

**MILITARY ENGINEERING SERVICES**  
**HQ 137 WKS ENGRS**

**NAME OF WORK: PROVISION OF SINGLE OFFERS ACCN AT LEIMAKHONG MIL STN.**

Ser No	Description	Page No
1	2	3
1.	Contents	01
2.	Lump Sum Tender and Contract for Works required in IAFW-2159 (Revised -1955)	02 to 32
3.	General Conditions of Contract IAFW-2249 (1989 Print)	33 to 66
4.	Errata/Amendments to General Conditions of Contract, IAFW-2249 (1989 Print)	67 to 83
5.	Schedule of Minimum wages	84
6.	Special Condition	85 to 92
7.	Particular Specification.	93to 172
8.	Notice of tender IAFW-2162 including Appx ‘A’ to notice of tender and amendments thereto.	173 to 181
9.	Forwarding letter including instructions to tenderer	182 to 185
10.	Errata/Amendments to tender documents	
11.	All Uploaded documents	
12.	Relevant correspondence	
13.	Acceptance letter	
14.	Drawings = _____ Sheets	

Total = \_\_\_\_\_ Pages  
\_\_\_\_\_

\_\_\_\_\_  
SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

FOR ACCEPTING OFFICER

**IN LIEU OF IAFW-2159**  
**(To be used in conjunction with General  
Condition of Contracts IAFW-2249)**

**MILITARY ENGINEERING SERVICES**

**Mukhyalaya 137 NirmanAbhiyanta  
Headquarters 137 Works Engineers  
PIN – 914 137  
C/O 99 APO**

8757/129/E8

29 Oct 2024

**TENDER AND LUMP SUM CONTRACT FOR WORKS BY MEASUREMENTREQUIRED IN  
THE EXECUTION OF PROVISION OF SINGLE OFFRS ACCN AT LEIMAKHONG MIL STN.**

1. Shri/ M /S\_\_\_\_\_

of \_\_\_\_\_ is/are hereby authorised to tender for the above mentioned work.

2. The Complete quoted and signed tender is to be uploaded on MES website [www.defproc.gov.in](http://www.defproc.gov.in) by 1800 hrs on \_\_\_\_\_ Nov **2024**.

3. All correspondence concerning to this tender shall be addressed as indicated on the top of this letter quoting the reference as given.

THE PRESIDENT OF INDIA DOES NOT BIND HIMSELF TO ACCEPT THE LOWEST  
OR ANY TENDER.

Signature of the Officer

Issuing the documents.

Appointment :

Dated : 29 Oct 2024

**SCHEDULE 'A' NOTES**

NAME OF WORK :- PROVISION OF SINGLE OFFRS ACCN AT LEIMAKHONG MIL STN.

**A. NOTES:-**

**1.0 (GENERAL) – APPLICABLE TO ALL PARTS**

This schedule is divided into 11 (Eleven) parts as detailed below:-

(a)	PART- I	BUILDING/STRUCTURE WORKS (Pre-priced)
(b)	PART- II	SITE CLEARANCE & DEVELOPMENT(Pre-priced)
(c)	PART- III	ROADS/ PATH(Pre-priced)
(d)	PART- IV	EXTERNAL WATER SUPPLY(Pre-priced)
(e)	PART- V	EXTERNAL ELECTRIC SUPPLY(Pre-priced)
(f)	PART- VI	SEWAGE DISPOSAL(Pre-priced)
(g)	PART- VII	AREA DRAINAGE(Pre-priced)
(h)	PART- VIII	RETAINING WALL(Pre-priced)
(i)	PART- IX	INTERNAL WATER SUPPLY(Pre-priced)
(j)	PART- X	INTERNAL ELECTRIC SUPPLY(Pre-priced)
(k)	PART- XI	MISCELLANEOUS ITEMS (To be quoted by bidder in BoQ)

- 2.0 The quantities of various items of Schedule 'A' except Part-I has been indicated are provisional. However these shall not be varied beyond the limits laid down in Condition 7 of IAFW-2249 General Condition of contracts and the tenderer / Bidder shall enter rate in figure under Column 6 and quoted amount for each item shall be deemed to include for the full and entire completion of item of works.
- 3.0 The description of building works and services given in various parts of Schedule 'A' are in brief. These are deemed to be amplified and read in conjunction with special conditions, particular specifications, drawing (including notes thereon), specifications for materials and workmanship given in MES Schedule Part-I,2009 and preambles of items and special condition given in relevant section of MES Schedule Part-II, 2020.
- 4.0 The entire work under this contract shall be completed within **12 (Twelve) months** from the date of commencement of work as mentioned in Work order No-01. Site for execution of work will be available on the date of handing over site as mentioned in Work Order No-1. In case it is not possible for the department, to make the entire site available on the date of handing over of site, the contractor shall have to arrange his programme accordingly. No claim whatsoever for not giving the entire site on the date of handing over of site and for giving site gradually will be tenable. However suitable extension of time will be granted under condition 11 of IAFW-2249 (General Conditions of the contract) in case of delay in completion of work due to gradual handing over of site.
- 5.0 The 'Unit Rates' inserted by MES under column 6 of Schedule 'A' Part II to X have been worked out at par MES Standard Schedule of Rates 2020 including amendments/errata as indicated in tender page here-in-after or at the rates analogous thereto. The accuracy of the 'Unit Rates' is however not guaranteed. The tenderer's attention is invited to Condition 6-A sub para (B) of IAFW-2249 (General Conditions of Contracts) and the lump sum price shall be worked out by him independently of the prices or rates inserted by MES in the tender and irrespective of any errors or inaccuracies therein.
- 6.0 SCHEDULE 'A' PART-I. The tenderer shall calculate his own rates and insert the same in the BOQ against each item of Schedule 'A' Part-I. The unit rate shall be based on the description of items in Schedule –'A', drawings and specifications enclosed herewith.
- 7.0 In case details in respect of items shown on main drawings are not given in the drawings referred to in the main drawings, then the same shall be followed from any other drawings included in the list of drawings. Any drawings mentioned in the contract/contract drawings but inadvertently not included in the list of drawings shall also be deemed to form part of the contract.
- 8.0 Probable distribution of various items of internal/external services are indicated on drawings. These are tentative and may be varied as per site requirement, where necessary at the discretion of the Engineer-in-Charge. The effect of such changes/variations in quantities due to realignment or re-siting shall deemed to be included in the rates quoted and no price adjustment on this account shall be allowed.
- 9.0 For structural details, structural drawings only to be referred. If there is any discrepancy between Architectural drawings and structural drawings with regard to structural details, detail shown on structural drawings shall prevail and with regard to Architectural details, detail shown inarchitectural drgs shall prevail. The decision of Accepting Officer as to what constituted structural or Architectural details shall be final, conclusive and binding.

Contd...

**SCHEDULE 'A' NOTES (Contd..)**

- 10.0 The tenderer are advised to visit the work site by taking prior appointment with GE869EWS before submission of tender. The tenderer shall have no claim what-so-ever on this account at a later stage whether he has actually inspected the work site or not.
- 11.0 The lump sum quoted by the tenderer against each part of Sch 'A' will be deemed to allow for all minor extras and constructional details, which are not specifically shown on drawings and specified in particular specifications but are essential for execution of work services in workman like manner and sound construction. Some of the minor details/items which are deemed essential for execution and entire completion of work are detailed below for guidance:-
- (i) Reinforcement for any RCC member not indicated in the drawings but required due to codal requirement.
  - (ii) Dwarf wall in situations like verandah, passage, ramp etc not indicated in drawings.
  - (iii) Lintels over doors, windows, openings and electric meter box not shown in drawings.

In all the above and other similar cases the details indicated elsewhere in the drawings which are similar or near similar to the missed out items of work shall be followed. In the absence of any other similar or near similar details, minimum essential requirement for completion of the work from structural and utility point of view shall be deemed to be included in the lump sum quoted. In case of difference of opinion as to whether or not certain items of work constitute minor extras and constructional details, the decision of the Accepting Officer in this regard shall be final, conclusive and binding.

- 12.0 Cost of testing including transportation of materials or equipments or items, provision of all facilities for testing in accordance with specifications and/or IS shall be borne by the contractor unless otherwise mentioned.
- 13.0 All reinforcement shall be of TMT bars (except MS round bars) irrespective of whatever shown on drawings.

**14.0 TAXES, DUTIES & LEVIES, ETC. (REFER SPECIAL CONDITION FOR REIMBURSEMENT / REFUND ON VARIATION IN TAXES DIRECTLY RELATED TO CONTRACT VALUE) :**

- 14.1 The rate quoted by the tenderer shall be inclusive of all types of taxes, levies including GST, labour welfare tax etc as prevailing on the date of submission of tender.

**15.0 SCHEDULE 'A' PART-I.**

- 15.1 The lump sum quoted against all items of Schedule 'A' Part-I shall be deemed to include for all items of works complete as specified in Particular Specifications and shown on drawings, notes thereon for completion of work and all minor details though not specifically shown on drawings or specified in particular specification except works covered under Schedule 'A' Part-II to Part-XI or unless specifically stated elsewhere in the tender documents.

Cutting and forming chases in masonry/concrete work etc. including cutting and or leaving holes/recesses, sinking etc. where required and as directed by the Engineer-in-charge shall be done as far as possible while the work is in progress. The cost of materials and labour for cutting and/or forming chases, cutting or leaving holes/recesses, sinking and making good in cement mortar (1:3) for filling up to 20mm and in PCC (1:2:4) type B-1 concrete for filling more than 20mm shall deemed to be included in the lump sum quoted by the contractor. In addition cutting or forming chases, cutting or leaving holes/recesses, sinking and making good in cement mortar 1:3/PCC 1:2:4 type B-1 in connection with the work required in plumbing, internal water supply, internal electrification etc. shall deemed to be included in the unit rates of respective building works in Sch 'A' part-I. However no price adjustment shall be made for any variation in the items/quantities of chases/holes/recesses etc. consequent upon changes in quantities of plumbing, internal water supply, internal electrification works etc.

**SCHEDULE 'A' NOTES (Contd..)**

- 15.2** The Structure under this contract have been designed for SBC of soil as indicated in structural drawings. Variation in SBC of soil if found at site and required redesigning of the foundation, the same shall be regularized through proper deviation order.
- 15.3 Lump Sum** Amount Quoted by the contractor for building/works under Schedule 'A' Part-I shall be deemed to include for the following:-
- 15.3.1 EXCAVATION AND EARTHWORK:-**
- 15.3.1.1** Surface dressing and leveling of the premises around 3.00 METRE perimeter of the building from external wall.
- 15.3.1.2** The existing Areas/ground where the Buildings / Structures covered in SCHEDULE 'A' PART-I are to be provided, are assumed not having much undulations. In case large undulations are existing at site and site clearance/development works are required to achieve the modified ground level, the payment for such site clearance/development works shall be paid separately. At the initial stage( without disturb existing ground levels) , the levels of the existing ground shall be recorded as per methods as specified in relevant clause in particular specification and final proposed modified ground levels shall be approved by GE under intimation to AO.
- 15.3.2 ANTI-TERMITE TREATMENT**
- 15.3.2.1** Pre-construction anti-termite treatment to the building listed at Serial No. 01 of Schedule 'A' Part-I.
- 15.3.2.2** Pre-construction Anti-Termite Treatment shall be carried out as per IS, to the Building of SCHEDULE 'A' PART-I as mentioned as above and its Cost shall be deemed to have been included in the Cost of Building in SCHEDULE 'A' PART-I.
- 15.3.2.3** Irrespective of whatever Shown/Specified in Tender document the Contractor has to give the Guarantee for for Anti-Termite Treatment for TEN YEARS.
- 15.3.3** Damp proof Course (DPC) as shown in drawings and specified.
- 15.3.4** Seismic Strengthening measures as specified.
- 15.3.5** The foundation depth wherever marked on drawings shall be taken as depth from natural ground level and in no case any foundation shall be laid on filled earth.
- 15.3.6** Lean concrete and sand filling below foundation.
- 15.3.7** Water proofing roof treatment and sunken floor treatment to the building listed at Serial No. 01 of Schedule 'A' Part-I. Irrespective of whatever Shown/Specified in Tender document the Contractor has to give the Guarantee for Water Proofing Treatment over RCC Roof Slabs & sunken floor treatment for TEN YEARS.
- 15.3.8** PCC Plinth Protection with PCC Surface Drain as indicated/shown in Drawings or specified in tender document.
- 15.3.9** RCC lintels band shall be provided as per mentioned structural drawing.
- 15.3.10** RCC lintels beam/continuous lintel beam shall be provided over all doors, windows or any openings if required as per site condition and as well as structural purpose.
- 15.3.11** Masonry work under external plinth beam shall be provided as mentioned main structural drawing/ CESZ/STD/26
- 15.3.12** Provision of three track sliding aluminium windows with MS grills, aluminium ventilators and pressed steel door frame with wooden paneled shutter as per size mentioned in the drawings and complete all as specified in Particular Specification.
- 15.3.13** Builders hardware for doors/windows etc. wherever not indicated on drawings but essential for functional requirement shall be provided and deemed to be included in quoted rate.
- 15.3.14** Stair Cases and Railings, etc. as indicated/shown in Drawings.

Contd...

**SCHEDULE 'A' NOTES (Contd..)**

- 15.3.15** Steps, ramp, platform etc as indicated in drawings.
- 15.3.16** Provn of 04 Nos. PVC Rotational moulded water storage tank triple layered of 500 Liter capacity over 75 mm thick cement concrete 1:2:4 type B1 (using 20 mm graded stone aggregate) platform over roof slab for each block of 04 Maj Accn.
- 15.3.17** Provision for hanging arrangement for ceiling fan and fixing arrangement for exhaust fan, AC, etc. (if shown on Drawings) shall be deemed to be included against SCHEDULE 'A' PART-I.
- 15.3.18** Wherever indicated in drawings or not Plinth beam shall be place over 100 mm thick PCC 1:4:8 type D2 with a projection of 75 mm thick at both the side from side of plinth beam.
- 15.3.19** Wash hand basin, Flushing Cistern (dual flushing type), Water Closet, Urinal, Soap dish, Mirror, Towel rail Readymade PVC Connecting Pipes to Wash Hand Basin, Flushing Cistern, etc., readymade PVC Connecting Pipes shall be of 15mm Outer Diameter of Low Density Coloured Polythene Pipe, 450mm long conforming to IS-3076 with and including Brass Unions with Nuts on Both Sides complete.
- 15.3.20** BLANK
- 15.3.21** RCC shall be design mix M-25 as shown on drawings.
- 15.3.22** Form work for all RCC work shall be or steel plate and the rate of which shall deemed to be included in the unit rate of the item.
- 15.3.23** Nahani trap with stainless steel grating, gully trap with grating, soil, waste pipes and vent pipe upto 1 m above roof level with cowl, HDPE drain pipe upto and including first manhole and gully trap where bath/WC/toilet are occurring. The average distance of Gully Trap if not shown on Drawings shall be considered 1.50 METRE from the outer face of External Wall of the Buildings. The average distance of First Manhole if not shown on Drawings shall be considered as 3000mm from the Outer Face of External Wall of the Buildings.
- 15.3.24** The water proofing compound to be used in this work shall be liquid water proofing compound of approved make and shall be used @ 200 ml per 50 kg bag of cement or as per manufacturer instructions whichever is more. The water proofing compound shall be mixed in water used for concrete/mortar.
- 15.3.25** Spouts wherever shown in the drawings will be protruding at least 600mm from the face of external wall.
- 15.3.26** Finishes will be as per schedule of finishes and wherever missing, the same shall be provided with similar type of finishes as provided for other rooms in the same building with complete all as specified in particular specifications.
- 15.3.27** Wherever door/window/ventilator is marked but type of door/window/ventilator is not shown in drawings, the same shall be provided with similar type of door/window/ventilator as provided for other rooms in the same building with complete all as specified in particular specifications and shown on TD drawings, except toilets where PVC doors and frames shall be provided if nothing is marked on drawings.
- 15.3.28** In addition to list of drawings attached with tender documents, if any other drawing(s) are referred to in drawings or in the tender documents, but not listed in the list of drawings, these drawing shall also form part of the tender documents. The contractor shall be deemed to have taken the details etc, shown in these missing drawing into consideration before quoting the lump sum amount, nothing extra shall be paid on this account.
- 15.3.29** In case where type, size and reinforcement details of footing, pile, pile cap, beam, continuous lintel beam/chajja, slab, columns, fins, truss & purlin, etc are not indicate on structural drawing these shall be provided as directed by accepting officer as per details of similar footing, pile, pile cap, beam, continuous lintel beam/chajja, slab, columns, truss & purlin etc and cost of same and shall be deemed to be included in the lump sum. The decision of the accepting officer as to the similar of footing, pile, pile cap, beam, continuous lintel beam/chajja, slab, columns, truss & purlin etc shall be final binding.
- 15.4 SBC (SAFE BEARING CAPACITY) :-**The SBC based on which foundation has been designed has been indicated in the structural drawings. While quoting the offer, the tenderer should consider the SBC given in the main structural drawings. However, in case GE observes soil of unusual nature at site during the execution, which may result in lower SBC. GE shall get tested the SBC of soil and if actual SBC found at site is at variance with reference to SBC mentioned in main drawings, the case shall be referred to Accepting Officers for approval and the change shall be regularized through deviation order (DO) and the cost for such testing of SBC of soil shall be borne by the department.

Contd...

**SCHEDULE 'A' NOTES (Contd..)****16.0 SCHEDULE 'A' PART-II TO PART- X**

16.1 All quantities are **PROVISIONAL**. Any variation in quantities if considered necessary due to site requirement /any other technical reasons as decided by the GE may be executed to the extent as specified in condition 7 of General Conditions of Contracts (IAFW-2249).

16.2 Unless otherwise specified the unit rate of each item of work inserted by MES or quoted by tenderer shall be deemed to include for "Materials and labours" or "Supplying and fixing" or "Supplying, laying, jointing and testing" etc complete unless otherwise specifically mentioned.

16.3 Earth work and site clearance for different Schedule 'A' Parts III to XI shall be measured and paid under respective items of Schedule 'A' Part-II unless otherwise specifically specified against various part of Schedule 'A'/BOQ.

**17.0 BLANK**

18.0 Special condition, condition in MES standard schedule Part-I and the preambles to the items given in MES Standard schedule of rates Part-II under respective trades shall be applicable. If any provision in the description of items of Schedule 'A' and particular specification is at variance with the provision laid down in the condition of MES Schedule and preambles to MES schedule item, the provision in description of items of Sch 'A' and provision in particular specification shall take precedence.

19.0 The contractor shall provide digital photographs taken at various stages as decided by GE during the progress of work and submit the same with RAR. Two hard copies (A4 size) and two soft copies (CD) of each digital photograph shall be submitted by contractor to GE" The unit rates against Sch 'A' Part I shall be deemed include the cost of above provision and nothing extra payable on this account. In the event of failure by contractor to submit the same within 30 days of issuance of completion certificate, an amount of **Rs.10,000/- (Rupees Ten thousand only)** will be recovered from the contractor.

20.0 The contractor shall submit for all structure, record drawings of the completed structure showing B/R & E/M services on A1 size polyester film and one original print alongwith a CD showing all changes shall be submitted by the contractor within 30 days of issue of completion certificate failing which **an amount @ 0.1% of contract amount** will be recovered towards it from the dues of the contractor.

**21.0 ANTIQUITIES AND USEFUL MATERIALS**

All findings of antiquities and useful materials of archaeological interest such as relics of antiquity, coins, fossils or other valuable articles shall become the property of the Government and accordingly shall be delivered to the Engineer-in-Charge without any extra cost.

22.0 Contractor shall provide structure plate in each building to be constructed in the above tender. Building Plate shall be provided at any suitable location at external wall surface of the respective building. 16-18 mm Thick machine cut mirror polished black granite of size 75 cm x 60 cm shall be provided over 20 mm thick cement mortar (1:3). The following information shall be engraved :-

- (a) Job No.
- (b) CA No and Year.
- (c) Name of work.
- (d) Name of Contractor.
- (e) Name of GE.
- (f) Name of Engineer-in-Charge.
- (g) Date of Commencement.
- (h) Details of completion phase wise.

**SCHEDULE 'A' NOTES (Contd..)**

- 23.0 The tenderer shall satisfy himself by visiting the site with prior appointment with GE/AGE(I) regarding working conditions, local conditions, nature of site/ground, climatic conditions, nature of work and means to access to site and other issues/circumstances which may effect the execution of work at a later date. No extra payment with regard to afore said reasons shall be admissible under any circumstances.
- 24.0 Retrieved materials (due to dismantling/demolition/ taking down etc) of serviceable nature shall be removed from site of work after deducting credit amount from RAR. Unserviceable retrieved materials and other debris shall be removed off from site to a distance exc. 50 mtr and not exc. 100 mtr and deposited as directed by Engineer-in-charge and the unit rate quoted for the dismantling/demolition/taking down etc shall be deemed to be inclusive for above provision.
- 25.0 All the Code of Practice, Standards and Specifications applicable shall be the latest editions with upto date correction slip etc.
- 26.0 Please note that No foreign exchange or import license facility will be arranged by the department for any material included in the subject tender.
- 27.0 The following abbreviation wherever occurs in tender documents shall have the meaning as indicated against each :-
- |     |                         |   |                                    |
|-----|-------------------------|---|------------------------------------|
| (a) | RM, M, m, Rm            | - | Running Metre                      |
| (b) | CM, cm                  | - | Cement mortar/Centimetre           |
| (c) | MM, mm                  | - | Millimetre                         |
| (d) | CUM, cum, cuM           | - | Cubic Metre                        |
| (e) | SQM, Sqm, sqm           | - | Square Metre                       |
| (f) | M/L, M & L              | - | Material & Labour                  |
| (g) | S/F, S&F                | - | Supplying and fixing               |
| (h) | C/O, CO                 | - | Carried over                       |
| (j) | B/F, BF                 | - | Brought forward                    |
| (k) | Kg                      | - | Kilogram                           |
| (l) | x Sqm/ X Sqm/10 Sqm     | - | 10 Square Metre                    |
| (m) | x RM/ X RM/ 10RM/ 10 Rm | - | Ten Running Metre                  |
| (n) | N.B.                    | - | Nominal Bore                       |
| (o) | Drg/Drsg/drg/drsg       | - | Drawing/Drawings/drawing/ drawings |
| (p) | Cu cm/CU CM             | - | Cubic Centimetre                   |
| (q) | PQC                     | - | Pavement quality concrete          |
| (r) | Pbw                     | - | Part by Weight                     |
| (s) | Qty/qty                 | - | Quantity                           |
| (t) | Ltr/ltr                 | - | Litre                              |
| (u) | Qtl                     | - | Quintal                            |
| (v) | AGE(I)                  | - | Asst Garrison Engineer(I)          |
- 28.0 **Security/ Restricted Area.** The contractor, his agents, work people etc shall adhere to this security instruction as laid down in the Contract Conditions strictly. No claim whatsoever for observance of restrictions imposed at site shall be admissible at any stage. Barricading (with steel sheets of height 4.5m) shall be provided at all work sites to prevent FOD Hazard as directed by the Engr –in-Charge
- 29.0 **PROJECT MANAGEMENT:** A Project Schedule will be jointly prepared by contractor and GE/AGE(I) using MS Project/Primavera within two weeks of acceptance of the contract and shall be kept on record of GE/AGE(I) for further reference.
- (i) The details in the Project Schedule Network will include:-
- (a) All activities in detail with assigned T&P labour and duration with facility to follow progress.
- (b) Material Procurement planning and utilization (quantity and time of availability) details to ensure actual availability prior to the commencement of the activity/task.
- (c) Plant deployment details (activity wise).
- (d) Activity Vs Labour employment details.



**SCHEDULE 'A' NOTES (Contd..)**

- (ii) The Project Schedule will be updated daily with all necessary details and the “work done report” will be signed by the contractor and included as part of the “work diary” by the JE and checked by the Engineer-in-Charge. A weekly review of the work progress will be done between the Engineer-in-Charge and the contractor to monitor the progress made during the week vis-à-vis total progress. The weekly report will also include forecast of resources to include plant, stores, labour, etc for the next week.
- (iii) A detailed monthly report will be prepared and submitted to the AGE(I) by the contractor and review done jointly to examine increasing resources to ensure completion within the laid down time period.
- (iv) All RAR's submitted by the contractor will be accompanied with the “weekly review of work progress report” as mentioned above for the intervening period between last RAR paid and the present RAR being prepared.

**30.0 EXECUTION OF ELECTRICAL WORKS / ELECTRICAL COMPONENT OF WORKS**

30.1 For execution of electrical works / electrical component of works requiring Electrical License in accordance with Rule 29 under Chapter III of Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulation, 2010, the contractor shall have valid Electrical License issued by the concerned State / Union Territory in the name of Firm or get the work executed through an agency having valid Electrical License issued by the concerned State / Union Territory where the work is being executed.

30.2 Prior to commencement of electrical works / electrical component of works, copy of valid Electrical License in the name of the contractor or copy of agreement with an agency having valid Electrical License alongwith agency's Electrical License shall be submitted by the contractor to the Accepting Officer through Nodal GE/AGE (I) with copy to CWE. Incase contractor does not possess valid Electrical License and he intends to get such work executed through agency having valid Electrical License and with whom he has agreement, prior approval of such agency in all contracts shall be got done from competent authority (i.e. concern CWE) (concerned CE Zone incase there is no CWE). Copy of License shall be kept on record by GE/AGE (I) as well as CWE.

30.3 GE/AGE (I) shall ensure that electrical work / electrical component of works required to be executed in accordance with Rule 29 mentioned above are executed by contractor / agency having valid Electrical License, as applicable. In addition, Supervisor for execution of electrical works / electrical component of works employed by the contractor shall possess Supervisor Certificate of Competency issued by concerned State Government / Union Territory and the worker / tradesmen for execution of electrical works / electrical component of works shall hold necessary permit issued by concerned State Government / Union Territory.

30.4 Reference of Electrical License and details of Supervisor's Certificate of Competency and Permit of tradesmen employed for execution of electrical works / electrical component of works shall be duly incorporated in the Works Diary and relevant site documents respectively for the whole period during which such work is executed.

**31.0 FIXATION OF SPECIAL (STAR) RATE:**

31.1 In the event of a deviation order involving fixation of Special (Star) rate, Draft Rate shall be prepared by GE/AGE (I) (within a maximum period of 30 Days) while initiating the proposal for deviation seeking approval of Accepting Officer and notified to contractor. While notifying the Draft Rate, it will be clearly stipulated that the same is merely an estimated rate and firm rate shall be fixed based on actuals and receipt of supporting documents from contractor such as vouchers / literatures of product / test certificate etc (as applicable) on completion of the work involving Star Rate. Any objection to the method of fixing Star Rate will be dealt as per Condition 7 of IAFW-2249.

31.2 Draft star rate shall be made based on market enquiry through telephonic enquiry / Quotations / email / rate list / internet based sources, material and labour constants available in various civil Engg books and record available in respect of Star Rates approved in the past for similar items of work etc. Contractor may also assist GE/AGE (I) office in preparation of draft star rate.

Contd...

**SCHEDULE 'A' NOTES (Contd..)**

31.3 The Draft Star rate shall be purely a draft rate and shall not be used for claiming final payment during execution of work. However GE/AGE (I) shall allow part payment to the tune of 80% during execution to avoid any financial hardship to contractor.

31.4 After completion of the item of work involving Star Rate, contractor shall submit the Vouchers / literatures of product / test certificates (as applicable, decision of GE/AGE (I) being final in case of any disagreement) for finalization of Star Rate. The Star Rate shall be technically checked by DCWE(C) / Director (C) depending upon the financial effect & approved by competent authority within a period of one month from submission of the relevant documents by contractor as mentioned above.

31.5 The Star Rate as approved by competent authority after technical check by DCWE(C) / Director (C) depending upon the financial effect shall be referred as "the rate decided by GE/AGE (I)" under Para 62(G) of IAFW-2249.

**32.0 INSPECTION OF THE WORKS (DEFECTS LIABILITY PERIOD)** (Refer Amended Condition 49 of IAFW – 2249 (General Conditions of Contracts)) :-

The Defects liability period for the scope of work(s) covered under the contract is **TWENTY FOUR CALENDAR** months. Any defects in the work noticed during this period shall be rectified by the contractor forthwith, on demand in writing from the GE specifying the area affected notwithstanding that the work executed might have been inadvertently passed, certified and paid. The contractor shall carry out the rectification of the defects notified at his own expense during the defects liability period and in event of his failure to do within a period to be specified by the GE in his demand, the GE shall undertake such rectification work at the risk and expense of the contractor.

**33.0 SAFETY MEASURES, PRECAUTION, RISKS ETC.**

33.1 The work shall be carried out with utmost care to ensure that no damage to existing/adjoining work is done failing which the damage, if any done shall be rectified by the Contractor to match with the existing/ adjoining work to the entire satisfaction of Engineer-in-Charge under contractor own arrangement and at his own expenses.

33.2 Suitable tools, plants, equipments, mechanism, etc as considered necessary shall be adopted during execution of the work. The contractor shall take all Precautions, Safety Measures, etc, to avoid any damage, Miss-happening, Accident etc, to the workmen engaged by him to carry out the work. The UNIT RATE quoted by contractor shall be deemed to have included the element of adopting safety measures, precautions and also the risks etc involved in work and nothing extra shall be admissible on this account.

33.3 All precaution will be taken to prevent accident. Scaffolding should be structurally and properly designed. Workmen will be provided with all safety equipment like harness, helmet etc. A safety net will be provided all around the overhead tank during construction to provide fall protection. The cost for these safety arrangement is deemed to be included in the rate quoted by the contractor and nothing extra will be admissible to the contractor in this regard.

**34.0 The contractor has to follow all the directives issued by MES/Station Authority/ concerned State Authority/ GOI to avoid the spread of Corona Virus (COVID-19). For this account nothing extra shall be admissible.**

**35.0 METHOD OF MEASUREMENT.**

35.1 The method of Measurements to be adopted in the Contract shall be as laid down in MES STANDARD SCHEDULE OF RATES PART-I & II, IS 1200 and other relevant BIS standard. The General Rules, Special Conditions, Preambles and other Provisions in MES STANDARD SCHEDULE OF RATES PART-I & II and BIS standard shall be deemed to apply to the work under this contract unless otherwise mentioned in the Tender documents. However, where the units of work given in Column 4 against items of Schedule 'A' are at variance with that mentioned against respective items in MES STANDARD SCHEDULE OF RATES, the Measurements of work against such items of SCHEDULE 'A' shall be done as per the UNITS given in SCHEDULE 'A'.

Contd...

**SCHEDULE 'A' NOTES (Contd..)**

- 35.2 Unless otherwise specifically mentioned unit rate of each item of work is inclusive of all “Material & Labour’ or “Supply & Fixing” or ‘Supply & Laying’ including Tools and Plants, Installing, Commissioning and Testing complete as required for entire completion of works.
- 35.3 The proposed work (**PROVISION OF SINGLE OFFRS ACCN AT LEIMAKHONG MIL STN**) site will be handed over by respective GE for dismantling/ demolitions/ taking down or other execution of work as per Schedule ‘A’ (BOQ) in piecemeal according to site conditions/ user’s requirement. No claim whatsoever on this account shall be admissible and CPM chart shall be prepared accordingly.
- 36.5 After completion of the item of work involving star rate, contractor shall submit the vouchers/literature of product/test certificates (as applicable, decision of GE/AGE(I) being final in case of any disagreement) for finalisation of star Rate. The Star Rate shall be technically checked bu DCWE(C)/Director(C) depending upon the financial effect & approved by competent authority within a period of one month from submission of the relevant documents by contractor as mentioned above.
- 36.6 The Star Rate as approved by complete authority after technical check by DCWE(C)/Director(C) depending effect shall be referred as “the rate decided by GE/AGE(I)” under Para 62(G) of IAFW-2249.
- 37.0 **PERFORMACE SECURITY:** An amount equivalent to 5% of the contract sum shall be deposited by contractor (either enlisted or un-enlisted within 28 days of receipt of the letter of acceptance in prescribed from as specified in condition 19 of IAFW-2249. On receipt of performance security, thereafter work order will be placed, failing which, the contract shall be cancelled and following action shall be initiated.
- (a) For un-enlisted contractors:- Forfeiture of Earnest Money Deposit and the firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.
- (b) In case of enlisted contractor the amount equal to earnest money as mentioned under Para 11 above shall be deposited by contractor through MRO in Government treasury. Issue of tender to such tenderer shall remain suspended till the aforesaid amount equal to earnest money is deposited in government treasury. In case, enlisted Contractor fails to deposit the money through MRO with in notified time frame, same shall be recovered from security deposit held with the deptt or any dues held with the Deptt. Further the firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.

38.0 **LIST OF WORKS:-**

- (a) **PROVISION OF SINGLE OFFRS ACCN AT LEIMAKHONG MIL STN**  
JOB NO : 2605/11/AMWP/2022-23/02

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

**SCHEDULE 'A' PART-I**  
**BUILDINGS/STRUCTURES WORK**  
**(LIST OF WORKS AND PRICES)**

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs    Ps	COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1	Construction of Single living Accn for 04 Maj Accn ( Building (G+1) with block of 04 Maj Accn) with permanent specifications, ATT, Mosquito proofing, seismic measures complete all as specified and as shown on drawings	S ee lis t of dr gs	Each	2.00	49,25,000.00	98,50,000.00		
	Total carried over to BOQ    Rs.					98,50,000.00		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

**SCHEDULE 'A' PART-II**  
**SITE CLEARANCE AND DEVELOPMENT**  
**(LIST OF WORKS AND PRICES)**

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs Ps	COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
{Note:-Necessary Earthwork and Excavation as required for different services (except Schedule 'A' Part-I) also shall be measured under this Schedule unless otherwise specifically excluded}								
1.	Surface excavation not exceeding 30 cm deep and averaging 30 cm deep and getting out in Soft / Loose soil complete all as specified and as directed.		Sqm	650.00	89.60	58,240.00		
2.	Surface excavation not exceeding 30 cm deep and averaging 15 cm deep and getting out in Soft / Loose soil complete all as specified and as directed.		Sqm	140.00	53.10	7,434.00		
3.	Excavation over areas not exceeding 1.50 m in depth and getting out in Soft / Loose soil complete all as specified and as directed.		Cum	73.00	258.50	18,870.50		
4.	Excavation over areas exceeding 1.50 m and not exceeding 3.00 m in depth and getting out in Soft / Loose soil complete all as specified and as directed.		Cum	4.00	417.20	1,668.80		
5.	Excavating in trenches, n exc 1.5 m wide and n exc 1.5 m in depth; for foundation, etc. or for shafts, wells, cesspits, manholes, pier holes, etc. n exc 10 sq m on plan and n exc 1.5 m in depth and getting out in Soft / Loose soil complete all as specified and as directed.		Cum	155.10	383.70	59,511.87		
6.	Returning, filling in, including spreading, levelling, watering and well ramming in layers not exceeding 25cm thick of excavated soil complete all as specified and as directed. Note: A deduction of 10% shall be made from total computed volume of filling to cater in bulk irrespective of machinery used for ramming.		Cum	89.40	139.10	12,435.54		
7.	Removal of excavated material [Soil] to a distance exceeding 250m but not exceeding 500 m and depositing where directed at a level not exceeding 1.5m above the starting point complete all as specified and as directed.		Cum	60.00	324.00	19,440.00		
8.	Removal of excavated material [Soil] to a distance not exceeding 50mand depositing where directed at a level not exceeding 1.5 m complete all as specified and as directed.		Cum	295.10	320.40	94,550.04		
	Total carried over to BOQ Rs.					2,72,150.75		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

SCHEDULE 'A' PART-III  
ROADS/PATH  
(LIST OF WORKS AND PRICES)

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs Ps	PERCENT OF COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	Rolling and consolidating formation surfaces in cutting by using power road roller of 8 to 12 ton capacity complete all as specified and as directed.		10 Sqm	10.00	26.00	260.00		
2.	M & L for Soling of spread thickness 150mm with broken boulders or quarried stones, interstices filled, surface formed and rolled with power road roller of 8 to 12 ton capacity and consolidated to required gradient and camber complete all as specified and as directed.		10 Sqm	10.00	2633.70	26337.00		
3.	M & L for 150 mm thick [compacted thickness] [Two layers of 75mm thick each] Water Bound Macadam with coarse aggregate of Granite/ trap/ basalt of Grading 2 [63 to 40mm size] spread, rolled with power road roller of 8 to 12 ton capacity and consolidated to gradient and camber required complete all as specified and as directed.		10 Sqm	10.00	4782.20	47822.00		
4.	M & L for Preparing surfaces of unsurfaced Water Bound Macadam surfaces by brushing with wire brushes for removing caked mud etc. sweeping with brooms and finally fanning the cleaned surfaces with gunny bags to remove all dirt etc. and applying evenly a priming / tack coat with bituminous primer at 10 KG per 10 Sq.m of paving bitumen and laying Bituminous Premixed Semi Dense Asphaltic Concrete, 40 mm consolidated thickness, using paving bitumen of Grade VG – 30, with 5.5% of binder content by weight of total mix using Hot Mix Plant and Mechanical Paver, rolled and compacted with power road roller of 8 to 12 ton capacity to required camber and gradient complete all as specified. Note: Minimum Bitumen content shall be 5.5% as specified here in above. Please note that if the actual quantity of bitumen to be incorporated on approval of Mix–Design is found more than the minimum bitumen content specified above, No price adjustment shall be made for actual bitumen content of Mix–Design. Bitumen shall be Paving Bitumen of Grade VG–30 and shall be procured by the contractor. Mix-Design shall be approved by GE.		10 Sqm	10.00	4701.60	47016.00		
	Total carried over to next page Rs.					1,21,435.00		

**SCHEDULE 'A' PART-III**  
**ROADS/PATH (CONTD...)**

1	2	3	4	5	6	7	8	9
	Total B/F from previous page Rs.					1,21,435.00		
5.	M & L for Continuous modular brick edging with width equal to the depth of the brick, laid dry on end at the required angle complete all as specified and as directed.		Rm	40.00	33.39	1,335.60		
6.	M & L for Hardcore of gauge not exceeding 63mm of broken stones or boulders, deposited, spread and levelled in layers not exceeding 15 cm thick watered and rammed to a true surfaces complete all as specified and as directed.		Cum	1.80	2070.80	3,727.44		
7.	M & L for 75mm thick, PCC 1:3:6, Type C-2, using 40mm graded aggregate as in sub base etc. surface finished even and fair to receive the topping layer complete all as specified and as directed.		Sqm	18.00	441.70	7,950.60		
8.	M & L for Plain cement concrete Type C1 [Nominal Mix] 1:3:6 using 20mm graded stone aggregate cast in situ in lintels up to 1.5m span, Cills, steps, seismic and other similar bands, plinth courses, string courses, lacing courses, parapets and railings up to 60 cm in height, copings, kneelers, apex stones, bed plates including weathering, slightly rounded or chamfered angles and throating as directed including use and waste of form work, complete all as specified and as directed.		Cum	0.20	9259.40	1,851.88		
9.	Material and labour for machine pressed precast colour concrete interlocking paver block made with grey cement and no pigment, any shape and size conforming to IS 15658-2006 of 60 mm thickness M-35 grade complete all as specified and as directed .		Sqm	18.00	741.60	13,348.80		
10.	Material and labour for 25mm thick sand filling under floors or in foundations including watering and consolidation complete all as specified and directed. (Note: Compacted thickness / Punned thickness shall be measured for payment purpose)		Cum	0.44	1974.30	868.69		
	Total carried over to next page Rs.					1,50,518.01		

**SCHEDULE 'A' PART-III**  
**ROADS/PATH (CONTD...)**

1	2	3	4	5	6	7	8	9
	Total B/F from previous page Rs.					1,50,518.01		
11.	M & L for preparing bituminous surfaces of road and marking 2.5mm thick centre lines, stop lines, dashes, arrows etc. and the like n. exc 10cm wide on roads pavements with hot applied thermo plastic road marking paint of approved colour confirming to BS 3262-1989 with special applicator machine all as per manufacturers instruction complete all as specified and directed.		Rm	60.00	447.05	26,823.00		
	Total carried over to BoQ Rs.					1,77,341.01		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER



**SCHEDULE 'A' PART-IV**  
**EXTERNAL WATER SUPPLY**  
**(LIST OF WORKS AND PRICES)**

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs    Ps	PERIOD OF COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	Supply and fixing 50mm bore galvanised steel water tubing medium grade including all fittings and fixed complete to walls and ceilings or laid in floors complete all as specified and as directed.		Rm	174.00	421.20	73,288.80		
2.	Supply and fixing 25mm bore galvanised steel water tubing medium grade including all fittings and fixed complete to walls and ceilings or laid in floors complete all as specified and as directed.		Rm	100.00	184.60	18,460.00		
3.	Supply and fixing 50mm bore Gun-metal, globe or gate valves, with iron wheel head, screwed both ends for iron pipe and fixed complete all as specified and directed.		Each	2.00	979.08	1958.16		
4.	Supply and fixing 25mm bore Gun-metal, globe or gate valves, with iron wheel head, screwed both ends for iron pipe and fixed complete all as specified and directed.		Each	2.00	587.24	1174.48		
	Total carried over to BoQ Rs.					94,881.44		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

SCHEDULE 'A' PART-V  
EXTERNAL ELECTRIC SUPPLY  
(LIST OF WORKS AND PRICES)

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs Ps	PERIOD OF COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	Materials and labour for sand filling around the cable with approved quality coarse sand for sand cushioning of Under ground cable including spreading and punning down to desired thickness complete all as specified and as directed. (Note: Punned thickness shall be measured for payment purpose)		Cum	10.00	1974.30	19,743.00		
2.	Materials and labour for brick protection cover to underground cables with sub class 'B' over burnt brick of size 23 X 11.5 X 7.5 cm, (locally available best quality), laid dry and flat abutting each other with gaps not exceeding 10mm complete all as specified and as directed.		Per 1000 Nos.	1.00	5551.88	5551.88		
3.	Supply and laying under ground XLPE insulated PVC sheathed (Heavy duty) armoured 1100 volts grade aluminium conductor cable of size 50 Sqmm 3.5 core laid in trenches or fixed to wall / pole / ceiling as per IS 7098 (Part I) including connection cable glands, aluminium lugs etc complete all as specified and as directed. Note : Earth work, brick protection and sand cushioning and GI Pipe will be measured and paid separately under respective item.		Rm	150.00	337.52	50,628.00		
4.	Supply and fixing 50 mm bore dia GI pipe, light grade including all fittings laid under road crossings or fixed to pole complete all as specified and directed.		Rm	10.00	402.00	4020.00		
5.	Supply and fixing 40 mm bore dia GI pipe, light grade including all fittings laid under road crossings or fixed to pole complete all as specified and directed.		Rm	12.00	380.20	4562.40		
6.	Material & labour for MCCB 4 Pole, 415V, Adjustable type, 250 Amps with breaking capacity 36 KA complete all as specified and as directed.		Each	1.00	15,580.80	15580.80		
	Total carried over to next page Rs.					1,00,086.08		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

**SCHEDULE 'A' PART-V**  
**EXTERNAL ELECTRIC SUPPLY**  
**(LIST OF WORKS AND PRICES)**

1	2	3	4	5	6	7	8	9
	Total B/F from previous page Rs.					1,00,086.08		
7.	Materials and labour for earthing complete with galvanised iron earth plate electrode 600 mm x 600 mm x 6 mm thick, burried directly and preferably vertically in ground, earth pit not less than 2.25 Mtr deep below ground level with top edge of the plate not less than 1.5 m below ground level connetced with galvanised strip of 32 x 6mm size by means of nuts, bolts, check nuts and washers made of galvanised iron or steel earthing lead to be protected by galvanised iron pipe of 40mm bore (light grade) and other end connected to earthing test point or lightening arrestor or main controlling switch as directed including providing funnel with 20mm bore galvanised iron pipe (medium grade), wire mesh, charcoal or coke and common salt in alternate layer of 15cm (compacted thickness) all round the earth electrode, concrete earth pit in PCC (1:3:6) type C-1 (with 20mm graded aggregate), 50mm thick precast RCC (1:2:4) cover slab (re-inforced with 8mm dia TMT bar @ 15 cm C/C bothways and suitable handle made of 10mm dia) including necessary earth work in excavation, returning filling and removal of surplus earth upto a distance not exceeding 50 m etc all as shown on electrical plate No. 3 of MES Schedule Part-I(2009) complete including testing on completion including taking out unserviceable earthing plate and accessories all as specified and as directed.		Each Set	2.00	7572.90	15,145.80		
	Total carried over to BoQ Rs.					1,15,231.88		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

**SCHEDULE 'A' PART-VI**  
**SEWAGE DISPOSAL**  
**(LIST OF WORKS AND PRICES)**

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs Ps	PERIOD OF COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	M & L for PCC 1:4:8, Type D-2, using 40mm graded stone aggregate as in Foundation, Fillings, Mass concrete, Footings etc complete all as specified and as directed.		Cum	3.80	5483.10	20,835.78		
2.	Material and labour for reinforced cement concrete (design mix) in M-25 (20mm graded aggregates) for foundation and plinth beams etc complete all as specified and directed.Note :- Reinforcement and form work required shall be measured Note :-(i) Reinforcement and form work required shall be measured and paid seperately (ii) Design mix will be approved by the GE.		Cum	1.82	7640.60	13,905.89		
3.	M & L for brick work with Fly Ash bricks, straight or curved on plan exceeding 6 m mean radius built in Cement Mortar 1:4 complete all as specified and as directed.		Cum	7.00	5370.50	37,593.50		
4.	Material and labour for reinforced cement concrete (design mix) in M-25 (20mm graded aggregate)as in Beams, cantilevers, bressummers, lintels over 1.5m span, shelves etc. including use and waste of form work, complete all as specified and as directed. Note :-(i) Reinforcement and form work required shall be measured and paid seperately (ii) Design mix will be approved by the GE.		Cum	0.27	8144.20	2198.93		
5.	M & L for use and waste of formwork to sides of concrete foundations, footings, bases of columns, raft and raft beams, sides and soffits (if any) of foundation and plinth beams; and similar work; vertical or to batter with rough finished surfaces of concrete, flat complete all as specified and as directed.		Sqm	4.00	316.72	1266.88		
6.	Material and labour for reinforced cement concrete (design mix) in M-25 (20mm graded aggregate) for slabs supported on walls, beams and columns in floors, roofs, landings, balconies, canopies, deck slabs and in shelves complete all as specified and directed. Note :- (i) Reinforcement and form work required shall be measured and paid seperately (ii) Design mix will be approved by the GE.		Cum	1.34	7388.40	9900.46		
	Total carried over to next page Rs.					85701.44		

SCHEDULE 'A' PART-VI

SEWAGE DISPOSAL

(LIST OF WORKS AND PRICES)

1	2	3	4	5	6	7	8	9
	Total B/F from previous page Rs.					85,701.44		
7.	M & L for Use and waste of formwork to soffits of suspended slabs such as roof slabs, floor slabs, landings and similar work; not exceeding 200mm thick (Horizontal or sloping) fair finished surfaces complete all as specified and as directed.		Sqm	10.00	495.26	4952.60		
8.	M & L for Use and removal of formwork to edges of concrete flats, treads, breaks in floors, window cills, concrete railings, openings in concrete walls, floor and roofs n exc 20 cm wide and sides of RCC/ PCC bands in walls, horizontal or sloping and similar work exc 10cm but n exc 20cm wide rough finished surfaces complete all as specified and as directed.		Rm	14.00	89.25	1249.50		
9.	Material and labour for mild steel TMT bars 10mm dia and over, cut to length bent to shape required, including cranking bending spirally for hooping for columns , hooking ends and binding with and including mild steel wire (annealed) not less than 0.90mm dia or securing with clips complete all as specified and as directed.		Kg	190.00	82.60	15694.00		
10.	Material and labour for 15mm thick rendering in CM (1:4) on brick work or concrete surface as on wall finished the surface even and smooth without using extra cement complete all as specified and directed.		Sqm	25.00	304.24	7606.00		
11.	Supply only integral water proofing compound (WPC) of best quality (ISI marked) complete all as specified and as directed.		Kg	9.00	46.10	414.90		
12.	S & F 100 mm dia Cast iron soil, waste and vent pipes in any length with or without ears, with cement joints, laid in trenches or in floors complete all as specified and directed.		Rm	4.00	904.86	3619.44		
13.	S & F 100 mm dia Cast iron cowl for vent pipes complete all as specified and directed.		Each	2.00	250.00	500.00		
14.	M & L for 150mm bore, Reinforced concrete pipe class NP-2 laid to slope in trenches, jointed with collars in cement mortar 1:1 and testing complete all as specified and as directed.		Rm	60.00	364.00	21840.00		
15.	M & L for cement concrete 1:4:8 type C2 using 40 mm graded stone aggregate as in bed concrete to drainpipes 150 mm bore including packing under & haunching against the sides of pipes after they are laid and tested complete all as specified and as directed.		Rm	60.00	455.02	27301.20		
16.	M & L for Loose filling with aggregates of gauge 80 to 40 mm in soakage pits, soakage wells complete all as specified and as directed.		Cum	8.00	813.70	6509.60		
	Total carried over to BoQ Rs.					1,75,388.68		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

Contd...

SCHEDULE 'A' PART-VII  
AREA DRAINAGE

(LIST OF WORKS AND PRICES)

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs Ps	PERCENT OF COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	M & L for PCC 1:3:6, Type C-2, using 40mm graded stone aggregate as in Foundation, Fillings, Mass concrete, Footings etc complete all as specified and as directed.		Cum	3.00	5862.00	17,586.00		
2.	M & L for brick work with Fly Ash bricks, straight or curved on plan exceeding 6 m mean radius built in Cement Mortar 1:4 complete all as specified and as directed.		Cum	7.00	5370.50	37,593.50		
3.	M & L for Plain cement concrete Type B-0 [Nominal Mix] 1:2:4 using 12.5mm graded stone aggregate cast in situ in lintels up to 1.5m span, Cills, steps, seismic and other similar bands, plinth courses, string courses, lacing courses, parapets and railings up to 60 cm in height, copings, kneelers, apex stones, bed plates including weathering, slightly rounded or chamfered angles and throating as directed including use and waste of form work, complete all as specified and as directed.		Cum	1.15	9259.40	10,648.31		
4.	Material and labour for 15mm thick rendering in CM (1:4) on brick work or concrete surface as on wall finished the surface even and smooth without using extra cement complete all as specified and directed.		Sqm	55.00	304.24	16,733.20		
5.	M & L for PCC 1:2:4, type B-1, using 20mm graded stone aggregate as in surface channels and drains complete all as specified and directed.		Cum	0.55	6611.70	3636.44		
6.	M & L for extra for forming fair finished drain or channel 30 cm inner girth in cement concrete, using ex- tra cement, including forms, moulds, mi- tred/stopped ends etc. complete all as specified and directed.		Rm	50.00	43.25	2162.50		
	Total carried over to BoQ Rs.					88,359.95		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

SCHEDULE 'A' PART-VIII  
RETAINING WALL  
(LIST OF WORKS AND PRICES)

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs    Ps	PERIOD OF COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	M & L for PCC 1:3:6, Type C-2, using 40mm graded stone aggregate as in Foundation, Fillings, Mass concrete, Footings etc complete all as specified and as directed.		Cum	4.05	5862.00	23741.10		
2.	M & L for Plain cement concrete Type B-0 [Nominal Mix] 1:2:4 using 12.5mm graded stone aggregate cast in situ in lintels up to 1.5m span, Cills, steps, seismic and other similar bands, plinth courses, string courses, lacing courses, parapets and railings up to 60 cm in height, copings, kneelers, apex stones, bed plates including weathering, slightly rounded or chamfered angles and throating as directed including use and waste of form work, complete all as specified and as directed.		Cum	0.90	9259.40	8333.46		
3.	Material and labour for Walling of random rubble, uncoursed, well bonded, bedded and solidly hearted, built in cement mortar 1:6 complete all as specified and directed.		Cum	26.10	4545.51	1,18,637.81		
4.	Supply and fixing of 75mm bore PVC (SWR) pipes single socketed in any length with rubber ring joints fixed to walls complete all as specified and directed.		Rm	39.00	165.00	6435.00		
5.	M & L for Raised pointing in cement mortar 1:4 to random or polygonal rubble, uncoursed or brought upto coursescomplete all as specified and directed.		Per 10Sqm	3.00	2562.55	7687.65		
	Total carried over to BoQ Rs.					1,64,835.02		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

SCHEDULE 'A' PART-X  
INTERNAL ELECTRIC SUPPLY  
(LIST OF WORKS AND PRICES)

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOUNT Rs Ps	COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9
1.	Supply and fixing Ceiling rose, 3 phase/PVC/ polycarbonate, isolated body complete all as specified and as directed.		Each	116.00	65.70	7,621.20		
2.	Supply and fixing Switch, Modular Type, One Module, Single Pole, One Way, 6 Amps, 230 Volts complete all as specified and as directed.		Each	144.00	260.50	37,512.00		
3.	Supply and fixing Switch, Modular Type, One Module, Two Way, 6 Amps, 230 Volts complete all as specified and as directed.		Each	12.00	307.30	3,687.60		
4.	Supply and fixing Socket Outlet, 2/3 Pin combined, 6 Amps, Modular Type, Two Modules, 230 Volts complete all as specified and as directed.		Each	24.00	340.54	8,172.96		
5.	Supply and fixing Switch, Modular Type, One Module, Single Pole, One Way, 16 Amps, 230 Volts complete all as specified and as directed.		Each	16.00	343.70	5,499.20		
6.	Supply and fixing Socket Outlet, 6/16 Amps, 2/3 Pin combined, Modular Type, Two Modules, 230 Volts complete all as specified and as directed.		Each	16.00	528.40	8,454.40		
7.	Supply and fixing Bell Push, Modular Type, One Module, Single Pole, One Way, 6 Amps, 230 Volts complete all as specified and as directed.		Each	8.00	307.30	2,458.40		
8.	Supply and fixing Bell, Multi Music Type, AC, 230 Volts, Single Pole complete all as specified and as directed.		Each	8.00	581.50	4,652.00		
9.	Supply and fixing LED lights fitting 1x 20W, 220V, AC decorative box type with driver, holder including LED tube light connecting up with three core flexible copper conductor cable of suitable size from ceiling rose complete all as specified and as directed.		Each	40.00	1305.40	52,216.00		
10.	Supply and fixing LED light fitting mirror type with high out put diffuser 2 feet, 10 watt 220 V AC decorative type with driver holder and LED lamp including connecting up with three core flexible copper conductor cable of suitable size complete all as specified and as directed.		Each	46.00	1354.81	62321.26		
	Total carried over to next page Rs.					1,92,595.02		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

Contd...



**SCHEDULE 'A' PART-X**  
**INTERNAL ELECTRIC SUPPLY(Cont....)**

1	2	3	4	5	6	7	8	9
	<b>Total B/F from previous page Rs.</b>					<b>1,92,595.02</b>		
11.	Supply and fixing LED street light fitting 35 Watt 230 V AC outdoor type with high pressure die cast aluminum hosing and heat resistant complete with driver, lamp bracket with impact and corrosion resistant including thermal management in multiple optics complete with IP 65/66 protection complete all as specified and as directed.		Each	8.00	2966.25	23730.00		
12.	Supply and fixing MCB DB, TPN, 4 Way, Double Door, 415 Volt complete all as specified and as directed.		Each	4.00	2642.70	10,570.80		
13.	Supply and fixing MCB DB, SPN, 8 Way, Double Door, 240 Volt complete all as specified and as directed.		Each	8.00	1912.70	15,301.60		
14.	Supply and fixing amp rating 240V, 10KA 'C' curve miniature circuit breaker (MCB) of SP and current carrying capacity 6 to 32 Amps in the MCB DB complete with connection testing and commissioning all as specified and as directed.		Each	52.00	294.00	15,288.00		
15.	Supply and fixing amp rating 240V, 10KA 'C' curve miniature circuit breaker (MCB) of SPN and current carrying capacity 6 to 32 Amps in the MCB DB complete with connection testing and commissioning all as specified and as directed.		Each	16.00	851.20	13,619.20		
16.	Supply and fixing amp rating 415V, 10KA 'C' curve miniature circuit breaker (MCB) of TPN and current carrying capacity 16 to 32 Amps in the MCB DB complete with connection testing and commissioning all as specified and as directed.		Each	4.00	1721.04	6,884.16		
17.	Supply and fixing ceiling fans complete with blades, down rods, electronic regulator and accessories, 230 V, 1200 mm sweep. Min air delivery 210 CFM with service value 6.00 BEE. Five star rated with brushless direct current motor (BLDC)complete all as specified and as directed.		Each	24.00	2649.47	63,587.28		
18.	Supply and fixing exhaust fan, steel body AC single Phase 230V of size 300mm sweep with, blades, and frame and louvers complete all as specified and as directed.		Each	8.00	3548.59	28388.72		
	<b>Total carried over to BoQ Rs.</b>					<b>3,69,964.78</b>		

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

**SCHEDULE 'A' PART-XI**  
**MISCELLANEOUS ITEMS**

**(LIST OF WORKS AND PRICES)**

Srl No	DESCRIPTION OF ITEM OF WORKS	DRG NO	UNIT	NO. OF UNITS REQD	UNIT RATE	TOTAL AMOU NT Rs Ps	COMPLETION	REMARKS
1	2	3	4	5	6	7	8	9

Rate To be quoted in BOQ

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

For ACCEPTING OFFICER

**SCHEDULE ‘B’**  
**ISSUE OF MATERIALS TO CONTRACTOR**  
**(SEE CONDITION 10 OF IAFW-2249)**

Ser No	Particulars	Rate in which materials will be issued to the contractor		Place of issue (by Name)	Remarks
		Unit	Rate		
1	2	3	4	5	6

----- NIL -----

---

**SCHEDULE ‘C’**  
**LIST OF TOOLS AND PLANT (OTHER THAN TRANSPORT)**  
**WHICH WILL BE HIRED TO THE CONTRACTOR**  
**(See condition 15, 34 & 35 of IAFW – 2249)**

Sl No	Quantity	Particulars	Details of MES Crew supplied	Hire Charges, per unit per working day	Stand by Charges, per unit per off day	Place of Issue (by name)	Remark
1	2	3	4	5	6	7	8

\_\_\_\_\_ NIL \_\_\_\_\_

---

**SCHEDULE ‘D’**  
**TRANSPORT TO BE HIRED TO THE CONTRACTOR**  
**(See Condition 16 & 35 of IAFW-2249)**

Sl No	Quantity	Particulars	Rate per unit per working day (Rs.)	Place of issue (by name) (Rs.)	Remarks
1	2	3	4	5	6

\_\_\_\_\_ NIL \_\_\_\_\_

**SIGNATURE OF CONTRACTOR**  
**DATE:\_\_\_\_\_**

**FOR ACCEPTING OFFICER**

**TENDER**

THE PRESIDENT OF INDIA

Having examined and perused the following documents:-

1. Particular Specification signed by ACWE (C)/DCWE(C).
2. Drawings detailed in the list of Drawings.
3. Schedule 'A', 'B', 'C' & 'D' attached hereto.
4. MES Standard Schedule of Rates Part-I, 2009 (specifications) and Part-II, 2020 (Rates), (here-in-after and in IAFW-2249 referred to as the "MES Schedule") together with amendments 1 to 3 for Part – I and amendments - for Part – II as applicable to the above said Schedule.
5. General Conditions of Contracts, IAFW-2249, (1989 print) together with errata 1 to 20 and amendment 1 to 49.
6. Water: Conditions 31 of IAFW-2249 (General Conditions of Contracts): Water will be supplied by the MES and shall be metered supply and shall be paid for by the contractor to the Department @ Rs. **26.73** per 1000 litres of water issued to contractor at site of work **subject to Minimum @ Rs. 3.75 per 1000 worth work done.**
7. Should this tender be accepted, I/We agree:
  - \*(a) That the sum of Rs. **2,15,000/-** forwarded as Earnest money shall either be retained in Part or full as the case may be, **on account of Performance Security or be refunded by the Government on receipt of the appropriate amount as Performance Security within the time specified in condition 19, amendment no 47 of IAFW-2249.**
  - (b) To execute all the works referred to in the said documents upon the terms and conditions contained or referred to therein at the **item rates** contained in the aforesaid Schedule 'A' or, at such other rates as may be fixed under the provisions of Condition 62 of IAFW-2249 and to carry out such deviations as may be ordered vide Condition 7 of IAFW-2249 upto a maximum of **10% (Ten) Percent** and further agree to refer all disputes (in case disagreement with the decision of such **DRB or conciliator** as applicable as per **condition 71, amendment no 40 of IAFW 2249.**), as required by **Condition 70** of IAFW-2249 to the Sole Arbitrator of a serving Officer having degree in Engineering or equivalent or having passed final/direct final examination of Sub Division- II of Institution of Surveyors (India), 31 apparatus 31 by the Govt. of India, to be appointed by the **Chief Engineer Shillong Zone, SE Falls, Shillong – 11**, or in his absence the Officer officiating as **Chief Engineer Shillong Zone**, whose decision shall be final, conclusive and binding.

\*to be deleted where NOT applicable.

**TENDER ( Contd... )**

Signature \_\_\_\_\_ dated \_\_\_\_\_

Name of the Signatory \_\_\_\_\_  
(IN BLOCK CAPITAL LETTER)

In the capacity of \_\_\_\_\_ duly authorized to

Sign the tender for and on behalf of \_\_\_\_\_  
(IN BLOCK CAPITAL LETTER)

Signature of witness  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_

Postal Address  
\_\_\_\_\_  
\_\_\_\_\_  
Telegraphic address

Telephone \_\_\_\_\_

**ACCEPTANCE**

\_\_\_\_\_ Alterations have been made in these documents and as evidence that these alterations were made before the execution of contract agreement, these have been initialed by the contractor and \_\_\_\_\_.

The said Officer(s) is/are hereby authorized to sign and initial on my behalf, the documents forming part of this contract.

The above tender was accepted by me on behalf of President of India at the item rates contained in Schedule 'A' for the contract sum of Rs. \_\_\_\_\_ (Rupees.....(only))  
on the \_\_\_\_\_ day of \_\_\_\_\_ 2024.

Signature \_\_\_\_\_ dated this \_\_\_\_\_ day of \_\_\_\_\_ 2024.

Appointment : Signature  
COLONEL  
COMMANDER  
HQ 137 WORKS ENGINEERS  
C/O 99 APO  
(FOR AND ON BEHALF OF THE PRESIDENT OF INDIA)

**GENERAL CONDITIONS OF CONTRACTS**  
**(IAFW-2249, 1989 PRINT)**

**FOR**

**LUMP SUM CONTRACTS (IAFW-2159)**

1. A copy of the GENERAL CONDITIONS OF CONTRACTS (IAFW-2249)-1989 Print with Errata 1 to 20 and amendments No. 1 to 49 has been supplied to me/us and is in my/our possession. I/We have read and understood the provisions contained in the aforesaid GENERAL CONDITIONS OF CONTRACTS before submission of this tender and I/We agree that I/we shall abide by the Terms and Conditions thereof, as modified, if any, elsewhere in this tender document.
2. It is hereby further agreed and declared by me/us, that the GENERAL CONDITIONS OF CONTRACTS (IAFW-2249)-1989 Print including Condition 70 thereof pertaining to settlement of disputes by Arbitration, containing 33 pages (Serial Page No. 31 to 64) with errata 1 to 20 and amendments No. 1 to 49 form part of this tender documents.
3. It is also agreed by me/us that in case of any discrepancy in the interpretation of the contents between English and Hindi Version, English Version will take precedence over Hindi Version.

**Note:-** In case the tenderer is not in position of any of the documents referred above he should obtain a copy from the office of the HQ 137 Works Engrs, C/O 99 APO, PIN-914137 before submission of his tender.

**SIGNATURE OF CONTRACTOR**  
**DATE**\_\_\_\_\_

**FOR ACCEPTING OFFICER**

**MILITARY ENGINEER SERVICES – ERRATA TO GENERAL  
CONDITIONS OF CONTRACTS IAFW-2249 (1989 PRINT).**

Errata No	Page No	Reference/Location	Particular
1	2	4	5
1.	4	Condition 3, para 3, line-1	For: “ an” Read: “ and”
2.	7	Condition 7, last para, line-9	For: “ 67pparatus” Read: “objection”
3.	7	Condition 7, last para, line-11	For: “ thetein” Read: “therein”
4.	8	Condition 8, line-7	
5.	10	Condition 10© General, sub para 2, line-3	Delete “)” after the word ‘necessary’
6.	11	Condition 15, para 2, line-6	For: “ escept” Read: “except”
7.	11	Condition 15, para 2, line-6	For: “ 67pparatus” Read: “67pparatus67”
8.	11	Condition 15, para 5, line-1	For: “Maintenance” Read: “Maintenance”
9.	16	Condition 32, para 1, line-4	For: “sitting” Read: “siting”
10.	16	Condition 32, para 2, line-2	For: “ reinstead” Read: “reinstated”
11.	16	Condition 34, line-6	For: “revese” Read: “revest”
12.	16-17	Condition 36, para 2, line-6	For: “combusitlble” Read: “combustible”
13.	17	Condition 37, line-3	For: “ Whese” Read: “Whose”
14.	17	Condition 43, line-1	For: “shal” Read: “shall”
15.	17	Condition 44, para 2, line-4	For: “ vist this” Read: “visit his”
16.	18	Condition 48, para (a), line-5	For: “ airising” Read: “arising”
17.	20	Condition 54, line-1 and 2	Illegible word is ‘Contractor’
18.	20	Condition 54, para below (a)	Insert “b” in the existing bracket “( )”
19.	30	ANNEXURE ‘B’, clause 6, line-2	Delete the word “after”
20.	30	ANNEXURE ‘B’, clause 6, line-3	Insert full stop “(.)” after the word “thereof” and For: “ladder” Read: “Ladder”

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

FOR ACCEPTING OFFICER

**MILITARY ENGINEER SERVICES – AMENDMENTS TO GENERAL  
CONDITIONS OF CONTRACTS IAFW-2249 (1989 PRINT).**

Amendment No.	Page No.	Particular
1	2	3
<div>1</div> <div>1989 Print</div>	28 and 29	<div>Annexure ‘A’, Military Engineer Services</div> <div>Contractor Labour regulation</div> <div>(a) Para 2 (a), line 3</div> <div>For: “not exceeding Rs. 400 per month”</div> <div>Read: “not exceeding Rs. 500 per month”</div> <div>(b) Para 11, line 5Add the following after the words labourers concerned. “The Garrison Engineer shall arrange payments to the labourconcerned within 45 days from the receipt of the person authorized as aforesaid, as the case may be”.</div>
<div>2</div> <div>1989 Print</div>	9	<div>Condition 10 (B) lines 2 to 6</div> <div>For: “Materials which-----</div> <div>----- as aforesaid:</div> <div>Read: “Materials which Government. Shall supply are shown in Schedule ‘B’ which also stipulates place of issue and rates(s) to be charged in respect thereof”.</div>
<div>3</div> <div>1989 Print</div>	19	<div>Condition 50 sub para 4(b) (iii)</div> <div>Delete the existing description against sub-para 4(b) (iii); and insert as under:-</div> <div>(iii) Where the contract sum exceed Rs. 20 lakhs but does not exceed Rs. 150 lakhs</div> <div>Seven and half percent of the Contract value of the item or group of items of work for which a separate period of completion is given or Rupees seven and a half lakhs which ever is less.</div> <div>(iv) Where the contract sum exceed Rs. 150 lakhs but does not exceed Rs. 300 lakhs</div> <div>Five percent of the contract value of the item or group of the items of work for which a separate period of completion is given or Rupees twelve and half lakhs which ever is less</div> <div>(v) Where the contract sum exceed Rs. 300 lakhs</div> <div>Four percent of the contract value of the item or group of the items of work for which a separate period of completion is given subject to a maximum of Rupees twenty five lakhs.”</div>
<div>3 (contd)</div> <div>1989 Print</div>		
<div>4</div> <div>1989 Print</div>	27	<div>Condition 70 sub para 9</div> <div>Add the following at the end of the sub para:-</div> <div>“If the value of the claims or counter claims in an arbitration reference exceeds Rs. 1 lakh, the arbitrator shall give reasons for the award”.</div>



AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.).

1	2	3
5 1989 Print	14 and 15	<p><i>Condition 25</i></p> <p>Delete paras 2 and 3 of the above condition and substitute the following:-</p> <p>“Where the contractor is not a qualified Engineer or even if he is so qualified, he can not, in the opinion of the GE, give his full personal attention to the works, he shall at his own expense, employ a person/persons, possessing the following qualifications and/or experience as his accredited Agents(s) to Supervise the Works and to receive instructions from the Engineer-in-Charge.</p> <p>(a) For works costing over Rs. 300 lakhs other than those covered in (g) below:-</p> <p>Two Degree holders in Engineering from a Government recognized Institution or equivalent with at least 5 years practical experience or works.</p> <p><u>And</u></p> <p>Adequate numbers of Diploma holders in Engineering from a Government Institution with at least 8 years Practical Experience of works.</p> <p>(Note: The above provision shall be applicable irrespective of the fact whether contract himself is a qualified Engineer or not).</p> <p>(b) For works costing between Rs. 100 lakhs and Rs. 300 lakhs other than those covered in (g) below:-</p> <p>A Degree holders in Engineering from a Government recognized Institution or equivalent with at least 4 years practical experience or works.</p> <p><u>OR</u></p> <p>Two Diploma holders in Engineering from a Government Institution with at least 6 years Practical Experience of works.</p> <p>© For works costing between Rs. 60 lakhs and Rs. 100 lakhs other than those covered in (g) below:-</p> <p>A Degree holder in Engineering from a Government recognized Institution or equivalent with at least 3 years practical experience or works.</p> <p><u>OR</u></p> <p>A Diploma holders in Engineering from a Government Institution with at least 5 years Practical Experience of works.</p>

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.).**

1	2	3
	(d) For works costing between Rs. 7.5 lakhs and Rs. 60 lakhs other than those covered in (g) below:-	A Degree holder in Engineering from a Government recognized Institution or equivalent with at least 2 years practical experience or works. <u>OR</u> A Diploma holders in Engineering from a Government Institution with at least 4 years Practical Experience of works.
	(e) For works costing between Rs. 2 lakhs and Rs. 7.5 lakhs other than those covered in (g) below:-	A Degree or Diploma holder in Engineering from a Government recognized Institution or equivalent with adequate practical experience or works.
	(f) For works costing upto 2 lakhs other than those covered in (g) below:-	A competent person with adequate practical experience of works
	(g) For works of any value for repairs to buildings and roads, periodical services to buildings, terms contract, grass cutting and fencing.	A competent person with adequate practical experience of works
	The employment of Agent(s) as aforesaid shall be to the approval of the GE who may verify his/their qualifications and experience by referring to original degree/diploma/testimonials which shall be made available to him by the contractor or by the individual employed or proposed to be employed.	
6 1989 Print	27	<i>Condition 70, sub para 9</i> Delete the description added at the end of sub para – 9 vide amendment No. 4 (1989 Print) and insert as under:- “The arbitrator shall give reason for the award in each and every case irrespective of the value of claims or counter claims.”

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.).**

1	2	3
<div>7</div> <div>1989 Print</div>	24	<div>Condition 64</div> <div>Delete paras 4 viz “provided the amount ----- ----- shall not exceed Rs. 1.5 lakhs in toto.”</div>
<div>8</div> <div>1989 Print</div>	26	<div>Condition 70, Arbitration Page 1, line-4</div> <div>Amend the words ‘Engineer Officer’ to read ‘Serving Officer having degree in Engineering or equivalent or having passed final/direct final examination of sub-division II of institution of surveyor (India) recognized by the Government. Of India’.</div>
<div>9</div> <div>1989 Print</div>	2	Add the following new conditions under chapter-IV:- “71 Jurisdiction of Court”
	27	<div>Add the following new conditions:-</div> <div>“71. Jurisdiction of Court:-</div> <div>Irrespective of the place of issue of tenders, the place of acceptance of tenders, the place of execution of contract or the place of payment under the contract, the contract shall be deemed to have been made at the place from where the acceptance of tenders has been issued and the work is executed/executable. The Courts of the place from where the acceptance of the tender has been issued or the place where the work is executed/under execution shall alone have jurisdiction to decide any dispute arising out of or in respect of the contract”.</div>
<div>10</div> <div>1989 Print</div>	14 & 15	<div>Condition 25 as amended vide amendment No. 5</div> <div>For: “Degree holders in Engineering from a Government recognized Institution or equivalent” wherever occurring.</div> <div>Read: “Degree holders in Engineering from a Government recognized Institution or equivalent or equivalent/final or direct final pass of sub-division II of institution of surveyor (India)”.</div>
<div>11</div> <div>1989 Print</div>	27	<div>Condition 70, ‘Arbitration’ para 8</div> <div>For: “The Arbitrator may, from time ----- ----- publishing the award”.</div> <div>Read: “The Arbitrator may from time to time with the consent of the parties, enlarge the time for making and publishing the award”.</div>
<div>12</div> <div>1989 Print</div>	24	<div>Add the following para 4 after para 3©:-</div> <div>“ The amount so retained from the contractor shall be called retention money and shall be released to the contractor alongwith the Final Bill. However, in case the amount of this retention money is more than 1.5 lakhs, than after retaining an amount of Rs. 1.5 lakhs or 1% of the contract amount as executed whichever is more, the balance amount of retention money will be refunded to the contractor on satisfactory completion of work as certified by the GE”.</div>

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3
<div>13</div> <div>1989 Print</div>	23	Condition 62(G), Valuation of deviation, Para-1, line-3 <b><u>For:</u></b> “ Plus 10%” <b><u>Read :</u></b> “ Plus 15%”
<div>14</div> <div>1989 Print</div>	05	(a) Condition 4A (a), line-4 <b><u>For:</u></b> “ Rs. 2,500.00” <b><u>Read :</u></b> “ Rs. 5,000.00”  (b) Condition 4A (d), line-2 and 3 <b><u>For:</u></b> “ Rs. 5,000.00” <b><u>Read :</u></b> “ Rs. 10,000.00”
<div>15</div> <div>1989 Print</div>	13	Condition 22, Sub Para 3, line 3 & 4 <b><u>For:</u></b> “ Controller of Defence Accounts concerned” <b><u>Read :</u></b> “ Accepting Officer”
<div>16</div> <div>1989 Print</div>	24	Condition 64, Sub Para 7, line 4 & 5 <b><u>For:</u></b> “ Controller of Defence Accounts” <b><u>Read :</u></b> “ Accepting Officer”
<div>17</div> <div>1989 Print</div>	19	<u>Condition 50</u> (a) <b><u>Sub Para 2, line 2</u></b> <b><u>For:</u></b> “ Deviation orders on the contractor” <b><u>Read :</u></b> “ Deviation orders, escalation amount”  (b) Delete existing sub para 4(b) (i) to 4(b) (v) in toto and insert as under :- “ Ten percent of the contract value of the item or group of items of work for which a separate period of completion is given”  (c) <b><u>Add Sub Para 5 as under:-</u></b> “Amount of retention money plus compensation during currency of contract shall not exceed ten percent of contract value. Contractor shall furnish BGB or Fixed Deposit Receipt in lieu of retention money and if compensation amount is not fully met from retention money, the difference if any shall be recovered from the payment due to the contractor.”

AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)

1	2	3
18 1989 Print	3 and 4	(a) <u>Condition 1(a), line -4</u> <b>For:</b> “The M.E.S Schedule, the specifications” <b>Read :</b> “ the M.E.S Schedule the Special conditions , the Specifications”
		(b) <u>Condition 1(b) line-02</u> <b>For:</b> “ these conditions and the Specifications” <b>Read :</b> “ these conditions the special conditions and the specifications”
		(c) <u>Condition 1(b) line-03</u> <b>For:</b> “ loaned” <b>Read :</b> “ sold”
		(d) <u>Condition 1(g) line-03</u> <b>For:</b> “Garrison engineer” whose administers <b>Read :</b> “ Garrison Engineer” (or Assistant Garrison Engineer (I) if applicable who administers” (e) <u>Condition 1(g) line-03</u> <b>In the end add the following :-</b> “ Where the office of the CWE does not exist and the GE is directly under the Chief Engineer ” the authority of the CWE stipulated in these conditions shall vest in the concerned Chief Engineer”.
		(f) <u>Condition 1(h) line-03</u> <b>For:</b> “ the Superintendent Grade I” <b>Read :</b> “ the Junior engineer (JE)”
		(g) <u>Condition 1(i) line-01</u> <b>For:</b> “ Indian Standards Institution” <b>Read :</b> “ Bureau of Indian Standards”
		(h) <u>Condition 1(p) line-04</u> <b>For:</b> “ air craft and acts off God” <b>Read :</b> “ air craft and natural calamities” (k) <u>Condition 1(p) line-05</u> <b>For:</b> “ floods and tornado” <b>Read :</b> “ floods, tornado and Tsunami”
19 1989 Print	5	(a) <u>Condition 4(A), line -7</u> <b>For:</b> “Rs 60,000/-” <b>Read :</b> “ Rs1,50,000/-”  (b) <u>Condition 4(A)(a), line -4</u> <b>For:</b> “Rs 2,500/-” <b>Read :</b> “ Rs10,000/-”  (c) <u>Condition 4(A)(c), line -4</u> <b>For:</b> “Rs 2,500/-” <b>Read :</b> “ Rs10,000/-”

AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)

1	2	3						
19 1989 Print	5	<p>(d)    <u>Condition 4(A)(d), line -2 and 3</u> <b>For:</b>    “Rs 5,000/-” <b>Read :</b>   “ Rs 20,000/-”</p> <p>(e)    <u>Condition 4(A)(f), line -1</u> <b>For:</b>    “Rs 60,000/-” <b>Read :</b>   “ Rs1,50,000/-”</p>						
20 1989 Print	5	<p>(a)    <u>Condition 6, subpara 1</u> The existing contents shall be substituted as under :-           “6 Provisional items –The amount pertaining to provisional items need not be deducted from the contract Sum. The Engineer-in-Charge and contractor shall set out the works covered under provisional items and provisional lump sum based on the description of items, drawing forming part of contract agreement and considering the ground conditions as encountered at site of works. The statement of variation in quantities new items or deletion of items from the contract agreement as required will be worked out for approval of Engineer-in-Charge who will be convey approval o such changes through site order book. For the purpose of payment the variation in value of work executed under these items shall be ascertained by measurement or valuation as for deviation. The variations shall be regularized as per condition 7”.</p>						
21 1989 Print	6 and 7	<p>(a)    <u>Condition 6A, line-6</u> Add following after the word “preference to scale “However the provisions of any drawing of later date shall take precedence over that of a drawing of previous date further subject to the condition that working drawing will take precedence over a Typical details drawing “.</p> <p>(b)    <u>Condition 6(A)(a), line -1</u> <b>For:</b>    “Quantities <b>Read :</b>   “Quantities Schedule’B’, ‘C’,’D”</p> <p>(c)    <u>Condition 6(A)(a), subpara 3 line 1</u> <b>For:</b>    “one documents forming” <b>Read :</b>   “ one documents as defined hereinabove forming”</p> <p>(d)<u>Condition 6(A)(A)</u> (i) Existing subpara (b) to (f) shall be enmured as subpara (c) to (g). (ii) Add new subpara (b) after existing subpara (a) as under :-            “(b)    Items and their quantities for which no rate or prices have been quoted shall be deemed to have been covered by the rates and prices quoted for the other items of Schedule ‘A’ or bill of quantities”. (41)        <b><u>Condition 6 A©(iii)</u></b> The existing contents shall be substituted as under :-</p> <table><tr><td>(iii)</td><td>Contract sum exceeding Rs 10 lakh but not exceeding Rs 100 lakh</td><td>: Rs 20,000 plus 2% of contract sum exceeding Rs 10 lakhs subject to a maximum of Rs 1,00,000/-</td></tr><tr><td>(iv)</td><td>Contract sum exceeding Rs 100 lakh</td><td>: 1% of contract sum subject to a maximum of Rs 5 lakh</td></tr></table>	(iii)	Contract sum exceeding Rs 10 lakh but not exceeding Rs 100 lakh	: Rs 20,000 plus 2% of contract sum exceeding Rs 10 lakhs subject to a maximum of Rs 1,00,000/-	(iv)	Contract sum exceeding Rs 100 lakh	: 1% of contract sum subject to a maximum of Rs 5 lakh
(iii)	Contract sum exceeding Rs 10 lakh but not exceeding Rs 100 lakh	: Rs 20,000 plus 2% of contract sum exceeding Rs 10 lakhs subject to a maximum of Rs 1,00,000/-						
(iv)	Contract sum exceeding Rs 100 lakh	: 1% of contract sum subject to a maximum of Rs 5 lakh						

AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)

1	2	3
22 1989 Print	8	<p>(41) <u>Condition 9(c), line -19</u> <b>For:</b> “labour at site” <b>Read :</b> “ labour and tools and plants at site”</p> <p>(41) <u>Condition 9(c), line19</u> Add the following at the end of para © viz line 21 : “ The contract shall give the details of idle labour, workmen, employees, tools and plants and such other details as asked by the GE within seven days of issue of order of suspension and the GE shall verify the necessity and correctness thereof, Proper record of these details shall be maintained duly signed by the GE and the contractor”.</p>
23 1989 Print	8,9 and 10	<p>(41) <u>Condition 10A, subpara 2</u> Add in the end after the word “comply”. Following : :- “However, if the cost of particular item of material in a contract exceed Rs 1 lakh, these materials shall be procured only form the manufactures or from their authorized dealers/stockiest (except in case of materials of local origin) and the contractor shall furnish proof thereof to the satisfaction of the GE that the material so comply ”.</p> <p>(41) <u>Condition 10A, subpara 3</u> Add in the end after the work “ in the contract “ following : “ The approved samples of materials which loose their identity after incorporation in the work shall be preserved with the GE till completion of work. Thereafter the same shall be removed in ‘as is where is condition by the contractor with prior permission of the GE without any extra cost to the Government. However, the approved samples of materials which do not loose their identity after incorporation and which can be incorporated in the work as decided by the Engineer-in-Charge shall be allowed to be used in the sample quarter/block/work”.</p> <p>(41) <u>©Condition 10 B, line -1 of last subpara page 9</u> <b>For:</b> “cost of loading ” <b>Read :</b> “ cost of carriage, loading”</p> <p>(41) <u>Condition 10 B line -3 of subpara 3 of page 10</u> <b>For:</b> “the Engineer-in-Charge may” <b>Read :</b> “ the GE may”</p> <p>(e) <u>Condition 10 B line -5 of subpara 3 of page 10</u> <b>For:</b> “as decided by the GE” <b>Read :</b> “ on the date of notifying to the contractor by GE (After technical check of final bill in CWE’s office) as decided by the GE or the stock book rate as fixed by the department, which ever is higher”</p> <p>(f) <u>Condition 10 B line -6 of subpara 3 of page 10</u> <b>For:</b> “the market rate” <b>Read :</b> “ the recovery rate”</p>
24 1989 Print	10 and 11	<p>(41) <u>Condition 11A, subpara (i) to (viii)</u> Existing contents of subpara (i) to (vii) shall be replaced as under with sub para (i) to (iv) :- “(i) By reason of civil commotion, local combination of workmen, strike or lockout affecting any of the trades employed on the work, or (ii) by reason of delay on part of nominated sub-contractors or nominated suppliers which the contractor has in the opinion of GE taken all practicable steps to avoid or reduce or (iii) by reasons of delay on the part of contractors or tradesmen engaged by Government in executing works not forming part of the contract or</p>

Contd..

AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)

1	2	3
24 1989 Print	10 and 11	(iv) by reasons of any other cause (except force majeure) which in the absolute discretion of the Accepting Officer is beyond the contractor's control",  (41) <u>Condition 11(A), last subpara line -2</u> <b>For:</b> "GE" <b>Read :</b> " Accepting Officer"
		(41) <u>Condition 11(B), last but 3<sup>rd</sup> line from end</u> <b>For:</b> "GE" <b>Read :</b> " Accepting Officer"
		(41) <u>©Condition 11©</u> The existing contents shall be substituted as under :-  "© Extension of time if due shall be granted within 45 days of receipt of request from the contractor alongwith supporting documents, but before expiry of original/extended period of completion.  (D) No claim in respect of compensation or otherwise for idle labour and/or idle machinery etec and/or business loss or any such loss, howsoever arising as a resuly of extensions granted under Condition (A) and (B) above shall be admissible. The decision on reason and quantum of extension shall be final and binding."  (E) DELAY ON ACCOUNT OF FORCE MAJEURE Should any force majeure circumstances arise each of the contracting party will be excused for the non fulfillment or for the delayed fulfillment of any of its contractual obligations, if the affected party within 15 days of its occurrence informs the other party in writing. Force majeure shall mean fires, floods, natural calamities such as earth quakes, lightening or other acts such as war, turmoils, strikes (otherwise than contractor's employees) invasion, act of foreign enemies, hostilities, civil war, rebellion, revolution insurrection, military or usurped power, damage from aircraft, sabotage, explosions, quarantine restrictions, beyond the control of either party.  It is understood and agreed between the parties here to that the rights and obligations of the parties shall be deemd to be in suspension during the continuance of the force majeure even as aforesaid and the said rights and obligations shall automatically revive upon cessation of the intervening force majeure event. The period within which the rights and obligations of the parties shall be in suspension due to force majeure event shall not be considered as a delay with respect of the period of completion and/or tasking over work under contract or otherwise to the detriment of either party. Not withstanding the provision of the immediately foregoing clauses, it is further understood and agreed between the parties hereto that in the event of any force majeure persisting for an uninterrupted period exceeding 06 (Six) months, either party hereto reserves the right to terminate this contract upon giving prior written notice of 30 (thirty) days to the other party of the intention to terminate without any liability other than agreement for the completed work and/or contractor's material lying at site".

Contd...



**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3									
25 1989 Print	12	(41) <u>Condition 17, line 1</u> <b>For:</b> “The contractor shall not” <b>Read :</b> “ The contractor including Public Sector undertaking/Government agency shall not”									
26 1989 Print	13	(41) <u>Condition 18, line 1</u> <b>For:</b> “The contractor shall not” <b>Read :</b> “ The contractor including Public Sector undertaking/Government agency shall not”									
27 1989 Print	14 and 15	<div>(41) <u>©Condition 25 the contents of subpara 2 after line 5 shall be substituted as under :-</u></div> <table><tr><td>(a)</td><td>For works costing between Rs 50 lakhs to 1000 lakh</td><td>A Degree holder in Engineering from a Govt recognized Institution or equivalent, final or direct final passed of sub division II of the Institution of Surveyors (India) with at least 4 years practical experience of works</td></tr><tr><td>(b)</td><td>For works costing between Rs 7.5 lakhs to 50 lakh</td><td>A Degree holder in Engineering from a Govt recognized Institution or equivalent, final or direct final passed of sub division II of the Institution of Surveyors (India) with at least 2 years practical experience of works</td></tr><tr><td>©</td><td>For works costing below Rs 7.5 lakh</td><td>A Diploma holder in Engineering from of Govt recognized Institution with adequate practical experience of works</td></tr></table> <div>Notes :-  (1) Engineers (Degree/Diploma holders) employed should be of the relevant discipline to which nature of work pertains. (2) The provision at Serial (b) &amp; (c) above shall be applicable irrespective of the fact whether contractor himself is a Qualified Engineer or not. (3) Contractor shall employ additional Engineers as directed by GE where there are scattered sites. (4) For works costing more than Rs 10 crore, the requirement of Engineering staff shall be as given in the tender documents.</div>	(a)	For works costing between Rs 50 lakhs to 1000 lakh	A Degree holder in Engineering from a Govt recognized Institution or equivalent, final or direct final passed of sub division II of the Institution of Surveyors (India) with at least 4 years practical experience of works	(b)	For works costing between Rs 7.5 lakhs to 50 lakh	A Degree holder in Engineering from a Govt recognized Institution or equivalent, final or direct final passed of sub division II of the Institution of Surveyors (India) with at least 2 years practical experience of works	©	For works costing below Rs 7.5 lakh	A Diploma holder in Engineering from of Govt recognized Institution with adequate practical experience of works
(a)	For works costing between Rs 50 lakhs to 1000 lakh	A Degree holder in Engineering from a Govt recognized Institution or equivalent, final or direct final passed of sub division II of the Institution of Surveyors (India) with at least 4 years practical experience of works									
(b)	For works costing between Rs 7.5 lakhs to 50 lakh	A Degree holder in Engineering from a Govt recognized Institution or equivalent, final or direct final passed of sub division II of the Institution of Surveyors (India) with at least 2 years practical experience of works									
©	For works costing below Rs 7.5 lakh	A Diploma holder in Engineering from of Govt recognized Institution with adequate practical experience of works									
28 1989 Print	15	(41) <u>Condition 26, last subpara, line 2</u> <b>For:</b> “Rs 50/-” <b>Read:</b> “ Rs 5000/- (Rupees five thousand only)”									
29 1989 Print	16	(41) <u>Condition 31, 3<sup>rd</sup> subpara, line 2</u> <b>For:</b> “at the *All India Flat Rate per 1,00 gallons which” <b>Read:</b> “at the * All in cost rate per 1,000 gallons subject to a minimum of Rs 3.75 per every Rs 1000/- worth of work done priced at contract rates which”									
30 1989 Print	17	(41) <u>Condition 36 last subpara</u> Add the following at the end :- “Fencing be provided wherever necessary as decided by GE to isolate the working area to make the area unrestricted from restricted”.									
31 1989 Print	17	(41) <u>Condition 44, last subpara 3, line 1</u> <b>For:</b> “rupees one lakh/-” <b>Read:</b> “ rupees ten lakh” (41) <u>Condition 44, last subpara 3, line 2</u> <b>For:</b> “rupees five lakh/-” <b>Read:</b> “ rupees ten lakh”									

AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)

1	2	3
32 1989 Print	18	<p>(41) <u>Condition 46, subpara 2 line 11 to 14</u></p> <p><b>For:</b> “Provided always that the liability of the Contractor under this condition shall not extend beyond the defects liability period except as regards workmanship which the GE shall have previously given notice to the contractor to rectify”</p> <p><b>Read :</b> “ Alternatively, such work. If technically/structurally acceptable, without detriment to the safety and utility of the item and the structure may be permitted to be accepted as devalued and recovered shall decided by competent authority (CWE in respect of contract concluded by himself and GE’s and GE/ AGE (I) and CE in respect of contractor concluded by him) or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Whether any particular defect is due to unsound, imperfect or unskillful workmanship or due to normal wear &amp; tear or users negligence, decision of GE shall be final and biding Provided always that the liability of the Contractor under this condition shall not extend beyond the defects liability period except as regards workmanship which the GE shall have previously given notice to the contractor to rectify Govt further reserves the rights to get the work technically inspected during currency of the contract and also during defects liability period by the Additional Director General of Technical Examination and/or his Officers or any other agency. The defects observed as a result of such technical examination shall be rectified by the contractor as notified by the GE. However, if the defects are not rectified the devaluation of the work shall be carried out and recovery thereon shall be affected”.</p>
33 1989 Print	19	<p>(41) <u>Condition 49, subpara 2 line 2,3 to 4</u></p> <p><b>For:</b> “within such period as may be notified by the Engineer-in-Charge to the place of issue against written receipt from the Engineer-in-Charge”</p> <p><b>Read :</b> “ to the place of issue as stipulated in condition 10(B) here-in – before against written receipts from the Engineer-in-Charge ”.</p>
		<p>(41) <u>Condition 49, subpara 5 line 3,4 and 5</u></p> <p><b>For:</b> “before the completion of entire group, but for all purpose of the contract except for compensation for delay, the completion of the entire group shall be taken into account”</p> <p><b>Read :</b> “ before the completion of the entire group in such event the grouping (phasing) of items as catered for in the contract shall be deemed to have been amended accordingly”.</p>
		<p>(41) <u>©Condition 49, subpara 7</u></p> <p>Existing contents shall be substituted as under :-</p> <p>“On receipt of notice from the contractor that the wok has been completed, the GE shall within seven days certify to the contractor the dates(s0 on which the items or ground of items of works are completed and taken over and the state thereof or shall notify the details of incomplete items of works to the contractor. In case of dispute between GE and the contractor over completion of work the decision of Accepting Officer or CWE in case of GE’s contract shall be final and binding”.</p>

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3
34 1989 Print	21	(41) <u>Condition 55</u> Existing contents shall be substituted as under :- “55. Termination of contract for Death – without prejudice to any of the rights or remedies under this contract, if the contractor dies , the Accepting officer shall have the open of terminating the contract without compensation to the contractor if proprietor has nominated a person during his lifetime, the nominee will be allowed by the GE to complete the balance work. However if the nominee is not willing or in the opinion of Accepting officer is not capable o completing the work as contracted for, he shall terminate the contract without any compensation to the nominee. The decision of the Accepting Officer whether the nominee is capable or not shall be final and binding.”.
35 1989 Print	21 and 22	(41) <u>On page 2 against Sl 59, Blank add following in description</u> “Determination of contract in the event of Force Majeure”  (41) <u>On page 22 against Sl 59 blank.</u> Insert new condition 59 in lieu o blank as under :- 59. Determination of contract in the event of Force Majeure- The contract may be determined at the option of either party by giving 30 days notice in writing to the other party should any event of “Force Majeure’ continue to prevail for an uninterrupted period of six months and no progress of work is achieved owing to such circumstances during these six months. On receipt of notice from one party to other explaining circumstances of ‘Force Majeure’ the GE and contractor will carry out join inspection of works and inventory of completed incomplete works and the materials collected for incorporation in the work shall be prepared for processing of final bill. The contractor shall have no claim to payment of any compensation on account of any profit or advantage which he may have derived from the execution of work in full but which he could not derive due to determination of contract on account of ‘Force Majeure.’.”.
36 1989 Print		(41) <u>Condition 61, last but one para, line 6</u> <b><u>For:</u></b> “Rs 500/-” <b><u>Read:</u></b> “ Rs 5000/-”
37 1989 Print	24	(41) <u>Condition 64 subpara 1 and 2</u> Substitute existing contents without following:- “64. Advance on Account-The contractor may at intervals of not less than 30 days for contract of value less that Rs 50 lakh and 15 days in case of contract more than 50 lakhs submit claims on I.A.F.W-2263 provided the payment due is not less than Rs 50000/- and for term contractor may prefer not more than two claims for payment of advances on account of work done and of materials delivered in connection with measurement and Lumpsum contracts. However such claim for work done. Which are required to be measured, shall be submitted only after recording joint measurement in the MES Measurement Book IAFW-2261”. <u>Condition 64, subpara 3 line 3</u> <b><u>For:</u></b> “Eingineer-in-Charge” <b><u>Read :</u></b> “ GE” <u>Condition 64 subpara 8 and 9</u> <u>Insert a new subpara between subpara 8 and 9 as follows :-</u> “Provided further the contractor may be paid advance on account to the fill value of material such as fitting and fixtures and other manufactured items as decided by the GE which do not lose their identity brought on the site, on his furnishing Guarantee Bodn(s) or fixed Deposit Receipt (s)

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3
<u>37</u> 1989 Print	24	from a scheduled bank for the amount of retention money which should otherwise be recoverable from him under the contract. The Guarantee Bond and Fixed Deposit Receipt shall be executed and kept valid in a manner as described here-in-before”.
<u>38</u> 1989 Print	25	<u>Condition 66, line 2</u> <b>For:</b> “the period being” <b>Read:</b> “ the period to be” <u>Condition 66, line 3</u> <b>For:</b> “by the GE” <b>Read:</b> “ by the Engineer-in-Charge” © <u>Condition 66(a)</u> <b>For:</b> “Four months” <b>Read:</b> “ Six months” <u>Condition 66(b)</u> <b>For:</b> “Six months” <b>Read:</b> “ Nine months”
<u>39</u> 1989 Print	27	Existing condition 71 Jurisdiction of Courts shall be renumbered as Condition 72
<u>40</u> 1989 Print	27	Add a new condition 71 conciliator as under :- 71. Conciliator – If a dispute (other than those for which the decision of the CWE or any person is by the contract expressed to be final and binding) of any kind whatsoever arises between the arties to the contract during the execution of the works or after completion or after determination/cancellation/termination of the contract, including any disagreement by either party with any action, inaction opinion instruction certificate or valuation by the Accepting Officer or his nominee the matter in dispute shall in the first place be referred to the Dispute Resolution Board (DRB) in case of contracts valuing Rs 10 crore or more and to conciliation by a sole conciliator in case o contract valuing less than 10 crore. In case of disagreement with the decision of such DRB or conciliator, any party may invoke arbitration clause.  Procedure for the constitution/appointment of DRB/ Conciliator shall be as laid down in the contract agreement.
<u>41</u> 1989 Print	13	<b>Security deposit</b> including all its sub para as existing deleted in toto and read as “BLANK”
<u>42</u> 1989 Print	20	Condition 53, Three paragraph after 53© Substitute existing contents with following:-  “Whenever the Accepting Officer exercises his authority to cancel the Contract under this condition, he may complete the Works by any means independently without risk and cost of the original contractor.  On cancelation of contract, the performance security and retention money upto last paid RAR shall be forfeited. ALL T&P and material of contractor lying at site shall be confiscated by Government and shall be absolutely at the disposal of the president of India and No compensation whatsoever shall be allowed by the department.  If the failed contractor is a Company, or a Firm then every member/partner/Director of Company, or Firm shall be barred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any otherCompany/ Firm.”

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3
43 1989 Print	20 and 21	<p>Condition 54, Paras after 54(d) Substitute existing contents with following:-</p> <p>“The Accepting Officer may without prejudice to any other right or remedy whichshall have accrued or shall accrue thereafter to the Government, cancel Contract as a whole or only such Work Order(s) or items of Work in default from the Contract. Whenever the Accepting Officer exercises his authority to cancel the Contract under this condition, he may complete the Works by any means independently without risk and cost of the original contractor.</p> <p>On cancelation of contract, the performance security and retention money upto last paid RAR shall be forfeited. ALL T&amp;P and material of contractor lying at site shall be confiscated by Government and shall be absolutely at the disposal of the president of India and No compensation whatsoever shall be allowed by the department.</p> <p>If the failed contractor is a Company, or a Firm then every member/partner/Director of Company, or Firm shall be barred from participating in the tender for the balance work either in his/her individual capacity or as a partner of any other Company/Firm.”</p>
44 1989 Print	25	<p><u>Condition 67(a), line 10</u> <b>For:</b> “Security Deposit or Security Bond amount” <b>Read:</b> “Performance Security amount (or from the Contractor’s Standing Security Deposit amount or Security Bond if Performance Security amount is not adequate)”</p>
	26	<p><u>Condition 67(g), line 5</u> <b>For:</b> “Security Deposit or Security Bond amount” <b>Read:</b> “Performance Security amount (or from the Contractor’s Standing Security Deposit amount or Security Bond if Performance Security amount is not adequate)”</p>
45 1989 Print	26	<p>Condition 68 Existing contents shall be substituted as under:-</p> <p><b>“68. Refund of Performance Security:-</b> The Performance Security Deposit mentioned in Condition 19 above may be refunded to the Contractor after the expiration of the defects liability period (vide Condition 46) by the G.E. provided always that the Contractor shall first have been paid the Final Bill and have rendered a No-Demand Certificate (I.A.F.W.-451).”</p>
46 1989 Print	26	<p><u>Condition 70</u><b>Arbitration:</b> sub para 3 Deleted the existing contets and shall be substitute as “BLANK”</p>

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3
47	13	Add a new Condition 19 Performance Security as under:-
1989 Print		<p><b>“19. Performance Security:-</b></p> <p>19.1. Within 28 days of receipt of the Letter of Acceptance, the successful contractor shall deliver to the Accepting Officer a Performance Security in any of the forms given below for an amount equivalent to 5% of the contract sum.</p> <p>(a) A Bank Guarantee in the prescribed form.</p> <p>(b) Government Securities, FDR or any other Government Instruments stipulated by the Accepting Officer.</p> <p>19.2. If the performance security is provided by the successful Contractor in the form of a Bank Guarantee, it shall be issued by Nationalized/Scheduled Indian Bank but its confirmation shall be done only from the Head Office of the Bank.</p> <p>19.3. Failure of the successful contractor to comply with the requirements of subclause 19.1 shall constitute sufficient grounds for cancellation of the award of work and forfeiture of the Earnest Money. In case of MES enlisted contractor, amount equal to the Earnest Money stipulated in the Notice Inviting Tender, shall be notified to the tenderer for depositing the amount through MRO, Issue of tender to such tenderers shall remain suspended till the aforesaid amount equal to the Earnest Money is deposited in Government Treasury.</p> <p>19.4. All compensation or other sums of money payable by the contractor to the Government under the terms of this contract or under any other contract with Government may be deducted from, or paid by the sale of a sufficient part of the Performance Security or from the interest arising there from or from any sums which may be due or become due to the contractor by the Government on any account whatsoever and in the event of his Performance Security being reduced by reason of any such deduction, or sale as aforesaid, the contractor shall within ten days thereafter make good in cash or securities, endorsed as aforesaid, any sum or sums which may have been deducted from or realized by the sale of his Performance Security or any part thereof. Government shall not be responsible for any loss of securities or any depreciation in the value of securities while in their charge nor for loss of interest thereon.</p> <p>19.5. In the event of contract being cancelled, under Condition 52, 53 &amp; 54 of General Conditions of Contract, the Performance security shall be forfeited in full and shall be credited into Consolidated Fund of India.”</p>

**AMENDMENTS TO IAFW-2249 (1989 PRINT) (CONTD.)**

1	2	3
48 <hr/> 1989 Print	17 and 18	<p><u>Condition 46, Second Para, lines 1 to 5</u></p> <p><b>For:</b> “Should the G.E. consider, at any time during the construction or reconstruction or prior to the expiration of period of a twelve calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) that any work has been executed with unsound, imperfect or 83pparatus83 workmanship or of a quality inferior to that contracted for or not otherwise in accordance with the Contract.....”</p> <p><b>Read:</b> “Should the G.E. consider, at any time during the construction or reconstruction or prior to the expiration of period of:- (a) Thirty six calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) for Runway works, Marine &amp; Harbour works, High Altitude works &amp; Specialist works of Hospitals &amp; Medical Equipment/Medical Gas. (b) Twenty four calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) for works other than mentioned in sub para (a) above. <i>(The period of defects liability period shall be specified in the tender documents.)</i> that any work has been executed with unsound, imperfect or 83pparatus83 workmanship or of a quality inferior to that contracted for or not otherwise in accordance with the Contract.....”</p>
49 <hr/> 1989 Print	17 and 18	<p><u>Condition 46,</u></p> <p><b>For:</b> “Should the G.E. consider, at any time during the construction or reconstruction or prior to the expiration of period of:- (a) Thirty six calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) for runway works, Marine &amp; Harbour works, high Altitude works &amp; Specialist works of Hospitals &amp; Medical Equipment/ Medical Gas. (b) Twenty four calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) for works other than mentioned in sub Para (a) above. <b>Read:</b> “Should the G.E. consider, at any time during the construction or reconstruction or prior to the expiration of period of:- (a) Thirty six calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) for Runway works, Marine &amp; Harbour works, High Altitude works &amp; Specialist works of Hospitals &amp; Medical Equipment/Medical Gas. (b) Twelve calendar months after the works have been handed over to Government (hereinafter referred to as the “defects liability period”) for works of Periodical Services and Welcome Maintenance, Minor works and Revenue Works and works for ‘Maintenance &amp; Operation’ including Repairs and Works for Maintenance &amp; Repair/Replacement. (c) Thirty days or date of taking over of the Installation by MES, whichever is earlier, for works of ‘Manning &amp; Operation’ &amp; ‘Maintenance &amp; Operation’ involving predominantly Outsourcing of Services through Deployment of Manpower/ Work-force and not involving Repair/ Replacement. (d) Twenty four calendar months after the works have been handed over to the Government (hereinafter referred to as the “defects liability period”) for works other than mentioned in Sub Para (a) to (c) above.</p>

SIGNATURE OF THE CONTRACTOR  
DATED: \_\_\_\_\_

FOR ACCEPTING OFFICER

**SCHEDULE OF MINIMUM WAGES**

It is hereby agreed that the “Schedule of Minimum Wages” as published by Govt of India/State Govt/Govt Local Authorities whichever is highest and which specifies minimum rates of wages for various categories of workman as applicable on the last due date of receipt of this tender shall form part of this tender documents.

The minimum rates of wages shall consist of all inclusive rates and include also the wages for weekly day of rest.

My/our signature here under amount to my/our having signed aforesaid documents forming part of this tender.

\_\_\_\_\_  
SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

FOR ACCEPTING OFFICER



### **SPECIAL CONDITIONS**

#### **1. GENERAL:**

1.1 The following Special Conditions shall be read in conjunction with General Conditions of contract IAFW-2249 including amendment/errata thereto. Any provision in this Special conditions if at variance with provision in the above mentioned documents, shall take precedence there over.

#### **2. ADMISSION TO SITE BY CONTRACTOR AND RESPONSIBILITY TO ASCERTAIN HIS OWN INFORMATION'S**

2.1 Refer paras 11 and 15 of Notice of Tender (IAFW-2162) and condition 4 of IAFW-2249. The contractor is advised to inspect the site of work with prior appointment of GE/AGE(I) who shall give reasonable facilities for this purpose. The tenderer shall be deemed to have satisfied himself before submitting his tender as to the nature of the ground and sub-soil (so far as it is practicable), the climatic conditions, the form and nature of the site, nature of work and the manner to access to the site and the accommodations he may require. In general information's on Inspection of site, as to risks, contingencies and other circumstances which may influence on effect his tender. No extra payment consequent on any mistake or mis-understanding or otherwise on this account shall be allowed. The tenderer shall be deemed to have visited the site before submitting the tender irrespective of the fact whether or not be actually visited it.

#### **3. AVAILABILITY OF LAND FOR STORAGE OF MATERIALS, ACCOMMODATION FOR LABOUR ETC**

3.1 Delete the following in para 1 of Condition 24 of IAFW-2249 (General Condition of Contracts):-

“in the event of the areas of land----- allotted to him”

And the following shall be read in conjunction with Condition 24 of IAFW-2249:-

“The contractor shall be permitted to store his materials including erecting temporary sheds thereof, temporary workshop and the like at the area of land, marked for this purpose, on the site plan/shown by the GE/AGE(I) free of rent, if it is on class A-1 land. For other types of land he shall be charged Licence Fee Rs. 1.00 (Rupees one only) per year or part of a year for each and every separate area of land allotted to him. No land shall be allotted to the contractor for construction of huts for accommodation of labour.”

3.2 The area so occupied shall be vacated by the certified date of completion and site of work shall be cleared as stipulated in condition 49 of IAFW-2249.

3.3 The persons who are directly employed by the contractor for the purpose of execution of works shall only be allowed to stay and work in these area. The contractor shall ensure that outsiders who are not directly connected with the work do not stay in this area. The GE/AGE(I) shall exercise proper check for the same.

3.4 The contractor shall ensure proper sanitation of the area to the satisfaction of the Engineer-in-Charge.

#### **4. CONDITION OF WORKING**

4.1 The work lies in **RESTRICTED AREA**. The contractor and his workman shall observed all the Rules promulgated from time to time by the authority controlling the area viz prohibition of smoking, lighting and fire precaution, search workman/agents and transport on entry and exit and keeping to specified routs and working hours restriction.

4.2 The contractor, his agents(s)/representative/workman etc and his materials, carts, trucks or other means of transports etc will be allowed to enter through and leave only from such gate and at such time as the GE/AGE(I) or authorities in charge of the restricted areas may at their sole discretion permit to be used. The contractor authorized representative is required to be present at the place of entry and exit for the purpose of identify his carts, trucks etc, to the personnel in charge of the security of restricted area.

**SPECIAL CONDITIONS (CONTD.)**

4.3 The contractor, his agents and representatives are required individually to be in possession of identity card or pass duly verified by the GE/AGE(I). The identity card/pass will be examined by the security staff at the time of entry into or exit from the restricted area and also at any time inside the restricted area. Every workman shall be in possession of an identity card which shall be issued after a through investigation of the antecedents of the labour employed by the contractor and attested by the Engr-in-Charge in accordance with the standing Rules and regulation of the Unit. Contractor shall be responsible for the conduct and action on his men, agents or representatives. Passes shall be returned at any time on demand by Engr-in-Charge and in any case on completion of work.

4.4 The contractor shall not carry out any work on Gazetted holidays, weekly holidays and other non-working days except when he is expressly authorized to do so by GE/AGE(I). The GE/AGE(I) may at his sole discretion declare any day as holiday or non-working day without assigning any reason for such declaration.

4.5 No payments shall be admissible for any man hours lost on the above accounts.

**5. CONTRACTOR'S REPRESENTATIVE AND WORKMAN**

5.1 Refer Condition 25 of IAFW-2249 (General Conditions of Contract). The contractor shall employ only Indian Nationals as his representative, servant and workman and verify their antecedents and loyalty before employing them for the work. He shall ensure that no person of doubtful antecedents and nationality is in any way associated with the work. If for reasons of technical collaboration or other considerations the employment of foreign national is unavoidable, the contractor shall furnish the particulars to his effect to the Accepting Officer at the time of submission of the tender.

**6. SECURITY OF CLASSIFIED DOCUMENTS:**

6.1 Contractor's special attention is drawn to Condition 2(A) and 3 of General Conditions of Contract IAFW-2249. The contractor shall not communicate any classified information regarding the work either to sub contractor or other without prior approval of the Engineer-in-Charge. The contractor shall not make copies of the design/drawings and other documents furnished to him in respect of work and he shall return all documents on the completion of the contract. The shall along with final bill attach, a receipt from the Engineer-in-Charge in respect of his having return the classified documents as per Condition 3 of IAFW-2249 (General Conditions of Contracts).

**7. MINIMUM WAGES PAYABLE TO LABOUR:**

7.1 Refer Condition 58 of IAFW-2249. The contractor shall not pay wages lower than minimum wages for labour as fixed by that Govt of India/Sate Govt/Union Territory under Minimum wages Act or Contract Labour (Abolition and Regulation Act) whichever is higher.

7.2 The fare wages referred to in Condition 58 of IAFW-2249 shall be deemed to be the same as the minimum wages payable as referred to above.

7.3 The contractor shall have no claim whatsoever, if on account of local factors and/or regulations, he is required to pay the wages in excess of minimum wages as described above during execution of work.

**8. CO-OPERATION WITH OTHER AGENCIES:**

8.1 The contractor shall permit free access and generally afford reasonable facilities to other agencies, departmental workmen engaged by the Govt to carryout their part of the work if any under separate arrangements. The contractor shall not be allowed any extra payment on this account.

**9. QUARRIES**

9.1 Quarries are not available on the land which is in the charge of the MES authorities. Condition 14 of IAFW-2249 shall thus be treated as deleted.

**SPECIAL CONDITIONS (CONTD.)**

**10. WATER:**

10.1 Refer Condition 31 of IAFW-2249 (General Condition of Contract) and clause No. 13 of MES Schedule of Rates Part-I. If the contractor desire to buy water from Govt, the water will be supplied by the Deptt. The water supply will be metered and the contractor shall pay for water used in the works and by his workmen at the rate of **Rs. 26.73 (Rupees twenty six and paise seventy three only) per 1000 Litres** of water consumed **subject to Minimum @ Rs. 3.75 per 1000 worth work done**. The supply of water may however not be continuous. The contractor shall be deemed to have ascertained the hours of availability of water before submitting his tender. MES do not guarantee the out put of water supply or against bread down in the system or sufficiency of supply. The contractor shall make his own arrangements for storage and supplementing the water supply at his own cost.

10.2 The contractor, if he so desire, will be allowed to augment the water supply by boring wells at his own cost at site(s) approved by the GE/AGE(I). On completion of the work, the contractor shall remove pipes etc installed and make good the site as directed by the Engr-in-Charge without any extra cost to the Govt,. The contractor shall, however, ensure that water drawn from such sources is clean and free from all impurities and is suitable for mixing of concrete, mortar, washing aggregate and curing of concrete as specified in IS-456.

**11. SUPPLY OF ELECTRICITY:**

11.1 In case the contractor desired to buy electricity from MES it will be supplied at point(s) shown on site plan or at any point as decided by GE/AGE(I).

11.2 Electric supply shall be 415/230 volts, 50 cycles, three phase AC supply.

11.3 The contractor shall be charged for the electric energy consumed at the following rates:

(a) At Rs **11.21**(Rupees Eleven and paise twenty one only) per unit (KWH) for lighting and power.

11.4 The above rates are all in cost rates, duties and/or taxes if any, levied by State Govt. and/or any Electricity undertaking and like on the electricity charges will be borne by the Department.

11.5 The maximum load of electricity that can be supplied by MES will be 5 KVA.

11.6 Electricity shall be supplied from main switches. Main switches and KWH meter to register the power supplied shall be provided and installed by MES. All other fittings, cable, switch, connections etc. for distribution and supply of electric from main switch to work site shall be arranged by the contractor at his own according to Indian Electricity Rules and along the routes approved by the GE/AGE(I). The GE/AGE(I) shall have free access to inspect all installation, connections, devices for consuming the electricity and if these are not found satisfactory the GE/AGE(I) shall have the power to get these disconnected, if so desired by him.

11.7 Supply of electricity shall be during the hours as decided by the GE/AGE(I), however MES do not guarantee, the continuity of supply and no compensation shall accrue to the contractor for the supply becoming intermittent or if there is any breakdown for any reason.

**12. MATERIALS AND SAMPLES:**

12. Refer Condition 10 of IAFW-2249 and clause No. 1.6 & 1.7 of MES Part-I.

12.1 The tenderers are advised to inspect sample of the materials which are displayed in the office of the GE/AGE(I) before submitting his tender. The tenderers shall be deemed to have inspected the samples and satisfied himself as to the nature and quality of materials, he is required to incorporate in the work, irrespective of whether he has actually inspected or not. The materials to be incorporated in the work by the contractor shall conform to or shall be superior in quality to the sample displayed and shall comply with the specifications given here-in-after.

12.2 The contractor shall not procure materials unless the samples are first approved by the GE/AGE(I).

12.3 The materials other than materials of local origins shall comply with the requirement of the latest IS.

**SPECIAL CONDITIONS (CONTD.)**

12.4 The cost of testing of material shall be borne by the contractor and while quoting their rates this aspect shall be kept in mind and nothing extra shall be admissible on the account.

**13. RECORDS OF MATERIALS**

13.1 The quantity of materials such as paints, water proofing compound, chemicals for anti-termite treatment and the like, as directed by the Engr-in-Charge (the quantity of which can not be checked after incorporation in the works) shall be recorded in measurement books and signed by the contractor and the Engineer-in-Charge as a check to ensure that the required quantity has been brought to site for incorporation in the work.

13.2 Materials brought to site shall be stored as directed by the Engineer-in-Charge and those already recorded in measurement book shall be suitably marked for identification.

13.3 The contractor shall on demand, produce to the GE/AGE(I), original receipted vouchers/invoices in respect of the supplies. The vouchers/invoices so produced shall be defaced and stamped by Engineer-in-Charge indicating contract Number, name of work, under his dated signature. The contractor shall ensure that the materials are brought to site in original sealed containers/packing, bearing manufacturer's marking except in the case the requirement of material(s) being less than smallest packing.

**14. PERIOD FOR KEEPING THE TENDER OPEN:**

14.1 The tender shall remain open for acceptance for a period of 60 days from the date specified for submission, excluding the date of submission.

**15. TIME AND PROGRESS CHART:**

15.1 The time and progress chart to be prepared as per condition 11 of IAFW-2249 (General Conditions of Contracts) shall consist of detailed net work analysis and a time schedule. The Critical path net work will be drawn jointly by the GE/AGE(I) and the contractor soon after acceptance of tender. The scheduling of the activities will be done by the GE/AGE(I) and the contractor so as to complete the work in the stipulated time. On completion of the time schedule a firm calendar date schedule will be submitted in four copies within two weeks from the date of handing over the site to the GE/AGE(I) who will approve it after due scrutiny. In case the contractor fails to submit the CPM net work diagram, the network prepared by the GE/AGE(I) shall be binding on him.

15.2 During the currency of the work contractor is expected to adhere to the time schedule and the adherence will be part of the contractor's performance under the contract. During execution of the work, contractor is expected to participate in the review and updating of the net work undertaken by GE/AGE(I). These reviews may be undertaken at the discretion of GE/AGE(I) either as periodical approval measure or when the quantum of work on the contract as substantially changed through deviation orders or amendments. Any revision of the schedule as a result of the reviews will be submitted by the contractor to the GE/AGE(I) within a week who will approve it after due scrutiny. The contractor will adhere to the revised schedule there after. In case of contractor not agreeing to the revised schedule, the same will be referred to the Accepting Officer whose decision will be final, conclusive and binding. GE/AGE(I)'s approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall be not automatically amount to a grant of extension of time. Extension of time shall be considered and decided by the appropriate authorities mentioned in condition 11 of IAFW-2249 and separately regulated.

15.3 The contractor is expected to mobilize and employ sufficient resources to achieve the detailed schedule within the broad frame work of the accepted methods of working and safety.

15.4 No additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the Department.

**16. RELEASE OF PERFORMANCE SECURITY**

16.1 Refer Condition 19 and 68 of IAFW-2249.

16.2 The Performance Security Deposit mentioned in Condition 19 above may be refunded to the Contractor after the expiration of the defects liability period (vide Condition 46 and amendment No 49 of IAFW-2249) by the GE/AGE(I), provided always that the Contractor shall first have been paid the Final Bill and have rendered a No-Demand Certificate (I.A.F.W.-451)."

**SPECIAL CONDITIONS (CONTD.)****17. SITE FOR EXECUTION OF WORK**

17.1 Site for execution of work will be available as soon as the work is commenced on the date as mentioned in the Work Order No. 01. However, in case due to unavoidable circumstances it is not possible to make the entire site available on the date of the commencement; the contractor shall have to arrange his programme accordingly. No claim whatsoever for not getting the entire site on the date of commencement of work and for giving the site gradually shall be tenable.

**18. RECOVERY CHARGE FOR TESTING OF MATERIALS**

18.1 Where testing of contractor's material is carried out in Zonal/National Test House/SEMT/Wing/Engineering Colleges by the Department, the contractor shall be liable to pay the testing charges as stated in Appendix 'C' to Particular Specifications and shall be recovered from the contractor's running payment/Final Bill as the case may be.

**19. SAFETY PRECAUTION**

19.1 The contractor shall take every precaution to control traffic on road keeping danger boards, necessary lighting arrangements, fence and watchman to avoid any damages in case due to excavation or others, the road is to be blocked, the contractor shall without any extra cost to the Govt provide separate bypass so that normal traffic is not disturbed.

19.2 Any damages to the existing structures/roads/building etc shall be made good by the contractor with the same specifications as per the existing work, without any extra cost to the Govt. in event of contractor not fully complying with the above provisions to the satisfaction of the GE/AGE(I), the GE/AGE(I) may provide the same for which the expenses incurred will be recovered from the contractor.

**20. RECORDS OF CONSUMPTION OF CEMENT**

20.1 The contractor shall maintain a pucca bound register with serially numbered pages with all pages initialed by Engr-in-Charge against numbering showing quantities of cement records and used in the work daily and balance at the end of each day. The form of record shall be as approved by the Engr-in-Charge. The register shall be signed daily by the representative of MES and the contractor in token of verification of its correctness and shall be checked by the Engr-in-Charge.

20.2 The register shall be kept at site safe custody of the contractor representative during the progress of the work and shall on demand, be produced for verification to the inspecting officers.

20.3 On completion of the work the contractor shall deposit the cement register to the Engr-in-Charge for record.

**21. RETENTION MONEY/COMPENSATION FOR DELAY**

21.1 Refer Condition 64 of IAFW-2249 (advance on Account) and Condition 50 of IAFW-2249 (Compensation for delay)

21.2 For the purpose of calculating retention money and liquidated damages under Condition 64 of IAFW-2249 and compensation for delay in completion of work under Condition 50 of IAFW-2249, the value of contract as revised including price variation under modified Condition 63 of IAFW-2249 (if any) shall be taken into account.

**22. OFFICIAL SECRET ACT**

22.1 Refer Condition 24 of IAFW-2249. The contractor's attention is invited to India Official Secret Act 1923 (xxx of 1923) particularly Sec 5 thereof. The contractor shall be bound by the provision of this Act.

**23. DAMAGE TO EXISTING WORKS:**

23.1 Any damage done to existing structure during the execution of works shall be made good by the contractor at his own cost and site of works left clean and tidy on completion. Rectification or reinstatement making good etc shall conform to the standard of materials originally used in the and finished work shall match with existing work in all respect to the entire satisfaction of the GE/AGE(I). In case of any dispute on this account, the matter shall be referred to the CWE whose decision in writing shall be final and binding.

**SPECIAL CONDITIONS (CONTD.)**

**24. SIGNING OF CONTRACT DOCUMENTS:**

24.1 The person signing the tender on behalf of another or on behalf of a firm shall attach with the tender a proper power of attorney duly executed in his favour by such other persons or by all the parties stating that he has authority to bind such other persons of the firm as the case may be in all matters pertaining to the contract including the arbitration clause.

**25. OUT OF POCKET EXPENSES:**

25.1 No out of pocket expenses incurred by the tenderers in submitting his tender shall be reimbursed whether his tender is accepted or not.

**26. CLEANING DOWN:**

26.1 The contractor shall clean all floors, remove cement/lime/paint drops, clean joinery, glass etc, touch up all painter's work and carry out all other necessary items of work to make the premises clean and tidy before handing over the buildings/works.

**27. FEMALE LABOUR:**

27.1 The contractor desires to employ female labour on works to be carried out inside the area of a Factory, Depot, Park etc and a female searcher is not borne on the 90pparatus90 strength of the Factory, Depot Park etc at the time of submission of the tender, he shall be deemed to have allowed his tender for pay and allowances etc for a female searcher (Class IV servant/GP 'D' servant) calculated for the period, female labour is employed by him inside that area. If more than one contractor has/have to employ female searcher in addition to the authorized strength of the Factor, Depot, park etc the salary and allowances paid to additional female searchers(s) shall be distributed on an equitable basis between the contractor's employing female labour taking into consideration the value and period of completion of their contracts. The GE/AGE(I)'s decision in this regard to the amount recoverable on this account from any contractor shall be final and binding.

**28. SCOPE OF CONCILIATION**

28.1 The scope of conciliation will be restricted to the following types of disputes with financial limit as indicated therein:-

- (a) Disputes relating to levy of compensation for delay in completion actual amount of compensation.
- (b) Disputes relating to technical examination of works.
- (c) Disputes relating to interpretation of the provisions of the contract with reference to their application to parties.
- (d) Disputes relating to non return of Schedule 'B' stores over-issued to the contractor.
- (e) Any other disputes having fair chances of being resolved by the Conciliation and considered fit to be referred to conciliation by the parties.

For item No. (a), (b), (c), (d) & (e) each as stated above the financial limit shall be Rupees two lakhs or one percent of the contract amount which ever is less.

**28.2 COMMENCEMENT OF CONCILIATION PROCEEDINGS**

28.2.1 The party initiating conciliation shall send to the other party a written invitation to conciliate, briefly indentifying the subject of the dispute.

28.2.2 Conciliation proceeding s shall commence when the other arty accepts in writing the invitation to conciliate.

28.2.3 If the other party rejects the invitation, there will be no conciliation proceedings. If the party initiating conciliation does not receive a reply within 30 days from the date on which he sends or within such other periods of time as specified in the invitation, he may elect to treat this as a rejection of the invitation to conciliate and if he so elects, he shall inform in writing the other party accordingly.

**28.3 NUMBERS OF CONCILIATORS**

28.3.1 There shall be a sole conciliator.

28.4 ----- B L A N K -----

**28.5 STATUS OF EFFECT OF SETTLEMENT AGREEMENT:**

28.5.1 The settlement agreement signed by the parties as a result of conciliation proceedings shall have the same status and effect as it is an arbitral award on agreed terms.

**SPECIAL CONDITIONS (CONTD.)****29. FEES CHARGEABLE BY POLICE AUTHORITIES FOR VERIFICATION OF ANTECEDENTS:**

29.1 Verification of antecedents of Proprietor/partners/Directors of the form in connection with issue of tender and of Enlistment shall be Govt responsibility and accordingly payment to Police authorities toward verification of antecedents shall be borne by the Govt.

29.2. Verification of antecedents of Contractor's representatives/labour deployed at site in connection with execution of work under the contract, as per security requirement shall be the responsibility of the contractor and all expenses in connection with verification of antecedents by Police Authorities/Security Agency shall be borne by the contractor. No claim whatsoever on this account shall be entertained by the Govt.

**30. RE-IMBURSEMENT/REFUND ON VARIATION IN "TAXES DIRECTLY RELATED TO CONTRACT VALUE"**

30.1 The rates quoted by the contractor shall be deemed to be inclusive of all taxes (including Sales Tax/VAT on material, Sales Tax/VAT on work contracts, turnover Tax, Service Tax, Labour Welfare Cess/Tax etc), duties, Royalties, Octroi and other levies payable under the respective Statutes. No other levies, and/or imposition/abolition of any new/existing taxes, duties, Royalties, Octroi and other levies shall be made except as provided in sub Para 30.2 to 30.5 here-in-below.

30.2 The taxes which are levied by Govt at certain percentage rates on Contract Sum/Amount shall be termed as "Taxes directly related to Contract Value" such as Sales Tax/VAT on work contracts, turnover Tax, Service Tax, Labour Welfare Cess/Tax and like but excluding Income Tax. The tenderer rates shall be deemed to be inclusive of all "Taxes directly related to Contract Value" with existing percentage rates as prevailing on last due date of receipt of tenders. Any increase in percentage rates of "Taxes directly related to Contract Value" with reference to prevailing rates on last due date for receipt of tenders shall be reimbursed to the Contractor and any decrease in percentage rates of "Taxes directly related to Contract Value" with reference to prevailing rates on last due date for receipt of tenders shall be refunded by the Contractor to the Govt/deducted by the Govt from any payments due to the Contractor. Similarly imposition of any new "Taxes directly related to the Contract Value" after the last due date of receipt of tenders shall be reimbursed to the Contractor and abolition of any "Taxes directly related to the Contract Value" prevailing on last due date of receipt of tenders shall be refunded by the Contractor to the Govt/deducted by the Govt from the payments due to the Contractor.

30.3 The contractor shall, within a reasonable time of his becoming aware of variation in percentage rates and/or imposition of any further "Taxes directly related to Contract Value" give written notice thereof to the GE stating that the same is given pursuant to this Special Condition, together with all information relating thereto to which he may be in a position to supply. The Contractor shall submit the other documentary proof/information as the GE may require.

30.4 The Contractor shall, for the purpose of this condition keep such books of account and other documents as are necessary and shall allow inspection of the same by a duly authorized representative of Govt, and shall further, at the request of the GE/AGE(I) furnish, verified in such a manner the GE/AGE(I) may require, any documents so kept and such other information's as the GE/AGE(I) may require.

30.5 Reimbursement for increase in percentage rates/imposition of "Taxes directly related to Contract Value" shall be made only if the contractor necessarily and properly pays additional "taxes directly related to Contract Value" to the Govt, without getting the same adjusted against any other tax liability or without getting the same refunded from the concerned Govt Authority and submits documentary proof for the same as the GE may require.

**31. OUT PUT OF POWER ROAD ROLLER**

31.1 Reference Condition 15 of IAFW-2249.

31.2 Where road roller(s) is/ are hired by the department to the contractor, a log book for each road roller shall be maintained by the department for recording hours of working of the road roller. In case, however, when the contractor procures road roller(s) from sources other than the department, a log book for each road roller shall be maintained by him for recording hours of working of the road roller. Entries in the log book shall be signed by the contractor or his authorized representative and by the Engineer-in-Charge at the site or work.

**SPECIAL CONDITIONS (CONTD.)**

31.3 To ensure proper consolidation, roller must work for at least number of days assessed on the basis of output given hereunder. If the roller has not worked for the number of days so assessed, recovery shall be effected from the contractor for the number of days falling short of the days assessed on the basis of output stipulated. The recovery shall be effected as under;-

- (a) Where road roller is hired out only by the department to the contractor, at rates given in Schedule ‘C’ .
- (b) Where road roller is hired by the contractor only from sources other than the department, Rs. 2500.00 per working day of 8 hours for 8 to 10 Tonne power roller.
- (c) Where road roller is hired by the contractor from the department and also from sources other than the department, at higher of the two rates given in Schedule ‘C’ of contract and clause 31.3(b) above.

31.4 The above provision shall not, however, absolve the contractor of his responsibility of properly consolidating surface as required under the provisions of the contract.

31.5 Out put per day for 8 hours work of power roller 8 to 10 Tonne):-

- |        |   |            |
|--------|---|------------|
| (i)    | Consolidation of formation surfaces/sub grade   | - 1850 Sqm |
| (ii)   | Consolidation of stone soling 23 cm thick   | - 518 Sqm  |
| (iii)  | - ditto- but for 15cm thick,  | - 800 Sqm  |
| (iv)   | Consolidation of water bound macadam (Stone metal) 7.5cm consolidated thickness including spreading and consolidation with binding materials.   | - 372 Sqm  |
| (v)    | Consolidation with water bound macadam (Stone metal) 10cm consolidation thickness including spreading and consolidation with binding materials. | - 248 Sqm  |
| (vi)   | Consolidation of one surfaces dressing  | - 774 Sqm  |
| (vii)  | Consolidation of two coat surface dressing.   | - 558 Sqm  |
| (viii) | Consolidation of 2.5cm thick premixed carpet including seal coat.   | - 600 Sqm  |
| (ix)   | Consolidation of 2 cm thick premixed carpet including seal coat.  | - 744 Sqm  |
| (x)    | Consolidation of bituminous mixture, 2 parts of broken stone metal and one part of sand and bitumen, consolidated thickness 4 cms               | - 372 Sqm  |
| (xi)   | Consolidation of 15 cm thick earth berm   | - 1800 Sqm |
| (xii)  | Consolidation of broken stone base.   | - 500 Sqm  |

31.5 Output of Power Roller for item not listed above will be ascertained by a BOO convened by GE.

31. **YARD STICK:**

31.1 The work done for the purpose of RAR payment against Item No. 1 of Schedule ‘A’ Part-I shall be calculated as per the Yard Stick given in Appx ‘D’. The yardstick are final and binding and shall govern the payment against respective items of Schedule ‘A’ Part-I. In the Yardstick details, the description of items have been given in brief and each item/activity has not been specifically mentioned in the relevant stage. The tenderer should note that irrespective of description at any stage, the entire work of relevant stage to be carried out as per terms and condition of the tender documents. No claim whatsoever by tenderer shall be entertained.

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

FOR ACCEPTING OFFICER



## **PARTICULAR SPECIFICATIONS**

### **GENERAL REQUIREMENT**

- 1.1 Work under this contract shall be carried out in accordance with Schedule 'A' Particular Specifications and General specification and other provisions in MES standard schedule of rates (here-in-after called MES schedule) Part-I of 2009 and Part-II of 2020 in conjunction with each other.
- 1.2 The term 'General Specifications' referred to here-in-before as well as referred to IAFW-2249 (General Conditions of contracts) shall mean the specifications contained in the MES schedule Part-I.
- 1.3 General rules, specifications, special conditions and all preambles in the MES schedule shall be deemed to be applicable to the work under this contract unless specifically stated otherwise in these tender documents in which case the provisions in these documents shall take precedence over the aforesaid provisions in the MES schedule. The term "as specified" particular specification and its absence general specifications. Reference to only some paragraphs of MES schedule have been made in these particular specifications but other paragraphs and provisions as applicable are also to be followed for all sections/parts of schedule 'A' even though not particularly mentioned here-in-after.
- 1.4 Where specifications for any items of work are not given in MES schedule or in these particular specifications, specifications given in relevant Indian Standard specifications or code of practice shall be followed.

### **2. SCOPE OF WORK**

- 2.1 This contract includes for full, final and entire completion of work described in Schedule 'A' at various parts applicable to MES schedule and in the particular specifications and other documents forming part of this tender documents.

### **3. MATERIALS**

- 3.1 All materials to be supplied by the contractor for incorporation in the work shall conform to relevant specifications. In case specification of any materials needed for incorporation in work is not contained in any of the contract documents, the specifications of such materials proposed to be incorporated in the work shall be got approved in writing from the GE / AGE(I) before their incorporation in work, whose decision with regard to quality shall be final and binding. The contractor shall not procure materials unless the samples are first got approved from the competent Engineer Authority.
- 3.2 As far as practicable all manufactured materials/articles other than these manufactured in contractor's workshop and those of local origin, shall bear IS certification mark. In case, any articles does not bear any IS certification marks being not manufactured with IS marks but conforming to the relevant IS specification and is proposed to be incorporated in the work, samples of the same shall be got approved in writing from GE / AGE(I) before incorporation in the work. The contractor shall submit sufficient evidence to the GE / AGE(I) to show that such articles conform to the relevant IS specification and no adjustment shall be made on this account.
- 3.3 Manufactured materials/articles shall be brought at site in original sealed containers/packing bearing manufacturer's marking unless the quantity required is a fraction of the smallest packing.
- 3.4 Materials of proprietary nature such as lime, water proofing compound, paint, anti termite chemical and the like, quantity of which cannot be checked after incorporating in the work shall be entered in MB under heading 'NOT TO BE ABSTRACTED' as soon as these are brought at site. These records shall be signed both by the Engineer-in-Charge and the authorized representative of the contractor. The contractor is required to obtain these materials direct from manufacturers or their authorized dealers. The contractors shall submit to Engineer-in-Charge original stamped receipt bills along with the relevant invoice of the manufacturer's or their authorized dealers (if any) in support of having brought the full quantity required for incorporating in the work. These vouchers shall be endorsed, dated and initialed by the Engineer-in-Charge giving CA NO and Name of work etc and certified copy of each of such vouchers signed by both the Engineer-in-Charge and the contractor shall be kept in MES Records with GE/AGE(I).

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 3.5 Further, the contractor shall be liable to produce any other voucher etc, in respect of other items/materials as and when asked by the GE/AGE(I)/Engineer-in-Charge. The Engineer-in-Charge shall keep the 94ppar copies duly certified by him and return the originals to the contractors, and shall deface such vouchers to prevent its misuse.
- 3.6 When the cost of each category of materials is less than Rs. 1000/- production of vouchers may not be insisted upon if the GE/AGE(I) is otherwise satisfied with the quality and quantity of materials.
- 3.7 The contractor shall carryout such instructions that are given to him in writing by the Engineer-in-Charge to ensure that full quantity of such materials goes into the work.
- 3.8 Materials such as sand, aggregate etc shall generally conforming to the samples kept in GE/AGE(I)'s office in addition to their conformity with relevant specifications given in the tender documents. The samples of all such materials shall be got approved from GE/AGE(I) in writing before these materials are brought to site in bulk. In case of any difference between samples kept in GE/AGE(I)'s office and as that specified in respective IS, the specifications laid down in IS shall take precedence. In case of any difference in opinion between GE/AGE(I) and contractor in this regard, the decision of CWE shall be final and binding. The sources of some of the materials are indicated below for contractor's guidance only :-

**MATERIALS**

**SOURCES**

- |     |                  |   |   |
|-----|------------------|---|---|
| (a) | Fine Sand        | - | Yairipok/Thoubal/Serou/Dhansiri River               |
| (b) | Coarse Sand      | - | Yairipok/Thoubal/Serou/Dhansiri/DeopaniRiver        |
| (c) | Stone aggregate- |   | Yairipok/Thoubal/Serou/Dhansiri/Deopani/Diphu River |
| (d) | Bricks           | - | Best quality available locally.                     |

- 3.9 Lime shall conform to IS-712-1984. Lime for white/colour wash shall be fresh burnt fat lime (Class 'C').
- 3.10 Letters conveying approval of samples/materials of GE/AGE(I)/Engineer-in-Charge will, interalia, mention sources of supply, name of manufacturer's trade name/brand (as applicable) and reference to clause of tender documents containing specifications of particular materials.

**3.11 TESTING OF MATERIALS**

- 3.11.1 Contractor shall carry out the testing of materials in Site Lab/Zonal Lab/SEMT, Pune/Engineering College as specified in respective clauses and Appendix 'B' to Particular specifications here-in-after. The contractor shall provide all the materials required for the purpose of testing including labours, moulds and transportation facilities without any extra cost to the Department. The contractor shall bear the cost of testing charges of materials in Zonal Lab/SEMT, Pune/Engineering College.
- 3.11.2 **'A' Level Test for Works Costing 100 Lakhs and above at Contractor's Site Lab:** The contractor may set up a Site laboratory at his option for testing of materials (except Schedule 'B' materials) for 'A' level Testing as listed in Appendix 'B' here-in-after. The contractor shall arrange all equipment/machines for the tests specified in Appendix 'B' here-in-after as 'A' level tests at his own cost with prior approval of GE/AGE(I). This cost shall be included in the quoted unit rate/lump-sum quoted by the contractor. The contractor shall employ a competent technical representative as approved by the GE/AGE(I)for the purpose of testing and all such tests shall be carried out in the presence of Engineer-in-Charge. The successful tests result thereof shall be recorded and signed jointly by the contractor and the Engineer-in-Charge. The charges for these tests i.e 'A' level tests carried out in Site laboratory of the contractor shall not be recovered by the Govt. In case, the contractor has not set up the site laboratory and the tests are carried out in zonal or any other MES laboratory setup/approved by GE/AGE(I), the recovery shall be made at rates applicable i.e as given in Appendix 'B' here-in-after.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 3.11.3 'B' & 'C' Level Tests: For tests of 'B' and 'C' level as indicated in Appendix 'B' here-in-after, the contractor shall provide all facilities for testing of materials at Zonal laboratory/Govt. approved laboratories or Test House/Engineering Colleges at his own cost. The quoted unit rates/lump sum/rates quoted by the contractor shall be deemed to be inclusive of these tests. The rates of various tests conducted in Laboratory of MES are indicated in Appendix 'B'. The contractor shall bear the actual charges of 'C' level tests (to be done in labs other than MES labs) irrespective of rates indicated in Appendix 'B'. Wherever it is convenient to get 'B' level test done at approved test house/Engineering College, the same can be done at the cost of the contractor and no separate recoveries will be made by the Department for the same.
- 3.11.4 The recoveries on account of testing charges wherever applicable shall be effected from the running account payments due to the contractor payable after completion of the respective tests or whenever the test is due whichever is earlier.

**4. EARTH WORK**

- 4.1 Excavation and earthwork shall be deemed to be in soft/loose. However, during excavation if hard/treacherous strata is met with which can neither be termed as soft rock nor hard rock within the definition given in MES Schedule Part I, the same shall be treated as any type of soil and the excavation in such earth shall be deemed to have been included in the quoted lump sum of the building in Schedule 'A' Part I. In case hard rock is met with the same shall be ordered as deviation.
- 4.2 Hard rock met with during excavation shall be entered in the measurement book duly signed by the GE and the contractor and the same shall become the property of the Govt. The contractor shall be responsible for properly stacking and depositing the same in the MES store yard as directed by the Engineer-in-Charge.
- 4.3 In no circumstances blasting will be permitted for excavating hard rock.
- 4.4 Lumpsum quoted by the contractor shall include use of timbering to uphold sides of excavation wherever required from structural/safety point of view.
- 4.5 Lump sum quoted by the contractor shall be deemed to include surface excavation not exceeding 30 cm deep but averaging 15 cm deep over the area occupied by the buildings including plinth protections, ramps, platforms, steps, court-yard, shaft etc., and up to a width of 3 metres beyond the edge of the plinth protection around the building and the like shall be carried out. If structures are sited in areas after site development no further surface excavation need be carried out unless ordered by the GE/AGE(I) in writing. In such cases, surface excavation as mentioned above shall be omitted through a deviation order.
- 1.6 The ground levels shown in the drawings are ground levels after surface excavation is carried out, there after excavation in trenches or over areas will be carried out as shown on drawings. Excavation made deeper than what is shown in drawings, shall be made good by the contractor with PCC(1:5:10) type E-2 without any extra cost to the Government.
- 1.7 Lump sum quoted by the contractor shall be deemed to include for bailing pumping and de-watering foundation trenches of buildings, if water is met with or accumulated from any source or cause. No additional payment will be admissible in this account. In the event of deviation no price adjustment shall be made for cost of bailing, pumping etc, and de-watering as specified herein before whether these are actually required and done at site or not.

**4.8 FILLING IN TRENCHES, PLINTH AND UNDER FLOORS**

- 4.8.1 Filling of excavated earth in foundation trenches, in plinth and under floor, etc. shall be carried out as per Clause No. 3.19.1, 3.19.2 and 3.19.3.1 of MES Schedule Part-I.
- 4.8.2 Tenderers shall quote their Lump Sum taking into consideration that entire quantity of earth obtained from excavation shall be utilized for filling purpose like returning, filling in trenches, etc., to achieve plinth height as shown on drawing including removal of surplus soil and bringing in approved earth to make up shortage, if any. Additional Earth, if required for Filling, as mentioned above, shall be obtained from Outside the MD Land without any Extra Cost to the Department. Earth, obtained thus shall be got approved from GE in writing prior to incorporation in the Work. No Royalties and Transportation Charges shall be Paid Extra by the Govt. for Earth obtained from Outside MD Land.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 4.8.3 All filling of earth will be spread in layers not exceeding 25cm thick (each layer) watered and well rammed. Thickness of filling shown in drawing is after consolidation.
- 4.9 **REMOVAL OF SPOIL**
- 4.9.1 Soil obtained from excavation and not approved for filling and surplus soil obtained from excavation and soil obtained from surface excavation and surface dressing shall be disposed off to a distance exc 250 M but not exc 500 M, or as indicated in relevant item in BOQ deposited and spread as directed by the Engineer-in-Charge.
- 4.10 **HARD CORE**
- 4.10.1 Hard core shall consist of broken stone aggregate of gauge not exceeding 63 mm and shall be well graded so that after consolidation it provides a dense and compact sub grade. Hard core shall be watered well rammed and consolidated. The thickness of hard core shown on drawings shall be thickness after consolidation.
- 4.11 **ANTITERMITE PRECONSTRUCTION SOIL TREATMENT IN ALL BUILDINGS AS LISTED IN SCH 'A' PART-I.**
- 4.11.1 Pre-constructional antitermite chemical treatment to bottom and sides of foundation trenches/pits, filling in trenches/pits, and below floors, junctions of walls and floors, external perimeter of buildings/plinth protection and surroundings of conduits/pipes of all buildings, shall be carried out all as specified in MES Schedule part-I.
- 4.11.2. Antitermite treatment shall be got done through approved specialist agency which is member of Indian Pest Control Association holding valid licence as per clause 13 of Insecticides CT-1968, Persons employed to do the antitermite treatment shall be qualified as per rule 10 of the rules framed under the inspection rules 1971. The specialist agency may be any one from the list circulated by E-in-C's Branch which are located and active in the area with prior approval of GE(I)/GE. However, if the contractor himself is enlisted for antitermite treatment also, he may carry out antitermite work himself.
- 4.11.3 Antitermite treatment shall be carried out with chemicals 'chloropyriphos' 20% concentration conforming to IS as specified in the MES Schedule, purchased directly from the manufacturer or his authorised agents. Contractor will not be allowed to use chemicals banned by the Government of India and contractor shall have no claim on this account. Chemical brought to site in sealed containers and bearing IS mark shall only be used in the work. Purchase vouchers shall be produced before the GE(I)/GE for verification and defacement against this contract.
- 4.11.4 The defects liability period of antitermite treatment shall be 10 years and the contractor shall be responsible to keep the entire buildings free from termite infestation for a period of 10 years after the date of taking over the completed buildings from the contractor. The contractor may obtain a similar guarantee from the specialist firm engaged by him for the purpose and the same shall be submitted on demand.
- 4.11.5 Should the GE(I)/GE at any time during the construction or prior to expire of said guarantee period of 10 years find that the buildings have been infested with termite, the contractor, on demand in writing from the GE(I)/GE, will forthwith undertake to carry out such treatment which may be necessary to render the buildings free from termite infestation at his own expense till expiry of the guarantee period of 10 (TEN) years. The guarantee shall also be applicable to wood work and joinery as specified hereinafter.
- 4.11.6 In the event of contractor's failure to comply with the GE(I)/GE/GE's direction within the stipulated period, the work shall be got carried out at the risk and the cost of the contractor. The liability of the contractor under this condition shall not be however extended beyond the period of 10 (TEN) years from the certified date of completion unless the notice was served on the contractor previously to rectify such defects.
- 4.11.7 The contractor shall provide a plaster plate of requisite size in situation as decided by the Engineer-in-charge on the wall of each of the building. The plate shall be 10 mm thick in cement sand mortar (1:4) to indicate the CA NO., Name of the contractor, the date of completion of the work and the probable date of expiry of 10 years guarantee for Antitermite treatment by engraving and painting (black). The cost of plaster plates is deemed to be included in the unit rates of the buildings.
- 4.11.8 **GUARANTEE FOR ANTI TERMITE TREATMENT**
- 4.11.8.1 Should the GE at any time during construction or reconstruction or prior to the expiration of period of ten years after the certified date of completion of work as per contract finds that buildings have been infested with termites, the contractor shall on demand in writing from the GE, specifying the building(s) complained of, not with-standing that the same may have been inadvertently passed, certified and paid for, forthwith undertake to carry out such treatment as may be necessary to render the said building(s) free from termite infestation at his own expenses for a period of ten years from the certified date of completion and in the event of his failing to do so within a period to be specified by the GE in his demand aforesaid, the GE shall undertake such treatment at the risk and expenses in all respect of the contractor. The liability of the contractor under this condition shall not extend beyond the period of ten years from the certified date of completion unless the GE has previously given Notice to the contractor. General Condition of Contracts (IAFW-2249) shall deemed to be amended to the extent mentioned above.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

4.11.8.2 An amount of security deposit equal to 2% calculated, based on the amount of anti-termite treatment at contract rates for the buildings for which treatment to be carried out shall be retained out of the final bill amount towards security deposit for anti-termite treatment and will be refunded to the contractor after expiry of the period of ten years from the certified date of completion by the GE provided there are no termite infestation in the building.

5. **CONCRETE WORK:**

5.1 **CEMENT:**

5.1.1 Cement shall be Ordinary Portland cement of Grade 43 Conforming to IS-8112 of 1989 (Latest revision) or Portland Pozzolana cement conforming to IS: 1489-1991 which shall be arranged by the contractor for all items of work requiring use of cement and shall not be more than 3 months old on the date it is received/brought at site of work. For this purpose the date of manufacture printed on the cement and as mentioned in the purchase voucher shall be considered for calculating the period of 3 months.

5.1.2 Based on the CPM chart finalized, monthly requirement of cement and the proposed date wise Schedule of deliveries for bringing the cement at site shall also be worked out by the contractor and the same shall be submitted to the GE for information and approval. Cement shall not be allowed to be stocked for more than two months requirement because of its deterioration with passage of time. Cement more than 6 months old shall be retested for checking its suitability for the use in works.

5.1.3 The following checks and procedure shall be followed before the cement supplied by the contractor is accepted and is approved for incorporation in the work:-

5.1.4 **PROCUREMENT OF CEMENT:** The cement supplied by the contractor shall be procured directly from main producers of cement or their authorized dealer / distributor. The following are the main cement manufacturers company of OPC and PPC:-

Ser No	Company Name	Address	Approved grade of cement
1	The Associated Cement Companies Ltd Brand : “ACC”	414-421 , Splendor Forum (4th Floor}, 3, District Centre, Jasola, New Delhi – 110044, Ph- 011 46583600	All
2	Ultra Tech Cement Ltd Brand : “ULTRATECH”	'B' Wing, 2nd Floor, Mahakali Caves Road, Andheri (East), Mumbai- 400093 Ph – 022 - 66917800	All
3	The India Cement	Dhun Building, 827, Anna Salai, Chennai-600002	All
4	Dalmia Cement (Bharat) Ltd Brand : “DALMIA” “KONARK”	Dalmiapuram, Distt- Tiruchirappalli, Tamil Nadu - 621651	All
5	Century Cements Brand : “CENTURY”	Industry House, 159 Church gate Reclamation, Mumbai -400020 , Ph-22-22023936	All
6	Saurashtra Cement Brand : “SAURASHTRA”	Gala No A-1, Ground Floor. Udhyog, Sadan No 3 MIDC, Central Road, Andheri (East), Mumbai- 400093 Ph – 022 – 32955557 / 67, Mo- 9320290081	All
7	The Ramco Cements Ltd (Formerly Madras Cement) Brand : “RAMCO”	Auras Corporate Centre, 98-A, Dr., Radhakrishnan Salai, Mylapore, Chennai – 600004, Ph-044 28478666	All
8	Mangalam Cement Ltd Brand : “MANGALAM”	PO Adityanagar, Morak, Dist- Kota, Rajasthan-326520 Ph-9351468076	All
9	Birla Corporation Ltd Brand : “BIRLA”	Birla Building (3rd &4th Floor) 9/1 , R.N Mukherjee Road, Kolkata -700001, Ph-033-30573700	All
10	Orient Cement Brand : “ORIENT”	5-9-22/57/D, 2nd and 3rd Floor, GP Birla centre, Adarsh Nagar, Hyderabad-500063, Pin-044 23688600	All

**PARTICULAR SPECIFICATIONS (CONTD.)**

11	Nuvoco Vistas Corporation Ltd. (Formerly Lafarge Cement) <b>Brand : “NUVOCO”</b>	Equinox Business Park Tower-3, East Wing, 4 <sup>th</sup> Floor LBS Marg, Kurla (West), Kurla, Mumbai, Maharashtra-400070	All
12	Shree Cement <b>Brand : “SHREE”</b>	Bangur Nagar, Beawar, Dist:-Ajmer, Rajasthan-305901 Ph -01462 228101-06	All
13	J K Cement <b>Brand : “J K”</b>	Kamla Tower Kanpur - 208001	All
14	J K Lakshmi Cement Ltd <b>Brand : “J K LAKSHMI”</b>	Jaykaypuram, Dist-Sirohi, Rajasthan-307019 Ph-02971 244409/10	All
15	Jaypee Rewa Cement <b>Brand : “JAYPEE”</b>	Jaypee Nagar, PO – Jaypee Nagar Rewa – 486450 (MP)	All
16	Ambuja Cement Ltd <b>Brand : “AMBUJA”</b>	Kodinar, PO-Ambujanagar, Taluka-Kodinar, Dist- Junagadh, Gujarat-362715 Ph-02795 237000	All
17	M/s Shree Guru Kripa Cement (Pvt) Ltd <b>Brand : “SARTAJ”</b>	4/4 Trikuta Nagar Jammu, Phone No-0191-2472043	(a) OPC 43 (b) PPC
18	M/S Parasakti Cements Ltd <b>Brand : “PRASAKTI”</b>	123/3 RT, Plot # 8-3-214/21 , Srinivasa Nagar Colony(West), Hyderabad-500038 Tel-040-44119100 /200, Fax- 040-23747562	(a) OPC 43 (b) PPC
19	M/s My Home Industries Ltd <b>Brand : “MAHA CEMENT”</b>	9 <sup>th</sup> Floor, Block-3, My Home Hub, I Madhapur, Hyderabad- 500081, Ph- 040-66929696, Fax- 040-66929797/98	(a) OPC 43 (b) PPC (c) PSC
20	M/s Chettinad Cement Corporation Ltd <b>Brand : “CHETTINAD Cement”</b>	4 <sup>th</sup> Floor, Rani Seethai Hall Building, 603, Anna Salai Hall, Chennai-600006, Tel No. 044-42951800, Fax No. 044-28291558, EMail: -info@chettinadcement. com Website- www.chettinadcement.com	(a) OPC 43 (b) PPC
21	M/s Sanghi Industries Ltd <b>Brand : “SANGHI”</b>	10 <sup>th</sup> Floor , Kataria Arcade, Off S G Highway, P O – Makarba, Dist-Ahmedabad – 380051 Mob – 09825803690, Tel – 079-26838000 Fax- 079-26838111 Website: www.sanghicement.com	(a) OPC 53 (b) PPC
22	M/s Wonder Cement Ltd <b>Brand: “WONDER Cement”</b>	17, Old Fatehpura Seva Mandir Road, Udaipur-313004 Rajasthan (India) Tele: +91-294-33991133 Fax: +91-294-3006333 Email: Corp.office@wondercement.com	(a) OPC 43 (b) OPC 53 (c) PPC
23	M/s Kesoram Industries Ltd <b>Brand : “Birla Shakti”</b>	Cement Division, Office No 613 to 616 White house, Block-III, VI Floor, 6-3-1192/1/1 Kundanbagh, Begumpet, Hyderabad-500016, Telengana Tele - +91-40-4334-4555, Fax- +91-40-4334-4534	(a) OPC- 43 (b) OPC-53 (c) PPC
24	M/S JSW Cement Ltd, A.P <b>Brand : “JSW PSC”</b>	JSW Centre, Opp MIMRDA Ground, Bandra Complex, Bandra(East) Mumbai-40051 Tele: +91-22-4286-5047 Fax: +91-22-2650-2001 Website:- www.jswcement.in	PSC
25	M/S Star Cement Meghalaya (Only for CE Shillong Zone & CE (AF) Shillong area)	Lumshnong, PO-Khaliehriat, Dist-Jantia Hills, Meghalaya, Ph-03655 278215/16/18	(a) OPC (b) PPC
26	M/S Meghalaya Cements Ltd ( Only for Eastern Region) <b>Brand : “TOP CEM”</b>	Lohia House, M. G Road Factory Bazar, Guwahati-781001. Tel 0361 -260367/671	(a) OPC (b) PPC

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 5.1.5 The following conditions shall have to be satisfied before PPC shall be allowed to be used in the work:-
- (a) **PPC should meet the strength criteria of 43 Grade OPC as laid down in IS-8112-2013.**
  - (b) The minimum period before striking off formwork while using PPC shall be as given in relevant PS clause here-in-after.
  - (c) **In cold climate regions where temperature is lower than 15<sup>0</sup>C only OPC shall be used.**
  - (d) Mixing of OPC & PPC shall not be allowed in a work. However with the strict control of ground executives different buildings can have different types of cement.
  - (e) While procuring PPC, the following requirements are to be ensured and certificate to the effect is to be obtained by the contractor for each batch from the manufacturer and the same shall be submitted to the GE/GE / AGE(I) for approval to procure PPC :-
    - (i) The quality of fly ash is strictly as per IS-1489(Part-I)- 2002.
    - (ii) Fly ash is inter-ground with clinker not with clinker.  
Dry fly ash is transported in closed containers and stored in silos. Only pneumatic pumping has been used.
    - (iii) The fly ash received from thermal power plants using high temperature combustion above 1000<sup>0</sup> C has been used.
- 5.1.6 The particulars of the manufacturer/supplier of cement shall be supplied by the contractor to the GE/GE / AGE(I) prior to the physical procurement for every lot of cement separately. Further at the time of taking delivery of cement consignment it shall be mandatory on the part of the contractor to obtain the requisite manufacturer's test certificates from the supplier for the batch printed on the cement bags of the consignment so as to make sure that the cement as purchased conforms to relevant BIS specifications.
- 5.1.7 In no case concreting shall be allowed if ambient temperature at the time of concreting is less than 5° C.
- 5.1.8 For extreme cold and Hot conditions all the precautions like placing form work and curing of concrete shall be ensured by the contractor all as per IS-7861: Part-I & IS- 7861: Part-II & IS 456.
- 5.1.9 **STORAGE:**
- 5.1.9.1 There will be two separate godowns provided by the contractor at site of works exclusively for storage of cement:-
- “First Godown” will have the cement lot(s) for which independent testing is to be got done and/or under process.
- “Second Godown” will have the cement lot(s) whose independent testing has been got done and which after successful testing stands approved by GE for incorporation in the work.
- 5.1.9.2 Cement shall be stored over dry platform with gap of 20cm from wall around and at least 20cm high from floor level. Compliance of provisions in clause 4.3.1 of MES Schedule Part-I shall be ensured. Godowns shall have easy access for proper inspection and cement shall be protected from dampness/moisture to minimize storage deterioration or intrusion of foreign matter. Cement older than six months shall not be used in RCC works.
- 5.1.9.3 Both the godowns shall be provided with two locks on each door. The key of one lock at each door shall remain with the Engr-in-charge or his representative and that of the other lock with the contractor's authorized agent at the site of works so that cement is removed from the godown only according to the requirement for independent testing purpose or for daily consumption purpose with the knowledge of both the parties.
- 5.1.10 **TESTING OF CEMENT**
- 5.1.10.1 Contractor shall submit particulars of manufacturer of cement along with the date of manufacture for every lot of cement separately. The manufacturer is to carry out inspections and testing of cement in accordance with the relevant BIS provisions. Contractor shall also submit manufacturer's test certificate in original alongwith the test sheet or an authenticated copy thereof giving results of each physical test as applicable and the chemical composition of cement. The documents giving above particulars shall be verified by site staff and GE in support of the purchases of cement and these details shall be recorded in the Cement Acceptance Register as per proforma given in Appendix 'A' to the tender documents here-in-after.

**PARTICULAR SPECIFICATIONS (CONTD.)**

5.1.10.2 The GE shall also organize independent testing of random samples of cement drawn from the various lots which shall be got tested by the contractor under his own arrangements and the cost of both materials and labour required for sampling, testing, packing, transportation of samples to testing places and testing charges thereof, and for subsequent identification of cement sampled, shall be borne by the contractor. The independent testing shall be got done from any of the following where facilities exist for all the tests required, viz National Test House, SEMT Wing CME, Govt Approved Laboratories, Zonal Laboratories, Regional Research Laboratories or reputed Engineering College.

5.1.10.3 The independent testing shall be got done as per:-

- (a) IS-3535 : Method of sampling hydraulic cement
- (b) IS-4031 : Methods of physical test for hydraulic cement
- (c) IS-4032 : Method of chemical analysis of hydraulic cement

The other relevant IS shall also be followed. However the tests shall be restricted to those indicated in Appendix 'B' to the tender documents here-in-after.

5.1.10.4 The above tests shall be independent tests. The samples shall be taken immediately within one week of delivery at the site of works and all the test got carried out by contractor within one week of sampling, In case it is not possible to test the samples within one week, the samples shall be packed and stored in air tight containers as decided by GE till such time that they are tested.

5.1.10.5 The entire lot(s) of cement shall stand rejected, if it does not comply with any of the requirement of IS specifications and the test results on samples are not within the acceptable limits. The rejected lot(s) shall be removed from the site of works by the contractor under their own arrangement and cost, The cost of tests shall be borne by the contractor irrespective of the results.

5.1.10.6 The contractor shall use only one type brand of cement for entire structure/reinforced concrete work. In the event of contractor desiring use of any different brand of cement, fresh design mix shall be carried out and submitted for approval without any extra cost to the Govt.

5.1.10.7 Laboratory test results so obtained in respect of PPC cement shall have to meet the strength criteria of ordinary Portland cement 43 grade as laid down in IS:8112-1989.

5.1.10.8 The setting time of cement shall be as under:-

- (i) Initial setting time should not be less than 30 minutes.
- (ii) Final setting time should not be more than 600 minutes.

**5.1.11 DOCUMENTATION AND PHYSICAL VERIFICATION:**

5.1.11.1 The contractor shall submit original paid vouchers from the manufacturers or their authorized vendors for the total quantity of cement supplied under each consignment brought to the site of work.

5.1.11.2 All consignments so received at the work site shall be inspected by GE alongwith the relevant documents for permitting storage in the "first godown" defined here-in-before.

5.1.11.3 The original vouchers and the test certificates shall be kept in record in the office of GE duly authenticated and with cross reference to the control number recorded in the cement register as per format given in Appx 'A' in the tender maintained for "first godown" duly signed by JE (Civ), Engineer-in-Charge, GE and the contractor.

5.1.11.4 After the independent testing has been got done by GE and satisfactory results obtained and kept on record, the consignment so got tested shall be removed from the "first godown" and transferred to "second godown" as defined here-in-before. Original vouchers and the test certificates submitted by the contractor alongwith the consignment and test certificates of independent testing shall be defaced by Engr-in-Charge and kept on record of GE duly authenticated and with cross reference to the control Number rendered in the cement register maintained for the "second godown". This second register shall be termed as "Cement Acceptance Register" which shall be signed by JE (Civ), Engineer-in-Charge, GE and the contractor. It shall be as per format given at Appx 'A' to this tender as an extra provision similar to "Details of test certificates" and termed as "Details of Independent test certificate". Besides this the quantity of cement shall be also suitable recorded in the measurement book for record purposes before incorporation in the work and shall be signed by Engineer-in-Charge and the contractor.

Contd...



**PARTICULAR SPECIFICATIONS (CONTD.)**

- 5.1.11.5 The Accepting Officer may order a BOO in which contractor shall also be a member for random check of cement and verification of connected documents.
- 5.1.11.6 Daily inspection shall be carried out by Engineer-in-Charge or his representative and contractor's authorized agent and separate register shall be maintained in both the godowns duly indicating on daily basis the inspection carried out and indicating holding in godown at beginning of the day, inward supplies in the day, removal in the day and balance at the close of the day duly signed by above persons. In the removal column particulars of lot removed and purpose for which removed shall be indicated.
- 5.1.11.7 The purchase voucher and test certificate of manufacturer shall be liked.

**5.1.12 WEIGHING AND PAYMENT FOR CEMENT**

- 5.1.12.1 Random samples of 5 bags per 100 bags shall be got weighed by Engineer-in-Charge in presence of representative of contractor from each consignment to arrive at average weight per bag for calculating total quantity of cement brought at site for incorporation in the work. All arrangement for weighing of cement bags including labour etc shall be provided by the contractor at his own cost.
- 5.1.12.2 The quantity of cement arrived at as aforesaid shall be considered for payment as applicable in accordance with IAFW-2249, General Conditions of Contracts.
- 5.1.12.3 Payment for cement shall only be allowed after production of original purchase vouchers, manufacturer's test certificates for each consignment of cement brought by contractor and after the results of random testing carried out by GE are found satisfactory as specified herein-in-before.

**5.2 AGGREGATES**

- 5.2.1 COARSE AGGREGATE (STONE): Aggregate for all concrete work shall be crushed stone aggregate conforming to IS-383 and para 4.4 of MES Schedule Part I, 2009. The aggregate also shall be in conformity with the samples kept in GE's office.
- 5.2.2. FINE AGGREGATE (COARSE SAND) : Fine aggregate shall be sand conforming to the requirements to IS-383 and para 4.4 of MES Schedule Part I Sand shall be washed in clean water if the deleterious materials exceed the permissible limit. Use of sand conforming to grading Zone-IV of IS-383 shall not be allowed in RCC/PCC work.
- 5.2.3 Grading of coarse aggregate unless otherwise specified shall be as follows :-

SL. NO	DESCRIPTION		GRADING
(a)	For Reinforced/Structural Element of depth/thickness 50mm or under	:	12.5mm graded
(b)	For Reinforced/Structural Element of depth/thickness over 50mm	:	20mm graded
(c)	For Plain Cement Concrete thickness exc. 25mm but not exc. 75mm	:	20mm graded
(d)	For Plain Cement Concrete thickness 75mm and over	:	40mm graded
(e)	Lime Concrete	:	40mm graded

- 5.2.3.1 Grading of coarse aggregate for plain and reinforced concrete i.e. stone aggregate shall be as per para 4.4.7 (I) of MES Schedule part-I and grading of fine aggregate sand shall be as per para 4.4.7(2) of MES Schedule Part-I
- 5.2.4 AGGREGATES FROM NATURAL SOURCES: Aggregates obtained from natural sources shall not be contained any type of harmful materials and shall be cleaned in all respect.

**5.3 WATER:**

- 5.3.1 Refer para 4.9 & 4.9.2 of MES Schedule Part I. Water shall conform to clause 5.4 IS-456-2000 in case water is drawn by the contractor from his own sources as mentioned in Special Condition Clause No 12 of these tender documents.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

**5.4 PLASTICISER**

5.4.1 Plasticiser shall be used in Design Mix Concrete as per the Manufacturer’s instruction without any Extra Cost to achieve the desired Results Strength and Workability. However Plasticiser should confirm to IS-9103.

**5.5. WORKMANSHIP**

**5.5.1. MIX OF CEMENT CONCRETE**

5.2.1.1. Unless otherwise specified, the mix of cement concrete required in various situation shall be of the following specified grade/proportions. Plain cement concrete and the RCC shall be provided in accordance with IS: 456-2000: -

Sl No	Situation	Mix of cement concrete	Type with nominal size of graded aggregates
1	2	3	4
(a)	Sub-base of floor	1:5:10	Type E-2 (40mm)
(b)	Lean concrete below RCC column footing	1:4:8	Type D-2 (40mm)
(c)	All RCC work.	-	M-25 (Design Mix)
(d)	Lean concrete for wall foundation and dwarf wall.	1:4:8	Type D-2 (40mm)
(e)	PCC in foundation for steps in GF and lean concrete to RCC post of staircase.	1:4:8	Type D-2 (40mm)
(f)	PCC cills, PCC drain, PCC plinth protection and hopper of gully trap and PCC blocks.	1: 3: 6	Type C-1(20mm)
(g)	All PCC bed block and pre-cast Jalli.	1:2:4	Type B-0(12.5mm)
(h)	All plain cement concrete not described in (a) to (g) above	1:2:4	Type B-1(20mm)
(j)	Plain cement concrete below plinth beam where shown on drawings	1: 4: 8	Type D-2 (40mm)

5.5.1.2. All concrete except lime concrete shall be machine mixed. Where small quantities of concrete work is involved, hand mixing may be permitted by the Engineer-in-charge at his own discretion subject to addition of 10% extra cement.

5.5.1.3 Compaction of RCC slabs, beams, foundations and columns shall be done with approved mechanical vibrator using pin and surface type vibrators for all concrete works including for flooring concrete. In other locations compaction may be achieved manually as directed by Engineer-in-charge.

5.5.1.4 For batching, workability, mixing, form work, removal of form work, transportation, placing, compaction, construction joint, curing, protection and inspection of concrete refer relevant paras of MES Schedule Part-I.

5.5.1.5.Sampling and testing of concrete of grade M-30 / M-25 shall be done as per paras 4.11.17 of MES Schedule part I. Testing of concrete as mentioned in IS-456 shall be carried out by the contractor without any extra cost to the department i.e. cost of samples, transportation and testing will be borne by the contractor. Sampling and strength testing of concrete shall be done in accordance with clause 15 of IS-456.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**5.6 SPECIFICATIONS FOR DESIGN MIX CONCRETE : M-25 GRADE**

5.6.1 CEMENT : Cement shall be all as specified here-in-before.

**5.6.2 AGGREGATE**

5.6.2.1 Coarse aggregate shall conform to IS-383 and shall be type basalt/trap granite stone. Aggregate shall be non porous, hard, strong, durable, clear and free from various impurities and adherent coating and shall not contain deleterious materials exceeding the limits specified in the above referred IS. When required by the Engineer-in-Charge, the contractor shall, at his own expenses, carry out any test laid down in IS-383 and IS-2386 to verify that the aggregate complies with the requirements of the IS. The test will be carried out in any Govt laboratory, Govt approved Laboratory, Govt Engineering College as approved by GE.

5.6.2.2 Coarse aggregate shall consist of crushed graded stones aggregates. The maximum size of the aggregate shall be 20mm graded as per IS-383.

5.6.2.3 Fine aggregate shall consist of naturally occurring coarse sand, fine aggregate shall conform to Zone II/III of Table IV of IS-383.

5.6.2.4 SAMPLES : Samples of the aggregate proposed to be used shall be approved by GE, prior to bulk delivery of the same at site of work. Field tests for determining the contents of silt, clay etc., for fine aggregate shall be carried out by the Engineer-in-Charge, from time to time to ensure that material brought to site are in conformity with the samples, approved by the GE.

5.6.2.5 GRADING OF AGGREGATES : The grading of coarse and fine aggregate shall be as per MES Schedule. Fine aggregate shall have grading as per grading Zone II/III of IS 383-2016. The grading of coarse and fine aggregate shall be checked as frequently as possible. The frequency for the aggregate testing shall be determined by Engineer-in-Charge to ensure that the specified grading is being maintained.

5.6.2.6 TESTING OF AGGREGATE : Aggregate shall be tested for following properties in accordance with IS mentioned against them:-

- |       |  |   |                    |
|-------|--|---|--------------------|
| (i)   | Aggregate particle size & shape  | : | IS-2386 Part I     |
| (ii)  | Presence of deleterious materials  | : | IS-2386 Pt II 1969 |
| (iii) | Aggregate specific gravity, density, voids absorption and bulk density       | : | IS-2386 Pt III     |
| (iv)  | Aggregate crushing value aggregate impact value and aggregate abrasion value | : | IS-2386 Pt IV      |
| (v)   | Aggregate soundness  | : | IS-2386 Pt V       |

**5.7 MIX PROPORTION AND STENGTH**

- |        |                                  |   |   |
|--------|----------------------------------|---|---|
| (i)    | Type of cement                   | : | Ordinary port-land cement, Grade 43 as per IS : 8112-1989 or Portland pozzolana cement (PPC) as per IS 1489 |
| (ii)   | Aggregate/cement ratio by weight | : | As per mix design based on IS-10262 & IS-456  |
| (iii)  | Workability                      | : | As per clause 7 of IS-456 – 2000  |
| (iv)   | Water cement ratio               | : | As per mix design based on IS-10262 & IS-456.   |
| (v)    | Degree of quality control        | : | Good (Refer IS-10262)   |
| (vi)   | Minimum cement content           | : | As per table 5 of IS-456, 2000 and as specified here-in-after.  |
| (vii)  | Maximum size of aggregate        | : | 20 mm graded  |
| (viii) | Maximum water cement ratio       | : | As per table 5 of IS-456, 2000  |
| (ix)   | Exposure Condition               | : | Moderate for M-25 & Severe for M-30.  |

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 5.7.1 As soon as possible, after receiving the order to commence work, the Contractor at his own expense shall get concrete mix designed from any NABL approved laboratories/Govt. Engineering Colleges to satisfy the requirements of Clause 2.7 of Particulars Specifications here-in-above.
- 5.7.2 The actual proportion of concrete mix shall be arrived at by means of number of trial mixes. First trial mix shall be prepared with the mix proportions arrived at as per mix design and other trial mixes with suitable adjustment in mix proportion.
- 5.7.3 Nine number of cubes of size 15x15x15 cm shall be made from each trial mix. The concrete cubes shall be tested as per IS-516-1959. Out of nine cubes, three cubes each will be tested for 07 days & 28 days strength and remaining three cubes shall be kept reserved at site.
- 5.7.4 The test after seven days is intended to give an early indication of the strength likely to be achieved at 28 days.
- 5.7.5 The concrete shall be deemed to comply with the strength requirements of clause 15 and 16 of IS-456-2000. The test strength of the sample shall be the average of three specimens. The individual variation should not be more than +15 percent of the average.
- 5.7.6 Whenever, there is any change in the type of grading of materials, the mix should be re-designed and modified suitably to give the desired compressive strength.
- 5.7.7 On the basis of above test results, the final design mix will be approved by the GE. The approval of the Accepting Officer shall not relieve the contractor of his responsibility for obtaining the required minimum strength of quality concrete in the work.
- 5.7.8 Minimum cement content for the M-30/M-25 (Design Mix) concrete shall not be less than as in Table 5 of IS-456, 2000. In case cement content as per actual Design Mix works out lower than minimum cement content specified, the contractor shall provide minimum cement content as per Table 5 of IS-456, 2000 and nothing extra shall be payable on this account. In case cement content as per actual Design Mix works out more than minimum cement content specified, the contractor shall provide cement content as per approved design mix and nothing extra shall be payable on this account.
- 5.7.9 SAMPLING. The sampling procedure and frequency of sampling shall be as per clause 15.2 of IS 456-2000.
- 5.7.10 ACCEPTANCE CRITERIA. The acceptance criteria of the test results shall be as laid down in clause 16 of IS : 456-2000.
- 5.7.11 WORKABILITY. The workability of the concrete shall be checked frequently as per IS-1199 (Methods of Sampling and Analysis of Concrete). Slump i.e. workability shall be controlled by properly accounting for moisture of aggregates. Records of moisture content and slump shall be kept duly verified by Engineer-in-Charge and GE.
- 5.7.12 BATCHING AND MIXING OF CONCRETE
- 5.7.12.1 The mixing of cement and aggregate for cement concrete for all grades and type of RCC work shall be done by fully automatic concrete batching plant with printing facility.
- 5.7.12.2 The batching shall be as per clause 10.2 of IS 456: 2000 and clause 4.11.3 (Excluding provision vide sub clause 4.11.3.1) of MES SSR Part – I.

**PARTICULAR SPECIFICATIONS (CONTD.)**

5.7.13 **TRIAL MIX:** The actual trial mix proportion will be arrived at by means of number of trial mixes by changing the water cement ratio, proportions of fine and coarse aggregate, fineness modulus of aggregate by changing their grading and proportions etc Attempts shall be made to make the mix design as economical as possible.

5.8 **CAST-IN-SITU/PRECAST ARTICLES**

5.8.1 PCC cills, RCC shelves, isolated lintels up to 1.5 metre length (i.e not in continuation with lintel band) may be cast in situ or pre-cast at the discretion of the contractor. In the event of deviation with regards to these items pricing shall be done at appropriate rate in SSR for cast-in-situ articles. Top of such pre-cast articles should be distinctly marked.

5.8.2. Unless otherwise specified all pre-cast concrete articles shall be set and jointed in CM (1:3).

5.8.3 For Assembly and cover to reinforcement refer paras 4.11.7 to 4.11.8.4 of MES Schedule Part-I.

5.9 **LINTEL/TIE**

5.9.1. Lintel beam shall be provided as per detailed section indicated in Schedule ‘A’ Note irrespective of whether the sections are shown or not on architectural / Structural drawings. Where lintel band is provided, SLT and lintel with chajja, wherever occurring shall be cast monolithic with the lintel band and the reinforcement higher of the two shall be provided.

5.10 **FORM WORK (STEEL)**

5.10.1 Refer Para 4.11.6 and 7.15 of MES Schedule Part I.

5.10.2 Formwork to exposed surfaces of concrete (other than mentioned here-in-after) shall be steel formwork having wrought and smooth surfaces in contact with concrete. However, in case of pricing deviation, form work top exposed surfaces shall be priced as fair finished surfaces at per SSR enhanced by the deviation percentage. Timber planks shall not be permitted.

5.10.3. Form work to exposed surfaces of RCC column, beams, lintels etc which are continuous with the plaster surface of wall and/or to the surface of concrete which are buried in contact with masonry or otherwise shall also be steel formwork.

5.10.4 Exposed surfaces of concrete such as soffits/sides of RCC chajjas, beams, staircase & shelves etc which are not in continuous with the adjoining plastered surface shall be finished as specified in Para 4.11.16.2(a) of MES SSR Part-I. However, the soffit of RCC roofs/floor slab shall be plastered with 5mm thick cement mortar (1:3).

5.10.5 Application of non-adhering oils such as used engine oils or bitumen based paints to inside of forms is not permitted.

5.10.6 Provide steel props/spans/bracings of sufficient strength such as ACROW props, ACROW spans from ACROW Indian Ltd, Bombay or similar as approved by the GE / AGE(I). Use of conventional wooden ballies (posts), struts that is other than steel member are not permitted.

5.11. **CURING AND MINIMUM PERIOD FOR STRIKING OF FORM WORK WITH POZZOLANA CEMENT USED**

5.11.1. Where pozzolana cement is used for RCC works in various locations, the minimum period for curing and striking off form work shall be as under in lieu of that specified in clause 4.11.6.3 of MES Schedule Part-I :-

- (a) Curing :- Structural RCC work, PCC work, Plastering etc. : 14 days
- (b) Striking off Form Work Walls, columns and vertical sides of beams : 3 to 4 days
- (c) Slabs (Props left under) : 8 days
- (d) Beams soffits (Props left under) : 9 days
- (e) Removal of props to slab/beam
  - (i) Spanning upto 6 M span : 16 days
  - (ii) Spanning beyond 6 M span : 22 days
- (f) For cantilever portion of slab form work with support shall be retained until the completion of the casting of the entire frame work of the building.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

5.11.2 In case of bad weather, periods mentioned above may be revised at the discretion of the Engineer-in-charge. The contractor shall be deemed to have considered the above provision before tendering and quote lump sum accordingly. No claim will be entertained if longer periods required for striking off form work and curing and all such effected matters is looked into upon the use of pozzolana cement as a result being issued to the contractor in full or in part or for bad weather.

5.11.3.Curing shall be carried out using pump of suitable capacity at no extra cost to the Govt. all as directed by Engineer-in-Charge.

**5.12 FINISHES**

5.12.1 For finishing to exposed surfaces of concrete, refer at paras 4.11.16.1, 4.11.16.2(b),(c),(d),(e) and 4.11.16.3 of MES Schedule Part-I. If thickness of plaster in cement mortar (1:3) as specified in para 4.11.16.2(b) of MES Schedule Part-I is required to be increased in excess of 5mm to achieve fair and even surface, it shall be provided by the contractor without any extra cost to the Govt.

5.12.2 All projections of chajja, RCC roof, cills and the like shall be provided with proper drip course and/or throating in plastering only and not while casting RCC/PCC.

5.12.3. All flat surface exposed to weather shall be weathered with imperceptible slope for smooth run of rainwater.

**5.13 LIME CONCRETE**

Surrounds of Squat Pattern WC's shall be lime concrete as specified in Para 4.10.1, 4.10.2 and 4.10.4 of MES Schedule Part-I. The contractor may use quick lime or factory made dry hydrated lime powder at his option without any price adjustment. Mixing of lime concrete shall be done by hand mixing.

**5.14 PCC DRAIN**

PCC drain shall be provided wherever shown and as per detail shown on drawing. PCC for drain shall be of concrete 1:3:6 type C-1, finished even and smooth with using extra cement.

**6. BRICK WORK**

**6.1. MATERIALS**

6.1.1. **CEMENT:** - Cement shall be as specified for concrete work.

6.1.2. **SAND :-** Sand for mortar shall be as specified in para 5.4, 5.4.1 of MES Schedule Part I.

**6.1.3 BRICKS**

6.1.3.1 Brick for brick work shall be the burnt bricks of size 230 x 115 x 75mm and should have minimum crushing strength of 75 Kg/Cm<sup>2</sup> when tested in accordance with clause 26 of IS-1077. The dimension of bricks when tested in accordance with shall be within the following tolerance limits per 20 bricks:-

		For 230 x 115 x 75 mm brick
(a)	Length	4520 mm to 4680 mm (4600mm <u>+80mm</u> )
(b)	Width	2260 mm to 2340 mm (2300mm <u>+40mm</u> )
(c)	Height	1460 mm to 1540 mm (1500mm <u>+40mm</u> )

6.1.3.2 Compressive strength: The bricks when tested in accordance with the procedure laid down in IS-3495 shall have a minimum average compressive strength as 75 Kg/cm<sup>2</sup>.

6.1.3.3. All brick work shall be built in English bond except in half brick walls which shall be in Stretcher bond.

6.1.3.4 **TESTING OF BRICKS** : Testing of bricks should be carried out as per IS.

6.1.4 **WATER** – Refer to para 5.17 of MES Schedule Part I.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**6.2 WORKMANSHIP**

**6.2.1 BRICK WORK** :- Mix of mortar for brick shall be as follows :-

- (a) Brick work in half brick thick walls, isolated pillars, parapet walls shall be built in cement mortar (1:4).
- (b) All other brick work in various situations unless otherwise specified shall be built in cement mortar (1:6).

**6.2.2. HALF BRICK WALLS** – Brickwork in halfbrickwallsexceeding1200mmheightfromfloorlevelshallbe reinforcedwith2Nos.8 mm dia TMT bars with 8 mm dia TMT spacer @200 mm c/c ateveryfourthcourse,startingfrom topof thefirstcourse fromfloorlevel.

**6.2.3.** The foundation for half brick wall shall be provided as shown in foundation plan. Where foundations for half brick wall are not indicated the same shall be constructed off the sub base level. Half brick thick walls in first floor shall be constructed of the RCC floor slab.

**6.2.4** Any hole left in the brick work for the purpose of centering/scaffolding shall be filled up with PCC (1:3:6) type C1 mixed with WPC as per manufacturer’s instructions.

**6.2.5** Flat iron 40 x 6 mm of size 300 mm bent to shape shall be provided at junction of column & brick work for building work. Spacing of FI shall be 300 mm c/c.

**6.2.6** Dwarf wall if shown on structural drawing shall be provided below plinth beam along the external perimeter of building.

**6.3. BEARING PLASTER** – Refer to clause No 5.34.14 of MES Schedule Part I, tops of walls bearing the edges of RCC floors, roofs, slabs, beams shall be finished with a layer of cement mortar 1: 4, 15 mm thick and the plastered surface shall be white washed. Two layers of chisel craft paper shall be provided above the plastered surface. Where the bottom of slab does not coincide with the level of brick course after cement plaster, the level shall be make up either by increasing the thickness of slab at bearing or where feasible by using brick tiles so that the bearing is directly on the plaster.

**6.4 DAMP PROOF COURSE (DPC)**

**6.4.1** Wherever shown on the drawings DPC shall be 40 mm thick in PCC 1:2:4 type B0 (using 12.50 mm graded stone aggregate) with water proofing compound as per manufacturer’s instruction. Layer of 200 micron polythene film shall be laid over a coat of hot blown bitumen, grade 85/25 @ 1.50 Kg /Sqm over the cement concrete.

**6.4.2** DPC shall be laid to the full width of wall. Level of the DPC at the openings shall be lowered equal to the thickness of the floor finish. The continuity of the DPC shall be maintained. The workmanship shall be all as specified in clause 5.42 of SSR Part-I, 2009. DPC shall not be provided on dwarf wall, RCC wall and RCC columns and at the location where RCC / PCC plinth band or RCC plinth beams are provided above the ground level.

**6.5. WATER PROOFING COMPOUND:**Water proofing compound shall be anti-algae conforming to IS – 2645, Specifications for integral cement water proofing compound. The quantity of water proofing compound shall be as recommended by the manufacturer. However, in the event of deviations the quantity of water proofing compound shall be considered @ 2% by weight of cement. The make shall be as specified here-in-after.

**7. STEEL AND IRON WORK**

**7.1** Unless otherwise specified quality of steel to be incorporated in the work shall be as follows:-

(a)	High strength deformed steel bars produced by Thermo Mechanical treatment process (In short called as TMT bars) for reinforcement.	Of Grade Fe-500D and meeting all requirement of IS 1786-1985 (Reaffirmed) 1990.
(b)	Mild steel for miscellaneous works	Shall conform to IS-432(Part-I). Grade wherever not shown/ indicated otherwise shall be of Grade I.

**7.2** Deviations on items of steel work shall be priced at applicable rates in MES Schedule subject to contractor’s percentage for respective parts of Schedule ‘A’.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**7.3 WELDING**

- 7.3.1 Welding of steel and ironwork shall be done in an approved manner with electric arc welding.
- 7.3.2 Electric welding shall be metal arc welding as specified in Para 10.15 of MES SSR Part-I.
- 7.3.3 Welding electrodes shall be of quality suitable for welding of structural steel and shall comply with requirement of IS-814 for covered electrodes for metal arc welding of mild steel.
- 7.3.4 Unless otherwise specified/shown on drawings, the fillet welds shall be of 6mm size.
- 7.3.5 All butt welds shall be full penetration welds.

**7.4 REINFORCEMENT**

- 7.4.1 Reinforcement shall be bent to shape and provided as indicated on the drawings.
- 7.4.2 All laps and crossings shall be tied with mild steel wire (annealed) of size not less than 0.9 mm dia.
- 7.4.3 Unless otherwise shown on drawing, bends to a radius of 4 times the dia of bar shall be provided in respect of tor steel bars. In case of deviations involving reinforcement bars, the length of each bar for the purpose of calculating laps shall be taken as 10 (Ten) metres for omit purpose.
- 7.4.4 Unless otherwise shown on drawings, spacing of chairs shall be 75 cm centre to centre below the cranked up bars to keep the bars in position.

**7.5 REINFORCEMENT STEEL AND STRUCTURAL/NON-STRUCTURAL STEEL**

**7.5.1 TYPE OF STEEL**

**7.5.1.1 REINFORCEMENT STEEL**

- (a) Unless otherwise specified, mild steel TMT bars shall be of grade Fe500D/ 550D meeting requirements of IS-1786-2008 shall be used of following approved primary manufacturers / main producers:-

Srl No	Company Name	Brand	ype of Steel
1	2	3	4
(i)	Rashtriya Ispat Nigam Limited (RINL), Visakapatnam steel plant Visakhpatnam- 530 031, India. Tel (91 891) 518226, 518376 Fax (91 891) 518316 Email: cmdvsp@itpvis.ap.nic.in	RINL	All
(ii)	TATA Iron and Steel Company (TISCO or TATA Steel) Bombay House 2, 4 Homi Modi Street Mumbai - 400001, India. Tel: (9122) 2049131, Fax: (9122) 2049522, 2870840, Email: corpcomm@jsr.tatasteel.com (Br office for North: Jeevan Tara Bldg, patel Chowk, New Delhi)	TATA	All
(iii)	Steel Authority of India Ltd (SAIL), Central Marketing Organization, Northern Region 17th Floor, scope Minar, Laxmi Nagar, Distt Centre, Delhi- 110092	SAIL	All
(iv)	M/s Jai Balaji Industries Ltd , 5 Bentek street, Kolkata – 700001 Delhi Office 510, Block-B, Navraung House 21 Kasturba Gandhi Marg, New Delhi – 110001 011 -43620219 , 43620220, Mob 7838272772/ 99558936103, Email Info@jaibalajigroup.com	Balaji Shakit	TMT Bars of Gde Fe 500 & Fe 500D
(v)	M/s Shyam Steel Industries Ltd, Shyam Towers EN -32 sector-V, Salt Lake, Kolkata -700091 Tel-033-400740007, Fax-033-40074010. Email: marketing@shyamsteel.com	SHYAM	TMT Bars of Gde Fe 500, Fe 500D & CRS
(vi)	M/s SPS Steel Rolling Mills Ltd , Elegant Towers 68A, Ballygunge Circular Road, Kolkata-700019, Ph -033-2895160/67 Fax 033-22894386 Email: spsdelhi@spsgroup.co.in	ELEGANT TMT	TMT Bars of Gde Fe 500, Fe 500D & Fe 550



**PARTICULAR SPECIFICATIONS (CONTD.)**

1	2	3	4
(vii)	M/S Steel Exchange India Ltd. My Home Laxminivas Apartments, Ameerpet, Hyderabad-500016, AP. Tel - 040-23403725, Fax - 040-23413267, Email : info@seil.co.in	SIMHADRI TMT	TMT Bars of Gde Fe 500, Fe 500D HSCRM
(viii)	M/S Jindal steel and Power Ltd. OP Jindal Road, Hissar, Haryana, PIN -125005 Tel - +91 1662222471-84, Fax - +91 1662220476	JINDAL PANTHER	TMT Bars of Gde. Fe 500, Fe500D, Fe 550 & Fe550D
(ix)	M/s SRMB Sirjan Pvt Ltd. SRMB House, 7 Khetra das lane Kolkata -700012. Tel :033- 6600 6600, FAX : 033- 22 11 0483	SRMB	TMT Bars of Gde. Fe 500, Fe 500D Fe 550, Fe 550D (Size 8-32mm)
(x)	M/s Concast steel and power Ltd, 21 Hemant, Basu Sarani, Suit Nos - 511 & 512 , 5th Floor, Kolkata 700001 Tel – 91-33-2213 0481-87, 91-33-22130488 Email: info@concastgroup.com	CONCAST MAXX	TMT Bars of Gde Fe 500 & Fe 500D (Size 8-32mm)
(xi)	M/s Shri Bajrang Power & Ispat Ltd, Vill- Borjhara, Urla Industrial Area, Raipur – 493221, Chhattisgarh Tel 07714288019 /29 /39	GOEL TMT	TMT Bars of Gde Fe 500, Fe 500D (Size 8-32mm)
(xii)	M/s JSW Steel Ltd, JSW Center , Bandra Kurla Complex Centre Bndra (East) Mumbai-400051, Maharashtra Ph: 022-42861000 Fax 022-42863000	NEOSTEE L	TMT Bars of Gde Fe 500, Fe 500D CRS(Size 8-40mm)
(xiii)	M/S Shyam Metalics & Energy Ltd. Viswakarma 1st Floor, 86 C, Topsia Road, Kolkata 700046, Ph 91 33 22852212 www.shyamgroup.com	SEL	TMT Bars of Gde Fe 500, Fe 500D (Size 8-32mm)
(xiv)	M/S Kamachi Industries Ltd, ABC Trade Center 3rd Floor (Inside Devi theatre Complex), Old No. 50, New No 39, Anna Salai, Chennai – 6000002 , India. Tel 91 04442961100, Fax 91 04442961122 Email Sales@Kamachitmt.com	KAMACHI	TMT Bars of Gde Fe 500, Fe 500D, Fe 550 & Fe 550D, HCRM (Size 8-40mm)
(xv)	M/s BDG Metal & Power Ltd, HMP house 4 Fairlie Place, 5th Floor Kolkata 700001, India. Tel: 91 3340059005, Fax: 91 3340059095 Email info@goyalgroup.in, Website :www.goyalgroup.in	BDG 6	TMT Bars of Gde Fe 500, Fe 500D Fe 550D (Size 8-32mm)
(xvi)	M/S Gallantt Metal Ltd, Ward 10 BC . Plot No 123, Ground Floor , Gandhi Dham Kutch, Gujarat – 37020 Tel 91 2836228164, Fax 91 2836235787 Email : gml@gallantt.Com, website www.gallantt.com	GALLANT T TMX	TMT Bars of Gde Fe 500, Fe 500D, CRS (Size 8-32mm)
(xvii) )	M/s Rashmi Metaliks Ltd. Premlata Building, 39 Shakespeare Sarani, 6th Floor , Kolkata- 700017 Tel 033-22894255/56, Fax 033-2894254 Email mkt.domesticdip@rashmigroup.com Website www.rashmigroup.com	RASHMI TMT	TMT Bars of Gde Fe 500 (Size 8-32mm), Fe 500D, Fe 550D (Size 8-25mm)
(xviii)	M/s Real Ispat & Power Ltd, Vrindavan Near IDBI Bank Civil Lines, Raipur -492001, CG Tel : 91 7714224000, Fax 91 7714224010 Email real@realispat.Com, Website www.realispat.com	G K TMT	TMT Bars of Gde Fe 500, Fe 500D (Size 8-36mm)
(xix)	M/s Super Smelter LTD Kolkata, Premlata, 39, shakespeare Sarani, 3rd Floor Kolkata -700017 Tel & Fax 91 33 2289-2734/36 Email: info@supershakti.in, Website: www. Supershakti.in	SUPER SHAKTI	TMT Bars of Gde Fe 500, Fe 500D, Fe 550, (Size 8-32mm)
(xx)	M/s Super Smelter LTD Kolkata, Premlata, 39, shakespeare Sarani, 3rd Floor Kolkata -700017 Tel & Fax 91 33 2289-2734/36 Email: info@supershakti.in, Website: www. Supershakti.in	SUPER SHAKTI	TMT Bars of Gde Fe 500, Fe 500D, Fe 550, (Size 8-32mm)

**PARTICULAR SPECIFICATIONS (CONTD.)**

Note :-

1. Any other manufacturer(s) approved by E-in-C's Branch, New Delhi but left out in the above list shall also be deemed to be included in the list provided the name(s) of such manufacturer(s) has not been deleted/removed by E-in-C's Branch.
2. Any other manufacturer(s) approved by E-in-C's Branch, New Delhi during the pre-tender and post tender stage/after acceptance/during execution shall also be deemed to be included in the list.
3. If any of the above manufacturer is banned/ removed by E-in-C's Branch, New Delhi during the pre-tender and post tender stage/after acceptance/during execution, the same shall be deemed to be deleted from the list.

**(Note for 'TISCO 'Make for works being executed in North eastern Region:- Reinforcement steel of above mentioned grade can also be procured from authorized distributor / Business development partners of TISCO. Production of documents indicating original lot No. and test certificate from TISCO alongwith voucher from TISCO authorized distributor from whom steel is being purchased shall be mandatory in such case.)**

- (b) Wherever deformed bar(s) have been shown in drawings, TMT bars of the same size and grade shall be used.
- (c) However 6mm bars (MS and CTD bars) wherever shown on drawings, the same shall be amended to 8mm TMT bars without changing spacing/numbers. The grade shall be as explained in (a) and (b) above.
- (d) Tolerance on size and weight of reinforcement bars shall not be more than specified in clause No. 10.17.4 and 10.17.5 of MES Schedule Part-I.

**7.5.1.2 STRUCTURAL STEEL**

- (a) Definition of structural steel as given in clause 10.4 of SSR Part-I shall be applicable. Standard quality steel of grade E-250(Fe-410W quality A) conforming to IS-2062 for all types of steel structures including those subject to dynamic loading shall be used.
- (b) Ordinary quality structural steel wherever mentioned shall be conforming to IS-1977 of grade E-165(Fe-290) and shall be used for steel doors, collapsible gate, window guard bars or grills, steel gates, hand railings, fencing posts etc.
- (c) Unless otherwise mentioned, galvanized steel sheets (plain or corrugated) where applicable shall be conforming to IS-277. Grade of zinc coating to be used shall be the one which is given in Clause 10.29.1 of SSR Part-I.

**7.5.2 SOURCE OF PROCUREMENT**

**7.5.2.1 STRUCTURAL STEEL:-** Structural steel shall be procured by the contractor from approved primary manufacturers / main producers of steel like Rashtriya Ispat Nigam Limited (RINL), Visakhapatnam / TATA Iron and Steel Company (TISCO or TATA Steel), Mumbai / Steel authority of India Ltd (SAIL), Delhi/ M/S Jindal Steel & Power Ltd, Gurgaon.

Note :-

1. Any other manufacturer(s) approved by E-in-C's Branch, New Delhi but left out in the above list shall also be deemed to be included in the list provided the name(s) of such manufacturer(s) has not been deleted/removed by E-in-C's Branch.
2. Any other manufacturer(s) approved by E-in-C's Branch, New Delhi during the pre-tender and post tender stage/after acceptance/during execution shall also be deemed to be included in the list.
3. If any of the above manufacturer is banned/ removed by E-in-C's Branch, New Delhi during the pre-tender and post tender stage/after acceptance/during execution, the same shall be deemed to be deleted from the list.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 7.5.2.2 Galvanised Steel sheet & Fabric Reinforcement for concrete: These shall be ISI Marked and shall be procured directly from Main manufacturers.
- 7.5.2.3 **However reinforcement steel, structural steel, Galvanised steel sheets and Fabric Reinforcement shall be permitted to be procured from authorised dealers of main producers in case of contracts of value less than 7.5 lakhs.**
- 7.5.2.4 Steel sections for railing, gates, fencing, guard bars, grills, steel chowkhat, holdfasts etc., which do not constitute structural members, can be procured from main producers/secondary producers/BIS marked manufacturers or their authorised dealers/authorized conversion agents at the option of Contractor without any price adjustment.
- 7.5.2.5 The contractor should place their demand/requisition of steel with the producers with adequate lead time.
- 7.5.2.6 Steel, when procured from main producers/approved secondary producers/ authorized conversion agents of main producers (stipulated in above paras) shall have to be procured directly from the storage depots of the main producers/approved secondary producers/authorized conversion agents and not from their authorized agents/dealers.
- 7.5.2.7 The particulars of the manufacturer/supplier of steel shall be submitted by the contractor to the GE(I)/GE/GE / AGE(I) prior to procurement for every lot of steel separately. The original documents in support of purchase of steel shall be verified by the site staff and GE(I)/GE/GE / AGE(I) and certified true copy of the result shall be retained in GE/GE / AGE(I)'s office. The form given here in after will be used for this purpose.

**7.6 TESTING OF STEEL**

7.6.1 The manufacturer is to carry out inspection and testing of steel in accordance with the relevant BIS provisions. The contractor shall submit the manufacturer's test certificate in original along with the Test Sheet giving the result of each mechanical test as applicable and the chemical composition of the steel or authenticated copy thereof duly signed by the manufacturer with each consignment. The Engineer-in-Charge shall record these details in Steel supply & Acceptance Register (as per proforma given herein-before) after due verification and send a certified true copy of test sheet to GE(I)/GE/AGE(I) for his records. The GE/ CWE shall also organize independent testing of random samples of steel drawn from various lots from National Test House, SEMT Wing CME, Regional Research Labs and NABL approved Labs etc as per the recommended minimum frequency shown in table as per given here-in-after. Samples from each lot should be tested for quality and elongation. The elongation shall be as admissible as per IS. Cost of samples, transportation and testing shall be borne by the contractor. The record of such checks would be maintained in the steel test register.

7.6.2 Testing shall not be insisted upon for steel given in Para 4.5.2.7 above.

**7.6.3 Independent testing**

7.6.3.1 The GE shall also organize independent testing of random samples of steel drawn from various lots from National Test House, SEMT Wing CME Pune, Regional Research Laboratories, Govt approved laboratories, Zonal laboratories as per the recommended minimum frequency as in Para 4.6.4 .In addition samples from each lot shall be tested for quality and elongation as per the parameters given in STEEL SUPPLY & ACCEPTANCE FORM. The elongation shall be as admissible as per IS.

**7.6.3.1.1 Reinforcement Steel**

- (i) Independent testing of steel by the GE(I)/GE / AGE(I) shall be optional at the discretion of the GE(I)/GE / AGE(I) in case of procurement of steel from main producers and testing charges shall be borne in accordance with Condition 10 A of IAFW-2249 i.e. testing charges shall be borne by the Deptt if the test results are found in order, otherwise these shall be borne by the Contractor.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (ii) Independent testing of steel by the GE(I)/GE / AGE(I) shall be mandatory in case of procurement of steel from secondary producers/authorized conversion agents of main producers and testing charges shall be borne by the contractor irrespective of the outcome of test results.
- (iii) In both the cases at (i) & (ii) above, the contractor at his cost shall provide all facilities required for the testing and cost of materials consumed in tests, samples, conveyance etc shall also be borne by the contractor.

7.6.3.1.2 Structural Steel

- (i) Independent testing of structural steel by the GE(I)/GE / AGE(I) shall be optional at the discretion of the GE(I)/GE / AGE(I) in case of procurement from main producers and testing charges shall be borne in accordance with Condition 10 A of IAFW – 2249 i.e., testing charges shall be borne by the Deptt if the test results are found in order, otherwise these shall be borne by the contractor.
- (ii) Independent testing of structural steel by the GE(I)/GE / AGE(I) shall be mandatory in case of procurement from secondary producers/authorized conversion agents of main producers and testing charges shall be borne by the Contractor irrespective of the outcome of test results.
- (iii) In both the cases at (i) & (ii) above, the contractor at his cost shall provide all facilities required for the testing and cost of materials consumed in tests, samples, conveyance etc shall also be borne by the Contractor.

7.6.4 FREQUENCY FOR TESTS ON STEEL

7.6.4.1 REINFORCEMENT STEEL

Nominal mass test, Tensile test, Bend and Rebend test shall be carried out as per minimum frequency given below: -

Nominal Size of Bars		Frequency
(a)	Bar size less than 10 mm	One sample (3 specimens) for each test for every 25 tonnes or part thereof.
(b)	Bar size 10 mm to 16 mm	One sample (3 specimens) for each test for every 35 tonnes or part thereof.
(c)	Bar size over 16 mm	One sample (3 specimens) for each test for every 45 tonnes or part thereof.

7.6.4.2 STRUCTURAL STEEL: The tests shall be carried out as per the frequency mentioned below: -

Type of Test		Frequency
(a)	Tensile Test	One test for every 25 tonnes of steel or part thereof.
(b)	Bend Test	One test for every 25 tonnes of steel or part thereof.

NOTE:

1. For various tests, Acceptance criteria, tolerance etc refer to Steel supply & Acceptance Form given here in before and relevant BIS Codes.
2. For steel items, for which, independent test is mandatory, as specified above, payment shall be released against these items only after satisfactory test report. Any item of steel, failing in test, shall be rejected and the particular consignment removed from the site by the contractor at his own cost.

7.6.5 DOCUMENTATION: The contractor shall submit original purchase vouchers from the manufacturer for the total quantity of steel supplied under each consignment to be incorporated in the work. The GE along with the relevant documents before acceptance shall inspect all consignments received at the work site. The original Vouchers and the test certificates shall be defaced by the Engineer-in-charge and kept on record in the office of the GE duly authenticated and with cross reference to the control number recorded in the Steel Acceptance Register. The Steel Acceptance Register will be signed by JE, Engineer-in-charge, GE and contractor. The entire quantity of all steel items shall be suitably recorded in the Measurement Book as not to be abstracted, before incorporation in the work and shall be signed by the Engineer-in-charge and the contractor.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**7.7 STORAGE ACCOUNTING, PRESERVATION AND MAINTENANCE OF STEEL**

- 7.7.1 The storage, accounting, preservation and maintenance of steel supplied by the contractor shall be done as per standard engineering practice till the same is incorporated in the work and the cost of the same shall be deemed to be included in the unit rate/amount quoted by the tenderer. The GE shall inspect at regular interval to verify that steel lying at site is stored, accounted, preserved and maintained as per the norms. The steel shall be stored so as to differentiate each consignment separately. If the GE is not satisfied with the storage / preservation of any size of bar/section of steel, he may order for any test(s) of steel as applicable for that size of bar/section of steel and as specified in tender documents /relevant IS code to recheck the acceptability criteria for the same. The contractor shall bear the cost of necessary testing(s) in this regard and no claim whatsoever shall be entertained.
- 7.7.2 Movement of steel shall be recorded in In/Out steel register as per following Performa. Each entry in the register shall be signed by the contractor and Engineer-in-Charge.

IN/OUT STEEL REGISTER								
Sl No	Date	Steel IN			Steel OUT			Qty Balance
		Qty (Tons)	Section	Control No	Qty (Tons)	Section	Reasons*	
1	2	3	4	5	6	7	8	9

\* Note:

- (i) The following reasons may be mentioned for taking out steel from storage: -
    - (a) For testing purpose
    - (b) For use in work
    - (c) Rejected steel taken out of site
  - (ii) All the transaction in the register shall be signed by Contractor / his representative and Engineer-in-Charge/JE.
- 7.7.3 **SCHEDULING AND SUPPLY:** Schedule of supply of steel will be finalised by GE in consultation with contractor and the same will be incorporated in CPM chart so that supply of steel is monitored in a way to avoid any delay in completion of the work. The schedule of supply of steel will be vetted by Accepting Officer or Officer nominated by the Accepting Officer from time to time
- 7.8 MEASUREMENTS AND PAYMENT OF STEEL**
- 7.8.1 The entire quantity of all steel items shall also be suitably recorded in the Measurement Book for record purposes as ‘Not to be abstracted’ before incorporation in the work and shall be signed by the Engineer-in-Charge and the contractor.
- 7.8.2 The nominal mass conversion factors for various steel Sections/ size of finished bars as given in relevant IS codes shall be considered standard for measurement.
- 7.8.3 The contractor shall plan to procure steel considering the time required for approval and testing of steel well in advance. No extension of time on grounds of delay in procurement of steel or testing/retesting of steel shall be admissible.
- 7.8.4 The payment of steel shall only be allowed after production of original purchase vouchers, test certificates by the contractor for each consignment of steel and results of testing carried out by the department are found satisfactory after testing as specified herein before.
- 7.9 **FABRICATION OF STEEL STRUCTURES:** The structural steel work shall be carried out all as specified in MES Schedule Part-10 and in drawings. The quality of fabrication and erection at site shall be got certified to the satisfaction of the department by any of the certifying bodies as approved by Accepting Officer.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**7.10 BARBED WIRE**

7.10.1 Galvanised steel barbed wire for fencing shall confirm to IS 278-2001, Specification for galvanized steel barded wire for fencing. The galvanized barbed wire shall be manufactured from galvanized mild steel wire conforming to IS 280-2006, Galvanised coating of steel wire shall conform to the requirements as laid down for medium coated wire in IS 4826, Hot dipped galvanized coatings on round steel wires. The barbed wire shall consist of two line wire 2.24 mm nominal dia, one or both containing 2 mm dia barbs at 75 mm centre to centre and weighing 97 to 106 Kg per Km. The barbs shall have a length of not less than 13 mm and not more than 18 mm. The points shall be sharp. The line and point wires shall be circular in section, free from scales and other defects and shall be uniformly galvanized. The line wire shall be in continuous lengths and shall not contain any welds other than those in the rod before it is drawn.

**8. ROOF**

**8.1. RCC ROOF SLAB**

- (a) RCC roof slab shall be laid to a slope as shown on drawings.
- (b) RCC roof slab shall be projected all as shown on drawings.
- (c) Full bearing of RCC roof slab shall be provided on external walls.
- (d) Exposed surfaces of soffit of RCC slab shall be plastered in CM (1:3) 5 mm thick and finished even and fair.

**8.2 WATER PROOFING TREATMENT TO RCC ROOF**

8.2.1 Unless otherwise specified, water proofing treatment to RCC roof shall be with non-woven polyester reinforcement and with mineral finish on top to be laid by torch application method. Technical characteristics (minimum) of the membrane shall be as under :-

- (i) Softening point : min 150 degree centigrade.
  - (ii) Penetration of 25 degree Centigrade : 20-35 dmm  
100g, 5 seconds
  - (iii) Pliability (Colf flexibility): : -2 degree centigrade to -5degree centigrade
  - (iv) Heat resistance : Does not drip at 120 degree centigrade.
  - (v) Tensile strength  
Length wise : 650 N/ 5cm.  
Cross wise : 350 N/ 5 cm.
  - (vi) Elongation :  
Length wise : >20%  
Cross wise : >20%
  - (vi) Dimensional stability : maximum change of 1%
  - (vii) Weight of the membrane : 3.5 Kg/Sqm
  - (viii) Reinforcement (Non woven polyster) : >=160 gms/Sqm
  - (ix) Tear strength :  
Length wise : 300N  
Cross wise : 250N
  - (x) Water tightness/impermeability : at 2 Kgf/cm2
  - (xi) Water absorption : not more than 1% of mass within 24 hours.
- (d) In no case damage/puncture of APP modified proofing membrane shall be permitted.
- (e) All materials used for water proofing treatment shall be of same manufacturer. However, the main contractor shall give guarantee for efficiency of water proofing treatment for a period of ten years as specified here-in-after.
- (g) Random samples of Polymeric Water Proofing membrane, as selected by GE shall be got tested from National Test House/Govt approved lab where such facilities exists before incorporation in the work. It is also noted that manufacturer test certificate shall also be produced by the contractor before approval of materials from GE. Cost of testing of materials shall be borne by contractor and unit rate shall deemed to be included in the above aspects.
- (h) In case the test results does not meet the specifications given above, the entire lot shall be rejected by the GE. In such a case, the contractor shall bring the fresh lot of desired quantity of APP Modified Water Proofing Membrane and the same procedure of testing repeated till the time satisfactory test results are obtained. Nothing extra will be paid to contractor on this account.

**PARTICULAR SPECIFICATIONS (CONTD.)****8.2.2 FOR NON ACCESSIBLE ROOF**

8.2.2.1 Roof treatment shall be done all as specified here-in-below and as directed by Engineer-in-Charge: -

- (a) 15 mm thick rendering in CM (1:4) shall be carried out to prepare the surface when the RCC of slab is green.
- (b) The roof surface shall be thoroughly wire brushed, washed, dried up and cleaned of all foreign matter and dust prior to the application of primer.
- (c) On the dried surface one coat of approved bituminous primer @ 0.40 litre per Sqm shall be applied.
- (d) 3mm thick APP Membrane to be laid on primed surface by torch application method. The overlaps shall be of minimum 75 mm on longitudinal direction and 100 mm on the transverse direction.
- (e) All joints should be filled with cement mortar (1:3) mixed with SBR latex @ 200 ml/ bag of cement and cured well before laying membrane by torching.
- (f) All angles and abutments should be sealed well with extra care to ensure full bondage.
- (g) Water proofing treatment shall be done by the approved authorized applicators of firm specified here-in-after and are certified by firms.
- (h) The top surface shall be finished by a coat of aluminium paint @ 100 gms/sqm.

**8.2.3 FOR ACCESSIBLE ROOF**

8.2.3.1 Roof treatment shall be done all as specified here-in-below and as directed by Engineer-in-Charge: -

- (a) Same as serial No. 8.2.2.1 (a) to (g).
- (b) A coat of hot blown bitumen 85 / 25 at 1.2 KG per Sq.m shall be applied over water proofing membrane.
- (c) Hydraulically pressed cement concrete tiles 250 X 250 mm / 300 X 300 mm, 25 mm size conforming to IS – 1237 shall be laid on 15 mm thick Cement Sand Mortar 1:4, and joints shall be 4mm wide and sealed with 2 mm deep polysulphide compound.

**NOTES ; FOR CLAUSE No. ACCESSIBLE ROOF/ NON ACCESSIBLE ROOF**

(a) For parapets membrane shall be taken to the height of PCC curved fillet as specified here-in-after and then inserted inside the parapet/PCC curved fillet in groove.

(b) Curved fillet in PCC (1:2:4) type BO of radius 75mm shall be provided at the junction of roof and parapet Wall/Mumty/Chimney/Other Vertical Surface and surfaces painted with hot paving bitumen of penetration value 30/40 conforming to IS:73 @ 1.20 kg/Sqm over a coat of bituminous primer, confirming to IS : 3384 applied @ 0.3 litre per Sqm.

**8.2.4 WATER PROOFING TREATMENT TO SUNKEN SLABS**

8.2.4.1 Unless otherwise shown on drawings, provide water proofing treatment to sunken slabs of upper floor toilets, bath, wash, WC as stated below :-

8.2.4.2 The slope of slab shall be 1:20 towards outer wall. The water proofing treatment of various layers from bottom to top on all surfaces shall be as under with provision of 25mm dia GI pipe(Medium Grade) spout projection 100mm beyond outer face of the wall of sunken floor: -

- (a) First layer of slurry of cement @ 0.488 Kg/Sqm mixed with Acrylic based polymer modified cementitious composite compound @ 0.253 kg/ sqm. This layer shall be allowed to air cure for 4 hours.
- (b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with Acrylic based polymer modified cementitious composite compound @ 0.126 kg/ sqm. This layer shall be allowed to air cure for 4 hours followed with water curing for 48 hours.
- (c) 200 micron thick polythene film pasted with the help of adhesives shall be provided over the treatment.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (d) PCC M-5 for filling in the sunken portion.
- (e) Concrete for sunken slabs shall be mixed with WP compound as per manufacturers Instructions.
- (f) Joint of Trap/WC/Soil pipes shall be properly sealed with sealing compound
- (g) P/S traps and Nahani / Floor traps with long arm shall be provided as per latest instructions.
- (h) Testing of all traps & joints and sunken slab shall be as per IS-1742 before filling of sunken slabs, including smoke tests.

**8.2.5 TESTING OF WATER PROOFING TREATMENT**

- 8.2.5.1 After the water proofing treatment is completed, leak proof tests shall be done by ponding. For this purpose, in roof, mud, mortar, fillet ponds shall be made longitudinally one meter a part over entire treated surface of roof to form pond of suitable size as directed by the Engineer-in-Charge. (These ponds shall be filled with potable water so that an average 50 mm (minimum 25 mm and maximum 75 mm) height of water is maintained during the test period.
- 8.2.5.2 Test shall be carried out continuously for a period of 48 hours. Any seepage notified shall be rectified by the contractor and making good the defective portion to entire satisfaction of the GE, who will pass this stage
- 8.2.5.3 All mud fillet bends shall be removed and surface made clear and tidy after completion of satisfactory testing.
- 8.2.5.4 Satisfactory completion of test shall not absolve the contractor from his responsibility of rectification of defects, which may arise during defect liability period.

**8.2.6 GUARANTEE OF WATER PROOFING TREATMENT OF RCC ROOF AND SUNKEN FLOOR**

- 8.2.6.1 The contractor shall furnished guarantee in favour of Garrison Engineer for efficiency of water proofing treatment during the guarantee period. The guarantee period shall be 10 (Ten) years from the certified date of completion of the work as per contract. Any leakage in the RCC roof noticed during the period shall be rectified by the contractor forthwith, on demand in writing from the GE specifying the roof of buildings affected, notwithstanding date the water proofing treatment to the roof might have been invariantly past, certified and paid for, the contractor shall carry out the rectification the leakage if any in roof at his own expense during the guarantee period and in even of his failure to do within a period to be specified by the GE in his demand aforesaid, the GE shall undertake such rectification work at the risk and expense in all respect of the contractor.
- 8.2.6.2 An amount equal to 2% (two percent) calculated on the amount of water proofing treatment work done at contract rate on account of water proofing treatment shall be retained out from the final bill amount toward security deposit for water proofing treatment and will be refunded to the contractor after expiry of the period of 10 (Ten) years from certified date of completion by the GE provided there are no leakage/seepage in the building and the contractor shall first have been paid final bill and have rendered a “ No demand certificate” (IAFW-451). Condition 10, 46 and 68 of General Condition of Contract (IAFW-2249) shall be deemed to be amended to the extent mentioned above.
- 8.2.6.3 Floors shall be laid to levels or to falls as shown on drawings and as directed by Engineer-in-Charge. Floor finish shall be extended over dwarf wall, doors and other opening.

**8.3. GALVALUMEPROFILED SHEET**

Galvalume profile sheet shall be as mentioned in Schedule 'A' and as specified i SSR Part – I 2009. Galvalume sheet shall be 0.50 mm total coated thickness having cover width of minimum 1000 mm and crest height of minimum 28 mm and pitch of maximum 250 mm and minimum 190 mm. However, 2 Nos stiffener ribs between ribs shall be provided if pitch is more than 200 mm. The material shall be cold rolled steel having 550 MPa yield strength, with hot deep metallic coating of aluminium zinc alloy @ 150 grams per Sqm (total both surfaces). The paintings shall be colour baked enamel polyester with silicon coating of film nominal thickness minimum 20 micron over a coat of primer on the exposed face/exterior side and on the reverse/interior side, backing coat over acoat of primer.



**PARTICULAR SPECIFICATIONS (CONTD.)****9. FLOORING & FLOOR FINISHES****9.1 GENERAL**

**9.1.1** Refer Clause No. 13.2, 13.4, 13.5, 13.8, 13.14, 13.21, 13.23, 13.24, 13.25, 13.27, 13.32, 13.38, 13.39, 13.40, 13.46 and 13.47 of MES Schedule Part-I are to be adopted for Materials and Workmanship of laying Floor/ Skirting/Dado.

9.1.2 Steps and connected ramps shall have the same type of floor as adjoining floors of building unless otherwise specifically mentioned and shall have chequered finish in addition.

9.1.3 Where two different types of floors finish are provided on either side of the opening the superior floor finish shall be extended over the opening.

9.1.4 Finishing layer of floor shall be carried out through all opening and over dwarf wall.

9.1.5 PCC floor shall be finished even and smooth using extra cement unless otherwise specifically mentioned in drawings of schedule of finishes or here-in-after.

9.1.6 Polythene film shall conform to IS-2508, 150 micron thick of 01.0 Grade. If full width of polythene film is not available, the same shall be laid with an overlap of 150mm pasted with the resin solution.

9.1.7 Sub floor may not be laid in panels. Under layer and topping layer of casting PCC/terrazzo cast-in-situ floor shall be laid in square or rectangular panel as directed by Engineer-in-Charge. Length of panel shall not exceed 2.0 Metre. Length width ratio shall not exceed 1.5 times in rectangular panels. However, area of each panel shall not exceed 2.0 Square Metre as specified. Cement concrete in sub base or sub floor and top wearing coat shall be laid separately and not monolithically.

9.1.8 Polished Kota stone shall be of machine cut polished and thickness shall be all as mentioned in the schedule of finishes. The stone slab shall be hard, even, sound, durable, tough, and regular in shape of shade as approved.

**9.2 NON-SKID CERAMIC TILE FLOORING.**

9.2.1 Provide non skid ceramic tiles as per the specification indicated in schedule of finish. In case specification not mentioned in schedule of finish the area of each tile shall be n.exc 0.1 lsqm laid over 15mm thick screed in cement mortar 1:4 over 25mm thick PCC 1:2:4 type B-0 over 75mm thick sub-base with PCC 1:3:6 type C-2 over 150 micron polythene sheet over 75 mm thick sand layer over rammed earth. Tiles shall be set in neat cement slurry and shall be pointed and jointed in white cement mixed with pigment/colour cement matching with the shade of tiles. Tiling shall be done as specified in Clause 13.40 of SSR Part-I. Floor tiles shall be Grade B-IIa as per IS 13712.

**9.3 KOTA STONE & VITRIFIED TILES FLOORING AND SKIRTING**

9.3.1 **KOTA STONE FLOORING AND SKIRTING:** Provide kota stone flooring as per the specification mentioned in schedule of finishes. In case specification is not mentioned in schedule of finishes the same shall be 20-25 mm thick (minimum) laid over 15mm thick screed in cement mortar 1:4 over 25mm thick PCC 1:2:4 type B-0 over 75mm thick sub-base with PCC 1:3:6 type C-2 over 150 micron polythene sheet over 75 mm thick sand layer over rammed earth. Kota stone shall be pointed and jointed in white cement mixed with pigment/colour cement matching with the shade of stone. Height of skirting shall be 10cm. Steps shall be provide 20-25 mm thick (minimum) laid over 20mm thick screed in cement mortar 1:4 over cement slurry @ 3.00 Kg / Sqm. The skirting and riser shall be laid over 10 mm thick plastering in CM 1:3. Kota stone skirting of length same as the length of adjacent floor stone to match the better look shall be used in skirting. Flooring and skirting shall be done as specified in Clause 13.47 of SSR Part-I.

9.3.2. **VITRIFIED TILE FLOORING:** Vitrified tiles for flooring shall be of the premium quality, hard, sound, dense, Double / Ultra Charged and homogenous in texture, free from defects, machine cut and factory mirror polished, Mohr hardness shall not be less than 7 and conforming to relevant IS. The tiles are classified under group B1a of the international Standard for Ceramic Tiles ISO – 13006 and European Standard EN: 176. The thickness of tiles shall be 8 to 10 mm. Tiles shall be laid over 15 mm thick screed in Cement Mortar 1:4 over 25mm thick PCC 1:2:4 type B-0 over 75mm thick sub-base with PCC 1:3:6 type C-2 over 150 micron polythene sheet over 75 mm thick sand layer over rammed earth. Where size does not fit on the same place, it shall be provided as per directions of the Engineer-in-charge. The shade and the size shall be as approved by GE. The tiles shall be laid with a border of different dark shade to the width as directed by the GE. Joints shall be pointed flush using polymer based cementitious tiling joint filler to match the shade of the tile.

9.3.3. **VITRIFIED TILE SKIRTING:** The tiles shall be all as specified for vitrified tile flooring. Size of the tile shall be as indicated in Schedule "A". The size and shade / design of tiles shall be as approved by GE. Screed for laying the tiles shall be 10 mm thick in Cement Mortar [1:3]. Tiles shall be laid as per pattern described by GE. Joints shall be pointed flush using polymer based cementitious tiling joint filler to match the shade of the tile. The skirting thickness projecting from the rendered wall surface shall be provided with triangular coving in CM 1:3, finished even and smooth. The height of coving shall be equal to the projection of skirting from the wall surface.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**9.4 GLAZED CERAMIC TILE IN SKIRTING/DADO.**

9.4.1 Glazed Ceramic tiles in skirting/dado shall be provided as per specification mentioned in schedule of finishes. In case specification not mentioned in schedule of finish the same shall be of size 200 x 300 x 7 to 8 mm thick glossy finish. Tiles shall be laid over 10mm thick screed in cement mortar 1:4. Tiles shall be set in neat cement slurry and shall be pointed and jointed in white cement mixed with pigment/colour cement matching with the shade of tiles. Dado shall be provided upto the lintel height. Height of skirting shall be 10cm. Tiling shall be done as specified in Clause 13.40 of SSR Part-I. Colour of tiles as approved by the GE. Wall tiles shall be Grade BIII as per IS 13712.

**9.5. PCC PLINTH PROTECTION:**

- (a) Provide plinth protection and drain as indicated in drawings. If not shown in drawing the same shall be with 100 mm thick PCC (1 : 2 : 4) type B-2 over 75 mm thick (consolidated thickness) hard core of broken stone aggregate over rammed earth. The surface of plinth protection shall be finished even and smooth without using extra cement. The concrete in plinth protection shall be laid in alternate bays of length n.exc 3 m and shall be laid in slope 1 in 12. The joints shall be 12 mm thick filled with bitumen mastic.
- (b) Construction joint with sealant compound of grade ‘B’ shall be constructed with as specified in SSR Part –I para 20.B.7.10.3
- (c) PCC Drain alongwith plinth protection wherever shown on main drawings shall be provided. Drain shall be of PCC (1:2:4) type B1 (using 20mm graded stone aggregate). The girth of drain shall be finished even and smooth using extra cement.

**9.6. PRECAST INTERLOCKING PAVER BLOCKS:**

9.6.1. Precast concrete interlocking Paver blocks shall conform to IS – 15658, Specification for precast concrete blocks for paving. Paver blocks shall be sound and free from cracks or other visual defects. The tolerance on length or breadth of paver blocks shall be +2mm and tolerance on thickness of tiles shall be +3mm. Water absorption shall not be more than 6 percent by mass. Shapes shall be Triangular, Zigzag, Hexagonal or other shapes as indicated. Colour of paver blocks shall be as indicated or as decided by GE. The thickness of paver blocks shall be 60mm/80mm and grade of concrete shall be M-35/M/40 respectively. Precast concrete interlocking Paver Blocks shall be of make as approved by GE.

9.6.2. **BEDDING SAND COURSE:** The bedding sand shall consist of naturally occurring, clean, well graded sand passing through 4.75mm sieve and suitable to concrete manufacture. The bedding should be from either a single source or blended to achieve the following grading.

IS Sieve Size	% Passing
9.52mm	100
4.75mm	95-100
2.36mm	80-100
1.18mm	50-100
600 Microns	25-60
300 Microns	10-60
150 Microns	5-15
75 Microns	0-10

- 9.6.3. Contractor shall be responsible to ensure that single-sized, gap-graded sands or sands containing an excessive amount of fines or plastic fines are not used. The sand particles should preferably be sharp, not rounded. The sand used for bedding shall be free of any deleterious soluble salts or other contaminants likely to cause efflorescence.
- 9.6.4. The sand shall be of uniform moisture content, which shall be within 4% to 8%, at the time of spreading and shall be protected against rain when stockpiled prior to spreading. Saturated sand shall not be used.
- 9.6.5. The bedding sand shall be spread loose in a uniform layer as per drawing. The compacted uniform thickness shall be 50mm and within ±5mm. Thickness variation shall not be used to correct irregularities in the base course surface.
- 9.6.6. The spread sand shall be carefully maintained in a loose dry condition and protected against pre-compaction both prior to and following spreading. Any pre-compacted sand left overnight shall be loosened before further laying of paver blocks takes place. Sand shall be slightly spread in a loose condition to the predetermined depth only slightly ahead of the laying of the paver block. Any depressions in the spread sand exceeding 5mm shall be loosened, raked and re spread before laying of paver block.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 9.6.7. **LAYING OF INTERLOCKING PAVER BLOCK:** Paver block shall be laid in pattern as specified and as directed by GE. Once the laying pattern has been established, it shall continue without interruption over the entire pavement surface. Cutting of blocks, the use of infill concrete or discontinuities in laying pattern is not permitted in other than approved locations. Paving units shall be placed on the un-compacted sand bed to the nominated laying pattern and care shall be taken to maintain the specified bond throughout the job. The first row shall be located next to an edge restraint. Specially manufactured edge paving units are permitted or edge units may be cut using a power saw, a mechanical or hydraulic guillotine, bolster or other approved cutting machine. No haphazardly broken pavers shall be used. Paver block shall be placed with the help of spacers to achieve gaps nominally 2 to 3mm wide between adjacent paving joints. No joint shall be less than 2mm and more than 4mm. However it is mandatory to use 3.0mm wide spacer while laying paver tiles so as to ensure uniform 3.0mm gap between adjacent pavers. Frequent use of string lines shall be used to check alignment. In this regard, the "laying face" shall be checked at least every two metre as the face proceeds. Should the face become out of alignment, it must be corrected prior to initial compaction and before further laying job is proceeded with. In each row, all full units shall be laid first. Closure units shall be cut and fitted subsequently. Such closure units shall consist of not less than 25% of a full unit. To fill spaces between 25mm and 50mm wide, concrete having minimum 1:1:2 Cement : Sand : Coarse Aggregate Mix and a strength of 40 N/Sq.mm shall be used. Within such mix, the nominal aggregate size shall not exceed one third the smallest dimension of the infill space. For smaller spaces dry packed mortar shall be used.
- 9.6.8. Except where it is necessary to correct any minor variation occurring in the laying bond, the paver block shall not be hammered into position. Where adjustment of position is necessary, care shall be taken to avoid premature compaction of the sand bedding.
- 9.6.9. **INITIAL COMPACTION:** After laying the paver block, they shall be compacted to achieve consolidation of the sand bedding and brought to design levels and profiles by not less than two passes of a suitable plate compactor. The compactor shall be a high-frequency, low amplitude mechanical flat plate vibrator having plate area sufficient to cover a minimum of twelve paving units.
- 9.6.10. Prior to compaction, all debris shall be removed from the surface. Compaction shall proceed as closely as possible following laying and prior to any traffic. Compaction shall not, however, be attempted within one meter of the laying face. Compaction shall continue until lipping has been eliminated between adjoining units. Joints shall then be filled and re-compacted as described in Clause 13.17.12.
- 9.6.11. All work further than one meter from the laying face shall be left fully compacted at the completion of each day's laying. Any blocks that are structurally damaged prior to or during compaction shall be immediately removed and replaced. Sufficient plate compactors shall be available at the paving site for both bedding compaction and joint filling.
- 9.6.12. **JOINT FILLING AND FINAL COMPACTION:** As soon as practical after compaction and in any case prior to the termination of work on that day and prior to the acceptance of any traffic, sand for joint filling shall be spread over the pavement. Joint sand shall pass a 2.36mm sieve and shall be free of soluble salts or contaminants likely to cause efflorescence. The same shall comply with the following grading limits:

IS Sieve Size	% Passing
2.36mm	100
1.18mm	90-100
600 Microns	60-90
300 Microns	30-60
150 Microns	15-30
75 Microns	10-20

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 9.6.13. The Contractor shall supply a sample of the jointing sand to be used in the contract prior to delivering any such material to site for incorporation into the works. Certificates of test results issued by a recognised testing laboratory confirming that the sand sample conforms to the requirements of this specification shall be submitted prior to supply of total volume required. The jointing sand shall be broomed to fill the joints. Excess sand shall then be removed from the pavement surface and the jointing sand shall be compacted with not less than one pass of the plate vibrator and joints refilled with sand to full depth. This procedure shall be repeated until all joints are completely filled with sand. No traffic shall be permitted to use the pavement until all joints have been completely filled with sand and compacted. Both the sand and paver block shall be dry when sand is spread and broomed into the joints to prevent premature setting of the sand. The difference in level [lippings] between adjacent units shall not exceed 3mm with not more than 1% in any 3m X 3m area exceeding 2mm. Pavement portions which are deformed beyond above limits after final compaction, shall be taken out and re-laid to the satisfaction of the Engineer-in-Charge.
- 9.6.14. **EDGE RESTRAINT USING KERB BLOCK:** Edge restraints shall be done using the kerb blocks as specified. They should be fixed properly to withstand overriding by the anticipated traffic, thermal expansion and to prevent loss of the laying course material from beneath the surface course. The edge restraint should present a vertical facedown to the level of the underside of the laying course. The surface course should not be vibrated until the edge restraint, together with any bedding or concrete haunching, has gained sufficient strength. It is essential that edge restraints are adequately secured.
- 9.6.15. **UNIFORM INTERLOCKING SPACES:** The pavers should have uniform interlocking space of 2mm to 3mm to ensure compacted sand filling after vibration on the paver surface.
- 9.6.16. **SKILLED LABOUR:** Skilled labour should be employed for laying blocks to ensure line and level of pavers, desired shape of the surface and adequate compaction of the sand in the joints.
- 9.6.17. **LAYING PATTERN:** Laying pattern and colour combination of paver blocks shall be as directed by GE.
- 9.6.18. **PAVER BLOCK DIMENSIONS:**
- [a] Thickness: 60mm/80mm
  - [b] Shape Regular: Uniform shape with no Hollow or Cracks
  - [c] Chamfer: 5 mm to 7 mm along top edges
  - [d] Thickness of Wearing Layer: Minimum 6 mm. The thickness of the wearing surface shall be measured at several points along the periphery of paver blocks. The arithmetic mean of the lowest two values shall be the minimum thickness of the wearing layer.
  - [e] Plan Area [ASP]: Refer Clause B-3.3 Annex B of IS – 15658: Maximum 0.03 Sq.m
  - [f] Colour: Natural cement Grey colour without use of any pigment OR colour as specified
  - [g] Dimensional Tolerance: Tolerances as per IS – 15658.
  - [h] All other visual/physical & dimensional acceptance on parameters like aspect ratio, squareness etc. shall be as per IS – 15658.
- 9.7 **PCC TILES/ PCC CHEQUERED TILE FLOOR**
- 9.7.1 Refer Clause no 13.16 & 13.17 of MES Schedule, Part-I. The PCC tiles/ PCC chequered tiles shall conform to IS 1237-1980 and IS 13801:1993 respectively.
- 9.7.2 PCC tiles/PCC Chequered tiles floor wherever shown in Schedule of finishes drawings shall be factory made and of size 200mm x 200mm x 20mm. Tiles shall be laid over 20mm thick screed bed in Cement Mortar 1:4, set, jointed and pointed in neat cement slurry over sub base floor/RCC slab/any other location as specified.
10. **PLASTERING AND POINTING**
- 10.1. **CEMENT PLASTER**
- 10.1.1. **GENERAL**
- 10.1.1.1 For sand to be used in cement plaster, refer paras 14.5, 14.5.1 and 14.5.2 of MES Schedule Part-I
- 10.1.1.2 The thickness of plaster mentioned here-in-after is finished thickness exclusive of dubbing out. Plastering in one coat/first coat as applicable and dubbing out shall however, be done in one operation.
- 10.1.1.3 The external and internal finishes (Plastering) shall be returned in the jambs of the openings upto frames and taken around cupboards and similar projections.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 10.2.1 **INTERNAL PLASTER:-**Internal surfaces of walls including internal surfaces shall be plastered with 10 mm thick in cement mortar (1:6) finished the surfaces even and smooth without using extra cement.
- 10.2.2. **EXTERNAL PLASTER:-** External surfaces of walls shown shall be plastered with 15 mm thick CM in two layers of 10 mm thick rendering coat and 5 mm thick setting coat in cement mortar (1:4). The base layer to be finished rough with scouring mark to receive the second layer which will be applied after not less than a gap of two days over the first one top layer with water proofing compound @ 3% by weight of cement. The plaster shall be continued to the exposed surfaces of RCC column., beams etc. which are continuous with plastered surfaces of walls. All external plaster shall be taken up to 15 cm below GL. The finishing of External plaster shall be of even and smooth without using extra cement. Provide plaster groove as per the details given in drawing.
- 10.2.3 **CEILING:-**Exposed surfaces of ceiling shall be plastered with cement mortar (1:3), 5 mm thick finished the surface even and smooth without using extra cement.
- 10.2.4 **CHICKEN WIRE MESH:** Where two dissimilar materials viz brick work and RCC; stone masonry and RCC; etc are meeting, chicken wire mesh shall be provided over joints beneath plaster (for both external and internal surfaces) to prevent cracks in plaster due to differential thermal expansion of dissimilar surfaces as directed by the Engr-in-Charge.
11. **FINISHES**
- 11.1 **CEMENT BASE PAINT:** Cement base paint shall be provided at all the locations as indicated. Cement base painting shall be provided all as specified in clause 15.15 of SSR Part-I.
- 11.2 **OIL BOUND DISTEMPER:** Two coats of oil bound distemper over a coat of primer shall be provided after application of adequate thick wall putty at all the internal locations irrespective of whatever shown on drawings. Distemping shall be done all as specified in clause 15.14 of SSR Part-I.
- 11.3 **WHITE WASHING:** Three coats of white wash shall be provided at all the locations as indicated in drawings. White wash shall be provided all as specified in clause 15.12 of SSR Part-I.
- 11.4 **ACRYLIC EXTERIOR WEATHER RESISTANT PAINT:**
- 11.4.1 **Materials:-**
- 11.4.1.1 The Acrylic emulsion paint shall be of premium quality as indicated by the manufacturer. The paint shall be of 100% acrylic and semi acrylic paint shall not be used in the work.
- 11.4.2 **Preparation of surface:-** Refer Clause No. 17.17.2 of SSR Part-I, 2009
- 11.4.3 **Prime Coat:-** Over the prepare surface, a coat of acrylic primer as per manufacturer' instruction shall be applied. The primer shall be allowed to dry for 4 to 6 hour before application of under coat / finishing coat of paint.
- 11.4.4 **Finishing coat:-** Premium quality acrylic paint having 100% acrylic shall be applied as per manufacturer's instruction. The paint for application shall be prepared by adding water with concentrated paint at the proportion as indicated by the manufacturer. No thinner shall be used. Paint shall be applied with brushes or rollers and shall be allowed to dry for 3 to 4 hours between subsequent coat.
- 11.4.5 The period of Guarantee for the acrylic exterior weather resistant paint (weather proof paint) treatment shall be 07 (Seven) years from the certified date of completion. The contractor shall be responsible for effectiveness of the acrylic exterior weather resistant paint (weather proof paint). If any damage / discolour noticed during this period the contractor shall be liable to rectify the same without any extra cost to the Government.
- 11.4.6 The contractor shall furnish a Guarantee certificate to the GE for effectiveness and efficiency of acrylic exterior weather resistant paint (weather proof paint) during the guarantee period.
- 11.4.7 An amount of Security deposit as calculated based on the table here-in-after on the amount of acrylic exterior weather resistant paint (weather proof paint) at contract rates shall be retained from the contractors **final bill** as security deposit for the acrylic exterior weather resistant paint (weather proof paint) which shall be released to the contractor only after expiry of guarantee period. The contractor may alternatively furnish a Fixed deposit receipt in favour of GE in lieu of sum to be retained as security deposit for acrylic exterior weather resistant paint (weather proof paint) from any approved scheduled Bank.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

Ser No.	Execution amount as per quoted Rate of Weather proof paint	Guarantee amount shall be <b>increase by25%</b>
1	2	3
1	Upto Rs. 50 Lakh	2% of amount subject to a minimum of Rs. 5000/-
2	Over Rs. 50 Lakh Upto Rs. 100 Lakh	Rs. 1,00,000.00+1.5% of amount exceeding Rs. 50 Lakhs.
3	Over Rs. 100 Lakh Upto Rs. 500 Lakh	Rs. 1,75,000.00+1.0% of amount exceeding Rs. 100 Lakhs.

**11.4 SCAFFOLDING**

- 11.4.1 The exterior painting works shall be carried out by using scaffolding. No jhoola is permitted for the work under any circumstances. Suitable protection shall be provided for workmen. The contractor shall be solely responsible for all the labours deployed for the work for identity/security. In case of any accident/injury fatal or partial disability, the contractor shall be solely responsible for settling all claims, compensation. Department shall have all rights to recover any sum indicated/claimed by labour commissioner/court directives. Engineer-in-charge will have to ensure that contractor has provided all adequate and required means for the workmen and contractor may get his personnel insured as per labour law.
- 11.4.2 Scaffolding or staging more than 3.5m above the ground or floor, swung or suspended from any overhead support or erected with stationery support shall have a guard rail properly attached, braced and otherwise secured at least 1m high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- 11.4.3 Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the Gangway of the stairway is more than 3.5m above ground level they should be closely boarded, should have adequate width and should be suitably fenced, as described herein before.
- 11.4.4 Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1.0m.
- 11.4.5 Safe means of access shall be provided to all working platforms and other working places.
- 11.4.6 The rates quoted are deemed to included the above provision of scaffolding and no extra will be payable to contractor on this account. The scaffolding shall be removed only after obtaining clearance of Engineer-in-Charge/Garrison Engineer after considering the quality of the work undertaken.

**12 PAINTING**

**12.1 GENERAL:**

- (a) For paints and allied materials refer para 17.2 of MES Schedule part-I.
- (b) Synthetic enamel paint shall be of 1<sup>st</sup> grade quality and of any of the makes as approved by GE(I)/AGE(I).

**12.2 WORKMANSHIP:**

- (a) For painting works generally refer para 17.3 of MES Schedule Part-I.
- (b) In case under coat is not done within 6 months of application of primer, the primer coat shall be redone without any extra cost. Priming coat shall be done to doors and windows surfaces etc, irrespective of the fact that these surfaces are already having shop coat of painting.

**12.3 PAINTING TO STEEL AND IRON WORK:**

- (a) GENERAL: Refer para 17.8 of MES schedule part-I.
- (b) All steel work exposed to view, other than galvanised surfaces, shall be treated with one finishing coat and one under coat of readymade synthetic enamel paint over a coat of red oxide primer as per clause 17.8 of MES Schedule Part-I.
- (c) Surfaces of structural steel viz trusses, purlins, rafters and bracings etc which are hidden under ceiling shall be given two coats of red oxide primer, one coat before fixing and other coat after fixing. Hold fasts shall be tarred in two coats and sanded.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (d) Reinforcement shall be left untreated.
- (e) Timber and steel (other than reinforcement) surfaces embedded in earth, concrete or wall/plaster shall be applied with two coats of coal tar. Tarred surfaces shall be sanded before use.
- (f) Hidden wood work in ceiling shall be treated with two coats of creosote oil.
- (g) Unless otherwise specified here-in-after, wood work and joinery including particle board/plywood surfaces exposed to view shall be treated with one under coat and one finishing coat of synthetic enamel paint over one coat of pink primer as per clause 17.6 of MES Schedule Part-I.
- (h) Priming coat shall be applied to surfaces of steel/wood work before fixing in position and under coat and finishing coat after fixing in position. Surface inaccessible for applying further coats shall be painted before fixing.
- (i) Fly proof wire mesh shall be 0.48mm nominal dia and average width of aperture shall be 1.40mm.
- (j) Fly proofing of GI wire mesh shall be treated with a coat of synthetic aluminium paint including preparation of surfaces.  
NOTE :- Surface of steel and wood work except that of particle board shall be prepared before painting/polishing.

**13 SUNDRIES ITEMS**

- 13.2 MS RUNGS:** Mild Steel rungs shall be provided as per details shown on drawings. Portion of rungs embedded in masonry wall shall be hot tarred. MS rungs 16 mm dia tor/round bar shall be provided as directed by Engineer-in-Charge at spacing as shown on drawings for climbing up to roof top for maintenance of roof, water supply lines, overhead service water tank etc. The rate for rungs shall deemed to be included in the lump sum amount quoted against buildings.
- 13.3 MILD STEEL RAILING :** Mild Steel railings shall be provided all as shown on drawings. The size and type of sections shall be all as shown on drawings. MS railing shall be painted with two coats of synthetic enamel paint over a coat of red oxide primer.
- 13.4 PEG SET:** Provide peg set with number of pegs as and where indicated in drawings. The pegs shall be as shown on drawing and of Stainless Steel.
- 13.5 FIRST MANHOLE** (Size 90cm x 90cm x 90cm): The manhole shall be of the following specifications: -

Excavation and earthwork	Softt/loose soil. Surplus soil shall be removed to a distance n.exc 50m and deposited as directed by Engg-in-Charge.
PCC foundation	PCC (1:3:6) type C2.
Walling	Brick work in CM (1:4).
Internal Plastering	15mm thick in CM (1:3) mixed with integral water-proofing compound as per manufacturer’s instruction and surface finished even and smooth without using extra cement
External Plastering	thick in CM (1:6) from top upto 150mm below GL.
Benching	PCC (1:2:4) type B1.
RCC cover slab	M-25 (design mix) and TMT bars as reinforcement.
	all as per drawings.

- 13.6HDPE WATER TANK:** Rotational moulded water storage tank triple layered wall construction ISI marked seamless perfection made of stabilized food grade polyethylene to ensure resistant to weather, temperature, corrosion and leakage including ball valve and shall be fixed on roof slab over PCC platform as shown on drawings and as directed. The water tank shall be provided all as per manufacturer’s instructions. The overflow pipe shall have perforated polythene cap screwed to one end. Washout pipe shall be provided with GI plug. Ball valve shall be of brass 25 mm bore high pressure, with polythene float and fly nut. The inlet, outlet, overflow and wash out pipe shall be measured under respective item of Schedule ‘A’. Capacity of water tank shall be as indicated in the drawings.
- 13.7 WPC:** Integral water proofing compound(WPC) shall conform to IS -2645 and the brand shall be got approvedin writing from the GE(I) /GE. Preparation of mix and method of mixing shall be as per manufacturer's instructions. While pricing deviation for omission the quantity shall be considered as 3% by weight of cement.

**13.8PVC DOORS WITH FRAME**

- 13.8.1** Clause No. 8.34 of MES Schedule Part-I(2009)

**PARTICULAR SPECIFICATIONS (CONTD.)****13.8 PVC DOORS WITH FRAME**

**13.8.2** Clause No. 8.34 of MES Schedule Part-I(2009)

**13.8.3 FACTORY MADE SOLID PVC MOULDED DOOR SHUTTERS WITH FRAMES :** Factory made solid PVC moulded door shutters with frames shall be provided as per drawings no CESZ/2015/TD/008.

**13.8.3 SOLID PVC DOORS FRAMES:** Where shown or mentioned on drawings solid PVC door frame shall be Solid PVC Door Frame of size 50mm 47mm made out of 5mm plain colour PVC sheet reinforced with M.S. Square tube, supplying & fixing in opening and all as specified in SSR part-I & part II .

**13.9 PVC DOOR SHUTTER**

**13.9.1 SOLID PVC DOORS SHUTTER:-**Where shown or mentioned on drawings solid PVC door shutter shall be factory made solid panel PVC door shutter 30 mm thick (style) consisting of frame made out of M.S. tubes for top & bottom rails. M.S. frame shall be covered with heat moulded plain colour PVC 'C' channel having a PVC sheet strip of 20mm width stuck inside with solvent cement for stiles and plain colour PVC sheets for top rail, lock rail & bottom rail on either side & as gap insert for top rail & bottom rail, panelling of plain colour PVC sheet to be fitted in the M.S. frame welded / sealed to the stiles & rails with suitable PVC sheet beading, and joined together with solvent cement, manufacturer's instructions and shown in relevant drawings in SSR part-I & part II.

**13.9.2** The size of door shall be specified in TD drawing.

**13.9.3** Irrespective of whatever shown or mentioned on drawings all builder's hardware fitting required for solid PVC door shall be provide stainless steel fitting(Grade-304).

**13.9.4** The PVC door shutter shall be tested in the reputed testing house/lab as approved by GE as per IS-4020. The number of door samples shall be as per requirements laid down in IS-4020. In case, the results are not satisfactory, the entire lot shall be rejected. The cost of the testing and the cost of the door shutters samples is deemed to be included in the rates quoted by the tenderer.

**13.10 PRESSED STEEL DOOR FRAME**

**13.10.1.1** Pressed steel frames where shown on drawings shall be as per IS-4351 and as specified in clause 10.27 of SSR Part I(2009). if size of frame not shown on drawing the PSD frame shall be 105x60 mm for single shutter frames and 125x60 for double shutter frames irrespective of whatever is shown on drawings. The tolerance over the profile size shall be +2 mm. The thickness of sheet shall be 1.60mm irrespective of whatever is shown on drawings and it shall be bent to shape as per drawing. The inner surface of the frames shall be treated with a coat of tar. Shop coat and red oxide shall be applied outside before erecting in position. The frame shall be filled with PCC M10 (Nominal Mix) using 12.5 mm graded stone aggregate. Cold rolled steel hinges as per IS shall be bolted to pressed steel frame.

**13.10.1.2** Irrespective of whatever shown on drawings the Mild Steel flat of 25 x 3mm MS flat shall be provided at the bottom of frames by welding to the frame and this tie bar shall be embedded and left inside floor.

**13.10.1.3** The Frames, Fittings, Hinges and Shock Absorber shall conform to specification given in IS-4351.

**13.10.1.4** Mild Steel Conduit 20mm dia of 16 gauge closed at one end shall be welded to inner face of frame for receiving shoot of bolt. M.S. sockets for housing shoot of tower bolt shall also be provided as directed by Engineer-in-Charge.

**13.10.1.5** The fixing lugs and inner surfaces of door frames coming in contact with concrete shall be treated with two coats of bituminous paint. The door frame shall be thoroughly cleaned, made free from rust, dirt, oil, etc. and exposed surfaces shall be painted with two coats of synthetic enamel paint over a coat of red oxide zinc chrome primer.

**13.10.1.6** The fixing of Pressed Steel Door Frames shall be done as per Clause No. 5.34.5(A) of MES Schedule Part -I. All Door Frames shall be fixed while Masonry Work is in progress.

**13.11 ALUMINIUM WORKS (DOORS. WINDOWS. VENTILATORS. PARTITIONS. ETC.)****13.11.1 MATERIALS****13.11.1.1 ALUMINIUM SECTIONS & BEADS ETC.**

Contd...



**PARTICULAR SPECIFICATIONS (CONTD.)**

**13.11.1.2** Refer Clause No. 10.37 of MES Schedule Part-1(2009) as applicable and as approved by GE.

**13.11.1.3** Aluminum Door shall be provided as per main drawings and TD drawings no CESZ/2015/TD/005.

**13.11.1.4** Aluminum sliding window shall be provided as per main drawings and TD drawings no CESZ/2015/TD-007.

**13.11.1.5** Specification for aluminium door and window shall be 15 micron anodized (colored) aluminum section having embossment of the name of the manufacturer on each section at every metre and thickness of colour anodizing shall be not less than 15 micron. The section particulars shall be provided as per drawing and clause 10.37 of SSR Part-I, 2009. In case of non availability of any particular section mentioned the next available section (having higher per Kg/Rm weight) shall be provided without any price adjustment. The test certificate from Govt authorized testing laboratory shall be produced by the contractor to conform thickness of anodizing.

**13.11.1.6** The contractor shall submit the manufacturer's test Certificate in original along with the test sheet giving the results as per relevant IS and duly signed by the section manufacturer with each consignment.

**13.11.2 ALUMINIUM FITTINGS ETC.:**Aluminium Doors and Windows shall be provided with the Standard Aluminium Fittings as specified in relevant Clause No. of MES Schedule Part-I, bearing ISI Mark and as approved by GE.

**13.11.3 ALUMINIUM DOORS/WINDOWS/VENTS**

**13.11.3.1** Aluminium Doors/Windows/Vents shall be fabricated, erected and fixed in position and as per the details/ size shown in TD drawings . These shall be in conformity with the standard aluminium fittings conforming to the specifications of relevant IS.

**13.11.3.2**The cleats for mechanical, vertical/ horizontal joints shall be of extruded aluminium section so as to avoid any play between jointed members.

**13.11.3.3**Glazing for aluminium doors/window shall with 5.5 mm thick ordinary sheet glass with solar control film 25 micron reflective type.

**13.11.3.4**Neoprene crest glazing gasket shall be provided with snap or beveled glazing beads. Glass shall be fixed with PVC/rubber gasket so as to avoid metal to glass contact and no projection at any bending shall be visible thereby making it flush glazed.

**13.11.3.5**Door shutter shall be provided with Floor Spring Door Closure of standard door pattern with all necessary fixing arrangement and all doors shall be provided with mortice lock of Godrej make or as approved by GE.

**13.11.3.6** All aluminium work shall be deemed to include in various items to complete work including Fittings, Fixtures, Stays, Locks, Handle, Special I-lings, Floor Springs, Neoprene/Rubber Linings, Gaskets, Bushes, Rollers, Sealants, etc. as directed and approved by the GE.

**13.11.3.7** The items of Aluminium Glazing, Windows, Vents and Louvers Window Work shall include the provision of mullions, coupling bars, as required to join various units of Glazing, Windows and Louvers etc to form larger glazing, windows vents or louvers cum window/glazing area as per drawings. Also the necessary jointing through Cleats, Glazing Clips, Rubber Packing, Anodized Aluminium Snap Beading, Screws, etc. complete all as specified. No extra payment shall be made for Coupling Members, Mullions, etc.

**13.11.3.8** Aluminium Sections used for Windows, Vents, Louvers and fixed glazing shall be of weight as specified on drawing. This shall be suitable for use to meet Architectural designs of relevant works and shall be subject to approval of GE who would require to be satisfied about their being appropriate on Technical, Structural Functional and Visual Considerations.

**13.11.3.9** All joints shall be accurately fabricated and be hair line in appearance. The finished surface shall be free from visible defects.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

**13.11.3.10** Each aluminum frame shall be Tailor Made as per openings at site. No cutting and making good of concrete surfaces shall be permitted.

**13.11.3.11** Frames shall be fixed to concrete or brick work with approved dash fastners. Method of fixing shall be got approved by the GE before installation.

**13.11.3.12** Samples of complete set of aluminum door / window with glazing shall be made and got approved from GE before mass fabrication.

**13.11.3.13** All hardware items shall conform to the relevant IS Specifications. Design, quality type, number and fixing of hardware shall be got approved by the GE.

**13.11.3.14** No visual variation in shade shall be permitted. The fabricator shall clearly indicate the shade variation tolerance as measured by standard equipment.

**13.11.3.15** The requirements, provisions, for all aluminium work shall conform to requirements and specifications and Clause No. meters given in this tender drawings / instructions and shall at least provide for or conform to fabrication, finishing, erection installation etc.

**13.11.4 MS GRILLS:**

**13.11.4.1** MS grills shall be fabricated with MS bars / flat to required size all as per the details shown on drawings or as specified in Schedule "A". MS Grills shall be fixed to windows as directed by the Engineer-in-Charge. All the surfaces of grills shall be treated with paints as specified here-in-after for steel surfaces.

**13.11.4.2** The type of MS grill shall be provided as shown on TD drawing no CESZ/2015/TD/007 Sheet 2R/5.

**13.11.5 WORKMANSHIP****13.11.5.1 GENERAL**

**13.11.5.2** Aluminium Doors and Windows shall be Fabricated, Erected and fixed in Position and as per the Details /Size all as directed by Engineer-in-Charge.

**13.11.5.3** The thickness and Type of Glazing for Aluminum Doors and Windows shall be all as shown in Drawings. Neoprene Crest Glazing Gasket shall be provided with Snap or Beveled Glazing Beads. Glass shall be fixed with PVC/Rubber Gasket so as to avoid Metal to Glass contact and no projection at any bending shall be visible thereby making it Flush Glazed.

**13.11.5.4** The Cleats for Mechanical, Vertical/ Horizontal Joints shall be of Extruded Aluminium Section so as to avoid any play between Jointed Members.

**14. SANITARY APPLIANCES**

**14.2** All vitreous china sanitary appliances, shall be of colour as approved by GE unless otherwise is mentioned elsewhere.

**14.3 WASH HAND BASIN (WHB):** Refer Para 18.32 and 18.89 of SSR Part-I 2009. Wash hand basin shall consist of the following:-

- (a) Where WHB is shown shall be of size 550 x400mm or equivalent. Make shall be as per list of approved make.
- (b) Rubber plug and chromium plated chain.
- (c) 32mm chromium plated waste fittings with PVC waste pipe.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (d) Bottle trap shall be chromium plated conforming to IS – 5219 and also refer to Para 18.22.1 of MES Sch Part-I. Whether shown on drawings or not each WHB shall be provided with one number bottle trap.
- (e) A pair of cast iron spout brackets.
- (f) Polythene connecting pipe of 300 mm long including brass union with nuts and bolts both sides.

**14.4 MIRROR:** Looking mirror shall be of selected quality 5.5 mm thick and it shall be mounted on 6 mm thick, AC plain building board with all round teak wood bead frame of size 25 x 12mm with polished with varnishing and shall be embedded in wall.

**14.5 BLANK**

**14.6 INDIAN TYPE WC :** Irrespective of whatever indicated on drawings all Indian type WCs shall be first quality, vitreous china, coloured, earthenware pan of size 580 x 440mm of CERA or Hindware or Paryware and shall be provided with one flushing cistern of CERA or Hindware or Paryware complete with all fittings and flushing pipe etc, 100 mm dia ‘P’ or ‘S’ trap and a pair of vitreous china foot rest (ISI marked). Fixing of pan, flushing cistern and foot rest shall be all as specified in clause No 18.86 of SSR Part-I.

**14.7. EUROPEAN WATER CLOSET:** Water closet European type [Pedestal Pattern] shall be Vitreous china whitewater closet apparatus [pedestal pattern] of height 400 to 410mm, rear outlet, conforming to IS – 2556 [Part – 2] with integral “P” trap having minimum 75mm water seal. The closet shall be screwed to wooden plugs embedded into floor and made good ground. Seat and cover shall be of thermo plastic material conforming to IS – 2548 [Part – I] white plastic closed pattern flat bottom, hinged with chromium plated brass hinges, rubber buffers of suitable size and ISI marked.

**14.8 SOAP NICHE/SOAP TRAY:** Irrespective of whether shown on drawings or not one soap tray shall be provided along with each WHB of Make as per list of approved makes.

**14.9 TOWEL RAIL:** Towel rail shall be as per clause 9.22 of of MES Sch Part-I. Irrespective of whatever shown on drawings towel rail shall be 600 mm long and 20 mm dia and shall be of brass chromium plated.

**14.10 LOW LEVEL FLUSHING CISTERN:** WC shall be provided with PVC low level flushing cistern of 10 lit capacity complete along with 32 mm/40mm flushing PVC pipe and PVC supply pipe 15mm bore. It shall be of Make as per list of approved makes.

**14.11 GLASS SHELVES.:-** Glass shelves shall be of 6.0mm thick plain glass (minimum).

**14.12 SOIL, WASTE, VENT PIPES AND FITTINGS:** These shall be of ISI marked as approved by GE and shall be provided as follows:-

- (a) Soil waste, vent pipes and fittings shall be 100mm bore.
- (b) All pipes and fittings shall be cast iron conforming to IS: 3989 and bearing ISI marked in following locations:-
  - (i) Inside buildings and through walls.
  - (ii) Below plinth level including 30 cm below ground level including duck foot bend and 3.0 m beyond outer face of external walls or upto first man hole. However, in case of soil/waste pipes running in shaft, these pipes shall be connected to man hole inside the shaft. From the man hole, 100 mm dia SWG pipe line shall be provided instead of running each soil pipe beyond outer face of external wall. Waste pipe shall be of cast iron upto gully trap.
  - (iii) In other locations as mentioned here-in-after.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (c) Waste pipes from sanitary fittings/ground sink upto nahani trap shall be 40 mm bore galvanised steel tube medium grade. Waste pipes from nahani/floor trap upto gully trap including necessary fittings etc shall be of cast iron.
- (d) Cast iron vent pipes shall be 1.00 m above top of roof with necessary slotted vent cowls.
- (e) Cast iron soil and waste pipes and fittings shall be centrifugally cast conforming to IS: 3989 and bearing ISI marked. All the soil and vent pipes along the walls shall be without ears and shall be fixed to wall with MS flat iron clamps of suitable size as directed by Engineer-in-Charge at suitable spacing.
- (f) Joints between cast iron to cast iron pipes and fittings shall be with run lead caulked joints.
- (g) Whether indicated on drawings or not, soil pipes to take salvage from water closets and waste pipes to take water from nahani traps shall be provided all as specified here-in-before.
- (h) Accessories such as bends branch pieces (single/ double) etc shall be provided as required. All exposed accessories above ground level shall have oval and access doors (Standard Pattern) to enable access to each straight section of the joints.
- (i) Each and every joints of soil/ waste pipe getting embedded in the floor/walls shall be tested with smoke test as laid down in MES Schedule Part-I, in presence of Engineer-in-Charge and he will certify that the joints are satisfactory and no leakage is noticed. A copy of this certificate shall be forwarded to the GE for record.
- (j) Lump sum tendered by the contractor for the buildings shall be deemed to include the cost of soil, waste and vent pipe and fittings as mentioned here-in-before.

**14.12 NAHANI TRAP :** Refer para 18.25 of MES Sch Part-I. Nahani trap shall have internal dia of minimum 75mm, long body conforming to IS: 153989 and bearing ISI marked.

**14.13 FLOOR TRAP :** Refer para 18.26 of MES Sch Part-I. Floor trap shall have internal dia of minimum 75mm, long body conforming to IS: 153989 and bearing ISI marked. Gratings of floor traps shall be stainless steel and with outer square frame and inner openable circular grating.

**14.14 GULLY TRAP :** Salt glazed stone ware gully trap shall be with rebated top square body type P with 15 cm x 10 cm cast iron grating and 100 mm bore outlet. Trap shall be set in cement concrete foundation of size 25.5 cm x 53.5 cm and 30 cm x 30 cm concrete hopper with 75 mm thick rebated concrete curb with 32.5 cm x 32.5 cm cast iron grating jointing of gully trap with drain pipe shall be in CM (1:3).

**14.15 RAIN WATER PIPE(RWP):** RWP if shown in drawing shall be of HDPE and shall be of 110 mm dia and shall be fixed to the locations as indicated in drawing and as directed by the Engr-in-Charge.

**14.16 GATE VALVE**

These shall be of gun metal fitted with wheel head (iron or gun metal), screwed/flanged both ends for iron pipe opening full way and of the size as specified. These shall conform to IS 778. The Gun Metal Gate Valve shall be carefully examined and cleared of all foreign matter before being fixed. The Gun Metal Gate Valve shall be fitted in the pipe lines in a workmanlike manner. The joints between Gun Metal Gate Valve and pipe shall be made leak-proof when tested to a pressure of 17.5 Kg/sq cm.

**14.17. PVC SOIL / WASTE AND RAIN WATER PIPES FITTINGS:** PVC [SWR] pipes shall conform to IS – 4985. The pipes shall have smooth internal and external surfaces and shall be free from grooving and other defects. The pipe of pressure rating 6 Kgf per Sq.cm shall be incorporated in the work. The size of pipes shall be as indicated in the Schedule "A". Rubber rings for the pipes and fittings shall conform to IS – 5382. PVC [SWR] fittings shall be used as per recommendations of the manufacturer of the pipes. In case there is no IS code for the fittings, these shall generally conform to the requirement of SS: 4515 DIN 19531 & DIN 19534. PVC [SWR] pipes and fittings shall be strong, dimensionally stable and shall be free from defects of approved quality. The make of PVC SWR pipe / fittings shall be as approved by GE.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 14.18. **RCC PIPES:** Reinforced cement concrete pipes for drains and culverts shall be Non Pressure type, Class NP2 or NP3, as indicated and shall conform to IS – 458, Specification for Concrete Pipes with or without reinforcement. Bends, junctions and specials shall be of cast iron and of suitable size. The ends of concrete pipes shall be suitable for butt end joints. The butt ends shall be prepared for collar joint with grooves. The pipe joints shall be capable of withstanding the same pressure as the pipe. Concrete pipes shall be straight and free from cracks except craze cracks. The ends of pipes shall be square with their longitudinal axis so that when placed in a straight line in the trench, no opening between ends in contact shall exceed 3 mm in pipes up to 600 mm diameter and 6 mm in pipes greater than 600 mm in diameter. The outside and inside surfaces of pipes shall be smooth, dense and hard and shall not be coated with cement wash or other preparation. The pipe shall be free from defects resulting from imperfect grading of the aggregate, missing or moulding. Pipe shall be free from local dents or bulges greater than 3 mm in depth and extending over a length in any direction greater than twice the thickness of barrel. Laying and jointing of pipes shall be carried out all as described in clauses 18.74.1 to 18.74.5 of MES Schedule Part – I.
- 14.19. **SALT GLAZED STONE WARE PIPES AND FITTINGS:** SGSW pipes, fittings shall comply to the requirement of IS – 651. The pipes and fittings shall be quality Grade "A" and shall be sound, free from visible defects. The glaze shall be free from crazing. The pipe shall give a sharp, clear note when struck with a light hammer. The acceptance criteria shall be as per IS – 651.
- 14.20. **BED CONCRETE/HAUNCHING:** Concrete foundations to the pipes, hunching the pipes shall be provided as specified in Schedule "A". The thickness of concrete bed below the barrel of the pipe shall not be less than 10cm for pipes up-to 150 mm and not less than 15 cm for pipes 150mm and over in dia. Bedding shall extend laterally at least 15cm beyond either side at the barrel of the pipe. Haunching of pipes shall be carried out all as specified in clause 18.68.4 of MES Schedule Part – I.
- 14.21. **LAYING AND JOINTING OF PIPES:** The pipes shall be laid on concrete bed as specified in clause 18.69 of MES Schedule Part – I. Jointing of salt glazed stone ware pipes shall be carried out as specified in clause 18.70 and 18.70.1 of MES Schedule Part – I.
- 14.22. **TEST FOR PIPES:** The pipes shall be tested for water test all as specified in clause 18.79 of MES Schedule Part – I. The unit rate for pipes in Schedule "A" include for this test.
- 14.23. **SAND CAST CI SOIL / WASTE / VENT PIPES & FITTINGS:** The cast iron soil waste and vent pipes and fittings, shall comply with IS – 1729. The cast iron pipes shall be sand cast. The pipes and fittings shall be procured from reputed manufacturers as approved by GE. The entire work shall conform to and shall be all as specified in relevant clauses as applicable in Section 18 of MES Schedule Part – I. Lead joints wherever required shall be measured and paid separately both for S & F and for "Fixing only" items under relevant items of Schedule "A".
- 15 **BUILDER’S HARDWARE**
- 15.1 GENERAL: Irrespective of what is shown on drawings all articles of builder’s hardware except butt hinges shall be of aluminium anodised matt finish. Size shall be as given on drawings/ Schedule of fittings. All aluminium builder’s hardware shall be fixed with cadmium coated steel screws.
- 15.2 **TOWER BOLT :** Refer para 9.3 of MES Schedule part-I. The diameter of bolts shall be 10 mm and the bolts shall be barrel bolts.
- 15.3 **BUTT HINGES :** Refer para 9.7.2 of MES Schedule part- I. Butt hinges shall be of pressed steel/cold rolled mild steel medium weight. Butt hinges for PVC door shall be stainless steel and shall be fixed with cadmium coated steel screws.
- 15.4 Ball catch shall be of cast brass all as specified in para 9.14 of SSR part-I.
- 15.5 All fittings shown on schedule of fitting/drawings shall be provided whether the same have been specified or not.
- 15.6 All builder’s hardware shall be ISI marked except bow handles which shall conform to relevant IS.
- 15.7 **HOLD FAST:**
- (a) Flat iron hold fasts/lugs shall be provided by welding as and where shown on drawings.
  - (b) Irrespective of what is shown on drawings, flat iron hold fasts shall be embedded in PCC (1:3:6) type C-1, block of size 15 cm (height of block) x 30 cm (length of block) x width of masonry wall.
  - (c) Hold fasts shall be hot tarred and sanded before fixing.

**PARTICULAR SPECIFICATIONS (CONTD.)****15.8 FAN HOOKS:**

- (a) Cast iron box with hook shown in drawings shall be provided in ground floor where RCC roof is provided. Fixing / hanging arrangement of fan in ground floor / first floor, where CGI / Galvalume sheet roof is provided, shall be with GI pipe all as shown in drawings, wherever ceiling fan/fan hook is indicated in drawings.
- (b) The contractor may at his discretion provide mild steel box fabricated out of 1.40 mm thick mild steel sheet in lieu of cast-iron box without any price adjustment.
- (c) Laminated white circular sheets shall be fixed to cover metallic boxes provided for fans & pendent lights in the ceiling so that no portion of metallic boxes is visible. The cost of fan hook with CI box as specified above in RCC slab and fixing / hanging arrangement with GI pipe in case of CGI sheet roof shall be deemed to be included in the cost tendered by the contractor for buildings under Schedule "A" Part-I.

**16. FLUSH DOOR SHUTTER**

- 16.1.** Flush door shutter shall be provided complete all as specified in Schedule 'A' (BOQ) and shown/mentioned on TD drawings No. CESZ/2015/TD/003 and other as specified in Para 8.25 of MES Schedule Part-I and as per IS 2202 (Part : I -1999).
- 16.2.** Flush door shutter shall be solid core types with block core, and shall conform to IS 2202 (Part I)- 1999, Specification for wooden flush door shutters (solid core type) Part I.
- 16.3.** All timber used shall be well seasoned and chemically treated. Adhesive shall be phenol formaldehyde synthetic resin BWP type specified in IS:848-2006. All dimensions shall be finished dimension and Manufacture's Test Certificate for test specified in IS: 2202 (Part I) shall be rendered.

**16.4.** Make : GREEN PLY / CENTURY PLY./ ARCHID PLY

**17. FACTORY MADE PANELLED AND WIRE GAUGE SHUTTERS:-**

- 17.1** Refer Clause No. 8.20.8 of MES Schedule Part-I(2009).
- 17.2** All Panelled and Wire Gauge Shutter for doors shall be factory made conforming to IS-1003 manufactured from well selected kiln seasoned, Second class Hardwood chemically treated as per IS-401 for antitermite. The thickness of shutter of all doors shall be 35mm with 12mm thick panel inserts plywood, ISI marked. However the overall size of shutters shall be as shown on drawings. Samples of shutter shall be got approved by the GE before placing the bulk order.
- 17.3** Factory Made Shutters shall be from any of the Approved Manufacturers listed in relevant APPENDIX to this Tender documents here-in-after.
- 17.4** The door shutter shall be tested in the reputed Testing House/Lab as approved by GE as per IS-1003. The number of door samples shall be as required by relevant IS-1003. In case, the results are not satisfactory, the entire lot shall be rejected. The cost of the testing and the cost of the door shutter sample is deemed to be included in the rates quoted by the tenderer.
- 17.5** **PLYWOOD :** Plywood shall conform to IS-303 and shall be ISI marked. Plywood wherever shown on drawing shall be of BWR grade, type 'BB' of thickness as mentioned in drawings and number of ply shall be as specified in MES Schedule Part-I. 8.5.2 Refer Clause No. 12.10 and subsequent Clause No. thereof of MES Schedule Part I for Plywood.
- 17.6** **FIXING OF SHUTTERS**
- 17.6.1** **GENERALLY** – Refer Clause No. 8.20 and 8.21 of MES Schedule Part-I(2009) as applicable and as directed by Engineer-in-Charge.
- 17.6.2** **STANDARD DIMENSIONS OF SHUTTERS FOR DOORS, WINDOWS, ETC.** – Refer Clause No. 8.24 of MES Schedule Part-I as applicable for Panelled, Glazed, Gauzed or Partly Panelled and Glazed Shutters.
- 17.7** **FABRICATION**
- 17.7.1** Refer to relevant Clause No. of MES Schedule Part-I(2009) and as directed by Engineer-inCharge.
- 17.7.2** Styles and Rails including Lock Rail of Shutters shall be One Piece only and shall be Jointed to each other by Mortise and Tenon Joints at Right Angles. Rails more than 150mm width shall have Two Tenons. The Bottom, Lock and Up Rails shall be inserted 25mm short of the width of the Styles.
- 17.7.3** The Edges of the Panel shall fit into groove to the full depth leaving an Air Gap of 1.5mm. Edges of the Panel insert shall be sealed by application of Glue.
- 17.7.4** All Members of the Shutter shall be straight without any Warp or Bow. They shall have smooth well planned surfaces at Right Angle to each other. The Right Angles of the Shutter shall be checked by measuring the True Diagonals from One Extreme Corner to the Opposite One and the surfaces of Mortise and Tenon Joints shall be Glued before putting together. All Joints shall be Pinned with Bamboo Pins Two per Tenon in staggered position.

**18. INTERNAL ELECTRIFICATION****18.1 GENERAL**

- 18.1.1** All work of internal electrification shall be executed by fully qualified licensed electricians all as per the latest Engineering practice and latest IS codes/IS Rules. Certificate of qualification shall be produced on demand by Engineer-in-Charge.
- 18.1.2** The position of electrical fittings and fixtures shown on the drawing are tentative. The exact position of these shall be as directed by Engineer-in-Charge at the time of execution without any price adjustment.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 18.1.3 The runs of wires and locations of fittings shall be marked on walls and soffits of roof/floor slabs for the wiring in a sample building for the approval of Engineer-in-Charge. The contractor may have to realign the wiring and or relocate the fittings required for final approval at no extra cost to Government. The entire work shall be completed on the basis of sample building. Layout wiring diagram in duplicate shall be submitted by the contractor and got approved from GE before execution of work.
- 18.1.4 Looping -in-system of wiring shall invariably be used through the installation.
- 18.1.5 All equipment, fittings and accessories, materials etc selected for the wiring installation shall conform to the relevant India Standards wherever these exist.
- 18.1.6 Contractor shall produce samples of all the fittings accessories materials etc for approval by the GE, before incorporation in work.
- 18.1.7 Notwithstanding, the fact that equipment has passed the inspection carried out during the stage of manufacture, the contractor is not relieved from his obligations to conform to the quality, workmanship, guarantee of performance etc.
- 18.1.8 Any defective material, equipment or workmanship which may come to the notice of the GE or his representative after installation shall be liable for rejection and the contractor shall have to replace such materials, equipment etc or rectify the defects at his own cost.
- 18.1.9 Light, Fan & 6Amp socket points may be wired on a common circuit. Such circuit shall not have more than 08 points of Light/Fan/6A socket points or a load of 800 Watt whichever is less. Similarly a power circuit shall not have more than 02,16Amps points or a load of 2000Watt whichever is less.
- 18.1.10 Colour coding shall be followed in conduit wiring. Phase wire shall be of Red/Yellow/Blue colour, Neutral wire shall be of Black colour and Earth wire shall be of Green colour. Any deviation from this shall not be accepted.
- 18.2 PVC INSULATED 1100 VOLTS GRADE CABLE (PVC SHEATHED/UN- SHEATHED)**
- 18.2.1 The conductor shall be of stranded copper wires. The insulation shall consist of compounded polyvinyl chloride. The thickness of insulation shall not be less than nominal value mentioned in appropriate table of IS-694-1964. The composition of the compound of sheath shall be polyvinyl chloride. The compound shall be designed to offer adequate mechanical protection. The value of thickness of sheath shall be in accordance with those specified in appropriate tables. The insulation on and sheath shall be applied by the extrusion process and each shall form a compact homogeneous body.
- 18.3 Switch Boxes.**
- 18.3.1 Switch boxes suitable to house switches of required ratings, and fan regulators as required shall be provided. In case the number of switches in one box is not tallying with that available in standard manufacturer, the box accommodating the next higher of switches shall be provided without any extra cost. In case fan regulator/regulators is/are to be provided at a later dated, suitable provision for accommodating such regulators shall be made in the switch boxes and blank of covers shall be provided without any extra cost.
- 18.3.2 Switch boxes shall be so designed that accessories are mounted on a grid plate with tapped holes for brass machine screws leaving ample space at the back and on the side for accommodating conductors, check-nuts and screwed bushes at conduit entries etc.. The grid plates and MS boxes shall be fitted with a brass earth terminal. Boxes shall be attached to conduits by means of check-nuts on either of their walls. Moulded front covers made from high impact resistant and ultra violet stabilized engineering plastics shall be fixed by means of counter sunk chromium plated brass machine screw. No timber shall be used for any supports. Switch boxes shall be located with bottom at 1200mm above floor level unless otherwise indicated.
- 18.3.3 Boxes for Socket / Telephone / Call Bell Outlets**
- 18.3.3.1 Outlet boxes shall be suitable for housing switches socket outlets / telephone outlets / buzzers and any other outlet as required. These shall be so designed that accessories are mounted on a grid plate with tapped holes for brass machine screws leaving ample space at the back and on the sides for accommodating conductors, check nuts and screwed bushes at conduit entries etc.. The grid plates and MS boxes shall be fitted with a brass earth terminal. These shall be attached to conduits by means of check nuts on either sides of their walls. Moulded front covers made from high impact resistant, flame retardant and ultra violet stabilized engineering plastics shall be used to mount the outlets and shall be fixed to the outlet MS boxes by means of counter sunk chromium plated brass machine screws. No timber supports shall be used. Boxes shall be located at skirting level or bottom at 1200mm from floor or inside raceways on laboratory work table., as indicated in drawings and / or as directed.



**PARTICULAR SPECIFICATIONS (CONTD.)****18.3.4 WIRES**

18.3.4.1 Wiring shall be carried out with PVC insulated 660/1100 volt grade FRLS unsheathed single core wires with electrolytic annealed stranded copper (unless otherwise stated) conductors and conforming to IS: 694/1990, IS: 1554. All wire rolls shall be ISI marked. All wires shall bear manufacturers label and shall be brought to site in new and original packages. Manufacturer's certificate certifying that wires brought of site are of their manufacture shall be furnished as required.

18.3.4.2 The smallest size of conductor for lighting circuits shall have a nominal cross-sectional area of not less than 1.5 sq.mm, while minimum size of power wiring shall be 4 sq.mm.

**18.4.5 CEILING ROSES**

18.4.5.1 Ceiling rose shall be of bakelite and shall comply with IS:371 specification for ceiling roses having two or three terminal plates of outside diameter not less than 63.5 mm (flexible cord shall be fixed to ceiling rose in such a way that no weight is carried by the clamping screws). The flexible cord shall be of 23/0.0076 twin core with copper conductor.

**18.5 MCB & DB**

18.5.1 MCBs shall have quick make and break non-welding silver alloy contacts both on the manual and automatic operation. MCBs shall be of thermal magnetic type with inverse time delay over current tripping having a short circuit rupturing capacity as specified in Schedule 'A'. In case of multiple breakers, the tripping must be on all the poles and operating handle shall be common. Pressure clamp terminals for stranded solid conductor insertion are acceptable upto 4 Sqmm aluminium and for higher ratings, the terminals shall be suitably extended for bolted lugs connections. All terminals shall be suitably shrouded.

18.5.2 MCBs shall be housed in distribution board fabricated out of sheet steel and shall have IP-52 degree of protection to prevent entries of dust, ample clearance between the conductors and sheet steel body shall be maintained in order to obviate any chance of short circuit. Movable conduit entry plates shall be provided at top and bottom to facilitate drilling holes to suit individual requirement. The MCBs shall be mounted on a high grade rigid insulating support and connected by electrolytic copper bus bars phase separation barriers made out of are resistant materials shall be provided between the phase. Bus bars shall be colour coded for phase identification and shall be PVC shrouded.

18.5.3 Distribution board of IP-52 degree of protection shall be recessed in wall niche/mounted on the surface of the wall with necessary clamps, bolts as required. Distribution boards shall be provided with proper identification name plate, danger mark etc. DB shall be provided with a circuit list giving details of each circuit. All the outgoing circuit wiring shall be provided with identification ferrule giving the circuit number and phase. Identification of all out going circuit shall also be written on the expose portion of DB.

18.5.4 Suitable earth terminal shall be provided on the distribution board for bending to earth.

18.5.5 Distribution Boards and MCBs shall of the same make.

18.5.6 Termination of all wiring to & from MCBs/MCCBs/ DBs shall be through tinned copper lugs/thimbles of adequate rating.

**18.6 SWITCHES/SWITCH SOCKET OUTLET/SOCKET OUTLET**

18.6.1 The base shall be made of vitrified ceramic material or tough non ignitable molded insulating material. The covers, cover plates and actuate members shall be of tough, non ignitable insulating material. Current carrying parts shall be made of brass, copper phosphor bronze, aluminium alloy or any other suitable material, springs shall be of corrosion resistant metal. Attachment fitting screw and other non current carrying parts shall be of mild steel aluminium alloy or insulating material. All socket outlets and switch socket combination shall have ISI certification mark.

**18.7 UTILITY FITTINGS**

18.7.1 The detailed dimension/indicated in the drawing/MES Schedule Part-I shall be followed. These fittings shall be pre-wired with twin core copper flexible cable of size 23/.0076. About 15 cm long extra flexible cable shall be provided with fittings for making connections with the connector.

18.7.2 Four Nos brass machine screw with washer, 4 mm dia 15 mm length, shall hold the shade.

18.7.3 Acrylic sheet shall be 3 mm thick and conform to IS-7569-1981.

18.7.4 Provision of earth connection is to be made in the fittings for earthing.

18.7.5 Brass lamp holders shall conform to relevant IS.

18.7.6 All fittings shall conform to relevant IS.

18.7.7 Fittings shall be fitted on PVC block of suitable size as directed. Cost for this provision shall deemed to be included under respective item of fittings.



**PARTICULAR SPECIFICATIONS (CONTD.)**

**18.8 MOUNTING HEIGHT**

- 18.8.1 Mounting height of various fittings shall be as under :-
- (a) Bracket light fittings - 215 cm from FFL.
  - (b) Ceiling light fittings - These shall be fixed centrally in the soffit of slab or as directed.
  - (c) Switch - 100 cm from FFL.
  - (d) Socket outlet - -ditto -

18.8.2 Position of fittings not indicated above shall be as directed by the Garrison Engineer.

**18.9 EARTHING**

18.9.1 All the non-current carrying metal parts of electrical installation shall be earthed properly. All metal conduits, cable sheathe, switch gear, distribution board, light fittings. MS boxes and parts made of metal shall be bounded together and connected by means of specified earthing conductors to an efficient earthing system. All earthing shall be in conformity with IE Rules.

18.9.2 Neutral conductor pipe conveying water, structural steel work, metallic enclosures, metallic conduits and lighting protection system conductors shall not be used as means of earthing an installation of even as a link in an earthing system. The electrical resistance measured between earth connection at the main distribution board and any other point on the completed installation shall be low enough to permit the passage of current necessary to operate circuit breakers and shall not exceed phase. All metal clad switches and other equipment carrying single phase current, shall be connected to earth by a single connection. All metal clad switches, carrying medium voltage shall be connected with earth by two separate and distinct connections.

18.9.3 No earth pit shall be made within 2 metre of a wall or foundation. Effort shall be made to locate them in grass lawns or near flower beds or water taps. The distance between two earthing pits shall be at least 2 metres.

**18.10 TESTING**

18.10.1 After completion of wiring, contractor shall submit three copies of wiring diagram.

18.10.2 The installation after completion of work shall be tested for insulation, wiring continuity, earth continuity, earth resistance polarity test etc, as specified in IS/IE Rules. The test shall be carried out in the presence of Engineer-in-Charge and shall be signed by Engineer-in-Charge and the contractor. Three copies of test sheet shall be submitted by contractor. In case the earth result does not fall within the specified limit, as mentioned in IS/IE Rules, the contractor shall dig earth pit beyond 2.5 m deep to obtain the desired earth results.

18.10.3 All testing instruments labour, materials and incidentals necessary to conduct the test shall be arranged by the contractor at his own cost.

**18.11 RECORD DRAWING**

18.11.1 Record drawings for the complete work of wiring on tracing cloth with two prints as directed by the Engineer-in-Charge shall be submitted by the contractor at his own expense.

**18.12. ROUTINE AND COMPLETION TESTS**

**18.12.1 Installation Completion Tests:**

18.12.1.1 At the completion of the work, the entire installation shall be subject to the following tests:

- (a) Wiring continuity test
- (b) Insulation resistance test
- (c) Earth continuity test
- (d) Earth resistivity test

18.12.1.2 Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

**18.12.2 Wiring Continuity Test:**

18.12.2.1 All wiring systems shall be tested for continuity of circuits short circuits and earthing after wiring is completed and before installation is energized.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**18.12.3 Insulation Resistance Test**

18.12.3.1 The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all fuses in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase systems, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistances lower than one mega ohm. The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between the two poles of the installation and in those circumstances the insulation shall not be less than that specified above. The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant standard specification or where there is no such specification, shall not be less than half a mega ohm or when PVC insulated cables are used for wiring 12.5 mega ohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Mega ohms is acceptable.

**18.12.4 Testing of Earth Continuity Path**

18.12.4.1 The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

**18.12.5 Testing of Polarity of Non-Linked Single Pole Switches**

18.12.5.1 In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three or four wire installation, a test shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance by GE.

**18.12.6 Earth Resistivity Test**

18.12.6.1 Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043.

**18.12.7 Performance**

18.12.7.1 Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

**18.12.8 Tests and Test Reports**

18.12.8.1 The contractor shall furnish test reports and preliminary drawings for the equipment to the GE for approval before commencing supply of the equipment. The contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc. required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge.

**19 LT FEEDER PILLAR BOX**

**19.1 PANEL CONSTRUCTION**

19.2 The panel shall be fabricated out of 2mm thick for indoor and 3.15 mm thick for outdoor CRCA sheet steel using CNC machine. The enclosure shall have welded frame. Construction with CRCA frame sections with minimum 5mm thickness.

19.3 The door, partitions and covers shall be CRCA sheet steel of 2mm thickness. The whole enclosure shall be pretreated as per eight tank pre treatment process and finished with powder coating of shade RAL 7032.

19.4 The panel shall be compartmentalized (Modular) design. The front portion of the enclosure shall be for mounting switch gear and the rear portion for mounting bus bar, cables etc. Suitable ventilation in the form of louvers shall be provided for better heat dissipation. All live parts shall be shrouded with FRP material of fire retardant grade.

**PARTICULAR SPECIFICATIONS (CONTD.)**

19.5 The whole panel shall be fabricated and assembled in a CPRI (Central Power Research Institute Bangalore) certified factory and certificate in original to the effect for IP 52, IP-53 (As per IS-13947 (Part-I) 1993 and IP-5x, IP x 2 as per IS 13947 (Part-I) 1993, Temperature rise (as per IS-8623 (Part-I) 1993, Short circuit withstand strength in accordance with Sub clause 8.2.3 of IS 8623 (Part-I) 1993/IEC Pub 439-1 (1985) shall be produced by the contractor for verification of the Engr-in-Charge and GE.

19.6 **BUS BAR**

19.6.1 The aluminium bus bar shall be Make : HINDALCO and shall be suitable sleeved with heat shrinkable PVC sleeves. The bus bar system shall have a short circuit with stand capacity of 50 KA for 1 second. The bus bar shall be supported on SMC type, single grip type support. The enclosure shall be provided with an earth bus bar of minimum 50 x 6 mm aluminium.

19.7 **INTERNAL WIRING**

19.7.1 The power wiring of the panel shall be done using suitable size copper cables ISI marked and shall have superior mechanical, electrical and thermal properties.

19.8 **DOCUMENTATION**

19.8.1 The contractor shall provide the complete wiring diagram of the panel duly certified by the manufacturer for record.

20. **LED LIGHTS/LUMINARIES**

20.1 All LED lights/luminaries shall be meet the provision laid down in IS No-1601, IS No – 16102 Part I/II, IS No – 16130 Part I, IS No – 15885 Part II/Sec 13, IS No – 16104, IS No – 16105, IS No-16106, IS No-16108 : 2012 and LM 79.

20.2 All LED light products shall be replacement **warranty of 2 Years** from the date of completion. The product will replace free of cost in the following cases:-  
(i) Manufacturing defects.  
(ii) Failure due to mechanical and electrical impact.  
(iii) Drop in lumen (or lux at 1m) below 90% of claimed values of lumen (or lux at 1m) of the LED/Luminaries.

20.3 The above warranty shall not include natural disaster, sudden surge in voltage recorded by digital electronic meter or due to wrong handling of light fittings.

20.4 Manufacturer's test certificate of LED light fitting shall be submitted by the contractor before any payment.

20.5 Guarantee certificate of LED light fitting shall be submitted by the contractor before any payment. Contractor shall be responsible for replacement at his cost any parts which is rendered defective and unserviceable during the above period.

21. **INTERNAL WATER SUPPLY**

21.1 **GENERAL** : Refer relevant parts of particular specification here-in-before. The internal water supply work shall be executed as specified in Schedule 'A' / BOQ and all as specified in MES SSR Part-I (2009).

21.2 **BIB TAPS AND STOP VALVE**: Refer para 18.14 of MES Schedule Part-I. Screw down bib taps and stop cocks shall be of brass bright finished ISI marked.

21.3 **PILLAR TAP**: Refer para 18.16 of MES Schedule Part-I. This shall be as mentioned in schedule 'A' and shall be ISI marked.

21.4 **VALVE**: Refer para 18.102 of MES Schedule Part-I. This shall be as mentioned in schedule 'A' and shall be ISI marked.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 21.5 **WORKMANSHIP:** Refer paras 18.41 of MES Schedule Part-I. Generally layout of water supply work is shown on drawings. The exact position of water supply line and fittings shall as directed by the Engineer-in-Charge. The mounting height of various fittings shall be as directed by Engineer-in-Charge.
- 21.6 **C-PVC PIPES AND FITTINGS:**
- 21.6.1. **Refer IS 15778 and Clause No. 18.114 of MES Schedule Part-I for fitting and laying.**
- 21.6.2. **CPVC Pipes and Fittings shall be as described in Schedule 'A' (BOQ). Joint of pipes should be done executed through authorized applicator of the pipe manufacturer and performance certificate from the manufacturer shall be submitted by the contractor before execution of work and applicator shall be approved by the GE.**
- 21.7. **FIXING OF WATER SUPPLY FITTINGS:** Fixing shall be done as per manufacturer's instruction and as directed by Engineer-in-Charge.
- 21.8. **TESTING:** The water supply installation shall be tested hydraulically at a pressure of 2.5 kg/sq cm in the presence of Engineer-in-Charge for at least 24 hours continuously to ensure leak proof connections. All arrangement for testing shall be made by contractor at his own cost. Any leakage/defects noticed shall be rectified to entire satisfaction of Engineer-in-Charge.
- 21.9. Necessary cuttings/leaving/forming holes, chases, etc., in wall floors and ceiling and making good involved shall be deemed to have been included in the unit rate quoted by the contractor for respective buildings under schedule 'A' part I. No adjustment shall however be made on this account for pricing any deviation in quantities indicated as provisional items under Schedule 'A'.
22. **STONE MASONRY:**
- 22.1. Stone for stone masonry shall be from the approved quarry and shall conform to or superior to the samples kept in the office of the Garrison Engineer.
- 22.2. Stone masonry where indicated in drawings shall be of random rubble uncoursed masonry built in cement mortar [1:6] and levelled at top. Mortar joints on buried faces shall be finished flush as the work proceeds.
- 22.3. The undulations from the straight edge held against the face of wall shall not be more than 40mm on pointed surfaces and 20mm on surfaces to be plastered.
- 22.4. For provisions of bond / through stones, hearting and jointing etc., Para 6.10.1 of MES Schedule Part – I shall be referred to. However, PCC bond stones of size 20 cm X 20 cm X full thickness of wall with mix PCC 1:3:6, Type C1 may be provided in lieu of bond / through stones at the discretion of contractor at no extra cost.
- 22.5. The thickness of mortar in beds and joints upto 30mm will be permitted without any price adjustment.
- 22.6. Quoins and jambs shall be provided all as described in clause 6.10.1.6 of MES Schedule Part – I.
23. **EXTERNAL ELECTRIC SUPPLY**
- 23.1 **GENERAL:**
- 23.1.1 The scope of work covers external electrification to various buildings in this tender and includes all works described in various items of Schedule 'A' particular specification and as shown on drawing.
- 23.1.2 The layout of various electrical equipments, fittings /accessories cables etc shown on various drawings attached with this tender are tentative. The exact layout shall be as directed by Engineer-in-Charge and approved by GE in writing to suit the site requirements. Contractor to ensure written approval before taking work in hand. No price adjustment what so ever, shall be admissible to the contractor on this account.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 23.1.3 Specifications of materials and workmanship in these external electrification services shall be as specified in MES Schedule part-I except where specifically mentioned in these documents. General rules, preamble to various section rates, special Conditions, methods of measurements) etc. given in SSR shall apply to this contract unless otherwise specified in these documents.
- 23.1.4 Particular specifications given here-in-after are brief and are only to particularise, amend or emphasize, the aforesaid specifications which are not repeated here. In case of any discrepancy between the two, specification mentioned herein shall take precedence over MES Schedule Part-I.
- 23.1.5 The tenderer shall be responsible for supplying, installing, laying, connecting, testing and commissioning of the item covered in the tender all as specified and directed by Engineer-in-Charge. The work shall be of high standard and executed as per sound engineering practice as per MES Schedule part-I/IE Rules/IS/National Electrical code.
- 23.1.6 During the currency of work and also on completion of work, testing shall be carried out for all items/the installation, as a whole as per SSR/IE Rules/IS to the entire satisfaction of GE and a record shall be maintained duly signed by the Engineer-in-Charge and the contractor.
- 23.1.7 Pre-commissioning test by IEM will be carried out and record maintained. The contractor will be responsible for the arrangement of testing and all the equipment testing material will be arranged by the contractor at no extra cost.
- 23.1.8 The entire installation shall run continuously for 72 hours under normal operating conditions and contractor's Engineer, fully familiar with the system and equipment, shall be available at the site during this period for proper setting of relays instruments etc, and rectifications of any defect.
- 23.1.9 The equipments for testing and arrangements for testing shall be made by the contractor without any extra cost.
- 23.1.10 The tenderer shall include all requisite components, accessories like cable glands, lables, CTs selector switches shrouds, indication lamps, Auxiliary relays, contractors, toggle switches, handles, cable indicating dice, brackets and clamps of all kinds, instrument wiring, instrument fuses interlocks and all such other requirements for completion of the entire work though not specifically brought out in schedule 'A' and in these specifications. The tendered rates shall be deemed to include all connected works required for supplying, erecting, testing and commissioning of the entire equipments (s) fittings and items like foundation for equipments, supplying and connecting of cables in ducts etc.
- 23.1.11 Unless otherwise specified civil engineering works required for installation of the equipments such as grouting of poles and equipments, trench cutting and back filling in ground and in road crossing etc shall be deemed as included.
- 23.1.12 Wherever the cable crosses the cable existing path/road, the contractor shall dig only half the width of path/road at a time. If required, necessary diversion shall be provided. Proper warning signs and red light shall be provided. Proper warning signs and red light shall be displayed and watchman posted to prevent accident at crossings and diversions. After the cables are laid, tested and trenches refill the road/path disturbed shall be made good to conform to the original specifications. No extra payment shall be made to the contractor for the aforesaid incidentals. The contractor shall be deemed to have visited site of works made himself familiar.
- 23.1.13. The electrical works shall be carried out by properly skilled and licensed electricians under the supervision of qualified electrical supervisor/engineers as per IE Rules. The contractor shall, on demand by Engineer-in-Charge produce such evidence of qualifications of his workman/supervisors/engineers at the time of commencement of work and at any time thereafter/during the currency of work.
- 23.1.14 The items covered in this tender and incorporated in work shall be capable of delivering satisfactory services/operation without detriment to its life under the climatic conditions of the proposed site.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 23.1.15 Before taking up any item of work of this tender in an area not belonging to Min of Defence, the contractor shall give adequate notice to the local authorities through MES. He shall be responsible for making adequate arrangements for lighting, watching and guarding excavation which might be a source of danger to the public.
- 23.2 TESTING OF DG SET / HT PANELS: DG set, HT panels shall be factory tested at manufacturer's/OEM premises before dispatch by representative of accepting officer. Intimation to this effect should reach Accepting Officer at least one month in advance enabling Testing Officer to plan his visit. Presence of contractor or his auth representative is required during factory testing.
- 23.3 TIMELY PLANNING/PROCUREMENT ACTION BY CONTRACTORS : E/M machines/eqpts such as DG Set, HT/LT panels shall be brought at site by the contractor only after 80% progress of Bldg portion to avail manufacturer's guarantee/warranty in full. However, necessary approval of make, drgs & technical details be submitted by the contractor to GE for his approval well in advance.
- 23.4 SAMPLES AND MATERIALS:
- 23.4.1 All materials (equipments, fittings, cables, accessories etc) to be incorporated in the work shall invariably be ISI marked and of the make specified herein and approved by GE / AGE(I). In case any ISI marked items is not available in the country, this shall be conforming to BIS and of the make approved by GE.
- 23.4.2 Amendments to IS issued till the date of receipt of tender are deemed to be included.
- 23.4.3 In case IS does not exist for any item, it shall conform to current BS/DIM/ASTM, specifications in which case a copy of relevant standard shall be submitted by tenderer.
- 23.4.4 The contractor after obtaining written approval of makes and samples shall obtain the materials and equipments from an approved firm or through their authorised agents and shall ensure that the materials are brought to site in the manufacturer's original packing with seal intact.
- 23.4.5 The contractor is required to submit the original purchase vouchers/cash memos duly machine numbered and dated in respect of purchase of the articles showing all taxes, makes and numbers as required. The purchase vouchers shall be produced to the Engineer-in-Charge for his verification of materials/equipments and obtaining the approval/permission of GE for release of payments/incorporation in works. On approval, the Engineer-in-Charge shall deface the purchase vouchers etc and the defaced original with two Xerox copies thereof shall be submitted by the contractor to the Engineer-in-Charge for reference and record. The original purchase vouchers shall be released to contractor after technical check and payment of final bill.
- 23.4.6 No foreign exchange shall be made available by the Department.
- 23.4.7 Manufacturer's test certificate as per IS test procedures for items to be incorporated in works shall be submitted by the contractor.
- 23.4.8 The tenderer shall submit detailed catalogues/pamphlets/drawings for all electrical equipment(s) like UG & LT cables etc. to the GE for approval within one month of placement of work order. The GE would convey the decision in two weeks and thereafter procurement action be organised accordingly by the contractor.
- 23.5 RECORD :
- (a) On completion of work, the contractor shall submit one tracing (on cloth) and three copies of detailed layout plans showing :-
- (i) Detailed schematic diagram and S/S layouts, with equipment details.
  - (ii) Schematic circuit and control wiring diagram for LT panels.
- (b) The following record for all buried cables :-
- (i) Size and type of cable and manufacturer's number.
  - (ii) Location of the cables in relation to buildings, roads, etc., with depth.
  - (iii) Cross section showing where cables are laid in pipes or ducts giving their sizes, type and depths together with an indication of any spare ways available.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (iv) Position and type of all joints.
- (v) Location of other cables which run alongwith or across the cable route.
- (vi) Position and depth of all pipes, ducts etc which are met as obstructions to the cable route.
- (vii) Accurate lengths from joint to joint.
- (viii) Record of service lines as per MES Schedule Part-I para 19.96.6. **SAFETY PROCEDURE AND PRACTICES:** In all electrical installations such as sub-stations industrial establishments, transmission and distribution lines and cable networks, safety procedures & instructions for working on low, medium and high voltage mains and apparatus and safety practices listed in IS-5216 (Guide for safety procedures and practices in electrical works) shall be followed to the extent applicable. The contractor shall provide workmen with safety devices and appliances.

23.6. **FIRE SAFETY:** All electrical equipment shall satisfy the requirements laid down in IS-1646 Code of practices for fire safety of buildings (general) electrical installation and IS-3034. Code of practice for fire safety of industrial buildings, electrical generating and distributing stations to the extent applicable.

23.7 **UNDER GROUND CABLES:**

23.7.1 LT power cable will be procured by the contractor .

23.7.2. **Method of Laying:** Before laying the cable, the trench shall be provided with a layer of sand of 8cm depth for the purpose of cushioning, After the cable has been unsoiled and laid in to the trenches over the rollers, the cable shall be lifted slightly over the rollers beginning from one end by helpers standing about 10 metre apart and drawn straight. The cable shall then be taken off the rollers by additional helpers lifting the cable and then laid straight into route. When the cable has been properly straightened, it shall be covered with sand to a depth of 15cm. This is then greedily pressed down to a depth of 10cm above top of the upper most cable, then providing a good bedding for the protective cable covers on warning covers which are placed centrally over the cable i.e by bricks. The punning shall be done by hand, mechanical punners shall not be used.

23.7.3. **TESTING OF ELECTRICAL EQUIPMENTS AND CABLE**

(a) Complete equipment shall be tested jointly by Engineer-in-Charge and contractor's qualified Engineer. Record of all test results shall be compiled and submitted to GE / AGE (I) for approval. GE / AGE (I) shall ensure that all test results are within the specified limits of Indian Standard or laid down specifications as described in clause 19.2 of SSR Part-I.

23.7.4 **TESTING OF CABLE**

(a) **Testing during laying:** All new cable shall be megger tested before jointing. After jointing is completed all low voltage cables shall be megger tested and high voltage cables pressure tested before commissioning. The cables shall be tested for :-

- (i) Continuity.
- (ii) Absence of Cross Phasing.
- (iii) Insulation resistance to earth.
- (ii) Insulation resistance between conductors.

(b) **Testing after laying and jointing:** Immediately after initial laying and jointing work is completed, a high voltage test shall be applied to HT cables to ensure that they have not been damaged during or after the laying operations and that there is no flaw in the jointing. The following tests shall also be carried out in all cables :-

- (i) Insulation resistance test sectional and over all.
- (ii) Continuity test sectional and over all.
- (iii) Full load test.
- (iv) Earth test.

(c) Insulation resistance test shall be carried out between the conductors and conductors and earth by Megger, high voltage test shall be carried out by a plying test voltage between the conductor and earth conductor to sheath as given in Appx 'F' to IS-1255 (1983) and reproduced in clause 19.94 of SSR Part-I Ser Page No 19.23.

**PARTICULAR SPECIFICATIONS (CONTD.)**

(d) The contractor shall provide all apparatus required for the test and render all resistance for carrying out test without any extra cost to the Deptt.

**23.7.5 SAND CUSHIONING**

23.7.5.1 Sand for cushioning shall be dry, clean sand, and sand cushioning as specified here in before.

**23.7.6 BRICK FOR CABLE COVER**

23.7.6.1 This shall be provided with burnt brick cable cover as mentioned under Schedule `A`. The burnt cable cover shall conform to IS and also to the requirement mentioned relevant clause of MES Schedule Part-I.

**23.7.7 ROAD CROSSING AND OTHER INCIDENTAL WORK**

23.7.7.1 Wherever the cable crosses the existing roads/path, the contractor shall dig only half the width of the road/path at a time. If required necessary diversion shall be provided. Proper warning notices signs and red light shall be displayed watchman posted to prevent accidents at crossing and diversion. After the cable are laid, tested and trenches refilled, the road/path disturbed shall be make good to confirm the original specification. No extra payment shall be admitted for the aforesaid incidental work. The contractor shall be deemed to have visited the site of work, made himself familiar with the various incidental work involved and necessary allowances made in the rates quoted in various items of Schedule `A`. Cables shall be taken through GI pipe light grade for protection of the cable road crossing and walls.

**23.8. INSPECTIONS AT MANUFACTURERS WORKSHOP PREMISES AND TESTING**

Equipment such as HT/LT cables (if the requirement is more than 500 metre each type), DG set shall be tested in the manufacturer’s workshop according to test specified in the relevant Indian Standard Specification and elaborated in this specification. The equipments shall bear the IS testing marks where manufactured accordingly. The cables, DG sets shall be inspected in presence of rep of the Accepting Officer in factory / manufacturer’s premises before dispatch of the material. The contractor shall be facilitating for inspection / testing in factory/ manufacturer’s workshop premises. The contractor shall give one month notice to the Accepting Officer indicating readiness of equipment for testing. The cost of the representative’s first visit to the factory shall be borne by the Department.

**24. GI PIPE & FITTINGS :**

Refer para 18.45 of SSR Part-I. Size and grade of GI pipe shall be as indicated in Sch `A` workmanship. Such as laying and fixing of pipes shall be followed from relevant paras under Section 18 of SSR Part-I, as directed.

**24.1 LAYING AND JOINTING OF GI PIPES (EXTERNAL WORK)**

**24.1.1 Trenches**

Dia of pipe mm	Width of Trench cm	Depth of trench cm
15 to 50	30	60
65 to 100	45	75

At joints the width of trench shall be widened where necessary.

**24.1.2 Cutting and Threading**

Where pipes have been cut or re-threaded, the ends shall be carefully filed out so that no obstruction to flow is offered. The ends of pipes shall then be carefully threaded in such a manner as will not result in slackness of joints.

**24.1.3 Jointing**

Screwed steel pipe shall be jointed with screwed and socketed joints using screwed fittings of wrought iron, steel or malleable cast iron. The pipes shall be cleaned and cleared of all foreign matter and any burrs from the ends of pipes removed before laying. In jointing the pipes, the inside of the socket and the screwed end of the pipe shall be oiled and rubbed over with white lead and a



**PARTICULAR SPECIFICATIONS (CONTD.)**

few strands of fine yarn or thread wrapped round screwed end of the pipe. The end shall then be screwed in the sockets tee etc. Care shall be taken that all the pipes and fittings are properly jointed so as to make the joints completely watertight.

**24.1.4 Testing**

On completion, the pipe line shall be tested to a hydraulic pressure of 6 kg/sqcm (6 metre) under working condition of pressure and flow. Any joint found leaking shall be redone and all leaking pipes removed and replaced.

**24.2 PROTECTION AGAINST POLLUTION NEAR SEWERS AND DRAINS**

24.2.1 Para 9.11.1 of the Manual of Water Supply and Treatment of the Min of Wks & Housing shall be referred to and adopted.

**25. TESTING**

25.1 The contractor will be responsible for the arrangement of testing. All the equipment, testing material etc will be arranged by the contractor at no extra cost.

25.2 The entire installation shall run continuously for 72 hours under normal operating conditions and contractor's engineer, fully familiar with the system and equipment, shall be available at the site during the period for proper rectifications of any defects.

25.3 Tendered rates shall be deemed to include all connected works required for supplying, erecting, testing and commissioning of the entire equipments (s) fittings and items like foundation for equipment, supplying laying and connecting of water main, various valves, fittings, hydrants etc. Minor connected items of work for proper execution and functioning of equipments though not specifically mentioned in the tender are deemed to be included in the rates quoted.

25.4 Unless otherwise specified civil engineering works required for installation of the equipments such as grouting of panels and equipments, trench cutting and back filling in ground and in road crossing etc shall be deemed as included.

25.5 Wherever the pipe line crosses the existing path/road, the contractor shall dig only half the width of path/road at a time. If required, necessary diversion shall be displayed and watchmen posted to prevent accident at crossings and diversions. After the pipes are laid, tested and trenches refilled, the road/path disturbed shall be made good to conform to the original specifications. No extra payment shall be made to the contractor for the aforesaid incidentals. The contractor shall be deemed to have visited site of works and made himself familiar.

25.6 The water supply work shall be carried out by properly skilled and licensed fitters/plumbers under the supervision of qualified supervisions/engineers. The contractor shall on demand by Engineer-in-Charge produce such evidence of qualifications of his workmen/supervisors engineers at the time of commencement of work and at any time thereafter/during the currency of work.

25.7 The items covered in this tender and incorporated in work shall be capable of delivering satisfactory service/operation without detriment to its life under the climatic conditions of site.

25.8 Before taking up any items of work under this tender in an area not belonging to Min of Def. the contractor shall give adequate notice to the local authorities through MES, He shall be responsible for making adequate arrangements for lighting, watching and guarding excavations which might be a source of danger to the public.

**26. MASSONRY VALVE PIT**

26.1 Valve pit shall be constructed as mentioned in schedule 'A' . The brief specification are as under.

- (a) Excavation : In soft/loose soil and surplus be removed to a distance not exc 50 m & deposited as directed by the Engr-in-charge.
- (b) Foundation : PCC (1:3:6) type C-2
- (c) Wall : Burnt brick work with sub class 'B' bricks in CM (1:6)
- (d) Benching : PCC (1:2:4) type B-1

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (e) Bed : PCC (1:3:6) type C-2
- (f) Hardcore : Shall be of broken brick not exc 63 mm gauge.
- (g) Plastering : 15 mm thick in CM (1:4) internally and externally upto 15 cm below ground level. Top of PCC bed shall be plastered in CM (1:4) and finished even and smooth using extra cement. Top portion of valve pit as shown on drawing shall be plastered 12 mm thick cement mortar (1:4).
- (h) Butt hinges : Shall be purpose made of heavy pattern suitable for fixing to cover plate as approved by GE.
- (j) Hasp and Staple : 75 mm long mild steel safety type.
- (k) Painting : (i) All steel members except covered under ser No (ii) below, shall be painted with two coats of synthetic enamel paint over a coat of red oxide primer.  
ii) Steel surface which are embedded in concrete/brick masonry shall be treated with two coats of hot tar and sanded before fixing
- (l) MS plate : MS plate shall be 5 mm thick.

**27. DEMOLITION/DISMANTLING/TAKING DOWN**

- 27.1 Demolition/Dismantling/taking down etc shall be carried out with outmost care so that no undue damage is caused in the existing structure. Unless otherwise specified the existing fittings and fixtures shall be taken down carefully to facilitate repair work in the buildings and shall be re-fixed in the same position after carry out the repair work without any extra cost to the Government all as directed.
- 27.2 The demolished/dismantling/taking down unserviceable materials other then sold to the contractor shall either be taken on charge by the department and contractor shall deposit such materials to MES Store yard as directed by the Engr-in-Charge without any extra cost or shall be disposed off as directed by the Engr-in-Charge.

**28. ROAD WORK:**

- 28.1. **GENERAL:**Road work shall be executed all as specified in MES Schedule Part – I. Road shall be constructed to the widths, alignments, cambers, super elevations and gradients etc. as specified / shown on drawings and as directed by Engineer-in-charge. Alignment, profile and surface evenness etc. shall be provided all as specified in clause 20.A.19 of MES Schedule Part – I. The aggregate/materials shall be stacked all as specified in clause 20.A.9 of MES Schedule Part – I.
- 28.2. **ROAD SIDE FILLING:** Before commencement of earth filling, representative of the GE and the contractor will be required to take the levels jointly of existing ground surface at intervals decided by the GE [The decision of the GE shall be final and binding in this respect] shall be taken for calculating the reduced levels of the existing ground and recorded in level register. After completion of the filling of earth including compaction/ramming, finished levels shall also be taken at decided interval and the reduced levels shall be entered in the level register. The quantity of filling shall be arrived out based on the Prismoidal Formula [Simpson’s rule]. Payment for earthwork in the above-mentioned situations shall be allowed as per the above method subject to ten percent deduction for voids.
- 28.3. **FORMATION SURFACES:** Before laying soling the formation shall be prepared all as specified in MES Schedule Part – I clause 20.A.21.2 and rolled by 8/10 capacity power roller.
- 28.4. **BLOCK LEVELS:**
  - 28.4.1. Before commencement of road-work, the block levels of the area [after clearing the shrubs and vegetation etc.] shall be taken jointly by the contractor and Engineer-in-Charge. Block levels shall be taken at 3 meter intervals.
  - 28.4.2. Drawing showing the block levels on the basis of the levels taken as mentioned above shall be prepared and signed by both parties in token of their acceptance. Formation levels to which the cutting/filling is required to be carried out shall then be marked on these drawings and cutting/filling shall be carried out strictly according to these signed drawings.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- 28.4.3. Levels of the finished formation [after consolidation] shall be taken to ensure that the correct levels as indicated in the aforesaid drawings have been, in fact achieved. A certificate to this effect shall be endorsed by the Engineer-in-Charge in the works passing register in addition to the entries made in the measurement book.
- 28.4.4. From the above mentioned signed drawing and final levels, volume of cutting/filling shall be computed by using standard formula of Simpson’s rule and Prismoidal formula. 10% [TEN] deduction shall be done from the volume of filling.
- 28.5. **SOLING:** Stones for soling shall be crushed or broken hard stone obtained from approved quarries and shall be broken to size ranging from 100mm to 50mm and conform to the samples kept in GE’s office and approved by the GE before incorporation in the work. Thickness of broken stone soling shall be as indicated in Schedule “A”, laid in layers as indicated, levelled, watered and rolled to required surface and camber all as specified in clause 20.A.20.1 of MES Schedule Part – I.
- 28.6. **WATER BOUND MACADAM:**
- 28.6.1. Stone for water bound macadam shall be hard broken graded granite aggregate of grading 2, 63 to 40mm size obtained from approved quarries. Screenings shall be of granite and shall be of grading Type B.
- 28.6.2. WBM work shall be completed six months before laying bituminous carpet. The surface of WBM shall be inspected before laying carpet by GE and representative of contractor for rectifying the defective construction if any, specified in MES Schedule Part – I clause 20.A.21.11, without extra cost to the Government. Bituminous carpet work shall not be carried out unless the ‘stage passing’ is given by GE.
- 28.7 **BITUMEN:** Unless otherwise carried out under relevant item of sch ‘A’ Bitumen shall be of paving of grade VG 10 / Vg-30 all as specified in Para 20 A 11.1 of MES Schedule part I and confirming to IS 73:2013. The contractor shall arrange to procure bitumen on his own arrangement from main producers like **Indian Oil Corporation (IOC), Bharat Petroleum and Hindusthan Petroleum (HP)** as approved by GE.

The manufacturer is to carryout inspections and testing of bitumen with the relevant BIS provision. The contractor shall submit the manufacturer’s taste certificate in original alongwith the taste giving the result of each as applicable or authenticated copy thereof, duly signed by the manufacturer with each consignment. The Engineer-in-Charge shall record these details in bitumen acceptance register after due verification.

The contractor shall submit original purchase vouchers from the manufacturer for the total quantity of bitumen supplied under each consignment to be incorporated in the work. All consignments received at the work site shall be inspected by the GE alongwith the relevant documents before acceptance. The original vouchers and the test certificates shall be suitable recorded in the measurement book for record purpose under heading “NOT TO BE ABSTRACTED” and to be signed by the Engineer-in-Charge and the Contractor.

Sl No	Characteristic	Requirement	Method of Test
(i)	Penetration at 25 <sup>0</sup> C, 100 g, 5 s, 0.1 mm, Min	80	IS 1203
(ii)	Absolute viscosity at 60 <sup>0</sup> C,Poises	800-1 200	IS 1206 (Part 2)
(iii)	Kinematic viscosity at 135 <sup>0</sup> C, cSt, Min	250	IS 1206 (Part 3)
(iv)	Flash point (Cleveland open cup), <sup>0</sup> C, Min	220	IS 1448 (P : 69)
(v)	Solubility in trichloroethylene, percent, Min	99.0	IS 1216
(vi)	Softening point (R&B), <sup>0</sup> C, Min	40	IS 1205
(vii)	Tests on residue from rolling thin film over test : (a) Viscosity ratio at 60 <sup>0</sup> C, Max (b) Ductility at 25 <sup>0</sup> C, cm, Min	4.0 75	IS 1206 (Part 2) IS 1208

- 28.8. **ROLLING:** After the spreading of the mix the rolling shall be done by power roller exc. 8 tonne and n exc. 12 tonne.
- 28.9. **ROAD ROLLER:** Road roller required for execution of work will not be issued under Schedule
- 28.10. **Tack Coat:-** Tack coat at the rate ordered by GE shall be applied just ahead of spreading of premix all as specified in clause 20.A.27.2 of SSR 2009 Part-I.

**PARTICULAR SPECIFICATIONS (CONTD.)****28.11 Mixing, Transporting and Spreading:-**

28.11.1 Mixing and spreading shall be all as specified in clause 20.A.27.3 and 20.A.27.4 of SSR-2009 Part-I. Hot mix plant of adequate capacity to yield a mix of proper & uniform quality shall be used for heating & mixing aggregate & binder. The plant may either be patch type or a continuous one having co-ordination set of special units such as drier of heating the aggregate, arrangement of grading and batching by weight or volume the required quantity of aggregate, binder, heating and control unit for metering out correct quantity of heated binder and aggregate. The hot mix plant shall be fitted with temperature measuring device both for aggregate and bitumen. The binder shall be heated to the correct temperature. The correct quantity of aggregate shall be fed in the plant along with specific quantity of binder. Mixing shall be continued till homogenous mix is obtained in which all the particle of aggregate is coated uniformly. The variation from specified temperature shall not be more than 10 degree centigrade on lower side only.

28.11.2 The temperature of binder at the time of mixing shall be in the range of 150 to 177 degree centigrade and aggregate in the range 155 to 163 degree centigrade provided that a difference in temperature between the binder and aggregate at no time exceeds 14 degree centigrade.

28.11.3 The hot mix shall be transported from mixing plant to the site of work in suitable vehicle. The vehicle implied for transport shall be cleaned and covered over transit if so directed by Engr-in-Charge.

28.11.4 The temperature of mix at the time of laying shall be in the range of 121 to 163 degree centigrade.

28.11.5 After applying tack coat on prepared WBM surface, bituminous macadam shall be laid to levels, gradient & camber.

28.11.6 The mix for premix carpet shall be spread at site by means of mechanical paver with suitable screed capable of spreading, pumping and finishing the mix or rakes or distributed evenly by means of mechanical paver to the required lines, grade and cross section. The hot mix shall be spread uniformly to the suitable thickness so as to give required compacted thickness as specified in respective item of Schedule 'A'.

28.11.7 Immediately after spreading the mix shall be rolled with 8 to 10 tonne roller. At the time of rolling temperature of level mix shall be 100 to 120 degree centigrade.

28.11.8 Spreading, tamping and finishing of the mix shall be done true to grade, line and cross section without causing segregation dragging, irregularities or other surface defects. The mix shall be spread so that required thickness is achieved after rolling. The edges (longitudinal and transverse) of previously laid carpet shall be cut back to its full depth and exposed surface painted with hot coat of bitumen and new mix shall be placed in contact with it.

28.11.9. Rolling and Compaction:- The mix after spreading shall be thoroughly compacted by rolling with set of rollers, at a speed not more than 5 Km/hr immediately. The initial and final rolling shall be done with 8 to 10 tonne wheeled roller. The wheel of roller shall start from the edge and progress towards centre. The roller shall proceed on the fresh material with a rear or fixed wheel leading so as to minimize the pushing of the mix and each pass of the roller shall overlap the proceeding one by half the width of roller.

**28.12. OPENING OF TRAFFIC:-**

Traffic may be allowed immediately after completion of the final rolling when mix has cooled down to the surrounding temperature.

**28.13. PREMIX BITUMINOUS MACADAM**

28.13.1 Premix bituminous macadam shall be carried out as specified in Sch 'A' and as per relevant para's of MES Schedule Part-I. Unit rate quoted shall include the provision of bitumen, at the rate of 4% by weight of the total mix. Minimum bitumen content for Premix bituminous macadam shall not be less than as per actual design mix report or 80 Kg/Cum whichever is greater. No price adjustment shall be applicable if excess quantity of binder content (bitumen) is used /approved in the execution of work under this item. However minus price adjustment shall be made for less quantity of binder content (bitumen) used in the work based on Sch 'B' rate. On the basis of above test results, the final design mix will be approved by GE.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

**28.14. SEMI DENSE ASPHALTIC CONCRETE [SDAC]:**  
**28.14.1.MATERIALS:**

28.14.1.1.The Semi Dense Asphaltic Concrete shall consist of coarse aggregate, fine aggregate and filler in suitable proportions and mixed with sufficient binder. The combined grading of fine and coarse aggregates shall conform to the following:

Layer Thickness	35–40 mm	25–30 mm
IS Sieve [mm]	Cumulative % by weight of total aggregate passing	
19	100	–
13.2	90 – 100	100
9.5	70 – 90	90 – 100
4.75	35 – 51	35 – 51
2.36	24 – 39	24 – 39
1.18	15 – 30	15 – 30
0.6	–	–
0.3	09 – 19	09 – 19
0.15	–	–
0.075	3 – 8	3 – 8

Note: The combined grading shall not vary from the low limit on one sieve to the high limit on the adjacent sieve.

28.14.1.2.**COARSE AGGREGATE:** Coarse aggregate shall be crushed stone retained on IS 2.36mm sieve. They shall be clean, hard, durable, of cubical shape, free from disintegrated pieces, free from dust and soft or friable matter, organic or other deleterious substances and adherent coatings. The aggregates shall not contain more than 6 percent by weight of flat/longed pieces [Flat piece is one having ratio of "width/thickness" of more than 4, elongated piece is where the ratio "length / width" is more than 4]. The aggregates shall preferably be hydrophobic and of low porosity. If hydrophanous aggregates are to be used, which in normal circumstances shall be avoided, bitumen shall be treated with anti-stripping agents of appropriate quality in suitable doses as per the manufacturer's recommendations, without additional payment. Before approval of the source of aggregate, the aggregates shall be tested for stripping.

28.14.1.3.The aggregate shall satisfy the following physical requirements:

Property	Test	Specification
Cleanliness [Dust]	Grain Size Analysis [IS – 2386, Part – I]	Max 5% Passing 0.075mm Sieve
Particle shape	Flakiness and Elongation Index [Combined] [IS – 2386, Part – I]	Max 30%
Strength	*Los Angeles Abrasion Value [IS – 2386, Part – IV]	Max 35%
	*Aggregate Impact Value [IS – 2386, Part – IV]	Max 27%
Polishing	Polished Stone Value [BS:812 Part – 114]	Max 24%
Durability	Soundness [IS – 2386, Part – V] Sodium Sulphate Magnesium Sulphate	Max 12% Max 18%
Water Absorption	Water absorption [IS – 2386, Part – III]	Max 2%
Water Sensitivity	Retained Tensile Strength [AASHTO T 283]	Min 80%
Stripping	Coating & Stripping of Bitumen Aggregate [Mixtures] [IS – 6241]	Minimum Retained Coating 95%

Note:

1.       \*Aggregate may satisfy requirements of either of these two tests.
2.       Water sensitivity test is only required for the minimum retained coating in the striping test is less than 95%.

**PARTICULAR SPECIFICATIONS (CONTD.)**

3. If minimum retained coating is less than 95% and it is required to use anti-stripping agent, the same shall be provided as per manufacturer’s instructions or as advised by testing lab as per approved job mix formula.

**28.14.1.4.FINE AGGREGATE:** Fine aggregate shall be the fraction passing IS – 2.36 mm sieve and retained on 75micron sieve, consisting of Natural River Sand conforming to IS – 383. It shall be clean, hard, durable, dry and free from dust, and soft or friable matter, organic or other deleterious matter.

**28.14.1.5.FILLER:** Filler shall consist of Ordinary Portland Cement [43 Grade] as approved by the GE. The filler shall be graded within the limits indicated in Table below.

IS Sieve [mm]	Cumulative per cent passing by weight of total aggregate
0.6	100
0.3	95 – 100
0.075	85 – 100

The rate quoted for the Semi Dense Asphaltic Concrete works shall be including the cost of the filler to be incorporated in the mix as per approved mix design.

**28.14.2.DESIGN CRITERIA FOR SEMI DENSE ASPHALTIC CONCRETE:**

28.14.2.1.Semi dense asphaltic concrete mixes should be properly designed so as to satisfy certain criteria needed to assure adequate stability and durability. The mix design shall be done by Marshall Method of mix design [ASMD 1559 – 1979]. The mix as designed and laid should satisfy the requirements as given under:

Criteria		Specified Value
		Semi Dense Asphaltic Concrete
[a]	Number of compaction blow each end of Marshall Specimen	75
[b]	Marshall Stability in KGs	1200 [Min]
[c]	Flow Value [mm]	2 – 4
[d]	Percentage Air Void in Mix [to prevent bleeding]	3 – 5
[e]	Percentage Air Voids filled with Bitumen [VFB]	65 – 78
[f]	Loss of Stability on immersion in Wear at 60°C [ASTMD 1075]	–
[g]	Binder content % by weight of Total Mix.	5.5%**
[h]	Percentage Voids in Mineral Aggregates [VMA]	See table below

\*\* Minimum Bitumen content shall be 5.5% as specified hereinabove & Schedule "A". However, the binder content to be used in the works shall be as per approved Mix Design as per Job-Mix formula obtained from approved Institutions / laboratories. Please note that if the actual quantity of bitumen to be incorporated on approval of Mix-Design is found more than the minimum bitumen content specified above, No price adjustment shall be made for actual bitumen content of Mix-Design.

**28.14.2.2.MINIMUM PERCENT OF VOIDS IN MINERAL AGGREGATES:**

Nominal Maximum Particle Size*	Minimum VMA, Percent related to Mix Design Air Voids, Percent**		
	3.0	4.0	5.0
9.5	14.0	15.0	16.0
12.5	13.0	14.0	15.0
19.0	12.0	13.0	14.0
25.0	11.0	12.0	13.0
37.5	10.0	11.0	12.0

**PARTICULAR SPECIFICATIONS (CONTD.)**

- \* The nominal maximum particle size is one size large than the first sieve to retain more than 10%.
- \*\* Interpolate maximum voids in the mineral aggregate [VMA] for design air voids values between those listed.

**28.14.3.JOB-MIX FORMULA FOR SEMI DENSE ASPHALTIC CONCRETE:**

28.14.3.1.The Design Mix / Job-Mix formula for Semi Dense Asphaltic Concrete shall be carried out from National Test House / SEMT CME / Regional Research Labs / CRRI, New Delhi / NABL Accredited Laboratories / Zonal Labs / Government Engineering Colleges, NITs & IITs etc. The mix designation shall be all as specified in table under clause 20.B.2 of MES Schedule Part – I. The cost of transportation of material and testing charges shall be borne by the contractor.

28.14.3.2The proportions of coarse aggregate, fine aggregate and mineral filler shall be indicated as percentage by weight of total aggregate including mineral filler. Contractor shall submit these mix proportions to Garrison Engineer for approval on meeting the specifications mentioned here-in-before.

28.14.3.3.The tenderer shall submit their job mix formula to the Garrison Engineer within 30 days of the acceptance of contract also giving the details as mentioned in the preceding clauses for approval of the Job– Mix formula for actual use. A re-verification of mix proportion is essential for every change in source of aggregates and bitumen and by obtaining fresh job mix formula and mix design.

28.14.3.4.Material, quality, workmanship, mix design criteria for semi dense asphaltic concrete shall be all as described in clause 20.B.2 of MES Schedule Part – I. Anti stripping agent shall be added to the aggregate to reduce the stripping time of aggregate all as per manufacturer’s instructions without any extra cost to the Government. The binder shall be paving bitumen of Grade VG–30 as per IS – 73.

28.14.3.5.Preparation of mix, laying, spreading, compaction and control for semi dense asphaltic concrete shall be done all as specified in clause 20.B.4 of MES Schedule Part – I.

**28.14.4.PLANT TRAILS:** Permissible variation in Job mix formula.

28.14.4.1.Once the laboratory job mix formula is approved the contractor shall carry out plant trails at the mixer to establish that the plant can be set up to produce a uniform mix conforming to the approved job mix formula. The permissible variations of the individual percentages of the various ingredients in the actual mix from the job mix formula to be used shall be within the limits as specified in table below.

Description	Permissible Variation
	Semi Dense Asphaltic Concrete
Aggregate Passing 19mm Sieve or Larger	± 7%
Aggregate Passing 13.2mm, 9.5 mm Sieve	± 6%
Aggregate Passing 4.75 mm Sieve	± 5%
Aggregate Passing 2.36mm, 1.18 mm, 0.6 mm Sieve	± 4%
Aggregate Passing 0.3mm, 0.15 mm Sieve	± 3%
Aggregate Passing 0.075mm Sieve	± 1.5%
Mixing Temperature	± 10°C

28.14.4.2.Once the plant trials have demonstrated the capability of the plant, and the trials are approved, the laying operation may commence. GE may order additional testing of the product to establish the reliability and consistency of the plant. No claim whatsoever on this account will be admissible.

**28.14.4.3LAYING TRIALS: [FOR SEMI DENSE ASPHALTIC CONCRETE]**

[a] Once the plant trials have been successfully completed and approved, the contractor shall carry out laying trials at the locations as indicated by the Engineer-in-Charge, to demonstrate that the proposed mix can be successfully laid, and compacted all in accordance with contract conditions. The laying trial shall be carried out one suitable area, which is not to form part of the works, unless of 100 Sq.m of construction similar to that of the proposed work, and its shall be in all respects similar, particularly compaction shall be same as required in the proposed work, on which the bituminous material is to be laid.

**PARTICULAR SPECIFICATIONS (CONTD.)**

[b] The contractor shall previously inform the GE of the proposed method for laying and compacting the material. The plant trials shall then establish if the proposed laying plant, compaction plant, and methodology is capable of producing satisfactory results. The density of the finished paving layer shall be determined by taking cores, no sooner than 24 hours after laying or by other approved method

[c] Once the laying trials have been approved, the same plant and methodology shall be applied to the laying of the material on the project, and no variation of either shall be acceptable, unless approved in writing by the GE, who may at his discretion require further laying trials without any extra cost to the Government.

**28.14.5.MIXING AND TRANSPORTATION OF MIX:**

28.14.5.1.The temperature of binder at the time of mixing shall be in the range of 165°C to 170°C and of the aggregates in the range of 153°C to 163°C, provided also that at no time, the difference in temperature between the aggregates and binder shall exceed 14°C. The mixing shall be thorough to ensure that a homogeneous mixture is obtained in which all particles of the mineral aggregates are coated uniformly and temperature of mix shall not exceed 160°C.

28.14.5.2.Hot mix plant shall be used for mixing of aggregate and the binder. The binder shall be heated to the specified temperature. The aggregate shall be suitably warmed or heated before loading into hot mix plant. The correct quantity of each size of aggregate shall be fed into mixer with specified quantity of each size of aggregate shall be fed into mixer with specified quantity of binder. Each batch shall be mixed to ensure thorough coating.

28.14.5.3.The mix shall be transported from the mixing plant to the point of use in suitable tipper vehicles specified here in after. The vehicles employed for transport shall be clean and be covered using suitable covers in transit to ensure that the temperature of mix does not fall below 120°C at the time of laying.

**28.14.6.SPREADING OF THE MIX:** Spreading of asphaltic concrete shall be done by means of self-propelled mechanical Paver with a provision of electronic sensing device for automatic levelling and profile control within the specified tolerances and internal heating arrangement for the screed.

**28.14.7.ROLLING AND COMPACTION:** The rolling and compaction process for Semi Dense Asphaltic Concrete shall be in four stages as described here in after. The initial or breakdown rolling shall be done with 8 to 10 tone Tandem Vibratory Roller used on static mode. Intermediate rolling shall be with a smooth sheet pneumatic roller of 15 to 30 ton capacity having tyre pressure of 7 Kg/Sq.cm. There after the compaction will be carried with the help of Tandem roller with vibratory mode till compaction levels are achieved. Final compaction and surface finish shall be achieved with the help of pneumatic tyred roller.

**28.14.8.QUALITY ASSURANCE:** Adequate quality control at every stage of work is essential and the contractor is responsible in conducting day to day quality control tests as enumerated in succeeding clauses. This shall be in addition to any other tests which will be required by the Garrison Engineer and Engineer-in-Charge through approved laboratory/test house. Expenses on all test shall be deemed to be included in the rates quoted.

**28.14.9.QUALITY CONTROL PLAN:**

28.14.9.1.The following details are to be submitted by contractor duly signed within 15 days of commencement of work.

**PART – I:**

1	Contract Agreement Reference No							
2	CPM Network prepared and approved by GE							
3	Resource scheduling done base on CPM							
4	Mix design submitted and approved							
5	Preliminary works completed to standard engineering practice							
6	Arrangements for water made							
7	Arrangement for electric supply made							
8	Materials brought to the site to be maintained as per following format:							
	Ser No.	Item	Source as per CA	Contractors plan of sourcing	Refer to testing clause	Agency for testing	Responsibility for testing	
9	List of all T & P, make and numbers that the contractor would deploy at site of work							
10	Name of person nominated by contractor for exercising quality control							
11	Qualifications / Experience of person at Serial No.11 above.							
12	Names of supervisors with their qualifications experience employed by contractor							



**PARTICULAR SPECIFICATIONS (CONTD.)**

13	Confirmation that contract requirements relating to quality of all materials and quality standards workmanship and finishes and acceptance criteria are explained and understood by all								
14	Confirmation that requirement of tests to be conducted on materials before approval of samples and during execution, tests on workmanship, tests before acceptance including the testing procedure, sampling techniques frequency and agencies responsible for testing are understood and shall be complied with.								
15	Method to be adopted for maintaining records of test result								
16	Certificate that contractor shall maintain log of all materials received at site as per the following format:								
	Ser No.	Date	Material	Quality received	Source	Whether as per approved sample or not	Test carried out by supplier	Tests to be carried out before incorporation	
17	General Remarks by contractor of his plan of actions to ensure that quality standards.								

**28.14.10.PLANTS / MACHINERY TO BE USED:**

**28.14.10.1.HOT MIX PLANT:** Computerised Hot mix plant of adequate capacity and capable of producing a proper and uniform quality mix shall be used for preparation of the mix. The plant shall be drum mix type, electrically controlled and computerized monitored continuous mix type. The plant shall have coordinated set of essential units capable of producing uniform mix as per the job mix formula such as:

- [a] Cold aggregate feed system for providing blended aggregate in correct proportions. At least 3 bin system shall be deployed.
- [b] The rotating drum shall be fitted with suitable burners capable of heating the aggregates to the required temperature without any visible unborn fuel or carbon residue on the aggregates.
- [c] The three – bin aggregate feed system shall have variable speed belt conveyors, [load cells or other suitable devices] for regulating the accurate proportioning of aggregates into an even flow automatically from a central control bin.
- [d] Bitumen control unit of the system shall be capable of measuring/metering and spraying required quantity of bitumen at specified temperature with synchronization of bitumen and aggregates feed.
- [e] Filler system suitable to receive bagged or bulk supply of filler material and its incorporation in the mix in correct quantity which could be controlled from central control unit.
- [f] Dust control unit shall be part of the plant.
- [g] Suitable auxiliary bitumen boiler of adequate capacity with self – heating arrangement and temperature control device.

**28.14.10.2. PAVER FINISHER:** Paver finisher shall have the following essential features:

- [a] Loading hoppers and suitable distributing mechanism.
- [b] Hydrostatic drive / Control for all drives
- [c] Hydraulically extendable screed for appropriate width requirement
- [d] The screed shall have tamping and vibrating arrangement for initial compaction tutelage as it is spread without rutting or spoiling the surface. It shall have adjustable amplitude and infinitely variable frequency.
- [e] Necessary control mechanism so as to ensure that the finished surface is free from surface blemishes.

Note: The work shall be carried out by means of mechanical paver. However, wherever widening of road less than 2.0m, same shall be allowed manually.

**28.14.10.3. SPRAYING FOR TACK COAT:** Tipper mounted with storage douser for bitumen with heating arrangement and having nozzle fixed at end with suitable pumping arrangement to spray the heated bitumen. The system should have a built- in arrangement to control the speed of the vehicle to give exact / desired quantity of bitumen to be sprayed.

**28.14.10.4. TIPPERS:** Tippers deployed for transportation of asphaltic concrete should be directly able to discharge into the paver hopper and shall have suitable hydraulic control for operating the system. The minimum carrying capacity of Tipper shall be 6 Ton.

Contd...

**PARTICULAR SPECIFICATIONS (CONTD.)**

28.14.10.5. **TANDEM VIBRATORY ROLLER:** Tandem Vibratory roller shall have both modes of compaction i.e. static mode as well as vibratory mode. It is desirable to use the static mode for the initial rolling and then resort to vibratory rolling and final finishing to be done by static rolling. The machine shall have auto water spraying system.

28.14.10.6. **PNEUMATIC TYRE ROLLER:**

[a] Final rolling shall be carried out by pneumatic tyre roller. The roller shall have pneumatic tyres placed in such a way that area traversed is suitably covered by the combination of front / rear wheels. The empty weight may be put to the tune of 10 tons and it shall be possible to increase this load to about 21 tons, with ballast or other martial for compaction purposes. This machine shall have auto water spray system.

[b] The contractor shall remove all loose material/wooden twigs or any other material from resurfaced portion of the road after completion of work.

28.14.11 **QUALITY CONTROL TESTS:**

28.14.11.1. **CONTROL TESTS ON FLEXIBLE PAVEMENT:**

Ser No .	Type of Construction	Test	Frequency [Minimum]
1	Semi Dense Bituminous Concrete / Bituminous Concrete	[i] Quality of binder	Number of samples per lot and test as per IS – 73, IS – 217 and IS – 8887 as applicable.
		[ii] Aggregates Impact Value / Loss Angles Abrasion Value	One test per 200 Cu.m of aggregate
		[iii] Flakiness Index & Elongation Index	One test per 50 Cu.m of aggregate
		[iv] Striping Value	Initially one set of three representative specimens for each source of supply. Subsequently when the warranted by changes in the quality of aggregate.
		[v] Water Absorption of Aggregates	– do –
		[vi] Soundness [Magnesium and Sodium Sulphate]	Initially one determination by each method for each of supply, ten as warranted by change in the quality of aggregates.
		[vii] Sand equivalent test	As required
		[viii] Plasticity Index	As required
		[ix] Polished Stone Value	As required, for Semi Dense Bituminous Concrete / Bituminous Concrete
		[x] Percentage of fractured faces	When Gravel is used, one test per 50 Cu.m of aggregates
		[xi] Mix grading	One set of tests on individual constituents and mixed aggregates from the dryer for each 400 tons of mix subject to a minimum of two tests per plant per day.
		[xii] Stability of mix	For each 400 tons of mix produced, a set of 3 Marshall specimen to be prepared and tested for suitability, flow value, density and void content subject to minimum of two sets being tested per plant per day
		[xiii] Water sensitivity mix [Retained tensile Strength]	Initially one set of three representative specimens for each source of supply. Subsequently when the warranted by changes in the quality of aggregate [if required]

**PARTICULAR SPECIFICATIONS (CONTD.)**

		[xiv] Swell test on the mix	As required for the Bituminous Concrete
		[xv] Control of temperature of binder in boiler, aggregate in the dryer and mix at the time of laying and rolling	At regular close intervals
		[xvi] Control of binder content and grading of mix	One test for each 400 tons of mix subject to a minimum two tests per day per plant.
		[xvii] Rate of spread of mixed materials	Regular control through checks on weight of mixed materials and layer thickness
		[xviii] Density of compacted layer	One test per 250 Sq.m area
	Binder	[i] Softening Point	Initially on submission there after daily if site blended, weekly if pre – blended
		[ii] Penetration at 25°C and 4°C	
		[iii] Elastic recovery	
		[iv] Ductility	
		[v] Flash Point	
		[vi] Frass Breaking	Initially on submission
		[vii] Viscosity at 150°C	
		[viii] Thin film oven test, penetration, softening pint, elastic recovery of residue, loss on heating.	

28.14.12.**PERMISSIBLE TOLERANCES FOR SEMI DENSE ASPHALTIC CONCRETE:** The permissible variation in binder content with reference to Schedule "A" shall be within the following limits:

[i] Binder Content : ± 0.3%

28.14.13.When the road is opened to traffic, it should be ensured that a minimum density of 95% is achieved.

28.14.14.**FINISHED SURFACE PAVEMENT UNIFORMITY [APPLICABLE FOR SEMI DENSE ASPHALTIC CONCRETE]:** The finished pavement shall be of uniform thickness and thickness shall not vary more than 3mm from that specified. The surface tolerance of any paving course shall be such as not to exceed 3mm when tested transversely. The uniformity of finished and compacted surface shall be checked with Profilometer / road unevenness recorder. Any layer with deviation beyond this limit shall be corrected and or removed and replaced by contractor at his own expense. The rectification in such cases shall be carried out with fresh materials and compacted to specifications.

28.15. **MISSING DETAILS / SPECIFICATIONS:** In case of any missing specification details, relevant provisions contained in IRC [Indian Road Congress] shall be followed during execution of the work. In case the same are not available in IRC also, the same will be followed from latest version of relevant technical Instructions published by E-in-C’s branch.

28.16. **MEASUREMENTS:** Refer special condition 20.A.1 on Page 433 of MES Schedule Part – II.

28.17. **OPENING TO TRAFFIC:** Traffic may be allowed immediately after completion of the final rolling when the mix has cooled down to the ambient temperature.

28.18. **USE OF ROAD:** During the progress of work on road the contractor has to provide suitable temporary screen barricades preferably of galvanization sheets duly painted on back side of intersections of road to avoid any untoward accident.

28.19. **COMMUNICATION FACILITIES:** Efficient communication facility for executives and contractor’s representative shall made available by the contractor regarding site control, safety precautions, quality control to ensure smooth execution of work.

**PARTICULAR SPECIFICATIONS (CONTD.)**

**28.20. MATERIALS AND TESTING:**

28.20.1.A percentage / selected checks as decided by the GE / Accepting Officer, shall be got done independently in National Test House / SEMT CME / Regional Research Labs / NABL Accredited Laboratories / Zonal Labs / Government Recognised Engineering College etc. and the expenditure for these tests shall be borne by the Contractor.

28.20.2.Type of tests on various materials indicated in MES Schedule Part – I. In case as per relevant IS, if any additional tests are also required to be carried out, the same shall be carried out by the contractor without any extra cost to the Government.

28.20.3.If the contractor does not carry out any of the tests as specified or for any less number of tests carried out, recovery to that effect shall be made and the recovery rate shall be as decided by Accepting Officer. In case the contractor is unable to carry out certain tests due to break down of testing equipment /non-availability of testing equipment, the required tests shall be got carried out in Government Lab / College as approved by GE and cost of such shall be borne by the contractor.

**28.21. ARRANGEMENT OF TRAFFIC DURING CONSTRUCTION:** The contractor shall at all times carryout work on the roads in manner creating least interference to the flow of the traffic while consistent with the satisfactory execution of work. For all works involving improvement to the existing road, the contractor shall, as directed by the Engineer-in-Charge, provide and maintain during the execution of work a passage for traffic either along a part of the existing road under improvement or along a temporary diversion constructed close to the road. The contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, marking, flags, lights and flagmen as may be required by the Engineer-in-Charge for the information and protection of traffic approaching and passing through the section of the road under construction / improvement. The cost of the arrangements shall be deemed to be inclusive in the quoted rates against relevant items of Schedule "A".

**28.22 THERMOPLASTIC PAINT**

The work under this section consists of marking traffic stripes using a thermoplastic compound meeting the requirements specified herein.

The thermoplastic compound shall be screeded/extndied on to the pavement surface in a molten state by suitable machine capable of controlled preparation and laying with surface application of glass beads at a specific rate. Upon cooling to ambient pavement temperature, it shall produce an adherent pavement marking of specified thickness and width and capable of resisting deformation by traffic.

The colour of the compound shall be white or yellow (IS colour No, 356) as specified in the drawings or as directed by the Engineer-in-charge.

The thermoplastic material shall be homogeneously composed of aggregate, pigment, resins and glass reflector zing beads.

The pigment, beads, and aggregate shall be uniformly dispersed in the resin, The material shall be free from all skins, dirt and foreign objects and shall comply with requirements indicated in Table.

**PROPORTIONS OF CONSTITUENTS OF MARKING MATERIAL**

(Percentage by weight)

Component	White	Yellow
Binder	18.0 min	18.0 min
Glass Beads	30-40	30-40
Titanium Dioxide	10.0 min	-
Calcium Carbonate and Inert Fillers	42.0 max	See
Yellow Pigments	-	Note

Note: Amount of yellow pigment, calcium carbonate and inert fillers shall be at the option of the manufacturer, provided all other requirements of this Specification are met.

**PARTICULAR SPECIFICATIONS (CONTD.)**

Application- Marking shall be done by machine. For locations where painting cannot be done by machine, approved manual methods shall be used with prior approval of the Engineer-in-Charge. The Contractor shall maintain control over traffic while painting operations are in progress so as to cause minimum inconvenience to traffic compatible with protecting the workmen.

The thermoplastic material shall be applied hot either by screeding or extrusion process. After transfer to the laying apparatus, the material shall be laid at a temperature within the range specified by the manufacturer for the particular method of laying being used. The paint shall be applied using a screed or extrusion machine.

The pavement temperature shall not be less than 10°C during application. All surfaces to be marked shall be thoroughly cleaned of all dust, dirt, grease, oil and all other foreign matter before application of the paint.

The material, when formed into traffic stripes, must be readily renewable by placing an overlay of new material directly over an old line of compatible material. Such new material shall so bond itself to the old line that no splitting or separation takes place.

Thermoplastic paint shall be applied in intermittent or continuous lines of uniform thickness of at least 2.0 mm unless specified otherwise. Where arrows or letters are to be provided, thermoplastic compound may be hand-sprayed. In addition to the beads included in the material, a further quantity of glass beads of Type 2, conforming to the above noted Specification shall be sprayed uniformly into a mono-layer on to the hot paint line in quick succession of the paint spraying operation. The glass beads shall be applied at the rate of 250 grams per square metre area.

The minimum thickness specified is exclusive of surface applied glass beads, The method of thickness measurement shall be in accordance with Appendices B and C of BS - 3262 (Part 3).

The finished lines shall be free from ruggedness on sides and ends and be parallel to the general alignment of the carriageway. The upper surface of the lines shall be level, uniform and free from streaks.

**SIGNATURE OF CONTRACTOR**  
**DATED:**

**FOR ACCEPTING OFFICER**

**PARTICULAR SPECIFICATIONS (CONTD.)**

**29. APPROVED NAME OF PRODUCT TO BE INCORPORATED IN THE WORK**

SI No.	Materials	Make/Name of the manufacturer
1	2	3
<b><u>(A) BUILDING MATERIALS</u></b>		
1.	Integral water proofing compound (WPC)	Bauchemic India/CICO/Fosroc/Pidilite/Roff
2.	Factory made second class hardwood paneled door shutter / Skeleton shutter	M/s Ascu Hickson Limited / M/s Doorking Industries / M/s Goyal Industries Corporation / M/s Joinary wood product Pvt Ltd / M/s Kajiranga wood products Pvt Ltd / M/s Narmada wood products / M/s Premier wood crafts (P) Ltd / M/s Purbanchal Industries / M/s Vinod Patterns & Furniture Industry.
3.	PVC doors & frames, Wndows, Partitions, False ceilings & wall cladding	Rajashri Plastiwood Ltd / M/s Accucel Polytech Pvt Ltd / M/s Sintex India Ltd / Duroplast.
4.	Builder's hardware	Argent / Classic / Poineer / or any ISI approved make.
5.	Alluminium door window section, Aluminium snap grid or any other aluminium section	Hindalco / Jindal / Halco
6.	Factory made steel windows / Ventilators & Factory made Pressed steel door frame / Pressed Steel Windows / Ventilators	M/s Doorwyn Industries / M/s Hopes metal Industries Ltd / M/s Madhu Industries / M/s Modern Fabricators / M/s Multiwyn Industrial Corp / M/s Purbanchal Industries / M/s Steel Engineers / M/s The Ankur Industries
7.	Rolling Shutter	Any ISI make
8.	CGI / PGI Steel sheet	Jindal / SAIL / TATA
9.	Wire mesh	ISI marked with valid CML NO of BIS.
10.	Thermoplastic road Marking paint	Asian Apcomark / STP / Shalimar Paints Ltd. / Berger Paints Ltd. / Jenson & Nicholson Paints Ltd / Jotun India Pvt Ltd
11.	Fibre glass / Mineral wool for thermal insulation	Twiga Insulation/ UP twiga fiber glass ltd. / Lloyd insulation.
12.	Prelaminated plywood / Plywood grade BWR type BB / Decorative plywood	Green ply / Kit ply / Century ply / Archid ply / Shirdi Industrial Ltd (asis) / Nepal Board.
13.	Plastic laminated sheet	Green Lam / Archid Lam / Century Lam / Kit Lam
14.	Veenered Particle Boards	Ecoboard / Novapan / Bhutan Board / Century ply / Archid ply / Green Ply / Shirdi Industrial Ltd (asis) / Nepal board
15.	Prelaminated particle board / Prelaminated MDF	Green Lam / Archid Lam / Century Lam / Kit Lam / Shirdi Industrial Ltd (asis) / Nepal board
16.	Adhesive	Fevical / Dr Fixit / Dendrite
17.	APP modified water proofing membrane	Moply-FP (M/s Texa India Ltd) / Super Thermolay (M/s STP Ltd) / Torchshield APP by Pidilite Industries
18.	Bitumen primer , Bitumen for roof treatment only.	STP or Make bearing ISI certification.
19.	High pressure Steam Cured (HPSC) Non Asbestos Fibre Cement board as per IS 14862	Armstrong / Saint Gobain (Gyproc) / Everest
20.	Chequerred Tiles (IS-13801)	Ultra / Bansal / Nitco / Anjali / Multiwyn
21.	Non Skid/Vitrified/Glazed Tiles	1 <sup>st</sup> quality of Johnson Tiles/ Somany/ Nitco/ Cera/ Kajaria.
22.	Precast Interlocking Paver blocks	Anjali Tiles / Ultra Tiles Pvt Ltd / Terra Firma / Bansal / Wondercrete / A-one tiles / Mehtab
23.	Sheet glass	Modiguard float glass / Saint Gobain glass (ssg)
24.	Cement base paint	Shalimar (Maha Cemkote) / Snowcem Plus / Durocem / Robbiacem (J&N) / Acrocem Ultra / Ecocem 9TATA Pigments)
25.	Acrylic based polymer modified cementious water proofing	Acrocrete & Acrocote / CICO / FOSROC / MYK Laticrete / Hi Tech / Pidilite / Sika / BASF India Ltd / Blue Seal
26.	Dry / oil bound/ Acrylic Distemper	Asian paints (tractor uno) / Berger (Jadoo)/ Dulux Weathershield (signatureor power flex) of ICI.
27.	Acrylic emulsion / Weather proof paint	Asian Paints (Royal) / Berger (Luxol silk splendor)/ ICI (dulux velvet touch)

PARTICULAR SPECIFICATIONS (CONTD.)

APPROVED NAME OF PRODUCT TO BE INCORPORATED IN THE WORK

1	2	3
28.	Plastic emulsion paint	Acrocem / Durocem / Super snowcem / Berger / Asian Paint (Gutucam)
29.	Synthetic Enamel Paints	Berger ( Luxol) / Asian (Apcolite) / ICI (Supergloss)
30.	PVC Flush cistern (ISI marked) & Plastic seat cover (Solid heavy duty)	Cera / Commander / Hindware / Johnson Poddar / Parryware / Speedflo (Blue star polymers)
31.	Stainless steel / Plate rack	Anjali / Blue Star / Diamond / Lotus / Nirali / Prayag
32.	Mirror	Atul / Goldfish / Kohinoor / Modi / Sain Gobain / Swastic / Prayag
33.	Chromium plated bathroom fittings of cast copper alloy fancy type bib tap, stop valves and pillar tap.	Jaquar (continental) / Marc / Parryware / Hindware/ W J Decor
34.	PVC Overhead tank (Multi layered construction)	Rotax / Sintex / Polycon / Diplast / Nilkamal.
35.	GI pipe (any grade)	Bansal / Bst / Jindal / Nezone (Ntl)/ Prakash / Tata / Swastik/ Zenith
36.	GI fittings	AA or Majke bearing ISI certification mark
37.	Cat copper bib cock / Stop valve	Leader /Gem / Jaquar
38.	Gun metal Gate valve	Kirloskar / L&T / Leader
39.	Vitreous china WC / WHB / Urinal / Soap dish / Urinal Partition wall / Laboratory sink	Hindustan sanitary ware (Hindware) / Parryware (Superfine) / Cera (Regular) / Jaquare.
40.	Anti Termite Chemical	Pest Control Management Pvt. Ltd. Or ISI Marked with valid CML NO of BIS.
41.	HDPE /PVC pipes & fittings	Anant/ Om Sree Products/ Tusker/Ori-Plast/ Supreme/ Prince/ Relliance
42.	Sealing compound & joint filler	STP limited/ Shalimar(tar)/ M. K. Petro products (India) pvt. Ltd/CICO/BASF/Dr Fixed/ Fosroc/ BASF India Ltd
43.	Galvalume sheet	DURASHINE / LYSAGHT BY M/S TATA BLUE SCOPE ALUCOLOR / GALVACOLOR BY BHUSHAN POWER & STEEL COLOURON PLUS BY JSW / DURA ROOF
44	Flush Shutter	ISI marked as approved by GE
45	Barbed wire	A-1 Fence product company Pvt Ltd. / Global Technocrats Pvt Ltd / Shiva Engineering Company.

(B) ELECTRICAL MATERIALS:-

46.	House wiring cable (1100 Volts)/Cable for service connection/Cable for Panel Bard wiring	Havells/ RR Kabel/ Finolex/RPG/RICHA
47.	Modular switches/ fixtures	Crabtree/ Legrand/ Schneider/L&T/ Siemens/ ABB/ Mk/ Philips/Anchor
48.	PVC Casing Capping / Conduit	Finolex / Modi / Presto Plast / Plaza / Kalinga/RICHA
49.	Wiring accessories and fittings	Anchor/ Havells/ Legrand/ Kinjal (ISI Marked)/RICHA
50.	MCBs, DBs, Isolator	Legrand /Siemens/ Schnieder (Merlin Gerin)/ ABB.
51.	MCCB	ABB/ Legrand/ Schneider/ Siemens
52.	LT UG /Service Cable	Havells/Finolex/Glostar/KEC(RPG)/RICHA
53.	LED Light fittings	Havells/Philips/ Bajaj
54.	Panel Board	L & T / Milestone / Advance / Unilec / C & S / Schneider

PARTICULAR SPECIFICATIONS (CONTD.)

APPROVED NAME OF PRODUCT TO BE INCORPORATED IN THE WORK

1	2	3
(C) WATER SUPPLY MATERIALS:-		
55.	GI pipe (any grade)	Bansal / Bst / Jindal / Nezone (Ntl)/ Prakash / Tata / Swastik/ Zenith
56.	GI fittings	AA or Majke bearing ISI certification mark
57.	HDPE /PVC pipes & fittings	Anant/ Om Sree Products/ Tusker/Ori-Plast/ Supreme/ Prince/ Relliance
58.	Gate Valve / Sluice valve / Non return valve	KIRLOSKAR / L&T / LEADER
59.	Submersible pump	KSB / Kirloskar / Beacon
60.	Centrifugal pump	KSB / Kirloskar / Beacon/Crompton
61.	DI Pipe	ELECTROTHERM INDIA / ELECTROSTEEL CASTING LTD / JINDAL SAW LIMITED / TATA METALIKS KUBATA PIPES / JAI BALAJI INDUSTRIES LTD.
62.	CI / DI Specials	ELECTROSTEEL CASTING LTD / JINDAL/ KESORAM / LANCO
63.	MS Pipe	BANSAL / BST / HINDUSTAN / JINDAL / NEZONE / PRAKASH / TATA

Note: The approved makes as specified here-in-before shall be provided if otherwise not specified in respective items of Sch ‘A’.

(SIGNATURE OF CONTRACTOR)  
Dated : \_\_\_\_\_

FOR ACCEPTING OFFICER



**PARTICULAR SPECIFICATIONS (CONTD.)**

**30. LIST OF DRAWINGS**

1. The following drawings are included in the tender documents:-

Sl No	Description of drawings	Drawing No	Sheet No	Date of	
				Draw ing	Last revision
1	2	3	4	5	6
	<b>For Building</b>				
1.	Floor plan, Roof plan, Elevation, Toilet details	CWE/LKG/ST/336/2023	01[R]/22	--	--
2.	Ground Floor Plan	CWE/LKG/ST/336/2023	02[R]/22	--	--
3.	First Floor Plan	CWE/LKG/ST/336/2023	03[R]/22	--	--
4.	Sections details	CWE/LKG/ST/336/2023	04[R]/22	--	--
5.	Ground floor furniture plan	CWE/LKG/ST/336/2023	05/22	--	--
6.	First floor furniture plan	CWE/LKG/ST/336/2023	06/22	--	--
7.	Ground floor electrical layout	CWE/LKG/ST/336/2023	7/22	--	--
8.	First floor electrical layout	CWE/LKG/ST/336/2023	8/22	--	--
9.	Ground floor sanitary layout	CWE/LKG/ST/336/2023	9[R]/22	--	--
10.	First floor sanitary layout	CWE/LKG/ST/336/2023	10[R]/22	--	--
11.	Toilet Details	CWE/LKG/ST/336/2023	11/22	--	--
12.	Site Plan	CWE/LKG/ST/336/2023	12/22	--	--
13.	General Notes	CWE/LKG/ST/336/2023	13/22	--	--
14.	Schedule of Finishes	CWE/LKG/ST/336/2023	14[R]/22	--	--
15.	Section details of footing	CWE/LKG/ST/336/2023	15/22	--	--
16.	Section details of Columns	CWE/LKG/ST/336/2023	16/22	--	--
17.	Details of Slabs	CWE/LKG/ST/336/2023	17/22	--	--
18.	Detailing of beam layout at various levels	CWE/LKG/ST/336/2023	18/22	--	--
19.	Detailing of beam schedule at level 1.8m & 4.8m	CWE/LKG/ST/336/2023	19/22	--	--
20.	Detailing of beam schedule at level 7.8m & 10.35m	CWE/LKG/ST/336/2023	20/22	--	--
21.	Slab detailing	CWE/LKG/ST/336/2023	21[R]/22	--	--
22.	Section details of Chajja, lintel, beam and coping	CWE/LKG/ST/336/2023	22/22	--	--

(SIGNATURE OF CONTRACTOR)

Dated : \_\_\_\_\_

FOR ACCEPTING OFFICER

PARTICULAR SPECIFICATIONS (CONTD.)

LIST OF TD DRAWINGS:-

Ser No	Description	Drawings No	LIST OF TD DRAWINGS:	Date	
				Original	Last Revision
1	2	3	4	5	6
1.	GENERAL NOTES & ARCHITECTURAL NORMS (FIXING HEIGHT OF VARIOUS FITTINGS/FIXTURES)	CESZ/2015/TD/001	1/2	05.01.15	
2.	GENERAL NOTES & ARCHITECTURAL NORMS (FIXING HEIGHT OF VARIOUS FITTINGS/FIXTURES)	CESZ/2015/TD/001	2/2	05.01.15	
3.	FLUSH DOOR WITH PRESSED STEEL FRAME	CESZ/2015/TD/003	1/2	05.01.15	16.05.15
4.	FLUSH DOOR WITH PRESSED STEEL FRAME	CESZ/2015/TD/003	2/2	05.01.15	16.05.15
5.	DETAILS OF ALUMINIUM SLIDING WINDOW	CESZ/2015/TD/007	1R/5	23.08.16	16.11.21
6.	DETAILS OF ALUMINIUM SLIDING WINDOW	CESZ/2015/TD/007	2R/5	23.08.16	
7.	DETAILS OF ALUMINIUM SLIDING WINDOW	CESZ/2015/TD/007	3R/5	23.08.16	
8.	DETAILS OF ALUMINIUM SLIDING WINDOW	CESZ/2015/TD/007	4R/5	23.08.16	
9.	DETAILS OF ALUMINIUM SLIDING WINDOW	CESZ/2015/TD/007	5R/5	23.08.16	
10.	DETAILS OF MOULDED PVC DOOR(SOLID CORE)	CESZ/2015/TD/008	1/3	05.01.15	
11.	DETAILS OF MOULDED PVC DOOR(WOOD FREE)	CESZ/2015/TD/008	2/3	05.01.15	
12.	DETAILS OF MOULDED PVC DOOR(SOLID PANEL PVC DOOR)	CESZ/2015/TD/008	3/3	05.01.15	
13.	TYPICAL DETAILS OF ROAD, DRAIN, PCC/BRICK FOOT, PATH, HUME PIPE CULVERT AND HARD STANDING	CESZ/2015/TD/009	1/2	05.01.15	05.03.1 5
14.	TYPICAL DETAILS OF ROAD, DRAIN, PCC/BRICK FOOT, PATH, HUME PIPE CULVERT AND HARD STANDING	CESZ/2015/TD/009	2/2	05.01.15	
15.	MISC TYPICAL DETALILS-1	CESZ/2015/TD/010	1/3	05.01.15	27.4.15
16.	MISC TYPICAL DETALILS-1	CESZ/2015/TD/010	2/3	05.01.15	
17.	MISC TYPICAL DETALILS-1	CESZ/2015/TD/010	3/3	05.01.15	21.03.1 5 27.04.15
18.	TYPICAL DETAILS OF PREVENTION & CURE LEAKAGE/ SEAPAGE AND DAMPNES	CESZ/2015/TD/011	1/2	05.01.15	
19.	TYPICAL DETAILS OF PREVENTION & CURE LEAKAGE/ SEAPAGE AND DAMPNES	CESZ/2015/TD/011	2/2	05.01.15	05.10.1 5
20.	TYPICAL DETAILS OF DRAPERY RODS	CESZ/2015/TD-013	1/1	05.01.15	
21.	TYPICAL DETAILS OF ALUMINIUM GRILLS	CESZ/2015/TD-014	1/1	05.01.15	
22.	TYPICAL DETAILS OF CEMENT MORTAR JALI	CESZ/2015/TD-015	1/1	05.01.15	
23.	TYPICAL DETAILS OF RCC PARAPET, MS AND SS RAILING/HAND RAIL	CESZ/2015/TD/016	1/3	05.01.15	
24.	TYPICAL DETAILS OF RCC PARAPET, MS AND SS RAILING/HAND RAIL	CESZ/2015/TD/016	2/3	05.01.15	
25.	TYPICAL DETAILS OF RCC PARAPET, MS AND SS RAILING/HAND RAIL	CESZ/2015/TD/016	3/3	05.01.15	
26.	DETAILS OF PRESSED STEEL WINDOW/VENTILATOR	CESZ/2015/TD/019	1©/3	28.04.15	19.06.1 5
27.	DETAILS OF PRESSED STEEL WINDOW/VENTILATOR	CESZ/2015/TD/019	2©/3	28.04.15	19.06.1 5
28.	DETAILS OF PRESSED STEEL WINDOW/VENTILATOR	CESZ/2015/TD/019	3R1/3	16.01.15	
29.	TYPICAL DETAILS OF JOINT LESS FALSE CEILING	CESZ/2019/TD-41	1/2	18.11.19	
30.	TYPICAL DETAILS OF JOINT LESS FALSE CEILING	CESZ/2019/TD-41	2/2	18.11.19	

PARTICULAR SPECIFICATIONS (CONTD.)

LIST OF TD DRAWINGS (Cont...):-

Ser No	Description	Drawings No	LIST OF TD DRAWINGS:	Date	
				Original	Last Revision
1	2	3	4	5	6
31.	TYPICAL DETAILS OF PRECOATED STEEL WINDOWS AND VENTS WITH / WITHOUT FLYPROOF & GRILL/GUARD BARS	CESZ/2018/TD-35	1/2	30.07.18	
32.	TYPICAL DETAILS OF PRECOATED STEEL WINDOWS AND VENTS WITH / WITHOUT FLYPROOF & GRILL/GUARD BARS	CESZ/2018/TD-35	2/2	30.07.18	
33.	TYPICAL DETAILS OF FIXING POLYTHENE WATER STORAGE TANK OVER RCC ROOF	CESZ/TD/41	1/1	14.10.97	
34.	TYPICAL DETAILS OF EXHAUST FAN	CESZ/TD-42	1/1	14.10.97	
35.	FIXING DETAILS OF FAN HOOK	CESZ/TD/97	1/1	14.07.00	
36.	SOAK WELL FOR 25 TO 250 USERS BRICK/PCC BLOCK CONSTN	TD/SZ/502	1/1	07.02.02	19.02.04 23.02.04 07.03.15 09.03.15
37.	PLUMBING SINGLE STACK SYSTEM	CESZ/TD/31	1/2	14.10.97	
38.	PLUMBING SINGLE STACK SYSTEM	CESZ/TD/31	2/2	14.10.97	
39.	DETAILS OF INDIAN TYPE WC SINGLE STACK SYSTEM	CESZ/TD/38	1/2	14.10.97	
40.	DETAILS OF NAHANI TRAP AND PIPE CONECTION	CESZ/TD/38	2/2	14.10.97	
41.	DETAILS OF WATER PROOFING TREATMENT TO BATH/EWC	CESZ/TD/39	1/1	14.10.97	20.11.99
42.	TYPICAL DETAILS OF MANHOLES AND GULLY TRAP	CESZ/TD/40	1/1	14.10.97	
43.	DETAILS OF COMPOUND WALL	CESZ/TD/66	1/1	14.10.97	
44.	TYPICAL DETAILS OF RETAINING WALL	CESZ/STD/10	1/2	12.05.98	
45.	TYPICAL DETAILS OF RETAINING WALL & BREAST WALL	CESZ/STD/10	2/2	12.05.98	
46.	NUMBERING OF BUILDING	TD/N/76	1/1	31.03.73	21.05.7 3
47.	E/M NOTES & LEGENDS	TD/EM/07	1/1	24.08.00	28.04.0 5
48.	METHOD OF EARTHING	TD/EM/11	1/1	22.01.04	
49.	LT PANEL STAGE(OUT DOOR)	TD/EM/14	1/1	28.12.04	
50.	CABLE ROOT INDICATOR	TD/EM/17	1/1	30.07.09	
51.	GENERAL NOTES ON RCC WORKS	CESZ/STD/01	1/4	15/05/98	10.04.0 1
52.	GENERAL NOTES ON RCC WORKS	CESZ/STD/01	2/4	15/05/98	
53.	GENERAL NOTES ON RCC WORKS	CESZ/STD/01	3/4	15/05/98	
54.	GENERAL NOTES ON RCC WORKS	CESZ/STD/01	4/4	15/05/98	08.06.0 4 07.10.0 4
55.	REINFORCING DETAILS OF CORNER AND JUNCTION OF WALL	CESZ/STD/3	1/5	12.05.98	
56.	TYPICAL MASONRY DETAILS	CESZ/STD/3	2/5	12.05.98	
57.	TYPICAL MASONRY DETAILS	CESZ/STD/3	3/5	12.05.98	
58.	TYPICAL MASONRY DETAILS	CESZ/STD/3	4/5	12.05.98	
59.	TYPICAL MASONRY DETAILS	CESZ/STD/3	5/5	12.05.98	

PARTICULAR SPECIFICATIONS (CONTD.)

LIST OF TD DRAWINGS (Cont...):-

Ser No	Description	Drawings No	LIST OF TD DRAWINGS:	Date	
				Original	Last Revision
1	2	3	4	5	6
60.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	1/10	12.05.98	
61.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	2/10	12.05.98	
62.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	3/10	12.05.98	
63.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	4/10	12.05.98	
64.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	5/10	12.05.98	24.5.04, 18.2.05
65.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	6/10	12.05.98	23.3.05
66.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	7/10	12.05.98	
67.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	8/10	12.05.98	
68.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	9/10	12.05.98	
69.	TYPICAL STRUCTURAL DETAILS	CESZ/STD/4	10/10	12.05.98	
70.	DETAILS OF CRUMPLE JOINTS	CESZ/STD/5	1/1	12.05.98	10.3.04
71.	TYPICAL DETAILS OF LINTEL AND CHAJJAS	CESZ/STD/6	1/2	12.05.98	
72.	TYPICAL DETAILS OF LINTEL AND CHAJJAS	CESZ/STD/6	2/2	12.05.98	21.7.04
73.	GENERAL NOTES ON RCC WORK	AMT/181			
74.	TYPICAL DETAILS OF REINFORCEMENT DETAILING	CESZ/STD/17	1/1	04.02.02	30.12.03
75.	GENERAL NOTES AND REFERENCES	CESZ/STD/26	1R/6	08.09.15	
76.	TYPICAL DETAILS OF BEAM COLUMN JUNCTION AND OTHER DETAILS	CESZ/STD/26	2R/6	08.09.15	
77.	TYPICAL DETAILS FOOTING, LINTEL BEAM, RIGIDE BEAM / SLAB	CESZ/STD/26	3/6	09.10.14	
78.	TYPICAL DETAILS RCC ROOF PROJECTION AND RCC CHHAJJA	CESZ/STD/26	4/6	09.10.14	
79.	TYPICAL DETAILS, SCHEDULE OF STEEL HOLLOW SECTION TRUSS	CESZ/STD/26	5R/6	08.09.15	
80.	TYPICAL DETAILS, OF STEEL HOLLOW SECTION TRUSS	CESZ/STD/26	6/6	09.10.14	
81.	TYPICAL DETAILS OF VALVE PITS	TD/EM/6	1/2	08.12.99	-
82.	TYPICAL DETAILS OF VALVE PITS	TD/EM/6	2/2	08.12.99	-
83.	DETAILS OF STEEL GATE (SPAN 3000 TO 6500) AND WICKET GATE (SPAN-1500)	CESZ/TD/72	1/2	14.10.07	17.03.07
84.	DETAILS OF STEEL GATE (SPAN 3000 TO 6500) AND WICKET GATE (SPAN-1500)	CESZ/TD/72	2/2	14.10.07	01.10.09
85.	ALUMINIUM WINDOW AND VENTILATORS	CESZ/TD/183			
86.	ALUMINIUM WINDOW AND VENTILATORS	CESZ/TD/185			
87.	NUMBERING OF BUILDING	TD/N/76	1/1	31.03.73	21.05.73

**Notes:** (i) Under column 3 of List of Drawings (TD drawings covered in booklet), reference to drawings No. "CESZ/TD" and "CESZ/STD" have been made and may not be upload alongwith tender documents. Contractor are deemed to be in possession of all said standard drawings amended upto date as issued by "Chief Engineer Shillong Zone", Shillong / Engineer – in -Chief, New Delhi. These drawings may however be referred to in this HQ/CWE/GE office during working hours. No claim whatsoever shall be admissible to the contractors on account of any misunderstanding if any on this account.

**PARTICULAR SPECIFICATIONS (CONTD.)**

- (ii) In case of any discrepancy in Drawings No, Sheet No, Original date and Revision Date in between the “LIST OF DRAWINGS” as stated above and mentioned in architectural Drawings, the details as shown in “LIST OF DRAWINGS” above shall take precedence over the Drawings. In this regards, decision of Accepting Officer shall be final and binding.
- (iii) In case of varying provisions between main drawing and typical drawing (TD), the main drawing(s) shall take precedence over TD drawings.
- (iv) In case of varying provisions between 2015, 2016 & 2017 series (CESZ/2015/TD, CESZ/2016/TD, CESZ/2017/TD or CESZ/STD) TD drawing and older version typical drawing, the provision catered in 2015/2016/2017 series (CESZ/2015/TD, CESZ/2016/TD, CESZ/2017/TD or CESZ/STD) TD drawing (s) shall take precedence.

**Clarification on Drawing:**

Reference/Particulars	Amendment
1) Drg No. CESZ/2015/STD-05, Sheet No.1/3 200/230 dt 19 Jan 2015, Note No.2	<p><b>For:</b> ‘Grid lines are center line of thick walls as shown in drg.’</p> <p><b>Read:</b> “Grid lines are center line of 230 mm thick brick walls as shown in drg”</p>
2) All drawings, Wherever thickness of wall mmmentioned under Notes. mm th	<p><b>For:</b> ‘All external walls are of 230 th&amp; all internal walls are of 115 unless otherwise mentioned/drawn .</p> <p><b>Read:</b> “All external walls are of 230mm thick brick &amp; all internal walls are of 115mm thick brick unless otherwise mentioned/drawn.”</p>

**SIGNATURE OF CONTRACTOR**  
**DATED:**

**FOR ACCEPTING OFFICER**

**PARTICULAR SPECIFICATIONS (CONTD.)**

**AMENDMENT TO DRAWING OF SCHEDULE OF FINISHES**

1. The following amendments is to be carried out in the drawing sheet of **Schedule of Finishes-**

Ser No.	Page No.	Location	Particulars
1	2	3	4
1		Drawing sheet No. 14/22 <b>Column No. 24</b>	<b>For:</b> 10 mm thick vitrified tiles 150mm high over cement screed over as specified. <b>Read:</b> Vitrified Ceramic tiles 8 to 10 mm thick white/coloured,polished, as in skirting etc. set and jointed in neat cement slurry and pointed in white or coloured cement to match and including rendering of 10mm thick in Cement Mortar 1:3 as specified.
2		Drawing sheet No. 14/22 <b>Column No. 27</b>	<b>For:</b> Mirror finished kota stone 150mm high over cement screed over as specified. <b>Read:</b> Mirror polished machine cut kota stone 20 to 25 mm thick laid over, as in skirting etc. and jointed with grey cement slurry mixed with a admixture of pigment to match shade of slab including rubbing and polishing to smooth mirror finishand including rendering of 10mm thick in Cement Mortar 1:3 as specified.
3		Drawing sheet No. 14/22 <b>Column No. 33</b>	<b>For:</b> RCC roof slab level to slope with water proofing treatment <b>Read:</b> RCC roof slab level to slope with water proofing treatment as specified in particular specification.

2. All other entries shall remain unchanged.

**SIGNATURE OF CONTRACTOR**  
**DATED:**

**FOR ACCEPTING OFFICER**

PARTICULAR SPECIFICATIONS (CONTD.)

APPENDIX ‘A’

CEMENT SUPPLY AND ACCEPTANCE REGISTER

- 1. CA No. & Name of work:
- 2. Control No.:
- 3. Name of Manufacturer/Brand Name/Gde of Cement (A) Manufacture \_\_\_\_\_ (B) Brand \_\_\_\_\_ (C) Grade \_\_\_\_\_
- 4. Qty of cement & Lot No/Week No. (in Bags): (Qty \_\_\_\_\_ (b) Lot No/Week No \_\_\_\_\_
- 5. Manufacturer’s test Certificates No. \_\_\_\_\_
- 6. Random Test Details: (a) Physical test report from vide their letter No. \_\_\_\_\_  
(Name of approval Lab/Engineer-in-Charge College)  
(b) Chemical rest report from \_\_\_\_\_ vide their letter No. \_\_\_\_\_  
(Name of approval Lab/Engineer-in-Charge College)
- 7. Details of Physical & Chemical properties:

PARTICULAR SPECIFICATIONS (CONTD.)

APPENDIX ‘A’ (CONTD.)

Physical requirement (as per IS-4031)										Chemical requirement (as per IS-4031)							
	Specific Surface dce (M2/Kg	Soundness by Le Chatellarexpansion (%)	Soundness by Auto clave Expansion	Initial Setting time (Minutes)	Final Setting time (Minutes)	Compressive strength			Temp during testing °C	Standard consistency (%)	Lime saturation factor (Ratio)	Almina Lon Ratio (%)	Insoluble residues (%)	Magnesia (%)	Sulphuric Anhydride (%)	Loss opn Ignition (%)	Alkales (%)
						03 days (Mpa)	07 Days (Mpa)	28 days (Mpa)									
As per relevant IS																	
As per manufa-cturer’s test Certificate																	
As per random test certificate																	

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

FOR ACCEPTING OFFICER



APPENDIX ‘B’

PARTICULAR SPECIFICATIONS (CONTD..)

STEEL SUPPLY & ACCEPTANCE REGISTER

1. CA No & Name of Work :
2. Contract No :
3. Name of Manufacturer’s TC No :
4. Manufacturer :
5. (a) Random Test Details (a) Physical test report from \_\_\_\_\_ vide letter No. \_\_\_\_\_ (Name of NABL approval lab/Govt. Engg College)  
(b) Chemical test report from \_\_\_\_\_ vide letter No. \_\_\_\_\_ (Name of NABL approval lab/Govt. Engg College)
6. Type of Steel, dia&Qty(a)type : TMT/CRS (b) Dia\_\_\_ mm (c) Actual Wt \_\_\_ MT (d) Conversion Wt \_\_\_ MT

	Chemical Test							Mechanical Test						
As per IS 1786-2008	Carbon %	Sulphur %	Phosphorous%	Sulphor + Phosphorous%	Mang-anese %	Silic-on %	Corrosion Resistant element	Wt per meter	Yield Stress (N/mm <sup>2</sup> )	Tensile Strength (N/mm <sup>2</sup> )	Percent elongation( Min 18%)	Bend test	Rebend test	Remarks
As per manufacture’s test certificates														
As per independent test														

Remarks with Signature

Contractor

Junior Engineer

Engineer-in-Charge

Accepted/Rejected

Garrison Engineer

Remarks of BOO/Inspecting Officer/CWE

APPENDIX ‘C’

PARTICULAR SPECIFICATIONS (CONTD..)

MATERIALS AND THEIR TEST

Sl No	Materials	Test	Method of test	Frequency of tests			Level of Test	Approved Rate of recovery/ test charges for CTL in Rs.	Remark
1	2	3	4	5			6	7	8
1.	Bricks	(i) Compressive strength	IS-3495 (Part-II)	As per IS-5454 as given under:			‘A’	330.00	Checks for visual and dimensional characteristic shall also be carried out as IS-5454
		(ii) Water absorption	-Do-	<u>Lot size</u>	<u>Sample size</u>	<u>Permissible Nos of defective bricks</u>	‘A’	330.00	
		(iii) Efflorescence	-Do- (Part-I)	1001 to 10000	5	0	‘A’	330.00	
				10001 to 35000	10	0			
				35001 to 50000	15	0			
2.	Coarse aggregate	(i) Sieve analysis	IS-2386 (Part-I)	One test for every 15 Cum of aggregate or part thereof brought to site			‘A’	660.00	
		(ii) Flakiness Index	- do -	- do -			‘A’	250.00	
		(iii) Estimation of deleterious materials	IS-2386 (Part-I)	One test for every 100 Cum of aggregate or part thereof			‘A’	600.00	

PARTICULAR SPECIFICATIONS (CONTD..)

APPENDIX ‘B’(CONTD.)

MATERIALS AND THEIR TEST (CONTD.)

1	2	3	4	5	6	7	8
		(iv) Organic impurities	- do -	One test per source of supply	‘C’	275.00	
		(v) Moisture content	- do – (Part-II)	Regularly as required	‘A’	330.00	
		(vi) Specific gravity	- do -	One test for each source of supply	‘B’	330.00	
3.	Fine aggregate	(i) Sieve analysis	IS-2386 (Part-I)	One test for every 15 Cum of aggregate or part thereof brought to site	‘A’	660.00	
		(ii) Test for clay, silt and impurities	- do – (Part-II)	- do -	‘A’	500.00	
		(iii) Specific gravity	-Do- (Part-II)	One for each source of supply	‘ B’	330.00	
		(iv) Moisture content	-Do- (Part-II)	Regularly as required subject to 2 tests/day when being used	‘A’	330.00	
		(v) Test organic impurities	-Do- (Part-II)	One test for each source of supply	‘C’	275.00	

PARTICULAR SPECIFICATIONS (CONTD..)

APPENDIX ‘B’(CONTD.)

MATERIALS AND THEIR TEST (CONTD.)

1	2	3	4	5	6	7	8
4.	Cement	(i) Setting time	IS-4031-63 affirmed 1980	Once for each consignment or as and when required.	‘B’	500.00	
		(ii) Soundness	- do –	- do -	‘B’	550.00	
		(iii) Compressive strength	-Do-	- do -	‘ B’	550.00	
		(iv) Fineness	-Do-	- Do -	‘ B’	275.00	
5.	Timber panelled and glazed door/windows & shutters (including factory made shutters	(a) Dimension, sizes, workmanship and finish	IS-1003 1977 (Part-I)	Frequency of sampling from each lot shall be as under:	‘A’	180.00	
			<u>Lot size</u>	<u>Sample size</u>			
			26 – 50	5			
			51 – 100	8			
			101 – 150	13			
			151 – 300	20			
			301 – 500	32			
			501 – 1000	50			
			1000 and above	80			
		(b) Strength test					
		(i) Slamming	IS-1003 1990	From the each lot 15% of the factory made shutters shall be manufacturer tested for strength tests.	‘A’	180.00	

PARTICULAR SPECIFICATIONS (CONTD..)

APPENDIX ‘C’(CONTD.)

MATERIALS AND THEIR TEST (CONTD.)

1	2	3	4	5	6	7	8
		(ii) Impact indentation	- do -				
		(iii) Shock resistance	- do -				
		(iv) Edge loading	- do -				
6.	Plywood (IS-303)	(a) Moisture content	IS-1734 (Part-I)	Six test pieces cut from each of the boards selected as per table shall be subjected to tests.	‘C’	240.00	Sampling shall be as per IS-7835-Tables.
7.	Wood particles board (medium density) (IS:3097-1985)	(a) Density	IS-2360 (Part-III)	Three tests specimens from each sample (Size 150mmx75mm)	‘A’	60.00	Sampling shall be as per IS:3487-1983 with measure metre.
		(b) Moisture content	- do -	- do -	‘A’ & ‘B’	60.00	
		(c) Water Absorption	- do – (Part-16)	- do - (Size 300mmx300mm)	‘A’	60.00	
		(d) Swelling due to surface absorption	- do – (Part-17)	- do - (Size 125mmx100mm)	‘A’	60.00	
		(e) Swelling in water	- do –	- do - (Size 200mmx100mm)	‘A’	60.00	
		(f) Modulus of rupture	- do – (Part-4)	Three specimen as per IS:2380	‘B’	90.00	

PARTICULAR SPECIFICATIONS (CONTD..)					APPENDIX ‘C’(CONTD.)		
MATERIALS AND THEIR TEST (CONTD.)							
1	2	3	4	5	6	7	8
		(g) Screw withdrawal strength	- do – (Part-4)	Three specimen as per IS:2385	‘C’	120.00	
8.	All type tiles	(i) Water absorption	IS-777	06 tiles out of 18	‘B’	330.00	
		(ii) Wet transverse strength	-do-	-do-	‘B’	660.00	
		(iii) Resistance to wear	-do-	-do-	‘C’	1000.00	
9.	Water for construction purposes	(i) Test for acidity	IS-4564 3015	Once at the stage of approval of source of water.	‘B’	500.00	
		(ii) Test for alkalinity	-do-	-do-	‘B’	500.00	
		(iii) Test for total dissolved solid content (TDS).	-do-	-do-	‘B’	500.00	

<u>PARTICULAR SPECIFICATIONS (CONTD..)</u>					<u>APPENDIX 'C'(CONTD.)</u>	
<u>MATERIALS AND THEIR TEST (CONTD.)</u>						
10	Reinforcement Steel	(i) Physical tests upto 16 mm dia (Normal mass, tensile elongation, bend and rebend)	As per relevant IS	As Specified in Particular Specification	'B'	2500.00
		(ii) Physical tests more than 16 mm dia (Normal mass, tensile elongation, bend and rebend)	-do-	-do-	'B'	2750.00

- Notes:**
- (a) **Legend under column: 06**
- (i) 'A' – Site Laboratory;      (ii) 'B'- CTL/ Zonal laboratory;      (iii) 'C' – Approved tests Lab/Engineering College
- (b) The above materials mentioned here-in-before, the testing shall be carried out for those materials only, which are to be incorporated under the subject work.

SIGNATURE OF CONTRACTOR

FOR ACCEPTING OFFICERDATE: \_\_\_\_\_

**YARDSTICK**  
**ITEM No 1 OF SCH ‘A’ Part – I : BUILDING/STRUCTURE WORK.**

Sl No	Description of works to be carried out in the stage	Approved Percentage
1.	Stage – 1 : Upton Plinth Level Excavation & Earthwork in foundation including removal and returning, filling in, PCC in foundation & Plinth, RCC in raft foundation, pile cap, Plinth Beam & Column, etc. including steel reinforcement & formwork, Brick Masonry, ATT in foundation & under floor, Steps upto plinth, DPC, etc. complete.	20.00
2.	Stage -2 : Plinth level to First Floor Level RCC in Column, Lintel Beam, Floor Beam, Floor Slab, Chajjah, Staircase, walls, Parapet walls etc. including steel reinforcement & formwork, etc.	15.00
3.	Stage -3 : First Floor Level to Roof level including Mummt RCC in Column, Lintel Beam, Floor Beam, Floor Slab, Chajjah, Staircase, walls, parapet walls, Mummt etc. including steel reinforcement & formwork, etc.	15.00
4.	Stage – 4 : Brick Masonry Works including other connected works (in all Floors) Brick masonry works including other connected items.	6.00
5.	Stage – 5 : All Joinery Works including Built-in-Furniture Platform, etc. All Joinery Works for doors, windows & ventilators including frames & shutters, Glazing, cills etc. including finishes of joinery complete and built-in-furniture and its connected items, etc.	5.00
6.	Stage – 6 : Flooring (Ground Floor) including Plinth Protection to building & ATT, etc. Harcore, PCC for sub base & floor finishes with screed bed in floor, dado, skirting & ATT and other connected items.	7.00
7.	Stage – 7 : Flooring (First Floor) Flooring with screed bed in floor, dado, skirting, sunken floor treatment and other connected items.	6.00
8.	Stage – 8 : Plaster Work (All Floors) Plaster to internal surface of walls, ceiling and external surfaces of walls & soffits or slab /chajjah/staircase, etc complete.	5.00
9.	Stage – 9 : Surface finishes (All floors) White / colour washing, distempering and painting work for internal & external surfaces, ceiling newly plastered surfaces and other connected items etc.	5.00
10.	Stage – 10 : Roof Treatment Roof Treatment complete including testing.	2.00
11.	Stage – 11 : Plumbing & Sanitary work Plumbing & Sanitary items & fixtures complete.	3.00
12.	Stage – 12 : Misc Items Site clearance, Ramps, Stainless steel railing in balcony/verandah/staircase, drapery rods including brackets, cupboard/wardrobes and items which are not covered above.	11.00
	Total	100.00

SIGNATURE OF CONTRACTOR  
DATE: \_\_\_\_\_

FOR ACCEPTING OFFICER



**MILITARY ENGINEER SERVICES**  
**NOTICE OF TENDER**

1. A tender is invited for the work as mentioned in Appendix 'A' to this NOTICE INVITING TENDER (NIT).
2. The work is estimated to cost as indicated in aforesaid Appendix 'A'. This estimate, however, is not a guarantee and is merely given as a rough guide and if the work cost more or less, a tenderer/bidder will have no claim on that account. The tender shall be based on as mentioned in aforesaid Appendix 'A'.
3. The work is to be completed within the period as indicated in aforesaid Appendix 'A' in accordance with the phasing, if any, indicated in the tender from the date of handing over site, which will be on or about two weeks after the date of Acceptance of tender.
4. Normally contractors whose names are on the MES approved list for the area in which the work lies, and within whose financial category the estimated amount would fall, may tender/bid but in case of term contracts, contractors of categories SS to E may tender/bid. Not more than one tender/bid shall be submitted/uploaded by one contractor or one firm of contracts. Under no circumstances will a father and his sons (s) or other close relations who have business dealing with one another be allowed to tender/bid for the same contract as separate competitors. A breach of this condition will render the tenders/bids of both the parties liable for rejection.
5. The office of The Commander Works Engineers, HQ 137 WE, C/o 99 APO will be the Accepting Officer here in after referred to as such for purpose of the contract.
6. The technical bid and financial bid (Cover-1 and Cover-2) shall be uploaded by the tenderer/bidder on or before the date & time mentioned in NIT. A scanned copy of DD with enlistment details /documents shall be uploaded as packet 1/cover-1 ('T'bid) of the tender/bid on e-tendering portal. DD is refundable in case 'T' bid is not accepted resulting in non -opening of 'Q' bid. The applicant contractor shall bear the cost of bank charges for procuring and encashing the DD and shall not have any claim from Govt whatsoever on this account.
  - 6.1 Tender form and conditions of contract and other necessary documents shall be available on [www.defproc.gov.in/www.mes.gov.in](http://www.defproc.gov.in/www.mes.gov.in) site for download and shall form part of contract agreement in case the tender/bid is accepted.
  - 6.2 In case of contractor who has not executed the Standing Security bond, the cover-I shall be accompanied with by Earnest Money of amount as mentioned as mentioned in Appendix 'A' in the form of deposit at call receipt in favour of concerned GE/GE/ AGE (I) see Appendix 'A' by a scheduled Bank or in receipted treasury Challan the amount being credited to the revenue deposit of the concerned GE/GE/ AGE (I) (See appendix 'A').
  - 6.3
    - (a) Un-enlisted contractors are required to submit the scanned copies (in pdf file) of documents required as per eligibility criteria mentioned in instructions for filling the tender documents and Appendix 'A' to NIT alongwith **EARNEST MONEY DEPOSIT (EMD)** and tender fee on e-procurement portal and submit the physical documents in the office of **HQ 137 WE** within time limit specified in NIT. Inadequacy/deficiency of documents shall make the bid liable for rejection resulting in disqualification for opening of finance bid.
    - (b) Contractor having not executed standing security bond and standing security deposit in any MES formation shall upload scanned copy of **EARNEST MONEY DEPOSIT (EMD)** mentioned in Notice of Tender and shall ensure receipt of hard copy of EMD in the office of tender issuing authority before date & time fixed for this purpose. In case of failure to abide by any of these two requirements. The finance bid will not be opened.
  - 6.4 The bidder whose bid is finally accepted shall submit performance security as per condition 19 **amendment no 47, of IAFW2249**. within the stipulated period failing which action as per provision given in condition 19 shall be taken.

**MILITARY ENGINEER SERVICES**  
**NOTICE OF TENDER (CONTD.../-)**

- 6.5 The GE/AGE(I) will return the Earnest Money wherever applicable to all unsuccessful tenderers/bidders by endorsing an authority on the deposit- at-call receipt for its refund, on production by the tenderer, bidder a certificate of the Accepting Officer that a bonafide tender/bid was received and all documents were returned.
- 6.6 The GE/AGE(I) will either return the Earnest Money to the successful tenderer/bidders by endorsing an authority on the deposit-at-call receipt for its refund on receipt of an appropriate amount of Security Deposit or will retail the same in part or full on account of security deposit if such a transaction is feasible.
- 6.7 Copies of the drawing and other document pertaining to the work signed for the purpose of identification by the Accepting Officer or his accredited representative, sample of materials and stores to be supplied by the contractor will also be available for inspection by the tenderer/bidder at the office of Accepting officer and concerned GE /GE/ AGE (I) during working hours.
7. The tenderers/bidders are advised to visit the site of work by making prior appointment with GE/GE/ AGE (I) / who is also the Executing Agency of the work (see appendix 'A' ). The tenderers/bidders are deemed to have full knowledge of all relevant documents, sample site etc, whether they have inspected them or not.
8. Any tender/bid which proposes any alteration to any of the conditions laid down or which proposes any other condition or prescription whatsoever, is liable to be rejected.
9. The uploading of bid implies that bidder has read this notice and the conditions of Contract and has made himself aware of the scope and specification of work to be done and of the conditions and rates at which stores, tools and plants etc will be issued to him and local conditions and other factors having bearing on the execution of the work.
10. Tenderers/bidders must be in possession of a copy of the MES Standard Schedule of Rates (see appendix 'A' ) including amendments and errata thereto.
11. Invitation for e-tender does not constitute any guarantee for validation of 'T' bid and subsequent opening of finance bid of any applicant/bidder, even of enlisted contractors of appropriate class, merely by virtue of enclosing DD. Accepting officer reserves the right to reject the 'T' bid and not open the finance bid of any applicant/bidder . 'T' bid validation shall be decided by the Accepting Officer based on, inter alia, capability of the firm as per criteria given in Appx 'A' to this NIT. The applicant contractor/bidder will be informed regarding non-validation of his 'T' bid assigning reasons thereof through the [www.defproc.gov.in](http://www.defproc.gov.in). website. The applicant contractor /bidder if he so desires may appeal to the next higher Engineer authority viz **HQ Chief Engineer Shillong Zone** on email id [ceshiz-ec-army@nic.in](mailto:ceshiz-ec-army@nic.in) with copy to the Accepting Officer on email before the scheduled date of opening of Finance bid. The decision of the next higher Engineer Authority (NHEA) shall be final and binding. The contractor /bidders shall be not be entitled for any compensation whatsoever for rejection of his bid.
12. The Accepting officer reserves the right to accept a tender submitted by a public undertaking, giving a price preference over other Tender (s)/bids which may be lower, as are admissible under the Govt Policy. No claim for any compensation or otherwise shall be admissible from such tenderer/bidder whose tender/bid is rejected.
13. Accepting officer does not bind himself to accept the lowest or any tender/bid or to give any reason for not doing so.
14. This Notice Inviting Tender (NIT) including Appendix 'A' shall form part of the contract..

**Signature of contractor**

**For CWE**

Contd...

**SINGLE STAGE TWO COVER SYSTEM FOR ISSUE OF TENDER ONLINE (E-Tender)**  
**APPENDIX 'A' TO NOTICE INVITING e-TENDER**

01	Name of Work	:	<b>PROVISION OF SINGLE OFFRS ACCN AT LEIMAKHONG MIL STN.</b>
02	Estimated cost of work	:	Rs. 140.00 Lakhs (Rupees one crore forty lakh only) (At par market)
03	Period of completion	:	<b>12 Months</b>
04	Cost of tender documents	:	Rs. 1000.00 in the form of DD/Bankers cheque from any Schedule/Nationalized bank in favour of <b>GE869EWS</b> payable at <b>Leimakhong</b> (Copy shall be uploaded online and original to be submitted offline before due date of opening of cover No 1).
05	Website/Portal address	:	<a href="http://www.defproc.gov.in">www.defproc.gov.in</a> and <a href="http://www.mes.gov.in">www.mes.gov.in</a>
06	Type of contract	:	The contract shall be based on drawings and specifications (IAFW-2159) and GCC (IAFW-2249) with Schedule 'A' (List of items of work) to be priced by MES. The tenderer is required to work out detailed quantity for each building / structure listed in Schedule 'A' part-I apply his own rate and quote the lumpsum amount that he will charge for the complete Sch 'A' Part-I. The tenderers are required to quote their lumpsum amount for prepriced part and quote price against each item of other part.
07	Information & details		
	(a) Publishing date	:	<b>Refer Critical dates</b>
	(b) Bid submission start date	:	
	(c) Last date of bid submission	:	
	(d) Date of bid opening	:	
08	<b><u>Eligibility Criteria</u></b>		
	<b><u>(A) For MES enlisted contractors</u></b>	:	All contractors enlisted with MES in <b>Class 'B'</b> and above and <b>Category a(i)</b> subject to the remarks wrt performance in respect of Wks in hand reflected in Workload return (WLR) circulated by competent engineer authority.
	<b><u>(B) For contractors not enlisted with MES</u></b>	:	(i) Contractor not enlisted with MES should meet the enlistment criteria of MES for <b>class &amp; category as given above against Clause 8(A) for MES enlisted contractors</b> with regard to satisfactorily completion of requisite value works with Central/State Government/ Central/ State PSUs/ AWHO/ AFNHB/ CGEWHO/ DGMAP, annual turnover, bank solvency, working capital and other requirements given in Para 1.4 & 1.5 of Section 1 of MES Manual of Contracts 2020 as available in all MES formations as well as MES website ( <a href="http://www.mes.gov.in">www.mes.gov.in</a> ).  (ii) Not carrying adverse remarks in Work Load Report (WLR) or any other similar report circulated by any competent authority, if already working in MES.  (iii) Not suspended/debarred/blacklisted (either permanently or temporarily) from participating in any bid or for business dealings by any Central/State Government Department or any Central/ State Government PSU or any Autonomous Body under Central/State Government or any Local Body as on the bid submission end date.
09	<b><u>Tender issuing and Accepting Officer</u></b>	:	Name : Col NK Chaudhary, Commander Addres : <b>HQ 137 Works Engrs, PIN 914137, C/O 99 APO.</b> Contact Details : 03862-295681, Mail id : dima1373-mes@nic.in
10	<b><u>Executing agency</u></b>	:	<b>GE869EWS</b>
11	<b><u>Earnest Money</u></b>	:	<b>Rs. 2,15,000/-</b> in the form of Deposit at call receipt (FDR not acceptable) from any scheduled/nationalized bank in favour of <b>GE869EWS</b> payable at <b>Leimakhong</b> . MES enlisted contractors are exempted from submission of EMD.

**SINGLE STAGE TWO COVER SYSTEM FOR ISSUE OF TENDER ONLINE (E-Tender)**  
**APPENDIX ‘A’ TO NOTICE INVITING e-TENDER Contd...**

12	Performance Security	<p>An amount equivalent to 3% of the contract sum shall be deposited by contractor (either enlisted or un-enlisted within 28 days of receipt of the letter of acceptance in prescribed form as specified in condition 19 of IAFW-2249. On receipt of performance security, thereafter work order will be placed, failing which, the contract shall be cancelled and following action shall be initiated. (a) For un-enlisted contractors:- Forfeiture of Earnest Money Deposit and the firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.</p> <p>(b) In case of enlisted contractor the amount equal to earnest money as mentioned under Para 11 above shall be deposited by contractor through MRO in Government treasury. Issue of tender to such tenderer shall remain suspended till the aforesaid amount equal to earnest money is deposited in government treasury. In case, enlisted Contractor fails to deposit the money through MRO within notified time frame, same shall be recovered from security deposit held with the deptt or any dues held with the Deptt. (For other details the tender be referred).</p> <p>(c) The relaxation in amount of performance security deposit from 5% to 3%, can be availed by the lowest bidder in terms of GOI MoD letter No. 66546/P-2/E8/211/2020/DMA(Wks-II) dated 16th Feb 2021 and further extended upto 31 Mar 2023 by E-in-C branch vide letter No 66546/P-2/E8/64/E8 dt 31 Dec 2022. In case if contractor abandons the work or invokes the arbitration clause or any other recoveries are found outstanding from the contractor subsequently during the progress of the work, the difference of 2% shall be recovered from any other amount due from the contractor. The firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.</p>
----	----------------------	---

**Notes:-**

1.	In case after opening of Cover 1, if the number of MES enlisted contractors of eligible class as well as un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT are less than 7(seven), applications in respect of MES contractors one class or two classes (in case of remote and difficult areas to be decided as per list circulated by CE command /ADG) below the eligible class shall also be considered subject to fulfillment of other eligibility criteria given in the NIT. Therefore MES contractor's one class below (two classes below in case of remote and difficult areas) may also bid for this tender. Such contractors (contractors of one/two classes below the eligible class) shall not be considered in case their present residual work in hand is more than FIVE TIMES their present tendering limit. However in case contractors fulfill the criteria of upgradation to the stipulated eligible class based on past experience of completed works (individual work experience and/or average annual turnover, as applicable) and financial soundness (solvency/financial soundness and working capital), the ceiling of present residual work will be considered for issue of tender. Such bidders shall upload in their Cover-1 bid details related to residual works in hand like details of works in hand showing names of work, names of Accepting Officers, Contract amounts, date of commencement and completion (stipulated) and progress as on bid submission date. Such contractors, if claim to fulfill the criteria of upgradation shall also upload the requisite information/documents in support of upgradation. These details shall be verified by the Tender Issuing Authority from concerned formations in case bids of such contractors are considered for evaluation.
2.	In case after opening of Cover 1, the number of MES enlisted contractors of eligible class as well as un-enlisted contractors, if any, fulfilling the other eligibility criteria given in NIT are 7(seven) or more, applications of only those one class below the eligible class bidders shall be considered who have previously completed similar works satisfactorily and are meeting the criteria of upgradation in respect of past experience of completed works (individual work experience and/or average annual turnovers as applicable) and financial soundness (solvency/financial soundness and working capital) as per details given in Manual on Contracts. Therefore such contractors shall upload the requisite information/documents in the Cover-1.
3.	Unenlisted contractor shall be considered provided he meets the criteria. Foreign firms shall not be eligible for this tender. However Indian firms having foreign national / Indian nationals staying abroad / Indian national having taken foreign citizenship, as director(s) shall be considered subject to security clearance from the concerned authorities.
4.	<b><u>Employee's Provident Funds and Miscellaneous Provisions (EPF &amp; MP) Act 1952-Reg.</u></b> Contractors are required to produce Provident Fund Code Number immediately after acceptance of bid but in any case before the commencement of work i.e. Before releasing the work order by GE/AGE(I). Further work shall commence on ground only after submission of Provident Fund Code Number and no claims whatsoever shall be entertained due to delay in commencement of work on this account. The contractor shall ensure compliance of EPF and MP Act 1952 as amended till bid submission end date by the sub contractor if any engaged for said work.
5.	<b><u>Performance Security</u></b> : Please refer condition 19 of IAFW-2249 (GCC) as amended under amendment No 47 to IAFW-2249 (GCC). The Performance Security shall be in favour of Accepting Officer. <b>Work Order No. 01</b> shall be placed only after submission of Performance Security of adequate value by the contractor.
6.	Contractors enlisted with MES will upload following documents in Cover 1 for checking eligibility :- (a) Application for tender on Firm's letter head. (b) Enlistment letter issued by the Registering Authority duly renewed for the cycle period in vogue. (c) Scanned copy of DD/Bankers Cheque towards cost of tender and EMD instrument in case SSD bond is not signed at the time of registration. (d) Scanned copy of GST registration certificate.
7.	Contractors not enlisted with MES will be required to upload following documents in Cover 1 for checking eligibility :- (a) Application for tender on Firm's letter head. (b) Scanned copy of DD/Bankers cheque towards cost of tender and Earnest Money Deposit (EMD) instrument. (c) Copy of Police verification Report/Police Clearance Certificate / Character Certificate from the Police authority of the area where the registered office of the firm is located/ notarized copy of valid passport of Proprietor/each Partner/each Director. (d) All documents required for enlistment in MES for the class mentioned in Para 8(b) above as per Para 1.5 of Section 1 of MES Manual on Contracts 2020. (e) Details of works being executed in MES, if any.
8.	Tenders not accompanied by scanned copies of requisite DD/Bankers Cheque towards cost of tender and earnest money (as applicable) in Cover 1 shall not be considered for validation of 'T' bid and their financial bids will not be opened.
9.	Contractors should ensure that their original physical DDs and Earnest Money Deposit (EMD) instruments (as applicable) reach the office of Accepting Officers within 07 days of bid submission end date, failing which following action shall be taken. (a) In case of tenders from an enlisted contractor of MES, where scanned copies of requisite DD/Bankers Cheque towards cost of tender have been uploaded in Cover 1 but physical copies are not received within the stipulated period, their financial bids (Cover 2) will be opened. <b>However non-submission of physical copies of cost of tender shall be considered as willful negligence of the tenderer with ulterior motives and such tenderer shall be banned from bidding for a period for six months commencing from the date of opening of finance bid (cover 2).</b>

Contd...

**APPENDIX ‘A’ TO NOTICE INVITING e-TENDER (Contd...)**

	(b) In case of tenders from unenlisted contractors, where scanned copies of requisite DD/Banker Cheque towards cost of tender have been uploaded Cover 1 but physical copies are not received within the stipulated period, their <b>financial bids (Cover 2) will not be opened</b> . Name of such contractors alongwith complete address shall be circulated for not opening of their bids for period of six months commencing form the date of opening of finance bid (cover 2).
	(c) In case of tenders from enlisted and unenlisted contractors , where scanned copies of instruments for Earnest Money Deposit (as applicable) have been uploaded in Cover 1 but the same are not received in physical form within stipulated period, such tenders shall not qualify for opening of financial bid (cover 2).
10.	Contractor will not be allowed to execute the work by subletting or through power of attorney to a third party/another firm on his behalf. However a contractor can execute the work through power of attorney to sons/daughters / spouse of Proprietor/ Partner/ Director and firm’s own employees, Director, Project Manager <b>provided they are not having a separate enlisted firm in MES in their name as Proprietor/Partner/Director.</b>
11.	After opening of cover-1 and during its technical evaluation, in case any deficiency is noticed in the documents required to be uploaded by the tenderers as per NIT, a communication in the form of e-mail/SMS/Speed Post etc. shall be sent to the contractor to rectify the deficiency within a period of seven days from date of communication failing which their financial bid (cover-2) shall not be opened and contractor shall not have any claim on the same.
12.	Invitation for e-tender does not constitute any guarantee for validation of Technical bid and subsequent opening of financial bid of any applicant/bidder merely by virtue of enclosing DD. Accepting officer reserves the right to reject the Technical bid and not to open the financial bid of any applicant/bidder. Technical bid validation shall be decided by the Accepting Officer based on eligibility of the firm as per criteria given in this Appendix ‘A’ to NIT. Tenderer/bidder will be informed regarding non-validation of his Technical bid assigning reasons therefore through tender evaluation report which shall be uploaded on the website <a href="http://www.defproc.gov.in">www.defproc.gov.in</a> . Such tenderer, if desires, may appeal to the next higher Engineer Authority i.e. <b>HQ Chief Engineer Shillong Zone</b> on email id <a href="mailto:ceshiz-ec-army@nic.in">ceshiz-ec-army@nic.in</a> with copy to the Accepting Officer on email id <a href="mailto:dima1373-mes@nic.in">dima1373-mes@nic.in</a> before the scheduled date of opening of Cover 2. NHEA shall decide the matter within a period of seven working days from the date of receipt of appeal. The decision of the NHEA shall be final and binding. The tenderer/bidder shall not be entitled for any compensation whatsoever for rejection of his bid.
13.	In case of un-enlisted contractor is already executing works in MES, he shall not be considered eligible for the subject tender if the total value of such works is more than twice the tendering limit of the MES Class of contractor for which it is eligible. For this purpose, details of the works being executed by such a contractor shall be uploaded in the cover-1 of the bid and shall be checked / verified by the Accepting Officer.
14.	In case of BOQ is revised through the corrigendum and the bidder has failed to quote on revised BOQ (i.e. he has quoted on pre revised BOQ), such bid shall be treated as willful negligence by the bidder and his quotation shall be considered non-bonafide. In such cases the lowest tender shall be determined from amongst the valid/bonafide bids only. Accepting Officer may decide whether to re-tender or consider the lowest bonafide tender for acceptance.
15.	Revoking the offer or revising his rates upward or offering voluntary reduction by the lowest tender after opening of Cover 2 shall considered as a willful default. For this default a penalty of an amount equal of Earnest Money shall be levied. In case of an unenlisted tenderer, Earnest Money Deposited by him shall be forfeited. In case of MES enlisted tenderer having deposited the Standing Security Bond, an amount equal to the earnest money stipulated in the NIT, shall be notified to the tenderer for depositing through MRO and consideration of such tenderer in tender evaluation for future works shall remain suspended till the aforementioned amount is deposited in the Government Treasury. No other disciplinary/administrative action shall be taken against such tenderers. In such a situation, the next lowest offer shall not be considered for acceptance. Instead, retendering shall be resorted to in a transparent and fair manner and the defaulting tenderer and his related firm if any, shall not be eligible for this tender in second call or subsequent calls.
16.	Tender to related firms shall not be issued simultaneously. Firms shall be termed as related if Proprietor/one or more Partners/Directors are common. Decision of Accepting Officer on issue/deny the tender to any one of the related firms shall be final and binding.
17.	(i) For submission of e-tender bidders are requested to get themselves registered with <a href="http://www.defproc.gov.in">www.defproc.gov.in</a> . website alongwith class -II/III Digital Signature Certificate (DSC) issued by authorized CA under IT Act 2003. (ii) For complete details refer our website <a href="http://www.defproc.gov.in">www.defproc.gov.in</a> at CPP portal. (iii) Any change/modification in the tender enquiry will be intimated through above mentioned website only. Bidders are therefore requested to visit our website regularly to keep themselves updated. (iv) Full notice of tender IAFW-2162 & enlistment criteria are available in all offices of MES and also on MES website
18.	All disputes arising out of or in respect of this tender before acceptance, court of the place shall be Dimapur (Nagaland) jurisdiction only. After acceptance of subject tender, Condition 72 (Jurisdiction of Courts) of IAFW-2249 shall be applicable.
19.	Before quoting the tender, Contractor can visit the site with prior permission of GE/AGE(I) concerned to acquaint himself about the site conditions and nature of work to be executed. The Contractor shall also study the tender documents carefully and any discrepancy / clarification / suggestion on tender documents required shall be brought to the notice of Accepting Officer and got clarified before bid submission start date.

**Signature of contractor**

**8757/06/E8**

Headquarter  
137 Works Engineers  
PIN - 914 137  
C/O 99 APO

Dated : 08 Apr 2023

**For Accepting Officer**

**Annexure No.1****ELIGIBILITY CRITERIA FOR UN-ENLISTED 'B' CLASS CONTRACTOR:-**

- 1. Past experience of completed similar nature works in last 5 years and Average Annual Turn Over (in Rs.):-**
  - (a) Two work costing not less than Rs 150.00 lakh each.  
or  
One work costing not less than Rs 250.00 lakh.
  - (b) Average annual turnover for last two consecutive years shall not be less than Rs 300.00 lakh.
- 2. Financial Soundness (in Rs.):-**
  - (a) Solvent upto Rs 100.00 lakh.  
or  
Financially sound for engagement upto Rs 300.00 lakh.
  - (b) Working capital Rs 12.00 lakh.
- 3. Following Documents to be submitted by an un-enlisted Contractor:-**
  - (a) 4 No's self attested Passport size coloured photographs of Proprietor/Partners/ Directors of firm.
  - (b) Affidavit for constitution of firm.
  - (c) List of works executed during last five years (As per Appendix 1.1) including copies of work orders/work allotment letters, Copies of completion certificates and Form 16 A/TDS certificate for GST (GSTR-7A).
  - (d) Annual turnover certificate duly supported with audited balance sheet. The turn over certificate must bear the UDIN (Unique Document Identification Number). The turn over certificate and audited balance sheet should be from same Chartered Accountant. In case balance sheets are not audited, Form 26 AS and / or Annual GST return shall be forwarded in support of turnover.
  - (e) Audited balance sheet of last five years in case of Limited companies.
  - (f) Solvency certificate from scheduled bank as per specimen given in Appendix-1.2
  - (g) Working Capital certificate from scheduled bank as per specimen given in Appendix-1.3
  - (h) Affidavit from contractor that there is no Government dues/ recovery outstanding against him.
  - (j) Affidavit from contractor giving brief details of arbitration / litigation cases he was involved in.
  - (k) Copy of partnership deed in case of partnership firm.
  - (l) Memorandum and Articles of Association in case of Limited Companies.
  - (m) Copy of Registration Certificate of firm with Registrar of Companies/Registrar of firms.
  - (n) Affidavit that no near relative(s) of the contractor or his/their employees/agents is/are working as Gazetted/ Commissioned Officer(s) in MES/ Corps of Engineers/Ministry of Defence. If the near relative(s) is/are working in such capacity in any formation upto Zonal CE/CCE, he/ they shall furnish details.
  - (o) Affidavit that no near relative(s) of the contractor or his/their employees/agents is/are working as Junior Engineer(s) in MES/Corps of Engineers. If his near relative(s) is/are working in such capacity in any formation upto CWE/ GE(I) office, the contractor shall furnish details.
  - (p) Copy of power of attorney/Resolution of the Board in-favour of any Partner/Director of the firm.
  - (r) Copy of immediate last Income Tax Return.
  - (s) Self attested copy of PAN card of Proprietor, Partners, Directors of the firm/Company.
  - (t) Self attested copy of GST registration, EPFO registration and ESIC registration certificate.

**Notes:-**

- (i) All the documents submitted by the contractor shall be signed by Proprietor/all Partners/all Directors unless specifically authorized to a Partner/Director through POA or Resolution of the Board.
- (ii) Photocopies of documents shall be self-attested. Registering Authority shall ask production of original documents to verify the photocopies.
- (iii) All affidavits shall be given on non-judicial stamp paper of appropriate value duly signed by the contractor and attested by the Magistrate/Notary public.

Appendix- 1.1

LIST OF WORKS EXECUTED AND COMPLETED DURING THE PRECEDING FIVE YEARS IN CENTRAL GOVT/STATE GOVT/PSU/AWHO/AFNHB/CGEWHO

SINo.	CA No. &Name ofWork	AmountofCo ntract	Formationviz CE,CWE, GEor Office ofother Deptt.Includingtheir completePostalAddress,F ax No, Mobile No, and official email id of certificate issuing office.	Date of commencement	Original/ scheduled date of completion	Actual date of completion	Whetherinvoked Arbitration/Litigation. If yes theoutcome of thesame	Remarks
1	2	3	4	5	6	7	8	9



Appendix- 1.2

Bank Address and Code No.

FORM OF SOLVENCY CERTIFICATE FROM THE NATIONALISED/ SCHEDULED BANK

This is certified that to the best of our knowledge and information Shri/Smt.....having address....., a customer of our bank are/is respectable and can be considered solvent upto Rs..... (Rupees.....)/financially sound for any engagement upto Rs..... (Rupees.....). This certificate is issued without any guarantee or responsibility on the bank or any of the officer(s).

(Signature)  
Name, Designation and Personal  
Code No of Signatory & Seal of bank  
Complete Postal Address,  
Telephone No, e-mail ID of Branch

Note: In case of partnership firm, certificate shall include names of all partners as recorded with the bank.

Appendix-1.3

Bank Address and Code No.

FORM OF WORKING CAPITAL CERTIFICATE FROM NATIONALIZED / SCHEDULED BANK

This is certified that M/s Shri/Smt.....having address.....has/ have been maintaining a saving bank account /current account/ fixed deposit account with this Branch of bank since.....and the firm is having working capital of approximately Rs ..... and/ or the firm is enjoying overdraft/credit facilities upto limit of Rs ..... This certificate is issued without any guarantee or responsibility on the bank of any or the officers.

(Signature)  
Name, Designation and Personal  
Code No of Signatory & Seal of bank  
Complete Postal Address,  
Telephone No, e-mail ID of Branch

Note: In case of partnership firm, certificate shall include names of all partners as recorded with the bank.



**CORRIGENDUM TO SINGLE STAGE TWO COVER SYSTEM FOR ISSUE OF TENDER ONLINE (E-Tender)**  
**APPENDIX 'A' TO NOTICE INVITING e-TENDER**

1. The following amendments is to be carried out in the NIT:-

Ser No.	Page No.	Location	Particulars
1	2	3	4
1	Serial Page No. 154	Serial No. 12, Performance Security, Column 3	<p><b>For:</b> An amount equivalent to 3% of the contract sum shall be deposited by contractor (either enlisted or un-enlisted within 28 days of receipt of the letter of acceptance in prescribed form as specified in condition 19 of IAFW-2249. On receipt of performance security, thereafter work order will be placed, failing which, the contract shall be cancelled and following action shall be initiated. (a) For un-enlisted contractors:-Forfeiture of Earnest Money Deposit and the firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.</p> <p>(b) In case of enlisted contractor the amount equal to earnest money as mentioned under Para 11 above shall be deposited by contractor through MRO in Government treasury. Issue of tender to such tenderer shall remain suspended till the aforesaid amount equal to earnest money is deposited in government treasury. In case, enlisted Contractor fails to deposit the money through MRO within notified time frame, same shall be recovered from security deposit held with the deptt or any dues held with the Deptt. (For other details the tender be referred).</p> <p>© The relaxation in amount of performance security deposit from 5% to 3%, can be availed by the lowest bidder in terms of GOI MoD letter No. 66546/P-2/E8/211/2020/DMA(Wks-II) dated 16<sup>th</sup> Feb 2021 and further extended upto 31 Mar 2023 by E-in-C branch vide letter No 66546/P-2/E8/64/E8 dt 31 Dec 2021. In case if contractor abandons the work or invokes the arbitration clause or any other recoveries are found outstanding from the contractor subsequently during the progress of the work, the difference of 2% shall be recovered from any other amount due from the contractor. The firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.</p> <p><b>Read:</b>An amount equivalent to 5% of the contract sum shall be deposited by contractor (either enlisted or un-enlisted within 28 days of receipt of the letter of acceptance in prescribed form as specified in condition 19 of IAFW-2249. On receipt of performance security, thereafter work order will be placed, failing which, the contract shall be cancelled and following action shall be initiated.</p> <p>(a) For un-enlisted contractors:-Forfeiture of Earnest Money Deposit and the firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.</p> <p>(b) In case of enlisted contractor the amount equal to earnest money as mentioned under Para 11 above shall be deposited by contractor through MRO in Government treasury. Issue of tender to such tenderer shall remain suspended till the aforesaid amount equal to earnest money is deposited in government treasury. In case, enlisted Contractor fails to deposit the money through MRO within notified time frame, same shall be recovered from security deposit held with the deptt or any dues held with the Deptt. Further the firm shall be barred from participating in the tender for the subject work either in his/her individual capacity or as a partner of any other Company/Firm during re-tender.</p>

2. All other entries shall remain unchanged.

SIGNATURE OF CONTRACTOR  
DATED:

FOR ACCEPTING OFFICER

Tele: Mili:

**REGISTERED ACK DUE**  
Mulhyalaya 137 NirmanAbhiyanta  
Headquarters 137 Works Engineers  
PIN – 914 137  
C/O 99 APO

8757/129/E8

29 Oct 2024

M/S \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Name of work:- PROVISION OF SINGLE OFFERS ACCN AT LEIMAKHONG MIL STN.**

Dear Sir,

1. Tender documents in respect of above work are uploaded on the site [www.defproc.gov.in](http://www.defproc.gov.in) . The tender is based on single stage two cover e-tendering system. The contents of Cover I & Cover II are specified in NOTICE OF TENDER.
2. Bids will be received online by ACCEPTING OFFICER upto the date and time mentioned in the **NOTICE INVITING TENDER (NIT)**. No tender/bid will be received in physical form and any tender/bid received in such manner will be treated as non bona fide.
3. Bid will be opened on line on a due date fixed for opening as per critical dates given in the portal. Cover 1 will be opened first. Tenderers may see the result of the opening of Cover 1 on the tender portal. Date of opening of Cover 2 shall be decided after technical evaluation of Cover 1 keeping in view the various eligibility criteria given in the NIT and the same will be intimated to the tenderers while uploading the technical evaluation on the tender portal.
4. Your attention is also drawn to instruction on filling and submission of tender attached herewith. You may forward your points on tender documents through e-mail and/or depute your technical representative for discussion on tender/drawings and to clarify doubts, if any, before the bid submission starts. You are requested not to write piece meal points and forward your points duly consolidated in one go.
5. Un-enlisted contractors are required to submit the scanned copies (in pdf file) of documents required as per eligibility criteria mentioned in instructions for filling the tender documents and Appendix 'A' to NIT alongwith EARNEST MONEY DEPOSIT (EMD) and tender fee on procurement portal mentioned above and submit the physical documents in the office of **HQ-137WE C/O 99 APO** within time limit specified in NIT. Inadequacy /deficiency of documents shall make the bid liable for rejection resulting in disqualification for opening of finance bid.
6. Enlisted contractors of MES shall submit the scanned copies (pdf file) of enlistment letter, tender fee and such other documents as mentioned in Appx 'A' to NIT on e-procurement portal and submit physical documents in the office of **HQ-137WE C/O 99 APO** within time limit specified in NIT.
7. The contractor must ensure that the tender/bid is uploaded on the tender portal using the authorized DSC in time as the Accepting Officer will take no cognizance of any quotations/offer received in any other electronic or physical form like email/fax/by hand/through post from tenderer /bidder.
8. Keeping in view delays due to system failure or other communication related failures, it is suggested that tender/bid may be uploaded sufficiently in advance of the last due date and time fixed on the portal.
9. General Conditions of Contracts (IAFW-2249) (1989 Print) and errata and amendments thereto, Schedule of Minimum Fair Wages and MES SSR (Part-I- 2009 and Part-II-2020 including errata and amendments thereto) are not enclosed with these documents. These are available for perusal in the Office of **HQ-137WE C/O 99 APO** and concerned GE/AGE(I) concerned. Tenderer is also requested to keep the copy of these documents with him as same are available in the market.

Contd...

10. **PERFORMANCE SECURITY DEPOSIT:-**  
After acceptance of the Tender, the contractor will be required to lodge with the Accepting Officer PERFORMANCE SECURITY DEPOSIT @ 5 % of contract amount. The amount is required to be lodged within 28 (Twenty eight) days of the receipt by the contractor of notification of acceptance of tender/bid, failing which action as stipulated in Condition 19 of GCC shall be taken.
11. ANY TENDERER, WHICH PROPOSES ALTERATIONS TO ANY OF THE CONDITIONS, SPECIFICATIONS LAID DOWN IN THE TENDER DOCUMENTS OR ANY NEW CONDITION, WHATSOEVER, IS LIABLE TO BE REJECTED.

Yours faithfully,

For Accepting Officer

SIGNATURE OF CONTRACTOR  
DATE:\_\_\_\_\_

## **INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER**

### **1. EARNEST MONEY DEPOSIT (EMD)**

Contractor(s) who are not enlisted with MES/who are enlisted but have not executed the Standing Security Bond shall submit Earnest Money Deposit as detailed in Notice of Tender in one of the following forms, along with their tender/bid:-

- (a) Deposit at Call Receipt from a Scheduled Bank in favour of concerned GE/AGE(I).
- (b) Receipted Treasury Challan, the amount being credited to the Revenue Deposit of GE/AGE(I).

It is advisable that Earnest Money is deposited in the form of deposit call receipt from an approved Schedule Bank for easy refund. In case the tenderer/bidder wants to lodge 'Earnest Money Deposit' in any other form allowed by MES, a confirmation about its acceptability will be obtained from the Accepting Officer well in advance of the bid submission end date and time. Earnest Money Deposit shall be submitted in the name of concerned GE/AGE(I).

**NOTES:-** Earnest Money Deposit (EMD) in the form of cheque/Bank Guarantee etc will not be accepted. **Non-Submission of Earnest Money Deposit (EMD) (scanned copy alongwith Technical Bid & hard copy before the date & time fixed for opening of BOQ) will render the bid disqualified for opening of Cover -II (finance bid).**

### **2. GENERAL INSTRUCTIONS FOR COMPLIANCE:-**

2.1 The bids received only in the electronic form will be considered. All bids shall be submitted on defproc.gov.in portal. Documents should be scanned and forwarded in 'pdf' format and 'xls' form as indicated. Bids shall be uploaded on 'defproc.gov.in' portal on or before the bid closing date mentioned in the tender. No tender/bid in any other electronic or physical form like date email/fax/by hand/through post will be considered.

2.2 The bid shall be DIGITALLY signed using authorised DSC. All pages of tender documents, drawings, corrections/alterations shall be signed/initialed by the lowest bidder after acceptance of tender for making original and CTC of the contract.

2.3 Digital signatory of the bid/tender shall ensure that he is competent to bind the contractor (through partnership deed, general power of attorney or Memorandum and Article of Association of the Company) in all the matters pertaining to the contract with Union of India including arbitration clause. A scanned copy of the documents in confirmation of such authority shall be attached with the tender/bid in 'pdf' form in Cover 1. It shall be ensured that power of attorney shall be executed in accordance with the constitution of the company as laid down in its Memorandum & Article of Association.

2.4 Drawings, if issued in physical form, must be returned duly initialled by the tenderer/bidder in separate envelope indicating his name and address.

2.5 The tender shall be signed, dated and witnessed at all places provided for in the documents after acceptance. All corrections shall be initialled. The Contractor shall initial every page of tender and shall sign all drawings forming part of the tender. Any tender/bid, which proposes alterations to any of the conditions whatsoever, is liable to be rejected.

### **3. BOQ :-**

3.1 The tenderer shall quote his rates on the BOQ EXCEL FILE only as per guide line of e-procure web portal. No alteration to the format will be accepted and such bid will be disqualified.

3.2 In case any tenderer wishes to revise/modify the rates quoted in the BOQ file, he can do so only in the BOQ files before uploading the tender through <https://defproc.gov.in> site only before closing date & time.

3.3 After the uploading of tender, Department may upload the errata/ amendment through corrigendum. The tenderer/bidder should submit their offer considering the errata/amendment carried out through corrigendum issued from time to time.

3.4 While uploading the bid, the tenderers/bidders should specifically check whether any **revised BOQ** has been uploaded by department through corrigendum prior to **Bid submission start date**. Tenderers/bidders attention is specifically drawn to the fact that they should submit their offer on revised BOQ only. In case any tenderer/bidder submits offer on pre-revised BOQ in lieu of Revised BOQ, **it will be considered as a willful negligence by the tenderer/bidder and quotation shall be considered non-bonafide.**

**INSTRUCTIONS ON FILLING AND SUBMISSION OF TENDER Contd...**

- 4. Tenders/bidders who uploaded their priced tenders/bids and are desirous of being present at the time of opening of the tenders/bids, may do so at the appointed time.
- 5. Hard copies of all above documents shall be sent by the contractor to the Tender issuing authority well in advance to be received before the date & time fixed for the same.
- 6. The contractor shall employ Indian Nationals after verifying their antecedents and loyalty. Attention is also drawn to relevant provisions in Special Condition referred here-in-after and also Conditions 24 & 25 of IAFW-2249 (General Conditions of Contract) including amendment and errata.

Signature of Contractor

For Accepting officer

Dated:\_\_\_\_\_