have satisfied himself before submitting the Tender, as to all the relevant matters including without limitation:</p> <p>a) the form and nature of the Site, including the sub-surface conditions;</p> <p>b) the hydrological and climatic conditions;</p> <p>c) the extent and nature of the work, Plant, and Materials necessary for the execution and completion of the Works and the remedying of any defects;</p> <p>d) the applicable laws, procedures and labour practices</p> <p>e) The Contractor's requirement for access, accommodation,</p> |

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| | | <p>facilities, personnel, power, transport and other services.</p> <p>f) the risk of injury or damage to property adjacent to the Site and to the occupiers of such property or any other risk.</p> |
| Sufficiency of accepted Contract Amount | 4.10 | <p>The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Contract Price. Unless otherwise stated in the Contract, the Contract Price shall cover all his obligations under the Contract and all things necessary for the proper design, execution and completion of the Works, testing and commissioning (including Integrated Testing and Commissioning) and remedying of any defects.</p> |
| Access Route | 4.11 | <p>The Contractor shall be deemed to have satisfied himself as to the suitability and availability of the access routes he chooses to use. The Contractor shall (as between the parties) be responsible for the maintenance of access routes. The Contractor shall provide at his cost signs or directions, which he may consider necessary or as instructed by Engineer for the guidance of his staff, labour and others. The Contractor shall obtain any permission concessions and related easement right that may be required from the relevant authorities for the use of such routes, signs and directions. The Employer will not be responsible for any claims which may arise from the use or otherwise of any access route. The Employer does not guarantee the suitability or availability of any particular access route, and will not entertain any claim for any non-suitability or non-availability for continuous use during construction of any such route.</p> |
| Right of way and facilities | 4.12 | <p>The Employer will acquire and provide land for Permanent Works and right of way (within MMRDA's land) for access thereto over routes established by the Contractor. The Contractor shall bear all cost and charges for special or temporary rights of way which he may require including those for access to the Site. The Contractor shall also obtain, at his risk and cost, any additional facility outside the Site which he may require for the purpose of the Works. The Employer reserves the right to make use of these service roads/rights of way for itself or for other Contractors working in the area, as and when necessary without any payment to the Contractor.</p> |
| Programmes | 4.13 | <p>The Contractor shall submit a detailed programme to the Engineer after receipt of the Letter of Acceptance not later than 28 days from the date of receipt of Letter of Acceptance. The Contractor shall also submit a revised programme whenever the Engineer finds that the previous programme is inconsistent with actual progress or with the Contractor's obligations.</p> <p>Each programme shall include the following:</p> <ul style="list-style-type: none"> a. the order in which the Contractor proposes to carry out the Works (including each stage of design, procurement, manufacture, delivery to Site, construction, erection, testing and commissioning), b. all major events and activities in the production of Construction or Manufacture Documents; and c. the sequence of all tests specified in the Contract including Integrated Testing and Commissioning. <p>Unless otherwise stated in the Contract, the programmes</p> |

shall be developed using precedence networking techniques, showing early start, late start, early finish and late finish dates. No significant alteration to the programmes, or to such arrangements and methods, shall be made without obtaining consent of the Engineer. If the progress of the Works does not conform to the programmes, the Engineer may instruct the Contractor to revise the programmes, showing the modifications necessary to achieve completion within the Time for Completion.

Consent by the Engineer to Programmes shall not relieve the Contractor of any of his responsibilities or obligations under the Contract. If the Programmes indicate that a Key Date has not, or will not be met, it shall not, by itself entitle the Contractor to an extension of time in relation to such Key Date.

Progress Reports 4.14

The Contractor shall submit to the Engineer by the end of each calendar month his Monthly Progress Report which shall, amongst other things, highlight actual or potential departures from the Works Programmes and/or the Design Submission Programme and state the measures which the Contractor proposes to take in order to make good or reduce any delay.

If requested by the Engineer, the Contractor shall submit to the Engineer, at weekly intervals, a written report as to the progress of off-Site manufacture of Plant, Rolling Stock and Materials.

The Contractor shall also submit to the Engineer such other reports as may reasonably be required by him or any relevant authority or public body.

The progress reports shall conform to the Employer's Requirements.

Contractor's Equipment 4.15

4.15.1 All Contractor's Equipment and Temporary Works provided by the Contractor shall, when brought on to the site, be deemed to be exclusively intended for execution of the Works and not be removed without the consent in writing of the Engineer. Such consent shall not be unreasonably withheld or delayed.

4.15.2 Upon completion of the Works the Contractor shall remove from the Site all the said Constructional Plant and his unused materials.

4.15.3 The Employer shall not, at any time, be liable for the loss or damage to any of the Constructional Plant, Temporary Works or materials save as mentioned in Clauses 14.1.

4.15.4 In respect of any Constructional Plant which the Contractor shall have imported for the purpose of the Works, the Employer may assist the Contractor, where required, in procuring any necessary Government consent for re-export of the same after the completion of the Works.

4.15.5 The Employer may assist (but is not obligated to) the Contractor, where required, in obtaining clearance through the Customs of Constructional Plant, materials and other things required for the Works.

Safety of Works 4.16

The Contractor shall throughout the execution of the Works including the carrying out of any testing, commissioning (including Integrated Testing and Commissioning), or remedying of any defect:

a. take full responsibility for the adequacy, stability, safety and security of the Works, Plant, Rolling Stock, Contractor's Equipment, Temporary Works, operations on Site and methods of manufacture, installation, construction and transportation;

b. have full regard for the safety of all persons on or in the vicinity of the Site (including without limitation persons to whom access to the Site has been allowed by the Contractor), comply with all relevant safety regulations, including provision of safety gear, and insofar as the Contractor is in occupation or otherwise is using areas of the Site, keep the Site and the Works (so far as the same are not completed and occupied by the Employer) in an orderly state appropriate to the avoidance of injury to all persons and shall keep the Employer indemnified against all injuries to such persons.

c. provide and maintain all lights, guards, fences and warning signs and watchmen when and where necessary or required by the Engineer or by laws or by any relevant authority for the protection of the Works and for the safety and convenience of the public and all persons on or in the vicinity of the Site; and

d. where any work would otherwise be carried out in darkness, ensure that all parts of the Site where work is being carried out are so lighted as to ensure the safety of all persons on or in the vicinity of the Site and of such work.

Contractor is required to take note of all the necessary provisions in Employer's Safety, Health and Environment Manual (SHE Manual) and the Contractor's price shall be inclusive of all the necessary costs to meet the prescribed safety standards. In the case, the Contractor fails in the above, the Employer may provide the necessary arrangements and recover the costs from the Contractor.

Protection of the environment 4.17

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to avoid injury, damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that air emissions, surface discharges and effluent from the Site during the Contract Period shall not exceed the values indicated in the employer's Requirements, and shall not exceed the values prescribed by law. The Contractor shall conform to the Employer's Requirements and shall indemnify the Employer against any liability or damages or claims arising out of his operations. The Contractor shall be responsible and liable for any stoppage, closure or suspension of the works due to any contravention of statutory requirements relating to the protection of the environment and shall indemnify and keep indemnified the Employer in this regard.

The Contractor's Site Environmental Plan shall be developed from his Employer's Safety, Health and Environmental Manual (SHE Manual), as per the Employer's Requirements and Special Conditions of Contract. Nothing extra shall be payable to the Contractor on this account and his Tender price shall be inclusive of expenditure required to be incurred for working as per SHE Manual.

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| Electricity Water and Gas | 4.18 | The Contractor shall be responsible for making his own arrangement at his own cost to obtain supply of water, electricity or gas for the Works. The Employer where feasible may at its discretion assist the Contractor in this respect. |
| Tools, Plants and Equipment Supplied By The Employer | 4.19 | <p>Except for any specific item mentioned in the Special Conditions of Contract or in Employer's Requirements, the Contractor shall provide all tools, plants and equipment for the Works. In respect of such exceptional tools, plants or equipment committed to be provided by the Employer under terms and conditions specified in the Special Conditions of Contract, the Contractor shall take all reasonable care and shall be responsible for all damages or loss caused by him, his representatives, sub-contractors or his workmen or others while they are in his charge.</p> <p>On completion of the Works, the Contractor shall hand over the unused balance of the tools, plants and equipment's to the Employer in good order and repair, fair wear and tear expected, and shall be responsible for any failure to account for the same or any damage done thereto.-</p> |
| Employer's Materials & Excavated Materials | 4.20 | <p>The decision of the Engineer as to the amount recoverable from the Contractor on this account shall be final and binding.</p> <p>i. Except for items mentioned in the Special Conditions of Contract, the Contractor shall provide all materials for the Works. Material if any, to be provided by Employer will be done only in a phased manner as per pre- approved program, against a Bank Guarantee for the value of the Material and at terms and conditions for issue, upkeep, usage, return and recovery of such Materials as specified in Special Conditions of Contract.</p> <p>ii. Unless otherwise specified, the Contractor shall not sell or remove, except for the purpose of this Contract, sand, stone, clay, ballast, earth, rock or other materials obtained from the work Site and these shall be the property of the Employer and will be disposed off only in the manner instructed by him.</p> |
| Sheds, Stores, Yards | 4.21 | It shall be the responsibility of the Contractor to provide at his own expense the required sheds, store houses, and yards for both Permanent and Temporary Works and provide free access to the Engineer and the Engineer's Representative who will have right of inspection including that of instructing the Contractor to remove a particular material from the stores and not to use the same on the Works. |
| Temporary Works | 4.22 | All temporary works necessary for the proper execution of the works shall be provided and maintained by the Contractor at his cost and subject to the consent of the Engineer shall be removed by Contractor at his own expense when they are no longer required and in such manner as the Engineer shall direct. In case the Contractor fails to remove the temporary works on completion the Engineer is authorized to get the same removed and recover the cost there of from the Contractor. |

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| Unforeseeable Physical Conditions | 4.23 | <p>In this Clause “physical conditions” means natural physical conditions, which the Contractor encounters at Site while executing the Works excluding climatic conditions.</p> <p>In this Clause “ physical conditions” means natural physical conditions, which the Contractor encounters at Site while executing the Works excluding climatic conditions.</p> <p>a. for complying with any instruction which the Engineer may issue to the Contractor in connection therewith, and</p> <p>b. for any proper and rea the Contractor may take in the absence of specific instructions from the Engineer, as a result of such conditions or obstructions being encountered.</p> <p>The decision of the Engineer as to the additional cost shall be final and binding.</p> |
| Access for Engineer | 4.24 | <p>The Contractor shall allow the Engineer or the Engineer’s Representative or any ther person authorised by him, at all times access to the Site, and to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured, fabricated and/or assembled for the Works. The Contractor shall ensure that sub contracts if any shall contain provisions entitling the Engineer or any person authorised by him to have such access.</p> |
| Access Road and Way Leaves | 4.25 | <p>Providing access roads/ way leaves to the site will be Contractor’s responsibility.</p> |
| Contractor to keep Site Clear | 4.26 | <p>During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor’s Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.</p> <p>On completion of the works, the Contractor shall clear away and remove from site all Constructional Plant, surplus material and Temporary Works. He should leave the whole of the site and Works in a clean, tidy and workman like condition to the satisfaction of the Engineer.</p> <p>On completion of Work the Contractor shall also clear away the labour camps, hutments and other related installations and restore the land to its original condition to the satisfaction of the Engineer within 45 days of the physical completion of Work. The cost on account of delay in return of land and reinstatement of original condition within the stipulated time as determined by Engineer will re recovered from the Contractor’s dues.</p> <p>No final payment in settlement of the accounts for Works shall be made or held to be due to the No final payment in settlement of the accounts for Works shall be made or held to be due to the Contractor, till, in addition to any other condition necessary for such final payment, site clearance and clearances of labour camps etc shall have been effected by him. Such clearance may be made by the Engineer through any other agency at the expense of the Contractor in the event of the Contractor’s failure to comply with this provision within 7 days after receiving notice to that effect from the</p> |

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| | | Engineer. All expenses on such removal / clearance shall be debitable to the Contractor as loans due from the Contractor to the Employer, and the Employer shall be competent to recover the same from Contractor's on-account or final bills, or from Performance Security amount or from any other amount payable to the Contractor in any other Contract. |
| Security of the Site | 4.27 | <p>The Contractor shall be wholly responsible for security of site and Works. Unless otherwise stated in Special Conditions of Contract</p> <p>a. the Contractor shall be responsible for keeping unauthorised persons off the Site; and</p> <p>b. Authorized persons shall be limited to the Employees of the Contractor, Subcontractor or persons authorized by the Engineer.</p> |
| Contractor's operations on site | 4.28 | The Contractor shall confine his operations to the Site, and to any additional area which may be provided to the Contractor and agreed by the Engineer as working areas. The Contractor shall take all necessary precautions to keep his personnel and equipment within the Site and such additional areas, and to keep and prohibit them from encroaching on adjacent land. |
| Discoveries | 4.29 | All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest, in addition to oil and other minerals discovered on the Site shall be the absolute property of the Government of India and the Contractor shall take all the necessary precautions to prevent its workmen or its sub-contractors' workmen or any other person from removing or damaging any such article or thing and shall immediately upon discovery thereof, acquaint the Engineer of such discovery and carry out the instructions of the Engineer. |
| Publicity | 4.30 | The Contractor shall not publish or otherwise circulate alone or in conjunction with any other person, any articles, photographs or other materials relating to the Contract, the Site, the Works, the Project or any part thereof, nor impart to the Press, or any radio or television network any information relating thereto, nor allow any representative of the media access to the Site, Contractor's Works Areas, or off-Site place of manufacture, or storage except with the permission, in writing, of the Employer. The Contractor shall ensure that his sub-contractors of any tier shall be bound by a like obligation and shall, if so required by the Employer, enforce the same at his own expense. The provisions of this Sub-Clause shall not exempt the Contractor from complying with any statutory provision in regard to the taking and publication of photographs. |
| Disclosure of Relationship | 4.31 | If the Contractor or any partner of the Contractor or Director of the Contractor's company is closely related to any of the Officers of the Employer or the Engineer, or alternatively, if any close relative of an officer of the Employer or the Engineer has financial interest / stake in the Contractor's firm, the same shall be disclosed by the Contractor at the time of filing his tender. Any failure to disclose the interest involved, shall entitle the Employer to rescind the Contract, without payment of any compensation to the Contractor. The Contractor shall note that he is prohibited from developing such interest during the Contract period. |
| Use of Explosives | 4.32 | Explosives if required on the Work shall be used by Contractor only with prior approval of the Engineer and in the |

manner and to the extent permitted by him. The Contractor shall be responsible for safe upkeep of such explosives in a special magazine as per the law on explosives as well as for taking all the precautions in the usage of the explosives with proper license and at Contractor's cost, sole risk and responsibility. The Contractor shall hold the Employer harmless and indemnify for the above.

Corrupt or fraudulent practices

4.33

Definition

4.33.1

The Employer requires that the Bidders/Contractors, their designated contractors and/or their agents observe the highest standards of ethics during Tendering and execution of this Contract. In pursuance with this policy, the Employer:

a. defines, for the purpose of these provisions, the terms set forth below as follows:

i. "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to Employer, Engineer or any of their employees, influence in the procurement process or in Contract execution; and

ii. "fraudulent practice" means a concealment or misrepresentation of facts in order to influence a procurement process or the execution of a Contract to the detriment of the Employer, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non- competitive levels and to deprive the Employer of the benefits of free and open competition.

iii. Breach of any of the contract condition during execution.

b. Will reject the Tender for the Work or rescind the Contract if the Employer determines that the Bidder/Contractor has engaged in corrupt or fraudulent practices.

c. Will declare a Contractor ineligible, either indefinitely or for a stated period of time, to be awarded a Contract/s if he at any time determines that the Contractor has engaged in corrupt or fraudulent practices in competing for, or in executing the Contract.

d. The successful Bidders/Contractors shall apprise the Employer through Chief Vigilance Officer, MMRDA of any fraud/suspected fraud as soon as it comes to their notice.

Compensation to Contractor on rescission of Contract

4.33.2

In the event of rescission of Contract under Sub-clause 4.33.1, the Contractor shall not be entitled to any compensation whatsoever, except for the work done up to the date of rescission.

5

DESIGN

The clauses under the head 'Design' are applicable only in 'Design & Build' contracts and in case of 'Part Design & Build' contracts, these are applicable only to part of the contract in which the design is the responsibility of the contractor.

General Obligations

5.1

The Contractor shall design and provide all necessary specifications for the Works in accordance with the site plans and Employer's requirements. Any design detail, plan,

drawing, specifications, notes, annotations, and information required shall be provided in such sufficient format, details, extent, size and scale and within such time as may be required to ensure effective execution of Works and/or as otherwise required by the Engineer.

The Contractor holds himself, and his designers as having the experience and capability necessary for the design. The Contractor undertakes that the designer shall be available to attend discussions with the Engineer at all reasonable times during the Contract Period.

The designer shall be the same entity as proposed by the Contractor at the time of pre-qualification, unless otherwise approved by the Employer. The Contractor shall furnish Designer's Warranty in the format approved by the Employer.

**Contractor's
warranty of design**

5.2

a. The Contractor shall be fully responsible, for the suitability, adequacy, integrity, durability and practicality of the Contractor's proposal.

b. The Contractor warrants that the Contractor's Proposals meet the Employer's Requirements and is fit for the purpose thereof. Where there is any inadequacy, insufficiency, impracticality or unsuitability in or of the Employer's Requirements or any part thereof, the Contractor's Proposal shall take into account, address or rectify such inadequacy, insufficiency, impracticality or unsuitability at Contractor's own cost.

c. The Contractor warrants that the Works have been or will be designed, manufactured, installed and otherwise constructed and to the highest standards available using proven up-to-date good practice

d. The Contractor warrants that the Works will, when completed, comply with enactments and regulations relevant to the Works.

e. The Contractor warrants that the design of the Works and the manufacture of plant have taken or will have taken full account of the effects of the intended manufacturing and installation methods, Temporary Works and Contractor's Equipment

f. The Contractor shall also provide a guarantee from the Designer for the design for suitability, adequacy, practicality of design for Employer's Requirements.

g. The Contractor shall indemnify the Employer against any damage, expense, liability, loss or claim, which the Employer might incur, sustain or be subject to arising from any breach of the Contractor's design responsibility and/or warranty set out in this Clause.

h. The Contractor further specifies and is deemed to have checked and accepted full responsibility 'for the Contractor' s Proposal and warrants absolutely that the same meets the Employer's Requirements:

i. Notwithstanding that such design may be or have been prepared, developed or issued by the Employer, any of Contractor's consultants, his sub-contractors and/or his qualified personnel/persons or cause to be prepared, developed or issued by others.

ii. Notwithstanding any warranties, guaranties and/or indemnities that may be or may have been submitted by any other person.

iii. Notwithstanding that the same have been accepted by the Engineer.

The Contractor shall be fully responsible for the Plants, Materials, goods, workmanship, preparing, developing and coordinating all design Works to enable that part of the Works to be constructed and/or to be fully operational in accordance with the Contract's requirements.

Apart from the Contractor, the above warranty shall also be applicable for his designer. This warranty shall be a part of his sub contract with the designer and should be made available at the time of signing of the Agreement.

No claim for additional payment or extension of time shall be entertained and/or the Contractor shall not be relieved from any obligation/liability under the Contract, for any delay, suspension, impediment to or adverse effect upon the progress of the Works due to any mistake, inaccuracy, discrepancy or omission in or between the Contractor's, the Definitive Design and the final design, or any failure by the Contractor to prepare any Design Data or submit the same to the Engineer in due time and the Contractor shall promptly make good any such defect at his own cost.

**Construction
and/or
Manufacture
Documents**

5.3

The Manufacture Documents shall comprise the technical documents specified in the Employer's Requirements, documents required to satisfy all regulatory approvals, documents described in Sub Clause 5.6 (As Built Document), and Sub Clause 5.7 (Operations and Maintenance Manuals). The Contractor shall prepare all Manufacture Documents in sufficient detail and shall also prepare any other document necessary to instruct the Contractor's personnel. The Engineer shall have the right to inspect the preparation of all these documents wherever they are being prepared.

Each of the Construction and/or Manufacture Documents shall, when considered ready for use, be submitted to the Engineer for pre- construction or pre-manufacture review. Unless otherwise stated in Employer's Requirements, each review by the Engineer shall not exceed 21 days, calculated from the date on which the Engineer receives the Manufacture Document.

The Engineer may during the review period, give notice to the Contractor that a Manufacture Document fails (to the extent stated) to comply with the Employer's Requirements, it shall be rectified, resubmitted and reviewed (and if specified, approved) in accordance with this Sub-Clause, at the Contractor's cost.

For each part of the Works, and except to the extent that the

prior consent of the Engineer shall have been obtained:

a. In the case of a Construction and/or Manufacture Document which has (as specified) been submitted for the Engineer's approval

i. The Engineer shall give notice to the Contractor that the Construction and/or Manufacture Document is provided with no objection, with or without comments, or that it fails (to the extent stated) to comply with the Contract.

ii. Execution of such part of the Works shall not commence until the Engineer has provided with no objection the Construction and/or Manufacture Document; and

iii. The Engineer shall be deemed to have provided with no objection the Construction and/or Manufacture Document upon the expiry of the review periods for all the Construction and/or Manufacture Documents which are relevant to the design and execution of such parts, unless the Engineer has previously notified otherwise in accordance with sub-paragraph (i)

b. construction and/or manufacture of such part of the Works shall not commence prior to the expiry of the review of the Construction and/or Manufacture Documents which are relevant to its design and execution;

c. construction and/or manufacture shall be in accordance with such reviewed (and if specified, approved) Construction and/or Manufacture Documents; and

d. if the Contractor wishes to modify any design or document which has previously been submitted for such pre-construction and/or pre-manufacture review, the Contractor shall immediately notify the Engineer, and based on Engineer's approval shall subsequently submit revised documents to the Engineer in accordance with the above procedure.

If the Engineer instructs that further Construction and/or Manufacture Documents are necessary for carrying out the Works, the Contractor shall promptly and at Contractor's cost prepare such documents, Errors omissions, ambiguities, inconsistencies, inadequacies and other defects if found at any stage in construction or any operations manufacture documents, then shall be rectified by the Contractor at his own cost and any approval or consent or review (under this sub-clause or otherwise) by the Employer/Engineer of the Manufacture and Construction Documents under this Sub-clause shall not relieve the Contractor from any obligations or responsibility under the Contract.

**Technical
Standards and
regulations**

5.4

The design, the Construction and/or Manufacture Documents, the execution and the completed Works (including remedying of defects therein) shall comply with the specifications, technical standards, building construction, safety and environmental regulations and other standards specified in the Employer's Requirements applicable to the Works or defined by the applicable laws and regulations.

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| Samples | 5.5 | <p>The Contractor shall submit at his own cost the following samples and relevant information to the Engineer for pre-construction and/or pre-manufacture review in accordance with the procedure for Construction and/or Manufacture Documents described in Sub-Clause 5.3:</p> <p>b. manufacturer's standard samples of Materials</p> <p>c. samples (if any) specified in the Employer's Requirements.</p> <p>Each sample shall be labelled as to origin and intended use in the Works.</p> |
| As-Built Drawings and Documents | 5.6 | <p>This clause is applicable for 'Build' part of contract also. The Contractor shall prepare, and keep up-to-date, a complete set of "as-built" records of the execution of the Works, showing the exact "as-built" locations, sizes and details of the Works as executed, with cross references to relevant specifications and data sheets. These records shall be kept on the Site and shall be used exclusively for the purposes of this Sub-Clause. Six copies shall be submitted to the Engineer prior to the commencement of the Tests on Completion. In addition, the Contractor shall prepare and submit to the Engineer "as-built drawings" of the Works, showing all Works as executed. The drawings shall be prepared as the Works proceed, and shall be submitted to the Engineer for his inspection. The Contractor shall obtain the consent of the Engineer as to their size, the referencing system, and other pertinent details.</p> <p>Prior to the issue of any Taking Over Certificate, the Contractor shall submit to the Engineer one microfiche copy, one full-size original copy and six printed copies of the relevant "as-built drawings", and any further Construction and/or Manufacture Documents specified in the Employer's Requirements. The Works shall not be considered to be completed for the purposes of Taking Over under Sub-Clause 9.1 until such documents have been submitted to the Engineer.</p> |
| Operation and Maintenance Manuals | 5.7 | <p>Prior to commencement of the Tests on Completion, the Contractor shall prepare, and submit to the Engineer, Operation and Maintenance Manuals in accordance with the Employer's Requirements and in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair the Works. The Works shall not be considered to be completed for the purposes of Taking Over under Sub-Clause 9.1 until such Operation and Maintenance Manuals have been submitted to the Engineer and received his consent.</p> |
| Intellectual Property Rights and Royalties | 5.8 | <p>The Contractor shall indemnify the Employer and the Engineer from and against all claims and proceedings on account of infringement (or alleged infringement) of any patent rights, registered designs, copyright, design, trademark, trade name, know-how or other intellectual property rights in respect of the Works, Contractor's Equipment, machines, work method, or Plant, or Materials, or anything whatsoever required for the Works and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in</p> |

relation thereto. The Contractor shall pay all traffic surcharges and other royalties, licence fees, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials, machine, process, systems, work methods, or Contractor's Equipment required for the Works. The Contractor shall, in the event of infringement of Intellectual Property Rights, rectify, modify or replace at his own cost the Works, Plant or materials or anything whatsoever required for the Works so that infringement no more exist or in the alternative shall procure necessary rights/license so that there is no infringement of Intellectual Property Rights.

The Contractor shall be promptly notified of any claim under this Sub- Clause made against the Employer. The Contractor shall, at his cost conduct negotiations for the settlement of such claim, and any litigation or arbitration that may arise from it. The Employer or the Engineer shall not make any admission which might be prejudicial to the Contractor, unless the Contractor has failed to take over the conduct of the negotiations, litigation or arbitration within a reasonable time after having been so requested. In the event of Contractor failing to act at Engineer's notice, the Employer shall be at full liberty to deduct any such amount of pending claim from any amount due to the Contractor under this Contract or any other Contract.

Insofar as the patent, copyright or other intellectual property rights in any Plant, Design Data, plans, calculations, drawings, documents, Materials, know-how and information relating to the Works shall be vested in the Contractor, the Contractor shall grant to the Employer, his successors and assignees a royalty-free, non-exclusive and irrevocable licence (carrying the right to grant sub-licences) to use and reproduce any of the works, designs or inventions incorporated and referred to in such Plant, documents or Materials and any such know-how and information for all purposes relating to the Works (including without limitation the design, manufacture, installation, reconstruction, Testing, commissioning, completion, reinstatement, extension, repair and operation of the Works). If any patent, registered design or software is developed by the Contractor specifically for the Works, the title thereto shall vest in the Employer and the Contractor shall grant to the Employer a non-exclusive irrevocable and royalty-free licence (carrying the right to grant sub-license) to use, repair, copy, modify, enhance, adapt and translate in any form such Software for his own use.

If the Contractor uses proprietary software for the purpose of storing or utilising records the Contractor shall obtain at his own expense the grant of a licence or sub-licence to use such software in favour of the Employer and shall pay such licence fee or other payment as the grantor of such licence may require provided that the use of such software under the licence may be restricted to use relating to the design, construction, reconstruction, manufacture, completion, reinstatement, extension, repair and operation of the Works or any part thereof.

The Contractor's permission referred to above shall be given, inter alia, to enable the Employer to disclose (under

conditions of confidentiality satisfactory to the Contractor programmes and documentation for a third party to undertake the performance of services for the Employer in respect of such programmes and documentation.

If any software is developed under the Contract or used by the Contractor for the purposes of storing or utilising records over which the Contractor or a third party holds title or other rights, the Contractor shall permit or obtain for the Employer (as the case may require) the right to use and apply that Software free of additional charge (together with any modifications, improvements and developments thereof) for the purpose of the design, manufacture, installation, reconstruction, testing, commissioning, completion, reinstatement, extension, repair, modification or operation of the Works, or any part thereof, or for the purpose of any Dispute.

The Employer reserves the right to use other Software on or in connection with the Works.

Engagement of 6

STAFF AND LABOUR

staff and Labour 6.1

The Contractor shall make his own arrangements for the engagement of staff and labour at his own cost.

Rates of Wages and Conditions of Labour 6.2

Full compliance of statutory requirements apart, the Contractor shall pay rates of wages and observe conditions of labour not less favourable than those Conditions of established for the trade or the industry where the work is carried out.

The Contractor shall make himself aware of all labour regulations and their impact on the cost and build up the same in the Contract Price. During the Contract Period no extra amount in this regard shall be payable to the Contractor, for whatsoever reason including any revision of rates payable to the labour due to revision of rates payable in Minimum Wages Act.

Labour provided by the Contractor, either directly or through sub- contractors, for the exclusive use of the Employer or the Engineer, shall, for the purpose of this Sub-Clause, be deemed to be employed by the Contractor. In the event of default being made in the payment of any money in respect of wages of any person employed by the Contractor or any of its sub-contractors of any tier in and for carrying out of this Contract and if a claim therefore is filed in the office of the Labour Authorities and proof thereof is furnished to the satisfaction of the Labour Authorities, the Employer may, failing payment of the said money by the Contractor, make payment of such claim on behalf of the Contractor to the said Labour Authorities and any sums so paid shall be recoverable by the Employer from the Contractor.

Persons in the service/ retired of Employer/ Engineer 6.3

a) The Contractor shall not recruit or attempt to recruit, staff and labour from amongst the Employer and the Engineer's personnel.

b) The Contractor either at the tendering stage or during construction stage will not employ any retired employee of

Employer or Engineer of the Employer in any capacity unless such employee has completed at least two years post retirement period or has obtained the no-objection certificate from Employer for being employed with the Contractor. It will be responsibility of the Contractor to collect the Employer's no objection certification from such retired employee and submit the same back to the Employer. In case of noncompliance of above, in addition to any or several of the courses, referred in Sub-clauses 13.2 being adopted by the Employer the Contractor on Termination of the Contract for the aforesaid reasons will have no claim whatsoever against the Employer except for actual value of the Work executed till the time of Termination.

Labour Laws

6.4

a) In dealing with labour and employees, the Contractor and his Sub- Contractors (including piece rate and petty Contractors) shall comply fully with all laws and statutory regulations pertaining to engagement, payment and upkeep of the labour in India.

b) The Contractor shall have a Labour Welfare Organisation which shall be responsible for labour welfare and compliance with prevalent labour laws, statutes and guidelines. In this context the Contractor is also required to familiarize himself with MMRDA's Labour Welfare Fund Rules as specified in Special Conditions of Contract or elsewhere in the contract and comply with the same.

c) The Contractor shall prepare and submit compliance reports of adherence to labour laws as and when desired by the Engineer.

d) The Contractor will ensure to open bank accounts for each worker employed by him and his sub-contractors and all the payments to workers will be released through bank accounts.

e) The violation of Labour Laws viz. Contract Labour (Regulation & Abolition) Act, 1970 & Central Rules, 1971 made there under or other applicable Labour Laws under the jurisdiction shall attract following penalties in addition to the penalties imposed by Statutory Authorities in terms of applicable Act/Rules :-

i) Delay in payment of dues to any workmen: 100/- per day per workman.

ii) Non- compliance(s) of other provision of laws, pointed out Employer/ Engineer or representative: 5000/- for each compliance informed writing under the decision of Engineer with regard to the merits of imposition of penalty, determination of non-compliance and amount of penalty shall be final and binding on Contractor. The 'Contract' under this sub-clause shall include any workmen employed by contractor working within premises of Works at Employer's establishment whether directly or through Sub-Contractor etc.

f) The contractor shall ensure the registration of all his eligible workers (inclusive of sub-contractors and petty contractors) with BOCW Board.

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| Working Hours | 6.5 | The Contractor, if required, shall carry out work during night hours or in shifts, Hours unless specifically provided otherwise in the Contract. No increase in rates or extra payments shall be admissible for night work. The Contractor shall provide adequate lighting and safety arrangements. |
| Facilities for Staff and Labour | 6.6 | The Contractor shall provide and maintain at his own expense, all necessary accommodation and welfare facilities as per prevailing labour & welfare laws for Labour his (and his Sub- contractor's) staff and labour. This includes good practices like provision of temporary crèche (Bal Mandir) where 50 or more women are employed at a time. All accommodation shall be maintained in a clean and sanitary condition, by the Contractor at his cost. |
| Health and Safety | 6.7 | <p>Precaution shall be taken by the Contractor to ensure the health and safety of his Safety staff and labour. The Contractor shall, in collaboration with and to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as per the Engineer's requirement and will ensure complete compliance with relevant clauses of Employer's Health, Safety and Environment Manual (SHE Manual).</p> <p>The Contractor's Site Safety Plan shall be developed from his Outline Safety Plan as per Employer's Requirements and SHE Manual of the Employer. The Contractor shall appoint a member of his staff at the Site to be responsible for maintaining the safety, and protection against accidents, of personnel on the Site. This person shall be qualified for his work and shall have the authority to issue instructions and take protective measures to prevent accidents.</p> |
| Contractor's Superintendence | 6.8 | <p>The Contractor shall employ (or cause to be employed) only persons who are careful and appropriately qualified, skilled and experienced in their respective trades or occupations. The Engineer may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative, who in the opinion of the Engineer:</p> <ul style="list-style-type: none"> a) persists in any misconduct, b) is incompetent or negligent in the performance of his duties, c) fails to conform with any provisions of the Contract, or <p>persists in any conduct which is prejudicial to safety, health, or the protection of the environment.</p> |
| Preservation of Peace and orderly conduct | 6.9 | |
| | 6.9.1 | The Contractor shall be responsible for preservation of peace and orderly conduct at the site and its neighbourhood by |

Contractor's employees, Representatives, petty contractors, Sub Contractors etc. In case, deployment of a Special Police Force, becomes necessary at or near Site, during the tenure of Works, the expenses for the same shall be borne by the Contractor.

The Contractor shall at all times take all reasonable precautions which will include that no labour or employee is permitted to work at site in an intoxicated state or under influence of drugs, to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour, and to preserve peace and protection of persons and property in the neighbourhood of the Works against such conduct.

Labour to be Contractor's Employee **6.10**

If, the Contractor directly or through petty contractors or Sub-Contractors supplies any labour to be used wholly or partly under the direct orders and control of the Engineer or the Employer, whether in connection with any work being executed by the Contractor or otherwise for the purposes of the Employer, such labour shall, for the purpose of this clause, be deemed to be persons employed by the Contractor.

Report of Accidents to Labour **6.11**

The Contractor shall be responsible for safety of all employees, employed by him on Works, directly or through petty contractors or Sub-Contractors, and shall report accidents to any of them, however, and wherever occurring on Works, to the Engineer or the Engineer's Representative, and shall make every arrangement to render all possible assistance and to provide prompt and proper medical attention. The compensation for affected Workers or their relatives shall be paid by the Contractor in such cases with utmost expeditious in accordance with the Workmen's Compensation Act.

Claim on account of violation of Labour laws **6.12**

The Contractor shall be solely accountable for violation of any labour law by it, its petty contractors or Sub Contractors and will pay any such claim/damage to the authorities forthwith on demand. If any moneys shall, as a result of any instructions, directions or decisions from the Authorities or claim or application made under any of the labour laws or regulations, be directed to be paid by the Employer, such moneys shall be deemed to be moneys payable to the Employer by the Contractor and he will pay the same to the Employer forthwith on demand, without demur and without asking for any reasons/explanations from the Employer. On failure of the Contractor to repay the Employer any moneys paid or to be paid by it as aforesaid within seven days after the same shall have been demanded, the Employer shall be entitled to recover the amount from any moneys due or accruing to the Contractor under this or any other Contract with the Employer.

Manner of Execution

7
7.1

QUALITY CONTROL

All Plant, goods, and Materials to be supplied shall be manufactured, and all work to be done shall be executed, in the manner set out in the Contract. Where the manner of manufacture and execution is not set out in the Contract, the work shall be executed in a proper, workmanlike and careful manner, with properly equipped facilities and non-hazardous Materials, and in accordance with modern recognized good

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| | | practice. |
| | 7.2 | Sources of Materials being supplied shall be intimated to the Engineer and are subject to his approval. Materials that are not specified in the Contract document shall conform to the relevant Indian Standards or in their absence conform to any International Standard approved by the Engineer. Save as otherwise expressly provided in the contract, samples shall be supplied by the Contractor at his own cost. |
| Delivery to Site | 7.3 | The Contractor shall be responsible for procurement, transport, receiving, unloading and safe keeping of all Plant, Rolling Stock, construction, Materials, Contractor's Equipment and other things required for the completion of the Works. |
| Inspection | 7.4 | <p>The Employer and the Engineer shall at all reasonable times</p> <ol style="list-style-type: none"> have full access to all parts of the Site and to all places from which natural materials are being obtained, and during production, manufacture, fabrication and construction (at the site and elsewhere) be entitled to inspect, examine, measure and test the materials and workmanship, and to check the progress of manufacture, of all Plant, goods, construction and Materials to be supplied under the Contract. |
| Testing | 7.5 | <p>This sub clause shall apply to all tests specified in the Contract, other than the Tests after Completion.</p> <p>The Contractor shall provide all documents and other information necessary for all types of testing and such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as are necessary to carry out such tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the testing of any Plant, goods, Materials and other parts of the Works as specified in the Contract. The employer/Engineer may instruct the contractor for any additional test, at employer's cost.</p> <p>The Engineer shall give the Contractor not less than 24 hours' notice of his intention to attend the tests.</p> <p>If the Engineer does not attend at the time and place agreed, or if the Contractor and the Engineer agree that the Engineer shall not attend, the Contractor may proceed with the tests, unless the Engineer instructs the Contractor otherwise. Such tests shall be deemed to have been made in the Engineer's presence. The Contractor shall promptly forward to the Engineer duly certified reports of the tests. If the Engineer has not attended the tests, he shall accept the readings as accurate. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. The expense of conducting such Tests shall be borne by the Contractor. No such testing shall relieve the Contractor from any obligation or responsibility.</p> |
| Rejection | 7.6 | (i) If, as a result of inspection, examination or testing, any Plant, goods, Material, design or workmanship is found to be defective or |

otherwise not in accordance with the Contract, the Engineer may reject the same and by giving notice to the Contractor with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item after rectification complies with the Contract.

(ii) If the Engineer requires such Plant, goods, Material, design or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If such rejection and retesting cause the Employer to incur additional costs, such costs shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any sum due, or to become due, to the Contractor.

(iii) Notwithstanding any previous Test or certification, the Engineer shall have the authority to instruct the Contractor: -
a. To remove from the Site and replace any plant or Materials which is not in accordance with the Contract.

b. To remove and re-execute any other work which is not in accordance with the Contract.

c. Execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.

(iv) In case of default on the part of the Contractor in carrying out such order, the Employer shall be entitled to employ and pay other parties, to carry out the same, and all expenses consequent thereof or incidental thereto, shall be recoverable from the Contractor or may be deducted by the Employer from any sum which may be due to the Contractor.

**Liability after
Inspection and
Testing**

7.7

The Contractor shall not be released from any liability or obligation under the Contract by reason of any such inspection or testing or witnessing of testing, or by the submission of reports of inspection or testing to the Engineer.

**Ownership of Plant
and Materials**

7.8

Each item of Plant, goods, and Material shall become the property of the Employer, when it is delivered to Site or payment thereof, either in part or full, has been made. The Contractor shall however continue to bear the risk in respect of such items which continue to remain in his custody.

**Cost of Employer's
Attendance
Including Travel**

7.9

The Employer shall bear the costs of attendance including travel by the Employer or his Representative for the purposes of Sub-Clauses 7.4 and 7.5 above. The cost of attendance including travel by the Employer, Engineer or his Representative for the purpose of Sub-clause 7.6 shall be borne by the Contractor.

**Covering up of
works**
**Examination of
work before
covering up**

7.10

7.10.1

No work or part of work shall be covered up or put out of view, without the prior approval of the Engineer or the Engineer's Representative.

**Cost of uncovering
the work already
covered up**

7.10.2

The Contractor shall uncover any part or parts of the Works, or make openings in or through the same, as the Engineer may from time to time direct, and shall reinstate and make good such part or parts, to the satisfaction of the Engineer. If any such part or parts have been covered up, or put out of

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| | | view after compliance with the requirement of Sub-clause 7.11.4 and the Works are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating and making good the same, shall be borne by the Employer, but if the Works are found to be defective, costs shall be borne by the Contractor. In case after completion of a part of the Work, the part of Work is not fully consistent with the Employer's Requirements and there is no way to change the same, in that case, the same (provided it has no implication on safety and operation) shall be accepted only at a Contractor's deemed variation at lower negotiated price. The decision of the Engineer in this regard shall be final and binding on the Contractor. |
| Tests after Completion | 7.11 | |
| Contractor's Obligations | 7.11.1 | <p>7.11.1 The Contractor shall carry out the Tests on Completion at his own cost in accordance with the Contract after providing the documents in accordance with Sub-Clauses 5.4 and 5.5. The Contractor shall give, to the Engineer, 21 days' notice of the date after which the Contractor will be ready to carry out the Tests on Completion. Unless otherwise agreed, such Tests shall be carried out within 14 days after this date, on such day or days as the Engineer shall instruct. Unless otherwise stated in Special Conditions of Contract, the Tests on Completion shall be carried out in the following sequence:</p> <p>a) pre-commissioning test, which shall include appropriate instructions and ("dry" or "cold") functional tests to demonstrate that each item of the Plant, goods and Work can safely undertake the next stage</p> <p>b) Commissioning Test shall include the specified operational tests to demonstrate that Works or Sections can be operated safely and as specified under all available operating condition</p> <p>c) trial operation which shall demonstrate that the Works or Section perform reliably and in accordance with the Contract: The Contractor at his cost shall arrange all tools, equipments, gadgets, facilities or as deemed necessary by the Engineer for such tests, In considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed the Tests on Completion described in sub-paragraphs (a), (b) or (c), the Contractor shall provide the Engineer and the Employer with a certified report of the results of all such Tests.</p> |
| Delayed Tests | 7.11.2 | <p>If the Engineer opines that Tests on Completion are being unduly delayed by the Contractor, the Engineer may by notice require the Contractor to carry out such Tests within 21 days after the receipt of the notice. The Contractor shall carry out such Tests on such day or days as the Contractor may fix and of which he shall give notice to the Engineer.</p> <p>If the Contractor fails to carry out the Tests on Completion within 21 days, the Engineer may proceed with such Tests at the risk and cost of the Contractor. The Tests on Completion then shall be deemed to have been carried out in the presence of the Contractor and the results of such Tests shall</p> |

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| | | be accepted as accurate. |
| Retesting | 7.11.3 | If the Works, or a part thereof, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.6 "Rejection" shall apply, and the Engineer or the employer may require such failed Tests, and the Tests on Completion on any related work, to be repeated under the same terms and conditions. |
| Failure to Pass Tests on Completion | 7.11.4 | <p>If the Works, or a part thereof, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 7.11.4, the Engineer shall be entitled to:</p> <p>a. order further repetition of Tests on Completion under Sub-Clause 7.11.4;</p> <p>b. reject the Works, or a part thereof, or a Section (as the case may be), in which event the Employer shall have the same remedies against the Contractor as are provided under Clause 13; or</p> <p>c. issue a Taking Over Certificate, if the Employer so requires. The Contract Price shall then be reduced by such amount as determined by the Engineer and as shall be appropriate to cover the reduced value to the Employer as a result of this failure. The Contractor shall then proceed in accordance with his other obligations under the Contract.</p> |
| Integrated testing and system commissioning | 7.12 | |
| Integrated Testing | 7.12.1 | Tests on Completion shall also include Integrated Testing where applicable as per the contract conditions. The Contractor shall, following satisfactory completion of tests on his works, equipment, sub-systems or system, perform, at the direction of the Engineer, programme of tests to verify and confirm the compatibility and complete performance of his works, equipment, sub-systems or system with the works, equipment, sub-systems or system provided by others. |
| Compilation of Test Results | 7.12.2 | The results of the Integrated Testing and Commissioning shall be compiled and evaluated by the Engineer and the Contractor. |
| Retesting | 7.12.3 | If the Works, or a part thereof, or a Section, fail to pass the Integrated Testing and Commissioning, the Engineer shall require such failed Tests, to be repeated under the same terms and conditions. If such failure and retesting result from a default of the Contractor and cause the Employer to incur additional costs, the same shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due, or to become due, to the Contractor. |
| Failure to Pass Test | 7.12.4 | If the Works, or a part thereof, or a Section, fail to pass Integrated Testing and Commissioning and the Contractor in consequence proposes to make any adjustment or modification to the Works or a part thereof, or a section, the Engineer may, with the approval of the Employer, instruct the Contractor to carry out such adjustment or modification, at his own cost and to satisfy the requirements of Integrated Testing and Commissioning within such time as the Employer / |

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| | | Engineer may deem to be reasonable. |
| Statutory Requirements | 7.12.5 | The Contractor along with others shall carry out all statutory tests and trials, under the supervision of the Engineer, necessary for obtaining sanction of the competent authority for opening the system for public carriage of passengers. |
| Commencement of works | 8 8.1 | <p>TIME MANAGEMENT</p> <p>The Contractor shall commence the Works on the date specified in the Letter of Acceptance or if no date is specified in the Letter of Acceptance, on the date specified in an instruction in writing to that effect from the Engineer (Notice to Proceed). Thereafter the Contractor shall proceed with due diligence, without delay, and in accordance with the programme or any revised or modified programme of the Works. Time will be the essence of Contract and time for Completion shall run from the date the Contractor is to commence the Works under this Clause.</p> <p>The Contractor shall not commence the construction, manufacture or installation of the Works or of any part of the Works unless and until the Engineer has endorsed the relevant Working Drawings in accordance with the Employer's Requirements.</p> |
| Time for Completion | 8.2 | Time is the essence of Contract and will remain so at all times during the pendency of the Contract including the extended period of Contract. The Contractor shall ensure defect free completion and have passed the tests on the completion, including integrated testing where ever in the scope of work and commissioning of the whole of the Works and/or parts thereof before the same is taken over by the Employer. |
| Delay | 8.3 | <p>In case of delay on the part of the Contractor, the Contractor shall be liable to pay liquidated damages and any other compensation for the damages suffered by the Employer as per clause 8.5. This is without prejudice to the right of the Employer to rescind the Contract.</p> <p>Failure or delay by the Employer or the Engineer, to hand over to the Contractor the Site necessary for execution of Works, or any part of the Works, or to give necessary notice to commence the Works, or to provide necessary Drawings or instructions or clarifications or to supply any material, plant or machinery, which under the Contract, is the responsibility of the Employer, shall in no way affect or vitiate the Contract or alter the character thereof; or entitle the Contractor to damages or compensation thereof but in any such case, the Engineer shall extend the time period for the completion of the Contract, as in his opinion is / are reasonable.</p> |
| Extension of Time for Completion | 8.4 | |
| Extension of Time | 8.4.1 | <p>The Contractor may apply for an extension of the Time for Completion if the Work is or will be delayed either before or after the Time for Completion by any of the following causes:</p> <p>a. "Force Majeure" referred to in Clause 16</p> <p>b. The Contractor's work held up for not being given possession of or access to the Site in accordance with the Contract</p> |

c. Instruction of the Engineer to suspend the Works and the Contractor not being in default as to reasons of suspension.

d. Acts or omissions of other Designated Contractors in executing work not forming part of this Contract and on whose performance, the performance of the Contractor necessarily depends.

e. Any act of prevention or Breach of Contract by the Employer and not mentioned in this Clause

f. Any order of Court restraining the performance of the Contract in full or in any part thereof

g. Any other event or occurrence which, according to the Employer is not due to the Contractor's failure or fault, and is beyond his control without Employer being responsible for the same.

h. An Employer's Variation

However, the Contractor shall not be entitled to any extension of time where the instructions or acts of the Employer or the Engineer are necessitated by or intended to cure any default of or breach of Contract by the Contractor or where any delay is due to

a. the failure of sub-contractor, to commence or to carry out work in due time,

b. non-availability, or shortage of Contractor's equipment, labour, utility services, Plant and Materials,

c. inclement weather conditions, and

d. the Contractor not fulfilling his obligations under Sub-Clause 4.4.

If the Contractor considers himself to be entitled to an extension of time for Completion, he shall give notice to the Engineer of such intention as soon as possible and in any event within 28 days of the start of the event giving rise to the delay and full and final supporting details of his application within 21 days of the last day of delay, together with any notice required by the Contract and relevant to such Clause.

The Engineer shall proceed in accordance with Sub-Clause 3.5 to agree or determine either prospectively or retrospectively such extension of the Time for Completion as may be due. The Engineer shall notify the Contractor accordingly. The extension of time including that of key date shall not entitle the contractor to retain the advance which shall be governed by Clause 11.2.

Extension of time for completion for other reasons 8.4.2

The Contractor shall not be entitled to an extension of time by reason of any delay to any activity in the carrying out of the Works unless in the opinion of the Engineer such delay results in or may be expected to result in a delay to completion of the Works, or achievement of any Stage by the relevant Key Date. Whether or not the Contractor fails to

achieve any Milestone by reason of any delay shall not by itself be material to the Contractor's entitlement to an extension of time.

**Extension of time
for delays due to
Contractor**

8.4.3

If the delay in the completion of the whole Works or a portion of the Works, for which an earlier completion period is stipulated, is due to the Contractor's failure or fault, and the Engineer is of the view that the remaining Works or the portions of Works can be completed by the Contractor in a reasonable and acceptable short time, then, the Engineer may allow the Contractor extension or further extension of time at its discretion with or without liquidated damages, for completion, as he may decide.

**Liquidated
Damages for Delay**

8.5

Time is the essence of the Contract. Appendix to the Form of Tender shall include in respect of the Works and in respect of any Stage, a percentage of the total contract value which will be recoverable from the Contractor as liquidated damages for delay in completion of the Works or in achievement of a stage by a particular Key Date. The total amount of liquidated damages in respect of the Works in all stages shall, however, not exceed the limit of liquidated damages stated in the Appendix to the Form of Tender. The aforesaid liquidated damages do not, however, include the sums payable by the Employer to Designated Contractors on account of delay caused by the Contractor to Designated Contractors which sums shall be recoverable from the Contractor in addition to any liquidated damages payable under this clause, the total ceiling limit of which is 15% of the contract value including liquidated damages levied under the provision of Appendix 1 to the Form of Tender.

The liquidated damages are recovered by the Employer from the Contractor for delay and not as penalty.

The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any sum due, or to become due, to the Contractor.

In the event of an extension of time being granted under Sub-Clause 8.3, the amount due under this Sub-Clause shall be recalculated accordingly, and any over-payment refunded. The payment or deduction of such damages shall not relieve the Contractor from his obligations to complete the Works, or from any other of his duties, obligations or responsibilities under the Contract.

The Contractor shall use and continue to use his best endeavours to avoid or reduce further delay to the Works, or any relevant Stages.

At any time after the Employer has become entitled to liquidated damages, the Engineer may give notice to the Contractor under Sub-Clause 13.1, requiring the Contractor to complete the Works within a specified reasonable time. Such action shall not prejudice the Employer's entitlements to recovery of liquidated damages, under this Sub-Clause and to terminate under Sub-Clause 13.2.

The decision of the Engineer as to the compensation payable by the Contractor under this Clause shall be final and binding.

Rate of Progress 8.6

If for any reason which does not entitle the Contractor to an extension of time, the rate of progress of the Works is at any time, in the opinion of the Engineer, too slow to ensure timely completion of the Works or achievement of any Stage by the relevant Key Date the Engineer may so notify the Contractor in writing. The Contractor shall thereupon take such steps as are necessary, or in default of taking such steps, shall take such steps as the Engineer may reasonably instruct in writing, to expedite progress so as to complete the Works or any Section in time or achieve any Stage by the relevant Key Date. The Contractor shall not be entitled to any additional payment for taking such steps.

If any steps taken by the Contractor in meeting his obligations under this Sub Clause cause the Employer to incur additional costs, such costs shall be recoverable from the Contractor by the Employer, and shall be deducted by the Employer from any sum due, or to become due, to the Contractor.

If, in the opinion of the Engineer, the steps taken by the contractor to expedite the progress are not adequate, the Engineer may take a recourse as per Clause 13.2.4 of this GCC.

Suspension of Work 8.7

The Engineer may at any time instruct the Contractor to suspend progress of part or all of the Works. During suspension, the Contractor shall protect, store and secure such part or whole of the Works against any deterioration, loss or damage.

Consequences of Suspension 8.8

The Contractor shall not be entitled to extra cost (if any), incurred by him, during the period of suspension of Work., if such suspension is

- a. provided for in the Contract, or
- b. necessary for proper execution of Works or by reasons of weather condition or by some default on the part of the Contractor, or
- c. necessary for the safety of Works or any part thereof or
- d. necessary for the safety of adjoining public or other property or safety of the public or workmen or those who have to be at the site or
- e. to ensure safety and to avoid disruption of traffic and utilities, as also to permit fast repairs and restoration of any damaged utilities,

If suspension is ordered by the Engineer for reasons other than those mentioned in sub-clause 8.8 then the Contractor's entitlement are in the table below:

| Suspension Period | Extension of Time | Compensation for the suspension period | Remarks |
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| Upto 14 days | NO | NO | Engineer may, at his sole discretion, give extension of time in |

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| | | | exceptional circumstances |
| 15 – 30 days | YES | NO | Extension of time as considered proper by the Engineer |
| Above 30 days | YES | <ul style="list-style-type: none"> As per Daily rate of wages for idle labour/ employees 70% of the rate hire charges for idle plant and machinery (excluding cost of fuel and lubricants) 15% above all these items to cover overhead costs | Compensation as assessed By the Engineer on Submission of documentary proof by the Contractor to Engineer's satisfaction |
| Above 90 days If contractor asks for fore closure | NO | As per Clause 13.3.4 | Contractor may ask for closure of the contract, or deletion from the Contract of that part of works which has been suspended |

Resumption of Work 8.9

After receipt of permission or of an instruction to proceed, the Contractor shall, after notice to the Engineer, and together with the Engineer, examine the Works, Plant, Rolling Stock and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works, Plant, Rolling Stock and Materials, which has occurred during the suspension.

9

EMPLOYER'S TAKING OVER

Taking Over Certificate 9.1

The Works shall be taken over by the Employer when they have been completed in accordance with the Contract, have passed the Tests on Completion, including Integrated Testing and Commissioning where ever applicable as per the contract, and a Taking Over Certificate for the Works shall be issued. If the Works are divided into Sections, the Contractor shall be entitled to apply for a Taking Over Certificate for each Section.

The Contractor may apply by notice to the Engineer for a Taking-Over- Certificate not earlier than 14 days before the works or section (as the case may be) will, in the Contractor's opinion, be complete and ready for taking over. The Engineer shall, within 28 days after the receipt of the Contractor's application shall conduct a complete joint survey of the works including carrying out any tests prescribed in the contract and prepare a list of effects and outstanding works and:

a) issue the Taking Over Certificate to the Contractor, stating the

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| | | <p>date on which the Works or Section were completed, including the Tests on Completion and Integrated Testing and Commissioning where ever applicable as per the contract in accordance with the Contract if defects and/or outstanding works are minor that does not affect the use and safety of the Works or Section for their intended purposes. The list of such works alongwith the target date of completion for each work shall be enclosed with the taking over certificate and completion of all these works /rectification of defects within the stipulated time shall be the responsibility of the contractor and any failure in it may be considered a reason by the Engineer to cancel the taking over certificate issued earlier; or</p> <p>b) reject the application, giving his reasons and specifying the work required to be done by the Contractor to enable the Taking Over Certificate to be issued. The Contractor shall then complete such work before issuing a further notice under this Sub-Clause.</p> |
| Taking over of Parts of the Works | 9.2 | <p>The Engineer may, at the sole discretion of the Employer issue a Taking Over Certificate for any part of the Permanent Works by following the procedure stipulated in Clause 9.1 above if:</p> <p>a. the Employer uses that part of the Works for revenue service before the Taking Over Certificate is issued for the entire work.</p> <p>b. the balance part is not completed not due to the fault of the contractor and contractual date of completion for the completed part is over.</p> |
| Completion of Outstanding Work and Remedying Defects | 10 10.1 | <p>DEFECTS LIABILITY</p> <p>“Defects Liability Period” shall mean the defects liability period stated in the Special Conditions of Contract calculated from the date of taking over of the Works. Provided that, if any part of the Works or sub-systems or component of that part has been replaced, renewed or repaired except minor repair, the “Defects Liability Period” in respect of that part or sub-system or components of that part shall start from the date such replacement, renewal or repair has been completed to the satisfaction of the Engineer.</p> <p>In order that the Construction and/or Manufacture Documents and the Works shall be in the condition required by the Contract (fair wear and tear excepted) at, or as soon as practicable after the expiry of the Contract Period, the Contractor shall execute all such work of amendment, reconstruction, and remedying defects or damage, as may be instructed in writing by the Employer or the Engineer during the Defect Liability Period.</p> |
| Cost of Remedying Defects | 10.2 | <p>All work referred to in Sub-Clause 10.1 shall be executed by the Contractor at his own cost, if the necessity for such work is due to:</p> <p>a) the design of the Works.</p> <p>b) Plant, Rolling Stock, Materials or workmanship not being in accordance with the Contract;</p> <p>c) or failure by the Contractor to comply with any of his other obligations. If in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an adjustment to the</p> |

Contract Price, with the approval of the Employer, and shall notify the Contractor accordingly. In this event, Sub-Clause 12.3 shall apply to such work.

Extension of Contract Period **10.3**

The Contract Period shall be extended by a period, after the Works are taken over, during which the Works or any Section or item of Plant, Rolling Stock, cannot be used, for the purposes for which they are intended, by reason of a defect or damage.

When delivery of Plant, Rolling Stock, and/or Materials, or erection of Plant, or installation of Materials, has been suspended under Sub-Clause 8.7, the Contractor's obligations under this Sub-Clause shall not apply to any defects or damage occurring more than three years after the Plant, Rolling Stock and/or Materials would otherwise have been delivered, erected and taken over.

Failure to Remedy Defects **10.4**

If the Contractor fails to remedy any defect or damage within such time as the Employer / Engineer may deem to be reasonable, the Employer or the Engineer may fix a date on or by which to remedy the defect or damage, and give the Contractor reasonable notice of such date. If the Contractor fails to remedy the defect or damage by such date and the necessity for such work is due to a cause stated in Sub-Clause 10.2(a), (b) or (c), the Employer may (at his sole discretion):

a) carry out the work himself or by others, in a reasonable manner and at the Contractor's risk and cost, but the Contractor shall have no responsibility for such work: the costs incurred by the Employer in remedying the defect or damage shall be recoverable from the Contractor by the Employer;

b) require the Engineer to determine and certify a reasonable reduction in the Contract Price; or

c) if the defect or damage is such that the Employer has been deprived of substantially the whole of the benefit of the Works or parts of the Works, terminate the Contract in respect of such parts of the Works as cannot be put to the intended use, the Employer shall then be entitled to recover all sums paid for such parts of the Works together with the cost of dismantling the same, clearing the Site and returning Plant, Rolling Stock and Materials to the Contractor, and Sub-Clause 13 shall not apply.

Removal of Defective Work **10.5**

If the defect or damage is such that it cannot be remedied expeditiously on the Site and if the Employer gives consent, the Contractor may, remove from the Site for the purposes of repair any part of the Works, which is defective or damaged. This consent may require the Contractor to increase the amount of Performance Security by the full replacement cost of these items or to provide other appropriate security acceptable to the Employer.

Further Tests **10.6**

If the remedying of any defect or damage is such that it may affect the performance of the Works, the Engineer may require that Tests on Completion, including Integrated Testing, be repeated to the extent necessary. The requirement shall be made by notice within 28 days after the defect or damage is remedied. Such Tests shall be carried out in accordance with Clause 7.11

Right of Access **10.7**

Until the Performance Certificate has been issued, the Contractor shall have the right of access to all parts of the Works and to

records of the working and performance of the Works, except as may be inconsistent with any reasonable security restrictions by the organisation responsible for operating the Works.

Contractor to Search **10.8**

The Contractor shall, if required by the Engineer, search for the cause of any defect, under the direction of the Engineer. Unless the defect is one for which the Contractor is liable, the Cost of such search shall be added to the Contract Price.

Performance Certificate **10.9**

The Contract shall not be considered to be completed until the Performance Certificate has been signed by the Engineer and delivered to the Contractor at the end of 'Defect Liability Period, stating the date on which the Contractor completed his obligations related to completion of works and rectification of defects during Defect Liability Period to the Engineer's satisfaction. Only the Performance Certificate shall be deemed to constitute approval of the Works.

Unfulfilled Obligations **10.10**

After the Performance Certificate has been issued, the Contractor and the Employer shall remain liable for the fulfilment of any obligation, which remains unperformed at that time. For the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force.

Emergency defect rectification **10.11**

If any defect or damage is one requiring immediate attention from safety, environmental or operational viewpoint, the Engineer has the authority to proceed with rectification in any manner suitable and deduct such sums from the Contract Price.

11

CONTRACT PRICE AND PAYMENT

The Contract Price **11.1**
Inclusions **11.1.1**
Exclusions

i. Unless otherwise stated in the Special Conditions of Contract the Contract Price, subject any to any adjustment thereto in accordance with the Contract shall be all inclusive (including all taxes, duties, royalties etc.).

ii. Nothing extra shall be payable over the quoted rates, notwithstanding any provision to the contrary in any law for the time being in force, save an except what is specifically provided in General or Special Condition of Contract.

iii. The reimbursement (as per this Sub-clause) of whatsoever nature shall be provided only for Permanent Works. No reimbursement (as per this Sub-clause) shall be provided for Temporary Works and fuel.

Maintaining Records and Availing Exemptions **11.1.2**

i. In the event of exemption of custom duties, excise duties, CST/VAT or any other cess/levy being granted by the Government in respect of the Works, the benefit of the same shall be passed on to Employer. The Contractor shall therefore maintain meticulous records of all the taxes and duties paid and provide the same as and when required by the Employer, so that the Employer is able to avail the reimbursement for which MMRDA may issue a procedure order separately. Alternatively, the Employer may direct the Contractor to get the reimbursements based on exemption certificates / government's order and it shall be obligatory on part of the Contractor to get the reimbursements from the statutory authorities and pass on the benefit to MMRDA.
ii. In case of Contractor's failure in availing the exemptions as stipulated above, the recovery of equivalent amount will be made

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| | | from Contractor's dues. |
| Adjust in Contract Price | 11.1.3 | Adjustment in contract price on account of inflation shall be done only if a "Price Variation Formula" is given in the special conditions of contract otherwise it will be a fixed price contract. |
| Adjustment for Change in Taxes/Duties | 11.1.4 | <p>The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the last date of submission of tender, which affect the Contractor in the performance of obligations under the Contract.</p> <p>If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the last date of submission of tender, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 17.1 <i>[Procedure for Claim]</i> to:</p> <ul style="list-style-type: none"> (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 <i>[Extension of Time for Completion]</i>, and (b) payment of any such Cost, which shall be included in the Contract Price. <p>After receiving this notice, the Engineer shall proceed in accordance with Sub- Clause 3.5 <i>[Engineer to Attempt Agreement]</i> to agree or determine these matters.</p> |
| Advances | 11.2 | <p>Mobilisation Advance shall be generally 5% of original contract value payable in two equal instalments or as mentioned in the Special Conditions of Contract. The first instalment shall be paid after mobilisation has started and next instalment shall be paid after satisfactory utilization of earlier instalment.</p> <p>Mobilisation advance shall be paid interest free against acceptable Bank Guarantee from a scheduled commercial bank in India. The value of Bank Guarantee taken towards security of "Mobilisation advance" shall be 110% of the advance taken by the contractor. The Contractor, once the 50% mobilization advance has been recovered, shall have a one-time option to reduce the Bank Guarantee for the mobilization advance by the amount recovered.</p> |
| Mobilisation Advance | 11.2.1 | <p>Mobilisation Advance shall be generally 5% of original contract value payable in two equal instalments or as mentioned in the Special Conditions of Contract. The first instalment shall be paid after mobilisation has started and next instalment shall be paid after satisfactory utilization of earlier instalment.</p> <p>Mobilisation advance shall be paid interest free against acceptable Bank Guarantee from a scheduled commercial bank in India. The value of Bank Guarantee taken towards security of "Mobilisation advance" shall be 110% of the advance taken by the contractor. The Contractor, once the 50% mobilization advance has been recovered, shall have a one-time option to reduce the Bank Guarantee for the mobilization advance by the amount recovered.</p> |
| Advance | 11.2.2 | Plant and machinery advance shall generally be 5% of original |

against Plant and Machinery

contract value or as specified in Special Conditions of Contract. This advance is payable against plant, equipment and machinery, provided the same have reached the site or in the case of new items meant specifically for the work firm purchase order has been placed and the invoices received. The advance will be given only if the plant/machinery has been purchased for this contract and not for those which are already in the books of the contractor. The plant and machinery shall be valued by the Engineer as follows:

- a. New Items: 80% of purchase price
- b. Used items in working order: 80% of the depreciated value as assessed by the Engineer
- c. Items valued at less than Rs. 25,000 per unit: Not to be considered

The total advance for Plant & Machinery shall be limited to 5%. This shall also be an interest free advance.

Written Request for Advances

11.2.3

Advances as admissible, shall be payable only on Contractor's written request to the Employer.

Recovery of Advances

11.2.4

a) The recovery of Advances shall commence when 20% of the original contract value of the work has been paid and it will be completed by the time 85% of the Original Contract Value has been paid or the original completion date whichever is earlier. As far as possible the recovery of advances shall be limited to 30% of an account bill.

b) No advance shall be given after 40% of the original contract amount has been paid.

c) The contractor shall always have the option to have the recoveries commenced and / or completed earlier, and / or to have recoveries affected in instalments of higher amount and also to repay part or whole of the advance by direct payment rather than through On-account Bills.

d) In case the Contract is terminated due to default of the contractor or rescinded/foreclosed due to any other reason, the contractor shall return the unrecovered amount of all advances within 15 days of issue of notice of termination/rescission/ fore closer of the contract and if the contractor fails to do so due to any reason whatsoever, then interest at an interest rate equal to State Bank of India Basic Rate plus 3% per annum or 12% per annum whichever is higher, shall be charged on the unrecovered amount of such advances from 16th day onwards till the same is returned by the contractor.

Interest in Case of Delay in Repayment of Advances

11.2.5

Should there be delay in the progress and completion of work, as a result of which it is not possible to recover the advance and interest thereon, before the date of completion stipulated in the Contract, then the interest to be charged from the Contractor on the remaining portion of the advance beyond the original completion date specified in the Contract, shall be the State Bank of India Base Rate plus 3% per annum or 12% per annum, whichever is higher.

**Advances to be
Used only for
This Work**

11.2.6

The advances shall be used by the Contractor strictly for the purpose of the Contract, and for the purpose for which they are paid. Under no circumstances, shall the advances be diverted for other purposes. Any such diversion shall be construed as a breach of the Contract and the Contractor shall be asked to return the advance at once and pay interest at 15% per annum till the advance is recovered back from him. The Contractor shall return the advance and pay the interest in one go without demur. Employer retains the right for any other remedy prescribed for breach of Contract in this regard.

The Contractor, if required by the Engineer shall provide the details of utilisation of Mobilization advance.

11.3

11.3.1

Provisional Payment Against Material at Site

A provisional payment on account of main construction materials required for the Permanent Works, shall be paid on request of the Contractor after these materials are brought to Site, against an Indemnity Bond in a form acceptable to Employer is duly executed. The payment shall be limited to 80% of the actual value or assessed value of these materials and the total of such provisional payment on account of construction materials at a time shall be limited to three percent of original contract value or likely average consumption of such materials for three months, whichever is less and at any time the total outstanding provisional payment against material at site shall not exceed four percent of the original control value. The valuation of the average consumption of such main construction materials shall be approved by the Engineer, whose decision shall be final. Materials which are of perishable nature should be adequately insured.

11.3.2

Written Request for Advances/ Provisional Payment against material at site

Advances and provisional payments as admissible, shall be payable only on Contractor's written request to the Employer/Engineer.

11.3.3

Recovery of Advances/ Provisional Payment

a. The recovery of Advances shall commence when 20% of the original Contract Value of the work has been paid and it will be completed by the time of original Date of Completion. As far as possible the recovery of advances shall be limited to 30% of On-account bill.

b. No advance shall be given after 40% of the original contract amount has been paid. However, provisional payment against material at site will continue to be paid as stipulated in Clause 11.3 till end of the contract period.

c. In case of provisional payment against Materials, the amount consumed every month shall be recovered from the next month's on account bill and completing the recovery in 3 monthly instalments. In case recovery could not be made due to any reason, interest will be charged as per Clause 11.2.5

Application for Interim Payment Certificates 11.4

11.4.1 In case of 'Lump Sum' contract with cost centre and Milestone payment, the fixed Lump Sum Price shall be apportioned by the Contractor amongst the various Cost Centres. The amount thus apportioned under each Cost Centre will be further apportioned amongst various Milestones with the approval of the Employer. The Contractor shall be entitled to submit to the Engineer requests for interim payments only upon the achievement of one or more of the Milestones described in the Cost Centre.

At the beginning of each month, the Engineer shall issue to the Contractor certificate in respect of each Milestone due to be achieved in the preceding month stating:

a. the date on which the Milestone was achieved; or

b. the non-achievement of the Milestone.

The Contractor shall submit a statement in three copies to the Engineer at the beginning of each month, in a form approved by the Engineer, showing the amounts to which the Contractor is entitled, together with supporting documents, including Milestone Certificates. The statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

a) the amount due in respect of Milestones certified achieved by the Engineer under each Cost Centre;

b) any amounts to be added and deducted for the advance payments and recovery thereof;

c) any other additions or deductions is due and approved by the Engineer in accordance with the Contract; and

d) the deduction of the amounts certified in all previous Interim Payment Certificates.

The Contractor shall not submit more than one request for interim payment per month.

If any Milestone is not achieved by the end of the month in which it is scheduled to be achieved, the Engineer shall suspend the payment relating to the Cost Centre in which the Milestone is included.

Payments suspended under this Clause shall be resumed by being included in the next application for interim payment made after the Milestone is achieved.

11.4.2 In case of 'Lump Sum' or Item rate' contracts with payment schedule, the contractor shall be entitled to be paid from time to time, normally once in a calendar month, by way of 'on account' bill as per the payment schedule indicated in Bill of Quantity(BOQ) or as finally approved by the Engineer.

Issue of Interim Payment Certificates 11.5

No amount will be certified or paid until the Employer has received, and approved, the Performance security and the parent Company Undertakings and Guarantees in accordance with Sub-Clause 4.2. Thereafter, the Engineer shall, within 21 days of receiving a statement and supporting documents, deliver to the Employer, with a copy to the Contractor, an Interim Payment Certificate showing the amount which the Engineer considers to

be due; if no payment is considered to be due, the Engineer shall promptly notify the Contractor accordingly.

Where only a part of the payment applied for is disputed, payment certificate shall be issued for the undisputed amount.

The Engineer shall have the power to omit from any of the contractor's requests for payment the value of any work executed or Materials supplied or services rendered, with which he may for the time being be dissatisfied and for that purpose and for any other reason which to him may seem proper, may delete, correct or modify the sum(s) previously certified by him as being due to the Contractor.

**Payment-
Interim and
Final**

11.6

Unless otherwise stated in Special Conditions of Contract,

(a) After preliminary scrutiny and certification by the Engineer, payment of 80% of the certified interim amount shall be made by the Employer within 14 days. The amount certified shall account for all deductions, including statutory deductions, recoveries for advances and any amounts due from the Contractor. The balance 20% shall be paid within 28 days, from the date of the preliminary certification of the bill by the Engineer.

(b) Next 80% interim payment shall be made only after 100% payment of preceding interim payment certified has been completed.

(c) the Employer shall pay the amount certified in the Final Payment Certificate within 56 days from the date of issue of the Certificate.

Payments shall be made into a bank account, nominated by the Contractor in Indian rupees in a bank in India unless otherwise permitted in Special Conditions of Contract. If payments are to be made in more than one currency, separate bank accounts may be nominated by the Contractor for each currency, and payments shall be made by the Employer accordingly.

**Statement at
Completion**

11.7

Not later than 60 days after the issue of the Taking Over Certificate for the whole of Works, the Contractor shall submit, to the Engineer, three copies of a statement at completion with supporting documents, showing in detail, in the form approved by the Engineer under Sub-Clause 11.4.:

- (a) the final value of all work done in accordance with the Contract, up to the date stated in such Taking Over Certificate,
- (b) any further sums which the Contractor considers to be due, and
- (c) an estimate of amounts which the Contractor considers will become due to him under the Contract.
- (d) The estimated amounts shall be shown separately in such statement at completion. The Engineer shall certify payment under Sub-Clause 11.5.

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| Application for Final Payment Certificate | 11.8 | <p>Not later than 56 days after the issue of the Performance Certificate, the Contractor shall submit to the Engineer three copies of a draft final statement with supporting documents showing in detail, in a form approved by the Engineer:</p> <p>(a) the value of all work done in accordance with the Contract, and</p> <p>(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.</p> <p>If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the Final Statement as agreed.</p> <p>If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Employer shall pay those parts of the draft final statement as certified by the Engineer as not being in dispute. The remainder of the dispute may then be resolved under Clause 17, in which case the Contractor shall then prepare and submit to the Engineer a Final Statement in accordance with the outcome of the dispute.</p> |
| Discharge | 11.9 | <p>When submitting the final statement, the Contractor shall submit a written discharge which confirms that the total of the Final Statement represents full and final settlement of all monies due to the Contractor under the Contract. Such discharge may state that it shall become effective only after payment due under the Final Payment Certificate has been made and the Performance security referred to in Sub-Clause 4.2 has been returned to the Contractor.</p> |
| Issue of Final Payment Certificate | 11.10 | <p>The Engineer shall issue to the Employer, with a copy to the Contractor, the Final Payment Certificate within 28 days after receiving the Final Statement and written discharge in accordance with Sub-Clause 11.7 and 11.8, stating:</p> <p>(a) the amount which is finally due, and</p> <p>(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled, the balance, if any, due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.</p> <p>If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clauses 11.8 and 11.9, the Engineer shall request the Contractor to do so. If the Contractor fails to make such an application within a period of 28 days, the Engineer shall issue the Final Payment.</p> |
| Cessation of Employer's Liability | 11.11 | <p>In respect of any matter or thing arising out of (or in connection with) the contract or execution of the Works before the issue of the Taking Over Certificate for the whole of the Works, the Employer shall not be liable to the Contractor unless the Contractor shall have included a claim for it in his Statement at</p> |

Completion described in Sub-Clause 11.7. For any such matter or thing arising after the issue of the Taking Over Certificate for the whole of the Works, the Employer shall not be liable to the Contractor unless the Contractor shall have included a claim for it in his Final Statement.

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| Calculation of Payments in Foreign Currency | 11.12 | All payments made by the Employer pursuant to the terms of the Contract shall be in the currency or currencies specified in the Contract. Wherever any sum in a foreign currency has to be converted into Indian Rupees for any purpose, the exchange rate to be employed for such conversion shall be the selling rate of exchange at the close of business of the State Bank of India 28 days before the latest date of submission of Tenders. |
| Round off | 11.13 | In every payment to the Contractor, sums of less than fifty paise shall be omitted and sums of fifty paise and more up to one rupee shall be reckoned as one rupee. |
| Payment By Cheque and E-Payment Tax Deduction at source | 11.14 | All payments to the Contractor will be made by cheque or "E-Payment" as desired by the Employer. |
| Production of Vouchers | 11.15 | Tax deductions will be made at source as per statutory requirement from every payment made to the Contractor at rates notified from time to time. |
| Production of Documents | 11.16 | <p>i. The Contractor shall, whenever required by the Engineer, produce or cause to be produced for examination by the Engineer, any quotation, invoice, cost or other account books, vouchers, receipts, letters, memoranda or any copy of or extract from any such documents and also furnish information and returns, as may be required, relating to the execution of this Contract or relevant for verifying or ascertaining the cost of execution of this Contract or ascertaining the Materials supplied by the Contractor are in accordance with the Specifications laid down in the Contract. The Engineer's decision on the question of relevancy of any documents, information or returns shall be final and binding on the parties.</p> <p>ii. If any part or item of the work is allowed to be carried out by a sub- Contractor, assignee or any subsidiary or allied firm, the Engineer shall have power to secure the books of such sub-Contractor, assignee or any subsidiary or allied firm through the Contractor, and shall have power to examine and inspect the same. The above obligations are without prejudice to the obligations of the Contractor under any statute, rules or orders. educations will be made at source as per statutory requirement from every payment made to the Contractor at rates notified from time to time.</p> |
| Withholding and Lien for Sums Claimed | 11.17 | <p>The Employer shall have lien over all or any moneys that may become due and payable to the Contractor under the Contract, and / or over the deposit of Performance Security or other amount or amounts made under the Contract and which may become payable to the Contractor.</p> <p>And further, unless the Contractor pays and clears immediately on demand any claim of the Employer, the Employer shall at all times be entitled to deduct the amount of the said claim from the moneys, securities and / or deposits which may have become or</p> |

will become payable to the Contractor under these presents, or under any other Contract or transaction whatsoever between the Employer and the Contractor even if the matter stands referred to Arbitration. The Contractor shall have no claim for any interest or damage whatsoever in respect of any amounts withheld or treated as withheld under the lien referred to above and duly notified as such to the Contractor.

Signature On Receipts for Payments **11.18**

Every receipt of payment to Contractor including refund of the Performance Security shall be signed by the person authorized to do so on his behalf. In the event of death of any of the Contractor's partners in case the Contractor is a partnership firm, during the currency of the Contract, it is hereby expressly agreed that every receipt by any one of surviving Contractor's partners, shall, if so signed as aforesaid, be a good and sufficient discharge as aforesaid, provided that nothing in this Clause shall be deemed to prejudice or affect any claim, which the Employer may hereafter have against the legal representatives of any Contractor's partner so dying, for or in respect of breach of any of the conditions of the Contract. Provided also that nothing contained in this clause shall be deemed to prejudice or affect the respective rights and obligations of the Contractor's partners, or of the legal heirs / representatives of any deceased Contractor / partner interest.

Post Payment Audit **11.19**

It is an agreed term of the Contract, that the Employer reserves to himself the right to carry out a post payment audit and / or technical examination of the Works, and the Final bill including all supporting vouchers, abstracts, etc., and to make a claim on the Contractor for the refund of any excess amount paid to him, if as a result of such examination, any over-payment to him is discovered to have been made in respect of any work done or alleged to have been done by the Contractor, under the Contract. If any under-payment is discovered, the same shall be paid by the Employer to the Contractor. Such payments or recoveries, however, shall not carry any interest.

Recovery of money due to the Employer **11.20**

All damages (including, without limitation, liquidated damages), costs, charges, expenses, debts, or sums for which the Contractor is liable to the Employer under any provision of the Contract may be deducted by the Employer from monies due to the Contractor under the Contract (including, without limitation, liquidated damages) and the Employer shall have the power to recover any balance not so deducted from monies due to the Contractor under any other contract between the Employer and the Contractor.

When the Contractor has assigned to a third party the right to receive monies due, or, to become due, under the Contract to the Contractor or charged such monies in favour of a third party, the Employer's right to deduct damages (including without limitation liquidated damages), costs, charges, expenses, debts or sums for which the Contractor is liable to the Employer from monies due to the Contractor under the Contract shall be limited to the right expressed above.

Right to Vary **12**
12.1

Variations

All Variations shall be recorded in a written instruction from the Engineer either as a Contractor's Variation or as an Employer's Variation, and shall not be implemented by the Contractor without

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| | | such an instruction in writing from the Engineer. No Variation shall in any way vitiate or invalidate the Contract. The Contractor shall not make any alteration and/or modification of the Works, unless and until the Engineer instructs or gives consent to a Variation. If the Construction and/or Manufacture Documents or Works are not in accordance with the Contract, the rectification shall not constitute a Variation. |
| Contractor's Variations | 12.2 | |
| Variation Proposal | 12.2.1 | <p>The Contractor may submit to the Employer, in writing at its own cost, any engineering proposal as contractor's variation for modifying the Employer's Requirements, provision of additional land, access or feasibility over and above that is provided in the Contract for the purpose of saving in time, construction or manufacture costs. Such variation proposal shall not impair the essential character, functions or characteristics or the Work, including service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards.</p> <p>The Contractor shall provide his variation proposal in a time limit prescribed by the Engineer. The Engineer's decision in this regard shall be communicated to the Contractor within a reasonable period of time. If by any reason the time limit specified by the Engineer is exceeded, the proposal may not be considered. The decision of the Engineer in this regard shall be final and binding.</p> |
| Contents of Variation | 12.2.2 | <p>If the Employer requires or accepts it, and if the Contractor wants to proceed with the proposal, the Contractor must provide (at no cost to the Employer) a detailed report prepared by a consultant acceptable to the Employer and which shall include:</p> <ul style="list-style-type: none"> a. a general description of the original Contract requirements for the Works and the proposed changes. b. detail of all the proposed modifications to the drawings and specifications. c. detail of all Work and goods affected by the value engineering proposal. d. a detailed estimate of the construction cost based on the original Contract requirements and based on the proposed changes. e. any resultant time extensions or reductions for the Contract. f. statement to the extent of minimum saving expected. The Contractor's cost of preparing the variation proposal shall be excluded in determining the estimated net savings in construction costs. |
| Employer Review | 12.2.3 | <p>The Employer may in his sole discretion, accept or reject the contractor's variation or any part thereof and determine the estimated net saving in the construction cost. The Employer shall not be liable for delays or damages to the Contractor due to any failure of the Employer to accept or act upon any such variation proposal submitted pursuant to this Clause.</p> |

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| | | Once, the Employer or the Engineer rejects the contractor's variation during proposition due to any reason, it shall not be pursued by Contractor in any other form. |
| Amendments- Employer Issuance | 12.2.4 | If the variation proposal is acceptable to the Employer/Engineer in whole or in parts, it will accept by execution of an amendment. Such amendment shall identify all the changes in the specifications, Contract Period etc. and shall specify net savings on construction costs which shall be adjusted in the contract value by the Employer. |
| Contractor's Acceptance and Payment | 12.2.5 | The Contractor shall either accept or reject any proposed amendment executed by the Engineer pursuant to this section within 5 working days of its receipt date from the Employer. If the Contractor does not reject the same in the period stipulated above, the amendments shall be deemed to be accepted by the Contractor and shall become a variation to the Contract. The Contractor's acceptance shall be unconditional, and the contract value / price shall be adjusted by the amount of saving due to the variation. |
| Employers Variation | 12.3 | <p>If the Engineer requests a proposal, prior to instructing a Variation which may be for additional work or alteration in the work on deletion / reduction in the scope of work, the Contractor shall submit at his own cost within 14 days or such period as the Engineer may allow of the receipt of such request of the Engineer</p> <p>a. a description of the proposed design and/or work to be performed and a programme for its execution,</p> <p>b. the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 4. 13, and</p> <p>c. the Contractor's proposal for adjustment to the Contract Price, Time for Completion and/or modifications to the Contract.</p> |
| Variation Procedure | 12.4 | <p>The Engineer shall, as soon as practicable after receipt of proposals under sub-clauses 12.2 and / or 12.3, respond with approval, rejection or comments.</p> <p>If the Engineer instructs or approves a Variation, he shall proceed in accordance with Sub-Clause 3.5 to agree or determine adjustments to the Contract Price, Time for Completion and Schedule of Payments.</p> <p>After receipt of proposal, it will be the prerogative of the Employer, whether to Instruct and proceed ahead with the variation or drop the proposal in part or full.</p> <p>In that case, no cost of preparing and submitting the proposal will be payable to Contractor. In case, the design part of variation has been completed on submission of same to the Engineer, the Employer decides to abandon the variation, only cost for design to the extent of work done will be paid to the Contractor.</p> |
| Variation in the Bill of Quantities | 12.5 | i)The quantities of items shown in the Bill of Quantities are approximate, and liable to vary during the actual execution of the work. Some items/group of items may have to be altered, added or omitted. The Contractor shall be bound to carry out and complete the stipulated work as instructed by the Engineer, |

irrespective of the magnitude of variations including additions, alterations or omissions in the Bill of Quantities, individual items or group of items, specified in the Bill of Quantities.

ii) Such variations shall be paid as follows:

a) At the accepted rates of the Contract for Positive variation in quantities to the extent of 25%, except in the case of foundation works. Unless otherwise specifically provided for in the Bill of Quantities or elsewhere in the Contract, the variation of 25% shall be applicable to a group of items mentioned therein and not to individual items. In case of variation in quantities on minus side, contract rates will be payable for executed quantities.

b) In case of foundation work, no variation limit applies, and Contractor shall carry out the Work, at rates stipulated in the Contract irrespective of any variation.

c) In case of earth work, the aforesaid variation limit of 25% shall apply to the gross quantity of earth work and variation in the quantity of individual classifications of soil will not be subject to this limit where any variation can take place.

d) For items against which the quantity given in the Bills of Quantities is "if or as required", there shall be no increase/decrease of rates whatever be the quantity finally executed.

e) Variation in the quantity of items individually costing upto 1% of the total contract value, shall be payable at the rates stated in the Contract. notwithstanding the magnitude of variation upto 2% of the original Contract Value for each item.

f) In case the variation in individual items or the group of items as stipulated above, is more than 25% on plus side, the rate for the varied quantity beyond 25% shall be negotiated between the Engineer and the Contractor and mutually agreed rates arrived at before actual execution of the extra quantity.

g) In case Engineer introduces an item for which the Contract does not contain any rates or prices applicable to the varied Works, the rate of such items shall be derived, wherever possible, from rate for similar items available in the Bill of Quantities of the accepted Tender. In case this is not possible, the rate may be decided on the following basis:

i) Cost of Materials at current market price, as actually utilised in the final finished Permanent Works, including a reasonable percentage for wastage and transportation.

ii) Cost of enabling works if any(unless provided for separately) worked out on the above basis but with less stringent quality. Specifications minus salvage value of serviceable material released after completion of work and cost of material released as scrap.

iii) Cost of labour actually used at the site of work at rates under Payment of Minimum Wages Act for the area of work for each category of worker, further enhanced by a percentage of 10% of the aforesaid rates to account for labour not directly utilised at Site and other ancillary and incidental expenses on labour.

iv) Hire charges for Plant & Machinery, scaffolding, shuttering, forms, etc., required to be used at the site of the work. The tools used by the various trades shall not be counted as Plant & Machinery for this purpose.

v) An amount of 20% of items (i), (ii), (iii) and (iv) above to allow for Contractor's overheads, profits and corporate taxes. This percentage shall also apply to estimated cost of Materials supplied free to the Contractor.

vi) In all cases where extra items of work are involved, for which there are no rates in the accepted Bill of Quantities the Contractor shall give a notice to the Engineer, of at least 7 days before the need for their execution arises.

h) In the event of disagreement in respect of items (f) and (g) above, the Engineer shall fix such rates of price as are, in his opinion appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on account payments to the Contractor. Alternatively, in the event of disagreement, the Contractor shall have no claim to execute extra quantities/new items and the Engineer shall be free to get such additional quantities beyond 25% new items executed through any other agency. However, if the Engineer or the Employer so directs the Contractor shall be bound to carry out any such additional quantities beyond the limits stated above original quantities and or new items and the disagreement or the difference regarding rates to be paid for the same shall be settled in the manner laid down under the conditions for the settlement of dispute.

**Payment in
Applicable
Currencies**

12.6

If the Contract provides for payment of the Contract Price in more than one currency, and an adjustment is agreed or fixed as stated above, the amount payable in each of the applicable currencies shall be specified when the adjustment is agreed or fixed. In specifying the amount in each currency, the Contractor and the Engineer (or, failing agreement, the Engineer) shall take account of the actual or expected currency proportions of the Cost of the varied work, without being bound by the proportions of various currencies specified for payment of the Contract Price.

**Notice to
Contractor**

**13
13.1**

Termination of Contract

If the Contractor fails to carry out any of his obligations, or if the Contractor is not executing the Works in accordance with the Contract, the Engineer may give notice to the Contractor requiring him to make good such failure and remedy the same within such time as the Employer / Engineer may deem to be reasonable.

**Termination
of Contract
Due to
Contractor's
Default
Conditions
Leading To
termination of
the contract**

13.2

13.2.1

The Employer shall be entitled to terminate the Contract if the Contractor or any one of its constituents,

a) fails to comply with a notice under Sub clause 13.1

- b) abandons or repudiates the Contract
- c) without reasonable excuse acceptable to the Engineer, fails to commence the Works in accordance with the Contract
- d) subcontracts the whole of the Works or assigns the Contract without approval of the Employer
- e) becomes bankrupt or insolvent or goes into liquidation except voluntary liquidation for the purpose of amalgamation or reconstruction
- f) persistently disregards instructions of the Engineer or contravenes any provisions of the Contract, or
- g) fails to adhere to the agreed programme of work by margin of 10% of the stipulated period or 21 days, whichever is earlier, or fails to complete the Works or parts of the Works within the stipulated or extended period of completion, or is unlikely to complete the whole Work or part thereof within time because of poor record of progress; or
- h) fails to remove materials from the Site, or pull down and replace work,
after receiving notice from the Engineer to the effect that the said materials or Works have been condemned or rejected, or
- i) fails to take steps to employ competent and/or additional staff and labour, or
- j) fails to afford the Engineer or his representative proper facilities for inspecting the Works or any part thereof, or
- k) indulges in corrupt or fraudulent practices as explained in Clause 4.33

- 13.2.2** In any one of these events or circumstances, the Employer may upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in case of sub- paragraph (e) or (k), the Employer may by notice of 7 days terminate the Contract immediately.
- 13.2.3** For the purpose of sub para (c) above, this clause, reasonable excuse shall be one, which in the opinion of the Engineer has resulted from, Any Circumstance which
 - is beyond the employer's or contractor's control and
 - made the failure unavoidable and it is evidenced by the Contractor to the satisfaction of the Engineer that the failure was remedied without unreasonable delay once that obstacle was out of the way.
- 13.2.4** In case of sub para(g), the Engineer at its sole discretion may terminate only part of the contract also by taking out some part of the total scope of work and may complete or arrange for any other entity through the process of open/limited/single tender or by calling quotations, to do so at the risk and cost of the contractor.
- 13.2.5** The Employer's decision to terminate the Contract shall not prejudice any other rights of the Employer under the Contract.

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| | 13.2.6 | On termination of contract due to contractor's default the performance security shall be forfeited by encashing the bank guarantee and the balance work shall be got done independently without risk and cost of the failed contractor. The failed contractor shall be debarred from participating in the tender for executing the balance work. If the failed contractor is a JV or a partnership firm, then every member/partner of such JV or partnership firm shall be debarred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any other JV/partnership firm. |
| | 13.2.7 | <p>The Engineer shall not make a claim under the Performance Security except for amounts to which the MMRDA is entitled under the contract (Notwithstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:</p> <p>i) Failure by the contractor to extend the validity of the Performance Security as described herein above, in which event the Engineer may claim the full amount of the Performance Security.</p> <p>ii) Failure by the contractor to pay MMRDA any amount due, either as agreed by the contractor or determined under any or the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer.</p> <p>iii) The contractor being determined or rescinded under provision of the GCC the Performance Security shall be forfeited in full and shall be absolutely at the disposal of the MMRDA.</p> |
| Valuation at the date of Termination | 13.2.8 | The Engineer shall, as soon as possible after termination under Sub-Clause determine and advise the Contractor of the value of the Construction and/or Manufacture Documents, Plant, Rolling Stock, Materials, Contractor's Equipment and works and all sums then due to the Contractor as at the date of termination. |
| Payment after Termination | 13.2.9 | <p>After termination under Sub-Clause 13.2.1, the Employer shall not be liable to make any further payments to the Contractor until the costs of design, manufacture, execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Employer, have been established.</p> <p>The Employer shall be entitled to recover from the Contractor the extra costs, if any, of completing the Works after allowing for any sum due to the Contractor under Sub-Clause 13.2.8. If there are no such extra costs, the Employer shall pay any balance to the Contractor.</p> |
| Non-exercise of power not to constitute waiver | 13.2.10 | Provided always that in case any of the powers conferred upon the Employer by Sub-clause 13.1 and Sub-clause 13.2.1 above, shall have become exercisable, and the same may not have been exercised, the non-exercise thereof shall not constitute waiver of any of the conditions thereof. |
| Default of Employer | 13.3 | |
| Notice by Contractor | 13.3.1 | <p>In the event of the Employer:</p> <p>a. failing to pay the Contractor, without reasonable cause, the amount due under any certificate of the Engineer within 56 days</p> |

after the expiry of the time stated in Sub-Clause 11.5 within which payment has to be made, subject to any deduction that the Employer is entitled to make under the Contract, or

b. becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, then, the Contractor may give notice requiring the Employer to remedy the default within 28 days after receipt of the notice. If the Employer fails to remedy the default or fails to propose steps reasonably acceptable to the Contractor to do so and in that case, the Contractor may terminate the Contract after issue of 14 days' notice to the Employer with a copy to the Engineer. In this case, the Contractor shall be compensated as per Sub clause 13.3.4

The Engineer's decision on the amount payable on this account shall be final and binding.

Contractor's Entitlement to Suspend the Work

13.3.2

The Contractor may, if the Employer fails to pay the Contractor the amount due under any certificate of the Engineer within 56 days after the expiry of the time stated in Sub-Clause 11.6, within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract, after giving 28 days' prior notice to the Employer, with a copy to the Engineer, suspend work or reduce the rate of work.

If the Contractor suspends work or reduces the rate of work in accordance with the provisions of this Sub-Clause and thereby suffers delay or incurs costs the Engineer shall, after due consultation with the Employer and the Contractor, determine:

a. any extension of time to which the Contractor is entitled under sub- clause- 8.4, and

b. the amount of such costs, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the Employer.

Cessation of Work by Contractor

13.3.3

After termination under Sub-13.3.1, the Contractor shall:

a. cease all further work, except for such work as may be necessary and instructed by the Engineer for the purpose of making safe or protecting those parts of the Works already executed, and any Work required to leave the Site in a clean and safe condition,

b. hand over all Construction and/or Manufacture Documents, Plant, Rolling stock, and Materials for which the Contractor has received payment,

c. hand over those parts of other Works executed by the Contractor up to the date of termination, and

d. remove all Contractor's Equipment which is on the Site and repatriate all his staff and labour from the Site. Any such termination shall be without prejudice to any other right of the Contractor under the Contract.

Payment on Termination

13.3.4

After termination under Sub-Clause 13.3.1 the Employer shall return the Performance security, and shall pay the Contractor an amount calculated and certified in accordance with the following

conditions:

- a. The value of approved materials actually brought to the site and reasonably required to execute the works during next three months, as per approved programme, and
- b. Value of work completed up to date by the contractor at rates specified in the Contract, after taking into account any deductions, retentions, setoff.
- c. In addition a sum not exceeding 2% (two percent) of the value of the work remaining incomplete on the date of Termination notice taking effect.

The payment as above shall be full compensation for termination under this clause and the Contractor has no claim for damages or other entitlements whether under the contract or otherwise.

13.3.5

In case termination/foreclosure of the Contract under whatsoever circumstances, any remaining tools, plants, equipment's and surplus materials of Employer with contractor will be returned to the Employer in good condition at Employer's depot at Contractor's cost. In case of the failure of the contractor to do so, the Employer will be entitled to recover their cost from the contractor from the amount becoming due to the contractor or from any other money due in any other contracts. The decision of the Engineer of the amount to be recovered will be final decision and full credit at rates initially charged to the contractor shall be allowed for such materials. Similarly, the Employer shall be entitled to recover the cost of the unreturned material, plant equipment and tools from the contractor where such material have been supplied free of cost and plant, equipment and tools free of cost or on lease basis to the contractor as stipulated in the Conditions of Contract.

Indemnity 14 14.1

RISK AND RESPONSIBILITY

The Contractor shall indemnify and hold harmless the Employer, the Engineer, the Designated Contractors, representatives and employees from and against all actions, suits, proceedings, claims, damages, losses, expenses and demands of every nature and description, by reasons of any act or omissions of the Contractor, his representative or his employees in the execution of the Works, including professional services provided by the Contractor or in the guarding the same.

These indemnification obligations shall include but not be limited to claims, damages, losses, damage proceedings, charges and expenses which are attributable to:

- (a) sickness, or disease, or death of, or injury to any person; and
- (b) loss of, or damage to, or destruction of any property (other than the Works) including consequential loss of use; and
- (c) loss, damage or costs arising from the carriage of Plant, Rolling Stock and Materials and/or ownership or chartering of marine vessels by the Contractor, or any sub-contractor of any tier.

The Contractor shall also indemnify and save harmless the Employer from and against all claims and proceedings on

account of infringements of patents rights, design, trademark name etc as detailed out in clause 5.8.

All sums payable by way of compensation under these conditions shall be considered reasonable compensation payable to the Employer, without reference to the actual loss or damage sustained, and whether or not any damage shall have been sustained. The decision of the Engineer as to compensation claimed shall be final and binding.

**Contractor's
Care of the
Works**

14.2

The Contractor shall take full responsibility for the care of the Works, or any part thereof, including full responsibility for the care of any work being manufactured, or stored off-Site for inclusion in the Works, or in the course of transportation to the Site, and for the care of Contractor's Equipment, Temporary Works, Plant, Rolling Stock, and any other Material, whatsoever, on the Site or delivered to or placed on the Site in connection with, or for the purpose of the Works.

The Contractor shall take this responsibility from the Commencement Date until the date of issue of the Taking Over Certificate, when responsibility shall pass to the Employer. If the Engineer issues a Taking Over Certificate for any Section or part of the Works, the Contractor shall cease to be responsible for the care of that Section or part from the date of issue of such Taking Over Certificate when responsibility shall pass to the Employer.

The Contractor shall take responsibility for the care of any outstanding work which is required to be completed prior to the expiry of the Contract Period, until the Engineer confirms in writing that such outstanding work has been completed.

If any loss or damage happens to the Works, any other property or person, arising from any cause other than the Employer's risks listed in Sub-Clause 14.3, during the period for which the Contractor is responsible, the Contractor shall rectify such loss or damage, at his cost, so that the Works conform with the Contract or at the option of the Employer, will pay or allow to the Employer the cost of rectifying such loss or damage. Notwithstanding such loss or damage, the Contractor shall proceed with the execution of works in all respects in accordance with the contract and the Engineer's instructions. The Contractor shall also be liable for any loss or damage to the Works caused by any operations carried out by the Contractor after the date of issue of the Taking Over Certificate.

**Employer's
Risks**

14.3

The Employer's risks of loss or damage to physical property in India and of death and personal injury occurring in India in consequence of the performance of obligations under the Contract are:

- a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- b) rebellion, revolution, insurrection, or military or usurped power, or civil war, within India,
- c) riot, commotion or disorder by persons unless solely restricted to or caused by employees of Contractor or of sub-contractors currently or formerly engaged in the Works,

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| | | <p>d) Ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly, except to the extent to which the Contractor may be responsible for the use of any radio-active material,</p> <p>e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds, and</p> <p>f) use or occupation by the Employer of any part of the Works, except as may be specified in the Contract.</p> |
| Consequences of Employer's Risks | 14.4 | <p>If an Employer's risk results in loss or damage, the Contractor shall promptly notify the Engineer and shall rectify this loss or damage to the extent required by the Engineer.</p> <p>If the Contractor suffers delay and/or incurs cost from rectifying this loss or damage, the Contractor shall give notice to the Engineer and shall be entitled to claim:</p> <p>(a) extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4, and</p> <p>(b) amount of such cost, which shall be included in the Contract Price.</p> |
| Contractor's Risks | 14.5 | <p>The Contractor's risks are all risks other than the Employer's risks given in sub-clause 14.3.</p> |
| Limitation of Liability | 14.6 | <p>Except as provided otherwise in these Conditions, neither party shall be liable to the other party for loss of use of any Works, loss of profit, loss of any Contract or any other indirect or consequential loss or damage which may be suffered by the other party in connection with the Contract. The total liability of the Contractor to the Employer under the Contract shall not exceed the Contract Price. Except that this Sub-Clause shall not limit the liability of the Contractor:</p> <p>(a) under Sub-Clauses 4.18, 4.19, 5.7, 8.6, and Clauses 7.10 and 7.11</p> <p>(b) under any other provisions of the Contract which expressly impose a greater liability,</p> <p>(c) in cases of fraud, wilful misconduct or illegal or unlawful acts, or</p> <p>(d) in cases of acts or omissions of the Contractor which are contrary to the most elementary rules of diligence which a conscientious Contractor would have followed in similar circumstances.</p> |
| Professional Indemnity Insurance | 15 15.1 | <p>INSURANCE</p> <p>The Contractor shall affect and maintain professional indemnity insurance, preferably in the name of MMRDA, for the amount in Indian Rupees stipulated in Appendix to the Form of Tender in respect of any design of the Works to be carried out by, or on behalf of the Contractor. This insurance, which shall ensure the Contractor's liability by reason of professional negligence and</p> |

errors in the design of the works, shall be valid from the date of commencement of Works, until 5 years after the date of issue of Performance Certificate. Alternatively, the Contractor shall redeem the insurance before the expiry of the Yearly Insurance in such a way that the entire validity period is covered.

The Engineer will not issue Final Payment Certificate until the Contractor has produced evidence that coverage of the professional indemnity insurance has been provided for the aforesaid period.

Insurance for Works and Contractor's Equipment **15.2**

The Contractor shall insure the Plant, Rolling stock, Materials and Works in the joint names of the Employer, the Contractor and Sub-contractors (wherever applicable) against all loss or damage. This insurance shall cover loss or damage from any cause other than the Employer's risks listed in Sub- Clause 14.3 sub paragraphs (a), (b), (d) and (e). Such insurance shall be for a limit of not less than the full replacement cost (including profit) and shall also cover the costs of demolition and removal of debris. Such insurance shall be in such a manner that the Employer and the Contractor are covered from the commencement date until the date of issue of the Taking Over Certificate for the whole of Works. The Contractor shall extend such insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking Over Certificate, and for loss or damage occasioned by the Contractor or Sub-contractors in the course of any other operations (including Clauses 7.10, 7.11 and 10).

The Contractor shall insure the Contractor's Equipment against all risks in the joint names of the Employer, the Contractor and Sub-contractors, (wherever applicable) against all loss or damage. This insurance shall cover loss or damage from any cause other than the Employer's risks listed in Sub-Clause 14.3 sub-paragraphs (a), (b), (d) and (e). Such insurance shall be for a limit of not less than the full replacement value (including delivery to Site). Such insurance shall be in such a manner that each item of equipment is insured while it is being transported to the Site and throughout the period it is on or near the Site.

Insurance against injury to Persons and Damage to Property **15.3**

The Contractor shall insure against liability to third parties in the joint names of the Employer, the Contractor and Sub-contractors, (wherever applicable) for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 15.2) or to any person (except persons insured under Sub-Clause 15.4), which may arise out of the performance of the Contract and occurring before the issue of the Performance Certificate. Such insurance shall be at least for the amount specified in the Appendix to Form of Tender.

Insurance for Workers **15.4**

The Contractor shall effect and maintain insurance against losses and claims arising from the death or injury to any person employed by the Contractor or any Sub-contractor (wherever applicable) in such a manner that the Employer and the Engineer are indemnified under the policy of insurance. For Sub-contractor's employees (wherever applicable), such insurance may be effected by the Sub-contractor, but the Contractor shall be responsible for compliance with this Clause.

**General
Requirements
for Insurances**

15.5

The Contractor shall, within the respective periods stated in the Appendix to Form of Tender (calculated from the Commencement Date), submit to the Employer:

a) evidence that the insurances described in this Clause have been effected, with an Indian Insurance Company, and

b) copies of the policies for the insurances described in Sub-Clause 15.2, 15.3 and 15.4. When each premium has been paid, the contractor shall submit copy of receipts to the employer. The contractor shall also, when providing such evidence, policies and receipts to the employer, notify the engineer of so doing.

The contractor shall effect all insurances for which he is responsible with insurers and in terms approved by the employer. Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify such loss or damage. Payments received from insurers shall be used for the rectification of such loss or damage.

The contractor (and, if appropriate, the employer) shall comply with the conditions stipulated in each of the insurance policies. The contractor shall make no material alteration to the terms of any insurance without the prior approval of the employer. If an insurer makes (or purports to make) any such alteration, the contractor shall notify the employer immediately.

If the contractor fails to effect and keep in force any of the insurances required under the contract, or fails to provide satisfactory evidence, policies and receipts in accordance with this sub-clause, the employer may, without prejudice to any other right or remedy, effect insurance for the coverage relevant to such default, and pay the premiums due. In such cases the premium paid by the employer plus overheads (equal to 50% of the premium paid) shall be recoverable from the contractor by the employer, and may be deducted by the employer from any monies due, or to become due, to the contractor or recover the same as debt due from the contractor. The contractor shall not dispute the amount of premium paid by the employer or the overhead charges thereon.

Nothing in this clause limits the obligations, liabilities or responsibilities of the contractor or the employer, under the other terms of the contract or otherwise. Any amount not insured or not recovered from the insurers shall be borne by the contractor.

The Contractor shall submit to the Engineer, the details of all claims made with the insurer and claims accepted by the insurer or any other details as required by the Engineer on monthly basis.

**Definition of
Force Majeure**

16

16.1

FORCE MAJEURE

In this Clause, "force majeure" means an event beyond the control of the Employer and the Contractor, which makes it impossible or illegal for a party to perform, including but not limited to:

(a) act of God.

(b) war, hostilities (whether war be declared or not), invasion, act

of foreign enemies, mobilisation, requisition, or embargo;

(c) rebellion, revolution, insurrection, military or usurped power, or civil war.

(d) contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly;

(e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Sub-contractors currently or formerly engaged on the Works.

If a party considers that it may be affected by Force Majeure, the party shall promptly notify the other party and Engineer of such Force Majeure within 21 days of such occurrence. If neither party issues any notice regarding the event within 21 days of its occurrence, the said event shall be deemed not to have occurred and the Contract shall continue to have effect as such.

Effect of Force Majeure Event 16.2

Neither the Employer nor the Contractor shall be considered in default or in contractual breach to the extent that performance of obligations is prevented by Force Majeure event which arises after the date of Notice to Proceed Upon the occurrence of such Force Majeure, the affected party shall endeavour to continue to perform its obligations as far as reasonably practicable.

Contractor's Responsibility 16.3

If affected by such Force Majeure, the Contractor shall promptly notify the Engineer of any proposals for overcoming the consequences of the Force Majeure, including any reasonable alternative means for performance, but shall not carry out these proposals without the consent of the Engineer.

Employer's Responsibility 16.4

If affected by such Force Majeure, the Employer shall promptly notify the Engineer and the Contractor of any proposals for overcoming the consequences of the Force Majeure.

Payment to Contractor 16.5

If the Works shall suffer loss or damage due to such Force Majeure, the Contractor shall be entitled to have included, in an Interim Payment Certificate, the Cost of work executed in accordance with the Contract.

Resumption of Work 16.6

The obligations under the Contract shall be resumed as soon as practicable after the event has come to an end or ceased to exist.

In case of doubt or dispute, whether a particular occurrence should be considered an "event" as defined under this clause, the decision of the Engineer shall be final and binding.

Works that have already been measured shall be paid for by the Employer even if the same is subsequently destroyed or damaged as a result of the event. The cost of rebuilding or replacing any work that has been measured shall be borne by the Employer.

Termination, Payment and Release 16.7

Irrespective of any extension of time, if a Force Majeure occurs and it's effect continues for a period of 6 months, after notice has been given under Sub- Clause 16.1, either party may give to the other party a notice of termination of the Contract which shall take

effect in 28 days after the notice is given. Unless at the end of 28 days period the effect of the Force Majeure has ceased, the Contract shall terminate upon that date. Otherwise, the Contract shall remain in effect.

The Contractor shall be paid fully for the work done under the Contract, but not for any defective work or work done which has been destroyed or damaged before its measurement. The Employer shall have the option to take over any Plant, Rolling Stock and Materials lying at site, at rates provided for in the Contract, failing that, as per rates, which are determined to be fair and reasonable by the Engineer.

**Release from
Performance
Under the Law**

16.8

If under the law of the Contract the Employer and the Contractor are released from further performance, the sum payable by the Employer to the Contractor shall be the same as would have been payable under Sub- Clause 16.7, if the Contract had been terminated under that Sub-Clause.

**Procedure for
Claims**

**17
17.1**

CLAIMS, DISPUTES, CONCILIATION AND ARBITRATION

If the Contractor intends to claim any additional payment under any clause of these Conditions or otherwise, the Contractor shall give notice to the Engineer as soon as possible and in any event within 28 days of the start of the event giving rise to the claim.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at any other location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer shall, on receipt of such notice, inspect such records and may instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer to inspect all such records and shall (if instructed) submit copies to the Engineer.

Within 28 days of such notice, or such other time as may be agreed by the Engineer, the Contractor shall send to the Engineer an account, giving detailed particulars of the amount and basis of the claim. Where the event giving rise to the claim has a continuing effect, such amount shall be considered as interim. The Contractor shall then, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further particulars. Where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event.

**Payment for
Claims**

17.2

If the Contractor fails to comply with this Sub-Clause, he shall not be entitled to claim any additional payment.

The Contractor shall be entitled to have included in any Interim Payment Certificate such amount for any claim as the Engineer considers due, after taking approval from the Employer. If the particulars supplied are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment for such part of the claim as has been substantiated.

**No legal action
till
Dispute
Settlement
Procedure is
Exhausted**

17.3

Any and all Disputes shall be settled in accordance with the provisions of Clause 17. No action at law concerning or arising out of any Dispute shall be commenced unless and until all applicable Dispute resolution procedures set out in Clause 17 shall have been finally exhausted in relation to that Dispute or any Dispute out of which that Dispute shall have arisen with which

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| Notice of Dispute | 17.4 | <p>it may be or may have been connected.</p> <p>For the purpose of Sub-Clause 17.5, a Dispute shall be deemed to arise when one party serves on the other party a notice in writing (hereinafter called a "Notice of Dispute") stating the nature of the Dispute provided that no such notice shall be served later than 28 days after the date of issue of Performance Certificate by the Engineer.</p> |
| Two Stages for Dispute Resolution | 17.5 | <p>Disputes shall be settled through two stages:</p> <p>a. Conciliation procedures as established by "The Arbitration and Conciliation Act-1996" (as amended from time to time) and in accordance with this Clause. In the event this procedure fails to resolve the Dispute then;</p> <p>b. Arbitration procedures undertaken as provided by "The Arbitration and Conciliation Act -1996" (as amended from time to time) and in accordance with this Clause.</p> |
| Conciliation | 17.6 | <p>Within 60 days of receipt of Notice of Dispute, either party shall refer the matter in dispute to conciliation.</p> <p>Conciliation proceedings shall be initiated within 30 days of one party inviting the other in writing to Conciliation. Conciliation shall commence when the other party accepts in writing this invitation. If the invitation is not accepted then Conciliation shall not take place. If the party initiating conciliation does not receive a reply within 30 days from the date on which he sends the invitation he may elect to treat this as a rejection of the invitation to conciliate and inform the other party accordingly.</p> <p>The Conciliation shall be undertaken by one Conciliator selected from a panel of Conciliators maintained by the Employer. The Conciliator shall assist the parties to reach an amicable settlement in an independent and impartial manner.</p> |
| Conciliation Procedure | 17.7 | <p>The Employer shall maintain a panel of Conciliators, who shall be from serving or retired engineers of Government Departments, or of Public Sector Undertakings. Out of this panel, a list of three Conciliators shall be sent to the Contractor who shall choose one of them to act as Conciliator and conduct conciliation proceedings in accordance with "The Arbitration and Conciliation Act, 1996", of India.</p> <p>There will be no objection if conciliator so nominated is a serving employee of MMRDA who would be Deputy level officer and above.</p> <p>The Employer and the Contractor shall in good faith co-operate with the Conciliator and, in particular, shall endeavour to comply with requests by the Conciliator to submit written materials, provide evidence and attend meetings. Each party may, on his own initiative or at the invitation of the Conciliator, submit to the Conciliator suggestions for the settlement of the dispute. When it appears to the Conciliator that there exist elements of a settlement which may be acceptable to the parties, he shall formulate the terms of a possible settlement and submit them to the parties for their observations. After receiving the observations of the parties, the Conciliator may reformulate the terms of a possible settlement in the light of such observations.</p> |

If the parties reach agreement on a settlement of the dispute, they may draw up and sign a written settlement agreement. If requested by the parties, the Conciliator may draw up, or assist the parties in drawing up, the settlement agreement.

When the parties sign the settlement agreement, it shall be final and binding on the parties and persons claiming under them respectively.

The Conciliator shall authenticate the settlement agreement and furnish a copy thereof to each of the parties.

As far as possible, the conciliation proceedings should be completed within 60 days of the receipt of notice by the Conciliator.

The parties shall not initiate, during the conciliation proceedings, any arbitral or judicial proceedings in respect of a dispute that is the subject matter of the conciliation proceedings.

The conciliation proceedings shall be terminated:

a. by the signing of the settlement agreement by the parties on the date of agreement; or

b. by written declaration of the conciliator, after consultation with the parties, to the effect further efforts at conciliation are no longer justified, on the date of declaration; or

c. by a written declaration of the parties to the conciliator to the effect that the conciliation proceedings are terminated, on the date of declaration; or

d. by a written declaration of a party to the other party and the conciliator, if appointed, to the effect that the conciliation proceedings are terminated, on the date of declaration.

Upon termination of the conciliation proceedings, the conciliator shall fix the costs of the conciliation and give written notice thereof to the parties. The costs shall be borne equally by the parties unless settlement agreement provides for a different apportionment. All other expenses incurred by a party shall be borne by that party.

**Termination of
Conciliation
Proceedings**

17.8

Arbitration

17.9

If the efforts to resolve all or any of the disputes through conciliation fails, then such disputes or differences, whatsoever arising between the parties, arising out of touching or relating to construction/ manufacture, measuring operation or effect of the Contract or the breach thereof shall be referred to Arbitration in accordance with the following provisions:

a. Matters to be arbitrated upon shall be referred to a sole Arbitrator if the total value of the claim is upto Rs.5 million and to a panel of three Arbitrators if total value of claims is more than Rs.5 million. The Employer shall provide a panel of three arbitrators which may also include MMRDA officers for the claims upto Rs.5 million and a panel of five Arbitrators which may also include MMRDA officers for claims of more than Rs.5 million. The Contractor shall have to choose the sole Arbitrator from the panel of three and/or one Arbitrator from the panel of five in case three Arbitrators are to be appointed. The Employer shall also choose

one Arbitrator from this panel of five and the two so chosen will choose the third arbitrator from the panel only who shall act as the Presiding Arbitrator. The Arbitrator(s) shall be appointed within a period of 30 days from the date of receipt of written notice/ demand of appointment of Arbitrator from either party. Neither party shall be limited in the proceedings before such arbitrator(s) to the evidence or arguments put before the Engineer for the purpose of obtaining his decision. No decision given by the Engineer in accordance with the foregoing provisions shall disqualify him from being called as a witness and giving evidence before the arbitrator(s) on any matter, whatsoever, relevant to dispute or difference referred to arbitrator/s. The arbitration proceedings shall be held in Mumbai only. The language of proceedings, that of documents and communication shall be English.

b. The Employer at the time of offering the panel of Arbitrator(s) to be appointed as Arbitrator shall also supply the information with regard to the qualifications of the said Arbitrator nominated in the panel along with their professional experience, phone nos. and addresses to the contractor.

c. The award of the sole Arbitrator or the award by majority of three Arbitrators as the case may be shall be binding on all parties.

Interest on Arbitration Award

17.10

Where the arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period, till the date on which the award is made.

Cost of Arbitration

17.11

The cost of arbitration shall be borne by the respective parties. The cost shall, inter alia, include the fees of the Arbitrator(s) as per rates fixed by the Employer from time to time.

Jurisdiction of Courts

17.12

Where recourse to a Court is to be made in respect of any matter, the court at Mumbai shall have the exclusive jurisdiction to try all disputes between the parties.

Suspension of Work on Account of Arbitration

17.13

The reference to Conciliation / Arbitration shall proceed notwithstanding that the Works shall not then be or be alleged to be complete, provided always that the obligations of the Employer, Engineer and the Contractor shall not be altered by reasons of arbitration being conducted during the progress of the Works. Neither party shall be entitled to suspend the work or part of the work to which the dispute relates on account of arbitration and payments to the Contractor shall continue to be made in terms of the Contract.

Notice to Contractor

**18
18.1**

SERVICE OF NOTICES

a. All notices to the Contractor, shall be served by post or telex or telefax or by hand to the Contractor or his authorized representatives. In case of notices delivered by post, they will be deemed to have been delivered after 7 days of dispatch.

b. The Contractor shall, on award of the Contract, furnish to the Engineer, the name, designation, address and telephone, telex and telefax numbers and e-mail address of his representative referred to in Clause 4.3.

**Notice to
Employer and
Engineer**

18.2

All notices to the Employer or Engineer shall be served by post or telex or telefax, or by delivering by hand to the address nominated for the purpose.

**Change of
Address**

18.3

Parties to the Contract may change the nominated address by Employer with a notice to all concerned.



MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF STANDARD GAUGE TRACKWORKS (BALLASTED AND BALLASTLESS) IN KASHELI DEPOT TRACKS FOR LINE 5 CORRIDOR OF MUMBAI METRO RAIL PROJECT OF MMRDA, MUMBAIO RAIL PROJECT OF MMRDA, MUMBAIO RAIL PROJEO RAIL PROJECT OF MMRDA, MUMBAI

CONTRACT NO: MMRDA/XX/MMRP/CA-303

TENDER DOCUMENTS

VOLUME 2

**SPECIAL CONDITIONS OF CONTRACT
(INCLUDING SCHEDULES)**

MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

**Metro PIU, 7th Floor, New Administrative Building,
Bandra-Kurla Complex, Bandra (E), Mumbai –400 051, India**

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SPECIAL CONDITIONS OF CONTRACT (SCC)

1. Sub-Clause 1.4

Contract Agreement

Insert the following at the end of GCC Sub-clause 1.4:

The Form of Contract Agreement shall be in the format given in Schedule 2 to these Special Conditions of Contract.

2. Sub-clause 1.5

Priority of Documents

GCC Sub-clause 1.5 shall stand replaced with the following:

The documents forming the Contract are to be taken a mutually explanatory of one another. If there is an ambiguity or discrepancy in the documents, the Engineer shall issue any necessary clarification or instruction to the Contractor, and the priority of the documents shall be as follows:

- a) The Contract Agreement;
- b) The Letter of Acceptance;
- c) Pre-and Post-bid proceeds
- d) Form of Tender
- e) BOQ/Payment Schedule
- f) NIT
- g) ITT
- h) The Employer's Requirements
- i) Technical Specifications
- j) Drawing
- k) The Special Conditions of Contract;
- l) The General Conditions of Contract;
- m) The Contractor's Proposal; and
- n) Any other document forming part of the Contract

3. Sub-Clause 3.2

Functions of Engineer

Insert the following at the end of GCC Sub-clause 3.2:

In addition to the duties mentioned in Clause 3.2 of General Conditions of Contract:

- i) shall watch and inspect the Works, monitor the test results and examine any material to be used and workmanship employed by the Contractor in connection with the Works;
- ii) shall carry out such duties and exercise such powers vested in the Engineer in accordance with the provisions of the Contract.
- iii) shall issue instructions which in his opinion are necessary for the execution of the Works; and
- iv) may issue any other instruction which in his opinion is desirable in connection with the Works.

In case The Engineer is employee of any agency hired by the Employer, the Engineer shall take the approval of the Employer for all technical and financial matters.

4. Sub-Clause 4.2.1

Performance Security Amount

The amount of Performance Security shall be 10% (Ten percent) of the Contract Price (including GST).

Initial performance security of 5% of Contract Price (including GST) shall be in the form of any of the instruments such Insurance Surety Bond issued by an insurer approved and recognized by IRDAI, Bank Demand Draft, Fixed Deposit Receipt (FDR) or Bank Guarantee from a Nationalized/Scheduled Commercial bank (including Scheduled Commercial Foreign Banks except Co-operative banks and Axis Bank) in India.

The balance performance security of 5% of Contract Price (including GST) shall be recovered by deducting from Running Account Bill at 5% from each Running Account Bills till the full Performance Security is recovered so that the total deposit is made up and held by MMRDA.

The contractor may, at his option, replace the retention amount with an unconditional BG from a bank acceptable to the MMRDA at the following stages:

- i) After the amount reaches half the value of the limit of the balance performance security (5%); and
- ii) After the amount reaches the maximum limit of the balance performance security (5%).

If the work completion Period is extended for whatsoever reason, the Performance Security in the form of any of the instruments such as Insurance Surety Bond, Bank Demand Draft, Fixed Deposit Receipt (FDR) or Bank Guarantee shall be suitably extended.

5. Sub-Clause 4.2.2

Forfeiture

Insert the following at the end of GCC Sub-clause 4.2.4

The Extension of time for submission of performance security beyond 30 (thirty) days up to 60 (Sixty) days from date of issue of LOA may be given by the Authority who is competent to sign the Contract Agreement. However, a penal Interest of 15% (fifteen percent) per annum shall be charged for the entire period i.e., from the date of issue of LOA to the date of submission of performance security. In case the contractor fails to submit the requisite performance security within 60 (sixty) days from date of issue of LOA, the Contract shall be annulled duly forfeiting Tender Security and other dues, if any payable against the Contract. The failed Contractor shall be debarred not only from participating in re-tender for that work but also in any other tender of MMRDA for a period of Five year from date of issue of LOA.

If contract is terminated due to Contractor's default in terms of GCC Clause 13.2, the full Performance Security amount shall be forfeited. Shortfall amount, if any, shall be recovered by the Employer from monies due to the Contractor under the Contract including, without limitation, and the Employer shall have the power to recover any balance from monies due to the Contractor under any other Contract between the Employer and the Contractor.

6. Sub-Clause 4.2.4

Guarantees, Warranties and Undertakings

Insert the following at the end of GCC Sub-clause 4.2.4:

The forms of Contractor warranty shall be in the format given in Schedule 1 of these Special Conditions of Contract. If the Contractor comprises corporations acting in partnership or otherwise, such corporation shall submit a Parent Company Undertaking (as per format given in Schedule-1A) and Parent Company Guarantee (as per format given in Schedule-1B).

7. Sub-Clause 4.5

Sub-Contractors

Insert the following at the end of GCC Sub-clause 4.5.1:

The sub-contracting, excluding design work shall be limited to 50% of the Contract Value. The value of a sub-contract, other than for Design work and Provisional Sums items as and when awarded, should be intimated by the Contractor to the Engineer and it should also be certified that the cumulative value of the sub-contracts awarded so far is within the aforesaid limit of 50%. A copy of the contract between the Contractor and

Sub-Contractor shall be given to the Engineer within 15 days of signing and in any case 7 days before the Sub Contractor starts the Work and thereafter the Contractor shall not carry any modification without the consent in writing of the Engineer. The terms and conditions of sub-contracts and the payments that have to be made to the sub-contractors shall be the sole responsibility of the Contractor. Payments to be made to such sub-contractors will be deemed to have been included in the Contract price. However, for major sub-contracts (each costing over Rs. Five Million), it will be obligatory on the part of the Contractor to obtain consent of the Employer. The Employer will give his consent after assessing and satisfying himself of the capability, experience and equipment resources of the sub-contractor. In case the Employer intends to withhold his consent, he should inform the Contractor within 15 days to enable him to make alternative arrangements to fulfil his programme. The Contractor shall provide sufficient superintendence, whether on the site or elsewhere, to ensure that the work to be carried out by a sub-contractor

complies with the requirements of the Contract. In the case of sub-contracts for electrical and mechanical works, which the Contractor intends to procure on the basis of outline design, design briefs and performance specification, the Contractor shall, prior to inviting tenders from sub-contractors, submit such documents to the Engineer for review. The proposed sub-contract terms and conditions shall impose on the sub-contractor such terms of the Contract as are applicable and appropriate to the part of the Works to be sub-contracted, to enable the Contractor to comply with his obligations under the Contract. Notwithstanding any consent to sub-contract given by the Engineer, if in his opinion it is considered necessary, the Engineer shall have full authority to order the removal of any sub-contractor from the Site or off-Site place of manufacture or storage.

8. Sub-Clause 4.9

Site Data

Insert the following at the end of GCC Sub-clause 4.9:

The Geotechnical and other related data provided by the Employer are based on the investigation conducted by the Employer and are for reference purposes only. The Tenderer should satisfy himself with the data furnished and make his own investigations if required for submitting his offer. Any change in design or construction methodology later during execution on account of change will be borne by the Contractor.

The Contractor shall not be relieved from any risk or obligation imposed on or undertaken by him under the Contract on any such ground or on the ground that he did not or could not foresee any matter which may affect or have affected the execution of the works or compliance with his other obligations under the Contract.

9. Sub-Clause 4.11

Access Route

Insert the following at the end of GCC Sub-clause 4.11:

All operations for the execution of the Works shall be carried out so as not to interfere unnecessarily with the convenience of the public or the access to public or private roads or footpaths or properties owned by the Employer or by any other person. The Contractor shall select routes, choose and use vehicles so that movement of Contractor's Equipment, Plant and Materials from and to the Site is limited so that traffic is not delayed and damage to highways and bridges is prevented. If there is any delay or damage or injury, the cost of rectification or reconstruction of highways or bridges shall be borne by the Contractor. The Contractor shall indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to

any such matters. If during the execution of the Works the Contractor shall receive any claim arising out of the execution of the Works in respect of damage to highways or bridges, he shall immediately report the facts to the Engineer. The Contractor shall negotiate a settlement in respect of such claims and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto.

10. Sub-Clause 4.13

Programmes.

Insert the following at the end of GCC Sub-clause 4.13:

Programme of Work

The Contractor shall prepare and submit his detailed Programme of Work so as to achieve key dates of various activities. The Contractor shall complete the work in a phased manner fixing priorities to the different stretches of the work to give access to other interfacing contracts as per the requirement of project from time to time.

The Engineer on receipt of a programme shall inform the Contractor in writing within 21 days after receipt of the above information;

- (a) that the programme has received his consent; or
- (b) that the programme is rejected, in which case reasons for such rejection shall be given; or
- (c) that further information is required to clarify or substantiate the programme or to satisfy the Engineer as to its reasonableness, or
- (d) that the programme has received his consent subject to incorporation of comments attached to the Notice of No Objection.

Provided that if none of the above actions is taken within the 30-day period, the Engineer shall be deemed to have given consent to the programme submitted.

The Contractor shall, within 21 days of receiving notification under subparagraphs (c) or (d) above, provide further information requested or the programme shall be deemed to have been rejected. The Engineer shall, within 21 days of receipt of such further information, either reject the programme or give his consent.

In the event of a programme being rejected, or deemed to have been rejected, the Contractor shall, within 21 days thereafter, submit a revised programme taking account of the reasons given for the rejection or incorporating further information requested by the Engineer, as the case may be.

The Contractor, following receipt of consent to the Works Programme, may at any time, submit to the Engineer an amended version. In the event that the Engineer grants an extension of time, instructs an Employer's Variation, or on the occurrence of any event or happening or situation, which could materially affect the progress of the Works, the Contractor shall submit a revised programme to the Engineer for his consent.

If the Engineer feels that there is a significant deviation between the actual or anticipated progress of the Works and the Works programme, the Engineer may require the Contractor to submit a revised/modified programme to ensure timely completion of Whole of Works or a Key Date or a milestone. The Contractor shall submit such revised programme within 14 days of the Employer's Representative's instruction or within such other time as the Employer's Representative will allow in writing.

Unless and until an amended version has the consent of the Engineer, the existing programme shall remain as the Works Programme for all purposes of the Contract.

Consent by the Engineer to a Works Programme shall not relieve the Contractor of any of his duties or responsibilities under the Contract, nor in the event that a Works Programme indicates that a Key Date has not or will not be met, constitute any form of acknowledgement that the Contractor is or may be entitled to an extension of time in relation to such Key Date or a Mile Stone.

Design Submission Programme

The Contractor shall submit to the Engineer, the Design Submission Programme and updated versions thereof in the form and content and at the times prescribed in the Contract, including the dates on which major decisions should be made.

In the second and subsequent submissions of the Design Submission Programme, the Contractor shall not, without the prior written consent of the Engineer:

- a) revise the description or content of any design package identified in the initial version of Design Submission Programme;
- b) reduce the periods provided for review by the Engineer of any submission of Design Data as set out in the initial version of the Design Submission Programme;
- c) revise the sequence of submissions of Design Data shown in the initial version of the Design Submission Programme.

Any amendment of the Design Submission Programme in breach of the above requirements shall have no effect whatsoever under the Contract.

Manufacture, Installation and Construction Methods.

The Contractor shall submit complete documents and information pertaining to the methods of manufacture, installation and construction which the Contractor proposes to adopt or use, (and if applicable such calculations of stresses, strains and deflections and the like that will or may arise in the Works or to the other works comprising the Project or any parts thereof during installation from the use of such methods). The Engineer will then check to see whether, if such methods are adhered to, the Works can be executed in accordance with the Contract and without detriment to the Works (when completed) and to other works comprising the Project and in a manner which minimises disruption to road and pedestrian traffic.

The Engineer shall inform the Contractor in writing within 21 days after receipt of the above information;

- (a) that the Contractor's proposed methods of manufacture, installation and construction have the consent of the Engineer; or
- (b) in what respects, in the opinion of the Engineer the Contractor's proposed methods of manufacture, installation and construction:
 - (i) fail to comply with the Employer's Requirements and/or the Definitive Design and/or the Final Design;
 - (ii) would be detrimental to the Works and/or to the other works comprising the Project;
 - (iii) do not comply with the other requirements of the Contract; or
- (c) as to the further documents or information which are required to enable the Engineer to properly assess the proposed methods of manufacture, installation and construction.

In the event that the Engineer does not give his consent, the Contractor shall take such steps or make such changes in the said methods or supply such further documents or information as may be necessary to meet the Engineer's requirements and to obtain his consent. The Contractor shall not change the methods of manufacture, installation and construction which have received the Engineer's consent without further review and consent in writing of the Engineer.

Notwithstanding the foregoing provisions of this Clause, or that certain of the Contractor's proposed methods of manufacture, installation and

construction may be the subject of the consent of the Engineer, the Contractor shall not be relieved of any liability or obligation under the Contract.

11. Sub-Clause 4.16 & 6.7 Safety Precautions

GCC Sub-clause 4.16 & 6.7 shall be read in conjunction with the following:

Within 8 weeks of the date of Notice to Proceed, the Contractor shall submit a detailed and comprehensive contract-specific Site Safety Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual). The Contractor is required to make himself aware of all the requirements of the Employer's Safety, Health and Environmental Manual in this regard and comply with them. The Site Safety Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with Sub-Clauses 4.16 and 6.7 of General Conditions of Contract.

Within 8 weeks of the date of Notice to Proceed, the Contractor shall submit a detailed and comprehensive contract-specific Site Safety Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual). The Contractor is required to make himself aware of all the requirements of the Employer's Safety, Health and Environmental Manual in this regard and comply with them. The Site Safety Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with Sub-Clauses 4.16 and 6.7 of General Conditions of Contract.

The Contractor shall, from time to time and as necessary or required by the Engineer, produce supplements to the Site Safety Plan such that it is at all times a detailed, comprehensive and contemporaneous statement by the Contractor of his site safety and industrial health obligations, responsibilities, policies and procedures (under the laws of India) or as stated in the Contract or elsewhere relating to work on Site.

If at any time the Site Safety Plan is, in the opinion of the Engineer, insufficient or requires revision or modification to ensure the security of the Works and the safety of all workmen upon, and visitors to the Site, the Engineer may instruct the Contractor to revise the Site Safety Plan. The Contractor shall, within 14 days, submit the revised plan to the Engineer for review.

Any omission, inconsistency or error in the Site Safety Plan or the Engineer concurrence or rejection of the Site Safety Plan and/or supplements thereto shall be without prejudice to the Contractor's obligations with respect to site safety and industrial health and shall not excuse any failure by the Contractor to adopt proper and recognised safety practices throughout the execution of the Works.

The Contractor shall adhere to the Site Safety Plan and shall ensure, that all sub-contractors of all tiers have a copy of the Site Safety Plan and comply with its provisions.

The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to carry out surveillance to verify that the Site Safety Plan is being properly and fully implemented.

The Contractor shall notify the Engineer immediately of any occurrence or incident that results in death or serious injury as defined in the Indian Penal Code. Such initial notification may be verbal and confirmed in writing

thereafter and shall be followed by a comprehensive written report within 24 hours of the occurrence/incident. The Contractor shall duly complete standard forms as required by the Engineer and Statutory Authorities.

The Contractor shall provide and maintain all necessary temporary fire protection and firefighting facilities on the Site during the construction of the Works in accordance with the statutory regulations and as required by the Engineer. The Contractor shall ensure that all gases, fuels and other and in accordance with the statutory regulations and as required by the obligations and requirements for safety and industrial health under this Contract are entirely without prejudice to, and do not derogate from, the Contractor's statutory obligations, with respect to safety and industrial health.

12. Sub-Clause 4.17

Protection of the Environment

Insert the following at the end of GCC Sub-clause 4.17:

Outline Environmental Plan means the environmental plan forming part of the Tender, setting out, in summary form, the Contractor's proposed means of complying with his obligations in relation to environmental quality. Site Environmental Plan means the site environmental plan including all supplements thereto, or any amended or varied version thereof, as submitted by the Contractor in accordance with Employer's Safety, Health and Environmental Manual (SHE Manual), this Clause and which has received the Engineer's consent. The Site Environmental Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with this Clause. The Contractor is required to make himself aware of all the requirements of the Employer's SHE Manual in this regard and comply with them.

Within 8 weeks of the date of the Notice to Proceed, the Contractor shall submit a detailed and comprehensive Site Environmental Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual), and shall include such further material, which the Contractor considers necessary and relevant any supplemental part thereof, the Contractor shall adhere to the principles and procedures contained in such document save to the extent that the Engineer may give his consent to any amended or varied version thereof. The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to monitor and conduct tests to verify that the Site Environmental Plan is being properly and fully implemented.

13. Sub-Clause 4.19

Employer Supplied Machinery and Materials

GCC subclause 4.19 shall stand replaced with the following:

The Employer will not provide any machinery or materials under the Contract.

14. Sub-Clause 4.27

Security of the Site

Insert the following at the end of GCC Sub-clause 4.27:

The Contractor shall take all measures necessary to ensure such security, including exercising control over all persons and vehicles which are employed or engaged on the Site or in connection with the Works or the

other works comprising the Project and with the security arrangements applicable to any other site within the Project. The Contractor shall arrange the issue of passes for the admission of all persons and vehicles to the Site or to any part thereof and may refuse admission to or remove from the Site any person or vehicle failing to show an appropriate pass on demand to any duly authorised person. If required by the Engineer, the Contractor shall submit a list identifying all persons to whom passes have been issued together with two photographs of each person and all entities to which a pass has been issued in respect of any vehicle and shall satisfy the Engineer of the bonafides of any such person or entity.

The Contractor shall not, without the written permission of the Engineer or otherwise in accordance with the Contract, allow access to the Site to any person unless the presence on Site of such person is necessary in connection with the execution of the Works or with the discharge of the duties of any relevant authority. The Contractor, after obtaining any necessary consent from any relevant authority shall submit to the Engineer proposals showing the layout of pedestrian routes, lighting, signs, and guarding any road opening or traffic diversion which may be required in connection with the execution of the Works and which the Contractor intends to construct. Any consent given by the Engineer to such proposals shall not relieve the Contractor of any obligation under the Contract or absolve the Contractor from any liability for or arising from such proposals or the implementation thereof.

All lights provided by the Contractor shall be so placed or screened as not to interfere with signs, signals or lights. The Contractor shall not in any way obscure or affect signs, signals or lights, in use by any relevant authority. In the event that the Contractor does so, the Contractor shall pay all costs associated with the re-setting, re-instating or provision of alternatives for any sign, signal or light, obscured or affected. For the purposes of this Clause only, "Site" shall include off-Site places of manufacture or storage and the Contractor's Work Areas and shall include, areas provided to the Contractor by others.

15. Sub-Clause 5.3

Submission of Document (Other than Design Data)

Insert the following at the end of GCC Sub-clause 5.3:

The Contractor shall submit drawings and documents, as required by the Contract, to the Engineer in accordance with any submittal schedule agreed with the Engineer. This submittal shall be made sufficiently before the Works are to be carried out to give the Engineer and the Employer reasonable time to examine the drawings or other documents, to prepare comments and for any changes to be accommodated by the Contractor.

Where the consent of the Engineer is required, the Engineer shall notify the Contractor in writing of his decision either within such period as may expressly be stipulated in the Contract or otherwise within a reasonable time.

If the Engineer has reasonable cause for being dissatisfied with the proposals set out in the Contractor's drawings or documents, the Engineer shall, within a period of 28 days from the date of submittal, require the Contractor in writing to make such amendments thereto as the Engineer may consider necessary. The Contractor shall make and be bound by such amendments at no additional expense to the Employer and shall resubmit the amended drawings or documents for Engineer's consent.

Within 14 days of notification of the Engineer's consent the Contractor shall provide the Engineer with the type and number of sets of the relevant drawings or documents as stipulated in the Employer's Requirement.

Should it be found at any time after notification of consent that the relevant drawings or documents do not comply with the Contract or do not agree with drawings or documents in relation to which the Engineer has previously notified his consent, the Contractor shall, at his own expense, make such alterations or additions as, in the opinion of the Engineer, are necessary to remedy such non-compliance or non-agreement and shall submit all such varied or amended drawings or documents for the consent of the Engineer.

No examination by the Engineer of the drawings or documents submitted by the Contractor, nor any consent of the Engineer in relation to the same, with or without amendment, shall absolve the Contractor from any of his obligations under the Contract or any liability for or arising from such drawings or documents.

The Operation and Maintenance Manuals and drawings submitted by the Contractor shall, if required, be updated by him during the Defects Liability Period and re-submitted for review by the Employer's Representative.

Submission of Design Data

In the case of submissions subsequent to the Definitive Design, the Design Data shall be in accordance with Employer's Requirements and the Definitive Design.

The Contractor shall submit to the Engineer all Design Data, together with the relevant Design Certificates certified by the Contractor, on or before the respective dates for submission shown on the Design Submission Programme or, as the case may be, the Works Programme. In the event that a re-submission of Design Data is required, such re-submission shall be made as soon as practicable after the receipt of the relevant statement of objections.

All submissions of Design Data shall include the copies as stipulated in the Employer's Requirements.

Following receipt of a submission of Design Data the Engineer shall, within 28 days, return one copy of the Design Data to the Contractor, together with either a Notice of No Objection, or a statement of objections which shall identify the aspects of the Design Data which do not conform to the above requirements. If the Engineer returns any Design Data with a Notice of No Objection, the Contractor shall proceed with the Works in accordance with the Contract.

If the Engineer provides that revisions to a submission of Design Data are appropriate but that such revisions are of minor design significance, the Engineer may issue a Notice of No Objection subject to an appended

schedule of comments identifying the relevant revisions. The Contractor shall revise such Design Data in accordance with such comments but shall not be obliged to re-submit such Design Data solely on account of such revisions.

If the Engineer returns any Design Data with a statement of objections the Contractor shall revise the Design Data to take account of the stated objections and re-submit such Design Data to the Engineer, together with new Design Certificates signed by the Designer and the Contractor.

The issue of a Notice of No Objection in relation to any submission of Design Data shall be entirely without prejudice to the review of subsequent submissions of Design Data or to any subsequent request for a Contractor's Variation, and shall not bind or fetter the Engineer in any manner whatsoever when deciding whether or not to raise objections in relation to any subsequent submission of Design Data

or when dealing with a subsequent request for a Contractor's Variation.

Neither an objection raised to the Design Data nor revisions of minor design significance under this Clause will, under any circumstances, constitute an Employer's Variation.

16. Sub-Clause 5.8

Technology Transfer

Insert the following at the end of GCC Sub-clause 5.8:

The Contractor shall provide the Transfer of Technology as stipulated in tender document. The Contractor shall use indigenous Materials to the maximum extent and shall use non-Indian substitutes only if Indian materials do not fit the requirements and/or are costlier.

17. Sub-Clause 5.9

Special Requirement

Additional Sub-clause 5.9 under GCC Clause 5 'Design'

The Design and Construction Standards shall be in conformity with the requirements of "Rules for Opening of a Railway or a Section of a Railway for Public Carriage of Passengers" and "Rules for Introduction of New Type of Rolling Stock" and to the satisfaction of the Commissioner of Railway Safety whose sanction is mandatory for commissioning of the System

18. Sub-Clause 6.2

Rates of Wages and Conditions of Labour

Insert the following at the end of Sub-clause 6.2:

During the currency of Contract as well as extended period of completion, if any, no extra amount in this regard shall be payable to the Contractor, for whatsoever reason including any revision of rates payable to the labour due to revision of rates payable in Minimum Wages Act.

19. Sub-Clause 6.4

Labour

Insert the following at the end of GCC Sub-clause 6.4:

The Contractor shall, if required by the Employer, deliver to the Engineer or to his office; a return in detail, in such form and at such intervals as the Employer may prescribe, showing the number of labour employed in different categories by the Contractor or his sub-contractors on the site.

The Contractor shall obtain and timely renew the Labour License and BOCW registration at their own cost and submit the same to the Employer for the entire duration of the Contract, including any extensions granted for work completion.

20. Sub-Clause 6.6

Facilities for Staff and Labour

Insert the following at the end of Sub-clause 6.6:

Training of contractor's Employees / Staff / Workers

Contractor shall provide a training / workshop on Safety, Health & Environment (SHE) to all its workers / employees/subcontractors of at least weeks (96 hrs) at the time of induction. Before posting any of his workers/staff/employees/subcontractors, the contractor shall give a certificate that the said person had undergone the requisite SHE training. Noncompliance of the above will invoke penalties as per conditions of contract on SHE.

21. Sub-Clause 6.7

Health and Safety

Insert the following at the end of Sub-clause 6.7:

Contractors are required to have tie-up with well-equipped reputed hospitals having facilities of MRI, CT Scan, Ultrasound, Blood bank, specialist Doctors like neurosurgeon, orthopaedic as mandatory

requirement a fire station located in the neighbourhood for attending to the casualties promptly and emergency vehicle kept on standby duty during the working hours for the purpose.

22. Sub-Clause 7.0

Quality Control

Insert the following at the end of Sub-clause 7:

Within 28 days of the issue of the Notice to Proceed, the Contractor shall submit to the Engineer, for his consent, his proposed Site Quality Plan based on the Outline Quality Plan and the Employer's Requirements. The quality manual should address the quality system as required by ISO 9001-1991. Any supplement to the Site Quality Plan shall be submitted at least 14 days before commencement of the relevant work.

Upon the Engineer notifying his consent to the Site Quality Plan, or any supplement thereto, the Contractor shall, adhere to the principles and procedures contained in such document, except where the Engineer gives his consent to any amended or varied version thereof. The Contractor shall cause any sub-contractors to adhere to this Plan.

The Contractor shall appoint a suitably qualified and experienced person, not otherwise engaged in the performance of the Contract, to act as manager of the quality assurance system and shall provide such other personnel and resources as required to ensure effective operation of the quality assurance system. The said manager shall carry out audits of the application of the quality assurance system, and ensure effective quality control and delivery of quality assurance.

The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer to carry out surveillance visits both on and off the Site to verify that the quality assurance system is being properly and fully implemented. No extra payment shall be made in this regard and the cost of the Work under this element shall be deemed to be included in the Contract Price.

23. Sub-Clause 7.3

Delivery to Site

Insert the following at the end of Sub-clause 7.3:

The Contractor shall be responsible for procurement, transport, receiving, unloading and safe keeping of all Plant, Construction Equipment and other thing required for the completion of the works.

24. Sub-Clause 7.4 & 7.5 Inspection and Testing

Insert the following at the end of Sub-clause 7.4 & 7.5:

- 1. In case of Turnouts:** The testing and inspection of UIC 60 Turnouts shall be strictly in accordance with the Testing and Inspection plan approved by Purchaser/Employer.
- 2. In case of Fastenings:** All materials, components and assemblies shall be inspected and tested as per inspection and testing plan approved by Engineer / Employer. The materials, equipment, labour, fittings/components required for testing and all other testing facilities required for testing shall be arranged by the Contractor at his own cost. For those tests, for which the testing facilities are not available with the Contractor, the tests can be conducted in reputed laboratories/Institutions at Contractor's cost with prior approval of the Purchaser/ Employer.
- 3. In case of Buffer Stops, Wheel Stops:** Factory Acceptance Test (FAT)

shall be conducted at factory. Contractor should interface the Design with Rolling Stock.

4. **In case of Weld Joint:** The testing and inspection of Weld joints shall be done as per IRS/RDSO manuals.
5. **In case of 1080 Grade HH Rails, 880/R260 Grade Rails/Other rails:** The testing and inspection of Rails shall be done as per IRS T-12-2009 with correction slips upto last date of submission of Tender. The inspection & tests shall be conducted at supplier's manufacturing facility/premises by the inspection agency nominated by the Purchaser.
6. **Sleepers & Clips etc.:** The testing and inspection shall be done as per RDSO specifications.

For all of above mentioned, following shall be applicable: -

The Engineer/ Employer shall appoint Inspecting authority as stipulated in Volume-3 (Employer's Requirements) and Volume-4 (Technical Specifications), to carry out pre- dispatch/pre-shipment inspection & testing of materials as per approved inspection and testing plan. Where no procedure for testing is specified, the Contractor shall propose suitable standard or particular procedures for Purchaser's/ Employer's Approval.

In addition to the inspection and testing by inspecting authority, the Purchaser/Employer or his authorised representative may also witness the tests and/or conduct test checks to be organised by Contractor for validation of test/inspection by inspecting authority. The expense of such tests shall be borne by the Contractor.

Periodically, during the Contract the Purchaser/Employer/his authorised representative may conduct inspections of manufacturing activities at the premises of the Contractor and those of his sub-Contractors. Such inspections shall include quality procedure checks, witness inspections, both routine and prototype, and shall also be for the purpose of monitoring progress. During each inspection suitably qualified staff shall be provided by the Contractor.

In addition, the Contractor shall carry out and coordinate all inspections, tests, approvals, clearances, and certifications stipulated in Volume-3 (Employer's Requirements) and Volume-4 (Technical Specifications) with the relevant statutory authorities, regulatory bodies, and other concerned authorities, as applicable.

All the expenditure for witnessing the test by Employer and Engineer including their travel and accommodation etc. is to be borne by the contractor.

25. Sub-Clause 7.6

Rejection

Insert the following at the end of Sub-clause 7.6:

Pre dispatch rejection by inspecting authority

The Inspecting authority shall have the power: -

- i) Before any Stores or part thereof are offered for inspection, to certify that they cannot be in accordance with the contract owing to the adoption of any unsatisfactory method of manufacture.
- ii) To reject any Stores offered as not being in accordance with the specifications.

- iii) To reject the whole of the instalment tendered for inspection, if after inspection of such portion thereof, as he may in his discretion think fit, he is satisfied that the same is unsatisfactory.
- iv) To mark the rejected stores with a rejection mark, so that they may be easily identified if re-offered.

The Inspecting authority's decision as regards the rejection shall be final and binding on the Contractor.

The rejected material as a result of pre-shipment/pre-dispatch inspection shall not be dispatched by the Contractor

Rejection at Mumbai:

The rejected material in Mumbai shall be on Contractor's account. The payment made to the Contractor and also total customs duties and other charges etc complete paid / expenses incurred by the purchaser / Employer for such material shall be recovered from the Contractor by the Purchaser/Employer and shall be deducted by the Purchaser/Employer from any monies due, or to become due to the Contractor or by way of encashing performance bank guarantee furnished by the Contractor. The rejected material shall not be taken as part of the quantities to be supplied as per BOQ.

The rejected material shall be removed from the storage areas by the Contractor at his own cost within 28 days of the date of such rejection. If such stores are not removed by the Contractor within the periods aforementioned, the Purchaser/Employer may dispose-off such stores at the Contractor's risk and on his account and retain such portion of the proceeds, if any, from such disposal, as may be necessary to recover any expense incurred in connection with such disposals.

26. Sub-Clause 8.5

Liquidated Damages

Insert the following at the end of Sub-clause 8.5:

Schedule A component of Contract Price will be considered for the purpose of levy of liquidated damages on failure to achieve key dates.

27. Sub-Clause 10.1

Defect Liability Period

Insert the following at the end of Sub-clause 10.1

The Defect liability period (DLP) shall be 104 weeks after the date of issue of the latest Taking Over Certificate for the whole of the works.

Work by persons other than the Contractor.

If by reason of any accident or failure or other event occurring to, in, or in connection with the Works any remedial or other work shall, in the opinion of the Engineer, be urgently necessary and the Contractor is unable or unwilling at once to do such remedial or other work, the Engineer may authorise the carrying out of such remedial or other work by a person other than the Contractor. If the remedial or other work so authorised by the Engineer is work, which, in the Engineer's opinion, the Contractor was liable to do under the defect liability period Contract, all expenses properly, incurred in carrying out the same shall be recoverable by the Employer from the Contractor, provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.

28. Sub-Clause 10.2 Cost of Remedying Defects

GCC Sub-clause 10.2 shall stand replaced with the following:

All work referred to in Sub-Clause 10.1 shall be executed by the Contractor at his own cost, if the necessity for such work is due to:

- a. the design of the Works:
- b. Plant, Construction Materials or workmanship not being in accordance with the Contract'
- c. or failure by the Contractor to comply with any of his other obligations. If in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an adjustment to the Contract Price, with the approval of the Employer, and shall notify the Contractor accordingly.

In this event, Sub-Clause 12.3 shall apply to such work.

29. Sub- Clause 11.1.1 The Contract Price Inclusions and Exclusions

GCC Sub-clause 11.1.1 shall stand replaced with the following:

- a) The contract price, subject to any adjustment thereto in accordance with the contract conditions, shall be all inclusive of all taxes and excluding GST.

The GST is not included in Contract Price. It shall be paid to the Contractor as applicable.

Bidder should make his own assessment and examine the applicable Taxes/ duties on the works at the time of submission of bid.

- (b) The quoted price in Schedule 'A' & 'B' shall be in Indian Rupees.

30. Sub- Clause 11.1.2 Maintaining Records and Availing Exemptions

GCC Sub-clause 11.1.2 shall stand replaced with the following:

- i) In the event of exemption/concession of custom duties, excise duties, or any other cess/levy being granted by the Government in respect of the Works, the benefit of the same shall be passed on to Employer. The Contractor shall therefore maintain meticulous records of all the taxes and duties paid and provide the same as and when required by the Employer, so that the Employer is able to avail the reimbursement for which MMRDA may issue a procedure order separately. Alternatively, the Employer may direct the Contractor to get the reimbursements based on exemption certificates / government's order and it shall be obligatory on part of the Contractor to get the reimbursements from the statutory authorities and pass on the benefit to MMRDA.
- ii. In case of Contractor's failure in availing the exemptions as stipulated above, the recovery of equivalent amount will be made from Contractor's dues.

31. Sub-Clause 11.1.3.1 Price Variation

Additional Sub-clause to GCC Sub-clause 11.1.3:

The rates as per the accepted Bill of Quantities shall be applicable till the completion of the Work and will be varied only to the extent of permissible

price variation under this Clause. However, this adjustment shall be to the extent that full compensation for any rise or fall in costs to the Contractor is not covered by the Price variation formula, the rates in the accepted Bill of Quantities shall be deemed to include amounts to cover the contingency of such rise or fall in costs.

The price variation will be payable only on the Indian currency component (no adjustment for Foreign currency component) of the Contract Price as per the follow price variation formula.

Payment as per the contract shall be subject to adjustment in accordance with the following Price Variation formula, and other terms given herein, to provide for variation in the market rates of inputs like labour, materials and fuel / energy during the currency of the Contract:

$$V = VI + Vs + Vc + Vf + Vm$$

Where,

V = Total adjustment on account of all factors

VI = Adjustment on account of labour component

$$= p \times R \times (I - I_o) / I_o$$

Vs = Adjustment on account of Steel component

$$= q \times R \times (W_s - W_{so}) / W_{so}$$

Vc = Adjustment on account of Cement component

$$= r \times R \times (W_c - W_{co}) / W_{co}$$

Vf = Adjustment on account of Fuel/Lubricant component

$$= s \times R \times (W_f - W_{fo}) / W_{fo}$$

Vm = Adjustment on account of Machinery and Machine Tools

$$= t \times R \times (W_m - W_{mo}) / W_{mo}$$

p = Cost Coefficient of Labour to the Total Cost = 0.22

q = Cost Coefficient of Steel to the Total Cost = 0.25

r = Cost Coefficient of Cement to the Total Cost = 0.15

S = Cost Coefficient of Fuel and Lubricant to the Total Cost = 0.05

T = Cost Coefficient of other Machinery and Machine Tools to the Total Cost = 0.18

Note: p + q + r + s + t = 0.85, balance 0.15 shall be fixed component.

R = Gross value of the work done by the Contractor for the period of work under consideration, after excluding there from the cost of any materials supplied free or at fixed rate to the Contractor.

I_o = Consumer Price Index for Industrial workers, published in the Reserve Bank of India Bulletin, as applicable to Mumbai area for the month in which the tender was opened.

I = Average of monthly Consumer Price Index for Industrial workers published in the Reserve Bank of India Bulletins as applicable to Mumbai area for the period of work under consideration.

Wso = All India Price Index (with base Oct'12 = 100) for Reinforcement bars (TMT-500) for primary manufacturers, issued by Central Public Works Department (CPWD) for the month in which the tender was opened.

Ws = All India Price Index (with base Oct'12=100) for Reinforcement bars (TMT-500) for primary manufacturers, issued by Central Public Works Department (CPWD) for the period of work under consideration.

Wco = All India Price Index (with base Oct'12=100) for Cement (OPC) issued by Central Public Works Department (CPWD) for the month in which the tender was opened.

Wc = All India Price Index (with base Oct'12=100) for Cement (OPC) issued by Central Public Works Department (CPWD) for the period of work under consideration.

Wfo = Whole Sale Price Index (Averages) for Fuel & Power, as published in the RBI Bulletin for the month in which the tender was opened.

Wf = Wholesale Price Index (Averages) for Fuel & Power, as published in the RBI Bulletins for the period of work under consideration.

Wmo = Wholesale Price Index (Averages) for Machinery and Machine Tools as published in the RBI Bulletin, for the month in which the tender was opened.

Wm = Wholesale Price Index (Averages) Machinery and Machine Tools as published in the RBI Bulletins for the period of work under consideration.

Period of Work under consideration will mean as under:

- i. In the case of first "On-account Bill" the period from the month in which the tender was opened to the month of measurement of first bill.
- ii. In the case of second and subsequent "On-account" and Final bills, the Period from the month of measurement for previous bill to the month of measurement of that bill.

Note: Responsibility of arranging the RBI Bulletins desired by the Employer or the Engineer shall rest with the Contractor.

Procedure in case of Delay in Availability of Final RBI Indices:

Where the final Price Indices are not available in the Reserve Bank of India Bulletins, while making payment towards on-account bills, payment towards Price Variation will be made on provisional basis based on the indices available, to be adjusted in subsequent bills as and when the final Indices figures become available.

32. Sub-Clause 11.1.3.2 Price Variation for Varied Items

Additional Sub-clause 11.1.3.2 to GCC Sub-clause 11.1.3:

Normally, no price variation clause shall be applicable to any extra

item/new rates not originally included in the accepted Bill of Quantities and for which the rates are fixed separately under 12 of GCC.

33. Sub-Clause 11.1.3.3 Adjustment on Account of Price Variation

Additional Sub-clause 11.1.3.3 to GCC Sub-clause 11.1.3:

Adjustment on account of Price Variations may be positive (in which case extra amount shall be paid to the Contractor), or negative (in which case the amount of Price Variation shall be recovered from the Contractor). Adjustment on account of Price Variation shall be calculated separately, for each period, between two successive dates of measurements for bills and paid along with each bill or separately as claimed by the contractor.

34. Sub-Clause 11.1.3.3 Price Variation during Extended Period of Completion

Additional Sub-clause 11.1.3.4 to GCC Sub-clause 11.1.3:

The price adjustment as worked out above i.e. either increase or decrease will be applicable up to the stipulated date of completion of the work including the extended period of completion where such extension has been granted under Sub-Clause 8.4.1 of GCC or it is specifically mentioned that extension is with price variation also. However, where extension has been granted under Sub-Clause 8.4.3 of GCC, price adjustment will be due as follows:

In case the indices increase above the indices applicable to a bill made on the last date of original completion period or the extended period under Sub-Clauses 8.4.1 of GCC, the price adjustment for the period of extension under Sub-Clause 8.4.3 of GCC will be limited to the amount payable as per the indices applicable to a bill made on the last date of the original completion period or the extended period under Sub-Clauses 8.4.1 of GCC as the case may be.

In case the indices fall below the indices applicable to a bill made on the last date of the original or extended period of completion, then the lower indices will be adopted for Price Adjustment for the period of extension under Clause 8.4 of GCC unless the extension has been granted due to Contractor's fault.

35. Sub-Clause 11.1.4 Adjustment for Changes in Taxes/ Duties

GCC Sub-clause 11.1.4 shall stand replaced with the following:

- i. The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of Taxes & Duties (including the introduction of new Laws of Taxes & Duties and the repeal or modification of existing Laws of Taxes & Duties) or in the judicial or official governmental interpretation of such Laws, made after the last date of submission of tender, which affect the Contractor in the performance of obligations under the Contract.
- ii. **Adjustment for Changes in Taxes/Duty during Extended Period of Completion:**

Adjustment for Changes in Legislation i.e., either increase or decrease will be applicable up to the stipulated date of completion of the work including the extended period of completion where such extension has been granted under Sub-Clause 8.4.1 of GCC or it is specifically mentioned that extension is with adjustment for changes in legislation. However, where extension has been granted under Sub-Clause 8.4.3 of GCC, this adjustment will be due as follows:

In case effect of the adjustment would be increase in Contract Price, the adjustment for the period of extension under Sub-Clause 8.4.3 of GCC will be ignored. In case effect of the adjustment would be decrease in Contract Price, then the Contract Price shall be adjusted accordingly.

36. Sub-Clause 11.2

Advances

Insert the following at the end of Sub-clause 11.2:

The Employer shall make an interest-bearing advance payment for mobilization, Material and Plant & Machinery when the Contractor submits a guarantee in accordance with this sub-clause. The guarantee shall be in the form of BG for 110% of the requested amount as the per format given in Appendix-25 of FOT. The total advance payment and the applicable currencies and proportions shall be as stated in GCC.

The interest on the amount paid as advance is chargeable at State Bank of India Basic Rate plus 3% per annum or 14.65% per annum whichever is higher) from the date the amount is paid.

37. Sub-Clause 11.2.1

Mobilisation Advance

Insert the following at the end of Sub-clause 11.2.1:

An interest-bearing Mobilisation Advance shall be 10% (including GST) of the Original Contract Value payable in two equal instalments at the interest rate of 14.65% per annum. The first instalment shall be paid after mobilisation has started and next instalment shall be paid after satisfactory utilization of earlier instalment. Second instalment shall be paid on production of effective and proper utilization proof of the first instalment.

An interest-bearing Mobilisation advance shall be paid against acceptable Bank Guarantee. The value of Bank Guarantee taken towards security of "Mobilisation advance" shall be 110% of the advance taken by the contractor.

If the Contract is terminated due to default of the Contractor, the "Mobilisation Advance" would be deemed as interest bearing advance at an interest rate of **(at an interest rate equal to State Bank of India Basic Rate plus 3% per annum or 14.65% per annum whichever is higher).**

38. Sub-Clause 11.2.2

Advance against Plant & Machinery

Insert the following at the end of Sub-clause 11.2.2

This advance is payable for plant, equipment and machinery, provided the same have reached the site, or in the case of new items meant specifically for the works, firm purchase order has been placed and the invoices received. The plant and machinery shall be valued by the Engineer as follows:

- a. New items: 80% of Purchase Price.
- b. Used items in working order: 80% of Depreciated Value as assessed by the Engineer
- c. Items valued at less than: Not to be considered Rs. 25,000 per unit.

The total interest-bearing advance for Plant and Machinery shall be limited to 5% of the price quoted in Schedule 'A' of BOQ/Price document at the

interest rate of 14.65% per annum and shall be paid against 12 acceptable Bank Guarantees of equal amount from a Schedule Commercial Bank of India. The Bank Guarantees shall be payable at Mumbai only.

39. Sub-Clause 11.2.4 Recovery of Advances

Replace GCC Sub-clause 11.2.4 (a) as below:

- a) The recovery of Advances shall commence either from 4th month after LOA or when 20% of the original Contract Price of the work has been paid whichever is earlier and it will be completed by 15th month from the date of LOA. As far as possible the recovery of advances shall be limited. to 30% of an account bill.

In case of non-recovery of complete advance within 15 months from the date of LOA, an Interest shall be charged on the balance outstanding advance at the rate of 3% above SBI MCLR Base Rate or 12% whichever is higher.

40. Sub-Clause 11.2.5 Interest in case of delay in repayment of Advances

GCC Sub-clause 11.2.5 shall stand replaced with the following:

In case there is a delay in progress of works by Contractor and/or delay in completion of works by Contractor and/or the Contract is terminated due to default of the Contractor, as a result of which recovery of the advance also delayed then:

- (i) Interest will also be charged on the balance outstanding advance at the rate of 3% above SBI MCLR Base Rate or 14.65% whichever is higher.
- (ii) Interest will be calculated up to the day the advance is actually paid back or recovered from respective RA bills (both days inclusive) and so on.

41. Sub-Clause 12.0 Variations

Insert the following at the end of GCC Sub-clause 12:

(C) Day work

For payment of extra items, the Engineer may decide to pay on the basis of 'Day Work' concept instead of paying as per sub-clause no. 12.5 (ii) of GCC. In such a case the Engineer may, if in his opinion it is necessary or desirable issue an instruction that any varied work or new item of work shall be executed on a day work basis. The Contractor shall be then paid for such item based on the actual expenditure made on daily basis under the terms set out in day work schedule included in the Contract and at the rates and prices affixed by him in the tender.

The Contractor shall furnish to the Engineer or his representative, a daily list (with name, occupation and shift time) of all workmen deployed on the work in duplicate for checking and approval. The Contractor shall submit to the Engineer a priced statement of labour, material, plant, etc., actually used on the work, together with the output of work at the end of each calendar month and / or as soon as the work is completed. The payment for the new item of work will be certified by the Engineer based on this submission of Contractor.

42. Sub-Clause 12.3 Employers Variation

An Employer's Variation shall be requested and implemented in accordance with and subject to the following provisions:

- (a) Within 14 days (or such other period as the Engineer may allow) of the Engineer informing the Contractor in writing of the intention to request an

Employer's Variation, the Contractor shall notify the Engineer in writing whether in his opinion the Employer's Variation. would, if ordered:

- (i) give rise to any entitlement to an extension of time; or
- (ii) affect the achievement of any Milestone; or
- (iii) give rise to any entitlement to additional payment; or
- (iv) affect the warranties of the Contractor set out in Clause 4.2 of Special Conditions of Contract and shall submit his proposals as to the terms upon which he would agree to implement the Employer's Variation.

(b) The Engineer shall determine the amount which should be added to or deducted from the fixed lump sum price as a result of the Variation and get it approved by the Employer. In assessing work covered by any sub-contract, the Engineer will have, where he deems necessary, access to the original sub-contract conditions, rates, prices and details of the variation claimed, to assist in evaluating any Variations and the agreed rates if any of major items of work/ activities, labour, plant and machinery and where appropriate the local market rates for these items.

(c) If the Engineer withdraws the request for an Employer's Variation, the Contractor shall have no claim of any kind whatsoever arising out of the amount determined above. In case the Employer's Variation involves omission of part of the Works, the agreement shall address the issue of reduction in the Contract Price.

There shall be only deductions in the fixed lump price as a result of Contractor's variations. The Engineer shall take prior approval of the Employer to the aforesaid valuation. Any such amount determined by the Engineer shall be denominated in the same currency as the relevant parts of the fixed lump sum price.

In case of any variation, once the rates have been finalised by the Engineer and approved by the Employer, the contractor shall be bound to carry out with the same. No claims shall be entertained by the Employer in this regard.

Note: The Schedules attached to SCC may be modified as considered necessary at the time of finalisation of the contract.

43. Sub-Clause 15

Insurance

Contractor shall take out necessary Insurance Policy/Policies so as to provide adequate insurance cover for execution of the awarded contract work from the “**Directorate of Insurance, Maharashtra State, Mumbai - 400 051**” only. Insurance Policy / Policies taken out from any other insurance Company will not be accepted.

The Contractor shall mandatorily obtain insurance Policy/Policies strictly in accordance with the Government of Maharashtra, Finance Department Government Resolution (GR) No. Sankirna-2018/CR-47/Insurance Administration dated 13 July 2022, and in full compliance with the procedures stipulated therein.

44. Sub-Clause 15.1

Professional Indemnity Insurance

Professional Indemnity Insurance (PII) shall be valid for the period of more than 5 years. In case the Contractor is granted Extension of Time pursuant in accordance with the provisions of GCC Clause 8.4, the Contractor shall ensure that the PII shall be extended or renewed suitably. The Contractor is deemed to have satisfied himself before submitting his tender as to all

Statutory/Legal/Insurance/Finance rules which may curtail the renewal or extension of PII to any shorter periods than contractual requirements.

Wherever the shorter period / annual renewable policy, the same shall be renewed before its expiry date. In such situation, the performance guarantee shall be retained till required validity period. The contractor's submission of such shorter period / renewable policy shall be construed as their irrevocable consent for retention of the performance guarantee.

The Engineer will not issue Final Payment Certificate until the Contractor has produced evidence that coverage of the professional indemnity insurance has been provided for the aforesaid period.

45. Sub-Clause 17.9

Arbitration

GCC Sub-clause 17.9 shall stand replaced with the following:

If the efforts to resolve all or any of the disputes through conciliation fails, then such disputes or differences, whatsoever arising between the parties, arising out of touching or relating to construction/ manufacture, measuring operation or effect of the Contract or the breach thereof shall be referred to Arbitration in accordance with the following provisions:

- a) Only such dispute(s) or difference(s) in respect of which notice has been made under Clause 17.9 but could not be settled through Conciliation, together with counter claims or set off, shall be referred to arbitration. Other matters shall not be included in the reference.
- b) The Arbitration proceedings shall be assumed to have commenced from the day, a written and valid demand for arbitration is received by Metropolitan Commissioner, Mumbai Metropolitan Region Development Authority (MMRDA)(MC/MMRDA).
- c) The disputes so referred to arbitration shall be settled by International Arbitration conducted in accordance with the Arbitration Rules of the Mumbai Centre for International Arbitration (MCIA). Arbitration shall be administered by the MCIA.

Arbitration Procedure: -

If the efforts to resolve all or any of the disputes through conciliation fails or decision has not become final and binding shall be finally settled by international arbitration. Unless otherwise agreed by both parties,

- a) Arbitration procedures undertaken as provided by the Arbitration Rules of the Mumbai Centre for International Arbitration (MCIA). Arbitration shall be administered by MCIA.
- b) The Disputes shall be settled by three arbitrators; and
- c) The Arbitration shall be conducted in the English language for communications.

The arbitrator(s) shall have full power to open up, review and revise any certificate determination, instruction, opinion or valuation of the Engineer, and any decision of the Conciliator or, relevant to the dispute. Nothing shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrator(s) to the evidence or arguments previously put up before the Conciliator to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the Conciliator shall be admissible in evidence in the arbitration. Arbitration may be commenced prior to or after completion of works. The Obligations of the parties, the Engineer and the Conciliator shall not be altered by reason of any arbitration being conducted during the progress of the works.

46. Additional Clause Destination and Packing

i) The shipment of stores shall be made to their own Stores at Mumbai. The stores shall be packed in such a way that no damage can occur to stores during transit and handling. The Contractor shall be fully responsible for the safe arrival of stores at Mumbai. In case any damage, whatsoever kind of it may be, occurred to stores, it all shall be on the cost of Contractor.

The Purchaser/ Employer shall not accept the damaged stores and no payment shall be made for such materials. On the packages/ bundles, the lifting points should be distinctly marked.

(ii) The packing advices should bring out the weight, dimensions and size of each bundles/ package. Where it is not possible to give weight of the bundles/packages, the Contractor must indicate the volume of the bundles/packages, the number of pieces per bundle/package, number of bundles/packages, and total weight of the items supplied.

(iii) Where the materials are shipped in bundles/packages, the pieces in each bundle/package should be of uniform sizes to facilitate quick acceptance and payment. The number of pieces in each bundle/package should also be the same.

47. Additional Clause

Details of Shipping, in case of Supplied Items

Details of Shipping and other Documents to be furnished by the Contractor are: Invoice, Negotiable bill of Lading, a non-negotiable Sea Way Bill, an Airway bill, a Railway consignment note, a Road Consignment Note, Insurance Certificate, Manufacturer's or Contractor's Warranty Certificate, Inspection Certificate issued by nominated inspection agency, Contractor's factory shipping details.

The above documents shall be received by the Purchaser/ Employer before arrival of the Goods and, if not received, the Contractor will be responsible for any consequent expenses.

48. Additional Clause

Warranty for supply items

Contractor shall arrange warranty certificate from the manufacturers that the Goods (Rails, Fasteners, Turnouts, Buffer stops and any other supply item) are new, unused and of the most recent and current models and they incorporate all recent improvements in design and materials. Contractor shall also warrants that the goods shall be free from the defects arising from any act of design, materials, workmanship under normal use.

Further particularly for Rails, contractor shall arrange warranty certificate from the manufacturer as per IRS T 12-2009 (with latest correction slips)

49. Additional Clause

Definitions

Maha Mumbai Metro Operation Corporation Limited MMOCL

Mumbai Metropolitan Region Development Authority (MMRDA) has established the Maha Mumbai Metro Operation Corporation Limited (MMMOCL) to carry out the "Operations and Maintenance" of all the upcoming Metro corridors in the Mumbai Metropolitan Region (MMR).

SCHEDULE 1

CONTRACTOR'S WARRANTY

(Refer clause 6 of SCC and Sub-Clause 4.2.4 of GCC)

THIS AGREEMENT is made on the day ofbetween:

- (1) [.....] of [.....] [and [see Note 1]] ([jointly] "the Contractor")
- (2) [Mumbai Metropolitan Region Development Authority (MMRDA)] [of]/[whose registered office is at] [Bandra-Kurla Complex, Bandra (E), Mumbai-400 451, India] (together with its successors and assigns, "the Employer").

WHEREAS

- (A) By a contract _ dated [] ("the Contract") made between (1) the Mumbai Metropolitan Region Development Authority (MMRDA) ("the Employer") and (2) the Contractor, the Contractor has agreed to design, execute, complete, test and commission (including Integrated Testing and Commissioning) and remedy any defect in the Works upon the terms and conditions contained in the Contract.
- (B) [See Note 3].
- (C) At the request of the Employer and pursuant to the terms of the Contract the Contractor has agreed to enter into this Warranty.

NOW IT IS AGREED AS FOLLOWS:

1. The Contractor hereby warrants and undertakes that:
 - (a) He will design, execute, complete, test and commission (including Integrated Testing and Commissioning) and remedy any defect in the Works in accordance with the terms of the Contract; and
 - (b) he owes a duty of care to the Employer in relation to the performance of its duties under the Contract; and
 - (c) he will replace free of cost to the Employer any defect or failure of equipment provided in the Works for a period of 36 months from the date of Taking Over of the last Section of the Works; and
 - (d) he agrees that should any design modification be required to any section or component due to any defect, the period of 36 months shall re-commence from the date when the modified part is commissioned into service, and such modification shall be carried out free of cost to the Employer in all sub-systems and systems for all sections; and
 - (e) he shall maintain the manufacture or spare of replacement parts for at least 10 years.
2. The liability of [the companies comprising [see Note 3]] the Contractor under this Warranty [shall be joint and several and [see Note 3]] shall not be released, diminished or in any way affected by any independent inquiry or investigation into the Works or any matter related to the Contract whether

carried out by or on behalf of the Employer or any liability or right of action which may arise out of such inquiry or investigation.

3. Insofar as the copyright or other intellectual property rights in any plans, calculations, drawings, documents, materials, plant, know-how and other information relating to the Works shall be vested in the Contractor, the Contractor grants to the Employer his successors and assigns a royalty free, non-exclusive and irrevocable licence (carrying the right to grant sub-licences) to use and reproduce any of the works designs or inventions incorporated and referred to in such documents or materials and any such know-how and information for all purposes relating to the Works or the Mumbai Metro Rail Project including without limitation the design, execute, complete, test and commission (including Integrated Testing and Commissioning) reinstatement, extension and the remedy of any defect in the Works. To the extent that beneficial ownership of any such copyright or other intellectual property rights is vested in anyone other than the Contractor, the Contractor shall use best endeavours to procure that the beneficial owner thereof shall grant a like licence to the Employer. For the avoidance of doubt, any such licence granted shall not be determined if the Contractor shall for any reason cease to be employed in connection with the Works.
4. The provisions of this Warranty shall be without prejudice to and shall not be deemed or construed so as to limit or exclude any rights or remedies which the Employer may have against the Contractor, whether in tort or otherwise.
5. Nothing contained in this Warranty shall vary or affect the Contractor's rights and obligations under the Contract.
6. The address for service of all documents arising out of or in connection with this Warranty shall be:-
 - (a) upon the Employer at [] India. [Note 4]
 - (b) upon the Contractor at [] India. [Note 4]
7. The Employer and the Contractor may change their respective nominated addresses to another address in India but only by prior written notice to each other. All notices must be in writing.
8. This Warranty shall be governed by and construed according to the laws for the time being in force in India.
9. (1) Any dispute or difference of any kind whatsoever between the Employer and the Contractor arising under out of or in connection with this Warranty shall be referred to arbitration in accordance with the Conciliation and Arbitration rules set out in the General Conditions of Contract. "Dispute" as defined in the Contract shall be deemed to include any such dispute or difference between the Employer and Contractor.

(2) In the event that the Employer is of the opinion that the issues in such a dispute or difference will or may touch upon or concern a dispute or difference arising under out of or in connection with the Contract ("the Contract Dispute") then provided that an arbitrator has not already been appointed pursuant to Clause 9(1), the Employer may by notice in writing to the Contractor require and the Contractor shall be deemed to have consented to the referral of such dispute or difference to the arbitrator to whom the Contract Dispute has been or will be referred.

(3) Save as expressly otherwise provided, the arbitrator shall have full power to open up, review and revise any decision, opinion, instruction, notice, order, direction, withholding of approval or consent, determination, certificate, statement of objections relating to the dispute.

(4) Subject to the foregoing provisions of this clause 9, the Employer and the Contractor shall submit to the jurisdiction of the Courts of India at Mumbai.

IN WITNESS, whereof, this Warranty has been executed as a deed on the date written at the head hereof

THE COMMON SEAL of

[.....]

was affixed hereto in the presence of:-

Notes (for preparation of and not inclusion in the engrossment of this Warranty):

- (1) If the Contractor comprises more than one company, each such company shall be a party and liability under this warranty will be joint and several, with consequential grammatical changes.
- (2) If Note 1 applies, that fact and the joint venture or other relevant agreement must be recited.
- (3) Delete if Note 1 does not apply.
- (4) The address for service shall be in India.

- necessary to ensure [see Note 6]] compliance by the Contractor with the provisions of the Contract.
2. The obligations of the Parent Company under this Undertaking shall remain in full force and effect and shall not be affected or discharged in any way and the Parent Company hereby waives notice of:-
- (a) any suspension of the Works, variation or amendment to the Contract (including without limitation extension of time for performance) or any concession or waiver by the Employer in respect of the Contractor's obligations [and/or the obligations of [] [see Note 7];
 - (b) any provision of the Contract being or becoming illegal, invalid, void, voidable or unenforceable;
 - (b) the termination of the Contract or of the employment of the Contractor [and/or [] [see Note 7] under the Contract for any reason;
 - (d) any forbearance or waiver of any right of action or remedy the Employer may have against the Contractor [and/or [] [see Note 7] or negligence by the Employer in enforcing any such right of action or remedy;
 - (e) any bond, undertaking, security or other guarantee held or obtained by the Employer for any of the obligations of the Contractor [and/or [] [see Note 7] under the Contract or any release or waiver thereof.
3. This Undertaking shall extend to any variation of or amendment to the Contract and to any agreement supplemental thereto agreed between the Employer and the Contractor [and/or [] [see Note 7] and for the avoidance of doubt the Parent Company hereby authorises the Employer and the Contractor [and/or [] [see Note 7] to make any such amendment, variation or supplemental agreement.
4. All documents arising out of or in connection with this Undertaking shall be served:
- (a) upon the Employer, at [] marked for the attention of [];
 - (b) upon the Parent Company, at [] India. [Note 8]
5. The Employer and the Parent Company may change their respective nominated addresses for service of documents to another address in India but only by prior written notice to each other. All demands and notices must be in writing.
6. This Undertaking shall be governed by and construed according to the laws for the time being in force in India and the Parent Company agrees to submit to the jurisdiction of the courts of Mumbai.

IN WITNESS where of this Undertaking has been executed as a deed on the date first before written. THE COMMON SEAL of)

[]) was affixed hereto) in the presence of:-)

Notes: (for preparation of but not for inclusion in the engrossment of this Undertaking)

1. If the Parent Company is not the immediate parent company, the chain of ownership must be recited, identifying each company in the chain and the shareholdings or other interests in each subsidiary.

2. If the Contractor comprises more than one company, that fact and the joint venture or other relevant agreement must be recited. In such case, insert the name of the subsidiary forming part of the joint venture, partnership or consortium, and in respect of which the parent company undertaking is being given.
3. If Note 2 applies, refer to the subsidiary of the Parent Company and not the Contractor.
4. If Note 1 applies, use this alternative.
5. If Note 1 applies, add this provision.
6. If Note 2 applies, add this provision.
7. If Note 2 applies, add this provision and insert the name of the subsidiary.
8. The address for service shall be India.

SCHEDULE 1B

PARENT COMPANY GUARANTEE (Refer Clause 6 of SCC)

THIS GUARANTEE is made on the day of..... between

(1) [.....] whose registered office is at [.....] and [.....] whose registered office is at [.....] ("the Guarantor").

(2) The Mumbai Metropolitan Region Development Authority (MMRDA) (together with its successors and assigns, "the Employer") [Metro PIU, 7th floor, New Administrative Building, Bandra-Kurla Complex, Bandra (E), Mumbai-400 451, India

WHEREAS

(A) By a contract [NO.] dated [.....] ("The Contract") made between (1) the Mumbai Metropolitan Region Development Authority (MMRDA) ("the Employer") and (2) [.....] ("the Contractor"), the Contractor has agreed to design, execute, complete and remedy any defects in the Works upon the terms and conditions contained in the Contract.

(B) Pursuant to the terms of the Contract, the Contractor has agreed to procure the provision of a guarantee in the terms hereof. [see Note 1].

(C) At the request of the Contractor, the Guarantor has agreed to guarantee performance of the Contract by the [Contractor] [see Note 2] as set out herein.

IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the Employer entering into the Contract with the Contractor, the Guarantor irrevocably and unconditionally guarantees to the Employer as a primary obligation and not as a surety due performance by the [Contractor] [see Note 2] of all of its obligations and liabilities under and in accordance with the Contract save that nothing herein shall be construed as imposing greater obligations or liabilities on the Guarantor than are imposed on the [Contractor] [see Note 2] in the Contract.

2. The obligations of the Guarantor under this Guarantee shall remain in full force and effect and shall not be affected or discharged in any way by and the Guarantor hereby waives notice of:-

(a) any suspension of the Works, variation to or amendment of the Contract (including without limitation extension of time for performance) or any concession or waiver by the Employer in respect of the Contractor's obligations [and/or the obligations of [] [see Note 3] under the Contract;

(b) any provision of the Contract being or becoming illegal, invalid, void, voidable or unenforceable;

(c) the termination of the Contract or of the engagement of the Contractor [and / or [.....]] [see Note 3] under the Contract for any reason;

(d) any forbearance or waiver of any right of action or remedy the Employer may have against the Contractor [and / or [.....]] [see Note 3] or negligence by the Employer in enforcing any such right of action or remedy;

(e) any bond, undertaking, security or other guarantee held or obtained by the Employer for any of the obligations of the Contractor [and/or [.....]] [see Note 3] under the Contract or any release or waiver thereof.

3. This Guarantee shall extend to any variation of or amendment to the Contract and to any agreement supplemental thereto agreed between the Employer and the Contractor [and/or []] [see Note 3] and for

the avoidance of doubt the Guarantor hereby authorises the Employer and the Contractor [and/or []] [see Note 3] to make any such amendment, variation or supplemental agreement.

4. This Guarantee is a continuing guarantee and accordingly shall cover all of the obligations and liabilities of the [Contractor] [see Note 2] under the Contract and remain in full force and effect until all the said obligations and liabilities of the Contractor shall have been carried out, completed and discharged in accordance with the Contract. This Guarantee is in addition to any other security which the Employer may at any time hold and may be enforced without first having recourse to any such security or taking any steps or proceedings against the Contractor.

5. Until expiry of the Maintenance and Defects Liability Period (as defined in the Contract) for the whole and every part of the Works, the Guarantor shall not on any ground whatsoever make any claim or threaten to make any claim whether by proceedings or otherwise against the Contractor [and/or []] [see Note 3] for the recovery of any sum paid by the Guarantor pursuant to this Guarantee. Any such claim shall be subordinate to any claims (contingent or otherwise) which the Employer may have against the Contractor [and/or []] [see Note 3] arising out of or in connection with the Contract until such time as such claims shall be satisfied by the Contractor [and/or []] [see Note 3] or the Guarantor as the case may be. To that intent the Guarantor shall not claim or have the benefit of any security which the Employer holds or may hold for any monies or liabilities due or incurred by the Contractor [and/or []] [see Note 3] to the Employer and, in case the Guarantor receives any sum from the Contractor [and/or []] [see Note 3] in respect of any payment by the Guarantor hereunder, the Guarantor shall hold such sum in trust for the Employer for so long as any sum is payable (contingently or otherwise) under this Guarantee.

6. The Employer shall be entitled to assign the benefit of this Guarantee at any time without the consent of the Guarantor or the [Contractor] [see Note 2] being required.

7. All documents arising out of or in connection with this Guarantee shall be served:

- (a) upon the Employer, at [.....] marked for the attention of [.....];
- (b) upon the Guarantor, at [.....] India. [Note 4]

8. The Employer and the Guarantor may change their respective nominated addresses for service of documents to another address in India but only by prior written notice to each other. All demands and notices must be in writing.

9. This Guarantee shall be governed by and construed according to the laws for the time being in force in India and the Contractor agrees to submit to the jurisdiction of the courts of India.

IN WITNESS whereof this Guarantee has been executed as a deed on the date first before written.

THE COMMON SEAL

of[.....]

was affixed hereto in the presence of:-

Notes (for preparation of but not inclusion in the engrossment of this Guarantee):

1. If the Contractor comprises more than one company, that fact, the joint venture or other relevant agreement and the relationship of the Guarantor to its subsidiary forming part of the Contractor must be recited.
2. If Note 1 applies, replace the word "Contractor" with name of the subsidiary being guaranteed.
3. If Note 1 applies, add additional wording and insert the name of the subsidiary being guaranteed.
4. The address for service shall be in India

SCHEDULE 2
FORM OF CONTRACT AGREEMENT
(Refer Clause F4 of ITT)

This Agreement is made at Mumbai on the day of(month) **2022** between Mumbai Metropolitan Region Development Authority (MMRDA), Metro-PIU, 7th Floor, MMRDA Office, Bandra-Kurla Complex, Bandra (E), Mumbai-400 451, India hereinafter called “the Employer” of the one part and.....(Name & Address of

Contractor) hereinafter called “the Contractor” of the other part. Whereas the Employer is desirous that (** certain Goods and Services should be provided and) the Works should be executed, viz.

.....(Name of work as mentioned under Clause 1.1 of NIT) hereinafter called “the Works” and has accepted a Tender by the Contractor for the execution and completion of such works (** as well as guarantee of such works) and the remedying of defects therein.

This agreement is signed between (for and on behalf of the Employer) and (for and on behalf of the Contractor).

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. These documents shall be signed by..... (for and on behalf of the Employer) and..... (for and on behalf of the Contractor).
 - a) Notice Inviting Tender (NIT)
 - b) Instructions to Tenderers (ITT)(Including Annexures)
 - c) Special Conditions of Contract (SCC)
 - d) General Conditions of Contract (GCC)
 - e) Conditions of contract on Safety, Health & Environment (SHE).
 - f) Specifications
 - g) Tender Drawings
 - h) Bill of Quantities
 - i) Form of Tender with Appendix
 - j) Letter of acceptance (LOA)
 - k) Contractor’s proposal submitted along with the tender
 - l) Any other item as applicable

The modifications to the tender documents communicated through the Addenda (.....Numbers) issued to the tenderers at the time of tender have been incorporated in the consolidated contract documents. Hence, the Addenda (.....Numbers) are not included in the contract documents. Copies of the Addenda are available with the Employer, Contractor and Employer’s Representative. As and when required, they could be referred to and in case of any discrepancy.

Between the corrections/modifications incorporated in the consolidated contract documents and the Addenda, the provision of the Addenda shall prevail.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter

mentioned, the Contractor hereby covenants with the Employer to execute and complete the works by ** and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects therein, the Total Contract Price of **being the sum stated in the letter of acceptance subject to such additions thereto or deductions there from as may be made under the provisions of the Contract at the times and in the manner prescribed by the Contract.

5. OBLIGATION OF THE CONTRACTOR

The contractor shall ensure full compliance with tax laws of India with regard to this contract and shall be solely responsible for the same. The contractor shall submit copies of acknowledgements evidencing filing of returns every year and shall keep the Employer fully indemnified against liability of tax, interest, penalty etc. of the contractor in respect thereof, which may arise.

6. JURISDICTION OF COURT

The Courts at Mumbai shall have the exclusive jurisdiction to try all disputes arising out of this agreement between the parties.

IN WITNESS WHEREOF the parties hereto have caused their respective Common Seals to be hereunto affixed / (or have hereunto set their respective hands and seals) the day and year first above written.

For and on behalf of the Contractor

For and on behalf of the Employer

Signature of the authorized official

Signature of the authorized official

Name of the official

Name of the official

Stamp/Seal of the Contractor

Stamp/Seal of the Employer

SEALED, SIGNED & DELIVERED

By the said..... (Name)
on behalf of the Contractor in the
presence of : Witness

By the said..... (Name)
on behalf of the Employer in the
presence of : Witness

Name:

Name:

Address:.....

Address:

Note:

* To be made out by the Employer at the time of finalization of the Form of Agreement.

** Blanks to be filled by the Employer at the time of finalization of the Form of Agreement.

*** To be deleted if not applicable



MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF STANDARD GAUGE TRACKWORKS (BALLASTED AND BALLASTLESS) IN KASHELI DEPOT TRACKS FOR LINE 5 CORRIDOR OF MUMBAI METRO RAIL PROJECT OF MMRDA, MUMBAIO RAIL PROJECT OF MMRDA, MUMBAIO RAIL PROJEO RAIL PROJECT OF MMRDA, MUMBAI

CONTRACT NO: MMRDA/XX/MMRP/CA-303

TENDER DOCUMENTS

VOLUME 2

CONDITIONS OF CONTRACT ON SAFETY, HEALTH & ENVIRONMENT

MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY

**Metro PIU, 7th Floor, New Administrative Building,
Bandra-Kurla Complex, Bandra (E), Mumbai –400 051, India**

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PART – I: SHE MANAGEMENT

1.0 General

1.1 Scope

- 1.1.1. This document defines the principal requirements of the Employer on Safety, Health and Environment (SHE) associated with the contractor / sub-contractor and any other agency to be practiced at construction worksites at all time.

1.2 Definition / languages

In this document,

- i) The use of 'shall' indicates a mandatory requirement.
- ii) The use of 'should' indicates a guideline that is strongly recommended.
- iii) The use of 'may' indicates a guideline that is to be considered.
- iv) 'SHE' means Safety, Health and Environment.
- v) Employer means Mumbai Metropolitan Region Development Authority (MMRDA)
- vi) Engineer means any person nominated or appointed from time to time by the Employer to act as the Engineer for the purpose of the contract and notified as such in writing to the Contractor
- vii) Chief Safety Officer means an officer nominated by MMRDA who is overall responsible for monitoring all SHE functions prescribed in this document.
- viii) BOCWA means Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996
- ix) BOCWR means Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Central Rules, 1998
- x) MBOCWR means Maharashtra Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Rules, 2007
- xi) DG means Director General of Ministry of Labour, Govt. of India.
- xii) CIIBC means Chief Inspector of Inspection of Building and Other Construction of Govt. of Maharashtra.

1.3 Application of this document

- 1.3.1. This document applies to all aspects of the contractor's scope of work, including all aspects conducted by sub-contractors and all other agencies. There shall be no activity associated to the contract, which is exempted from the purview of this document.

1.4 Purpose of this document

- 1.4.1. The objective of these guidelines is to ensure that adequate precautions are taken to avoid accidents, occupational illness and harmful effects on the environment during construction.
- 1.4.2. This document:
- i) Describes the SHE interfaces between Employer and the Contractor.
 - ii) Details the processes by which the contractor shall manage SHE issues while carrying out the work under the contract.
 - iii) Describes by reference, the practices and procedures as given in the MMRDA Project Safety, Health & Environment manual for best SHE performance.

- 1.4.3. These requirements shall be read together with MMRDA Project SHE Manual, OHSAS 18001- 2007, Occupational Health and Safety Management System and ISO 14001: 2004 Environmental Management Systems. Definition of key terms used in these requirements related to OHSAS 18001 and ISO 14001 standard are found in MMRDA's Project SHE Manual.

2.0 'SHE' Targets and Goals

- 2.1. The SHE targets, goals and aim for the Works are to achieve:

- i) Zero total recordable injuries.
- ii) Zero reportable environmental incidents
- iii) All personnel inducted in accordance with the approved contractor SHE plan
- iv) Total compliance of conducting inspections and audits as per approved SHE plan
- v) 100% incident recording and reporting.
- vi) 100% adherence of usage of appropriate PPEs at work.
- vii) Executing construction work with least disturbance to the environment, adjoining road users and traffic.

3.0 Compliance

- 3.1. Memorandum of Understanding (MOU)

- 3.1.1 A Memorandum of Understanding placed at Appendix No.: 1 shall be executed before the award of contract by the contractor with regard to various provisions on Safety, Health and Environment to be practiced during the construction work.

- 3.2. MMRDA's SHE Policy and Management Systems

- 3.2.1 The construction works shall be undertaken in accordance with MMRDA's SHE Policy and Management Systems as amended from time to time provided in Project SHE Manual.

- 3.3. Indian statutory requirements

- 3.3.1 Primary statutory regulations

- 3.3.1.1 Contractor shall develop thorough understanding about Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996, Central Rules 1998, Maharashtra Govt. Rules, Building and Other Construction Workers' Welfare Cess Act, 1996 and Central Rules, 1998 and Maharashtra Building Construction Workers' Welfare Board Rules, not only to satisfy the Inspectors' perspective but the use of legislation as the strong tool for effective SHE management at construction worksites. Contractor is strongly advised to practice the principle of voluntary compliance.

- 3.3.1.2 In order to facilitate the contractor for better understanding on the various provisions of the above Act and Maharashtra Govt. Rules, a tabulated information highlighting the Sections/Rules referring to the corresponding registration of contractors, maintenance of registers and records, hours of work and wages, welfare, medical facilities and safety requirements are given in Appendix No.: 2. It is an indicative one and not a limiting list.

- 3.3.2 In addition, the construction works shall be undertaken in accordance with all applicable legislation and Indian statutory requirements listed below but not limiting to:

- i) Indian Electricity Act 2003 and Rules 1956
- ii) National Building Code, 2005
- iii) Factories Act, 1948, Maharashtra Factories Rules.
- iv) Motor Vehicles Act as amended in 1994 and The Central Motor Vehicles Rules, 1989

- v) Indian Road Congress Code IRC: SP: 55-2001 'Guidelines on Safety In Road Construction Zones.
- vi) The Petroleum Act, 1934 and Rules 1976
- vii) Gas Cylinder Rules, 2003
- viii) Indian Explosives Act. 1884, along with the Explosives Substance Act 1908 and the Explosives Rules 1983
- ix) The (Indian) Boilers Act, 1923
- x) The Public Liability Insurance Act 1991 and Rules 1991
- xi) Minimum Wages Act, 1948 and Rules 1950
- xii) Contract Labour Act, 1970 and Rules 1971
- xiii) Child Labour (Prohibitions & Regulations) Act, 1986 and Rules 1950 xiv) Environment Protection Act, 1986 and Rules 1986 Air (Prevention and control of Pollution) Act, 1981
- xiv) Water (Prevention and Control of Pollution) Act, 1974
- xv) The Noise Pollution (Regulation & Control) Rules, 2000
- xvi) Notification on Control of Noise from Diesel Generator (DG) sets, 2002
- xvii) Recycled Plastic Usage Rules, 1998
- xviii) Notification, Central Ground Water Board, Act January 1997
- xix) Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989
- xx) The Hazardous Waste (Management & Handling) Rules, 1989
- xxi) Hazardous Waste Management Rules 1989 (as amended in 1999)
- xxii) Batteries (Management and Handling) Rules xxv)
- xxiii) Fly ash utilization notification, Sept 1999
- xxiv) Workman Compensation Act, 1923 along with allied Rules

3.3.2.1 The contractor shall ensure that all his employees / workmen are covered under 'Workmen Compensation Act' and shall pay compensation to his workmen as and when the eventuality for the same arises.

3.3.3 Notwithstanding the above Act/Rules, there is nothing in those to exempt the contractor from the purview of any other Act or Rule in Republic of India for the safety of men and materials.

3.3.4 If the requirements stated in this document are less stringent than or in conflict with the country's applicable legislation, the latter shall apply.

3.4. International Standards, Guidelines & ISO Certifications

3.5. The works should be undertaken in accordance with the applicable international guidelines, standards and specifications on SHE and every contract shall aim to achieve ISO certifications listed below during the currency of the contract:

OHSAS 18001- 2007 : Occupational Health and Safety Management System.

ISO 14001-2004 : Environmental Management Systems.

3.5.1 The process of certification shall start immediately after the award of the work and complete within reasonable time. Towards this, the contractor shall undertake the required steps including appointment of ISO consultant for obtaining the certification on Occupational Health and Safety Management System and Environment Management System.

3.5.2 In case of failure on the part of the contractor, the Employer at the cost of the contractor shall do the same.

4.0 Contractor SHE Policy and Plan

- 4.1. The contractor as per Section 39 of the BOCW Act shall formulate a SHE policy and get it approved by Head/CIIBC respectively and display it at conspicuous places at work sites in Hindi and a local language understood by the majority of construction workers.
- 4.2. Within 4 weeks of the notification of acceptance of the tender, the Contractor shall submit a detailed and comprehensive Contract specific SHE Plan. The SHE Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance of the contract provisions. The SHE Plan shall include the following but not be restricted to:
 - i) A statement of the Contractor's policy, organisation and arrangements for SHE
 - ii) The name(s) and experience of person(s) within the Contractor's proposed management who shall be responsible for co-ordinating and monitoring the Contractor's SHE performance;
 - iii) The number of SHE staff who shall be employed on the Works, their responsibilities, authority and line of communication with the proposed Contractor's agent;
 - iv) A statement of the Contractor's policy and procedures for identifying and estimating hazards, and the measures for addressing the same;
 - v) A list of SHE hazards anticipated for this Contract and sufficient information to demonstrate the Contractor's proposals for achieving effective and efficient health and safety procedures;
 - vi) A description of the SHE training courses and emergency drills which shall be provided by the Contractor, with an outline of the syllabus to be followed;
 - vii) Details of the safety equipment which shall be provided by the Contractor, including personal protective equipment;
 - viii) A statement of the Contractor's policy and procedures for ensuring that Contractor's Equipment used on the Project Site are maintained in a safe condition and are operated in a safe manner;
 - ix) A statement of the Contractor's policy and procedures for ensuring that sub- contractors comply with the Contractor's safety plan;
 - x) A statement of the Contractor's disciplinary procedures with respect to SHE related matters, and
 - xi) A statement of the Contractor's procedure for reporting and investigating accidents, dangerous occurrences or occupational illnesses
- 4.3. The Contractor shall, from time to time and as necessary are required by the Employer to produce supplements to the SHE Plan such that it is at all times a detailed, comprehensive and contemporaneous statement by the Contractor of his site safety, industrial health and environment obligations, responsibilities, policies and procedures relating to work on Site. Any and all submissions of supplements to the SHE Plan shall be made to the Employer in accordance with the agreed procedures.
- 4.4. If at any time the SHE plans is, in the Employer's opinion, insufficient or requires revision or modification to ensure the security of the Works and the safety of all workmen upon and visitors to the Site, the Employer may instruct the Contractor to revise the SHE plan and the Contractor shall within 7 days submit the revised plan to the Employer for review.
- 4.5. Any omissions, inconsistencies and errors in the SHE Plan or the Employer's acceptance or rejection of the SHE Plan and/or supplements thereto shall be without prejudice to the Contractor's obligations with respect to site safety, industrial health and environment and shall not excuse any failure by the contractor to adopt proper and recognised safety practices throughout the execution of the Work.
- 4.6. The Contractor shall adhere to the SHE Plan and shall ensure, as far as practically possible, that all sub-contractors of all tiers require that contracting parties each have a copy of the Site SHE Plan and comply with its provisions.
- 4.7. The details of contents to be covered in the site SHE plan are given in Appendix No.: 3.

5.0 Designer's role

Designer's role in Safety, Health and Environment

- 5.1. Designer's primary role includes to minimize the risk to health and safety of those who are going to construct, maintain, clean, repair, dismantle or demolish the structures and anyone else like adjoining road users/general public, who might be affected by the work.
- 5.2. General philosophy
 - 5.2.1. When considering health and safety in designer's work, they shall be expected to do what is reasonable at the time the design is prepared. It may be possible for hazards, which cannot be addressed at the feasibility stage to be looked at during detailed design. In deciding what is reasonably practicable, the risk to health and safety produced by a feature of the design has to be weighed against the cost of excluding the feature. The overall design process does not need to be dominated by a concern to avoid all risks during the construction phase and maintenance. However, a judgement has to be made by weighing up one consideration against another so the cost is counted not just in financial terms, but also those of fitness for purpose, aesthetics, buildability or environmental impact. By applying these principles, it may be possible to make decisions at the design stage, which will avoid or reduce risks during construction work. In many cases, the large number of design considerations will allow a number of equally valid design solutions. What is important is the approach to the solutions of design problems. This should involve a proper exercise of judgement, which takes account of health and safety issues.
- 5.3. Hierarchy of Risk Control
 - 5.3.1. Designers shall need, so far as reasonably practicable, to avoid or reduce risks by applying a series of steps known as the hierarchy of risk control or principles of prevention and protection. The steps to be adopted shall include the following:
 - i) consider if the hazard can be prevented from arising so that the risk can be avoided (e.g, alter the design to avoid the risk);
 - ii) if this cannot be achieved, the risk should be combated at source (eg, ensure the design details of items to be lifted include attachment points for lifting);
 - i) failing this, priority should be given to measures to control the risk that will protect all people;
 - ii) only as a last resort should measures to control risk by means of personal protection be assumed (e.g, use of safety harnesses).
- 5.4. Duty to provide health and safety risks in the drawing itself.
 - 5.4.1. In case of situations where the designers have carried out the design work and concluded that there are risks, which was not reasonably practicable to avoid, detailed information shall be given about the health and safety risks, which remain. This information needs to be included with the design to alert others to the risks, which they cannot reasonably be expected to know. This is essential for the parties who have to use the design information.
 - 5.4.2. If the designers' basic design assumptions affect health or safety, or health and safety risks are not obvious from the standard design document, the designer shall provide additional information. The information shall include a broad indication of the assumptions about the precautions for dealing with the risks. The information will need to be conveyed in a clear manner; it shall be included on drawings, in written specifications or outline method statements. The level of detail to be recorded will be determined by the nature of the hazards involved and the associated level of risk.
- 5.5 Employer's approval

- 5.5.1. Every structure like scaffold, falsework, launching girder, earth retaining structures etc. shall have its design calculations included in the method statements in addition to health and safety risks. Employers' designer or his approved proof check consultants as applicable as per the contract conditions shall approve all these designs.
- 5.5. Any non-standard structures like trestles made up of re-bars or structures which are very old, corroded, repaired for many times etc. for which no design calculations can be made accurately from any national standards, shall not be allowed to be used at sites even for short duration.
- 5.6. If any of the above-mentioned clauses are not adhered penalty shall be imposed depending upon the gravity of the unsafe act and or condition

6.0 Contractor SHE Organisation

- 6.1. Education and Experience
- 6.2. The contractor shall appoint the required SHE personnel as prescribed in General Instruction attached as Appendix 5 (enclosed at the end) based upon the statutory requirement and establish the safety organisation based upon the contract value. The minimum educational qualification and the work experience are given in General Instruction attached as Appendix 6.
 - 6.1.1. **In order to effectively interact on labour welfare matters with the Employer and the statutory authorities enforcing the labour welfare legislations every contractor shall employ a full time Labour Welfare Officer duly qualified and experienced as per clause 6.1.1.**
- 6.3. Conduct and competency
 - 6.3.1. The conduct and functioning of the contractor SHE personnel shall be monitored by the Employer. Any default or deficiency shall attract penalty as per details given under penalty **clause 56.0** of this document.
 - 6.3.2. The Contractor shall ensure that all personnel are competent to perform the job assigned to them. In the event that the Contractor is unable to demonstrate the competency of any person whose activities can directly impact on the Works' SHE performance, the Employer shall remove that person from the site without any procedural formalities.
 - 6.3.3. Approval from Employer
 - 6.3.4. The name, address, educational qualification, work experience and health condition of each personnel deployed for SHE jobs shall be submitted to the Employer in the format prescribed for the purpose for comments and approval well before the start of the work. Only on approval by the Employer these personnel are authorised to work. In case any of the SHE personnel leaves the contractor the same shall be intimated to the Employer. The contractor shall recruit new personnel and fill up the vacancy.
- 6.4. Responsibility of SHE personnel
 - 6.4.1. For all works carried out by the contractor and his sub-contractors, the responsibility of ensuring the required SHE manpower lies with the main contractor only. The minimum required manpower indicated by the Employer includes the sub-contractors' work also. It shall be the responsibility of the main contractor to provide required SHE manpower for all the works executed by all contractors. Necessary conditions shall be included in all sub-contract documents executed by the main contractor.
- 6.5. Employment status of SHE personnel
 - 6.5.1. No contractor shall engage SHE manpower from any outsourcing agencies in which case the effectiveness would be lost. All SHE manpower shall be on the payroll of the main contractor only and not on the payroll of any subcontractor or outsourcing

manpower agencies etc. This condition does not apply to positions like traffic marshals who are engaged almost on a daily requirement basis.

6.6. Reporting of SHE personnel

- 6.6.1. All SHE personnel are to report to the Chief SHE Manager who shall report directly to the Chief Project Manager. The Employer shall monitor adherence to this procedure at all times. In case of non-adherence penalty shall be levied as indicated in the penalty clause.

6.7. Inadequate SHE personnel

- 6.7.1. In case if the contractor fails to provide the minimum required manpower as illustrated in General Instruction attached as Appendix 5, or fail to fill up vacancies created within 14 days, the same shall be provided by the Employer at contractor's cost. Any administrative expenses involved to provide the same as paper advertisement or manpower consultant charges, etc shall also be at the cost of contractor.

6.8. Prohibition of performance of other duties

- 6.8.1. No SHE personnel shall be required or permitted to do any work which is unconnected to, inconsistent with or detrimental to the performance of the SHE duties for respective category mentioned in General Information attached as **Appendix 5**

6.9. Facilities to be provided to SHE personnel

- 6.9.1. As per schedule VIII of BOCWR, the contractor shall provide all SHE personnel with such facilities, equipment and information that are necessary to enable him to dispatch his duties effectively.
- 6.9.2. The minimum Employer's requirements of such facilities / equipment's to be provided for SHE personnel are given in the General Instruction attached as **Appendix 7.**

7.0 Contractor SHE Committee

- 7.1. All employees should be able to participate in the making and monitoring of arrangements for safety, industrial health and environment at their place of work. The establishment of site SHE committees in which employees and Contractor and sub-contractor management are represented can increase the involvement and commitment of employees. The contractor shall ensure the formation and monitor the functioning of contractor SHE committees.

7.2. Terms of Reference

- 7.2.1. The Terms of Reference for the committee shall be as follows;

- i) To establish company safety policies and practices
- ii) To monitor the adequacy of the contractor's site SHE plan and ensure its implementation
- iii) To review SHE training
- iv) To review the contractor's monthly SHE report.
- v) To identify probable causes of accident and unsafe practices in building or other construction work and to suggest remedial measures.
- vi) To stimulate interest of Employer and building workers in safety by organizing safety week, safety competition, talks and film-shows on safety, preparing posters or taking similar other measures as and when required or as necessary.
- vii) To go round the construction site with a view to check unsafe practices and detect unsafe conditions and to recommend remedial measures for their rectifications including first-aid medical and welfare facilities.
- viii) Committee team members should perform a site inspection before every committee meetings and to monitor SHE inspection reports.
- ix) To bring to the notice of the Employer the hazards associated with use, handling and maintenance of the equipment used during the course of building and other construction work

- x) To suggest measures for improving welfare amenities in the construction site and other miscellaneous aspect of safety, health and welfare in building or other construction work.
- xi) To look into the health hazards associated with handling different types of explosives, chemicals and other construction materials and to suggest remedial measures including personal protective equipment.
- xii) To review the last safety committee meeting minutes and to take action against persons/sub-contractors for non-compliance if any.

7.3. Within 14 days of award of contract, the SHE committee shall be constituted and notification regarding the same shall be communicated to the members and employees as per the format provided in Form No.: SF 001

7.4. Site SHE Committee meeting shall be conducted at least once in a month with the minimum members listed below:

| | |
|----------------------------|--|
| Chairman | Project Manager |
| Secretary | SHE Manager (In-charge) |
| Members | <ul style="list-style-type: none"> i) Labour Welfare Officer ii) In charge of plant and machinery iii) In charge of site electrics iv) In charge of stores. v) Senior Managers/ Engineers heading different sub functions. vi) Sub – contractor's representative vii) Labour Contractor's representative viii) Workers' representative ix) Co-contractor representative. x) SHE staffs |
| Employer's Representatives | MMRDA SHE in charge and other representatives |

7.5. Construction SHE Committee meeting shall be conducted at least once in a week with the minimum members listed below:

| | |
|-----------|---|
| Chairman | Project Manager |
| Secretary | SHE Manager (In-charge) |
| Members | <ul style="list-style-type: none"> i) Labour Welfare Officer ii) In charge of plant and machinery iii) In-charge of site electrics iv) Senior Managers / Engineers heading different sub functions v) Sub- Contractor's representative vi) Labour contractor's representative vii) Workers' representatives viii) All SHE Staffs |

7.6. Co-contractors' participation

- 7.7. In case of depot, station and other contiguous areas where more than one main contractors are working together, the Employer shall instruct the other contractors to join for the monthly SHE committee meeting of the main civil contractor, so as to discuss and decide about the common provision of security, lighting, toilet, drinking water etc. and sharing the maintenance cost of the same etc.
- 7.6.1. The general principle for sharing the cost shall be either based on the contract value of works executed at the contiguous area or the daily average number of workmen employed by each contractor in the contiguous area.
- 7.8. Minimum time between two monthly SHE Committee meetings
- 7.9. A minimum period of 21 days shall be maintained between any two SHE monthly committee meetings.
- 7.10. Agenda
- 7.10.1. The Secretary shall circulate the agenda of the meeting at least seven working days in advance of the scheduled date of the meeting to all members.
- 7.10.2. The agenda should broadly cover the following:
- i) Confirmation of minutes
 - ii) Chairman's review/overview of site SHE performance / condition
 - iii) Previous month SHE statistics
 - iv) Incident and Accident Investigation / dangerous occurrence / near miss report
 - v) Site SHE inspection
 - vi) Sub-contractors' SHE issues
 - vii) Safety presentation by Members
 - viii) Report from Employer
 - ix) Matters arising
 - x) Any other business
- 7.11. Minutes of the meeting
- 7.11.1. The Minutes of the meeting shall be prepared as per the format provided at **Form No.: SF-002** and sent to all members within 2 working days preferably by mail/fax followed by hardcopy. Safety Committee meeting minutes shall also be displayed in the notice board for wider publicity to all concerned.
- 7.12. Disciplinary Action
- 7.12.1. The chairman shall inform the members of any outstanding issues in the meeting and in case of repeated offence/ non-compliance by some members or other co/sub-contractors and propose suitable disciplinary action including provisions of monetary penalty as per the relevant contract clauses, the Employer shall ensure that the same is implemented.

8.0 ID Card and First day at work, SHE orientation training

- 8.1. The Contractor shall ensure that all personnel working at the site receive an induction SHE training explaining the nature of the work, the hazards that may be encountered during the site work and the particular hazards attached to their own function within the operation. The training shall cover the contents as given in the General Instruction attached as Appendix
- 8.2. All personnel shall be issued a photo identity card of size 85mm x 55mm duly signed by the authorized representative of the contractor before they are engaged for any work as per the format given in the General Instruction attached as Appendix 9
- 8.3. Contractor shall also issue personnel SHE handbook in a language known to the workers, which provides information on SHE and emergency procedures that all personnel working on contract are required to know and the need to follow. Contractor shall ensure that this is distributed and its content introduced to all personnel working at the site.

9.0 SHE Training

- 9.1. The behaviour of people at all levels of the contractor is critical for SHE performance.
- 9.2. The contractor shall organize quality SHE training to engage Managers, supervisors and other personnel in behavioural change and improve safety performance.
- 9.3. The Contractor shall analyses the training requirements for all the employees and initiate a training program to demonstrate that all persons employed, including subcontractors, are suitably qualified, competent and fit. This will include:
 - i) Detailed Job descriptions for all personnel, to include their specific SHE responsibilities
 - ii) Specification of qualifications, competency and training requirements for all personnel
 - iii) Assessment and recording of training needs for all personnel, including subcontractors' employees in the workforce, vendor representatives and site visitors
 - iv) A system for assessing new hirers e.g. previous training
 - v) A means of confirming that the system is effective
 - vi) A matrix and schedule of training requirements, covering general, task-specific and SHE-related training, showing the training frequency and interval between refresher courses
 - vii) Timely, competent delivery of training courses
- 9.4. The contractor shall arrange behavioural-based training programmes for all the executives to identify, recognize and eliminate unsafe act and unsafe conditions.
- 9.5. The minimum Employer's requirement of training needs for various categories of employees are given in general instruction attached as Appendix 10
- 9.6. The contents of SHE training to Managers/Supervisors as given in general instruction attached as Appendix 11 shall be conducted.
- 9.7. The refresher-training programme to all employees shall be conducted once in six months.
- 9.8. Toolbox talk as given in the Employer's Project SHE manual shall be conducted to all high-risk workmen every day.
- 9.9. On-the spot practical skill development training on height safety including scaffold safety, crane safety, welding safety, electrical safety, traffic safety for marshals shall also be conducted to all foremen/ workmen who were associated to the concerned jobs.
- 9.10. Daily Safety Oath as given in Project SHE manual shall be taken by every employee including workman without fail.
- 9.11. All vehicle drivers including Hydra operators shall be trained on defensive driving at any reputed institute with prior approval of employer. All vehicle drivers shall also undergo refresher training on defensive driving provided by the same institute once in 6 months. All Hydra Operators shall undergo training from Original Equipment manufacturers (OEM).
- 9.12. All the above listed training programmes except at clause 9.11 shall be organized by the contractor only after taking approval from the Employer for the training faculty / organization, content and durations.
- 9.13. Contractor shall provide a training/Workshop on Safety, Health & Environment (SHE) to all its worker/staff/employees/subcontractors of at least 2 weeks (96 hrs.) at the time of induction. Before postings of any his workers/staff/employees/subcontractors, the contractor shall give a certificate that the said person had undergone the requisite SHE training. Non-compliance of the above will invoke penalties as per condition of contract on SHE.
- 9.14. In case of failure on the part of the contractor to provide all the above-mentioned training programs to all employees in time, the same shall be provided by the Employer through accredited agencies if required by formulating a common scheme to all contractors. Any administrative expenses and training fee towards the same shall be at the cost of the contractor.

10.0 SHE Inspection

- 10.1 The contractor shall evolve and administer a system of conducting SHE inspections and other risk management analysis on a periodical basis.
- 10.2 The purpose of SHE inspection is to identify any variation in construction activities and operations, machineries, plant and equipment and processes against the SHE Plan and its supplementary procedures and programs.
- 10.3 Following SHE inspections program shall be adopted.
 - i) Planned General Inspection
 - ii) Routine Inspection
 - iii) Specific Inspection
 - iv) Other Inspection
- 10.3.1. Planned General Inspection
 - 10.3.1.1 Planned general inspections are performed at predetermined intervals and it usually involves the representation from both Contractor and the Employer.
 - 10.3.1.2 Inspections that will be classified under this inspection program are:
 - i) Monthly contractor and subcontractors site safety committee Inspection.
 - ii) Weekly safety inspection by construction supervisors (Contractors and Sub- contractors).
 - iii) Daily safety inspection by contractor site SHE team.
- 10.3.2. Routine Inspection
 - 10.3.1.1 Routine inspections are often referring to the inspection of work site, equipment and temporary structures performed by site and equipment operators and temporary structure erectors. Inspections that will be classified under this inspection program are:
 - i) Daily Inspection of plant and equipment by operator
 - ii) Weekly Inspection of scaffold by scaffolding supervisor
 - iii) Monthly Inspection of electrical hand tools by competent electrical supervisor
 - iv) Quarterly Inspection of temporary electrical systems by competent electrical supervisor
 - v) Half-yearly inspection of lifting machinery, lifting appliances, equipment and gears by Govt. approved competent person.
 - 10.3.1.2 The list mentioned above is not exhaustive. Contractor may add additional categories. Contractors' Site SHE Manager will ensure that a system of routine inspections are carried out periodically to all plants, equipment, powered tools and any other temporary structures that will pose a hazard to operators and workmen.
- 10.3.3. Specific Inspection
 - 10.3.3.1 Specific inspections are performed on activities without a predetermined date. Competent supervisors usually perform inspections for ensuring an activity whether it is executed in accordance to a general set of rules; method statement submitted or developed procedures.
The following are examples that will be commonly performed as required on the construction site:

- i) Inspection performed before a heavy lifting operation.
- ii) Inspection performed before and after the entry of person into a confined space.
- iii) Inspection performed before and after a welding and gas cutting operation.
- iv) Inspection of formwork before concreting by formwork erector.

The list mentioned above is not exhaustive. The contractor shall ensure that a competent supervisor inspects all high-risk processes and activities.

10.3.4. Other Inspection

Other inspection includes the following:

- i) Mandatory Inspections by Labor Department of Government.
- ii) MMRDA site SHE management team

10.3.5. The contractor shall prepare all required safety inspection checklist for all activity operations and equipment. Checklists will be prepared based on the Indian standards, rules and regulations and Employer's requirements. The formats provided in the Project SHE manual may be referred.

10.3.6. All inspection records and reports will be properly kept and filed for audit purpose. Inspection reports of Planned General Inspection and Routine Inspection will be used for discussion during Safety Committee Meetings.

11.0 SHE Audit

11.1 General

- 11.1.1. The purpose and scope of SHE audit is to assess potential risk, liabilities and the degree of compliance of construction Safety, Health & Environmental plan and its supplementary procedures and programs against applicable and current SHE legislation regulations and requirements of the employer.
- 11.1.2. Project Manager holds the ultimate responsibility in ensuring implementation of SHE audit program during the construction work.

11.2 Monthly Audit Rating Score (M A R S)

- 11.2.1. Monthly Audit Rating Score (MARS) will be performed once in a month. A team consisting of Project manager and Employer representative based on the pre- designed score-rating format will conduct it. The details of the pre-designed monthly audit score rating formats are given in the Project SHE manual.
- 11.2.2. This Monthly SHE Audit Rating Score (MARS) report will enable the Employer to evaluate the general compliance by the Contractor with the Conditions of Contract, the Employer's Project SHE Manual and the Contractor's site specific SHE Plan.
- 11.2.3. Monthly Audits will be conducted in accordance with MMRDA Guidelines. The Project Manager accompanied by the Employer's representatives shall carry out the Audit. The Contractor's senior manager and SHE in-charge should also be invited to attend.
- 11.2.4. Timing

The Monthly Audit Rating Score (MARS) should be conducted at least 7 days prior to the scheduled date of Monthly SHE Committee meeting.

11.2.5. Evaluation

11.2.5.1 The numerical scoring has been weighed on a 1-10 scale. The audit team will use their observations noted in evaluating the points to be awarded against each of the elements of the audited section. Wherever some topics and sub-topics are not applicable the score rating need not be given. The overall audit ratings shall be achieved by:

$$\text{Overall Audit rating} = \frac{\text{Actual Score Achieved}}{\text{Maximum Possible Score}} \times 100$$

11.2.5.2 The criticality of the required actions for the respective sections of the Audit will be classified as:

| Sl. No. | Score | Description | Action |
|---------|-------|-----------------------|--|
| 1 | < 60% | Immediate | Require Contractor to rectify within 24 hours |
| 2 | < 75% | Improvement Necessary | Contractor rectification within 7 days and confirmed in writing to Employer |
| 3 | < 90% | Improvement Desirable | Contractor rectification within one month and confirmed in writing to Employer |

11.2.6. Report

A copy of each Audit Report will be sent to Employer and to all subcontractors, with whom it will then be discussed in detail at the Monthly SHE Committee Meeting in order to ensure that any corrective actions are agreed upon.

11.3 Monthly Electrical Safety Audit

11.3.1. A team comprising of contractor's senior SHE (Electrical) engineer and Employer's representative shall conduct monthly electrical safety audit covering the following and submit the report to Employer.

- i) Electrical accidents investigation findings and remedy
- ii) Adequacy of power generation and power requirements
- iii) Power distribution and transmission system in place
- iv) Updated electrical single line diagram showing the current condition of power source and distribution including the IP44 DBs arrangement.
- v) Electrical protection devices – selection, installation and maintenance.
- vi) Earth or ground connection and earth pit maintenance details

- vii) Education and training of electrical personnel undertaken
- viii) Routine electrical inspection details
- ix) Electrical maintenance system and register.
- x) Name plate details of major electrical equipment
- xi) Classified zones in the site, if any.

11.4 External SHE Audit

- 11.4.1. External SHE audits are to be conducted by external agencies that are competent with ISO qualified auditors with the prior approval of the Employer.
- 11.4.2. Areas of competence of Audit team
- 11.4.3. Practical understanding of BOCW Act and Rules, statutory requirements on health/medical and welfare of workmen, construction hazards and its prevention and control, traffic management, electrical safety, rigging, safety of construction equipment and environment management.
- 11.4.4. Audit shall be conducted as per the guidelines of ISO, ILO, and national standards. Audit report shall also be presented as per the above formats.
- 11.4.5. External SHE audit shall be conducted on a quarterly basis throughout the currency of the contract.
- 11.4.6. Targets of SHE Audit:
 - The contents and coverage of the external audit shall include the following items
 - 11.4.6.1 SHE management:
 - i) Organization
 - ii) Communication and Motivation
 - iii) Time office
 - iv) Inspection
 - v) Emergency preparedness
 - vi) Budget allocation
 - vii) Education and Training
 - viii) Work permit system
 - 11.4.6.2 Technical:
 - i) Building and Structure
 - ii) Construction operational safety
 - iii) Material safety
 - iv) Hand tools and Power tools
 - v) Electrical system
 - vi) Safety Appliances

- vii) Fire prevention and control
- viii) Housekeeping
- ix) Maintenance and Machinery safety
- x) First-aid and Medical Facilities
- xi) Welfare measures
- xii) Environmental Management

11.4.7. Audit Documents:

11.4.7.1 Contractor shall make the below listed documents available for the review by the Audit team.

- i) SHE policy
- ii) SHE manual
- iii) SHE Rules and Regulation
- iv) SHE organization chart
- v) Annual SHE objectives / programs
- vi) Accident / near miss statistics and analysis
- vii) SHE Training program / records for all personnel
- viii) Operating manuals and maintenance manual of all equipments
- ix) Safe worthiness certificates of all lifting appliances and gears
- x) Medical fitness record for all personnel
- xi) Risk identification, assessment and control details
- xii) Environmental management reports
- xiii) Emergency management records including mock drill

11.4.8. Audit Preparation:

- i) Audit team members are required to gather information by observations through interviews and by checks of hardware and documentation.
- ii) Audit team shall prepare checklist to cover all parts based on SHE legislations rules and regulations and MMRDA requirements.
- iii) Audit team members shall verify the facts and findings leading to the identified gaps and weakness.
- iv) Audit leader has overall responsibility for reaching a conclusion.

11.4.9. Reporting:

11.4.9.1 Audit report shall be prepared and directly sent to the Employer within 7 days of conducting the audit with a copy to the contractor.

11.4.10. Report contents:

- i) Executing summary - based on the finalized checklists as written the findings to the Employer by the audit team members, the audit leader will compile a concise and accurate summary of observations and findings.
- ii) Introduction - this will contain basic information regarding the facilities or organization audited, the specific audit dates (inclusion of those for preparation and post-audit activities).
- iii) Principal positive findings - This will contain the summary of positive aspects as observed by the auditors. It will also contain highlights of those issue, which may warrant dissemination as best practice regarding methodology used or achievement.
- iv) Audit Findings - All audit findings as detailed in the audit checklists shall be grouped together as priority 1 and 2 as detailed below in a separate listing.
 - a) Priority 1: Actions to rectify gaps or weakness should generally be implemented within two-weeks' time, if risk potential is high or unacceptable.
 - b) Priority 2: Actions should be generally implemented or rectified with a maximum of 3 – 4 weeks, if not rectified would create a likelihood of minor injury or business loss.

11.4.11. Conformity Report & Action by Employer

- 11.4.11.1 The auditor shall inspect the site after 14 days of conducting initial audit for checking the adequacy of implementation of items maintained under priority 1 by the contractor and shall submit a conformity / non-conformity report to the Employer with a copy to the contractor.
- 11.4.11.2 The auditor shall again inspect after 28 days of conducting initial audit for checking the adequacy of implementation of items mentioned under priority 2 by the contractor and shall submit a conformity / non-conformity report to the Employer with a copy to the contractor.
- 11.4.11.3 In case of non-conformity of items mentioned by auditor, the Employer shall take necessary steps including stoppage of work and or imposing any penalty for getting the item implemented.
- 11.4.11.4 Failure of contractor to conduct External SHE Audit
- 11.4.11.5 If the contractor fails to conduct the external SHE audit in time, the Employer at the cost of contractor shall get it done.

12.0 SHE Communication

- 12.1 The contractor shall take every effort to communicate the Safety, Occupational health and Environment management measures through posters campaigns / billboards / banners / glow signs being displayed around the work site as part of the effort to rise safety awareness amongst to the work force. Posters should be in Hindi, English and other suitable language deemed appropriate. Posters / billboards / banners/ glow signs should be changed at least once in a month to maintain the impact.
- 12.2 The contractor shall also observe important days as listed in General Instruction attached as Appendix 12 and printing and displaying safety signage and posters as listed in General Instruction attached as Appendix 13.
- 12.3 The list indicated are the minimum requirements of the Employer and the contractor is encouraged to further the SHE communication activities by formulating suitable reward schemes for safety performers and any other activities, which deem fit for the purpose.

13.0 SHE Submittals to the Employer

13.1 The contractor's SHE management should send the following reports to the Employer periodically:

- i) Daily Reporting of total no of workmen (as given in **Clause 13.2**)
- ii) Monthly SHE Report (as given in **Clause 13.3**)
- iii) SHE Committee Meeting Minutes (as given in **Clause 7.9.1**)
- iv) SHE Inspection Reports
- v) SHE Audit Reports
 - a) Monthly Audit Rating Score (MARS) report
 - b) External SHE Audit
 - c) Electrical Safety Audit
- vi) Air and Noise Quality monitoring report

13.2 Daily Reporting of total no of workmen

13.2.1. The contractor shall report to the Employer the total no of workmen engaged by all including any subcontractor within 2 hours of starting of any shift in any day. This reporting shall be the primary duty of the Chief SHE Manager of the contractor and reporting shall be through tele-fax / email. The onus of checking the receipt of the same by the Employer lies with the contractor. If the information is not received or received more than 2 hrs. after starting of the shift, penalty shall be levied as per relevant clause.

13.3 Monthly SHE Report

13.3.1. The contractor shall prepare a monthly SHE report consisting of the following and submit 3 copies within 7th of next month to the Employer as specified in the Project SHE manual.

- i) Monthly man-hour details as specified in the Project SHE manual
- ii) Monthly accident / incident details as specified in the Project SHE manual
- iii) SHE committee details
- iv) Details of SHE training conducted in the month
- v) SHE Inspection
- vi) SHE internal audit details like electrical audit etc.
- vii) SHE Communication activities under taken in the month indicating the number of posters displayed and balance availability in stock.
- viii) Air quality / Noise monitoring details
- ix) Toolbox talks details
- x) PPE details: Quantity purchased, issued to the workmen and stock available.

- xi) Details on IP 44 panel boards, lighting poles, welding and cutting equipments, Ladders, Hoists, tools & tackles.
- xii) Monthly Lux meter study results
- xiii) Housekeeping
- xiv) Barricade maintenance details
- xv) No of critical excavations
- xvi) Health & Welfare activities
- xvii) Safety walk conducted by Contractors' Project Manager in the month
- xviii) SHE Activities Planned for next month

14.0 Accident reporting and investigation

14.1. Reporting to Employer

- 14.1.1. All accidents and dangerous occurrences shall immediately be informed verbally to the Employer. This will enable the Employer to reach to the scene of accident / dangerous occurrences to monitor/assist any rescue work and/or start conducting the investigation process so that the evidences are not lost.
- 14.1.2. Reports of all accidents (fatal / injury) and dangerous occurrences shall also be sent within 24 hours as per format provided in the Employer's Project SHE manual.
- 14.1.3. No accident / dangerous occurrences is exempted from reporting to the Employer.
- 14.1.4. Any willful delay in verbal and written reporting to the Employer shall be penalised as per relevant clause.

14.2. Reporting to Govt. organisations

In addition to the above verbal and written reporting to the Employer, as per relevant Rule of BOCWR, notice of any accident to a worker at the building or construction site that:

- a) causes loss of life; or
- b) disables a worker from working for a period of 48 hours or more immediately following the accident;
- c) shall forthwith be sent by telegram, telephone, fax, or similar other means including special messenger within four hours in case of fatal accidents and 72 hours in case of other accidents, to:
 - i) the Regional Labour Commissioner (central), wherein the contractor has registered the firm/work
 - ii) the board with which the worker involved was registered as a beneficiary;
 - iii) Director General and
 - iv) the next of kind or other relative of the worker involved in the accident;

14.2.1. Further, notice of accident shall be sent in respect of an accident which

- (a) causes loss of life; or
- (b) disables the injured worker from work for more than 10 days to
 - i) the officer-in-charge of the nearest police station;

- ii) the District Magistrate or, if the District Magistrate by order so desires, to
 - iii) the Sub-Divisional Magistrate
- 14.2.2. In case of an accident causing minor injury, first-aid shall be administered and the injured worker shall be immediately transferred to a hospital or other place for medical treatment.
- 14.2.3. Where any accident causing disablement that subsequently results in death, notice in writing of such death, shall be sent to the authorities mentioned in clause 14.2.1 and 14.2.2 above within 72 hours of such death.
- 14.2.4. Reporting of dangerous occurrences:
- 14.2.4.1 The following classes of dangerous occurrences shall be reported to the Inspector having jurisdiction, whether or not any disablement or death caused to the worker, namely:
 - (a) collapse or failure of lifting appliances, or hoist, or conveyors, or similar equipment for handling of building or construction material or breakage or failure of rope, chain or loose gears; or overturning of cranes used in construction work;
 - (b) falling of objects from height;
 - (c) collapse or subsidence of soil, tunnel, pipe lines, any wall, floor, gallery, roof or any other part of any structure, launching girder, platform, staging, scaffolding or means of access including formwork;
 - (d) explosion of receiver or vessel used for storage of pressure greater than atmospheric pressure, of any gas or gases or any liquid or solid used as building material;
 - (e) fire and explosion causing damage to any place on construction site where building workers are employed;
 - (f) spillage or leakage of any hazardous substance and damage to their container;
 - (g) collapse, capsizing, toppling or collision of transport equipment;
 - (h) leakage or release of harmful toxic gases at the construction site;
- 14.2.5. In case of failure of launching girder, lifting appliance, loose gear, hoist or building and other construction work, machinery and transport equipment at a construction site, such appliances, gear, hoist, machinery or equipment and the site of such occurrence shall, as far as practicable, be kept undisturbed until inspected by the Authorities;
- 14.2.6. Every notice given for fatal accidents or dangerous occurrences shall be followed by a written report to the concerned Authorities under relevant Section of BOCWA and the Director General in the specified Form of BOCWR.
- 14.3. Accident investigation**
- 14.3.1. General**
- 14.3.1.1 Investigations should be conducted in an open and positive atmosphere that encourages the witnesses to talk freely. The primary objective is to ascertain the facts with a view to prevent future and possibly more serious occurrences.

14.3.1.2 Accidents and Dangerous Occurrences which result in death, serious injury or serious damage must be investigated by the Contractor immediately to find out the cause of the accident/occurrence so that measures can be formulated to prevent any recurrence.

14.3.1.3 Near misses and minor accidents should also be investigated by the Contractor as soon as possible as they are signals that there are inadequacies in the safety management system.

14.3.2. Procedure of incident investigation

14.3.2.1 It is important after any accident or dangerous occurrence that information relating to the incident is gathered in an organized way. The following steps shall be followed;

- a) take photographs and make sketches
- b) examine involved equipment, workpiece or material and the environmental conditions
- c) interview the injured, eye-witnesses and other involved parties
- d) consult expert opinion where necessary
- e) identify the specific contractor or sub-contractor involved.

14.3.2.2 Having gathered information, it is then necessary to make an analysis of incident

- a. establish the chain of events leading to the accident or incident
- b. find out at what stage the accident took place
- c. consider all possible causes and the interaction of different factors that led up to the accident, and identify the most probable cause the cause of an accident should never be classified as carelessness. The specific act or omission that caused the accident must be identified.

14.3.2.3 The next stage is to proceed with the follow-up action

- a) report on the findings and conclusions
- b) formulate preventive measures to avoid recurrence
- c) publicize the findings and the remedial actions taken

14.4. Employers' independent incident investigation

14.4.1. In case of fatal / dangerous occurrence the Employer shall also conduct independent investigation. Contractor and his staff shall extend necessary co-operation and testify about the accident.

14.4.2. The contractor shall take every effort to preserve the scene of accident till the Employer completes the investigation.

14.4.3. All persons summoned by the Employer in connection to witness recording shall obey the instructions without delay. Any wilful suppression of information by any person shall be removed from the site immediately and / or punishable as per relevant penalty clause.

15.0 Emergency preparedness plan

15.1 The Contractor shall prepare an Emergency Response Plan for all work sites as a part of the Contractor SHE Plan. The plan shall integrate the emergency response plans of the Contractor and all other subcontractors. The Emergency Response Plan shall detail the Contractor's procedures, including detailed communications arrangements, for dealing with all emergencies

- that could affect the Site. This include where applicable, injury, sickness, evacuation, fire, chemical spillage, severe weather and rescue.
- 15.2 The contractor shall ensure that an Emergency Response Plan is prepared to deal with emergencies arising out of:
- i) Fire and explosion
 - ii) Collapse of lifting appliances and transport equipment
 - iii) Collapse of building, sheds or structure etc.
 - iv) Gas leakage or spillage of dangerous goods or chemicals
 - v) Bomb threatening, Criminal or Terrorist attack
 - vi) Drowning of workers
 - vii) Landslides getting workers buried floods, Earthquake, storms and other natural calamities.
- 15.3 Arrangements shall be made for emergency medical treatment and evacuation of the victim in the event of an accident or dangerous incident occurring, the chain of command and the responsible persons of the contractor with their telephone numbers and addresses for quick communication shall be adequately publicized and conspicuously displayed in the workplace.
- 15.4 Contractors shall require to have tie-up with well-equipped reputed hospitals having facilities of MRI, CT Scan, Ultrasound, Blood Bank, specialist Doctors like neurosurgeon, orthopaedic as mandatory requirement and fire stations located in the neighbourhood for attending to the casualties promptly and emergency vehicle kept on standby duty during the working hours for the purpose.
- 15.5 Contractor shall conduct an onsite emergency mock drill once in every month for all his workers and his subcontractor's workers.
- 15.6 It shall be the responsibility of the contractor to keep the Local Law & Order Authorities informed and seek urgent help, as the case may be, so as to mitigate the consequences of an emergency. Prompt communication to MMRDA, telephonically initially and followed by a written report, shall be made by the contractor.

16.0 Experts / Agencies for SHE services

- 16.1 Contractors may utilize the services of experts/agencies empanelled under relevant Rule of BOCWR and relevant rule of MBOCWR for the purpose of training, internal audit and any other SHE services with prior approval of the Employer.
- 16.2 As an aide to contractors, a list of experts/agencies and the offered service are given in General Instruction attached as Appendix 14 for ready reference. In addition to it if the contractor would like to use any expert/agencies services for any SHE activities the same can also be allowed provided that they are competent and meet to the general requirements of Employer. In every case prior approval of the Employer is mandatory.

PART – II: SAFETY

17.0 Housekeeping

- 17.1 Housekeeping is the act of keeping the working environment cleared of all unnecessary waste, thereby providing a first-line of defence against accidents and injuries.
- 17.2 Contractor shall understand and accept that improper housekeeping is the primary hazard in any construction site and ensure that a high degree of housekeeping is always maintained. Indeed “Cleanliness is indeed next to Godliness”
- 17.3 Housekeeping is the responsibility of all site personnel, and line management commitment shall be demonstrated by the continued efforts of supervising staff towards this activity.
- 17.4 General Housekeeping shall be carried out by the contractor and ensured at all times at Work Site, Construction Depot, Batching Plant, Labour Camp, Stores, Offices and toilets/urinals. Towards this the Contractor shall constitute a special group of housekeeping personnel as per General Instruction attached as Appendix 5. This group shall ensure daily cleaning at work sites and surrounding areas and maintain a register as per the approved format by the Employer.
- 17.5 Adequate time shall be assigned to ensure that good housekeeping is maintained. This shall be carried out by team of housekeeping squad.
- 17.6 The contractor shall be responsible to provide segregated containers for disposal of debris at required places and regular cleaning of the same.
- 17.7 Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the surrounding area from excavated soil, rubbish etc, which may cause inconvenience to and endanger the public. The barricade especially those exposed to public shall be aesthetically maintained by regular cleaning and painting as directed by the Employer. These shall be maintained in one line and level.
- 17.8 The structure dimension of the barricade, material and composition, its colour scheme, MMRDA logo and other details shall be in accordance with specifications laid down in tender document.
- 17.9 All stairways, passageways and gangways shall be maintained without any blockages or obstructions. All emergency exits passageways, exits fire doors, break-glass alarm points, fire fighting equipment, first aid stations, and other emergency stations shall be kept clean, unobstructed and in good working order.
- 17.10 Lumber with protruding nails shall be either bent / removed and properly stacked.
- 17.11 All surplus earth and debris are removed/disposed of from the working areas to officially designated dumpsites. Trucks carrying sand, earth and any pulverized materials etc. in order to avoid dust or odour impact shall be covered while moving. The tyres of the trucks leaving the site shall be cleaned with water, wherever the possibility of spillage on carriageways meant for regular road traffic exists.
- 17.12 No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, which may obstruct the traffic movement.
- 17.13 Roads shall be kept clear and materials like: pipes, steel, sand boulders, concrete, chips and brick etc. shall not be allowed on the roads to obstruct free movement of road traffic.
- 17.14 Water logging or bentonite spillage on roads shall not be allowed. If bentonite spillage is observed on road endangering the safety of road users, the contractor shall be penalised as per relevant clause.
- 17.15 Proper and safe stacking of material are of paramount importance at yards, stores and such locations where material would be unloaded for future use. The storage area shall be well laid out with easy access and material stored / stacked in an orderly and safe manner.
- 17.16 Flammable chemicals / compressed gas cylinders shall be safely stored.
- 17.17 Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas shall be removed to identified locations(s).

- 17.18 All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
- 17.19 Empty cement bags and other packaging material shall be properly stacked and removed.
- 17.20 The Contractor shall ensure that all his sub-contractors maintain the site reasonably clean through provisions related to house keeping.

18.0 Working at Height

18.1 Definitions

- 18.1.1. "access" and "egress" include ascent and descent.
- 18.1.2. "fragile surface" means a surface, which would be able to fail if any reasonably foreseeable loading were to be applied to it.
- 18.1.3. "line" includes rope, chain or webbing
- 18.1.4. "personal fall protection" means -
 - (a) a fall prevention, work restraint, work positioning, fall arrest or rescue system, other than a system in which the only safeguards are collective safeguards; or
 - (b) rope access and positioning techniques;
- 18.1.5. "work at height" means -
 - (a) work in any place, including a place at or below ground level;
 - (b) obtaining access to or egress from such place while at work, except by a staircase in a permanent workplace, where, if protective measures were not taken, a person could fall a distance liable to cause personal injury;
- 18.1.6. "work equipment" means any machinery, appliance, apparatus, tool or installation for use at work (whether exclusively or not) and includes
 - (a) a guard-rail, toe-board, barrier or similar collective means of protection
 - (b) a working platform
 - (c) a net, airbag or other collective safe guard for arresting falls.
 - (d) personal fall protection system
 - (e) ladders
- 18.1.7. "working platform"
 - (a) means any platform used as a place of work or as a means of access to or egress from a place of work;
 - (b) includes any scaffold, suspended scaffold, cradle, mobile platforms, trestle, gangway, gantry and stairway which is so used.

18.2 Organization and planning

The contractor shall ensure that work at height is

- i) properly planned for any emergencies and rescue
- ii) appropriately supervised; and
- iii) carried out in a manner, which is reasonably practicable safe.

- 18.3 The contractor shall ensure that work at height is carried out only when the weather conditions do not jeopardise the health or safety of persons involved in the work.

18.4 Competence

The contractor shall ensure that no person engages in any activity, including organization, planning and supervision, in relation to work at height or work equipment for use in such work unless he is competent to do so or, if being trained, is being supervised by a competent person.

18.5 Avoidance of risks from work at height

The contractor shall ensure that work is not carried out at height where it is reasonably practicable to carry out the work safely otherwise than at height.

18.6 Where work is carried out at height, the contractor shall take suitable and sufficient measures as given below to prevent, so far as is reasonably practicable, any person falling a distance liable to cause personal injury.

- (a) his ensuring that the work is carried out
 - (i) from an existing place of work; or
 - (ii) (in the case of obtaining access or egress) using an existing means, complying to the requirements as given in **18.15**

where it is reasonably practicable to carry it out safely and under appropriate ergonomic conditions; and

- (b) where it is not reasonably practicable for the work to be carried out in accordance with sub-paragraph (a), his providing sufficient work equipment for preventing, so far as is reasonably practicable, a fall occurring.

18.7 Where the measures taken under clause 18.6 do not eliminate the risk of a fall occurring, every contractor shall

- (a) so far as is reasonably practicable, provide sufficient work equipment to minimise
 - (i) the distance and consequences; or
 - (ii) where it is not reasonably practicable to minimise the distance, the consequences, of a fall; and
- (b) Without prejudice to the generality of clause 18.4, provide such additional training and instruction or take other additional suitable and sufficient measures to prevent, so far as is reasonably practicable, any person falling a distance liable to cause personal injury.

18.8 Selection of 'work equipment' for work at height

- 1) the contractor, in selecting work equipment for use in work at height, shall
 - a) give collective protection measures priority over personal protection measures;
and
 - b) take account of
 - i) the working conditions and the risks to the safety of persons at the place where the work equipment is to be used;
 - ii) in the case of work equipment for access and egress, the distance to be negotiated;
 - iii) the distance and consequences of a potential fall;
 - iv) the duration and frequency of use;
 - v) the need for easy and timely evacuation and rescue in an emergency;

and

- vi) any additional risk posed by the use, installation or removal of that work equipment or by evacuation and rescue from it;

2) The contractor shall select work equipment for work at height which:

- a) has characteristics including dimensions which:
 - (i) are appropriate to the nature of the work to be performed and the foreseeable loadings; and
 - (ii) allow passage without risk; and
- b) is in other respects the most suitable work equipment, having regard in particular to the purposes specified in **18.5** and **18.6**.

18.9 Fragile surfaces

- 18.9.1. The contractor shall ensure that no person at work passes across or near, or working on, from or near, a fragile surface where it is reasonably practicable to carry out work safely and under appropriate ergonomic conditions without his doing so.
- 18.9.2. Where it is not reasonably practicable to carry out work safely and under appropriate ergonomic conditions without passing across or near, or working on, from or near, a fragile surface, every contractor shall,
 - (a) ensure, so far as is reasonably practicable, that suitable and sufficient platforms, coverings, guard rails or similar means of support or protection are provided and used so that any foreseeable loading is supported by such supports or borne by such protection;
 - (b) where a risk of a person at work falling remains despite the measures taken under the preceding provisions of this regulation, take suitable and sufficient measures to minimise the distances and consequences of his fall.
- 18.9.3. Where any person at work may pass across or near, or work on, from or near, a fragile surface, every contractor shall ensure that
 - (a) prominent warning notices are so far as is reasonably practicable affixed at the approach to the place where the fragile surface is situated; or
 - (b) where that is not reasonably practicable, such persons are made aware of it by other means.

18.10 Falling objects

- 18.10.1 The contractor shall, where necessary to prevent injury to any person, take suitable and sufficient steps to prevent, so far as is reasonably practicable, the fall of any material or object.
- 18.10.2 Where it is not reasonably practicable to comply with the requirements of **18.9**, every contractor shall take suitable and sufficient steps to prevent any person being struck by any falling material or object which is liable to cause personal injury.
- 18.10.3 The contractor shall ensure that no material or object is thrown or tipped from height in circumstances where it is liable to cause injury to any person.
- 18.10.4 Every employer shall ensure that materials and objects are stored in such a way as to prevent risk to any person arising from the collapse, overturning or unintended movement of such materials or objects.

18.11 Danger areas

- 18.11.1 Without prejudice to the preceding requirements of these Regulations, every contractor shall ensure that

(a) where a workplace contains an area in which, owing to the nature of the work, there is a risk of any person at work

i) falling a distance;

or

ii) being struck by a falling object,

which is liable to cause personal injury, the workplace is so far as is reasonably practicable equipped with devices preventing unauthorised persons from entering such area; and

(b) such area is clearly indicated.

18.12 Inspection of work equipment

18.12.1 The contractor shall ensure that, where the safety of work equipment depends on how it is installed or assembled, it is not used after installation or assembly in any position unless it has been inspected in that position.

18.12.2 The contractor shall ensure that work equipment exposed to conditions causing deterioration which is liable to result in dangerous situations is inspected

(a) at suitable intervals; and

(b) each time that exceptional circumstances which are liable to jeopardise the safety of the work equipment have occurred, to ensure that health and safety conditions are maintained and that any deterioration can be detected and remedied in good time.

18.12.3 Without prejudice to paragraph 18.12.1, the contractor shall ensure that a working platform

(a) used for construction work; and

(b) from which a person could fall 2 metres or more,

is not used in any position unless it has been inspected in that position or, in the case of a mobile working platform, inspected on the site, within the previous 7 days.

18.12.4 The contractor shall ensure that the reports of all inspections are properly maintained and shown to the Employer as and when required.

18.12.5 In this clause "inspection",

(a) means such visual or more rigorous inspection by a competent person as is appropriate for safety purposes;

(b) includes any testing appropriate for those purposes,

18.13 Inspection of places of work at height

18.13.1 The contractor shall so far as is reasonably practicable ensure that the surface and every parapet, permanent rail or other such fall protection measure of every place of work at height are checked on each occasion before the place is used.

18.14 Duties of persons at work

18.14.1 Any workmen employed by the contractor shall report to the supervisor about any defect relating to work at height which he knows is likely to endanger the safety of himself or another person.

18.14.2 Every workman shall use any work equipment or safety device provided to him for work at height by the contractor, in accordance with

(a) any training in the use of the work equipment or device concerned which have been received by him; and

- (b) the instructions respecting that use which have been provided to him by the contractor as per the requirements of the Employer

18.15 Requirements for existing places of work and means of access or egress at height Every existing place of work or means of access or egress at height shall

- (a) be stable and of sufficient strength and rigidity for the purpose for which it is intended to be or is being used;
- (b) where applicable, rest on a stable, sufficiently strong surface;
- (c) be of sufficient dimensions to permit the safe passage of persons and the safe use of any plant or materials required to be used and to provide a safe working area having regard to the work to be carried out there;
- (d) possess suitable and sufficient means for preventing a fall;
- (e) possess a surface which has no gap
 - (i) through which a person could fall;
 - (ii) through which any material or object could fall and injure a person; or
 - (iii) giving rise to other risk of injury to any person, unless measures have been taken to protect persons against such risk;
- (f) be so constructed and used, and maintained in such condition, as to prevent, so far as is reasonably practicable -
 - (i) the risk of slipping or tripping; or
 - (ii) any person being caught between it and any adjacent structure;
- (g) where it has moving parts, be prevented by appropriate devices from moving inadvertently during work at height.

18.16 Requirements for guardrails, toe-boards, barriers and similar collective means of protection

- i) Unless the context otherwise requires, any reference in this section to means of protection is to a guardrail, toe-board, barrier or similar collective means of protection.
- ii) Means of protection shall
 - (a) be of sufficient dimensions, of sufficient strength and rigidity for the purposes for which they are being used, and otherwise suitable;
 - (b) be so placed, secured and used as to ensure, so far as is reasonably practicable, that they do not become accidentally displaced; and
 - (c) be so placed as to prevent, so far as is practicable, the fall of any person, or of any material or object, from any place of work.
- iii) In relation to work at height involved in construction work
 - (a) the top guard-rail or other similar means of protection shall be at least 950 millimetres above the edge from which any person is liable to fall;
 - (b) toe-boards shall be suitable and sufficient to prevent the fall of any person, or any material or object, from any place of work; and
 - (c) any intermediate guardrail or similar means of protection shall be positioned so that any gap between it and other means of protection does not exceed 470 millimetres.

- iv) Any structure or part of a structure which supports means of protection or to which means of protection are attached shall be of sufficient strength and suitable for the purpose of such support or attachment.

18.17 Requirements for all Working Platforms

- i) Every working platforms requires a supporting structure for holding it
- ii) Any surface upon which any supporting structure rests shall be stable, of sufficient strength and of suitable composition safely to support the supporting structure, the working platform and any loading intended to be placed on the working platform.

iii). Stability of supporting structure

Any supporting structure shall

- (a) be suitable and of sufficient strength and rigidity for the purpose for which it is being used;
- (b) in the case of a wheeled structure, be prevented by appropriate devices from moving inadvertently during work at height;
- (c) in other cases, be prevented from slipping by secure attachment to the bearing surface or to another structure, provision of an effective anti-slip device or by other means of equivalent effectiveness;
- (d) be stable while being erected, used and dismantled; and
- (e) when altered or modified, be so altered or modified as to ensure that it remains stable.
- (f) Have suitable base plates and properly footed thereby.

iv). Stability of working platforms

A working platform shall

- (a) be suitable and of sufficient strength and rigidity for the purpose or purposes for which it is intended to be used or is being used;
- (b) be so erected and used as to ensure that its components do not become accidentally displaced so as to endanger any person;
- (c) when altered, or modified, be so altered or modified as to ensure that it remains stable; and
- (d) be dismantled in such a way as to prevent accidental displacement.

v) Safety on working platforms

A working platform shall

- (a) be of sufficient dimensions to permit the safe passage of persons and the safe use of any plant or materials required to be used and to provide a safe working area having regard to the work being carried out there;
- (b) possess a suitable surface and, in particular, be so constructed that the surface of the working platform has no gap
 - i) through which a person could fall;
 - ii) through which any material or object could fall and injure a person; or
 - iii) giving rise to other risk of injury to any person, unless measures have been taken to protect persons against such risk; and

(c) be so erected and used, and maintained in such condition, as to prevent, so far as is reasonably practicable

i) the risk of slipping or tripping; or

ii) any person being caught between the working platform and any adjacent structure.

vi) Loading

A working platform and any supporting structure shall not be loaded so as to give rise to a risk of collapse or to any deformation, which could affect its safe use.

vii) Additional requirements for scaffolding

Strength and stability calculations for scaffolding shall be carried out unless

(a) a note of the calculations, covering the structural arrangements contemplated, is available; or

(b) it is assembled in conformity with a generally recognised standard configuration.

viii) Depending on the complexity of the scaffolding selected, a competent person shall draw up an assembly, use and dismantling plan. This may be in the form of a standard plan, supplemented by items relating to specific details of the scaffolding in question.

ix) A copy of the plan, including any instructions it may contain, shall be kept available for the use of persons concerned in the assembly, use, dismantling or alteration of scaffolding until it has been dismantled.

x) The dimensions, form and layout of scaffolding decks shall be appropriate to the nature of the work to be performed and suitable for the loads to be carried and permit work and passage in safety.

xi) While a scaffold is not available for use, including during its assembly, dismantling or alteration, it shall be marked with general warning signs in accordance with and be suitably delineated by physical means preventing access to the danger zone.

xii) Scaffolding may be assembled, dismantled or significantly altered only under the supervision of a competent person and by persons who have received appropriate and specific training in the operations envisaged which addresses specific risks which the operations may entail and precautions to be taken, and more particularly in

(a) understanding of the plan for the assembly, dismantling or alteration of the scaffolding concerned;

(b) safety during the assembly, dismantling or alteration of the scaffolding concerned;

(c) measures to prevent the risk of persons, materials or objects falling;

(d) safety measures in the event of changing weather conditions which could adversely affect the safety of the scaffolding concerned;

(e) permissible loadings;

(f) any other risks which the assembly, dismantling or alteration of the scaffolding may entail.

18.18 Requirements for collective safeguards for arresting falls

i) Collective safeguard are a safety net, airbag or other collective safeguard for arresting falls

- ii) A safeguard shall be used only if
 - (a) a risk assessment has demonstrated that the work activity can so far as is reasonably practicable be performed safely while using it and without affecting its effectiveness;
 - (b) the use of other, safer work equipment is not reasonably practicable; and
 - (c) a sufficient number of available persons have received adequate training specific to the safeguard, including rescue procedures.
- iii) A safeguard shall be suitable and of sufficient strength to arrest safely the fall of any person who is liable to fall.
- iv) A safeguard shall
 - (a) in the case of a safeguard which is designed to be attached, be securely attached to all the required anchors, and the anchors and the means of attachment thereto shall be suitable and of sufficient strength and stability for the purpose of safely supporting the foreseeable loading in arresting any fall and during any subsequent rescue;
 - (b) in the case of an airbag, landing mat or similar safeguard, be stable; and
 - (c) in the case of a safeguard, which distorts in arresting a fall, afford sufficient clearance.
 - v) Suitable and sufficient steps shall be taken to ensure, so far as practicable, that in the event of a fall by any person the safeguard does not itself cause injury to that person.

18.19 Requirements for personal fall protection systems

- i) A personal fall protection system shall be used only if
 - (a) a risk assessment has demonstrated that
- ii) the work can so far as is reasonably practicable be performed safely while using that system; and
- iii) the use of other safer work equipment is not reasonably practicable; and
 - (b) the user and a sufficient number of available persons have received adequate training specific to the operations envisaged, including rescue procedures.
- iv) A personal fall protection system shall
 - (a) be suitable and of sufficient strength for the purposes for which it is being used having regard to the work being carried out and any foreseeable loading;
 - (b) where necessary, fit the user;
 - (c) be correctly fitted;
 - (d) be designed to minimise injury to the user and, where necessary, be adjusted to prevent the user falling or slipping from it, should a fall occur; and
 - (e) be so designed, installed and used as to prevent unplanned or uncontrolled movement of the user.
- v) A personal fall protection system designed for use with an anchor shall be securely attached to at least one anchor, and each anchor and the means of attachment thereto shall be suitable and of sufficient strength and stability for the purpose of supporting any foreseeable loading.
- vi) Suitable and sufficient steps shall be taken to prevent any person falling or slipping from a personal fall protection system.

18.20 Requirements for Ladders

- 1) Every contractor shall ensure that a ladder is used for work at height only if a risk assessment has demonstrated that the use of more suitable work equipment is not justified because of the low risk and
 - i) The short duration of use; or
 - ii) Existing features on site, which he cannot alter.
- 2) Only metal ladders shall be allowed. Bamboo ladders are prohibited.
- 3) Any surface upon which a rest shall be stable, firm, of sufficient strength and of suitable composition safely to support the ladder so that its rungs or steps remain horizontal, and any loading intended to be placed on it.
- 4) A ladder shall be so positioned as to ensure its stability during use
- 5) A suspended ladder shall be attached in a secure manner and so that, with the exception of a flexible ladder, it cannot be displaced and swinging is prevented.
- 6) A portable ladder shall be prevented from slipping during use by
 - i) securing the stiles at or near their upper or lower ends;
 - ii) an effective anti-slip or other effective stability device; or
 - iii) any other arrangement of equivalent effectiveness.
- 7) A ladder used for access shall be long enough to protrude sufficiently above the place of landing to which it provides access, unless other measures have been taken to ensure a firm handhold.
- 8) No interlocking or extension ladder shall be used unless its sections are prevented from moving relative to each other while in use.
- 9) A mobile ladder shall be prevented from moving before it is stepped on.
- 10) Where a ladder or run of ladders raises a vertical distance of 9 metres or more above its base, there shall, where reasonably practicable, be provided at suitable intervals sufficient safe landing areas or rest platforms.
- 11) Every ladder shall be used in such a way that
 - (a) a secure handhold and secure support are always available to the user; and
 - (b) the user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of
 - (i) the low risk; and
 - (ii) the short duration of use.

19.0 Overhead protection

All contractors shall provide overhead protections as per relevant Rule of BOCWR

- i) Overhead protection should be erected along the periphery of every building which is under construction and the building height shall be 15m or above after construction.
- ii) Overhead protection shall be minimum 2m wide and the outer edge shall be 150mm higher than the inner edge and an angle not more than 200 to its horizontal sloping into the building.

- iii) Overhead protection shall not be erected more than a height of 5m from the base of the building.
- v) Areas of inadvertent hazard of falling of material shall be guarded or barricaded or roped-off thereby by the contractor.

20.0 Slipping, Tripping, Cutting, Drowning and Falling Hazards

As per relevant Rule of BOCWR,

- i) All places should be free from dust, debris or similar materials.
- ii) Sharp projections or any protruding nails or similar objects shall be suitably guarded or shall even be avoided to make the place safe to work.
- iii) Contractor shall not allow workmen to work or use platforms, scaffolds/passageways or any walkways, which has water, or oil or similar substances spilt and has a slipping hazard, unless it is cleaned off or covered or sanded or saw dusted or make it safe with any suitable material.
- iv) When workers are exposed to areas where fall into water is possible, the contractor shall provide suitable and adequate equipment for saving the workers from drowning and rescuing from such hazard. If the Employer considers, the contractor shall provide well-equipped boat or launch, manned with trained personnel at the work place.
- v) Open side or opening where worker, equipment, vehicle or lifting appliance may fall at a building or outside shall be guarded suitably except in places of free access by reasons of nature of work.
- vi) Suitable safety net shall be provided at places of material / man falling is possible in accordance with national standards.

21.0 Lifting Appliances and Gear

- 21.1 (a) Lifting appliances means a crane, hoist machinery, derrick, winch, gin pole, sheer legs, jack, hoist drum, slewing machinery, slewing bearing fasteners, luffing machinery sheaves, pulley blocks, hooks or other equipment used for lifting materials, objects or building workers and lifting gears means ropes, chain slings, shackles, hooks, lifting lugs, wire ropes, lifting eyebolts and events and other accessories of a lifting appliance.

(b) Use of “Tractor Transmission Type “Pick and Carry Hydra crane

“Tractor Transmission Type” Pick and Carry Hydra crane – 1st Generation model is prohibited at MMRDA works. Contractor shall mobilized ‘Truck Transmission Type’ pick and hydra crane – 2nd Generation model only

- 21.2 No machine shall be selected to do any lifting on a specific job until its size and characteristics are considered against:
- i) the weights, dimensions and lift radii of the heaviest and largest loads
 - ii) the maximum lift height, the maximum lift radius and the weight of the loads that must be handled at each
 - iii) the number and frequency of lifts to be made
 - iv) how long the crane will be required on site
 - v) the type of lifting to be done (for example, is precision placement of loads important)
 - vi) the type of carrier required (this depends on ground conditions and machine capacity
In its operating quadrants: capacity is normally greatest over the rear, less over the side, and non-existent over the front
 - vii) whether loads will have to be walked or carried
 - viii) whether loads will have to be suspended for lengthy periods

- ix) the site conditions, including the ground where the machine will be set up, access roads and ramps it must travel, space for erection and any obstacles that might impede access or operation.
- 21.3 The contractor shall ensure that a valid certificate of fitness issued as per clause 21.5 is available for all lifting appliances including synchronised mobile jacks, pre-stressing hydraulic jacks, jacks fitted with launching girders etc. and Employers approval before inducting to the site. Only after obtaining the approval from the Employer any lifting appliances and gear shall be used.
- 21.4 The laminated photocopies of fitness certificate issued by competent person, the Employers' approval letter, the operators' photo, manufacturer's load chart and competency certificate shall always be either kept in the operator cabin or pasted on the visible surface of the lifting appliances.
- 21.5 All lifting appliances and loose gears shall be clearly marked for its safe working load and identification by stamping or other suitable means.
- 21.6 The contractor shall also maintain a register containing a system of identification of all tools and tackles, its date of purchase, safe working load, competent person date of examination etc.
- 21.7 Test and periodical examination of lifting appliances and gears
 - 21.7.1 All lifting appliances including all parts and gears thereof, whether fixed or movable shall be thoroughly tested and examined by a competent person once at least in every six months or after it has undergone any alterations or repairs liable to affect its strength or stability. Within the validity, if the lifting appliances are shifted to a new site, re-examination by the same competent person for ensuring its safety shall also be done.
 - 21.7.2 Contractors can utilise the services of any competent person as defined in Factories Act, 1948 and approved by Chief Inspector of Factories with the permission of the Employer.
 - 21.7.3 All alarms and signals like automatic safe load indicators (SLI), boom angle indicators, boom extension indicators, over lift boom alarm, swing alarm, hydraulic safety valves, mechanical radius indicators, load moment indicators etc. shall be periodically examined and maintained always in working condition
- 21.8 Automatic safe load indicators**
 - 21.8.2. As stipulated in relevant Rule of Maharashtra BOCW Rules, every lifting appliances and gears like cranes, hydras etc, if so constructed that the safe working load may be varied by raising or lowering of the jib or otherwise shall be attached with an automatic indicator of safe working loads approved by Bureau of Indian standards/ International certifying bodies which gives a warning to the operator and arrests further movements of the lifting parts.
- 21.9 Qualification of operator of lifting appliances and of signaller etc
 - 21.9.1 The contractor shall not employ any person to drive or operate a lifting machine like crane, hydra etc whether driven by mechanical power or otherwise or to give signals to work as an operator of a rigger or derricks unless he
 - i) is above twenty-one years of age and possesses a valid heavy transport vehicle driving licence as per Motor Vehicle Act and Rules.
 - ii) is absolutely competent and reliable
 - iii) possesses the knowledge of the inherent risks involved in the operation of lifting appliances by undergoing a formal training at any institution of national importance acceptable to Employer
 - iv) is medically examined periodically as specified in relevant schedule of BOCW Rules.
- 21.10 General requirements of appliances

- 21.10.1 Out-of level
- 21.10.1.1 One of the most severe effects of being out-of fit level is that side loads develop in the boom. Because of side loads all mobile cranes lose capacity rapidly as the degree of out-of- level increases and therefore all effort shall be made to prevent such situations.
- 21.10.2 Boom
 - i) The boom is one of the more critical elements of the crane and must be in perfect condition at all time. No boom section with a bent lattice member shall be allowed
 - ii) All welds shall be crack and corrosion free
 - iii) No member of the boom shall be bent
 - iv) All telescopic boom shall be free from cracks, rust, flaking or cracked paint, bulges, greases or varnishes
- 21.10.3 The sweep area (work area) of the construction machinery shall be always free from obstructions.
- 21.10.4 All hydraulic piping and fittings shall be maintained leak proof.
- 21.10.5 The operator cab shall possess good and safe:
 - i) structure, windows and windshield wipers
 - ii) Drivers chair and foot rest
 - iii) Control handles
 - iv) Cab instrumentation
 - v) Telecommunication
 - vi) Cab out fitting
 - vii) wind indicator with an adjustable set point shall be in a position representative for the wind on the crane. The indicator shall give continuous information regarding constant speeds and gusts.

21.11 Mandatory rigging requirements

- 21.11.1 Rigging shall be done under experienced and qualified rigger only.
- 21.11.2 The primary requirement in rigging shall be to assess the weight of load before attempting any lift.
- 21.11.3 All hooks shall be fitted with Master Rings having certificate of fitness from the competent person, so that the hooks are subjected to balanced vertical loading only.
- 21.11.4 Only four legged slings shall be allowed which includes master link (ring), intermediate master link (ring) if necessary, chain / wire rope sling, sling hook or other terminal fitting.
- 21.11.5 Hand spliced slings up to 32mm diameter shall not be used at site for any lifting purpose.
- 21.11.6 No load shall be slewed over public areas without stopping the pedestrians and road traffic first.
- 21.11.7 Requirements of outriggers
 - i) All outriggers shall be fully extended and at all tyres are clear of the ground
 - ii) Heavy duty blocking having large bearing area shall be necessary to prevent sinking of floats

- 21.11.8 All loads shall have tag-lines attached in order to ensure that the load can be controlled at all times.
- 21.11.9 No close working to any live overhead power line is permitted without the operation of a strict Permit to Work.
- 21.11.10 Minimum lighting is to be ensured at all lifting operations.
- 21.12 Failure to do any of the above shall attract penalty from the Employer as per relevant clause

22.0 Launching Operation

- 22.1 As launching operation is one of the riskiest job, the contractor shall take utmost precaution at all stages like; planning, establishing casing yard, casting segments, transporting segments, fabrication and erection of launching girders, launching of segments, pre- stressing, auto launching of girders and dismantling of launching girders.
- 22.2 The contractor shall prepare a comprehensive Method Statement for the launching operation, adhering to the SHE conditions laid down in conditions of contract on SHE and project SHE manual. Particular reference shall be made to the provisions on working at height. As the entire process of launching has to be undertaken at an elevated level the safety of workers and the girder is paramount important. The following general guidelines shall be adhered throughout the launching operation.
- i) Necessary 'working platforms' and fall protection anchorage arrangement shall be provided in the launching girder itself.
 - ii) Provisions for mounting light fittings shall also be made available in the launching girder.
 - iii) The casting yard shall be established ensuring the provision given in **clause 38.0**
 - iv) The workmen engaged in fabrication of reinforcement, concreting the segment shall be provided with necessary PPEs including compulsory hand protection gloves.
 - v) Casting and curing of segment shall be undertaken under the direct supervision of the responsible engineer of the contractor.
 - vi) Trucks with valid registration, license, safe worthiness certificate, Employer's approval certificate, and pollution under check certificate shall only be used for transport of segments
 - vii) Drivers engaged for driving these trucks, shall be trained once in 6 months at any reputed institute with prior approval of employer on defensive driving.
 - viii) Drivers shall also have undergone proper medical examination as per relevant clause mentioned under 'Medical Facilities'.
 - ix) The segments shall rigidly secured to the truck with necessary wooden wedges and necessary red indicators/safety tapes provided so that the vehicle is clearly seen by other road users both in day / night time.
 - x) Every launching girder shall have a responsible engineer on duty all the time.
 - xi) All the time from erection to dismantling the area between the two piers wherein launching is in progress shall always be barricaded.
 - xii) Unloading of segments from trucks, lifting of segments, shifting of segments, gluing shall be done under the direct supervision of the approved engineer of the contractor.
 - xiii) Auto launching shall be done only after approval from the Employer. After every auto launching the stability of launching girder shall be ensured.

- xiv) The vertical deflection of launching girder shall be monitored at all critical stages like with/without loads and after every auto launching.
 - xv) A register containing all important operational details from erection to dismantling of launching girders shall be maintained and made available to Employer whenever called for.
 - xvi) Test certificate for all lifting gears including Macalloy bars shall be maintained at a location closer to the launching girder itself so that it can be referred during all inspections.
 - xvii) Adequate lighting at all time shall be ensured in the entire area of operation.
 - xviii) Access to drinking water & toilet shall be ensured to all workmen engaged for launching process.
 - xix) Proper access ladders/stairways shall be maintained for safe ascending / descending of workmen / engineers.
- 22.3 Non-adherence to any of the clauses mentioned above shall be viewed seriously by the Employer and penalty levied as per relevant clause.

23.0 Construction Machinery

- 23.1 Construction machineries may include dumpers and dump trucks, lift trucks and telescopic handlers piling rigs, vibro hammers, rail welding equipments, mobile elevating work platforms, cranes, tipper lorries, lorry loaders, skip wagons, 360° excavators, 180° backhoe loaders, crawler tractors, scrapers, graders, loading shovels, trenchers, side booms, pavers, planers, chippers, road rollers, locomotives, tankers and bowsers, trailers, hydraulic and mechanical breakers etc.
- 23.2 Safe worthiness certificate
- 21.2.1 The contractor shall mobilize construction plant and machinery with their age conforming to **Appendix No 17**. Every such construction equipment shall also be in sound mechanical working condition and certified by either competent person under Factories Act or manufacturers' warranty in case of brand new equipment's or authorized persons / firms approved by Employer before induction to any site.
 - 21.2.2 Every such certificate shall have the date of purchase, main overhauling undertaken in the past, any accident to the equipment, visual examination details, critical components safety check, list of safety devices and its working condition, manufacturer's maintenance checklist, past projects wherein the equipment's were used etc. as its minimum content.

23.3 Reverse Horns

- 21.3.1 All Vehicles shall be fitted with audible reverse alarms and maintained in good working condition. Reversing shall be done only when there is adequate rear view visibility or under the directions of a banksman.
- 23.4 General operating procedures
- i) Drivers entering site shall be instructed to follow the safe system of work adopted on site. These shall be verbal instructions or, preferably, written instructions showing the relevant site rules, the site layout, delivery areas, speed limits, etc.
 - ii) No passengers shall be carried, unless specific seating has been provided in accordance with the manufacturers recommendations.
 - iii) Working on gradients beyond any equipments capability shall not be allowed.
 - iv) Prevention of dumper and dump truck accidents should be managed by providing wheel stops at a sufficient distance from the edges of excavations, spoil heaps, pits, etc.

- v) The manufacturer's recommended bucket size must not be exceeded in excavators.
 - vi) If excavators operating on a gradient which cannot be avoided, it must be ensured that the working cycle is slowed down, that the bucket is not extended too far in the downhill direction, and that travel is undertaken with extreme caution. A large excavator must never be permitted to travel in a confined area, or around people, without a banksman to guide the driver, who should have the excavator attachment close in to the machine, with the bucket just clear of the ground. On wheeled excavators, it is essential that the tires are in good condition and correctly inflated. If stabilizing devices are fitted, they should be employed when the machine is excavating.
 - vii) When the front shovel of the 1800 backhoe loaders is being employed, the backhoe attachment shall be in its "travel" position, with the safety locking device in place.
 - viii) When operating the backhoe in poor ground conditions, the stabilizers tend to sink into the surface of the ground, reducing stability. Therefore, frequent checks shall be made for the stability of the machine. The loading shovel should always be lowered to the ground to stabilize the machine when the backhoe is employed.
 - ix) The netting operation of the skip wagons should be carried out prior to lifting the skip to reduce the risks of working on the rear platform
 - x) If a tractor dozer is employed on clearing scrub or felling trees, it shall be provided with adequate driver protection.
 - xi) When two or more scrapers are working on the same job, a minimum distance of at least 25m shall be kept between them.
 - xii) In case of hydraulic breakers, hydraulic rams and hoses shall be in good working condition
- 23.5 All wood working machines shall be fitted with suitable guards and devices such as top guard, riving knife, push stick, guards for drive belts and chains, and emergency stop switch easily accessible by the operator.

23.6 Penalty

- 21.6.1 If any of the above clauses are not adhered, penalty shall be imposed as per relevant clause depending upon the gravity of the unsafe act and or condition.

24.0 Machine and general area guarding

- 24.1 The contractor shall ensure at the construction site all motors, cogwheels, chains and friction gearing, flywheels, shafting, dangerous and moving parts of machinery are securely fenced or legged. The fencing of dangerous part of machinery is not removed while such machinery is in motion or in use.

25.0 Manual lifting and carrying of excessive weight

- 25.1 The contractor shall ensure at his construction site of a building or other construction work that no building worker lifts by hand or carries overhead or over his back or shoulders any material, article, tool or appliances exceeding in weight as said below as per relevant Rule of BOCWR, unless aided by another building worker or device.

| Person | Maximum weight in kg. |
|--------|-----------------------|
|--------|-----------------------|

| | |
|-------------|----|
| Adult man | 55 |
| Adult woman | 30 |

- 25.2 No building worker aided by other building worker shall lift or carry weight higher than or exceeding the sum of total of maximum limits set out for each building worker separately as mentioned in the table above.

26.0 Site Electricity

26.1 Competency of Electrical personnel:

- 26.1.1 The contractor shall employ qualified and competent electrical personnel as specified in general instruction attached as **Appendix 5.**

26.2 Assessment of power

- 26.2.1 The contractor shall assess the size and location of the electrical loads and the manner in which they vary with time during the currency of the contract.
- 26.2.2 The contractor shall elaborate as to how the total supply is to be obtained / generated. The details of the source of electricity, earthing requirement, substation / panel boards, distribution system shall be prepared and necessary approval from Employer obtained before proceeding of the execution of the job.
- 26.2.3 The main contractor shall take consideration, the requirements of the sub / petty contractors' electric power supply and arrive at the capacity of main source of power supply from diesel generators.
- 26.2.4 As the sub / petty contractors' small capacity generators create more noise and safety hazard, no small capacity diesel generators shall be allowed for whatsoever the type of job to be executed under this contract.
- 26.2.5 If any unsafe noise making small capacity diesel generators are found used by sub /petty contractors the main contractor shall only be penalised.

26.3 Work on site

- 26.3.1 The contractor shall also submit electrical single line diagram, schematic diagram and the details of the equipment for all temporary electrical installation and these diagrams together with the temporary electrical equipment shall be submitted to the Employer's for necessary approval. Failure to do so shall invite penalty as per relevant clause.

26.4 Strength and capability of electrical equipment

- 26.4.1 No electrical equipment shall be put into use where its strength and capability may be exceeded in such a way as may give rise to danger.

26.5 Adverse or hazardous environments

- 26.5.1 Electrical equipment which may reasonably foreseeably be exposed to-
- mechanical damage;
 - the effects of the weather, natural hazards, temperature or pressure;
 - the effects of wet, dirty, dusty or corrosive conditions; or
 - any flammable or explosive substance, including dusts, vapours or gases, shall be of such construction or as necessary protected as to prevent, so far as is reasonably practicable, danger arising from such exposure.

26.6 Distribution system:

- 26.6.1 The contractor shall provide distribution system for control and distribution of electricity from a main AC supply of 50Hz for typical appliances,

- i) Fixed plant – 400V 3 phase
- ii) Movable plant fed via trailing cable over 3.75 kW – 400 3 phase
- iii) Installation in site buildings – 230V single phase
- iv) Fixed flood lighting – 230V single phase
- v) Portable and hand tools – 115V single phase
- vi) Site lighting - 115V single phase
- vii) Portable hand lamps – 115V single phase

26.7 Electrical protection circuits

- 26.7.1 Precautions shall be taken, either by earthing or by other suitable means, to prevent danger arising when any conductor (other than a circuit conductor) which may reasonably foreseeable become charged as a result of either the use of a system, or a fault in a system, becomes so charged. A conductor shall be regarded as earthed when conductors of sufficient strength and current-carrying capability to discharge electrical energy to earth connect it to the general mass of earth.

If a circuit conductor is connected to earth or to any other reference point, nothing which might reasonably be expected to give rise to danger by breaking the electrical continuity or introducing high impedance shall be placed in that conductor unless suitable precautions are taken to prevent that danger.

- 26.7.2 Appropriate electrical protection shall be provided for all circuits, against over load, short circuit and earth fault current.
- 26.7.3 The contractor shall provide sufficient ELCBs (maintain sensitivity 30 mA) / RCCBs for all the equipments (including Potable equipments), electrical switchboards, distribution panels etc. to prevent electrical shocks to the workers.
- 26.7.4 All protection devices shall be capable of interrupting the circuit without damage to any equipments and circuits in case of any fault may occur.
- 26.7.5 Rating of fuses and circuit breakers used for the protection of circuits should be coordinate with equipment power ratings.
- 26.7.6 Protection against lightning shall be ensured to all equipment kept in open at sites.

26.8 Cables:

- 26.8.1 Cables shall be selected after full consideration of the condition to which they shall be exposed and the duties for which they are required. Supply cable up to 3.3 kV shall be in accordance with BS 6346.
- 26.8.2 For supplies to mobile or transportable equipment where operating of the equipment subjects the cable to flexing, the cable shall conform to any of these codes BS 6007 / BS 6500 / BS 7375.
- 26.8.3 Flexible cords with a conductor cross sectional area smaller than 1.5 mm² shall not be used and insulated flexible cable shall conform to BS 6500 and BS 7375.
- 26.8.4 Where low voltage cables are to be used, reference shall be made to BS 7375. The following standards shall also be referred to particularly for underground cables BS 6346 and BS 6708
- 26.8.5 Cables buried directly in the ground shall be of a type incorporating armour or metal sheath or both. Such cables shall be marked by cable covers or a suitable marking tape and be buried at a sufficient depth to avoid their being damaged by any disturbance of the ground. Cable routes shall be marked on the plans kept in the site electrical register.

- 26.8.6 Cabling passing under the walk way and across way for transport and mobile equipment shall be laid in ducts at a minimum depth of 0.6 meters.
- 26.8.7 Cables that need to cross open areas, or where span of 3m or more are involved, a catenary wire on poles or other supports shall be provided for convenient means of suspension. Minimum height shall be 6 m above ground.
- 26.8.8 Cables carrying a voltage to earth in excess of 65V other than supply for welding process shall have metal armour or sheath, which has been effectively earthed and monitored by the contractor. In case of flexible and trailing cables such earthed metal sheath and/or armour should be in addition to the earth core in the cable and shall not be used as the protective conductor.
- 26.8.9 Armoured cables having an over-sheath of polyvinyl chloride (PVC) or an oil resisting and flame retardant compound shall be used whenever there is a risk of mechanical damage occurring.
- 26.9 Plugs, socket-outlets and couplers:
 - 26.9.1 The contractor shall ensure plugs, socket-outlets, and couplers available in the construction site as "splash proof" type. The minimum degree of Ingress Protection should be of IP44 in accordance with BS EN 60529.
 - 26.9.2 **Only plugs and fittings of the weatherproof type shall be used and they should be colour coded in accordance with the Internationally recognised standards for example as detailed as follows:**
 - (a) 110 volts : Yellow.
 - (b) 240 volts : Blue.
 - (c) 415 volts : Red.
- 26.10 Connections
 - 26.10.1 Every joint and connection in a system shall be mechanically and electrically suitable for use to prevent danger. Proper cable connectors as per national/international standards shall only be used to connect cables.
 - 26.10.2 No loose connections or tapped joints shall be allowed anywhere in the work site, office area, stores and other areas. Penalty as per relevant clause shall be put in case of observation of any tapped joints.
- 26.11 Portable and hand-held equipments:
 - 26.11.1 The contractor shall ensure the use of double insulated or all-insulated portable electrical hand equipment may be used without earthing (i.e. two core cables), but they shall still be used only on 110V because of the risk of damage to trailing leads.
- 26.12 Other equipments:
 - 26.12.1 All equipment shall have the provision for major switch/cut-off switch in the equipment itself.
 - 26.12.2 All non-current carrying metal parts of electrical equipment shall be earthed through insulated cable
 - 26.12.3 Isolate exposed high-voltage (over 415 Volts) equipment, such as transformer banks, open switches, and similar equipment with exposed energized parts and prevent unauthorised access.
 - 26.12.4 Approved perimeter markings shall be used to isolate restricted areas from designated work areas and entryways and shall be erected before work begins and maintained for entire duration of work. Approved perimeter marking shall be installed with either red barrier tape printed with the words "DANGER—HIGH VOLTAGE" or a barrier of yellow or orange synthetic rope, approximately 1 to 1.5 meter above the floor or work surface.

26.13 Work on or near live conductors

- 26.13.1. No person shall be engaged in any work activity on or so near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless-
- it is unreasonable in all the circumstances for it to be dead; and
 - it is reasonable in all the circumstances for him to be at work on or near it while it is live; and
 - suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury.

26.14 Inspection and Maintenance

- 26.14.1 All electrical equipment should be permanently numbered and a record kept of the date of issue, date of last inspection and recommended inspection period.
- 26.14.2 Fixed installations shall be inspected at least at three monthly intervals; routine maintenance being carried out in accordance with equipment manufactures recommendations.

27.0 Lighting:

- 27.1 The contractor shall provide sufficient site lighting, of the right type and at the right place for it to be properly effective. Lighting ought not to introduce the risk of electric shock. Therefore, 230V supplies should be used for those fittings, which are robustly installed, and well out of reach e.g. flood lighting or high-pressure discharge lamps.

27.2 Selection of Luminaries:

The contractor shall select the luminaries as per the area requirement indicated below:

| Type of Lighting | Area of Requirement | Luminaries |
|---------------------|---|--|
| Area Lighting | Workmen and vehicles to move about in safely. | <ol style="list-style-type: none"> Shovel type: non-symmetrical Symmetrical or non-symmetrical tungsten halogen |
| Beam flood lighting | Concentrated light over an area from a relatively great distance. | <ol style="list-style-type: none"> Portable flood light (Conical beam) Wide angle flood (fan shaped beam) Medium or narrow angle flood (Conical beam) |
| Dispersive lighting | Lighting for indoor | <ol style="list-style-type: none"> Dispersive (Mercury florescent) Cargo cluster Florescent trough |

| | | |
|------------------|---|--|
| Walkway lighting | Lighting for stairways, ladder ways, corridors, scaffold access routs, etc. | i) Well glass unit ii) Bulkhead unit (tungsten filament) iii) Bulk head unit (Florescent) |
| Local lighting | Lighting on sites and fittings are generally accessible to operatives | i) PAR (Parabolic Aluminised Reflector) lamp cluster ii) Festoons (with or without shades) iii) Adjustable florescent work lamp iv) Portable flood lamp (mounted on own cable drum) |

- 27.3 The contractor shall ensure that luminaries should always be placed so that no person is required to work in their own shadow and so that the local light for one person is not a source of glare for the others. Strongly made clamps should be available for attaching luminaries to poles and other convenient supports.
- 27.4 Luminaries should be robust, resistant to corrosion and rain proof especially at the point of the cable entry.
- 27.5 The correct type of lamp for each luminaries should always be used and when lamps need to be replaced if shall be in accordance with the supply voltage.
- 27.6 Lamp holders not fitted with a lamp should be capped off.
- 27.7 The contractor shall take every effort to illuminate the work site as per the Employer's requirement illustrated in general instruction attached as Appendix 15.

28.0 Hand Tools and Power Tools

28.1 General

- 28.1.1 The contractor is wholly responsible for the safe condition of tools and equipment used by his employees and that of his sub-contractors.
- 28.1.2 Use of short / damaged hand tools shall be avoided and the contractor shall ensure all his hand tools used at his worksite are safe to work with or stored and shall also train his employees (including his sub-contractors) for proper use thereby.
- 28.1.3 All hand tools and power tools shall be duly inspected before use for safe operation.
- 28.1.4 All hand tools and power tools shall have sufficient grip and the design specification on par with national/international standards on anthropometrics.

28.2 Hand tools

- 28.2.1 Hand tools shall include saws, chisels, axes and hatches, hammers, hand planes, screw drivers, crow bars, nail pullers.
- 28.2.2 The contractor shall ensure that,
- For crosscutting of hardwood, saws with larger teeth points (no. of points per inch) shall be preferred to avoid the saw jumping out of the job.
 - Mushroom headed chisels shall not be used in the worksite where the fragments of the head may cause injury.

- iii) Unless hatchet has a striking face, it shall be used as a hammer.
- iv) Only knives of retractable blades shall be used in the worksite.
- v) No screwdrivers shall be used for scraping, chiselling or punching holes.
- vi) A pilot hole shall always be driven before driving a screw.
- vii) Wherever necessary, usage of proper PPEs shall be used by his employees.

28.3 Power tools

28.3.1 Power tools include drills, planes, routers, saws, jackhammers, grinders, sprayers, chipping hammers, air nozzles and drills.

28.3.2 The contractor shall ensure that

- i) Electric tools are properly grounded or / and double insulated.
- ii) GFCIs/ RCCBs shall be used with all portable electric tool operated especially outdoors or in wet condition.
- iii) Before making any adjustments or changing attachments, his workers shall disconnect the tool from the power source.
- iv) When operating in confined spaces or for prolonged periods, hearing protection shall be required. The same shall also apply to working with equipment's, which gives out more noise as mentioned in clause 43.0 of this contract document.
- v) Tool is held firmly and the material is properly secured before turning on the tool.
- vi) All drills shall have suitable attachments respective of the operations and powerful for ease of operation.
- vii) When any work / operation need to be performed repeatedly or continuously, tools specifically designed for that work shall be used. The same is applicable to detachable tool bit also.
- viii) Size of the drill shall be determined by the maximum opening of the chuck n case of drill bit.
- ix) Attachments such as speed reducing screwdrivers and buffers shall be provided to prevent fatigue and undue muscle strain to his workers.
- x) Stock should be clamped or otherwise secured firmly to prevent it from moving.
- xi) Workers shall never stand on the top of the ladder to drill holes in walls / ceilings, which can be hazardous, instead standing on the fourth or fifth rung shall be recommended.
- xii) Electric plane shall not be operated with loose clothing or long scarf or open jacket.
- xiii) Safety guards used on right angle head or vertical portable grinders must cover a minimum of 1800 of the wheel and the spindle / wheel specifications shall be checked.
- xiv) All power tools / hand tools shall have guards at their nip points.
- xv) Low profile safety chain shall be used in case of wood working machines and the saw shall run at high rpm when cutting and also correct chain tension shall be ensured to avoid "kickback".
- xvi) Leather aprons and gloves shall be used as an additional personal protection auxiliary to withstand kickback.

- xvii) Push sticks shall be provided and properly used to hold the job down on the table while the heels moves the stock forward and thus preventing kickbacks.
- xviii) Air pressure is set at a suitable level for air actuated tool or equipment being used.
Before changing or adjusting pneumatic tools, air pressure shall be turned off.
- xix) Only trained employees shall use explosive actuated tools and the tool shall also be unloaded when not in use.
- xx) Usage of such explosive actuated tools shall be avoided in case of places where explosive/flammable vapours or gases may be present.
- xxi) Explosive actuated tools and their explosives shall be stored separately and be taken out and loaded only before the time of immediate use.
- xxii) Misfired cartridges of explosive actuated tools must be placed in a container of water and be removed safely from the project.
- xxiii) No worker shall point any power operated / hand tool to any other person especially during loading / unloading.

29.0 Welding, Gouging and Cutting

- 29.1 Gas cylinders in use shall be kept upright on a custom-built stand or trolley fitted with a bracket to accommodate the hoses and equipment or otherwise secured. The metal cap shall be kept in place to protect the valve when the cylinder is not connected for use.
- 29.2 Hose clamp or clip shall be used to connect hoses firmly in both sides of cylinders and torches.
- 29.3 All gas cylinders shall be fixed with pressure regulator and dial gauges
- 29.4 Non-return valve and Flashback arrester shall be fixed at both end of cylinder and torch.
- 29.5 Domestic LPG cylinders shall not be used for Gas welding and Cutting purpose.
- 29.6 DCP or CO2 type Fire Extinguisher not less than 5 kg shall be fixed at or near to welding process zone in an easily accessible location. Fire Extinguisher should confirm to IS 2190:1992.
- 29.7 Use firewatchers if there is a possibility of ignition unobserved by the operator (e.g. on the other side of bulkheads).
- 29.8 Oxygen cylinders and flammable gas cylinders shall be stored separately, at least 6.6 meters (20 feet) apart or separated by a fire proof, 1.6 meters (5 feet) high partition. Flammable substances shall not be stored within 50 feet of cylinder storage areas.
- 29.9 Transformer used for electrical arc welding shall be fixed with Ammeter and Voltmeter and also fixed with separate main power switch.
- 29.10 Welding grounds and returns should be securely attached to the work by cable lugs, by clamps in the case of stranded conductors, or by bolts for strip conductors. The ground cable will not be attached to equipment or existing installations or apparatus.
- 29.11 Use a low voltage open circuit relay device if welding with alternating current in constricted or damp places.
- 29.12 Take precautions against the risk of increased fume hazards when welding with chrome containing fluxed consumables or high current metal inert gas (MIG) or tungsten inert gas (TIG) processes.
- 29.13 Avoid being in contact with water or wet floors when welding. Use duckboards or rubber protection.
- 29.14 All electrical installations shall meet the IS: 5571: 1997 and NFPA 70 for gas cylinder storage area and other hazardous areas.

29.15 The current for Electric arc welding shall not exceed 300 A on a hand welding operation.

30.0 Dangerous and harmful environment

As per BOCWR Rule,

- i) When internal combustion engines are to be used into a confined space or excavation or tunnel or any other workplace where neither natural or artificial ventilation system is inadequate to keep carbon monoxide below 50ppm, exposure of building workers shall be avoided unless suitable measures are taken and provided by the contractor.
- ii) No worker shall be allowed into any confined space or tank or trench or excavation wherein there is given off any dust, fumes / vapours or other impurities which is likely to be injurious or offensive, explosive or poisonous or noxious or gaseous material or other harmful articles unless steps are carried out by the contractor and certified by the responsible person to be safe.

31.0 Fire prevention, protection and fighting system

- 31.1 The contractor shall ensure that construction site is provided with fire extinguishing equipment sufficient to extinguish any probable fire at construction site. An adequate water supply is provided at ample pressure as per national standard.
- 31.2 Recharging of fire extinguishers and their proper maintenance should be ensured and as a minimum should meet Indian National Standards
- 31.3 All drivers of vehicles, foreman, supervisors and managers shall be trained on operating the fire extinguishers and firefighting equipment.
- 31.4 The contractor shall also give consideration to the provision of adequate firefighting arrangements within the underground and tunnelling operations including the provision of Fire Service compatible hose connections and emergency lighting
- 31.5 As per the relevant rules of MBOCW Rules 2007, all lifting appliances' driver cabin should be provided with a suitable portable fire extinguisher.
- 31.6 Combustible scrap and other construction debris should be disposed off site on a regular basis. If scrap is to be burnt on site, the burning site should be specified and located at a distance no less than 12 metres from any construction work or any other combustible material.
- 31.7 Every fire, including those extinguished by contractor personnel, shall be reported to the Employer representatives.
- 31.8 Emergency plans and Fire Evacuation plans shall be prepared and issued. Mock drills should be held on a regular basis to ensure the effectiveness of the arrangements and as a part of the programme, the Telephone Number of the local fire brigade should be prominently displayed near each telephone on site.

32.0 Corrosive substances

- 32.1 As per relevant rule of BOCWR Rules, corrosive substances including alkalis and acids shall be stored and used by a person dealing with such substances at a building / construction site in a manner that it does not endanger the building worker and suitable PPE shall be provided by the contractor to the worker during such handling and work. In case of spillage of such substances on building worker, the contractor shall take immediate remedial measures.

33.0 Demolition

- 33.1 The Contractor shall ensure that

- i) all demolition works be carried out in a controlled manner under the management of experienced and competent supervision.
- ii) the concerned department of the Government or local authority be informed and permission obtained wherever required. Media shall also be informed regarding this concern.
- iii) all glass or similar materials or articles in exterior openings are removed before commencing any demolition work and all water, steam, electric, gas and other similar supply lines are put-off and such lines so located or capped with substantial coverings so as to protect it from damage and to afford safety to the building workers and public..
- iv) examine the walls of all structures adjacent to the structure to be demolished to determine thickness, method of support to such adjacent structures
- v) no demolishing work be performed if the adjacent structure seems to be unsafe unless and until remedial measures like sheet piling, shoring, bracing or similar means be ensured for safety and stability for adjacent structure from collapsing.
- vi) debris / bricks and other materials or articles shall be removed by means of
 - a) chutes
 - b) buckets or hoists
 - c) through openings through floors or
 - d) any other safe means
- vii) no person other than building workers or other persons essential to the operation of demolition work shall be permitted to enter a zone of demolition and the area be provided with substantial barricades.

34.0 Excavation and Tunnelling:

34.1 Excavation

34.1.1 The contractor shall ensure

- i) where any construction building, worker engaged in excavation is exposed to hazard of falling or sliding material or article from any bank or side of such excavation which is more than one 1.5 m above his footing, such worker is protected by adequate piling and bracing against such bank or side.
- ii) where banks of an excavation are undercut, adequate shoring is provided to support the material or article overhanging such bank.
- iii) excavated material is not stored at least 0.65 m from the edge of an open excavation or trench and banks of such excavation or trench are stripped of loose rocks and the banks of such excavation or trench are stripped of loose rocks and other materials which may slide, roll or fall upon a construction building worker working below such bank
- iv) metal ladders and staircases or ramps are provided, as the case may be, for safe access to and egress from excavation where, the depth of such excavation exceeds 1.5 m and such ladders, staircases or ramps comply with the IS 3696 Part 1&2 and other relevant national standards.
- v) trench and excavation is protected against falling of a person by suitable measures if the depth of such trench or excavation exceeds 1.5 m and such protection is an

improved protection in accordance with the design and drawing of a professional engineer, where such depth exceeds 4m.

34.2 Tunneling

- 34.2.1 The contractor shall inform in writing to the Director General within 30 days, prior to the commencement of any tunneling work.
- 34.2.2 The contractor shall appoint a responsible person for safe operation for tunneling work as per relevant Rules of BOCWR.
- 34.2.3 The contractor shall ensure
 - i) every compressed air system in a tunnel is provided with emergency power supply for maintained continued supply of compressed air as per relevant Rule of BOCWR
 - ii) watertight bulkhead doors are installed at the entrance of a tunnel to prevent flooding.
 - iii) reliable and effective means of communication such as telephone or walkie-talkie are provided and maintained for arranging better effective communication at an excavation or tunnelling work as per relevant Rule of BOCWR.
 - iv) all portable electrical hand tools and inspection lamp used in underground and confined space at an excavation or tunnelling work is operated at a voltage not exceeding 24V.
 - v) only flame proof equipment of appropriate type as per IS: 5571:2000 and or other relevant national standard is used inside the tunnel
 - vi) petrol or LPG of any other flammable substances are not used, stored inside the tunnel except with prior approval from Employer, and also no oxy-acetylene gas is used in a compressed air environment in excavation or tunnelling
 - vii) adequate number of water outlets provided for fire fighting purpose, an audible fire alarm and adequate number and types of fire extinguishers are provided and maintained.
 - viii) temperature in any working chamber in an excavation or tunnelling work where workers employed does not exceed 29°C as per relevant Rule of BOCWR.
 - ix) all working areas in a free air tunnel are provided with ventilation system as approved by the Director General and the fresh air supplied in such tunnel is not less than 6 m³/ min for each worker employed in tunnel as per relevant Rule of BOCWR.

34.3 Warning signs and notices:

34.3.1 The contractor shall ensure that

- i) suitable warning signs or notices, required for the safety of building workers carrying out the work of an excavation or tunnelling, shall be displayed or erected at conspicuous places in Hindi and in a language understood by majority of such building workers at such building such excavation or tunnelling work
- ii) such warning signs and notices with regard to compressed air working shall include
 - a) the danger involved in such compressed air work
 - b) fire and explosion hazard

- c) the emergency procedures for rescue from such danger or hazards.

35.0 Work Permit system

- 35.1 The Contractor shall develop a Work Permit system, which is a formal written system used to control certain types of work that are potentially hazardous. A work permit is a document, which specifies the work to be done, and the precautions to be taken. Work Permits form an essential part of safe systems of work for many construction activities. They allow work to start only after safe procedures have been defined and they provide a clear record that all foreseeable hazards have been considered. Permits to Work are usually required in high- risk areas as identified by the Risk Assessments.
- 35.2 A permit is needed when construction work can only be carried out if normal safeguards are dropped or when new hazards are introduced by the work. Examples of high-risk activities include but are not limited to:
 - i) Entry into confined spaces
 - ii) Work in close proximity to overhead power lines and telecommunication cables.
 - iii) Hot work.
 - iv) To dig—where underground services may be located.
 - v) Work with heavy moving machinery.
 - vi) Working on electrical equipment
 - vii) Work with radioactive isotopes.
 - viii) Heavy lifting operations and lifting operations closer to live power line
- 35.3 The permit-to-work system should be fully documented, laying down:
 - i) How the system works;
 - ii) The jobs it is to be used for;
 - iii) The responsibilities and training of those involved;and
 - iv) How to check its operation;
- 35.4 A Work Permit authorisation form shall be completed with the maximum duration period not exceeding 12 hours.
- 35.5 A copy of each Permit To Work shall be displayed, during its validity, in a conspicuous location in close proximity to the actual works location to which it applies.

36.0 Traffic Management

- 36.1 The basic objective of the following guidelines is to lay down procedures to be adopted by contractor to ensure the safe and efficient movement of traffic and also to ensure the safety of workmen at construction sites.
- 36.2 All construction workers should be provided with high visibility jackets with reflective tapes as most of viaduct /tunnelling and station works or either above or under right-of-way. The conspicuity of workmen at all times shall be increased so as to protect from speeding vehicular traffic.
- 36.3 The guiding principles to be adopted for safety in construction zone are to

- i) Warn the road user clearly and sufficiently in advance.
- ii) Provide safe and clearly marked lanes for guiding road users.
- iii) Provide safe and clearly marked buffer and work zones
- iv) Provide adequate measures that control driver behaviour through construction zones.

36.4 Legal permission

- 34.4.1 In all cases, the contractor shall employ proper precautions. Wherever operations undertaken are likely to interfere with public traffic, specific traffic management plans shall be drawn up and implemented by the contractor in consultation with the approval of local police authorities and/or the concerned metropolitan/civil authorities as the case may be.
- 34.4.2 Such traffic management plans shall include provision for traffic diversion and selection of alternative routes for transport of equipment. If necessary, the contractor shall carry out road widening before commencement of works to accommodate the extra load

36.5 The primary traffic control devices used in work zones shall include signs, delineators, barricades, cones, pylons, pavement markings and flashing lights.

36.6 The road construction and maintenance signs which fall into the same three major categories as do other traffic signs, that are Regulatory Signs, Warning Signs and Direction (or guidelines) Signs shall only be used. The IRC: 67 (Code of Practice for Road Signs) provide a list of traffic signs. The size, colours and placement of sign shall confirm to IRC:67.

36.7 Regulatory signs

- 34.7.1 Regulatory signs impose legal restriction on all traffic. It is essential, therefore, that they are used only after consulting the local police and traffic authorities.

36.8 Warning signs

- 34.8.1 Warning signs in the traffic control zone shall be utilised to warn the drivers of specific hazards that may be encountered.
- 34.8.2 The contractor shall place detour signage at strategic locations and install appropriate warning signs. In order to minimize disruption of access to residences and business, the contractor shall maintain at least one entrance to a property where multiple entrances exist.
- 34.8.3 A warning sign as given in general instruction attached as Appendix 16 shall be installed at all secondary road which merges with the primary road where the construction work is in progress at sufficient distance before it merges with the primary road so as to alert the road users regarding the 'Metro Work in Progress'.
- 34.8.4 Materials hanging over / protruded from the chassis / body of any vehicle especially during material handling shall be indicated by red indicator (red light/flag) to indicate the caution to the road users.

36.9 Delineators

The delineators are the elements of a total system of traffic control and have two distinct purposes:

- i) To delineate and guide the driver to and along a safe path
- ii) As a taper to move traffic from one lane to another.

36.9.1 These channelising devices such as cones, traffic cylinders, tapes and drums shall be placed in or adjacent to the roadway to control the flow of traffic. These should normally be retro-reflectors complying to IRC: 79 - Recommended Practice for Road Delineators.

36.9.2 Traffic cones and cylinders

- 36.9.2.1 Traffic cones of 500mm, 750mm and 1000mm high and 300mm to 500mm in diameter or in square shape at base and are often made of plastic or rubber

and normally have retro- reflectorised red and white band shall be used wherever required.

36.9.3 Drums

- 36.9.3.1 Drums about 800mm to 1000mm high and 300mm in diameter can be used either as channelising or warning devices. These are highly visible, give the appearance of being formidable objects and therefore command the respect of drivers.

36.9.4 Barricades

- 36.9.4.1 Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the working area from the risk of accidents due to speedy vehicular movement. Same the way barricades protect the road users from the danger due to construction equipment and other temporary structures.
- 36.9.4.2 The structure dimension of the barricade, material and composition, its colour scheme, MMRDA logo and other details shall be in accordance with specifications laid down in tender document.
- 36.9.4.3 All barricades shall be erected as per the design requirements of the Employer, numbered, painted and maintained in good condition and also Barricade in-charge maintains a barricade register in site.
- 36.9.4.4 All barricades shall be conspicuously seen in the dark/night time by the road users so that no vehicle hits the barricade. Conspicuity shall be ensured by affixing retro reflective stripes of required size and shape at appropriate angle at the bottom and middle portion of the barricade at a minimum gap of 1000mm. In addition minimum one red light or red light blinker should be placed at the top of each barricade.

- 36.9.5 The contractor shall ensure that all his construction vehicles plying on public roads (like dump trucks, trailers, etc.) have proper license to ply on public roads from the State Transport Authority. Drivers holding proper valid license as per the requirements of Motor Vehicles Act shall drive these vehicles

- 36.9.6 The contractor shall not undertake loading and unloading at carriageways obstructing the free flow of vehicular traffic and encroachment of existing roads by the contractor applying the excuse of work execution.

36.9.7 Tow away vehicle

- 36.9.4.1 The contractor shall make arrangements keeping tow away van / manpower to tow away any breakdown vehicle in the traffic flow without losing any time at his cost.

36.9.8 Cleaning of roads

- 36.9.8.1 The contractor shall ensure the cleanliness of roads and footpaths by deploying proper manpower for the same. The contractor shall have to ensure proper brooming, cleaning washing of roads and footpaths on all the time throughout the entire stretch till the currency of the contract including disposal of sweepage.

37.0 Work adjacent to live railways and within Railway ROW

- 37.1 Whenever work is to be conducted in close proximity to the live railways then the following measures shall need to be addressed:

- (a) The rules provided for in the Railway's manual shall be followed.

- (b) No persons are allowed to encroach onto the railway unless specific authority has been given by the owner.
- (c) Adequate protection in accordance with the railway owner's requirements shall be followed. (Provision of Block Inspectors, Flagmen and Lookouts)
- (d) All persons shall wear high visibility clothing at all times.
- (e) Any induction training requirements of the railways shall be strictly observed

38.0 Batching Plant / Casting Yard

- i) The batching plant / casting yard shall be effectively planned for smooth flow of unloading and stacking the aggregates reinforcements and cement, batching plant, transport of concrete, casting the segment, stacking the segment and loading the segments to the trucks. As far as possible the conflicts should be avoided.
 - ii) The batching plant / casting yard shall be barricaded and made as a compulsory PPE zone
 - iii) If in case of material unloading area is not maintainable as PPE zone, the same shall be segregated properly and made as a non-PPE zone with appropriate barrications.
 - iv) Electrical system shall also be suitably planned so that location of diesel generator, if any, location of DBs, routing of cables and positioning of area lighting poles/masts does not infringe on any other utility and pose danger.
 - v) Drainage shall be effectively provided and waste water shall be disposed after proper treatment
 - vi) Time office, canteen, drinking water, toilet and rest place shall be suitably located for the easy access to workers. All the facilities shall be properly cleaned and maintained during the entire period of operation.
 - vii) Manual handling of cement shall be avoided to a larger extent. Whenever it is absolutely necessary the workmen shall be given full body protection, hand protection and respiratory protection as a basic measure of ensuring better health.
 - viii) The PPEs provided to cement handling workmen shall conform to international standards.
 - ix) Access roads and internal circulation roads shall be well laid and maintained properly at all time.
- x) Non-adherence to any of the above provision shall be penalized as per relevant penalty clause.

39.0 Personal Protective Equipments (PPEs)

39.1 The contractor shall provide required PPEs to workmen to protect against safety and / or health hazards. Primarily PPEs are required for the following protection

- i) Head Protection (Safety helmets)
- ii) Foot Protection (Safety footwear, Gumboot, etc)

- iii) Body Protection (High visibility clothing (waistcoat/jacket), Apron, etc)
- iv) Personal fall protection (Full body harness, Rope-grap fall arrester, etc)
- v) Eye Protection (Goggles, Welders glasses, etc)
- vi) Hand Protection (Gloves, Finger coats, etc)
- vii) Respiratory Protection. (Nose mask, SCBAs, etc)
- viii) Hearing Protection (Ear plugs, Ear muffs, etc)

- 39.2 The PPEs and safety appliances provided by the contractor shall be of the standard as prescribed by Bureau of Indian Standards (BIS). If materials conforming to BIS standards are not available, the Contractor as approved by the Employer shall procure PPE and safety appliances.
- 39.3 All construction workers should be provided with high visibility jackets with reflective tapes confirming to the requirement specified under BS EN 471: 1994 as most of viaduct /tunnelling and station works are executed either above or under right-of-way. The conspicuity of workmen at all times shall be increased so as to protect them from speeding vehicular traffic.
- 39.4 The contractor shall provide safety helmet, safety shoe and high visibility clothing for all employees including workmen, traffic marshal and other employees who are engaged for any work under this contract as per the following requirement.

| All employees of the Contractor including workmen | Traffic marshals |
|--|--|
| <ul style="list-style-type: none"> i) Hard hat with company Logo ii) Safety boots iii) Hi-visibility waistcoat covering upper body and meeting the following requirements as per BS EN 471:1994: <ul style="list-style-type: none"> a. Background in fluorescent orange-red in colour b. Two vertical green strips of 5cm wide on front side, covering the torso at least 500 cm² c. Two diagonal strips of 5 cm wide on back in an 'X' pattern covering at least 570cm² d. Horizontal strips not less than 5cm wide running around the bottom of the vertical strip in front and 'X' pattern at back. e. The bottom strip shall be at a distance of 5cm from the bottom of the vest. f. Strips must be retro reflective and fluorescent g. Waistcoat shall have a side adjustable fit and a side and front tear-away feature on vests made of nylon. | <ul style="list-style-type: none"> i) Hard hat with reflective tape ii) Safety boots iii) Hi-visibility jacket covering upper body and meeting the following requirements as per BS EN 471: 1994 <ul style="list-style-type: none"> a. Background in fluorescent orange-red in colour b. Jackets with full-length sleeves with two bands of retro reflective material, which shall be placed at the same height on the garment as those of the torso. The upper band shall encircle the upper part of the sleeves between the elbow and the shoulder; the bottom of the lower band shall not be less than 5cm from the bottom of the sleeve. c. Two vertical green strips of 5cm wide on front side, covering the torso at least 500 cm² d. Two diagonal strips of 5 cm wide on back in an 'X' pattern covering at e. The bottom strip shall be at a distance of 5cm from the bottom of the vest f. Horizontal strips not less than 5cm wide running around the bottom of the vertical strip in front and 'X' pattern at back. g. Strips must be retro reflective and fluorescent |

39.4.1 Colour coding for helmets

| Safety Helmet Colour Code (Every Helmet should have the LOGO* affixed /painted) | Person to use |
|--|--|
| White | MMRDA staffs |
| Grey | All Designers, Architect, Consultants, etc. |
| Violet | Main Contractors (Engineers / Supervisors) |
| Blue | All Sub-contractors (Engineers / Supervisors) |
| Red | Electricians (Both Contractor and Sub- contractor) |
| Green | Safety Professionals (Both Contractor and Sub- contractor) |
| Orange | Security Guards / Traffic marshals |
| Yellow | All workmen |
| White (with "VISITOR" sticker) | Visitors |

Notes: LOGO*

1. Logo shall have its outer dimension 2"X2" and shall be conspicuous
 2. Logo shall be either painted or affixed
 3. No words shall come either on Top / Bottom of Logo
- Logo of the corresponding main contracting company for their employees and sub-contracting company for their employees shall only be used.
- 39.5 In addition to the above any other PPE required for any specific jobs like, welding and cutting, working at height, tunnelling etc shall also be provided to all workmen and also ensure that all workmen use the PPEs properly while on the job.
- 39.6 The contractor shall not pay any cash amount in lieu of PPE to the workers/sub- contractors and expect them to buy and use during work.
- 39.7 The contractor shall at all time maintain a minimum of 10% spare PPEs and safety appliances and properly record and show to the Employer during the inspections. Failing to do so shall invite appropriate penalty as per the provisions of the contract.
- It is always the duty of the contractor to provide required PPEs for all visitors. Towards this required quantity of PPEs shall be kept always at the security post.

40.0 Visitors to site

- 40.1 No visitor is allowed to enter the site without the permission of the Employer. All authorised visitors should report at the site office. Contractor shall provide visitor's helmet (White helmet with visitor sticker) and other PPEs like Safety Shoe, reflective jacket, respiratory protection etc. as per requirement of the site.
- 40.2 All Visitors shall be accompanied at all times by a responsible member of the site personnel.
- 40.3 The contractor shall be fully responsible for all visitors' safety and health within the site.

PART – III: OCCUPATIONAL HEALTH AND WELFARE

41.0 Physical fitness of workmen

- 41.1 The contractor shall ensure that his employees/workmen subject themselves to such medical examination as required under the law or under the contract provision and keep a record of the same.
- 41.2 The contractor shall not permit any employee/workmen to enter the work area under the influence of alcohol or any drugs.

42.0 Medical Facilities

42.1 Medical Examination

- 42.1.1 The contractor shall arrange a medical examination of all his employees including his sub-contractor employees employed as drivers, operators of lifting appliances and transport equipment before employing, after illness or injury, if it appears that the illness or injury might have affected his fitness and, thereafter, once in every two years up to the age of 40 and once in a year, thereafter.
- i) The Contractor shall maintain the confidential records of medical examination or the physician authorized by the Employer.
 - ii) No building or other construction worker is charged for the medical examination and the cost of such examination is borne by contractor employing such building worker.
 - iii) The medical examination shall include: -
 - a) Full medical and occupational history.
 - b) Clinical examination with particular reference to
 - i) General Physique;
 - ii) Vision: - Total visual performance using standard orthorator like Titmus Vision Tester should be estimated and suitability for placement ascertained in accordance with the prescribed job standards.
 - iii) Hearing: - Persons with normal must be able to hear a forced whisper at twenty-four feet. Persons using hearing aids must be able to hear a warning shout under noisy working conditions.
 - iv) Breathing: - Peak flow rate using standard peak flow meter and the average peak flow rate determined out of these readings of the test performed. The results recorded at pre-placement medical examination could be used as a standard for the same individual at the same altitude for reference during subsequent examination.
 - v) Upper Limbs: - Adequate arm function and grip
 - vi) Spine: - Adequately flexible for the job concerned.
 - vii) Lower Limbs: - Adequate leg and foot concerned.

viii) General: - Mental alertness and stability with good eye, hand and foot coordination.

c) Any other tests which the examining doctor considers necessary

42.1.2 If the contractor fails to get the medical examination conducted as mentioned above, the employer will have the right to get the same conducted by through an agency with intimation to the contractor and deduct the cost and overhead charges.

42.2 Occupational Health Centre

42.2.1 The contractor shall ensure at a construction site an occupational health centre, mobile or static is provided and maintained in good order. Services and facilities as per the scale lay down in relevant Schedule of BOCWR. A construction medical officer appointed in an occupational health center possess the qualification as laid down in relevant Schedule of BOCWR.

42.3 Ambulance van and room

42.3.1 The contractor shall ensure at a construction site of a building or other construction work that an ambulance van and room are provided at such construction site or an arrangement is made with a nearby hospital for providing such ambulance van for transportation of serious cases of accident or sickness of workers to hospital promptly and such ambulance van and room are maintained in good repair and is equipped with standard facilities specified in relevant Schedules of BOCWR.

42.4 First-aid boxes

42.4.1 The contractor shall ensure at a construction site one First-aid box for 100 workers provided and maintained for providing First-aid to the building workers. Every First-aid box is distinctly marked "First-aid" and is equipped with the articles specified in Schedule III of BOCWR.

42.5 HIV/ AIDS prevention and control

- 42.5.1 The contractor shall adopt the Employer's Policy on "HIV / AIDS Prevention and Control for Workmen Engaged by Contractors" and the copy of the policy is given in Appendix No.: 4.
- 42.5.2 The Employer will engage a professional agency for implementing the guidelines laid down in the policy and communicate to the contractor.
- 42.5.3 The Contractor shall extend necessary support to the appointed agency by deputing the workmen to attend the awareness creation programmes.
- 42.5.4 The contractor shall also extend necessary organizational support to the appointed agency for the effective implementation of the Employers' workplace policy on HIV/AIDS for workmen of the Contractors.
- 42.5.5 As laid down in the policy the contractor shall identify peer educators (1 for every 100 workers) and refer them for professional training to the Employers' appointed agency for the purpose.
- 42.5.6 The peer educators on completion of the training shall serve as the focal point for any information, education and awareness campaign among the workmen throughout the contract period.
- 42.5.7 The peer educators will be paid a monthly honorarium as fixed by the Employer for rendering his services in addition to his regular duty.
- 42.5.8 The total number of peer educators (1 for 100 workers) shall always be maintained by the contractor.

- 42.5.9 In case if these peer educators leave the contractor by creating vacancy, then the contractor at his own expense train the new replacement peer educator from the Employers' appointed agency for the purpose.
- 42.5.10 It is suggested to the contractor that due care should be taken to select the peer educators from among the group of workmen so that they remain with the contractor throughout the contract period.
- 42.6 Prevention of mosquito breeding:
- 42.6.1 Measures shall be taken to prevent breeding at site. The measures to be taken shall include:
- i) Empty cans, oil drums, packing and other receptacles, which may retain water shall be deposited at a central collection point and shall be removed from the site regularly.
 - ii) Still waters shall be treated at least once every week with oil in order to prevent mosquito breeding.
 - iii) Contractor's equipment and other items on the site, which may retain water, shall be stored, covered or treated in such a manner that water could not be retained.
 - iv) Water storage tanks shall be provided.
- 42.6.2 Posters in both Hindi and English, which draw attention to the dangers of permitting mosquito breeding, shall be displayed prominently on the site.
- 42.6.3 The contractor at periodic interval shall arrange to prevent mosquito breeding by fumigation / spraying of insecticides. Most effective insecticides shall include SOLFAC WP 10 or Baytex, The Ideal Larvicide etc.
- 42.7 Alcohol and drugs
- 42.7.1 The contractor shall ensure at all times that no employee is working under the influence of alcohol / drugs which are punishable under Govt. regulations.
- 42.7.2 Smoking at public worksites by any employee is also prohibited as per Govt. regulations.

43.0 Noise

- 43.1 The Contractor shall consider noise as an environmental constraint in his design, planning and execution of the Works and provide demonstrable evidence of the same on Employer's request. The Contractor shall, at his own expense, take all appropriate measures to ensure that work carried out by the Contractor and by his sub-Contractors, whether on or off the Site, will not cause any unnecessary or excessive noise which may disturb the occupants of any nearby dwellings, schools, hospitals, or premises with similar sensitivity to noise.
- 43.1.1 Without prejudice to the generality of the foregoing, noise level reduction measures shall include the following:
- i) The Contractor shall ensure that all powered mechanical equipment used in the Works shall be effectively sound reduced using the most modern techniques available including but not limited to silencers and mufflers.
 - ii) The Contractor shall construct acoustic screens or enclosures around any parts of the Works from which excessive noise may be generated.
- 43.1.2 The Contractor shall ensure that noise generated by work carried out by the Contractor and his sub-Contractors during daytime and night time shall not exceed the maximum permissible noise limits, whether continuously or intermittently, as given in the project SHE Manual. The same may be varied from time to time by and at the sole discretion of the Employer, In the event of a breach of this requirement, the Contractor shall immediately re- deploy or adjust the relevant equipment or take other appropriate measures to reduce

the noise levels and thereafter maintain them at levels which do not exceed the said limits. Such measures may include without limitation the temporary or permanent cessation of use of certain items of equipment.

- 43.1.3 The noise monitoring requirements including monitoring locations are given in the project SHE Manual.

43.2 Control Requirements

- 43.2.1 Construction material should be operated and transported in such a manner as not to create unnecessary noise as outlined below:

- i) Perform Work within the procedures outlined herein and comply with applicable codes, regulations, and standards established by the Central and State Government and their agencies.
- ii) Keep noise to the lowest reasonably practicable level. Appropriate measures will be taken to ensure that construction works will not cause any unnecessary or excessive noise, which may disturb the occupants of any nearby dwellings, schools, hospitals, or premises with similar sensitivity to noise. Use equipment with effective noise-suppression devices and employ other noise control measures as to protect the public.
- iii) Schedule and conduct operations in a manner that will minimize, to the greatest extent feasible, the disturbance to the public in areas adjacent to the construction activities and to occupants of buildings in the vicinity of the construction activities.
- iv) The Contractor shall submit to the Employer a Noise Monitoring and Control Plan (NMCP) under contract specific Site Environmental Plan. It shall include full and comprehensive details of all powered mechanical equipment, which he proposes to use during daytime and night time, and of his proposed working methods and noise level reduction measures. The NMCP shall include detailed noise calculations and vibration levels to demonstrate the anticipated noise generation and vibrations by the Contractor.
- v) The NMCP prepared by the Contractor shall guide the implementation of construction activity. The NMCP will be reviewed on a regular basis and updated as necessary to assure that current construction activities are addressed. It may appear as a regular agenda item in project coordination meetings, if noise is an issue at any location in the contract.

43.3 Occupational Noise

- i) Protection against the effects of occupational noise exposure should be provided when the sound levels exceed the threshold values as provided in Project SHE Manual.
- ii) When employees are subjected to sound levels exceeding those listed in the Table, feasible administrative or engineering controls should be utilized as given in this document and MMRDA's Project SHE Manual.
- iii) If such controls fail to reduce sound levels within the levels of the table, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.
- iv) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. Exposure to different levels for various periods of time shall be computed according to the formula and sample computation as given in project SHE Manual.

43.4 Vibration Level

- 43.4.1 In locations where the alignment is close to historical / heritage structures, the contractor shall prepare a monitoring scheme prior to construction at such locations. This scheme for monitoring vibration level at such historical / heritage sites shall be submitted to Employer for his approval. This scheme shall include:
- i) Monitoring requirements for vibrations at regular intervals throughout the construction period.
 - ii) Pre-construction structural integrity inspections of historic and sensitive structures in project activity.
 - iii) Information dissemination about the construction method, probable effects, quality control measures and precautions to be used.
 - iv) The vibration level limits at work sites adjacent to the alignment shall conform to the permitted values of peak p velocity as given in article project SHE Manual.

44.0 Ventilation and illumination

44.1 Ventilation

- 44.1.1 The contractor shall ensure at a construction site of a building or other construction work that all working areas in a free tunnel are provided with ventilation system as approved by the Head/CIIBC and the fresh air supply in such tunnel is not less than 6m³/min for each building worker employed underground in such tunnel and the free air flow movement inside such tunnel is not less than 9m/min.
- 44.1.2 The oxygen level shall not be less than 19.5% in the working environment.

44.2 Illumination

- 44.2.1 The contractor shall take every effort to illuminate the work site as per the Employer's requirement illustrated in general instruction attached as Appendix 15.
- 44.2.2 The contractor shall conduct a monthly illumination monitoring by lux meter for all the locations and the report shall be sent to the Employer within 7th of the next month and the same shall be reviewed during the monthly SHE committee meeting.

45.0 Radiation

The use of radioactive substances and radiating apparatus shall comply with the Govt. regulatory requirements and all subsidiary legislation

Operations involving ionising radiation shall only be carried out after having been reviewed without objection by the Employer's representative and shall be carried out in accordance with a method statement.

each area containing irradiated apparatus shall have warning notices and barriers, as required by the Regulations, conspicuously posted at or near the area.

Radioactive substances will be stored, used or disposed shall be strictly in accordance with the Govt. Enactments.

The contractor shall ensure that all site personnel and members of the public are not exposed to radiation.

46.0 Welfare measures for workers

46.1 Latrine and Urinal Accommodation

The contractor shall provide one latrine seat for every 20 workers up to 100 workers and thereafter one for every additional 50 workers. In addition one urinal accommodation shall be provided for every 100 workers.

When women are employed, separate latrine and urinals accommodation shall be provided on the same scale as mentioned above.

Latrine and urinals shall be provided as per Section 33 of BOCWA and maintained as per Rule 243 of BOCWR and shall also comply with the requirements of public health authorities

Moving sites

In case of works like track laying, the zone of work is constantly moving at elevated level or at underground level. In such cases mobile toilets with proper facility to drain the sullage shall be provided at reasonably accessible distance.

In case if the contractor fail to provide required number of urinals and latrines or fail to maintain it as per the requirements of Public Health laws, the Employer shall have the right to provide/maintain through renowned external agencies like "Sulabh" at the cost of the contractor.

46.2 Canteen:

In every workplace wherein not less than 250 workers are ordinarily employed the contractor shall provide an adequate canteen conforming to relevant Section of BOCWA, Rule 244 of BOCWR and as stipulated in relevant Rule of BOCWR, the charges for food stuff shall be based on 'no profit no loss' basis. The price list of all items shall be conspicuously displayed in such canteen.

Serving of tea and snacks at the workplace:

As per relevant Rule of BOCWR, at a building or other construction work where a workplace is situated at a distance of more than 200 m from the canteen provided under Rule of BOCWR, the contractor employing building works shall make suitable arrangement for serving tea and light refreshment to such building works at such place.

Drinking water

As per relevant Section of BOCWA the contractor shall make in every worksite, effective arrangements to provide sufficient supply of wholesome drinking water with minimum quantity of 5 litres per workman per day. Quality of the drinking water shall conform to the requirements of national standards on Public Health.

While locating these drinking water facilities due care shall be taken so that these are easily accessible within a distance of 200m from the place of work for all workers at all location of work sites.

- 46.2.1 All such points shall be legible marked "Drinking Water" in a language understood by a majority of the workmen employed in such place and such point shall be situated within six metres of any washing places, urinals or latrines.

46.3 Labour Accommodation

- 46.3.1 The contractor shall provide free of charges as near as possible, temporary living accommodation to all workers conforming to provisions of relevant Section of BOCWA. These accommodations shall have cooking place, bathing, washing and lavatory facilities

46.4 Creches

- 46.4.1 In every workplace where in more than 50 female workers are ordinarily employed, there shall be provided and maintained a suitable room for use of children under age of 6 yrs, conforming to the relevant provisions of Section of BOCWA.

PART - IV: ENVIRONMENTAL MANAGEMENT

47.0 Air Quality

The Contractor shall take all necessary precautions to minimise fugitive dust emissions from operations involving excavation, grading, and clearing of land and disposal of waste. He shall not allow emissions of fugitive dust from any transport, handling, construction or storage activity to remain visible in atmosphere beyond the property line of emission source for any prolonged period of time without notification to the Employer.

The Contractor shall use construction equipment designed and equipped to minimise or control air pollution. He shall maintain evidence of such design and equipment and make these available for inspection by Employer.

If after commencement of construction activity, Employer believes that the Contractor's equipment or methods of working are causing unacceptable air pollution impacts then these shall be inspected and remedial proposals shall be drawn up by the Contractor, submitted for review to the Employer and implemented.

In developing these remedial measures, the Contractor shall inspect and review all dust sources that may be contributing to air pollution. Remedial measures include use of additional/ alternative equipment by the Contractor or maintenance/modification of existing equipment of the Contractor.

In the event that approved remedial measures are not being implemented and serious impacts persist, the Employer may direct the Contractor to suspend work until the measures are implemented, as required under the Contract.

Contractor's transport vehicles and other equipment shall conform to emission standards fixed by Statutory Agencies of Government of India or the State Government from time to time. The Contractor shall carry out periodical checks and undertake remedial measures including replacement, if required, so as to operate within permissible norms.

The Contractor shall establish and maintain records of routine maintenance program for internal combustion engine powered vehicles and equipment used on this project. He shall keep records available for inspection by Employer.

47.1 The Contractor shall cover loads of dust generating materials like debris and soil being transported from construction sites. All trucks carrying loose material should be covered and loaded with sufficient free-board to avoid spills through the tail board or side boards.

The Contractor shall promptly transport all excavation disposal materials of whatever kind so as not to delay work on the project. Stockpiling of materials will only be allowed at sites designated by the Employer. The Contractor shall place excavation materials in the dumping/disposal areas designated in the plans as given in the specifications.

The temporary dumping areas shall be maintained by the Contractor at all times until the excavate is re-utilised for backfilling or as directed by Employer. Dust control activities shall continue even during any work stoppage.

The Contractor shall place material in a manner that will minimize dust production. Material shall be minimized each day and wetted, to minimize dust production. During dry weather, dust control methods must be used daily especially on windy, dry days to prevent any dust from blowing across the site perimeter.

The Contractor shall water down construction sites as required to suppress dust, during handling of excavation soil or debris or during demolition. The Contractor will make water sprinklers, water supply and water delivering equipment available at any time that it is required for dust control use. Dust screens will be used, as feasible when additional dust control measures are needed specially where the work is near sensitive receptors.

The Contractor shall provide a wash pit or a wheel washing and/or vehicle cleaning facility at the exits from work sites such as construction depots and batching plants. At such facility, high-pressure water jets will be directed at the wheels of vehicles to remove all spoil and dirt.

The Contractor shall design and implement his blasting techniques so as to minimise dust, noise, vibration generation and prevention fly rock.

Blasting technique should be consistent not only with nature and quantity of rock to be blasted but also the location of blasting.

The contractor shall give preference to explosives with better environmental characteristics.

The Contractor shall protect structures, utilities, pavements roads and other facilities from disfiguration and damage as a result of his activities. Where this is not possible, the contractor shall restore the structures, utilities, pavements, roads and other facilities to their original or better, failing which the rectification/restoration work shall be carried out at the risk and cost of the contractor.

- 47.2 The Contractor shall submit to the Employer an Air Monitoring and Control Plan (AMCP) under contract specific Site Environmental Plan to guide construction activity insofar as it relates to monitoring, controlling and mitigating air pollution.

48.0 Water Quality

- 48.1 The Contractor shall comply with the Indian Government legislation and other State regulations in existence in respective state insofar as they relate to water pollution control and monitoring. A drainage system should be constructed at the commencement of the Works, to drain off all surface water from the work site into suitable drain outlet.
- 48.2 The Contractor shall provide adequate precautions to ensure that no spoil or debris of any kind is pushed, washed, falls or deposited on land adjacent to the site perimeter including public roads or existing stream courses and drains within or adjacent to the site. In the event of any spoil or debris from construction works being deposited or any silt washed down to any area, then all such spoil, debris or material and silt shall be immediately removed and the affected land and areas restored to their natural state by the Contractor to the satisfaction of the Employer.
- 48.3 Due to lowering of potable water supplies and subsequent contamination of ground water, the Contractor is not allowed to discharge water from the site without the approval of the Employer. The Contractor must comply with the requirements of the Central Ground Water Board for discharge of water arising from dewatering. Any water obtained from dewatering systems installed in the works must be either re-used for construction purposes and this water may subsequently be discharged to the drainage system or, if not re-used, recharged to the ground water at suitable aquifer levels. The Contractor must submit his proposals for approval of Employer, on his proposed locations of dewatering of excavation and collection of water for either construction re-use or recharge directly to aquifers. The Contractor's recharge proposals must be sufficient for recharging of the quantity of water remaining after deduction of water re-used for construction. During dewatering, the contractor shall monitor ground water levels from wells to ensure that draw down levels do not exceed allowable limits. The Contractor will not be permitted to directly discharge, to the drainage system, unused ground water obtaining from the excavation without obtaining approval of Employer or the Agency controlling the system.

The Contractor shall ensure that earth, bentonite, chemicals and concrete agitator washings etc. are not deposited in the watercourses but are suitably collected and residue disposed off in a manner approved by local authorities.

All water and waste products (surface runoff and wastewater) arising on the site shall be collected and removed from the site via a suitable and properly designed temporary drainage

system and disposed off at a location and in a manner that will cause neither pollution nor nuisance.

Any mud slurry from drilling, tunnelling, diaphragm wall construction or grouting etc. shall not be discharged into the drainage system unless treatment is carried out that will remove silt, mud particles, bentonite etc. The Contractor shall provide treatment facilities as necessary to prevent the discharge of contaminated ground water.

The Contractor shall discharge wastewater arising out of site office, canteen or toilet facilities constructed by him into sewers after obtaining prior approval of agency controlling the system. A wastewater drainage system shall be provided to drain wastewater into the sewerage system.

The bentonite mixing, treatment and handling system shall be established by the contractor giving due regard to its environmental impacts. The disposal of redundant bentonite shall be carefully considered whether in bulk or liquid form. The disposal location will be advised and agreed with the relevant authorities.

The Contractor shall take measures to prevent discharge of oil and grease during spillage from reaching drainage system or any water body. Oil removal / interceptors shall be provided to treat oil waste from workshop areas etc.

The Contractor shall apply to the appropriate authority for installing bore wells for water supply at site.

49.0 Archaeological and Historical Preservation

- 49.1 The contractor shall seek to accommodate archaeological and historical preservation concerns that may arise due to the construction of the project especially in close vicinity of such areas where such monuments may be located.

The contractor shall consult the Archaeological Survey of India (ASI) and other parties, on the advice of the Employer, to identify and assess construction effects and seek ways to avoid, minimize or mitigate adverse effects on such monuments.

Adverse effects may include reasonably foreseeable effects caused by the construction that may occur later in time, be farther removed in distance or those that alter, howsoever temporarily, the significance of the structure.

50.0 Landscape and Greenery

As far as is reasonably practicable, the Contractor shall maintain ecological balance by preventing deforestation and defacing of natural landscape. In respect of ecological balance, the Contractor shall observe the following instructions.

The Contractor shall, so conduct his construction operations, as to prevent any avoidable destruction, scarring or defacing of natural surroundings in the vicinity of work.

Where destruction, scarring, damage or defacing may occur as a result of operations relating to Permanent or Temporary works, the same shall be repaired, replanted or otherwise corrected at Contractor's expense. All work areas shall be smoothened and graded in a manner to conform to natural appearance of the landscape as directed by the Employer.

- 50.1 A suggested list of trees/shrubs suitable for planting and landscaping is found in Employer's Project, SHE Manual.

51.0 Felling of Trees

- 51.1 The contractor shall identify the number and type of trees that are required to be felled as a result of construction of works and facilities related to Project and inform the Employer.

All trees and shrubbery, which are not specifically required to be cleared or removed construction purposes, shall be preserved and shall be protected from any damage that may be caused by Contractor's construction operations and equipment. The contractor shall not fell, remove or dispose of any tree or forest produce in any land handed over to him for the construction of works and facilities related to project except with the previous permission obtained from the Forest Department.

The Employer shall arrange permission from the forest department for trees to be felled or transplanted. The Employer will permit the removal of trees or shrubs only after prior approval.

- 51.2 Special care shall be exercised where trees or shrubs are exposed to injuries by construction equipment, blasting, excavating, dumping, chemical damage or other operation and the Contractor shall adequately protect such trees by used of protective barriers or other methods approved by the Employer. Trees shall not be used for anchorage.

52.0 Fly Ash

The Employer may require the contractor to use fly ash as a percentage substitution of cement, in concrete for certain structures and works.

In all such uses of Fly Ash, the contractor shall maintain a detailed record of usage of Fly Ash. The contractor shall also collect related details and provide to the Employer.

- 52.1 The reporting details on consumption of Fly Ash are found in Employer's SHE Manual.

53.0 Waste

The contractor is required to develop, institute and maintain a Waste Management Programme (WMP) during the construction of the project for his works, which may include: -

- i) Identification of disposal sites.
- ii) Identification of quantities to be excavated and disposed off.
- iii) Identification of split between waste and inert material
- iv) Identification of amounts intended to be stored temporarily on site location of such storage.
- v) Identification of intended transport means and route.
- vi) Obtaining permission, where required, for disposal.

Such a mechanism is intended to ensure that the designation of areas for the segregation and temporary storage of reusable and recyclable materials are incorporate into the WMP. The WMP should be prepared and submitted to the Engineer for approval.

The Contractor shall handle waste in a manner that ensures they are held securely without loss or leakage thus minimizing potential for pollution. The Contractor shall maintain and clean waste storage areas regularly.

The Contractor shall remove waste in a timely manner and disposed off at landfill sites after obtaining approval of Conservancy and Sanitation Engineering Department of Municipal Corporation of City for its disposal.

Burning of wastes is prohibited. The Contractor shall not burn debris or vegetation or construction waste on the site but remove it in accordance with **50.1** above.

The Contractor shall make arrangement to dispose of metal scrap and other saleable waste to authorized dealer and make available to the Employer on request, records of such sales.

54.0 Hazardous Waste Management

If encountered or generated as a result of Contractor's activity, then waste classified as hazardous under the "Hazardous Wastes (Management & Handling) Rules, 1989, amendments 2000, 2003" shall be disposed off in a manner in compliance with the procedure given in the rules under the aforesaid act.

Chemicals classified as hazardous chemicals under "Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 of Environment (Protection) Act, 1986 shall be disposed off in a manner in compliance with the procedure given in the rules under the aforesaid act.

The contractor shall identify the nature and quantity of hazardous waste generated as a result of his activities and shall file a 'Request for Authorisation' with Maharashtra Pollution Control Committee along with a map showing the location of storage area.

- 54.1 Outside the storage area, the contractor shall place a 'display board', which will display quantity and nature of hazardous waste, on date. Hazardous Waste needs to be stored in a secure place

It shall be the responsibility of the contractor to ensure that hazardous wastes are stored, based on the composition, in a manner suitable for handling, storage and transport. The labelling and packaging is required to be easily visible and be able to withstand physical conditions and climatic factors.

The contractor shall approach only Authorised Recyclers of Hazardous Waste for disposal of Hazardous Waste, under intimation to the Employer.

Submittal of all environment related documents and records pertaining to monitoring and trend analysis on key parameters such as but not limited to consumption/efficient use of resources such as energy, water, material such as cement, fly ash, iron and steel, recycle/reuse of waste etc that shall have demonstrated continual improvement in the implementation of Environmental Management System. Failure to do so the Employer shall impose appropriate penalty as indicated under penalty clause.

55.0 Energy Management

The contractor shall use and maintain equipment so as to conserve energy and shall be able to produce demonstrable evidence of the same upon Employer's request.

Measures to conserve energy include but not limited to the following:

- i) Use of energy efficient motors and pumps
- ii) Use of energy efficient lighting, which uses energy efficient luminaries
- iii) Adequate and uniform illumination level at construction sites suitable for the task
- iv) Proper size and length of cables and wires to match the rating of equipment
- v) Use of energy efficient air conditioners

- 55.1 The contractor shall design site offices to maximize daylight and minimum heat gain. The rooms shall be well insulated to enhance the efficiency of air conditioners and the use of solar films on windows may be used where feasible.

PART - V: PENALTY AND AWARDS

56.0 Charges to be recovered from contractor for unsafe act or condition

MMRDA is committed to building an image of safety conscious organisation meticulously over a period of project execution. Any reportable accident (fatality / injury) results in loss of life and/or property damage. These accidents not only result in loss of life but also damage the reputation of MMRDA. Most of the accidents are avoidable and are caused primarily due to contractors' negligence. Hence MMRDA shall recover the cost of damages from the contractors for every reportable incident (fatality / injury).

In addition, every MMRDA work site is exposed to public scrutiny as the work is executed just on the right-of-way. Any unsafe act / unsafe condition observed by public further damages our reputation. Because of the non-voluntary compliance of contractors to the condition of contract on SHE and project SHE manual, MMRDA has been forced to establish safety-enforcing organisation. The cost of established such an organisation shall be recovered from contractors for all observed safety violations at sites.

The following table indicates the Safety, Health and Environment violation (unsafe act /unsafe condition) and charges to be recovered from contractors.

| SL. NO. | TOPIC | UNSAFE ACT/UNSAFE CONDITION | DEDUCTIBLE AMOUNT |
|----------------|-------------------|--|---|
| 1. | SHE Policy & Plan | i) SHE policy a) non-compliance of clause 4.1 b) Inadequate coverage, not signed c) Not displayed at prominent locations | Rs.5,000 per single violation, compounded to a maximum of Rs.25,000 at any single instance. |
| | | ii) SHE Plan: a) Not as per Employers' content and coverage b) Delay in submission c) Not updated as per employer's instruction as per clause 4.4 d) Copies not provided to all required supervisors / engineers | Rs.1,00,000 per single violation, compounded to a maximum of Rs.2,00,000 at any single instance. |
| 2. | SHE Organisation | i) Not complying to the minimum manpower requirements as mentioned in General Instruction attached as Appendix 5 ii) Not filling up the vacancies created due to SHE personnel leaving the contractor within 14 days. iii) SHE organisation not provided with required Audio-visual and other equipment's as per General Instruction | i) Rs.1,00,000 per month for first month and Rs.2,00,000 for subsequent months ii) Rs.50,000 per month for first month and Rs.1,00,000 for subsequent months For items iii), iv), v) and vi) Rs.50,000 for first violation and |

| | | | |
|----|---------------|--|---|
| | | <p>attached as Appendix 16</p> <p>iv) Employing through outsourcing agencies and SHE personal are not in the payroll of the main contractor</p> <p>v) Disobedience / Improper conduct of any SHE personnel.</p> <p>vi) Chief SHE Manager not reporting directly to CPM of contractor.</p> | Rs.1,00,000 for subsequent violations |
| 3. | SHE committee | <p>i) Failed to formulate or conduct SHE Committee meeting for any month</p> <p>ii) Contractor and Sub-contractor representatives not attending SHE Committee meetings</p> <p>iii) Failed to conduct Site inspection before conducting SHE Committee meeting</p> <p>iv) Failed to send SHE Committee Meeting minutes or Agenda to Employer in time</p> <p>v) Non-adherence of clause 7.7.1</p> <p>vi) Non-adherence of clause 7.9</p> | <p>i) Rs.1,00,000 for the first violation and Rs.5,00,000 for the subsequent violations</p> <p>ii) Rs.5,000 to the contractor of the member who had not attended the meeting for first violation and Rs.25,000 for subsequent violations.</p> <p>For item iii), iv), v) and vi) Rs.25,000 for first violation and Rs.50,000 for subsequent violations</p> |
| 4. | ID card | i) Non-adherence of clause 8.1, 8.2 and 8.3 | Rs.1,00,000 for first violation and Rs.2,00,000 for subsequent violations |
| 5. | SHE Training | <p>i) Not complying to the requirements as mentioned in conditions of contract on SHE and project SHE manual with regard to:</p> <p>a) Induction training not given</p> <p>b) Supervisor/engineer/manager training not conducted as per clause 9.6</p> <p>c) Refresher training as per clause 9.7 and 9.11 not conducted</p> <p>d) Tool-box talk not conducted as per clause 9.8</p> <p>e) Skill development training not conducted as clause 9.9</p> <p>f) Daily Safety Oath not conducted as per clause 9.10</p> | <p>For item 1 a) to h)</p> <p>Rs.50,000 for first violation on and Rs.1,00,000 for subsequent violations</p> |

| | | | |
|-----|--------------------------------|---|--|
| | | g) Top management behaviour based SHE training conducted h) 96 hrs SHE training to all | |
| 6. | SHE Inspection | i) Not complying to the requirements as mentioned in conditions of contract on SHE and project SHE manual as per clause 10.0 ii) Non-compliance of clause 10.3.6 | Rs.50,000 for first violation and Rs.1,00,000 for subsequent violations |
| 7. | SHE audit | Internal Audit: MARS i) Not conducted as per SHE Plan ii) Report not sent to Employer iii) Action not taken for any month External Audit iv) Not conducted as per SHE Plan v) Report not sent to employer vi) Action not taken for any quarter | For item i) to iii) Rs.50,000 for first violation and Rs.1,00,000 for subsequent violations. For item iv) to vi) Rs.1,00,000 for first violation and Rs.2,00,000 for subsequent violations. |
| 8. | SHE Communication | i) Important days to be observed for SHE awareness as furnished by employer not observed ii) Posters as furnished by Employer not printed and displayed | i) Rs.10,000 for first violation and Rs.50,000 for subsequent violations ii) 2,00,000 per contract |
| 9. | SHE Submittals | i) Non-compliance of clause 13.1 ii) Non-compliance of clause 13.2 iii) Non-compliance of clause 13.3 | For item i) Rs.50,000 for first violation and Rs.1,00,000 for subsequent violations For item ii) and iii) Rs.1,00,000 for first violation and Rs.2,00,000 for subsequent violations |
| 10. | Injury and Incidence reporting | i) Fatal accidents ii) Injury accident iii) Abnormal delay in reporting accidents or wilful suppression of information about any accidents / dangerous occurrence as per clause 14.1.4 iv) Delay in informing about any accidents / dangerous incidents. v) Non-compliance of the clause 14.4 | i. Rs.5,00,000 for first fatality and Rs.10,00,000 for every subsequent fatality. ii. Rs.1,00,000 for first grievously injured person and Rs.2,00,000 for every subsequent grievously injured person (Grievous Injury as defined by Workmen Compensation Act) |

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| | | | <p>iii. Rs.1,00,000 for first violation and Rs.2,00,000 for subsequent violations</p> <p>For items iv) and v)</p> <p>Rs.50,000 for first violation and Rs.1,00,000 for subsequent violations</p> |
| 11. | Emergency preparedness Plan | Non-compliance of the clause 15.1,15.2,15.3, 15.4, 15.5 and 15.6 | Rs.1,00,000 for non-compliance of any of the clauses |
| 12. | Housekeeping | <p>i) Housekeeping maintenance register not properly maintained up to date</p> <p>ii) Surrounding areas of drinking water tanks / taps not hygienically cleaned / maintained</p> <p>iii) Office, stores, toilet / urinals not properly cleaned and maintained.</p> <p>iv) Required dustbins at appropriate places not provided / not cleaned.</p> <p>v) Stairways, gangways, passageways blocked.</p> <p>vi) Lumber with protruding nails left as such</p> <p>vii) Openings unprotected</p> <p>viii) Excavated earth not removed within a reasonable time.</p> <p>ix) Truck carrying excavated earth not covered / tyres not cleaned.</p> <p>x) Vehicles / equipments parked / placed on roads obstructing free flow of traffic</p> <p>xi) Unused surplus cables / steel scraps lying scattered</p> <p>xii) Wooden scraps, empty wooden cable drums lying scattered</p> <p>xiii) Water stagnation leading to mosquito breeding</p> | Rs.10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance |
| 13. | Working at Height / | i) Not using or anchoring Safety Belt | Rs.10,000 per single violation Compounded to a maximum |

| | | | |
|-----|-----------------------------|---|--|
| | Ladders and Scaffolds | <ul style="list-style-type: none"> ii) Not using Safety Net iii) Absence of life line or anchorage point to anchor safety belt iv) Non-compliance of clause 18.17 v) Using Bamboo ladders vi) Painting of ladders vii) Improper usage (less than 1m extension above landing point, not maintaining 1:4 ratio) viii) Aluminium ladders without base rubber bush ix) Usage of broken / weak ladders x) Usage of re-bar welded ladders xi) Improper guardrail, toe board, barriers and other means of collective protection xii) Improper working platform xiii) Working at unprotected fragile surface xiv) Working at unprotected edges | of Rs.1,00,000 at any single instance |
| 14. | Lifting appliances and gear | <ul style="list-style-type: none"> i) Non-availability of fitness certificate as per clause 21.3 ii) Documents not displayed on the machine or not available with the operator as per clause 21.4 | Rs.50,000 per single violation Compounded to a maximum of Rs.5,00,000 at any single instance |
| | | | |
| | | <ul style="list-style-type: none"> iii) Maximum Safe Working Load not written on the machine as per clause 21.5 iv) Non-compliance of 21.6 v) Non-compliance of 21.7 vi) Automatic safe load indicator not provided or not in working condition as per clause 21.8 vii) Age of the operator less than 21 years or without any licence and non-compliance of other item as per clause 21.9 viii) Non-compliance of 21.10 | |

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|-----|------------------------|--|--|
| | | <p>ix) Non-compliance of any of the items mentioned regarding rigging requirements as per clause 21.11</p> <p>x) Failure to submit method statement in case of all critical lifting</p> <p>xi) Person riding on crane.</p> <p>xii) Creating more noise and smoke</p> <p>xiii) Absence of portable fire extinguisher in driver cabin</p> <p>xiv) Fail to guard hoist platform</p> <p>xv) No fencing of hoist rope movement area</p> <p>xvi) Hoist platform not in the horizontal position</p> <p>xvii) Use of 1st Generation Hydra crane xviii) Use of overage construction machinery regarding requirement under clause 23.3.1 & Appendix '17'</p> | |
| 15. | Launching operation | Non-adherence of any of the provisions mentioned in clause 22.2 | Rs. 50,000 for first violation and Rs.1,00,000 for subsequent violations . |
| 16. | Site Electrical safety | <p>i) Non-compliance of clause 26.1.1</p> <p>ii) Non-compliance of clause 26.2.4, 26.2.5</p> <p>iii) Non-compliance of clause 26.3.1</p> <p>iv) Non-compliance of clause 26.7, 26.8 and 26.9.1</p> <p>v) Non-compliance of clause 26.10 and 26.13</p> <p>vi) Non-compliance of clause 28.3.2</p> <p>vii) Exposed electric lines (fermentative damage) and circuits in the workplace.</p> <p>viii) Inserting of bare wires into the socket ix) Improper grounding for the electrical appliances</p> | Rs.10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance |

| | | | |
|-----|----------------------------|--|---|
| | | <ul style="list-style-type: none"> x) Electrical cables running on the ground xi) Non-compliance clause 27.0 | |
| 17. | Hand tools and Power tools | <ul style="list-style-type: none"> i) Non-compliance of clause 28.0 | Rs. 10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance |
| 18. | Gas Cutting | <ul style="list-style-type: none"> ii) Wrong colour coding of cylinder. iii) Cylinders not stored in upright position. iv) Flash back arrester, non-return valve and regulator not present or not in working condition. v) Fail to put cylinders in a cylinder trolley. vi) Damaged hose. vii) Using domestic LPG cylinders viii) Fail to store cylinder 6.6m away from fire prone materials ix) Fail to use hose clamps x) Fire extinguisher not placed in the vicinity during operation | Rs. 10,000 per single violation Compounded to a maximum of Rs. 50,000 at any single instance |
| 19. | Welding | <ul style="list-style-type: none"> i) Voltmeter and Ammeter not working ii) Improper grounding and return path. iii) Damaged welding cable iv) Bare openings in the cable. v) Non-availability of separate switch in the transformer vi) Non-availability of main switch control to switch off power to the welding unit. vii) Usage of reinforcement rod as return conductor viii) Damaged holder ix) Fire extinguisher not placed in the vicinity during operation | Rs. 10,000 per single violation Compounded to a maximum of Rs. 50,000 at any single instance. |

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|-----|---|--|--|
| 20. | Fire precaution | <ul style="list-style-type: none"> i) Smoking and open flames in fire prone area ii) Using more than 24V portable electrical appliances in the fire prone area iii) Not proper ventilation in cylinder storage area. iv) Absence of fire extinguishers v) Fire extinguishers not refilled once in a year. vi) Fire extinguisher placed in a not easily accessible location | Rs.5,000 per single violation Compounded to a maximum of Rs.25,000 at any single instance. |
| 21. | Excavation, Tunnelling and confined space | <ul style="list-style-type: none"> i) Non-compliance of clause 34.1.1 ii) Non-compliance of clause 34.2.3 iii) Non-compliance of clause 34.3 | <p>For any item from i) and ii) Rs. 10,000 per single violation</p> <p>Compounded to a maximum of Rs.50,000 at any single instance.</p> <p>For item iii) Rs. 10,000 per first violation and Rs. 50,000 for subsequent violations</p> |
| 22. | Work permit system | <ul style="list-style-type: none"> i) Non-compliance of clause 35.2 ii) Non-compliance of clause 21.11.9 | <p>For item I) and ii)</p> <p>Rs. 50,000 per first violation and Rs.1,00,000 for subsequent violations</p> |
| 23. | Traffic Management | <ul style="list-style-type: none"> i) Non-compliance of clause 36.4.1 ii) Non-compliance of clause 36.8.3 iii) Non-compliance of clause 36.9.2 iv) Non-compliance of clause 36.9.3 v) Non-compliance of clause 36.9.7 vi) Non-compliance of clause 36.9.8 | Rs.1,00,000 per first violation and Rs.2,00,000 for subsequent violations |
| | | <ul style="list-style-type: none"> a) Barricades <ul style="list-style-type: none"> i) Not Cleaned ii) Not in alignment iii) Not numbered | Rs. 25,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance |

| | | | |
|-----|-------------------------------|---|---|
| | | <ul style="list-style-type: none"> iv) Not painted v) Red lights / reflectors not working vi) Damages not repaired vii) Not secured properly viii) Barricade inspector not employed ix) Protruding parts / portions repaired x) Barricades maintaining register not properly maintained up to date | |
| | | <ul style="list-style-type: none"> b) Contractor Vehicles <ul style="list-style-type: none"> i) Over loading of vehicles ii) Unfit drivers or operators iii) Unlicensed vehicles iv) Absence of traffic marshals v) Absence of reversing alarm vi) Absence of fog light (at winter) vii) Power / hand brakes not in working condition. | Rs.25,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance |
| | | <ul style="list-style-type: none"> c) Splashing of Bentonite on roads / non-cleaning of tyres of dumpers and transit mixers <ul style="list-style-type: none"> i) Mishandling of bentonite like splashing of bentonite outside specified width of barricading ii) Non-cleaning of tyres of dumpers and transit mixers before leaving the site and thereby creating a traffic safety hazard to road users. | For item i) and ii) <ul style="list-style-type: none"> a) Rs.1,00,000 on first observation. b) Rs. 2,00,000 on second observation c) Rs. 3,00,000 on third and subsequent observations |
| 24. | Batching plant / Casting yard | Non-adherence of any of the provisions mentioned in clause 38.0. | Rs. 10,000 for single violation compounded to a maximum of Rs.1,00,000 at any single instant. |

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|-----|---------------------|---|---|
| 25. | PPE | <ul style="list-style-type: none"> i) Not having ii) Not wearing (or) using and kept it elsewhere iii) Using damaged one iv) Using wrong type v) Using wrong colour helmet or helmet without logo vi) Using for other operation (e.g. Using safety helmet for storing materials or carrying water from one place to other) vii) Not conforming to BIS standard viii) Non-compliance of clause 39.6, 39.7 and 39.8 | <p>From item i) to vi).</p> <p>Rs.200 per single violation</p> <p>For item vii)</p> <p>Rs.10,000 for first violation and Rs.50,000 for subsequent violations</p> <p>For item viii)</p> <p>Rs.50,000 for first violation and Rs.1,00,000 for subsequent violations</p> |
| 26. | Occupational Health | <ul style="list-style-type: none"> i) Fail to conduct Medical examination to workers ii) Absence of ambulance van & room iii) Workers not having ID card iv) Inadequate number of toilets v) Toilets not cleaned properly vi) Absence of water facilities for toilets and washing places vii) Toilet placed more than 500m from the work site viii) Absence of drinking water ix) Absence of first-aid person in work site. x) Absence or inadequacy of first-aid box. xi) Misuse of first-aid box. xii) First-aid box not satisfy the minimum Indian standard. xiii) Smoking inside the construction site xiv) Drink and drive or work | <p>Rs.10,000 per single violation Compounded to a maximum of Rs.1,00,000 at any single instance</p> |

| | | | |
|-----|--------------------------|--|--|
| | | xv) Excessive noise and vibration xvi) Canteen not provided xvii) Food stuff not served on no loss no profit basis xviii) Creche not provided xix) Accommodation not provided as per BOCWA xx) Fumigation / insecticides not sprayed to prevent Mosquito breeding xxi) Non-compliance of clause 44.1 and 44.2 | |
| 27. | Labour Welfare measures | i) Non adherence of Labour welfare provisions of BOCWA ii) Fail to register establishment and display the registration certificate at workplace iii) Absence of workers register and records iv) Absence of muster roll and wages register v) Fail to display an abstract of BOCWA and BOCWR | Rs.10,000 per single violation Compounded to a maximum of Rs.50,000 at any single instance |
| 28. | Environmental Management | i) Tyre wash facility not provided ii) Spillage from vehicles not arrest iii) Air monitoring not practiced iv) Noise monitoring not practiced v) The values of air monitoring and noise monitoring not within acceptable limits vi) Dust control measures at sites not practiced vii) Improper disposal of debris / residues | Rs.10,000 per single violation Compounded to a maximum of Rs.50,000 at any single instance |

56.1 Without limiting to the unsafe acts and or conditions mentioned above in clause 56.3 the Employer shall have the right to deduct charges for any other unsafe act and or condition depending upon the gravity of the situation on a case-to-case basis. The charges shall be in comparison with that of the similar offence indicated in clause

57.0 Stoppage of work

The Employer shall have the right to stop the work at his sole discretion, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and / or property, and / or equipments. In such cases, the contractor shall be informed in writing about the nature of hazards and possible injury / accident.

The contractor shall not proceed with the work until he has complied with each direction to the satisfaction of Employer

The Contractor shall not be entitled for any damages / compensation for stoppage of work, due to safety reasons and the period of such stoppage of work shall not be taken as an extension of time for Completion of the Facilities and will not be the ground for waiver of levy of liquidated damages.

58.0 Awards

The following categories will be considered for awards as per the scheme in practice of Employer

- i) For every safe million man hour working without any reportable incidents
- ii) Zero fatality contracts
- iii) 100% adherence to voluntary reporting of all accidents throughout the currency of contract
- iv) Safest project team of the year.
- v) Best SHE team of the year.
- vi) Safest Contractor of the year.

APPENDIX NO - 1

Memorandum of Understanding between Mumbai Metropolitan Region Development

Authority (MMRDA) and the Contractor for safe execution of contract work

This Memorandum of Understanding is made and executed by and between Mumbai Metropolitan Region Development Authority (MMRDA) having its registered office at

_____ or
their authorized representative(s), hereinafter referred to as "EMPLOYER" (which expression shall wherever the context so requires or admits be deemed to mean and include its successors in business and assigns) of the one party

AND

M/s _____ having its
registered office at _____

_____ having its hereinafter referred to as the "CONTRACTOR" (which expression shall wherever the context so requires or admits be deemed to mean and include its successors in business and assigns) of the other party

WITNESSETH THAT

WHEREAS the EMPLOYER gives highest importance to the occupational safety, health and environment during execution of work, seeks cooperation from the CONTRACTOR in this endeavour.

Thus, this Memorandum of Understanding is for promoting the safety, health and environment aspects required to be followed at workplace/site and will be applicable to any site job to be done by the CONTRACTOR

AND

WHEREAS the CONTRACTOR has read all the terms and conditions of the EMPLOYER and whereas the CONTRACTOR has studied the following documents:

- (a) Tender Documents, including Notice Inviting Tender, General Conditions, Special Conditions,
- (b) Conditions of Contract on Safety, Health and Environment and Project Safety, Health and Environment Manual.
- (c) Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996, Central Rules 1998 and subsequent Maharashtra Government Rules 2009, Building and Other Construction Workers Welfare Cess Act and Rules and Maharashtra and Other Construction Workers' Welfare Board Rules
- (d) Indian Electricity Act 2003 and Rules 1956.
- (e) Corresponding International / Bureau of Indian Standard Codes.

The amendments to any of the above rules and any other rules & regulations or procedures, circulars, notices & advices laid down by the EMPLOYER from time to time.

Now it is hereby AGREED AND DECLARED by and between the EMPLOYER and the CONTRACTOR as follows:

- Clause - I The CONTRACTOR shall abide by the terms and conditions stipulated in Condition of Contract on Safety, Health & Environment and Project Safety, Health & Environment Manual.
- Clause - II The CONTRACTOR shall undertake full responsibility for safe execution of job at work place/site and safety of his personnel and adjoining road users during work.
- Clause - III Without giving any prior notice, the EMPLOYER shall from time to time be entitled to add/or amend any or all terms and conditions with a view to improving safety and occupational health of personnel and safety of work, with immediate effect and the same shall be binding on the CONTRACTOR. The contractor agrees to implement all such amendments, which shall be laid down by the EMPLOYER.
- Clause - IV Besides following the guidelines, safety rules and regulations, safety codes given in various safety procedures/documents mentioned above, the CONTRACTOR shall also prepare detailed method statement which includes job safety analysis wherever there are complicated and hazardous/high risk working involved and get it approved from Employer before execution of work.
- Clause - V Any negligence or violation in implementing any of the provision of the conditions of contract on Safety, Health & Environment and MMRDA project Safety, Health & Environment Manual shall be viewed seriously and the contractor is liable to compensate the employer for the loss of reputation. The cost of damage shall be fixed on case-to-case basis.

In witness thereof the Parties hereto by representatives duly authorised have executed this Memorandum of Understanding on _____ day of _____ 20_____.

Signed on
For and on behalf of KMRL

Signed on
For and on behalf of (Contractor)

Signature:
Title:

Name:

Signature: Name:
Name:
Title:

APPENDIX NO - 2

Safety, Welfare and Occupational Health requirements as per BOCW Act 1996 and Rules

1998 and Maharashtra BOCW Rules 2007 *

(This list has been prepared in chronological order with primary importance to Section of Act and secondary importance to Rules)

S - Refers relevant Sections in BOCWA

R - Refers relevant Rules in BOCWR

C - Refers relevant Chapter No. in BOCWR

| Sl. No. | Items | Relevant Sections / Rules in BOCWA and BOCWR and MBOCWR |
|---------|--|---|
| 1. | Registration of establishment | S – 7, R – 23 to 27 |
| 2. | Display of registration certification at workplace | R – 26 (5) |
| 3. | Hours of work | S – 28 R – 234 to 237 |
| 4. | Register of overtime | S – 28; S – 29 R – 241(1) Form XXII |
| 5. | Weekly rest and payment at rest | R – 235 |
| 6. | Night shift | R – 236 |
| 7. | Maintenance of workers registers and records | S – 30 R – 238 |
| 8. | Notice of commencement and completion | S – 46 R – 239 |
| 9. | Register of persons employed as building workers | R – 240 |
| 10. | Muster roll and wages register | R – 241(1) (a); Form XVI and XVII |
| 11. | Payment of wages | R – 248 |
| 12. | Display of notice of wages regarding | R – 249 |
| 13. | Register of damage or loss | R – 241(1)(a); Form XIX, XX, XXI |

| | | |
|-----|--|------------------------------------|
| 14. | Issue of wages book | R – 241(2)(a); Form XXIII |
| 15. | Service certificate for each workers | R – 241(2)(b); Form XXIV |
| 16. | Display an abstract of BOCWA and BOCWR | R – 241(5) |
| 17. | Annual return | R – 242; Form XXV |
| 18. | Drinking water | S – 32 |
| 19. | Latrines and Urinals | S – 33 R – 243 |
| 20. | Accommodation | S – 34 |
| 21. | Creches | S – 35 |
| 22. | First-aid boxes | S – 36 R – 231 and Schedule III |
| 23. | Canteens | S – 37 R – 244 |
| 24. | Food stuff and other items served in the canteens | R – 245 |
| 25. | Supply of tea and snacks in work place | R – 246 |
| 26. | Food charges on no loss no profit basis | R – 247 |
| 27. | Rajasthan BOCW welfare Board Rules | R – 250 to 296 |
| 28. | Safety committee | S – 38 R – 208 |
| 29. | Safety officer | S – 38 R – 209 and Schedule VII |
| 30. | Reporting of accidents and dangerous occurrences | S – 39 R – 210 |
| 31. | Procedure for inquiry in to the causes of accidents | R – 211 |
| 32. | Responsibility of employer | S - 44 R – 5 |
| 33. | Responsibility of Architects, Project engineer and Designers | R – 6 |
| 34. | Responsibility of workmen | R – 8 |

| | | |
|-----|---|------------------------|
| 35. | Responsibility for payment of wages and compensation | S – 45 |
| 36. | Penalties and Procedures | S – 47; S – 55 |
| 37. | Excessive noise, vibration etc | R – 34 |
| 38. | Fire Protection | R – 35 |
| 39. | Emergency action plan | R – 36 |
| 40. | Fencing of motors | R – 37 |
| 41. | Lifting of carrying of excessive weight | R – 38 |
| 42. | Health, Safety and Environmental Policy | R – 39 |
| 43. | Dangerous and Harmful Environment | R – 40 |
| 44. | Overhead protection | R – 41 |
| 45. | Slipping, Tripping, Cutting, Drowning and Falling Hazards | R – 42 |
| 46. | Dust, Gases, Fumes, etc | R – 43 |
| 47. | Corrosive substance | R – 49 |
| 48. | Eye Protection | R – 45 |
| 49. | Head Protection and other protection apparel | R – 46; R – 54 |
| 50. | Electrical Hazards | R – 47 |
| 51. | Vehicular traffic | R – 48 |
| 52. | Stability of structure | R – 49 |
| 53. | Illumination | R – 50; R – 124 |
| 54. | Stacking of materials | R – 51 |
| 55. | Disposal of debris | R – 52 |
| 56. | Numbering and marking of floors | R – 53 |
| 57. | Lifting appliances and gears | C – VII; R – 55 to 81 |
| 58. | Runways and Ramps | C – VIII; R – 82 to 85 |
| 59. | Working on or adjacent to water | C – IX; R – 86 & 87 |
| 60. | Transport and earthmoving equipments | C – X; R – 88 to 95 |
| 61. | Concrete work | C – XI; R – 96 to 107 |

| | | |
|-----|--|--|
| 62. | Demolition | C – XII; R – 108 to 118 |
| 63. | Excavation and Tunnelling works | C – XIII; R – 119 to 168 |
| 64. | Ventilation | R – 153 |
| 65. | Construction, repair and maintenance of step roof | C – XIV; R – 169 to 171 |
| 66. | Ladders and Step ladders | C – XV; R – 172 to 174 |
| 67. | Catch platform and hoardings, chutes, safety belts and nets | C – XVI; R – 175 to 180 |
| 68. | Structural frame and formworks | C – XVII; R – 181 to 185 |
| 69. | Stacking and unstacking | C – XVIII; R – 186 & 187 |
| 70. | Scaffold | C – XIX; R – 188 to 205 |
| 71. | Cofferdams and Caissons | C – XX; R – 206 to 211 |
| 72. | Explosives | C – XXI; R – 212 & 213 |
| 73. | Piling | C – XXII; R – 214 to 222 |
| 74. | Medical Examination for building and other construction worker, Crane operator and Transport vehicle drivers | R – 81; R – 223(a)(iii) and Schedule XII |
| 75. | Medical examination for occupational health hazards | R – 233(a)(iv) |
| 76. | Charging of workers for Medical Examination | R – 223(b) |
| 77. | Occupational health centres and Medical officers | R – 225 and Schedule X & XI |
| 78. | Ambulance van & room | R – 226 & 227 and Schedule IV & V |
| 79. | Stretchers | R – 228 |
| 80. | Occupational health service for building workers | R – 229 |
| 81. | Medical examination for occupational health hazards | R – 223(a)(iv) |
| 82. | Emergency care services and emergency treatment | R – 232 |
| 83. | Panel of experts and agencies | Central Rule 250 Maharashtra Rule |
| 84. | Power of inspectors | Central rule 251 Maharashtra Rule |

** Please confirm with latest revision*

APPENDIX NO - 3

| SITE SHE PLAN | |
|------------------------|--|
| Contract No | |
| Contractor Name | |
| Project Name | |

| | |
|----|---|
| 1 | Project Highlights <ul style="list-style-type: none"> i. Title of the content ii. Contractor Number iii. Brief scope of work iv. Location map/ key plan v. Period of the project |
| 2 | SHE Policy |
| 3 | Site Organisation Chart Chart indicating reporting of SHE personnel |
| 4 | Roles & Responsibility Individual responsibility of the <ul style="list-style-type: none"> i) Project Manager ii) Construction Manager iii) Construction Supervisors iv) SHE Committee Members v) SHE Incharge vi) Site Engineers vii) First Line Supervisors viii) Sub-contractors |
| 5 | SHE Committee <ul style="list-style-type: none"> i. Details - Chairman, Members, Secretary and Employer's representative, ii. Procedures for effective conduct of meeting |
| 6 | SHE Training |
| 7 | Subcontractor Evaluation, Selection and Control |
| 8 | SHE Inspection |
| 9 | SHE Audit |
| 10 | Accident Investigation And Reporting Procedures |
| 11 | Occupational Health Measures |
| 12 | Labour Welfare Measures |
| 13 | Risk assessment and mitigation procedures |

| | |
|-----------|--|
| 14 | Safe Work Procedures <ul style="list-style-type: none"> i. Work at Height ii. Structural Steel Erection iii. Launching of segments iv. Floor, Wall Openings and Stairways v. Welding, Cutting and Bracing vi. Lifting appliances vii. Work Permit Systems viii. Electrical Equipments ix. Mechanical Equipments x. Excavation xi. Fire Prevention xii. Hazardous Chemicals and Solvents xiii. Ionising Radiation xiv. Lighting xv. Abrasive Blasting |
| 15 | Work Permit System |
| 16 | List of standard job specific PPEs to be used in the site |
| 17 | Maintenance of Regime for construction Equipment and Machinery |
| 18 | Traffic management |
| 19 | Housekeeping |
| 20 | Environmental Management |
| 21 | Emergency Management |
| 22 | Visitors and Security arrangement |

APPENDIX NO - 4

WORKPLACE POLICY ON HIV/AIDS PREVENTION & CONTROL FOR WORKMEN ENGAGED BY CONTRACTORS

“Being mobile in and of itself is not a risk factor for HIV infection. It is the situations encountered and the behaviours possibly engaged in during mobility or migration that increase vulnerability and risk regarding HIV / AIDS.”

UNAIDS, Technical update on ‘Population, Mobility and AIDS’, February 2001, p.5

Mumbai Metropolitan Region Development Authority (MMRDA) recognizes HIV / AIDS as a developmental challenge and realizes the need to respond to it by implementing regular HIV / AIDS prevention programmes and creating a non - discriminatory work environment for HIV infected workmen engaged by contractors. For the purpose of making conscientious, sensitive and compassionate decision in addressing the realities of HIV / AIDS, MMRDA has established these guidelines based on ILO code of practice on HIV / AIDS.

- Creating awareness through professional agency using IEC (Information, Education and Communication) package specially designed for migrant workers.
- Institutional capacity building by training the project implementation team, Safety, Health & Environment (SHE) Managers, establishing linkages for efficient diagnosis and treatment of the affected workers, effective monitoring of implementation and documentation for further learning.
- Establishing peer educators by selecting them in consultation with contractors and training them through professional agencies so that they become focal point for any information, education and awareness campaigns among the workmen throughout the contract period.
- Promotion of social marketing of condoms through concerned Rajasthan State Government body.

APPENDIX NO - 5

MINIMUM MANPOWER REQUIREMENTS OF SHE ORGANIZATION BASED ON CONTRACT VALUE

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------------------|-------------------|--------------------|--------------------|----------------|----------------------------------|----------------------------------|
| Awarded Contract value (in Cr.) | Chief SHE Manager | Senior SHE Manager | Junior SHE Manager | Safety Steward | Senior SHE (Electrical) Engineer | Junior SHE (Electrical) Engineer |
| Upto 2 | - | - | 1 | Refer Note 1 | - | 1 |
| Upto 10 | - | 1 | Refer Note 1 | | 1 | Refer Note 2 |
| Upto 25 | 1 | Refer Note 1 | | | 1 | |
| Upto 100 | 1 | | | | 1 | |
| Upto 250 | 1 | | | | 1 | |
| More than 250 | 1 | | | | 1 | |

| | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---------------------------------|--|---|-----------------------|---|---|---------------------|------------------------|
| Awarded Contract value (in Cr.) | *Junior SHE (Fire) Manager / **Senior SHE (Fire) Manager | Occupational Health officer with Necessary Nursing Assistants (Refer Note3) | Environmental Manager | Senior SHE (Traffic) Engineer (Refer Note4) | Barricade Maintenance Squad (Refer Note4) | House Keeping Squad | Labour Welfare Officer |
| Upto 2 | - | - | - | - | Refer Note 5 | Refer Note 6 | - |
| Upto 10 | - | 1 (PT) | 1 | 1 | | | 1 |
| Upto 25 | 1* | 1 (PT) | 1 | 1 | | | 1 |
| Upto 100 | 1* | 1 (FT) | 1 | 1 | | | 1 |
| Upto 250 | 1** | 2(FT) | 1 | 1 | | | 1 with support staff |
| More than 250 | 2** | 2(FT) | 1 with support staff | 1 | | | 1 with support staff |

Note 1: Adequate, qualified and trained SHE Professionals with required support staff to be deployed at each worksite at each shift.

Note 2: Adequate, qualified and trained Electrical Engineers / supervisors to be deployed at each worksite at each shift.

Note 3: (PT) means Part-Time and (FT) means Full-time.

Note 4: Senior SHE (Traffic) Engineer Post and Barricade Manager (including the staff) Posts are applicable to contracts where the work has to be executed either below or over the right-of-way like Viaduct, Tunnel Contracts wherein erection and maintenance of barricades are paramount important.

Note 5: One Barricade Manager supported by required supervisors and workmen

Note 6: One Housekeeping Manager supported by required supervisors and workmen.

APPENDIX NO - 6

MINIMUM QUALIFICATION AND EXPERIENCE FOR (SHE) SAFETY, ELECTRICAL, ENVIRONMENTAL, TRAFFIC ENGG. AND OCCUPATIONAL HEALTH PROFESSIONALS

| Sl. No | Designation | Qualification | Experience (in years) |
|--------|-----------------------------------|--|---|
| 1 | Chief SHE Manager | <p>The Chief SHE Manager shall have qualified in any of the following degree/diploma:</p> <ul style="list-style-type: none"> i) Post Graduate Diploma in Industrial Safety & Environmental Management (PGDISEM) from National Institute of Industrial Engineering, Mumbai ii) M.E. in Industrial Safety from NIT, Trichy, Tamil Nadu iii) M.E. in Industrial Safety from Mepco Schlenk Engineering College, Sivakasi, Tamil Nadu iv) B.E. in Fire and Safety Engg. From Cochin University of Science and Engg. Cochin, Kerala v) B.E. with advanced Safety Management Diploma from CLI / RLI Mumbai / Chennai / Kolkata and Kanpur. vi) B.E / B.Arch., with one year Full Time advanced Safety diploma from NICMAR, Hyderabad. vii) B.E/B.Tech with any other equivalent State and Central Govt. recognized full time Degree / Diploma in Safety. viii) International qualifications like CSP (Certified Safety Professional), NEBOSH, MIOSH, MSISO etc. | 2 {for all category except (iv) and 5yrs for category (iv)} |
| 2 | Senior SHE Manager (Refer Note 3) | <p>As stated in Sl. No:1 and in addition the following categories:</p> <ul style="list-style-type: none"> i) B.Sc.(Physics/Chemistry/Maths) with one year Full Time advanced Safety diploma from NICMAR, Hyderabad ii) B.Sc. / Diploma in Engg. with advanced Safety Management Diploma from CLI / RLI / Mumbai / Chennai / Kolkata and Kanpur. iii) B.Sc. (Physics/Chemistry/Maths) with One year Full Time diploma in Safety Engineering offered by West Bengal State Technical Education <i>Departments</i> and similar courses by other states. iv) Any Graduate or diploma holder with 7 years of work experience in full fledged SHE department of any Public Sector / Leading Private Sector / MNC /with prior approval of employer on a case to case basis | 2 {for category (i), (ii) and (iii) only} |
| 3 | Junior SHE Manager (Refer Note 3) | <ul style="list-style-type: none"> i) Degree in Science / Diploma in Engineering with Govt. recognized safety diplomas from Correspondence course of NICMAR, Annamalai University, National and State Productivity Councils, Other State Technical Education Boards etc. | 2 (for category (i) only) |

| | | | |
|-----|---------------------------------------|--|------------------------------------|
| | | ii) Any Graduate or diploma holder with <u>5 years</u> of work experience in full fledged SHE department of any Public Sector / Leading Private Sector / MNC / with prior approval of employer on a case to case basis | |
| 4 | Safety Steward (Refer Note 3) | Any basic qualification with any SHE related certificate courses. | 2 |
| 5 | Senior SHE (Electrical) Manager | Degree in Electrical Engineering + Govt. recognized Electrical Licence holder | 2 |
| 6 | Junior SHE (Electrical) Manager | Diploma in Electrical Engineering + Govt. recognized Electrical Licence holder | 1 |
| 7 | Senior SHE (Fire) Manager | i) B.E. (Fire) from National Fire Service College, Nagpur ii) B.E (Fire & Safety) from Cochin University iii) Graduate with any Govt. recognized diploma in Fire Safety with 5 years of experience | 2 (for category (i) and (ii) only) |
| 8 | Junior SHE (Fire) Manager | Any Diploma holder with any Govt. recognized diploma in Industrial Fire Safety. | 1 |
| 9 | Occupational Health Officer | MBBS with Govt. recognized degree/diploma in Industrial/occupational health | 1 |
| 10 | Environment Manager | Govt. recognized PG Degree / PG Diploma / Degree in Environmental Engineering / Science | 2 |
| 11 | Senior SHE (Traffic) Engineer | Govt. recognized PG Degree / Degree / Diploma in Traffic/Transportation Engineering or Planning | 1 |
| 12. | House Keeping Squad -Manager | Any Diploma in Engineering | 1 |
| 13 | Barricade Manager | Any Diploma in Engineering | 1 |
| 14 | Labour Welfare Officer | Any Degree with Govt. Recognized Degree / Diploma / P G Diploma in Labour Welfare related fields like Law, Personnel / Industrial Relations etc. | 2 |

Note 1: In some extraordinary cases where the candidate had earlier worked in Metro Projects they can be considered for the following posts:

- i) Senior SHE Manager
- ii) Junior SHE Manager
- iii) Safety Steward

depending upon the qualification and no. of years of experience on a case to case basis even if they do not possess the prescribed qualification as listed above.

Note 2: In all other cases other than listed under note 3 (i), (ii) and (iii) irrespective their earlier experience with Metro projects the candidates shall qualify as specified above.

APPENDIX NO - 7

MINIMUM REQUIREMENTS OF SHE MONITORING AND AUDIO-VISUAL EQUIPMENTS

1. For the purpose of minimum requirements of Audio-visual and Other equipment the contracts are categorized into the following groups:

| Contract Value (Initial awarded value of contract) | Group |
|--|-------|
| Upto 25 Cr | A |
| Upto 100 Cr | B |
| Upto 250 Cr | C |
| More than 250 Cr | D |

2. Every contractor falling into the above groups shall provide the following minimum required audio visual aids for conducting weekly review, monthly safety committee and other post review meeting of all fatal and major incidences effectively. These audio-visual equipments are a must for conducting periodical in-house safety presentations in the training programmes.
3. In addition to the above portable hand held digital sound level meter (SLM) and portable hand held digital lux meter are also to be provided.

| Sl.No | SHE monitoring and Audio-Visual Equipment details | SHE monitoring and Audio-Visual equipment required for | | | |
|-------|--|--|------------------|------------------|------------------|
| | | Group A Contract | Group B Contract | Group C Contract | Group D Contract |
| 1. | Portable hand held Digital Sound Level Meter (SLM) | 1 | 1 | 1 | 1 |
| 2. | Portable hand held Digital Lux Meter | 1 | 1 | 1 | 1 |
| 3. | Laptop Computer with standard configuration including multimedia facilities | 1 | 1 | 1 | 1 |
| 4. | Colour Printer | 1 | 1 | 1 | 1 |
| 5. | Computer projector with screen | - | 1 | 1 | 1 |
| 6. | Overhead projector | 1 | | | |
| 7. | 35mm Camera (For taking accident investigation photos in which case the images cannot be easily altered) | 1 | 1 | 1 | 1 |
| 8. | Digital camera with flash of minimum 4 mega pixel and video facility | 1 | 1 | 1 | 2 |
| 9. | Digital still camera with flash of minimum 4 mega pixel | 1 | 2 | 4 | 6 |

| | | | | | |
|-----|---|--|---|---|---|
| 10. | Portable loudspeaker (for tool-box talk and emergency purpose) | 1 | 1 | 2 | 6 |
| 11. | Communication facility like mobile phone, walky-talky etc | For all supervisors and managers/engineers working in Safety, Health & Environment | | | |
| 12. | Accident investigation Kit containing the following: | 1 | 1 | 1 | 2 |
| a) | Chalk piece for marking | | | | |
| b) | Measuring tape for measuring <ul style="list-style-type: none"> Flexible tape – 2m length Metal Foot long scale and Metal tape – 30m | | | | |
| c) | Equipment tags | | | | |
| d) | Multipurpose Flash light | | | | |
| e) | Barrier tape of 20m length | | | | |
| f) | Accident investigation Forms and checklists | | | | |
| g) | Enough Paper for witness recording and other noting | | | | |
| h) | Emergency Phone Numbers list | | | | |

APPENDIX NO - 8

Training of Contractor's Employees/Staff/Worker's

Contractor shall provide a training/workshop on safety, health & environment (SHE) to all its workers/staff/employees/subcontractors of at least 2 weeks (96 hrs) at the time of induction. Before posting of any his workers/staff/employees/subcontractors, the contractor shall give a certificate that the said person had undergone the requisite SHE training. Noncompliance of the above will invoke penalties as per the condition of contract on SHE, Vol-2 of Tender Document.

The training shall cover following aspects:

1. Hazard Identification Procedure:

Hazards on site:

- Falls
- Earthling work
- Electricity
- Machinery
- Handling materials
- Transport
- Site housekeeping
- Fire

2. Personal Protective Equipment

- What is available?
- How to obtain it?
- Correct use and care.

3. Health

- Site welfare facilities
- Potential health hazards
- First Aid/CPR

4. Duties of the contractor

- Brief outline of the responsibilities of the Contractor by law
- Details of Contractor's accident prevention policy
- MMRDA's SHE manual
- Building and other Constructions Welfare Law

5. Employee's Duties

- Brief outline of responsibilities of employee under law
- Explanation of how new employees fit into the Contractor's plan for accident prevention. (induction and orientation).

Note: This list is not exhaustive and contractors shall be required to submit their detailed training curriculum subjects wise giving time duration and training faculty details for Engineers approval

APPENDIX NO - 9

ID Card Format

(85 mm x 55mm)

Front side of ID Card:

| MMRDA Metro Project | |
|---|--|
| Company Logo | Name & Address of Main / Sub / Labour contractor |
| Name: Designation: Blood Group: Valid up to: | Photo |
| Authorised Signatory | |

Backside of ID Card:

| |
|---|
| Employee Address: _____ _____ _____ _____ |
| <ol style="list-style-type: none">1. This card is the property of "XX" (Main / Sub / Labour Contractor) and must be returned on demand and on transfer / cancellation of employment.2. A charge will be levied for replacement of the card due to loss or theft3. If found please return to |
| Main Contractors Address |

APPENDIX NO - 10

SHE Training details for Managers and Supervisors

| | |
|---|---|
| 1. The Law and Safety | 2. Policy and Administration |
| Statutory requirement Appropriate regulations Duties of employer and employee | Effect of incentive on accident prevention Human relations Consultation Safety Officer: duties, aims, objectives |
| 3. Safety and the Supervisor | 4. Principles of Accident Prevention |
| Safety and efficient production go together Accidents affect morale and public relations | Attitudes of management, supervision and operations Methods of achieving safe operations Accident and injury causes |
| 5. Site Inspection | 6. Human Behavior |
| The role of management Hazard Identification Procedure Records results Follow-up procedures Feedback | Motivating agencies Individual behavior Environmental effects Techniques of persuasion |
| 7. Site housekeeping | 8. Health |
| Site organization Relationship of site housekeeping to accident occurrence Site access Equipment storage Material stacking Materials handling | Medical examination Hazard to health on site Sanitation and welfare Protective clothing First Aid/CPR |
| 9. Personal Protective Equipment | 10. Electricity |
| Eye, face, hands, feet and legs Respiratory protective equipment Protection against ionizing radiation | Appreciation of electrical hazards Power tools Arc welding Low voltage system Lighting and power system on sites ELCB, RRCB, Grounding/Ground fault circuit interrupters (GFCIs) |
| 11. Oxygen and Acetylene Equipment | 12. Equipment |
| Cylinder storage and maintenance Condition and maintenance of valves, regulators, and gauges Condition and maintenance of hoses and fittings Pressures | Accidents related to moving parts of machinery Appreciation of principles of guarding Importance of regular maintenance |
| 13. Transportation | 14. Excavations |
| Transport to and from site Hazard connected with site transport Competent drivers Dumpers Tipping trucks Movement near excavations | Method of shoring Precautions while shoring Precautions at edge of excavations Removal of shoring Sheet steel piling |
| 15. Working platforms, Ladders, and Scaffolding | 16. Cranes and other Lifting Machines |
| Hazards connected with the use of ladders Maintenance and inspection | Licensing, certification and training required |

| | |
|--|--|
| Type of scaffold Overloading Work on roofs Fragile material Openings in walls and floors Use of safety belts and nets | for operation of cranes Slings methods Signaling Access to crane(s) Maintenance and examination Ground conditions Hazards and accident prevention methods connected with the use of different types of cranes/heavy equipment Crane Lift Plan for all lifts |
| 17. Lifting Tackle | 18. Fire Prevention and Control |
| Slings - single and multi-legged Safe working loads (SWLs) Safety hooks and eyebolts Cause of failure Maintenance and examination | Principle causes determining fire Understanding fire chemistry Fire fighting equipment Fire fighting training |
| 19. Communications | |
| Effective methods of communication (particular interest to non-English speaking workers) Method and preparation of reports Safety committees Safety meeting | |

APPENDIX NO - 11

SHE Training Matrix

| Types of training | Management | | | | | | | | | | | | | | | | | Supervisor | | | | | | | Specific | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|-----------------|----------------|----------|----------------------|----------------------|------------------------|-----------------------------------|---|-------------------|----------------------------|--------------------|---------------------------------------|-----------------------|----------------------------------|------------------|------------------------|-------------------------|---|--------------------------------|--|----------------------------|---|---------------|--|--------------------------------|---------|----------------------|------------------|---------------------------------|-----------------------|------------------------|------------------------------|-------------------------|---------------------|---------------------------|----------------------------|--------------------------|---------------------------------|--------------|---------------------|-------------------------------|-----------------------------------|---------------------------|--|--|--|--|
| | SHE Orientation | SHE Leadership | SHE Plan | SHE Improvement Plan | Management of Change | SHE Audit & Inspection | SHE Emergency Response & aredness | Incident/Accident Investigation & Reporting | SHE Communication | SHE Promotion & Incentives | Traffic Management | Hazard Identification & Risk Analysis | Permit to work system | Confined space entry scaffolding | Waste Management | Environment Monitoring | Labour welfare measures | Behavioral Based Safety Management (BBSM) | Job/Task Safety Analysis (JSA) | Safety Training Observation Programme (STOP) | Industrial First Aid & CPR | Incident / Accident Investigation & Reporting | Fire fighting | Confined Space Testing & Certification | Scaffold Erection & Inspection | Rigging | Wire Rope Inspection | Crane Inspection | Electrical/Mechanical Isolation | Permit to Work System | Confined Space Working | Explosive Handling & Control | Heavy Lifting Operation | Radiography (X-Ray) | HAZMAT Handling & Control | Welding, Cutting & Bracing | Power Actuated Hand Tool | Electrical/Mechanical Isolation | Roofing Work | Steel erection work | Scaffold Erection/Dismantling | False-work Erection / Dismantling | Painting in Confined Area | | | | |
| Project Manager | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sr. Construction Managers | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | | | | | • | | | | | | | | | | | | | | | | | | | |
| Quality Manager | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | | | | | • | | | | | | | | | | | | | | | | | | | | | |
| Planning engineer | • | • | • | | • | • | • | • | • | | | • | | • | | | | | | | • | | | | | • | | | | | | | | | | | | | | | | | | | | | |

| Types of training | Management | | | | | | | | | | | | | | | | | Supervisor | | | | | | | | | | Specific | | | | | | | | | | | | | | | | | | | |
|--------------------------|-----------------|----------------|----------|----------------------|----------------------|------------------------|-----------------------------------|---|-------------------|----------------------------|--------------------|---------------------------------------|-----------------------|----------------------------------|------------------|------------------------|-------------------------|---|--------------------------------|--|----------------------------|---|---------------|--|--------------------------------|---------|----------------------|------------------|---------------------------------|-----------------------|------------------------|------------------------------|-------------------------|---------------------|---------------------------|----------------------------|--------------------------|---------------------------------|--------------|---------------------|-------------------------------|-----------------------------------|---------------------------|---|---|---|---|
| | SHE Orientation | SHE Leadership | SHE Plan | SHE Improvement Plan | Management of Change | SHE Audit & Inspection | SHE Emergency Response & aredness | Incident/Accident Investigation & Reporting | SHE Communication | SHE Promotion & Incentives | Traffic Management | Hazard Identification & Risk Analysis | Permit to work system | Confined space entry scaffolding | Waste Management | Environment Monitoring | Labour welfare measures | Behavioral Based Safety Management (BBSM) | Job/Task Safety Analysis (JSA) | Safety Training Observation Programme (STOP) | Industrial First Aid & CPR | Incident / Accident Investigation & Reporting | Fire fighting | Confined Space Testing & Certification | Scaffold Erection & Inspection | Rigging | Wire Rope Inspection | Crane Inspection | Electrical/Mechanical Isolation | Permit to Work System | Confined Space Working | Explosive Handling & Control | Heavy Lifting Operation | Radiography (X-Ray) | HAZMAT Handling & Control | Welding, Cutting & Bracing | Power Actuated Hand Tool | Electrical/Mechanical Isolation | Roofing Work | Steel erection work | Scaffold Erection/Dismantling | False-work Erection / Dismantling | Painting in Confined Area | | | | |
| Construction Managers | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | • | | • | | | | | | | | | | | | | | | | | | |
| Construction Supervisors | | • | | • | | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | | • | • | | • | • | • | • | • | • | • | • | |
| Construction Foreman | | • | | • | | | • | | • | | | • | • | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Machinery Operators | • | | | | | | • | | | | • | | | | • | | | | | | | • | • | • | | | | • | | | | | | | | | | | | | | | | | | | |
| Material Handlers | • | | | | | | • | | | | | • | • | • | • | | | | | | | • | • | • | | | • | | | | | | | | | | | | | | | | | | | | |

[illegible]

| Types of training | Management | | | | | | | | | | | | | | | | Supervisor | | | | | | | | Specific | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|-----------------|----------------|----------|----------------------|----------------------|------------------------|-----------------------------------|---|-------------------|----------------------------|--------------------|---------------------------------------|-----------------------|----------------------------------|------------------|------------------------|-------------------------|---|--------------------------------|--|----------------------------|---|---------------|--|--------------------------------|---------|----------------------|------------------|---------------------------------|-----------------------|------------------------|------------------------------|-------------------------|---------------------|---------------------------|----------------------------|--------------------------|---------------------------------|--------------|---------------------|-------------------------------|-----------------------------------|---------------------------|---|---|---|---|
| | SHE Orientation | SHE Leadership | SHE Plan | SHE Improvement Plan | Management of Change | SHE Audit & Inspection | SHE Emergency Response & aredness | Incident/Accident Investigation & Reporting | SHE Communication | SHE Promotion & Incentives | Traffic Management | Hazard Identification & Risk Analysis | Permit to work system | Confined space entry scaffolding | Waste Management | Environment Monitoring | Labour welfare measures | Behavioral Based Safety Management (BBSM) | Job/Task Safety Analysis (JSA) | Safety Training Observation Programme (STOP) | Industrial First Aid & CPR | Incident / Accident Investigation & Reporting | Fire fighting | Confined Space Testing & Certification | Scaffold Erection & Inspection | Rigging | Wire Rope Inspection | Crane Inspection | Electrical/Mechanical Isolation | Permit to Work System | Confined Space Working | Explosive Handling & Control | Heavy Lifting Operation | Radiography (X-Ray) | HAZMAT Handling & Control | Welding, Cutting & Bracing | Power Actuated Hand Tool | Electrical/Mechanical Isolation | Roofing Work | Steel erection work | Scaffold Erection/Dismantling | False-work Erection / Dismantling | Painting in Confined Area | | | | |
| Transportation Drivers | • | | | | | | • | | | | • | | | | | • | | | | | • | | • | | | | | | | | | | | | | | | | | | | | | | | | |
| Security Officers | • | | | | | | • | • | | | • | • | • | | • | • | | | | | • | • | • | | | | | | | | | | | | | | | | | | | | | | | | |
| Clerical Staff | • | | | | | | • | | | | • | | | • | • | | | | | | • | | • | | | | | | | | | | | | | | | | | | | | | | | | |
| Medical Doctor | • | • | • | | | | • | • | | | | | | • | • | • | • | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sr. SHE Managers | | • | | | | | • | | | | | | | • | • | • | • | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jr. SHE Managers | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

| Types of training | Management | | | | | | | | | | Supervisor | | | | | Specific | | | | | | | | | |
|-------------------|------------|---|--|--|--|--|--|--|--|--|------------|--|--|--|--|----------|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHE Supervisors | • | SHE Orientation | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Leadership | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Plan | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Improvement Plan | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Management of Change | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Audit & Inspection | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Emergency Response & aredness | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Incident/Accident Investigation & Reporting | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Communication | | | | | | | | | | | | | | | | | | | | | | | |
| | • | SHE Promotion & Incentives | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Traffic Management | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Hazard Identification & Risk Analysis | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Permit to work system | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Confined space entry scaffolding | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Waste Management | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Environment Monitoring | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Labour welfare measures | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Behavioral Based Safety Management (BBSM) | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Job/Task Safety Analysis (JSA) | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Safety Training Observation Programme (STOP) | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Industrial First Aid & CPR | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Incident / Accident Investigation & Reporting | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Fire fighting | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Confined Space Testing & Certification | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Scaffold Erection & Inspection | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Rigging | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Wire Rope Inspection | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Crane Inspection | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Electrical/Mechanical Isolation | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Permit to Work System | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Confined Space Working | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Explosive Handling & Control | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Heavy Lifting Operation | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Radiography (X-Ray) | | | | | | | | | | | | | | | | | | | | | | | |
| | • | HAZMAT Handling & Control | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Welding, Cutting & Bracing | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Power Actuated Hand Tool | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Electrical/Mechanical Isolation | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Roofing Work | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Steel erection work | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Scaffold Erection/Dismantling | | | | | | | | | | | | | | | | | | | | | | | |
| | • | False-work Erection / Dismantling | | | | | | | | | | | | | | | | | | | | | | | |
| | • | Painting in Confined Area | | | | | | | | | | | | | | | | | | | | | | | |

APPENDIX NO - 12

DAYS TO BE OBSERVED FOR CREATING SHE AWARENESS

| | |
|-------------------|---|
| 1st Monday to | Road Safety Week (Subjected to confirmation from Ministry of Road |
| Sunday of January | Transport, Govt. of India every year.) |
| 16th February | Kyoto Protocol Day |
| March | Red Cross Month |
| May 1 to 7 | Emergency Preparedness Week |
| 4th March | National Safety Day |
| 7th April | World Health Day |
| 14th April | Fire Safety Day |
| April 18 to 22 | Earth Week |
| 20th April | Earth Day |
| 20th April | Noise Awareness Day |
| 28th April | ILO World Day for Safety and Health at Work Day |
| 5th June | World Environmental Day |
| 12th June | World Day against Child Labours |
| 9th July | Occupational Health Day |
| 17th October | World Trauma Day |
| 1st December | World AIDS Day |

APPENDIX NO - 13

Minimum Requirements of SHE Communication Posters / Signages / Video

- For the purpose of Minimum requirements of SHE Communication Posters / Signages / Video the contracts are categorized into the following groups:

| Contract Value (Initial awarded value of contract) | Group |
|--|-------|
| Upto 25 Cr | A |
| Upto 100 Cr | B |
| Upto 250 Cr | C |
| More than 250 Cr | D |

- Every contractor falling into the above groups shall prepare a SHE Communication Plan as a part of site specific SHE Plan and shall include the following minimum requirement of Posters / Signages / Video as applicable. In case readymade posters are available in any of the category from National Safety Council, Loss Prevention Association of India or any other safety related organisations they may procure the same and display it. In case the same is not available then the contractors' shall make necessary arrangements to get the posters designed and printed on their own.

All the above are to be detailed in the Site SHE Plan and get an approval from the Employer before displaying the posters.

Table No.: 1 - Minimum No. of Posters

| Sl.No | SHE Poster Title | Minimum No. of concepts in each title | No. of Posters / Signage / Video | | | |
|-------|--|---|----------------------------------|------------------|------------------|------------------|
| | | | Group A Contract | Group B Contract | Group C Contract | Group D Contract |
| 1. | Safety Culture | 5 | Each 10 | Each 50 | Each 75 | Each 100 |
| 2. | Daily Safety Oath | 1 English & 1 Hindi | Each 100 | Each 200 | Each 500 | Each 1000 |
| 3. | Mandatory PPE Usage | | | | | |
| a) | Signages to display the messages like PPE ZONE, | 2 types of sizes | Each 25 | Each 50 | Each 75 | Each 200 |
| | NO PPE ZONE, HARD HAT AREA etc. | made up of metal sheet to be mounted at different locations | | | | |
| b) | Helmet | 5 | Each 25 | Each 50 | Each 75 | Each 200 |

| | | | | | | |
|-----|--|---|---------|---------|---------|----------|
| c) | Shoe | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| d) | Goggles & Ear Protection | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| e) | Full Body Harness | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| f) | Hi-Vi Jacket | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 4. | Emergency Management Plan | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 5. | Working at Heights | 10 | Each 25 | Each 50 | Each 75 | Each 200 |
| a) | Ladder, Stairway, Scaffold - Signages to display the messages like SAFE, UNSAFE, FIT FOR USE, AVOID USE etc. | 5 types of sizes made up of metal sheet to be mounted at different locations | Each 25 | Each 50 | Each 75 | Each 200 |
| 6. | Site Electricity | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 7. | Crane Safety | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 8. | Slings | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 9. | Rigging Procedures | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 10. | Excavation | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 11. | Occupational Health (Mosquito Control, HIV/AIDS awareness, Dust Control, Noise Control, No Smoking/Spitting, etc.) | 10 | Each 25 | Each 50 | Each 75 | Each 200 |
| 12. | First – Aid | 3 | Each 25 | Each 50 | Each 75 | Each 200 |
| 13. | Labour Welfare Measures (Payment of Minimum Wages, Avoidance of Child labour, Signing in the Muster Roll, In case of accidents-what to do? etc | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 14. | Importance of “Safety Handbook” | 1 | 25 | 50 | 75 | 200 |
| 15. | Traffic Safety (Speed limit, safe crossing and working within barricaded area etc.) | 5 | Each 25 | Each 50 | Each 75 | Each 200 |
| 16. | Environmental Monitoring (Spillage of Muck, hazardous material, | 5 | Each 25 | Each 50 | Each 75 | Each 200 |

| | | | | | | |
|-----|---|---|---|---|---|---|
| | Improper drainage, water spray for dust containment etc.) | | | | | |
| 17. | Video in Hindi on PPE usage – 15 minutes duration | 1 | - | - | - | 1 |

Note 1: Items mentioned under 17 is **video**. Items under 3 (a) and 5 (a) are **metal signage boards** and all other items are **posters**.

Table No.: 2 – Size of Posters / Signages

| Sl.No | Item | Size |
|-------|---|---|
| 1. | Posters – Standard | 17"x22" –135 GSM 4 Colour Printing |
| 2. | Posters – Special (Wherever required) | 17"x22" card laminated FA Poster |
| 3. | Posters - Mega size (Wherever required) | 32"x40" Flex FA Poster |
| 4. | First-Aid Booklet | 6"x4" |
| 5. | Safety Handbook | 6"x4" |
| 6. | Signages | Small : 12"x6" Big : 24"x12" |
| 7. | Road Traffic Sign Boards | Strictly as per Indian Road Congress (IRC) specifications |

Table No.: 3 – Safety Signage Colour (as per IS 9457)

| Sl.No | Type of signage | Colour |
|-------|-----------------|--------|
| 1 | Mandatory | Blue |
| 2 | Danger | Yellow |
| 3 | Prohibitory | Red |
| 4 | Safe conditions | Green |

APPENDIX NO - 14

Experts / Agencies for SHE Services

| Sl. No. | Organisation | Services |
|--|--|----------|
| Crane and Lifting Appliance Testing, Certification, Crane Safety Training and associated services | | |
| 1. | INTENCO Engineering Certifications LLP K – 10, South Extension, Part – 2, New Delhi – 110 049 Phone: 011 – 26254761, 26258130 Mobile: 9312260130 E-mail: info@intenco.in | |
| 2. | Boss Technical Services A-2/295, Pankha Road, Janakpuri, New Delhi-110058 Mobile: 9811144107 E-mail: bosstechnical@yahoo.co.in | |
| 3. | KR Bedmutha Techno Associates Pvt Ltd A-2A/120, Janakpuri, New Delhi-110058 Tel: 011-25504438, 25504438 E-mail: Bedmutha_124@sify.com Website: www.krbta.com | |
| 4. | Meenal Engineers & Consultants 308, Agarwal Chamber-IV 27, Veer Savarkar Block Vikas Marg, Delhi-110092. Tel: 0120-4132552, 4101552, Mobile: 9811191052 E-mail: pk_bansal25@yahoo.co.in Website: www.meenalengineers.com | |
| SHE Services like ISO Certification, External SHE Audits, Consultancy services and SHE Training | | |
| 1. | Bureau Veritas India Pvt. Ltd., | |

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|----|---|
| | <p>B-21 & 22, First Floor, Sector-16, NOIDA-201 301 (U.P.)</p> <p>Phone: 0120 – 2515055, Fax: 0120 - 2515248</p> <p>E-mail: enp.delhi@in.bureauveritas.com</p> |
| 2. | <p>Quality Growth Services Pvt. Ltd. H-13, Kirti Nagar, New Delhi – 110 015</p> <p>Fax: 011 – 25431737 / 25438598 / 25918332</p> <p>E-mail: qgs@qgspl.com</p> <p>Website: www.qgspl.com</p> |
| 3. | <p>EQMS INDIA PVT. LTD.</p> <p>E-49, 1st Floor, Dazzle House, Jawahar Park, Main Vikas Marg, Laxmi Nagar, Delhi-110 092</p> <p>Phone: 91-11-220 17639/2204 4754</p> <p>Fax: 91-91 2201 5150</p> <p>E-mail: eqms@eqmsindia.org</p> |
| 4. | <p>Vexil Business Process Services Pvt. Ltd.</p> <p>10184, 3rd Floor (Landmark Inn) Main Arya Samaj Road, Karol Bagh, New Delhi – 110 005</p> <p>Mobile: 9350232711, 98102832201, 9350232714</p> <p>E-mail: info@vexilbps.com</p> <p>Website: www.vexilbps.com</p> |
| 5. | <p>SGS India Pvt. Ltd</p> <p>226, Udyog Vihar Phase-I GURGAON-122016</p> <p>E-mail: brahmpal.upadhyay@sgs.com</p> <p>Website: www.sgs.com, Mobile: 08588839832</p> |
| 6. | <p>American System Registrar</p> <p>657, 2nd Floor, Sector-15, Part-1, Gurgaon, HARYANA- 122001.</p> <p>Phone: 0124-4271365, Fax: 0124-4271366</p> |

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|---------------------------------|---|
| | <p>Mobile: 09811653069</p> <p>E-mail: info@ascertification.com, sacin@asrcertification.com</p> <p>website: www.ASRworldwide.com</p> |
| 7. | <p>Quality Austria Central Asia Pvt Ltd</p> <p>82, Okhla Industrial Area Phase-III</p> <p>New Delhi-110020</p> <p>Tel: 011-46465100, Fax: 46465101</p> <p>E-mail: marketing@qualityaustriaindia.com</p> <p>Web: www.qualityaustria.com</p> |
| 8. | <p>BSI India</p> <p>The Mira Corporate Suites (A-2)</p> <p>Plot 1&2, Ishwar Nagar,</p> <p>Mathura Road, New Delhi-110065</p> <p>www.bsigroup.co.in</p> |
| 9. | <p>Allied Boston Consultants India Pvt Ltd</p> <p>A-2/60, Second Floor, Shiv Arcade, Acharya Niketan,</p> <p>Mayur Vihar Phase-I</p> <p>Delhi-110091</p> <p>Tel: 011-22702467, Fax: 011-22753084</p> <p>E-mail: vishal.khosla@abcipl.co.in</p> <p>Website: www.abcipl.com</p> |
| 10. | <p>TUV SUD South Asia Pvt Ltd</p> <p>C-153/1, Phase-I, Okhla Industrial area</p> <p>New Delhi-110020</p> <p>Tel: 011-30889797, Fax 30889595</p> <p>Website: www.tuv-sud.in</p> |
| SHE Trainings and Audits | |
| 1. | <p>Premier Safety & Health Solutions</p> <p>A-703, Ramkrishan Apts</p> <p>Plot-12, Sector-23</p> <p>Dwarka, New Delhi- 110075</p> <p>Tel: 28050074, Mob: 935088832, 981007254</p> |

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| | E-mail: contact@pshs.in , Website: www.pshs.in |
| SHE Trainings for Workers and Staff | |
| 1 | Construction Industry Development Council 801, 8th Floor, Hemkunt Chambers, 89, Nehru Place, New Delhi – 110 019 E-mail: cidc@cidc.in , cidcindia@yahoo.com Website: www.cidc.in |
| 2. | Delhi Productivity Council 1E/10, Swami Ramtirth Nagar New Delhi – 110 055, Tel.: 23522835 |
| 3. | Indian Building Congress Sector-VI, RK Puram, New Delhi-110022 Tel: 26169531, 26170197, Fax: 26196391 Website: www.ibc.org.in |
| 4. | Manipal City & Guilds Skills Training Pvt Ltd 256, Ground Floor, Okhla Industrial Estate Phase-3 New Delhi-110020, Tel: 9313927236 E-mail: rajesh.ratnam@indiaskills.com Website: www.indiaskills.com |
| 5. | Labournet Services India Pvt Ltd. A-1/55, Second Floor, Safdarjung Enclave, NEW DELHI-110029. Mobile: 9899151343 E-mail: munish@labournet.in Website: www.labournet.in |
| 6. | Renyge Technologies H-13, Second Floor, Kirti Nagar New Delhi-110015 Tel: 9811653069, 9811029466 |
| 7. | SHELP Consultants |

| | | |
|--|---|--|
| | 241, L-Extn, Mohan Garden, Uttam Nagar, New Delhi-110059 Mob: 9717273812, 9958331125 E-mail: shelpconsultants@yahoo.in | |
| 8. | Dolphin Fire EHS Consultants (P) Ltd 10, Shanti Vihar, Near Karkardooma Court New Delhi-110092. Tel: 011- 42147100, Fax: 22374819 Mob: 9310464046 E-mail: sachin@dolphinehs.com Web: www.dolphinehs.com | |
| 9. | Centre for Occupational and Environmental Health Ground Floor, BL Thareja Block Maulana Azad Medical College, New Delhi-110002 Ph:011-23233519,23221515, Telefax: 011-23214731 E-mail: ivpss_coeh@yahoo.co.in , joshitk45@yahoo.co.in | |
| 10. | Arbrit Safety & Engineering Solutions Private Ltd 510, 5th Floor, Laxmi Deep Building, Distt Centre Laxmi Nagar, Delhi-110092 Ph: 011-45636440, Mobile: 9873916087 Website: www.arbritonline.com Kerala (Corporate) Office: Arbrit Safety & Engineering Solutions Private Ltd Building No. 34/1810D, 3rd Floor Poomkudy House, Edappally Cochin-682024, Kerala Ph: 0484-2753060, Mobile: 09447063682 | |
| Agencies for Specialised SHE Training | | |
| 1. | HSRTC, PENTASAFE, 201, 2nd Floor, Town Centre, Andheri Kurla Road, Marol, Andheri (East), Mumbai-400 059 Phone: 022-2850 2210/20/50 | <ul style="list-style-type: none">• Training for Height Safety |

| | | |
|----|---|---|
| | <p>Fax: 022-2850 2260</p> <p>E-mail: training@penta-safe.com</p> <p>Website: www.penta-safe.com</p> | |
| 2. | <p>St. Johns' Ambulance</p> <p>Red Cross Road</p> <p>New Delhi – 110 001</p> | <ul style="list-style-type: none"> First-aid Training |
| 3. | <p>Institute of Driving Training & Research, Wazirabad Road, Adjoining Loni Road flyover. New Delhi – 110 094</p> <p>Phone: 011 – 22813474, 22815833</p> <p>Fax: 011 - 22811131</p> <p>&</p> <p>Institute of Driving Training & Research, Sarai Kale Khan ISBT</p> <p>New Delhi</p> | <ul style="list-style-type: none"> Defensive Driving Training for Vehicle Drivers. |
| 4. | <p>Institute of Road Traffic Education</p> <p>College of Traffic Management</p> <p>Aravali Hills, Surajkund Badhkal Road, Sector-43, Faridabad, Haryana-121001</p> <p>Regd. Office: B-128-130 DDA Sheds, Okhla Industrial Area Phase-I, NEW DELHI-110020.</p> <p>Tel: 011-26816868, Fax: 26817965</p> <p>Mob: 9350232056, Web: www.irte.com</p> <p>E-mail: training@irte.com</p> | <ul style="list-style-type: none"> Defensive Driving Training for Vehicle Drivers. |
| 5. | <p>L & T Eutectic</p> <p>32, Sivaji Marg</p> <p>New Delhi – 110 015</p> <p>Phone: 011 - 51419538, 51419539</p> <p>Fax: 011 - 51419600</p> <p>Website: www.Inteutecticwelding.com</p> | <ul style="list-style-type: none"> Training for Gas Cutting/ Welding Safety |
| 6. | <p>Modicare Foundation</p> | <ul style="list-style-type: none"> HIV / AIDS awareness |

| | | |
|----|--|--|
| | <p>4 Community Centre, New Friends Colony, New Delhi – 110 065</p> <p>Phone: 011 – 5167235059</p> <p>Fax: 011 – 26915469</p> <p>E-mail: nivedita@modi.com nivedita@gmavil.com</p> <p>Website: www.modicarefoundation.org</p> | |
| 7. | <p>Manitowoc India Pvt Ltd 2nd Floor, Plot No 117, Sector-44 Gurgaon-122001. HARYANA Website: www.manitowoc.com</p> | <ul style="list-style-type: none"> Crane and Lifting Operations |
| 8. | <p>Quench Technologies 1/168/1-A, Bappa Rawal Market, Lampur Road Narela, DELHI-110040 Mobile: 09212415534 E-mail: quenchtech@gmail.com</p> | <ul style="list-style-type: none"> Fire Fighting Training |
| 9. | <p>Youngman India Private Ltd Youngman Group UK D2, Udhog Kendra Ext-1, Near Noida Phase-II Ecotech III, Greater Noida Mob: 9810282787 E-mail: vjain@youngmangroup.com Web: www.youngmangroup.com</p> | <ul style="list-style-type: none"> Training for Height Safety |

Attachment - II

APPENDIX NO - 14

Experts / Agencies for SHE Services

| Sr.No. | Organization | Services |
|---------------|---|---|
| 1. | HSRTC, PENTASAFE, 201,2 nd Floor, Town Centre, AndheriKurla Road, Marol, Andheri (East), Mumbai-400 059 Phone: 022-2850 2260 E-mail: trainIng@penta-safe.com Website: www.genta-safe.com | Training for Height safety |
| 2. | St. Johns' Ambulance Red Cross Road New Delhi- 110 001 | First-aid Training |
| 3. | Institute of Driving Training & Research, Wazirabad Road, Adjoining Loni Road flyover. New Delhi- 110 094 Phone:011-22813474,22815833 Fax: 011 -22811131 & Institute of Driving Training & Research, Sarai Kale Khan ISBT New Delhi | Defensive Driving Training for vehicle Drivers. |
| 4. | Institute of Road Traffic Education College of Traffic Management Aravali Hills, SurajkundBadhkal Road, Sector-43, Faridabad, Haryana-121001 Regd. Office: B-128-130 DDA Sheds, Okhla Industrial Area Phase-I, | Defensive Driving Training for vehicle Drivers. |

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| | NEW DELHI-110020. Tel: 011-26816868, Fax: 26817965 Mob: 9350232056, Web: www.irte.com E-mail: training@irte.com | |
| 5. | L & T Eutectic 32, Sivaji Marg New Delhi- 110 015 Phone:011-51419538,51419539 Fax: 011 - 51419600 Website: www.Inteutecticwelding.com | Training for Gas Cutting/Welding Safety |
| 6. | Medicare Foundation 4 Community Centre, New Friends Colony, New Delhi - 110 065 Phone:011-5167235059 Fax: 011-26915469 E-Mail: nivedita@modi.com nivedita@gmail.com Website: www.modicarefoundation.org | HIV /AIDS awareness |
| | Manitowoc India Pvt Ltd 2nd Floor, Plot No 117, Sector-44 Gurgaon-122001. HARYANA Website: | Crane and Lifting Operations |
| 8. | Quench Technologies 1/168/1-A,Bappa Rawal Market, Lampur Road Narela, DELHI-110040 Mobile: 09212415534 | Fire Fighting Training |

| | | |
|-----|--|---|
| 9. | Youngman India Private Ltd Youngman Group UK D2, Udhog Kendra Ext-1, Near Naida Phase-II Ecotech III, Greater Naida Mob: 9810282787 | Training for Height Safety |
| 10. | Bureau Veritas India Pvt.Ltd. s" Floor, Marwah Center, Opp. Hansalndl. Estate, KrishnalalMarwah Marg, Off. Saki Vihar Road, Andheri (E), Mumbai 400072. Phone : 022 6695 6300 | SHE Management / Technical Training |
| 11. | BSI Management Systems, The Mira Corporate Suites (A-2), Plot no.1 & 2, Ishwar Nagar, Mathura Road, New Delhi 110 020. Phone : 011 2692 9000 | SHE Management / Technical Training |
| 12. | Central Labour Institue, Post Box no. 17851, N.S. Monkikar Marg, Sion, Mumbai 400022. Phone : 022 4092203 | SHE Management / Technical Training |
| 13. | Construction Industry Development Council, 801, 8th floor, Hemkunt Chambers, 89, Nehru Place, | SHE Management/ Technical Training |
| | Det Norske Veritas AS, Poonam Chambers, A-Wing, 201-D, 2nd floor, Dr. Annie Besant Road, Worli, Mumbai 400018. Phone : 022 66606640 Fax : 022 66606642 | SHE Management/ Technical Training |
| 15. | DuPont Safety Resources, E.I. DuPont India Pvt.Ltd., ArihantNitco Park, 6th floor, 90, Dr. RadhakrishnanSalai, | SHE Management Training |

| | | |
|-----|---|---|
| | <p>Mylapore, Chennai 600004.</p> <p>Phone: 044 28472800 / 28473752</p> <p>Fax : 044 28473800</p> <p>Mobile : 9381201040</p> <p>Website : in.dupont.com</p> | |
| 16. | <p>EQMS India Pvt.Ltd.,</p> <p>E-49, 1st floor, Dazzle House, Jawahar Park, Vikas Marg, Laxmi Nagar, Delhi 110092.</p> <p>Phone:01122017639/22044754</p> <p>Fax : 011 2201 5150</p> <p>e-mail: eqms@eqmsindia.org</p> <p>website: www.eqmsindia.com</p> | <p>ISO certification.</p> <p>SHE Management Technical Training</p> |
| 17. | <p>Green Cross Consultants,</p> <p>59, ih cross, 1st floor, Jai Bharath Nagar, Bangalore 560 033.</p> <p>Phone : 080 25496782</p> <p>Email : etgrangan@yahoo.com</p> | <p>SHE Management Technical Training</p> |
| 18. | <p>Pentasaft Academy,</p> <p>31, 2"d floor, Om Heerapanna Mall, Behind Oshiwara Police Station, Oshiwara, Andheri (W), Mumbai 400102.</p> <p>Phone : 022 40053560 /61 /62</p> <p>Fax : 022 4005 3563</p> <p>Email : training@penta-safe.com</p> <p>Website : www.penta-safe.com</p> | <p>SHE Management Technical Training</p> <p>SHE Practical Field Training for Height Safety</p> |
| 19. | <p>International Engineering Company, K-10, South Extension, IPart-2,</p> <p>New Delhi 110049.</p> <p>Phone:01126254761/26258130</p> <p>Mobile : 9312260130</p> | <p>Crane & Lifting appliances and Gears certification.</p> <p>SHE Practical Field Training for Crane Safety</p> |

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|-----|---|---|
| | Email : ashok@intenco.net | |
| 20. | MFA Crucial Moments Healthcare Pvt.Ltd., 42, Okhla Indl. Estate, Phase-II, New Delhi 110020. Phone:01155624000 Fax : 011 55624010 Email: contact@crucialmoments.net | First-aid Training |
| 21. | National Productivity Council, Novalty Chambers (Novalty Cinema Bldg), 1st floor, Grant Road (E), Mumbai 40007. Phone : 23071322 / 23002924 Fax : 2307 3323 | SHE Management / Technical Training |
| 22. | National Safety Council, HQ and Institute Bldg., 98A, Sector 15, Indl. Area, CBD Belapur, Navi Mumbai 400614. Phone 27579924. | SHE Management / Technical Training |
| 23. | NICMAR(National Institute of Construction Management & Research), 910, 8th floor, Hemkunt Chambers, 89, Nehru Place, New Delhi 110019. Phone : 011 51618415 / 51618417 / 51618418. Fax : 51618416. | SHE Management / Technical Training |
| 24. | Quality Growth Services Pvt.Ltd., h-13, Kirti Nagar, New Delhi 110015. Fax : 011 25431737 / 25438598 / 25918332 Email : ggs@ggspl.com Website : www.ggspl.com | ISO certification |
| 25. | Safety Engineers Association (India), Flat no.12, block no.3, Mansarovar Apt., | SHE Management / Technical Training |

| | | |
|-----|---|---|
| | 11/A, Arcot Road, Porur, Chennai 600116. Phone : 044 2476 8697 Email : seaindia@~ahoo.com | |
| 26. | SGS India Pvt.Ltd., SGS House, 4-B, A.S. Marg, Vikhroli (W), Mumbai 400083. Phone : 2579 8421 to 28 Fax : 25798431/32 Email: ritesh.sharma@sgs.com | SHE Management / Technical Training |
| 27. | SHE Management Consultancy & Support Services, 145-A, Pocket-VI, (DDA Flats), KondliGharoli, MayurVihar - II, Delhi 110096. Fax : 011 22625015. Mobile : 9811153873 Email : r k p@vsnl.net | SHE Management / Technical Training |
| 28. | TUV SUDSouth Asia, Mughal Houe, Off. Saki Vihar Road, Saki Naka, Andheri (E), Mumbai 400072. Phone : 022 3082 9797 Fax : 022 3082 9595 Email : anjan.de@tuv.sud.in | SHE Management / Technical Training |
| 29. | Western India Automobile Association, LaljiNaranji Memorial Bldg., 76, Veer Nariman Road, Churchgate, Mumbai 400020. Phone : 22041085 / 22880407 / 22047032 After off. Hrs.: 22041085 Fax : 22041382 Email : info@wiaaindia.com | SHE Practical Field Training on Defensive Driving |
| 30. | Welding ResearchInstitute, | SHE Practical Field Training for welding safety. |

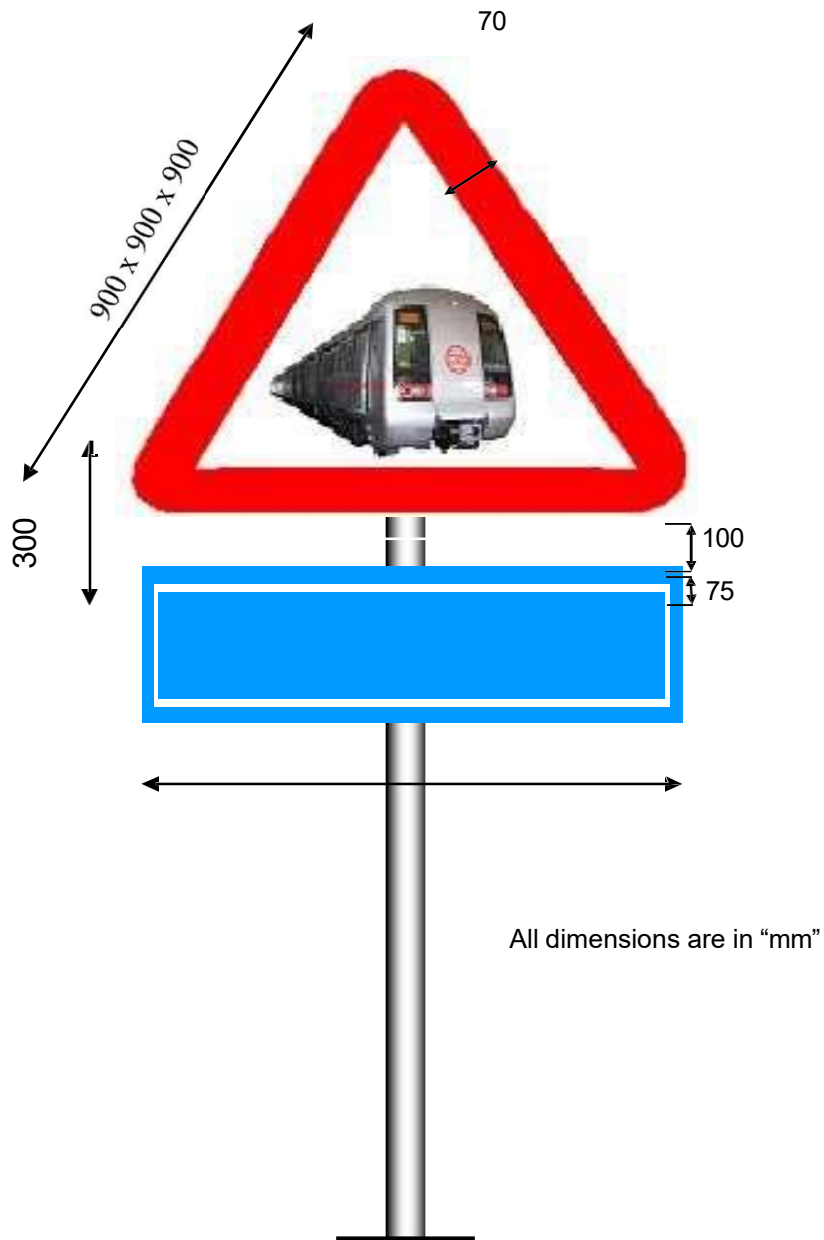
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|--|--|--|
| | <p>Bharat heavy Electricals Ltd. (BHEL), Trichirappalli, Tamil Nadu 620 014. Phone : 0431 2520770</p> <p>Fax : 04321 2520770</p> <p>Email: wri@bheltrv.co.in</p> | |
|--|--|--|

APPENDIX NO - 15

MINIMUM LIGHTING REQUIREMENTS

| S.N. | Facility or Function | Luminance – lx (lm/ft ²) |
|------|---|--|
| 1. | Administrative areas (offices, drafting and meeting rooms, etc.) | 540 (50) |
| 2. | Construction areas <ul style="list-style-type: none"> - general indoor - general outdoor - tunnel and general underground work areas (minimum 110 lux required at tunnel and shaft heading during drilling, mucking and scaling) | 55 (5) 33 (3) 55 (5) |
| 3. | Access ways <ul style="list-style-type: none"> - exit ways, walkways, ladders, stairs | 110 (10) |
| 4. | Maintenance / Operating areas / shops <ul style="list-style-type: none"> - vehicle maintenance shop - carpentry shop - outdoors field maintenance area - refueling area, outdoors - shops, fine details work - shops, medium detail work - welding shop | 325 (30) 110 (10) 55 (5) 55 (5) 540 (50) 325 (30) 325 (30) |
| 5. | Mechanical/electrical equipment rooms | 110 (10) |
| 6. | Hoists, Elevators, freight and passenger | 215 (20) |
| 7. | Warehouses and storage rooms/area <ul style="list-style-type: none"> - indoor stockroom, active/bulk storage - indoor rack storage - outdoor storage | 110 (10) 270 (25) 33 (3) |
| 8. | Health Centers and First aid stations and infirmaries | 325 (30) |
| 9. | Toilets, wash and dressing rooms | 110 (10) |
| 10. | Work areas – general (not listed above) | 325 (30) |
| 11. | Parking areas | 33 (3) |
| 12. | Visitor areas | 215 (20) |
| 13. | Laboratories | 540 (50) |

APPENDIX NO - 16



APPENDIX No - 17

Maximum Permissible Age of Construction Plant and Machinery

| S.No | Construction Plant & Machinery | Maximum permissible age |
|------|--|-------------------------|
| 1 | Mobile Crawler Cranes | 15 years |
| 2 | Gantries | 15 years |
| 3 | Mobile Tyre Mounted Hydraulic Cranes | 10 years |
| 4 | Launching Girders | 10 years |
| 5 | Piling Rigs | 5 years |
| 6 | All other plant and machinery like Transit mixture, Trailers, Dumpers, Boom Placer Excavators, Pressure vessel including Air Compressors, Diesel Generator Sets, and locomotive etc. | 10 years. |

FORM No.: SF/001

| FORMATION OF SITE SHE COMMITTEE | |
|---------------------------------|--|
| Contract No | |
| Contractor Name | |
| Contract Title | |

| <u>CIRCULAR</u> | |
|--|--|
| <p><u>Committee</u></p> <p>The following SHE Committee is constituted with immediate effect:</p> <p>Chairman:</p> <p>Members:</p> <ol style="list-style-type: none"> 1) 2) 3) 4) 5) <p>Secretary:</p> | |
| <p><u>Periodicity</u></p> <p>The committee will meet at least once in a month on the day (specify date)</p> | |
| <p><u>Agenda</u></p> <p>Secretary will circulate agenda of the meeting at least two days in advance of the schedule date of the meeting.</p> | |
| <p><u>Circulation</u></p> <p>Gist of the meeting will be minuted in the standard format and circulated to the following under the signature of the secretary</p> <ol style="list-style-type: none"> 1. Chairman 2. Members 3. MMRDA Representatives 4. Engineers Representatives 5. Others concerned | |
| <p>Date: _____ Signed By: ----- CHAIRMAN</p> | |

Prepared by:

Location:

Date:

MINUTES OF SHE MEETING

| Item No. | Description of Discussion | Action By | Target | Remarks |
|----------|---|-----------|--------|---------|
| 1 | Complaints received from Clients and corrective and preventive action | | | |
| 2 | Review of MOM of previous meeting | | | |
| 3 | NCR's / Observation from third party | | | |
| 4 | First - Aid cases / Reportable accident cases | | | |
| 5 | Future jobs and specific requirement | | | |
| 6 | Status of implementation of Safety plan | | | |
| 7 | Sub-contractor performance | | | |
| 8 | Analysis of first-aid cases | | | |
| 9 | Need for any specific system / training / PPE's / resources | | | |
| 10 | Observation of SHE committee during last walk down | | | |

Next SHE Meeting is scheduled on:

| | |
|--------------|--|
| Date: | Chief SHE Manager (Signature & Name) |
| Date: | Project Manager (Signature & Name) |